

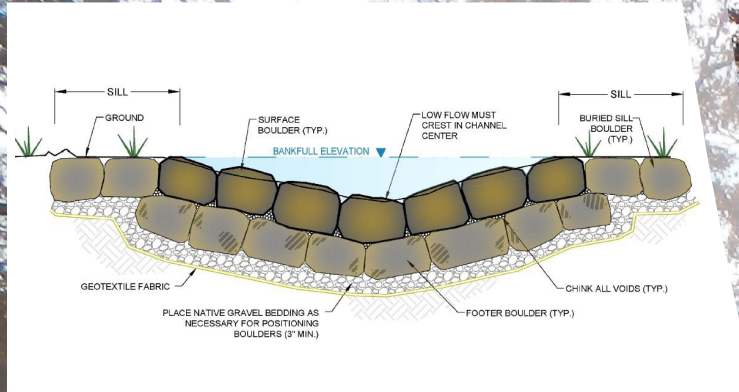


Monument Creek Watershed Restoration Master Plan

October 31, 2016

Submitted to:
Larry Small, Executive Director
Fountain Creek Watershed Flood Control and Greenway District
www.fountain-crk.org

Appendix



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Fountain Creek Watershed Flood Control and Greenway District Monument Creek Watershed Restoration Master Plan

Appendix

Prepared for:

Larry Small, Executive Director
Fountain Creek Watershed Flood Control and Greenway District

Prepared by:

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Matrix Project No. 15.526.007

Appendices

A. Existing Conditions

A summary of the existing environmental conditions within the watershed is provided in the following sections. Smith Environmental and Engineering reported on the existing environmental context for the watershed, this document, along with a landscape context statement, have been included.

i. Environmental Context Report



SMITH ENVIRONMENTAL AND ENGINEERING
Delivering Smart Solutions for Planning, Permitting, & Design

MEMORANDUM

TO: Chris Martin, Matrix Design Group, Inc. (MATRIX)
FROM: Darrin Masters, Smith Environmental and Engineering (SMITH)
SUBJECT: Mountain Creek Master Plan, Environmental Resources
DATE: September 20, 2016

El Paso County (County) and MATRIX are in the process of preparing a Master Plan for the Monument Creek watershed in El Paso County, Colorado. To support the development of this plan, SMITH has completed an investigation and analysis of available Geospatial Information Systems (GIS) data pertaining to environmental resources. This memorandum describes the layers selected for inclusion in the plan exhibits, describes the significance of the environmental resources, and assesses preliminary impacts to high priority projects within the watershed. This document supplements the geodatabase prepared by SMITH in coordination with the County and MATRIX (Task 1).

TASK 2 – ENVIRONMENTALLY SIGNIFICANT AREAS AND MAPPING GUIDANCE

SMITH identified four general categories of significant environment resources: Terrestrial Animal Habitat, Aquatic Animal Habitat, Vegetative Communities, and Water Quality and Hazardous Materials. The list below is a selection of layers found in the geodatabase that SMITH believes are significant within the Monument Creek watershed and should be prioritized on one or more maps.

Terrestrial Animal Habitats

Layers:

1. Streams
2. CriticalHabitat_USFWS
3. PMJM_Block_Clearance_Zone
4. Bighorn_Production_Area
5. Bighorn_Winter_Range
6. Bighorn_Summer_Range
7. Elk_Summer_Concentration_Area
8. Elk_Winter_Range
9. Elk_Summer_Range

We recommend displaying these layers on one, stand-alone map. Include the watershed stream layer to put Critical Habitat into perspective. Order the layers from top to bottom as they appear in the list above. Use a solid color for elk and bighorn sheep summer ranges, Preble's meadow jumping mouse (PMJM, *Zapus hudsonius preblei*) habitat, and PMJM block clearance. All other layers will

need to be patterned, because they overlap many of the other layers. A DEM with shaded relief would be a useful base layer. You can include vegetation layers as the base, but the raster-based vegetation layers would likely obscure the purpose of the map, which is to illustrate sensitive wildlife areas.

Aquatic Animal Habitats

Layers:

1. Fish_Barriers
2. AK_Darter_Potential_Habitat

Given that the high priority projects occur near or on streams, fish habitat and the ability to move up and downstream are very important resources. There is little GIS data available for fish in Colorado. It should be stated in the master plan that fish habitat and passage needs to be a priority for all work in live water. These layers can be combined with the terrestrial data into one map if the map remains readable. Place these layers as shown in the list above and below the stream layer.

Vegetative Communities

1. CO_Wetlands_USFWS
2. EPC_Riparian
3. PCAs_rev
4. fc_veg_sp83_clip

We recommend displaying these layers on one, standalone map. At the watershed scale, illustrate the wetlands and riparian layers as one color that identifies the overall areas of each type. Order the layers from top to bottom as they appear in the list above. When shown at a large scale, the riparian and wetland layers appear somewhat fragmented. To help with this, use a Digital Elevation Model (DEM) with shaded relief (or another type of terrain layer) to provide texture.

Overall vegetative classes found in the watershed are nicely shown in the FCWS fc_veg_sp83_clip layer. The layer is busy, because it was derived from a raster with 30 m pixel resolution. The various vegetation types are grouped into a reasonable number of classes that accurately illustrates vegetation at the watershed scale. To be most effective, layer #4 should be a stand-alone vegetation map with the layer draped onto a DEM. This would clearly show how the vegetation types change with respect to elevation and topography.

Water Quality and Hazardous Materials

1. Phase I mapped sites
2. Streams requiring TMDLs

These layers will be important when developing stormwater management plans and assessing the potential to encounter hazardous materials when excavating. We recommend a stand-alone map with the layers represented in the order above.

General Mapping Guidance

1. Map Scale. To make the map(s) more readable, we recommend focusing on habitats and habitat characteristics that are essential for illustrating the watershed master plan's priorities.
2. We recommend these stand-alone maps to group similar resources and maintain readability.
 - a. Aquatic and terrestrial potential animal habitats for Threatened and Endangered and Candidate Species, and sensitive areas for ungulate wintering and reproduction
 - b. Wetlands, riparian, and Potential Conservation Areas (PCAs)
 - c. Phase 1 sites and streams with Total Maximum Daily Loads (TMDLs)
 - d. Overall topography and vegetation
3. We recommend using the vegetation classification found in the layer *fc_veg_sp83_clip*. This layer appears to be derived from the Colorado Vegetation Classification project (CVCP). The CVCP is a raster based on information collected at 30 m pixels, which is the most accurate. Further, many of the CVCP classes were combined into meaningful groups that are understandable at the watershed scale. Caution must be used when planning, because the vegetation type has changed in many areas due to development.
4. We do not recommend using the GAP data at this scale, because the Landsat data collected in the mid-90s have a resolution of 100 hectares for uplands and 40 hectares for wetlands and riparian.
5. SMITH recommends that background layers that will aid in orienting the reader be added, including highways and main roads, streams, and topographical relief.

TASK 3 – DESCRIPTION OF ENVIRONMENTAL RESOURCES

This is a general discussion of our reasoning behind selecting environmental resources to be displayed on maps. Refer to the discussion under Task 2 for specific layers that we recommend to use.

Terrestrial Animal Habitats

The US Fish and Wildlife Service (USFWS) has designated Critical Habitat for two Threatened and Endangered species protected under the Endangered Species Act (ESA): the Preble's meadow jumping mouse and the Mexican Spotted Owl (*Strix occidentalis lucida*). Projects occurring in Critical Habitat must consider the potential to adversely modify its habitat. However, even if an area is not designated as Critical Habitat, it does not mean that habitat is absent in that area. For example, all riparian habitat should be evaluated for PMJM, and all forested or cliff areas should be

evaluated for the owl. The exception to this guideline occurs in the south part of the main branch of Monument Creek, which has been block-cleared for the PMJM. This means that projects do not need to consider impacts to the mouse in those areas.

Big game winter ranges, production areas, and concentration areas are important to maintain, because the health of these populations depends on the integrity of these areas. Bighorn sheep (*Ovis canadensis*) and elk (*Cervus canadensis*) are the most sensitive, and provide significant hunting and wildlife viewing value to the public. Other species, including white-tailed deer (*Odocoileus virginianus*) and mule deer (*Odocoileus hemionus*), can be included as well, but their ranges are broader and they are less dependent on seasonal migrations.

Aquatic Animal Habitats

The Arkansas darter (*Etheostoma cragini*) is a Candidate for listing under the ESA and is a Colorado State Threatened species. The main branch of Monument Creek throughout the watershed is considered potential habitat by Colorado Parks and Wildlife (CPW). When planning on the watershed scale, projects should consider impacts to aquatic habitats not only for the darter, but to maintain other stream functions that contribute to ecosystem health.

Barriers to fish movement can have significant impacts on aquatic habitats. Projects that plan to modify, maintain, or add structures to any stream channel, need to ensure that they are appropriate for fish passage.

Vegetative Communities

The vegetation at a given location is a function of several factors, including the soil conditions, elevation, annual precipitation, and historical use of the area. The vegetative composition and structure in turn affects the use of the area by wildlife. Therefore, SMITH selected several layers that appropriately describe the vegetation within the watershed and can be used to identify unique or significant habitat areas. The CVCP provides the vegetative communities, and the additional layers supplement that information.

Wetlands and riparian areas, in addition to being protected by the Clean Water Act (CWA), also provide excellent habitat for wildlife, especially in developed areas where riparian corridors provide wildlife with protected movement through a patchwork of landscapes. The USFWS provides wetland data through the National Wetland Inventory (NWI). Although, these data are older and digitized from hard copy maps, the wetland polygons in the watershed appear to be reasonably accurate upon our review and will be valuable when identifying wetland resources and determining preliminary impacts. In addition to the USFWS data, the Colorado Division of Wildlife (now CPW) provides data on the extent of the riparian areas within the watershed. By combining these datasets, a complete picture of this important vegetative community is obtained.

The Colorado Natural Heritage Program (CNHP) has identified PCAs throughout the state, including eight within the watershed. These areas focus on capturing the ecological processes that are necessary to support the continued existence of particular element, suite of elements, or other significant features. There is no regulatory or legal protection provided to PCAs. However, if a

project is proposed in one of these area, an investigation should be performed to determine what unique features may occur. CNHP maintains reports on each PCA.

Water Quality and Hazardous Materials

Phase I Environmental Site Assessments show where potentially hazardous materials have been documented for other projects. It is important to note that this layer does not reveal the location of every potentially hazardous material, but rather only those that have been previously investigated. If proper research and investigation are not performed, especially for projects on waterways, local wildlife, vegetation, or private individuals could be exposed to hazardous materials.

Streams that have a TMDL have been found to be imperiled under the CWA. A TMDL mandates the maximum amount of a pollutant that can occur in a waterbody. Many of the major drainages within the watershed have a TMDL, and this information should be incorporated into project planning, especially the stormwater management plan and Section 401 certification.

TASK 4 – IMPACTS TO ENVIRONMENTAL RESOURCES

MATRIX has provided SMITH with the locations of 39 proposed projects within watershed. The projects have been categorized by the type of activity proposed, and SMITH has elected to assess the impacts in this manner. The six project types that will be discussed are Reach, Recreation, Riparian, Detention, Flood Risk Reduction, and Stability. The following list represents a selection of federal and state environmental laws and regulations. Some of these regulatory issues are discussed by project type, but all have the potential to affect the proposed projects.

Federal

1. Clean Water Act (CWA). Waters of the US (WUS), including wetlands, may require a Section 404 permit from the US Army Corps of Engineers (USACE).
2. Endangered Species Act (ESA). Designated Critical Habitat for the PMJM occurs within the watershed, and suitable habitat is present in riparian areas; therefore these projects may require substantial consultation with the USFWS.
3. National Historic Preservation Act (NHPA). For every project with a federal nexus, cultural and historic resources need to be evaluated and protected if needed. These consultations will occur between the federal agency and the State Historic Preservation Officer (SHPO).
4. Migratory Bird Treaty Act (MBTA). The majority of birds that occur throughout North America are protected by the MBTA. Projects that are proposed during the breeding season (May through August) have the potential to affect a wide variety of bird species. Protections and mitigation for birds, their nests, and eggs need to be in place to comply with the MBTA.
5. Bald and Golden Eagle Protection Act. (BGEPA). Eagles have protections in addition to those provided by the MBTA. If eagles are disturbed to the point that a nest fails or a pair fails to reproduce in a particular year, the cause of the disturbance (any of the proposed projects) would violate BGEPA.

6. National Flood Insurance Act (NFIA). A Floodplain Development Permit may be required for modification and improvements to existing structures and the construction of new structures. Projects that propose to alter the current floodplain in an area need to work with the local Floodplain Administrator to permit the activity.

State

1. Senate Bill 40 (SB40) Wildlife Certification. SB 40 certification is required when a project with state agency involvement (typically the Colorado Department of Transportation) impacts wildlife or aquatic resources in Colorado streams. State listed Threatened and Endangered species with potential to occur are also evaluated during the certification process. The certification is issued by CPW.
2. CWA Section 401 Water Quality Certification. This certification is regulated through the Colorado Department of Health and Human Resources (CDPHE). The Colorado Water Quality Control Division (WQCD) reviews and issues Water Quality Certifications under Section 401 of the federal CWA for projects or actions that are applicable to the provisions of the Colorado 401 Certification Regulation. A CWA 401 Water Quality Certification is required for any federal license or permit that is issued to construct or operate a facility, which may result in any fill or discharge into WUS.

Reach Projects

The eleven Reach projects consist of natural channel design and/or the installation of drop structures. These projects will occur on Pine Creek (two projects), Kettle Creek, Middle Tributary (two projects), Black Squirrel Creek (two projects), Jackson Creek, Monument Creek, North Douglas Creek, and South Douglas Creek. These projects have the potential to affect resources protected under any of the federal laws listed above. Specifically, a CWA Section 404 permit may be required, and if so, ESA and NHPA documentation will need to be provided with the permit application. The Jackson Creek project occurs in PMJM Critical Habitat, and the Monument Creek project may affect the Arkansas darter.

Recreation Projects

There are four Recreation projects that are associated with trails, open space, and other existing recreation resources. One occurs on Pine Creek, two on Monument Creek, and one on a tributary to Monument Creek. Depending on the nature of the work, a CWA Section 404 may be required, and if so, ESA and NHPA documentation will need to be provided with the permit application. The project sites do not occur within any Critical Habitat, though the Monument Creek projects may affect the Arkansas darter or its habitat.

Riparian Projects

There are three Riparian projects that propose to complete stream restoration on Monument Creek (two projects) and Black Squirrel Creek. Depending on the scale of the work, all the state and federal laws listed above could apply, including the CWA. The Monument Creek projects may affect the Arkansas darter, and the Black Squirrel Creek project occurs within PMJM Critical Habitat.

Riparian areas are integral to ecosystem function throughout the watershed. They promoted higher biological diversity and provide habitats for many federal and state Threatened and Endangered species. Therefore, protections, enhancement, restoration, and creation of riparian habitats will be of high importance at both the state and federal levels.

Detention Projects

There are nine Detention projects. Retrofits are proposed on Middle Tributary, Monument Branch (two projects), Pine Creek, and Black Squirrel Creek (two projects); conceptual detention projects are proposed on Black Squirrel Creek (two projects) and Pine Creek. Depending on the nature and scale of the work, a CWA Section 404 permit may be required for these projects. If so, at a minimum ESA and NHPA documentation will need to be provided with the permit application. The Black Squirrel Creek and Middle Tributary projects occur in PMJM Critical Habitat.

Flood Risk Reduction Projects

There are five Flood Risk Reduction projects. There are culvert replacements at Teachout Creek, Northern Teachout Creek, and an unnamed tributary to Monument Creek; a levee installation also on an unnamed tributary; and bridge work on Monument Creek. Depending on the nature and scale of the work, a CWA Section 404 permit may be required for these projects. If so, at a minimum ESA and NHPA documentation will need to be provided with the permit application. In addition, any work that proposes to alter the floodplain to reduce risk will require a floodplain development permit. The Northern Teachout Creek project occurs within PMJM Critical Habitat, and the Monument Creek project may affect the Arkansas darter.

Stability Projects

The seven Stability projects propose to stabilize head-cutting on Monument Creek (two projects), Pine Creek (two projects), Black Squirrel Creek, and Middle Tributary (two projects). All of these projects have the potential to impact WUS, including wetlands, and may require a CWA Section 404 permit. If so, at a minimum ESA and NHPA documentation will need to be provided with the permit application. The Black Squirrel Creek project and the southern Monument Creek project occur in PMJM Critical Habitat, and both Monument Creek projects may affect the Arkansas darter. Projects that propose installing new structures in any creek should consult with CPW on techniques that promote fish habitat and movement along the stream.

ii. Landscape Context

The Landscape Context of the Monument Creek Watershed is well described in two recent planning efforts:

1. "Monument Creek Watershed Landscape Assessment" for the United State Air Force Academy by the Colorado Natural Heritage Program.
2. "The Upper Monument Creek Landscape Restoration Initiative" a collaborative effort facilitated by the Nature Conservancy and the Colorado Forest Restoration Institute.

The following landscape overview is taken from the "Monument Creek Watershed Landscape Assessment".

"The assessment area encompasses the Monument Creek Watershed located in northwestern El Paso County, Colorado. The project area encompasses approximately 61,200 ha (151,300 ac) of the Fountain Creek Watershed. The minimum elevation within the project area is approximately 1,800 meters (6,000 feet) and the maximum is 2,965 meters (9,727 feet) at the top of Ormes Peak in the Rampart Range. The Monument Creek Watershed is part of the Arkansas River drainage, Colorado's largest river basin and draining 62,011 square km (24,904 square miles) of land area (Colorado State University 2001)."

The project area is characterized by a complex land ownership pattern, representing a myriad of potential uses and relationships. The land status breakdown is as follows (CDOW 1998b):

- Private (which includes land managed by local government) - 58% or 35,360 ha (87,377 acres)
- Forest Service - 29% or 17,900 ha (44,232 acres)
- Department of Defense – 12% or 7,473 ha (18,466 acres)
- State of Colorado - 1% or 500 ha (1,228 acres)
- Bureau of Land Management - < 1% or 3 ha (6 acres)

The project area is comprised of three predominant vegetation groups that are strongly correlated to elevation, precipitation and soils: mixed coniferous forest, shrublands and grasslands. Regional vegetation is less regulated by long-term ecological processes than anthropogenic effects. As a result, natural disturbance regimes have been altered due to land use change, fire exclusion, the spread of invasive and exotic species and other impacts.

Climate is complex in the project area, largely dependent on elevation and topography. The mountainous portions of the project area receive over 64 cm (25 inches) of precipitation per year. Lower elevations within the watershed receive less precipitation, averaging just over 41 cm (16 inches) per year (Colorado State University 2000). Precipitation generally occurs during the summer months as part of seasonal monsoon cycles and during the winter in the form of snow. Unpredictable weather patterns can occur within the Watershed. Notable is the Monument Hill area of the Palmer Divide. Many reaches of the Monument Creek Watershed are prone to seasonal flash flooding.

The Watershed is highly urbanized: the Colorado Springs metropolitan area dominates the southern portion of the Watershed. Other Watershed communities include: Monument, Palmer Lake and Black Forest.

According to US Census Bureau data (2000), nearly 200,000 people inhabit the project area, close to half of the entire population of El Paso County. Population is concentrated in the northern Colorado Springs area

(Lower Monument Creek and Douglas Creek sub-watersheds; see page 23 for more information on 6th level watersheds), along the I-25 corridor and former ranchlands east of the Air Force Academy.

Between 1930 and 2000, the population of El Paso County grew by nearly 950%, from just over 49,000 residents to over 500,000 residents (US Census Bureau 2001). Between 1990 and 1998 alone, the County grew by 24%. While neighboring Douglas County grew faster during this period (over 140% growth between 1990 and 1998), more people migrated to El Paso County than any other County in the state (over 95,000) (Colorado Division of Local Government 2000).

The economic base of the County has changed dramatically over the last 100 years. Formerly a regional health center and once driven by resource extraction and support for mining and timber industries, the region's economy is now dominated by federal installations, a burgeoning high tech sector, and higher education. The region possesses one of the highest concentrations of non-profit organizations in the country.

The goal of the "Monument Creek Watershed Landscape Assessment" was to document the current and historic condition of the Monument Creek Watershed and provide the foundation for multi-jurisdictional and ecological management within and adjacent to the landscape area. The document contains three main components:

1. Reference condition
2. Current condition
3. Desired condition

The assessment provides very detailed information about biological systems, vegetation, wildlife, soils, geology, climate, land-use, population, settlement patterns and recreation. The "Monument Creek Landscape Assessment" is a very good reference document and should be considered when starting any project within the Monument Creek Watershed.

The following landscape overview is taken from the "Upper Monument Creek Landscape Initiative".

"The Upper Monument Creek (UMC) landscape supports a diversity of ecosystems and associated vegetation types consistent with the Montane Zone of the southern Front Range. The landscape is generally conifer-dominated with approximately 85% of the area characterized by three primary systems: Ponderosa Pine-Douglas Fir Woodland, Dry-Mesic Montane Mixed Conifer Forest and Woodland (dry mixed-conifer forest), and Mesic Montane Mixed Conifer Forest and Woodland (mesic mixed-conifer forest). These three systems are distributed across the UMC area and are often found commingled, with location and patch size based on aspect, elevation, soils and other factors. Dominant conifer species throughout the landscape are ponderosa pine, Douglas-fir, and limber pine, with Colorado blue spruce, Englemann spruce, pinyon pine, Rocky Mountain juniper, lodgepole pine, and white fir also occurring. Aspen is also common to dominant in much of the landscape, particularly in the dry and mesic mixed-conifer forests. Notably, this landscape contains one of the northernmost stands of native pinyon pine and white fir in the Front Range of Colorado.

As with other areas of the Front Range, vegetation patterns in the UMC landscape closely follow moisture gradients, with distinct changes in species composition and structure accompanying changes in elevation and aspect. On the east side of the landscape, lower elevations are characterized by Gambel oak shrublands that

begin to incorporate ponderosa pine and/or mixed conifer species as they rise to approximately 8,300'. At higher elevations, most stands are dominated by mixed conifer and aspen. There is a small area of pinyon-juniper forest in the southeast portion of the landscape.

On the western flank of the landscape, ponderosa pine dominates with a grass or grass-shrub understory. As one climbs eastward, the Douglas-fir component increases and then the other conifer species become more common. Above 9000' limber pine becomes a 3rd co-dominant tree species (at times replacing ponderosa pine) and spruce (both Englemann spruce and Colorado blue spruce) are common to co-dominant in wetter and cooler sites.

There is a large area dominated by lodgepole pine centered on the main ridge of the Rampart Range (app. 7,500 acres), of which approximately 1/3 is in the UMC landscape. This isolated stand of lodgepole pine has not yet experienced the kind of epidemic mountain pine beetle activity that has affected other areas of the state over the last decade."

"The Upper Monument Creek Landscape Initiative" proposed a ten year, ten million dollar plan to manage fire conditions on approximately 18,000 acres within the Upper Monument Creek landscape. The initiative identified eight different ecological systems within the plan area. The initiative describes the existing condition of each ecological system/plant community and prepares a fire mitigation strategy for each.

B. Concept Design Plans

Monument Creek Watershed Restoration Master Plan

Conceptual Design of Actionable Projects

Immediate Action Projects

North Douglas I-25 Downstream Culvert Opening

Concept Design		
Bank Stabilization Needed	130	CY
Wingwall and Footer Struct. Conc.	20	CY
Cut	0	CY
Fill	1100	CY
Net	-1100	CY
Drop Structures Total Area	450	SY
Grouted Boulder (1 Boulder Thick)	450	CY
Fence	580	LF
Revegetation Area	2300	SF

South Douglas I-25 Downstream Culvert Opening

Concept Design		
Bank Stabilization Needed	120	CY
Wingwall and Footer Struct. Conc.	20	CY
Cut	40	CY
Fill	300	CY
Net	-260	CY
Drop Structures Total Area	0	SY
Grouted Boulder (1 Boulder Thick)	0	CY
Fence	350	LF
Revegetation Area	1000	SF

Monument Branch I-25 Corridor Erosion

Concept Design		
Mobilization	1	LS
Dewatering	1	LS
Sediment and Erosion Control	1	LS
Inlet	1	EA
60" Manhole	5	EA
48" RCP	900	LF
Import Fill	2100	CY
FES	10	EA
Riprap Mat (Soil Riprap Type VH)	150	CY
Reveg (Seed, stakes, plugs)	5000	SF

Monument Creek Watershed Restoration Master Plan

Conceptual Design of Actionable Projects

Stream Channel Restoration Projects

BS-7: Black Squirrel Small Drop Structures West of I-25

Concept Design		
Bank Stabilization Needed	3600	FT
No. of Rock Vanes Design (1-ft)	0	EA
Total Vane Length	0	FT
Boulders in Vane	0	EA
No. of 3-ft Drops	11	EA
Total Grouted Boulder Area	22000	SF
Concept Design Slope	0.50%	%
Cut	1350	CY
Fill	1560	CY
Net	2234	CY
Drop Structures Total Area	2444	SY
Grouted Boulder (1 Boulder Thick)	2444	CY
Revegetation Area	61193	SF

JC-1: Jackson Creek Small Drop Structures East of Monument Creek Confluence

Concept Design		
Bank Stabilization Needed	1680	FT
No. of Rock Vanes Design (1-ft)	0	EA
Total Vane Length	0	FT
Boulders in Vane	0	EA
No. of 3-ft Drops	8	EA
Total Grouted Boulder Area	12000	SF
Concept Design Slope	0.50%	%
Cut	100	CY
Fill	2000	CY
Net	-567	CY
Drop Structures Total Area	1333	SY
Grouted Boulder (1 Boulder Thick)	1333	CY
Revegetation Area	23492	SF

KC-1: Kettle Creek Natural Channel Design East of I-25

Concept Design		
Bank Stabilization Needed	7000	FT
No. of Rock Vanes Design (1-ft)	37	EA
Total Vane Length	3330	FT
Boulders in Vane	1110	EA
No. of 3-ft Drops	0	EA
Total Grouted Boulder Area	0	SF
Concept Design Slope	0.50%	%
Cut	7800	CY
Fill	4900	CY
Net	2900	CY
Drop Structures Total Area	0	SY
Grouted Boulder (1 Boulder Thick)	0	CY
Revegetation Area	146595	SF

MCM-2: Monument Creek Small Drop Structures Near Railroad Crossing at North Airfield

Concept Design		
Bank Stabilization Needed	600	FT
No. of Rock Vanes Design (1-ft)	0	EA
Total Vane Length	0	FT
Boulders in Vane	0	EA
No. of 3-ft Drops	2	EA
Total Grouted Boulder Area	14000	SF
Concept Design Slope	0.50%	%
Cut	2270	CY
Fill	870	CY
Net	2956	CY
Drop Structures Total Area	1556	SY
Grouted Boulder (1 Boulder Thick)	1556	CY
Revegetation Area	54300	SF

Stream Channel Restoration Projects

MT-4: Middle Tributary Small Drop Structures West of I-25

Concept Design		
Bank Stabilization Needed	1500	FT
No. of Rock Vanes Design (1-ft)	0	EA
Total Vane Length	0	FT
Boulders in Vane	0	EA
No. of 3-ft Drops	6	EA
Total Grouted Boulder Area	7200	SF
Concept Design Slope	0.50%	%
Cut	40	CY
Fill	450	CY
Net	390	CY
Drop Structures Total Area	800	SY
Grouted Boulder (1 Boulder Thick)	800	CY
Revegetation Area	13100	SF

MT-5: Middle Tributary Natural Channel Design East of Monument Creek Confluence

Concept Design		
Bank Stabilization Needed	600	FT
No. of Rock Vanes Design (1-ft)	4	EA
Total Vane Length	320	FT
Boulders in Vane	110	EA
No. of 3-ft Drops	0	EA
Total Grouted Boulder Area	0	SF
Concept Design Slope	0.50%	%
Cut	40	CY
Fill	420	CY
Net	-380	CY
Drop Structures Total Area	0	SY
Grouted Boulder (1 Boulder Thick)	0	CY
Revegetation Area	5300	SF

NDC-1: North Douglas Small Drop Structures East of I-25

Concept Design		
Bank Stabilization Needed	2600	FT
No. of Rock Vanes Design (1-ft)	0	EA
Total Vane Length	0	FT
Boulders in Vane	0	EA
No. of 3-ft Drops	9	EA
Total Grouted Boulder Area	10800	SF
Concept Design Slope	0.50%	%
Cut	650	CY
Fill	3250	CY
Net	270	CY
Drop Structures Total Area	1200	SY
Grouted Boulder (1 Boulder Thick)	1200	CY
Revegetation Area	44549	SF

PC-6: Pine Creek Natural Channel Design East of I-25

Concept Design		
Bank Stabilization Needed	1680	FT
No. of Rock Vanes Design (1-ft)	0	EA
Total Vane Length	0	FT
Boulders in Vane	0	EA
No. of 3-ft Drops	0	EA
Total Grouted Boulder Area	0	SF
Concept Design Slope	0.50%	%
Cut	1475	CY
Fill	400	CY
Net	1075	CY
Drop Structures Total Area	0	SY
Grouted Boulder (1 Boulder Thick)	0	CY
Revegetation Area	27711	SF

Stream Channel Restoration Projects

PC-7: Pine Creek Small Drop Structures East of I-25 and Downstream of Academy Blvd.

Concept Design		
Bank Stabilization Needed	820	FT
No. of Rock Vanes Design (1-ft)	0	EA
Total Vane Length	0	FT
Boulders in Vane	0	EA
No. of 3-ft Drops	4	EA
Total Grouted Boulder Area	7600	SF
Concept Design Slope	0.50%	%
Cut	2246	CY
Fill	1185	CY
Net	1905	CY
Drop Structures Total Area	844	SY
Grouted Boulder (1 Boulder Thick)	844	CY
Revegetation Area	18266	SF

SDC-1: South Douglas Small Drop Structures Downstream of Holland Park Blvd.

Concept Design		
Bank Stabilization Needed	450	FT
No. of Rock Vanes Design (1-ft)	0	EA
Total Vane Length	0	FT
Boulders in Vane	0	EA
No. of 3-ft Drops	2	EA
Total Grouted Boulder Area	2400	SF
Concept Design Slope	0.50%	%
Cut	1000	CY
Fill	70	CY
Net	270	CY
Drop Structures Total Area	267	SY
Grouted Boulder (1 Boulder Thick)	267	CY
Revegetation Area	10169	SF

Monument Creek Watershed Restoration Master Plan

Conceptual Design of Actionable Projects

Detention and Water Quality Facilities

BS-1: Black Squirrel Conceptual Detention Upstream of Hwy 83

Concept Design		
Target Release Rate	94	CFS
Required Storage Volume	137	ACRE-FT
Estimated Stage-Storage-Discharge Relationship		
Stage (ft. from bottom)	Storage (Acre-ft)	Discharge (cfs)
0	0	0
1	13	23
2	25	28
3	38	32
4	52	36
5	65	40
6	79	45
7	94	50
8	108	56
9	123	66
10	138	94

BS-2: Black Squirrel Conceptual Detention Near Silver Creek Dr.

Concept Design		
Target Release Rate	118	CFS
Required Storage Volume	19	ACRE-FT
Estimated Stage-Storage-Discharge Relationship		
Stage (ft. from bottom)	Storage (Acre-ft)	Discharge (cfs)
0	0	0
1	1	54
2	3	71
3	4	79
4	6	92
5	8	98
6	10	110
7	12	121
8	14	135
9	16	152
10	18	202

BS-4: Black Squirrel Detention Retrofit Upstream of Voyager Pkwy.

Concept Design		
Target Release Rate	169	CFS
Required Storage Volume	20	ACRE-FT
Estimated Stage-Storage-Discharge Relationship		
Stage (ft. from bottom)	Storage (Acre-ft)	Discharge (cfs)
0	0	0
1	1	34
2	3	43
3	5	50
4	7	59
5	8	65
6	10	75
7	12	84
8	15	98
9	17	119
10	19	169

BS-5: Black Squirrel Detention Retrofit Upstream of USAFA Property Boundary

Concept Design		
Target Release Rate	168	CFS
Required Storage Volume	33	ACRE-FT
Estimated Stage-Storage-Discharge Relationship		
Stage (ft. from bottom)	Storage (Acre-ft)	Discharge (cfs)
0	0	0
1	3	17
2	6	26
3	9	35
4	12	45
5	15	57
6	18	68
7	22	83
8	25	99
9	29	123
10	33	173

Detention and Water Quality Facilities

MB-1: Monument Branch Detention Retrofit at Flying Horse

Concept Design		
Target Release Rate	66	CFS
Required Storage Volume	82	ACRE-FT
Estimated Stage-Storage-Discharge Relationship		
Stage (ft. from bottom)	Storage (Acre-ft)	Discharge (cfs)
0	0	0
1	7	15
2	15	19
3	23	22
4	30	27
5	39	29
6	47	31
7	56	35
8	64	39
9	73	46
10	83	66

MT-2: Middle Tributary Detention Retrofit Upstream of USAFA Property Boundary

Concept Design		
Target Release Rate	104	CFS
Required Storage Volume	34	ACRE-FT
Estimated Stage-Storage-Discharge Relationship		
Stage (ft. from bottom)	Storage (Acre-ft)	Discharge (cfs)
0	0	0
1	3	25
2	6	33
3	9	36
4	12	41
5	15	45
6	19	51
7	22	56
8	26	63
9	30	74
10	34	104

MB-2: Monument Branch Detention at the Classical Academy

Concept Design		
Target Release Rate	90	CFS
Required Storage Volume	100	ACRE-FT
Estimated Stage-Storage-Discharge Relationship		
Stage (ft. from bottom)	Storage (Acre-ft)	Discharge (cfs)
0	0	0
1	9	21
2	18	27
3	28	32
4	37	36
5	47	40
6	57	44
7	68	49
8	78	54
9	89	63
10	100	90

PC-1: Pine Creek Detention Retrofit Upstream of Stoneglen Dr.

Concept Design		
Target Release Rate	142	CFS
Required Storage Volume	13	ACRE-FT
Estimated Stage-Storage-Discharge Relationship		
Stage (ft. from bottom)	Storage (Acre-ft)	Discharge (cfs)
0	0	0
1	1	27
2	2	38
3	3	46
4	4	52
5	5	60
6	6	69
7	8	79
8	9	92
9	11	105
10	12	142

Detention and Water Quality Facilities

PC-2: Pine Creek Conceptual Detention Downstream of Briargate Blvd.

Concept Design		
Target Release Rate	118	CFS
Required Storage Volume	106	ACRE-FT
<i>Estimated Stage-Storage-Discharge Relationship</i>		
<i>Stage (ft. from bottom)</i>	<i>Storage (Acre-ft)</i>	<i>Discharge (cfs)</i>
0	0	0
1	10	29
2	19	36
3	29	41
4	40	46
5	50	51
6	61	57
7	72	64
8	83	72
9	95	85
10	106	118

Monument Creek Watershed Restoration Master Plan

Conceptual Design of Actionable Projects

Flood Risk Reduction Projects

MCM-6: Flood Risk Reduction at W. Polk Rd. Bridge at Monument Creek

Concept Design		
100-Yr WS Upstream	6083.15	ELEV.
Proposed Low Chord	6087.15	ELEV.
Deck Span	120	LF
Deck Width	50	LF
Deck Area	6000	SF
Roadway Replacement Width	50	LF
Roadway Replacement Length	320	LF
Roadway Replacement Area	16000	CY
Curb and Gutter	640	LF
Culvert	NA	Type
Culvert Length	NA	LF
Span/Diameter	NA	LF
Rise	NA	LF
Cells	NA	No.
Area	NA	SF

NRR-1: Culvert Replacement at War Eagle Dr. North

Concept Design		
100-Yr WS Upstream	NA	ELEV.
Proposed Low Chord	NA	ELEV.
Deck Span	NA	LF
Deck Width	NA	LF
Deck Area	NA	SF
Roadway Replacement Width	45	LF
Roadway Replacement Length	90	LF
Roadway Replacement Area	4050	CY
Curb and Gutter	180	LF
Culvert	Box	Type
Culvert Length	60	LF
Span/Diameter	10	LF
Rise	6	LF
Cells	4	No.
Area	240	SF

NRR-2: Levee Installation at S. Rockrimmon Blvd. Downstream of Pro Rodeo Dr.

Concept Design		
Width of Levee Base	30	LF
Width of Levee Top	14	LF
Levee Length	400	LF
Levee Height	4	LF
Levee Volume	1304	CY

TC-1: Culvert Replacement at Northern Teachout Creek Tributary and Old Denver Hwy.

Concept Design		
100-Yr WS Upstream	NA	ELEV.
Proposed Low Chord	NA	ELEV.
Deck Span	NA	LF
Deck Width	NA	LF
Deck Area	NA	SF
Roadway Replacement Width	45	LF
Roadway Replacement Length	180	LF
Roadway Replacement Area	8100	CY
Curb and Gutter	0	LF
Culvert	Box	Type
Culvert Length	50	LF
Span/Diameter	8	LF
Rise	4	LF
Cells	3	No.
Area	96	SF

Flood Risk Reduction Projects

TC-2: Culvert Replacement at Teachout Creek and Old Denver Hwy.

Concept Design		
100-Yr WS Upstream	NA	ELEV.
Proposed Low Chord	NA	ELEV.
Deck Span	NA	LF
Deck Width	NA	LF
Deck Area	NA	SF
Roadway Replacement Width	45	LF
Roadway Replacement Length	85	LF
Roadway Replacement Area	3825	CY
Curb and Gutter	0	LF
Culvert	Box	Type
Culvert Length	60	LF
Span/Diameter	10	LF
Rise	4	LF
Cells	1	No.
Area	40	SF

C. Technical Analyses

A summary of the technical analyses completed as a part of this Restoration Master Plan are provided in the following Appendices. The attached technical memoranda were drafted early in the Restoration Plan development process. Methodologies and results presented in these technical memoranda reflect the stage of the planning effort at which they were drafted. For finalized methodologies and results refer to the Restoration Plan report and the technical results provided in the following sections.

i. Hydrology and Hydraulics Technical Memorandum

HYDROLOGY AND HYDRAULICS TECHNICAL MEMORANDUM

Date: June 15, 2016

To: Larry Small, Executive Director, Fountain Creek Watershed Flood Control and Greenway District

From: Preston Manning, Drake Ludwig E.I., Graham Thompson P.E.

RE: Hydrology and Hydraulics of the Monument Creek Watershed

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1. Background and Purpose

The floods of 2013 caused considerable damage to infrastructure as well as public and private property in El Paso County, particularly in the stream corridors of the Monument Creek watershed. In many areas, especially in some

of the primary tributaries, the effects of the floods were similar to those seen in other Colorado counties that suffered extensive and excessive rainfall during the summer and early autumn of 2013. In El Paso County, the unique combination of excessive rainfall and post-Waldo Canyon and Black Forest Fire conditions resulted in not only historically high water levels and stream flows, but also excessive amounts of sediment transport and deposition.

The goal of this project is to produce an actionable plan that will aid in the restoration of the Monument Creek watershed. The Monument Creek Restoration Master Plan (MCRMP) is directed by the Fountain Creek Watershed Flood Control and Greenway District (District) on behalf of the Colorado Watershed Restoration Program administered by the Department of Local Affairs (DOLA). Additional funding partners in the projects include: the City of Colorado Springs, El Paso County, the United States Air Force Academy (USAFA), Colorado Springs Utilities (CSU), the Pikes Peak Area Council of Governments (PPACG), and the Pikes Peak Regional Building Department (PPRBD).

An understanding of the hydrologic and hydraulic processes active in the Monument Creek watershed is essential in identifying areas of risk and possible improvement. Hydrologic and hydraulic models provide valuable insight into these complex processes. A key tool in reaching a thorough understanding of the basin hydrology is a detailed physically-based model that includes the fundamental characteristics of the watershed and provides a reasonable estimation of the amount and timing of runoff. By routing the flows calculated in the hydrology model, we can characterize in-stream flow conditions throughout the watershed via hydraulic modeling.

The purpose of this memorandum is to document the detailed hydrologic and hydraulic analyses completed for Monument Creek, including the results of post-fire flood hydrology as well as the development and adjustment of the models used in the evaluation. This memorandum is an interim work product, the hydrologic and hydraulic analyses are subject to further refinement as the project progresses, however, the general processes and conclusions presented here are not expected to significantly change. The technical hydrologic study is a continuation of the investigations and evaluations developed during the past 12 years to address the conditions of the watershed. This update builds on the Fountain Creek Watershed Study (FCWS) and the recent sedimentation mitigation project conducted by the United States Geological Survey (USGS) on behalf of the District.

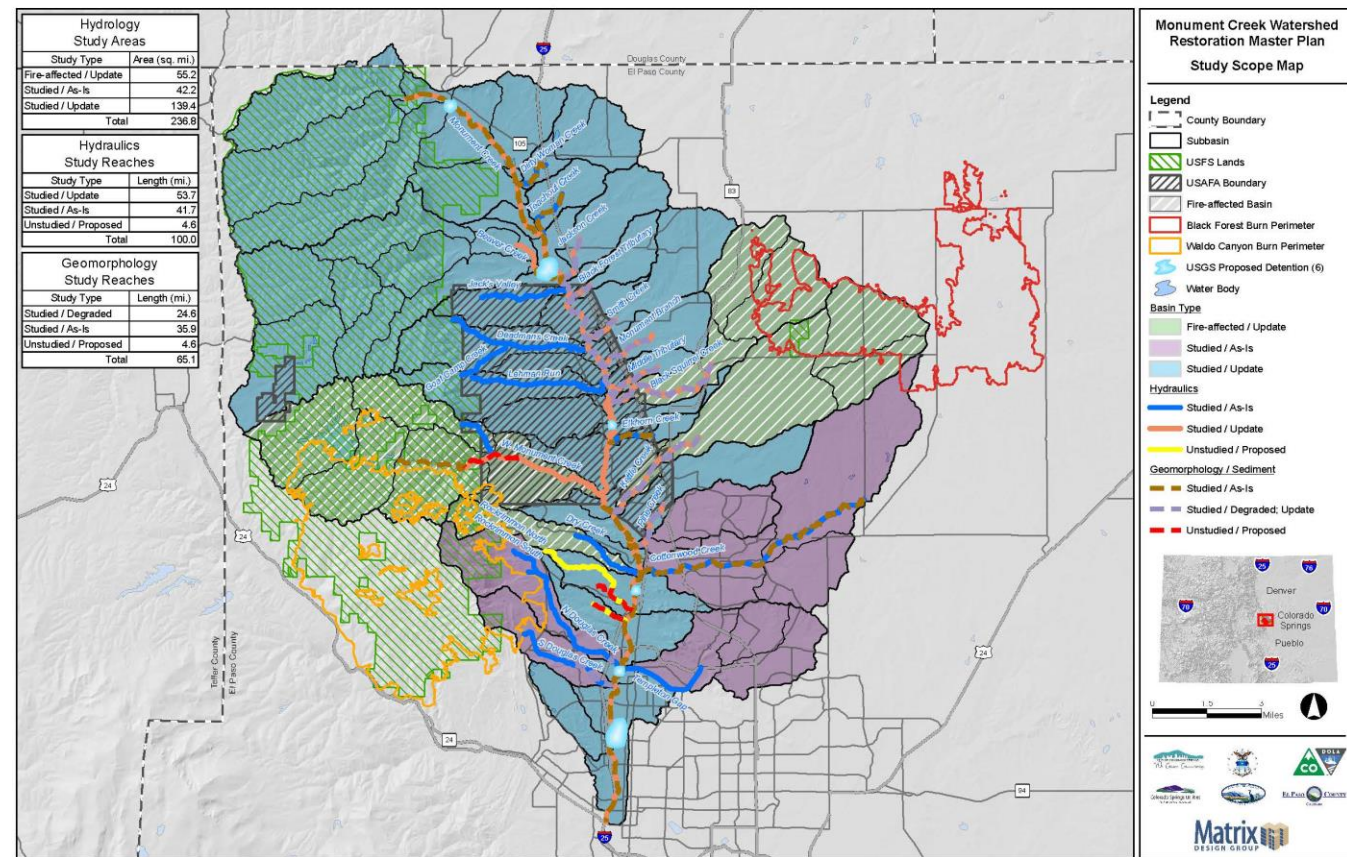


Figure 1. Basin Overview Map

2. Monument Creek Watershed Hydrology Assessment

The hydrology assessment of the Monument Creek watershed was improved by updating the existing Monument Creek hydrology model to include the methods and results from recent USGS, Colorado Springs, and El Paso County projects. This process results in improved estimates of the accumulation and routing of storm water throughout the Monument Creek watershed above the confluence with Fountain Creek in Colorado Springs. The previous version of the Monument Creek hydrology model was originally developed for the United States Army Corps of Engineers (USACE) and published in the FCWS in 2006.

The updated hydrologic model utilizes an estimation of runoff potential based on physical properties of the watershed to calculate the percentage of rainfall that becomes runoff. Model parameters account for slope, soil type, vegetation cover, land use, and in the case of post-fire evaluations, degree of soil burn severity (SBS). Recent studies have been conducted for the Waldo Canyon fire and High Park fire that provide a guide and reference for understanding the effects of wildfire on hydrology and subsequent sediment supply.

Additional improvements were incorporated into the hydrologic assessments that had been developed by the City of Colorado Springs in the 2014 update of the DCM (City of Colorado Springs 2014). Post-fire hydrology methods were also developed for the Waldo Canyon Fire hydrology study and were similarly applied to the Black Forest Fire as part of the current hydrologic assessment. The resulting model represents the cumulative updates of the

regional model for all areas within the Monument Creek watershed that were not included in the previous subbasin specific assessments.

In addition to recent Waldo Fire hydrology assessments done for North and South Douglas Creeks, the City of Colorado Springs has developed detailed drainage basin planning studies (DBPS) for the Cottonwood Creek and Templeton Gap watersheds, both of which are major tributaries of Monument Creek. The simulated results from those DBPS's have been incorporated, as-is, into the current hydrologic assessment.

2.1 Monument Creek Hydrologic Model Development

The Monument Creek hydrology model was developed to calculate the amount of anticipated runoff and the time it takes for that runoff to accumulate in the drainage network of the watershed. The analyses incorporated updated design rainfall depths, improved hydrologic soil information, updated land use information, additional detention facilities, and results from other hydrologic studies of the Monument Creek watershed.

The detailed hydrologic modeling consisted of the following steps, which are described in more detail in the sections below:

1. Delineate and sub-divide the Monument Creek watershed into topographic subbasins with similar hydrologic characteristics, while considering the use of discharge estimates at specific design points. Using the delineation, define the flow paths and relative locations of overland flow, shallow concentrated flow, and channel flow for each subbasin.
2. Update the watershed's soil parameters to reflect updates to the Hydrologic Soil Group (HSG) designations in the updated City of Colorado Springs' Drainage Criteria Manual.
3. Identify and incorporate areas of recent land use changes within the watershed.
4. Estimate pre-fire CN values for each subbasin with respect to soil types, land use and antecedent runoff condition (ARC).
5. Adjust the pre-fire CN values for burned areas based on SBS mapped via BARC process to create the post-fire HEC-HMS model.
6. Identify and implement major detention facilities within the watershed.
7. Identify and implement the most appropriate rainfall event into the hydrologic model.

2.1.1 Basin Delineation and Flow Path Definition

Matrix acquired high resolution topographic data from El Paso County and used the Geographic Information System (GIS) tools, 3-D Analyst, HEC-GeoHMS and ArcHydro to define the extents of the modeled subbasins. HEC-GeoHMS and ArcHydro are processing tools for geospatial hydrologic analysis that operate in a GIS environment. Topography is represented by a Digital Elevation Model (DEM) that is processed to calculate basin characteristics and parameter estimates that are imported into the HEC-HMS model. Further manual refinements were required to account for site-specific features such as storm drains, city streets, parking lots, and desired design points. The Monument Creek watershed encompasses an area of approximately 236.8 square-miles and the updated hydrologic model was discretized into 149 subbasins. The Figure 2 illustrates the watershed and subbasin delineation for the updated Monument Creek (MN) hydrology as it compares the old FCWS hydrology model (MC).



Figure 2. Watershed Components Map

Additional detail was added to the existing FCWS hydrologic model with further discretization of modeled subbasins throughout the entire watershed. The subdivision of these subbasins increases the model resolution and provides more explicit results for identified areas of interest.

Flow paths were defined for each subbasin to represent the combined routing of overland, shallow concentrated, and channel routing features. HEC-GeoHMS and ArcHydro stream delineation tools were used to define the longest flow path and other physical characteristics of each subbasin (ie. slope, channel width, side slopes of channels). The spatial stream and subbasin delineation data was used to calculate the temporal parameters, Time of Concentration (T_c) and Lag Time (T_L), that represent the hydrologic response of each subbasin. Curve Number (CN), T_L , and T_c for the additional subbasins and the remainders of the original "parent" subbasins were recalculated from the source data.

2.1.2 Updated Hydrologic Soil Groups (HSG)

Table 6-8 of the revised DCM recommends that significant areas of the watersheds be reclassified into a different Hydrologic Soil Group (HSG) than the original NRCS classification. Specific soils that were historically classified as HSG 'D' soils with high runoff potential were modified to HSG 'B' with moderate-low runoff potential following detailed review of the hydrologic properties of the soils in the Pikes Peak area. The CN values for these areas were adjusted to reflect the change in HSG classifications.

2.1.3 Land Use Changes

Matrix worked alongside key stakeholders to identify areas in which the land use had changed since the FCWS model was created. Both existing and future land use coverages were updated in GIS to reflect the aforementioned changes. In most cases, these areas reflected recent development. Additionally, a new land use coverage was created to reflect historic, pre-development conditions. In areas that have been developed, historic vegetative cover was assigned based upon soil characteristics.

2.1.4 Antecedent Runoff Condition (ARC) and Initial Abstraction (Ia)

Composite CN values were calculated for each subbasin using updated soils data spatially evaluated using Esri's ArcGIS software. For 2-hour storm simulations, the CN values were calculated to account for ARC₁ conditions in the undeveloped regions of the watershed. ARC₁ assumes that the soil is dry at the beginning of the simulation and a greater percentage of rainfall will infiltrate the soils at the onset of the storm simulation. To simulate this response, a lower CN is applied to represent for ARC₁ conditions. This assumption is based on hydrologic modeling of the Upper Fountain Creek watershed that was done for the previous Waldo Fire Study that adjusted the CN and initial abstraction (Ia) values to better simulate the record observed at the US Geological Survey (USGS) flow gage Fountain Creek near Colorado Springs, CO (USGS Gage 07103700). Conversely, for 24-hour storm simulations, the CN values were calculated to account for ARC₂ conditions to better represent the soil moisture conditions that would exist for longer duration storm events.

Further adjustments to the Initial Abstraction (Ia) values are recommended by the 2014 DCM and have been applied in the Monument Creek hydrology evaluation. The short duration storms are more common in these Front Range watersheds, thus our hydrologic evaluations have focused on the shorter duration storms. These shorter storms support the use of ARC₁ as the most realistic antecedent runoff condition.

2.1.5 Post-Fire Hydrology Model Adjustments

Detailed hydrologic studies were conducted following the Waldo Canyon Fire. The Waldo Canyon Fire located west of Colorado Springs, began on June 23 and lasted through July 10, 2012. The burn area covers 18,247 acres and generally extends north from US Highway 24 to West Monument Creek and northwest from the Colorado Springs city limits to Rampart Reservoir. The previous Waldo Canyon Post Fire Hydrology Study (Waldo Fire) and the Waldo Canyon Fire Watershed Assessment of River Stability and Sediment Supply (WARSSS) projects produced technical methods, tools, and results that are the basis for the current technical hydrologic evaluations. The subbasins that were included in the Waldo Fire and WARSSS reports that drain to Monument Creek include North and South Douglas Creeks and West Monument Creek. The hydrology of these watersheds was developed in detail as part of those recent studies and have been included in the current assessment.

The Waldo Canyon Fire burn area was studied by the United States Forest Service Burn Area Emergency Response (BAER) team with support from the USGS in July and August of 2012. The BAER team produced a field-based soil burn severity (SBS) map dated July 14, 2012 and a post-fire hydrology report dated July 16, 2012. A more detailed burn map was released on August 2, 2012 with improved satellite remote sensing and burned area reflectance classification (BARC) processing. The BARC data revealed an average SBS classification of "low" to "moderate." The fire burned inconsistently, however, resulting in intermixed patches of severe burn and unburned areas throughout. The results of the BAER team report were evaluated with respect to soil conditions and comparison of hydrologic results.

The method comparison of previous post-fire hydrology studies led Matrix to conclude that the Waldo Canyon Fire BAER and High Park Fire NRCS reports utilized nearly identical post-fire curve numbers for ponderosa pine forest. Additionally, for the previous Waldo Canyon post-fire hydrology model, Matrix adopted the BAER report recommendation to replace high SBS curve numbers for moderate SBS areas. This recommendation had been made to account for the anticipated increased hydrologic response from severe vegetation burn that may not be reflected in the moderate soil burn severity data. The BAER recommendation was not applicable to the Monument Creek watershed due to the large percentage of moderate burn area and since the use of high SBS CN's would skew the discharge estimates to unreasonable levels. The moderate SBS CN's would best represent the runoff potential for the moderately burned areas of the Monument Creek watershed. Figure 3 illustrates the post-fire CN values applied in the Monument Creek Restoration Master Planning hydrology evaluation.

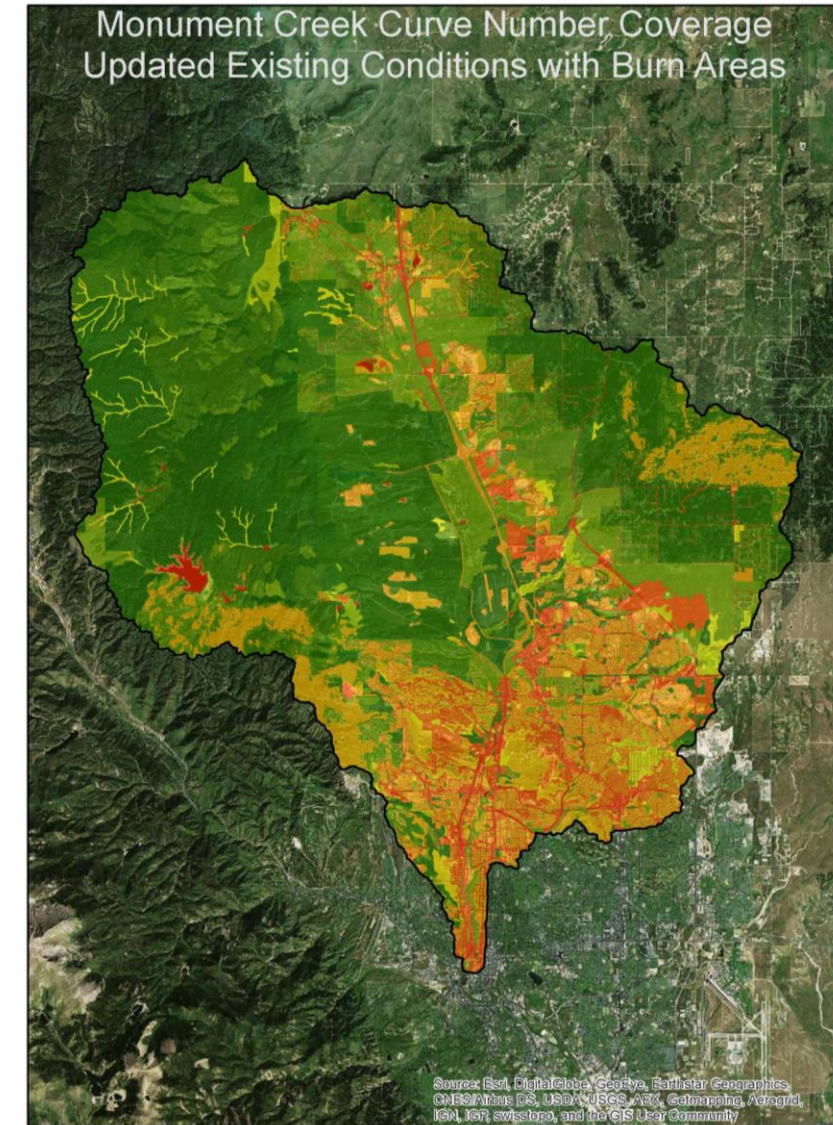


Figure 3. Post-Fire Curve Numbers

The extents and severity of the Black Forest fire were provided by El Paso County. This dataset identified areas of low, moderate, and high burn severity. El Paso County's 'Black Forest Fire Burn Assessment' further explains the methodology by which these severities were assigned. Post-fire curve numbers were designated based upon burn severity. A field investigation determined that the condition of the canopy in areas of moderate severity were not different than those in areas of high burn severity. As a result, High burn curve number values were used for moderate burn areas due to extensive forest canopy burn. This approach was consistent with that done for the Waldo Canyon burn area.

The Monument Creek hydrology model was modified to represent the hydrologic conditions that resulted from the Black Forest and Waldo Canyon fires. The adjustments required to represent the post-fire conditions included increased CN values for burned areas. The secondary effect of the fires on Monument Creek and its tributaries has

been a significant increase in the amount of sediment that is migrating from the burned areas. Although the effects of the fire on the hydrology in the burn area is not thoroughly understood and specific published estimates of burn effects on CN are limited, Matrix reviewed several recent documents containing post-fire CN information including:

- *Waldo Canyon Fire BAER Assessment Appendix A: Design Flow Runoff Response* (Moore and Park 2012),
- *High Park Fire: Increased Flood Potential Analysis*, NRCS (Yochum 2012), and
- *Final Summary of Findings – Fourmile Canyon Post-fire Hydrology and Discussion of Conceptual Mitigation Measures*, (WWE 2011).

The runoff potential increased in burned areas because losses to infiltration, evapotranspiration, and canopy capture are significantly reduced after a fire. For subbasins with burned areas, CN values were adjusted based on the SBS and percentage of area burned.

2.1.6 Detention Facilities

Detention facilities can significantly alter the hydrology of a watershed by attenuating flows during storm events. The stakeholder group provided Matrix with information on their managed detention facilities within the watershed. This information was processed into Stage-Storage-Discharge curves that were implemented into the hydrology model, in addition to those that have existed in previous models. In their study, the USGS presented a number of proposed detention facilities in the Monument Creek watershed. These detention facilities were not included in the existing model as they are not yet a functional element of the watershed, however they will be looked at as viable restoration alternatives.

2.1.7 Monument Creek Rainfall Assessment

Per the revised DCM, Matrix selected the 2-hour design storm to represent select rainfall distributions. To account for orographic effects, the 1-hour rainfall depths were obtained at the centroid of each subbasin from the 2013 *National Oceanographic and Atmospheric Administration (NOAA) Rainfall Atlas 14*. Figure 4 illustrates the 100-year, 2-hour distribution of rainfall across the Monument Creek Watershed.



Figure 4. 100 Year, 2 Hour Rainfall Depths (NOAA Atlas 14)

Additionally, a 24-hour storm will be simulated to provide evaluations of maximum peak floods that could occur. Whereas the 24-hour events produce a larger volume and greater peak flow, the shorter duration storms occur more frequently and have the ability to produce bankfull water levels on a fairly regular basis.

Shorter, more regular storms, have greater cumulative potential to affect the stream banks, floodplains, and associated infrastructure throughout the watershed. The 2-hour storms provide intermediate peak discharges with a high likelihood of occurrence since most of the storm events in the region are short term, locally centered, high intensity storms rather than lower intensity, long term regional events.

2.2 Model Calibration and Validation

The Monument Creek HMS model calibration strategy aimed to match the peak streamflows to the historical peak streamflows at select USGS gage sites throughout the watershed. Specific calibration points for peak streamflow are dependent on available data and period of record. Six stream gage locations along Monument Creek were used for model calibration.

2.2.1 Model Calibration

Since design storms have known volumes, preliminary results can be analyzed to define the general water balance. For flood modeling, losses are assumed to be negligible due to relatively short simulation periods and therefore initial abstraction (Ia) is a useful calibration parameter during initial calibration. The initial abstraction is calculated as a function of potential maximum soil moisture retention (S) and therefore, calibration by adjusting Ia effects simulated volume and subsequently, peak discharge. Because the model is sensitive to variation in Ia or specifically, to the coefficient S, it is likely that a range of Ia values can be applied in the model to match the observed peak discharges; as was done in the Waldo Fire Hydrology Study in 2013 and the UFCCC model in 2015.

As previously alluded to, the initial abstraction is a fraction or 'ratio' of the potential maximum soil moisture retention (S), this fraction is referred to as the initial abstraction ratio. Per the guidance outlined in the revised Colorado Springs DCM, the initial abstraction ratio was originally set to 0.1 as deemed appropriate for the region. This ratio was adjusted, within a reasonable range of values to match the 2- and 10-year flows resultant from the gage analysis. Table 1 below shows the calibrated initial abstraction ratios for areas contributing to their respective USGS stream gages.

Table 1. Calibrated Initial Abstraction Ratios

USGS Stream Gage	Calibrated Ia Ratio
Monument Creek at Palmer Lake, Colorado (07103747)	0.1
Monument Creek below Monument Lake near Monument, Colorado (07103755)	0.05
Monument Creek above North Gate Boulevard at U.S. Air Force Academy, Colorado (07103780)	0.15
Monument Creek above Woodmen Road at Colorado Springs, Colorado (07103970)	0.05
Monument Creek at Pikeview, Colorado (07104000)	0.05
Monument Creek at Bijou Street at Colorado Springs, Colorado (07104905)	0.2

2.2.3 Model Verification

After reasonable calibration to peak streamflow, the performance of the model will be verified by simulating an observed rainfall event. The USGS model includes input rainfall for two storms (1999 and 2011) used to calibrate and verify the USGS Composite model. These storms will be used to validate the peak discharge calibration and model performance under observed, rather than designed, conditions.

2.3 Hydrology Results

Table 2 presents the simulated post-fire hydrology results for clear water flows at select locations. These results reflect the flood flows generated from a 100-year, 2-hour storm. A range of discharges that are expected from the 2-hour storm with predictable probabilities of annual recurrence of 50%, 20%, 10%, 2%, and 1%. (2-yr, 5-yr, 10-yr, 50-yr, and 100-yr storms) can be found in Appendix A. Once simulated, the SCS method that simulates the discharge resulting from the 24 hour storm with a 1% recurrence probability (100-yr recurrence interval) will be

included to provide an upper limit to the range of predictable discharges. A summary of the 100-year, 2-hour model hydrology results can be found in the table below.

Table 2. Monument Creek Peak Discharge Summary

Location	Peak Streamflow (cfs)
Monument Creek through the town of Palmer Lake	1400
Confluence of Beaver Creek	2300
Confluence of Black Forest Tributary	3000
Confluence of West Monument Creek	7400
Confluence of Kettle Creek	8800
Confluence of Cottonwood Creek	9200
Confluence of Templeton Gap	19000
Confluence of Upper Fountain Creek	25000

3. Monument Creek Watershed Hydraulic Analyses

The response of the hydraulic features to the updated hydrology throughout the Monument Creek watershed was evaluated with updated hydraulic models developed for the USAFA Academy Floodplain Revisions in 2003 and the USACE FCWS in 2006. Additionally, Matrix created hydraulic models for the North and South Rockrimmon tributaries for this study. The hydraulic models were developed with the USACE Hydrologic Engineering Center's River Analysis System (HEC-RAS) version 4.1.

3.1 Existing Hydraulic Models

Preceding versions of the Monument Creek HEC-RAS models from the aforementioned sources were updated with the latest available topography information. The HEC-RAS updates were developed from recent aerial photography and high-resolution digital elevation models (DEM) developed from the 2011 EPC LiDAR survey. Limited ground truthing was conducted for structures within the previously developed models.

3.2 Newly Developed Hydraulic Models

The North and South Rockrimmon tributaries were the only two in the watershed that had not yet been previously modeled. Using LiDAR data obtained from El Paso County in conjunction with the HEC-GeoRAS software, Matrix created new models to assess the condition of these creeks. Additional field survey, done by the Matrix team, provided information on major structures and creek crossings that was then used to model the bridge and culvert geometry in the HEC-RAS model.

3.3 Application of the Hydraulic Analyses

The hydraulic evaluation will be used to determine the effect of the updated hydrology on the river channels, banks, floodplains, road crossings and private property. Parameters such as the water surface elevation and channel velocity were carried forward into the assessment of each reach and structure to aid in the assessment of its condition.

3.3.1 Inundation Mapping

Hydraulic model results will be used to develop the inundation maps and extent of an extreme event, the 24-hour storm with a 1% chance of annual recurrence. This storm produces the highest peak water level profile when

compared to the 2-hour storm events and was thus used to delineate the inundation area. These inundation maps do not represent the regulatory floodplain used to delineate the requirements for flood hazard insurance as directed by the National Flood Insurance Program (NFIP) and administered by FEMA.

3.3.2 Project Ranking Criteria

Hydraulic model results will also be applied to the Alternatives Analysis to determine the range of effects that could put the channels, banks, and floodplains at risk. The risk to the stability and ecology of these features and engineered structures varies as the water rises and the appropriate mitigation measure must likely accommodate a range of conditions observed during low flow frequent storms and those seen during less frequent, extreme events.

3.3.3 Actionable Plan

Ultimately, the hydrologic and hydraulic modeling efforts will provide a mechanism by which the watershed can be studied holistically to identify areas that are at risk as well as opportunities for improvement.

References

City of Colorado Springs (2014) "City of Colorado Springs Drainage Criteria Manual" Volume 1, Chapter 6 Hydrology

Federal Emergency Management Agency. (2010) "Hydrology Report for Fountain Creek, El Paso County, CO." Prepared by Michael Baker Jr. Inc.

Hawkins, R.H., Ward, T.J., Woodward, D.E., Van Mullem, J.A. (2010) "Continuing Evolution of Rainfall-Runoff and the Curve Number Precedent"

Jarrett, B. (2013). "Documentation of the July 1st and 10th, and August 9, 2013 Peak Discharges in the 2012 Waldo Burn Area Streams"

Mockus, V. and Hjelmfelt, A. (2004) "Hydrology National Engineering Handbook Part 630, Chapter 10 Estimation of Direct Runoff from Storm Rainfall." *United States Department of Agriculture Natural Resources Conservation Service*

Moore, M. and Park, D. (2012) "Appendix A: Design Flow Runoff Response, Waldo Canyon Fire, Pike and San Isabel National Forest, Cimarron and Comanche National Grasslands." *Pikes Peak Ranger District*

Moore, M. and Park, D. (2012). "Hydrology Resource Report, Waldo Canyon Fire BAER Assessment." *Pikes Peak Ranger District*

Wright Water Engineers (WWE), Paton, I. and Earles, A. (2011). "Final Summary of Findings – Fourmile Canyon Post-fire Hydrology and Discussion of Conceptual Mitigation Measures." *Wright Water Engineers, Inc.*

Perica, S., Martin, D., Pavlovic, S., Roy, I., St. Laurent, M., Trypaluk, C., Unruh, D., Yekta, M., Bonnin, G. (2013). NOAA Atlas 14 Volume 8 Version 2, Precipitation-Frequency Atlas of the United States, Midwestern States. *National Oceanic and Atmospheric Administration, National Weather Service, Silver Spring, MD*

Rust, B. and Young, D. (2012). "Waldo Canyon Fire – Burned Area Emergency Response, Soil Resource Assessment." *United States Department of Agriculture Forest Service*

United States Department of Agriculture Natural Resources Conservation Service, Conservation Engineering Division. (1986). "Urban Hydrology for Small Watersheds, Technical Release 55, Second Edition ed."

Waldo Burn Area Emergency Response Team (BAER). (2012). "Waldo Soil Burn Severity Assessment, U.S. Geologic Survey"

Waldo Burned Area Reflectance Classification (BARC). (2012) "Waldo Soil Burn Severity Assessment, U.S. Geologic Survey"

Whatcom County Flood Control Zone District. (2004). "Jones Creek Debris Flow Study." Prepared by Kerr Wood Leidal Associates, LTC

Yochum, S. (2012). "High Park Fire: Increased Flood Potential Analysis." *United States Department of Agriculture Natural Resources Conservation Service Colorado*

Appendix A. Monument Creek Hydrology Results Summary

USGS Gage Name and Number	2-Year, 2-Hour			
	Existing Calibrated Peak Streamflow Model Results (cfs)	Gage Analysis Peak Streamflow (cfs)	Confidence Limits: (0.95-0.05) Gage Analysis Range (cfs)	FCWS Peak Streamflow Model Results (cfs)
Monument Creek at Palmer Lake, Colorado (07103747)	32	60	40-90	63
Monument Creek below Monument Lake near Monument, Colorado (07103755)	30	60	N/A*	53
Monument Creek above North Gate Boulevard at U.S. Air Force Academy, Colorado (07103780)	120	180	130-240	92
Monument Creek above Woodmen Road at Colorado Springs, Colorado (07103970)	750	1230	970-1560	560
Monument Creek at Pikeview, Colorado (07104000)	1300	1300	1060-1590	1000
Monument Creek at Bijou Street at Colorado Springs, Colorado (07104905)	2700	3860	3140-4740	2500

*Not a long enough period of record to calculate confidence limits using Bulletin 17B methodology

USGS Gage Name and Number	5-Year, 2-Hour			
	Existing Calibrated Peak Streamflow Model Results (cfs)	Gage Analysis Peak Streamflow (cfs)	Confidence Limits: (0.95-0.05) Gage Analysis Range (cfs)	FCWS Peak Streamflow Model Results (cfs)
Monument Creek at Palmer Lake, Colorado (07103747)	130	150	100-270	520
Monument Creek below Monument Lake near Monument, Colorado (07103755)	60	110	N/A*	160
Monument Creek above North Gate Boulevard at U.S. Air Force Academy, Colorado (07103780)	290	400	300-580	330
Monument Creek above Woodmen Road at Colorado Springs, Colorado (07103970)	1500	2050	1610-2830	1600
Monument Creek at Pikeview, Colorado (07104000)	2300	2690	2170-3470	2800
Monument Creek at Bijou Street at Colorado Springs, Colorado (07104905)	5300	5520	4510-7400	7600

*Not a long enough period of record to calculate confidence limits using Bulletin 17B methodology

USGS Gage Name and Number	10-Year, 2-Hour			
	Existing Calibrated Peak Streamflow Model Results (cfs)	Gage Analysis Peak Streamflow (cfs)	Confidence Limits: (0.95-0.05) Gage Analysis Range (cfs)	FCWS Peak Streamflow Model Results (cfs)
Monument Creek at Palmer Lake, Colorado (07103747)	290	250	150-500	1100
Monument Creek below Monument Lake near Monument, Colorado (07103755)	64	160*	N/A**	410
Monument Creek above North Gate Boulevard at U.S. Air Force Academy, Colorado (07103780)	570	610	430-960	850
Monument Creek above Woodmen Road at Colorado Springs, Colorado (07103970)	2500	2670	2040-3970	2500
Monument Creek at Pikeview, Colorado (07104000)	3500	3940	3090-5340	4300
Monument Creek at Bijou Street at Colorado Springs, Colorado (07104905)	8200	6660	5330-9560	12000

*Not a long enough period of record to reliably estimate flow at the given return interval

**Not a long enough period of record to calculate confidence limits using Bulletin 17B methodology

50-Year, 2-Hour

USGS Gage Name and Number	Existing Calibrated Peak Streamflow Model Results (cfs)	Gage Analysis Peak Streamflow (cfs)	Confidence Limits: (0.95-0.05) Gage Analysis Range (cfs)	FCWS Peak Streamflow Model Results (cfs)
Monument Creek at Palmer Lake, Colorado (07103747)	940	600	320-1560	4100
Monument Creek below Monument Lake near Monument, Colorado (07103755)	210	300*	N/A**	3300
Monument Creek above North Gate Boulevard at U.S. Air Force Academy, Colorado (07103780)	2000	1300	830-2370	5800
Monument Creek above Woodmen Road at Colorado Springs, Colorado (07103970)	6500	4300*	3050-7350	6800
Monument Creek at Pikeview, Colorado (07104000)	7500	7700	5640-11550	10000
Monument Creek at Bijou Street at Colorado Springs, Colorado (07104905)	19000	9300*	7000-15270	29000

*Not a long enough period of record to reliably estimate flow at the given return interval

**Not a long enough period of record to calculate confidence limits using Bulletin 17B methodology

100-Year, 2-Hour

USGS Gage Name and Number	Existing Calibrated Peak Streamflow Model Results (cfs)	Gage Analysis Peak Streamflow (cfs)	Confidence Limits: (0.95-0.05) Gage Analysis Range (cfs)	FCWS Peak Streamflow Model Results (cfs)
Monument Creek at Palmer Lake, Colorado (07103747)	1400	800*	410-2340	5300
Monument Creek below Monument Lake near Monument, Colorado (07103755)	600	400*	N/A**	4600
Monument Creek above North Gate Boulevard at U.S. Air Force Academy, Colorado (07103780)	3000	1700	1040-3270	8100
Monument Creek above Woodmen Road at Colorado Springs, Colorado (07103970)	9100	5000*	3490-9160	9700
Monument Creek at Pikeview, Colorado (07104000)	9900	9700	6950-15220	12000
Monument Creek at Bijou Street at Colorado Springs, Colorado (07104905)	25000	10400*	7680-18080	36000

*Not a long enough period of record to reliably estimate flow at the given return interval

**Not a long enough period of record to calculate confidence limits using Bulletin 17B methodology

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ii. **Hydrology Model Results**

Monument Creek Watershed
Existing Hydrology Results

Monument Creek HEC-HMS Results - Existing Conditions (2016)

Hydrologic Element	Drainage Area (mi ²)	2-Year, 2-Hour		5-Year, 2-Hour		10-Year, 2-Hour		50-Year, 2-Hour		100-Year, 2-Hour	
		Discharge (cfs)	Volume (in)	Discharge (cfs)	Volume (in)	Discharge (cfs)	Volume (in)	Discharge (cfs)	Volume (in)	Discharge (cfs)	Volume (in)
MN015	2.890	0	0	0	0	0	0	20	0.03	44	0.07
JMN015	2.890	0	0	0	0	0	0	20	0.03	44	0.07
RMN020	2.890	0	0	0	0	0	0	20	0.03	44	0.07
MN020	2.655	0	0	0	0	1	0	29	0.04	60	0.09
JMN020	5.545	0	0	0	0	1	0	40	0.04	92	0.08
RMN025	5.545	0	0	0	0	1	0	40	0.04	92	0.08
MN025	1.405	0	0	0	0	1	0	15	0.05	29	0.1
JMN025	6.950	0	0	0	0	1	0	54	0.04	120	0.08
RMN030	6.950	0	0	0	0	1	0	54	0.04	120	0.08
MN030	1.222	0	0	0	0	1	0	13	0.05	26	0.1
JMN030	8.171	0	0	0	0	1	0	65	0.04	150	0.08
RMN035	8.171	0	0	0	0	1	0	65	0.04	150	0.08
MN035	0.718	0	0	0	0	2	0.01	19	0.08	35	0.14
JMN035a	8.889	0	0	0	0	2	0	68	0.04	160	0.09
MN010	3.880	0	0	0	0	0	0	30	0.04	65	0.08
MN005	2.509	0	0	0	0	0	0	5	0.01	16	0.04
JMN005	2.509	0	0	0	0	0	0	5	0.01	16	0.04
RMN010	2.509	0	0	0	0	0	0	5	0.01	16	0.04
JMN010	6.390	0	0	0	0	0	0	30	0.03	66	0.06
JMN035b	15.279	0	0	0	0	2	0	96	0.04	220	0.08
RMN040	15.279	0	0	0	0	2	0	96	0.04	220	0.08
MN040	0.491	0	0	1	0	2	0.01	17	0.1	29	0.17
JMN040	15.770	0	0	1	0	3	0	100	0.04	230	0.08
RMN045	15.770	0	0	1	0	3	0	100	0.04	230	0.08
MN045	0.296	12	0.06	31	0.14	55	0.24	150	0.59	200	0.8
JMN045	16.066	12	0	31	0	55	0.01	150	0.05	230	0.09
MN050	1.879	0	0	0	0	0	0	4	0.01	12	0.03
JMN050	1.879	0	0	0	0	0	0	4	0.01	12	0.03
RMN055	1.879	0	0	0	0	0	0	4	0.01	12	0.03
MN055	2.545	0	0	0	0	1	0	30	0.05	59	0.1
JMN055	4.423	0	0	0	0	1	0	30	0.03	61	0.07
RMN060	4.423	0	0	0	0	1	0	30	0.03	61	0.07
MN060	2.103	0	0	0	0	4	0.01	45	0.09	80	0.15
JMN060	6.526	0	0	0	0	4	0	67	0.05	130	0.1
RMN065	6.526	0	0	0	0	4	0	67	0.05	130	0.1
MN065	0.718	6	0.02	25	0.06	52	0.13	170	0.38	240	0.54
JMN065a	7.244	6	0	25	0.01	52	0.02	170	0.08	240	0.14
JMN065b	23.310	16	0	50	0	96	0.01	290	0.06	400	0.11
RMN070	23.310	16	0	50	0	96	0.01	280	0.06	400	0.11
MN070	1.933	14	0.01	64	0.06	140	0.12	450	0.36	650	0.51
JMN070	25.243	28	0	110	0.01	220	0.02	710	0.08	1100	0.14
RMN075	25.243	28	0	110	0.01	220	0.02	700	0.08	1100	0.14

Monument Creek HEC-HMS Results - Existing Conditions (2016)

Hydrologic Element	Drainage Area (mi ²)	2-Year, 2-Hour		5-Year, 2-Hour		10-Year, 2-Hour		50-Year, 2-Hour		100-Year, 2-Hour	
		Discharge (cfs)	Volume (in)	Discharge (cfs)	Volume (in)	Discharge (cfs)	Volume (in)	Discharge (cfs)	Volume (in)	Discharge (cfs)	Volume (in)
MN075	1.414	5	0.01	28	0.04	67	0.09	250	0.29	370	0.42
JMN075a	26.657	32	0	130	0.01	280	0.02	930	0.09	1400	0.15
MN080	1.612	39	0.06	86	0.13	140	0.21	340	0.5	460	0.67
JMN075b	28.269	66	0.01	220	0.02	420	0.03	1300	0.12	1800	0.18
RMN085	28.269	60	0.01	200	0.02	380	0.03	1200	0.12	1600	0.18
MN085	0.576	23	0.09	46	0.19	71	0.29	160	0.65	210	0.86
JMN085a	28.845	69	0.01	230	0.02	440	0.04	1300	0.13	1800	0.2
MN090	0.568	59	0.18	110	0.32	160	0.46	330	0.94	420	1.2
JMN090	0.568	59	0.18	110	0.32	160	0.46	330	0.94	420	1.2
RMN095	0.568	59	0.18	110	0.32	160	0.46	330	0.94	420	1.2
MN095	1.023	59	0.14	120	0.25	170	0.38	360	0.81	470	1.04
JMN095	1.590	120	0.15	220	0.28	330	0.41	680	0.86	870	1.1
JMN085b	30.435	140	0.01	370	0.03	690	0.06	1900	0.16	2600	0.24
Monument Lake	30.435	30	0.01	61	0.03	64	0.06	220	0.16	610	0.24
RMN100	30.435	30	0.01	61	0.03	64	0.06	220	0.16	600	0.24
MN100	0.424	2	0.01	8	0.04	20	0.1	73	0.36	110	0.53
JMN100a	30.859	30	0.01	62	0.03	73	0.06	220	0.16	610	0.24
MN105	2.233	11	0.01	52	0.06	120	0.13	400	0.41	570	0.59
JMN105	2.233	11	0.01	52	0.06	120	0.13	400	0.41	570	0.59
RMN110	2.233	11	0.01	52	0.06	120	0.13	400	0.41	570	0.59
MN110	0.541	21	0.06	58	0.16	110	0.27	280	0.68	380	0.91
JMN110	2.774	21	0.02	69	0.08	150	0.15	480	0.46	680	0.65
RMN115	2.774	21	0.02	69	0.08	150	0.15	480	0.46	680	0.65
MN115	1.273	37	0.07	97	0.17	170	0.28	440	0.7	590	0.94
Lake Woodmoor	1.273	0	0	0	0	0	0	0	0	0	0
JMN115	4.046	21	0.01	69	0.05	150	0.11	480	0.32	680	0.45
RMN120	4.046	21	0.01	69	0.05	150	0.11	480	0.32	680	0.45
MN120	0.339	8	0.04	23	0.13	42	0.23	120	0.6	160	0.83
JMN120	4.385	28	0.02	80	0.06	170	0.12	540	0.34	770	0.48
RMN125	4.385	28	0.02	79	0.06	170	0.12	540	0.34	770	0.48
MN125	0.640	10	0.04	32	0.11	61	0.21	180	0.58	240	0.79
JMN125	5.026	36	0.02	110	0.07	210	0.13	650	0.37	940	0.52
JMN100b	35.884	48	0.02	150	0.04	270	0.07	770	0.19	1100	0.28
RMN130	35.884	48	0.02	150	0.04	270	0.07	770	0.19	1100	0.28
MN130	0.291	2	0.01	9	0.06	20	0.13	70	0.41	110	0.59
JMN130	36.175	49	0.02	150	0.04	280	0.07	790	0.19	1200	0.28
MN135	3.210	0	0	0	0	0	0	67	0.05	160	0.11
JMN135	39.384	49	0.01	150	0.03	280	0.06	860	0.18	1300	0.27
RMN140	39.384	47	0.01	150	0.03	280	0.06	850	0.18	1300	0.27
MN140	0.730	1	0	6	0.03	15	0.07	61	0.3	92	0.45
JMN140a	40.114	48	0.01	150	0.03	290	0.06	920	0.18	1400	0.27
MN150	1.542	10	0.02	40	0.07	83	0.15	260	0.46	370	0.65
MN145	1.215	26	0.05	77	0.13	150	0.24	390	0.62	530	0.85

Monument Creek HEC-HMS Results - Existing Conditions (2016)

Hydrologic Element	Drainage Area (mi ²)	2-Year, 2-Hour		5-Year, 2-Hour		10-Year, 2-Hour		50-Year, 2-Hour		100-Year, 2-Hour	
		Discharge (cfs)	Volume (in)	Discharge (cfs)	Volume (in)	Discharge (cfs)	Volume (in)	Discharge (cfs)	Volume (in)	Discharge (cfs)	Volume (in)
JMN145	1.215	26	0.05	77	0.13	150	0.24	390	0.62	530	0.85
RMN150	1.215	26	0.05	77	0.13	150	0.24	390	0.62	530	0.85
JMN150	2.757	35	0.03	120	0.1	230	0.19	630	0.53	880	0.74
JMN140b	42.871	60	0.01	210	0.04	410	0.07	1400	0.21	2100	0.3
RMN155	42.871	59	0.01	200	0.04	400	0.07	1400	0.21	2100	0.3
MN155	0.377	0	0	0	0	1	0.01	15	0.11	28	0.19
JMN155a	43.248	59	0.01	200	0.04	400	0.07	1400	0.2	2100	0.3
MN160	4.100	0	0	0	0	0	0	0	0	3	0.01
Leo Lake	4.100	58	0.09	58	0.09	58	0.09	58	0.09	58	0.09
Grace Lake	4.100	66	0.22	66	0.22	66	0.22	66	0.22	66	0.23
JMN160	4.100	66	0.22	66	0.22	66	0.22	66	0.22	66	0.23
RMN165	4.100	66	0.24	66	0.24	66	0.24	66	0.24	66	0.25
MN165	2.353	0	0	0	0	0	0	0	0	2	0
JMN165	6.453	66	0.15	66	0.15	66	0.15	66	0.15	66	0.16
MN170	4.330	0	0	0	0	0	0	0	0	0	0
JMN170	10.783	66	0.09	66	0.09	66	0.09	66	0.09	66	0.09
RMN175	10.783	66	0.1	66	0.1	66	0.1	66	0.1	66	0.1
MN175	1.784	0	0	0	0	0	0	0	0	6	0.01
JMN175	12.567	66	0.08	66	0.08	66	0.08	66	0.08	67	0.09
MN180	2.275	0	0	0	0	0	0	1	0	5	0.01
JMN180	14.842	66	0.07	66	0.07	66	0.07	66	0.07	71	0.08
RMN185	14.842	66	0.08	66	0.08	66	0.08	66	0.08	71	0.08
MN185	2.738	0	0	0	0	0	0	6	0	29	0.03
JMN185	17.580	66	0.06	66	0.06	66	0.06	69	0.06	94	0.07
MN190	2.151	0	0	0	0	0	0	1	0	9	0.02
JMN190	2.151	0	0	0	0	0	0	1	0	9	0.02
RMN195	2.151	0	0	0	0	0	0	1	0	9	0.02
MN195	1.531	0	0	0	0	0	0	1	0	8	0.02
JMN195a	3.682	0	0	0	0	0	0	1	0	12	0.02
JMN195b	21.262	66	0.05	66	0.05	66	0.05	69	0.05	110	0.06
RMN200	21.262	66	0.06	66	0.06	66	0.06	69	0.06	110	0.07
MN200	0.952	0	0	2	0	10	0.02	68	0.17	120	0.28
Bristlecone Res	22.214	58	0.05	58	0.05	60	0.05	82	0.06	120	0.08
JMN200	22.214	58	0.05	58	0.05	60	0.05	82	0.06	120	0.08
RMN205	22.214	58	0.05	58	0.05	60	0.05	82	0.06	120	0.08
MN205	0.725	3	0.01	14	0.06	31	0.13	110	0.41	150	0.59
JMN205	22.939	58	0.05	59	0.05	76	0.06	170	0.07	230	0.09
MN210	1.897	0	0	0	0	0	0	1	0	5	0.02
JMN210	1.897	0	0	0	0	0	0	1	0	5	0.02
RMN215	1.897	0	0	0	0	0	0	1	0	5	0.02
MN215	0.546	0	0	0	0	2	0	40	0.1	76	0.18
JMN215	2.443	0	0	0	0	2	0	40	0.02	76	0.05
RMN220	2.443	0	0	0	0	2	0	39	0.02	76	0.05

Monument Creek HEC-HMS Results - Existing Conditions (2016)

Hydrologic Element	Drainage Area (mi ²)	2-Year, 2-Hour		5-Year, 2-Hour		10-Year, 2-Hour		50-Year, 2-Hour		100-Year, 2-Hour	
		Discharge (cfs)	Volume (in)	Discharge (cfs)	Volume (in)	Discharge (cfs)	Volume (in)	Discharge (cfs)	Volume (in)	Discharge (cfs)	Volume (in)
MN220	1.333	0	0	0	0	0	0	25	0.04	56	0.1
JMN220a	3.775	0	0	0	0	2	0	62	0.03	130	0.07
JMN220b	26.714	58	0.04	59	0.05	76	0.05	220	0.07	320	0.09
RMN225a	26.714	58	0.04	59	0.05	76	0.05	220	0.07	320	0.09
JMN155b	69.963	120	0.03	260	0.04	480	0.06	1600	0.15	2400	0.22
RMN225b	69.963	120	0.03	260	0.04	470	0.06	1600	0.15	2400	0.22
MN225	1.105	0	0	0	0	5	0.01	45	0.13	78	0.22
JMN225a	71.068	120	0.03	260	0.04	480	0.06	1600	0.15	2400	0.22
MN230	3.078	0	0	8	0.01	33	0.04	180	0.21	280	0.34
JMN230	3.078	0	0	8	0.01	33	0.04	180	0.21	280	0.34
RMN235	3.078	0	0	8	0.01	33	0.04	180	0.21	280	0.34
MN235	1.273	14	0.03	45	0.1	85	0.19	250	0.54	350	0.75
JMN235	4.352	14	0.01	45	0.04	90	0.08	350	0.31	530	0.46
JMN225b	75.419	120	0.02	280	0.04	540	0.06	2000	0.16	2900	0.23
RMN240	75.419	120	0.02	270	0.04	540	0.06	2000	0.16	2900	0.23
MN240	0.518	0	0	3	0.01	12	0.05	64	0.23	110	0.36
JMN240	75.937	120	0.02	270	0.04	540	0.06	2000	0.16	2900	0.23
MN245	2.956	0	0	0	0	0	0	1	0	17	0.02
JMN245	78.893	120	0.02	270	0.04	540	0.06	2000	0.15	3000	0.23
RMN250a	78.893	120	0.02	270	0.04	540	0.06	2000	0.15	3000	0.23
MN255	2.235	6	0.01	25	0.06	52	0.13	170	0.43	240	0.61
Gleneagle Pond	2.235	5	0.01	24	0.06	48	0.13	160	0.43	220	0.61
Academy View Storage Center	2.235	5	0.01	24	0.06	48	0.13	160	0.43	220	0.61
JMN255	81.128	120	0.02	290	0.04	580	0.06	2100	0.16	3100	0.24
RMN250b	81.128	120	0.02	290	0.04	570	0.06	2000	0.16	3000	0.24
MN250	0.645	0	0	0	0	0	0	0	0	3	0.01
JMN250	81.773	120	0.02	290	0.04	570	0.06	2000	0.16	3000	0.23
RMN260	81.773	120	0.02	290	0.04	570	0.06	2000	0.16	3000	0.23
MN260	1.763	19	0.04	46	0.09	78	0.15	210	0.38	280	0.52
JMN260	83.535	120	0.02	300	0.04	590	0.06	2100	0.17	3200	0.24
MN265	1.964	5	0.01	19	0.03	40	0.05	140	0.18	210	0.26
JMN265	1.964	5	0.01	19	0.03	40	0.05	140	0.18	210	0.26
RMN270	1.964	5	0.01	19	0.03	40	0.05	140	0.18	210	0.26
MN270	1.910	31	0.05	66	0.1	110	0.17	280	0.42	380	0.58
JMN270	3.874	34	0.03	84	0.06	150	0.11	420	0.3	580	0.42
RMN275	3.874	34	0.03	84	0.06	150	0.11	420	0.3	580	0.42
MN275	1.790	47	0.09	90	0.18	140	0.28	320	0.64	420	0.84
JMN275a	5.664	64	0.05	160	0.1	280	0.17	720	0.41	990	0.55
JMN275b	89.200	130	0.03	350	0.04	730	0.07	2700	0.18	4000	0.26
RMN280a	89.200	130	0.03	350	0.04	730	0.07	2700	0.18	4000	0.26
MN285	2.386	2	0	8	0.02	18	0.04	66	0.14	99	0.21
JMN285	2.386	2	0	8	0.02	18	0.04	66	0.14	99	0.21
RMN290	2.386	2	0	8	0.02	18	0.04	66	0.14	99	0.21

Monument Creek HEC-HMS Results - Existing Conditions (2016)

Hydrologic Element	Drainage Area (mi ²)	2-Year, 2-Hour		5-Year, 2-Hour		10-Year, 2-Hour		50-Year, 2-Hour		100-Year, 2-Hour	
		Discharge (cfs)	Volume (in)	Discharge (cfs)	Volume (in)	Discharge (cfs)	Volume (in)	Discharge (cfs)	Volume (in)	Discharge (cfs)	Volume (in)
MN290	0.667	0	0	2	0.01	8	0.02	41	0.09	67	0.15
JMN290	3.052	2	0	8	0.01	18	0.03	66	0.13	99	0.2
MN295	0.601	5	0.01	17	0.04	32	0.08	100	0.24	150	0.34
JMN295	3.653	5	0	18	0.02	39	0.04	150	0.15	220	0.22
RMN300	3.653	6	0	18	0.02	39	0.04	150	0.15	220	0.22
MN300	1.444	3	0	12	0.02	25	0.05	88	0.17	140	0.26
JMN300a	5.096	8	0	29	0.02	64	0.04	230	0.16	340	0.23
JMN300b	94.296	130	0.02	360	0.04	740	0.07	2800	0.18	4200	0.26
RMN280b	94.296	130	0.02	360	0.04	740	0.07	2800	0.18	4100	0.26
MN280	0.434	5	0.02	12	0.05	23	0.1	66	0.28	94	0.4
JMN280	94.730	130	0.02	360	0.04	740	0.07	2800	0.18	4100	0.26
MN310	1.860	88	0.2	160	0.34	220	0.5	450	1	570	1.27
MN305	1.454	96	0.19	170	0.33	240	0.48	490	0.97	630	1.24
JMN305	1.454	96	0.19	170	0.33	240	0.48	490	0.97	630	1.24
RMN310	1.454	96	0.19	170	0.33	240	0.48	490	0.97	630	1.24
JMN310a	3.314	190	0.2	320	0.34	450	0.49	910	0.98	1200	1.26
JMN310b	98.044	240	0.03	450	0.05	920	0.08	3300	0.21	5000	0.29
RMN315	98.044	240	0.03	450	0.05	900	0.08	3300	0.21	4900	0.29
MN315	1.436	8	0.01	22	0.04	43	0.08	130	0.25	190	0.35
JMN315	99.479	240	0.03	460	0.05	910	0.08	3300	0.21	5000	0.29
MN330	2.653	5	0	20	0.02	44	0.05	160	0.17	240	0.25
MN320	1.782	2	0	7	0.02	14	0.04	49	0.15	74	0.23
JMN320	1.782	2	0	7	0.02	14	0.04	49	0.15	74	0.23
RMN325	1.782	2	0	7	0.02	14	0.04	49	0.15	74	0.23
MN325	0.472	6	0.02	17	0.06	31	0.1	87	0.29	130	0.41
LehmanDetPond1	0.472	2	0.02	3	0.06	16	0.1	79	0.29	120	0.41
LehmanDetPond2	0.472	2	0.02	2	0.06	2	0.1	27	0.29	57	0.41
LehmanDetPond3	0.472	2	0.02	2	0.06	2	0.1	10	0.29	44	0.41
JMN325	2.254	3	0.01	8	0.03	15	0.05	56	0.18	85	0.26
RMN330	2.254	3	0.01	8	0.03	15	0.05	56	0.18	85	0.26
LehmanGolfPond4	2.254	3	0.01	8	0.03	15	0.05	56	0.18	85	0.26
LehmanGolfPond5	2.254	3	0.01	8	0.03	15	0.05	56	0.18	84	0.26
USAFA Non-Pot#1	4.907	0	0	0	0	0	0	44	0.1	94	0.18
JMN330	104.386	240	0.03	460	0.05	910	0.08	3300	0.2	5000	0.29
RMN335	104.386	240	0.03	460	0.05	900	0.08	3300	0.2	5000	0.29
MN335	0.316	8	0.04	18	0.09	30	0.16	77	0.4	110	0.55
JMN335	104.702	240	0.03	460	0.05	900	0.08	3300	0.2	5000	0.29
MN340	0.861	56	0.14	110	0.25	160	0.37	330	0.8	430	1.04
JMN340	0.861	56	0.14	110	0.25	160	0.37	330	0.8	430	1.04
RMN345	0.861	55	0.14	110	0.25	160	0.37	330	0.8	430	1.04
MN345	0.397	26	0.12	48	0.22	73	0.34	170	0.73	220	0.96
JMN345a	1.258	74	0.13	140	0.24	210	0.36	460	0.78	600	1.01
JMN345b	105.960	260	0.03	490	0.05	910	0.08	3300	0.21	5100	0.3

Monument Creek HEC-HMS Results - Existing Conditions (2016)

Hydrologic Element	Drainage Area (mi ²)	2-Year, 2-Hour		5-Year, 2-Hour		10-Year, 2-Hour		50-Year, 2-Hour		100-Year, 2-Hour	
		Discharge (cfs)	Volume (in)	Discharge (cfs)	Volume (in)	Discharge (cfs)	Volume (in)	Discharge (cfs)	Volume (in)	Discharge (cfs)	Volume (in)
RMN350a	105.960	260	0.03	490	0.05	910	0.08	3300	0.21	5000	0.3
MN355	1.720	15	0.03	36	0.06	63	0.11	180	0.3	250	0.42
JMN355	1.720	15	0.03	36	0.06	63	0.11	180	0.3	250	0.42
RMN360	1.720	15	0.03	36	0.06	63	0.11	180	0.3	250	0.42
MN360	1.221	15	0.04	32	0.09	53	0.15	140	0.38	190	0.52
JMN360	2.941	29	0.03	67	0.07	120	0.13	310	0.34	430	0.47
RMN365	2.941	29	0.03	67	0.07	120	0.13	310	0.34	430	0.47
MN365	1.583	12	0.02	30	0.06	54	0.1	160	0.29	220	0.4
JMN365	4.524	37	0.03	91	0.07	160	0.12	440	0.32	620	0.44
MN370	1.604	3	0.01	11	0.03	22	0.06	71	0.19	110	0.27
MN375	1.541	5	0.01	13	0.04	25	0.07	75	0.22	110	0.32
JMN375	3.145	7	0.01	24	0.03	46	0.06	150	0.2	220	0.3
RMN380	3.145	7	0.01	24	0.03	46	0.06	150	0.2	220	0.3
MN380	0.354	2	0.01	6	0.04	11	0.08	33	0.23	47	0.34
JMN380a	3.499	8	0.01	25	0.03	49	0.07	160	0.21	230	0.3
JMN380b	8.023	43	0.02	120	0.05	210	0.1	580	0.27	820	0.38
RMN385	8.023	43	0.02	120	0.05	210	0.1	580	0.27	820	0.38
MN385	1.340	10	0.01	29	0.04	56	0.08	180	0.24	250	0.35
JMN385	9.363	44	0.02	120	0.05	210	0.09	600	0.27	860	0.38
RMN390	9.363	44	0.02	120	0.05	210	0.09	600	0.27	860	0.38
MN390	0.517	33	0.11	63	0.2	97	0.3	220	0.67	290	0.88
JMN390	9.880	44	0.02	120	0.06	210	0.1	610	0.29	880	0.4
RMN395	9.880	44	0.02	120	0.06	210	0.1	610	0.29	870	0.4
MN395	1.107	34	0.08	67	0.16	110	0.25	250	0.58	340	0.77
JMN395a	10.987	61	0.03	130	0.07	220	0.12	660	0.32	950	0.44
Allison Valley Ranch #3	10.987	36	0.02	110	0.06	210	0.11	640	0.3	930	0.43
Allison Valley Ranch #2	10.987	28	0.01	110	0.05	210	0.1	640	0.3	930	0.42
Allison Valley Ranch #1	10.987	0	0	93	0.04	210	0.09	640	0.28	930	0.41
JMN395b	116.947	260	0.03	500	0.05	1200	0.08	4000	0.22	6000	0.31
RMN350b	116.947	260	0.03	500	0.05	1100	0.08	4000	0.22	5900	0.31
MN350	0.690	7	0.02	19	0.06	34	0.11	98	0.3	140	0.42
JMN350	117.637	260	0.03	500	0.05	1100	0.08	4000	0.22	5900	0.31
MN400	2.154	12	0.02	33	0.05	61	0.09	190	0.26	260	0.36
JMN400	2.154	12	0.02	33	0.05	61	0.09	190	0.26	260	0.36
RMN405	2.154	12	0.02	33	0.05	61	0.09	190	0.26	260	0.36
MN405	0.933	2	0.01	8	0.03	16	0.06	52	0.19	77	0.28
JMN405a	3.087	13	0.01	40	0.04	76	0.08	240	0.24	340	0.34
JMN405b	120.725	260	0.03	520	0.05	1200	0.08	4000	0.22	6100	0.31
RMN410	120.725	260	0.03	520	0.05	1200	0.08	4000	0.22	6100	0.31
MN410	1.361	28	0.07	57	0.13	91	0.21	220	0.51	300	0.69
JMN410	122.086	270	0.03	530	0.05	1200	0.08	4100	0.22	6100	0.31
MN415	1.087	42	0.12	78	0.22	120	0.33	260	0.73	350	0.95
Interquest South Pond A	1.087	20	0.12	23	0.22	24	0.33	66	0.73	110	0.95

Monument Creek HEC-HMS Results - Existing Conditions (2016)

Hydrologic Element	Drainage Area (mi ²)	2-Year, 2-Hour		5-Year, 2-Hour		10-Year, 2-Hour		50-Year, 2-Hour		100-Year, 2-Hour	
		Discharge (cfs)	Volume (in)	Discharge (cfs)	Volume (in)	Discharge (cfs)	Volume (in)	Discharge (cfs)	Volume (in)	Discharge (cfs)	Volume (in)
JMN415	123.173	290	0.03	550	0.05	1200	0.09	4100	0.22	6200	0.32
RMN420	123.173	290	0.03	550	0.05	1200	0.09	4100	0.22	6200	0.32
MN420	0.818	4	0.01	12	0.04	23	0.07	71	0.22	110	0.33
JMN420	123.990	290	0.03	550	0.05	1200	0.09	4100	0.22	6200	0.32
RMN425	123.990	290	0.03	550	0.05	1200	0.09	4100	0.22	6200	0.32
MN425	2.080	19	0.03	45	0.08	78	0.13	210	0.35	300	0.48
JMN425	126.070	290	0.03	560	0.05	1200	0.09	4100	0.23	6300	0.32
MN430	5.674	31	0.04	65	0.08	110	0.13	270	0.32	370	0.44
Rampart Reservoir	5.674	5	0.03	11	0.07	17	0.11	29	0.27	29	0.34
JMN430	5.674	5	0.03	11	0.07	17	0.11	29	0.27	29	0.34
RMN435	5.674	5	0.03	11	0.07	17	0.11	29	0.27	29	0.34
MN435	1.556	30	0.1	54	0.17	80	0.26	180	0.56	230	0.74
JMN435	7.230	31	0.05	56	0.09	83	0.14	190	0.33	240	0.42
Nichols Reservoir	7.230	17	0.04	34	0.09	49	0.14	78	0.32	90	0.41
RMN440	7.230	17	0.04	34	0.09	49	0.14	78	0.32	90	0.41
MN440	1.940	47	0.1	83	0.18	130	0.27	270	0.59	360	0.77
JMN440	9.170	47	0.06	86	0.11	140	0.17	310	0.38	400	0.49
RMN445	9.170	47	0.06	86	0.11	140	0.17	310	0.38	400	0.48
MN445	1.538	22	0.05	45	0.1	72	0.16	180	0.39	240	0.53
JMN445	10.708	65	0.06	130	0.11	190	0.16	440	0.38	600	0.49
RMN450	10.708	65	0.05	130	0.11	190	0.16	440	0.38	600	0.49
MN450	2.224	82	0.11	150	0.19	230	0.29	490	0.63	650	0.83
JMN450	12.931	130	0.06	230	0.12	360	0.19	810	0.42	1100	0.55
RMN455	12.931	130	0.06	230	0.12	360	0.19	810	0.42	1100	0.55
MN455	1.551	46	0.11	83	0.19	130	0.29	280	0.64	360	0.84
JMN455	14.482	170	0.07	320	0.13	480	0.2	1100	0.45	1500	0.58
RMN460	14.482	170	0.07	320	0.13	480	0.2	1100	0.45	1500	0.58
MN460	0.407	19	0.07	37	0.14	59	0.22	140	0.52	190	0.69
JMN460	14.889	170	0.07	320	0.13	490	0.2	1200	0.45	1500	0.58
RMN465	14.889	170	0.07	320	0.13	490	0.2	1200	0.45	1500	0.58
MN465	1.135	45	0.07	89	0.15	150	0.23	340	0.53	450	0.7
JMN465	16.025	180	0.07	340	0.13	520	0.2	1200	0.45	1600	0.59
MN475	1.820	5	0.01	15	0.03	29	0.06	88	0.2	130	0.29
MN470	1.714	3	0.01	10	0.03	19	0.06	59	0.18	87	0.26
JMN470	1.714	3	0.01	10	0.03	19	0.06	59	0.18	87	0.26
Stanley Canyon Dam	1.714	0	0	0	0	0	0	15	0.06	37	0.14
RMN475	1.714	0	0	0	0	0	0	15	0.06	37	0.14
JMN475a	3.534	5	0.01	15	0.02	29	0.03	88	0.13	130	0.22
JMN475b	19.559	190	0.06	350	0.11	550	0.17	1300	0.39	1800	0.52
RMN480	19.559	190	0.06	350	0.11	550	0.17	1300	0.39	1800	0.52
MN480	0.662	17	0.04	38	0.09	64	0.15	170	0.37	240	0.52
JMN480	20.222	190	0.06	360	0.11	550	0.17	1300	0.39	1800	0.52
RMN485	20.222	190	0.06	360	0.11	550	0.17	1300	0.39	1800	0.52

Monument Creek HEC-HMS Results - Existing Conditions (2016)

Hydrologic Element	Drainage Area (mi ²)	2-Year, 2-Hour		5-Year, 2-Hour		10-Year, 2-Hour		50-Year, 2-Hour		100-Year, 2-Hour	
		Discharge (cfs)	Volume (in)	Discharge (cfs)	Volume (in)	Discharge (cfs)	Volume (in)	Discharge (cfs)	Volume (in)	Discharge (cfs)	Volume (in)
MN485	2.139	43	0.05	94	0.1	160	0.17	400	0.42	540	0.58
JMN485	22.361	190	0.06	370	0.11	590	0.17	1500	0.4	2000	0.53
RMN490	22.361	190	0.06	370	0.11	590	0.17	1500	0.4	2000	0.53
MN490	0.878	18	0.05	38	0.11	63	0.17	160	0.42	220	0.58
JMN490	23.239	190	0.06	380	0.11	610	0.17	1500	0.4	2000	0.53
RMN495	23.239	190	0.06	380	0.11	610	0.17	1500	0.4	2000	0.53
MN495	0.176	5	0.07	10	0.13	15	0.21	36	0.51	48	0.69
JMN495a	23.415	190	0.06	380	0.11	610	0.17	1500	0.4	2100	0.53
JMN495b	149.485	420	0.03	850	0.06	1400	0.1	4900	0.25	7400	0.35
RMN500	149.485	400	0.03	820	0.06	1400	0.1	4800	0.25	7200	0.35
MN500	0.825	22	0.07	43	0.14	69	0.23	170	0.53	230	0.72
JMN500	150.310	400	0.03	820	0.06	1400	0.1	4800	0.25	7200	0.35
MN505	1.106	81	0.2	140	0.34	200	0.48	400	0.96	520	1.23
JMN505	1.106	81	0.2	140	0.34	200	0.48	400	0.96	520	1.23
RMN510	1.106	81	0.2	140	0.34	200	0.48	400	0.96	520	1.23
MN510	0.610	40	0.19	68	0.32	98	0.46	200	0.93	260	1.19
JMN510	1.717	120	0.19	210	0.33	300	0.47	600	0.95	770	1.22
RMN515	1.717	120	0.19	210	0.33	300	0.47	600	0.95	770	1.22
MN515	0.814	68	0.22	120	0.36	170	0.52	330	1.02	420	1.3
JMN515	2.531	190	0.2	320	0.34	450	0.49	910	0.98	1200	1.25
MN520	1.340	76	0.17	140	0.3	190	0.43	400	0.89	510	1.15
JMN520	3.871	260	0.19	450	0.33	640	0.47	1300	0.95	1700	1.21
RMN525	3.871	260	0.19	450	0.33	640	0.47	1300	0.95	1700	1.21
MN525	0.580	15	0.07	29	0.13	46	0.21	120	0.5	150	0.67
JMN525	4.451	270	0.18	470	0.3	680	0.44	1400	0.89	1800	1.14
MN535	1.429	6	0.01	18	0.04	34	0.07	110	0.22	160	0.32
MN530	1.145	32	0.09	60	0.17	93	0.26	210	0.59	280	0.79
JMN530	1.145	32	0.09	60	0.17	93	0.26	210	0.59	280	0.79
RMN535	1.145	32	0.09	60	0.17	93	0.26	210	0.59	280	0.79
JMN535a	2.574	37	0.05	76	0.1	130	0.16	310	0.39	420	0.53
JMN535b	7.025	300	0.13	540	0.23	790	0.33	1700	0.7	2200	0.92
RMN540	7.025	300	0.13	540	0.23	790	0.33	1700	0.7	2200	0.92
MN540	0.366	2	0.01	6	0.03	13	0.06	42	0.21	61	0.3
JMN540	7.392	310	0.12	540	0.22	800	0.32	1700	0.68	2300	0.89
RMN545	7.392	310	0.12	540	0.22	800	0.32	1700	0.68	2300	0.89
MN545	1.006	76	0.18	140	0.3	200	0.44	410	0.9	520	1.16
JMN545	8.398	340	0.13	610	0.23	910	0.33	2000	0.71	2600	0.92
RMN550	8.398	340	0.13	610	0.23	910	0.33	2000	0.71	2600	0.92
MN550	0.570	3	0.01	9	0.03	18	0.06	61	0.2	90	0.29
JMN550	8.968	340	0.12	610	0.21	910	0.32	2000	0.67	2600	0.88
RMN555	8.968	340	0.12	610	0.21	910	0.32	2000	0.67	2600	0.88
MN555	1.280	17	0.03	41	0.07	70	0.13	200	0.34	270	0.47
JMN555	10.248	350	0.11	630	0.2	950	0.29	2100	0.63	2800	0.83

Monument Creek HEC-HMS Results - Existing Conditions (2016)

Hydrologic Element	Drainage Area (mi ²)	2-Year, 2-Hour		5-Year, 2-Hour		10-Year, 2-Hour		50-Year, 2-Hour		100-Year, 2-Hour	
		Discharge (cfs)	Volume (in)	Discharge (cfs)	Volume (in)	Discharge (cfs)	Volume (in)	Discharge (cfs)	Volume (in)	Discharge (cfs)	Volume (in)
RMN560	10.248	350	0.11	630	0.2	950	0.29	2100	0.63	2800	0.83
MN560	1.011	19	0.04	43	0.09	72	0.15	190	0.39	260	0.53
JMN560	11.259	360	0.1	650	0.19	970	0.28	2200	0.61	2900	0.8
RMN565	11.259	350	0.1	640	0.19	970	0.28	2200	0.61	2900	0.8
MN565	2.026	16	0.03	37	0.08	63	0.13	170	0.35	230	0.48
JMN565	13.284	370	0.09	680	0.17	1100	0.26	2300	0.57	3100	0.75
RMN570	13.284	370	0.09	680	0.17	1100	0.26	2300	0.57	3100	0.75
MN570	1.026	27	0.08	52	0.15	81	0.24	200	0.56	260	0.75
JMN570	14.311	380	0.09	700	0.17	1100	0.26	2500	0.57	3300	0.75
MN575	1.036	48	0.13	87	0.24	130	0.36	290	0.77	370	1.01
JMN575	15.347	390	0.09	730	0.17	1200	0.26	2600	0.58	3500	0.77
RMN580	15.347	380	0.09	720	0.17	1200	0.26	2600	0.58	3500	0.77
MN580	1.100	54	0.14	97	0.25	150	0.38	310	0.8	410	1.05
JMN580	16.447	390	0.1	740	0.18	1200	0.27	2700	0.6	3600	0.79
Kettle Creek	16.447	330	0.1	630	0.18	990	0.27	1500	0.6	1700	0.79
RMN585	16.447	330	0.1	630	0.18	990	0.27	1500	0.6	1700	0.79
MN585	0.983	9	0.03	22	0.08	37	0.13	98	0.35	140	0.49
JMN585a	17.430	330	0.09	640	0.17	1000	0.26	1600	0.58	1700	0.77
JMN585b	167.740	730	0.04	1500	0.07	2400	0.12	6300	0.29	8900	0.4
RMN590	167.740	730	0.04	1500	0.07	2400	0.12	6300	0.29	8900	0.4
MN590	1.080	44	0.1	83	0.19	130	0.29	290	0.65	390	0.86
JMN590	168.821	730	0.04	1500	0.07	2400	0.12	6300	0.29	8900	0.4
RMN595	168.821	730	0.04	1500	0.07	2400	0.12	6300	0.29	8800	0.4
MN595	1.644	33	0.07	65	0.15	110	0.23	250	0.55	330	0.74
JMN595	170.465	730	0.04	1500	0.08	2400	0.12	6300	0.29	8900	0.4
MN600	1.710	180	0.23	300	0.38	420	0.54	840	1.07	1100	1.37
JMN600	1.710	180	0.23	300	0.38	420	0.54	840	1.07	1100	1.37
RMN605	1.710	180	0.23	300	0.38	420	0.54	840	1.07	1100	1.37
MN605	0.792	56	0.14	110	0.25	160	0.37	330	0.79	430	1.03
Pine Creek Reservoir	0.792	26	0.14	46	0.25	71	0.37	150	0.79	180	1.03
JMN605	2.501	200	0.2	330	0.34	470	0.49	950	0.98	1300	1.26
RMN610	2.501	200	0.2	330	0.34	470	0.49	950	0.98	1300	1.26
MN610	1.056	80	0.18	140	0.31	210	0.45	420	0.93	550	1.2
JMN610	3.557	270	0.19	460	0.33	670	0.48	1400	0.97	1800	1.24
RMN615	3.557	270	0.19	460	0.33	670	0.48	1400	0.97	1800	1.24
MN615	1.331	130	0.2	220	0.34	310	0.5	640	1	820	1.28
JMN615	4.888	360	0.2	620	0.33	910	0.48	1900	0.98	2500	1.25
South Pine Creek	3.769	220	0.14	380	0.24	560	0.35	1200	0.74	1600	0.96
JMN620	8.657	460	0.17	780	0.29	1200	0.43	2300	0.87	3000	1.12
RMN625	8.657	460	0.17	780	0.29	1200	0.43	2300	0.87	3000	1.12
MN625	0.837	87	0.24	150	0.39	210	0.56	420	1.11	530	1.41
JMN625a	9.494	520	0.18	900	0.3	1300	0.44	2700	0.89	3500	1.15
JMN625b	179.958	750	0.05	1600	0.09	2500	0.14	6500	0.32	9200	0.44

Monument Creek HEC-HMS Results - Existing Conditions (2016)

Hydrologic Element	Drainage Area (mi ²)	2-Year, 2-Hour		5-Year, 2-Hour		10-Year, 2-Hour		50-Year, 2-Hour		100-Year, 2-Hour	
		Discharge (cfs)	Volume (in)	Discharge (cfs)	Volume (in)	Discharge (cfs)	Volume (in)	Discharge (cfs)	Volume (in)	Discharge (cfs)	Volume (in)
RMN630a	179.958	750	0.05	1600	0.09	2500	0.14	6500	0.32	9200	0.44
MN630	0.629	68	0.21	120	0.35	170	0.5	350	1.01	440	1.29
JMN630	180.587	750	0.05	1600	0.09	2500	0.14	6500	0.33	9200	0.45
Cottonwood Creek	19.142	490	0.07	940	0.12	1600	0.18	3800	0.4	5100	0.53
JMN635	199.729	1100	0.05	1900	0.09	2800	0.14	6600	0.33	9300	0.45
RMN630b	199.729	1100	0.05	1900	0.09	2800	0.14	6600	0.33	9300	0.45
MN640	3.011	210	0.17	360	0.3	530	0.43	1100	0.89	1500	1.14
JMN640	3.011	210	0.17	360	0.3	530	0.43	1100	0.89	1500	1.14
RMN645	3.011	210	0.17	360	0.3	530	0.43	1100	0.89	1500	1.14
MN645	0.444	83	0.34	140	0.53	190	0.73	340	1.36	430	1.7
JMN645a	3.455	250	0.19	430	0.33	620	0.47	1300	0.95	1700	1.21
JMN645b	203.185	1300	0.05	2300	0.09	3400	0.15	7300	0.34	9600	0.47
RMN650	203.185	1300	0.05	2300	0.09	3400	0.15	7300	0.34	9500	0.47
MN650	0.641	120	0.3	190	0.49	260	0.68	500	1.28	620	1.61
JMN650	203.826	1300	0.05	2400	0.1	3500	0.15	7600	0.35	9900	0.47
RMN655	203.826	1300	0.05	2400	0.1	3500	0.15	7600	0.35	9900	0.47
MN655	1.101	160	0.28	280	0.47	410	0.68	800	1.33	1100	1.68
JMN655	204.927	1400	0.05	2500	0.1	3700	0.15	8100	0.35	11000	0.48
MN665	0.977	120	0.19	240	0.36	360	0.54	780	1.12	1100	1.45
MN660	0.871	140	0.26	240	0.45	360	0.65	710	1.29	910	1.63
JMN660	0.871	140	0.26	240	0.45	360	0.65	710	1.29	910	1.63
RMN665	0.871	140	0.26	240	0.45	360	0.65	710	1.29	900	1.63
JMN665a	1.848	240	0.22	450	0.4	680	0.59	1500	1.2	1900	1.53
JMN665b	206.775	1500	0.05	2700	0.1	4000	0.15	9000	0.36	12000	0.49
RMN670a	206.775	1500	0.05	2700	0.1	4000	0.15	9000	0.36	12000	0.49
MN675	1.168	160	0.24	290	0.43	420	0.63	850	1.25	1100	1.59
MN670	1.095	130	0.2	240	0.36	370	0.54	780	1.14	1100	1.47
JMN675	209.038	1600	0.06	2900	0.1	4400	0.16	10000	0.37	14000	0.5
RMN670b	209.038	1600	0.06	2900	0.1	4400	0.16	10000	0.37	14000	0.5
JMN670	209.038	1600	0.06	2900	0.1	4400	0.16	10000	0.37	14000	0.5
RMN680	209.038	1500	0.06	2800	0.1	4400	0.16	9900	0.37	14000	0.5
MN680	1.964	200	0.22	360	0.39	530	0.58	1200	1.19	1500	1.52
JMN680	211.002	1600	0.06	3000	0.11	4700	0.16	11000	0.38	15000	0.51
Templeton Gap	8.748	860	0.17	1800	0.32	2800	0.49	6600	1.05	8700	1.36
JMN685	219.750	2100	0.06	4100	0.12	6300	0.18	15000	0.4	20000	0.54
RMN690a	219.750	2100	0.06	4100	0.12	6300	0.18	15000	0.4	20000	0.54
North Douglas	6.031	340	0.12	640	0.21	1100	0.31	2500	0.67	3400	0.88
JMN695	225.782	2400	0.06	4600	0.12	7100	0.18	17000	0.41	22000	0.55
RMN690b	225.782	2400	0.06	4600	0.12	7100	0.18	17000	0.41	22000	0.55
MN690	0.486	63	0.23	120	0.41	180	0.6	360	1.21	460	1.55
JMN690	226.268	2400	0.06	4600	0.12	7200	0.18	17000	0.41	22000	0.55
South Douglas	3.589	300	0.13	570	0.23	890	0.34	2100	0.71	2800	0.93
JMN700	229.856	2500	0.07	4900	0.12	7600	0.18	18000	0.42	24000	0.56

Monument Creek HEC-HMS Results - Existing Conditions (2016)

Hydrologic Element	Drainage Area (mi ²)	2-Year, 2-Hour		5-Year, 2-Hour		10-Year, 2-Hour		50-Year, 2-Hour		100-Year, 2-Hour	
		Discharge (cfs)	Volume (in)	Discharge (cfs)	Volume (in)	Discharge (cfs)	Volume (in)	Discharge (cfs)	Volume (in)	Discharge (cfs)	Volume (in)
RMN705	229.856	2500	0.07	4800	0.12	7500	0.18	18000	0.41	23000	0.56
MN705	1.373	150	0.18	290	0.34	440	0.51	950	1.08	1300	1.4
JMN705	231.229	2600	0.07	4900	0.12	7700	0.18	18000	0.42	24000	0.56
RMN710	231.229	2500	0.07	4900	0.12	7600	0.18	18000	0.42	24000	0.56
MN710	1.718	160	0.26	280	0.45	410	0.65	820	1.28	1100	1.63
JMN710	232.948	2700	0.07	5200	0.12	8000	0.19	19000	0.43	25000	0.57
MN715	0.922	8	0.02	28	0.09	56	0.17	180	0.52	260	0.75
JMN715	0.922	8	0.02	28	0.09	56	0.17	180	0.52	260	0.75
RMN720	0.922	8	0.02	28	0.09	56	0.17	180	0.52	260	0.75
MN720	0.727	4	0.01	16	0.06	36	0.13	130	0.44	190	0.65
JMN720	1.649	11	0.02	43	0.07	91	0.15	300	0.49	440	0.7
RMN725	1.649	11	0.02	43	0.07	91	0.15	300	0.49	440	0.7
MN725	0.551	24	0.08	58	0.18	110	0.31	270	0.77	370	1.04
JMN725a	2.200	24	0.03	63	0.1	130	0.19	400	0.56	580	0.79
JMN725b	235.148	2700	0.07	5200	0.12	8200	0.19	19000	0.43	25000	0.57
RMN730	235.148	2700	0.07	5200	0.12	8100	0.19	19000	0.43	25000	0.57
MN730	1.302	100	0.2	190	0.36	280	0.54	600	1.13	770	1.45
JMN730	236.450	2700	0.07	5300	0.12	8300	0.19	19000	0.43	26000	0.58
RMN735	236.450	2700	0.07	5300	0.12	8200	0.19	19000	0.43	26000	0.57
MN735	0.484	52	0.36	83	0.57	120	0.79	220	1.48	270	1.84
MonumentOutlet	236.934	2700	0.07	5400	0.13	8300	0.19	20000	0.43	26000	0.58

Monument Creek Watershed
Target Release Rate Results

Monument Creek HEC-HMS Results - Target Release Rates (2016)											
Hydrologic Element	Drainage Area (mi ²)	Target Release Rates 2-Year, 2-Hour		Target Release Rates 5-Year, 2-Hour		Target Release Rates 10-Year, 2-Hour		Target Release Rates 50-Year, 2-Hour		Target Release Rates 100-Year, 2-Hour	
		Discharge (cfs)	Volume (in)	Discharge (cfs)	Volume (in)	Discharge (cfs)	Volume (in)	Discharge (cfs)	Volume (in)	Discharge (cfs)	Volume (in)
MN015	2.890	0	0	0	0	0	0	15	3.5	36	8.7
JMN015	2.890	0	0	0	0	0	0	15	3.5	36	8.7
RMN020	2.890	0	0	0	0	0	0	15	3.5	36	8.7
MN020	2.655	0	0	0	0	0	0	22	4.5	49	10.1
JMN020	5.545	0	0	0	0	0	0	30	8	74	18.8
RMN025	5.545	0	0	0	0	0	0	30	8	74	18.8
MN025	1.405	0	0	0	0	0	0	6	1.5	16	3.9
JMN025	6.950	0	0	0	0	0	0	35	9.5	88	22.7
RMN030	6.950	0	0	0	0	0	0	35	9.5	88	22.7
MN030	1.222	0	0	0	0	1	0	12	2.8	24	5.9
JMN030	8.171	0	0	0	0	1	0	45	12.3	110	28.6
RMN035	8.171	0	0	0	0	1	0	45	12.3	110	28.6
MN035	0.718	0	0	0	0	0	0	9	1.3	18	2.8
JMN035a	8.889	0	0	0	0	1	0	46	13.5	120	31.4
MN010	3.880	0	0	0	0	0	0	17	4.2	44	10.8
MN005	2.509	0	0	0	0	0	0	2	0.6	9	3
JMN005	2.509	0	0	0	0	0	0	2	0.6	9	3
RMN010	2.509	0	0	0	0	0	0	2	0.6	9	3
JMN010	6.390	0	0	0	0	0	0	17	4.8	44	13.8
JMN035b	15.279	0	0	0	0	1	0	61	18.3	160	45.2
RMN040	15.279	0	0	0	0	1	0	61	18.3	160	45.2
MN040	0.491	0	0	0	0	1	0.1	11	1.7	21	3.2
JMN040	15.770	0	0	0	0	1	0.1	63	20	170	48.4
RMN045	15.770	0	0	0	0	1	0.1	63	20	170	48.4
MN045	0.296	0	0	2	0.1	7	0.5	36	2.7	58	4.2
JMN045	16.066	0	0	2	0.1	7	0.6	63	22.7	170	52.6
MN050	1.879	0	0	0	0	0	0	4	1.2	13	3.7
JMN050	1.879	0	0	0	0	0	0	4	1.2	13	3.7
RMN055	1.879	0	0	0	0	0	0	4	1.2	13	3.7
MN055	2.545	0	0	0	0	1	0.1	29	6.6	57	13.2
JMN055	4.423	0	0	0	0	1	0.1	29	7.7	59	16.9
RMN060	4.423	0	0	0	0	1	0.1	29	7.7	59	16.9
MN060	2.103	0	0	0	0	3	0.6	39	8.5	71	15.4
JMN060	6.526	0	0	0	0	3	0.7	60	16.2	120	32.3
RMN065	6.526	0	0	0	0	3	0.7	60	16.2	120	32.3
MN065	0.718	0	0	3	0.3	12	1.2	66	6.3	110	9.9
JMN065a	7.244	0	0	3	0.3	12	1.9	68	22.5	120	42.2
JMN065b	23.310	0	0	4	0.4	17	2.5	130	45.2	280	94.8
RMN070	23.310	0	0	4	0.5	17	2.5	130	45.2	280	94.8
MN070	1.933	0	0	4	0.3	18	1.9	150	13	250	21.3
JMN070	25.243	0	0	6	0.7	32	4.4	230	58.2	380	116.1
RMN075	25.243	0	0	6	0.7	32	4.4	220	58.2	380	116.1
MN075	1.414	0	0	0	0	2	0.1	43	4.4	86	8.5
JMN075a	26.657	0	0	6	0.7	34	4.5	260	62.7	460	124.5
MN080	1.612	6	0.8	22	3	45	6	150	18.7	210	26.8
JMN075b	28.269	6	0.8	22	3.7	71	10.6	400	81.3	650	151.3
RMN085	28.269	6	0.8	21	3.6	66	10.4	370	80.5	600	150
MN085	0.576	4	0.4	11	1.4	20	2.6	60	7.8	86	11
JMN085a	28.845	6	1.2	26	5	74	13	420	88.3	680	161
MN090	0.568	2	0.2	9	0.9	19	1.9	64	6	93	8.7
JMN090	0.568	2	0.2	9	0.9	19	1.9	64	6	93	8.7
RMN095	0.568	2	0.2	9	0.9	19	1.9	63	6	93	8.7

Monument Creek HEC-HMS Results - Target Release Rates (2016)											
Hydrologic Element	Drainage Area (mi ²)	Target Release Rates 2-Year, 2-Hour		Target Release Rates 5-Year, 2-Hour		Target Release Rates 10-Year, 2-Hour		Target Release Rates 50-Year, 2-Hour		Target Release Rates 100-Year, 2-Hour	
		Discharge (cfs)	Volume (in)	Discharge (cfs)	Volume (in)	Discharge (cfs)	Volume (in)	Discharge (cfs)	Volume (in)	Discharge (cfs)	Volume (in)
JMN180	14.842	0	0	0	0	0	0	0	0	0	0
RMN185	14.842	0	0	0	0	0	0	0	0	0	0
MN185	2.738	0	0	0	0	0	0	0	0	9	1.1
JMN185	17.580	0	0	0	0	0	0	0	0	9	1.1
MN190	2.151	0	0	0	0	0	0	0	0	2	0.2
JMN190	2.151	0	0	0	0	0	0	0	0	2	0.2
RMN195	2.151	0	0	0	0	0	0	0	0	2	0.2
MN195	1.531	0	0	0	0	0	0	1	0	6	0.9
JMN195a	3.682	0	0	0	0	0	0	1	0	6	1.2
JMN195b	21.262	0	0	0	0	0	0	1	0	14	2.2
RMN200	21.262	0	0	0	0	0	0	1	0	14	2.2
MN200	0.952	0	0	0	0	0	0	20	2.6	43	5.6
Bristlecone Res	22.214	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
JMN200	22.214	0	0	0	0	0	0	20	2.6	43	7.9
RMN205	22.214	0	0	0	0	0	0	20	2.6	43	7.9
MN205	0.725	0	0	0	0	1	0	18	2.8	35	5.5
JMN205	22.939	0	0	0	0	1	0	37	5.4	77	13.4
MN210	1.897	0	0	0	0	0	0	0	0	0	0
JMN210	1.897	0	0	0	0	0	0	0	0	0	0
RMN215	1.897	0	0	0	0	0	0	0	0	0	0
MN215	0.546	0	0	0	0	0	0	11	0.9	30	2.2
JMN215	2.443	0	0	0	0	0	0	11	0.9	30	2.2
RMN220	2.443	0	0	0	0	0	0	11	0.9	30	2.3
MN220	1.333	0	0	0	0	0	0	28	3.6	62	7.8
JMN220a	3.775	0	0	0	0	0	0	37	4.5	91	10.1
JMN220b	26.714	0	0	0	0	1	0	72	9.9	160	23.4
RMN225a	26.714	0	0	0	0	1	0	72	9.9	160	23.4
JMN155b	69.963	11	2.6	41	9.2	110	21	750	142.8	1400	268.4
RMN225b	69.963	10	2.6	41	9.1	110	20.9	740	142.7	1400	268.3
MN225	1.105	0	0	0	0	0	0	15	2.4	33	5.6
JMN225a	71.068	10	2.6	41	9.1	110	20.9	750	145	1400	273.8
MN230	3.078	0	0	0	0	0	0	2	0.2	15	2.9
JMN230	3.078	0	0	0	0	0	0	2	0.2	15	2.9
RMN235	3.078	0	0	0	0	0	0	2	0.2	15	2.9
MN235	1.273	0	0	0	0	0	0	25	3.8	52	8
JMN235	4.352	0	0	0	0	0	0	25	4	53	10.9
JMN225b	75.419	10	2.6	41	9.1	110	20.9	770	149	1400	284.7
RMN240	75.419	9	2.6	40	9.1	110	20.8	760	148.9	1400	284.6
MN240	0.518	0	0	0	0	0	0	12	1.4	28	3
JMN240	75.937	9	2.6	40	9.1	110	20.8	760	150.3	1400	287.6
MN245	2.956	0	0	0	0	0	0	12	1.7	41	6.6
JMN245	78.893	9	2.6	40	9.1	110	20.8	760	152	1500	294.2
RMN250a	78.893	9	2.6	40	9.1	110	20.8	760	152	1500	294.2
MN255	2.235	0	0	0	0	0	0	8	2.5	24	7.3
Gleneagle Pond	2.235	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Academy View Storage Center	2.235	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
JMN255	81.128	9	2.6	40	9.1	110	20.8	770	154.4	1500	301.4
RMN250b	81.128	8	2.5	40	9	110	20.6	760	154.2	1400	301.2
MN250	0.645	0	0	0	0	0	0	0	0	4	0.4
JMN250	81.773	8	2.5	40	9	110	20.6	760	154.2	1400	301.5
RMN260	81.773	8	2.5	39	8.9	110	20.4	750	153.9	1400	301
MN260	1.763	6	1	19	3.3	37	6.6	120	20.6	170	29.8
JMN260	83.535	8	3.5	39	12.3	110	27	770	174.6	1500	330.9

Monument Creek HEC-HMS Results - Target Release Rates (2016)											
Hydrologic Element	Drainage Area (mi ²)	Target Release Rates 2-Year, 2-Hour		Target Release Rates 5-Year, 2-Hour		Target Release Rates 10-Year, 2-Hour		Target Release Rates 50-Year, 2-Hour		Target Release Rates 100-Year, 2-Hour	
		Discharge (cfs)	Volume (in)	Discharge (cfs)	Volume (in)	Discharge (cfs)	Volume (in)	Discharge (cfs)	Volume (in)	Discharge (cfs)	Volume (in)
MN265	1.964	1	0.1	8	1.1	21	2.9	91	12.3	150	19.1
JMN265	1.964	1	0.1	8	1.1	21	2.9	91	12.3	150	19.1
RMN270	1.964	1	0.1	8	1.1	21	2.9	91	12.4	150	19.1
MN270	1.910	2	0.3	11	1.7	24	3.9	91	14.7	140	22.2
JMN270	3.874	2	0.4	18	2.8	45	6.9	190	27.1	280	41.2
RMN275	3.874	2	0.4	18	2.8	45	6.9	190	27.1	280	41.2
MN275	1.790	9	1.6	24	4.7	44	8.7	130	25.1	190	35.7
JMN275a	5.664	9	2	29	7.4	75	15.5	300	52.1	460	76.9
JMN275b	89.200	14	5.4	42	19.7	120	42.6	910	226.7	1700	407.8
RMN280a	89.200	14	5.4	42	19.7	120	42.5	910	226.7	1700	407.7
MN285	2.386	1	0	4	0.9	10	2.7	45	12.5	71	19.8
JMN285	2.386	1	0	4	0.9	10	2.7	45	12.5	71	19.8
RMN290	2.386	1	0	4	0.9	10	2.7	45	12.5	71	19.8
MN290	0.667	2	0.1	9	0.7	20	1.6	75	5.7	120	8.5
JMN290	3.052	2	0.2	9	1.6	20	4.3	76	18.2	120	28.2
MN295	0.601	4	0.3	14	1.1	28	2.2	90	6.9	140	10
JMN295	3.653	5	0.5	22	2.7	47	6.5	170	25.1	250	38.2
RMN300	3.653	6	0.5	22	2.7	47	6.5	170	25.1	250	38.2
MN300	1.444	5	0.7	17	2.6	34	5.2	110	16.3	160	23.6
JMN300a	5.096	9	1.2	38	5.3	81	11.7	270	41.4	400	61.8
JMN300b	94.296	22	6.7	77	25	150	54.2	960	268.1	1800	469.5
RMN280b	94.296	20	6.7	76	24.9	150	54.1	950	268	1800	469.4
MN280	0.434	3	0.3	10	1	19	1.9	57	5.7	83	8.2
JMN280	94.730	20	7	77	25.9	160	56	950	273.7	1800	477.6
MN310	1.860	7	1.5	20	4.5	38	8.4	120	24.9	160	35.5
MN305	1.454	4	0.6	14	2.3	29	4.6	95	15.1	140	22.1
JMN305	1.454	4	0.6	14	2.3	29	4.6	95	15.1	140	22.1
RMN310	1.454	4	0.6	14	2.3	29	4.6	95	15.1	140	22.1
JMN310a	3.314	11	2.1	34	6.8	66	13.1	210	40	300	57.6
JMN310b	98.044	28	9.1	120	32.7	220	69.1	1100	313.7	2000	535.2
RMN315	98.044	27	9.1	110	32.6	220	69	980	313.3	1900	534.8
MN315	1.436	7	1	21	3.2	41	6.1	130	18.4	180	26.3
JMN315	99.479	28	10.1	120	35.8	240	75.1	990	331.7	1900	561.1
MN330	2.653	9	1.3	30	4.7	61	9.3	200	29.4	290	42.7
MN320	1.782	1	0.1	4	1	10	2.7	39	11.2	60	17.3
JMN320	1.782	1	0.1	4	1	10	2.7	39	11.2	60	17.3
RMN325	1.782	1	0.1	4	1	10	2.7	39	11.2	60	17.3
MN325	0.472	5	0.4	14	1.2	26	2.3	77	6.5	120	9.3
LehmanDetPond1	0.472	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
LehmanDetPond2	0.472	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
LehmanDetPond3	0.472	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
JMN325	2.254	5	0.5	14	2.3	26	5	78	17.7	120	26.5
RMN330	2.254	5	0.5	14	2.3	26	5	77	17.7	120	26.6
LehmanGolfPond4	2.254	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
LehmanGolfPond5	2.254	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
USAFA Non-Pot#1	4.907	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
JMN330	104.386	34	12	140	42.8	290	89.4	1100	378.8	2000	630.3
RMN335	104.386	34	12	140	42.7	290	89.3	1100	378.7	2000	630.2
MN335	0.316	2	0.1	6	0.5	12	1.1	38	3.4	56	5
JMN335	104.702	34	12.2	140	43.3	290	90.4	1100	382.1	2000	635.2
MN340	0.861	9	1.1	24	2.9	43	5.1	120	14	170	19.7
JMN340	0.861	9	1.1	24	2.9	43	5.1	120	14	170	19.7
RMN345	0.861	9	1.1	24	2.9	43	5.1	120	14	170	19.7

Monument Creek HEC-HMS Results - Target Release Rates (2016)											
Hydrologic Element	Drainage Area (mi ²)	Target Release Rates 2-Year, 2-Hour		Target Release Rates 5-Year, 2-Hour		Target Release Rates 10-Year, 2-Hour		Target Release Rates 50-Year, 2-Hour		Target Release Rates 100-Year, 2-Hour	
		Discharge (cfs)	Volume (in)	Discharge (cfs)	Volume (in)	Discharge (cfs)	Volume (in)	Discharge (cfs)	Volume (in)	Discharge (cfs)	Volume (in)
MN345	0.397	3	0.3	8	0.8	16	1.6	49	4.9	71	7.1
JMN345a	1.258	11	1.4	30	3.7	54	6.7	160	18.9	230	26.7
JMN345b	105.960	34	13.6	140	47	300	97.1	1100	401.1	2000	662
RMN350a	105.960	34	13.6	140	46.9	300	97	1100	400.9	2000	661.8
MN355	1.720	1	0	5	0.8	14	2.3	61	10	96	15.6
JMN355	1.720	1	0	5	0.8	14	2.3	61	10	96	15.6
RMN360	1.720	1	0	5	0.8	14	2.3	61	10	96	15.6
MN360	1.221	1	0	3	0.6	9	1.6	38	7	59	11
JMN360	2.941	1	0.1	8	1.4	22	3.8	98	17	160	26.6
RMN365	2.941	1	0.1	8	1.4	22	3.8	98	17	160	26.6
MN365	1.583	1	0.1	6	0.9	15	2.5	64	10.3	99	15.9
JMN365	4.524	1	0.2	11	2.3	32	6.3	150	27.3	240	42.4
MN370	1.604	1	0	3	0.7	9	2	40	9	63	14.1
MN375	1.541	1	0.1	4	0.8	9	2.2	39	9.4	60	14.6
JMN375	3.145	1	0.1	7	1.5	18	4.2	78	18.4	130	28.7
RMN380	3.145	1	0.1	7	1.5	18	4.2	78	18.4	130	28.7
MN380	0.354	1	0	2	0.3	5	0.6	19	2.5	28	3.9
JMN380a	3.499	1	0.1	7	1.7	19	4.8	84	20.9	140	32.6
JMN380b	8.023	1	0.3	18	4	50	11.1	230	48.2	360	75
RMN385	8.023	1	0.3	18	4	50	11.1	230	48.2	360	75
MN385	1.340	8	0.9	26	2.8	51	5.4	160	16.4	240	23.6
JMN385	9.363	8	1.2	26	6.8	51	16.5	240	64.5	380	98.6
RMN390	9.363	8	1.2	26	6.8	51	16.5	240	64.5	380	98.6
MN390	0.517	6	0.6	17	1.6	31	2.8	90	7.9	130	11.2
JMN390	9.880	12	1.8	36	8.4	70	19.3	240	72.4	390	109.7
RMN395	9.880	12	1.8	36	8.4	70	19.3	240	72.4	390	109.7
MN395	1.107	7	0.9	19	2.7	36	5.1	110	15	160	21.4
JMN395a	10.987	13	2.7	46	11.1	95	24.4	320	87.4	470	131.1
Allison Valley Ranch #3	10.987	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Allison Valley Ranch #2	10.987	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Allison Valley Ranch #1	10.987	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
JMN395b	116.947	40	16.3	160	58	350	121.4	1300	488.3	2300	792.9
RMN350b	116.947	39	16.3	160	58	350	121.3	1300	488.1	2300	792.6
MN350	0.690	1	0.1	5	0.6	12	1.4	46	5.3	70	8.1
JMN350	117.637	39	16.4	160	58.6	350	122.7	1300	493.4	2300	800.7
MN400	2.154	5	0.8	19	3.2	40	6.6	140	21.7	200	31.9
JMN400	2.154	5	0.8	19	3.2	40	6.6	140	21.7	200	31.9
RMN405	2.154	5	0.8	19	3.2	40	6.6	140	21.7	200	31.9
MN405	0.933	1	0	3	0.4	7	1.3	31	5.7	49	8.9
JMN405a	3.087	5	0.8	22	3.6	47	7.9	170	27.4	250	40.8
JMN405b	120.725	41	17.2	170	62.2	380	130.6	1400	520.8	2300	841.5
RMN410	120.725	41	17.2	170	62.2	370	130.6	1400	520.7	2300	841.3
MN410	1.361	2	0.3	10	1.6	21	3.5	72	12.3	110	18.4
JMN410	122.086	41	17.6	170	63.8	380	134.1	1400	533	2300	859.6
MN415	1.087	1	0	3	0.5	9	1.5	39	6.5	61	10.2
Interquest South Pond A	1.087	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
JMN415	123.173	41	17.6	170	64.3	380	135.5	1500	539.6	2300	869.8
RMN420	123.173	41	17.6	170	64.3	380	135.5	1400	539.5	2300	869.7
MN420	0.818	1	0	4	0.5	9	1.3	38	5.4	60	8.3
JMN420	123.990	41	17.6	170	64.7	380	136.8	1500	544.8	2300	878
RMN425	123.990	41	17.6	170	64.7	380	136.7	1400	544.7	2300	877.7
MN425	2.080	4	0.7	16	3	34	6.2	120	20.8	170	30.7
JMN425	126.070	41	18.3	170	67.7	380	142.9	1500	565.5	2300	908.5

Monument Creek HEC-HMS Results - Target Release Rates (2016)											
Hydrologic Element	Drainage Area (mi ²)	Target Release Rates 2-Year, 2-Hour		Target Release Rates 5-Year, 2-Hour		Target Release Rates 10-Year, 2-Hour		Target Release Rates 50-Year, 2-Hour		Target Release Rates 100-Year, 2-Hour	
		Discharge (cfs)	Volume (in)	Discharge (cfs)	Volume (in)	Discharge (cfs)	Volume (in)	Discharge (cfs)	Volume (in)	Discharge (cfs)	Volume (in)
MN430	5.674	6	1.9	19	6.8	38	13.9	130	45.7	190	67.4
Rampart Reservoir	5.674	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
JMN430	5.674	6	1.9	19	6.8	38	13.9	130	45.7	190	67.4
RMN435	5.674	6	1.9	19	6.8	38	13.9	130	45.7	190	67.4
MN435	1.556	0	0	1	0.2	4	0.9	20	5.4	33	8.8
JMN435	7.230	6	1.9	20	7.1	41	14.8	150	51	220	76.2
Nichols Reservoir	7.230	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
RMN440	7.230	6	1.9	20	7.1	41	14.8	150	51	220	76.2
MN440	1.940	0	0	3	0.5	8	1.7	36	8.2	58	13.2
JMN440	9.170	6	1.9	21	7.6	45	16.5	170	59.3	250	89.3
RMN445	9.170	6	1.9	21	7.6	45	16.5	170	59.3	250	89.3
MN445	1.538	1	0	4	0.6	10	1.8	43	8	68	12.5
JMN445	10.708	6	2	21	8.2	47	18.3	180	67.2	270	101.8
RMN450	10.708	6	2	21	8.2	47	18.3	180	67.2	270	101.8
MN450	2.224	2	0.2	9	1.3	21	3.3	84	13.4	130	20.7
JMN450	12.931	6	2.1	22	9.5	48	21.6	190	80.6	300	122.5
RMN455	12.931	6	2.1	22	9.5	48	21.6	190	80.6	300	122.5
MN455	1.551	0	0	2	0.4	7	1.3	35	6.9	57	11.1
JMN455	14.482	6	2.1	22	9.9	50	22.9	210	87.5	340	133.5
RMN460	14.482	6	2.1	22	9.9	50	22.9	210	87.5	340	133.6
MN460	0.407	0	0	1	0.1	4	0.4	22	1.9	35	3.1
JMN460	14.889	6	2.1	22	10	50	23.3	210	89.4	340	136.6
RMN465	14.889	6	2.1	22	10	50	23.3	210	89.5	340	136.6
MN465	1.135	2	0.1	8	0.9	20	2.1	79	8.1	130	12.3
JMN465	16.025	6	2.3	22	10.9	50	25.5	220	97.6	350	149
MN475	1.820	1	0.2	7	1.4	16	3.4	58	12.9	88	19.6
MN470	1.714	1	0.1	4	0.9	9	2.4	36	10	56	15.5
JMN470	1.714	1	0.1	4	0.9	9	2.4	36	10	56	15.5
Stanley Canyon Dam	1.714	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
RMN475	1.714	1	0.1	4	0.9	9	2.4	36	10	56	15.5
JMN475a	3.534	1	0.3	7	2.3	19	5.8	83	22.9	130	35.1
JMN475b	19.559	6	2.6	26	13.3	64	31.2	300	120.5	470	184.1
RMN480	19.559	6	2.6	26	13.3	64	31.2	300	120.5	470	184.1
MN480	0.662	12	1	29	2.4	51	4.2	150	11.3	200	15.7
JMN480	20.222	12	3.6	29	15.7	64	35.5	300	131.8	480	199.8
RMN485	20.222	12	3.6	29	15.7	64	35.5	300	131.8	480	199.8
MN485	2.139	13	1.7	38	5	73	9.3	230	27.7	330	39.7
JMN485	22.361	21	5.3	61	20.7	120	44.8	400	159.5	590	239.5
RMN490	22.361	21	5.3	61	20.7	120	44.8	400	159.5	590	239.5
MN490	0.878	3	0.3	9	1.2	19	2.5	65	8.4	97	12.4
JMN490	23.239	23	5.6	69	21.9	140	47.3	460	167.9	690	252
RMN495	23.239	23	5.6	69	21.9	140	47.3	460	167.9	690	252
MN495	0.176	1	0	2	0.2	3	0.4	10	1.4	16	2.1
JMN495a	23.415	23	5.7	70	22	140	47.7	470	169.3	700	254.1
JMN495b	149.485	43	24	190	89.7	450	190.6	1800	734.8	2800	1162.5
RMN500	149.485	39	23.7	190	89.2	430	189.7	1800	732.4	2700	1159.1
MN500	0.825	1	0.1	5	0.7	11	1.7	43	6.3	66	9.6
JMN500	150.310	39	23.8	190	89.9	430	191.4	1800	738.7	2700	1168.8
MN505	1.106	1	0	3	0.4	9	1.3	40	6	63	9.4
JMN505	1.106	1	0	3	0.4	9	1.3	40	6	63	9.4
RMN510	1.106	1	0	3	0.4	9	1.3	40	6	63	9.4
MN510	0.610	1	0	2	0.2	5	0.7	21	3.3	33	5.2
JMN510	1.717	1	0	5	0.7	13	2	61	9.3	96	14.6

Monument Creek HEC-HMS Results - Target Release Rates (2016)											
Hydrologic Element	Drainage Area (mi ²)	Target Release Rates 2-Year, 2-Hour		Target Release Rates 5-Year, 2-Hour		Target Release Rates 10-Year, 2-Hour		Target Release Rates 50-Year, 2-Hour		Target Release Rates 100-Year, 2-Hour	
		Discharge (cfs)	Volume (in)	Discharge (cfs)	Volume (in)	Discharge (cfs)	Volume (in)	Discharge (cfs)	Volume (in)	Discharge (cfs)	Volume (in)
RMN515	1.717	1	0	5	0.7	13	2	61	9.3	96	14.6
MN515	0.814	1	0	3	0.3	7	1	31	4.5	49	7.1
JMN515	2.531	1	0	7	1	19	3	89	13.8	150	21.7
MN520	1.340	1	0	4	0.6	10	1.7	45	7.6	71	11.8
JMN520	3.871	1	0.1	10	1.6	29	4.7	140	21.3	220	33.5
RMN525	3.871	1	0.1	10	1.6	29	4.7	140	21.3	220	33.5
MN525	0.580	1	0	2	0.2	5	0.7	22	3.2	35	5.1
JMN525	4.451	1	0.1	11	1.8	32	5.4	150	24.5	240	38.6
MN535	1.429	1	0	4	0.6	11	1.8	50	8	79	12.7
MN530	1.145	1	0	3	0.5	9	1.4	37	6.5	58	10.1
JMN530	1.145	1	0	3	0.5	9	1.4	37	6.5	58	10.1
RMN535	1.145	1	0	3	0.5	9	1.4	37	6.5	58	10.1
JMN535a	2.574	1	0	5	1.1	16	3.2	78	14.5	130	22.8
JMN535b	7.025	1	0.1	15	2.9	47	8.6	230	39	370	61.4
RMN540	7.025	1	0.1	15	2.9	47	8.6	230	39	370	61.4
MN540	0.366	1	0	2	0.1	4	0.4	21	2.1	33	3.2
JMN540	7.392	1	0.1	15	3.1	47	9	240	41.1	380	64.6
RMN545	7.392	1	0.1	15	3.1	47	9	240	41.1	380	64.6
MN545	1.006	1	0	4	0.5	10	1.3	46	5.9	72	9.2
JMN545	8.398	1	0.2	16	3.5	51	10.3	260	47	420	73.8
RMN550	8.398	1	0.2	16	3.5	51	10.3	260	47	420	73.8
MN550	0.570	1	0.1	5	0.5	12	1.3	47	4.6	71	7
JMN550	8.968	1	0.3	16	4.1	52	11.6	270	51.6	440	80.8
RMN555	8.968	1	0.3	16	4.1	52	11.6	270	51.6	440	80.8
MN555	1.280	1	0.1	6	0.7	15	1.9	64	8	110	12.5
JMN555	10.248	2	0.3	16	4.8	54	13.5	300	59.6	480	93.3
RMN560	10.248	2	0.3	16	4.8	54	13.5	300	59.6	480	93.3
MN560	1.011	1	0.1	5	0.6	13	1.5	56	6.5	88	10.1
JMN560	11.259	2	0.4	16	5.3	54	15	310	66.1	510	103.4
RMN565	11.259	2	0.4	16	5.3	54	15	310	66.1	500	103.3
MN565	2.026	3	0.5	10	2.2	22	4.9	77	17.5	120	26.2
JMN565	13.284	3	0.8	21	7.6	66	19.9	370	83.6	610	129.5
RMN570	13.284	3	0.8	21	7.6	66	19.9	370	83.6	610	129.5
MN570	1.026	2	0.2	7	1.1	15	2.4	53	8.6	80	13
JMN570	14.311	4	1	22	8.6	71	22.3	390	92.2	640	142.5
MN575	1.036	1	0.1	6	0.9	14	2.1	51	8	78	12.2
JMN575	15.347	4	1.2	23	9.5	76	24.4	400	100.2	670	154.6
RMN580	15.347	4	1.2	22	9.5	74	24.4	400	100.1	660	154.5
MN580	1.100	2	0.2	7	1.1	16	2.5	58	9.1	88	13.7
JMN580	16.447	4	1.4	22	10.6	75	26.8	400	109.2	680	168.1
Kettle Creek	16.447	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
RMN585	16.447	5	1.4	22	10.6	75	26.8	400	109.2	680	168.1
MN585	0.983	0	0	2	0.2	5	0.8	24	4.5	38	7.3
JMN585a	17.430	5	1.4	22	10.8	75	27.6	410	113.6	690	175.4
JMN585b	167.740	41	25.1	200	100.6	510	219	2200	852.4	3400	1344.2
RMN590	167.740	41	25.2	200	100.6	510	219	2200	852.4	3400	1344.2
MN590	1.080	4	0.5	13	1.8	26	3.6	87	11.6	130	17
JMN590	168.821	41	25.7	200	102.4	510	222.6	2200	864	3400	1361.2
RMN595	168.821	41	25.6	200	102.4	500	222.6	2200	863.7	3400	1360.7
MN595	1.644	1	0.2	7	1.2	15	3	60	12.1	92	18.5
JMN595	170.465	41	25.8	200	103.6	510	225.6	2200	875.8	3400	1379.2
MN600	1.710	8	1	26	3.3	51	6.4	170	20.1	240	29.2
JMN600	1.710	8	1	26	3.3	51	6.4	170	20.1	240	29.2

Monument Creek HEC-HMS Results - Target Release Rates (2016)											
Hydrologic Element	Drainage Area (mi ²)	Target Release Rates 2-Year, 2-Hour		Target Release Rates 5-Year, 2-Hour		Target Release Rates 10-Year, 2-Hour		Target Release Rates 50-Year, 2-Hour		Target Release Rates 100-Year, 2-Hour	
		Discharge (cfs)	Volume (in)	Discharge (cfs)	Volume (in)	Discharge (cfs)	Volume (in)	Discharge (cfs)	Volume (in)	Discharge (cfs)	Volume (in)
JMN695	225.782	43	36.7	240	145.3	620	317.1	2700	1230.4	3500	1622.9
RMN690b	225.782	43	36.6	240	145.3	620	317	2700	1230.3	3500	1622.8
MN690	0.486	0	0	0	0	0	0	0	0	2	0.2
JMN690	226.268	43	36.6	240	145.3	620	317	2700	1230.3	3500	1622.9
South Douglas	3.589	0	0	0	0	0	0	0	0	0	0
JMN700	229.856	43	36.6	240	145.3	620	317	2700	1230.3	3500	1622.9
RMN705	229.856	43	36.6	240	145.2	610	317	2700	1230.1	3500	1622.5
MN705	1.373	0	0	0	0	0	0	1	0	13	1.3
JMN705	231.229	43	36.6	240	145.2	610	317	2700	1230.1	3500	1623.7
RMN710	231.229	43	36.6	240	145.2	610	316.9	2700	1230	3500	1623.6
MN710	1.718	0	0	0	0	0	0	0	0	2	0.2
JMN710	232.948	43	36.6	240	145.2	610	316.9	2700	1230	3500	1623.8
MN715	0.922	0	0	0	0	0	0	0	0	0	0
JMN715	0.922	0	0	0	0	0	0	0	0	0	0
RMN720	0.922	0	0	0	0	0	0	0	0	0	0
MN720	0.727	0	0	0	0	0	0	0	0	4	0.5
JMN720	1.649	0	0	0	0	0	0	0	0	4	0.5
RMN725	1.649	0	0	0	0	0	0	0	0	4	0.5
MN725	0.551	0	0	0	0	0	0	6	0.6	18	1.9
JMN725a	2.200	0	0	0	0	0	0	6	0.6	18	2.4
JMN725b	235.148	43	36.6	240	145.2	610	316.9	2700	1230.6	3500	1626.3
RMN730	235.148	43	36.5	240	145.1	610	316.8	2700	1230.3	3500	1625.8
MN730	1.302	0	0	0	0	0	0	0	0	0	0
JMN730	236.450	43	36.5	240	145.1	610	316.8	2700	1230.3	3500	1625.8
RMN735	236.450	43	36.5	240	145	610	316.7	2700	1230.1	3500	1625.4
MN735	0.484	0	0	0	0	0	0	0	0	0	0
MonumentOutlet	236.934	43	36.5	240	145	610	316.7	2700	1230.1	3500	1625.4

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iii. **Hydraulics Model Results**

Beaver Creek Hydraulic Results

HEC-RAS Plan: Plan 05 River: Beaver Creek Reach: Middle

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl	Shear Total (lb/sq ft)	Mann Wtd Total	Shear Chan (lb/sq ft)	Shear LOB (lb/sq ft)	Shear ROB (lb/sq ft)
Middle	6355	2 Yr	58.00	6825.76	6826.64	4.71	12.68	19.58	0.93	0.86	0.035	1.08	0.22	0.89
Middle	6355	5 Yr	59.00	6825.76	6826.65	4.72	12.91	19.74	0.92	0.86	0.035	1.08	0.23	0.89
Middle	6355	10 Yr	76.00	6825.76	6826.78	5.12	15.64	21.51	0.93	0.92	0.035	1.21	0.30	0.96
Middle	6355	50 Yr	170.00	6825.76	6827.40	5.51	38.85	51.02	0.77	0.57	0.031	1.18	0.31	0.87
Middle	6355	100 Yr	230.00	6825.76	6827.59	6.04	49.01	57.10	0.80	0.66	0.032	1.37	0.41	0.99
Middle	6142	2 Yr	58.00	6818.93	6820.10	2.01	28.87	70.55	0.55	0.25	0.040	0.25		
Middle	6142	5 Yr	59.00	6818.93	6820.10	2.02	29.24	70.60	0.55	0.25	0.040	0.25		
Middle	6142	10 Yr	76.00	6818.93	6820.18	2.21	34.40	71.17	0.56	0.28	0.040	0.28		
Middle	6142	50 Yr	170.00	6818.93	6820.48	3.00	56.74	73.60	0.60	0.44	0.040	0.44		
Middle	6142	100 Yr	230.00	6818.93	6820.64	3.37	68.19	74.76	0.62	0.53	0.040	0.53		0.05
Middle	5908	2 Yr	58.00	6816.00	6816.43	3.32	17.49	43.66	0.92	0.68	0.040	0.68		
Middle	5908	5 Yr	59.00	6816.00	6816.44	3.34	17.66	43.73	0.93	0.68	0.040	0.68		
Middle	5908	10 Yr	76.00	6816.00	6816.50	3.69	20.61	45.01	0.96	0.80	0.040	0.80		
Middle	5908	50 Yr	170.00	6816.00	6816.82	4.72	36.04	52.34	1.00	1.14	0.040	1.14		
Middle	5908	100 Yr	230.00	6816.00	6816.99	5.12	44.91	56.16	1.01	1.28	0.040	1.28		
Middle	5844	2 Yr	58.00	6814.00	6814.54	3.95	14.68	30.59	1.00	0.90	0.040	0.90		
Middle	5844	5 Yr	59.00	6814.00	6814.54	3.97	14.86	30.66	1.00	0.90	0.040	0.91	0.04	
Middle	5844	10 Yr	76.00	6814.00	6814.64	4.26	17.85	31.83	1.00	0.98	0.040	0.99	0.12	
Middle	5844	50 Yr	170.00	6814.00	6815.05	5.41	31.97	36.59	0.97	1.21	0.038	1.34	0.37	0.22
Middle	5844	100 Yr	230.00	6814.00	6815.27	5.89	40.28	40.14	0.96	1.26	0.037	1.49	0.35	0.35
Middle	5693	2 Yr	58.00	6812.00	6814.11	0.47	131.64	81.51	0.06	0.01	0.036	0.01	0.01	0.01
Middle	5693	5 Yr	59.00	6812.00	6814.12	0.48	132.16	81.56	0.06	0.01	0.036	0.01	0.01	0.01
Middle	5693	10 Yr	76.00	6812.00	6814.21	0.58	139.85	82.34	0.07	0.01	0.036	0.01	0.01	0.01
Middle	5693	50 Yr	170.00	6812.00	6814.54	1.08	167.60	85.07	0.12	0.03	0.036	0.04	0.03	0.03
Middle	5693	100 Yr	230.00	6812.00	6814.71	1.34	182.17	86.48	0.14	0.04	0.036	0.06	0.04	0.04
Middle	5593	2 Yr	58.00	6813.74	6813.93	1.26	18.77	62.91	0.71	0.47	0.034	0.16	0.50	
Middle	5593	5 Yr	59.00	6813.74	6813.93	1.28	18.87	62.96	0.71	0.48	0.034	0.16	0.51	
Middle	5593	10 Yr	76.00	6813.74	6813.98	1.58	22.11	64.79	0.76	0.56	0.034	0.22	0.60	
Middle	5593	50 Yr	170.00	6813.74	6814.24	2.30	47.60	101.63	0.71	0.50	0.033	0.35	0.65	0.25
Middle	5593	100 Yr	230.00	6813.74	6814.34	2.78	57.83	102.76	0.75	0.62	0.034	0.47	0.76	0.37
Middle	5547	2 Yr	58.00	6811.95	6812.42	1.37	42.24	100.98	0.37	0.73	0.101	0.73		
Middle	5547	5 Yr	59.00	6811.95	6812.42	1.38	42.73	101.01	0.37	0.73	0.101	0.73		
Middle	5547	10 Yr	76.00	6811.95	6812.50	1.51	50.35	101.55	0.38	0.83	0.101	0.83		
Middle	5547	50 Yr	170.00	6811.95	6812.75	2.25	75.51	103.31	0.46	1.62	0.101	1.62		
Middle	5547	100 Yr	230.00	6811.95	6812.82	2.75	83.65	103.88	0.54	2.35	0.101	2.35		
Middle	5404	2 Yr	58.00	6808.00	6809.52	1.59	36.53	44.21	0.31	0.78	0.101	0.78		
Middle	5404	5 Yr	59.00	6808.00	6809.53	1.59	37.01	44.49	0.31	0.78	0.101	0.78		
Middle	5404	10 Yr	76.00	6808.00	6809.69	1.71	44.39	48.78	0.31	0.84	0.099	0.87	0.04	
Middle	5404	50 Yr	170.00	6808.00	6810.40	1.98	88.11	74.70	0.27	0.69	0.083	0.96	0.24	0.12
Middle	5404	100 Yr	230.00	6808.00	6810.79	1.96	119.33	85.12	0.24	0.61	0.080	0.87	0.29	0.17
Middle	5370	2 Yr	58.00	6808.00	6808.98	1.81	31.89	35.65	0.32	0.87	0.095	0.96	0.34	0.42
Middle	5370	5 Yr	59.00	6808.00	6809.00	1.82	32.34	35.73	0.32	0.87	0.094	0.96	0.34	0.42
Middle	5370	10 Yr	76.00	6808.00	6809.18	1.93	39.06	36.87	0.31	0.92	0.093	1.02	0.38	0.44

HEC-RAS Plan: Plan 05 River: Beaver Creek Reach: Middle (Continued)

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl	Shear Total (lb/sq ft)	Mann Wtd Total	Shear Chan (lb/sq ft)	Shear LOB (lb/sq ft)	Shear ROB (lb/sq ft)
Middle	5370	50 Yr	170.00	6808.00	6810.04	2.35	73.15	48.39	0.29	0.93	0.083	1.26	0.32	0.53
Middle	5370	100 Yr	230.00	6808.00	6810.51	2.38	97.35	55.14	0.27	0.84	0.080	1.20	0.36	0.50
Middle	5300	BCP 01	Culvert											
Middle	5223	2 Yr	58.00	6804.00	6805.44	1.51	38.57	28.49	0.23	0.59	0.100	0.60	0.04	
Middle	5223	5 Yr	59.00	6804.00	6805.45	1.52	38.83	28.51	0.23	0.60	0.100	0.61	0.04	
Middle	5223	10 Yr	76.00	6804.00	6805.62	1.75	43.62	28.91	0.25	0.76	0.100	0.77	0.09	
Middle	5223	50 Yr	170.00	6804.00	6806.27	2.72	63.10	30.77	0.32	1.56	0.097	1.67	0.36	0.10
Middle	5223	100 Yr	230.00	6804.00	6806.50	3.31	70.15	31.58	0.38	2.19	0.096	2.40	0.57	0.24
Middle	5200	2 Yr	58.00	6804.00	6805.33	1.07	55.57	50.72	0.17	0.27	0.095	0.31	0.10	0.03
Middle	5200	5 Yr	59.00	6804.00	6805.34	1.08	56.02	50.86	0.17	0.27	0.095	0.31	0.10	0.03
Middle	5200	10 Yr	76.00	6804.00	6805.50	1.22	64.24	53.43	0.18	0.33	0.094	0.38	0.12	0.05
Middle	5200	50 Yr	170.00	6804.00	6806.13	1.74	111.57	109.28	0.21	0.34	0.073	0.69	0.12	0.18
Middle	5200	100 Yr	230.00	6804.00	6806.36	1.95	136.66	111.80	0.23	0.45	0.077	0.83	0.21	0.24
Middle	4914	2 Yr	58.00	6801.28	6802.03	2.70	21.38	110.00	0.73	1.29	0.060	2.80	0.22	0.87
Middle	4914	5 Yr	59.00	6801.28	6802.04	2.67	21.91	110.05	0.72	1.28	0.060	2.74	0.25	0.87
Middle	4914	10 Yr	76.00	6801.28	6802.10	2.60	28.33	110.66	0.66	1.31	0.064	2.48	0.49	0.98
Middle	4914	50 Yr	170.00	6801.28	6802.30	2.88	50.83	113.54	0.61	1.77	0.065	2.71	1.15	1.50
Middle	4914	100 Yr	230.00	6801.28	6802.41	2.94	64.05	115.08	0.58	1.87	0.065	2.69	1.34	1.63
Middle	4580	2 Yr	58.00	6800.00	6801.50	0.23	256.07	175.90	0.03	0.00	0.030	0.00		0.00
Middle	4580	5 Yr	59.00	6800.00	6801.51	0.23	258.05	175.97	0.03	0.00	0.030	0.00		0.00
Middle	4580	10 Yr	76.00	6800.00	6801.66	0.27	284.50	176.96	0.04	0.00	0.030	0.00		0.00
Middle	4580	50 Yr	170.00	6800.00	6802.18	0.45	377.01	180.53	0.05	0.00	0.030	0.00	0.00	0.00
Middle	4580	100 Yr	230.00	6800.00	6802.39	0.56	415.74	182.46	0.06	0.01	0.030	0.01	0.00	0.00
Middle	4567	2 Yr	58.00	6800.00	6801.50	0.26	229.24	164.26	0.04	0.00	0.030	0.00	0.00	0.00
Middle	4567	5 Yr	59.00	6800.00	6801.51	0.26	231.08	164.36	0.04	0.00	0.030	0.00	0.00	0.00
Middle	4567	10 Yr	76.00	6800.00	6801.66	0.31	255.66	165.71	0.04	0.00	0.030	0.00	0.00	0.00
Middle	4567	50 Yr	170.00	6800.00	6802.18	0.51	342.95	171.56	0.06	0.00	0.030	0.01	0.00	0.00
Middle	4567	100 Yr	230.00	6800.00	6802.39	0.63	379.77	174.20	0.07	0.01	0.030	0.01	0.00	0.00
Middle	4560		Inl Struct											
Middle	4545	2 Yr	58.00	6793.89	6795.36	6.04	9.70	9.32	1.01	0.84	0.029	0.91	0.14	0.04
Middle	4545	5 Yr	59.00	6793.89	6795.37	6.06	9.84	9.36	1.01	0.84	0.029	0.92	0.14	0.05
Middle	4545	10 Yr	76.00	6793.89	6795.59	6.53	11.94	10.01	0.99	0.87	0.028	1.00	0.20	0.12
Middle	4545	50 Yr	170.00	6793.89	6796.54	8.27	22.78	12.58	0.96	1.01	0.027	1.34	0.40	0.35
Middle	4545	100 Yr	230.00	6793.89	6797.04	9.01	29.31	13.80	0.95	1.07	0.027	1.50	0.48	0.44
Middle	4460	2 Yr	58.00	6792.00	6792.92	2.36	24.68	31.08	0.46	0.15	0.030	0.15	0.03	
Middle	4460	5 Yr	59.00	6792.00	6792.93	2.38	24.94	31.16	0.46	0.15	0.030	0.15	0.03	
Middle	4460	10 Yr	76.00	6792.00	6793.06	2.66	28.88	32.33	0.49	0.18	0.030	0.18	0.04	
Middle	4460	50 Yr	170.00	6792.00	6793.49	4.01	43.59	36.17	0.61	0.34	0.029	0.37	0.12	0.04
Middle	4460	100 Yr	230.00	6792.00	6793.67	4.73	50.57	38.15	0.68	0.43	0.029	0.50	0.16	0.07
Middle	4368	2 Yr	58.00	6790.55	6792.49	1.56	35.81	53.34	0.26	0.43	0.071	0.69	0.28	0.05
Middle	4368	5 Yr	59.00	6790.55	6792.50	1.56	36.20	54.62	0.26	0.43	0.070	0.69	0.27	0.05

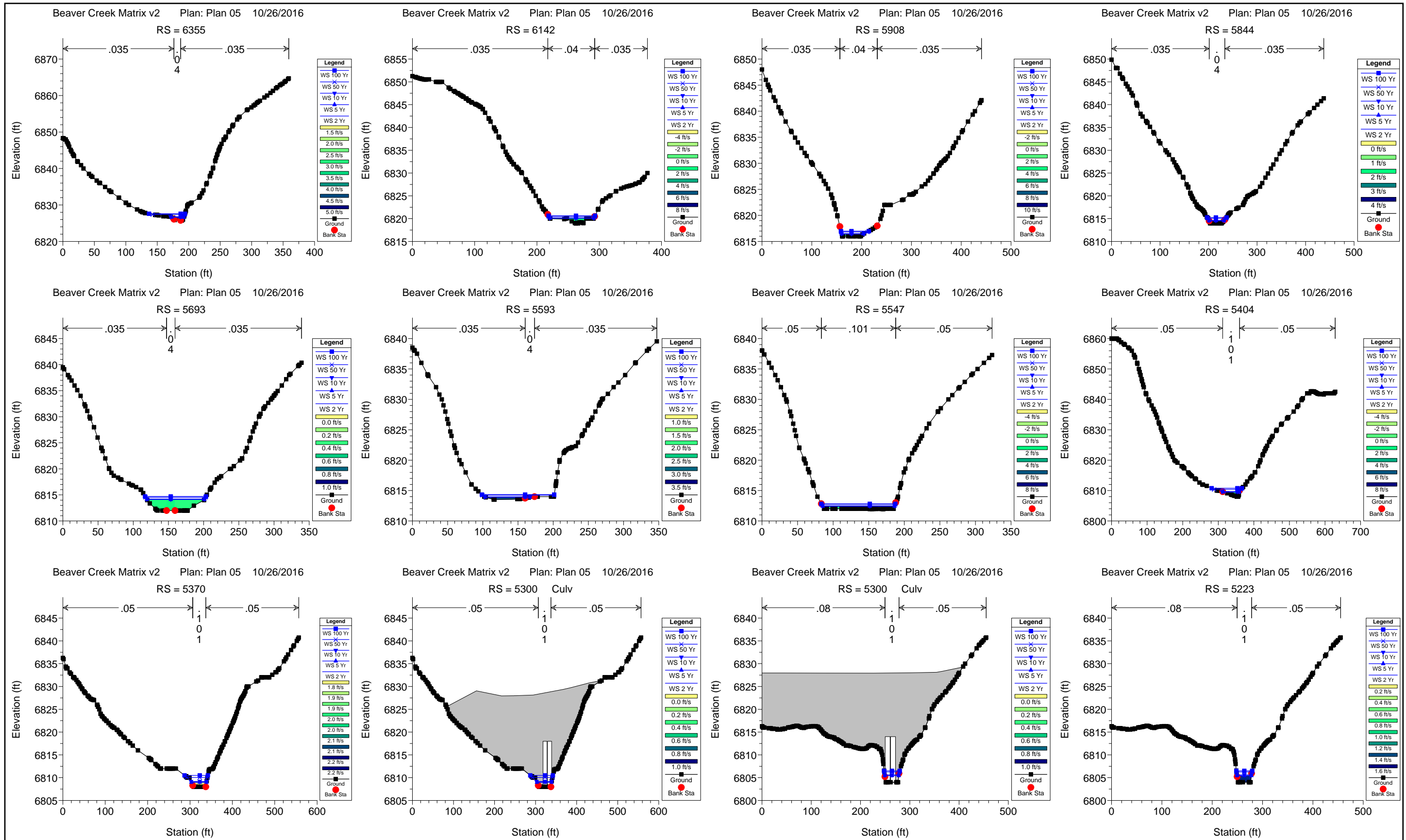
HEC-RAS Plan: Plan 05 River: Beaver Creek Reach: Middle (Continued)

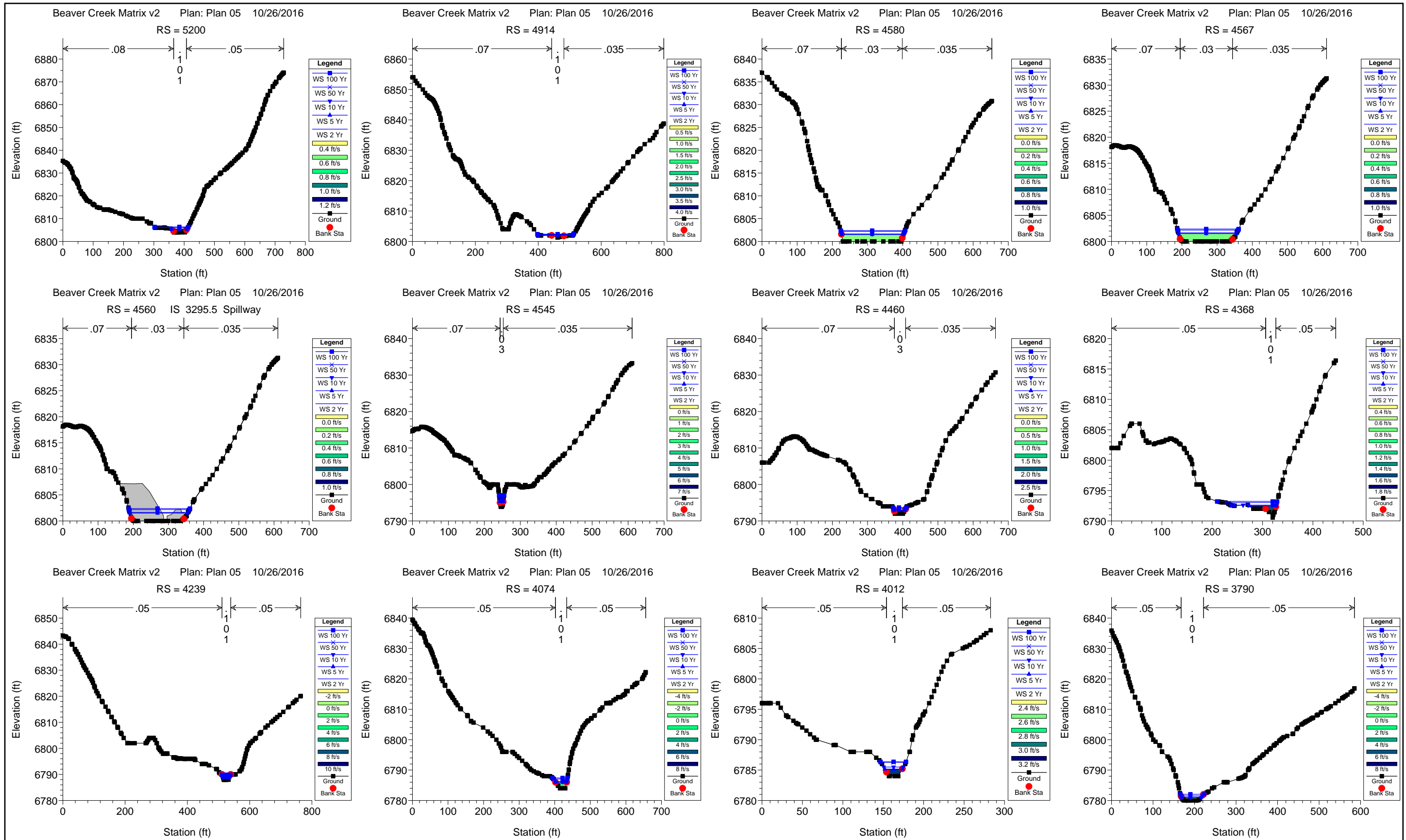
Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl	Shear Total (lb/sq ft)	Mann Wtd Total	Shear Chan (lb/sq ft)	Shear LOB (lb/sq ft)	Shear ROB (lb/sq ft)
Middle	4368	10 Yr	76.00	6790.55	6792.61	1.66	43.89	80.45	0.27	0.35	0.058	0.75	0.21	0.08
Middle	4368	50 Yr	170.00	6790.55	6793.03	1.92	83.88	102.03	0.27	0.47	0.062	0.92	0.36	0.19
Middle	4368	100 Yr	230.00	6790.55	6793.22	2.09	104.71	119.33	0.27	0.51	0.060	1.04	0.41	0.25
Middle	4239	2 Yr	58.00	6788.00	6788.74	4.61	12.57	19.01	1.00	7.08	0.101	7.08		
Middle	4239	5 Yr	59.00	6788.00	6788.75	4.63	12.74	19.06	1.00	7.11	0.101	7.11		
Middle	4239	10 Yr	76.00	6788.00	6788.88	4.98	15.28	19.96	1.00	7.85	0.101	7.85		
Middle	4239	50 Yr	170.00	6788.00	6789.44	6.15	27.66	23.74	1.00	10.43	0.101	10.43		
Middle	4239	100 Yr	230.00	6788.00	6789.89	5.90	38.99	26.69	0.86	8.91	0.101	8.91		
Middle	4074	2 Yr	58.00	6784.00	6785.97	1.29	45.03	31.07	0.19	0.43	0.101	0.43		
Middle	4074	5 Yr	59.00	6784.00	6785.98	1.30	45.52	31.20	0.19	0.43	0.101	0.43		
Middle	4074	10 Yr	76.00	6784.00	6786.21	1.44	52.70	32.70	0.20	0.49	0.098	0.51	0.03	0.03
Middle	4074	50 Yr	170.00	6784.00	6787.06	2.08	82.94	38.65	0.23	0.78	0.091	0.92	0.18	0.16
Middle	4074	100 Yr	230.00	6784.00	6787.42	2.41	97.36	42.39	0.25	0.94	0.088	1.19	0.25	0.25
Middle	4012	2 Yr	58.00	6784.00	6785.13	3.12	18.70	21.34	0.57	2.68	0.097	2.87	0.69	
Middle	4012	5 Yr	59.00	6784.00	6785.16	3.09	19.21	21.54	0.56	2.60	0.097	2.80	0.70	
Middle	4012	10 Yr	76.00	6784.00	6785.50	2.83	27.09	24.41	0.44	1.82	0.092	2.12	0.67	0.23
Middle	4012	50 Yr	170.00	6784.00	6786.28	3.51	48.58	30.91	0.43	2.12	0.084	2.81	1.02	0.76
Middle	4012	100 Yr	230.00	6784.00	6786.36	4.52	51.08	31.58	0.54	3.43	0.084	4.58	1.67	1.29
Middle	3790	2 Yr	58.00	6780.00	6781.04	1.35	42.89	47.84	0.25	0.55	0.101	0.55		
Middle	3790	5 Yr	59.00	6780.00	6781.04	1.37	42.99	47.85	0.26	0.56	0.101	0.56		
Middle	3790	10 Yr	76.00	6780.00	6781.05	1.74	43.76	47.99	0.32	0.90	0.101	0.90		
Middle	3790	50 Yr	170.00	6780.00	6781.52	2.55	66.80	51.77	0.39	1.71	0.101	1.72	0.07	
Middle	3790	100 Yr	230.00	6780.00	6782.04	2.43	94.87	57.30	0.32	1.35	0.098	1.42	0.24	0.03
Middle	3487	2 Yr	58.00	6777.50	6778.91	1.06	54.74	58.62	0.19	0.31	0.097	0.33	0.04	0.09
Middle	3487	5 Yr	59.00	6777.50	6778.93	1.06	55.94	58.83	0.19	0.30	0.097	0.32	0.05	0.09
Middle	3487	10 Yr	76.00	6777.50	6779.27	1.00	76.28	62.26	0.15	0.24	0.095	0.26	0.06	0.09
Middle	3487	50 Yr	170.00	6777.50	6780.76	0.93	182.26	82.28	0.10	0.14	0.085	0.18	0.06	0.06
Middle	3487	100 Yr	230.00	6777.50	6781.55	0.90	251.75	94.14	0.08	0.11	0.081	0.15	0.05	0.06
Middle	3371	2 Yr	58.00	6776.00	6778.82	0.52	109.25	61.31	0.06	0.04	0.075	0.06	0.02	0.02
Middle	3371	5 Yr	59.00	6776.00	6778.85	0.52	110.60	61.53	0.06	0.04	0.075	0.06	0.02	0.02
Middle	3371	10 Yr	76.00	6776.00	6779.19	0.55	132.61	64.84	0.05	0.04	0.073	0.06	0.02	0.03
Middle	3371	50 Yr	170.00	6776.00	6780.72	0.63	268.86	119.86	0.05	0.03	0.062	0.07	0.02	0.03
Middle	3371	100 Yr	230.00	6776.00	6781.52	0.58	368.88	130.00	0.04	0.03	0.061	0.06	0.02	0.03
Middle	3340	BCP 03	Culvert											
Middle	3316	2 Yr	58.00	6772.73	6773.87	2.58	15.74	24.01	0.44	1.12	0.050	1.87	1.03	0.64
Middle	3316	5 Yr	59.00	6772.73	6773.89	2.55	16.26	26.26	0.43	1.01	0.048	1.81	0.99	0.53
Middle	3316	10 Yr	76.00	6772.73	6773.99	2.80	19.38	32.97	0.45	1.03	0.044	2.13	1.17	0.54
Middle	3316	50 Yr	170.00	6772.73	6774.41	3.29	34.56	38.61	0.45	1.44	0.045	2.66	1.56	1.01
Middle	3316	100 Yr	230.00	6772.73	6774.63	3.46	43.26	41.66	0.45	1.56	0.044	2.81	1.66	1.16
Middle	3198	2 Yr	58.00	6768.28	6769.76	3.10	20.03	24.00	0.48	0.41	0.040	0.63	0.32	0.23
Middle	3198	5 Yr	59.00	6768.28	6769.77	3.13	20.18	24.09	0.49	0.41	0.040	0.64	0.32	0.24
Middle	3198	10 Yr	76.00	6768.28	6769.93	3.39	24.11	26.17	0.50	0.46	0.040	0.72	0.36	0.28

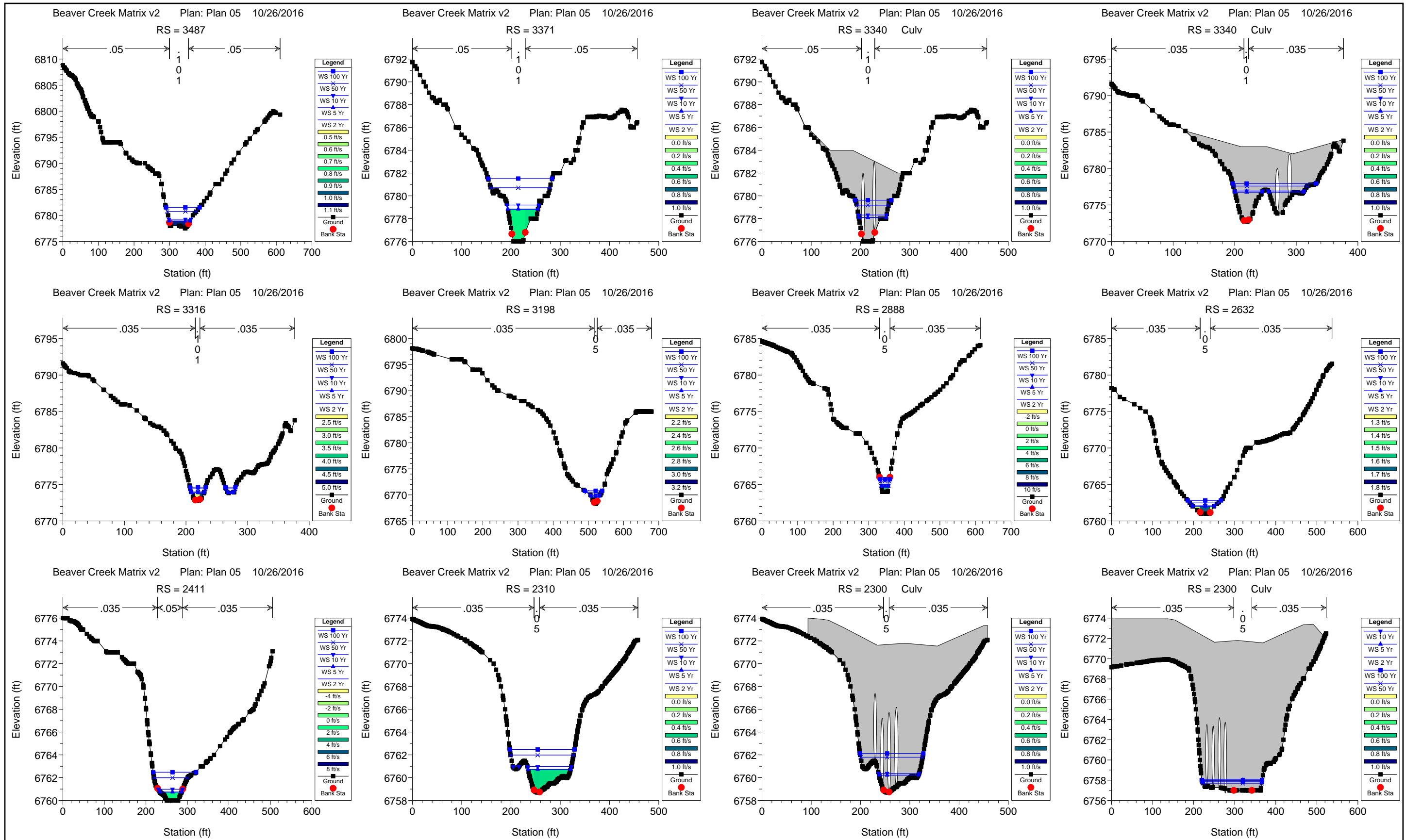
HEC-RAS Plan: Plan 05 River: Beaver Creek Reach: Middle (Continued)

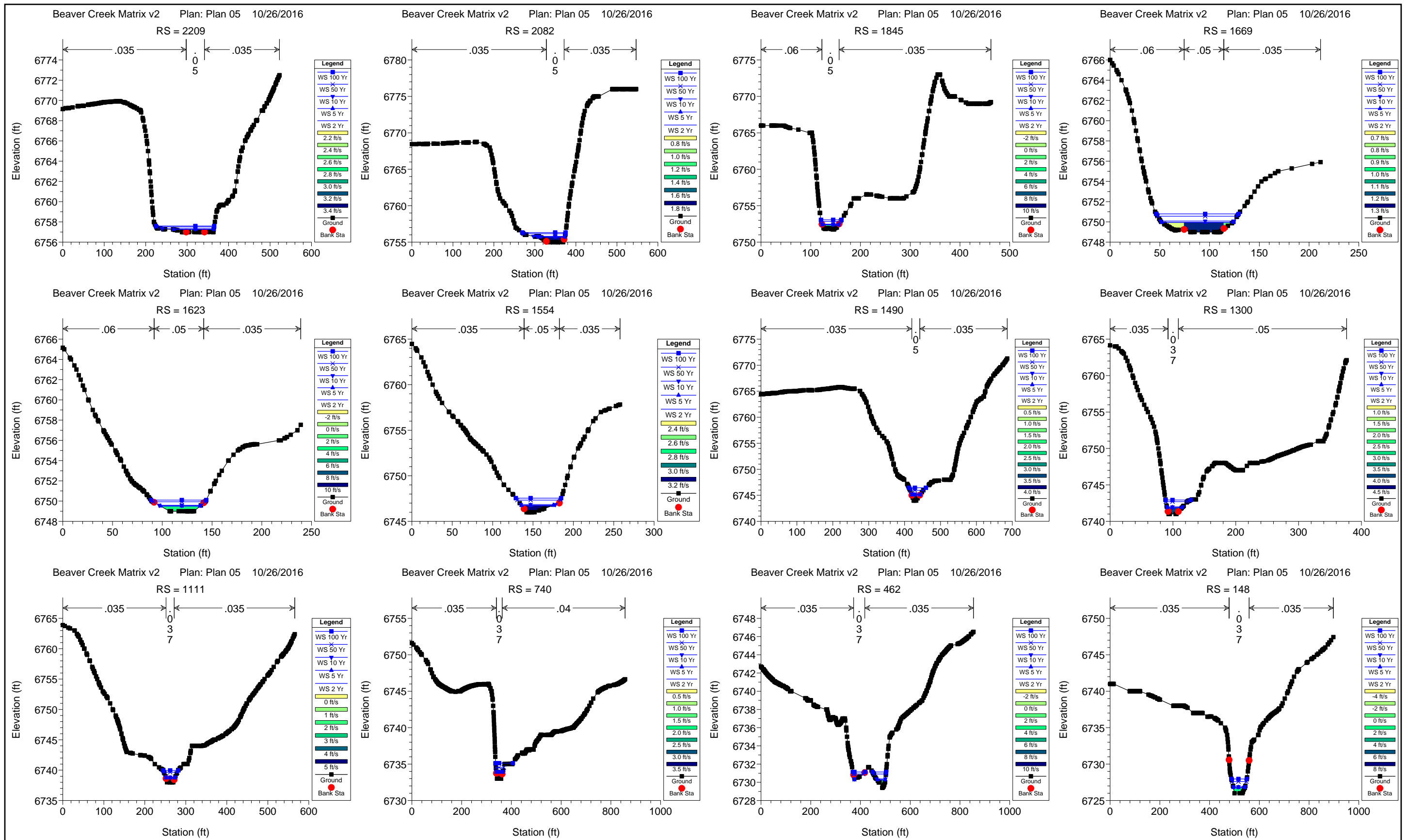
Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl	Shear Total (lb/sq ft)	Mann Wtd Total	Shear Chan (lb/sq ft)	Shear LOB (lb/sq ft)	Shear ROB (lb/sq ft)
Middle	1669	100 Yr	230.00	6749.00	6750.79	2.23	116.61	82.74	0.30	0.23	0.049	0.29	0.20	0.14
Middle	1623	2 Yr	58.00	6749.00	6749.50	3.64	15.94	39.35	1.01	1.27	0.050	1.27		
Middle	1623	5 Yr	59.00	6749.00	6749.51	3.61	16.33	39.64	0.99	1.24	0.050	1.24		
Middle	1623	10 Yr	76.00	6749.00	6749.59	3.89	19.53	41.94	1.00	1.38	0.050	1.38		
Middle	1623	50 Yr	170.00	6749.00	6749.93	4.79	35.55	52.10	1.00	1.75	0.049	1.82	0.06	0.15
Middle	1623	100 Yr	230.00	6749.00	6750.10	5.21	44.68	55.51	0.98	1.84	0.048	2.00	0.29	0.38
Middle	1554	2 Yr	58.00	6746.00	6746.75	3.20	18.29	39.14	0.80	0.87	0.049	0.92	0.35	
Middle	1554	5 Yr	59.00	6746.00	6746.76	3.21	18.54	39.39	0.80	0.87	0.049	0.92	0.36	
Middle	1554	10 Yr	76.00	6746.00	6746.84	3.46	22.15	42.88	0.83	0.98	0.049	1.04	0.45	
Middle	1554	50 Yr	170.00	6746.00	6747.33	3.72	46.31	53.30	0.67	0.89	0.047	0.99	0.49	0.17
Middle	1554	100 Yr	230.00	6746.00	6747.55	4.03	57.94	56.01	0.66	0.96	0.047	1.09	0.54	0.25
Middle	1490	2 Yr	58.00	6744.00	6745.08	3.57	16.27	23.13	0.74	0.96	0.049	1.00	0.05	0.04
Middle	1490	5 Yr	59.00	6744.00	6745.09	3.58	16.51	23.27	0.73	0.96	0.049	1.00	0.06	0.04
Middle	1490	10 Yr	76.00	6744.00	6745.23	3.86	19.89	25.28	0.73	0.98	0.047	1.10	0.14	0.13
Middle	1490	50 Yr	220.00	6744.00	6745.96	5.52	42.30	36.03	0.77	1.34	0.043	1.84	0.54	0.53
Middle	1490	100 Yr	320.00	6744.00	6746.46	5.58	62.94	46.99	0.68	1.09	0.041	1.72	0.54	0.52
Middle	1300	2 Yr	58.00	6741.00	6741.88	4.03	15.59	23.68	0.78	0.53	0.034	0.67	0.20	0.22
Middle	1300	5 Yr	59.00	6741.00	6741.88	4.07	15.74	23.78	0.78	0.54	0.034	0.68	0.21	0.22
Middle	1300	10 Yr	76.00	6741.00	6741.99	4.56	18.42	25.40	0.83	0.63	0.034	0.82	0.27	0.28
Middle	1300	50 Yr	220.00	6741.00	6742.71	6.69	39.69	34.16	0.92	1.02	0.035	1.47	0.62	0.61
Middle	1300	100 Yr	320.00	6741.00	6742.93	8.39	47.96	40.14	1.08	1.39	0.034	2.21	0.95	0.80
Middle	1111	2 Yr	58.00	6738.00	6738.72	4.41	13.33	21.91	0.96	0.80	0.036	0.87	0.07	0.20
Middle	1111	5 Yr	59.00	6738.00	6738.73	4.43	13.51	21.99	0.96	0.80	0.035	0.87	0.07	0.20
Middle	1111	10 Yr	76.00	6738.00	6738.85	4.77	16.32	23.17	0.94	0.85	0.035	0.95	0.14	0.26
Middle	1111	50 Yr	220.00	6738.00	6739.66	6.24	38.64	32.55	0.87	0.95	0.033	1.29	0.38	0.47
Middle	1111	100 Yr	320.00	6738.00	6739.95	7.37	48.63	36.25	0.94	1.20	0.033	1.70	0.54	0.65
Middle	740	2 Yr	58.00	6733.00	6733.87	3.20	18.33	26.18	0.65	0.40	0.035	0.43	0.04	0.07
Middle	740	5 Yr	59.00	6733.00	6733.88	3.23	18.51	26.27	0.65	0.40	0.035	0.44	0.04	0.07
Middle	740	10 Yr	76.00	6733.00	6733.99	3.63	21.39	27.57	0.68	0.47	0.035	0.53	0.07	0.11
Middle	740	50 Yr	220.00	6733.00	6734.54	6.16	37.92	32.02	0.91	1.07	0.034	1.31	0.39	0.45
Middle	740	100 Yr	320.00	6733.00	6735.13	6.16	62.18	69.48	0.76	0.51	0.026	1.16	0.42	0.16
Middle	462	2 Yr	58.00	6730.48	6730.26		14.91	32.71	0.00	0.68	0.035			0.68
Middle	462	5 Yr	59.00	6730.48	6730.27		15.17	32.96	0.00	0.68	0.035			0.68
Middle	462	10 Yr	76.00	6730.48	6730.37		18.76	36.21	0.00	0.71	0.035			0.71
Middle	462	50 Yr	220.00	6730.48	6730.91	2.11	52.60	88.75	0.71	0.57	0.031	0.27	0.06	0.81
Middle	462	100 Yr	320.00	6730.48	6731.14	2.76	74.60	103.79	0.73	0.62	0.033	0.39	0.17	0.82
Middle	148	2 Yr	58.00	6726.00	6726.78	1.94	29.84	45.83	0.42	0.17	0.037	0.17		
Middle	148	5 Yr	59.00	6726.00	6726.79	1.96	30.17	45.96	0.43	0.17	0.037	0.17		
Middle	148	10 Yr	76.00	6726.00	6726.91	2.12	35.77	48.06	0.43	0.19	0.037	0.19		
Middle	148	50 Yr	220.00	6726.00	6727.60	3.03	72.71	57.40	0.47	0.33	0.037	0.33		
Middle	148	100 Yr	320.00	6726.00	6727.96	3.41	93.79	61.83	0.49	0.39	0.037	0.39		

Beaver Creek Cross Section Diagrams









Black Forest Creek Hydraulic Results

HEC-RAS Plan: Plan 04 River: Black Forest Cr Reach: BF R1

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl	Shear Total (lb/sq ft)	Mann Wtd Total	Shear Chan (lb/sq ft)	Shear LOB (lb/sq ft)	Shear ROB (lb/sq ft)
BF R1	6766	2-Year	5.00	6820.00	6820.49	1.87	2.90	7.28	0.48	0.27	0.048	0.32	0.14	0.06
BF R1	6766	5-Year	24.00	6820.00	6821.08	3.68	8.15	10.61	0.63	0.68	0.050	0.95	0.44	0.33
BF R1	6766	10-Year	48.00	6820.00	6821.50	4.99	13.11	13.01	0.72	1.03	0.052	1.55	0.72	0.60
BF R1	6766	50-Year	160.00	6820.00	6822.64	7.04	48.89	47.51	0.77	1.00	0.058	2.56	1.21	0.70
BF R1	6766	100-Year	220.00	6820.00	6822.69	9.30	51.33	47.92	1.00	1.77	0.059	4.43	2.10	1.27
BF R1	6495	2-Year	5.00	6813.94	6814.11	1.98	2.77	24.49	1.03	0.56	0.054	0.57	0.50	
BF R1	6495	5-Year	24.00	6813.94	6814.33	3.24	8.57	30.10	1.00	0.93	0.053	1.08	0.68	0.24
BF R1	6495	10-Year	48.00	6813.94	6814.52	4.02	14.67	35.64	0.99	1.15	0.053	1.43	0.83	0.46
BF R1	6495	50-Year	160.00	6813.94	6815.10	5.60	43.17	63.08	0.94	1.34	0.055	2.15	0.99	0.81
BF R1	6495	100-Year	220.00	6813.94	6815.31	6.14	57.39	72.66	0.95	1.47	0.057	2.44	1.13	0.98
BF R1	5970	2-Year	5.00	6804.00	6804.27	0.91	5.74	22.41	0.31	0.08	0.050	0.09	0.04	0.02
BF R1	5970	5-Year	24.00	6804.00	6804.65	1.76	14.97	26.31	0.39	0.22	0.050	0.25	0.13	0.10
BF R1	5970	10-Year	48.00	6804.00	6804.94	2.39	23.00	29.29	0.43	0.34	0.051	0.41	0.20	0.17
BF R1	5970	50-Year	160.00	6804.00	6805.72	4.08	51.84	44.89	0.55	0.65	0.050	0.98	0.38	0.43
BF R1	5970	100-Year	220.00	6804.00	6806.03	4.80	68.50	89.48	0.59	0.48	0.039	1.29	0.22	0.58
BF R1	5820	2-Year	5.00	6802.00	6802.08	1.04	3.59	48.71	0.67	0.59	0.067	0.59	0.59	0.58
BF R1	5820	5-Year	24.00	6802.00	6802.21	1.81	10.11	50.92	0.70	1.22	0.067	1.27	1.22	1.19
BF R1	5820	10-Year	48.00	6802.00	6802.32	2.28	16.19	52.89	0.71	1.64	0.067	1.73	1.64	1.58
BF R1	5820	50-Year	160.00	6802.00	6802.70	3.39	37.36	59.25	0.71	2.67	0.066	2.97	2.64	2.50
BF R1	5820	100-Year	220.00	6802.00	6802.86	3.77	46.73	61.86	0.72	3.02	0.066	3.43	2.99	2.80
BF R1	5533	2-Year	5.00	6794.00	6794.24	0.54	7.75	34.64	0.19	0.10	0.071	0.11	0.10	0.07
BF R1	5533	5-Year	24.00	6794.00	6794.58	1.01	20.57	41.45	0.23	0.24	0.070	0.28	0.24	0.18
BF R1	5533	10-Year	48.00	6794.00	6794.86	1.30	33.38	51.25	0.25	0.31	0.068	0.41	0.34	0.20
BF R1	5533	50-Year	160.00	6794.00	6795.59	1.77	100.49	135.40	0.25	0.29	0.060	0.62	0.36	0.20
BF R1	5533	100-Year	220.00	6794.00	6795.70	2.06	116.08	141.72	0.28	0.39	0.060	0.82	0.48	0.29
BF R1	5448	2-Year	5.00	6792.71	6792.93	0.87	2.73	17.02	0.45	0.48	0.053	0.35		0.69
BF R1	5448	5-Year	24.00	6792.71	6793.24	1.82	9.81	25.85	0.49	0.88	0.061	1.01	0.51	1.04
BF R1	5448	10-Year	48.00	6792.71	6793.46	2.42	15.89	29.99	0.53	1.26	0.063	1.55	0.84	1.38
BF R1	5448	50-Year	160.00	6792.71	6793.93	4.29	31.95	38.45	0.72	3.01	0.063	4.07	2.25	3.12
BF R1	5448	100-Year	220.00	6792.71	6794.26	4.20	64.85	118.75	0.62	1.35	0.058	3.58	0.97	1.57
BF R1	5023	2-Year	5.00	6782.00	6782.15	2.03	2.84	20.02	0.93	0.53	0.056	0.55	0.47	0.49
BF R1	5023	5-Year	24.00	6782.00	6782.53	2.64	11.10	23.66	0.64	0.54	0.056	0.61	0.42	0.45
BF R1	5023	10-Year	48.00	6782.00	6782.80	3.45	18.42	31.28	0.68	0.66	0.054	0.91	0.58	0.43
BF R1	5023	50-Year	160.00	6782.00	6783.53	5.28	49.42	57.43	0.75	0.95	0.055	1.71	0.97	0.67
BF R1	5023	100-Year	220.00	6782.00	6783.82	5.71	67.78	70.00	0.75	1.00	0.058	1.89	1.04	0.73
BF R1	4508	2-Year	5.00	6774.64	6774.91	1.23	6.48	37.94	0.46	0.11	0.061	0.14	0.11	0.06
BF R1	4508	5-Year	24.00	6774.64	6775.17	2.23	18.88	54.66	0.57	0.26	0.063	0.36	0.27	0.17
BF R1	4508	10-Year	48.00	6774.64	6775.36	2.87	30.44	63.40	0.61	0.38	0.065	0.54	0.39	0.28
BF R1	4508	50-Year	160.00	6774.64	6775.90	4.45	70.38	86.12	0.71	0.72	0.068	1.06	0.71	0.61
BF R1	4508	100-Year	220.00	6774.64	6776.15	5.27	105.50	171.87	0.77	0.59	0.064	1.40	0.48	0.78
BF R1	4404	2-Year	5.00	6772.05	6772.18	2.42	3.02	30.24	1.29	0.64	0.062	0.70	0.35	0.80
BF R1	4404	5-Year	24.00	6772.05	6772.38	3.94	10.11	39.89	1.24	1.06	0.065	1.31	1.00	1.00
BF R1	4404	10-Year	48.00	6772.05	6772.55	4.86	17.28	47.81	1.24	1.31	0.065	1.73	1.35	1.18

HEC-RAS Plan: Plan 04 River: Black Forest Cr Reach: BF R1 (Continued)

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl	Shear Total (lb/sq ft)	Mann Wtd Total	Shear Chan (lb/sq ft)	Shear LOB (lb/sq ft)	Shear ROB (lb/sq ft)
BF R1	4404	50-Year	160.00	6772.05	6773.02	6.91	45.41	72.69	1.25	1.83	0.067	2.78	2.09	1.60
BF R1	4404	100-Year	220.00	6772.05	6773.19	7.51	59.18	82.23	1.25	1.98	0.067	3.11	2.27	1.75
BF R1	4107	2-Year	5.00	6752.00	6752.11	2.57	2.81	25.89	1.36	0.77	0.064	0.79	0.77	0.77
BF R1	4107	5-Year	24.00	6752.00	6752.33	4.12	8.60	27.61	1.27	1.34	0.064	1.41	1.31	1.31
BF R1	4107	10-Year	48.00	6752.00	6752.52	5.15	14.03	29.14	1.26	1.75	0.064	1.89	1.69	1.70
BF R1	4107	50-Year	160.00	6752.00	6753.13	7.58	33.51	34.10	1.26	2.71	0.065	3.16	2.58	2.58
BF R1	4107	100-Year	220.00	6752.00	6753.38	8.43	42.26	36.11	1.26	3.06	0.065	3.65	2.89	2.90
BF R1	4029	2-Year	5.00	6748.00	6750.13	0.08	109.73	65.57	0.01	0.00	0.069	0.00	0.00	0.00
BF R1	4029	5-Year	24.00	6748.00	6750.38	0.35	126.06	66.89	0.04	0.00	0.070	0.01	0.00	0.00
BF R1	4029	10-Year	48.00	6748.00	6750.60	0.62	141.05	68.07	0.07	0.01	0.070	0.02	0.01	0.01
BF R1	4029	50-Year	160.00	6748.00	6751.34	1.52	192.47	71.96	0.15	0.07	0.070	0.09	0.07	0.07
BF R1	4029	100-Year	220.00	6748.00	6751.65	1.88	215.25	73.62	0.17	0.10	0.071	0.13	0.10	0.10
BF R1	4013	2-Year	5.00	6748.00	6750.13	0.05	99.28	67.21	0.01	0.00	0.045	0.00	0.00	0.00
BF R1	4013	5-Year	24.00	6748.00	6750.38	0.21	116.00	68.36	0.03	0.00	0.044	0.00	0.00	0.00
BF R1	4013	10-Year	48.00	6748.00	6750.60	0.37	131.23	69.39	0.05	0.01	0.044	0.01	0.00	0.00
BF R1	4013	50-Year	160.00	6748.00	6751.33	0.89	183.30	72.70	0.10	0.03	0.044	0.03	0.01	0.01
BF R1	4013	100-Year	220.00	6748.00	6751.65	1.09	206.25	74.15	0.11	0.04	0.044	0.05	0.01	0.01
BF R1	3940		Culvert											
BF R1	3803	2-Year	5.00	6746.00	6746.16	0.94	5.33	34.19	0.42	0.17	0.060	0.17		
BF R1	3803	5-Year	24.00	6746.00	6746.46	1.51	15.94	37.21	0.40	0.31	0.060	0.31		
BF R1	3803	10-Year	48.00	6746.00	6746.68	1.96	24.66	39.39	0.43	0.43	0.059	0.45	0.08	
BF R1	3803	50-Year	160.00	6746.00	6747.32	3.23	51.67	45.45	0.51	0.88	0.058	0.99	0.34	0.05
BF R1	3803	100-Year	220.00	6746.00	6747.55	3.74	62.28	47.60	0.54	1.09	0.058	1.25	0.46	0.13
BF R1	3728	2-Year	5.00	6745.40	6744.54		3.62	10.02	0.00	0.76	0.100			0.76
BF R1	3728	5-Year	24.00	6745.40	6745.26		15.21	31.39	0.00	0.90	0.100			0.90
BF R1	3728	10-Year	48.00	6745.40	6745.54	0.87	26.82	46.92	0.50	1.00	0.096	0.17		1.08
BF R1	3728	50-Year	160.00	6745.40	6746.17	2.43	64.08	81.86	0.61	1.23	0.080	0.76	0.26	1.86
BF R1	3728	100-Year	220.00	6745.40	6746.38	3.03	81.64	83.09	0.64	1.48	0.085	1.06	0.56	2.08
BF R1	3642	2-Year	5.00	6742.00	6742.41	1.46	3.64	17.09	0.43	0.24	0.052	0.42	0.04	
BF R1	3642	5-Year	24.00	6742.00	6742.75	2.51	12.45	32.86	0.56	0.64	0.066	1.03	0.44	
BF R1	3642	10-Year	48.00	6742.00	6742.97	3.05	20.53	40.07	0.61	0.95	0.070	1.42	0.75	
BF R1	3642	50-Year	160.00	6742.00	6743.55	4.26	47.80	55.83	0.70	1.84	0.074	2.42	1.62	
BF R1	3642	100-Year	220.00	6742.00	6743.78	4.11	61.85	65.34	0.70	2.10	0.076	2.32	2.02	0.22
BF R1	3585	2-Year	5.00	6740.00	6740.11	2.11	2.37	22.32	1.14	0.96	0.060	0.96		
BF R1	3585	5-Year	24.00	6740.00	6740.33	3.18	7.71	25.97	0.99	1.39	0.058	1.50	0.41	
BF R1	3585	10-Year	48.00	6740.00	6740.52	3.95	12.75	29.06	0.99	1.77	0.058	2.01	0.72	
BF R1	3585	50-Year	160.00	6740.00	6741.09	5.66	31.87	37.80	0.97	2.55	0.058	3.21	1.46	0.46
BF R1	3585	100-Year	220.00	6740.00	6741.32	6.17	41.23	41.32	0.96	2.75	0.058	3.57	1.67	0.70
BF R1	3436	2-Year	5.00	6734.00	6734.34	0.89	5.60	18.87	0.29	0.12	0.060	0.12		
BF R1	3436	5-Year	24.00	6734.00	6734.63	2.08	11.81	22.95	0.49	0.48	0.058	0.53		0.14
BF R1	3436	10-Year	48.00	6734.00	6734.91	2.71	18.60	25.88	0.53	0.71	0.058	0.81		0.31
BF R1	3436	50-Year	160.00	6734.00	6735.65	4.43	40.07	32.43	0.63	1.41	0.058	1.74	0.30	0.84

HEC-RAS Plan: Plan 04 River: Black Forest Cr Reach: BF R1 (Continued)

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Vel Chnl	Flow Area	Top Width	Froude # Chl	Shear Total	Mann Wtd Total	Shear Chan	Shear LOB	Shear ROB
			(cfs)	(ft)	(ft)	(ft/s)	(sq ft)	(ft)		(lb/sq ft)		(lb/sq ft)	(lb/sq ft)	(lb/sq ft)
BF R1	3436	100-Year	220.00	6734.00	6735.92	5.04	49.36	34.70	0.66	1.68	0.058	2.13	0.49	1.04
BF R1	3324	2-Year	5.00	6732.00	6732.09	1.86	2.99	33.30	1.09	1.05	0.077	1.07	1.00	1.06
BF R1	3324	5-Year	24.00	6732.00	6732.43	1.87	14.76	37.05	0.51	0.60	0.077	0.65	0.52	0.63
BF R1	3324	10-Year	48.00	6732.00	6732.64	2.46	22.86	39.43	0.54	0.88	0.077	0.97	0.74	0.94
BF R1	3324	50-Year	160.00	6732.00	6733.29	3.85	50.95	46.75	0.60	1.58	0.076	1.89	1.26	1.74
BF R1	3324	100-Year	220.00	6732.00	6733.54	4.34	63.13	49.59	0.62	1.84	0.076	2.25	1.46	2.05
BF R1	3166	2-Year	5.00	6728.24	6728.57	1.19	4.41	25.29	0.42	0.22	0.058	0.31	0.08	0.02
BF R1	3166	5-Year	24.00	6728.24	6728.85	2.03	14.71	42.80	0.49	0.46	0.066	0.71	0.25	0.35
BF R1	3166	10-Year	48.00	6728.24	6729.06	2.53	24.13	48.33	0.52	0.67	0.069	0.98	0.43	0.57
BF R1	3166	50-Year	160.00	6728.24	6729.61	3.84	55.05	63.64	0.60	1.27	0.071	1.89	0.92	1.21
BF R1	3166	100-Year	220.00	6728.24	6729.81	4.29	68.38	68.54	0.62	1.51	0.072	2.24	1.11	1.48
BF R1	3025	2-Year	5.00	6722.84	6723.23	2.85	1.75	7.23	1.02	1.33	0.060	1.33		
BF R1	3025	5-Year	24.00	6722.84	6723.66	4.17	5.75	10.92	1.01	2.21	0.060	2.21		
BF R1	3025	10-Year	48.00	6722.84	6723.99	4.97	9.65	12.81	1.01	2.79	0.060	2.79		
BF R1	3025	50-Year	160.00	6722.84	6724.93	6.49	28.26	26.97	0.91	2.51	0.053	3.72	0.50	1.13
BF R1	3025	100-Year	220.00	6722.84	6725.27	6.98	38.28	31.99	0.89	2.55	0.054	4.03	0.80	1.38
BF R1	2995	2-Year	5.00	6722.00	6722.50	0.88	5.94	13.24	0.22	0.09	0.058	0.10	0.03	0.04
BF R1	2995	5-Year	24.00	6722.00	6723.01	1.98	13.36	15.99	0.35	0.33	0.058	0.40	0.15	0.18
BF R1	2995	10-Year	48.00	6722.00	6723.37	2.80	19.54	17.95	0.42	0.56	0.058	0.72	0.29	0.32
BF R1	2995	50-Year	160.00	6722.00	6724.32	5.06	38.72	22.65	0.59	1.41	0.059	1.98	0.87	0.92
BF R1	2995	100-Year	220.00	6722.00	6724.65	5.93	46.48	24.27	0.64	1.81	0.059	2.59	1.14	1.21
BF R1	2965	2-Year	5.00	6722.00	6722.14	2.26	2.22	16.84	1.10	1.02	0.060	1.02		
BF R1	2965	5-Year	24.00	6722.00	6722.40	3.50	6.86	18.24	1.01	1.73	0.060	1.73		
BF R1	2965	10-Year	48.00	6722.00	6722.63	4.29	11.19	19.46	1.00	2.26	0.060	2.26		
BF R1	2965	50-Year	160.00	6722.00	6723.34	6.08	26.31	23.24	1.01	3.64	0.060	3.64		
BF R1	2965	100-Year	220.00	6722.00	6723.63	6.62	33.24	24.77	1.01	4.07	0.060	4.08		
BF R1	2939	2-Year	5.00	6718.85	6722.12	0.08	67.23	20.80	0.01	0.00	0.051	0.00	0.00	0.00
BF R1	2939	5-Year	24.00	6718.85	6722.34	0.34	71.85	20.83	0.03	0.01	0.050	0.01	0.00	0.00
BF R1	2939	10-Year	48.00	6718.85	6722.55	0.64	76.22	20.85	0.06	0.02	0.050	0.03	0.00	0.00
BF R1	2939	50-Year	160.00	6718.85	6723.24	1.79	90.66	20.94	0.15	0.14	0.048	0.20	0.00	0.01
BF R1	2939	100-Year	220.00	6718.85	6723.51	2.31	96.44	20.98	0.19	0.23	0.048	0.33	0.00	0.02
BF R1	2840		Culvert											
BF R1	2791	2-Year	5.00	6717.14	6722.12	0.05	109.02	23.13	0.00	0.00	0.075	0.00	0.00	0.00
BF R1	2791	5-Year	24.00	6717.14	6722.34	0.22	114.17	23.24	0.02	0.00	0.074	0.01	0.00	0.00
BF R1	2791	10-Year	48.00	6717.14	6722.55	0.42	119.06	23.35	0.03	0.02	0.074	0.02	0.00	0.00
BF R1	2791	50-Year	160.00	6717.14	6723.23	1.25	135.17	23.68	0.09	0.13	0.072	0.20	0.03	0.02
BF R1	2791	100-Year	220.00	6717.14	6723.50	1.64	141.59	23.86	0.11	0.22	0.072	0.33	0.05	0.03
BF R1	2769	2-Year	5.00	6720.22	6722.12	0.17	29.21	32.95	0.03	0.00	0.046	0.00	0.00	0.00
BF R1	2769	5-Year	24.00	6720.22	6722.33	0.68	36.74	37.69	0.11	0.02	0.045	0.03	0.01	0.00
BF R1	2769	10-Year	48.00	6720.22	6722.52	1.17	44.61	43.03	0.17	0.06	0.044	0.09	0.02	0.01
BF R1	2769	50-Year	160.00	6720.22	6723.13	2.55	77.08	60.18	0.31	0.23	0.045	0.36	0.11	0.10
BF R1	2769	100-Year	220.00	6720.22	6723.37	3.04	91.93	63.87	0.35	0.31	0.047	0.50	0.17	0.14

HEC-RAS Plan: Plan 04 River: Black Forest Cr Reach: BF R1 (Continued)

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl	Shear Total (lb/sq ft)	Mann Wtd Total	Shear Chan (lb/sq ft)	Shear LOB (lb/sq ft)	Shear ROB (lb/sq ft)
BF R1	2743	2-Year	5.00	6721.85	6722.10	0.95	5.30	49.91	0.51	0.13	0.050	0.13	0.06	0.06
BF R1	2743	5-Year	24.00	6721.85	6722.24	1.96	12.45	51.32	0.69	0.42	0.050	0.43	0.20	0.20
BF R1	2743	10-Year	48.00	6721.85	6722.35	2.70	18.22	52.43	0.79	0.70	0.050	0.73	0.34	0.35
BF R1	2743	50-Year	160.00	6721.85	6722.68	4.70	35.82	55.68	1.00	1.66	0.050	1.77	0.85	0.86
BF R1	2743	100-Year	220.00	6721.85	6722.83	5.25	44.59	57.23	1.01	1.91	0.050	2.06	1.00	1.00
BF R1	2693	2-Year	5.00	6720.00	6720.06	1.57	3.19	55.01	1.15	0.45	0.050	0.45		0.22
BF R1	2693	5-Year	24.00	6720.00	6720.18	2.43	9.91	55.64	1.01	0.73	0.050	0.74	0.32	0.36
BF R1	2693	10-Year	48.00	6720.00	6720.29	3.02	16.03	56.22	0.99	0.96	0.050	0.98	0.42	0.47
BF R1	2693	50-Year	160.00	6720.00	6720.64	4.53	35.98	58.14	1.00	1.63	0.050	1.69	0.69	0.81
BF R1	2693	100-Year	220.00	6720.00	6720.79	5.00	45.06	59.10	0.99	1.83	0.050	1.91	0.77	0.91
BF R1	2642	2-Year	5.00	6718.00	6718.12	0.72	8.69	76.53	0.37	0.10	0.074	0.11	0.11	0.09
BF R1	2642	5-Year	24.00	6718.00	6718.30	1.30	23.53	82.11	0.41	0.24	0.073	0.25	0.25	0.18
BF R1	2642	10-Year	48.00	6718.00	6718.47	1.66	37.27	86.97	0.43	0.33	0.073	0.36	0.35	0.24
BF R1	2642	50-Year	160.00	6718.00	6719.03	2.37	90.62	102.26	0.41	0.48	0.073	0.56	0.54	0.34
BF R1	2642	100-Year	220.00	6718.00	6719.28	2.56	116.42	107.83	0.40	0.52	0.073	0.62	0.59	0.37
BF R1	2585	2-Year	5.00	6716.01	6716.28	2.31	2.37	17.00	1.04	0.92	0.062	1.01	0.32	1.45
BF R1	2585	5-Year	24.00	6716.01	6716.55	4.06	7.47	20.39	1.10	1.92	0.068	2.23	1.43	2.02
BF R1	2585	10-Year	48.00	6716.01	6716.79	5.05	12.59	23.30	1.09	2.43	0.069	2.98	1.96	2.33
BF R1	2585	50-Year	160.00	6716.01	6717.49	7.26	31.89	31.86	1.10	3.55	0.071	4.85	3.03	3.18
BF R1	2585	100-Year	220.00	6716.01	6717.76	7.95	41.06	35.13	1.10	3.89	0.071	5.47	3.36	3.47
BF R1	2521	2-Year	5.00	6712.64	6714.27	0.10	49.34	35.55	0.02	0.00	0.060	0.00		
BF R1	2521	5-Year	24.00	6712.64	6715.61	0.24	102.52	43.32	0.03	0.00	0.059	0.00	0.00	
BF R1	2521	10-Year	48.00	6712.64	6716.43	0.35	140.36	49.42	0.03	0.01	0.056	0.01	0.00	0.00
BF R1	2521	50-Year	160.00	6712.64	6717.30	0.91	186.40	57.01	0.08	0.04	0.055	0.05	0.02	0.01
BF R1	2521	100-Year	220.00	6712.64	6717.58	1.17	202.89	59.70	0.10	0.07	0.054	0.09	0.02	0.02
BF R1	2500		Culvert											
BF R1	2492	2-Year	5.00	6712.20	6714.19	0.46	10.84	10.70	0.08	0.03	0.070	0.03		
BF R1	2492	5-Year	24.00	6712.20	6714.61	1.54	16.27	15.73	0.23	0.23	0.061	0.30	0.02	0.05
BF R1	2492	10-Year	48.00	6712.20	6714.92	2.42	22.49	25.42	0.33	0.41	0.056	0.70	0.11	0.14
BF R1	2492	50-Year	160.00	6712.20	6715.79	4.38	47.02	60.94	0.48	1.23	0.065	1.99	0.55	0.99
BF R1	2492	100-Year	220.00	6712.20	6716.27	3.86	102.19	101.78	0.39	0.52	0.063	1.46	0.29	0.50
BF R1	2468	2-Year	5.00	6714.00	6714.09	2.33	2.64	30.05	1.37	1.20	0.073	1.23	1.19	1.19
BF R1	2468	5-Year	24.00	6714.00	6714.39	2.49	12.53	38.80	0.71	0.72	0.069	0.87	0.81	0.47
BF R1	2468	10-Year	48.00	6714.00	6714.72	2.47	26.38	44.13	0.51	0.58	0.072	0.69	0.63	0.44
BF R1	2468	50-Year	160.00	6714.00	6715.71	3.00	75.51	54.76	0.40	0.62	0.073	0.77	0.65	0.52
BF R1	2468	100-Year	220.00	6714.00	6716.14	3.69	104.56	90.16	0.44	0.58	0.070	1.08	0.46	0.66
BF R1	2405	2-Year	5.00	6712.51	6713.20	1.10	5.10	13.33	0.27	0.12	0.056	0.16	0.06	0.03
BF R1	2405	5-Year	24.00	6712.51	6713.80	2.04	15.09	20.18	0.34	0.28	0.059	0.41	0.20	0.15
BF R1	2405	10-Year	48.00	6712.51	6714.19	2.70	23.92	23.83	0.39	0.43	0.062	0.65	0.34	0.26
BF R1	2405	50-Year	160.00	6712.51	6715.12	4.66	48.81	30.12	0.53	1.09	0.065	1.65	0.93	0.76
BF R1	2405	100-Year	220.00	6712.51	6715.44	5.41	58.85	32.32	0.58	1.40	0.065	2.13	1.21	0.99

HEC-RAS Plan: Plan 04 River: Black Forest Cr Reach: BF R1 (Continued)

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl	Shear Total (lb/sq ft)	Mann Wtd Total	Shear Chan (lb/sq ft)	Shear LOB (lb/sq ft)	Shear ROB (lb/sq ft)
BF R1	2255	2-Year	5.00	6710.86	6711.22	2.58	2.12	11.64	0.95	0.89	0.057	1.11	0.36	
BF R1	2255	5-Year	24.00	6710.86	6711.57	4.24	7.43	18.39	0.98	1.53	0.062	2.20	1.08	0.69
BF R1	2255	10-Year	48.00	6710.86	6711.89	4.96	14.40	25.43	0.92	1.63	0.066	2.60	1.25	0.99
BF R1	2255	50-Year	160.00	6710.86	6712.73	6.00	53.28	59.60	0.80	1.56	0.077	3.05	1.46	1.16
BF R1	2255	100-Year	220.00	6710.86	6713.02	6.41	72.23	70.65	0.79	1.66	0.080	3.30	1.58	1.29
BF R1	2170	2-Year	5.00	6710.00	6710.38	0.75	12.45	40.12	0.21	0.04	0.081	0.05	0.05	0.04
BF R1	2170	5-Year	24.00	6710.00	6710.76	1.63	30.54	55.11	0.33	0.15	0.084	0.20	0.15	0.13
BF R1	2170	10-Year	48.00	6710.00	6711.02	2.28	45.88	65.00	0.40	0.25	0.085	0.36	0.26	0.22
BF R1	2170	50-Year	160.00	6710.00	6711.68	3.93	97.34	91.15	0.53	0.58	0.088	0.92	0.60	0.51
BF R1	2170	100-Year	220.00	6710.00	6711.91	4.52	119.63	101.07	0.58	0.72	0.089	1.16	0.74	0.63
BF R1	2132	2-Year	5.00	6710.00	6710.07	2.22	4.34	64.27	1.49	0.83	0.095	0.85	0.79	0.84
BF R1	2132	5-Year	24.00	6710.00	6710.19	3.91	12.09	68.66	1.60	1.79	0.095	1.89	1.61	1.82
BF R1	2132	10-Year	48.00	6710.00	6710.30	4.83	19.88	72.36	1.56	2.29	0.095	2.47	1.97	2.35
BF R1	2132	50-Year	160.00	6710.00	6710.64	7.12	46.95	83.82	1.56	3.61	0.095	4.15	2.91	3.79
BF R1	2132	100-Year	220.00	6710.00	6710.79	7.85	59.45	88.61	1.56	4.02	0.095	4.72	3.19	4.24
BF R1	2028	2-Year	5.00	6707.95	6708.16	0.47	19.19	119.94	0.19	0.03	0.093	0.04	0.03	0.03
BF R1	2028	5-Year	24.00	6707.95	6708.40	0.84	50.36	134.61	0.22	0.08	0.094	0.09	0.06	0.08
BF R1	2028	10-Year	48.00	6707.95	6708.60	1.11	78.93	158.80	0.24	0.11	0.093	0.14	0.08	0.13
BF R1	2028	50-Year	160.00	6707.95	6709.07	1.84	160.93	188.33	0.31	0.26	0.094	0.33	0.20	0.30
BF R1	2028	100-Year	220.00	6707.95	6709.25	2.09	196.78	198.58	0.32	0.31	0.094	0.41	0.25	0.37
BF R1	1811	2-Year	5.00	6706.00	6706.04	1.50	5.39	150.28	1.39	0.69	0.097	0.69	0.69	0.69
BF R1	1811	5-Year	24.00	6706.00	6706.10	2.73	14.30	153.79	1.57	1.64	0.097	1.67	1.63	1.66
BF R1	1811	10-Year	48.00	6706.00	6706.15	3.36	23.41	157.30	1.51	2.09	0.097	2.15	2.07	2.12
BF R1	1811	50-Year	160.00	6706.00	6706.43	3.96	68.50	173.63	1.07	1.96	0.097	2.12	1.92	2.04
BF R1	1811	100-Year	220.00	6706.00	6706.52	4.45	84.51	179.07	1.09	2.29	0.097	2.51	2.24	2.41
BF R1	1721	2-Year	5.00	6703.42	6703.74	0.79	6.32	32.53	0.32	0.11	0.060	0.11		
BF R1	1721	5-Year	24.00	6703.42	6704.10	1.08	28.08	133.73	0.27	0.06	0.043	0.15	0.02	0.05
BF R1	1721	10-Year	48.00	6703.42	6704.22	1.58	44.31	154.13	0.36	0.14	0.053	0.30	0.08	0.11
BF R1	1721	50-Year	160.00	6703.42	6704.52	2.65	109.07	269.65	0.49	0.33	0.063	0.74	0.25	0.33
BF R1	1721	100-Year	220.00	6703.42	6704.64	2.89	144.24	304.23	0.50	0.38	0.068	0.84	0.31	0.39
BF R1	1655	2-Year	5.00	6703.00	6703.21	0.75	9.29	80.21	0.29	0.06	0.057	0.10	0.03	0.03
BF R1	1655	5-Year	24.00	6703.00	6703.26	2.62	13.92	100.02	0.92	0.60	0.061	1.11	0.41	0.42
BF R1	1655	10-Year	48.00	6703.00	6703.43	2.16	46.41	263.74	0.58	0.26	0.070	0.63	0.22	0.26
BF R1	1655	50-Year	160.00	6703.00	6703.72	2.43	137.08	359.12	0.51	0.36	0.083	0.67	0.34	0.30
BF R1	1655	100-Year	220.00	6703.00	6703.81	2.76	170.37	382.50	0.54	0.46	0.087	0.84	0.44	0.38
BF R1	1600	2-Year	5.00	6702.00	6702.06	1.64	3.78	63.43	1.18	0.69	0.074	0.70	0.67	
BF R1	1600	5-Year	24.00	6702.00	6702.35	1.12	36.12	188.95	0.33	0.10	0.068	0.18	0.08	0.07
BF R1	1600	10-Year	48.00	6702.00	6702.41	1.80	47.79	217.62	0.50	0.24	0.072	0.45	0.20	0.17
BF R1	1600	50-Year	160.00	6702.00	6702.61	3.24	96.07	271.03	0.73	0.74	0.082	1.26	0.66	0.53
BF R1	1600	100-Year	220.00	6702.00	6702.74	3.34	132.87	310.01	0.69	0.74	0.085	1.26	0.68	0.55
BF R1	1492	2-Year	5.00	6700.00	6700.28	0.67	11.96	60.90	0.23	0.06	0.081	0.07	0.05	0.02
BF R1	1492	5-Year	24.00	6700.00	6700.26	3.39	11.17	58.96	1.22	1.48	0.081	1.88	1.41	0.51
BF R1	1492	10-Year	48.00	6700.00	6700.58	2.49	38.42	120.19	0.59	0.44	0.082	0.76	0.40	0.32

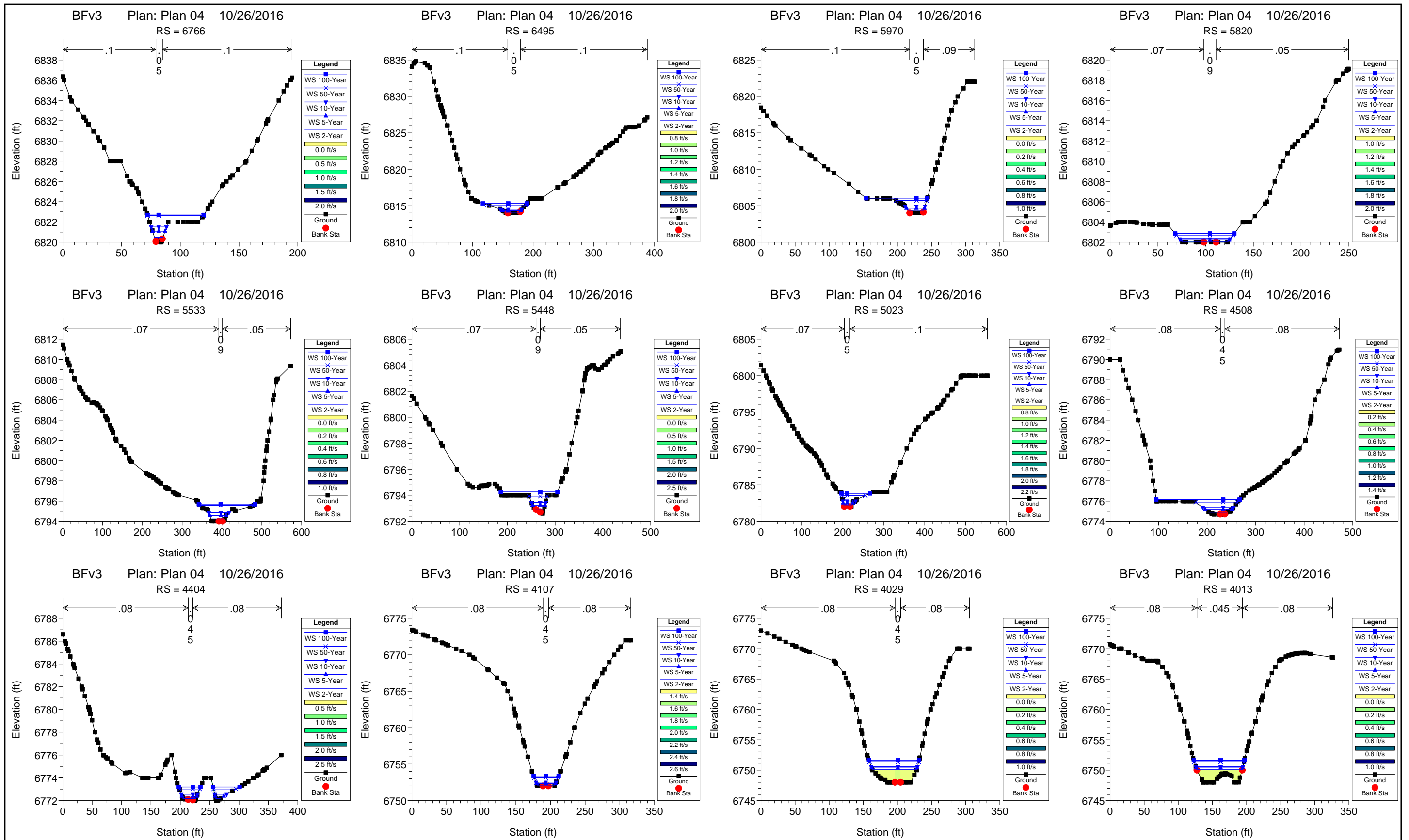
HEC-RAS Plan: Plan 04 River: Black Forest Cr Reach: BF R1 (Continued)

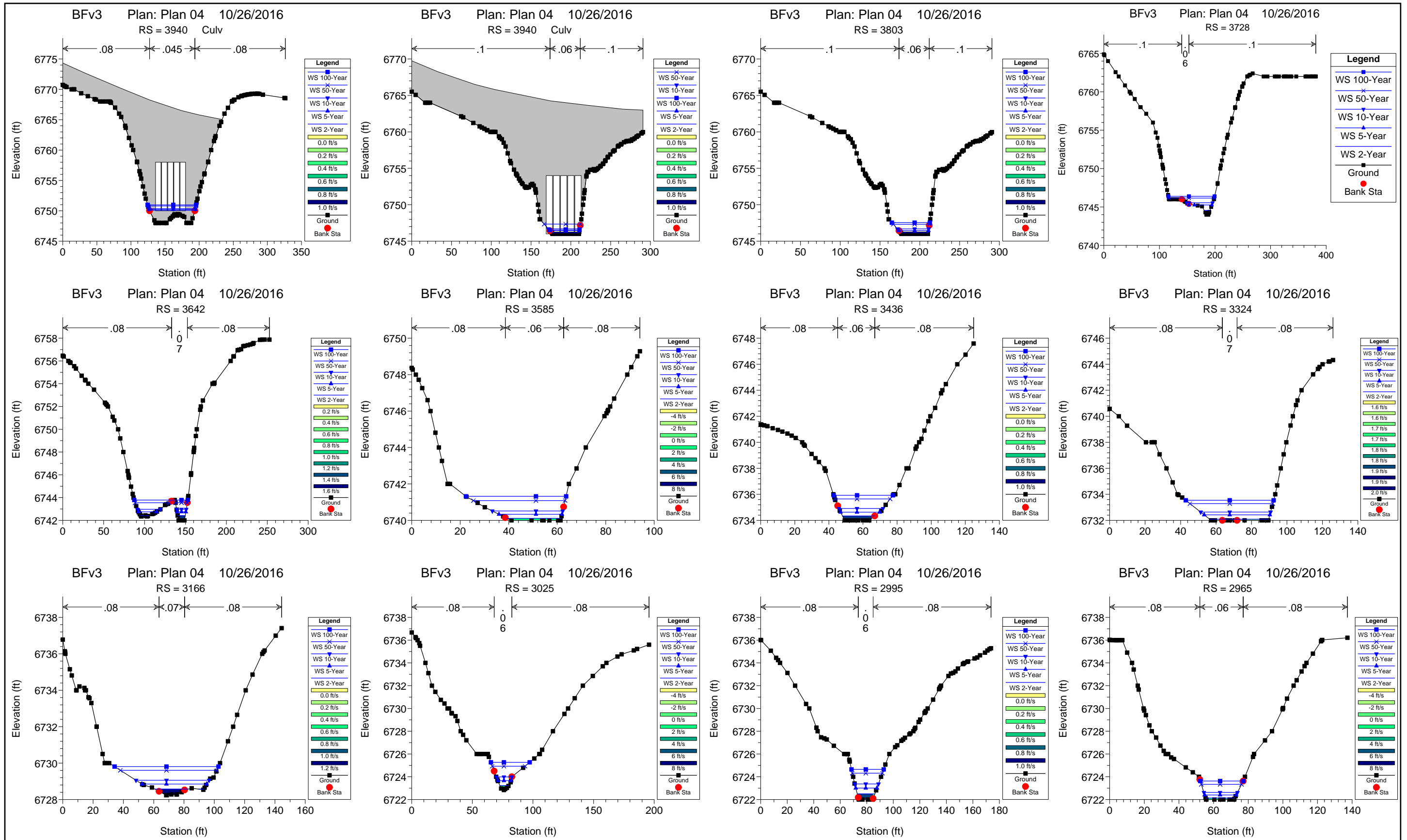
Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl	Shear Total (lb/sq ft)	Mann Wtd Total	Shear Chan (lb/sq ft)	Shear LOB (lb/sq ft)	Shear ROB (lb/sq ft)
BF R1	1492	50-Year	160.00	6700.00	6701.15	2.69	127.64	230.90	0.45	0.35	0.080	0.71	0.32	0.35
BF R1	1492	100-Year	220.00	6700.00	6701.29	3.04	162.96	279.69	0.48	0.40	0.081	0.87	0.38	0.43
BF R1	1378	2-Year	5.00	6699.00	6699.11	1.13	4.48	136.04	0.62	0.26	0.058	0.28	0.06	0.04
BF R1	1378	5-Year	24.00	6699.00	6699.16	0.33	54.93	150.44	0.15	0.05	0.082	0.02	0.07	0.00
BF R1	1378	10-Year	48.00	6699.00	6699.16	0.66	54.93	150.44	0.30	0.20	0.082	0.08	0.26	0.02
BF R1	1378	50-Year	160.00	6699.00	6699.33	2.09	86.59	219.64	0.65	0.79	0.078	0.65	0.90	0.22
BF R1	1378	100-Year	220.00	6699.00	6699.46	2.45	119.68	260.45	0.64	0.80	0.080	0.79	0.88	0.29
BF R1	1287	2-Year	5.00	6695.00	6695.29	1.90	2.63	11.09	0.69	0.60	0.060	0.60		
BF R1	1287	5-Year	24.00	6695.00	6695.66	3.22	9.74	52.49	0.74	0.39	0.036	1.26	0.13	0.33
BF R1	1287	10-Year	48.00	6695.00	6695.84	4.01	21.83	85.14	0.81	0.60	0.053	1.79	0.40	0.57
BF R1	1287	50-Year	160.00	6695.00	6696.23	4.95	77.12	173.10	0.81	0.92	0.076	2.38	0.81	0.79
BF R1	1287	100-Year	220.00	6695.00	6696.31	5.66	92.07	178.60	0.89	1.26	0.079	3.03	1.14	0.98
BF R1	1199	2-Year	5.00	6691.00	6691.27	2.17	2.65	12.07	0.78	0.71	0.065	0.78	0.63	
BF R1	1199	5-Year	24.00	6691.00	6691.59	4.21	7.41	17.94	1.00	1.63	0.064	2.20	1.43	0.67
BF R1	1199	10-Year	48.00	6691.00	6692.06	4.36	19.42	50.77	0.76	0.71	0.055	1.92	0.44	0.65
BF R1	1199	50-Year	160.00	6691.00	6692.59	6.23	55.02	82.07	0.88	1.47	0.073	3.41	1.28	1.20
BF R1	1199	100-Year	220.00	6691.00	6692.77	6.86	70.53	92.10	0.92	1.76	0.076	3.99	1.60	1.42
BF R1	1031	2-Year	5.00	6683.00	6683.37	1.67	3.28	12.45	0.61	0.70	0.082	0.63		0.79
BF R1	1031	5-Year	24.00	6683.00	6683.74	3.18	9.29	19.84	0.74	1.39	0.076	1.69	0.45	1.59
BF R1	1031	10-Year	48.00	6683.00	6684.09	3.70	17.43	25.42	0.68	1.45	0.077	1.95	0.76	1.61
BF R1	1031	50-Year	160.00	6683.00	6685.09	5.01	45.44	30.88	0.64	2.13	0.083	2.81	1.64	2.12
BF R1	1031	100-Year	220.00	6683.00	6685.50	5.42	58.56	32.63	0.63	2.32	0.084	3.07	1.88	2.26
BF R1	898	2-Year	5.00	6679.08	6679.61	1.53	3.38	10.82	0.45	0.39	0.065	0.46	0.12	0.07
BF R1	898	5-Year	24.00	6679.08	6680.16	2.62	11.13	16.97	0.48	0.71	0.068	0.99	0.43	0.38
BF R1	898	10-Year	48.00	6679.08	6680.48	3.61	17.12	19.59	0.57	1.18	0.071	1.69	0.81	0.73
BF R1	898	50-Year	160.00	6679.08	6681.38	6.02	37.78	25.82	0.73	2.63	0.077	3.91	2.03	1.95
BF R1	898	100-Year	220.00	6679.08	6681.67	7.02	45.51	27.43	0.79	3.41	0.078	5.08	2.67	2.61
BF R1	775	2-Year	5.00	6675.66	6675.84	1.43	3.51	74.56	0.71	0.41	0.060	0.41		
BF R1	775	5-Year	24.00	6675.66	6676.00	2.87	8.65	89.92	1.03	1.19	0.057	1.35		0.33
BF R1	775	10-Year	48.00	6675.66	6676.14	3.38	16.61	107.47	0.97	1.22	0.059	1.61	0.49	0.65
BF R1	775	50-Year	160.00	6675.66	6676.53	5.01	39.55	113.49	1.01	2.36	0.067	2.79	1.31	1.87
BF R1	775	100-Year	220.00	6675.66	6676.70	5.48	50.34	116.22	0.99	2.66	0.068	3.12	1.51	2.20
BF R1	719	2-Year	5.00	6673.00	6673.22	1.42	3.51	24.12	0.66	0.39	0.060	0.39		
BF R1	719	5-Year	24.00	6673.00	6673.48	1.95	13.06	45.59	0.59	0.46	0.056	0.55	0.19	0.13
BF R1	719	10-Year	48.00	6673.00	6673.61	2.74	19.75	54.34	0.70	0.75	0.056	0.98	0.36	0.30
BF R1	719	50-Year	160.00	6673.00	6674.11	3.99	51.61	71.11	0.71	1.22	0.063	1.64	0.85	0.80
BF R1	719	100-Year	220.00	6673.00	6674.30	4.41	65.71	74.01	0.72	1.43	0.066	1.88	1.05	1.01
BF R1	635	2-Year	5.00	6670.55	6670.79	1.18	4.96	37.62	0.47	0.17	0.055	0.25	0.07	0.07
BF R1	635	5-Year	24.00	6670.55	6670.98	2.40	13.20	44.77	0.68	0.61	0.066	0.80	0.38	0.44
BF R1	635	10-Year	48.00	6670.55	6671.20	2.80	24.32	53.42	0.63	0.71	0.070	0.94	0.45	0.59
BF R1	635	50-Year	160.00	6670.55	6671.69	4.54	51.89	59.45	0.76	1.62	0.076	2.03	1.11	1.51
BF R1	635	100-Year	220.00	6670.55	6671.88	5.13	63.75	61.76	0.80	1.97	0.077	2.46	1.36	1.87

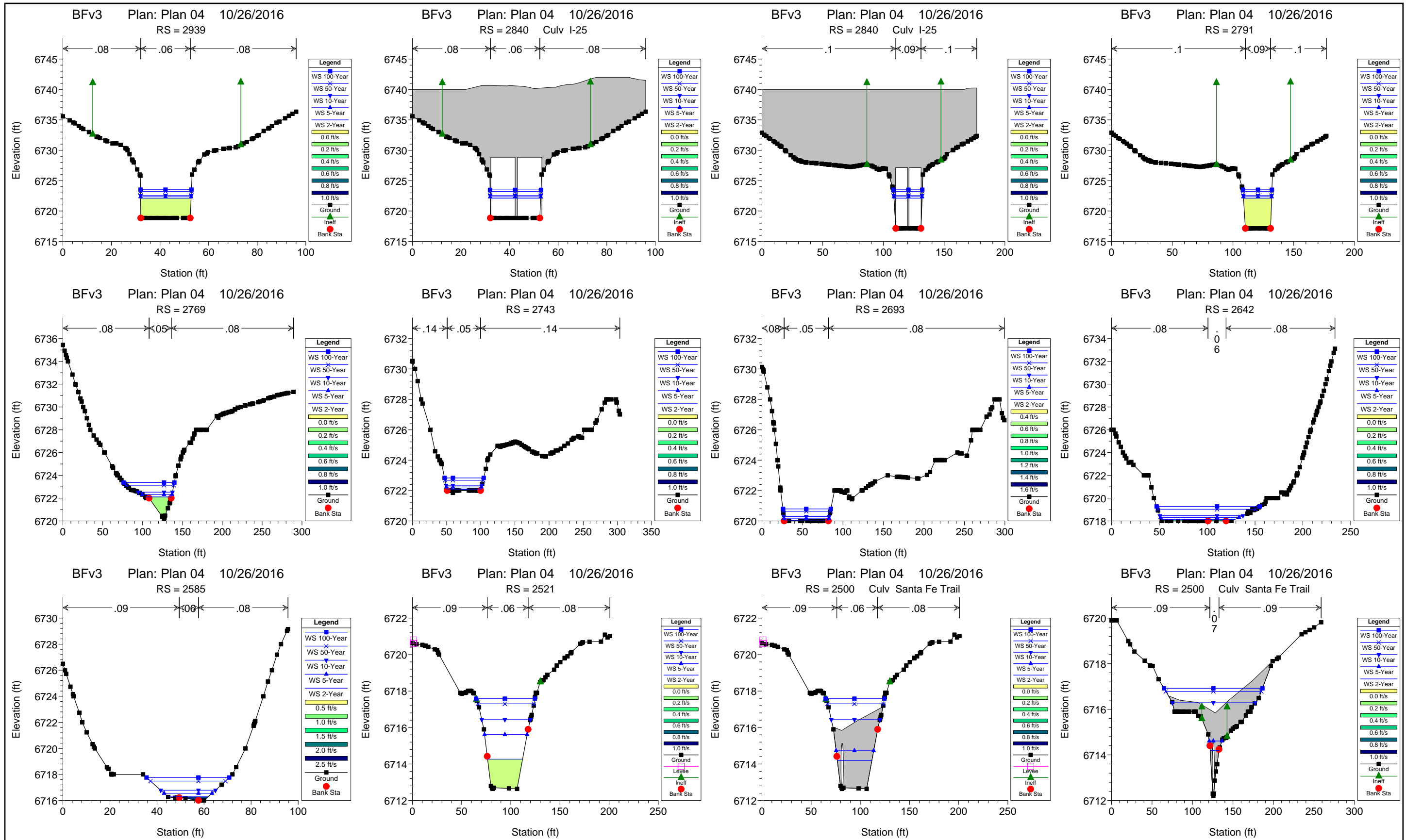
HEC-RAS Plan: Plan 04 River: Black Forest Cr Reach: BF R1 (Continued)

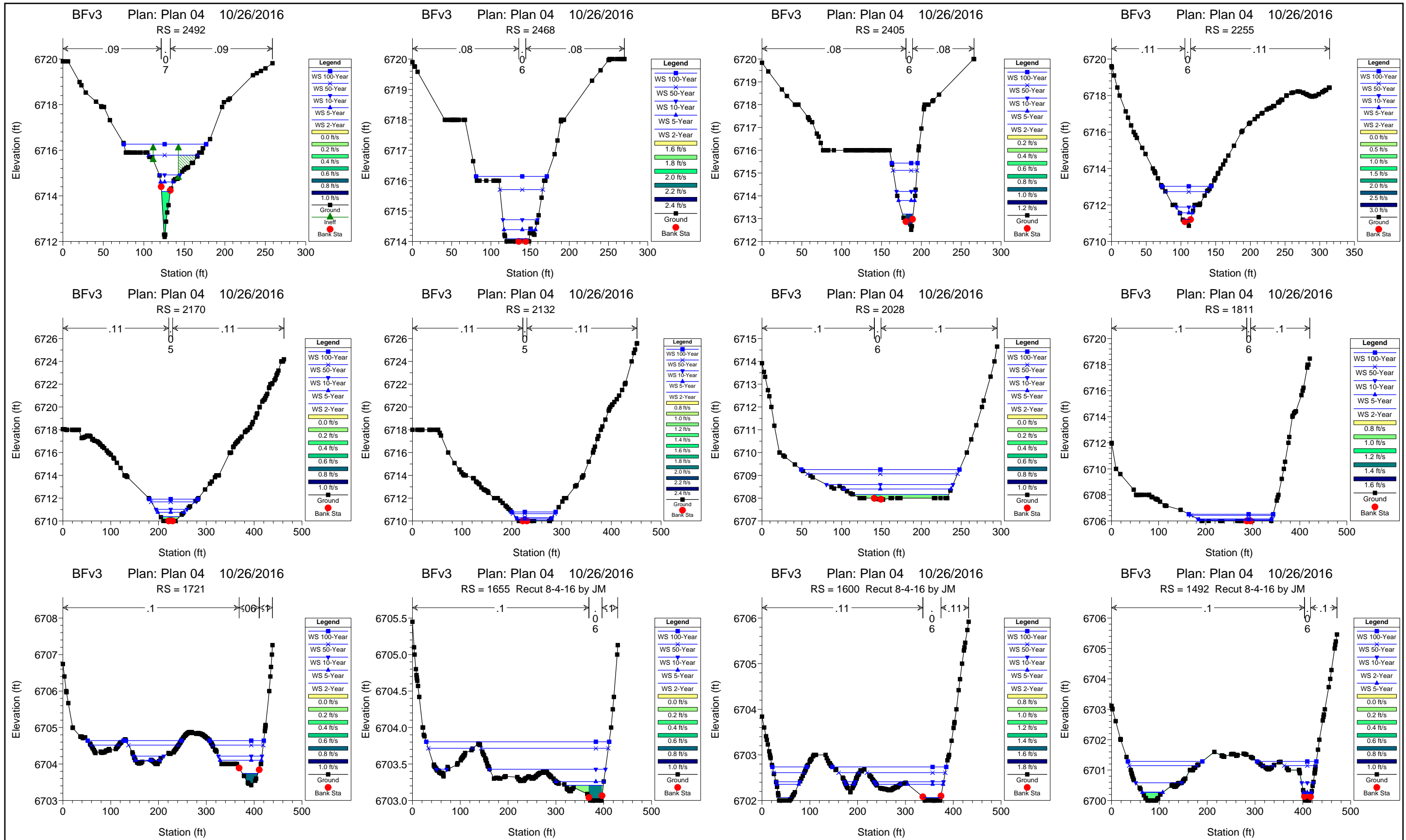
Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl	Shear Total (lb/sq ft)	Mann Wtd Total	Shear Chan (lb/sq ft)	Shear LOB (lb/sq ft)	Shear ROB (lb/sq ft)
BF R1	557	2-Year	5.00	6667.48	6667.65	1.80	2.77	26.95	0.99	0.70	0.060	0.70		
BF R1	557	5-Year	24.00	6667.48	6667.87	2.52	10.27	39.02	0.79	0.80	0.057	0.95	0.24	0.35
BF R1	557	10-Year	48.00	6667.48	6667.97	3.73	14.49	43.68	1.02	1.51	0.058	1.89	0.59	0.76
BF R1	557	50-Year	160.00	6667.48	6668.43	5.29	37.55	52.26	1.00	2.43	0.065	2.98	1.58	1.80
BF R1	557	100-Year	220.00	6667.48	6668.61	5.88	47.12	53.72	1.01	2.86	0.067	3.45	1.93	2.23
BF R1	469	2-Year	5.00	6664.66	6664.79	1.90	3.24	36.95	1.14	0.85	0.075	0.83	0.15	0.91
BF R1	469	5-Year	24.00	6664.66	6665.09	1.99	17.65	58.41	0.56	0.43	0.074	0.55	0.29	0.38
BF R1	469	10-Year	48.00	6664.66	6665.41	1.94	36.64	61.77	0.41	0.36	0.079	0.43	0.29	0.34
BF R1	469	50-Year	160.00	6664.66	6666.62	2.09	118.44	72.52	0.27	0.30	0.083	0.36	0.25	0.29
BF R1	469	100-Year	220.00	6664.66	6667.17	2.17	159.71	77.30	0.24	0.30	0.084	0.36	0.25	0.28
BF R1	399	2-Year	5.00	6663.00	6663.58	1.11	4.59	9.97	0.28	0.15	0.058	0.16	0.04	
BF R1	399	5-Year	24.00	6663.00	6664.17	2.32	11.61	13.33	0.39	0.42	0.058	0.54	0.21	0.17
BF R1	399	10-Year	48.00	6663.00	6664.61	3.19	17.75	14.68	0.46	0.70	0.059	0.91	0.40	0.36
BF R1	399	50-Year	160.00	6663.00	6665.85	5.47	38.22	18.48	0.58	1.54	0.062	2.18	0.99	0.98
BF R1	399	100-Year	220.00	6663.00	6666.34	6.23	47.63	19.76	0.61	1.84	0.063	2.67	1.22	1.24
BF R1	377		Bridge											
BF R1	370	2-Year	5.00	6663.00	6663.20	2.65	2.20	11.45	1.04	1.16	0.067	1.22	0.92	1.09
BF R1	370	5-Year	24.00	6663.00	6663.56	4.45	6.61	13.16	1.05	2.16	0.068	2.44	1.57	1.91
BF R1	370	10-Year	48.00	6663.00	6663.88	5.54	11.05	14.71	1.04	2.72	0.068	3.26	1.94	2.33
BF R1	370	50-Year	160.00	6663.00	6664.86	8.09	27.15	18.05	1.05	4.19	0.069	5.42	3.05	3.60
BF R1	370	100-Year	220.00	6663.00	6665.24	8.99	34.36	19.24	1.06	4.74	0.070	6.29	3.45	4.09
BF R1	293	2-Year	5.00	6657.69	6658.21	2.46	2.03	6.49	0.76	0.88	0.059	0.90		
BF R1	293	5-Year	24.00	6657.69	6658.66	4.79	5.54	9.32	0.96	1.97	0.056	2.56	0.80	0.72
BF R1	293	10-Year	48.00	6657.69	6659.07	5.86	9.91	11.91	0.95	2.31	0.057	3.33	1.23	1.16
BF R1	293	50-Year	160.00	6657.69	6660.40	7.19	39.67	38.39	0.80	1.59	0.059	3.89	1.05	1.64
BF R1	293	100-Year	220.00	6657.69	6660.73	7.83	53.59	44.85	0.82	1.85	0.064	4.42	1.35	1.90
BF R1	238	2-Year	5.00	6654.65	6655.04	2.15	2.56	20.60	0.91	0.60	0.053	0.84	0.19	0.19
BF R1	238	5-Year	24.00	6654.65	6655.29	3.66	7.96	22.69	0.99	1.50	0.064	1.82	0.75	1.16
BF R1	238	10-Year	48.00	6654.65	6655.54	4.32	13.91	24.55	0.93	1.81	0.067	2.16	0.98	1.54
BF R1	238	50-Year	160.00	6654.65	6656.53	5.22	41.59	31.34	0.71	1.85	0.069	2.34	1.14	1.71
BF R1	238	100-Year	220.00	6654.65	6656.89	5.72	53.38	33.65	0.71	2.04	0.070	2.64	1.30	1.90
BF R1	129	2-Year	5.00	6652.00	6652.46	1.04	4.95	13.62	0.28	0.17	0.066	0.20	0.05	0.04
BF R1	129	5-Year	24.00	6652.00	6652.99	2.00	14.22	21.32	0.36	0.39	0.065	0.57	0.22	0.20
BF R1	129	10-Year	48.00	6652.00	6653.35	2.70	22.33	24.46	0.42	0.64	0.069	0.92	0.41	0.40
BF R1	129	50-Year	160.00	6652.00	6654.09	5.07	42.59	30.44	0.62	1.90	0.073	2.81	1.35	1.39
BF R1	129	100-Year	220.00	6652.00	6654.38	5.86	51.99	33.10	0.67	2.38	0.074	3.58	1.73	1.79
BF R1	25	2-Year	5.00	6650.00	6650.07	1.50	4.04	61.46	1.02	0.75	0.084	0.76	0.77	0.17
BF R1	25	5-Year	24.00	6650.00	6650.18	2.64	11.36	72.36	1.13	1.63	0.083	1.75	1.66	0.72
BF R1	25	10-Year	48.00	6650.00	6650.28	3.19	19.69	94.61	1.09	1.73	0.078	2.19	1.91	0.62
BF R1	25	50-Year	160.00	6650.00	6650.66	3.52	69.94	155.39	0.78	1.41	0.085	2.00	1.42	1.02
BF R1	25	100-Year	220.00	6650.00	6650.76	3.89	86.81	175.90	0.80	1.54	0.082	2.32	1.45	1.26

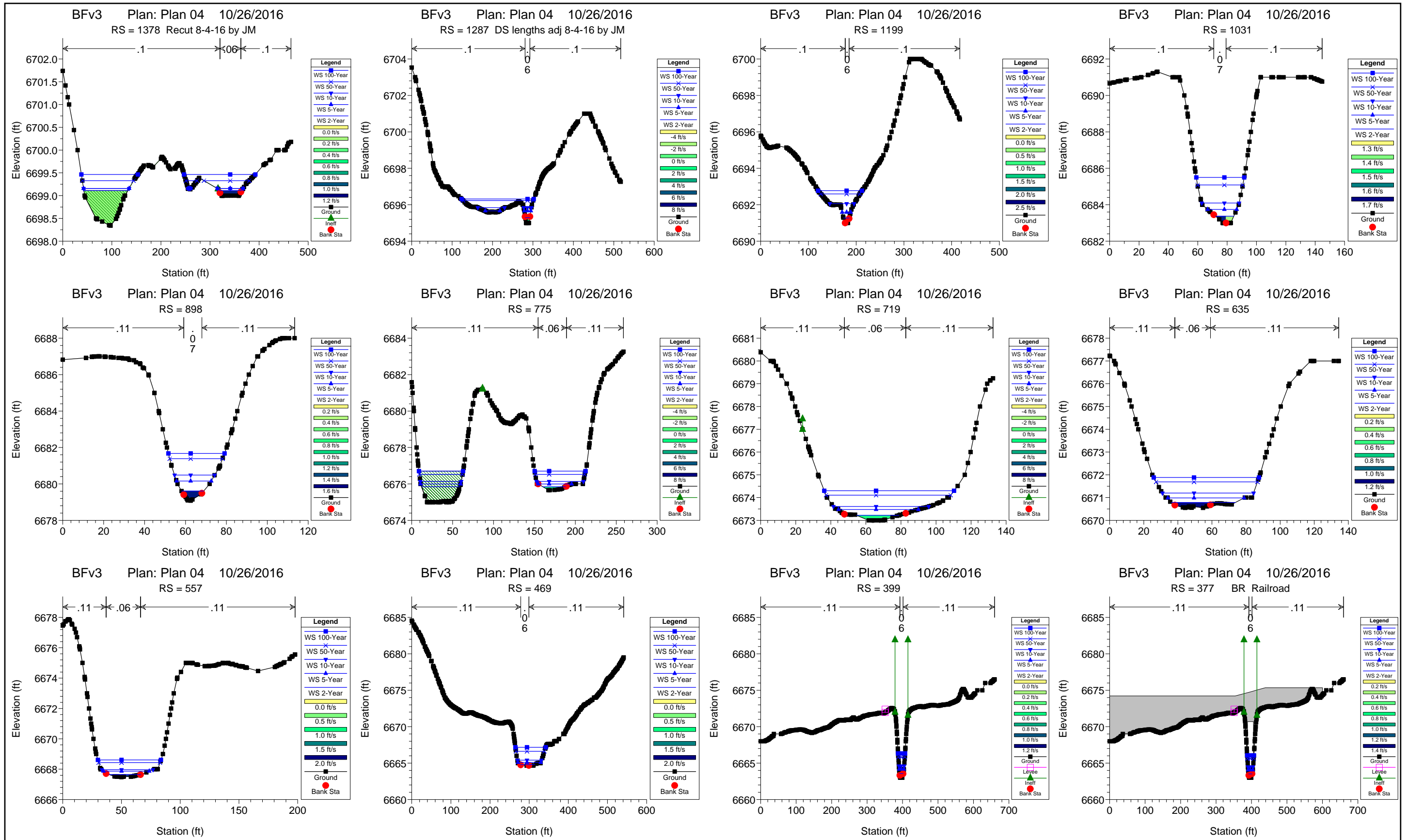
Black Forest Creek Cross Section Diagrams

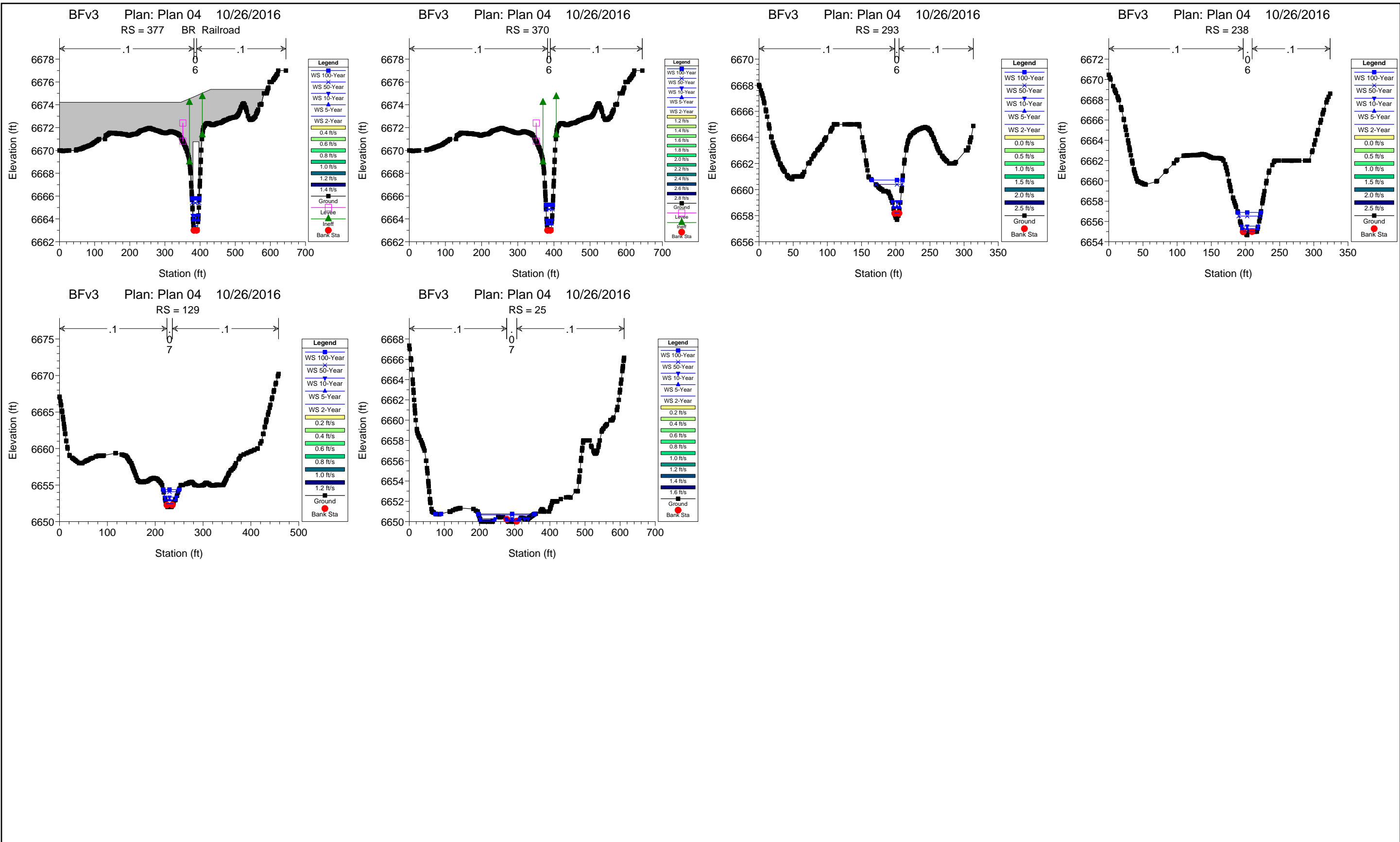












Black Squirrel Creek Hydraulic Results

HEC-RAS Plan: Plan 05 River: Black Squirrel * Reach: BS R1

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Vel Chnl	Flow Area	Top Width	Froude # Chl	Shear Total	Mann Wtd Total	Shear Chan	Shear LOB	Shear ROB
			(cfs)	(ft)	(ft)	(ft/s)	(sq ft)	(ft)		(lb/sq ft)		(lb/sq ft)	(lb/sq ft)	(lb/sq ft)
BS R1	22920	2 Yr	44.00	6858.00	6859.31	3.27	18.89	20.54	0.50	0.48	0.055	0.69	0.37	0.40
BS R1	22920	5 Yr	120.00	6858.00	6860.03	5.05	36.22	27.07	0.62	0.92	0.057	1.42	0.73	0.80
BS R1	22920	10 Yr	210.00	6858.00	6860.57	6.44	51.90	31.29	0.71	1.35	0.059	2.14	1.12	1.19
BS R1	22920	50 Yr	600.00	6858.00	6861.88	10.32	99.62	41.33	0.92	2.90	0.061	4.79	2.54	2.58
BS R1	22920	100 Yr	860.00	6858.00	6862.44	12.19	123.67	45.47	1.02	3.82	0.062	6.39	3.39	3.41
BS R1	22742	2 Yr	44.00	6855.63	6856.21	3.35	13.13	37.26	1.00	1.13	0.050	1.13		
BS R1	22742	5 Yr	120.00	6855.63	6856.55	4.60	26.32	40.84	0.99	1.66	0.049	1.71	0.41	
BS R1	22742	10 Yr	210.00	6855.63	6856.85	5.46	39.29	44.02	0.99	2.05	0.049	2.15	0.72	
BS R1	22742	50 Yr	600.00	6855.63	6857.79	7.61	84.13	51.58	0.98	2.90	0.049	3.33	1.45	0.80
BS R1	22742	100 Yr	860.00	6855.63	6858.28	8.49	110.50	55.12	0.97	3.24	0.049	3.83	1.75	1.14
BS R1	22719	2 Yr	44.00	6854.28	6854.93	3.66	12.01	28.69	1.00	1.27	0.050	1.27		
BS R1	22719	5 Yr	120.00	6854.28	6855.32	4.94	24.29	33.69	1.03	1.93	0.050	1.93		
BS R1	22719	10 Yr	210.00	6854.28	6855.67	5.74	36.64	37.10	1.01	2.29	0.050	2.33	0.16	
BS R1	22719	50 Yr	600.00	6854.28	6856.70	7.88	78.75	44.66	0.99	3.10	0.048	3.50	1.03	0.59
BS R1	22719	100 Yr	860.00	6854.28	6857.23	8.79	103.50	48.03	0.98	3.43	0.048	4.03	1.38	0.97
BS R1	22714	2 Yr	44.00	6853.58	6854.27	3.38	13.02	28.56	0.88	1.05	0.050	1.05		
BS R1	22714	5 Yr	120.00	6853.58	6854.66	4.79	25.13	32.65	0.94	1.68	0.049	1.75	0.15	0.14
BS R1	22714	10 Yr	210.00	6853.58	6854.99	5.91	36.29	35.54	0.98	2.14	0.048	2.37	0.48	0.50
BS R1	22714	50 Yr	600.00	6853.58	6856.18	7.82	83.52	43.68	0.91	2.67	0.048	3.27	1.21	1.22
BS R1	22714	100 Yr	860.00	6853.58	6856.93	8.18	118.11	48.12	0.82	2.57	0.048	3.26	1.33	1.35
BS R1	22671	2 Yr	44.00	6851.45	6852.37	4.38	10.05	17.03	1.00	1.62	0.050	1.62		
BS R1	22671	5 Yr	120.00	6851.45	6852.93	5.66	21.36	22.53	1.00	2.18	0.049	2.28	0.35	
BS R1	22671	10 Yr	210.00	6851.45	6853.39	6.71	32.36	25.85	0.99	2.47	0.047	2.83	0.74	0.37
BS R1	22671	50 Yr	600.00	6851.45	6854.80	9.18	75.05	34.40	0.96	3.20	0.048	4.22	1.63	1.38
BS R1	22671	100 Yr	860.00	6851.45	6855.51	10.22	100.92	38.21	0.96	3.55	0.049	4.86	2.00	1.78
BS R1	22665	2 Yr	44.00	6850.07	6851.04	4.40	10.00	16.76	1.00	1.61	0.050	1.63		
BS R1	22665	5 Yr	120.00	6850.07	6851.62	5.88	20.88	20.85	1.00	2.23	0.049	2.40	0.68	
BS R1	22665	10 Yr	210.00	6850.07	6852.12	6.87	32.01	24.00	0.99	2.61	0.048	2.93	1.10	0.15
BS R1	22665	50 Yr	600.00	6850.07	6853.60	9.40	73.33	31.65	0.96	3.34	0.048	4.36	1.88	1.19
BS R1	22665	100 Yr	860.00	6850.07	6854.33	10.52	97.96	35.17	0.96	3.72	0.049	5.07	2.24	1.62
BS R1	22606	2 Yr	44.00	6847.49	6848.46	4.33	10.16	17.53	1.00	1.59	0.050	1.59		
BS R1	22606	5 Yr	120.00	6847.49	6849.01	5.71	21.30	22.46	1.00	2.14	0.048	2.30	0.44	
BS R1	22606	10 Yr	210.00	6847.49	6849.48	6.78	32.50	25.57	0.98	2.44	0.047	2.86	0.86	0.47
BS R1	22606	50 Yr	600.00	6847.49	6850.92	9.27	75.60	33.80	0.95	3.21	0.048	4.26	1.78	1.37
BS R1	22606	100 Yr	860.00	6847.49	6851.63	10.37	100.99	37.40	0.96	3.61	0.049	4.97	2.19	1.77
BS R1	22602	2 Yr	44.00	6846.32	6847.71	2.54	17.33	19.32	0.47	0.47	0.050	0.47		
BS R1	22602	5 Yr	120.00	6846.32	6848.39	3.86	31.84	23.38	0.55	0.83	0.048	0.92	0.21	0.07
BS R1	22602	10 Yr	210.00	6846.32	6848.93	4.91	45.20	26.12	0.60	1.13	0.047	1.35	0.41	0.24
BS R1	22602	50 Yr	600.00	6846.32	6850.39	7.83	88.53	33.07	0.74	2.14	0.048	2.87	1.11	0.86
BS R1	22602	100 Yr	860.00	6846.32	6850.92	9.59	106.65	35.52	0.84	2.98	0.048	4.11	1.65	1.31
BS R1	22556	2 Yr	44.00	6845.83	6846.73	4.39	10.01	17.02	1.01	1.63	0.050	1.63		
BS R1	22556	5 Yr	120.00	6845.83	6847.30	5.78	21.18	21.91	1.00	2.17	0.049	2.34	0.58	
BS R1	22556	10 Yr	210.00	6845.83	6847.78	6.74	32.62	25.08	0.99	2.55	0.049	2.85	0.99	

HEC-RAS Plan: Plan 05 River: Black Squirrel * Reach: BS R1 (Continued)

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl	Shear Total (lb/sq ft)	Mann Wtd Total	Shear Chan (lb/sq ft)	Shear LOB (lb/sq ft)	Shear ROB (lb/sq ft)
BS R1	22556	50 Yr	600.00	6845.83	6849.19	9.24	73.88	33.26	0.97	3.34	0.048	4.29	1.86	0.85
BS R1	22556	100 Yr	860.00	6845.83	6850.18	9.48	109.23	38.54	0.86	3.00	0.049	4.09	1.85	1.11
BS R1	22550	2 Yr	44.00	6845.10	6846.05	4.66	9.53	15.14	1.00	1.65	0.048	1.76	0.28	
BS R1	22550	5 Yr	120.00	6845.10	6846.69	6.18	20.69	19.64	0.98	2.16	0.048	2.53	0.94	0.19
BS R1	22550	10 Yr	210.00	6845.10	6847.23	7.32	32.20	22.98	0.97	2.48	0.048	3.15	1.32	0.65
BS R1	22550	50 Yr	600.00	6845.10	6848.85	10.02	76.49	31.45	0.96	3.33	0.050	4.75	2.22	1.67
BS R1	22550	100 Yr	860.00	6845.10	6849.66	11.14	103.52	35.40	0.96	3.70	0.052	5.46	2.59	2.07
BS R1	22545	2 Yr	44.00	6844.00	6845.27	3.33	13.80	15.74	0.58	0.68	0.047	0.78	0.10	0.25
BS R1	22545	5 Yr	120.00	6844.00	6846.03	4.96	27.55	20.16	0.66	1.09	0.047	1.44	0.41	0.58
BS R1	22545	10 Yr	210.00	6844.00	6846.67	6.13	41.57	23.39	0.69	1.43	0.049	1.99	0.68	0.87
BS R1	22545	50 Yr	600.00	6844.00	6848.67	8.58	97.61	32.69	0.72	2.08	0.052	3.19	1.31	1.51
BS R1	22545	100 Yr	860.00	6844.00	6849.71	9.44	134.19	37.27	0.71	2.27	0.054	3.59	1.53	1.72
BS R1	22445	2 Yr	44.00	6841.75	6842.96	5.09	8.89	12.04	0.99	1.79	0.048	1.97	0.47	
BS R1	22445	5 Yr	120.00	6841.75	6843.72	6.86	19.50	15.99	0.98	2.29	0.048	2.91	1.13	0.50
BS R1	22445	10 Yr	210.00	6841.75	6844.38	8.10	31.19	19.08	0.96	2.63	0.049	3.60	1.53	0.99
BS R1	22445	50 Yr	600.00	6841.75	6846.35	11.12	76.76	27.17	0.96	3.57	0.053	5.48	2.52	2.02
BS R1	22445	100 Yr	860.00	6841.75	6847.33	12.39	105.35	31.44	0.96	3.95	0.055	6.34	2.90	2.43
BS R1	22441	2 Yr	44.00	6840.66	6841.82	5.02	8.76	11.55	1.02	1.97	0.050	1.97		
BS R1	22441	5 Yr	120.00	6840.66	6842.56	6.69	18.50	14.89	0.98	2.43	0.046	2.84	0.53	0.48
BS R1	22441	10 Yr	210.00	6840.66	6843.19	7.97	28.74	17.30	0.98	2.79	0.046	3.56	1.04	0.89
BS R1	22441	50 Yr	600.00	6840.66	6845.15	10.89	69.64	24.22	0.96	3.60	0.049	5.32	2.07	1.82
BS R1	22441	100 Yr	860.00	6840.66	6846.13	12.13	94.99	27.65	0.96	3.96	0.050	6.14	2.48	2.19
BS R1	22272	2 Yr	44.00	6836.00	6837.34	3.71	11.95	11.42	0.62	0.91	0.049	0.96		0.14
BS R1	22272	5 Yr	120.00	6836.00	6838.23	5.46	23.37	14.16	0.69	1.39	0.046	1.71	0.30	0.50
BS R1	22272	10 Yr	210.00	6836.00	6838.95	6.86	34.32	16.18	0.74	1.84	0.046	2.43	0.62	0.81
BS R1	22272	50 Yr	600.00	6836.00	6840.87	10.84	69.41	20.35	0.89	3.43	0.048	5.08	1.67	1.95
BS R1	22272	100 Yr	860.00	6836.00	6841.73	12.81	87.60	22.14	0.97	4.36	0.049	6.71	2.26	2.63
BS R1	21966	2 Yr	44.00	6833.00	6834.48	2.63	17.35	17.75	0.43	0.40	0.047	0.47	0.09	0.10
BS R1	21966	5 Yr	120.00	6833.00	6835.32	3.97	34.49	22.45	0.50	0.68	0.048	0.89	0.28	0.32
BS R1	21966	10 Yr	210.00	6833.00	6836.04	4.92	51.80	25.63	0.53	0.90	0.049	1.24	0.44	0.50
BS R1	21966	50 Yr	600.00	6833.00	6838.16	7.20	114.64	33.24	0.58	1.48	0.053	2.18	0.84	1.06
BS R1	21966	100 Yr	860.00	6833.00	6839.23	8.15	151.94	36.55	0.59	1.73	0.055	2.61	1.02	1.31
BS R1	21574	2 Yr	44.00	6830.00	6831.04	2.99	14.74	16.39	0.55	0.64	0.049	0.65		0.06
BS R1	21574	5 Yr	120.00	6830.00	6831.84	4.33	29.08	19.61	0.58	0.95	0.047	1.12	0.26	0.30
BS R1	21574	10 Yr	210.00	6830.00	6832.51	5.36	43.03	21.90	0.61	1.22	0.047	1.53	0.46	0.50
BS R1	21574	50 Yr	600.00	6830.00	6834.43	8.06	91.28	28.36	0.68	2.01	0.049	2.84	1.02	1.11
BS R1	21574	100 Yr	860.00	6830.00	6835.32	9.35	118.02	31.74	0.72	2.42	0.049	3.59	1.33	1.40
BS R1	21151	2 Yr	44.00	6826.00	6827.30	2.42	18.23	19.15	0.43	0.41	0.049	0.42		0.03
BS R1	21151	5 Yr	120.00	6826.00	6828.03	3.72	33.51	22.60	0.50	0.71	0.047	0.82	0.16	0.20
BS R1	21151	10 Yr	210.00	6826.00	6828.66	4.69	48.37	25.01	0.54	0.96	0.047	1.18	0.32	0.38
BS R1	21151	50 Yr	600.00	6826.00	6830.51	7.09	101.76	33.03	0.61	1.58	0.048	2.22	0.74	0.86
BS R1	21151	100 Yr	860.00	6826.00	6831.58	7.93	143.31	51.70	0.61	1.33	0.043	2.57	0.49	1.03

HEC-RAS Plan: Plan 05 River: Black Squirrel * Reach: BS R1 (Continued)

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl	Shear Total (lb/sq ft)	Mann Wtd Total	Shear Chan (lb/sq ft)	Shear LOB (lb/sq ft)	Shear ROB (lb/sq ft)
BS R1	21057	2 Yr	44.00	6825.00	6826.05	3.82	11.98	17.98	0.76	0.97	0.047	1.12	0.16	0.33
BS R1	21057	5 Yr	120.00	6825.00	6826.78	5.14	26.64	22.31	0.74	1.29	0.049	1.64	0.57	0.70
BS R1	21057	10 Yr	210.00	6825.00	6827.44	6.01	42.58	25.84	0.72	1.48	0.050	1.98	0.82	0.89
BS R1	21057	50 Yr	600.00	6825.00	6829.43	8.15	104.39	37.44	0.70	1.90	0.053	2.93	1.22	1.36
BS R1	21057	100 Yr	860.00	6825.00	6830.17	9.98	144.89	87.52	0.80	1.39	0.040	4.16	0.69	1.93
BS R1	20498	2 Yr	44.00	6817.00	6818.48	3.21	14.70	14.20	0.51	0.56	0.047	0.68	0.22	0.12
BS R1	20498	5 Yr	120.00	6817.00	6819.34	4.95	28.68	18.13	0.60	1.00	0.048	1.36	0.56	0.41
BS R1	20498	10 Yr	210.00	6817.00	6820.01	6.34	41.74	20.94	0.67	1.42	0.049	2.04	0.89	0.69
BS R1	20498	50 Yr	600.00	6817.00	6821.86	9.93	98.04	52.84	0.81	1.67	0.044	4.22	1.98	0.76
BS R1	20498	100 Yr	860.00	6817.00	6822.76	10.59	155.87	72.86	0.79	1.74	0.051	4.52	2.14	1.07
BS R1	20055	2 Yr	44.00	6810.00	6810.84	4.75	9.29	13.79	1.00	1.75	0.049	1.81		0.12
BS R1	20055	5 Yr	120.00	6810.00	6811.52	6.40	20.41	19.16	0.96	2.03	0.046	2.63	0.53	0.71
BS R1	20055	10 Yr	210.00	6810.00	6812.13	7.44	33.91	24.93	0.93	2.14	0.047	3.14	0.87	1.03
BS R1	20055	50 Yr	600.00	6810.00	6813.82	10.07	87.41	38.71	0.93	2.85	0.053	4.69	1.64	1.96
BS R1	20055	100 Yr	860.00	6810.00	6814.76	10.75	128.31	48.27	0.88	2.81	0.055	4.95	1.79	2.06
BS R1	19929	2 Yr	44.00	6807.00	6808.92	2.02	22.94	17.23	0.28	0.21	0.046	0.25	0.06	0.05
BS R1	19929	5 Yr	120.00	6807.00	6809.97	3.18	43.82	22.28	0.34	0.38	0.047	0.52	0.17	0.17
BS R1	19929	10 Yr	210.00	6807.00	6810.85	4.02	65.44	26.80	0.38	0.51	0.048	0.76	0.27	0.26
BS R1	19929	50 Yr	600.00	6807.00	6813.40	6.06	154.92	51.24	0.43	0.69	0.048	1.43	0.56	0.40
BS R1	19929	100 Yr	860.00	6807.00	6814.26	7.34	214.61	91.71	0.49	0.67	0.044	2.01	0.80	0.39
BS R1	19824	2 Yr	44.00	6807.00	6808.28	3.37	13.14	12.83	0.57	0.76	0.049	0.80		0.10
BS R1	19824	5 Yr	120.00	6807.00	6808.97	5.46	22.91	15.49	0.74	1.54	0.047	1.79	0.16	0.49
BS R1	19824	10 Yr	210.00	6807.00	6809.52	7.13	31.98	17.63	0.84	2.21	0.046	2.79	0.49	0.89
BS R1	19824	50 Yr	600.00	6807.00	6811.33	10.71	76.63	44.16	0.94	2.22	0.039	5.17	1.49	0.94
BS R1	19824	100 Yr	860.00	6807.00	6812.17	11.61	120.20	60.09	0.92	2.35	0.045	5.70	1.79	1.39
BS R1	19342	2 Yr	44.00	6799.00	6800.11	4.63	10.79	13.58	0.80	1.14	0.047	1.50	0.45	0.52
BS R1	19342	5 Yr	120.00	6799.00	6801.11	5.83	27.46	19.63	0.72	1.28	0.051	1.91	0.76	0.81
BS R1	19342	10 Yr	210.00	6799.00	6801.95	6.73	45.86	24.51	0.70	1.44	0.054	2.27	0.96	1.01
BS R1	19342	50 Yr	600.00	6799.00	6803.98	9.63	107.26	35.78	0.77	2.29	0.061	3.87	1.70	1.86
BS R1	19342	100 Yr	860.00	6799.00	6804.97	10.76	145.45	41.59	0.78	2.61	0.063	4.55	1.93	2.25
BS R1	18890	2 Yr	44.00	6791.00	6792.39	3.73	12.34	11.64	0.60	0.83	0.048	0.94	0.31	0.05
BS R1	18890	5 Yr	120.00	6791.00	6793.08	6.31	21.09	13.74	0.81	1.82	0.047	2.31	0.89	0.40
BS R1	18890	10 Yr	210.00	6791.00	6793.64	8.32	29.34	15.40	0.94	2.73	0.048	3.68	1.50	0.81
BS R1	18890	50 Yr	600.00	6791.00	6795.79	11.70	69.07	21.55	0.96	3.78	0.050	5.90	2.56	1.75
BS R1	18890	100 Yr	860.00	6791.00	6796.89	13.06	94.54	25.09	0.96	4.13	0.051	6.85	2.92	2.13
BS R1	18391	2 Yr	44.00	6781.00	6781.53	3.72	12.03	27.84	0.95	1.14	0.048	1.26	0.21	0.21
BS R1	18391	5 Yr	120.00	6781.00	6782.05	4.66	29.12	37.37	0.82	1.20	0.048	1.54	0.50	0.55
BS R1	18391	10 Yr	210.00	6781.00	6782.47	5.49	45.58	40.60	0.81	1.49	0.051	1.90	0.70	0.90
BS R1	18391	50 Yr	600.00	6781.00	6783.82	7.37	106.25	48.43	0.78	2.14	0.055	2.74	1.14	1.64
BS R1	18391	100 Yr	860.00	6781.00	6784.52	8.16	141.46	51.54	0.77	2.41	0.057	3.11	1.32	1.94
BS R1	17898	2 Yr	44.00	6775.00	6776.00	1.12	39.24	43.45	0.21	0.29	0.089	0.30	0.02	
BS R1	17898	5 Yr	120.00	6775.00	6776.65	1.78	68.53	46.87	0.25	0.58	0.087	0.63	0.16	0.12
BS R1	17898	10 Yr	210.00	6775.00	6777.23	2.25	96.51	49.70	0.27	0.81	0.087	0.90	0.28	0.25

HEC-RAS Plan: Plan 05 River: Black Squirrel * Reach: BS R1 (Continued)

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl	Shear Total (lb/sq ft)	Mann Wtd Total	Shear Chan (lb/sq ft)	Shear LOB (lb/sq ft)	Shear ROB (lb/sq ft)
BS R1	17898	50 Yr	600.00	6775.00	6778.88	3.53	184.12	56.55	0.32	1.54	0.087	1.83	0.71	0.69
BS R1	17898	100 Yr	860.00	6775.00	6779.67	4.13	230.27	59.81	0.34	1.93	0.087	2.35	0.94	0.93
BS R1	17436	2 Yr	44.00	6770.45	6771.20	2.03	31.75	55.28	0.43	1.07	0.128	1.31	0.85	1.13
BS R1	17436	5 Yr	120.00	6770.45	6771.85	2.54	69.63	61.99	0.38	1.37	0.130	1.65	1.23	1.38
BS R1	17436	10 Yr	210.00	6770.45	6772.42	3.09	111.47	83.39	0.39	1.50	0.128	2.17	1.68	1.33
BS R1	17436	50 Yr	600.00	6770.45	6773.65	4.34	224.60	97.49	0.43	2.64	0.131	3.63	2.84	2.43
BS R1	17436	100 Yr	860.00	6770.45	6774.22	4.92	281.76	100.88	0.45	3.27	0.132	4.41	3.43	3.07
BS R1	16946	2 Yr	44.00	6764.00	6764.74	0.96	47.91	85.77	0.21	0.27	0.096	0.30	0.05	0.18
BS R1	16946	5 Yr	120.00	6764.00	6765.13	1.55	84.96	98.64	0.27	0.56	0.098	0.67	0.25	0.39
BS R1	16946	10 Yr	210.00	6764.00	6765.47	1.98	118.17	101.68	0.30	0.86	0.100	1.00	0.50	0.60
BS R1	16946	50 Yr	610.00	6764.00	6766.56	2.98	235.08	110.83	0.34	1.60	0.104	1.86	1.21	1.11
BS R1	16946	100 Yr	880.00	6764.00	6767.14	3.40	300.19	114.91	0.34	1.94	0.105	2.26	1.54	1.34
BS R1	16545	2 Yr	44.00	6760.00	6760.46	1.11	44.00	104.24	0.29	0.42	0.105	0.45	0.34	0.32
BS R1	16545	5 Yr	120.00	6760.00	6760.92	1.45	95.72	118.59	0.27	0.53	0.105	0.61	0.44	0.38
BS R1	16545	10 Yr	210.00	6760.00	6761.31	1.71	142.93	122.95	0.26	0.67	0.107	0.75	0.56	0.52
BS R1	16545	50 Yr	610.00	6760.00	6762.41	2.55	282.13	129.90	0.29	1.23	0.110	1.37	1.05	1.05
BS R1	16545	100 Yr	880.00	6760.00	6762.94	2.96	351.79	132.84	0.30	1.55	0.110	1.73	1.32	1.35
BS R1	16086	2 Yr	44.00	6755.24	6755.85	1.12	42.44	107.35	0.28	0.17	0.064	0.22	0.06	0.07
BS R1	16086	5 Yr	120.00	6755.24	6756.12	1.82	74.22	117.16	0.36	0.40	0.069	0.50	0.24	0.22
BS R1	16086	10 Yr	210.00	6755.24	6756.34	2.38	100.15	118.83	0.42	0.66	0.071	0.78	0.46	0.41
BS R1	16086	50 Yr	610.00	6755.24	6757.07	3.69	188.83	124.33	0.49	1.37	0.073	1.57	1.13	0.96
BS R1	16086	100 Yr	880.00	6755.24	6757.46	4.23	238.09	126.40	0.51	1.70	0.074	1.93	1.45	1.21
BS R1	15684	2 Yr	44.00	6750.48	6750.99	2.15	31.17	98.94	0.54	0.51	0.079	0.81	0.39	0.47
BS R1	15684	5 Yr	120.00	6750.48	6751.35	2.28	80.44	139.23	0.43	0.51	0.082	0.76	0.40	0.55
BS R1	15684	10 Yr	210.00	6750.48	6751.66	2.48	123.91	142.52	0.40	0.60	0.084	0.81	0.52	0.63
BS R1	15684	50 Yr	610.00	6750.48	6752.56	3.33	256.56	150.85	0.41	0.99	0.086	1.20	0.92	1.00
BS R1	15684	100 Yr	880.00	6750.48	6753.01	3.77	324.62	154.52	0.42	1.20	0.086	1.45	1.15	1.20
BS R1	15603	2 Yr	44.00	6749.00	6749.79	1.64	27.63	43.90	0.34	0.37	0.066	0.42	0.07	0.13
BS R1	15603	5 Yr	120.00	6749.00	6750.28	2.52	54.52	74.56	0.40	0.50	0.057	0.83	0.31	0.15
BS R1	15603	10 Yr	210.00	6749.00	6750.64	3.08	86.98	102.34	0.43	0.61	0.059	1.14	0.52	0.30
BS R1	15603	50 Yr	610.00	6749.00	6751.53	4.37	194.47	127.26	0.49	1.22	0.071	1.96	1.05	0.90
BS R1	15603	100 Yr	880.00	6749.00	6751.95	4.93	247.75	129.45	0.51	1.57	0.074	2.37	1.30	1.25
BS R1	15309	2 Yr	44.00	6742.53	6742.75	2.62	19.22	115.42	1.03	1.33	0.070	1.62	0.43	1.32
BS R1	15309	5 Yr	120.00	6742.53	6742.93	3.45	42.66	144.89	0.99	1.77	0.073	2.28	1.01	1.73
BS R1	15309	10 Yr	210.00	6742.53	6743.07	4.11	63.77	156.99	1.01	2.29	0.074	2.91	1.52	2.24
BS R1	15309	50 Yr	610.00	6742.53	6743.49	5.74	132.14	168.34	1.05	3.91	0.077	4.67	3.03	3.98
BS R1	15309	100 Yr	880.00	6742.53	6743.70	6.50	168.65	173.33	1.07	4.72	0.078	5.59	3.76	4.85
BS R1	15046	2 Yr	44.00	6736.00	6737.22	1.29	45.22	143.00	0.24	0.09	0.047	0.24	0.04	0.03
BS R1	15046	5 Yr	120.00	6736.00	6737.61	1.68	110.75	174.10	0.26	0.18	0.068	0.36	0.14	0.08
BS R1	15046	10 Yr	210.00	6736.00	6737.89	1.99	161.34	177.59	0.28	0.28	0.075	0.47	0.23	0.13
BS R1	15046	50 Yr	610.00	6736.00	6738.76	2.76	318.56	183.68	0.31	0.56	0.080	0.78	0.52	0.31
BS R1	15046	100 Yr	880.00	6736.00	6738.94	3.58	351.30	184.80	0.39	0.94	0.081	1.29	0.88	0.53

HEC-RAS Plan: Plan 05 River: Black Squirrel * Reach: BS R1 (Continued)

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl	Shear Total (lb/sq ft)	Mann Wtd Total	Shear Chan (lb/sq ft)	Shear LOB (lb/sq ft)	Shear ROB (lb/sq ft)
BS R1	12412	2 Yr	61.00	6711.87	6712.27	2.51	25.17	208.78	0.95	1.35	0.069	1.45		0.59
BS R1	12412	5 Yr	130.00	6711.87	6712.41	3.21	43.70	244.06	0.96	1.66	0.066	2.03	0.30	0.88
BS R1	12412	10 Yr	220.00	6711.87	6712.54	3.76	66.12	269.21	0.95	1.98	0.068	2.49	0.78	1.15
BS R1	12412	50 Yr	660.00	6711.87	6712.97	5.50	147.11	330.89	1.01	3.32	0.072	4.32	1.91	2.37
BS R1	12412	100 Yr	950.00	6711.87	6713.26	5.51	239.58	484.53	0.88	2.28	0.067	3.95	1.14	2.35
BS R1	12309	2 Yr	61.00	6688.00	6687.41		19.28	62.84	0.00	5.08	0.110		5.08	
BS R1	12309	5 Yr	130.00	6688.00	6687.62		34.96	81.52	0.00	6.27	0.110		6.27	
BS R1	12309	10 Yr	220.00	6688.00	6687.82		52.11	93.82	0.00	7.42	0.110		7.42	
BS R1	12309	50 Yr	660.00	6688.00	6688.42	3.57	122.95	140.18	1.23	9.32	0.105	2.76	10.22	
BS R1	12309	100 Yr	950.00	6688.00	6688.70	4.52	165.09	158.81	1.25	9.82	0.103	3.82	11.08	
BS R1	11813	2 Yr	61.00	6678.00	6679.50	1.43	72.77	122.70	0.24	0.15	0.081	0.28	0.07	0.13
BS R1	11813	5 Yr	130.00	6678.00	6680.14	1.41	153.64	132.59	0.19	0.16	0.090	0.23	0.08	0.15
BS R1	11813	10 Yr	220.00	6678.00	6680.72	1.55	232.85	138.97	0.18	0.19	0.093	0.25	0.11	0.18
BS R1	11813	50 Yr	660.00	6678.00	6682.46	2.20	488.97	155.06	0.19	0.33	0.097	0.42	0.23	0.33
BS R1	11813	100 Yr	950.00	6678.00	6683.08	2.64	587.69	161.07	0.22	0.45	0.097	0.58	0.32	0.45
BS R1	11235	2 Yr	61.00	6678.00	6679.31	0.40	288.52	189.51	0.06	0.01	0.105	0.01	0.01	0.01
BS R1	11235	5 Yr	130.00	6678.00	6679.88	0.65	397.10	193.18	0.08	0.03	0.105	0.02	0.03	0.02
BS R1	11235	10 Yr	220.00	6678.00	6680.41	0.89	501.23	196.26	0.10	0.04	0.105	0.04	0.05	0.04
BS R1	11235	50 Yr	660.00	6678.00	6682.00	1.69	819.79	204.89	0.15	0.13	0.105	0.13	0.13	0.12
BS R1	11235	100 Yr	950.00	6678.00	6682.46	2.20	914.20	207.39	0.18	0.20	0.105	0.21	0.21	0.19
BS R1	11217	2 Yr	61.00	6675.22	6679.30	0.52	132.91	58.27	0.05	0.01	0.047	0.01	0.00	0.00
BS R1	11217	5 Yr	130.00	6675.22	6679.86	0.91	167.22	64.99	0.09	0.03	0.047	0.04	0.02	0.01
BS R1	11217	10 Yr	220.00	6675.22	6680.38	1.30	243.11	177.09	0.11	0.03	0.035	0.08	0.03	0.01
BS R1	11217	50 Yr	660.00	6675.22	6681.93	2.28	546.97	209.09	0.17	0.10	0.057	0.21	0.10	0.07
BS R1	11217	100 Yr	950.00	6675.22	6682.36	2.89	636.93	211.84	0.21	0.16	0.061	0.32	0.15	0.12
BS R1	11200		Inl Struct											
BS R1	11176	2 Yr	61.00	6666.66	6667.13	3.37	20.72	71.68	0.96	0.84	0.048	1.10	0.36	0.38
BS R1	11176	5 Yr	130.00	6666.66	6667.35	4.30	36.89	75.92	0.98	1.26	0.053	1.55	0.75	0.86
BS R1	11176	10 Yr	220.00	6666.66	6667.58	5.12	54.38	80.12	0.99	1.62	0.056	1.97	1.05	1.26
BS R1	11176	50 Yr	660.00	6666.66	6668.39	7.05	134.76	119.57	0.97	2.05	0.056	2.98	1.20	2.18
BS R1	11176	100 Yr	950.00	6666.66	6668.75	7.94	179.56	126.04	0.99	2.51	0.060	3.54	1.66	2.64
BS R1	10667	2 Yr	61.00	6660.00	6660.72	1.29	47.11	71.69	0.28	0.14	0.050	0.14		
BS R1	10667	5 Yr	130.00	6660.00	6661.08	1.75	74.29	79.22	0.31	0.21	0.049	0.22	0.01	0.01
BS R1	10667	10 Yr	220.00	6660.00	6661.43	2.18	103.62	92.50	0.34	0.26	0.046	0.31	0.05	0.04
BS R1	10667	50 Yr	660.00	6660.00	6662.38	3.64	210.90	130.79	0.43	0.51	0.046	0.71	0.23	0.21
BS R1	10667	100 Yr	950.00	6660.00	6662.79	4.33	267.40	144.17	0.47	0.66	0.048	0.96	0.34	0.33
BS R1	10194	2 Yr	61.00	6655.87	6656.56	3.98	15.34	31.58	1.00	1.42	0.050	1.42		
BS R1	10194	5 Yr	130.00	6655.87	6656.92	4.70	30.85	56.98	0.90	1.07	0.042	1.66	0.31	0.36
BS R1	10194	10 Yr	220.00	6655.87	6657.21	5.50	48.68	62.17	0.91	1.42	0.048	2.05	0.75	0.66
BS R1	10194	50 Yr	660.00	6655.87	6658.68	6.11	154.41	91.43	0.67	1.24	0.054	1.92	0.89	0.84
BS R1	10194	100 Yr	950.00	6655.87	6659.47	6.16	267.74	179.22	0.59	0.79	0.050	1.79	0.60	0.46

HEC-RAS Plan: Plan 05 River: Black Squirrel * Reach: BS R1 (Continued)

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl	Shear Total (lb/sq ft)	Mann Wtd Total	Shear Chan (lb/sq ft)	Shear LOB (lb/sq ft)	Shear ROB (lb/sq ft)
BS R1	10085	2 Yr	61.00	6652.00	6653.89	2.61	28.81	106.43	0.35	0.28	0.049	0.40	0.17	0.16
BS R1	10085	5 Yr	130.00	6652.00	6654.12	4.78	34.33	109.87	0.60	0.90	0.050	1.29	0.58	0.55
BS R1	10085	10 Yr	220.00	6652.00	6654.60	6.15	47.04	116.71	0.69	1.36	0.051	1.99	0.94	0.90
BS R1	10085	50 Yr	660.00	6652.00	6655.95	10.53	89.46	135.72	0.95	3.30	0.054	5.04	2.46	2.46
BS R1	10085	100 Yr	950.00	6652.00	6656.77	11.73	120.30	148.23	0.96	3.72	0.055	5.87	2.85	2.88
BS R1	9881	2 Yr	61.00	6651.00	6651.83	4.40	13.86	68.46	0.99	1.62	0.050	1.62		
BS R1	9881	5 Yr	130.00	6651.00	6651.97	2.63	66.03	78.14	0.55	0.65	0.075	0.55	0.69	
BS R1	9881	10 Yr	220.00	6651.00	6652.28	3.36	91.08	80.02	0.58	0.88	0.074	0.79	0.92	0.10
BS R1	9881	50 Yr	660.00	6651.00	6653.33	5.41	177.20	84.52	0.66	1.63	0.073	1.63	1.70	0.49
BS R1	9881	100 Yr	950.00	6651.00	6653.86	6.28	222.90	86.76	0.69	1.98	0.072	2.03	2.06	0.67
BS R1	9418	2 Yr	61.00	6639.41	6640.14	2.56	33.57	58.49	0.53	0.80	0.084	1.01	0.83	0.70
BS R1	9418	5 Yr	130.00	6639.41	6640.18	5.12	35.66	58.76	1.03	3.17	0.085	3.98	3.27	2.80
BS R1	9418	10 Yr	220.00	6639.41	6640.43	6.03	50.51	60.68	1.06	4.13	0.085	5.02	4.23	3.76
BS R1	9418	50 Yr	660.00	6639.41	6641.26	8.80	103.28	66.62	1.14	7.36	0.086	8.76	7.45	6.88
BS R1	9418	100 Yr	950.00	6639.41	6641.64	10.13	129.35	68.90	1.20	9.15	0.086	10.90	9.27	8.57
BS R1	9076	2 Yr	61.00	6632.23	6632.83	1.87	34.83	82.68	0.47	0.54	0.068	0.62	0.34	0.15
BS R1	9076	5 Yr	130.00	6632.23	6633.28	1.93	75.01	94.24	0.35	0.45	0.070	0.53	0.34	0.23
BS R1	9076	10 Yr	220.00	6632.23	6633.59	2.35	105.11	98.63	0.37	0.61	0.071	0.71	0.49	0.36
BS R1	9076	50 Yr	660.00	6632.23	6634.63	3.55	214.44	109.72	0.41	1.13	0.073	1.33	0.97	0.77
BS R1	9076	100 Yr	950.00	6632.23	6635.15	4.05	272.89	113.66	0.43	1.38	0.073	1.61	1.18	0.97
BS R1	8967	2 Yr	61.00	6630.91	6631.77	1.61	48.57	68.85	0.31	0.33	0.081	0.38	0.18	0.32
BS R1	8967	5 Yr	130.00	6630.91	6631.79	3.32	50.29	69.30	0.64	1.38	0.081	1.62	0.75	1.33
BS R1	8967	10 Yr	220.00	6630.91	6632.10	3.94	72.41	73.76	0.65	1.74	0.081	2.05	1.00	1.68
BS R1	8967	50 Yr	660.00	6630.91	6633.13	5.65	152.04	80.82	0.67	2.92	0.082	3.41	1.84	2.88
BS R1	8967	100 Yr	950.00	6630.91	6633.64	6.41	193.66	83.44	0.69	3.49	0.082	4.09	2.23	3.46
BS R1	8632	2 Yr	61.00	6625.18	6625.67	3.24	22.54	79.19	0.92	1.46	0.068	1.99	1.18	0.86
BS R1	8632	5 Yr	130.00	6625.18	6626.27	2.13	74.75	91.58	0.38	0.52	0.075	0.63	0.40	0.44
BS R1	8632	10 Yr	220.00	6625.18	6626.58	2.61	103.45	95.28	0.40	0.73	0.076	0.87	0.56	0.64
BS R1	8632	50 Yr	660.00	6625.18	6627.57	4.02	203.89	104.79	0.47	1.43	0.078	1.70	1.11	1.33
BS R1	8632	100 Yr	950.00	6625.18	6628.06	4.64	255.29	108.22	0.49	1.80	0.078	2.12	1.39	1.68
BS R1	8304	2 Yr	61.00	6618.00	6618.29	3.03	20.32	72.21	1.00	1.90	0.070	1.93	0.92	1.05
BS R1	8304	5 Yr	130.00	6618.00	6618.47	3.89	33.94	73.76	1.00	2.61	0.070	2.69	1.28	1.41
BS R1	8304	10 Yr	220.00	6618.00	6618.67	4.62	48.65	75.34	0.99	3.25	0.070	3.38	1.61	1.76
BS R1	8304	50 Yr	660.00	6618.00	6619.38	6.62	103.50	79.84	0.99	5.12	0.070	5.46	2.75	2.99
BS R1	8304	100 Yr	950.00	6618.00	6619.74	7.46	133.13	81.78	1.00	5.95	0.070	6.40	3.25	3.55
BS R1	8043	2 Yr	61.00	6612.44	6613.51	1.55	40.19	52.22	0.30	0.34	0.069	0.36		0.16
BS R1	8043	5 Yr	130.00	6612.44	6614.00	2.02	67.34	59.11	0.31	0.46	0.067	0.52	0.10	0.25
BS R1	8043	10 Yr	220.00	6612.44	6614.51	2.38	99.10	64.95	0.31	0.55	0.067	0.65	0.19	0.33
BS R1	8043	50 Yr	660.00	6612.44	6616.20	3.40	223.90	82.20	0.32	0.82	0.068	1.05	0.45	0.53
BS R1	8043	100 Yr	950.00	6612.44	6616.97	3.86	290.48	89.13	0.33	0.97	0.069	1.27	0.59	0.63
BS R1	7883	2 Yr	61.00	6611.00	6613.48	0.36	168.92	79.98	0.04	0.01	0.070	0.01		0.00
BS R1	7883	5 Yr	130.00	6611.00	6613.92	0.64	205.02	83.79	0.07	0.04	0.068	0.04	0.00	0.00
BS R1	7883	10 Yr	220.00	6611.00	6614.39	0.91	245.65	88.38	0.09	0.07	0.067	0.08	0.01	0.01

HEC-RAS Plan: Plan 05 River: Black Squirrel * Reach: BS R1 (Continued)

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl	Shear Total (lb/sq ft)	Mann Wtd Total	Shear Chan (lb/sq ft)	Shear LOB (lb/sq ft)	Shear ROB (lb/sq ft)
BS R1	7883	5 Yr	660.00	6611.00	6616.00	1.73	398.46	100.74	0.14	0.21	0.066	0.25	0.06	0.08
BS R1	7883	100 Yr	950.00	6611.00	6616.75	2.12	475.61	104.73	0.16	0.30	0.066	0.36	0.09	0.13
BS R1	7397	2 Yr	61.00	6611.00	6613.45	0.26	268.14	129.38	0.03	0.01	0.071	0.01	0.00	0.00
BS R1	7397	5 Yr	130.00	6611.00	6613.84	0.47	319.81	134.82	0.05	0.02	0.071	0.02	0.01	0.01
BS R1	7397	10 Yr	220.00	6611.00	6614.25	0.68	377.19	141.41	0.07	0.04	0.071	0.04	0.02	0.03
BS R1	7397	50 Yr	660.00	6611.00	6615.69	1.36	613.63	183.90	0.11	0.11	0.070	0.15	0.07	0.07
BS R1	7397	100 Yr	950.00	6611.00	6616.39	1.62	742.37	186.14	0.12	0.15	0.072	0.21	0.10	0.11
BS R1	7074	2 Yr	61.00	6611.00	6613.43	0.24	353.08	163.82	0.03	0.01	0.088	0.01	0.00	0.01
BS R1	7074	5 Yr	130.00	6611.00	6613.80	0.43	414.69	169.97	0.05	0.02	0.088	0.02	0.01	0.02
BS R1	7074	10 Yr	220.00	6611.00	6614.19	0.64	482.21	178.68	0.06	0.03	0.088	0.04	0.03	0.03
BS R1	7074	50 Yr	660.00	6611.00	6615.53	1.34	746.22	216.02	0.11	0.11	0.088	0.15	0.10	0.12
BS R1	7074	100 Yr	950.00	6611.00	6616.19	1.66	895.36	237.10	0.13	0.16	0.088	0.22	0.14	0.17
BS R1	6959	2 Yr	61.00	6611.00	6613.43	0.14	446.37	191.74	0.02	0.00	0.069	0.00	0.00	0.00
BS R1	6959	5 Yr	130.00	6611.00	6613.80	0.25	516.93	194.15	0.03	0.01	0.069	0.01	0.00	0.00
BS R1	6959	10 Yr	220.00	6611.00	6614.18	0.38	591.85	196.80	0.04	0.01	0.069	0.01	0.00	0.00
BS R1	6959	50 Yr	660.00	6611.00	6615.50	0.79	858.53	206.21	0.07	0.05	0.068	0.05	0.01	0.02
BS R1	6959	100 Yr	950.00	6611.00	6616.16	0.98	994.37	210.88	0.08	0.07	0.068	0.08	0.02	0.03
BS R1	6688	2 Yr	61.00	6611.00	6613.43	0.15	419.62	180.26	0.02	0.00	0.070	0.00	0.00	0.00
BS R1	6688	5 Yr	130.00	6611.00	6613.79	0.28	484.62	181.94	0.03	0.01	0.070	0.01	0.00	0.00
BS R1	6688	10 Yr	220.00	6611.00	6614.16	0.41	552.89	183.62	0.04	0.02	0.070	0.02	0.01	0.01
BS R1	6688	50 Yr	660.00	6611.00	6615.45	0.87	792.66	189.17	0.07	0.06	0.070	0.06	0.04	0.03
BS R1	6688	100 Yr	950.00	6611.00	6616.08	1.09	913.20	191.83	0.09	0.09	0.070	0.10	0.06	0.05
BS R1	6600		Inl Struct											
BS R1	6534	2 Yr	36.00	6596.37	6597.47	0.45	81.78	98.00	0.08	0.03	0.069	0.03	0.01	0.01
BS R1	6534	5 Yr	110.00	6596.37	6598.02	0.82	137.02	101.85	0.12	0.08	0.069	0.08	0.03	0.04
BS R1	6534	10 Yr	210.00	6596.37	6598.49	1.17	184.95	104.19	0.15	0.15	0.069	0.15	0.06	0.08
BS R1	6534	50 Yr	640.00	6596.37	6599.74	2.11	318.60	109.94	0.21	0.39	0.069	0.42	0.19	0.24
BS R1	6534	100 Yr	930.00	6596.37	6600.33	2.56	384.12	112.37	0.23	0.53	0.069	0.59	0.27	0.33
BS R1	6318	2 Yr	36.00	6596.61	6596.96	2.94	16.71	85.67	0.94	1.16	0.072	1.79	0.87	0.64
BS R1	6318	5 Yr	110.00	6596.61	6597.18	4.03	39.21	105.77	0.98	1.99	0.080	2.80	1.69	1.59
BS R1	6318	10 Yr	210.00	6596.61	6597.45	4.31	68.20	107.47	0.85	2.22	0.084	2.78	2.03	1.89
BS R1	6318	50 Yr	640.00	6596.61	6598.20	5.78	151.28	111.89	0.82	3.47	0.087	4.00	3.37	3.00
BS R1	6318	100 Yr	930.00	6596.61	6598.60	6.46	195.87	113.84	0.82	4.08	0.087	4.64	4.01	3.50
BS R1	6200		Inl Struct											
BS R1	6160	2 Yr	28.00	6585.64	6589.40	0.11	270.11	95.20	0.01	0.00	0.077	0.00	0.00	0.00
BS R1	6160	5 Yr	110.00	6585.64	6590.21	0.34	350.41	101.75	0.03	0.01	0.077	0.01	0.00	0.01
BS R1	6160	10 Yr	210.00	6585.64	6590.80	0.56	411.57	105.97	0.05	0.03	0.077	0.03	0.01	0.02
BS R1	6160	50 Yr	640.00	6585.64	6592.27	1.25	574.68	115.12	0.09	0.12	0.077	0.15	0.06	0.08
BS R1	6160	100 Yr	930.00	6585.64	6592.94	1.61	652.72	118.72	0.11	0.20	0.078	0.25	0.09	0.13
BS R1	5396	2 Yr	28.00	6584.00	6589.40	0.04	809.90	174.61	0.00	0.00	0.085	0.00	0.00	0.00
BS R1	5396	5 Yr	110.00	6584.00	6590.20	0.14	952.41	177.81	0.01	0.00	0.085	0.00	0.00	0.00

HEC-RAS Plan: Plan 05 River: Black Squirrel * Reach: BS R1 (Continued)

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl	Shear Total (lb/sq ft)	Mann Wtd Total	Shear Chan (lb/sq ft)	Shear LOB (lb/sq ft)	Shear ROB (lb/sq ft)
BS R1	5396	10 Yr	210.00	6584.00	6590.78	0.24	1055.73	179.93	0.02	0.00	0.086	0.01	0.00	0.00
BS R1	5396	50 Yr	640.00	6584.00	6592.19	0.58	1312.80	184.58	0.04	0.03	0.086	0.03	0.02	0.02
BS R1	5396	100 Yr	930.00	6584.00	6592.81	0.78	1428.25	186.60	0.05	0.05	0.086	0.05	0.04	0.04
BS R1	5344	2 Yr	28.00	6589.70	6589.40		741.11	201.15	0.00	0.00	0.110			0.00
BS R1	5344	5 Yr	110.00	6589.70	6590.20	0.03	920.14	245.35	0.01	0.00	0.101	0.00	0.00	0.00
BS R1	5344	10 Yr	210.00	6589.70	6590.78	0.09	1066.85	263.39	0.02	0.01	0.101	0.00	0.00	0.01
BS R1	5344	50 Yr	640.00	6589.70	6592.19	0.31	1461.41	297.12	0.03	0.03	0.101	0.02	0.01	0.04
BS R1	5344	100 Yr	930.00	6589.70	6592.81	0.46	1651.74	316.33	0.05	0.06	0.105	0.03	0.02	0.06
BS R1	5300		Inl Struct											
BS R1	5293	2 Yr	28.00	6586.00	6586.51	3.42	9.44	32.36	0.93	1.51	0.063	2.17	0.43	0.89
BS R1	5293	5 Yr	110.00	6586.00	6586.99	4.84	35.73	70.36	0.90	1.90	0.075	3.37	1.33	1.53
BS R1	5293	10 Yr	210.00	6586.00	6587.30	5.89	60.12	84.49	0.94	2.65	0.083	4.51	2.17	2.07
BS R1	5293	50 Yr	640.00	6586.00	6588.10	8.39	137.89	110.82	1.04	4.80	0.092	7.74	4.48	3.81
BS R1	5293	100 Yr	930.00	6586.00	6588.48	9.40	182.45	122.85	1.07	5.71	0.094	9.17	5.63	4.37
BS R1	5211	2 Yr	28.00	6574.00	6574.97	2.63	10.64	13.89	0.53	1.06	0.070	1.06		
BS R1	5211	5 Yr	110.00	6574.00	6576.16	3.11	42.71	34.06	0.44	0.95	0.073	1.17	0.63	
BS R1	5211	10 Yr	210.00	6574.00	6576.77	3.98	65.42	40.57	0.50	1.43	0.075	1.77	1.06	0.08
BS R1	5211	50 Yr	640.00	6574.00	6577.95	7.13	123.17	58.98	0.70	3.20	0.073	4.85	2.35	0.99
BS R1	5211	100 Yr	930.00	6574.00	6578.38	9.12	157.81	84.66	0.84	3.98	0.070	7.61	2.82	1.54
BS R1	5171	2 Yr	1.00	6574.25	6574.08		0.88	10.91	0.00	1.23	0.120		1.23	
BS R1	5171	5 Yr	93.00	6574.25	6574.90	4.28	23.34	47.98	1.27	4.99	0.093	3.60	6.72	
BS R1	5171	10 Yr	210.00	6574.25	6575.34	5.60	50.46	73.44	1.15	4.52	0.090	4.82	4.31	
BS R1	5171	50 Yr	640.00	6574.25	6576.08	8.14	107.61	84.10	1.21	7.38	0.089	8.18	7.22	1.23
BS R1	5171	100 Yr	930.00	6574.25	6576.60	8.65	157.25	104.41	1.09	6.46	0.086	8.33	6.36	1.56
BS R1	5056	2 Yr	1.00	6570.00	6570.09	0.50	2.07	24.24	0.30	0.08	0.071	0.08		0.06
BS R1	5056	5 Yr	93.00	6570.00	6571.31	2.65	44.55	46.23	0.41	0.65	0.072	0.89	0.46	0.42
BS R1	5056	10 Yr	210.00	6570.00	6572.02	3.53	82.61	60.93	0.44	0.91	0.074	1.36	0.71	0.62
BS R1	5056	50 Yr	640.00	6570.00	6573.53	4.76	221.91	105.70	0.45	1.22	0.081	2.06	0.97	1.02
BS R1	5056	100 Yr	930.00	6570.00	6574.33	4.99	308.99	111.45	0.42	1.34	0.086	2.11	1.09	1.20
BS R1	4978	2 Yr	1.00	6568.00	6568.07	1.39	0.81	12.62	0.95	0.84	0.088	0.87	0.80	0.76
BS R1	4978	5 Yr	93.00	6568.00	6569.10	6.02	21.62	27.32	1.01	4.57	0.090	6.37	4.07	3.68
BS R1	4978	10 Yr	210.00	6568.00	6569.67	7.80	38.27	30.67	1.06	6.85	0.093	9.28	6.02	5.99
BS R1	4978	50 Yr	640.00	6568.00	6571.35	9.76	95.87	37.24	0.94	8.57	0.096	11.51	7.39	8.08
BS R1	4978	100 Yr	930.00	6568.00	6572.23	10.62	129.68	39.89	0.91	9.31	0.097	12.63	8.00	8.89
BS R1	4908	2 Yr	1.00	6566.00	6566.12	0.47	2.14	18.33	0.24	0.06	0.070	0.06		
BS R1	4908	5 Yr	93.00	6566.00	6567.48	2.77	35.64	29.74	0.41	0.81	0.067	0.95	0.34	0.29
BS R1	4908	10 Yr	210.00	6566.00	6568.34	3.73	63.10	34.58	0.44	1.17	0.067	1.47	0.64	0.56
BS R1	4908	50 Yr	640.00	6566.00	6570.32	5.51	141.54	44.35	0.47	1.91	0.069	2.61	1.25	1.14
BS R1	4908	100 Yr	930.00	6566.00	6571.29	6.26	187.04	48.98	0.48	2.23	0.070	3.14	1.52	1.40
BS R1	4800		Bridge											
BS R1	4741	2 Yr	1.00	6563.83	6564.05	0.70	1.43	19.28	0.45	0.21	0.080	0.21		

HEC-RAS Plan: Plan 05 River: Black Squirrel * Reach: BS R1 (Continued)

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl	Shear Total (lb/sq ft)	Mann Wtd Total	Shear Chan (lb/sq ft)	Shear LOB (lb/sq ft)	Shear ROB (lb/sq ft)
BS R1	4741	5 Yr	93.00	6563.83	6565.24	3.40	30.54	29.23	0.53	1.59	0.078	1.93	0.87	0.99
BS R1	4741	10 Yr	210.00	6563.83	6565.99	4.52	54.09	34.01	0.56	2.29	0.079	2.93	1.41	1.55
BS R1	4741	50 Yr	640.00	6563.83	6567.70	6.60	121.42	44.60	0.60	3.63	0.080	5.08	2.40	2.77
BS R1	4741	100 Yr	930.00	6563.83	6568.52	7.49	160.06	49.95	0.62	4.22	0.080	6.14	2.86	3.32
BS R1	4654	2 Yr	1.00	6562.00	6562.13	0.54	1.97	16.09	0.27	0.10	0.082	0.11	0.09	0.05
BS R1	4654	5 Yr	93.00	6562.00	6563.56	3.19	36.95	31.54	0.45	1.18	0.083	1.59	0.99	0.82
BS R1	4654	10 Yr	210.00	6562.00	6564.38	4.22	65.54	37.54	0.48	1.74	0.085	2.41	1.52	1.29
BS R1	4654	50 Yr	640.00	6562.00	6566.13	6.28	140.12	46.98	0.54	3.13	0.087	4.45	2.81	2.49
BS R1	4654	100 Yr	930.00	6562.00	6566.95	7.21	179.68	50.41	0.57	3.86	0.088	5.52	3.48	3.16
BS R1	4536	2 Yr	1.00	6560.00	6560.11	0.76	1.34	12.51	0.40	0.16	0.069	0.17	0.08	
BS R1	4536	5 Yr	93.00	6560.00	6561.56	3.74	32.37	30.18	0.53	1.14	0.070	1.67	0.81	0.81
BS R1	4536	10 Yr	210.00	6560.00	6562.30	5.00	57.81	37.72	0.58	1.72	0.073	2.62	1.34	1.33
BS R1	4536	50 Yr	640.00	6560.00	6563.90	7.27	127.22	48.76	0.65	3.05	0.076	4.66	2.62	2.45
BS R1	4536	100 Yr	930.00	6560.00	6564.67	8.21	166.16	53.15	0.67	3.66	0.077	5.59	3.22	2.96
BS R1	4457	2 Yr	1.00	6559.00	6559.13	0.47	2.23	18.84	0.23	0.06	0.070	0.06	0.03	0.02
BS R1	4457	5 Yr	93.00	6559.00	6560.34	3.17	38.07	37.89	0.48	0.94	0.075	1.26	0.73	0.64
BS R1	4457	10 Yr	210.00	6559.00	6561.03	4.26	66.35	43.60	0.53	1.47	0.077	1.99	1.22	1.05
BS R1	4457	50 Yr	640.00	6559.00	6562.57	6.41	140.60	52.45	0.60	2.74	0.080	3.72	2.41	2.02
BS R1	4457	100 Yr	930.00	6559.00	6563.30	7.40	180.11	56.32	0.63	3.39	0.081	4.66	3.02	2.52
BS R1	4408	2 Yr	1.00	6558.00	6558.07	1.34	0.75	11.94	0.94	0.62	0.070	0.62		
BS R1	4408	5 Yr	93.00	6558.00	6558.99	4.28	25.03	35.12	0.79	2.02	0.068	2.61	1.14	1.09
BS R1	4408	10 Yr	210.00	6558.00	6559.46	5.91	42.58	38.81	0.88	3.40	0.071	4.34	2.29	2.25
BS R1	4408	50 Yr	640.00	6558.00	6560.57	9.01	90.01	46.33	1.00	6.36	0.074	8.29	4.73	4.81
BS R1	4408	100 Yr	930.00	6558.00	6561.18	10.13	119.09	50.07	1.01	7.35	0.075	9.75	5.56	5.75
BS R1	4290	2 Yr	1.00	6555.41	6555.54	0.32	3.11	42.32	0.21	0.03	0.070	0.03		
BS R1	4290	5 Yr	93.00	6555.41	6556.16	2.00	54.66	110.68	0.44	0.49	0.069	0.64	0.29	0.27
BS R1	4290	10 Yr	210.00	6555.41	6556.50	2.74	93.52	121.87	0.49	0.82	0.072	1.05	0.57	0.59
BS R1	4290	50 Yr	640.00	6555.41	6557.25	4.17	203.23	160.31	0.56	1.46	0.075	2.00	1.08	1.29
BS R1	4290	100 Yr	930.00	6555.41	6557.60	4.74	260.29	163.37	0.58	1.86	0.077	2.43	1.47	1.63
BS R1	4256	2 Yr	1.00	6554.83	6554.92	0.85	1.17	25.46	0.70	0.28	0.070	0.28		
BS R1	4256	5 Yr	93.00	6554.83	6555.52	2.16	52.47	115.22	0.52	0.66	0.076	0.79	0.56	0.16
BS R1	4256	10 Yr	210.00	6554.83	6555.84	2.90	90.93	129.36	0.55	1.00	0.077	1.22	0.89	0.41
BS R1	4256	50 Yr	640.00	6554.83	6556.57	4.27	199.94	160.30	0.60	1.70	0.079	2.17	1.48	1.17
BS R1	4256	100 Yr	930.00	6554.83	6556.92	4.85	258.74	169.20	0.61	2.05	0.080	2.61	1.80	1.51
BS R1	4124	2 Yr	1.00	6552.29	6551.96		2.79	32.33	0.00	0.05	0.080		0.05	
BS R1	4124	5 Yr	93.00	6552.29	6552.58	0.91	50.19	95.72	0.41	0.73	0.078	0.21	0.77	
BS R1	4124	10 Yr	210.00	6552.29	6552.92	1.90	84.37	106.25	0.49	1.12	0.077	0.65	1.22	0.22
BS R1	4124	50 Yr	640.00	6552.29	6553.71	3.69	173.97	117.49	0.58	2.06	0.078	1.75	2.19	1.09
BS R1	4124	100 Yr	930.00	6552.29	6554.14	4.40	224.69	123.07	0.60	2.45	0.079	2.25	2.57	1.46
BS R1	4019	2 Yr	1.00	6549.34	6549.49	1.62	0.62	7.49	0.99	0.83	0.070	0.83		
BS R1	4019	5 Yr	93.00	6549.34	6550.42	3.15	55.58	92.41	0.57	0.89	0.098	1.40	0.82	0.71
BS R1	4019	10 Yr	210.00	6549.34	6550.89	3.92	104.55	115.02	0.58	1.22	0.102	1.89	1.14	1.02
BS R1	4019	50 Yr	640.00	6549.34	6551.92	5.15	235.73	133.49	0.58	1.97	0.107	2.73	1.92	1.53

HEC-RAS Plan: Plan 05 River: Black Squirrel * Reach: BS R1 (Continued)

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl	Shear Total (lb/sq ft)	Mann Wtd Total	Shear Chan (lb/sq ft)	Shear LOB (lb/sq ft)	Shear ROB (lb/sq ft)
BS R1	4019	100 Yr	930.00	6549.34	6552.42	5.72	304.18	137.51	0.59	2.37	0.108	3.16	2.32	1.79
BS R1	3931	2 Yr	1.00	6548.00	6548.09	0.17	5.79	67.73	0.10	0.01	0.070	0.01		
BS R1	3931	5 Yr	93.00	6548.00	6548.66	1.92	50.83	89.59	0.43	0.55	0.069	0.60	0.27	0.03
BS R1	3931	10 Yr	210.00	6548.00	6548.98	2.79	81.27	97.34	0.51	0.97	0.070	1.10	0.58	0.25
BS R1	3931	50 Yr	640.00	6548.00	6549.65	4.79	149.33	104.96	0.66	2.38	0.072	2.71	1.67	1.08
BS R1	3931	100 Yr	930.00	6548.00	6549.97	5.74	183.07	108.04	0.73	3.21	0.072	3.67	2.32	1.59
BS R1	3844	2 Yr	1.00	6544.82	6544.89	1.27	0.79	16.10	1.01	1.01	0.090	1.01		
BS R1	3844	5 Yr	93.00	6544.82	6545.36	3.83	35.11	102.43	0.97	2.99	0.103	4.27	2.71	1.74
BS R1	3844	10 Yr	210.00	6544.82	6545.68	4.27	70.21	114.81	0.84	3.38	0.106	4.48	3.25	2.10
BS R1	3844	50 Yr	640.00	6544.82	6546.57	4.95	181.19	132.88	0.67	3.78	0.109	4.71	3.88	2.46
BS R1	3844	100 Yr	930.00	6544.82	6547.05	5.26	247.38	139.63	0.63	3.96	0.109	4.88	4.14	2.62
BS R1	3643	2 Yr	1.00	6538.00	6538.14	0.51	2.06	15.36	0.24	0.11	0.092	0.12	0.09	0.06
BS R1	3643	5 Yr	93.00	6538.00	6539.89	2.65	49.98	43.88	0.34	0.78	0.091	1.30	0.53	0.70
BS R1	3643	10 Yr	210.00	6538.00	6540.76	3.42	97.08	64.66	0.36	1.03	0.094	1.91	0.76	1.04
BS R1	3643	50 Yr	640.00	6538.00	6542.37	4.78	224.81	91.07	0.40	1.79	0.103	3.20	1.54	1.70
BS R1	3643	100 Yr	930.00	6538.00	6543.10	5.35	294.65	100.48	0.42	2.16	0.105	3.80	1.93	1.96
BS R1	3489	2 Yr	1.00	6536.00	6536.15	0.54	2.15	14.94	0.24	0.12	0.099	0.12	0.10	0.11
BS R1	3489	5 Yr	93.00	6536.00	6537.74	3.20	43.78	39.19	0.43	1.23	0.100	1.95	0.96	1.37
BS R1	3489	10 Yr	210.00	6536.00	6538.54	4.26	80.79	55.07	0.47	1.74	0.101	3.05	1.40	2.03
BS R1	3489	50 Yr	640.00	6536.00	6540.14	5.71	189.61	75.52	0.49	2.77	0.108	4.65	2.49	2.85
BS R1	3489	100 Yr	930.00	6536.00	6540.93	6.19	250.73	79.71	0.49	3.22	0.110	5.15	2.99	3.08
BS R1	3368	2 Yr	1.00	6531.72	6531.88	1.75	0.57	6.74	1.06	1.60	0.090	1.60		
BS R1	3368	5 Yr	93.00	6531.72	6532.89	5.30	17.99	22.23	0.98	5.96	0.086	6.67	1.38	1.67
BS R1	3368	10 Yr	210.00	6531.72	6533.52	6.78	33.06	25.47	0.97	7.64	0.085	9.15	3.27	3.05
BS R1	3368	50 Yr	640.00	6531.72	6535.03	9.59	75.95	31.21	0.97	11.22	0.086	14.56	6.48	5.96
BS R1	3368	100 Yr	930.00	6531.72	6535.79	10.77	100.92	34.25	0.97	12.61	0.086	17.05	7.67	6.97
BS R1	3300		Culvert											
BS R1	3268	2 Yr	1.00	6530.24	6530.41	1.93	0.52	4.67	1.02	0.55	0.050	0.55		
BS R1	3268	5 Yr	93.00	6530.24	6531.70	5.66	16.45	16.93	1.01	2.30	0.050	2.30		
BS R1	3268	10 Yr	210.00	6530.24	6532.42	7.09	29.69	19.77	1.01	2.99	0.049	3.11	0.08	0.29
BS R1	3268	50 Yr	640.00	6530.24	6534.15	10.04	68.55	25.35	0.98	3.84	0.046	4.85	1.23	1.11
BS R1	3268	100 Yr	930.00	6530.24	6535.12	11.09	94.93	29.42	0.95	3.92	0.046	5.43	1.51	1.42
BS R1	3154	2 Yr	1.00	6527.65	6527.94	0.69	1.44	9.39	0.31	0.06	0.050	0.06		
BS R1	3154	5 Yr	93.00	6527.65	6529.19	3.53	31.31	28.32	0.55	0.68	0.053	0.81	0.39	0.49
BS R1	3154	10 Yr	210.00	6527.65	6530.14	4.42	60.12	32.23	0.52	0.85	0.055	1.05	0.58	0.61
BS R1	3154	50 Yr	640.00	6527.65	6532.55	6.09	148.02	41.02	0.50	1.16	0.057	1.57	0.89	0.80
BS R1	3154	100 Yr	930.00	6527.65	6533.70	6.96	199.59	49.46	0.51	1.25	0.057	1.90	1.07	0.77
BS R1	3049	2 Yr	1.00	6526.00	6526.09	1.90	0.53	6.12	1.14	0.58	0.050	0.58		
BS R1	3049	5 Yr	93.00	6526.00	6527.88	4.76	25.34	20.14	0.63	0.94	0.051	1.33	0.52	0.61
BS R1	3049	10 Yr	210.00	6526.00	6528.93	6.21	49.15	25.32	0.65	1.31	0.056	1.94	0.88	0.95
BS R1	3049	50 Yr	640.00	6526.00	6531.22	9.18	120.25	37.91	0.72	2.09	0.061	3.47	1.63	1.61
BS R1	3049	100 Yr	930.00	6526.00	6531.85	11.57	146.36	44.35	0.85	2.97	0.062	5.31	2.43	2.22

HEC-RAS Plan: Plan 05 River: Black Squirrel * Reach: BS R1 (Continued)

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl	Shear Total (lb/sq ft)	Mann Wtd Total	Shear Chan (lb/sq ft)	Shear LOB (lb/sq ft)	Shear ROB (lb/sq ft)
BS R1	2893	2 Yr	1.00	6524.00	6524.27	0.63	1.59	6.82	0.23	0.05	0.050	0.05		
BS R1	2893	5 Yr	93.00	6524.00	6526.04	4.35	22.47	16.17	0.60	0.96	0.047	1.15	0.34	0.14
BS R1	2893	10 Yr	210.00	6524.00	6526.89	6.29	38.04	20.43	0.70	1.54	0.046	2.09	0.74	0.51
BS R1	2893	50 Yr	640.00	6524.00	6528.72	9.93	101.71	56.31	0.84	1.82	0.044	4.33	1.72	0.92
BS R1	2893	100 Yr	930.00	6524.00	6529.66	10.52	161.56	67.61	0.81	2.08	0.054	4.55	1.84	1.41
BS R1	2751	2 Yr	1.00	6523.00	6523.07	1.17	0.86	13.22	0.81	0.24	0.050	0.24	0.12	
BS R1	2751	5 Yr	93.00	6523.00	6524.29	4.06	35.31	45.08	0.64	0.67	0.056	1.08	0.56	0.46
BS R1	2751	10 Yr	210.00	6523.00	6524.81	5.75	59.66	48.04	0.76	1.34	0.064	1.93	1.01	1.09
BS R1	2751	50 Yr	640.00	6523.00	6526.20	8.43	131.69	55.09	0.83	2.53	0.071	3.42	1.75	2.37
BS R1	2751	100 Yr	930.00	6523.00	6526.87	9.74	169.31	58.70	0.88	3.15	0.072	4.29	2.11	3.06
BS R1	2593	2 Yr	1.00	6520.00	6520.09	0.73	1.38	15.88	0.43	0.07	0.044	0.07		0.03
BS R1	2593	5 Yr	93.00	6520.00	6520.98	5.55	22.97	36.03	0.99	1.16	0.046	1.78	0.69	0.83
BS R1	2593	10 Yr	210.00	6520.00	6521.59	6.63	54.22	53.40	0.93	1.37	0.057	2.16	1.06	1.14
BS R1	2593	50 Yr	640.00	6520.00	6522.73	9.91	118.15	58.56	1.06	2.94	0.067	4.03	2.65	2.15
BS R1	2593	100 Yr	930.00	6520.00	6523.34	11.21	154.93	61.55	1.08	3.57	0.069	4.82	3.30	2.54
BS R1	2456	2 Yr	1.00	6516.84	6517.02	1.15	1.14	34.73	0.83	0.11	0.040	0.19	0.05	0.05
BS R1	2456	5 Yr	93.00	6516.84	6517.98	4.03	39.99	45.88	0.70	0.78	0.070	0.92	0.74	0.71
BS R1	2456	10 Yr	210.00	6516.84	6518.63	5.35	73.41	56.97	0.73	1.06	0.071	1.38	1.10	0.87
BS R1	2456	50 Yr	640.00	6516.84	6519.67	9.10	139.82	67.41	0.97	2.58	0.074	3.40	2.60	2.24
BS R1	2456	100 Yr	930.00	6516.84	6520.00	11.50	162.52	69.46	1.16	3.97	0.075	5.22	3.95	3.51
BS R1	2331	2 Yr	1.00	6514.00	6514.11	0.77	1.30	12.28	0.41	0.09	0.050	0.09	0.03	
BS R1	2331	5 Yr	93.00	6514.00	6515.14	5.75	20.34	24.16	0.96	1.67	0.052	2.25	1.12	0.96
BS R1	2331	10 Yr	210.00	6514.00	6515.80	7.59	38.45	30.47	1.00	2.34	0.055	3.35	1.77	1.53
BS R1	2331	50 Yr	640.00	6514.00	6517.35	9.04	137.53	74.77	0.87	2.11	0.065	3.87	2.13	1.67
BS R1	2331	100 Yr	930.00	6514.00	6518.53	8.08	230.11	82.00	0.67	1.71	0.072	2.80	1.56	1.51
BS R1	2176	2 Yr	1.00	6510.00	6510.07	1.50	0.66	9.53	1.00	0.32	0.045	0.32		
BS R1	2176	5 Yr	93.00	6510.00	6511.68	4.69	23.45	18.11	0.65	0.83	0.045	1.07	0.51	0.38
BS R1	2176	10 Yr	210.00	6510.00	6512.65	6.32	42.98	21.75	0.69	1.21	0.047	1.67	0.82	0.68
BS R1	2176	50 Yr	640.00	6510.00	6514.89	9.50	99.93	29.06	0.76	2.04	0.051	3.07	1.50	1.38
BS R1	2176	100 Yr	930.00	6510.00	6515.93	10.98	131.87	32.17	0.80	2.47	0.052	3.84	1.86	1.75
BS R1	2124	2 Yr	1.00	6509.00	6509.20	0.87	1.15	6.72	0.37	0.08	0.045	0.08		
BS R1	2124	5 Yr	93.00	6509.00	6510.57	6.47	17.61	16.37	0.94	1.54	0.044	2.12	0.82	0.83
BS R1	2124	10 Yr	210.00	6509.00	6511.48	8.40	34.49	20.66	0.96	2.09	0.048	3.04	1.37	1.37
BS R1	2124	50 Yr	640.00	6509.00	6513.60	11.89	87.40	29.13	0.99	3.14	0.054	4.93	2.40	2.35
BS R1	2124	100 Yr	930.00	6509.00	6514.65	13.31	120.35	33.34	1.00	3.55	0.056	5.76	2.79	2.75
BS R1	2054	2 Yr	1.00	6508.00	6508.10	1.47	0.68	7.54	0.86	0.27	0.045	0.27		
BS R1	2054	5 Yr	93.00	6508.00	6509.66	4.46	22.37	18.96	0.66	0.84	0.042	1.02	0.22	0.33
BS R1	2054	10 Yr	210.00	6508.00	6510.58	5.87	42.04	23.46	0.68	1.12	0.044	1.49	0.49	0.60
BS R1	2054	50 Yr	640.00	6508.00	6512.70	8.63	101.66	32.45	0.72	1.76	0.047	2.60	1.06	1.17
BS R1	2054	100 Yr	930.00	6508.00	6513.77	9.76	138.66	36.96	0.73	2.01	0.049	3.10	1.29	1.41
BS R1	1993	2 Yr	1.00	6507.00	6507.15	0.67	1.63	11.31	0.30	0.06	0.053	0.06	0.03	0.05
BS R1	1993	5 Yr	93.00	6507.00	6508.37	6.23	19.46	17.75	0.94	1.93	0.055	2.47	1.22	1.50

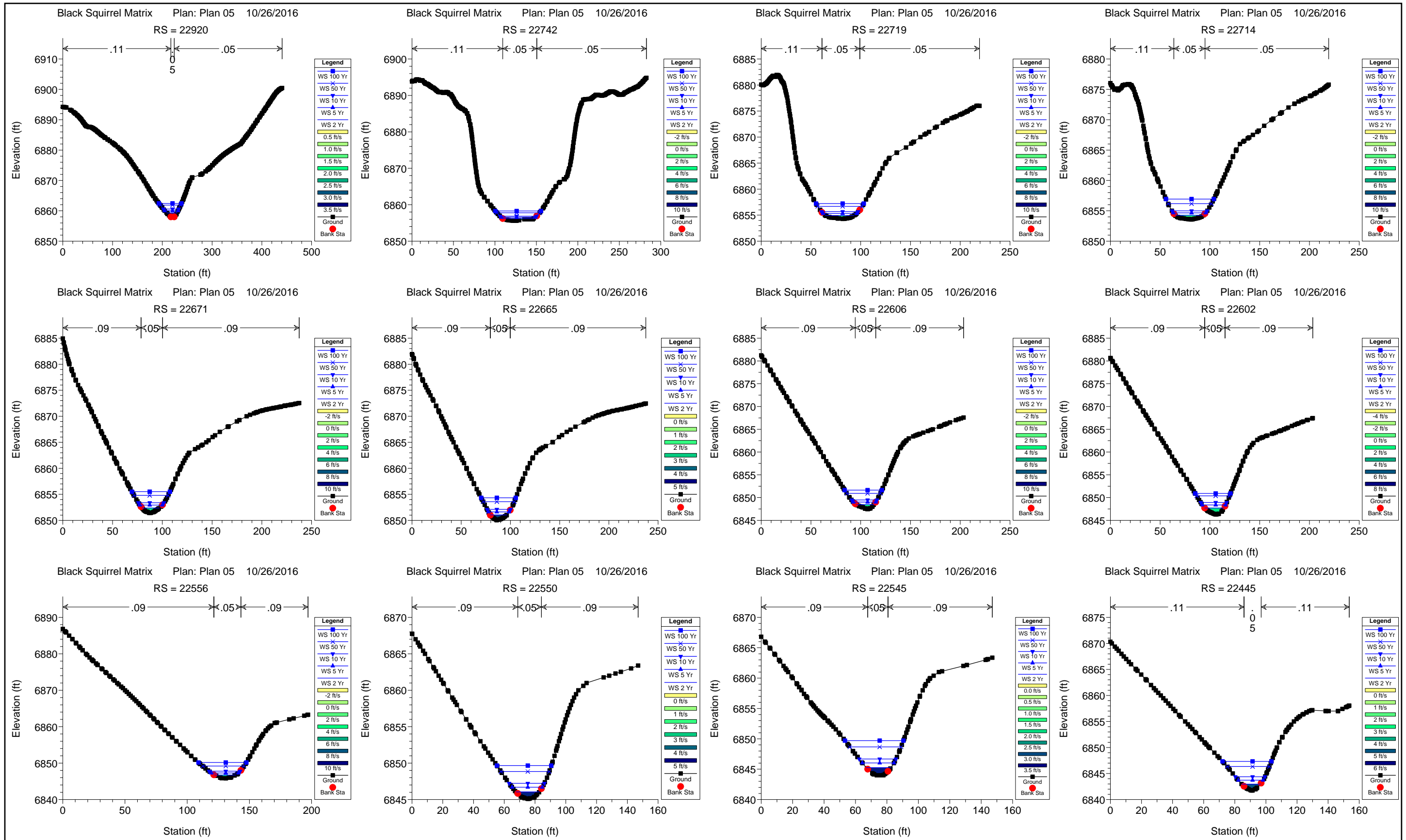
HEC-RAS Plan: Plan 05 River: Black Squirrel * Reach: BS R1 (Continued)

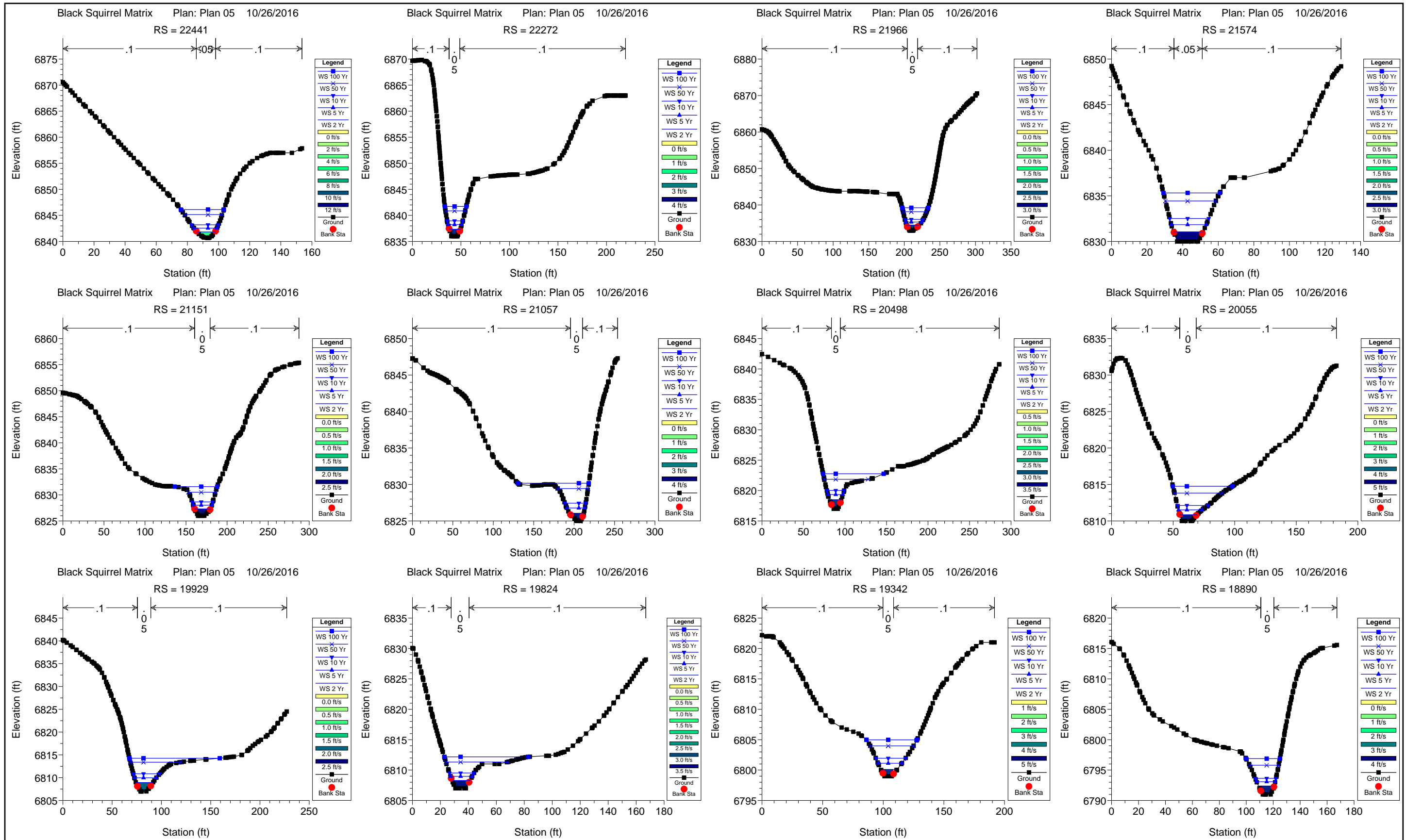
Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl	Shear Total (lb/sq ft)	Mann Wtd Total	Shear Chan (lb/sq ft)	Shear LOB (lb/sq ft)	Shear ROB (lb/sq ft)
BS R1	1993	10 Yr	210.00	6507.00	6509.16	8.45	34.90	21.32	1.01	2.85	0.057	3.90	1.93	2.25
BS R1	1993	50 Yr	640.00	6507.00	6511.17	11.88	86.41	29.83	1.03	4.07	0.061	6.20	3.07	3.31
BS R1	1993	100 Yr	930.00	6507.00	6512.13	13.43	117.00	34.26	1.05	4.64	0.062	7.39	3.63	3.77
BS R1	1921	2 Yr	1.00	6506.00	6506.06	1.13	0.88	15.82	0.84	0.24	0.050	0.24		
BS R1	1921	5 Yr	93.00	6506.00	6507.24	3.85	28.39	28.66	0.61	0.79	0.051	0.98	0.47	0.45
BS R1	1921	10 Yr	210.00	6506.00	6508.12	4.79	55.47	33.37	0.58	0.99	0.053	1.27	0.63	0.67
BS R1	1921	50 Yr	640.00	6506.00	6510.12	6.84	137.63	50.34	0.60	1.34	0.055	2.07	1.02	0.92
BS R1	1921	100 Yr	930.00	6506.00	6510.93	7.93	179.89	55.00	0.63	1.69	0.057	2.62	1.27	1.25
BS R1	1767	2 Yr	1.00	6504.00	6504.13	0.54	1.94	15.38	0.27	0.04	0.052	0.04	0.03	
BS R1	1767	5 Yr	93.00	6504.00	6505.50	3.86	29.49	24.61	0.56	0.74	0.053	0.93	0.51	0.32
BS R1	1767	10 Yr	210.00	6504.00	6506.17	5.85	47.23	29.91	0.70	1.36	0.053	1.88	0.91	0.72
BS R1	1767	50 Yr	640.00	6504.00	6507.58	9.79	105.22	51.73	0.91	2.50	0.055	4.45	1.72	1.83
BS R1	1767	100 Yr	930.00	6504.00	6508.37	10.82	149.73	60.56	0.91	2.84	0.059	5.08	2.13	2.15
BS R1	1628	2 Yr	1.00	6502.00	6502.04	1.47	0.73	18.19	1.29	0.44	0.053	0.45		0.43
BS R1	1628	5 Yr	93.00	6502.00	6502.96	5.36	21.08	26.28	0.97	1.71	0.054	2.06	0.99	1.46
BS R1	1628	10 Yr	210.00	6502.00	6503.71	6.32	42.99	31.52	0.85	1.85	0.055	2.36	1.25	1.53
BS R1	1628	50 Yr	640.00	6502.00	6505.70	7.86	120.65	47.87	0.72	1.89	0.057	2.82	1.45	1.50
BS R1	1628	100 Yr	930.00	6502.00	6506.49	8.92	161.91	55.73	0.74	2.16	0.057	3.41	1.65	1.77
BS R1	1539	2 Yr	1.00	6500.00	6500.23	0.67	1.49	8.36	0.28	0.06	0.050	0.06		
BS R1	1539	5 Yr	93.00	6500.00	6501.87	3.48	30.07	23.80	0.49	0.58	0.048	0.74	0.32	0.20
BS R1	1539	10 Yr	210.00	6500.00	6502.81	4.69	55.56	30.70	0.52	0.81	0.049	1.15	0.56	0.36
BS R1	1539	50 Yr	640.00	6500.00	6505.09	6.54	155.88	59.96	0.53	0.96	0.052	1.80	0.91	0.57
BS R1	1539	100 Yr	930.00	6500.00	6505.81	7.77	201.11	65.95	0.58	1.32	0.056	2.42	1.24	0.88
BS R1	1390	2 Yr	1.00	6498.00	6498.07	1.75	0.57	8.60	1.19	0.53	0.050	0.53		
BS R1	1390	5 Yr	93.00	6498.00	6499.36	6.19	15.97	15.21	0.98	2.13	0.047	2.54	0.83	0.44
BS R1	1390	10 Yr	210.00	6498.00	6500.22	7.96	30.89	19.46	0.97	2.61	0.048	3.52	1.39	1.02
BS R1	1390	50 Yr	640.00	6498.00	6502.29	11.12	83.25	33.84	0.96	3.16	0.050	5.47	2.41	1.60
BS R1	1390	100 Yr	930.00	6498.00	6503.82	10.35	176.63	81.50	0.76	1.62	0.051	4.27	1.93	0.99
BS R1	1307	2 Yr	1.00	6496.00	6496.14	0.65	1.53	11.17	0.31	0.06	0.050	0.06		
BS R1	1307	5 Yr	93.00	6496.00	6497.77	3.75	28.84	21.47	0.51	0.66	0.049	0.84	0.26	0.39
BS R1	1307	10 Yr	210.00	6496.00	6498.82	4.98	54.17	26.76	0.53	0.91	0.052	1.26	0.48	0.61
BS R1	1307	50 Yr	640.00	6496.00	6501.49	6.89	165.82	68.71	0.52	0.85	0.052	1.92	0.51	0.70
BS R1	1307	100 Yr	930.00	6496.00	6502.53	7.61	248.33	86.40	0.53	0.98	0.059	2.21	0.71	0.78
BS R1	1217	2 Yr	1.00	6494.45	6494.59	1.78	0.56	6.03	1.03	0.49	0.050	0.49		
BS R1	1217	5 Yr	93.00	6494.45	6496.06	6.73	18.50	16.85	0.97	2.00	0.054	2.80	1.41	1.05
BS R1	1217	10 Yr	210.00	6494.45	6496.99	8.71	36.05	20.74	0.98	2.75	0.058	3.99	2.10	1.77
BS R1	1217	50 Yr	640.00	6494.45	6498.99	13.09	85.34	28.92	1.10	4.63	0.064	7.39	3.71	3.49
BS R1	1217	100 Yr	930.00	6494.45	6500.89	11.94	184.62	72.12	0.84	2.14	0.063	5.46	1.58	2.54
BS R1	1065	2 Yr	1.00	6490.00	6490.13	1.83	0.55	4.63	0.94	0.49	0.050	0.49		
BS R1	1065	5 Yr	93.00	6490.00	6492.01	5.15	20.24	15.52	0.70	1.20	0.046	1.59	0.48	0.41
BS R1	1065	10 Yr	210.00	6490.00	6493.12	6.68	41.32	23.41	0.70	1.38	0.047	2.26	0.72	0.74
BS R1	1065	50 Yr	640.00	6490.00	6495.37	9.83	106.06	33.76	0.77	2.40	0.058	4.02	1.82	1.47
BS R1	1065	100 Yr	930.00	6490.00	6496.33	11.50	140.54	38.88	0.83	2.99	0.060	5.19	2.36	1.92

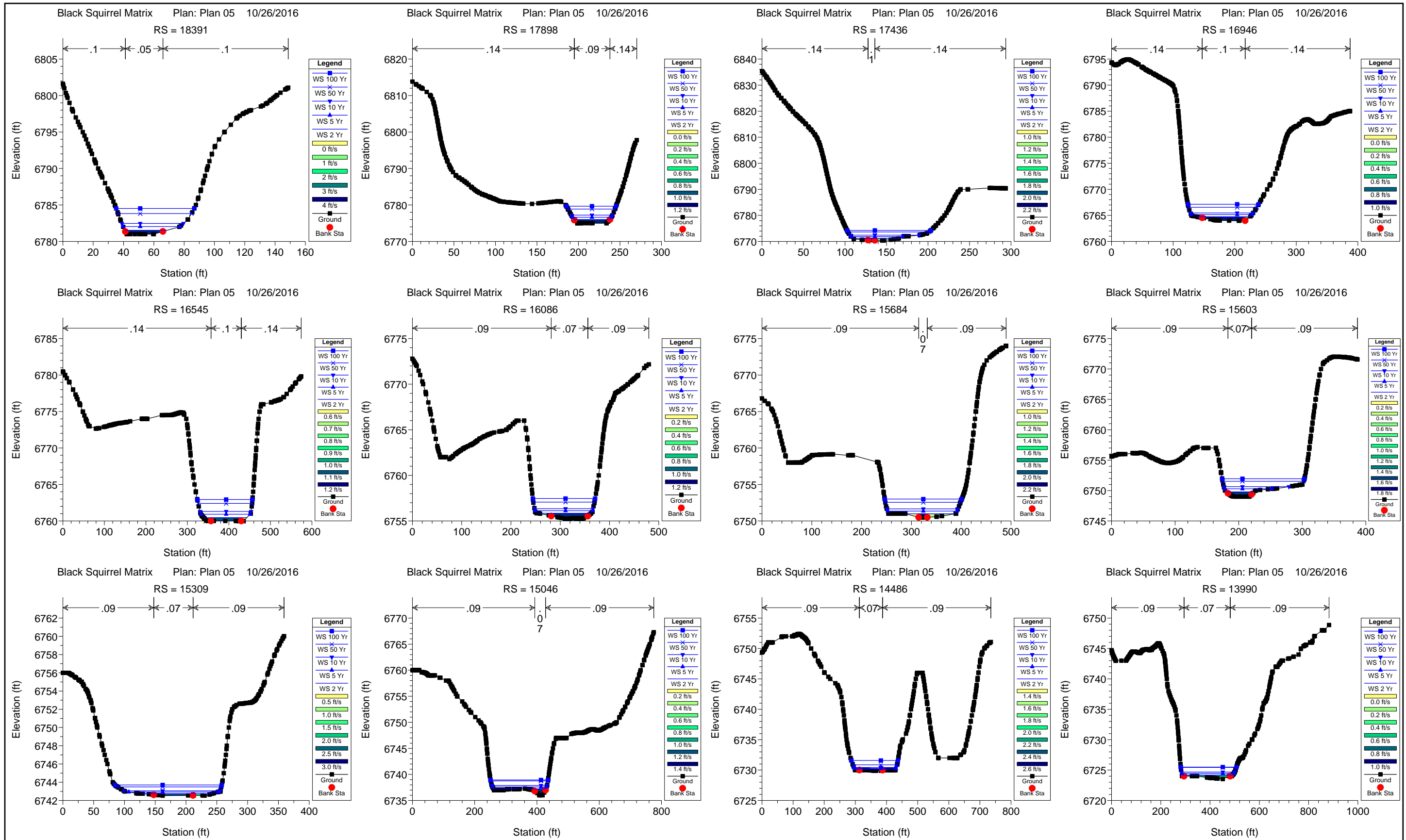
HEC-RAS Plan: Plan 05 River: Black Squirrel * Reach: BS R1 (Continued)

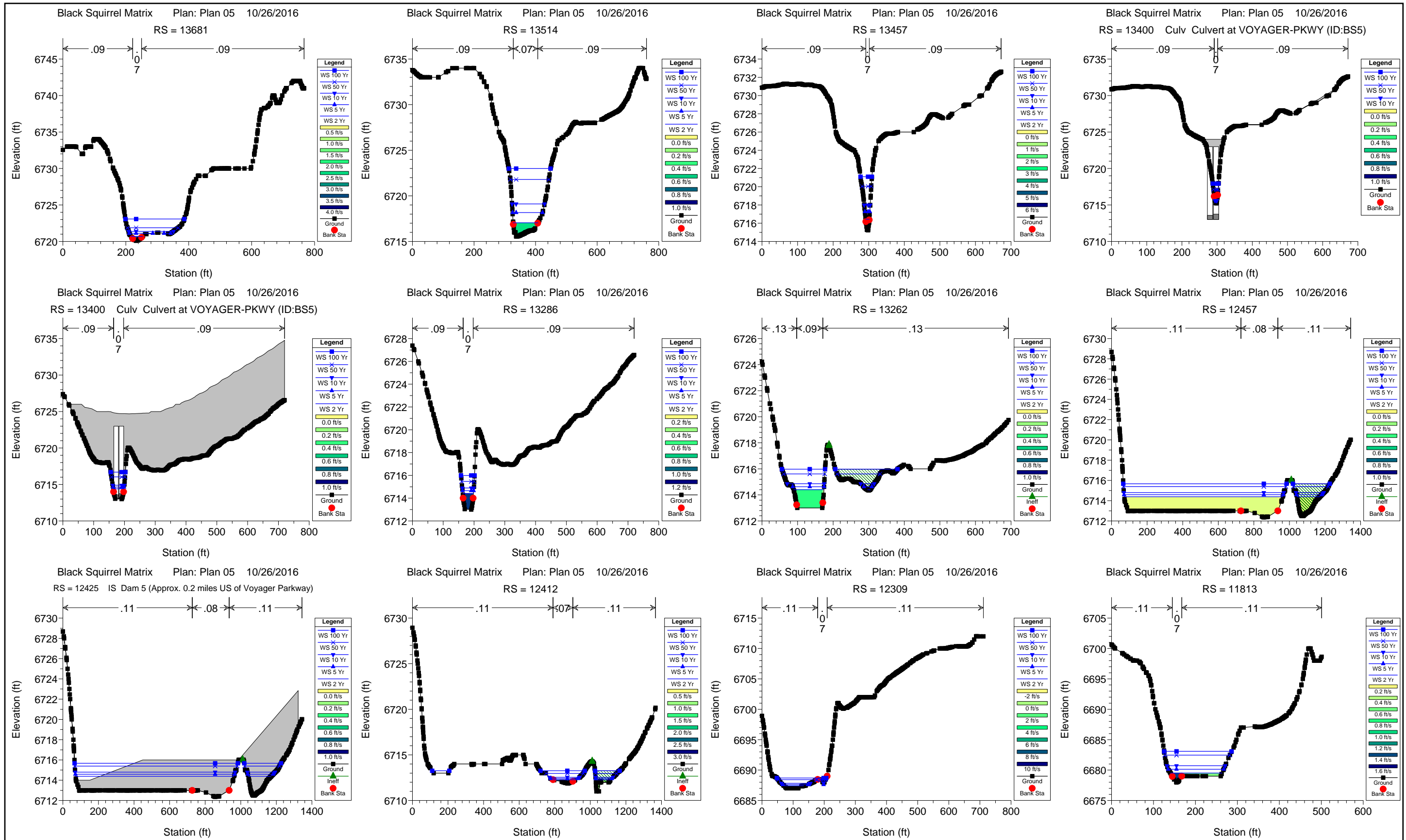
Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl	Shear Total (lb/sq ft)	Mann Wtd Total	Shear Chan (lb/sq ft)	Shear LOB (lb/sq ft)	Shear ROB (lb/sq ft)
BS R1	855	2 Yr	1.00	6487.00	6487.20	0.73	1.38	7.66	0.30	0.07	0.050	0.07		
BS R1	855	5 Yr	93.00	6487.00	6488.76	5.14	22.02	17.81	0.70	1.17	0.050	1.59	0.62	0.62
BS R1	855	10 Yr	210.00	6487.00	6489.52	7.59	37.14	21.93	0.86	2.08	0.052	3.05	1.26	1.30
BS R1	855	50 Yr	640.00	6487.00	6491.49	11.38	91.56	33.34	0.96	3.40	0.058	5.62	2.42	2.52
BS R1	855	100 Yr	930.00	6487.00	6492.54	12.62	129.50	39.22	0.95	3.76	0.061	6.43	2.85	2.88
BS R1	771	2 Yr	1.00	6486.00	6486.08	1.20	0.83	11.29	0.78	0.24	0.050	0.24		
BS R1	771	5 Yr	93.00	6486.00	6487.28	4.72	21.19	21.60	0.77	1.26	0.048	1.50	0.26	0.51
BS R1	771	10 Yr	210.00	6486.00	6488.04	6.24	39.35	26.14	0.79	1.71	0.049	2.22	0.62	0.93
BS R1	771	50 Yr	640.00	6486.00	6490.01	8.69	103.12	39.25	0.78	2.24	0.053	3.41	1.22	1.48
BS R1	771	100 Yr	930.00	6486.00	6491.02	9.67	148.21	51.00	0.77	2.26	0.054	3.91	1.46	1.50
BS R1	710	2 Yr	1.00	6485.00	6485.15	0.66	1.52	11.21	0.32	0.06	0.050	0.06		
BS R1	710	5 Yr	93.00	6485.00	6486.58	3.57	29.38	24.84	0.53	0.65	0.049	0.80	0.23	0.34
BS R1	710	10 Yr	210.00	6485.00	6487.49	4.77	53.55	28.63	0.55	0.95	0.052	1.22	0.43	0.62
BS R1	710	50 Yr	640.00	6485.00	6489.63	7.10	123.52	36.62	0.59	1.56	0.055	2.17	0.85	1.15
BS R1	710	100 Yr	930.00	6485.00	6490.67	8.17	163.81	41.09	0.61	1.84	0.056	2.68	1.06	1.38
BS R1	642	2 Yr	1.00	6484.00	6484.08	1.26	0.87	11.29	0.80	0.26	0.055	0.26	0.25	
BS R1	642	5 Yr	93.00	6484.00	6485.30	5.73	20.98	21.23	0.90	1.67	0.055	2.15	1.51	0.80
BS R1	642	10 Yr	210.00	6484.00	6486.07	7.62	39.00	25.67	0.95	2.38	0.058	3.25	2.14	1.44
BS R1	642	50 Yr	640.00	6484.00	6487.88	11.13	94.06	35.02	1.00	3.77	0.063	5.61	3.28	2.74
BS R1	642	100 Yr	930.00	6484.00	6488.80	12.51	128.12	39.25	1.01	4.31	0.065	6.59	3.69	3.30
BS R1	463	2 Yr	1.00	6481.00	6481.14	0.70	1.44	11.23	0.34	0.07	0.050	0.07		
BS R1	463	5 Yr	93.00	6481.00	6482.66	4.05	27.63	22.89	0.56	0.74	0.049	0.99	0.40	0.37
BS R1	463	10 Yr	210.00	6481.00	6483.58	5.50	51.57	29.18	0.61	1.09	0.053	1.58	0.70	0.66
BS R1	463	50 Yr	640.00	6481.00	6485.83	7.81	131.84	40.97	0.63	1.68	0.061	2.57	1.31	1.21
BS R1	463	100 Yr	930.00	6481.00	6487.04	8.60	184.13	45.84	0.62	1.87	0.064	2.89	1.53	1.39
BS R1	330	2 Yr	1.00	6479.00	6479.21	1.37	0.73	5.10	0.64	0.26	0.050	0.26		
BS R1	330	5 Yr	93.00	6479.00	6480.78	5.14	22.60	19.60	0.74	1.23	0.052	1.63	0.79	0.66
BS R1	330	10 Yr	210.00	6479.00	6481.75	6.67	43.61	23.96	0.75	1.67	0.055	2.33	1.16	1.11
BS R1	330	50 Yr	640.00	6479.00	6483.98	9.66	107.71	33.94	0.79	2.54	0.061	3.95	1.82	2.04
BS R1	330	100 Yr	930.00	6479.00	6484.79	11.62	137.27	38.74	0.87	3.31	0.062	5.41	2.37	2.78
BS R1	95	2 Yr	1.00	6476.00	6476.27	0.90	1.12	5.10	0.34	0.09	0.050	0.09		
BS R1	95	5 Yr	93.00	6476.00	6478.43	3.79	27.39	18.19	0.48	0.63	0.047	0.82	0.32	0.17
BS R1	95	10 Yr	210.00	6476.00	6479.56	5.15	51.84	25.32	0.52	0.85	0.048	1.30	0.54	0.38
BS R1	95	50 Yr	640.00	6476.00	6482.04	7.65	154.21	70.96	0.57	0.92	0.049	2.36	1.00	0.55
BS R1	95	100 Yr	930.00	6476.00	6482.98	8.49	222.88	75.41	0.59	1.25	0.060	2.76	1.16	0.91

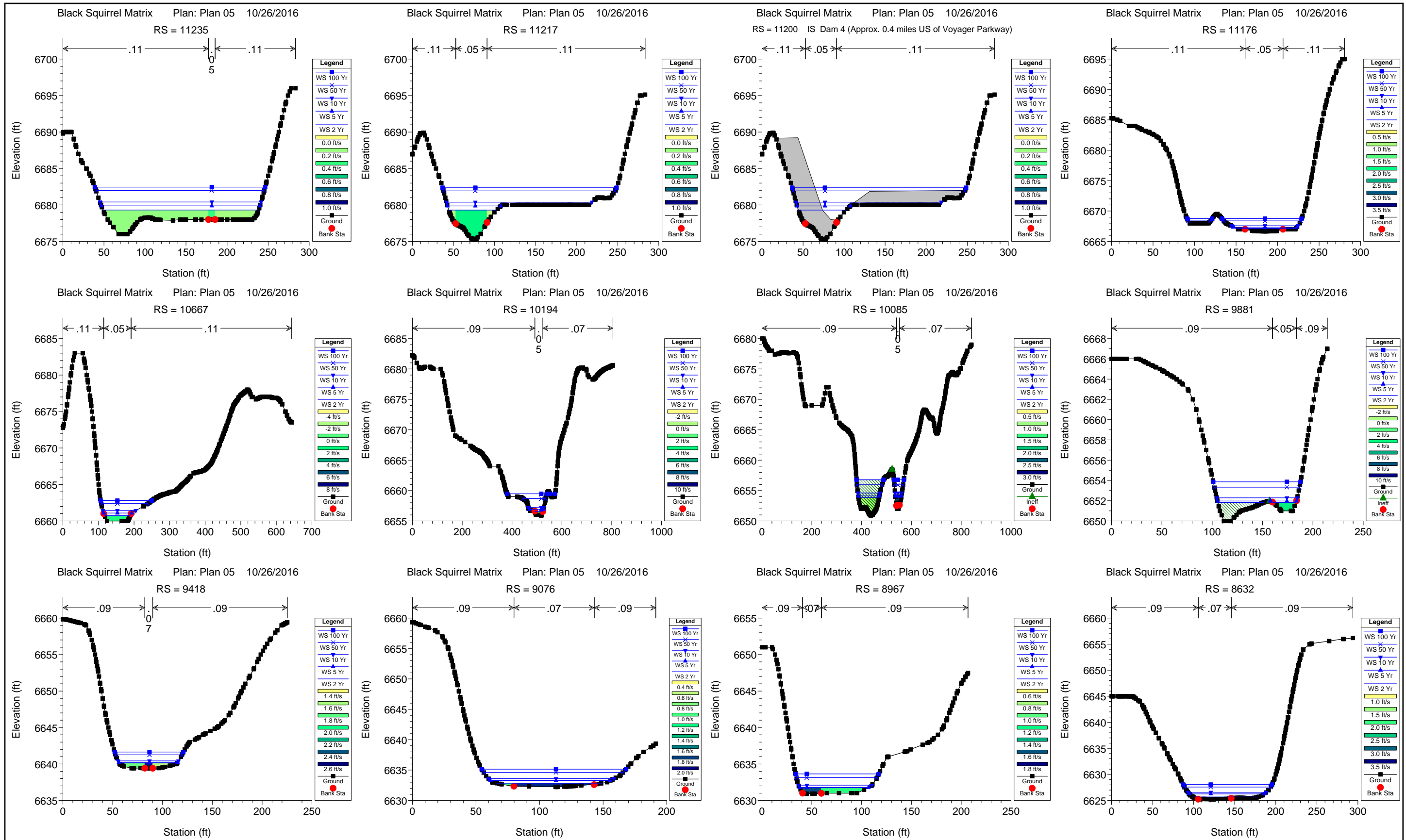
Black Squirrel Creek Cross Section Diagrams

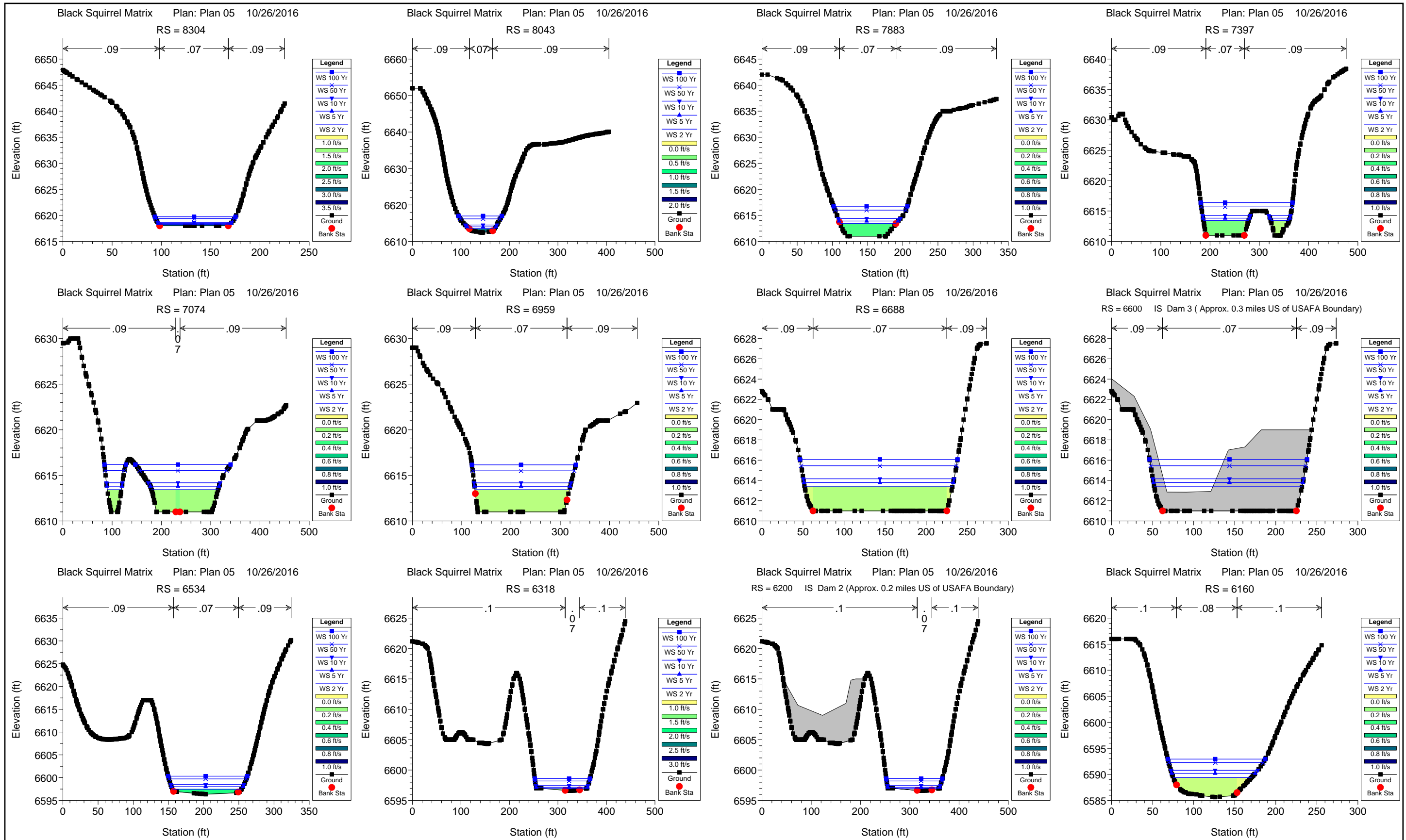


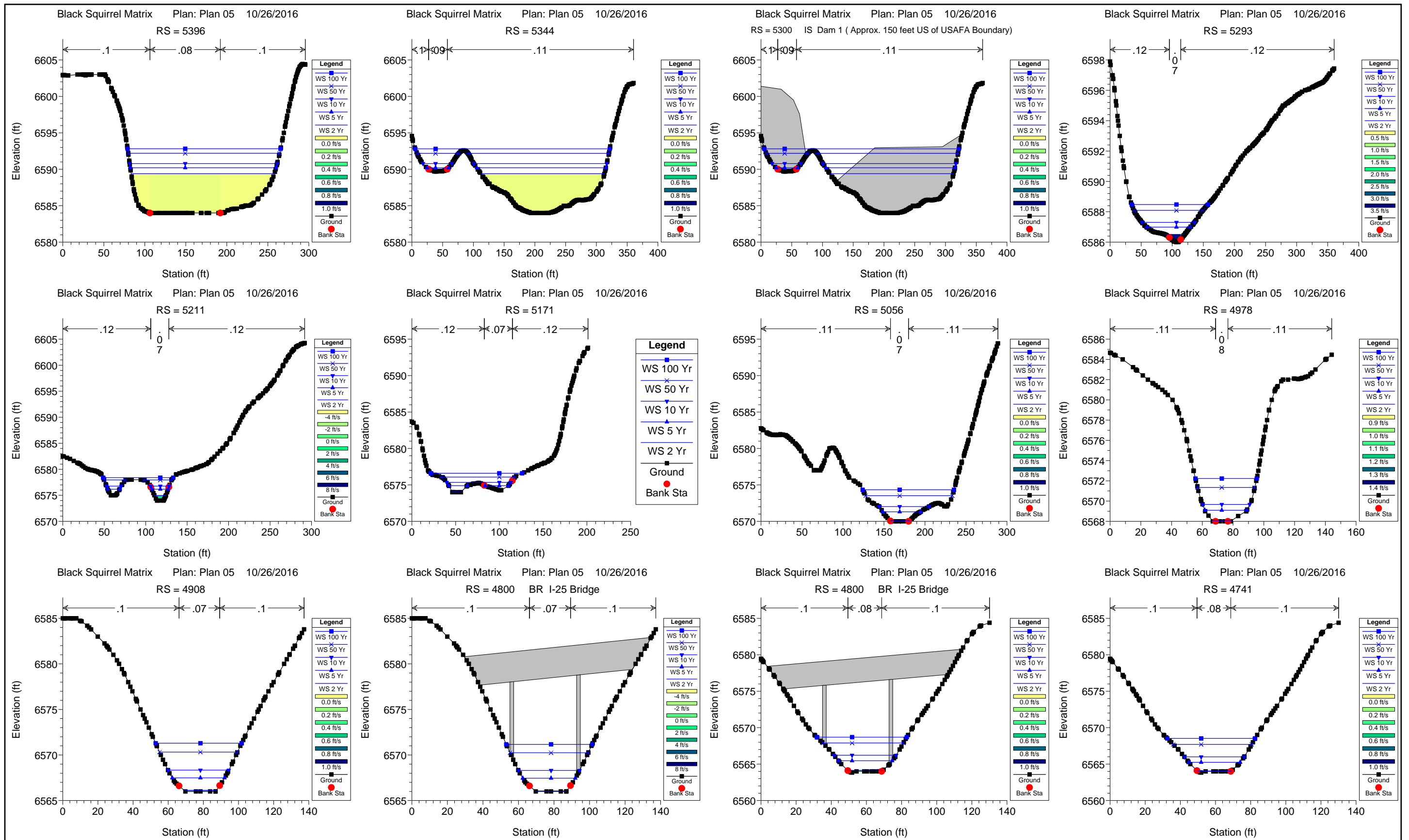


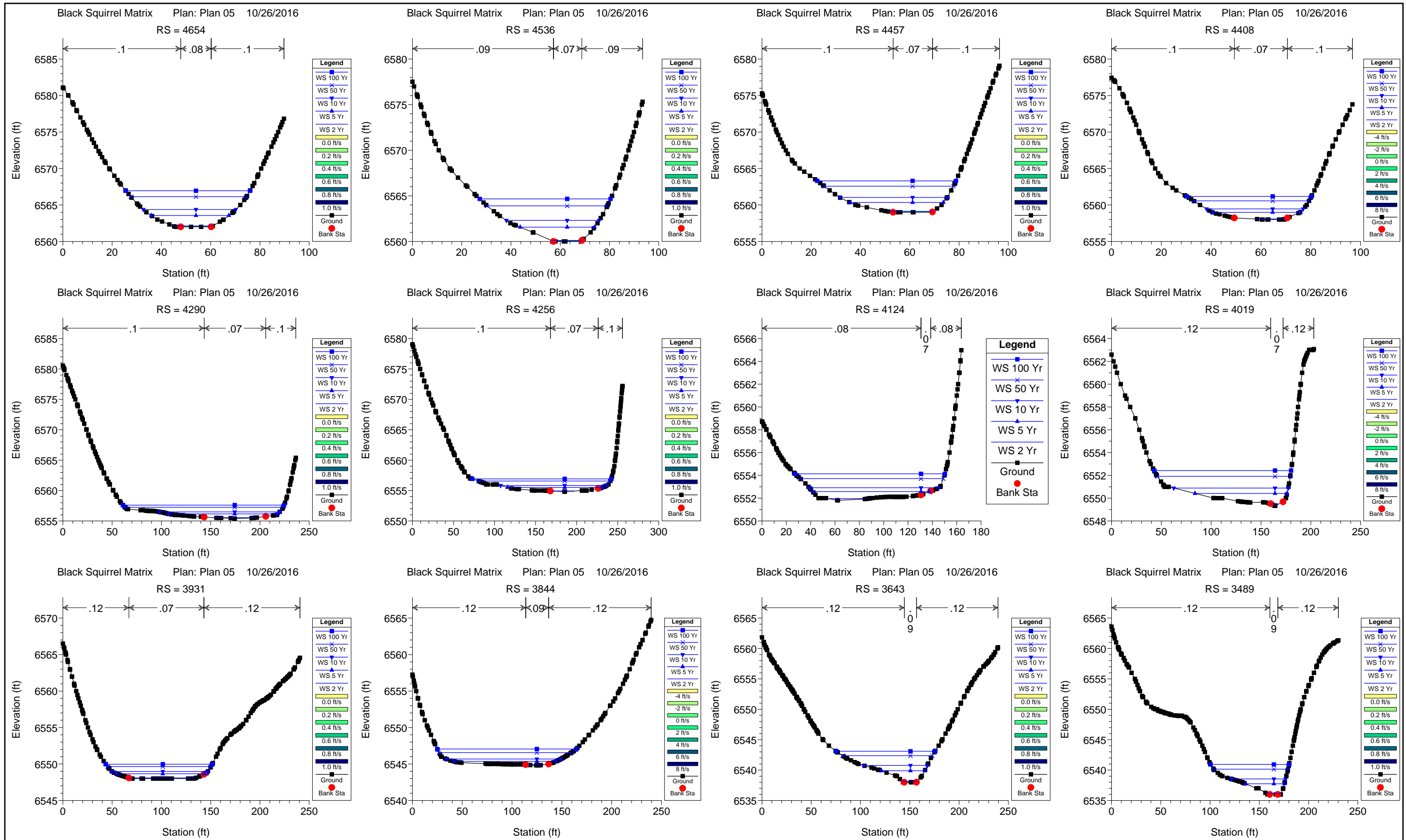


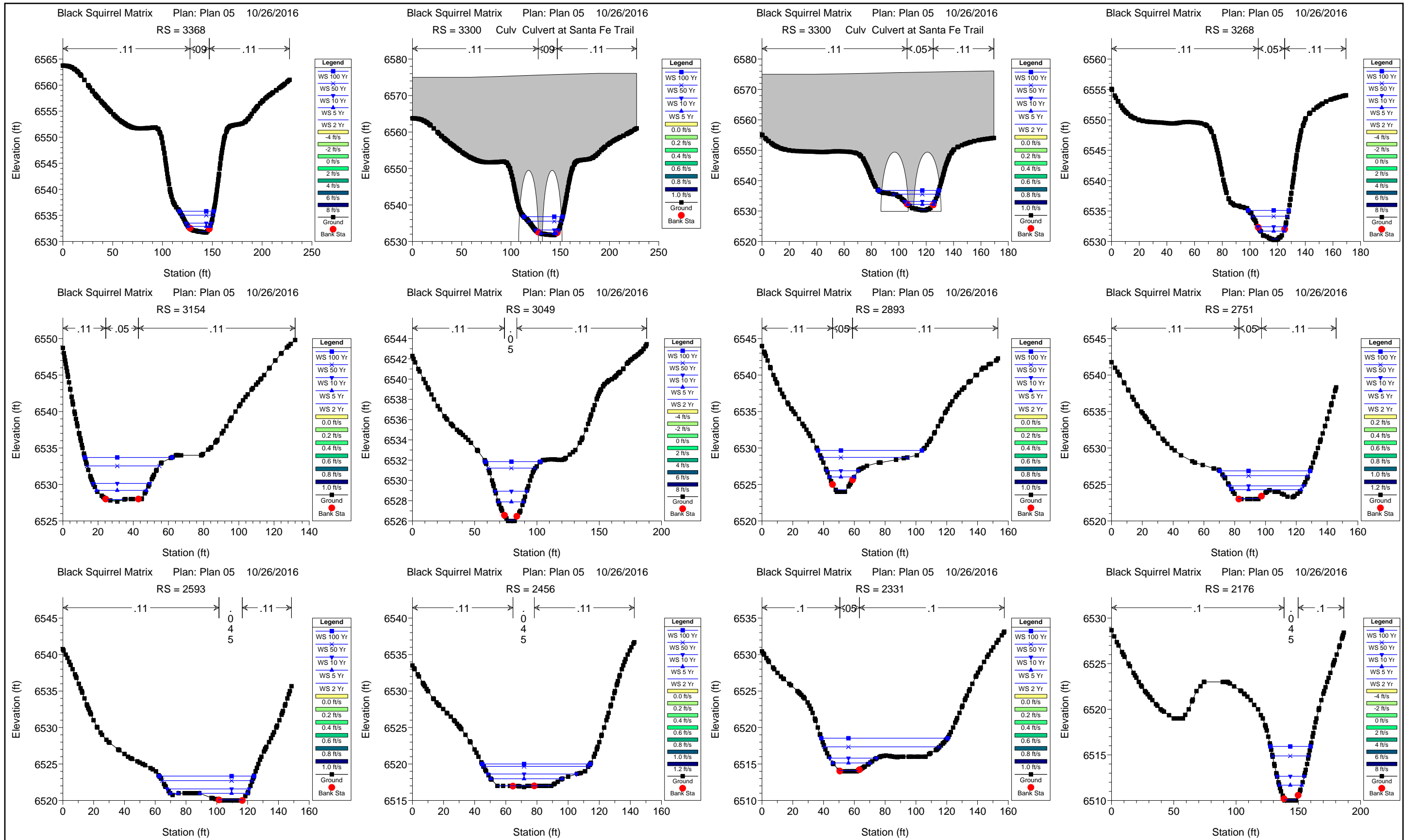


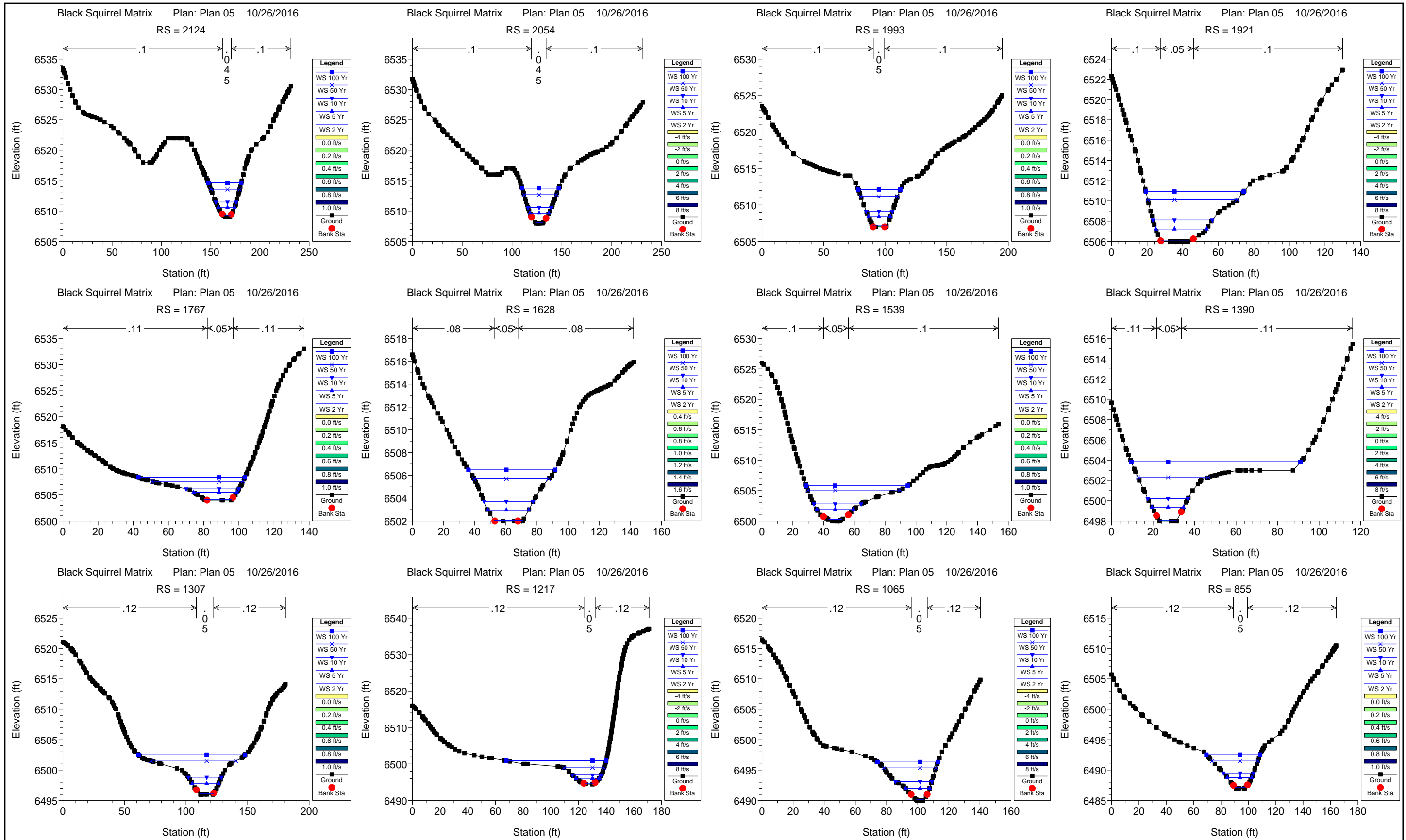


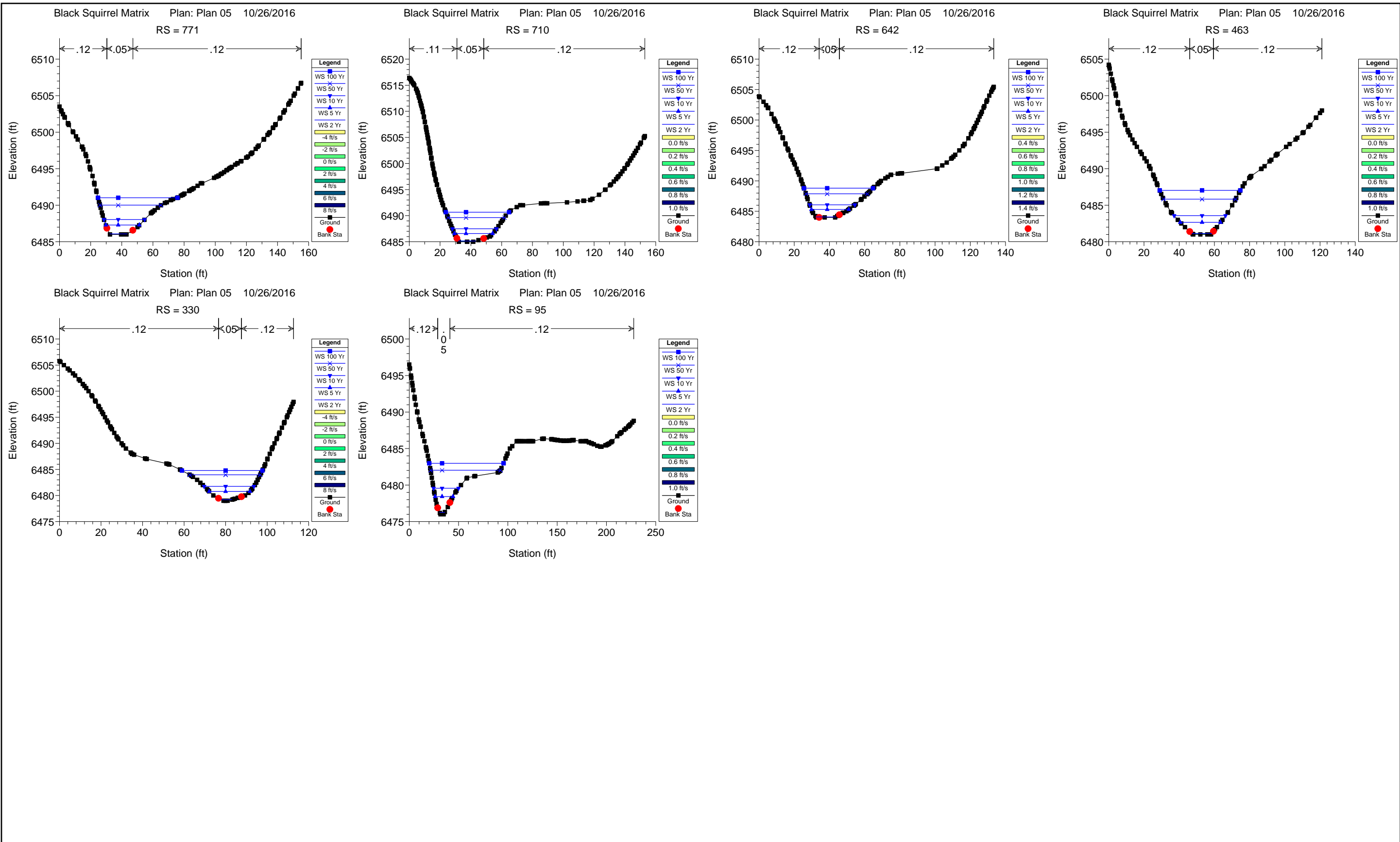












Jackson Creek Hydraulic Results

HEC-RAS Plan: Plan 04 River: Jackson Creek Reach: JC R1

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl	Shear Total (lb/sq ft)	Mann Wtd Total	Shear Chan (lb/sq ft)	Shear LOB (lb/sq ft)	Shear ROB (lb/sq ft)
JC R1	7870	2-Year	1.00	6834.00	6834.12	0.18	5.43	45.88	0.09	0.01	0.080	0.01		
JC R1	7870	5-Year	8.00	6834.00	6834.20	0.87	9.17	46.23	0.35	0.24	0.080	0.24	0.09	
JC R1	7870	10-Year	33.00	6834.00	6834.46	1.54	21.53	47.40	0.40	0.55	0.079	0.56	0.21	0.08
JC R1	7870	50-Year	180.00	6834.00	6835.26	3.05	60.73	50.91	0.48	1.46	0.079	1.56	0.58	0.56
JC R1	7870	100-Year	280.00	6834.00	6835.65	3.62	80.54	52.60	0.50	1.85	0.079	2.01	0.75	0.78
JC R1	7470	2-Year	1.00	6827.43	6827.67	0.86	1.17	9.98	0.44	0.27	0.080	0.27		
JC R1	7470	5-Year	8.00	6827.43	6828.04	0.98	10.24	88.54	0.31	0.09	0.051	0.26	0.03	0.03
JC R1	7470	10-Year	33.00	6827.43	6828.32	1.49	36.02	91.40	0.34	0.31	0.098	0.48	0.25	0.24
JC R1	7470	50-Year	180.00	6827.43	6829.13	2.62	113.39	99.61	0.39	0.88	0.114	1.10	0.82	0.73
JC R1	7470	100-Year	280.00	6827.43	6829.50	3.08	150.65	103.34	0.41	1.15	0.115	1.41	1.09	0.94
JC R1	7026	2-Year	1.00	6820.00	6820.06	0.29	6.28	103.77	0.20	0.04	0.143	0.04	0.04	0.04
JC R1	7026	5-Year	8.00	6820.00	6820.16	0.88	16.39	106.36	0.39	0.26	0.143	0.26	0.25	0.26
JC R1	7026	10-Year	33.00	6820.00	6820.36	1.57	38.71	112.90	0.46	0.60	0.143	0.63	0.60	0.59
JC R1	7026	50-Year	180.00	6820.00	6820.95	3.12	109.67	126.50	0.56	1.63	0.143	1.79	1.59	1.65
JC R1	7026	100-Year	280.00	6820.00	6821.23	3.70	145.90	132.67	0.59	2.06	0.143	2.31	1.99	2.11
JC R1	6993	2-Year	1.00	6818.00	6818.05	1.27	0.79	17.37	1.05	0.81	0.080	0.81		
JC R1	6993	5-Year	8.00	6818.00	6818.19	2.04	3.92	30.49	1.00	1.49	0.080	1.49		
JC R1	6993	10-Year	33.00	6818.00	6818.38	3.06	10.83	39.14	1.01	2.50	0.079	2.58	0.46	
JC R1	6993	50-Year	180.00	6818.00	6818.98	4.99	41.48	65.64	0.94	3.42	0.074	4.72	1.56	1.42
JC R1	6993	100-Year	280.00	6818.00	6819.26	5.64	61.34	78.14	0.93	3.75	0.077	5.50	1.70	2.24
JC R1	6957	2-Year	1.00	6816.00	6816.06	0.21	4.89	77.37	0.15	0.02	0.082	0.02	0.02	0.02
JC R1	6957	5-Year	8.00	6816.00	6816.25	0.42	19.80	78.67	0.15	0.05	0.082	0.05	0.04	0.04
JC R1	6957	10-Year	33.00	6816.00	6816.65	0.67	51.86	82.06	0.14	0.09	0.082	0.09	0.07	0.06
JC R1	6957	50-Year	180.00	6816.00	6818.03	1.14	171.66	90.64	0.14	0.17	0.083	0.19	0.11	0.12
JC R1	6957	100-Year	280.00	6816.00	6818.72	1.31	235.53	93.07	0.14	0.20	0.083	0.22	0.13	0.14
JC R1	6784		Culvert											
JC R1	6741	2-Year	1.00	6814.00	6814.26	0.42	2.38	12.60	0.17	0.03	0.060	0.03		
JC R1	6741	5-Year	8.00	6814.00	6814.46	1.49	5.37	18.02	0.48	0.34	0.060	0.34		
JC R1	6741	10-Year	33.00	6814.00	6814.83	2.59	13.01	22.20	0.57	0.73	0.058	0.80	0.14	0.18
JC R1	6741	50-Year	180.00	6814.00	6815.71	5.73	35.21	28.08	0.82	2.39	0.059	2.93	0.82	1.17
JC R1	6741	100-Year	280.00	6814.00	6815.99	7.43	43.44	29.85	0.98	3.69	0.059	4.65	1.35	1.95
JC R1	6715	2-Year	1.00	6814.00	6814.02	0.99	1.01	47.43	1.19	0.36	0.060	0.36		
JC R1	6715	5-Year	8.00	6814.00	6814.24	0.71	11.66	65.29	0.26	0.08	0.061	0.08	0.04	0.05
JC R1	6715	10-Year	33.00	6814.00	6814.40	1.71	20.43	89.30	0.47	0.37	0.060	0.40	0.19	0.19
JC R1	6715	50-Year	180.00	6814.00	6814.76	4.83	40.80	129.37	0.98	2.38	0.062	2.60	1.24	1.53
JC R1	6715	100-Year	280.00	6814.00	6815.01	5.62	56.02	168.68	0.99	2.79	0.061	3.21	1.53	1.61
JC R1	6514	2-Year	14.00	6809.63	6810.02	2.06	8.39	116.32	0.79	0.25	0.036	0.73	0.07	0.07
JC R1	6514	5-Year	45.00	6809.63	6810.23	2.25	33.44	119.04	0.61	0.46	0.076	0.68	0.37	0.37
JC R1	6514	10-Year	90.00	6809.63	6810.44	2.58	58.71	121.72	0.57	0.60	0.084	0.79	0.53	0.54
JC R1	6514	50-Year	350.00	6809.63	6811.40	3.29	180.81	134.14	0.46	0.80	0.091	0.94	0.75	0.76
JC R1	6514	100-Year	530.00	6809.63	6811.89	3.66	248.17	140.13	0.45	0.91	0.092	1.07	0.86	0.87
JC R1	6181	2-Year	14.00	6802.00	6802.54	2.03	7.33	29.67	0.49	0.47	0.060	0.51	0.24	0.23

HEC-RAS Plan: Plan 04 River: Jackson Creek Reach: JC R1 (Continued)

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl	Shear Total (lb/sq ft)	Mann Wtd Total	Shear Chan (lb/sq ft)	Shear LOB (lb/sq ft)	Shear ROB (lb/sq ft)
JC R1	6181	5-Year	45.00	6802.00	6803.03	3.35	14.96	62.35	0.58	0.96	0.060	1.13	0.52	0.50
JC R1	6181	10-Year	90.00	6802.00	6803.48	4.57	22.84	85.45	0.66	1.51	0.060	1.86	0.85	0.81
JC R1	6181	50-Year	350.00	6802.00	6804.73	9.08	48.94	144.21	0.97	4.45	0.062	6.01	2.82	2.74
JC R1	6181	100-Year	530.00	6802.00	6805.51	10.40	67.72	158.11	0.98	5.14	0.063	7.24	3.39	3.31
JC R1	5560	2-Year	14.00	6788.00	6788.15	2.08	6.91	47.51	0.95	0.36	0.040	0.37	0.19	
JC R1	5560	5-Year	45.00	6788.00	6788.32	3.15	15.22	52.92	0.99	0.60	0.040	0.66	0.33	0.17
JC R1	5560	10-Year	90.00	6788.00	6788.50	3.98	25.15	59.12	1.00	0.78	0.040	0.91	0.46	0.29
JC R1	5560	50-Year	350.00	6788.00	6789.22	5.79	90.25	134.42	0.92	0.78	0.040	1.42	0.44	0.59
JC R1	5560	100-Year	530.00	6788.00	6789.59	6.25	152.44	182.86	0.87	0.79	0.047	1.51	0.56	0.59
JC R1	5180	2-Year	14.00	6776.00	6776.84	1.68	8.35	14.83	0.39	0.24	0.049	0.24		
JC R1	5180	5-Year	45.00	6776.00	6777.32	2.84	16.70	20.30	0.51	0.50	0.048	0.58		0.16
JC R1	5180	10-Year	90.00	6776.00	6777.82	3.56	28.35	25.64	0.55	0.69	0.050	0.82		0.33
JC R1	5180	50-Year	350.00	6776.00	6779.19	6.07	94.08	67.81	0.66	0.99	0.053	1.89	0.43	0.68
JC R1	5180	100-Year	530.00	6776.00	6779.75	7.12	150.74	137.22	0.70	0.84	0.050	2.44	0.31	0.85
JC R1	4864	2-Year	14.00	6771.67	6771.95	2.57	5.45	26.48	1.00	0.79	0.050	0.79		
JC R1	4864	5-Year	45.00	6771.67	6772.15	2.87	35.54	191.85	0.81	0.38	0.069	0.80	0.30	0.31
JC R1	4864	10-Year	90.00	6771.67	6772.27	3.75	57.65	194.61	0.93	0.73	0.084	1.25	0.63	0.66
JC R1	4864	50-Year	350.00	6771.67	6772.67	6.28	136.55	200.41	1.16	2.17	0.101	2.88	2.03	2.08
JC R1	4864	100-Year	530.00	6771.67	6772.87	7.32	177.41	208.34	1.23	2.82	0.103	3.66	2.61	2.80
JC R1	4695	2-Year	14.00	6767.96	6768.28	0.70	20.94	79.54	0.23	0.10	0.070	0.10	0.05	0.05
JC R1	4695	5-Year	45.00	6767.96	6768.49	1.24	38.82	86.61	0.31	0.24	0.070	0.27	0.13	0.14
JC R1	4695	10-Year	90.00	6767.96	6768.75	1.60	62.22	95.04	0.32	0.34	0.070	0.39	0.19	0.20
JC R1	4695	50-Year	350.00	6767.96	6769.61	2.67	170.58	178.73	0.37	0.50	0.064	0.84	0.35	0.24
JC R1	4695	100-Year	530.00	6767.96	6769.98	3.10	244.85	215.50	0.39	0.60	0.069	1.06	0.41	0.37
JC R1	4391	2-Year	14.00	6761.57	6761.97	3.03	5.21	33.61	1.14	1.94	0.071	2.75		0.70
JC R1	4391	5-Year	45.00	6761.57	6762.19	3.16	25.22	105.28	0.86	1.39	0.098	2.42	1.06	1.18
JC R1	4391	10-Year	90.00	6761.57	6762.31	4.19	38.32	108.59	1.01	2.56	0.108	3.91	2.19	2.24
JC R1	4391	50-Year	350.00	6761.57	6762.78	6.79	92.67	122.57	1.19	6.20	0.118	8.30	6.14	5.43
JC R1	4391	100-Year	530.00	6761.57	6763.03	7.74	124.82	132.29	1.21	7.48	0.120	10.03	7.76	6.40
JC R1	4111	2-Year	14.00	6756.00	6758.52	0.09	179.59	84.17	0.01	0.00	0.085	0.00	0.00	0.00
JC R1	4111	5-Year	45.00	6756.00	6759.01	0.25	221.36	87.16	0.02	0.01	0.086	0.01	0.00	0.00
JC R1	4111	10-Year	90.00	6756.00	6759.50	0.42	265.10	91.24	0.04	0.02	0.086	0.02	0.01	0.01
JC R1	4111	50-Year	350.00	6756.00	6761.18	1.05	432.75	140.07	0.08	0.09	0.087	0.12	0.07	0.06
JC R1	4111	100-Year	530.00	6756.00	6761.88	1.38	510.80	155.35	0.10	0.14	0.088	0.19	0.11	0.10
JC R1	4032	2-Year	14.00	6756.00	6758.52	0.16	96.17	48.49	0.02	0.00	0.076	0.00	0.00	0.00
JC R1	4032	5-Year	45.00	6756.00	6759.00	0.41	120.45	52.19	0.04	0.02	0.076	0.02	0.01	0.01
JC R1	4032	10-Year	90.00	6756.00	6759.49	0.69	146.44	56.00	0.07	0.05	0.076	0.06	0.02	0.02
JC R1	4032	50-Year	350.00	6756.00	6761.10	1.74	257.82	89.71	0.14	0.19	0.071	0.32	0.15	0.07
JC R1	4032	100-Year	530.00	6756.00	6761.77	2.24	323.63	107.43	0.17	0.27	0.072	0.51	0.24	0.12
JC R1	3901	2-Year	14.00	6758.00	6758.51	0.52	28.77	59.92	0.13	0.02	0.052	0.02	0.02	0.01
JC R1	3901	5-Year	45.00	6758.00	6758.96	0.88	57.12	65.90	0.16	0.05	0.052	0.06	0.04	0.03
JC R1	3901	10-Year	90.00	6758.00	6759.41	1.19	87.87	71.90	0.18	0.08	0.053	0.09	0.05	0.05
JC R1	3901	50-Year	350.00	6758.00	6760.93	2.11	225.63	101.26	0.22	0.17	0.056	0.22	0.10	0.12

HEC-RAS Plan: Plan 04 River: Jackson Creek Reach: JC R1 (Continued)

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl	Shear Total (lb/sq ft)	Mann Wtd Total	Shear Chan (lb/sq ft)	Shear LOB (lb/sq ft)	Shear ROB (lb/sq ft)
JC R1	3901	100-Year	530.00	6758.00	6761.56	2.57	290.22	105.17	0.24	0.24	0.059	0.31	0.15	0.18
JC R1	3855	2-Year	14.00	6758.00	6758.26	3.06	6.47	27.53	1.05	0.92	0.066	1.03	0.81	0.74
JC R1	3855	5-Year	45.00	6758.00	6758.55	4.52	15.32	33.61	1.07	1.45	0.068	1.76	1.22	1.15
JC R1	3855	10-Year	90.00	6758.00	6758.87	5.54	26.97	40.23	1.05	1.75	0.070	2.28	1.47	1.39
JC R1	3855	50-Year	350.00	6758.00	6759.96	8.50	84.71	66.71	1.07	2.63	0.077	4.09	2.23	2.21
JC R1	3855	100-Year	530.00	6758.00	6760.55	9.09	128.90	77.23	1.00	2.78	0.083	4.27	2.45	2.28
JC R1	3798	2-Year	14.00	6748.00	6748.41	3.63	4.13	11.00	1.00	1.14	0.050	1.26	0.59	0.50
JC R1	3798	5-Year	45.00	6748.00	6748.88	5.30	9.76	12.92	1.00	1.73	0.051	2.07	0.98	0.83
JC R1	3798	10-Year	90.00	6748.00	6749.37	6.65	16.59	14.84	1.00	2.20	0.052	2.82	1.34	1.13
JC R1	3798	50-Year	350.00	6748.00	6751.26	10.14	51.14	21.47	0.99	3.31	0.057	4.90	2.38	2.01
JC R1	3798	100-Year	530.00	6748.00	6752.19	11.57	72.66	24.46	1.00	3.79	0.059	5.87	2.83	2.41
JC R1	3796		Culvert											
JC R1	3653	2-Year	14.00	6747.50	6748.05	3.09	4.78	20.33	0.96	0.72	0.043	0.99	0.14	0.13
JC R1	3653	5-Year	45.00	6747.50	6748.40	4.43	13.07	27.84	0.95	1.10	0.051	1.58	0.77	0.51
JC R1	3653	10-Year	90.00	6747.50	6748.75	5.54	24.89	44.38	0.97	1.19	0.051	2.16	0.64	0.88
JC R1	3653	50-Year	350.00	6747.50	6749.81	8.01	87.03	65.90	0.98	2.26	0.073	3.56	1.92	1.89
JC R1	3653	100-Year	530.00	6747.50	6750.27	9.17	118.61	69.62	1.01	2.91	0.078	4.36	2.63	2.46
JC R1	3483	2-Year	14.00	6738.00	6738.55	0.70	21.90	41.41	0.17	0.04	0.053	0.04	0.02	0.04
JC R1	3483	5-Year	45.00	6738.00	6739.07	1.15	44.08	44.01	0.20	0.08	0.053	0.09	0.04	0.07
JC R1	3483	10-Year	90.00	6738.00	6739.56	1.56	66.34	46.57	0.22	0.13	0.054	0.15	0.07	0.11
JC R1	3483	50-Year	350.00	6738.00	6741.12	2.96	147.41	58.19	0.30	0.34	0.054	0.42	0.17	0.27
JC R1	3483	100-Year	530.00	6738.00	6741.83	3.60	190.60	63.78	0.32	0.45	0.054	0.59	0.24	0.37
JC R1	3200	2-Year	14.00	6737.17	6737.61	1.98	7.09	20.47	0.59	0.38	0.049	0.39	0.05	
JC R1	3200	5-Year	45.00	6737.17	6737.94	3.21	14.76	25.51	0.69	0.71	0.048	0.83	0.26	0.18
JC R1	3200	10-Year	90.00	6737.17	6738.22	4.30	28.82	58.84	0.78	0.69	0.044	1.33	0.57	0.32
JC R1	3200	50-Year	350.00	6737.17	6739.05	7.32	80.10	64.63	0.97	2.17	0.066	3.13	1.60	1.75
JC R1	3200	100-Year	530.00	6737.17	6739.47	8.49	108.02	67.58	1.01	2.83	0.070	3.92	2.03	2.41
JC R1	3017	2-Year	14.00	6732.00	6732.17	2.16	6.48	39.49	0.94	0.60	0.050	0.60		
JC R1	3017	5-Year	45.00	6732.00	6732.35	3.25	13.85	42.37	1.00	1.07	0.050	1.08	0.13	
JC R1	3017	10-Year	90.00	6732.00	6732.54	4.09	22.27	44.76	1.00	1.40	0.049	1.47	0.38	0.26
JC R1	3017	50-Year	350.00	6732.00	6733.77	4.59	84.55	56.41	0.61	1.06	0.050	1.24	0.53	0.54
JC R1	3017	100-Year	530.00	6732.00	6734.13	5.77	108.14	84.28	0.70	1.12	0.042	1.84	0.31	0.83
JC R1	2703	2-Year	14.00	6726.00	6726.52	1.10	13.15	28.03	0.28	0.10	0.050	0.11	0.06	
JC R1	2703	5-Year	45.00	6726.00	6726.87	2.03	23.76	31.50	0.39	0.27	0.050	0.31	0.15	0.07
JC R1	2703	10-Year	90.00	6726.00	6727.19	2.93	34.21	33.99	0.48	0.49	0.050	0.58	0.29	0.19
JC R1	2703	50-Year	350.00	6726.00	6727.78	7.44	55.43	38.57	0.99	2.64	0.051	3.25	1.63	1.25
JC R1	2703	100-Year	530.00	6726.00	6728.52	7.72	86.49	44.63	0.86	2.38	0.053	3.11	1.60	1.24
JC R1	2608	2-Year	14.00	6726.00	6726.48	0.23	60.51	143.66	0.06	0.01	0.050	0.01		
JC R1	2608	5-Year	45.00	6726.00	6726.85	0.39	116.13	155.51	0.08	0.01	0.050	0.01		0.00
JC R1	2608	10-Year	90.00	6726.00	6727.20	0.53	172.60	165.59	0.09	0.02	0.050	0.02	0.00	0.01
JC R1	2608	50-Year	350.00	6726.00	6727.97	1.17	305.80	178.16	0.15	0.08	0.050	0.08	0.02	0.03
JC R1	2608	100-Year	530.00	6726.00	6729.01	1.12	498.01	189.43	0.12	0.06	0.050	0.06	0.02	0.03

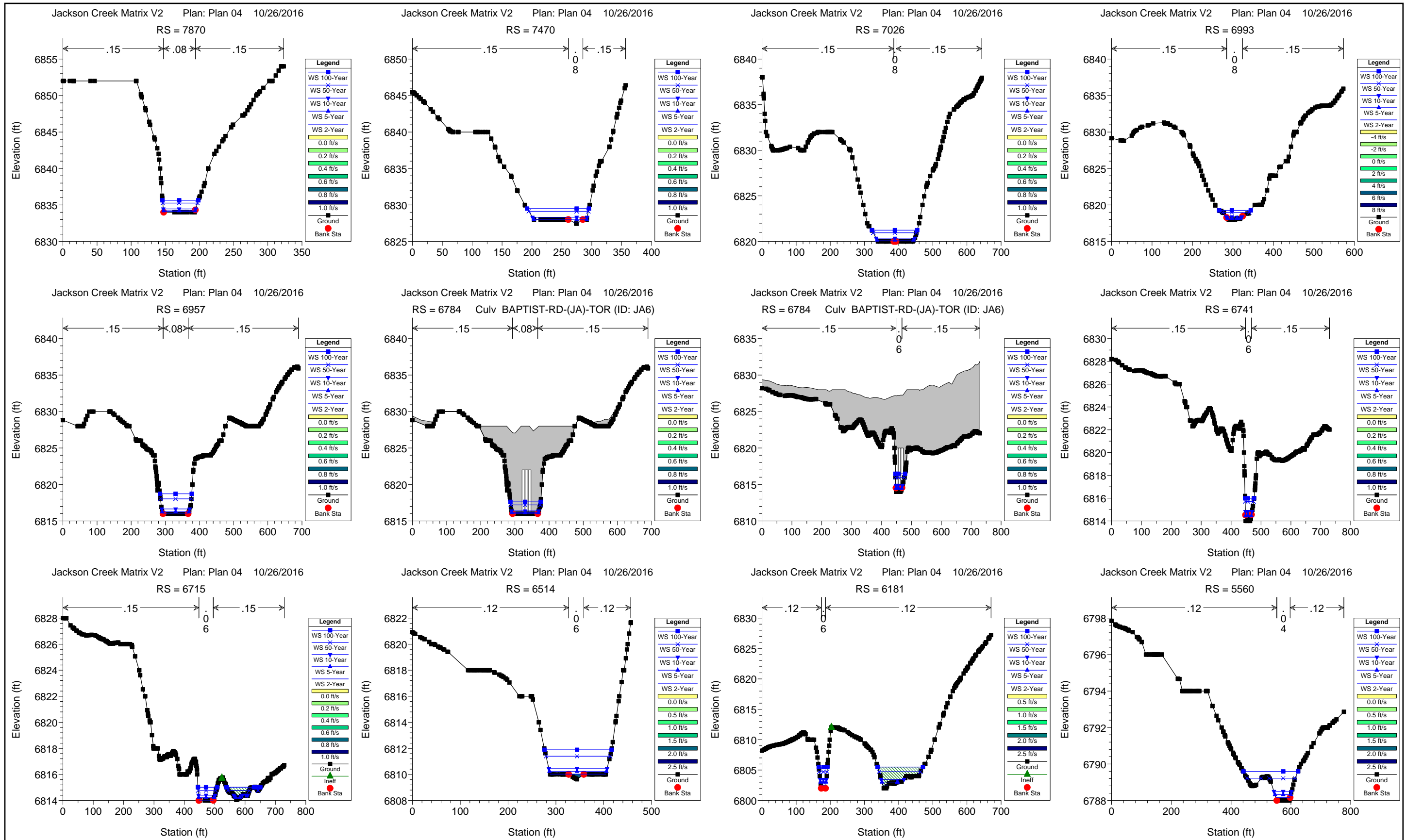
HEC-RAS Plan: Plan 04 River: Jackson Creek Reach: JC R1 (Continued)

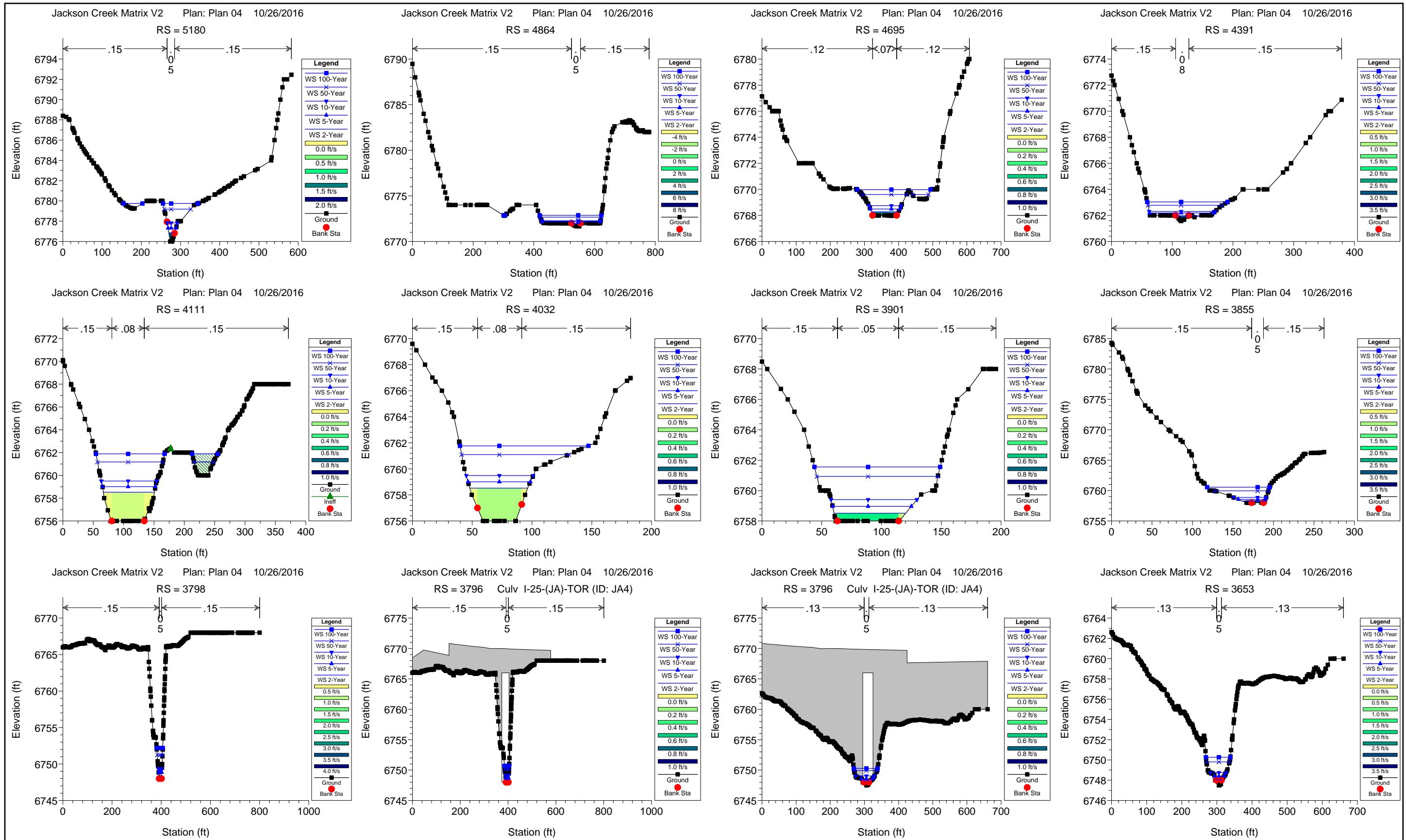
Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl	Shear Total (lb/sq ft)	Mann Wtd Total	Shear Chan (lb/sq ft)	Shear LOB (lb/sq ft)	Shear ROB (lb/sq ft)
JC R1	2550		Bridge											
JC R1	2519	2-Year	14.00	6724.00	6724.28	1.29	10.99	39.87	0.43	0.14	0.045	0.15	0.07	0.07
JC R1	2519	5-Year	45.00	6724.00	6724.61	1.91	24.45	42.94	0.43	0.23	0.044	0.25	0.10	0.08
JC R1	2519	10-Year	90.00	6724.00	6724.89	2.61	36.67	45.51	0.49	0.37	0.045	0.41	0.17	0.16
JC R1	2519	50-Year	350.00	6724.00	6725.70	5.07	95.72	130.13	0.69	0.53	0.036	1.23	0.20	0.53
JC R1	2519	100-Year	530.00	6724.00	6726.06	6.08	150.20	193.99	0.75	0.62	0.040	1.66	0.34	0.77
JC R1	2345	2-Year	14.00	6721.35	6721.69	1.83	15.14	88.57	0.78	0.35	0.089	0.35	0.35	
JC R1	2345	5-Year	45.00	6721.35	6721.79	3.79	24.74	104.18	1.29	1.12	0.086	1.28	1.09	0.21
JC R1	2345	10-Year	90.00	6721.35	6721.96	4.61	44.48	130.83	1.23	1.24	0.086	1.60	1.18	0.47
JC R1	2345	50-Year	350.00	6721.35	6722.59	6.09	142.89	162.19	1.04	1.71	0.098	2.07	1.72	1.08
JC R1	2345	100-Year	530.00	6721.35	6722.89	6.89	192.94	166.90	1.03	2.05	0.100	2.44	2.07	1.39
JC R1	2083	2-Year	14.00	6716.00	6716.23	1.48	12.85	66.20	0.55	0.18	0.056	0.21	0.16	0.03
JC R1	2083	5-Year	45.00	6716.00	6716.53	1.92	35.54	86.55	0.47	0.21	0.059	0.26	0.18	0.11
JC R1	2083	10-Year	90.00	6716.00	6716.78	2.46	59.33	100.12	0.49	0.29	0.061	0.38	0.25	0.18
JC R1	2083	50-Year	350.00	6716.00	6717.40	4.91	141.39	169.40	0.74	0.75	0.064	1.24	0.60	0.68
JC R1	2083	100-Year	530.00	6716.00	6717.67	5.74	187.94	173.54	0.79	1.04	0.069	1.60	0.90	0.91
JC R1	1602	2-Year	14.00	6708.00	6708.44	1.90	14.09	67.21	0.51	0.23	0.070	0.48	0.16	0.23
JC R1	1602	5-Year	45.00	6708.00	6708.58	3.75	26.85	98.07	0.87	0.81	0.081	1.71	0.63	0.84
JC R1	1602	10-Year	90.00	6708.00	6708.75	4.74	43.85	107.77	0.97	1.37	0.092	2.52	1.19	1.34
JC R1	1602	50-Year	350.00	6708.00	6709.69	4.78	178.99	165.80	0.65	1.25	0.109	1.96	1.16	1.35
JC R1	1602	100-Year	530.00	6708.00	6710.10	5.26	251.66	187.81	0.64	1.40	0.111	2.19	1.29	1.57
JC R1	1306	2-Year	14.00	6701.00	6701.49	2.58	5.68	14.92	0.68	0.76	0.057	0.89	0.23	0.19
JC R1	1306	5-Year	45.00	6701.00	6702.70	1.90	34.48	33.20	0.26	0.20	0.064	0.31	0.12	0.14
JC R1	1306	10-Year	90.00	6701.00	6703.15	2.81	51.31	41.81	0.34	0.36	0.067	0.63	0.25	0.29
JC R1	1306	50-Year	350.00	6701.00	6704.07	6.72	102.60	90.87	0.68	1.18	0.061	3.18	0.77	1.53
JC R1	1306	100-Year	530.00	6701.00	6704.66	7.62	177.55	156.48	0.71	1.21	0.071	3.86	0.90	1.87
JC R1	1208	2-Year	14.00	6700.00	6701.39	0.61	24.57	29.87	0.10	0.03	0.052	0.04	0.01	0.01
JC R1	1208	5-Year	45.00	6700.00	6702.65	0.79	88.14	92.43	0.09	0.02	0.051	0.05	0.01	0.02
JC R1	1208	10-Year	90.00	6700.00	6703.07	1.26	143.15	159.37	0.13	0.04	0.056	0.11	0.02	0.04
JC R1	1208	50-Year	350.00	6700.00	6703.83	2.96	274.34	184.16	0.28	0.25	0.078	0.58	0.20	0.23
JC R1	1208	100-Year	530.00	6700.00	6704.22	3.62	349.47	196.58	0.32	0.38	0.084	0.85	0.33	0.35
JC R1	1157		Culvert											
JC R1	1142	2-Year	14.00	6697.43	6698.12	3.79	3.76	8.97	1.00	1.79	0.058	1.92	0.45	
JC R1	1142	5-Year	45.00	6697.43	6698.64	5.42	9.29	12.26	0.97	2.37	0.057	3.04	1.15	0.73
JC R1	1142	10-Year	90.00	6697.43	6699.18	6.63	17.04	16.76	0.95	2.62	0.057	3.92	1.47	1.19
JC R1	1142	50-Year	350.00	6697.43	6701.07	7.96	108.85	95.87	0.76	1.45	0.072	4.31	1.24	1.08
JC R1	1142	100-Year	530.00	6697.43	6701.63	8.51	170.25	119.58	0.75	1.70	0.083	4.68	1.48	1.46
JC R1	1090	2-Year	14.00	6696.00	6697.11	1.29	11.22	16.01	0.25	0.07	0.038	0.08	0.02	0.01
JC R1	1090	5-Year	45.00	6696.00	6697.79	2.17	24.28	22.45	0.31	0.14	0.038	0.19	0.06	0.05
JC R1	1090	10-Year	90.00	6696.00	6698.42	2.95	41.59	34.61	0.36	0.18	0.037	0.31	0.08	0.10
JC R1	1090	50-Year	350.00	6696.00	6700.29	5.09	140.32	67.98	0.45	0.39	0.053	0.74	0.32	0.25

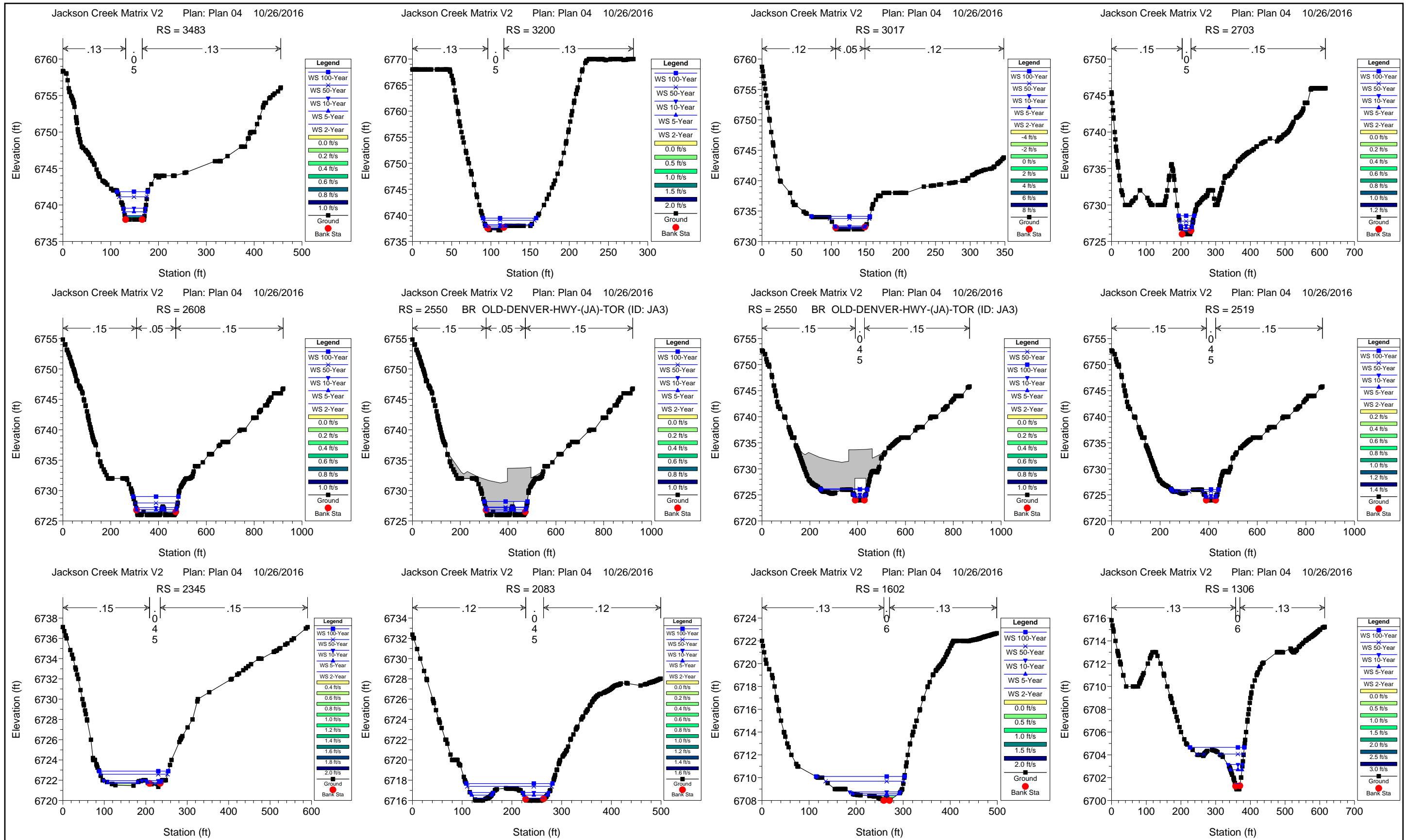
HEC-RAS Plan: Plan 04 River: Jackson Creek Reach: JC R1 (Continued)

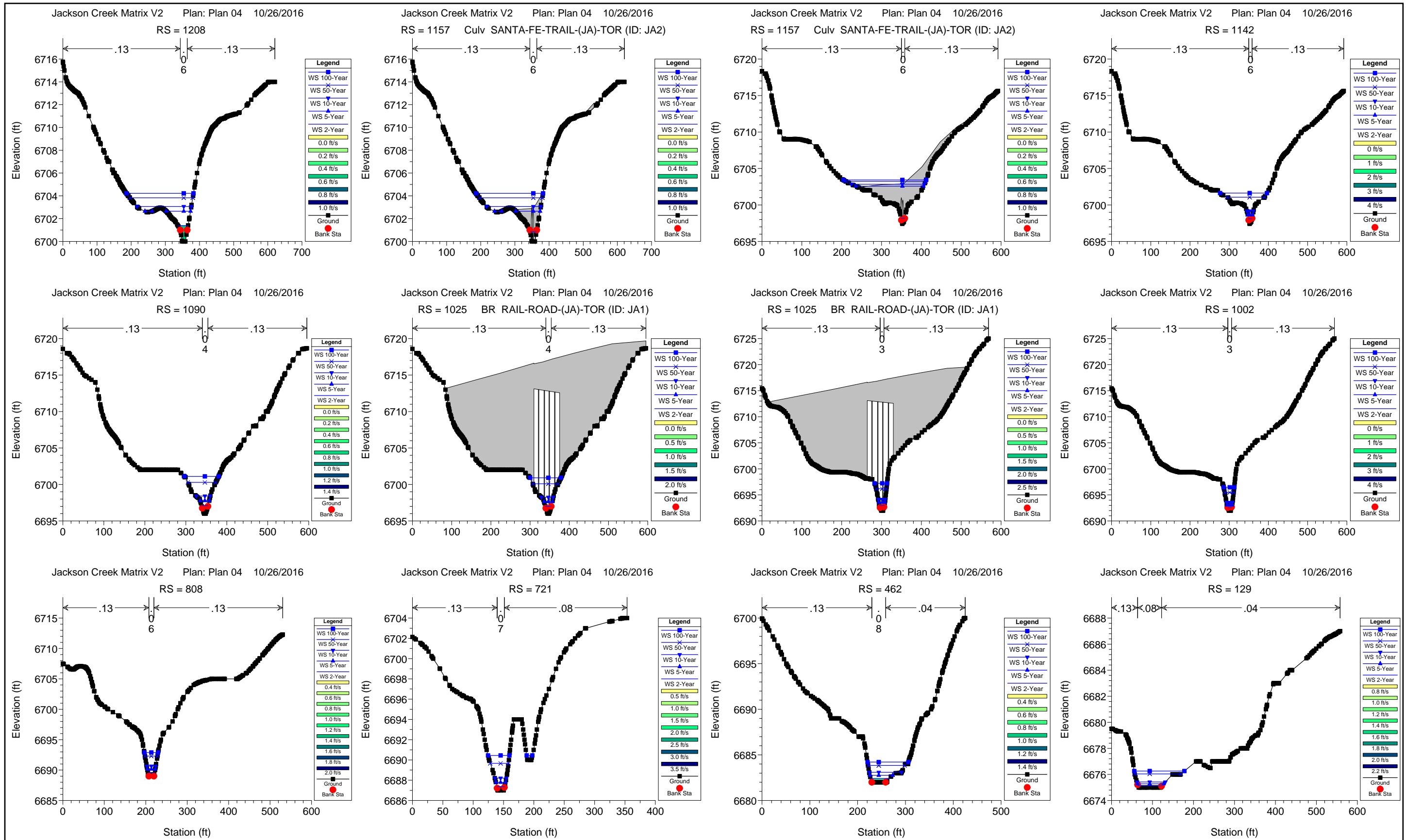
Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl	Shear Total (lb/sq ft)	Mann Wtd Total	Shear Chan (lb/sq ft)	Shear LOB (lb/sq ft)	Shear ROB (lb/sq ft)
JC R1	1090	100-Year	530.00	6696.00	6701.11	5.98	201.89	83.55	0.48	0.49	0.058	0.96	0.42	0.34
JC R1	1025	Bridge												
JC R1	1002	2-Year	14.00	6692.00	6692.57	3.67	3.82	9.21	1.00	0.46	0.030	0.46		
JC R1	1002	5-Year	45.00	6692.00	6693.06	5.30	9.26	12.92	0.99	0.60	0.028	0.75	0.22	0.17
JC R1	1002	10-Year	90.00	6692.00	6693.56	6.63	16.38	15.20	0.99	0.76	0.030	1.01	0.41	0.35
JC R1	1002	50-Year	350.00	6692.00	6695.49	10.19	53.15	22.82	0.99	1.20	0.036	1.78	0.83	0.78
JC R1	1002	100-Year	530.00	6692.00	6696.47	11.61	77.42	26.80	0.99	1.35	0.038	2.12	0.98	0.94
JC R1	808	2-Year	14.00	6689.00	6689.61	1.82	8.63	16.07	0.41	0.35	0.061	0.40	0.22	0.19
JC R1	808	5-Year	45.00	6689.00	6690.15	2.98	18.17	19.24	0.49	0.70	0.063	0.86	0.45	0.41
JC R1	808	10-Year	90.00	6689.00	6690.66	3.99	28.72	22.01	0.55	1.05	0.064	1.37	0.72	0.66
JC R1	808	50-Year	350.00	6689.00	6692.31	7.11	71.87	30.30	0.69	2.38	0.068	3.46	1.78	1.65
JC R1	808	100-Year	530.00	6689.00	6692.90	8.89	90.51	33.09	0.79	3.44	0.070	5.11	2.61	2.47
JC R1	721	2-Year	14.00	6687.00	6687.37	3.37	4.20	12.76	1.01	2.11	0.068	2.24	0.50	0.25
JC R1	721	5-Year	45.00	6687.00	6687.79	4.77	10.14	15.84	0.96	2.87	0.067	3.46	1.27	1.06
JC R1	721	10-Year	90.00	6687.00	6688.21	5.85	17.56	19.12	0.95	3.43	0.067	4.49	1.76	1.73
JC R1	721	50-Year	350.00	6687.00	6689.67	8.74	53.15	30.02	0.95	5.04	0.070	7.67	3.18	3.67
JC R1	721	100-Year	530.00	6687.00	6690.44	9.35	82.13	44.50	0.89	4.26	0.066	8.05	3.54	2.38
JC R1	462	2-Year	14.00	6682.00	6682.41	0.91	14.77	39.64	0.25	0.18	0.072	0.20	0.14	0.13
JC R1	462	5-Year	45.00	6682.00	6682.76	1.47	29.89	47.83	0.30	0.35	0.069	0.43	0.26	0.23
JC R1	462	10-Year	90.00	6682.00	6683.09	1.93	48.39	67.49	0.33	0.43	0.063	0.66	0.39	0.24
JC R1	462	50-Year	350.00	6682.00	6683.84	3.12	102.51	76.35	0.41	1.05	0.059	1.44	0.83	0.80
JC R1	462	100-Year	530.00	6682.00	6684.22	3.66	132.91	85.41	0.43	1.30	0.058	1.86	1.06	1.01
JC R1	129	2-Year	14.00	6675.00	6675.12	2.05	6.83	57.63	1.05	1.54	0.080	1.54		
JC R1	129	5-Year	45.00	6675.00	6675.28	2.78	16.23	64.04	0.94	2.03	0.077	2.16	0.27	0.68
JC R1	129	10-Year	90.00	6675.00	6675.42	3.50	25.83	69.66	0.96	2.65	0.075	2.97	0.75	1.12
JC R1	129	50-Year	350.00	6675.00	6676.04	4.79	77.13	112.94	0.83	2.71	0.064	4.10	1.68	1.16
JC R1	129	100-Year	530.00	6675.00	6676.26	5.27	103.28	122.50	0.83	3.13	0.063	4.67	2.15	1.68

Jackson Creek Cross Section Diagrams









Kettle Creek Hydraulic Results

HEC-RAS Plan: Plan 04 River: Kettle Creek Reach: KC R1

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl	Shear Total (lb/sq ft)	Mann Wtd Total	Shear Chan (lb/sq ft)	Shear LOB (lb/sq ft)	Shear ROB (lb/sq ft)
KC R1	20905	2Yr	390.00	6661.00	6663.71	6.67	59.10	33.24	0.84	1.86	0.043	2.05	0.24	0.26
KC R1	20905	5Yr	740.00	6661.00	6664.72	8.13	95.95	39.81	0.83	2.14	0.041	2.65	0.65	0.68
KC R1	20905	10Yr	1200.00	6661.00	6665.74	9.41	139.81	46.15	0.83	2.42	0.041	3.22	0.98	1.03
KC R1	20905	50Yr	2700.00	6661.00	6668.17	11.81	271.24	62.27	0.82	2.89	0.041	4.32	1.55	1.67
KC R1	20905	100Yr	3600.00	6661.00	6669.29	12.74	345.23	69.78	0.82	3.08	0.041	4.77	1.78	1.93
KC R1	20850		Bridge											
KC R1	20811	2Yr	390.00	6659.43	6662.07	7.19	54.27	34.91	1.01	2.50	0.044	2.55		0.11
KC R1	20811	5Yr	740.00	6659.43	6662.95	8.64	88.24	41.77	0.97	2.71	0.042	3.18	0.55	0.68
KC R1	20811	10Yr	1200.00	6659.43	6663.87	9.89	129.64	47.74	0.95	2.97	0.041	3.74	0.98	1.15
KC R1	20811	50Yr	2700.00	6659.43	6666.04	12.46	246.54	60.24	0.93	3.66	0.041	5.04	1.72	2.08
KC R1	20811	100Yr	3600.00	6659.43	6667.05	13.50	310.72	66.04	0.93	3.93	0.041	5.60	2.01	2.43
KC R1	20575	2Yr	390.00	6652.77	6654.79	7.26	55.42	36.70	0.97	2.16	0.042	2.51	0.55	0.55
KC R1	20575	5Yr	740.00	6652.77	6655.70	8.69	92.15	44.41	0.94	2.43	0.041	3.13	0.95	0.99
KC R1	20575	10Yr	1200.00	6652.77	6656.63	9.90	137.29	53.10	0.92	2.63	0.041	3.68	1.26	1.29
KC R1	20575	50Yr	2700.00	6652.77	6658.78	12.17	275.68	76.63	0.90	2.96	0.041	4.75	1.94	1.62
KC R1	20575	100Yr	3600.00	6652.77	6659.70	13.18	351.40	87.93	0.90	3.16	0.041	5.30	2.19	1.86
KC R1	19961	2Yr	390.00	6638.00	6641.44	8.25	47.56	19.54	0.90	2.70	0.043	2.91	0.23	0.22
KC R1	19961	5Yr	740.00	6638.00	6642.75	10.21	75.92	24.04	0.91	3.09	0.040	3.89	0.79	0.76
KC R1	19961	10Yr	1200.00	6638.00	6644.00	12.08	109.75	30.36	0.94	3.43	0.039	4.97	1.20	1.26
KC R1	19961	50Yr	2700.00	6638.00	6647.47	13.36	277.04	71.76	0.80	2.35	0.037	5.12	1.31	1.62
KC R1	19961	100Yr	3600.00	6638.00	6648.76	13.69	379.46	84.83	0.77	2.39	0.039	5.13	1.58	1.71
KC R1	19324	2Yr	390.00	6632.00	6635.78	5.07	83.54	37.73	0.52	0.77	0.040	1.03	0.30	0.26
KC R1	19324	5Yr	740.00	6632.00	6636.78	6.77	125.00	45.77	0.60	1.15	0.040	1.67	0.58	0.51
KC R1	19324	10Yr	1200.00	6632.00	6637.72	8.38	174.64	61.43	0.67	1.38	0.038	2.38	0.92	0.56
KC R1	19324	50Yr	2700.00	6632.00	6641.65	6.33	646.66	148.38	0.38	0.56	0.043	1.12	0.42	0.47
KC R1	19324	100Yr	3600.00	6632.00	6640.36	11.89	461.23	139.32	0.76	1.84	0.040	4.15	1.21	1.45
KC R1	19161	2Yr	390.00	6631.00	6633.78	7.58	59.28	40.24	0.89	1.63	0.039	2.52	0.66	0.72
KC R1	19161	5Yr	740.00	6631.00	6634.71	8.96	100.94	48.59	0.88	2.03	0.041	3.14	0.97	1.27
KC R1	19161	10Yr	1200.00	6631.00	6635.57	10.36	145.31	54.44	0.91	2.52	0.042	3.88	1.27	1.80
KC R1	19161	50Yr	2700.00	6631.00	6636.08	19.72	177.78	88.99	1.63	5.90	0.034	13.50	4.59	3.55
KC R1	19161	100Yr	3600.00	6631.00	6638.26	12.23	464.69	145.23	0.83	2.16	0.043	4.57	1.65	1.78
KC R1	18668	2Yr	390.00	6625.00	6629.01	2.51	163.94	75.56	0.27	0.22	0.042	0.26	0.08	0.05
KC R1	18668	5Yr	740.00	6625.00	6630.26	3.07	266.58	89.40	0.27	0.26	0.041	0.34	0.13	0.10
KC R1	18668	10Yr	1200.00	6625.00	6631.57	3.49	392.50	101.35	0.27	0.30	0.042	0.40	0.18	0.14
KC R1	18668	50Yr	2700.00	6625.00	6634.42	4.51	701.45	114.08	0.28	0.44	0.044	0.58	0.32	0.24
KC R1	18668	100Yr	3600.00	6625.00	6635.65	5.02	845.06	118.03	0.29	0.52	0.044	0.69	0.40	0.29
KC R1	18650		Bridge											
KC R1	18624	2Yr	390.00	6625.00	6627.77	3.99	100.85	65.25	0.52	0.64	0.042	0.75	0.19	0.13
KC R1	18624	5Yr	740.00	6625.00	6628.62	4.90	166.06	85.24	0.53	0.73	0.040	0.99	0.36	0.25
KC R1	18624	10Yr	1200.00	6625.00	6629.47	5.61	242.90	93.54	0.53	0.88	0.042	1.19	0.50	0.46
KC R1	18624	50Yr	2700.00	6625.00	6631.61	6.89	459.26	107.62	0.51	1.15	0.044	1.53	0.79	0.77
KC R1	18624	100Yr	3600.00	6625.00	6632.68	7.39	576.44	113.04	0.50	1.25	0.044	1.66	0.91	0.88

HEC-RAS Plan: Plan 04 River: Kettle Creek Reach: KC R1 (Continued)

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl	Shear Total (lb/sq ft)	Mann Wtd Total	Shear Chan (lb/sq ft)	Shear LOB (lb/sq ft)	Shear ROB (lb/sq ft)
KC R1	18482	2Yr	390.00	6623.79	6626.44	4.78	81.62	52.17	0.67	1.10	0.044	1.12	0.10	0.02
KC R1	18482	5Yr	740.00	6623.79	6627.07	6.46	116.69	58.29	0.76	1.64	0.043	1.83	0.37	0.29
KC R1	18482	10Yr	1200.00	6623.79	6627.78	7.81	159.87	63.38	0.80	2.08	0.042	2.44	0.68	0.62
KC R1	18482	50Yr	2700.00	6623.79	6629.44	10.69	273.67	73.47	0.88	3.15	0.042	3.95	1.42	1.44
KC R1	18482	100Yr	3600.00	6623.79	6630.17	12.05	328.91	77.85	0.92	3.72	0.042	4.77	1.79	1.83
KC R1	17689	2Yr	390.00	6612.00	6614.83	6.83	64.13	56.34	0.86	1.28	0.036	2.16	0.39	0.44
KC R1	17689	5Yr	740.00	6612.00	6615.62	7.88	115.57	69.71	0.84	1.57	0.040	2.56	0.93	0.68
KC R1	17689	10Yr	1200.00	6612.00	6616.29	9.16	164.39	76.14	0.88	2.07	0.042	3.22	1.47	0.97
KC R1	17689	50Yr	2700.00	6612.00	6617.81	11.86	290.49	88.69	0.94	3.19	0.044	4.77	2.70	1.71
KC R1	17689	100Yr	3600.00	6612.00	6618.56	12.86	358.28	93.66	0.95	3.63	0.044	5.35	3.19	2.04
KC R1	17221	2Yr	390.00	6607.00	6610.06	4.51	115.40	114.74	0.54	0.42	0.036	0.90	0.23	0.13
KC R1	17221	5Yr	740.00	6607.00	6610.62	5.56	180.82	119.23	0.59	0.71	0.041	1.27	0.51	0.30
KC R1	17221	10Yr	1200.00	6607.00	6611.18	6.46	249.10	122.83	0.63	1.00	0.044	1.61	0.80	0.46
KC R1	17221	50Yr	2700.00	6607.00	6612.44	8.59	407.53	128.63	0.71	1.78	0.046	2.56	1.59	0.93
KC R1	17221	100Yr	3600.00	6607.00	6613.03	9.53	484.55	131.22	0.74	2.17	0.046	3.02	1.98	1.15
KC R1	16763	2Yr	390.00	6602.78	6604.35	5.30	77.86	98.33	0.95	1.35	0.042	1.63	0.54	0.45
KC R1	16763	5Yr	740.00	6602.78	6604.83	6.28	129.01	111.12	0.92	1.60	0.043	2.00	0.95	0.73
KC R1	16763	10Yr	1200.00	6602.78	6605.31	7.30	186.57	130.87	0.93	1.83	0.042	2.46	1.32	0.84
KC R1	16763	50Yr	2700.00	6602.78	6606.40	9.21	347.42	157.29	0.93	2.46	0.043	3.36	1.96	1.54
KC R1	16763	100Yr	3600.00	6602.78	6606.88	10.08	425.02	162.99	0.95	2.86	0.044	3.84	2.25	1.95
KC R1	15614	2Yr	390.00	6586.00	6590.39	4.08	96.40	47.46	0.48	0.67	0.043	0.74	0.09	0.06
KC R1	15614	5Yr	740.00	6586.00	6591.86	4.42	183.70	72.71	0.41	0.50	0.039	0.73	0.19	0.16
KC R1	15614	10Yr	1200.00	6586.00	6593.48	4.50	335.84	142.36	0.34	0.30	0.033	0.67	0.21	0.13
KC R1	15614	50Yr	2700.00	6586.00	6597.02	3.94	954.12	189.33	0.23	0.25	0.043	0.43	0.15	0.20
KC R1	15614	100Yr	3600.00	6586.00	6598.42	4.07	1226.64	201.35	0.22	0.26	0.044	0.44	0.16	0.23
KC R1	15552	2Yr	390.00	6586.00	6589.33	6.92	56.58	24.58	0.78	1.95	0.043	2.07	0.13	0.14
KC R1	15552	5Yr	740.00	6586.00	6590.72	8.17	95.17	31.01	0.74	1.97	0.041	2.48	0.51	0.54
KC R1	15552	10Yr	1200.00	6586.00	6592.26	8.99	149.50	40.50	0.68	1.84	0.039	2.69	0.71	0.74
KC R1	15552	50Yr	2700.00	6586.00	6595.45	10.79	318.68	65.34	0.65	1.89	0.039	3.31	1.09	1.14
KC R1	15552	100Yr	3600.00	6586.00	6596.60	11.88	398.71	73.90	0.67	2.15	0.040	3.85	1.35	1.39
KC R1	15451		Bridge											
KC R1	15402	2Yr	390.00	6584.00	6586.69	7.97	50.85	29.08	0.98	2.43	0.042	2.88	0.72	0.48
KC R1	15402	5Yr	740.00	6584.00	6587.77	9.60	86.07	35.82	0.96	2.75	0.042	3.63	1.17	1.06
KC R1	15402	10Yr	1200.00	6584.00	6588.88	11.06	129.49	42.17	0.95	3.09	0.043	4.35	1.55	1.56
KC R1	15402	50Yr	2700.00	6584.00	6591.52	14.02	259.30	56.38	0.94	3.88	0.046	5.96	2.32	2.56
KC R1	15402	100Yr	3600.00	6584.00	6592.75	15.23	332.83	62.98	0.94	4.22	0.047	6.65	2.64	2.97
KC R1	15089	2Yr	390.00	6574.00	6576.81	7.75	51.90	24.39	0.88	2.25	0.042	2.59	0.41	0.60
KC R1	15089	5Yr	740.00	6574.00	6577.83	10.16	78.55	27.88	0.97	3.16	0.042	3.96	1.01	1.15
KC R1	15089	10Yr	1200.00	6574.00	6579.08	11.77	116.12	32.35	0.96	3.53	0.042	4.80	1.49	1.54
KC R1	15089	50Yr	2700.00	6574.00	6581.96	15.33	230.34	52.54	0.98	3.89	0.040	6.93	1.77	2.28
KC R1	15089	100Yr	3600.00	6574.00	6584.30	12.12	620.43	199.67	0.68	1.26	0.044	3.96	0.86	1.53

HEC-RAS Plan: Plan 04 River: Kettle Creek Reach: KC R1 (Continued)

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl	Shear Total (lb/sq ft)	Mann Wtd Total	Shear Chan (lb/sq ft)	Shear LOB (lb/sq ft)	Shear ROB (lb/sq ft)
KC R1	14811	2Yr	390.00	6569.00	6570.88	6.96	56.13	39.12	1.01	2.40	0.044	2.45	0.11	0.19
KC R1	14811	5Yr	740.00	6569.00	6571.68	8.49	88.68	41.76	0.99	2.92	0.043	3.16	0.58	0.71
KC R1	14811	10Yr	1200.00	6569.00	6572.54	9.92	125.43	44.11	0.99	3.45	0.043	3.88	0.97	1.16
KC R1	14811	50Yr	2700.00	6569.00	6574.72	12.87	227.61	49.60	0.99	4.51	0.043	5.47	1.70	1.97
KC R1	14811	100Yr	3600.00	6569.00	6575.81	14.07	283.66	52.51	0.98	4.89	0.043	6.14	1.99	2.27
KC R1	14330	2Yr	390.00	6564.00	6566.69	3.28	133.30	56.15	0.35	0.39	0.046	0.45	0.28	0.17
KC R1	14330	5Yr	740.00	6564.00	6568.02	4.06	210.87	60.25	0.36	0.51	0.047	0.59	0.37	0.25
KC R1	14330	10Yr	1200.00	6564.00	6569.40	4.81	296.62	64.39	0.37	0.62	0.047	0.76	0.47	0.32
KC R1	14330	50Yr	2700.00	6564.00	6572.77	6.51	573.09	149.72	0.39	0.50	0.035	1.18	0.22	0.41
KC R1	14330	100Yr	3600.00	6564.00	6572.77	8.67	574.55	150.37	0.52	0.89	0.035	2.09	0.40	0.72
KC R1	13981	2Yr	390.00	6562.00	6565.17	4.81	83.22	32.55	0.50	0.83	0.043	0.94	0.17	0.20
KC R1	13981	5Yr	740.00	6562.00	6566.31	6.44	122.28	36.21	0.57	1.24	0.042	1.51	0.37	0.42
KC R1	13981	10Yr	1200.00	6562.00	6567.33	8.19	161.32	40.22	0.64	1.74	0.042	2.26	0.63	0.67
KC R1	13981	50Yr	2700.00	6562.00	6568.82	13.71	260.56	111.47	0.95	2.09	0.030	5.82	1.74	0.74
KC R1	13981	100Yr	3600.00	6562.00	6570.58	11.11	642.21	231.47	0.68	1.20	0.043	3.53	1.12	0.85
KC R1	13782	2Yr	390.00	6560.00	6562.55	7.78	51.24	30.64	0.99	2.43	0.042	2.80	0.38	0.41
KC R1	13782	5Yr	740.00	6560.00	6563.62	9.21	90.26	43.89	0.94	2.32	0.039	3.39	0.90	0.75
KC R1	13782	10Yr	1200.00	6560.00	6564.69	10.37	143.30	53.59	0.91	2.54	0.042	3.88	1.28	1.31
KC R1	13782	50Yr	2700.00	6560.00	6567.15	10.27	553.36	236.59	0.71	1.18	0.048	3.25	1.30	0.89
KC R1	13782	100Yr	3600.00	6560.00	6567.65	11.48	671.07	239.34	0.76	1.60	0.053	3.96	1.63	1.28
KC R1	13599	2Yr	390.00	6557.00	6559.40	7.92	50.01	28.17	1.00	1.17	0.029	1.29	0.12	0.20
KC R1	13599	5Yr	740.00	6557.00	6560.45	9.67	82.18	33.12	0.98	1.36	0.028	1.66	0.38	0.47
KC R1	13599	10Yr	1200.00	6557.00	6561.58	11.20	122.28	38.05	0.97	1.53	0.029	2.01	0.58	0.69
KC R1	13599	50Yr	2700.00	6557.00	6564.56	11.56	519.32	198.39	0.76	0.66	0.034	1.78	0.64	0.49
KC R1	13599	100Yr	3600.00	6557.00	6565.54	12.13	735.69	232.74	0.75	0.74	0.040	1.88	0.68	0.59
KC R1	13213	2Yr	390.00	6552.00	6554.94	8.37	47.82	24.13	1.00	1.25	0.029	1.39	0.30	
KC R1	13213	5Yr	740.00	6552.00	6556.12	10.18	79.60	29.83	0.98	1.40	0.028	1.79	0.56	0.26
KC R1	13213	10Yr	1200.00	6552.00	6557.38	11.75	121.14	36.34	0.96	1.52	0.028	2.14	0.77	0.48
KC R1	13213	50Yr	2700.00	6552.00	6561.40	12.04	467.16	162.98	0.72	0.62	0.030	1.82	0.42	0.50
KC R1	13213	100Yr	3600.00	6552.00	6562.32	13.18	620.66	170.11	0.75	0.82	0.036	2.11	0.64	0.64
KC R1	12790	2Yr	390.00	6548.00	6550.58	7.97	50.60	30.51	0.99	1.05	0.027	1.29	0.18	0.18
KC R1	12790	5Yr	740.00	6548.00	6551.71	9.39	94.84	48.46	0.93	0.96	0.026	1.54	0.38	0.40
KC R1	12790	10Yr	1200.00	6548.00	6554.29	7.43	244.08	65.49	0.55	0.51	0.034	0.79	0.38	0.27
KC R1	12790	50Yr	2700.00	6548.00	6560.39	5.34	1336.41	254.62	0.27	0.14	0.046	0.32	0.16	0.11
KC R1	12790	100Yr	3600.00	6548.00	6563.23	4.85	2245.63	358.16	0.22	0.11	0.052	0.25	0.13	0.08
KC R1	12403	2Yr	390.00	6543.00	6548.34	1.66	253.47	70.85	0.14	0.04	0.028	0.04	0.01	0.01
KC R1	12403	5Yr	740.00	6543.00	6551.30	1.80	485.15	85.74	0.12	0.03	0.030	0.04	0.02	0.01
KC R1	12403	10Yr	1200.00	6543.00	6554.72	1.76	1285.78	348.13	0.09	0.01	0.028	0.04	0.02	0.01
KC R1	12403	50Yr	2700.00	6543.00	6560.52	1.78	4011.29	540.81	0.08	0.01	0.047	0.03	0.02	0.01
KC R1	12403	100Yr	3600.00	6543.00	6563.32	1.78	5588.86	604.34	0.07	0.01	0.051	0.03	0.01	0.01
KC R1	12369	2Yr	390.00	6541.32	6548.31	2.00	202.85	44.21	0.15	0.01	0.012	0.01	0.00	0.00
KC R1	12369	5Yr	740.00	6541.32	6551.25	2.44	359.75	63.13	0.15	0.01	0.012	0.01	0.00	0.00
KC R1	12369	10Yr	1200.00	6541.32	6554.66	2.58	1244.75	412.66	0.13	0.00	0.014	0.01	0.00	0.00

HEC-RAS Plan: Plan 04 River: Kettle Creek Reach: KC R1 (Continued)

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Vel Chnl	Flow Area	Top Width	Froude # Chl	Shear Total	Mann Wtd Total	Shear Chan	Shear LOB	Shear ROB
			(cfs)	(ft)	(ft)	(ft/s)	(sq ft)	(ft)		(lb/sq ft)		(lb/sq ft)	(lb/sq ft)	(lb/sq ft)
KC R1	12369	50Yr	2700.00	6541.32	6560.46	2.93	4036.59	563.36	0.12	0.01	0.032	0.02	0.01	0.01
KC R1	12369	100Yr	3600.00	6541.32	6563.25	3.02	5708.50	640.38	0.12	0.01	0.037	0.02	0.00	0.01
KC R1	12306	2Yr	330.00	6542.00	6546.49	10.51	31.39	9.00	0.99	0.40	0.013	0.40		
KC R1	12306	5Yr	630.00	6542.00	6548.26	13.44	46.86	8.22	0.95	0.62	0.013	0.62		
KC R1	12306	10Yr	990.00	6542.00	6549.73	17.15	57.71	6.23	1.09	1.01	0.013	1.01		
KC R1	12306	50Yr	1500.00	6542.00	6550.63	24.10	62.24	3.40	1.45	2.04	0.013	2.04		
KC R1	12306	100Yr	1700.00	6542.00	6550.76	27.14	62.64	2.76	1.62	2.61	0.013	2.61		
KC R1	12219	2Yr	330.00	6540.40	6544.89	10.51	31.41	9.00	0.99	0.40	0.013	0.40		
KC R1	12219	5Yr	630.00	6540.40	6546.67	13.41	46.97	8.21	0.94	0.62	0.013	0.62		
KC R1	12219	10Yr	990.00	6540.40	6548.14	17.14	57.77	6.22	1.09	1.01	0.013	1.01		
KC R1	12219	50Yr	1500.00	6540.40	6549.03	24.09	62.27	3.40	1.44	2.04	0.013	2.04		
KC R1	12219	100Yr	1700.00	6540.40	6549.17	27.11	62.70	2.71	1.61	2.60	0.013	2.60		
KC R1	12133	2Yr	330.00	6538.80	6543.28	10.53	31.34	8.99	0.99	0.41	0.013	0.41		
KC R1	12133	5Yr	630.00	6538.80	6545.07	13.42	46.94	8.22	0.94	0.62	0.013	0.62		
KC R1	12133	10Yr	990.00	6538.80	6546.52	17.17	57.67	6.26	1.09	1.01	0.013	1.01		
KC R1	12133	50Yr	1500.00	6538.80	6547.44	24.08	62.30	3.35	1.44	2.04	0.013	2.04		
KC R1	12133	100Yr	1700.00	6538.80	6547.57	27.11	62.70	2.70	1.61	2.60	0.013	2.60		
KC R1	12046	2Yr	330.00	6537.20	6541.70	10.48	31.50	9.00	0.99	0.40	0.013	0.40		
KC R1	12046	5Yr	630.00	6537.20	6543.45	13.48	46.75	8.23	0.95	0.63	0.013	0.63		
KC R1	12046	10Yr	990.00	6537.20	6544.92	17.17	57.66	6.26	1.09	1.01	0.013	1.01		
KC R1	12046	50Yr	1500.00	6537.20	6545.83	24.09	62.25	3.40	1.45	2.04	0.013	2.04		
KC R1	12046	100Yr	1700.00	6537.20	6545.98	27.12	62.69	2.69	1.61	2.60	0.013	2.60		
KC R1	11960	2Yr	330.00	6535.60	6540.09	10.49	31.46	9.00	0.99	0.40	0.013	0.40		
KC R1	11960	5Yr	630.00	6535.60	6541.87	13.42	46.96	8.21	0.94	0.62	0.013	0.62		
KC R1	11960	10Yr	990.00	6535.60	6543.34	17.13	57.80	6.20	1.08	1.01	0.013	1.01		
KC R1	11960	50Yr	1500.00	6535.60	6544.22	24.11	62.22	3.45	1.45	2.04	0.013	2.04		
KC R1	11960	100Yr	1700.00	6535.60	6544.38	27.11	62.71	2.65	1.61	2.60	0.013	2.60		
KC R1	11873	2Yr	330.00	6534.00	6538.50	10.47	31.51	9.00	0.99	0.40	0.013	0.40		
KC R1	11873	5Yr	630.00	6534.00	6540.26	13.45	46.84	8.22	0.95	0.63	0.013	0.63		
KC R1	11873	10Yr	990.00	6534.00	6541.74	17.13	57.81	6.20	1.08	1.01	0.013	1.01		
KC R1	11873	50Yr	1500.00	6534.00	6542.65	24.08	62.30	3.34	1.44	2.04	0.013	2.04		
KC R1	11873	100Yr	1700.00	6534.00	6542.78	27.11	62.72	2.65	1.61	2.60	0.013	2.60		
KC R1	11787	2Yr	330.00	6532.40	6536.89	10.51	31.41	9.00	0.99	0.40	0.013	0.40		
KC R1	11787	5Yr	630.00	6532.40	6538.67	13.41	46.97	8.21	0.94	0.62	0.013	0.62		
KC R1	11787	10Yr	990.00	6532.40	6540.14	17.14	57.77	6.22	1.09	1.01	0.013	1.01		
KC R1	11787	50Yr	1500.00	6532.40	6541.03	24.09	62.27	3.40	1.44	2.04	0.013	2.04		
KC R1	11787	100Yr	1700.00	6532.40	6541.17	27.11	62.70	2.71	1.61	2.60	0.013	2.60		
KC R1	11700	2Yr	330.00	6530.80	6535.28	10.53	31.34	8.99	0.99	0.41	0.013	0.41		
KC R1	11700	5Yr	630.00	6530.80	6537.07	13.42	46.94	8.22	0.94	0.62	0.013	0.62		
KC R1	11700	10Yr	990.00	6530.80	6538.52	17.17	57.67	6.26	1.09	1.01	0.013	1.01		
KC R1	11700	50Yr	1500.00	6530.80	6539.44	24.08	62.30	3.35	1.44	2.04	0.013	2.04		
KC R1	11700	100Yr	1700.00	6530.80	6539.57	27.11	62.70	2.70	1.61	2.60	0.013	2.60		

HEC-RAS Plan: Plan 04 River: Kettle Creek Reach: KC R1 (Continued)

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl	Shear Total (lb/sq ft)	Mann Wtd Total	Shear Chan (lb/sq ft)	Shear LOB (lb/sq ft)	Shear ROB (lb/sq ft)
KC R1	11614	2Yr	330.00	6529.20	6533.70	10.48	31.50	9.00	0.99	0.40	0.013	0.40		
KC R1	11614	5Yr	630.00	6529.20	6535.45	13.48	46.75	8.23	0.95	0.63	0.013	0.63		
KC R1	11614	10Yr	990.00	6529.20	6536.92	17.17	57.66	6.26	1.09	1.01	0.013	1.01		
KC R1	11614	50Yr	1500.00	6529.20	6537.83	24.09	62.25	3.40	1.45	2.04	0.013	2.04		
KC R1	11614	100Yr	1700.00	6529.20	6537.98	27.12	62.69	2.69	1.61	2.60	0.013	2.60		
KC R1	11527	2Yr	330.00	6527.60	6532.09	10.49	31.46	9.00	0.99	0.40	0.013	0.40		
KC R1	11527	5Yr	630.00	6527.60	6533.87	13.42	46.96	8.21	0.94	0.62	0.013	0.62		
KC R1	11527	10Yr	990.00	6527.60	6535.34	17.13	57.80	6.20	1.08	1.01	0.013	1.01		
KC R1	11527	50Yr	1500.00	6527.60	6536.22	24.11	62.22	3.45	1.45	2.04	0.013	2.04		
KC R1	11527	100Yr	1700.00	6527.60	6536.38	27.11	62.71	2.65	1.61	2.60	0.013	2.60		
KC R1	11441	2Yr	330.00	6526.00	6530.49	10.51	31.39	9.00	0.99	0.40	0.013	0.40		
KC R1	11441	5Yr	630.00	6526.00	6532.26	13.44	46.86	8.22	0.95	0.62	0.013	0.62		
KC R1	11441	10Yr	990.00	6526.00	6533.73	17.15	57.71	6.23	1.09	1.01	0.013	1.01		
KC R1	11441	50Yr	1500.00	6526.00	6534.63	24.10	62.24	3.40	1.45	2.04	0.013	2.04		
KC R1	11441	100Yr	1700.00	6526.00	6534.76	27.14	62.64	2.76	1.62	2.61	0.013	2.61		
KC R1	11343	2Yr	330.00	6524.19	6528.69	10.49	31.46	9.00	0.99	0.40	0.013	0.40		
KC R1	11343	5Yr	630.00	6524.19	6530.45	13.47	46.79	8.23	0.95	0.63	0.013	0.63		
KC R1	11343	10Yr	990.00	6524.19	6531.94	17.13	57.79	6.19	1.08	1.01	0.013	1.01		
KC R1	11343	50Yr	1500.00	6524.19	6532.82	24.11	62.21	3.40	1.45	2.04	0.013	2.04		
KC R1	11343	100Yr	1700.00	6524.19	6532.97	27.13	62.67	2.65	1.61	2.61	0.013	2.61		
KC R1	11245	2Yr	330.00	6522.39	6526.88	10.49	31.47	9.00	0.99	0.40	0.013	0.40		
KC R1	11245	5Yr	630.00	6522.39	6528.65	13.45	46.85	8.23	0.95	0.63	0.013	0.63		
KC R1	11245	10Yr	990.00	6522.39	6530.13	17.13	57.78	6.22	1.09	1.01	0.013	1.01		
KC R1	11245	50Yr	1500.00	6522.39	6531.02	24.09	62.27	3.40	1.44	2.04	0.013	2.04		
KC R1	11245	100Yr	1700.00	6522.39	6531.16	27.11	62.70	2.71	1.61	2.60	0.013	2.60		
KC R1	11148	2Yr	330.00	6520.58	6525.07	10.49	31.45	9.00	0.99	0.40	0.013	0.40		
KC R1	11148	5Yr	630.00	6520.58	6526.85	13.42	46.96	8.21	0.94	0.62	0.013	0.62		
KC R1	11148	10Yr	990.00	6520.58	6528.32	17.13	57.80	6.20	1.08	1.01	0.013	1.01		
KC R1	11148	50Yr	1500.00	6520.58	6529.20	24.11	62.22	3.44	1.45	2.04	0.013	2.04		
KC R1	11148	100Yr	1700.00	6520.58	6529.36	27.11	62.71	2.65	1.61	2.60	0.013	2.60		
KC R1	11050	2Yr	330.00	6518.77	6523.27	10.49	31.46	9.00	0.99	0.40	0.013	0.40		
KC R1	11050	5Yr	630.00	6518.77	6525.03	13.47	46.79	8.23	0.95	0.63	0.013	0.63		
KC R1	11050	10Yr	990.00	6518.77	6526.51	17.14	57.75	6.20	1.09	1.01	0.013	1.01		
KC R1	11050	50Yr	1500.00	6518.77	6527.41	24.10	62.24	3.35	1.44	2.04	0.013	2.04		
KC R1	11050	100Yr	1700.00	6518.77	6527.54	27.14	62.64	2.70	1.61	2.61	0.013	2.61		
KC R1	10952	2Yr	330.00	6516.97	6521.47	10.47	31.53	9.00	0.99	0.40	0.013	0.40		
KC R1	10952	5Yr	630.00	6516.97	6523.23	13.44	46.89	8.22	0.95	0.62	0.013	0.62		
KC R1	10952	10Yr	990.00	6516.97	6524.71	17.12	57.82	6.20	1.08	1.01	0.013	1.01		
KC R1	10952	50Yr	1500.00	6516.97	6525.60	24.09	62.28	3.39	1.44	2.04	0.013	2.04		
KC R1	10952	100Yr	1700.00	6516.97	6525.75	27.10	62.73	2.65	1.61	2.60	0.013	2.60		
KC R1	10855	2Yr	330.00	6515.16	6519.66	10.48	31.50	9.00	0.99	0.40	0.013	0.40		
KC R1	10855	5Yr	630.00	6515.16	6521.41	13.48	46.75	8.23	0.95	0.63	0.013	0.63		
KC R1	10855	10Yr	990.00	6515.16	6522.88	17.17	57.66	6.26	1.09	1.01	0.013	1.01		

HEC-RAS Plan: Plan 04 River: Kettle Creek Reach: KC R1 (Continued)

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl	Shear Total (lb/sq ft)	Mann Wtd Total	Shear Chan (lb/sq ft)	Shear LOB (lb/sq ft)	Shear ROB (lb/sq ft)
KC R1	10855	50Yr	1500.00	6515.16	6523.79	24.09	62.25	3.40	1.45	2.04	0.013	2.04		
KC R1	10855	100Yr	1700.00	6515.16	6523.94	27.12	62.69	2.69	1.61	2.60	0.013	2.60		
KC R1	10757	2Yr	330.00	6513.35	6517.83	10.54	31.32	9.00	0.99	0.41	0.013	0.41		
KC R1	10757	5Yr	630.00	6513.35	6519.62	13.44	46.87	8.22	0.95	0.62	0.013	0.62		
KC R1	10757	10Yr	990.00	6513.35	6521.10	17.12	57.81	6.21	1.08	1.01	0.013	1.01		
KC R1	10757	50Yr	1500.00	6513.35	6521.99	24.09	62.26	3.38	1.44	2.04	0.013	2.04		
KC R1	10757	100Yr	1700.00	6513.35	6522.12	27.13	62.66	2.75	1.61	2.60	0.013	2.60		
KC R1	10660	2Yr	330.00	6511.55	6516.03	10.53	31.34	8.99	0.99	0.41	0.013	0.41		
KC R1	10660	5Yr	630.00	6511.55	6517.82	13.42	46.94	8.22	0.94	0.62	0.013	0.62		
KC R1	10660	10Yr	990.00	6511.55	6519.27	17.17	57.67	6.26	1.09	1.01	0.013	1.01		
KC R1	10660	50Yr	1500.00	6511.55	6520.19	24.08	62.30	3.35	1.44	2.04	0.013	2.04		
KC R1	10660	100Yr	1700.00	6511.55	6520.32	27.11	62.70	2.70	1.61	2.60	0.013	2.60		
KC R1	10562	2Yr	330.00	6509.74	6514.24	10.48	31.50	9.00	0.99	0.40	0.013	0.40		
KC R1	10562	5Yr	630.00	6509.74	6515.99	13.48	46.75	8.23	0.95	0.63	0.013	0.63		
KC R1	10562	10Yr	990.00	6509.74	6517.46	17.17	57.66	6.26	1.09	1.01	0.013	1.01		
KC R1	10562	50Yr	1500.00	6509.74	6518.37	24.09	62.25	3.40	1.45	2.04	0.013	2.04		
KC R1	10562	100Yr	1700.00	6509.74	6518.52	27.12	62.69	2.69	1.61	2.60	0.013	2.60		
KC R1	10464	2Yr	330.00	6507.94	6512.39	10.61	31.11	8.99	1.00	0.41	0.013	0.41		
KC R1	10464	5Yr	630.00	6507.94	6514.16	13.52	46.60	8.25	0.95	0.63	0.013	0.63		
KC R1	10464	10Yr	990.00	6507.94	6515.68	17.12	57.83	6.20	1.08	1.01	0.013	1.01		
KC R1	10464	50Yr	1500.00	6507.94	6516.57	24.08	62.29	3.40	1.44	2.04	0.013	2.04		
KC R1	10464	100Yr	1700.00	6507.94	6516.72	27.10	62.73	2.67	1.61	2.60	0.013	2.60		
KC R1	10367	2Yr	330.00	6506.13	6510.62	10.51	31.41	9.00	0.99	0.40	0.013	0.40		
KC R1	10367	5Yr	630.00	6506.13	6512.40	13.41	46.98	8.21	0.94	0.62	0.013	0.62		
KC R1	10367	10Yr	990.00	6506.13	6513.86	17.15	57.72	6.24	1.09	1.01	0.013	1.01		
KC R1	10367	50Yr	1500.00	6506.13	6514.77	24.08	62.30	3.35	1.44	2.04	0.013	2.04		
KC R1	10367	100Yr	1700.00	6506.13	6514.90	27.11	62.70	2.70	1.61	2.60	0.013	2.60		
KC R1	10269	2Yr	330.00	6504.32	6508.81	10.52	31.36	9.00	0.99	0.41	0.013	0.41		
KC R1	10269	5Yr	630.00	6504.32	6510.59	13.43	46.91	8.21	0.95	0.62	0.013	0.62		
KC R1	10269	10Yr	990.00	6504.32	6512.06	17.15	57.72	6.22	1.09	1.01	0.013	1.01		
KC R1	10269	50Yr	1500.00	6504.32	6512.96	24.10	62.23	3.37	1.45	2.04	0.013	2.04		
KC R1	10269	100Yr	1700.00	6504.32	6513.08	27.15	62.61	2.76	1.62	2.61	0.013	2.61		
KC R1	10171	2Yr	330.00	6502.52	6506.97	10.61	31.11	8.99	1.00	0.41	0.013	0.41		
KC R1	10171	5Yr	630.00	6502.52	6508.75	13.51	46.62	8.25	0.95	0.63	0.013	0.63		
KC R1	10171	10Yr	990.00	6502.52	6510.26	17.13	57.79	6.22	1.09	1.01	0.013	1.01		
KC R1	10171	50Yr	1500.00	6502.52	6511.14	24.09	62.26	3.44	1.45	2.04	0.013	2.04		
KC R1	10171	100Yr	1700.00	6502.52	6511.29	27.11	62.70	2.72	1.61	2.60	0.013	2.60		
KC R1	10074	2Yr	330.00	6500.71	6505.20	10.51	31.41	9.00	0.99	0.40	0.013	0.40		
KC R1	10074	5Yr	630.00	6500.71	6506.96	13.46	46.81	8.23	0.95	0.63	0.013	0.63		
KC R1	10074	10Yr	990.00	6500.71	6508.45	17.13	57.78	6.22	1.09	1.01	0.013	1.01		
KC R1	10074	50Yr	1500.00	6500.71	6509.34	24.09	62.26	3.42	1.45	2.04	0.013	2.04		
KC R1	10074	100Yr	1700.00	6500.71	6509.49	27.10	62.73	2.65	1.61	2.60	0.013	2.60		

HEC-RAS Plan: Plan 04 River: Kettle Creek Reach: KC R1 (Continued)

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl	Shear Total (lb/sq ft)	Mann Wtd Total	Shear Chan (lb/sq ft)	Shear LOB (lb/sq ft)	Shear ROB (lb/sq ft)
KC R1	9976	2Yr	330.00	6498.90	6503.39	10.50	31.41	9.00	0.99	0.40	0.013	0.40		
KC R1	9976	5Yr	630.00	6498.90	6505.18	13.42	46.96	8.21	0.94	0.62	0.013	0.62		
KC R1	9976	10Yr	990.00	6498.90	6506.64	17.14	57.75	6.20	1.09	1.01	0.013	1.01		
KC R1	9976	50Yr	1500.00	6498.90	6507.54	24.10	62.24	3.36	1.44	2.04	0.013	2.04		
KC R1	9976	100Yr	1700.00	6498.90	6507.68	27.13	62.67	2.65	1.61	2.61	0.013	2.61		
KC R1	9879	2Yr	330.00	6497.10	6501.58	10.53	31.35	8.99	0.99	0.41	0.013	0.41		
KC R1	9879	5Yr	630.00	6497.10	6503.35	13.46	46.82	8.23	0.95	0.63	0.013	0.63		
KC R1	9879	10Yr	990.00	6497.10	6504.84	17.13	57.78	6.22	1.09	1.01	0.013	1.01		
KC R1	9879	50Yr	1500.00	6497.10	6505.72	24.09	62.26	3.44	1.45	2.04	0.013	2.04		
KC R1	9879	100Yr	1700.00	6497.10	6505.86	27.12	62.68	2.76	1.61	2.60	0.013	2.60		
KC R1	9781	2Yr	330.00	6495.29	6499.78	10.49	31.45	9.00	0.99	0.40	0.013	0.40		
KC R1	9781	5Yr	630.00	6495.29	6501.56	13.42	46.96	8.21	0.94	0.62	0.013	0.62		
KC R1	9781	10Yr	990.00	6495.29	6503.03	17.13	57.80	6.20	1.08	1.01	0.013	1.01		
KC R1	9781	50Yr	1500.00	6495.29	6503.92	24.10	62.25	3.40	1.45	2.04	0.013	2.04		
KC R1	9781	100Yr	1700.00	6495.29	6504.07	27.12	62.69	2.69	1.61	2.60	0.013	2.60		
KC R1	9683	2Yr	330.00	6493.48	6497.98	10.49	31.46	9.00	0.99	0.40	0.013	0.40		
KC R1	9683	5Yr	630.00	6493.48	6499.74	13.47	46.79	8.23	0.95	0.63	0.013	0.63		
KC R1	9683	10Yr	990.00	6493.48	6501.22	17.14	57.75	6.20	1.09	1.01	0.013	1.01		
KC R1	9683	50Yr	1500.00	6493.48	6502.12	24.10	62.24	3.35	1.44	2.04	0.013	2.04		
KC R1	9683	100Yr	1700.00	6493.48	6502.25	27.14	62.64	2.70	1.61	2.61	0.013	2.61		
KC R1	9586	2Yr	330.00	6491.68	6496.18	10.47	31.53	9.00	0.99	0.40	0.013	0.40		
KC R1	9586	5Yr	630.00	6491.68	6497.94	13.44	46.89	8.22	0.95	0.62	0.013	0.62		
KC R1	9586	10Yr	990.00	6491.68	6499.42	17.12	57.82	6.20	1.08	1.01	0.013	1.01		
KC R1	9586	50Yr	1500.00	6491.68	6500.31	24.09	62.28	3.39	1.44	2.04	0.013	2.04		
KC R1	9586	100Yr	1700.00	6491.68	6500.46	27.10	62.73	2.65	1.61	2.60	0.013	2.60		
KC R1	9488	2Yr	330.00	6489.87	6494.36	10.49	31.45	9.00	0.99	0.40	0.013	0.40		
KC R1	9488	5Yr	630.00	6489.87	6496.14	13.42	46.96	8.21	0.94	0.62	0.013	0.62		
KC R1	9488	10Yr	990.00	6489.87	6497.61	17.13	57.80	6.20	1.08	1.01	0.013	1.01		
KC R1	9488	50Yr	1500.00	6489.87	6498.49	24.11	62.22	3.44	1.45	2.04	0.013	2.04		
KC R1	9488	100Yr	1700.00	6489.87	6498.65	27.11	62.71	2.65	1.61	2.60	0.013	2.60		
KC R1	9390	2Yr	330.00	6488.06	6492.56	10.49	31.46	9.00	0.99	0.40	0.013	0.40		
KC R1	9390	5Yr	630.00	6488.06	6494.32	13.47	46.79	8.23	0.95	0.63	0.013	0.63		
KC R1	9390	10Yr	990.00	6488.06	6495.80	17.14	57.75	6.20	1.09	1.01	0.013	1.01		
KC R1	9390	50Yr	1500.00	6488.06	6496.70	24.10	62.24	3.35	1.44	2.04	0.013	2.04		
KC R1	9390	100Yr	1700.00	6488.06	6496.83	27.14	62.64	2.70	1.61	2.61	0.013	2.61		
KC R1	9293	2Yr	330.00	6486.26	6490.74	10.53	31.34	8.99	0.99	0.41	0.013	0.41		
KC R1	9293	5Yr	630.00	6486.26	6492.53	13.42	46.94	8.22	0.94	0.62	0.013	0.62		
KC R1	9293	10Yr	990.00	6486.26	6493.98	17.17	57.67	6.26	1.09	1.01	0.013	1.01		
KC R1	9293	50Yr	1500.00	6486.26	6494.90	24.08	62.30	3.35	1.44	2.04	0.013	2.04		
KC R1	9293	100Yr	1700.00	6486.26	6495.03	27.11	62.70	2.70	1.61	2.60	0.013	2.60		
KC R1	9195	2Yr	330.00	6484.45	6488.95	10.48	31.50	9.00	0.99	0.40	0.013	0.40		
KC R1	9195	5Yr	630.00	6484.45	6490.70	13.48	46.75	8.23	0.95	0.63	0.013	0.63		
KC R1	9195	10Yr	990.00	6484.45	6492.17	17.17	57.66	6.26	1.09	1.01	0.013	1.01		

HEC-RAS Plan: Plan 04 River: Kettle Creek Reach: KC R1 (Continued)

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl	Shear Total (lb/sq ft)	Mann Wtd Total	Shear Chan (lb/sq ft)	Shear LOB (lb/sq ft)	Shear ROB (lb/sq ft)
KC R1	9195	50Yr	1500.00	6484.45	6493.08	24.09	62.25	3.40	1.45	2.04	0.013	2.04		
KC R1	9195	100Yr	1700.00	6484.45	6493.23	27.12	62.69	2.69	1.61	2.60	0.013	2.60		
KC R1	9097	2Yr	330.00	6482.65	6487.10	10.61	31.11	8.99	1.00	0.41	0.013	0.41		
KC R1	9097	5Yr	630.00	6482.65	6488.91	13.43	46.90	8.21	0.95	0.62	0.013	0.62		
KC R1	9097	10Yr	990.00	6482.65	6490.37	17.17	57.65	6.27	1.09	1.01	0.013	1.01		
KC R1	9097	50Yr	1500.00	6482.65	6491.29	24.09	62.27	3.35	1.44	2.04	0.013	2.04		
KC R1	9097	100Yr	1700.00	6482.65	6491.43	27.11	62.71	2.64	1.61	2.60	0.013	2.60		
KC R1	9000	2Yr	330.00	6480.84	6485.32	10.53	31.34	8.99	0.99	0.41	0.013	0.41		
KC R1	9000	5Yr	630.00	6480.84	6487.11	13.42	46.94	8.22	0.94	0.62	0.013	0.62		
KC R1	9000	10Yr	990.00	6480.84	6488.56	17.17	57.67	6.26	1.09	1.01	0.013	1.01		
KC R1	9000	50Yr	1500.00	6480.84	6489.47	24.09	62.27	3.40	1.44	2.04	0.013	2.04		
KC R1	9000	100Yr	1700.00	6480.84	6489.60	27.13	62.67	2.76	1.62	2.60	0.013	2.60		
KC R1	8902	2Yr	330.00	6479.03	6483.52	10.52	31.36	9.00	0.99	0.41	0.013	0.41		
KC R1	8902	5Yr	630.00	6479.03	6485.30	13.43	46.91	8.21	0.95	0.62	0.013	0.62		
KC R1	8902	10Yr	990.00	6479.03	6486.77	17.15	57.72	6.22	1.09	1.01	0.013	1.01		
KC R1	8902	50Yr	1500.00	6479.03	6487.67	24.10	62.23	3.37	1.45	2.04	0.013	2.04		
KC R1	8902	100Yr	1700.00	6479.03	6487.79	27.15	62.61	2.76	1.62	2.61	0.013	2.61		
KC R1	8804	2Yr	330.00	6477.23	6481.68	10.61	31.11	8.99	1.00	0.41	0.013	0.41		
KC R1	8804	5Yr	630.00	6477.23	6483.46	13.51	46.62	8.25	0.95	0.63	0.013	0.63		
KC R1	8804	10Yr	990.00	6477.23	6484.97	17.13	57.79	6.22	1.09	1.01	0.013	1.01		
KC R1	8804	50Yr	1500.00	6477.23	6485.85	24.09	62.26	3.44	1.45	2.04	0.013	2.04		
KC R1	8804	100Yr	1700.00	6477.23	6486.00	27.11	62.70	2.72	1.61	2.60	0.013	2.60		
KC R1	8707	2Yr	330.00	6475.42	6479.91	10.51	31.41	9.00	0.99	0.40	0.013	0.40		
KC R1	8707	5Yr	630.00	6475.42	6481.69	13.41	46.98	8.21	0.94	0.62	0.013	0.62		
KC R1	8707	10Yr	990.00	6475.42	6483.15	17.15	57.72	6.24	1.09	1.01	0.013	1.01		
KC R1	8707	50Yr	1500.00	6475.42	6484.06	24.08	62.30	3.35	1.44	2.04	0.013	2.04		
KC R1	8707	100Yr	1700.00	6475.42	6484.19	27.11	62.70	2.70	1.61	2.60	0.013	2.60		
KC R1	8609	2Yr	330.00	6473.61	6478.10	10.52	31.36	9.00	0.99	0.41	0.013	0.41		
KC R1	8609	5Yr	630.00	6473.61	6479.88	13.43	46.91	8.21	0.95	0.62	0.013	0.62		
KC R1	8609	10Yr	990.00	6473.61	6481.35	17.16	57.70	6.22	1.09	1.01	0.013	1.01		
KC R1	8609	50Yr	1500.00	6473.61	6482.25	24.10	62.24	3.35	1.44	2.04	0.013	2.04		
KC R1	8609	100Yr	1700.00	6473.61	6482.38	27.14	62.64	2.71	1.61	2.61	0.013	2.61		
KC R1	8512	2Yr	330.00	6471.81	6476.29	10.53	31.35	8.99	0.99	0.41	0.013	0.41		
KC R1	8512	5Yr	630.00	6471.81	6478.06	13.46	46.82	8.23	0.95	0.63	0.013	0.63		
KC R1	8512	10Yr	990.00	6471.81	6479.55	17.12	57.83	6.20	1.08	1.01	0.013	1.01		
KC R1	8512	50Yr	1500.00	6471.81	6480.44	24.08	62.29	3.40	1.44	2.04	0.013	2.04		
KC R1	8512	100Yr	1700.00	6471.81	6480.59	27.10	62.73	2.69	1.61	2.60	0.013	2.60		
KC R1	8414	2Yr	330.00	6470.00	6474.49	10.51	31.39	9.00	0.99	0.40	0.013	0.40		
KC R1	8414	5Yr	630.00	6470.00	6476.26	13.44	46.86	8.22	0.95	0.62	0.013	0.62		
KC R1	8414	10Yr	990.00	6470.00	6477.73	17.15	57.71	6.23	1.09	1.01	0.013	1.01		
KC R1	8414	50Yr	1500.00	6470.00	6478.63	24.10	62.24	3.40	1.45	2.04	0.013	2.04		
KC R1	8414	100Yr	1700.00	6470.00	6478.76	27.14	62.64	2.76	1.62	2.61	0.013	2.61		

HEC-RAS Plan: Plan 04 River: Kettle Creek Reach: KC R1 (Continued)

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl	Shear Total (lb/sq ft)	Mann Wtd Total	Shear Chan (lb/sq ft)	Shear LOB (lb/sq ft)	Shear ROB (lb/sq ft)
KC R1	8312	2Yr	330.00	6468.78	6469.89	5.96	55.35	50.00	1.00	0.62	0.025	0.62		
KC R1	8312	5Yr	630.00	6468.78	6470.48	7.43	84.74	50.00	1.01	0.84	0.025	0.84		
KC R1	8312	10Yr	990.00	6468.78	6471.07	8.64	114.58	50.00	1.01	1.03	0.025	1.03		
KC R1	8312	50Yr	1500.00	6468.78	6471.81	9.90	151.44	50.00	1.00	1.24	0.025	1.24		
KC R1	8312	100Yr	1700.00	6468.78	6472.06	10.35	164.21	50.00	1.01	1.33	0.025	1.33		
KC R1	8308	2Yr	330.00	6468.00	6469.11	5.96	55.40	50.00	1.00	9.84	0.100	9.84		
KC R1	8308	5Yr	630.00	6468.00	6469.70	7.42	84.96	50.00	1.00	13.32	0.100	13.32		
KC R1	8308	10Yr	990.00	6468.00	6470.29	8.64	114.60	50.00	1.01	16.48	0.100	16.48		
KC R1	8308	50Yr	1500.00	6468.00	6471.02	9.93	151.05	50.00	1.01	20.04	0.100	20.04		
KC R1	8308	100Yr	1700.00	6468.00	6471.29	10.34	164.43	50.00	1.00	21.18	0.100	21.18		
KC R1	8269	2Yr	330.00	6455.00	6457.86	5.02	114.56	50.22	0.52	0.35	0.044	0.45	0.33	0.35
KC R1	8269	5Yr	630.00	6455.00	6459.06	6.23	177.01	53.39	0.54	0.49	0.045	0.62	0.47	0.48
KC R1	8269	10Yr	990.00	6455.00	6460.20	7.30	239.61	55.95	0.56	0.61	0.045	0.78	0.59	0.60
KC R1	8269	50Yr	1500.00	6455.00	6461.84	8.06	334.06	59.30	0.54	0.67	0.045	0.87	0.65	0.65
KC R1	8269	100Yr	1700.00	6455.00	6462.01	8.89	344.02	59.64	0.59	0.81	0.045	1.05	0.79	0.78
KC R1	8248	2Yr	330.00	6455.00	6457.34	8.50	67.55	39.55	0.98	1.00	0.042	1.39	0.99	0.86
KC R1	8248	5Yr	640.00	6455.00	6458.53	9.62	118.65	45.84	0.90	1.11	0.043	1.55	1.10	0.98
KC R1	8248	10Yr	1000.00	6455.00	6459.70	10.33	175.31	50.38	0.84	1.16	0.044	1.62	1.16	1.04
KC R1	8248	50Yr	1600.00	6455.00	6461.30	11.35	260.08	55.77	0.80	1.26	0.044	1.78	1.26	1.14
KC R1	8248	100Yr	1700.00	6455.00	6461.54	11.50	273.71	56.56	0.79	1.27	0.044	1.80	1.27	1.15
KC R1	8116	2Yr	330.00	6453.00	6455.58	8.11	43.78	24.60	0.97	1.07	0.028	1.31	0.17	0.51
KC R1	8116	5Yr	640.00	6453.00	6456.74	9.78	76.15	31.13	0.95	1.20	0.028	1.64	0.42	0.71
KC R1	8116	10Yr	1000.00	6453.00	6457.79	11.11	111.71	36.95	0.94	1.32	0.029	1.94	0.61	0.86
KC R1	8116	50Yr	1600.00	6453.00	6459.18	12.68	168.58	44.76	0.93	1.47	0.030	2.30	0.82	1.04
KC R1	8116	100Yr	1700.00	6453.00	6459.36	12.96	176.89	45.83	0.94	1.51	0.030	2.38	0.85	1.08
KC R1	7963	2Yr	330.00	6450.00	6452.21	8.07	46.60	26.99	0.98	1.03	0.029	1.29	0.64	0.34
KC R1	7963	5Yr	640.00	6450.00	6453.30	9.88	78.86	32.27	0.97	1.25	0.030	1.69	0.83	0.57
KC R1	7963	10Yr	1000.00	6450.00	6454.30	11.30	113.62	37.29	0.97	1.41	0.030	2.02	0.97	0.75
KC R1	7963	50Yr	1600.00	6450.00	6455.67	12.91	169.92	44.81	0.96	1.57	0.031	2.40	1.11	0.94
KC R1	7963	100Yr	1700.00	6450.00	6455.88	13.12	179.34	45.97	0.96	1.59	0.031	2.45	1.13	0.96
KC R1	7784	2Yr	330.00	6448.00	6449.30	6.39	56.79	49.93	1.00	0.87	0.031	0.96	0.72	0.37
KC R1	7784	5Yr	640.00	6448.00	6449.97	7.92	91.13	53.19	1.01	1.13	0.031	1.29	0.91	0.61
KC R1	7784	10Yr	1000.00	6448.00	6450.59	9.18	125.13	55.58	1.01	1.37	0.031	1.57	1.08	0.81
KC R1	7784	50Yr	1600.00	6448.00	6451.48	10.68	175.97	58.68	1.02	1.64	0.032	1.92	1.27	1.04
KC R1	7784	100Yr	1700.00	6448.00	6451.62	10.89	183.93	59.11	1.02	1.68	0.032	1.97	1.29	1.07
KC R1	7586	2Yr	330.00	6437.93	6440.85	8.31	41.13	21.66	0.98	2.58	0.042	3.06	0.52	0.58
KC R1	7586	5Yr	640.00	6437.93	6442.09	10.05	71.60	27.69	0.95	2.84	0.041	3.87	1.03	1.16
KC R1	7586	10Yr	1000.00	6437.93	6443.23	11.36	106.08	32.74	0.93	3.09	0.042	4.50	1.39	1.62
KC R1	7586	50Yr	1600.00	6437.93	6444.70	13.06	158.82	38.74	0.93	3.55	0.044	5.43	1.83	2.23
KC R1	7586	100Yr	1700.00	6437.93	6444.93	13.27	167.79	39.63	0.93	3.59	0.044	5.53	1.88	2.31
KC R1	7499	2Yr	330.00	6433.00	6435.57	7.92	43.92	26.10	0.97	2.33	0.041	2.85	0.36	0.70
KC R1	7499	5Yr	640.00	6433.00	6436.70	9.51	77.82	34.17	0.94	2.53	0.041	3.55	0.86	1.18
KC R1	7499	10Yr	1000.00	6433.00	6437.70	10.80	115.71	41.77	0.93	2.76	0.043	4.19	1.21	1.54

HEC-RAS Plan: Plan 04 River: Kettle Creek Reach: KC R1 (Continued)

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Vel Chnl	Flow Area	Top Width	Froude # Chl	Shear Total	Mann Wtd Total	Shear Chan	Shear LOB	Shear ROB
			(cfs)	(ft)	(ft)	(ft/s)	(sq ft)	(ft)		(lb/sq ft)		(lb/sq ft)	(lb/sq ft)	(lb/sq ft)
KC R1	7499	50Yr	1600.00	6433.00	6439.05	12.19	178.94	51.21	0.91	3.04	0.045	4.85	1.56	2.02
KC R1	7499	100Yr	1700.00	6433.00	6439.25	12.36	189.36	52.37	0.91	3.08	0.045	4.93	1.60	2.10
KC R1	7199	2Yr	330.00	6427.00	6430.05	4.07	82.68	42.50	0.49	0.66	0.043	0.74	0.17	0.05
KC R1	7199	5Yr	640.00	6427.00	6430.94	5.51	124.59	52.17	0.56	0.94	0.041	1.20	0.36	0.23
KC R1	7199	10Yr	1000.00	6427.00	6431.52	7.12	156.59	58.35	0.66	1.40	0.041	1.90	0.61	0.46
KC R1	7199	50Yr	1600.00	6427.00	6432.24	9.26	201.73	65.69	0.78	2.12	0.042	3.02	1.04	0.89
KC R1	7199	100Yr	1700.00	6427.00	6432.35	9.57	208.77	66.63	0.80	2.24	0.042	3.20	1.12	0.97
KC R1	6916	2Yr	330.00	6425.00	6427.63	5.42	62.87	41.23	0.70	1.11	0.040	1.37	0.21	0.18
KC R1	6916	5Yr	640.00	6425.00	6428.50	6.60	130.82	105.96	0.70	0.80	0.036	1.79	0.46	0.37
KC R1	6916	10Yr	1000.00	6425.00	6429.28	6.99	217.93	115.54	0.65	0.99	0.045	1.84	0.56	0.66
KC R1	6916	50Yr	1600.00	6425.00	6430.37	7.42	348.05	127.01	0.61	1.13	0.051	1.90	0.65	0.88
KC R1	6916	100Yr	1700.00	6425.00	6430.53	7.50	370.35	147.67	0.60	1.01	0.048	1.92	0.66	0.76
KC R1	6729	2Yr	330.00	6423.00	6425.93	4.56	75.59	49.16	0.58	0.76	0.040	0.96	0.09	0.19
KC R1	6729	5Yr	640.00	6423.00	6426.65	6.25	116.28	63.15	0.67	1.12	0.040	1.62	0.36	0.44
KC R1	6729	10Yr	1000.00	6423.00	6427.28	7.60	159.66	73.27	0.74	1.48	0.041	2.23	0.66	0.73
KC R1	6729	50Yr	1600.00	6423.00	6428.04	9.44	219.27	84.75	0.83	2.05	0.043	3.21	1.20	1.13
KC R1	6729	100Yr	1700.00	6423.00	6428.17	9.67	230.26	88.49	0.83	2.08	0.043	3.34	1.29	1.14
KC R1	6530	2Yr	330.00	6421.00	6424.21	4.29	82.70	73.15	0.61	0.68	0.040	0.92	0.17	0.29
KC R1	6530	5Yr	640.00	6421.00	6424.97	5.26	141.50	81.03	0.61	0.92	0.044	1.21	0.47	0.41
KC R1	6530	10Yr	1000.00	6421.00	6425.66	6.08	201.82	92.95	0.62	1.07	0.044	1.48	0.62	0.53
KC R1	6530	50Yr	1600.00	6421.00	6426.68	6.83	301.93	101.41	0.60	1.24	0.047	1.69	0.85	0.62
KC R1	6530	100Yr	1700.00	6421.00	6426.76	7.09	309.76	101.70	0.62	1.34	0.048	1.81	0.93	0.66
KC R1	6429	2Yr	330.00	6420.00	6422.47	5.89	56.44	46.68	0.92	1.73	0.044	1.83	0.32	0.11
KC R1	6429	5Yr	640.00	6420.00	6423.08	7.67	86.56	52.14	0.98	2.40	0.043	2.74	0.73	0.64
KC R1	6429	10Yr	1000.00	6420.00	6423.73	8.76	122.18	56.69	0.97	2.73	0.043	3.23	0.97	1.15
KC R1	6429	50Yr	1600.00	6420.00	6424.64	10.09	182.86	82.99	0.96	2.46	0.038	3.87	0.70	1.65
KC R1	6429	100Yr	1700.00	6420.00	6424.92	9.80	208.45	98.25	0.89	2.02	0.037	3.56	0.64	1.56
KC R1	6093	2Yr	330.00	6416.00	6418.48	3.23	115.98	125.15	0.53	0.46	0.044	0.57	0.03	0.25
KC R1	6093	5Yr	640.00	6416.00	6419.00	4.13	184.72	140.39	0.56	0.65	0.046	0.82	0.19	0.43
KC R1	6093	10Yr	1000.00	6416.00	6419.51	4.73	258.61	146.01	0.56	0.80	0.048	0.99	0.34	0.59
KC R1	6093	50Yr	1600.00	6416.00	6420.30	5.33	376.17	153.23	0.55	0.94	0.050	1.13	0.50	0.74
KC R1	6093	100Yr	1700.00	6416.00	6420.42	5.41	394.79	154.17	0.54	0.96	0.050	1.15	0.52	0.76
KC R1	5952	2Yr	330.00	6415.00	6417.29	3.52	103.43	110.17	0.56	0.50	0.041	0.66	0.11	0.18
KC R1	5952	5Yr	640.00	6415.00	6417.94	4.22	176.37	112.71	0.54	0.67	0.046	0.82	0.21	0.42
KC R1	5952	10Yr	1000.00	6415.00	6418.58	4.76	248.93	114.85	0.53	0.81	0.048	0.95	0.29	0.58
KC R1	5952	50Yr	1600.00	6415.00	6419.48	5.44	353.38	117.71	0.52	0.97	0.049	1.13	0.39	0.77
KC R1	5952	100Yr	1700.00	6415.00	6419.60	5.56	368.00	118.09	0.52	1.00	0.049	1.16	0.40	0.80
KC R1	5763	2Yr	330.00	6413.00	6415.34	4.36	77.98	66.46	0.65	0.81	0.041	0.97	0.14	0.11
KC R1	5763	5Yr	640.00	6413.00	6415.93	5.82	120.62	78.63	0.73	1.19	0.041	1.55	0.45	0.32
KC R1	5763	10Yr	1000.00	6413.00	6416.38	7.24	156.70	81.95	0.82	1.75	0.043	2.23	0.87	0.59
KC R1	5763	50Yr	1600.00	6413.00	6416.97	9.04	206.36	85.33	0.92	2.57	0.045	3.24	1.53	1.00
KC R1	5763	100Yr	1700.00	6413.00	6417.08	9.23	215.64	85.83	0.92	2.66	0.045	3.34	1.61	1.05

HEC-RAS Plan: Plan 04 River: Kettle Creek Reach: KC R1 (Continued)

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl	Shear Total (lb/sq ft)	Mann Wtd Total	Shear Chan (lb/sq ft)	Shear LOB (lb/sq ft)	Shear ROB (lb/sq ft)
KC R1	5378	2Yr	330.00	6410.00	6411.73	3.30	107.93	124.09	0.54	0.45	0.040	0.60	0.32	0.12
KC R1	5378	5Yr	640.00	6410.00	6412.25	4.20	188.01	194.28	0.58	0.50	0.039	0.85	0.46	0.21
KC R1	5378	10Yr	1000.00	6410.00	6412.69	4.80	279.59	214.46	0.58	0.64	0.044	1.03	0.57	0.37
KC R1	5378	50Yr	1600.00	6410.00	6413.23	5.62	398.49	223.50	0.61	0.88	0.048	1.31	0.72	0.62
KC R1	5378	100Yr	1700.00	6410.00	6413.29	5.79	412.15	224.26	0.62	0.94	0.049	1.38	0.76	0.66
KC R1	5145	2Yr	330.00	6408.00	6409.05	4.44	102.75	110.83	0.76	0.98	0.057	1.11	0.75	0.99
KC R1	5145	5Yr	640.00	6408.00	6409.52	5.73	156.00	114.52	0.82	1.46	0.058	1.64	1.21	1.43
KC R1	5145	10Yr	1000.00	6408.00	6409.96	6.82	206.63	117.96	0.86	1.90	0.059	2.13	1.63	1.84
KC R1	5145	50Yr	1600.00	6408.00	6410.79	7.49	307.51	125.30	0.79	2.00	0.059	2.28	1.80	1.86
KC R1	5145	100Yr	1700.00	6408.00	6411.00	7.37	333.52	127.13	0.75	1.88	0.059	2.16	1.71	1.74
KC R1	4880	2Yr	330.00	6404.00	6405.94	3.55	99.56	104.33	0.56	0.52	0.041	0.67	0.24	0.14
KC R1	4880	5Yr	640.00	6404.00	6406.51	4.48	168.96	133.87	0.59	0.66	0.042	0.94	0.22	0.37
KC R1	4880	10Yr	1000.00	6404.00	6407.01	5.21	241.41	155.33	0.60	0.79	0.043	1.18	0.31	0.59
KC R1	4880	50Yr	1600.00	6404.00	6407.34	7.03	293.35	157.97	0.76	1.44	0.046	2.05	0.70	1.14
KC R1	4880	100Yr	1700.00	6404.00	6407.30	7.64	285.80	157.59	0.84	1.70	0.046	2.44	0.81	1.34
KC R1	4438	2Yr	330.00	6399.00	6400.42	5.31	96.94	143.81	0.81	0.74	0.045	1.47	0.78	0.48
KC R1	4438	5Yr	640.00	6399.00	6400.82	6.71	156.20	149.68	0.90	1.29	0.053	2.15	1.17	1.00
KC R1	4438	10Yr	1000.00	6399.00	6401.18	7.89	209.83	153.57	0.96	1.82	0.056	2.79	1.54	1.52
KC R1	4438	50Yr	1600.00	6399.00	6402.11	7.44	355.98	160.24	0.76	1.61	0.061	2.19	1.22	1.45
KC R1	4438	100Yr	1700.00	6399.00	6402.38	7.03	399.82	161.58	0.68	1.42	0.061	1.90	1.06	1.30
KC R1	4158	2Yr	330.00	6396.00	6398.14	1.64	223.35	134.95	0.21	0.11	0.045	0.12	0.06	0.06
KC R1	4158	5Yr	640.00	6396.00	6399.30	1.90	394.19	162.44	0.19	0.11	0.045	0.14	0.05	0.09
KC R1	4158	10Yr	1000.00	6396.00	6400.44	2.08	583.94	172.10	0.18	0.12	0.047	0.15	0.07	0.10
KC R1	4158	50Yr	1600.00	6396.00	6402.06	2.30	873.63	183.70	0.17	0.14	0.049	0.17	0.09	0.12
KC R1	4158	100Yr	1700.00	6396.00	6402.31	2.33	919.65	185.20	0.17	0.14	0.049	0.17	0.09	0.12
KC R1	4029	2Yr	330.00	6394.00	6398.14	0.57	631.78	229.23	0.05	0.01	0.043	0.01	0.00	0.00
KC R1	4029	5Yr	640.00	6394.00	6399.31	0.79	914.24	258.42	0.07	0.02	0.043	0.02	0.01	0.01
KC R1	4029	10Yr	1000.00	6394.00	6400.45	0.97	1225.02	293.18	0.07	0.02	0.043	0.03	0.01	0.02
KC R1	4029	50Yr	1600.00	6394.00	6402.08	1.15	1740.58	326.25	0.07	0.03	0.045	0.04	0.01	0.02
KC R1	4029	100Yr	1700.00	6394.00	6402.33	1.17	1822.60	328.62	0.08	0.03	0.046	0.04	0.01	0.02
KC R1	3981	2Yr	330.00	6394.00	6398.13	1.01	340.43	112.17	0.10	0.03	0.043	0.04	0.01	0.01
KC R1	3981	5Yr	640.00	6394.00	6399.28	1.44	482.17	132.78	0.12	0.06	0.042	0.07	0.03	0.02
KC R1	3981	10Yr	1000.00	6394.00	6400.40	1.76	642.46	153.53	0.13	0.07	0.041	0.10	0.04	0.03
KC R1	3981	50Yr	1600.00	6394.00	6402.02	2.13	919.12	198.87	0.14	0.08	0.041	0.13	0.03	0.04
KC R1	3981	100Yr	1700.00	6394.00	6402.27	2.18	970.48	229.74	0.14	0.08	0.038	0.14	0.02	0.05
KC R1	3883		Culvert											
KC R1	3864	2Yr	330.00	6393.00	6394.71	6.36	52.47	43.72	1.00	2.05	0.044	2.15	0.55	0.35
KC R1	3864	5Yr	640.00	6393.00	6395.40	7.89	83.62	46.32	1.00	2.62	0.044	2.86	0.95	0.80
KC R1	3864	10Yr	1000.00	6393.00	6396.07	9.08	115.66	48.88	0.99	3.05	0.044	3.43	1.24	1.11
KC R1	3864	50Yr	1600.00	6393.00	6397.02	10.55	163.43	52.72	0.99	3.55	0.044	4.18	1.54	1.50
KC R1	3864	100Yr	1700.00	6393.00	6397.14	10.80	170.29	53.25	0.99	3.66	0.044	4.33	1.61	1.56
KC R1	3837	2Yr	330.00	6392.53	6393.61	5.29	79.60	99.70	0.96	1.39	0.051	1.64	1.16	0.78

HEC-RAS Plan: Plan 04 River: Kettle Creek Reach: KC R1 (Continued)

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl	Shear Total (lb/sq ft)	Mann Wtd Total	Shear Chan (lb/sq ft)	Shear LOB (lb/sq ft)	Shear ROB (lb/sq ft)
KC R1	3837	5Yr	640.00	6392.53	6394.06	6.61	126.27	105.96	0.99	1.91	0.053	2.24	1.67	1.15
KC R1	3837	10Yr	1000.00	6392.53	6394.43	7.96	165.80	109.69	1.06	2.58	0.054	3.01	2.30	1.59
KC R1	3837	50Yr	1600.00	6392.53	6395.43	7.72	295.20	163.31	0.82	1.59	0.048	2.43	1.82	0.53
KC R1	3837	100Yr	1700.00	6392.53	6395.74	7.22	347.76	178.07	0.73	1.30	0.049	2.05	1.52	0.52
KC R1	3749	2Yr	330.00	6389.00	6391.37	6.41	73.97	78.52	0.90	1.20	0.046	2.02	0.73	0.86
KC R1	3749	5Yr	640.00	6389.00	6392.01	7.71	130.36	96.48	0.91	1.59	0.051	2.61	1.08	1.41
KC R1	3749	10Yr	1000.00	6389.00	6392.76	7.91	205.53	104.74	0.81	1.65	0.055	2.50	1.28	1.51
KC R1	3749	50Yr	1600.00	6389.00	6395.21	5.72	539.26	185.22	0.43	0.57	0.057	1.07	0.43	0.70
KC R1	3749	100Yr	1700.00	6389.00	6395.57	5.42	607.44	189.15	0.40	0.52	0.059	0.94	0.40	0.62
KC R1	3654	2Yr	330.00	6386.00	6389.88	1.68	212.39	62.96	0.15	0.09	0.044	0.10	0.04	0.04
KC R1	3654	5Yr	640.00	6386.00	6391.46	2.26	317.58	69.97	0.17	0.14	0.044	0.17	0.07	0.07
KC R1	3654	10Yr	1000.00	6386.00	6393.01	2.70	432.85	80.98	0.18	0.16	0.043	0.22	0.08	0.08
KC R1	3654	50Yr	1600.00	6386.00	6395.22	3.17	645.84	111.05	0.18	0.17	0.042	0.27	0.09	0.09
KC R1	3654	100Yr	1700.00	6386.00	6395.56	3.22	684.48	115.35	0.18	0.17	0.042	0.28	0.09	0.09
KC R1	3491		Culvert											
KC R1	3410	2Yr	330.00	6377.89	6380.46	4.29	81.05	39.31	0.49	0.69	0.043	0.80	0.27	0.22
KC R1	3410	5Yr	640.00	6377.89	6381.14	6.36	108.96	42.08	0.64	1.34	0.043	1.60	0.61	0.49
KC R1	3410	10Yr	1000.00	6377.89	6381.61	8.53	128.97	43.73	0.80	2.26	0.043	2.75	1.10	0.92
KC R1	3410	50Yr	1600.00	6377.89	6382.28	11.31	158.92	46.04	0.98	3.67	0.044	4.57	1.91	1.62
KC R1	3410	100Yr	1700.00	6377.89	6382.44	11.53	166.56	46.59	0.98	3.74	0.044	4.68	1.97	1.67
KC R1	3383	2Yr	330.00	6377.51	6380.45	4.36	156.54	82.75	0.45	0.50	0.070	0.77	0.56	0.44
KC R1	3383	5Yr	640.00	6377.51	6381.26	5.81	226.03	88.93	0.53	0.86	0.072	1.25	0.90	0.79
KC R1	3383	10Yr	1000.00	6377.51	6381.94	7.09	288.54	93.57	0.60	1.23	0.073	1.76	1.26	1.16
KC R1	3383	50Yr	1600.00	6377.51	6382.82	8.75	373.21	98.83	0.67	1.80	0.073	2.52	1.79	1.72
KC R1	3383	100Yr	1700.00	6377.51	6382.95	9.00	385.56	99.60	0.68	1.89	0.073	2.65	1.88	1.81
KC R1	3046	2Yr	330.00	6377.00	6378.01	3.84	90.22	96.87	0.67	0.78	0.045	0.84	0.35	0.44
KC R1	3046	5Yr	640.00	6377.00	6378.55	4.77	145.30	106.19	0.67	0.99	0.045	1.12	0.46	0.62
KC R1	3046	10Yr	1000.00	6377.00	6379.07	5.50	202.27	114.97	0.67	1.15	0.045	1.36	0.58	0.75
KC R1	3046	50Yr	1600.00	6377.00	6379.77	6.41	285.80	122.62	0.68	1.40	0.046	1.67	0.81	0.93
KC R1	3046	100Yr	1700.00	6377.00	6379.88	6.52	299.52	123.85	0.68	1.43	0.046	1.71	0.84	0.95
KC R1	2853	2Yr	330.00	6375.00	6376.28	3.22	114.38	95.45	0.50	0.51	0.048	0.55	0.33	0.46
KC R1	2853	5Yr	640.00	6375.00	6376.84	4.29	168.78	98.12	0.56	0.80	0.048	0.86	0.56	0.69
KC R1	2853	10Yr	1000.00	6375.00	6377.34	5.24	217.84	100.16	0.60	1.09	0.049	1.18	0.79	0.93
KC R1	2853	50Yr	1600.00	6375.00	6378.00	6.47	285.00	102.69	0.66	1.52	0.049	1.66	1.13	1.27
KC R1	2853	100Yr	1700.00	6375.00	6378.09	6.66	294.79	103.02	0.67	1.59	0.049	1.74	1.19	1.32
KC R1	2597	2Yr	330.00	6371.97	6372.72	4.90	74.57	106.94	1.01	1.47	0.049	1.53	1.35	0.85
KC R1	2597	5Yr	640.00	6371.97	6373.10	6.18	116.16	111.00	1.04	2.00	0.049	2.12	1.80	1.13
KC R1	2597	10Yr	1000.00	6371.97	6373.48	7.15	158.27	113.39	1.04	2.41	0.049	2.57	2.18	1.41
KC R1	2597	50Yr	1600.00	6371.97	6374.01	8.33	219.79	117.07	1.03	2.92	0.049	3.15	2.62	1.72
KC R1	2597	100Yr	1700.00	6371.97	6374.09	8.50	229.24	117.52	1.03	3.00	0.049	3.23	2.69	1.77
KC R1	2381	2Yr	330.00	6369.00	6370.06	2.84	142.14	152.16	0.49	0.41	0.051	0.46	0.40	0.22
KC R1	2381	5Yr	640.00	6369.00	6370.52	3.71	213.17	155.13	0.53	0.63	0.052	0.69	0.61	0.42

HEC-RAS Plan: Plan 04 River: Kettle Creek Reach: KC R1 (Continued)

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl	Shear Total (lb/sq ft)	Mann Wtd Total	Shear Chan (lb/sq ft)	Shear LOB (lb/sq ft)	Shear ROB (lb/sq ft)
KC R1	2381	10Yr	1000.00	6369.00	6370.93	4.49	276.96	157.78	0.57	0.86	0.053	0.93	0.82	0.61
KC R1	2381	50Yr	1600.00	6369.00	6371.49	5.47	366.42	160.47	0.61	1.17	0.053	1.27	1.12	0.89
KC R1	2381	100Yr	1700.00	6369.00	6371.58	5.61	379.84	160.85	0.62	1.22	0.053	1.32	1.16	0.93
KC R1	2013	2Yr	330.00	6364.00	6365.09	4.66	78.51	133.66	0.96	1.12	0.043	1.38	0.56	0.51
KC R1	2013	5Yr	640.00	6364.00	6365.44	5.82	127.50	144.27	0.99	1.55	0.046	1.89	0.84	0.93
KC R1	2013	10Yr	1000.00	6364.00	6365.79	6.64	180.73	155.84	0.98	1.81	0.047	2.24	1.02	1.19
KC R1	2013	50Yr	1600.00	6364.00	6366.25	7.72	253.71	161.40	0.99	2.29	0.049	2.76	1.27	1.69
KC R1	2013	100Yr	1700.00	6364.00	6366.32	7.87	265.00	161.97	0.99	2.36	0.049	2.84	1.30	1.77
KC R1	1690	2Yr	330.00	6356.68	6364.03	0.48	936.54	233.53	0.04	0.01	0.051	0.01	0.00	0.00
KC R1	1690	5Yr	640.00	6356.68	6364.74	0.80	1102.87	238.06	0.06	0.02	0.052	0.02	0.01	0.01
KC R1	1690	10Yr	1000.00	6356.68	6365.22	1.14	1218.22	241.85	0.08	0.03	0.053	0.04	0.03	0.02
KC R1	1690	50Yr	1600.00	6356.68	6365.77	1.65	1354.31	247.41	0.11	0.06	0.053	0.08	0.05	0.05
KC R1	1690	100Yr	1700.00	6356.68	6365.80	1.74	1359.87	247.58	0.12	0.07	0.053	0.09	0.06	0.06
KC R1	1609	2Yr	330.00	6354.00	6364.03	0.43	1226.14	311.72	0.03	0.00	0.047	0.01	0.00	0.00
KC R1	1609	5Yr	640.00	6354.00	6364.73	0.74	1453.72	336.30	0.04	0.01	0.049	0.02	0.01	0.01
KC R1	1609	10Yr	1000.00	6354.00	6365.21	1.05	1619.96	354.03	0.06	0.02	0.050	0.03	0.01	0.01
KC R1	1609	50Yr	1600.00	6354.00	6365.77	1.52	1818.91	366.29	0.09	0.03	0.051	0.06	0.03	0.03
KC R1	1609	100Yr	1700.00	6354.00	6365.79	1.61	1826.96	366.79	0.09	0.04	0.052	0.07	0.03	0.03
KC R1	1575		Culvert											
KC R1	1554	2Yr	330.00	6353.46	6355.68	5.83	63.94	82.98	0.90	1.07	0.036	1.79	0.31	
KC R1	1554	5Yr	640.00	6353.46	6356.27	6.98	118.08	96.18	0.90	1.49	0.044	2.27	0.88	0.31
KC R1	1554	10Yr	1000.00	6353.46	6356.77	8.05	167.54	104.82	0.92	1.89	0.047	2.79	1.36	0.46
KC R1	1554	50Yr	1600.00	6353.46	6359.26	4.80	546.54	180.51	0.38	0.49	0.054	0.78	0.47	0.29
KC R1	1554	100Yr	1700.00	6353.46	6359.62	4.61	611.40	186.93	0.36	0.44	0.055	0.70	0.43	0.27
KC R1	1518	2Yr	330.00	6353.00	6354.56	5.24	81.29	114.68	0.89	1.02	0.044	1.54	0.60	
KC R1	1518	5Yr	640.00	6353.00	6355.52	4.39	201.02	131.93	0.55	0.68	0.052	0.88	0.56	0.19
KC R1	1518	10Yr	1000.00	6353.00	6357.08	3.41	422.64	150.45	0.32	0.35	0.056	0.44	0.31	0.16
KC R1	1518	50Yr	1600.00	6353.00	6359.32	3.04	776.55	165.41	0.22	0.24	0.058	0.30	0.23	0.12
KC R1	1518	100Yr	1700.00	6353.00	6359.66	3.02	833.65	167.22	0.21	0.23	0.058	0.29	0.22	0.12
KC R1	1433	2Yr	330.00	6350.00	6353.83	2.37	143.64	46.22	0.22	0.19	0.043	0.21	0.05	0.04
KC R1	1433	5Yr	640.00	6350.00	6355.40	3.06	264.40	157.94	0.24	0.10	0.027	0.31	0.03	0.08
KC R1	1433	10Yr	1000.00	6350.00	6357.00	2.94	589.11	222.53	0.20	0.11	0.042	0.27	0.07	0.06
KC R1	1433	50Yr	1600.00	6350.00	6359.29	2.67	1134.34	253.99	0.16	0.10	0.054	0.20	0.09	0.05
KC R1	1433	100Yr	1700.00	6350.00	6359.64	2.64	1223.49	258.72	0.15	0.10	0.055	0.19	0.09	0.05
KC R1	1412		Culvert											
KC R1	1317	2Yr	330.00	6346.56	6348.31	6.86	52.17	39.53	0.99	2.06	0.045	2.36	1.05	1.04
KC R1	1317	5Yr	640.00	6346.56	6349.11	8.47	85.33	44.00	0.99	2.60	0.045	3.11	1.38	1.50
KC R1	1317	10Yr	1000.00	6346.56	6349.85	9.77	119.28	47.65	0.99	3.05	0.046	3.78	1.72	1.90
KC R1	1317	50Yr	1600.00	6346.56	6350.84	11.50	170.35	56.21	1.01	3.51	0.045	4.77	1.86	2.33
KC R1	1317	100Yr	1700.00	6346.56	6351.03	11.64	181.10	59.03	1.00	3.43	0.045	4.81	1.75	2.33
KC R1	1284	2Yr	330.00	6346.00	6347.91	2.73	122.08	109.73	0.45	0.40	0.045	0.41		0.17

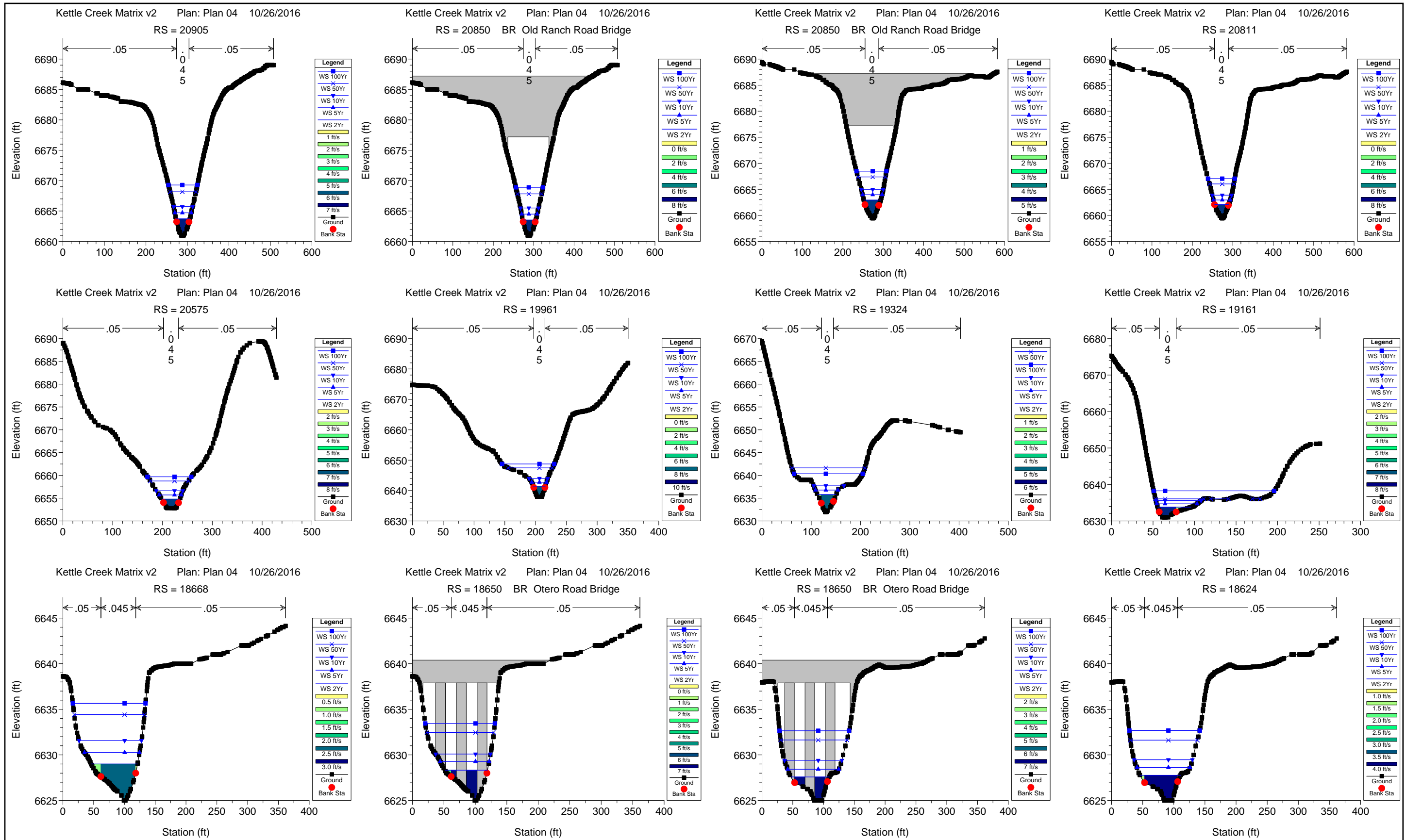
HEC-RAS Plan: Plan 04 River: Kettle Creek Reach: KC R1 (Continued)

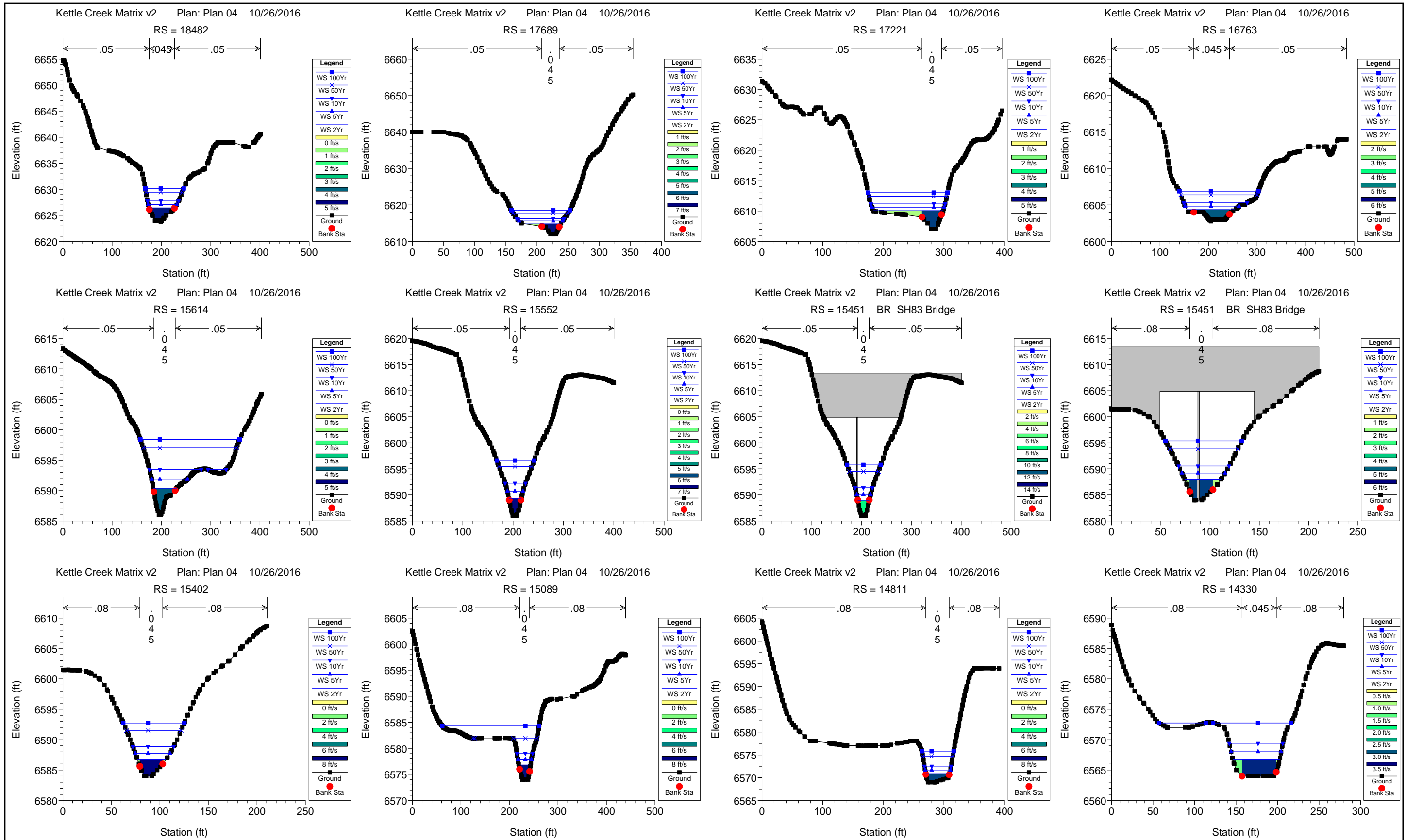
Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl	Shear Total (lb/sq ft)	Mann Wtd Total	Shear Chan (lb/sq ft)	Shear LOB (lb/sq ft)	Shear ROB (lb/sq ft)
KC R1	1284	5Yr	640.00	6346.00	6348.59	3.15	207.95	132.96	0.43	0.45	0.044	0.48	0.08	0.25
KC R1	1284	10Yr	1000.00	6346.00	6349.24	3.51	297.86	140.92	0.41	0.48	0.044	0.53	0.15	0.28
KC R1	1284	50Yr	1600.00	6346.00	6350.22	3.89	440.13	150.15	0.38	0.51	0.044	0.58	0.22	0.31
KC R1	1284	100Yr	1700.00	6346.00	6350.37	3.94	463.42	151.70	0.37	0.52	0.044	0.59	0.22	0.32
KC R1	914	2Yr	330.00	6343.00	6345.05	4.43	76.08	49.44	0.61	0.87	0.043	0.95	0.27	0.17
KC R1	914	5Yr	640.00	6343.00	6345.82	5.81	115.64	53.45	0.66	1.27	0.043	1.44	0.50	0.43
KC R1	914	10Yr	1000.00	6343.00	6346.43	7.19	149.10	56.55	0.73	1.75	0.043	2.04	0.76	0.69
KC R1	914	50Yr	1600.00	6343.00	6347.21	9.01	195.15	60.77	0.81	2.46	0.044	2.98	1.15	1.10
KC R1	914	100Yr	1700.00	6343.00	6347.31	9.32	201.18	61.35	0.83	2.59	0.044	3.16	1.23	1.17
KC R1	738	2Yr	330.00	6342.00	6343.30	3.90	85.86	79.44	0.64	0.77	0.043	0.83	0.17	0.11
KC R1	738	5Yr	640.00	6342.00	6343.69	5.65	117.39	85.42	0.80	1.40	0.043	1.58	0.44	0.35
KC R1	738	10Yr	1000.00	6342.00	6344.12	6.83	155.68	93.09	0.86	1.80	0.043	2.13	0.65	0.61
KC R1	738	50Yr	1600.00	6342.00	6344.67	8.38	210.91	105.34	0.93	2.33	0.042	2.95	0.95	1.01
KC R1	738	100Yr	1700.00	6342.00	6344.77	8.55	221.30	107.38	0.93	2.37	0.042	3.03	0.99	1.05
KC R1	599	2Yr	330.00	6340.00	6341.05	4.88	70.57	72.13	0.85	1.29	0.046	1.36	0.83	0.08
KC R1	599	5Yr	640.00	6340.00	6341.84	5.28	131.12	81.51	0.69	1.16	0.045	1.31	0.66	0.31
KC R1	599	10Yr	1000.00	6340.00	6342.53	5.88	196.42	106.28	0.65	1.07	0.042	1.46	0.50	0.47
KC R1	599	50Yr	1600.00	6340.00	6343.50	6.40	308.27	120.37	0.61	1.14	0.045	1.55	0.68	0.57
KC R1	599	100Yr	1700.00	6340.00	6343.61	6.55	321.83	121.06	0.61	1.18	0.045	1.60	0.73	0.60
KC R1	442	2Yr	330.00	6337.81	6340.09	3.45	184.44	103.78	0.41	0.42	0.075	0.52	0.41	0.43
KC R1	442	5Yr	640.00	6337.81	6341.26	4.05	318.34	124.52	0.39	0.47	0.075	0.63	0.45	0.50
KC R1	442	10Yr	1000.00	6337.81	6341.97	4.98	410.25	134.42	0.43	0.66	0.075	0.89	0.63	0.70
KC R1	442	50Yr	1600.00	6337.81	6343.01	5.99	557.47	149.83	0.47	0.86	0.076	1.19	0.82	0.91
KC R1	442	100Yr	1700.00	6337.81	6343.11	6.20	572.31	150.98	0.48	0.92	0.076	1.27	0.88	0.97
KC R1	238	2Yr	330.00	6331.00	6340.11	0.84	896.42	155.63	0.05	0.01	0.074	0.02	0.01	0.01
KC R1	238	5Yr	640.00	6331.00	6341.27	1.34	1079.75	161.49	0.07	0.03	0.075	0.05	0.03	0.03
KC R1	238	10Yr	1000.00	6331.00	6341.97	1.88	1193.90	164.33	0.10	0.06	0.075	0.09	0.06	0.06
KC R1	238	50Yr	1600.00	6331.00	6342.98	2.61	1362.48	167.91	0.13	0.11	0.075	0.17	0.11	0.11
KC R1	238	100Yr	1700.00	6331.00	6343.08	2.74	1378.48	168.23	0.14	0.12	0.075	0.19	0.12	0.12
KC R1	126	2Yr	330.00	6328.87	6340.11	1.00	778.65	126.03	0.05	0.01	0.072	0.03	0.01	0.01
KC R1	126	5Yr	640.00	6328.87	6341.26	1.63	928.00	134.59	0.08	0.04	0.072	0.07	0.03	0.04
KC R1	126	10Yr	1000.00	6328.87	6341.94	2.32	1022.63	140.79	0.11	0.07	0.073	0.13	0.07	0.08
KC R1	126	50Yr	1600.00	6328.87	6342.93	3.30	1168.20	151.35	0.16	0.14	0.073	0.26	0.13	0.15
KC R1	126	100Yr	1700.00	6328.87	6343.03	3.47	1181.96	151.75	0.16	0.16	0.073	0.29	0.15	0.16
KC R1	105		Culvert											
KC R1	81	2Yr	330.00	6325.97	6329.22	8.74	40.61	20.37	0.97	2.53	0.041	3.26	0.76	0.78
KC R1	81	5Yr	640.00	6325.97	6330.59	10.46	73.41	27.89	0.93	2.69	0.041	4.05	1.26	1.24
KC R1	81	10Yr	1000.00	6325.97	6331.83	11.73	113.38	37.13	0.91	2.73	0.042	4.63	1.52	1.50
KC R1	81	50Yr	1600.00	6325.97	6333.49	12.90	187.36	51.24	0.87	2.74	0.045	5.11	1.67	1.90
KC R1	81	100Yr	1700.00	6325.97	6333.69	13.15	197.68	52.66	0.88	2.81	0.045	5.25	1.73	1.99
KC R1	68	2Yr	330.00	6325.00	6328.11	8.43	41.84	22.66	0.97	2.42	0.041	3.10	0.70	0.70
KC R1	68	5Yr	640.00	6325.00	6329.40	10.02	77.07	32.99	0.93	2.42	0.040	3.78	1.08	1.09

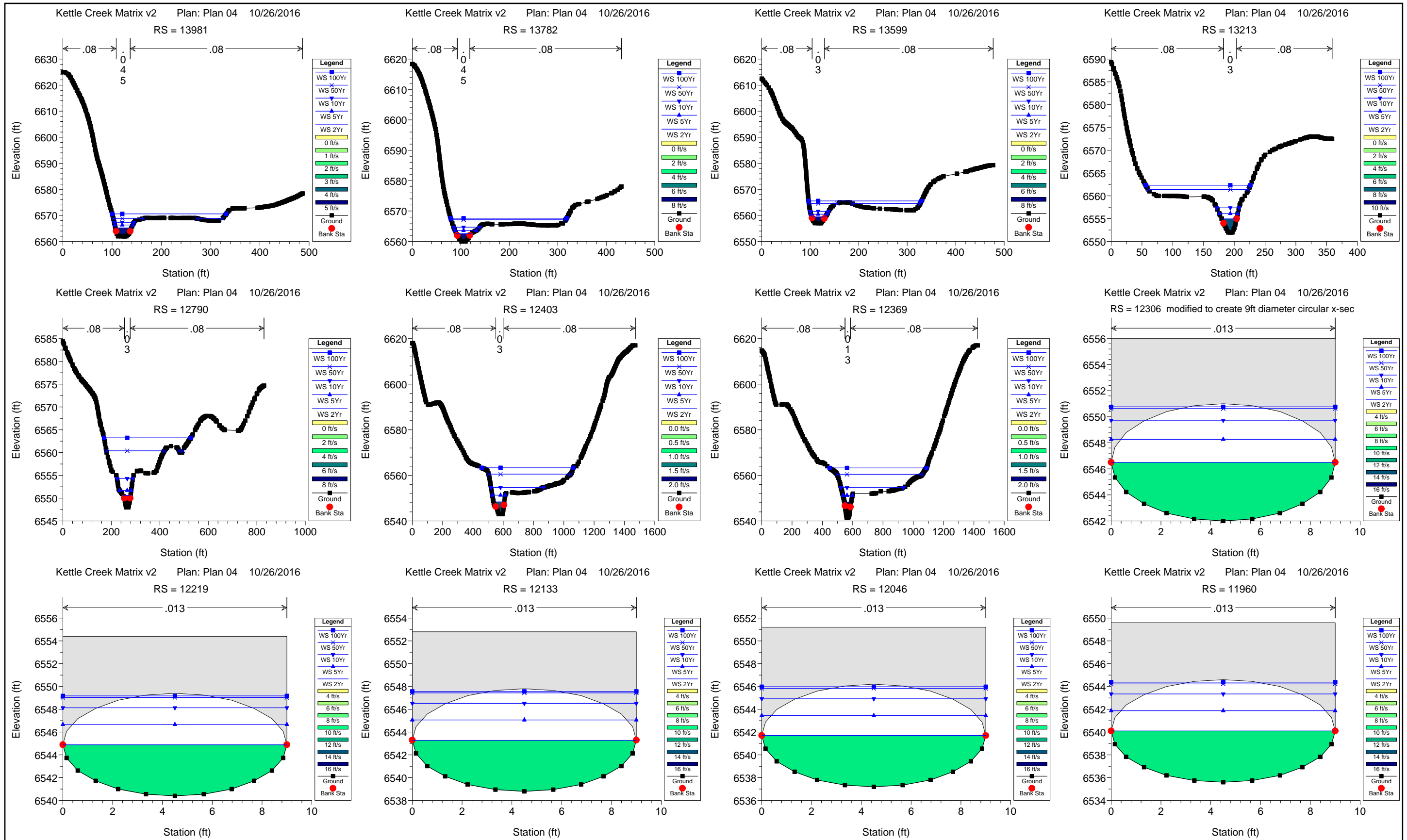
HEC-RAS Plan: Plan 04 River: Kettle Creek Reach: KC R1 (Continued)

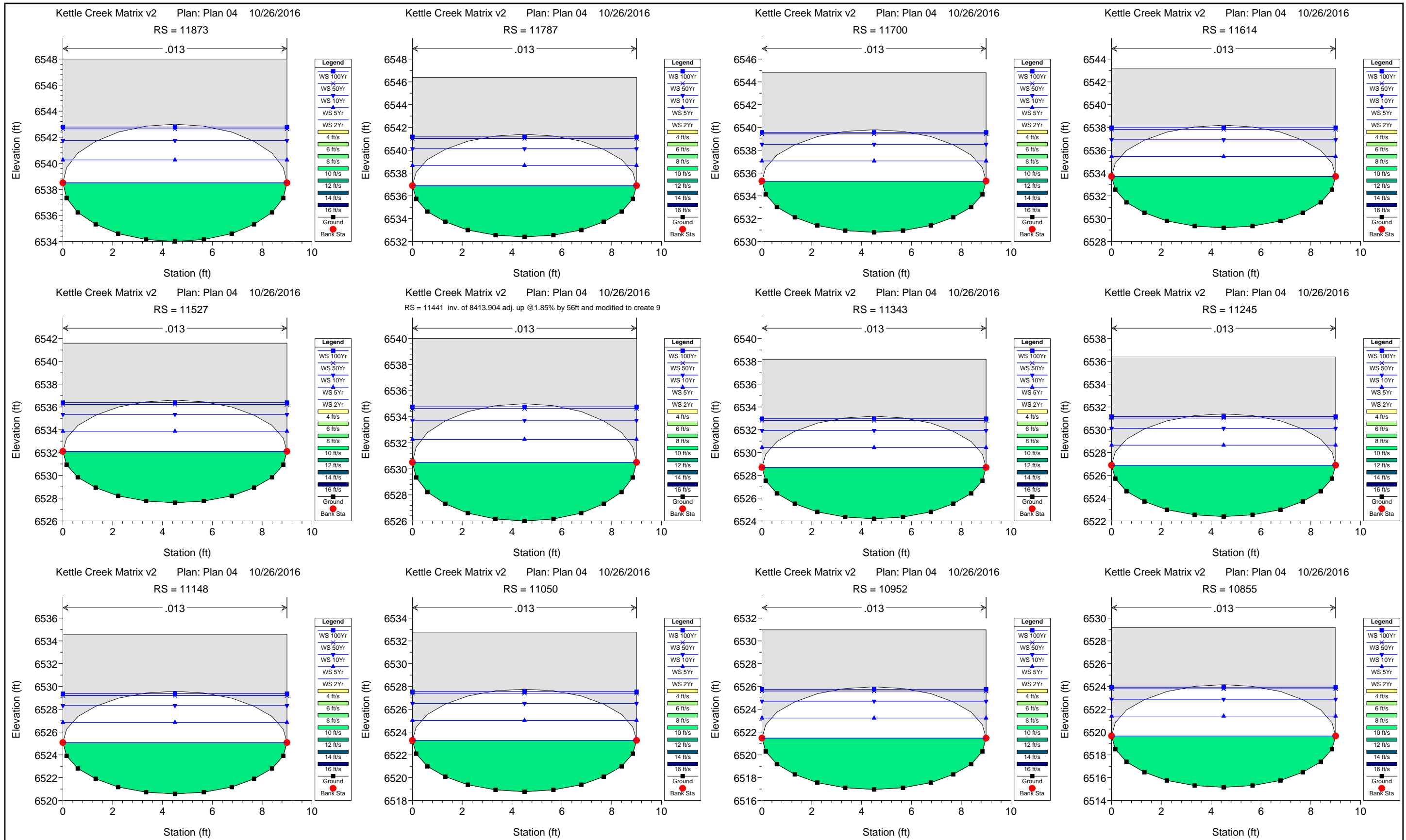
Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl	Shear Total (lb/sq ft)	Mann Wtd Total	Shear Chan (lb/sq ft)	Shear LOB (lb/sq ft)	Shear ROB (lb/sq ft)
KC R1	68	10Yr	1000.00	6325.00	6330.47	11.46	119.57	49.18	0.93	2.36	0.040	4.54	1.34	1.17
KC R1	68	50Yr	1600.00	6325.00	6332.29	10.83	270.54	103.01	0.75	1.49	0.045	3.63	1.10	1.05
KC R1	68	100Yr	1700.00	6325.00	6332.39	11.15	281.15	103.86	0.76	1.60	0.046	3.83	1.19	1.15

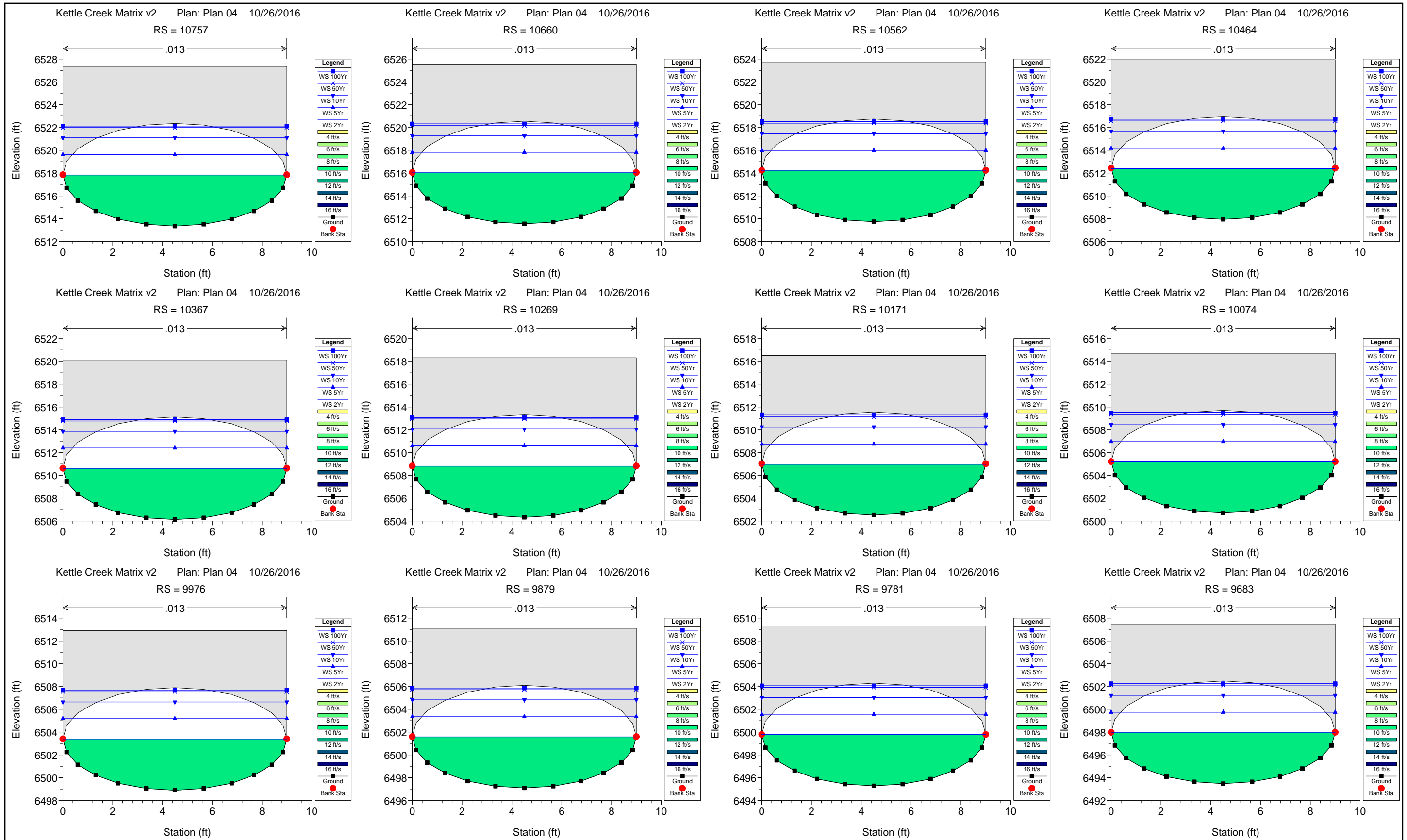
Kettle Creek Cross Section Diagrams

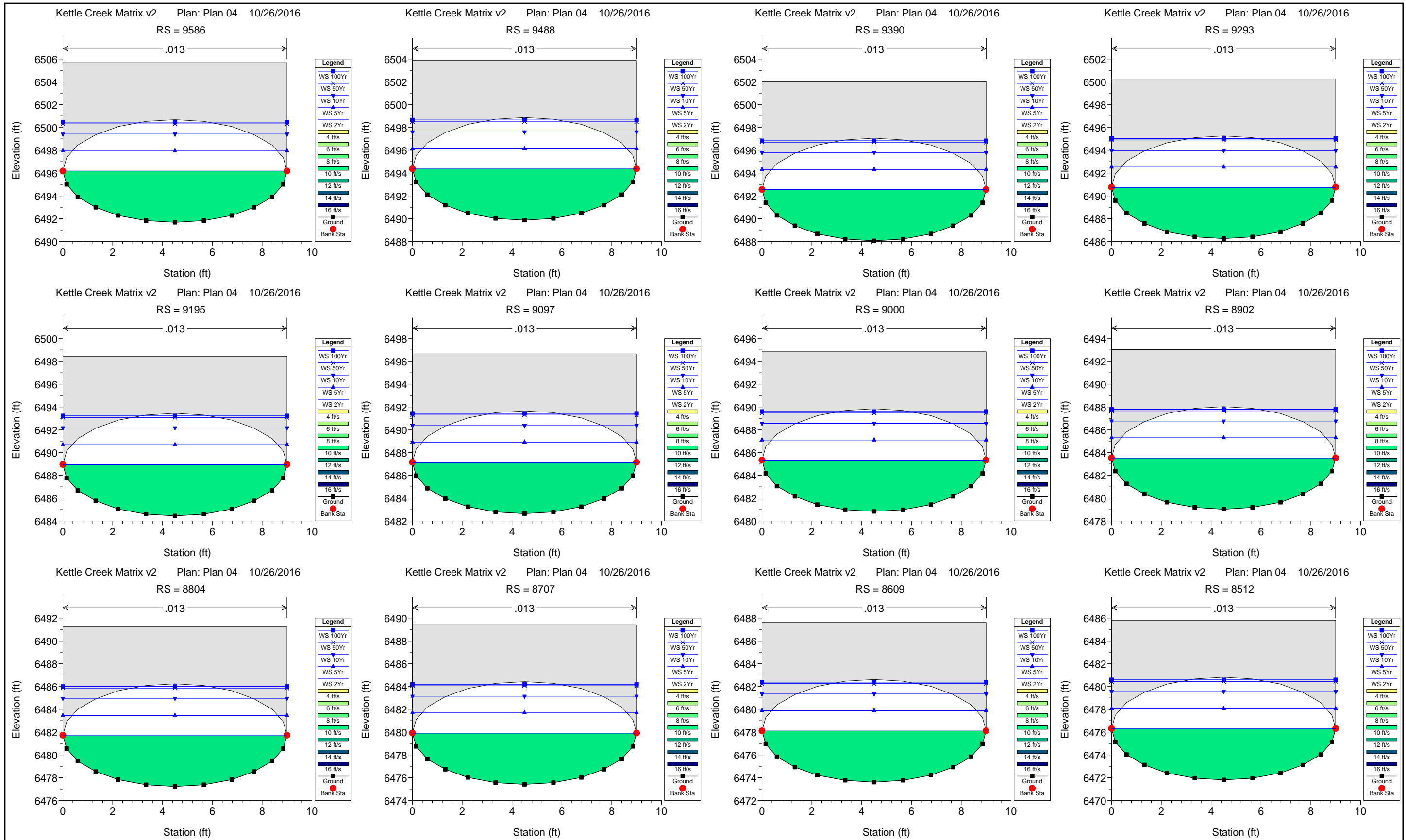


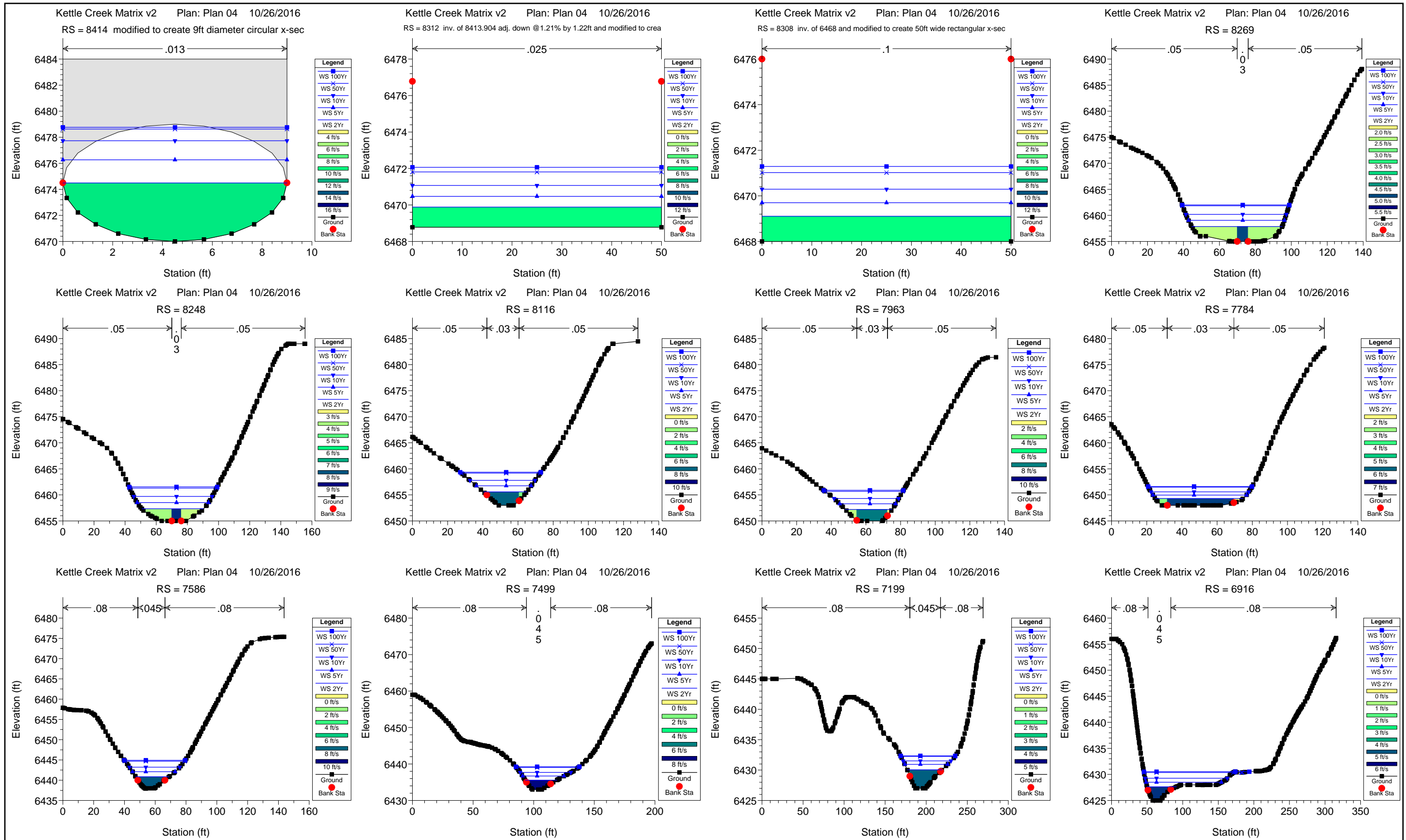


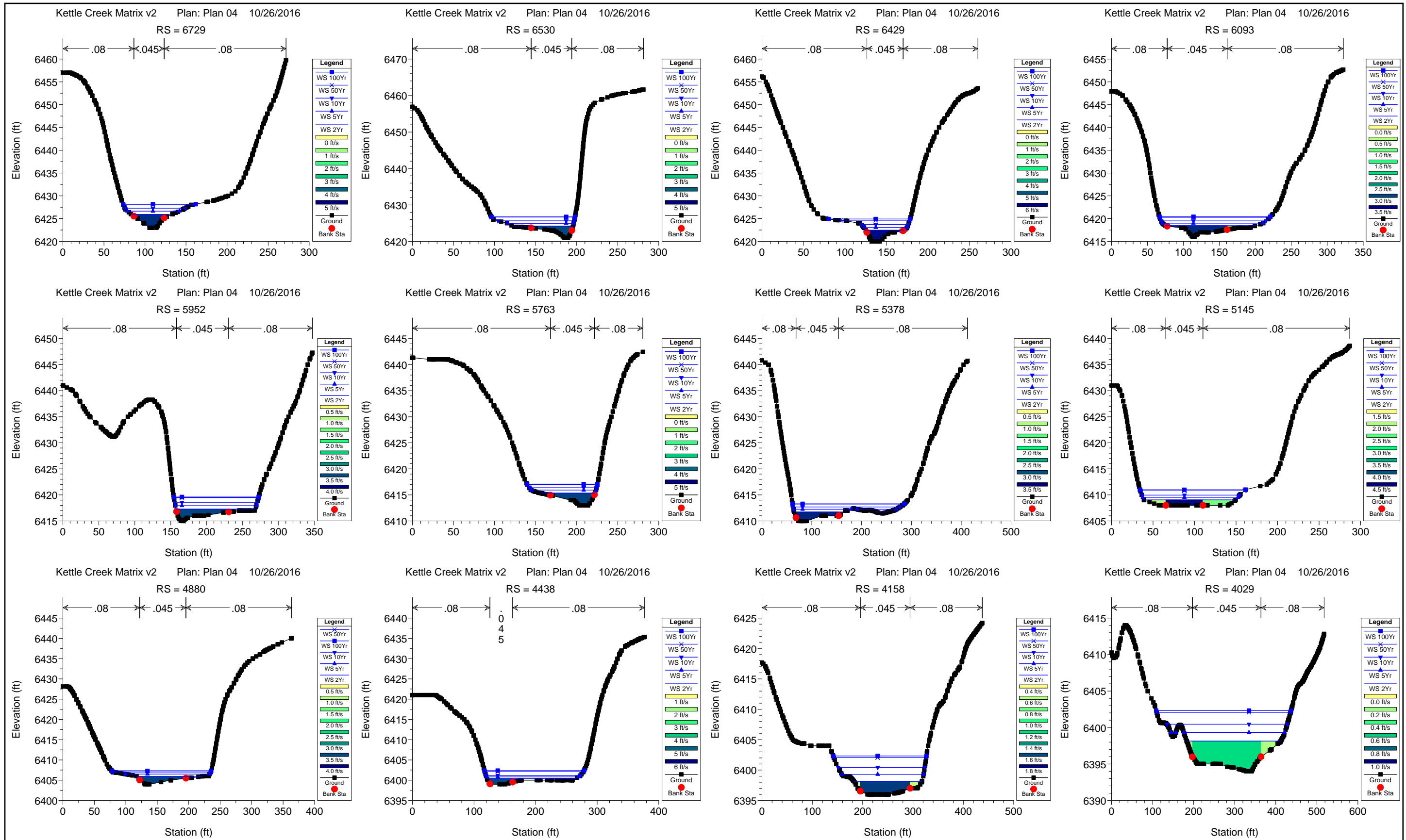


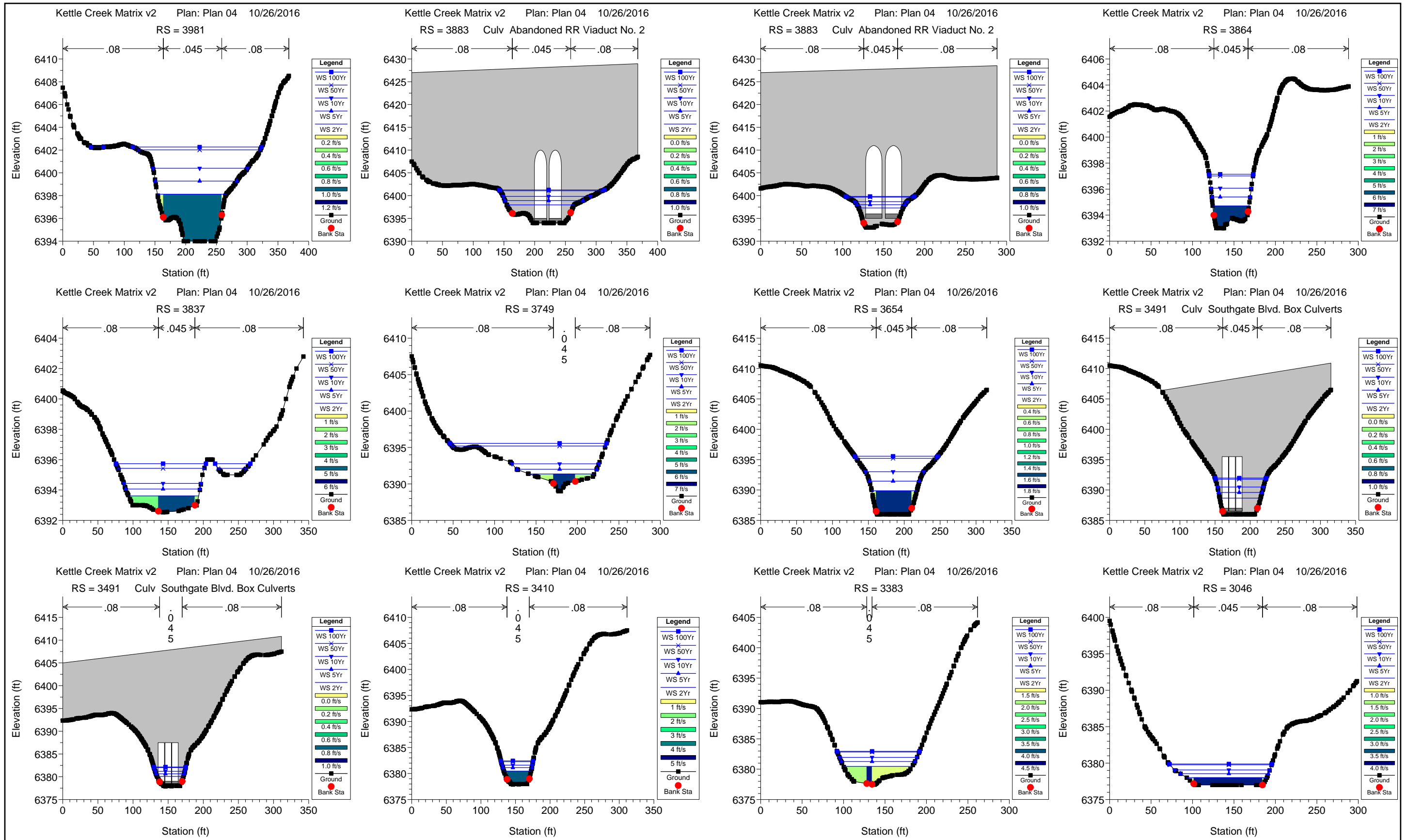


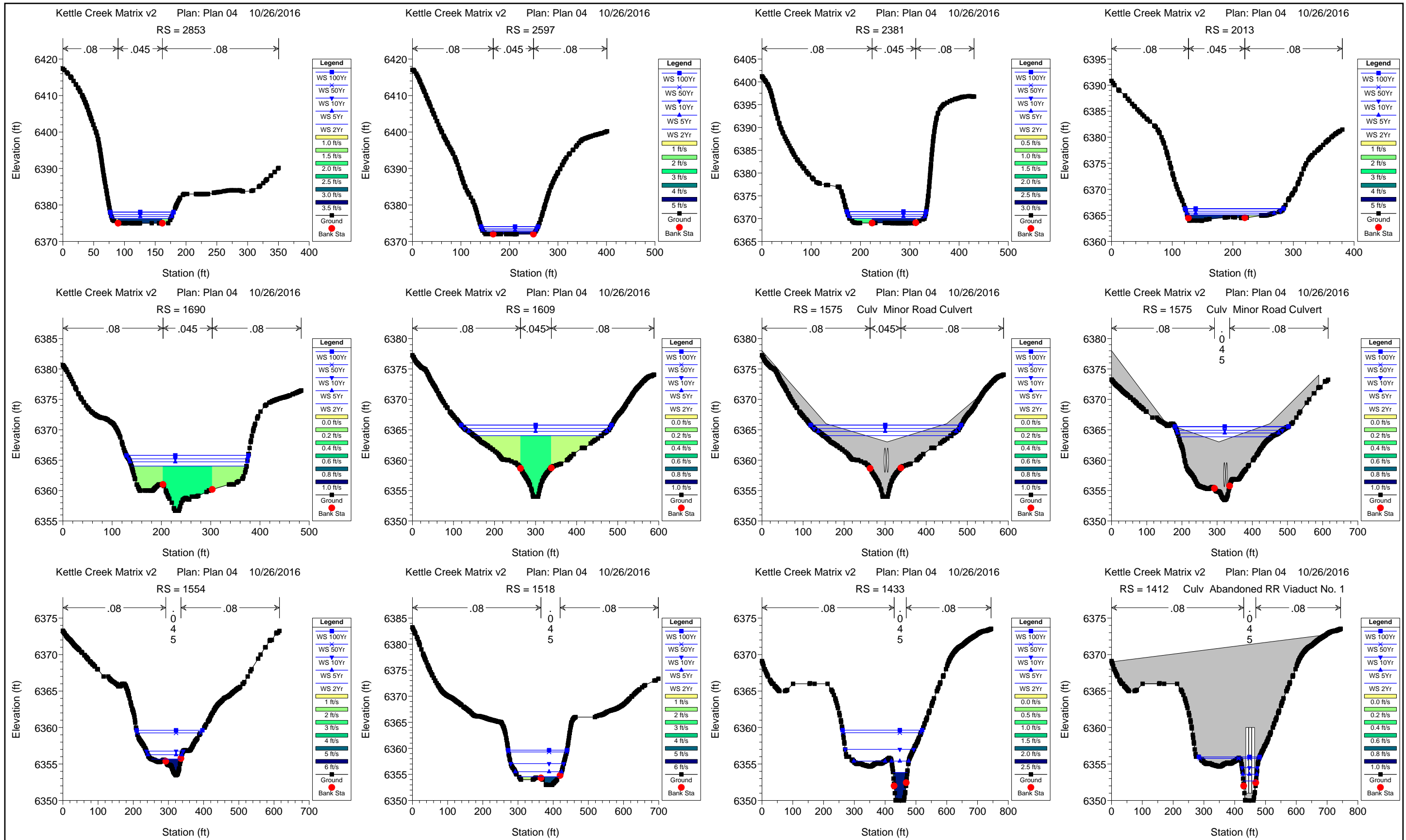


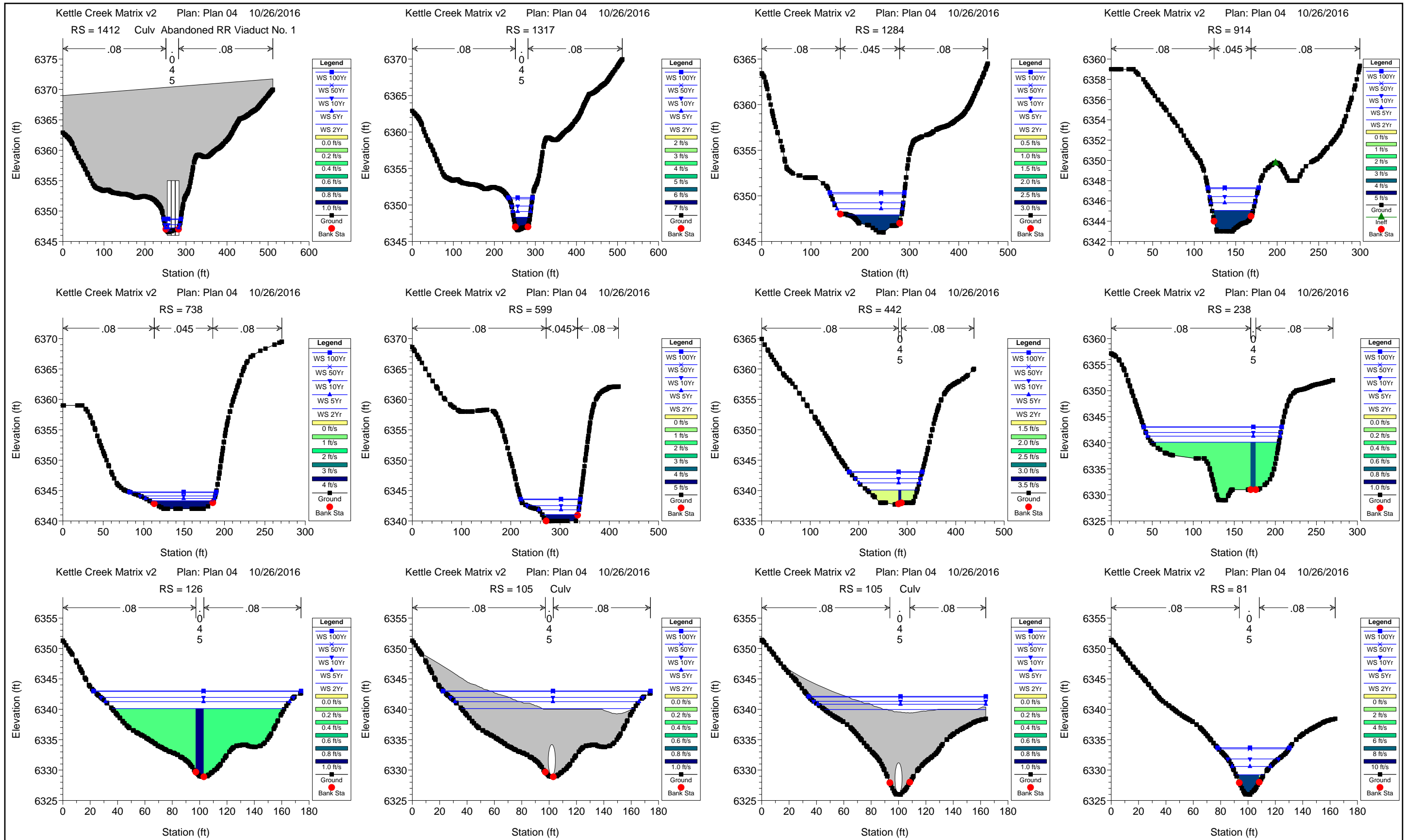




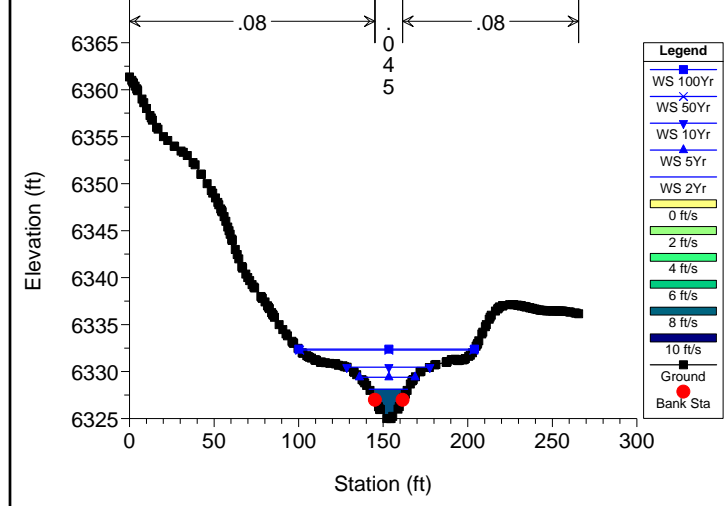








RS = 68



Middle Tributary Hydraulic Results

HEC-RAS Plan: Plan 05 River: Middle Tributary Reach: MT R1

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl	Shear Total (lb/sq ft)	Mann Wtd Total	Shear Chan (lb/sq ft)	Shear LOB (lb/sq ft)	Shear ROB (lb/sq ft)
MT R1	9893	2 yr	55.10	6724.00	6725.91	1.32	41.79	24.09	0.18	0.41	0.099	0.41	0.01	0.02
MT R1	9893	5 yr	100.50	6724.00	6726.85	1.56	65.49	26.22	0.17	0.45	0.095	0.50	0.08	0.08
MT R1	9893	10 yr	150.70	6724.00	6727.74	1.74	89.67	28.26	0.16	0.48	0.093	0.57	0.13	0.13
MT R1	9893	50 yr	324.60	6724.00	6730.26	1.97	210.01	89.38	0.14	0.24	0.068	0.61	0.15	0.09
MT R1	9893	100 yr	424.30	6724.00	6731.51	1.77	364.21	155.05	0.12	0.15	0.072	0.47	0.09	0.09
MT R1	9807		Culvert											
MT R1	9427	2 yr	55.10	6713.33	6714.29	4.50	12.49	21.13	1.00	3.07	0.068	3.28	1.13	0.69
MT R1	9427	5 yr	100.50	6713.33	6714.61	5.38	19.40	29.91	0.97	3.72	0.068	4.10	1.72	1.20
MT R1	9427	10 yr	150.70	6713.33	6714.86	6.29	25.32	42.84	1.01	4.32	0.066	5.17	2.26	1.10
MT R1	9427	50 yr	324.60	6713.33	6715.68	7.70	46.70	63.62	0.95	5.37	0.068	6.51	3.00	2.69
MT R1	9427	100 yr	424.30	6713.33	6716.03	8.47	56.27	156.64	0.97	6.08	0.069	7.46	3.44	3.30
MT R1	9423	2 yr	55.10	6712.00	6713.64	1.67	31.82	22.46	0.23	0.45	0.077	0.54	0.31	0.46
MT R1	9423	5 yr	100.50	6712.00	6714.10	2.32	42.62	24.01	0.28	0.78	0.077	0.96	0.53	0.79
MT R1	9423	10 yr	150.70	6712.00	6714.47	2.89	51.78	39.78	0.32	1.13	0.077	1.41	0.79	1.15
MT R1	9423	50 yr	324.60	6712.00	6715.42	4.32	76.38	63.79	0.41	2.18	0.077	2.84	1.55	2.23
MT R1	9423	100 yr	424.30	6712.00	6715.88	4.92	88.73	120.34	0.44	2.67	0.077	3.53	1.90	2.73
MT R1	9422	2 yr	55.10	6712.00	6713.62	1.68	31.51	22.41	0.23	0.46	0.077	0.55	0.32	0.47
MT R1	9422	5 yr	100.50	6712.00	6714.08	2.34	42.14	23.97	0.29	0.80	0.077	0.98	0.55	0.81
MT R1	9422	10 yr	150.70	6712.00	6714.45	2.92	51.14	38.30	0.33	1.16	0.077	1.45	0.81	1.18
MT R1	9422	50 yr	324.60	6712.00	6715.38	4.38	75.28	62.87	0.42	2.26	0.077	2.93	1.60	2.30
MT R1	9422	100 yr	424.30	6712.00	6715.83	4.99	87.43	107.05	0.45	2.76	0.077	3.64	1.96	2.82
MT R1	9420	2 yr	55.10	6712.00	6713.59	2.59	29.24	21.59	0.36	0.66	0.085	0.80	0.51	0.64
MT R1	9420	5 yr	100.50	6712.00	6714.02	3.62	39.01	26.17	0.45	1.14	0.085	1.44	0.88	1.12
MT R1	9420	10 yr	150.70	6712.00	6714.37	4.54	47.07	40.25	0.52	1.69	0.085	2.14	1.30	1.67
MT R1	9420	50 yr	324.60	6712.00	6715.20	6.94	67.75	60.64	0.68	3.47	0.085	4.53	2.63	3.45
MT R1	9420	100 yr	424.30	6712.00	6715.58	7.99	77.76	89.29	0.74	4.36	0.085	5.78	3.29	4.35
MT R1	9417	2 yr	55.10	6712.00	6713.55	2.77	27.30	21.95	0.39	0.71	0.081	0.92	0.63	0.65
MT R1	9417	5 yr	100.50	6712.00	6713.97	3.80	36.89	23.69	0.48	1.21	0.081	1.59	1.04	1.12
MT R1	9417	10 yr	150.70	6712.00	6714.30	4.72	44.77	41.77	0.55	1.78	0.082	2.33	1.48	1.67
MT R1	9417	50 yr	324.60	6712.00	6715.09	7.11	64.95	59.71	0.71	3.60	0.082	4.81	2.90	3.49
MT R1	9417	100 yr	424.30	6712.00	6715.46	8.13	74.86	115.45	0.77	4.48	0.082	6.05	3.58	4.38
MT R1	9412	2 yr	55.10	6712.00	6713.49	2.91	26.43	22.23	0.42	0.80	0.083	1.03	0.67	0.75
MT R1	9412	5 yr	100.50	6712.00	6713.88	4.04	35.46	24.07	0.52	1.40	0.083	1.83	1.14	1.32
MT R1	9412	10 yr	150.70	6712.00	6714.17	5.07	42.65	40.72	0.61	2.09	0.084	2.75	1.70	2.00
MT R1	9412	50 yr	324.60	6712.00	6714.84	7.88	59.78	72.08	0.83	4.59	0.084	6.08	3.74	4.46
MT R1	9412	100 yr	424.30	6712.00	6715.10	9.27	66.85	110.33	0.93	6.12	0.084	8.16	4.98	5.98
MT R1	9382	2 yr	55.10	6712.00	6712.65	3.52	15.98	42.70	0.98	2.20	0.069	2.34	0.88	0.83
MT R1	9382	5 yr	100.50	6712.00	6712.83	4.33	23.99	44.93	1.00	2.86	0.068	3.12	1.32	1.28
MT R1	9382	10 yr	150.70	6712.00	6713.01	4.84	32.53	47.13	0.98	3.20	0.068	3.56	1.58	1.56
MT R1	9382	50 yr	324.60	6712.00	6713.49	6.18	56.46	52.79	0.98	4.21	0.068	4.92	2.30	2.26
MT R1	9382	100 yr	424.30	6712.00	6713.72	6.69	68.96	55.31	0.97	4.58	0.068	5.45	2.61	2.52
MT R1	9165	2 yr	55.10	6706.00	6707.29	1.45	45.96	69.74	0.25	0.25	0.073	0.38	0.13	0.16

HEC-RAS Plan: Plan 05 River: Middle Tributary Reach: MT R1 (Continued)

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl	Shear Total (lb/sq ft)	Mann Wtd Total	Shear Chan (lb/sq ft)	Shear LOB (lb/sq ft)	Shear ROB (lb/sq ft)
MT R1	9165	5 yr	100.50	6706.00	6707.60	1.85	69.30	82.45	0.28	0.36	0.076	0.57	0.23	0.25
MT R1	9165	10 yr	150.70	6706.00	6707.83	2.22	89.40	92.00	0.31	0.48	0.077	0.77	0.33	0.34
MT R1	9165	50 yr	324.60	6706.00	6708.37	3.06	155.61	137.11	0.37	0.72	0.078	1.33	0.53	0.61
MT R1	9165	100 yr	424.30	6706.00	6708.57	3.40	182.79	139.10	0.40	0.91	0.081	1.59	0.71	0.74
MT R1	9087	2 yr	55.10	6705.69	6706.07	2.25	26.47	125.21	0.76	1.11	0.073	1.41	0.45	0.33
MT R1	9087	5 yr	100.50	6705.69	6706.15	2.96	37.09	126.39	0.88	1.85	0.077	2.24	1.06	0.84
MT R1	9087	10 yr	150.70	6705.69	6706.26	3.24	50.88	127.91	0.84	2.11	0.079	2.46	1.44	1.13
MT R1	9087	50 yr	324.60	6705.69	6706.55	4.03	87.98	131.91	0.82	2.88	0.081	3.23	2.32	1.71
MT R1	9087	100 yr	424.30	6705.69	6706.70	4.27	108.44	134.07	0.79	3.06	0.081	3.42	2.55	1.84
MT R1	8867	2 yr	55.10	6698.00	6698.67	2.17	27.71	49.06	0.47	0.64	0.069	0.75	0.26	0.38
MT R1	8867	5 yr	100.50	6698.00	6698.97	2.62	43.59	56.20	0.47	0.77	0.069	0.96	0.37	0.48
MT R1	8867	10 yr	150.70	6698.00	6699.20	3.09	57.06	61.87	0.50	0.96	0.069	1.25	0.49	0.63
MT R1	8867	50 yr	324.60	6698.00	6699.80	4.12	98.80	76.57	0.54	1.38	0.070	1.93	0.82	0.98
MT R1	8867	100 yr	424.30	6698.00	6700.05	4.59	118.85	83.25	0.56	1.60	0.071	2.30	0.97	1.17
MT R1	8669	2 yr	55.10	6694.03	6694.74	1.84	32.65	90.86	0.49	0.50	0.066	0.62	0.21	0.25
MT R1	8669	5 yr	100.50	6694.03	6694.87	2.48	45.35	94.95	0.57	0.84	0.069	1.02	0.47	0.44
MT R1	8669	10 yr	150.70	6694.03	6695.02	2.87	60.03	100.96	0.59	1.03	0.070	1.27	0.64	0.56
MT R1	8669	50 yr	324.60	6694.03	6695.38	3.92	97.87	111.39	0.66	1.67	0.072	2.07	1.19	0.95
MT R1	8669	100 yr	424.30	6694.03	6695.55	4.31	117.78	115.78	0.68	1.91	0.072	2.38	1.43	1.11
MT R1	8445	2 yr	55.10	6688.87	6689.26	1.47	37.53	139.65	0.50	0.46	0.070	0.46	0.04	
MT R1	8445	5 yr	100.50	6688.87	6689.40	1.74	58.21	146.27	0.48	0.54	0.069	0.56	0.13	0.10
MT R1	8445	10 yr	150.70	6688.87	6689.51	2.06	74.38	150.93	0.50	0.68	0.068	0.73	0.19	0.20
MT R1	8445	50 yr	324.60	6688.87	6689.83	2.74	123.17	161.17	0.53	1.01	0.068	1.10	0.42	0.42
MT R1	8445	100 yr	424.30	6688.87	6689.96	3.06	145.42	165.43	0.55	1.18	0.069	1.31	0.53	0.53
MT R1	8331	2 yr	55.10	6684.82	6685.45	2.17	28.04	97.81	0.64	0.73	0.066	0.91	0.31	
MT R1	8331	5 yr	100.50	6684.82	6685.55	2.99	38.27	104.71	0.78	1.27	0.068	1.61	0.69	0.20
MT R1	8331	10 yr	150.70	6684.82	6685.68	3.40	52.28	113.43	0.78	1.49	0.070	1.91	0.92	0.40
MT R1	8331	50 yr	324.60	6684.82	6685.98	4.56	89.42	133.59	0.85	2.25	0.073	3.00	1.57	0.93
MT R1	8331	100 yr	424.30	6684.82	6686.13	4.96	111.29	147.00	0.86	2.44	0.074	3.36	1.72	1.19
MT R1	8194	2 yr	55.10	6680.82	6681.62	1.87	36.55	84.11	0.47	0.55	0.081	0.62	0.02	0.49
MT R1	8194	5 yr	100.50	6680.82	6681.87	2.19	60.78	106.04	0.45	0.57	0.078	0.73	0.14	0.51
MT R1	8194	10 yr	150.70	6680.82	6682.08	2.60	87.31	161.33	0.47	0.55	0.073	0.95	0.20	0.44
MT R1	8194	50 yr	324.60	6680.82	6682.50	3.24	156.32	168.94	0.49	0.89	0.084	1.31	0.55	0.79
MT R1	8194	100 yr	424.30	6680.82	6682.68	3.55	187.31	172.33	0.50	1.06	0.087	1.51	0.70	0.96
MT R1	8121	2 yr	55.10	6678.92	6679.98	2.69	22.34	36.99	0.54	0.88	0.066	1.10	0.42	0.16
MT R1	8121	5 yr	100.50	6678.92	6680.12	3.69	43.28	164.44	0.68	0.57	0.049	1.95	0.81	0.27
MT R1	8121	10 yr	150.70	6678.92	6680.25	4.22	63.93	167.17	0.73	0.91	0.065	2.45	1.07	0.59
MT R1	8121	50 yr	324.60	6678.92	6680.53	5.55	111.18	173.00	0.85	1.91	0.083	3.90	1.85	1.54
MT R1	8121	100 yr	424.30	6678.92	6680.66	6.03	133.82	175.51	0.89	2.37	0.087	4.47	2.17	1.99
MT R1	8083	2 yr	55.10	6677.70	6678.13	2.71	20.57	90.53	0.99	2.09	0.079	2.16	0.88	0.58
MT R1	8083	5 yr	100.50	6677.70	6678.49	1.90	55.01	99.68	0.43	0.72	0.079	0.78	0.36	0.31
MT R1	8083	10 yr	150.70	6677.70	6678.63	2.28	69.68	103.35	0.47	0.94	0.079	1.04	0.50	0.43
MT R1	8083	50 yr	324.60	6677.70	6679.02	3.16	111.11	113.35	0.53	1.52	0.079	1.74	0.85	0.76

HEC-RAS Plan: Plan 05 River: Middle Tributary Reach: MT R1 (Continued)

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl	Shear Total (lb/sq ft)	Mann Wtd Total	Shear Chan (lb/sq ft)	Shear LOB (lb/sq ft)	Shear ROB (lb/sq ft)
MT R1	8083	100 yr	424.30	6677.70	6679.20	3.51	132.50	118.31	0.54	1.75	0.079	2.04	0.99	0.90
MT R1	7905	2 yr	55.10	6670.50	6670.91	3.21	18.83	68.87	0.99	2.27	0.078	2.70	0.74	1.70
MT R1	7905	5 yr	100.50	6670.50	6671.07	3.82	30.32	80.31	0.97	2.64	0.078	3.36	1.15	2.12
MT R1	7905	10 yr	150.70	6670.50	6671.21	4.21	43.30	96.06	0.94	2.69	0.078	3.75	1.25	2.42
MT R1	7905	50 yr	324.60	6670.50	6671.58	5.18	84.22	131.01	0.92	3.15	0.080	4.86	1.86	3.11
MT R1	7905	100 yr	424.30	6670.50	6671.72	5.66	103.38	139.89	0.94	3.62	0.083	5.55	2.33	3.51
MT R1	7708	2 yr	55.10	6656.00	6657.08	2.26	25.20	26.05	0.39	0.82	0.077	0.91	0.25	0.28
MT R1	7708	5 yr	100.50	6656.00	6657.47	2.98	35.72	28.16	0.44	1.22	0.077	1.42	0.45	0.50
MT R1	7708	10 yr	150.70	6656.00	6657.81	3.56	45.77	30.04	0.47	1.57	0.077	1.89	0.66	0.71
MT R1	7708	50 yr	324.60	6656.00	6658.69	4.96	73.38	32.66	0.54	2.63	0.078	3.22	1.39	1.44
MT R1	7708	100 yr	424.30	6656.00	6659.08	5.58	86.24	33.38	0.56	3.16	0.079	3.90	1.78	1.80
MT R1	7231	2 yr	55.10	6644.00	6644.50	3.05	18.21	37.26	0.76	2.08	0.079	2.13	0.92	0.29
MT R1	7231	5 yr	100.50	6644.00	6644.77	3.59	28.41	38.28	0.72	2.45	0.079	2.55	1.10	0.64
MT R1	7231	10 yr	150.70	6644.00	6645.01	4.09	37.68	39.20	0.72	2.86	0.079	3.03	1.29	0.91
MT R1	7231	50 yr	324.60	6644.00	6645.67	5.25	64.48	41.74	0.72	3.83	0.078	4.21	1.80	1.53
MT R1	7231	100 yr	424.30	6644.00	6645.99	5.73	77.98	42.97	0.72	4.23	0.078	4.73	2.02	1.78
MT R1	7043	2 yr	55.10	6640.00	6640.71	1.95	29.03	42.28	0.41	0.41	0.060	0.43	0.21	0.19
MT R1	7043	5 yr	100.50	6640.00	6640.99	2.55	40.75	43.24	0.45	0.63	0.060	0.67	0.32	0.31
MT R1	7043	10 yr	150.70	6640.00	6641.24	3.03	51.75	44.27	0.48	0.81	0.060	0.87	0.41	0.40
MT R1	7043	50 yr	324.60	6640.00	6641.89	4.23	81.39	46.84	0.54	1.33	0.060	1.48	0.69	0.66
MT R1	7043	100 yr	424.30	6640.00	6642.19	4.77	99.79	71.73	0.57	1.12	0.049	1.79	0.27	0.78
MT R1	6862	2 yr	55.10	6636.21	6636.82	3.54	16.20	47.32	0.99	1.49	0.056	1.73	0.49	0.29
MT R1	6862	5 yr	100.50	6636.21	6637.02	4.16	26.57	56.15	0.95	1.65	0.056	2.09	0.71	0.64
MT R1	6862	10 yr	150.70	6636.21	6637.18	4.75	35.92	58.14	0.96	2.04	0.059	2.52	1.13	1.03
MT R1	6862	50 yr	324.60	6636.21	6637.63	6.12	62.81	63.38	0.98	2.94	0.062	3.58	2.04	1.83
MT R1	6862	100 yr	424.30	6636.21	6637.83	6.70	76.15	65.89	0.99	3.32	0.063	4.07	2.38	2.15
MT R1	6745	2 yr	55.10	6631.00	6632.57	2.01	28.87	26.18	0.30	0.30	0.055	0.37	0.08	0.07
MT R1	6745	5 yr	100.50	6631.00	6633.11	2.54	44.86	35.25	0.32	0.36	0.052	0.53	0.12	0.15
MT R1	6745	10 yr	150.70	6631.00	6633.57	2.95	64.02	48.78	0.34	0.37	0.051	0.67	0.16	0.22
MT R1	6745	50 yr	324.60	6631.00	6634.63	3.74	129.97	70.98	0.36	0.51	0.059	0.95	0.33	0.36
MT R1	6745	100 yr	424.30	6631.00	6635.08	4.03	163.69	76.00	0.36	0.59	0.063	1.06	0.42	0.41
MT R1	6183	2 yr	55.10	6625.00	6626.10	5.21	10.58	12.70	1.00	2.90	0.059	2.95		0.17
MT R1	6183	5 yr	100.50	6625.00	6626.53	6.16	16.53	14.49	0.99	3.45	0.058	3.67		0.76
MT R1	6183	10 yr	150.70	6625.00	6626.92	6.91	22.40	16.05	0.99	3.90	0.058	4.29		1.20
MT R1	6183	50 yr	324.60	6625.00	6627.92	8.76	40.23	19.56	0.97	4.62	0.056	5.81	1.09	2.06
MT R1	6183	100 yr	424.30	6625.00	6628.40	9.48	50.01	21.21	0.96	4.88	0.056	6.42	1.49	2.38
MT R1	6124	2 yr	55.10	6621.00	6622.09	5.06	10.90	14.03	1.00	1.93	0.049	1.97	0.11	
MT R1	6124	5 yr	100.50	6621.00	6622.49	6.07	16.93	16.14	0.99	2.20	0.047	2.49	0.52	0.33
MT R1	6124	10 yr	150.70	6621.00	6622.86	6.86	23.15	17.87	0.97	2.41	0.047	2.90	0.81	0.62
MT R1	6124	50 yr	324.60	6621.00	6623.84	8.62	42.77	21.76	0.96	2.93	0.047	3.88	1.43	1.27
MT R1	6124	100 yr	424.30	6621.00	6624.29	9.37	52.92	23.35	0.96	3.19	0.048	4.34	1.70	1.51
MT R1	6091	2 yr	55.10	6616.38	6617.64	5.44	10.20	11.79	1.00	2.01	0.048	2.17	0.26	0.15

HEC-RAS Plan: Plan 05 River: Middle Tributary Reach: MT R1 (Continued)

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Vel Chnl	Flow Area	Top Width	Froude # Chl	Shear Total	Mann Wtd Total	Shear Chan	Shear LOB	Shear ROB
			(cfs)	(ft)	(ft)	(ft/s)	(sq ft)	(ft)		(lb/sq ft)		(lb/sq ft)	(lb/sq ft)	(lb/sq ft)
MT R1	6091	5 yr	100.50	6616.38	6618.11	6.49	16.28	13.90	0.97	2.22	0.046	2.69	0.68	0.56
MT R1	6091	10 yr	150.70	6616.38	6618.52	7.39	22.24	15.24	0.97	2.52	0.047	3.20	1.03	0.87
MT R1	6091	50 yr	324.60	6616.38	6619.64	9.29	41.39	18.89	0.96	3.08	0.047	4.31	1.63	1.49
MT R1	6091	100 yr	424.30	6616.38	6620.16	10.06	51.69	20.63	0.95	3.29	0.048	4.78	1.86	1.72
MT R1	5841	2 yr	55.10	6608.00	6608.70	3.31	18.72	38.05	0.73	0.69	0.047	0.90	0.31	0.31
MT R1	5841	5 yr	100.50	6608.00	6608.84	4.79	24.54	42.47	0.95	1.29	0.048	1.75	0.65	0.65
MT R1	5841	10 yr	150.70	6608.00	6609.12	5.01	37.41	49.80	0.86	1.23	0.049	1.74	0.67	0.78
MT R1	5841	50 yr	324.60	6608.00	6609.59	6.80	61.72	53.16	0.97	2.14	0.054	2.84	1.43	1.64
MT R1	5841	100 yr	424.30	6608.00	6609.83	7.44	74.72	54.89	0.98	2.47	0.055	3.23	1.71	1.97
MT R1	5404	2 yr	55.10	6594.71	6595.40	4.18	13.52	25.76	0.98	1.40	0.049	1.50	0.55	0.12
MT R1	5404	5 yr	100.50	6594.71	6595.66	5.12	20.59	27.78	0.99	1.77	0.049	1.98	0.83	0.41
MT R1	5404	10 yr	150.70	6594.71	6595.92	5.78	27.96	29.72	0.98	1.99	0.049	2.30	1.01	0.62
MT R1	5404	50 yr	324.60	6594.71	6596.60	7.36	49.65	33.95	0.98	2.60	0.049	3.17	1.57	1.11
MT R1	5404	100 yr	424.30	6594.71	6596.92	7.99	60.96	35.93	0.98	2.84	0.050	3.54	1.78	1.31
MT R1	5295	2 yr	55.10	6591.00	6591.77	3.50	15.83	25.38	0.77	0.97	0.049	1.00	0.16	
MT R1	5295	5 yr	100.50	6591.00	6592.16	3.90	26.40	29.85	0.70	0.99	0.048	1.09	0.33	0.09
MT R1	5295	10 yr	150.70	6591.00	6592.46	4.40	35.97	32.96	0.69	1.08	0.047	1.27	0.46	0.23
MT R1	5295	50 yr	324.60	6591.00	6593.23	5.68	64.31	40.44	0.70	1.39	0.047	1.80	0.76	0.55
MT R1	5295	100 yr	424.30	6591.00	6593.58	6.22	78.92	43.64	0.71	1.54	0.048	2.05	0.89	0.68
MT R1	5177	2 yr	55.10	6589.00	6590.04	3.01	25.67	34.26	0.53	0.48	0.058	0.64	0.26	0.53
MT R1	5177	5 yr	100.50	6589.00	6590.29	4.15	34.84	36.46	0.65	0.85	0.060	1.13	0.54	0.90
MT R1	5177	10 yr	150.70	6589.00	6590.52	5.08	43.38	38.44	0.74	1.21	0.061	1.60	0.83	1.25
MT R1	5177	50 yr	324.60	6589.00	6591.14	7.22	68.63	44.29	0.88	2.11	0.062	2.88	1.57	2.13
MT R1	5177	100 yr	424.30	6589.00	6591.43	8.10	81.95	48.07	0.92	2.46	0.062	3.48	1.84	2.49
MT R1	5073	2 yr	55.10	6587.64	6588.29	3.25	17.22	34.94	0.79	0.87	0.049	0.92	0.14	0.25
MT R1	5073	5 yr	100.50	6587.64	6588.63	3.58	29.50	39.15	0.68	0.83	0.048	0.95	0.27	0.34
MT R1	5073	10 yr	150.70	6587.64	6588.92	3.91	41.67	43.04	0.64	0.86	0.048	1.03	0.35	0.40
MT R1	5073	50 yr	324.60	6587.64	6589.67	4.86	79.57	59.37	0.62	0.95	0.047	1.35	0.45	0.51
MT R1	5073	100 yr	424.30	6587.64	6589.97	5.33	98.77	67.32	0.63	1.02	0.047	1.54	0.54	0.57
MT R1	5063	2 yr	55.10	6587.08	6588.29	1.67	33.45	43.96	0.32	0.19	0.048	0.21	0.04	0.04
MT R1	5063	5 yr	100.50	6587.08	6588.64	2.13	49.59	49.38	0.35	0.26	0.047	0.30	0.08	0.08
MT R1	5063	10 yr	150.70	6587.08	6588.95	2.49	65.60	54.01	0.36	0.31	0.047	0.38	0.12	0.12
MT R1	5063	50 yr	324.60	6587.08	6589.73	3.35	114.30	71.52	0.39	0.43	0.047	0.60	0.22	0.20
MT R1	5063	100 yr	424.30	6587.08	6590.05	3.75	138.24	79.60	0.41	0.49	0.047	0.73	0.26	0.25
MT R1	5047	2 yr	55.10	6587.00	6588.14	2.56	23.43	35.72	0.50	0.40	0.047	0.50	0.20	0.14
MT R1	5047	5 yr	100.50	6587.00	6588.45	3.27	35.06	39.39	0.54	0.57	0.049	0.73	0.34	0.28
MT R1	5047	10 yr	150.70	6587.00	6588.72	3.82	46.47	42.85	0.57	0.71	0.049	0.92	0.45	0.39
MT R1	5047	50 yr	324.60	6587.00	6589.39	5.28	79.16	56.96	0.65	1.03	0.049	1.55	0.80	0.58
MT R1	5047	100 yr	424.30	6587.00	6589.63	5.98	93.64	60.39	0.69	1.27	0.050	1.91	1.00	0.77
MT R1	4975	2 yr	55.10	6586.00	6586.70	4.42	14.69	29.44	0.96	1.20	0.049	1.59	0.73	0.38
MT R1	4975	5 yr	100.50	6586.00	6586.98	5.26	24.09	35.62	0.95	1.42	0.050	1.99	0.97	0.63
MT R1	4975	10 yr	150.70	6586.00	6587.23	5.94	33.63	41.10	0.96	1.61	0.051	2.35	1.14	0.86
MT R1	4975	50 yr	324.60	6586.00	6587.90	7.28	66.60	58.42	0.94	1.86	0.054	3.05	1.41	1.25

HEC-RAS Plan: Plan 05 River: Middle Tributary Reach: MT R1 (Continued)

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl	Shear Total (lb/sq ft)	Mann Wtd Total	Shear Chan (lb/sq ft)	Shear LOB (lb/sq ft)	Shear ROB (lb/sq ft)
MT R1	4975	100 yr	424.30	6586.00	6588.23	7.59	87.63	67.69	0.90	1.85	0.055	3.14	1.44	1.34
MT R1	4888	2 yr	55.10	6585.00	6585.61	1.65	34.49	66.08	0.39	0.22	0.049	0.23	0.07	0.12
MT R1	4888	5 yr	100.50	6585.00	6585.85	2.08	51.13	70.79	0.41	0.29	0.049	0.33	0.12	0.17
MT R1	4888	10 yr	150.70	6585.00	6586.07	2.41	67.33	74.32	0.42	0.36	0.049	0.41	0.17	0.21
MT R1	4888	50 yr	324.60	6585.00	6586.51	3.56	100.68	79.28	0.52	0.68	0.050	0.79	0.38	0.41
MT R1	4888	100 yr	424.30	6585.00	6587.47	2.69	184.18	94.36	0.30	0.30	0.050	0.38	0.18	0.19
MT R1	4749	2 yr	73.50	6582.27	6583.16	4.31	17.17	31.56	1.00	1.49	0.049	1.58	0.21	
MT R1	4749	5 yr	136.70	6582.27	6583.46	5.13	28.01	39.70	0.97	1.60	0.046	1.95	0.52	0.27
MT R1	4749	10 yr	207.20	6582.27	6583.74	5.75	39.91	47.02	0.95	1.67	0.046	2.24	0.73	0.51
MT R1	4749	50 yr	455.30	6582.27	6586.07	3.19	197.08	80.88	0.30	0.33	0.054	0.48	0.27	0.23
MT R1	4749	100 yr	598.70	6582.27	6587.26	2.88	299.41	91.36	0.24	0.25	0.057	0.35	0.21	0.18
MT R1	4629	2 yr	73.50	6580.00	6581.74	1.85	40.65	29.10	0.26	0.19	0.048	0.21	0.04	0.05
MT R1	4629	5 yr	136.70	6580.00	6582.64	2.12	68.78	33.23	0.24	0.20	0.047	0.24	0.07	0.08
MT R1	4629	10 yr	207.20	6580.00	6583.49	2.33	98.69	36.90	0.23	0.21	0.048	0.26	0.09	0.09
MT R1	4629	50 yr	455.30	6580.00	6585.93	2.75	202.99	48.89	0.20	0.21	0.048	0.30	0.11	0.12
MT R1	4629	100 yr	598.70	6580.00	6587.13	2.89	265.89	56.09	0.19	0.21	0.049	0.31	0.12	0.13
MT R1	4480		Culvert											
MT R1	4350	2 yr	73.50	6572.00	6576.84	0.72	155.89	46.47	0.06	0.01	0.059	0.02	0.01	0.01
MT R1	4350	5 yr	136.70	6572.00	6577.79	1.09	205.53	58.08	0.08	0.03	0.059	0.05	0.02	0.02
MT R1	4350	10 yr	207.20	6572.00	6578.69	1.36	261.97	67.50	0.09	0.04	0.059	0.07	0.04	0.03
MT R1	4350	50 yr	455.30	6572.00	6581.28	1.82	471.55	126.13	0.11	0.06	0.062	0.11	0.06	0.04
MT R1	4350	100 yr	598.70	6572.00	6582.58	2.04	620.94	184.60	0.11	0.06	0.061	0.13	0.05	0.05
MT R1	4240	2 yr	73.50	6569.00	6576.85	0.19	381.50	121.31	0.02	0.00	0.050	0.00		
MT R1	4240	5 yr	136.70	6569.00	6577.80	0.27	510.89	151.12	0.02	0.00	0.046	0.00	0.00	0.00
MT R1	4240	10 yr	207.20	6569.00	6578.70	0.33	656.62	171.18	0.03	0.00	0.045	0.00	0.00	0.00
MT R1	4240	50 yr	455.30	6569.00	6581.30	0.45	1133.32	192.44	0.03	0.01	0.048	0.01	0.00	0.00
MT R1	4240	100 yr	598.70	6569.00	6582.60	0.49	1390.17	202.44	0.03	0.01	0.049	0.01	0.00	0.00
MT R1	4134	2 yr	73.50	6568.00	6576.85	0.16	882.00	182.00	0.01	0.00	0.066	0.00	0.00	0.00
MT R1	4134	5 yr	136.70	6568.00	6577.80	0.25	1058.97	190.47	0.01	0.00	0.068	0.00	0.00	0.00
MT R1	4134	10 yr	207.20	6568.00	6578.70	0.32	1234.06	198.50	0.02	0.00	0.068	0.00	0.00	0.00
MT R1	4134	50 yr	455.30	6568.00	6581.30	0.50	1779.67	220.44	0.02	0.00	0.070	0.01	0.00	0.00
MT R1	4134	100 yr	598.70	6568.00	6582.60	0.56	2073.70	231.85	0.03	0.01	0.071	0.01	0.00	0.01
MT R1	4073	2 yr	73.50	6571.44	6576.83	1.11	93.35	31.06	0.09	0.03	0.048	0.05	0.02	0.02
MT R1	4073	5 yr	136.70	6571.44	6577.76	1.65	126.66	39.41	0.12	0.06	0.049	0.11	0.04	0.03
MT R1	4073	10 yr	207.20	6571.44	6578.64	2.03	175.09	88.81	0.14	0.04	0.037	0.15	0.02	0.05
MT R1	4073	50 yr	455.30	6571.44	6581.27	1.95	546.86	156.04	0.11	0.05	0.060	0.13	0.04	0.05
MT R1	4073	100 yr	598.70	6571.44	6582.57	1.85	758.78	169.39	0.10	0.05	0.065	0.11	0.04	0.04
MT R1	4032		Culvert											
MT R1	3996	2 yr	73.50	6567.00	6568.82	6.26	15.05	12.43	0.84	4.06	0.079	5.96	3.21	2.40
MT R1	3996	5 yr	136.70	6567.00	6569.32	8.33	21.78	14.02	0.99	6.43	0.081	9.67	5.22	4.20
MT R1	3996	10 yr	207.20	6567.00	6569.87	9.47	29.86	15.54	1.00	7.55	0.082	11.62	6.25	5.23

HEC-RAS Plan: Plan 05 River: Middle Tributary Reach: MT R1 (Continued)

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl	Shear Total (lb/sq ft)	Mann Wtd Total	Shear Chan (lb/sq ft)	Shear LOB (lb/sq ft)	Shear ROB (lb/sq ft)
MT R1	3996	50 yr	455.30	6567.00	6571.32	11.95	55.29	19.57	1.03	9.80	0.083	16.08	8.48	7.22
MT R1	3996	100 yr	598.70	6567.00	6571.95	13.01	68.16	21.21	1.04	10.86	0.084	18.21	9.52	8.15
MT R1	3932	2 yr	73.50	6565.61	6566.23	1.79	41.60	120.11	0.53	0.80	0.080	0.82	0.45	0.45
MT R1	3932	5 yr	136.70	6565.61	6566.40	2.24	61.98	121.80	0.55	1.10	0.080	1.13	0.67	0.62
MT R1	3932	10 yr	207.20	6565.61	6566.57	2.56	82.64	123.55	0.54	1.30	0.080	1.34	0.80	0.73
MT R1	3932	50 yr	455.30	6565.61	6567.09	3.16	148.26	128.36	0.51	1.62	0.080	1.70	1.00	0.93
MT R1	3932	100 yr	598.70	6565.61	6567.36	3.37	183.67	130.15	0.49	1.71	0.080	1.80	1.06	1.03
MT R1	3855	2 yr	73.50	6563.00	6564.05	2.09	35.11	53.53	0.45	0.90	0.079	0.91	0.05	
MT R1	3855	5 yr	136.70	6563.00	6564.38	2.60	53.06	56.70	0.46	1.16	0.078	1.23	0.25	0.23
MT R1	3855	10 yr	207.20	6563.00	6564.67	3.02	70.09	59.56	0.47	1.39	0.077	1.52	0.41	0.39
MT R1	3855	50 yr	455.30	6563.00	6565.46	4.01	119.83	66.82	0.49	1.97	0.077	2.28	0.83	0.80
MT R1	3855	100 yr	598.70	6563.00	6565.82	4.42	144.72	70.03	0.50	2.23	0.076	2.63	1.01	0.99
MT R1	3722	2 yr	73.50	6561.00	6562.07	1.84	42.09	52.39	0.34	0.54	0.077	0.63	0.36	0.11
MT R1	3722	5 yr	136.70	6561.00	6562.46	2.34	63.76	59.58	0.36	0.73	0.076	0.90	0.51	0.26
MT R1	3722	10 yr	207.20	6561.00	6562.81	2.72	85.74	67.94	0.37	0.86	0.075	1.14	0.62	0.35
MT R1	3722	50 yr	455.30	6561.00	6563.68	3.60	154.55	89.48	0.40	1.17	0.075	1.72	0.80	0.65
MT R1	3722	100 yr	598.70	6561.00	6564.05	4.00	189.72	102.27	0.41	1.29	0.075	2.03	0.92	0.74
MT R1	3699	2 yr	73.50	6560.59	6561.72	2.36	34.16	46.76	0.44	0.84	0.076	1.05	0.39	0.42
MT R1	3699	5 yr	136.70	6560.59	6562.13	2.87	54.83	55.09	0.44	1.03	0.076	1.36	0.56	0.58
MT R1	3699	10 yr	207.20	6560.59	6562.48	3.28	75.36	62.51	0.45	1.19	0.077	1.64	0.72	0.72
MT R1	3699	50 yr	455.30	6560.59	6563.38	4.16	144.01	89.44	0.46	1.43	0.077	2.28	1.05	0.95
MT R1	3699	100 yr	598.70	6560.59	6563.76	4.48	179.47	96.58	0.46	1.59	0.079	2.53	1.17	1.12
MT R1	3657	2 yr	73.50	6560.00	6561.15	1.95	37.74	39.15	0.34	0.66	0.078	0.69	0.05	0.05
MT R1	3657	5 yr	136.70	6560.00	6561.52	2.64	52.92	43.32	0.40	1.01	0.076	1.14	0.20	0.21
MT R1	3657	10 yr	207.20	6560.00	6561.84	3.21	67.35	46.88	0.43	1.32	0.075	1.56	0.36	0.38
MT R1	3657	50 yr	455.30	6560.00	6562.65	4.54	114.37	71.35	0.51	1.75	0.068	2.75	0.87	0.63
MT R1	3657	100 yr	598.70	6560.00	6563.01	5.05	141.64	83.74	0.53	1.92	0.067	3.26	1.07	0.82
MT R1	3563	2 yr	73.50	6558.95	6559.77	2.06	35.83	53.15	0.43	0.84	0.079	0.87	0.05	0.13
MT R1	3563	5 yr	136.70	6558.95	6560.14	2.47	56.82	59.33	0.42	0.96	0.076	1.08	0.21	0.30
MT R1	3563	10 yr	207.20	6558.95	6560.47	2.81	77.46	65.36	0.42	1.08	0.075	1.28	0.33	0.44
MT R1	3563	50 yr	455.30	6558.95	6561.35	3.59	143.59	88.69	0.42	1.26	0.072	1.77	0.51	0.72
MT R1	3563	100 yr	598.70	6558.95	6561.75	3.87	182.14	101.28	0.42	1.31	0.072	1.95	0.61	0.82
MT R1	3534	2 yr	73.50	6558.13	6559.51	1.37	53.86	58.48	0.25	0.34	0.079	0.35		0.09
MT R1	3534	5 yr	136.70	6558.13	6559.89	1.80	77.15	63.33	0.28	0.49	0.077	0.54	0.08	0.18
MT R1	3534	10 yr	207.20	6558.13	6560.23	2.16	99.24	67.93	0.30	0.63	0.076	0.71	0.14	0.27
MT R1	3534	50 yr	455.30	6558.13	6561.11	3.01	166.10	91.78	0.33	0.85	0.070	1.20	0.24	0.51
MT R1	3534	100 yr	598.70	6558.13	6561.53	3.30	206.84	103.85	0.34	0.92	0.070	1.37	0.34	0.60
MT R1	3495	2 yr	73.50	6558.00	6559.21	1.64	45.76	56.49	0.31	0.48	0.078	0.51	0.06	0.26
MT R1	3495	5 yr	136.70	6558.00	6559.56	2.13	66.34	60.46	0.34	0.70	0.077	0.77	0.18	0.41
MT R1	3495	10 yr	207.20	6558.00	6559.87	2.53	85.98	64.01	0.36	0.89	0.077	1.01	0.29	0.53
MT R1	3495	50 yr	455.30	6558.00	6560.72	3.44	144.72	74.50	0.39	1.31	0.076	1.61	0.55	0.86
MT R1	3495	100 yr	598.70	6558.00	6561.12	3.85	177.67	99.73	0.41	1.22	0.068	1.91	0.39	1.03

HEC-RAS Plan: Plan 05 River: Middle Tributary Reach: MT R1 (Continued)

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl	Shear Total (lb/sq ft)	Mann Wtd Total	Shear Chan (lb/sq ft)	Shear LOB (lb/sq ft)	Shear ROB (lb/sq ft)
MT R1	3393	2 yr	73.50	6557.00	6557.80	2.15	34.60	49.15	0.44	0.88	0.078	0.92	0.06	0.33
MT R1	3393	5 yr	136.70	6557.00	6558.17	2.63	53.79	54.02	0.44	1.08	0.077	1.21	0.27	0.51
MT R1	3393	10 yr	207.20	6557.00	6558.50	3.01	72.35	57.58	0.44	1.26	0.077	1.46	0.43	0.68
MT R1	3393	50 yr	455.30	6557.00	6559.36	3.98	125.29	66.43	0.46	1.77	0.077	2.18	0.81	1.08
MT R1	3393	100 yr	598.70	6557.00	6559.74	4.41	151.46	70.45	0.47	2.01	0.077	2.53	0.99	1.28
MT R1	3333	2 yr	73.50	6556.00	6557.07	1.63	45.56	51.91	0.30	0.46	0.077	0.49	0.09	
MT R1	3333	5 yr	136.70	6556.00	6557.46	2.13	66.10	55.66	0.33	0.67	0.077	0.75	0.22	0.12
MT R1	3333	10 yr	207.20	6556.00	6557.78	2.56	84.56	58.92	0.35	0.88	0.076	1.01	0.34	0.22
MT R1	3333	50 yr	455.30	6556.00	6558.58	3.65	135.21	67.36	0.41	1.46	0.076	1.79	0.69	0.55
MT R1	3333	100 yr	598.70	6556.00	6558.93	4.14	159.37	71.90	0.44	1.74	0.075	2.21	0.84	0.73
MT R1	3258	2 yr	73.50	6555.00	6555.98	2.31	32.44	57.12	0.51	0.98	0.075	1.12	0.12	0.28
MT R1	3258	5 yr	136.70	6555.00	6556.23	3.05	47.19	62.37	0.57	1.48	0.075	1.75	0.46	0.70
MT R1	3258	10 yr	207.20	6555.00	6556.45	3.61	61.64	65.90	0.60	1.89	0.076	2.27	0.77	1.07
MT R1	3258	50 yr	455.30	6555.00	6557.06	4.85	104.66	74.39	0.65	2.87	0.078	3.55	1.54	1.92
MT R1	3258	100 yr	598.70	6555.00	6557.35	5.32	126.78	76.65	0.66	3.29	0.079	4.05	1.93	2.26
MT R1	3124	2 yr	73.50	6552.00	6552.97	2.09	36.20	53.35	0.43	0.80	0.078	0.87	0.35	0.02
MT R1	3124	5 yr	136.70	6552.00	6553.33	2.53	57.43	61.96	0.42	0.94	0.076	1.12	0.51	0.23
MT R1	3124	10 yr	207.20	6552.00	6553.66	2.89	78.35	67.48	0.43	1.09	0.076	1.34	0.64	0.40
MT R1	3124	50 yr	455.30	6552.00	6554.50	3.72	139.73	77.83	0.43	1.50	0.078	1.90	1.00	0.81
MT R1	3124	100 yr	598.70	6552.00	6554.88	4.07	170.53	82.29	0.44	1.68	0.078	2.16	1.16	0.96
MT R1	3070	2 yr	73.50	6551.00	6552.38	1.50	49.23	55.79	0.28	0.41	0.079	0.42	0.03	0.03
MT R1	3070	5 yr	136.70	6551.00	6552.75	1.97	70.60	61.04	0.31	0.59	0.076	0.65	0.12	0.12
MT R1	3070	10 yr	207.20	6551.00	6553.08	2.34	91.72	65.45	0.33	0.74	0.076	0.85	0.21	0.22
MT R1	3070	50 yr	455.30	6551.00	6553.92	3.26	149.99	72.72	0.37	1.19	0.076	1.42	0.47	0.55
MT R1	3070	100 yr	598.70	6551.00	6554.31	3.65	178.28	76.08	0.38	1.40	0.076	1.71	0.61	0.69
MT R1	3039	2 yr	73.50	6551.00	6552.08	1.79	41.73	52.51	0.35	0.59	0.079	0.62	0.30	0.03
MT R1	3039	5 yr	136.70	6551.00	6552.40	2.37	59.42	56.57	0.39	0.88	0.077	0.97	0.50	0.17
MT R1	3039	10 yr	207.20	6551.00	6552.72	2.79	77.89	60.13	0.40	1.08	0.077	1.24	0.65	0.31
MT R1	3039	50 yr	455.30	6551.00	6553.51	3.84	128.47	67.70	0.45	1.70	0.077	2.04	1.11	0.73
MT R1	3039	100 yr	598.70	6551.00	6553.87	4.30	153.16	70.84	0.47	1.99	0.077	2.43	1.33	0.92
MT R1	2920	2 yr	73.50	6549.47	6550.32	1.91	38.63	60.10	0.41	0.74	0.079	0.76	0.12	0.15
MT R1	2920	5 yr	136.70	6549.47	6550.65	2.35	58.97	62.81	0.42	0.95	0.078	1.01	0.27	0.30
MT R1	2920	10 yr	207.20	6549.47	6550.91	2.82	75.34	64.90	0.44	1.24	0.078	1.33	0.41	0.45
MT R1	2920	50 yr	455.30	6549.47	6551.63	3.84	124.00	70.10	0.48	1.90	0.078	2.13	0.83	0.85
MT R1	2920	100 yr	598.70	6549.47	6551.98	4.23	149.40	72.60	0.49	2.15	0.078	2.45	1.00	1.02
MT R1	2783	2 yr	73.50	6544.00	6545.47	5.19	14.48	15.28	0.88	4.18	0.075	4.79	1.03	0.46
MT R1	2783	5 yr	136.70	6544.00	6545.93	6.61	22.17	18.39	0.94	5.37	0.073	6.90	2.04	1.47
MT R1	2783	10 yr	207.20	6544.00	6546.50	6.92	36.42	33.41	0.84	3.54	0.063	6.81	1.50	1.37
MT R1	2783	50 yr	455.30	6544.00	6547.50	8.07	83.17	56.31	0.81	3.89	0.072	8.13	2.60	2.63
MT R1	2783	100 yr	598.70	6544.00	6547.85	8.74	103.91	61.68	0.83	4.51	0.075	9.20	3.23	3.29
MT R1	2675	2 yr	73.50	6542.00	6543.52	2.00	36.91	33.26	0.32	0.64	0.077	0.69	0.13	0.03
MT R1	2675	5 yr	136.70	6542.00	6544.15	2.37	61.14	42.15	0.31	0.66	0.073	0.84	0.23	0.19
MT R1	2675	10 yr	207.20	6542.00	6544.71	2.65	86.01	46.22	0.30	0.74	0.074	0.95	0.30	0.32

HEC-RAS Plan: Plan 05 River: Middle Tributary Reach: MT R1 (Continued)

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl	Shear Total (lb/sq ft)	Mann Wtd Total	Shear Chan (lb/sq ft)	Shear LOB (lb/sq ft)	Shear ROB (lb/sq ft)
MT R1	2675	50 yr	455.30	6542.00	6546.04	3.62	153.66	81.19	0.33	0.78	0.062	1.54	0.57	0.29
MT R1	2675	100 yr	598.70	6542.00	6546.52	3.95	194.43	86.33	0.34	0.93	0.067	1.75	0.66	0.46
MT R1	2643	2 yr	73.50	6541.00	6542.80	4.09	18.42	15.45	0.62	2.40	0.075	2.75	0.57	0.23
MT R1	2643	5 yr	136.70	6541.00	6543.37	5.21	28.47	20.48	0.66	2.86	0.070	3.99	0.93	0.78
MT R1	2643	10 yr	207.20	6541.00	6543.86	6.01	39.94	25.73	0.68	3.14	0.069	4.92	1.33	1.25
MT R1	2643	50 yr	455.30	6541.00	6545.09	7.44	86.50	50.82	0.68	3.09	0.068	6.57	1.83	2.01
MT R1	2643	100 yr	598.70	6541.00	6545.67	7.52	118.05	58.18	0.64	3.10	0.073	6.39	2.26	1.80
MT R1	2605	2 yr	73.50	6540.00	6541.93	3.14	23.86	18.47	0.46	1.46	0.077	1.60	0.35	
MT R1	2605	5 yr	136.70	6540.00	6542.56	3.95	36.91	23.22	0.49	1.74	0.072	2.24	0.61	0.37
MT R1	2605	10 yr	207.20	6540.00	6543.04	4.71	48.79	26.90	0.52	2.14	0.071	2.98	0.92	0.67
MT R1	2605	50 yr	455.30	6540.00	6544.02	6.88	80.65	37.59	0.65	3.49	0.070	5.70	1.86	1.60
MT R1	2605	100 yr	598.70	6540.00	6544.45	7.74	97.83	42.90	0.69	4.02	0.070	6.93	2.60	1.75
MT R1	2524	2 yr	73.50	6538.00	6539.10	4.62	15.97	18.09	0.84	3.76	0.077	3.97	0.22	0.21
MT R1	2524	5 yr	136.70	6538.00	6539.46	6.17	22.92	21.56	0.96	5.28	0.073	6.38	1.13	1.05
MT R1	2524	10 yr	207.20	6538.00	6539.85	6.94	32.33	25.63	0.94	5.52	0.071	7.37	1.86	1.74
MT R1	2524	50 yr	455.30	6538.00	6540.88	8.03	72.41	44.65	0.86	5.04	0.073	8.43	2.99	2.70
MT R1	2524	100 yr	598.70	6538.00	6541.28	8.64	90.39	47.23	0.86	5.75	0.076	9.33	3.85	3.16
MT R1	2470	2 yr	73.50	6534.19	6535.56	4.64	16.22	17.81	0.81	3.47	0.076	3.89	1.01	0.56
MT R1	2470	5 yr	136.70	6534.19	6536.07	5.59	25.94	20.13	0.80	4.10	0.075	4.93	1.65	1.36
MT R1	2470	10 yr	207.20	6534.19	6536.55	6.27	36.06	22.08	0.78	4.51	0.075	5.66	2.08	1.89
MT R1	2470	50 yr	455.30	6534.19	6537.87	7.73	68.64	27.39	0.75	5.28	0.075	7.27	2.93	2.86
MT R1	2470	100 yr	598.70	6534.19	6538.47	8.37	86.27	31.31	0.74	5.44	0.074	8.07	2.90	3.30
MT R1	2427	2 yr	73.50	6533.00	6534.66	2.63	28.16	20.96	0.39	1.06	0.078	1.13	0.05	0.22
MT R1	2427	5 yr	136.70	6533.00	6535.30	3.34	42.29	23.38	0.41	1.39	0.075	1.60	0.30	0.42
MT R1	2427	10 yr	207.20	6533.00	6535.86	3.92	55.85	25.29	0.43	1.68	0.074	2.04	0.52	0.61
MT R1	2427	50 yr	455.30	6533.00	6537.30	5.31	95.41	29.55	0.46	2.44	0.074	3.22	1.07	1.13
MT R1	2427	100 yr	598.70	6533.00	6537.93	5.92	114.63	31.39	0.48	2.81	0.074	3.82	1.34	1.37
MT R1	2348	2 yr	73.50	6531.00	6532.71	4.43	17.02	15.51	0.71	3.05	0.077	3.37		0.95
MT R1	2348	5 yr	136.70	6531.00	6533.22	5.67	25.63	18.14	0.76	3.98	0.074	4.89	0.73	1.69
MT R1	2348	10 yr	207.20	6531.00	6533.67	6.62	34.31	20.28	0.79	4.74	0.074	6.18	1.35	2.35
MT R1	2348	50 yr	455.30	6531.00	6534.86	8.69	61.99	26.15	0.83	6.33	0.074	9.20	2.80	3.85
MT R1	2348	100 yr	598.70	6531.00	6535.42	9.45	77.31	29.11	0.84	6.83	0.074	10.35	3.31	4.44
MT R1	2307	2 yr	73.50	6530.00	6531.71	2.99	25.10	20.61	0.45	1.32	0.076	1.48	0.37	0.13
MT R1	2307	5 yr	136.70	6530.00	6532.31	3.77	38.35	23.53	0.48	1.71	0.074	2.07	0.68	0.44
MT R1	2307	10 yr	207.20	6530.00	6532.84	4.38	51.53	25.93	0.49	2.02	0.074	2.58	0.94	0.70
MT R1	2307	50 yr	455.30	6530.00	6534.24	5.75	92.16	32.28	0.51	2.73	0.074	3.83	1.55	1.30
MT R1	2307	100 yr	598.70	6530.00	6534.88	6.29	113.84	35.25	0.52	3.00	0.075	4.35	1.80	1.54
MT R1	2259	2 yr	73.50	6529.00	6530.42	3.97	18.83	17.04	0.63	2.41	0.076	2.69	0.44	0.42
MT R1	2259	5 yr	136.70	6529.00	6530.89	5.22	27.45	19.25	0.71	3.46	0.074	4.17	1.05	1.00
MT R1	2259	10 yr	207.20	6529.00	6531.31	6.22	35.89	21.05	0.75	4.34	0.074	5.49	1.65	1.58
MT R1	2259	50 yr	455.30	6529.00	6532.37	8.61	60.30	25.17	0.85	6.73	0.074	9.20	3.37	3.26
MT R1	2259	100 yr	598.70	6529.00	6532.83	9.64	72.33	26.82	0.89	7.87	0.074	11.01	4.22	4.08

HEC-RAS Plan: Plan 05 River: Middle Tributary Reach: MT R1 (Continued)

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl	Shear Total (lb/sq ft)	Mann Wtd Total	Shear Chan (lb/sq ft)	Shear LOB (lb/sq ft)	Shear ROB (lb/sq ft)
MT R1	2166	2 yr	73.50	6527.00	6528.26	2.56	28.87	28.22	0.43	1.10	0.078	1.16	0.13	0.13
MT R1	2166	5 yr	136.70	6527.00	6528.75	3.24	43.41	31.39	0.46	1.44	0.075	1.64	0.37	0.38
MT R1	2166	10 yr	207.20	6527.00	6529.16	3.82	57.13	33.93	0.48	1.77	0.075	2.10	0.60	0.61
MT R1	2166	50 yr	455.30	6527.00	6530.22	5.24	95.76	39.41	0.53	2.71	0.075	3.44	1.26	1.28
MT R1	2166	100 yr	598.70	6527.00	6530.68	5.87	114.53	41.79	0.55	3.16	0.075	4.11	1.57	1.59
MT R1	2099	2 yr	73.50	6526.00	6527.44	1.98	37.23	34.19	0.33	0.65	0.078	0.68	0.07	0.04
MT R1	2099	5 yr	136.70	6526.00	6527.88	2.64	52.99	37.90	0.37	0.96	0.075	1.09	0.22	0.20
MT R1	2099	10 yr	207.20	6526.00	6528.26	3.18	68.06	41.09	0.40	1.24	0.075	1.47	0.38	0.36
MT R1	2099	50 yr	455.30	6526.00	6529.23	4.47	111.87	48.75	0.46	1.97	0.074	2.53	0.86	0.85
MT R1	2099	100 yr	598.70	6526.00	6529.67	4.99	134.10	51.74	0.48	2.30	0.075	3.02	1.08	1.10
MT R1	2079	2 yr	73.50	6526.00	6527.10	2.65	28.02	33.46	0.50	1.25	0.078	1.32	0.26	0.08
MT R1	2079	5 yr	136.70	6526.00	6527.50	3.36	41.86	36.29	0.52	1.69	0.076	1.88	0.60	0.36
MT R1	2079	10 yr	207.20	6526.00	6527.85	3.95	54.83	38.72	0.55	2.08	0.076	2.41	0.88	0.62
MT R1	2079	50 yr	455.30	6526.00	6528.72	5.43	91.14	44.15	0.61	3.21	0.076	3.94	1.74	1.33
MT R1	2079	100 yr	598.70	6526.00	6529.12	6.05	109.33	46.67	0.63	3.70	0.076	4.65	2.12	1.65
MT R1	2056	2 yr	73.50	6525.25	6526.41	3.03	24.83	32.14	0.58	1.58	0.076	1.75	0.40	0.42
MT R1	2056	5 yr	136.70	6525.25	6526.74	4.02	35.71	35.27	0.65	2.37	0.076	2.77	0.84	0.86
MT R1	2056	10 yr	207.20	6525.25	6527.05	4.73	47.14	38.30	0.68	2.91	0.075	3.54	1.23	1.23
MT R1	2056	50 yr	455.30	6525.25	6527.97	6.00	85.73	44.99	0.68	3.79	0.077	4.86	2.05	2.10
MT R1	2056	100 yr	598.70	6525.25	6528.43	6.43	107.25	48.06	0.67	4.03	0.077	5.27	2.33	2.37
MT R1	1998	2 yr	73.50	6524.00	6525.24	2.07	35.72	42.27	0.39	0.77	0.078	0.81	0.11	0.11
MT R1	1998	5 yr	136.70	6524.00	6525.73	2.45	57.21	46.25	0.37	0.89	0.077	0.98	0.25	0.26
MT R1	1998	10 yr	207.20	6524.00	6526.17	2.77	78.26	49.62	0.36	0.99	0.076	1.14	0.36	0.37
MT R1	1998	50 yr	455.30	6524.00	6527.33	3.54	140.72	57.64	0.36	1.28	0.076	1.58	0.62	0.62
MT R1	1998	100 yr	598.70	6524.00	6527.87	3.86	172.89	61.61	0.36	1.40	0.076	1.77	0.74	0.71
MT R1	1947	2 yr	73.50	6523.00	6524.73	1.92	39.40	34.53	0.30	0.54	0.076	0.61	0.17	0.03
MT R1	1947	5 yr	136.70	6523.00	6525.23	2.51	57.99	39.11	0.33	0.77	0.075	0.94	0.34	0.18
MT R1	1947	10 yr	207.20	6523.00	6525.67	2.97	75.96	42.29	0.35	0.98	0.075	1.23	0.50	0.31
MT R1	1947	50 yr	455.30	6523.00	6526.84	4.03	129.95	50.40	0.38	1.47	0.076	1.95	0.90	0.66
MT R1	1947	100 yr	598.70	6523.00	6527.38	4.44	157.91	53.79	0.39	1.67	0.076	2.27	1.08	0.82
MT R1	1916	2 yr	73.50	6523.00	6524.03	3.83	19.17	24.46	0.76	2.86	0.080	2.89		
MT R1	1916	5 yr	136.70	6523.00	6524.45	4.62	30.12	27.38	0.74	3.28	0.076	3.63	0.67	0.62
MT R1	1916	10 yr	207.20	6523.00	6524.86	5.17	41.80	30.18	0.72	3.51	0.075	4.13	1.08	1.00
MT R1	1916	50 yr	455.30	6523.00	6525.92	6.52	77.16	36.52	0.70	4.31	0.075	5.55	2.03	1.85
MT R1	1916	100 yr	598.70	6523.00	6526.40	7.10	95.53	40.08	0.70	4.63	0.074	6.24	2.28	2.22
MT R1	1794	2 yr	73.50	6520.00	6521.86	2.14	35.23	30.28	0.32	0.64	0.074	0.75	0.09	0.14
MT R1	1794	5 yr	136.70	6520.00	6522.42	2.73	53.82	35.81	0.35	0.85	0.073	1.09	0.28	0.31
MT R1	1794	10 yr	207.20	6520.00	6522.88	3.24	71.27	40.20	0.37	1.06	0.073	1.43	0.44	0.47
MT R1	1794	50 yr	455.30	6520.00	6524.02	4.42	121.51	47.73	0.42	1.68	0.076	2.34	0.92	0.98
MT R1	1794	100 yr	598.70	6520.00	6524.51	4.93	145.70	50.08	0.43	1.99	0.077	2.78	1.16	1.26
MT R1	1644	2 yr	73.50	6519.00	6520.59	1.76	41.88	40.08	0.30	0.53	0.078	0.55	0.09	
MT R1	1644	5 yr	136.70	6519.00	6520.95	2.44	57.46	45.76	0.36	0.83	0.075	0.95	0.23	0.14
MT R1	1644	10 yr	207.20	6519.00	6521.27	2.99	72.23	48.18	0.40	1.15	0.075	1.35	0.38	0.34

HEC-RAS Plan: Plan 05 River: Middle Tributary Reach: MT R1 (Continued)

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl	Shear Total (lb/sq ft)	Mann Wtd Total	Shear Chan (lb/sq ft)	Shear LOB (lb/sq ft)	Shear ROB (lb/sq ft)
MT R1	1644	50 yr	455.30	6519.00	6522.05	4.38	112.25	53.59	0.48	2.09	0.076	2.55	0.89	0.94
MT R1	1644	100 yr	598.70	6519.00	6522.41	4.98	131.52	55.61	0.52	2.56	0.076	3.16	1.17	1.26
MT R1	1606	2 yr	73.50	6519.00	6519.82	3.02	24.48	48.40	0.74	2.03	0.080	2.06	0.81	
MT R1	1606	5 yr	136.70	6519.00	6520.15	3.39	41.05	52.74	0.66	2.08	0.078	2.22	0.97	0.43
MT R1	1606	10 yr	207.20	6519.00	6520.43	3.79	56.32	55.10	0.63	2.31	0.078	2.51	1.13	0.72
MT R1	1606	50 yr	455.30	6519.00	6521.18	4.83	99.94	61.10	0.62	3.00	0.078	3.43	1.58	1.32
MT R1	1606	100 yr	598.70	6519.00	6521.53	5.27	121.89	63.85	0.62	3.31	0.077	3.86	1.79	1.56
MT R1	1553	2 yr	73.50	6518.00	6519.07	1.42	52.89	64.30	0.26	0.35	0.077	0.38	0.07	0.09
MT R1	1553	5 yr	136.70	6518.00	6519.41	1.88	75.38	68.44	0.30	0.53	0.077	0.60	0.17	0.20
MT R1	1553	10 yr	207.20	6518.00	6519.71	2.26	96.53	71.94	0.32	0.70	0.077	0.80	0.26	0.30
MT R1	1553	50 yr	455.30	6518.00	6520.50	3.16	156.60	81.15	0.37	1.13	0.077	1.37	0.52	0.58
MT R1	1553	100 yr	598.70	6518.00	6520.87	3.55	188.36	99.67	0.38	1.15	0.070	1.64	0.65	0.45
MT R1	1517	2 yr	73.50	6518.00	6518.77	1.55	47.87	67.91	0.32	0.46	0.078	0.48	0.05	0.12
MT R1	1517	5 yr	136.70	6518.00	6519.08	2.01	69.69	72.03	0.35	0.66	0.077	0.72	0.16	0.23
MT R1	1517	10 yr	207.20	6518.00	6519.37	2.37	90.99	76.67	0.36	0.82	0.077	0.92	0.27	0.31
MT R1	1517	50 yr	455.30	6518.00	6520.16	3.09	163.15	97.47	0.37	1.05	0.075	1.34	0.50	0.50
MT R1	1517	100 yr	598.70	6518.00	6520.56	3.33	202.08	100.61	0.37	1.16	0.077	1.47	0.59	0.65
MT R1	1481	2 yr	73.50	6517.00	6518.32	1.72	42.98	66.85	0.37	0.60	0.079	0.61	0.13	0.09
MT R1	1481	5 yr	136.70	6517.00	6518.64	2.14	64.90	70.06	0.38	0.78	0.078	0.83	0.23	0.21
MT R1	1481	10 yr	207.20	6517.00	6518.94	2.46	86.28	72.69	0.38	0.93	0.078	1.01	0.32	0.33
MT R1	1481	50 yr	455.30	6517.00	6519.78	3.18	149.61	77.71	0.39	1.29	0.078	1.43	0.52	0.64
MT R1	1481	100 yr	598.70	6517.00	6520.19	3.47	182.11	80.00	0.38	1.42	0.078	1.60	0.60	0.75
MT R1	1439	2 yr	73.50	6516.61	6517.63	2.04	36.69	50.93	0.41	0.76	0.078	0.82		0.24
MT R1	1439	5 yr	136.70	6516.61	6517.99	2.54	56.22	56.60	0.42	0.97	0.076	1.12	0.20	0.40
MT R1	1439	10 yr	207.20	6516.61	6518.32	2.92	75.25	58.98	0.43	1.18	0.077	1.36	0.38	0.60
MT R1	1439	50 yr	455.30	6516.61	6519.21	3.82	130.10	64.25	0.44	1.69	0.079	1.98	0.76	1.07
MT R1	1439	100 yr	598.70	6516.61	6519.63	4.18	157.52	66.24	0.44	1.91	0.079	2.26	0.93	1.26
MT R1	1368	2 yr	73.50	6515.23	6516.43	2.64	39.79	47.40	0.44	0.90	0.094	1.21	0.91	0.69
MT R1	1368	5 yr	136.70	6515.23	6516.84	3.25	59.83	51.47	0.46	1.25	0.094	1.66	1.27	1.00
MT R1	1368	10 yr	207.20	6515.23	6517.21	3.71	79.20	54.21	0.47	1.54	0.095	2.01	1.57	1.26
MT R1	1368	50 yr	455.30	6515.23	6518.16	4.85	134.62	62.44	0.51	2.25	0.095	3.00	2.41	1.72
MT R1	1368	100 yr	598.70	6515.23	6518.59	5.33	162.56	66.33	0.52	2.55	0.094	3.45	2.79	1.91
MT R1	1316	2 yr	73.50	6514.14	6515.43	2.54	39.61	45.85	0.43	0.89	0.093	1.13	0.94	0.54
MT R1	1316	5 yr	136.70	6514.14	6515.89	3.05	62.33	51.38	0.43	1.12	0.094	1.45	1.19	0.74
MT R1	1316	10 yr	207.20	6514.14	6516.26	3.54	81.70	54.68	0.45	1.41	0.094	1.83	1.50	0.97
MT R1	1316	50 yr	455.30	6514.14	6517.19	4.75	135.96	62.32	0.49	2.18	0.094	2.88	2.37	1.54
MT R1	1316	100 yr	598.70	6514.14	6517.62	5.25	163.46	66.52	0.51	2.49	0.094	3.35	2.77	1.72
MT R1	1280	2 yr	73.50	6512.25	6513.75	5.69	14.04	16.14	0.94	4.28	0.072	5.64	1.84	1.18
MT R1	1280	5 yr	136.70	6512.25	6514.36	6.37	27.03	29.62	0.85	3.21	0.065	6.13	1.68	1.37
MT R1	1280	10 yr	207.20	6512.25	6514.84	6.65	44.83	44.35	0.78	2.81	0.068	6.16	1.83	1.62
MT R1	1280	50 yr	455.30	6512.25	6515.62	8.34	83.17	52.84	0.85	4.61	0.079	8.77	3.68	3.41
MT R1	1280	100 yr	598.70	6512.25	6515.92	9.19	99.68	55.35	0.89	5.63	0.082	10.32	4.71	4.29

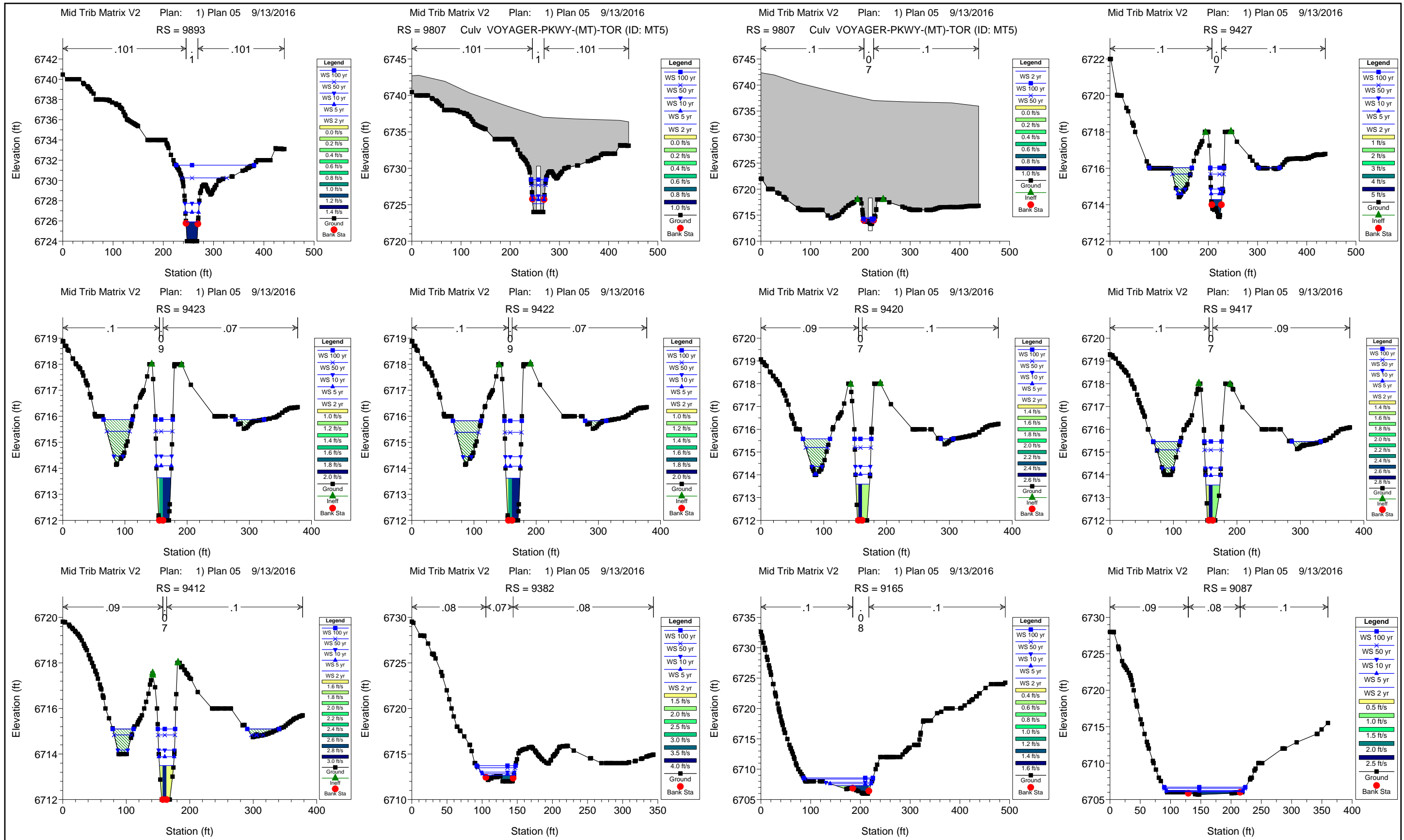
HEC-RAS Plan: Plan 05 River: Middle Tributary Reach: MT R1 (Continued)

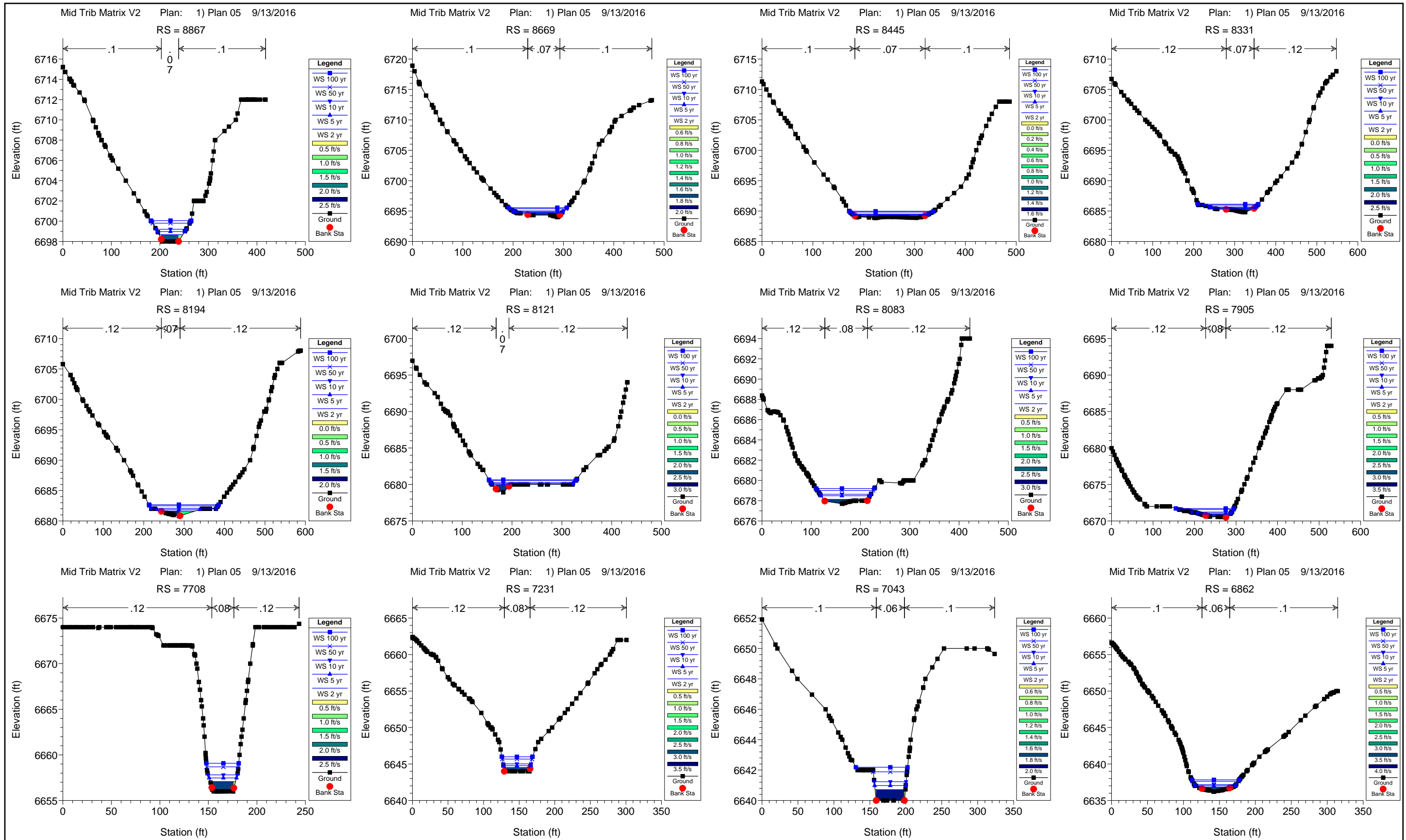
Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl	Shear Total (lb/sq ft)	Mann Wtd Total	Shear Chan (lb/sq ft)	Shear LOB (lb/sq ft)	Shear ROB (lb/sq ft)
MT R1	1230	2 yr	73.50	6510.39	6511.97	2.37	34.44	28.57	0.35	0.76	0.079	0.91	0.52	0.45
MT R1	1230	5 yr	136.70	6510.39	6512.52	3.07	51.02	31.63	0.39	1.09	0.079	1.36	0.77	0.66
MT R1	1230	10 yr	207.20	6510.39	6513.01	3.62	66.97	34.20	0.41	1.37	0.079	1.76	0.98	0.86
MT R1	1230	50 yr	455.30	6510.39	6514.27	4.88	118.16	46.25	0.45	1.86	0.077	2.78	1.52	1.13
MT R1	1230	100 yr	598.70	6510.39	6514.76	5.47	141.34	49.66	0.47	2.21	0.078	3.36	1.81	1.41
MT R1	1137	2 yr	73.50	6509.00	6510.29	3.54	21.48	22.09	0.59	1.90	0.075	2.19	0.27	0.61
MT R1	1137	5 yr	136.70	6509.00	6510.84	4.27	34.76	26.39	0.58	2.19	0.074	2.79	0.67	0.96
MT R1	1137	10 yr	207.20	6509.00	6511.35	4.78	49.34	31.25	0.57	2.30	0.073	3.20	0.94	1.13
MT R1	1137	50 yr	455.30	6509.00	6512.31	6.68	88.02	51.11	0.66	3.02	0.069	5.54	1.90	1.57
MT R1	1137	100 yr	598.70	6509.00	6512.74	7.21	110.71	54.75	0.67	3.48	0.073	6.18	2.19	2.14
MT R1	1094	2 yr	73.50	6508.26	6509.95	1.78	47.77	38.90	0.25	0.40	0.080	0.50	0.28	0.26
MT R1	1094	5 yr	136.70	6508.26	6510.55	2.24	72.72	43.84	0.27	0.55	0.081	0.71	0.40	0.37
MT R1	1094	10 yr	207.20	6508.26	6511.06	2.74	97.48	59.70	0.30	0.61	0.075	0.98	0.34	0.51
MT R1	1094	50 yr	455.30	6508.26	6512.05	3.82	163.60	73.96	0.35	1.04	0.079	1.72	0.72	0.84
MT R1	1094	100 yr	598.70	6508.26	6512.47	4.31	195.75	81.27	0.38	1.25	0.079	2.11	0.90	0.99
MT R1	1055	2 yr	73.50	6508.00	6509.74	1.79	44.89	35.27	0.25	0.41	0.077	0.50	0.16	0.27
MT R1	1055	5 yr	136.70	6508.00	6510.33	2.31	68.74	46.82	0.28	0.52	0.072	0.75	0.20	0.41
MT R1	1055	10 yr	207.20	6508.00	6510.82	2.73	94.72	65.02	0.30	0.54	0.067	0.98	0.22	0.53
MT R1	1055	50 yr	455.30	6508.00	6511.77	3.77	163.67	77.34	0.35	0.99	0.076	1.68	0.62	0.92
MT R1	1055	100 yr	598.70	6508.00	6512.16	4.21	194.78	80.45	0.37	1.23	0.078	2.03	0.83	1.11
MT R1	1016	2 yr	73.50	6508.00	6509.27	3.13	26.09	26.54	0.49	1.28	0.075	1.65	0.56	0.76
MT R1	1016	5 yr	136.70	6508.00	6509.83	3.79	42.54	32.76	0.50	1.51	0.075	2.14	0.79	0.99
MT R1	1016	10 yr	207.20	6508.00	6510.31	4.28	64.56	60.00	0.50	1.17	0.064	2.52	0.58	1.16
MT R1	1016	50 yr	455.30	6508.00	6511.32	4.89	140.98	80.74	0.47	1.52	0.079	2.91	1.13	1.33
MT R1	1016	100 yr	598.70	6508.00	6511.72	5.21	174.03	83.54	0.48	1.76	0.082	3.18	1.40	1.45
MT R1	967	2 yr	73.50	6507.00	6508.51	2.80	30.49	25.80	0.40	0.94	0.078	1.23	0.56	0.61
MT R1	967	5 yr	136.70	6507.00	6509.05	3.65	45.59	30.92	0.45	1.33	0.077	1.90	0.79	0.94
MT R1	967	10 yr	207.20	6507.00	6509.50	4.40	62.26	43.70	0.49	1.44	0.072	2.58	0.78	1.30
MT R1	967	50 yr	455.30	6507.00	6510.51	5.67	121.83	69.77	0.53	1.87	0.075	3.83	1.27	1.92
MT R1	967	100 yr	598.70	6507.00	6510.93	6.06	152.41	74.49	0.54	2.15	0.079	4.21	1.58	2.10
MT R1	864	2 yr	73.50	6506.00	6507.10	2.35	33.34	36.87	0.40	0.83	0.076	0.98	0.48	0.23
MT R1	864	5 yr	136.70	6506.00	6507.54	3.00	50.84	43.51	0.43	1.10	0.075	1.42	0.69	0.42
MT R1	864	10 yr	207.20	6506.00	6507.92	3.48	68.70	49.11	0.45	1.31	0.075	1.78	0.86	0.60
MT R1	864	50 yr	455.30	6506.00	6508.91	4.55	123.08	60.79	0.47	1.85	0.078	2.64	1.17	1.21
MT R1	864	100 yr	598.70	6506.00	6509.35	4.97	150.34	64.05	0.48	2.11	0.079	3.01	1.41	1.48
MT R1	785	2 yr	73.50	6505.00	6506.01	2.16	36.43	40.83	0.38	0.74	0.079	0.85	0.39	0.46
MT R1	785	5 yr	136.70	6505.00	6506.45	2.70	55.43	44.32	0.40	1.00	0.079	1.17	0.55	0.66
MT R1	785	10 yr	207.20	6505.00	6506.83	3.18	72.79	47.55	0.41	1.24	0.079	1.50	0.70	0.84
MT R1	785	50 yr	455.30	6505.00	6507.78	4.37	122.87	58.85	0.46	1.83	0.077	2.46	1.01	1.34
MT R1	785	100 yr	598.70	6505.00	6508.20	4.86	148.53	63.43	0.48	2.10	0.078	2.90	1.22	1.57
MT R1	659	2 yr	73.50	6503.00	6504.51	2.20	39.50	50.21	0.35	0.53	0.071	0.82	0.45	0.16
MT R1	659	5 yr	136.70	6503.00	6504.92	2.77	62.56	61.27	0.38	0.74	0.074	1.18	0.69	0.36
MT R1	659	10 yr	207.20	6503.00	6505.24	3.24	83.41	65.61	0.41	0.98	0.078	1.52	0.91	0.58

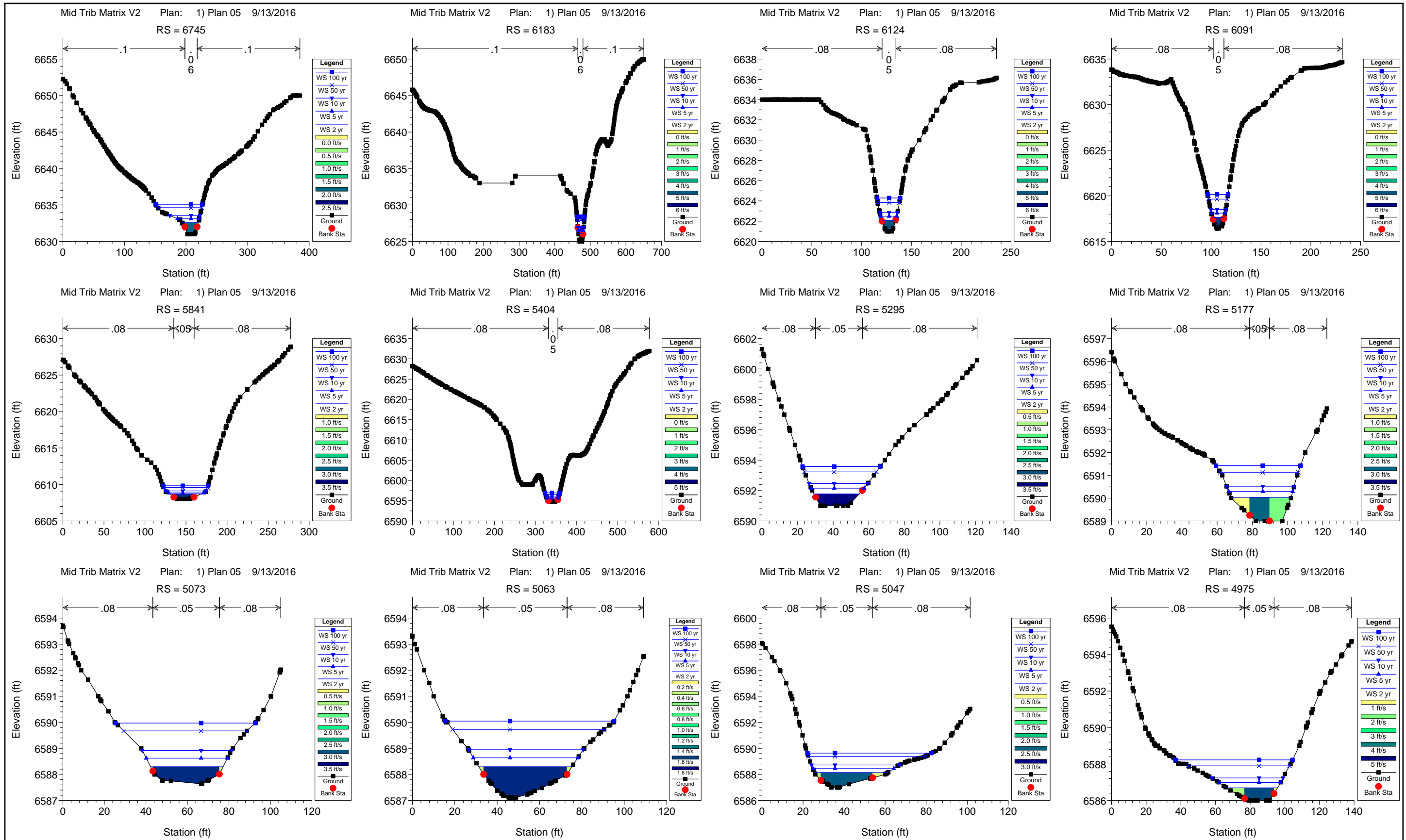
HEC-RAS Plan: Plan 05 River: Middle Tributary Reach: MT R1 (Continued)

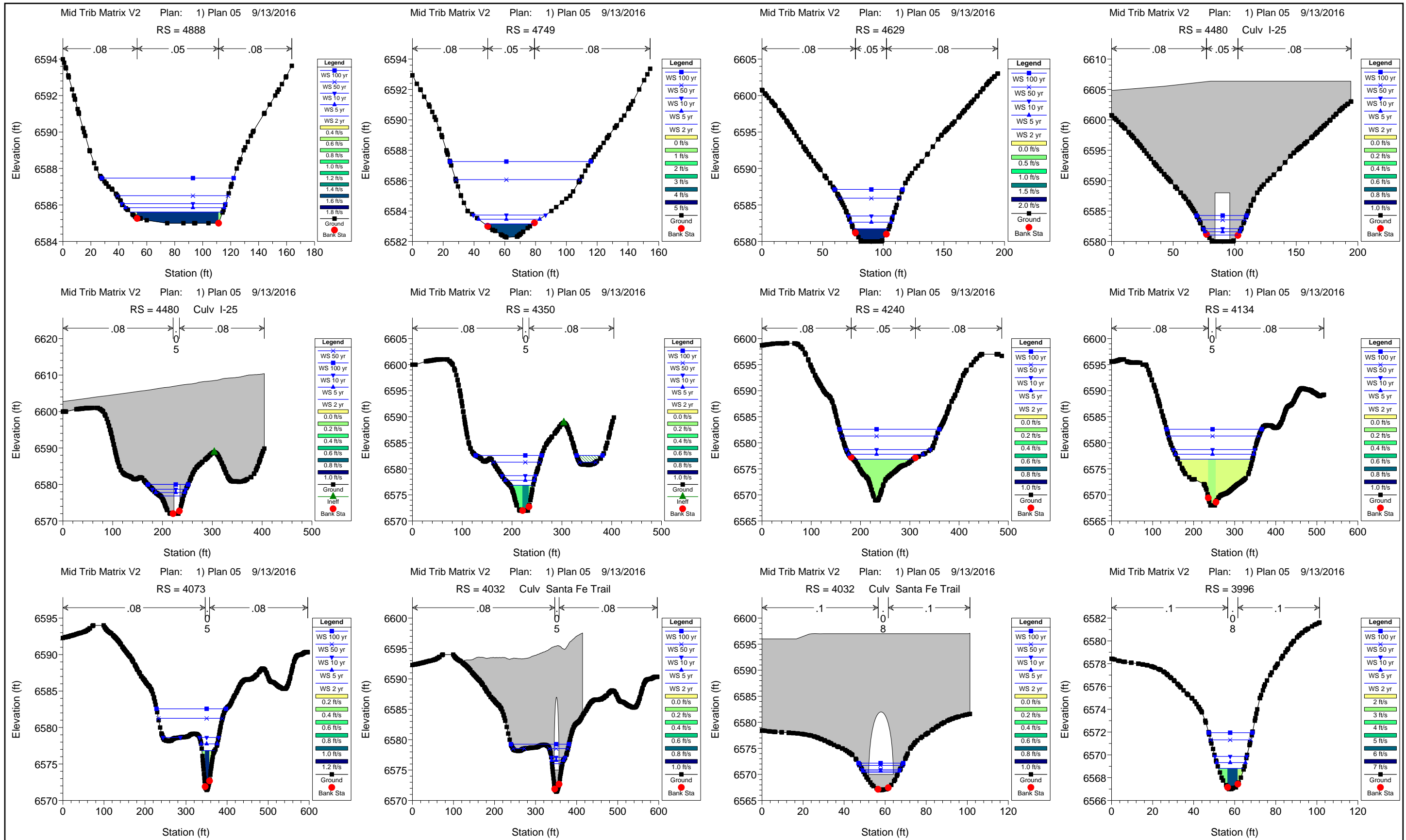
Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl	Shear Total (lb/sq ft)	Mann Wtd Total	Shear Chan (lb/sq ft)	Shear LOB (lb/sq ft)	Shear ROB (lb/sq ft)
MT R1	659	50 yr	455.30	6503.00	6506.08	4.29	142.08	74.02	0.45	1.62	0.083	2.36	1.44	1.19
MT R1	659	100 yr	598.70	6503.00	6506.46	4.74	170.57	77.74	0.47	1.90	0.084	2.77	1.68	1.47
MT R1	533	2 yr	73.50	6502.00	6502.97	1.97	40.94	64.12	0.38	0.57	0.074	0.75	0.24	0.23
MT R1	533	5 yr	136.70	6502.00	6503.29	2.48	62.46	69.18	0.41	0.83	0.077	1.06	0.49	0.42
MT R1	533	10 yr	207.20	6502.00	6503.58	2.89	82.60	73.07	0.43	1.05	0.079	1.34	0.70	0.57
MT R1	533	50 yr	455.30	6502.00	6504.29	3.90	138.50	82.09	0.47	1.67	0.081	2.14	1.26	1.00
MT R1	533	100 yr	598.70	6502.00	6504.61	4.35	165.19	85.59	0.49	1.97	0.081	2.53	1.54	1.20
MT R1	439	2 yr	73.50	6500.98	6501.79	1.72	50.72	80.75	0.34	0.46	0.081	0.58	0.35	0.29
MT R1	439	5 yr	136.70	6500.98	6502.09	2.17	76.65	90.60	0.37	0.64	0.082	0.83	0.50	0.43
MT R1	439	10 yr	207.20	6500.98	6502.33	2.55	98.98	93.45	0.39	0.85	0.084	1.07	0.71	0.60
MT R1	439	50 yr	455.30	6500.98	6502.96	3.49	160.37	100.88	0.44	1.42	0.085	1.76	1.26	1.03
MT R1	439	100 yr	598.70	6500.98	6503.26	3.88	190.75	104.04	0.45	1.68	0.086	2.07	1.51	1.23
MT R1	309	2 yr	73.50	6499.00	6499.79	2.09	40.51	85.08	0.45	0.64	0.074	0.90	0.41	0.18
MT R1	309	5 yr	136.70	6499.00	6500.04	2.58	64.65	102.81	0.47	0.85	0.076	1.24	0.62	0.38
MT R1	309	10 yr	207.20	6499.00	6500.26	2.94	87.22	106.77	0.49	1.08	0.079	1.50	0.86	0.61
MT R1	309	50 yr	455.30	6499.00	6500.83	3.77	151.57	117.35	0.51	1.63	0.083	2.16	1.43	1.11
MT R1	309	100 yr	598.70	6499.00	6501.08	4.19	181.09	122.55	0.53	1.91	0.084	2.54	1.72	1.33
MT R1	213	2 yr	73.50	6497.68	6498.47	1.40	59.26	107.36	0.30	0.34	0.080	0.41	0.23	0.24
MT R1	213	5 yr	136.70	6497.68	6498.74	1.77	89.52	118.82	0.32	0.47	0.081	0.58	0.35	0.32
MT R1	213	10 yr	207.20	6497.68	6499.02	2.05	125.13	155.77	0.33	0.48	0.075	0.71	0.23	0.36
MT R1	213	50 yr	455.30	6497.68	6499.58	2.74	222.91	204.92	0.36	0.69	0.078	1.13	0.47	0.49
MT R1	213	100 yr	598.70	6497.68	6499.83	3.00	276.00	228.21	0.37	0.77	0.079	1.29	0.56	0.56
MT R1	57	2 yr	73.50	6493.70	6494.52	4.21	18.79	38.38	1.00	3.53	0.080	3.93	0.61	2.69
MT R1	57	5 yr	136.70	6493.70	6494.80	4.88	30.91	47.79	0.99	4.12	0.080	4.75	1.43	3.21
MT R1	57	10 yr	207.20	6493.70	6495.05	5.00	44.66	70.97	1.08	4.91	0.083	5.18	2.55	4.87
MT R1	57	50 yr	455.30	6493.70	6495.55	6.23	83.31	85.44	1.02	5.64	0.081	6.70	2.84	4.93
MT R1	57	100 yr	598.70	6493.70	6495.77	6.78	103.29	93.26	1.02	5.99	0.081	7.48	3.19	4.97

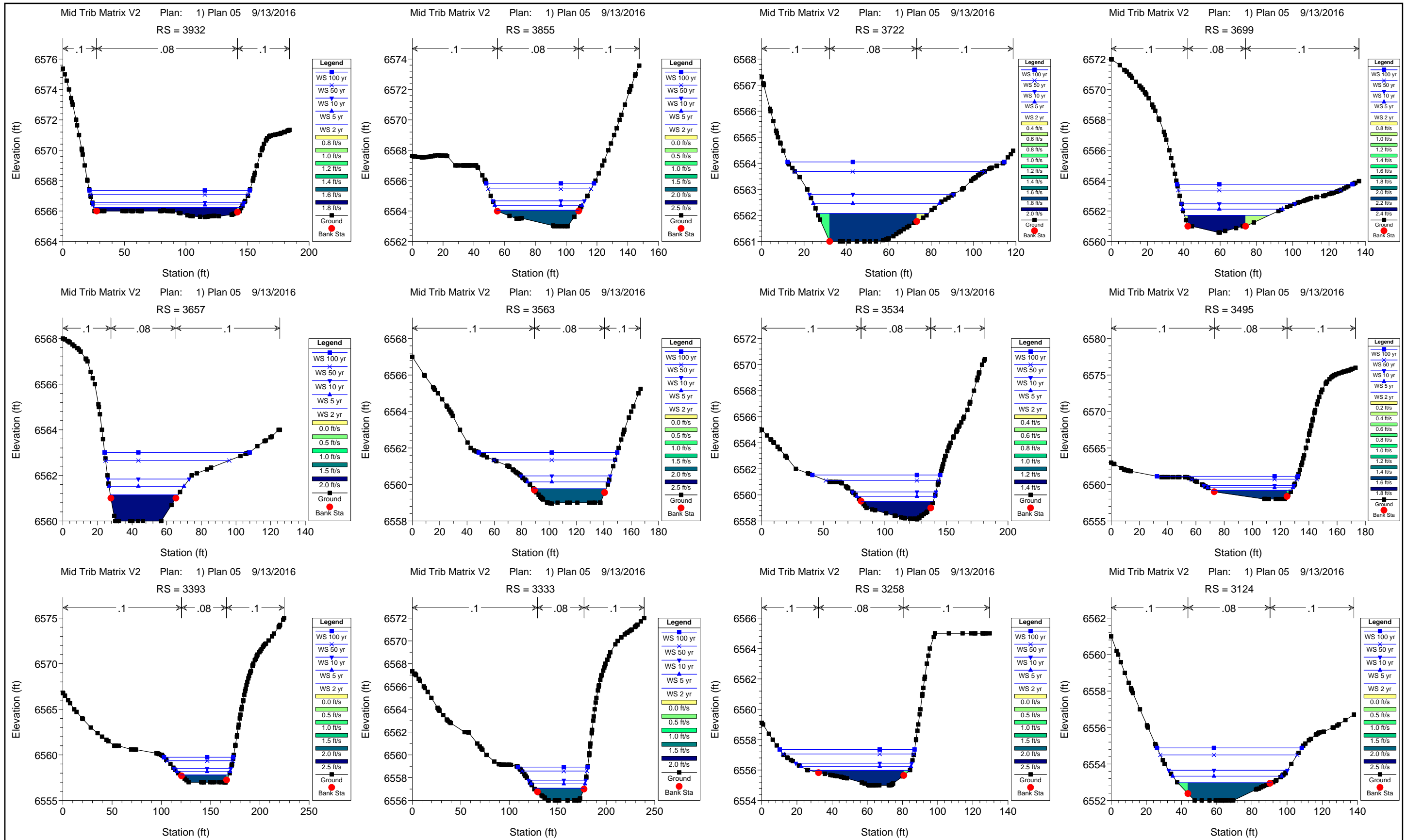
Middle Tributary Cross Section Diagrams

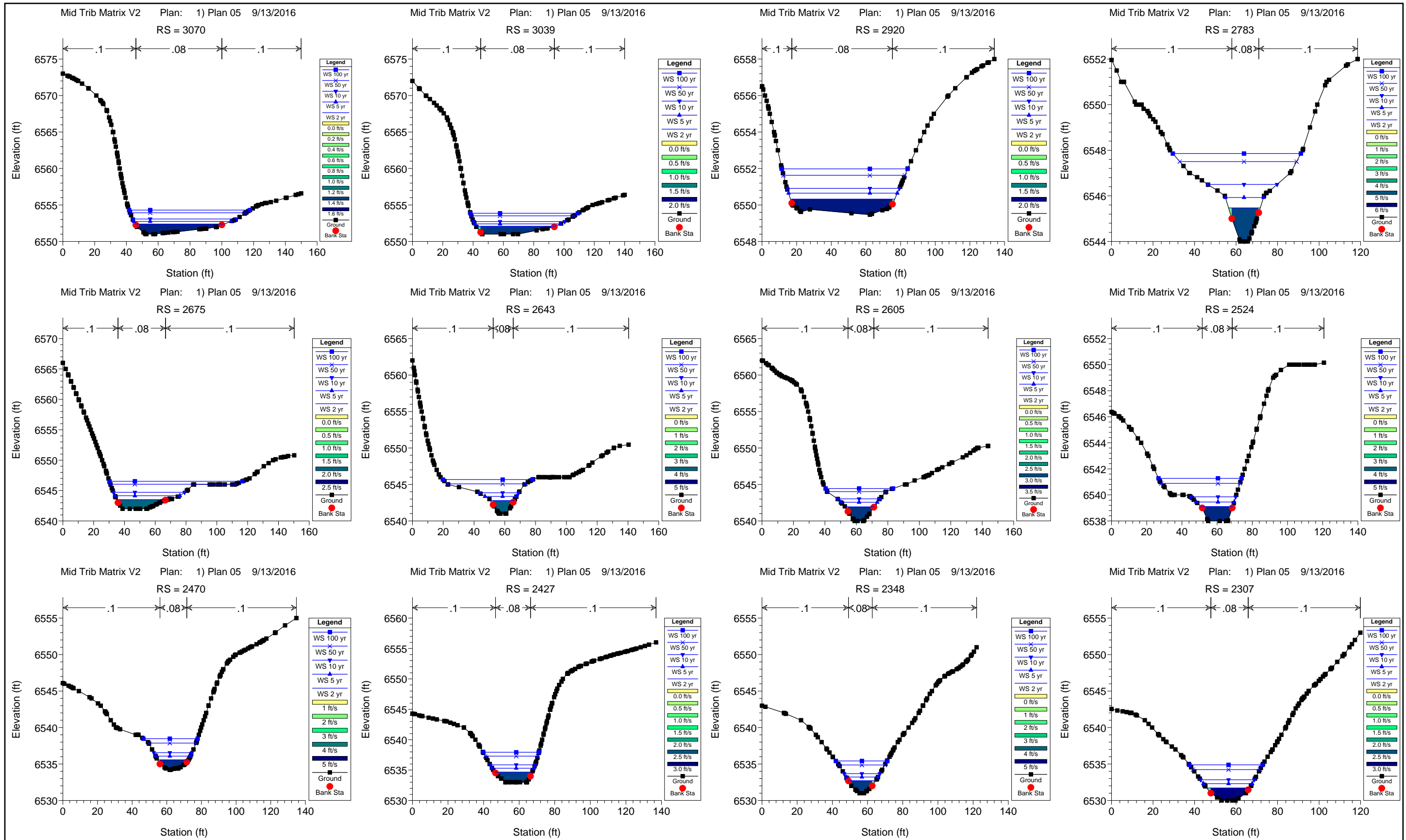


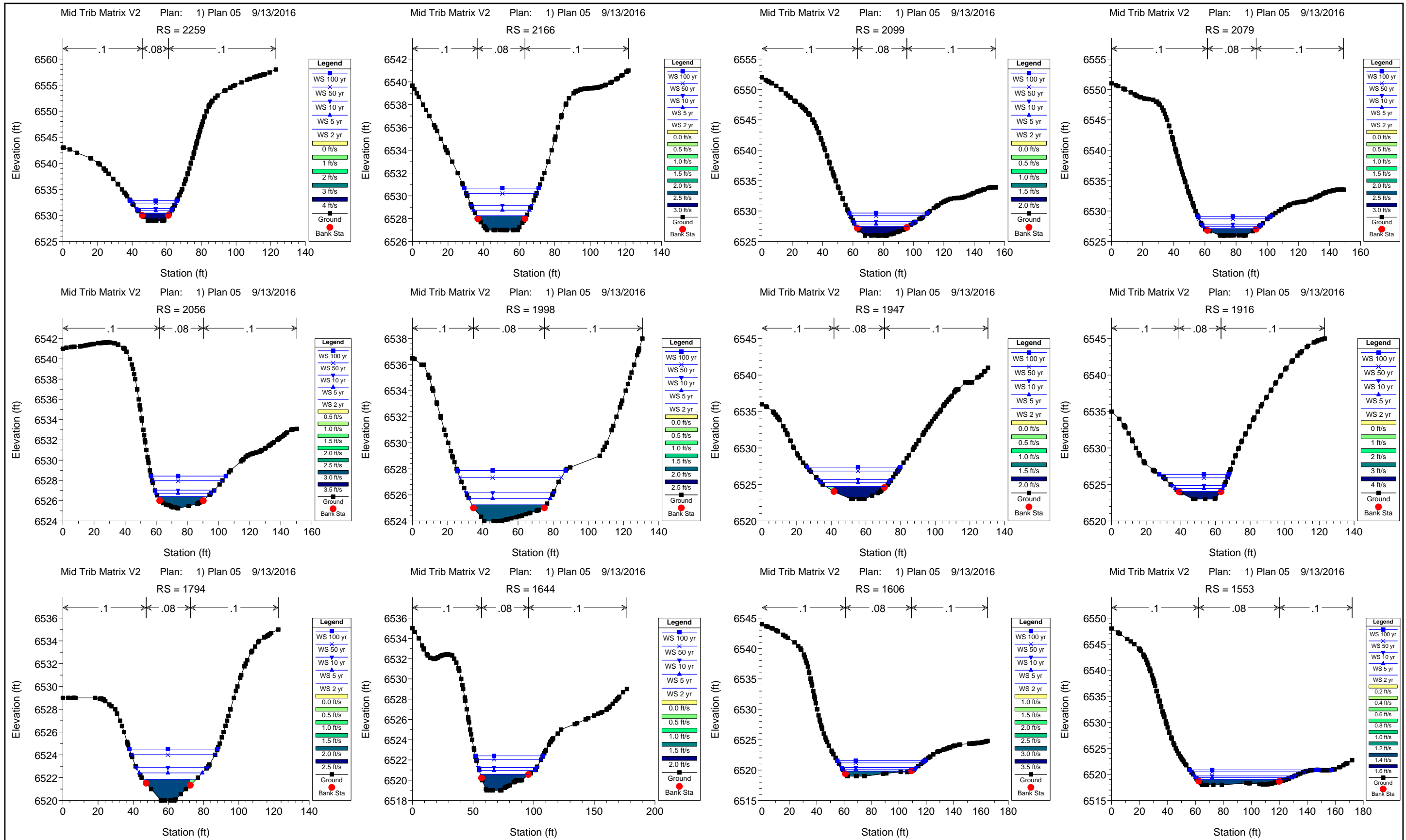


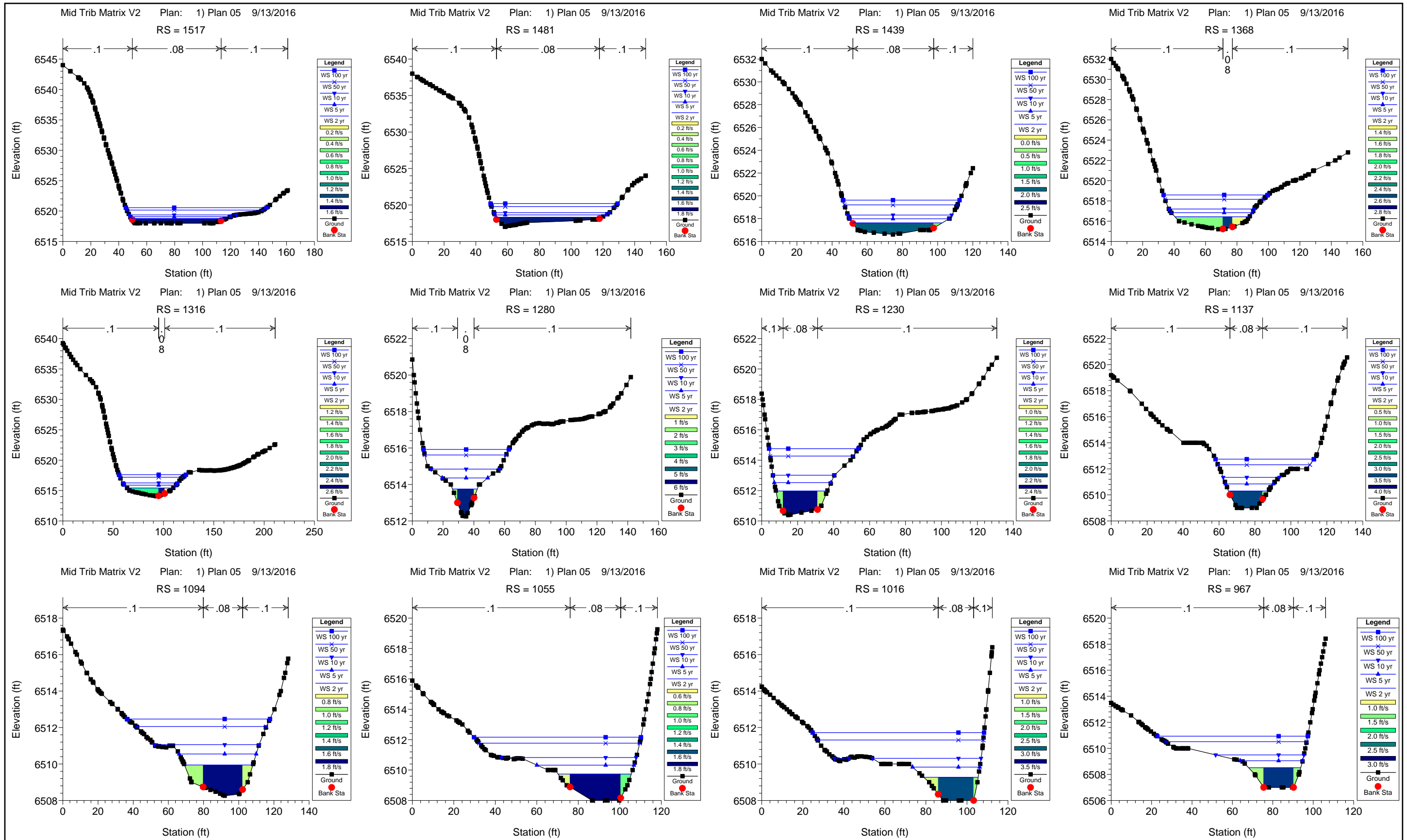


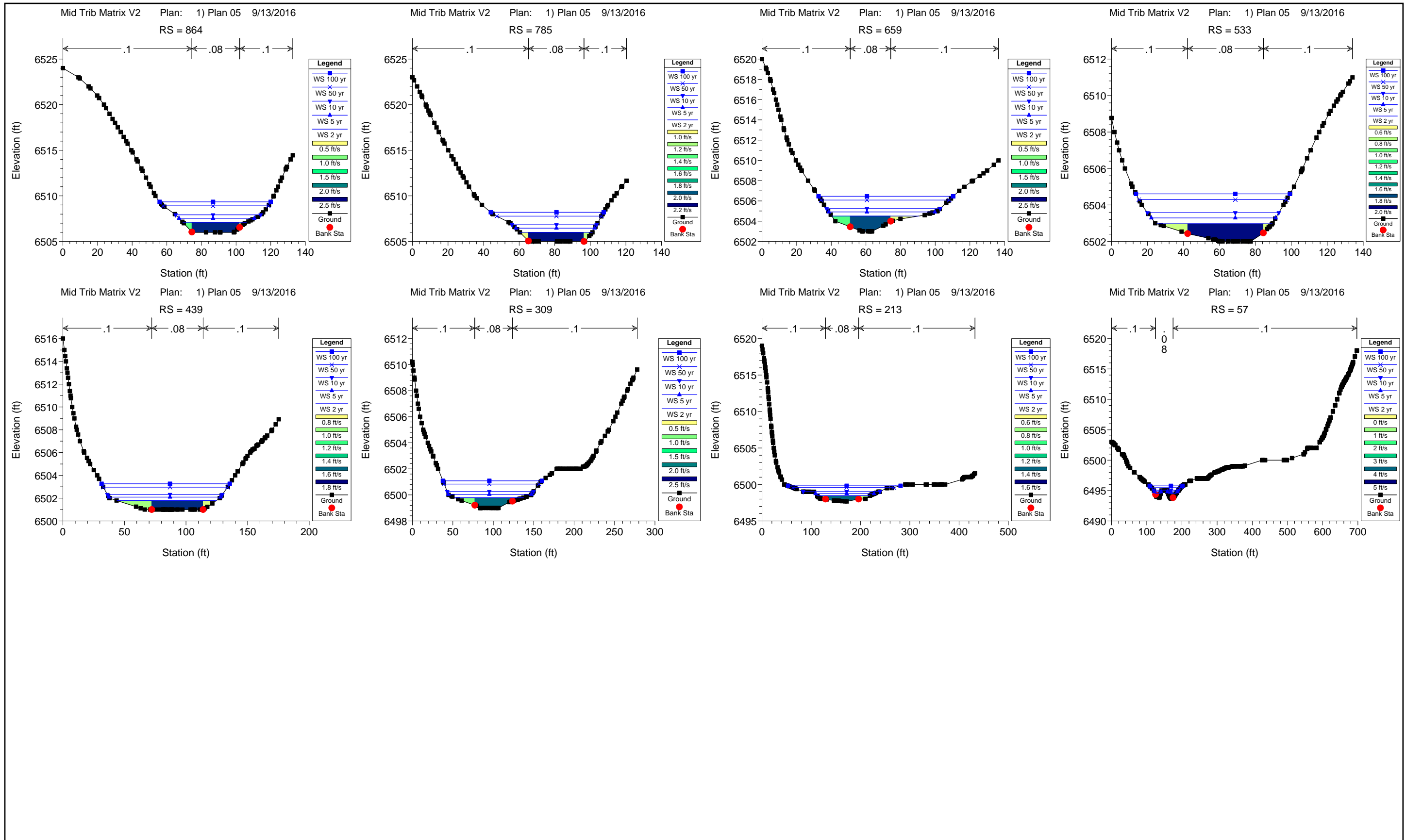












Monument Branch Hydraulic Results

HEC-RAS Plan: Plan 06 River: Monument Branch Reach: Reach-1

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl	Shear Total (lb/sq ft)	Mann Wtd Total	Shear Chan (lb/sq ft)	Shear LOB (lb/sq ft)	Shear ROB (lb/sq ft)
Reach-1	10738	2-Yr	190.00	6774.00	6777.11	4.52	42.69	19.11	0.51	0.98	0.047	1.10	0.19	0.09
Reach-1	10738	5-Yr	320.00	6774.00	6777.93	5.65	59.20	21.34	0.55	1.28	0.046	1.56	0.36	0.28
Reach-1	10738	10-Yr	450.00	6774.00	6778.56	6.58	73.39	23.20	0.59	1.55	0.045	1.98	0.52	0.43
Reach-1	10738	50-Yr	910.00	6774.00	6780.11	9.21	112.68	27.75	0.70	2.45	0.045	3.48	1.04	0.99
Reach-1	10738	100-Yr	1200.00	6774.00	6780.81	10.59	133.13	30.60	0.75	2.96	0.045	4.42	1.35	1.27
Reach-1	10407	2-Yr	190.00	6770.00	6772.84	4.36	44.48	23.98	0.53	2.94	0.083	3.41	0.66	0.64
Reach-1	10407	5-Yr	320.00	6770.00	6773.59	5.23	63.60	27.48	0.54	3.51	0.080	4.45	1.16	1.09
Reach-1	10407	10-Yr	450.00	6770.00	6774.25	5.76	83.31	33.35	0.54	3.50	0.075	5.04	1.22	1.39
Reach-1	10407	50-Yr	910.00	6770.00	6775.94	6.73	151.76	47.87	0.52	3.60	0.072	6.04	1.88	1.89
Reach-1	10407	100-Yr	1200.00	6770.00	6776.77	7.10	200.57	85.17	0.51	3.18	0.067	6.40	1.75	1.99
Reach-1	10154	2-Yr	190.00	6768.00	6770.67	3.26	60.07	31.03	0.39	0.52	0.048	0.59	0.09	0.18
Reach-1	10154	5-Yr	320.00	6768.00	6771.41	4.04	84.04	34.25	0.42	0.68	0.047	0.82	0.19	0.27
Reach-1	10154	10-Yr	450.00	6768.00	6771.91	4.78	101.94	36.48	0.46	0.87	0.047	1.08	0.30	0.38
Reach-1	10154	50-Yr	910.00	6768.00	6773.17	6.80	162.67	61.67	0.56	1.11	0.041	1.97	0.56	0.39
Reach-1	10154	100-Yr	1200.00	6768.00	6773.76	7.75	204.63	83.28	0.60	1.15	0.040	2.46	0.50	0.55
Reach-1	9737	2-Yr	190.00	6766.00	6766.90	4.38	49.96	71.49	0.81	1.09	0.049	1.41	0.89	0.39
Reach-1	9737	5-Yr	320.00	6766.00	6767.13	5.77	66.51	77.14	0.96	1.73	0.050	2.26	1.43	0.80
Reach-1	9737	10-Yr	450.00	6766.00	6767.40	6.35	89.08	88.29	0.95	1.83	0.050	2.55	1.63	0.90
Reach-1	9737	50-Yr	910.00	6766.00	6768.16	7.75	164.18	113.95	0.93	2.19	0.053	3.29	2.10	1.31
Reach-1	9737	100-Yr	1200.00	6766.00	6768.49	8.52	203.10	119.45	0.95	2.57	0.056	3.78	2.42	1.70
Reach-1	9383	2-Yr	190.00	6755.55	6756.51	4.07	50.82	90.00	0.91	1.25	0.051	1.37	0.83	0.65
Reach-1	9383	5-Yr	320.00	6755.55	6756.85	4.32	83.40	98.22	0.77	1.17	0.052	1.33	0.79	0.65
Reach-1	9383	10-Yr	450.00	6755.55	6757.06	4.96	103.99	103.08	0.81	1.41	0.052	1.65	0.97	0.80
Reach-1	9383	50-Yr	910.00	6755.55	6757.49	7.14	151.08	113.37	0.99	2.55	0.052	3.08	1.77	1.52
Reach-1	9383	100-Yr	1200.00	6755.55	6757.80	7.81	186.47	120.27	1.00	2.81	0.053	3.47	1.97	1.73
Reach-1	9159	2-Yr	190.00	6748.00	6750.41	5.99	32.91	23.86	0.78	1.62	0.043	2.12	0.16	0.27
Reach-1	9159	5-Yr	320.00	6748.00	6750.86	7.87	45.23	30.60	0.92	2.23	0.042	3.39	0.42	0.70
Reach-1	9159	10-Yr	450.00	6748.00	6751.43	8.42	65.18	39.04	0.88	2.14	0.043	3.60	0.60	0.98
Reach-1	9159	50-Yr	910.00	6748.00	6752.92	8.21	210.17	135.88	0.70	1.10	0.049	2.97	0.66	0.82
Reach-1	9159	100-Yr	1200.00	6748.00	6753.26	9.06	256.02	138.69	0.74	1.44	0.053	3.53	0.81	1.15
Reach-1	8887	2-Yr	190.00	6742.00	6743.39	6.06	31.66	29.54	0.99	2.31	0.048	2.48	0.33	0.13
Reach-1	8887	5-Yr	320.00	6742.00	6744.70	4.59	78.71	42.04	0.51	0.84	0.047	1.11	0.37	0.30
Reach-1	8887	10-Yr	450.00	6742.00	6745.94	4.08	137.17	52.23	0.37	0.54	0.049	0.76	0.31	0.27
Reach-1	8887	50-Yr	910.00	6742.00	6749.56	3.21	508.48	131.17	0.21	0.20	0.059	0.38	0.15	0.15
Reach-1	8887	100-Yr	1200.00	6742.00	6751.51	2.90	778.64	144.88	0.17	0.16	0.065	0.28	0.14	0.14
Reach-1	8778	2-Yr	190.00	6740.00	6743.50	0.86	239.57	99.19	0.09	0.03	0.050	0.04	0.01	0.02
Reach-1	8778	5-Yr	320.00	6740.00	6744.86	0.94	383.99	115.47	0.08	0.03	0.049	0.04	0.01	0.02
Reach-1	8778	10-Yr	450.00	6740.00	6746.06	1.01	537.44	143.30	0.08	0.03	0.048	0.04	0.01	0.02
Reach-1	8778	50-Yr	910.00	6740.00	6749.61	1.11	1095.13	169.19	0.07	0.03	0.054	0.04	0.02	0.02
Reach-1	8778	100-Yr	1200.00	6740.00	6751.54	1.16	1434.35	182.59	0.06	0.03	0.056	0.04	0.02	0.02
Reach-1	8708	2-Yr	190.00	6740.00	6743.34	1.42	165.93	66.38	0.14	0.07	0.052	0.10	0.05	0.03
Reach-1	8708	5-Yr	320.00	6740.00	6744.74	1.59	267.71	78.04	0.13	0.08	0.054	0.11	0.06	0.04
Reach-1	8708	10-Yr	450.00	6740.00	6745.95	1.71	367.98	88.32	0.12	0.08	0.055	0.12	0.06	0.04

HEC-RAS Plan: Plan 06 River: Monument Branch Reach: Reach-1 (Continued)

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Vel Chnl	Flow Area	Top Width	Froude # Chl	Shear Total	Mann Wtd Total	Shear Chan	Shear LOB	Shear ROB
			(cfs)	(ft)	(ft)	(ft/s)	(sq ft)	(ft)		(lb/sq ft)		(lb/sq ft)	(lb/sq ft)	(lb/sq ft)
Reach-1	8708	50-Yr	910.00	6740.00	6749.53	1.94	733.66	115.95	0.11	0.08	0.059	0.13	0.07	0.05
Reach-1	8708	100-Yr	1200.00	6740.00	6751.47	2.01	972.01	129.98	0.10	0.08	0.061	0.13	0.07	0.05
Reach-1	8550		Culvert											
Reach-1	8425	2-Yr	190.00	6730.00	6731.94	4.31	46.96	32.66	0.57	1.76	0.065	2.15	0.09	0.62
Reach-1	8425	5-Yr	320.00	6730.00	6732.55	5.21	68.18	36.16	0.60	2.25	0.067	2.84	0.40	1.17
Reach-1	8425	10-Yr	450.00	6730.00	6733.06	5.89	87.05	38.76	0.61	2.65	0.067	3.41	0.68	1.59
Reach-1	8425	50-Yr	910.00	6730.00	6734.43	7.62	146.02	48.16	0.65	3.54	0.068	5.00	1.21	2.63
Reach-1	8425	100-Yr	1200.00	6730.00	6735.14	8.36	182.21	54.03	0.66	3.86	0.068	5.72	1.51	3.09
Reach-1	8335	2-Yr	190.00	6728.00	6730.13	4.29	48.33	35.36	0.57	1.68	0.065	2.13	0.66	0.08
Reach-1	8335	5-Yr	320.00	6728.00	6730.65	5.37	67.28	37.74	0.63	2.41	0.067	3.06	1.35	0.42
Reach-1	8335	10-Yr	450.00	6728.00	6731.06	6.24	83.13	39.57	0.67	3.06	0.068	3.91	1.94	0.75
Reach-1	8335	50-Yr	910.00	6728.00	6732.18	8.43	130.28	44.55	0.76	4.83	0.070	6.35	3.58	1.76
Reach-1	8335	100-Yr	1200.00	6728.00	6732.73	9.53	155.20	47.23	0.81	5.78	0.071	7.76	4.40	2.37
Reach-1	7848	2-Yr	190.00	6716.00	6717.16	5.97	33.25	32.28	1.00	2.26	0.050	2.44	1.22	0.21
Reach-1	7848	5-Yr	320.00	6716.00	6717.62	7.03	48.70	35.10	0.99	2.65	0.049	3.02	1.49	0.61
Reach-1	7848	10-Yr	450.00	6716.00	6718.02	7.81	63.10	37.51	0.98	2.93	0.049	3.45	1.69	0.90
Reach-1	7848	50-Yr	910.00	6716.00	6719.12	9.79	107.48	42.57	0.98	3.76	0.050	4.67	2.31	1.73
Reach-1	7848	100-Yr	1200.00	6716.00	6719.72	10.66	133.47	45.25	0.98	4.10	0.050	5.22	2.58	2.04
Reach-1	7509	2-Yr	190.00	6706.00	6707.19	4.80	42.74	43.25	0.79	1.33	0.049	1.56	0.44	0.78
Reach-1	7509	5-Yr	320.00	6706.00	6707.70	5.47	66.25	49.00	0.75	1.45	0.049	1.79	0.63	0.89
Reach-1	7509	10-Yr	450.00	6706.00	6708.13	5.97	88.31	53.05	0.73	1.56	0.050	1.98	0.78	1.04
Reach-1	7509	50-Yr	910.00	6706.00	6709.35	7.25	157.05	59.94	0.70	1.94	0.053	2.49	1.20	1.43
Reach-1	7509	100-Yr	1200.00	6706.00	6709.98	7.86	196.08	63.48	0.70	2.12	0.054	2.77	1.37	1.59
Reach-1	7029	2-Yr	190.00	6698.00	6700.24	3.01	66.91	40.49	0.38	1.10	0.075	1.31	0.37	0.43
Reach-1	7029	5-Yr	320.00	6698.00	6700.78	3.87	89.41	42.59	0.43	1.65	0.076	2.00	0.72	0.79
Reach-1	7029	10-Yr	450.00	6698.00	6701.21	4.56	108.04	44.24	0.47	2.16	0.077	2.63	1.02	1.12
Reach-1	7029	50-Yr	910.00	6698.00	6702.29	6.48	158.03	48.41	0.57	3.80	0.077	4.80	1.99	2.19
Reach-1	7029	100-Yr	1200.00	6698.00	6702.81	7.45	183.77	50.49	0.62	4.73	0.077	6.08	2.55	2.80
Reach-1	6774	2-Yr	190.00	6692.53	6693.71	3.85	51.19	88.95	0.83	4.09	0.093	4.78	2.74	1.85
Reach-1	6774	5-Yr	320.00	6692.53	6694.04	4.20	83.60	127.37	0.74	3.28	0.083	4.99	2.68	1.25
Reach-1	6774	10-Yr	450.00	6692.53	6694.26	4.43	111.28	129.15	0.71	3.68	0.087	5.20	2.61	1.98
Reach-1	6774	50-Yr	910.00	6692.53	6694.87	4.99	192.44	134.28	0.65	4.50	0.089	5.76	2.73	3.34
Reach-1	6774	100-Yr	1200.00	6692.53	6695.19	5.32	234.70	137.01	0.64	4.95	0.089	6.22	2.93	3.93
Reach-1	6388	2-Yr	190.00	6682.00	6683.29	3.45	58.06	59.59	0.58	0.72	0.048	0.81	0.40	0.21
Reach-1	6388	5-Yr	320.00	6682.00	6683.63	4.38	78.58	61.69	0.64	1.06	0.049	1.20	0.59	0.47
Reach-1	6388	10-Yr	450.00	6682.00	6683.92	5.07	96.78	63.68	0.68	1.32	0.050	1.51	0.73	0.68
Reach-1	6388	50-Yr	910.00	6682.00	6684.72	6.85	148.71	66.95	0.76	2.12	0.051	2.43	1.32	1.27
Reach-1	6388	100-Yr	1200.00	6682.00	6685.14	7.64	177.69	68.75	0.78	2.49	0.051	2.88	1.61	1.52
Reach-1	6093	2-Yr	190.00	6676.00	6676.90	3.13	51.41	59.23	0.58	2.74	0.082	2.87	2.52	2.56
Reach-1	6093	5-Yr	320.00	6676.00	6677.32	3.58	76.53	61.41	0.55	3.09	0.082	3.30	2.77	2.82
Reach-1	6093	10-Yr	450.00	6676.00	6677.66	3.98	97.34	63.17	0.55	3.50	0.082	3.79	3.08	3.14
Reach-1	6093	50-Yr	910.00	6676.00	6678.62	4.95	160.72	68.16	0.54	4.45	0.081	5.02	3.73	3.95

HEC-RAS Plan: Plan 06 River: Monument Branch Reach: Reach-1 (Continued)

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Vel Chnl	Flow Area	Top Width	Froude # Chl	Shear Total	Mann Wtd Total	Shear Chan	Shear LOB	Shear ROB
			(cfs)	(ft)	(ft)	(ft/s)	(sq ft)	(ft)		(lb/sq ft)		(lb/sq ft)	(lb/sq ft)	(lb/sq ft)
Reach-1	6093	100-Yr	1200.00	6676.00	6679.09	5.46	193.14	70.44	0.55	5.05	0.080	5.78	4.17	4.47
Reach-1	5649	2-Yr	190.00	6664.00	6665.60	3.95	48.16	43.22	0.66	1.06	0.050	1.06		
Reach-1	5649	5-Yr	320.00	6664.00	6665.98	4.89	65.74	49.42	0.73	1.46	0.049	1.52		0.19
Reach-1	5649	10-Yr	450.00	6664.00	6666.25	5.66	87.89	87.00	0.78	1.18	0.040	1.92	0.28	0.37
Reach-1	5649	50-Yr	910.00	6664.00	6666.90	7.67	146.73	93.78	0.89	2.15	0.048	3.16	1.17	0.86
Reach-1	5649	100-Yr	1200.00	6664.00	6667.24	8.54	179.50	97.91	0.93	2.60	0.050	3.74	1.63	1.10
Reach-1	5449	2-Yr	190.00	6659.55	6660.63	4.71	41.74	66.30	1.02	1.72	0.050	1.80	0.82	1.05
Reach-1	5449	5-Yr	320.00	6659.55	6660.91	5.51	60.85	68.66	1.00	2.05	0.050	2.19	1.01	1.23
Reach-1	5449	10-Yr	450.00	6659.55	6661.14	6.18	76.89	70.59	1.01	2.38	0.050	2.57	1.19	1.42
Reach-1	5449	50-Yr	910.00	6659.55	6661.84	7.70	128.29	76.42	0.99	3.04	0.050	3.40	1.60	1.82
Reach-1	5449	100-Yr	1200.00	6659.55	6662.20	8.48	156.17	82.05	1.00	3.31	0.050	3.90	1.36	2.09
Reach-1	5269	2-Yr	190.00	6646.43	6648.54	6.90	28.09	20.57	1.00	2.71	0.048	2.97	0.68	0.50
Reach-1	5269	5-Yr	320.00	6646.43	6649.16	8.12	41.27	22.21	0.99	3.15	0.047	3.67	1.01	0.92
Reach-1	5269	10-Yr	450.00	6646.43	6649.69	9.03	53.35	23.61	0.98	3.46	0.047	4.21	1.22	1.23
Reach-1	5269	50-Yr	910.00	6646.43	6651.20	11.23	91.66	26.78	0.97	4.25	0.047	5.59	1.70	2.04
Reach-1	5269	100-Yr	1200.00	6646.43	6651.98	12.29	113.25	28.80	0.98	4.59	0.047	6.32	1.80	2.41
Reach-1	4793	2-Yr	190.00	6638.00	6639.90	1.69	114.41	68.98	0.22	0.37	0.075	0.42	0.10	0.15
Reach-1	4793	5-Yr	320.00	6638.00	6640.51	2.07	160.71	81.53	0.23	0.45	0.071	0.57	0.17	0.18
Reach-1	4793	10-Yr	450.00	6638.00	6640.98	2.35	200.43	89.70	0.24	0.52	0.069	0.70	0.23	0.24
Reach-1	4793	50-Yr	910.00	6638.00	6642.34	2.81	337.84	107.88	0.24	0.63	0.067	0.88	0.32	0.37
Reach-1	4793	100-Yr	1200.00	6638.00	6643.09	2.92	419.07	110.17	0.23	0.66	0.067	0.90	0.33	0.44
Reach-1	4502	2-Yr	190.00	6636.00	6637.22	5.61	37.66	34.87	0.90	1.82	0.051	2.08	1.02	1.17
Reach-1	4502	5-Yr	320.00	6636.00	6637.73	6.55	56.26	38.41	0.88	2.11	0.051	2.52	1.20	1.34
Reach-1	4502	10-Yr	450.00	6636.00	6638.24	6.97	76.73	41.53	0.82	2.13	0.052	2.62	1.30	1.34
Reach-1	4502	50-Yr	910.00	6636.00	6639.27	9.29	121.95	45.97	0.90	3.24	0.053	4.11	2.24	2.00
Reach-1	4502	100-Yr	1200.00	6636.00	6639.69	10.83	142.52	52.23	0.99	3.87	0.052	5.37	2.36	2.60
Reach-1	4065	2-Yr	190.00	6626.00	6628.05	4.79	40.19	31.56	0.71	1.32	0.047	1.46	0.19	0.08
Reach-1	4065	5-Yr	320.00	6626.00	6628.48	6.13	54.07	33.19	0.80	1.93	0.048	2.18	0.64	0.33
Reach-1	4065	10-Yr	450.00	6626.00	6628.74	7.51	62.87	34.18	0.91	2.72	0.048	3.13	1.07	0.60
Reach-1	4065	50-Yr	910.00	6626.00	6629.90	9.57	105.10	38.73	0.93	3.58	0.048	4.39	1.85	1.28
Reach-1	4065	100-Yr	1200.00	6626.00	6630.77	9.77	149.38	105.64	0.85	2.26	0.040	4.23	1.85	0.63
Reach-1	3783	2-Yr	190.00	6620.00	6621.72	6.09	32.71	30.26	0.92	1.90	0.045	2.38	0.38	0.45
Reach-1	3783	5-Yr	320.00	6620.00	6622.28	6.98	53.90	45.85	0.89	1.73	0.043	2.79	0.50	0.74
Reach-1	3783	10-Yr	450.00	6620.00	6622.79	7.29	79.19	53.09	0.83	1.74	0.047	2.81	0.74	1.06
Reach-1	3783	50-Yr	910.00	6620.00	6623.68	9.83	133.80	69.57	0.95	2.69	0.051	4.61	1.55	1.93
Reach-1	3783	100-Yr	1200.00	6620.00	6623.85	12.16	146.49	75.28	1.15	3.90	0.051	6.93	2.41	2.69
Reach-1	3689	2-Yr	190.00	6616.00	6618.97	7.21	31.11	25.84	0.91	1.87	0.043	2.99	0.77	0.64
Reach-1	3689	5-Yr	320.00	6616.00	6619.70	8.13	53.26	34.92	0.87	1.99	0.047	3.42	1.14	1.10
Reach-1	3689	10-Yr	450.00	6616.00	6619.97	10.09	63.64	40.74	1.03	2.75	0.047	5.10	1.63	1.70
Reach-1	3689	50-Yr	910.00	6616.00	6621.56	9.59	194.98	106.48	0.79	1.67	0.057	3.99	1.38	1.21
Reach-1	3689	100-Yr	1200.00	6616.00	6621.98	10.51	242.11	115.85	0.83	2.04	0.061	4.65	1.73	1.58
Reach-1	3550	2-Yr	190.00	6612.00	6613.97	7.43	27.21	18.49	0.99	2.69	0.047	3.27	0.57	1.12

HEC-RAS Plan: Plan 06 River: Monument Branch Reach: Reach-1 (Continued)

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl	Shear Total (lb/sq ft)	Mann Wtd Total	Shear Chan (lb/sq ft)	Shear LOB (lb/sq ft)	Shear ROB (lb/sq ft)
Reach-1	3550	5-Yr	320.00	6612.00	6614.73	8.48	43.19	23.32	0.94	2.71	0.046	3.77	1.09	1.17
Reach-1	3550	10-Yr	450.00	6612.00	6615.31	9.40	57.44	25.73	0.94	3.03	0.047	4.32	1.43	1.58
Reach-1	3550	50-Yr	910.00	6612.00	6617.22	9.54	175.80	98.43	0.75	1.37	0.047	3.80	0.84	1.64
Reach-1	3550	100-Yr	1200.00	6612.00	6617.74	10.32	231.43	112.68	0.77	1.61	0.052	4.30	1.12	1.90
Reach-1	3449	2-Yr	190.00	6610.00	6612.34	2.82	70.60	43.34	0.36	0.40	0.048	0.46	0.06	0.16
Reach-1	3449	5-Yr	320.00	6610.00	6612.96	3.50	99.01	48.99	0.39	0.52	0.047	0.64	0.13	0.27
Reach-1	3449	10-Yr	450.00	6610.00	6613.42	4.10	122.34	53.04	0.42	0.65	0.047	0.83	0.20	0.36
Reach-1	3449	50-Yr	910.00	6610.00	6614.61	5.64	213.04	102.35	0.49	0.71	0.042	1.40	0.35	0.32
Reach-1	3449	100-Yr	1200.00	6610.00	6614.89	6.79	242.45	108.63	0.57	1.01	0.044	1.99	0.55	0.51
Reach-1	3378	2-Yr	190.00	6610.00	6611.25	6.22	36.41	36.09	0.98	2.03	0.051	2.54	1.27	1.26
Reach-1	3378	5-Yr	320.00	6610.00	6611.77	7.16	57.60	46.88	0.95	2.06	0.050	3.00	1.49	1.15
Reach-1	3378	10-Yr	450.00	6610.00	6612.25	7.58	84.64	65.28	0.89	1.78	0.049	3.10	1.58	1.00
Reach-1	3378	50-Yr	910.00	6610.00	6613.05	10.08	144.34	85.61	1.02	2.72	0.054	4.95	2.62	1.81
Reach-1	3378	100-Yr	1200.00	6610.00	6613.86	9.25	243.42	136.41	0.83	1.77	0.056	3.86	2.06	1.29
Reach-1	3369	2-Yr	190.00	6606.00	6608.48	4.61	41.93	30.15	0.65	1.16	0.047	1.30	0.20	0.16
Reach-1	3369	5-Yr	320.00	6606.00	6609.10	5.48	62.09	35.35	0.66	1.33	0.046	1.65	0.42	0.38
Reach-1	3369	10-Yr	450.00	6606.00	6609.57	6.23	79.81	39.36	0.67	1.52	0.046	1.99	0.59	0.55
Reach-1	3369	50-Yr	910.00	6606.00	6610.87	8.00	143.02	61.56	0.71	1.69	0.044	2.88	1.16	0.66
Reach-1	3369	100-Yr	1200.00	6606.00	6611.35	9.12	175.12	71.37	0.76	1.99	0.045	3.60	1.53	0.89
Reach-1	3229	2-Yr	190.00	6604.00	6605.69	6.30	32.98	25.44	0.88	1.93	0.047	2.41	0.80	0.73
Reach-1	3229	5-Yr	320.00	6604.00	6606.20	7.84	46.89	29.22	0.95	2.56	0.048	3.40	1.23	1.15
Reach-1	3229	10-Yr	450.00	6604.00	6606.69	8.72	62.31	33.57	0.95	2.76	0.048	3.92	1.45	1.37
Reach-1	3229	50-Yr	910.00	6604.00	6608.01	10.80	114.62	45.91	0.96	3.30	0.050	5.24	2.17	1.85
Reach-1	3229	100-Yr	1200.00	6604.00	6608.91	10.98	162.72	62.07	0.88	2.73	0.049	5.06	2.32	1.34
Reach-1	3174	2-Yr	190.00	6602.00	6604.01	6.88	28.51	21.28	0.99	2.62	0.048	2.94	0.72	
Reach-1	3174	5-Yr	320.00	6602.00	6604.63	8.07	42.60	24.34	0.98	2.96	0.047	3.61	1.27	0.50
Reach-1	3174	10-Yr	450.00	6602.00	6605.15	8.93	56.09	26.97	0.97	3.20	0.047	4.11	1.61	0.85
Reach-1	3174	50-Yr	910.00	6602.00	6606.69	10.83	104.93	39.51	0.93	3.26	0.046	5.20	2.23	1.14
Reach-1	3174	100-Yr	1200.00	6602.00	6607.74	10.83	153.81	53.51	0.83	2.64	0.046	4.82	1.99	1.20
Reach-1	3073	2-Yr	190.00	6600.00	6602.12	4.21	46.44	26.20	0.53	0.93	0.048	1.02	0.30	0.02
Reach-1	3073	5-Yr	320.00	6600.00	6603.05	4.72	71.74	28.20	0.49	0.97	0.048	1.13	0.44	0.12
Reach-1	3073	10-Yr	450.00	6600.00	6603.86	5.12	95.30	29.99	0.47	1.01	0.048	1.22	0.50	0.18
Reach-1	3073	50-Yr	910.00	6600.00	6606.27	6.06	172.70	34.21	0.43	1.09	0.048	1.44	0.65	0.28
Reach-1	3073	100-Yr	1200.00	6600.00	6607.58	6.48	219.12	36.66	0.42	1.12	0.048	1.55	0.69	0.32
Reach-1	2951		Culvert											
Reach-1	2893	2-Yr	190.00	6594.64	6596.88	6.62	28.99	21.39	0.97	2.59	0.048	2.77	0.45	0.33
Reach-1	2893	5-Yr	320.00	6594.64	6597.50	7.66	44.16	26.89	0.94	2.58	0.045	3.29	0.66	0.64
Reach-1	2893	10-Yr	450.00	6594.64	6597.98	8.58	57.43	28.86	0.95	2.95	0.046	3.85	1.14	0.88
Reach-1	2893	50-Yr	910.00	6594.64	6599.32	10.77	97.59	30.78	0.96	4.04	0.048	5.26	2.43	1.44
Reach-1	2893	100-Yr	1200.00	6594.64	6600.05	11.75	120.18	31.84	0.96	4.48	0.049	5.92	2.91	1.67
Reach-1	2774	2-Yr	190.00	6592.00	6593.52	4.69	47.86	41.28	0.67	1.04	0.050	1.36	0.68	0.51
Reach-1	2774	5-Yr	320.00	6592.00	6593.97	5.84	67.76	47.21	0.74	1.41	0.050	1.93	0.96	0.77

HEC-RAS Plan: Plan 06 River: Monument Branch Reach: Reach-1 (Continued)

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl	Shear Total (lb/sq ft)	Mann Wtd Total	Shear Chan (lb/sq ft)	Shear LOB (lb/sq ft)	Shear ROB (lb/sq ft)
Reach-1	2774	10-Yr	450.00	6592.00	6594.30	6.81	83.96	50.73	0.79	1.80	0.051	2.49	1.25	1.08
Reach-1	2774	50-Yr	910.00	6592.00	6595.12	9.48	129.52	60.21	0.95	3.00	0.053	4.36	2.16	2.02
Reach-1	2774	100-Yr	1200.00	6592.00	6595.65	10.28	162.87	66.49	0.95	3.26	0.053	4.87	2.40	2.28
Reach-1	2590	2-Yr	190.00	6588.00	6589.38	6.08	32.49	31.42	0.98	2.13	0.047	2.46	0.26	0.68
Reach-1	2590	5-Yr	320.00	6588.00	6589.88	7.03	49.65	36.97	0.95	2.32	0.047	2.94	0.64	1.01
Reach-1	2590	10-Yr	450.00	6588.00	6590.32	7.62	68.27	45.80	0.92	2.21	0.045	3.19	0.67	1.25
Reach-1	2590	50-Yr	910.00	6588.00	6592.81	5.96	207.59	65.56	0.49	1.02	0.052	1.51	0.71	0.72
Reach-1	2590	100-Yr	1200.00	6588.00	6594.19	5.62	305.24	75.47	0.40	0.82	0.054	1.23	0.64	0.58
Reach-1	2528	2-Yr	190.00	6586.00	6588.56	2.92	82.54	43.90	0.33	0.34	0.053	0.45	0.18	0.26
Reach-1	2528	5-Yr	320.00	6586.00	6589.50	3.35	127.61	52.22	0.32	0.38	0.053	0.53	0.20	0.31
Reach-1	2528	10-Yr	450.00	6586.00	6590.33	3.63	174.43	61.08	0.31	0.38	0.054	0.58	0.21	0.33
Reach-1	2528	50-Yr	910.00	6586.00	6592.86	3.90	372.44	90.74	0.27	0.34	0.057	0.57	0.23	0.31
Reach-1	2528	100-Yr	1200.00	6586.00	6594.24	3.90	502.77	97.90	0.24	0.33	0.059	0.54	0.25	0.30
Reach-1	2468	2-Yr	190.00	6586.00	6588.21	4.12	63.25	31.62	0.49	0.79	0.062	0.92	0.75	0.69
Reach-1	2468	5-Yr	320.00	6586.00	6589.15	4.80	93.82	33.75	0.48	0.92	0.062	1.11	0.86	0.78
Reach-1	2468	10-Yr	450.00	6586.00	6589.97	5.30	122.14	35.61	0.47	1.01	0.062	1.26	0.93	0.85
Reach-1	2468	50-Yr	910.00	6586.00	6592.39	6.46	215.69	41.93	0.45	1.15	0.062	1.59	1.03	0.97
Reach-1	2468	100-Yr	1200.00	6586.00	6593.72	6.93	274.14	46.31	0.44	1.18	0.062	1.72	1.02	1.01
Reach-1	2388		Culvert											
Reach-1	2365	2-Yr	190.00	6582.00	6583.83	6.94	28.82	20.88	0.96	2.39	0.046	2.91	0.52	0.94
Reach-1	2365	5-Yr	320.00	6582.00	6584.48	8.15	43.18	22.83	0.95	2.84	0.047	3.59	1.17	1.18
Reach-1	2365	10-Yr	450.00	6582.00	6585.01	9.12	55.60	24.02	0.96	3.25	0.048	4.20	1.63	1.36
Reach-1	2365	50-Yr	910.00	6582.00	6586.54	11.43	94.90	27.26	0.97	4.16	0.048	5.69	2.56	1.86
Reach-1	2365	100-Yr	1200.00	6582.00	6587.29	12.62	115.89	28.75	0.99	4.69	0.049	6.59	3.02	2.16
Reach-1	2285	2-Yr	190.00	6578.71	6580.34	5.98	32.11	31.06	1.00	2.29	0.048	2.45	0.37	0.36
Reach-1	2285	5-Yr	320.00	6578.71	6580.82	6.95	48.13	36.95	0.97	2.41	0.046	2.94	0.74	0.51
Reach-1	2285	10-Yr	450.00	6578.71	6581.23	7.61	64.31	41.22	0.95	2.54	0.046	3.26	0.98	0.87
Reach-1	2285	50-Yr	910.00	6578.71	6583.65	5.77	218.91	81.39	0.48	0.87	0.050	1.44	0.54	0.60
Reach-1	2285	100-Yr	1200.00	6578.71	6584.99	5.25	339.50	96.37	0.39	0.66	0.053	1.09	0.51	0.45
Reach-1	2213	2-Yr	190.00	6576.97	6579.64	3.07	66.58	56.78	0.45	0.49	0.047	0.59	0.19	0.14
Reach-1	2213	5-Yr	320.00	6576.97	6580.47	3.08	123.52	80.26	0.36	0.35	0.046	0.51	0.22	0.10
Reach-1	2213	10-Yr	450.00	6576.97	6581.27	2.95	194.71	93.19	0.30	0.29	0.049	0.42	0.23	0.13
Reach-1	2213	50-Yr	910.00	6576.97	6583.75	2.80	442.77	105.11	0.21	0.24	0.056	0.31	0.20	0.17
Reach-1	2213	100-Yr	1200.00	6576.97	6585.06	2.89	586.56	117.53	0.19	0.22	0.057	0.31	0.19	0.16
Reach-1	2148	2-Yr	190.00	6576.00	6577.92	7.36	26.58	16.79	0.98	2.81	0.047	3.22	0.82	0.41
Reach-1	2148	5-Yr	320.00	6576.00	6578.65	8.64	39.46	18.42	0.96	3.23	0.047	3.95	1.12	1.00
Reach-1	2148	10-Yr	450.00	6576.00	6579.27	9.62	51.15	19.63	0.96	3.57	0.046	4.55	1.40	1.33
Reach-1	2148	50-Yr	910.00	6576.00	6581.05	11.88	90.15	24.31	0.95	4.11	0.046	5.97	2.02	1.81
Reach-1	2148	100-Yr	1200.00	6576.00	6581.94	12.96	112.53	26.21	0.95	4.49	0.046	6.73	2.30	2.24
Reach-1	2032		Culvert											
Reach-1	1995	2-Yr	190.00	6574.00	6575.55	6.45	29.64	23.89	1.00	2.59	0.049	2.72	0.10	0.47

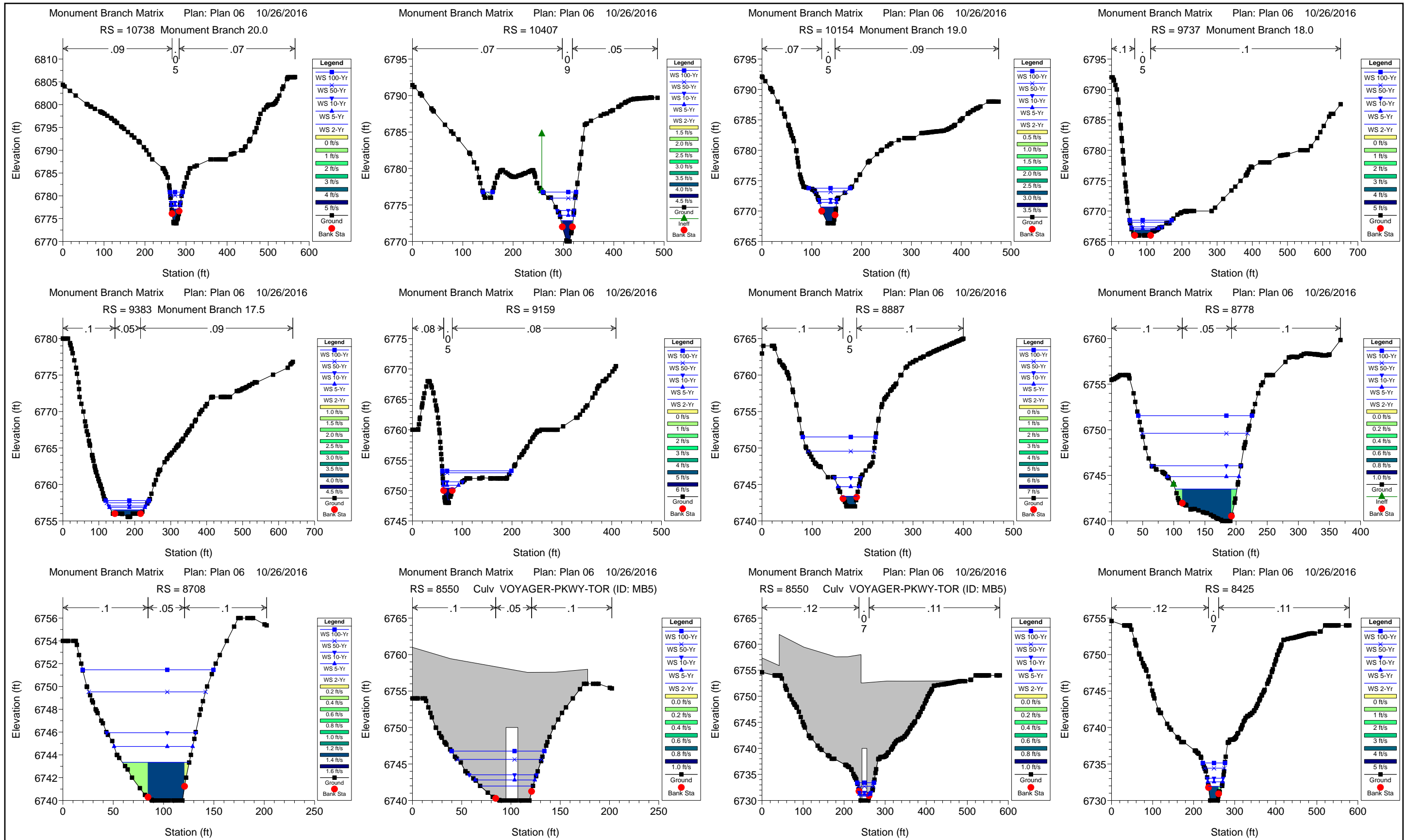
HEC-RAS Plan: Plan 06 River: Monument Branch Reach: Reach-1 (Continued)

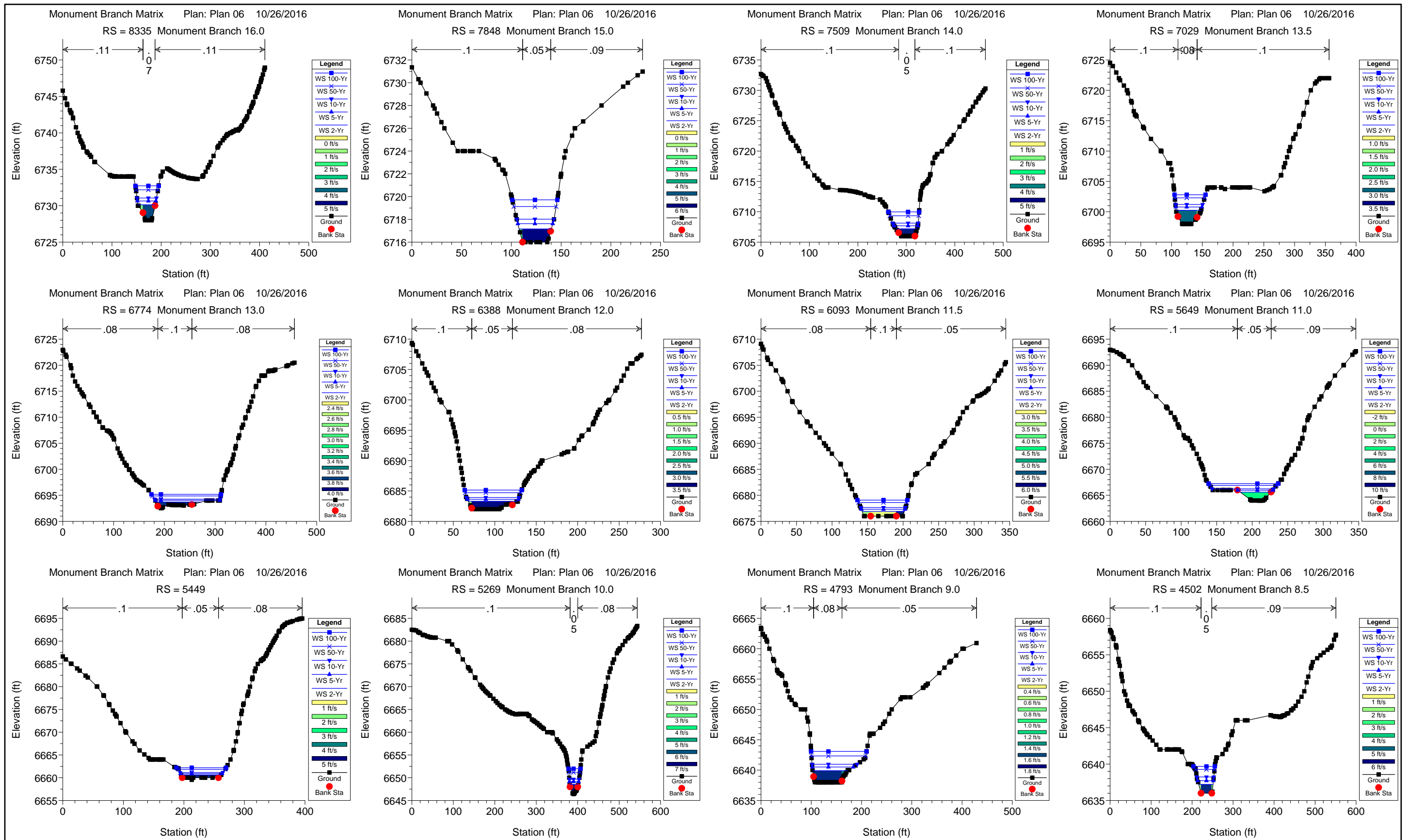
Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Vel Chnl	Flow Area	Top Width	Froude # Chl	Shear Total	Mann Wtd Total	Shear Chan	Shear LOB	Shear ROB
			(cfs)	(ft)	(ft)	(ft/s)	(sq ft)	(ft)		(lb/sq ft)		(lb/sq ft)	(lb/sq ft)	(lb/sq ft)
Reach-1	1995	5-Yr	320.00	6574.00	6576.09	7.60	43.45	26.91	0.99	2.91	0.047	3.36	0.63	0.79
Reach-1	1995	10-Yr	450.00	6574.00	6576.58	8.35	56.79	27.97	0.97	3.19	0.047	3.75	1.12	1.01
Reach-1	1995	50-Yr	910.00	6574.00	6577.90	10.48	95.54	30.85	0.97	4.10	0.048	5.08	2.00	1.56
Reach-1	1995	100-Yr	1200.00	6574.00	6578.59	11.47	117.46	32.55	0.97	4.49	0.048	5.74	2.29	1.82
Reach-1	1879	2-Yr	190.00	6563.00	6564.81	3.98	50.22	40.93	0.58	0.84	0.047	0.99	0.18	0.28
Reach-1	1879	5-Yr	320.00	6563.00	6565.38	4.70	75.75	49.73	0.58	0.93	0.046	1.24	0.33	0.37
Reach-1	1879	10-Yr	450.00	6563.00	6565.86	5.17	101.96	58.11	0.58	0.97	0.046	1.39	0.42	0.45
Reach-1	1879	50-Yr	910.00	6563.00	6567.08	6.42	179.96	68.58	0.59	1.32	0.050	1.89	0.68	0.85
Reach-1	1879	100-Yr	1200.00	6563.00	6567.74	6.90	225.77	71.33	0.58	1.47	0.052	2.06	0.77	1.04
Reach-1	1766	2-Yr	190.00	6561.37	6563.06	4.92	40.56	34.92	0.76	1.37	0.048	1.56	0.37	0.61
Reach-1	1766	5-Yr	320.00	6561.37	6563.42	6.40	53.61	37.02	0.87	2.09	0.048	2.44	0.75	1.03
Reach-1	1766	10-Yr	450.00	6561.37	6563.70	7.64	64.19	38.67	0.96	2.77	0.048	3.30	1.11	1.44
Reach-1	1766	50-Yr	910.00	6561.37	6564.78	9.59	108.58	43.86	0.97	3.60	0.049	4.49	1.83	2.15
Reach-1	1766	100-Yr	1200.00	6561.37	6565.34	10.47	133.81	46.23	0.97	3.99	0.050	5.07	2.16	2.49
Reach-1	1635	2-Yr	190.00	6559.42	6560.64	4.38	48.13	48.10	0.73	1.18	0.052	1.31	0.90	0.68
Reach-1	1635	5-Yr	320.00	6559.42	6561.10	5.08	71.14	50.59	0.71	1.40	0.052	1.57	1.06	0.86
Reach-1	1635	10-Yr	450.00	6559.42	6561.51	5.59	92.04	52.39	0.70	1.55	0.053	1.76	1.18	0.99
Reach-1	1635	50-Yr	910.00	6559.42	6562.67	6.91	155.80	57.34	0.69	1.96	0.053	2.30	1.47	1.30
Reach-1	1635	100-Yr	1200.00	6559.42	6563.24	7.61	189.00	59.38	0.70	2.22	0.053	2.64	1.68	1.47
Reach-1	1475	2-Yr	190.00	6556.00	6557.83	4.92	40.86	30.42	0.69	1.26	0.048	1.48	0.57	0.28
Reach-1	1475	5-Yr	320.00	6556.00	6558.35	6.09	57.50	33.74	0.74	1.67	0.048	2.06	0.91	0.52
Reach-1	1475	10-Yr	450.00	6556.00	6558.78	6.96	72.76	36.82	0.77	1.96	0.048	2.53	1.18	0.71
Reach-1	1475	50-Yr	910.00	6556.00	6559.96	9.01	126.37	52.26	0.83	2.40	0.047	3.72	1.85	1.09
Reach-1	1475	100-Yr	1200.00	6556.00	6560.56	9.79	158.96	55.29	0.83	2.74	0.049	4.17	2.11	1.49
Reach-1	1287	2-Yr	190.00	6553.00	6554.56	4.79	40.14	34.87	0.76	1.43	0.049	1.52	0.34	0.10
Reach-1	1287	5-Yr	320.00	6553.00	6555.00	5.89	56.05	37.52	0.81	1.86	0.048	2.08	0.61	0.36
Reach-1	1287	10-Yr	450.00	6553.00	6555.35	6.79	69.43	39.12	0.84	2.26	0.048	2.59	0.91	0.58
Reach-1	1287	50-Yr	910.00	6553.00	6556.31	9.07	109.25	43.80	0.93	3.35	0.048	4.05	1.69	1.17
Reach-1	1287	100-Yr	1200.00	6553.00	6556.80	10.14	131.20	46.30	0.96	3.88	0.048	4.82	2.10	1.47
Reach-1	1184	2-Yr	190.00	6551.25	6552.60	4.48	46.09	46.08	0.74	1.18	0.049	1.35	0.78	0.38
Reach-1	1184	5-Yr	320.00	6551.25	6552.96	5.62	63.22	49.07	0.81	1.66	0.050	1.95	1.19	0.65
Reach-1	1184	10-Yr	450.00	6551.25	6553.27	6.46	78.97	52.52	0.84	1.98	0.050	2.42	1.52	0.80
Reach-1	1184	50-Yr	910.00	6551.25	6554.06	8.74	124.21	61.70	0.95	2.99	0.050	3.92	2.54	1.39
Reach-1	1184	100-Yr	1200.00	6551.25	6554.50	9.68	152.94	70.08	0.98	3.24	0.049	4.57	2.97	1.50
Reach-1	1099	2-Yr	190.00	6550.00	6551.12	3.97	50.29	52.48	0.69	1.01	0.050	1.10	0.08	0.69
Reach-1	1099	5-Yr	320.00	6550.00	6551.53	4.74	72.94	59.17	0.70	1.20	0.049	1.41	0.27	0.82
Reach-1	1099	10-Yr	450.00	6550.00	6551.83	5.45	91.56	64.01	0.73	1.42	0.048	1.74	0.43	0.98
Reach-1	1099	50-Yr	910.00	6550.00	6552.71	7.02	153.19	76.54	0.76	1.92	0.049	2.53	0.92	1.30
Reach-1	1099	100-Yr	1200.00	6550.00	6553.13	7.78	187.15	81.89	0.78	2.20	0.050	2.95	1.18	1.49
Reach-1	986	2-Yr	190.00	6547.00	6548.42	5.60	37.20	40.80	0.90	1.60	0.046	2.09	0.37	0.65
Reach-1	986	5-Yr	320.00	6547.00	6548.83	6.79	55.72	49.86	0.95	1.95	0.047	2.79	0.72	1.00
Reach-1	986	10-Yr	450.00	6547.00	6549.22	7.41	76.58	56.93	0.93	2.09	0.049	3.09	0.95	1.27
Reach-1	986	50-Yr	910.00	6547.00	6550.24	9.03	145.03	79.00	0.92	2.44	0.052	4.00	1.25	2.02

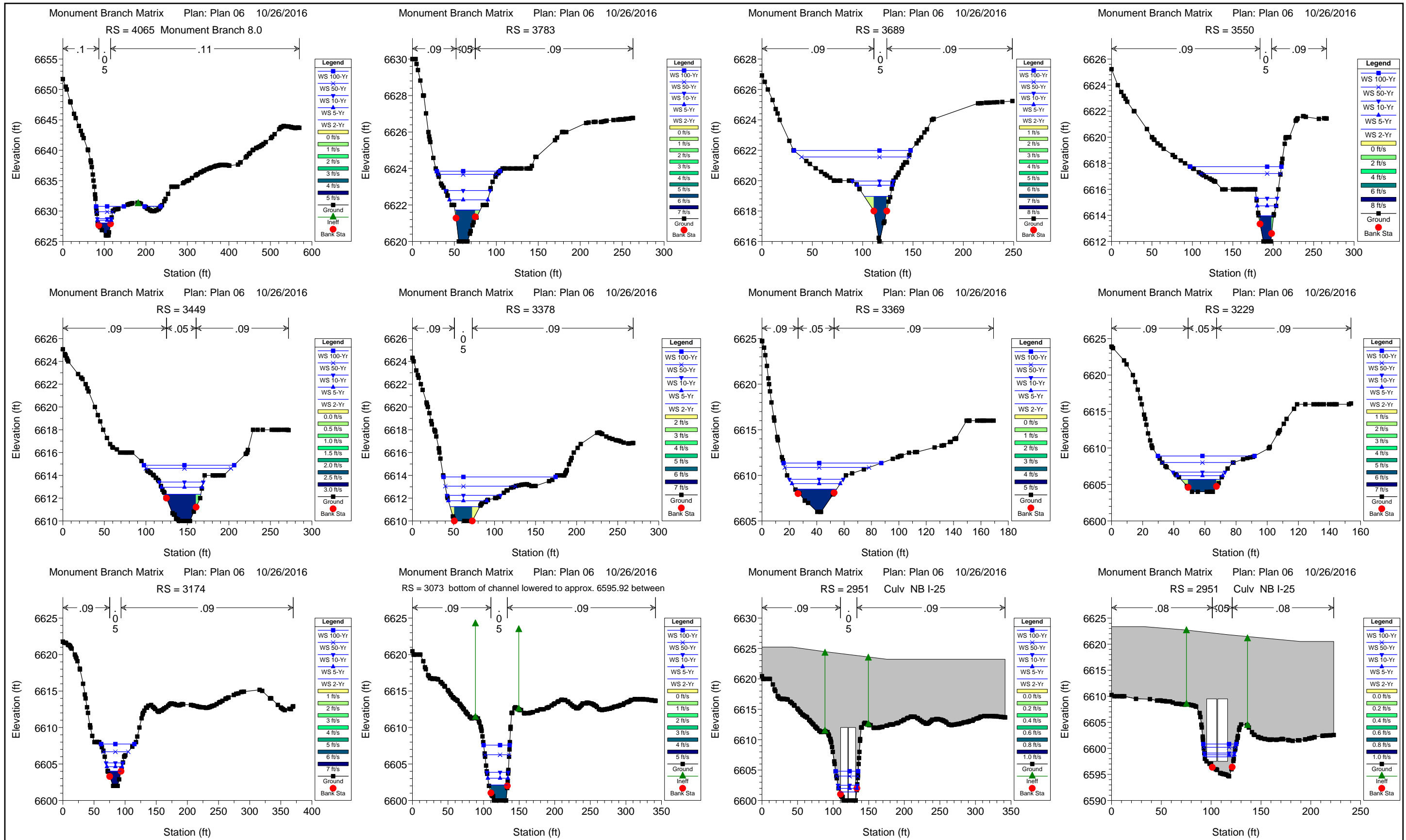
HEC-RAS Plan: Plan 06 River: Monument Branch Reach: Reach-1 (Continued)

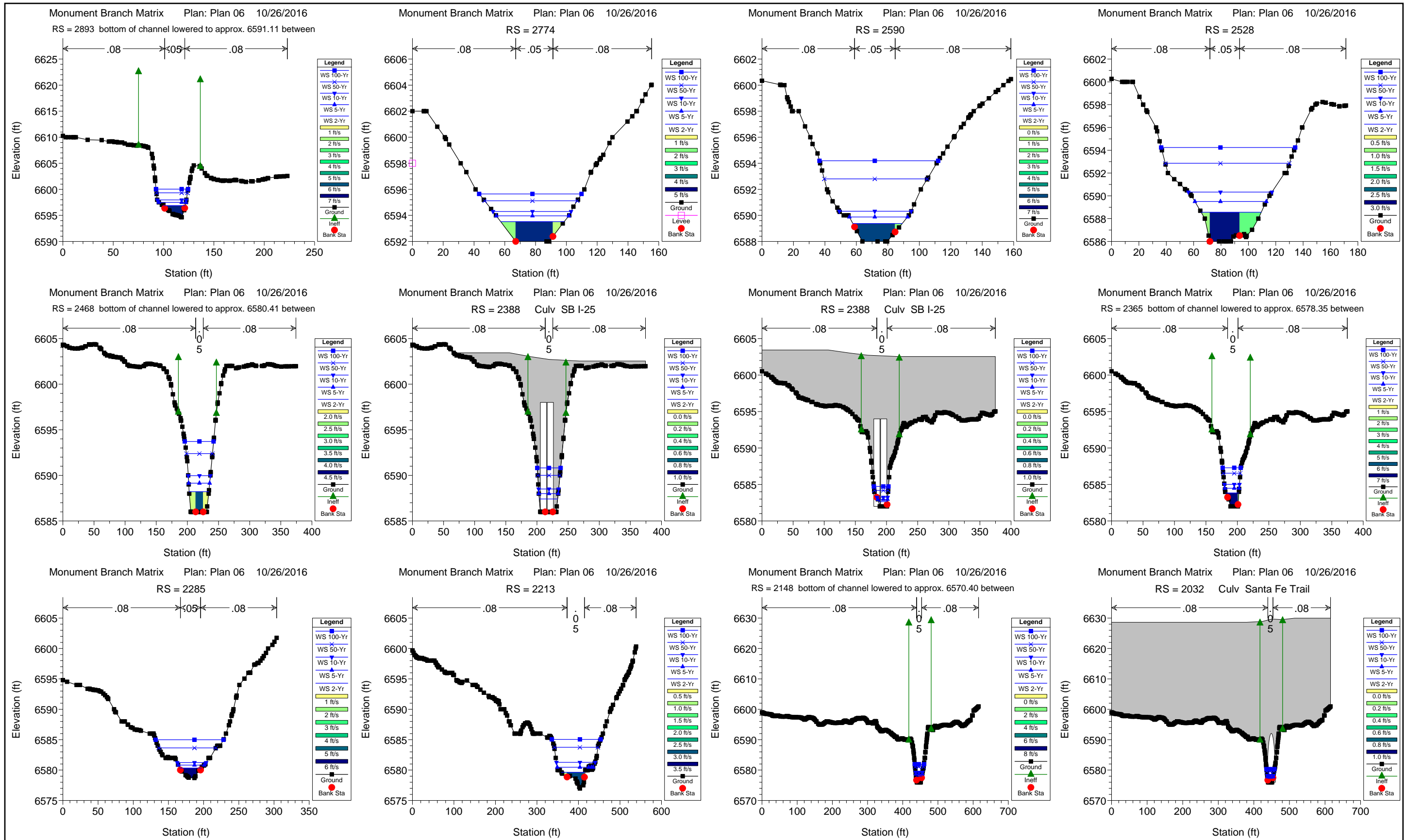
Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl	Shear Total (lb/sq ft)	Mann Wtd Total	Shear Chan (lb/sq ft)	Shear LOB (lb/sq ft)	Shear ROB (lb/sq ft)
Reach-1	986	100-Yr	1200.00	6547.00	6550.73	9.76	185.69	86.47	0.92	2.72	0.054	4.44	1.57	2.37
Reach-1	938	2-Yr	190.00	6545.00	6546.77	6.36	30.30	25.88	1.00	2.47	0.048	2.66	0.51	
Reach-1	938	5-Yr	320.00	6545.00	6547.33	7.34	46.91	35.89	0.96	2.25	0.043	3.13	0.82	0.37
Reach-1	938	10-Yr	450.00	6545.00	6547.82	7.89	67.45	47.92	0.92	2.04	0.043	3.34	1.02	0.65
Reach-1	938	50-Yr	910.00	6545.00	6548.96	9.60	131.90	62.18	0.91	2.66	0.050	4.33	1.55	1.69
Reach-1	938	100-Yr	1200.00	6545.00	6549.55	10.36	171.81	74.23	0.91	2.74	0.051	4.78	1.41	2.19
Reach-1	755	2-Yr	190.00	6542.00	6543.81	3.99	50.78	35.65	0.55	0.84	0.049	0.96	0.43	0.10
Reach-1	755	5-Yr	320.00	6542.00	6544.34	4.98	70.93	40.56	0.60	1.10	0.048	1.36	0.62	0.25
Reach-1	755	10-Yr	450.00	6542.00	6544.78	5.73	89.73	45.49	0.63	1.28	0.047	1.69	0.75	0.38
Reach-1	755	50-Yr	910.00	6542.00	6545.91	7.73	153.67	71.92	0.71	1.57	0.045	2.73	0.78	0.85
Reach-1	755	100-Yr	1200.00	6542.00	6546.39	8.67	191.93	82.64	0.75	1.82	0.047	3.30	1.00	1.15
Reach-1	651	2-Yr	190.00	6540.46	6541.78	6.12	34.19	33.56	0.98	2.10	0.049	2.49	1.23	0.84
Reach-1	651	5-Yr	320.00	6540.46	6542.26	7.16	51.54	38.48	0.97	2.40	0.049	3.05	1.52	1.08
Reach-1	651	10-Yr	450.00	6540.46	6542.66	7.95	67.86	43.05	0.97	2.62	0.049	3.50	1.75	1.27
Reach-1	651	50-Yr	910.00	6540.46	6543.83	9.64	127.88	61.49	0.94	2.81	0.050	4.43	1.59	1.90
Reach-1	651	100-Yr	1200.00	6540.46	6544.43	10.21	166.96	68.14	0.92	2.96	0.052	4.70	1.83	2.18
Reach-1	521	2-Yr	190.00	6538.00	6539.26	4.03	53.14	48.77	0.63	0.92	0.051	1.06	0.55	0.57
Reach-1	521	5-Yr	320.00	6538.00	6539.66	5.02	73.45	51.42	0.69	1.28	0.052	1.51	0.82	0.84
Reach-1	521	10-Yr	450.00	6538.00	6539.96	5.93	88.82	53.33	0.75	1.68	0.052	1.99	1.09	1.12
Reach-1	521	50-Yr	910.00	6538.00	6540.73	8.35	131.84	58.11	0.89	2.90	0.053	3.53	1.95	2.03
Reach-1	521	100-Yr	1200.00	6538.00	6541.10	9.59	153.60	60.43	0.96	3.62	0.053	4.46	2.45	2.55
Reach-1	404	2-Yr	190.00	6535.80	6536.68	4.53	42.36	61.75	0.95	1.60	0.050	1.64	0.65	
Reach-1	404	5-Yr	320.00	6535.80	6536.94	5.56	58.57	64.51	1.01	2.12	0.049	2.22	0.94	0.18
Reach-1	404	10-Yr	450.00	6535.80	6537.18	6.18	74.76	66.31	1.00	2.39	0.049	2.54	1.17	0.48
Reach-1	404	50-Yr	910.00	6535.80	6537.88	7.79	122.82	70.85	1.00	3.15	0.049	3.46	1.73	1.07
Reach-1	404	100-Yr	1200.00	6535.80	6538.27	8.49	150.32	73.13	0.99	3.47	0.049	3.87	1.99	1.32
Reach-1	233	2-Yr	190.00	6532.87	6533.74	2.42	79.53	117.78	0.51	0.45	0.049	0.47	0.08	0.20
Reach-1	233	5-Yr	320.00	6532.87	6534.02	2.91	112.61	121.43	0.52	0.57	0.049	0.60	0.18	0.27
Reach-1	233	10-Yr	450.00	6532.87	6534.25	3.31	140.19	123.07	0.53	0.69	0.050	0.73	0.28	0.35
Reach-1	233	50-Yr	910.00	6532.87	6534.90	4.29	222.24	127.97	0.55	0.99	0.050	1.06	0.49	0.54
Reach-1	233	100-Yr	1200.00	6532.87	6535.24	4.76	265.90	130.40	0.57	1.14	0.050	1.23	0.60	0.63
Reach-1	60	2-Yr	190.00	6529.54	6530.90	4.63	47.60	71.23	0.80	0.96	0.043	1.49	0.31	0.72
Reach-1	60	5-Yr	320.00	6529.54	6531.23	5.53	78.75	107.27	0.83	1.05	0.045	1.95	0.53	0.94
Reach-1	60	10-Yr	450.00	6529.54	6531.46	6.17	104.43	109.14	0.86	1.37	0.051	2.30	0.87	1.10
Reach-1	60	50-Yr	910.00	6529.54	6532.12	7.75	177.77	120.12	0.91	2.12	0.057	3.24	1.76	1.04
Reach-1	60	100-Yr	1200.00	6529.54	6532.44	8.47	220.24	141.26	0.93	2.23	0.055	3.70	2.20	0.80

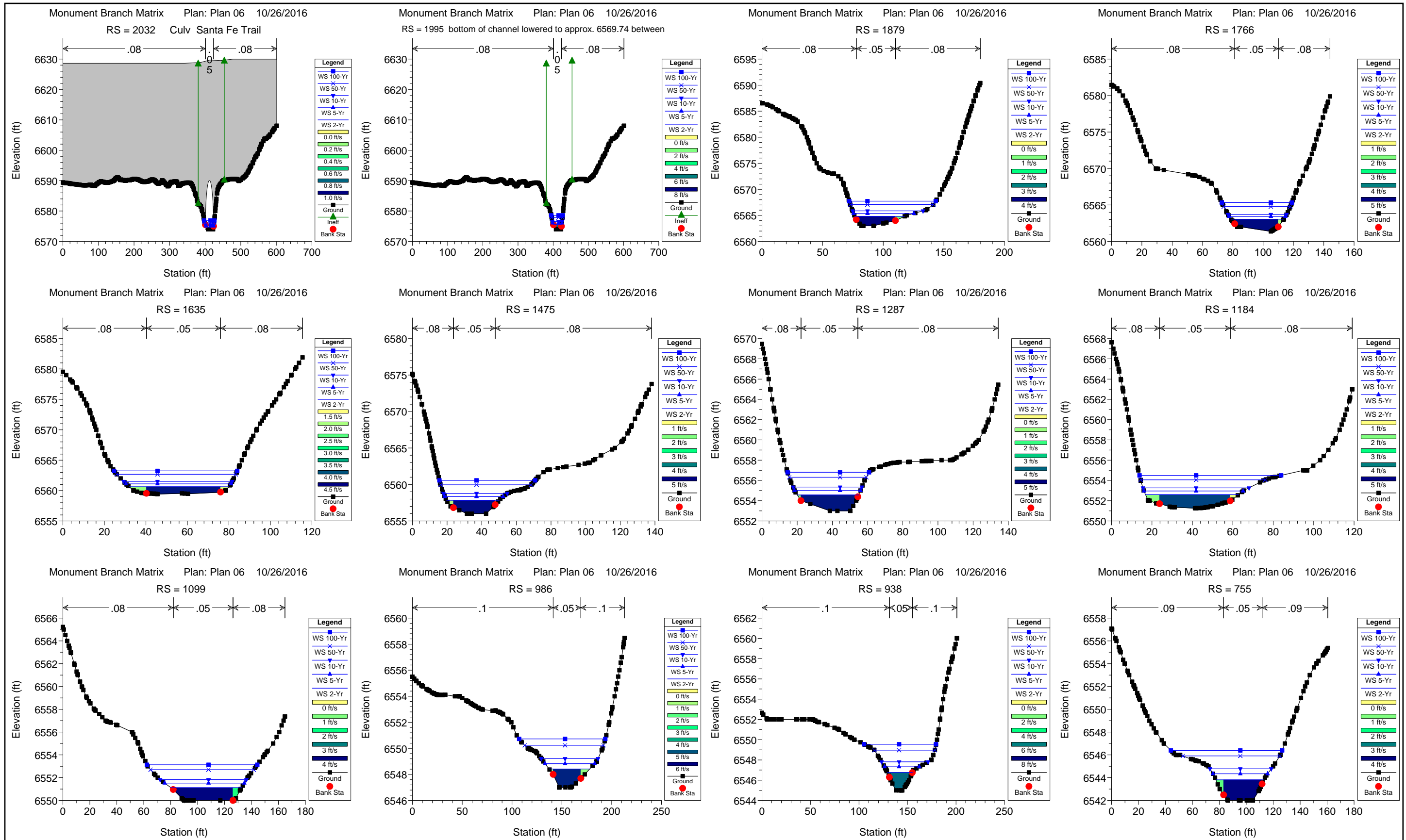
Monument Branch Cross Section Diagrams

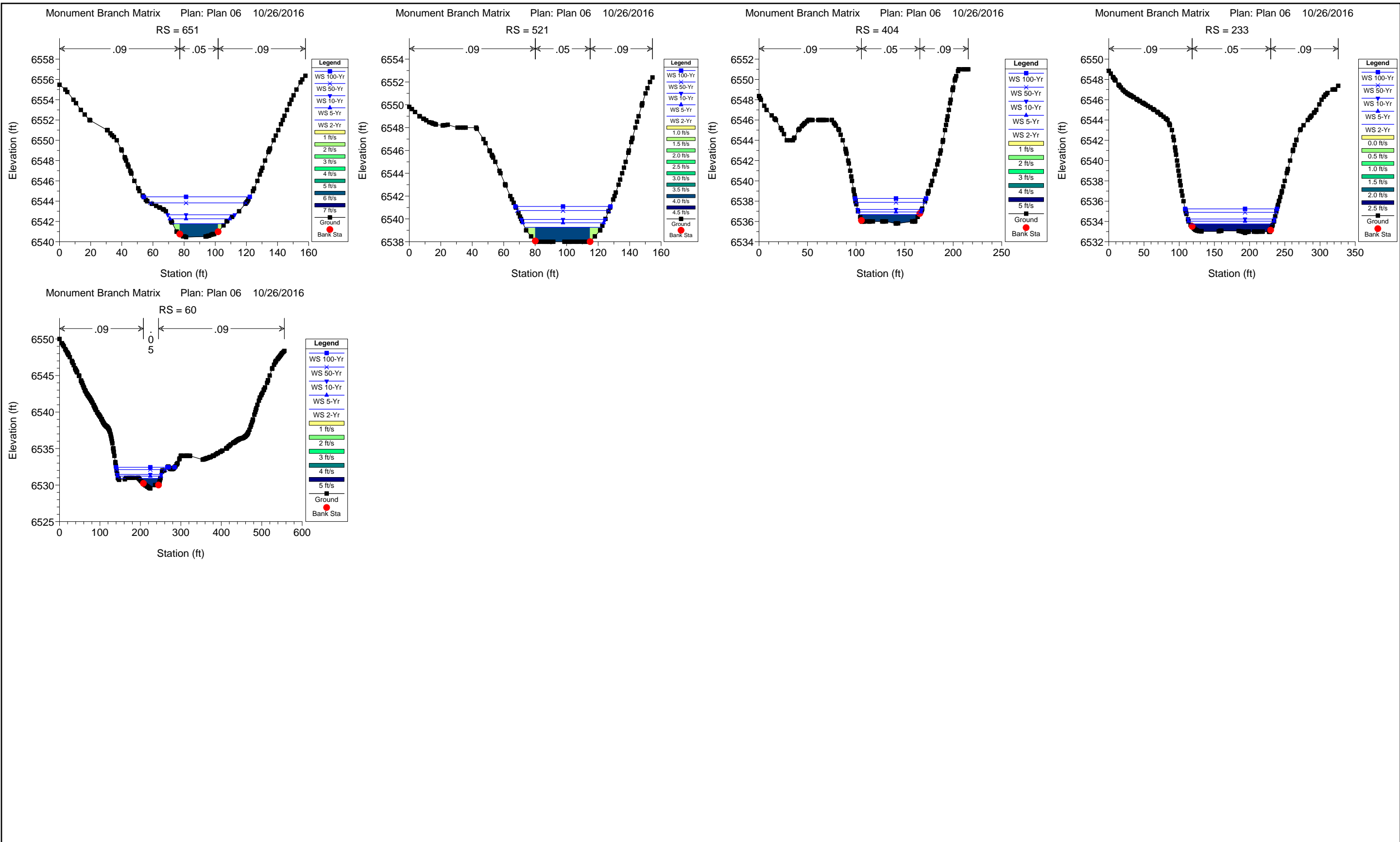












Monument Creek Hydraulic Results

HEC-RAS Plan: Plan 07 River: Monument Creek Reach: MC R1

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl	Shear Total (lb/sq ft)	Mann Wtd Total	Shear Chan (lb/sq ft)	Shear LOB (lb/sq ft)	Shear ROB (lb/sq ft)
MC R1	156800	2-Yr	12.00	7159.00	7159.13	1.99	6.19	51.42	0.99	0.54	0.050	0.56	0.53	0.50
MC R1	156800	5-Yr	31.00	7159.00	7159.23	2.70	11.97	54.74	0.98	0.78	0.050	0.84	0.76	0.70
MC R1	156800	10-Yr	55.00	7159.00	7159.34	3.25	17.94	63.36	0.98	0.97	0.050	1.07	0.93	0.85
MC R1	156800	50-Yr	150.00	7159.00	7159.60	4.81	34.03	104.56	1.10	1.67	0.049	1.94	1.58	1.40
MC R1	156800	100-Yr	230.00	7159.00	7159.84	5.11	51.00	126.27	0.98	1.57	0.049	1.96	1.35	1.33
MC R1	156388	2-Yr	12.00	7140.00	7140.49	3.36	3.58	10.20	1.00	1.13	0.050	1.13		
MC R1	156388	5-Yr	31.00	7140.00	7140.82	4.11	7.55	13.88	0.98	1.46	0.050	1.46		
MC R1	156388	10-Yr	55.00	7140.00	7141.17	4.10	14.68	26.25	0.78	0.83	0.041	1.26	0.09	0.26
MC R1	156388	50-Yr	150.00	7140.00	7141.69	5.88	29.43	30.87	0.89	1.54	0.045	2.21	0.50	0.97
MC R1	156388	100-Yr	230.00	7140.00	7142.04	6.60	40.69	33.86	0.89	1.80	0.046	2.58	0.71	1.28
MC R1	155964	2-Yr	12.00	7128.00	7128.46	2.08	5.85	15.23	0.57	0.38	0.048	0.41	0.09	
MC R1	155964	5-Yr	31.00	7128.00	7128.73	3.13	10.36	18.19	0.67	0.67	0.047	0.79	0.26	0.09
MC R1	155964	10-Yr	55.00	7128.00	7128.83	4.73	12.33	19.38	0.94	1.40	0.046	1.72	0.60	0.28
MC R1	155964	50-Yr	150.00	7128.00	7129.50	5.93	30.36	37.70	0.87	1.22	0.041	2.20	0.63	0.70
MC R1	155964	100-Yr	230.00	7128.00	7129.93	6.10	57.76	91.13	0.78	0.72	0.037	2.14	0.45	0.77
MC R1	155504	2-Yr	12.00	7116.00	7116.39	3.33	3.66	11.19	0.98	1.00	0.048	1.10	0.20	0.25
MC R1	155504	5-Yr	31.00	7116.00	7116.70	4.40	7.54	14.03	0.95	1.25	0.046	1.57	0.50	0.54
MC R1	155504	10-Yr	55.00	7116.00	7116.98	5.19	11.79	16.73	0.94	1.43	0.045	1.94	0.72	0.73
MC R1	155504	50-Yr	150.00	7116.00	7117.71	6.69	27.16	25.05	0.91	1.70	0.045	2.67	1.03	1.20
MC R1	155504	100-Yr	230.00	7116.00	7118.13	7.48	38.65	30.05	0.91	1.88	0.045	3.10	1.23	1.41
MC R1	155388	2-Yr	12.00	7113.00	7113.95	1.07	11.19	16.44	0.23	0.09	0.050	0.09		
MC R1	155388	5-Yr	31.00	7113.00	7114.40	1.62	19.37	19.51	0.28	0.17	0.048	0.18	0.01	0.03
MC R1	155388	10-Yr	55.00	7113.00	7114.77	2.10	27.03	21.80	0.31	0.24	0.046	0.28	0.04	0.07
MC R1	155388	50-Yr	150.00	7113.00	7115.71	3.25	50.04	26.90	0.37	0.43	0.046	0.56	0.17	0.20
MC R1	155388	100-Yr	230.00	7113.00	7115.59	5.31	46.66	26.26	0.62	1.19	0.046	1.53	0.44	0.54
MC R1	155370		Bridge											
MC R1	155344	2-Yr	12.00	7111.93	7112.30	3.06	4.02	14.09	0.98	3.73	0.099	3.95	3.38	0.45
MC R1	155344	5-Yr	31.00	7111.93	7112.56	4.16	7.88	15.95	0.98	5.22	0.097	5.95	4.67	1.75
MC R1	155344	10-Yr	55.00	7111.93	7112.81	4.95	12.05	17.71	0.97	6.21	0.096	7.44	5.50	2.63
MC R1	155344	50-Yr	150.00	7111.93	7113.47	6.73	25.31	21.92	0.98	8.68	0.095	11.26	7.54	4.91
MC R1	155344	100-Yr	230.00	7111.93	7113.89	7.62	35.08	24.49	0.98	9.84	0.095	13.27	8.50	6.03
MC R1	155324	2-Yr	12.00	7111.00	7111.51	2.23	6.45	18.08	0.56	0.32	0.049	0.45	0.20	0.15
MC R1	155324	5-Yr	31.00	7111.00	7111.81	3.27	13.33	27.70	0.65	0.49	0.050	0.82	0.37	0.28
MC R1	155324	10-Yr	55.00	7111.00	7112.07	4.03	21.79	37.75	0.69	0.62	0.053	1.13	0.54	0.40
MC R1	155324	50-Yr	150.00	7111.00	7112.62	5.92	45.33	46.99	0.82	1.27	0.064	2.12	1.08	1.02
MC R1	155324	100-Yr	230.00	7111.00	7112.86	7.47	56.74	50.91	0.97	1.94	0.066	3.22	1.66	1.62
MC R1	155162	2-Yr	12.00	7107.00	7107.41	3.04	3.95	13.12	0.98	0.98	0.050	0.98		
MC R1	155162	5-Yr	31.00	7107.00	7107.69	3.76	8.24	17.37	0.96	1.28	0.050	1.28		
MC R1	155162	10-Yr	55.00	7107.00	7107.92	4.40	12.53	20.75	0.98	1.54	0.049	1.60	0.12	
MC R1	155162	50-Yr	150.00	7107.00	7108.53	5.91	28.18	30.64	0.94	1.71	0.046	2.30	0.68	0.56
MC R1	155162	100-Yr	230.00	7107.00	7109.73	4.06	86.50	97.07	0.46	0.32	0.039	0.87	0.13	0.35
MC R1	154753	2-Yr	28.00	7097.00	7097.25	1.41	17.78	39.93	0.51	0.42	0.067	0.23		0.49

HEC-RAS Plan: Plan 07 River: Monument Creek Reach: MC R1 (Continued)

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Vel Chnl	Flow Area	Top Width	Froude # Chl	Shear Total	Mann Wtd Total	Shear Chan	Shear LOB	Shear ROB
			(cfs)	(ft)	(ft)	(ft/s)	(sq ft)	(ft)		(lb/sq ft)		(lb/sq ft)	(lb/sq ft)	(lb/sq ft)
MC R1	154753	5-Yr	110.00	7097.00	7097.73	3.66	39.73	49.99	0.76	1.15	0.070	1.05	0.38	1.22
MC R1	154753	10-Yr	220.00	7097.00	7098.18	4.88	63.79	58.72	0.80	1.47	0.067	1.60	0.69	1.51
MC R1	154753	50-Yr	710.00	7097.00	7099.29	7.72	141.98	84.42	0.90	2.34	0.063	3.20	1.46	2.32
MC R1	154753	100-Yr	1100.00	7097.00	7099.45	11.04	156.30	89.58	1.25	4.53	0.062	6.41	2.89	4.46
MC R1	154256	2-Yr	28.00	7085.00	7085.64	3.89	7.29	15.15	0.96	1.27	0.049	1.35		0.37
MC R1	154256	5-Yr	110.00	7085.00	7086.44	5.27	22.83	23.18	0.82	1.38	0.046	1.81	0.53	0.80
MC R1	154256	10-Yr	220.00	7085.00	7086.99	6.77	37.08	28.01	0.88	1.88	0.045	2.65	0.96	1.23
MC R1	154256	50-Yr	710.00	7085.00	7088.57	9.57	95.02	57.73	0.91	2.05	0.039	4.30	2.09	0.95
MC R1	154256	100-Yr	1100.00	7085.00	7089.63	8.62	239.09	177.62	0.72	0.96	0.042	3.20	1.66	0.66
MC R1	153763	2-Yr	28.00	7074.00	7075.03	3.06	9.14	15.53	0.70	0.77	0.049	0.79		
MC R1	153763	5-Yr	110.00	7074.00	7075.76	5.16	22.82	22.21	0.79	1.33	0.045	1.72	0.49	0.48
MC R1	153763	10-Yr	220.00	7074.00	7076.35	6.56	38.37	31.62	0.83	1.55	0.042	2.46	0.63	0.87
MC R1	153763	50-Yr	710.00	7074.00	7078.04	8.31	115.07	55.15	0.77	1.84	0.047	3.19	1.29	1.42
MC R1	153763	100-Yr	1100.00	7074.00	7078.78	9.79	158.69	63.02	0.83	2.40	0.049	4.17	1.81	1.93
MC R1	153258	2-Yr	28.00	7066.00	7066.72	2.50	11.40	19.81	0.56	0.47	0.048	0.52	0.12	
MC R1	153258	5-Yr	110.00	7066.00	7067.45	4.13	28.66	27.49	0.63	0.87	0.046	1.10	0.44	0.17
MC R1	153258	10-Yr	220.00	7066.00	7068.02	5.33	46.19	33.36	0.68	1.19	0.045	1.63	0.72	0.41
MC R1	153258	50-Yr	710.00	7066.00	7069.19	8.97	96.53	54.34	0.90	2.28	0.042	3.93	1.58	1.11
MC R1	153258	100-Yr	1100.00	7066.00	7069.98	10.05	147.91	76.07	0.90	2.31	0.043	4.57	1.69	1.37
MC R1	152789	2-Yr	28.00	7057.62	7058.55	3.12	8.97	15.65	0.73	0.83	0.050	0.83		
MC R1	152789	5-Yr	110.00	7057.62	7059.28	5.15	22.49	29.80	0.80	1.36	0.045	1.74	0.42	0.36
MC R1	152789	10-Yr	220.00	7057.62	7059.87	6.50	38.04	49.81	0.84	1.67	0.044	2.43	0.78	0.72
MC R1	152789	50-Yr	710.00	7057.62	7061.45	7.30	199.72	231.90	0.69	0.74	0.045	2.50	0.99	0.55
MC R1	152789	100-Yr	1100.00	7057.62	7061.86	8.50	283.06	260.04	0.76	1.18	0.056	3.27	1.32	0.97
MC R1	152336	2-Yr	28.00	7048.00	7048.74	1.94	16.12	26.68	0.40	0.78	0.088	0.96	0.78	0.57
MC R1	152336	5-Yr	110.00	7048.00	7049.52	3.26	41.95	41.02	0.47	1.42	0.086	2.12	1.43	1.02
MC R1	152336	10-Yr	220.00	7048.00	7050.09	4.18	69.01	81.96	0.51	1.93	0.086	3.13	1.87	1.51
MC R1	152336	50-Yr	710.00	7048.00	7051.28	6.65	146.71	167.67	0.65	2.41	0.062	6.82	1.32	3.96
MC R1	152336	100-Yr	1100.00	7048.00	7051.81	7.46	227.83	220.91	0.67	2.79	0.068	8.17	1.84	4.96
MC R1	151868	2-Yr	28.00	7039.84	7040.37	2.04	14.65	42.69	0.57	0.35	0.049	0.40	0.22	0.26
MC R1	151868	5-Yr	110.00	7039.84	7040.82	3.40	35.52	51.06	0.65	0.72	0.048	0.87	0.52	0.52
MC R1	151868	10-Yr	220.00	7039.84	7041.19	4.31	61.40	90.68	0.69	0.69	0.041	1.23	0.36	0.72
MC R1	151868	50-Yr	710.00	7039.84	7042.15	5.88	175.70	166.41	0.70	1.05	0.049	1.89	0.80	1.08
MC R1	151868	100-Yr	1100.00	7039.84	7042.62	6.71	245.46	190.24	0.73	1.41	0.054	2.30	1.17	1.31
MC R1	151383	2-Yr	28.00	7035.00	7035.47	1.57	18.77	44.15	0.40	0.20	0.049	0.22	0.12	0.16
MC R1	151383	5-Yr	110.00	7035.00	7036.02	2.63	46.37	96.07	0.46	0.23	0.034	0.49	0.25	0.09
MC R1	151383	10-Yr	220.00	7035.00	7036.39	3.36	86.28	116.47	0.50	0.38	0.043	0.71	0.40	0.25
MC R1	151383	50-Yr	710.00	7035.00	7037.25	5.26	199.10	140.62	0.62	0.94	0.054	1.50	0.88	0.77
MC R1	151383	100-Yr	1100.00	7035.00	7037.76	6.09	274.58	152.68	0.65	1.21	0.057	1.87	1.11	1.03
MC R1	151025	2-Yr	28.00	7029.79	7030.19	2.21	12.93	59.74	0.82	0.54	0.050	0.57	0.23	0.41
MC R1	151025	5-Yr	110.00	7029.79	7030.45	3.94	28.95	64.48	1.00	1.29	0.049	1.39	0.60	0.97
MC R1	151025	10-Yr	220.00	7029.79	7030.72	4.91	47.15	69.86	1.00	1.67	0.049	1.87	0.83	1.22
MC R1	151025	50-Yr	710.00	7029.79	7031.54	6.46	138.21	148.23	0.91	1.49	0.044	2.53	0.91	0.94

HEC-RAS Plan: Plan 07 River: Monument Creek Reach: MC R1 (Continued)

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl	Shear Total (lb/sq ft)	Mann Wtd Total	Shear Chan (lb/sq ft)	Shear LOB (lb/sq ft)	Shear ROB (lb/sq ft)
MC R1	151025	100-Yr	1100.00	7029.79	7031.90	7.51	193.64	158.97	0.95	2.00	0.048	3.20	1.23	1.50
MC R1	150729	2-Yr	28.00	7023.00	7023.51	2.11	13.31	30.43	0.56	0.40	0.049	0.41	0.04	
MC R1	150729	5-Yr	110.00	7023.00	7024.17	3.07	37.11	43.80	0.54	0.56	0.046	0.66	0.25	0.05
MC R1	150729	10-Yr	220.00	7023.00	7024.68	3.81	63.71	59.39	0.54	0.63	0.044	0.89	0.39	0.20
MC R1	150729	50-Yr	710.00	7023.00	7025.75	5.24	203.19	163.95	0.57	0.68	0.046	1.41	0.46	0.53
MC R1	150729	100-Yr	1100.00	7023.00	7026.21	6.06	280.32	170.49	0.61	0.97	0.051	1.79	0.74	0.79
MC R1	150304	2-Yr	28.00	7018.00	7018.39	1.57	18.08	50.42	0.45	0.23	0.049	0.24	0.07	0.04
MC R1	150304	5-Yr	110.00	7018.00	7018.75	3.04	37.70	58.16	0.62	0.63	0.048	0.72	0.28	0.25
MC R1	150304	10-Yr	220.00	7018.00	7019.04	4.23	57.30	117.68	0.74	0.59	0.033	1.25	0.11	0.50
MC R1	150304	50-Yr	710.00	7018.00	7019.73	6.61	151.13	153.27	0.89	1.47	0.048	2.58	0.96	1.17
MC R1	150304	100-Yr	1100.00	7018.00	7020.16	7.31	222.77	178.07	0.88	1.70	0.052	2.92	1.25	1.33
MC R1	149883	2-Yr	28.00	7013.54	7014.01	1.17	23.87	104.67	0.43	0.15	0.049	0.16		0.01
MC R1	149883	5-Yr	110.00	7013.54	7014.35	1.80	62.94	122.75	0.42	0.25	0.048	0.28	0.08	0.14
MC R1	149883	10-Yr	220.00	7013.54	7014.66	2.26	102.47	135.08	0.42	0.32	0.048	0.38	0.14	0.20
MC R1	149883	50-Yr	710.00	7013.54	7015.43	3.28	279.40	300.87	0.45	0.36	0.044	0.64	0.21	0.37
MC R1	149883	100-Yr	1100.00	7013.54	7015.81	3.75	395.34	307.17	0.46	0.50	0.050	0.78	0.34	0.45
MC R1	149590	2-Yr	28.00	7011.00	7011.45	0.67	42.50	103.30	0.18	0.19	0.106	0.20	0.06	0.03
MC R1	149590	5-Yr	110.00	7011.00	7011.92	1.21	96.35	127.25	0.22	0.43	0.103	0.52	0.20	0.17
MC R1	149590	10-Yr	220.00	7011.00	7012.30	1.61	165.33	294.15	0.25	0.35	0.076	0.81	0.19	0.08
MC R1	149590	50-Yr	710.00	7011.00	7012.89	2.42	425.13	524.69	0.31	0.70	0.091	1.62	0.72	0.41
MC R1	149590	100-Yr	1100.00	7011.00	7013.13	2.87	551.38	544.44	0.35	1.05	0.097	2.19	1.07	0.71
MC R1	149466	2-Yr	28.00	7008.98	7009.13	2.10	13.47	103.72	1.01	0.85	0.059	0.88	0.44	0.44
MC R1	149466	5-Yr	110.00	7008.98	7009.33	3.22	35.06	112.71	0.98	1.42	0.059	1.52	0.77	0.75
MC R1	149466	10-Yr	220.00	7008.98	7009.51	4.08	56.15	120.69	1.00	1.91	0.058	2.11	1.10	1.02
MC R1	149466	50-Yr	710.00	7008.98	7010.19	4.91	193.85	430.94	0.79	0.87	0.042	2.31	0.40	0.51
MC R1	149466	100-Yr	1100.00	7008.98	7010.44	5.03	314.16	497.90	0.74	0.99	0.050	2.27	0.63	0.75
MC R1	149166	2-Yr	28.00	7005.00	7005.23	0.60	46.56	218.25	0.23	0.04	0.050	0.04		
MC R1	149166	5-Yr	110.00	7005.00	7005.47	1.06	109.81	301.99	0.28	0.08	0.046	0.10	0.02	0.01
MC R1	149166	10-Yr	220.00	7005.00	7005.81	1.16	222.43	370.98	0.23	0.08	0.049	0.10	0.04	0.03
MC R1	149166	50-Yr	710.00	7005.00	7007.57	0.90	1097.14	575.90	0.10	0.03	0.057	0.04	0.03	0.02
MC R1	149166	100-Yr	1100.00	7005.00	7009.11	0.78	2022.79	613.66	0.07	0.02	0.062	0.03	0.02	0.02
MC R1	148948	2-Yr	28.00	7003.00	7003.34	2.51	11.17	37.14	0.79	0.94	0.060	0.94		
MC R1	148948	5-Yr	110.00	7003.00	7004.23	2.38	46.28	61.59	0.40	0.56	0.060	0.56		
MC R1	148948	10-Yr	220.00	7003.00	7004.97	2.77	79.38	79.10	0.38	0.66	0.060	0.66		
MC R1	148948	50-Yr	710.00	7003.00	7007.22	3.59	201.10	542.07	0.33	0.82	0.060	0.85	0.41	
MC R1	148948	100-Yr	1100.00	7003.00	7008.80	3.90	287.78	566.37	0.30	0.87	0.060	0.89	0.57	
MC R1	148850		Culvert											
MC R1	148789	2-Yr	32.00	6985.00	6986.52	1.41	22.77	18.61	0.22	0.13	0.050	0.13		
MC R1	148789	5-Yr	130.00	6985.00	6987.92	2.48	52.49	23.63	0.29	0.34	0.050	0.34		
MC R1	148789	10-Yr	280.00	6985.00	6989.14	3.34	83.76	27.96	0.34	0.55	0.050	0.56	0.01	
MC R1	148789	50-Yr	930.00	6985.00	6991.97	5.53	174.23	45.73	0.40	1.05	0.047	1.23	0.51	0.23
MC R1	148789	100-Yr	1400.00	6985.00	6993.13	6.82	217.34	90.01	0.46	1.40	0.045	1.76	0.90	0.36

HEC-RAS Plan: Plan 07 River: Monument Creek Reach: MC R1 (Continued)

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl	Shear Total (lb/sq ft)	Mann Wtd Total	Shear Chan (lb/sq ft)	Shear LOB (lb/sq ft)	Shear ROB (lb/sq ft)
MC R1	148413	2-Yr	32.00	6984.00	6984.48	3.75	8.53	19.37	1.00	1.06	0.045	1.06		
MC R1	148413	5-Yr	130.00	6984.00	6985.16	5.65	23.01	23.33	1.00	1.85	0.045	1.85		
MC R1	148413	10-Yr	280.00	6984.00	6985.83	7.04	39.78	26.38	1.01	2.49	0.045	2.49		
MC R1	148413	50-Yr	930.00	6984.00	6987.83	8.83	105.34	43.82	1.00	6.34	0.062	6.37	0.14	
MC R1	148413	100-Yr	1400.00	6984.00	6988.71	9.54	154.40	99.18	0.94	5.15	0.054	7.20	0.97	0.93
MC R1	148198	2-Yr	32.00	6978.00	6978.67	2.65	12.71	21.84	0.58	0.33	0.039	0.37	0.31	0.10
MC R1	148198	5-Yr	130.00	6978.00	6979.57	4.10	35.13	27.43	0.58	0.54	0.039	0.66	0.51	0.28
MC R1	148198	10-Yr	280.00	6978.00	6980.51	5.05	63.31	31.84	0.56	0.66	0.039	0.85	0.63	0.40
MC R1	148198	50-Yr	930.00	6978.00	6983.02	7.20	154.87	41.12	0.57	0.99	0.038	1.37	0.93	0.69
MC R1	148198	100-Yr	1400.00	6978.00	6984.23	7.98	207.59	46.66	0.56	1.07	0.037	1.57	0.98	0.79
MC R1	147876	2-Yr	32.00	6975.00	6975.80	3.38	10.20	14.84	0.67	0.36	0.034	0.43	0.25	0.19
MC R1	147876	5-Yr	130.00	6975.00	6976.65	6.01	24.23	17.95	0.82	0.83	0.033	1.06	0.61	0.52
MC R1	147876	10-Yr	280.00	6975.00	6977.41	8.32	38.71	20.35	0.94	1.34	0.033	1.79	1.01	0.87
MC R1	147876	50-Yr	930.00	6975.00	6979.72	12.09	93.63	26.96	0.98	2.02	0.033	3.02	1.59	1.44
MC R1	147876	100-Yr	1400.00	6975.00	6980.92	13.27	128.01	30.44	0.96	2.16	0.032	3.37	1.70	1.59
MC R1	147509	2-Yr	32.00	6973.00	6973.55	1.75	19.16	37.48	0.42	0.16	0.040	0.17	0.16	0.14
MC R1	147509	5-Yr	130.00	6973.00	6974.20	3.12	45.59	43.77	0.50	0.36	0.040	0.42	0.36	0.31
MC R1	147509	10-Yr	280.00	6973.00	6974.79	4.33	72.69	48.73	0.57	0.58	0.040	0.70	0.57	0.50
MC R1	147509	50-Yr	930.00	6973.00	6976.30	6.90	157.54	64.44	0.67	1.06	0.038	1.44	1.06	0.87
MC R1	147509	100-Yr	1400.00	6973.00	6976.82	8.49	192.49	72.14	0.77	1.44	0.037	2.09	1.49	1.14
MC R1	147075	2-Yr	32.00	6968.00	6968.35	3.39	9.69	29.17	1.01	1.10	0.050	1.16	0.64	0.99
MC R1	147075	5-Yr	130.00	6968.00	6968.88	5.26	26.19	33.45	0.99	1.82	0.049	2.05	1.03	1.53
MC R1	147075	10-Yr	280.00	6968.00	6969.43	6.34	53.92	58.66	0.93	1.60	0.045	2.52	0.79	1.75
MC R1	147075	50-Yr	930.00	6968.00	6970.73	9.04	150.19	94.59	0.96	2.38	0.051	4.13	1.66	2.60
MC R1	147075	100-Yr	1400.00	6968.00	6971.52	9.16	255.62	155.53	0.86	1.81	0.050	3.90	1.33	2.28
MC R1	146700	2-Yr	32.00	6964.00	6964.39	0.89	36.61	114.66	0.27	0.08	0.050	0.08	0.05	0.05
MC R1	146700	5-Yr	130.00	6964.00	6964.73	1.73	78.47	128.51	0.37	0.22	0.049	0.24	0.11	0.13
MC R1	146700	10-Yr	280.00	6964.00	6965.15	2.19	136.86	149.07	0.37	0.28	0.048	0.33	0.13	0.19
MC R1	146700	50-Yr	930.00	6964.00	6966.21	3.29	302.25	166.01	0.40	0.50	0.048	0.59	0.36	0.35
MC R1	146700	100-Yr	1400.00	6964.00	6966.76	3.79	397.49	175.94	0.41	0.61	0.048	0.73	0.48	0.40
MC R1	146245	2-Yr	32.00	6959.41	6959.90	3.13	10.43	36.08	0.98	0.92	0.048	1.02		0.26
MC R1	146245	5-Yr	130.00	6959.41	6960.53	3.62	38.63	49.19	0.66	0.78	0.047	0.94	0.32	0.56
MC R1	146245	10-Yr	280.00	6959.41	6960.95	5.07	60.56	55.41	0.77	1.31	0.047	1.64	0.63	1.04
MC R1	146245	50-Yr	930.00	6959.41	6962.21	7.23	163.74	156.20	0.79	1.07	0.034	2.68	0.49	1.70
MC R1	146245	100-Yr	1400.00	6959.41	6962.66	8.31	235.85	161.50	0.83	1.59	0.043	3.36	1.00	2.02
MC R1	145836	2-Yr	32.00	6952.00	6952.79	2.74	12.59	19.64	0.55	0.30	0.038	0.37	0.18	0.14
MC R1	145836	5-Yr	130.00	6952.00	6953.33	5.96	24.69	25.09	0.91	1.08	0.037	1.47	0.74	0.58
MC R1	145836	10-Yr	280.00	6952.00	6954.09	7.07	47.61	37.59	0.86	1.06	0.034	1.77	0.92	0.60
MC R1	145836	50-Yr	930.00	6952.00	6955.60	10.20	123.36	57.52	0.95	1.81	0.038	3.08	1.60	1.39
MC R1	145836	100-Yr	1400.00	6952.00	6956.59	10.33	227.03	163.84	0.85	0.87	0.030	2.91	0.40	1.53
MC R1	145426	2-Yr	32.00	6947.16	6947.79	3.15	10.33	27.03	0.85	0.53	0.038	0.59	0.09	
MC R1	145426	5-Yr	130.00	6947.16	6948.55	3.91	36.31	37.79	0.63	0.53	0.038	0.65	0.34	0.20

HEC-RAS Plan: Plan 07 River: Monument Creek Reach: MC R1 (Continued)

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl	Shear Total (lb/sq ft)	Mann Wtd Total	Shear Chan (lb/sq ft)	Shear LOB (lb/sq ft)	Shear ROB (lb/sq ft)
MC R1	145426	10-Yr	280.00	6947.16	6949.18	5.04	61.46	42.34	0.66	0.75	0.038	0.95	0.56	0.36
MC R1	145426	50-Yr	930.00	6947.16	6951.78	5.52	199.32	66.62	0.46	0.56	0.036	0.84	0.43	0.36
MC R1	145426	100-Yr	1400.00	6947.16	6952.69	6.55	264.96	77.51	0.50	0.71	0.037	1.11	0.55	0.48
MC R1	144958	2-Yr	69.00	6942.00	6943.92	1.84	37.47	31.51	0.30	0.45	0.070	0.45		
MC R1	144958	5-Yr	230.00	6942.00	6945.04	3.04	78.77	42.31	0.36	0.80	0.064	0.98	0.23	0.21
MC R1	144958	10-Yr	440.00	6942.00	6946.18	3.63	132.41	141.27	0.35	0.92	0.063	1.22	0.42	0.36
MC R1	144958	50-Yr	1300.00	6942.00	6946.44	9.80	146.30	148.10	0.90	6.42	0.063	8.66	3.12	2.64
MC R1	144958	100-Yr	1800.00	6942.00	6947.17	10.84	187.26	164.87	0.91	7.12	0.063	9.99	3.91	3.18
MC R1	144479	2-Yr	69.00	6940.00	6941.12	2.40	28.81	308.08	0.47	0.27	0.040	0.28	0.02	
MC R1	144479	5-Yr	230.00	6940.00	6941.97	3.79	62.91	417.28	0.53	0.47	0.037	0.55	0.16	0.08
MC R1	144479	10-Yr	440.00	6940.00	6942.38	5.66	82.91	536.76	0.70	0.95	0.037	1.15	0.37	0.29
MC R1	144479	50-Yr	1300.00	6940.00	6943.51	1.74	1504.84	678.81	0.17	0.07	0.065	0.10	0.07	0.03
MC R1	144479	100-Yr	1800.00	6940.00	6943.01	3.25	1164.24	673.03	0.35	0.23	0.064	0.35	0.23	0.11
MC R1	143996	2-Yr	69.00	6935.00	6936.18	5.06	13.63	46.16	0.92	1.19	0.040	1.19		
MC R1	143996	5-Yr	230.00	6935.00	6937.51	6.37	36.08	130.42	0.82	1.52	0.040	1.52		
MC R1	143996	10-Yr	440.00	6935.00	6940.28	4.24	103.86	850.41	0.40	0.55	0.040	0.55		
MC R1	143996	50-Yr	1300.00	6935.00	6940.83	10.72	121.27	891.23	0.99	3.47	0.040	3.47		
MC R1	143996	100-Yr	1800.00	6935.00	6941.64	1.58	2071.84	927.26	0.13	0.06	0.066	0.07	0.06	0.01
MC R1	143887	2-Yr	69.00	6934.00	6935.46	2.72	25.35	21.91	0.45	0.32	0.040	0.32		
MC R1	143887	5-Yr	230.00	6934.00	6937.44	3.08	78.10	172.47	0.31	0.25	0.037	0.30	0.06	0.07
MC R1	143887	10-Yr	440.00	6934.00	6940.46	0.68	1756.88	904.56	0.05	0.00	0.052	0.01	0.01	0.00
MC R1	143887	50-Yr	1300.00	6934.00	6940.53	1.94	1813.92	906.58	0.14	0.03	0.053	0.09	0.04	0.01
MC R1	143887	100-Yr	1800.00	6934.00	6941.62	1.67	2818.43	932.29	0.11	0.03	0.060	0.07	0.04	0.02
MC R1	143860	2-Yr	69.00	6933.00	6935.42	1.61	43.60	23.85	0.20	0.26	0.066	0.29	0.06	0.03
MC R1	143860	5-Yr	230.00	6933.00	6937.43	2.50	98.90	31.35	0.22	0.42	0.063	0.55	0.19	0.16
MC R1	143860	10-Yr	440.00	6933.00	6940.38	2.44	231.84	356.00	0.16	0.18	0.049	0.44	0.11	0.08
MC R1	143860	50-Yr	1300.00	6933.00	6940.52	1.25	1800.27	907.80	0.08	0.05	0.067	0.11	0.05	0.02
MC R1	143860	100-Yr	1800.00	6933.00	6939.32	12.27	168.10	214.50	0.89	6.67	0.055	11.64	4.20	2.34
MC R1	143820		Culvert											
MC R1	143802	2-Yr	69.00	6930.00	6931.95	2.77	28.03	21.30	0.38	0.22	0.038	0.29	0.09	0.19
MC R1	143802	5-Yr	230.00	6930.00	6933.23	4.46	59.02	26.86	0.46	0.45	0.037	0.63	0.26	0.40
MC R1	143802	10-Yr	440.00	6930.00	6934.27	5.77	89.00	30.81	0.51	0.66	0.036	0.95	0.41	0.59
MC R1	143802	50-Yr	1300.00	6930.00	6936.25	10.20	157.51	38.90	0.73	1.66	0.037	2.60	1.14	1.52
MC R1	143802	100-Yr	1800.00	6930.00	6936.38	13.74	162.78	39.60	0.98	2.97	0.037	4.67	2.05	2.72
MC R1	143776	2-Yr	69.00	6930.00	6931.95	1.69	40.87	27.91	0.25	0.11	0.040	0.11		
MC R1	143776	5-Yr	230.00	6930.00	6933.27	2.87	83.46	36.72	0.30	0.22	0.036	0.27	0.06	0.06
MC R1	143776	10-Yr	440.00	6930.00	6934.35	3.74	127.76	45.02	0.34	0.30	0.035	0.40	0.12	0.12
MC R1	143776	50-Yr	1300.00	6930.00	6936.61	6.19	252.26	226.11	0.44	0.58	0.034	0.95	0.31	0.31
MC R1	143776	100-Yr	1800.00	6930.00	6937.47	6.10	722.00	681.51	0.41	0.17	0.033	0.89	0.12	0.33
MC R1	143616	2-Yr	69.00	6930.00	6931.68	1.59	43.27	35.93	0.26	0.17	0.050	0.17		
MC R1	143616	5-Yr	230.00	6930.00	6933.01	2.41	98.09	46.62	0.27	0.26	0.047	0.31	0.06	0.06
MC R1	143616	10-Yr	440.00	6930.00	6934.10	3.05	154.08	55.50	0.29	0.34	0.045	0.43	0.13	0.12

HEC-RAS Plan: Plan 07 River: Monument Creek Reach: MC R1 (Continued)

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl	Shear Total (lb/sq ft)	Mann Wtd Total	Shear Chan (lb/sq ft)	Shear LOB (lb/sq ft)	Shear ROB (lb/sq ft)
MC R1	143616	50-Yr	1300.00	6930.00	6936.65	3.21	920.98	739.15	0.23	0.08	0.040	0.40	0.07	0.06
MC R1	143616	100-Yr	1800.00	6930.00	6937.55	2.60	1600.12	762.84	0.17	0.08	0.052	0.25	0.07	0.06
MC R1	143165	2-Yr	69.00	6929.00	6930.62	2.10	32.83	25.26	0.32	0.18	0.040	0.18		
MC R1	143165	5-Yr	230.00	6929.00	6931.76	3.62	64.41	29.96	0.42	0.41	0.038	0.45	0.07	0.06
MC R1	143165	10-Yr	440.00	6929.00	6932.05	6.14	73.13	30.99	0.67	1.10	0.038	1.24	0.23	0.22
MC R1	143165	50-Yr	1300.00	6929.00	6933.60	10.98	125.45	47.74	0.95	2.73	0.037	3.41	0.99	0.94
MC R1	143165	100-Yr	1800.00	6929.00	6934.54	12.09	161.09	69.58	0.94	2.95	0.036	3.87	1.24	1.16
MC R1	142662	2-Yr	69.00	6927.00	6927.60	3.93	17.56	125.84	0.99	0.89	0.040	0.89		
MC R1	142662	5-Yr	230.00	6927.00	6928.21	5.19	46.57	227.94	0.95	0.79	0.031	1.26	0.11	
MC R1	142662	10-Yr	440.00	6927.00	6928.35	3.60	222.22	257.47	0.61	0.46	0.063	0.58	0.44	0.04
MC R1	142662	50-Yr	1300.00	6927.00	6930.07	3.73	725.89	390.77	0.39	0.30	0.064	0.45	0.28	0.15
MC R1	142662	100-Yr	1800.00	6927.00	6930.52	4.10	905.01	398.98	0.40	0.36	0.065	0.52	0.34	0.19
MC R1	142178	2-Yr	69.00	6924.16	6925.34	1.29	53.31	71.62	0.26	0.08	0.040	0.08		
MC R1	142178	5-Yr	230.00	6924.16	6926.12	2.07	112.57	80.91	0.30	0.16	0.038	0.17	0.02	0.04
MC R1	142178	10-Yr	440.00	6924.16	6926.77	2.70	168.23	89.99	0.33	0.22	0.038	0.26	0.06	0.08
MC R1	142178	50-Yr	1300.00	6924.16	6926.78	7.93	169.51	90.17	0.95	1.91	0.038	2.20	0.55	0.69
MC R1	142178	100-Yr	1800.00	6924.16	6927.38	8.31	241.00	148.82	0.88	1.31	0.031	2.23	0.36	0.81
MC R1	141884	2-Yr	69.00	6923.57	6924.60	1.76	40.04	451.50	0.36	0.15	0.039	0.16		0.06
MC R1	141884	5-Yr	230.00	6923.57	6925.31	2.81	88.23	507.00	0.42	0.26	0.037	0.34	0.04	0.11
MC R1	141884	10-Yr	440.00	6923.57	6925.90	3.62	144.33	564.26	0.45	0.34	0.038	0.50	0.11	0.19
MC R1	141884	50-Yr	1300.00	6923.57	6926.01	1.19	1670.50	631.42	0.14	0.07	0.074	0.05	0.07	0.02
MC R1	141884	100-Yr	1800.00	6923.57	6926.01	1.65	1670.50	631.42	0.20	0.13	0.074	0.10	0.14	0.04
MC R1	141501	2-Yr	69.00	6921.00	6921.45	3.63	19.00	146.73	1.00	0.80	0.040	0.80		
MC R1	141501	5-Yr	230.00	6921.00	6921.97	5.09	45.18	219.88	0.98	1.25	0.040	1.25		
MC R1	141501	10-Yr	440.00	6921.00	6922.45	6.01	73.22	249.04	0.99	1.57	0.040	1.57		
MC R1	141501	50-Yr	1300.00	6921.00	6923.01	5.68	409.26	371.54	0.83	0.97	0.059	1.29	0.89	
MC R1	141501	100-Yr	1800.00	6921.00	6923.04	7.60	422.51	371.76	1.10	1.74	0.060	2.29	1.60	
MC R1	139821	2-Yr	69.00	6917.00	6919.25	0.03	2418.65	1117.26	0.00	0.00	0.039	0.00	0.00	0.00
MC R1	139821	5-Yr	230.00	6917.00	6919.65	0.08	2871.62	1148.48	0.01	0.00	0.039	0.00	0.00	0.00
MC R1	139821	10-Yr	440.00	6917.00	6920.03	0.13	3317.36	1190.36	0.01	0.00	0.038	0.00	0.00	0.00
MC R1	139821	50-Yr	1300.00	6917.00	6921.18	0.28	4701.53	1215.67	0.02	0.00	0.039	0.00	0.00	0.00
MC R1	139821	100-Yr	1800.00	6917.00	6921.71	0.34	5351.11	1223.21	0.03	0.00	0.039	0.00	0.00	0.00
MC R1	139640		Inl Struct											
MC R1	139357	2-Yr	30.00	6882.00	6882.51	1.95	16.99	44.24	0.50	0.18	0.038	0.22	0.11	
MC R1	139357	5-Yr	62.00	6882.00	6882.82	2.18	32.34	57.32	0.45	0.18	0.038	0.24	0.13	
MC R1	139357	10-Yr	73.00	6882.00	6882.92	2.16	38.72	61.98	0.42	0.17	0.038	0.23	0.12	
MC R1	139357	50-Yr	220.00	6882.00	6884.95	0.97	263.34	126.49	0.10	0.02	0.038	0.03	0.02	0.01
MC R1	139357	100-Yr	610.00	6882.00	6886.42	1.53	461.77	141.60	0.13	0.05	0.038	0.07	0.05	0.02
MC R1	139269	2-Yr	30.00	6881.00	6881.79	2.42	12.41	19.87	0.54	0.31	0.040	0.31		
MC R1	139269	5-Yr	62.00	6881.00	6882.14	3.11	20.05	23.46	0.57	0.42	0.038	0.45	0.05	0.03
MC R1	139269	10-Yr	73.00	6881.00	6882.09	3.87	18.94	22.99	0.73	0.68	0.039	0.71	0.06	0.04
MC R1	139269	50-Yr	220.00	6881.00	6884.87	2.13	118.61	46.69	0.20	0.09	0.036	0.13	0.06	0.05

HEC-RAS Plan: Plan 07 River: Monument Creek Reach: MC R1 (Continued)

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl	Shear Total (lb/sq ft)	Mann Wtd Total	Shear Chan (lb/sq ft)	Shear LOB (lb/sq ft)	Shear ROB (lb/sq ft)
MC R1	139269	100-Yr	610.00	6881.00	6886.20	3.88	185.93	54.27	0.31	0.27	0.036	0.40	0.21	0.16
MC R1	138886	2-Yr	30.00	6879.00	6879.66	1.67	17.93	30.68	0.39	0.15	0.040	0.15		
MC R1	138886	5-Yr	62.00	6879.00	6879.99	2.16	28.65	34.13	0.42	0.22	0.040	0.22		
MC R1	138886	10-Yr	73.00	6879.00	6880.23	1.95	37.37	36.87	0.34	0.17	0.040	0.17		
MC R1	138886	50-Yr	220.00	6879.00	6884.87	0.65	463.03	152.32	0.05	0.01	0.040	0.01	0.00	0.00
MC R1	138886	100-Yr	610.00	6879.00	6886.21	1.32	677.78	166.30	0.09	0.03	0.045	0.04	0.02	0.02
MC R1	138784	2-Yr	30.00	6878.00	6878.56	3.88	7.73	15.96	0.98	0.87	0.040	0.87		
MC R1	138784	5-Yr	62.00	6878.00	6879.72	2.07	31.50	24.48	0.30	0.14	0.038	0.17	0.04	0.04
MC R1	138784	10-Yr	73.00	6878.00	6880.05	1.98	39.90	26.80	0.26	0.12	0.037	0.15	0.04	0.04
MC R1	138784	50-Yr	220.00	6878.00	6884.84	1.40	325.70	144.61	0.10	0.02	0.040	0.05	0.01	0.01
MC R1	138784	100-Yr	610.00	6878.00	6886.12	2.78	519.41	158.80	0.17	0.07	0.053	0.18	0.06	0.06
MC R1	138750		Culvert											
MC R1	138726	2-Yr	30.00	6876.00	6876.87	4.17	7.20	12.87	0.98	0.96	0.040	0.96		
MC R1	138726	5-Yr	62.00	6876.00	6877.21	5.15	12.05	15.40	1.03	1.31	0.040	1.31		
MC R1	138726	10-Yr	73.00	6876.00	6877.34	5.21	14.02	16.15	0.99	1.29	0.040	1.29		
MC R1	138726	50-Yr	220.00	6876.00	6878.28	7.13	31.91	21.73	0.96	1.67	0.037	1.94	0.44	0.27
MC R1	138726	100-Yr	610.00	6876.00	6879.87	9.78	73.66	30.92	0.95	2.09	0.038	2.93	0.99	0.90
MC R1	138541	2-Yr	30.00	6873.00	6874.04	2.35	12.74	17.99	0.49	0.28	0.040	0.28		
MC R1	138541	5-Yr	62.00	6873.00	6874.42	3.08	20.16	20.83	0.55	0.44	0.040	0.44		
MC R1	138541	10-Yr	73.00	6873.00	6874.52	3.26	22.40	21.62	0.56	0.48	0.040	0.48		
MC R1	138541	50-Yr	220.00	6873.00	6875.41	5.13	44.03	27.10	0.66	0.84	0.037	0.97	0.21	0.16
MC R1	138541	100-Yr	610.00	6873.00	6876.79	7.62	87.12	36.17	0.75	1.31	0.035	1.78	0.54	0.52
MC R1	138307	2-Yr	30.00	6870.62	6871.45	3.31	9.06	18.49	0.83	0.63	0.040	0.63		
MC R1	138307	5-Yr	62.00	6870.62	6871.78	3.96	15.65	21.43	0.82	0.79	0.040	0.79		
MC R1	138307	10-Yr	73.00	6870.62	6871.87	4.12	17.73	22.28	0.81	0.83	0.040	0.83		
MC R1	138307	50-Yr	220.00	6870.62	6872.67	6.03	37.55	27.43	0.85	1.24	0.037	1.42	0.36	0.28
MC R1	138307	100-Yr	610.00	6870.62	6873.91	8.67	76.04	34.43	0.91	1.87	0.036	2.42	0.88	0.76
MC R1	137862	2-Yr	30.00	6868.00	6868.66	1.45	20.73	34.93	0.33	0.12	0.040	0.12		
MC R1	137862	5-Yr	62.00	6868.00	6868.98	1.91	32.46	38.21	0.37	0.18	0.041	0.18		
MC R1	137862	10-Yr	73.00	6868.00	6869.07	2.04	35.78	38.96	0.37	0.20	0.041	0.20	0.01	0.01
MC R1	137862	50-Yr	220.00	6868.00	6869.89	3.21	70.84	45.90	0.43	0.38	0.040	0.43	0.11	0.11
MC R1	137862	100-Yr	610.00	6868.00	6871.15	4.87	141.63	71.82	0.49	0.56	0.036	0.85	0.19	0.25
MC R1	137446	2-Yr	30.00	6865.00	6865.40	3.42	8.78	25.43	1.03	0.75	0.040	0.75		
MC R1	137446	5-Yr	62.00	6865.00	6865.63	4.14	15.13	29.38	0.98	0.88	0.039	0.95	0.15	
MC R1	137446	10-Yr	73.00	6865.00	6865.70	4.32	17.16	30.33	0.97	0.91	0.038	0.99	0.21	
MC R1	137446	50-Yr	220.00	6865.00	6866.33	6.03	38.67	36.96	0.95	1.28	0.038	1.53	0.63	0.39
MC R1	137446	100-Yr	610.00	6865.00	6867.43	8.01	84.22	47.40	0.92	1.64	0.037	2.19	0.95	0.78
MC R1	136992	2-Yr	30.00	6860.70	6861.88	1.22	24.51	31.93	0.25	0.07	0.040	0.07		
MC R1	136992	5-Yr	62.00	6860.70	6862.23	1.71	36.53	36.62	0.29	0.12	0.038	0.13	0.01	0.01
MC R1	136992	10-Yr	73.00	6860.70	6862.33	1.85	40.10	37.94	0.30	0.13	0.038	0.15	0.02	0.02
MC R1	136992	50-Yr	220.00	6860.70	6863.22	2.98	79.90	51.97	0.36	0.23	0.035	0.32	0.09	0.09
MC R1	136992	100-Yr	610.00	6860.70	6864.58	4.31	171.71	83.72	0.41	0.33	0.034	0.56	0.19	0.18

HEC-RAS Plan: Plan 07 River: Monument Creek Reach: MC R1 (Continued)

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl	Shear Total (lb/sq ft)	Mann Wtd Total	Shear Chan (lb/sq ft)	Shear LOB (lb/sq ft)	Shear ROB (lb/sq ft)
MC R1	136950		Bridge											
MC R1	136898	2-Yr	30.00	6859.00	6859.78	2.78	10.78	18.89	0.65	0.42	0.040	0.42		
MC R1	136898	5-Yr	62.00	6859.00	6859.92	4.58	13.53	20.78	1.00	1.10	0.040	1.10		
MC R1	136898	10-Yr	73.00	6859.00	6860.01	4.71	15.49	22.06	0.99	1.12	0.040	1.13		
MC R1	136898	50-Yr	220.00	6859.00	6860.78	6.50	35.87	30.74	0.94	1.33	0.036	1.68	0.43	0.45
MC R1	136898	100-Yr	610.00	6859.00	6862.13	7.95	90.15	54.79	0.83	1.18	0.033	2.03	0.49	0.73
MC R1	136298	2-Yr	49.00	6856.00	6857.10	1.16	41.94	98.50	0.31	0.08	0.040	0.08	0.02	0.10
MC R1	136298	5-Yr	150.00	6856.00	6857.57	1.71	88.87	101.70	0.32	0.14	0.040	0.14	0.06	0.13
MC R1	136298	10-Yr	280.00	6856.00	6857.99	2.17	132.41	104.48	0.33	0.19	0.040	0.20	0.09	0.16
MC R1	136298	50-Yr	790.00	6856.00	6859.09	3.32	252.39	116.81	0.38	0.33	0.039	0.38	0.19	0.19
MC R1	136298	100-Yr	1200.00	6856.00	6859.69	3.95	330.57	144.23	0.40	0.37	0.036	0.50	0.26	0.15
MC R1	135864	2-Yr	49.00	6855.00	6855.65	1.37	35.95	77.54	0.35	0.11	0.040	0.11	0.03	
MC R1	135864	5-Yr	150.00	6855.00	6855.99	2.37	64.91	91.16	0.47	0.24	0.038	0.27	0.10	0.06
MC R1	135864	10-Yr	280.00	6855.00	6856.25	3.26	88.96	93.14	0.56	0.42	0.038	0.47	0.22	0.17
MC R1	135864	50-Yr	790.00	6855.00	6856.97	5.23	157.28	97.11	0.69	0.92	0.039	1.02	0.56	0.56
MC R1	135864	100-Yr	1200.00	6855.00	6857.51	5.95	210.98	99.56	0.69	1.09	0.039	1.21	0.69	0.72
MC R1	135330	2-Yr	49.00	6849.00	6849.70	4.29	11.43	20.52	1.01	4.05	0.080	4.05		
MC R1	135330	5-Yr	150.00	6849.00	6850.85	3.70	46.06	51.48	0.50	1.12	0.060	2.09	0.70	0.37
MC R1	135330	10-Yr	280.00	6849.00	6851.63	3.55	104.23	82.25	0.40	0.88	0.068	1.70	0.64	0.58
MC R1	135330	50-Yr	790.00	6849.00	6853.51	3.62	271.80	97.76	0.31	0.93	0.074	1.46	0.61	0.80
MC R1	135330	100-Yr	1200.00	6849.00	6854.53	3.92	386.36	124.65	0.30	0.92	0.070	1.59	0.67	0.78
MC R1	134983	2-Yr	49.00	6846.00	6847.61	1.69	29.07	26.32	0.28	0.12	0.040	0.12		
MC R1	134983	5-Yr	150.00	6846.00	6848.25	3.18	47.73	32.07	0.44	0.36	0.038	0.39	0.03	0.07
MC R1	134983	10-Yr	280.00	6846.00	6848.71	4.56	63.43	35.85	0.56	0.63	0.037	0.74	0.12	0.18
MC R1	134983	50-Yr	790.00	6846.00	6849.62	8.71	98.99	95.01	0.89	1.87	0.037	2.39	0.72	0.75
MC R1	134983	100-Yr	1200.00	6846.00	6850.38	10.30	132.96	117.89	0.94	2.25	0.037	3.10	1.13	0.90
MC R1	134658	2-Yr	49.00	6846.00	6846.24	1.86	26.27	111.28	0.68	0.25	0.040	0.25		
MC R1	134658	5-Yr	150.00	6846.00	6846.60	2.25	66.83	115.41	0.52	0.27	0.040	0.27	0.07	0.05
MC R1	134658	10-Yr	280.00	6846.00	6846.91	2.74	103.36	119.11	0.51	0.34	0.039	0.35	0.12	0.10
MC R1	134658	50-Yr	790.00	6846.00	6847.77	3.86	210.13	129.41	0.51	0.51	0.039	0.56	0.22	0.22
MC R1	134658	100-Yr	1200.00	6846.00	6848.38	4.31	291.26	148.92	0.49	0.54	0.038	0.63	0.21	0.25
MC R1	134303	2-Yr	49.00	6841.00	6842.03	2.60	18.85	28.21	0.56	0.35	0.040	0.35		
MC R1	134303	5-Yr	150.00	6841.00	6842.44	4.79	31.32	32.88	0.86	1.03	0.039	1.05	0.04	
MC R1	134303	10-Yr	280.00	6841.00	6842.85	6.21	45.89	37.44	0.93	1.40	0.038	1.57	0.29	0.17
MC R1	134303	50-Yr	790.00	6841.00	6844.19	8.27	102.64	46.72	0.88	1.78	0.037	2.22	0.88	0.64
MC R1	134303	100-Yr	1200.00	6841.00	6845.00	9.25	142.19	51.30	0.87	1.98	0.037	2.55	1.13	0.83
MC R1	133629	2-Yr	49.00	6837.54	6838.72	1.67	29.26	41.64	0.35	0.14	0.040	0.14		
MC R1	133629	5-Yr	150.00	6837.54	6839.58	2.18	73.37	64.37	0.32	0.14	0.036	0.19	0.03	0.04
MC R1	133629	10-Yr	280.00	6837.54	6840.25	2.71	123.26	79.70	0.32	0.18	0.038	0.26	0.07	0.09
MC R1	133629	50-Yr	790.00	6837.54	6841.79	4.15	252.30	88.54	0.38	0.39	0.044	0.50	0.17	0.28
MC R1	133629	100-Yr	1200.00	6837.54	6842.69	4.93	338.27	114.28	0.41	0.42	0.041	0.66	0.10	0.40

HEC-RAS Plan: Plan 07 River: Monument Creek Reach: MC R1 (Continued)

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl	Shear Total (lb/sq ft)	Mann Wtd Total	Shear Chan (lb/sq ft)	Shear LOB (lb/sq ft)	Shear ROB (lb/sq ft)
MC R1	133203	2-Yr	49.00	6836.00	6837.73	0.74	67.32	56.12	0.12	0.13	0.097	0.14	0.03	0.04
MC R1	133203	5-Yr	150.00	6836.00	6838.59	1.32	116.99	59.97	0.16	0.35	0.097	0.38	0.14	0.14
MC R1	133203	10-Yr	280.00	6836.00	6839.00	2.04	141.95	161.92	0.23	0.78	0.096	0.86	0.33	0.34
MC R1	133203	50-Yr	790.00	6836.00	6839.51	4.72	174.34	230.30	0.48	3.85	0.096	4.35	1.78	1.79
MC R1	133203	100-Yr	1200.00	6836.00	6840.11	5.92	212.71	241.27	0.55	5.62	0.096	6.44	2.73	2.73
MC R1	132933	2-Yr	49.00	6836.00	6836.27	2.82	17.38	75.14	1.03	0.59	0.040	0.59		
MC R1	132933	5-Yr	150.00	6836.00	6836.54	3.81	39.38	88.27	1.01	0.86	0.040	0.86		
MC R1	132933	10-Yr	280.00	6836.00	6837.05	3.13	95.41	246.65	0.60	0.21	0.025	0.47	0.02	0.07
MC R1	132933	50-Yr	860.00	6836.00	6838.48	2.85	498.97	308.25	0.33	0.21	0.054	0.28	0.17	0.12
MC R1	132933	100-Yr	1300.00	6836.00	6839.82	2.51	913.99	344.50	0.23	0.14	0.060	0.19	0.13	0.09
MC R1	132823	2-Yr	49.00	6835.00	6835.81	0.75	69.78	97.93	0.15	0.02	0.039	0.03	0.02	0.03
MC R1	132823	5-Yr	150.00	6835.00	6836.39	1.23	131.88	123.27	0.18	0.05	0.039	0.06	0.04	0.06
MC R1	132823	10-Yr	280.00	6835.00	6836.94	1.56	194.60	150.15	0.20	0.08	0.040	0.09	0.06	0.09
MC R1	132823	50-Yr	860.00	6835.00	6838.35	2.62	354.03	214.04	0.25	0.19	0.041	0.21	0.17	0.20
MC R1	132823	100-Yr	1300.00	6835.00	6839.71	2.75	508.36	225.46	0.22	0.19	0.042	0.20	0.18	0.20
MC R1	132800		Bridge											
MC R1	132718	2-Yr	49.00	6834.36	6835.09	3.47	14.17	29.12	0.87	0.71	0.041	0.73		0.09
MC R1	132718	5-Yr	150.00	6834.36	6835.57	5.06	32.24	46.57	0.91	0.97	0.038	1.34	0.30	0.42
MC R1	132718	10-Yr	280.00	6834.36	6836.05	5.63	58.66	65.77	0.83	0.92	0.037	1.48	0.44	0.57
MC R1	132718	50-Yr	860.00	6834.36	6837.05	8.06	130.19	76.75	0.91	1.79	0.042	2.58	1.34	1.18
MC R1	132718	100-Yr	1300.00	6834.36	6837.59	9.29	172.71	82.13	0.95	2.28	0.043	3.23	1.81	1.54
MC R1	132481	2-Yr	48.00	6829.00	6829.92	4.15	11.58	16.07	0.86	0.87	0.040	0.87		
MC R1	132481	5-Yr	150.00	6829.00	6830.68	6.00	26.14	22.11	0.88	1.16	0.036	1.45	0.34	0.27
MC R1	132481	10-Yr	290.00	6829.00	6831.40	7.30	44.92	31.96	0.87	1.20	0.034	1.87	0.48	0.53
MC R1	132481	50-Yr	920.00	6829.00	6833.18	9.08	162.15	103.80	0.80	0.94	0.035	2.37	0.65	0.86
MC R1	132481	100-Yr	1400.00	6829.00	6833.87	10.24	235.60	107.16	0.84	1.35	0.042	2.86	1.07	1.07
MC R1	132209	2-Yr	48.00	6826.00	6827.27	2.83	17.45	19.32	0.51	0.34	0.039	0.37		0.19
MC R1	132209	5-Yr	150.00	6826.00	6828.10	4.41	36.00	25.24	0.60	0.61	0.037	0.74	0.12	0.40
MC R1	132209	10-Yr	290.00	6826.00	6828.81	5.76	55.23	29.59	0.65	0.86	0.037	1.12	0.30	0.60
MC R1	132209	50-Yr	920.00	6826.00	6830.60	8.73	144.00	81.59	0.75	0.90	0.031	2.15	0.45	1.10
MC R1	132209	100-Yr	1400.00	6826.00	6831.57	9.51	230.03	91.40	0.74	1.14	0.038	2.37	0.78	1.20
MC R1	131771	2-Yr	48.00	6821.00	6822.08	5.01	9.59	12.46	1.00	1.23	0.040	1.24	0.04	
MC R1	131771	5-Yr	150.00	6821.00	6822.98	6.93	23.01	17.24	0.94	1.44	0.036	1.84	0.50	0.47
MC R1	131771	10-Yr	290.00	6821.00	6823.85	8.17	40.12	22.47	0.90	1.54	0.035	2.23	0.74	0.72
MC R1	131771	50-Yr	920.00	6821.00	6826.01	10.73	113.57	48.89	0.87	1.54	0.033	3.14	1.02	1.00
MC R1	131771	100-Yr	1400.00	6821.00	6826.96	12.27	163.23	55.19	0.91	2.00	0.037	3.85	1.46	1.50
MC R1	131318	2-Yr	48.00	6818.83	6819.74	1.06	45.43	64.81	0.22	0.06	0.040	0.06		
MC R1	131318	5-Yr	150.00	6818.83	6820.35	1.67	96.80	101.47	0.26	0.08	0.035	0.12	0.03	0.03
MC R1	131318	10-Yr	290.00	6818.83	6820.87	2.10	154.72	122.39	0.27	0.11	0.035	0.16	0.05	0.06
MC R1	131318	50-Yr	920.00	6818.83	6822.30	3.03	381.65	179.46	0.30	0.18	0.038	0.28	0.12	0.13
MC R1	131318	100-Yr	1400.00	6818.83	6823.09	3.44	530.93	198.10	0.30	0.22	0.040	0.34	0.16	0.17
MC R1	130803	2-Yr	48.00	6818.00	6818.64	1.55	31.01	58.43	0.37	0.13	0.040	0.13		

HEC-RAS Plan: Plan 07 River: Monument Creek Reach: MC R1 (Continued)

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Vel Chnl	Flow Area	Top Width	Froude # Chl	Shear Total	Mann Wtd Total	Shear Chan	Shear LOB	Shear ROB
			(cfs)	(ft)	(ft)	(ft/s)	(sq ft)	(ft)		(lb/sq ft)		(lb/sq ft)	(lb/sq ft)	(lb/sq ft)
MC R1	130803	5-Yr	150.00	6818.00	6819.14	2.39	63.92	69.71	0.42	0.24	0.038	0.26	0.06	0.05
MC R1	130803	10-Yr	290.00	6818.00	6819.56	3.18	93.53	71.82	0.47	0.37	0.039	0.41	0.17	0.11
MC R1	130803	50-Yr	920.00	6818.00	6820.68	5.38	177.47	77.05	0.59	0.86	0.039	0.96	0.52	0.35
MC R1	130803	100-Yr	1400.00	6818.00	6821.27	6.54	223.00	79.57	0.65	1.17	0.038	1.32	0.74	0.50
MC R1	130343	2-Yr	48.00	6816.00	6816.38	1.52	32.19	88.34	0.44	0.14	0.040	0.14	0.12	0.14
MC R1	130343	5-Yr	150.00	6816.00	6816.71	2.47	62.57	92.80	0.52	0.29	0.040	0.31	0.23	0.28
MC R1	130343	10-Yr	290.00	6816.00	6817.07	3.14	96.32	97.18	0.54	0.41	0.040	0.44	0.30	0.39
MC R1	130343	50-Yr	920.00	6816.00	6818.22	4.56	215.51	109.61	0.54	0.64	0.039	0.72	0.43	0.62
MC R1	130343	100-Yr	1400.00	6816.00	6818.90	5.18	291.58	115.79	0.54	0.74	0.039	0.85	0.51	0.73
MC R1	129940	2-Yr	48.00	6812.27	6813.05	2.37	20.27	43.48	0.61	0.33	0.040	0.33		
MC R1	129940	5-Yr	150.00	6812.27	6813.59	3.34	45.53	49.18	0.59	0.47	0.039	0.51	0.06	0.13
MC R1	129940	10-Yr	290.00	6812.27	6814.08	4.23	71.04	55.17	0.61	0.62	0.038	0.71	0.17	0.22
MC R1	129940	50-Yr	920.00	6812.27	6815.45	6.36	155.49	67.15	0.66	1.04	0.037	1.29	0.49	0.57
MC R1	129940	100-Yr	1400.00	6812.27	6816.24	7.24	210.26	72.79	0.67	1.22	0.037	1.54	0.63	0.73
MC R1	129670	2-Yr	48.00	6810.00	6810.65	2.36	21.55	36.43	0.52	0.26	0.040	0.29	0.26	0.20
MC R1	129670	5-Yr	150.00	6810.00	6811.15	3.98	40.98	41.23	0.66	0.59	0.039	0.69	0.59	0.44
MC R1	129670	10-Yr	290.00	6810.00	6811.65	5.12	62.69	44.96	0.70	0.84	0.039	1.00	0.84	0.63
MC R1	129670	50-Yr	920.00	6810.00	6813.16	7.45	138.32	55.13	0.74	1.34	0.038	1.71	1.33	1.04
MC R1	129670	100-Yr	1400.00	6810.00	6813.94	8.62	183.46	60.46	0.76	1.61	0.037	2.13	1.59	1.25
MC R1	129180	2-Yr	48.00	6806.00	6806.92	2.32	20.66	36.76	0.55	0.30	0.040	0.30		
MC R1	129180	5-Yr	150.00	6806.00	6807.57	3.23	47.41	44.35	0.52	0.40	0.038	0.45	0.11	0.11
MC R1	129180	10-Yr	290.00	6806.00	6808.12	4.13	73.43	49.27	0.55	0.55	0.038	0.64	0.21	0.20
MC R1	129180	50-Yr	920.00	6806.00	6809.54	6.58	151.40	62.33	0.65	1.02	0.036	1.34	0.61	0.44
MC R1	129180	100-Yr	1400.00	6806.00	6810.28	7.72	212.82	115.74	0.69	0.81	0.028	1.72	0.82	0.27
MC R1	128633	2-Yr	48.00	6802.00	6803.43	2.57	19.16	20.92	0.46	0.28	0.039	0.30		0.12
MC R1	128633	5-Yr	150.00	6802.00	6804.24	4.09	40.63	38.72	0.54	0.37	0.031	0.63	0.08	0.30
MC R1	128633	10-Yr	290.00	6802.00	6804.85	5.02	71.69	54.72	0.57	0.47	0.033	0.86	0.24	0.42
MC R1	128633	50-Yr	920.00	6802.00	6806.52	6.63	171.28	64.93	0.58	0.81	0.037	1.25	0.62	0.63
MC R1	128633	100-Yr	1400.00	6802.00	6807.46	7.25	236.00	73.39	0.57	0.89	0.036	1.40	0.71	0.70
MC R1	128087	2-Yr	48.00	6797.00	6798.11	4.99	10.30	15.22	0.96	0.96	0.037	1.20	0.48	0.12
MC R1	128087	5-Yr	150.00	6797.00	6798.96	6.67	26.25	22.70	0.91	1.16	0.036	1.70	0.76	0.50
MC R1	128087	10-Yr	290.00	6797.00	6799.63	7.94	43.19	27.38	0.91	1.42	0.036	2.15	1.05	0.76
MC R1	128087	50-Yr	920.00	6797.00	6801.46	11.17	104.09	39.22	0.96	2.18	0.037	3.52	1.84	1.38
MC R1	128087	100-Yr	1400.00	6797.00	6802.43	12.77	145.61	46.83	0.99	2.53	0.037	4.29	2.20	1.66
MC R1	127571	2-Yr	48.00	6794.00	6795.31	1.18	40.57	70.54	0.27	0.08	0.040	0.08		
MC R1	127571	5-Yr	150.00	6794.00	6795.84	1.83	86.32	98.85	0.31	0.12	0.036	0.15	0.02	0.04
MC R1	127571	10-Yr	290.00	6794.00	6796.33	2.27	139.28	111.72	0.32	0.16	0.037	0.20	0.06	0.08
MC R1	127571	50-Yr	920.00	6794.00	6797.85	3.14	321.25	126.92	0.31	0.25	0.038	0.31	0.12	0.19
MC R1	127571	100-Yr	1400.00	6794.00	6798.74	3.50	439.01	143.74	0.31	0.27	0.037	0.35	0.13	0.20
MC R1	127082	2-Yr	48.00	6792.00	6792.46	3.90	12.76	29.98	1.01	0.82	0.039	0.89	0.67	0.44
MC R1	127082	5-Yr	150.00	6792.00	6792.97	5.47	29.41	35.10	0.98	1.17	0.039	1.37	0.89	0.67
MC R1	127082	10-Yr	290.00	6792.00	6793.45	6.73	46.79	38.02	0.99	1.53	0.039	1.81	1.17	0.98
MC R1	127082	50-Yr	920.00	6792.00	6794.92	9.48	108.86	45.76	0.98	2.27	0.039	2.84	1.75	1.62

HEC-RAS Plan: Plan 07 River: Monument Creek Reach: MC R1 (Continued)

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl	Shear Total (lb/sq ft)	Mann Wtd Total	Shear Chan (lb/sq ft)	Shear LOB (lb/sq ft)	Shear ROB (lb/sq ft)
MC R1	127082	100-Yr	1400.00	6792.00	6795.74	10.54	148.13	50.09	0.96	2.50	0.038	3.23	1.95	1.79
MC R1	126649	2-Yr	48.00	6789.00	6789.90	1.42	33.74	43.51	0.28	0.10	0.040	0.10		
MC R1	126649	5-Yr	150.00	6789.00	6790.55	2.35	67.56	62.77	0.35	0.17	0.035	0.22	0.05	0.04
MC R1	126649	10-Yr	290.00	6789.00	6791.09	3.05	106.10	77.74	0.38	0.24	0.035	0.34	0.10	0.09
MC R1	126649	50-Yr	920.00	6789.00	6792.34	4.94	214.38	92.90	0.49	0.54	0.037	0.75	0.36	0.26
MC R1	126649	100-Yr	1400.00	6789.00	6793.08	5.63	284.43	97.66	0.50	0.67	0.037	0.91	0.50	0.33
MC R1	126179	2-Yr	48.00	6786.92	6787.26	2.97	16.15	58.21	0.99	0.61	0.040	0.61		
MC R1	126179	5-Yr	150.00	6786.92	6787.59	4.22	35.62	60.77	0.97	0.95	0.040	0.96		0.17
MC R1	126179	10-Yr	290.00	6786.92	6787.91	5.27	55.30	63.24	0.98	1.26	0.039	1.30	0.13	0.37
MC R1	126179	50-Yr	920.00	6786.92	6789.20	6.58	152.30	118.09	0.78	0.88	0.030	1.51	0.51	0.19
MC R1	126179	100-Yr	1400.00	6786.92	6789.63	8.01	203.89	121.47	0.87	1.34	0.035	2.10	0.77	0.55
MC R1	125894	2-Yr	48.00	6784.00	6784.82	1.36	35.40	50.17	0.28	0.09	0.040	0.09		
MC R1	125894	5-Yr	150.00	6784.00	6785.38	2.28	69.32	70.05	0.36	0.17	0.036	0.22	0.05	0.05
MC R1	125894	10-Yr	290.00	6784.00	6785.84	3.06	103.35	80.22	0.41	0.27	0.036	0.36	0.10	0.12
MC R1	125894	50-Yr	920.00	6784.00	6786.49	6.24	179.23	130.33	0.72	0.77	0.034	1.32	0.46	0.41
MC R1	125894	100-Yr	1400.00	6784.00	6787.44	5.81	309.10	142.26	0.56	0.67	0.039	1.03	0.36	0.49
MC R1	125628	2-Yr	48.00	6783.00	6783.20	2.66	18.01	91.87	1.06	0.55	0.040	0.55		
MC R1	125628	5-Yr	150.00	6783.00	6783.43	3.78	39.65	94.75	1.03	0.87	0.040	0.87		
MC R1	125628	10-Yr	290.00	6783.00	6783.68	4.58	63.30	97.80	1.00	1.10	0.040	1.10		
MC R1	125628	50-Yr	920.00	6783.00	6785.63	3.40	282.92	129.00	0.37	0.32	0.037	0.38	0.12	0.14
MC R1	125628	100-Yr	1400.00	6783.00	6787.12	3.03	566.58	275.07	0.26	0.13	0.031	0.26	0.05	0.12
MC R1	125518	2-Yr	48.00	6780.00	6781.39	1.95	24.67	30.45	0.38	0.18	0.040	0.18		
MC R1	125518	5-Yr	150.00	6780.00	6782.15	2.88	52.55	41.20	0.44	0.32	0.039	0.34	0.05	
MC R1	125518	10-Yr	290.00	6780.00	6782.83	3.64	81.00	47.90	0.46	0.47	0.040	0.48	0.21	
MC R1	125518	50-Yr	920.00	6780.00	6785.10	5.19	192.62	118.61	0.44	0.56	0.036	0.76	0.56	0.14
MC R1	125518	100-Yr	1400.00	6780.00	6786.56	5.78	282.31	263.13	0.43	0.69	0.040	0.85	0.69	0.34
MC R1	125500		Bridge											
MC R1	125464	2-Yr	48.00	6778.66	6779.68	2.48	19.68	33.36	0.54	0.29	0.038	0.32	0.05	0.05
MC R1	125464	5-Yr	150.00	6778.66	6780.19	4.16	38.62	39.99	0.68	0.62	0.038	0.74	0.24	0.28
MC R1	125464	10-Yr	290.00	6778.66	6780.49	6.21	51.21	42.55	0.90	1.25	0.038	1.54	0.55	0.69
MC R1	125464	50-Yr	920.00	6778.66	6781.94	9.22	123.31	95.14	0.95	1.94	0.040	2.70	0.97	1.43
MC R1	125464	100-Yr	1400.00	6778.66	6782.71	10.68	170.36	110.67	0.98	2.40	0.042	3.34	1.65	1.59
MC R1	125232	2-Yr	48.00	6776.00	6776.25	2.79	17.23	71.58	1.00	0.56	0.040	0.56		
MC R1	125232	5-Yr	150.00	6776.00	6776.53	3.99	37.78	74.48	0.97	0.87	0.039	0.90	0.24	0.18
MC R1	125232	10-Yr	290.00	6776.00	6776.91	4.39	67.17	78.40	0.81	0.85	0.039	0.90	0.33	0.29
MC R1	125232	50-Yr	920.00	6776.00	6778.23	5.41	176.63	87.04	0.64	0.92	0.039	1.01	0.50	0.45
MC R1	125232	100-Yr	1400.00	6776.00	6779.01	5.97	246.23	91.92	0.61	0.99	0.039	1.12	0.56	0.52
MC R1	124734	2-Yr	59.00	6772.00	6773.06	1.50	39.37	54.25	0.31	0.11	0.040	0.11		
MC R1	124734	5-Yr	200.00	6772.00	6773.77	2.48	82.08	66.82	0.37	0.22	0.038	0.25	0.04	0.04
MC R1	124734	10-Yr	400.00	6772.00	6774.41	3.26	128.85	77.83	0.40	0.31	0.037	0.38	0.11	0.10
MC R1	124734	50-Yr	1400.00	6772.00	6776.35	4.95	317.55	108.35	0.44	0.52	0.037	0.70	0.25	0.32
MC R1	124734	100-Yr	2100.00	6772.00	6777.38	5.49	434.43	123.25	0.43	0.56	0.036	0.80	0.21	0.41

HEC-RAS Plan: Plan 07 River: Monument Creek Reach: MC R1 (Continued)

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl	Shear Total (lb/sq ft)	Mann Wtd Total	Shear Chan (lb/sq ft)	Shear LOB (lb/sq ft)	Shear ROB (lb/sq ft)
MC R1	124402	2-Yr	59.00	6770.00	6770.51	3.17	18.62	41.23	0.83	2.37	0.080	2.37		
MC R1	124402	5-Yr	200.00	6770.00	6771.21	4.00	51.68	52.43	0.67	2.46	0.076	2.79	0.92	0.42
MC R1	124402	10-Yr	400.00	6770.00	6771.84	4.86	87.19	58.77	0.65	2.99	0.076	3.54	1.54	1.02
MC R1	124402	50-Yr	1400.00	6770.00	6773.59	7.64	203.86	75.45	0.72	5.32	0.074	6.96	3.20	2.93
MC R1	124402	100-Yr	2100.00	6770.00	6774.12	9.95	247.65	109.04	0.87	7.00	0.068	11.26	3.39	4.90
MC R1	124064	2-Yr	59.00	6765.07	6766.88	2.28	25.92	27.18	0.41	0.24	0.040	0.24		
MC R1	124064	5-Yr	200.00	6765.07	6767.80	3.69	57.13	40.63	0.48	0.39	0.036	0.51	0.11	0.11
MC R1	124064	10-Yr	400.00	6765.07	6768.61	4.73	93.46	48.06	0.51	0.54	0.036	0.74	0.21	0.27
MC R1	124064	50-Yr	1400.00	6765.07	6771.02	6.60	306.64	156.19	0.52	0.45	0.031	1.15	0.37	0.28
MC R1	124064	100-Yr	2100.00	6765.07	6772.25	6.77	560.99	292.48	0.48	0.35	0.033	1.13	0.29	0.26
MC R1	123636	2-Yr	59.00	6762.00	6762.96	4.90	12.04	16.15	1.00	1.20	0.040	1.20		
MC R1	123636	5-Yr	200.00	6762.00	6763.92	6.76	32.06	25.54	0.92	1.28	0.035	1.74	0.43	0.48
MC R1	123636	10-Yr	400.00	6762.00	6764.75	8.19	55.70	31.26	0.91	1.56	0.036	2.24	0.71	0.87
MC R1	123636	50-Yr	1400.00	6762.00	6767.06	11.71	140.71	41.75	0.94	2.49	0.036	3.69	1.39	1.87
MC R1	123636	100-Yr	2100.00	6762.00	6768.20	13.25	191.19	46.92	0.96	2.88	0.036	4.40	1.69	2.26
MC R1	123258	2-Yr	59.00	6759.00	6760.15	1.77	33.40	43.11	0.35	0.15	0.040	0.15		
MC R1	123258	5-Yr	200.00	6759.00	6761.20	2.37	91.05	64.71	0.31	0.16	0.036	0.21	0.07	0.05
MC R1	123258	10-Yr	400.00	6759.00	6762.18	2.77	164.98	100.20	0.29	0.14	0.032	0.25	0.12	0.04
MC R1	123258	50-Yr	1400.00	6759.00	6764.83	3.80	500.40	156.62	0.29	0.22	0.038	0.37	0.22	0.13
MC R1	123258	100-Yr	2100.00	6759.00	6766.10	4.19	707.56	216.10	0.28	0.20	0.035	0.42	0.10	0.20
MC R1	123057	2-Yr	59.00	6758.00	6759.32	2.60	22.73	21.41	0.44	0.30	0.040	0.30		
MC R1	123057	5-Yr	200.00	6758.00	6760.47	3.93	51.77	30.15	0.49	0.48	0.037	0.56	0.07	0.07
MC R1	123057	10-Yr	400.00	6758.00	6761.38	5.17	83.69	42.06	0.54	0.59	0.034	0.86	0.15	0.21
MC R1	123057	50-Yr	1400.00	6758.00	6763.83	7.54	220.99	64.08	0.58	0.96	0.036	1.49	0.59	0.63
MC R1	123057	100-Yr	2100.00	6758.00	6764.94	8.58	295.71	69.95	0.60	1.18	0.036	1.80	0.81	0.83
MC R1	122983	2-Yr	59.00	6757.00	6759.13	1.65	35.66	27.40	0.26	0.18	0.050	0.18		
MC R1	122983	5-Yr	200.00	6757.00	6760.27	2.84	73.31	38.89	0.33	0.35	0.045	0.43	0.10	0.04
MC R1	122983	10-Yr	400.00	6757.00	6761.20	3.80	114.87	50.50	0.37	0.49	0.043	0.69	0.20	0.15
MC R1	122983	50-Yr	1400.00	6757.00	6763.62	6.37	264.05	70.88	0.47	1.06	0.045	1.62	0.72	0.54
MC R1	122983	100-Yr	2100.00	6757.00	6764.73	7.50	346.50	78.82	0.51	1.37	0.046	2.12	1.00	0.76
MC R1	122900		Bridge											
MC R1	122828	2-Yr	59.00	6757.00	6758.12	2.22	26.57	34.17	0.44	0.31	0.045	0.31		
MC R1	122828	5-Yr	200.00	6757.00	6758.86	3.64	55.90	44.98	0.54	0.60	0.042	0.68	0.11	0.09
MC R1	122828	10-Yr	400.00	6757.00	6759.52	4.79	87.53	50.44	0.59	0.87	0.042	1.03	0.33	0.30
MC R1	122828	50-Yr	1400.00	6757.00	6760.80	9.66	157.00	58.01	0.93	2.88	0.042	3.58	1.52	1.45
MC R1	122828	100-Yr	2100.00	6757.00	6761.71	10.78	212.43	62.90	0.92	3.22	0.042	4.12	1.83	1.82
MC R1	122635	2-Yr	59.00	6756.00	6756.96	2.21	26.70	37.95	0.46	0.25	0.040	0.25		
MC R1	122635	5-Yr	200.00	6756.00	6757.82	3.22	65.18	51.30	0.46	0.33	0.037	0.40	0.11	0.10
MC R1	122635	10-Yr	400.00	6756.00	6758.55	4.01	117.09	92.16	0.47	0.31	0.032	0.55	0.12	0.21
MC R1	122635	50-Yr	1400.00	6756.00	6760.43	5.08	353.08	137.77	0.44	0.45	0.037	0.73	0.33	0.35
MC R1	122635	100-Yr	2100.00	6756.00	6761.27	5.67	470.38	142.25	0.45	0.56	0.038	0.85	0.45	0.43

HEC-RAS Plan: Plan 07 River: Monument Creek Reach: MC R1 (Continued)

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl	Shear Total (lb/sq ft)	Mann Wtd Total	Shear Chan (lb/sq ft)	Shear LOB (lb/sq ft)	Shear ROB (lb/sq ft)
MC R1	122307	2-Yr	59.00	6753.00	6754.36	3.40	17.38	20.56	0.65	0.55	0.040	0.55		
MC R1	122307	5-Yr	200.00	6753.00	6755.08	5.84	35.57	30.13	0.85	1.08	0.036	1.36	0.22	0.30
MC R1	122307	10-Yr	400.00	6753.00	6755.77	7.35	60.78	42.52	0.88	1.24	0.034	1.90	0.49	0.58
MC R1	122307	50-Yr	1400.00	6753.00	6758.08	9.62	215.62	138.55	0.80	0.89	0.029	2.55	0.53	0.99
MC R1	122307	100-Yr	2100.00	6753.00	6758.84	10.88	328.84	162.35	0.84	1.20	0.036	3.10	0.87	1.24
MC R1	122116	2-Yr	59.00	6751.47	6752.70	2.44	24.21	37.66	0.54	0.31	0.040	0.31		
MC R1	122116	5-Yr	200.00	6751.47	6753.40	3.63	56.23	49.84	0.57	0.50	0.038	0.55	0.14	0.09
MC R1	122116	10-Yr	400.00	6751.47	6754.02	4.71	88.83	55.46	0.61	0.70	0.038	0.82	0.29	0.21
MC R1	122116	50-Yr	1400.00	6751.47	6755.95	7.11	228.36	104.45	0.64	0.84	0.032	1.47	0.38	0.45
MC R1	122116	100-Yr	2100.00	6751.47	6756.87	7.79	362.66	154.33	0.63	0.82	0.034	1.64	0.60	0.38
MC R1	121625	2-Yr	59.00	6748.00	6749.23	2.54	23.21	29.11	0.50	0.32	0.040	0.32		
MC R1	121625	5-Yr	200.00	6748.00	6750.09	3.80	54.49	43.18	0.55	0.49	0.037	0.58	0.15	0.02
MC R1	121625	10-Yr	400.00	6748.00	6750.81	4.86	89.74	55.60	0.58	0.61	0.036	0.82	0.26	0.15
MC R1	121625	50-Yr	1400.00	6748.00	6752.58	7.79	211.02	85.81	0.69	1.08	0.034	1.74	0.82	0.35
MC R1	121625	100-Yr	2100.00	6748.00	6753.37	9.14	288.70	117.66	0.74	1.16	0.032	2.25	1.15	0.40
MC R1	121125	2-Yr	59.00	6745.00	6746.17	1.40	42.41	54.74	0.27	0.29	0.070	0.31	0.03	0.03
MC R1	121125	5-Yr	200.00	6745.00	6746.95	2.31	93.09	76.21	0.32	0.51	0.065	0.68	0.20	0.20
MC R1	121125	10-Yr	400.00	6745.00	6747.57	3.07	149.29	101.92	0.36	0.70	0.062	1.07	0.34	0.34
MC R1	121125	50-Yr	1400.00	6745.00	6749.17	4.61	356.13	144.22	0.41	1.28	0.063	2.00	0.70	1.05
MC R1	121125	100-Yr	2100.00	6745.00	6749.88	5.23	461.89	152.75	0.43	1.61	0.063	2.43	1.01	1.35
MC R1	120847	2-Yr	59.00	6742.97	6743.71	2.56	23.06	49.53	0.66	0.38	0.040	0.38		
MC R1	120847	5-Yr	200.00	6742.97	6744.19	3.97	51.79	67.40	0.75	0.65	0.038	0.75	0.09	0.18
MC R1	120847	10-Yr	400.00	6742.97	6744.65	5.02	84.36	76.51	0.77	0.86	0.037	1.04	0.24	0.37
MC R1	120847	50-Yr	1400.00	6742.97	6746.06	7.44	207.32	95.10	0.79	1.42	0.038	1.79	0.63	0.90
MC R1	120847	100-Yr	2100.00	6742.97	6746.78	8.30	279.69	104.97	0.78	1.57	0.037	2.06	0.77	1.05
MC R1	120500	2-Yr	59.00	6738.57	6739.67	3.02	19.52	26.82	0.62	0.46	0.040	0.46		
MC R1	120500	5-Yr	200.00	6738.57	6740.52	4.31	48.00	39.91	0.63	0.62	0.037	0.74	0.13	0.16
MC R1	120500	10-Yr	400.00	6738.57	6741.23	5.44	80.26	50.21	0.65	0.76	0.036	1.04	0.29	0.32
MC R1	120500	50-Yr	1400.00	6738.57	6743.23	7.84	218.35	92.56	0.68	0.98	0.033	1.73	0.54	0.65
MC R1	120500	100-Yr	2100.00	6738.57	6744.11	8.84	308.07	109.98	0.69	1.15	0.035	2.07	0.71	0.86
MC R1	120016	2-Yr	59.00	6735.00	6736.47	2.13	27.73	36.33	0.43	0.22	0.040	0.22		
MC R1	120016	5-Yr	200.00	6735.00	6737.24	3.02	66.15	60.35	0.51	0.40	0.040	0.40		
MC R1	120016	10-Yr	400.00	6735.00	6737.79	3.91	102.34	73.03	0.58	0.62	0.040	0.62		
MC R1	120016	50-Yr	1400.00	6735.00	6738.90	7.38	191.47	84.32	0.84	1.75	0.039	1.85	0.35	0.09
MC R1	120016	100-Yr	2100.00	6735.00	6739.50	8.83	242.99	97.58	0.90	2.25	0.039	2.46	0.66	0.32
MC R1	119526	2-Yr	59.00	6730.55	6731.46	3.47	17.01	45.74	1.00	0.76	0.040	0.76	0.06	
MC R1	119526	5-Yr	200.00	6730.55	6731.93	4.88	43.21	65.57	0.95	0.93	0.036	1.15	0.34	0.30
MC R1	119526	10-Yr	400.00	6730.55	6732.39	5.71	76.26	73.92	0.89	1.09	0.038	1.36	0.48	0.61
MC R1	119526	50-Yr	1400.00	6730.55	6734.16	7.03	215.50	82.32	0.71	1.31	0.039	1.54	0.65	1.06
MC R1	119526	100-Yr	2100.00	6730.55	6734.99	7.91	285.37	85.02	0.71	1.53	0.039	1.80	0.78	1.29
MC R1	119034	2-Yr	59.00	6726.00	6727.90	1.39	42.31	49.93	0.27	0.09	0.040	0.09		
MC R1	119034	5-Yr	200.00	6726.00	6728.54	2.61	79.69	66.43	0.38	0.22	0.036	0.27	0.04	0.06
MC R1	119034	10-Yr	400.00	6726.00	6729.07	3.66	117.94	76.55	0.46	0.37	0.036	0.48	0.11	0.15

HEC-RAS Plan: Plan 07 River: Monument Creek Reach: MC R1 (Continued)

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl	Shear Total (lb/sq ft)	Mann Wtd Total	Shear Chan (lb/sq ft)	Shear LOB (lb/sq ft)	Shear ROB (lb/sq ft)
MC R1	119034	50-Yr	1400.00	6726.00	6730.32	7.03	217.77	82.76	0.69	1.22	0.038	1.52	0.48	0.79
MC R1	119034	100-Yr	2100.00	6726.00	6730.96	8.45	271.22	85.38	0.76	1.67	0.038	2.06	0.69	1.17
MC R1	118539	2-Yr	120.00	6724.00	6724.73	3.45	34.80	59.64	0.80	0.64	0.040	0.64		
MC R1	118539	5-Yr	260.00	6724.00	6725.09	4.41	61.95	102.48	0.82	0.62	0.032	0.91	0.05	0.11
MC R1	118539	10-Yr	480.00	6724.00	6725.50	5.03	105.88	111.44	0.78	0.76	0.036	1.05	0.20	0.41
MC R1	118539	50-Yr	1600.00	6724.00	6727.05	6.02	298.44	133.15	0.63	0.91	0.038	1.16	0.50	0.77
MC R1	118539	100-Yr	2400.00	6724.00	6727.77	6.73	396.14	139.08	0.63	1.06	0.038	1.34	0.64	0.95
MC R1	118128	2-Yr	120.00	6719.00	6720.70	2.76	43.44	48.00	0.51	0.36	0.040	0.36		
MC R1	118128	5-Yr	260.00	6719.00	6721.24	3.69	71.54	55.26	0.55	0.50	0.038	0.55	0.07	0.12
MC R1	118128	10-Yr	480.00	6719.00	6721.80	4.77	103.95	60.20	0.60	0.72	0.038	0.82	0.19	0.28
MC R1	118128	50-Yr	1600.00	6719.00	6723.31	8.33	218.61	104.02	0.79	1.25	0.032	2.08	0.40	0.95
MC R1	118128	100-Yr	2400.00	6719.00	6724.00	9.54	300.92	127.82	0.82	1.44	0.033	2.56	0.65	1.23
MC R1	117645	2-Yr	120.00	6716.00	6717.24	2.87	41.85	52.46	0.57	0.40	0.040	0.40		
MC R1	117645	5-Yr	260.00	6716.00	6717.71	3.76	69.48	64.53	0.62	0.57	0.039	0.61	0.05	
MC R1	117645	10-Yr	480.00	6716.00	6718.21	4.66	110.86	103.28	0.65	0.56	0.033	0.84	0.14	0.05
MC R1	117645	50-Yr	1600.00	6716.00	6719.67	6.59	274.15	121.76	0.66	0.99	0.037	1.35	0.67	0.31
MC R1	117645	100-Yr	2400.00	6716.00	6720.47	7.25	382.77	158.60	0.65	0.94	0.034	1.52	0.85	0.21
MC R1	117156	2-Yr	120.00	6710.00	6711.37	5.26	22.99	21.14	0.86	1.13	0.039	1.20		0.19
MC R1	117156	5-Yr	260.00	6710.00	6712.18	6.49	42.12	26.62	0.82	1.24	0.036	1.53	0.27	0.43
MC R1	117156	10-Yr	480.00	6710.00	6713.11	7.60	71.11	42.50	0.79	1.07	0.031	1.85	0.51	0.37
MC R1	117156	50-Yr	1600.00	6710.00	6715.22	10.16	254.53	116.86	0.80	1.21	0.037	2.75	1.00	0.88
MC R1	117156	100-Yr	2400.00	6710.00	6715.96	11.70	344.93	127.28	0.86	1.66	0.041	3.49	1.31	1.32
MC R1	116718	2-Yr	120.00	6705.00	6707.17	3.59	33.40	25.10	0.55	0.53	0.040	0.53		
MC R1	116718	5-Yr	260.00	6705.00	6707.79	5.24	50.55	30.24	0.67	0.87	0.037	1.01	0.11	0.16
MC R1	116718	10-Yr	480.00	6705.00	6708.38	7.21	70.57	37.91	0.80	1.29	0.035	1.74	0.35	0.34
MC R1	116718	50-Yr	1600.00	6705.00	6711.27	8.56	220.57	60.41	0.65	1.27	0.036	1.90	0.63	0.89
MC R1	116718	100-Yr	2400.00	6705.00	6712.63	9.44	309.02	71.87	0.64	1.35	0.036	2.15	0.61	1.13
MC R1	116484	2-Yr	120.00	6703.47	6704.82	4.50	26.69	27.15	0.80	0.92	0.040	0.92		
MC R1	116484	5-Yr	260.00	6703.47	6705.60	5.31	49.57	31.11	0.71	0.98	0.038	1.07	0.18	0.17
MC R1	116484	10-Yr	480.00	6703.47	6706.75	5.68	88.43	36.00	0.59	0.86	0.037	1.03	0.31	0.28
MC R1	116484	50-Yr	1600.00	6703.47	6708.41	11.24	153.51	42.55	0.93	2.67	0.036	3.47	1.30	1.14
MC R1	116484	100-Yr	2400.00	6703.47	6709.69	12.63	216.73	63.07	0.92	2.32	0.032	4.03	1.61	0.74
MC R1	116044	2-Yr	120.00	6700.00	6702.17	3.05	40.45	28.78	0.41	0.29	0.036	0.36	0.05	0.07
MC R1	116044	5-Yr	260.00	6700.00	6702.89	4.39	64.83	38.45	0.50	0.46	0.034	0.65	0.15	0.17
MC R1	116044	10-Yr	480.00	6700.00	6703.15	7.15	75.36	43.07	0.77	1.10	0.034	1.68	0.41	0.46
MC R1	116044	50-Yr	1600.00	6700.00	6705.14	8.60	288.19	162.76	0.70	0.77	0.033	2.01	0.69	0.51
MC R1	116044	100-Yr	2400.00	6700.00	6705.77	9.16	393.84	168.08	0.70	0.98	0.035	2.19	0.90	0.73
MC R1	115514	2-Yr	120.00	6697.00	6697.97	4.88	24.58	34.36	1.02	1.21	0.040	1.21		
MC R1	115514	5-Yr	260.00	6697.00	6698.50	5.72	49.08	55.01	0.91	1.00	0.035	1.38	0.34	0.26
MC R1	115514	10-Yr	480.00	6697.00	6699.51	4.83	120.86	90.03	0.57	0.48	0.035	0.81	0.28	0.25
MC R1	115514	50-Yr	1600.00	6697.00	6700.58	8.48	248.49	135.82	0.82	1.20	0.035	2.19	0.87	0.74
MC R1	115514	100-Yr	2400.00	6697.00	6701.11	9.65	322.92	152.41	0.87	1.48	0.035	2.69	1.26	0.44

HEC-RAS Plan: Plan 07 River: Monument Creek Reach: MC R1 (Continued)

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl	Shear Total (lb/sq ft)	Mann Wtd Total	Shear Chan (lb/sq ft)	Shear LOB (lb/sq ft)	Shear ROB (lb/sq ft)
MC R1	115012	2-Yr	120.00	6692.00	6693.98	2.51	48.87	70.23	0.40	0.24	0.038	0.27	0.01	0.08
MC R1	115012	5-Yr	260.00	6692.00	6694.59	3.48	79.45	87.09	0.45	0.36	0.037	0.45	0.11	0.16
MC R1	115012	10-Yr	480.00	6692.00	6694.48	6.89	73.57	84.21	0.93	1.46	0.037	1.80	0.39	0.63
MC R1	115012	50-Yr	1600.00	6692.00	6696.65	5.57	335.15	117.14	0.50	0.66	0.038	0.89	0.39	0.58
MC R1	115012	100-Yr	2400.00	6692.00	6697.52	6.29	444.98	145.84	0.51	0.68	0.035	1.06	0.25	0.73
MC R1	114553	2-Yr	120.00	6689.00	6690.16	4.82	24.92	35.98	1.02	1.19	0.040	1.19		
MC R1	114553	5-Yr	260.00	6689.00	6690.66	5.96	44.48	42.49	0.97	1.36	0.038	1.53	0.22	0.33
MC R1	114553	10-Yr	480.00	6689.00	6691.25	7.07	72.12	51.81	0.94	1.48	0.036	1.88	0.50	0.52
MC R1	114553	50-Yr	1600.00	6689.00	6693.05	9.44	198.16	85.00	0.88	1.72	0.035	2.65	1.05	1.02
MC R1	114553	100-Yr	2400.00	6689.00	6693.84	10.64	269.89	96.78	0.90	2.00	0.035	3.14	1.29	1.32
MC R1	113961	2-Yr	120.00	6685.00	6686.88	1.48	81.24	60.78	0.22	0.09	0.039	0.09		0.01
MC R1	113961	5-Yr	260.00	6685.00	6687.56	2.10	128.96	81.28	0.26	0.12	0.035	0.16	0.02	0.03
MC R1	113961	10-Yr	480.00	6685.00	6688.27	2.72	193.50	97.90	0.29	0.17	0.035	0.24	0.06	0.07
MC R1	113961	50-Yr	1600.00	6685.00	6690.41	4.24	431.20	124.30	0.34	0.34	0.036	0.48	0.18	0.23
MC R1	113961	100-Yr	2400.00	6685.00	6691.24	5.10	559.60	183.27	0.38	0.35	0.031	0.66	0.14	0.33
MC R1	113620	2-Yr	120.00	6685.00	6686.31	2.02	59.26	56.15	0.35	0.18	0.040	0.18		
MC R1	113620	5-Yr	260.00	6685.00	6686.84	2.89	90.06	60.59	0.41	0.32	0.039	0.33	0.01	0.04
MC R1	113620	10-Yr	480.00	6685.00	6687.34	3.99	121.78	64.56	0.49	0.53	0.038	0.57	0.09	0.11
MC R1	113620	50-Yr	1600.00	6685.00	6688.58	7.94	229.79	202.73	0.77	0.67	0.023	1.93	0.13	0.54
MC R1	113620	100-Yr	2400.00	6685.00	6689.30	8.79	399.23	241.67	0.78	0.92	0.033	2.21	0.49	0.69
MC R1	113232	2-Yr	120.00	6683.00	6683.76	3.97	30.20	48.75	0.89	0.84	0.040	0.84		
MC R1	113232	5-Yr	260.00	6683.00	6684.20	4.60	65.09	119.60	0.80	0.50	0.030	0.95	0.09	0.17
MC R1	113232	10-Yr	480.00	6683.00	6684.59	5.12	116.29	144.28	0.76	0.60	0.034	1.06	0.21	0.36
MC R1	113232	50-Yr	1600.00	6683.00	6685.76	6.13	325.13	189.24	0.67	0.82	0.038	1.24	0.42	0.68
MC R1	113232	100-Yr	2400.00	6683.00	6686.32	6.70	432.68	192.02	0.66	0.99	0.039	1.38	0.52	0.86
MC R1	112752	2-Yr	120.00	6679.00	6680.92	2.22	53.98	45.19	0.36	0.21	0.040	0.21		
MC R1	112752	5-Yr	260.00	6679.00	6681.55	2.97	93.87	71.36	0.39	0.24	0.035	0.33	0.04	0.08
MC R1	112752	10-Yr	480.00	6679.00	6682.20	3.69	149.59	114.74	0.42	0.25	0.030	0.46	0.10	0.10
MC R1	112752	50-Yr	1600.00	6679.00	6683.65	5.43	393.00	187.12	0.49	0.46	0.036	0.85	0.25	0.34
MC R1	112752	100-Yr	2400.00	6679.00	6684.26	6.14	509.91	192.03	0.51	0.61	0.037	1.04	0.32	0.48
MC R1	112390	2-Yr	120.00	6678.00	6678.94	3.37	35.65	47.97	0.69	0.57	0.040	0.57		
MC R1	112390	5-Yr	260.00	6678.00	6679.35	4.62	57.07	55.24	0.76	0.84	0.038	0.92	0.14	0.14
MC R1	112390	10-Yr	480.00	6678.00	6679.80	5.98	83.53	62.78	0.84	1.16	0.037	1.39	0.34	0.35
MC R1	112390	50-Yr	1600.00	6678.00	6681.42	7.61	306.93	178.26	0.75	0.95	0.039	1.78	0.76	0.63
MC R1	112390	100-Yr	2400.00	6678.00	6682.22	8.06	451.73	184.36	0.71	1.13	0.044	1.85	0.84	0.87
MC R1	111914	2-Yr	120.00	6673.00	6674.75	3.18	37.79	34.89	0.54	0.45	0.040	0.45		
MC R1	111914	5-Yr	260.00	6673.00	6675.45	4.06	66.44	45.81	0.54	0.51	0.037	0.62	0.08	0.16
MC R1	111914	10-Yr	480.00	6673.00	6676.26	4.84	108.39	58.70	0.53	0.56	0.035	0.78	0.15	0.29
MC R1	111914	50-Yr	1600.00	6673.00	6678.24	7.39	271.16	162.72	0.61	0.55	0.026	1.50	0.21	0.75
MC R1	111914	100-Yr	2400.00	6673.00	6678.94	8.63	390.16	177.99	0.66	0.82	0.031	1.95	0.46	1.02
MC R1	111329	2-Yr	120.00	6669.00	6670.61	3.33	37.21	40.89	0.57	0.42	0.037	0.49	0.12	0.06
MC R1	111329	5-Yr	270.00	6669.00	6671.12	4.81	60.21	48.75	0.68	0.71	0.037	0.90	0.30	0.21
MC R1	111329	10-Yr	540.00	6669.00	6671.72	6.54	91.78	57.03	0.78	1.11	0.036	1.50	0.59	0.45

HEC-RAS Plan: Plan 07 River: Monument Creek Reach: MC R1 (Continued)

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl	Shear Total (lb/sq ft)	Mann Wtd Total	Shear Chan (lb/sq ft)	Shear LOB (lb/sq ft)	Shear ROB (lb/sq ft)
MC R1	111329	50-Yr	2000.00	6669.00	6673.67	9.33	279.24	172.36	0.81	0.97	0.028	2.46	0.60	0.77
MC R1	111329	100-Yr	2900.00	6669.00	6674.38	10.16	438.05	249.59	0.82	1.01	0.031	2.77	0.72	0.93
MC R1	110812	2-Yr	120.00	6666.00	6667.60	2.55	47.35	51.29	0.45	0.27	0.038	0.30	0.02	0.04
MC R1	110812	5-Yr	270.00	6666.00	6668.27	3.26	89.89	78.65	0.45	0.28	0.034	0.41	0.09	0.11
MC R1	110812	10-Yr	540.00	6666.00	6669.08	3.94	162.76	111.13	0.44	0.31	0.033	0.52	0.15	0.18
MC R1	110812	50-Yr	2000.00	6666.00	6671.35	5.30	475.21	159.21	0.43	0.47	0.037	0.76	0.36	0.31
MC R1	110812	100-Yr	2900.00	6666.00	6672.27	5.92	624.28	165.02	0.44	0.59	0.039	0.89	0.48	0.38
MC R1	110467	2-Yr	120.00	6665.00	6666.77	1.52	80.16	68.44	0.24	0.12	0.044	0.12	0.01	0.04
MC R1	110467	5-Yr	270.00	6665.00	6667.40	2.22	124.68	72.89	0.29	0.21	0.043	0.23	0.05	0.09
MC R1	110467	10-Yr	540.00	6665.00	6668.15	3.09	182.01	83.97	0.34	0.33	0.041	0.40	0.11	0.12
MC R1	110467	50-Yr	2000.00	6665.00	6669.98	6.14	378.98	121.40	0.51	0.91	0.041	1.31	0.47	0.49
MC R1	110467	100-Yr	2900.00	6665.00	6670.62	7.53	493.46	186.18	0.59	0.98	0.037	1.89	0.70	0.50
MC R1	110150	2-Yr	120.00	6665.00	6665.84	2.14	56.35	77.92	0.44	0.28	0.045	0.29	0.10	
MC R1	110150	5-Yr	270.00	6665.00	6666.27	3.01	91.50	84.62	0.49	0.46	0.044	0.49	0.19	0.12
MC R1	110150	10-Yr	540.00	6665.00	6666.85	3.94	142.06	90.59	0.53	0.66	0.043	0.74	0.32	0.27
MC R1	110150	50-Yr	2000.00	6665.00	6668.29	6.04	501.57	307.79	0.60	0.73	0.044	1.42	0.28	0.57
MC R1	110150	100-Yr	2900.00	6665.00	6668.88	6.62	688.83	318.44	0.60	0.92	0.049	1.61	0.47	0.79
MC R1	109790	2-Yr	120.00	6660.32	6661.37	4.74	26.57	42.28	0.94	1.11	0.041	1.39	0.31	0.33
MC R1	109790	5-Yr	270.00	6660.32	6661.88	5.82	52.40	57.68	0.90	1.24	0.040	1.78	0.61	0.59
MC R1	109790	10-Yr	540.00	6660.32	6662.45	7.12	87.39	64.38	0.92	1.71	0.042	2.36	1.13	0.94
MC R1	109790	50-Yr	2000.00	6660.32	6664.69	8.74	318.06	243.63	0.76	0.87	0.029	2.73	0.62	0.55
MC R1	109790	100-Yr	2900.00	6660.32	6665.27	9.78	479.09	298.80	0.80	1.12	0.036	3.27	0.84	0.91
MC R1	109255	2-Yr	120.00	6657.00	6658.36	0.82	146.19	138.62	0.14	0.04	0.045	0.04		
MC R1	109255	5-Yr	270.00	6657.00	6659.14	1.04	262.08	156.37	0.14	0.05	0.044	0.05	0.01	0.01
MC R1	109255	10-Yr	540.00	6657.00	6660.17	1.28	426.39	161.95	0.14	0.06	0.044	0.07	0.02	0.03
MC R1	109255	50-Yr	2000.00	6657.00	6662.94	2.24	1005.28	286.54	0.17	0.12	0.041	0.16	0.05	0.08
MC R1	109255	100-Yr	2900.00	6657.00	6663.85	2.71	1232.70	301.31	0.19	0.17	0.043	0.23	0.09	0.11
MC R1	109175	2-Yr	120.00	6657.00	6658.08	3.21	39.53	40.78	0.54	0.51	0.044	0.58	0.28	0.43
MC R1	109175	5-Yr	270.00	6657.00	6658.78	4.19	69.62	45.28	0.55	0.71	0.044	0.83	0.42	0.58
MC R1	109175	10-Yr	540.00	6657.00	6659.70	5.27	113.97	51.53	0.56	0.92	0.043	1.14	0.58	0.74
MC R1	109175	50-Yr	2000.00	6657.00	6662.29	7.55	395.12	207.92	0.58	0.84	0.039	1.87	0.69	0.60
MC R1	109175	100-Yr	2900.00	6657.00	6663.08	8.59	529.46	220.47	0.61	1.16	0.044	2.32	1.00	0.91
MC R1	108957	2-Yr	120.00	6655.00	6656.48	3.13	39.12	34.00	0.48	0.45	0.042	0.52	0.10	0.09
MC R1	108957	5-Yr	270.00	6655.00	6657.23	4.29	66.98	40.88	0.53	0.66	0.041	0.83	0.26	0.24
MC R1	108957	10-Yr	540.00	6655.00	6658.09	5.68	105.43	48.74	0.59	0.96	0.041	1.30	0.48	0.44
MC R1	108957	50-Yr	2000.00	6655.00	6660.40	9.02	344.51	245.81	0.70	0.73	0.029	2.69	1.04	0.36
MC R1	108957	100-Yr	3000.00	6655.00	6661.13	10.06	528.08	253.58	0.73	1.12	0.040	3.20	1.33	0.76
MC R1	108745	2-Yr	120.00	6654.00	6655.38	2.77	48.78	46.04	0.42	0.30	0.043	0.40	0.21	0.19
MC R1	108745	5-Yr	270.00	6654.00	6655.98	3.95	78.41	52.24	0.49	0.54	0.043	0.71	0.41	0.36
MC R1	108745	10-Yr	540.00	6654.00	6656.73	5.22	126.84	71.81	0.56	0.72	0.041	1.12	0.65	0.44
MC R1	108745	50-Yr	2000.00	6654.00	6658.61	8.58	317.65	180.10	0.70	0.97	0.032	2.53	1.18	0.58
MC R1	108745	100-Yr	3000.00	6654.00	6659.23	10.01	476.26	337.71	0.77	0.89	0.030	3.31	1.58	0.57

HEC-RAS Plan: Plan 07 River: Monument Creek Reach: MC R1 (Continued)

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl	Shear Total (lb/sq ft)	Mann Wtd Total	Shear Chan (lb/sq ft)	Shear LOB (lb/sq ft)	Shear ROB (lb/sq ft)
MC R1	108566	2-Yr	120.00	6653.13	6654.15	2.40	49.98	93.10	0.58	0.41	0.045	0.41		
MC R1	108566	5-Yr	270.00	6653.13	6654.42	3.57	75.86	96.83	0.70	0.77	0.044	0.78	0.10	0.05
MC R1	108566	10-Yr	540.00	6653.13	6654.72	5.18	105.21	100.91	0.87	1.42	0.044	1.49	0.34	0.28
MC R1	108566	50-Yr	2000.00	6653.13	6656.00	8.53	243.25	114.67	0.98	2.78	0.043	3.12	1.28	1.16
MC R1	108566	100-Yr	3000.00	6653.13	6656.88	8.78	400.43	222.76	0.86	1.64	0.035	2.98	1.35	0.59
MC R1	108377	2-Yr	120.00	6652.00	6652.51	1.65	73.08	153.32	0.42	0.20	0.045	0.20		0.19
MC R1	108377	5-Yr	270.00	6652.00	6652.86	2.13	129.28	174.07	0.42	0.26	0.044	0.28	0.05	0.24
MC R1	108377	10-Yr	540.00	6652.00	6653.30	2.60	224.76	238.71	0.41	0.27	0.041	0.36	0.10	0.31
MC R1	108377	50-Yr	2000.00	6652.00	6654.84	3.56	603.48	250.02	0.38	0.45	0.044	0.52	0.33	0.42
MC R1	108377	100-Yr	3000.00	6652.00	6655.62	4.00	799.54	253.66	0.37	0.53	0.044	0.60	0.42	0.48
MC R1	108254	2-Yr	120.00	6651.00	6651.67	1.95	61.40	103.00	0.45	0.26	0.045	0.26		
MC R1	108254	5-Yr	270.00	6651.00	6652.03	2.72	100.39	116.05	0.50	0.40	0.043	0.43	0.01	0.09
MC R1	108254	10-Yr	540.00	6651.00	6652.53	3.44	163.37	150.27	0.51	0.45	0.039	0.60	0.06	0.24
MC R1	108254	50-Yr	2000.00	6651.00	6654.20	5.03	483.64	200.38	0.50	0.77	0.046	0.99	0.51	0.57
MC R1	108254	100-Yr	3000.00	6651.00	6654.93	5.84	632.53	204.05	0.53	1.00	0.048	1.25	0.74	0.76
MC R1	108164	2-Yr	120.00	6650.22	6650.99	2.05	58.61	102.09	0.48	0.29	0.045	0.29		
MC R1	108164	5-Yr	270.00	6650.22	6651.45	2.53	107.87	111.20	0.44	0.34	0.044	0.36	0.08	0.08
MC R1	108164	10-Yr	540.00	6650.22	6652.04	3.16	176.72	124.00	0.44	0.43	0.043	0.49	0.14	0.15
MC R1	108164	50-Yr	2000.00	6650.22	6653.70	5.17	430.56	175.69	0.50	0.77	0.041	1.03	0.39	0.42
MC R1	108164	100-Yr	3000.00	6650.22	6654.34	6.26	549.33	198.23	0.56	1.00	0.041	1.42	0.52	0.66
MC R1	108020	2-Yr	120.00	6649.00	6650.01	2.08	57.85	80.46	0.42	0.26	0.044	0.27	0.00	
MC R1	108020	5-Yr	290.00	6649.00	6650.40	3.28	89.96	85.40	0.54	0.54	0.043	0.59	0.16	0.10
MC R1	108020	10-Yr	570.00	6649.00	6650.80	4.71	124.69	90.49	0.67	0.99	0.043	1.10	0.39	0.28
MC R1	108020	50-Yr	2000.00	6649.00	6652.13	7.67	330.85	262.26	0.80	1.04	0.033	2.37	0.54	0.43
MC R1	108020	100-Yr	3000.00	6649.00	6652.67	8.71	472.56	267.75	0.83	1.50	0.040	2.89	1.00	0.86
MC R1	107830	2-Yr	120.00	6648.00	6649.34	1.27	95.31	204.99	0.28	0.10	0.045	0.11	0.08	
MC R1	107830	5-Yr	290.00	6648.00	6649.70	1.66	193.68	238.77	0.29	0.12	0.043	0.16	0.08	0.02
MC R1	107830	10-Yr	570.00	6648.00	6650.16	2.04	312.06	263.16	0.30	0.17	0.043	0.21	0.12	0.06
MC R1	107830	50-Yr	2000.00	6648.00	6651.52	3.19	675.42	270.57	0.33	0.36	0.044	0.41	0.32	0.19
MC R1	107830	100-Yr	3000.00	6648.00	6652.20	3.72	860.61	273.94	0.35	0.46	0.044	0.52	0.42	0.25
MC R1	107657	2-Yr	120.00	6647.29	6648.00	3.66	32.81	81.78	1.02	1.04	0.045	1.04		
MC R1	107657	5-Yr	290.00	6647.29	6648.33	4.75	62.60	94.01	0.98	1.31	0.043	1.43	0.32	0.50
MC R1	107657	10-Yr	570.00	6647.29	6648.72	5.86	101.28	101.45	0.97	1.68	0.043	1.89	0.63	0.82
MC R1	107657	50-Yr	2000.00	6647.29	6649.96	7.91	334.89	223.60	0.91	1.70	0.044	2.69	1.19	1.13
MC R1	107657	100-Yr	3000.00	6647.29	6650.48	9.02	452.29	230.70	0.94	2.23	0.047	3.27	1.47	1.66
MC R1	107455	2-Yr	120.00	6643.00	6644.85	2.13	57.05	40.41	0.30	0.21	0.043	0.23	0.06	0.02
MC R1	107455	5-Yr	290.00	6643.00	6645.67	2.92	126.72	134.44	0.34	0.15	0.031	0.37	0.13	0.06
MC R1	107455	10-Yr	570.00	6643.00	6646.21	3.76	205.84	154.66	0.39	0.26	0.036	0.57	0.21	0.16
MC R1	107455	50-Yr	2000.00	6643.00	6647.78	5.59	522.18	288.04	0.47	0.44	0.036	1.09	0.45	0.35
MC R1	107455	100-Yr	3000.00	6643.00	6648.63	5.92	770.59	301.63	0.45	0.56	0.042	1.15	0.49	0.47
MC R1	107226	2-Yr	120.00	6642.00	6643.51	4.04	29.74	31.37	0.73	0.95	0.045	0.95		
MC R1	107226	5-Yr	290.00	6642.00	6644.17	5.36	60.98	89.61	0.76	0.64	0.030	1.43	0.25	0.15
MC R1	107226	10-Yr	570.00	6642.00	6644.86	5.48	133.29	109.29	0.65	0.73	0.039	1.32	0.35	0.46

HEC-RAS Plan: Plan 07 River: Monument Creek Reach: MC R1 (Continued)

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl	Shear Total (lb/sq ft)	Mann Wtd Total	Shear Chan (lb/sq ft)	Shear LOB (lb/sq ft)	Shear ROB (lb/sq ft)
MC R1	107226	50-Yr	2000.00	6642.00	6646.99	5.35	578.76	296.18	0.45	0.45	0.041	1.01	0.36	0.38
MC R1	107226	100-Yr	3000.00	6642.00	6648.03	5.28	888.59	303.48	0.40	0.50	0.047	0.91	0.33	0.45
MC R1	106945	2-Yr	120.00	6640.00	6641.95	1.92	62.47	58.37	0.33	0.21	0.045	0.21		
MC R1	106945	5-Yr	290.00	6640.00	6642.65	2.78	106.25	66.76	0.37	0.33	0.043	0.37	0.07	0.07
MC R1	106945	10-Yr	570.00	6640.00	6643.41	3.71	159.99	73.93	0.41	0.50	0.042	0.58	0.19	0.15
MC R1	106945	50-Yr	2000.00	6640.00	6645.70	5.93	421.60	168.15	0.48	0.62	0.036	1.19	0.56	0.27
MC R1	106945	100-Yr	3000.00	6640.00	6646.86	6.50	620.74	176.98	0.47	0.78	0.042	1.34	0.65	0.48
MC R1	106744	2-Yr	120.00	6639.76	6641.33	1.87	64.40	64.22	0.33	0.20	0.045	0.20		0.02
MC R1	106744	5-Yr	290.00	6639.76	6641.85	2.94	99.79	70.31	0.42	0.40	0.043	0.43	0.05	0.11
MC R1	106744	10-Yr	570.00	6639.76	6642.43	4.12	142.03	75.56	0.50	0.68	0.043	0.76	0.19	0.24
MC R1	106744	50-Yr	2000.00	6639.76	6644.03	7.85	276.72	95.24	0.72	1.78	0.041	2.28	0.88	0.68
MC R1	106744	100-Yr	3000.00	6639.76	6644.70	9.78	344.80	108.19	0.82	2.43	0.041	3.35	1.38	0.95
MC R1	106534	2-Yr	120.00	6639.00	6640.27	1.88	62.54	134.87	0.49	0.27	0.045	0.26	0.08	0.39
MC R1	106534	5-Yr	290.00	6639.00	6640.64	2.58	112.45	138.41	0.50	0.40	0.045	0.41	0.16	0.45
MC R1	106534	10-Yr	570.00	6639.00	6641.03	3.43	168.08	142.21	0.55	0.61	0.045	0.63	0.27	0.58
MC R1	106534	50-Yr	2000.00	6639.00	6642.26	5.89	351.04	169.50	0.66	1.25	0.042	1.48	0.74	0.56
MC R1	106534	100-Yr	3000.00	6639.00	6642.84	6.99	461.13	210.76	0.71	1.40	0.039	1.93	1.00	0.54
MC R1	106388	2-Yr	120.00	6637.00	6638.86	2.65	45.31	61.20	0.54	0.43	0.044	0.44	0.01	
MC R1	106388	5-Yr	290.00	6637.00	6639.32	3.57	94.43	134.62	0.57	0.40	0.036	0.68	0.16	0.09
MC R1	106388	10-Yr	570.00	6637.00	6639.80	4.20	167.00	163.84	0.57	0.51	0.039	0.85	0.32	0.19
MC R1	106388	50-Yr	2000.00	6637.00	6641.10	5.93	408.33	266.78	0.60	0.72	0.035	1.40	0.85	0.09
MC R1	106388	100-Yr	3000.00	6637.00	6641.66	6.81	556.60	271.11	0.64	1.01	0.040	1.74	1.15	0.36
MC R1	106089	2-Yr	120.00	6635.69	6637.30	1.30	92.77	184.53	0.31	0.12	0.045	0.12	0.03	
MC R1	106089	5-Yr	290.00	6635.69	6637.63	1.94	149.65	192.61	0.37	0.22	0.045	0.23	0.08	0.03
MC R1	106089	10-Yr	570.00	6635.69	6637.98	2.72	210.81	201.04	0.43	0.39	0.044	0.40	0.16	0.09
MC R1	106089	50-Yr	2000.00	6635.69	6639.06	4.78	479.69	331.70	0.56	0.62	0.038	0.99	0.09	0.32
MC R1	106089	100-Yr	3000.00	6635.69	6639.62	5.46	672.99	355.55	0.57	0.80	0.042	1.21	0.27	0.54
MC R1	105770	2-Yr	120.00	6634.00	6634.59	3.67	32.67	67.78	0.93	0.99	0.045	0.99		
MC R1	105770	5-Yr	290.00	6634.00	6635.10	4.10	78.68	143.92	0.73	0.54	0.034	0.97	0.15	0.27
MC R1	105770	10-Yr	570.00	6634.00	6635.62	4.28	156.66	153.08	0.62	0.62	0.041	0.92	0.39	0.38
MC R1	105770	50-Yr	2000.00	6634.00	6637.31	4.92	538.56	302.19	0.48	0.52	0.040	0.94	0.40	0.47
MC R1	105770	100-Yr	3000.00	6634.00	6638.21	5.05	820.33	323.83	0.44	0.57	0.045	0.92	0.47	0.47
MC R1	105320	2-Yr	120.00	6629.00	6630.96	2.37	50.66	38.86	0.37	0.30	0.045	0.30		
MC R1	105320	5-Yr	290.00	6629.00	6631.73	3.52	84.85	49.67	0.43	0.47	0.041	0.56	0.09	0.10
MC R1	105320	10-Yr	570.00	6629.00	6632.59	4.62	134.05	66.94	0.48	0.59	0.038	0.86	0.20	0.21
MC R1	105320	50-Yr	2000.00	6629.00	6635.05	6.64	448.52	155.66	0.50	0.78	0.044	1.45	0.42	0.58
MC R1	105320	100-Yr	3000.00	6629.00	6635.96	7.76	593.67	163.42	0.55	1.09	0.048	1.88	0.62	0.89
MC R1	105059	2-Yr	120.00	6628.00	6629.24	3.32	36.33	45.54	0.64	0.64	0.044	0.67	0.09	0.09
MC R1	105059	5-Yr	290.00	6628.00	6629.86	4.49	66.86	52.25	0.65	0.89	0.043	1.02	0.30	0.30
MC R1	105059	10-Yr	570.00	6628.00	6630.51	5.89	102.44	57.46	0.71	1.30	0.042	1.55	0.62	0.55
MC R1	105059	50-Yr	2000.00	6628.00	6632.35	9.71	248.72	133.51	0.86	1.60	0.033	3.41	1.72	0.60
MC R1	105059	100-Yr	3000.00	6628.00	6633.35	10.40	404.82	173.50	0.82	1.71	0.038	3.64	1.90	0.97

HEC-RAS Plan: Plan 07 River: Monument Creek Reach: MC R1 (Continued)

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl	Shear Total (lb/sq ft)	Mann Wtd Total	Shear Chan (lb/sq ft)	Shear LOB (lb/sq ft)	Shear ROB (lb/sq ft)
MC R1	104900	2-Yr	120.00	6627.00	6628.59	1.69	71.16	66.25	0.29	0.16	0.045	0.16		
MC R1	104900	5-Yr	290.00	6627.00	6629.35	2.28	134.01	100.97	0.30	0.18	0.039	0.25	0.05	0.02
MC R1	104900	10-Yr	570.00	6627.00	6630.05	3.00	208.08	112.42	0.34	0.29	0.041	0.38	0.14	0.08
MC R1	104900	50-Yr	2000.00	6627.00	6631.56	5.64	404.36	146.97	0.50	0.79	0.040	1.15	0.60	0.28
MC R1	104900	100-Yr	3000.00	6627.00	6632.18	6.92	498.78	155.74	0.57	1.14	0.041	1.65	0.87	0.52
MC R1	104815	2-Yr	120.00	6627.00	6628.03	3.85	35.22	44.67	0.67	0.65	0.043	0.84	0.52	0.36
MC R1	104815	5-Yr	290.00	6627.00	6628.84	4.44	75.68	54.13	0.58	0.70	0.043	0.92	0.57	0.50
MC R1	104815	10-Yr	570.00	6627.00	6629.55	5.25	159.00	139.45	0.58	0.52	0.039	1.16	0.36	0.66
MC R1	104815	50-Yr	2000.00	6627.00	6630.46	9.43	291.13	149.83	0.89	1.88	0.042	3.37	1.58	1.90
MC R1	104815	100-Yr	3000.00	6627.00	6631.57	8.37	465.96	172.88	0.69	1.42	0.041	2.42	1.33	1.08
MC R1	104496	2-Yr	120.00	6624.00	6625.47	3.24	47.32	54.91	0.47	0.31	0.040	0.53	0.20	0.28
MC R1	104496	5-Yr	300.00	6624.00	6625.92	5.30	74.98	67.38	0.67	0.75	0.041	1.29	0.53	0.71
MC R1	104496	10-Yr	590.00	6624.00	6626.42	6.87	134.61	132.79	0.78	0.84	0.039	2.02	0.59	1.06
MC R1	104496	50-Yr	2100.00	6624.00	6629.34	4.46	628.78	197.54	0.34	0.39	0.043	0.65	0.36	0.38
MC R1	104496	100-Yr	3200.00	6624.00	6631.30	3.97	1037.16	259.32	0.26	0.31	0.044	0.47	0.30	0.30
MC R1	104233	2-Yr	120.00	6622.00	6623.29	4.46	45.97	149.68	0.69	0.36	0.037	1.05	0.27	0.47
MC R1	104233	5-Yr	300.00	6622.00	6623.84	4.23	104.17	153.94	0.55	0.44	0.043	0.84	0.40	0.40
MC R1	104233	10-Yr	590.00	6622.00	6625.03	3.16	235.17	162.62	0.32	0.27	0.044	0.40	0.27	0.19
MC R1	104233	50-Yr	2100.00	6622.00	6629.10	3.25	733.08	192.37	0.21	0.25	0.043	0.31	0.27	0.15
MC R1	104233	100-Yr	3200.00	6622.00	6631.09	3.58	997.22	211.04	0.21	0.29	0.044	0.35	0.31	0.20
MC R1	104179	2-Yr	120.00	6620.00	6621.63	5.70	24.00	19.72	0.79	1.18	0.042	1.59	0.64	0.85
MC R1	104179	5-Yr	300.00	6620.00	6622.65	7.63	46.93	25.09	0.83	1.67	0.042	2.42	1.07	1.29
MC R1	104179	10-Yr	590.00	6620.00	6623.79	9.28	78.95	31.05	0.84	2.06	0.042	3.17	1.43	1.66
MC R1	104179	50-Yr	2100.00	6620.00	6627.14	13.21	209.51	46.08	0.87	3.15	0.042	5.20	2.49	2.73
MC R1	104179	100-Yr	3200.00	6620.00	6628.72	14.86	286.14	50.96	0.89	3.72	0.043	6.16	3.03	3.30
MC R1	104170		Bridge											
MC R1	104162	2-Yr	120.00	6619.25	6620.94	6.19	22.04	19.34	0.89	1.43	0.042	1.92	0.78	1.01
MC R1	104162	5-Yr	300.00	6619.25	6621.88	8.33	42.57	23.91	0.94	2.08	0.042	2.95	1.33	1.60
MC R1	104162	10-Yr	590.00	6619.25	6622.93	10.26	70.18	28.60	0.97	2.68	0.042	3.97	1.88	2.14
MC R1	104162	50-Yr	2100.00	6619.25	6626.30	14.34	191.21	42.82	0.96	3.81	0.042	6.20	2.96	3.27
MC R1	104162	100-Yr	3200.00	6619.25	6627.89	16.09	263.84	48.39	0.97	4.39	0.043	7.29	3.48	3.89
MC R1	104117	2-Yr	120.00	6619.00	6620.20	5.10	27.85	32.20	0.82	1.01	0.043	1.40	0.98	0.68
MC R1	104117	5-Yr	300.00	6619.00	6620.83	7.26	51.20	41.52	0.95	1.65	0.043	2.47	1.62	1.20
MC R1	104117	10-Yr	590.00	6619.00	6621.53	8.97	83.14	49.42	0.99	2.23	0.043	3.38	2.12	1.77
MC R1	104117	50-Yr	2100.00	6619.00	6623.82	12.10	222.29	70.91	0.97	3.18	0.043	4.96	2.75	2.93
MC R1	104117	100-Yr	3200.00	6619.00	6624.91	13.17	304.32	80.44	0.95	3.47	0.041	5.49	2.97	3.27
MC R1	103682	2-Yr	120.00	6614.00	6615.38	3.68	41.01	45.40	0.55	0.45	0.042	0.70	0.33	0.51
MC R1	103682	5-Yr	300.00	6614.00	6616.18	4.63	87.36	67.97	0.55	0.55	0.042	0.94	0.43	0.66
MC R1	103682	10-Yr	590.00	6614.00	6616.83	5.86	134.48	77.08	0.61	0.85	0.043	1.39	0.72	0.96
MC R1	103682	50-Yr	2100.00	6614.00	6618.72	8.78	292.97	89.17	0.71	1.80	0.043	2.63	1.69	1.73
MC R1	103682	100-Yr	3200.00	6614.00	6619.66	10.16	378.95	93.06	0.75	2.34	0.043	3.32	2.25	2.14
MC R1	103353	2-Yr	120.00	6610.00	6611.78	5.14	26.61	24.00	0.73	0.95	0.041	1.32	0.26	0.73

HEC-RAS Plan: Plan 07 River: Monument Creek Reach: MC R1 (Continued)

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl	Shear Total (lb/sq ft)	Mann Wtd Total	Shear Chan (lb/sq ft)	Shear LOB (lb/sq ft)	Shear ROB (lb/sq ft)
MC R1	103353	5-Yr	300.00	6610.00	6612.66	6.98	55.22	45.54	0.79	1.05	0.037	2.08	0.39	1.15
MC R1	103353	10-Yr	590.00	6610.00	6613.63	7.47	107.88	60.42	0.72	1.13	0.040	2.14	0.71	1.22
MC R1	103353	50-Yr	2100.00	6610.00	6616.56	8.31	338.97	135.36	0.58	0.85	0.033	2.15	0.59	1.32
MC R1	103353	100-Yr	3200.00	6610.00	6617.93	8.59	528.63	142.26	0.55	1.04	0.039	2.15	0.84	1.31
MC R1	103103	2-Yr	120.00	6607.97	6609.90	3.66	39.02	31.62	0.47	0.41	0.040	0.62	0.47	0.20
MC R1	103103	5-Yr	300.00	6607.97	6610.99	4.74	78.50	39.60	0.49	0.59	0.042	0.90	0.64	0.41
MC R1	103103	10-Yr	590.00	6607.97	6612.10	5.90	124.79	44.04	0.52	0.85	0.043	1.25	0.84	0.66
MC R1	103103	50-Yr	2100.00	6607.97	6615.41	8.27	365.84	149.47	0.54	0.66	0.031	2.02	1.20	0.47
MC R1	103103	100-Yr	3200.00	6607.97	6617.19	7.83	669.60	183.14	0.46	0.66	0.040	1.68	0.92	0.56
MC R1	102953	2-Yr	120.00	6607.00	6608.85	4.42	32.40	24.90	0.57	0.63	0.042	0.91	0.45	0.40
MC R1	102953	5-Yr	300.00	6607.00	6609.96	5.87	65.51	35.46	0.60	0.84	0.041	1.38	0.64	0.62
MC R1	102953	10-Yr	590.00	6607.00	6611.04	7.14	107.73	42.51	0.63	1.12	0.042	1.84	0.93	0.83
MC R1	102953	50-Yr	2100.00	6607.00	6614.04	10.27	256.72	58.49	0.68	1.89	0.040	3.15	1.88	1.15
MC R1	102953	100-Yr	3200.00	6607.00	6615.50	11.60	354.05	73.35	0.70	2.06	0.039	3.78	2.31	1.14
MC R1	102649	2-Yr	120.00	6604.00	6605.73	4.70	27.32	22.21	0.70	0.98	0.044	1.13	0.92	0.15
MC R1	102649	5-Yr	300.00	6604.00	6606.63	6.87	49.83	28.08	0.80	1.56	0.043	2.06	1.45	0.56
MC R1	102649	10-Yr	590.00	6604.00	6607.63	8.65	81.11	33.95	0.84	2.05	0.043	2.89	1.89	1.00
MC R1	102649	50-Yr	2100.00	6604.00	6610.79	11.96	214.45	51.05	0.83	2.79	0.040	4.42	2.61	1.80
MC R1	102649	100-Yr	3200.00	6604.00	6612.40	13.31	307.26	66.52	0.82	2.83	0.039	5.08	2.60	2.01
MC R1	102140	2-Yr	120.00	6601.00	6603.14	2.86	49.14	36.90	0.36	0.25	0.040	0.37	0.28	0.11
MC R1	102140	5-Yr	300.00	6601.00	6604.30	3.69	99.75	47.71	0.37	0.35	0.042	0.53	0.37	0.23
MC R1	102140	10-Yr	590.00	6601.00	6605.46	4.56	157.44	51.53	0.39	0.51	0.043	0.73	0.48	0.40
MC R1	102140	50-Yr	2100.00	6601.00	6608.65	7.42	337.21	61.85	0.48	1.11	0.042	1.61	0.88	1.05
MC R1	102140	100-Yr	3200.00	6601.00	6609.98	9.09	427.18	127.46	0.54	1.38	0.039	2.29	0.88	1.51
MC R1	101986	2-Yr	120.00	6600.00	6601.98	5.42	25.26	19.42	0.71	0.98	0.041	1.39	0.40	0.64
MC R1	101986	5-Yr	300.00	6600.00	6603.22	6.55	59.94	35.39	0.66	0.93	0.040	1.70	0.64	0.64
MC R1	101986	10-Yr	590.00	6600.00	6604.51	7.09	110.74	43.75	0.60	1.02	0.041	1.78	0.72	0.83
MC R1	101986	50-Yr	2100.00	6600.00	6608.06	8.42	354.28	103.32	0.53	0.89	0.037	2.05	0.53	0.91
MC R1	101986	100-Yr	3200.00	6600.00	6609.50	9.25	517.65	125.11	0.53	1.04	0.039	2.34	0.65	1.14
MC R1	101733	2-Yr	120.00	6598.00	6600.61	3.11	39.18	21.65	0.39	0.40	0.042	0.44	0.05	0.07
MC R1	101733	5-Yr	300.00	6598.00	6601.79	4.69	68.33	27.85	0.46	0.65	0.040	0.87	0.20	0.22
MC R1	101733	10-Yr	590.00	6598.00	6602.88	6.51	102.10	34.78	0.55	1.02	0.039	1.51	0.41	0.45
MC R1	101733	50-Yr	2100.00	6598.00	6605.66	11.08	240.47	69.09	0.73	1.81	0.035	3.71	1.18	1.08
MC R1	101733	100-Yr	3200.00	6598.00	6607.10	12.25	378.94	133.69	0.74	1.43	0.032	4.26	1.28	0.91
MC R1	101460	2-Yr	120.00	6597.00	6599.31	3.53	34.65	25.05	0.48	0.50	0.040	0.61	0.08	0.06
MC R1	101460	5-Yr	300.00	6597.00	6600.33	4.99	68.65	41.18	0.53	0.64	0.037	1.03	0.25	0.26
MC R1	101460	10-Yr	590.00	6597.00	6601.41	5.99	119.96	52.37	0.54	0.81	0.039	1.33	0.41	0.49
MC R1	101460	50-Yr	2100.00	6597.00	6604.53	8.16	321.73	90.31	0.55	1.05	0.036	2.02	0.70	0.78
MC R1	101460	100-Yr	3200.00	6597.00	6605.95	9.04	490.38	150.87	0.55	0.92	0.034	2.33	0.74	0.69
MC R1	100880	2-Yr	120.00	6593.00	6594.71	4.29	28.68	22.81	0.63	0.81	0.042	0.94	0.15	0.22
MC R1	100880	5-Yr	300.00	6593.00	6595.74	5.86	55.91	30.13	0.66	1.08	0.040	1.46	0.43	0.47
MC R1	100880	10-Yr	590.00	6593.00	6596.74	7.55	89.99	37.86	0.71	1.46	0.040	2.16	0.79	0.74
MC R1	100880	50-Yr	2100.00	6593.00	6599.46	11.82	218.15	57.92	0.84	2.60	0.039	4.38	2.11	1.58

HEC-RAS Plan: Plan 07 River: Monument Creek Reach: MC R1 (Continued)

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Vel Chnl	Flow Area	Top Width	Froude # Chl	Shear Total	Mann Wtd Total	Shear Chan	Shear LOB	Shear ROB
			(cfs)	(ft)	(ft)	(ft/s)	(sq ft)	(ft)		(lb/sq ft)		(lb/sq ft)	(lb/sq ft)	(lb/sq ft)
MC R1	100880	100-Yr	3200.00	6593.00	6600.77	13.22	305.77	79.75	0.85	2.57	0.036	5.14	2.58	1.53
MC R1	100474	2-Yr	120.00	6590.00	6591.99	3.22	39.23	28.94	0.44	0.41	0.041	0.50	0.14	0.12
MC R1	100474	5-Yr	300.00	6590.00	6592.96	4.68	72.57	40.23	0.51	0.62	0.039	0.91	0.28	0.31
MC R1	100474	10-Yr	590.00	6590.00	6594.01	5.84	120.73	50.90	0.54	0.81	0.040	1.27	0.48	0.47
MC R1	100474	50-Yr	2100.00	6590.00	6596.66	8.91	294.62	79.82	0.62	1.42	0.039	2.47	1.06	1.00
MC R1	100474	100-Yr	3200.00	6590.00	6597.83	10.29	397.78	98.54	0.66	1.66	0.038	3.11	1.24	1.30
MC R1	100207	2-Yr	120.00	6589.00	6590.57	3.08	39.61	32.41	0.47	0.45	0.043	0.49	0.08	0.10
MC R1	100207	5-Yr	300.00	6589.00	6591.71	3.96	80.95	40.50	0.44	0.53	0.041	0.66	0.20	0.21
MC R1	100207	10-Yr	590.00	6589.00	6592.59	5.37	126.27	58.04	0.52	0.71	0.038	1.10	0.37	0.31
MC R1	100207	50-Yr	2100.00	6589.00	6595.55	7.20	378.25	121.56	0.50	0.79	0.036	1.61	0.34	0.62
MC R1	100207	100-Yr	3200.00	6589.00	6597.06	7.39	619.22	193.29	0.47	0.65	0.035	1.58	0.33	0.57
MC R1	100039	2-Yr	120.00	6587.00	6589.52	3.87	33.11	20.21	0.47	0.54	0.041	0.68	0.22	0.02
MC R1	100039	5-Yr	300.00	6587.00	6590.60	5.63	68.50	49.97	0.56	0.56	0.034	1.26	0.28	0.21
MC R1	100039	10-Yr	590.00	6587.00	6591.63	6.27	128.23	61.87	0.54	0.72	0.039	1.42	0.52	0.33
MC R1	100039	50-Yr	2100.00	6587.00	6594.91	7.37	371.15	105.91	0.48	0.78	0.036	1.62	0.94	0.23
MC R1	100039	100-Yr	3200.00	6587.00	6596.47	7.76	609.76	199.67	0.46	0.59	0.033	1.69	0.87	0.28
MC R1	99764	2-Yr	120.00	6586.00	6587.98	3.59	36.95	31.08	0.48	0.43	0.039	0.62	0.17	0.16
MC R1	99764	5-Yr	300.00	6586.00	6589.01	4.81	72.55	38.14	0.51	0.66	0.041	0.95	0.42	0.32
MC R1	99764	10-Yr	590.00	6586.00	6590.18	5.80	121.23	44.73	0.52	0.84	0.042	1.23	0.64	0.45
MC R1	99764	50-Yr	2100.00	6586.00	6593.95	7.38	369.68	90.93	0.47	0.83	0.038	1.59	0.83	0.50
MC R1	99764	100-Yr	3200.00	6586.00	6595.49	8.29	521.01	104.83	0.48	1.01	0.040	1.88	0.92	0.74
MC R1	99635	2-Yr	120.00	6585.00	6586.52	4.94	24.27	21.30	0.82	1.35	0.045	1.35		
MC R1	99635	5-Yr	300.00	6585.00	6587.43	6.62	45.87	25.63	0.84	1.86	0.043	2.03	0.19	0.41
MC R1	99635	10-Yr	590.00	6585.00	6588.48	8.23	74.94	29.85	0.84	2.24	0.041	2.72	0.63	0.77
MC R1	99635	50-Yr	2100.00	6585.00	6592.20	10.95	234.21	69.73	0.74	1.80	0.034	3.66	0.78	1.34
MC R1	99635	100-Yr	3200.00	6585.00	6593.75	11.89	351.97	80.37	0.73	2.09	0.038	4.03	1.28	1.49
MC R1	99600		Bridge											
MC R1	99523	2-Yr	120.00	6583.00	6585.13	3.79	32.28	25.16	0.55	0.63	0.042	0.73		0.11
MC R1	99523	5-Yr	300.00	6583.00	6586.25	4.88	69.13	39.02	0.53	0.68	0.039	1.00	0.20	0.32
MC R1	99523	10-Yr	590.00	6583.00	6587.55	5.52	123.90	44.59	0.49	0.78	0.041	1.12	0.32	0.53
MC R1	99523	50-Yr	2100.00	6583.00	6591.44	7.54	324.55	59.36	0.48	1.12	0.040	1.65	0.58	0.94
MC R1	99523	100-Yr	3200.00	6583.00	6593.29	8.58	444.27	71.47	0.49	1.24	0.039	1.99	0.68	1.06
MC R1	99367	2-Yr	120.00	6582.00	6584.11	3.55	34.83	22.58	0.48	0.54	0.043	0.61	0.02	0.19
MC R1	99367	5-Yr	300.00	6582.00	6585.33	4.91	65.77	27.72	0.50	0.76	0.041	0.97	0.18	0.38
MC R1	99367	10-Yr	590.00	6582.00	6586.57	6.41	102.86	32.31	0.55	1.07	0.041	1.47	0.38	0.63
MC R1	99367	50-Yr	2100.00	6582.00	6590.07	10.24	247.91	55.89	0.65	1.69	0.037	3.06	0.95	1.05
MC R1	99367	100-Yr	3200.00	6582.00	6591.97	11.26	364.06	65.27	0.64	1.90	0.039	3.44	1.10	1.37
MC R1	99165	2-Yr	120.00	6581.00	6583.15	3.35	38.22	23.68	0.42	0.41	0.041	0.51	0.17	0.15
MC R1	99165	5-Yr	300.00	6581.00	6584.40	4.71	72.01	30.28	0.46	0.61	0.041	0.86	0.32	0.32
MC R1	99165	10-Yr	590.00	6581.00	6585.50	6.28	108.60	35.52	0.53	0.94	0.040	1.39	0.57	0.56
MC R1	99165	50-Yr	2100.00	6581.00	6588.37	11.10	225.43	45.43	0.73	2.39	0.040	3.67	1.75	1.62
MC R1	99165	100-Yr	3200.00	6581.00	6589.54	13.78	280.76	48.98	0.84	3.45	0.040	5.38	2.63	2.39

HEC-RAS Plan: Plan 07 River: Monument Creek Reach: MC R1 (Continued)

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl	Shear Total (lb/sq ft)	Mann Wtd Total	Shear Chan (lb/sq ft)	Shear LOB (lb/sq ft)	Shear ROB (lb/sq ft)
MC R1	98838	2-Yr	120.00	6579.00	6580.51	4.92	25.17	23.53	0.77	1.08	0.041	1.29	0.25	0.24
MC R1	98838	5-Yr	300.00	6579.00	6581.23	7.38	44.59	30.67	0.92	1.80	0.040	2.49	0.74	0.73
MC R1	98838	10-Yr	590.00	6579.00	6582.21	8.62	79.87	39.83	0.88	1.98	0.040	2.97	1.13	1.05
MC R1	98838	50-Yr	2100.00	6579.00	6585.01	11.63	226.54	81.23	0.85	2.07	0.035	4.33	2.39	0.84
MC R1	98838	100-Yr	3200.00	6579.00	6586.19	12.96	328.02	90.17	0.87	2.61	0.038	5.06	2.91	1.49
MC R1	98606	2-Yr	120.00	6578.00	6579.70	1.71	76.03	74.00	0.27	0.13	0.043	0.16	0.10	0.08
MC R1	98606	5-Yr	300.00	6578.00	6580.65	2.18	149.88	81.44	0.26	0.18	0.044	0.21	0.12	0.14
MC R1	98606	10-Yr	590.00	6578.00	6581.69	2.72	238.76	90.10	0.27	0.24	0.043	0.29	0.16	0.20
MC R1	98606	50-Yr	2100.00	6578.00	6584.85	4.16	562.09	113.66	0.29	0.41	0.042	0.54	0.30	0.36
MC R1	98606	100-Yr	3200.00	6578.00	6586.48	4.80	756.15	124.15	0.30	0.49	0.042	0.66	0.37	0.43
MC R1	98308	2-Yr	120.00	6577.00	6578.99	2.38	53.85	38.86	0.31	0.21	0.040	0.27	0.07	0.07
MC R1	98308	5-Yr	300.00	6577.00	6579.84	3.72	89.05	43.61	0.40	0.44	0.041	0.57	0.25	0.18
MC R1	98308	10-Yr	590.00	6577.00	6580.67	5.23	126.74	47.77	0.49	0.78	0.042	1.04	0.51	0.36
MC R1	98308	50-Yr	2100.00	6577.00	6582.30	11.39	211.32	56.30	0.89	3.11	0.041	4.33	2.30	1.59
MC R1	98308	100-Yr	3200.00	6577.00	6583.47	13.09	281.68	65.30	0.92	3.59	0.040	5.33	2.71	1.92
MC R1	98078	2-Yr	120.00	6577.00	6577.46	3.75	32.97	75.30	0.97	0.99	0.045	1.05	0.84	0.88
MC R1	98078	5-Yr	300.00	6577.00	6577.82	5.17	60.69	80.18	1.01	1.51	0.045	1.64	1.21	1.30
MC R1	98078	10-Yr	590.00	6577.00	6578.27	6.35	98.05	84.48	0.99	1.94	0.045	2.13	1.50	1.67
MC R1	98078	50-Yr	2100.00	6577.00	6580.65	7.04	316.80	99.06	0.65	1.60	0.043	1.84	1.11	1.46
MC R1	98078	100-Yr	3200.00	6577.00	6581.87	7.72	450.32	133.14	0.62	1.38	0.038	2.01	0.61	1.59
MC R1	97812	2-Yr	130.00	6574.00	6575.16	1.54	86.76	79.16	0.25	0.12	0.044	0.13	0.06	0.10
MC R1	97812	5-Yr	350.00	6574.00	6575.99	2.35	154.74	84.07	0.29	0.23	0.044	0.25	0.12	0.18
MC R1	97812	10-Yr	730.00	6574.00	6576.94	3.25	236.75	89.22	0.33	0.38	0.044	0.42	0.21	0.28
MC R1	97812	50-Yr	2700.00	6574.00	6579.72	5.63	533.07	140.62	0.42	0.66	0.038	1.02	0.54	0.33
MC R1	97812	100-Yr	4000.00	6574.00	6581.02	6.42	737.76	170.01	0.43	0.75	0.038	1.23	0.66	0.42
MC R1	97584	2-Yr	130.00	6573.00	6574.03	3.97	35.69	53.07	0.74	0.71	0.041	0.94	0.40	0.25
MC R1	97584	5-Yr	350.00	6573.00	6574.68	5.39	73.67	63.98	0.77	1.08	0.042	1.44	0.67	0.68
MC R1	97584	10-Yr	730.00	6573.00	6575.36	6.90	120.57	72.03	0.82	1.57	0.042	2.09	1.09	1.15
MC R1	97584	50-Yr	2700.00	6573.00	6577.94	9.27	331.30	90.70	0.75	2.20	0.042	2.92	1.77	1.78
MC R1	97584	100-Yr	4000.00	6573.00	6579.01	10.67	432.33	99.20	0.78	2.65	0.042	3.62	2.18	2.16
MC R1	97280	2-Yr	130.00	6569.00	6570.85	4.01	35.36	25.37	0.54	0.61	0.042	0.77	0.18	0.39
MC R1	97280	5-Yr	350.00	6569.00	6572.06	5.15	91.38	62.35	0.53	0.52	0.038	1.06	0.35	0.34
MC R1	97280	10-Yr	730.00	6569.00	6573.22	5.75	167.78	69.71	0.50	0.69	0.041	1.19	0.42	0.56
MC R1	97280	50-Yr	2700.00	6569.00	6576.34	8.09	433.73	130.40	0.53	0.89	0.035	1.94	0.33	1.20
MC R1	97280	100-Yr	4000.00	6569.00	6577.63	8.88	650.17	227.88	0.54	0.74	0.031	2.22	0.61	0.64
MC R1	96824	2-Yr	130.00	6566.00	6568.68	2.91	51.16	39.04	0.38	0.30	0.042	0.40	0.20	0.04
MC R1	96824	5-Yr	350.00	6566.00	6569.66	4.56	97.24	53.47	0.48	0.57	0.043	0.86	0.41	0.26
MC R1	96824	10-Yr	730.00	6566.00	6570.69	6.26	160.46	69.60	0.57	0.88	0.045	1.45	0.62	0.61
MC R1	96824	50-Yr	2700.00	6566.00	6573.94	9.26	463.47	119.93	0.61	1.41	0.048	2.58	1.09	1.40
MC R1	96824	100-Yr	4000.00	6566.00	6575.37	9.89	639.33	125.82	0.60	1.65	0.050	2.76	1.38	1.53
MC R1	96477	2-Yr	130.00	6566.00	6566.94	2.65	49.97	56.54	0.49	0.41	0.045	0.42		0.26
MC R1	96477	5-Yr	350.00	6566.00	6567.71	3.79	95.58	60.55	0.52	0.65	0.044	0.69	0.14	0.41

HEC-RAS Plan: Plan 07 River: Monument Creek Reach: MC R1 (Continued)

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl	Shear Total (lb/sq ft)	Mann Wtd Total	Shear Chan (lb/sq ft)	Shear LOB (lb/sq ft)	Shear ROB (lb/sq ft)
MC R1	96477	10-Yr	730.00	6566.00	6568.75	4.80	160.87	65.36	0.51	0.85	0.044	0.95	0.30	0.53
MC R1	96477	50-Yr	2700.00	6566.00	6572.35	7.13	459.16	114.86	0.50	0.98	0.040	1.58	0.66	0.44
MC R1	96477	100-Yr	4000.00	6566.00	6573.94	7.80	650.38	125.03	0.49	1.13	0.043	1.75	0.71	0.68
MC R1	96227	2-Yr	130.00	6562.00	6563.52	6.44	23.53	21.59	0.92	1.46	0.042	2.07	0.99	0.92
MC R1	96227	5-Yr	360.00	6562.00	6564.77	7.88	56.52	30.47	0.83	1.65	0.042	2.53	1.21	1.25
MC R1	96227	10-Yr	740.00	6562.00	6565.90	9.62	95.69	39.20	0.86	2.05	0.040	3.37	1.45	1.74
MC R1	96227	50-Yr	2800.00	6562.00	6569.04	14.73	257.68	62.45	0.98	3.69	0.042	6.49	2.86	3.52
MC R1	96227	100-Yr	4100.00	6562.00	6570.39	16.59	348.22	70.72	1.01	4.41	0.043	7.76	3.55	4.22
MC R1	96131	2-Yr	130.00	6561.00	6563.42	2.18	60.95	35.82	0.27	0.19	0.042	0.22	0.03	0.05
MC R1	96131	5-Yr	360.00	6561.00	6564.73	3.39	114.10	45.14	0.33	0.34	0.040	0.45	0.14	0.14
MC R1	96131	10-Yr	740.00	6561.00	6565.85	4.89	168.30	51.42	0.41	0.62	0.041	0.84	0.34	0.28
MC R1	96131	50-Yr	2800.00	6561.00	6568.73	9.91	347.91	72.15	0.65	1.89	0.042	2.91	1.48	0.97
MC R1	96131	100-Yr	4100.00	6561.00	6569.82	12.12	430.57	78.36	0.74	2.66	0.043	4.16	2.17	1.49
MC R1	96094	2-Yr	130.00	6561.00	6563.14	4.25	37.04	27.14	0.51	0.51	0.040	0.81	0.44	0.27
MC R1	96094	5-Yr	360.00	6561.00	6564.42	5.51	87.30	47.18	0.53	0.62	0.040	1.16	0.63	0.42
MC R1	96094	10-Yr	740.00	6561.00	6565.55	6.70	144.43	54.41	0.56	0.89	0.041	1.56	0.82	0.71
MC R1	96094	50-Yr	2800.00	6561.00	6568.67	10.54	378.03	89.51	0.67	1.75	0.042	3.23	1.61	1.54
MC R1	96094	100-Yr	4100.00	6561.00	6569.98	11.94	499.11	95.26	0.70	2.24	0.045	3.93	1.95	2.07
MC R1	95869	2-Yr	130.00	6560.00	6562.37	2.54	52.81	34.04	0.33	0.25	0.041	0.30	0.04	0.06
MC R1	95869	5-Yr	360.00	6560.00	6563.50	4.09	99.65	53.45	0.42	0.42	0.037	0.67	0.17	0.16
MC R1	95869	10-Yr	740.00	6560.00	6564.53	5.40	165.77	71.23	0.47	0.61	0.038	1.05	0.30	0.36
MC R1	95869	50-Yr	2800.00	6560.00	6567.13	9.41	383.65	99.19	0.64	1.58	0.040	2.71	0.86	1.43
MC R1	95869	100-Yr	4100.00	6560.00	6568.03	11.36	480.50	114.26	0.73	2.11	0.041	3.79	1.18	2.08
MC R1	95715	2-Yr	130.00	6560.00	6561.73	3.15	42.05	33.93	0.47	0.44	0.042	0.51	0.07	0.06
MC R1	95715	5-Yr	360.00	6560.00	6562.72	4.62	87.69	52.95	0.52	0.63	0.039	0.92	0.29	0.23
MC R1	95715	10-Yr	740.00	6560.00	6563.70	5.85	155.44	86.30	0.56	0.70	0.036	1.31	0.39	0.40
MC R1	95715	50-Yr	2800.00	6560.00	6566.24	9.09	450.86	163.11	0.66	1.22	0.040	2.62	0.92	0.93
MC R1	95715	100-Yr	4100.00	6560.00	6567.25	10.10	621.37	181.08	0.68	1.52	0.043	3.07	1.32	0.62
MC R1	95456	2-Yr	130.00	6558.00	6559.77	4.16	33.11	27.29	0.59	0.67	0.040	0.86	0.22	0.21
MC R1	95456	5-Yr	360.00	6558.00	6560.73	5.65	81.03	61.16	0.63	0.71	0.037	1.35	0.41	0.47
MC R1	95456	10-Yr	740.00	6558.00	6561.43	7.40	135.29	104.24	0.73	0.87	0.033	2.14	0.56	0.80
MC R1	95456	50-Yr	2800.00	6558.00	6563.23	11.88	370.02	144.96	0.94	2.42	0.045	4.74	2.07	1.95
MC R1	95456	100-Yr	4100.00	6558.00	6563.99	13.53	482.95	154.18	0.99	3.18	0.048	5.87	2.83	2.44
MC R1	95019	2-Yr	130.00	6554.00	6555.59	4.21	32.44	27.69	0.62	0.73	0.041	0.90	0.16	0.24
MC R1	95019	5-Yr	360.00	6554.00	6556.62	5.97	74.30	57.82	0.67	0.79	0.036	1.52	0.42	0.38
MC R1	95019	10-Yr	740.00	6554.00	6557.70	6.60	150.96	82.27	0.62	0.85	0.039	1.64	0.54	0.58
MC R1	95019	50-Yr	2800.00	6554.00	6560.95	7.05	623.27	225.82	0.48	0.61	0.039	1.51	0.56	0.52
MC R1	95019	100-Yr	4100.00	6554.00	6562.21	7.30	917.25	237.94	0.45	0.73	0.045	1.53	0.58	0.66
MC R1	94529	2-Yr	130.00	6551.00	6553.23	2.35	57.14	44.20	0.34	0.24	0.043	0.28	0.06	0.11
MC R1	94529	5-Yr	360.00	6551.00	6554.36	3.45	111.44	51.41	0.38	0.41	0.042	0.50	0.19	0.21
MC R1	94529	10-Yr	740.00	6551.00	6555.51	4.63	174.76	59.07	0.42	0.62	0.042	0.79	0.35	0.32
MC R1	94529	50-Yr	2800.00	6551.00	6558.11	8.94	396.00	132.47	0.63	1.16	0.034	2.48	0.98	0.52
MC R1	94529	100-Yr	4100.00	6551.00	6558.97	10.84	522.44	160.87	0.71	1.57	0.036	3.49	1.08	0.95

HEC-RAS Plan: Plan 07 River: Monument Creek Reach: MC R1 (Continued)

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl	Shear Total (lb/sq ft)	Mann Wtd Total	Shear Chan (lb/sq ft)	Shear LOB (lb/sq ft)	Shear ROB (lb/sq ft)
MC R1	94162	2-Yr	130.00	6549.00	6550.54	6.04	25.39	23.93	0.86	1.26	0.041	1.82	0.80	0.88
MC R1	94162	5-Yr	360.00	6549.00	6551.68	7.79	59.27	36.54	0.84	1.51	0.041	2.51	1.05	1.26
MC R1	94162	10-Yr	740.00	6549.00	6552.80	9.06	114.02	75.67	0.82	1.19	0.034	3.02	0.78	1.48
MC R1	94162	50-Yr	2800.00	6549.00	6554.73	12.86	422.34	190.03	0.95	2.06	0.046	5.30	1.79	2.55
MC R1	94162	100-Yr	4100.00	6549.00	6555.66	13.55	669.52	301.11	0.93	1.87	0.048	5.60	1.66	2.74
MC R1	93616	2-Yr	130.00	6544.00	6545.80	3.69	41.35	30.11	0.48	0.48	0.044	0.64	0.44	0.37
MC R1	93616	5-Yr	360.00	6544.00	6546.93	5.59	82.22	43.87	0.58	0.79	0.042	1.25	0.84	0.56
MC R1	93616	10-Yr	740.00	6544.00	6547.89	7.21	145.76	71.57	0.64	0.97	0.041	1.89	1.25	0.72
MC R1	93616	50-Yr	2800.00	6544.00	6550.73	9.00	478.21	151.73	0.61	1.13	0.041	2.46	1.53	0.98
MC R1	93616	100-Yr	4100.00	6544.00	6551.99	9.50	720.38	208.32	0.59	1.10	0.042	2.58	1.55	0.98
MC R1	93345	2-Yr	130.00	6543.00	6544.71	2.69	57.21	47.08	0.36	0.24	0.042	0.35	0.15	0.26
MC R1	93345	5-Yr	360.00	6543.00	6545.76	3.88	120.19	72.29	0.41	0.37	0.041	0.61	0.25	0.42
MC R1	93345	10-Yr	740.00	6543.00	6546.78	4.64	204.61	93.84	0.42	0.45	0.040	0.79	0.34	0.50
MC R1	93345	50-Yr	2800.00	6543.00	6549.85	6.51	620.33	162.63	0.44	0.71	0.044	1.28	0.69	0.54
MC R1	93345	100-Yr	4100.00	6543.00	6551.10	7.28	829.39	171.51	0.45	0.89	0.047	1.51	0.88	0.71
MC R1	93122	2-Yr	130.00	6542.00	6543.46	3.82	36.62	35.83	0.59	0.59	0.041	0.76	0.29	0.14
MC R1	93122	5-Yr	360.00	6542.00	6544.54	4.97	85.16	52.55	0.57	0.71	0.041	1.06	0.44	0.40
MC R1	93122	10-Yr	740.00	6542.00	6545.63	5.88	151.27	70.01	0.55	0.80	0.039	1.31	0.51	0.64
MC R1	93122	50-Yr	2800.00	6542.00	6548.88	7.71	545.86	151.53	0.52	0.96	0.044	1.81	0.76	1.00
MC R1	93122	100-Yr	4100.00	6542.00	6550.13	8.53	738.07	157.01	0.53	1.21	0.048	2.09	1.04	1.16
MC R1	92402	2-Yr	130.00	6536.00	6538.09	4.26	35.84	23.36	0.52	0.58	0.042	0.81	0.36	0.45
MC R1	92402	5-Yr	360.00	6536.00	6539.39	6.29	71.43	31.67	0.60	0.98	0.042	1.51	0.70	0.76
MC R1	92402	10-Yr	740.00	6536.00	6540.64	7.99	118.09	46.51	0.65	1.17	0.038	2.20	1.01	0.85
MC R1	92402	50-Yr	2800.00	6536.00	6543.60	12.97	334.48	119.77	0.83	1.78	0.035	4.91	0.88	2.18
MC R1	92402	100-Yr	4100.00	6536.00	6544.59	14.86	494.75	176.98	0.89	1.99	0.038	6.18	1.12	3.01
MC R1	92040	2-Yr	130.00	6534.00	6535.94	3.93	38.98	27.31	0.50	0.52	0.043	0.71	0.49	0.35
MC R1	92040	5-Yr	360.00	6534.00	6537.20	5.44	90.20	52.59	0.54	0.61	0.040	1.15	0.77	0.41
MC R1	92040	10-Yr	740.00	6534.00	6538.06	7.27	138.20	59.07	0.64	1.07	0.042	1.90	1.23	0.82
MC R1	92040	50-Yr	2800.00	6534.00	6541.05	10.12	425.73	168.62	0.67	1.08	0.035	3.06	1.76	0.88
MC R1	92040	100-Yr	4100.00	6534.00	6542.40	10.36	675.58	197.56	0.63	1.21	0.042	3.02	1.67	1.07
MC R1	91746	2-Yr	130.00	6532.00	6534.02	4.33	35.79	26.71	0.54	0.57	0.041	0.86	0.34	0.40
MC R1	91746	5-Yr	360.00	6532.00	6535.35	5.93	87.05	57.34	0.57	0.62	0.038	1.36	0.42	0.46
MC R1	91746	10-Yr	740.00	6532.00	6536.64	5.90	186.82	87.07	0.48	0.56	0.040	1.20	0.45	0.47
MC R1	91746	50-Yr	2800.00	6532.00	6540.08	7.19	532.10	118.08	0.45	0.82	0.042	1.48	0.80	0.72
MC R1	91746	100-Yr	4100.00	6532.00	6541.34	8.19	691.21	134.28	0.47	1.00	0.042	1.83	1.03	0.85
MC R1	91583	2-Yr	130.00	6531.00	6533.40	3.04	48.37	32.25	0.36	0.27	0.039	0.41	0.12	0.12
MC R1	91583	5-Yr	360.00	6531.00	6534.74	4.30	104.76	49.77	0.40	0.41	0.039	0.70	0.26	0.24
MC R1	91583	10-Yr	740.00	6531.00	6536.09	5.15	181.16	64.31	0.41	0.51	0.039	0.90	0.39	0.32
MC R1	91583	50-Yr	2800.00	6531.00	6539.28	8.48	468.78	111.10	0.53	1.07	0.041	2.06	1.06	0.66
MC R1	91583	100-Yr	4100.00	6531.00	6540.30	10.19	587.30	119.47	0.59	1.53	0.043	2.85	1.57	1.00
MC R1	91455	2-Yr	130.00	6531.00	6533.03	2.93	51.48	32.21	0.36	0.30	0.044	0.39	0.24	0.27
MC R1	91455	5-Yr	360.00	6531.00	6534.31	4.46	97.38	39.73	0.43	0.55	0.044	0.76	0.43	0.51

HEC-RAS Plan: Plan 07 River: Monument Creek Reach: MC R1 (Continued)

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl	Shear Total (lb/sq ft)	Mann Wtd Total	Shear Chan (lb/sq ft)	Shear LOB (lb/sq ft)	Shear ROB (lb/sq ft)
MC R1	91455	10-Yr	740.00	6531.00	6535.48	6.28	148.57	48.87	0.52	0.91	0.043	1.37	0.66	0.89
MC R1	91455	50-Yr	2800.00	6531.00	6538.02	11.26	364.49	128.19	0.75	1.51	0.036	3.79	1.06	1.95
MC R1	91455	100-Yr	4100.00	6531.00	6538.97	12.94	499.05	152.58	0.81	1.95	0.039	4.80	1.57	2.08
MC R1	91236	2-Yr	130.00	6530.00	6531.78	4.67	33.70	28.33	0.63	0.70	0.042	1.04	0.49	0.59
MC R1	91236	5-Yr	360.00	6530.00	6532.98	6.20	78.46	47.93	0.64	0.85	0.041	1.54	0.60	0.87
MC R1	91236	10-Yr	740.00	6530.00	6534.00	7.59	135.23	63.12	0.67	1.11	0.041	2.09	0.87	1.16
MC R1	91236	50-Yr	2800.00	6530.00	6536.94	9.30	520.94	204.48	0.62	0.95	0.040	2.60	0.82	1.38
MC R1	91236	100-Yr	4100.00	6530.00	6538.19	9.45	825.74	261.34	0.58	0.98	0.045	2.55	0.89	1.32
MC R1	91013	2-Yr	130.00	6529.00	6531.38	1.94	80.73	57.32	0.23	0.12	0.044	0.16	0.12	0.10
MC R1	91013	5-Yr	360.00	6529.00	6532.57	2.92	171.13	86.44	0.28	0.18	0.043	0.32	0.22	0.15
MC R1	91013	10-Yr	740.00	6529.00	6533.61	3.69	266.65	98.27	0.31	0.28	0.042	0.47	0.26	0.26
MC R1	91013	50-Yr	2800.00	6529.00	6536.28	6.32	574.75	131.01	0.42	0.72	0.042	1.19	0.51	0.79
MC R1	91013	100-Yr	4100.00	6529.00	6537.37	7.45	730.00	158.68	0.46	0.86	0.040	1.57	0.55	1.08
MC R1	90920	2-Yr	130.00	6529.00	6531.22	2.44	65.30	41.35	0.29	0.18	0.044	0.26	0.17	0.15
MC R1	90920	5-Yr	360.00	6529.00	6532.26	4.25	116.16	62.99	0.41	0.39	0.042	0.70	0.45	0.29
MC R1	90920	10-Yr	740.00	6529.00	6533.19	5.72	187.18	87.81	0.49	0.59	0.041	1.16	0.73	0.46
MC R1	90920	50-Yr	2800.00	6529.00	6535.53	8.98	414.02	105.38	0.62	1.46	0.042	2.47	1.31	1.37
MC R1	90920	100-Yr	4100.00	6529.00	6536.42	10.58	514.02	159.65	0.68	1.75	0.039	3.29	1.08	1.95
MC R1	90790	2-Yr	130.00	6529.00	6530.99	2.28	70.55	50.68	0.29	0.17	0.044	0.24	0.14	0.15
MC R1	90790	5-Yr	360.00	6529.00	6531.82	3.95	119.37	66.14	0.41	0.40	0.044	0.63	0.36	0.36
MC R1	90790	10-Yr	740.00	6529.00	6532.61	5.33	181.33	92.27	0.49	0.57	0.039	1.06	0.55	0.49
MC R1	90790	50-Yr	2800.00	6529.00	6534.92	8.42	523.69	205.71	0.61	0.96	0.040	2.24	0.73	1.11
MC R1	90790	100-Yr	4100.00	6529.00	6535.94	9.14	752.31	237.34	0.61	1.14	0.045	2.51	0.92	1.32
MC R1	90519	2-Yr	240.00	6528.00	6529.45	4.45	65.57	69.61	0.65	0.65	0.041	1.00	0.40	0.47
MC R1	90519	5-Yr	460.00	6528.00	6529.98	5.38	105.52	80.57	0.67	0.87	0.042	1.32	0.64	0.67
MC R1	90519	10-Yr	910.00	6528.00	6530.80	6.04	197.82	137.81	0.64	0.76	0.038	1.48	0.86	0.51
MC R1	90519	50-Yr	3300.00	6528.00	6533.02	8.36	591.83	221.38	0.66	1.24	0.044	2.34	1.46	1.02
MC R1	90519	100-Yr	5000.00	6528.00	6534.16	9.08	864.89	258.03	0.64	1.40	0.047	2.58	1.41	1.23
MC R1	90393	2-Yr	240.00	6526.00	6527.61	4.79	51.73	51.90	0.78	1.06	0.042	1.25	0.27	0.27
MC R1	90393	5-Yr	460.00	6526.00	6528.17	5.91	83.69	61.50	0.79	1.31	0.041	1.67	0.46	0.55
MC R1	90393	10-Yr	910.00	6526.00	6528.94	7.50	134.66	70.45	0.84	1.80	0.042	2.38	0.75	1.00
MC R1	90393	50-Yr	3300.00	6526.00	6531.44	9.81	487.07	179.59	0.77	1.74	0.043	3.23	1.20	1.30
MC R1	90393	100-Yr	5000.00	6526.00	6532.58	10.90	721.01	229.22	0.78	1.90	0.045	3.72	1.40	1.50
MC R1	90202	2-Yr	240.00	6524.00	6526.13	3.69	77.14	69.40	0.46	0.34	0.036	0.62	0.14	0.22
MC R1	90202	5-Yr	460.00	6524.00	6526.81	4.50	127.62	81.13	0.48	0.49	0.039	0.83	0.29	0.33
MC R1	90202	10-Yr	910.00	6524.00	6527.82	5.32	223.50	104.80	0.49	0.60	0.041	1.05	0.43	0.45
MC R1	90202	50-Yr	3300.00	6524.00	6530.53	7.50	561.82	155.25	0.52	0.97	0.039	1.74	0.99	0.44
MC R1	90202	100-Yr	5000.00	6524.00	6531.39	9.32	715.54	204.09	0.61	1.23	0.037	2.57	1.34	0.57
MC R1	89884	2-Yr	240.00	6522.00	6524.57	3.95	77.68	66.44	0.47	0.36	0.038	0.69	0.22	0.12
MC R1	89884	5-Yr	460.00	6522.00	6525.24	4.74	124.25	72.22	0.49	0.54	0.041	0.91	0.40	0.22
MC R1	89884	10-Yr	910.00	6522.00	6525.94	6.45	176.33	77.56	0.60	0.99	0.041	1.56	0.81	0.45
MC R1	89884	50-Yr	3300.00	6522.00	6528.04	10.89	447.44	226.78	0.80	1.33	0.033	3.82	1.06	1.35
MC R1	89884	100-Yr	5000.00	6522.00	6529.47	10.53	794.98	251.40	0.70	1.47	0.044	3.31	1.31	1.25

HEC-RAS Plan: Plan 07 River: Monument Creek Reach: MC R1 (Continued)

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl	Shear Total (lb/sq ft)	Mann Wtd Total	Shear Chan (lb/sq ft)	Shear LOB (lb/sq ft)	Shear ROB (lb/sq ft)
MC R1	89328	2-Yr	240.00	6519.00	6521.54	3.68	67.06	47.18	0.49	0.52	0.040	0.65	0.16	0.06
MC R1	89328	5-Yr	460.00	6519.00	6522.26	4.52	128.30	142.47	0.51	0.32	0.029	0.87	0.29	0.11
MC R1	89328	10-Yr	910.00	6519.00	6523.13	4.82	255.79	150.98	0.46	0.45	0.039	0.89	0.35	0.31
MC R1	89328	50-Yr	3300.00	6519.00	6526.28	5.45	768.48	173.20	0.38	0.63	0.044	0.91	0.43	0.57
MC R1	89328	100-Yr	5000.00	6519.00	6527.99	5.83	1074.78	183.51	0.36	0.69	0.045	0.97	0.46	0.65
MC R1	88951	2-Yr	240.00	6517.00	6518.92	4.20	61.75	46.62	0.56	0.64	0.041	0.84	0.20	0.26
MC R1	88951	5-Yr	460.00	6517.00	6519.62	5.32	96.76	53.82	0.60	0.89	0.041	1.21	0.38	0.49
MC R1	88951	10-Yr	910.00	6517.00	6520.64	6.63	156.09	61.90	0.63	1.21	0.041	1.67	0.60	0.80
MC R1	88951	50-Yr	3300.00	6517.00	6523.45	10.90	354.00	80.40	0.77	2.56	0.041	3.70	1.39	2.05
MC R1	88951	100-Yr	5000.00	6517.00	6524.47	13.66	445.38	108.39	0.89	3.08	0.037	5.53	1.76	2.27
MC R1	88643	2-Yr	240.00	6515.00	6517.12	3.34	76.18	55.12	0.44	0.41	0.041	0.53	0.14	0.08
MC R1	88643	5-Yr	460.00	6515.00	6517.89	4.16	121.19	63.07	0.46	0.56	0.041	0.73	0.28	0.17
MC R1	88643	10-Yr	910.00	6515.00	6518.92	5.33	190.89	70.94	0.50	0.80	0.042	1.07	0.51	0.32
MC R1	88643	50-Yr	3300.00	6515.00	6521.88	8.22	570.25	221.31	0.57	0.82	0.034	2.08	0.77	0.25
MC R1	88643	100-Yr	5000.00	6515.00	6522.95	9.52	817.45	237.54	0.61	1.20	0.041	2.65	1.17	0.59
MC R1	88141	2-Yr	240.00	6512.00	6514.07	4.13	60.82	43.40	0.54	0.63	0.040	0.81	0.14	0.22
MC R1	88141	5-Yr	460.00	6512.00	6514.80	5.25	98.44	59.72	0.58	0.76	0.038	1.17	0.29	0.39
MC R1	88141	10-Yr	910.00	6512.00	6515.77	6.53	163.21	72.39	0.62	1.04	0.039	1.61	0.59	0.61
MC R1	88141	50-Yr	3300.00	6512.00	6518.47	9.91	514.41	212.55	0.70	1.20	0.037	3.07	0.85	1.27
MC R1	88141	100-Yr	5000.00	6512.00	6519.68	10.71	790.30	238.16	0.69	1.52	0.045	3.38	1.22	1.42
MC R1	87989	2-Yr	240.00	6511.00	6513.14	3.64	69.25	52.49	0.48	0.47	0.039	0.63	0.26	0.06
MC R1	87989	5-Yr	460.00	6511.00	6513.71	4.96	101.32	60.33	0.57	0.77	0.039	1.07	0.41	0.28
MC R1	87989	10-Yr	900.00	6511.00	6514.52	6.65	157.54	82.23	0.66	1.06	0.038	1.73	0.46	0.67
MC R1	87989	50-Yr	3300.00	6511.00	6517.48	9.07	600.51	216.63	0.65	1.17	0.044	2.58	0.81	1.44
MC R1	87989	100-Yr	5000.00	6511.00	6518.88	9.45	908.27	223.13	0.61	1.41	0.051	2.62	1.13	1.49
MC R1	87650	2-Yr	240.00	6509.00	6510.85	3.92	69.44	65.32	0.56	0.54	0.040	0.77	0.48	0.26
MC R1	87650	5-Yr	460.00	6509.00	6511.55	4.42	120.70	76.32	0.52	0.61	0.042	0.86	0.52	0.40
MC R1	87650	10-Yr	900.00	6509.00	6512.57	5.12	201.66	82.05	0.50	0.76	0.043	1.02	0.58	0.59
MC R1	87650	50-Yr	3300.00	6509.00	6515.82	7.82	503.49	118.17	0.54	1.21	0.040	1.88	0.95	0.94
MC R1	87650	100-Yr	5000.00	6509.00	6517.13	9.27	709.76	172.60	0.59	1.29	0.038	2.48	1.21	0.98
MC R1	87367	2-Yr	240.00	6507.00	6509.27	3.28	77.32	50.42	0.42	0.40	0.041	0.50	0.15	0.13
MC R1	87367	5-Yr	460.00	6507.00	6509.98	4.33	115.31	56.03	0.47	0.61	0.042	0.78	0.31	0.24
MC R1	87367	10-Yr	900.00	6507.00	6510.99	5.64	176.33	65.20	0.52	0.88	0.041	1.19	0.57	0.37
MC R1	87367	50-Yr	3300.00	6507.00	6513.90	9.34	510.93	185.78	0.64	1.13	0.037	2.68	1.53	0.59
MC R1	87367	100-Yr	5000.00	6507.00	6515.04	10.74	736.39	205.67	0.68	1.56	0.043	3.36	1.95	1.03
MC R1	86981	2-Yr	240.00	6505.00	6507.14	4.07	67.46	56.84	0.53	0.51	0.039	0.78	0.25	0.17
MC R1	86981	5-Yr	460.00	6505.00	6507.85	4.85	110.42	63.60	0.54	0.68	0.041	0.99	0.45	0.29
MC R1	86981	10-Yr	900.00	6505.00	6508.86	5.93	185.16	86.03	0.56	0.80	0.039	1.32	0.56	0.44
MC R1	86981	50-Yr	3300.00	6505.00	6511.71	8.94	597.16	210.20	0.62	1.10	0.042	2.47	0.89	0.92
MC R1	86981	100-Yr	5000.00	6505.00	6512.87	9.98	848.00	221.33	0.64	1.48	0.049	2.92	1.29	1.09
MC R1	86837	2-Yr	240.00	6504.00	6506.41	3.11	81.49	57.52	0.42	0.39	0.042	0.47	0.21	0.10
MC R1	86837	5-Yr	460.00	6504.00	6507.23	3.76	131.09	63.29	0.42	0.49	0.042	0.60	0.32	0.20

HEC-RAS Plan: Plan 07 River: Monument Creek Reach: MC R1 (Continued)

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Vel Chnl	Flow Area	Top Width	Froude # Chl	Shear Total	Mann Wtd Total	Shear Chan	Shear LOB	Shear ROB
			(cfs)	(ft)	(ft)	(ft/s)	(sq ft)	(ft)		(lb/sq ft)		(lb/sq ft)	(lb/sq ft)	(lb/sq ft)
MC R1	86837	10-Yr	900.00	6504.00	6508.17	5.04	192.95	68.92	0.48	0.78	0.042	0.96	0.53	0.40
MC R1	86837	50-Yr	3300.00	6504.00	6510.67	8.71	561.67	207.80	0.63	1.09	0.039	2.41	0.71	1.16
MC R1	86837	100-Yr	5000.00	6504.00	6511.56	10.40	749.50	212.34	0.70	1.68	0.045	3.27	1.25	1.61
MC R1	86569	2-Yr	240.00	6502.00	6504.60	4.49	59.99	57.25	0.60	0.59	0.036	0.97	0.20	0.22
MC R1	86569	5-Yr	460.00	6502.00	6504.94	6.69	81.17	67.34	0.82	1.20	0.037	2.02	0.55	0.60
MC R1	86569	10-Yr	900.00	6502.00	6505.67	8.06	135.43	81.12	0.85	1.60	0.039	2.65	0.97	1.13
MC R1	86569	50-Yr	3300.00	6502.00	6508.43	10.24	483.45	220.47	0.77	1.36	0.037	3.41	0.95	1.94
MC R1	86569	100-Yr	5000.00	6502.00	6509.83	10.18	798.27	229.23	0.68	1.57	0.046	3.13	1.30	1.82
MC R1	86360	2-Yr	240.00	6501.00	6503.45	2.60	108.76	123.46	0.41	0.25	0.042	0.36	0.13	0.17
MC R1	86360	5-Yr	460.00	6501.00	6504.10	2.77	191.56	132.28	0.35	0.27	0.043	0.35	0.14	0.21
MC R1	86360	10-Yr	900.00	6501.00	6505.15	3.01	333.85	139.65	0.31	0.29	0.044	0.36	0.15	0.25
MC R1	86360	50-Yr	3300.00	6501.00	6508.26	4.59	813.30	180.02	0.33	0.49	0.042	0.66	0.26	0.44
MC R1	86360	100-Yr	5000.00	6501.00	6509.50	5.54	1048.92	197.25	0.36	0.66	0.042	0.91	0.37	0.59
MC R1	86016	2-Yr	240.00	6499.00	6501.57	3.98	62.83	36.53	0.49	0.61	0.042	0.72	0.26	0.10
MC R1	86016	5-Yr	460.00	6499.00	6502.39	5.17	95.68	43.71	0.54	0.83	0.040	1.08	0.43	0.25
MC R1	86016	10-Yr	900.00	6499.00	6503.56	6.52	169.10	90.98	0.57	0.71	0.033	1.54	0.64	0.24
MC R1	86016	50-Yr	3300.00	6499.00	6506.96	8.36	772.09	258.09	0.54	0.83	0.048	2.06	0.93	0.65
MC R1	86016	100-Yr	5000.00	6499.00	6508.29	8.94	1125.29	274.91	0.53	1.05	0.055	2.23	1.01	0.89
MC R1	85859	2-Yr	240.00	6498.00	6500.67	3.73	66.12	41.69	0.49	0.58	0.042	0.66	0.04	0.18
MC R1	85859	5-Yr	460.00	6498.00	6501.53	4.64	104.42	46.73	0.50	0.75	0.042	0.90	0.13	0.34
MC R1	85859	10-Yr	900.00	6498.00	6502.64	6.13	163.86	64.97	0.56	0.92	0.038	1.39	0.27	0.39
MC R1	85859	50-Yr	3300.00	6498.00	6505.41	10.41	513.48	182.34	0.72	1.44	0.042	3.35	0.80	1.00
MC R1	85859	100-Yr	5000.00	6498.00	6506.63	11.59	745.40	196.19	0.73	1.91	0.048	3.91	0.95	1.51
MC R1	85654	2-Yr	240.00	6497.00	6499.75	3.28	75.67	42.98	0.40	0.40	0.041	0.48	0.08	0.10
MC R1	85654	5-Yr	460.00	6497.00	6500.64	4.22	118.06	52.08	0.43	0.53	0.040	0.71	0.21	0.21
MC R1	85654	10-Yr	900.00	6497.00	6501.75	5.36	213.25	107.97	0.46	0.49	0.035	1.03	0.39	0.22
MC R1	85654	50-Yr	3300.00	6497.00	6504.51	8.27	646.65	180.72	0.56	1.07	0.047	2.07	0.99	0.83
MC R1	85654	100-Yr	5000.00	6497.00	6505.65	9.62	854.84	186.14	0.60	1.52	0.051	2.66	1.33	1.26
MC R1	85453	2-Yr	240.00	6496.00	6499.11	2.95	83.61	43.46	0.36	0.36	0.043	0.39	0.01	0.17
MC R1	85453	5-Yr	460.00	6496.00	6499.93	3.97	129.08	84.30	0.41	0.33	0.033	0.63	0.10	0.09
MC R1	85453	10-Yr	900.00	6496.00	6501.03	4.97	232.15	164.12	0.44	0.31	0.029	0.89	0.03	0.31
MC R1	85453	50-Yr	3300.00	6496.00	6502.50	10.70	503.39	205.29	0.80	1.67	0.043	3.72	0.91	1.79
MC R1	85453	100-Yr	5000.00	6496.00	6503.41	12.32	701.06	227.75	0.86	2.26	0.048	4.69	1.46	2.50
MC R1	85285	2-Yr	260.00	6495.64	6497.52	5.91	44.47	37.21	0.94	1.79	0.044	1.87	0.64	
MC R1	85285	5-Yr	490.00	6495.64	6498.22	6.91	73.17	44.91	0.88	1.88	0.042	2.21	0.85	0.30
MC R1	85285	10-Yr	910.00	6495.64	6499.02	8.67	113.57	160.66	0.93	2.02	0.037	3.10	1.18	0.48
MC R1	85285	50-Yr	3300.00	6495.64	6501.49	7.05	1025.14	415.31	0.55	0.79	0.060	1.65	0.70	0.76
MC R1	85285	100-Yr	5000.00	6495.64	6502.91	6.47	1626.02	427.38	0.44	0.74	0.066	1.28	0.69	0.68
MC R1	84656	2-Yr	260.00	6490.00	6492.22	3.63	82.16	53.48	0.44	0.44	0.042	0.59	0.28	0.30
MC R1	84656	5-Yr	490.00	6490.00	6492.90	4.73	121.54	61.17	0.50	0.65	0.042	0.91	0.44	0.48
MC R1	84656	10-Yr	910.00	6490.00	6493.84	5.80	181.29	66.52	0.53	0.91	0.042	1.25	0.69	0.69
MC R1	84656	50-Yr	3300.00	6490.00	6496.35	10.52	362.17	129.42	0.74	2.53	0.042	3.45	2.20	1.96
MC R1	84656	100-Yr	5000.00	6490.00	6496.89	14.31	405.06	162.75	0.97	4.54	0.042	6.21	4.01	3.49

HEC-RAS Plan: Plan 07 River: Monument Creek Reach: MC R1 (Continued)

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl	Shear Total (lb/sq ft)	Mann Wtd Total	Shear Chan (lb/sq ft)	Shear LOB (lb/sq ft)	Shear ROB (lb/sq ft)
MC R1	84378	2-Yr	260.00	6489.00	6491.05	3.50	93.95	69.91	0.43	0.36	0.043	0.55	0.42	0.29
MC R1	84378	5-Yr	490.00	6489.00	6491.80	3.99	148.28	74.80	0.42	0.45	0.043	0.65	0.47	0.40
MC R1	84378	10-Yr	910.00	6489.00	6492.81	4.75	227.07	113.56	0.43	0.60	0.043	0.83	0.57	0.55
MC R1	84378	50-Yr	3300.00	6489.00	6496.24	5.41	1177.02	387.10	0.35	0.36	0.049	0.87	0.47	0.33
MC R1	84378	100-Yr	5000.00	6489.00	6496.47	7.66	1267.75	390.37	0.49	0.74	0.050	1.72	0.94	0.69
MC R1	84183	2-Yr	260.00	6488.00	6490.09	4.88	65.34	44.27	0.59	0.75	0.044	1.07	0.66	0.61
MC R1	84183	5-Yr	490.00	6488.00	6490.89	5.86	103.21	108.97	0.61	0.96	0.044	1.38	0.91	0.78
MC R1	84183	10-Yr	910.00	6488.00	6491.88	6.94	162.79	195.30	0.62	1.04	0.039	1.75	1.19	0.72
MC R1	84183	50-Yr	3300.00	6488.00	6494.79	10.80	433.14	389.76	0.73	1.58	0.037	3.52	2.47	1.13
MC R1	84183	100-Yr	5000.00	6488.00	6496.25	6.29	1705.43	403.93	0.39	0.57	0.061	1.12	0.78	0.54
MC R1	83654	2-Yr	260.00	6485.00	6487.73	3.70	92.39	54.22	0.39	0.34	0.043	0.56	0.28	0.35
MC R1	83654	5-Yr	490.00	6485.00	6488.50	4.54	138.23	65.22	0.43	0.46	0.041	0.78	0.39	0.47
MC R1	83654	10-Yr	910.00	6485.00	6489.52	5.55	211.92	80.77	0.46	0.61	0.040	1.07	0.52	0.63
MC R1	83654	50-Yr	3300.00	6485.00	6492.86	8.21	609.96	143.36	0.52	1.03	0.045	1.94	0.94	1.05
MC R1	83654	100-Yr	5000.00	6485.00	6494.36	9.45	844.32	168.84	0.54	1.27	0.047	2.42	1.18	1.27
MC R1	83310	2-Yr	260.00	6484.00	6486.02	3.33	96.60	69.28	0.41	0.84	0.068	1.22	0.88	0.68
MC R1	83310	5-Yr	490.00	6484.00	6486.70	4.08	145.94	74.15	0.44	1.20	0.069	1.66	1.16	1.06
MC R1	83310	10-Yr	910.00	6484.00	6487.66	4.99	220.55	81.31	0.46	1.64	0.069	2.24	1.47	1.53
MC R1	83310	50-Yr	3300.00	6484.00	6490.69	8.06	533.03	123.79	0.55	3.04	0.067	4.78	2.26	3.30
MC R1	83310	100-Yr	5000.00	6484.00	6492.07	9.14	712.53	135.30	0.57	3.72	0.068	5.77	2.94	3.96
MC R1	83191	2-Yr	260.00	6483.00	6485.45	2.44	111.55	78.67	0.34	0.26	0.044	0.29	0.16	0.18
MC R1	83191	5-Yr	490.00	6483.00	6486.18	3.02	170.19	82.40	0.35	0.35	0.044	0.40	0.20	0.25
MC R1	83191	10-Yr	910.00	6483.00	6487.16	3.80	253.32	88.14	0.37	0.48	0.043	0.56	0.28	0.34
MC R1	83191	50-Yr	3300.00	6483.00	6489.95	6.94	534.69	112.04	0.50	1.17	0.043	1.51	0.72	0.80
MC R1	83191	100-Yr	5000.00	6483.00	6491.02	8.72	657.62	118.63	0.58	1.72	0.043	2.27	1.06	1.23
MC R1	82812	2-Yr	260.00	6482.00	6483.96	3.63	83.44	58.57	0.46	0.43	0.042	0.60	0.34	0.48
MC R1	82812	5-Yr	490.00	6482.00	6484.62	4.71	126.05	70.87	0.51	0.62	0.042	0.92	0.48	0.72
MC R1	82812	10-Yr	910.00	6482.00	6485.45	6.15	192.32	94.93	0.58	0.83	0.041	1.43	0.64	1.08
MC R1	82812	50-Yr	3300.00	6482.00	6488.39	8.13	715.47	251.41	0.57	0.90	0.046	2.04	0.78	1.42
MC R1	82812	100-Yr	5000.00	6482.00	6489.33	9.29	952.45	255.64	0.60	1.28	0.050	2.55	1.15	1.72
MC R1	82556	2-Yr	260.00	6480.00	6481.85	5.84	64.45	69.65	0.76	0.79	0.041	1.59	0.88	0.60
MC R1	82556	5-Yr	490.00	6480.00	6482.34	6.80	100.96	76.87	0.78	1.12	0.043	2.00	1.13	0.94
MC R1	82556	10-Yr	910.00	6480.00	6483.05	7.68	157.26	81.54	0.78	1.46	0.044	2.33	1.35	1.34
MC R1	82556	50-Yr	3300.00	6480.00	6484.94	12.55	319.77	90.80	1.00	3.72	0.043	5.29	3.14	3.68
MC R1	82556	100-Yr	5000.00	6480.00	6486.46	12.26	578.16	242.14	0.85	1.69	0.033	4.62	0.90	3.38
MC R1	82363	2-Yr	260.00	6477.00	6480.11	5.19	69.76	86.34	0.55	0.32	0.028	1.10	0.48	0.10
MC R1	82363	5-Yr	490.00	6477.00	6480.74	5.80	128.21	99.12	0.55	0.49	0.036	1.29	0.54	0.32
MC R1	82363	10-Yr	910.00	6477.00	6481.33	7.19	189.67	114.55	0.63	0.83	0.039	1.87	0.83	0.64
MC R1	82363	50-Yr	3300.00	6477.00	6483.88	8.72	573.22	177.23	0.60	1.16	0.043	2.34	0.85	1.31
MC R1	82363	100-Yr	5000.00	6477.00	6484.97	9.71	769.54	181.54	0.62	1.53	0.045	2.76	1.22	1.67
MC R1	82154	2-Yr	260.00	6476.00	6478.54	5.50	67.25	71.29	0.63	0.52	0.035	1.30	0.62	0.30
MC R1	82154	5-Yr	490.00	6476.00	6479.08	6.58	111.21	90.16	0.68	0.74	0.038	1.74	0.84	0.53

HEC-RAS Plan: Plan 07 River: Monument Creek Reach: MC R1 (Continued)

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl	Shear Total (lb/sq ft)	Mann Wtd Total	Shear Chan (lb/sq ft)	Shear LOB (lb/sq ft)	Shear ROB (lb/sq ft)
MC R1	82154	10-Yr	910.00	6476.00	6480.10	6.15	212.41	115.60	0.55	0.65	0.039	1.38	0.65	0.54
MC R1	82154	50-Yr	3300.00	6476.00	6483.06	7.47	691.17	231.63	0.50	0.73	0.040	1.68	0.40	0.82
MC R1	82154	100-Yr	5000.00	6476.00	6484.20	8.30	963.91	245.90	0.52	0.97	0.045	1.98	0.63	1.07
MC R1	81764	2-Yr	260.00	6475.00	6477.22	1.99	134.19	107.31	0.29	0.17	0.042	0.20	0.01	0.04
MC R1	81764	5-Yr	500.00	6475.00	6477.98	2.40	220.82	120.05	0.28	0.21	0.042	0.25	0.05	0.09
MC R1	81764	10-Yr	1100.00	6475.00	6479.05	3.35	367.59	159.94	0.33	0.30	0.040	0.43	0.10	0.14
MC R1	81764	50-Yr	4000.00	6475.00	6482.02	5.47	1002.70	304.61	0.38	0.49	0.040	0.93	0.24	0.31
MC R1	81764	100-Yr	5900.00	6475.00	6483.13	6.23	1345.47	311.16	0.40	0.67	0.045	1.14	0.30	0.49
MC R1	81498	2-Yr	260.00	6474.00	6476.44	3.53	98.60	66.65	0.40	0.32	0.043	0.53	0.28	0.27
MC R1	81498	5-Yr	500.00	6474.00	6477.20	4.44	158.71	95.83	0.44	0.39	0.041	0.77	0.46	0.24
MC R1	81498	10-Yr	1100.00	6474.00	6477.96	6.30	234.28	102.61	0.56	0.82	0.042	1.44	0.93	0.58
MC R1	81498	50-Yr	4000.00	6474.00	6480.34	10.13	533.36	228.25	0.71	1.16	0.031	3.17	2.29	0.71
MC R1	81498	100-Yr	5900.00	6474.00	6481.60	10.54	827.54	238.20	0.67	1.47	0.039	3.23	2.39	1.10
MC R1	81240	2-Yr	260.00	6472.00	6474.68		63.76	100.12	0.00	0.98	0.045			0.98
MC R1	81240	5-Yr	500.00	6472.00	6475.17		103.76	138.32	0.00	1.29	0.044			1.29
MC R1	81240	10-Yr	1100.00	6472.00	6476.11		226.14	185.00	0.00	1.00	0.041			1.00
MC R1	81240	50-Yr	4000.00	6472.00	6479.40		776.63	237.45	0.00	1.00	0.046			1.00
MC R1	81240	100-Yr	5900.00	6472.00	6480.75		1045.51	250.23	0.00	1.19	0.048			1.19
MC R1	81020	2-Yr	260.00	6470.00	6472.62	5.18	74.96	64.04	0.56	0.49	0.039	1.11	0.43	0.34
MC R1	81020	5-Yr	500.00	6470.00	6473.52	5.23	136.66	72.04	0.49	0.55	0.042	1.03	0.49	0.46
MC R1	81020	10-Yr	1100.00	6470.00	6474.88	6.04	241.00	80.49	0.48	0.74	0.043	1.23	0.69	0.66
MC R1	81020	50-Yr	4000.00	6470.00	6478.38	8.60	675.91	211.98	0.52	0.87	0.036	2.09	1.33	0.67
MC R1	81020	100-Yr	5900.00	6470.00	6479.77	9.45	947.66	234.19	0.53	1.15	0.042	2.39	1.55	0.96
MC R1	80644	2-Yr	260.00	6468.00	6470.97	4.03	82.04	42.41	0.41	0.42	0.043	0.65	0.37	0.32
MC R1	80644	5-Yr	500.00	6468.00	6471.92	5.27	129.08	56.59	0.47	0.58	0.042	1.01	0.47	0.53
MC R1	80644	10-Yr	1100.00	6468.00	6473.15	6.98	208.54	79.22	0.54	0.82	0.038	1.62	0.65	0.90
MC R1	80644	50-Yr	4000.00	6468.00	6476.21	10.96	549.10	147.97	0.67	1.52	0.040	3.41	1.28	1.95
MC R1	80644	100-Yr	5900.00	6468.00	6477.60	12.03	766.78	180.76	0.69	1.88	0.043	3.91	1.66	2.24
MC R1	80330	2-Yr	260.00	6467.00	6469.31	5.14	69.43	54.36	0.60	0.63	0.041	1.14	0.47	0.61
MC R1	80330	5-Yr	500.00	6467.00	6469.91	6.66	104.72	65.01	0.69	0.98	0.042	1.78	0.79	0.94
MC R1	80330	10-Yr	1100.00	6467.00	6471.00	7.96	186.54	86.86	0.70	1.22	0.040	2.28	1.02	1.27
MC R1	80330	50-Yr	4000.00	6467.00	6474.26	10.14	545.56	132.25	0.66	1.70	0.042	3.04	1.55	1.79
MC R1	80330	100-Yr	5900.00	6467.00	6475.76	11.00	754.22	145.22	0.66	1.96	0.044	3.36	1.83	1.97
MC R1	80019	2-Yr	260.00	6465.00	6467.78	2.45	107.37	85.05	0.38	0.30	0.044	0.31	0.12	0.09
MC R1	80019	5-Yr	500.00	6465.00	6468.50	3.00	169.82	88.04	0.37	0.38	0.044	0.41	0.16	0.16
MC R1	80019	10-Yr	1100.00	6465.00	6469.84	3.90	290.53	93.10	0.37	0.53	0.044	0.58	0.23	0.26
MC R1	80019	50-Yr	4000.00	6465.00	6472.62	7.51	573.35	114.09	0.53	1.41	0.042	1.77	0.68	0.61
MC R1	80019	100-Yr	5900.00	6465.00	6473.75	9.20	709.51	126.15	0.60	1.88	0.041	2.50	0.95	0.85
MC R1	79525	2-Yr	260.00	6463.00	6465.20	4.52	70.42	46.04	0.54	0.62	0.043	0.90	0.67	0.45
MC R1	79525	5-Yr	500.00	6463.00	6465.91	5.87	105.23	51.43	0.61	0.96	0.044	1.38	0.96	0.77
MC R1	79525	10-Yr	1100.00	6463.00	6467.07	8.06	173.36	90.38	0.70	1.08	0.034	2.33	0.61	1.45
MC R1	79525	50-Yr	4000.00	6463.00	6470.07	9.67	704.06	217.09	0.64	1.27	0.045	2.79	1.05	1.91
MC R1	79525	100-Yr	5900.00	6463.00	6471.27	10.36	969.07	223.79	0.64	1.57	0.049	3.04	1.38	2.10

HEC-RAS Plan: Plan 07 River: Monument Creek Reach: MC R1 (Continued)

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl	Shear Total (lb/sq ft)	Mann Wtd Total	Shear Chan (lb/sq ft)	Shear LOB (lb/sq ft)	Shear ROB (lb/sq ft)
MC R1	79332	2-Yr	260.00	6462.00	6464.28	3.88	89.04	67.28	0.45	0.38	0.042	0.65	0.31	0.35
MC R1	79332	5-Yr	500.00	6462.00	6464.94	4.73	137.95	81.19	0.49	0.52	0.041	0.90	0.42	0.52
MC R1	79332	10-Yr	1100.00	6462.00	6466.05	6.17	236.10	94.76	0.54	0.84	0.043	1.37	0.71	0.85
MC R1	79332	50-Yr	4000.00	6462.00	6468.96	9.70	662.25	190.34	0.65	1.40	0.045	2.82	1.12	1.94
MC R1	79332	100-Yr	5900.00	6462.00	6469.97	11.38	858.34	196.65	0.71	2.02	0.050	3.71	1.70	2.60
MC R1	78766	2-Yr	260.00	6458.00	6458.94	5.39	53.57	67.34	0.98	1.43	0.045	1.70	1.26	1.49
MC R1	78766	5-Yr	500.00	6458.00	6459.37	6.70	83.60	72.88	1.01	1.93	0.045	2.31	1.81	1.83
MC R1	78766	10-Yr	1100.00	6458.00	6460.20	8.48	148.50	83.58	1.01	2.55	0.045	3.16	2.53	2.20
MC R1	78766	50-Yr	4000.00	6458.00	6462.62	11.82	389.28	113.70	0.97	3.54	0.042	4.80	3.70	2.95
MC R1	78766	100-Yr	5900.00	6458.00	6463.88	12.56	594.78	187.76	0.91	2.68	0.038	5.01	3.81	1.87
MC R1	78235	2-Yr	260.00	6455.00	6456.56	2.06	154.84	136.14	0.29	0.15	0.045	0.21	0.15	0.14
MC R1	78235	5-Yr	500.00	6455.00	6457.34	2.17	266.02	146.35	0.25	0.16	0.044	0.20	0.16	0.15
MC R1	78235	10-Yr	1100.00	6455.00	6458.30	3.03	410.22	153.30	0.29	0.29	0.044	0.35	0.29	0.26
MC R1	78235	50-Yr	4000.00	6455.00	6461.07	5.26	856.89	169.71	0.38	0.72	0.045	0.87	0.74	0.64
MC R1	78235	100-Yr	5900.00	6455.00	6462.39	6.18	1084.66	175.75	0.40	0.92	0.045	1.12	0.97	0.83
MC R1	77872	2-Yr	260.00	6453.00	6455.17	4.30	76.79	53.81	0.51	0.53	0.043	0.82	0.59	0.41
MC R1	77872	5-Yr	500.00	6453.00	6456.16	5.51	142.08	140.83	0.55	0.38	0.033	1.19	0.17	0.69
MC R1	77872	10-Yr	1100.00	6453.00	6457.09	6.06	275.53	149.00	0.53	0.59	0.040	1.31	0.43	0.81
MC R1	77872	50-Yr	4000.00	6453.00	6459.86	7.45	750.94	199.47	0.50	0.91	0.042	1.67	0.78	1.15
MC R1	77872	100-Yr	5900.00	6453.00	6461.31	7.91	1078.77	284.96	0.48	0.80	0.038	1.77	0.66	1.25
MC R1	77323	2-Yr	260.00	6450.00	6452.46	3.64	83.36	54.95	0.44	0.43	0.042	0.59	0.04	0.31
MC R1	77323	5-Yr	500.00	6450.00	6453.20	4.86	130.90	80.37	0.51	0.55	0.040	0.96	0.13	0.39
MC R1	77323	10-Yr	1100.00	6450.00	6454.35	5.94	239.20	114.48	0.52	0.67	0.038	1.28	0.25	0.52
MC R1	77323	50-Yr	4000.00	6450.00	6457.70	8.04	743.24	183.12	0.52	1.06	0.045	1.92	0.49	0.95
MC R1	77323	100-Yr	5900.00	6450.00	6459.38	8.72	1068.75	220.73	0.51	1.13	0.047	2.10	0.55	1.03
MC R1	77071	2-Yr	260.00	6449.26	6451.25	3.17	88.52	70.77	0.45	0.41	0.042	0.50	0.17	0.37
MC R1	77071	5-Yr	500.00	6449.26	6451.95	3.93	140.04	77.51	0.46	0.55	0.043	0.68	0.31	0.47
MC R1	77071	10-Yr	1100.00	6449.26	6453.07	5.26	231.53	85.47	0.51	0.85	0.043	1.06	0.59	0.67
MC R1	77071	50-Yr	4000.00	6449.26	6455.35	10.10	443.69	273.39	0.75	2.54	0.043	3.28	2.06	1.86
MC R1	77071	100-Yr	5900.00	6449.26	6455.96	13.16	506.32	284.11	0.93	4.13	0.043	5.39	3.42	2.98
MC R1	76887	2-Yr	260.00	6449.00	6450.78	2.06	129.53	79.58	0.27	0.19	0.044	0.20	0.09	0.06
MC R1	76887	5-Yr	500.00	6449.00	6451.42	2.84	183.14	119.17	0.32	0.29	0.042	0.34	0.11	0.12
MC R1	76887	10-Yr	1100.00	6449.00	6452.42	4.22	284.67	163.50	0.40	0.49	0.039	0.68	0.19	0.25
MC R1	76887	50-Yr	4000.00	6449.00	6454.68	7.21	950.29	382.31	0.53	0.73	0.044	1.67	0.45	0.59
MC R1	76887	100-Yr	5900.00	6449.00	6455.85	7.62	1403.37	390.96	0.51	0.92	0.053	1.75	0.68	0.80
MC R1	76447	2-Yr	260.00	6448.00	6449.05	3.78	84.01	109.70	0.65	0.59	0.045	0.81	0.53	0.61
MC R1	76447	5-Yr	500.00	6448.00	6449.48	4.43	134.92	123.62	0.64	0.72	0.044	0.98	0.71	0.68
MC R1	76447	10-Yr	1100.00	6448.00	6450.32	5.21	247.61	198.95	0.60	0.86	0.043	1.17	0.84	0.83
MC R1	76447	50-Yr	4000.00	6448.00	6453.21	5.85	965.05	251.63	0.45	0.83	0.052	1.13	0.77	0.92
MC R1	76447	100-Yr	5900.00	6448.00	6454.55	6.43	1307.70	269.90	0.44	0.93	0.052	1.27	0.87	1.04
MC R1	75865	2-Yr	260.00	6442.00	6444.24	4.26	74.97	57.24	0.51	0.49	0.040	0.81	0.30	0.31
MC R1	75865	5-Yr	500.00	6442.00	6444.99	5.13	119.84	62.69	0.53	0.69	0.042	1.06	0.51	0.43

HEC-RAS Plan: Plan 07 River: Monument Creek Reach: MC R1 (Continued)

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Vel Chnl	Flow Area	Top Width	Froude # Chl	Shear Total	Mann Wtd Total	Shear Chan	Shear LOB	Shear ROB
			(cfs)	(ft)	(ft)	(ft/s)	(sq ft)	(ft)		(lb/sq ft)		(lb/sq ft)	(lb/sq ft)	(lb/sq ft)
MC R1	75865	10-Yr	1100.00	6442.00	6446.23	6.51	201.48	68.44	0.56	1.06	0.042	1.51	0.90	0.63
MC R1	75865	50-Yr	4000.00	6442.00	6448.88	11.42	486.05	168.25	0.77	1.67	0.035	3.95	2.69	0.74
MC R1	75865	100-Yr	5900.00	6442.00	6449.92	13.27	666.18	177.16	0.84	2.42	0.041	5.09	3.54	1.42
MC R1	75674	2-Yr	260.00	6441.00	6443.56	3.04	106.06	76.77	0.35	0.24	0.040	0.40	0.13	0.37
MC R1	75674	5-Yr	500.00	6441.00	6444.22	3.99	158.97	81.64	0.41	0.42	0.043	0.64	0.29	0.55
MC R1	75674	10-Yr	1100.00	6441.00	6445.45	5.34	269.35	108.39	0.46	0.60	0.042	1.02	0.46	0.74
MC R1	75674	50-Yr	4000.00	6441.00	6448.38	8.19	843.20	252.76	0.54	0.94	0.047	2.00	1.23	0.73
MC R1	75674	100-Yr	5900.00	6441.00	6449.61	9.12	1157.94	258.82	0.56	1.26	0.053	2.35	1.53	1.05
MC R1	75529	2-Yr	260.00	6440.00	6441.97	8.02	40.91	33.66	1.02	1.88	0.042	2.97	1.44	1.41
MC R1	75529	5-Yr	500.00	6440.00	6442.91	7.81	91.71	66.96	0.82	1.18	0.039	2.47	1.28	0.90
MC R1	75529	10-Yr	1100.00	6440.00	6443.73	10.09	150.25	75.10	0.93	2.05	0.041	3.79	1.99	1.75
MC R1	75529	50-Yr	4000.00	6440.00	6446.63	12.65	516.37	181.06	0.87	2.12	0.042	4.90	2.60	1.88
MC R1	75529	100-Yr	5900.00	6440.00	6448.49	11.64	931.75	243.36	0.71	1.73	0.049	3.82	1.98	1.60
MC R1	75289	2-Yr	270.00	6438.00	6440.48	3.47	113.95	95.02	0.39	0.25	0.041	0.51	0.26	0.18
MC R1	75289	5-Yr	530.00	6438.00	6441.23	3.83	199.63	146.64	0.38	0.24	0.036	0.57	0.33	0.17
MC R1	75289	10-Yr	1200.00	6438.00	6442.65	4.26	415.57	157.20	0.35	0.35	0.045	0.62	0.39	0.31
MC R1	75289	50-Yr	4100.00	6438.00	6446.38	5.69	1073.88	198.18	0.35	0.58	0.050	0.91	0.47	0.62
MC R1	75289	100-Yr	6100.00	6438.00	6448.08	6.47	1421.83	210.62	0.36	0.73	0.052	1.11	0.60	0.80
MC R1	75122	2-Yr	270.00	6437.00	6438.80	6.59	45.74	39.86	0.90	1.45	0.039	2.11	0.61	0.68
MC R1	75122	5-Yr	530.00	6437.00	6439.60	7.62	81.45	48.57	0.86	1.68	0.041	2.47	1.02	0.95
MC R1	75122	10-Yr	1200.00	6437.00	6441.32	7.99	178.36	66.47	0.69	1.45	0.039	2.28	1.04	0.97
MC R1	75122	50-Yr	4100.00	6437.00	6445.22	9.98	668.29	181.67	0.62	1.29	0.043	2.85	1.05	1.22
MC R1	75122	100-Yr	6100.00	6437.00	6447.01	10.52	1020.85	208.74	0.59	1.46	0.049	2.96	1.28	1.26
MC R1	74804	2-Yr	270.00	6434.00	6437.40	2.87	100.71	43.18	0.30	0.26	0.041	0.33	0.13	0.08
MC R1	74804	5-Yr	530.00	6434.00	6438.42	3.97	148.02	50.15	0.35	0.42	0.041	0.57	0.23	0.18
MC R1	74804	10-Yr	1200.00	6434.00	6439.90	5.94	232.45	66.88	0.45	0.73	0.038	1.15	0.45	0.35
MC R1	74804	50-Yr	4100.00	6434.00	6443.37	9.82	591.98	134.82	0.58	1.31	0.040	2.67	0.83	1.00
MC R1	74804	100-Yr	6100.00	6434.00	6445.05	11.11	837.00	154.51	0.60	1.65	0.044	3.23	1.13	1.39
MC R1	74409	2-Yr	270.00	6434.00	6435.17	5.67	49.23	52.87	0.98	1.61	0.043	1.81	0.81	0.45
MC R1	74409	5-Yr	530.00	6434.00	6435.73	6.99	79.71	56.86	0.97	2.09	0.043	2.39	1.15	0.97
MC R1	74409	10-Yr	1200.00	6434.00	6437.09	7.86	163.21	66.01	0.80	2.03	0.042	2.46	1.17	1.26
MC R1	74409	50-Yr	4100.00	6434.00	6440.82	10.12	516.13	116.69	0.69	2.02	0.043	3.11	1.28	1.74
MC R1	74409	100-Yr	6100.00	6434.00	6442.73	10.96	748.10	126.95	0.66	2.24	0.046	3.36	1.63	1.86
MC R1	74051	2-Yr	270.00	6430.00	6433.07	2.47	114.66	47.41	0.26	0.21	0.043	0.25	0.10	0.08
MC R1	74051	5-Yr	530.00	6430.00	6433.97	3.57	158.97	52.01	0.33	0.39	0.042	0.47	0.21	0.16
MC R1	74051	10-Yr	1200.00	6430.00	6435.38	5.46	252.99	76.34	0.43	0.63	0.038	0.99	0.45	0.27
MC R1	74051	50-Yr	4100.00	6430.00	6438.54	10.05	515.40	89.26	0.62	1.93	0.044	2.86	1.28	1.32
MC R1	74051	100-Yr	6100.00	6430.00	6439.75	12.57	626.30	93.66	0.72	2.90	0.045	4.28	1.89	2.11
MC R1	73889	2-Yr	270.00	6430.00	6432.68	3.30	98.08	70.66	0.38	0.28	0.038	0.47	0.16	0.15
MC R1	73889	5-Yr	530.00	6430.00	6433.57	3.88	163.23	75.24	0.38	0.39	0.041	0.59	0.22	0.28
MC R1	73889	10-Yr	1200.00	6430.00	6434.91	5.25	268.45	81.43	0.43	0.68	0.042	0.96	0.38	0.56
MC R1	73889	50-Yr	4100.00	6430.00	6437.83	9.24	529.27	100.17	0.60	1.74	0.042	2.51	0.99	1.55
MC R1	73889	100-Yr	6100.00	6430.00	6439.04	11.25	704.26	160.28	0.67	1.77	0.037	3.53	1.29	1.40

HEC-RAS Plan: Plan 07 River: Monument Creek Reach: MC R1 (Continued)

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl	Shear Total (lb/sq ft)	Mann Wtd Total	Shear Chan (lb/sq ft)	Shear LOB (lb/sq ft)	Shear ROB (lb/sq ft)
MC R1	73671	2-Yr	270.00	6429.00	6432.23	2.76	122.74	66.59	0.29	0.21	0.043	0.31	0.19	0.17
MC R1	73671	5-Yr	530.00	6429.00	6433.11	3.59	185.67	77.35	0.33	0.32	0.043	0.48	0.29	0.27
MC R1	73671	10-Yr	1200.00	6429.00	6434.36	5.05	297.68	106.24	0.40	0.49	0.039	0.86	0.50	0.41
MC R1	73671	50-Yr	4100.00	6429.00	6437.15	8.60	671.16	198.06	0.55	1.15	0.042	2.15	1.18	1.02
MC R1	73671	100-Yr	6100.00	6429.00	6438.36	10.17	959.95	256.68	0.60	1.20	0.040	2.87	1.53	1.05
MC R1	73227	2-Yr	270.00	6429.00	6430.42	3.88	76.28	95.95	0.67	0.64	0.041	0.85	0.29	0.31
MC R1	73227	5-Yr	530.00	6429.00	6430.71	5.64	105.93	108.51	0.86	1.20	0.041	1.65	0.65	0.65
MC R1	73227	10-Yr	1200.00	6429.00	6431.41	7.23	189.80	125.23	0.89	1.75	0.042	2.36	1.19	1.21
MC R1	73227	50-Yr	4100.00	6429.00	6433.56	9.65	474.60	138.69	0.83	2.68	0.044	3.31	2.17	2.26
MC R1	73227	100-Yr	6100.00	6429.00	6434.96	10.09	704.39	180.86	0.75	2.27	0.041	3.29	1.52	2.35
MC R1	72813	2-Yr	270.00	6425.00	6426.27	3.51	85.95	83.92	0.55	0.52	0.043	0.65	0.35	0.44
MC R1	72813	5-Yr	530.00	6425.00	6427.03	3.90	152.85	93.95	0.48	0.55	0.044	0.69	0.39	0.50
MC R1	72813	10-Yr	1200.00	6425.00	6428.36	4.64	287.59	109.80	0.45	0.64	0.042	0.82	0.46	0.62
MC R1	72813	50-Yr	4100.00	6425.00	6431.83	6.54	755.94	146.47	0.44	0.96	0.045	1.29	0.78	0.94
MC R1	72813	100-Yr	6100.00	6425.00	6433.23	7.76	965.83	153.77	0.48	1.28	0.046	1.71	1.10	1.18
MC R1	72395	2-Yr	270.00	6420.00	6423.66	4.38	70.71	40.42	0.46	0.50	0.038	0.79	0.23	0.22
MC R1	72395	5-Yr	530.00	6420.00	6424.62	5.62	115.33	52.23	0.51	0.70	0.039	1.18	0.40	0.43
MC R1	72395	10-Yr	1200.00	6420.00	6426.21	7.11	212.43	69.07	0.54	0.97	0.039	1.67	0.66	0.75
MC R1	72395	50-Yr	4100.00	6420.00	6429.42	10.97	564.01	178.35	0.66	1.27	0.035	3.40	0.88	1.74
MC R1	72395	100-Yr	6100.00	6420.00	6430.86	11.98	825.93	185.96	0.67	1.72	0.043	3.85	1.38	1.98
MC R1	72228	2-Yr	270.00	6420.00	6421.72	6.74	41.84	31.42	0.96	1.94	0.043	2.26	1.10	0.29
MC R1	72228	5-Yr	530.00	6420.00	6422.58	8.03	72.12	40.01	0.91	2.07	0.040	2.77	1.32	0.64
MC R1	72228	10-Yr	1200.00	6420.00	6423.98	10.09	136.74	62.49	0.91	2.78	0.042	3.74	1.96	1.64
MC R1	72228	50-Yr	4100.00	6420.00	6427.37	13.25	514.50	155.26	0.87	2.40	0.045	5.22	1.98	1.80
MC R1	72228	100-Yr	6100.00	6420.00	6428.53	15.10	700.15	166.28	0.92	3.25	0.049	6.45	2.78	2.64
MC R1	72210		Culvert											
MC R1	72207	2-Yr	270.00	6418.00	6421.47	2.98	103.04	53.48	0.28	0.28	0.046	0.34	0.27	0.26
MC R1	72207	5-Yr	530.00	6418.00	6422.10	4.75	125.53	63.68	0.41	0.70	0.046	0.81	0.67	0.65
MC R1	72207	10-Yr	1200.00	6418.00	6423.50	7.60	174.81	87.44	0.57	1.68	0.046	1.88	1.62	1.61
MC R1	72207	50-Yr	4100.00	6418.00	6427.45	9.82	790.73	183.57	0.56	1.19	0.050	2.62	1.18	1.07
MC R1	72207	100-Yr	6100.00	6418.00	6429.03	11.14	1112.87	226.42	0.59	1.42	0.053	3.20	1.44	1.30
MC R1	72041	2-Yr	270.00	6418.00	6420.01	8.57	43.98	52.28	1.07	1.38	0.035	3.34	2.02	0.74
MC R1	72041	5-Yr	530.00	6418.00	6421.06	7.10	102.84	59.22	0.72	1.11	0.042	1.99	1.15	0.89
MC R1	72041	10-Yr	1200.00	6418.00	6422.75	7.35	209.11	66.71	0.59	1.18	0.043	1.84	1.02	1.08
MC R1	72041	50-Yr	4100.00	6418.00	6426.73	9.27	687.05	189.46	0.55	0.97	0.038	2.39	1.24	0.86
MC R1	72041	100-Yr	6100.00	6418.00	6428.39	9.93	1006.92	196.55	0.54	1.25	0.045	2.59	1.32	1.16
MC R1	71851	2-Yr	270.00	6417.00	6419.41	3.00	104.61	55.28	0.34	0.30	0.044	0.38	0.28	0.24
MC R1	71851	5-Yr	530.00	6417.00	6420.52	3.61	170.25	62.38	0.34	0.37	0.044	0.49	0.36	0.31
MC R1	71851	10-Yr	1200.00	6417.00	6422.30	4.74	289.40	71.65	0.36	0.55	0.042	0.74	0.54	0.44
MC R1	71851	50-Yr	4100.00	6417.00	6426.13	7.71	748.70	169.81	0.45	0.77	0.039	1.63	1.19	0.48
MC R1	71851	100-Yr	6100.00	6417.00	6427.67	8.95	1015.14	176.67	0.48	1.10	0.044	2.08	1.52	0.80

HEC-RAS Plan: Plan 07 River: Monument Creek Reach: MC R1 (Continued)

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl	Shear Total (lb/sq ft)	Mann Wtd Total	Shear Chan (lb/sq ft)	Shear LOB (lb/sq ft)	Shear ROB (lb/sq ft)
MC R1	71508	2-Yr	270.00	6415.00	6418.37	4.16	82.60	38.24	0.40	0.41	0.042	0.66	0.40	0.28
MC R1	71508	5-Yr	530.00	6415.00	6419.42	5.38	126.34	46.38	0.45	0.60	0.041	1.01	0.60	0.44
MC R1	71508	10-Yr	1200.00	6415.00	6420.89	7.61	206.93	64.03	0.55	0.98	0.039	1.84	1.06	0.74
MC R1	71508	50-Yr	4100.00	6415.00	6424.71	10.55	717.12	203.30	0.60	1.07	0.042	2.99	1.64	0.89
MC R1	71508	100-Yr	6100.00	6415.00	6426.53	10.74	1094.98	211.79	0.56	1.29	0.050	2.92	1.56	1.16
MC R1	71061	2-Yr	290.00	6412.00	6415.00	7.33	46.83	34.81	0.85	1.38	0.037	2.35	0.48	0.69
MC R1	71061	5-Yr	550.00	6412.00	6415.86	8.52	83.63	50.09	0.84	1.52	0.038	2.85	0.79	0.97
MC R1	71061	10-Yr	1200.00	6412.00	6417.28	9.50	162.90	60.20	0.78	1.86	0.041	3.14	1.03	1.54
MC R1	71061	50-Yr	4100.00	6412.00	6420.69	12.81	430.38	104.66	0.80	2.44	0.039	4.74	1.18	3.05
MC R1	71061	100-Yr	6200.00	6412.00	6422.14	14.73	614.90	145.55	0.84	2.66	0.039	5.92	1.43	3.95
MC R1	70643	2-Yr	290.00	6410.00	6413.01	3.30	107.42	49.77	0.34	0.31	0.044	0.43	0.25	0.30
MC R1	70643	5-Yr	550.00	6410.00	6414.00	4.25	160.09	56.34	0.37	0.46	0.044	0.65	0.37	0.45
MC R1	70643	10-Yr	1200.00	6410.00	6415.64	5.61	273.12	86.52	0.42	0.56	0.039	1.01	0.58	0.46
MC R1	70643	50-Yr	4100.00	6410.00	6419.36	8.37	743.61	176.36	0.48	0.85	0.040	1.90	1.16	0.69
MC R1	70643	100-Yr	6200.00	6410.00	6421.03	9.41	1044.98	184.14	0.50	1.16	0.045	2.28	1.39	1.01
MC R1	70183	2-Yr	290.00	6409.00	6411.46	3.98	86.21	50.68	0.46	0.50	0.043	0.69	0.39	0.43
MC R1	70183	5-Yr	550.00	6409.00	6412.22	5.10	126.25	54.92	0.51	0.76	0.043	1.03	0.63	0.61
MC R1	70183	10-Yr	1200.00	6409.00	6413.39	7.11	196.66	67.58	0.61	1.20	0.040	1.79	0.99	1.01
MC R1	70183	50-Yr	4100.00	6409.00	6416.65	10.80	537.27	135.22	0.70	1.78	0.041	3.42	1.50	1.75
MC R1	70183	100-Yr	6200.00	6409.00	6418.32	11.94	778.30	148.99	0.69	2.18	0.046	3.90	1.95	1.92
MC R1	69468	2-Yr	290.00	6403.00	6405.20	7.39	47.63	30.46	0.88	1.67	0.043	2.40	1.31	1.32
MC R1	69468	5-Yr	550.00	6403.00	6406.23	8.27	88.16	46.15	0.81	1.53	0.041	2.65	1.17	1.41
MC R1	69468	10-Yr	1200.00	6403.00	6407.86	8.90	172.33	57.53	0.71	1.61	0.041	2.68	1.42	1.32
MC R1	69468	50-Yr	4100.00	6403.00	6412.33	11.01	554.87	119.32	0.64	1.61	0.042	3.30	1.63	1.22
MC R1	69468	100-Yr	6200.00	6403.00	6414.26	12.26	818.47	151.79	0.64	1.81	0.044	3.84	1.74	1.55
MC R1	69364	2-Yr	290.00	6402.00	6405.07	3.09	104.93	46.44	0.32	0.30	0.042	0.38	0.13	0.23
MC R1	69364	5-Yr	550.00	6402.00	6406.11	3.98	156.76	53.84	0.35	0.42	0.042	0.58	0.20	0.34
MC R1	69364	10-Yr	1200.00	6402.00	6407.68	5.55	254.34	71.84	0.42	0.64	0.039	1.00	0.35	0.51
MC R1	69364	50-Yr	4100.00	6402.00	6412.05	8.56	657.57	112.80	0.48	1.14	0.043	1.96	0.73	1.09
MC R1	69364	100-Yr	6200.00	6402.00	6413.82	10.28	875.34	132.66	0.53	1.50	0.044	2.68	1.02	1.45
MC R1	69300		Bridge											
MC R1	69256	2-Yr	290.00	6402.00	6404.73	3.50	89.38	46.40	0.39	0.39	0.040	0.52	0.15	0.16
MC R1	69256	5-Yr	550.00	6402.00	6405.75	4.34	141.54	55.83	0.41	0.51	0.040	0.71	0.26	0.26
MC R1	69256	10-Yr	1200.00	6402.00	6407.19	6.17	230.04	67.38	0.49	0.87	0.041	1.28	0.51	0.55
MC R1	69256	50-Yr	4100.00	6402.00	6411.26	9.81	567.50	103.71	0.57	1.58	0.043	2.65	1.16	1.13
MC R1	69256	100-Yr	6200.00	6402.00	6412.67	12.19	724.97	118.49	0.66	2.24	0.044	3.90	1.74	1.66
MC R1	69115	2-Yr	290.00	6401.00	6403.99	4.70	67.54	32.09	0.50	0.70	0.041	0.91	0.43	0.21
MC R1	69115	5-Yr	560.00	6401.00	6405.03	5.64	124.97	62.49	0.51	0.62	0.037	1.18	0.54	0.30
MC R1	69115	10-Yr	1200.00	6401.00	6406.61	6.47	243.37	83.61	0.49	0.75	0.039	1.38	0.65	0.52
MC R1	69115	50-Yr	4100.00	6401.00	6410.99	8.45	660.88	106.20	0.48	1.21	0.045	1.92	0.95	1.11
MC R1	69115	100-Yr	6300.00	6401.00	6412.29	10.80	803.33	113.08	0.57	1.91	0.046	3.01	1.49	1.79
MC R1	68781	2-Yr	290.00	6400.00	6402.36	4.02	77.74	39.40	0.46	0.58	0.043	0.70	0.37	0.29

HEC-RAS Plan: Plan 07 River: Monument Creek Reach: MC R1 (Continued)

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl	Shear Total (lb/sq ft)	Mann Wtd Total	Shear Chan (lb/sq ft)	Shear LOB (lb/sq ft)	Shear ROB (lb/sq ft)
MC R1	68781	5-Yr	560.00	6400.00	6403.21	5.47	113.27	44.78	0.54	0.90	0.042	1.17	0.62	0.45
MC R1	68781	10-Yr	1200.00	6400.00	6404.47	7.69	179.23	59.67	0.64	1.35	0.039	2.06	1.10	0.68
MC R1	68781	50-Yr	4100.00	6400.00	6406.99	14.57	353.02	77.27	0.97	4.02	0.042	6.36	3.25	2.69
MC R1	68781	100-Yr	6300.00	6400.00	6409.41	13.91	777.57	215.46	0.80	1.98	0.040	5.25	2.60	1.42
MC R1	68617	2-Yr	290.00	6399.00	6401.52	3.91	80.89	53.80	0.48	0.51	0.040	0.69	0.13	0.36
MC R1	68617	5-Yr	560.00	6399.00	6402.41	4.69	136.13	68.63	0.48	0.60	0.040	0.88	0.27	0.48
MC R1	68617	10-Yr	1200.00	6399.00	6403.71	6.03	237.42	88.92	0.52	0.81	0.039	1.29	0.48	0.66
MC R1	68617	50-Yr	4100.00	6399.00	6406.64	9.38	637.55	167.74	0.62	1.39	0.043	2.62	1.42	0.90
MC R1	68617	100-Yr	6300.00	6399.00	6408.12	10.76	896.57	184.03	0.65	1.82	0.047	3.24	1.63	1.44
MC R1	68134	2-Yr	290.00	6397.00	6399.39	3.63	101.24	86.60	0.41	0.28	0.035	0.56	0.30	0.12
MC R1	68134	5-Yr	560.00	6397.00	6399.85	5.09	141.39	90.24	0.53	0.58	0.039	1.05	0.58	0.35
MC R1	68134	10-Yr	1200.00	6397.00	6400.61	7.10	223.85	114.04	0.66	1.02	0.040	1.89	1.09	0.72
MC R1	68134	50-Yr	4100.00	6397.00	6403.16	10.20	530.32	125.27	0.73	2.21	0.046	3.26	1.94	1.96
MC R1	68134	100-Yr	6300.00	6397.00	6404.76	11.25	735.70	131.15	0.71	2.60	0.047	3.67	2.14	2.42
MC R1	68088	2-Yr	290.00	6397.00	6398.81	5.90	57.49	73.09	0.77	1.25	0.044	1.63	1.27	0.95
MC R1	68088	5-Yr	560.00	6397.00	6399.22	7.12	112.12	101.18	0.84	1.11	0.040	2.23	1.69	0.81
MC R1	68088	10-Yr	1200.00	6397.00	6399.98	8.33	193.16	112.28	0.85	1.59	0.042	2.76	2.01	1.33
MC R1	68088	50-Yr	4100.00	6397.00	6403.21	8.00	706.42	178.83	0.57	1.26	0.046	1.99	1.38	1.18
MC R1	68088	100-Yr	6300.00	6397.00	6404.97	8.46	1035.97	194.83	0.53	1.35	0.047	2.05	1.38	1.30
MC R1	67602	2-Yr	290.00	6393.00	6395.35	4.14	98.86	81.28	0.48	0.38	0.041	0.74	0.29	0.49
MC R1	67602	5-Yr	560.00	6393.00	6396.12	4.53	163.62	86.52	0.45	0.48	0.042	0.80	0.41	0.53
MC R1	67602	10-Yr	1200.00	6393.00	6397.56	5.13	293.02	93.40	0.42	0.62	0.044	0.91	0.57	0.61
MC R1	67602	50-Yr	4100.00	6393.00	6401.65	7.11	742.51	150.18	0.43	0.79	0.039	1.41	0.71	0.90
MC R1	67602	100-Yr	6300.00	6393.00	6403.50	8.25	1056.73	186.94	0.45	0.94	0.041	1.78	0.85	1.10
MC R1	67439	2-Yr	290.00	6392.00	6394.31	4.14	76.30	50.98	0.55	0.67	0.043	0.81	0.48	0.60
MC R1	67439	5-Yr	560.00	6392.00	6395.14	5.05	120.34	55.15	0.55	0.88	0.043	1.06	0.69	0.73
MC R1	67439	10-Yr	1200.00	6392.00	6396.54	6.57	202.18	61.87	0.58	1.24	0.043	1.56	1.02	1.00
MC R1	67439	50-Yr	4100.00	6392.00	6400.43	10.00	558.75	142.99	0.63	1.40	0.038	2.88	0.92	1.66
MC R1	67439	100-Yr	6300.00	6392.00	6402.13	11.47	816.92	158.35	0.65	1.88	0.044	3.55	1.42	2.01
MC R1	67227	2-Yr	290.00	6391.00	6393.59	2.78	119.45	69.66	0.32	0.25	0.043	0.34	0.20	0.12
MC R1	67227	5-Yr	560.00	6391.00	6394.49	3.47	185.87	78.03	0.34	0.35	0.043	0.47	0.30	0.18
MC R1	67227	10-Yr	1200.00	6391.00	6396.05	4.31	327.73	110.81	0.35	0.39	0.038	0.63	0.38	0.19
MC R1	67227	50-Yr	4100.00	6391.00	6400.20	6.25	842.46	133.29	0.37	0.75	0.045	1.08	0.76	0.54
MC R1	67227	100-Yr	6300.00	6391.00	6401.78	7.78	1059.04	141.74	0.42	1.10	0.046	1.59	1.14	0.80
MC R1	67054	2-Yr	290.00	6391.00	6392.99	3.14	94.99	60.14	0.42	0.44	0.044	0.47	0.13	0.41
MC R1	67054	5-Yr	560.00	6391.00	6393.92	3.81	152.63	63.97	0.41	0.54	0.043	0.60	0.24	0.48
MC R1	67054	10-Yr	1200.00	6391.00	6395.45	4.97	255.00	69.31	0.43	0.76	0.043	0.88	0.42	0.63
MC R1	67054	50-Yr	4100.00	6391.00	6399.12	8.58	540.46	206.29	0.54	1.55	0.041	2.12	1.05	1.03
MC R1	67054	100-Yr	6300.00	6391.00	6400.84	9.61	1000.35	252.49	0.55	1.02	0.038	2.49	1.22	0.66
MC R1	66877	2-Yr	290.00	6390.00	6392.36	3.19	103.40	57.40	0.37	0.34	0.043	0.44	0.16	0.30
MC R1	66877	5-Yr	560.00	6390.00	6393.36	3.96	166.75	70.24	0.38	0.43	0.042	0.60	0.21	0.40
MC R1	66877	10-Yr	1200.00	6390.00	6395.00	4.79	298.09	88.09	0.38	0.52	0.041	0.77	0.34	0.48
MC R1	66877	50-Yr	4100.00	6390.00	6398.86	7.14	742.44	144.66	0.42	0.81	0.040	1.41	0.76	0.66

HEC-RAS Plan: Plan 07 River: Monument Creek Reach: MC R1 (Continued)

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl	Shear Total (lb/sq ft)	Mann Wtd Total	Shear Chan (lb/sq ft)	Shear LOB (lb/sq ft)	Shear ROB (lb/sq ft)
MC R1	66877	100-Yr	6300.00	6390.00	6400.44	8.66	996.19	190.08	0.47	0.98	0.039	1.97	0.62	1.01
MC R1	66624	2-Yr	290.00	6389.00	6391.09	4.58	69.07	38.34	0.56	0.80	0.044	0.94	0.70	0.47
MC R1	66624	5-Yr	560.00	6389.00	6391.93	5.96	102.86	41.83	0.61	1.16	0.043	1.42	1.01	0.71
MC R1	66624	10-Yr	1200.00	6389.00	6393.43	7.80	171.27	50.64	0.65	1.56	0.041	2.12	1.27	1.04
MC R1	66624	50-Yr	4100.00	6389.00	6396.59	12.87	488.99	152.83	0.82	1.99	0.038	4.82	1.49	2.21
MC R1	66624	100-Yr	6300.00	6389.00	6398.40	13.65	838.65	221.35	0.78	2.01	0.044	5.05	1.65	2.21
MC R1	66400	2-Yr	290.00	6388.00	6389.91	3.43	96.42	69.39	0.44	0.39	0.041	0.54	0.33	0.22
MC R1	66400	5-Yr	560.00	6388.00	6390.34	5.02	128.26	77.11	0.58	0.77	0.041	1.09	0.66	0.47
MC R1	66400	10-Yr	1200.00	6388.00	6390.74	8.64	159.88	79.87	0.92	2.21	0.042	3.05	1.85	1.49
MC R1	66400	50-Yr	4100.00	6388.00	6393.18	12.88	369.49	90.74	1.00	4.23	0.044	5.49	3.13	3.58
MC R1	66400	100-Yr	6300.00	6388.00	6394.59	14.75	500.96	96.45	1.01	5.11	0.044	6.64	3.61	4.53
MC R1	66151	2-Yr	290.00	6387.00	6387.49	3.68	79.68	166.84	0.93	0.97	0.045	0.99	0.97	0.90
MC R1	66151	5-Yr	560.00	6387.00	6387.91	3.79	150.85	171.77	0.70	0.82	0.045	0.85	0.81	0.73
MC R1	66151	10-Yr	1200.00	6387.00	6388.82	3.92	311.77	179.49	0.51	0.69	0.044	0.72	0.68	0.57
MC R1	66151	50-Yr	4100.00	6387.00	6392.19	4.53	947.73	195.50	0.35	0.63	0.045	0.68	0.61	0.52
MC R1	66151	100-Yr	6300.00	6387.00	6394.12	5.02	1331.94	203.58	0.33	0.68	0.045	0.75	0.66	0.56
MC R1	65893	2-Yr	290.00	6384.00	6386.28	1.99	162.85	133.59	0.28	0.16	0.043	0.20	0.09	0.16
MC R1	65893	5-Yr	560.00	6384.00	6386.94	2.47	253.55	141.29	0.29	0.22	0.044	0.27	0.16	0.21
MC R1	65893	10-Yr	1200.00	6384.00	6388.18	3.02	433.86	148.30	0.29	0.29	0.044	0.35	0.25	0.27
MC R1	65893	50-Yr	4100.00	6384.00	6391.81	4.42	1024.66	194.45	0.29	0.43	0.041	0.58	0.46	0.31
MC R1	65893	100-Yr	6300.00	6384.00	6393.80	5.04	1488.12	273.96	0.30	0.41	0.038	0.70	0.56	0.27
MC R1	65685	2-Yr	290.00	6384.00	6385.31	3.72	80.79	77.38	0.61	0.68	0.043	0.75	0.34	0.18
MC R1	65685	5-Yr	560.00	6384.00	6386.13	3.99	145.73	81.28	0.50	0.66	0.044	0.73	0.44	0.27
MC R1	65685	10-Yr	1200.00	6384.00	6387.39	5.01	250.62	85.47	0.49	0.87	0.044	0.97	0.66	0.41
MC R1	65685	50-Yr	4100.00	6384.00	6390.58	8.19	547.57	102.35	0.57	1.67	0.043	2.07	1.40	0.77
MC R1	65685	100-Yr	6300.00	6384.00	6392.17	9.90	731.55	133.39	0.62	1.86	0.039	2.81	1.85	0.72
MC R1	65440	2-Yr	290.00	6382.00	6384.44	2.68	116.46	57.12	0.30	0.26	0.043	0.31	0.17	0.12
MC R1	65440	5-Yr	560.00	6382.00	6385.28	3.64	172.04	82.93	0.36	0.32	0.037	0.51	0.15	0.22
MC R1	65440	10-Yr	1200.00	6382.00	6386.43	5.22	277.39	97.10	0.44	0.61	0.040	0.95	0.39	0.43
MC R1	65440	50-Yr	4100.00	6382.00	6389.24	9.28	569.60	109.97	0.61	1.79	0.046	2.55	1.44	1.17
MC R1	65440	100-Yr	6300.00	6382.00	6390.51	11.57	713.05	114.52	0.70	2.68	0.047	3.76	2.26	1.71
MC R1	65254	2-Yr	290.00	6382.00	6383.07	5.78	52.60	54.24	0.99	1.69	0.044	1.87	1.60	0.88
MC R1	65254	5-Yr	560.00	6382.00	6383.64	7.05	85.77	62.55	0.97	2.00	0.043	2.41	1.99	0.96
MC R1	65254	10-Yr	1200.00	6382.00	6384.67	8.11	180.24	108.60	0.88	1.68	0.040	2.72	2.11	0.92
MC R1	65254	50-Yr	4100.00	6382.00	6387.06	11.63	457.74	123.03	0.91	3.28	0.047	4.51	3.14	2.66
MC R1	65254	100-Yr	6300.00	6382.00	6388.96	11.92	700.85	133.10	0.80	3.17	0.049	4.26	2.76	2.79
MC R1	65054	2-Yr	290.00	6377.00	6379.97	5.06	65.51	51.28	0.61	0.68	0.037	1.14	0.40	0.23
MC R1	65054	5-Yr	560.00	6377.00	6380.96	5.48	125.98	69.92	0.55	0.68	0.038	1.18	0.36	0.47
MC R1	65054	10-Yr	1200.00	6377.00	6382.52	6.37	256.86	109.28	0.52	0.70	0.039	1.39	0.67	0.44
MC R1	65054	50-Yr	4100.00	6377.00	6386.38	8.43	742.00	135.18	0.51	1.27	0.051	2.00	1.21	1.08
MC R1	65054	100-Yr	6300.00	6377.00	6388.34	9.61	1013.97	142.79	0.52	1.61	0.053	2.42	1.49	1.43
MC R1	64611	2-Yr	290.00	6374.00	6377.83	4.18	79.47	41.38	0.40	0.39	0.035	0.68	0.20	0.13

HEC-RAS Plan: Plan 07 River: Monument Creek Reach: MC R1 (Continued)

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl	Shear Total (lb/sq ft)	Mann Wtd Total	Shear Chan (lb/sq ft)	Shear LOB (lb/sq ft)	Shear ROB (lb/sq ft)
MC R1	64611	5-Yr	560.00	6374.00	6378.78	5.52	124.65	50.73	0.47	0.61	0.038	1.08	0.35	0.33
MC R1	64611	10-Yr	1200.00	6374.00	6380.20	7.34	203.30	62.92	0.54	0.98	0.038	1.74	0.59	0.66
MC R1	64611	50-Yr	4100.00	6374.00	6383.72	11.18	518.55	106.60	0.65	1.82	0.042	3.45	1.01	1.66
MC R1	64611	100-Yr	6300.00	6374.00	6385.37	13.11	703.48	118.85	0.70	2.44	0.044	4.49	1.42	2.39
MC R1	63885	2-Yr	290.00	6373.00	6374.96	3.32	90.46	60.84	0.45	0.46	0.042	0.53	0.14	0.16
MC R1	63885	5-Yr	560.00	6373.00	6375.83	4.06	146.87	68.50	0.45	0.57	0.042	0.69	0.25	0.26
MC R1	63885	10-Yr	1200.00	6373.00	6377.21	5.15	273.61	134.22	0.46	0.49	0.034	0.96	0.38	0.20
MC R1	63885	50-Yr	4100.00	6373.00	6379.87	8.49	656.04	153.49	0.58	1.41	0.045	2.20	0.86	1.07
MC R1	63885	100-Yr	6300.00	6373.00	6381.35	9.85	889.95	161.97	0.61	1.86	0.048	2.77	1.13	1.54
MC R1	63302	2-Yr	290.00	6367.00	6369.50	7.73	44.57	25.61	0.87	1.77	0.042	2.55	1.49	1.01
MC R1	63302	5-Yr	560.00	6367.00	6370.43	9.80	71.45	32.48	0.94	2.34	0.042	3.67	2.01	1.46
MC R1	63302	10-Yr	1200.00	6367.00	6372.06	11.86	135.90	47.19	0.93	2.66	0.041	4.72	2.50	1.76
MC R1	63302	50-Yr	4100.00	6367.00	6376.61	11.20	599.71	146.78	0.64	1.44	0.042	3.39	1.58	1.20
MC R1	63302	100-Yr	6300.00	6367.00	6378.76	11.17	939.28	168.34	0.58	1.48	0.045	3.15	1.27	1.43
MC R1	63101	2-Yr	290.00	6366.00	6369.20	2.79	115.54	50.60	0.28	0.23	0.041	0.31	0.09	0.15
MC R1	63101	5-Yr	560.00	6366.00	6370.36	3.44	205.01	100.30	0.30	0.21	0.035	0.42	0.08	0.23
MC R1	63101	10-Yr	1200.00	6366.00	6372.16	4.26	392.88	108.12	0.31	0.34	0.045	0.57	0.24	0.33
MC R1	63101	50-Yr	4100.00	6366.00	6376.41	6.79	935.63	155.97	0.37	0.71	0.048	1.22	0.67	0.47
MC R1	63101	100-Yr	6300.00	6366.00	6378.42	8.08	1283.82	197.09	0.41	0.86	0.048	1.63	0.95	0.51
MC R1	62767	2-Yr	290.00	6365.00	6368.27	4.41	81.94	38.93	0.43	0.47	0.041	0.75	0.55	0.28
MC R1	62767	5-Yr	560.00	6365.00	6369.34	5.57	126.38	44.55	0.47	0.69	0.042	1.09	0.76	0.48
MC R1	62767	10-Yr	1200.00	6365.00	6371.02	7.12	226.96	87.52	0.51	0.67	0.034	1.60	1.04	0.45
MC R1	62767	50-Yr	4100.00	6365.00	6375.17	10.04	726.23	160.27	0.56	1.16	0.046	2.67	1.51	0.99
MC R1	62767	100-Yr	6300.00	6365.00	6377.24	10.94	1067.87	171.28	0.55	1.48	0.052	2.98	1.60	1.36
MC R1	62534	2-Yr	290.00	6364.00	6367.27	4.30	76.47	40.37	0.47	0.55	0.041	0.77	0.54	0.24
MC R1	62534	5-Yr	560.00	6364.00	6368.29	5.36	122.08	48.51	0.50	0.73	0.041	1.07	0.69	0.41
MC R1	62534	10-Yr	1200.00	6364.00	6369.80	7.18	203.54	59.65	0.56	1.11	0.041	1.72	1.03	0.74
MC R1	62534	50-Yr	4100.00	6364.00	6373.82	10.41	650.76	143.79	0.61	1.44	0.046	2.97	1.60	1.14
MC R1	62534	100-Yr	6300.00	6364.00	6375.99	11.28	977.52	157.40	0.59	1.74	0.052	3.25	1.68	1.51
MC R1	62294	2-Yr	290.00	6363.00	6366.28	4.28	85.50	44.39	0.43	0.46	0.042	0.73	0.38	0.24
MC R1	62294	5-Yr	560.00	6363.00	6367.28	5.32	133.37	51.01	0.47	0.65	0.042	1.02	0.58	0.37
MC R1	62294	10-Yr	1200.00	6363.00	6368.88	6.48	265.06	112.10	0.48	0.57	0.036	1.36	0.46	0.52
MC R1	62294	50-Yr	4100.00	6363.00	6373.36	7.83	871.44	196.54	0.43	0.71	0.043	1.63	0.91	0.30
MC R1	62294	100-Yr	6300.00	6363.00	6375.84	7.93	1587.32	349.73	0.39	0.56	0.046	1.55	0.96	0.31
MC R1	62092	2-Yr	290.00	6363.00	6365.59	3.53	89.21	43.56	0.39	0.42	0.042	0.52	0.15	0.24
MC R1	62092	5-Yr	560.00	6363.00	6366.49	4.70	131.58	49.37	0.45	0.64	0.041	0.84	0.26	0.42
MC R1	62092	10-Yr	1200.00	6363.00	6367.59	7.15	190.17	59.58	0.59	1.22	0.040	1.77	0.43	0.98
MC R1	62092	50-Yr	4100.00	6363.00	6370.02	14.18	352.86	100.60	0.95	4.17	0.043	6.04	2.40	3.61
MC R1	62092	100-Yr	6300.00	6363.00	6371.84	16.33	486.54	181.96	0.97	5.14	0.044	7.41	3.42	4.38
MC R1	62054	2-Yr	290.00	6362.54	6365.48	3.31	97.93	55.32	0.37	0.34	0.041	0.47	0.14	0.17
MC R1	62054	5-Yr	560.00	6362.54	6366.41	4.16	151.77	60.88	0.40	0.49	0.041	0.66	0.22	0.33
MC R1	62054	10-Yr	1200.00	6362.54	6367.52	6.09	226.53	78.80	0.51	0.83	0.038	1.29	0.28	0.71
MC R1	62054	50-Yr	4100.00	6362.54	6369.64	12.30	448.70	144.19	0.84	2.18	0.037	4.63	1.14	2.02

HEC-RAS Plan: Plan 07 River: Monument Creek Reach: MC R1 (Continued)

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl	Shear Total (lb/sq ft)	Mann Wtd Total	Shear Chan (lb/sq ft)	Shear LOB (lb/sq ft)	Shear ROB (lb/sq ft)
MC R1	62054	100-Yr	6300.00	6362.54	6371.22	13.52	753.55	235.93	0.83	2.04	0.039	5.21	1.45	1.66
MC R1	61906	2-Yr	290.00	6362.00	6364.15	6.85	51.63	36.56	0.82	1.35	0.041	2.08	0.74	1.53
MC R1	61906	5-Yr	560.00	6362.00	6364.97	8.33	92.61	63.49	0.85	1.34	0.038	2.76	0.79	1.97
MC R1	61906	10-Yr	1200.00	6362.00	6366.42	8.24	195.22	84.30	0.69	1.23	0.039	2.37	0.93	1.61
MC R1	61906	50-Yr	4100.00	6362.00	6368.98	10.83	680.06	221.48	0.72	1.53	0.047	3.52	1.36	2.14
MC R1	61906	100-Yr	6300.00	6362.00	6370.20	12.08	959.69	240.34	0.74	2.00	0.051	4.14	1.91	1.89
MC R1	61715	2-Yr	290.00	6360.00	6362.17	4.85	62.85	37.95	0.60	0.86	0.041	1.07	0.27	0.27
MC R1	61715	5-Yr	560.00	6360.00	6363.20	5.77	108.39	51.20	0.58	0.91	0.039	1.32	0.43	0.39
MC R1	61715	10-Yr	1200.00	6360.00	6363.99	9.07	153.22	61.76	0.82	1.93	0.039	3.02	1.06	1.00
MC R1	61715	50-Yr	4100.00	6360.00	6367.37	10.37	792.43	307.06	0.68	1.15	0.046	3.19	0.81	1.45
MC R1	61715	100-Yr	6300.00	6360.00	6369.26	9.60	1404.04	336.78	0.56	1.16	0.057	2.54	0.99	1.20
MC R1	61552	2-Yr	400.00	6359.00	6361.86	2.80	157.72	67.41	0.29	0.26	0.043	0.32	0.23	0.25
MC R1	61552	5-Yr	820.00	6359.00	6362.79	4.08	223.81	75.64	0.37	0.47	0.042	0.61	0.41	0.48
MC R1	61552	10-Yr	1400.00	6359.00	6363.71	5.21	363.99	198.99	0.42	0.36	0.032	0.93	0.23	0.72
MC R1	61552	50-Yr	4800.00	6359.00	6367.11	7.29	1202.22	285.19	0.45	0.78	0.053	1.52	0.69	1.04
MC R1	61552	100-Yr	7200.00	6359.00	6368.98	7.72	1771.11	321.70	0.43	0.87	0.057	1.58	0.86	0.80
MC R1	61363	2-Yr	400.00	6359.00	6360.83	5.52	81.68	87.14	0.72	1.12	0.043	1.43	0.96	0.76
MC R1	61363	5-Yr	820.00	6359.00	6361.61	6.65	173.94	119.70	0.73	1.02	0.043	1.84	0.74	1.05
MC R1	61363	10-Yr	1400.00	6359.00	6362.51	7.30	285.02	128.32	0.69	1.27	0.049	2.01	1.06	1.18
MC R1	61363	50-Yr	4800.00	6359.00	6365.78	10.11	781.98	203.05	0.68	1.74	0.051	3.09	2.20	0.90
MC R1	61363	100-Yr	7200.00	6359.00	6367.83	10.28	1221.54	225.15	0.61	1.78	0.056	2.93	2.20	1.15
MC R1	61199	2-Yr	400.00	6356.00	6357.83	6.70	64.51	53.71	0.94	1.70	0.041	2.22	0.57	0.51
MC R1	61199	5-Yr	820.00	6356.00	6358.73	8.24	120.11	68.14	0.93	2.06	0.043	2.88	0.95	1.09
MC R1	61199	10-Yr	1400.00	6356.00	6359.65	9.73	196.10	97.35	0.93	2.15	0.043	3.61	1.24	1.23
MC R1	61199	50-Yr	4800.00	6356.00	6362.74	13.75	565.32	130.39	0.95	3.87	0.056	5.82	2.72	3.23
MC R1	61199	100-Yr	7200.00	6356.00	6363.76	17.11	717.68	228.91	1.10	3.57	0.043	8.58	4.30	2.33
MC R1	60902	2-Yr	400.00	6352.00	6354.49	4.67	89.54	46.70	0.55	0.81	0.042	0.95	0.31	0.28
MC R1	60902	5-Yr	820.00	6352.00	6355.74	5.56	173.00	87.06	0.52	0.66	0.036	1.17	0.45	0.27
MC R1	60902	10-Yr	1400.00	6352.00	6356.87	6.19	279.07	98.77	0.51	0.80	0.040	1.32	0.54	0.49
MC R1	60902	50-Yr	4800.00	6352.00	6360.48	8.85	848.42	250.56	0.54	0.97	0.040	2.22	0.96	0.72
MC R1	60902	100-Yr	7200.00	6352.00	6362.44	9.13	1420.26	325.02	0.50	0.94	0.046	2.21	0.96	0.77
MC R1	60571	2-Yr	400.00	6350.00	6353.35	3.39	127.25	52.47	0.34	0.36	0.042	0.46	0.12	0.25
MC R1	60571	5-Yr	820.00	6350.00	6354.58	4.60	198.08	83.15	0.39	0.54	0.040	0.75	0.20	0.43
MC R1	60571	10-Yr	1400.00	6350.00	6355.81	5.38	394.12	194.25	0.41	0.35	0.035	0.94	0.18	0.53
MC R1	60571	50-Yr	4800.00	6350.00	6359.60	7.42	1173.13	219.77	0.43	0.86	0.056	1.51	0.75	0.73
MC R1	60571	100-Yr	7200.00	6350.00	6361.64	8.15	1670.69	260.90	0.43	0.96	0.058	1.70	0.95	0.61
MC R1	60341	2-Yr	400.00	6350.00	6352.17	5.13	85.54	63.41	0.62	0.95	0.043	1.17	0.57	0.69
MC R1	60341	5-Yr	820.00	6350.00	6353.38	6.13	148.44	97.03	0.59	1.12	0.042	1.44	0.71	0.86
MC R1	60341	10-Yr	1400.00	6350.00	6354.51	7.27	218.40	139.50	0.60	1.19	0.038	1.83	0.62	1.08
MC R1	60341	50-Yr	4800.00	6350.00	6358.97	7.72	1092.42	204.56	0.45	0.97	0.056	1.65	0.86	0.86
MC R1	60341	100-Yr	7200.00	6350.00	6361.03	8.56	1562.27	260.29	0.45	1.02	0.055	1.89	1.03	0.58
MC R1	60243	2-Yr	400.00	6348.00	6352.08	2.98	159.93	59.89	0.27	0.22	0.041	0.32	0.16	0.19

HEC-RAS Plan: Plan 07 River: Monument Creek Reach: MC R1 (Continued)

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl	Shear Total (lb/sq ft)	Mann Wtd Total	Shear Chan (lb/sq ft)	Shear LOB (lb/sq ft)	Shear ROB (lb/sq ft)
MC R1	60243	5-Yr	820.00	6348.00	6353.28	4.25	239.06	71.50	0.33	0.39	0.042	0.60	0.28	0.37
MC R1	60243	10-Yr	1400.00	6348.00	6354.40	5.56	323.66	79.70	0.39	0.62	0.043	0.96	0.46	0.60
MC R1	60243	50-Yr	4800.00	6348.00	6358.33	9.73	794.20	161.89	0.54	1.19	0.044	2.50	0.95	1.23
MC R1	60243	100-Yr	7200.00	6348.00	6360.45	10.81	1238.63	263.09	0.54	1.10	0.044	2.90	1.27	0.72
MC R1	60077	2-Yr	400.00	6349.00	6351.77	3.21	141.69	62.73	0.34	0.34	0.044	0.42	0.32	0.28
MC R1	60077	5-Yr	820.00	6349.00	6352.85	4.50	215.18	73.27	0.40	0.56	0.044	0.74	0.52	0.45
MC R1	60077	10-Yr	1400.00	6349.00	6353.89	5.48	295.88	80.79	0.44	0.75	0.043	1.01	0.71	0.61
MC R1	60077	50-Yr	4800.00	6349.00	6357.79	8.29	803.82	180.94	0.49	0.95	0.039	1.91	1.35	0.65
MC R1	60077	100-Yr	7200.00	6349.00	6360.02	8.72	1335.19	261.17	0.46	0.90	0.043	1.96	1.38	0.67
MC R1	59920	2-Yr	400.00	6349.00	6351.24	3.57	120.71	64.72	0.42	0.46	0.043	0.56	0.44	0.36
MC R1	59920	5-Yr	820.00	6349.00	6352.23	4.74	194.30	82.29	0.47	0.63	0.041	0.87	0.65	0.46
MC R1	59920	10-Yr	1400.00	6349.00	6353.24	5.81	284.31	94.80	0.50	0.83	0.042	1.19	0.87	0.63
MC R1	59920	50-Yr	4800.00	6349.00	6357.13	8.61	757.30	260.20	0.53	1.45	0.048	2.11	1.37	1.26
MC R1	59920	100-Yr	7200.00	6349.00	6359.27	9.50	1041.56	302.95	0.52	1.75	0.050	2.38	1.47	1.62
MC R1	59881	2-Yr	400.00	6348.53	6351.11	3.58	129.50	67.17	0.40	0.41	0.043	0.54	0.36	0.31
MC R1	59881	5-Yr	820.00	6348.53	6352.07	4.72	196.61	71.55	0.44	0.65	0.043	0.84	0.56	0.54
MC R1	59881	10-Yr	1400.00	6348.53	6353.03	5.90	266.60	74.85	0.49	0.95	0.043	1.21	0.79	0.82
MC R1	59881	50-Yr	4800.00	6348.53	6356.30	10.34	528.39	84.94	0.66	2.39	0.043	3.10	1.90	2.19
MC R1	59881	100-Yr	7200.00	6348.53	6358.10	12.13	685.26	89.80	0.69	3.02	0.043	3.97	2.36	2.80
MC R1	59875		Bridge											
MC R1	59865	2-Yr	400.00	6348.00	6351.00	3.98	119.53	63.86	0.42	0.43	0.041	0.65	0.27	0.28
MC R1	59865	5-Yr	820.00	6348.00	6351.92	5.31	180.72	67.92	0.49	0.74	0.042	1.04	0.45	0.56
MC R1	59865	10-Yr	1400.00	6348.00	6352.83	6.67	243.44	71.14	0.55	1.11	0.042	1.53	0.68	0.90
MC R1	59865	50-Yr	4800.00	6348.00	6355.56	12.39	449.77	79.53	0.81	3.35	0.043	4.52	2.04	2.98
MC R1	59865	100-Yr	7200.00	6348.00	6356.60	15.73	534.12	82.41	0.96	5.15	0.043	6.97	3.13	4.66
MC R1	59826	2-Yr	400.00	6349.00	6350.28	6.38	66.11	56.53	1.00	1.96	0.045	2.15	1.60	1.79
MC R1	59826	5-Yr	820.00	6349.00	6351.03	7.84	110.84	62.57	0.97	2.40	0.043	2.78	1.96	2.10
MC R1	59826	10-Yr	1400.00	6349.00	6351.85	9.13	167.04	75.31	0.95	2.59	0.041	3.37	2.24	2.06
MC R1	59826	50-Yr	4800.00	6349.00	6354.66	13.89	415.28	180.51	1.03	4.79	0.046	6.20	3.77	4.25
MC R1	59826	100-Yr	7200.00	6349.00	6356.10	15.94	550.10	255.89	1.05	6.05	0.047	7.57	4.46	5.66
MC R1	59601	2-Yr	400.00	6343.00	6345.88	7.32	67.87	45.99	0.78	1.18	0.037	2.20	0.68	0.83
MC R1	59601	5-Yr	820.00	6343.00	6346.96	8.96	124.51	57.18	0.81	1.66	0.042	2.95	1.28	1.21
MC R1	59601	10-Yr	1400.00	6343.00	6348.12	10.26	195.25	65.80	0.81	2.09	0.045	3.53	1.83	1.54
MC R1	59601	50-Yr	4800.00	6343.00	6351.87	14.93	592.29	161.89	0.89	2.59	0.046	6.21	3.54	1.77
MC R1	59601	100-Yr	7200.00	6343.00	6353.75	15.54	930.82	196.16	0.84	2.81	0.053	6.31	3.34	2.24
MC R1	59400	2-Yr	400.00	6341.00	6343.93	5.93	77.63	43.40	0.63	0.93	0.039	1.44	0.43	0.50
MC R1	59400	5-Yr	820.00	6341.00	6345.12	7.33	135.43	52.76	0.65	1.26	0.041	1.95	0.71	0.87
MC R1	59400	10-Yr	1400.00	6341.00	6346.24	8.87	198.28	60.22	0.69	1.69	0.042	2.63	1.02	1.28
MC R1	59400	50-Yr	4800.00	6341.00	6350.85	10.97	819.21	209.35	0.62	1.31	0.046	3.24	1.34	1.08
MC R1	59400	100-Yr	7200.00	6341.00	6353.14	10.74	1316.61	235.61	0.55	1.35	0.053	2.90	0.76	1.30
MC R1	59145	2-Yr	400.00	6339.00	6341.63	7.68	60.56	34.23	0.84	0.74	0.027	1.10	0.47	0.39
MC R1	59145	5-Yr	820.00	6339.00	6342.68	9.62	102.82	46.73	0.89	0.92	0.026	1.54	0.57	0.61

HEC-RAS Plan: Plan 07 River: Monument Creek Reach: MC R1 (Continued)

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl	Shear Total (lb/sq ft)	Mann Wtd Total	Shear Chan (lb/sq ft)	Shear LOB (lb/sq ft)	Shear ROB (lb/sq ft)
MC R1	59145	10-Yr	1400.00	6339.00	6343.77	11.24	165.73	67.10	0.91	1.00	0.026	1.92	0.57	0.87
MC R1	59145	50-Yr	4800.00	6339.00	6347.50	16.89	490.96	110.92	1.02	1.85	0.033	3.57	1.50	1.64
MC R1	59145	100-Yr	7200.00	6339.00	6349.27	19.31	702.35	127.90	1.07	2.33	0.037	4.39	1.96	2.14
MC R1	58639	2-Yr	400.00	6335.00	6337.75	8.22	56.43	32.93	0.91	0.85	0.027	1.26	0.60	0.38
MC R1	58639	5-Yr	820.00	6335.00	6338.91	9.74	100.73	42.76	0.89	0.99	0.026	1.57	0.74	0.60
MC R1	58639	10-Yr	1400.00	6335.00	6340.10	11.18	160.64	69.02	0.89	0.89	0.023	1.88	0.46	0.82
MC R1	58639	50-Yr	4800.00	6335.00	6344.34	15.38	650.48	263.13	0.90	0.79	0.026	2.89	0.50	1.15
MC R1	58639	100-Yr	7200.00	6335.00	6345.89	16.88	1117.72	325.82	0.91	1.06	0.037	3.30	0.81	1.51
MC R1	58209	2-Yr	400.00	6332.00	6335.26	6.09	82.18	44.00	0.60	0.38	0.026	0.64	0.34	0.24
MC R1	58209	5-Yr	820.00	6332.00	6336.43	7.87	144.58	62.19	0.67	0.51	0.027	0.97	0.50	0.37
MC R1	58209	10-Yr	1400.00	6332.00	6337.46	9.87	215.66	74.98	0.75	0.75	0.030	1.42	0.70	0.60
MC R1	58209	50-Yr	4800.00	6332.00	6340.88	14.47	858.56	226.84	0.86	1.11	0.044	2.59	0.95	1.23
MC R1	58209	100-Yr	7200.00	6332.00	6342.45	16.09	1229.68	245.98	0.88	1.46	0.051	3.03	1.34	1.47
MC R1	57761	2-Yr	400.00	6330.00	6333.48	2.99	150.89	85.53	0.31	0.69	0.065	1.14	0.28	0.30
MC R1	57761	5-Yr	820.00	6330.00	6334.54	3.89	271.50	144.77	0.34	0.81	0.062	1.73	0.42	0.62
MC R1	57761	10-Yr	1400.00	6330.00	6335.53	4.48	429.31	167.18	0.35	1.10	0.071	2.13	0.74	0.91
MC R1	57761	50-Yr	4800.00	6330.00	6338.69	6.62	987.27	184.20	0.41	2.59	0.082	3.95	2.25	2.09
MC R1	57761	100-Yr	7200.00	6330.00	6340.15	7.70	1261.72	191.19	0.44	3.45	0.084	5.06	3.13	2.74
MC R1	57568	2-Yr	400.00	6329.00	6331.15	7.61	55.76	35.70	0.99	1.03	0.029	1.21	0.85	0.18
MC R1	57568	5-Yr	820.00	6329.00	6332.37	8.60	112.88	75.01	0.87	0.64	0.022	1.30	0.33	0.42
MC R1	57568	10-Yr	1400.00	6329.00	6333.36	9.80	230.42	171.02	0.86	0.51	0.023	1.54	0.33	0.62
MC R1	57568	50-Yr	4800.00	6329.00	6336.35	13.39	852.33	236.65	0.89	1.22	0.046	2.39	1.09	1.16
MC R1	57568	100-Yr	7200.00	6329.00	6337.84	14.69	1210.01	244.00	0.89	1.56	0.051	2.69	1.45	1.33
MC R1	57080	2-Yr	400.00	6325.00	6328.81	5.13	91.20	38.80	0.48	0.29	0.026	0.44	0.19	0.14
MC R1	57080	5-Yr	820.00	6325.00	6330.01	7.06	145.61	52.78	0.57	0.43	0.026	0.76	0.33	0.24
MC R1	57080	10-Yr	1400.00	6325.00	6330.98	9.05	202.65	64.68	0.67	0.63	0.026	1.17	0.52	0.39
MC R1	57080	50-Yr	4800.00	6325.00	6333.53	14.30	634.13	179.66	0.88	1.10	0.032	2.58	1.09	0.91
MC R1	57080	100-Yr	7200.00	6325.00	6334.71	16.51	852.70	192.98	0.95	1.54	0.035	3.30	1.11	1.41
MC R1	56579	2-Yr	730.00	6323.00	6325.82	9.18	93.80	44.32	0.96	1.12	0.029	1.52	1.06	0.80
MC R1	56579	5-Yr	1500.00	6323.00	6327.31	10.35	190.50	105.72	0.88	0.69	0.022	1.67	0.50	0.78
MC R1	56579	10-Yr	2400.00	6323.00	6328.27	12.08	320.50	176.01	0.93	0.73	0.024	2.13	0.87	0.39
MC R1	56579	50-Yr	6300.00	6323.00	6330.57	16.24	875.84	268.13	1.04	1.46	0.038	3.42	1.89	1.11
MC R1	56579	100-Yr	8900.00	6323.00	6331.85	17.15	1223.92	275.15	1.02	1.80	0.044	3.62	2.16	1.49
MC R1	56375	2-Yr	730.00	6322.00	6324.95	6.86	133.52	66.22	0.70	0.57	0.029	0.83	0.48	0.51
MC R1	56375	5-Yr	1500.00	6322.00	6325.95	8.89	204.18	75.23	0.79	0.87	0.028	1.27	0.75	0.80
MC R1	56375	10-Yr	2400.00	6322.00	6326.71	10.98	263.53	81.17	0.89	1.25	0.028	1.83	1.09	1.17
MC R1	56375	50-Yr	6300.00	6322.00	6329.28	14.46	731.36	214.07	0.94	1.28	0.030	2.75	1.64	1.07
MC R1	56375	100-Yr	8900.00	6322.00	6330.74	15.16	1049.34	222.54	0.90	1.52	0.035	2.84	1.67	1.37
MC R1	56039	2-Yr	730.00	6320.00	6322.72	8.52	113.94	76.62	0.91	0.72	0.027	1.32	0.74	0.55
MC R1	56039	5-Yr	1500.00	6320.00	6323.72	10.44	207.57	116.55	0.95	0.85	0.026	1.79	1.01	0.67
MC R1	56039	10-Yr	2400.00	6320.00	6324.58	11.79	327.62	147.52	0.97	1.03	0.030	2.13	1.20	0.87
MC R1	56039	50-Yr	6300.00	6320.00	6327.81	13.30	863.99	186.43	0.84	1.34	0.038	2.27	0.93	1.40
MC R1	56039	100-Yr	8900.00	6320.00	6329.42	14.24	1172.38	254.84	0.82	1.53	0.041	2.44	1.11	1.62

HEC-RAS Plan: Plan 07 River: Monument Creek Reach: MC R1 (Continued)

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl	Shear Total (lb/sq ft)	Mann Wtd Total	Shear Chan (lb/sq ft)	Shear LOB (lb/sq ft)	Shear ROB (lb/sq ft)
MC R1	55554	2-Yr	730.00	6315.00	6318.86	8.13	108.36	49.25	0.74	0.65	0.025	1.09	0.39	0.35
MC R1	55554	5-Yr	1500.00	6315.00	6320.11	10.39	202.80	101.72	0.82	0.65	0.023	1.62	0.33	0.68
MC R1	55554	10-Yr	2400.00	6315.00	6321.20	11.78	320.98	117.74	0.85	0.88	0.028	1.95	0.58	0.90
MC R1	55554	50-Yr	6300.00	6315.00	6323.98	16.16	723.86	158.15	0.96	1.68	0.036	3.23	1.41	1.60
MC R1	55554	100-Yr	8900.00	6315.00	6325.25	18.30	927.30	164.43	1.02	2.21	0.039	3.96	1.95	2.06
MC R1	55060	2-Yr	730.00	6313.00	6315.91	8.77	106.62	60.15	0.92	0.86	0.028	1.39	0.47	0.74
MC R1	55060	5-Yr	1500.00	6313.00	6316.95	10.71	172.88	67.13	0.96	1.23	0.028	1.86	0.67	1.15
MC R1	55060	10-Yr	2400.00	6313.00	6317.91	12.26	241.21	75.07	0.98	1.50	0.028	2.27	0.79	1.46
MC R1	55060	50-Yr	6300.00	6313.00	6321.08	15.18	686.50	207.33	0.95	1.22	0.028	2.94	1.14	1.10
MC R1	55060	100-Yr	8900.00	6313.00	6322.89	15.22	1070.59	217.07	0.86	1.39	0.035	2.76	1.17	1.32
MC R1	54576	2-Yr	730.00	6310.07	6313.71	4.50	178.36	78.33	0.46	0.27	0.027	0.36	0.12	0.14
MC R1	54576	5-Yr	1500.00	6310.07	6314.94	6.18	285.16	96.78	0.53	0.42	0.028	0.60	0.23	0.24
MC R1	54576	10-Yr	2400.00	6310.07	6315.91	7.72	390.01	118.96	0.60	0.55	0.028	0.88	0.34	0.32
MC R1	54576	50-Yr	6300.00	6310.07	6318.17	12.96	731.06	194.27	0.84	1.11	0.029	2.19	0.60	0.84
MC R1	54576	100-Yr	8900.00	6310.07	6319.26	15.10	955.33	213.41	0.91	1.49	0.032	2.84	0.89	1.26
MC R1	54085	2-Yr	730.00	6308.00	6311.88	5.71	155.35	79.28	0.56	0.97	0.044	1.57	0.42	0.61
MC R1	54085	5-Yr	1500.00	6308.00	6313.04	6.88	305.82	166.73	0.58	0.87	0.040	2.06	0.40	0.83
MC R1	54085	10-Yr	2400.00	6308.00	6314.07	7.48	491.05	210.18	0.57	0.99	0.044	2.27	0.75	0.79
MC R1	54085	50-Yr	6300.00	6308.00	6316.34	9.62	1300.56	409.63	0.61	1.40	0.056	3.33	1.66	1.12
MC R1	54085	100-Yr	8900.00	6308.00	6316.94	11.56	1548.70	413.35	0.71	2.16	0.060	4.70	2.45	1.80
MC R1	53647	2-Yr	730.00	6305.00	6308.76	8.34	187.30	159.24	0.78	0.39	0.031	1.16	0.49	0.28
MC R1	53647	5-Yr	1500.00	6305.00	6309.78	10.36	381.58	205.51	0.85	0.67	0.043	1.65	0.60	0.59
MC R1	53647	10-Yr	2400.00	6305.00	6310.55	12.35	551.57	272.94	0.94	0.85	0.045	2.23	0.88	0.75
MC R1	53647	50-Yr	6300.00	6305.00	6312.69	15.65	1419.52	492.98	1.01	1.24	0.056	3.20	1.56	1.14
MC R1	53647	100-Yr	8900.00	6305.00	6314.09	14.88	2153.59	534.80	0.88	1.24	0.064	2.73	1.43	1.18
MC R1	53184	2-Yr	730.00	6301.00	6304.44	4.69	172.88	63.68	0.45	0.29	0.028	0.37	0.17	0.28
MC R1	53184	5-Yr	1500.00	6301.00	6306.09	6.02	292.91	97.02	0.47	0.31	0.025	0.54	0.14	0.39
MC R1	53184	10-Yr	2400.00	6301.00	6307.71	6.77	517.21	203.85	0.46	0.23	0.023	0.62	0.16	0.23
MC R1	53184	50-Yr	6300.00	6301.00	6311.99	7.74	1799.65	336.65	0.41	0.33	0.041	0.69	0.29	0.34
MC R1	53184	100-Yr	8900.00	6301.00	6313.70	8.55	2389.77	352.53	0.42	0.42	0.045	0.80	0.37	0.43
MC R1	52866	2-Yr	730.00	6299.00	6302.68	8.23	105.52	60.76	0.86	0.75	0.026	1.23	0.29	0.35
MC R1	52866	5-Yr	1500.00	6299.00	6304.11	10.21	199.04	70.70	0.87	1.09	0.031	1.65	0.71	0.59
MC R1	52866	10-Yr	2400.00	6299.00	6305.12	12.53	274.24	78.12	0.96	1.54	0.033	2.31	1.10	0.91
MC R1	52866	50-Yr	6300.00	6299.00	6309.26	14.82	913.68	215.75	0.85	1.21	0.038	2.67	0.95	1.23
MC R1	52866	100-Yr	8900.00	6299.00	6310.61	16.65	1218.33	235.09	0.89	1.56	0.042	3.22	1.30	1.51
MC R1	52434	2-Yr	730.00	6297.00	6300.28	6.95	112.49	55.18	0.74	0.66	0.026	0.88	0.16	0.27
MC R1	52434	5-Yr	1500.00	6297.00	6301.21	9.95	169.12	67.38	0.92	1.12	0.026	1.64	0.41	0.59
MC R1	52434	10-Yr	2400.00	6297.00	6302.44	11.02	276.73	114.69	0.88	0.90	0.024	1.83	0.34	0.70
MC R1	52434	50-Yr	6300.00	6297.00	6305.40	13.86	887.05	248.12	0.87	1.13	0.035	2.47	0.82	1.21
MC R1	52434	100-Yr	8900.00	6297.00	6306.53	15.68	1179.12	270.02	0.92	1.48	0.039	3.02	1.16	1.52
MC R1	51951	2-Yr	730.00	6295.39	6298.52	6.02	221.06	230.70	0.62	0.35	0.036	0.64	0.28	0.44
MC R1	51951	5-Yr	1500.00	6295.39	6299.83	7.00	409.28	249.93	0.60	0.50	0.043	0.77	0.45	0.54

HEC-RAS Plan: Plan 07 River: Monument Creek Reach: MC R1 (Continued)

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl	Shear Total (lb/sq ft)	Mann Wtd Total	Shear Chan (lb/sq ft)	Shear LOB (lb/sq ft)	Shear ROB (lb/sq ft)
MC R1	51951	10-Yr	2400.00	6295.39	6300.74	6.42	898.28	272.03	0.50	0.39	0.053	0.61	0.37	0.42
MC R1	51951	50-Yr	6300.00	6295.39	6304.13	8.05	1848.23	288.36	0.49	0.60	0.058	0.81	0.60	0.54
MC R1	51951	100-Yr	8900.00	6295.39	6305.94	8.84	2379.25	299.72	0.48	0.69	0.059	0.91	0.70	0.59
MC R1	51347	2-Yr	730.00	6291.00	6296.01	4.16	211.42	76.55	0.33	1.00	0.064	1.83	0.91	0.74
MC R1	51347	5-Yr	1500.00	6291.00	6297.52	5.04	342.74	98.05	0.35	1.31	0.060	2.47	1.12	1.15
MC R1	51347	10-Yr	2400.00	6291.00	6298.45	6.08	440.23	108.63	0.39	1.84	0.059	3.43	1.55	1.73
MC R1	51347	50-Yr	6300.00	6291.00	6300.81	9.11	714.83	122.82	0.51	4.08	0.058	7.02	3.61	3.95
MC R1	51347	100-Yr	8900.00	6291.00	6301.60	11.19	813.50	128.35	0.61	6.04	0.057	10.31	5.37	5.87
MC R1	51039	2-Yr	730.00	6290.00	6294.21	5.58	172.76	137.36	0.50	0.37	0.028	1.13	0.42	0.12
MC R1	51039	5-Yr	1500.00	6290.00	6294.92	8.33	285.98	180.20	0.68	0.83	0.035	2.39	0.70	0.52
MC R1	51039	10-Yr	2400.00	6290.00	6295.72	9.50	466.85	243.81	0.72	1.05	0.042	2.95	1.05	0.75
MC R1	51039	50-Yr	6300.00	6290.00	6297.52	13.26	963.96	299.90	0.87	2.35	0.054	5.23	2.45	1.97
MC R1	51039	100-Yr	8900.00	6290.00	6298.61	13.86	1296.04	309.16	0.85	2.78	0.058	5.45	2.80	2.45
MC R1	50640	2-Yr	730.00	6288.00	6291.59	7.81	108.57	124.88	0.83	0.72	0.026	1.11	0.41	0.36
MC R1	50640	5-Yr	1500.00	6288.00	6292.65	8.40	396.97	309.13	0.76	0.39	0.032	1.15	0.46	0.31
MC R1	50640	10-Yr	2400.00	6288.00	6293.24	9.93	581.83	317.04	0.83	0.64	0.040	1.53	0.62	0.55
MC R1	50640	50-Yr	6300.00	6288.00	6295.92	10.84	1507.63	396.88	0.72	0.84	0.051	1.56	0.65	0.79
MC R1	50640	100-Yr	8900.00	6288.00	6297.31	11.26	2076.41	419.44	0.68	0.93	0.055	1.59	0.66	0.89
MC R1	50148	2-Yr	730.00	6285.00	6289.24	4.34	311.31	166.35	0.41	0.19	0.038	0.35	0.14	0.14
MC R1	50148	5-Yr	1500.00	6285.00	6290.79	5.12	638.02	249.04	0.40	0.23	0.044	0.45	0.19	0.19
MC R1	50148	10-Yr	2400.00	6285.00	6291.98	5.83	945.23	266.05	0.41	0.31	0.051	0.55	0.27	0.23
MC R1	50148	50-Yr	6300.00	6285.00	6294.96	8.39	1767.20	284.95	0.49	0.68	0.059	1.03	0.66	0.37
MC R1	50148	100-Yr	8900.00	6285.00	6296.19	9.89	2120.27	290.85	0.54	0.95	0.061	1.37	0.94	0.51
MC R1	49640	2-Yr	730.00	6284.00	6287.35	8.20	117.86	62.54	0.79	0.65	0.027	1.15	0.46	0.70
MC R1	49640	5-Yr	1500.00	6284.00	6288.49	11.07	211.55	111.50	0.93	0.80	0.026	1.90	0.57	1.16
MC R1	49640	10-Yr	2400.00	6284.00	6289.48	12.80	331.68	127.60	0.97	1.13	0.032	2.37	0.91	1.44
MC R1	49640	50-Yr	6300.00	6284.00	6292.47	15.75	1044.55	315.28	0.96	1.21	0.042	3.10	1.08	1.83
MC R1	49640	100-Yr	8900.00	6284.00	6293.33	18.00	1320.02	319.18	1.04	1.73	0.046	3.93	1.59	2.30
MC R1	49230	2-Yr	730.00	6284.21	6286.38	4.02	286.31	231.24	0.48	0.18	0.033	0.32	0.17	0.23
MC R1	49230	5-Yr	1500.00	6284.21	6287.24	5.11	489.47	240.39	0.52	0.31	0.039	0.46	0.30	0.33
MC R1	49230	10-Yr	2400.00	6284.21	6288.01	6.04	675.72	247.33	0.55	0.43	0.041	0.60	0.42	0.43
MC R1	49230	50-Yr	6300.00	6284.21	6290.46	8.53	1306.20	279.08	0.60	0.75	0.044	1.01	0.74	0.71
MC R1	49230	100-Yr	8900.00	6284.21	6291.57	10.01	1664.61	348.41	0.65	0.85	0.042	1.31	0.82	0.91
MC R1	49085	2-Yr	730.00	6284.00	6285.70	3.10	259.42	239.38	0.42	1.19	0.074	1.85	0.97	1.43
MC R1	49085	5-Yr	1500.00	6284.00	6286.70	3.15	507.75	257.23	0.34	1.20	0.078	1.63	1.08	1.27
MC R1	49085	10-Yr	2400.00	6284.00	6287.49	3.53	716.14	269.45	0.33	1.44	0.079	1.88	1.34	1.46
MC R1	49085	50-Yr	6300.00	6284.00	6290.03	4.74	1443.05	356.09	0.34	1.91	0.075	2.84	1.71	2.15
MC R1	49085	100-Yr	8900.00	6284.00	6291.16	5.23	1861.44	380.15	0.35	2.23	0.077	3.26	2.04	2.40
MC R1	48896	2-Yr	730.00	6281.00	6284.96	3.55	416.88	219.96	0.32	0.23	0.057	0.46	0.20	0.18
MC R1	48896	5-Yr	1500.00	6281.00	6285.25	6.32	482.22	225.45	0.55	0.75	0.059	1.43	0.65	0.56
MC R1	48896	10-Yr	2400.00	6281.00	6286.08	7.21	675.99	240.19	0.57	1.00	0.063	1.75	0.91	0.71
MC R1	48896	50-Yr	6300.00	6281.00	6288.36	10.32	1262.94	288.38	0.68	1.92	0.067	3.16	1.80	1.31
MC R1	48896	100-Yr	8900.00	6281.00	6289.19	12.21	1508.41	302.42	0.76	2.64	0.068	4.27	2.51	1.77

HEC-RAS Plan: Plan 07 River: Monument Creek Reach: MC R1 (Continued)

Reach	River Sta		Profile	Q Total	Min Ch El	W.S. Elev	Vel Chnl	Flow Area	Top Width	Froude # Chl	Shear Total	Mann Wtd Total	Shear Chan	Shear LOB	Shear ROB
				(cfs)	(ft)	(ft)	(ft/s)	(sq ft)	(ft)		(lb/sq ft)		(lb/sq ft)	(lb/sq ft)	(lb/sq ft)
MC R1	48692	48691.71	2-Yr	730.00	6279.07	6280.97	14.71	69.44	56.57	1.99	7.52	0.051	10.39	3.52	6.52
MC R1	48692	48691.71	5-Yr	1500.00	6279.07	6282.87	9.98	306.61	178.90	0.93	1.78	0.056	3.73	1.21	1.83
MC R1	48692	48691.71	10-Yr	2400.00	6279.07	6283.61	11.35	449.31	206.99	0.96	2.27	0.060	4.52	1.76	2.28
MC R1	48692	48691.71	50-Yr	6300.00	6279.07	6286.01	13.64	1081.52	321.53	0.93	2.81	0.066	5.64	2.75	2.49
MC R1	48692	48691.71	100-Yr	8900.00	6279.07	6287.41	13.08	1544.93	339.74	0.81	2.72	0.069	4.87	2.60	2.55
MC R1	48669	48668.88	2-Yr	730.00	6276.00	6280.34	5.15	228.28	78.20	0.44	0.62	0.055	0.93	0.43	0.56
MC R1	48669	48668.88	5-Yr	1500.00	6276.00	6281.83	7.35	389.03	132.79	0.54	0.86	0.054	1.72	0.56	0.81
MC R1	48669	48668.88	10-Yr	2400.00	6276.00	6282.91	9.25	554.20	184.01	0.62	1.12	0.055	2.57	0.88	0.97
MC R1	48669	48668.88	50-Yr	6300.00	6276.00	6286.05	11.23	1428.14	346.59	0.62	1.37	0.063	3.35	1.27	1.23
MC R1	48669	48668.88	100-Yr	8900.00	6276.00	6287.37	11.66	1899.05	363.27	0.61	1.59	0.067	3.47	1.46	1.49
MC R1	48397		2-Yr	730.00	6276.00	6278.22	8.30	98.50	55.88	0.98	1.06	0.029	1.35	0.91	0.74
MC R1	48397		5-Yr	1500.00	6276.00	6279.38	10.10	169.05	67.83	0.97	1.26	0.028	1.73	1.17	0.86
MC R1	48397		10-Yr	2400.00	6276.00	6280.51	11.24	274.52	121.61	0.93	0.97	0.024	1.95	1.29	0.57
MC R1	48397		50-Yr	6300.00	6276.00	6283.38	14.72	801.75	262.04	0.96	1.16	0.031	2.83	1.83	0.89
MC R1	48397		100-Yr	8900.00	6276.00	6284.75	15.78	1223.86	346.17	0.94	1.23	0.035	3.07	1.95	1.01
MC R1	47893		2-Yr	730.00	6271.00	6274.95	5.80	132.21	46.51	0.55	0.46	0.027	0.57	0.13	0.14
MC R1	47893		5-Yr	1500.00	6271.00	6276.45	7.78	214.31	64.13	0.61	0.60	0.025	0.91	0.24	0.25
MC R1	47893		10-Yr	2400.00	6271.00	6277.26	10.20	271.75	83.97	0.75	0.83	0.023	1.48	0.27	0.43
MC R1	47893		50-Yr	6300.00	6271.00	6280.20	14.00	795.10	214.56	0.83	1.04	0.030	2.44	0.82	0.74
MC R1	47893		100-Yr	8900.00	6271.00	6281.41	15.80	1062.19	223.75	0.88	1.42	0.035	2.97	1.19	1.11
MC R1	47435		2-Yr	750.00	6270.00	6273.82	6.06	144.69	51.61	0.55	0.43	0.028	0.60	0.30	0.30
MC R1	47435		5-Yr	1600.00	6270.00	6275.28	7.96	308.21	224.66	0.61	0.24	0.019	0.93	0.46	0.13
MC R1	47435		10-Yr	2500.00	6270.00	6276.38	8.59	594.17	287.04	0.60	0.33	0.029	1.01	0.51	0.24
MC R1	47435		50-Yr	6500.00	6270.00	6279.90	9.26	1726.24	344.42	0.52	0.51	0.047	1.02	0.53	0.47
MC R1	47435		100-Yr	9200.00	6270.00	6281.72	9.71	2374.83	367.73	0.50	0.58	0.050	1.06	0.55	0.54
MC R1	47050		2-Yr	750.00	6268.94	6271.38	7.81	125.66	82.75	0.91	1.78	0.045	2.66	1.28	0.71
MC R1	47050		5-Yr	1600.00	6268.94	6272.50	9.99	226.72	97.30	0.96	2.61	0.050	3.80	2.23	1.44
MC R1	47050		10-Yr	2500.00	6268.94	6273.40	11.52	318.79	106.84	0.98	3.25	0.052	4.69	2.92	2.00
MC R1	47050		50-Yr	6500.00	6268.94	6276.21	15.70	656.54	133.09	1.04	5.07	0.056	7.35	4.81	3.63
MC R1	47050		100-Yr	9200.00	6268.94	6277.72	17.31	867.56	145.71	1.04	5.75	0.057	8.38	5.48	4.31
MC R1	47014		2-Yr	750.00	6266.00	6269.59	5.47	163.81	66.63	0.52	0.86	0.044	1.23	0.36	0.50
MC R1	47014		5-Yr	1600.00	6266.00	6271.29	7.09	311.04	98.83	0.55	1.11	0.046	1.83	0.63	0.78
MC R1	47014		10-Yr	2500.00	6266.00	6272.54	8.24	442.46	111.21	0.57	1.42	0.050	2.31	0.97	1.02
MC R1	47014		50-Yr	6500.00	6266.00	6275.80	12.11	854.86	140.63	0.69	2.71	0.055	4.38	2.28	2.01
MC R1	47014		100-Yr	9200.00	6266.00	6277.17	14.30	1058.12	156.02	0.76	3.54	0.056	5.85	3.13	2.61
MC R1	46582		2-Yr	750.00	6264.00	6268.44	4.95	228.77	86.06	0.44	0.27	0.035	0.40	0.08	0.21
MC R1	46582		5-Yr	1600.00	6264.00	6269.99	6.82	369.57	97.51	0.52	0.47	0.037	0.68	0.14	0.42
MC R1	46582		10-Yr	2500.00	6264.00	6271.14	8.16	551.55	190.50	0.56	0.40	0.031	0.91	0.13	0.61
MC R1	46582		50-Yr	6500.00	6264.00	6273.34	13.49	1005.27	214.30	0.80	1.21	0.041	2.26	0.75	1.59
MC R1	46582		100-Yr	9200.00	6264.00	6275.08	14.44	1388.18	229.50	0.78	1.41	0.045	2.44	1.00	1.75
MC R1	46204		2-Yr	750.00	6263.00	6266.33	9.07	92.02	45.08	0.91	0.94	0.025	1.44	0.37	0.45
MC R1	46204		5-Yr	1600.00	6263.00	6268.08	10.16	254.18	139.06	0.81	0.59	0.025	1.56	0.36	0.61

HEC-RAS Plan: Plan 07 River: Monument Creek Reach: MC R1 (Continued)

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl	Shear Total (lb/sq ft)	Mann Wtd Total	Shear Chan (lb/sq ft)	Shear LOB (lb/sq ft)	Shear ROB (lb/sq ft)
MC R1	46204	10-Yr	2500.00	6263.00	6268.89	12.12	386.32	208.86	0.90	0.69	0.027	2.10	0.47	0.88
MC R1	46204	50-Yr	6500.00	6263.00	6271.85	14.07	1108.25	261.26	0.84	1.21	0.045	2.46	1.08	1.16
MC R1	46204	100-Yr	9200.00	6263.00	6274.57	12.33	1926.30	396.88	0.64	0.74	0.044	1.73	0.88	0.26
MC R1	46044 46052.07	2-Yr	750.00	6261.25	6264.93	4.19	150.73	58.66	0.39	1.44	0.053	2.06	1.16	1.27
MC R1	46044 46052.07	5-Yr	1600.00	6261.25	6266.10	6.03	224.81	84.67	0.48	2.62	0.052	3.89	2.16	2.36
MC R1	46044 46052.07	10-Yr	2500.00	6261.25	6267.61	6.50	414.58	163.16	0.46	1.65	0.047	4.14	1.10	2.21
MC R1	46044 46052.07	50-Yr	6500.00	6261.25	6271.71	5.52	1594.68	325.08	0.30	1.18	0.065	2.52	1.07	1.27
MC R1	46044 46052.07	100-Yr	9200.00	6261.25	6274.67	5.55	2742.53	547.18	0.27	0.88	0.069	2.35	1.25	0.46
MC R1	46022 46022.89	2-Yr	750.00	6261.00	6264.94	3.21	191.23	65.03	0.28	0.87	0.053	1.18	0.73	0.81
MC R1	46022 46022.89	5-Yr	1600.00	6261.00	6266.04	5.16	268.91	110.83	0.41	1.34	0.042	2.81	0.78	1.84
MC R1	46022 46022.89	10-Yr	2500.00	6261.00	6267.17	6.33	417.71	168.76	0.45	1.57	0.046	3.95	1.04	2.28
MC R1	46022 46022.89	50-Yr	6500.00	6261.00	6271.75	5.06	1718.83	334.75	0.27	1.00	0.065	2.10	0.93	0.99
MC R1	46022 46022.89	100-Yr	9200.00	6261.00	6274.63	5.16	2862.62	555.08	0.25	0.76	0.067	2.02	1.09	0.42
MC R1	45642	2-Yr	750.00	6259.00	6262.14	8.97	93.93	45.14	0.93	1.03	0.027	1.44	0.37	1.03
MC R1	45642	5-Yr	1600.00	6259.00	6264.55	8.38	227.13	91.98	0.64	0.54	0.023	1.03	0.47	0.31
MC R1	45642	10-Yr	2500.00	6259.00	6266.05	8.96	399.35	273.57	0.61	0.48	0.025	1.08	0.56	0.30
MC R1	45642	50-Yr	6500.00	6259.00	6271.48	7.22	2057.89	335.80	0.36	0.29	0.043	0.58	0.33	0.26
MC R1	45642	100-Yr	9200.00	6259.00	6274.09	7.70	3104.37	499.55	0.35	0.26	0.044	0.62	0.36	0.23
MC R1	45487	2-Yr	750.00	6259.00	6262.32	3.07	281.31	113.24	0.30	0.13	0.029	0.16	0.07	0.12
MC R1	45487	5-Yr	1600.00	6259.00	6264.98	2.93	657.90	158.88	0.21	0.08	0.028	0.12	0.06	0.08
MC R1	45487	10-Yr	2500.00	6259.00	6266.44	3.44	918.62	199.79	0.22	0.10	0.027	0.15	0.08	0.09
MC R1	45487	50-Yr	6500.00	6259.00	6271.54	4.48	2081.45	265.33	0.22	0.14	0.031	0.22	0.12	0.13
MC R1	45487	100-Yr	9200.00	6259.00	6274.15	4.97	2841.37	321.07	0.23	0.15	0.032	0.25	0.14	0.14
MC R1	45423	2-Yr	750.00	6258.06	6262.11	4.25	228.91	79.44	0.40	0.25	0.034	0.30	0.10	0.22
MC R1	45423	5-Yr	1600.00	6258.06	6264.67	5.13	467.53	126.71	0.37	0.22	0.032	0.37	0.14	0.15
MC R1	45423	10-Yr	2500.00	6258.06	6266.02	6.15	662.60	151.10	0.40	0.29	0.034	0.49	0.21	0.21
MC R1	45423	50-Yr	6500.00	6258.06	6270.96	7.93	1465.32	173.01	0.40	0.47	0.041	0.69	0.35	0.41
MC R1	45423	100-Yr	9200.00	6258.06	6273.46	8.82	1910.96	183.45	0.40	0.55	0.043	0.81	0.42	0.50
MC R1	45400		Bridge											
MC R1	45302	2-Yr	750.00	6256.00	6260.41	8.34	101.45	36.66	0.77	0.86	0.028	1.15	0.31	0.36
MC R1	45302	5-Yr	1600.00	6256.00	6262.28	11.26	186.10	59.22	0.84	1.03	0.027	1.83	0.53	0.48
MC R1	45302	10-Yr	2500.00	6256.00	6264.31	11.57	381.40	132.73	0.74	0.67	0.028	1.75	0.37	0.50
MC R1	45302	50-Yr	6500.00	6256.00	6270.23	10.79	1282.50	164.68	0.52	0.72	0.044	1.25	0.62	0.64
MC R1	45302	100-Yr	9200.00	6256.00	6272.65	11.73	1690.48	172.80	0.52	0.85	0.046	1.40	0.76	0.77
MC R1	45228	2-Yr	750.00	6256.00	6260.66	5.89	219.39	70.50	0.48	0.35	0.039	0.53	0.32	0.24
MC R1	45228	5-Yr	1600.00	6256.00	6262.98	7.42	402.11	88.22	0.50	0.47	0.042	0.74	0.46	0.32
MC R1	45228	10-Yr	2500.00	6256.00	6264.20	9.65	592.48	162.43	0.59	0.52	0.040	1.18	0.53	0.34
MC R1	45228	50-Yr	6500.00	6256.00	6270.50	8.97	1714.27	192.40	0.42	0.51	0.051	0.84	0.50	0.44
MC R1	45228	100-Yr	9200.00	6256.00	6272.93	9.94	2193.60	202.16	0.43	0.61	0.052	0.98	0.61	0.55
MC R1	45215		Bridge											
MC R1	45207	2-Yr	750.00	6256.00	6260.51	5.68	173.91	57.89	0.48	0.60	0.040	0.89	0.32	0.37

HEC-RAS Plan: Plan 07 River: Monument Creek Reach: MC R1 (Continued)

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl	Shear Total (lb/sq ft)	Mann Wtd Total	Shear Chan (lb/sq ft)	Shear LOB (lb/sq ft)	Shear ROB (lb/sq ft)
MC R1	43534	2-Yr	750.00	6241.00	6244.44	6.33	151.23	70.39	0.60	0.57	0.032	0.92	0.42	0.44
MC R1	43534	5-Yr	1600.00	6241.00	6246.03	7.43	272.60	81.72	0.58	0.73	0.033	1.12	0.62	0.60
MC R1	43534	10-Yr	2500.00	6241.00	6247.30	8.29	381.22	89.58	0.58	0.86	0.034	1.29	0.77	0.71
MC R1	43534	50-Yr	6500.00	6241.00	6250.51	11.76	698.36	106.92	0.67	1.51	0.034	2.26	1.42	1.29
MC R1	43534	100-Yr	9200.00	6241.00	6252.28	12.84	894.63	115.02	0.67	1.70	0.033	2.54	1.60	1.48
MC R1	43528	2-Yr	750.00	6241.00	6244.45	6.05	156.48	70.03	0.57	0.54	0.033	0.84	0.44	0.41
MC R1	43528	5-Yr	1600.00	6241.00	6246.02	7.26	275.26	80.02	0.57	0.72	0.034	1.07	0.64	0.58
MC R1	43528	10-Yr	2500.00	6241.00	6247.28	8.21	380.84	87.83	0.58	0.86	0.034	1.27	0.80	0.69
MC R1	43528	50-Yr	6500.00	6241.00	6250.46	11.87	689.63	105.75	0.68	1.55	0.034	2.31	1.49	1.29
MC R1	43528	100-Yr	9200.00	6241.00	6252.25	12.75	887.42	114.19	0.67	1.68	0.033	2.51	1.61	1.44
MC R1	43523		Bridge											
MC R1	43518	2-Yr	750.00	6241.00	6244.33	6.13	153.29	69.37	0.59	0.57	0.033	0.87	0.47	0.45
MC R1	43518	5-Yr	1600.00	6241.00	6245.92	7.23	271.66	79.27	0.57	0.73	0.033	1.06	0.66	0.60
MC R1	43518	10-Yr	2500.00	6241.00	6247.18	8.11	375.97	86.05	0.57	0.86	0.033	1.24	0.80	0.71
MC R1	43518	50-Yr	6500.00	6241.00	6250.33	11.71	675.67	103.47	0.68	1.53	0.033	2.25	1.50	1.27
MC R1	43518	100-Yr	9200.00	6241.00	6252.12	12.91	868.57	112.61	0.68	1.74	0.033	2.59	1.70	1.46
MC R1	43512	2-Yr	750.00	6241.00	6244.13	7.09	132.31	64.62	0.71	0.77	0.033	1.19	0.60	0.61
MC R1	43512	5-Yr	1600.00	6241.00	6245.73	8.14	246.47	77.10	0.66	0.91	0.034	1.37	0.81	0.71
MC R1	43512	10-Yr	2500.00	6241.00	6247.00	8.96	349.79	85.04	0.64	1.03	0.034	1.53	0.96	0.82
MC R1	43512	50-Yr	6500.00	6241.00	6250.14	12.32	644.93	102.46	0.72	1.69	0.033	2.51	1.64	1.38
MC R1	43512	100-Yr	9200.00	6241.00	6251.92	13.45	835.13	111.14	0.72	1.88	0.033	2.82	1.84	1.57
MC R1	43506		Bridge											
MC R1	43499	2-Yr	750.00	6240.89	6243.65	8.77	102.80	53.88	0.94	1.35	0.033	1.92	1.06	1.01
MC R1	43499	5-Yr	1600.00	6240.89	6245.09	10.36	188.04	64.70	0.90	1.61	0.033	2.32	1.44	1.12
MC R1	43499	10-Yr	2500.00	6240.89	6245.99	12.20	250.29	73.13	0.96	2.02	0.033	3.01	1.95	1.32
MC R1	43499	50-Yr	6500.00	6240.89	6249.86	13.20	618.46	106.53	0.78	1.85	0.033	2.91	1.95	1.38
MC R1	43499	100-Yr	9200.00	6240.89	6251.79	13.93	832.09	114.20	0.75	1.98	0.033	3.04	2.02	1.59
MC R1	43385	2-Yr	750.00	6239.00	6242.77	6.75	127.90	47.23	0.62	0.73	0.032	1.02	0.47	0.42
MC R1	43385	5-Yr	1600.00	6239.00	6244.92	7.58	262.39	74.56	0.55	0.65	0.031	1.11	0.46	0.42
MC R1	43385	10-Yr	2500.00	6239.00	6245.48	10.41	306.43	83.09	0.72	1.14	0.031	2.02	0.91	0.67
MC R1	43385	50-Yr	6500.00	6239.00	6248.16	16.40	575.01	112.29	0.96	2.47	0.034	4.46	2.37	1.61
MC R1	43385	100-Yr	9200.00	6239.00	6249.74	18.43	759.23	121.35	0.99	3.07	0.037	5.35	2.95	2.20
MC R1	42697	2-Yr	1300.00	6235.00	6239.68	7.46	202.79	81.01	0.62	0.78	0.031	1.17	0.66	0.27
MC R1	42697	5-Yr	2400.00	6235.00	6240.30	11.39	269.82	124.84	0.89	1.11	0.025	2.62	1.22	0.39
MC R1	42697	10-Yr	3500.00	6235.00	6241.44	11.23	427.80	147.15	0.79	1.11	0.029	2.38	0.99	0.68
MC R1	42697	50-Yr	7600.00	6235.00	6243.42	14.62	733.16	161.14	0.90	2.03	0.033	3.68	1.83	1.57
MC R1	42697	100-Yr	9900.00	6235.00	6244.29	15.98	876.00	165.98	0.93	2.45	0.034	4.25	2.21	1.99
MC R1	42376	2-Yr	1300.00	6233.00	6236.86	9.98	139.57	86.82	0.93	1.79	0.032	2.26	0.73	0.75
MC R1	42376	5-Yr	2400.00	6233.00	6238.59	9.52	472.16	249.65	0.73	0.64	0.033	1.80	0.31	0.51
MC R1	42376	10-Yr	3500.00	6233.00	6239.26	10.90	641.22	258.52	0.79	0.95	0.039	2.27	0.56	0.81
MC R1	42376	50-Yr	7600.00	6233.00	6241.01	14.45	1110.32	278.43	0.92	1.90	0.048	3.67	1.43	1.73
MC R1	42376	100-Yr	9900.00	6233.00	6241.75	15.93	1320.52	285.07	0.96	2.37	0.050	4.32	1.87	2.19

HEC-RAS Plan: Plan 07 River: Monument Creek Reach: MC R1 (Continued)

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl	Shear Total (lb/sq ft)	Mann Wtd Total	Shear Chan (lb/sq ft)	Shear LOB (lb/sq ft)	Shear ROB (lb/sq ft)
MC R1	42137	2-Yr	1300.00	6231.00	6234.51	9.67	154.53	105.49	0.95	1.65	0.033	2.19	1.46	1.13
MC R1	42137	5-Yr	2400.00	6231.00	6235.79	11.42	240.47	173.82	0.95	1.96	0.032	2.73	1.71	1.42
MC R1	42137	10-Yr	3500.00	6231.00	6236.74	11.02	587.37	277.47	0.83	0.92	0.034	2.39	1.38	0.71
MC R1	42137	50-Yr	7600.00	6231.00	6239.29	11.70	1358.63	324.54	0.73	1.23	0.047	2.37	1.16	1.12
MC R1	42137	100-Yr	9900.00	6231.00	6240.63	11.73	1813.85	352.79	0.68	1.24	0.050	2.26	1.11	1.16
MC R1	41677	2-Yr	1300.00	6225.00	6230.35	5.02	300.05	84.29	0.39	1.77	0.071	2.63	0.74	1.88
MC R1	41677	5-Yr	2400.00	6225.00	6232.19	5.96	479.91	110.46	0.40	2.03	0.068	3.36	1.06	2.37
MC R1	41677	10-Yr	3500.00	6225.00	6233.45	6.75	626.09	121.59	0.41	2.48	0.069	4.07	1.50	2.82
MC R1	41677	50-Yr	7600.00	6225.00	6236.78	8.52	1077.44	162.44	0.44	3.60	0.070	5.80	2.78	3.41
MC R1	41677	100-Yr	9900.00	6225.00	6238.25	9.10	1293.93	171.81	0.44	4.11	0.071	6.37	3.27	4.00
MC R1	41414	2-Yr	1300.00	6224.00	6227.73	8.25	182.24	71.84	0.76	1.05	0.031	1.53	0.62	0.54
MC R1	41414	5-Yr	2400.00	6224.00	6228.87	10.96	276.81	101.18	0.88	1.40	0.030	2.47	0.82	0.87
MC R1	41414	10-Yr	3500.00	6224.00	6229.85	12.46	391.49	123.41	0.91	1.63	0.033	3.00	1.07	1.18
MC R1	41414	50-Yr	7600.00	6224.00	6232.44	16.16	734.81	141.10	0.98	2.74	0.040	4.46	2.27	1.94
MC R1	41414	100-Yr	9900.00	6224.00	6233.58	17.73	900.25	151.06	1.01	3.19	0.041	5.14	2.82	2.11
MC R1	41204	2-Yr	1300.00	6222.00	6226.15	8.51	187.85	87.93	0.74	1.05	0.032	2.05	0.45	0.93
MC R1	41204	5-Yr	2400.00	6222.00	6227.27	10.37	290.80	96.97	0.80	1.58	0.034	2.81	0.98	1.28
MC R1	41204	10-Yr	3500.00	6222.00	6228.20	11.50	387.31	110.15	0.82	1.83	0.035	3.27	1.25	1.48
MC R1	41204	50-Yr	7600.00	6222.00	6230.50	15.02	659.50	124.79	0.91	3.06	0.038	5.02	2.47	2.30
MC R1	41204	100-Yr	9900.00	6222.00	6231.51	16.48	787.43	128.84	0.94	3.66	0.039	5.82	3.07	2.69
MC R1	40723	2-Yr	1300.00	6219.00	6222.38	8.40	174.98	67.46	0.80	1.23	0.033	1.63	0.76	0.84
MC R1	40723	5-Yr	2400.00	6219.00	6223.84	9.66	289.10	87.91	0.77	1.28	0.031	1.91	0.80	0.97
MC R1	40723	10-Yr	3500.00	6219.00	6224.87	10.76	393.83	117.90	0.78	1.25	0.029	2.22	0.76	1.10
MC R1	40723	50-Yr	7600.00	6219.00	6227.95	12.62	872.06	186.57	0.74	1.37	0.033	2.66	1.34	0.76
MC R1	40723	100-Yr	9900.00	6219.00	6229.34	13.28	1166.63	235.08	0.73	1.33	0.033	2.80	1.54	0.73
MC R1	40234	2-Yr	1300.00	6214.00	6217.97	8.94	149.33	51.41	0.87	1.64	0.033	1.87	0.49	0.33
MC R1	40234	5-Yr	2400.00	6214.00	6219.29	11.39	222.23	59.18	0.93	2.18	0.032	2.71	0.82	0.70
MC R1	40234	10-Yr	3500.00	6214.00	6220.59	12.41	317.68	97.45	0.90	1.63	0.026	2.97	0.49	0.88
MC R1	40234	50-Yr	7600.00	6214.00	6223.77	15.20	699.64	145.93	0.89	2.02	0.032	3.85	1.52	0.78
MC R1	40234	100-Yr	9900.00	6214.00	6225.06	16.39	898.29	158.17	0.90	2.33	0.035	4.28	1.93	1.10
MC R1	39806	2-Yr	1300.00	6211.00	6214.27	8.73	163.29	59.87	0.85	1.46	0.034	1.78	0.98	1.00
MC R1	39806	5-Yr	2400.00	6211.00	6215.86	10.14	266.45	70.26	0.81	1.61	0.033	2.10	1.06	1.14
MC R1	39806	10-Yr	3500.00	6211.00	6216.62	12.23	326.87	92.64	0.91	1.80	0.029	2.91	0.88	1.54
MC R1	39806	50-Yr	7600.00	6211.00	6219.35	15.51	640.80	125.82	0.95	2.46	0.033	4.11	1.67	2.14
MC R1	39806	100-Yr	9900.00	6211.00	6220.52	16.92	791.31	131.91	0.97	2.89	0.034	4.68	2.12	2.46
MC R1	39354	2-Yr	1300.00	6207.00	6210.63	9.49	155.03	56.52	0.90	1.17	0.029	1.51	0.74	0.87
MC R1	39354	5-Yr	2400.00	6207.00	6212.08	12.32	250.90	97.41	0.98	1.17	0.025	2.27	1.11	0.62
MC R1	39354	10-Yr	3500.00	6207.00	6213.52	11.09	465.67	217.21	0.77	0.56	0.021	1.69	0.73	0.35
MC R1	39354	50-Yr	7600.00	6207.00	6215.62	13.72	944.11	234.85	0.83	1.11	0.031	2.35	0.96	0.93
MC R1	39354	100-Yr	9900.00	6207.00	6217.24	13.03	1329.77	242.49	0.72	1.07	0.035	2.00	0.89	0.97
MC R1	38970	2-Yr	1300.00	6205.30	6209.09	6.96	199.50	65.76	0.65	0.68	0.028	0.81	0.34	0.37
MC R1	38970	5-Yr	2400.00	6205.30	6210.24	9.59	291.37	125.55	0.78	0.68	0.022	1.40	0.57	0.17

HEC-RAS Plan: Plan 07 River: Monument Creek Reach: MC R1 (Continued)

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl	Shear Total (lb/sq ft)	Mann Wtd Total	Shear Chan (lb/sq ft)	Shear LOB (lb/sq ft)	Shear ROB (lb/sq ft)
MC R1	38970	10-Yr	3500.00	6205.30	6211.44	9.65	457.41	149.47	0.70	0.67	0.024	1.31	0.48	0.35
MC R1	38970	50-Yr	7600.00	6205.30	6214.90	9.93	1028.26	175.36	0.57	0.74	0.029	1.19	0.53	0.58
MC R1	38970	100-Yr	9900.00	6205.30	6216.54	10.15	1323.45	183.10	0.54	0.76	0.030	1.18	0.57	0.64
MC R1	38828	2-Yr	1300.00	6205.00	6208.67	6.61	222.11	89.59	0.61	0.49	0.026	0.72	0.38	0.17
MC R1	38828	5-Yr	2400.00	6205.00	6210.05	7.94	357.52	108.68	0.62	0.61	0.027	0.94	0.44	0.33
MC R1	38828	10-Yr	3500.00	6205.00	6211.17	8.67	485.95	121.36	0.62	0.67	0.027	1.05	0.46	0.44
MC R1	38828	50-Yr	7600.00	6205.00	6214.52	9.99	937.79	144.55	0.57	0.81	0.028	1.20	0.59	0.65
MC R1	38828	100-Yr	9900.00	6205.00	6216.10	10.53	1173.10	152.16	0.56	0.87	0.029	1.27	0.66	0.72
MC R1	38800		Bridge											
MC R1	38790	2-Yr	1300.00	6205.00	6208.03	7.47	186.49	72.06	0.76	0.83	0.029	0.98	0.61	0.51
MC R1	38790	5-Yr	2400.00	6205.00	6209.29	9.24	284.11	83.16	0.79	1.05	0.028	1.34	0.80	0.60
MC R1	38790	10-Yr	3500.00	6205.00	6210.33	10.45	376.22	94.62	0.80	1.17	0.027	1.59	0.88	0.69
MC R1	38790	50-Yr	7600.00	6205.00	6212.88	14.35	651.19	118.51	0.90	1.81	0.029	2.63	1.30	1.28
MC R1	38790	100-Yr	9900.00	6205.00	6213.85	16.31	768.91	124.80	0.97	2.24	0.030	3.27	1.64	1.66
MC R1	38751	2-Yr	1300.00	6204.75	6207.40	8.81	155.35	69.72	0.99	1.31	0.029	1.47	1.10	0.95
MC R1	38751	5-Yr	2400.00	6204.75	6208.57	10.67	240.38	75.74	0.99	1.62	0.029	1.89	1.32	1.14
MC R1	38751	10-Yr	3500.00	6204.75	6209.57	11.82	319.43	82.60	0.97	1.75	0.028	2.13	1.39	1.18
MC R1	38751	50-Yr	7600.00	6204.75	6212.31	15.15	605.46	120.41	0.98	2.01	0.028	3.00	1.33	1.57
MC R1	38751	100-Yr	9900.00	6204.75	6213.60	16.34	765.52	126.53	0.98	2.26	0.029	3.31	1.63	1.78
MC R1	38578	2-Yr	1400.00	6202.57	6206.32	7.61	201.74	70.54	0.72	0.81	0.029	0.98	0.28	0.68
MC R1	38578	5-Yr	2500.00	6202.57	6207.54	9.59	294.19	90.47	0.78	0.97	0.027	1.41	0.45	0.72
MC R1	38578	10-Yr	3700.00	6202.57	6208.55	10.94	395.24	103.57	0.81	1.14	0.027	1.71	0.55	0.88
MC R1	38578	50-Yr	8100.00	6202.57	6211.68	13.53	803.30	148.72	0.80	1.37	0.029	2.26	0.64	1.39
MC R1	38578	100-Yr	11000.00	6202.57	6213.45	14.53	1074.67	158.47	0.79	1.55	0.031	2.45	0.90	1.57
MC R1	38129	2-Yr	1400.00	6200.00	6202.93	9.20	154.39	60.24	0.97	1.42	0.029	1.54	0.29	0.32
MC R1	38129	5-Yr	2500.00	6200.00	6204.28	10.78	241.11	70.41	0.94	1.53	0.027	1.85	0.44	0.47
MC R1	38129	10-Yr	3700.00	6200.00	6205.50	11.82	366.96	124.70	0.90	1.12	0.024	2.04	0.42	0.38
MC R1	38129	50-Yr	8100.00	6200.00	6208.40	15.19	757.68	142.50	0.93	1.86	0.032	2.92	1.33	1.07
MC R1	38129	100-Yr	11000.00	6200.00	6209.88	16.87	972.86	148.95	0.95	2.25	0.034	3.41	1.77	1.41
MC R1	37657	2-Yr	1400.00	6199.00	6202.43	3.37	452.66	160.55	0.32	0.16	0.029	0.19	0.05	0.12
MC R1	37657	5-Yr	2500.00	6199.00	6203.65	4.34	663.68	187.11	0.36	0.22	0.029	0.29	0.08	0.16
MC R1	37657	10-Yr	3700.00	6199.00	6204.72	5.13	878.00	217.15	0.38	0.27	0.029	0.38	0.11	0.20
MC R1	37657	50-Yr	8100.00	6199.00	6207.52	7.12	1626.52	300.22	0.43	0.40	0.032	0.63	0.24	0.31
MC R1	37657	100-Yr	11000.00	6199.00	6208.90	8.08	2052.23	318.80	0.45	0.51	0.034	0.78	0.31	0.41
MC R1	37500		Bridge											
MC R1	37300	2-Yr	1400.00	6197.20	6200.33	5.07	320.97	162.10	0.55	0.36	0.029	0.48	0.22	0.22
MC R1	37300	5-Yr	2500.00	6197.20	6201.41	6.24	510.13	185.21	0.57	0.48	0.031	0.64	0.27	0.34
MC R1	37300	10-Yr	3700.00	6197.20	6202.33	7.24	690.09	205.84	0.59	0.58	0.033	0.80	0.31	0.46
MC R1	37300	50-Yr	8100.00	6197.20	6204.76	9.94	1276.24	291.71	0.66	0.81	0.034	1.31	0.59	0.59
MC R1	37300	100-Yr	11000.00	6197.20	6206.01	11.07	1660.06	316.27	0.68	0.97	0.037	1.54	0.74	0.75
MC R1	37231	2-Yr	1400.00	6197.00	6200.17	4.75	341.85	151.30	0.49	0.34	0.031	0.44	0.11	0.23

HEC-RAS Plan: Plan 07 River: Monument Creek Reach: MC R1 (Continued)

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl	Shear Total (lb/sq ft)	Mann Wtd Total	Shear Chan (lb/sq ft)	Shear LOB (lb/sq ft)	Shear ROB (lb/sq ft)
MC R1	37231	5-Yr	2500.00	6197.00	6201.24	6.08	519.02	180.12	0.54	0.48	0.032	0.66	0.20	0.35
MC R1	37231	10-Yr	3700.00	6197.00	6202.14	7.20	694.44	209.44	0.57	0.59	0.033	0.88	0.30	0.43
MC R1	37231	50-Yr	8100.00	6197.00	6204.56	9.90	1284.86	275.14	0.64	0.94	0.037	1.47	0.67	0.70
MC R1	37231	100-Yr	11000.00	6197.00	6205.80	11.08	1632.45	285.95	0.67	1.17	0.040	1.76	0.87	0.93
MC R1	37200	Bridge												
MC R1	37163	2-Yr	1400.00	6197.00	6199.07	8.09	191.04	143.31	1.00	1.26	0.032	1.43	0.38	0.81
MC R1	37163	5-Yr	2500.00	6197.00	6200.16	8.97	395.51	222.26	0.90	0.88	0.031	1.55	0.43	0.49
MC R1	37163	10-Yr	3700.00	6197.00	6200.91	10.18	573.25	250.76	0.91	1.10	0.035	1.86	0.50	0.79
MC R1	37163	50-Yr	8100.00	6197.00	6203.00	12.83	1165.54	302.31	0.93	1.68	0.044	2.59	1.06	1.44
MC R1	37163	100-Yr	11000.00	6197.00	6203.98	14.28	1467.55	310.06	0.96	2.08	0.047	3.06	1.43	1.85
MC R1	36887	2-Yr	1400.00	6192.00	6195.01	9.48	159.02	62.83	0.96	1.79	0.033	2.15	1.23	1.38
MC R1	36887	5-Yr	2500.00	6192.00	6196.32	11.14	248.78	78.94	0.94	1.90	0.031	2.64	1.47	1.18
MC R1	36887	10-Yr	3700.00	6192.00	6197.56	11.92	424.17	309.75	0.89	1.19	0.027	2.78	1.40	0.68
MC R1	36887	50-Yr	8100.00	6192.00	6199.69	13.39	1376.78	462.14	0.85	1.21	0.042	3.15	0.95	1.24
MC R1	36887	100-Yr	11000.00	6192.00	6200.42	15.02	1714.53	470.86	0.91	1.65	0.047	3.84	1.36	1.69
MC R1	36519	2-Yr	1400.00	6185.00	6188.60	9.81	151.32	48.88	0.92	1.85	0.033	2.19	1.05	0.70
MC R1	36519	5-Yr	2500.00	6185.00	6190.14	11.75	230.70	53.85	0.92	2.24	0.033	2.78	1.34	0.97
MC R1	36519	10-Yr	3700.00	6185.00	6191.48	13.27	305.84	58.23	0.92	2.55	0.032	3.28	1.58	1.17
MC R1	36519	50-Yr	8100.00	6185.00	6196.04	13.09	1384.44	506.64	0.70	0.66	0.031	2.68	0.51	0.47
MC R1	36519	100-Yr	11000.00	6185.00	6197.07	14.35	1921.11	529.53	0.73	0.94	0.039	3.12	0.80	0.62
MC R1	36063	2-Yr	1500.00	6182.00	6186.57	6.87	235.32	61.49	0.58	0.85	0.034	1.00	0.22	0.77
MC R1	36063	5-Yr	2700.00	6182.00	6187.93	9.18	321.48	65.61	0.67	1.35	0.034	1.64	0.44	1.23
MC R1	36063	10-Yr	4000.00	6182.00	6188.94	11.34	389.82	68.78	0.77	1.91	0.034	2.36	0.67	1.74
MC R1	36063	50-Yr	9000.00	6182.00	6192.85	14.26	984.94	298.99	0.77	0.99	0.025	3.21	0.61	0.82
MC R1	36063	100-Yr	12000.00	6182.00	6193.90	16.08	1303.49	307.38	0.83	1.42	0.031	3.96	1.01	1.25
MC R1	35824	2-Yr	1500.00	6180.00	6184.88	9.97	194.37	75.16	0.81	1.13	0.030	2.07	0.47	0.79
MC R1	35824	5-Yr	2700.00	6180.00	6186.05	12.17	287.53	83.78	0.89	1.65	0.031	2.87	0.66	1.30
MC R1	35824	10-Yr	4000.00	6180.00	6187.12	13.71	379.49	88.38	0.92	2.08	0.033	3.44	0.80	1.76
MC R1	35824	50-Yr	9000.00	6180.00	6190.15	17.92	660.36	113.16	1.00	3.37	0.034	5.20	1.22	3.12
MC R1	35824	100-Yr	12000.00	6180.00	6192.26	17.97	1099.78	254.01	0.91	1.74	0.029	4.91	1.13	1.47
MC R1	35526	2-Yr	1500.00	6179.00	6183.61	5.61	298.23	97.87	0.48	0.48	0.031	0.67	0.24	0.20
MC R1	35526	5-Yr	2700.00	6179.00	6185.28	6.51	472.80	108.29	0.47	0.59	0.032	0.81	0.38	0.32
MC R1	35526	10-Yr	4000.00	6179.00	6186.72	7.25	632.72	113.17	0.47	0.70	0.033	0.94	0.51	0.41
MC R1	35526	50-Yr	9000.00	6179.00	6190.18	10.06	1075.64	157.51	0.54	0.98	0.030	1.59	0.99	0.42
MC R1	35526	100-Yr	12000.00	6179.00	6191.77	11.25	1332.76	164.85	0.56	1.20	0.032	1.90	1.21	0.63
MC R1	35043	2-Yr	1500.00	6178.00	6182.37	5.79	282.58	72.99	0.49	0.61	0.035	0.71	0.53	0.52
MC R1	35043	5-Yr	2700.00	6178.00	6183.82	7.65	392.33	78.22	0.56	0.94	0.034	1.13	0.80	0.79
MC R1	35043	10-Yr	4000.00	6178.00	6185.04	9.21	493.38	137.30	0.61	0.76	0.025	1.53	0.36	1.03
MC R1	35043	50-Yr	9000.00	6178.00	6188.48	12.10	1002.53	156.58	0.66	1.38	0.033	2.32	1.03	1.38
MC R1	35043	100-Yr	12000.00	6178.00	6190.04	13.40	1251.04	162.25	0.68	1.68	0.036	2.72	1.35	1.58
MC R1	34614	2-Yr	1500.00	6177.00	6179.41	8.67	175.63	79.11	1.01	1.89	0.035	1.98	1.90	0.33
MC R1	34614	5-Yr	2700.00	6177.00	6180.52	10.43	266.20	84.26	0.99	2.30	0.034	2.51	2.33	0.64

HEC-RAS Plan: Plan 07 River: Monument Creek Reach: MC R1 (Continued)

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Vel Chnl	Flow Area	Top Width	Froude # Chl	Shear Total	Mann Wtd Total	Shear Chan	Shear LOB	Shear ROB
			(cfs)	(ft)	(ft)	(ft/s)	(sq ft)	(ft)		(lb/sq ft)		(lb/sq ft)	(lb/sq ft)	(lb/sq ft)
MC R1	34614	10-Yr	4000.00	6177.00	6181.52	11.76	353.18	89.98	0.99	2.57	0.033	2.93	2.64	0.82
MC R1	34614	50-Yr	9000.00	6177.00	6184.65	14.78	731.19	153.13	0.95	2.42	0.031	3.86	3.19	0.99
MC R1	34614	100-Yr	12000.00	6177.00	6186.06	16.15	955.18	164.37	0.95	2.80	0.033	4.36	3.47	1.49
MC R1	34284	2-Yr	1500.00	6173.00	6177.43	4.53	368.72	105.81	0.38	0.25	0.028	0.32	0.18	0.14
MC R1	34284	5-Yr	2700.00	6173.00	6179.08	5.51	551.91	117.12	0.39	0.33	0.028	0.42	0.26	0.19
MC R1	34284	10-Yr	4000.00	6173.00	6180.64	6.15	749.47	135.93	0.39	0.35	0.028	0.49	0.31	0.19
MC R1	34284	50-Yr	9000.00	6173.00	6184.70	8.24	1389.82	176.46	0.42	0.51	0.029	0.76	0.41	0.36
MC R1	34284	100-Yr	12000.00	6173.00	6186.84	8.96	1781.50	189.35	0.42	0.57	0.031	0.85	0.46	0.43
MC R1	34256	2-Yr	1500.00	6173.00	6177.45	3.98	425.60	126.59	0.33	0.19	0.028	0.25	0.13	0.13
MC R1	34256	5-Yr	2700.00	6173.00	6179.13	4.77	646.58	137.32	0.34	0.24	0.029	0.32	0.19	0.17
MC R1	34256	10-Yr	4000.00	6173.00	6180.71	5.34	873.69	150.40	0.34	0.28	0.029	0.37	0.24	0.18
MC R1	34256	50-Yr	9000.00	6173.00	6184.82	7.22	1563.30	184.43	0.37	0.42	0.030	0.58	0.34	0.31
MC R1	34256	100-Yr	12000.00	6173.00	6186.97	7.90	1975.88	198.75	0.37	0.47	0.031	0.66	0.39	0.36
MC R1	34235		Bridge											
MC R1	34223	2-Yr	1500.00	6172.26	6176.83	4.03	417.65	132.84	0.35	0.34	0.037	0.46	0.20	0.25
MC R1	34223	5-Yr	2700.00	6172.26	6178.49	4.71	647.02	143.78	0.34	0.42	0.038	0.56	0.31	0.31
MC R1	34223	10-Yr	4000.00	6172.26	6180.04	5.20	877.82	154.15	0.34	0.48	0.038	0.63	0.37	0.35
MC R1	34223	50-Yr	9000.00	6172.26	6184.10	6.87	1573.82	187.05	0.36	0.68	0.039	0.95	0.54	0.54
MC R1	34223	100-Yr	12000.00	6172.26	6186.25	7.43	1989.68	199.17	0.35	0.75	0.040	1.05	0.60	0.61
MC R1	34194	2-Yr	1600.00	6172.00	6176.71	4.54	402.47	125.32	0.39	0.44	0.038	0.58	0.28	0.26
MC R1	34194	5-Yr	2900.00	6172.00	6178.32	5.54	610.76	134.48	0.40	0.60	0.039	0.77	0.45	0.38
MC R1	34194	10-Yr	4400.00	6172.00	6179.80	6.43	819.59	151.08	0.42	0.71	0.039	0.96	0.55	0.45
MC R1	34194	50-Yr	10000.00	6172.00	6183.74	8.62	1552.71	202.21	0.45	1.01	0.041	1.50	0.76	0.79
MC R1	34194	100-Yr	14000.00	6172.00	6185.73	9.83	1966.17	212.37	0.48	1.27	0.043	1.85	1.01	1.01
MC R1	34003	2-Yr	1600.00	6172.00	6175.92	6.06	287.28	94.26	0.55	0.64	0.033	0.81	0.30	0.40
MC R1	34003	5-Yr	2900.00	6172.00	6177.47	7.23	441.96	104.75	0.55	0.80	0.033	1.04	0.47	0.50
MC R1	34003	10-Yr	4400.00	6172.00	6178.91	8.15	601.03	118.29	0.55	0.89	0.032	1.22	0.54	0.58
MC R1	34003	50-Yr	10000.00	6172.00	6182.65	10.71	1145.18	163.28	0.58	1.18	0.032	1.81	0.81	0.83
MC R1	34003	100-Yr	14000.00	6172.00	6184.42	12.35	1445.20	176.16	0.62	1.49	0.034	2.29	1.09	1.04
MC R1	33646	2-Yr	1600.00	6171.00	6174.41	6.13	258.87	83.92	0.62	0.91	0.035	0.90		0.92
MC R1	33646	5-Yr	3000.00	6171.00	6175.76	7.76	376.24	90.18	0.68	1.35	0.035	1.32		1.39
MC R1	33646	10-Yr	4700.00	6171.00	6176.91	9.50	534.54	164.00	0.73	1.14	0.028	1.81	0.26	1.82
MC R1	33646	50-Yr	11000.00	6171.00	6179.72	13.81	1033.23	187.76	0.86	2.28	0.035	3.32	1.32	3.06
MC R1	33646	100-Yr	15000.00	6171.00	6181.03	15.85	1284.41	195.61	0.91	2.93	0.038	4.16	1.91	3.71
MC R1	33166	2-Yr	1600.00	6169.00	6172.42	5.93	303.58	115.54	0.58	0.65	0.034	0.82	0.60	0.53
MC R1	33166	5-Yr	3000.00	6169.00	6173.52	7.87	439.73	136.97	0.66	0.95	0.033	1.31	0.88	0.70
MC R1	33166	10-Yr	4700.00	6169.00	6174.51	9.65	590.34	166.65	0.73	1.20	0.032	1.84	1.11	0.87
MC R1	33166	50-Yr	11000.00	6169.00	6177.08	13.91	1070.30	196.06	0.87	2.28	0.037	3.36	2.19	1.77
MC R1	33166	100-Yr	15000.00	6169.00	6178.27	15.96	1307.48	201.37	0.93	2.96	0.038	4.22	2.87	2.34
MC R1	32782	2-Yr	1600.00	6168.00	6171.48	4.51	401.32	189.81	0.43	0.35	0.033	0.47	0.16	0.36
MC R1	32782	5-Yr	3000.00	6168.00	6172.55	5.79	649.69	240.15	0.48	0.42	0.031	0.70	0.29	0.38
MC R1	32782	10-Yr	4700.00	6168.00	6173.56	6.83	899.93	256.09	0.51	0.58	0.034	0.91	0.36	0.57

HEC-RAS Plan: Plan 07 River: Monument Creek Reach: MC R1 (Continued)

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl	Shear Total (lb/sq ft)	Mann Wtd Total	Shear Chan (lb/sq ft)	Shear LOB (lb/sq ft)	Shear ROB (lb/sq ft)
MC R1	32782	50-Yr	11000.00	6168.00	6176.29	9.31	1651.16	290.18	0.57	1.02	0.038	1.49	0.65	1.07
MC R1	32782	100-Yr	15000.00	6168.00	6177.62	10.46	2045.39	300.45	0.59	1.26	0.040	1.78	0.84	1.33
MC R1	32337	2-Yr	1600.00	6167.00	6168.97	7.30	250.77	188.55	0.96	1.25	0.035	1.52	0.84	0.86
MC R1	32337	5-Yr	3000.00	6167.00	6169.77	8.77	441.13	242.13	0.96	1.37	0.036	1.94	0.77	1.32
MC R1	32337	10-Yr	4700.00	6167.00	6170.48	10.25	614.67	247.05	1.00	1.84	0.039	2.45	1.24	1.78
MC R1	32337	50-Yr	11000.00	6167.00	6172.53	13.65	1160.78	283.18	1.04	2.81	0.042	3.69	2.09	2.91
MC R1	32337	100-Yr	15000.00	6167.00	6173.57	15.11	1460.08	289.67	1.05	3.34	0.044	4.26	2.62	3.40
MC R1	32268	2-Yr	1600.00	6156.86	6160.21	9.27	256.41	145.92	0.91	1.09	0.034	2.01	0.70	1.27
MC R1	32268	5-Yr	3000.00	6156.86	6161.46	11.13	458.58	179.42	0.93	1.47	0.041	2.60	1.12	1.62
MC R1	32268	10-Yr	4700.00	6156.86	6162.48	13.01	645.75	185.08	0.98	2.08	0.046	3.32	1.74	2.03
MC R1	32268	50-Yr	11000.00	6156.86	6166.20	15.35	1360.37	199.31	0.89	2.83	0.054	3.89	2.65	2.22
MC R1	32268	100-Yr	15000.00	6156.86	6168.09	16.60	1745.90	207.78	0.88	3.17	0.055	4.28	3.05	2.32
MC R1	32247	2-Yr	1600.00	6156.00	6159.59	9.32	262.86	133.97	0.93	1.30	0.039	2.06	0.91	1.19
MC R1	32247	5-Yr	3000.00	6156.00	6160.83	11.47	445.57	163.90	0.97	1.74	0.044	2.80	1.34	1.59
MC R1	32247	10-Yr	4700.00	6156.00	6162.01	13.03	647.94	174.17	0.98	2.23	0.048	3.33	1.87	1.84
MC R1	32247	50-Yr	11000.00	6156.00	6164.92	17.74	1175.12	191.40	1.08	3.86	0.053	5.36	3.66	2.29
MC R1	32247	100-Yr	15000.00	6156.00	6167.18	18.09	1640.21	222.83	0.97	3.50	0.054	5.15	3.67	1.64
MC R1	32225	2-Yr	1600.00	6156.00	6159.18	4.96	336.16	121.58	0.49	0.50	0.033	0.58	0.47	0.29
MC R1	32225	5-Yr	3000.00	6156.00	6160.59	6.06	527.00	154.24	0.50	0.57	0.030	0.77	0.48	0.39
MC R1	32225	10-Yr	4700.00	6156.00	6162.02	6.84	766.25	172.32	0.49	0.65	0.032	0.89	0.57	0.45
MC R1	32225	50-Yr	11000.00	6156.00	6166.09	8.60	1533.50	224.52	0.48	0.79	0.032	1.19	0.83	0.31
MC R1	32225	100-Yr	15000.00	6156.00	6168.49	8.20	2130.61	260.77	0.41	0.65	0.030	1.00	0.65	0.36
MC R1	32031	2-Yr	1600.00	6154.36	6158.68	5.30	375.69	149.92	0.46	0.36	0.031	0.60	0.21	0.31
MC R1	32031	5-Yr	3000.00	6154.36	6160.23	5.92	620.30	162.43	0.43	0.45	0.032	0.68	0.33	0.35
MC R1	32031	10-Yr	4700.00	6154.36	6161.77	6.44	878.99	178.05	0.42	0.50	0.032	0.74	0.41	0.36
MC R1	32031	50-Yr	11000.00	6154.36	6165.98	7.81	1804.02	244.38	0.41	0.59	0.033	0.94	0.57	0.38
MC R1	32031	100-Yr	15000.00	6154.36	6168.58	8.04	2456.57	256.60	0.38	0.62	0.035	0.93	0.60	0.45
MC R1	31711	2-Yr	1600.00	6152.40	6157.35	7.04	273.35	106.54	0.64	0.74	0.032	1.11	0.48	0.72
MC R1	31711	5-Yr	3000.00	6152.40	6159.21	7.37	481.46	120.21	0.55	0.74	0.033	1.06	0.58	0.60
MC R1	31711	10-Yr	4700.00	6152.40	6160.79	8.11	693.96	149.91	0.53	0.75	0.031	1.18	0.61	0.50
MC R1	31711	50-Yr	11000.00	6152.40	6165.04	10.01	1472.81	200.48	0.52	0.98	0.035	1.55	0.88	0.70
MC R1	31711	100-Yr	15000.00	6152.40	6167.76	10.28	2034.87	211.96	0.48	1.01	0.037	1.52	0.95	0.74
MC R1	31561	2-Yr	1600.00	6152.00	6157.04	5.69	324.46	87.09	0.45	0.49	0.033	0.66	0.33	0.39
MC R1	31561	5-Yr	3000.00	6152.00	6158.83	7.23	496.90	109.56	0.49	0.64	0.032	0.96	0.52	0.40
MC R1	31561	10-Yr	4700.00	6152.00	6160.40	8.25	700.33	161.35	0.51	0.73	0.031	1.17	0.62	0.48
MC R1	31561	50-Yr	11000.00	6152.00	6164.25	11.22	1216.42	200.70	0.57	1.40	0.036	1.90	1.28	1.12
MC R1	31561	100-Yr	15000.00	6152.00	6166.86	11.82	1567.58	212.06	0.54	1.55	0.037	1.97	1.44	1.30
MC R1	31550		Bridge											
MC R1	31543	2-Yr	1600.00	6152.00	6156.91	5.79	317.60	85.47	0.46	0.51	0.033	0.68	0.38	0.34
MC R1	31543	5-Yr	3000.00	6152.00	6158.72	7.12	486.86	103.26	0.48	0.65	0.032	0.93	0.52	0.40
MC R1	31543	10-Yr	4700.00	6152.00	6160.24	8.44	660.67	165.21	0.52	0.83	0.032	1.22	0.78	0.50
MC R1	31543	50-Yr	11000.00	6152.00	6163.54	12.68	1045.89	200.04	0.66	1.89	0.035	2.47	1.81	1.41

HEC-RAS Plan: Plan 07 River: Monument Creek Reach: MC R1 (Continued)

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Vel Chnl	Flow Area	Top Width	Froude # Chl	Shear Total	Mann Wtd Total	Shear Chan	Shear LOB	Shear ROB
			(cfs)	(ft)	(ft)	(ft/s)	(sq ft)	(ft)		(lb/sq ft)		(lb/sq ft)	(lb/sq ft)	(lb/sq ft)
MC R1	31543	100-Yr	15000.00	6152.00	6166.01	13.58	1333.12	210.77	0.64	2.14	0.037	2.65	2.07	1.71
MC R1	31229	2-Yr	1600.00	6151.00	6154.69	9.60	173.10	57.30	0.92	1.39	0.029	1.57	0.13	0.70
MC R1	31229	5-Yr	3000.00	6151.00	6156.47	11.10	322.59	134.79	0.86	0.84	0.021	1.82	0.40	0.32
MC R1	31229	10-Yr	4700.00	6151.00	6157.77	12.80	506.59	153.25	0.89	1.15	0.026	2.25	0.60	0.67
MC R1	31229	50-Yr	11000.00	6151.00	6162.56	13.46	1449.01	210.83	0.71	1.25	0.038	2.07	0.66	1.08
MC R1	31229	100-Yr	15000.00	6151.00	6165.56	13.24	2111.87	230.17	0.62	1.18	0.041	1.85	0.58	1.11
MC R1	30730	2-Yr	1600.00	6148.00	6152.72	7.37	236.08	69.44	0.64	0.71	0.029	0.87	0.17	0.62
MC R1	30730	5-Yr	3000.00	6148.00	6154.54	8.70	422.64	136.83	0.63	0.55	0.024	1.07	0.19	0.71
MC R1	30730	10-Yr	4700.00	6148.00	6156.42	9.33	708.60	165.60	0.59	0.61	0.028	1.12	0.39	0.58
MC R1	30730	50-Yr	11000.00	6148.00	6162.22	10.29	1752.95	190.77	0.49	0.75	0.037	1.13	0.64	0.69
MC R1	30730	100-Yr	15000.00	6148.00	6165.25	10.85	2345.70	200.36	0.47	0.81	0.040	1.18	0.72	0.74
MC R1	30269	2-Yr	1600.00	6146.85	6151.93	5.54	334.20	118.42	0.45	0.27	0.024	0.46	0.15	0.15
MC R1	30269	5-Yr	3000.00	6146.85	6154.12	6.23	667.75	176.16	0.42	0.28	0.028	0.52	0.20	0.18
MC R1	30269	10-Yr	4700.00	6146.85	6156.12	6.85	1039.21	192.77	0.40	0.34	0.032	0.58	0.28	0.26
MC R1	30269	50-Yr	11000.00	6146.85	6162.07	8.11	2264.69	217.48	0.37	0.47	0.039	0.68	0.42	0.38
MC R1	30269	100-Yr	15000.00	6146.85	6165.14	8.72	2949.35	227.79	0.36	0.52	0.041	0.74	0.48	0.43
MC R1	30268 30268.5	2-Yr	1600.00	6146.85	6151.46	7.52	281.71	101.48	0.64	0.57	0.029	0.88	0.31	0.27
MC R1	30268 30268.5	5-Yr	3000.00	6146.85	6153.22	9.48	515.44	160.94	0.68	0.66	0.032	1.26	0.44	0.37
MC R1	30268 30268.5	10-Yr	4700.00	6146.85	6155.06	10.56	838.36	185.49	0.66	0.81	0.039	1.43	0.62	0.57
MC R1	30268 30268.5	50-Yr	11000.00	6146.85	6160.95	12.01	2022.94	213.59	0.57	1.04	0.051	1.53	0.93	0.84
MC R1	30268 30268.5	100-Yr	15000.00	6146.85	6163.92	12.84	2674.07	223.76	0.55	1.15	0.054	1.64	1.05	0.94
MC R1	30137	2-Yr	1600.00	6146.00	6151.23	7.15	296.34	78.00	0.56	0.57	0.033	0.76	0.62	0.44
MC R1	30137	5-Yr	3000.00	6146.00	6152.98	9.42	438.52	84.39	0.64	0.90	0.034	1.20	0.95	0.73
MC R1	30137	10-Yr	4700.00	6146.00	6154.69	11.38	588.21	90.70	0.69	1.20	0.035	1.62	1.27	1.00
MC R1	30137	50-Yr	11000.00	6146.00	6159.91	15.36	1111.05	107.27	0.73	1.80	0.037	2.52	1.84	1.58
MC R1	30137	100-Yr	15000.00	6146.00	6162.69	16.96	1416.92	113.09	0.74	2.04	0.038	2.88	2.03	1.85
MC R1	30100		Bridge											
MC R1	30029	2-Yr	1600.00	6146.00	6149.70	10.03	188.79	74.56	0.94	1.19	0.028	1.68	0.82	0.59
MC R1	30029	5-Yr	3000.00	6146.00	6151.26	12.27	313.18	83.07	0.96	1.62	0.031	2.23	1.10	1.07
MC R1	30029	10-Yr	4700.00	6146.00	6152.69	14.41	435.85	87.80	0.99	2.09	0.033	2.83	1.40	1.56
MC R1	30029	50-Yr	11000.00	6146.00	6156.79	19.37	821.29	101.07	1.05	3.18	0.035	4.35	2.10	2.65
MC R1	30029	100-Yr	15000.00	6146.00	6159.18	21.01	1073.84	109.95	1.03	3.40	0.036	4.78	2.26	2.89
MC R1	29754	2-Yr	1600.00	6141.00	6145.69	6.28	269.77	76.37	0.55	0.74	0.034	0.86	0.13	0.64
MC R1	29754	5-Yr	3000.00	6141.00	6147.43	7.90	411.36	86.71	0.58	0.98	0.033	1.21	0.32	0.85
MC R1	29754	10-Yr	4700.00	6141.00	6149.05	8.94	678.32	216.76	0.58	0.60	0.025	1.42	0.48	0.35
MC R1	29754	50-Yr	11000.00	6141.00	6153.14	10.71	1660.58	253.76	0.56	1.00	0.039	1.76	0.75	0.83
MC R1	29754	100-Yr	15000.00	6141.00	6155.13	11.50	2173.15	261.42	0.55	1.18	0.042	1.93	0.86	1.03
MC R1	29258	2-Yr	1600.00	6139.00	6143.98	6.62	254.89	65.85	0.54	0.76	0.033	0.92	0.22	0.35
MC R1	29258	5-Yr	3000.00	6139.00	6145.61	8.49	437.55	139.74	0.60	0.68	0.027	1.36	0.22	0.35
MC R1	29258	10-Yr	4700.00	6139.00	6146.98	10.11	656.72	174.91	0.65	0.89	0.031	1.81	0.39	0.65
MC R1	29258	50-Yr	11000.00	6139.00	6150.55	13.63	1327.72	197.89	0.72	1.72	0.041	2.88	1.17	1.48
MC R1	29258	100-Yr	15000.00	6139.00	6152.20	15.33	1659.65	204.42	0.75	2.18	0.043	3.49	1.61	1.93

HEC-RAS Plan: Plan 07 River: Monument Creek Reach: MC R1 (Continued)

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl	Shear Total (lb/sq ft)	Mann Wtd Total	Shear Chan (lb/sq ft)	Shear LOB (lb/sq ft)	Shear ROB (lb/sq ft)
MC R1	28940	2-Yr	1600.00	6138.00	6143.22	5.94	295.65	140.90	0.47	0.38	0.025	0.72	0.18	0.08
MC R1	28940	5-Yr	3000.00	6138.00	6144.99	7.19	628.46	207.12	0.49	0.43	0.031	0.95	0.33	0.20
MC R1	28940	10-Yr	4700.00	6138.00	6146.44	8.34	937.63	219.69	0.51	0.62	0.038	1.20	0.54	0.38
MC R1	28940	50-Yr	11000.00	6138.00	6150.20	11.06	1808.09	241.89	0.56	1.16	0.046	1.86	1.07	0.88
MC R1	28940	100-Yr	15000.00	6138.00	6151.94	12.42	2236.78	251.60	0.59	1.45	0.048	2.24	1.36	1.15
MC R1	28612	2-Yr	1600.00	6137.00	6140.67	10.01	165.40	55.30	0.96	2.02	0.033	2.32	0.32	0.92
MC R1	28612	5-Yr	3000.00	6137.00	6142.70	10.73	373.03	164.35	0.81	0.95	0.026	2.28	0.39	0.83
MC R1	28612	10-Yr	4700.00	6137.00	6144.03	12.12	609.41	190.24	0.82	1.28	0.033	2.70	0.89	0.69
MC R1	28612	50-Yr	11000.00	6137.00	6146.99	16.38	1203.63	208.55	0.93	2.58	0.044	4.37	2.25	1.73
MC R1	28612	100-Yr	15000.00	6137.00	6149.08	16.89	1649.13	218.62	0.87	2.76	0.048	4.36	2.54	1.96
MC R1	28159	2-Yr	1600.00	6134.00	6138.89	5.64	300.36	79.42	0.47	0.55	0.033	0.67	0.45	0.09
MC R1	28159	5-Yr	3000.00	6134.00	6140.75	6.79	596.01	178.42	0.47	0.45	0.031	0.86	0.40	0.23
MC R1	28159	10-Yr	4700.00	6134.00	6142.44	7.71	913.59	199.36	0.48	0.58	0.036	1.03	0.52	0.39
MC R1	28159	50-Yr	11000.00	6134.00	6146.68	10.10	1846.77	231.32	0.51	0.99	0.044	1.53	0.90	0.80
MC R1	28159	100-Yr	15000.00	6134.00	6148.78	11.16	2340.70	239.39	0.52	1.19	0.047	1.78	1.08	1.02
MC R1	27669	2-Yr	1600.00	6132.00	6136.63	8.10	205.88	113.33	0.69	1.20	0.033	1.41	1.07	0.23
MC R1	27669	5-Yr	3000.00	6132.00	6137.71	11.19	383.21	145.21	0.85	1.21	0.031	2.49	1.82	0.63
MC R1	27669	10-Yr	4700.00	6132.00	6138.81	13.54	546.83	150.73	0.94	1.90	0.037	3.42	2.42	1.26
MC R1	27669	50-Yr	11000.00	6132.00	6142.52	17.24	1169.27	182.06	0.95	2.95	0.047	4.77	3.03	2.43
MC R1	27669	100-Yr	15000.00	6132.00	6144.15	19.23	1471.12	188.14	0.99	3.65	0.049	5.65	3.43	3.15
MC R1	27460	2-Yr	1600.00	6130.94	6134.38	9.61	176.51	93.52	0.96	2.61	0.039	3.09	0.98	2.57
MC R1	27460	5-Yr	3000.00	6130.94	6136.07	10.82	403.18	180.42	0.87	1.60	0.037	3.45	0.94	1.28
MC R1	27460	10-Yr	4700.00	6130.94	6137.00	13.15	579.26	199.23	0.97	2.44	0.043	4.83	1.34	2.25
MC R1	27460	50-Yr	11000.00	6130.94	6140.25	15.86	1286.84	229.51	0.93	3.78	0.057	6.10	2.60	3.86
MC R1	27460	100-Yr	15000.00	6130.94	6142.70	15.41	1863.17	241.17	0.80	3.56	0.062	5.34	2.73	3.63
MC R1	27436	2-Yr	1600.00	6128.72	6132.22	9.86	167.59	59.92	0.97	2.91	0.040	3.40	0.92	2.78
MC R1	27436	5-Yr	3000.00	6128.72	6133.82	12.02	272.19	71.72	0.96	3.42	0.039	4.42	1.32	3.36
MC R1	27436	10-Yr	4700.00	6128.72	6136.58	11.15	614.00	197.21	0.71	1.33	0.034	3.27	0.82	1.04
MC R1	27436	50-Yr	11000.00	6128.72	6140.28	14.11	1412.82	227.08	0.74	2.50	0.052	4.58	1.90	2.34
MC R1	27436	100-Yr	15000.00	6128.72	6142.64	14.45	1960.75	237.75	0.69	2.70	0.057	4.52	2.18	2.57
MC R1	27403	2-Yr	1600.00	6127.47	6131.51	10.50	168.51	58.84	0.98	2.62	0.038	3.28	1.04	2.30
MC R1	27403	5-Yr	3000.00	6127.47	6133.13	12.80	271.47	68.94	0.99	3.23	0.038	4.30	1.46	2.94
MC R1	27403	10-Yr	4700.00	6127.47	6134.77	14.64	403.24	94.90	0.99	3.16	0.036	5.13	1.27	3.36
MC R1	27403	50-Yr	11000.00	6127.47	6138.77	17.68	1135.57	212.98	0.95	3.13	0.045	6.41	2.48	2.74
MC R1	27403	100-Yr	15000.00	6127.47	6142.05	15.94	1856.41	225.73	0.75	2.74	0.055	4.76	2.35	2.52
MC R1	27385	2-Yr	1600.00	6126.00	6130.74	8.60	211.37	59.40	0.71	1.53	0.038	2.02	0.60	1.34
MC R1	27385	5-Yr	3000.00	6126.00	6132.49	11.21	326.96	72.59	0.78	2.14	0.038	3.08	0.96	1.99
MC R1	27385	10-Yr	4700.00	6126.00	6133.99	13.79	447.33	90.54	0.87	2.68	0.038	4.34	1.23	2.74
MC R1	27385	50-Yr	11000.00	6126.00	6138.74	16.82	1225.71	207.64	0.83	2.55	0.045	5.51	2.18	2.04
MC R1	27385	100-Yr	15000.00	6126.00	6141.78	16.21	1876.45	221.12	0.72	2.55	0.053	4.77	2.30	2.18
MC R1	27176	2-Yr	1600.00	6125.00	6129.88	6.48	249.95	64.04	0.56	0.83	0.033	0.91	0.19	0.87
MC R1	27176	5-Yr	3000.00	6125.00	6131.72	8.37	375.36	72.20	0.60	1.12	0.032	1.34	0.37	1.18

HEC-RAS Plan: Plan 07 River: Monument Creek Reach: MC R1 (Continued)

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl	Shear Total (lb/sq ft)	Mann Wtd Total	Shear Chan (lb/sq ft)	Shear LOB (lb/sq ft)	Shear ROB (lb/sq ft)
MC R1	27176	10-Yr	4700.00	6125.00	6133.23	10.35	503.66	101.63	0.67	1.22	0.029	1.90	0.36	1.60
MC R1	27176	50-Yr	11000.00	6125.00	6136.87	15.40	934.88	126.73	0.81	2.34	0.034	3.69	1.36	2.83
MC R1	27176	100-Yr	15000.00	6125.00	6138.54	17.82	1149.70	130.88	0.88	3.07	0.036	4.71	2.02	3.48
MC R1	26688	2-Yr	1600.00	6123.00	6128.18	7.18	253.96	64.82	0.56	0.78	0.033	1.04	0.43	0.58
MC R1	26688	5-Yr	3000.00	6123.00	6129.85	9.32	372.68	79.15	0.63	1.08	0.031	1.59	0.59	0.81
MC R1	26688	10-Yr	4700.00	6123.00	6131.33	11.00	559.22	145.23	0.68	0.96	0.027	2.08	0.47	0.82
MC R1	26688	50-Yr	11000.00	6123.00	6135.62	13.84	1293.71	194.28	0.69	1.50	0.037	2.86	1.07	1.44
MC R1	26688	100-Yr	15000.00	6123.00	6137.75	15.04	1741.10	229.33	0.69	1.64	0.039	3.21	1.40	1.36
MC R1	26205	2-Yr	1600.00	6121.36	6126.23	7.63	236.54	73.46	0.64	0.87	0.031	1.23	0.98	0.35
MC R1	26205	5-Yr	3000.00	6121.36	6127.93	9.32	388.15	112.34	0.66	0.91	0.028	1.65	1.21	0.44
MC R1	26205	10-Yr	4700.00	6121.36	6129.56	10.32	581.82	122.54	0.65	1.11	0.032	1.87	1.29	0.71
MC R1	26205	50-Yr	11000.00	6121.36	6134.14	12.69	1194.58	147.50	0.64	1.52	0.035	2.42	1.46	1.22
MC R1	26205	100-Yr	15000.00	6121.36	6136.21	14.11	1520.91	166.00	0.65	1.72	0.036	2.84	1.63	1.42
MC R1	25811	2-Yr	2100.00	6118.00	6122.48	11.27	206.13	75.65	0.96	2.10	0.033	2.71	1.74	0.69
MC R1	25811	5-Yr	4100.00	6118.00	6124.60	12.66	431.03	117.52	0.88	1.69	0.032	2.99	1.97	0.90
MC R1	25811	10-Yr	6300.00	6118.00	6126.19	14.25	658.45	164.99	0.89	1.73	0.033	3.52	2.31	1.06
MC R1	25811	50-Yr	15000.00	6118.00	6130.08	18.84	1333.90	179.54	0.96	3.29	0.042	5.40	3.43	2.68
MC R1	25811	100-Yr	20000.00	6118.00	6131.73	20.93	1633.36	183.77	1.00	4.07	0.044	6.38	3.98	3.47
MC R1	25435	2-Yr	2400.00	6114.00	6118.72	6.80	387.68	95.05	0.55	0.81	0.034	0.95	0.72	0.74
MC R1	25435	5-Yr	4600.00	6114.00	6120.99	8.55	621.90	113.23	0.57	1.02	0.034	1.32	0.81	1.00
MC R1	25435	10-Yr	7200.00	6114.00	6122.68	10.48	893.50	176.23	0.63	1.06	0.031	1.85	0.70	1.36
MC R1	25435	50-Yr	17000.00	6114.00	6127.26	14.76	1773.75	212.17	0.71	1.96	0.039	3.19	1.56	2.25
MC R1	25435	100-Yr	22000.00	6114.00	6129.05	16.36	2168.61	229.68	0.74	2.30	0.041	3.75	1.87	2.60
MC R1	25024	2-Yr	2400.00	6112.00	6116.49	9.06	307.36	88.46	0.75	1.32	0.034	1.73	1.06	1.11
MC R1	25024	5-Yr	4600.00	6112.00	6117.59	13.20	408.63	95.77	0.98	2.56	0.034	3.40	2.16	2.01
MC R1	25024	10-Yr	7200.00	6112.00	6119.29	14.27	607.67	143.39	0.93	2.09	0.029	3.64	2.40	1.04
MC R1	25024	50-Yr	17000.00	6112.00	6123.13	18.69	1237.18	181.63	0.99	3.26	0.034	5.42	3.61	2.26
MC R1	25024	100-Yr	22000.00	6112.00	6124.64	20.36	1518.40	191.49	1.01	3.79	0.036	6.16	4.09	2.82
MC R1	24607	2-Yr	2400.00	6109.69	6115.52	5.70	547.01	225.13	0.45	0.32	0.028	0.66	0.25	0.18
MC R1	24607	5-Yr	4600.00	6109.69	6117.08	6.53	908.50	234.98	0.45	0.46	0.032	0.79	0.32	0.34
MC R1	24607	10-Yr	7200.00	6109.69	6118.54	7.18	1255.59	240.24	0.45	0.58	0.033	0.89	0.37	0.47
MC R1	24607	50-Yr	17000.00	6109.69	6122.71	8.87	2285.59	253.69	0.45	0.86	0.034	1.19	0.49	0.78
MC R1	24607	100-Yr	22000.00	6109.69	6124.43	9.54	2724.40	258.93	0.45	0.97	0.034	1.31	0.54	0.90
MC R1	24133	2-Yr	2400.00	6108.00	6112.16	9.89	263.66	129.46	0.88	2.24	0.035	4.38	1.53	0.41
MC R1	24133	5-Yr	4600.00	6108.00	6113.92	11.16	546.32	175.83	0.82	2.64	0.044	4.93	1.73	1.51
MC R1	24133	10-Yr	7200.00	6108.00	6115.13	12.96	760.94	180.10	0.87	3.74	0.049	6.24	2.16	2.59
MC R1	24133	50-Yr	17000.00	6108.00	6118.29	17.60	1346.19	189.85	0.98	6.93	0.054	10.15	3.31	5.76
MC R1	24133	100-Yr	22000.00	6108.00	6119.75	18.90	1627.64	194.74	0.98	7.82	0.055	11.19	3.56	6.74
MC R1	23689	2-Yr	2400.00	6102.00	6107.97	7.62	350.46	81.43	0.57	0.65	0.028	0.84	0.51	0.15
MC R1	23689	5-Yr	4600.00	6102.00	6109.88	10.03	527.12	107.22	0.65	0.87	0.026	1.32	0.64	0.33
MC R1	23689	10-Yr	7200.00	6102.00	6111.71	11.48	836.78	212.43	0.66	0.69	0.023	1.61	0.46	0.44
MC R1	23689	50-Yr	17000.00	6102.00	6116.76	14.13	2007.79	242.97	0.66	1.21	0.035	2.10	1.06	0.86
MC R1	23689	100-Yr	22000.00	6102.00	6119.12	14.72	2593.64	253.17	0.63	1.33	0.038	2.17	1.20	0.95

HEC-RAS Plan: Plan 07 River: Monument Creek Reach: MC R1 (Continued)

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl	Shear Total (lb/sq ft)	Mann Wtd Total	Shear Chan (lb/sq ft)	Shear LOB (lb/sq ft)	Shear ROB (lb/sq ft)
MC R1	23208	2-Yr	2400.00	6101.00	6104.87	10.99	241.91	76.23	0.99	2.21	0.034	2.68	1.85	1.62
MC R1	23208	5-Yr	4600.00	6101.00	6106.81	12.70	407.75	104.93	0.94	2.09	0.030	3.12	1.21	1.91
MC R1	23208	10-Yr	7200.00	6101.00	6108.38	14.65	601.66	137.41	0.96	2.27	0.030	3.83	1.37	2.31
MC R1	23208	50-Yr	17000.00	6101.00	6112.46	19.55	1232.09	167.98	1.02	3.73	0.037	5.89	2.93	3.42
MC R1	23208	100-Yr	22000.00	6101.00	6117.02	16.55	2051.86	195.11	0.73	2.43	0.040	3.77	2.15	2.01
MC R1	22713	2-Yr	2600.00	6097.00	6102.64	6.18	486.82	109.38	0.46	0.58	0.034	0.74	0.46	0.49
MC R1	22713	5-Yr	4900.00	6097.00	6105.09	7.23	799.18	148.89	0.45	0.59	0.031	0.90	0.53	0.47
MC R1	22713	10-Yr	7700.00	6097.00	6107.25	8.26	1130.77	157.38	0.45	0.74	0.033	1.09	0.61	0.64
MC R1	22713	50-Yr	18000.00	6097.00	6112.66	11.22	2017.33	170.70	0.50	1.25	0.035	1.74	0.87	1.19
MC R1	22713	100-Yr	24000.00	6097.00	6116.96	11.16	2791.75	194.75	0.44	1.09	0.035	1.59	0.63	1.10
MC R1	22557	2-Yr	2600.00	6096.00	6101.09	9.72	294.85	75.60	0.79	2.65	0.043	3.24	1.45	2.38
MC R1	22557	5-Yr	4900.00	6096.00	6103.28	11.59	473.97	90.34	0.78	3.02	0.042	4.05	1.83	2.55
MC R1	22557	10-Yr	7700.00	6096.00	6105.71	12.25	789.53	166.40	0.71	2.06	0.036	4.09	1.82	1.34
MC R1	22557	50-Yr	18000.00	6096.00	6111.53	14.39	1888.12	210.81	0.65	2.79	0.047	4.79	2.07	2.46
MC R1	22557	100-Yr	24000.00	6096.00	6116.28	13.78	3016.17	342.20	0.54	1.76	0.045	4.01	1.52	1.45
MC R1	22540		Bridge											
MC R1	22535	2-Yr	2600.00	6096.00	6100.62	10.02	285.03	76.97	0.84	1.77	0.034	2.13	1.24	1.51
MC R1	22535	5-Yr	4900.00	6096.00	6102.71	11.82	454.84	85.82	0.82	2.07	0.033	2.60	1.49	1.75
MC R1	22535	10-Yr	7700.00	6096.00	6104.43	14.07	641.70	164.07	0.87	1.60	0.025	3.40	1.91	0.85
MC R1	22535	50-Yr	18000.00	6096.00	6110.47	15.73	1764.56	206.97	0.74	2.07	0.038	3.54	1.61	1.78
MC R1	22535	100-Yr	24000.00	6096.00	6112.92	16.96	2301.04	230.34	0.73	2.28	0.040	3.90	1.53	2.15
MC R1	22294	2-Yr	2600.00	6093.77	6099.34	8.94	317.01	71.22	0.69	1.32	0.034	1.59	0.47	1.17
MC R1	22294	5-Yr	4900.00	6093.77	6101.22	11.97	462.13	85.11	0.79	1.92	0.032	2.58	0.71	1.70
MC R1	22294	10-Yr	7700.00	6093.77	6102.64	14.78	612.83	127.21	0.89	2.06	0.028	3.71	0.63	2.28
MC R1	22294	50-Yr	18000.00	6093.77	6107.18	19.25	1282.48	163.82	0.94	3.21	0.034	5.46	2.01	3.26
MC R1	22294	100-Yr	24000.00	6093.77	6109.18	21.17	1625.22	178.52	0.96	3.72	0.035	6.29	2.52	3.78
MC R1	22058	2-Yr	2600.00	6093.00	6098.26	8.81	337.84	84.37	0.68	1.15	0.033	1.55	0.70	0.99
MC R1	22058	5-Yr	4900.00	6093.00	6099.79	12.17	474.88	97.39	0.82	1.90	0.033	2.71	1.18	1.69
MC R1	22058	10-Yr	7700.00	6093.00	6101.35	14.11	687.92	172.29	0.86	1.60	0.027	3.40	0.86	2.07
MC R1	22058	50-Yr	18000.00	6093.00	6105.14	18.41	1472.66	222.02	0.93	2.74	0.035	5.11	2.10	2.89
MC R1	22058	100-Yr	24000.00	6093.00	6106.74	20.30	1835.90	229.57	0.97	3.39	0.037	5.96	2.79	3.21
MC R1	21635	2-Yr	2600.00	6091.00	6095.62	9.66	321.72	114.41	0.83	1.35	0.032	2.01	0.51	0.97
MC R1	21635	5-Yr	4900.00	6091.00	6096.95	11.89	504.56	151.11	0.89	1.68	0.031	2.77	0.93	1.24
MC R1	21635	10-Yr	7700.00	6091.00	6098.18	13.83	694.85	159.27	0.94	2.27	0.033	3.51	1.34	1.83
MC R1	21635	50-Yr	18000.00	6091.00	6101.54	18.32	1256.30	173.97	1.02	3.80	0.035	5.39	2.37	3.42
MC R1	21635	100-Yr	24000.00	6091.00	6103.13	20.13	1538.26	180.78	1.04	4.44	0.036	6.20	2.79	4.08
MC R1	21080	2-Yr	2600.00	6087.00	6091.05	10.06	306.90	115.76	0.88	1.43	0.031	2.20	1.64	0.67
MC R1	21080	5-Yr	4900.00	6087.00	6092.55	11.96	505.89	146.32	0.89	1.73	0.031	2.80	1.57	1.17
MC R1	21080	10-Yr	7700.00	6087.00	6093.77	13.77	697.56	165.52	0.93	2.14	0.032	3.47	1.85	1.65
MC R1	21080	50-Yr	18000.00	6087.00	6097.04	18.10	1276.72	187.22	1.01	3.53	0.034	5.26	3.22	2.98
MC R1	21080	100-Yr	24000.00	6087.00	6098.56	19.88	1568.88	196.00	1.03	4.13	0.035	6.05	3.84	3.53

HEC-RAS Plan: Plan 07 River: Monument Creek Reach: MC R1 (Continued)

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl	Shear Total (lb/sq ft)	Mann Wtd Total	Shear Chan (lb/sq ft)	Shear LOB (lb/sq ft)	Shear ROB (lb/sq ft)
MC R1	20608	2-Yr	2600.00	6083.00	6086.20	9.49	283.92	110.97	0.98	1.90	0.033	2.18	0.76	0.57
MC R1	20608	5-Yr	4900.00	6083.00	6088.14	9.98	545.03	158.35	0.80	1.44	0.031	2.04	0.85	0.55
MC R1	20608	10-Yr	7700.00	6083.00	6090.09	10.01	867.72	171.60	0.68	1.35	0.032	1.83	0.92	0.78
MC R1	20608	50-Yr	18000.00	6083.00	6095.68	10.96	1888.83	193.65	0.55	1.39	0.034	1.80	0.99	1.06
MC R1	20608	100-Yr	24000.00	6083.00	6098.66	11.26	2496.42	213.90	0.51	1.31	0.034	1.77	0.83	1.09
MC R1	20128	2-Yr	2600.00	6077.00	6083.83	7.95	360.44	80.78	0.55	0.81	0.030	1.18	0.28	0.30
MC R1	20128	5-Yr	4900.00	6077.00	6085.65	10.60	572.86	141.16	0.65	0.95	0.027	1.94	0.35	0.62
MC R1	20128	10-Yr	7700.00	6077.00	6087.48	12.34	843.88	153.22	0.68	1.33	0.032	2.45	0.73	1.01
MC R1	20128	50-Yr	18000.00	6077.00	6093.50	14.69	1868.81	190.47	0.64	1.79	0.038	2.98	1.34	1.52
MC R1	20128	100-Yr	24000.00	6077.00	6096.47	15.78	2774.99	390.17	0.64	1.21	0.033	3.24	0.78	1.62
MC R1	19691	2-Yr	2600.00	6076.00	6081.62	9.67	322.00	134.25	0.74	0.85	0.025	1.87	0.29	0.53
MC R1	19691	5-Yr	4900.00	6076.00	6083.74	11.14	638.40	155.13	0.72	1.23	0.034	2.22	0.81	0.80
MC R1	19691	10-Yr	7700.00	6076.00	6085.87	12.18	976.73	163.41	0.70	1.51	0.039	2.43	1.18	0.98
MC R1	19691	50-Yr	18000.00	6076.00	6092.53	14.13	2385.43	278.07	0.62	1.44	0.043	2.74	1.21	1.05
MC R1	19691	100-Yr	24000.00	6076.00	6095.90	14.41	3543.79	392.70	0.57	1.23	0.044	2.68	1.06	0.92
MC R1	19582	2-Yr	2600.00	6076.00	6081.51	7.56	382.46	110.28	0.58	0.76	0.030	1.14	0.44	0.22
MC R1	19582	5-Yr	4900.00	6076.00	6083.54	9.57	624.99	125.98	0.63	1.12	0.033	1.64	0.82	0.49
MC R1	19582	10-Yr	7700.00	6076.00	6085.55	11.17	888.60	135.70	0.65	1.44	0.036	2.06	1.18	0.75
MC R1	19582	50-Yr	18000.00	6076.00	6091.93	13.97	1846.00	164.64	0.62	1.90	0.040	2.71	1.74	1.18
MC R1	19582	100-Yr	24000.00	6076.00	6094.85	15.28	2364.42	191.42	0.63	1.99	0.039	3.06	1.98	1.15
MC R1	19500		Bridge											
MC R1	19467	2-Yr	2600.00	6076.00	6079.90	10.61	269.08	87.61	0.96	1.98	0.033	2.49	0.85	1.34
MC R1	19467	5-Yr	4900.00	6076.00	6081.66	12.38	451.24	114.21	0.92	2.10	0.031	2.99	0.92	1.66
MC R1	19467	10-Yr	7700.00	6076.00	6083.21	14.29	634.49	121.94	0.94	2.65	0.033	3.68	1.49	2.20
MC R1	19467	50-Yr	18000.00	6076.00	6089.08	16.10	1408.95	141.59	0.79	2.83	0.036	3.82	2.09	2.40
MC R1	19467	100-Yr	24000.00	6076.00	6091.05	18.19	1695.96	149.97	0.83	3.38	0.036	4.65	2.61	2.81
MC R1	19427	2-Yr	2600.00	6073.89	6077.94	10.47	266.63	85.89	0.97	2.73	0.038	3.23	2.29	1.54
MC R1	19427	5-Yr	4900.00	6073.89	6079.65	12.87	421.75	95.97	0.98	3.47	0.039	4.29	3.00	2.03
MC R1	19427	10-Yr	7700.00	6073.89	6081.37	14.77	595.94	104.94	0.98	4.05	0.039	5.14	3.52	2.51
MC R1	19427	50-Yr	18000.00	6073.89	6089.29	14.72	1532.39	132.00	0.67	2.93	0.041	3.98	2.45	2.17
MC R1	19427	100-Yr	24000.00	6073.89	6091.18	17.21	1790.16	142.22	0.74	3.70	0.041	5.22	3.14	2.67
MC R1	19403	2-Yr	2600.00	6071.00	6077.32	6.21	462.70	86.90	0.44	0.79	0.039	0.95	0.72	0.35
MC R1	19403	5-Yr	4900.00	6071.00	6079.98	8.00	707.49	97.25	0.47	1.10	0.039	1.40	1.00	0.56
MC R1	19403	10-Yr	7700.00	6071.00	6082.42	9.64	955.05	106.07	0.50	1.42	0.040	1.87	1.28	0.80
MC R1	19403	50-Yr	18000.00	6071.00	6089.62	12.96	1808.97	132.34	0.53	1.99	0.041	2.87	1.77	1.26
MC R1	19403	100-Yr	24000.00	6071.00	6091.48	15.66	2069.29	152.23	0.61	2.55	0.040	4.07	2.45	1.46
MC R1	19250	2-Yr	2600.00	6070.00	6076.23	8.54	323.83	68.19	0.64	1.60	0.038	1.88	1.26	0.22
MC R1	19250	5-Yr	4900.00	6070.00	6078.65	10.63	503.09	79.88	0.67	2.01	0.037	2.58	1.64	0.58
MC R1	19250	10-Yr	7700.00	6070.00	6080.92	12.29	697.30	91.78	0.68	2.31	0.036	3.17	1.95	0.86
MC R1	19250	50-Yr	18000.00	6070.00	6088.68	14.20	1652.10	182.76	0.59	1.73	0.033	3.50	2.00	0.80
MC R1	19250	100-Yr	24000.00	6070.00	6090.94	15.87	2100.51	210.36	0.62	2.04	0.034	4.21	2.35	1.12
MC R1	19021	2-Yr	2600.00	6069.00	6075.22	8.73	340.53	71.15	0.62	1.07	0.033	1.44	0.90	0.61

HEC-RAS Plan: Plan 07 River: Monument Creek Reach: MC R1 (Continued)

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl	Shear Total (lb/sq ft)	Mann Wtd Total	Shear Chan (lb/sq ft)	Shear LOB (lb/sq ft)	Shear ROB (lb/sq ft)
MC R1	19021	5-Yr	4900.00	6069.00	6077.77	10.62	536.69	82.09	0.63	1.35	0.032	1.90	1.11	0.88
MC R1	19021	10-Yr	7700.00	6069.00	6080.17	12.05	745.30	91.75	0.64	1.55	0.032	2.25	1.24	1.09
MC R1	19021	50-Yr	18000.00	6069.00	6088.53	13.26	1780.79	143.36	0.53	1.35	0.033	2.26	1.09	1.07
MC R1	19021	100-Yr	24000.00	6069.00	6090.63	15.38	2087.48	148.52	0.58	1.78	0.033	2.94	1.40	1.47
MC R1	18713	2-Yr	2600.00	6067.00	6073.52	8.74	334.10	65.83	0.61	2.67	0.051	3.52	2.16	1.25
MC R1	18713	5-Yr	4900.00	6067.00	6076.02	10.93	515.71	79.28	0.64	3.44	0.050	4.93	2.88	1.79
MC R1	18713	10-Yr	7700.00	6067.00	6078.70	12.04	745.85	92.83	0.62	3.62	0.049	5.49	3.09	2.11
MC R1	18713	50-Yr	18000.00	6067.00	6087.92	12.26	1864.30	138.63	0.47	2.83	0.050	4.68	2.46	2.13
MC R1	18713	100-Yr	24000.00	6067.00	6089.88	14.38	2141.74	145.14	0.53	3.78	0.050	6.25	3.25	2.93
MC R1	18332	2-Yr	2600.00	6065.00	6072.05	7.70	395.00	79.31	0.52	0.78	0.033	1.09	0.56	0.46
MC R1	18332	5-Yr	4900.00	6065.00	6074.87	9.07	635.35	90.90	0.52	0.94	0.032	1.34	0.75	0.57
MC R1	18332	10-Yr	7700.00	6065.00	6077.93	9.72	932.11	102.96	0.48	0.96	0.032	1.40	0.81	0.58
MC R1	18332	50-Yr	18000.00	6065.00	6087.77	10.04	3023.19	515.37	0.37	0.32	0.024	1.24	0.74	0.17
MC R1	18332	100-Yr	24000.00	6065.00	6090.08	10.71	4207.09	539.81	0.38	0.44	0.031	1.36	0.78	0.30
MC R1	18186	2-Yr	2600.00	6065.00	6071.41	8.42	333.81	66.31	0.60	0.80	0.028	0.99	0.69	0.30
MC R1	18186	5-Yr	4900.00	6065.00	6074.00	10.51	516.14	74.60	0.63	1.05	0.028	1.37	0.93	0.49
MC R1	18186	10-Yr	7700.00	6065.00	6077.00	11.57	754.01	84.04	0.60	1.09	0.027	1.51	0.97	0.58
MC R1	18186	50-Yr	18000.00	6065.00	6087.26	11.61	2769.53	555.05	0.44	0.28	0.020	1.23	0.68	0.16
MC R1	18186	100-Yr	24000.00	6065.00	6089.81	11.68	4198.44	569.37	0.42	0.36	0.027	1.20	0.63	0.26
MC R1	18125		Bridge											
MC R1	18076	2-Yr	2600.00	6062.00	6067.73	10.08	276.95	62.34	0.78	1.75	0.034	2.05	0.30	1.51
MC R1	18076	5-Yr	4900.00	6062.00	6070.37	11.95	451.37	69.98	0.75	2.02	0.033	2.51	0.62	1.81
MC R1	18076	10-Yr	7700.00	6062.00	6073.70	12.17	699.59	79.29	0.64	1.75	0.032	2.32	0.70	1.60
MC R1	18076	50-Yr	18000.00	6062.00	6081.18	15.28	1377.69	102.95	0.62	2.05	0.031	3.07	1.06	1.91
MC R1	18076	100-Yr	24000.00	6062.00	6084.00	17.18	1685.22	141.65	0.65	2.34	0.031	3.71	1.26	2.18
MC R1	17843	2-Yr	2600.00	6061.00	6067.09	8.02	368.10	78.65	0.58	0.93	0.033	1.22	0.46	0.86
MC R1	17843	5-Yr	4900.00	6061.00	6070.31	8.67	658.37	99.73	0.50	0.86	0.032	1.24	0.48	0.84
MC R1	17843	10-Yr	7700.00	6061.00	6073.97	8.66	1058.71	117.91	0.42	0.74	0.032	1.11	0.48	0.73
MC R1	17843	50-Yr	18000.00	6061.00	6081.99	10.89	2207.18	279.74	0.42	0.55	0.024	1.49	0.73	0.29
MC R1	17843	100-Yr	24000.00	6061.00	6085.39	11.50	3767.73	617.71	0.41	0.39	0.025	1.58	0.51	0.27
MC R1	17422	2-Yr	2600.00	6059.00	6066.56	5.53	504.35	86.55	0.36	0.44	0.032	0.55	0.09	0.21
MC R1	17422	5-Yr	4900.00	6059.00	6069.95	6.52	844.81	115.95	0.35	0.45	0.030	0.68	0.15	0.24
MC R1	17422	10-Yr	7700.00	6059.00	6073.73	6.99	1343.65	151.51	0.32	0.42	0.030	0.70	0.17	0.26
MC R1	17422	50-Yr	18000.00	6059.00	6081.75	9.37	3099.70	443.31	0.35	0.34	0.026	1.09	0.27	0.22
MC R1	17422	100-Yr	24000.00	6059.00	6085.12	9.67	4852.90	582.08	0.34	0.36	0.032	1.11	0.18	0.28
MC R1	17011	2-Yr	2600.00	6057.00	6066.22	5.28	572.79	89.86	0.31	0.30	0.031	0.46	0.27	0.17
MC R1	17011	5-Yr	4900.00	6057.00	6069.64	6.52	935.60	115.29	0.32	0.39	0.031	0.63	0.35	0.25
MC R1	17011	10-Yr	7700.00	6057.00	6073.47	7.22	1419.39	138.73	0.31	0.42	0.033	0.71	0.38	0.30
MC R1	17011	50-Yr	18000.00	6057.00	6081.44	9.97	2683.38	174.58	0.36	0.70	0.036	1.19	0.60	0.57
MC R1	17011	100-Yr	24000.00	6057.00	6084.33	11.99	3358.12	336.08	0.40	0.58	0.029	1.65	0.79	0.40
MC R1	16769	2-Yr	2600.00	6056.00	6066.35	2.57	1235.15	191.02	0.14	0.05	0.027	0.08	0.04	0.03
MC R1	16769	5-Yr	4900.00	6056.00	6069.86	3.11	2083.00	270.65	0.15	0.06	0.027	0.10	0.04	0.05

HEC-RAS Plan: Plan 07 River: Monument Creek Reach: MC R1 (Continued)

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl	Shear Total (lb/sq ft)	Mann Wtd Total	Shear Chan (lb/sq ft)	Shear LOB (lb/sq ft)	Shear ROB (lb/sq ft)
MC R1	16769	10-Yr	7700.00	6056.00	6073.74	3.41	3248.34	377.60	0.14	0.06	0.027	0.11	0.04	0.06
MC R1	16769	50-Yr	18000.00	6056.00	6081.95	4.47	7185.20	605.07	0.15	0.09	0.036	0.17	0.08	0.10
MC R1	16769	100-Yr	24000.00	6056.00	6085.06	5.29	9584.97	1074.03	0.17	0.07	0.029	0.23	0.05	0.09
MC R1	16750		Bridge											
MC R1	16730	2-Yr	2600.00	6055.62	6060.78	5.86	504.96	130.31	0.47	0.72	0.039	0.90	0.41	0.63
MC R1	16730	5-Yr	4900.00	6055.62	6062.83	7.32	825.66	190.91	0.49	0.78	0.036	1.24	0.39	0.74
MC R1	16730	10-Yr	7700.00	6055.62	6064.55	8.59	1175.70	225.89	0.52	0.96	0.037	1.59	0.63	0.77
MC R1	16730	50-Yr	18000.00	6055.62	6070.29	10.23	2672.39	285.11	0.48	1.23	0.045	1.90	0.96	1.11
MC R1	16730	100-Yr	24000.00	6055.62	6073.08	10.98	3504.42	329.23	0.47	1.27	0.046	2.06	0.95	1.26
MC R1	16486	2-Yr	2600.00	6055.00	6059.09	8.57	322.66	92.15	0.75	1.36	0.033	1.60	0.66	0.85
MC R1	16486	5-Yr	4900.00	6055.00	6060.97	10.44	524.28	139.07	0.75	1.31	0.029	2.09	0.45	1.13
MC R1	16486	10-Yr	7700.00	6055.00	6063.24	10.54	993.85	239.83	0.65	0.95	0.030	1.91	0.53	1.04
MC R1	16486	50-Yr	18000.00	6055.00	6069.81	10.61	2824.00	291.58	0.49	1.02	0.043	1.59	0.86	0.84
MC R1	16486	100-Yr	24000.00	6055.00	6072.71	11.11	3680.34	299.30	0.47	1.11	0.046	1.64	0.98	0.83
MC R1	16247	2-Yr	2600.00	6054.00	6058.56	6.01	491.80	142.15	0.50	0.58	0.033	0.76	0.50	0.44
MC R1	16247	5-Yr	4900.00	6054.00	6061.20	5.91	1204.24	316.23	0.39	0.34	0.033	0.63	0.28	0.25
MC R1	16247	10-Yr	7700.00	6054.00	6063.56	6.18	2039.12	372.96	0.35	0.36	0.040	0.62	0.35	0.21
MC R1	16247	50-Yr	18000.00	6054.00	6070.13	7.06	4643.31	413.03	0.31	0.48	0.050	0.69	0.48	0.35
MC R1	16247	100-Yr	24000.00	6054.00	6073.05	7.61	5869.91	425.65	0.31	0.54	0.052	0.75	0.55	0.41
MC R1	15941	2-Yr	2600.00	6053.00	6058.65	2.17	1245.11	270.71	0.16	0.08	0.032	0.09	0.01	0.04
MC R1	15941	5-Yr	4900.00	6053.00	6061.22	2.69	2040.06	331.78	0.17	0.09	0.033	0.13	0.04	0.05
MC R1	15941	10-Yr	7700.00	6053.00	6063.56	3.19	2836.37	348.95	0.17	0.13	0.035	0.16	0.07	0.08
MC R1	15941	50-Yr	18000.00	6053.00	6070.09	4.36	5294.49	403.06	0.19	0.20	0.038	0.26	0.13	0.15
MC R1	15941	100-Yr	24000.00	6053.00	6073.01	4.88	6506.81	427.86	0.19	0.23	0.038	0.30	0.16	0.17
MC R1	15784	2-Yr	2600.00	6052.00	6058.24	4.82	582.68	122.03	0.35	0.74	0.047	0.91	0.32	0.24
MC R1	15784	5-Yr	4900.00	6052.00	6060.63	6.19	891.43	136.77	0.38	1.05	0.048	1.34	0.62	0.43
MC R1	15784	10-Yr	7700.00	6052.00	6062.74	7.51	1192.25	148.14	0.41	1.40	0.049	1.83	0.94	0.65
MC R1	15784	50-Yr	18000.00	6052.00	6068.68	10.40	2175.22	219.73	0.45	2.22	0.051	3.02	1.63	1.34
MC R1	15784	100-Yr	24000.00	6052.00	6071.32	11.59	2642.30	260.24	0.47	2.72	0.053	3.57	2.02	1.86
MC R1	15700		Bridge											
MC R1	15663	2-Yr	2600.00	6049.00	6054.63	5.41	536.95	112.81	0.40	0.78	0.044	0.94	0.65	0.73
MC R1	15663	5-Yr	4900.00	6049.00	6056.95	6.68	804.91	118.65	0.42	1.06	0.043	1.28	0.84	1.01
MC R1	15663	10-Yr	7700.00	6049.00	6058.96	8.04	1048.53	123.85	0.45	1.40	0.043	1.72	1.08	1.36
MC R1	15663	50-Yr	18000.00	6049.00	6064.74	11.12	1813.20	141.82	0.49	2.16	0.042	2.83	1.59	2.14
MC R1	15663	100-Yr	24000.00	6049.00	6067.19	12.59	2172.34	151.16	0.52	2.56	0.042	3.45	1.85	2.54
MC R1	15461	2-Yr	2700.00	6048.00	6054.24	4.88	624.06	122.27	0.35	0.60	0.044	0.74	0.62	0.50
MC R1	15461	5-Yr	5200.00	6048.00	6056.54	6.30	913.25	128.89	0.38	0.90	0.043	1.12	0.89	0.79
MC R1	15461	10-Yr	8000.00	6048.00	6058.56	7.49	1178.90	134.78	0.41	1.18	0.043	1.47	1.12	1.05
MC R1	15461	50-Yr	19000.00	6048.00	6064.33	10.64	2012.44	154.93	0.46	1.94	0.042	2.56	1.72	1.81
MC R1	15461	100-Yr	25000.00	6048.00	6066.82	11.87	2411.57	164.89	0.48	2.24	0.042	3.03	1.93	2.12
MC R1	15037	2-Yr	2700.00	6047.00	6053.19	4.98	610.99	136.21	0.36	0.86	0.051	1.17	0.93	0.45

HEC-RAS Plan: Plan 07 River: Monument Creek Reach: MC R1 (Continued)

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl	Shear Total (lb/sq ft)	Mann Wtd Total	Shear Chan (lb/sq ft)	Shear LOB (lb/sq ft)	Shear ROB (lb/sq ft)
MC R1	15037	5-Yr	5200.00	6047.00	6055.42	6.39	924.44	144.05	0.39	1.33	0.052	1.73	1.40	0.87
MC R1	15037	10-Yr	8000.00	6047.00	6057.40	7.52	1215.80	150.19	0.41	1.73	0.053	2.23	1.80	1.23
MC R1	15037	50-Yr	19000.00	6047.00	6063.12	10.44	2124.66	167.59	0.46	2.84	0.054	3.71	2.89	2.22
MC R1	15037	100-Yr	25000.00	6047.00	6065.62	11.56	2552.81	174.95	0.47	3.28	0.054	4.33	3.31	2.62
MC R1	14578	2-Yr	2700.00	6045.07	6049.16	10.12	317.32	123.17	0.91	2.52	0.041	3.75	0.99	1.59
MC R1	14578	5-Yr	5200.00	6045.07	6050.87	12.41	541.31	135.99	0.93	3.56	0.046	4.99	2.21	2.35
MC R1	14578	10-Yr	8000.00	6045.07	6052.31	14.41	740.81	142.30	0.96	4.60	0.049	6.22	3.30	3.05
MC R1	14578	50-Yr	19000.00	6045.07	6056.62	19.25	1394.02	160.86	1.01	7.12	0.053	9.47	6.02	4.65
MC R1	14578	100-Yr	25000.00	6045.07	6058.49	21.15	1702.54	169.05	1.03	8.11	0.053	10.86	7.07	5.29
MC R1	14538	2-Yr	2700.00	6040.00	6046.04	7.55	414.82	89.45	0.54	1.36	0.043	1.80	0.86	0.79
MC R1	14538	5-Yr	5200.00	6040.00	6048.15	10.36	622.16	110.65	0.64	2.08	0.043	3.06	1.33	1.26
MC R1	14538	10-Yr	8000.00	6040.00	6049.58	13.14	803.68	136.84	0.75	2.82	0.043	4.66	1.70	1.94
MC R1	14538	50-Yr	19000.00	6040.00	6054.28	18.45	1513.62	163.50	0.86	5.11	0.049	8.04	4.03	3.58
MC R1	14538	100-Yr	25000.00	6040.00	6056.87	19.47	1952.16	174.51	0.84	5.47	0.051	8.47	4.58	3.94
MC R1	14230	2-Yr	2700.00	6038.54	6042.64	10.63	295.42	101.06	0.96	3.14	0.044	4.13	1.66	2.02
MC R1	14230	5-Yr	5200.00	6038.54	6044.49	12.94	504.87	127.71	0.96	3.72	0.044	5.38	2.26	2.51
MC R1	14230	10-Yr	8000.00	6038.54	6046.40	13.96	784.06	160.57	0.89	3.63	0.046	5.68	2.38	2.62
MC R1	14230	50-Yr	19000.00	6038.54	6053.57	13.96	2101.70	200.61	0.64	3.17	0.055	4.55	2.66	2.61
MC R1	14230	100-Yr	25000.00	6038.54	6056.55	14.56	2715.25	211.20	0.61	3.29	0.056	4.66	2.80	2.80
MC R1	14169	2-Yr	2700.00	6035.00	6042.22	5.91	587.77	109.36	0.40	0.82	0.049	1.06	0.44	0.66
MC R1	14169	5-Yr	5200.00	6035.00	6044.73	8.11	894.36	141.16	0.47	1.20	0.048	1.79	0.74	0.84
MC R1	14169	10-Yr	8000.00	6035.00	6046.94	9.60	1228.92	159.21	0.50	1.53	0.050	2.33	1.05	1.12
MC R1	14169	50-Yr	19000.00	6035.00	6053.47	12.84	2404.81	196.08	0.53	2.37	0.055	3.60	1.92	1.86
MC R1	14169	100-Yr	25000.00	6035.00	6056.36	13.93	2985.94	205.63	0.54	2.70	0.057	4.03	2.19	2.21
MC R1	14034	2-Yr	2700.00	6035.00	6041.76	6.67	451.69	83.45	0.46	0.85	0.038	1.07	0.35	0.82
MC R1	14034	5-Yr	5200.00	6035.00	6044.27	8.57	694.65	112.14	0.50	1.06	0.035	1.59	0.45	1.03
MC R1	14034	10-Yr	8000.00	6035.00	6046.52	9.95	966.48	130.09	0.52	1.27	0.036	1.99	0.73	1.17
MC R1	14034	50-Yr	19000.00	6035.00	6053.21	13.01	1993.46	168.16	0.54	1.85	0.040	2.92	1.37	1.70
MC R1	14034	100-Yr	25000.00	6035.00	6056.15	14.13	2500.28	177.59	0.54	2.11	0.042	3.28	1.58	1.98
MC R1	13534	2-Yr	2700.00	6034.00	6039.72	7.98	389.79	101.41	0.60	1.14	0.036	1.64	0.67	0.35
MC R1	13534	5-Yr	5200.00	6034.00	6041.93	10.34	624.99	111.09	0.66	1.77	0.040	2.46	1.30	0.69
MC R1	13534	10-Yr	8000.00	6034.00	6043.93	12.14	854.30	118.20	0.69	2.29	0.042	3.14	1.84	0.99
MC R1	13534	50-Yr	19000.00	6034.00	6049.46	17.10	1562.17	137.42	0.77	3.85	0.045	5.36	3.44	1.94
MC R1	13534	100-Yr	25000.00	6034.00	6051.85	19.02	1899.88	144.54	0.80	4.50	0.046	6.31	4.08	2.42
MC R1	13187	2-Yr	2700.00	6032.27	6037.52	8.42	370.34	107.39	0.67	1.67	0.041	2.39	0.85	1.09
MC R1	13187	5-Yr	5200.00	6032.27	6040.23	9.52	684.71	122.97	0.61	1.90	0.045	2.64	1.34	1.34
MC R1	13187	10-Yr	8000.00	6032.27	6042.42	10.84	965.01	133.41	0.61	2.27	0.047	3.14	1.76	1.64
MC R1	13187	50-Yr	19000.00	6032.27	6048.27	14.78	1810.04	154.61	0.66	3.61	0.051	5.00	3.00	2.80
MC R1	13187	100-Yr	25000.00	6032.27	6050.86	16.24	2221.51	162.65	0.67	4.12	0.052	5.74	3.45	3.26
MC R1	13149	2-Yr	2700.00	6030.00	6037.78	5.48	620.50	110.04	0.35	0.62	0.045	0.87	0.33	0.44
MC R1	13149	5-Yr	5200.00	6030.00	6040.38	7.55	925.86	124.24	0.41	1.06	0.048	1.50	0.69	0.73
MC R1	13149	10-Yr	8000.00	6030.00	6042.49	9.33	1199.53	134.36	0.47	1.50	0.050	2.15	1.08	1.05
MC R1	13149	50-Yr	19000.00	6030.00	6048.11	14.22	2015.55	155.02	0.59	3.05	0.053	4.42	2.37	2.29

HEC-RAS Plan: Plan 07 River: Monument Creek Reach: MC R1 (Continued)

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl	Shear Total (lb/sq ft)	Mann Wtd Total	Shear Chan (lb/sq ft)	Shear LOB (lb/sq ft)	Shear ROB (lb/sq ft)
MC R1	13149	100-Yr	25000.00	6030.00	6050.48	16.16	2392.51	162.92	0.63	3.75	0.054	5.47	2.96	2.88
MC R1	13036	2-Yr	2700.00	6029.00	6037.42	5.25	579.99	114.34	0.33	2.47	0.083	3.92	1.01	0.99
MC R1	13036	5-Yr	5200.00	6029.00	6040.01	6.79	905.74	135.16	0.37	3.75	0.087	5.98	2.31	1.90
MC R1	13036	10-Yr	8000.00	6029.00	6042.18	7.94	1209.51	144.67	0.39	4.96	0.090	7.68	3.43	2.97
MC R1	13036	50-Yr	19000.00	6029.00	6048.15	10.84	2139.98	167.04	0.44	8.38	0.093	12.58	6.45	6.04
MC R1	13036	100-Yr	25000.00	6029.00	6050.75	11.86	2586.74	175.73	0.45	9.63	0.094	14.42	7.51	7.27
MC R1	12536	2-Yr	2700.00	6028.00	6034.02	8.02	394.07	122.71	0.58	0.85	0.031	1.60	0.31	0.74
MC R1	12536	5-Yr	5200.00	6028.00	6036.10	10.15	670.55	139.55	0.63	1.37	0.037	2.33	0.83	1.15
MC R1	12536	10-Yr	8000.00	6028.00	6037.82	11.92	915.75	145.29	0.67	1.90	0.040	3.01	1.35	1.54
MC R1	12536	50-Yr	19000.00	6028.00	6043.43	15.54	1778.90	161.97	0.70	3.02	0.045	4.40	2.57	2.30
MC R1	12536	100-Yr	25000.00	6028.00	6045.98	16.86	2200.90	169.73	0.70	3.40	0.046	4.92	2.99	2.54
MC R1	12311	2-Yr	2700.00	6027.22	6031.47	10.59	290.62	106.15	0.94	2.79	0.040	4.06	1.04	1.60
MC R1	12311	5-Yr	5200.00	6027.22	6033.42	12.69	528.08	129.24	0.92	3.50	0.045	5.11	2.09	2.28
MC R1	12311	10-Yr	8000.00	6027.22	6035.45	13.64	799.21	136.86	0.85	3.87	0.049	5.34	2.80	2.48
MC R1	12311	50-Yr	19000.00	6027.22	6040.86	17.52	1585.64	153.41	0.84	5.54	0.054	7.41	4.73	3.45
MC R1	12311	100-Yr	25000.00	6027.22	6043.16	19.18	1945.51	160.17	0.85	6.28	0.055	8.43	5.51	3.89
MC R1	12282	2-Yr	2700.00	6025.70	6031.72	6.47	472.09	110.84	0.47	0.97	0.041	1.34	0.50	0.66
MC R1	12282	5-Yr	5200.00	6025.70	6034.11	8.32	773.29	133.53	0.51	1.37	0.044	1.97	0.85	1.00
MC R1	12282	10-Yr	8000.00	6025.70	6036.09	9.87	1044.56	140.09	0.55	1.85	0.046	2.58	1.31	1.32
MC R1	12282	50-Yr	19000.00	6025.70	6041.61	14.07	1861.53	155.67	0.63	3.31	0.050	4.53	2.72	2.26
MC R1	12282	100-Yr	25000.00	6025.70	6043.99	15.72	2239.31	162.29	0.65	3.92	0.051	5.40	3.31	2.65
MC R1	12039	2-Yr	2700.00	6025.00	6029.83	8.93	324.44	99.58	0.72	1.45	0.033	2.15	0.40	0.74
MC R1	12039	5-Yr	5200.00	6025.00	6031.38	12.29	509.96	130.80	0.86	2.27	0.035	3.71	1.06	1.36
MC R1	12039	10-Yr	8000.00	6025.00	6032.86	14.54	708.04	136.87	0.92	3.16	0.039	4.84	1.94	1.83
MC R1	12039	50-Yr	19000.00	6025.00	6037.38	19.66	1360.38	151.02	0.99	5.38	0.045	7.59	4.31	2.99
MC R1	12039	100-Yr	25000.00	6025.00	6039.39	21.59	1669.69	157.00	1.01	6.23	0.046	8.70	5.23	3.45
MC R1	11751	2-Yr	2700.00	6022.77	6027.10	10.13	318.81	118.43	0.89	1.96	0.037	2.92	1.41	1.30
MC R1	11751	5-Yr	5200.00	6022.77	6028.54	12.38	495.58	126.82	0.94	2.81	0.038	3.94	2.27	2.08
MC R1	11751	10-Yr	8000.00	6022.77	6029.81	14.19	660.42	132.14	0.96	3.56	0.038	4.83	3.01	2.77
MC R1	11751	50-Yr	19000.00	6022.77	6034.99	16.10	1388.95	148.84	0.82	3.92	0.039	5.14	3.50	3.30
MC R1	11751	100-Yr	25000.00	6022.77	6038.27	15.76	1893.97	159.01	0.71	3.43	0.040	4.54	3.08	2.92
MC R1	11707	2-Yr	2700.00	6019.00	6025.56	6.97	458.83	115.03	0.49	0.76	0.035	1.19	0.51	0.45
MC R1	11707	5-Yr	5200.00	6019.00	6027.84	8.71	735.08	126.02	0.53	1.13	0.038	1.68	0.86	0.81
MC R1	11707	10-Yr	8000.00	6019.00	6029.84	10.10	994.46	132.82	0.55	1.47	0.039	2.11	1.18	1.13
MC R1	11707	50-Yr	19000.00	6019.00	6035.47	13.90	1791.33	150.45	0.61	2.46	0.042	3.46	2.09	2.01
MC R1	11707	100-Yr	25000.00	6019.00	6038.50	14.80	2261.98	159.91	0.60	2.61	0.042	3.71	2.24	2.17
MC R1	11592	2-Yr	2700.00	6019.00	6024.52	9.05	340.38	95.02	0.69	1.43	0.035	2.13	0.88	0.54
MC R1	11592	5-Yr	5200.00	6019.00	6026.79	10.58	588.82	122.17	0.68	1.64	0.035	2.59	1.36	0.76
MC R1	11592	10-Yr	8000.00	6019.00	6028.87	11.62	855.50	132.70	0.66	1.90	0.038	2.88	1.65	1.13
MC R1	11592	50-Yr	19000.00	6019.00	6034.49	15.03	1651.93	150.13	0.68	2.89	0.041	4.13	2.52	2.18
MC R1	11592	100-Yr	25000.00	6019.00	6037.73	15.50	2154.58	159.81	0.64	2.88	0.042	4.12	2.51	2.30
MC R1	11085	2-Yr	2700.00	6016.43	6022.28	7.11	436.97	115.43	0.54	0.90	0.036	1.30	0.35	0.50

HEC-RAS Plan: Plan 07 River: Monument Creek Reach: MC R1 (Continued)

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl	Shear Total (lb/sq ft)	Mann Wtd Total	Shear Chan (lb/sq ft)	Shear LOB (lb/sq ft)	Shear ROB (lb/sq ft)
MC R1	11085	5-Yr	5300.00	6016.43	6024.31	9.65	688.35	130.15	0.62	1.51	0.040	2.16	0.87	0.86
MC R1	11085	10-Yr	8300.00	6016.43	6026.04	11.83	919.33	136.87	0.69	2.17	0.042	3.03	1.47	1.22
MC R1	11085	50-Yr	19000.00	6016.43	6030.11	17.64	1502.48	149.24	0.85	4.38	0.045	5.96	3.47	2.49
MC R1	11085	100-Yr	26000.00	6016.43	6031.95	20.78	1782.72	154.68	0.94	5.81	0.046	7.92	4.76	3.34
MC R1	10777	2-Yr	2700.00	6015.09	6019.23	10.22	289.43	109.97	0.94	3.17	0.042	4.46	2.36	0.73
MC R1	10777	5-Yr	5300.00	6015.09	6020.94	12.65	490.47	124.41	0.96	4.38	0.046	6.01	3.71	1.94
MC R1	10777	10-Yr	8300.00	6015.09	6022.43	14.70	681.79	131.77	0.99	5.58	0.048	7.48	4.94	3.05
MC R1	10777	50-Yr	19000.00	6015.09	6026.48	19.30	1245.23	146.10	1.03	8.45	0.051	11.06	7.77	5.65
MC R1	10777	100-Yr	26000.00	6015.09	6028.57	21.47	1558.62	152.72	1.05	9.84	0.052	12.91	9.12	6.85
MC R1	10726	2-Yr	2700.00	6009.00	6014.25	9.78	290.62	73.08	0.80	2.87	0.043	3.41	1.99	0.39
MC R1	10726	5-Yr	5300.00	6009.00	6016.55	12.36	474.72	88.12	0.82	3.63	0.042	4.77	2.59	1.07
MC R1	10726	10-Yr	8300.00	6009.00	6018.46	14.70	663.90	111.23	0.87	4.13	0.041	6.23	2.92	1.47
MC R1	10726	50-Yr	19000.00	6009.00	6023.41	19.32	1291.27	136.97	0.92	6.19	0.046	9.28	5.18	3.34
MC R1	10726	100-Yr	26000.00	6009.00	6025.98	21.30	1655.19	145.61	0.93	7.17	0.048	10.66	6.19	4.27
MC R1	10629	2-Yr	2700.00	6008.00	6014.17	7.39	397.44	84.75	0.55	0.86	0.033	1.06	0.50	0.46
MC R1	10629	5-Yr	5300.00	6008.00	6016.68	9.38	622.62	94.53	0.58	1.18	0.033	1.51	0.76	0.69
MC R1	10629	10-Yr	8300.00	6008.00	6018.79	11.08	834.04	108.05	0.61	1.42	0.031	1.96	0.89	0.85
MC R1	10629	50-Yr	19000.00	6008.00	6023.98	15.30	1502.75	141.71	0.68	2.14	0.032	3.25	1.51	1.41
MC R1	10629	100-Yr	26000.00	6008.00	6026.66	17.18	1894.21	150.76	0.71	2.57	0.033	3.89	1.92	1.75
MC R1	10231	2-Yr	2700.00	6007.00	6012.75	7.79	369.13	81.62	0.58	0.95	0.032	1.19	0.34	0.43
MC R1	10231	5-Yr	5300.00	6007.00	6015.26	9.82	591.30	97.30	0.61	1.23	0.031	1.67	0.63	0.52
MC R1	10231	10-Yr	8300.00	6007.00	6017.28	11.64	815.54	123.80	0.65	1.40	0.030	2.18	0.92	0.53
MC R1	10231	50-Yr	19000.00	6007.00	6021.58	16.94	1397.90	143.48	0.79	2.69	0.033	4.10	2.03	1.54
MC R1	10231	100-Yr	26000.00	6007.00	6023.62	19.60	1696.63	149.90	0.85	3.49	0.034	5.25	2.68	2.20
MC R1	9574	2-Yr	2700.00	6003.00	6009.05	8.69	330.35	73.86	0.65	2.44	0.046	3.03	1.15	0.77
MC R1	9574	5-Yr	5300.00	6003.00	6011.23	11.40	525.16	119.59	0.72	2.65	0.039	4.67	1.81	0.80
MC R1	9574	10-Yr	8300.00	6003.00	6012.91	13.58	776.42	168.88	0.78	3.04	0.039	6.21	1.96	1.47
MC R1	9574	50-Yr	19000.00	6003.00	6017.01	17.99	1539.97	196.74	0.86	5.57	0.051	9.65	3.71	4.24
MC R1	9574	100-Yr	26000.00	6003.00	6019.32	19.46	2004.97	203.99	0.86	6.58	0.054	10.72	4.67	5.39
MC R1	9383	2-Yr	2700.00	6002.00	6008.67	6.76	479.32	118.79	0.47	0.51	0.030	0.85	0.35	0.23
MC R1	9383	5-Yr	5300.00	6002.00	6010.86	9.27	804.66	184.01	0.55	0.72	0.031	1.45	0.44	0.42
MC R1	9383	10-Yr	8300.00	6002.00	6012.45	11.48	1112.43	200.66	0.63	1.12	0.035	2.10	0.67	0.80
MC R1	9383	50-Yr	19000.00	6002.00	6015.67	17.81	1806.32	223.98	0.85	2.70	0.042	4.61	1.68	2.34
MC R1	9383	100-Yr	26000.00	6002.00	6018.10	19.26	2358.79	230.83	0.85	3.20	0.045	5.11	2.18	2.88
MC R1	9325		Bridge											
MC R1	9243	2-Yr	2700.00	6001.00	6007.04	8.63	351.82	85.74	0.63	1.02	0.031	1.44	0.81	0.37
MC R1	9243	5-Yr	5300.00	6001.00	6009.30	10.81	584.97	140.18	0.67	1.05	0.027	2.03	0.97	0.44
MC R1	9243	10-Yr	8300.00	6001.00	6010.85	12.99	841.47	178.78	0.74	1.35	0.029	2.76	1.08	0.79
MC R1	9243	50-Yr	19000.00	6001.00	6014.82	17.63	1641.23	221.80	0.84	2.45	0.035	4.53	1.65	2.13
MC R1	9243	100-Yr	26000.00	6001.00	6017.01	19.32	2137.27	230.02	0.86	3.01	0.039	5.17	2.18	2.72
MC R1	9045	2-Yr	2700.00	6001.00	6005.81	9.89	303.42	80.21	0.80	1.14	0.028	1.48	0.65	0.72
MC R1	9045	5-Yr	5300.00	6001.00	6007.74	12.70	489.43	135.58	0.86	1.15	0.023	2.17	0.68	0.57

HEC-RAS Plan: Plan 07 River: Monument Creek Reach: MC R1 (Continued)

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Vel Chnl	Flow Area	Top Width	Froude # Chl	Shear Total	Mann Wtd Total	Shear Chan	Shear LOB	Shear ROB
			(cfs)	(ft)	(ft)	(ft/s)	(sq ft)	(ft)		(lb/sq ft)		(lb/sq ft)	(lb/sq ft)	(lb/sq ft)
MC R1	9045	10-Yr	8300.00	6001.00	6009.38	14.52	759.71	186.67	0.88	1.27	0.025	2.64	0.73	0.90
MC R1	9045	50-Yr	19000.00	6001.00	6013.13	19.17	1539.02	217.10	0.97	2.35	0.032	4.07	1.74	2.04
MC R1	9045	100-Yr	26000.00	6001.00	6014.92	21.52	1932.25	222.48	1.02	3.00	0.035	4.90	2.38	2.66
MC R1	8547	2-Yr	2700.00	5998.00	6002.35	10.88	265.42	80.85	0.97	1.58	0.028	1.91	0.88	0.67
MC R1	8547	5-Yr	5300.00	5998.00	6004.67	12.14	530.48	177.53	0.86	0.97	0.022	2.04	0.55	0.38
MC R1	8547	10-Yr	8300.00	5998.00	6006.17	13.89	816.86	197.04	0.88	1.32	0.027	2.48	0.94	0.77
MC R1	8547	50-Yr	19000.00	5998.00	6009.71	18.54	1542.04	211.62	0.97	2.49	0.033	3.90	2.03	1.92
MC R1	8547	100-Yr	26000.00	5998.00	6011.49	20.77	1925.51	217.60	1.01	3.10	0.035	4.66	2.59	2.52
MC R1	8047	2-Yr	2700.00	5996.00	6000.38	7.44	414.20	149.87	0.64	0.57	0.026	0.87	0.27	0.18
MC R1	8047	5-Yr	5300.00	5996.00	6002.15	9.62	708.45	187.66	0.69	0.82	0.028	1.30	0.47	0.49
MC R1	8047	10-Yr	8300.00	5996.00	6003.66	11.38	1004.47	200.84	0.73	1.12	0.031	1.69	0.77	0.76
MC R1	8047	50-Yr	19000.00	5996.00	6007.62	15.49	1827.09	214.75	0.81	1.99	0.036	2.71	1.64	1.43
MC R1	8047	100-Yr	26000.00	5996.00	6009.71	17.36	2284.15	221.57	0.83	2.41	0.038	3.22	2.06	1.74
MC R1	7609	2-Yr	2700.00	5993.00	5998.43	5.31	608.45	175.12	0.41	2.03	0.074	2.98	1.88	0.61
MC R1	7609	5-Yr	5300.00	5993.00	6000.20	6.88	945.01	200.29	0.46	3.10	0.076	4.52	2.85	1.63
MC R1	7609	10-Yr	8300.00	5993.00	6001.86	7.84	1286.51	210.80	0.47	3.90	0.078	5.46	3.64	2.42
MC R1	7609	50-Yr	19000.00	5993.00	6006.33	9.92	2261.08	224.03	0.48	5.81	0.079	7.59	5.64	4.06
MC R1	7609	100-Yr	26000.00	5993.00	6008.74	10.87	2808.12	230.69	0.49	6.67	0.079	8.62	6.56	4.74
MC R1	7508	2-Yr	2700.00	5993.00	5998.06	5.49	570.78	201.80	0.44	0.29	0.026	0.46	0.24	0.08
MC R1	7508	5-Yr	5300.00	5993.00	5999.78	7.14	900.05	214.05	0.49	0.49	0.029	0.70	0.43	0.28
MC R1	7508	10-Yr	8300.00	5993.00	6001.37	8.41	1210.78	219.27	0.52	0.68	0.031	0.90	0.61	0.46
MC R1	7508	50-Yr	19000.00	5993.00	6005.63	11.42	2056.68	229.00	0.57	1.17	0.032	1.44	1.07	0.97
MC R1	7508	100-Yr	26000.00	5993.00	6007.90	12.81	2516.31	233.77	0.59	1.42	0.033	1.71	1.30	1.24
MC R1	7475		Bridge											
MC R1	7431	2-Yr	2700.00	5993.00	5997.66	6.23	506.41	161.51	0.51	0.40	0.027	0.60	0.31	0.11
MC R1	7431	5-Yr	5300.00	5993.00	5999.08	8.74	791.14	212.50	0.63	0.66	0.028	1.07	0.65	0.27
MC R1	7431	10-Yr	8300.00	5993.00	6000.39	10.64	1070.51	216.92	0.69	0.99	0.032	1.48	0.98	0.56
MC R1	7431	50-Yr	19000.00	5993.00	6003.84	15.03	1835.49	226.08	0.81	1.93	0.036	2.61	1.86	1.41
MC R1	7431	100-Yr	26000.00	5993.00	6005.64	17.06	2248.18	230.15	0.85	2.42	0.037	3.19	2.32	1.87
MC R1	7258	2-Yr	2700.00	5993.00	5996.89	7.04	493.28	218.84	0.65	1.14	0.042	1.85	0.92	0.55
MC R1	7258	5-Yr	5300.00	5993.00	5998.35	8.69	822.46	228.83	0.68	1.76	0.048	2.51	1.53	1.19
MC R1	7258	10-Yr	8300.00	5993.00	5999.73	9.91	1141.15	234.29	0.69	2.26	0.051	3.02	2.00	1.72
MC R1	7258	50-Yr	19000.00	5993.00	6003.47	12.81	2041.76	246.61	0.71	3.47	0.053	4.34	3.12	2.96
MC R1	7258	100-Yr	26000.00	5993.00	6005.47	14.16	2540.97	253.03	0.71	4.03	0.054	4.99	3.63	3.53
MC R1	7127	2-Yr	2700.00	5991.20	5994.79	9.15	360.16	164.61	0.94	2.51	0.045	3.36	1.67	1.38
MC R1	7127	5-Yr	5300.00	5991.20	5996.14	11.16	610.08	196.21	0.95	3.20	0.047	4.40	2.72	1.52
MC R1	7127	10-Yr	8300.00	5991.20	5997.24	13.04	830.45	201.66	0.99	4.25	0.049	5.57	3.75	2.52
MC R1	7127	50-Yr	19000.00	5991.20	6000.28	17.28	1458.95	212.31	1.05	6.80	0.052	8.41	6.23	4.94
MC R1	7127	100-Yr	26000.00	5991.20	6001.92	19.16	1811.41	217.46	1.07	7.96	0.052	9.75	7.36	6.02
MC R1	7019	2-Yr	2700.00	5985.00	5990.19	6.74	445.47	113.18	0.52	1.13	0.041	1.51	0.76	0.61
MC R1	7019	5-Yr	5300.00	5985.00	5992.59	8.42	752.92	150.16	0.54	1.35	0.041	2.07	0.67	0.98
MC R1	7019	10-Yr	8300.00	5985.00	5994.55	9.78	1092.75	189.97	0.56	1.54	0.041	2.58	0.78	1.40

HEC-RAS Plan: Plan 07 River: Monument Creek Reach: MC R1 (Continued)

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl	Shear Total (lb/sq ft)	Mann Wtd Total	Shear Chan (lb/sq ft)	Shear LOB (lb/sq ft)	Shear ROB (lb/sq ft)
MC R1	7019	50-Yr	19000.00	5985.00	5998.73	13.54	1919.81	203.32	0.64	2.94	0.047	4.38	2.06	2.69
MC R1	7019	100-Yr	26000.00	5985.00	6000.92	15.20	2369.09	208.40	0.67	3.64	0.049	5.26	2.74	3.32
MC R1	6533	2-Yr	2700.00	5982.00	5987.42	8.83	344.08	87.88	0.67	1.11	0.032	1.54	0.60	0.55
MC R1	6533	5-Yr	5300.00	5982.00	5989.47	11.37	544.40	110.04	0.74	1.51	0.031	2.30	0.84	0.91
MC R1	6533	10-Yr	8300.00	5982.00	5991.07	13.36	760.42	173.90	0.78	1.43	0.026	2.97	0.74	0.87
MC R1	6533	50-Yr	19000.00	5982.00	5995.63	16.15	1652.94	206.53	0.77	2.20	0.034	3.79	1.58	1.79
MC R1	6533	100-Yr	26000.00	5982.00	5998.61	16.43	2282.33	215.65	0.71	2.30	0.037	3.67	1.77	1.98
MC R1	6071	2-Yr	2700.00	5980.00	5985.43	8.45	356.04	99.30	0.64	0.94	0.030	1.42	0.32	0.48
MC R1	6071	5-Yr	5300.00	5980.00	5987.54	10.52	637.42	171.60	0.68	0.98	0.028	1.97	0.44	0.69
MC R1	6071	10-Yr	8300.00	5980.00	5989.27	12.00	970.87	201.62	0.70	1.25	0.032	2.39	0.77	0.96
MC R1	6071	50-Yr	19000.00	5980.00	5994.43	14.07	2066.27	221.91	0.65	1.81	0.040	2.83	1.47	1.53
MC R1	6071	100-Yr	26000.00	5980.00	5997.73	14.42	2817.56	233.95	0.60	1.85	0.042	2.77	1.59	1.59
MC R1	5636	2-Yr	2700.00	5978.00	5983.90	7.88	451.12	146.60	0.58	0.64	0.030	1.21	0.32	0.76
MC R1	5636	5-Yr	5300.00	5978.00	5985.91	10.20	790.08	192.45	0.65	0.96	0.035	1.83	0.63	1.08
MC R1	5636	10-Yr	8300.00	5978.00	5987.70	11.64	1144.44	202.33	0.67	1.30	0.039	2.22	1.00	1.24
MC R1	5636	50-Yr	19000.00	5978.00	5993.30	13.71	2328.22	219.89	0.62	1.80	0.046	2.64	1.63	1.29
MC R1	5636	100-Yr	26000.00	5978.00	5996.81	14.27	3124.22	236.40	0.58	1.84	0.047	2.67	1.74	1.19
MC R1	5297	2-Yr	2700.00	5977.00	5981.11	10.66	268.19	84.43	0.94	1.95	0.032	2.48	0.78	0.59
MC R1	5297	5-Yr	5300.00	5977.00	5983.36	12.16	576.72	179.92	0.86	1.42	0.030	2.79	0.82	0.72
MC R1	5297	10-Yr	8300.00	5977.00	5984.89	14.05	868.23	197.03	0.89	1.95	0.035	3.46	1.12	1.34
MC R1	5297	50-Yr	19000.00	5977.00	5992.28	13.23	2481.55	289.52	0.60	1.36	0.041	2.45	1.26	1.04
MC R1	5297	100-Yr	26000.00	5977.00	5995.45	15.05	4059.57	680.63	0.62	0.96	0.039	2.98	1.11	0.72
MC R1	4844	2-Yr	2700.00	5972.00	5977.90	5.80	514.48	136.32	0.47	0.54	0.033	0.69	0.44	0.25
MC R1	4844	5-Yr	5300.00	5972.00	5980.98	6.05	1017.51	193.08	0.38	0.42	0.031	0.64	0.31	0.25
MC R1	4844	10-Yr	8300.00	5972.00	5983.09	7.03	1436.58	204.04	0.39	0.56	0.034	0.80	0.43	0.39
MC R1	4844	50-Yr	19000.00	5972.00	5992.86	6.78	4649.41	552.31	0.27	0.25	0.033	0.59	0.24	0.18
MC R1	4844	100-Yr	26000.00	5972.00	5996.36	7.20	6957.58	751.31	0.26	0.25	0.036	0.63	0.19	0.21
MC R1	4720	2-Yr	2700.00	5971.00	5977.68	5.67	574.74	135.17	0.39	0.51	0.036	0.78	0.31	0.35
MC R1	4720	5-Yr	5300.00	5971.00	5980.79	6.51	1092.02	194.11	0.37	0.53	0.037	0.90	0.40	0.34
MC R1	4720	10-Yr	8300.00	5971.00	5982.87	7.64	1508.26	204.65	0.39	0.73	0.041	1.16	0.60	0.52
MC R1	4720	50-Yr	19000.00	5971.00	5992.61	8.11	3873.48	524.40	0.31	0.36	0.032	1.07	0.42	0.19
MC R1	4720	100-Yr	26000.00	5971.00	5996.18	8.23	6032.57	664.92	0.29	0.38	0.039	1.05	0.39	0.27
MC R1	4700		Bridge											
MC R1	4650	2-Yr	2700.00	5971.00	5977.27	6.08	528.43	123.43	0.43	0.61	0.037	0.91	0.36	0.45
MC R1	4650	5-Yr	5300.00	5971.00	5980.52	6.88	1050.45	193.72	0.39	0.57	0.037	1.01	0.42	0.37
MC R1	4650	10-Yr	8300.00	5971.00	5982.63	7.99	1470.20	203.79	0.41	0.78	0.041	1.28	0.63	0.57
MC R1	4650	50-Yr	19000.00	5971.00	5992.45	8.11	3730.09	422.32	0.31	0.59	0.043	1.07	0.59	0.39
MC R1	4650	100-Yr	26000.00	5971.00	5995.79	9.01	5315.77	532.57	0.32	0.50	0.040	1.26	0.59	0.31
MC R1	4420	2-Yr	2700.00	5969.24	5977.10	4.52	699.27	141.59	0.29	0.30	0.035	0.47	0.28	0.17
MC R1	4420	5-Yr	5300.00	5969.24	5980.43	5.33	1280.57	188.31	0.28	0.35	0.037	0.58	0.32	0.25
MC R1	4420	10-Yr	8300.00	5969.24	5982.51	6.52	1681.06	195.51	0.32	0.53	0.040	0.82	0.49	0.41
MC R1	4420	50-Yr	19000.00	5969.24	5992.39	7.11	3660.41	383.88	0.26	0.58	0.044	0.81	0.48	0.57

HEC-RAS Plan: Plan 07 River: Monument Creek Reach: MC R1 (Continued)

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl	Shear Total (lb/sq ft)	Mann Wtd Total	Shear Chan (lb/sq ft)	Shear LOB (lb/sq ft)	Shear ROB (lb/sq ft)
MC R1	4420	100-Yr	26000.00	5969.24	5995.71	8.54	5259.28	593.92	0.29	0.37	0.033	1.11	0.34	0.29
MC R1	4400	Bridge												
MC R1	4325	2-Yr	2700.00	5968.00	5974.57	5.98	428.72	94.74	0.42	1.37	0.045	1.96	0.84	1.07
MC R1	4325	5-Yr	5300.00	5968.00	5976.90	7.21	722.51	153.66	0.43	1.38	0.039	2.57	0.79	1.16
MC R1	4325	10-Yr	8300.00	5968.00	5979.25	7.36	1129.46	188.18	0.39	1.33	0.040	2.47	1.01	1.08
MC R1	4325	50-Yr	19000.00	5968.00	5985.50	7.88	2381.05	210.58	0.33	1.60	0.045	2.45	1.33	1.47
MC R1	4325	100-Yr	26000.00	5968.00	5988.26	8.54	2951.21	219.86	0.34	1.91	0.046	2.74	1.65	1.79
MC R1	4129	2-Yr	2700.00	5968.00	5973.55	8.40	367.02	100.28	0.63	0.67	0.026	1.02	0.62	0.24
MC R1	4129	5-Yr	5300.00	5968.00	5976.07	9.82	655.58	123.90	0.61	0.80	0.027	1.23	0.65	0.50
MC R1	4129	10-Yr	8300.00	5968.00	5978.24	11.10	959.81	165.08	0.61	0.82	0.026	1.45	0.51	0.73
MC R1	4129	50-Yr	19000.00	5968.00	5984.62	12.82	2177.98	210.02	0.56	1.00	0.032	1.64	0.79	0.93
MC R1	4129	100-Yr	26000.00	5968.00	5987.31	14.30	2775.74	232.29	0.57	1.18	0.033	1.95	1.01	0.99
MC R1	3846	2-Yr	2700.00	5966.00	5973.70	4.70	675.20	114.36	0.30	0.21	0.029	0.28	0.17	0.15
MC R1	3846	5-Yr	5300.00	5966.00	5976.27	6.18	1031.56	153.39	0.34	0.28	0.027	0.45	0.22	0.22
MC R1	3846	10-Yr	8300.00	5966.00	5978.46	7.36	1374.31	159.90	0.37	0.39	0.028	0.60	0.33	0.27
MC R1	3846	50-Yr	19000.00	5966.00	5984.72	9.76	2429.05	177.95	0.40	0.62	0.029	0.91	0.57	0.36
MC R1	3846	100-Yr	26000.00	5966.00	5987.36	11.30	2913.54	190.64	0.43	0.78	0.029	1.17	0.72	0.45
MC R1	3800	Bridge												
MC R1	3679	2-Yr	2700.00	5965.17	5972.98	6.42	414.12	115.45	0.47	0.69	0.030	1.12	0.49	0.05
MC R1	3679	5-Yr	5400.00	5965.17	5975.60	8.15	810.20	164.87	0.49	0.93	0.035	1.60	0.76	0.26
MC R1	3679	10-Yr	8300.00	5965.17	5977.71	9.31	1166.63	172.20	0.50	1.24	0.040	1.94	1.10	0.43
MC R1	3679	50-Yr	20000.00	5965.17	5983.89	12.39	2282.78	188.58	0.53	2.10	0.047	2.95	2.02	0.88
MC R1	3679	100-Yr	26000.00	5965.17	5986.30	13.65	2746.15	195.87	0.55	2.45	0.048	3.42	2.40	1.06
MC R1	3190	2-Yr	2700.00	5963.24	5970.34	1.47	826.42	162.31	0.10	4.65	0.162	6.44	4.72	3.91
MC R1	3190	5-Yr	5400.00	5963.24	5973.01	1.69	1271.24	170.49	0.10	5.80	0.148	7.67	5.41	5.23
MC R1	3190	10-Yr	8300.00	5963.24	5975.12	1.92	1638.25	177.08	0.10	7.09	0.142	9.26	6.30	6.59
MC R1	3190	50-Yr	20000.00	5963.24	5981.09	2.58	2745.07	193.93	0.11	11.13	0.133	14.59	8.88	10.98
MC R1	3190	100-Yr	26000.00	5963.24	5983.38	2.82	3265.69	280.37	0.11	9.45	0.109	16.83	4.53	12.78
MC R1	3148	2-Yr	2700.00	5960.00	5970.03	1.50	1166.70	161.64	0.08	4.17	0.230	5.94	4.62	3.57
MC R1	3148	5-Yr	5400.00	5960.00	5972.78	1.90	1623.78	169.93	0.09	6.41	0.207	8.87	6.58	5.80
MC R1	3148	10-Yr	8300.00	5960.00	5974.95	2.23	1999.28	176.11	0.10	8.43	0.196	11.55	8.23	7.85
MC R1	3148	50-Yr	20000.00	5960.00	5981.09	3.13	3128.72	197.75	0.12	14.39	0.175	20.32	11.84	14.67
MC R1	3148	100-Yr	26000.00	5960.00	5983.46	3.47	3735.90	314.11	0.13	11.72	0.139	24.07	6.27	17.56
MC R1	3002	2-Yr	2700.00	5959.15	5966.64	4.06	747.69	147.91	0.27	33.19	0.391	48.81	39.30	16.43
MC R1	3002	5-Yr	5400.00	5959.15	5968.98	4.79	1115.19	161.94	0.27	43.03	0.349	61.82	49.47	26.99
MC R1	3002	10-Yr	8300.00	5959.15	5970.72	5.33	1400.83	166.63	0.28	51.79	0.324	72.45	57.33	36.15
MC R1	3002	50-Yr	20000.00	5959.15	5975.30	6.95	2190.81	177.48	0.31	80.96	0.279	110.16	83.12	65.20
MC R1	3002	100-Yr	26000.00	5959.15	5976.67	7.87	2436.13	180.74	0.33	100.86	0.270	137.13	101.54	83.42
MC R1	2655	2-Yr	2700.00	5958.00	5963.34	6.78	457.04	127.17	0.52	0.62	0.031	0.92	0.74	0.16
MC R1	2655	5-Yr	5400.00	5958.00	5965.26	8.74	738.55	156.93	0.57	0.88	0.031	1.37	1.11	0.42
MC R1	2655	10-Yr	8300.00	5958.00	5966.66	10.28	962.22	162.13	0.62	1.21	0.032	1.79	1.45	0.72

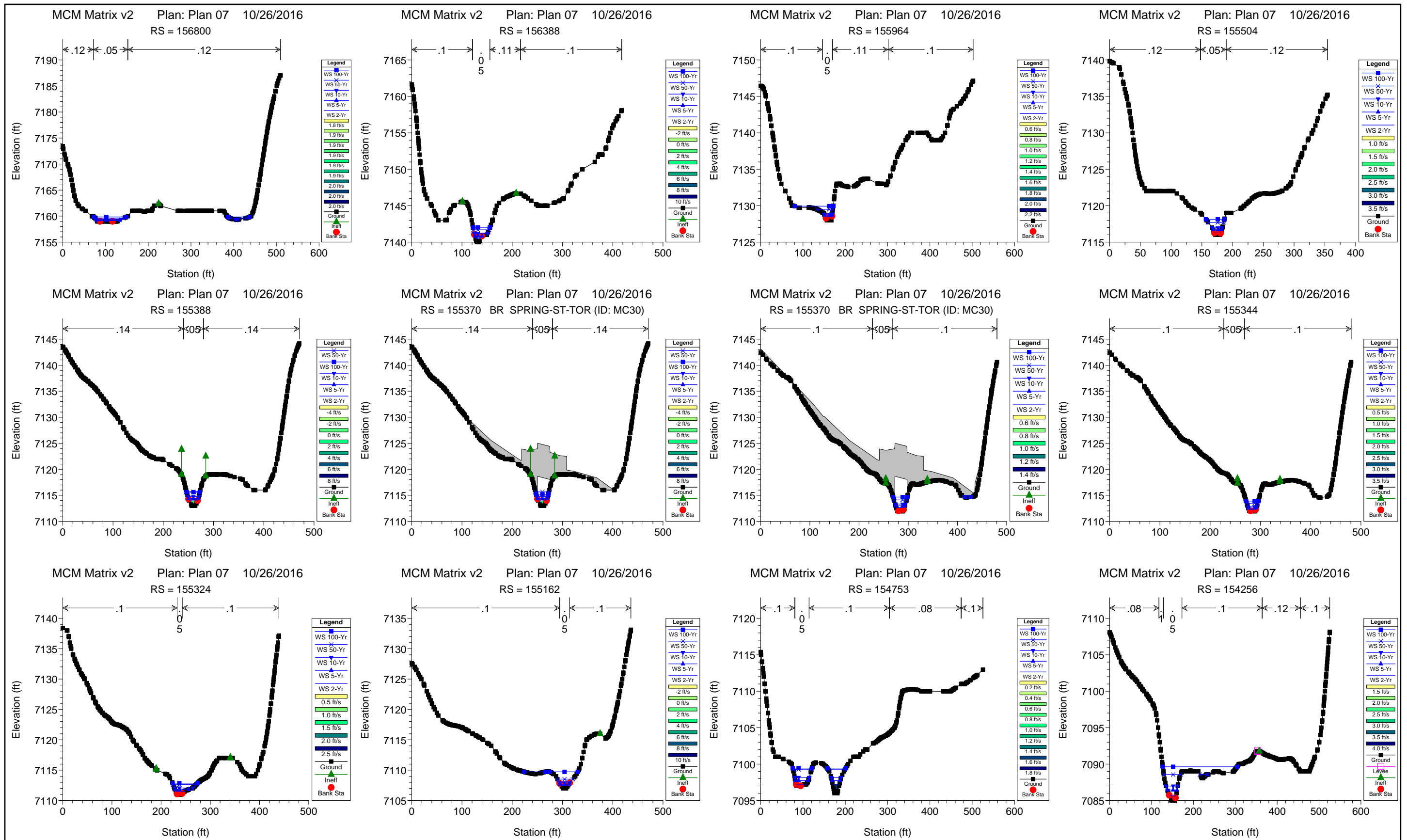
HEC-RAS Plan: Plan 07 River: Monument Creek Reach: MC R1 (Continued)

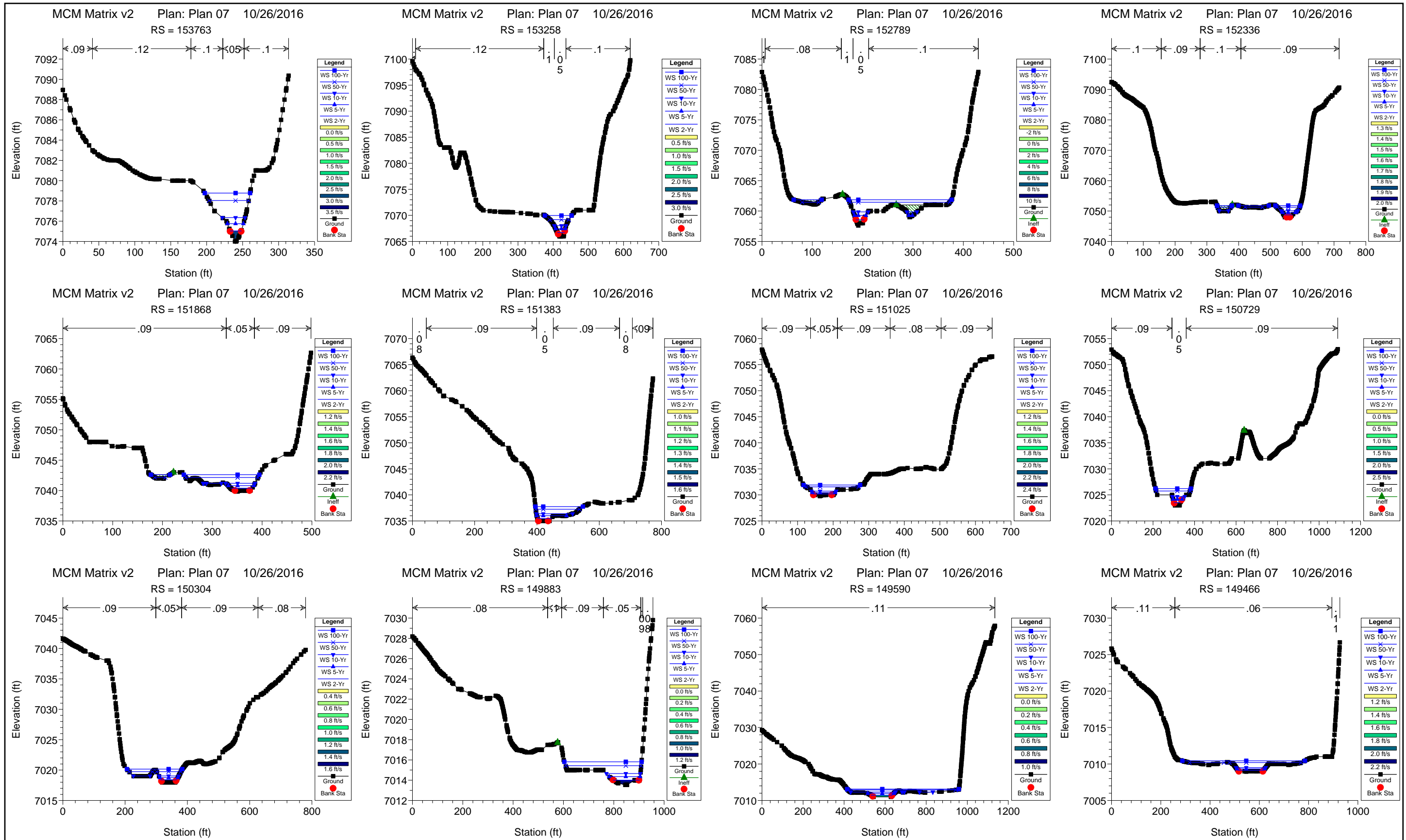
Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl	Shear Total (lb/sq ft)	Mann Wtd Total	Shear Chan (lb/sq ft)	Shear LOB (lb/sq ft)	Shear ROB (lb/sq ft)
MC R1	2655	50-Yr	20000.00	5958.00	5970.66	14.47	1635.54	174.48	0.72	2.26	0.033	3.12	2.48	1.68
MC R1	2655	100-Yr	26000.00	5958.00	5972.77	15.31	2011.41	181.19	0.70	2.42	0.034	3.32	2.60	1.90
MC R1	2380	2-Yr	2700.00	5957.00	5961.31	9.86	305.04	141.28	0.86	1.15	0.026	2.13		0.58
MC R1	2380	5-Yr	5400.00	5957.00	5963.11	12.06	609.34	193.29	0.89	1.71	0.034	3.02		1.21
MC R1	2380	10-Yr	8300.00	5957.00	5964.40	13.60	862.34	198.72	0.92	2.61	0.040	3.98		2.07
MC R1	2380	50-Yr	20000.00	5957.00	5968.98	16.46	1804.48	212.66	0.86	3.91	0.048	5.11	0.71	3.60
MC R1	2380	100-Yr	26000.00	5957.00	5971.63	16.47	2379.86	220.10	0.78	3.74	0.049	4.77	0.90	3.58
MC R1	2165	2-Yr	2700.00	5955.78	5961.21	4.37	730.31	226.55	0.34	0.18	0.026	0.28	0.09	0.07
MC R1	2165	5-Yr	5400.00	5955.78	5963.11	6.03	1200.66	268.88	0.40	0.30	0.030	0.48	0.16	0.17
MC R1	2165	10-Yr	8300.00	5955.78	5964.69	7.27	1646.31	297.59	0.44	0.42	0.032	0.66	0.23	0.27
MC R1	2165	50-Yr	20000.00	5955.78	5969.21	10.56	3200.68	391.75	0.51	0.74	0.037	1.20	0.41	0.56
MC R1	2165	100-Yr	26000.00	5955.78	5971.94	10.84	4329.02	431.79	0.48	0.74	0.040	1.19	0.39	0.60
MC R1	2000		Bridge											
MC R1	1814	2-Yr	2700.00	5954.00	5959.31	6.23	489.73	131.21	0.50	0.46	0.029	0.59	0.39	0.10
MC R1	1814	5-Yr	5400.00	5954.00	5961.31	7.79	861.09	224.04	0.53	0.47	0.026	0.82	0.47	0.16
MC R1	1814	10-Yr	8300.00	5954.00	5963.00	8.73	1254.79	243.62	0.53	0.58	0.028	0.96	0.61	0.29
MC R1	1814	50-Yr	20000.00	5954.00	5968.35	10.88	2753.28	316.26	0.52	0.79	0.033	1.26	0.92	0.51
MC R1	1814	100-Yr	26000.00	5954.00	5971.12	11.19	3693.76	370.59	0.48	0.75	0.034	1.25	0.94	0.49
MC R1	1307	2-Yr	2700.00	5951.38	5956.67	10.22	373.43	149.77	0.83	1.14	0.032	2.16	0.66	0.80
MC R1	1307	5-Yr	5400.00	5951.38	5958.29	12.92	626.19	160.15	0.91	1.92	0.038	3.13	1.42	1.54
MC R1	1307	10-Yr	8300.00	5951.38	5959.58	15.10	836.64	165.17	0.96	2.65	0.040	4.02	2.09	2.24
MC R1	1307	50-Yr	20000.00	5951.38	5965.67	16.52	1902.27	184.34	0.79	2.90	0.045	3.96	2.51	2.66
MC R1	1307	100-Yr	26000.00	5951.38	5968.74	16.70	2483.54	194.12	0.72	2.78	0.046	3.78	2.43	2.58
MC R1	1271	2-Yr	2700.00	5949.00	5953.69	10.96	284.64	96.84	0.96	3.12	0.042	4.32	2.98	1.32
MC R1	1271	5-Yr	5400.00	5949.00	5956.30	10.73	632.78	151.77	0.73	2.19	0.041	3.51	2.20	1.31
MC R1	1271	10-Yr	8300.00	5949.00	5958.64	10.70	1004.84	164.63	0.63	2.12	0.045	3.16	2.13	1.53
MC R1	1271	50-Yr	20000.00	5949.00	5966.47	11.25	2396.93	189.80	0.48	2.06	0.049	2.83	2.01	1.77
MC R1	1271	100-Yr	26000.00	5949.00	5969.47	11.93	2980.02	200.18	0.47	2.19	0.050	3.02	2.11	1.91
MC R1	1230	2-Yr	2700.00	5947.67	5953.48	7.47	411.70	119.81	0.58	1.22	0.039	1.85	0.84	0.39
MC R1	1230	5-Yr	5400.00	5947.67	5956.39	8.42	824.98	156.21	0.52	1.32	0.043	2.03	0.94	0.81
MC R1	1230	10-Yr	8300.00	5947.67	5958.61	9.40	1183.22	165.64	0.52	1.59	0.047	2.33	1.23	1.13
MC R1	1230	50-Yr	20000.00	5947.67	5966.26	11.20	2543.06	189.18	0.47	1.99	0.052	2.75	1.67	1.63
MC R1	1230	100-Yr	26000.00	5947.67	5969.17	12.15	3108.02	200.04	0.47	2.20	0.052	3.07	1.86	1.83
MC R1	1208	2-Yr	2700.00	5946.50	5953.61	6.26	507.62	120.14	0.44	0.36	0.027	0.54	0.35	0.10
MC R1	1208	5-Yr	5400.00	5946.50	5956.46	7.67	905.76	154.46	0.44	0.45	0.028	0.72	0.41	0.25
MC R1	1208	10-Yr	8300.00	5946.50	5958.65	8.86	1255.90	164.10	0.46	0.59	0.031	0.89	0.55	0.39
MC R1	1208	50-Yr	20000.00	5946.50	5966.23	11.17	2593.51	188.13	0.45	0.84	0.034	1.19	0.80	0.66
MC R1	1208	100-Yr	26000.00	5946.50	5969.12	12.23	3151.43	199.04	0.46	0.96	0.035	1.37	0.91	0.76
MC R1	1185	2-Yr	2700.00	5946.00	5953.21	7.63	397.45	99.10	0.53	3.53	0.065	5.69	3.01	0.89
MC R1	1185	5-Yr	5400.00	5946.00	5956.13	8.57	725.64	125.74	0.49	3.88	0.066	6.34	2.94	2.24
MC R1	1185	10-Yr	8300.00	5946.00	5958.44	8.89	1048.14	155.54	0.46	3.63	0.062	6.33	2.46	2.76
MC R1	1185	50-Yr	20000.00	5946.00	5966.33	8.68	2421.98	189.97	0.35	3.23	0.062	5.07	2.66	2.74

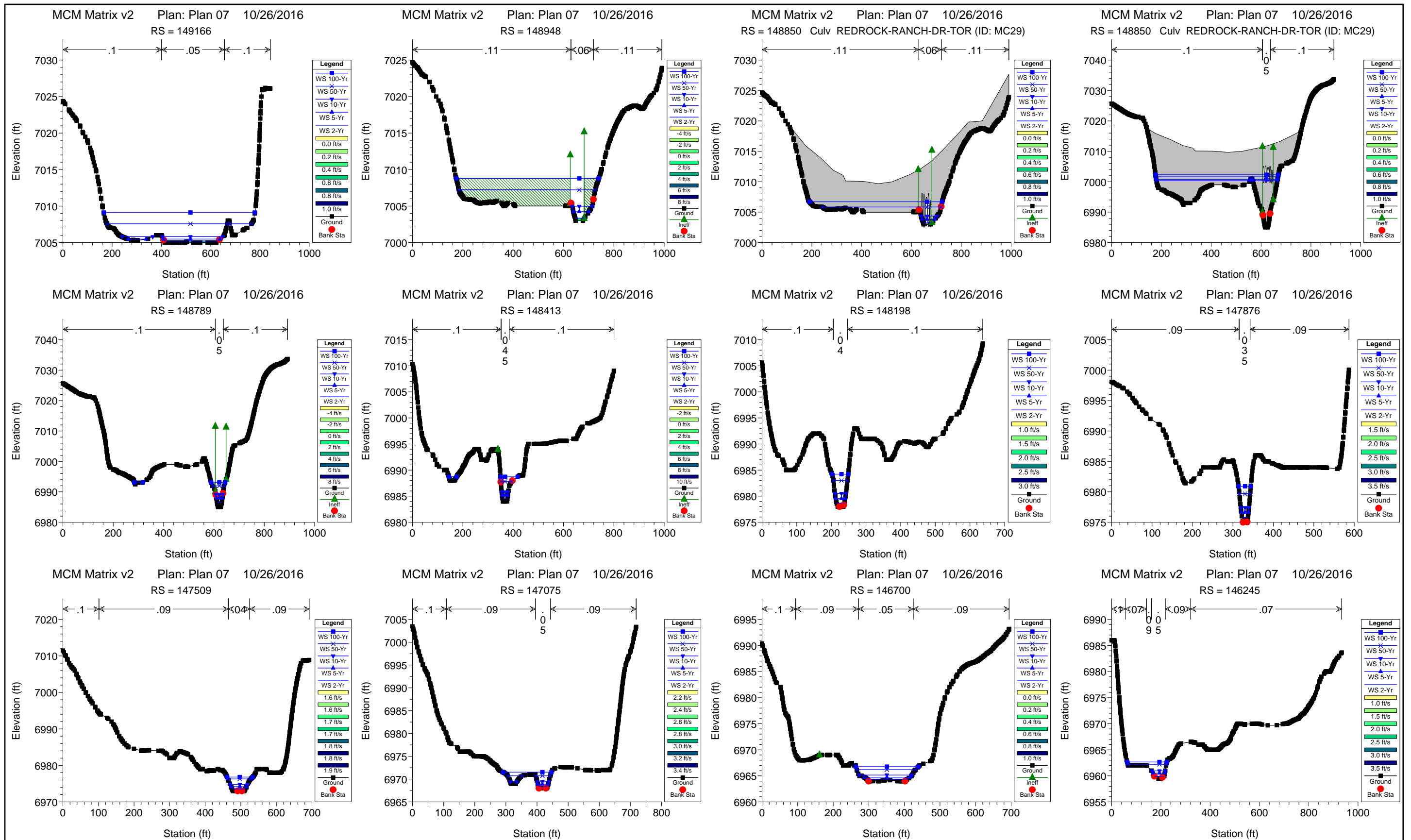
HEC-RAS Plan: Plan 07 River: Monument Creek Reach: MC R1 (Continued)

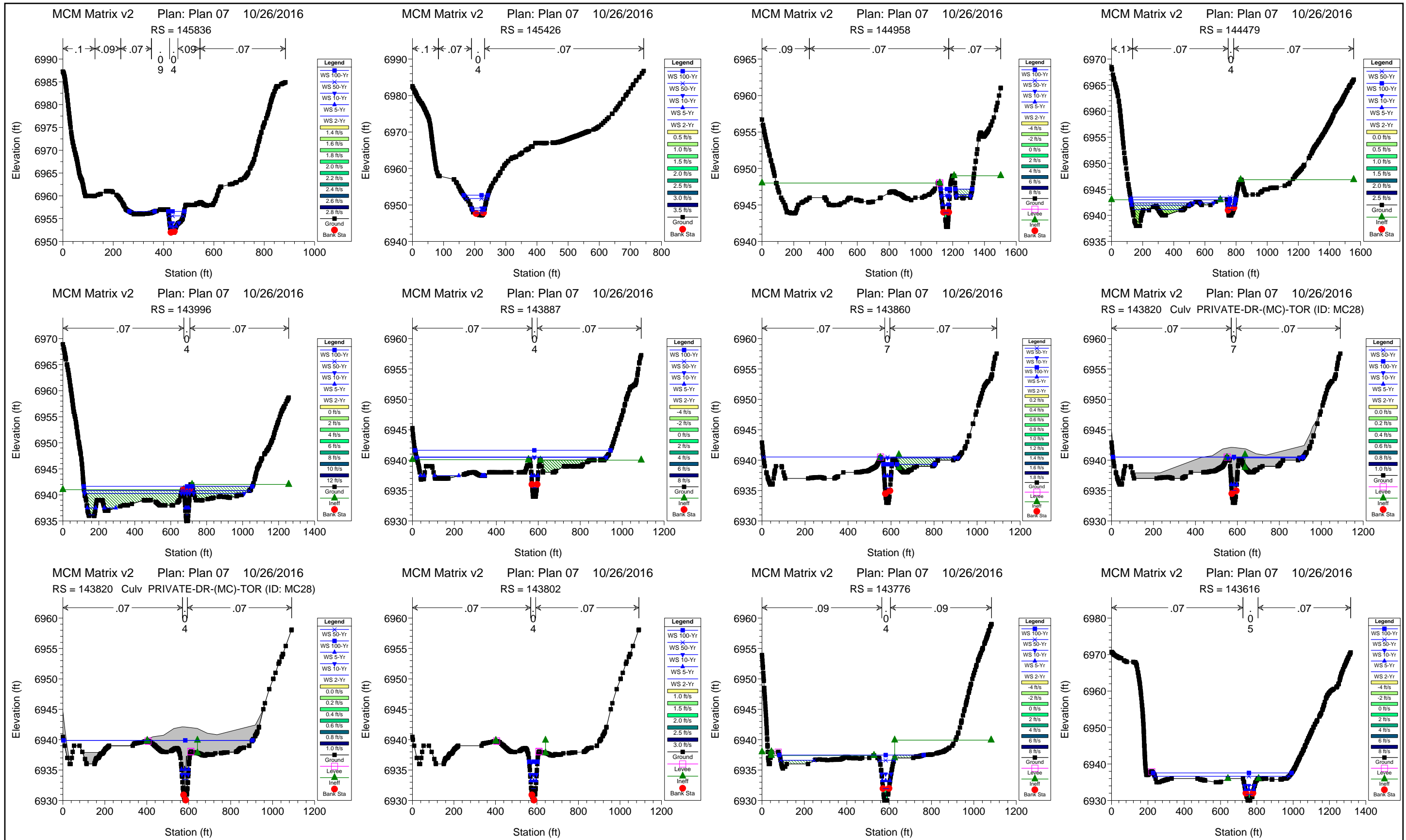
Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl	Shear Total (lb/sq ft)	Mann Wtd Total	Shear Chan (lb/sq ft)	Shear LOB (lb/sq ft)	Shear ROB (lb/sq ft)
MC R1	1185	100-Yr	26000.00	5946.00	5969.29	9.04	3006.15	205.13	0.34	3.32	0.062	5.25	2.81	2.83
MC R1	1175	Bridge												
MC R1	1158	2-Yr	2700.00	5946.00	5952.32	9.04	332.63	75.02	0.66	0.87	0.028	1.16	0.65	0.30
MC R1	1158	5-Yr	5400.00	5946.00	5954.29	12.34	509.84	101.66	0.78	1.24	0.026	1.96	1.06	0.52
MC R1	1158	10-Yr	8300.00	5946.00	5955.92	14.62	685.14	113.56	0.84	1.62	0.027	2.58	1.26	0.92
MC R1	1158	50-Yr	20000.00	5946.00	5961.00	19.73	1358.63	148.44	0.91	2.51	0.029	4.07	1.88	1.96
MC R1	1158	100-Yr	26000.00	5946.00	5962.57	22.37	1598.29	156.34	0.98	3.14	0.030	5.06	2.41	2.51
MC R1	945	2-Yr	2700.00	5946.00	5951.82	8.35	374.63	101.02	0.62	0.65	0.026	1.00	0.76	0.24
MC R1	945	5-Yr	5400.00	5946.00	5954.06	10.39	619.26	119.02	0.65	0.90	0.027	1.38	0.89	0.55
MC R1	945	10-Yr	8300.00	5946.00	5955.99	11.75	871.25	138.43	0.66	1.04	0.027	1.65	0.89	0.77
MC R1	945	50-Yr	20000.00	5946.00	5961.66	15.35	1730.06	166.71	0.69	1.58	0.030	2.41	1.42	1.29
MC R1	945	100-Yr	26000.00	5946.00	5960.60	21.87	1557.92	159.50	1.01	3.31	0.030	5.01	2.94	2.73
MC R1	499	2-Yr	2700.00	5945.00	5949.25	10.50	283.84	94.29	0.92	1.30	0.027	1.76	1.19	0.39
MC R1	499	5-Yr	5400.00	5945.00	5951.20	13.08	490.00	142.24	0.94	1.67	0.028	2.40	1.46	0.84
MC R1	499	10-Yr	8300.00	5945.00	5952.85	15.00	699.35	237.04	0.95	1.93	0.029	2.91	1.79	1.09
MC R1	499	50-Yr	20000.00	5945.00	5957.55	20.17	1450.51	344.90	1.01	2.77	0.032	4.49	2.71	1.87
MC R1	499	100-Yr	26000.00	5945.00	5958.82	20.00	2649.91	398.32	0.95	2.07	0.038	4.27	1.74	1.82

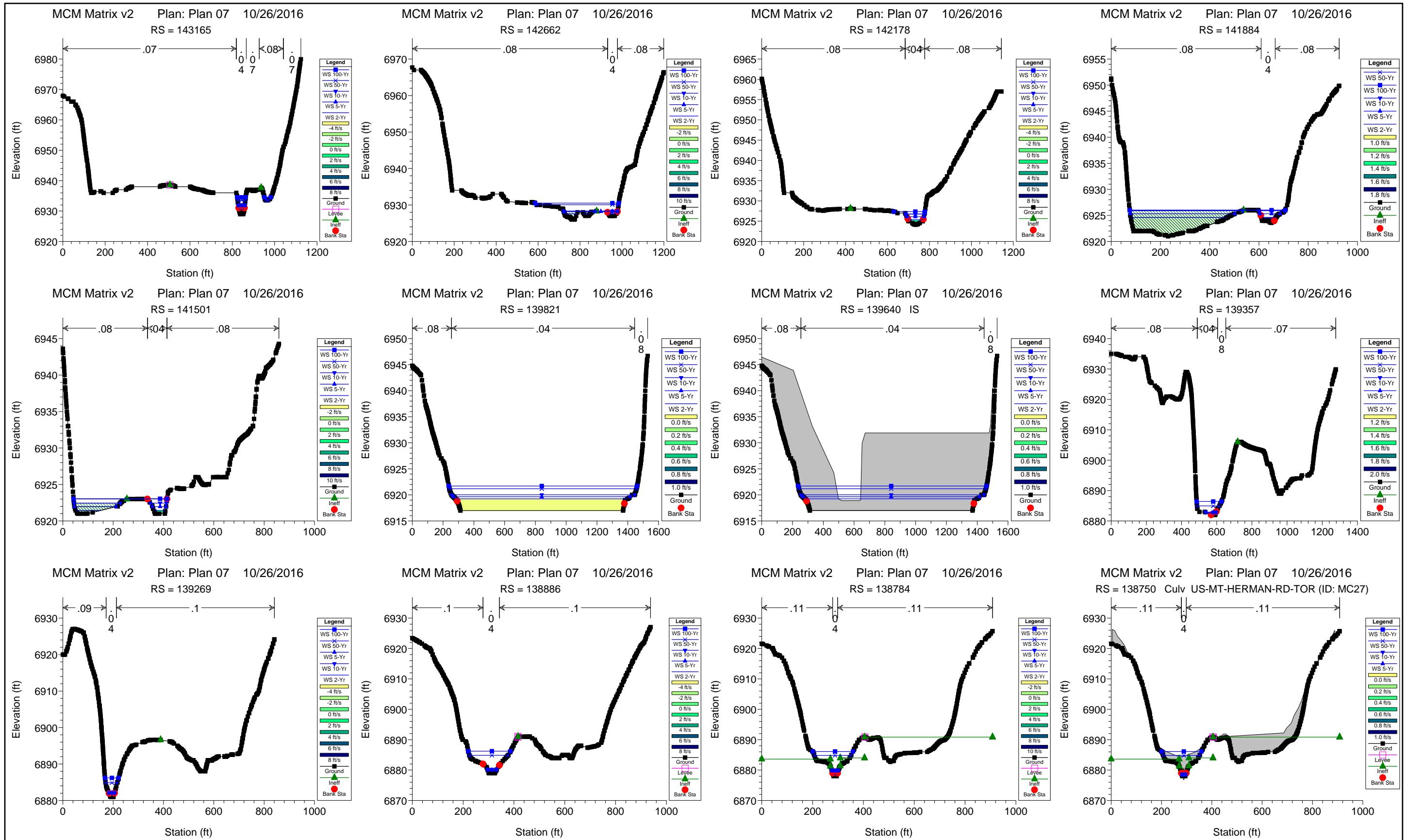
Monument Creek Cross Section Diagrams

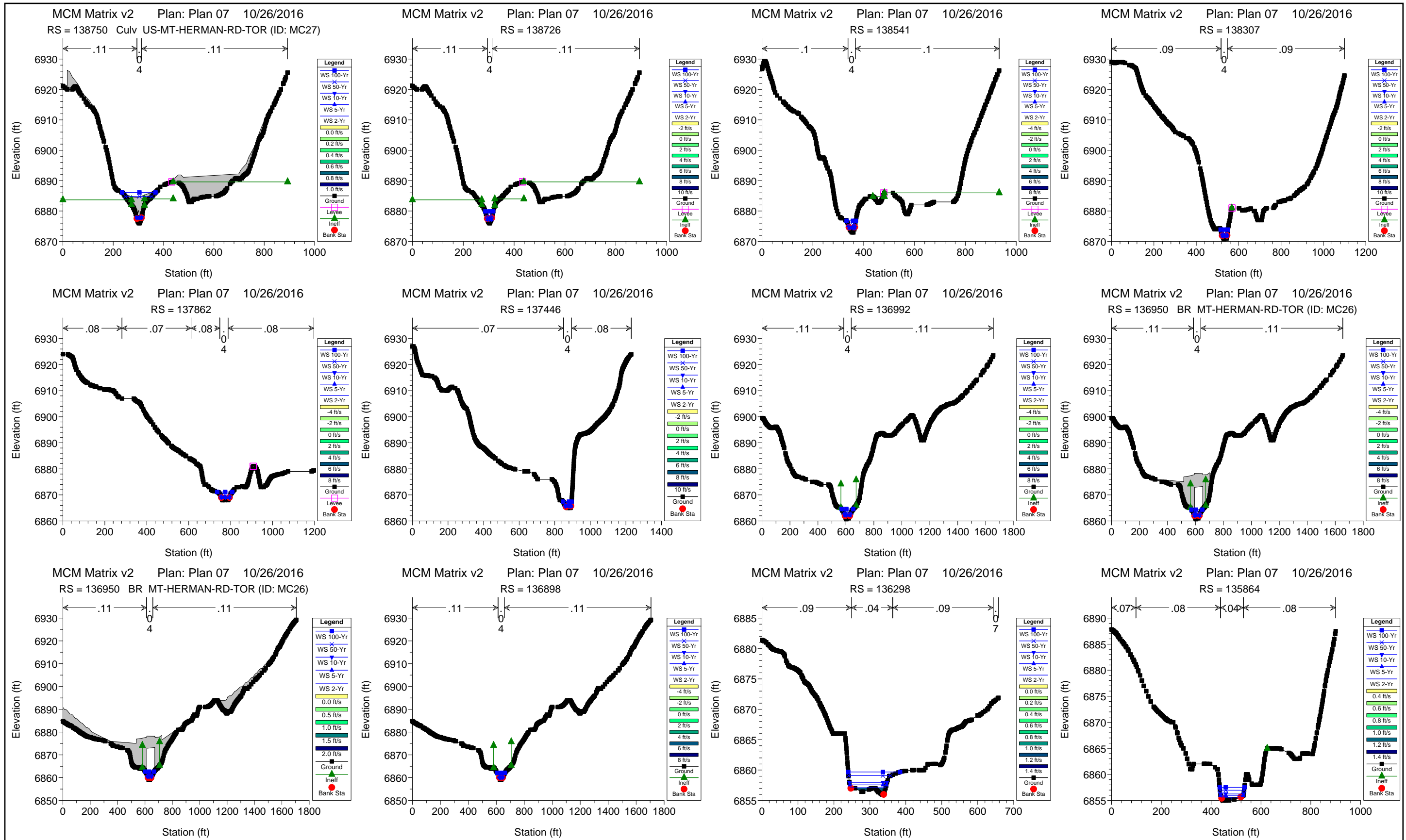


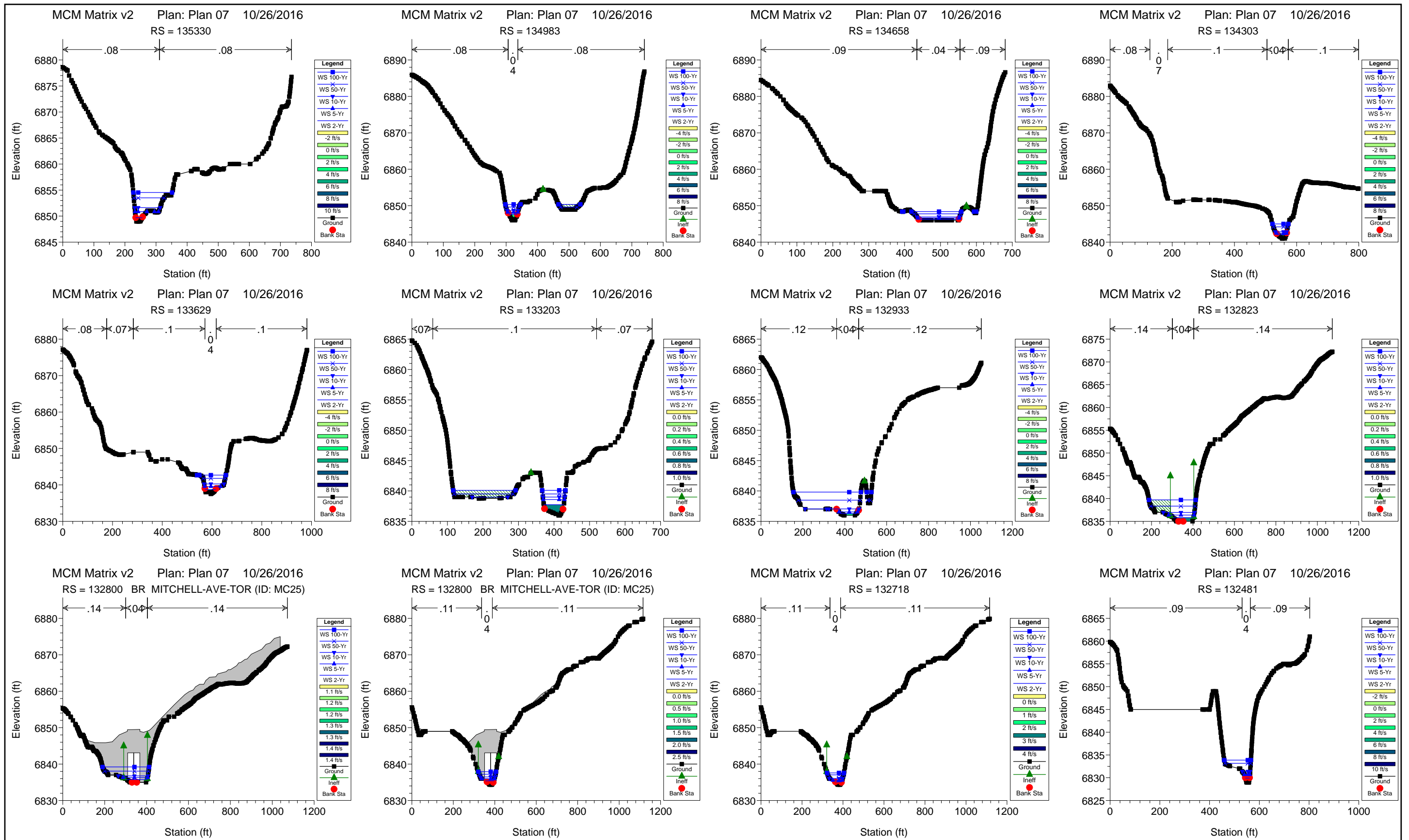


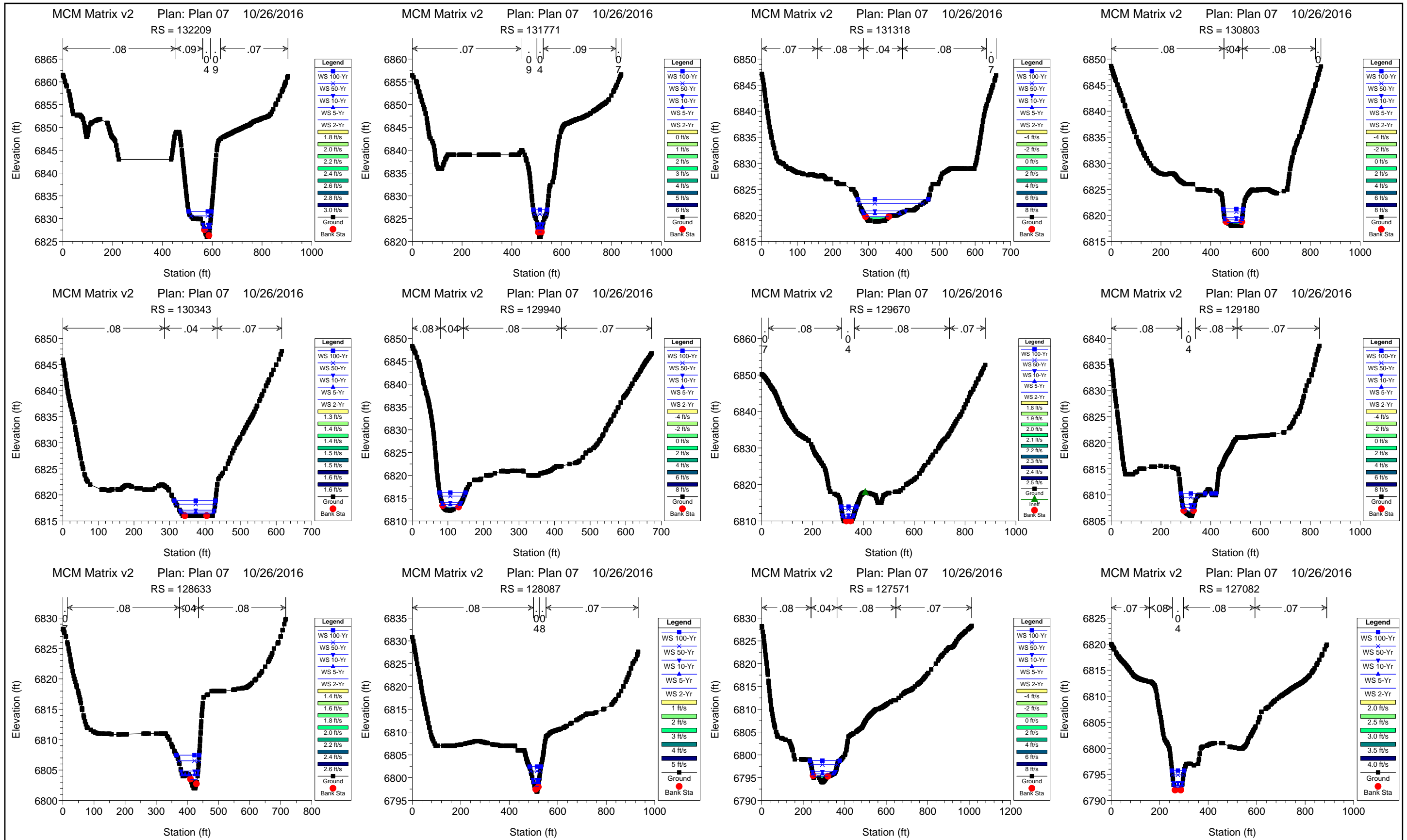


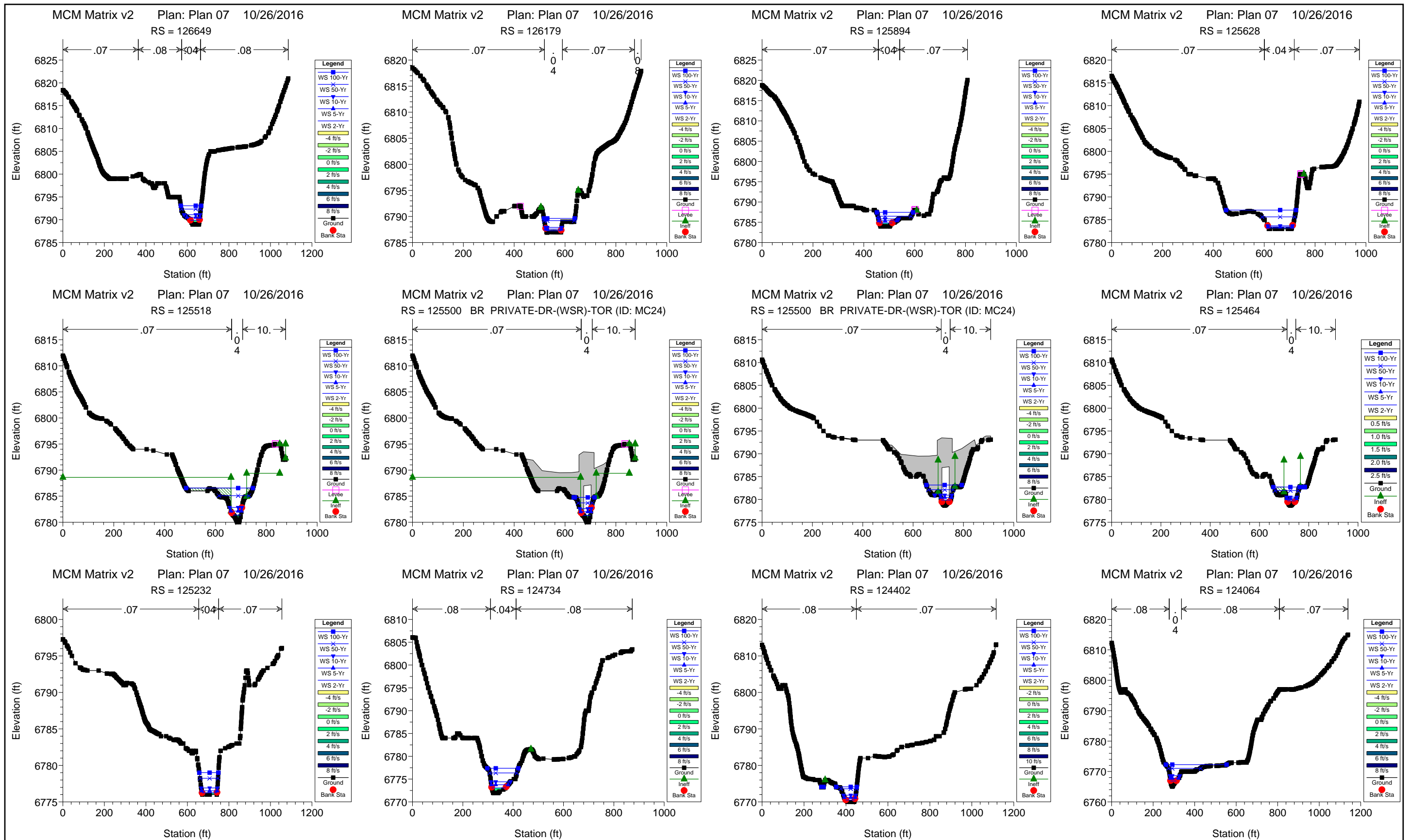


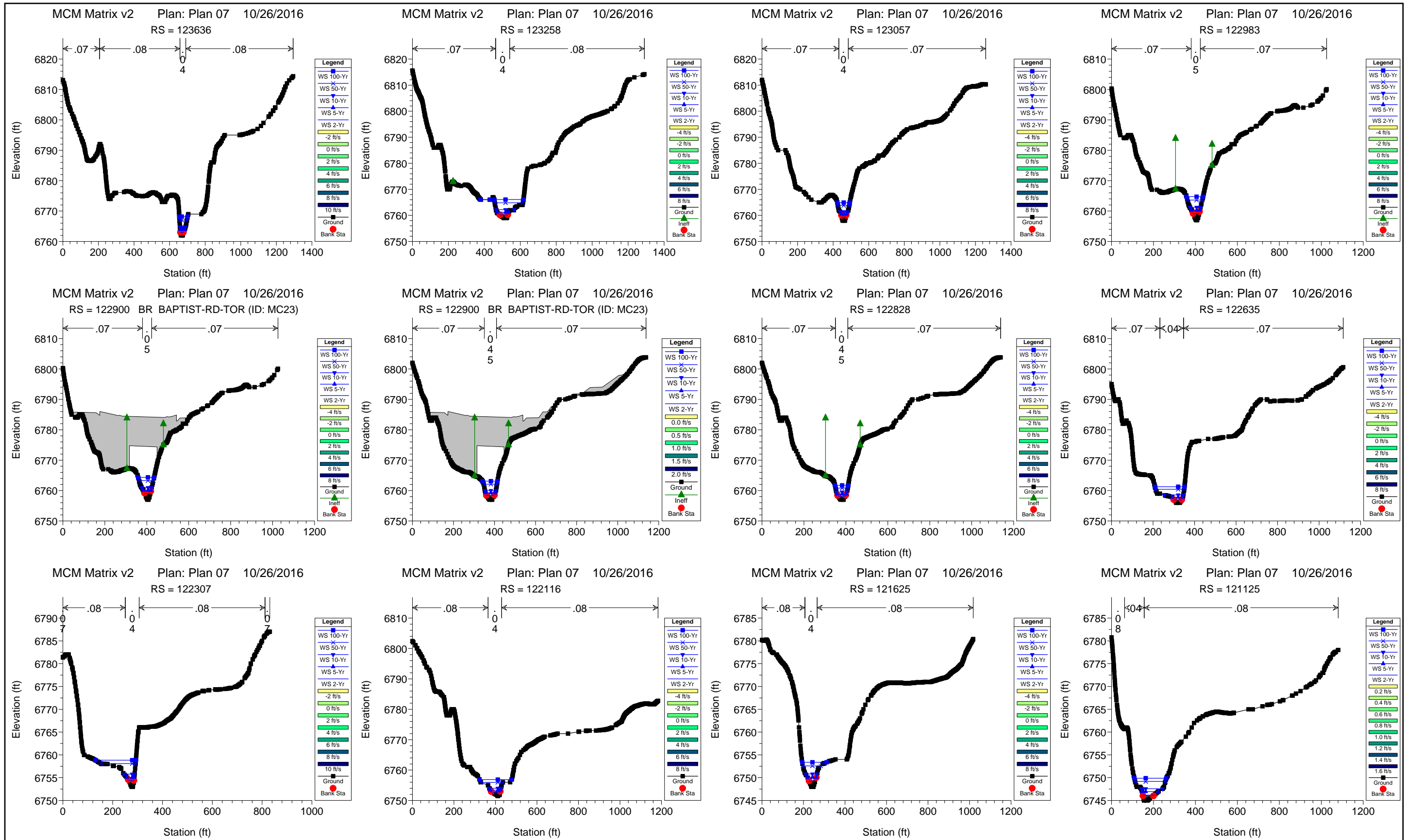


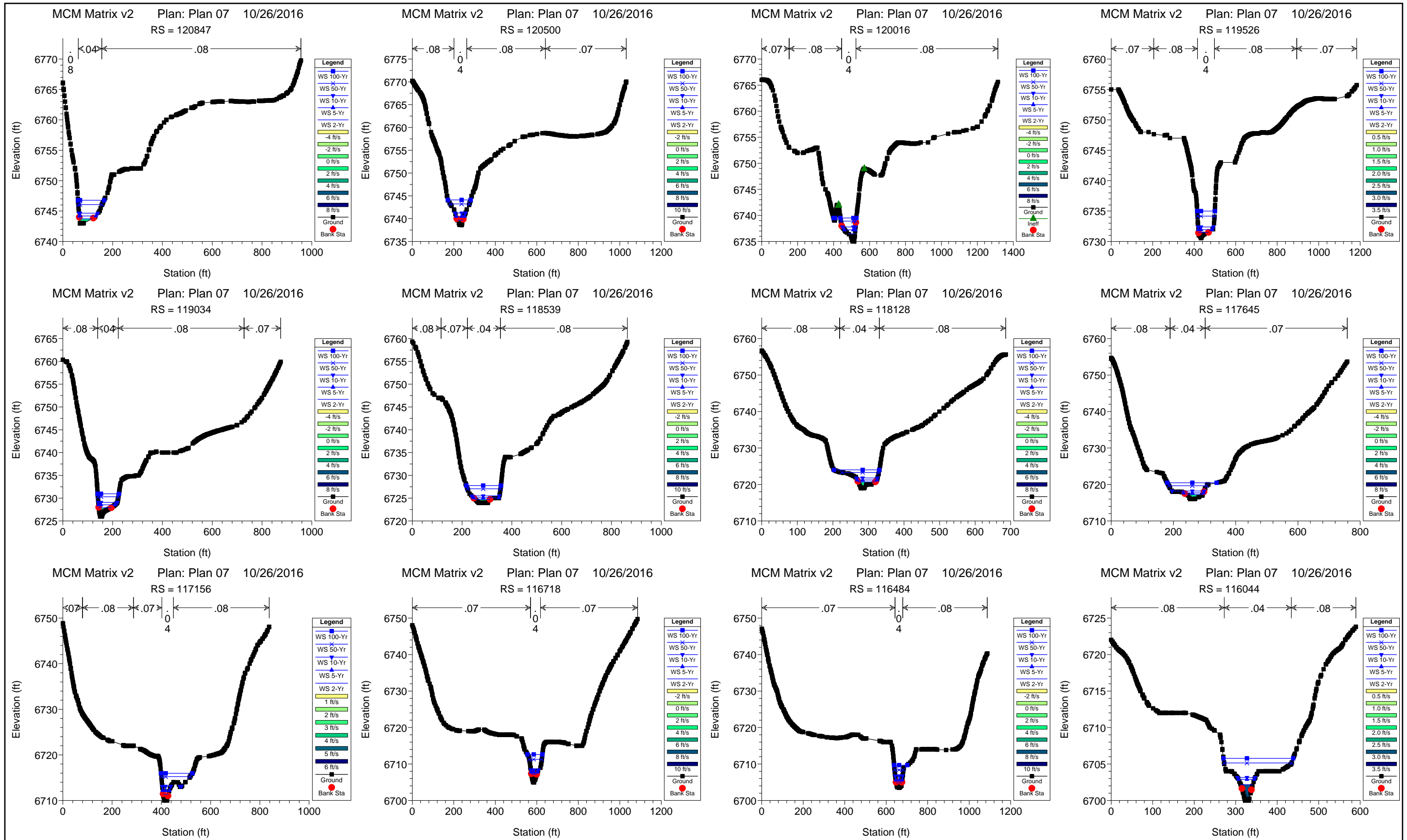


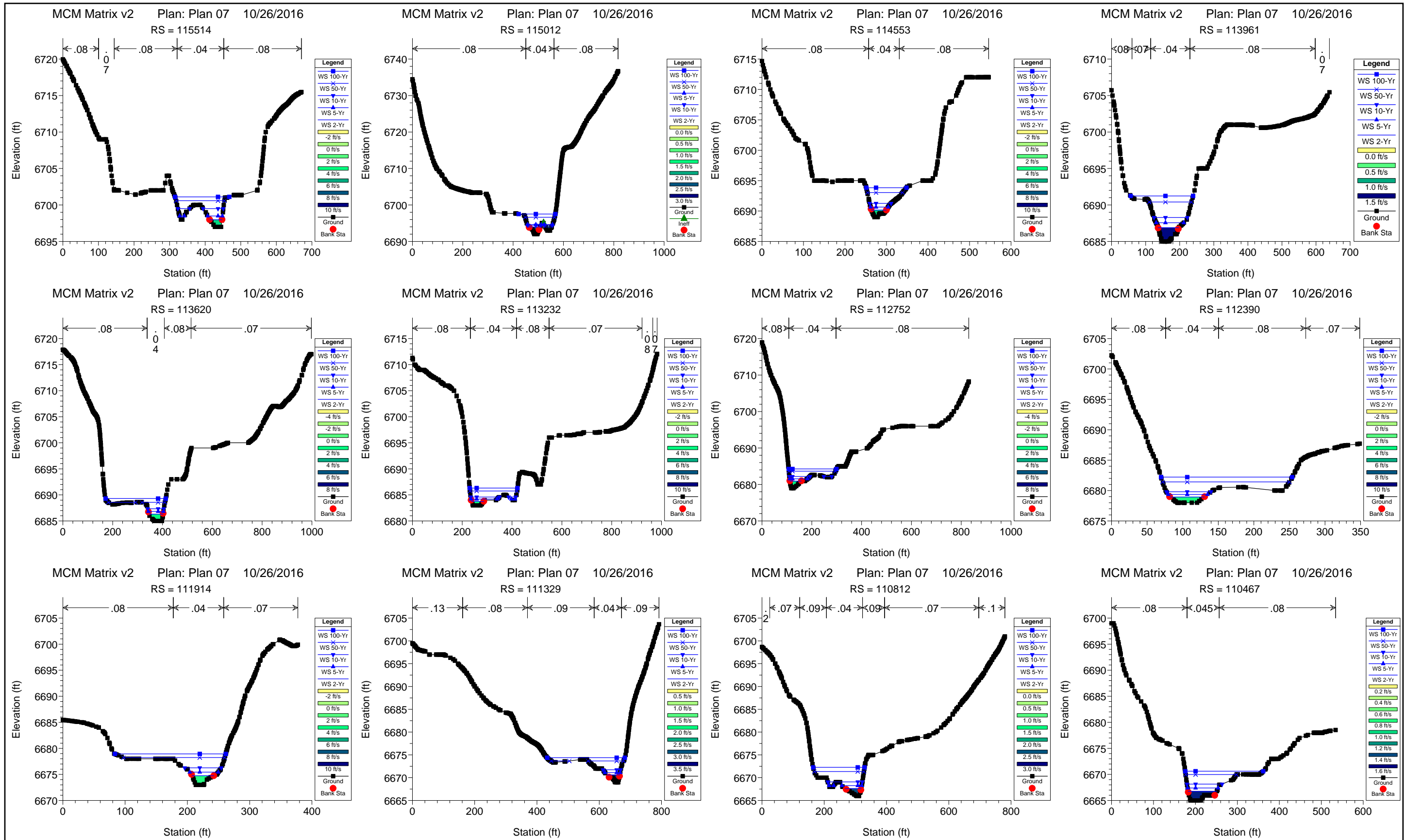


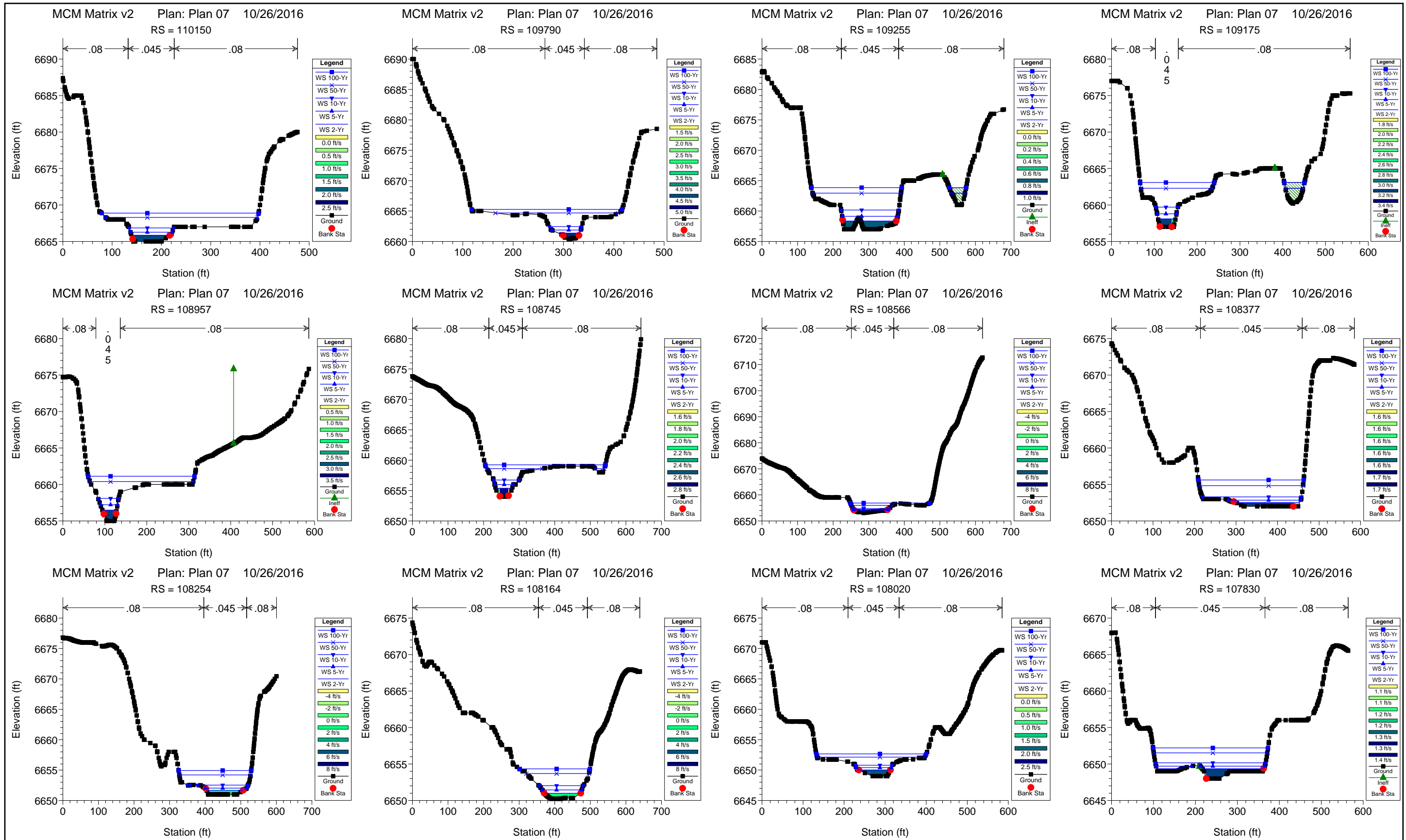


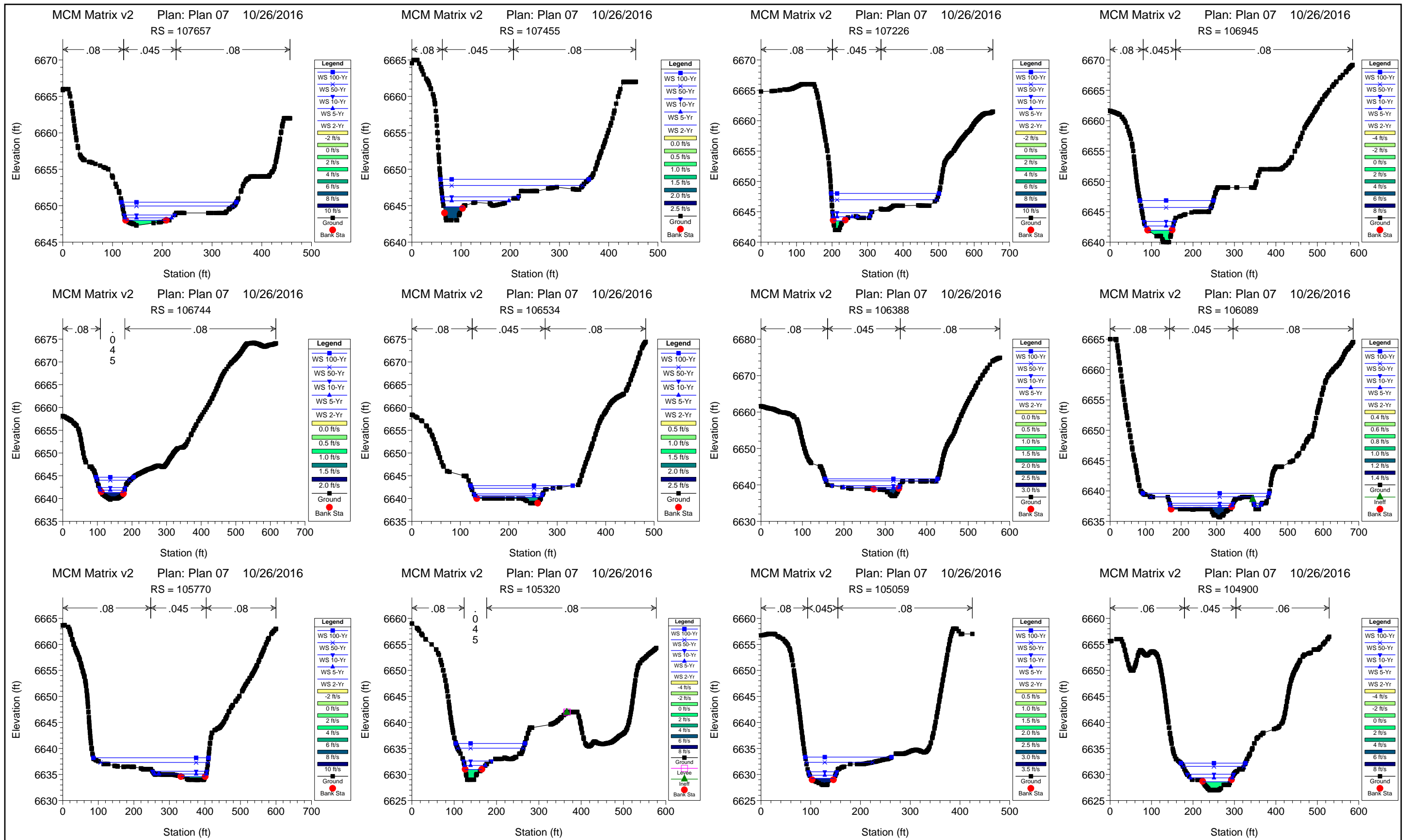


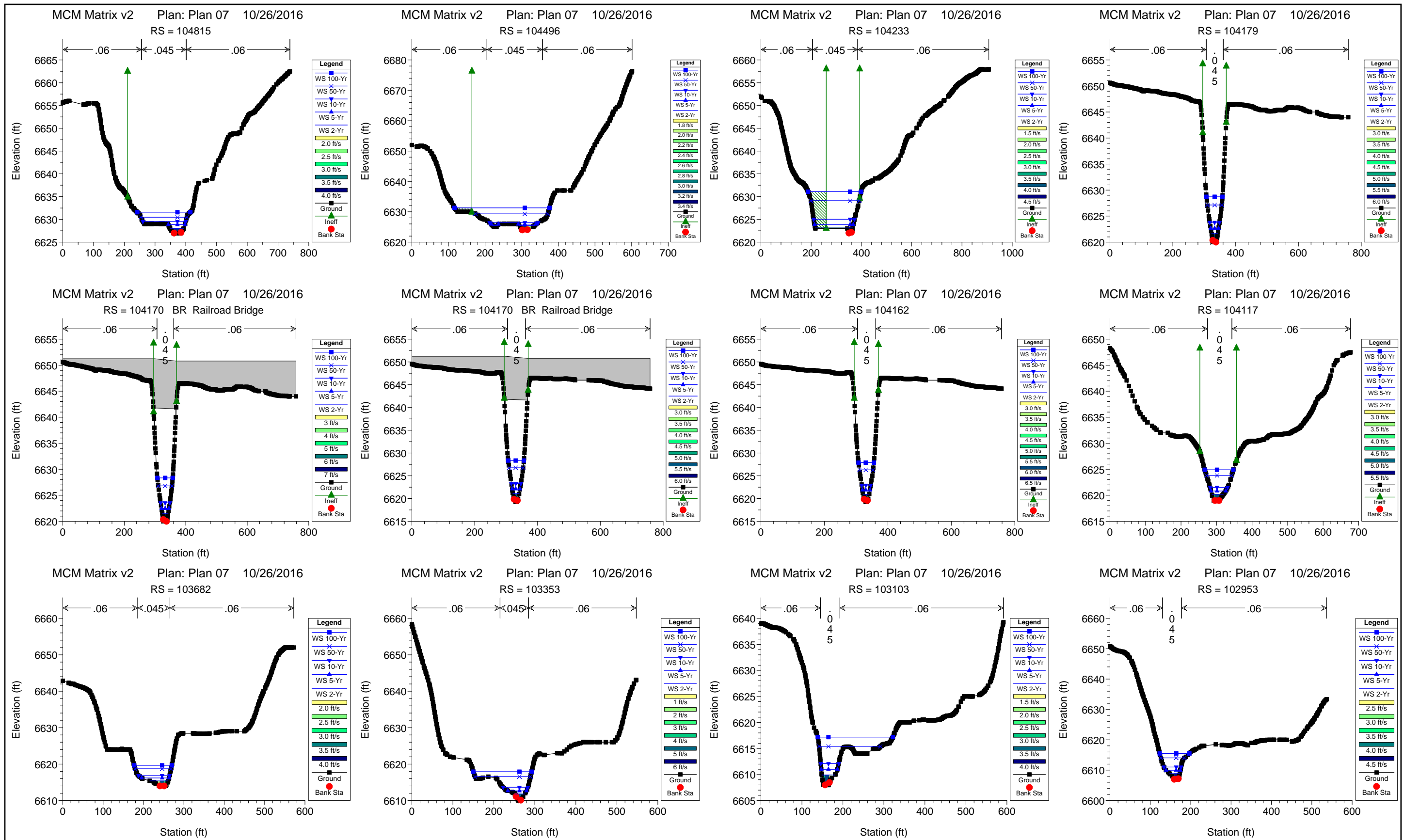


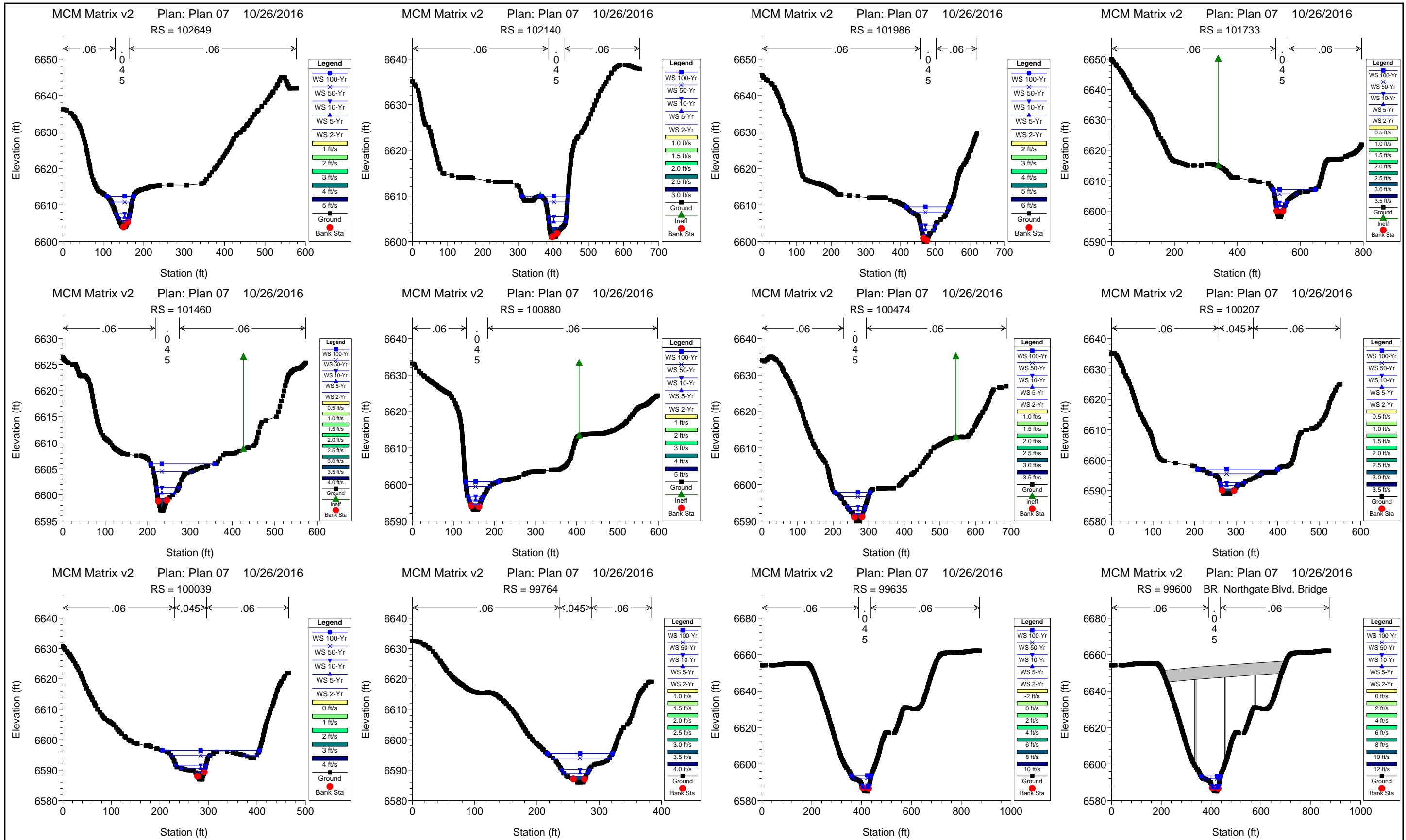


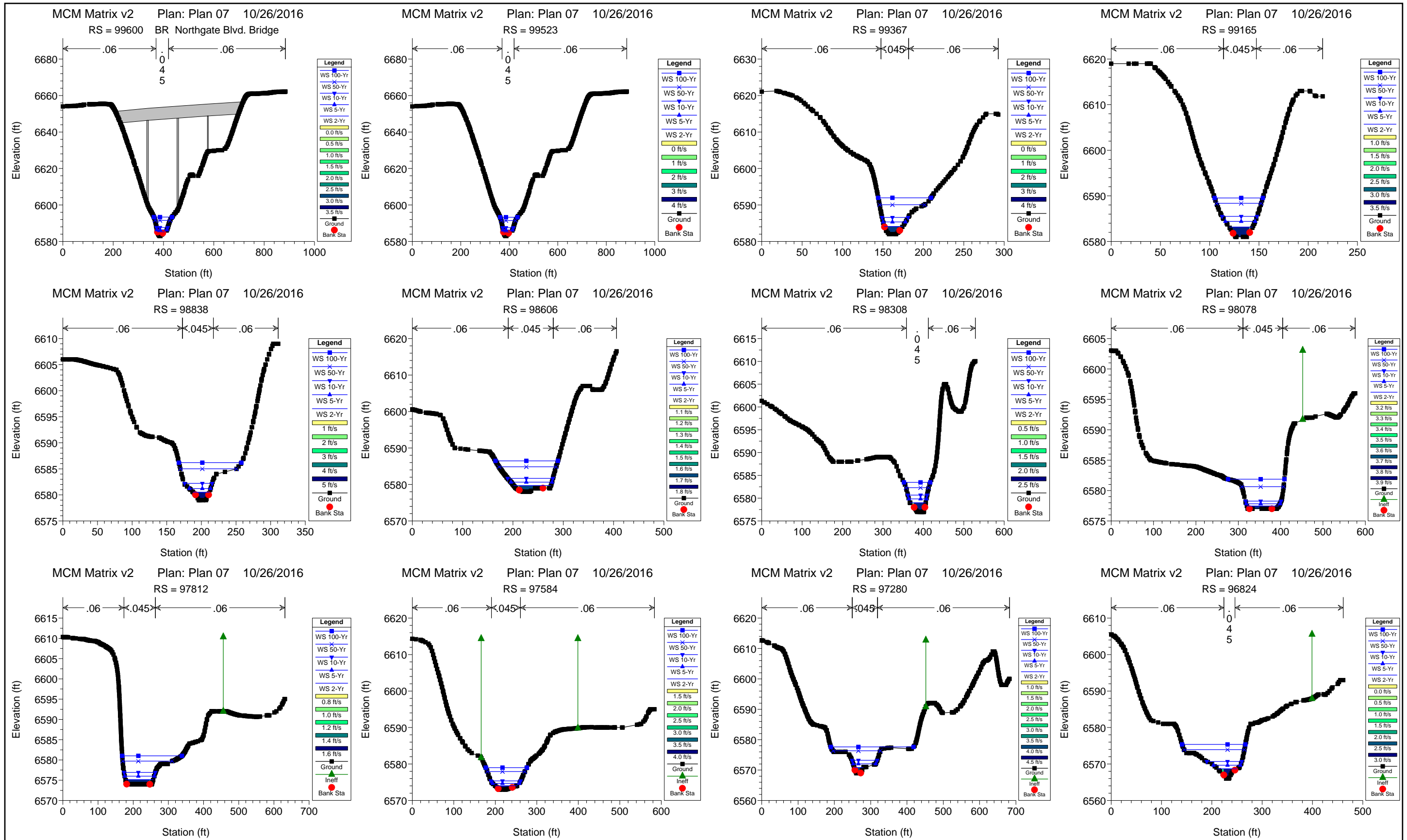


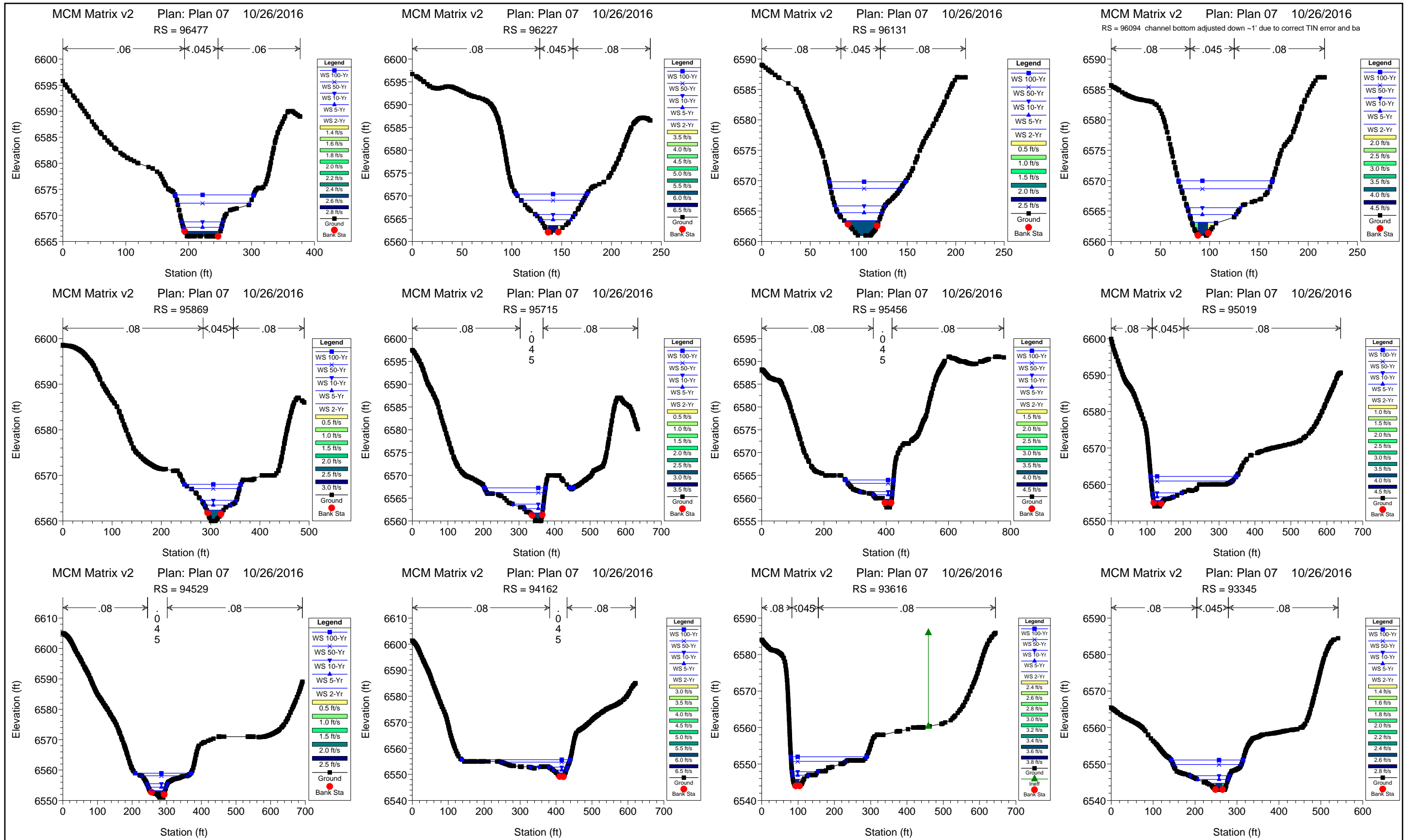


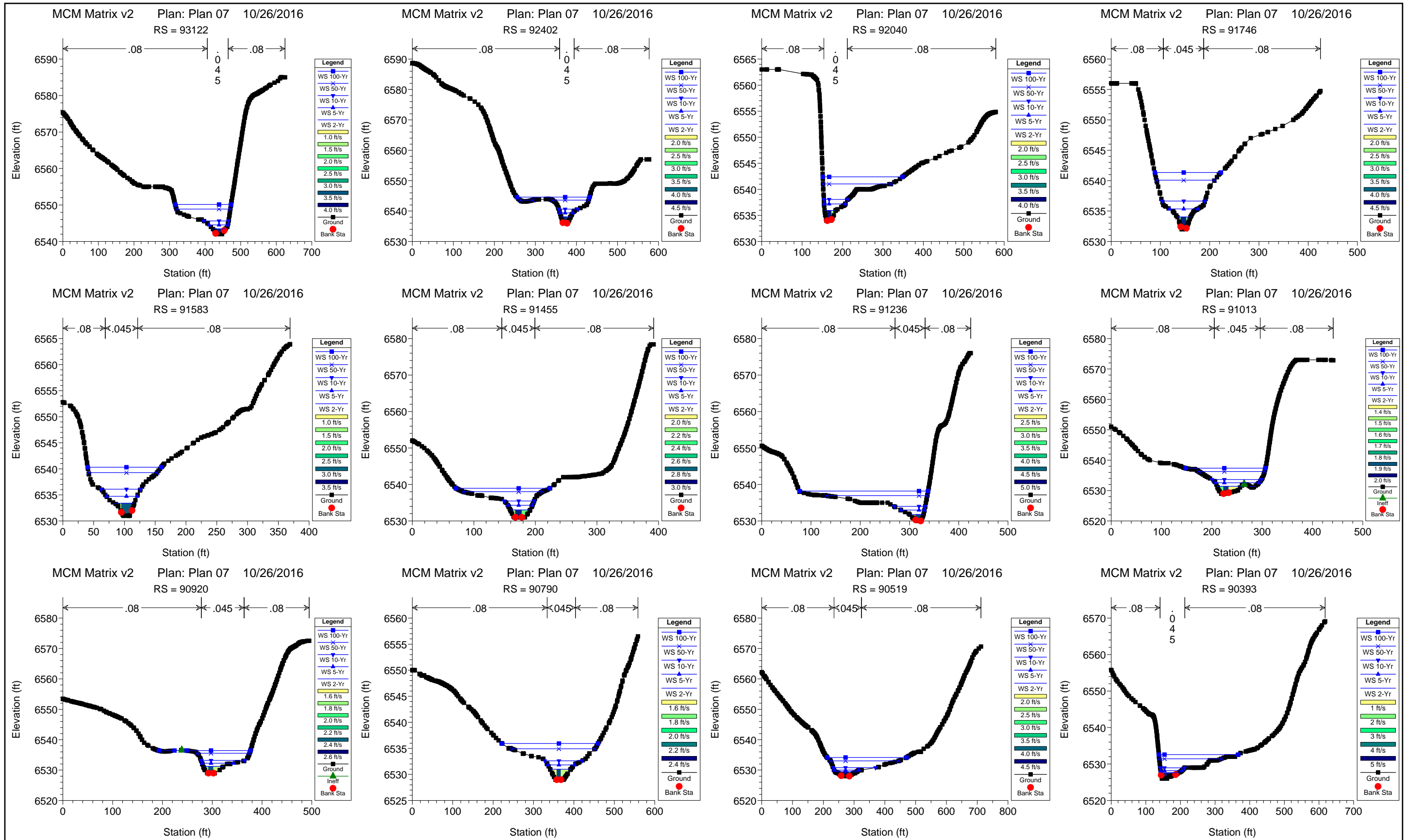


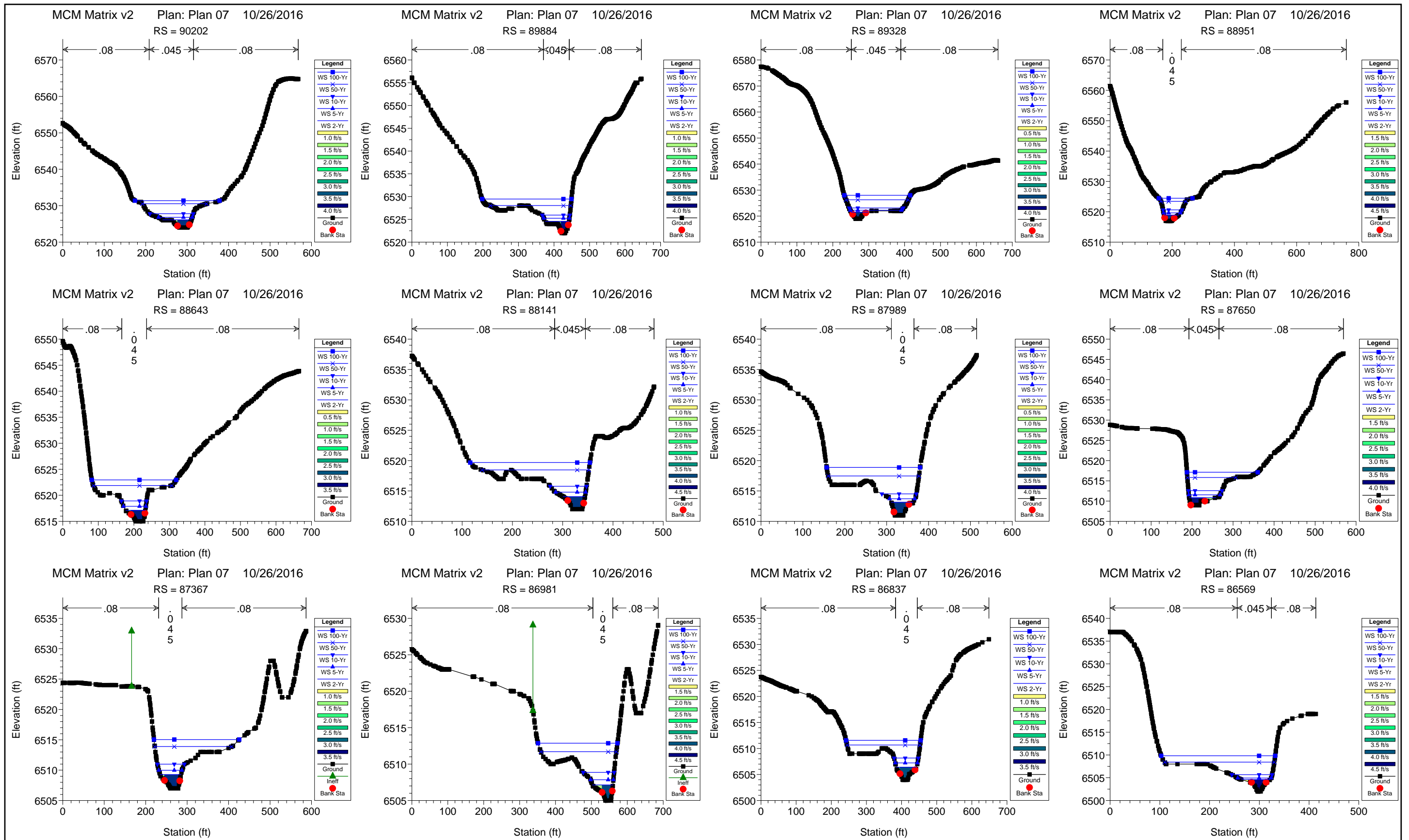


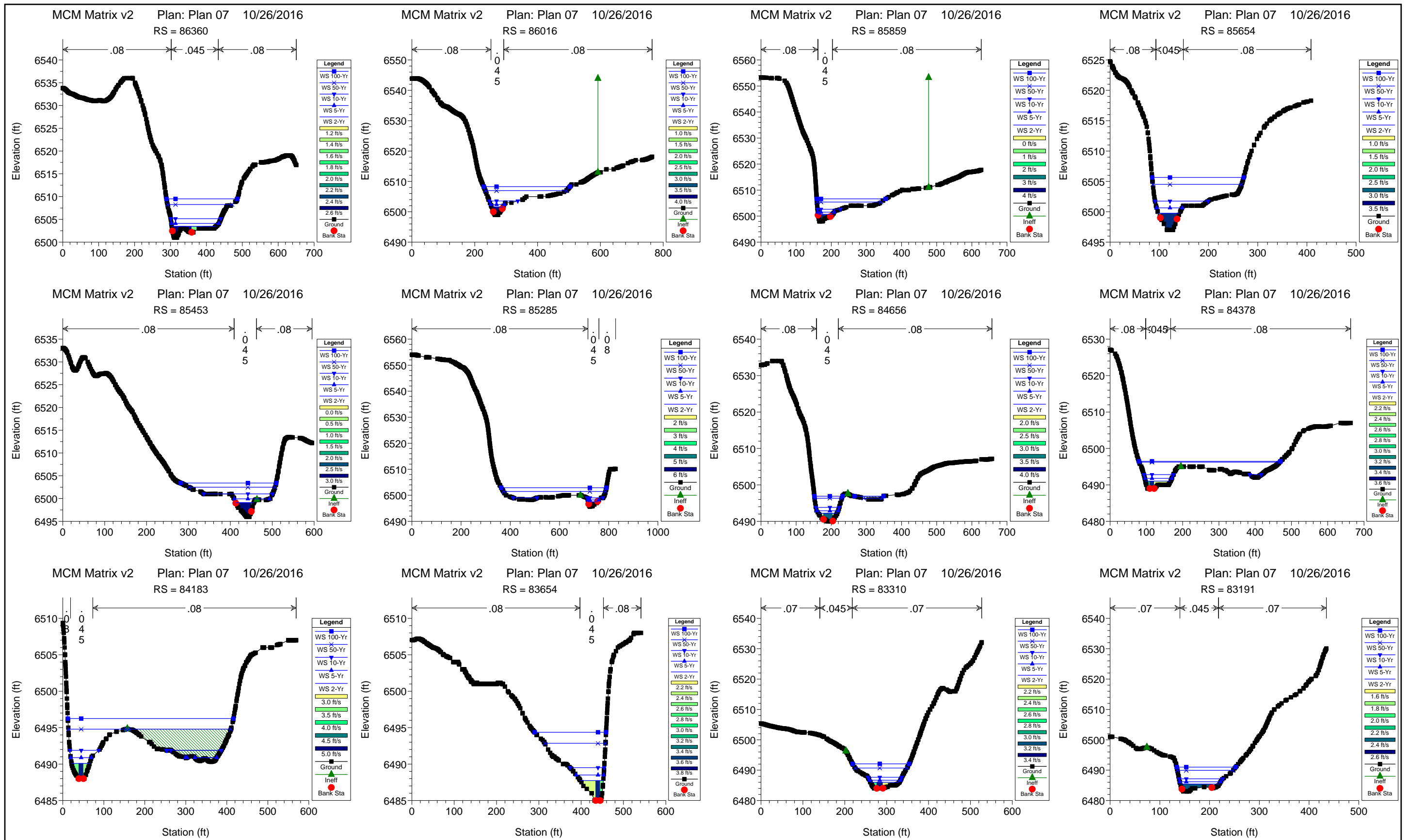


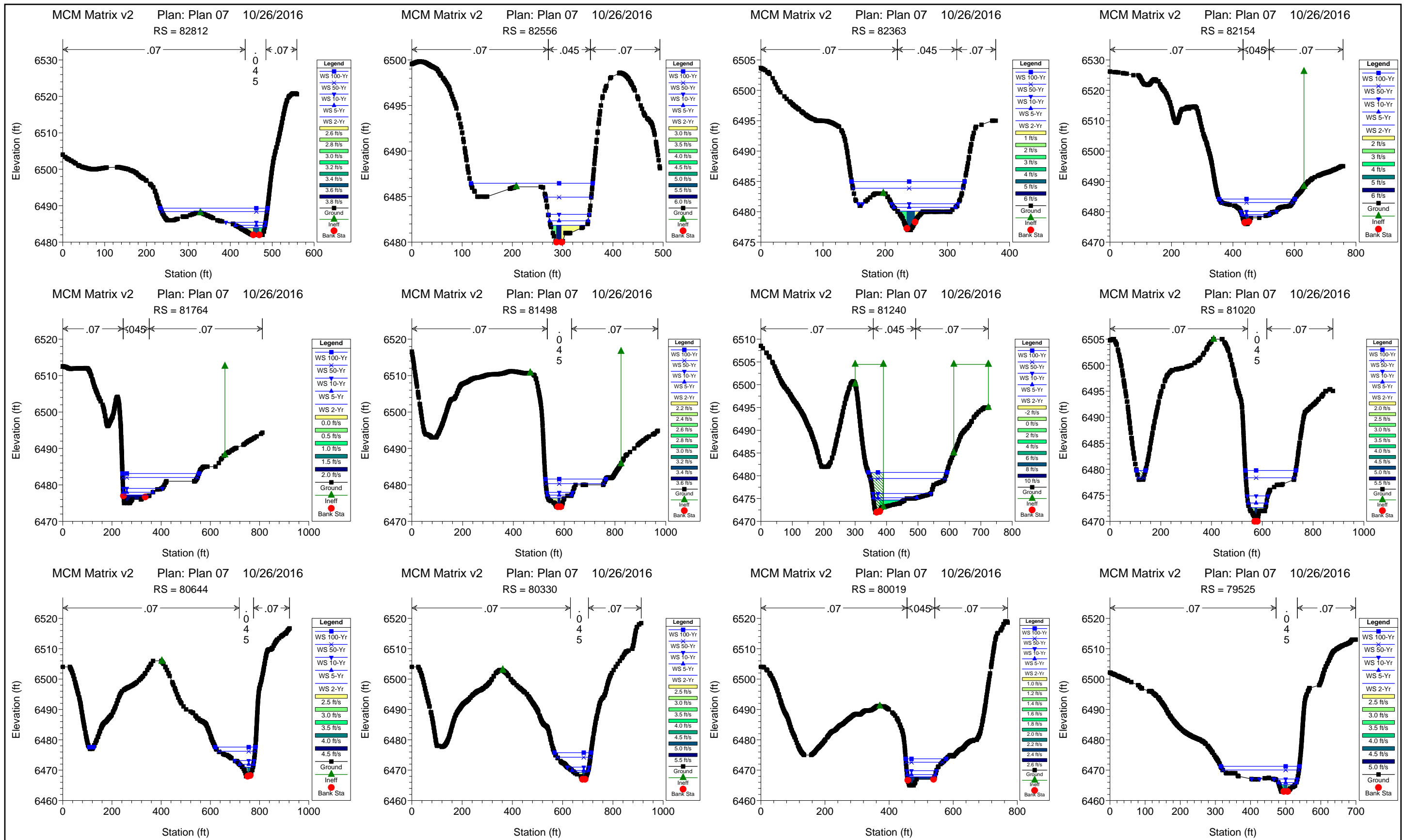


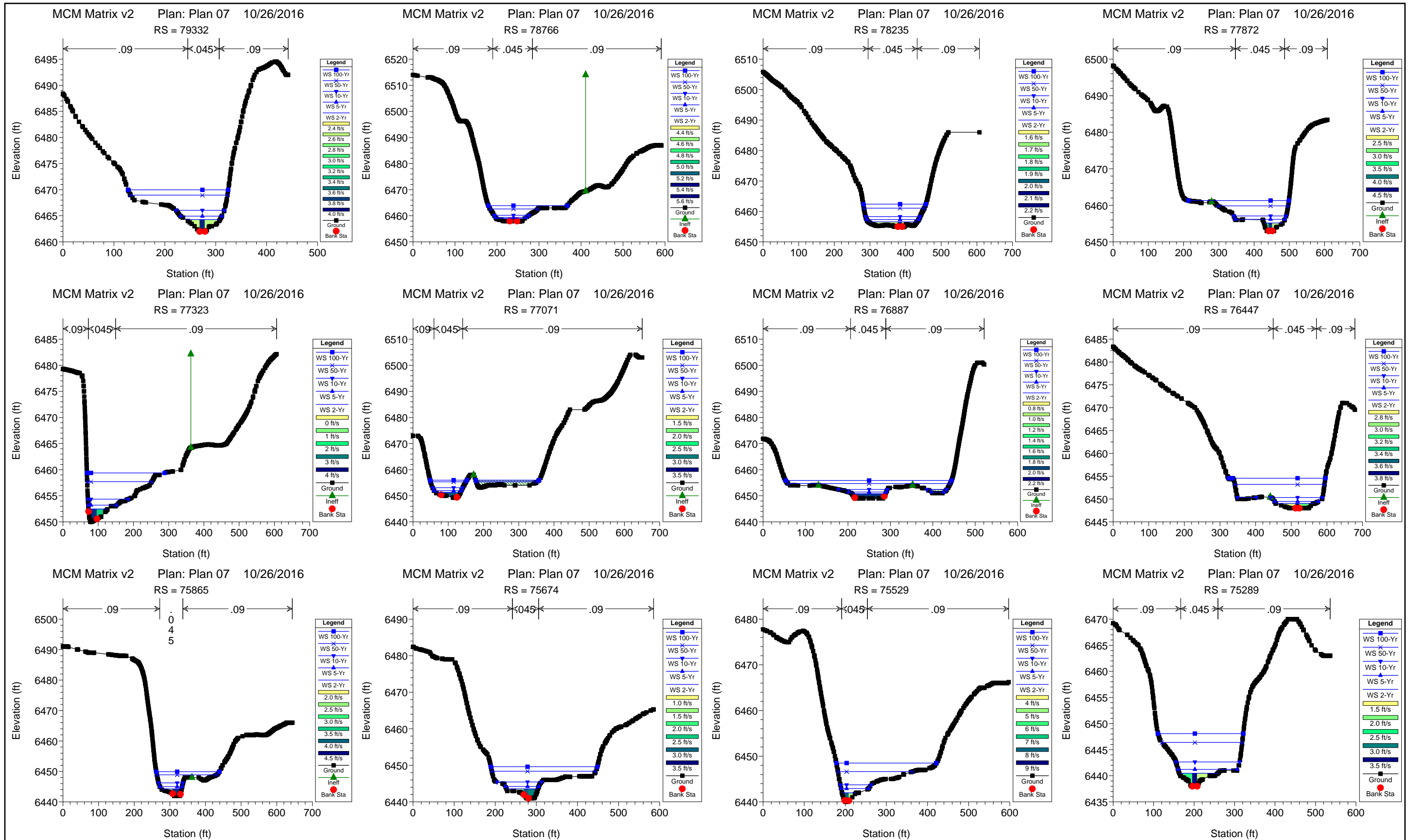


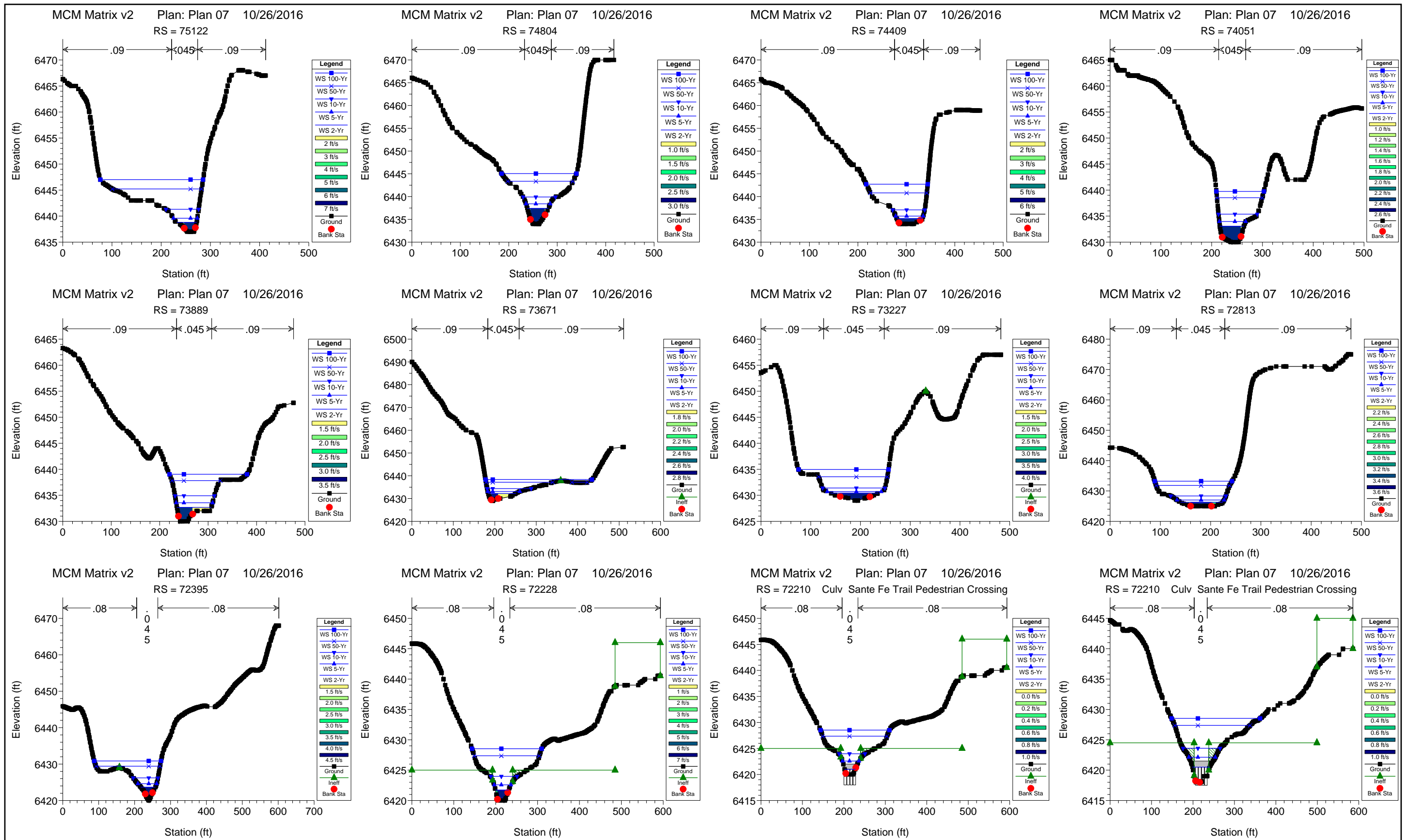


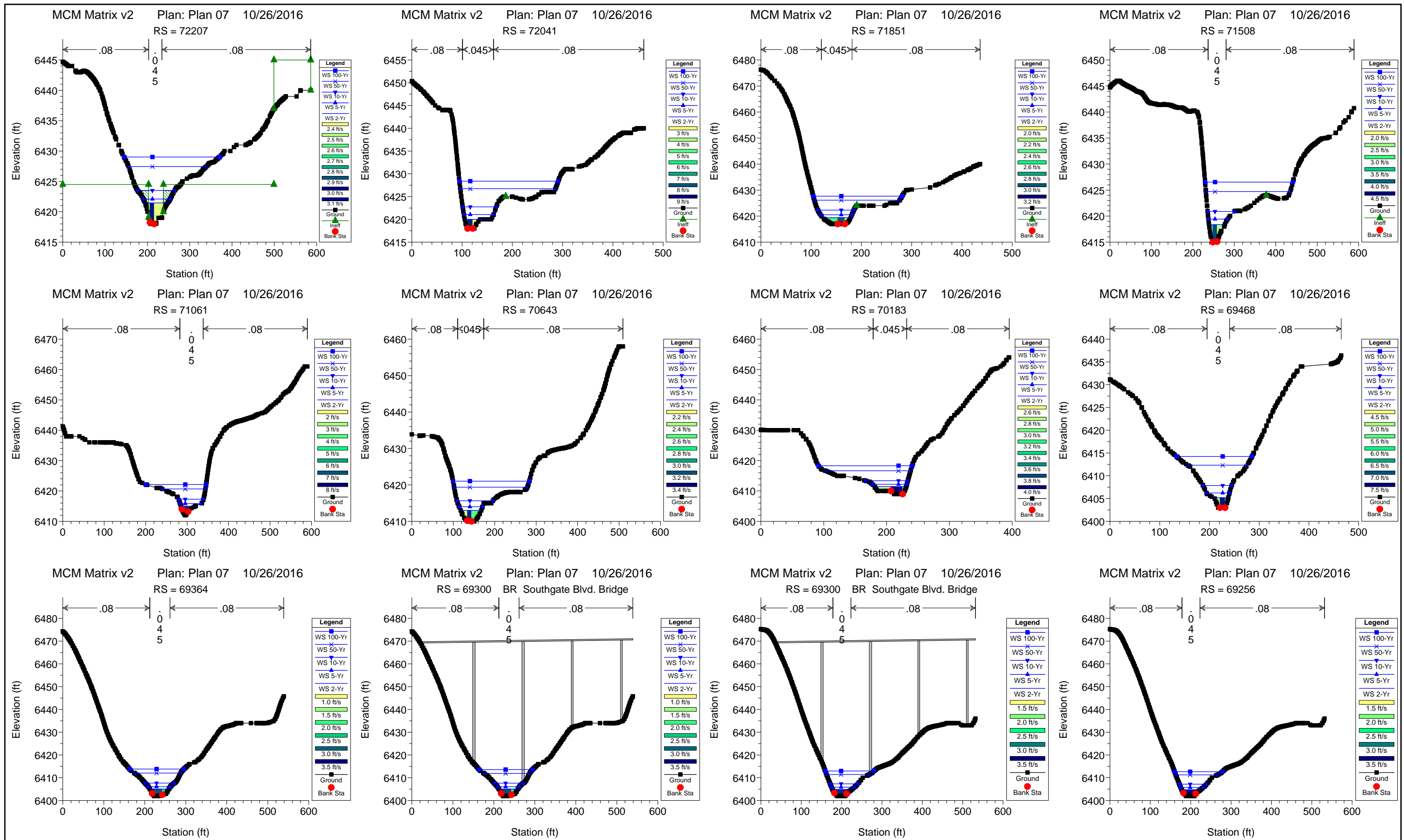


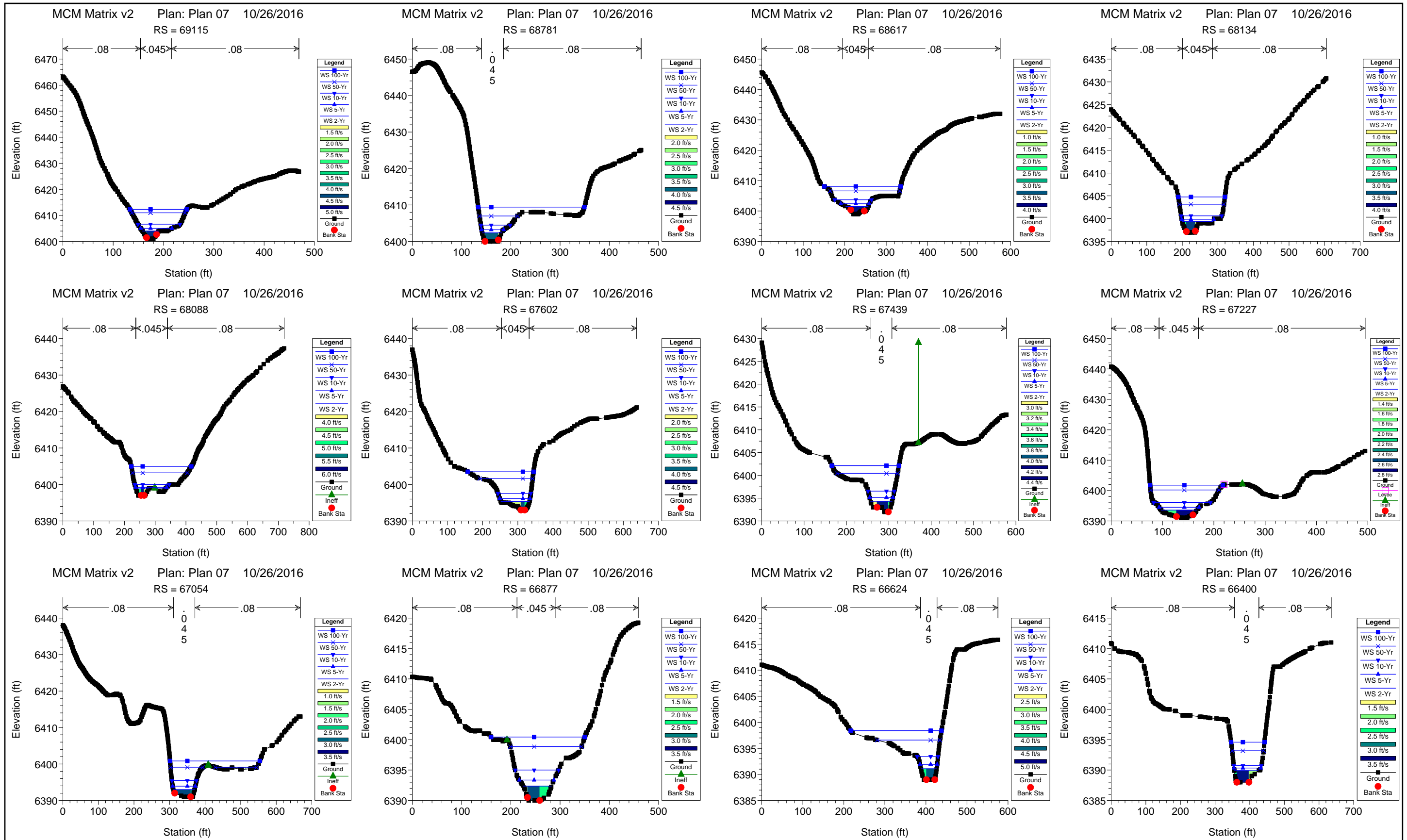


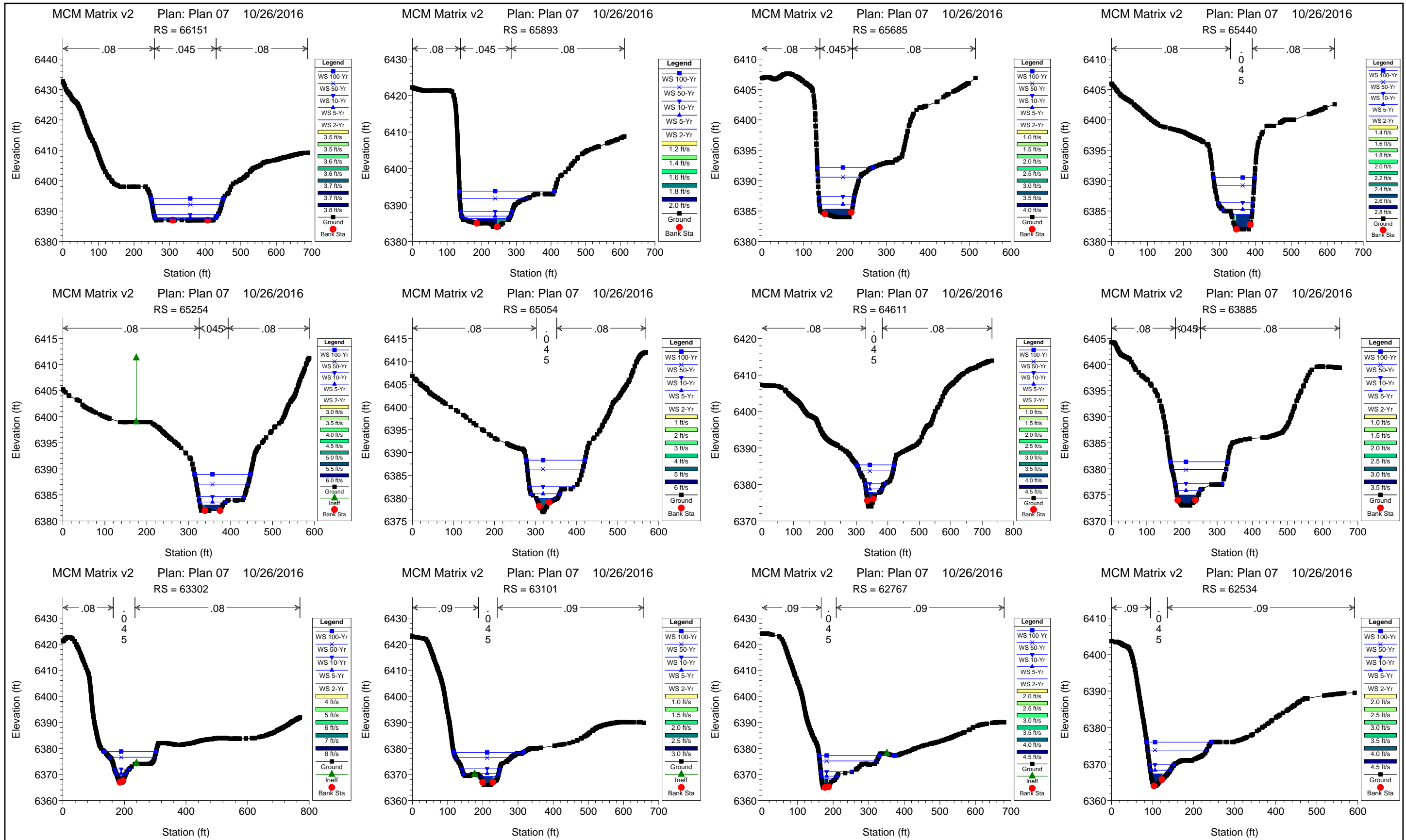


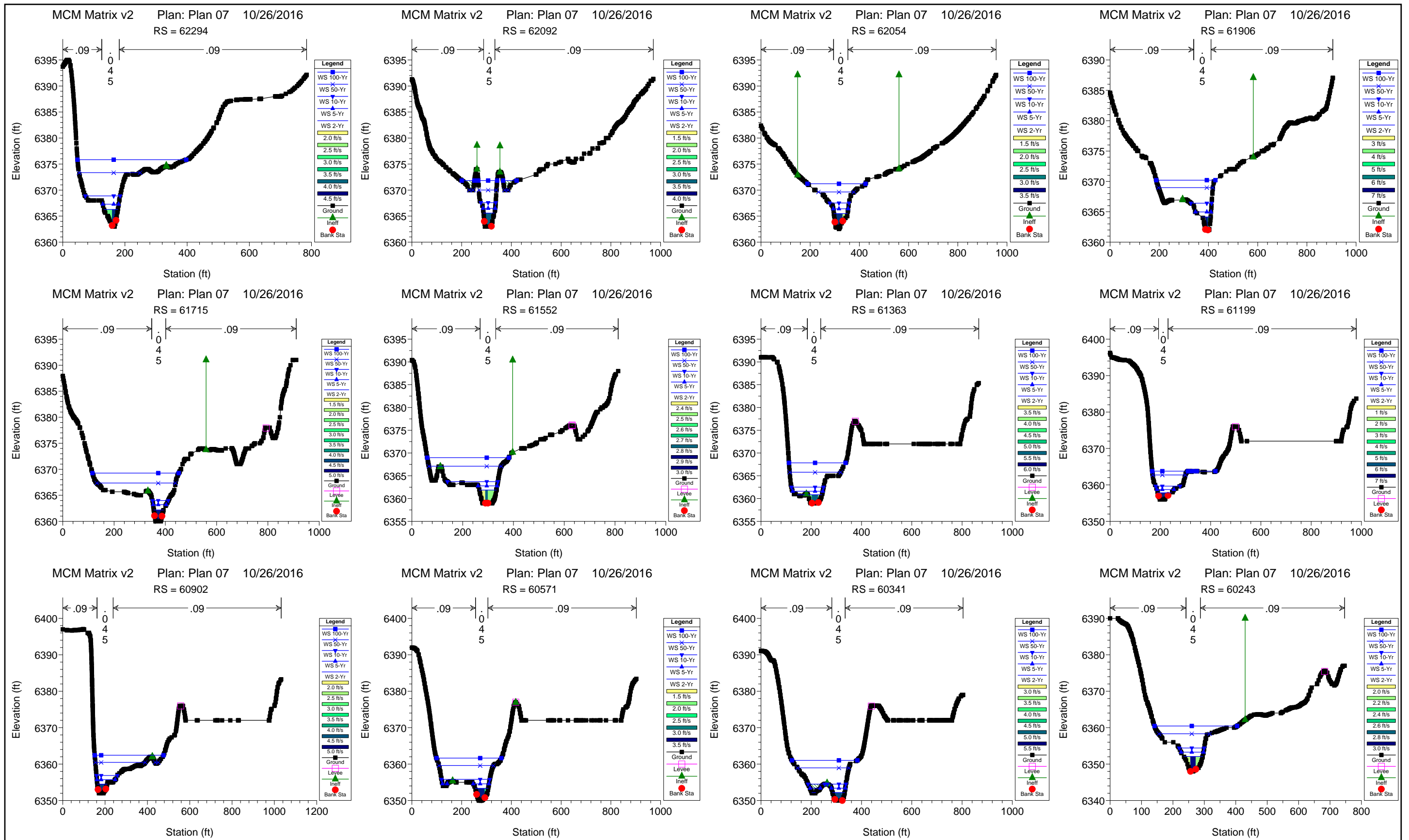


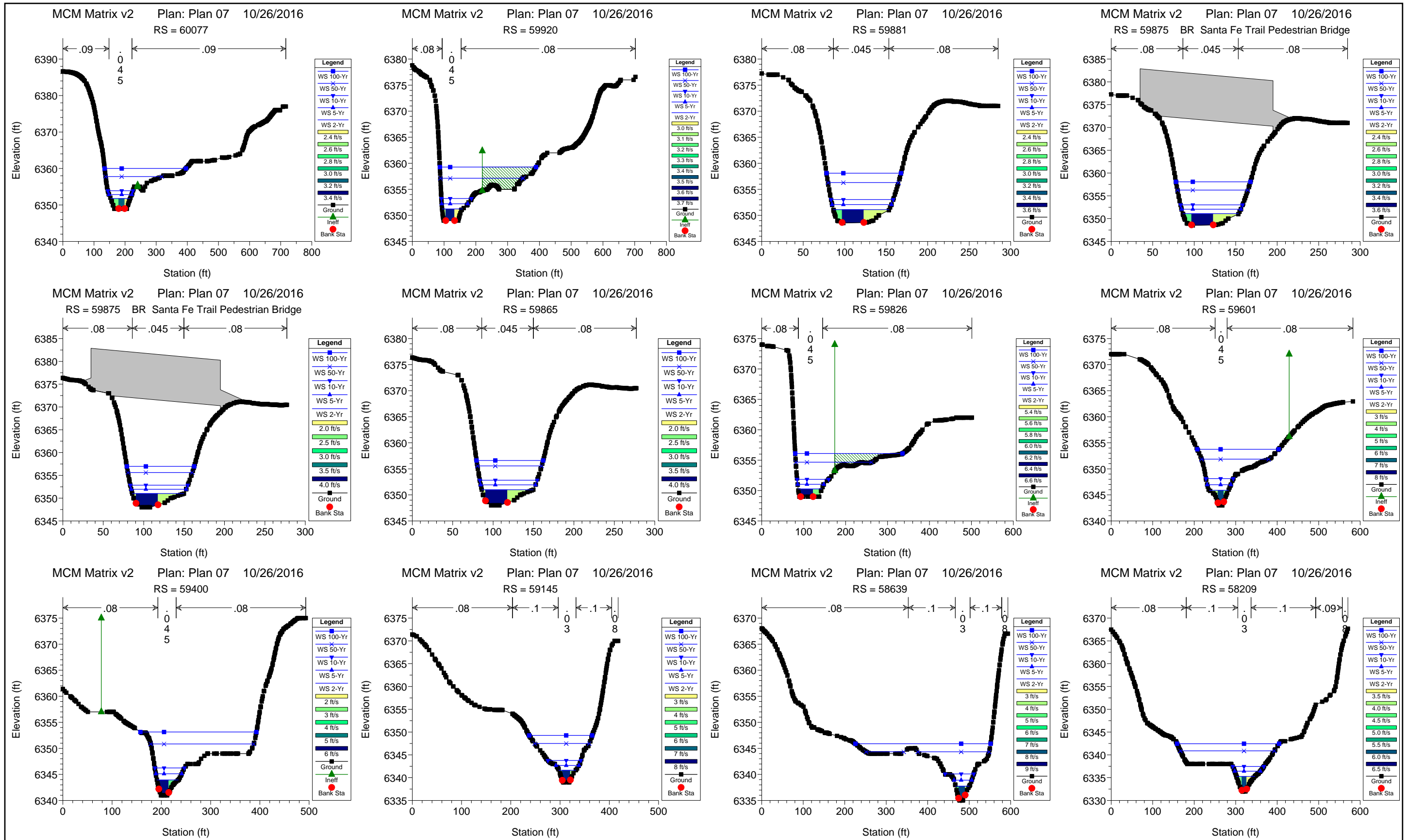


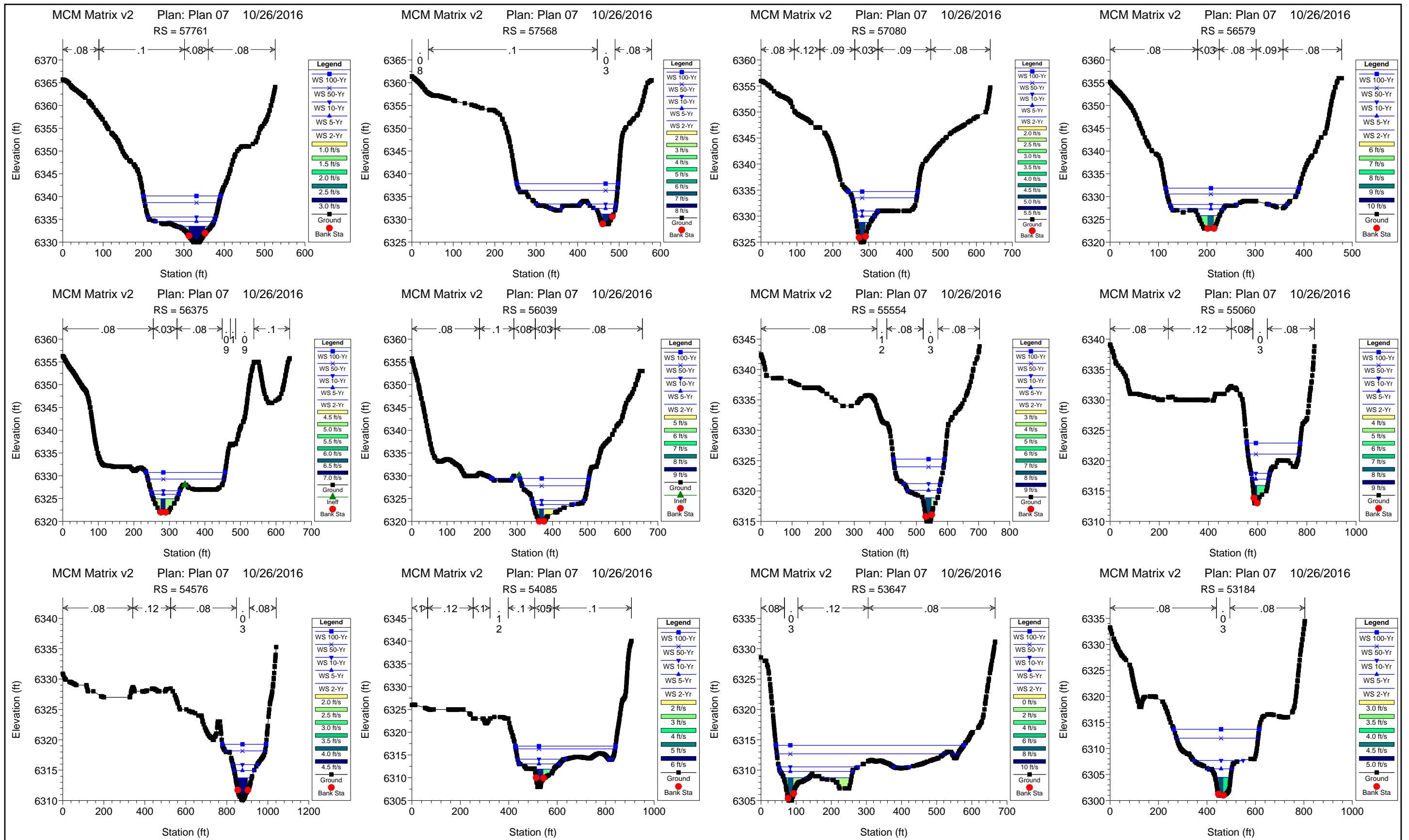


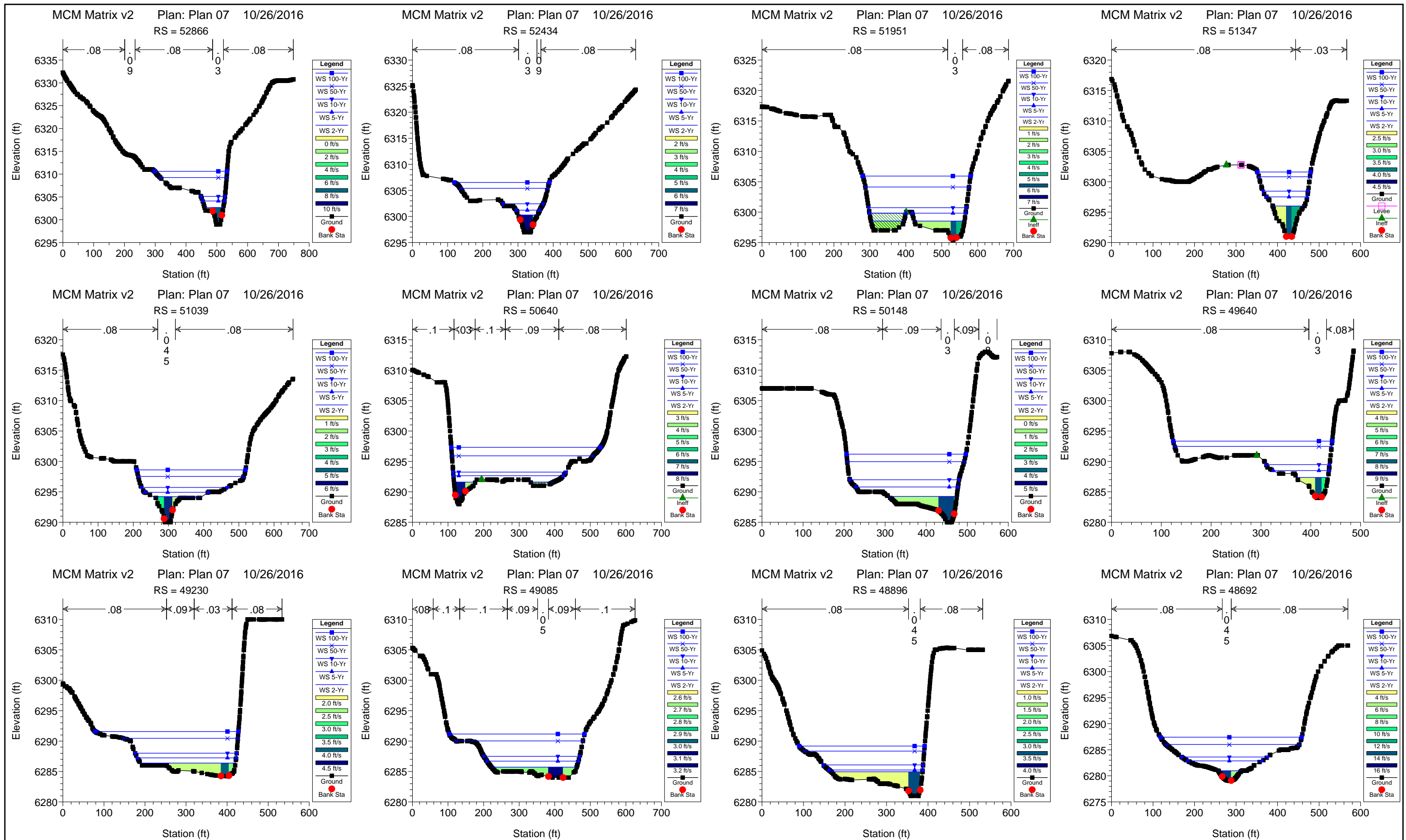


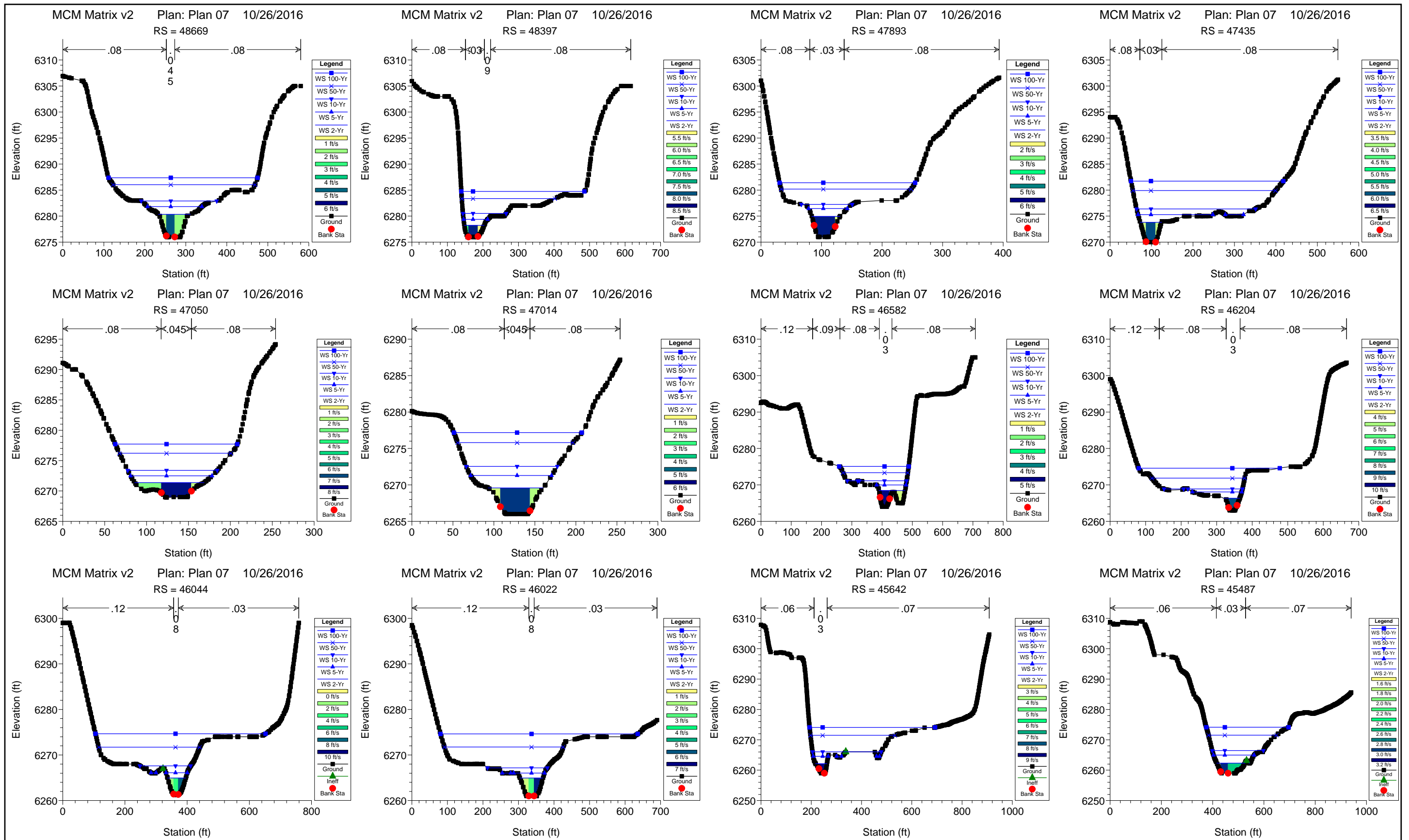


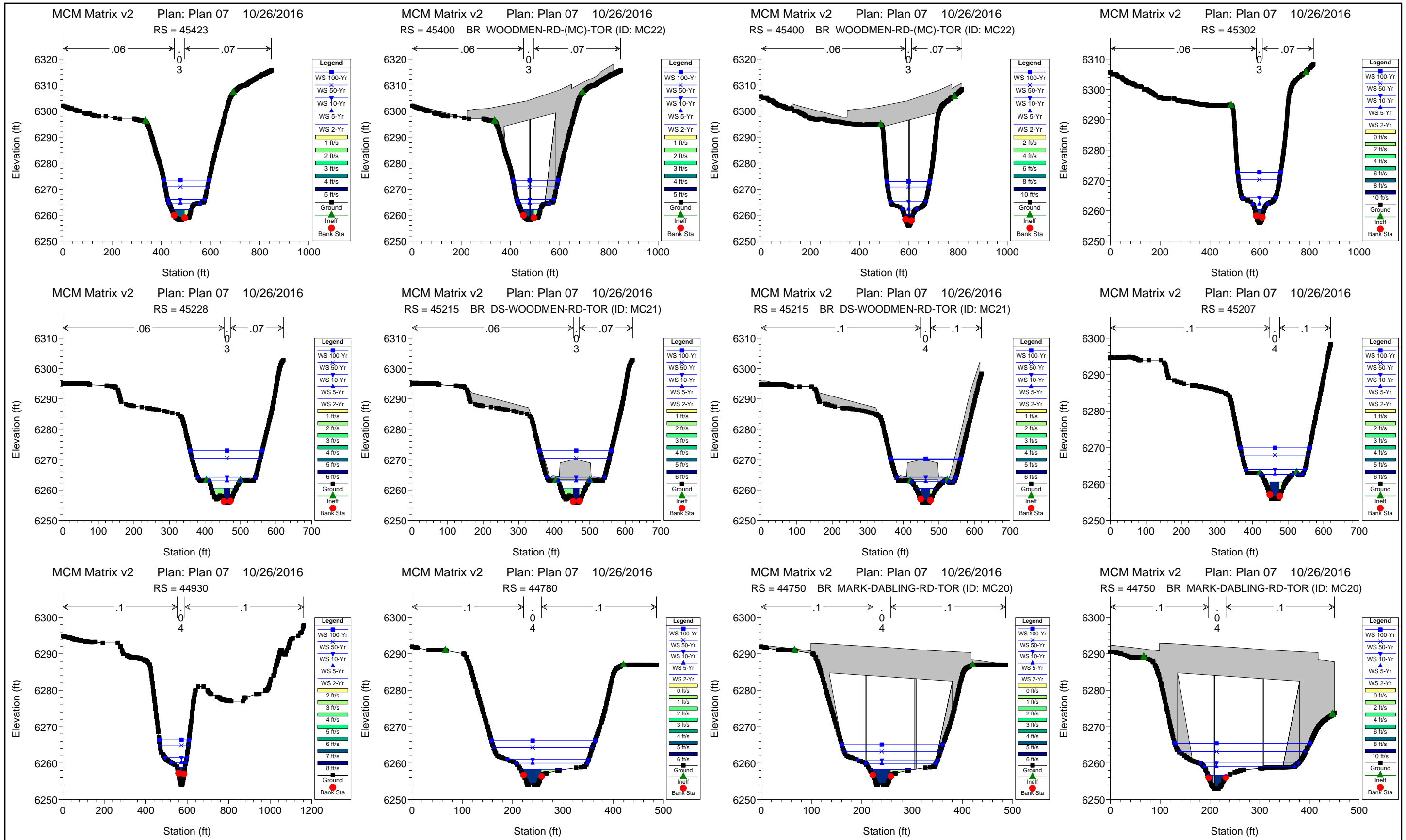


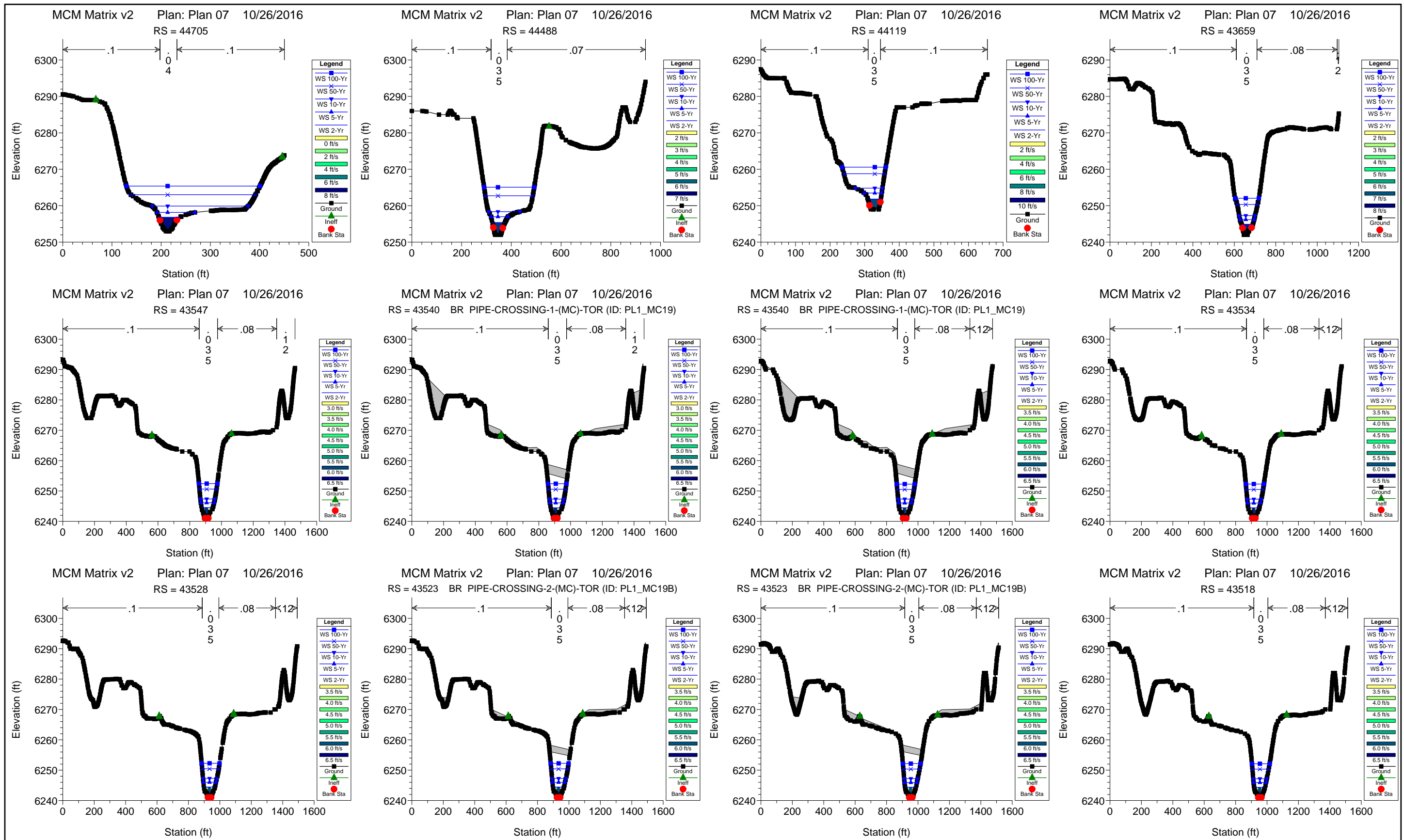


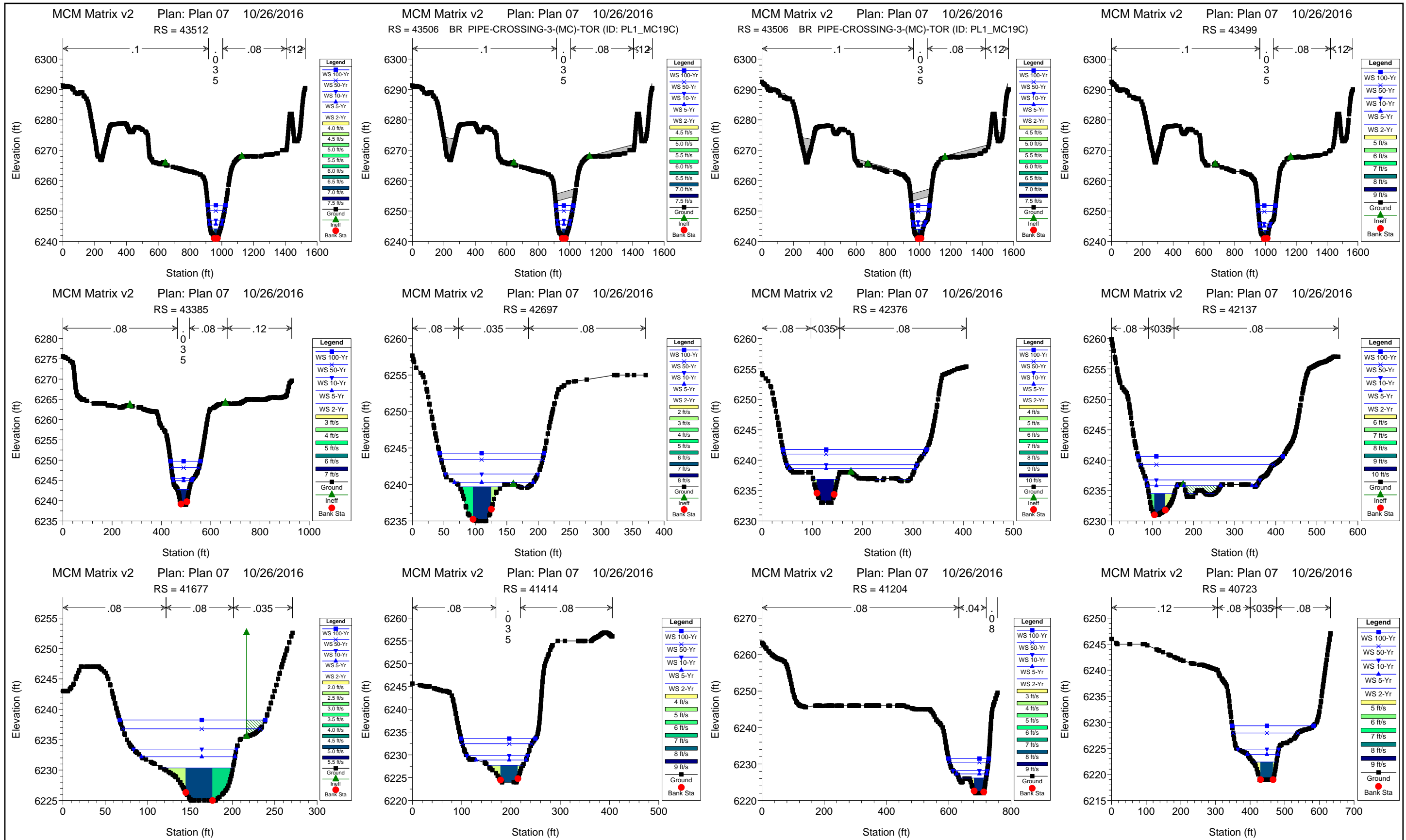


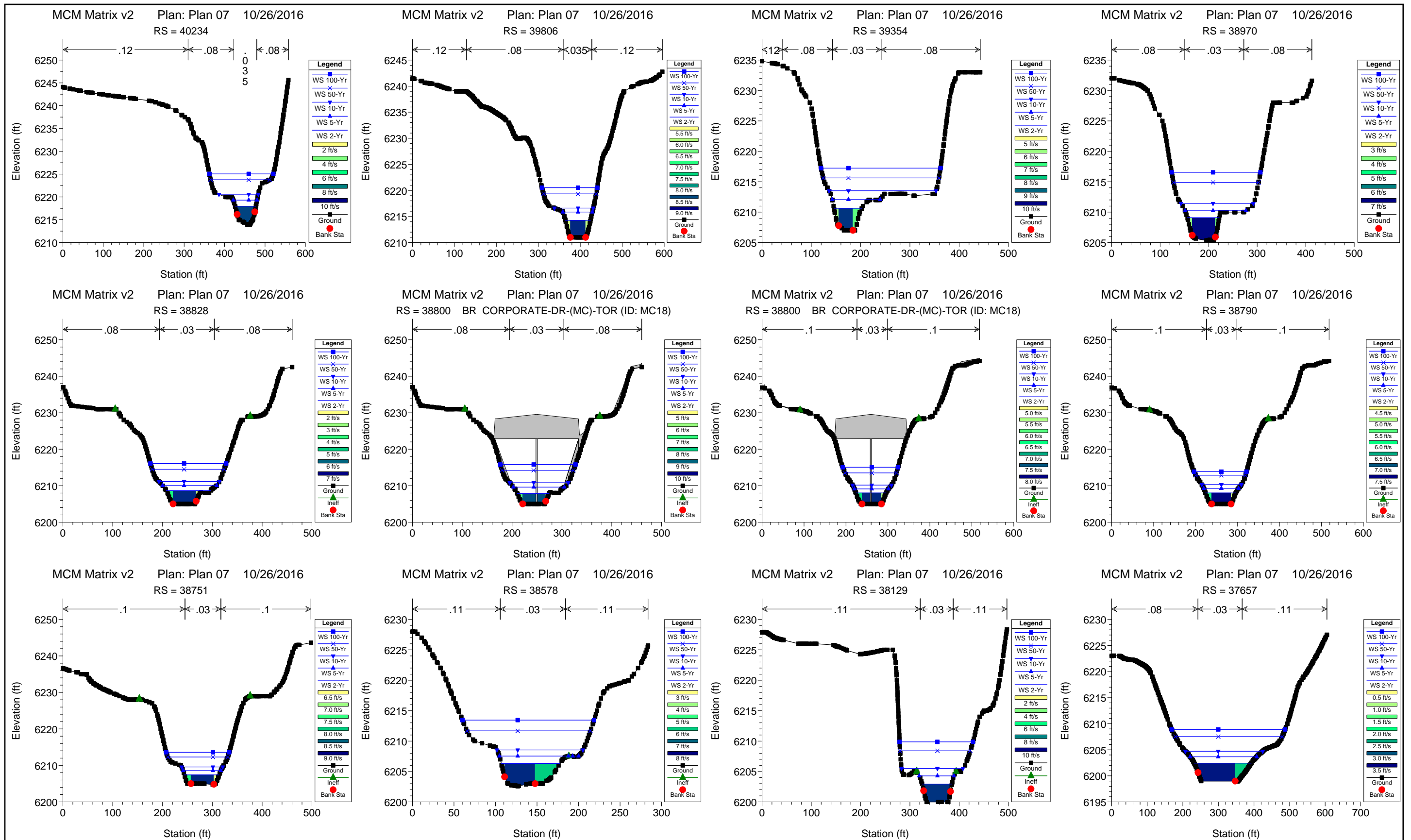


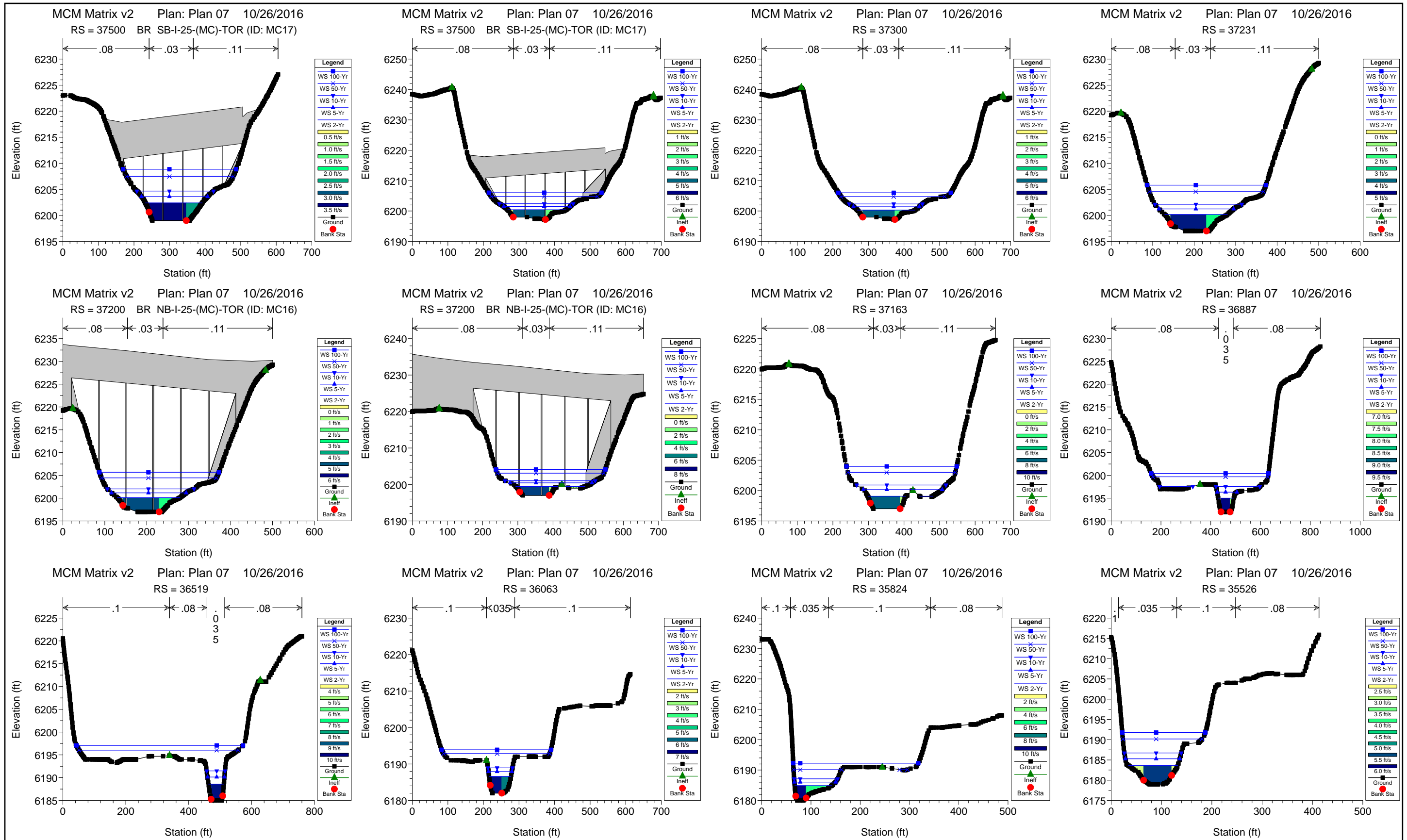


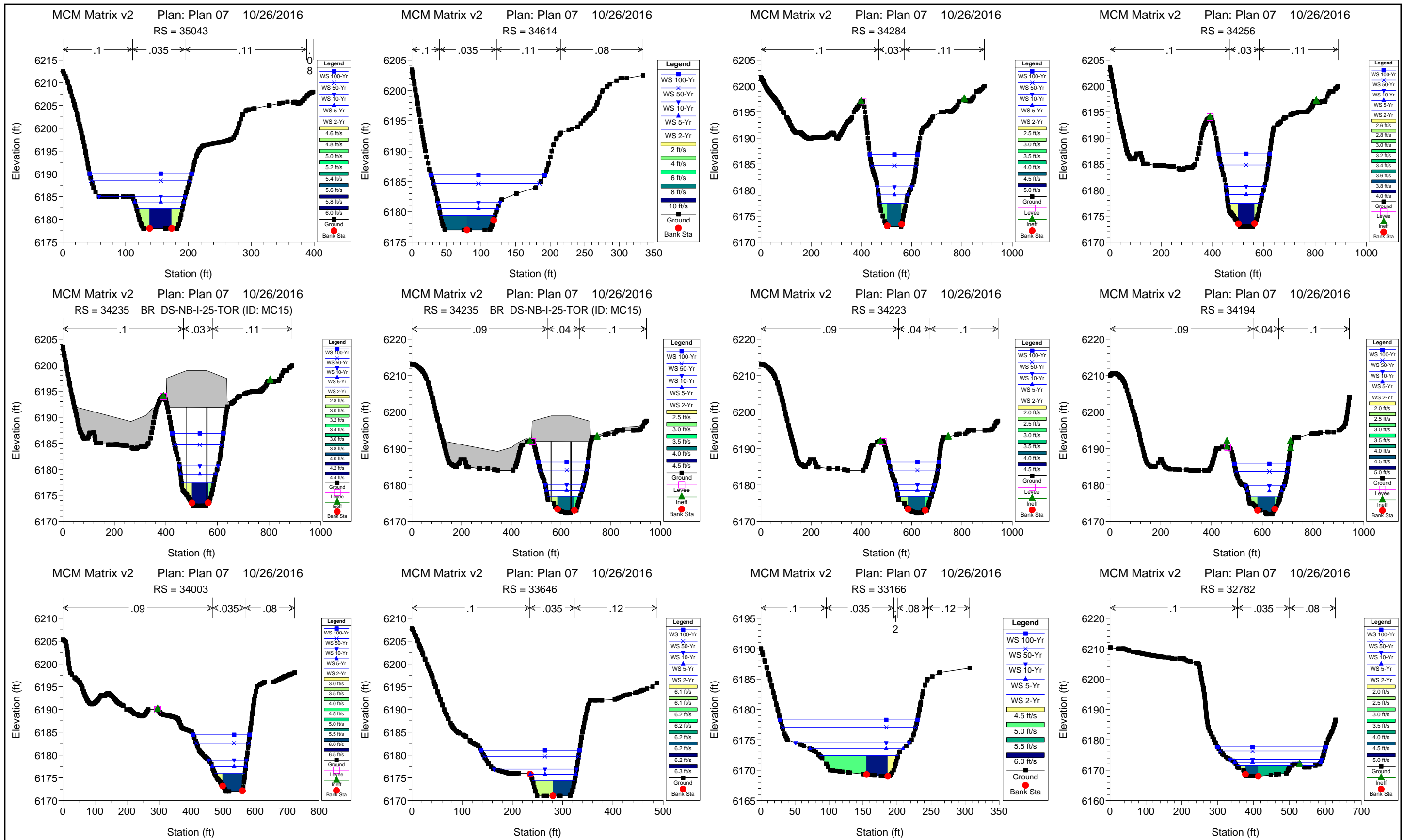


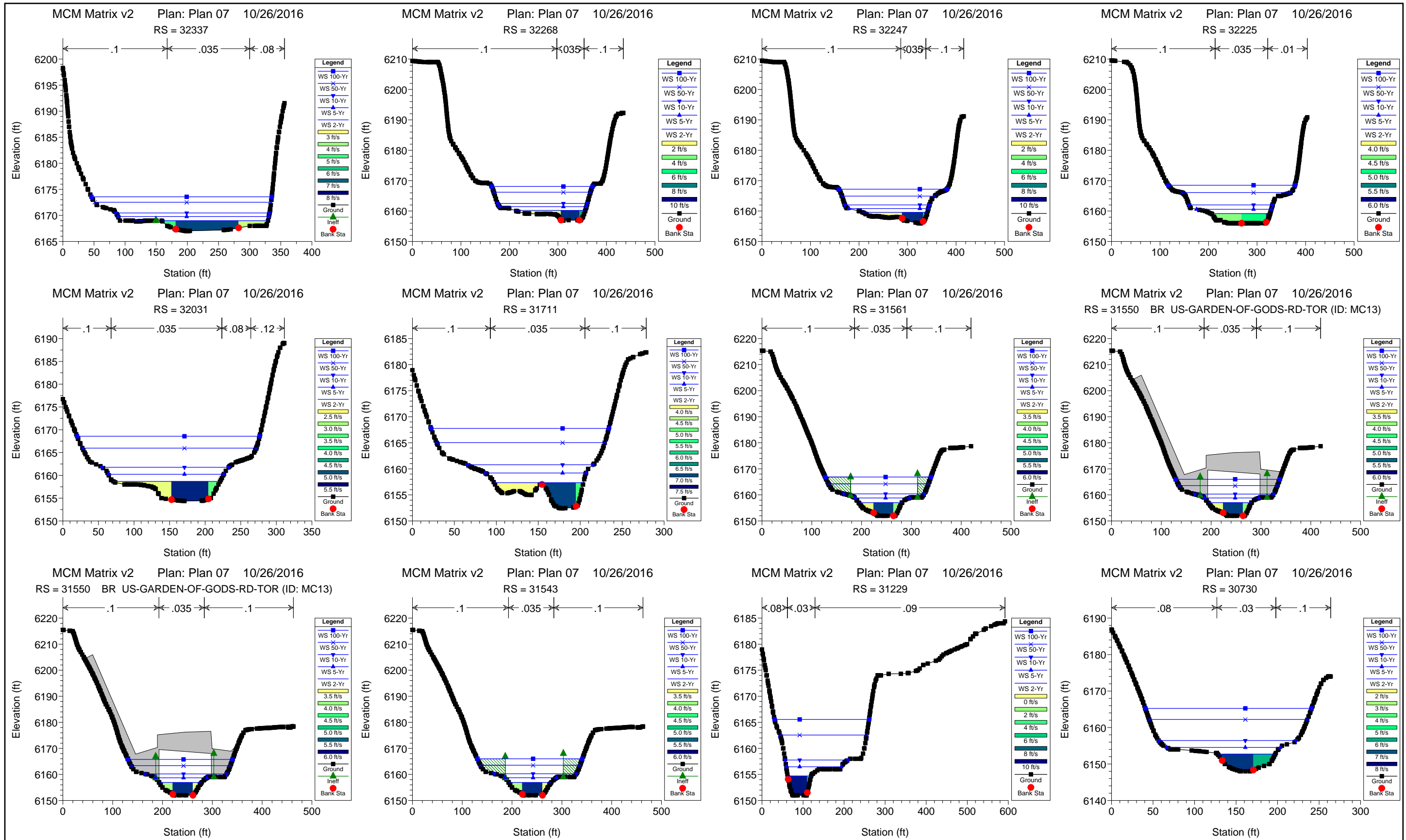


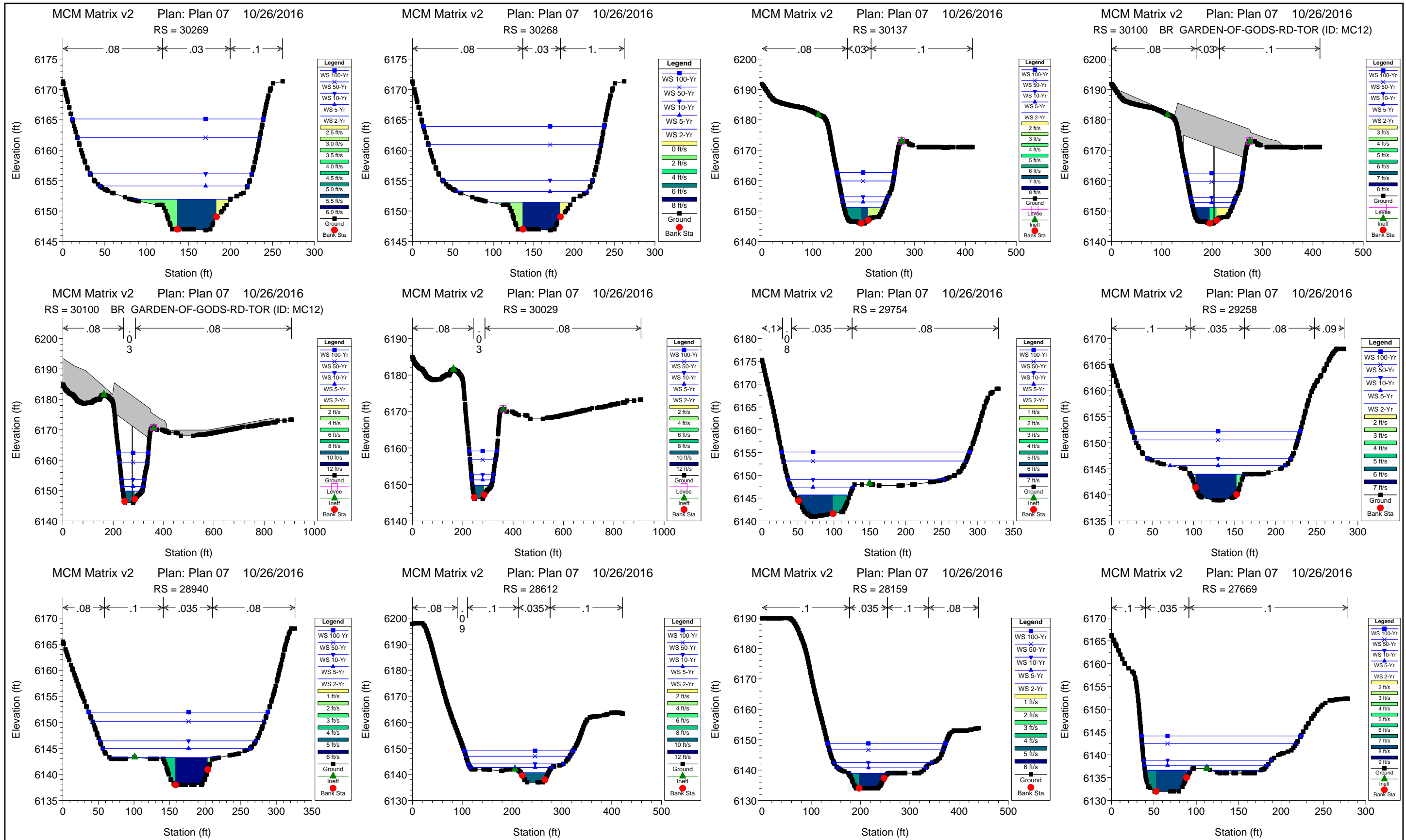


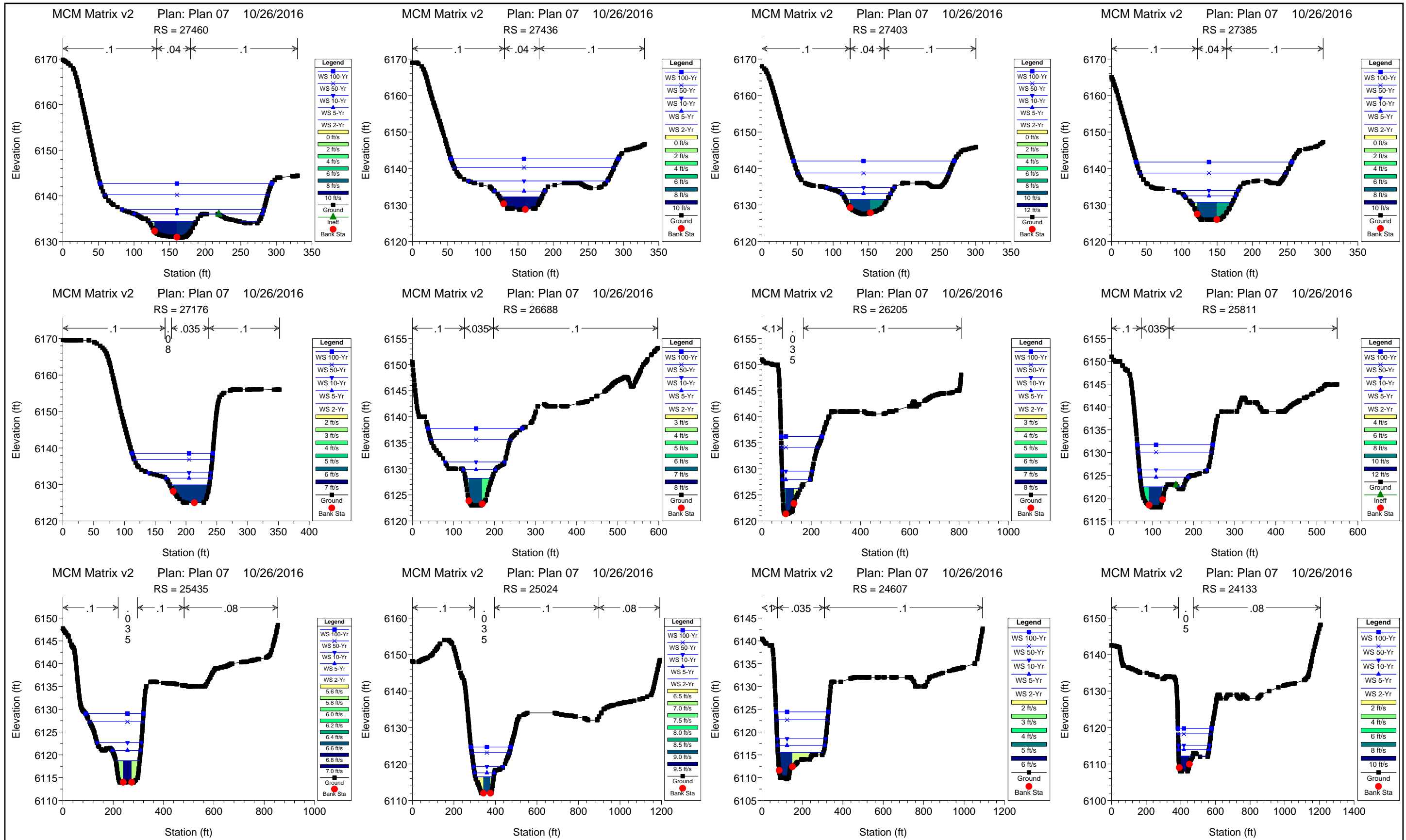


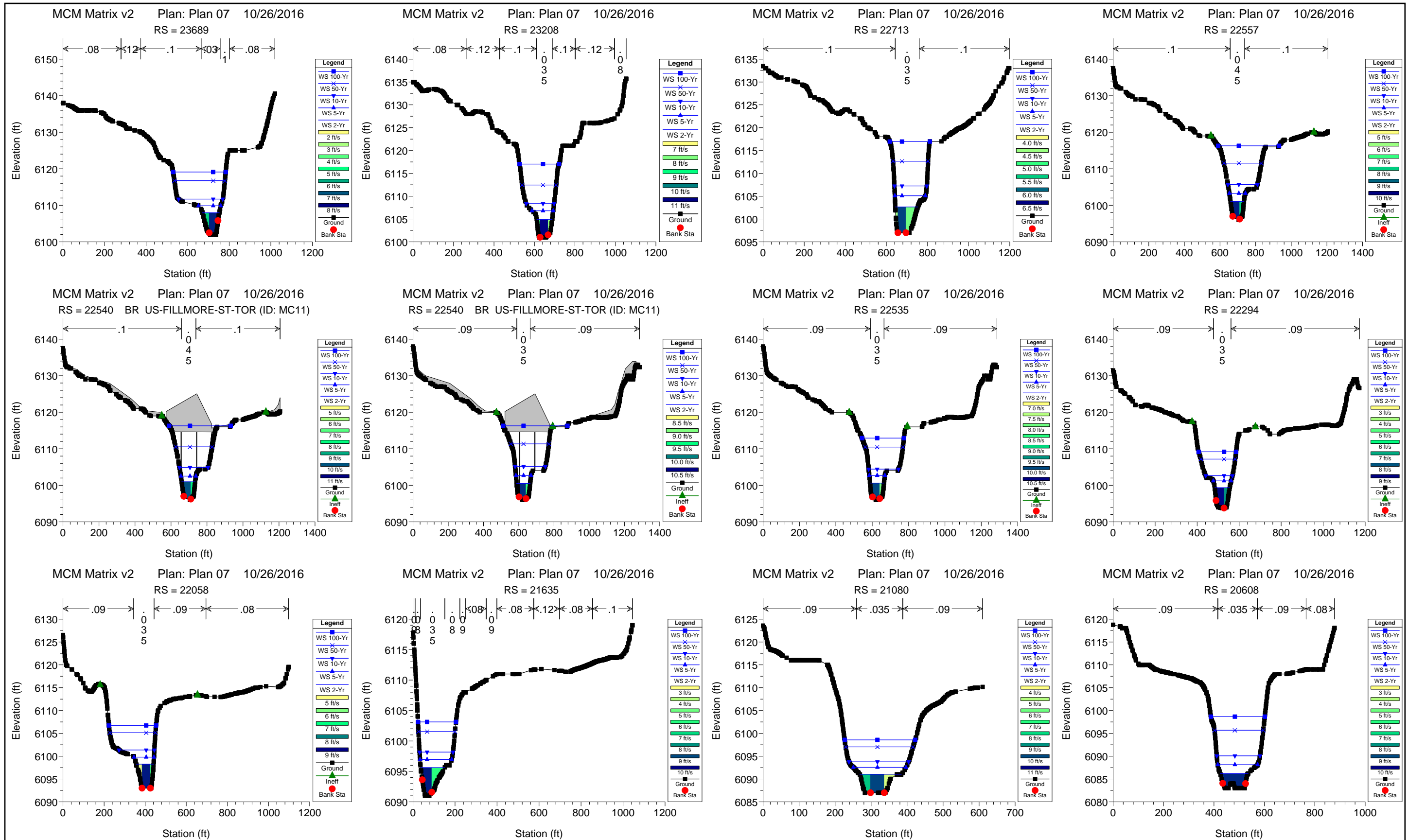


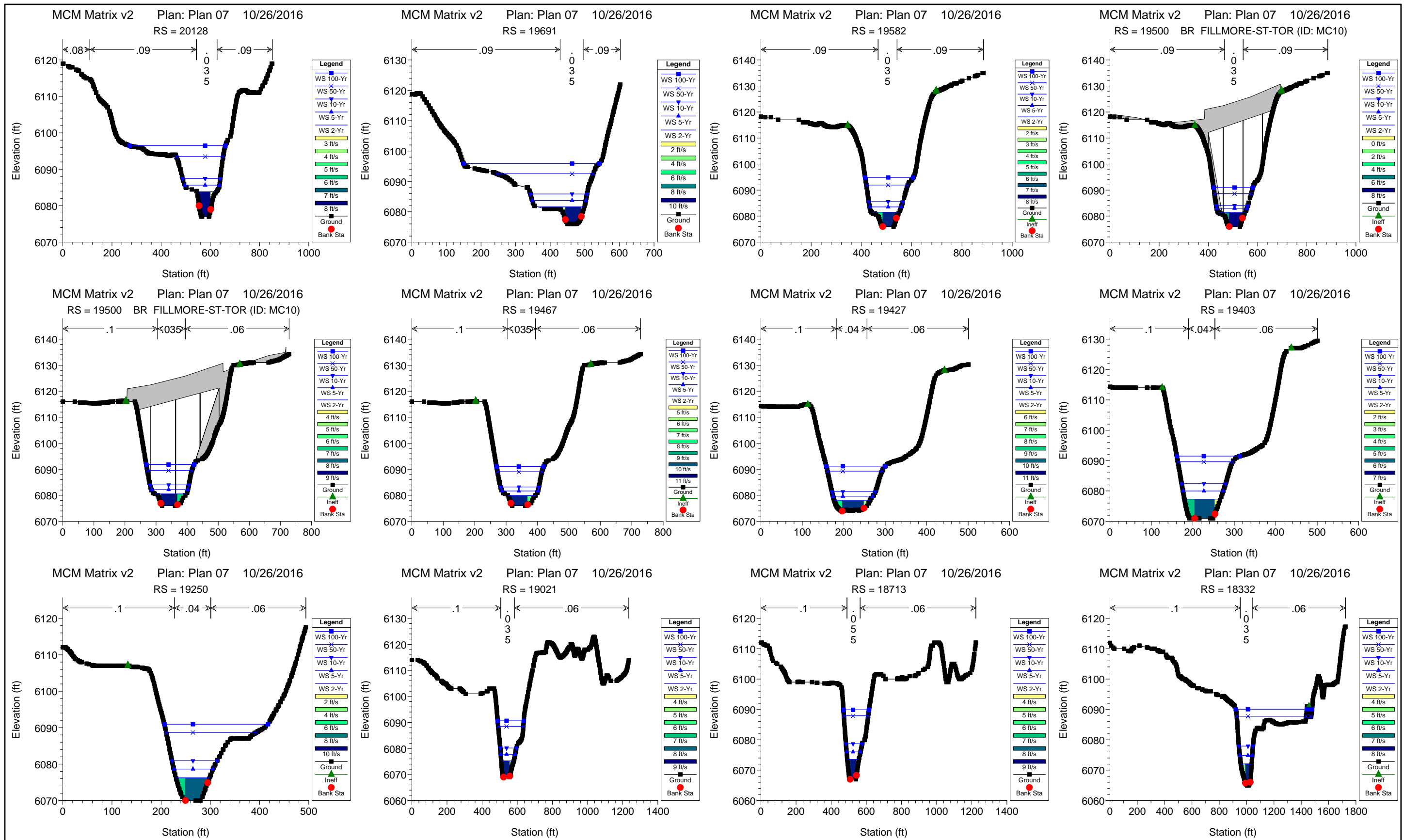


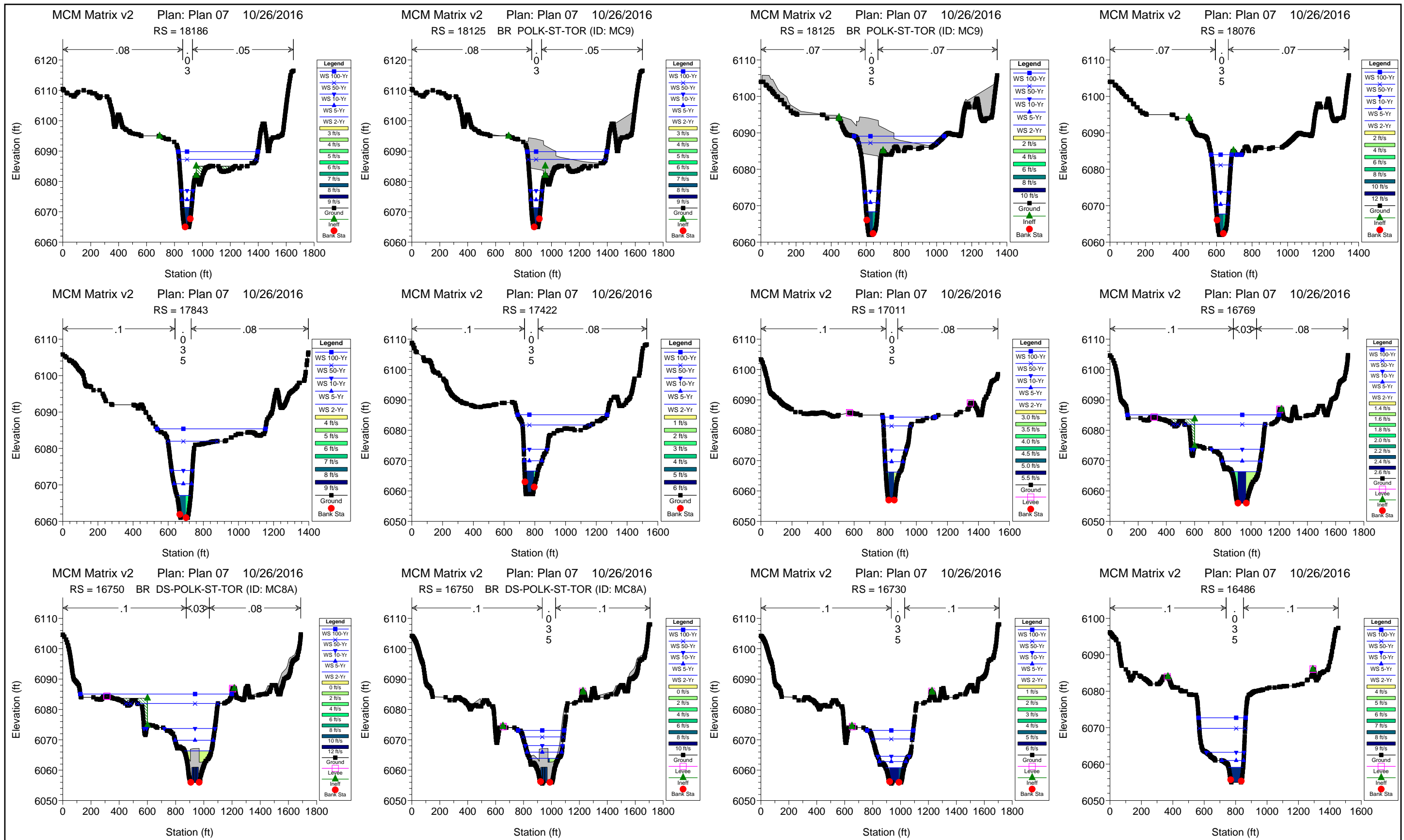


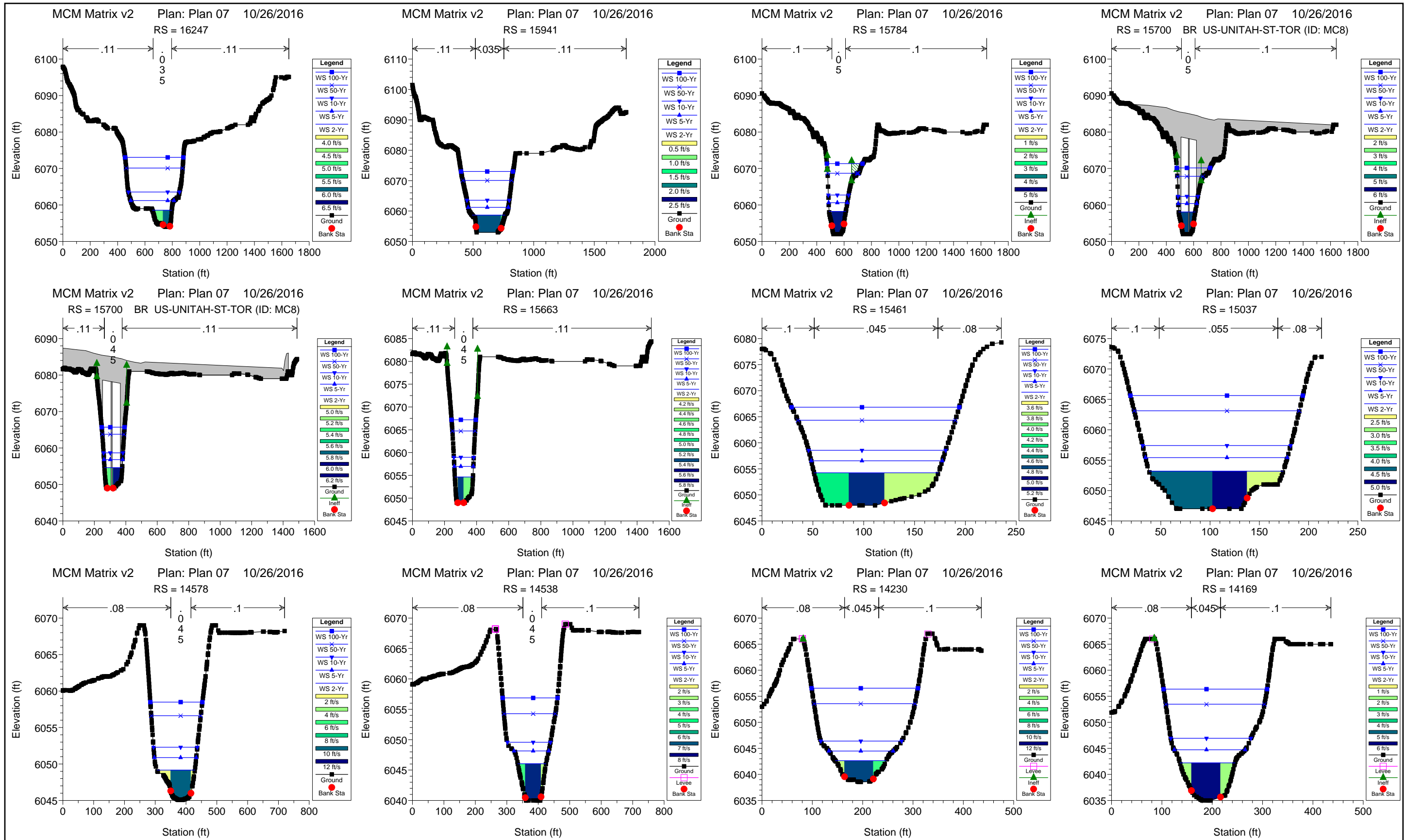


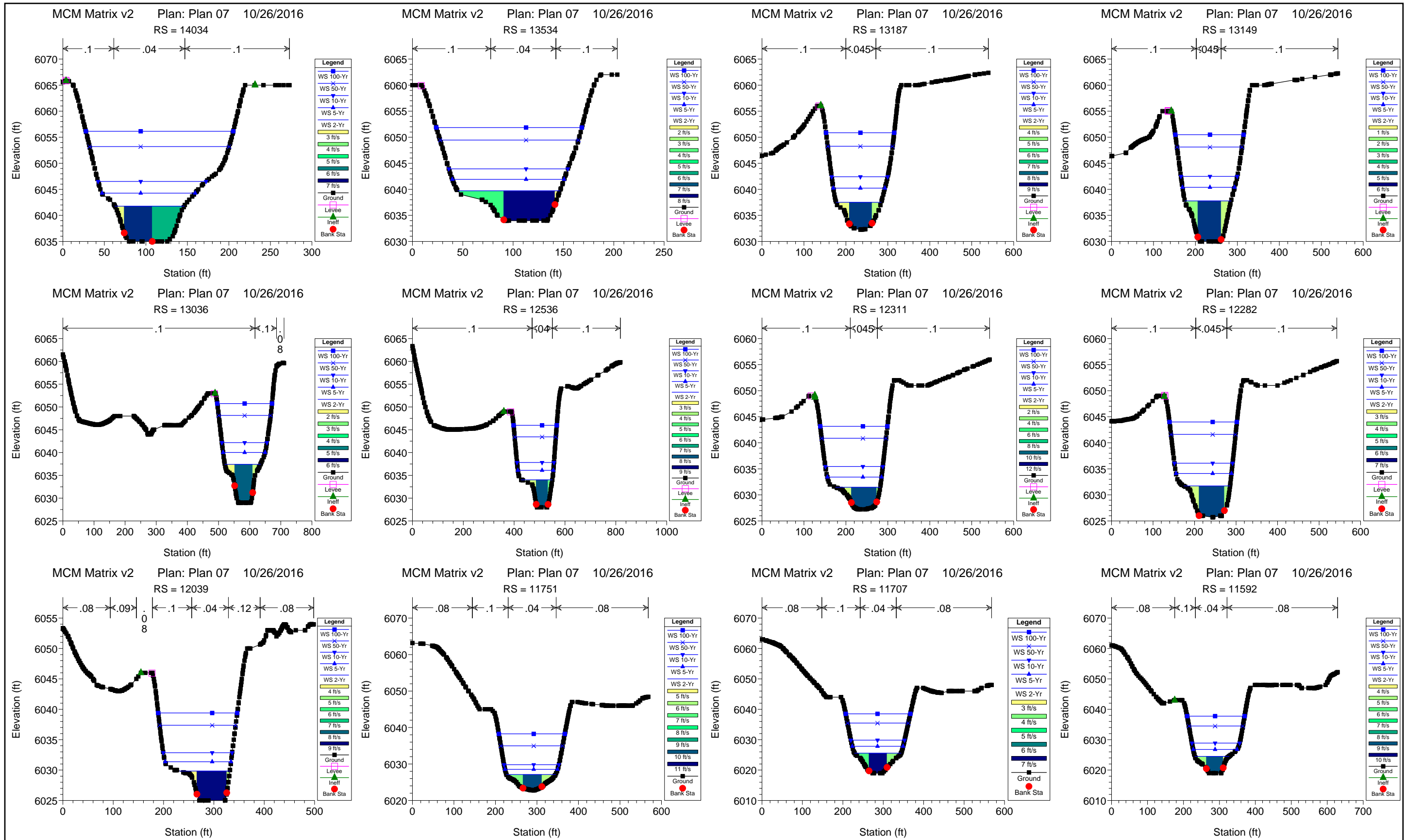


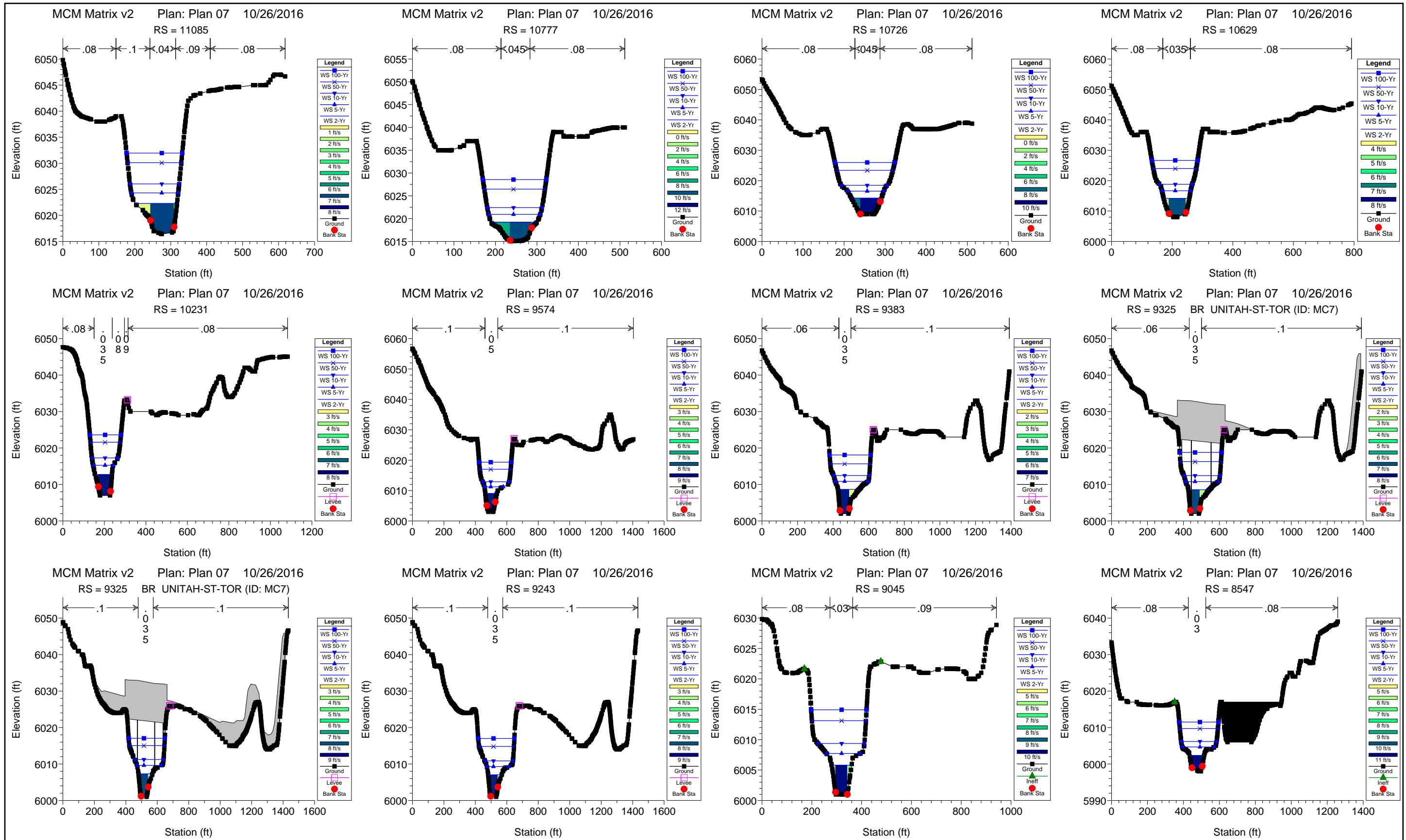


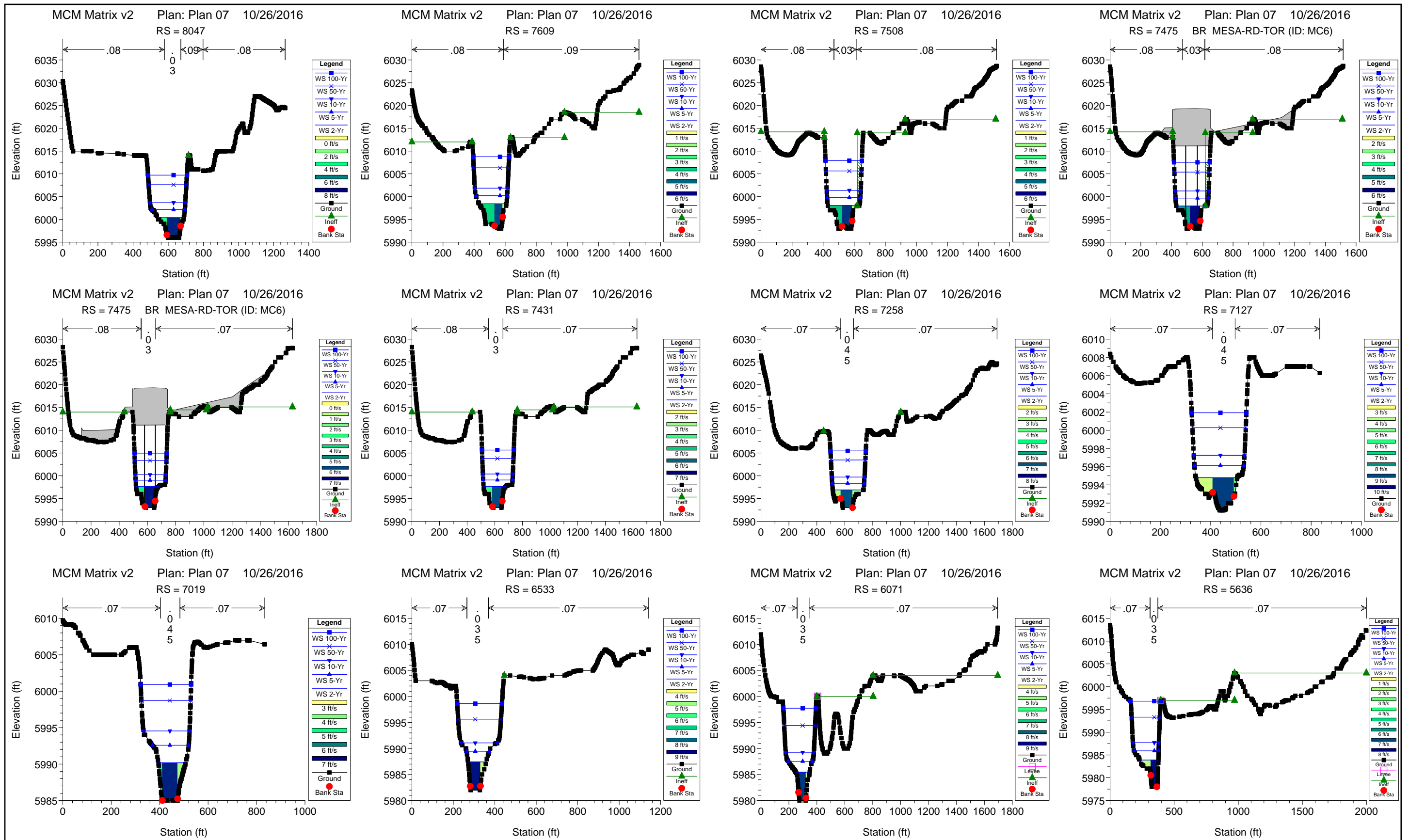


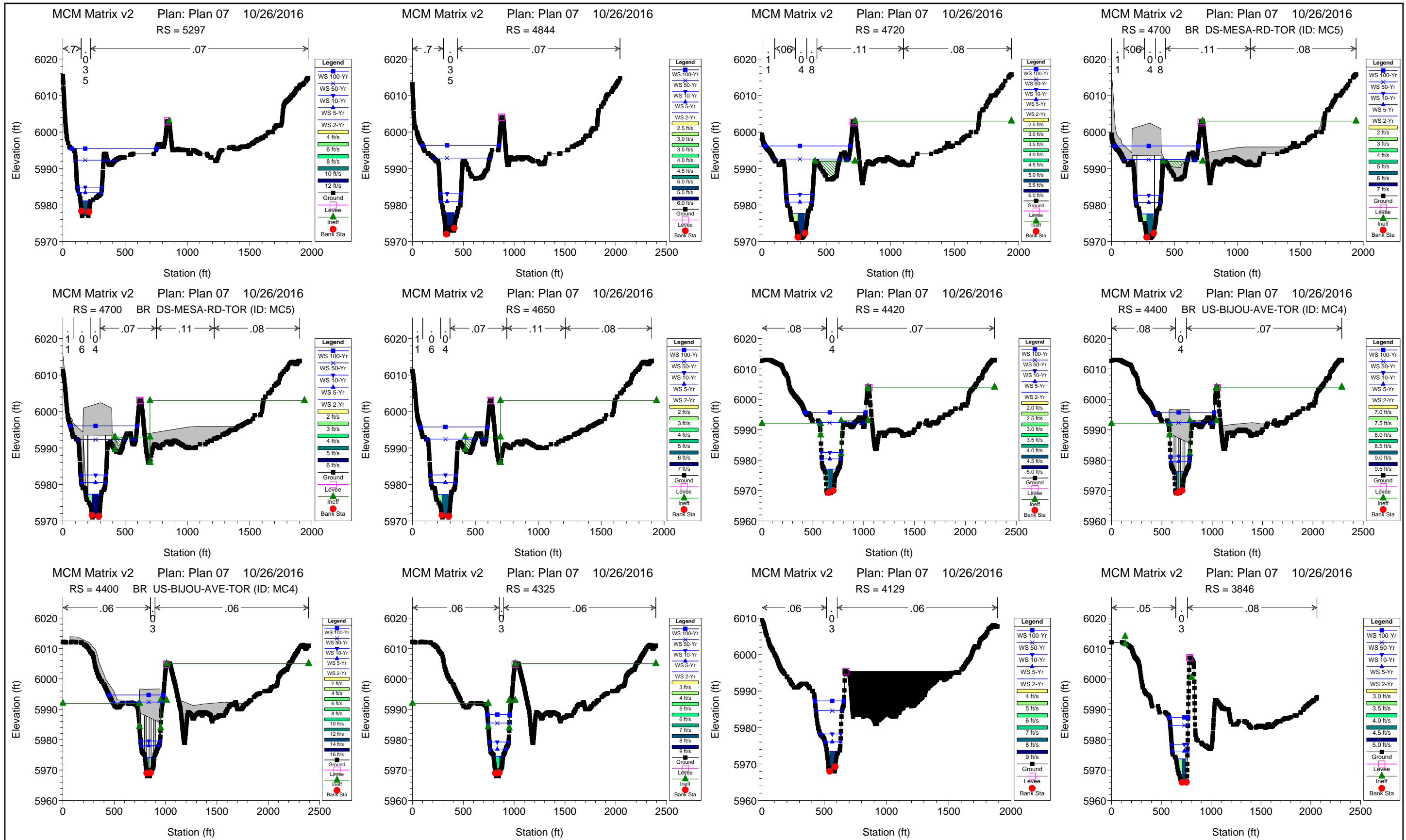


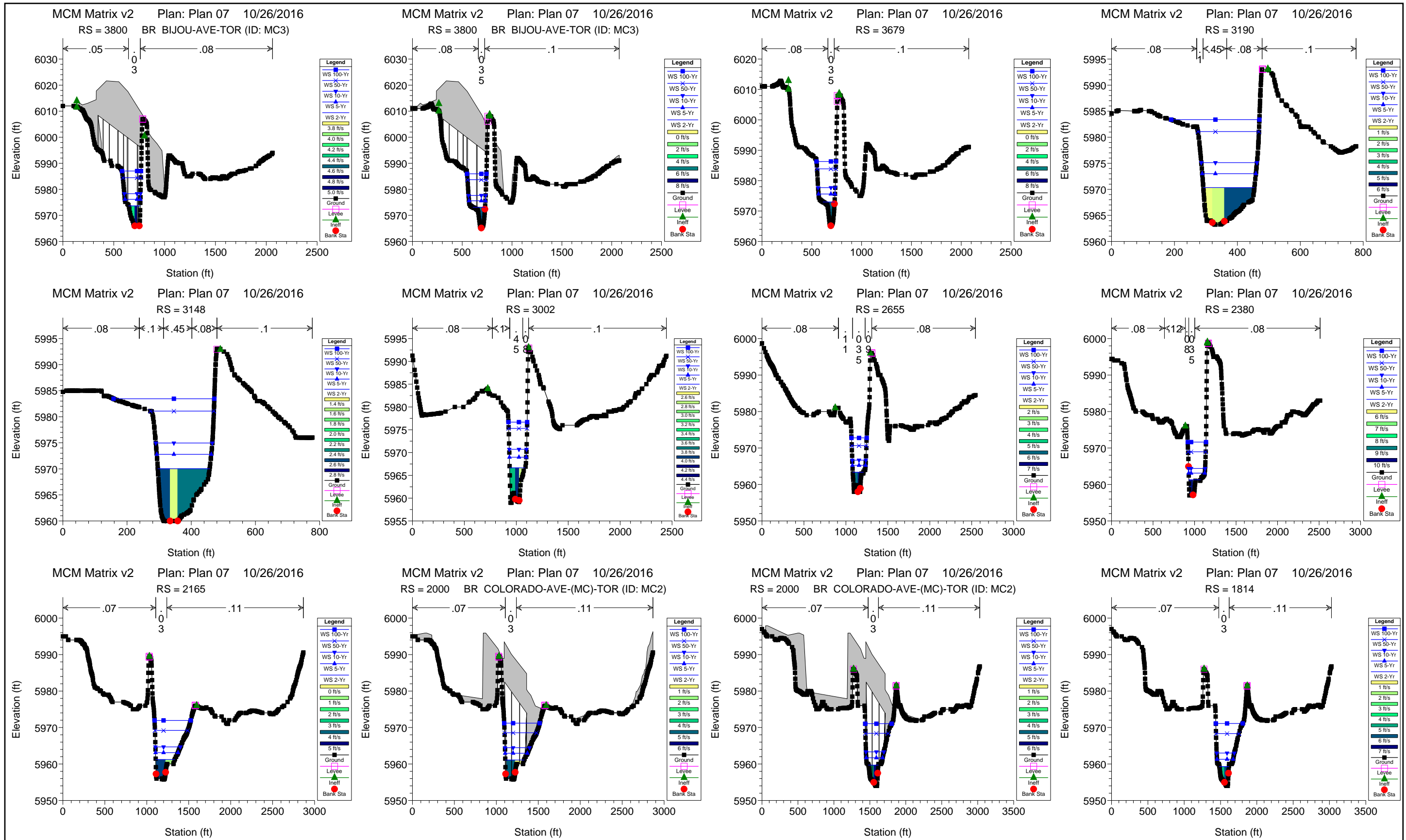


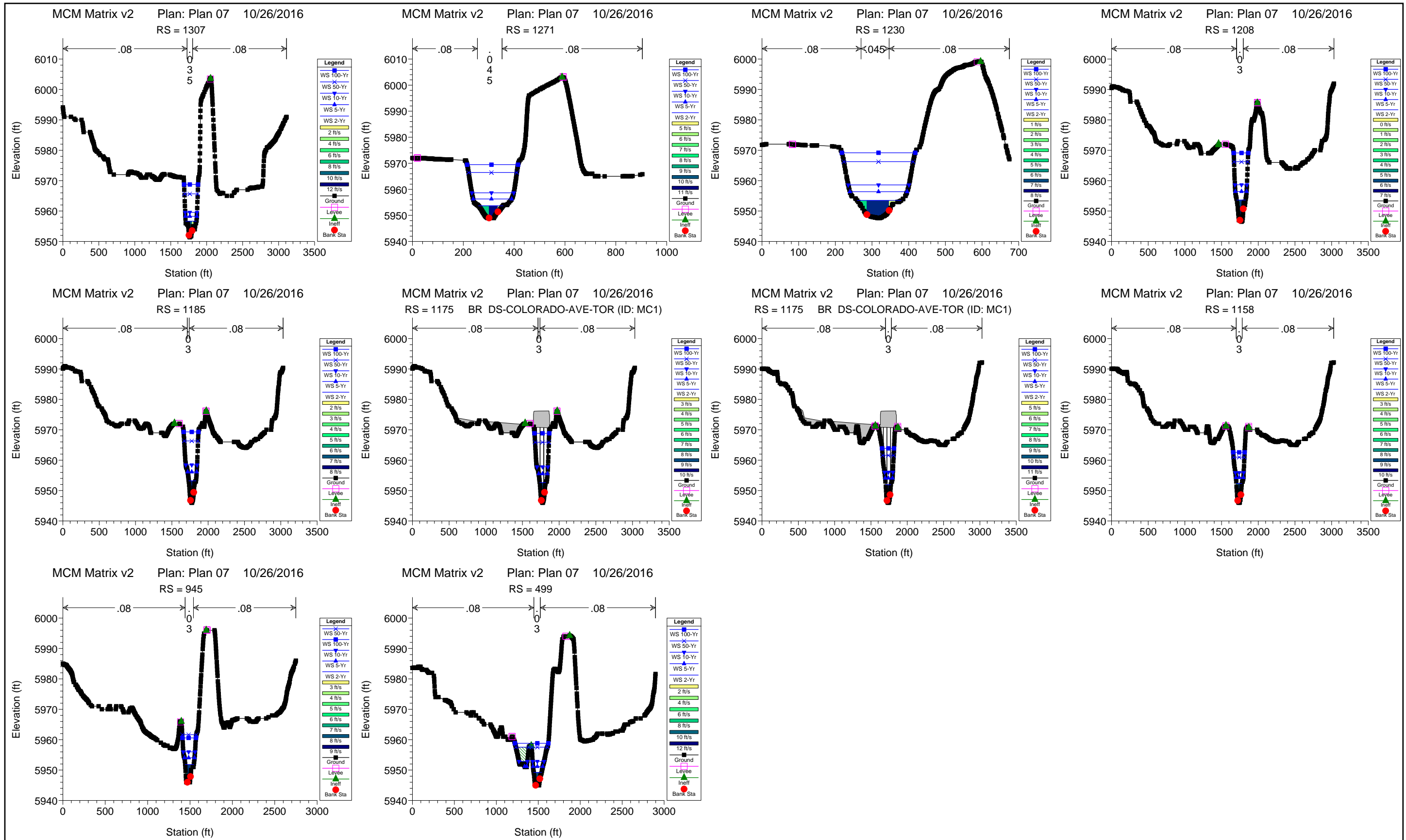












North Rockrimmon Creek Hydraulic Results

HEC-RAS Plan: Plan 03 River: N Rockrimmon Cr Reach: NR R1

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl	Shear Total (lb/sq ft)	Mann Wtd Total	Shear Chan (lb/sq ft)	Shear LOB (lb/sq ft)	Shear ROB (lb/sq ft)
NR R1	14552	2yr	140.00	6550.00	6550.90	5.13	27.29	33.53	1.00	1.06	0.036	1.06		
NR R1	14552	5yr	240.00	6550.00	6551.26	6.04	39.76	36.06	1.01	1.40	0.037	1.40		
NR R1	14552	10yr	360.00	6550.00	6551.64	6.71	53.66	38.68	1.00	1.69	0.038	1.69		
NR R1	14552	50yr	710.00	6550.00	6552.44	8.24	87.06	44.10	1.00	2.10	0.037	2.27	0.37	0.23
NR R1	14552	100yr	910.00	6550.00	6552.84	8.83	105.32	46.70	0.98	2.19	0.037	2.47	0.53	0.40
NR R1	14392	2yr	140.00	6542.00	6543.44	2.43	57.51	57.64	0.43	0.23	0.037	0.23		
NR R1	14392	5yr	240.00	6542.00	6543.84	2.93	81.91	66.77	0.46	0.34	0.039	0.34	0.02	
NR R1	14392	10yr	360.00	6542.00	6544.18	3.41	106.10	72.83	0.49	0.42	0.038	0.44	0.07	0.04
NR R1	14392	50yr	710.00	6542.00	6544.88	4.57	158.21	76.80	0.54	0.65	0.038	0.70	0.18	0.18
NR R1	14392	100yr	910.00	6542.00	6545.21	5.06	184.34	78.55	0.56	0.75	0.038	0.82	0.24	0.24
NR R1	14305	2yr	140.00	6542.00	6542.59	4.24	33.00	59.02	1.00	0.76	0.035	0.76		
NR R1	14305	5yr	240.00	6542.00	6542.84	4.98	48.15	61.24	0.99	0.95	0.035	0.95		
NR R1	14305	10yr	360.00	6542.00	6543.07	5.78	62.41	63.27	1.02	1.18	0.035	1.20	0.13	
NR R1	14305	50yr	710.00	6542.00	6543.69	6.90	103.78	68.74	0.97	1.48	0.036	1.53	0.42	
NR R1	14305	100yr	910.00	6542.00	6543.96	7.51	122.63	71.15	0.98	1.62	0.035	1.73	0.53	0.13
NR R1	14140	2yr	140.00	6536.00	6540.20	0.67	218.25	74.97	0.06	0.01	0.033	0.01	0.00	0.00
NR R1	14140	5yr	240.00	6536.00	6540.75	0.98	260.92	78.34	0.09	0.02	0.033	0.02	0.01	0.01
NR R1	14140	10yr	360.00	6536.00	6541.14	1.32	292.07	80.78	0.11	0.03	0.033	0.04	0.01	0.01
NR R1	14140	50yr	710.00	6536.00	6541.81	2.21	347.54	84.99	0.17	0.08	0.033	0.10	0.04	0.04
NR R1	14140	100yr	910.00	6536.00	6542.10	2.67	372.09	86.92	0.20	0.11	0.033	0.14	0.05	0.06
NR R1	14045	2yr	140.00	6534.00	6540.17	1.32	121.83	163.25	0.17	0.01	0.017	0.03	0.00	0.00
NR R1	14045	5yr	240.00	6534.00	6540.72	1.52	214.95	172.26	0.17	0.02	0.027	0.05	0.01	0.01
NR R1	14045	10yr	360.00	6534.00	6541.11	1.78	283.30	179.65	0.18	0.04	0.030	0.06	0.02	0.02
NR R1	14045	50yr	710.00	6534.00	6541.78	2.45	406.46	189.85	0.23	0.08	0.034	0.13	0.05	0.06
NR R1	14045	100yr	910.00	6534.00	6542.06	2.75	461.35	193.36	0.25	0.10	0.035	0.16	0.07	0.08
NR R1	14025		Culvert											
NR R1	13955	2yr	140.00	6530.02	6531.83	6.62	21.16	15.70	1.00	1.40	0.035	1.40		
NR R1	13955	5yr	240.00	6530.02	6532.47	7.58	32.18	45.15	0.96	1.44	0.033	1.63	0.18	0.30
NR R1	13955	10yr	360.00	6530.02	6533.06	8.53	43.92	52.25	0.95	1.65	0.033	1.89	0.50	0.72
NR R1	13955	50yr	710.00	6530.02	6534.38	10.70	70.07	65.30	0.96	2.37	0.035	2.59	1.34	1.55
NR R1	13955	100yr	910.00	6530.02	6535.00	11.66	82.55	72.60	0.97	2.71	0.035	2.92	1.71	1.92
NR R1	13914	2yr	140.00	6526.00	6527.94	6.81	20.56	14.48	1.01	1.48	0.035	1.48		
NR R1	13914	5yr	240.00	6526.00	6528.61	7.81	31.51	18.35	0.96	1.44	0.032	1.72	0.24	0.27
NR R1	13914	10yr	360.00	6526.00	6529.27	8.60	44.76	22.22	0.92	1.43	0.031	1.90	0.42	0.48
NR R1	13914	50yr	710.00	6526.00	6531.00	8.10	130.61	82.79	0.68	0.54	0.027	1.43	0.44	0.32
NR R1	13914	100yr	910.00	6526.00	6531.32	8.84	157.42	84.66	0.71	0.69	0.030	1.66	0.53	0.47
NR R1	13672	2yr	140.00	6522.00	6522.52	4.05	34.62	71.26	1.02	0.71	0.035	0.72	0.06	
NR R1	13672	5yr	240.00	6522.00	6523.02	3.39	72.29	81.19	0.61	0.37	0.034	0.40	0.12	
NR R1	13672	10yr	360.00	6522.00	6523.89	1.69	259.07	160.36	0.22	0.08	0.040	0.08	0.07	0.01
NR R1	13672	50yr	710.00	6522.00	6524.39	2.54	340.93	164.99	0.30	0.16	0.040	0.17	0.15	0.03
NR R1	13672	100yr	910.00	6522.00	6524.55	3.03	366.66	166.35	0.34	0.22	0.041	0.24	0.21	0.05
NR R1	13465	2yr	140.00	6518.00	6522.31	0.93	149.80	298.06	0.08	0.00	0.013	0.00		

HEC-RAS Plan: Plan 03 River: N Rockrimmon Cr Reach: NR R1 (Continued)

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Vel Chnl	Flow Area	Top Width	Froude # Chl	Shear Total	Mann Wtd Total	Shear Chan	Shear LOB	Shear ROB
			(cfs)	(ft)	(ft)	(ft/s)	(sq ft)	(ft)		(lb/sq ft)		(lb/sq ft)	(lb/sq ft)	(lb/sq ft)
NR R1	12866	2yr	140.00	6496.00	6497.65	6.22	22.50	18.34	0.99	0.17	0.013	0.17		
NR R1	12866	5yr	240.00	6496.00	6498.21	7.16	33.78	22.60	0.98	0.19	0.012	0.21	0.01	0.02
NR R1	12866	10yr	360.00	6496.00	6498.71	8.23	46.35	27.97	0.99	0.19	0.012	0.25	0.04	0.04
NR R1	12866	50yr	710.00	6496.00	6500.11	9.51	101.38	84.42	0.89	0.10	0.009	0.29	0.03	0.07
NR R1	12866	100yr	910.00	6496.00	6500.84	9.46	173.36	110.24	0.80	0.10	0.012	0.27	0.06	0.07
NR R1	12736	2yr	140.00	6488.80	6490.35	6.08	23.21	20.38	0.98	0.16	0.013	0.17		0.02
NR R1	12736	5yr	240.00	6488.80	6490.87	7.25	34.32	22.92	0.98	0.19	0.012	0.21	0.02	0.05
NR R1	12736	10yr	360.00	6488.80	6491.39	8.26	46.91	25.32	0.98	0.21	0.012	0.25	0.05	0.08
NR R1	12736	50yr	710.00	6488.80	6492.64	10.23	82.22	31.22	0.97	0.25	0.013	0.33	0.09	0.12
NR R1	12736	100yr	910.00	6488.80	6493.26	11.03	102.71	35.18	0.96	0.26	0.013	0.37	0.10	0.14
NR R1	12723	2yr	140.00	6484.00	6486.21	4.22	33.15	20.30	0.58	0.53	0.035	0.53		
NR R1	12723	5yr	240.00	6484.00	6486.74	5.42	44.32	21.91	0.66	0.79	0.034	0.81	0.04	
NR R1	12723	10yr	360.00	6484.00	6487.20	6.62	54.90	23.51	0.73	1.03	0.033	1.13	0.14	0.11
NR R1	12723	50yr	710.00	6484.00	6488.07	9.64	76.42	26.23	0.92	1.83	0.032	2.18	0.47	0.40
NR R1	12723	100yr	910.00	6484.00	6488.58	10.67	90.07	27.62	0.95	2.06	0.032	2.54	0.64	0.56
NR R1	12690	2yr	140.00	6484.00	6486.03	4.15	33.72	22.60	0.60	0.53	0.035	0.53		
NR R1	12690	5yr	240.00	6484.00	6486.53	5.29	45.33	24.29	0.68	0.83	0.036	0.83		
NR R1	12690	10yr	360.00	6484.00	6486.98	6.37	56.68	25.89	0.75	1.13	0.036	1.17		0.12
NR R1	12690	50yr	710.00	6484.00	6487.78	9.17	78.57	28.70	0.93	2.04	0.035	2.25	0.14	0.45
NR R1	12690	100yr	910.00	6484.00	6488.24	10.12	92.19	30.65	0.96	2.25	0.034	2.62	0.27	0.61
NR R1	12622	2yr	140.00	6484.00	6485.09	5.73	24.45	25.46	1.03	1.16	0.035	1.16		
NR R1	12622	5yr	240.00	6484.00	6485.56	6.51	36.93	28.02	0.99	1.30	0.034	1.34		0.14
NR R1	12622	10yr	360.00	6484.00	6485.99	7.34	49.49	30.37	0.99	1.49	0.034	1.57		0.32
NR R1	12622	50yr	710.00	6484.00	6486.98	8.96	82.29	35.63	0.96	1.70	0.033	2.01	0.35	0.61
NR R1	12622	100yr	910.00	6484.00	6487.47	9.59	100.30	38.20	0.95	1.77	0.032	2.18	0.49	0.72
NR R1	12469	2yr	140.00	6475.20	6477.34	6.38	21.93	17.59	1.01	1.33	0.035	1.33		
NR R1	12469	5yr	240.00	6475.20	6477.90	7.41	32.69	20.88	1.00	1.49	0.033	1.61	0.08	0.24
NR R1	12469	10yr	360.00	6475.20	6478.46	8.22	45.97	25.26	0.96	1.44	0.032	1.80	0.33	0.40
NR R1	12469	50yr	710.00	6475.20	6479.70	9.93	81.69	32.27	0.93	1.63	0.032	2.27	0.73	0.71
NR R1	12469	100yr	910.00	6475.20	6480.29	10.60	101.78	36.41	0.92	1.67	0.032	2.46	0.81	0.82
NR R1	12462	2yr	140.00	6474.00	6476.53	3.24	43.55	22.92	0.40	0.27	0.034	0.29	0.03	0.03
NR R1	12462	5yr	240.00	6474.00	6477.12	4.26	57.86	24.87	0.46	0.40	0.033	0.46	0.08	0.09
NR R1	12462	10yr	360.00	6474.00	6477.69	5.21	72.56	26.76	0.51	0.53	0.032	0.65	0.14	0.16
NR R1	12462	50yr	710.00	6474.00	6478.95	7.18	109.36	32.16	0.60	0.81	0.032	1.10	0.29	0.31
NR R1	12462	100yr	910.00	6474.00	6479.53	8.02	128.67	34.81	0.63	0.93	0.032	1.31	0.37	0.39
NR R1	12408	2yr	140.00	6474.13	6475.84	5.88	23.79	22.34	1.00	1.18	0.035	1.18		
NR R1	12408	5yr	240.00	6474.13	6476.30	6.94	34.74	24.50	1.01	1.41	0.034	1.47	0.13	0.13
NR R1	12408	10yr	360.00	6474.13	6476.77	7.86	46.59	26.13	0.99	1.56	0.033	1.73	0.30	0.30
NR R1	12408	50yr	710.00	6474.13	6477.88	9.68	77.72	29.99	0.98	1.86	0.033	2.25	0.61	0.61
NR R1	12408	100yr	910.00	6474.13	6478.42	10.40	94.73	32.41	0.97	1.93	0.032	2.46	0.69	0.72
NR R1	12233	2yr	140.00	6468.00	6469.96	5.22	26.84	19.97	0.79	0.95	0.037	0.95		
NR R1	12233	5yr	240.00	6468.00	6470.53	6.16	38.98	22.60	0.83	1.33	0.038	1.33		
NR R1	12233	10yr	360.00	6468.00	6471.10	6.89	52.65	25.26	0.82	1.48	0.038	1.58	0.20	

HEC-RAS Plan: Plan 03 River: N Rockrimmon Cr Reach: NR R1 (Continued)

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl	Shear Total (lb/sq ft)	Mann Wtd Total	Shear Chan (lb/sq ft)	Shear LOB (lb/sq ft)	Shear ROB (lb/sq ft)
NR R1	12233	50yr	710.00	6468.00	6472.61	7.77	95.68	31.26	0.72	1.49	0.037	1.77	0.56	0.17
NR R1	12233	100yr	910.00	6468.00	6473.32	8.18	118.83	33.56	0.69	1.49	0.037	1.85	0.66	0.28
NR R1	12230	Bridge												
NR R1	12222	2yr	140.00	6468.00	6469.61	6.25	22.39	18.77	1.01	1.29	0.035	1.29		
NR R1	12222	5yr	240.00	6468.00	6470.15	7.21	33.34	21.50	1.01	1.52	0.034	1.56	0.07	0.06
NR R1	12222	10yr	360.00	6468.00	6470.66	8.18	44.62	23.29	1.00	1.66	0.033	1.83	0.27	0.24
NR R1	12222	50yr	710.00	6468.00	6471.89	9.94	76.03	27.84	0.96	1.86	0.032	2.32	0.61	0.57
NR R1	12222	100yr	910.00	6468.00	6472.46	10.72	92.73	30.50	0.96	1.94	0.032	2.55	0.70	0.70
NR R1	12147	2yr	140.00	6466.42	6468.28	5.97	23.44	21.51	1.01	1.21	0.035	1.21		
NR R1	12147	5yr	240.00	6466.42	6468.79	6.84	35.24	25.32	0.99	1.36	0.034	1.44		0.12
NR R1	12147	10yr	360.00	6466.42	6469.25	7.72	47.98	28.86	0.98	1.43	0.032	1.67	0.21	0.33
NR R1	12147	50yr	710.00	6466.42	6470.36	9.34	84.40	38.88	0.94	1.50	0.031	2.10	0.41	0.67
NR R1	12147	100yr	910.00	6466.42	6470.93	9.77	109.09	46.95	0.91	1.40	0.031	2.17	0.48	0.72
NR R1	12141	2yr	140.00	6465.70	6467.15	5.86	23.97	23.63	1.01	1.14	0.034	1.18		0.11
NR R1	12141	5yr	240.00	6465.70	6467.63	6.81	35.95	26.98	1.00	1.31	0.034	1.43		0.33
NR R1	12141	10yr	360.00	6465.70	6468.10	7.62	49.39	30.06	0.97	1.39	0.033	1.63	0.18	0.48
NR R1	12141	50yr	710.00	6465.70	6469.14	9.37	83.61	35.58	0.96	1.67	0.033	2.13	0.51	0.84
NR R1	12141	100yr	910.00	6465.70	6469.65	10.04	102.43	38.30	0.95	1.76	0.033	2.32	0.63	0.96
NR R1	12034	2yr	140.00	6462.07	6463.62	6.01	23.28	21.05	1.01	1.22	0.035	1.22		
NR R1	12034	5yr	240.00	6462.07	6464.11	7.05	34.20	23.37	1.00	1.43	0.034	1.51	0.18	0.05
NR R1	12034	10yr	360.00	6462.07	6464.60	7.95	46.30	25.59	0.98	1.54	0.033	1.74	0.37	0.24
NR R1	12034	50yr	710.00	6462.07	6465.77	9.66	79.35	30.79	0.95	1.75	0.032	2.21	0.68	0.57
NR R1	12034	100yr	910.00	6462.07	6466.30	10.48	96.50	34.80	0.96	1.80	0.032	2.47	0.82	0.58
NR R1	12027	2yr	140.00	6460.00	6462.56	3.20	43.93	23.68	0.40	0.27	0.034	0.29	0.02	0.01
NR R1	12027	5yr	240.00	6460.00	6463.21	4.08	60.34	26.65	0.45	0.37	0.033	0.42	0.08	0.06
NR R1	12027	10yr	360.00	6460.00	6463.73	5.05	74.71	28.98	0.50	0.50	0.032	0.61	0.14	0.12
NR R1	12027	50yr	710.00	6460.00	6464.56	7.71	100.29	32.85	0.68	1.01	0.032	1.32	0.38	0.33
NR R1	12027	100yr	910.00	6460.00	6464.87	9.06	110.87	34.24	0.77	1.33	0.032	1.78	0.54	0.47
NR R1	11900	2yr	140.00	6460.00	6461.44	6.03	23.22	20.83	1.01	1.22	0.035	1.22		
NR R1	11900	5yr	240.00	6460.00	6461.93	7.12	34.23	25.03	1.02	1.39	0.033	1.54		0.23
NR R1	11900	10yr	360.00	6460.00	6462.52	7.45	53.39	39.62	0.91	0.98	0.029	1.52	0.22	0.30
NR R1	11900	50yr	710.00	6460.00	6463.61	8.44	113.85	70.67	0.83	0.86	0.030	1.69	0.42	0.51
NR R1	11900	100yr	910.00	6460.00	6463.99	9.15	142.21	81.09	0.85	0.96	0.031	1.91	0.54	0.61
NR R1	11868	2yr	140.00	6458.00	6459.85	2.48	56.50	38.69	0.36	0.19	0.035	0.19		
NR R1	11868	5yr	240.00	6458.00	6460.48	2.94	82.59	43.74	0.36	0.22	0.034	0.24	0.03	0.04
NR R1	11868	10yr	360.00	6458.00	6461.07	3.39	109.33	46.86	0.37	0.26	0.033	0.29	0.05	0.07
NR R1	11868	50yr	710.00	6458.00	6462.36	4.38	174.92	57.38	0.39	0.33	0.032	0.42	0.11	0.11
NR R1	11868	100yr	910.00	6458.00	6462.94	4.82	210.78	65.61	0.40	0.35	0.031	0.49	0.14	0.12
NR R1	11851	2yr	140.00	6458.00	6459.29	5.87	23.84	22.53	1.01	1.18	0.035	1.18		
NR R1	11851	5yr	240.00	6458.00	6459.78	6.71	35.77	25.63	1.00	1.41	0.035	1.41		
NR R1	11851	10yr	360.00	6458.00	6460.25	7.46	48.93	31.48	0.99	1.40	0.032	1.61	0.10	0.18
NR R1	11851	50yr	710.00	6458.00	6461.27	9.04	85.81	40.91	0.95	1.51	0.031	2.02	0.40	0.56

HEC-RAS Plan: Plan 03 River: N Rockrimmon Cr Reach: NR R1 (Continued)

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl	Shear Total (lb/sq ft)	Mann Wtd Total	Shear Chan (lb/sq ft)	Shear LOB (lb/sq ft)	Shear ROB (lb/sq ft)
NR R1	11851	100yr	910.00	6458.00	6461.80	9.51	110.05	50.44	0.92	1.39	0.030	2.11	0.49	0.55
NR R1	11830	2yr	140.00	6456.00	6457.18	5.62	25.00	26.57	1.00	1.05	0.034	1.10	0.07	0.13
NR R1	11830	5yr	240.00	6456.00	6457.62	6.62	37.25	29.80	0.98	1.19	0.033	1.35	0.26	0.31
NR R1	11830	10yr	360.00	6456.00	6458.07	7.38	51.46	33.04	0.95	1.27	0.033	1.53	0.42	0.44
NR R1	11830	50yr	710.00	6456.00	6459.03	9.08	86.03	38.40	0.95	1.57	0.033	2.02	0.79	0.71
NR R1	11830	100yr	910.00	6456.00	6459.50	9.75	104.55	40.95	0.95	1.69	0.033	2.22	0.91	0.82
NR R1	11805	2yr	140.00	6454.14	6455.58	5.51	25.39	27.70	1.01	1.09	0.035	1.09		
NR R1	11805	5yr	240.00	6454.14	6455.99	6.43	37.37	30.14	1.01	1.31	0.035	1.33	0.09	
NR R1	11805	10yr	360.00	6454.14	6456.40	7.26	50.39	33.44	0.99	1.39	0.033	1.54	0.26	0.21
NR R1	11805	50yr	710.00	6454.14	6457.36	8.87	85.24	39.25	0.96	1.63	0.033	1.98	0.58	0.56
NR R1	11805	100yr	910.00	6454.14	6457.82	9.52	104.12	42.17	0.95	1.71	0.033	2.16	0.69	0.67
NR R1	11798	2yr	140.00	6452.00	6453.27	5.03	27.81	25.92	0.86	0.86	0.035	0.86		
NR R1	11798	5yr	240.00	6452.00	6453.66	6.24	38.45	27.73	0.93	1.22	0.035	1.22		
NR R1	11798	10yr	360.00	6452.00	6454.03	7.37	48.85	29.62	1.01	1.58	0.035	1.60		0.02
NR R1	11798	50yr	710.00	6452.00	6455.00	9.10	79.89	33.95	0.99	1.84	0.033	2.09	0.37	0.40
NR R1	11798	100yr	910.00	6452.00	6455.49	9.78	96.87	36.14	0.97	1.93	0.033	2.28	0.51	0.53
NR R1	11685	2yr	140.00	6450.00	6451.40	5.67	24.70	25.21	1.01	1.13	0.035	1.13		
NR R1	11685	5yr	240.00	6450.00	6451.84	6.61	36.48	28.11	1.00	1.32	0.034	1.38	0.15	
NR R1	11685	10yr	360.00	6450.00	6452.27	7.48	48.98	30.46	0.99	1.47	0.033	1.62	0.38	0.14
NR R1	11685	50yr	710.00	6450.00	6453.28	9.15	82.64	36.14	0.97	1.70	0.033	2.08	0.71	0.46
NR R1	11685	100yr	910.00	6450.00	6453.81	9.71	102.58	39.99	0.94	1.70	0.032	2.21	0.81	0.53
NR R1	11677	2yr	140.00	6450.00	6450.89	5.20	26.93	32.83	1.01	1.00	0.035	1.00		
NR R1	11677	5yr	240.00	6450.00	6451.26	6.09	39.48	34.97	1.00	1.21	0.035	1.23	0.13	
NR R1	11677	10yr	360.00	6450.00	6451.63	6.88	52.75	37.12	1.00	1.38	0.034	1.45	0.29	
NR R1	11677	50yr	710.00	6450.00	6452.48	8.48	86.57	42.13	0.98	1.66	0.033	1.89	0.58	0.26
NR R1	11677	100yr	910.00	6450.00	6452.90	9.15	104.43	44.49	0.98	1.78	0.033	2.08	0.71	0.40
NR R1	11470	2yr	140.00	6444.41	6446.03	5.93	23.60	22.50	1.02	1.20	0.035	1.21		
NR R1	11470	5yr	240.00	6444.41	6446.51	6.97	34.92	24.97	0.99	1.34	0.033	1.47	0.23	0.24
NR R1	11470	10yr	360.00	6444.41	6446.99	7.83	47.66	27.41	0.97	1.44	0.033	1.69	0.40	0.40
NR R1	11470	50yr	710.00	6444.41	6448.10	9.55	81.12	32.82	0.95	1.69	0.032	2.18	0.68	0.72
NR R1	11470	100yr	910.00	6444.41	6448.62	10.29	98.80	35.30	0.95	1.80	0.032	2.40	0.79	0.86
NR R1	11464	2yr	140.00	6444.00	6445.44	4.48	31.25	25.89	0.72	0.71	0.036	0.71		
NR R1	11464	5yr	240.00	6444.00	6445.93	5.39	44.49	28.69	0.76	0.97	0.037	0.97		
NR R1	11464	10yr	360.00	6444.00	6446.31	6.46	55.87	30.45	0.82	1.25	0.036	1.31	0.09	0.10
NR R1	11464	50yr	710.00	6444.00	6447.10	8.94	81.30	33.67	0.96	1.97	0.035	2.23	0.41	0.44
NR R1	11464	100yr	910.00	6444.00	6447.54	9.81	96.35	35.40	0.98	2.18	0.034	2.55	0.56	0.60
NR R1	11316	2yr	140.00	6442.00	6443.35	5.63	24.87	24.82	0.99	1.10	0.035	1.10		
NR R1	11316	5yr	240.00	6442.00	6443.79	6.60	36.61	28.87	1.00	1.27	0.034	1.37	0.05	0.17
NR R1	11316	10yr	360.00	6442.00	6444.23	7.43	50.14	32.64	0.98	1.34	0.033	1.58	0.27	0.34
NR R1	11316	50yr	710.00	6442.00	6445.22	9.11	84.71	37.00	0.96	1.67	0.033	2.05	0.61	0.78
NR R1	11316	100yr	910.00	6442.00	6445.69	9.84	102.60	39.23	0.96	1.79	0.033	2.27	0.71	0.93
NR R1	11308	2yr	140.00	6440.00	6441.37	6.00	23.35	21.22	1.01	1.21	0.035	1.21		

HEC-RAS Plan: Plan 03 River: N Rockrimmon Cr Reach: NR R1 (Continued)

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl	Shear Total (lb/sq ft)	Mann Wtd Total	Shear Chan (lb/sq ft)	Shear LOB (lb/sq ft)	Shear ROB (lb/sq ft)
NR R1	11308	5yr	240.00	6440.00	6441.90	6.68	35.94	25.97	1.00	1.40	0.035	1.40		
NR R1	11308	10yr	360.00	6440.00	6442.34	7.56	47.94	28.84	1.00	1.54	0.034	1.65	0.16	0.15
NR R1	11308	50yr	710.00	6440.00	6443.39	9.18	81.54	35.08	0.96	1.70	0.032	2.08	0.51	0.48
NR R1	11308	100yr	910.00	6440.00	6443.88	9.87	99.67	38.03	0.95	1.78	0.032	2.28	0.64	0.61
NR R1	11103	2yr	140.00	6436.00	6436.84	4.89	28.63	38.66	1.00	0.92	0.035	0.92		
NR R1	11103	5yr	240.00	6436.00	6437.41	4.60	52.22	44.51	0.75	0.69	0.035	0.69		
NR R1	11103	10yr	360.00	6436.00	6437.96	4.60	78.25	50.19	0.65	0.63	0.035	0.63		
NR R1	11103	50yr	710.00	6436.00	6439.23	4.83	158.34	74.13	0.51	0.43	0.031	0.57	0.16	0.10
NR R1	11103	100yr	910.00	6436.00	6439.84	4.96	206.60	85.00	0.47	0.40	0.031	0.57	0.18	0.13
NR R1	11091	2yr	140.00	6435.14	6436.62	5.50	25.45	28.03	1.02	0.15	0.013	0.15		
NR R1	11091	5yr	240.00	6435.14	6437.05	6.26	38.34	32.04	1.01	0.18	0.013	0.18		
NR R1	11091	10yr	360.00	6435.14	6437.44	7.00	51.76	36.20	1.00	0.19	0.013	0.21	0.03	0.00
NR R1	11091	50yr	710.00	6435.14	6438.32	8.66	88.65	49.92	0.99	0.20	0.012	0.27	0.07	0.04
NR R1	11091	100yr	910.00	6435.14	6438.77	9.27	113.39	60.55	0.97	0.19	0.011	0.29	0.08	0.05
NR R1	11085	2yr	140.00	6432.98	6435.15	5.91	23.71	22.56	1.02	1.20	0.035	1.20		
NR R1	11085	5yr	240.00	6432.98	6435.65	6.70	35.81	26.27	1.01	1.41	0.035	1.41		
NR R1	11085	10yr	360.00	6432.98	6436.10	7.48	48.42	29.49	1.00	1.52	0.034	1.62	0.21	0.05
NR R1	11085	50yr	710.00	6432.98	6437.13	9.09	82.77	37.46	0.96	1.63	0.032	2.06	0.52	0.42
NR R1	11085	100yr	910.00	6432.98	6437.65	9.64	103.12	40.89	0.94	1.66	0.032	2.18	0.63	0.59
NR R1	11080	2yr	140.00	6432.00	6434.10	5.12	27.36	24.86	0.86	0.89	0.035	0.89		
NR R1	11080	5yr	240.00	6432.00	6434.43	6.69	35.88	26.45	1.01	1.41	0.035	1.41		
NR R1	11080	10yr	360.00	6432.00	6434.89	7.44	48.38	28.62	1.01	1.63	0.035	1.63		
NR R1	11080	50yr	710.00	6432.00	6435.88	9.10	79.25	33.65	0.99	1.89	0.033	2.10	0.31	0.28
NR R1	11080	100yr	910.00	6432.00	6436.37	9.75	96.48	36.54	0.98	1.93	0.032	2.28	0.44	0.42
NR R1	10924	2yr	140.00	6432.00	6433.17	2.75	50.87	53.88	0.50	0.27	0.035	0.27		
NR R1	10924	5yr	240.00	6432.00	6433.64	3.13	76.76	56.58	0.47	0.30	0.035	0.31	0.01	0.03
NR R1	10924	10yr	360.00	6432.00	6434.11	3.50	103.84	60.24	0.45	0.32	0.034	0.35	0.05	0.04
NR R1	10924	50yr	710.00	6432.00	6435.24	4.17	181.48	76.61	0.43	0.33	0.032	0.42	0.12	0.10
NR R1	10924	100yr	910.00	6432.00	6435.63	4.66	212.63	82.09	0.45	0.39	0.032	0.50	0.16	0.13
NR R1	10854	2yr	140.00	6430.79	6432.19	5.60	25.01	26.33	1.01	1.11	0.035	1.11		
NR R1	10854	5yr	240.00	6430.79	6432.64	6.33	37.93	30.80	1.00	1.30	0.035	1.30		
NR R1	10854	10yr	360.00	6430.79	6433.04	7.11	50.98	35.18	1.00	1.40	0.033	1.51	0.08	0.15
NR R1	10854	50yr	710.00	6430.79	6433.91	8.80	85.78	43.65	0.99	1.60	0.032	2.00	0.43	0.55
NR R1	10854	100yr	910.00	6430.79	6434.60	8.31	134.92	82.83	0.83	0.85	0.028	1.64	0.37	0.35
NR R1	10846	2yr	140.00	6430.00	6431.14	5.48	25.56	27.65	1.00	1.07	0.035	1.07		
NR R1	10846	5yr	240.00	6430.00	6431.57	6.31	38.03	30.95	1.00	1.29	0.035	1.29		
NR R1	10846	10yr	360.00	6430.00	6431.96	7.12	50.73	33.60	1.01	1.47	0.034	1.52		0.14
NR R1	10846	50yr	710.00	6430.00	6432.87	8.75	83.63	38.75	0.98	1.72	0.033	1.98	0.33	0.48
NR R1	10846	100yr	910.00	6430.00	6433.32	9.41	101.47	41.30	0.97	1.81	0.033	2.16	0.46	0.61
NR R1	10491	2yr	140.00	6424.00	6426.32	3.60	38.90	38.86	0.63	0.45	0.035	0.45		
NR R1	10491	5yr	240.00	6424.00	6426.91	3.34	71.83	71.83	0.59	0.39	0.035	0.39		
NR R1	10491	10yr	360.00	6424.00	6427.33	3.40	107.20	93.88	0.53	0.32	0.033	0.37	0.03	0.04
NR R1	10491	50yr	710.00	6424.00	6428.03	4.23	186.20	159.78	0.53	0.29	0.027	0.49	0.12	0.05

HEC-RAS Plan: Plan 03 River: N Rockrimmon Cr Reach: NR R1 (Continued)

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl	Shear Total (lb/sq ft)	Mann Wtd Total	Shear Chan (lb/sq ft)	Shear LOB (lb/sq ft)	Shear ROB (lb/sq ft)
NR R1	10491	100yr	910.00	6424.00	6428.32	4.58	232.33	166.00	0.53	0.34	0.030	0.55	0.18	0.11
NR R1	10419	2yr	140.00	6424.00	6425.23	5.58	25.09	24.77	0.98	1.08	0.035	1.08		
NR R1	10419	5yr	240.00	6424.00	6425.68	6.53	36.76	27.92	1.00	1.36	0.035	1.36		
NR R1	10419	10yr	360.00	6424.00	6426.29	6.30	57.14	45.31	0.99	1.28	0.035	1.28		
NR R1	10419	50yr	710.00	6424.00	6427.10	6.44	110.31	84.70	0.99	1.32	0.035	1.32		
NR R1	10419	100yr	910.00	6424.00	6427.40	6.60	137.92	99.16	0.99	1.35	0.035	1.35		
NR R1	10382	2yr	140.00	6418.00	6420.26	3.76	37.25	17.09	0.45	0.05	0.013	0.05		
NR R1	10382	5yr	240.00	6418.00	6421.25	4.43	54.14	17.61	0.44	0.07	0.013	0.07		
NR R1	10382	10yr	360.00	6418.00	6422.27	5.00	71.94	18.14	0.44	0.08	0.013	0.08		
NR R1	10382	50yr	710.00	6418.00	6424.75	6.08	116.87	19.44	0.43	0.10	0.013	0.10		
NR R1	10382	100yr	910.00	6418.00	6426.52	6.06	150.22	83.93	0.38	0.10	0.013	0.10		
NR R1	10370		Culvert											
NR R1	10301	2yr	140.00	6417.41	6418.85	6.73	20.80	14.82	1.00	0.20	0.013	0.20		
NR R1	10301	5yr	240.00	6417.41	6419.46	8.01	29.98	15.09	1.00	0.26	0.013	0.26		
NR R1	10301	10yr	360.00	6417.41	6420.08	9.14	39.40	15.36	1.01	0.32	0.013	0.32		
NR R1	10301	50yr	710.00	6417.41	6421.57	11.29	62.89	16.03	1.00	0.43	0.013	0.43		
NR R1	10301	100yr	910.00	6417.41	6422.41	11.88	76.62	17.39	1.00	0.47	0.013	0.47		
NR R1	10239	2yr	140.00	6414.00	6415.07	5.63	24.88	25.51	1.00	1.11	0.035	1.11		
NR R1	10239	5yr	240.00	6414.00	6415.52	6.56	36.59	27.44	1.00	1.37	0.035	1.37		
NR R1	10239	10yr	360.00	6414.00	6415.94	7.40	48.69	29.26	1.01	1.59	0.035	1.61		0.08
NR R1	10239	50yr	710.00	6414.00	6416.93	9.13	79.29	32.79	0.99	1.89	0.033	2.10	0.33	0.40
NR R1	10239	100yr	910.00	6414.00	6417.41	9.85	95.48	34.48	0.98	2.00	0.033	2.32	0.45	0.54
NR R1	10017	2yr	140.00	6406.00	6407.59	5.38	26.00	21.66	0.86	0.94	0.035	0.95		
NR R1	10017	5yr	240.00	6406.00	6408.10	6.47	37.98	25.28	0.87	1.06	0.033	1.22	0.18	0.21
NR R1	10017	10yr	360.00	6406.00	6408.63	7.27	52.16	27.51	0.85	1.17	0.033	1.41	0.33	0.40
NR R1	10017	50yr	710.00	6406.00	6409.82	9.03	87.60	32.30	0.86	1.46	0.033	1.89	0.60	0.70
NR R1	10017	100yr	910.00	6406.00	6410.36	9.80	105.74	34.20	0.86	1.60	0.033	2.11	0.71	0.84
NR R1	10010		Bridge											
NR R1	10005	2yr	140.00	6406.00	6407.31	5.91	23.68	22.03	1.00	1.19	0.035	1.19		
NR R1	10005	5yr	240.00	6406.00	6407.80	6.87	34.95	24.41	1.01	1.46	0.035	1.46		
NR R1	10005	10yr	360.00	6406.00	6408.27	7.71	46.88	26.58	1.00	1.61	0.034	1.69	0.14	0.11
NR R1	10005	50yr	710.00	6406.00	6409.35	9.45	78.23	31.43	0.97	1.84	0.032	2.19	0.50	0.46
NR R1	10005	100yr	910.00	6406.00	6409.87	10.16	95.28	33.75	0.96	1.93	0.032	2.39	0.63	0.60
NR R1	9900	2yr	140.00	6402.48	6404.30	6.26	22.39	19.05	1.01	1.27	0.035	1.29		0.05
NR R1	9900	5yr	240.00	6402.48	6404.84	7.33	33.34	21.85	0.99	1.40	0.033	1.57	0.15	0.29
NR R1	9900	10yr	360.00	6402.48	6405.37	8.25	45.74	24.59	0.97	1.50	0.032	1.82	0.34	0.46
NR R1	9900	50yr	710.00	6402.48	6406.63	9.98	81.76	35.45	0.94	1.50	0.030	2.29	0.62	0.56
NR R1	9900	100yr	910.00	6402.48	6407.35	10.14	111.85	47.33	0.87	1.24	0.030	2.23	0.67	0.55
NR R1	9894	2yr	140.00	6402.00	6403.36	6.06	23.10	20.14	1.00	1.23	0.035	1.23		
NR R1	9894	5yr	240.00	6402.00	6403.89	7.00	34.28	22.52	1.00	1.49	0.035	1.49		
NR R1	9894	10yr	360.00	6402.00	6404.37	7.93	45.70	24.90	1.00	1.63	0.034	1.76	0.16	0.16

HEC-RAS Plan: Plan 03 River: N Rockrimmon Cr Reach: NR R1 (Continued)

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl	Shear Total (lb/sq ft)	Mann Wtd Total	Shear Chan (lb/sq ft)	Shear LOB (lb/sq ft)	Shear ROB (lb/sq ft)
NR R1	9894	50yr	710.00	6402.00	6405.52	9.65	77.86	30.62	0.96	1.80	0.032	2.23	0.52	0.55
NR R1	9894	100yr	910.00	6402.00	6406.01	10.58	93.14	32.86	0.98	1.98	0.032	2.56	0.67	0.72
NR R1	9778	2yr	140.00	6398.59	6400.63	6.50	21.53	16.77	1.01	1.36	0.035	1.36		
NR R1	9778	5yr	240.00	6398.59	6401.24	7.35	32.66	19.87	1.01	1.61	0.035	1.61		
NR R1	9778	10yr	360.00	6398.59	6401.80	8.11	44.43	22.67	1.01	1.79	0.035	1.83	0.08	
NR R1	9778	50yr	710.00	6398.59	6403.00	9.81	75.01	28.02	0.97	1.93	0.032	2.31	0.51	0.34
NR R1	9778	100yr	910.00	6398.59	6403.61	10.42	92.90	30.67	0.94	1.94	0.032	2.45	0.65	0.49
NR R1	9772	2yr	140.00	6398.00	6400.01	4.83	28.97	18.60	0.68	0.71	0.035	0.71		
NR R1	9772	5yr	240.00	6398.00	6400.53	6.20	39.30	21.25	0.76	0.94	0.033	1.06	0.13	0.13
NR R1	9772	10yr	360.00	6398.00	6400.96	7.62	49.06	23.47	0.85	1.24	0.032	1.50	0.29	0.27
NR R1	9772	50yr	710.00	6398.00	6402.06	10.09	78.17	29.50	0.94	1.70	0.031	2.34	0.65	0.62
NR R1	9772	100yr	910.00	6398.00	6402.67	10.78	97.26	32.82	0.92	1.76	0.032	2.53	0.81	0.72
NR R1	9681	2yr	140.00	6397.02	6398.74	6.15	22.75	19.56	1.01	1.26	0.035	1.26		
NR R1	9681	5yr	240.00	6397.02	6399.28	7.03	34.12	22.51	1.01	1.50	0.035	1.50		
NR R1	9681	10yr	360.00	6397.02	6399.78	7.90	45.94	25.07	1.00	1.64	0.034	1.75	0.05	0.25
NR R1	9681	50yr	710.00	6397.02	6400.93	9.60	78.25	31.20	0.96	1.77	0.032	2.21	0.41	0.55
NR R1	9681	100yr	910.00	6397.02	6401.49	10.27	96.43	34.06	0.95	1.83	0.032	2.40	0.54	0.70
NR R1	9674	2yr	140.00	6396.00	6398.31	2.87	48.89	25.49	0.36	0.22	0.034	0.23	0.02	0.02
NR R1	9674	5yr	240.00	6396.00	6398.95	3.71	65.95	27.61	0.40	0.31	0.033	0.35	0.06	0.05
NR R1	9674	10yr	360.00	6396.00	6399.54	4.50	82.93	29.55	0.44	0.41	0.033	0.48	0.11	0.10
NR R1	9674	50yr	710.00	6396.00	6400.76	6.31	121.62	34.45	0.53	0.66	0.032	0.85	0.24	0.21
NR R1	9674	100yr	910.00	6396.00	6401.08	7.50	132.88	35.88	0.61	0.88	0.032	1.17	0.35	0.30
NR R1	9588	2yr	140.00	6396.00	6397.59	5.44	25.72	21.79	0.88	0.98	0.035	0.98		
NR R1	9588	5yr	240.00	6396.00	6398.07	6.49	37.12	26.65	0.93	1.19	0.033	1.28	0.03	0.06
NR R1	9588	10yr	360.00	6396.00	6398.48	7.62	48.55	30.24	0.97	1.38	0.032	1.64	0.19	0.27
NR R1	9588	50yr	710.00	6396.00	6399.49	9.41	84.68	42.40	0.97	1.48	0.031	2.16	0.52	0.54
NR R1	9588	100yr	910.00	6396.00	6400.27	8.98	127.64	64.67	0.82	0.98	0.029	1.82	0.53	0.44
NR R1	9459	2yr	140.00	6393.80	6395.48	6.03	23.21	20.86	1.01	1.22	0.035	1.22		
NR R1	9459	5yr	240.00	6393.80	6395.99	6.84	35.07	25.57	1.03	1.46	0.035	1.47	0.03	
NR R1	9459	10yr	360.00	6393.80	6396.50	7.43	50.28	35.11	0.95	1.19	0.030	1.56	0.23	0.19
NR R1	9459	50yr	710.00	6393.80	6397.67	7.72	125.42	87.30	0.78	0.68	0.029	1.43	0.40	0.36
NR R1	9459	100yr	910.00	6393.80	6398.03	8.19	158.30	92.80	0.78	0.78	0.032	1.55	0.49	0.49
NR R1	9452	2yr	140.00	6392.00	6394.30	3.90	35.86	23.22	0.55	0.46	0.035	0.46		
NR R1	9452	5yr	240.00	6392.00	6394.84	4.89	49.20	26.12	0.62	0.65	0.034	0.67		0.04
NR R1	9452	10yr	360.00	6392.00	6395.03	6.68	54.18	27.22	0.81	1.15	0.034	1.22		0.12
NR R1	9452	50yr	710.00	6392.00	6395.86	9.33	79.02	32.37	0.96	1.77	0.032	2.13	0.26	0.45
NR R1	9452	100yr	910.00	6392.00	6396.56	9.40	109.84	52.64	0.87	1.17	0.028	2.02	0.37	0.35
NR R1	9361	2yr	140.00	6391.74	6393.23	5.71	24.53	24.65	1.01	1.13	0.035	1.13		
NR R1	9361	5yr	240.00	6391.74	6393.68	6.55	36.65	28.24	1.01	1.35	0.035	1.37		0.03
NR R1	9361	10yr	360.00	6391.74	6394.33	5.97	77.87	97.66	0.76	0.42	0.025	1.00	0.08	0.18
NR R1	9361	50yr	710.00	6391.74	6394.95	7.33	140.62	105.58	0.81	0.73	0.033	1.37	0.23	0.49
NR R1	9361	100yr	910.00	6391.74	6395.21	8.00	167.73	108.83	0.85	0.89	0.035	1.59	0.31	0.64

HEC-RAS Plan: Plan 03 River: N Rockrimmon Cr Reach: NR R1 (Continued)

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl	Shear Total (lb/sq ft)	Mann Wtd Total	Shear Chan (lb/sq ft)	Shear LOB (lb/sq ft)	Shear ROB (lb/sq ft)
NR R1	9355	2yr	140.00	6390.00	6391.69	6.09	22.99	20.45	1.01	1.25	0.035	1.25		
NR R1	9355	5yr	240.00	6390.00	6392.21	7.05	34.26	23.54	0.99	1.39	0.033	1.50	0.14	0.10
NR R1	9355	10yr	360.00	6390.00	6392.73	7.82	47.66	27.45	0.95	1.39	0.032	1.68	0.32	0.30
NR R1	9355	50yr	710.00	6390.00	6393.92	9.31	84.98	35.57	0.91	1.49	0.032	2.04	0.65	0.60
NR R1	9355	100yr	910.00	6390.00	6394.73	8.14	169.93	112.80	0.71	0.55	0.028	1.45	0.54	0.31
NR R1	9309	2yr	140.00	6388.00	6389.90	6.65	21.05	15.45	1.00	1.41	0.035	1.41		
NR R1	9309	5yr	240.00	6388.00	6390.54	7.58	32.90	21.83	0.95	1.26	0.031	1.62	0.23	0.23
NR R1	9309	10yr	360.00	6388.00	6391.18	8.22	49.29	29.05	0.90	1.15	0.030	1.74	0.39	0.41
NR R1	9309	50yr	710.00	6388.00	6392.88	8.10	138.98	95.27	0.69	0.51	0.028	1.43	0.40	0.30
NR R1	9309	100yr	910.00	6388.00	6393.23	8.76	173.36	102.82	0.72	0.62	0.031	1.63	0.47	0.42
NR R1	9303	2yr	140.00	6388.00	6389.39	6.14	22.96	20.56	0.99	1.17	0.034	1.24		0.14
NR R1	9303	5yr	240.00	6388.00	6389.93	7.15	35.07	24.60	0.96	1.23	0.032	1.49	0.21	0.36
NR R1	9303	10yr	360.00	6388.00	6390.45	7.99	49.18	28.91	0.94	1.28	0.032	1.70	0.37	0.50
NR R1	9303	50yr	710.00	6388.00	6391.67	9.42	90.56	39.87	0.89	1.34	0.032	2.05	0.57	0.74
NR R1	9303	100yr	910.00	6388.00	6391.87	11.23	98.83	42.04	1.03	1.83	0.032	2.86	0.79	1.05
NR R1	9221	2yr	140.00	6386.00	6387.43	5.99	23.49	21.94	1.00	1.16	0.034	1.21		0.17
NR R1	9221	5yr	240.00	6386.00	6387.92	7.06	34.99	24.84	0.98	1.29	0.033	1.48	0.22	0.37
NR R1	9221	10yr	360.00	6386.00	6388.46	7.75	50.19	31.96	0.93	1.18	0.031	1.62	0.35	0.36
NR R1	9221	50yr	710.00	6386.00	6389.75	8.30	114.09	68.27	0.79	0.77	0.029	1.59	0.48	0.39
NR R1	9221	100yr	910.00	6386.00	6389.96	9.70	128.78	72.97	0.89	1.03	0.030	2.13	0.67	0.57
NR R1	9210	2yr	140.00	6384.00	6386.12	2.72	51.42	30.65	0.37	0.21	0.034	0.22	0.01	0.01
NR R1	9210	5yr	240.00	6384.00	6386.75	3.40	71.74	34.32	0.39	0.27	0.033	0.30	0.05	0.05
NR R1	9210	10yr	360.00	6384.00	6387.34	4.01	93.30	37.84	0.41	0.33	0.032	0.39	0.09	0.08
NR R1	9210	50yr	710.00	6384.00	6388.53	5.43	144.65	53.15	0.47	0.42	0.029	0.64	0.20	0.11
NR R1	9210	100yr	910.00	6384.00	6389.00	6.10	171.75	62.63	0.50	0.46	0.029	0.78	0.26	0.14
NR R1	9142	2yr	140.00	6383.64	6385.33	5.98	23.54	22.46	1.00	1.12	0.034	1.20	0.06	0.15
NR R1	9142	5yr	240.00	6383.64	6385.84	6.91	36.40	27.06	0.96	1.16	0.032	1.42	0.31	0.31
NR R1	9142	10yr	360.00	6383.64	6386.33	7.77	51.08	33.57	0.94	1.17	0.031	1.64	0.55	0.27
NR R1	9142	50yr	710.00	6383.64	6387.46	9.07	99.18	52.16	0.89	1.13	0.031	1.94	0.75	0.50
NR R1	9142	100yr	910.00	6383.64	6388.01	9.42	130.29	62.34	0.85	1.10	0.032	1.98	0.80	0.56
NR R1	9134	2yr	140.00	6382.00	6383.21	5.80	24.15	23.20	1.00	1.16	0.035	1.16		
NR R1	9134	5yr	240.00	6382.00	6383.69	6.72	35.77	26.08	1.00	1.37	0.035	1.41		0.06
NR R1	9134	10yr	360.00	6382.00	6384.14	7.56	48.28	29.43	0.99	1.50	0.033	1.64	0.06	0.28
NR R1	9134	50yr	710.00	6382.00	6385.17	9.24	81.39	34.50	0.97	1.74	0.033	2.11	0.42	0.67
NR R1	9134	100yr	910.00	6382.00	6385.69	9.87	99.96	37.15	0.95	1.80	0.033	2.27	0.55	0.78
NR R1	8965	2yr	140.00	6377.57	6379.37	6.30	22.23	18.23	1.00	1.30	0.035	1.30		
NR R1	8965	5yr	240.00	6377.57	6379.94	7.15	33.55	21.29	1.00	1.54	0.035	1.54		
NR R1	8965	10yr	360.00	6377.57	6380.44	8.12	44.66	23.36	1.00	1.69	0.034	1.82	0.19	0.18
NR R1	8965	50yr	710.00	6377.57	6381.64	9.91	75.53	28.02	0.97	1.89	0.032	2.32	0.56	0.53
NR R1	8965	100yr	910.00	6377.57	6382.22	10.64	92.40	30.30	0.96	1.97	0.032	2.53	0.70	0.65
NR R1	8956	2yr	140.00	6376.00	6378.51	3.36	41.70	24.21	0.45	0.33	0.035	0.33	0.01	
NR R1	8956	5yr	240.00	6376.00	6379.13	4.20	57.62	27.30	0.49	0.44	0.034	0.47	0.07	0.02
NR R1	8956	10yr	360.00	6376.00	6379.69	5.03	73.61	29.95	0.53	0.54	0.033	0.63	0.13	0.08

HEC-RAS Plan: Plan 03 River: N Rockrimmon Cr Reach: NR R1 (Continued)

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl	Shear Total (lb/sq ft)	Mann Wtd Total	Shear Chan (lb/sq ft)	Shear LOB (lb/sq ft)	Shear ROB (lb/sq ft)
NR R1	8956	50yr	710.00	6376.00	6380.91	6.75	112.98	34.28	0.59	0.80	0.032	1.00	0.30	0.26
NR R1	8956	100yr	910.00	6376.00	6381.46	7.53	132.52	36.56	0.62	0.92	0.032	1.19	0.39	0.33
NR R1	8865	2yr	140.00	6376.00	6377.52	6.03	23.22	20.81	1.01	1.22	0.035	1.22		
NR R1	8865	5yr	240.00	6376.00	6378.04	6.84	35.08	24.69	1.01	1.43	0.035	1.45		
NR R1	8865	10yr	360.00	6376.00	6378.50	7.76	47.00	27.37	0.99	1.53	0.033	1.70	0.20	0.22
NR R1	8865	50yr	710.00	6376.00	6379.61	9.40	80.89	33.74	0.96	1.69	0.032	2.14	0.51	0.57
NR R1	8865	100yr	910.00	6376.00	6380.16	10.03	100.57	39.00	0.94	1.65	0.031	2.30	0.62	0.58
NR R1	8855	2yr	140.00	6376.00	6376.98	5.01	27.93	30.65	0.93	0.90	0.035	0.90		
NR R1	8855	5yr	240.00	6376.00	6377.36	6.02	39.89	32.40	0.96	1.18	0.035	1.18		
NR R1	8855	10yr	360.00	6376.00	6377.70	7.04	51.24	33.86	1.00	1.45	0.034	1.49	0.08	0.12
NR R1	8855	50yr	710.00	6376.00	6378.62	8.62	85.44	40.73	0.97	1.61	0.032	1.92	0.40	0.38
NR R1	8855	100yr	910.00	6376.00	6379.06	9.30	103.55	42.88	0.96	1.74	0.032	2.11	0.52	0.57
NR R1	8763	2yr	140.00	6374.00	6375.27	5.82	24.05	23.27	1.01	1.17	0.035	1.17		
NR R1	8763	5yr	240.00	6374.00	6375.75	6.65	36.08	26.55	1.00	1.39	0.035	1.39		
NR R1	8763	10yr	360.00	6374.00	6376.19	7.47	48.50	29.35	0.99	1.51	0.034	1.61	0.22	0.09
NR R1	8763	50yr	710.00	6374.00	6377.21	9.16	81.34	35.04	0.97	1.73	0.032	2.08	0.56	0.44
NR R1	8763	100yr	910.00	6374.00	6377.72	9.81	99.64	37.68	0.95	1.80	0.032	2.26	0.67	0.59
NR R1	8680	2yr	140.00	6371.25	6373.32	4.51	31.07	25.98	0.73	0.67	0.035	0.67		
NR R1	8680	5yr	240.00	6371.25	6373.86	5.21	46.22	29.57	0.72	0.79	0.034	0.81		0.08
NR R1	8680	10yr	360.00	6371.25	6374.39	5.83	63.35	34.71	0.71	0.79	0.032	0.92	0.13	0.19
NR R1	8680	50yr	710.00	6371.25	6375.67	6.87	113.88	43.84	0.66	0.83	0.032	1.10	0.32	0.34
NR R1	8680	100yr	910.00	6371.25	6376.20	7.48	138.26	48.88	0.66	0.89	0.032	1.24	0.37	0.41
NR R1	8614	2yr	140.00	6370.53	6372.20	6.16	22.79	20.19	1.00	1.21	0.034	1.26		0.11
NR R1	8614	5yr	240.00	6370.53	6372.73	7.21	34.35	23.73	0.98	1.30	0.032	1.52	0.22	0.32
NR R1	8614	10yr	360.00	6370.53	6373.25	8.09	47.68	27.05	0.96	1.39	0.032	1.75	0.39	0.51
NR R1	8614	50yr	710.00	6370.53	6374.46	9.75	85.48	37.37	0.93	1.46	0.031	2.20	0.53	0.81
NR R1	8614	100yr	910.00	6370.53	6375.10	10.11	111.87	44.86	0.88	1.37	0.031	2.24	0.58	0.87
NR R1	8602	2yr	140.00	6368.00	6369.73	3.50	40.05	28.97	0.52	0.38	0.035	0.38		
NR R1	8602	5yr	240.00	6368.00	6370.28	4.23	56.90	31.85	0.55	0.49	0.034	0.51	0.04	0.04
NR R1	8602	10yr	360.00	6368.00	6370.80	4.95	73.98	34.49	0.57	0.57	0.033	0.64	0.10	0.10
NR R1	8602	50yr	710.00	6368.00	6371.99	6.37	118.53	40.46	0.59	0.75	0.032	0.93	0.25	0.24
NR R1	8602	100yr	910.00	6368.00	6372.54	6.97	141.66	42.67	0.61	0.84	0.032	1.06	0.32	0.32
NR R1	8473	2yr	140.00	6366.65	6368.29	5.99	23.39	21.36	1.01	1.21	0.035	1.21		
NR R1	8473	5yr	240.00	6366.65	6368.80	6.83	35.15	24.74	1.01	1.43	0.035	1.44		0.03
NR R1	8473	10yr	360.00	6366.65	6369.27	7.65	47.86	28.64	0.98	1.47	0.033	1.65	0.23	0.22
NR R1	8473	50yr	710.00	6366.65	6370.34	9.38	81.05	34.07	0.96	1.71	0.032	2.14	0.59	0.55
NR R1	8473	100yr	910.00	6366.65	6370.86	10.04	99.89	37.71	0.95	1.75	0.032	2.32	0.67	0.67
NR R1	8464	2yr	140.00	6365.45	6366.88	4.40	31.85	31.56	0.77	0.67	0.035	0.67		
NR R1	8464	5yr	240.00	6365.45	6367.27	5.40	44.48	32.72	0.82	0.92	0.035	0.92		
NR R1	8464	10yr	360.00	6365.45	6367.65	6.29	57.19	33.85	0.85	1.16	0.035	1.16		
NR R1	8464	50yr	710.00	6365.45	6368.50	8.21	87.24	36.85	0.91	1.62	0.034	1.74	0.17	0.28
NR R1	8464	100yr	910.00	6365.45	6368.91	9.05	102.40	38.35	0.93	1.81	0.033	2.01	0.31	0.40

HEC-RAS Plan: Plan 03 River: N Rockrimmon Cr Reach: NR R1 (Continued)

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl	Shear Total (lb/sq ft)	Mann Wtd Total	Shear Chan (lb/sq ft)	Shear LOB (lb/sq ft)	Shear ROB (lb/sq ft)
NR R1	8320	2yr	140.00	6363.08	6364.65	5.76	24.30	23.79	1.00	1.15	0.035	1.15		
NR R1	8320	5yr	240.00	6363.08	6365.11	6.62	36.87	28.90	0.99	1.26	0.034	1.37	0.29	
NR R1	8320	10yr	360.00	6363.08	6365.54	7.51	49.65	30.73	0.98	1.43	0.033	1.61	0.52	0.18
NR R1	8320	50yr	710.00	6363.08	6366.55	9.25	82.80	34.91	0.97	1.74	0.033	2.11	0.89	0.49
NR R1	8320	100yr	910.00	6363.08	6367.03	9.98	100.12	36.97	0.97	1.87	0.033	2.33	1.02	0.61
NR R1	8309	2yr	140.00	6362.00	6362.95	4.40	31.78	35.92	0.83	0.70	0.035	0.70		
NR R1	8309	5yr	240.00	6362.00	6363.34	5.21	46.08	37.73	0.83	0.88	0.035	0.88		
NR R1	8309	10yr	360.00	6362.00	6363.72	5.90	61.01	39.52	0.84	1.05	0.035	1.05		
NR R1	8309	50yr	710.00	6362.00	6364.60	7.33	97.59	43.54	0.84	1.32	0.034	1.40	0.16	0.17
NR R1	8309	100yr	910.00	6362.00	6365.04	7.91	117.00	45.51	0.83	1.40	0.033	1.55	0.26	0.27
NR R1	8161	2yr	140.00	6358.23	6360.48	6.01	23.31	20.18	0.98	1.20	0.035	1.20		
NR R1	8161	5yr	240.00	6358.23	6361.01	6.87	35.18	24.49	0.98	1.35	0.034	1.43		0.18
NR R1	8161	10yr	360.00	6358.23	6361.50	7.67	48.10	28.18	0.96	1.43	0.033	1.64	0.11	0.37
NR R1	8161	50yr	710.00	6358.23	6362.59	9.26	82.60	34.39	0.93	1.62	0.032	2.07	0.48	0.74
NR R1	8161	100yr	910.00	6358.23	6363.10	9.92	100.56	36.46	0.93	1.73	0.032	2.25	0.62	0.90
NR R1	8151	2yr	140.00	6358.00	6359.00	5.59	25.02	27.58	1.04	1.13	0.035	1.13		
NR R1	8151	5yr	240.00	6358.00	6359.44	6.39	37.57	29.88	1.00	1.32	0.035	1.32		
NR R1	8151	10yr	360.00	6358.00	6359.87	7.06	50.99	32.17	0.99	1.49	0.035	1.49		
NR R1	8151	50yr	710.00	6358.00	6360.80	8.69	82.68	36.14	0.97	1.79	0.033	1.95	0.29	0.29
NR R1	8151	100yr	910.00	6358.00	6361.26	9.35	99.60	37.91	0.96	1.89	0.033	2.13	0.42	0.43
NR R1	8019	2yr	140.00	6352.43	6354.01	5.64	24.82	23.99	0.98	1.09	0.035	1.09		
NR R1	8019	5yr	240.00	6352.43	6354.43	6.87	35.20	25.52	1.00	1.36	0.034	1.45	0.19	0.19
NR R1	8019	10yr	360.00	6352.43	6354.92	7.68	48.03	27.24	0.97	1.47	0.033	1.65	0.34	0.35
NR R1	8019	50yr	710.00	6352.43	6356.03	9.42	80.49	31.33	0.95	1.74	0.033	2.13	0.61	0.64
NR R1	8019	100yr	910.00	6352.43	6356.54	10.20	97.06	32.99	0.95	1.89	0.033	2.37	0.74	0.77
NR R1	8009	2yr	140.00	6350.00	6353.35	1.88	74.62	31.10	0.21	0.09	0.035	0.09		
NR R1	8009	5yr	240.00	6350.00	6353.91	2.59	92.63	33.72	0.27	0.16	0.035	0.17		0.01
NR R1	8009	10yr	360.00	6350.00	6354.42	3.28	110.49	35.65	0.32	0.24	0.034	0.25	0.01	0.03
NR R1	8009	50yr	710.00	6350.00	6355.51	4.83	151.30	39.40	0.41	0.43	0.033	0.50	0.08	0.10
NR R1	8009	100yr	910.00	6350.00	6356.00	5.54	170.77	41.08	0.44	0.53	0.032	0.64	0.11	0.15
NR R1	7919	2yr	140.00	6351.73	6352.79	5.21	27.03	33.74	1.00	0.96	0.034	1.00	0.11	0.17
NR R1	7919	5yr	240.00	6351.73	6353.15	6.14	39.87	36.29	0.99	1.12	0.034	1.23	0.28	0.32
NR R1	7919	10yr	360.00	6351.73	6353.53	6.93	53.98	39.02	0.97	1.25	0.033	1.43	0.41	0.44
NR R1	7919	50yr	710.00	6351.73	6354.38	8.48	89.78	44.12	0.96	1.53	0.033	1.86	0.72	0.66
NR R1	7919	100yr	910.00	6351.73	6354.79	9.15	107.93	46.20	0.96	1.67	0.033	2.05	0.86	0.76
NR R1	7847	2yr	140.00	6348.10	6349.73	5.88	23.81	22.89	1.02	1.19	0.035	1.19		
NR R1	7847	5yr	240.00	6348.10	6350.21	6.81	35.50	25.91	0.99	1.33	0.034	1.42	0.10	0.20
NR R1	7847	10yr	360.00	6348.10	6350.67	7.68	48.17	28.59	0.98	1.43	0.033	1.65	0.28	0.37
NR R1	7847	50yr	710.00	6348.10	6351.75	9.32	82.14	34.26	0.95	1.65	0.032	2.10	0.62	0.66
NR R1	7847	100yr	910.00	6348.10	6352.26	9.96	100.37	36.38	0.94	1.74	0.032	2.27	0.78	0.77
NR R1	7838	2yr	140.00	6348.00	6349.34	4.28	32.69	27.82	0.70	0.61	0.035	0.61		
NR R1	7838	5yr	240.00	6348.00	6349.81	5.18	46.30	30.25	0.74	0.81	0.035	0.81		
NR R1	7838	10yr	360.00	6348.00	6350.22	6.10	59.11	32.04	0.78	1.02	0.034	1.05	0.06	0.05

HEC-RAS Plan: Plan 03 River: N Rockrimmon Cr Reach: NR R1 (Continued)

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl	Shear Total (lb/sq ft)	Mann Wtd Total	Shear Chan (lb/sq ft)	Shear LOB (lb/sq ft)	Shear ROB (lb/sq ft)
NR R1	7838	50yr	710.00	6348.00	6351.09	8.17	88.51	35.20	0.87	1.49	0.033	1.66	0.31	0.28
NR R1	7838	100yr	910.00	6348.00	6351.48	9.12	102.50	36.59	0.91	1.73	0.033	1.98	0.43	0.40
NR R1	7717	2yr	140.00	6346.00	6347.62	5.75	24.36	24.45	1.01	1.15	0.035	1.15		
NR R1	7717	5yr	240.00	6346.00	6348.07	6.63	36.20	27.67	1.02	1.38	0.035	1.39	0.04	0.04
NR R1	7717	10yr	360.00	6346.00	6348.51	7.48	48.57	29.62	0.99	1.50	0.034	1.61	0.21	0.22
NR R1	7717	50yr	710.00	6346.00	6349.53	9.09	81.34	34.49	0.96	1.71	0.032	2.05	0.51	0.52
NR R1	7717	100yr	910.00	6346.00	6350.01	9.77	98.42	36.81	0.95	1.81	0.032	2.24	0.63	0.64
NR R1	7706	2yr	140.00	6346.00	6347.26	3.78	37.02	32.33	0.62	0.48	0.035	0.48		
NR R1	7706	5yr	240.00	6346.00	6347.69	4.67	51.42	34.26	0.67	0.66	0.035	0.66		
NR R1	7706	10yr	360.00	6346.00	6348.10	5.48	65.86	37.15	0.71	0.81	0.034	0.85	0.05	0.04
NR R1	7706	50yr	710.00	6346.00	6348.98	7.24	100.30	41.09	0.77	1.16	0.033	1.31	0.24	0.29
NR R1	7706	100yr	910.00	6346.00	6349.39	7.98	117.76	42.93	0.79	1.31	0.033	1.52	0.33	0.40
NR R1	7559	2yr	140.00	6344.22	6345.50	5.19	26.98	31.16	0.98	0.98	0.035	0.98		
NR R1	7559	5yr	240.00	6344.22	6345.88	6.15	39.09	32.76	0.98	1.20	0.034	1.23	0.06	0.14
NR R1	7559	10yr	360.00	6344.22	6346.27	7.00	51.88	34.03	0.97	1.38	0.034	1.46	0.24	0.25
NR R1	7559	50yr	710.00	6344.22	6347.18	8.65	84.42	37.18	0.96	1.69	0.033	1.91	0.50	0.50
NR R1	7559	100yr	910.00	6344.22	6347.63	9.31	101.43	38.79	0.95	1.81	0.033	2.10	0.60	0.60
NR R1	7552	2yr	140.00	6342.00	6343.25	4.34	32.26	30.06	0.74	0.64	0.035	0.64		
NR R1	7552	5yr	240.00	6342.00	6343.66	5.34	44.97	32.00	0.79	0.88	0.035	0.88	0.04	
NR R1	7552	10yr	360.00	6342.00	6344.04	6.27	57.61	33.77	0.83	1.10	0.034	1.14	0.15	
NR R1	7552	50yr	710.00	6342.00	6344.83	8.47	85.28	36.67	0.94	1.66	0.033	1.83	0.42	0.27
NR R1	7552	100yr	910.00	6342.00	6345.22	9.33	100.05	38.13	0.96	1.87	0.033	2.12	0.55	0.40
NR R1	7479	2yr	140.00	6340.86	6342.10	5.48	25.55	28.43	1.02	1.08	0.035	1.08		
NR R1	7479	5yr	240.00	6340.86	6342.51	6.37	37.70	30.37	1.01	1.31	0.035	1.31		
NR R1	7479	10yr	360.00	6340.86	6342.92	7.13	50.48	32.28	1.00	1.53	0.035	1.53		
NR R1	7479	50yr	710.00	6340.86	6343.84	8.66	82.12	36.48	1.00	1.91	0.034	1.98	0.11	0.13
NR R1	7479	100yr	910.00	6340.86	6344.27	9.34	98.31	38.23	0.99	2.01	0.034	2.17	0.27	0.27
NR R1	7470	2yr	140.00	6340.00	6341.10	4.71	29.75	29.64	0.83	0.77	0.035	0.77		
NR R1	7470	5yr	240.00	6340.00	6341.49	5.78	41.65	31.51	0.88	1.03	0.035	1.05		0.12
NR R1	7470	10yr	360.00	6340.00	6341.85	6.83	53.09	33.21	0.93	1.32	0.034	1.37		0.27
NR R1	7470	50yr	710.00	6340.00	6342.69	8.77	82.74	36.76	0.98	1.78	0.033	1.98	0.26	0.59
NR R1	7470	100yr	910.00	6340.00	6343.14	9.45	99.47	38.52	0.97	1.89	0.033	2.17	0.40	0.71
NR R1	7381	2yr	140.00	6338.00	6339.59	5.68	24.63	25.09	1.01	1.13	0.035	1.13		
NR R1	7381	5yr	240.00	6338.00	6340.04	6.56	36.66	28.63	1.01	1.33	0.034	1.37		0.11
NR R1	7381	10yr	360.00	6338.00	6340.47	7.38	49.47	30.85	0.98	1.44	0.033	1.57	0.20	0.30
NR R1	7381	50yr	710.00	6338.00	6341.46	9.05	82.58	35.89	0.96	1.69	0.033	2.04	0.52	0.59
NR R1	7381	100yr	910.00	6338.00	6341.92	9.79	99.51	38.17	0.97	1.82	0.032	2.26	0.65	0.72
NR R1	7372	2yr	140.00	6338.00	6339.27	3.37	41.56	36.38	0.56	0.38	0.035	0.38		
NR R1	7372	5yr	240.00	6338.00	6339.74	4.04	59.44	38.91	0.57	0.48	0.035	0.49		0.04
NR R1	7372	10yr	360.00	6338.00	6340.19	4.69	77.23	41.02	0.59	0.58	0.034	0.61	0.03	0.11
NR R1	7372	50yr	710.00	6338.00	6341.13	6.19	117.83	44.80	0.64	0.83	0.033	0.93	0.18	0.26
NR R1	7372	100yr	910.00	6338.00	6341.34	7.39	127.09	45.57	0.74	1.15	0.033	1.30	0.28	0.38

HEC-RAS Plan: Plan 03 River: N Rockrimmon Cr Reach: NR R1 (Continued)

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl	Shear Total (lb/sq ft)	Mann Wtd Total	Shear Chan (lb/sq ft)	Shear LOB (lb/sq ft)	Shear ROB (lb/sq ft)
NR R1	7123	2yr	140.00	6334.98	6336.64	5.85	23.95	22.76	1.00	1.17	0.035	1.17		
NR R1	7123	5yr	240.00	6334.98	6337.12	6.71	35.77	25.96	1.01	1.41	0.035	1.41		
NR R1	7123	10yr	360.00	6334.98	6337.58	7.51	48.37	29.10	0.99	1.52	0.034	1.63		0.23
NR R1	7123	50yr	710.00	6334.98	6338.69	8.80	89.89	47.40	0.91	1.25	0.030	1.90	0.31	0.41
NR R1	7123	100yr	910.00	6334.98	6339.52	8.23	136.63	64.81	0.75	0.87	0.030	1.53	0.36	0.41
NR R1	7116	2yr	140.00	6334.00	6335.81	4.99	28.05	23.07	0.80	0.81	0.035	0.81		
NR R1	7116	5yr	240.00	6334.00	6336.22	6.33	38.50	27.54	0.88	1.04	0.032	1.20	0.07	0.14
NR R1	7116	10yr	360.00	6334.00	6336.57	7.71	48.50	29.25	0.97	1.40	0.033	1.66	0.22	0.39
NR R1	7116	50yr	710.00	6334.00	6337.68	9.32	84.09	34.96	0.94	1.62	0.033	2.09	0.51	0.75
NR R1	7116	100yr	910.00	6334.00	6339.79	6.33	193.79	71.89	0.49	0.42	0.031	0.81	0.27	0.23
NR R1	6870	2yr	140.00	6330.00	6331.13	5.00	28.02	36.85	1.01	1.94	0.050	1.94		
NR R1	6870	5yr	240.00	6330.00	6331.48	5.67	42.39	44.11	1.00	2.19	0.049	2.28	0.08	
NR R1	6870	10yr	360.00	6330.00	6332.22	4.69	78.30	52.26	0.63	1.15	0.047	1.31	0.40	0.07
NR R1	6870	50yr	710.00	6330.00	6336.18	2.26	335.31	81.08	0.17	0.15	0.043	0.20	0.09	0.07
NR R1	6870	100yr	910.00	6330.00	6340.07	1.40	692.38	101.24	0.08	0.05	0.042	0.07	0.03	0.02
NR R1	6598	2yr	140.00	6326.00	6329.29	2.34	60.78	113.69	0.24	0.13	0.035	0.13		0.06
NR R1	6598	5yr	240.00	6326.00	6330.65	2.70	90.22	154.49	0.23	0.15	0.035	0.16		0.10
NR R1	6598	10yr	360.00	6326.00	6331.94	3.10	118.14	171.46	0.23	0.19	0.035	0.19		0.13
NR R1	6598	50yr	710.00	6326.00	6335.93	3.53	204.68	211.70	0.20	0.20	0.035	0.20		0.17
NR R1	6598	100yr	910.00	6326.00	6339.89	3.18	290.40	261.31	0.15	0.15	0.035	0.15		0.13
NR R1	6550		Culvert											
NR R1	6400	2yr	140.00	6314.00	6315.08	6.13	23.49	29.21	1.04	0.17	0.013	0.17	0.17	
NR R1	6400	5yr	240.00	6314.00	6315.59	7.13	34.60	29.29	1.00	0.21	0.013	0.21	0.21	
NR R1	6400	10yr	360.00	6314.00	6316.09	8.17	45.30	29.37	1.00	0.25	0.013	0.25	0.25	
NR R1	6400	50yr	710.00	6314.00	6317.27	10.29	71.00	29.54	1.00	0.34	0.013	0.34	0.34	
NR R1	6400	100yr	910.00	6314.00	6317.87	11.13	84.09	29.63	1.00	0.38	0.013	0.38	0.38	
NR R1	6365	2yr	140.00	6306.00	6307.30	5.49	25.49	23.62	0.93	1.03	0.035	1.03		
NR R1	6365	5yr	240.00	6306.00	6307.84	6.16	39.10	26.57	0.88	1.11	0.034	1.15	0.12	
NR R1	6365	10yr	360.00	6306.00	6308.38	6.78	54.06	28.10	0.83	1.16	0.034	1.26	0.32	0.09
NR R1	6365	50yr	710.00	6306.00	6309.84	7.70	96.93	30.80	0.72	1.16	0.033	1.36	0.48	0.25
NR R1	6365	100yr	910.00	6306.00	6310.61	8.01	121.31	32.20	0.68	1.14	0.033	1.38	0.51	0.30
NR R1	6247	2yr	140.00	6301.58	6304.11	7.52	18.62	10.71	1.00	3.50	0.050	3.50		
NR R1	6247	5yr	240.00	6301.58	6304.93	8.52	28.18	12.74	1.01	4.16	0.050	4.16		
NR R1	6247	10yr	360.00	6301.58	6305.65	9.56	37.99	14.34	0.99	4.34	0.047	4.81	0.39	0.52
NR R1	6247	50yr	710.00	6301.58	6307.40	11.34	66.80	18.78	0.93	4.30	0.044	5.77	1.28	1.31
NR R1	6247	100yr	910.00	6301.58	6308.18	12.09	82.37	20.87	0.91	4.40	0.043	6.23	1.58	1.64
NR R1	5980	2yr	140.00	6294.00	6296.70	5.15	27.17	13.60	0.64	1.56	0.050	1.56		
NR R1	5980	5yr	240.00	6294.00	6297.50	6.21	38.68	15.29	0.68	2.07	0.050	2.09		0.05
NR R1	5980	10yr	360.00	6294.00	6298.20	7.25	49.87	16.79	0.72	2.49	0.048	2.67	0.07	0.25
NR R1	5980	50yr	710.00	6294.00	6299.47	9.97	73.13	19.77	0.84	3.66	0.045	4.51	0.66	0.84
NR R1	5980	100yr	910.00	6294.00	6299.99	11.27	83.75	20.99	0.89	4.32	0.044	5.55	0.98	1.18
NR R1	5720	2yr	140.00	6290.00	6292.27	7.03	19.90	12.70	0.99	1.52	0.035	1.52		

HEC-RAS Plan: Plan 03 River: N Rockrimmon Cr Reach: NR R1 (Continued)

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Vel Chnl	Flow Area	Top Width	Froude # Chl	Shear Total	Mann Wtd Total	Shear Chan	Shear LOB	Shear ROB
			(cfs)	(ft)	(ft)	(ft/s)	(sq ft)	(ft)		(lb/sq ft)		(lb/sq ft)	(lb/sq ft)	(lb/sq ft)
NR R1	5720	5yr	240.00	6290.00	6293.00	8.03	29.88	14.44	0.98	1.82	0.035	1.82		
NR R1	5720	10yr	360.00	6290.00	6293.69	8.91	40.40	16.07	0.99	2.09	0.035	2.11		0.04
NR R1	5720	50yr	710.00	6290.00	6295.20	10.91	67.61	20.17	0.96	2.20	0.032	2.70	0.45	0.48
NR R1	5720	100yr	910.00	6290.00	6295.94	11.66	83.39	22.27	0.94	2.23	0.031	2.92	0.63	0.64
NR R1	5611	2yr	140.00	6288.00	6289.93	6.69	20.92	15.09	1.00	1.43	0.035	1.43		
NR R1	5611	5yr	240.00	6288.00	6290.56	7.80	31.08	16.87	0.97	1.56	0.033	1.72	0.23	0.13
NR R1	5611	10yr	360.00	6288.00	6291.21	8.73	42.48	18.56	0.95	1.64	0.032	1.96	0.43	0.24
NR R1	5611	50yr	710.00	6288.00	6292.64	10.67	71.64	21.92	0.93	1.90	0.031	2.53	0.82	0.44
NR R1	5611	100yr	910.00	6288.00	6293.31	11.48	86.76	23.29	0.93	2.01	0.031	2.78	0.98	0.52
NR R1	5419	2yr	240.00	6278.00	6279.43	6.06	39.58	33.56	0.98	1.22	0.035	1.22		
NR R1	5419	5yr	450.00	6278.00	6280.07	7.18	62.69	38.46	0.99	1.52	0.035	1.53		0.03
NR R1	5419	10yr	680.00	6278.00	6280.60	8.18	83.78	40.65	0.98	1.70	0.034	1.81	0.15	0.25
NR R1	5419	50yr	1500.00	6278.00	6282.11	10.47	149.53	46.82	0.96	2.11	0.033	2.49	0.41	0.70
NR R1	5419	100yr	1900.00	6278.00	6282.71	11.29	178.65	49.69	0.96	2.24	0.032	2.75	0.50	0.83
NR R1	5234	2yr	240.00	6274.00	6276.16	5.05	47.56	32.15	0.73	0.78	0.035	0.78		
NR R1	5234	5yr	450.00	6274.00	6276.82	6.49	69.35	34.45	0.81	1.17	0.035	1.17		
NR R1	5234	10yr	680.00	6274.00	6277.37	7.66	88.82	36.39	0.86	1.52	0.035	1.53		0.04
NR R1	5234	50yr	1500.00	6274.00	6278.74	10.74	142.22	40.77	0.97	2.32	0.033	2.59	0.48	0.41
NR R1	5234	100yr	1900.00	6274.00	6279.40	11.54	169.45	42.58	0.96	2.46	0.033	2.84	0.65	0.55
NR R1	4817	2yr	240.00	6269.27	6271.00	6.23	38.54	31.84	1.00	1.27	0.035	1.27		
NR R1	4817	5yr	450.00	6269.27	6271.67	7.37	61.06	35.15	0.99	1.58	0.035	1.58		
NR R1	4817	10yr	680.00	6269.27	6272.24	8.32	81.82	37.80	0.98	1.80	0.034	1.85	0.10	0.09
NR R1	4817	50yr	1500.00	6269.27	6273.79	10.65	145.52	44.05	0.97	2.19	0.033	2.54	0.58	0.53
NR R1	4817	100yr	1900.00	6269.27	6274.44	11.39	175.02	46.75	0.95	2.29	0.032	2.76	0.72	0.67
NR R1	4677	2yr	240.00	6264.62	6266.30	6.11	39.27	34.83	1.01	1.25	0.035	1.25		
NR R1	4677	5yr	450.00	6264.62	6266.91	7.31	61.55	37.71	1.01	1.58	0.035	1.58		
NR R1	4677	10yr	680.00	6264.62	6267.45	8.24	82.56	40.17	1.01	1.85	0.035	1.86	0.06	
NR R1	4677	50yr	1500.00	6264.62	6268.92	10.40	146.38	46.24	0.99	2.27	0.033	2.50	0.52	0.31
NR R1	4677	100yr	1900.00	6264.62	6269.53	11.13	174.97	48.57	0.97	2.37	0.033	2.71	0.66	0.48
NR R1	4659	2yr	240.00	6258.50	6261.94	3.58	67.04	36.71	0.47	0.37	0.035	0.37		
NR R1	4659	5yr	450.00	6258.50	6262.89	4.32	104.96	41.40	0.47	0.44	0.034	0.47	0.07	0.05
NR R1	4659	10yr	680.00	6258.50	6263.77	4.86	142.74	44.15	0.45	0.48	0.033	0.54	0.12	0.10
NR R1	4659	50yr	1500.00	6258.50	6266.09	6.27	253.28	51.66	0.46	0.61	0.032	0.76	0.23	0.21
NR R1	4659	100yr	1900.00	6258.50	6267.00	6.76	301.92	55.05	0.46	0.65	0.032	0.84	0.27	0.24
NR R1	4509	2yr	240.00	6258.00	6260.32	7.25	33.10	20.57	1.01	1.58	0.035	1.58		
NR R1	4509	5yr	450.00	6258.00	6261.39	7.76	58.03	25.81	0.91	1.62	0.035	1.62		
NR R1	4509	10yr	680.00	6258.00	6261.96	9.27	73.54	28.51	1.01	2.13	0.034	2.19		0.21
NR R1	4509	50yr	1500.00	6258.00	6263.89	11.55	136.13	36.36	0.95	2.29	0.032	2.84	0.58	0.68
NR R1	4509	100yr	1900.00	6258.00	6264.63	12.38	163.78	38.24	0.95	2.43	0.032	3.10	0.83	0.81
NR R1	4201	2yr	240.00	6254.00	6256.72	5.34	44.95	29.09	0.76	0.87	0.035	0.87		
NR R1	4201	5yr	450.00	6254.00	6257.17	7.66	58.82	32.76	1.00	1.67	0.035	1.69	0.11	
NR R1	4201	10yr	680.00	6254.00	6257.77	8.61	80.16	38.21	0.99	1.72	0.033	1.96	0.26	0.22
NR R1	4201	50yr	1500.00	6254.00	6259.38	10.87	148.32	44.48	0.96	2.14	0.033	2.62	0.55	0.95

HEC-RAS Plan: Plan 03 River: N Rockrimmon Cr Reach: NR R1 (Continued)

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl	Shear Total (lb/sq ft)	Mann Wtd Total	Shear Chan (lb/sq ft)	Shear LOB (lb/sq ft)	Shear ROB (lb/sq ft)
NR R1	4201	100yr	1900.00	6254.00	6260.00	11.73	176.33	45.72	0.96	2.36	0.033	2.91	0.63	1.19
NR R1	3971	2yr	240.00	6252.00	6253.77	6.06	39.59	32.70	0.97	1.20	0.035	1.20		
NR R1	3971	5yr	450.00	6252.00	6254.73	5.99	75.13	39.10	0.76	1.01	0.035	1.01		
NR R1	3971	10yr	680.00	6252.00	6255.60	6.18	110.40	42.23	0.66	0.92	0.034	0.96	0.09	0.07
NR R1	3971	50yr	1500.00	6252.00	6258.11	6.92	226.71	49.86	0.53	0.81	0.033	0.97	0.26	0.26
NR R1	3971	100yr	1900.00	6252.00	6259.13	7.22	279.23	52.49	0.51	0.81	0.032	0.99	0.30	0.28
NR R1	3725	2yr	240.00	6248.00	6251.48	5.58	43.04	18.34	0.64	0.84	0.035	0.84		
NR R1	3725	5yr	450.00	6248.00	6252.41	7.36	61.45	21.39	0.74	1.24	0.033	1.34	0.12	0.07
NR R1	3725	10yr	680.00	6248.00	6253.05	9.14	75.98	23.40	0.83	1.66	0.032	1.93	0.32	0.21
NR R1	3725	50yr	1500.00	6248.00	6255.02	12.67	127.31	28.58	0.94	2.44	0.031	3.23	0.96	0.65
NR R1	3725	100yr	1900.00	6248.00	6255.91	13.57	153.92	30.84	0.93	2.55	0.031	3.52	1.15	0.79
NR R1	3478	2yr	240.00	6246.00	6249.66	4.44	54.09	28.45	0.57	1.14	0.050	1.14		
NR R1	3478	5yr	450.00	6246.00	6250.65	5.30	86.11	36.14	0.57	1.26	0.046	1.44	0.18	0.20
NR R1	3478	10yr	680.00	6246.00	6251.47	5.96	118.34	42.36	0.56	1.31	0.044	1.67	0.35	0.37
NR R1	3478	50yr	1500.00	6246.00	6253.26	7.82	204.10	52.46	0.60	1.81	0.043	2.51	0.86	0.73
NR R1	3478	100yr	1900.00	6246.00	6253.95	8.41	241.62	56.15	0.60	1.96	0.042	2.79	1.02	0.84
NR R1	2996	2yr	240.00	6242.00	6244.18	6.28	38.23	22.19	0.84	1.16	0.035	1.16		
NR R1	2996	5yr	450.00	6242.00	6244.97	7.93	56.77	25.19	0.93	1.69	0.035	1.69		
NR R1	2996	10yr	680.00	6242.00	6245.59	9.29	73.19	27.58	1.00	2.20	0.035	2.21		
NR R1	2996	50yr	1500.00	6242.00	6247.52	11.58	133.98	35.62	0.96	2.37	0.032	2.88	0.53	0.50
NR R1	2996	100yr	1900.00	6242.00	6248.29	12.33	162.99	39.14	0.95	2.40	0.031	3.09	0.70	0.64
NR R1	2746	2yr	240.00	6238.00	6240.61	7.06	33.98	22.48	1.01	1.53	0.035	1.53		
NR R1	2746	5yr	450.00	6238.00	6241.45	8.06	55.93	29.18	1.01	1.76	0.034	1.82	0.09	
NR R1	2746	10yr	680.00	6238.00	6242.11	9.07	76.49	33.04	0.99	1.86	0.033	2.10	0.37	0.15
NR R1	2746	50yr	1500.00	6238.00	6243.92	11.39	143.26	40.74	0.95	2.18	0.032	2.78	0.93	0.59
NR R1	2746	100yr	1900.00	6238.00	6244.64	12.21	173.76	44.64	0.95	2.27	0.032	3.04	1.08	0.69
NR R1	2079	2yr	240.00	6228.00	6230.92	5.24	45.76	20.12	0.61	0.10	0.013	0.10		
NR R1	2079	5yr	450.00	6228.00	6232.62	5.45	83.06	23.72	0.50	0.09	0.012	0.09	0.01	0.01
NR R1	2079	10yr	680.00	6228.00	6235.05	4.92	141.30	58.34	0.35	0.06	0.013	0.07	0.03	0.03
NR R1	2079	50yr	1500.00	6228.00	6236.39	8.26	231.49	96.65	0.53	0.06	0.008	0.17	0.02	0.02
NR R1	2079	100yr	1900.00	6228.00	6234.98	13.92	139.45	56.74	1.00	0.50	0.013	0.53	0.20	0.20
NR R1	2000		Culvert											
NR R1	1856	2yr	240.00	6219.24	6221.05	7.38	32.51	18.97	0.99	0.23	0.013	0.23		
NR R1	1856	5yr	450.00	6219.24	6221.97	8.93	50.38	19.97	0.99	0.30	0.013	0.30		
NR R1	1856	10yr	680.00	6219.24	6222.79	10.13	67.10	20.87	1.00	0.36	0.013	0.36		
NR R1	1856	50yr	1500.00	6219.24	6225.12	12.60	119.09	24.99	0.99	0.48	0.013	0.48		
NR R1	1856	100yr	1900.00	6219.24	6228.24	9.80	193.84	34.57	0.61	0.25	0.013	0.25		
NR R1	1678	2yr	240.00	6213.00	6215.23	7.08	33.87	21.45	0.99	1.51	0.035	1.51		
NR R1	1678	5yr	450.00	6213.00	6216.07	8.53	53.52	25.06	0.98	1.71	0.033	1.91	0.24	0.30
NR R1	1678	10yr	680.00	6213.00	6216.86	9.50	74.49	28.10	0.94	1.77	0.032	2.15	0.46	0.51
NR R1	1678	50yr	1500.00	6213.00	6222.96	5.88	321.38	65.67	0.34	0.30	0.028	0.58	0.14	0.20
NR R1	1678	100yr	1900.00	6213.00	6229.24	1.83	1734.58	279.89	0.08	0.02	0.032	0.05	0.02	0.02

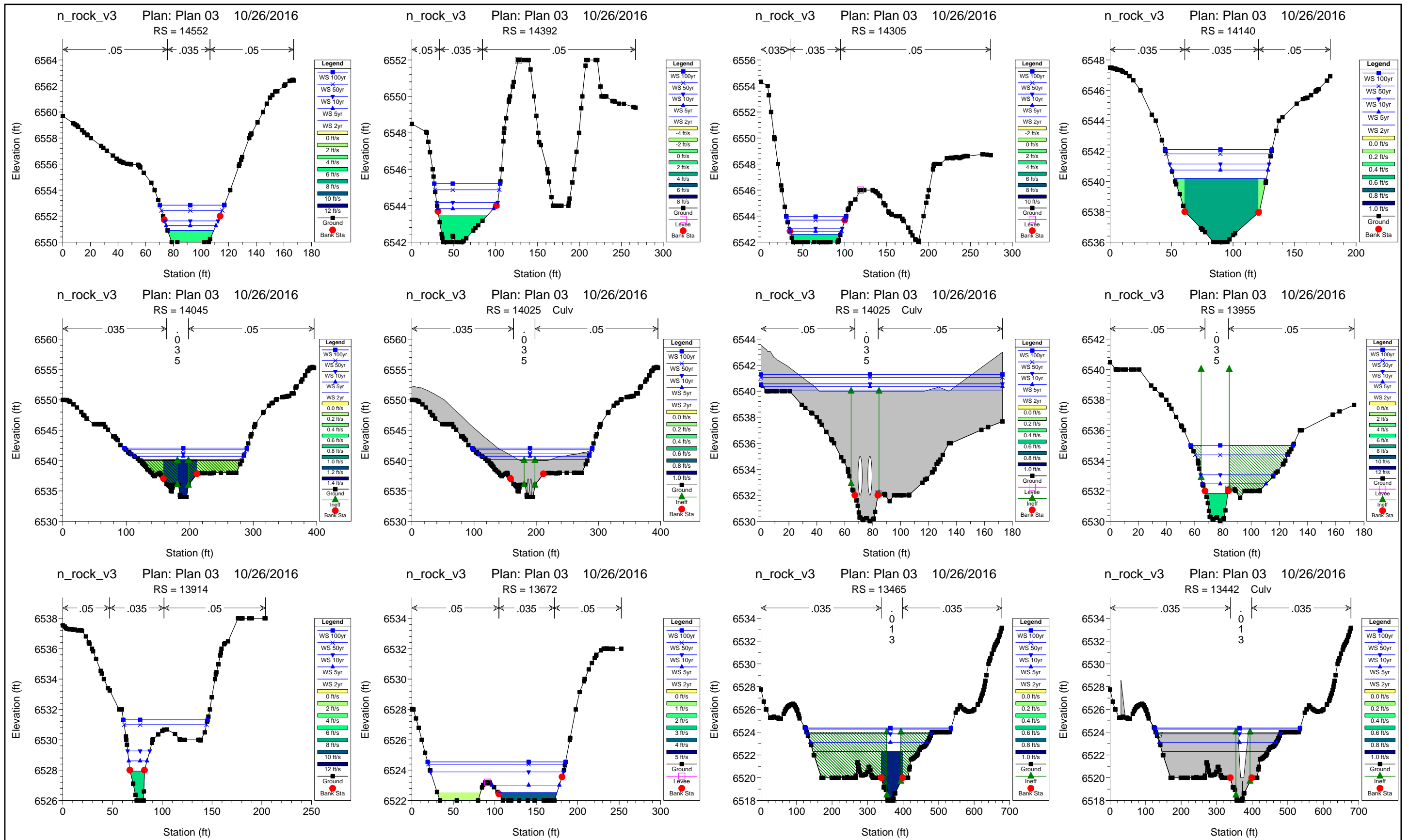
HEC-RAS Plan: Plan 03 River: N Rockrimmon Cr Reach: NR R1 (Continued)

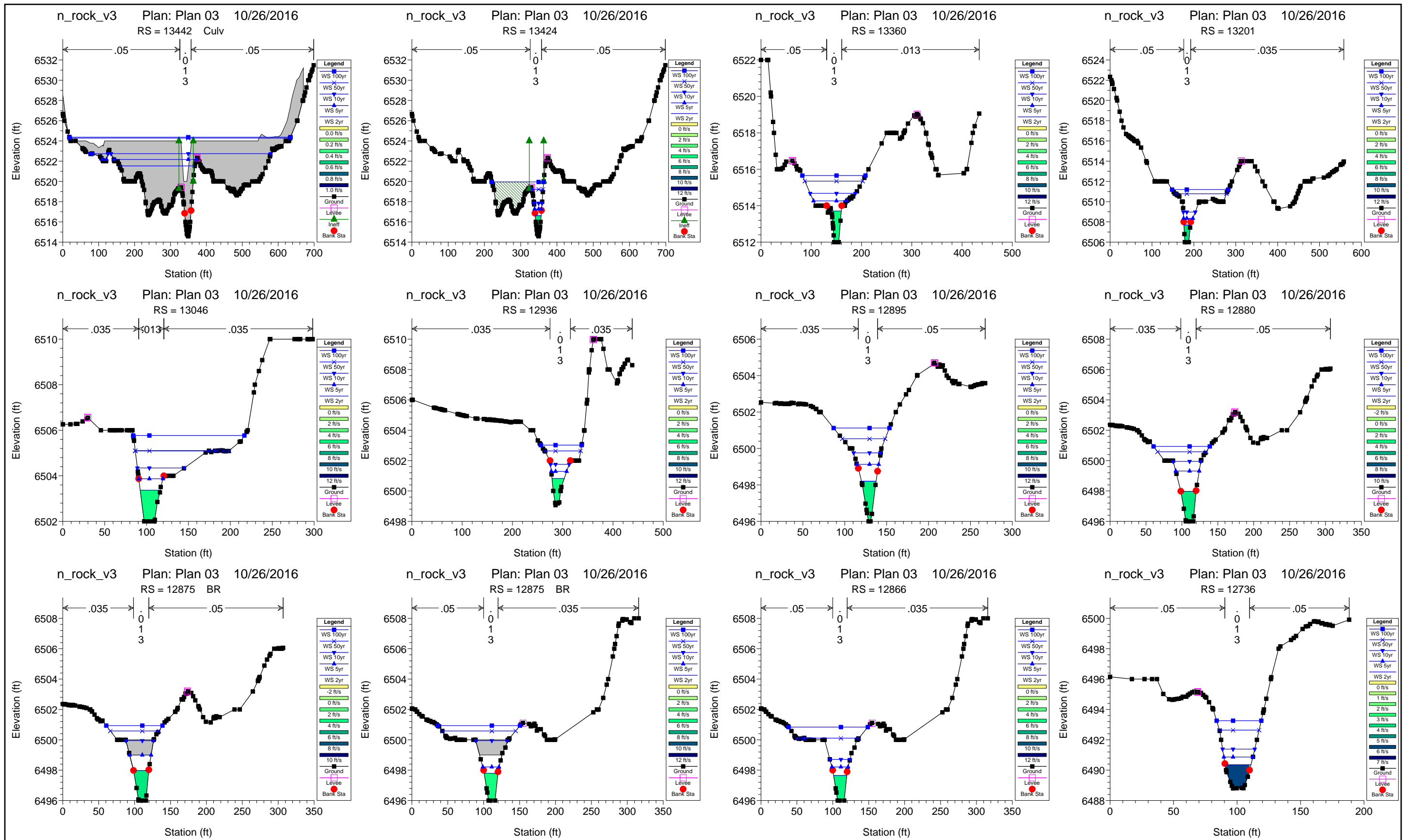
Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl	Shear Total (lb/sq ft)	Mann Wtd Total	Shear Chan (lb/sq ft)	Shear LOB (lb/sq ft)	Shear ROB (lb/sq ft)
NR R1	1373	2yr	240.00	6206.20	6210.55	3.24	74.15	32.68	0.38	0.28	0.035	0.28		
NR R1	1373	5yr	450.00	6206.20	6212.81	2.63	180.42	63.16	0.24	0.12	0.031	0.16	0.02	0.03
NR R1	1373	10yr	680.00	6206.20	6214.97	2.03	516.31	215.33	0.15	0.03	0.030	0.08	0.02	0.03
NR R1	1373	50yr	1500.00	6206.20	6223.25	0.95	2857.32	378.87	0.04	0.01	0.042	0.01	0.01	0.01
NR R1	1373	100yr	1900.00	6206.20	6229.26	0.63	5245.97	428.35	0.02	0.00	0.044	0.01	0.00	0.00
NR R1	1316	2yr	240.00	6206.08	6210.17	4.82	49.79	19.57	0.53	0.61	0.035	0.61		
NR R1	1316	5yr	450.00	6206.08	6212.54	4.38	106.19	28.52	0.36	0.34	0.032	0.42	0.06	0.07
NR R1	1316	10yr	680.00	6206.08	6214.70	4.30	183.00	46.01	0.29	0.21	0.029	0.35	0.07	0.09
NR R1	1316	50yr	1500.00	6206.08	6223.16	2.89	898.76	149.71	0.13	0.05	0.034	0.12	0.04	0.04
NR R1	1316	100yr	1900.00	6206.08	6229.23	1.72	2254.86	277.18	0.07	0.02	0.040	0.04	0.01	0.01
NR R1	1100		Culvert											
NR R1	1077	2yr	240.00	6204.00	6207.32	8.61	27.88	12.17	1.00	0.29	0.013	0.29		
NR R1	1077	5yr	450.00	6204.00	6208.65	9.82	45.84	14.91	0.99	0.34	0.013	0.34		
NR R1	1077	10yr	680.00	6204.00	6211.23	7.37	92.38	21.46	0.61	0.16	0.013	0.17	0.00	0.00
NR R1	1077	50yr	1500.00	6204.00	6218.34	5.62	466.34	149.23	0.29	0.02	0.011	0.07	0.01	0.01
NR R1	1077	100yr	1900.00	6204.00	6222.77	3.63	1314.82	221.17	0.16	0.01	0.019	0.03	0.01	0.01
NR R1	1051	2yr	240.00	6203.00	6207.18	4.15	57.78	18.90	0.42	0.06	0.013	0.06		
NR R1	1051	5yr	450.00	6203.00	6209.49	4.20	107.27	24.18	0.35	0.05	0.013	0.05		
NR R1	1051	10yr	680.00	6203.00	6211.63	4.12	165.86	31.28	0.30	0.04	0.012	0.05	0.00	0.00
NR R1	1051	50yr	1500.00	6203.00	6218.60	2.46	1260.03	169.89	0.12	0.01	0.020	0.01	0.01	0.00
NR R1	1051	100yr	1900.00	6203.00	6222.84	2.06	2061.62	206.75	0.09	0.01	0.022	0.01	0.01	0.00
NR R1	850		Culvert											
NR R1	598	2yr	240.00	6199.00	6201.56	9.03	26.58	10.59	1.00	0.32	0.013	0.32		
NR R1	598	5yr	450.00	6199.00	6202.88	11.06	40.69	10.81	1.00	0.44	0.013	0.44		
NR R1	598	10yr	680.00	6199.00	6204.09	12.61	53.91	11.01	1.00	0.55	0.013	0.55		
NR R1	598	50yr	1500.00	6199.00	6207.55	16.14	92.95	11.59	1.00	0.83	0.013	0.83		
NR R1	598	100yr	1900.00	6199.00	6210.45	14.13	176.35	66.33	0.76	0.31	0.011	0.60	0.17	0.07
NR R1	580	2yr	240.00	6199.00	6201.79	4.17	57.49	20.68	0.44	0.06	0.013	0.06		
NR R1	580	5yr	450.00	6199.00	6203.25	5.13	87.65	20.78	0.44	0.09	0.013	0.09		
NR R1	580	10yr	680.00	6199.00	6204.59	5.88	115.72	20.86	0.44	0.11	0.013	0.11		
NR R1	580	50yr	1500.00	6199.00	6208.49	7.60	197.49	21.10	0.44	0.16	0.013	0.16		
NR R1	580	100yr	1900.00	6199.00	6209.62	8.58	224.29	33.92	0.47	0.15	0.011	0.20	0.01	0.01
NR R1	250		Culvert											
NR R1	202	2yr	240.00	6191.65	6194.60	7.80	30.77	16.55	1.01	1.76	0.035	1.76		
NR R1	202	5yr	450.00	6191.65	6195.58	9.45	47.83	19.92	1.00	2.16	0.034	2.27	0.21	
NR R1	202	10yr	680.00	6191.65	6196.48	10.68	64.88	22.89	0.98	2.37	0.033	2.63	0.47	
NR R1	202	50yr	1500.00	6191.65	6198.93	13.82	112.60	31.43	0.99	3.47	0.035	3.71	1.72	
NR R1	202	100yr	1900.00	6191.65	6199.91	14.99	131.74	36.74	0.99	3.91	0.035	4.16	2.18	
NR R1	129	2yr	240.00	6187.00	6189.39	7.00	34.30	22.81	1.01	1.50	0.035	1.50		
NR R1	129	5yr	450.00	6187.00	6190.22	8.11	55.58	28.22	1.00	1.74	0.034	1.82	0.10	0.08

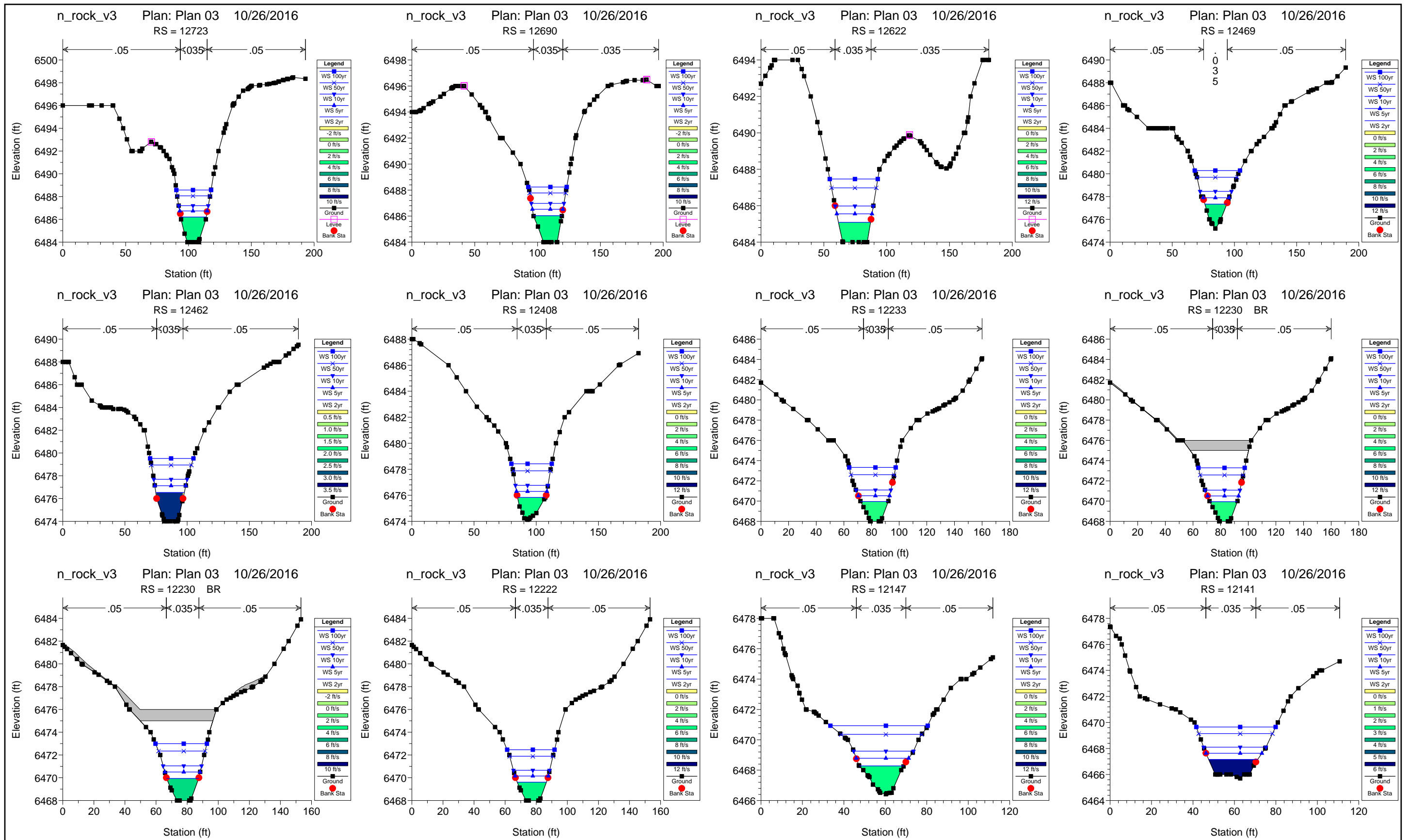
HEC-RAS Plan: Plan 03 River: N Rockrimmon Cr Reach: NR R1 (Continued)

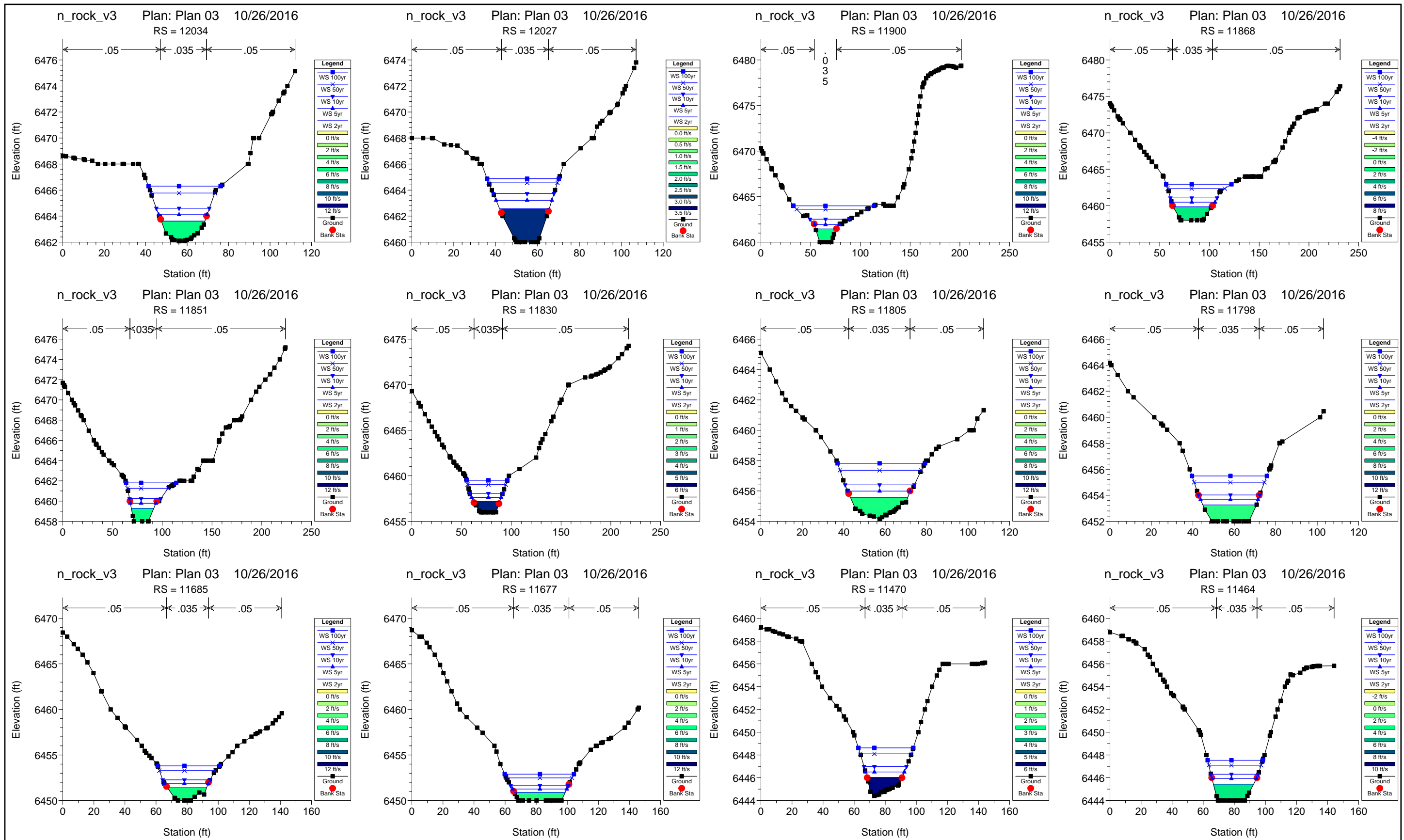
Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl	Shear Total (lb/sq ft)	Mann Wtd Total	Shear Chan (lb/sq ft)	Shear LOB (lb/sq ft)	Shear ROB (lb/sq ft)
NR R1	129	10yr	680.00	6187.00	6190.89	9.21	75.60	32.16	0.98	1.83	0.032	2.13	0.34	0.30
NR R1	129	50yr	1500.00	6187.00	6192.93	10.45	180.46	68.81	0.84	1.27	0.030	2.28	0.61	0.57
NR R1	129	100yr	1900.00	6187.00	6193.56	11.14	227.60	81.61	0.85	1.30	0.030	2.49	0.74	0.54

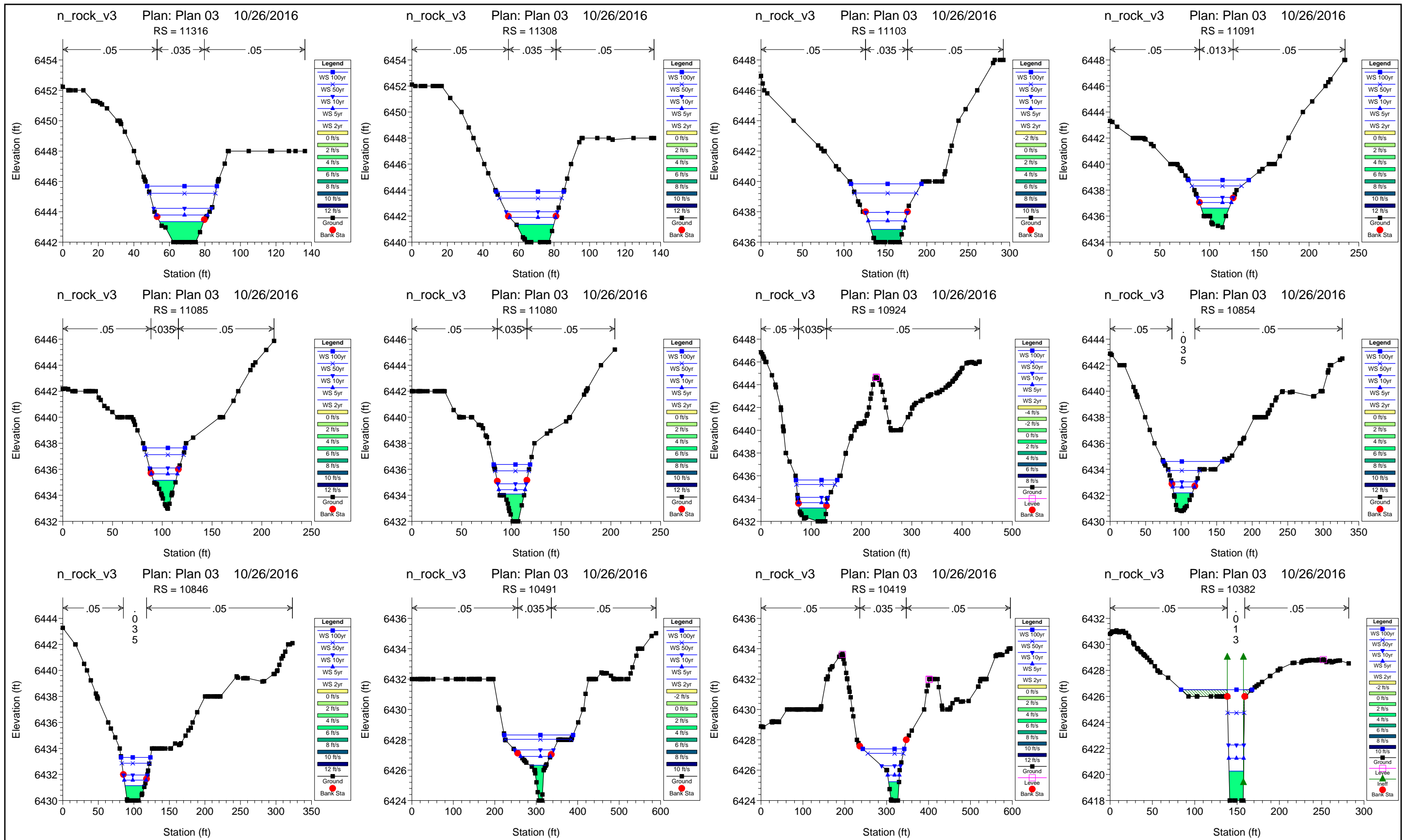
North Rockrimmon Creek Cross Section Diagrams

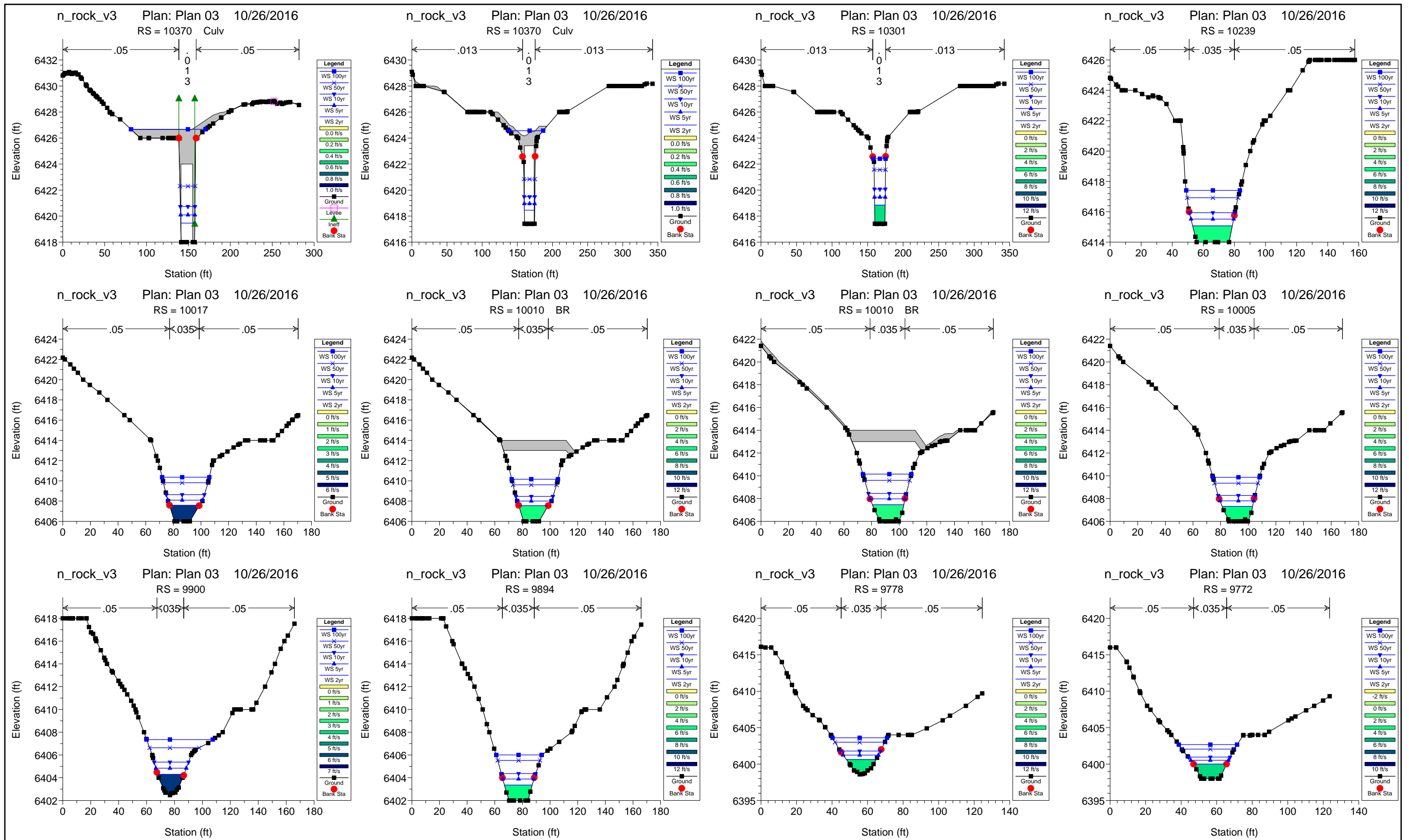


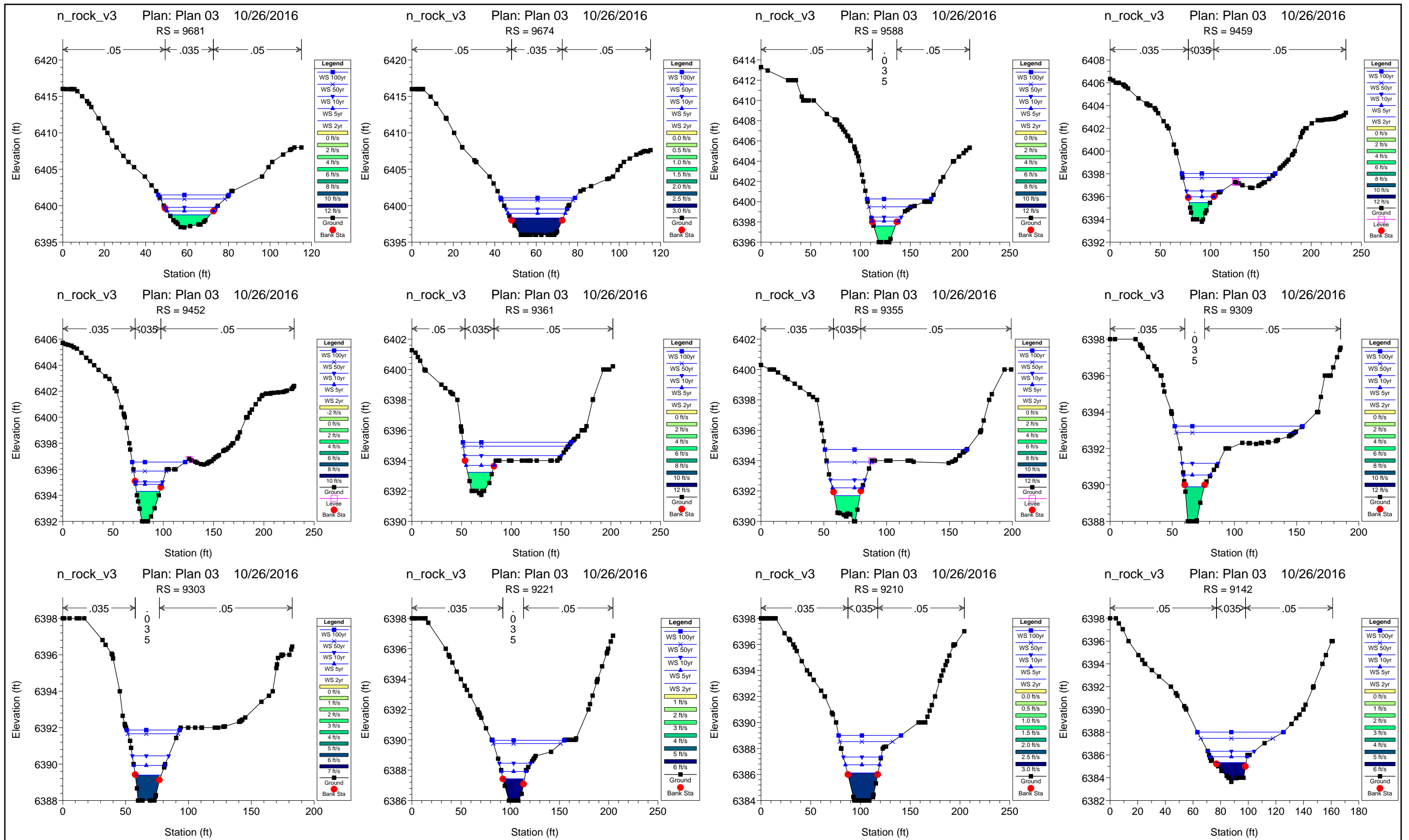


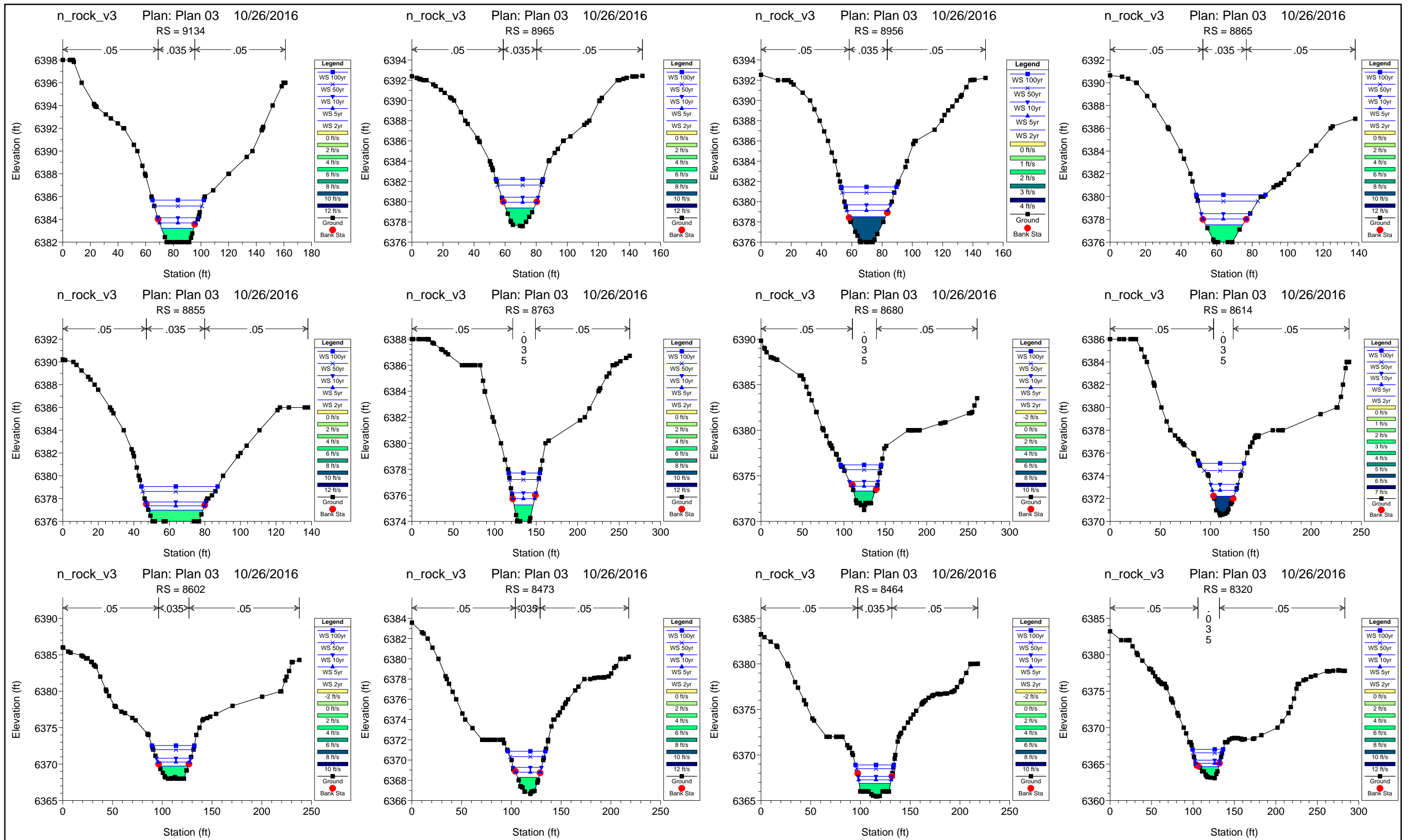


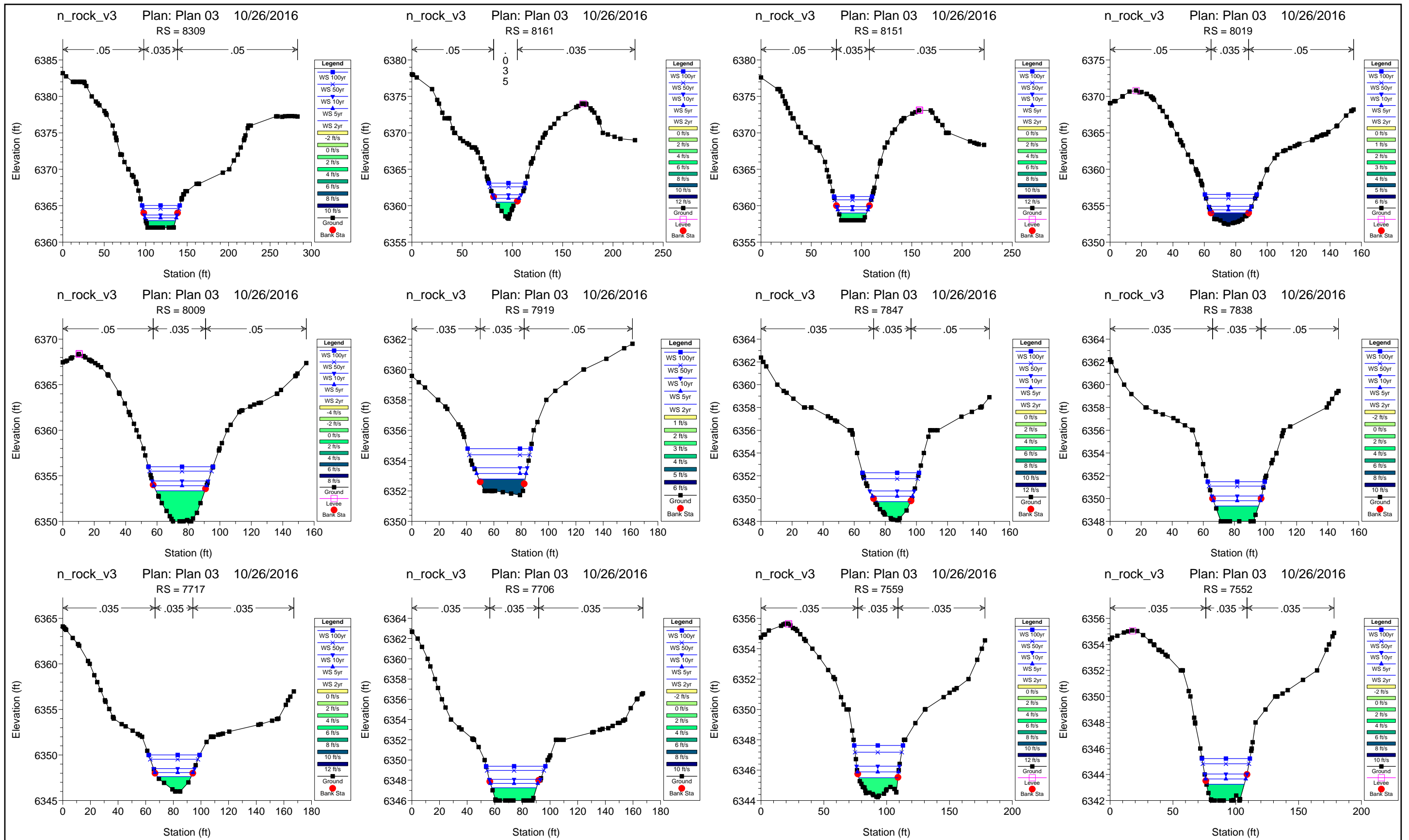


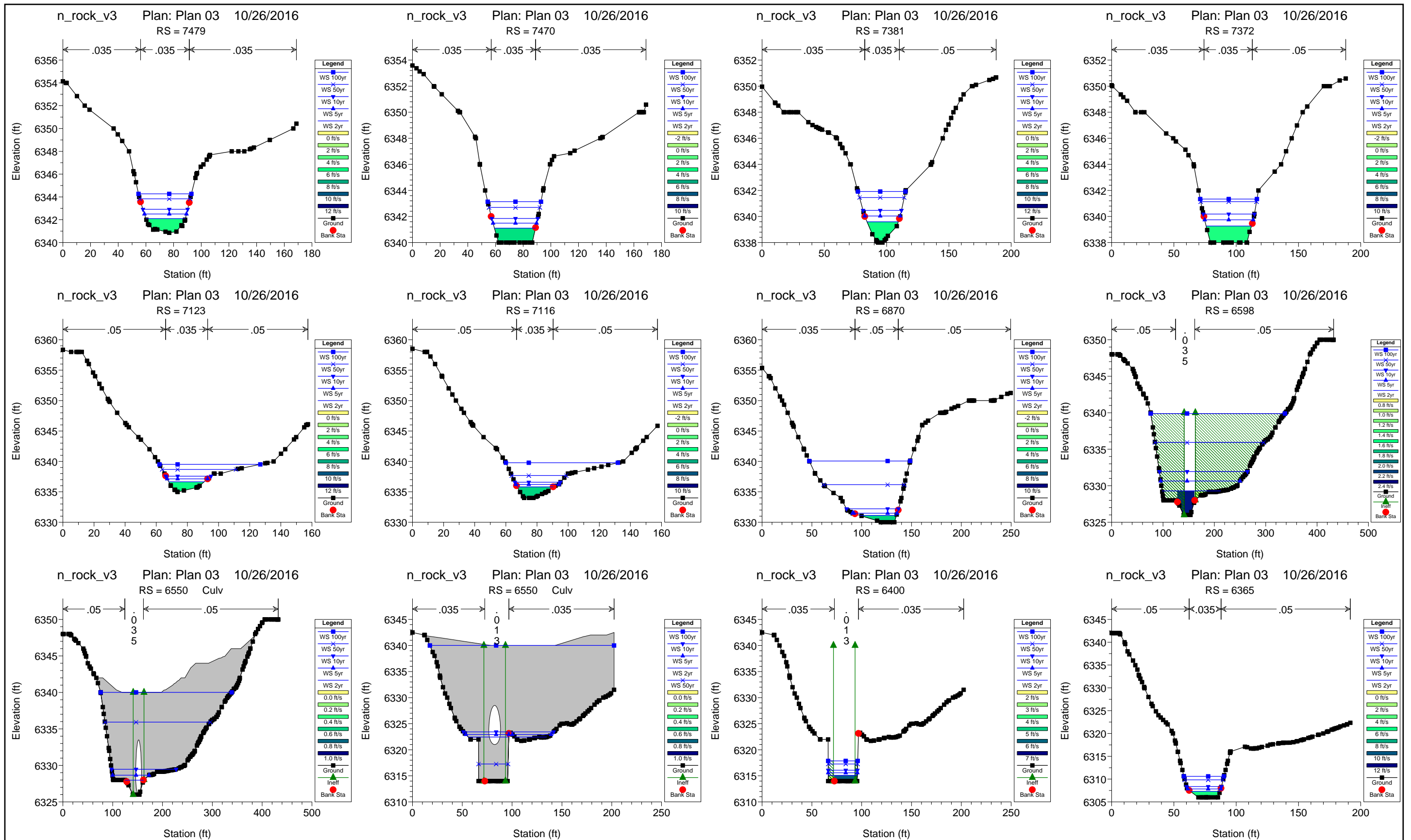


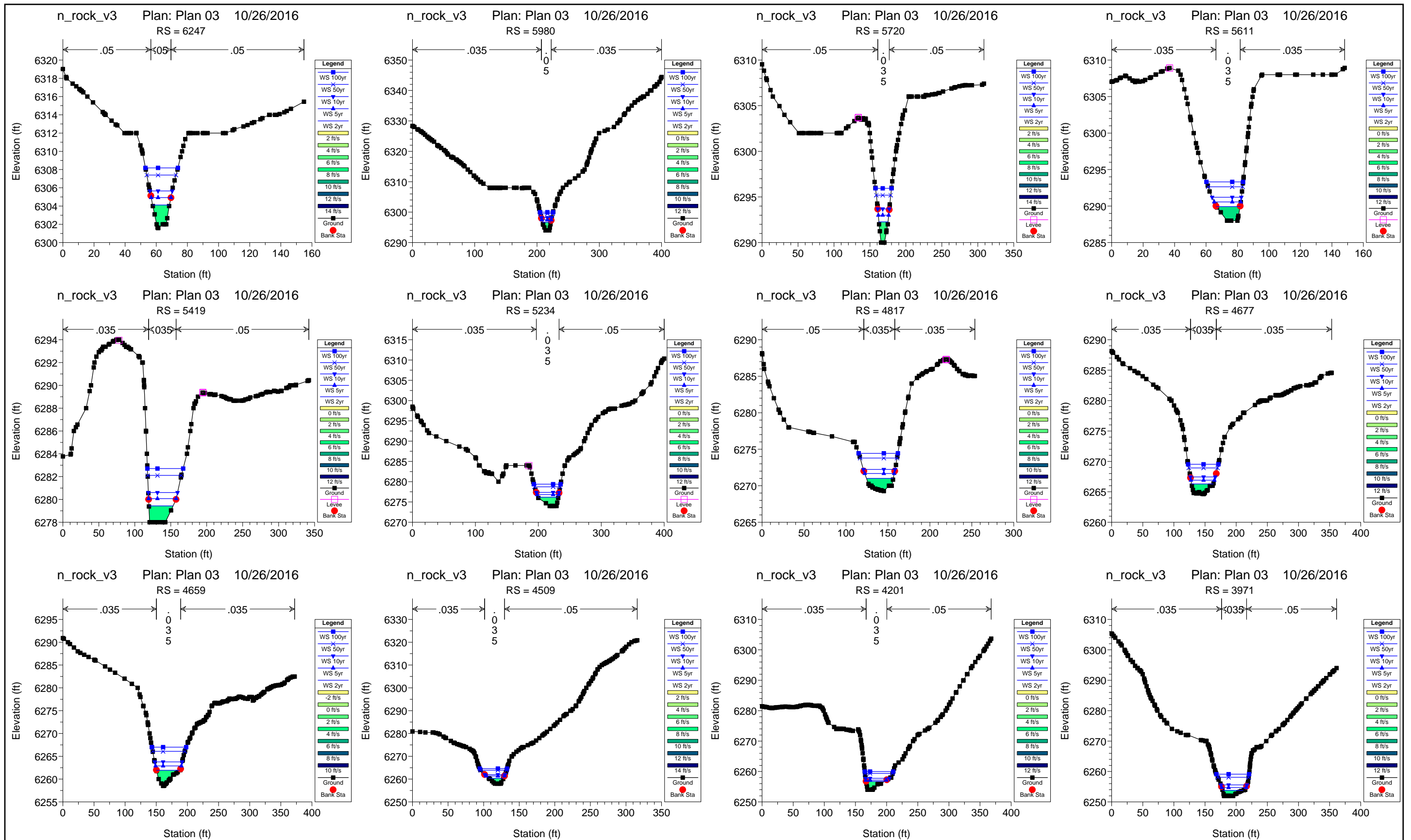


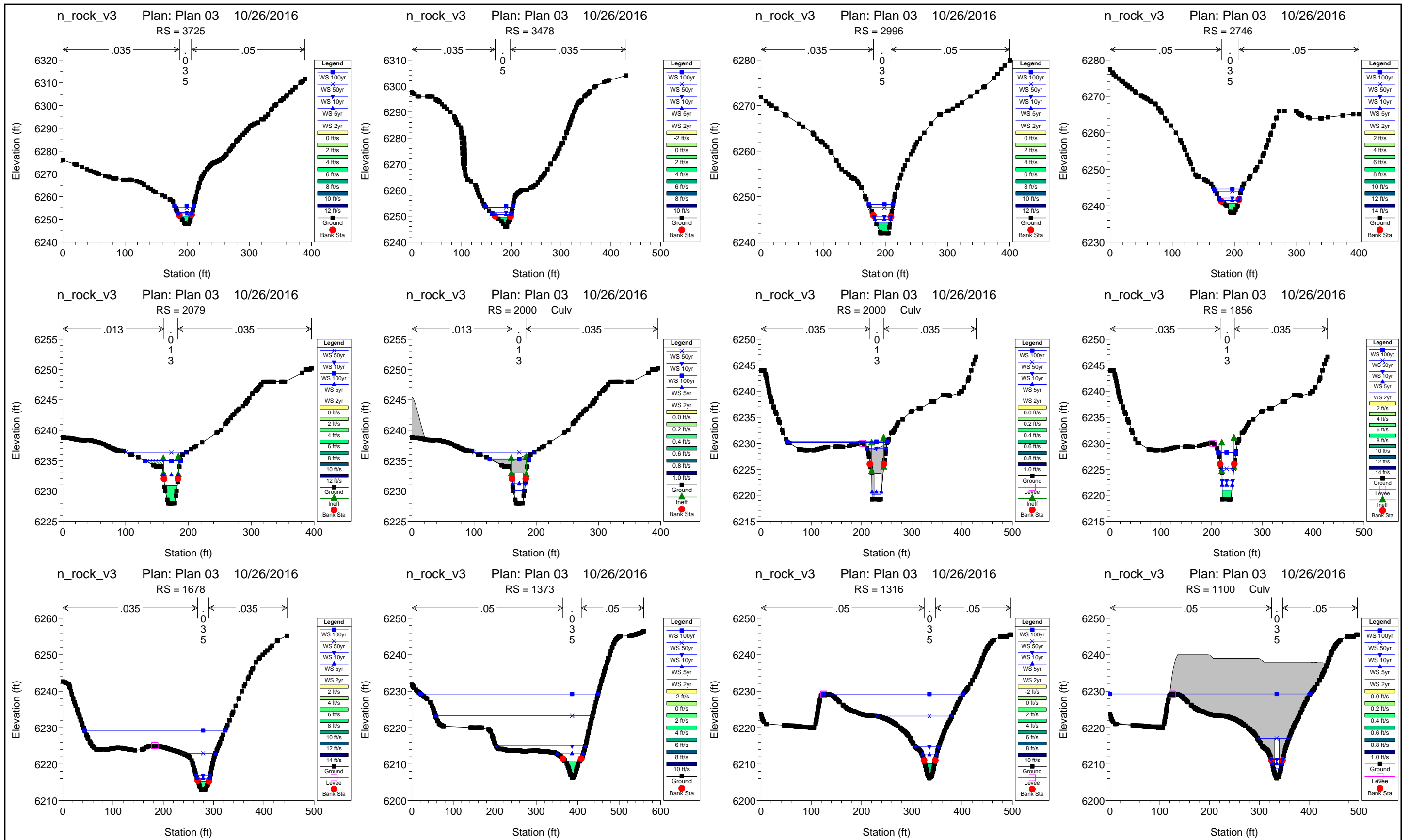


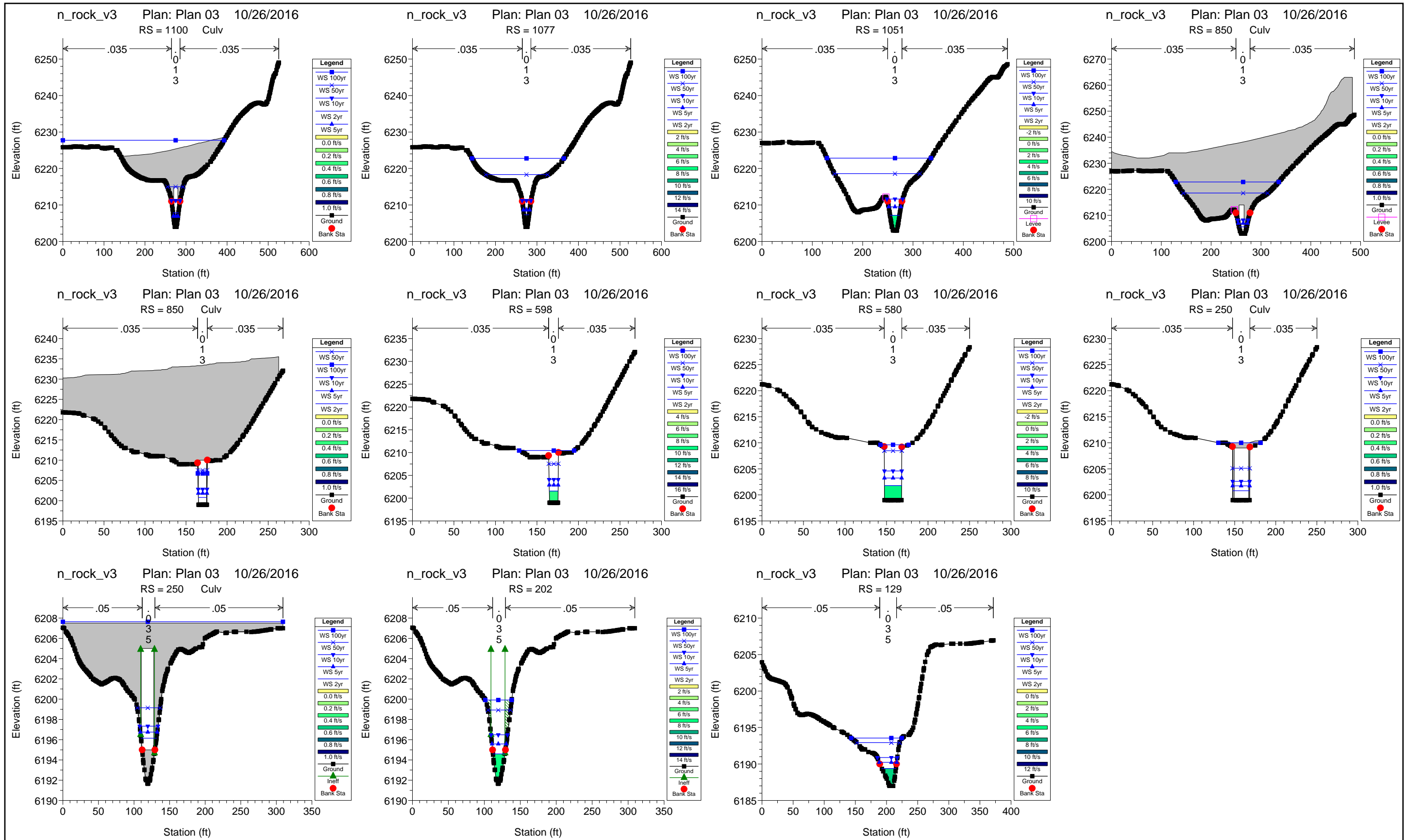












Pine Creek Hydraulic Results

HEC-RAS Plan: Plan 04 River: Pine Creek Reach: PC-1

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl	Shear Total (lb/sq ft)	Mann Wtd Total	Shear Chan (lb/sq ft)	Shear LOB (lb/sq ft)	Shear ROB (lb/sq ft)
PC-1	11983	2-Year	360.00	6534.00	6535.72	4.91	88.13	67.36	0.66	0.87	0.045	1.15	0.74	0.66
PC-1	11983	5-Year	620.00	6534.00	6536.15	6.61	120.31	85.15	0.79	1.27	0.044	1.94	1.21	0.88
PC-1	11983	10-Year	910.00	6534.00	6536.52	7.61	152.61	87.36	0.84	1.68	0.045	2.43	1.51	1.27
PC-1	11983	50-Year	1900.00	6534.00	6537.38	10.44	229.51	92.26	1.00	3.04	0.046	4.16	2.55	2.57
PC-1	11983	100-Year	2500.00	6534.00	6537.88	11.36	276.38	95.02	1.02	3.49	0.046	4.71	2.87	3.05
PC-1	11946	2-Year	360.00	6534.00	6535.40	4.14	104.74	90.44	0.62	0.73	0.048	0.88	0.72	0.64
PC-1	11946	5-Year	620.00	6534.00	6535.74	5.55	136.85	97.22	0.74	1.18	0.048	1.46	1.17	1.03
PC-1	11946	10-Year	910.00	6534.00	6535.98	7.01	160.63	103.53	0.88	1.76	0.047	2.24	1.69	1.56
PC-1	11946	50-Year	1900.00	6534.00	6536.73	9.94	254.63	131.34	1.06	2.86	0.048	4.04	2.62	2.64
PC-1	11946	100-Year	2500.00	6534.00	6537.15	10.79	311.27	140.75	1.07	3.18	0.048	4.55	3.00	2.86
PC-1	11896	2-Year	360.00	6534.00	6534.68	3.54	113.67	175.45	0.75	0.77	0.049	0.81	0.79	0.73
PC-1	11896	5-Year	620.00	6534.00	6534.94	4.39	159.04	180.84	0.80	1.06	0.049	1.13	1.09	0.99
PC-1	11896	10-Year	910.00	6534.00	6535.26	4.73	218.42	186.82	0.74	1.10	0.049	1.18	1.14	1.02
PC-1	11896	50-Year	1900.00	6534.00	6536.04	5.94	369.44	200.34	0.73	1.44	0.048	1.59	1.50	1.32
PC-1	11896	100-Year	2500.00	6534.00	6536.38	6.61	438.57	205.35	0.76	1.68	0.048	1.88	1.77	1.53
PC-1	11756	2-Year	360.00	6532.00	6532.77	2.68	138.36	193.31	0.57	0.49	0.048	0.47	0.51	0.50
PC-1	11756	5-Year	620.00	6532.00	6533.05	3.37	192.61	195.90	0.60	0.67	0.048	0.66	0.70	0.67
PC-1	11756	10-Year	910.00	6532.00	6533.19	4.35	219.77	197.22	0.73	1.06	0.048	1.05	1.10	1.06
PC-1	11756	50-Year	1900.00	6532.00	6533.64	6.53	310.85	201.74	0.92	2.08	0.048	2.10	2.11	2.03
PC-1	11756	100-Year	2500.00	6532.00	6533.93	7.30	368.38	204.53	0.95	2.43	0.048	2.49	2.45	2.35
PC-1	11653	2-Year	360.00	6530.00	6530.70	4.74	85.28	142.92	1.00	1.24	0.045	1.45	0.82	1.30
PC-1	11653	5-Year	620.00	6530.00	6530.97	5.64	125.38	154.57	1.01	1.54	0.046	1.84	1.08	1.60
PC-1	11653	10-Year	910.00	6530.00	6531.41	5.37	198.49	173.80	0.80	1.19	0.046	1.47	0.86	1.21
PC-1	11653	50-Year	1900.00	6530.00	6532.61	5.31	449.00	238.07	0.58	0.85	0.045	1.17	0.64	0.88
PC-1	11653	100-Year	2500.00	6530.00	6533.22	5.25	597.36	250.71	0.52	0.79	0.046	1.07	0.64	0.77
PC-1	11567	2-Year	360.00	6528.00	6530.30	2.13	241.10	250.99	0.25	0.09	0.037	0.20	0.05	0.07
PC-1	11567	5-Year	620.00	6528.00	6530.88	2.28	390.43	264.15	0.24	0.11	0.042	0.21	0.09	0.09
PC-1	11567	10-Year	910.00	6528.00	6531.39	2.43	527.02	272.25	0.24	0.13	0.044	0.23	0.11	0.10
PC-1	11567	50-Year	1900.00	6528.00	6532.59	2.99	866.34	294.31	0.25	0.20	0.046	0.31	0.18	0.13
PC-1	11567	100-Year	2500.00	6528.00	6533.20	3.21	1048.48	303.32	0.25	0.23	0.047	0.34	0.21	0.14
PC-1	11342	2-Year	360.00	6528.00	6529.44	4.16	91.89	70.17	0.61	0.80	0.045	0.88	0.50	0.58
PC-1	11342	5-Year	620.00	6528.00	6529.91	5.29	126.10	74.59	0.67	1.14	0.044	1.29	0.70	0.81
PC-1	11342	10-Year	910.00	6528.00	6530.36	6.07	179.66	131.87	0.70	0.91	0.037	1.59	0.36	1.00
PC-1	11342	50-Year	1900.00	6528.00	6531.57	6.83	344.46	139.35	0.64	1.20	0.043	1.75	0.82	1.10
PC-1	11342	100-Year	2500.00	6528.00	6532.17	7.22	428.48	142.90	0.62	1.32	0.044	1.85	0.98	1.15
PC-1	11157	2-Year	360.00	6526.00	6528.47	2.71	149.76	120.31	0.38	0.29	0.044	0.36	0.34	0.16
PC-1	11157	5-Year	620.00	6526.00	6529.07	3.17	223.01	125.45	0.38	0.37	0.045	0.45	0.37	0.26
PC-1	11157	10-Year	910.00	6526.00	6529.57	3.63	287.63	129.57	0.39	0.45	0.046	0.54	0.43	0.35
PC-1	11157	50-Year	1900.00	6526.00	6530.86	4.77	459.67	138.34	0.42	0.69	0.046	0.82	0.61	0.57
PC-1	11157	100-Year	2500.00	6526.00	6531.46	5.31	545.06	142.14	0.44	0.82	0.046	0.97	0.71	0.69
PC-1	10981	2-Year	360.00	6526.00	6527.96	2.51	153.79	90.98	0.32	0.25	0.044	0.29	0.14	0.14
PC-1	10981	5-Year	620.00	6526.00	6528.50	3.27	215.02	117.32	0.37	0.33	0.041	0.45	0.16	0.22
PC-1	10981	10-Year	910.00	6526.00	6528.96	3.87	270.21	121.11	0.40	0.45	0.043	0.60	0.26	0.30

HEC-RAS Plan: Plan 04 River: Pine Creek Reach: PC-1 (Continued)

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl	Shear Total (lb/sq ft)	Mann Wtd Total	Shear Chan (lb/sq ft)	Shear LOB (lb/sq ft)	Shear ROB (lb/sq ft)
PC-1	10981	50-Year	1900.00	6526.00	6530.13	5.29	417.37	130.51	0.46	0.77	0.044	1.00	0.55	0.50
PC-1	10981	100-Year	2500.00	6526.00	6530.68	5.95	490.65	134.68	0.48	0.94	0.044	1.21	0.69	0.61
PC-1	10792	2-Year	360.00	6526.00	6527.14	3.18	120.02	114.50	0.53	0.52	0.045	0.56	0.21	0.52
PC-1	10792	5-Year	620.00	6526.00	6527.50	4.11	161.52	118.84	0.60	0.78	0.045	0.85	0.36	0.78
PC-1	10792	10-Year	910.00	6526.00	6527.81	4.93	198.86	121.87	0.65	1.05	0.046	1.15	0.54	1.04
PC-1	10792	50-Year	1900.00	6526.00	6528.68	6.72	308.27	127.55	0.73	1.68	0.046	1.87	1.03	1.64
PC-1	10792	100-Year	2500.00	6526.00	6529.20	7.31	375.24	130.72	0.72	1.86	0.046	2.08	1.18	1.80
PC-1	10582	2-Year	360.00	6523.62	6524.83	3.88	97.70	108.93	0.70	0.83	0.046	0.88	0.71	0.61
PC-1	10582	5-Year	620.00	6523.62	6525.28	4.45	147.47	112.18	0.66	0.95	0.046	1.01	0.83	0.69
PC-1	10582	10-Year	910.00	6523.62	6525.75	4.85	199.98	115.38	0.63	1.01	0.046	1.09	0.88	0.73
PC-1	10582	50-Year	1900.00	6523.62	6527.17	5.55	371.28	124.25	0.54	1.07	0.046	1.18	0.92	0.74
PC-1	10582	100-Year	2500.00	6523.62	6527.95	5.82	469.57	128.98	0.51	1.08	0.045	1.22	0.93	0.74
PC-1	10471	2-Year	360.00	6520.40	6522.29	6.97	58.78	46.18	0.97	1.89	0.044	2.38	0.82	1.66
PC-1	10471	5-Year	620.00	6520.40	6522.87	8.28	86.96	50.73	0.99	2.36	0.044	3.03	1.26	2.13
PC-1	10471	10-Year	910.00	6520.40	6523.42	9.27	115.89	54.98	0.99	2.70	0.045	3.53	1.58	2.46
PC-1	10471	50-Year	1900.00	6520.40	6524.86	11.49	202.51	65.17	0.99	3.46	0.045	4.70	2.34	3.12
PC-1	10471	100-Year	2500.00	6520.40	6525.56	12.43	249.98	69.85	0.99	3.78	0.045	5.22	2.66	3.39
PC-1	10311	2-Year	360.00	6515.08	6516.88	7.66	54.38	37.62	1.03	2.31	0.046	2.80	1.37	2.19
PC-1	10311	5-Year	620.00	6515.08	6517.54	9.07	80.66	41.18	1.03	2.83	0.046	3.52	1.81	2.68
PC-1	10311	10-Year	910.00	6515.08	6518.14	10.31	106.41	44.81	1.05	3.29	0.046	4.23	2.17	3.07
PC-1	10311	50-Year	1900.00	6515.08	6519.81	12.79	193.83	67.88	1.04	3.37	0.042	5.60	2.79	2.67
PC-1	10311	100-Year	2500.00	6515.08	6521.02	12.46	297.80	92.57	0.91	2.65	0.044	4.93	2.31	2.15
PC-1	10144	2-Year	360.00	6508.00	6509.89	7.96	53.71	35.73	1.02	2.31	0.046	2.94	1.46	2.15
PC-1	10144	5-Year	620.00	6508.00	6510.59	9.36	80.01	39.25	1.03	2.83	0.046	3.65	1.92	2.65
PC-1	10144	10-Year	910.00	6508.00	6511.23	10.50	106.25	42.40	1.03	3.24	0.046	4.27	2.26	3.05
PC-1	10144	50-Year	1900.00	6508.00	6512.92	13.05	184.66	49.89	1.04	4.16	0.046	5.73	3.12	3.89
PC-1	10144	100-Year	2500.00	6508.00	6513.72	14.24	225.76	53.27	1.05	4.63	0.046	6.49	3.54	4.31
PC-1	9951	2-Year	360.00	6500.00	6502.34	7.16	51.53	34.09	0.98	2.27	0.043	2.49		0.75
PC-1	9951	5-Year	620.00	6500.00	6503.06	8.40	77.63	39.07	0.96	2.54	0.042	3.04	0.47	1.14
PC-1	9951	10-Year	910.00	6500.00	6503.71	9.39	104.81	43.64	0.95	2.76	0.041	3.50	0.79	1.42
PC-1	9951	50-Year	1900.00	6500.00	6505.43	11.50	189.03	54.01	0.93	3.29	0.042	4.52	1.50	2.06
PC-1	9951	100-Year	2500.00	6500.00	6506.24	12.47	234.47	58.68	0.93	3.57	0.042	5.04	1.80	2.34
PC-1	9765	2-Year	360.00	6494.00	6496.26	7.37	56.46	39.04	0.93	1.82	0.042	2.49	0.72	1.08
PC-1	9765	5-Year	620.00	6494.00	6496.96	8.75	85.05	42.93	0.94	2.34	0.044	3.17	1.23	1.61
PC-1	9765	10-Year	910.00	6494.00	6497.59	9.89	113.11	46.18	0.96	2.77	0.045	3.77	1.64	2.01
PC-1	9765	50-Year	1900.00	6494.00	6499.26	12.42	197.74	54.78	0.98	3.69	0.046	5.18	2.47	2.87
PC-1	9765	100-Year	2500.00	6494.00	6500.01	13.70	240.25	58.53	1.01	4.22	0.047	6.02	2.91	3.33
PC-1	9563	2-Year	360.00	6486.00	6488.02	7.58	53.35	35.78	1.03	2.40	0.046	2.76	0.73	2.15
PC-1	9563	5-Year	620.00	6486.00	6488.72	9.00	79.62	38.94	1.02	2.91	0.046	3.47	1.25	2.52
PC-1	9563	10-Year	910.00	6486.00	6489.38	10.14	106.22	41.95	1.02	3.29	0.046	4.06	1.59	2.81
PC-1	9563	50-Year	1900.00	6486.00	6491.16	12.62	188.92	50.87	1.01	4.01	0.046	5.40	2.27	3.34
PC-1	9563	100-Year	2500.00	6486.00	6492.04	13.66	235.49	55.38	1.01	4.30	0.046	5.98	2.55	3.57

HEC-RAS Plan: Plan 04 River: Pine Creek Reach: PC-1 (Continued)

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl	Shear Total (lb/sq ft)	Mann Wtd Total	Shear Chan (lb/sq ft)	Shear LOB (lb/sq ft)	Shear ROB (lb/sq ft)
PC-1	9337	2-Year	360.00	6478.00	6479.78	7.30	52.17	34.65	0.97	2.17	0.043	2.54	0.77	0.93
PC-1	9337	5-Year	620.00	6478.00	6480.51	8.59	79.07	39.16	0.96	2.52	0.043	3.13	1.11	1.23
PC-1	9337	10-Year	910.00	6478.00	6481.19	9.62	107.01	43.66	0.96	2.78	0.043	3.63	1.37	1.45
PC-1	9337	50-Year	1900.00	6478.00	6482.99	11.82	197.22	57.29	0.94	3.21	0.043	4.70	1.84	1.95
PC-1	9337	100-Year	2500.00	6478.00	6483.86	12.69	250.66	64.66	0.93	3.35	0.043	5.13	2.02	2.16
PC-1	9150	2-Year	360.00	6471.37	6473.23	7.33	53.40	36.78	1.01	2.27	0.045	2.61	0.48	1.72
PC-1	9150	5-Year	620.00	6471.37	6473.93	8.62	80.92	41.60	0.99	2.62	0.044	3.21	0.88	1.99
PC-1	9150	10-Year	910.00	6471.37	6474.57	9.65	109.15	45.61	0.98	2.91	0.044	3.70	1.22	2.23
PC-1	9150	50-Year	1900.00	6471.37	6476.29	11.92	196.41	55.94	0.97	3.54	0.045	4.86	1.90	2.78
PC-1	9150	100-Year	2500.00	6471.37	6477.08	13.01	242.29	60.31	0.98	3.91	0.045	5.49	2.25	3.12
PC-1	8894	2-Year	360.00	6462.00	6463.52	7.45	56.00	40.00	1.06	2.49	0.049	2.76	2.30	1.90
PC-1	8894	5-Year	620.00	6462.00	6464.16	8.92	82.30	42.75	1.07	3.07	0.049	3.52	2.79	2.25
PC-1	8894	10-Year	910.00	6462.00	6464.77	10.06	109.34	45.74	1.07	3.47	0.048	4.12	3.14	2.44
PC-1	8894	50-Year	1900.00	6462.00	6466.39	12.79	190.32	55.51	1.08	4.33	0.048	5.72	3.83	2.92
PC-1	8894	100-Year	2500.00	6462.00	6467.33	13.57	246.39	64.30	1.04	4.21	0.047	6.04	3.67	2.82
PC-1	8709	2-Year	360.00	6454.00	6456.32	5.45	71.48	34.22	0.63	1.11	0.044	1.28	0.58	0.63
PC-1	8709	5-Year	620.00	6454.00	6456.95	7.28	93.50	35.75	0.75	1.78	0.044	2.12	0.95	1.02
PC-1	8709	10-Year	910.00	6454.00	6457.34	9.37	107.59	36.68	0.90	2.79	0.044	3.36	1.51	1.61
PC-1	8709	50-Year	1900.00	6454.00	6459.03	12.61	173.10	41.01	0.99	4.13	0.044	5.31	2.33	2.39
PC-1	8709	100-Year	2500.00	6454.00	6459.90	13.94	209.52	43.27	1.01	4.65	0.044	6.16	2.68	2.71
PC-1	8605	2-Year	360.00	6452.66	6455.30	5.18	79.59	57.11	0.70	1.04	0.045	1.29	1.01	0.72
PC-1	8605	5-Year	620.00	6452.66	6456.12	5.83	130.64	72.88	0.65	0.99	0.043	1.43	0.98	0.65
PC-1	8605	10-Year	910.00	6452.66	6456.94	5.82	191.64	75.70	0.56	0.96	0.045	1.30	0.82	0.73
PC-1	8605	50-Year	1900.00	6452.66	6458.63	7.30	327.16	87.62	0.57	1.28	0.045	1.79	0.99	1.06
PC-1	8605	100-Year	2500.00	6452.66	6459.33	8.18	390.91	94.67	0.60	1.50	0.045	2.15	1.13	1.25
PC-1	8428	2-Year	360.00	6450.00	6454.58	2.70	137.93	67.34	0.33	0.33	0.046	0.33	0.27	0.36
PC-1	8428	5-Year	620.00	6450.00	6455.65	3.12	212.53	71.98	0.31	0.36	0.046	0.39	0.25	0.37
PC-1	8428	10-Year	910.00	6450.00	6456.51	3.68	277.85	81.53	0.33	0.42	0.045	0.50	0.28	0.36
PC-1	8428	50-Year	1900.00	6450.00	6458.11	5.43	425.10	106.32	0.41	0.68	0.044	0.96	0.44	0.52
PC-1	8428	100-Year	2500.00	6450.00	6458.77	6.22	497.90	115.96	0.44	0.83	0.043	1.22	0.53	0.64
PC-1	8288	2-Year	360.00	6450.00	6453.53	5.74	63.66	25.11	0.60	1.20	0.042	1.36	0.18	0.13
PC-1	8288	5-Year	620.00	6450.00	6453.99	8.43	76.03	28.23	0.82	2.25	0.040	2.78	0.48	0.35
PC-1	8288	10-Year	910.00	6450.00	6454.88	8.96	125.07	68.25	0.77	1.31	0.033	2.91	0.56	0.44
PC-1	8288	50-Year	1900.00	6450.00	6456.46	10.39	266.88	108.24	0.76	1.56	0.038	3.52	1.06	1.01
PC-1	8288	100-Year	2500.00	6450.00	6457.05	11.21	333.56	119.16	0.78	1.82	0.040	3.96	1.29	1.34
PC-1	8186	2-Year	360.00	6450.00	6453.13	3.44	111.03	71.45	0.45	0.47	0.043	0.56	0.10	0.28
PC-1	8186	5-Year	620.00	6450.00	6453.84	4.09	168.74	88.73	0.45	0.52	0.041	0.70	0.17	0.37
PC-1	8186	10-Year	910.00	6450.00	6454.35	4.80	217.24	100.38	0.48	0.65	0.041	0.91	0.26	0.50
PC-1	8186	50-Year	1900.00	6450.00	6455.57	6.47	345.09	108.47	0.55	1.10	0.043	1.48	0.67	0.85
PC-1	8186	100-Year	2500.00	6450.00	6456.36	6.86	433.12	115.15	0.54	1.17	0.044	1.58	0.76	0.91
PC-1	8005	2-Year	360.00	6448.00	6451.87	4.90	91.14	72.96	0.58	0.61	0.038	1.06	0.30	0.44
PC-1	8005	5-Year	620.00	6448.00	6452.23	6.74	123.55	101.51	0.74	0.92	0.037	1.92	0.65	0.39
PC-1	8005	10-Year	910.00	6448.00	6452.64	7.55	167.91	113.28	0.77	1.16	0.040	2.29	0.89	0.64

HEC-RAS Plan: Plan 04 River: Pine Creek Reach: PC-1 (Continued)

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl	Shear Total (lb/sq ft)	Mann Wtd Total	Shear Chan (lb/sq ft)	Shear LOB (lb/sq ft)	Shear ROB (lb/sq ft)
PC-1	8005	50-Year	1900.00	6448.00	6453.54	9.79	280.42	138.71	0.87	1.89	0.043	3.53	1.58	1.32
PC-1	8005	100-Year	2500.00	6448.00	6456.07	5.15	772.41	253.49	0.36	0.41	0.044	0.83	0.43	0.29
PC-1	7865	2-Year	360.00	6448.00	6449.77	6.37	61.20	57.23	0.95	1.61	0.041	2.09	0.45	1.29
PC-1	7865	5-Year	620.00	6448.00	6450.46	6.30	130.95	126.26	0.77	0.89	0.038	1.78	0.53	0.51
PC-1	7865	10-Year	910.00	6448.00	6450.78	7.15	172.01	132.06	0.82	1.19	0.041	2.19	0.79	0.81
PC-1	7865	50-Year	1900.00	6448.00	6452.91	5.29	512.01	193.48	0.44	0.56	0.045	0.97	0.48	0.46
PC-1	7865	100-Year	2500.00	6448.00	6456.04	2.97	1278.84	302.76	0.19	0.14	0.046	0.26	0.12	0.13
PC-1	7735	2-Year	360.00	6446.00	6448.00	3.35	116.15	76.78	0.45	0.47	0.045	0.54	0.50	0.13
PC-1	7735	5-Year	620.00	6446.00	6448.75	3.92	177.51	85.36	0.44	0.55	0.045	0.65	0.55	0.24
PC-1	7735	10-Year	910.00	6446.00	6449.46	4.37	240.35	93.16	0.43	0.60	0.045	0.74	0.58	0.31
PC-1	7735	50-Year	1900.00	6446.00	6452.89	2.94	976.97	278.59	0.20	0.14	0.045	0.26	0.12	0.10
PC-1	7735	100-Year	2500.00	6446.00	6456.03	1.92	2006.25	382.84	0.11	0.05	0.046	0.10	0.05	0.04
PC-1	7627	2-Year	360.00	6444.00	6446.37	7.43	55.83	39.40	0.95	1.88	0.042	2.55	1.49	0.63
PC-1	7627	5-Year	620.00	6444.00	6447.05	8.72	84.66	44.84	0.95	2.29	0.043	3.17	1.88	1.12
PC-1	7627	10-Year	910.00	6444.00	6447.68	9.68	114.33	49.24	0.95	2.59	0.044	3.64	2.16	1.47
PC-1	7627	50-Year	1900.00	6444.00	6447.83	19.02	122.00	50.24	1.82	9.82	0.044	13.83	8.21	5.75
PC-1	7627	100-Year	2500.00	6444.00	6447.89	24.47	124.98	50.62	2.32	16.15	0.044	22.75	13.51	9.54
PC-1	7507	2-Year	360.00	6442.00	6444.67	3.19	124.29	61.83	0.36	0.35	0.043	0.43	0.15	0.23
PC-1	7507	5-Year	620.00	6442.00	6445.36	4.12	168.03	65.59	0.41	0.53	0.043	0.66	0.28	0.37
PC-1	7507	10-Year	910.00	6442.00	6445.98	4.90	209.80	69.02	0.44	0.70	0.044	0.88	0.39	0.51
PC-1	7507	50-Year	1900.00	6442.00	6447.42	6.37	396.31	150.10	0.49	0.67	0.038	1.34	0.35	0.79
PC-1	7507	100-Year	2500.00	6442.00	6448.52	6.18	657.95	323.84	0.43	0.38	0.034	1.18	0.23	0.69
PC-1	7473	2-Year	360.00	6442.00	6444.34	4.63	86.53	60.65	0.59	0.75	0.041	0.99	0.33	0.38
PC-1	7473	5-Year	620.00	6442.00	6444.98	5.55	127.03	65.25	0.61	0.99	0.043	1.29	0.53	0.63
PC-1	7473	10-Year	910.00	6442.00	6445.58	6.26	167.53	69.35	0.62	1.17	0.043	1.53	0.70	0.81
PC-1	7473	50-Year	1900.00	6442.00	6446.79	8.48	305.07	161.88	0.72	1.09	0.035	2.53	0.51	1.42
PC-1	7473	100-Year	2500.00	6442.00	6448.54	5.38	809.40	368.41	0.38	0.33	0.040	0.91	0.24	0.50
PC-1	7428	2-Year	360.00	6442.00	6443.36	6.75	59.26	49.45	1.02	2.06	0.046	2.36	1.68	1.69
PC-1	7428	5-Year	620.00	6442.00	6443.91	8.00	87.43	52.96	1.02	2.53	0.046	2.95	2.10	2.02
PC-1	7428	10-Year	910.00	6442.00	6444.43	9.04	116.15	57.74	1.02	2.86	0.045	3.48	2.21	2.37
PC-1	7428	50-Year	1900.00	6442.00	6446.53	8.12	412.08	319.32	0.67	0.65	0.034	2.28	0.43	1.46
PC-1	7428	100-Year	2500.00	6442.00	6445.81	14.61	222.56	156.76	1.32	2.90	0.030	7.83	1.35	5.13
PC-1	7417	2-Year	360.00	6439.04	6442.19	5.26	89.52	42.79	0.55	0.79	0.047	1.11	0.85	0.58
PC-1	7417	5-Year	620.00	6439.04	6442.99	6.55	125.53	47.39	0.60	1.12	0.047	1.59	1.19	0.86
PC-1	7417	10-Year	910.00	6439.04	6443.69	7.65	160.03	51.43	0.64	1.42	0.047	2.05	1.50	1.11
PC-1	7417	50-Year	1900.00	6439.04	6445.54	9.82	328.63	184.91	0.69	0.85	0.033	3.00	0.60	1.67
PC-1	7417	100-Year	2500.00	6439.04	6446.18	11.72	498.00	370.17	0.79	0.81	0.035	4.14	0.60	2.30
PC-1	7223	2-Year	360.00	6438.00	6439.65	6.89	60.01	47.07	1.00	2.08	0.047	2.41	1.53	2.48
PC-1	7223	5-Year	620.00	6438.00	6440.21	8.04	87.49	50.43	1.02	2.70	0.047	3.01	2.16	3.13
PC-1	7223	10-Year	910.00	6438.00	6440.72	8.98	113.98	53.17	1.04	3.24	0.048	3.54	2.73	3.67
PC-1	7223	50-Year	1900.00	6438.00	6442.09	11.17	194.17	65.48	1.09	4.46	0.048	4.92	4.19	4.40
PC-1	7223	100-Year	2500.00	6438.00	6443.89	9.59	336.12	107.20	0.80	2.29	0.046	3.26	1.68	2.80

HEC-RAS Plan: Plan 04 River: Pine Creek Reach: PC-1 (Continued)

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl	Shear Total (lb/sq ft)	Mann Wtd Total	Shear Chan (lb/sq ft)	Shear LOB (lb/sq ft)	Shear ROB (lb/sq ft)
PC-1	7100		Culvert											
PC-1	6951	2-Year	360.00	6423.76	6426.01	1.95	92.26	47.45	0.24	0.48	0.037	0.54	0.34	0.40
PC-1	6951	5-Year	620.00	6423.76	6426.82	2.29	131.99	49.51	0.24	0.58	0.036	0.66	0.40	0.47
PC-1	6951	10-Year	910.00	6423.76	6427.58	2.57	169.89	51.37	0.24	0.66	0.035	0.77	0.45	0.53
PC-1	6951	50-Year	1900.00	6423.76	6429.55	3.22	276.04	56.47	0.24	0.85	0.033	1.05	0.57	0.67
PC-1	6951	100-Year	2500.00	6423.76	6430.55	3.47	333.89	59.34	0.24	0.91	0.032	1.16	0.61	0.70
PC-1	6896	2-Year	360.00	6420.00	6421.95	7.05	53.38	33.03	0.91	1.99	0.042	2.32	1.07	0.40
PC-1	6896	5-Year	620.00	6420.00	6423.24	6.74	103.34	44.11	0.67	1.30	0.041	1.78	0.64	0.59
PC-1	6896	10-Year	910.00	6420.00	6424.34	6.97	160.63	67.11	0.60	0.96	0.037	1.72	0.54	0.41
PC-1	6896	50-Year	1900.00	6420.00	6426.81	6.75	416.29	131.75	0.46	0.65	0.040	1.39	0.51	0.43
PC-1	6896	100-Year	2500.00	6420.00	6428.17	6.24	610.73	164.68	0.39	0.51	0.041	1.11	0.39	0.40
PC-1	6783	2-Year	360.00	6416.00	6420.96	5.93	64.31	20.77	0.52	1.02	0.040	1.32	0.33	0.22
PC-1	6783	5-Year	620.00	6416.00	6422.10	7.66	90.85	28.66	0.60	1.26	0.037	2.03	0.58	0.30
PC-1	6783	10-Year	910.00	6416.00	6423.12	8.75	130.11	47.61	0.62	1.16	0.034	2.49	0.78	0.40
PC-1	6783	50-Year	1900.00	6416.00	6426.22	8.19	383.24	122.52	0.47	0.70	0.038	1.90	0.76	0.47
PC-1	6783	100-Year	2500.00	6416.00	6427.89	6.94	606.96	144.43	0.37	0.54	0.043	1.29	0.54	0.43
PC-1	6651	2-Year	360.00	6416.00	6418.93	8.56	43.20	20.63	0.97	2.71	0.042	3.18	0.62	0.44
PC-1	6651	5-Year	620.00	6416.00	6419.99	9.92	67.00	24.47	0.94	2.89	0.040	3.79	1.07	0.77
PC-1	6651	10-Year	910.00	6416.00	6420.90	11.11	90.62	27.09	0.94	3.20	0.040	4.39	1.52	1.04
PC-1	6651	50-Year	1900.00	6416.00	6423.33	13.61	165.46	34.84	0.92	3.72	0.040	5.69	2.34	1.52
PC-1	6651	100-Year	2500.00	6416.00	6423.97	15.98	188.37	36.96	1.03	4.87	0.040	7.61	3.20	2.10
PC-1	6509	2-Year	360.00	6412.00	6415.47	9.27	40.72	17.05	0.96	2.83	0.041	3.54	0.75	0.75
PC-1	6509	5-Year	620.00	6412.00	6416.70	10.74	63.67	20.33	0.93	3.05	0.040	4.22	1.22	1.15
PC-1	6509	10-Year	910.00	6412.00	6417.77	11.98	87.07	23.25	0.93	3.30	0.040	4.87	1.58	1.46
PC-1	6509	50-Year	1900.00	6412.00	6420.29	15.31	155.02	32.39	0.97	4.06	0.039	6.98	2.36	2.19
PC-1	6509	100-Year	2500.00	6412.00	6422.31	14.48	255.31	91.69	0.82	1.69	0.029	5.77	0.81	1.47
PC-1	6363	2-Year	360.00	6406.00	6408.30	4.22	87.28	43.09	0.50	0.71	0.043	0.79	0.17	0.21
PC-1	6363	5-Year	620.00	6406.00	6409.33	4.86	133.38	46.34	0.47	0.79	0.043	0.92	0.26	0.32
PC-1	6363	10-Year	910.00	6406.00	6410.37	5.29	182.19	47.98	0.45	0.84	0.043	0.99	0.30	0.42
PC-1	6363	50-Year	1900.00	6406.00	6413.27	6.20	351.42	66.68	0.41	0.78	0.040	1.15	0.35	0.38
PC-1	6363	100-Year	2500.00	6406.00	6413.42	7.95	361.81	67.16	0.52	1.28	0.040	1.87	0.56	0.63
PC-1	6141	2-Year	360.00	6402.00	6405.03	8.87	41.72	18.60	0.97	2.86	0.041	3.36	0.43	0.66
PC-1	6141	5-Year	620.00	6402.00	6406.14	10.33	64.25	21.82	0.95	3.09	0.040	4.05	0.75	1.15
PC-1	6141	10-Year	910.00	6402.00	6407.15	11.50	87.72	24.65	0.94	3.30	0.040	4.63	0.98	1.53
PC-1	6141	50-Year	1900.00	6402.00	6409.62	14.36	158.04	32.70	0.95	3.94	0.039	6.28	1.48	2.42
PC-1	6141	100-Year	2500.00	6402.00	6411.73	11.33	380.71	156.14	0.66	0.98	0.033	3.58	0.82	0.66
PC-1	5941	2-Year	360.00	6393.64	6397.49	9.06	42.19	18.94	0.94	2.60	0.040	3.39	0.76	0.74
PC-1	5941	5-Year	620.00	6393.64	6398.69	10.35	68.08	24.48	0.90	2.64	0.039	3.93	1.14	1.11
PC-1	5941	10-Year	910.00	6393.64	6399.71	11.38	95.80	29.68	0.89	2.75	0.039	4.42	1.44	1.38
PC-1	5941	50-Year	1900.00	6393.64	6402.17	13.57	185.75	43.70	0.87	3.06	0.040	5.50	2.03	1.90
PC-1	5941	100-Year	2500.00	6393.64	6403.29	14.37	237.65	49.45	0.86	3.23	0.041	5.90	2.32	2.10
PC-1	5813	2-Year	360.00	6390.00	6393.49	8.88	43.00	20.25	0.94	2.48	0.039	3.30	0.54	0.71

HEC-RAS Plan: Plan 04 River: Pine Creek Reach: PC-1 (Continued)

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl	Shear Total (lb/sq ft)	Mann Wtd Total	Shear Chan (lb/sq ft)	Shear LOB (lb/sq ft)	Shear ROB (lb/sq ft)
PC-1	5813	5-Year	620.00	6390.00	6394.65	10.09	70.06	26.27	0.90	2.51	0.039	3.78	0.80	1.16
PC-1	5813	10-Year	910.00	6390.00	6395.59	11.20	97.09	30.95	0.89	2.71	0.039	4.34	0.99	1.52
PC-1	5813	50-Year	1900.00	6390.00	6398.65	11.65	211.16	42.25	0.73	2.39	0.041	3.99	1.01	1.84
PC-1	5813	100-Year	2500.00	6390.00	6400.19	13.08	283.67	71.03	0.75	1.97	0.037	4.75	1.18	1.31
PC-1	5698	2-Year	360.00	6388.00	6392.18	6.72	57.66	20.26	0.63	1.32	0.040	1.73	0.53	0.35
PC-1	5698	5-Year	620.00	6388.00	6393.36	8.34	82.99	22.85	0.68	1.72	0.040	2.42	0.84	0.56
PC-1	5698	10-Year	910.00	6388.00	6394.42	9.64	108.52	25.22	0.71	2.03	0.040	3.02	1.11	0.74
PC-1	5698	50-Year	1900.00	6388.00	6396.93	12.96	179.28	31.75	0.80	2.92	0.039	4.84	1.93	1.22
PC-1	5698	100-Year	2500.00	6388.00	6397.96	14.67	213.75	36.44	0.85	3.34	0.038	5.96	2.42	1.37
PC-1	5573	2-Year	360.00	6388.00	6391.49	5.29	69.82	24.15	0.52	0.95	0.042	1.11	0.22	0.18
PC-1	5573	5-Year	620.00	6388.00	6392.79	6.36	103.08	26.94	0.53	1.13	0.041	1.43	0.38	0.30
PC-1	5573	10-Year	910.00	6388.00	6393.96	7.26	136.11	29.53	0.54	1.29	0.040	1.73	0.52	0.41
PC-1	5573	50-Year	1900.00	6388.00	6396.98	8.83	274.66	61.54	0.53	1.11	0.036	2.22	0.62	0.53
PC-1	5573	100-Year	2500.00	6388.00	6398.51	8.91	377.53	72.19	0.49	1.08	0.038	2.14	0.65	0.66
PC-1	5453	2-Year	360.00	6386.00	6389.32	9.19	40.83	17.20	0.96	2.85	0.041	3.53	0.82	0.51
PC-1	5453	5-Year	620.00	6386.00	6390.52	10.67	63.67	20.77	0.94	3.05	0.040	4.22	1.29	0.82
PC-1	5453	10-Year	910.00	6386.00	6391.60	11.84	87.74	24.04	0.92	3.23	0.039	4.81	1.65	1.05
PC-1	5453	50-Year	1900.00	6386.00	6394.31	14.33	164.62	32.58	0.90	3.66	0.040	6.11	2.40	1.50
PC-1	5453	100-Year	2500.00	6386.00	6395.55	15.44	207.43	36.61	0.90	3.89	0.040	6.75	2.74	1.70
PC-1	5370	2-Year	360.00	6384.00	6388.47	5.45	71.70	25.49	0.50	0.82	0.040	1.12	0.29	0.27
PC-1	5370	5-Year	620.00	6384.00	6389.42	7.16	97.74	29.34	0.58	1.24	0.040	1.80	0.56	0.47
PC-1	5370	10-Year	910.00	6384.00	6390.23	8.61	122.96	32.59	0.65	1.63	0.040	2.46	0.85	0.66
PC-1	5370	50-Year	1900.00	6384.00	6391.98	12.53	185.82	39.28	0.82	2.96	0.040	4.76	1.86	1.31
PC-1	5370	100-Year	2500.00	6384.00	6392.77	14.31	217.53	41.68	0.89	3.69	0.041	6.00	2.49	1.66
PC-1	5268	2-Year	360.00	6384.00	6387.82	5.67	69.54	31.73	0.56	0.89	0.039	1.28	0.30	0.24
PC-1	5268	5-Year	620.00	6384.00	6388.40	7.88	89.67	36.18	0.72	1.54	0.039	2.34	0.69	0.49
PC-1	5268	10-Year	910.00	6384.00	6389.00	9.50	112.15	38.87	0.80	2.13	0.040	3.23	1.15	0.73
PC-1	5268	50-Year	1900.00	6384.00	6390.70	12.63	183.94	45.43	0.91	3.35	0.041	5.12	2.32	1.26
PC-1	5268	100-Year	2500.00	6384.00	6391.60	13.68	226.28	48.27	0.92	3.76	0.042	5.74	2.79	1.44
PC-1	5152	2-Year	360.00	6383.82	6385.92	8.24	49.78	34.69	1.03	2.20	0.041	3.10	1.13	0.98
PC-1	5152	5-Year	620.00	6383.82	6386.83	8.58	88.87	46.76	0.89	1.90	0.041	2.96	1.20	0.94
PC-1	5152	10-Year	910.00	6383.82	6387.41	9.66	117.20	49.62	0.91	2.32	0.042	3.53	1.65	1.12
PC-1	5152	50-Year	1900.00	6383.82	6388.89	12.22	194.47	54.23	0.97	3.45	0.044	5.02	2.84	1.55
PC-1	5152	100-Year	2500.00	6383.82	6389.64	13.28	235.58	56.04	0.98	3.93	0.044	5.66	3.37	1.73
PC-1	5007	2-Year	360.00	6378.00	6380.71	5.66	74.97	45.77	0.66	0.98	0.042	1.39	0.70	0.52
PC-1	5007	5-Year	620.00	6378.00	6381.49	6.65	111.48	48.69	0.67	1.27	0.044	1.74	0.89	0.88
PC-1	5007	10-Year	910.00	6378.00	6382.24	7.36	149.42	51.86	0.66	1.45	0.044	1.98	0.99	1.12
PC-1	5007	50-Year	1900.00	6378.00	6384.09	9.35	253.69	61.15	0.69	1.96	0.044	2.81	1.31	1.74
PC-1	5007	100-Year	2500.00	6378.00	6384.96	10.20	308.27	63.94	0.70	2.23	0.045	3.19	1.55	2.00
PC-1	4880	2-Year	360.00	6376.00	6378.71	7.46	56.29	36.74	0.88	1.69	0.041	2.46	0.94	0.55
PC-1	4880	5-Year	620.00	6376.00	6379.40	8.89	82.86	39.38	0.91	2.27	0.043	3.20	1.55	0.81
PC-1	4880	10-Year	910.00	6376.00	6379.97	10.31	105.88	41.54	0.97	2.90	0.043	4.05	2.15	1.08
PC-1	4880	50-Year	1900.00	6376.00	6381.76	12.57	189.06	51.08	0.96	3.58	0.044	5.25	2.90	1.48

HEC-RAS Plan: Plan 04 River: Pine Creek Reach: PC-1 (Continued)

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl	Shear Total (lb/sq ft)	Mann Wtd Total	Shear Chan (lb/sq ft)	Shear LOB (lb/sq ft)	Shear ROB (lb/sq ft)
PC-1	4880	100-Year	2500.00	6376.00	6382.60	13.50	233.42	54.17	0.96	3.93	0.044	5.77	3.31	1.64
PC-1	4726	2-Year	360.00	6364.00	6367.27	9.83	39.55	15.04	1.05	3.86	0.046	4.14		3.46
PC-1	4726	5-Year	620.00	6364.00	6368.49	11.42	58.87	16.71	1.05	4.77	0.046	5.14		4.27
PC-1	4726	10-Year	910.00	6364.00	6369.60	12.64	78.26	18.19	1.05	5.51	0.046	5.96		4.94
PC-1	4726	50-Year	1900.00	6364.00	6372.51	15.24	137.10	22.89	1.06	7.12	0.046	7.84		6.27
PC-1	4726	100-Year	2500.00	6364.00	6374.02	15.96	174.84	26.90	1.03	7.32	0.046	8.27		6.31
PC-1	4581	2-Year	360.00	6362.00	6365.64	5.64	69.84	25.13	0.57	1.10	0.045	1.27	0.97	0.13
PC-1	4581	5-Year	620.00	6362.00	6366.81	7.03	102.56	30.28	0.60	1.34	0.044	1.77	1.10	0.39
PC-1	4581	10-Year	910.00	6362.00	6367.87	7.98	136.69	33.81	0.61	1.52	0.043	2.12	1.25	0.56
PC-1	4581	50-Year	1900.00	6362.00	6370.60	10.02	241.95	43.10	0.62	1.89	0.043	2.91	1.59	0.88
PC-1	4581	100-Year	2500.00	6362.00	6371.46	11.51	280.50	45.60	0.68	2.37	0.043	3.71	2.04	1.13
PC-1	4452	2-Year	360.00	6360.00	6363.44	8.89	43.93	20.34	0.93	2.44	0.040	3.27	0.84	0.93
PC-1	4452	5-Year	620.00	6360.00	6364.54	10.34	68.50	24.02	0.92	2.78	0.041	3.97	1.37	1.35
PC-1	4452	10-Year	910.00	6360.00	6365.49	11.60	92.28	26.31	0.92	3.19	0.041	4.65	1.85	1.70
PC-1	4452	50-Year	1900.00	6360.00	6367.92	14.42	172.28	40.74	0.94	3.52	0.040	6.29	2.16	2.33
PC-1	4452	100-Year	2500.00	6360.00	6369.35	14.48	240.10	52.36	0.86	3.07	0.040	5.97	2.03	2.22
PC-1	4283	2-Year	360.00	6354.00	6356.63	4.67	88.46	48.09	0.54	0.71	0.043	0.94	0.41	0.51
PC-1	4283	5-Year	620.00	6354.00	6357.92	4.71	152.59	50.81	0.43	0.64	0.044	0.83	0.47	0.37
PC-1	4283	10-Year	910.00	6354.00	6358.98	5.12	206.89	52.21	0.42	0.70	0.044	0.90	0.56	0.35
PC-1	4283	50-Year	1900.00	6354.00	6361.67	6.37	352.56	55.99	0.41	0.90	0.044	1.19	0.78	0.38
PC-1	4283	100-Year	2500.00	6354.00	6362.96	7.01	431.77	64.53	0.42	0.93	0.042	1.37	0.89	0.32
PC-1	4168	2-Year	360.00	6350.00	6354.09	10.19	39.32	14.55	0.94	2.82	0.039	4.03	0.75	1.41
PC-1	4168	5-Year	620.00	6350.00	6355.69	11.07	69.54	24.37	0.86	2.25	0.037	4.22	0.86	1.64
PC-1	4168	10-Year	910.00	6350.00	6356.91	11.61	106.01	32.25	0.81	2.17	0.039	4.32	1.19	1.73
PC-1	4168	50-Year	1900.00	6350.00	6359.11	14.68	182.79	37.81	0.88	3.39	0.042	6.26	2.53	2.52
PC-1	4168	100-Year	2500.00	6350.00	6360.15	15.99	223.67	40.82	0.91	3.90	0.043	7.15	3.09	2.87
PC-1	3973	2-Year	520.00	6339.57	6342.43	8.00	73.67	34.54	0.88	2.14	0.044	2.68	1.77	1.18
PC-1	3973	5-Year	900.00	6339.57	6343.39	9.62	107.86	36.45	0.90	2.75	0.044	3.48	2.22	1.76
PC-1	3973	10-Year	1300.00	6339.57	6344.18	11.08	136.97	38.07	0.94	3.36	0.044	4.32	2.67	2.26
PC-1	3973	50-Year	2700.00	6339.57	6346.23	14.81	220.12	42.74	1.03	4.98	0.044	6.78	3.90	3.49
PC-1	3973	100-Year	3500.00	6339.57	6347.35	15.99	269.57	45.77	1.03	5.30	0.044	7.49	4.16	3.71
PC-1	3789	2-Year	520.00	6338.00	6341.05	5.46	111.35	42.80	0.55	0.97	0.046	1.18	0.78	0.86
PC-1	3789	5-Year	900.00	6338.00	6341.98	7.03	152.49	45.80	0.62	1.43	0.046	1.79	1.17	1.25
PC-1	3789	10-Year	1300.00	6338.00	6342.76	8.27	188.96	47.48	0.67	1.84	0.046	2.33	1.54	1.58
PC-1	3789	50-Year	2700.00	6338.00	6344.82	11.42	291.35	51.81	0.77	2.99	0.046	3.93	2.57	2.49
PC-1	3789	100-Year	3500.00	6338.00	6345.75	12.81	340.32	53.71	0.81	3.54	0.046	4.75	3.06	2.92
PC-1	3623	2-Year	520.00	6336.00	6338.68	8.00	68.90	40.39	0.96	2.18	0.040	2.84	0.46	1.22
PC-1	3623	5-Year	900.00	6336.00	6339.62	9.06	112.41	50.06	0.91	2.26	0.040	3.23	0.98	1.26
PC-1	3623	10-Year	1300.00	6336.00	6340.31	10.16	147.67	52.07	0.92	2.72	0.042	3.80	1.52	1.40
PC-1	3623	50-Year	2700.00	6336.00	6342.11	12.97	244.01	55.24	0.97	4.00	0.043	5.45	2.89	1.79
PC-1	3623	100-Year	3500.00	6336.00	6342.96	14.14	291.63	56.66	0.98	4.53	0.043	6.18	3.45	1.94
PC-1	3490	2-Year	520.00	6324.82	6329.27	9.69	56.86	21.65	0.95	2.98	0.041	3.73	1.15	0.56

HEC-RAS Plan: Plan 04 River: Pine Creek Reach: PC-1 (Continued)

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl	Shear Total (lb/sq ft)	Mann Wtd Total	Shear Chan (lb/sq ft)	Shear LOB (lb/sq ft)	Shear ROB (lb/sq ft)
PC-1	3490	5-Year	900.00	6324.82	6330.58	11.36	88.06	25.89	0.94	3.32	0.040	4.58	1.63	1.00
PC-1	3490	10-Year	1300.00	6324.82	6331.73	12.51	120.10	29.85	0.92	3.50	0.040	5.16	1.95	1.28
PC-1	3490	50-Year	2700.00	6324.82	6334.64	15.14	221.01	38.36	0.91	4.14	0.041	6.58	2.90	1.88
PC-1	3490	100-Year	3500.00	6324.82	6335.82	16.47	267.82	40.73	0.93	4.64	0.041	7.46	3.46	2.18
PC-1	3425	2-Year	520.00	6322.00	6326.72	5.02	114.32	37.20	0.46	0.75	0.043	0.95	0.28	0.47
PC-1	3425	5-Year	900.00	6322.00	6328.30	5.79	174.91	39.80	0.45	0.86	0.043	1.12	0.33	0.61
PC-1	3425	10-Year	1300.00	6322.00	6329.69	6.41	231.65	41.87	0.44	0.95	0.042	1.27	0.37	0.70
PC-1	3425	50-Year	2700.00	6322.00	6333.54	7.97	402.56	46.83	0.43	1.16	0.042	1.68	0.47	0.91
PC-1	3425	100-Year	3500.00	6322.00	6335.35	8.65	489.82	49.61	0.44	1.25	0.041	1.88	0.52	0.99
PC-1	3345	2-Year	520.00	6322.00	6326.66	3.14	171.56	43.61	0.27	0.40	0.049	0.44	0.16	0.01
PC-1	3345	5-Year	900.00	6322.00	6328.27	3.90	243.21	45.49	0.29	0.52	0.048	0.61	0.22	0.05
PC-1	3345	10-Year	1300.00	6322.00	6329.68	4.50	308.59	47.08	0.30	0.62	0.047	0.75	0.27	0.08
PC-1	3345	50-Year	2700.00	6322.00	6333.58	5.98	500.79	51.56	0.32	0.85	0.045	1.15	0.40	0.16
PC-1	3345	100-Year	3500.00	6322.00	6335.40	6.62	596.76	53.56	0.33	0.95	0.045	1.34	0.46	0.20
PC-1	3259	2-Year	520.00	6322.00	6326.31	5.14	170.65	47.14	0.44	0.73	0.065	0.93	0.65	0.65
PC-1	3259	5-Year	900.00	6322.00	6327.86	6.37	245.83	50.07	0.46	0.98	0.065	1.29	0.90	0.81
PC-1	3259	10-Year	1300.00	6322.00	6329.22	7.33	315.56	52.46	0.48	1.18	0.066	1.59	1.10	0.93
PC-1	3259	50-Year	2700.00	6322.00	6332.97	9.71	524.55	59.53	0.52	1.66	0.066	2.43	1.59	1.21
PC-1	3259	100-Year	3500.00	6322.00	6334.71	10.76	631.73	64.09	0.53	1.85	0.066	2.84	1.77	1.32
PC-1	3189	2-Year	520.00	6322.00	6326.02	4.60	117.16	31.02	0.41	0.69	0.043	0.79	0.23	0.03
PC-1	3189	5-Year	900.00	6322.00	6327.50	5.78	164.13	32.22	0.44	0.91	0.042	1.11	0.32	0.08
PC-1	3189	10-Year	1300.00	6322.00	6328.80	6.72	206.65	33.39	0.46	1.09	0.041	1.40	0.40	0.12
PC-1	3189	50-Year	2700.00	6322.00	6332.35	9.05	337.28	42.58	0.50	1.39	0.037	2.21	0.60	0.26
PC-1	3189	100-Year	3500.00	6322.00	6334.01	10.00	410.24	44.97	0.51	1.57	0.038	2.57	0.69	0.45
PC-1	3124	2-Year	520.00	6321.67	6324.53	9.25	63.59	27.32	1.01	3.00	0.045	3.57	1.08	2.03
PC-1	3124	5-Year	900.00	6321.67	6325.66	11.04	95.82	29.82	1.01	3.57	0.045	4.51	1.57	2.30
PC-1	3124	10-Year	1300.00	6321.67	6326.68	12.38	127.50	31.99	1.00	3.95	0.045	5.23	1.94	2.48
PC-1	3124	50-Year	2700.00	6321.67	6329.54	15.58	227.99	38.40	0.99	4.80	0.046	7.09	2.81	2.87
PC-1	3124	100-Year	3500.00	6321.67	6330.92	16.85	283.92	42.64	0.99	5.02	0.046	7.84	3.11	2.91
PC-1	3036	2-Year	520.00	6320.00	6323.74	4.34	156.04	46.64	0.40	0.60	0.053	0.70	0.59	0.24
PC-1	3036	5-Year	900.00	6320.00	6325.00	5.53	216.68	49.51	0.44	0.85	0.053	1.03	0.84	0.36
PC-1	3036	10-Year	1300.00	6320.00	6326.11	6.46	272.98	51.95	0.46	1.05	0.053	1.31	1.04	0.46
PC-1	3036	50-Year	2700.00	6320.00	6329.22	8.62	444.35	58.34	0.50	1.52	0.053	2.04	1.51	0.73
PC-1	3036	100-Year	3500.00	6320.00	6330.70	9.49	533.41	61.35	0.51	1.70	0.053	2.35	1.70	0.84
PC-1	2915	2-Year	520.00	6320.00	6322.05	8.94	71.23	36.66	1.10	3.24	0.051	3.60	2.65	2.95
PC-1	2915	5-Year	900.00	6320.00	6322.94	10.76	104.27	37.97	1.11	4.04	0.051	4.63	3.14	3.62
PC-1	2915	10-Year	1300.00	6320.00	6323.74	12.19	135.03	39.11	1.11	4.64	0.051	5.48	3.49	4.11
PC-1	2915	50-Year	2700.00	6320.00	6326.05	15.50	229.66	42.57	1.11	5.91	0.050	7.55	4.14	5.10
PC-1	2915	100-Year	3500.00	6320.00	6327.18	16.86	278.48	44.22	1.11	6.39	0.050	8.44	4.40	5.47
PC-1	2437	2-Year	520.00	6310.00	6314.53	4.13	164.97	51.88	0.35	0.43	0.047	0.60	0.20	0.32
PC-1	2437	5-Year	900.00	6310.00	6315.84	5.14	235.67	55.69	0.38	0.61	0.049	0.85	0.30	0.51
PC-1	2437	10-Year	1300.00	6310.00	6316.99	5.92	301.60	59.52	0.40	0.76	0.049	1.06	0.37	0.66
PC-1	2437	50-Year	2700.00	6310.00	6320.09	7.85	503.41	71.52	0.44	1.10	0.050	1.65	0.64	0.98

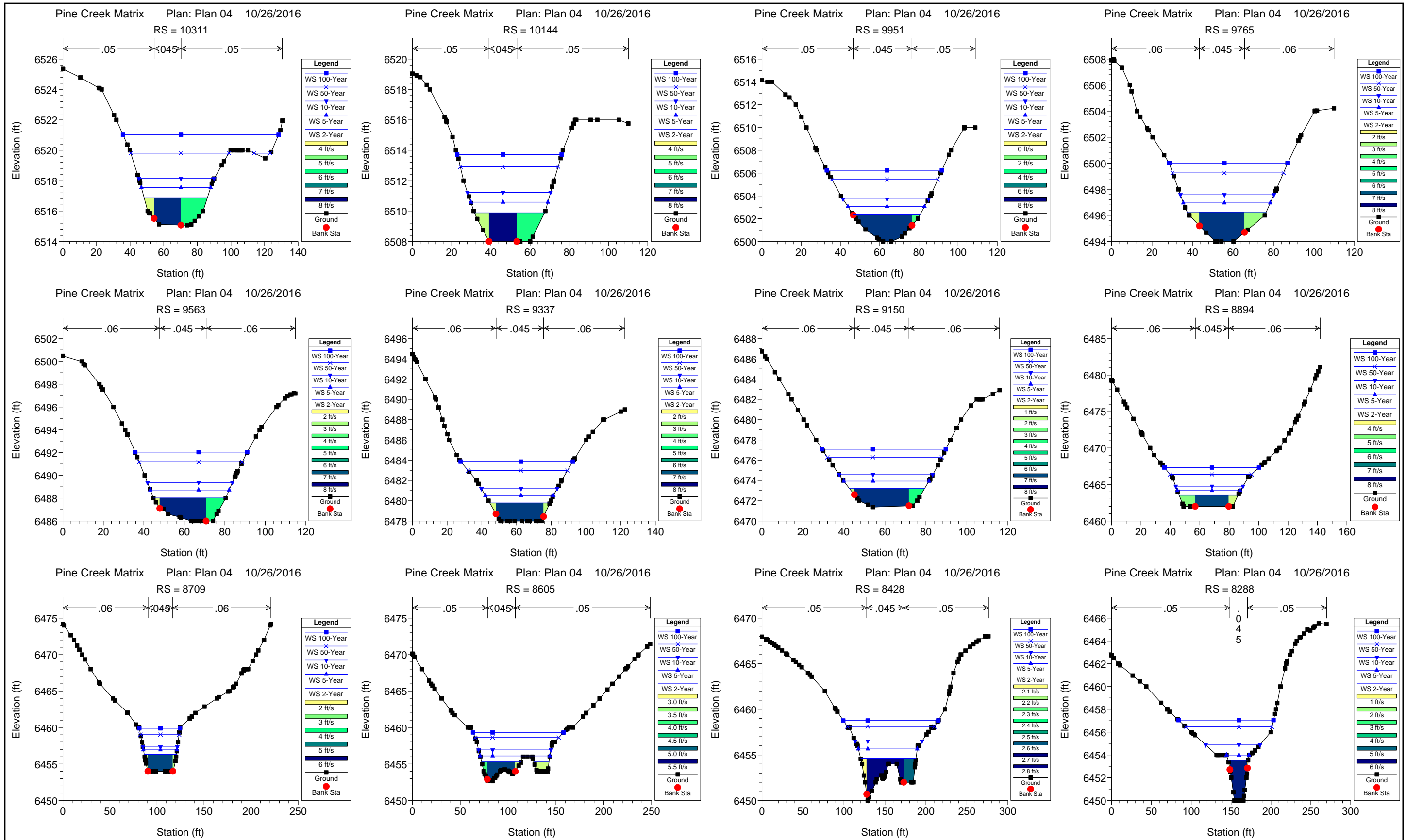
HEC-RAS Plan: Plan 04 River: Pine Creek Reach: PC-1 (Continued)

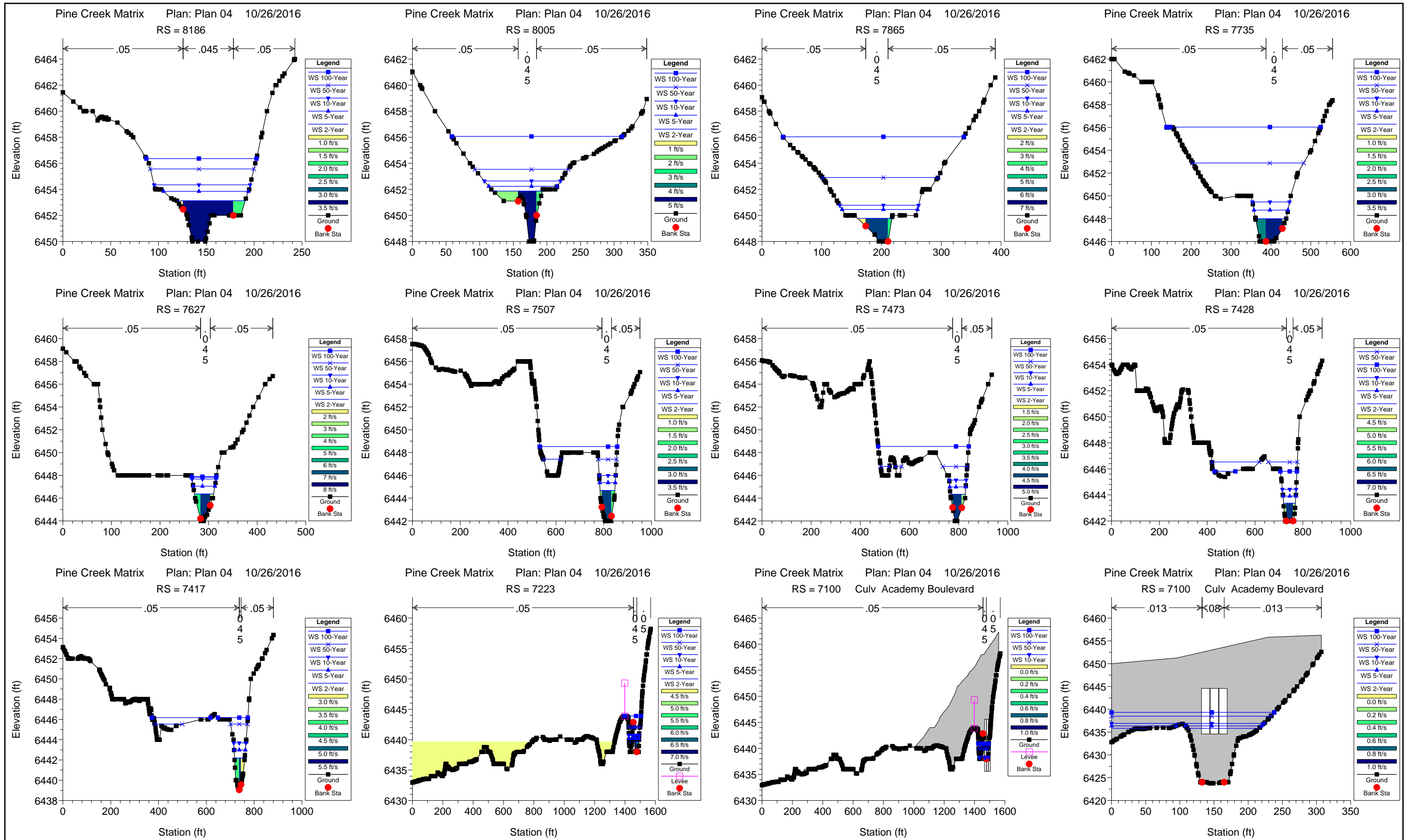
Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl	Shear Total (lb/sq ft)	Mann Wtd Total	Shear Chan (lb/sq ft)	Shear LOB (lb/sq ft)	Shear ROB (lb/sq ft)
PC-1	2437	100-Year	3500.00	6310.00	6321.51	8.70	611.09	79.31	0.45	1.23	0.051	1.93	0.80	1.06
PC-1	2289	2-Year	520.00	6310.00	6313.80	5.72	123.18	42.10	0.57	1.21	0.058	1.29	0.10	1.19
PC-1	2289	5-Year	900.00	6310.00	6314.91	7.33	172.27	46.70	0.63	1.66	0.057	1.92	0.39	1.62
PC-1	2289	10-Year	1300.00	6310.00	6315.88	8.55	219.80	50.52	0.66	2.00	0.057	2.44	0.62	1.95
PC-1	2289	50-Year	2700.00	6310.00	6318.53	11.46	365.88	60.00	0.72	2.86	0.058	3.82	1.30	2.72
PC-1	2289	100-Year	3500.00	6310.00	6319.76	12.65	442.25	64.34	0.74	3.22	0.058	4.43	1.58	3.04
PC-1	2263		Bridge											
PC-1	2153	2-Year	520.00	6308.00	6310.88	8.47	62.59	30.29	0.98	1.24	0.028	1.39	0.24	0.22
PC-1	2153	5-Year	900.00	6308.00	6311.89	9.96	95.66	34.92	0.96	1.39	0.028	1.71	0.44	0.44
PC-1	2153	10-Year	1300.00	6308.00	6312.79	11.06	128.75	39.11	0.95	1.49	0.028	1.94	0.55	0.61
PC-1	2153	50-Year	2700.00	6308.00	6315.18	13.62	235.02	49.55	0.93	1.76	0.028	2.54	0.92	0.94
PC-1	2153	100-Year	3500.00	6308.00	6316.27	14.63	291.81	53.64	0.93	1.89	0.028	2.78	1.08	1.07
PC-1	1995	2-Year	520.00	6302.02	6304.80	7.92	79.87	50.23	0.93	0.87	0.029	1.22	0.46	0.58
PC-1	1995	5-Year	900.00	6302.02	6305.60	9.23	125.15	60.75	0.93	1.01	0.030	1.50	0.56	0.83
PC-1	1995	10-Year	1300.00	6302.02	6306.24	10.28	166.13	65.61	0.94	1.19	0.031	1.75	0.74	1.02
PC-1	1995	50-Year	2700.00	6302.02	6307.88	13.02	280.62	73.65	0.99	1.74	0.032	2.47	1.28	1.51
PC-1	1995	100-Year	3500.00	6302.02	6308.66	14.10	339.11	77.02	1.01	1.96	0.033	2.77	1.49	1.72
PC-1	1719	2-Year	520.00	6300.00	6302.61	5.11	123.59	60.80	0.56	0.39	0.031	0.49	0.33	0.22
PC-1	1719	5-Year	900.00	6300.00	6303.41	6.40	173.49	64.51	0.62	0.56	0.032	0.70	0.48	0.36
PC-1	1719	10-Year	1300.00	6300.00	6304.09	7.43	218.67	67.49	0.65	0.70	0.032	0.88	0.61	0.48
PC-1	1719	50-Year	2700.00	6300.00	6305.98	9.81	351.88	73.64	0.71	1.06	0.033	1.35	0.94	0.78
PC-1	1719	100-Year	3500.00	6300.00	6306.88	10.77	419.00	76.04	0.73	1.22	0.033	1.56	1.08	0.90
PC-1	1583	2-Year	520.00	6300.00	6302.56	2.74	199.71	85.29	0.30	0.13	0.030	0.14	0.01	0.07
PC-1	1583	5-Year	900.00	6300.00	6303.40	3.52	272.63	87.45	0.34	0.19	0.030	0.21	0.03	0.11
PC-1	1583	10-Year	1300.00	6300.00	6304.13	4.16	337.38	89.38	0.36	0.25	0.030	0.28	0.04	0.15
PC-1	1583	50-Year	2700.00	6300.00	6306.16	5.72	524.33	94.91	0.41	0.40	0.030	0.46	0.09	0.25
PC-1	1583	100-Year	3500.00	6300.00	6307.12	6.39	616.68	97.69	0.42	0.47	0.030	0.54	0.11	0.30
PC-1	1463		Bridge											
PC-1	1286	2-Year	520.00	6286.87	6289.06	7.12	75.88	50.68	1.01	1.07	0.030	1.12		0.58
PC-1	1286	5-Year	900.00	6286.87	6289.75	8.44	111.86	53.14	1.01	1.34	0.030	1.40		0.79
PC-1	1286	10-Year	1300.00	6286.87	6290.36	9.47	145.17	55.09	1.00	1.53	0.030	1.63	0.10	0.93
PC-1	1286	50-Year	2700.00	6286.87	6292.08	12.05	244.45	60.39	1.00	1.97	0.030	2.25	0.49	1.19
PC-1	1286	100-Year	3500.00	6286.87	6292.92	13.10	296.31	63.00	1.00	2.14	0.030	2.51	0.63	1.29
PC-1	997	2-Year	520.00	6280.00	6282.94	7.28	104.29	49.26	0.78	0.75	0.037	0.97	0.76	0.42
PC-1	997	5-Year	900.00	6280.00	6283.89	9.05	153.62	55.01	0.83	1.02	0.038	1.35	0.99	0.65
PC-1	997	10-Year	1300.00	6280.00	6284.65	10.53	196.97	57.90	0.88	1.29	0.040	1.72	1.21	0.91
PC-1	997	50-Year	2700.00	6280.00	6286.77	14.03	326.87	64.73	0.97	1.99	0.042	2.68	1.74	1.59
PC-1	997	100-Year	3500.00	6280.00	6287.79	15.41	395.01	67.91	0.99	2.26	0.042	3.08	1.95	1.86
PC-1	492	2-Year	520.00	6276.00	6278.93	7.87	68.68	36.75	0.96	1.10	0.029	1.24	0.37	0.25
PC-1	492	5-Year	900.00	6276.00	6279.77	9.60	101.21	40.46	0.99	1.39	0.029	1.65	0.59	0.45
PC-1	492	10-Year	1300.00	6276.00	6280.57	10.79	134.46	42.91	0.99	1.58	0.029	1.92	0.80	0.61

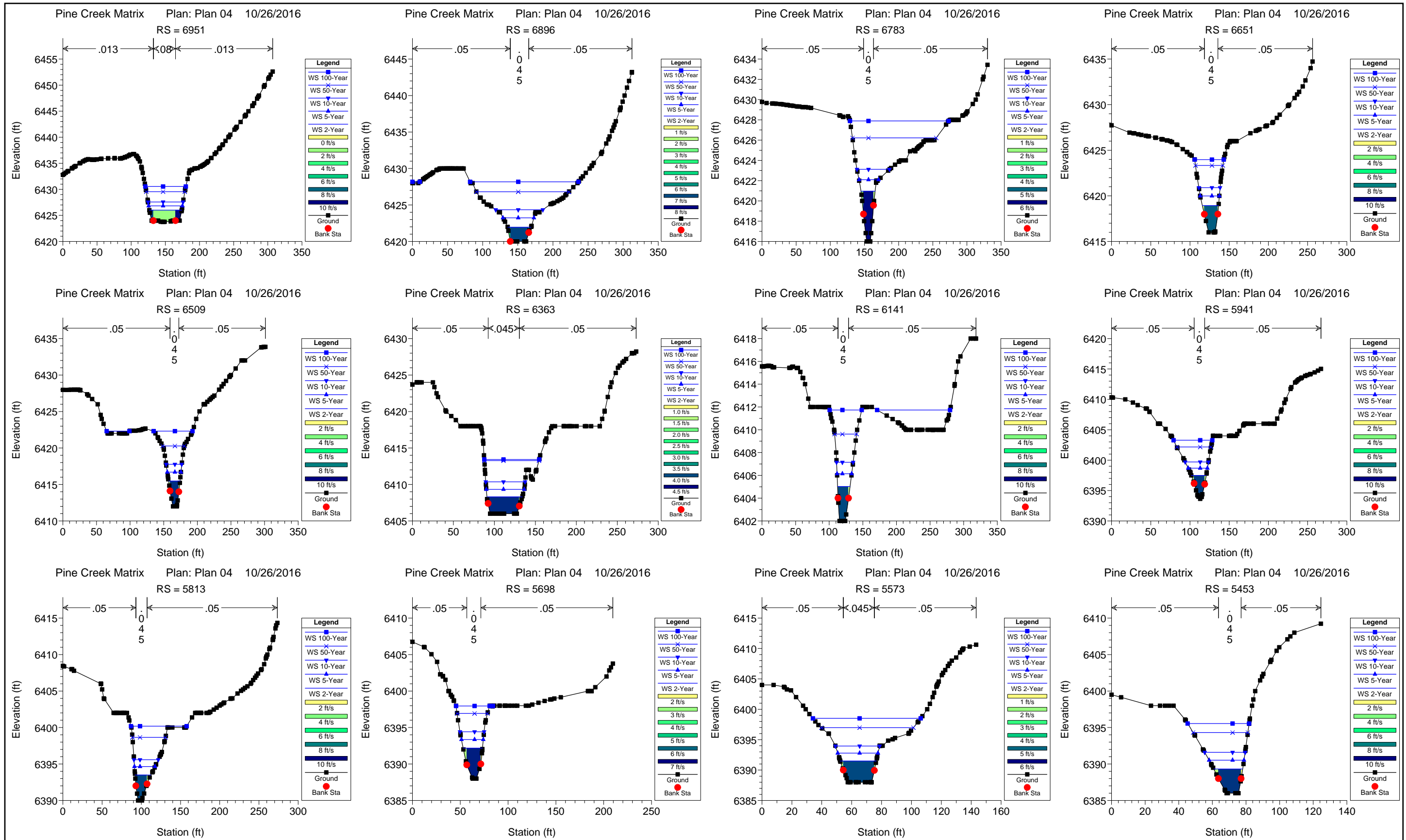
HEC-RAS Plan: Plan 04 River: Pine Creek Reach: PC-1 (Continued)

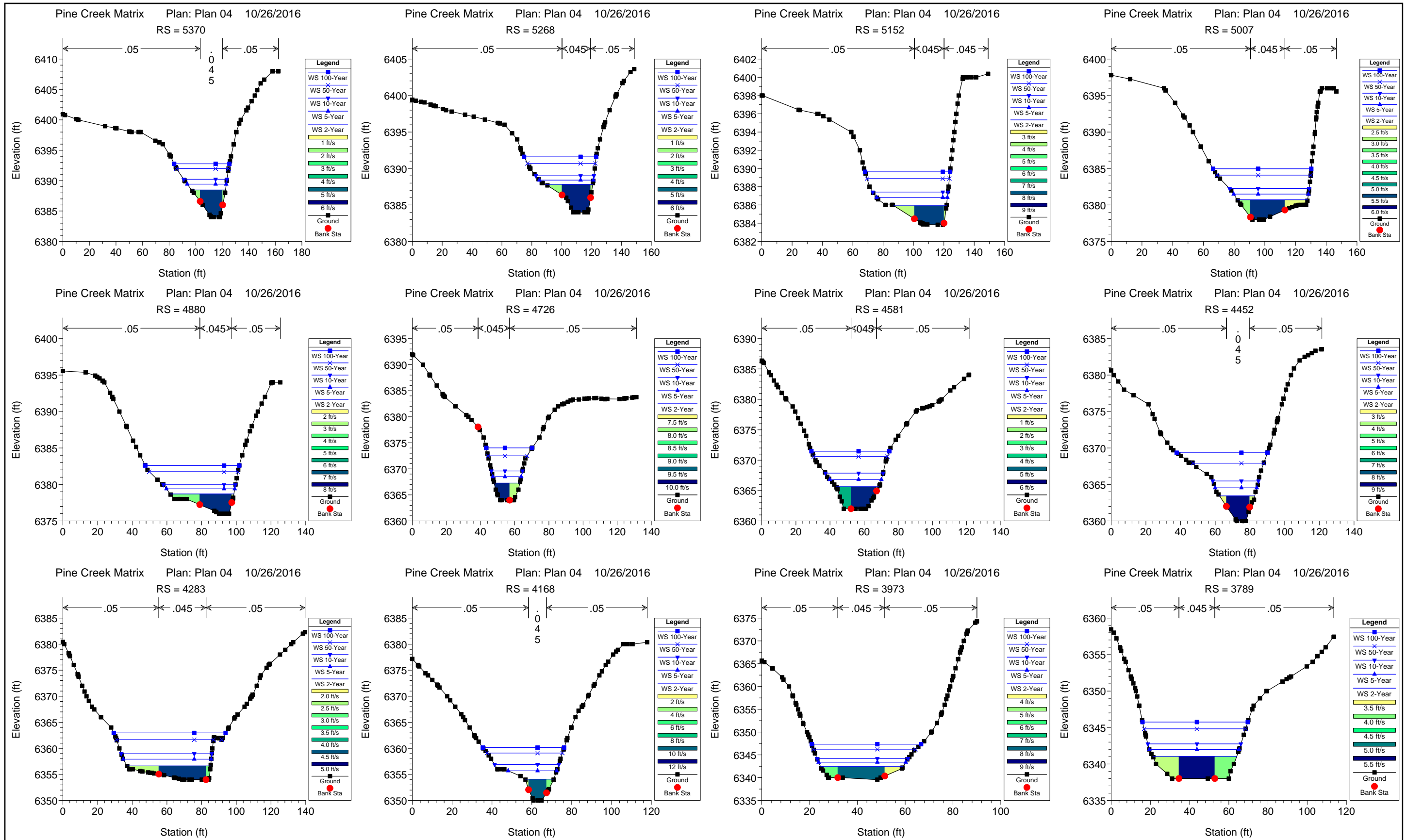
Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl	Shear Total (lb/sq ft)	Mann Wtd Total	Shear Chan (lb/sq ft)	Shear LOB (lb/sq ft)	Shear ROB (lb/sq ft)
PC-1	492	50-Year	2700.00	6276.00	6282.80	13.66	236.60	48.63	0.99	2.04	0.030	2.64	1.24	0.97
PC-1	492	100-Year	3500.00	6276.00	6283.86	14.88	289.45	51.35	0.99	2.24	0.031	2.96	1.38	1.14
PC-1	158	2-Year	520.00	6274.00	6276.34	7.01	79.13	40.77	0.83	0.83	0.029	0.96	0.23	0.33
PC-1	158	5-Year	900.00	6274.00	6277.18	8.69	114.47	43.20	0.88	1.11	0.030	1.33	0.35	0.57
PC-1	158	10-Year	1300.00	6274.00	6277.91	10.02	146.96	45.21	0.91	1.35	0.030	1.64	0.44	0.76
PC-1	158	50-Year	2700.00	6274.00	6279.92	13.32	244.43	51.64	0.97	1.93	0.030	2.52	0.69	1.18
PC-1	158	100-Year	3500.00	6274.00	6280.89	14.74	297.09	59.10	1.00	2.04	0.029	2.93	0.81	1.15

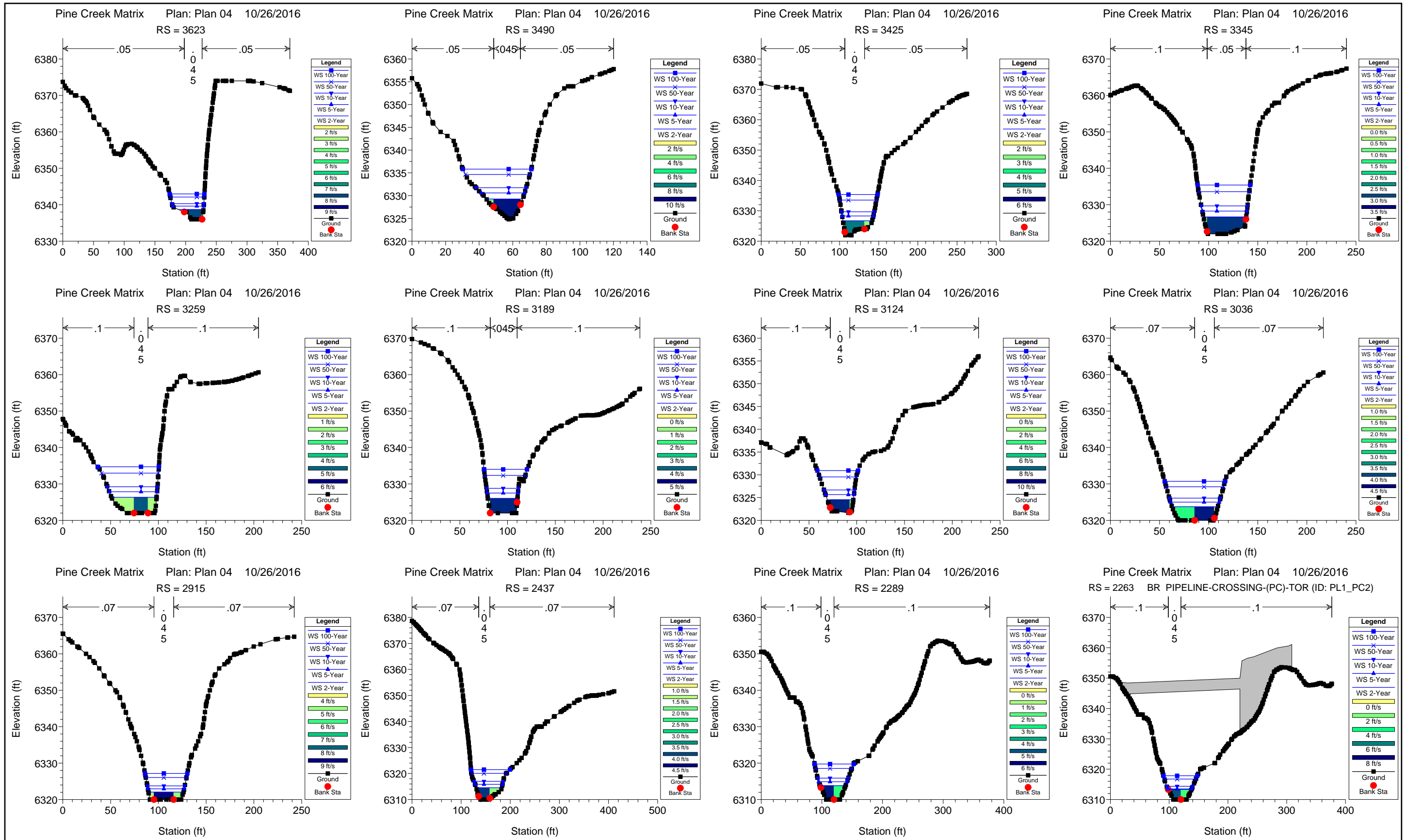
Pine Creek Cross Section Diagrams

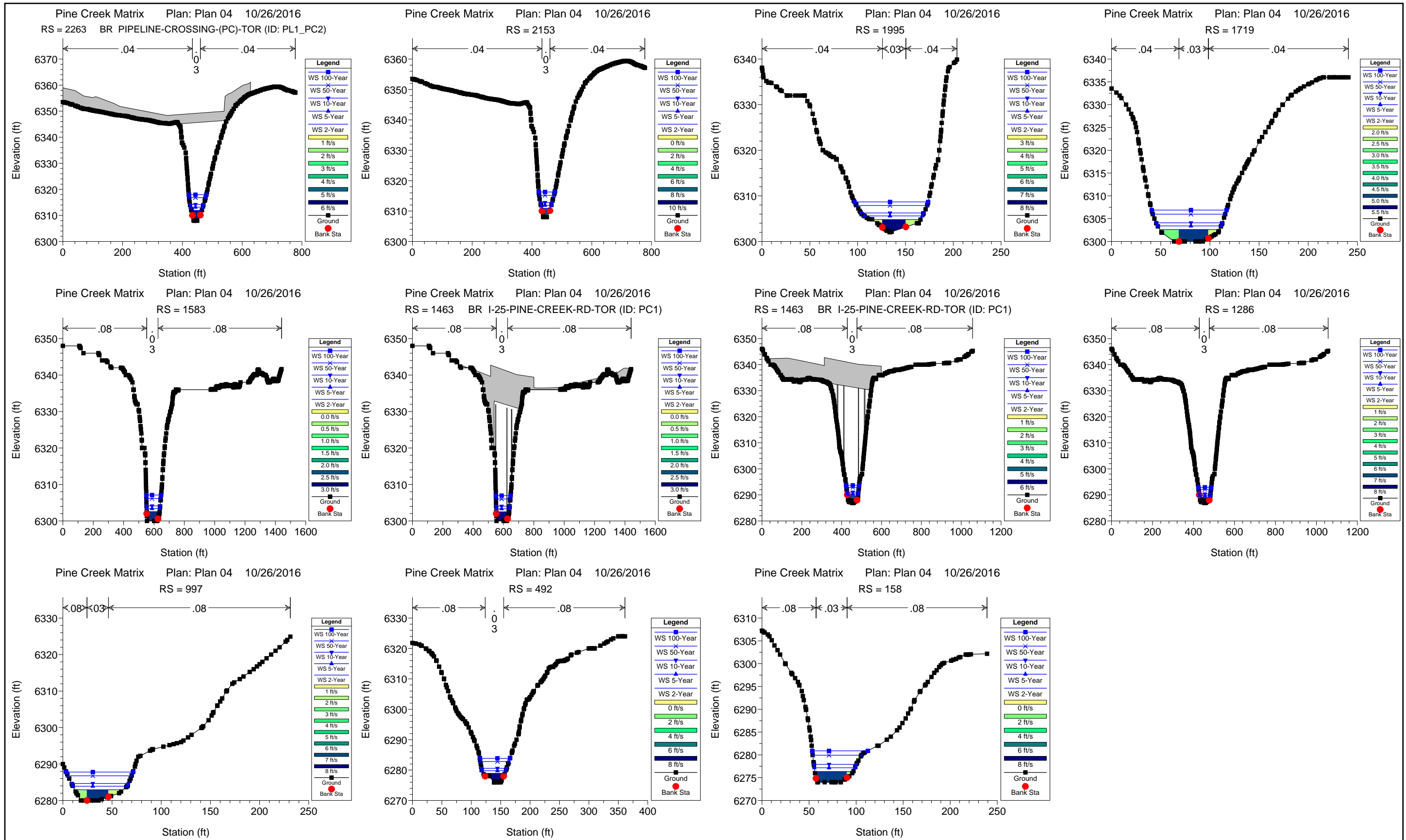












Smith Creek Hydraulic Results

HEC-RAS Plan: Plan 04 River: Smith Creek Reach: SC R1

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl	Shear Total (lb/sq ft)	Mann Wtd Total	Shear Chan (lb/sq ft)	Shear LOB (lb/sq ft)	Shear ROB (lb/sq ft)
SC R1	6044	2yr	64.00	6712.00	6712.89	1.90	33.73	57.62	0.43	0.30	0.050	0.30		0.01
SC R1	6044	5yr	160.00	6712.00	6713.28	2.77	64.78	97.80	0.50	0.37	0.043	0.55	0.13	0.10
SC R1	6044	10yr	280.00	6712.00	6713.60	3.46	102.42	139.90	0.54	0.44	0.043	0.78	0.22	0.17
SC R1	6044	50yr	720.00	6712.00	6714.30	4.96	239.42	255.80	0.62	0.65	0.050	1.38	0.54	0.35
SC R1	6044	100yr	990.00	6712.00	6714.57	5.55	311.34	276.61	0.65	0.83	0.055	1.66	0.76	0.50
SC R1	5593	2yr	64.00	6704.00	6704.18	2.86	32.95	192.83	1.20	0.99	0.072	1.03	0.94	0.99
SC R1	5593	5yr	160.00	6704.00	6704.32	3.88	62.06	204.40	1.20	1.45	0.072	1.55	1.34	1.45
SC R1	5593	10yr	280.00	6704.00	6704.47	4.69	91.86	217.63	1.21	1.81	0.072	2.00	1.62	1.84
SC R1	5593	50yr	720.00	6704.00	6704.86	6.28	189.13	265.83	1.19	2.41	0.072	2.93	2.12	2.34
SC R1	5593	100yr	990.00	6704.00	6705.05	6.85	239.85	273.46	1.18	2.72	0.074	3.26	2.46	2.62
SC R1	5163	2yr	64.00	6692.00	6692.41	1.86	43.20	111.04	0.51	0.31	0.060	0.33	0.28	0.27
SC R1	5163	5yr	160.00	6692.00	6692.71	2.68	77.02	120.38	0.56	0.52	0.060	0.57	0.46	0.44
SC R1	5163	10yr	280.00	6692.00	6692.98	3.33	112.23	132.43	0.59	0.68	0.060	0.79	0.57	0.57
SC R1	5163	50yr	720.00	6692.00	6693.65	4.92	208.90	160.36	0.68	1.15	0.061	1.45	0.95	0.90
SC R1	5163	100yr	990.00	6692.00	6694.02	5.40	273.67	216.93	0.67	1.01	0.054	1.63	0.69	0.94
SC R1	4992	2yr	64.00	6688.00	6688.54	4.09	17.56	39.56	0.99	1.24	0.050	1.46	0.75	0.30
SC R1	4992	5yr	160.00	6688.00	6688.97	5.37	37.02	52.14	0.97	1.55	0.051	2.07	1.00	0.70
SC R1	4992	10yr	280.00	6688.00	6689.36	6.30	59.80	63.80	0.96	1.78	0.053	2.55	1.23	0.98
SC R1	4992	50yr	720.00	6688.00	6690.48	7.54	177.88	165.17	0.85	1.30	0.054	2.98	1.12	0.77
SC R1	4992	100yr	990.00	6688.00	6690.77	8.58	230.67	192.13	0.91	1.60	0.057	3.71	1.37	1.10
SC R1	4930	2yr	64.00	6686.00	6687.03	2.60	36.77	41.58	0.45	0.41	0.068	0.48	0.41	0.33
SC R1	4930	5yr	160.00	6686.00	6687.68	3.82	66.23	48.83	0.52	0.70	0.068	0.87	0.70	0.55
SC R1	4930	10yr	280.00	6686.00	6688.29	4.92	102.88	78.17	0.57	0.74	0.062	1.30	0.64	0.57
SC R1	4930	50yr	720.00	6686.00	6689.02	8.73	174.43	121.06	0.89	1.76	0.064	3.73	1.40	1.58
SC R1	4930	100yr	990.00	6686.00	6689.43	9.79	231.23	151.52	0.93	1.97	0.066	4.49	1.57	1.85
SC R1	4783	2yr	64.00	6684.00	6684.60	4.36	15.49	28.88	1.00	1.45	0.049	1.60	0.46	0.79
SC R1	4783	5yr	160.00	6684.00	6685.09	5.81	30.76	33.65	0.99	1.96	0.050	2.33	0.90	1.15
SC R1	4783	10yr	280.00	6684.00	6685.56	6.92	47.98	41.34	0.98	2.18	0.049	2.93	0.89	1.43
SC R1	4783	50yr	720.00	6684.00	6686.79	6.80	245.58	251.11	0.72	0.81	0.058	2.32	0.65	0.71
SC R1	4783	100yr	990.00	6684.00	6687.05	7.59	311.67	263.48	0.77	1.09	0.064	2.81	0.94	0.80
SC R1	4658	2yr	64.00	6678.00	6678.96	5.56	13.37	16.03	1.00	1.89	0.052	2.22	1.36	1.01
SC R1	4658	5yr	160.00	6678.00	6679.72	7.44	26.83	19.26	1.00	2.55	0.053	3.26	1.81	1.48
SC R1	4658	10yr	280.00	6678.00	6680.45	8.86	42.34	23.78	1.00	2.87	0.053	4.12	1.86	1.86
SC R1	4658	50yr	720.00	6678.00	6682.89	8.41	221.42	163.41	0.67	0.81	0.055	2.95	0.61	1.09
SC R1	4658	100yr	990.00	6678.00	6683.28	9.40	288.91	180.13	0.72	1.08	0.062	3.59	0.87	1.29
SC R1	4504	2yr	64.00	6674.00	6676.22	2.02	37.87	25.03	0.25	0.32	0.067	0.44	0.19	0.17
SC R1	4504	5yr	160.00	6674.00	6677.27	3.06	66.00	28.64	0.31	0.64	0.071	0.89	0.41	0.43
SC R1	4504	10yr	280.00	6674.00	6678.16	3.94	93.15	32.15	0.35	0.94	0.072	1.36	0.62	0.69
SC R1	4504	50yr	720.00	6674.00	6680.31	6.39	212.80	170.85	0.45	0.62	0.045	3.09	0.28	1.06
SC R1	4504	100yr	990.00	6674.00	6680.61	7.72	265.19	184.39	0.53	0.98	0.053	4.44	0.55	1.44
SC R1	4380	2yr	64.00	6674.00	6674.72	4.77	13.81	20.71	0.99	3.26	0.068	3.53	1.29	1.03
SC R1	4380	5yr	160.00	6674.00	6675.31	6.35	26.81	23.17	0.98	4.44	0.068	5.12	2.09	1.84
SC R1	4380	10yr	280.00	6674.00	6675.88	7.55	40.74	25.55	0.97	5.28	0.068	6.40	2.71	2.47

HEC-RAS Plan: Plan 04 River: Smith Creek Reach: SC R1 (Continued)

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl	Shear Total (lb/sq ft)	Mann Wtd Total	Shear Chan (lb/sq ft)	Shear LOB (lb/sq ft)	Shear ROB (lb/sq ft)
SC R1	4380	50yr	720.00	6674.00	6677.43	9.86	89.39	37.64	0.94	6.01	0.066	8.95	3.99	2.91
SC R1	4380	100yr	990.00	6674.00	6678.85	7.90	238.74	177.93	0.63	1.41	0.057	5.12	0.89	1.36
SC R1	4151	2yr	64.00	6668.00	6669.42	1.24	60.81	57.03	0.19	0.15	0.069	0.19	0.08	0.10
SC R1	4151	5yr	160.00	6668.00	6670.38	1.62	147.26	133.90	0.19	0.13	0.063	0.27	0.07	0.13
SC R1	4151	10yr	280.00	6668.00	6671.32	1.59	281.50	153.56	0.15	0.13	0.075	0.23	0.10	0.10
SC R1	4151	50yr	720.00	6668.00	6674.07	1.50	812.70	223.70	0.11	0.10	0.084	0.17	0.09	0.08
SC R1	4151	100yr	990.00	6668.00	6675.48	1.47	1141.98	243.41	0.09	0.10	0.087	0.15	0.09	0.07
SC R1	4104	2yr	64.00	6668.00	6669.08	3.25	25.80	26.37	0.55	1.28	0.085	1.43	1.24	1.16
SC R1	4104	5yr	160.00	6668.00	6670.03	4.15	52.76	30.11	0.51	1.58	0.085	1.89	1.56	1.34
SC R1	4104	10yr	280.00	6668.00	6670.97	4.77	82.30	32.33	0.49	1.79	0.086	2.19	1.74	1.52
SC R1	4104	50yr	720.00	6668.00	6673.66	6.04	177.61	38.18	0.45	2.12	0.086	2.84	2.02	1.83
SC R1	4104	100yr	990.00	6668.00	6675.03	6.55	231.96	62.53	0.44	2.22	0.086	3.10	2.07	1.94
SC R1	4000		Culvert											
SC R1	3976	2yr	64.00	6662.00	6662.82	5.04	12.98	17.58	1.00	3.49	0.068	3.81	0.87	1.11
SC R1	3976	5yr	160.00	6662.00	6663.49	6.68	25.61	20.36	0.97	4.58	0.067	5.46	1.80	1.89
SC R1	3976	10yr	280.00	6662.00	6664.12	7.91	39.38	22.91	0.96	5.37	0.067	6.80	2.61	2.48
SC R1	3976	50yr	720.00	6662.00	6665.69	10.88	78.59	26.90	1.00	7.87	0.068	10.66	5.10	3.99
SC R1	3976	100yr	990.00	6662.00	6666.54	11.84	103.25	31.00	0.98	8.00	0.067	11.78	5.62	3.95
SC R1	3928	2yr	64.00	6660.00	6660.99	1.51	45.58	70.44	0.31	0.30	0.068	0.35	0.11	0.23
SC R1	3928	5yr	160.00	6660.00	6661.46	2.21	81.21	79.71	0.35	0.53	0.070	0.63	0.27	0.38
SC R1	3928	10yr	280.00	6660.00	6661.54	3.61	87.55	88.83	0.56	1.26	0.066	1.66	0.51	0.97
SC R1	3928	50yr	720.00	6660.00	6661.92	6.82	130.82	129.86	0.93	3.26	0.062	5.43	1.45	3.07
SC R1	3928	100yr	990.00	6660.00	6662.35	6.92	198.64	168.49	0.84	2.89	0.066	5.17	1.76	2.04
SC R1	3770	2yr	64.00	6657.64	6658.10	2.82	27.34	135.48	0.89	1.06	0.063	1.63	0.53	0.52
SC R1	3770	5yr	160.00	6657.64	6658.28	3.86	52.39	143.38	0.97	1.95	0.073	2.62	1.30	1.45
SC R1	3770	10yr	280.00	6657.64	6658.82	2.68	139.53	181.08	0.47	0.74	0.077	0.99	0.49	0.72
SC R1	3770	50yr	720.00	6657.64	6660.77	1.79	614.92	304.50	0.18	0.21	0.083	0.31	0.18	0.18
SC R1	3770	100yr	990.00	6657.64	6661.75	1.65	934.41	342.02	0.15	0.16	0.085	0.24	0.15	0.14
SC R1	3603	2yr	64.00	6654.00	6655.86	1.58	42.62	33.92	0.23	0.25	0.065	0.30	0.03	0.09
SC R1	3603	5yr	160.00	6654.00	6656.88	2.22	80.16	38.87	0.25	0.41	0.068	0.50	0.14	0.24
SC R1	3603	10yr	280.00	6654.00	6657.83	2.71	118.94	42.66	0.26	0.53	0.069	0.67	0.22	0.36
SC R1	3603	50yr	720.00	6654.00	6660.37	3.19	464.77	367.28	0.23	0.16	0.051	0.78	0.10	0.32
SC R1	3603	100yr	990.00	6654.00	6661.57	2.41	931.33	406.06	0.16	0.13	0.074	0.42	0.11	0.17
SC R1	3552	2yr	64.00	6654.00	6654.92	6.22	13.01	15.67	1.14	4.80	0.081	5.51	4.49	3.98
SC R1	3552	5yr	160.00	6654.00	6655.69	8.15	26.25	18.47	1.11	6.18	0.081	7.73	5.80	4.83
SC R1	3552	10yr	280.00	6654.00	6656.37	9.80	39.23	19.83	1.12	7.74	0.081	9.99	7.13	6.22
SC R1	3552	50yr	720.00	6654.00	6658.20	13.36	78.80	23.34	1.15	10.86	0.081	15.33	9.67	8.94
SC R1	3552	100yr	990.00	6654.00	6659.11	14.75	100.80	25.10	1.15	11.91	0.081	17.51	10.50	9.87
SC R1	3500		Culvert											
SC R1	3407	2yr	64.00	6652.00	6652.74	4.85	14.31	21.69	1.00	3.17	0.070	3.60	1.87	1.77
SC R1	3407	5yr	160.00	6652.00	6653.32	6.46	28.12	25.26	0.99	4.29	0.069	5.27	2.29	2.59

HEC-RAS Plan: Plan 04 River: Smith Creek Reach: SC R1 (Continued)

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl	Shear Total (lb/sq ft)	Mann Wtd Total	Shear Chan (lb/sq ft)	Shear LOB (lb/sq ft)	Shear ROB (lb/sq ft)
SC R1	3407	10yr	280.00	6652.00	6653.87	7.70	42.91	28.55	0.99	5.14	0.069	6.67	2.64	3.29
SC R1	3407	50yr	720.00	6652.00	6655.43	9.68	98.88	42.15	0.92	5.62	0.070	8.61	2.96	3.96
SC R1	3407	100yr	990.00	6652.00	6656.01	10.79	124.14	44.33	0.95	6.72	0.072	10.15	3.45	5.11
SC R1	3359	2yr	64.00	6648.00	6648.54	4.01	15.96	32.64	1.01	1.44	0.050	1.44		
SC R1	3359	5yr	160.00	6648.00	6648.97	5.30	30.82	37.49	0.98	1.84	0.048	2.05	0.48	0.44
SC R1	3359	10yr	280.00	6648.00	6649.38	6.21	47.34	42.84	0.95	2.07	0.046	2.49	0.76	0.72
SC R1	3359	50yr	720.00	6648.00	6650.41	8.15	97.29	52.91	0.94	2.74	0.046	3.53	1.54	1.34
SC R1	3359	100yr	990.00	6648.00	6650.75	9.53	115.96	59.09	1.02	3.33	0.045	4.61	2.11	1.27
SC R1	3300	2yr	64.00	6646.00	6647.00	2.80	23.54	34.92	0.57	0.55	0.048	0.61	0.12	0.25
SC R1	3300	5yr	160.00	6646.00	6647.37	4.51	37.32	38.91	0.75	1.18	0.047	1.39	0.42	0.60
SC R1	3300	10yr	280.00	6646.00	6647.85	5.30	57.00	43.98	0.74	1.38	0.047	1.70	0.62	0.77
SC R1	3300	50yr	720.00	6646.00	6648.77	7.16	132.68	107.61	0.79	1.30	0.041	2.66	0.74	0.87
SC R1	3300	100yr	990.00	6646.00	6649.38	6.66	208.19	139.51	0.66	1.02	0.043	2.15	0.73	0.70
SC R1	3202	2yr	64.00	6644.00	6644.72	4.34	15.52	29.63	0.98	1.34	0.047	1.57	0.91	0.20
SC R1	3202	5yr	160.00	6644.00	6645.31	4.93	37.02	42.88	0.79	1.15	0.046	1.61	0.86	0.50
SC R1	3202	10yr	280.00	6644.00	6645.62	6.44	51.21	49.74	0.92	1.73	0.045	2.55	1.34	0.89
SC R1	3202	50yr	720.00	6644.00	6647.70	3.81	350.89	324.69	0.35	0.20	0.042	0.67	0.22	0.14
SC R1	3202	100yr	990.00	6644.00	6649.65	1.42	1147.91	463.88	0.11	0.04	0.048	0.08	0.03	0.03
SC R1	3126	2yr	64.00	6642.00	6643.15	2.27	28.70	36.83	0.43	0.34	0.047	0.38	0.08	0.02
SC R1	3126	5yr	160.00	6642.00	6643.21	5.25	31.31	41.98	0.96	1.59	0.044	1.99	0.29	0.15
SC R1	3126	10yr	280.00	6642.00	6644.10	3.65	103.11	125.36	0.48	0.35	0.039	0.77	0.20	0.21
SC R1	3126	50yr	720.00	6642.00	6647.74	1.22	914.44	365.69	0.09	0.03	0.046	0.06	0.03	0.02
SC R1	3126	100yr	990.00	6642.00	6649.64	0.95	1942.92	775.78	0.06	0.01	0.045	0.03	0.01	0.01
SC R1	3055	2yr	64.00	6641.58	6642.17	2.70	27.85	125.20	0.86	0.56	0.048	0.77	0.43	0.41
SC R1	3055	5yr	160.00	6641.58	6642.96	1.29	136.24	145.38	0.22	0.10	0.050	0.11	0.09	0.08
SC R1	3055	10yr	280.00	6641.58	6644.14	1.06	331.14	233.29	0.12	0.04	0.046	0.06	0.04	0.02
SC R1	3055	50yr	720.00	6641.58	6647.74	0.65	1483.31	473.81	0.05	0.01	0.044	0.02	0.01	0.01
SC R1	3055	100yr	990.00	6641.58	6649.64	0.54	2854.58	791.10	0.03	0.00	0.047	0.01	0.00	0.01
SC R1	2973	2yr	64.00	6640.00	6641.44	2.33	29.16	22.05	0.34	0.30	0.049	0.34	0.21	0.18
SC R1	2973	5yr	160.00	6640.00	6642.67	3.02	58.13	25.09	0.33	0.38	0.048	0.47	0.25	0.22
SC R1	2973	10yr	280.00	6640.00	6643.90	3.48	91.08	28.24	0.31	0.41	0.047	0.54	0.26	0.25
SC R1	2973	50yr	720.00	6640.00	6647.49	4.17	207.12	35.56	0.27	0.42	0.046	0.63	0.28	0.28
SC R1	2973	100yr	990.00	6640.00	6649.38	4.39	277.08	38.63	0.25	0.41	0.046	0.65	0.28	0.29
SC R1	2900		Culvert											
SC R1	2873	2yr	64.00	6631.24	6632.59	3.95	16.50	17.75	0.69	1.01	0.048	1.10	0.11	0.30
SC R1	2873	5yr	160.00	6631.24	6633.09	6.44	25.89	19.87	0.92	2.18	0.047	2.57	0.56	0.87
SC R1	2873	10yr	280.00	6631.24	6633.69	7.77	38.59	22.27	0.94	2.67	0.046	3.34	0.94	1.28
SC R1	2873	50yr	720.00	6631.24	6635.35	9.77	88.50	37.74	0.89	2.66	0.043	4.36	1.40	1.52
SC R1	2873	100yr	990.00	6631.24	6636.14	10.17	122.43	46.39	0.84	2.52	0.043	4.43	1.64	1.47
SC R1	2778	2yr	64.00	6630.00	6630.39	2.92	22.58	62.17	0.83	0.77	0.049	0.83	0.78	0.45
SC R1	2778	5yr	160.00	6630.00	6630.69	3.97	42.35	68.22	0.84	1.13	0.049	1.26	1.15	0.66
SC R1	2778	10yr	280.00	6630.00	6631.03	4.53	67.76	83.86	0.79	1.12	0.046	1.44	1.29	0.55

HEC-RAS Plan: Plan 04 River: Smith Creek Reach: SC R1 (Continued)

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl	Shear Total (lb/sq ft)	Mann Wtd Total	Shear Chan (lb/sq ft)	Shear LOB (lb/sq ft)	Shear ROB (lb/sq ft)
SC R1	2778	50yr	720.00	6630.00	6631.80	5.79	141.65	102.65	0.76	1.48	0.047	1.95	1.66	0.98
SC R1	2778	100yr	990.00	6630.00	6632.19	6.37	185.83	125.07	0.76	1.49	0.046	2.21	1.83	0.95
SC R1	2668	2yr	64.00	6628.00	6628.56	2.05	31.68	58.21	0.48	0.35	0.050	0.36	0.35	0.16
SC R1	2668	5yr	160.00	6628.00	6628.95	2.97	55.00	59.98	0.54	0.61	0.050	0.63	0.59	0.29
SC R1	2668	10yr	280.00	6628.00	6629.25	3.94	73.06	61.31	0.62	0.96	0.049	1.02	0.93	0.47
SC R1	2668	50yr	720.00	6628.00	6630.21	5.61	134.12	65.21	0.66	1.56	0.049	1.71	1.49	0.82
SC R1	2668	100yr	990.00	6628.00	6630.82	5.98	174.36	67.38	0.63	1.61	0.049	1.79	1.52	0.87
SC R1	2570	2yr	64.00	6626.00	6626.52	4.09	16.12	33.22	1.00	1.38	0.049	1.47	0.96	0.67
SC R1	2570	5yr	160.00	6626.00	6626.96	5.31	31.81	37.15	0.95	1.78	0.048	2.02	1.12	0.92
SC R1	2570	10yr	280.00	6626.00	6627.56	5.44	56.05	43.13	0.77	1.48	0.048	1.80	0.93	0.82
SC R1	2570	50yr	720.00	6626.00	6629.20	6.00	134.91	52.45	0.59	1.35	0.048	1.73	1.00	0.80
SC R1	2570	100yr	990.00	6626.00	6630.01	6.29	178.78	55.99	0.55	1.35	0.048	1.76	1.05	0.81
SC R1	2502	2yr	64.00	6624.00	6625.42	2.85	28.40	26.94	0.42	0.38	0.052	0.51	0.23	0.27
SC R1	2502	5yr	160.00	6624.00	6626.17	4.28	50.72	32.79	0.51	0.71	0.054	1.00	0.50	0.53
SC R1	2502	10yr	280.00	6624.00	6626.80	5.44	72.75	36.97	0.57	1.03	0.055	1.49	0.77	0.79
SC R1	2502	50yr	720.00	6624.00	6628.38	7.86	137.90	44.93	0.66	1.83	0.058	2.67	1.42	1.54
SC R1	2502	100yr	990.00	6624.00	6629.13	8.79	173.11	48.29	0.68	2.15	0.059	3.17	1.66	1.88
SC R1	2449	2yr	64.00	6624.00	6625.07	2.65	26.19	28.49	0.45	0.42	0.049	0.49	0.18	0.24
SC R1	2449	5yr	160.00	6624.00	6625.75	3.88	46.84	32.11	0.52	0.73	0.050	0.88	0.39	0.46
SC R1	2449	10yr	280.00	6624.00	6626.32	4.99	65.82	35.12	0.58	1.06	0.050	1.33	0.61	0.69
SC R1	2449	50yr	720.00	6624.00	6627.66	7.65	117.91	42.56	0.71	1.98	0.051	2.69	1.22	1.39
SC R1	2449	100yr	990.00	6624.00	6628.25	8.93	144.04	48.24	0.76	2.38	0.050	3.48	1.39	1.79
SC R1	2223	2yr	64.00	6621.00	6621.47	4.11	19.79	44.20	1.05	1.45	0.061	1.53	1.40	1.36
SC R1	2223	5yr	160.00	6621.00	6621.82	5.87	35.51	47.41	1.15	2.39	0.061	2.61	2.25	2.17
SC R1	2223	10yr	280.00	6621.00	6622.18	6.97	53.37	50.41	1.13	2.90	0.062	3.25	2.71	2.59
SC R1	2223	50yr	720.00	6621.00	6623.15	9.46	105.41	57.35	1.14	4.16	0.062	4.90	3.85	3.61
SC R1	2223	100yr	990.00	6621.00	6623.62	10.44	133.62	60.66	1.14	4.64	0.062	5.59	4.31	3.93
SC R1	2112	2yr	64.00	6618.46	6619.19	2.20	33.32	70.76	0.51	0.34	0.050	0.41	0.21	0.15
SC R1	2112	5yr	160.00	6618.46	6619.56	3.13	60.26	75.19	0.57	0.60	0.053	0.71	0.47	0.33
SC R1	2112	10yr	280.00	6618.46	6619.87	3.97	84.41	78.90	0.62	0.88	0.054	1.03	0.74	0.51
SC R1	2112	50yr	720.00	6618.46	6620.84	5.29	177.84	106.75	0.62	1.13	0.054	1.52	1.15	0.63
SC R1	2112	100yr	990.00	6618.46	6621.47	5.39	249.62	120.28	0.56	1.05	0.055	1.45	1.10	0.63
SC R1	2057	2yr	64.00	6617.57	6618.63	1.88	34.91	69.21	0.46	0.31	0.051	0.31		0.23
SC R1	2057	5yr	160.00	6617.57	6619.05	2.40	70.04	97.93	0.47	0.38	0.048	0.44	0.06	0.31
SC R1	2057	10yr	280.00	6617.57	6619.42	2.81	107.49	101.43	0.45	0.47	0.050	0.53	0.21	0.34
SC R1	2057	50yr	720.00	6617.57	6620.66	3.31	255.60	130.78	0.37	0.46	0.051	0.58	0.35	0.26
SC R1	2057	100yr	990.00	6617.57	6621.38	3.39	351.83	137.73	0.34	0.45	0.052	0.55	0.36	0.29
SC R1	1906	2yr	64.00	6615.00	6615.69	4.58	14.34	23.02	0.98	1.56	0.049	1.69	0.62	0.32
SC R1	1906	5yr	160.00	6615.00	6616.23	6.18	27.72	26.10	0.99	2.19	0.049	2.53	1.08	0.87
SC R1	1906	10yr	280.00	6615.00	6616.77	7.32	42.37	28.64	0.97	2.61	0.049	3.14	1.41	1.26
SC R1	1906	50yr	720.00	6615.00	6618.18	9.84	87.30	35.23	0.98	3.56	0.050	4.67	2.10	2.10
SC R1	1906	100yr	990.00	6615.00	6618.86	10.85	112.35	38.72	0.98	3.90	0.050	5.33	2.35	2.43

HEC-RAS Plan: Plan 04 River: Smith Creek Reach: SC R1 (Continued)

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl	Shear Total (lb/sq ft)	Mann Wtd Total	Shear Chan (lb/sq ft)	Shear LOB (lb/sq ft)	Shear ROB (lb/sq ft)
SC R1	1818	2yr	64.00	6612.24	6613.37	2.26	30.86	45.43	0.42	0.29	0.046	0.38	0.12	0.10
SC R1	1818	5yr	160.00	6612.24	6613.97	3.01	69.15	79.09	0.44	0.33	0.046	0.56	0.23	0.17
SC R1	1818	10yr	280.00	6612.24	6614.51	3.47	115.58	96.74	0.43	0.40	0.050	0.67	0.31	0.26
SC R1	1818	50yr	720.00	6612.24	6615.93	4.14	262.18	109.23	0.39	0.56	0.059	0.80	0.42	0.46
SC R1	1818	100yr	990.00	6612.24	6616.61	4.48	339.32	117.42	0.39	0.62	0.060	0.89	0.47	0.53
SC R1	1786	2yr	64.00	6612.00	6613.26	1.72	42.53	58.05	0.28	0.12	0.042	0.20	0.09	0.04
SC R1	1786	5yr	160.00	6612.00	6613.88	2.46	88.41	84.46	0.32	0.21	0.048	0.35	0.17	0.12
SC R1	1786	10yr	280.00	6612.00	6614.43	2.92	136.34	89.33	0.34	0.30	0.053	0.46	0.23	0.21
SC R1	1786	50yr	720.00	6612.00	6615.86	3.92	273.85	103.14	0.36	0.49	0.059	0.70	0.35	0.41
SC R1	1786	100yr	990.00	6612.00	6616.55	4.35	346.96	111.26	0.36	0.56	0.060	0.81	0.40	0.48
SC R1	1718	2yr	64.00	6612.00	6612.51	5.19	17.75	36.83	1.28	2.23	0.069	2.37	2.20	2.16
SC R1	1718	5yr	160.00	6612.00	6612.93	7.00	33.96	40.43	1.28	3.17	0.069	3.54	3.14	3.01
SC R1	1718	10yr	280.00	6612.00	6613.32	8.44	50.30	43.36	1.29	4.00	0.069	4.59	3.96	3.75
SC R1	1718	50yr	720.00	6612.00	6614.41	11.32	101.84	51.73	1.29	5.46	0.069	6.76	5.45	5.00
SC R1	1718	100yr	990.00	6612.00	6614.93	12.48	129.99	55.97	1.29	6.02	0.070	7.70	6.06	5.45
SC R1	1671	2yr	64.00	6609.04	6610.29	3.17	27.77	36.31	0.54	0.50	0.055	0.70	0.39	0.17
SC R1	1671	5yr	160.00	6609.04	6610.85	4.64	49.64	41.85	0.64	0.94	0.058	1.29	0.81	0.45
SC R1	1671	10yr	280.00	6609.04	6611.33	5.84	70.68	45.77	0.71	1.37	0.060	1.88	1.23	0.73
SC R1	1671	50yr	720.00	6609.04	6612.47	8.66	127.72	53.63	0.85	2.59	0.062	3.58	2.40	1.59
SC R1	1671	100yr	990.00	6609.04	6612.99	9.87	156.57	56.88	0.89	3.18	0.063	4.42	2.97	2.02
SC R1	1628	2yr	64.00	6609.00	6609.75	3.15	26.44	40.65	0.64	0.67	0.059	0.77	0.54	0.64
SC R1	1628	5yr	160.00	6609.00	6610.27	4.44	49.15	47.14	0.70	1.06	0.060	1.29	0.85	1.02
SC R1	1628	10yr	280.00	6609.00	6610.69	5.58	70.05	51.06	0.76	1.49	0.060	1.85	1.21	1.44
SC R1	1628	50yr	720.00	6609.00	6611.69	8.37	124.84	58.50	0.90	2.80	0.062	3.56	2.35	2.67
SC R1	1628	100yr	990.00	6609.00	6612.12	9.66	150.82	61.40	0.96	3.51	0.062	4.51	2.96	3.33
SC R1	1484	2yr	64.00	6608.00	6608.90	1.56	52.52	81.27	0.30	0.14	0.054	0.18		0.10
SC R1	1484	5yr	160.00	6608.00	6609.37	2.23	95.50	94.91	0.35	0.26	0.057	0.33	0.01	0.21
SC R1	1484	10yr	280.00	6608.00	6609.79	2.79	136.52	101.53	0.38	0.36	0.058	0.46	0.07	0.31
SC R1	1484	50yr	720.00	6608.00	6610.81	4.11	246.78	114.94	0.44	0.67	0.060	0.86	0.23	0.60
SC R1	1484	100yr	990.00	6608.00	6611.28	4.70	302.30	122.52	0.46	0.82	0.060	1.06	0.33	0.72
SC R1	1424	2yr	64.00	6608.00	6608.76	1.12	67.81	98.97	0.23	0.09	0.055	0.10	0.04	0.08
SC R1	1424	5yr	160.00	6608.00	6609.21	1.71	114.65	108.06	0.27	0.17	0.056	0.19	0.09	0.14
SC R1	1424	10yr	280.00	6608.00	6609.62	2.19	160.04	116.23	0.30	0.25	0.056	0.29	0.15	0.21
SC R1	1424	50yr	720.00	6608.00	6610.62	3.28	287.10	131.19	0.36	0.46	0.058	0.55	0.29	0.39
SC R1	1424	100yr	990.00	6608.00	6611.09	3.73	349.57	135.00	0.37	0.56	0.058	0.68	0.36	0.49
SC R1	1324	2yr	64.00	6607.48	6608.07	3.54	22.19	73.93	1.05	1.07	0.055	1.26	0.29	1.17
SC R1	1324	5yr	160.00	6607.48	6608.33	4.80	42.14	77.12	1.08	1.70	0.058	1.92	0.97	1.78
SC R1	1324	10yr	280.00	6607.48	6608.59	5.77	62.47	81.46	1.09	2.16	0.059	2.46	1.36	2.27
SC R1	1324	50yr	720.00	6607.48	6609.28	7.83	122.01	89.70	1.10	3.23	0.060	3.73	2.30	3.36
SC R1	1324	100yr	990.00	6607.48	6609.62	8.65	153.29	92.56	1.10	3.68	0.061	4.26	2.72	3.80
SC R1	1271	2yr	64.00	6604.00	6604.90	3.10	22.01	33.66	0.61	0.59	0.046	0.73	0.19	0.20
SC R1	1271	5yr	160.00	6604.00	6605.36	4.70	40.19	56.59	0.74	0.81	0.040	1.45	0.25	0.62
SC R1	1271	10yr	280.00	6604.00	6605.71	5.92	64.03	72.76	0.82	1.15	0.045	2.11	0.60	1.01

HEC-RAS Plan: Plan 04 River: Smith Creek Reach: SC R1 (Continued)

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl	Shear Total (lb/sq ft)	Mann Wtd Total	Shear Chan (lb/sq ft)	Shear LOB (lb/sq ft)	Shear ROB (lb/sq ft)
SC R1	1271	50yr	720.00	6604.00	6606.61	7.91	133.48	80.11	0.88	2.15	0.056	3.25	1.63	1.73
SC R1	1271	100yr	990.00	6604.00	6607.06	8.61	170.28	82.77	0.88	2.52	0.058	3.65	2.04	1.97
SC R1	1226	2yr	64.00	6603.12	6603.80	3.96	18.04	42.59	0.94	1.04	0.047	1.35	0.34	0.67
SC R1	1226	5yr	160.00	6603.12	6604.20	5.28	37.00	52.83	0.96	1.48	0.050	2.01	0.81	1.14
SC R1	1226	10yr	280.00	6603.12	6604.57	6.20	58.51	61.63	0.95	1.77	0.052	2.47	1.11	1.45
SC R1	1226	50yr	720.00	6603.12	6605.45	8.39	117.24	70.44	1.00	2.88	0.057	3.82	2.23	2.38
SC R1	1226	100yr	990.00	6603.12	6605.85	9.35	146.09	72.76	1.02	3.44	0.058	4.49	2.80	2.81
SC R1	1171	2yr	64.00	6600.59	6601.26	3.65	18.38	46.65	0.99	1.18	0.050	1.26	0.74	0.60
SC R1	1171	5yr	160.00	6600.59	6601.60	4.94	34.68	49.51	1.00	1.74	0.051	1.89	1.17	1.00
SC R1	1171	10yr	280.00	6600.59	6601.93	5.93	51.47	52.17	1.00	2.18	0.051	2.42	1.49	1.28
SC R1	1171	50yr	720.00	6600.59	6603.08	7.10	115.31	58.52	0.84	2.37	0.052	2.73	1.71	1.52
SC R1	1171	100yr	990.00	6600.59	6603.77	7.33	156.58	61.63	0.76	2.27	0.052	2.66	1.66	1.50
SC R1	1133	2yr	64.00	6599.00	6600.03	2.33	27.80	35.45	0.45	0.38	0.048	0.41	0.07	0.07
SC R1	1133	5yr	160.00	6599.00	6600.67	3.23	52.17	40.44	0.47	0.56	0.048	0.65	0.21	0.21
SC R1	1133	10yr	280.00	6599.00	6601.29	3.91	78.28	44.73	0.48	0.70	0.048	0.84	0.32	0.32
SC R1	1133	50yr	720.00	6599.00	6602.96	5.24	162.08	55.00	0.48	0.96	0.049	1.25	0.54	0.56
SC R1	1133	100yr	990.00	6599.00	6603.62	5.99	199.66	58.73	0.50	1.16	0.050	1.55	0.68	0.71
SC R1	1072	2yr	64.00	6597.74	6598.82	4.78	13.69	21.63	0.99	1.58	0.047	1.81	0.40	0.20
SC R1	1072	5yr	160.00	6597.74	6599.42	6.25	28.43	27.04	0.96	1.99	0.048	2.52	0.88	0.90
SC R1	1072	10yr	280.00	6597.74	6599.96	7.43	44.18	31.06	0.96	2.41	0.049	3.18	1.28	1.34
SC R1	1072	50yr	720.00	6597.74	6601.34	10.02	94.37	43.77	0.98	3.16	0.050	4.80	1.69	2.47
SC R1	1072	100yr	990.00	6597.74	6602.29	9.90	149.38	69.83	0.85	2.17	0.047	4.30	1.16	2.30
SC R1	1028	2yr	64.00	6596.00	6597.30	2.91	22.49	25.13	0.52	0.55	0.048	0.60	0.14	0.09
SC R1	1028	5yr	160.00	6596.00	6597.96	4.24	40.58	29.76	0.58	0.89	0.047	1.08	0.36	0.29
SC R1	1028	10yr	280.00	6596.00	6598.49	5.49	57.01	33.12	0.66	1.29	0.048	1.65	0.61	0.55
SC R1	1028	50yr	720.00	6596.00	6599.59	8.94	100.75	50.66	0.87	2.29	0.045	3.81	1.03	1.48
SC R1	1028	100yr	990.00	6596.00	6600.21	9.78	134.15	56.63	0.87	2.58	0.047	4.31	1.44	1.73
SC R1	998	2yr	64.00	6596.00	6596.85	3.39	19.42	28.53	0.68	0.79	0.047	0.89	0.20	0.21
SC R1	998	5yr	160.00	6596.00	6597.20	5.72	29.95	31.80	0.95	1.88	0.048	2.23	0.72	0.77
SC R1	998	10yr	280.00	6596.00	6597.65	6.90	45.16	35.18	0.97	2.36	0.048	2.90	1.12	1.22
SC R1	998	50yr	720.00	6596.00	6598.91	9.15	96.18	46.24	0.96	3.04	0.049	4.19	1.67	2.02
SC R1	998	100yr	990.00	6596.00	6599.52	10.02	126.45	53.49	0.95	3.20	0.049	4.71	1.79	2.33
SC R1	930	2yr	64.00	6594.00	6594.93	4.55	14.61	25.68	0.97	1.39	0.046	1.66	0.35	0.23
SC R1	930	5yr	160.00	6594.00	6595.66	5.07	36.41	33.11	0.75	1.26	0.049	1.62	0.75	0.57
SC R1	930	10yr	280.00	6594.00	6596.30	5.75	59.50	38.36	0.71	1.38	0.050	1.84	0.98	0.73
SC R1	930	50yr	720.00	6594.00	6597.97	7.28	133.15	50.03	0.66	1.70	0.053	2.42	1.42	1.06
SC R1	930	100yr	990.00	6594.00	6598.79	7.86	178.54	59.72	0.65	1.70	0.053	2.64	1.58	1.03
SC R1	874	2yr	64.00	6593.00	6594.50	2.37	27.85	24.66	0.37	0.32	0.047	0.37	0.09	0.07
SC R1	874	5yr	160.00	6593.00	6595.20	3.73	46.53	28.79	0.47	0.64	0.047	0.79	0.27	0.24
SC R1	874	10yr	280.00	6593.00	6595.79	4.89	64.45	31.83	0.54	0.96	0.048	1.24	0.48	0.43
SC R1	874	50yr	720.00	6593.00	6597.23	7.58	115.97	39.84	0.67	1.81	0.048	2.57	1.08	0.99
SC R1	874	100yr	990.00	6593.00	6597.97	8.57	146.90	44.79	0.69	2.08	0.049	3.10	1.33	1.18

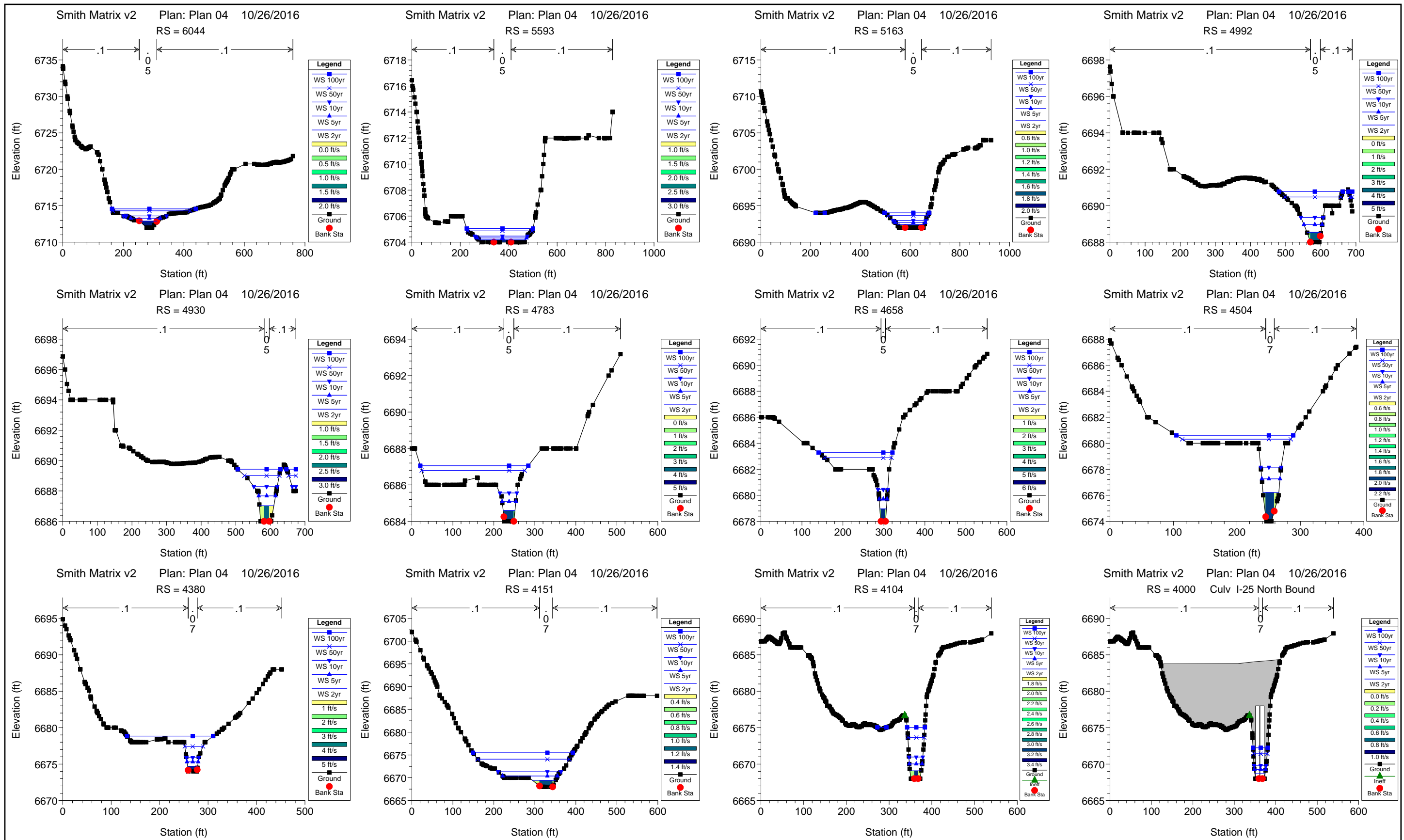
HEC-RAS Plan: Plan 04 River: Smith Creek Reach: SC R1 (Continued)

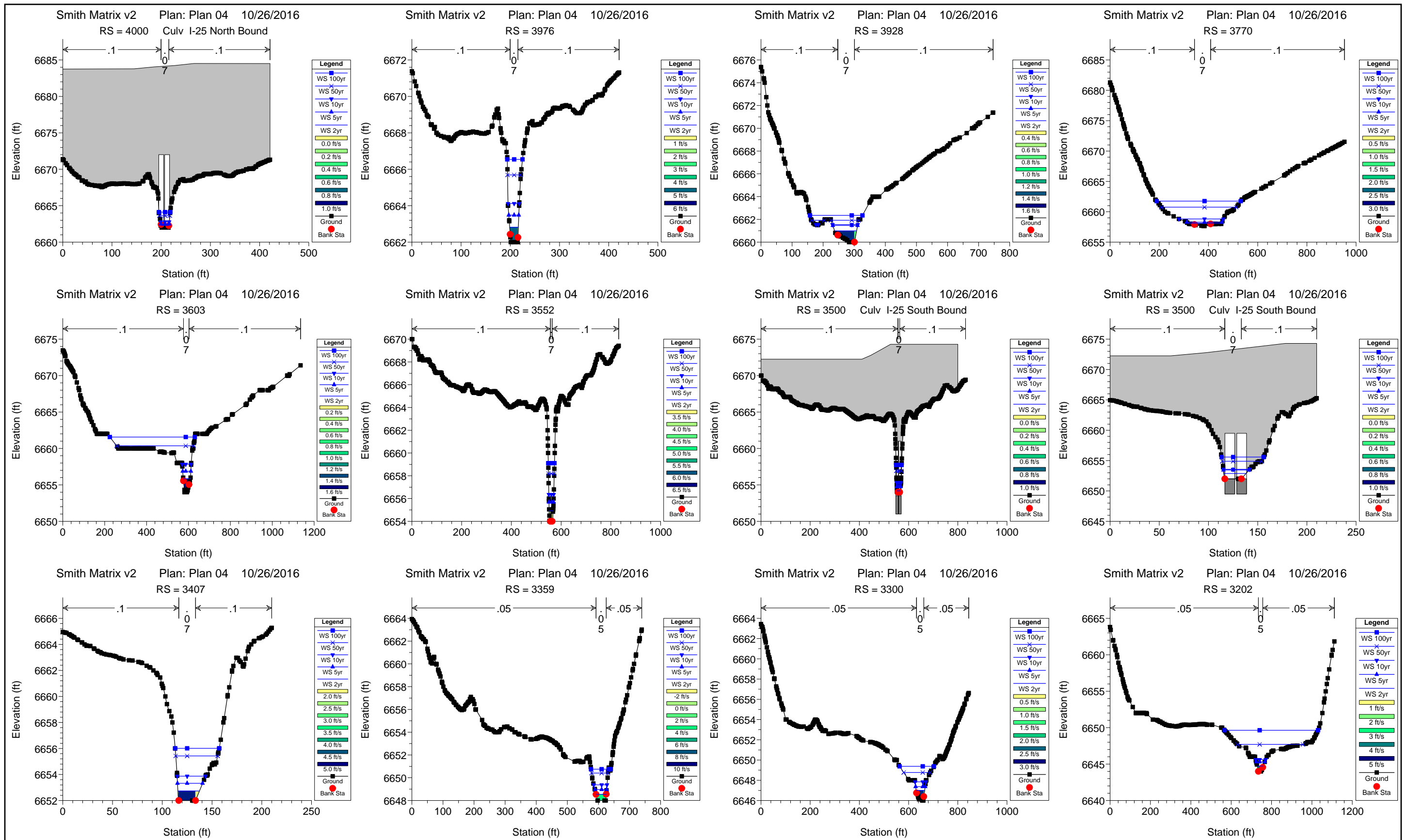
Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl	Shear Total (lb/sq ft)	Mann Wtd Total	Shear Chan (lb/sq ft)	Shear LOB (lb/sq ft)	Shear ROB (lb/sq ft)
SC R1	835	2yr	64.00	6593.00	6594.29	2.41	27.25	26.69	0.40	0.36	0.048	0.40	0.14	0.04
SC R1	835	5yr	160.00	6593.00	6594.90	3.83	44.53	30.45	0.52	0.73	0.048	0.87	0.35	0.20
SC R1	835	10yr	280.00	6593.00	6595.40	5.08	60.62	33.15	0.60	1.14	0.048	1.40	0.61	0.41
SC R1	835	50yr	720.00	6593.00	6596.46	8.49	98.68	38.69	0.83	2.61	0.048	3.43	1.59	1.23
SC R1	835	100yr	990.00	6593.00	6596.91	10.11	116.38	41.04	0.92	3.47	0.049	4.67	2.17	1.75
SC R1	789	2yr	64.00	6593.00	6593.54	4.08	15.99	32.69	0.99	1.36	0.049	1.46	0.42	0.28
SC R1	789	5yr	160.00	6593.00	6593.99	5.40	31.66	38.00	0.97	1.78	0.048	2.08	0.78	0.68
SC R1	789	10yr	280.00	6593.00	6594.39	6.50	47.43	40.80	0.98	2.27	0.049	2.69	1.23	1.12
SC R1	789	50yr	720.00	6593.00	6595.49	8.71	96.81	47.94	0.98	3.20	0.051	3.97	2.03	1.91
SC R1	789	100yr	990.00	6593.00	6596.03	9.61	123.45	50.99	0.98	3.58	0.051	4.52	2.36	2.23
SC R1	731	2yr	64.00	6590.65	6591.70	3.38	19.13	24.70	0.66	0.82	0.049	0.86		0.19
SC R1	731	5yr	160.00	6590.65	6592.20	5.14	32.64	28.95	0.79	1.46	0.047	1.71	0.36	0.57
SC R1	731	10yr	280.00	6590.65	6592.64	6.64	45.82	32.05	0.89	2.10	0.047	2.59	0.75	1.00
SC R1	731	50yr	720.00	6590.65	6593.87	9.41	90.01	39.05	0.96	3.30	0.049	4.35	1.75	1.97
SC R1	731	100yr	990.00	6590.65	6594.50	10.40	115.28	41.83	0.96	3.72	0.050	4.99	2.19	2.28
SC R1	615	2yr	64.00	6588.00	6588.60	4.31	15.74	30.05	0.99	1.38	0.049	1.57	0.70	0.51
SC R1	615	5yr	160.00	6588.00	6589.08	5.71	31.50	35.50	0.97	1.86	0.049	2.25	1.09	0.95
SC R1	615	10yr	280.00	6588.00	6589.52	6.81	47.84	38.75	0.98	2.32	0.051	2.86	1.48	1.38
SC R1	615	50yr	720.00	6588.00	6590.69	9.12	98.24	46.36	0.98	3.29	0.053	4.23	2.29	2.28
SC R1	615	100yr	990.00	6588.00	6591.54	9.14	139.20	50.71	0.86	2.96	0.054	3.88	2.14	2.16
SC R1	524	2yr	64.00	6586.00	6587.50	1.62	40.19	35.45	0.25	0.16	0.047	0.17	0.01	0.04
SC R1	524	5yr	160.00	6586.00	6588.26	2.44	71.72	46.60	0.30	0.25	0.045	0.33	0.08	0.11
SC R1	524	10yr	280.00	6586.00	6588.95	3.05	106.44	53.92	0.33	0.34	0.047	0.47	0.16	0.18
SC R1	524	50yr	720.00	6586.00	6590.72	4.30	210.57	63.13	0.36	0.58	0.051	0.79	0.40	0.33
SC R1	524	100yr	990.00	6586.00	6591.56	4.79	265.37	66.70	0.37	0.68	0.052	0.93	0.50	0.39
SC R1	421	2yr	64.00	6586.00	6586.89	3.20	21.30	27.33	0.61	0.71	0.050	0.77	0.06	0.47
SC R1	421	5yr	160.00	6586.00	6587.46	4.66	37.91	30.43	0.69	1.19	0.050	1.37	0.35	0.83
SC R1	421	10yr	280.00	6586.00	6587.98	5.85	54.30	32.97	0.74	1.63	0.050	1.94	0.62	1.15
SC R1	421	50yr	720.00	6586.00	6589.33	8.43	102.58	38.46	0.82	2.67	0.051	3.38	1.33	1.96
SC R1	421	100yr	990.00	6586.00	6589.98	9.47	128.40	40.92	0.84	3.10	0.052	4.03	1.64	2.31
SC R1	289	2yr	64.00	6583.00	6583.74	4.57	14.35	21.88	0.97	1.59	0.049	1.67	0.66	
SC R1	289	5yr	160.00	6583.00	6584.30	6.21	27.40	25.02	0.98	2.21	0.049	2.54	1.14	0.60
SC R1	289	10yr	280.00	6583.00	6584.83	7.41	41.56	27.52	0.98	2.67	0.049	3.21	1.51	1.01
SC R1	289	50yr	720.00	6583.00	6586.27	9.96	85.40	33.24	0.98	3.67	0.050	4.76	2.32	1.90
SC R1	289	100yr	990.00	6583.00	6586.97	10.99	109.37	35.77	0.98	4.08	0.050	5.43	2.65	2.26
SC R1	120	2yr	64.00	6576.00	6577.58	5.93	11.41	11.22	0.94	1.90	0.046	2.35	0.53	0.55
SC R1	120	5yr	160.00	6576.00	6578.53	7.86	24.12	15.75	0.94	2.30	0.046	3.41	0.97	1.11
SC R1	120	10yr	280.00	6576.00	6579.42	9.14	40.23	21.15	0.92	2.45	0.047	4.11	1.26	1.42
SC R1	120	50yr	720.00	6576.00	6581.51	8.91	184.69	112.08	0.69	1.06	0.054	3.29	1.09	0.86
SC R1	120	100yr	990.00	6576.00	6581.72	10.99	208.65	116.85	0.84	1.66	0.056	4.93	1.64	1.38
SC R1	34	2yr	64.00	6574.00	6574.67	4.07	16.40	35.41	0.97	1.22	0.047	1.43	0.34	0.21
SC R1	34	5yr	160.00	6574.00	6575.09	5.43	32.64	40.08	0.97	1.76	0.049	2.10	0.98	0.63
SC R1	34	10yr	280.00	6574.00	6575.49	6.50	49.16	42.85	0.98	2.24	0.051	2.69	1.47	0.97

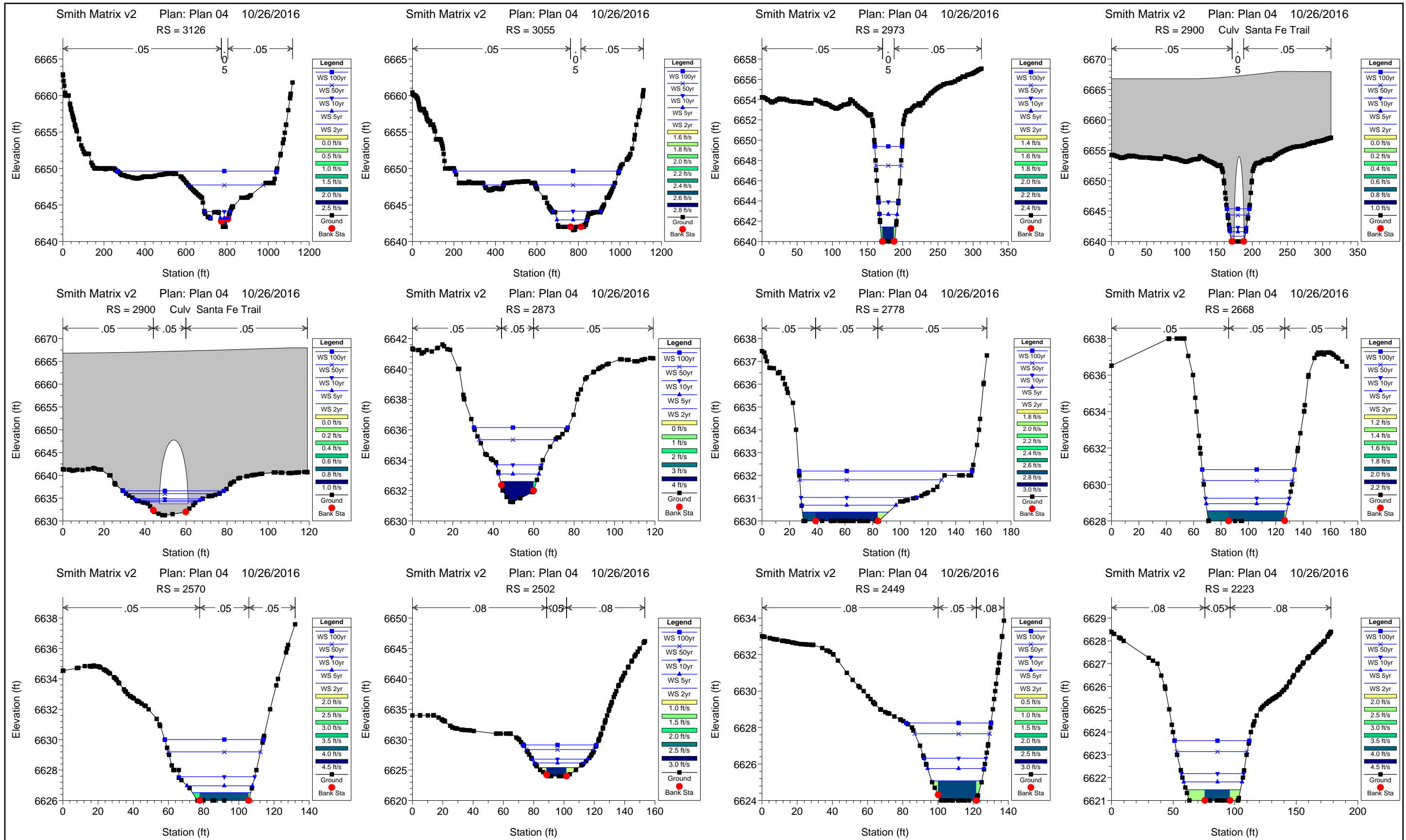
HEC-RAS Plan: Plan 04 River: Smith Creek Reach: SC R1 (Continued)

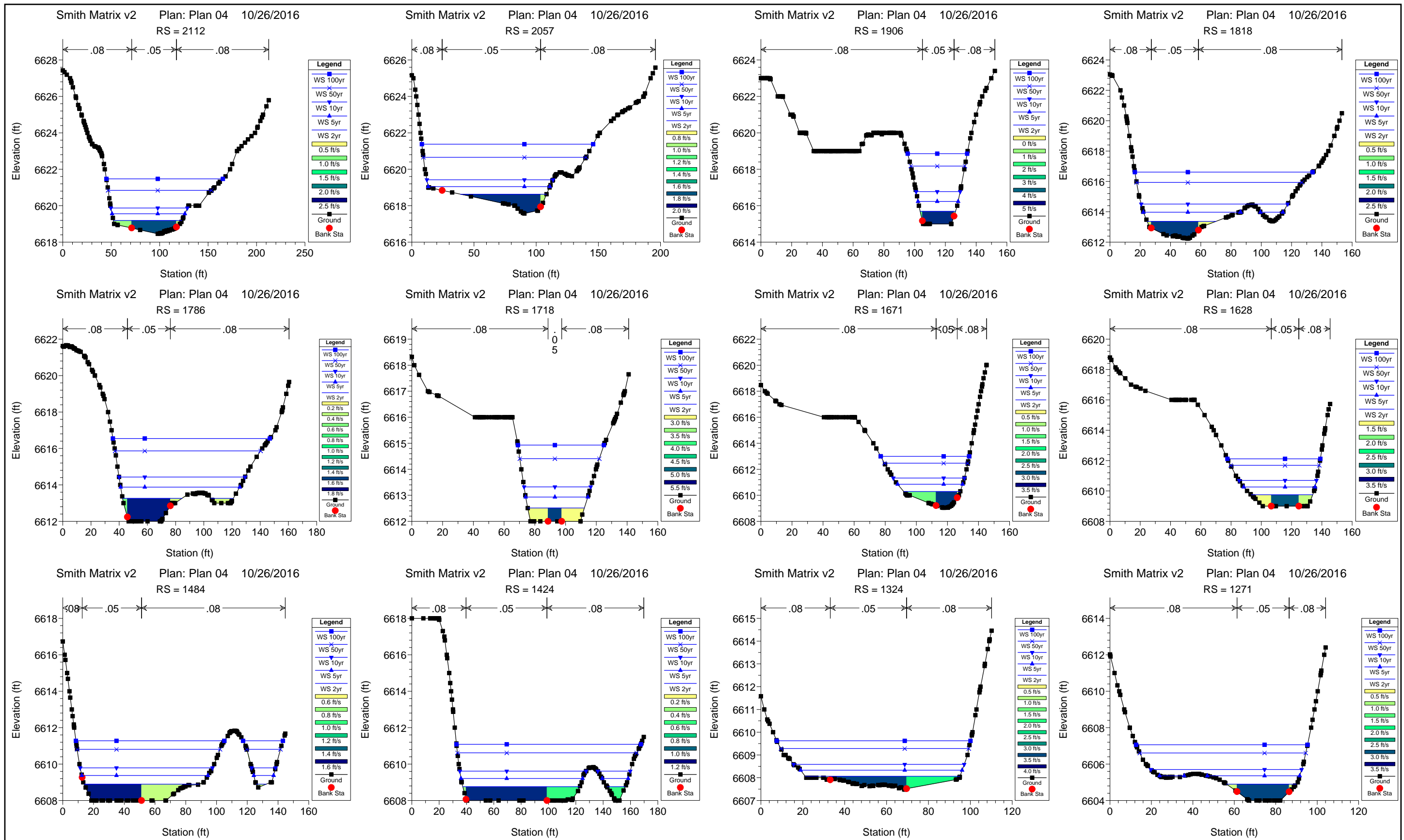
Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl	Shear Total (lb/sq ft)	Mann Wtd Total	Shear Chan (lb/sq ft)	Shear LOB (lb/sq ft)	Shear ROB (lb/sq ft)
SC R1	34	50yr	720.00	6574.00	6576.55	8.83	97.88	48.89	1.00	3.34	0.052	4.10	2.54	1.72
SC R1	34	100yr	990.00	6574.00	6577.08	9.75	124.34	51.85	1.00	3.75	0.053	4.69	2.94	1.98

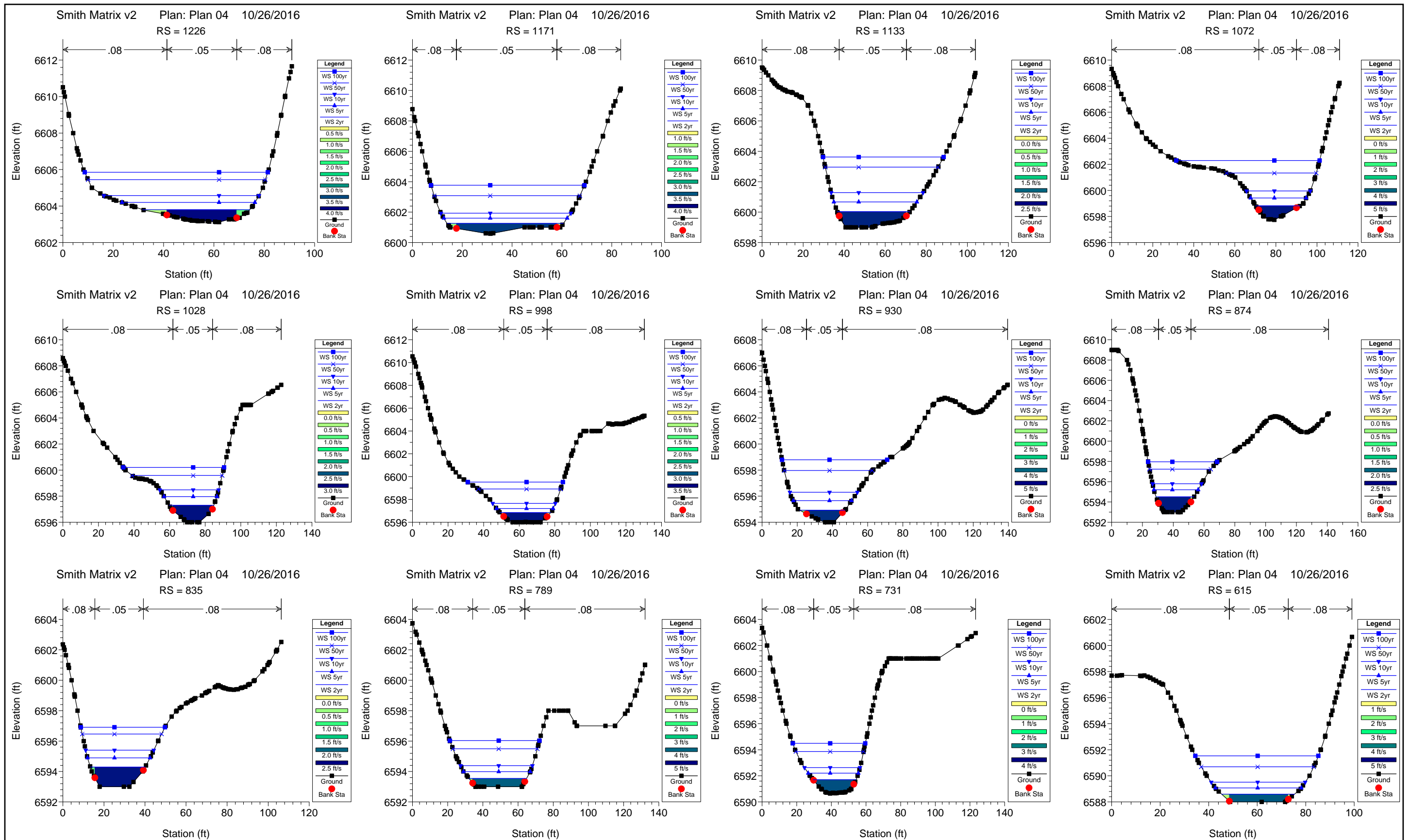
Smith Creek Cross Section Diagrams

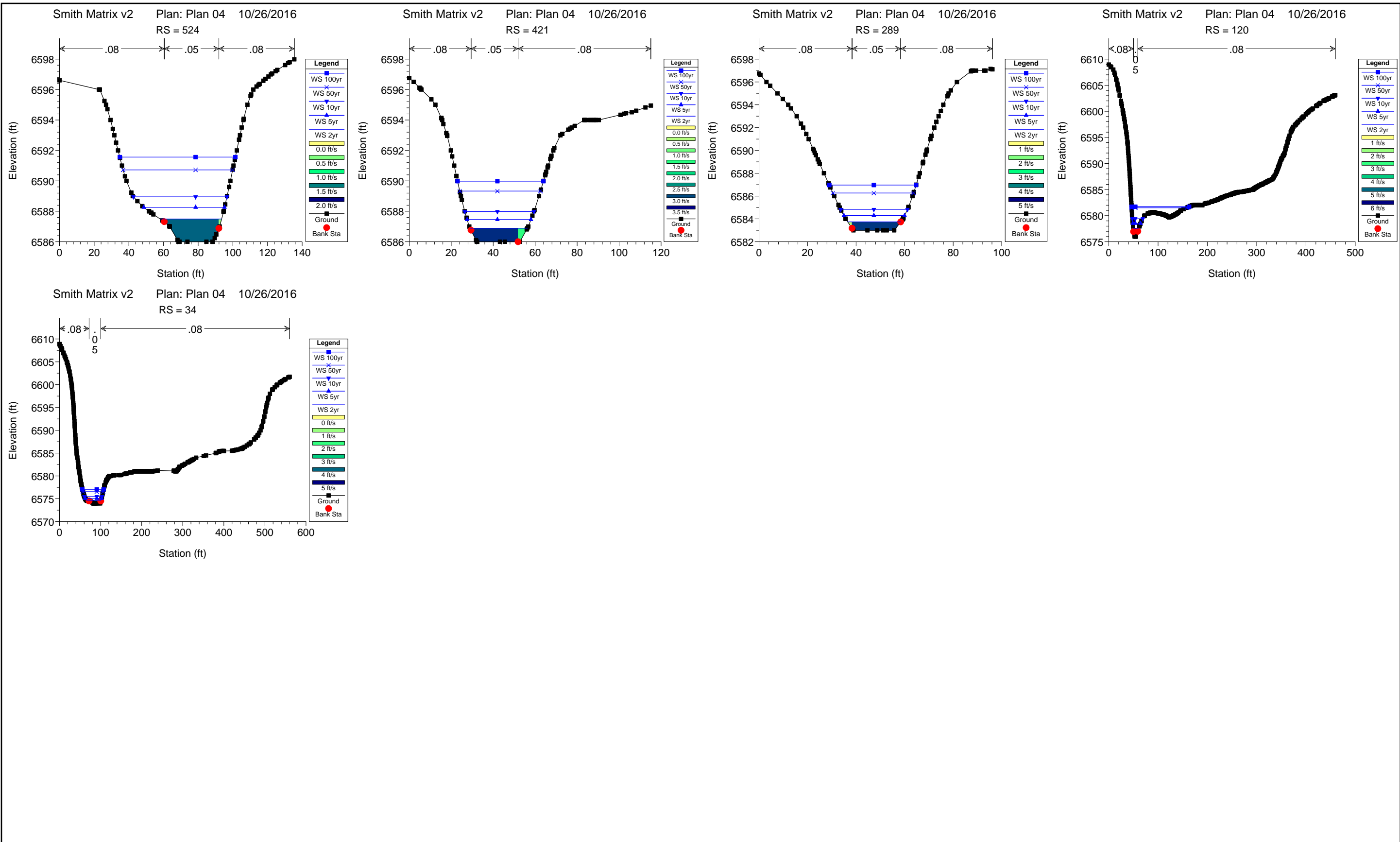












South Rockrimmon Creek Hydraulic Results

HEC-RAS Plan: Plan 06 River: S Rockrimmon Cr Reach: SR R1

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl	Shear Total (lb/sq ft)	Mann Wtd Total	Shear Chan (lb/sq ft)	Shear LOB (lb/sq ft)	Shear ROB (lb/sq ft)
SR R1	5572	2-Year	160.00	6282.00	6283.06	2.45	65.41	66.57	0.43	0.35	0.045	0.35		
SR R1	5572	5-Year	290.00	6282.00	6283.52	3.00	96.74	70.97	0.45	0.46	0.045	0.46		
SR R1	5572	10-Year	420.00	6282.00	6283.88	3.42	123.10	74.53	0.46	0.55	0.044	0.56	0.06	0.01
SR R1	5572	50-Year	850.00	6282.00	6284.71	4.61	187.26	79.80	0.51	0.83	0.043	0.90	0.22	0.18
SR R1	5572	100-Year	1100.00	6282.00	6285.09	5.17	217.58	81.92	0.54	0.98	0.043	1.07	0.29	0.26
SR R1	5376	2-Year	160.00	6280.00	6281.08	4.29	38.80	46.44	0.75	0.87	0.041	1.05	0.36	0.10
SR R1	5376	5-Year	290.00	6280.00	6281.46	5.34	57.56	53.50	0.80	1.14	0.040	1.47	0.57	0.28
SR R1	5376	10-Year	420.00	6280.00	6281.74	6.12	73.56	58.85	0.83	1.35	0.040	1.81	0.74	0.43
SR R1	5376	50-Year	850.00	6280.00	6282.49	7.47	127.84	82.19	0.85	1.54	0.038	2.39	0.95	0.66
SR R1	5376	100-Year	1100.00	6280.00	6282.78	8.02	152.35	84.53	0.86	1.76	0.038	2.65	1.20	0.77
SR R1	5130	2-Year	160.00	6274.00	6275.39	5.83	27.45	26.44	1.01	1.93	0.045	1.93		
SR R1	5130	5-Year	290.00	6274.00	6275.94	6.69	43.36	31.46	1.00	2.29	0.045	2.31	0.05	
SR R1	5130	10-Year	420.00	6274.00	6276.34	7.47	56.75	34.82	0.99	2.42	0.043	2.65	0.34	0.25
SR R1	5130	50-Year	850.00	6274.00	6277.44	8.95	100.04	44.00	0.93	2.55	0.040	3.24	0.87	0.79
SR R1	5130	100-Year	1100.00	6274.00	6277.97	9.50	124.46	48.61	0.91	2.58	0.040	3.45	1.04	0.95
SR R1	4908	2-Year	160.00	6266.00	6267.20	5.56	28.75	30.02	1.00	1.80	0.045	1.80		
SR R1	4908	5-Year	290.00	6266.00	6267.70	6.45	44.98	35.03	1.00	2.20	0.045	2.20		
SR R1	4908	10-Year	420.00	6266.00	6268.07	7.14	58.84	38.78	1.01	2.46	0.044	2.53	0.06	0.10
SR R1	4908	50-Year	850.00	6266.00	6269.06	8.68	101.84	48.48	0.96	2.61	0.041	3.17	0.62	0.68
SR R1	4908	100-Year	1100.00	6266.00	6269.55	9.26	126.78	54.46	0.94	2.61	0.040	3.41	0.81	0.83
SR R1	4746	2-Year	160.00	6252.00	6254.51	2.94	54.44	27.00	0.36	0.40	0.045	0.40		
SR R1	4746	5-Year	290.00	6252.00	6255.16	3.99	72.76	29.07	0.44	0.68	0.045	0.68		
SR R1	4746	10-Year	420.00	6252.00	6255.52	5.05	83.19	30.15	0.53	1.05	0.045	1.06		0.01
SR R1	4746	50-Year	850.00	6252.00	6256.35	7.80	109.44	32.47	0.73	2.19	0.043	2.33	0.16	0.20
SR R1	4746	100-Year	1100.00	6252.00	6256.87	8.79	126.76	34.41	0.77	2.50	0.042	2.82	0.30	0.30
SR R1	4723	2-Year	160.00	6252.00	6254.37	3.35	47.69	27.81	0.45	0.54	0.045	0.54		
SR R1	4723	5-Year	290.00	6252.00	6255.02	4.22	73.22	44.89	0.50	0.57	0.039	0.79	0.16	0.03
SR R1	4723	10-Year	420.00	6252.00	6255.36	5.16	88.95	47.81	0.57	0.81	0.040	1.12	0.33	0.12
SR R1	4723	50-Year	850.00	6252.00	6256.74	4.23	240.22	75.46	0.37	0.50	0.045	0.65	0.30	0.49
SR R1	4723	100-Year	1100.00	6252.00	6257.42	4.53	292.03	77.30	0.37	0.55	0.045	0.71	0.35	0.53
SR R1	4630	2-Year	160.00	6252.00	6253.06	5.58	28.70	29.66	1.00	1.81	0.045	1.81		
SR R1	4630	5-Year	290.00	6252.00	6253.55	6.64	43.67	31.97	1.00	2.29	0.045	2.29		
SR R1	4630	10-Year	420.00	6252.00	6253.95	7.39	56.87	33.89	1.00	2.65	0.045	2.65		
SR R1	4630	50-Year	850.00	6252.00	6254.98	9.22	93.24	37.01	0.99	3.26	0.043	3.53	0.54	0.54
SR R1	4630	100-Year	1100.00	6252.00	6255.48	9.98	112.44	38.53	0.98	3.49	0.043	3.91	0.77	0.77
SR R1	4415	2-Year	160.00	6247.37	6248.93	3.27	49.00	40.83	0.53	0.58	0.045	0.58		
SR R1	4415	5-Year	290.00	6247.37	6249.55	3.87	75.04	43.69	0.52	0.70	0.044	0.72	0.10	
SR R1	4415	10-Year	420.00	6247.37	6250.07	4.30	98.34	46.02	0.51	0.77	0.044	0.81	0.17	0.06
SR R1	4415	50-Year	850.00	6247.37	6251.46	5.29	165.76	50.77	0.49	0.92	0.043	1.05	0.30	0.24
SR R1	4415	100-Year	1100.00	6247.37	6252.13	5.72	200.78	53.21	0.49	0.99	0.042	1.16	0.35	0.31
SR R1	4304	2-Year	160.00	6246.00	6247.45	4.95	32.29	25.65	0.78	1.31	0.045	1.31		
SR R1	4304	5-Year	290.00	6246.00	6248.00	6.16	47.06	28.17	0.84	1.85	0.045	1.85		
SR R1	4304	10-Year	420.00	6246.00	6248.36	7.36	57.30	29.59	0.91	2.35	0.044	2.47	0.18	0.19

HEC-RAS Plan: Plan 06 River: S Rockrimmon Cr Reach: SR R1 (Continued)

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl	Shear Total (lb/sq ft)	Mann Wtd Total	Shear Chan (lb/sq ft)	Shear LOB (lb/sq ft)	Shear ROB (lb/sq ft)
SR R1	4304	50-Year	850.00	6246.00	6249.41	9.67	90.54	33.43	0.97	3.22	0.042	3.72	0.68	0.88
SR R1	4304	100-Year	1100.00	6246.00	6249.98	10.43	110.15	35.25	0.96	3.42	0.042	4.09	0.89	1.15
SR R1	4032	2-Year	160.00	6240.00	6241.25	6.00	26.66	23.95	1.00	2.01	0.045	2.01		
SR R1	4032	5-Year	290.00	6240.00	6241.79	7.21	40.35	26.22	1.01	2.49	0.044	2.57	0.24	0.05
SR R1	4032	10-Year	420.00	6240.00	6242.26	8.02	53.04	27.87	0.99	2.68	0.043	2.93	0.57	0.34
SR R1	4032	50-Year	850.00	6240.00	6243.48	9.96	89.25	31.55	0.97	3.25	0.042	3.86	1.17	0.89
SR R1	4032	100-Year	1100.00	6240.00	6244.08	10.75	108.69	33.33	0.96	3.46	0.042	4.25	1.39	1.10
SR R1	3873	2-Year	160.00	6236.00	6238.32	4.63	34.61	24.15	0.68	1.07	0.044	1.09		0.10
SR R1	3873	5-Year	290.00	6236.00	6238.95	5.84	50.39	26.23	0.71	1.40	0.043	1.54	0.20	0.30
SR R1	3873	10-Year	420.00	6236.00	6239.45	6.76	63.93	27.89	0.74	1.67	0.042	1.92	0.36	0.46
SR R1	3873	50-Year	850.00	6236.00	6240.75	8.82	102.87	31.74	0.79	2.28	0.041	2.85	0.81	0.88
SR R1	3873	100-Year	1100.00	6236.00	6241.36	9.70	122.91	33.42	0.81	2.55	0.041	3.28	1.01	1.07
SR R1	3607	2-Year	160.00	6234.00	6235.72	3.92	40.79	26.32	0.56	0.77	0.045	0.77		
SR R1	3607	5-Year	290.00	6234.00	6236.39	4.92	59.11	27.93	0.59	1.04	0.044	1.09	0.08	0.07
SR R1	3607	10-Year	420.00	6234.00	6236.93	5.70	74.38	29.03	0.61	1.25	0.043	1.36	0.20	0.15
SR R1	3607	50-Year	850.00	6234.00	6238.36	7.46	117.95	32.07	0.65	1.70	0.042	2.02	0.49	0.35
SR R1	3607	100-Year	1100.00	6234.00	6239.06	8.16	141.26	33.64	0.65	1.87	0.041	2.29	0.62	0.45
SR R1	3379	2-Year	160.00	6232.00	6233.44	4.23	37.81	28.27	0.64	0.94	0.045	0.94		
SR R1	3379	5-Year	290.00	6232.00	6233.98	5.44	53.46	29.69	0.70	1.34	0.044	1.40	0.07	0.17
SR R1	3379	10-Year	420.00	6232.00	6234.39	6.44	65.84	30.54	0.75	1.71	0.043	1.83	0.22	0.32
SR R1	3379	50-Year	850.00	6232.00	6235.38	8.99	97.05	32.56	0.88	2.78	0.042	3.16	0.66	0.73
SR R1	3379	100-Year	1100.00	6232.00	6235.80	10.25	110.95	33.41	0.94	3.40	0.042	3.94	0.91	0.96
SR R1	3175	2-Year	160.00	6228.00	6229.57	5.85	27.37	26.24	1.01	1.94	0.045	1.94		
SR R1	3175	5-Year	290.00	6228.00	6230.09	6.93	41.99	29.66	1.00	2.31	0.044	2.42	0.19	0.21
SR R1	3175	10-Year	420.00	6228.00	6230.52	7.76	54.99	31.45	0.99	2.54	0.043	2.79	0.49	0.51
SR R1	3175	50-Year	850.00	6228.00	6231.66	9.54	93.72	36.36	0.96	3.00	0.042	3.61	1.02	1.05
SR R1	3175	100-Year	1100.00	6228.00	6232.23	10.23	114.96	38.39	0.95	3.17	0.042	3.92	1.26	1.27
SR R1	2906	2-Year	160.00	6222.44	6224.47	3.12	51.31	38.20	0.47	0.51	0.045	0.51		
SR R1	2906	5-Year	290.00	6222.44	6225.08	3.86	75.18	40.18	0.50	0.70	0.045	0.70		
SR R1	2906	10-Year	420.00	6222.44	6225.57	4.42	95.10	41.85	0.51	0.84	0.045	0.85		0.06
SR R1	2906	50-Year	850.00	6222.44	6226.81	5.76	149.43	45.41	0.54	1.17	0.043	1.26	0.12	0.28
SR R1	2906	100-Year	1100.00	6222.44	6227.40	6.35	176.68	46.83	0.55	1.31	0.043	1.46	0.20	0.37
SR R1	2630	2-Year	160.00	6220.00	6221.45	4.96	32.27	28.42	0.82	1.35	0.045	1.35		
SR R1	2630	5-Year	290.00	6220.00	6221.98	5.96	48.76	33.21	0.85	1.72	0.044	1.78	0.14	
SR R1	2630	10-Year	420.00	6220.00	6222.36	6.89	61.96	36.30	0.88	2.00	0.043	2.21	0.43	0.35
SR R1	2630	50-Year	850.00	6220.00	6223.30	9.06	97.83	39.26	0.95	2.89	0.043	3.34	0.99	1.06
SR R1	2630	100-Year	1100.00	6220.00	6223.75	10.00	115.83	40.51	0.97	3.29	0.043	3.87	1.23	1.36
SR R1	2271	2-Year	160.00	6214.00	6215.10	4.28	37.34	36.49	0.75	1.05	0.045	1.05		
SR R1	2271	5-Year	290.00	6214.00	6215.53	5.40	53.73	38.47	0.80	1.48	0.045	1.50	0.09	
SR R1	2271	10-Year	420.00	6214.00	6215.88	6.28	67.24	40.08	0.84	1.80	0.044	1.88	0.27	0.14
SR R1	2271	50-Year	850.00	6214.00	6216.76	8.35	104.18	43.59	0.91	2.61	0.043	2.91	0.75	0.60
SR R1	2271	100-Year	1100.00	6214.00	6217.18	9.24	123.06	45.37	0.93	2.96	0.043	3.39	0.96	0.81

HEC-RAS Plan: Plan 06 River: S Rockrimmon Cr Reach: SR R1 (Continued)

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl	Shear Total (lb/sq ft)	Mann Wtd Total	Shear Chan (lb/sq ft)	Shear LOB (lb/sq ft)	Shear ROB (lb/sq ft)
SR R1	2130	2-Year	160.00	6210.00	6211.76	5.82	27.51	26.45	1.01	1.92	0.045	1.92		
SR R1	2130	5-Year	290.00	6210.00	6212.28	6.79	42.97	31.25	0.99	2.22	0.044	2.34	0.35	0.20
SR R1	2130	10-Year	420.00	6210.00	6212.68	7.66	55.75	32.65	0.99	2.52	0.043	2.75	0.66	0.45
SR R1	2130	50-Year	850.00	6210.00	6213.78	9.49	93.68	36.44	0.97	3.08	0.042	3.61	1.20	0.96
SR R1	2130	100-Year	1100.00	6210.00	6214.32	10.24	113.86	38.00	0.97	3.31	0.042	3.97	1.41	1.20
SR R1	1880	2-Year	160.00	6206.00	6207.71	3.19	50.13	46.24	0.54	0.57	0.045	0.57		
SR R1	1880	5-Year	290.00	6206.00	6208.23	3.80	76.42	52.79	0.55	0.71	0.044	0.73	0.06	0.05
SR R1	1880	10-Year	420.00	6206.00	6208.38	5.00	84.22	53.42	0.69	1.19	0.044	1.22	0.14	0.12
SR R1	1880	50-Year	850.00	6206.00	6210.50	4.26	206.98	61.72	0.39	0.59	0.043	0.67	0.22	0.19
SR R1	1880	100-Year	1100.00	6206.00	6213.46	2.95	400.80	69.01	0.20	0.22	0.043	0.27	0.11	0.09
SR R1	1712	2-Year	160.00	6204.00	6205.21	4.90	32.65	35.20	0.90	1.41	0.045	1.41		
SR R1	1712	5-Year	290.00	6204.00	6205.60	6.20	47.07	39.02	0.97	1.93	0.044	2.04	0.26	
SR R1	1712	10-Year	420.00	6204.00	6206.36	5.49	79.05	44.38	0.68	1.21	0.043	1.37	0.44	0.22
SR R1	1712	50-Year	850.00	6204.00	6210.33	3.33	283.83	57.33	0.24	0.28	0.043	0.35	0.18	0.13
SR R1	1712	100-Year	1100.00	6204.00	6213.41	2.69	470.02	63.98	0.16	0.15	0.043	0.20	0.10	0.08
SR R1	1573	2-Year	160.00	6202.00	6203.92	3.09	51.79	36.92	0.46	0.49	0.045	0.49		
SR R1	1573	5-Year	290.00	6202.00	6204.76	3.46	84.61	40.81	0.41	0.49	0.043	0.53	0.07	0.09
SR R1	1573	10-Year	420.00	6202.00	6206.11	3.04	143.51	46.04	0.28	0.30	0.042	0.35	0.08	0.10
SR R1	1573	50-Year	850.00	6202.00	6210.28	2.63	357.59	56.40	0.17	0.15	0.042	0.20	0.06	0.09
SR R1	1573	100-Year	1100.00	6202.00	6213.38	2.32	543.08	63.34	0.12	0.10	0.041	0.14	0.04	0.06
SR R1	1379	2-Year	160.00	6201.00	6202.74	3.12	51.20	40.54	0.49	0.52	0.045	0.52		
SR R1	1379	5-Year	290.00	6201.00	6204.45	2.33	127.49	47.83	0.24	0.20	0.043	0.22	0.05	0.05
SR R1	1379	10-Year	420.00	6201.00	6205.99	2.15	204.81	52.48	0.18	0.14	0.042	0.16	0.05	0.05
SR R1	1379	50-Year	850.00	6201.00	6210.25	2.08	452.96	64.31	0.12	0.09	0.042	0.12	0.04	0.05
SR R1	1379	100-Year	1100.00	6201.00	6213.37	1.91	673.54	80.18	0.10	0.06	0.040	0.09	0.03	0.04
SR R1	1209	2-Year	160.00	6200.00	6202.60	1.53	104.52	53.10	0.19	0.06	0.035	0.06		
SR R1	1209	5-Year	290.00	6200.00	6204.41	1.42	208.92	61.53	0.13	0.04	0.033	0.05	0.01	0.01
SR R1	1209	10-Year	420.00	6200.00	6205.97	1.43	310.53	69.11	0.11	0.03	0.033	0.04	0.01	0.01
SR R1	1209	50-Year	850.00	6200.00	6210.26	1.48	683.52	102.83	0.08	0.02	0.032	0.04	0.01	0.01
SR R1	1209	100-Year	1100.00	6200.00	6213.38	1.34	1045.90	128.05	0.07	0.02	0.033	0.03	0.01	0.01
SR R1	1169	2-Year	160.00	6199.00	6202.58	1.38	115.60	49.17	0.16	0.05	0.035	0.05		
SR R1	1169	5-Year	290.00	6199.00	6204.41	1.36	226.10	70.24	0.12	0.03	0.032	0.04	0.01	0.01
SR R1	1169	10-Year	420.00	6199.00	6205.97	1.37	344.77	81.16	0.10	0.03	0.032	0.04	0.01	0.01
SR R1	1169	50-Year	850.00	6199.00	6210.26	1.41	754.74	112.76	0.08	0.02	0.033	0.03	0.02	0.01
SR R1	1169	100-Year	1100.00	6199.00	6213.38	1.29	1153.75	143.20	0.06	0.01	0.034	0.02	0.01	0.01
SR R1	1135	2-Year	160.00	6198.85	6202.41	3.43	46.61	19.38	0.38	0.04	0.013	0.04		
SR R1	1135	5-Year	290.00	6198.85	6204.22	3.58	81.01	24.52	0.31	0.04	0.013	0.04		
SR R1	1135	10-Year	420.00	6198.85	6205.75	3.81	110.15	29.05	0.28	0.04	0.013	0.04		
SR R1	1135	50-Year	850.00	6198.85	6209.94	4.48	189.79	59.61	0.25	0.05	0.013	0.05		
SR R1	1135	100-Year	1100.00	6198.85	6213.07	4.41	249.19	112.75	0.21	0.04	0.013	0.04		
SR R1	796		Culvert											
SR R1	467	2-Year	160.00	6190.84	6193.21	6.87	23.78	40.86	0.99	0.19	0.013	0.20	0.02	0.06

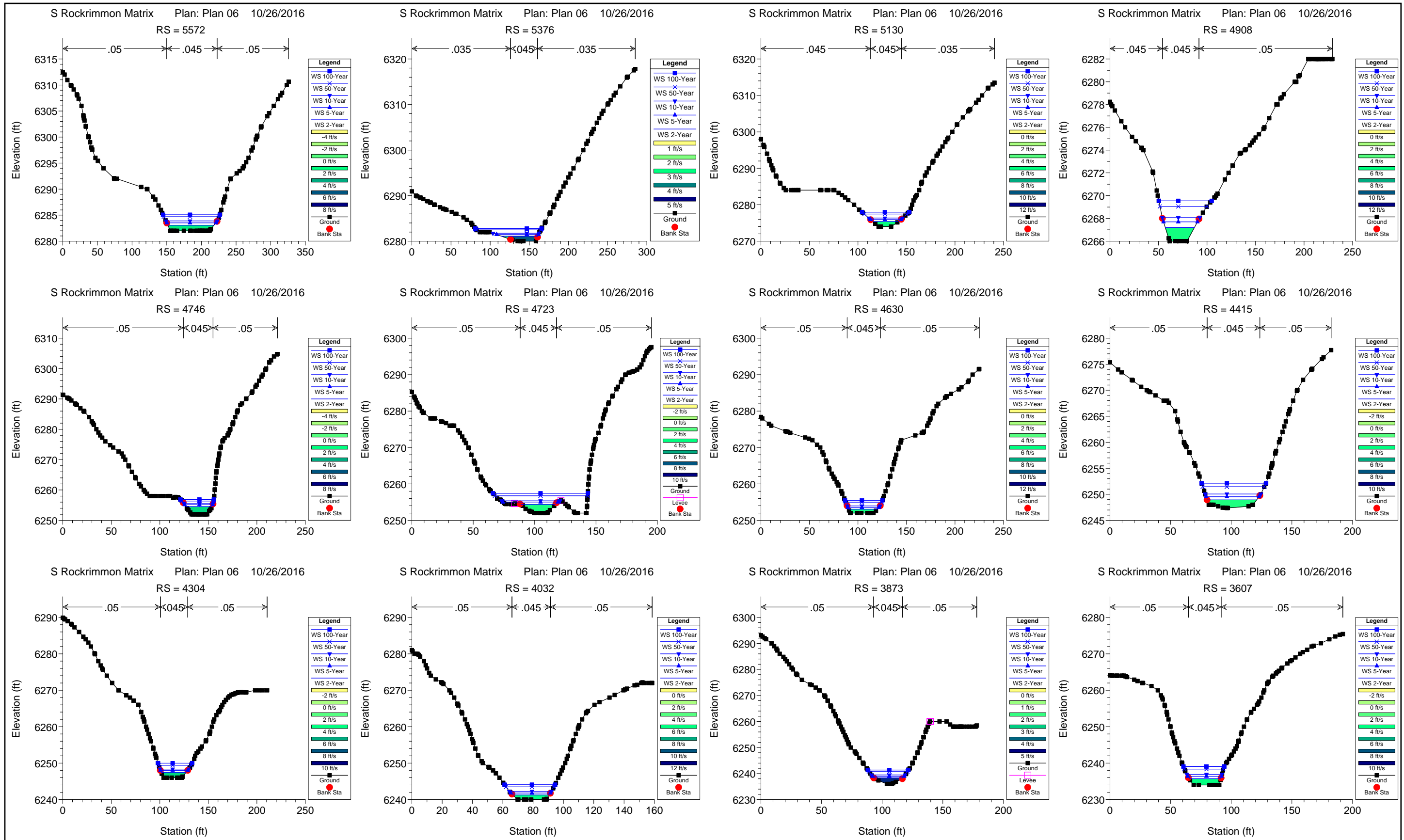
HEC-RAS Plan: Plan 06 River: S Rockrimmon Cr Reach: SR R1 (Continued)

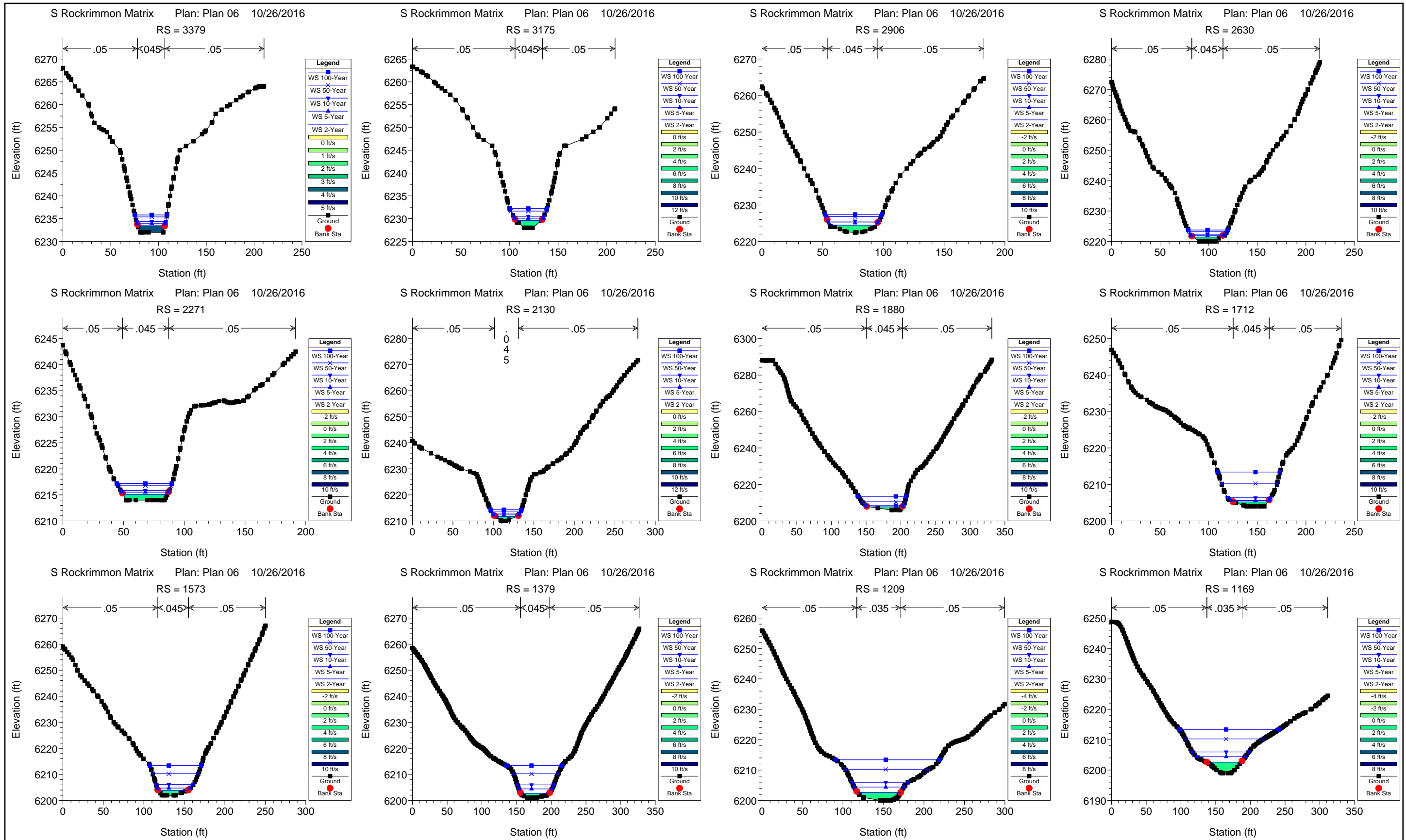
Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl	Shear Total (lb/sq ft)	Mann Wtd Total	Shear Chan (lb/sq ft)	Shear LOB (lb/sq ft)	Shear ROB (lb/sq ft)
SR R1	467	5-Year	290.00	6190.84	6193.94	8.29	36.73	45.24	0.98	0.23	0.013	0.26	0.06	0.14
SR R1	467	10-Year	420.00	6190.84	6194.56	9.34	48.18	68.15	0.98	0.26	0.013	0.30	0.08	0.19
SR R1	467	50-Year	850.00	6190.84	6196.19	11.80	79.25	74.85	0.98	0.38	0.013	0.41	0.19	0.32
SR R1	467	100-Year	1100.00	6190.84	6197.00	12.87	94.63	77.97	0.99	0.43	0.014	0.46	0.24	0.38
SR R1	452	2-Year	160.00	6184.00	6185.73	6.61	24.21	18.06	1.01	0.19	0.013	0.19		
SR R1	452	5-Year	290.00	6184.00	6186.42	7.73	37.50	20.56	1.01	0.24	0.013	0.24		
SR R1	452	10-Year	420.00	6184.00	6187.85	5.96	70.50	25.58	0.63	0.12	0.013	0.12		
SR R1	452	50-Year	850.00	6184.00	6192.92	3.31	256.88	49.90	0.26	0.03	0.013	0.03		
SR R1	452	100-Year	1100.00	6184.00	6195.73	2.72	458.14	84.78	0.17	0.01	0.012	0.02	0.00	0.00
SR R1	425	2-Year	160.00	6183.55	6185.01	5.70	28.06	28.70	1.02	1.14	0.035	1.14		
SR R1	425	5-Year	290.00	6183.55	6186.48	3.80	76.27	36.79	0.47	0.40	0.035	0.40		
SR R1	425	10-Year	420.00	6183.55	6188.12	2.91	144.47	46.90	0.29	0.20	0.035	0.20		
SR R1	425	50-Year	850.00	6183.55	6193.00	1.96	482.50	91.27	0.13	0.05	0.031	0.07	0.02	0.02
SR R1	425	100-Year	1100.00	6183.55	6195.78	1.70	766.75	112.02	0.09	0.03	0.032	0.05	0.02	0.02
SR R1	370	2-Year	160.00	6181.00	6184.64	2.57	62.25	23.07	0.28	0.17	0.035	0.17		
SR R1	370	5-Year	290.00	6181.00	6186.48	2.63	110.16	28.91	0.24	0.16	0.035	0.16		
SR R1	370	10-Year	420.00	6181.00	6188.10	2.60	161.86	35.79	0.21	0.14	0.035	0.15	0.00	0.00
SR R1	370	50-Year	850.00	6181.00	6192.98	2.20	492.99	101.85	0.13	0.04	0.030	0.08	0.02	0.02
SR R1	370	100-Year	1100.00	6181.00	6195.78	1.88	806.82	123.00	0.09	0.03	0.033	0.05	0.02	0.02
SR R1	364	2-Year	160.00	6181.00	6184.45	4.10	39.04	15.75	0.46	0.45	0.035	0.45		
SR R1	364	5-Year	290.00	6181.00	6186.32	4.02	72.24	19.92	0.36	0.36	0.034	0.38	0.01	0.02
SR R1	364	10-Year	420.00	6181.00	6187.93	4.06	104.37	23.94	0.31	0.33	0.035	0.35	0.10	0.11
SR R1	364	50-Year	850.00	6181.00	6192.74	4.29	200.61	76.03	0.24	0.30	0.035	0.31	0.18	0.19
SR R1	364	100-Year	1100.00	6181.00	6195.50	4.35	255.91	106.06	0.21	0.29	0.035	0.29	0.19	0.20
SR R1	312		Culvert											
SR R1	256	2-Year	160.00	6174.00	6177.45	5.77	45.98	13.58	0.55	0.51	0.044	0.76	0.36	0.51
SR R1	256	5-Year	290.00	6174.00	6178.55	8.23	60.96	13.75	0.68	0.86	0.043	1.42	0.58	0.86
SR R1	256	10-Year	420.00	6174.00	6179.37	10.34	72.24	13.87	0.79	1.20	0.043	2.12	0.79	1.20
SR R1	256	50-Year	850.00	6174.00	6181.82	15.17	106.74	14.24	0.96	1.91	0.041	4.02	1.20	1.91
SR R1	256	100-Year	1100.00	6174.00	6184.72	15.04	148.66	14.96	0.81	1.42	0.039	3.55	0.85	1.43
SR R1	253	2-Year	160.00	6174.00	6177.50	4.86	52.12	14.98	0.46	0.37	0.043	0.54	0.35	0.31
SR R1	253	5-Year	290.00	6174.00	6178.67	6.92	69.54	15.05	0.56	0.61	0.042	0.99	0.58	0.51
SR R1	253	10-Year	420.00	6174.00	6179.56	8.66	83.02	15.10	0.65	0.85	0.042	1.47	0.79	0.68
SR R1	253	50-Year	850.00	6174.00	6182.27	12.69	124.14	15.26	0.78	1.32	0.040	2.76	1.22	1.02
SR R1	253	100-Year	1100.00	6174.00	6185.11	12.96	167.82	15.64	0.69	1.06	0.038	2.61	0.98	0.79
SR R1	100		Culvert											
SR R1	54	2-Year	160.00	6174.00	6176.45	7.90	24.80	16.02	0.95	1.18	0.034	1.69	0.52	0.79
SR R1	54	5-Year	290.00	6174.00	6177.35	9.41	40.76	19.61	0.95	1.39	0.035	2.13	0.77	1.01
SR R1	54	10-Year	420.00	6174.00	6178.03	10.58	55.22	22.59	0.96	1.58	0.036	2.52	0.96	1.18
SR R1	54	50-Year	850.00	6174.00	6179.57	13.80	96.75	33.53	1.06	2.02	0.036	3.83	1.28	1.72
SR R1	54	100-Year	1100.00	6174.00	6181.31	10.76	221.47	97.87	0.72	0.68	0.036	2.12	0.48	0.89

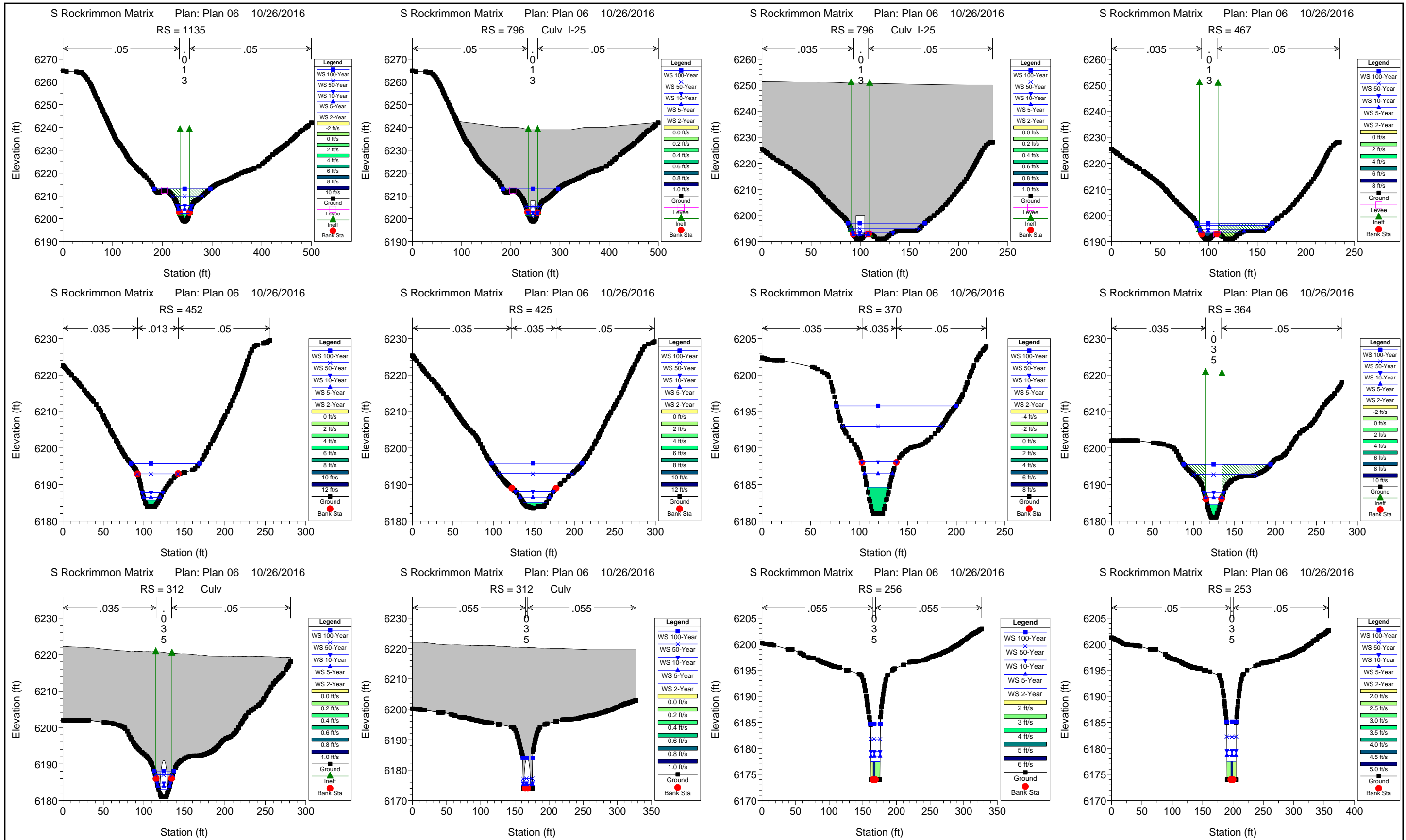
HEC-RAS Plan: Plan 06 River: S Rockrimmon Cr Reach: SR R1 (Continued)

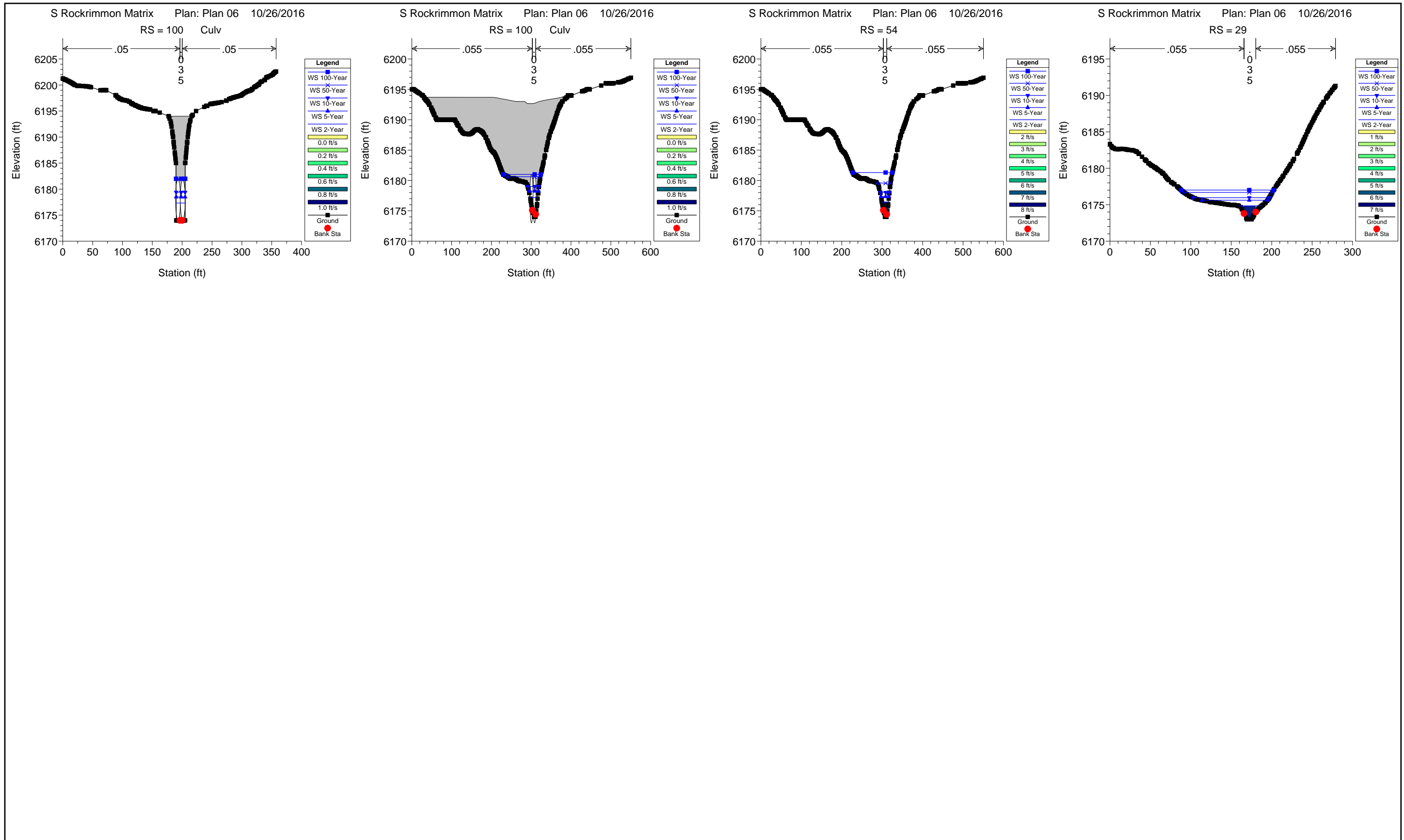
Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl	Shear Total (lb/sq ft)	Mann Wtd Total	Shear Chan (lb/sq ft)	Shear LOB (lb/sq ft)	Shear ROB (lb/sq ft)
SR R1	29	2-Year	160.00	6173.00	6174.84	6.60	28.19	28.48	0.93	0.82	0.030	1.31	0.32	0.31
SR R1	29	5-Year	290.00	6173.00	6175.62	6.57	72.63	81.09	0.76	0.43	0.030	1.13	0.25	0.38
SR R1	29	10-Year	420.00	6173.00	6175.98	7.22	103.97	94.27	0.77	0.54	0.035	1.30	0.37	0.49
SR R1	29	50-Year	850.00	6173.00	6176.69	9.07	177.15	109.34	0.86	0.91	0.040	1.90	0.73	0.83
SR R1	29	100-Year	1100.00	6173.00	6177.01	9.82	213.13	114.43	0.90	1.09	0.042	2.16	0.91	0.97

South Rockrimmon Creek Cross Section Diagrams









West Monument Creek Hydraulic Results

HEC-RAS Plan: Plan 06 River: W. Monument Crk. Reach: USAFA

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl	Shear Total (lb/sq ft)	Mann Wtd Total	Shear Chan (lb/sq ft)	Shear LOB (lb/sq ft)	Shear ROB (lb/sq ft)
USAFA	22434	2yr	180.00	7028.00	7030.00	7.15	25.29	16.52	1.00	3.02	0.049	3.15	0.36	
USAFA	22434	5yr	340.00	7028.00	7030.83	8.77	39.96	19.17	1.01	3.64	0.047	4.17	1.00	0.33
USAFA	22434	10yr	520.00	7028.00	7031.49	10.36	53.43	21.27	1.05	4.34	0.046	5.34	1.55	0.86
USAFA	22434	50yr	1200.00	7028.00	7033.35	14.27	98.31	27.13	1.14	6.15	0.047	8.65	3.04	2.30
USAFA	22434	100yr	1600.00	7028.00	7034.20	15.88	122.72	29.98	1.17	6.90	0.047	10.15	3.69	2.95
USAFA	21908	2yr	180.00	7000.00	7001.40	9.92	18.73	18.29	1.64	6.02	0.048	6.70	0.24	1.88
USAFA	21908	5yr	340.00	7000.00	7001.85	13.27	27.47	20.90	1.86	8.86	0.047	10.75	1.73	3.70
USAFA	21908	10yr	520.00	7000.00	7002.31	15.48	37.59	23.36	1.91	10.47	0.047	13.43	3.24	5.09
USAFA	21908	50yr	1200.00	7000.00	7003.60	20.69	72.36	30.54	2.00	14.19	0.049	20.37	6.78	8.40
USAFA	21908	100yr	1600.00	7000.00	7004.20	22.79	91.83	34.49	2.03	15.49	0.050	23.39	8.13	9.59
USAFA	21573	2yr	180.00	6977.00	6978.78	8.18	23.08	19.55	1.24	3.70	0.048	4.30	1.45	0.31
USAFA	21573	5yr	340.00	6977.00	6979.40	10.13	41.32	36.39	1.27	3.32	0.042	5.80	2.27	1.14
USAFA	21573	10yr	520.00	6977.00	6979.86	11.88	58.80	39.92	1.34	4.49	0.048	7.46	3.13	2.34
USAFA	21573	50yr	1200.00	6977.00	6981.03	16.39	109.71	46.47	1.52	8.05	0.056	12.44	5.75	5.82
USAFA	21573	100yr	1600.00	6977.00	6981.55	18.35	134.41	49.06	1.59	9.78	0.058	14.92	6.99	7.48
USAFA	21224	2yr	180.00	6963.00	6964.66	7.00	30.33	28.56	1.02	2.20	0.047	3.06	0.68	1.17
USAFA	21224	5yr	340.00	6963.00	6965.24	9.05	48.76	35.84	1.12	3.04	0.049	4.57	1.40	1.87
USAFA	21224	10yr	520.00	6963.00	6965.77	10.41	69.75	42.21	1.14	3.57	0.052	5.60	2.02	2.38
USAFA	21224	50yr	1200.00	6963.00	6967.22	13.53	141.47	56.46	1.19	5.03	0.058	8.16	3.62	3.81
USAFA	21224	100yr	1600.00	6963.00	6967.87	14.81	180.52	63.42	1.21	5.60	0.060	9.30	4.33	4.31
USAFA	20654	2yr	180.00	6936.00	6937.46	8.80	22.03	22.30	1.42	4.25	0.047	5.17	1.93	0.96
USAFA	20654	5yr	340.00	6936.00	6938.04	10.82	36.30	26.65	1.43	5.20	0.048	6.85	2.93	2.00
USAFA	20654	10yr	520.00	6936.00	6938.51	12.75	49.55	30.18	1.50	6.37	0.049	8.80	4.09	2.82
USAFA	20654	50yr	1200.00	6936.00	6939.80	17.37	94.96	40.83	1.63	9.10	0.051	14.04	7.03	5.00
USAFA	20654	100yr	1600.00	6936.00	6940.39	19.17	121.28	47.60	1.66	9.85	0.052	16.23	8.26	5.60
USAFA	20512	2yr	180.00	6933.00	6934.44	4.50	56.46	118.61	1.01	1.30	0.060	1.68	1.74	0.97
USAFA	20512	5yr	340.00	6933.00	6934.72	5.48	93.07	132.30	1.02	1.72	0.064	2.20	1.95	1.39
USAFA	20512	10yr	520.00	6933.00	6934.89	6.85	115.56	136.86	1.17	2.57	0.065	3.25	2.70	2.14
USAFA	20512	50yr	1200.00	6933.00	6935.65	8.35	223.08	145.37	1.09	3.39	0.069	4.04	2.96	3.09
USAFA	20512	100yr	1600.00	6933.00	6935.87	9.76	256.91	158.13	1.20	4.21	0.067	5.31	3.82	3.73
USAFA	20372	2yr	180.00	6927.00	6928.66	6.52	34.02	42.28	1.01	1.71	0.045	2.76	0.94	0.73
USAFA	20372	5yr	340.00	6927.00	6929.19	8.02	59.85	57.72	1.04	2.11	0.048	3.73	0.84	1.61
USAFA	20372	10yr	520.00	6927.00	6929.44	6.95	132.42	108.23	0.85	1.57	0.062	2.68	0.68	1.55
USAFA	20372	50yr	1200.00	6927.00	6930.02	11.39	202.73	141.49	1.23	3.55	0.063	6.63	2.45	3.22
USAFA	20372	100yr	1600.00	6927.00	6930.54	11.81	285.02	183.84	1.17	3.26	0.065	6.72	3.03	2.81
USAFA	20184	2yr	190.00	6919.00	6920.62	6.73	29.98	41.50	1.19	2.36	0.043	3.22	0.51	
USAFA	20184	5yr	360.00	6919.00	6921.07	8.13	53.11	66.28	1.28	2.80	0.045	4.35	1.20	
USAFA	20184	10yr	550.00	6919.00	6921.26	10.37	66.43	70.78	1.54	4.55	0.048	6.81	2.40	
USAFA	20184	50yr	1300.00	6919.00	6921.69	8.76	231.53	149.59	1.17	3.97	0.072	4.51	2.09	4.84
USAFA	20184	100yr	1800.00	6919.00	6921.86	11.09	257.16	155.58	1.42	6.15	0.072	7.06	3.45	7.39
USAFA	19942	2yr	190.00	6908.55	6910.29	6.06	31.35	27.59	1.00	2.50	0.050	2.50		
USAFA	19942	5yr	360.00	6908.55	6910.93	7.16	50.26	32.03	1.01	3.14	0.050	3.14		
USAFA	19942	10yr	550.00	6908.55	6911.24	4.99	153.92	80.48	0.65	1.51	0.072	1.45		1.55

HEC-RAS Plan: Plan 06 River: W. Monument Crk. Reach: USAFA (Continued)

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl	Shear Total (lb/sq ft)	Mann Wtd Total	Shear Chan (lb/sq ft)	Shear LOB (lb/sq ft)	Shear ROB (lb/sq ft)
USAFA	19942	50yr	1300.00	6908.55	6911.52	10.39	177.07	84.42	1.26	6.02	0.071	6.01		6.03
USAFA	19942	100yr	1800.00	6908.55	6912.19	11.13	244.66	121.65	1.18	4.57	0.061	6.27	0.53	3.97
USAFA	19685	2yr	190.00	6897.00	6899.25	5.57	50.62	37.37	0.67	1.08	0.055	1.71	0.79	0.73
USAFA	19685	5yr	360.00	6897.00	6899.90	7.47	80.26	64.19	0.79	1.25	0.049	2.81	1.38	0.76
USAFA	19685	10yr	550.00	6897.00	6899.02	18.59	42.38	34.18	2.37	12.75	0.054	19.72	8.77	8.55
USAFA	19685	50yr	1300.00	6897.00	6901.06	14.24	219.07	165.81	1.26	3.03	0.058	9.09	4.73	2.35
USAFA	19685	100yr	1800.00	6897.00	6901.36	16.79	272.97	192.09	1.44	4.10	0.061	12.32	6.50	3.31
USAFA	19537	2yr	190.00	6895.00	6896.19	5.06	54.36	88.99	1.02	1.57	0.062	1.98	0.23	1.32
USAFA	19537	5yr	360.00	6895.00	6896.52	6.27	85.93	98.44	1.05	2.13	0.064	2.69	0.61	1.85
USAFA	19537	10yr	550.00	6895.00	6896.75	1.73	447.21	249.17	0.26	0.26	0.086	0.19	0.05	0.27
USAFA	19537	50yr	1300.00	6895.00	6896.75	4.09	447.21	249.17	0.63	1.45	0.086	1.08	0.29	1.52
USAFA	19537	100yr	1800.00	6895.00	6896.75	5.67	447.21	249.17	0.87	2.78	0.086	2.07	0.55	2.92
USAFA	19364	2yr	190.00	6883.00	6884.98	4.26	45.79	31.31	0.59	1.01	0.048	1.10	0.28	
USAFA	19364	5yr	360.00	6883.00	6884.55	11.04	32.93	28.21	1.75	7.64	0.049	8.06	1.31	
USAFA	19364	10yr	550.00	6883.00	6884.12	25.65	21.44	25.12	4.89	49.18	0.050	49.18		
USAFA	19364	50yr	1300.00	6883.00	6885.77	19.11	75.68	44.10	2.18	14.45	0.046	19.43	6.52	4.21
USAFA	19364	100yr	1800.00	6883.00	6886.97	16.15	167.68	134.56	1.50	4.43	0.038	12.11	2.00	4.43
USAFA	19325		Culvert											
USAFA	19298	2yr	190.00	6881.15	6882.60	5.02	41.76	56.21	0.98	1.72	0.052	1.90	1.09	
USAFA	19298	5yr	360.00	6881.15	6883.33	4.64	89.04	71.58	0.68	1.17	0.052	1.35	0.79	0.14
USAFA	19298	10yr	550.00	6881.15	6883.75	5.40	120.51	78.92	0.70	1.38	0.052	1.68	0.92	0.31
USAFA	19298	50yr	1300.00	6881.15	6884.67	8.39	204.88	115.68	0.89	2.26	0.049	3.55	1.32	1.00
USAFA	19298	100yr	1800.00	6881.15	6885.18	9.13	283.01	134.47	0.89	2.53	0.053	3.98	1.77	1.43
USAFA	19103	2yr	190.00	6877.04	6877.99	3.14	72.78	69.41	0.65	1.10	0.076	0.77	0.20	1.42
USAFA	19103	5yr	360.00	6877.04	6877.99	5.95	72.78	69.41	1.23	3.95	0.076	2.78	0.73	5.10
USAFA	19103	10yr	550.00	6877.04	6878.27	7.93	102.47	123.08	1.39	3.64	0.065	4.44	1.02	6.20
USAFA	19103	50yr	1300.00	6877.04	6879.23	10.36	238.51	160.28	1.30	4.56	0.079	6.06	3.26	5.28
USAFA	19103	100yr	1800.00	6877.04	6879.50	12.37	284.40	170.08	1.45	6.12	0.080	8.27	4.77	6.68
USAFA	18866	2yr	190.00	6872.00	6873.29	1.19	166.18	82.69	0.22	0.21	0.085	0.10	0.02	0.25
USAFA	18866	5yr	360.00	6872.00	6874.10	2.15	247.56	124.45	0.28	0.30	0.079	0.27	0.05	0.38
USAFA	18866	10yr	550.00	6872.00	6874.79	2.70	339.69	142.21	0.30	0.37	0.081	0.38	0.13	0.45
USAFA	18866	50yr	1300.00	6872.00	6876.48	4.04	843.13	389.99	0.35	0.38	0.085	0.72	0.25	0.39
USAFA	18866	100yr	1800.00	6872.00	6877.19	4.10	1130.56	420.00	0.33	0.39	0.087	0.71	0.27	0.41
USAFA	18800		Culvert											
USAFA	18780	2yr	190.00	6867.11	6869.27	5.94	48.13	69.56	0.79	0.82	0.041	2.07	0.33	0.92
USAFA	18780	5yr	360.00	6867.11	6869.44	1.21	433.98	194.76	0.15	0.10	0.081	0.08	0.02	0.13
USAFA	18780	10yr	550.00	6867.11	6869.44	1.85	433.98	194.76	0.24	0.23	0.081	0.20	0.04	0.30
USAFA	18780	50yr	1300.00	6867.11	6869.44	4.38	433.98	194.76	0.56	1.28	0.081	1.10	0.23	1.68
USAFA	18780	100yr	1800.00	6867.11	6869.44	6.07	433.98	194.76	0.77	2.45	0.081	2.10	0.45	3.22
USAFA	18564	2yr	190.00	6859.00	6859.89	8.80	31.61	56.57	1.93	5.51	0.067	6.35		4.98
USAFA	18564	5yr	360.00	6859.00	6859.65	26.89	19.41	47.06	6.70	53.41	0.064	64.53		45.98

HEC-RAS Plan: Plan 06 River: W. Monument Crk. Reach: USAFA (Continued)

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl	Shear Total (lb/sq ft)	Mann Wtd Total	Shear Chan (lb/sq ft)	Shear LOB (lb/sq ft)	Shear ROB (lb/sq ft)
USAFA	18564	10yr	550.00	6859.00	6859.88	26.04	30.92	56.15	5.75	48.34	0.067	55.81		43.57
USAFA	18564	50yr	1300.00	6859.00	6860.60	9.85	234.64	203.21	1.51	5.51	0.082	6.27	2.42	6.11
USAFA	18564	100yr	1800.00	6859.00	6860.59	13.71	232.96	202.12	2.11	10.75	0.082	12.17	4.68	11.93
USAFA	18121	2yr	190.00	6840.00	6842.06	6.28	36.69	45.62	0.90	1.31	0.040	2.44	0.65	0.13
USAFA	18121	5yr	360.00	6840.00	6842.75	7.09	79.87	76.33	0.84	1.31	0.048	2.74	1.04	0.62
USAFA	18121	10yr	550.00	6840.00	6843.27	7.88	125.23	98.95	0.84	1.47	0.054	3.15	1.21	0.93
USAFA	18121	50yr	1300.00	6840.00	6844.38	10.44	310.26	242.82	0.94	1.66	0.060	4.95	1.22	1.76
USAFA	18121	100yr	1800.00	6840.00	6844.97	10.09	461.82	273.68	0.85	1.70	0.069	4.41	1.34	1.89
USAFA	17228	2yr	190.00	6809.00	6810.56	7.09	27.21	27.49	1.18	3.02	0.047	3.43		0.40
USAFA	17228	5yr	360.00	6809.00	6810.89	10.10	43.20	66.61	1.48	2.88	0.036	6.40	0.71	0.92
USAFA	17228	10yr	550.00	6809.00	6811.15	12.24	63.77	85.87	1.65	3.88	0.041	8.89	1.52	1.96
USAFA	17228	50yr	1300.00	6809.00	6812.07	14.85	145.75	92.55	1.61	6.81	0.059	11.33	3.22	5.37
USAFA	17228	100yr	1800.00	6809.00	6812.21	19.00	158.82	93.29	2.01	11.25	0.061	18.24	5.40	9.09
USAFA	16635	2yr	190.00	6784.65	6786.30	6.13	31.42	29.70	1.00	2.27	0.047	2.53	0.30	0.32
USAFA	16635	5yr	360.00	6784.65	6786.93	7.45	52.38	37.43	0.98	2.50	0.046	3.23	0.78	0.80
USAFA	16635	10yr	550.00	6784.65	6787.53	8.27	78.53	48.72	0.94	2.42	0.045	3.62	1.10	1.01
USAFA	16635	50yr	1300.00	6784.65	6788.86	11.48	151.53	59.80	1.05	4.05	0.051	6.02	2.18	2.62
USAFA	16635	100yr	1800.00	6784.65	6789.79	12.01	227.59	100.48	0.98	2.96	0.047	6.12	2.32	1.78
USAFA	16392	2yr	190.00	6776.00	6778.18	8.38	36.11	46.87	1.02	1.41	0.041	3.88	0.74	1.62
USAFA	16392	5yr	360.00	6776.00	6778.74	10.69	69.26	70.62	1.16	2.15	0.053	5.85	1.52	2.60
USAFA	16392	10yr	550.00	6776.00	6779.08	12.92	95.87	82.70	1.31	3.14	0.059	8.19	2.43	3.74
USAFA	16392	50yr	1300.00	6776.00	6780.16	16.62	219.49	174.67	1.45	3.77	0.064	12.24	3.17	5.86
USAFA	16392	100yr	1800.00	6776.00	6780.36	20.06	255.25	181.45	1.71	5.76	0.068	17.56	4.97	8.44
USAFA	16187	2yr	190.00	6764.00	6769.98	4.03	65.76	18.62	0.29	0.24	0.036	0.63	0.20	0.05
USAFA	16187	5yr	360.00	6764.00	6770.85	6.54	83.61	22.54	0.44	0.56	0.038	1.59	0.46	0.20
USAFA	16187	10yr	550.00	6764.00	6771.50	8.92	99.53	25.99	0.57	0.96	0.039	2.87	0.78	0.43
USAFA	16187	50yr	1300.00	6764.00	6772.80	17.03	137.96	33.97	1.01	3.15	0.042	9.93	2.34	1.87
USAFA	16187	100yr	1800.00	6764.00	6775.00	16.67	233.70	50.78	0.89	2.76	0.050	8.83	1.91	2.10
USAFA	16150		Culvert											
USAFA	16138	2yr	190.00	6767.35	6769.44	9.43	34.68	25.95	1.34	4.70	0.077	5.52	5.29	4.04
USAFA	16138	5yr	370.00	6767.35	6770.32	11.49	60.05	31.77	1.30	5.31	0.077	7.05	5.88	4.52
USAFA	16138	10yr	590.00	6767.35	6771.13	13.25	87.97	37.25	1.30	5.93	0.078	8.51	6.53	5.05
USAFA	16138	50yr	1500.00	6767.35	6773.10	15.98	178.08	51.11	1.23	8.95	0.081	14.06	9.24	8.02
USAFA	16138	100yr	2000.00	6767.35	6773.98	17.82	224.95	55.39	1.27	9.77	0.082	15.39	9.25	9.17
USAFA	15910	2yr	190.00	6758.00	6760.01	6.97	31.24	27.24	0.97	2.11	0.046	2.95	0.84	0.91
USAFA	15910	5yr	370.00	6758.00	6760.61	9.37	49.11	31.89	1.11	3.34	0.049	4.80	1.86	1.69
USAFA	15910	10yr	590.00	6758.00	6761.18	11.39	68.69	36.92	1.21	4.36	0.051	6.55	2.81	2.29
USAFA	15910	50yr	1500.00	6758.00	6763.85	10.27	335.86	175.83	0.78	1.50	0.057	4.26	2.18	1.04
USAFA	15910	100yr	2000.00	6758.00	6764.45	10.85	449.71	198.40	0.78	1.73	0.064	4.59	2.43	1.30
USAFA	15099	2yr	190.00	6732.95	6734.67	7.01	29.00	23.05	1.01	2.51	0.047	3.04	0.67	1.11
USAFA	15099	5yr	370.00	6732.95	6735.47	8.61	49.69	28.28	1.00	2.97	0.048	3.98	1.25	1.60
USAFA	15099	10yr	590.00	6732.95	6736.16	9.93	92.88	122.70	1.01	1.23	0.031	4.85	0.55	2.02

HEC-RAS Plan: Plan 06 River: W. Monument Crk. Reach: USAFA (Continued)

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl	Shear Total (lb/sq ft)	Mann Wtd Total	Shear Chan (lb/sq ft)	Shear LOB (lb/sq ft)	Shear ROB (lb/sq ft)
USAFA	15099	50yr	1500.00	6732.95	6736.45	21.12	130.94	134.13	2.05	6.32	0.041	21.28	3.80	8.97
USAFA	15099	100yr	2000.00	6732.95	6736.78	23.14	177.78	146.33	2.14	8.32	0.050	24.75	5.83	10.54
USAFA	14977	2yr	190.00	6727.00	6728.73	8.96	21.86	17.86	1.36	4.69	0.048	5.18	1.37	
USAFA	14977	5yr	370.00	6727.00	6729.35	11.68	33.82	20.66	1.49	6.62	0.048	7.84	2.80	0.65
USAFA	14977	10yr	590.00	6727.00	6730.04	13.45	49.12	23.68	1.47	7.32	0.047	9.38	3.67	1.73
USAFA	14977	50yr	1500.00	6727.00	6732.75	14.43	176.13	97.35	1.10	2.91	0.041	8.51	1.71	2.71
USAFA	14977	100yr	2000.00	6727.00	6733.49	15.28	259.15	127.13	1.09	3.10	0.048	9.15	2.15	3.04
USAFA	14836	2yr	190.00	6722.00	6724.18	7.20	28.01	19.79	0.98	2.64	0.047	3.12	0.24	1.06
USAFA	14836	5yr	370.00	6722.00	6725.09	8.76	48.63	25.26	0.96	2.94	0.047	3.99	0.88	1.54
USAFA	14836	10yr	590.00	6722.00	6725.95	10.11	72.62	30.90	0.96	3.27	0.048	4.83	1.35	1.95
USAFA	14836	50yr	1500.00	6722.00	6727.26	16.57	159.01	128.86	1.34	3.07	0.036	11.65	1.42	4.82
USAFA	14836	100yr	2000.00	6722.00	6727.76	18.10	234.52	173.42	1.39	3.51	0.043	13.44	2.14	5.67
USAFA	14685	2yr	190.00	6716.35	6717.41	7.19	31.29	48.11	1.37	2.93	0.049	3.85	1.65	0.92
USAFA	14685	5yr	370.00	6716.35	6717.66	10.49	43.57	52.19	1.76	5.73	0.051	7.55	3.76	2.12
USAFA	14685	10yr	590.00	6716.35	6717.90	13.32	56.75	56.89	2.03	8.46	0.053	11.38	6.06	3.33
USAFA	14685	50yr	1500.00	6716.35	6719.10	15.92	145.03	103.21	1.76	7.28	0.052	13.16	4.87	5.77
USAFA	14685	100yr	2000.00	6716.35	6719.56	17.24	203.61	139.02	1.75	7.10	0.054	14.58	4.90	6.95
USAFA	14345	2yr	190.00	6706.00	6707.46	7.39	50.02	63.54	1.12	2.04	0.068	3.50	3.27	1.03
USAFA	14345	5yr	370.00	6706.00	6708.07	8.53	100.19	110.71	1.07	1.90	0.069	4.12	3.58	1.22
USAFA	14345	10yr	590.00	6706.00	6708.55	9.33	164.53	171.46	1.05	1.81	0.070	4.58	2.21	1.48
USAFA	14345	50yr	1500.00	6706.00	6709.57	11.41	404.14	275.93	1.08	2.58	0.087	6.09	2.09	2.78
USAFA	14345	100yr	2000.00	6706.00	6709.81	12.69	470.83	279.30	1.16	3.36	0.088	7.37	2.81	3.59
USAFA	13781	2yr	190.00	6687.00	6688.52	5.74	33.80	28.92	0.91	2.03	0.049	2.17	0.58	
USAFA	13781	5yr	370.00	6687.00	6689.03	7.84	49.90	46.39	1.06	2.29	0.039	3.64	1.26	0.11
USAFA	13781	10yr	590.00	6687.00	6689.49	9.52	74.75	69.18	1.14	2.47	0.038	4.96	1.92	0.69
USAFA	13781	50yr	1500.00	6687.00	6690.71	12.68	204.65	149.48	1.21	3.06	0.047	7.59	3.34	1.95
USAFA	13781	100yr	2000.00	6687.00	6691.27	13.08	297.28	178.59	1.16	3.24	0.055	7.68	3.46	2.37
USAFA	13168	2yr	190.00	6671.00	6673.17	7.00	51.60	51.37	0.89	1.45	0.061	2.79	1.09	1.21
USAFA	13168	5yr	370.00	6671.00	6673.85	8.31	93.47	76.10	0.91	1.67	0.063	3.55	1.16	1.76
USAFA	13168	10yr	590.00	6671.00	6674.34	10.22	139.34	118.84	1.02	1.92	0.063	5.07	1.26	2.60
USAFA	13168	50yr	1500.00	6671.00	6675.67	11.64	364.15	197.82	0.97	2.43	0.079	5.84	1.99	3.24
USAFA	13168	100yr	2000.00	6671.00	6676.00	13.05	430.40	204.86	1.05	3.16	0.081	7.16	2.68	4.03
USAFA	12897	2yr	190.00	6665.00	6666.39	6.08	82.67	119.24	0.91	1.17	0.083	2.35	0.91	1.72
USAFA	12897	5yr	370.00	6665.00	6666.68	8.12	118.52	127.13	1.10	2.18	0.088	3.92	1.83	2.87
USAFA	12897	10yr	590.00	6665.00	6667.14	8.79	184.37	165.26	1.06	2.21	0.089	4.24	1.88	3.02
USAFA	12897	50yr	1500.00	6665.00	6667.98	11.98	332.37	188.36	1.22	4.17	0.093	7.05	3.97	4.43
USAFA	12897	100yr	2000.00	6665.00	6668.49	12.55	437.38	221.23	1.18	4.16	0.094	7.34	4.21	3.81
USAFA	12590	2yr	190.00	6655.00	6656.73	7.93	51.28	64.85	1.06	1.67	0.063	3.70	1.32	2.36
USAFA	12590	5yr	370.00	6655.00	6657.43	8.33	126.59	126.42	0.94	1.49	0.079	3.65	1.31	2.20
USAFA	12590	10yr	590.00	6655.00	6657.75	9.77	167.09	129.17	1.04	2.26	0.083	4.82	2.06	2.85
USAFA	12590	50yr	1500.00	6655.00	6659.11	11.41	366.58	173.88	0.99	2.93	0.089	5.74	2.92	2.29
USAFA	12590	100yr	2000.00	6655.00	6659.50	12.71	436.83	187.68	1.06	3.56	0.089	6.92	3.70	2.38

HEC-RAS Plan: Plan 06 River: W. Monument Crk. Reach: USAFA (Continued)

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl	Shear Total (lb/sq ft)	Mann Wtd Total	Shear Chan (lb/sq ft)	Shear LOB (lb/sq ft)	Shear ROB (lb/sq ft)
USAFA	11782	2yr	190.00	6634.00	6635.60	5.20	82.83	94.03	0.74	0.94	0.078	1.65	0.77	0.87
USAFA	11782	5yr	370.00	6634.00	6636.14	6.31	139.77	118.16	0.77	1.24	0.081	2.20	1.09	1.17
USAFA	11782	10yr	590.00	6634.00	6636.41	8.08	172.51	122.79	0.93	2.06	0.083	3.47	1.74	1.97
USAFA	11782	50yr	1500.00	6634.00	6637.31	12.18	293.08	144.90	1.19	4.38	0.086	7.07	3.42	4.33
USAFA	11782	100yr	2000.00	6634.00	6637.83	12.67	370.55	151.29	1.15	4.70	0.088	7.29	3.58	4.73
USAFA	11568	2yr	190.00	6628.00	6629.81	6.59	28.86	22.42	1.01	2.74	0.049	2.82		0.15
USAFA	11568	5yr	370.00	6628.00	6630.59	7.98	49.17	30.14	0.97	2.74	0.045	3.54	0.66	0.68
USAFA	11568	10yr	590.00	6628.00	6631.64	7.84	112.09	109.28	0.78	0.98	0.036	2.98	0.69	0.44
USAFA	11568	50yr	1500.00	6628.00	6633.13	8.71	425.67	267.38	0.71	1.13	0.061	3.24	0.97	0.93
USAFA	11568	100yr	2000.00	6628.00	6633.47	9.70	515.92	272.93	0.77	1.52	0.066	3.93	1.31	1.30
USAFA	10827	2yr	190.00	6609.62	6611.38	5.92	36.47	36.95	0.90	1.67	0.046	2.26	0.72	0.30
USAFA	10827	5yr	370.00	6609.62	6612.02	7.16	77.17	89.09	0.90	1.28	0.043	2.90	0.71	0.73
USAFA	10827	10yr	590.00	6609.62	6612.09	10.75	84.05	90.24	1.32	2.94	0.045	6.45	1.73	1.70
USAFA	10827	50yr	1500.00	6609.62	6612.80	17.09	151.43	109.34	1.81	7.44	0.055	14.77	5.52	4.76
USAFA	10827	100yr	2000.00	6609.62	6613.38	17.14	229.87	145.54	1.65	6.61	0.060	13.93	5.25	4.83
USAFA	10367	2yr	190.00	6599.00	6600.68	5.06	38.17	32.12	0.78	1.50	0.048	1.66	0.26	
USAFA	10367	5yr	370.00	6599.00	6601.28	6.63	59.75	40.63	0.85	1.99	0.046	2.54	0.62	0.19
USAFA	10367	10yr	590.00	6599.00	6601.83	8.00	84.33	48.82	0.91	2.42	0.046	3.38	1.02	0.55
USAFA	10367	50yr	1500.00	6599.00	6603.54	10.87	182.80	66.05	0.94	3.48	0.051	5.23	2.20	1.54
USAFA	10367	100yr	2000.00	6599.00	6606.18	6.88	577.94	195.37	0.47	0.78	0.057	1.78	0.60	0.63
USAFA	10091	2yr	190.00	6592.00	6593.88	6.92	38.76	35.96	0.95	1.86	0.053	2.87	0.90	2.01
USAFA	10091	5yr	370.00	6592.00	6594.62	8.41	70.45	48.30	0.96	2.27	0.057	3.74	1.42	2.46
USAFA	10091	10yr	590.00	6592.00	6595.29	9.69	106.08	59.64	0.98	2.64	0.060	4.58	1.84	2.85
USAFA	10091	50yr	1500.00	6592.00	6596.75	13.80	251.78	135.74	1.14	3.34	0.064	8.16	2.59	4.05
USAFA	10091	100yr	2000.00	6592.00	6595.93	25.57	149.36	77.77	2.34	15.46	0.061	29.93	11.12	17.62
USAFA	9704	2yr	190.00	6581.00	6582.31	3.98	48.27	72.04	0.84	1.21	0.049	1.26	0.27	0.27
USAFA	9704	5yr	370.00	6581.00	6582.74	4.75	80.48	77.50	0.79	1.41	0.049	1.53	0.49	0.50
USAFA	9704	10yr	590.00	6581.00	6583.13	5.58	111.46	81.43	0.80	1.72	0.049	1.92	0.75	0.73
USAFA	9704	50yr	1500.00	6581.00	6584.26	7.94	208.23	89.76	0.86	2.81	0.050	3.22	1.52	1.52
USAFA	9704	100yr	2000.00	6581.00	6584.78	8.75	256.15	93.31	0.87	3.17	0.051	3.68	1.77	1.82
USAFA	9506	2yr	190.00	6576.00	6577.12	4.45	42.99	45.88	0.79	1.36	0.049	1.41	0.09	0.25
USAFA	9506	5yr	370.00	6576.00	6577.50	6.21	60.90	48.66	0.94	2.28	0.048	2.47	0.43	0.69
USAFA	9506	10yr	590.00	6576.00	6577.93	7.47	82.46	51.85	0.99	2.89	0.048	3.25	0.80	1.08
USAFA	9506	50yr	1500.00	6576.00	6579.42	10.03	167.17	61.85	0.98	3.92	0.049	4.79	1.77	1.95
USAFA	9506	100yr	2000.00	6576.00	6580.08	10.98	209.38	66.32	0.98	4.28	0.049	5.40	2.11	2.26
USAFA	9348	2yr	190.00	6571.22	6573.17	6.81	49.48	66.77	0.89	1.10	0.049	2.69	1.35	0.55
USAFA	9348	5yr	370.00	6571.22	6573.84	7.47	111.45	115.97	0.83	1.12	0.060	2.91	1.46	0.79
USAFA	9348	10yr	590.00	6571.22	6574.26	8.54	164.94	136.69	0.88	1.50	0.066	3.62	1.88	1.17
USAFA	9348	50yr	1500.00	6571.22	6575.18	13.21	322.94	292.59	1.19	2.50	0.066	7.90	4.37	1.98
USAFA	9348	100yr	2000.00	6571.22	6575.33	15.68	363.33	299.96	1.39	3.73	0.069	10.98	6.11	3.04
USAFA	9163	2yr	190.00	6566.00	6567.35	6.55	32.32	39.47	1.08	2.07	0.044	2.90	0.81	0.68
USAFA	9163	5yr	370.00	6566.00	6567.77	8.91	50.48	52.81	1.25	2.95	0.044	4.84	1.66	1.26
USAFA	9163	10yr	590.00	6566.00	6568.29	9.83	83.51	73.40	1.20	2.93	0.046	5.36	2.14	1.65

HEC-RAS Plan: Plan 06 River: W. Monument Crk. Reach: USAFA (Continued)

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl	Shear Total (lb/sq ft)	Mann Wtd Total	Shear Chan (lb/sq ft)	Shear LOB (lb/sq ft)	Shear ROB (lb/sq ft)
USAFA	9163	50yr	1500.00	6566.00	6569.90	10.79	245.75	127.14	0.99	2.77	0.057	5.33	2.53	2.13
USAFA	9163	100yr	2000.00	6566.00	6570.56	11.06	334.12	141.67	0.93	2.86	0.061	5.31	2.58	2.33
USAFA	8899	2yr	190.00	6557.00	6558.97	6.09	35.11	38.36	0.93	1.64	0.044	2.39	0.44	0.58
USAFA	8899	5yr	370.00	6557.00	6559.61	7.40	61.98	43.54	0.92	2.21	0.050	3.09	0.90	1.37
USAFA	8899	10yr	590.00	6557.00	6560.18	8.70	87.70	46.88	0.96	2.87	0.052	3.93	1.35	2.07
USAFA	8899	50yr	1500.00	6557.00	6561.50	13.43	153.63	53.33	1.20	6.00	0.056	8.15	3.35	4.93
USAFA	8899	100yr	2000.00	6557.00	6562.10	15.05	186.82	56.25	1.25	7.15	0.057	9.76	4.18	6.01
USAFA	8719	2yr	190.00	6549.00	6554.03	1.20	157.97	34.13	0.10	0.06	0.050	0.06		
USAFA	8719	5yr	370.00	6549.00	6555.63	1.70	218.98	42.11	0.13	0.11	0.048	0.12	0.01	0.01
USAFA	8719	10yr	590.00	6549.00	6556.48	2.34	256.29	46.21	0.16	0.19	0.047	0.22	0.02	0.03
USAFA	8719	50yr	1500.00	6549.00	6558.94	4.21	394.55	72.51	0.25	0.41	0.041	0.64	0.13	0.10
USAFA	8719	100yr	2000.00	6549.00	6559.77	5.07	469.82	110.43	0.29	0.43	0.036	0.90	0.17	0.12
USAFA	8700		Culvert											
USAFA	8681	2yr	190.00	6549.00	6551.58	5.54	34.32	14.22	0.63	1.74	0.050	1.74		
USAFA	8681	5yr	370.00	6549.00	6552.22	8.47	43.69	14.66	0.86	3.86	0.050	3.86		
USAFA	8681	10yr	590.00	6549.00	6553.32	9.22	63.97	23.43	0.98	4.62	0.050	4.62		
USAFA	8681	50yr	1500.00	6549.00	6555.65	11.85	135.31	36.17	0.96	5.09	0.046	6.29	1.58	1.67
USAFA	8681	100yr	2000.00	6549.00	6556.62	12.91	172.34	40.63	0.95	5.41	0.047	7.02	2.09	2.24
USAFA	8529	2yr	190.00	6547.00	6549.09	4.20	45.60	49.67	0.75	1.20	0.049	1.26	0.09	0.21
USAFA	8529	5yr	370.00	6547.00	6549.69	4.97	77.59	55.78	0.70	1.32	0.048	1.50	0.38	0.45
USAFA	8529	10yr	590.00	6547.00	6550.06	6.35	98.88	59.35	0.80	1.96	0.048	2.29	0.70	0.77
USAFA	8529	50yr	1500.00	6547.00	6550.75	11.70	141.68	65.13	1.27	5.77	0.049	7.02	2.69	2.65
USAFA	8529	100yr	2000.00	6547.00	6551.05	13.88	161.72	68.05	1.43	7.68	0.049	9.53	3.83	3.61
USAFA	8029	2yr	190.00	6537.00	6538.37	4.46	45.22	50.29	0.78	1.22	0.049	1.40	0.54	0.25
USAFA	8029	5yr	370.00	6537.00	6538.70	6.51	61.96	53.24	0.99	2.34	0.049	2.71	1.24	0.70
USAFA	8029	10yr	590.00	6537.00	6539.26	7.16	93.44	58.29	0.91	2.43	0.050	2.92	1.44	0.99
USAFA	8029	50yr	1500.00	6537.00	6540.66	10.05	184.50	73.12	0.97	3.61	0.051	4.79	2.22	2.03
USAFA	8029	100yr	2000.00	6537.00	6541.36	10.86	240.06	87.04	0.96	3.58	0.050	5.25	2.10	2.30
USAFA	7186	2yr	190.00	6516.00	6517.62	5.96	32.41	25.99	0.90	2.09	0.048	2.28	0.26	0.48
USAFA	7186	5yr	370.00	6516.00	6518.32	7.54	51.88	29.40	0.93	2.70	0.047	3.18	0.80	0.97
USAFA	7186	10yr	590.00	6516.00	6519.03	8.77	73.97	32.26	0.93	3.15	0.048	3.89	1.27	1.37
USAFA	7186	50yr	1500.00	6516.00	6521.03	12.34	152.33	70.16	1.00	2.87	0.037	6.42	2.59	0.83
USAFA	7186	100yr	2000.00	6516.00	6521.68	13.94	206.00	98.73	1.06	2.98	0.038	7.84	3.22	1.24
USAFA	6709	2yr	190.00	6505.00	6506.90	5.04	39.43	36.14	0.76	1.29	0.045	1.62	0.28	0.27
USAFA	6709	5yr	370.00	6505.00	6507.47	6.69	62.64	43.96	0.85	1.87	0.046	2.55	0.57	0.84
USAFA	6709	10yr	590.00	6505.00	6507.96	8.30	86.34	69.11	0.94	1.88	0.039	3.64	0.37	1.46
USAFA	6709	50yr	1500.00	6505.00	6509.16	12.09	196.93	105.38	1.12	3.49	0.051	6.75	2.04	3.38
USAFA	6709	100yr	2000.00	6505.00	6509.70	13.11	261.30	124.97	1.13	3.82	0.054	7.58	2.47	3.96
USAFA	6250	2yr	190.00	6494.00	6495.42	6.20	32.17	29.40	0.98	2.20	0.048	2.53	0.41	0.83
USAFA	6250	5yr	370.00	6494.00	6496.09	7.69	53.41	34.35	0.98	2.71	0.048	3.37	0.93	1.28
USAFA	6250	10yr	590.00	6494.00	6496.78	8.75	79.56	40.27	0.95	2.93	0.048	3.93	1.36	1.52
USAFA	6250	50yr	1500.00	6494.00	6498.85	11.21	200.74	80.88	0.91	2.79	0.049	5.32	2.15	1.66

HEC-RAS Plan: Plan 06 River: W. Monument Crk. Reach: USAFA (Continued)

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl	Shear Total (lb/sq ft)	Mann Wtd Total	Shear Chan (lb/sq ft)	Shear LOB (lb/sq ft)	Shear ROB (lb/sq ft)
USAFA	6250	100yr	2000.00	6494.00	6499.54	12.26	259.36	88.44	0.93	3.28	0.053	6.08	2.55	2.19
USAFA	6085	2yr	190.00	6491.00	6492.55	3.53	53.76	48.82	0.59	0.85	0.050	0.86		
USAFA	6085	5yr	370.00	6491.00	6493.08	4.64	80.91	54.25	0.64	1.19	0.048	1.30	0.23	0.14
USAFA	6085	10yr	590.00	6491.00	6493.55	5.68	107.69	58.48	0.69	1.57	0.047	1.79	0.49	0.33
USAFA	6085	50yr	1500.00	6491.00	6494.06	11.51	138.84	63.74	1.26	5.67	0.047	6.81	2.26	1.51
USAFA	6085	100yr	2000.00	6491.00	6494.55	12.78	171.64	70.15	1.28	6.25	0.047	7.93	2.85	1.92
USAFA	5681	2yr	190.00	6482.77	6484.34	6.17	31.99	28.33	0.99	2.34	0.049	2.53		1.06
USAFA	5681	5yr	370.00	6482.77	6485.00	7.62	53.00	34.90	0.98	2.68	0.047	3.34	0.61	1.45
USAFA	5681	10yr	590.00	6482.77	6485.70	8.62	81.78	47.61	0.95	2.55	0.045	3.84	0.88	1.50
USAFA	5681	50yr	1500.00	6482.77	6487.65	10.36	235.32	98.03	0.86	2.44	0.053	4.60	1.85	1.59
USAFA	5681	100yr	2000.00	6482.77	6488.26	11.41	297.17	104.91	0.89	2.94	0.057	5.35	2.38	2.07
USAFA	5147	2yr	190.00	6470.00	6471.75	4.46	42.99	37.65	0.72	1.26	0.049	1.33	0.36	0.05
USAFA	5147	5yr	370.00	6470.00	6472.33	5.82	66.63	44.44	0.77	1.66	0.047	1.98	0.66	0.37
USAFA	5147	10yr	590.00	6470.00	6472.88	6.97	93.06	52.01	0.81	1.98	0.046	2.60	0.95	0.64
USAFA	5147	50yr	1500.00	6470.00	6473.72	12.61	142.95	67.38	1.25	5.10	0.046	7.68	3.00	2.19
USAFA	5147	100yr	2000.00	6470.00	6474.31	13.71	185.50	75.31	1.25	5.55	0.048	8.57	3.39	2.86
USAFA	4657	2yr	190.00	6460.00	6462.58	5.60	34.50	23.10	0.77	1.71	0.048	1.89	0.33	0.06
USAFA	4657	5yr	370.00	6460.00	6463.43	7.08	58.64	39.70	0.79	1.57	0.040	2.63	0.41	0.46
USAFA	4657	10yr	590.00	6460.00	6464.15	8.24	96.66	74.33	0.81	1.34	0.037	3.28	0.79	0.32
USAFA	4657	50yr	1500.00	6460.00	6465.95	9.64	318.66	156.33	0.76	1.60	0.057	3.87	1.77	1.04
USAFA	4657	100yr	2000.00	6460.00	6466.83	9.15	484.71	199.13	0.66	1.39	0.062	3.30	1.69	1.00
USAFA	4195	2yr	190.00	6451.00	6453.44	5.97	32.75	22.03	0.80	1.84	0.047	2.13		0.37
USAFA	4195	5yr	380.00	6451.00	6454.22	7.90	55.25	32.97	0.88	2.24	0.044	3.30	0.37	0.88
USAFA	4195	10yr	610.00	6451.00	6454.93	9.41	79.99	36.32	0.93	2.97	0.048	4.30	0.78	1.67
USAFA	4195	50yr	1500.00	6451.00	6456.84	13.16	156.93	44.39	1.03	4.93	0.053	7.21	1.94	3.69
USAFA	4195	100yr	2100.00	6451.00	6457.69	15.36	197.08	50.04	1.11	6.08	0.054	9.32	2.72	4.61
USAFA	3831	2yr	190.00	6443.00	6445.12	6.15	31.96	30.32	0.88	1.63	0.041	2.34	0.09	0.18
USAFA	3831	5yr	380.00	6443.00	6445.88	7.80	58.91	41.52	0.91	2.06	0.044	3.30	0.62	0.92
USAFA	3831	10yr	610.00	6443.00	6446.48	9.22	98.61	76.76	0.96	1.93	0.044	4.27	1.06	1.08
USAFA	3831	50yr	1500.00	6443.00	6447.73	12.67	213.58	101.32	1.10	3.68	0.058	7.14	2.31	2.86
USAFA	3831	100yr	2100.00	6443.00	6448.39	14.02	282.70	111.63	1.13	4.45	0.062	8.32	2.87	3.66
USAFA	3577	2yr	190.00	6439.35	6441.14	4.13	91.04	118.81	0.61	0.57	0.065	1.07	0.49	0.33
USAFA	3577	5yr	380.00	6439.35	6441.65	4.94	152.66	124.12	0.62	0.88	0.073	1.38	0.81	0.49
USAFA	3577	10yr	610.00	6439.35	6442.07	5.86	205.88	129.43	0.67	1.23	0.076	1.83	1.19	0.67
USAFA	3577	50yr	1500.00	6439.35	6443.06	8.96	349.57	205.63	0.86	1.94	0.067	3.80	2.67	0.50
USAFA	3577	100yr	2100.00	6439.35	6443.61	9.87	467.43	219.18	0.88	2.40	0.074	4.39	3.04	1.07
USAFA	3379	2yr	190.00	6436.00	6437.67	5.02	55.79	102.29	0.81	0.78	0.044	1.69	0.43	0.43
USAFA	3379	5yr	380.00	6436.00	6438.08	6.29	101.16	114.99	0.88	1.32	0.056	2.40	1.00	0.75
USAFA	3379	10yr	610.00	6436.00	6438.53	6.97	155.54	130.24	0.86	1.59	0.062	2.71	1.37	0.85
USAFA	3379	50yr	1500.00	6436.00	6439.93	7.82	376.03	183.09	0.74	1.72	0.070	2.87	1.83	0.95
USAFA	3379	100yr	2100.00	6436.00	6440.47	8.75	480.96	199.17	0.77	2.07	0.072	3.41	2.28	1.22
USAFA	3256	2yr	190.00	6434.00	6435.84	4.08	79.96	94.39	0.59	0.62	0.060	1.05		0.48

HEC-RAS Plan: Plan 06 River: W. Monument Crk. Reach: USAFA (Continued)

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Vel Chnl	Flow Area	Top Width	Froude # Chl	Shear Total	Mann Wtd Total	Shear Chan	Shear LOB	Shear ROB
			(cfs)	(ft)	(ft)	(ft/s)	(sq ft)	(ft)		(lb/sq ft)		(lb/sq ft)	(lb/sq ft)	(lb/sq ft)
USAFA	3256	5yr	380.00	6434.00	6436.44	4.80	138.75	99.32	0.59	0.89	0.069	1.29	0.13	0.78
USAFA	3256	10yr	610.00	6434.00	6436.94	5.69	189.38	103.32	0.63	1.23	0.072	1.69	0.29	1.12
USAFA	3256	50yr	1500.00	6434.00	6438.17	8.66	355.62	161.13	0.79	2.03	0.072	3.43	0.90	1.83
USAFA	3256	100yr	2100.00	6434.00	6438.82	9.30	461.79	165.62	0.78	2.39	0.076	3.75	1.08	2.22
USAFA	2993	2yr	190.00	6431.00	6431.89	4.22	57.40	70.31	0.79	1.21	0.060	1.31	1.08	1.04
USAFA	2993	5yr	380.00	6431.00	6432.25	6.02	88.72	96.64	0.95	1.74	0.057	2.38	1.19	1.69
USAFA	2993	10yr	610.00	6431.00	6432.61	7.14	125.31	106.23	0.99	2.25	0.060	3.08	1.68	2.00
USAFA	2993	50yr	1500.00	6431.00	6433.78	8.91	288.93	167.07	0.94	2.48	0.062	3.99	2.29	1.57
USAFA	2993	100yr	2100.00	6431.00	6434.24	10.32	375.23	202.60	1.01	2.90	0.063	5.09	2.39	2.31
USAFA	2757	2yr	190.00	6423.00	6424.82	6.02	31.58	27.81	0.99	2.43	0.050	2.46	0.13	
USAFA	2757	5yr	380.00	6423.00	6425.55	6.96	65.09	57.28	0.90	1.72	0.043	2.80	0.69	0.53
USAFA	2757	10yr	610.00	6423.00	6426.12	8.03	101.73	72.06	0.91	1.99	0.047	3.41	1.10	0.91
USAFA	2757	50yr	1500.00	6423.00	6427.40	11.18	202.81	84.15	1.02	3.73	0.057	5.74	2.82	2.07
USAFA	2757	100yr	2100.00	6423.00	6428.27	11.83	279.13	90.79	0.97	4.00	0.060	5.98	3.25	2.35
USAFA	2629	2yr	190.00	6420.00	6422.00	4.41	43.04	35.22	0.70	1.29	0.050	1.29		
USAFA	2629	5yr	380.00	6420.00	6422.69	5.41	72.74	51.86	0.72	1.38	0.045	1.72	0.27	0.17
USAFA	2629	10yr	610.00	6420.00	6423.26	6.39	106.42	63.66	0.74	1.57	0.045	2.18	0.56	0.51
USAFA	2629	50yr	1500.00	6420.00	6424.30	10.29	180.29	79.34	0.99	3.38	0.048	5.01	1.65	1.88
USAFA	2629	100yr	2100.00	6420.00	6424.86	11.99	227.54	88.64	1.07	4.21	0.049	6.45	2.22	2.72
USAFA	2321	2yr	190.00	6415.00	6416.85	5.17	38.61	27.45	0.71	1.34	0.047	1.60	0.30	0.41
USAFA	2321	5yr	380.00	6415.00	6417.69	6.70	66.17	45.94	0.75	1.35	0.040	2.35	0.65	0.43
USAFA	2321	10yr	610.00	6415.00	6418.37	7.92	115.57	101.49	0.78	1.09	0.038	3.03	0.95	0.53
USAFA	2321	50yr	1500.00	6415.00	6419.88	9.46	339.26	176.33	0.77	1.56	0.059	3.79	1.35	1.24
USAFA	2321	100yr	2100.00	6415.00	6420.48	10.28	446.21	180.67	0.79	2.01	0.066	4.30	1.57	1.71
USAFA	2108	2yr	190.00	6410.26	6412.44	6.23	31.27	24.01	0.89	2.05	0.046	2.40	0.31	0.35
USAFA	2108	5yr	380.00	6410.26	6413.19	8.14	52.01	31.26	0.95	2.61	0.045	3.59	0.85	0.94
USAFA	2108	10yr	610.00	6410.26	6413.94	9.46	78.00	37.64	0.96	2.99	0.047	4.40	1.28	1.47
USAFA	2108	50yr	1500.00	6410.26	6416.01	11.66	218.97	93.61	0.91	2.58	0.051	5.62	2.01	1.73
USAFA	2108	100yr	2100.00	6410.26	6416.99	12.15	312.54	98.90	0.87	2.99	0.058	5.76	2.15	2.32
USAFA	2064	2yr	190.00	6410.00	6411.90	4.44	45.49	34.47	0.62	1.00	0.047	1.20	0.15	0.36
USAFA	2064	5yr	380.00	6410.00	6412.39	6.65	63.41	38.13	0.81	1.96	0.048	2.46	0.52	0.90
USAFA	2064	10yr	610.00	6410.00	6412.59	9.68	71.05	39.58	1.13	3.97	0.048	5.06	1.18	1.94
USAFA	2064	50yr	1500.00	6410.00	6414.31	12.86	156.10	71.03	1.13	4.04	0.045	7.40	2.42	2.01
USAFA	2064	100yr	2100.00	6410.00	6415.40	13.30	256.76	131.03	1.04	2.80	0.043	7.29	2.58	1.59
USAFA	1984	2yr	190.00	6408.00	6409.94	6.79	29.17	22.12	0.99	2.58	0.048	2.88		0.89
USAFA	1984	5yr	380.00	6408.00	6411.26	6.32	104.90	172.38	0.67	0.45	0.032	2.02	0.46	0.25
USAFA	1984	10yr	610.00	6408.00	6411.73	7.04	199.96	219.72	0.69	0.68	0.050	2.38	0.63	0.51
USAFA	1984	50yr	1500.00	6408.00	6412.09	13.08	281.95	231.29	1.21	2.73	0.060	7.94	2.30	2.25
USAFA	1984	100yr	2100.00	6408.00	6413.11	9.95	524.49	245.96	0.82	1.98	0.075	4.23	1.43	1.80
USAFA	1867	2yr	190.00	6405.65	6407.44	4.33	44.70	45.29	0.70	1.04	0.045	1.26		0.12
USAFA	1867	5yr	380.00	6405.65	6407.34	9.47	40.46	40.65	1.59	5.58	0.047	6.16		0.48
USAFA	1867	10yr	610.00	6405.65	6407.81	10.30	68.27	75.99	1.45	3.74	0.040	6.48	0.67	1.16
USAFA	1867	50yr	1500.00	6405.65	6409.53	9.80	218.82	94.16	0.95	3.25	0.057	4.58	1.30	2.52

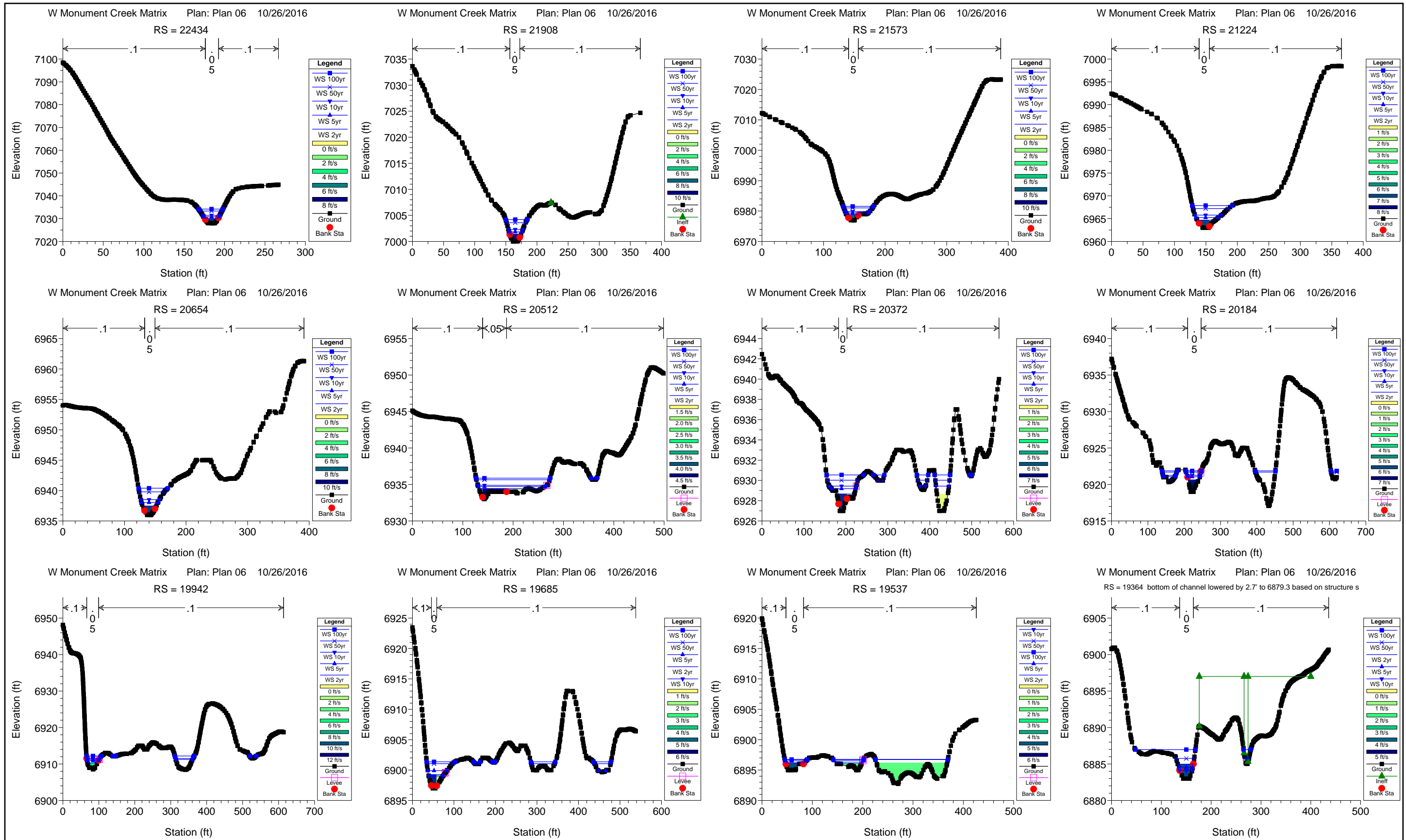
HEC-RAS Plan: Plan 06 River: W. Monument Crk. Reach: USAFA (Continued)

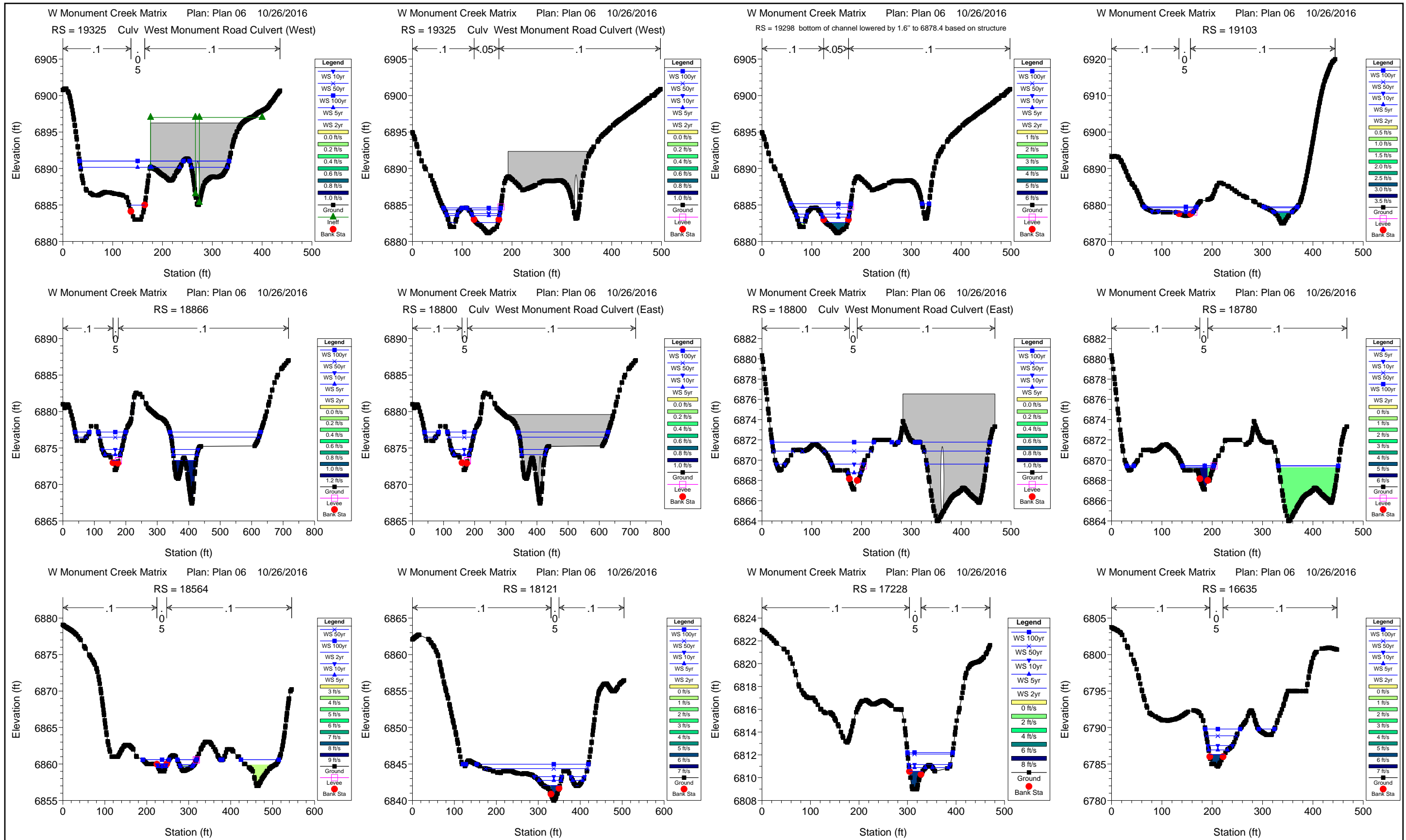
Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl	Shear Total (lb/sq ft)	Mann Wtd Total	Shear Chan (lb/sq ft)	Shear LOB (lb/sq ft)	Shear ROB (lb/sq ft)
USAFA	1867	100yr	2100.00	6405.65	6410.16	10.99	279.49	98.32	0.98	3.95	0.059	5.44	1.67	3.27
USAFA	1734	2yr	190.00	6403.00	6405.02	4.47	42.47	37.59	0.74	1.34	0.050	1.36		
USAFA	1734	5yr	380.00	6403.00	6405.87	5.02	83.07	64.07	0.63	0.92	0.041	1.42	0.28	0.22
USAFA	1734	10yr	610.00	6403.00	6406.64	4.99	204.24	194.41	0.53	0.48	0.044	1.26	0.25	0.34
USAFA	1734	50yr	1500.00	6403.00	6408.01	5.94	480.95	207.09	0.51	0.88	0.065	1.56	0.68	0.77
USAFA	1734	100yr	2100.00	6403.00	6408.72	6.40	628.89	211.35	0.51	1.06	0.069	1.72	0.87	0.96
USAFA	1555	2yr	190.00	6400.00	6402.41	4.73	41.51	25.25	0.61	1.12	0.047	1.29	0.13	0.35
USAFA	1555	5yr	380.00	6400.00	6403.04	6.98	58.72	29.19	0.78	2.03	0.046	2.56	0.51	0.81
USAFA	1555	10yr	610.00	6400.00	6403.59	9.06	75.55	32.23	0.91	3.05	0.047	4.03	1.10	1.34
USAFA	1555	50yr	1500.00	6400.00	6405.96	9.43	325.15	168.16	0.71	1.30	0.052	3.60	1.41	0.93
USAFA	1555	100yr	2100.00	6400.00	6406.53	10.68	421.80	175.40	0.77	1.81	0.059	4.47	1.81	1.41
USAFA	1428	2yr	190.00	6398.00	6399.86	5.97	32.00	37.38	0.98	1.82	0.042	2.42		0.04
USAFA	1428	5yr	380.00	6398.00	6400.55	6.23	77.92	81.95	0.90	1.54	0.047	2.41	0.36	0.83
USAFA	1428	10yr	610.00	6398.00	6400.98	7.25	114.92	89.62	0.92	2.01	0.052	3.00	0.68	1.35
USAFA	1428	50yr	1500.00	6398.00	6401.37	14.12	150.48	96.29	1.64	7.30	0.055	10.71	2.04	5.58
USAFA	1428	100yr	2100.00	6398.00	6401.96	14.74	210.88	107.44	1.53	7.36	0.057	10.81	2.42	6.40
USAFA	1361	2yr	190.00	6394.70	6399.12	1.50	126.60	38.75	0.15	0.11	0.050	0.11		
USAFA	1361	5yr	380.00	6394.70	6400.54	1.89	202.44	77.41	0.20	0.17	0.048	0.18	0.01	0.02
USAFA	1361	10yr	610.00	6394.70	6401.10	2.52	250.81	100.68	0.24	0.23	0.042	0.30	0.04	0.02
USAFA	1361	50yr	1500.00	6394.70	6402.38	4.26	460.93	250.83	0.35	0.32	0.036	0.79	0.25	0.11
USAFA	1361	100yr	2100.00	6394.70	6402.75	5.32	554.14	254.89	0.42	0.54	0.041	1.19	0.41	0.25
USAFA	1316		Culvert											
USAFA	1307	2yr	190.00	6396.00	6397.68	5.45	34.84	28.74	0.87	1.98	0.050	1.98		
USAFA	1307	5yr	380.00	6396.00	6398.23	7.37	52.17	34.29	1.00	2.94	0.047	3.25	0.33	0.42
USAFA	1307	10yr	610.00	6396.00	6398.88	8.44	76.44	40.55	0.98	3.09	0.046	3.82	0.83	0.85
USAFA	1307	50yr	1500.00	6396.00	6401.36	8.28	350.08	259.00	0.66	0.82	0.042	2.88	0.75	0.50
USAFA	1307	100yr	2100.00	6396.00	6401.96	8.90	516.89	293.79	0.67	1.05	0.052	3.20	0.66	0.84
USAFA	1248	2yr	190.00	6394.58	6396.33	3.95	48.80	66.58	0.79	1.15	0.049	1.20	0.38	0.25
USAFA	1248	5yr	380.00	6394.58	6396.82	4.76	82.79	71.65	0.75	1.36	0.049	1.48	0.58	0.47
USAFA	1248	10yr	610.00	6394.58	6397.23	5.67	113.34	75.06	0.77	1.72	0.049	1.92	0.82	0.75
USAFA	1248	50yr	1500.00	6394.58	6397.12	15.03	104.74	74.30	2.12	12.41	0.049	13.78	5.75	5.11
USAFA	1248	100yr	2100.00	6394.58	6397.65	15.48	145.03	77.80	1.89	11.77	0.049	13.26	5.93	5.87
USAFA	1162	2yr	190.00	6392.97	6394.05	4.77	44.11	52.10	0.83	1.33	0.049	1.60	0.56	0.85
USAFA	1162	5yr	380.00	6392.97	6394.45	6.59	66.17	56.97	0.97	2.22	0.050	2.73	1.17	1.53
USAFA	1162	10yr	610.00	6392.97	6394.94	7.64	95.54	64.55	0.97	2.57	0.050	3.33	1.42	1.90
USAFA	1162	50yr	1500.00	6392.97	6396.27	10.11	188.20	74.07	0.99	3.79	0.054	4.88	2.69	2.84
USAFA	1162	100yr	2100.00	6392.97	6396.95	11.29	240.48	78.10	1.00	4.43	0.055	5.71	3.33	3.30
USAFA	915	2yr	190.00	6385.00	6386.62	6.68	28.97	22.66	0.99	2.56	0.048	2.83	0.38	0.60
USAFA	915	5yr	380.00	6385.00	6387.49	7.91	55.45	39.09	0.92	2.09	0.042	3.38	0.92	0.72
USAFA	915	10yr	610.00	6385.00	6388.11	9.40	82.12	47.15	0.97	2.62	0.045	4.41	1.39	1.30
USAFA	915	50yr	1500.00	6385.00	6389.72	12.69	174.21	67.29	1.05	3.89	0.050	6.93	2.57	2.64
USAFA	915	100yr	2100.00	6385.00	6390.51	14.13	230.76	77.03	1.08	4.49	0.052	8.14	3.11	3.26

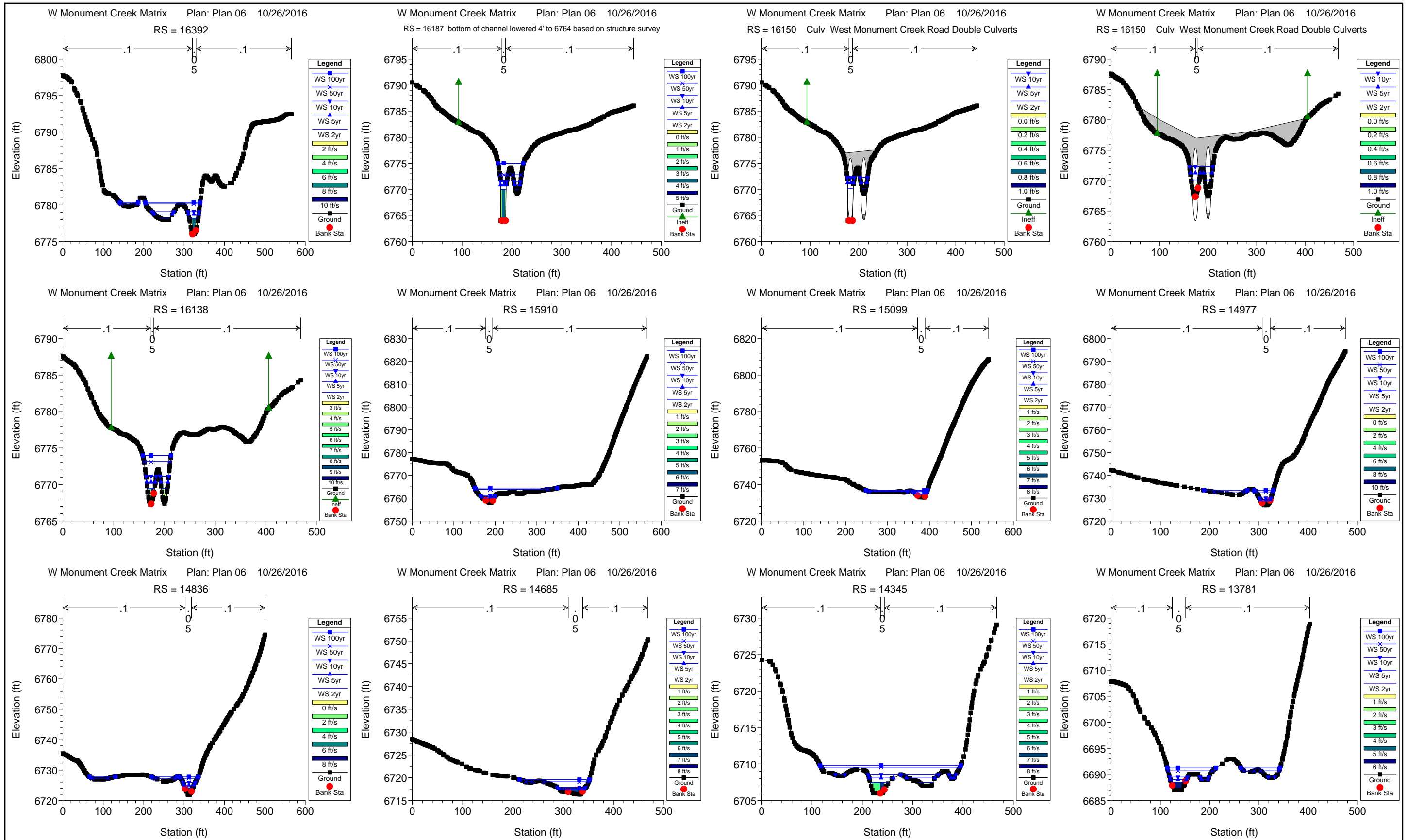
HEC-RAS Plan: Plan 06 River: W. Monument Crk. Reach: USAFA (Continued)

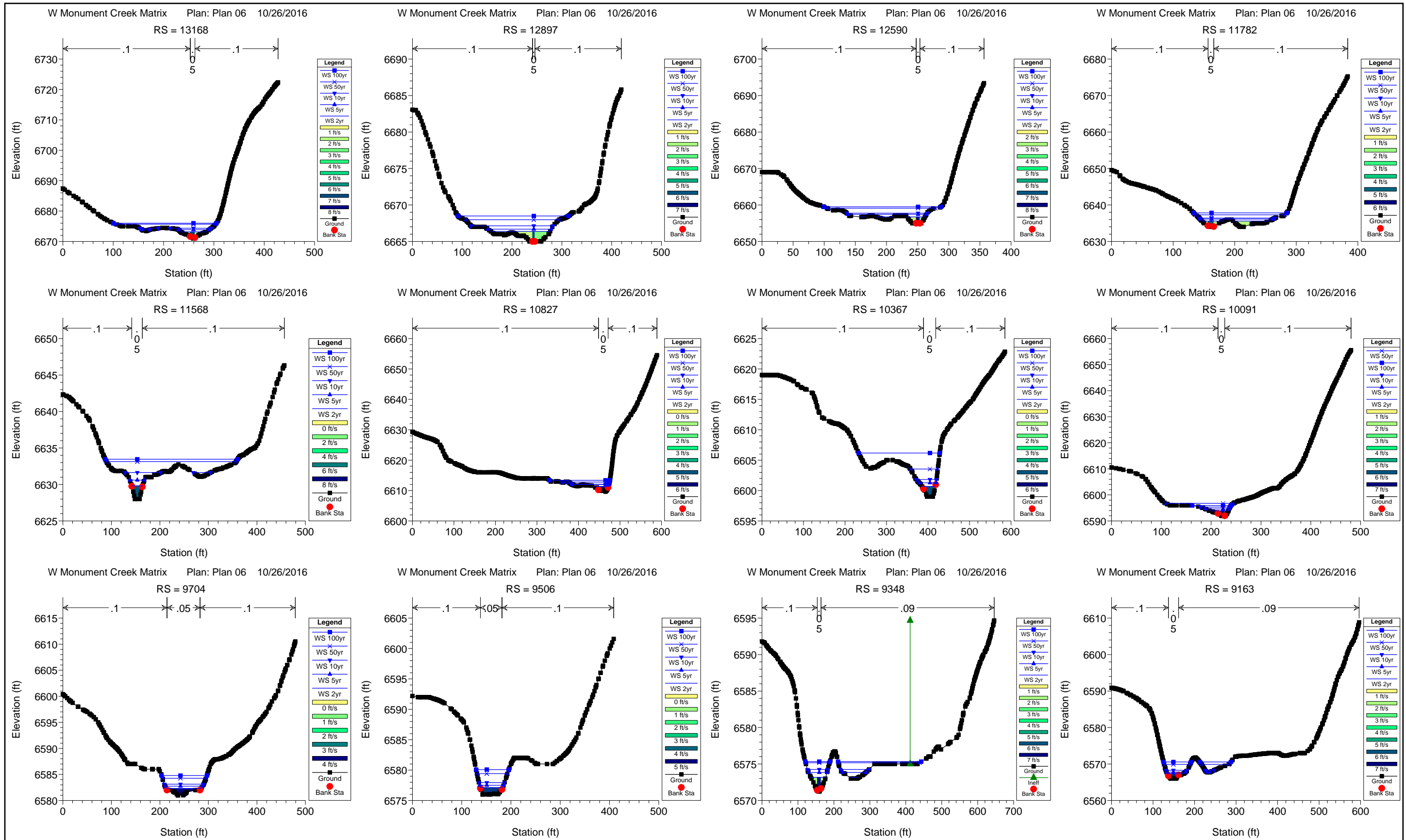
Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl	Shear Total (lb/sq ft)	Mann Wtd Total	Shear Chan (lb/sq ft)	Shear LOB (lb/sq ft)	Shear ROB (lb/sq ft)
USAFA	813	2yr	190.00	6383.00	6384.53	3.31	58.06	70.39	0.63	0.78	0.049	0.81	0.08	0.29
USAFA	813	5yr	380.00	6383.00	6385.13	3.85	103.29	81.35	0.56	0.80	0.048	0.92	0.20	0.40
USAFA	813	10yr	610.00	6383.00	6385.83	4.05	163.78	90.01	0.49	0.75	0.048	0.90	0.31	0.44
USAFA	813	50yr	1500.00	6383.00	6388.44	4.06	459.26	131.25	0.33	0.50	0.050	0.69	0.30	0.36
USAFA	813	100yr	2100.00	6383.00	6390.93	3.38	813.54	155.80	0.22	0.31	0.054	0.42	0.23	0.22
USAFA	718	2yr	190.00	6380.00	6382.00	6.55	29.78	23.55	0.96	2.37	0.047	2.70	0.47	0.57
USAFA	718	5yr	380.00	6380.00	6382.81	8.16	50.27	26.96	0.96	2.95	0.047	3.61	1.13	1.16
USAFA	718	10yr	610.00	6380.00	6384.77	6.55	110.25	33.94	0.56	1.40	0.049	1.89	0.76	0.76
USAFA	718	50yr	1500.00	6380.00	6385.81	12.49	147.41	37.05	0.96	4.58	0.049	6.37	2.71	2.68
USAFA	718	100yr	2100.00	6380.00	6389.75	9.09	316.26	49.45	0.53	1.80	0.051	2.80	1.21	1.19
USAFA	700		Bridge											
USAFA	667	2yr	190.00	6379.00	6380.86	6.00	31.77	27.81	0.98	2.36	0.049	2.42	0.32	
USAFA	667	5yr	380.00	6379.00	6381.55	7.46	52.32	31.88	0.97	2.87	0.047	3.23	0.87	0.51
USAFA	667	10yr	610.00	6379.00	6382.20	8.70	74.34	35.23	0.97	3.31	0.047	3.96	1.29	1.00
USAFA	667	50yr	1500.00	6379.00	6384.18	11.31	153.49	45.30	0.94	4.07	0.047	5.51	2.09	1.91
USAFA	667	100yr	2100.00	6379.00	6385.23	12.46	205.45	65.68	0.94	3.47	0.041	6.24	2.45	1.24
USAFA	527	2yr	190.00	6373.42	6375.43	7.06	27.17	22.45	1.10	3.08	0.049	3.26	0.53	
USAFA	527	5yr	380.00	6373.42	6376.04	9.20	43.35	41.04	1.23	3.04	0.038	5.00	1.31	0.15
USAFA	527	10yr	610.00	6373.42	6376.84	9.19	88.33	70.81	1.01	2.17	0.042	4.39	1.06	1.06
USAFA	527	50yr	1500.00	6373.42	6377.38	16.89	132.76	91.13	1.69	6.63	0.046	13.94	3.84	4.26
USAFA	527	100yr	2100.00	6373.42	6377.76	19.65	168.93	102.14	1.86	8.73	0.049	18.14	5.66	6.11
USAFA	37	2yr	190.00	6360.00	6375.00	0.09	4650.65	810.48	0.00	0.00	0.060	0.00	0.00	0.00
USAFA	37	5yr	380.00	6360.00	6366.70	0.87	572.70	220.15	0.07	0.02	0.041	0.03	0.01	0.01
USAFA	37	10yr	610.00	6360.00	6366.70	1.39	572.70	220.15	0.11	0.04	0.041	0.08	0.02	0.02
USAFA	37	50yr	1500.00	6360.00	6366.70	3.42	572.70	220.15	0.27	0.24	0.041	0.48	0.11	0.13
USAFA	37	100yr	2100.00	6360.00	6366.70	4.79	572.70	220.15	0.37	0.47	0.041	0.94	0.22	0.26

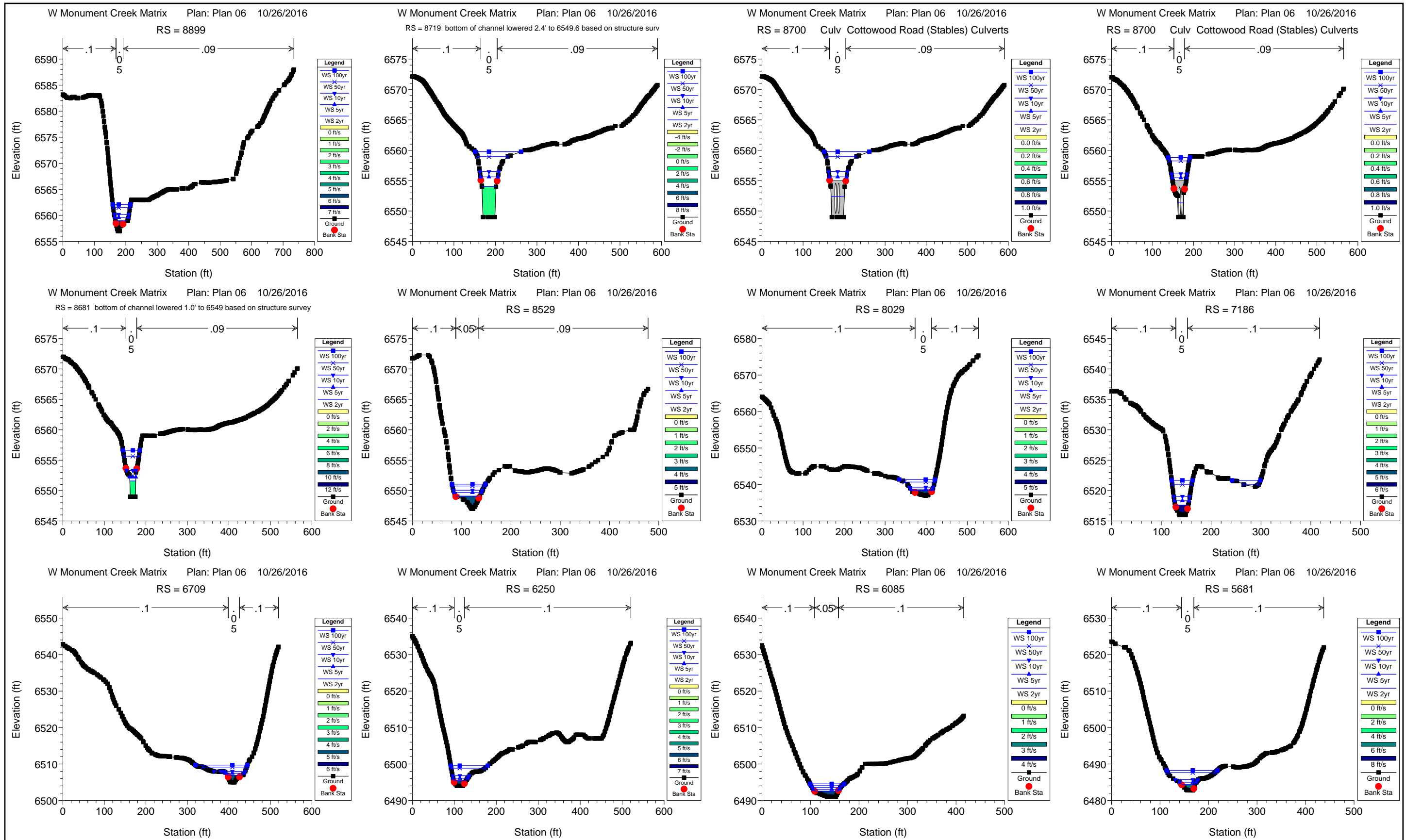
West Monument Creek Cross Section Diagrams

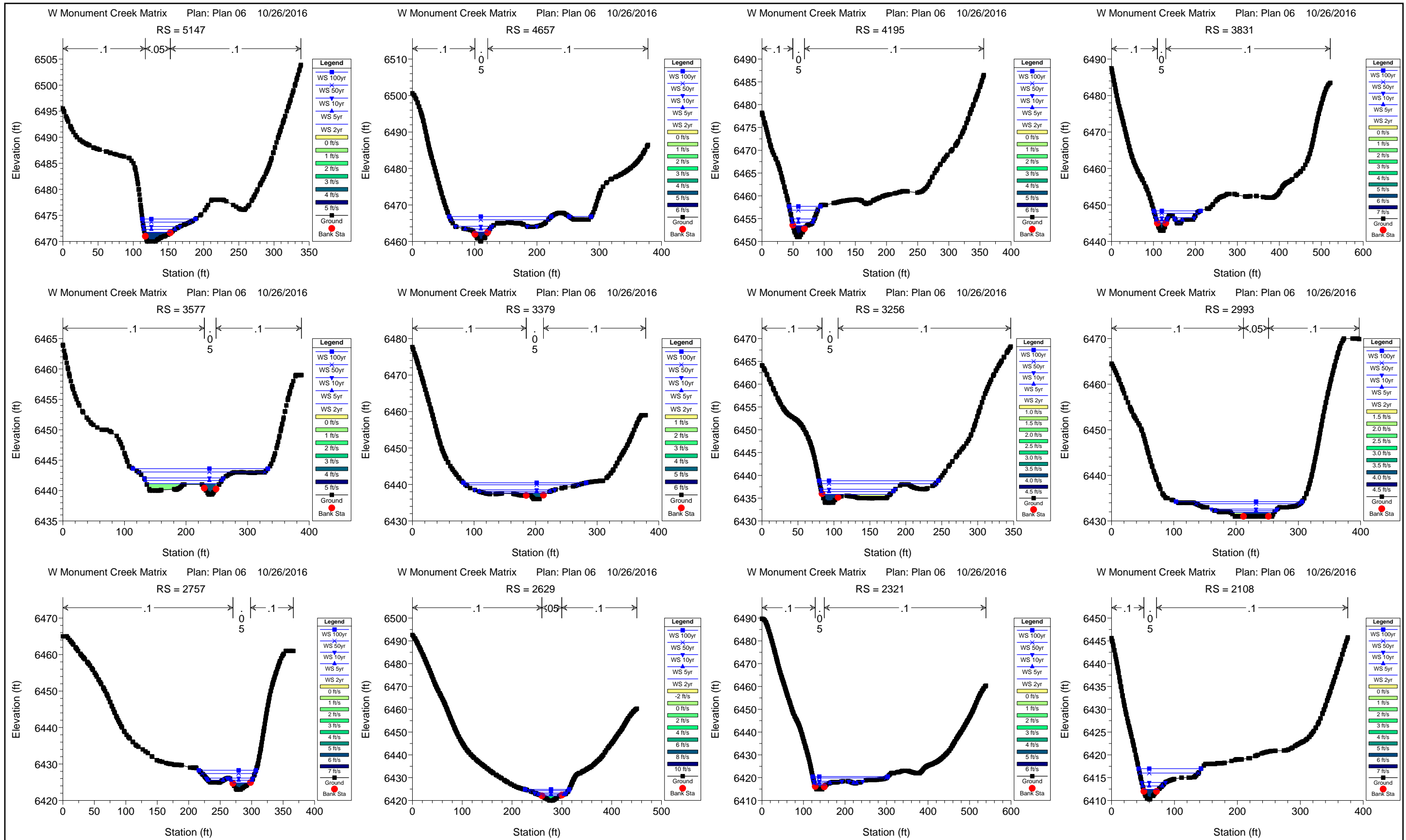


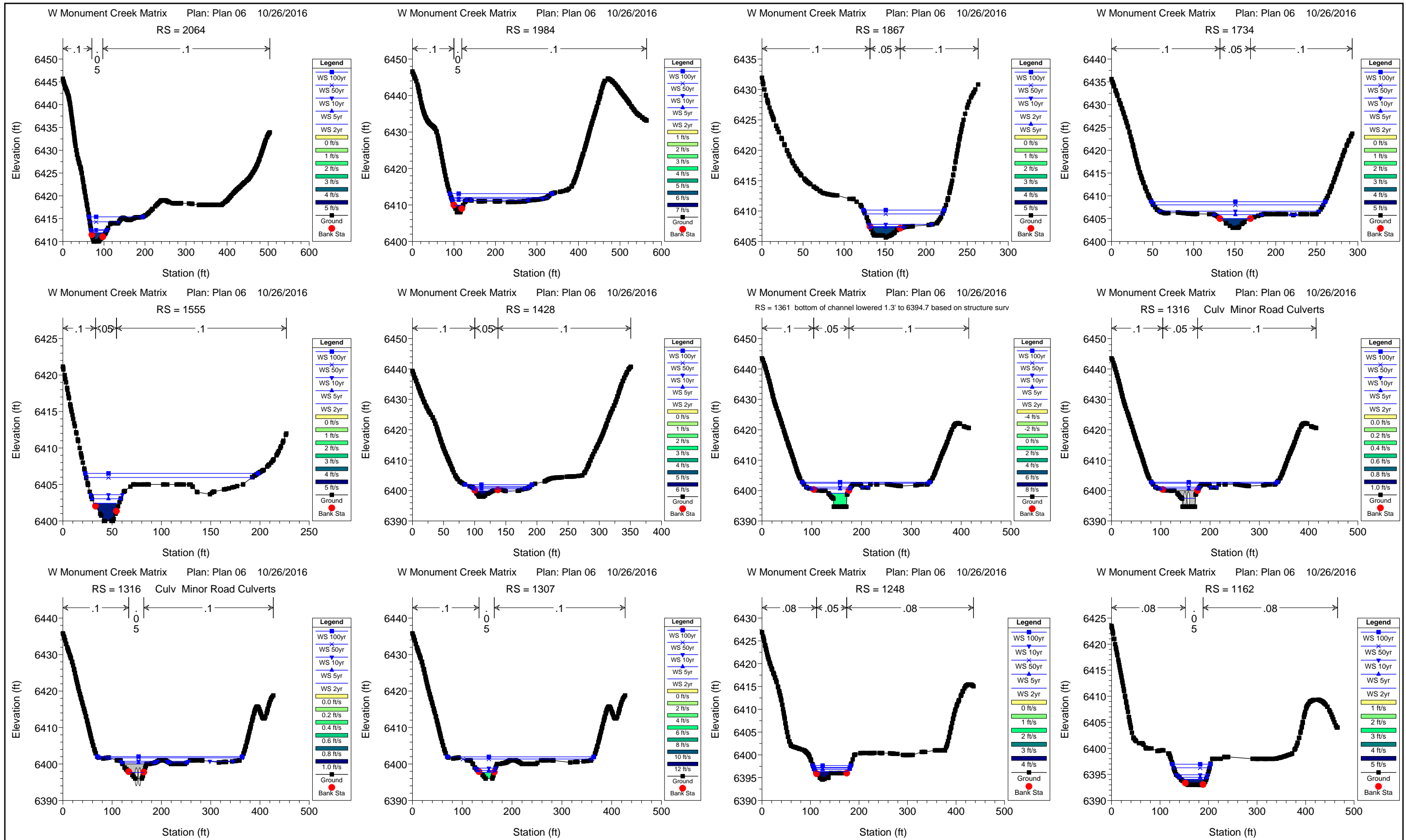


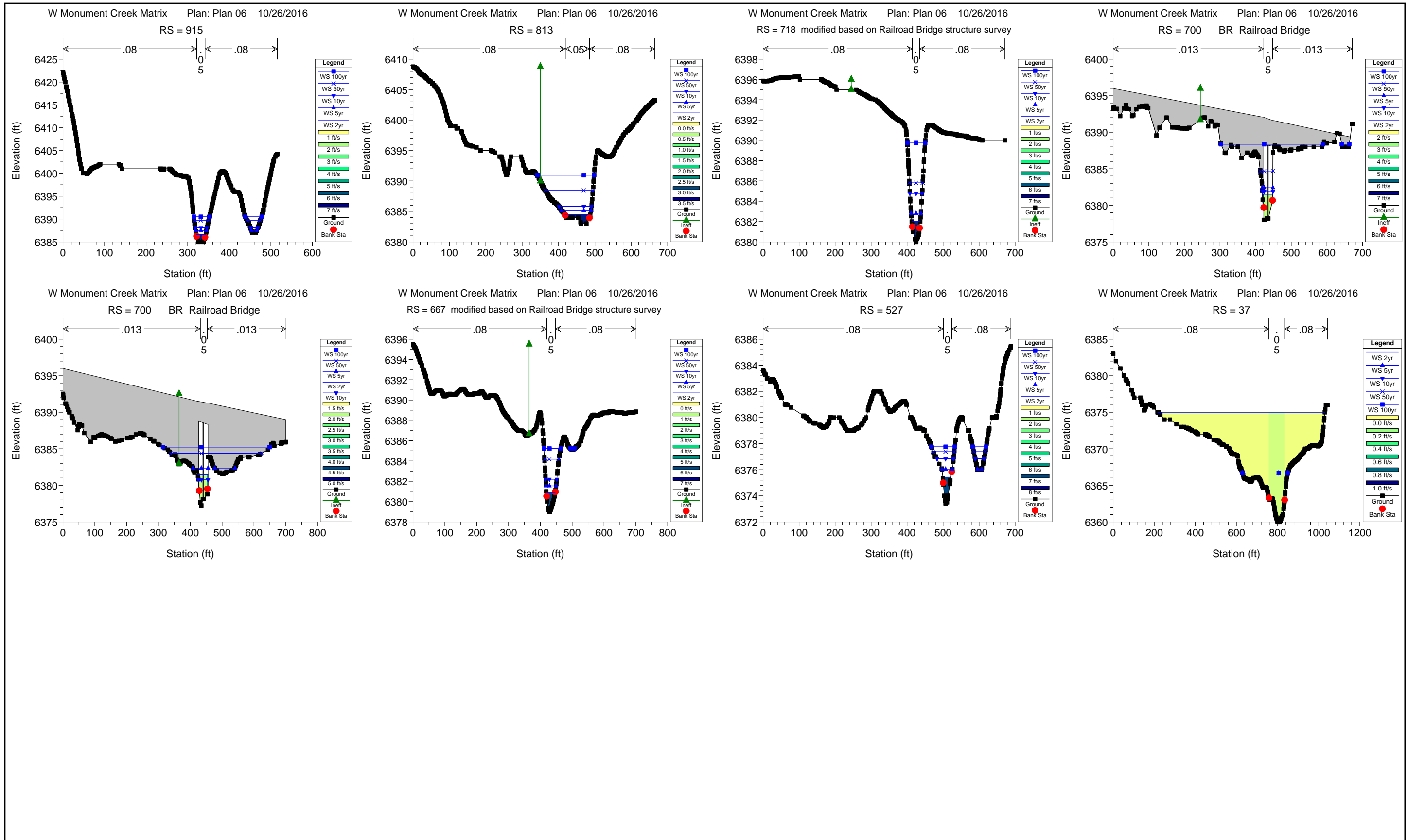












iv. **Geomorphological Assessment Technical Memorandum and Results**

MEMORANDUM

Date: April 29, 2016

To: Larry Small, Executive Director, Fountain Creek Watershed Flood Control and Greenway District

From: Graham Thompson P.E.

RE: Geomorphic Assessment of Monument Creek and Tributaries
DRAFT Technical Memorandum

1.0 Background and Purpose

The Monument Creek Watershed includes 236.8 square miles of forest and upland grasslands. The mountains meet the plains within the watershed with the United Air Force Academy located at the center of the watershed. The recent summer of 2013 floods, coupled with the 2012 Waldo Canyon fire and the 2013 Black Forest fire have resulted in considerable erosion and transport of sediment and debris. The floods altered the creek bed, banks, floodplains and structures and have led to extensive flood damage including property and infrastructure damage, erosion and sedimentation that resulted in a net loss of flood capacity, and in some cases, severe channel instability and downstream sediment supply.

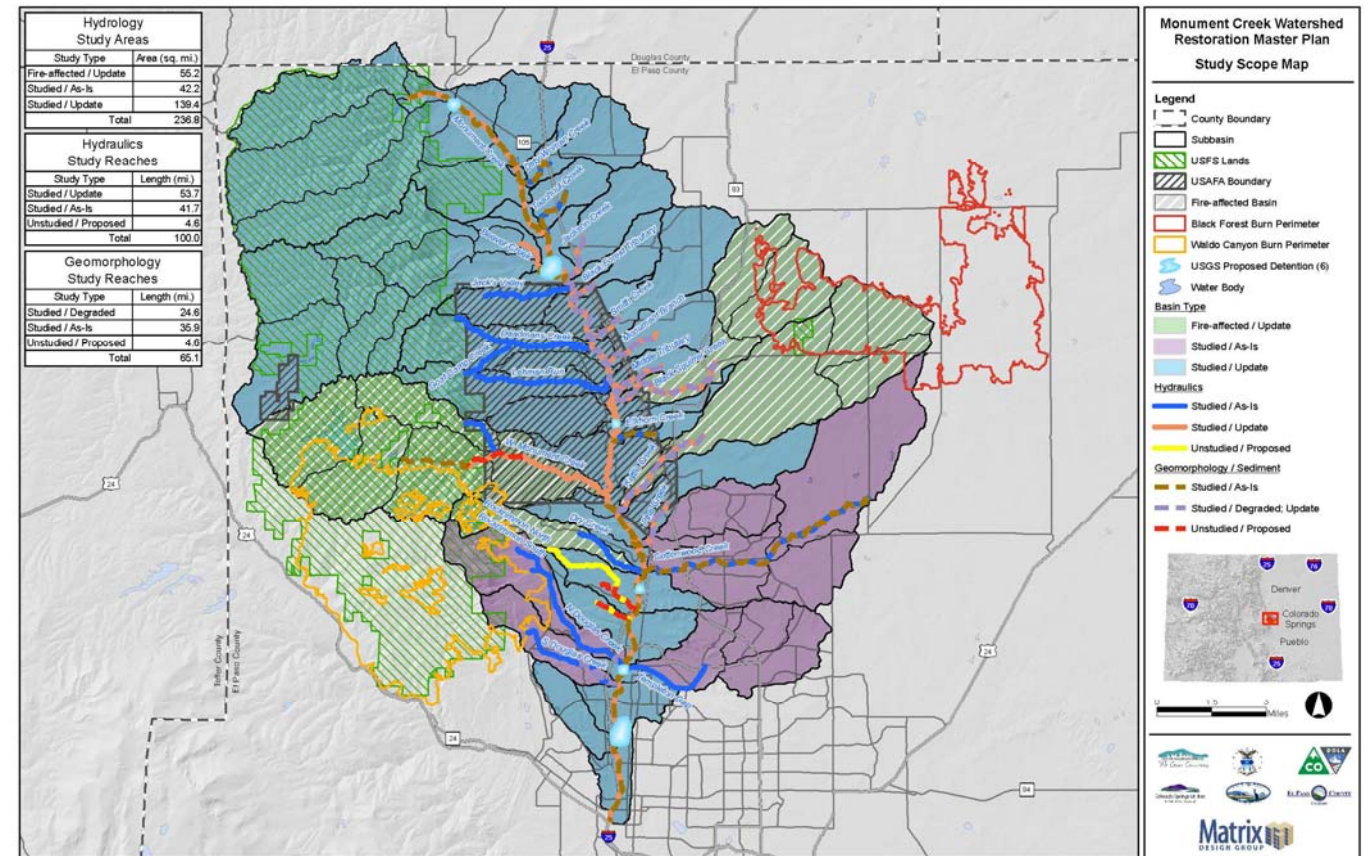
To identify strategies that will mitigate the effects of fire damage and flood damage in the watershed, a holistic restoration planning effort will provide effective and lasting protection of at risk assets as well as the health, safety and welfare of the public. A critical building block of the planning effort included an evaluation of fluvial geomorphology in project streams within the Monument Creek Watershed.

The purpose of the geomorphic assessment was to evaluate the degree of in-stream erosion and establish restoration potential and priorities for selected reaches of Monument Creek and 13 major tributaries based on the magnitude and potential adverse consequences of continued instability and downstream sediment supply.

2.0 Methods

The Matrix team, including subconsultants Wildland Hydrology, Inc. and Blue Mountain Consultants, LLC performed a detailed bank and channel stability assessment to evaluate the geomorphic condition of the selected reaches of Monument Creek and 13 major tributaries in the areas identified by stakeholders as primary sources of erosion and excess sediment. These reaches are identified in Figure 2-1.

Figure 2-1. Monument Creek Watershed Study Scope Map



Field methods included the evaluation of Bank Erosion Hazard Index (BEHI) and Near Bank Stress (NBS) as defined in the Bank Assessment for Non-point source Consequences of Sediment (BANCS) model. The BANCS model is one component of the Watershed Assessment of River Stability and Sediment Supply (WARSSS) methodology. WARSSS is a comprehensive, quantitative, geomorphology-based method for determining effects of land use on sediment and stream channel dynamics (Rosgen 2006).

Field work was completed in November and December 2015 and included walking the identified reaches of Monument Creek and tributaries and mapped existing stream type and condition, valley type, and relevant BEHI and NBS geomorphic parameters to determine existing bank erosion rates. Table 2-1 lists the reaches and stream lengths as mapped in the field. Mapped miles included only areas where stream banks potentially contribute sediment so stable reaches, wetlands, concrete channels, and road underpasses (e.g. culvert) were not included in the stream length totals.

Table 2-1. Mapped Stream Lengths for Monument Creek and Tributaries

Stream	Mapped Miles
Black Forest Tributary	0.26
Black Squirrel Creek	1.95
Jackson Creek	1.39
Kettle Creek	6.32
Middle Tributary	1.29
Monument Branch	2.06
Monument Creek	5.62
North Douglas	0.44
North Rockrimmon	0.85
Pine Creek	2.70
Smith Creek	0.30
South Douglas	1.18
South Rockrimmon ¹	
West Monument	1.33
Grand Total	25.69

¹South Rockrimmon was walked and photographed but the entire reach rated either Good or Fair. No restoration priorities exist on this stream and the stream channel was not mapped.

All reaches were photo documented and a georeferenced photo index with aerial imagery was created. Special notation was made for areas where immediate action is required to conserve desirable attributes (e.g. infrastructure, functioning wetlands, etc).

The team then developed river restoration priorities using average annual bank erosion rate (tons/ft/year) and objectively stratified reaches from worst to best. Finally, the team proposed stream type conversion and restoration potential for all reaches. Calculated sediment savings as a function of stream type conversion (reduction in sediment supply from bank erosion) for each reach.

3.0 Stream Type and Condition

Field reconnaissance was completed to map the project reaches of the Monument Creek and tributaries and classify the existing stream type and condition. The project reaches were classified into five (5) Rosgen stream types described in Table 3-1 and shown in Figure 3-1.

Table 3-1. Stream Types of Monument Creek

Rosgen Stream Type	General Description	Entrenchment Ratio	W/D Ratio	Sinuosity	Slope	Landforms/Soils/Features	Percentage of Upper Fountain Creek
B	Moderately entrenched, moderate gradient, riffle-dominated channel, with infrequently spaced pools. Very stable plan and profile. Stable banks.	1.4 - 2.2	>12	>1.2	0.02 - 0.39	Moderate relief, colluvial deposition and/or mstructural. Moderate entrenchment and width/depth ratio. Narrow, gently sloping valleys. Rapids predominate with scour pools.	40%
C	Low gradient, meandering, point bar, riffle/pool, alluvial channels with broad, well-defined floodplains.	>2.2	>12	>1.2	<0.02	Broad valleys with terraces, in association with floodplains, alluvial soils. Slightly entrenched with well-defined meandering channels. Riffle/pool bed morphology.	10%
D	Braided channel with longitudinal and transverse bars. Very wide channel with eroding banks.	N/A	>40	N/A	<0.04	Broad valleys with alluvium, steeper fans. Glacial debris and depositional features. Active lateral adjustment with abundance of sediment supply. Convergence. Divergence of bed features, aggradational processes, high bedload and bank erosion.	3%
F	Entrenched meandering riffle/pool channel on low gradients with high width/depth ratio.	<1.4	>12	>1.2	<0.02	Entrenched in highly weathered material. Gentle gradients with a high width/depth ratio. Meandering, laterally unstable with high bank erosion rates. Riffle/pool morphology.	15%
G	Entrenched "gully" step/pool and low width/depth ratio on moderate gradients.	<1.4	<12	>1.2	<0.039	Gullies, step/pool morphology with moderate slopes and low width/depth ratio. Narrow valleys or deeply incised in alluvial or colluvial materials; i.e., fans or deltas. Unstable with grade control problems and high bank erosion rates.	32%

Included in the evaluation of stream morphology were conditional criteria that reflect the potential local erosion rate were estimated as a function of mainstem stream condition as "poor", "poor-fair", "fair", and "good". A reach under "poor" condition will supply significantly more sediment than a similar reach classified as "fair" or "good" condition. The bank condition evaluation for sediment supply reaches is shown in Figure 3-2.

Figure 3-1. Monument Creek and Tributaries Stream Type

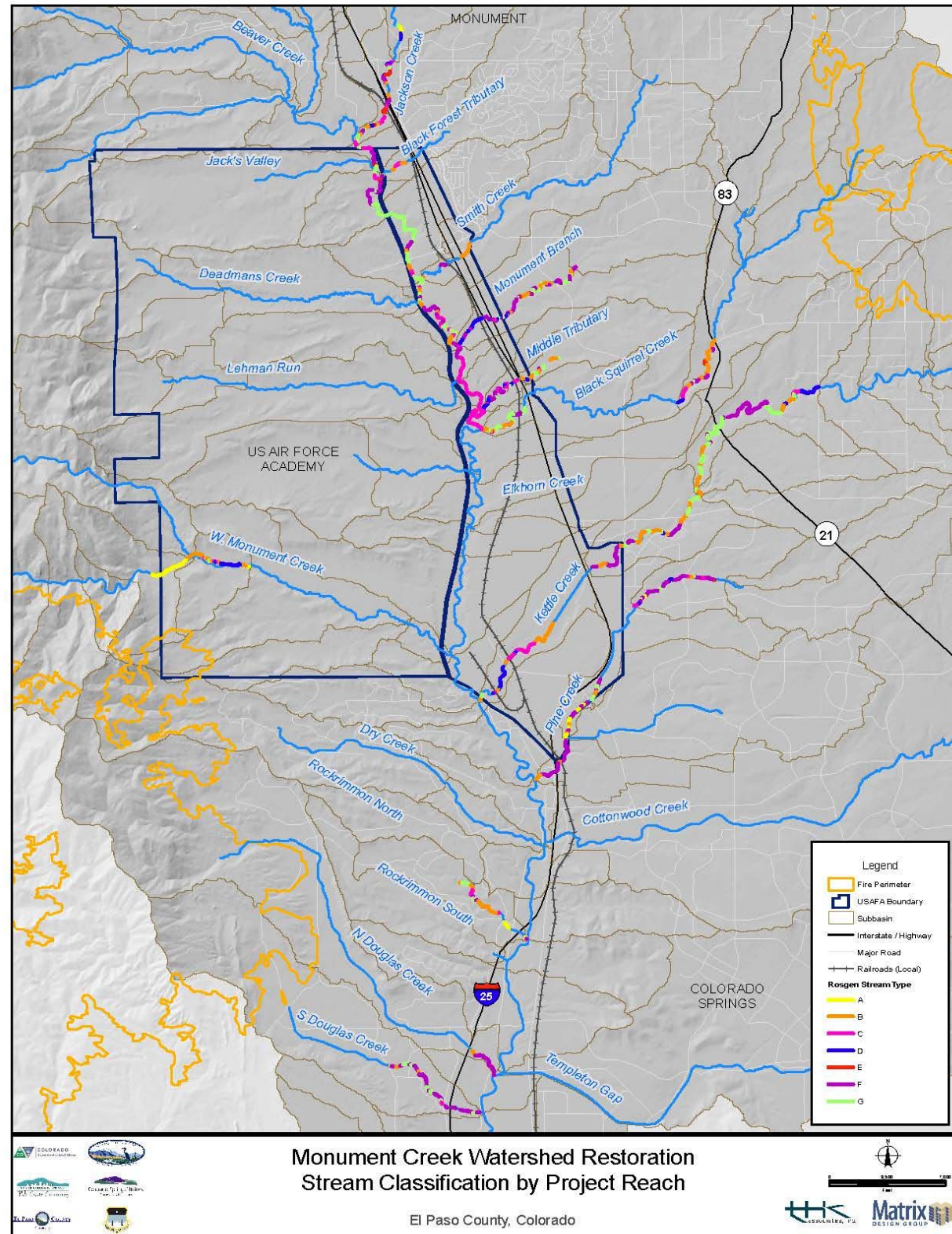
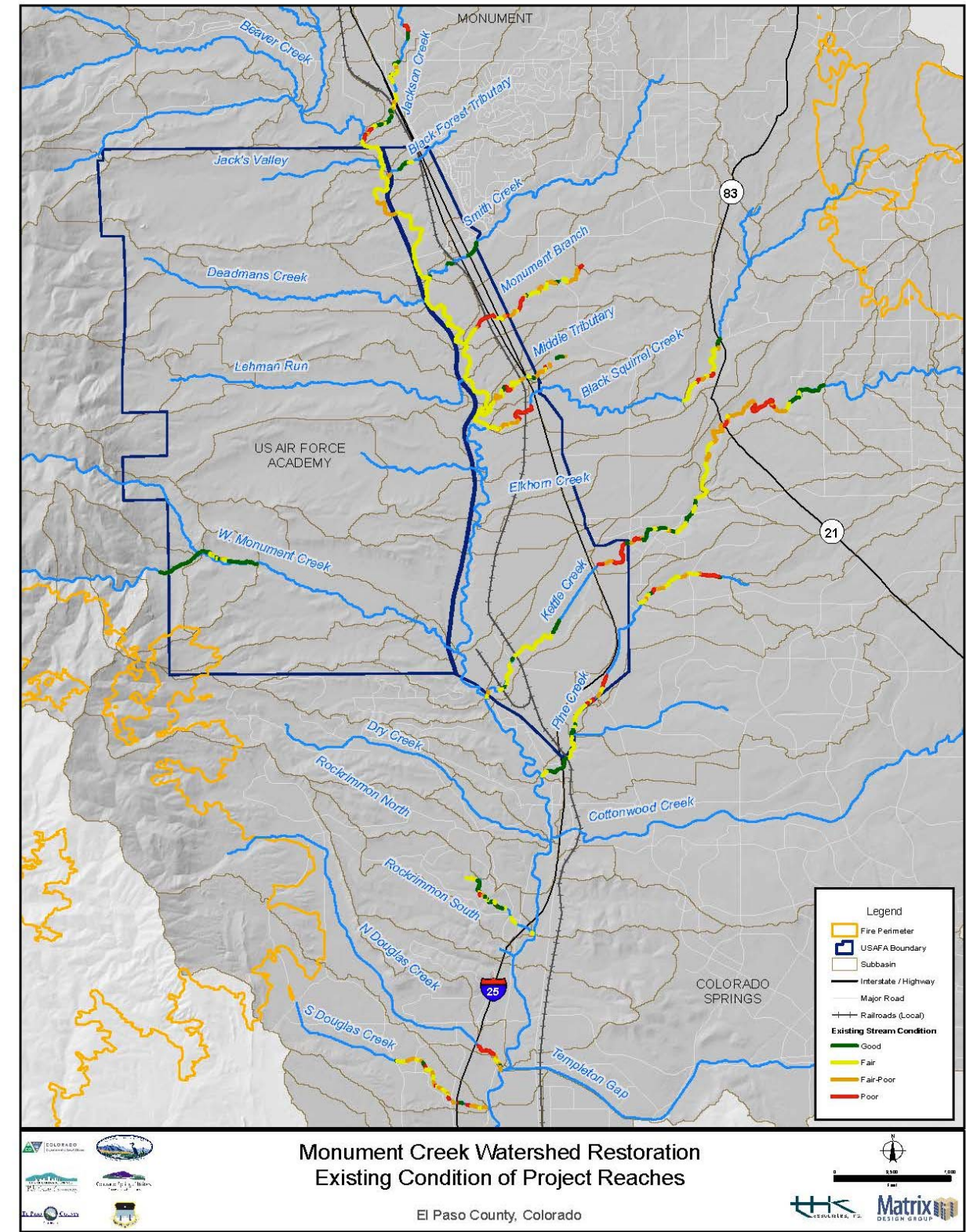


Figure 3-2. Monument Creek and Tributaries Stream Condition



The Monument Creek and tributaries stream type, condition, erosion rate, and total erosion are tabulated by reach in Appendix A. The reach delineation shown in the Appendix A is based on physical conditions of the channel and banks. The sediment supply estimates are related to the amount of erosion on an annual (non-flood) discharge basis.

4.0 Restoration Potential

In addition to assessing the existing condition and associated total erosion as described on Table 3-3, our team made recommendations to restore respective reaches in the corridor to stable stream types that would reduce sediment supply. Table 4-1 identifies the amount of erosion reduction that could be reasonably achieved by restoring eroding reaches, and effectively reducing the supply to the Monument Creek mainstem and downstream to Fountain Creek. The potential for erosion reduction also provides a metric for establishing restoration priority.

Figure 4-1. Monument Creek and Tributaries Restoration Ran

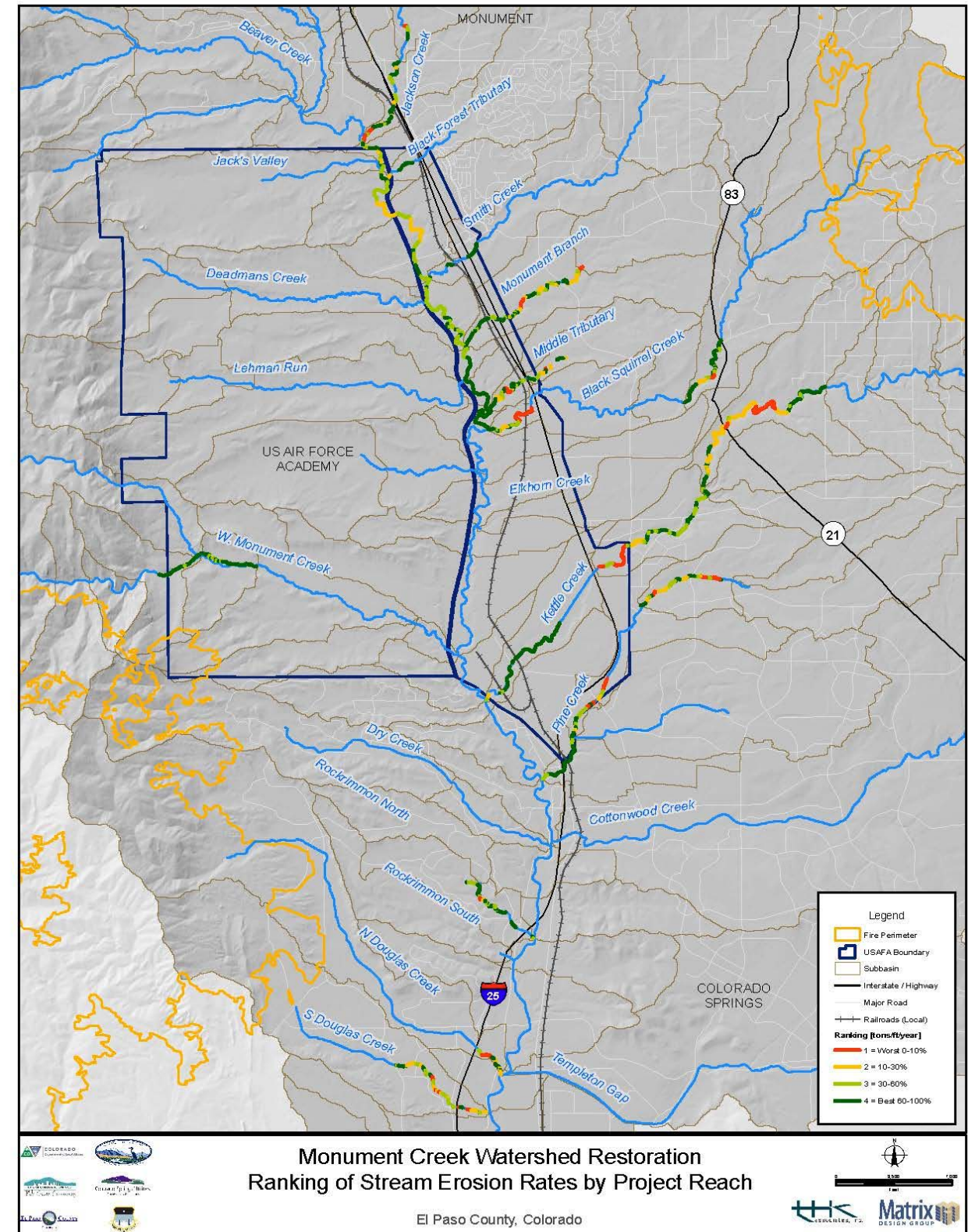


Table 4-1. Proposed Restoration and Potential Erosion Reduction

Stream Type	Parameters	Black Forest Tributary	Black Squirrel Creek	Jackson Creek	Kettle Creek	Middle Tributary	Monument Branch	Monument Creek	North Douglas	North Rockrimmon	Pine Creek	Smith Creek	South Douglas	West Monument	Grand Total	
A	Stream Length Mapped (ft)				410						617	1707			2707	5440
	Erosion - Current (Tons/yr)				38						4	39			24	104
B	Stream Length Mapped (ft)	540	4381	978	9990	1293	1906	2307	361	1989	1376	1221	448	2325	29116	
	Erosion - Current (Tons/yr)	6.3	165.6	56.4	228.5	47.0	87.2	122.2	82.7	37.3	54.7	2.7	23.8	25.8	940	
C	Stream Length Mapped (ft)	576	894	1463	2484	1148	494	11315		586	504		138	280	19882	
	Erosion - Current (Tons/yr)	0.2	4.2	7.1	14.8	12.9	15.2	200.8		0.8	64.3		34.0	7.8	362	
D	Stream Length Mapped (ft)		390	1017	3552	1349	1167				170			1502	9147	
	Erosion - Current (Tons/yr)		0.0	0.0	19.1	0.0	0.0				0.3			0.2	20	
Da	Stream Length Mapped (ft)					175	1008				241				1424	
	Erosion - Current (Tons/yr)					0.0	0.0				2.5				2	
E	Stream Length Mapped (ft)		268	1160			39	482			80				2029	
	Erosion - Current (Tons/yr)		3.5	9.2			0.1	9.4			0.2				23	
F	Stream Length Mapped (ft)	183	1976	1205	8277	1659	4346	6694	1961	423	8984	365	4355		40428	
	Erosion - Current (Tons/yr)	82.4	1421.7	522.1	8410.0	1373.2	3504.4	647.0	1363.7	116.0	5038.6	9.3	2077.8		24566	
G	Stream Length Mapped (ft)	88	2393	1086	9051	1201	1913	8869		897	1173		1297	227	28196	
	Erosion - Current (Tons/yr)	34.1	2266.7	1064.2	4473.8	517.4	759.5	3117.0		404.8	653.5		529.8	69.8	13891	
Total	Stream Length Mapped (ft)	1388	10303	7319	33354	6826	10872	29667	2322	4511	14235	1586	6237	7042	135662	
	Erosion - Current (Tons/yr)	123	3862	1697	13146	1951	4366	4096	1446	563	5853	12	2665	128	39908	
	Erosion Rate - Current (Tons/ft/yr)	0.09	0.37	0.23	0.39	0.29	0.40	0.14	0.62	0.12	0.41	0.01	0.43	0.02	0.29	
	Erosion - Post Construction (Tons/yr)	0.8	16.4	9.1	64.7	9.7	17.2	41.6	3.8	12.8	55.4	2.8	10.5	32.8	278	

With the development of restoration projects that are designed to improve the stability of the channel bed and banks, the conditional target as indicated on Table 5-1 could have a considerable effect on mainstem sediment supply. It is reasonable to assert that a restoration goal of retuning "poor" condition reaches to a "fair" condition will result in a more balanced transport that will keep the excess sediment moving through the stream corridor.

5.0 References

Rosgen, D.L., B. Rosgen, S. Collins, J. Nankervis, K. Wright. 2013. "Waldo Canyon Fire Watershed Assessment: The WARSSS Results". Wildland Hydrology, Fort Collins, Colorado.

Rosgen, D.L. 2006. Watershed assessment of river stability and sediment supply (WARSSS). Wildland Hydrology, Fort Collins, Colorado.

Appendix A: Existing and Proposed Stream Type, Condition, and Total Erosion by Reach

Rank Worst to Best by (Tons/ft/year)	Feature ID	Stream Name	Segment Length (ft)	Valley Type	Current Conditions			Proposed Condition		
					Stream Type and Condition	Total Erosion (Tons/yr)	Total Erosion Rate (Tons/ft/yr)	Stream Type and Condition	Total Erosion (Tons/yr)	Total Erosion Rate (Tons/ft/yr)
1	229	Black Forest Tributary	53	8c	G4 Fair-Poor	26.84	0.503	B4 Good	0.11	0.002
2	230	Black Forest Tributary	183	8c	F4 Fair-Poor	82.44	0.450	B4 Good	0.37	0.002
3	231	Black Forest Tributary	35	8c	G4 Fair	7.29	0.209	B4 Good	0.07	0.002
4	265	Black Forest Tributary	251	8c	B4 Fair	6.34	0.025	C4 Good	0.10	0.000
5	233	Black Forest Tributary	576	8c	C4 Good	0.17	0.000	C4 Good	0.17	0.000
6	232	Black Forest Tributary	288	2	B4 Good	0.00	0.000	B4 Good	0.00	0.000

Rank Worst to Best by (Tons/ft/year)	Feature ID	Stream Name	Segment Length (ft)	Valley Type	Current Conditions			Proposed Condition		
					Stream Type and Condition	Total Erosion (Tons/yr)	Total Erosion Rate (Tons/ft/yr)	Stream Type and Condition	Total Erosion (Tons/yr)	Total Erosion Rate (Tons/ft/yr)
1	158	Black Squirrel Creek	512	8b	G4 Poor	931.95	1.819	C4 Good	0.19	0.000
2	159	Black Squirrel Creek	345	8b	F4 Poor	358.12	1.039	B4 Good	0.71	0.002
3	173	Black Squirrel Creek	484	4	F4 Poor	502.90	1.039	B4 Good	0.99	0.002
4	430	Black Squirrel Creek	178	8b	F4 Poor	185.04	1.039	C4 Good	0.07	0.000
5	160	Black Squirrel Creek	987	8b	G4 Poor	897.37	0.909	B4 Good	2.02	0.002
6	176	Black Squirrel Creek	171	4	G4 Poor	124.23	0.728	B4 Good	0.35	0.002
7	177	Black Squirrel Creek	149	4	F4 Poor	108.69	0.728	B4 Good	0.31	0.002
8	182	Black Squirrel Creek	551	8b	G4 Fair-Poor	277.08	0.503	B4 Good	1.13	0.002
9	184	Black Squirrel Creek	71	8a	F4 Fair-Poor	31.76	0.450	B4 Good	0.14	0.002
10	175	Black Squirrel Creek	433	8a	F4 Fair-Poor	146.02	0.337	B4 Good	0.89	0.002
11	154	Black Squirrel Creek	317	4	F4 Fair-Poor	89.17	0.281	B4 Good	0.32	0.001
12	186	Black Squirrel Creek	172	8a	G4 Fair	36.10	0.209	B4 Good	0.35	0.002
13	401	Black Squirrel Creek	50	4	B4 Fair-Poor	9.21	0.183	B4 Good	0.10	0.002
14	397	Black Squirrel Creek	60	8a	B4 Fair	9.72	0.161	B4 Good	0.12	0.002
15	403	Black Squirrel Creek	29	8b	B4 Fair-Poor	3.91	0.134	B4 Good	0.06	0.002
16	395	Black Squirrel Creek	68	8a	B4 Fair	7.75	0.113	B4 Good	0.14	0.002
17	399	Black Squirrel Creek	91	8a	B4 Fair	8.13	0.089	B4 Good	0.19	0.002
18	400	Black Squirrel Creek	115	4	B4 Fair-Poor	8.75	0.076	B4 Good	0.23	0.002
19	402	Black Squirrel Creek	118	8b	B4 Fair-Poor	8.99	0.076	B4 Good	0.24	0.002
20	161	Black Squirrel Creek	78	4	B4 Fair-Poor	5.96	0.076	B4 Good	0.16	0.002
21	163	Black Squirrel Creek	98	8b	B4 Fair-Poor	7.46	0.076	B4 Good	0.20	0.002
22	183	Black Squirrel Creek	159	8a	B4 Fair	10.66	0.067	B4 Good	0.32	0.002
23	174	Black Squirrel Creek	222	8a	B4 Fair	11.21	0.050	B4 Good	0.46	0.002
24	188	Black Squirrel Creek	185	3b	B4 Fair	6.21	0.034	B4 Good	0.38	0.002
25	157	Black Squirrel Creek	228	8a	B4 Fair	7.67	0.034	B4 Good	0.47	0.002
26	178	Black Squirrel Creek	336	8a	B4 Fair	11.31	0.034	B4 Good	0.69	0.002
27	185	Black Squirrel Creek	148	8a	B4 Fair	4.99	0.034	B4 Good	0.30	0.002
28	394	Black Squirrel Creek	163	8a	B4 Fair	5.46	0.034	B4 Good	0.33	0.002
29	187	Black Squirrel Creek	222	8a	B4 Fair	7.46	0.034	B4 Good	0.45	0.002
30	396	Black Squirrel Creek	96	8a	B4 Fair	3.24	0.034	B4 Good	0.20	0.002
31	398	Black Squirrel Creek	109	8a	B4 Fair	3.65	0.034	B4 Good	0.22	0.002
32	181	Black Squirrel Creek	241	8a	B4 Fair	6.08	0.025	B4 Good	0.49	0.002
33	155	Black Squirrel Creek	974	4	Bc4 Fair	16.36	0.017	B4 Good	1.00	0.001
34	156	Black Squirrel Creek	268	4	E4 Fair	3.54	0.013	E4 Good	0.05	0.000
35	162	Black Squirrel Creek	144	8b	C4 Fair	0.67	0.005	B4 Good	0.29	0.002
36	179	Black Squirrel Creek	750	8a	C4 Fair	3.50	0.005	C4 Good	0.28	0.000
37	153	Black Squirrel Creek	589	2	Bc4 Good	1.45	0.002	Bc4 Good	1.45	0.002
38	180	Black Squirrel Creek	390	8a	D Deposition4 Fair	0.00	0.000	C4 Good	0.15	0.000

Rank Worst to Best by (Tons/ft/year)	Feature ID	Stream Name	Segment Length (ft)	Valley Type	Current Conditions			Proposed Condition		
					Stream Type and Condition	Total Erosion (Tons/yr)	Total Erosion Rate (Tons/ft/yr)	Stream Type and Condition	Total Erosion (Tons/yr)	Total Erosion Rate (Tons/ft/yr)
1	95	Jackson Creek	119	8b	G4 Poor	172.65	1.455	B4 Good	0.24	0.002
2	96	Jackson Creek	275	8a	F4 Poor	342.46	1.247	B4 Good	0.56	0.002
3	98	Jackson Creek	538	3b	G4 Poor	586.64	1.091	C4 Good	0.20	0.000
4	71	Jackson Creek	226	8c	G4 Poor	205.16	0.909	B4 Good	0.46	0.002
5	88	Jackson Creek	59	10	G4 Fair-Poor	37.16	0.628	B4 Good	0.12	0.002
6	84	Jackson Creek	253	8c	F4 Fair-Poor	142.10	0.562	C4 Good	0.10	0.000
7	91	Jackson Creek	64	8c	G4 Fair-Poor	32.24	0.503	C4 Good	0.02	0.000
8	388	Jackson Creek	81	8a	G4 Fair-Poor	30.37	0.377	B4 Good	0.16	0.002
9	73	Jackson Creek	165	2	Aa+4 Poor	19.57	0.118	A4 Good	0.71	0.004
10	97	Jackson Creek	175	8a	B4 Fair-Poor	20.01	0.114	B4 Good	0.36	0.002
11	72	Jackson Creek	245	8c	A6 Poor	18.09	0.074	A4 Good	1.05	0.004
12	80	Jackson Creek	423	3b	F4 Fair	28.89	0.068	C4 Good	0.16	0.000
13	81	Jackson Creek	68	8c	Bc4 Fair	3.40	0.050	C4 Good	0.03	0.000
14	90	Jackson Creek	177	8c	B4 Fair	8.93	0.050	C4 Good	0.07	0.000
15	82	Jackson Creek	316	8a	B4 Fair	15.94	0.050	B4 Good	0.65	0.002
16	83	Jackson Creek	254	8a	F4 Fair	8.68	0.034	B4 Good	0.52	0.002
17	94	Jackson Creek	242	8b	B4 Fair	8.13	0.034	B4 Good	0.50	0.002
18	86	Jackson Creek	174	2	E4 Fair-Poor	3.02	0.017	E4 Good	0.03	0.000
19	85	Jackson Creek	182	8a	C4 Fair	2.54	0.014	C4 Good	0.07	0.000
20	77	Jackson Creek	202	8c	C4 Fair	2.84	0.014	C4 Good	0.08	0.000
21	389	Jackson Creek	443	10	E4 Fair	3.90	0.009	E4 Good	0.08	0.000
22	78	Jackson Creek	176	10	C4 Fair	1.24	0.007	C4 Good	0.07	0.000
23	87	Jackson Creek	357	8c	E4 Good	1.54	0.004	E4 Good	1.54	0.004
24	92	Jackson Creek	186	8c	E4 Good	0.80	0.004	E4 Good	0.80	0.004
25	89	Jackson Creek	710	8b	C4 Good	0.43	0.001	C4 Good	0.43	0.001
26	75	Jackson Creek	193	8b	C4 Good	0.09	0.000	C4 Good	0.09	0.000
27	74	Jackson Creek	330	3a	D Deposition4 Good	0.00	0.000	D4 Good	0.00	0.000
28	76	Jackson Creek	257	10	D Deposition4 Good	0.00	0.000	D4 Good	0.00	0.000
29	79	Jackson Creek	161	8c	D Deposition4 Good	0.00	0.000	D4 Good	0.00	0.000
30	93	Jackson Creek	270	8c	D Deposition4 Good	0.00	0.000	D4 Good	0.00	0.000

Rank Worst to Best by (Tons/ft/year)	Feature ID	Stream Name	Segment Length (ft)	Valley Type	Current Conditions			Proposed Condition		
					Stream Type and Condition	Total Erosion (Tons/yr)	Total Erosion Rate (Tons/ft/yr)	Stream Type and Condition	Total Erosion (Tons/yr)	Total Erosion Rate (Tons/ft/yr)
1	142	Kettle Creek	1423	4	F4 Poor	3548.62	2.494	B4 Good	2.91	0.002
2	299	Kettle Creek	298	8b	G4 Poor	379.48	1.273	C4 Good	0.11	0.000
3	143	Kettle Creek	665	8b	F4 Poor	828.97	1.247	B4 Good	1.36	0.002
4	301	Kettle Creek	767	8b	F4 Poor	956.10	1.247	B4 Good	1.57	0.002
5	303	Kettle Creek	441	8b	F4 Poor	526.17	1.194	B4 Good	0.90	0.002
6	309	Kettle Creek	130	8a	G4 Poor	141.43	1.091	B4 Good	0.27	0.002
7	302	Kettle Creek	414	8a	F4 Poor	430.37	1.039	B4 Good	0.85	0.002
8	370	Kettle Creek	178	8b	F4 Poor	184.88	1.039	B4 Good	0.36	0.002
9	371	Kettle Creek	206	8b	F4 Poor	214.03	1.039	B4 Good	0.42	0.002
10	300	Kettle Creek	203	8b	G4 Fair-Poor	204.54	1.005	B4 Good	0.42	0.002
11	310	Kettle Creek	444	8a	G4 Poor	403.36	0.909	B4 Good	0.91	0.002
12	145	Kettle Creek	306	3b	F4 Poor	254.32	0.831	B4 Good	0.63	0.002
13	139	Kettle Creek	332	8b	F4 Poor	276.24	0.831	B4 Good	0.68	0.002
14	384	Kettle Creek	90	8b	F4 Poor	74.95	0.831	B4 Good	0.18	0.002
15	375	Kettle Creek	150	8a	G4 Fair-Poor	118.62	0.791	B4 Good	0.31	0.002
16	376	Kettle Creek	108	8b	G4 Fair-Poor	85.05	0.791	B4 Good	0.22	0.002
17	126	Kettle Creek	261	8b	G4 Fair-Poor	164.19	0.628	B4 Good	0.53	0.002
18	308	Kettle Creek	252	8a	G4 Fair-Poor	158.48	0.628	B4 Good	0.52	0.002
19	312	Kettle Creek	176	8a	G4 Fair-Poor	110.29	0.628	B4 Good	0.36	0.002
20	314	Kettle Creek	455	8a	G4 Fair-Poor	285.68	0.628	B4 Good	0.93	0.002
21	316	Kettle Creek	264	8a	G4 Fair-Poor	165.78	0.628	B4 Good	0.54	0.002
22	313	Kettle Creek	107	8a	F4 Fair-Poor	60.05	0.562	B4 Good	0.22	0.002
23	315	Kettle Creek	83	8a	F4 Fair-Poor	46.86	0.562	B4 Good	0.17	0.002
24	385	Kettle Creek	22	8b	F4 Poor	12.38	0.560	B4 Good	0.05	0.002
25	373	Kettle Creek	63	8b	F4 Fair-Poor	32.51	0.514	C4 Good	0.02	0.000
26	377	Kettle Creek	74	8b	G4 Fair-Poor	37.19	0.503	B4 Good	0.15	0.002
27	298	Kettle Creek	844	8b	G4 Fair-Poor	424.27	0.503	C4 Good	0.32	0.000
28	305	Kettle Creek	250	8b	G4 Fair-Poor	125.75	0.503	C4 Good	0.09	0.000
29	311	Kettle Creek	407	8a	G4 Fair-Poor	204.35	0.503	B4 Good	0.83	0.002
30	319	Kettle Creek	400	8b	G4 Fair-Poor	201.10	0.503	B4 Good	0.82	0.002
31	374	Kettle Creek	445	8a	G4 Fair-Poor	223.77	0.503	B4 Good	0.91	0.002
32	372	Kettle Creek	504	8b	F4 Fair-Poor	226.76	0.450	C4 Good	0.19	0.000
33	304	Kettle Creek	1331	8b	F4 Fair-Poor	598.61	0.450	C4 Good	0.50	0.000
34	306	Kettle Creek	145	8b	F4 Fair-Poor	65.41	0.450	C4 Good	0.06	0.000
35	140	Kettle Creek	417	8b	G4 Fair-Poor	157.14	0.377	B4 Good	0.85	0.002
36	138	Kettle Creek	309	8b	G4 Fair-Poor	116.43	0.377	B4 Good	0.63	0.002
37	317	Kettle Creek	101	8a	G4 Fair	35.14	0.349	B4 Good	0.21	0.002
38	378	Kettle Creek	59	8b	G4 Fair	20.15	0.339	B4 Good	0.12	0.002
39	380	Kettle Creek	91	8b	G4 Fair	30.95	0.339	B4 Good	0.19	0.002
40	134	Kettle Creek	149	8b	G4 Fair	41.47	0.279	B4 Good	0.30	0.002
41	136	Kettle Creek	315	8b	G4 Fair	87.92	0.279	B4 Good	0.64	0.002
42	307	Kettle Creek	243	8a	G4 Fair	67.93	0.279	C4 Good	0.09	0.000
43	328	Kettle Creek	412	8a	G4 Fair	114.91	0.279	B4 Good	0.84	0.002
44	294	Kettle Creek	384	8b	G4 Fair	107.11	0.279	C4 Good	0.15	0.000
45	369	Kettle Creek	58	8b	Bc4 Fair	12.36	0.215	C4 Good	0.02	0.000
46	324	Kettle Creek	207	8a	G4 Fair	43.39	0.209	B4 Good	0.42	0.002
47	326	Kettle Creek	715	8a	G4 Fair	149.75	0.209	B4 Good	1.46	0.002
48	133	Kettle Creek	119	8a	D Erosional4 Fair-Poor	19.07	0.160	B4 Good	0.24	0.002
49	379	Kettle Creek	143	8b	G4 Fair	20.02	0.140	B4 Good	0.29	0.002
50	322	Kettle Creek	345	8b	G4 Fair	48.20	0.140	B4 Good	0.71	0.002
51	144	Kettle Creek	583	8b	Bc4 Fair-Poor	44.50	0.076	B4 Good	1.19	0.002
52	382	Kettle Creek	99	8c	B4 Good	7.28	0.074	B4 Good	7.28	0.074
53	383	Kettle Creek	83	8c	B4 Good	6.12	0.074	B4 Good	6.12	0.074
54	387	Kettle Creek	12	8a	B4 Good	0.90	0.073	B4 Good	0.03	0.002
55	130	Kettle Creek	701	6	F1 Fair	47.83	0.068	B4 Good	1.43	0.002
56	123	Kettle Creek	46	8a	B4 Fair	3.12	0.067	B4 Good	0.09	0.002
57	127	Kettle Creek	74	8a	B4 Fair	4.99	0.067	B4 Good	0.15	0.002
58	124	Kettle Creek	152	8a	F4 Fair	7.79	0.051	B4 Good	0.31	0.002
59	131	Kettle Creek	310	8a	F4 Fair	15.86	0.051	B4 Good	0.63	0.002

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					Stream Type and Condition	Total Erosion (Tons/yr)	Total Erosion Rate (Tons/ft/yr)	Stream Type and Condition	Total Erosion (Tons/yr)	Total Erosion Rate (Tons/ft/yr)
60	122	Kettle Creek	38	8a	F4 Fair	1.29	0.034	B4 Good	0.08	0.002
61	113	Kettle Creek	332	8b	B4 Fair	11.16	0.034	B4 Good	0.68	0.002
62	112	Kettle Creek	973	8a	B4 Fair	32.70	0.034	B4 Good	1.99	0.002
63	318	Kettle Creek	632	8b	Bc4 Fair	21.23	0.034	B4 Good	1.29	0.002
64	320	Kettle Creek	124	8b	Bc4 Fair	4.17	0.034	B4 Good	0.25	0.002
65	321	Kettle Creek	211	8b	Bc4 Fair	7.08	0.034	B4 Good	0.43	0.002
66	323	Kettle Creek	784	8a	B4 Fair	26.35	0.034	b4 Good	1.60	0.002
67	325	Kettle Creek	534	8a	B4 Fair	17.96	0.034	B4 Good	1.09	0.002
68	368	Kettle Creek	72	8b	Bc4 Fair	1.81	0.025	C4 Good	0.03	0.000
69	297	Kettle Creek	479	8b	Bc4 Fair	12.07	0.025	C4 Good	0.18	0.000
70	114	Kettle Creek	644	8b	C4 Fair	6.01	0.009	C4 Good	0.24	0.000
71	115	Kettle Creek	448	8c	C4 Fair	4.18	0.009	C4 Good	0.17	0.000
72	147	Kettle Creek	158	8b	B4 Good	1.04	0.007	B4 Good	1.04	0.007
73	295	Kettle Creek	522	8b	Bc4 Good	3.42	0.007	C4 Good	0.20	0.000
74	116	Kettle Creek	232	8b	C4 Fair	1.09	0.005	C4 Good	0.09	0.000
75	117	Kettle Creek	267	8c	C4 Fair	1.25	0.005	C4 Good	0.10	0.000
76	119	Kettle Creek	353	8c	C4 Fair	1.65	0.005	C4 Good	0.13	0.000
77	431	Kettle Creek	107	8c	C4 Fair	0.50	0.005	B4 Good	0.22	0.002
78	132	Kettle Creek	331	8b	B4 Good	1.09	0.003	B4 Good	1.09	0.003
79	135	Kettle Creek	650	8b	B4 Good	2.13	0.003	B4 Good	2.13	0.003
80	327	Kettle Creek	327	8a	B4 Good	1.07	0.003	B4 Good	1.07	0.003
81	381	Kettle Creek	153	8c	B4 Good	0.50	0.003	B4 Good	0.50	0.003
82	137	Kettle Creek	680	8c	B4 Good	2.23	0.003	B4 Good	2.23	0.003
83	121	Kettle Creek	187	8a	B4 Good	0.46	0.002	B4 Good	0.46	0.002
84	128	Kettle Creek	410	2	B4 Good	1.01	0.002	B4 Good	1.01	0.002
85	141	Kettle Creek	98	8a	B4 Good	0.24	0.002	B4 Good	0.24	0.002
86	386	Kettle Creek	63	8a	B4 Good	0.15	0.002	B4 Good	0.15	0.002
87	146	Kettle Creek	855	2	B4 Good	1.40	0.002	B4 Good	1.40	0.002
88	293	Kettle Creek	434	8b	C4 Good	0.13	0.000	C4 Good	0.13	0.000
89	118	Kettle Creek	173	8b	D Deposition4 Fair	0.00	0.000	C4 Good	0.07	0.000
90	120	Kettle Creek	1625	8a	D Deposition4 Fair	0.00	0.000	C4 Good	0.62	0.000
91	125	Kettle Creek	26	8a	D Deposition4 Fair	0.00	0.000	C4 Good	0.01	0.000
92	129	Kettle Creek	461	6	Ba1 Good	0.00	0.000	Ba1 Good	0.00	0.000
93	292	Kettle Creek	1436	8b	D Deposition4 Good	0.00	0.000	D4 Good	0.00	0.000
94	296	Kettle Creek	172	8b	D Deposition4 Good	0.00	0.000	C4 Good	0.07	0.000

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					Stream Type and Condition	Total Erosion (Tons/yr)	Total Erosion Rate (Tons/ft/yr)	Stream Type and Condition	Total Erosion (Tons/yr)	Total Erosion Rate (Tons/ft/yr)
1	167	Middle Tributary	150	4	F4 Poor	467.07	3.118	B4 Good	0.31	0.002
2	196	Middle Tributary	646	8a	Fb4 Poor	671.61	1.039	B4 Good	1.32	0.002
3	169	Middle Tributary	386	8b	G4 Fair-Poor	242.83	0.628	B4 Good	0.79	0.002
4	166	Middle Tributary	214	8c	G4 Fair-Poor	107.46	0.503	B4 Good	0.44	0.002
5	200	Middle Tributary	357	8a	F4 Fair-Poor	160.74	0.450	B4 Good	0.73	0.002
6	164	Middle Tributary	164	8a	G4 Fair-Poor	61.83	0.377	B4 Good	0.34	0.002
7	195	Middle Tributary	114	8b	G4 Fair-Poor	42.83	0.377	C4 Good	0.04	0.000
8	202	Middle Tributary	167	8a	F4 Fair-Poor	56.48	0.337	B4 Good	0.34	0.002
9	191	Middle Tributary	175	3b	G4 Fair	36.62	0.209	C4 Good	0.07	0.000
10	199	Middle Tributary	148	8a	G4 Fair	25.87	0.174	B4 Good	0.30	0.002
11	393	Middle Tributary	19	8b	B4 Fair-Poor	2.57	0.134	B4 Good	0.04	0.002
12	170	Middle Tributary	333	8b	B4 Fair-Poor	25.43	0.076	B4 Good	0.68	0.002
13	392	Middle Tributary	130	8b	B4 Fair-Poor	9.94	0.076	B4 Good	0.27	0.002
14	198	Middle Tributary	338	8a	F4 Fair	17.31	0.051	B4 Good	0.69	0.002
15	189	Middle Tributary	262	8a	C4 Fair-Poor	9.23	0.035	C4 Good	0.10	0.000
16	172	Middle Tributary	130	8a	B4 Fair	4.39	0.034	C4 Good	0.05	0.000
17	168	Middle Tributary	235	8a	B4 Fair	3.95	0.017	B4 Good	0.48	0.002
18	204	Middle Tributary	116	8a	C4 Fair	1.08	0.009	C4 Good	0.04	0.000
19	192	Middle Tributary	229	8a	C4 Fair	1.07	0.005	C4 Good	0.09	0.000
20	194	Middle Tributary	279	8a	C4 Fair	1.30	0.005	C4 Good	0.11	0.000
21	165	Middle Tributary	294	8a	B4 Good	0.48	0.002	B4 Good	0.60	0.002
22	429	Middle Tributary	150	8a	B4 Good	0.25	0.002	B4 Good	0.31	0.002
23	197	Middle Tributary	263	8a	C4 Good	0.24	0.001	B4 Good	0.54	0.002
24	171	Middle Tributary	295	8a	D Deposition4 Good	0.00	0.000	C4 Good	0.00	0.000
25	190	Middle Tributary	213	3a	D Deposition4 Fair	0.00	0.000	C4 Good	0.08	0.000
26	193	Middle Tributary	175	8a	Da Deposition4 Fair	0.00	0.000	C4 Good	0.07	0.000
27	201	Middle Tributary	41	8a	D Deposition4 Fair-Poor	0.00	0.000	B4 Good	0.08	0.002
28	203	Middle Tributary	280	8a	D Deposition4 Fair-Poor	0.00	0.000	B4 Good	0.57	0.002
29	205	Middle Tributary	521	3a	D Deposition4 Fair	0.00	0.000	C4 Good	0.20	0.000

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					Stream Type and Condition	Total Erosion (Tons/yr)	Total Erosion Rate (Tons/ft/yr)	Stream Type and Condition	Total Erosion (Tons/yr)	Total Erosion Rate (Tons/ft/yr)
1	225	Monument Branch	324	4	F4 Poor	1211.93	3.742	B4 Good	0.66	0.002
2	224	Monument Branch	166	8b	F4 Poor	414.76	2.494	B4 Good	0.34	0.002
3	226	Monument Branch	213	4	F4 Poor	532.55	2.494	B4 Good	0.44	0.002
4	206	Monument Branch	380	8c	F4 Poor	710.62	1.871	B4 Good	0.78	0.002
5	223	Monument Branch	60	8b	G4 Fair	41.86	0.698	B4 Good	0.12	0.002
6	210	Monument Branch	597	8b	G4 Fair-Poor	300.29	0.503	B4 Good	1.22	0.002
7	222	Monument Branch	127	8b	F4 Fair-Poor	57.00	0.450	B4 Good	0.26	0.002
8	213	Monument Branch	228	8b	F4 Fair-Poor	102.62	0.450	B4 Good	0.47	0.002
9	218	Monument Branch	341	8c	G4 Fair-Poor	149.80	0.440	B4 Good	0.70	0.002
10	241	Monument Branch	277	8a	F4 Poor	114.98	0.416	C4 Good	0.10	0.000
11	391	Monument Branch	50	8b	F4 Fair-Poor	19.45	0.385	B4 Good	0.10	0.002
12	214	Monument Branch	207	8b	G4 Fair-Poor	77.99	0.377	B4 Good	0.42	0.002
13	208	Monument Branch	107	8b	G4 Fair-Poor	40.25	0.377	B4 Good	0.22	0.002
14	209	Monument Branch	122	8b	F4 Fair-Poor	41.00	0.337	B4 Good	0.25	0.002
15	217	Monument Branch	226	8b	F4 Fair-Poor	76.18	0.337	B4 Good	0.46	0.002
16	390	Monument Branch	135	8b	F4 Fair-Poor	45.51	0.337	B4 Good	0.28	0.002
17	249	Monument Branch	127	8a	Fb4 Poor	39.63	0.312	C4 Good	0.05	0.000
18	216	Monument Branch	254	8b	G4 Fair	70.91	0.279	B4 Good	0.52	0.002
19	248	Monument Branch	83		G4 Fair-Poor	20.85	0.251	C4 Good	0.03	0.000
20	251	Monument Branch	81	8a	G4 Fair-Poor	20.28	0.251	C4 Good	0.03	0.000
21	259	Monument Branch	128	8a	G4 Fair	26.86	0.209	C4 Good	0.05	0.000
22	256	Monument Branch	438	8a	F4 Poor	91.15	0.208	B4 Good	0.90	0.002
23	245	Monument Branch	55	8a	G4 Fair-Poor	10.39	0.189	C4 Good	0.02	0.000
24	207	Monument Branch	352	8b	Bc4 Fair-Poor	40.26	0.114	B4 Good	0.72	0.002
25	266	Monument Branch	170	8b	B4 Fair-Poor	12.98	0.076	B4 Good	0.35	0.002
26	258	Monument Branch	143	8a	C4 Fair-Poor	10.11	0.070	C4 Good	0.05	0.000
27	246	Monument Branch	61	8a	F4 Fair-Poor	3.41	0.056	C4 Good	0.02	0.000
28	219	Monument Branch	262	8b	F4 Fair	13.40	0.051	B4 Good	0.54	0.002
29	243	Monument Branch	114	8a	C4 Fair-Poor	4.01	0.035	C4 Good	0.04	0.000
30	254	Monument Branch	343	8a	F4 Fair	11.69	0.034	B4 Good	0.70	0.002
31	215	Monument Branch	369	8b	B4 Fair	12.40	0.034	B4 Good	0.75	0.002
32	242	Monument Branch	194	8a	B4 Fair	6.51	0.034	C4 Good	0.07	0.000
33	211	Monument Branch	437	8b	F4 Fair	11.19	0.026	B4 Good	0.89	0.002
34	220	Monument Branch	575	8b	B4 Fair	14.49	0.025	B4 Good	1.18	0.002
35	260	Monument Branch	430	8a	F4 Fair	7.34	0.017	C4 Good	0.16	0.000
36	253	Monument Branch	118	8a	C4 Fair	0.55	0.005	C4 Good	0.04	0.000
37	269	Monument Branch	118	8a	C4 Fair	0.55	0.005	C4 Good	0.04	0.000
38	221	Monument Branch	39	8b	E4 Good	0.11	0.003	E4 Good	0.11	0.003
39	212	Monument Branch	247	8a	Bc4 Good	0.61	0.002	B4 Good	0.50	0.002
40	244	Monument Branch	70	8a	D Deposition4 Fair-Poor	0.00	0.000	C4 Good	0.03	0.000
41	247	Monument Branch	204	8a	D Deposition4 Fair-Poor	0.00	0.000	C4 Good	0.08	0.000
42	250	Monument Branch	98	3b	D Deposition4 Poor	0.00	0.000	C4 Good	0.04	0.000
43	252	Monument Branch	163	8a	D Deposition4 Fair-Poor	0.00	0.000	C4 Good	0.06	0.000
44	255	Monument Branch	52	8a	D Deposition4 Fair	0.00	0.000	B4 Good	0.11	0.002
45	257	Monument Branch	1008	3b	Da Deposition4 Poor	0.00	0.000	B4 Good	2.06	0.002
46	261	Monument Branch	229	8a	D Deposition4 Fair	0.00	0.000	C4 Good	0.09	0.000
47	262	Monument Branch	251	3b	D Deposition4 Fair	0.00	0.000	C4 Good	0.10	0.000
48	268	Monument Branch	100	8a	D Deposition4 Fair	0.00	0.000	C4 Good	0.04	0.000

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1	333	Monument Creek	238	8c	F4 Fair-Poor	187.28	0.787	C4 Good	0.14	0.001
2	334	Monument Creek	1307	8c	G4 Fair-Poor	821.21	0.628	C4 Good	0.79	0.001
3	432	Monument Creek	208	8c	G4 Fair-Poor	130.85	0.628	B4 Good	0.68	0.003
4	336	Monument Creek	2171	8a	G4 Fair	757.35	0.349	B4 Good	7.11	0.003
5	413	Monument Creek	79	8c	F4 Fair	25.50	0.323	C4 Good	0.05	0.001
6	411	Monument Creek	113	8c	F4 Fair	36.42	0.323	C4 Good	0.07	0.001
7	235	Monument Creek	235	8c	G4 Fair	65.50	0.279	C4 Good	0.14	0.001
8	239	Monument Creek	517	8c	G4 Fair	144.34	0.279	C4 Good	0.31	0.001
9	331	Monument Creek	174	8c	G4 Fair	48.56	0.279	C4 Good	0.11	0.001
10	339	Monument Creek	774	8a	G4 Fair	215.89	0.279	B4 Good	2.53	0.003
11	342	Monument Creek	977	8b	G4 Fair	272.79	0.279	B4 Good	3.20	0.003
12	335	Monument Creek	996	8b	G4 Fair	277.90	0.279	B4 Good	3.26	0.003
13	343	Monument Creek	131	8b	G4 Fair	36.63	0.279	B4 Good	0.43	0.003
14	348	Monument Creek	187	8a	G4 Fair	52.24	0.279	B4 Good	0.61	0.003
15	360	Monument Creek	524	8b	G4 Fair	146.20	0.279	C4 Good	0.32	0.001
16	346	Monument Creek	220	8b	G4 Fair	53.74	0.244	B4 Good	0.72	0.003
17	357	Monument Creek	129	8b	G4 Fair	26.98	0.209	C4 Good	0.08	0.001
18	358	Monument Creek	319	8a	G4 Fair	66.76	0.209	C4 Good	0.19	0.001
19	234	Monument Creek	205		C4 Fair	30.56	0.149	C4 Good	0.12	0.001
20	409	Monument Creek	67		C4 Fair	5.05	0.076	C4 Good	0.04	0.001
21	238	Monument Creek	95	8c	B4 Fair	7.19	0.076	C4 Good	0.06	0.001
22	330	Monument Creek	929	8c	F4 Fair	63.39	0.068	C4 Good	0.56	0.001
23	337	Monument Creek	577	8c	F4 Fair	39.36	0.068	B4 Good	1.89	0.003
24	351	Monument Creek	668	8c	F4 Fair	45.60	0.068	C4 Good	0.41	0.001
25	412	Monument Creek	27	8c	F4 Fair	1.87	0.068	C4 Good	0.02	0.001
26	267	Monument Creek	555	8c	F4 Fair	37.85	0.068	C4 Good	0.34	0.001
27	332	Monument Creek	1067	8c	F4 Fair	72.81	0.068	C4 Good	0.65	0.001
28	345	Monument Creek	271	8b	B4 Fair	18.24	0.067	B4 Good	0.89	0.003
29	365	Monument Creek	781	8b	F4 Fair	46.62	0.060	C4 Good	0.47	0.001
30	350	Monument Creek	624	8c	F4 Fair	37.25	0.060	B4 Good	2.04	0.003
31	362	Monument Creek	770	8a	B4 Fair	45.31	0.059	C4 Good	0.47	0.001
32	349	Monument Creek	378	8a	B4 Fair	22.23	0.059	B4 Good	1.24	0.003
33	347	Monument Creek	161	8b	F4 Fair	8.26	0.051	B4 Good	0.53	0.003
34	353	Monument Creek	254	8c	F4 Fair	13.02	0.051	C4 Good	0.15	0.001
35	355	Monument Creek	234	8c	F4 Fair	11.98	0.051	C4 Good	0.14	0.001
36	363	Monument Creek	386	8b	F4 Fair	19.74	0.051	C4 Good	0.23	0.001
37	352	Monument Creek	158	8c	B4 Fair	7.95	0.050	C4 Good	0.10	0.001
38	338	Monument Creek	253	8b	B4 Fair	8.50	0.034	B4 Good	0.83	0.003
39	340	Monument Creek	382	8a	Bc4 Fair	12.83	0.034	B4 Good	1.25	0.003
40	237	Monument Creek	306	8c	E4 Fair	6.73	0.022	C4 Good	0.19	0.001
41	240	Monument Creek	498	8c	C4 Fair	9.31	0.019	C4 Good	0.30	0.001
42	366	Monument Creek	4811	8c	C4 Fair	89.87	0.019	C4 Good	2.92	0.001
43	236	Monument Creek	728	8c	C4 Fair	11.91	0.016	C4 Good	0.44	0.001
44	329	Monument Creek	176	8c	E4 Fair	2.71	0.015	C4 Good	0.11	0.001
45	364	Monument Creek	220	8b	C4 Fair	2.57	0.012	C4 Good	0.13	0.001
46	361	Monument Creek	167	8b	C4 Fair	1.95	0.012	C4 Good	0.10	0.001
47	367	Monument Creek	3030	8b	C4 Fair	35.38	0.012	C4 Good	1.84	0.001
48	341	Monument Creek	365	8a	C4 Fair	3.41	0.009	B4 Good	1.20	0.003
49	354	Monument Creek	473	8c	C4 Fair	4.42	0.009	C4 Good	0.29	0.001
50	356	Monument Creek	318	8b	C4 Fair	2.97	0.009	C4 Good	0.19	0.001
51	359	Monument Creek	142	8b	C4 Fair	1.33	0.009	C4 Good	0.09	0.001
52	410	Monument Creek	115		C4 Fair	0.81	0.007	C4 Good	0.07	0.001
53	344	Monument Creek	174		C4 Fair	1.22	0.007	B4 Good	0.57	0.003

Rank Worst to Best by (Tons/ft/year)	Feature ID	Stream Name	Segment Length (ft)	Valley Type	Current Conditions			Proposed Condition		
					Stream Type and Condition	Total Erosion (Tons/yr)	Total Erosion Rate (Tons/ft/yr)	Stream Type and Condition	Total Erosion (Tons/yr)	Total Erosion Rate (Tons/ft/yr)
1	34	North Douglas	664	4	F4 Poor	1104.12	1.663	B4 Good	1.36	0.002
2	37	North Douglas	118	4	F4 Fair-Poor	53.09	0.450	B4 Good	0.24	0.002
3	39	North Douglas	193	4	F4 Fair-Poor	86.63	0.450	B4 Good	0.39	0.002
4	35	North Douglas	326	4	F4 Fair-Poor	110.10	0.337	B4 Good	0.67	0.002
5	33	North Douglas	361	4	B4 Poor	82.67	0.229	B4 Good	0.74	0.002
6	36	North Douglas	383	4	F4 Fair	9.79	0.026	B4 Good	0.39	0.001
7	38	North Douglas	101	4	F4 Good	0.00	0.000	B4 Good	0.00	0.000
8	406	North Douglas	176	7	F1 Poor	0.00	0.000	B4 Good	0.00	0.000

Rank Worst to Best by (Tons/ft/year)	Feature ID	Stream Name	Segment Length (ft)	Valley Type	Current Conditions			Proposed Condition		
					Stream Type and Condition	Total Erosion (Tons/yr)	Total Erosion Rate (Tons/ft/yr)	Stream Type and Condition	Total Erosion (Tons/yr)	Total Erosion Rate (Tons/ft/yr)
1	46	North Rockrimmon	279	8a	G4 Poor	254.06	0.909	B4 Good	0.57	0.002
2	415	North Rockrimmon	125	8b	F4 Fair-Poor	56.09	0.450	B4 Good	0.26	0.002
3	47	North Rockrimmon	154	8a	F4 Fair-Poor	52.00	0.337	B4 Good	0.32	0.002
4	42	North Rockrimmon	306	8a	G4 Fair	85.41	0.279	B4 Good	0.63	0.002
5	41	North Rockrimmon	312	8a	G4 Fair	65.32	0.209	B4 Good	0.64	0.002
6	419	North Rockrimmon	58	8a	B4 Poor	8.79	0.153	B4 Good	0.12	0.002
7	422	North Rockrimmon	101	8a	B4 Fair	8.50	0.084	B4 Good	0.21	0.002
8	428	North Rockrimmon	30	8c	F4 Fair	2.04	0.068	B4 Good	0.06	0.002
9	421	North Rockrimmon	126	8a	B4 Fair	8.44	0.067	B4 Good	0.26	0.002
10	425	North Rockrimmon	76	8a	b4 Fair	5.13	0.067	B4 Good	0.16	0.002
11	45	North Rockrimmon	114	8a	F4 Fair	5.85	0.051	B4 Good	0.23	0.002
12	40	North Rockrimmon	134	8a	B5 Fair	1.80	0.013	B4 Good	0.27	0.002
13	427	North Rockrimmon	126	8c	A1 Fair	0.86	0.007	A1 Fair	0.86	0.007
14	414	North Rockrimmon	491	8c	A1 Fair	3.36	0.007	A1 Fair	3.36	0.007
15	416	North Rockrimmon	106	8c	C1 Fair	0.55	0.005	C1 Good	0.04	0.000
16	417	North Rockrimmon	203	8a	B4 Good	0.66	0.003	B4 Good	0.66	0.003
17	423	North Rockrimmon	65	8a	B4 Good	0.21	0.003	B4 Good	0.21	0.003
18	48	North Rockrimmon	459	8a	B4 Good	1.50	0.003	B4 Good	1.50	0.003
19	418	North Rockrimmon	176	8a	B4 Good	0.58	0.003	B4 Good	0.58	0.003
20	420	North Rockrimmon	169	8a	B4 Good	0.55	0.003	B4 Good	0.55	0.003
21	424	North Rockrimmon	18	8a	b4 Good	0.06	0.003	b4 Good	0.06	0.003
22	426	North Rockrimmon	50	8a	b4 Good	0.16	0.003	b4 Good	0.16	0.003
23	43	North Rockrimmon	355		B4 Good	0.87	0.002	B4 Good	0.87	0.002
24	44	North Rockrimmon	479	8a	C4 Good	0.22	0.000	C4 Good	0.22	0.000

Rank Worst to Best by (Tons/ft/year)	Feature ID	Stream Name	Segment Length (ft)	Valley Type	Current Conditions			Proposed Condition		
					Stream Type and Condition	Total Erosion (Tons/yr)	Total Erosion Rate (Tons/ft/yr)	Stream Type and Condition	Total Erosion (Tons/yr)	Total Erosion Rate (Tons/ft/yr)
1	56	Pine Creek	281	4	F4 Poor	875.27	3.118	B4 Good	0.57	0.002
2	272	Pine Creek	347	8a	F4 Poor	576.29	1.663	B4 Good	0.71	0.002
3	49	Pine Creek	480	8a	F1 Poor	697.96	1.455	B1 Good	0.98	0.002
4	271	Pine Creek	308	8b	F4 Poor	383.90	1.247	B4 Good	0.63	0.002
5	54	Pine Creek	285	8a	F4 Poor	355.41	1.247	B4 Good	0.58	0.002
6	274	Pine Creek	385	8a	F4 Poor	440.54	1.143	B4 Good	0.79	0.002
7	50	Pine Creek	303	8a	G4 Poor	331.02	1.091	B4 Good	0.62	0.002
8	285	Pine Creek	341	8a	F4 Poor	283.58	0.831	B4 Good	0.70	0.002
9	51	Pine Creek	70	8c	F4 Poor	58.30	0.831	B4 Good	0.14	0.002
10	279	Pine Creek	529	8a	F4 Fair-Poor	416.18	0.787	B4 Good	1.08	0.002
11	289	Pine Creek	196	8a	F4 Fair-Poor	154.64	0.787	B4 Good	0.40	0.002
12	284	Pine Creek	643	8c	Fb4 Fair-Poor	432.80	0.673	B4 Good	1.32	0.002
13	288	Pine Creek	131	8a	G4 Fair	55.00	0.419	B4 Good	0.27	0.002
14	404	Pine Creek	70	8b	Fb4 Fair	28.44	0.404	C4 Good	0.03	0.000
15	53	Pine Creek	202	8b	G4 Fair-Poor	76.32	0.377	B4 Good	0.41	0.002
16	275	Pine Creek	144	8a	G4 Fair-Poor	54.20	0.377	B4 Good	0.29	0.002
17	283	Pine Creek	393	8c	G4 Fair	136.95	0.349	B4 Good	0.80	0.002
18	62	Pine Creek	199	4	F1 Fair	61.04	0.307	B1 Good	0.41	0.002
19	58	Pine Creek	486	4	F1 Fair	124.38	0.256	B1 Good	0.99	0.002
20	65	Pine Creek	406	4	F4 Fair	104.00	0.256	B4 Good	0.83	0.002
21	273	Pine Creek	252	8a	C4 Poor	62.27	0.247	B4 Good	0.52	0.002
22	282	Pine Creek	283	8b	Fb4 Fair	24.15	0.085	C4 Good	0.11	0.000
23	405	Pine Creek	117	8b	Fb4 Fair	10.01	0.085	C4 Good	0.04	0.000
24	287	Pine Creek	137	8a	F4 Fair	11.71	0.085	B4 Good	0.28	0.002
25	57	Pine Creek	320	4	A1 Fair	21.90	0.068	A1 Fair	21.90	0.068
26	52	Pine Creek	252	8b	B4 Fair	12.72	0.050	B4 Good	0.52	0.002
27	60	Pine Creek	198	4	B1 Fair	9.98	0.050	B4 Good	0.41	0.002
28	70	Pine Creek	448	4	B4 Fair	22.57	0.050	B4 Good	0.92	0.002
29	276	Pine Creek	214	8a	B4 Fair	8.97	0.042	B4 Good	0.44	0.002
30	59	Pine Creek	410	4	A1 Fair	11.23	0.027	A1 Fair	11.23	0.027
31	55	Pine Creek	210	6	A1 Fair	5.02	0.024	A1 Fair	5.02	0.024
32	277	Pine Creek	56	8a	C4 Fair	0.66	0.012	B4 Good	0.12	0.002
33	281	Pine Creek	241	8b	Da Erosional4 Fair	2.48	0.010	C4 Good	0.09	0.000
34	291	Pine Creek	195	3a	C4 Fair	1.37	0.007	C4 Good	0.07	0.000
35	66	Pine Creek	33	4	Aa+1 Good	0.17	0.005	Aa+1 Good	0.17	0.005
36	68	Pine Creek	150	4	B4 Good	0.49	0.003	B4 Good	0.49	0.003
37	270	Pine Creek	80	8b	E4 Good	0.17	0.002	E4 Good	0.17	0.002
38	290	Pine Creek	170	3a	D Erosional4 Fair	0.29	0.002	C Good	0.06	0.000
39	64	Pine Creek	402	4	A1 Good	0.17	0.000	A1 Good	0.17	0.000
40	61	Pine Creek	178	4	A1 Good	0.06	0.000	A1 Good	0.06	0.000
41	286	Pine Creek	154	8a	A1 Good	0.01	0.000	A1 Good	0.01	0.000
42	63	Pine Creek	114	4	B1 Good	0.00	0.000	B1 Good	0.00	0.000
43	67	Pine Creek	1310	4	F4 Fair	0.00	0.000	B4 Good	0.00	0.000
44	69	Pine Creek	1688	4	F4 Good	0.00	0.000	B4 Good	0.00	0.000
45	278	Pine Creek	299	8a	F4 Fair	0.00	0.000	B4 Good	0.00	0.000
46	280	Pine Creek	123	6	Fb4 Fair	0.00	0.000	Fb4 Fair	0.00	0.000

Rank Worst to Best by (Tons/ft/year)	Feature ID	Stream Name	Segment Length (ft)	Valley Type	Current Conditions			Proposed Condition		
					Stream Type and Condition	Total Erosion (Tons/yr)	Total Erosion Rate (Tons/ft/yr)	Stream Type and Condition	Total Erosion (Tons/yr)	Total Erosion Rate (Tons/ft/yr)
1	263	Smith Creek	365		F4 Good	9.33	0.026	C4 Good	0.14	0.000
2	264	Smith Creek	73	3b	B4 Good	0.36	0.005	B4 Good	0.36	0.005
3	227	Smith Creek	539	8c	B6 Good	1.32	0.002	B6 Good	1.32	0.002
4	228	Smith Creek	610	8a	Bc6 Good	1.00	0.002	Bc6 Good	1.00	0.002

Rank Worst to Best by (Tons/ft/year)	Feature ID	Stream Name	Segment Length (ft)	Valley Type	Current Conditions			Proposed Condition		
					Stream Type and Condition	Total Erosion (Tons/yr)	Total Erosion Rate (Tons/ft/yr)	Stream Type and Condition	Total Erosion (Tons/yr)	Total Erosion Rate (Tons/ft/yr)
1	26	South Douglas	111	2	F4 Poor	288.95	2.598	B4 Good	0.11	0.001
2	28	South Douglas	278	2	F4 Poor	404.19	1.455	B4 Good	0.57	0.002
3	16	South Douglas	113	8b	F4 Poor	140.71	1.247	B4 Good	0.23	0.002
4	13	South Douglas	281	2	F4 Fair-Poor	252.79	0.900	B4 Good	0.57	0.002
5	18	South Douglas	108	8c	G4 Fair-Poor	94.87	0.880	B4 Good	0.22	0.002
6	8	South Douglas	166	2	F4 Fair-Poor	112.15	0.675	B4 Good	0.34	0.002
7	29	South Douglas	580	8a	F4 Fair-Poor	391.33	0.675	B4 Good	1.19	0.002
8	4	South Douglas	222	2	F4 Fair-Poor	149.68	0.675	B4 Good	0.45	0.002
9	5	South Douglas	296	2	G4 Fair-Poor	186.29	0.628	B4 Good	0.61	0.002
10	19	South Douglas	173	8b	F4 Fair-Poor	97.53	0.562	B4 Good	0.35	0.002
11	15	South Douglas	252	8c	G4 Fair-Poor	126.79	0.503	B4 Good	0.52	0.002
12	32	South Douglas	208	2	F4 Fair-Poor	93.68	0.450	B4 Good	0.43	0.002
13	17	South Douglas	130	8c	G4 Fair	54.34	0.419	B4 Good	0.27	0.002
14	22	South Douglas	169	8b	F4 Fair-Poor	57.15	0.337	B4 Good	0.35	0.002
15	24	South Douglas	138	8a	C4 Poor	33.98	0.247	B4 Good	0.28	0.002
16	25	South Douglas	129	2	F4 Fair-Poor	28.91	0.225	B4 Good	0.26	0.002
17	31	South Douglas	68	2	G4 Fair	14.16	0.209	B4 Good	0.14	0.002
18	23	South Douglas	136	8a	G4 Fair	18.92	0.140	B4 Good	0.14	0.001
19	7	South Douglas	187	2	G4 Fair	26.12	0.140	B4 Good	0.38	0.002
20	10	South Douglas	164	2	B4 Poor	18.80	0.114	B4 Good	0.17	0.001
21	1	South Douglas	120	2	G4 Fair	8.36	0.070	B4 Good	0.12	0.001
22	14	South Douglas	343	8c	F4 Fair	17.57	0.051	B4 Good	0.70	0.002
23	20	South Douglas	169	8b	F4 Fair	8.64	0.051	B4 Good	0.35	0.002
24	21	South Douglas	116	2	F4 Fair	5.96	0.051	B4 Good	0.12	0.001
25	11	South Douglas	280	2	F4 Fair	11.95	0.043	B4 Good	0.29	0.001
26	6	South Douglas	116	2	F4 Fair	3.95	0.034	B4 Good	0.24	0.002
27	27	South Douglas	153	8a	F4 Good	5.20	0.034	B4 Good	0.31	0.002
28	30	South Douglas	34	2	B4 Fair	0.86	0.025	B4 Good	0.07	0.002
29	2	South Douglas	246	2	F4 Fair	4.20	0.017	B4 Good	0.25	0.001
30	12	South Douglas	191	2	F4 Fair	3.26	0.017	B4 Good	0.20	0.001
31	3	South Douglas	250	2	B4 Fair	4.19	0.017	B4 Good	0.26	0.001
32	0	South Douglas	48	2	F4 Good	0.00	0.000	B4 Good	0.00	0.000
33	9	South Douglas	262	2	F4 Good	0.00	0.000	B4 Good	0.00	0.000

Rank Worst to Best by (Tons/ft/year)	Feature ID	Stream Name	Segment Length (ft)	Valley Type	Current Conditions			Proposed Condition		
					Stream Type and Condition	Total Erosion (Tons/yr)	Total Erosion Rate (Tons/ft/yr)	Stream Type and Condition	Total Erosion (Tons/yr)	Total Erosion Rate (Tons/ft/yr)
1	103	West Monument	55	8a	G3 Fair-Poor	27.78	0.503	B3 Good	0.11	0.002
2	106	West Monument	172	8b	G4 Fair	42.06	0.244	B4 Good	0.35	0.002
3	408	West Monument	60	2	A4 Good	8.95	0.150	A4 Good	8.95	0.150
4	108	West Monument	89		C4 Fair-Poor	6.26	0.070	C4 Good	0.03	0.000
5	101	West Monument	192	8a	B4 Fair	8.07	0.042	B4 Good	0.39	0.002
6	104	West Monument	154	8b	B4 Fair	6.46	0.042	B4 Good	0.31	0.002
7	111	West Monument	124	8c	Ba4 Fair	4.16	0.034	B4 Good	0.25	0.002
8	150	West Monument	262	2	A4 Good	2.68	0.010	A4 Good	2.68	0.010
9	110	West Monument	88	8c	C4 Fair	0.82	0.009	C4 Good	0.03	0.000
10	102	West Monument	104	8a	C4 Fair	0.73	0.007	C4 Good	0.04	0.000
11	148	West Monument	1767	2	A4 Good	9.06	0.005	A4 Good	9.06	0.005
12	407	West Monument	619	2	A4 Good	3.17	0.005	A4 Good	3.17	0.005
13	149	West Monument	308	3b	B4 Good	1.51	0.005	B4 Good	1.51	0.005
14	100	West Monument	825	8b	Ba4 Good	3.38	0.004	Ba4 Good	3.38	0.004
15	99	West Monument	104		B4 Good	0.34	0.003	B4 Good	0.34	0.003
16	105	West Monument	96	8b	Ba4 Good	0.32	0.003	Ba4 Good	0.32	0.003
17	151	West Monument	388	3b	B4 Good	1.27	0.003	B4 Good	1.27	0.003
18	107	West Monument	135	8c	Ba4 Good	0.33	0.002	Ba4 Good	0.33	0.002
19	152	West Monument	1348	3b	D Erosional4 Good	0.21	0.000	D4 Good	0.21	0.000
20	109	West Monument	153	8c	D Deposition4 Fair	0.00	0.000	C4 Good	0.06	0.000

D. Alternatives Analysis Technical Evaluation

Local Erosion and Immediate Action

Monument Creek Watershed Restoration Master Plan

8/22/2016

Name	Type	Immediate
Drainage Improvements along Beacon Lite R.	Local Erosion	No
Palmer Lake Drainage Improvements	Local Erosion and Flooding	No
Failed wingwalls on N. douglas and I-25	Local Erosion Infrastructure at Risk	Yes
Failed wingwalls on N. douglas and I-26	Local Erosion Infrastructure at Risk	Yes
Drainage Improvements near Hwy 105 exit of I-25	Local Erosion	No
Clean and Protect Pond near Woodmont Dr.	Pond Rehabilitation	No
Drainage Improvements near northern USAFA runway	Local Erosion	No
Monitor Discharge from Briargate Pkwy exit ramp	Monitor Discharge Location	No
Monitor Discharge from I-25 at Briargate Pkwy	Monitor Discharge Location	No
Monitor Discharge from I-25 NW of Briargate Pkwy	Monitor Discharge Location	No
Drainage Improvements at Monument Branch and I-25	Local Erosion Infrastructure at Risk	Yes
Monitor Discharge from Bass Pro Parking Lot	Monitor Discharge Location	No
Monitor Discharge north of Monument Branch	Monitor Discharge Location	No
Monitor Discharge at SW corner of Storage Sheds	Monitor Discharge Location	No
Monitor Discharge at NW corner of Storage Sheds	Monitor Discharge Location	No
Drainage Improvements off Paiute Circle	Local Erosion	No
Protect Utility on Middle Trib. east of I-25	Exposed Utility	No
Railroad bridge improvements along Jackson Creek	Crossing at Risk	No
Drainage Improvements at Struthers and N Gate Blvd	Local Erosion and Drainage Improvements	No
Protect Utility on Middle Trib. near Compassion Dr	Exposed Utility	No

Reach	Creek	Reach Alternative	Preliminary Cost Estimate	Proposed Stream Restoration	Rank Priority	Ranking (Total Project Erosion Savings tons/yr)	Ranking (Total Project Erosion Savings tons/ft/yr)	Ranking (Total Project Erosion tons/yr)	Ranking (Total Project Erosion tons/ft/yr)	Sinuosity	HEC-RAS Start	HEC-RAS End	Length	Max. 2-yr Channel Shear Stress	Max. 100-yr Floodplain Shear Stress	Max. Stable Slope for NCD	Required Width for NCD	Reach Manning's Value	Reach Slope	Q24 (cfs)	Q1004 (cfs)	Stable Reach
PC-7	Pine Creek	Small Drop Structures w/ Toe Protection	\$447,000	A1 Fair	High	13	1	13	1	1.13	6509	6141	368	1.33	2.25	0.04	28.45	0.04	0.03	350	2400	No
MT-10	Middle Tributary	Natural Channel Design	\$168,000	B4 Good	High	20	2	51	47	1.13	2259	1947	312	0.91	2.25	0.06	16.75	0.08	0.02	74	600	No
MCM-15	Monument Creek Main Stem	Small Drop Structures w/ Toe Protection	\$848,000	B4 Good	High	9	3	24	26	1.13	104815	104117	698	0.84	2.25	0.03	66.12	0.04	0.01	110	3100	No
PC-6	Pine Creek	Small Drop Structures w/ Toe Protection	\$333,000	NA	High	25	4	35	19	1.13	6783	6509	274	1.33	2.25	0.04	28.45	0.03	0.01	350	2400	No
KC-4	Kettle Creek	Natural Channel Design	\$2,373,000	B4 Good	High	1	5	1	1	1.13	16763	12369	4394	1.04	2.25	0.03	33.36	0.04	0.01	350	3600	No
BS-11	Black Squirrel Creek	Small Drop Structures w/ Toe Protection	\$2,515,000	B4 Good	High	5	6	5	3	1.13	4124	2054	2070	0.60	2.25	0.04	29.56	0.07	0.02	0	930	No
PC-3	Pine Creek	Natural Channel Design	\$526,000	B4 Good	High	13	7	10	4	1.13	8709	7735	974	1.33	2.25	0.04	28.45	0.04	0.01	350	2400	No
JC-6	Jackson Creek	Small Drop Structures w/ Toe Protection	\$1,231,000	B4 Good	High	12	8	11	6	1.13	1142	129	1013	0.28	2.25	0.02	23.19	0.06	0.02	13	520	No
MB-6	Monument Branch	Small Drop Structures w/ Toe Protection	\$1,231,000	C4 Good	High	4	9	4	5	1.13	5649	3369	2280	1.68	2.25	0.03	21.59	0.05	0.03	180	1200	No
BS-15	Black Squirrel Creek	Natural Channel Design	\$289,000	B4 Good	High	21	10	26	7	1.13	1390	855	535	0.60	2.25	0.04	29.56	0.06	0.02	0	930	No
SDC-8	South Douglas Creek	Small Drop Structures w/ Toe Protection	\$241,161	NA	High	33	11	29	22	NA	NA	NA	268	NA	2.25	NA	NA	NA	NA	NA	NA	No
MT-9	Middle Tributary	Small Drop Structures w/ Toe Protection	\$948,000	NA	High	19	12	15	8	1.13	3039	2259	780	0.91	2.25	0.06	16.75	0.07	0.03	74	600	No
NDC-1	North Douglas Creek	Small Drop Structures w/ Toe Protection	\$1,388,252	B4 Good	Moderate	8	13	8	9	NA	NA	NA	1543	NA	2.25	NA	NA	NA	NA	NA	NA	No
MB-1	Monument Branch	Natural Channel Design	\$853,000	B4 Good	Moderate	11	14	10	10	1.13	10738	9159	1579	1.68	2.25	0.03	21.59	0.05	0.02	180	1200	No
SDC-10	South Douglas Creek	Small Drop Structures w/ Toe Protection	\$323,629	B4 Good	Moderate	23	16	28	11	NA	NA	NA	360	NA	2.25	NA	NA	NA	NA	NA	NA	No
KC-1d	Kettle Creek	Natural Channel Design	\$243,363	C4 Good	Moderate	23	12	19	12	NA	NA	NA	608	NA	2.25	NA	NA	NA	NA	NA	NA	No
SDC-12	South Douglas Creek	Small Drop Structures w/ Toe Protection	\$240,170	B4 Good	Moderate	37	17	32	13	NA	NA	NA	267	NA	2.25	NA	NA	NA	NA	NA	NA	No
KC-1e	Kettle Creek	Natural Channel Design	\$2,257,723	C4 Good	Moderate	2	18	2	15	NA	NA	NA	5644	NA	2.25	NA	NA	NA	NA	NA	NA	No
SDC-4	South Douglas Creek	Small Drop Structures w/ Toe Protection	\$142,509	NA	Moderate	45	19	41	14	NA	NA	NA	158	NA	2.25	NA	NA	NA	NA	NA	NA	No
BS-4	Black Squirrel Creek	Natural Channel Design	\$629,000	B4 Good	Moderate	18	20	16	21	1.13	20055	18890	1165	0.60	2.25	0.04	29.56	0.05	0.02	43	860	No
KC-1f	Kettle Creek	Natural Channel Design	\$97,355	NA	Moderate	40	21	36	16	NA	NA	NA	243	NA	2.25	NA	NA	NA	NA	NA	NA	No
MCM-14	Monument Creek Main Stem	Small Drop Structures w/ Toe Protection	\$1,548,000	NA	Moderate	17	22	18	28	1.13	106089	104815	1274	0.84	2.25	0.03	66.12	0.04	0.01	110	3000	No
SDC-18	South Douglas Creek	Small Drop Structures w/ Toe Protection	\$1,291,643	B4 Good	Moderate	14	23	12	17	NA	NA	NA	1435	NA	2.25	NA	NA	NA	NA	NA	NA	No
PC-5	Pine Creek	Natural Channel Design	\$373,000	B4 Good	Moderate	24	24	27	30	1.13	7473	6783	690	1.33	2.25	0.04	28.45	0.04	0.04	350	2400	No
KC-1g	Kettle Creek	Natural Channel Design	\$1,164,482	B4 Good	Moderate	6	25	6	18	NA	NA	NA	2911	NA	2.25	NA	NA	NA	NA	NA	NA	No
SDC-2	South Douglas Creek	Small Drop Structures w/ Toe Protection	\$513,658	B4 Good	Moderate	28	26	22	20	NA	NA	NA	571	NA	2.25	NA	NA	NA	NA	NA	NA	No
MCM-13	Monument Creek Main Stem	Natural Channel Design	\$1,121,000	C4 Good	Moderate	10	27	17	37	1.13	108164	106089	2075	0.84	2.25	0.03	66.12	0.04	0.01	110	3000	No
MB-2	Monument Branch	Natural Channel Design	\$329,000	B4 Good	Moderate	30	28	53	54	1.13	9159	8550	609	1.68	2.25	0.03	21.59	0.06	0.02	180	1200	No
MT-4	Middle Tributary	Natural Channel Design	\$917,000	B4 Good	Moderate	16	29	14	23	1.13	6745	5047	1698	0.91	2.25	0.06	16.75	0.05	0.03	55	420	No
SDC-14	South Douglas Creek	Small Drop Structures w/ Toe Protection	\$146,311	B4 Good	Moderate	52	30	24	31	NA	NA	NA	163	NA	2.25	NA	NA	NA	NA	NA	NA	No
NRC-4	North Rockrimmon Creek	Small Drop Structures w/ Toe Protection	\$836,000	B4 Good	Moderate	29	23	25	25	1.13	4659	3971	688	0.87	2.25	0.03	18.53	0.03	0.01	240	1800	No
SDC-11	South Douglas Creek	Small Drop Structures w/ Toe Protection	\$116,021	NA	Low	53	32	49	27	NA	NA	NA	129	NA	2.25	NA	NA	NA	NA	NA	NA	No
PC-1a	Pine Creek	Small Drop Structures w/ Toe Protection	\$6,843,130	B4 Good	Low	3	33	3	29	NA	NA	NA	7603	NA	2.25	NA	NA	NA	NA	NA	NA	No
JC-5	Jackson Creek	Small Drop Structures w/ Toe Protection	\$559,000	B4 Good	Low	38	34	50	50	1.13	1602	1142	460	0.28	2.25	0.02	23.19	0.08	0.02	13	520	No
SDC-16	South Douglas Creek	Small Drop Structures w/ Toe Protection	\$812,956	B4 Good	Low	26	35	21	31	NA	NA	NA	903	NA	2.25	NA	NA	NA	NA	NA	NA	No
NDC-5	North Douglas Creek	Small Drop Structures w/ Toe Protection	\$211,912	NA	Low	51	36	46	32	NA	NA	NA	235	NA	2.25	NA	NA	NA	NA	NA	NA	No
KC-1k	Kettle Creek	Natural Channel Design	\$130,637	NA	Low	44	37	40	33	NA	NA	NA	327	NA	2.25	NA	NA	NA	NA	NA	NA	No
KC-12	Kettle Creek	Natural Channel Design	\$287,000	B4 Good	Low	39	38	34	34	1.13	599	68	531	1.04	2.25	0.03	33.36	0.06	0.03	330	1600	No
KC-1h	Kettle Creek	Natural Channel Design	\$292,981	B4 Good	Low	36	39	31	35	NA	NA	NA	732	NA	2.25	NA	NA	NA	NA	NA	NA	No
MCM-17	Monument Creek Main Stem	Natural Channel Design	\$865,000	B4 Good	Low	22	40	25	45	1.13	98078	96477	1601	0.84	2.25	0.03	66.12	0.04	0.01	130	4000	No
MT-12	Middle Tributary	Natural Channel Design	\$463,000	B4 Good	Low	34	41	30	39	1.13	1517	659	858	0.91	2.25	0.06	16.75	0.08	0.02	74	600	No
KC-1b	Kettle Creek	Natural Channel Design	\$153,512	C4 Good	Low	46	42	42	36	NA	NA	NA	384	NA	2.25	NA	NA	NA	NA	NA	NA	No
MB-5	Monument Branch	Natural Channel Design	\$1,367,000	B4 Good	Low	31	43	33	46	1.13	6774	5649	1125	1.68	2.25	0.03	21.59	0.06	0.03	180	1200	No
BF-5	Black Forest	Natural Channel Design	\$240,000	B4 Good	Low	43	44	39	38	1.13	469	25	444	0.38	2.25	0.03	19.47	0.07	0.03	4	220	No
MCM-16	Monument Creek Main Stem	Small Drop Structures w/ Toe Protection	\$7,337,000	B4 Good	Low	7	45	7	40	1.13	104117	98078	6039	0.84	2.25	0.03	66.12	0.04	0.01	110	3100	No
MT-3	Middle Tributary	Natural Channel Design	\$520,000	B4 Good	Low	35	48	35	40	1.13	7988	6745	963	0.91	2.25	0.06	16.75	0.05	0.03	55	420	No
KC-3	Jackson Creek	Natural Channel Design	\$343,000	C4 Good	Low	41	47	41	41	1.13	3653	3017	636	0.28	2.25	0.02	23.19	0.06	0.02	13	520	No
MB-4	Monument Branch	Natural Channel Design	\$1,897,000	B4 Good	Low	27	48	20	42	1.13	8335	6774	1561	1.68	2.25	0.03	21.59	0.07	0.02	180	1200	No
BS-2	Black Squirrel Creek	Natural Channel Design	\$259,000	B4 Good	Low	47	49	45	44	1.13	22445	21966	479	0.60	2.25	0.04	29.56	0.05	0.02	43	860	No
KC-1i	Kettle Creek	Natural Channel Design	\$232,654	B4 Good	Low	42	50	38	43	NA	NA	NA	582	NA	2.25	NA	NA	NA	NA	NA	NA	No
MB-7	Monument Branch	Small Drop Structures w/ Toe Protection	\$321,000	C4 Good	Low	48	51	56	57	1.13	3369	2774	595	1.68	2.25	0.03	21.59	0.05	0.02	180	1200	No
BS-16	Black Squirrel Creek	Natural Channel Design	\$410,000	B4 Good	Low	50	52	44	48	1.13	855	95	760	0.60	2.25	0.04	29.56	0.06	0.01	0	930	No
SDC-6	South Douglas Creek	Small Drop Structures w/ Toe Protection	\$145,292	NA	Low	56	53	55	49	NA	NA	NA	161	NA	2.25	NA	NA	NA	NA	NA	NA	No
BS-13	Black Squirrel Creek	Natural Channel Design	\$158,000	B4 Good	Low	55	54	54	52	1.13	1921	1628	293	0.60	2.25	0.04	29.56	0.06	0.01	0	930	No
MB-8	Monument Branch	Small Drop Structures w/ Toe Protection	\$859,000	B4 Good	Low	49	55	53	53	1.13	2774	1184	1590	1.68	2.25	0.03	21.59	0.05	0.03	180	1200	No
MB-9	Monument Branch	Natural Channel Design	\$607,000	C4 Good	Low	54	56	52	55	1.13	1184	60	1124	1.68	2.25	0.03	21.59	0.05	0.02	180	1200	No
MT-7	Middle Tributary	Natural Channel Design	\$220,000	C4 Good	Low	57	57	57	56	1.13	4480	4073	407	0.91	2.25	0.06	16.75	0.06	0.02			

Reach	Creek	Reach Alternative	Preliminary Cost Estimate	Proposed Stream Restoration	Rank Priority	Ranking (Total Project Erosion Savings tons/yr)	Ranking (Total Project Erosion Savings tons/ft/yr)	Ranking (Total Project Erosion tons/yr)	Ranking (Total Project Erosion tons/ft/yr)	Sinuosity	HEC-RAS Start	HEC-RAS End	Length	Max. 2-yr Channel Shear Stress	Max. 100-yr Floodplain Shear Stress	Max. Stable Slope for NCD	Required Width for NCD	Reach Manning's Value	Reach Slope	Q24 (cfs)	Q1004 (cfs)	Stable Reach
BS-1	Black Squirrel Creek	Protect In Place		B4 Good	Low	106	106	106	106	1.13	22920	22445	475	0.60	2.25	0.04	29.56	0.05	0.03	43	860	Yes
BS-10	Black Squirrel Creek	Protect In Place		NA	Low	106	106	106	106	1.13	5211	4124	1087	0.60	2.25	0.04	29.56	0.08	0.02	0	930	Yes
BS-6	Black Squirrel Creek	Protect In Place		NA	Low	106	106	106	106	1.13	17436	13262	4174	0.60	2.25	0.04	29.56	0.08	0.01	43	870	Yes
BS-7	Black Squirrel Creek	Protect In Place		NA	Low	106	106	106	106	1.13	13262	6600	6662	0.60	2.25	0.04	29.56	0.07	0.02	60	940	Yes
BS-8	Black Squirrel Creek	Protect In Place		NA	Low	106	106	106	106	1.13	6600	6200	400	0.60	2.25	0.04	29.56	0.08	0.04	36	930	Yes
BS-9	Black Squirrel Creek	Protect In Place		NA	Low	106	106	106	106	1.13	6200	5211	989	0.60	2.25	0.04	29.56	0.09	0.02	27	930	Yes
KC-10	Kettle Creek	Protect In Place		NA	Low	106	106	106	106	1.13	1690	1554	136	1.04	2.25	0.03	33.36	0.05	0.02	330	1600	Yes
KC-1a	Kettle Creek	Protect In Place		NA	Low	106	106	106	106	NA	NA	NA	1870	NA	NA	NA	NA	NA	NA	NA	NA	Yes
KC-11	Kettle Creek	Protect In Place		NA	Low	106	106	106	106	NA	NA	NA	412	NA	NA	NA	NA	NA	NA	NA	NA	Yes
KC-6	Kettle Creek	Protect In Place		NA	Low	106	106	106	106	1.13	8269	7499	770	1.04	2.25	0.03	33.36	0.04	0.03	330	1600	Yes
KC-9	Kettle Creek	Protect In Place		B4 Good	Low	106	106	106	106	1.13	3654	1690	1964	1.04	2.25	0.03	33.36	0.05	0.01	330	1600	Yes
MCM-1	Monument Creek Main Stem	Protect In Place		NA	Low	106	106	106	106	1.13	156800	155162	1638	0.84	2.25	0.03	66.12	0.05	0.03	12	220	Yes
MCM-2	Monument Creek Main Stem	Protect In Place		NA	Low	106	106	106	106	1.13	155162	148948	6214	0.84	2.25	0.03	66.12	0.06	0.02	27	1000	Yes
MCM-20	Monument Creek Main Stem	Protect In Place		NA	Low	106	106	106	106	1.13	88141	85453	2688	0.84	2.25	0.03	66.12	0.05	0.01	240	5000	Yes
MCM-22	Monument Creek Main Stem	Protect In Place		NA	Low	106	106	106	106	1.13	82154	75259	6625	0.84	2.25	0.03	66.12	0.05	0.01	250	5900	Yes
MCM-23	Monument Creek Main Stem	Protect In Place		NA	Low	106	106	106	106	1.13	75529	71508	4021	0.84	2.25	0.03	66.12	0.05	0.01	260	6100	Yes
MCM-24	Monument Creek Main Stem	Protect In Place		NA	Low	106	106	106	106	1.13	71508	69256	2252	0.84	2.25	0.03	66.12	0.04	0.01	280	6200	Yes
MCM-25	Monument Creek Main Stem	Protect In Place		NA	Low	106	106	106	106	1.13	69256	61715	7541	0.84	2.25	0.03	66.12	0.05	0.01	280	6200	Yes
MCM-26	Monument Creek Main Stem	Protect In Place		NA	Low	106	106	106	106	1.13	61715	57080	4635	0.84	2.25	0.03	66.12	0.05	0.01	400	7200	Yes
MCM-27	Monument Creek Main Stem	Protect In Place		NA	Low	106	106	106	106	1.13	57080	56375	705	0.84	2.25	0.03	66.12	0.04	0.00	720	8800	Yes
MCM-28	Monument Creek Main Stem	Protect In Place		NA	Low	106	106	106	106	1.13	56375	47893	8482	0.84	2.25	0.03	66.12	0.05	0.01	720	8900	Yes
MCM-29	Monument Creek Main Stem	Protect In Place		NA	Low	106	106	106	106	1.13	47893	43385	4508	0.84	2.25	0.03	66.12	0.05	0.01	740	9100	Yes
MCM-3	Monument Creek Main Stem	Protect In Place		NA	Low	106	106	106	106	1.13	148948	145426	3522	0.84	2.25	0.03	66.12	0.04	0.01	31	1300	Yes
MCM-30	Monument Creek Main Stem	Protect In Place		NA	Low	106	106	106	106	1.13	43385	38751	4634	0.84	2.25	0.03	66.12	0.04	0.01	1300	9900	Yes
MCM-31	Monument Creek Main Stem	Protect In Place		NA	Low	106	106	106	106	1.13	38751	36519	2232	0.84	2.25	0.03	66.12	0.04	0.01	1400	11000	Yes
MCM-32	Monument Creek Main Stem	Protect In Place		NA	Low	106	106	106	106	1.13	36519	34223	2296	0.84	2.25	0.03	66.12	0.03	0.01	1400	12000	Yes
MCM-33	Monument Creek Main Stem	Protect In Place		NA	Low	106	106	106	106	1.13	34223	34003	220	0.84	2.25	0.03	66.12	0.04	0.00	1500	13000	Yes
MCM-34	Monument Creek Main Stem	Protect In Place		NA	Low	106	106	106	106	1.13	34003	26205	7798	0.84	2.25	0.03	66.12	0.04	0.01	1600	14000	Yes
MCM-35	Monument Creek Main Stem	Protect In Place		NA	Low	106	106	106	106	1.13	26205	25811	394	0.84	2.25	0.03	66.12	0.04	0.01	2100	19000	Yes
MCM-36	Monument Creek Main Stem	Protect In Place		NA	Low	106	106	106	106	1.13	25811	23208	2603	0.84	2.25	0.03	66.12	0.04	0.01	2400	22000	Yes
MCM-37	Monument Creek Main Stem	Protect In Place		NA	Low	106	106	106	106	1.13	23208	15663	7545	0.84	2.25	0.03	66.12	0.04	0.01	2500	23000	Yes
MCM-38	Monument Creek Main Stem	Protect In Place		NA	Low	106	106	106	106	1.13	15663	11592	4071	0.84	2.25	0.03	66.12	0.05	0.01	2600	24000	Yes
MCM-39	Monument Creek Main Stem	Protect In Place		NA	Low	106	106	106	106	1.13	11592	3846	7746	0.84	2.25	0.03	66.12	0.04	0.01	2700	25000	Yes
MCM-4	Monument Creek Main Stem	Protect In Place		NA	Low	106	106	106	106	1.13	145426	139821	5605	0.84	2.25	0.03	66.12	0.05	0.01	69	1800	Yes
MCM-40	Monument Creek Main Stem	Protect In Place		NA	Low	106	106	106	106	1.13	3846	499	3347	0.84	2.25	0.03	66.12	0.07	0.01	2700	25000	Yes
MCM-5	Monument Creek Main Stem	Protect In Place		NA	Low	106	106	106	106	1.13	139821	136898	2923	0.84	2.25	0.03	66.12	0.04	0.01	29	610	Yes
MCM-6	Monument Creek Main Stem	Protect In Place		NA	Low	106	106	106	106	1.13	136898	133203	3695	0.84	2.25	0.03	66.12	0.05	0.01	48	1100	Yes
MCM-7	Monument Creek Main Stem	Protect In Place		NA	Low	106	106	106	106	1.13	133203	132718	485	0.84	2.25	0.03	66.12	0.05	0.00	48	1300	Yes
MCM-8	Monument Creek Main Stem	Protect In Place		NA	Low	106	106	106	106	1.13	132718	125232	7486	0.84	2.25	0.03	66.12	0.04	0.01	47	1300	Yes
MCM-9	Monument Creek Main Stem	Protect In Place		NA	Low	106	106	106	106	1.13	125232	119034	6198	0.84	2.25	0.03	66.12	0.04	0.01	58	2000	Yes
MT-1	Middle Tributary	Protect In Place		NA	Low	106	106	106	106	1.13	9893	7905	1988	0.91	2.25	0.06	16.75	0.08	0.03	55	420	Yes
NDC-4	North Douglas Creek	Protect In Place		NA	Low	106	106	106	106	NA	NA	NA	102	NA	NA	NA	NA	NA	NA	NA	NA	Yes
NRC-1	North Rockrimmon Creek	Protect In Place		NA	Low	106	106	106	106	1.13	14552	6400	8152	0.87	2.25	0.06	18.53	0.03	0.03	130	900	Yes
NRC-6	North Rockrimmon Creek	Protect In Place		NA	Low	106	106	106	106	1.13	2000	1316	684	0.87	2.25	0.06	18.53	0.03	0.03	240	1800	Yes
NRC-7	North Rockrimmon Creek	Protect In Place		NA	Low	106	106	106	106	1.13	1316	250	1066	0.87	2.25	0.06	18.53	0.02	0.01	240	1800	Yes
PC-1	Pine Creek	Protect In Place		NA	Low	106	106	106	106	1.13	11983	10582	1401	1.33	2.25	0.04	28.45	0.05	0.01	350	2400	Yes
PC-11	Pine Creek	Protect In Place		B4 Good	Low	106	106	106	106	1.13	2289	997	1292	1.33	2.25	0.04	28.45	0.03	0.02	520	3400	Yes
PC-1b	Pine Creek	Protect In Place		NA	Low	106	106	106	106	NA	NA	NA	1271	NA	NA	NA	NA	NA	NA	NA	NA	Yes
PC-2	Pine Creek	Protect In Place		NA	Low	106	106	106	106	1.13	10582	8709	1873	1.33	2.25	0.04	28.45	0.04	0.04	350	2400	Yes
SC-2	Smith Creek	Protect In Place		NA	Low	106	106	106	106	1.13	2570	34	2536	1.02	2.25	0.02	16.43	0.05	0.02	160	1100	Yes
SDC-15	South Douglas Creek	Protect In Place		NA	Low	106	106	106	106	NA	NA	NA	127	NA	NA	NA	NA	NA	NA	NA	NA	Yes
SDC-5	South Douglas Creek	Protect In Place		NA	Low	106	106	106	106	NA	NA	NA	259	NA	NA	NA	NA	NA	NA	NA	NA	Yes
SRC-1	South Rockrimmon Creek	Protect In Place		NA	Low	106	106	106	106	1.13	5572	4908	664	1.02	2.25	0.02	16.43	0.04	0.02	160	1100	Yes
SRC-2	South Rockrimmon Creek	Protect In Place		NA	Low	106	106	106	106	1.13	4908	29	4879	1.02	2.25	0.02	16.43	0.04	0.02	160	1100	Yes
WMC-1	West Monument Creek	Protect In Place		A4 Good	Low	106	106	106	106	1.13	22434	20372	2062	2.05	2.25	0.05	36.05	0.06	0.05	180	1600	Yes
WMC-2	West Monument Creek	Protect In Place		B4 Good	Low	106	106	106	106	1.13	20372	19685	687</									

Detention / Water Quality Facilities
Monument Creek Watershed Restoration Master Plan

9/15/2016

Detention Facility	New Construction or Retrofit	Approx. Existing Hydromodification	Potential Future Hydromodification	Proposed Downstream Reach Improvement	Environmental Benefits	Flood Risk Reduction Benefits	Practicality of a Sub-Regional Detention Facility	Detention Facility Ranking	Cost
Black Forest Concept Detention A	Concept Detention	Low	Low	Moderate	High	Low	More	Low	\$ 1,410,000
Black Forest Detention Retrofit A	Detention Retrofit	Low	Low	Moderate	High	Low	More	Low	\$ 30,000
Black Forest Detention Retrofit B	Detention Retrofit	Low	Low	Moderate	Moderate	Low	More	Low	\$ 30,000
Black Squirrel Concept Detention A	Concept Detention	Moderate	Very High	High	Very High	Low	More	High	\$ 4,390,000
Black Squirrel Concept Detention B	Concept Detention	Moderate	Very High	High	Very High	Low	More	High	\$ 3,980,000
Black Squirrel Concept Detention C	Concept Detention	Moderate	Low	High	High	Low	More	Moderate	\$ 1,150,000
Black Squirrel Concept Detention D	Concept Detention	High	Low	High	Very High	Low	More	Moderate	\$ 1,870,000
Black Squirrel Detention Retrofit A	Detention Retrofit	Moderate	Very High	Very High	Very High	Low	More	High	\$ 3,940,000
Black Squirrel Detention Retrofit B	Detention Retrofit	High	Low	Very High	Very High	Low	More	Moderate	\$ 750,000
Black Squirrel Detention Retrofit C	Detention Retrofit	Moderate	Very High	High	Very High	Low	More	High	\$ 3,950,000
Dry Creek Concept Detention A ²	Concept Detention	Very High	Low	Low	Moderate	Low	More	Low	\$ 4,050,000
Dry Creek Detention Retrofit A ²	Detention Retrofit	Very High	Low	Low	Moderate	Low	More	Low	\$ 30,000
Elkhorn Detention Retrofit A ²	Detention Retrofit	High	Moderate	Low	Moderate	Low	More	Low	\$ 30,000
Jackson Concept Detention A	Concept Detention	Low	Low	Moderate	Very High	Low	More	Low	\$ 980,000
Jackson Detention Retrofit A	Detention Retrofit	Low	Low	Moderate	Very High	Low	More	Low	\$ 30,000
Kettle Concept Detention A	Concept Detention	High	High	Moderate	Very High	Moderate	Less	Low	\$ 17,320,000
Kettle Concept Detention B	Concept Detention	High	High	Moderate	Very High	Moderate	Less	Low	\$ 13,570,000
Kettle Concept Detention C	Concept Detention	Moderate	Low	Moderate	Moderate	Moderate	More	Low	\$ 2,260,000
Kettle Concept Detention D	Concept Detention	Moderate	Low	Moderate	Moderate	Moderate	More	Low	\$ 810,000
Kettle Concept Detention E	Concept Detention	Moderate	Low	Moderate	Moderate	Moderate	More	Low	\$ 810,000
Kettle Concept Detention F	Concept Detention	Very High	Low	Moderate	Moderate	Moderate	Less	Low	\$ 9,670,000
Kettle Concept Detention G	Concept Detention	Very High	Low	Moderate	Moderate	Moderate	Less	Low	\$ 7,170,000
Kettle Concept Detention H	Concept Detention	Very High	Low	Moderate	Moderate	Moderate	More	Moderate	\$ 3,230,000
Kettle Detention Retrofit A	Detention Retrofit	High	Low	Moderate	Very High	Moderate	More	Moderate	\$ 30,000
Kettle Detention Retrofit B	Detention Retrofit	High	Low	Moderate	High	Moderate	More	Moderate	\$ 30,000
Kettle Detention Retrofit C	Detention Retrofit	High	Moderate	Moderate	Moderate	Moderate	More	Moderate	\$ 1,520,000
Kettle Detention Retrofit D	Detention Retrofit	High	High	Moderate	Moderate	Moderate	More	Moderate	\$ 1,850,000
Middle Tributary Detention Retrofit A	Detention Retrofit	Very High	Very High	Very High	Very High	Low	More	High	\$ 1,330,000
Misc. Detention Retrofit A ²	Detention Retrofit	Moderate	Low	Low	Moderate	Low	More	Low	\$ 30,000
Misc. Detention Retrofit B ²	Detention Retrofit	Moderate	Low	Low	Moderate	Low	More	Low	\$ 30,000
Misc. Detention Retrofit C ²	Detention Retrofit	Low	Low	Low	Moderate	Low	More	Low	\$ 30,000
Monument Branch Concept Detention A	Concept Detention	Very High	Low	Very High	Very High	Low	Less	Low	\$ 7,040,000
Monument Branch Detention Retrofit A	Detention Retrofit	High	Moderate	Very High	High	Low	More	High	\$ 2,920,000
Monument Branch Detention Retrofit B	Detention Retrofit	Very High	Low	Very High	Moderate	Low	More	High	\$ 2,090,000
Monument Branch Detention Retrofit C	Detention Retrofit	High	Moderate	Very High	Moderate	Low	More	Moderate	\$ 2,920,000
North Douglas Detention Retrofit A ^{1,2,3}	Detention Retrofit	Very High	Low	High	Moderate	Low	Yes	Moderate	\$ 640,000
North Rockrimmon Concept Detention A	Concept Detention	Moderate	Low	Low	Moderate	Very High	More	Moderate	\$ 1,190,000
North Rockrimmon Concept Detention B	Concept Detention	Low	Low	High	Moderate	Very High	More	Moderate	\$ 2,670,000
Pine Concept Detention A	Concept Detention	Very High	Low	Low	High	Low	Less	Low	\$ 13,780,000
Pine Concept Detention B	Concept Detention	Very High	Low	Very High	High	Low	More	High	\$ 4,080,000
Pine Detention Retrofit A	Detention Retrofit	Very High	Low	High	High	Low	More	Moderate	\$ 30,000
Pine Detention Retrofit B	Detention Retrofit	Very High	Low	Very High	Moderate	Low	More	Moderate	\$ 2,690,000
Pine Detention Retrofit C	Detention Retrofit	Very High	Low	Very High	High	Low	More	High	\$ 1,050,000
Pine Detention Retrofit D	Detention Retrofit	Very High	Low	Very High	Moderate	Low	More	Moderate	\$ 2,690,000
Pine Detention Retrofit E	Detention Retrofit	Very High	Low	Very High	Moderate	Low	More	Moderate	\$ 1,050,000
Smith Creek Concept Detention A	Concept Detention	High	Moderate	Low	Very High	Low	More	Moderate	\$ 4,030,000
Smith Detention Retrofit A	Detention Retrofit	High	Moderate	Low	Very High	Moderate	More	Moderate	\$ 30,000
South Douglas Concept Detention A ^{1,2,3}	Concept Detention	Very High	Low	High	Moderate	Low	More	Moderate	\$ 1,110,000
South Douglas Concept Detention B ^{1,2,3}	Concept Detention	Very High	Low	Low	Moderate	Low	More	Low	\$ 470,000
South Douglas Concept Detention C ^{1,2,3}	Concept Detention	Very High	Low	Low	Moderate	Low	More	Low	\$ 380,000
South Douglas Detention Retrofit A ^{1,2,3}	Detention Retrofit	Very High	Low	High	Moderate	Low	Less	Low	\$ 250,000
Teachout Concept Detention A ²	Concept Detention	High	High	Low	Moderate	Very High	More	Moderate	\$ 1,390,000
Templeton Gap Concept Detention A ^{1,2,3}	Concept Detention	Very High	Low	Low	Moderate	Low	More	Low	\$ 1,390,000
Templeton Gap Concept Detention B ^{1,2,3}	Concept Detention	Very High	Low	Low	Moderate	Low	More	Low	\$ 1,660,000
USGS Proposed Detention above N. Gate Blvd. at USAFA ⁴	Concept Detention	Low	High	Low	Very High	Very High	Less	Low	\$ 16,320,000
USGS Proposed Detention at Monument Creek at Bijou St. ⁴	Concept Detention	High	Low	Low	High	Very High	Less	Low	\$ 45,190,000
USGS Proposed Detention at Monument Creek at Pikeview ⁴	Concept Detention	Very High	Low	Low	High	Very High	Less	Low	\$ 44,290,000
USGS Proposed Detention at Monument Creek at Spring St. ⁴	Concept Detention	Low	Low	Low	High	Moderate	More	Low	\$ 4,560,000
USGS Proposed Detention at Monument Creek at Templeton Gap Floodway ⁴	Concept Detention	High	Low	Low	High	Very High	More	Moderate	\$ 2,290,000
USGS Proposed Detention at Monument Creek below Monument Lake ⁴	Concept Detention	Low	Very High	Low	Very High	Very High	Less	Low	\$ 5,920,000
USGS Proposed Detention at Monument Creek below Sewage Treatment Plant USAFA ⁴	Concept Detention	Low	Moderate	Low	Very High	Very High	Less	Low	\$ 40,680,000
West Monument Concept Detention A	Concept Detention	Very High	Low	Low	High	Low	Less	Low	\$ 14,280,000
West Monument Concept Detention B	Concept Detention	High	Low	Low	High	Low	Less	Low	\$ 14,740,000

Notes:

- Hydromodification assigned based on engineering judgement due to scope (modeling) limitations.
- Proposed downstream reach improvement assigned based on engineering judgement and/or previous studies outside of the project scope.
- Detention facility project assumed feasible based upon engineering judgement.
- Sizes for USGS proposed detention facilities referenced from the report "Remediation Scenarios for Attenuating Peak Flows and Reducing Sediment Transport in Fountain Creek, Colorado, 2013"
- Due to previous evaluation, the City of Colorado Springs IGA Detention Alternatives were not identified for evaluation in this analysis
- Detention Alternatives in the Cottonwood Creek watershed will be adopted from the City of Colorado Springs' DBPS

Flood Risk Reduction

Monument Creek Watershed Restoration Master Plan

8/23/2016

Creek	Structure ID	Crossing	Structure/Source	Flood Risk Concern	Q, Weir (Overtopping Flow, cfs)	Q, Total (cfs)	Overtop % of Total Flow	Rank	Approximate Cost
Monument Creek	18125	Two Lane Road	Bridge	Overtopping	3294.58	23400.7	14%	High	\$ 1,397,000
Teachout Creek	Old Denver HW	Two Lane Road	Culvert	Stakeholder Identified	-	-	-	High	\$ 220,000
Teachout Creek	Old Denver HW	Two Lane Road	Culvert	Stakeholder Identified	-	-	-	High	\$ 220,000
North Rockrimmon	Railroad/Mark Dabbling	NA	Concept Levee	Backwater				High	\$ 177,778
North Rockrimmon	14025 Culvert #1	Two Lane Road	Culvert	Overtopping	741.38	900.3	82%	High	\$ 729,000
North Rockrimmon	2000 Culvert #1	Intersection	Box Culvert	Overtopping	734.79	1825.5	40%	Moderate	\$ 2,530,000
West Monument	Stables	NA	Concept Levee	Inundation				Moderate	\$ 152,889
North Rockrimmon	Allegheny Dr.	NA	Concept Levee	Inundation				Moderate	\$ 71,111
Kettle Creek	1575 Culvert #1	Access Road	Culvert	Overtopping	1387.06	1642.6	84%	Low	\$ 14,000
Kettle Creek	105 Culvert #1	Driveway	Culvert	Overtopping	1229.8	1642.6	75%	Low	\$ 27,000
Monument Creek	138750 Culvert #1	Access Road	Culvert	Overtopping	383.29	607.2	63%	Low	\$ 26,000
Monument Creek	4400	Railroad	Bridge	Overtopping	2709.69	25386.1	11%	Low	\$ 2,430,000
North Rockrimmon	250 Culvert #1	Driveway/Parking Lot	Box Culvert	Overtopping	58.56	1825.5	3%	Low	\$ 2,442,000
Lehman Run	AFA Stadium Access	Two Lane Road	Culvert	Previously Studied - Overtops	-	-	-	Low	\$ 51,000
Smith Creek	North Gate	Four Lane Road	Bridge	Stakeholder Identified	-	-	-	Low	\$ 5,400,000
Monument Creek	Oxbridge Road	Two Lane Road	Culvert	Stakeholder Identified	-	-	-	Low	\$ 486,000

Aquatic Habitat Alternatives

Monument Creek Watershed Restoration Master Plan

8/18/2016

Name	Crest Width (LF)	Cost
Monument Creek near West Boulder Street	100	\$ 400,000
Monument Creek east of Goose Gossage Sports Complex	85	\$ 340,000
Monument Creek near Maple Ct.	200	\$ 800,000
Monument Creek upstream of South Rockrimmon confluence	80	\$ 320,000
Monument Creek at I-25	90	\$ 360,000
Monument Creek at railroad crossing near USAFA northern runway	50	\$ 200,000
Monument Creek at Monument Lake	140	\$ 560,000
Monument Creek at Red Rock Ranch Road	80	\$ 320,000
Kettle Creek at culvert outfall	45	\$ 180,000
West Monument Creek at Ice Lake	25	\$ 100,000
West Monument Creek at Diversion	50	\$ 200,000

Stability Alternatives

Monument Creek Watershed Restoration Master Plan

9/2/2016

Project Description	Headcut Size (ft)	2-Year Existing Hydromodification	2-Year Future Hydromodification	Rank
Headcutting on South Rockrimmon downstream of Ute Valley Park	7	Low	Low	Moderate
Exposed utility on Pine Creek near I-25 Academy Blvd. exit ramp	0	Very High	Low	Low
Headcutting on Pine Creek upstream of detention facility at Briargate Pkwy. and Voyager Pkwy.	5	Very High	Low	High
Utility crossing on Pine Creek downstream of Chapel Hills Dr.	0	Very High	Low	Low
Headcutting on Pine Creek at golf cart crossing ¹	4	Very High	Low	High
Headcutting on Kettle Creek east of Interquest Pkwy.	5	High	Low	Moderate
Headcutting on Kettle Creek downstream of Howells Rd. #1	4	High	Low	Moderate
Headcutting on Kettle Creek downstream of Howells Rd. #2	3	High	Low	Moderate
Headcutting on Black Squirrel Creek downstream of I-25	10	Moderate	Very High	High
Headcutting on Middle Tributary on USAFA	6	Very High	Very High	High
Protect Utility on Middle Tributary east of I-25	0	Very High	High	Low
Protect Utility on Middle Tributary near Compassion Dr	0	Very High	High	Low
Utility Crossing on Monument Branch Downstream of Flying Horse Pond	0	Very High	Low	Low
Headcutting at Smith Creek and I-25 exit ramp	6	Moderate	Low	Moderate
Drainage Improvements near northern USAFA runway	0	Moderate	Low	Low
Headcutting upstream of railroad crossing on Black Forest	4	Low	Low	Low
Headcutting and Bridge scour railroad crossing at Jackson Creek	5	Low	Low	Low
Headcutting near pond upstream of Jackson Creek Pkwy.	4	Low	Low	Low
Palmer Lake Drainage Improvements	0	Moderate	Low	Low
Headcutting and exposed utility on Middle Tributary south of Middle Creek Pkwy	15	Very High	High	High
Natural Channel Design Black Forest Creek	0	Low	Low	Low
Monument Creek Headcutting west of USAFA Airfield ²	0	Moderate	Moderate	High
Monument Creek Headcutting near Thunderbird Ln. ²	0	Very High	Low	High

Notes:

1. Size of Headcut estimated
2. Stakeholder identified stability issue
3. Headcut sizes considered where applicable

Riparian Alternatives

Monument Creek Watershed Restoration Master Plan

9/27/2016

Name	Adjacent Reach Alternative?	Restoration Extents (LF)	Cost	Rank
Dry Creek Upstream of E Rockrimmon Blvd.	No	1786	\$ 228,573	Low
Middle Tributary at I-25	Yes	942	\$ 120,542	Moderate
Dirty Woman Creek East of I-25	No	3579	\$ 458,130	Moderate
Jackson Creek Between Railroad and I-25	Yes	1307	\$ 167,332	Low
Monument Branch at I-25	Yes	1663	\$ 212,829	Moderate
Black Squirrel from Voyager to Schoup Rd.	Yes	9669	\$ 1,237,657	High
Monument Creek at Monument Reservoir	No	2457	\$ 314,474	Moderate
Monument Creek at Woodmen Rd.	No	2784	\$ 356,374	Moderate
Monument Creek at North Gate Blvd.	Yes	6495	\$ 831,383	High
North Rockrimmon Downstream of Pro Rodeo Dr.	No	605	\$ 77,502	Low
Monument Creek at Oxbridge Rd.	No	2784	\$ 356,366	High
Black Squirrel at I-25	No	1047	\$ 133,960	Moderate
Monument Creek at Baptist Road	No	7365	\$ 942,741	Moderate
Dry Creek Downstream of Dawson Dr.	No	463	\$ 59,219	Low

*Note:

1. Projects ranked on surrounding alternatives and overall feasibility

Recreation Alternatives

Monument Creek Watershed Restoration Master Plan

9/27/2016

Name	Cost	Rank
Sinton Trail	\$ 133,474	High
COS IGA Projects - Monument Branch Trail	\$ 80,333	Moderate
COS IGA Projects - Cottonwood Detention Trail	\$ 89,067	Low
COS IGA Projects - #10 Pond/Park/Trail	\$ 33,957	Low
La Foret Trail Connection	\$ 255,948	Moderate
Forest Lake Open Space	\$ -	Low
Pine Creek Open Space	\$ -	High
Black Squirrel / Smith Creek Open Space	\$ -	Moderate
Ute Valley Park - Allegheny Drainage & Vindicator Trailhead Detention	\$ -	Low
North Rockrimmon Trails	\$ 8,591	Moderate
Mesa Creek Outfall	\$ 300,000	High
Uintah Bridge Bank Stabilization	\$ 450,000	High

*Note:

1. Prjects ranked on surrounding alternatives and overall feasibility

**Management Recommendations:

1. Policy change to strengthen development regulation to protect Riparian Corridors.
2. Formalize a working group that meets quarterly to discuss project prioritization changes and project partnering opportunities.

E. Cost Estimate Background

Monument Creek Watershed Restoration Master Plan

Unit Costs

DWB 7/26/2016

(Compiled from Colorado reference sources and Matrix and UDFCD master plan documents)

Comparisons

Matrix Falcon DBPS Upper Fntn UDFCD Big Dry Creek Box Elder Happy Canyon CDOT

Item Description	Unit	Base Year		Adj. Factor ¹	2016 Unit Cost	Source/Comment	Comparisons					
		Unit Cost	Base Year				2012	2015	2015	2014	2014	2016
Earthwork												
Excavation and Fill (on-site)	CY	\$11	2012	1.2677	\$14	UDFCD UD-MP Cost 2.2, low range	\$15.00		\$12.00		\$13.51	
Excavation (haul, near)	CY	\$24	2012	1.2677	\$30	UDFCD UD-MP Cost 2.2, high range	\$25.00		\$26.00	\$22.00	\$16.88	
Excavation (haul, far)	CY	\$31	2012	1.2677	\$39	UDFCD UD-MP Cost 2.2, high range		\$30.00	\$33.00	\$29.00	\$28.14	
Embankment (on-site)	CY	\$11	2012	1.2677	\$14	UDFCD UD-MP Cost 2.2, low range						
Embankment (haul, near)	CY	\$24	2012	1.2677	\$30	UDFCD UD-MP Cost 2.2 high range						
Embankment (haul, far)	CY	\$31	2012	1.2677	\$39	UDFCD UD-MP Cost 2.2 high range						
Clear and Grub	AC	\$1,872	2016	1.0000	\$1,872	CDOT 2016 Cost Data - avg award						\$1,872.00
Top Soil - striping and replacement?	CY	\$12	2016	1.0000	\$12	CDOT 2016 Cost Data - avg award						\$11.38
Top Soil - stockpile	CY	\$10	2016	1.0000	\$10	CDOT 2016 Cost Data - avg award						\$9.39
Top Soil - wetland	CY	\$22	2016	1.0000	\$22	CDOT 2016 Cost Data - avg award						\$21.52
Top Soil - wetland stockpile	CY	\$18	2016	1.0000	\$18	CDOT 2016 Cost Data - avg award						\$17.52
Uncl. Excavation	CY	\$11	2016	1.0000	\$11	CDOT 2016 Cost Data - avg award						\$10.57
Emb. Matl	CY	\$16	2016	1.0000	\$16	CDOT 2016 Cost Data - wgted avg award						\$15.43
Circular Pipes												
12" RCP	LF	\$36	2012	1.2677	\$46	UDFCD UD-MP Cost 2.1	\$45.90					\$114.25
15" RCP	LF	\$85	2016	1.0000	\$85	CDOT 2016 Cost Data - avg award						\$85.23
18" RCP	LF	\$54	2012	1.2677	\$68	UDFCD UD-MP Cost 2.1	\$68.85		\$58.00			\$65.99
24" RCP	LF	\$72	2012	1.2677	\$91	UDFCD UD-MP Cost 2.2	\$91.79		\$78.00			\$75.60
30" RCP	LF	\$90	2012	1.2677	\$114	UDFCD UD-MP Cost 2.2	\$114.30					\$91.98
36" RCP	LF	\$108	2012	1.2677	\$137	UDFCD UD-MP Cost 2.2	\$137.68		\$117.00			\$135.00
42" RCP	LF	\$126	2012	1.2677	\$160	UDFCD UD-MP Cost 2.2	\$160.63		\$136.00			\$191.16
48" RCP	LF	\$144	2012	1.2677	\$183	UDFCD UD-MP Cost 2.2	\$183.58		\$156.00			\$277.79
54" RCP	LF	\$216	2012	1.2677	\$274	UDFCD UD-MP Cost 2.2	\$206.53		\$233.00			
60" RCP	LF	\$240	2012	1.2677	\$304	UDFCD UD-MP Cost 2.2	\$229.47					
66" RCP	LF	\$264	2012	1.2677	\$335	UDFCD UD-MP Cost 2.2	\$252.42					
72" RCP	LF	\$360	2012	1.2677	\$456	UDFCD UD-MP Cost	\$393.38					\$1,050.00
78" RCP	LF	\$390	2012	1.2677	\$494	Averaged cost of adjacent sizes	\$426.16		\$421.00			
84" RCP	LF	\$420	2012	1.2677	\$532	UDFCD UD-MP Cost 2.2	\$458.95					
90" RCP	LF	\$450	2012	1.2677	\$570	UDFCD UD-MP Cost 2.2	\$491.73					
96" RCP	LF	\$480	2012	1.2677	\$608	UDFCD UD-MP Cost 2.2	\$524.51					
102" RCP	LF	\$714	2012	1.2677	\$905	UDFCD UD-MP Cost 2.2	\$780.20					
108" RCP	LF	\$756	2012	1.2677	\$958	UDFCD UD-MP Cost 2.2	\$826.10					
120" RCP	LF	\$840	2012	1.2677	\$1,065	UDFCD UD-MP Cost 2.2	\$917.89					
Flared End Sections (RCP)												
24" FES	EA	\$970	2012	1.2677	\$1,230	UDFCD UD-MP Cost 2.2						\$1,673.14
30" FES	EA	\$1,570	2012	1.2677	\$1,990	UDFCD UD-MP Cost 2.2						\$2,250.00
36" FES	EA	\$1,610	2012	1.2677	\$2,041	UDFCD UD-MP Cost 2.2						\$2,037.50
42" FES	EA	\$1,700	2012	1.2677	\$2,155	UDFCD UD-MP Cost 2.2						\$2,500.00
48" FES	EA	\$2,060	2012	1.2677	\$2,611	UDFCD UD-MP Cost 2.2						\$3,987.78
60" FES	EA	\$3,500	2012	1.0000	\$3,500	CDOT 2016 Cost Data - avg award						\$3,500.00
72" FES	EA	\$5,000	2012	1.0000	\$5,000	CDOT 2016 Cost Data - avg award						\$5,000.00

Monument Creek Watershed Restoration Master Plan

Unit Costs

DWB 7/26/2016

(Compiled from Colorado reference sources and Matrix and UDFCD master plan documents)

Comparisons

Matrix Falcon DBPS Upper Fntn UDFCD Big Dry Creek Box Elder Happy Canyon CDOT

Item Description	Unit	Base Year		Adj. Factor ¹	2016 Unit Cost	Source/Comment	Comparisons				
		Unit Cost	Base Year				2,012	2,015	2,015	2,014	2,014
Manholes and Inlets											
48" Manhole	EA	\$2,900	2012	1.2677	\$3,676	UDFCD UD-MP Cost 2.2					
60" Manhole	EA	\$3,900	2012	1.2677	\$4,944	UDFCD UD-MP Cost 2.2			\$4,214.00		
72" Manhole	EA	\$4,300	2012	1.2677	\$5,451	UDFCD UD-MP Cost 2.2					
Type B Manhole (48" and larger defl. <10 deg)	EA	\$12,000	2012	1.2677	\$15,212	UDFCD UD-MP Cost 2.2					
Type P Manhole (48" and larger defl. >10 deg)	EA	\$15,000	2012	1.2677	\$19,016	UDFCD UD-MP Cost 2.2			\$16,206.00		
Storm Inlet (Type r/Type 14, 5 ft, 10 deep)	EA	\$4,600	2012	1.2677	\$5,831	UDFCD UD-MP Cost 2.2			\$4,970.00		
Culverts, Headwalls and Wingwalls (see Culvert Element Worksheet)											
Hydraulic Structures											
Grouted Boulders, 36 inch	CY	\$190	2012	1.2677	\$241	UDFCD UD-MP Cost 2.2	\$200.00				\$281.38
Ungouted Boulders,	CY	\$120	2012	1.2677	\$152	Matrix - Falcon DBPS size??	\$120.00				
Soil Riprap, Type M	CY	\$70	2012	1.2677	\$89	UDFCD UD-MP Cost 2.2					
Bedding Granular Type II	CY	\$58	2012	1.2677	\$74	UDFCD UD-MP Cost 2.2	\$60.00		\$54.00	\$56.28	
Grout	CY	\$240	2012	1.2677	\$304	UDFCD UD-MP Cost 2.2	\$500.00		\$224.00	\$309.51	
Check Structure, Concrete	LF	\$270	2012	1.2677	\$342	UDFCD UD-MP Cost 2.2		\$292.00	\$252.00	\$340.00	
Sheet pile	SF	\$60	2014	1.2677	\$76	Matrix - Falcon DBPS	\$60.00			\$55.00	\$55.00
Grouted Boulder Drop (see Grouted Boulder Drop Worksheet)											
Riffle Drop											
Rock Vanes											
Channel Improvements											
Boulder Edging, 12" high	LF	\$60	2012	1.2677	\$76	UDFCD UD-MP Cost 2.2			\$81.00		
Boulder Edging, 24" high	LF	\$75	2012	1.2677	\$95	UDFCD UD-MP Cost 2.2			\$97.00		
Boulder Edging, 36" high	LF	\$90	2012	1.2677	\$114	UDFCD UD-MP Cost 2.2			\$43.00		
Concrete Low Flow Channel	LF	\$40	2012	1.2677	\$51	UDFCD UD-MP Cost 2.2					
Grouted Boulders, 12"	SY	\$130	2012	1.2677	\$165	UDFCD UD-MP Cost 2.2					
Grouted Boulders, 18"	SY	\$150	2012	1.2677	\$190	UDFCD UD-MP Cost 2.2					
Grouted Boulders, 24"	SY	\$170	2012	1.2677	\$216	UDFCD UD-MP Cost 2.2					
Grouted Boulders, 36"	SY	\$190	2012	1.2677	\$241	UDFCD UD-MP Cost 2.2			\$177.00		
Grouted Boulders, 48"	SY	\$200	2012	1.2677	\$254	UDFCD UD-MP Cost 2.2					
6-inch Riprap, Type VL	CY	\$45	2012	1.2677	\$57	UDFCD UD-MP Cost 2.2					\$98.25
9-inch Riprap, Type L	CY	\$55	2012	1.2677	\$70	UDFCD UD-MP Cost 2.2					\$99.58
12-inch Riprap, Type M	CY	\$60	2012	1.2677	\$76	UDFCD UD-MP Cost 2.2	\$90.00		\$65.00		\$112.09
18-inch Riprap, Type H	CY	\$80	2012	1.2677	\$101	UDFCD UD-MP Cost 2.2					\$73.30
24-inch Riprap, Type VH	CY	\$85	2012	1.2677	\$108	UDFCD UD-MP Cost 2.2					\$120.00
36-inch Riprap	CY	\$190	2016	1.0000	\$190	CDOT 2016 Cost Data - avg award					\$190.00
Soil Riprap, Type VL	CY	\$50	2012	1.2677	\$63	UDFCD UD-MP Cost 2.2				\$56.28	\$90.00

Monument Creek Watershed Restoration Master Plan

Unit Costs

DWB 7/26/2016

(Compiled from Colorado reference sources and Matrix and UDFCD master plan documents)

Comparisons

Matrix Falcon DBPS Upper Fntn UDFCD Big Dry Creek Box Elder Happy Canyon CDOT

Item Description	Unit	Base Year		Adj. Factor ¹	2016 Unit Cost	Source/Comment	Comparisons					
		Unit Cost	Base Year				2,012	2,015	2,015	2,014	2,014	2,016
Soil Riprap, Type L	CY	\$60	2012	1.2677	\$76	UDFCD UD-MP Cost 2.2			\$65.00		\$61.90	\$95.50
Soil Riprap, Type M	CY	\$70	2012	1.2677	\$89	UDFCD UD-MP Cost 2.2	\$100.00		\$76.00	\$65.00	\$67.53	\$86.75
Soil Riprap, Type H	CY	\$80	2012	1.2677	\$101	UDFCD UD-MP Cost 2.2					\$78.79	
Soil Riprap, Type VH	CY	\$90	2012	1.2677	\$114	UDFCD UD-MP Cost 2.2					\$95.67	
Void-filled Riprap, Type VL	CY	\$60	2012	1.2677	\$76	Unit costs not available, assumed 20% increase above soil riprap						
Void-filled Riprap, Type L	CY	\$72	2012	1.2677	\$91	Unit costs not available, assumed 20% increase above soil riprap						
Void-filled Riprap, Type M	CY	\$84	2012	1.2677	\$106	Unit costs not available, assumed 20% increase above soil riprap						
Void-filled Riprap, Type H	CY	\$96	2012	1.2677	\$122	Unit costs not available, assumed 20% increase above soil riprap						
Void-filled Riprap, Type VH	CY	\$108	2012	1.2677	\$137	Unit costs not available, assumed 20% increase above soil riprap						
Detention Facility (see Detention Element Worksheet)							\$24,500.00 15000-60000		\$49,266.00	\$42,500.00	\$51,232.20	
Landscaping and Recreation												
Wetland Plantings	AC	\$25,000	2012	1.2677	\$31,693	UDFCD UD-MP Cost 2.2			\$27,010.00		\$28,137.72	
Reclamation & seeding (native grasses)	AC	\$1,000	2012	1.2677	\$1,268	UDFCD UD-MP Cost 2.2			\$1,080.00	\$930.00	\$1,125.51	
Seeding, native	AC	\$620	2016	1.0000	\$620	CDOT 2016 Cost Data - avg award					\$618.82	
Seeding, prep, amendment, mulch	AC	\$21,780	2012	1.2677	\$27,611	Matrix - Falcon DBPS	\$21,780.00					
Soil Conditioning	AC	\$2,750	2016	1.0000	\$2,750	CDOT 2016 Cost Data - avg award						\$2,731.82
Seeding, wetlands	AC	\$3,300	2016	1.0000	\$3,300	CDOT 2016 Cost Data - avg award						\$3,286.44
Trail/path, Concrete (10' width, 6" thick)	LF	\$44	2012	1.2677	\$56	UDFCD UD-MP Cost 2.2			\$48.00			
Trail/path, Crusher fines (10' width, 6" thick)	LF	\$11	2012	1.2677	\$14	UDFCD UD-MP Cost 2.2			\$12.00		\$11.26	
Erosion Control Blanket	SY	\$6	2012	1.2677	\$8	Matrix - Falcon DBPS	\$6.00					
Erosion Control Blanket, double layer	SY	\$12	2012	1.2677	\$15	Matrix - Falcon DBPS	\$12.00					
Soil Retention Blanket	SY	\$3	2016	1.0000	\$3	CDOT 2016 Cost Data - avg award						\$2.34
Turg Reinforcement Mat	SY	\$7	2016	1.0000	\$7	CDOT 2016 Cost Data - avg award						\$6.60
Mulching (weed free hay)	AC	\$800	2016	1.0000	\$800	CDOT 2016 Cost Data - avg award						\$801.97
Irrigation system			2012	1.2677	\$0	Matrix					\$2.34	
Wetland plugs (10-T)	EA	\$5	2012	1.2677	\$6	Matrix - Falcon DBPS	\$5.00					
Shrubs, 5 gallon	EA	\$45	2012	1.2677	\$57	Matrix - Falcon DBPS	\$45.00					
Live Stakes	EA	\$4	2012	1.2677	\$5	Matrix - Falcon DBPS	\$4.00					
Willow cuttings	EA	\$6	2016	1.0000	\$6	CDOT 2016 Cost Data - avg award						\$5.43
Silt Fence	LF	\$1	2016	1.0000	\$1	CDOT 2016 Cost Data - avg award						\$1.16
Removal												
Removal of culvert pipe, D<48"	LF	\$20	2012	1.2677	\$25	UDFCD UD-MP Cost 2.2			\$22.00	\$19.00	\$33.77	
Removal of culvert pipe, 48"<D<84"	LF	\$50	2012	1.2677	\$63	UDFCD UD-MP Cost 2.2			\$54.00	\$47.00	\$56.28	
Removal of culvert pipe, D>84"	LF	\$75	2012	1.2677	\$95	UDFCD UD-MP Cost 2.2			\$81.00		\$84.41	
Concrete Box Culvert	LF/Cell	\$100	2012	1.2677	\$127	UDFCD UD-MP Cost 2.2			\$108.00	\$93.00	\$112.55	

Monument Creek Watershed Restoration Master Plan

Unit Costs

DWB 7/26/2016

(Compiled from Colorado reference sources and Matrix and UDFCD master plan documents)

Comparisons

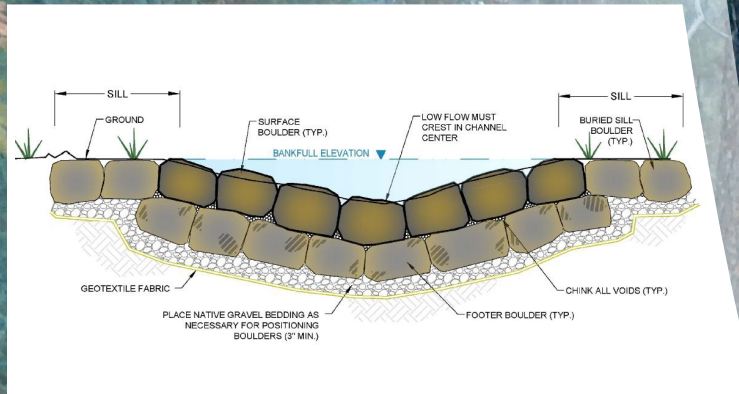
Matrix Falcon DBPS Upper Fntn UDFCD Big Dry Creek Box Elder Happy Canyon CDOT

Item Description	Unit	Base Year		Adj. Factor ¹	2016 Unit Cost	Source/Comment	Comparisons					
		Unit Cost	Base Year				2,012	2,015	2,015	2,014	2,014	2,016
Land Acquisition (case-by-case)							\$87,120.00			\$90,000.00	\$25,000.00	
Structural Concrete and Steel												
Structural Concrete	CY	\$600	2012	1.2677	\$761	UDFCD UD-MP Cost 2.2	\$600.00			\$559.00	\$787.86	
Reinforcing Steel	LB	\$0.90	2012	1.2677	\$1.14	UDFCD UD-MP Cost 2.2				\$0.84	\$0.90	\$1.02
Concrete Flat Work	SY	\$450	2012	1.2677	\$570	Matrix-Falcon DBPS	\$450.00					
Grout cut-off wall	SF	\$60	2012	1.2677	\$76	Matrix-Falcon DBPS	\$60.00					
Bridges	SF	\$175	2012	1.2677	\$222	Matrix-Falcon DBPS	\$175.00					
Bridge Widening	SF				\$110	CDOT 2016 Cost Book						
Bridge Replacement						CDOT 2016 Cost Book						
Operation and Maintenance												
Culvert Maintenance	LF	\$1	2012	1.2677	\$1	UDFCD UD-MP Cost 2.2				\$1.00		
Manhole and Inlet Maintenance	EA	\$50	2012	1.2677	\$63	UDFCD UD-MP Cost 2.2						
Hydraulic Structure Maintenance	EA	\$5,000	2012	1.2677	\$6,339	UDFCD UD-MP Cost 2.2				\$470.00		
Channel Maintenance	LF	\$2	2012	1.2677	\$3	UDFCD UD-MP Cost 2.2				\$2.00		
Detention/WQ Maintenance	AC	\$1,500	2012	1.2677	\$1,902	UDFCD UD-MP Cost 2.2				\$1,400.00		
Mowing	AC	\$50	2012	1.2677	\$63	UDFCD UD-MP Cost 2.2				\$47.00		
Trail Maintenance	LF	\$5	2012	1.2677	\$6	UDFCD UD-MP Cost 2.2						
Sediment Removal	CY	\$25	2015	1.0000	\$25	Matrix-Upper Fountain - Index shows 1.7% decrease, used		\$25.00				
Debris Removal	CY	\$50	2015	1.0000	\$50	Matrix-Upper Fountain - Index shows 1.7% decrease, used		\$50.00				

NOTES:

1. Source: CDOT, Colorado Construction Cost Index Report, 1Q 2016

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