MDDP & DBPS Amendment

Eagleview
El Paso County, Colorado

Prepared for:
Joe DesJardin
PT Eagleview LLC
1864 Woodmoor Drive, Suite 100
Monument, CO 80132

Prepared by:
Kimley-Horn and Associates, Inc.
2 North Nevada Avenue, Suite 300
Colorado Springs, Colorado 80903
(719) 453-0180
Contact: Kevin Kofford, P.E.

Project #: 196288000

PCD Filing No.: XXXXX MDP232

Prepared: October 16, 2023

Kimley»Horn

CERTIFICATION

DESIGN ENGINEER'S STATEMENT

The attached MDDP & DBPS Amendment was prepared under my direction and supervision and are correct to the best of my knowledge and belief. Said hydraulic report has been prepared according to the criteria established by the County for drainage reports and said report is in conformity with the master plan of the drainage basin. I accept responsibility for any liability caused by any negligent acts, errors or omissions on my part in preparation of this report.

SIGNATURE (Affix Seal): _____

Kevin Kofford, P.E.
Colorado P.E. No. 57234 Date

OWNER/DEVELOPER'S STATEMENT

I, the developer, have read and will comply with all of the requirements specified in this Drainage Report and Plan.

_____
PT Eagleview LLC

_____
Authorized Signature Date

_____
Joseph W. DesJardin

_____
Director of Entitlements

_____
Address:
1864 Woodmoor Drive
Monument, CO 80132

EL PASO COUNTY

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

_____ _____
Josh Palmer, P.E. Date
County Engineer/ ECM Administrator

Conditions:

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INTRODUCTION

PURPOSE AND SCOPE

Clarify who is taking over this responsbility from who.

The purpose of this report is to serve as an MDDP and DBPS Amendment ("Amendment") to the previously approved Falcon Drainage Basin Planning Study completed by Matrix Design Group, September 2015 (DBPS). Changes to the DBPS include the removal of the small drop structures for the entire length of reaches RWT054, RWT080, and RWT092, to be replaced with natural channel design measures in appropriate locations. Additionally, this DBPS Amendment modified the size and location of Sub-Regional Pond 1 (SR1) which has resulted in a smaller full spectrum detention basin on reach RWT080. Lastly, this Amendment changes the responsible parties for drainage improvements in support of the proposed Eagleview development ("Project") and thus amending the Falcon Drainage Basin, drainage fee.

GENERAL LOCATION AND DESCRIPTION

The Site is located approximately 4 miles northwest of Falcon, Colorado within Section 26, Township 12 South, Range 65 West of the 6th Principal Meridian, County of El Paso, State of Colorado ("the Site"). There are four identified reaches and one sub regional pond associated with this Amendment. All features are located on the Eagleview Project, a Site that comprises two parcels of land which are bound by Stapleton Estates Filing No. 1 on the west and south, Paint Brush Hills Filing No. 14 (PCD File No. SF2024) to the east, and the Rodgwick Subdivision and MFY Farm Subdivision to the north. Reaches RWT080 and RWT054 extend beyond the northern property of the Eagleview Site, RWT080 to the northwest and RWT054 to the northeast. This report intends to amend the full extent of these reaches beyond the Eagleview site. Table 1 below describes the general description and location of each feature as identified in the DBPS.

Table 1: General Description and Location of Affected Reaches

Reach/Feature	Description	Location
RWT094	South of SR1	Eagleview Site
SR1	Sub-Regional Pond	Eagleview Site
RWT080	Northwest of SR1	Extends ~1,815' beyond Eagleview Site
RWT092	Northeast of SR1	Eagleview Site
RWT054	Northeast of SR1	Extends ~1,650' beyond Eagleview Site

A vicinity map has been provided in the **Appendix** of this report. The project is within the Falcon Drainage Basin (CHWS1400) which is a part of the El Paso County Drainage Basin Fee Program, which is based on the total amount of impervious acres for the Site. The identified features are located within the West Tributary of the Falcon Drainage Basin. The watershed contains three natural streams and has an overall area of approximately 10.6 square miles at the confluence of Black Squirrel Creek. The headwaters of the watershed are made up of ponderosa pine forest, grassland on undeveloped land, and 2-to-5-acre rural residential lots.

The Eagleview Site is approximately 121 acres consisting of undeveloped land with native vegetation. Vegetation within the site is characterized primarily by prairie grasses along with some area of scrub brush and a limited occurrence of small oaks. The Site does not currently provide

water quality or detention for the Project area. The existing land use is undeveloped vacant land. There are no existing irrigation ditches on the Site. The Site is currently owned by PT Eagleview LLC and will be developed by PT Eagleview LLC.

According to NRCS soil mapping data, USCS Type B soils are the primary soil type within the site, indicating high levels of permeability. Soils present at the Site consist mainly of "Pring coarse sandy loam" which represent a moderate hazard for erosion. The Appendix contains detailed NRCS soil data. The existing topography consists of slopes ranging from 1% to 20%. The west tributary of the Falcon drainage basin runs from the northwest corner of the site to the southeast corner of the Site.

PREVIOUS REPORTS

The following is a complete list of the existing reports pertaining to the Eagleview site and corresponding area:

1. Falcon Drainage Basin Planning Study Selected Plan Report (DBPS), prepared by Matrix Design Group, September 2015. PCD File No. MP132.

2. Eagleview Preliminary Drainage Report (PDR), prepared by Kimley-Horn, October 28, 2022. PCD File No. SP216.

3. Eagleview Final Drainage Report (FDR), prepared by Kimley-Horn, under review.

DRAINAGE DESIGN CRITERIA

DEVELOPMENT CRITERIA REFERENCE

2023

The proposed storm facilities are designed to be in compliance with the El Paso County "Engineering Criteria Manual", as revised in November 1991 and October 1994 with County adopted Chapter 6 and Section 3.2.1 of Chapter 13 of the City of Colorado Springs May 2014 Drainage Criteria Manual, Volume 1, ("the DCM").

(DCM1 is 1991)

HYDROLOGIC CRITERIA

The existing conditions hydrology used for this report is unchanged from the approved Eagleview Preliminary Drainage Report (PDR), prepared by Kimley-Horn, October 28, 2022. PCD File No. SP216. A brief summary of the differences between the approved PDR and the Falcon DBPS is provided below:

The PDR hydrology model utilizes the NRCS Type II rainfall distribution, the cumulative depth for the 5-year storm 2.7 inches and the cumulative depth for the 100-year storm is 4.6 inches. Per the DCM both Frontal and Thunderstorms were evaluated to determine the higher design flow. The comparative analysis between the two storms shows that the Frontal Storm produces a significantly higher flow rates therefore, this storm was used for the drainage design. The rainfall distribution for the Frontal Storm was selected as the dominant storm-type for this project. See **Table 2** below for the rainfall values.

Table 2: Colorado Springs Rainfall Depths

	Duration (HRS)	
Storm Event	**1 HR**	**24 HR**
5 Year	1.5	2.7
100 Year	2.52	4.6

It should be noted that the DBPS used a slightly lower cumulative depth for the 5-yr (2.6 inches) and used the same cumulative depth for the 100-year of (4.6 inches) because the DBPS used an areal reduction of 2% to the rainfall depths as the Falcon Watershed is slightly larger than 10 square miles. This areal reduction was not applied to the rainfall depths for this Site as the drainage area analyzed was smaller and didn't require an areal reduction. Refer to Tables 6-2 and 6-4 in Chapter 6 of the DCM for the frontal rainfall distribution curve and Colorado Springs rainfall depths data for the 5-year and 100-year design storm events utilized for the project. The project model was compared to the DBPS model, and it generally reflects lower flows for the project site area. This is mainly due to using the Type II rainfall distribution curve versus the Type IIa rainfall distribution curve that the DBPS model used. Design point JWT080 in the DBPS model and design points J4 and P7 in the project models were used as critical points to compare the existing and proposed condition models. Routing of channelized flow was based on the Muskingum-Cunge method for all reaches for the existing and proposed model. This aligned with the methodology completed in the DBPS models. Reference the approved Eagleview PDR hydrologic calculations included in the Appendix.

Provide a comparison table and map showing the differences in flows at specified locations

HYDRAULIC CRITERIA

Applicable design methods were used to analyze the identified reaches which include the use of HEC-HMS and HEC-RAS models, as well as the Mile High Flood Districts UD-Detention spreadsheet. Proposed amendments to the identified drainage features have been analyzed using the following hydraulic design parameters, in Table 3, consistent with the DCM Section 6.5.2 and 10.7.

Add all parameters for natural channel design similar to City DCM Table 12-6, including low-flow channel. Provide to Staff for review before resubmitting report.

Table 3: Hydraulic Design Parameters

Design Criteria	Design Value
Maximum 100-year channel depth	5 ft
Froude No., 100-year, main channel	0.9

Address criteria for velocities and shear stresses

DBPS DRAINAGE RECOMMENDATIONS

The DBPS made recommendations for channels (RWT054), (RWT092), (RWT080), and (RWT094). The DBPS also identified a sub-regional dentition pond (SR1) to be constructed onsite to provide water quality and flood attenuation.

The following is a description of the improvements identified within the DBPS for each reach or feature:

RWT094:

- Natural Channel Design- Five (5) drops identified between SR1 and Property Line

SR1 (Sub Regional Pond 1):

- 11.03 AC-FT (100 YR) Sub Regional Pond
- Assumed as Non-Jurisdictional Dam
- Sized for the WQCV + 100 YR Detention Volume
- Four (4) drops identified within SR1

RWT080:

- Small Drop Structures- Twenty six (26) drops identified, eleven (11) within the Eagleview project limits

RWT092:

- Small Drop Structures- Two (2) drops identified between SR1 and Reach RWT054

RWT054:

- Small Drop Structures- Sixteen (16) drops identified

PROPOSED AMENDMENTS TO RECOMMENDATIONS

Based on engineering judgements, assumptions and analysis this Amendment proposes to modify the improvements from the DBPS. A summary of the proposed changes are included below and represented in the exhibit shown in **Appendix A**:

identify the amount

Please add stations to all below

RWT094:

- This channel will remain unchanged from the DBPS designation of a natural reach.
- A combination of natural riprap riffle drops, coir matting and channel grading will be shown south of the proposed road (South Arroya Lane) due to the width of the channel in this section
- Concrete check structures north of South Arroya Lane to the confluence of RWT094 with RWT080 and RWT092. Refer to Appendix A for concrete check structure typical detail.

SR1 (Sub Regional Pond 1):

- 11.03 AC-FT (100 YR) SR1 will be modified in size and location. This Amendment proposes a 2.4 AC-FT full spectrum detention basin on the RWT080 reach in the northwest corner of the Eagleview site.
- HEC-HMS modeling shows that placing SR1 at his location still achieves the objectives of the DBPS which are water quality and 100 year flood attenuation and reduces the peak flow downstream of the Site, serving a similar function to the anticipated Sub-Regional pond.

how many and will they be replaced with another improvement?

RWT080:

- Sub-Regional Pond (SR1) is proposed to move to the northwest corner of the Eagleview site along this reach.
- Remove the drop structures upstream of the Eagleview site.

indicate the amount of check structures

RWT092:

- Remove small grouted boulder drop structures and replace with concrete check structures. Refer to Appendix A for concrete check structure typical detail

RWT054:

identify the tributary area that the DBPS pond was accounting for and what the proposed pond will account for.

identify the amount to be removed and replaced with the check structures

- Remove small grouted boulder drop structures and replace with concrete check structures. Refer to Appendix A for concrete check structure typical detail

See **Appendix A** for a conceptual layout of these proposed improvements.

HYDRAULIC ANALYSIS

The hydraulic analysis is based on El Paso County's Drainage Criteria Manual (DCM). Per Section 2.2.1 of the DCM "A stable channel reaches "equilibrium" over many years. Therefore, channel modifications should be minimal."

Based on visual inspection, the results from the HEC-RAS modeling of the Falcon DBPS did not appear to match the results seen in the field. The reaches appear to function with more stability than the results of the DBPS show in initial HEC-RAS models. As a part of this Amendment, additional field investigation was completed. Pictures were taken at each HEC-RAS cross section identified in the DBPS. Engineering judgement was then used to revised the Manning's n, a hydraulic model of the reach was performed using HEC-RAS. Pictures of each corresponding cross section have been included in the **Appendix C**. The purpose of this analysis was to determine the Froude number. The results of the model are summarized below in Table 4 below and against the maximum Froude number (<0.9), discussed in Section 6.5.2 and 10.7 in the DCM. The proposed changes to the HEC-RAS model show a Froude number of 0.9 or less at all cross sections, with the exception of two cross sections.

State how the proposed design will address this.

Flow rates were determined based on hydrologic analyses completed as a part of the Eagleview Subdivision PDR and the results of that study are presented therein. A full overview of the updated flows and Manning's n updates are included in the **Appendix C**. A abbreviated overview of the results from revised HEC-RAS modeling is provided in Table 4.

Table 4: Revised Falcon DBPS HEC-RAS Cross Sections

Revised Falcon DBPS HEC-RAS Cross Sections				
	DBPS		Eagleview	
Cross Section	Input	Output	Input	Output
	100-yr Flow (cfs)	Froude No.	100-yr Flow (cfs)	Froude No.
42818.78	260	0.45	284.2	0.55
42418.78	480	1.04	284.2	0.77
42018.78	480	0.74	284.2	0.59
41774.8	480	1.02	284.2	0.89
41539.1	480	0.42	284.2	0.24
41465.66	480	0.32	284.2	0.10
41441.59 (Culvert)	480	-	284.2	-
41405.38	480	0.87	284.2	0.77
41368	480	0.86	284.2	0.90

41330.7	480	0.88	284.2	0.80
41293.4	480	0.86	284.2	0.69
41256.1	480	0.91	284.2	0.64
41218.78	480	0.74	284.2	0.49
Eagleview Site 40884.05	480	0.97	284.2	0.93
40418.78	480	0.91	284.2	0.52
40018.78	740	1.01	371.3	0.94
39618.78	740	1.04	478	0.48
39218.78	740	1.15	478	0.75
38818.78	740	1.03	478	0.66
38418.78	740	1.07	478	0.73
38018.78	740	1.06	478	0.85
37618.78	740	1.04	515.5	0.88

CHECK STRUCTURES

Check Structures are a less invasive alternative to the traditional grouted riprap drops proposed by the DBPS. This Amendment proposes to use concrete check structures in place of these traditional drops to provide a less invasive and natural approach. Check structures are described in Urban Storm Drainage Criteria Manual, Volume 2, Chapter 9, Section 2.9 as a useful solution for channels that have "not yet experienced significant erosion or degradation." Based on the visual inspection described above and acceptable Froude values from the revised HEC-RAS modeling, check structures can accomplish the goals of the DBPS for these reaches to provide protection and reinforcement and prevent future degradation. The check structures allow for construction and protection of the channel in more sensitive areas with established vegetation by not requiring regrading of the channel bottom between drops and allows for natural erosion overtime. It additionally holds the low flow of the channel in place and provides the benefits of reducing velocity and scour.

If modeling shows that there may be erosion, substitution for drop structures may not be recommended.

Check structure construction typically consists of filling an excavated narrow trench (12" minimum width) with reinforced concrete to a depth of six feet, in place. The structures are then backfilled to existing grade. The check structures are placed with a 3 foot vertical drop from the crest of the check to the projected downstream invert based on the estimated long-term equilibrium slope of 0%. Over time the channel finds the equilibrium between the check structures. Additional soil riprap protection downstream of the check structure will be provided to mitigate scour potential. A detail is provided in the **Appendix A**.

The following assumptions were made for the purposes of this Amendment:

- An assumed 10 feet of riprap upstream of the check structure was provided, with 20 feet of riprap provided downstream to mitigate scour potential
- Widths of the check structures were based on the hydrologic calculations prepared for the Eagleview development Final Drainage Report (FDR).

State that geotechnical analysis and recommendations for check structure design will be verified.

- For the RWT094 reach, the 2-year flow of 77.5 cfs at design point P3 was used as the basis to size the low flow portion of the channel in this reach. This results in a 22 foot wide low flow channel. Based on the guidance given, the structure is extended an additional 10 feet to both sides resulting in a 42 foot wide check structure.
- For the RWT092 and RWT052 reaches, were sized using 70% of the 2-year which is 54.3 cfs. This results in a 18 foot wide low flow channel. Based on the guidance given, the structure is extended an additional 10 feet to both sides resulting in a 38 foot wide check structure.

A more detailed overview of the hydraulic analysis for each reach is provided below. A summary of the proposed changes are included below and represented in the exhibit shown in **Appendix A**:

please include stations for each reach

Address option of constructing riprap drops and burying back to existing grade. (allowing sediment transport if downstream geomorphology is sediment-dependent)

RWT094

RWT094 is located south the confluence with RWT080 and RWT092 to the southern property line. It is divided into two sections, split by the proposed South Arroya Lane. The section north of the proposed roadway has a narrower cross section and more closely resembles the cross section of reach RWT092. A total of five check structures are proposed in the northern section of this reach. South of the proposed South Arroya Lane, the channel becomes much wider with shallower slopes. Due to the extra width, a total of four constructed riffles are proposed within this section of the reach. The drop heights of the constructed riffles range from 2.3' to 3' with 3% to 4% slopes. The channel sections outside of the riffles within this reach will have a channel slope of 0.40% to reduce the potential of erosion. The Falcon DBPS states, "The crest width for a natural channel drop structure is the channel width associated with the low flow (bankfull) event as defined in the DCM update Section 3.1.1.1". Thus riprap protection is provided for only the low flow portion of the riffle.

Provide attributes and analysis.

RWT092

RWT092 is located between RWT054 and the sub regional detention pond SR1. A total of four check structures are proposed within this reach. The reach ends at the confluence with another smaller channel from the west. A proposed rock chute at this confluence will reduce the potential of erosion entering the reach.

RWT054

RWT054 is located north of reach RWT092. A total of five check structures are proposed within this reach. Due to the denser vegetation, including fully grown ponderosa trees within the low flow channel, check structures allow for an non-invasive way to protect the channel. Proposed grading around sections of the outer banks are also proposed.

RWT080

RWT080 is located west of RWT092. This Amendment proposes to modify the 11.03 AC-FT (100 YR) Sub Regional Pond (SR-1) to a 2.4 AC-FT full spectrum detention basin on the RWT080 reach in the northwest corner of the Eagleview site. The pond will have two riprap rock chutes with stilling basins to address head cutting and to provide entrance into the proposed pond.

We need the complete channel profiles and stable modeling to verify these changes.

Please explain why/how this significant decrease in size is acceptable.

SR1 (SUB REGIONAL POND 1)

The DBPS states two goals for providing detention within the Falcon Watershed are to: 1. Manage the channel-forming flows to historical conditions where possible 2. Manage the major flood flows to historical conditions where possible. This Amendment proposes to modify the 11.03 AC-FT (100 YR) Sub Regional Pond (SR-1) to a 2.4 AC-FT full spectrum detention basin on the RWT080 reach in the northwest corner of the Eagleview site. Providing this full spectrum detention basin reduces the peak flow leaving the Eagleview site from 578.2 cfs to 562.3 cfs for proposed conditions. Reference the map in **Appendix A**. HEC-HMS modeling using the Muskingum-Cunge method is provided in the **Appendix B** which demonstrates the lag the detention provides compared to the peak of the full channel. The full spectrum detention pond design was completed utilizing Mile High Flood District's UD-Detention spreadsheet with a peak inflow of 109.2 cfs and peak ouflow of 100.6 cfs. By reducing the historic flows downstream of the proposed site, this modified location supports the goals of the Falcon DBPS detention strategy.

740 on Table 6?

Specify which storm event these are for.

Two Water Quality Features, WQF1 and WQF2 will provide water quality for the proposed improvements, consistent with El Paso County MS4 requirements. Each of the three stormwater features will be privately owned and maintained. An overview of the proposed features in provided in Table 5 and show in the **Appendix A**.

Table 5: Summary of Eagleview Stormwater Facilities

Pond	Proposed Volume (ac-ft)	100-yr Inflow (Developed) [cfs]	Flow Exiting Pond (Developed) [cfs]	100-yr Flows Detained
WQF1	0.11 ac-ft	181	181	No
WQF2	0.038 ac-ft	79	79	No
SR1	2.4 ac-ft	109.2	100.6	Yes

Clarify differences, and why is reduction so low? DBPS has ~100 cfs (16%) reduction. FDR has ~100 cfs reduction from 490-380 cfs, >17 Ac-ft or 760-652 cfs, 21 Ac-ft. I don't see how this will affect the main channel flow significantly.

THE FOUR STEP PROCESS

The Project was designed in accordance with the four-step process to minimize adverse impacts of urbanization, as outlined in the El Paso County Engineering Manual for BMP selection as noted below:

Step 1. **Employ Runoff Reduction Practices** – The project is proposing a low-density residential development that will be designed to minimize the impact to the current existing terrain. The Site's proposed paved roadways will increase the Site's impervious area, however, roadside ditches and channels will be constructed to slow down the runoff velocity and reduce runoff peaks.

Step 2. Implement BMPs That Provide a Water Quality Capture Volume with Slow Release –The sub regional detention pond and two water quality features will be used to capture stormwater, provide water quality treatment, and maintain flows discharging off site at or below historic levels. Water quality measures are being used for all stormwater that contacts roadways, excluding 0.39 acres which cannot practicably be treated. Per

ECM Appendix I Section 1.7.C.A., 20% of the development site or less than 1 acre can be excluded from providing water quality. As mentioned, 0.39 acres of impervious area will not be able to be treated which is less than 1 acre of the overall site. Per ECM Appendix I Section 1.7.1.B, in development areas of low-density housing, water quality is required for all roads, but is not required for the entirety of the large-lots. Due to the Project consisting of single family large-lots, lot imperviousness shall be limited to 10 percent or less. Refer to **Appendix A** for PBMP Tributary Areas map.

Step 3 Stabilize Drainageways– The existing natural channels will be stabilized using the methods described in this Amendment. The design of the natural channels will meet the criteria set forth by the DCM.

Step 4. Implement Site Specific and Other Source Control BMPs – The erosion control construction BMPs of the Project were designed to reduce contamination. Source control BMPs include the use of vehicle tracking control, culvert protection, stockpile management, and stabilized staging areas.

MAINTENANCE

Maintenance access for the proposed channel improvements is provided by proposed maintenance roads adjacent to channels. Access for the RWT094 south of South Arroya Lane is provided by a maintenance road starting at the proposed Chemita Trail and ending at South Arroya Lane, near the 72 inch culvert crossing. Access for the northern portion of site to reaches RWT094, RWT092, and RWT054 will be accessed by a maintenance road starting on the north end of South Arroya Lane and ending at the cul-de-sac at the end of South Arroya Lane. Access to the modified Sub Regional Pond (SR-1) and reach RWT080 will be accessed from a maintenance road starting at the cul-de-sac of Arroya Lane in the northwest corner of the site.

Once construction of the proposed channel improvements are completed, maintenance of the channel will be the responsibility of El Paso County. Ownership of all drainage facilities within public rights-of-way shall fall to El Paso County, pending Board of County Commissioners approval.

Also discuss maintenance access for the two WQ ponds.

(if applicable criteria are met)

FLOODPLAIN STATEMENT

There is no FEMA mapped floodplain on the project site. Refer to **Appendix A** for the Flood Insurance Rate Map (FIRM) number 08041C05350G effective date, December 7, 2018.

WETLAND MITIGATION

The U.S. Army Corps of Engineers (USACE) provided an approved jurisdictional determination (AJD) for the wetlands present within the Eagleview site. The USACE AJD found that the wetlands within the site were isolated and not Waters of the U.S. (WOTUS); therefore impacts to these wetlands will not require permitting under Section 404 of the Clean Water Act. Furthermore, the wetlands onsite are unregulated and shall not incur any additional permitting requirements beyond the scope of El Paso County.

GRADING AND EROSION CONTROL

The Site will disturb more than 1 acre and will require a Colorado Discharge Permit System (CDPS) General Permit for Stormwater Discharge Associated with Construction Activities from the Colorado Department of Public Health and Environment (CDPHE). The proposed sub-regional detention pond will be non-jurisdictional and will therefore require the submission of a Non-Jurisdictional Water Impoundment Structure application form as a part of the platting process.

DRAINAGE FEES AND REIMBURSABLE COSTS

REIMBURSABLE COSTS

The Falcon Drainage Basin Study identifies two types improvements for the identified reaches and features, County Costs or Developer Costs. Items identified as Developer Costs (those incurred by the Developer) are eligible for reimbursement. County Costs are not eligible for reimbursement. Each reach and feature was classified in the DBPS as follows:

Table 6: Summary of Identified Costs per DBPS

Reach/Feature	Description	Type of Cost	Reimbursable
RWT094	South of SR1	Developer Cost	Yes
SR1	Sub-Regional Pond	County Cost	No
RWT080	Northwest of SR1	County Cost	No
RWT092	Northeast of SR1	County Cost	No

The developer intends to amend the DBPS to allow for the costs on reaches RWT080, RWT092 RWT054, and Sub-Regional Pond SR1 to become reimbursable by following the process outlined below:

1. Drainage reimbursement request application with PCD.
2. Amendment to the DBPS Memorandum requesting RWT080, RWT092 and Pond SR1 changed from a County Cost to Developer Cost
    - Amendment request hearing to the Drainage Board and Board of County Commissioners
3. The subsequent Final Drainage Report associated with the Final Plat application will include the following:
    - Channel analysis to determine the number of drop structures and locations needed to stabilize the channel/meet criteria.
    - Provide cost estimates for the reimbursable improvements.
    - Drainage fee section would reference the BoCC resolution (if approved).
4. Once construction of the reimbursable facilities is completed, procedures for Drainage Improvement Credits and Reimbursements outlined in Chapter 3 of the Drainage Criteria Manual will be in effect.

DRAINAGE FEES

The costs per reach/ feature provided in DBPS were scaled by length of reach within the Project site to determine an estimate of improvement costs as shown below. Costs are shown are taken from the values in the DBPS on tables 6-4 and 6-10. Costs are based on 2013 costs shown in the DBPS.

Table 7: Scaled DBPS Costs within Eagleview Project Limits

DBPS Reach	UNIT	QUANITITY	UNIT COST	COST (2013)
RWT-094	LF	2,010	$ 114.78	$ 230,707.80
Engineering/Administration/Contingency	%	35%		$ 80,747.73
TOTAL (DEVELOPER RESPONSIBLE REACHES/FEATURES)				**$311,455.53**
RWT-080	LF	1680	$ 671.19	$ 1,127,599.00
RWT-092	LF	626	$ 662.04	$ 414,437.00
RWT-054	LF	784	$ 566.49	$ 444,128.00
Sub Regional Detention Pond SR1	LS	1	$ 405,769	$ 405,769.00
Engineering/Administration/Contingency	%	35%		$ 837,176.55
TOTAL (COUNTY RESPONSIBLE REACHES/FEATURES)				**$ 3,229,109.55**
TOTAL:				**$ 3,540,565.08**

The identified reaches RWT080, RWT092, RWT054, and Sub Regional Pond SR1 are proposed to be amended within the Falcon DBPS to change from County Costs to Developer Costs and become reimbursable. A summary of the DBPS costs, proposed costs and total differences are provided in a table below. 2013 costs were brought to present value by a factor of 1.605 which was provided from the County and based on the percentage increases for the Drainage Basin Fees over the years.

(to be verified with final analysis)

Table 8: Summary DBPS Costs vs. Proposed Costs

DBPS Reach	DBPS COST (2013) W/ 35%	INFLATED DBPS COST(2023) (1.605 Factor)	PROPOSED COST(2023) W/ 35%	DIFFERENCE
RWT-094	$311,456.00	$499,887.00	$469,882.00	($30,005.00)
Total Developer Cost:	**$311,456.00**	**$499,887.00**	**$469,882.00**	**($30,005.00)**
RWT-080	$1,522,259.00	$2,443,226.00	$0	($2,443,226.00)
RWT-092	$559,490.00	$897,981.00	$192,267.00	($705,714.00)
RWT-054	$599,573.00	$962,315.00	$205,281.00	($757,034.00)
Sub Regional Detention Pond (SR1)	$547,788.00	$879,200.00	$266,591.00	($612,609.00)
Total County Cost:	**$3,229,110.00**	**$5,182,722.00**	**$664,139.00**	**($4,518,583.00)**
Total:	**$3,540,566.00**	**$5,682,609.00**	**$1,134,021.00**	**($4,548,588.00)**

The costs estimated by the DBPS for the reaches and features identified is **$3,540,566.00** in 2013 dollars and **$5,682,609.00** in 2023 dollars. The proposed County Costs of $664,139.00 compared to the estimated $5,182,722.00 estimated by the DBPS save the County **$4,518,583.00** in improvements. Costs are outlined in the Opinion of Probable Construction Cost as part of **Appendix E**.

The current 2023 Falcon Drainage Basin Fee is **$37,256** per Impervious Acre. The remaining unplatted developable area within the Falcon Drainage Basin as determined by El Paso County as 1,433 total developable acres at an assumed average 29.2% imperviousness for a total of **418** acres.

The difference in actual proposed cost for RWT-094 (Developer Cost) and the inflated DBPS cost is less than the proposed amount, thus resulting in no additional drainage fee increase.

Should RWT080, RWT092, RWT054, and Sub Regional Pond SR1 be amended as Developer Costs, the estimated improvements of **$644,139.00** would cause an increase of at least **$1,541.00** per impervious acre. The final drainage basin fee will be determined by County Staff using the estimates provided.

Fees are deferred at plat recordation due to reimbursement expenses being greater than the required drainage fees. The final drainage basin fee will be determined by County Staff using the estimates provided.

CONCLUSION

This MDDP and DBPS Amendment to the previously approved Falcon Drainage Basin Planning Study completed by Matrix Design Group, September 2015 (DBPS) removes the small drop structures for the entire length of reaches RWT054, RWT080, and RWT092, to be replaced with natural channel design measures in appropriate locations. Additionally, this DBPS Amendment modified the size and location of Sub-Regional Pond 1 (SR1).

The proposed modifications and improvements would cause a change in the Drainage Basin Fee. The difference in actual proposed cost for RWT-094 (Developer Cost) and the inflated DBPS do not result in an increase of Drainage Basin Fees. Should RWT080, RWT092, RWT054, and Sub Regional Pond SR1 be amended as Developer Costs, the estimated improvements of **$644,139.00** would cause an increase of at least **$1,541.00** per impervious acre.

REFERENCES

1. City of Colorado Springs “Drainage Criteria Manual (DCM) Volume 1”, dated May 2014

2. El Paso County “Engineering Criteria Manual” Volumes 1 & 2, dated October 31, 2018

3. Urban Drainage and Flood Control District Drainage Criteria Manuals (UDFCDCM), (Volumes 1, 2 and 3), prepared by Wright-McLaughlin Engineers, June 2001, with latest revisions.

4. Flood Insurance Rate Map, El Paso County, Colorado and Incorporated Areas, Map Number 08041C0507F and 08041C0530F, Effective Date March 17, 1997, prepared by the Federal Emergency Management Agency (FEMA).

5. Falcon Drainage Basin Planning Study Selected Plan Report (DBPS), prepared by Matrix Design Group, September 2015. PCD File No. MP132.

6. Eagleview Subdivision Preliminary Drainage Report (PDR), prepared by Kimley-Horn, October 28, 2022. PCD File No. SP216

7. Eagleview Subdivision Final Drainage Report (FDR), prepared by Kimley-Horn, under review.

APPENDIX

APPENDIX A: FIGURES

- Existing Conditions Drainage Map (Excerpt from PDR)
- Proposed Conditions Drainage Map (Excerpt from PDR)
- Proposed Conditions Drainage Map (Revised)
- Overview Map - PBMP Tributary Areas (Revised)
- Overall Drainage Improvements Exhibit (Revised)
- Stream Improvement Details

Appendix E Drainage Maps Excerpts from PDR (Existing Conditions and Proposed Conditions)

LEGEND

- DRAINAGE BASIN AREAS
- A – HEC–HMS BASINS
  B – BASIN ACREAGE
  C – 5–YR RUNOFF
  D – 100–YR RUNOFF
- DESIGN POINT
- EXISTING CONTOURS
- PROPERTY BOUNDARY
- FLOW ARROW
- FLOW PATH
- PARCEL LINE

HEC-HMS - EXISTING RUNOFF TABLE

DESIGN POINT	BASIN DESIGNATION	BASIN AREA (ACRES)	DIRECT 5-YR RUNOFF (CFS)	DIRECT 100-YR RUNOFF (CFS)	CUMULATIVE DIRECT 5-YR RUNOFF (CFS)	CUMULATIVE DIRECT 100-YR RUNOFF (CFS)
	B1	5.55	3.0	8.5	-	-
J1	OB1	10.37	7.1	18.8	10.1	27.3
	B2	41.43	15.4	48.5	-	-
	OB2	28.06	20.6	52.7	-	-
	OB3	43.44	25.3	67.1	-	-
J2	OB4	10.50	7.5	18.9	67.5	183.8
	OB5	143.82	36.8	106.9	-	-
	OB6	118.40	40.8	113.2	-	-
J4	OB7	421.43	101.4	284.2	169.2	478.0
	B3	59.54	36.4	110.0	-	-
	B4	14.68	5.4	18.2	-	-
J3	OB8	33.07	19.5	51.6	183.1	515.5

NORTH

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EAGLEVIEW
EL PASO COUNTY, COLORADO
PRE DEVELOPMENT DRAINAGE MAP

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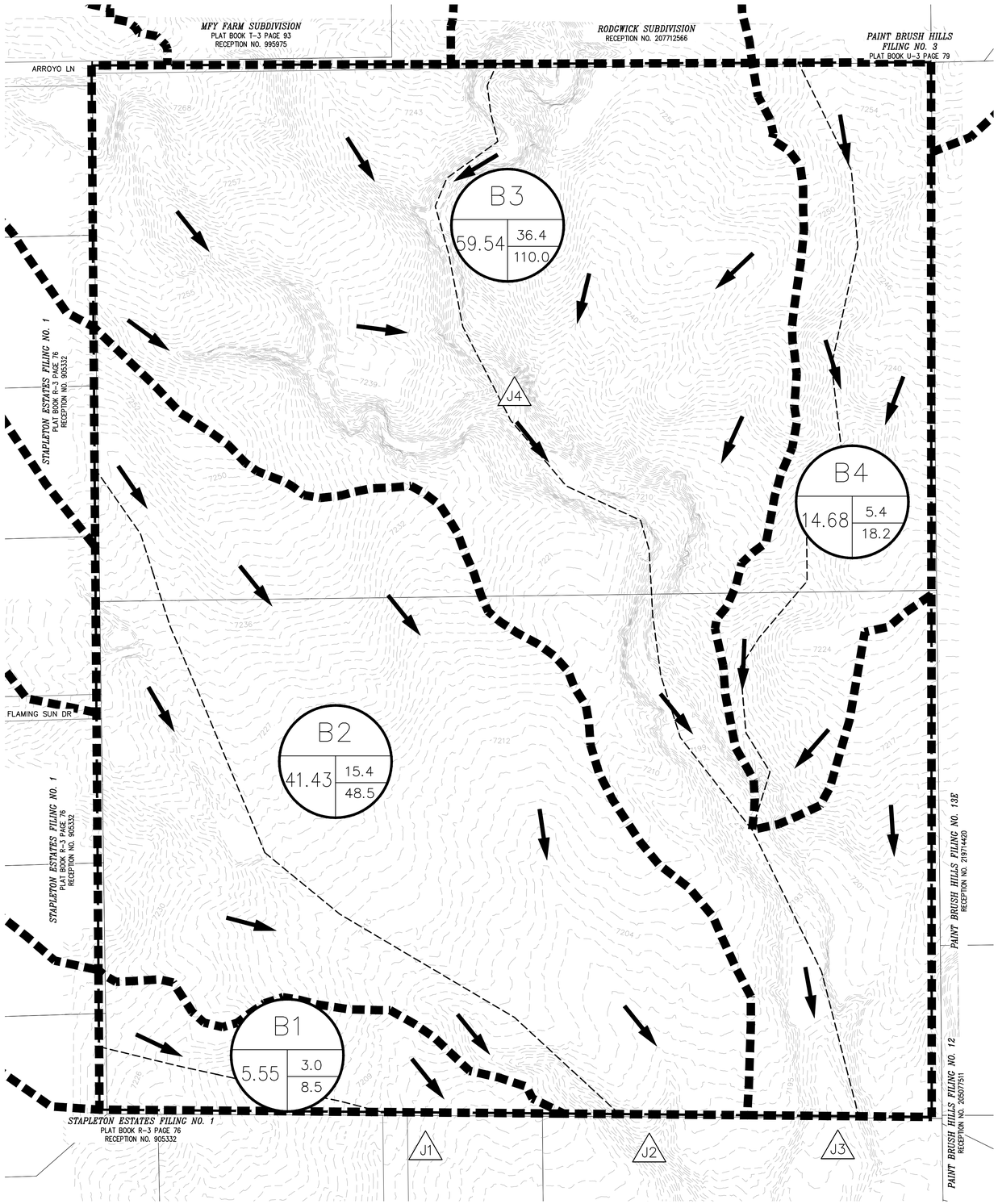
K:\COS_Civil\196288000_Eagleview\CADD\Exhibits\Drainage Analysis\196288000_EX_DRN.dwg Morey, Doug 8/1/2022 10:49 AM



LEGEND

- DRAINAGE BASIN AREAS
- A – HEC–HMS BASINS
  B – BASIN ACREAGE
  C – 5–YR RUNOFF
  D – 100–YR RUNOFF
- E0 DESIGN POINT
- EXISTING CONTOURS
- PROPERTY BOUNDARY
- FLOW ARROW
- FLOW PATH

HEC-HMS - EXISTING RUNOFF TABLE						
DESIGN POINT	BASIN DESIGNATION	BASIN AREA (ACRES)	DIRECT 5-YR RUNOFF (CFS)	DIRECT 100-YR RUNOFF (CFS)	CUMULATIVE DIRECT 5-YR RUNOFF (CFS)	CUMULATIVE DIRECT 100-YR RUNOFF (CFS)
	B1	5.55	3.0	8.5	-	-
J1	OB1	10.37	7.1	18.8	10.1	27.3
	B2	41.43	15.4	48.5	-	-
	OB2	28.06	20.6	52.7	-	-
	OB3	43.44	25.3	67.1	-	-
J2	OB4	10.50	7.5	18.9	67.5	183.8
	OB5	143.82	36.8	106.9	-	-
	OB6	118.40	40.8	113.2	-	-
J4	OB7	421.43	101.4	284.2	169.2	478.0
	B3	59.54	36.4	110.0	-	-
	B4	14.68	5.4	18.2	-	-
J3	OB8	33.07	19.5	51.6	183.1	515.5

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EAGLEVIEW
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PRE DEVELOPMENT DRAINAGE MAP

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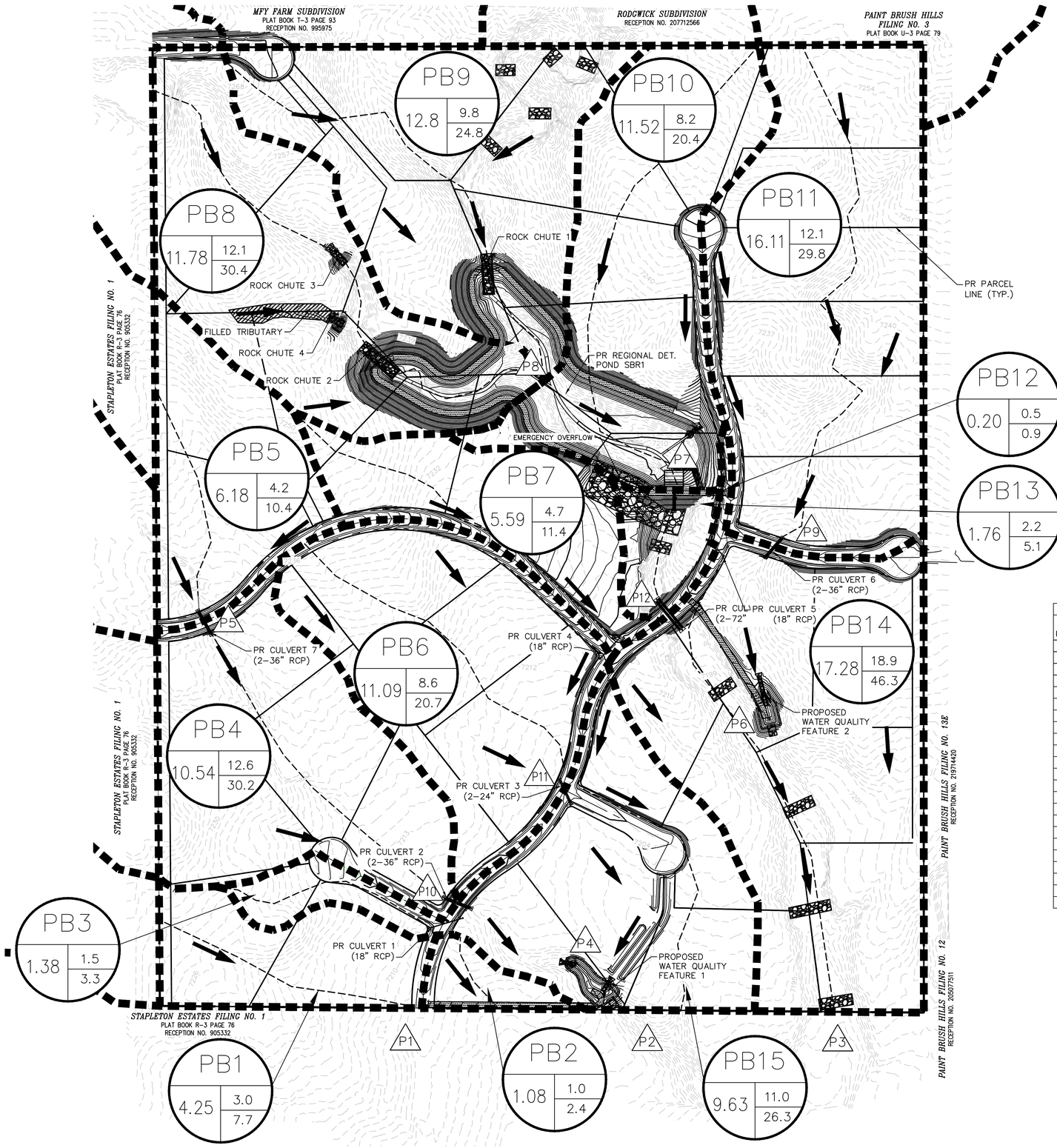

LEGEND

- DRAINAGE BASIN AREAS
- A – HEC-HMS BASINS
  B – BASIN ACREAGE
  C – 5-YR RUNOFF
  D – 100-YR RUNOFF
- E0 DESIGN POINT
- EXISTING CONTOURS
- PROPOSED CONTOURS
- PROPERTY BOUNDARY
- FLOW ARROW
- FLOW PATH
- DROP STRUCTURE

HEC-HMS - DEVELOPED RUNOFF BASIN TABLE			
BASIN DESIGNATION	BASIN AREA (ACRES)	DIRECT 5-YR RUNOFF (CFS)	DIRECT 100-YR RUNOFF (CFS)
OB1	10.37	7.1	18.8
OB2	28.06	20.6	52.7
OB3	43.44	25.3	67.1
OB4	10.50	7.5	18.9
OB5	143.82	36.8	106.9
OB6	118.40	42.1	114.9
OB7	421.43	101.4	284.3
OB8	33.07	19.0	51.0
PB1	4.25	3.0	7.7
PB2	1.08	1.0	2.4
PB3	1.38	1.5	3.3
PB4	10.54	12.6	30.2
PB5	6.18	4.2	10.4
PB6	11.09	8.6	20.7
PB7	5.59	4.7	11.4
PB8	11.78	12.1	30.4
PB9	12.80	9.8	24.8
PB10	11.52	8.2	20.4
PB11	16.11	12.1	29.8
PB12	0.20	0.5	0.9
PB13	1.76	2.2	5.1
PB14	17.28	18.9	46.3
PB15	9.63	11.0	26.3

HEC-HMS - DEVELOPED RUNOFF DESIGN POINT TABLE				
DESIGN POINT	TRIBUTARY BASINS	TRIBUTARY AREA (ACRES)	CUMULATIVE 5-YR FLOW (CFS)	CUMULATIVE 100-YR FLOW (CFS)
P1	OB1, PB1	14.62	10.1	26.4
P2	OB2, OB3, OB4, PB3, PB4, PB5, PB6, PB7, PB15	126.42	74.1	189.1
P3	OB5, OB6, OB7, OB8, PB8, PB9, PB10, PB11, PB12, PB13, PB14	787.97	131.8	437.7
P4	OB2, OB3, OB4, PB3, PB4, PB5, PB6, PB7	116.79	72.2	184.6
P5 (CULVERT 7)	OB3, OB4, PB5	60.12	36.8	95.9
P6	OB8, PB11, PB12	49.38	29.9	78.5
P7 (POND SR1)	OB5, OB6, OB7, PB8, PB9, PB10	719.49	131.7	420.1
P8	OB5, OB6, OB7, PB8, PB9, PB10	707.97	173.4	486.7
P9 (CULVERT 6)	OB8, PB11	49.18	29.8	78.4
P10 (CULVERT 2)	OB2, OB3, OB4, PB4, PB5	98.72	57.9	150.1
P11 (CULVERT 3)	PB6, PB7	16.68	13.2	31.9
P12 (CULVERT 8)	OB5, OB6, OB7, PB8, PB9, PB10, PB13	721.28	137.9	420.3

NOTES:
1. LOCATION OF DROP STRUCTURES IS APPROXIMATE AND WILL BE FINALIZED IN THE FINAL DRAINAGE REPORT.

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EAGLEVIEW
EL PASO COUNTY, COLORADO
POST DEVELOPMENT DRAINAGE MAP

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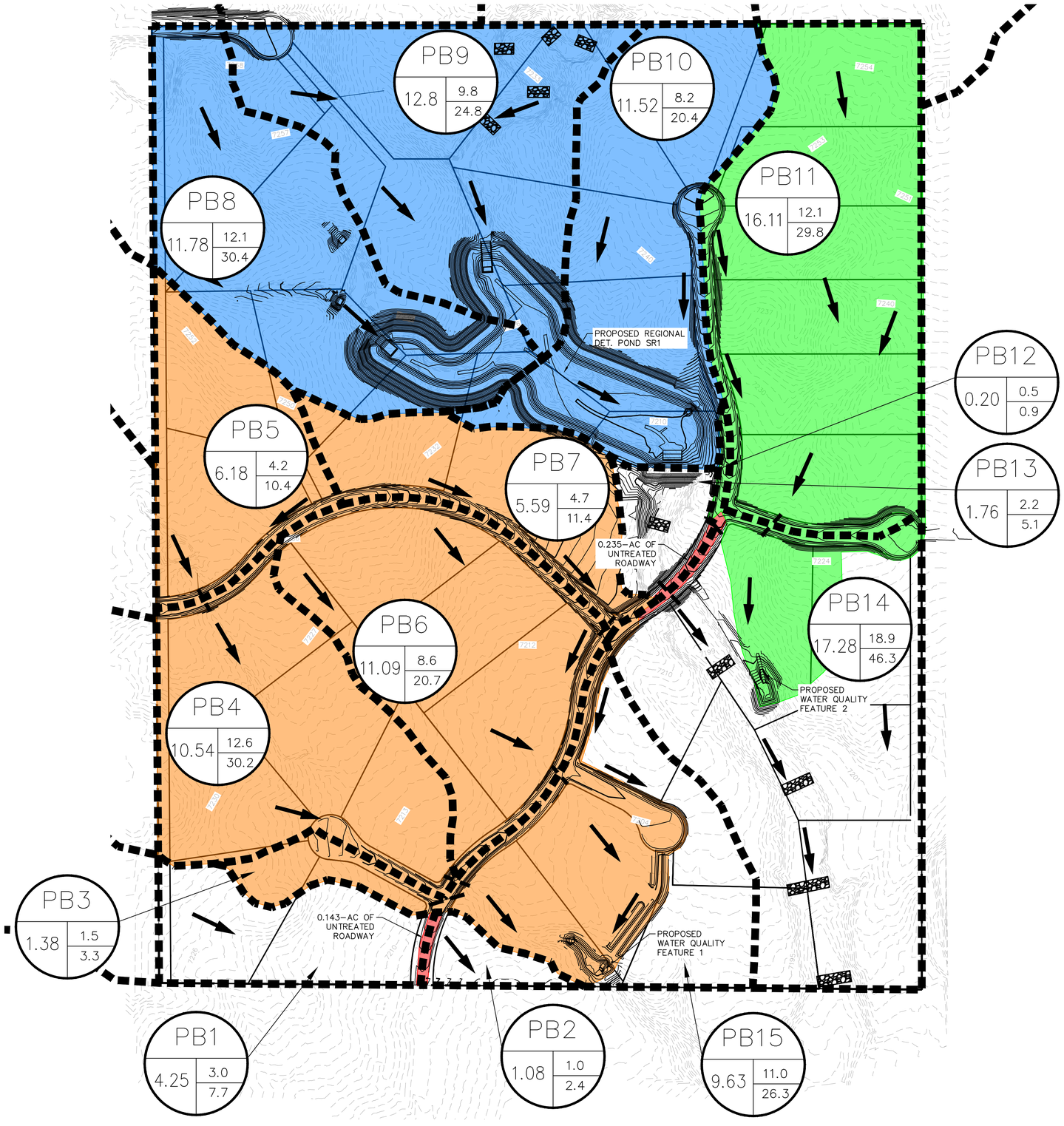

LEGEND

- DRAINAGE BASIN AREAS
- A – HEC–HMS BASINS
  B – BASIN ACREAGE
  C – 5–YR RUNOFF
  D – 100–YR RUNOFF
- EXISTING CONTOURS
- PROPOSED CONTOURS
- PROPERTY BOUNDARY
- FLOW ARROW
- FLOW PATH
- AREA TRIBUTARY TO SR1
- AREA TRIBUTARY TO WQF1
- AREA TRIBUTARY TO WQF2
- ROADWAY AREA NOT TREATED

NOTES:
1. NON–ROADWAY AREAS NOT TREATED BY A PBMP ARE EXCLUDED BASED ON ECM APP I.7.1.B.5.
2. ROADWAY AREA NOT TREATED BY A PBMP TOTALS 0.39 ACRES AND IS EXCLUDED BASED ON ECM APP I.7.1.C.1.

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EAGLEVIEW
EL PASO COUNTY, COLORADO
OVERVIEW MAP - PBMP TRIBUTARY AREAS

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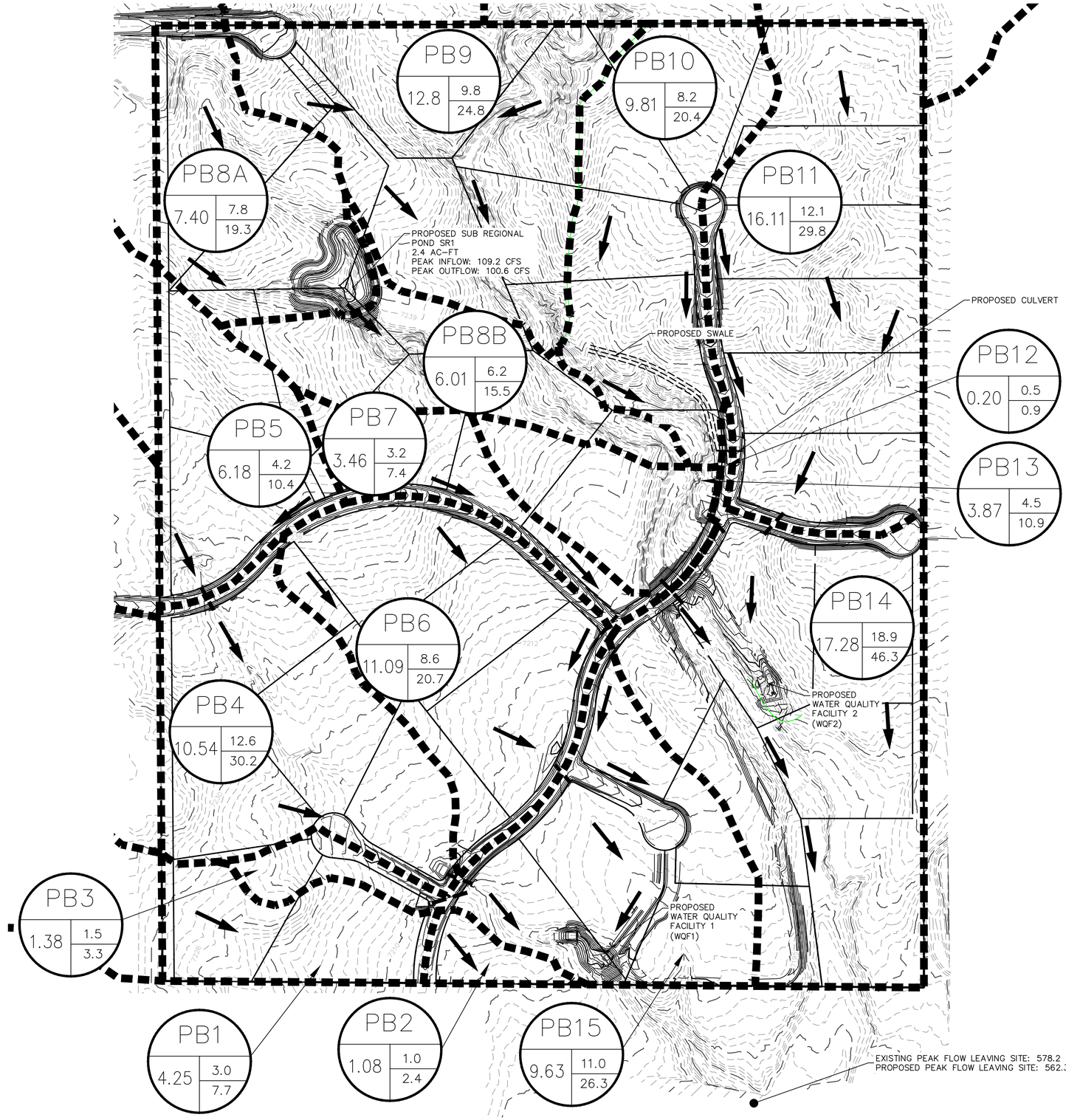
Proposed Conditions Drainage Map (Revised)



LEGEND

- DRAINAGE BASIN AREAS
- A – HEC-HMS BASINS
  B – BASIN ACREAGE
  C – 5-YR RUNOFF
  D – 100-YR RUNOFF
- EXISTING CONTOURS
- PROPOSED CONTOURS
- PROPERTY BOUNDARY
- FLOW ARROW
- FLOW PATH

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DATE: 10/12/2023

EAGLEVIEW
EL PASO COUNTY, COLORADO
PROPOSED CONDITIONS DRAINAGE MAP

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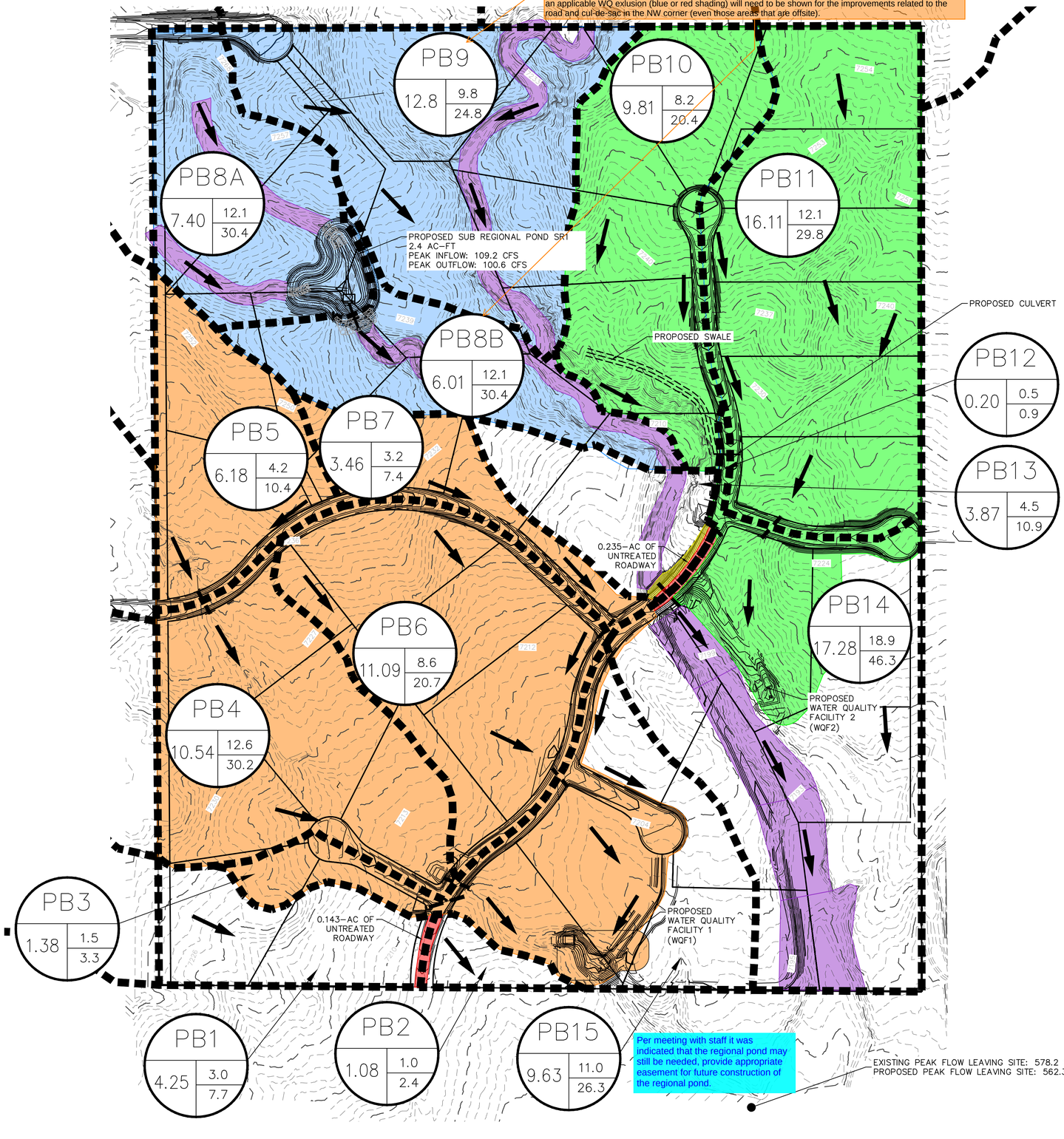
Overview Map - PBMP Tributary Areas (Revised)

I don't see how any runoff in either of these Basins is trib to the revised SR1. Please revise the blue shaded area accordingly. As stated in the MDDP amendment text, for large lots, only the roadways need WQ treatment. So the areas in blue that are not trib to SR1 can be shown as non-shaded (white). WQ treatment or an applicable WQ exlusion (blue or red shading) will need to be shown for the improvements related to the road and cul-de-sac in the NW corner (even those areas that are offsite).



Per meeting with staff it was indicated that the regional pond may still be needed, provide appropriate easement for future construction of the regional pond.

LEGEND

- DRAINAGE BASIN AREAS
- A – HEC-HMS BASINS
  B – BASIN ACREAGE
  C – 5-YR RUNOFF
  D – 100-YR RUNOFF
- EXISTING CONTOURS
- PROPOSED CONTOURS
- PROPERTY BOUNDARY
- FLOW ARROW
- FLOW PATH
- AREA TRIBUTARY TO SR1
- AREA TRIBUTARY TO WQF1
- AREA TRIBUTARY TO WQF2
- ROADWAY AREA NOT TREATED (SEE NOTE 2)
- STREAM STABILIZATION SITES NOT TREATED (SEE NOTE 3)

NOTES:

1. NON-ROADWAY AREAS NOT TREATED BY A PBMP ARE EXCLUDED BASED ON ECM APP I.7.1.B.7 AND I.7.1.B.7 DUE TO GRADING WITHIN A DEDICATED DRAINAGE EASEMENT TO PROVIDE A PATHWAY FOR THE EMERGENCY OVERFLOW FROM THE SUB-REGIONAL POND AND A MAINTENANCE ROAD FROM TO THE WATER QUALITY FACILITIES #1 AND #2. THE PORTION OF THE AREA NOT WITHIN THE DRAINAGE EASEMENT WILL BE PART OF A "LARGE LOT" 2.5 ACRES OR GREATER WITH AND IMPERVIOUS PERCENTAGE LESS THAN 10%
2. ROADWAY AREA NOT TREATED BY A PBMP TOTALS 0.39 ACRES AND IS EXCLUDED BASED ON ECM APP I.7.1.C.1.
3. AREAS DISTURBED THROUGH THE CONSTRUCTION OF DROP STRUCTURES ARE EXCLUDED BASED ON ECM APP I.7.1.B.8.

NORTH

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EAGLEVIEW
EL PASO COUNTY, COLORADO
OVERVIEW MAP - PBMP TRIBUTARY AREAS

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Overall Drainage Improvements Exhibit (Revised)

It appears that any overflows are currently directed to the southwest, not southeast.

The existing stock ponds need to be addressed in the FDR if they haven't been already. Show it on the drainage plans. Are water rights in place? Has embankment stability analysis and maintenance plan been completed if it is to remain?

Why not use this pond if easements can be obtained?

NORTH

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EX. PROPERTY BOUNDARY

PRESA LANE

DRAINAGE EASEMENT (METRO DISTRICT MAINTENANCE) (TYP)

PROP. WATER QUALITY POND #1 PER ONSITE CIVIL PLANS (SF-22-42)

CHEMITA TRAIL

SOUTH ARROYA LANE

FLAMING SUN DRIVE

PROP. CULVERTS DOUBLE BARREL 72" RCP PER ONSITE CIVIL PLANS (SF-22-42)

PROP. 15' MAINTENANCE ROAD

WEST TRIBUTARY (RWT094) (PER FALCON DBPS)

PROP. CHANNEL MAINTENANCE ACCESS ROAD

PROP. WATER QUALITY POND #2 PER ONSITE CIVIL PLANS (SF-22-42)

PROP. LOW FLOW RIFFLE DROP (TYP.)

VARIABLE WIDTH DRAINAGE EASEMENT

PROP. TYPE VL RIPRAP (D50= 6" T=12") TYP.

ACEQUIA COURT

PROP. SUB-REGIONAL POND (SR-1)

TRIBUTARY TO WEST TRIBUTARY (RWT080) (PER FALCON DBPS)

PROP. 15' MAINTENANCE ROAD

WEST TRIBUTARY (RWT092) (PER FALCON DBPS)

PROP. ROCK CHUTE

WEST TRIBUTARY (RWT054) (PER FALCON DBPS)

PROP. TYPE M RIPRAP (D50= 12" T=24") TYP.

PROP. 3-FT CONCRETE CHECK STRUCTURE (TYP.) INSTALL AT EXISTING GRADE

PROP. TYPE M RIPRAP (D50= 12" T=24") TYP.

PROP. 15' MAINTENANCE ROAD

PROP. 3-FT CONCRETE CHECK STRUCTURE (TYP.) INSTALL AT EXISTING GRADE

GRADE BACK SLOPES (3:1 MINIMUM) AND REVEGETATE

PROP. 15' MAINTENANCE ROAD

GRADE BACK SLOPES (3:1 MINIMUM) AND REVEGETATE

SOUTH ARROYA LANE

ARROYA LANE

EX. PROPERTY BOUNDARY

LOT LINE (TYP.) PER ONSITE CIVIL PLANS (SF-22-42) (TYP.)

LEGEND

- EXISTING PROPERTY BOUNDARY
- EXISTING MAJOR CONTOUR
- EXISTING MINOR CONTOUR
- XXXX PROPOSED MAJOR CONTOUR
- XXXX PROPOSED MINOR CONTOUR
- PROPOSED RIPRAP
- PROPOSED STORM PIPE
- STORM PIPE PER ONSITE CIVIL PLANS

NOTES:

1. PROPOSED CONCRETE CHECK STRUCTURES SHALL SPAN THE WIDTH OF THE LOW FLOW CHANNEL AND EXTEND 10-FT INTO EACH BANK.
2. ADDITIONAL EROSION CONTROL MEASURES TO BE IMPLEMENTED AS NECESSARY BASED ON THE RESULTS OF DETAILED CHANNEL ANALYSIS WHICH WILL BE COMPLETED AS A PART OF FINAL DESIGN.

NO.	REVISION	BY	DATE	APPR.

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DRAWN BY: DCM
CHECKED BY: BAH
DATE: 10/12/2023

EAGLEVIEW
EL PASO COUNTY, COLORADO
CONSTRUCTION DOCUMENTS

OVERALL DRAINAGE IMPROVEMENTS

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Typical Stream Improvement Details

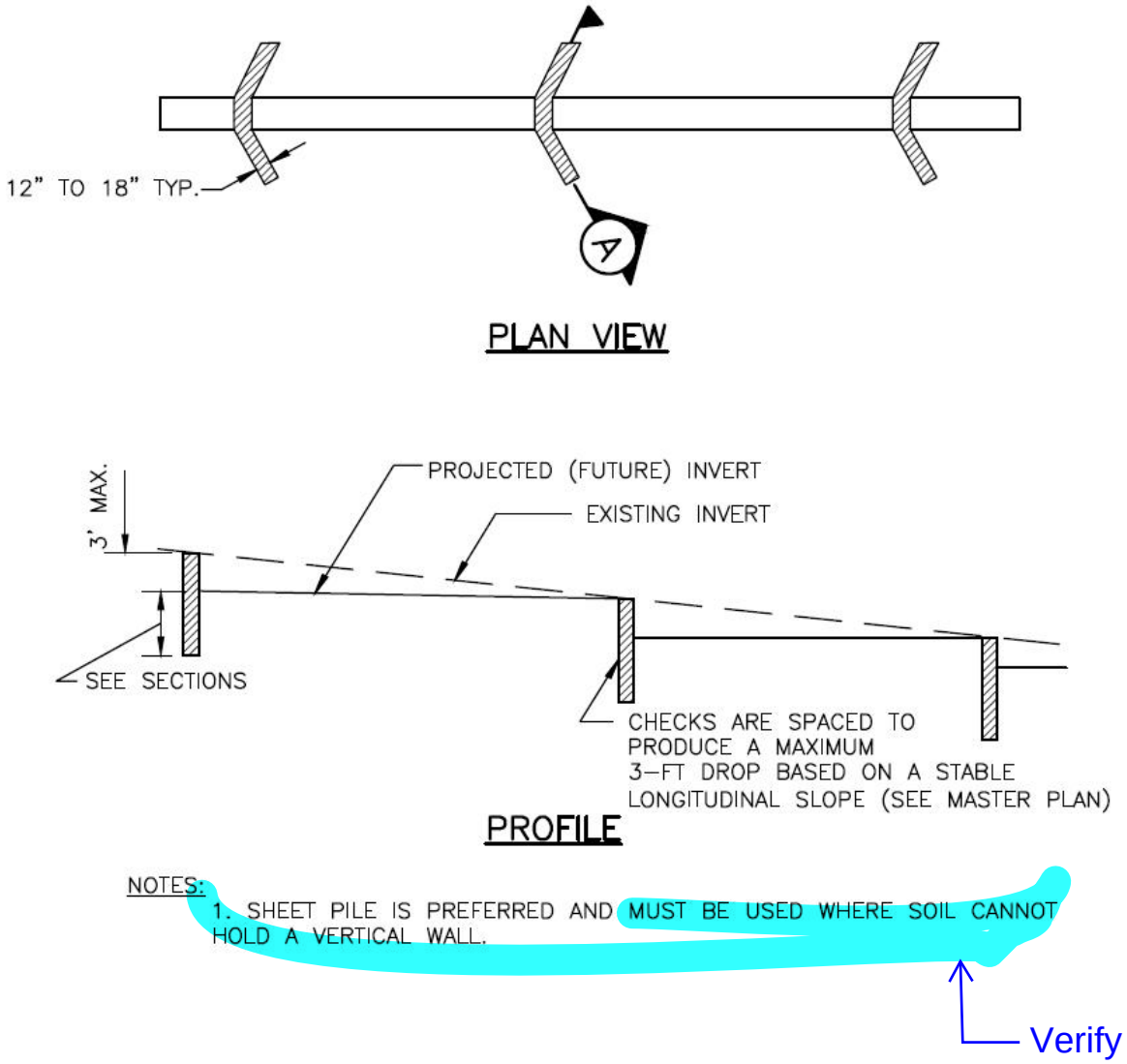
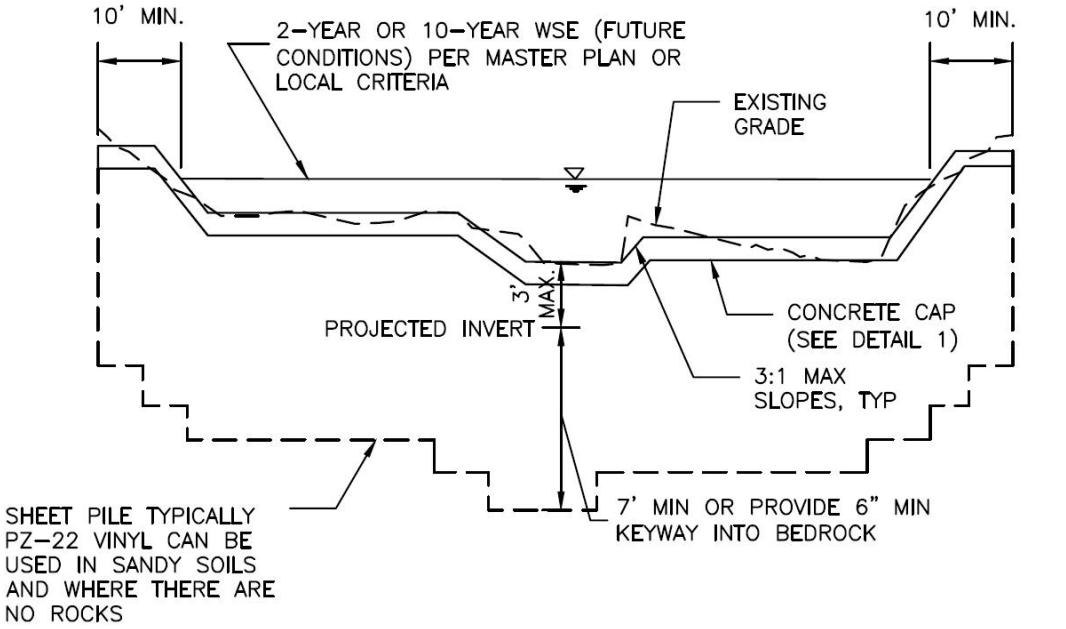


Figure 9-26. Check structure details (Part 1 of 3)



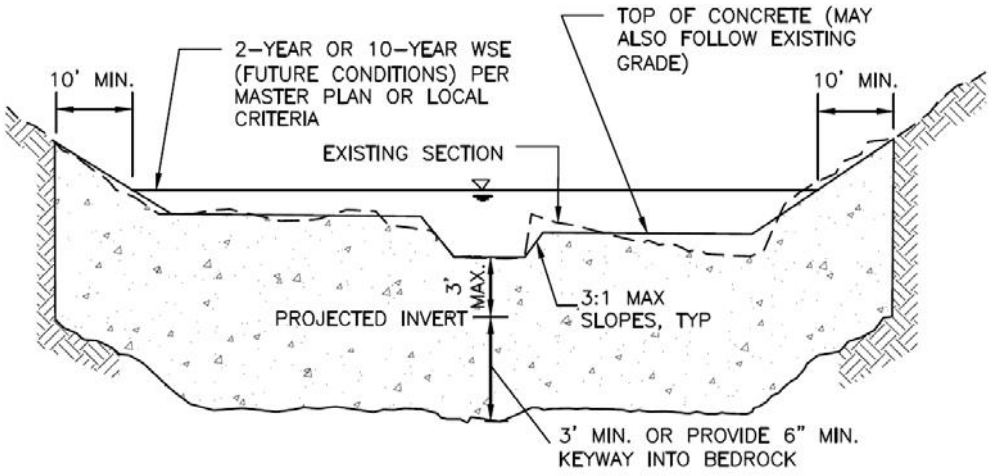


Figure 9-27. Check structure details (Part 2 of 3)

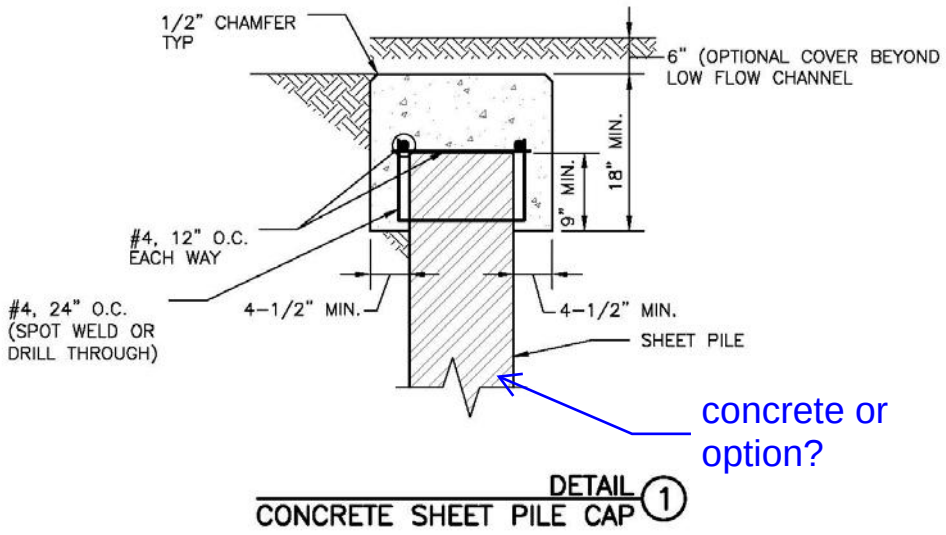
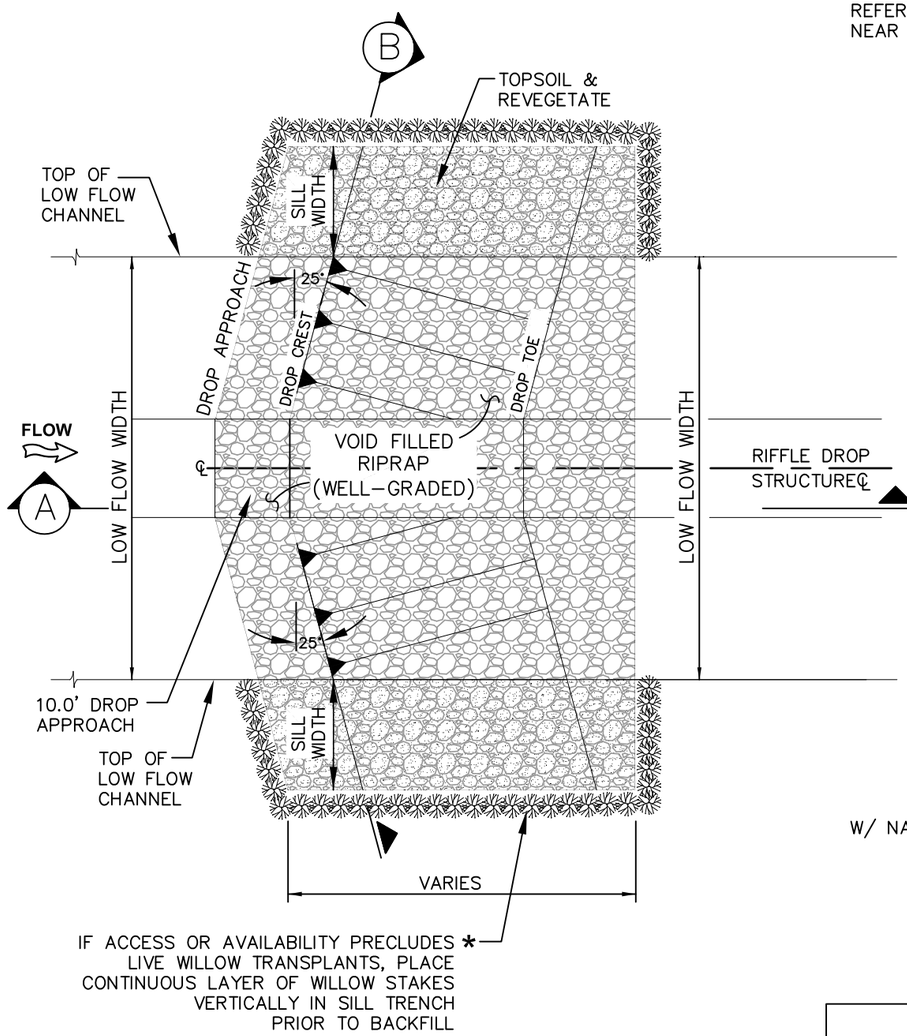


Figure 9-28. Check structure details (Part 3 of 3)

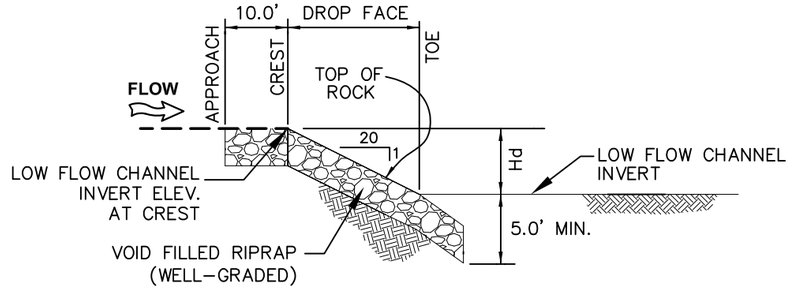
Provide channel profiles showing proposed riffle and check structure locations, existing, proposed, and stable grades



RIFFLE DROP STRUCTURE PLAN

NTS

NOTE:
REFER TO EROSION CONTROL BLANKET DETAIL FOR BLANKET INSTALLATION NEAR STRUCTURES.

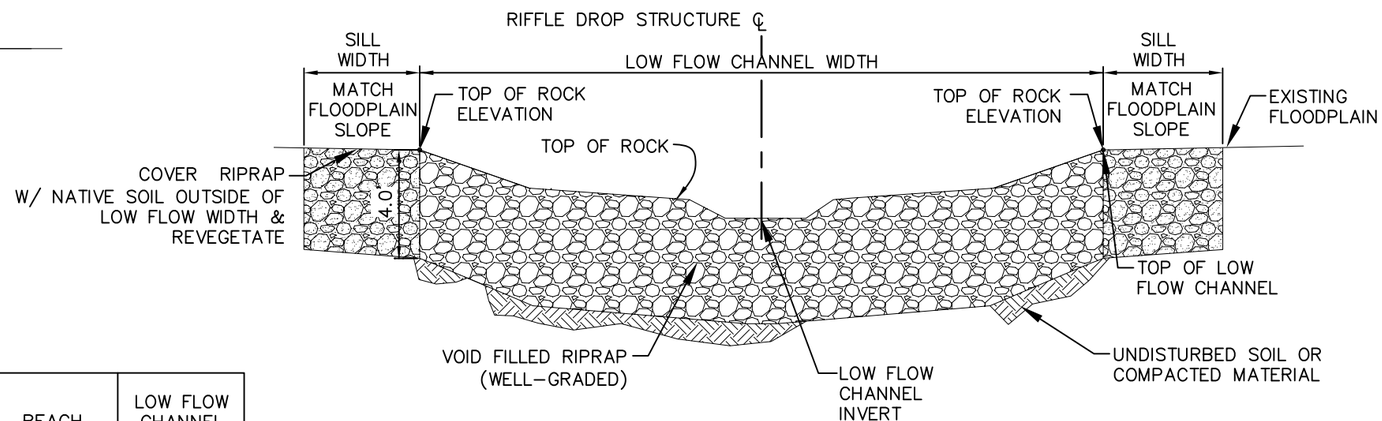


NOTE:
REFER TO EROSION CONTROL BLANKET DETAIL FOR BLANKET INSTALLATION.

RIFFLE DROP STRUCTURE PROFILE A

NTS

REACH	LOW FLOW CHANNEL WIDTH (FT)
RET120	29
RET154	22
RWT150	18
RWT210	30



RIFFLE DROP STRUCTURE SECTION B

NTS

CONSTRUCTED RIFFLE DROP STRUCTURE

TYPICAL RIFFLE DROP STRUCTURE

FOR USE IN NATURAL CHANNEL DESIGN REACHES

NOT FOR CONSTRUCTION

NAME: S:\10.122.003 (Falcon DBPS)\DWG\XSEC-RCVANE-RDSexhibit.dwg
PCP: Matrix.ctb
PLOT DATE: Tue Jun 18, 2013 1:49pm

Matrix DESIGN GROUP
2435 Research Parkway, Suite 300
Colorado Springs, CO 80920
Phone 719-575-0100
Fax 719-575-0208

APPENDIX B: HYDROLOGY

- Existing and Proposed Conditions Hydrology (Excerpts from PDR)
- Proposed Conditions Hydrology (Revised)

Appendix B Hydrology Excerpts from PDR (Existing Conditions and Proposed Conditions)

Custom Soil Resource Report
Soil Map

Map Scale: 1:18,700 if printed on A portrait (8.5" x 11") sheet.

N

Meters
0 250 500 1000 1500

Feet
0 500 1000 2000 3000

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 13N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

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

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

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

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

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

Soil Survey Area: El Paso County Area, Colorado
Survey Area Data: Version 19, Aug 31, 2021

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

Date(s) aerial images were photographed: Sep 11, 2018—Oct 20, 2018

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

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
19	Columbine gravelly sandy loam, 0 to 3 percent slopes	5.2	0.3%
40	Kettle gravelly loamy sand, 3 to 8 percent slopes	506.7	28.0%
41	Kettle gravelly loamy sand, 8 to 40 percent slopes	205.0	11.3%
71	Pring coarse sandy loam, 3 to 8 percent slopes	1,092.9	60.4%
Totals for Area of Interest		**1,809.9**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

El Paso County Area, Colorado

19—Columbine gravelly sandy loam, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: 367p
Elevation: 6,500 to 7,300 feet
Mean annual precipitation: 14 to 16 inches
Mean annual air temperature: 46 to 50 degrees F
Frost-free period: 125 to 145 days
Farmland classification: Not prime farmland

Map Unit Composition

Columbine and similar soils: 97 percent
Minor components: 3 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Columbine

Setting

Landform: Flood plains, fan terraces, fans
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium

Typical profile

A - 0 to 14 inches: gravelly sandy loam
C - 14 to 60 inches: very gravelly loamy sand

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): High to very high (5.95 to 19.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Very low (about 2.5 inches)

Interpretive groups

Land capability classification (irrigated): 4e
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: A
Ecological site: R049XY214CO - Gravelly Foothill
Hydric soil rating: No

Minor Components

Fluvaquentic haplaquolls

Percent of map unit: 1 percent
Landform: Swales
Hydric soil rating: Yes

Other soils

Percent of map unit: 1 percent
Hydric soil rating: No

Pleasant

Percent of map unit: 1 percent
Landform: Depressions
Hydric soil rating: Yes

40—Kettle gravelly loamy sand, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: 368g
Elevation: 7,000 to 7,700 feet
Farmland classification: Not prime farmland

Map Unit Composition

Kettle and similar soils: 85 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Kettle

Setting

Landform: Hills
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Sandy alluvium derived from arkose

Typical profile

E - 0 to 16 inches: gravelly loamy sand
Bt - 16 to 40 inches: gravelly sandy loam
C - 40 to 60 inches: extremely gravelly loamy sand

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat excessively drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): High (2.00 to 6.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 3.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: B
Ecological site: F048AY908CO - Mixed Conifer

Hydric soil rating: No

Minor Components

Other soils

Percent of map unit:
Hydric soil rating: No

Pleasant

Percent of map unit:
Landform: Depressions
Hydric soil rating: Yes

41—Kettle gravelly loamy sand, 8 to 40 percent slopes

Map Unit Setting

National map unit symbol: 368h
Elevation: 7,000 to 7,700 feet
Farmland classification: Not prime farmland

Map Unit Composition

Kettle and similar soils: 85 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Kettle

Setting

Landform: Hills
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Sandy alluvium derived from arkose

Typical profile

E - 0 to 16 inches: gravelly loamy sand
Bt - 16 to 40 inches: gravelly sandy loam
C - 40 to 60 inches: extremely gravelly loamy sand

Properties and qualities

Slope: 8 to 40 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat excessively drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): High (2.00 to 6.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 3.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: B
Ecological site: F048AY908CO - Mixed Conifer
Hydric soil rating: No

Minor Components

Pleasant
Percent of map unit:
Landform: Depressions
Hydric soil rating: Yes

Other soils
Percent of map unit:
Hydric soil rating: No

71—Pring coarse sandy loam, 3 to 8 percent slopes

Map Unit Setting
National map unit symbol: 369k
Elevation: 6,800 to 7,600 feet
Farmland classification: Not prime farmland

Map Unit Composition
Pring and similar soils: 85 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Pring

Setting
Landform: Hills
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Arkosic alluvium derived from sedimentary rock

Typical profile
A - 0 to 14 inches: coarse sandy loam
C - 14 to 60 inches: gravelly sandy loam

Properties and qualities
Slope: 3 to 8 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): High (2.00 to 6.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 6.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: B
Ecological site: R048AY222CO - Loamy Park
Hydric soil rating: No

Minor Components

Pleasant

Percent of map unit:
Landform: Depressions
Hydric soil rating: Yes

Other soils

Percent of map unit:
Hydric soil rating: No

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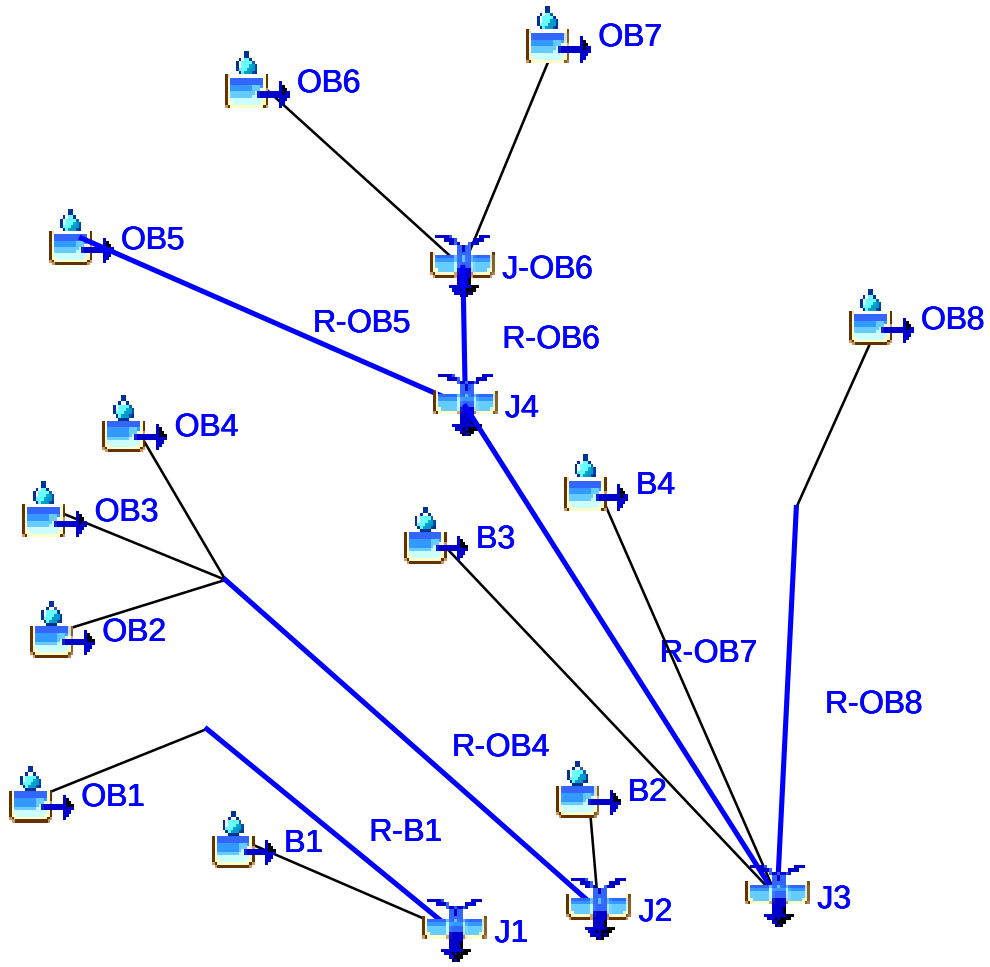
HEC-HMS

Project : Eagleview_Subdivision

Basin Model : Eagleview_Existing

Mar 11 13:21:39 MST 2022



El Paso County Chapter 5: Table 5-2 SCS 24-hr Type II Distribution for TR-20 Input				
	Minutes			
Hour	15	30	45	60
1	0.002	0.005	0.008	0.01
2	0.014	0.017	0.020	0.02
3	0.026	0.029	0.032	0.04
4	0.038	0.041	0.044	0.05
5	0.052	0.056	0.060	0.06
6	0.068	0.072	0.076	0.08
7	0.085	0.090	0.095	0.1
8	0.105	0.110	0.115	0.12
9	0.126	0.133	0.140	0.15
10	0.155	0.163	0.172	0.18
11	0.191	0.203	0.218	0.24
12	0.257	0.283	0.387	0.66
13	0.707	0.735	0.758	0.78
14	0.791	0.804	0.815	0.83
15	0.834	0.842	0.849	0.86
16	0.863	0.869	0.875	0.88
17	0.887	0.893	0.898	0.9
18	0.908	0.913	0.918	0.92
19	0.926	0.930	0.934	0.94
20	0.942	0.946	0.950	0.95
21	0.956	0.959	0.962	0.97
22	0.968	0.971	0.974	0.98
23	0.980	0.983	0.986	0.99
24	0.992	0.995	0.998	1

Table 6-2. 24hr Rainfall Depths for Colorado Springs	
Return Period	Depths
2-yr	2.1
5-yr	2.7
10-yr	3.2
25-yr	3.6
50-yr	4.2
100-yr	4.6

Design Strom Hyetograph Table								
	Time (mins)	Fraction of 1-hr Rainfall Depth	2-yr	5-yr	10-yr	25-yr	50-yr	100-yr
	0	0	0	0	0	0	0	0
	15	0.002	0.0042	0.0054	0.0064	0.0072	0.0084	0.0092
	30	0.005	0.0105	0.0135	0.016	0.018	0.021	0.023
	45	0.008	0.0168	0.0216	0.0256	0.0288	0.0336	0.0368
1	60	0.011	0.0231	0.0297	0.0352	0.0396	0.0462	0.0506
	75	0.014	0.0294	0.0378	0.0448	0.0504	0.0588	0.0644
	90	0.017	0.0357	0.0459	0.0544	0.0612	0.0714	0.0782
	105	0.02	0.042	0.054	0.064	0.072	0.084	0.092
2	120	0.023	0.0483	0.0621	0.0736	0.0828	0.0966	0.1058
	135	0.026	0.0546	0.0702	0.0832	0.0936	0.1092	0.1196
	150	0.029	0.0609	0.0783	0.0928	0.1044	0.1218	0.1334
	165	0.032	0.0672	0.0864	0.1024	0.1152	0.1344	0.1472
3	180	0.035	0.0735	0.0945	0.112	0.126	0.147	0.161
	195	0.038	0.0798	0.1026	0.1216	0.1368	0.1596	0.1748
	210	0.041	0.0861	0.1107	0.1312	0.1476	0.1722	0.1886
	225	0.044	0.0924	0.1188	0.1408	0.1584	0.1848	0.2024
4	240	0.048	0.1008	0.1296	0.1536	0.1728	0.2016	0.2208
	255	0.052	0.1092	0.1404	0.1664	0.1872	0.2184	0.2392
	270	0.056	0.1176	0.1512	0.1792	0.2016	0.2352	0.2576
	285	0.06	0.126	0.162	0.192	0.216	0.252	0.276
5	300	0.0604	0.12684	0.16308	0.19328	0.21744	0.25368	0.27784
	315	0.068	0.1428	0.1836	0.2176	0.2448	0.2856	0.3128
	330	0.072	0.1512	0.1944	0.2304	0.2592	0.3024	0.3312
	345	0.076	0.1596	0.2052	0.2432	0.2736	0.3192	0.3496
6	360	0.08	0.168	0.216	0.256	0.288	0.336	0.368
	375	0.085	0.1785	0.2295	0.272	0.306	0.357	0.391
	390	0.09	0.189	0.243	0.288	0.324	0.378	0.414
	405	0.095	0.1995	0.2565	0.304	0.342	0.399	0.437
7	420	0.1	0.21	0.27	0.32	0.36	0.42	0.46
	435	0.105	0.2205	0.2835	0.336	0.378	0.441	0.483
	450	0.11	0.231	0.297	0.352	0.396	0.462	0.506
	465	0.115	0.2415	0.3105	0.368	0.414	0.483	0.529
8	480	0.12	0.252	0.324	0.384	0.432	0.504	0.552
	495	0.126	0.2646	0.3402	0.4032	0.4536	0.5292	0.5796
	510	0.133	0.2793	0.3591	0.4256	0.4788	0.5586	0.6118
	525	0.14	0.294	0.378	0.448	0.504	0.588	0.644
9	540	0.147	0.3087	0.3969	0.4704	0.5292	0.6174	0.6762
	555	0.155	0.3255	0.4185	0.496	0.558	0.651	0.713
	570	0.163	0.3423	0.4401	0.5216	0.5868	0.6846	0.7498
	585	0.172	0.3612	0.4644	0.5504	0.6192	0.7224	0.7912
10	600	0.181	0.3801	0.4887	0.5792	0.6516	0.7602	0.8326
	615	0.191	0.4011	0.5157	0.6112	0.6876	0.8022	0.8786
	630	0.203	0.4263	0.5481	0.6496	0.7308	0.8526	0.9338
	645	0.218	0.4578	0.5886	0.6976	0.7848	0.9156	1.0028
11	660	0.236	0.4956	0.6372	0.7552	0.8496	0.9912	1.0856
	675	0.257	0.5397	0.6939	0.8224	0.9252	1.0794	1.1822
	690	0.283	0.5943	0.7641	0.9056	1.0188	1.1886	1.3018
	705	0.387	0.8127	1.0449	1.2384	1.3932	1.6254	1.7802
12	720	0.663	1.3923	1.7901	2.1216	2.3868	2.7846	3.0498
	735	0.707	1.4847	1.9089	2.2624	2.5452	2.9694	3.2522
	750	0.735	1.5435	1.9845	2.352	2.646	3.087	3.381
	765	0.758	1.5918	2.0466	2.4256	2.7288	3.1836	3.4868
13	780	0.776	1.6296	2.0952	2.4832	2.7936	3.2592	3.5696
	795	0.791	1.6611	2.1357	2.5312	2.8476	3.3222	3.6386
	810	0.804	1.6884	2.1708	2.5728	2.8944	3.3768	3.6984
	825	0.815	1.7115	2.2005	2.608	2.934	3.423	3.749

14	840	0.825	1.7325	2.2275	2.64	2.97	3.465	3.795
	855	0.834	1.7514	2.2518	2.6688	3.0024	3.5028	3.8364
	870	0.842	1.7682	2.2734	2.6944	3.0312	3.5364	3.8732
	885	0.849	1.7829	2.2923	2.7168	3.0564	3.5658	3.9054
15	900	0.856	1.7976	2.3112	2.7392	3.0816	3.5952	3.9376
	915	0.863	1.8123	2.3301	2.7616	3.1068	3.6246	3.9698
	930	0.869	1.8249	2.3463	2.7808	3.1284	3.6498	3.9974
	945	0.875	1.8375	2.3625	2.8	3.15	3.675	4.025
16	960	0.881	1.8501	2.3787	2.8192	3.1716	3.7002	4.0526
	975	0.887	1.8627	2.3949	2.8384	3.1932	3.7254	4.0802
	990	0.893	1.8753	2.4111	2.8576	3.2148	3.7506	4.1078
	1005	0.898	1.8858	2.4246	2.8736	3.2328	3.7716	4.1308
17	1020	0.903	1.8963	2.4381	2.8896	3.2508	3.7926	4.1538
	1035	0.908	1.9068	2.4516	2.9056	3.2688	3.8136	4.1768
	1050	0.913	1.9173	2.4651	2.9216	3.2868	3.8346	4.1998
	1065	0.918	1.9278	2.4786	2.9376	3.3048	3.8556	4.2228
18	1080	0.922	1.9362	2.4894	2.9504	3.3192	3.8724	4.2412
	1095	0.926	1.9446	2.5002	2.9632	3.3336	3.8892	4.2596
	1110	0.93	1.953	2.511	2.976	3.348	3.906	4.278
	1125	0.934	1.9614	2.5218	2.9888	3.3624	3.9228	4.2964
19	1140	0.938	1.9698	2.5326	3.0016	3.3768	3.9396	4.3148
	1155	0.942	1.9782	2.5434	3.0144	3.3912	3.9564	4.3332
	1170	0.946	1.9866	2.5542	3.0272	3.4056	3.9732	4.3516
	1185	0.95	1.995	2.565	3.04	3.42	3.99	4.37
20	1200	0.953	2.0013	2.5731	3.0496	3.4308	4.0026	4.3838
	1215	0.956	2.0076	2.5812	3.0592	3.4416	4.0152	4.3976
	1230	0.959	2.0139	2.5893	3.0688	3.4524	4.0278	4.4114
	1245	0.962	2.0202	2.5974	3.0784	3.4632	4.0404	4.4252
21	1260	0.965	2.0265	2.6055	3.088	3.474	4.053	4.439
	1275	0.968	2.0328	2.6136	3.0976	3.4848	4.0656	4.4528
	1290	0.971	2.0391	2.6217	3.1072	3.4956	4.0782	4.4666
	1305	0.974	2.0454	2.6298	3.1168	3.5064	4.0908	4.4804
22	1320	0.977	2.0517	2.6379	3.1264	3.5172	4.1034	4.4942
	1335	0.98	2.058	2.646	3.136	3.528	4.116	4.508
	1350	0.983	2.0643	2.6541	3.1456	3.5388	4.1286	4.5218
	1365	0.986	2.0706	2.6622	3.1552	3.5496	4.1412	4.5356
23	1380	0.989	2.0769	2.6703	3.1648	3.5604	4.1538	4.5494
	1395	0.992	2.0832	2.6784	3.1744	3.5712	4.1664	4.5632
	1410	0.995	2.0895	2.6865	3.184	3.582	4.179	4.577
	1425	0.998	2.0958	2.6946	3.1936	3.5928	4.1916	4.5908
24	1440	1	2.1	2.7	3.2	3.6	4.2	4.6

IMPERVIOUS FACTOR CALCULATION TABLE - EXISTING CONDITIONS

	Basin	Area (Acre)	Open Space (2%)	Buildings (100%)	Paved Roadway (100%)	Gravel Roadway (80%)	Total % Check	Weighted Impervious
Onsite	B1	5.55	93%	0%	0%	6%	99%	7%
	B2	41.43	100%	0%	0%	0%	100%	2%
	B3	59.54	100%	0%	0%	0%	100%	2%
	B4	14.68	100%	0%	0%	0%	100%	2%
Offsite	OB1	10.37	93%	2%	4%	2%	100%	9%
	OB2	28.06	90%	3%	3%	5%	100%	11%
	OB3	43.44	92%	2%	2%	4%	100%	9%
	OB4	10.50	87%	4%	5%	4%	100%	13%
	OB5	143.82	94%	2%	1%	3%	100%	7%
	OB6	118.40	93%	1%	2%	4%	100%	8%
	OB7	421.43	93%	2%	1%	4%	100%	8%
	OB8	33.08	93%	2%	1%	5%	100%	8%
Total		930.30						10.6%

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Pre Runoff Analysis
Time of Concentration

Project Information

Project Name: Eagleview
KHA Project #: 196288000
Designed by: DCM Date: 3/17/2022
Revised by: Date:
Checked by: BAH Date: 3/17/2022

Minimum Time of Concentration 5.0 minutes
2YR-24HR Rainfall, P2 2.10

Pre-Development
Drainage Area: OB1

		Flow Length, L (ft)	Slope, s (ft/ft)	Manning's Roughness Coefficient, n	Two-year, 24-hr rainfall, P2 (in)	Paved or Unpaved	Cross Sectional Area of Flow, A (ft^2)	Wetted Perimeter, pw (ft)	Hydraulic radius, r (ft)	Average Velocity, V (ft/s)**	Travel Time, Tt (min)	Lag Time (min)
SHEET	T1 SHEET FLOW	300.00	0.073	0.15	2.10						17.35	
SHALLOW CONCENTRATED	T2 SHALLOW CONCENTRATED FLOW	1118.00	0.038			U				3.14	5.93	
										Pre-Development Time of Concentration, OB1	23.28	13.97

Pre-Development
Drainage Area: OB2

		Flow Length, L (ft)	Slope, s (ft/ft)	Manning's Roughness Coefficient, n	Two-year, 24-hr rainfall, P2 (in)	Paved or Unpaved	Cross Sectional Area of Flow, A (ft^2)	Wetted Perimeter, pw (ft)	Hydraulic radius, r (ft)	Average Velocity, V (ft/s)**	Travel Time, Tt (min)	Lag Time (min)
SHEET	T1 SHEET FLOW	300.00	0.063	0.15	2.10						18.41	
SHALLOW CONCENTRATED	T2 SHALLOW CONCENTRATED FLOW	554.00	0.046			U				3.45	2.67	
CHANNEL	T2 CHANNEL FLOW	841.00	0.029	0.05		U	9.50	6.60	1.44	6.45	2.17	
										Pre-Development Time of Concentration, OB2	23.26	13.95

Pre-Development
Drainage Area: OB3

		Flow Length, L (ft)	Slope, s (ft/ft)	Manning's Roughness Coefficient, n	Two-year, 24-hr rainfall, P2 (in)	Paved or Unpaved	Cross Sectional Area of Flow, A (ft^2)	Wetted Perimeter, pw (ft)	Hydraulic radius, r (ft)	Average Velocity, V (ft/s)**	Travel Time, Tt (min)	Lag Time (min)
SHEET	T1 SHEET FLOW	300.00	0.074	0.15	2.10						17.26	
SHALLOW CONCENTRATED	T2 SHALLOW CONCENTRATED FLOW	2436.00	0.034			U				2.97	13.65	
										Pre-Development Time of Concentration, OB3	30.91	18.55

Pre-Development
Drainage Area: OB4

		Flow Length, L (ft)	Slope, s (ft/ft)	Manning's Roughness Coefficient, n	Two-year, 24-hr rainfall, P2 (in)	Paved or Unpaved	Cross Sectional Area of Flow, A (ft^2)	Wetted Perimeter, pw (ft)	Hydraulic radius, r (ft)	Average Velocity, V (ft/s)**	Travel Time, Tt (min)	Lag Time (min)
SHEET	T1 SHEET FLOW	300.00	0.042	0.15	2.10						21.65	
SHALLOW CONCENTRATED	T2 SHALLOW CONCENTRATED FLOW	783.00	0.038			U				3.16	4.13	
CHANNEL	T2 CHANNEL FLOW	577.00	0.028	0.05		U	9.50	6.60	1.44	6.36	1.51	
										Pre-Development Time of Concentration, OB4	27.29	16.38

Pre-Development
Drainage Area: OB5

		Flow Length, L (ft)	Slope, s (ft/ft)	Manning's Roughness Coefficient, n	Two-year, 24-hr rainfall, P2 (in)	Paved or Unpaved	Cross Sectional Area of Flow, A (ft^2)	Wetted Perimeter, pw (ft)	Hydraulic radius, r (ft)	Average Velocity, V (ft/s)**	Travel Time, Tt (min)	Lag Time (min)
SHEET	T1 SHEET FLOW	300.00	0.037	0.40	2.10						49.91	
SHALLOW CONCENTRATED	T2 SHALLOW CONCENTRATED FLOW	3838.00	0.033			U				2.93	21.83	
CHANNEL	T2 CHANNEL FLOW	1407.00	0.024	0.04		U	9.50	6.60	1.44	7.36	3.19	
										Pre-Development Time of Concentration, OB5	74.93	44.96

Pre-Development
Drainage Area: OB6

		Flow Length, L (ft)	Slope, s (ft/ft)	Manning's Roughness Coefficient, n	Two-year, 24-hr rainfall, P2 (in)	Paved or Unpaved	Cross Sectional Area of Flow, A (ft^2)	Wetted Perimeter, pw (ft)	Hydraulic radius, r (ft)	Average Velocity, V (ft/s)**	Travel Time, Tt (min)	Lag Time (min)
SHEET	T1 SHEET FLOW	300.00	0.064	0.40	2.10						40.09	
SHALLOW CONCENTRATED	T2 SHALLOW CONCENTRATED FLOW	2569.00	0.038			U				3.14	13.62	
CHANNEL	T2 CHANNEL FLOW	2110.00	0.027	0.04		U	9.50	6.60	1.44	7.73	4.55	
										Pre-Development Time of Concentration, OB6	58.25	34.95

Pre-Development
Drainage Area: OB7

		Flow Length, L (ft)	Slope, s (ft/ft)	Manning's Roughness Coefficient, n	Two-year, 24-hr rainfall, P2 (in)	Paved or Unpaved	Cross Sectional Area of Flow, A (ft^2)	Wetted Perimeter, pw (ft)	Hydraulic radius, r (ft)	Average Velocity, V (ft/s)**	Travel Time, Tt (min)	Lag Time (min)
SHEET	T1 SHEET FLOW	300.00	0.028	0.40	2.10						55.80	
SHALLOW CONCENTRATED	T2 SHALLOW CONCENTRATED FLOW	2068.00	0.036			U				3.06	11.26	
CHANNEL	T3 CHANNEL FLOW	6198.00	0.03	0.04		U	12.00	22.00	0.55	4.09	25.29	
										Pre-Development Time of Concentration, OB7	92.35	55.41

Pre-Development
Drainage Area: OB8

		Flow Length, L (ft)	Slope, s (ft/ft)	Manning's Roughness Coefficient, n	Two-year, 24-hr rainfall, P2 (in)	Paved or Unpaved	Cross Sectional Area of Flow, A (ft^2)	Wetted Perimeter, pw (ft)	Hydraulic radius, r (ft)	Average Velocity, V (ft/s)**	Travel Time, Tt (min)	Lag Time (min)
SHEET	T1 SHEET FLOW	300.00	0.029	0.15	2.10						25.10	
SHALLOW CONCENTRATED	T2 SHALLOW CONCENTRATED FLOW	1117.00	0.043			U				3.34	5.57	
CHANNEL	T2 CHANNEL FLOW	762.00	0.033	0.03		U	9.50	6.60	1.44	11.43	1.11	
										Pre-Development Time of Concentration, OB8	31.78	19.07

Pre-Development
Drainage Area: B1

		Flow Length, L (ft)	Slope, s (ft/ft)	Manning's Roughness Coefficient, n	Two-year, 24-hr rainfall, P2 (in)	Paved or Unpaved	Cross Sectional Area of Flow, A (ft^2)	Wetted Perimeter, pw (ft)	Hydraulic radius, r (ft)	Average Velocity, V (ft/s)**	Travel Time, Tt (min)	Lag Time (min)
SHEET	T1 SHEET FLOW	300.00	0.027	0.15	2.10						25.83	
SHALLOW CONCENTRATED	T2 SHALLOW CONCENTRATED FLOW	368.00	0.033			U				2.91	2.11	
CHANNEL	T2 CHANNEL FLOW	210.00	0.034	0.03		U	9.50	6.60	1.44	11.68	0.30	
										Pre-Development Time of Concentration, B1	28.24	16.94

Pre-Development
Drainage Area: B2

		Flow Length, L (ft)	Slope, s (ft/ft)	Manning's Roughness Coefficient, n	Two-year, 24-hr rainfall, P2 (in)	Paved or Unpaved	Cross Sectional Area of Flow, A (ft^2)	Wetted Perimeter, pw (ft)	Hydraulic radius, r (ft)	Average Velocity, V (ft/s)**	Travel Time, Tt (min)	Lag Time (min)
SHEET	T1 SHEET FLOW	300.00	0.022	0.15	2.10						28.04	
SHALLOW CONCENTRATED	T2 SHALLOW CONCENTRATED FLOW	737.00	0.025			U				2.55	4.82	
CHANNEL	T3 CHANNEL FLOW	1086.00	0.02	0.03		U	9.50	6.60	1.44	9.18	1.97	
										Pre-Development Time of Concentration, B2	34.83	20.90

Pre-Development
Drainage Area: B3

		Flow Length, L (ft)	Slope, s (ft/ft)	Manning's Roughness Coefficient, n	Two-year, 24-hr rainfall, P2 (in)	Paved or Unpaved	Cross Sectional Area of Flow, A (ft^2)	Wetted Perimeter, pw (ft)	Hydraulic radius, r (ft)	Average Velocity, V (ft/s)**	Travel Time, Tt (min)	Lag Time (min)
CHANNEL	T3 CHANNEL FLOW	2985.00	0.02	0.03		U	14.00	34.00	0.41	3.58	13.88	
										Pre-Development Time of Concentration, B3	13.88	8.33

Kimley»Horn

Pre Runoff Analysis
Time of Concentration

Project Information

Project Name: Eagleview
KHA Project #: 196288000
Designed by: DCM Date: 3/17/2022
Revised by: Date:
Checked by: BAH Date: 3/17/2022

Minimum Time of Concentration 5.0 minutes
2YR-24HR Rainfall, P2 2.10

Pre-Development

Drainage Area: B4

		Flow Length, L (ft)	Slope, s (ft/ft)	Manning's Roughness Coefficient, n	Two-year, 24-hr rainfall, P2 (in)	Paved or Unpaved	Cross Sectional Area of Flow, A (ft^2)	Wetted Perimeter, pw (ft)	Hydraulic radius, r (ft)	Average Velocity, V (ft/s)**	Travel Time, Tt (min)	Lag Time (min)
SHEET	T1 SHEET FLOW	300.00	0.020	0.15	2.10						29.13	
SHALLOW CONCENTRATED	T2 SHALLOW CONCENTRATED FLOW	181.00	0.044			U				3.37	0.90	
CHANNEL	T2 CHANNEL FLOW	1548.00	0.033	0.03		U	9.50	6.60	1.44	11.50	2.24	
										Pre-Development Time of Concentration, B4	32.27	19.36

Kimley»Horn

Pre Runoff Analysis

Composite CN

Project Name: Eagleview
KHA Project #: 196288000
Designed by: DCM Date: 3/17/2022
Revised by: Date:
Revised by: Date:
Checked by: BAH Date: 3/17/2022

Pre-Development

Drainage Area: *OB1*

COVER DESCRIPTION	HYDROLOGIC CONDITION OR COVER TYPE	HYDROLOGIC SOIL GROUP	SCS CURVE NUMBER (CN)	AREA, A (ac.)	INITIAL ABSTRACTION, IA
RESIDENTIAL	RR-5 (Rangeland Landuse)	B	62.00	9.79	--
IMPERVIOUS	Paved; curbs and storm sewers (excluding right-of-way)	B	98.00	0.38	--
IMPERVIOUS	Gravel (including right of way)	B	85.00	0.20	--
CUTSOM					
COMPOSITE SCS CURVE NUMBER - OB1		**63.76**		10.37	0.569

Pre-Development

Drainage Area: *OB2*

COVER DESCRIPTION	HYDROLOGIC CONDITION OR COVER TYPE	HYDROLOGIC SOIL GROUP	SCS CURVE NUMBER (CN)	AREA, A (ac.)	INITIAL ABSTRACTION, IA
RESIDENTIAL	RR-5 (Rangeland Landuse)	B	62.00	25.92	--
IMPERVIOUS	Paved; curbs and storm sewers (excluding right-of-way)	B	98.00	0.86	--
IMPERVIOUS	Gravel (including right of way)	B	85.00	1.28	--
CUTSOM					
COMPOSITE SCS CURVE NUMBER - OB2		**64.16**		28.06	0.559

Pre-Development

Drainage Area: *OB3*

COVER DESCRIPTION	HYDROLOGIC CONDITION OR COVER TYPE	HYDROLOGIC SOIL GROUP	SCS CURVE NUMBER (CN)	AREA, A (ac.)	INITIAL ABSTRACTION, IA
RESIDENTIAL	RR-5 (Rangeland Landuse)	B	62.00	40.88	--
IMPERVIOUS	Paved; curbs and storm sewers (excluding right-of-way)	B	98.00	0.89	--
IMPERVIOUS	Gravel (including right of way)	B	85.00	1.67	--
CUTSOM					
COMPOSITE SCS CURVE NUMBER - OB3		**63.62**		43.44	0.572

Pre-Development

Drainage Area: *OB4*

COVER DESCRIPTION	HYDROLOGIC CONDITION OR COVER TYPE	HYDROLOGIC SOIL GROUP	SCS CURVE NUMBER (CN)	AREA, A (ac.)	INITIAL ABSTRACTION, IA
RESIDENTIAL	RR-5 (Rangeland Landuse)	B	62.00	9.55	0.00
IMPERVIOUS	Paved; curbs and storm sewers (excluding right-of-way)	B	98.00	0.52	0.55
IMPERVIOUS	Gravel (including right of way)	B	85.00	0.43	9.95
CUTSOM					
COMPOSITE SCS CURVE NUMBER - OB4		**64.71**		10.50	0.545

Pre-Development

Drainage Area: *OB5*

COVER DESCRIPTION	HYDROLOGIC CONDITION OR COVER TYPE	HYDROLOGIC SOIL GROUP	SCS CURVE NUMBER (CN)	AREA, A (ac.)	INITIAL ABSTRACTION, IA
RESIDENTIAL	RR-5 (Rangeland Landuse)	B	62.00	28.58	--
RESIDENTIAL	RR-5 (Woods Landuse)	B	58.00	109.48	--
IMPERVIOUS	Paved; curbs and storm sewers (excluding right-of-way)	B	98.00	1.12	--
IMPERVIOUS	Gravel (including right of way)	B	85.00	4.64	--
CUTSOM					
COMPOSITE SCS CURVE NUMBER - OB5		**59.98**		143.82	0.667

Pre-Development

Drainage Area: *OB6*

COVER DESCRIPTION	HYDROLOGIC CONDITION OR COVER TYPE	HYDROLOGIC SOIL GROUP	SCS CURVE NUMBER (CN)	AREA, A (ac.)	INITIAL ABSTRACTION, IA
RESIDENTIAL	RR-5 (Rangeland Landuse)	B	62.00	60.64	--
RESIDENTIAL	RR-5 (Woods Landuse)	B	58.00	51.19	--
IMPERVIOUS	Paved; curbs and storm sewers (excluding right-of-way)	B	98.00	2.04	--
IMPERVIOUS	Gravel (including right of way)	B	85.00	4.53	--
CUTSOM					
COMPOSITE SCS CURVE NUMBER - OB6		**61.77**		118.40	0.619

Kimley»Horn

Pre Runoff Analysis
Composite CN

Project Name: Eagleview
KHA Project #: 196288000
Designed by: DCM Date: 3/17/2022
Revised by: Date:
Revised by: Date:
Checked by: BAH Date: 3/17/2022

Pre-Development

Drainage Area: *OB7*

COVER DESCRIPTION	HYDROLOGIC CONDITION OR COVER TYPE	HYDROLOGIC SOIL GROUP	SCS CURVE NUMBER (CN)	AREA, A (ac.)	INITIAL ABSTRACTION, IA
RESIDENTIAL	RR-5 (Rangeland Landuse)	B	62.00	122.08	--
RESIDENTIAL	RR-5 (Woods Landuse)	B	58.00	259.48	--
RESIDENTIAL	2.5 acre	B	64.00	16.02	--
IMPERVIOUS	Paved; curbs and storm sewers (excluding right-of-way)	B	98.00	5.46	--
IMPERVIOUS	Gravel (including right of way)	B	85.00	18.17	--
CUTSOM					
COMPOSITE SCS CURVE NUMBER - OB7		**61.07**		421.20	0.637

Pre-Development

Drainage Area: *OB8*

COVER DESCRIPTION	HYDROLOGIC CONDITION OR COVER TYPE	HYDROLOGIC SOIL GROUP	SCS CURVE NUMBER (CN)	AREA, A (ac.)	INITIAL ABSTRACTION, IA
RESIDENTIAL	RR-5 (Rangeland Landuse)	B	62.00	8.71	--
RESIDENTIAL	2.5 acre	B	64.00	21.76	--
RESIDENTIAL	1/2 acre (25% imp.)	B	71.00	0.79	--
IMPERVIOUS	Paved; curbs and storm sewers (excluding right-of-way)	B	98.00	0.24	--
IMPERVIOUS	Gravel (including right of way)	B	85.00	1.57	--
CUTSOM					
COMPOSITE SCS CURVE NUMBER - OB8		**64.89**		33.07	0.541

Pre-Development

Drainage Area: *B1*

COVER DESCRIPTION	HYDROLOGIC CONDITION OR COVER TYPE	HYDROLOGIC SOIL GROUP	SCS CURVE NUMBER (CN)	AREA, A (ac.)	INITIAL ABSTRACTION, IA
OPEN_SPACE	Good condition (grass cover >75%)	B	61.00	5.55	--
CUTSOM					
COMPOSITE SCS CURVE NUMBER - B1		**61.00**		5.55	0.639

Pre-Development

Drainage Area: *B2*

COVER DESCRIPTION	HYDROLOGIC CONDITION OR COVER TYPE	HYDROLOGIC SOIL GROUP	SCS CURVE NUMBER (CN)	AREA, A (ac.)	INITIAL ABSTRACTION, IA
OPEN_SPACE	Good condition (grass cover >75%)	A	39.00	0.61	--
OPEN_SPACE	Good condition (grass cover >75%)	B	61.00	40.82	--
CUTSOM					
COMPOSITE SCS CURVE NUMBER - B2		**60.68**		41.43	0.648

Pre-Development

Drainage Area: *B3*

COVER DESCRIPTION	HYDROLOGIC CONDITION OR COVER TYPE	HYDROLOGIC SOIL GROUP	SCS CURVE NUMBER (CN)	AREA, A (ac.)	INITIAL ABSTRACTION, IA
OPEN_SPACE	Good condition (grass cover >75%)	A	39.00	0.28	--
OPEN_SPACE	Good condition (grass cover >75%)	B	61.00	59.27	--
CUTSOM					
COMPOSITE SCS CURVE NUMBER - B3		**60.90**		59.54	0.642

Pre-Development

Drainage Area: *B4*

COVER DESCRIPTION	HYDROLOGIC CONDITION OR COVER TYPE	HYDROLOGIC SOIL GROUP	SCS CURVE NUMBER (CN)	AREA, A (ac.)	INITIAL ABSTRACTION, IA
OPEN_SPACE	Good condition (grass cover >75%)	B	61.00	14.68	--
CUTSOM					
COMPOSITE SCS CURVE NUMBER - B4		**61.00**		14.68	0.639

Project: Eagleview_Subdivision Simulation Run: EV 5-yr Ex. Type II

Start of Run: 01Oct2021, 00:00 Basin Model: Eagleview_Existing
End of Run: 02Oct2021, 00:00 Meteorologic Model: 5-yr Type II
Compute Time: 11Mar2022, 14:50:40 Control Specifications: 24-hr Storm

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (AC-FT)
B1	0.0091800	3.0	01Oct2021, 12:11	0.3
B2	0.0647266	15.4	01Oct2021, 12:16	1.8
B3	0.0930359	36.4	01Oct2021, 12:04	2.7
B4	0.0229422	5.8	01Oct2021, 12:14	0.7
J1	0.0253831	10.1	01Oct2021, 12:11	1.0
J2	0.1928516	67.5	01Oct2021, 12:15	7.3
J3	1.2354980	183.1	01Oct2021, 12:47	42.8
J4	1.0678500	169.2	01Oct2021, 12:46	37.4
J-OB6	0.8431300	132.4	01Oct2021, 12:45	30.1
OB1	0.0162031	7.1	01Oct2021, 12:08	0.7
OB2	0.0438438	20.6	01Oct2021, 12:08	1.9
OB3	0.0678750	25.3	01Oct2021, 12:13	2.8
OB4	0.0164062	7.5	01Oct2021, 12:10	0.8
OB5	0.2247200	36.8	01Oct2021, 12:42	7.4
OB6	0.1850100	40.8	01Oct2021, 12:30	6.8
OB7	0.6581200	101.4	01Oct2021, 12:53	23.3
OB8	0.0516699	19.5	01Oct2021, 12:13	2.1
R-B1	0.0162031	7.1	01Oct2021, 12:11	0.7
R-OB4	0.1281250	52.2	01Oct2021, 12:14	5.4
R-OB5	0.2247200	36.8	01Oct2021, 12:45	7.4
R-OB6	0.8431300	132.4	01Oct2021, 12:46	30.0
R-OB7	1.0678500	169.2	01Oct2021, 12:49	37.3
R-OB8	0.0516699	19.4	01Oct2021, 12:17	2.1

Project: Eagleview_Subdivision Simulation Run: EV 100-yr Ex. Type II

Start of Run: 01Oct2021, 00:00 Basin Model: Eagleview_Existing
End of Run: 02Oct2021, 00:00 Meteorologic Model: 100-yr Type II
Compute Time: 11Mar2022, 10:12:01 Control Specifications: 24-hr Storm

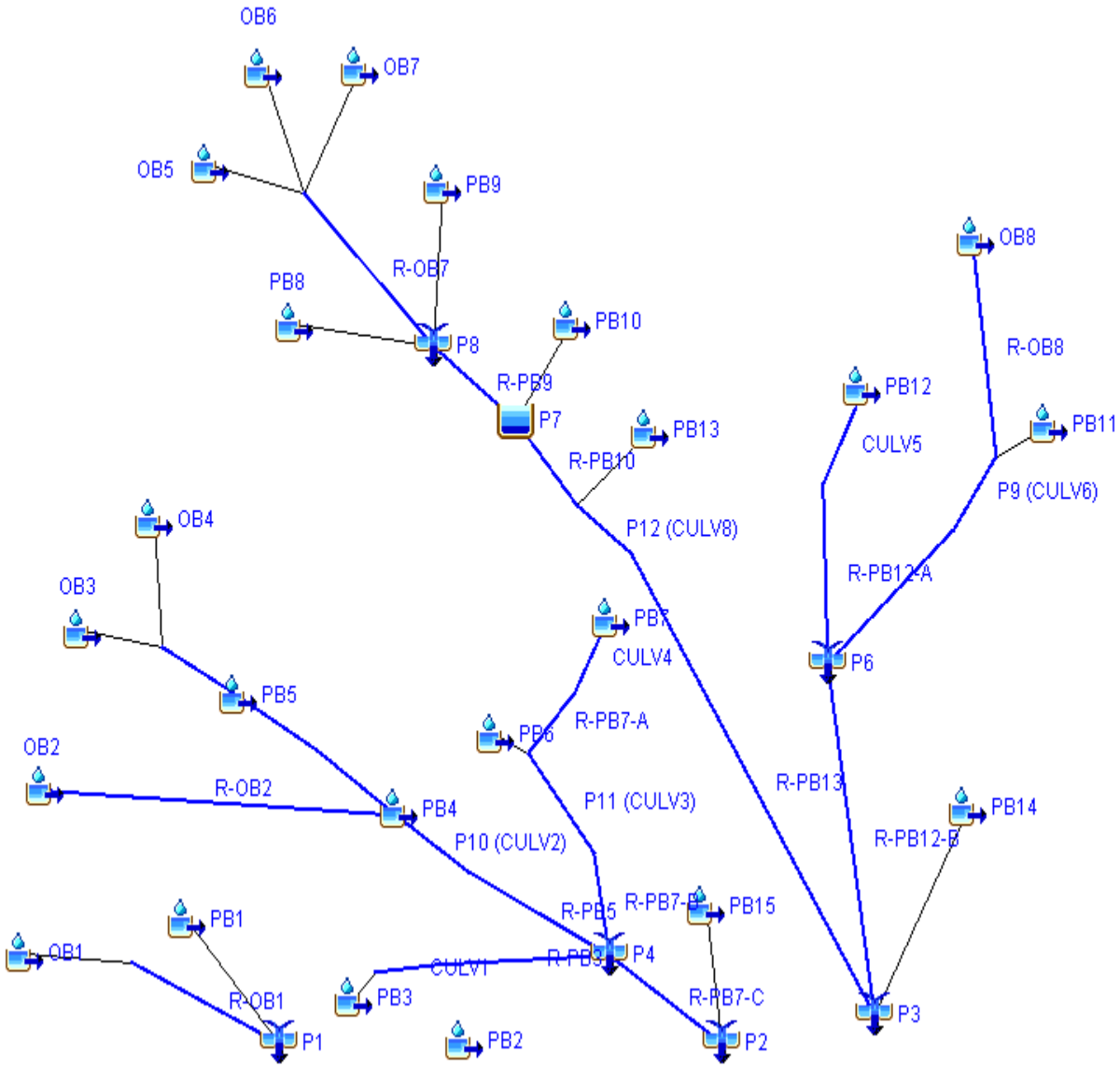
Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (AC-FT)
B1	0.0091800	8.5	01Oct2021, 12:11	0.8
B2	0.0647266	48.5	01Oct2021, 12:15	5.3
B3	0.0930359	110.0	01Oct2021, 12:04	7.8
B4	0.0229422	18.2	01Oct2021, 12:13	1.9
J1	0.0253831	27.3	01Oct2021, 12:10	2.5
J2	0.1928516	183.8	01Oct2021, 12:13	18.8
J3	1.2354980	515.5	01Oct2021, 12:44	112.7
J4	1.0678500	478.0	01Oct2021, 12:44	97.8
J-OB6	0.8431300	371.3	01Oct2021, 12:43	78.1
OB1	0.0162031	18.8	01Oct2021, 12:08	1.7
OB2	0.0438438	52.7	01Oct2021, 12:08	4.7
OB3	0.0678750	67.1	01Oct2021, 12:12	6.9
OB4	0.0164062	18.9	01Oct2021, 12:10	1.8
OB5	0.2247200	106.9	01Oct2021, 12:40	19.7
OB6	0.1850100	113.2	01Oct2021, 12:29	17.5
OB7	0.6581200	284.2	01Oct2021, 12:52	60.6
OB8	0.0516699	51.6	01Oct2021, 12:13	5.4
R-B1	0.0162031	18.7	01Oct2021, 12:10	1.7
R-OB4	0.1281250	135.8	01Oct2021, 12:13	13.4
R-OB5	0.2247200	106.8	01Oct2021, 12:43	19.7
R-OB6	0.8431300	371.3	01Oct2021, 12:44	78.1
R-OB7	1.0678500	477.9	01Oct2021, 12:46	97.7
R-OB8	0.0516699	51.5	01Oct2021, 12:16	5.4

HEC-HMS

Project : Eagleview_Subdivision

Basin Model : Eagleview_Proposed

Mar 16 08:36:57 MDT 2022



IMPERVIOUS FACTOR CALCULATION TABLE - PROPOSED CONDITIONS

	Basin	Area (Acre)	Open Space (2%)	2.5 Acre Lot (100%)	1/8 Acre Lot (100%)	Buildings (100%)	Paved Roadway (100%)	Gravel Roadway (80%)	Total % Check	Weighted Impervious
Onsite	PB1	4.25	0%	99%	0%	0%	1%	0%	100%	12%
	PB2	1.08	0%	94%	0%	0%	6%	0%	100%	16%
	PB3	1.38	0%	85%	0%	0%	15%	0%	100%	24%
	PB4	10.54	0%	97%	0%	0%	3%	0%	100%	14%
	PB5	6.18	0%	97%	0%	0%	3%	0%	100%	13%
	PB6	11.09	0%	95%	0%	0%	5%	0%	100%	16%
	PB7	5.59	0%	94%	0%	0%	6%	0%	100%	16%
	PB8	11.78	0%	99%	0%	0%	1%	0%	100%	11%
	PB9	12.80	0%	98%	0%	0%	2%	0%	100%	12%
	PB10	11.52	0%	98%	0%	0%	2%	0%	100%	13%
	PB11	16.11	0%	97%	0%	0%	3%	0%	100%	14%
	PB12	0.20	0%	50%	0%	0%	50%	0%	100%	55%
	PB13	1.76	0%	96%	0%	0%	4%	0%	100%	15%
	PB14	17.28	0%	97%	0%	0%	3%	0%	100%	13%
	PB15	9.63	0%	93%	0%	0%	7%	0%	100%	17%
Offsite	OB1	10.37	93%	0%	0%	2%	4%	2%	100%	9%
	OB2	28.06	90%	0%	0%	3%	3%	5%	100%	11%
	OB3	43.44	92%	0%	0%	2%	2%	4%	100%	9%
	OB4	10.50	87%	0%	0%	4%	5%	4%	100%	13%
	OB5	143.82	94%	0%	0%	2%	1%	3%	100%	7%
	OB6	118.40	92%	0%	0%	1%	2%	5%	100%	9%
	OB7	421.43	93%	0%	0%	2%	1%	4%	100%	8%
	OB8	33.08	93%	0%	0%	2%	1%	5%	100%	8%
Total		930.30								12.2%

Kimley»Horn

Post Runoff Analysis
Time of Concentration

Project Information

Project Name: Eagleview
KHA Project #: 196288000
Designed by: DCM Date: 3/17/2022
Revised by: Date:
Checked by: BAH Date: 3/17/2022

Minimum Time of Concentration 5.0 minutes
2YR-24HR Rainfall, P2 2.10

Post-Development
Drainage Area: OB1

		Flow Length, L (ft)	Slope, s (ft/ft)	Manning's Roughness Coefficient, n	Two-year, 24-hr rainfall, P2 (in)	Paved or Unpaved	Cross Sectional Area of Flow, A (ft^2)	Wetted Perimeter, pw (ft)	Hydraulic radius, r (ft)	Average Velocity, V (ft/s)**	Travel Time, Tt (min)	Lag Time (min)
SHEET	T1 SHEET FLOW	300.00	0.073	0.15	2.10						17.35	
SHALLOW CONCENTRATED	T2 SHALLOW CONCENTRATED FLOW	1118.00	0.038			U				3.14	5.93	
										Post-Development Time of Concentration, OB1	23.28	13.97

Post-Development
Drainage Area: OB2

		Flow Length, L (ft)	Slope, s (ft/ft)	Manning's Roughness Coefficient, n	Two-year, 24-hr rainfall, P2 (in)	Paved or Unpaved	Cross Sectional Area of Flow, A (ft^2)	Wetted Perimeter, pw (ft)	Hydraulic radius, r (ft)	Average Velocity, V (ft/s)**	Travel Time, Tt (min)	Lag Time (min)
SHEET	T1 SHEET FLOW	300.00	0.063	0.15	2.10						18.41	
SHALLOW CONCENTRATED	T2 SHALLOW CONCENTRATED FLOW	554.00	0.046			U				3.45	2.67	
CHANNEL	T2 CHANNEL FLOW	841.00	0.029	0.05		U	9.50	6.60	1.44	6.45	2.17	
										Post-Development Time of Concentration, OB2	23.26	13.95

Post-Development
Drainage Area: OB3

		Flow Length, L (ft)	Slope, s (ft/ft)	Manning's Roughness Coefficient, n	Two-year, 24-hr rainfall, P2 (in)	Paved or Unpaved	Cross Sectional Area of Flow, A (ft^2)	Wetted Perimeter, pw (ft)	Hydraulic radius, r (ft)	Average Velocity, V (ft/s)**	Travel Time, Tt (min)	Lag Time (min)
SHEET	T1 SHEET FLOW	300.00	0.074	0.15	2.10						17.26	
SHALLOW CONCENTRATED	T2 SHALLOW CONCENTRATED FLOW	2436.00	0.034			U				2.97	13.65	
										Post-Development Time of Concentration, OB3	30.91	18.55

Post-Development
Drainage Area: OB4

		Flow Length, L (ft)	Slope, s (ft/ft)	Manning's Roughness Coefficient, n	Two-year, 24-hr rainfall, P2 (in)	Paved or Unpaved	Cross Sectional Area of Flow, A (ft^2)	Wetted Perimeter, pw (ft)	Hydraulic radius, r (ft)	Average Velocity, V (ft/s)**	Travel Time, Tt (min)	Lag Time (min)
SHEET	T1 SHEET FLOW	300.00	0.042	0.15	2.10						21.65	
SHALLOW CONCENTRATED	T2 SHALLOW CONCENTRATED FLOW	783.00	0.038			U				3.16	4.13	
CHANNEL	T2 CHANNEL FLOW	577.00	0.028	0.05		U	9.50	6.60	1.44	6.36	1.51	
										Post-Development Time of Concentration, OB4	27.29	16.38

Post-Development
Drainage Area: OB5

		Flow Length, L (ft)	Slope, s (ft/ft)	Manning's Roughness Coefficient, n	Two-year, 24-hr rainfall, P2 (in)	Paved or Unpaved	Cross Sectional Area of Flow, A (ft^2)	Wetted Perimeter, pw (ft)	Hydraulic radius, r (ft)	Average Velocity, V (ft/s)**	Travel Time, Tt (min)	Lag Time (min)
SHEET	T1 SHEET FLOW	300.00	0.037	0.40	2.10						49.91	
SHALLOW CONCENTRATED	T2 SHALLOW CONCENTRATED FLOW	3838.00	0.033			U				2.93	21.83	
CHANNEL	T2 CHANNEL FLOW	1407.00	0.024	0.04		U	9.50	6.60	1.44	7.36	3.19	
										Post-Development Time of Concentration, OB5	74.93	44.96

Post-Development
Drainage Area: OB6

		Flow Length, L (ft)	Slope, s (ft/ft)	Manning's Roughness Coefficient, n	Two-year, 24-hr rainfall, P2 (in)	Paved or Unpaved	Cross Sectional Area of Flow, A (ft^2)	Wetted Perimeter, pw (ft)	Hydraulic radius, r (ft)	Average Velocity, V (ft/s)**	Travel Time, Tt (min)	Lag Time (min)
SHEET	T1 SHEET FLOW	300.00	0.064	0.40	2.10						40.09	
SHALLOW CONCENTRATED	T2 SHALLOW CONCENTRATED FLOW	2569.00	0.038			U				3.14	13.62	
CHANNEL	T2 CHANNEL FLOW	2110.00	0.027	0.04		U	9.50	6.60	1.44	7.73	4.55	
										Post-Development Time of Concentration, OB6	58.25	34.95

Post-Development
Drainage Area: OB7

		Flow Length, L (ft)	Slope, s (ft/ft)	Manning's Roughness Coefficient, n	Two-year, 24-hr rainfall, P2 (in)	Paved or Unpaved	Cross Sectional Area of Flow, A (ft^2)	Wetted Perimeter, pw (ft)	Hydraulic radius, r (ft)	Average Velocity, V (ft/s)**	Travel Time, Tt (min)	Lag Time (min)
SHEET	T1 SHEET FLOW	300.00	0.028	0.40	2.10						55.80	
SHALLOW CONCENTRATED	T2 SHALLOW CONCENTRATED FLOW	2068.00	0.036			U				3.06	11.26	
CHANNEL	T3 CHANNEL FLOW	6198.00	0.03	0.04		U	12.00	22.00	0.55	4.09	25.29	
										Post-Development Time of Concentration, OB7	92.35	55.41

Post-Development
Drainage Area: OB8

		Flow Length, L (ft)	Slope, s (ft/ft)	Manning's Roughness Coefficient, n	Two-year, 24-hr rainfall, P2 (in)	Paved or Unpaved	Cross Sectional Area of Flow, A (ft^2)	Wetted Perimeter, pw (ft)	Hydraulic radius, r (ft)	Average Velocity, V (ft/s)**	Travel Time, Tt (min)	Lag Time (min)
SHEET	T1 SHEET FLOW	300.00	0.029	0.15	2.10						25.10	
SHALLOW CONCENTRATED	T2 SHALLOW CONCENTRATED FLOW	1117.00	0.043			U				3.34	5.57	
CHANNEL	T2 CHANNEL FLOW	762.00	0.033	0.03		U	9.50	6.60	1.44	11.43	1.11	
										Post-Development Time of Concentration, OB8	31.78	19.07

Post-Development
Drainage Area: PB1

		Flow Length, L (ft)	Slope, s (ft/ft)	Manning's Roughness Coefficient, n	Two-year, 24-hr rainfall, P2 (in)	Paved or Unpaved	Cross Sectional Area of Flow, A (ft^2)	Wetted Perimeter, pw (ft)	Hydraulic radius, r (ft)	Average Velocity, V (ft/s)**	Travel Time, Tt (min)	Lag Time (min)
SHEET	T1 SHEET FLOW	300.00	0.033	0.15	2.10						23.84	
SHALLOW CONCENTRATED	T2 SHALLOW CONCENTRATED FLOW	400.00	0.041			U				3.27	2.04	
										Post-Development Time of Concentration, PB1	25.88	15.53

Post-Development
Drainage Area: PB2

		Flow Length, L (ft)	Slope, s (ft/ft)	Manning's Roughness Coefficient, n	Two-year, 24-hr rainfall, P2 (in)	Paved or Unpaved	Cross Sectional Area of Flow, A (ft^2)	Wetted Perimeter, pw (ft)	Hydraulic radius, r (ft)	Average Velocity, V (ft/s)**	Travel Time, Tt (min)	Lag Time (min)
SHEET	T1 SHEET FLOW	227.00	0.033	0.15	2.10						19.07	
										Post-Development Time of Concentration, PB2	19.07	11.44

Post-Development
Drainage Area: PB3

		Flow Length, L (ft)	Slope, s (ft/ft)	Manning's Roughness Coefficient, n	Two-year, 24-hr rainfall, P2 (in)	Paved or Unpaved	Cross Sectional Area of Flow, A (ft^2)	Wetted Perimeter, pw (ft)	Hydraulic radius, r (ft)	Average Velocity, V (ft/s)**	Travel Time, Tt (min)	Lag Time (min)
SHEET	T3 SHEET FLOW	313.00	0.05	0.15	2.10						21.59	
CHANNEL	T3 CHANNEL FLOW	315.00	0.02	0.03		U	9.00	12.40	0.73	6.08	0.86	
										Post-Development Time of Concentration, PB3	22.46	13.47

Post-Development
Drainage Area: PB4

		Flow Length, L (ft)	Slope, s (ft/ft)	Manning's Roughness Coefficient, n	Two-year, 24-hr rainfall, P2 (in)	Paved or Unpaved	Cross Sectional Area of Flow, A (ft^2)	Wetted Perimeter, pw (ft)	Hydraulic radius, r (ft)	Average Velocity, V (ft/s)**	Travel Time, Tt (min)	Lag Time (min)
MINIMUM TC	T2 MINIMUM TC FLOW										5.00	
										Post-Development Time of Concentration, PB4	5.00	3.00

Kimley»Horn

Post Runoff Analysis
Time of Concentration

Project Information

Project Name: Eagleview
KHA Project #: 196288000
Designed by: DCM Date: 3/17/2022
Revised by: Date:
Checked by: BAH Date: 3/17/2022

Minimum Time of Concentration 5.0 minutes
2YR-24HR Rainfall, P2 2.10

Post-Development
Drainage Area: PB5

		Flow Length, L (ft)	Slope, s (ft/ft)	Manning's Roughness Coefficient, n	Two-year, 24-hr rainfall, P2 (in)	Paved or Unpaved	Cross Sectional Area of Flow, A (ft^2)	Wetted Perimeter, pw (ft)	Hydraulic radius, r (ft)	Average Velocity, V (ft/s)**	Travel Time, Tt (min)	Lag Time (min)
SHEET	T1 SHEET FLOW	300.00	0.021	0.15	2.10						28.56	
SHALLOW CONCENTRATED	T2 SHALLOW CONCENTRATED FLOW	292.00	0.024			U				2.50	1.95	
CHANNEL	T2 CHANNEL FLOW	44.00	0.032	0.03		U	9.50	6.60	1.44	11.33	0.06	
										Post-Development Time of Concentration, PB5	30.58	18.35

Post-Development
Drainage Area: PB6

		Flow Length, L (ft)	Slope, s (ft/ft)	Manning's Roughness Coefficient, n	Two-year, 24-hr rainfall, P2 (in)	Paved or Unpaved	Cross Sectional Area of Flow, A (ft^2)	Wetted Perimeter, pw (ft)	Hydraulic radius, r (ft)	Average Velocity, V (ft/s)**	Travel Time, Tt (min)	Lag Time (min)
SHEET	T1 SHEET FLOW	300.00	0.034	0.15	2.10						23.56	
SHALLOW CONCENTRATED	T2 SHALLOW CONCENTRATED FLOW	650.00	0.036			U				3.06	3.54	
CHANNEL	T2 CHANNEL FLOW	66.00	0.001	0.03		U	9.00	12.40	0.73	1.27	0.87	
										Post-Development Time of Concentration, PB6	27.96	16.78

Post-Development
Drainage Area: PB7

		Flow Length, L (ft)	Slope, s (ft/ft)	Manning's Roughness Coefficient, n	Two-year, 24-hr rainfall, P2 (in)	Paved or Unpaved	Cross Sectional Area of Flow, A (ft^2)	Wetted Perimeter, pw (ft)	Hydraulic radius, r (ft)	Average Velocity, V (ft/s)**	Travel Time, Tt (min)	Lag Time (min)
SHEET	T1 SHEET FLOW	300.00	0.043	0.15	2.10						21.44	
SHALLOW CONCENTRATED	T2 SHALLOW CONCENTRATED FLOW	235.00	0.051			U				3.64	1.08	
CHANNEL	T2 CHANNEL FLOW	539.00	0.035	0.03		U	9.00	12.40	0.73	7.50	1.20	
										Post-Development Time of Concentration, PB7	23.72	14.23

Post-Development
Drainage Area: PB8

		Flow Length, L (ft)	Slope, s (ft/ft)	Manning's Roughness Coefficient, n	Two-year, 24-hr rainfall, P2 (in)	Paved or Unpaved	Cross Sectional Area of Flow, A (ft^2)	Wetted Perimeter, pw (ft)	Hydraulic radius, r (ft)	Average Velocity, V (ft/s)**	Travel Time, Tt (min)	Lag Time (min)
SHEET	T1 SHEET FLOW	17.00	0.018	0.15	2.10						3.06	
SHALLOW CONCENTRATED	T2 SHALLOW CONCENTRATED FLOW	136.00	0.110			U				5.35	0.42	
CHANNEL	T2 CHANNEL FLOW	1445.00	0.031	0.03		U	14.00	34.00	0.41	4.84	4.98	
										Post-Development Time of Concentration, PB8	8.46	5.07

Post-Development
Drainage Area: PB9

		Flow Length, L (ft)	Slope, s (ft/ft)	Manning's Roughness Coefficient, n	Two-year, 24-hr rainfall, P2 (in)	Paved or Unpaved	Cross Sectional Area of Flow, A (ft^2)	Wetted Perimeter, pw (ft)	Hydraulic radius, r (ft)	Average Velocity, V (ft/s)**	Travel Time, Tt (min)	Lag Time (min)
SHEET	T1 SHEET FLOW	300.00	0.060	0.15	2.10						18.77	
SHALLOW CONCENTRATED	T2 SHALLOW CONCENTRATED FLOW	171.00	0.072			U				4.33	0.66	
CHANNEL	T2 CHANNEL FLOW	873.00	0.028	0.03		U	14.00	34.00	0.41	4.60	3.16	
										Post-Development Time of Concentration, PB9	22.59	13.56

Post-Development
Drainage Area: PB10

		Flow Length, L (ft)	Slope, s (ft/ft)	Manning's Roughness Coefficient, n	Two-year, 24-hr rainfall, P2 (in)	Paved or Unpaved	Cross Sectional Area of Flow, A (ft^2)	Wetted Perimeter, pw (ft)	Hydraulic radius, r (ft)	Average Velocity, V (ft/s)**	Travel Time, Tt (min)	Lag Time (min)
SHEET	T1 SHEET FLOW	300.00	0.035	0.15	2.10						23.29	
SHALLOW CONCENTRATED	T2 SHALLOW CONCENTRATED FLOW	395.00	0.034			U				2.97	2.21	
CHANNEL	T2 CHANNEL FLOW	771.00	0.042	0.03		U	14.00	34.00	0.41	5.63	2.28	
										Post-Development Time of Concentration, PB10	27.78	16.67

Post-Development
Drainage Area: PB11

		Flow Length, L (ft)	Slope, s (ft/ft)	Manning's Roughness Coefficient, n	Two-year, 24-hr rainfall, P2 (in)	Paved or Unpaved	Cross Sectional Area of Flow, A (ft^2)	Wetted Perimeter, pw (ft)	Hydraulic radius, r (ft)	Average Velocity, V (ft/s)**	Travel Time, Tt (min)	Lag Time (min)
SHEET	T1 SHEET FLOW	300.00	0.031	0.15	2.10						24.44	
CHANNEL	T2 CHANNEL FLOW	1252.00	0.025	0.03		U	9.50	6.60	1.44	10.01	2.08	
										Post-Development Time of Concentration, PB11	26.53	15.92

Post-Development
Drainage Area: PB12

		Flow Length, L (ft)	Slope, s (ft/ft)	Manning's Roughness Coefficient, n	Two-year, 24-hr rainfall, P2 (in)	Paved or Unpaved	Cross Sectional Area of Flow, A (ft^2)	Wetted Perimeter, pw (ft)	Hydraulic radius, r (ft)	Average Velocity, V (ft/s)**	Travel Time, Tt (min)	Lag Time (min)
MINIMUM TC	T2 MINIMUM TC FLOW										5.00	
										Post-Development Time of Concentration, PB12	5.00	3.00

Post-Development
Drainage Area: PB13

		Flow Length, L (ft)	Slope, s (ft/ft)	Manning's Roughness Coefficient, n	Two-year, 24-hr rainfall, P2 (in)	Paved or Unpaved	Cross Sectional Area of Flow, A (ft^2)	Wetted Perimeter, pw (ft)	Hydraulic radius, r (ft)	Average Velocity, V (ft/s)**	Travel Time, Tt (min)	Lag Time (min)
MINIMUM TC	T2 MINIMUM TC FLOW										5.00	
										Post-Development Time of Concentration, PB13	5.00	3.00

Post-Development
Drainage Area: PB14

		Flow Length, L (ft)	Slope, s (ft/ft)	Manning's Roughness Coefficient, n	Two-year, 24-hr rainfall, P2 (in)	Paved or Unpaved	Cross Sectional Area of Flow, A (ft^2)	Wetted Perimeter, pw (ft)	Hydraulic radius, r (ft)	Average Velocity, V (ft/s)**	Travel Time, Tt (min)	Lag Time (min)
SHEET	T1 SHEET FLOW	40.00	0.085	0.013	2.10						0.46	
CHANNEL	T2 CHANNEL FLOW	244.00	0.060	0.03		U	9.00	12.40	0.73	9.82	0.41	
CHANNEL	T2 CHANNEL FLOW	1123.00	0.014	0.03		U	14.00	34.00	0.41	3.25	5.76	
										Post-Development Time of Concentration, PB14	6.63	3.98

Post-Development
Drainage Area: PB15

		Flow Length, L (ft)	Slope, s (ft/ft)	Manning's Roughness Coefficient, n	Two-year, 24-hr rainfall, P2 (in)	Paved or Unpaved	Cross Sectional Area of Flow, A (ft^2)	Wetted Perimeter, pw (ft)	Hydraulic radius, r (ft)	Average Velocity, V (ft/s)**	Travel Time, Tt (min)	Lag Time (min)
MINIMUM TC	T2 MINIMUM TC FLOW										5.00	
										Post-Development Time of Concentration, PB15	5.00	3.00

Kimley»Horn

Post Runoff Analysis
Composite CN

Project Name: Eagleview
KHA Project #: 196288000
Designed by: DCM Date: 3/17/2022
Revised by: Date:
Revised by: Date:
Checked by: BAH Date: 3/17/2022

Post-Development

Drainage Area: *OB1*

COVER DESCRIPTION	HYDROLOGIC CONDITION OR COVER TYPE	HYDROLOGIC SOIL GROUP	SCS CURVE NUMBER (CN)	AREA, A (ac.)	INITIAL ABSTRACTION, IA
RESIDENTIAL	RR-5 (Rangeland Landuse)	B	62.00	9.79	--
IMPERVIOUS	Paved; curbs and storm sewers (excluding right-of-way)	B	98.00	0.38	--
IMPERVIOUS	Gravel (including right of way)	B	85.00	0.20	--
CUTSOM					
COMPOSITE SCS CURVE NUMBER - OB1		**63.76**		10.37	0.569

Post-Development

Drainage Area: *OB2*

COVER DESCRIPTION	HYDROLOGIC CONDITION OR COVER TYPE	HYDROLOGIC SOIL GROUP	SCS CURVE NUMBER (CN)	AREA, A (ac.)	INITIAL ABSTRACTION, IA
RESIDENTIAL	RR-5 (Rangeland Landuse)	B	62.00	25.92	--
IMPERVIOUS	Paved; curbs and storm sewers (excluding right-of-way)	B	98.00	0.86	--
IMPERVIOUS	Gravel (including right of way)	B	85.00	1.28	--
CUTSOM					
COMPOSITE SCS CURVE NUMBER - OB2		**64.16**		28.06	0.559

Post-Development

Drainage Area: *OB3*

COVER DESCRIPTION	HYDROLOGIC CONDITION OR COVER TYPE	HYDROLOGIC SOIL GROUP	SCS CURVE NUMBER (CN)	AREA, A (ac.)	INITIAL ABSTRACTION, IA
RESIDENTIAL	RR-5 (Rangeland Landuse)	B	62.00	40.88	--
IMPERVIOUS	Paved; curbs and storm sewers (excluding right-of-way)	B	98.00	0.89	--
IMPERVIOUS	Gravel (including right of way)	B	85.00	1.67	--
CUTSOM					
COMPOSITE SCS CURVE NUMBER - OB3		**63.62**		43.44	0.572

Post-Development

Drainage Area: *OB4*

COVER DESCRIPTION	HYDROLOGIC CONDITION OR COVER TYPE	HYDROLOGIC SOIL GROUP	SCS CURVE NUMBER (CN)	AREA, A (ac.)	INITIAL ABSTRACTION, IA
RESIDENTIAL	RR-5 (Rangeland Landuse)	B	62.00	9.55	--
IMPERVIOUS	Paved; curbs and storm sewers (excluding right-of-way)	B	98.00	0.52	--
IMPERVIOUS	Gravel (including right of way)	B	85.00	0.43	--
CUTSOM					
COMPOSITE SCS CURVE NUMBER - OB4		**64.71**		10.50	0.545

Post-Development

Drainage Area: *OB5*

COVER DESCRIPTION	HYDROLOGIC CONDITION OR COVER TYPE	HYDROLOGIC SOIL GROUP	SCS CURVE NUMBER (CN)	AREA, A (ac.)	INITIAL ABSTRACTION, IA
RESIDENTIAL	RR-5 (Rangeland Landuse)	B	62.00	28.58	--
RESIDENTIAL	RR-5 (Woods Landuse)	B	58.00	109.48	--
IMPERVIOUS	Paved; curbs and storm sewers (excluding right-of-way)	B	98.00	1.12	--
IMPERVIOUS	Gravel (including right of way)	B	85.00	4.64	--
CUTSOM					
COMPOSITE SCS CURVE NUMBER - OB5		**59.98**		143.82	0.667

Post-Development

Drainage Area: *OB6*

COVER DESCRIPTION	HYDROLOGIC CONDITION OR COVER TYPE	HYDROLOGIC SOIL GROUP	SCS CURVE NUMBER (CN)	AREA, A (ac.)	INITIAL ABSTRACTION, IA
RESIDENTIAL	RR-5 (Rangeland Landuse)	B	62.00	60.64	--
RESIDENTIAL	RR-5 (Woods Landuse)	B	58.00	51.19	--
IMPERVIOUS	Paved; curbs and storm sewers (excluding right-of-way)	B	98.00	2.04	--
IMPERVIOUS	Gravel (including right of way)	B	85.00	4.53	--
CUTSOM					
COMPOSITE SCS CURVE NUMBER - OB6		**61.77**		118.40	0.619

Kimley»Horn

Post Runoff Analysis

Composite CN

Project Name: Eagleview
KHA Project #: 196288000
Designed by: DCM Date: 3/17/2022
Revised by: Date:
Revised by: Date:
Checked by: BAH Date: 3/17/2022

Post-Development

Drainage Area: *OB7*

COVER DESCRIPTION	HYDROLOGIC CONDITION OR COVER TYPE	HYDROLOGIC SOIL GROUP	SCS CURVE NUMBER (CN)	AREA, A (ac.)	INITIAL ABSTRACTION, IA
RESIDENTIAL	RR-5 (Rangeland Landuse)	B	62.00	122.08	--
RESIDENTIAL	RR-5 (Woods Landuse)	B	58.00	259.48	--
RESIDENTIAL	2.5 acre	B	64.00	16.02	--
IMPERVIOUS	Paved; curbs and storm sewers (excluding right-of-way)	B	98.00	5.46	--
IMPERVIOUS	Gravel (including right of way)	B	85.00	18.17	--
CUTSOM					
COMPOSITE SCS CURVE NUMBER - OB7		**61.07**		421.20	0.637

Post-Development

Drainage Area: *OB8*

COVER DESCRIPTION	HYDROLOGIC CONDITION OR COVER TYPE	HYDROLOGIC SOIL GROUP	SCS CURVE NUMBER (CN)	AREA, A (ac.)	INITIAL ABSTRACTION, IA
RESIDENTIAL	RR-5 (Rangeland Landuse)	B	62.00	8.71	--
RESIDENTIAL	2.5 acre	B	64.00	21.76	--
RESIDENTIAL	1/2 acre (25% imp.)	B	71.00	0.79	--
IMPERVIOUS	Paved; curbs and storm sewers (excluding right-of-way)	B	98.00	0.24	--
IMPERVIOUS	Gravel (including right of way)	B	85.00	1.57	--
CUTSOM					
COMPOSITE SCS CURVE NUMBER - OB8		**64.89**		33.07	0.541

Post-Development

Drainage Area: *PB1*

COVER DESCRIPTION	HYDROLOGIC CONDITION OR COVER TYPE	HYDROLOGIC SOIL GROUP	SCS CURVE NUMBER (CN)	AREA, A (ac.)	INITIAL ABSTRACTION, IA
RESIDENTIAL	2.5 acre	B	64.00	4.19	--
IMPERVIOUS	Paved; open ditches (including right-of-way)	B	89.00	0.06	--
CUTSOM					
COMPOSITE SCS CURVE NUMBER - PB1		**64.35**		4.25	0.554

Post-Development

Drainage Area: *PB2*

COVER DESCRIPTION	HYDROLOGIC CONDITION OR COVER TYPE	HYDROLOGIC SOIL GROUP	SCS CURVE NUMBER (CN)	AREA, A (ac.)	INITIAL ABSTRACTION, IA
RESIDENTIAL	2.5 acre	B	64.00	1.02	--
IMPERVIOUS	Paved; open ditches (including right-of-way)	B	89.00	0.06	--
CUTSOM					
COMPOSITE SCS CURVE NUMBER - PB2		**65.38**		1.08	0.530

Post-Development

Drainage Area: *PB3*

COVER DESCRIPTION	HYDROLOGIC CONDITION OR COVER TYPE	HYDROLOGIC SOIL GROUP	SCS CURVE NUMBER (CN)	AREA, A (ac.)	INITIAL ABSTRACTION, IA
RESIDENTIAL	2.5 acre	B	64.00	1.18	--
IMPERVIOUS	Paved; open ditches (including right-of-way)	B	89.00	0.20	--
CUTSOM					
COMPOSITE SCS CURVE NUMBER - PB3		**67.68**		1.38	0.478

Post-Development

Drainage Area: *PB4*

COVER DESCRIPTION	HYDROLOGIC CONDITION OR COVER TYPE	HYDROLOGIC SOIL GROUP	SCS CURVE NUMBER (CN)	AREA, A (ac.)	INITIAL ABSTRACTION, IA
RESIDENTIAL	2.5 acre	B	64.00	10.18	--
IMPERVIOUS	Paved; open ditches (including right-of-way)	B	89.00	0.35	--
CUTSOM					
COMPOSITE SCS CURVE NUMBER - PB4		**64.84**		10.54	0.542

Post-Development

Drainage Area: *PB5*

COVER DESCRIPTION	HYDROLOGIC CONDITION OR COVER TYPE	HYDROLOGIC SOIL GROUP	SCS CURVE NUMBER (CN)	AREA, A (ac.)	INITIAL ABSTRACTION, IA
RESIDENTIAL	2.5 acre	B	64.00	6.01	--
IMPERVIOUS	Paved; open ditches (including right-of-way)	B	89.00	0.17	--
CUTSOM					
COMPOSITE SCS CURVE NUMBER - PB5		**64.70**		6.18	0.546

Kimley»Horn

Post Runoff Analysis
Composite CN

Project Name:	Eagleview		
KHA Project #:	196288000		
Designed by:	DCM	Date:	3/17/2022
Revised by:		Date:	
Revised by:		Date:	
Checked by:	BAH	Date:	3/17/2022

Post-Development

Drainage Area: *PB6*

COVER DESCRIPTION	HYDROLOGIC CONDITION OR COVER TYPE	HYDROLOGIC SOIL GROUP	SCS CURVE NUMBER (CN)	AREA, A (ac.)	INITIAL ABSTRACTION, IA
RESIDENTIAL	2.5 acre	B	64.00	10.50	--
IMPERVIOUS	Paved; open ditches (including right-of-way)	B	89.00	0.59	--
CUTSOM					
COMPOSITE SCS CURVE NUMBER - PB6		**65.33**		11.09	0.531

Post-Development

Drainage Area: *PB7*

COVER DESCRIPTION	HYDROLOGIC CONDITION OR COVER TYPE	HYDROLOGIC SOIL GROUP	SCS CURVE NUMBER (CN)	AREA, A (ac.)	INITIAL ABSTRACTION, IA
RESIDENTIAL	2.5 acre	B	64.00	5.28	--
IMPERVIOUS	Paved; open ditches (including right-of-way)	B	89.00	0.31	--
CUTSOM					
COMPOSITE SCS CURVE NUMBER - PB7		**65.38**		5.59	0.530

Post-Development

Drainage Area: *PB8*

COVER DESCRIPTION	HYDROLOGIC CONDITION OR COVER TYPE	HYDROLOGIC SOIL GROUP	SCS CURVE NUMBER (CN)	AREA, A (ac.)	INITIAL ABSTRACTION, IA
RESIDENTIAL	2.5 acre	B	64.00	11.72	--
IMPERVIOUS	Paved; open ditches (including right-of-way)	B	89.00	0.06	--
CUTSOM					
COMPOSITE SCS CURVE NUMBER - PB8		**64.13**		11.78	0.559

Post-Development

Drainage Area: *PB9*

COVER DESCRIPTION	HYDROLOGIC CONDITION OR COVER TYPE	HYDROLOGIC SOIL GROUP	SCS CURVE NUMBER (CN)	AREA, A (ac.)	INITIAL ABSTRACTION, IA
RESIDENTIAL	2.5 acre	B	64.00	12.60	--
IMPERVIOUS	Paved; open ditches (including right-of-way)	B	89.00	0.20	--
CUTSOM					
COMPOSITE SCS CURVE NUMBER - PB9		**64.39**		12.80	0.553

Post-Development

Drainage Area: *PB10*

COVER DESCRIPTION	HYDROLOGIC CONDITION OR COVER TYPE	HYDROLOGIC SOIL GROUP	SCS CURVE NUMBER (CN)	AREA, A (ac.)	INITIAL ABSTRACTION, IA
RESIDENTIAL	2.5 acre	B	64.00	11.25	--
IMPERVIOUS	Paved; open ditches (including right-of-way)	B	89.00	0.26	--
CUTSOM					
COMPOSITE SCS CURVE NUMBER - PB10		**64.57**		11.52	0.549

Post-Development

Drainage Area: *PB11*

COVER DESCRIPTION	HYDROLOGIC CONDITION OR COVER TYPE	HYDROLOGIC SOIL GROUP	SCS CURVE NUMBER (CN)	AREA, A (ac.)	INITIAL ABSTRACTION, IA
RESIDENTIAL	2.5 acre	B	64.00	15.60	--
IMPERVIOUS	Paved; open ditches (including right-of-way)	B	89.00	0.51	--
CUTSOM					
COMPOSITE SCS CURVE NUMBER - PB11		**64.80**		16.11	0.543

Post-Development

Drainage Area: *PB12*

COVER DESCRIPTION	HYDROLOGIC CONDITION OR COVER TYPE	HYDROLOGIC SOIL GROUP	SCS CURVE NUMBER (CN)	AREA, A (ac.)	INITIAL ABSTRACTION, IA
RESIDENTIAL	2.5 acre	B	64.00	0.10	--
IMPERVIOUS	Paved; open ditches (including right-of-way)	B	89.00	0.10	--
CUTSOM					
COMPOSITE SCS CURVE NUMBER - PB12		**76.50**		0.20	0.307

Kimley»Horn

Post Runoff Analysis

Composite CN

Project Name:	Eagleview		
KHA Project #:	196288000		
Designed by:	DCM	Date:	3/17/2022
Revised by:		Date:	
Revised by:		Date:	
Checked by:	BAH	Date:	3/17/2022

Post-Development					
Drainage Area: *PB13*					
COVER DESCRIPTION	**HYDROLOGIC CONDITION OR COVER TYPE**	**HYDROLOGIC SOIL GROUP**	**SCS CURVE NUMBER (CN)**	**AREA, A (ac.)**	**INITIAL ABSTRACTION, IA**
RESIDENTIAL	2.5 acre	B	64.00	1.68	--
IMPERVIOUS	Paved; open ditches (including right-of-way)	B	89.00	0.08	--
CUTSOM					
COMPOSITE SCS CURVE NUMBER - PB13		**65.12**		1.76	0.536

Post-Development					
Drainage Area: *PB14*					
COVER DESCRIPTION	**HYDROLOGIC CONDITION OR COVER TYPE**	**HYDROLOGIC SOIL GROUP**	**SCS CURVE NUMBER (CN)**	**AREA, A (ac.)**	**INITIAL ABSTRACTION, IA**
RESIDENTIAL	2.5 acre	A	45.00	0.28	--
RESIDENTIAL	2.5 acre	B	64.00	16.54	--
IMPERVIOUS	Paved; open ditches (including right-of-way)	B	89.00	0.46	--
CUTSOM					
COMPOSITE SCS CURVE NUMBER - PB14		**63.64**		17.28	0.571

Post-Development					
Drainage Area: *PB15*					
COVER DESCRIPTION	**HYDROLOGIC CONDITION OR COVER TYPE**	**HYDROLOGIC SOIL GROUP**	**SCS CURVE NUMBER (CN)**	**AREA, A (ac.)**	**INITIAL ABSTRACTION, IA**
RESIDENTIAL	2.5 acre	A	45.00	0.61	--
RESIDENTIAL	2.5 acre	B	64.00	8.38	--
IMPERVIOUS	Paved; open ditches (including right-of-way)	B	89.00	0.65	--
CUTSOM					
COMPOSITE SCS CURVE NUMBER - PB15		**61.65**		9.63	0.622

Project: Eagleview_Subdivision Simulation Run: EV 5-yr Pr. Type II

Start of Run: 01Oct2021, 00:00 Basin Model: Eagleview_Proposed
End of Run: 02Oct2021, 00:00 Meteorologic Model: 5-yr Type II
Compute Time: 14Mar2022, 16:43:16 Control Specifications: 24-hr Storm

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (AC-FT)
CULV1	0.0021625	1.5	01Oct2021, 12:08	0.1
CULV4	0.0087281	4.7	01Oct2021, 12:08	0.4
CULV5	.000315625	0.5	01Oct2021, 12:00	0.0
OB1	0.0162031	7.1	01Oct2021, 12:08	0.7
OB2	0.0438438	20.6	01Oct2021, 12:08	1.9
OB3	0.0678750	25.3	01Oct2021, 12:13	2.8
OB4	0.0164062	7.5	01Oct2021, 12:10	0.8
OB5	0.22472	36.8	01Oct2021, 12:42	7.4
OB6	0.18501	42.1	01Oct2021, 12:30	7.0
OB7	0.65812	101.4	01Oct2021, 12:53	23.3
OB8	0.0516699	19.0	01Oct2021, 12:13	2.1
P1	0.0228484	10.1	01Oct2021, 12:10	1.0
P10 (CULV2)	0.15425	57.9	01Oct2021, 12:13	6.7
P11 (CULV3)	0.0260593	13.2	01Oct2021, 12:10	1.3
P12 (CULV8)	1.1270	131.8	01Oct2021, 13:19	33.3
P2	0.19753	74.1	01Oct2021, 12:14	8.9
P3	1.2312	137.9	01Oct2021, 13:19	37.8
P4	0.18248	72.2	01Oct2021, 12:13	8.1
P5 (CULV7)	0.0939437	36.8	01Oct2021, 12:13	4.0
P6	0.0771621	29.9	01Oct2021, 12:15	3.3
P7	1.1242	131.7	01Oct2021, 13:18	33.2
P8	1.1062	173.4	01Oct2021, 12:46	39.3
P9 (CULV6)	0.0768465	29.8	01Oct2021, 12:14	3.3
PB1	0.0066453	3.0	01Oct2021, 12:10	0.3
PB10	0.0179938	8.2	01Oct2021, 12:11	0.8
PB11	0.0251766	12.1	01Oct2021, 12:10	1.2

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (AC-FT)
PB12	.000315625	0.5	01Oct2021, 12:00	0.0
PB13	0.0027469	2.2	01Oct2021, 12:00	0.1
PB14	0.0270031	18.9	01Oct2021, 12:01	1.2
PB15	0.0150500	11.0	01Oct2021, 12:00	0.7
PB2	0.0016938	1.0	01Oct2021, 12:06	0.1
PB3	0.0021625	1.5	01Oct2021, 12:07	0.1
PB4	0.0164672	12.6	01Oct2021, 12:00	0.8
PB5	0.0096625	4.2	01Oct2021, 12:12	0.5
PB6	0.0173312	8.6	01Oct2021, 12:11	0.9
PB7	0.0087281	4.7	01Oct2021, 12:08	0.4
PB8	0.0184000	12.1	01Oct2021, 12:01	0.8
PB9	0.0199984	9.8	01Oct2021, 12:08	0.9
R-OB1	0.0162031	7.1	01Oct2021, 12:10	0.7
R-OB2	0.0438438	20.5	01Oct2021, 12:10	1.9
R-OB4-A	0.0842812	32.6	01Oct2021, 12:13	3.5
R-OB4-B	0.0939437	36.7	01Oct2021, 12:15	4.0
R-OB7	1.0678	170.1	01Oct2021, 12:46	37.6
R-OB8	0.0516699	19.0	01Oct2021, 12:16	2.1
R-PB10	1.1242	131.6	01Oct2021, 13:19	33.2
R-PB11	0.0768465	29.8	01Oct2021, 12:15	3.3
R-PB12-A	.000315625	0.5	01Oct2021, 12:02	0.0
R-PB12-B	0.0771621	29.9	01Oct2021, 12:17	3.3
R-PB13	1.1270	131.7	01Oct2021, 13:21	33.2
R-PB3	0.0021625	1.5	01Oct2021, 12:09	0.1
R-PB5	0.15425	57.9	01Oct2021, 12:14	6.7
R-PB7-A	0.0087281	4.7	01Oct2021, 12:10	0.4
R-PB7-B	0.0260593	13.2	01Oct2021, 12:12	1.3
R-PB7-C	0.18248	72.1	01Oct2021, 12:14	8.1
R-PB9	1.1062	173.3	01Oct2021, 12:47	39.3

Project: Eagleview_Subdivision Simulation Run: EV 100-yr Pr. Type II

Start of Run: 01Oct2021, 00:00 Basin Model: Eagleview_Proposed
End of Run: 02Oct2021, 00:00 Meteorologic Model: 100-yr Type II
Compute Time: 15Mar2022, 09:38:27 Control Specifications: 24-hr Storm

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (AC-FT)
CULV1	0.0021625	3.3	01Oct2021, 12:07	0.3
CULV4	0.0087281	11.3	01Oct2021, 12:08	1.0
CULV5	.000315625	0.9	01Oct2021, 12:00	0.1
OB1	0.0162031	18.8	01Oct2021, 12:08	1.7
OB2	0.0438438	52.7	01Oct2021, 12:08	4.7
OB3	0.0678750	67.1	01Oct2021, 12:12	6.9
OB4	0.0164062	18.9	01Oct2021, 12:10	1.8
OB5	0.22472	106.9	01Oct2021, 12:40	19.7
OB6	0.18501	114.9	01Oct2021, 12:29	17.8
OB7	0.65812	284.3	01Oct2021, 12:52	60.6
OB8	0.0516699	51.0	01Oct2021, 12:13	5.3
P1	0.0228484	26.4	01Oct2021, 12:09	2.4
P10 (CULV2)	0.15425	150.1	01Oct2021, 12:12	16.4
P11 (CULV3)	0.0260593	31.9	01Oct2021, 12:10	3.1
P12 (CULV8)	1.1270	420.3	01Oct2021, 13:06	96.8
P2	0.19753	189.1	01Oct2021, 12:13	21.4
P3	1.2312	437.7	01Oct2021, 13:07	107.9
P4	0.18248	184.6	01Oct2021, 12:12	19.8
P5 (CULV7)	0.0939437	95.9	01Oct2021, 12:13	9.8
P6	0.0771621	78.5	01Oct2021, 12:14	8.2
P7	1.1242	420.1	01Oct2021, 13:05	96.5
P8	1.1062	486.7	01Oct2021, 12:44	102.2
P9 (CULV6)	0.0768465	78.4	01Oct2021, 12:13	8.2
PB1	0.0066453	7.7	01Oct2021, 12:09	0.7
PB10	0.0179938	20.4	01Oct2021, 12:10	2.0
PB11	0.0251766	29.8	01Oct2021, 12:10	2.9

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (AC-FT)
PB12	.000315625	0.9	01Oct2021, 12:00	0.1
PB13	0.0027469	5.1	01Oct2021, 12:00	0.3
PB14	0.0270031	46.3	01Oct2021, 12:01	2.9
PB15	0.0150500	26.3	01Oct2021, 12:00	1.7
PB2	0.0016938	2.4	01Oct2021, 12:06	0.2
PB3	0.0021625	3.3	01Oct2021, 12:07	0.3
PB4	0.0164672	30.2	01Oct2021, 12:00	1.9
PB5	0.0096625	10.4	01Oct2021, 12:12	1.1
PB6	0.0173312	20.7	01Oct2021, 12:10	2.0
PB7	0.0087281	11.4	01Oct2021, 12:08	1.0
PB8	0.0184000	30.4	01Oct2021, 12:01	2.0
PB9	0.0199984	24.8	01Oct2021, 12:07	2.2
R-OB1	0.0162031	18.7	01Oct2021, 12:09	1.7
R-OB2	0.0438438	52.5	01Oct2021, 12:09	4.7
R-OB4-A	0.0842812	85.5	01Oct2021, 12:13	8.8
R-OB4-B	0.0939437	95.8	01Oct2021, 12:14	9.8
R-OB7	1.0678	479.0	01Oct2021, 12:44	98.1
R-OB8	0.0516699	50.9	01Oct2021, 12:15	5.3
R-PB10	1.1242	420.0	01Oct2021, 13:06	96.5
R-PB11	0.0768465	78.3	01Oct2021, 12:14	8.2
R-PB12-A	.000315625	0.9	01Oct2021, 12:02	0.1
R-PB12-B	0.0771621	78.4	01Oct2021, 12:15	8.2
R-PB13	1.1270	420.1	01Oct2021, 13:07	96.7
R-PB3	0.0021625	3.3	01Oct2021, 12:09	0.3
R-PB5	0.15425	150.0	01Oct2021, 12:13	16.4
R-PB7-A	0.0087281	11.3	01Oct2021, 12:09	1.0
R-PB7-B	0.0260593	31.9	01Oct2021, 12:11	3.1
R-PB7-C	0.18248	184.4	01Oct2021, 12:13	19.8
R-PB9	1.1062	486.6	01Oct2021, 12:44	102.2

TypicalChannel

Project Description	
Friction Method	Manning Formula
Solve For	Discharge

Input Data		
Roughness Coefficient	0.030	
Channel Slope	0.025	ft/ft
Normal Depth	24.0	in
Left Side Slope	1.300	H:V
Right Side Slope	1.300	H:V

Results		
Discharge	34.88	cfs
Flow Area	5.2	ft²
Wetted Perimeter	6.6	ft
Hydraulic Radius	9.5	in
Top Width	5.20	ft
Critical Depth	25.7	in
Critical Slope	0.017	ft/ft
Velocity	6.71	ft/s
Velocity Head	0.70	ft
Specific Energy	2.70	ft
Froude Number	1.183	
Flow Type	Supercritical	

Label what these cross-sections are for and stabilization needed

GVF Input Data		
Downstream Depth	0.0	in
Length	0.0	ft
Number Of Steps	0	

GVF Output Data		
Upstream Depth	0.0	in
Profile Description	N/A	
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	24.0	in
Critical Depth	25.7	in
Channel Slope	0.025	ft/ft
Critical Slope	0.017	ft/ft

Worksheet for Typical Ditch

Project Description	
Friction Method	Manning Formula
Solve For	Discharge

Input Data		
Roughness Coefficient	0.030	
Channel Slope	0.025	ft/ft
Normal Depth	18.0	in
Left Side Slope	4.000	H:V
Right Side Slope	4.000	H:V

Results		
Discharge	57.02	cfs
Flow Area	9.0	ft²
Wetted Perimeter	12.4	ft
Hydraulic Radius	8.7	in
Top Width	12.00	ft
Critical Depth	19.9	in
Critical Slope	0.015	ft/ft
Velocity	6.34	ft/s
Velocity Head	0.62	ft
Specific Energy	2.12	ft
Froude Number	1.290	
Flow Type	Supercritical	

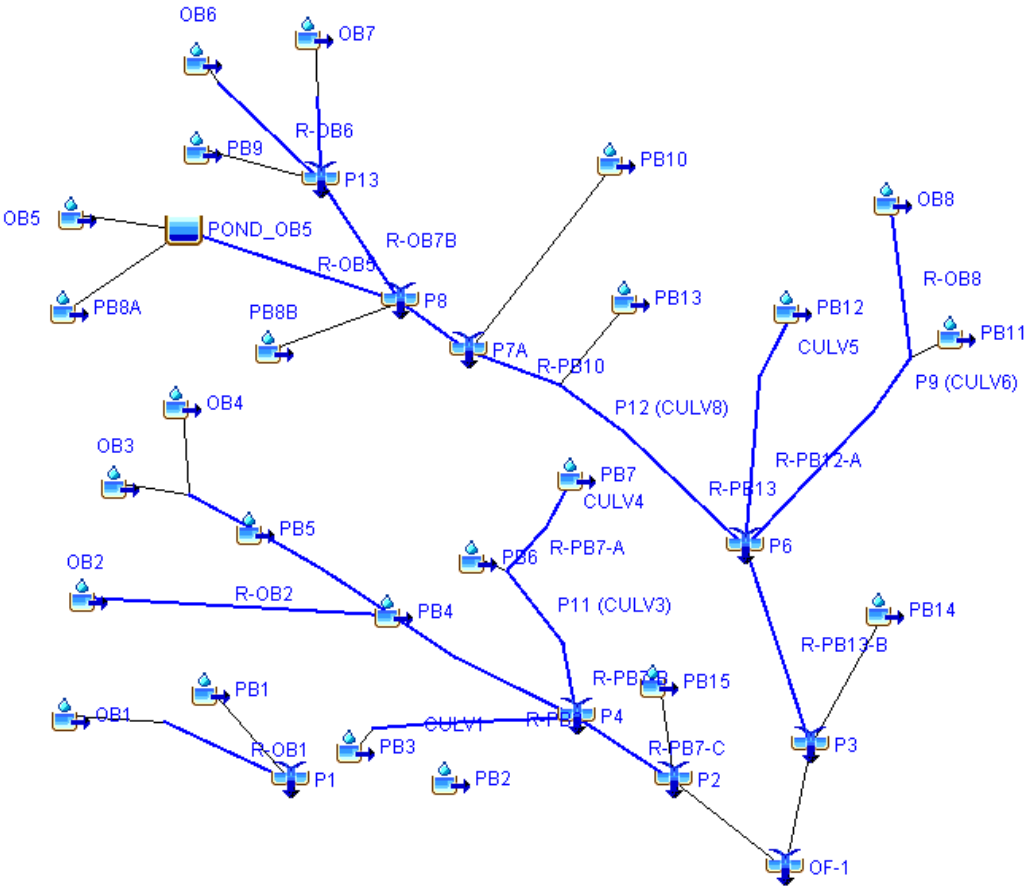
Label what these cross-sections are for and stabilization needed

GVF Input Data		
Downstream Depth	0.0	in
Length	0.0	ft
Number Of Steps	0	

GVF Output Data		
Upstream Depth	0.0	in
Profile Description	N/A	
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	18.0	in
Critical Depth	19.9	in
Channel Slope	0.025	ft/ft
Critical Slope	0.015	ft/ft

Proposed Conditions Hydrology (Revised)

Proposed Conditions HEC-HMS (Includes sub regional detention Pond_OB5)



Project: Eagleview_Subdivision_Update Simulation Run: Pr

Start of Run: 01Oct2021, 00:00 Basin Model:

End of Run: 02Oct2021, 00:00 Meteorologic Model:

Compute Time: 12Oct2023, 09:44:12 Control Specifications:

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (AC-FT)
OB7	0.65812	284.3	01Oct2021, 12:52	60.6
R-OB7A	0.65812	284.3	01Oct2021, 12:53	60.5
OB6	0.18501	113.3	01Oct2021, 12:29	17.5
R-OB6	0.18501	113.3	01Oct2021, 12:30	17.5
PB9	0.0199984	24.8	01Oct2021, 12:07	2.2
P13	0.86313	375.0	01Oct2021, 12:44	80.3
R-OB7B	0.86313	374.9	01Oct2021, 12:45	80.2
OB5	0.22472	107.1	01Oct2021, 12:40	19.8
PB8A	0.0115600	19.3	01Oct2021, 12:01	1.3
POND_OB5	0.23628	100.6	01Oct2021, 12:52	20.0
R-OB5	0.23628	100.6	01Oct2021, 12:55	20.0
PB8B	0.0093900	15.5	01Oct2021, 12:01	1.0
P8	1.1088	473.9	01Oct2021, 12:47	101.2
R-PB9	1.1088	473.9	01Oct2021, 12:48	101.2
PB10	0.0180156	20.4	01Oct2021, 12:10	2.0
P7A	1.1268	478.3	01Oct2021, 12:48	103.2
R-PB10	1.1268	478.3	01Oct2021, 12:48	103.2
PB13	0.0060438	10.9	01Oct2021, 12:00	0.7
P12 (CULV8)	1.1329	479.2	01Oct2021, 12:48	103.9
R-PB13	1.1329	479.2	01Oct2021, 12:48	103.8
OB8	0.0516742	51.6	01Oct2021, 12:13	5.4
R-OB8	0.0516742	51.6	01Oct2021, 12:15	5.4
PB11	0.0251766	29.8	01Oct2021, 12:10	2.9
P9 (CULV6)	0.0768508	79.1	01Oct2021, 12:13	8.2
R-PB11	0.0768508	79.0	01Oct2021, 12:14	8.2

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (AC-FT)
PB12	.000315625	0.9	01Oct2021, 12:00	0.1
CULV5	.000315625	0.9	01Oct2021, 12:00	0.1
R-PB12-A	.000315625	0.9	01Oct2021, 12:02	0.1
P6	1.2100	501.7	01Oct2021, 12:46	112.1
R-PB13-B	1.2100	501.6	01Oct2021, 12:47	112.1
PB14	0.0270031	46.3	01Oct2021, 12:01	2.9
P3	1.2370	506.2	01Oct2021, 12:47	115.0
OB3	0.0678750	67.2	01Oct2021, 12:12	7.0
OB4	0.0164062	18.9	01Oct2021, 12:10	1.8
R-OB4-A	0.0842812	85.7	01Oct2021, 12:13	8.8
PB5	0.0096625	10.4	01Oct2021, 12:12	1.1
P5 (CULV7)	0.0939437	96.1	01Oct2021, 12:13	9.9
R-OB4-B	0.0939437	95.9	01Oct2021, 12:14	9.8
OB2	0.0438438	52.7	01Oct2021, 12:08	4.7
R-OB2	0.0438438	52.5	01Oct2021, 12:09	4.7
PB4	0.0164672	30.2	01Oct2021, 12:00	1.9
P10 (CULV2)	0.15425	150.2	01Oct2021, 12:12	16.4
R-PB5	0.15425	150.1	01Oct2021, 12:13	16.4
PB6	0.0173312	20.7	01Oct2021, 12:10	2.0
PB7	0.0054094	7.4	01Oct2021, 12:08	0.7
CULV4	0.0054094	7.4	01Oct2021, 12:08	0.7
R-PB7-A	0.0054094	7.4	01Oct2021, 12:09	0.7
P11 (CULV3)	0.0227406	28.0	01Oct2021, 12:10	2.7
R-PB7-B	0.0227406	27.9	01Oct2021, 12:11	2.7
PB3	0.0021625	3.3	01Oct2021, 12:07	0.3
CULV1	0.0021625	3.3	01Oct2021, 12:07	0.3
R-PB3	0.0021625	3.3	01Oct2021, 12:09	0.3
P4	0.17916	180.8	01Oct2021, 12:12	19.4
R-PB7-C	0.17916	180.8	01Oct2021, 12:13	19.4
PB15	0.0150500	26.3	01Oct2021, 12:00	1.7
P2	0.19421	185.4	01Oct2021, 12:13	21.1

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (AC-FT)
OF-1	1.4312	562.3	01Oct2021, 12:42	136.1
OB1	0.0162031	18.8	01Oct2021, 12:08	1.7
R-OB1	0.0162031	18.7	01Oct2021, 12:09	1.7
PB1	0.0066453	7.7	01Oct2021, 12:09	0.7
P1	0.0228484	26.4	01Oct2021, 12:09	2.4
PB2	0.0016935	2.4	01Oct2021, 12:06	0.2

Project: Eagleview_Subdivision_Update

Simulation Run: Proposed_PondOB5 Reservoir: POND_OB5

Start of Run:	01Oct2021, 00:00	Basin Model:	Eagleview_Proposed_OB5_Pond
End of Run:	02Oct2021, 00:00	Meteorologic Model:	100-yr Type II
Compute Time:	12Oct2023, 09:44:12	Control Specifications:	24-hr Storm

Volume Units: AC-FT

Computed Results

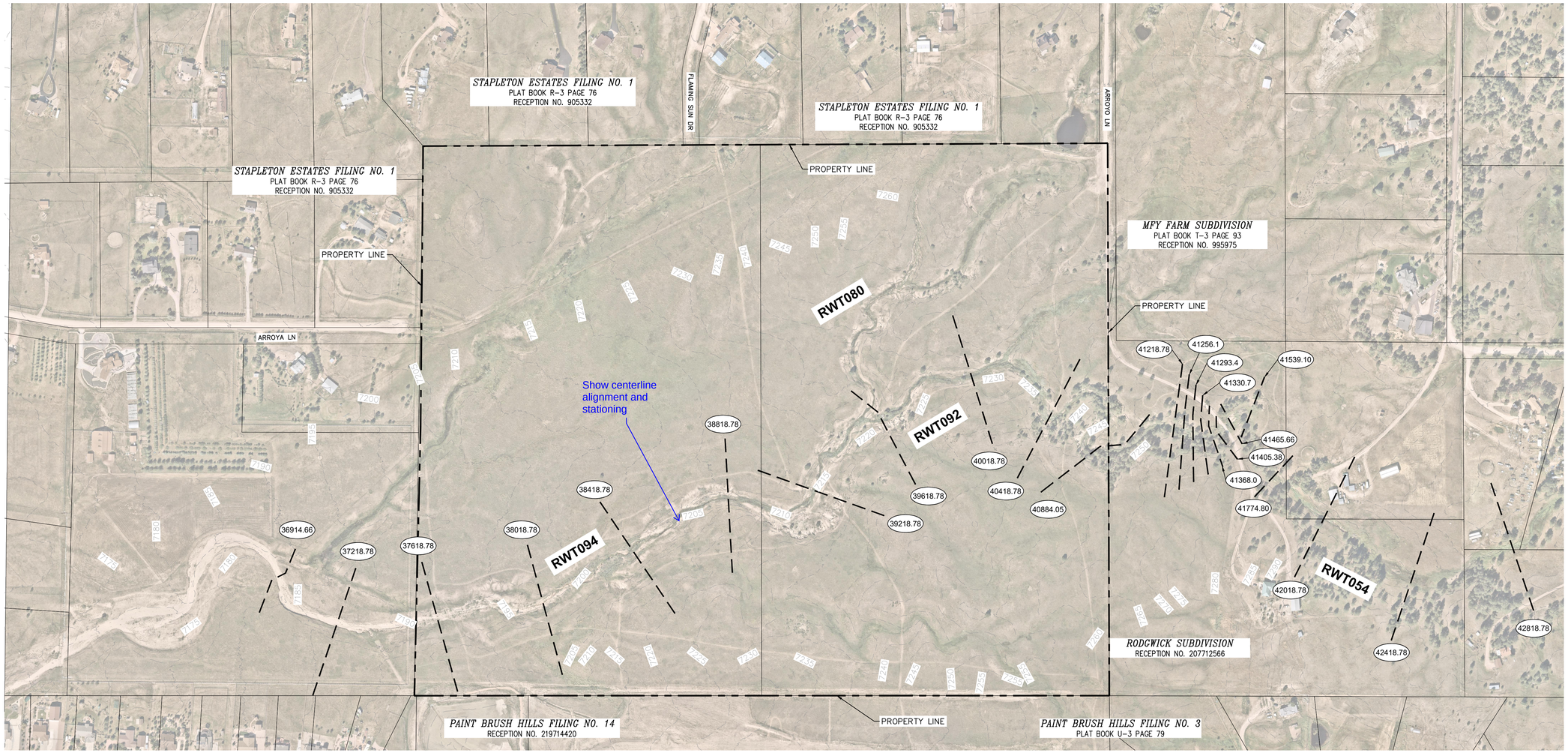
Peak Inflow :	109.2 (CFS)	Date/Time of Peak Inflow :	01Oct2021, 12:40
Peak Outflow :	100.6 (CFS)	Date/Time of Peak Outflow :	01Oct2021, 12:52
Total Inflow :	21.0 (AC-FT)	Peak Storage :	2.4 (AC-FT)
Total Outflow :	20.0 (AC-FT)	Peak Elevation :	7241.3 (FT)

APPENDIX C: HYDRAULICS

- HEC-RAS Model Overview Map and Photos
- HEC-RAS Comparison Table

Kimley»Horn

Overview Map



GRAPHIC SCALE IN FEET
0 100 200 400

NORTH

LEGEND

- PROPERTY LINE
- LOT LINE
- HEC-RAS CROSS SECTION
- XXXX EXISTING MAJOR CONTOUR
- XXXX EXISTING MINOR CONTOUR
- (XXXX.XX) HEC-RAS CROSS SECTION ID

EAGLEVIEW HEC-RAS
CROSS SECTIONS EXHIBIT
09/27/2023

Kimley»Horn

2 N NEVADA AVE, SUITE 900, COLORADO SPRINGS, CO 80903
PHONE: 719-453-0180

Cross Section Photos

Cross Section 41774.8

North:

South:

East:

West:

Cross Section 41539.1

North:

South:

East:

West:

Cross Section 41465.66

North:

South:

East:

West:

Cross Section 41441.59

North:

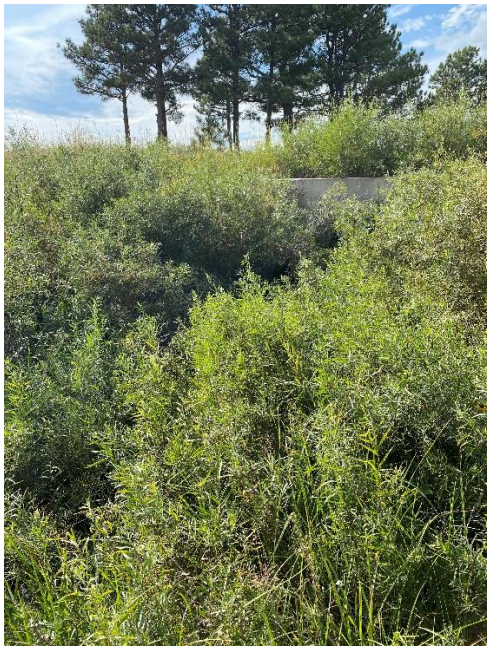
South:

East:

West:

Cross Section 41405.38

North:



South:

East:

West:

Cross Section 41368

North:

South:

East:

West:

Cross Section 41330.7

North:

South:

East:

West:

Cross Section 41293.4

North:

South:

East:

West:

Cross Section 41256.1

North:

South:

Cross Section 41218.78

North:

South:

East:

West:

Cross Section 40884.05

North:

South:

East:

Manning's N could be higher?

West:

Cross Section 40418.78

North:

South:

East:

West:

Cross Section 40018.78

North:

South:

East:

West:

Cross Section 39618.78

North:

South:

East:

West:

Cross Section 39218.78

North:

South:

East:

West:

Cross Section 38818.78

North:

South:

East:

West:

Cross Section 38418.78

North:

South:

East:

West:

Cross Section 38018.78

Lack of vegetation requires lower Manning's Ns

North:

South:

East:

West:

Cross Section 37618.78

Lack of vegetation requires lower Manning's Ns

North:

South:

East:

West:

HEC-RAS Results Comparison (Falcon DBPS HEC-RAS Cross Sections vs Eagleview)																
DBPS								Eagleview								
Cross Section	Input				Output			Cross Section	Input				Output			
	100-yr Flow (cfs)	Manning's n			Velocity (fps)	Shear (lb/sf)	Froude No.		100-yr Flow (cfs)	Manning's n			Velocity (fps)	Shear (lb/sf)	Froude No.	
		Left Overbank	Channel	Right Overbank						Left Overbank	Channel	Right Overbank				
42818.78	260	0.08	0.05	0.08	3.39	0.67	0.45	42818.78	284.2	0.04	0.06	0.04	4.90	1.15	0.55	
42418.78	480	0.08	0.05	0.08	6.47	2.42	1.04	42418.78	284.2	0.04	0.06	0.04	5.11	1.71	0.77	
42018.78	480	0.08	0.05	0.08	5.46	1.77	0.74	42018.78	284.2	0.04	0.06	0.04	5.19	1.38	0.59	
41774.8	480	0.08	0.05	0.08	7.32	3.12	1.02	41774.8	284.2	0.05	0.06	0.04	6.59	2.64	0.89	
41539.1	480	0.08	0.05	0.08	3.34	0.63	0.42	41539.1	284.2	0.05	0.06	0.08	2.42	0.28	0.24	
41465.66	480	0.08	0.05	0.08	3.28	0.28	0.32	41465.66	284.2	0.08	0.06	0.1	1.53	0.07	0.10	
41441.59 (Culvert)	480	-	-	-	-	-	-	41441.59 (Culvert)	284.2	-	-	-	-	-	-	
41405.38	480	0.08	0.05	0.08	5.99	2.17	0.87	41405.38	284.2	0.05	0.06	0.08	7.55	1.97	0.77	
41368	480	0.08	0.05	0.08	6.06	2.22	0.86	41368	284.2	0.08	0.06	0.08	7.93	3.78	0.90	
41330.7	480	0.08	0.05	0.08	6.32	2.43	0.88	41330.7	284.2	0.08	0.06	0.08	6.78	3.21	0.80	
41293.4	480	0.08	0.05	0.08	6.36	2.41	0.86	41293.4	284.2	0.1	0.06	0.1	5.72	2.51	0.69	
41256.1	480	0.08	0.05	0.08	6.79	2.73	0.91	41256.1	284.2	0.1	0.07	0.1	5.28	3.06	0.64	
41218.78	480	0.08	0.05	0.08	5.93	1.99	0.74	41218.78	284.2	0.1	0.07	0.1	4.22	1.89	0.49	
40884.05	480	0.08	0.05	0.08	7.00	2.48	0.97	40884.05	284.2	0.025	0.06	0.1	7.45	3.67	0.93	
40418.78	480	0.08	0.05	0.08	5.99	2.30	0.91	40418.78	284.2	0.1	0.06	0.1	4.09	1.02	0.52	
40018.78	740	0.08	0.03	0.08	9.05	1.56	1.01	40018.78	371.3	0.04	0.06	0.04	7.65	3.87	0.94	
39618.78	740	0.08	0.03	0.08	7.56	1.09	1.04	39618.78	478	0.04	0.06	0.04	4.31	0.81	0.48	
39218.78	740	0.08	0.03	0.08	9.28	0.78	1.15	39218.78	478	0.04	0.06	0.04	6.90	1.99	0.75	
38818.78	740	0.08	0.03	0.08	8.62	1.35	1.03	38818.78	478	0.04	0.05	0.04	6.06	1.49	0.66	
38418.78	740	0.08	0.03	0.08	7.39	0.91	1.07	38418.78	478	0.04	0.05	0.04	6.11	1.19	0.73	
38018.78	740	0.08	0.03	0.08	8.77	0.91	1.06	38018.78	478	0.045	0.04	0.045	7.31	1.02	0.85	
37618.78	740	0.08	0.03	0.08	7.16	0.95	1.04	37618.78	515.5	0.045	0.04	0.045	7.22	0.96	0.88	

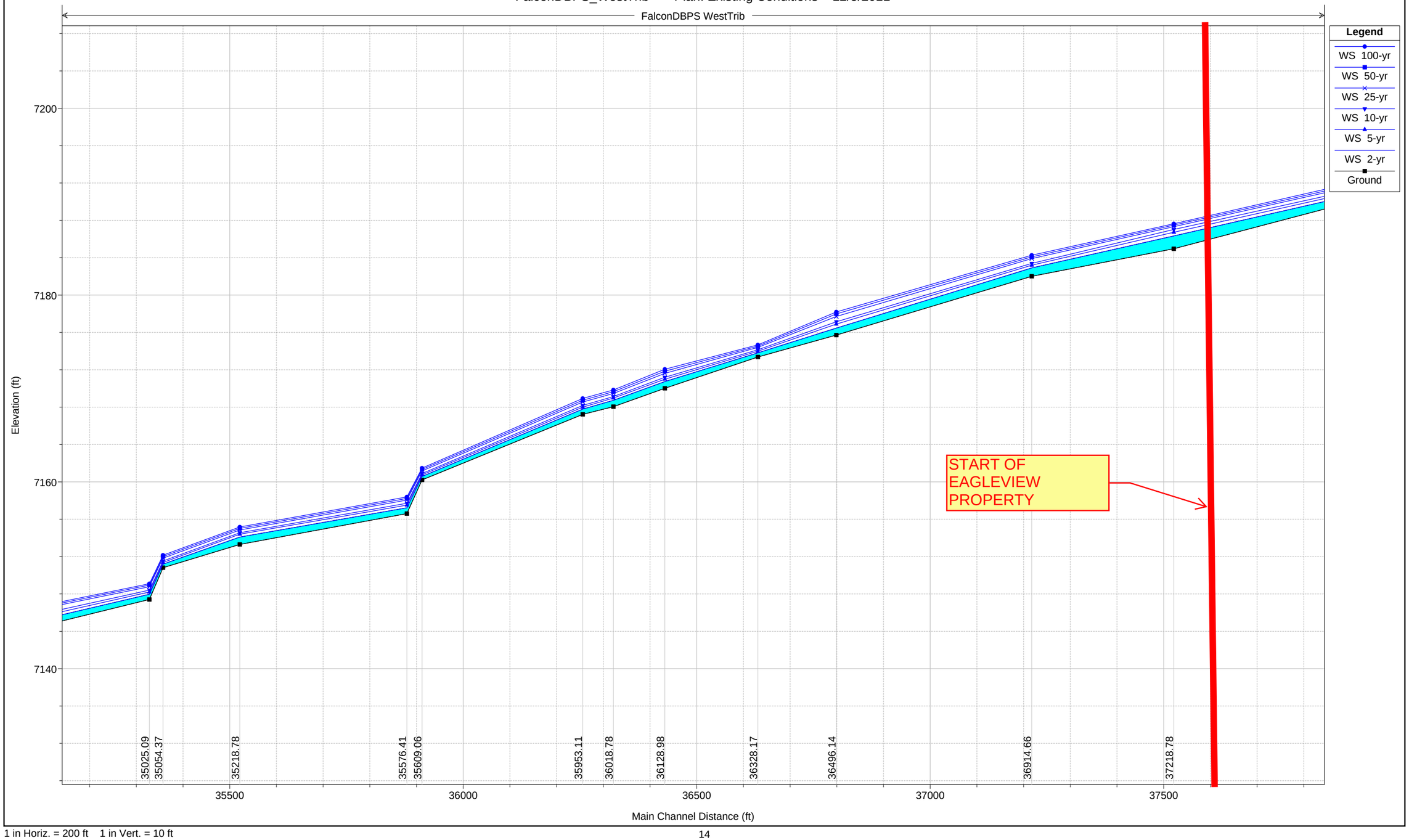
add downstream section

Potential issues identified. Provide complete modeling and profiles showing effects of grade control/drops

Identify deviations from ECM 3.3.3 and DCM. Revise the design to eliminate deviations or provide deviation request. DBPS revisions and County maintenance depend on meeting criteria and installation of adequate stabilization features.

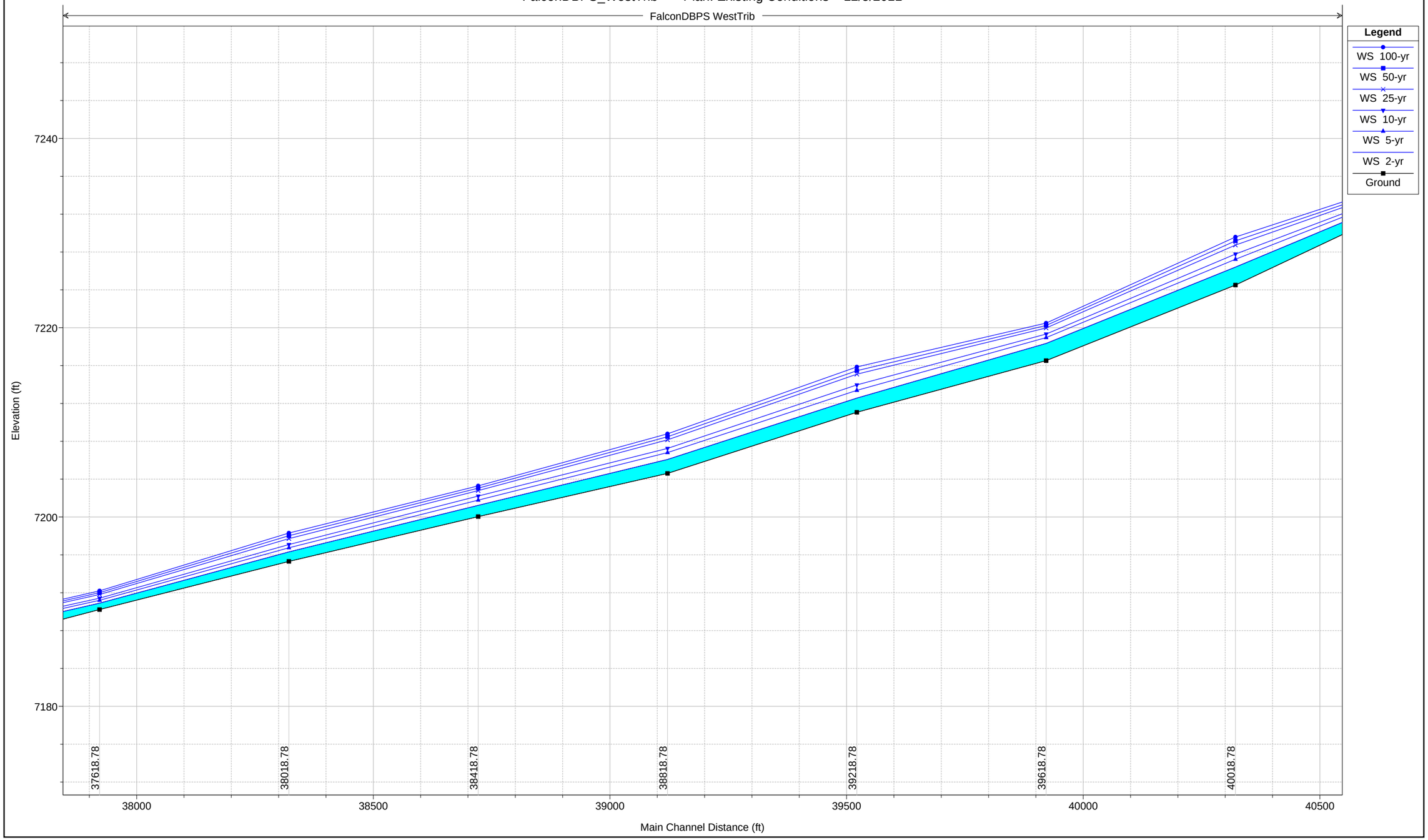
APPENDIX D: DBPS EXCERPTS

FalconDBPS_WestTrib Plan: Existing Conditions 12/5/2011



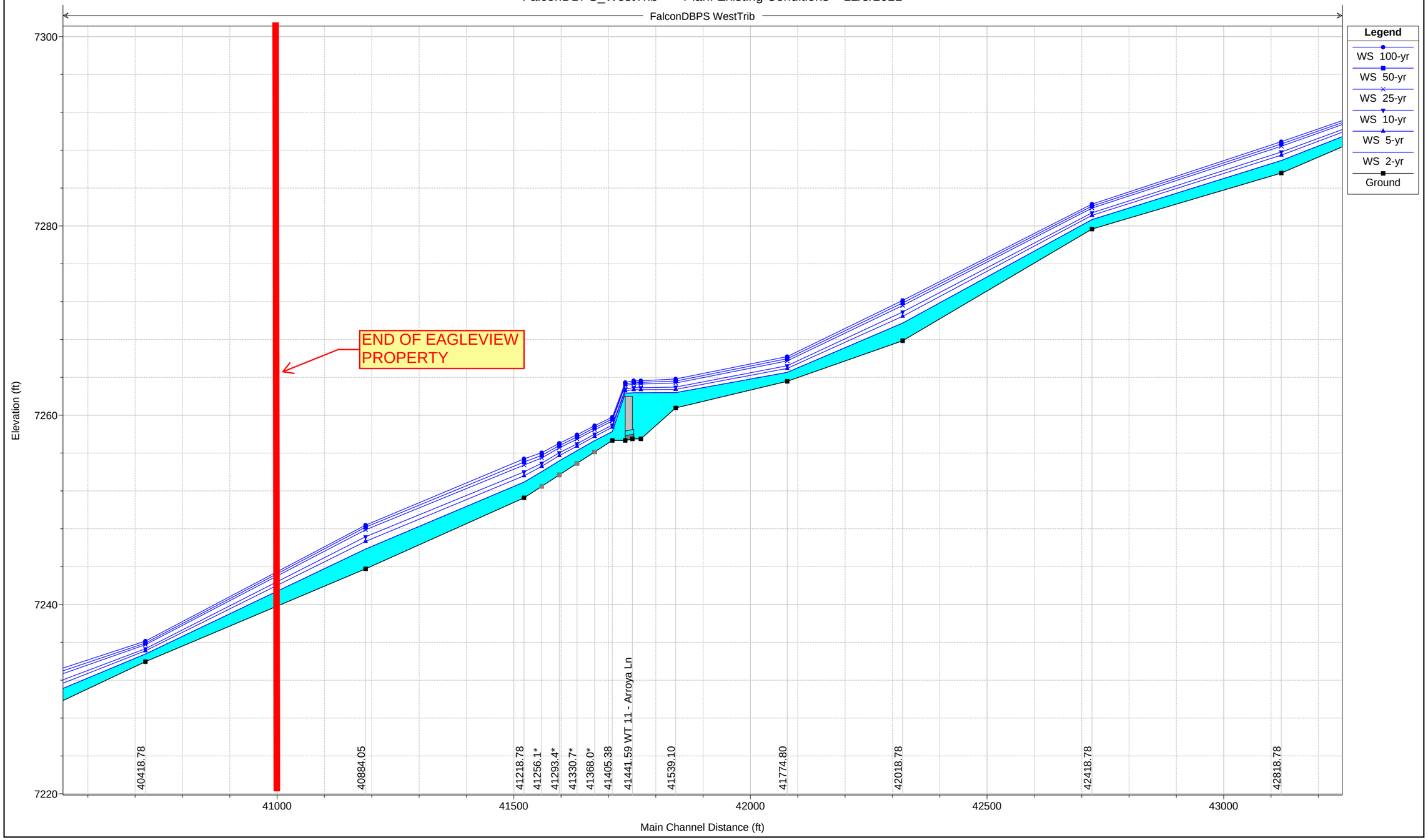
1 in Horiz. = 200 ft 1 in Vert. = 10 ft

FalconDBPS_WestTrib Plan: Existing Conditions 12/5/2011



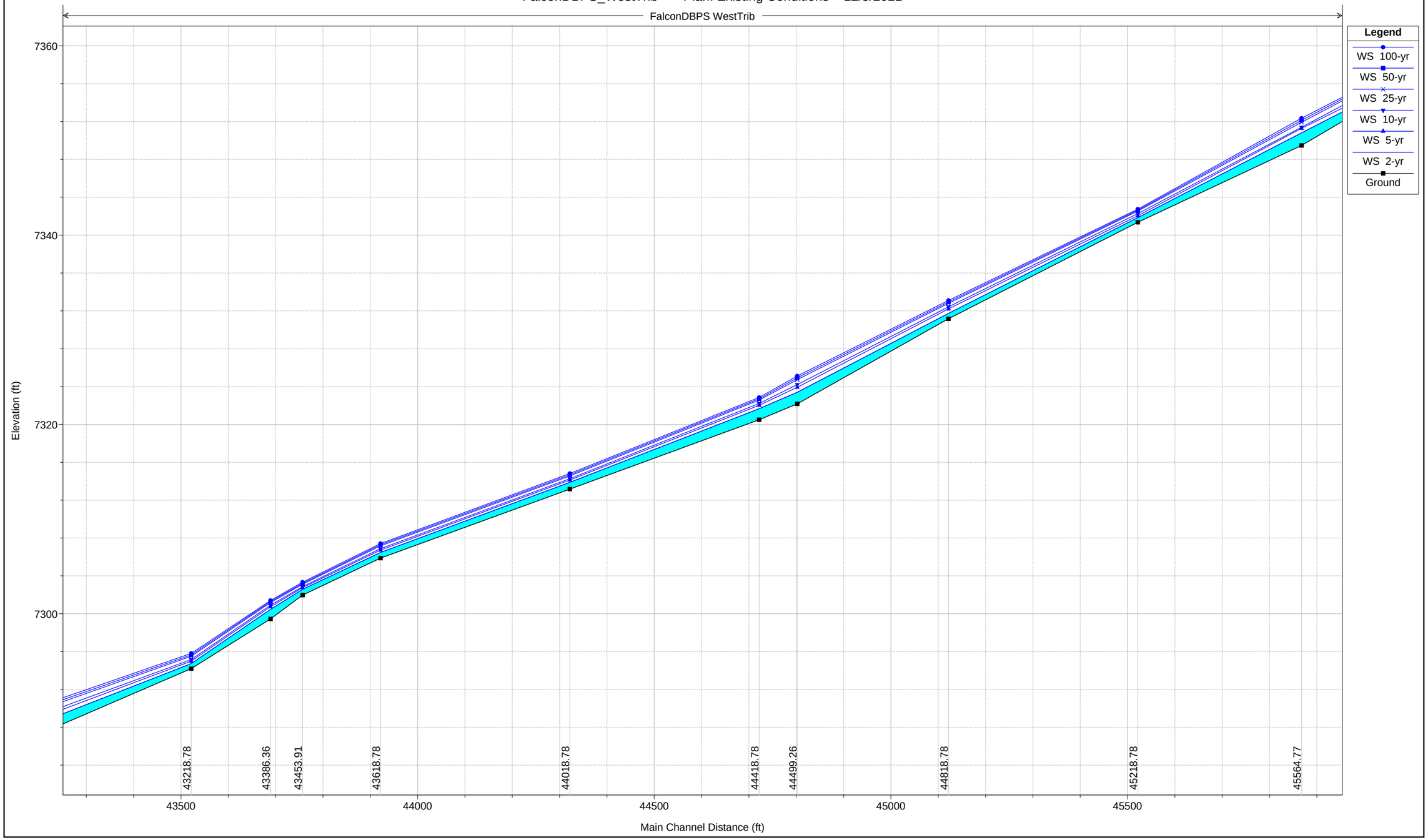
1 in Horiz. = 200 ft 1 in Vert. = 10 ft

FalconDBPS_WestTrib Plan: Existing Conditions 12/5/2011



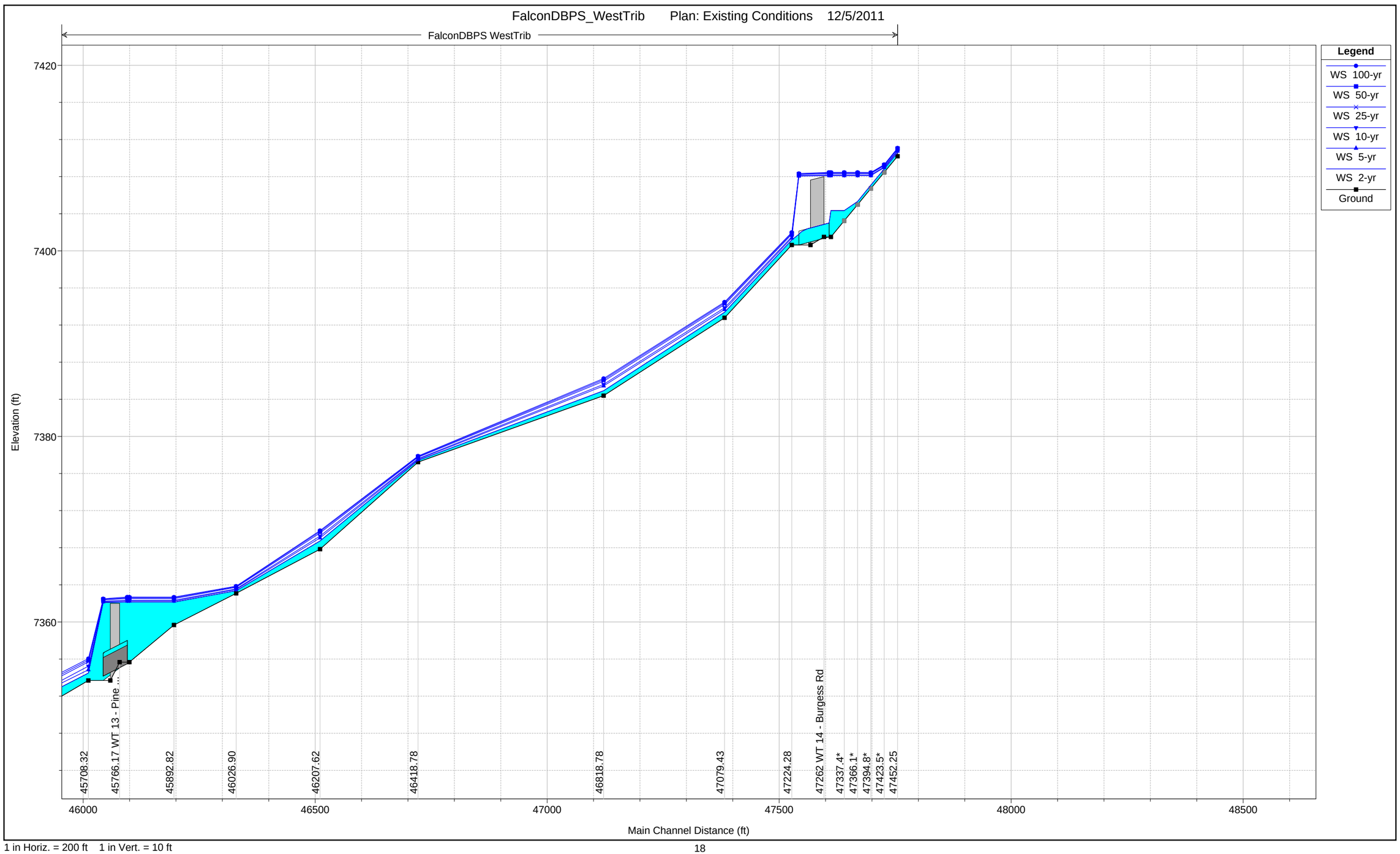
1 in Horiz. = 200 ft 1 in Vert. = 10 ft

FalconDBPS_WestTrib Plan: Existing Conditions 12/5/2011

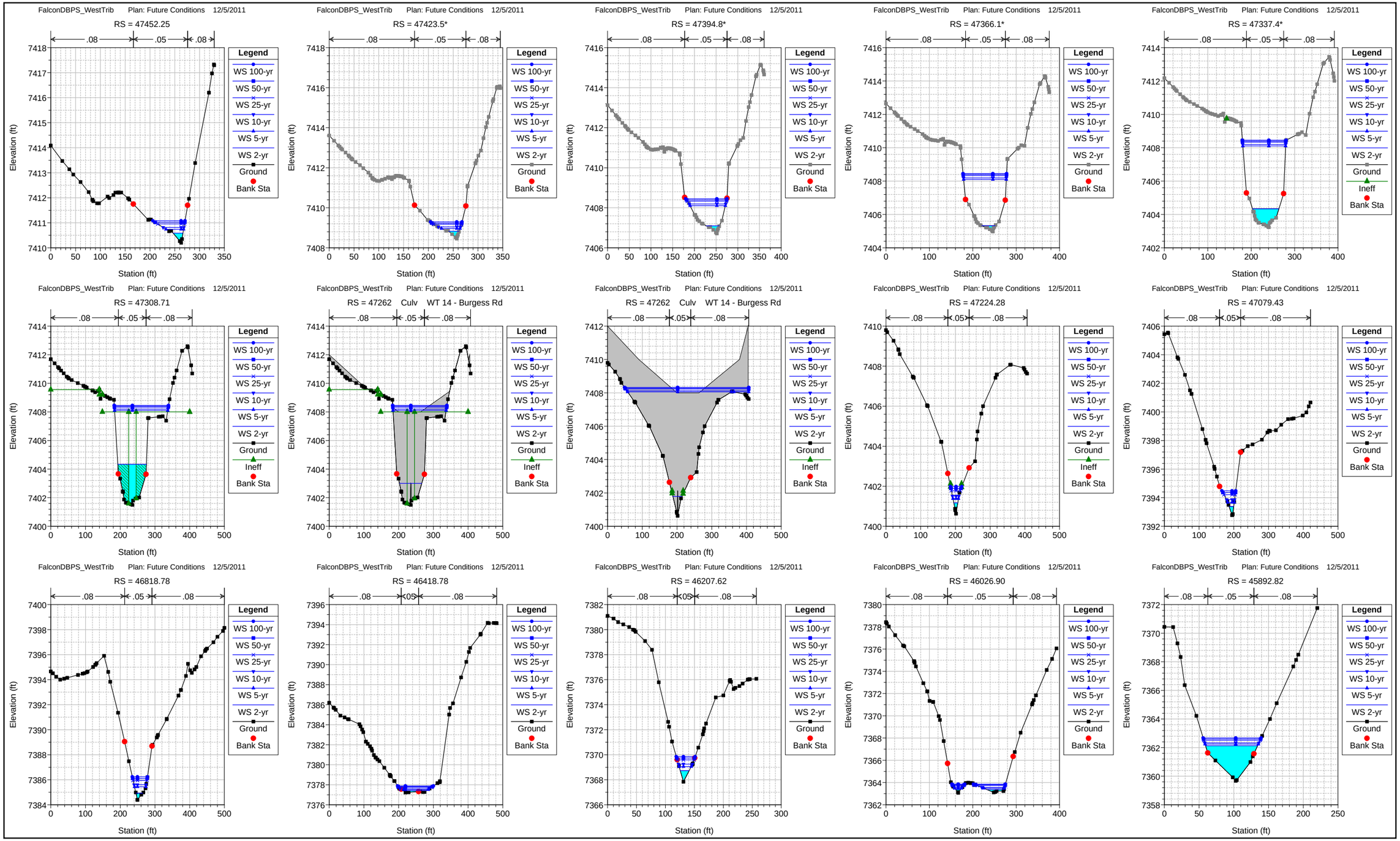


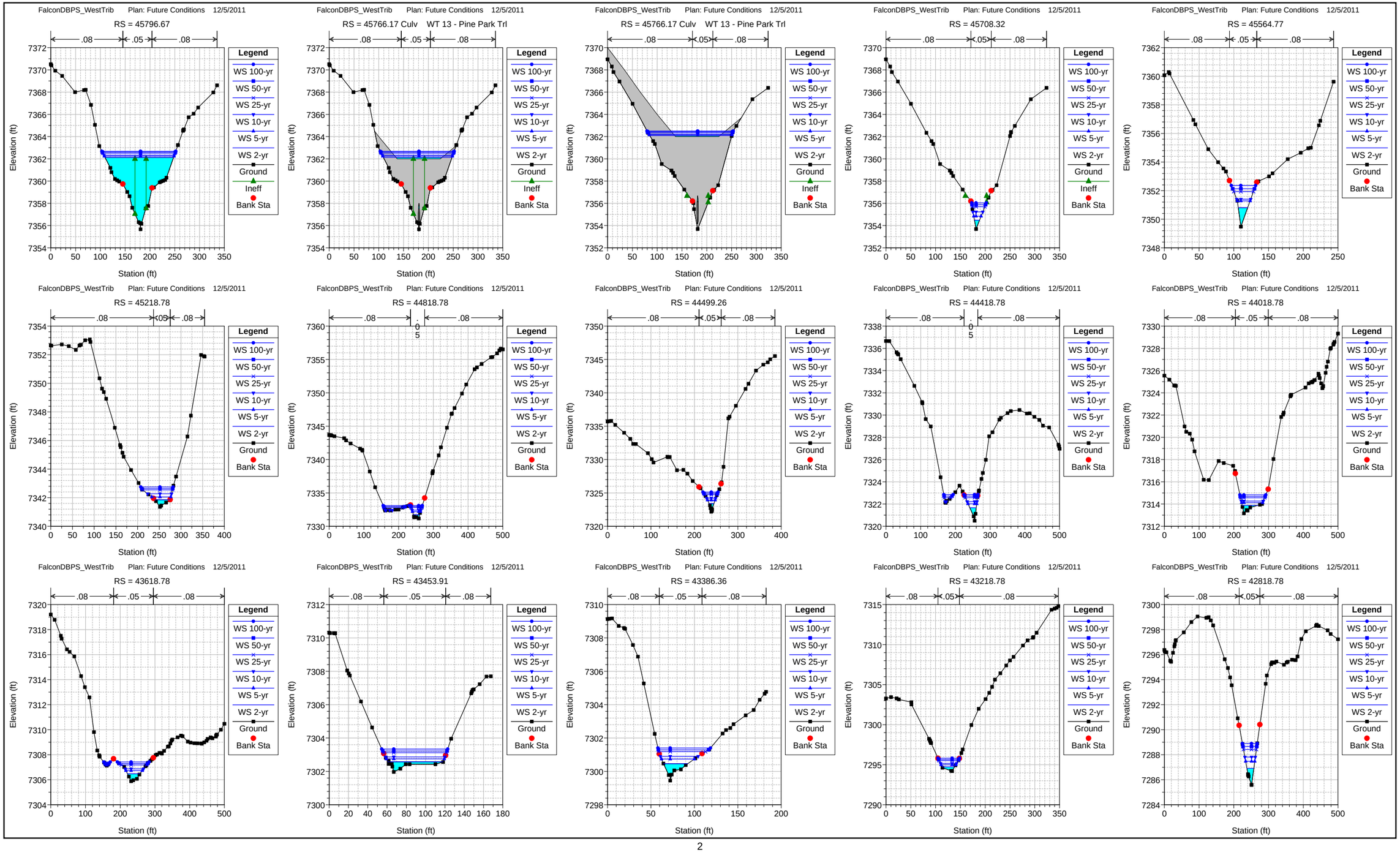
1 in Horiz. = 200 ft 1 in Vert. = 10 ft

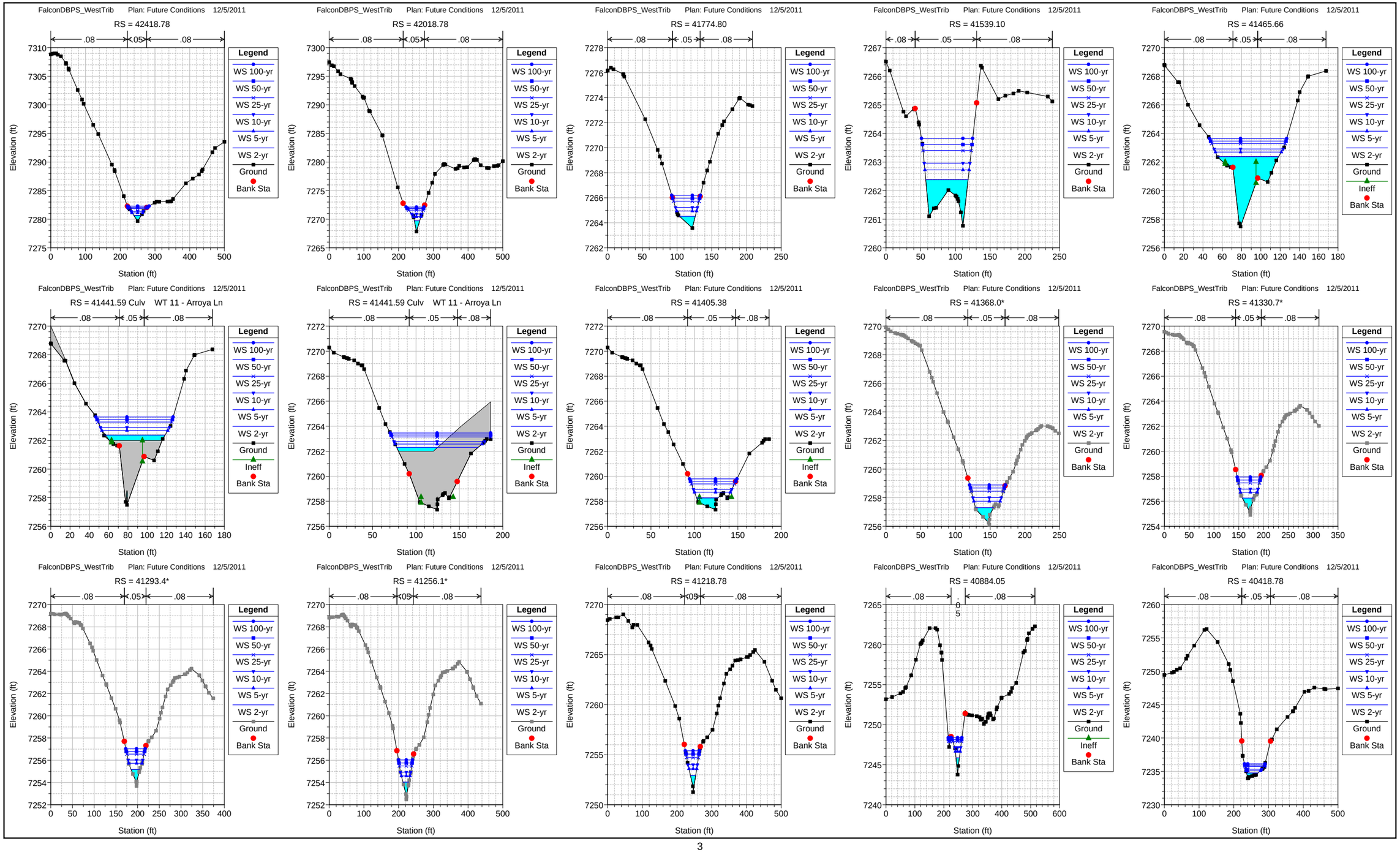
FalconDBPS_WestTrib Plan: Existing Conditions 12/5/2011



1 in Horiz. = 200 ft 1 in Vert. = 10 ft


FalconDBPS_WestTrib Plan: Future Conditions 12/5/2011
RS = 47452.25
RS = 47423.5*
RS = 47394.8*
RS = 47366.1*
RS = 47337.4*
RS = 47308.71
RS = 47262 Culv WT 14 - Burgess Rd
RS = 47262 Culv WT 14 - Burgess Rd
RS = 47224.28
RS = 47079.43
RS = 46818.78
RS = 46418.78
RS = 46207.62
RS = 46026.90
RS = 45892.82
.08
.05
.08
Legend
WS 100-yr
WS 50-yr
WS 25-yr
WS 10-yr
WS 5-yr
WS 2-yr
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)


FalconDBPS_WestTrib Plan: Future Conditions 12/5/2011
RS = 45796.67
RS = 45766.17 Culv WT 13 - Pine Park Trl
RS = 45766.17 Culv WT 13 - Pine Park Trl
RS = 45708.32
RS = 45564.77
RS = 45218.78
RS = 44818.78
RS = 44499.26
RS = 44418.78
RS = 44018.78
RS = 43618.78
RS = 43453.91
RS = 43386.36
RS = 43218.78
RS = 42818.78
.08
.05
Legend
WS 100-yr
WS 50-yr
WS 25-yr
WS 10-yr
WS 5-yr
WS 2-yr
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)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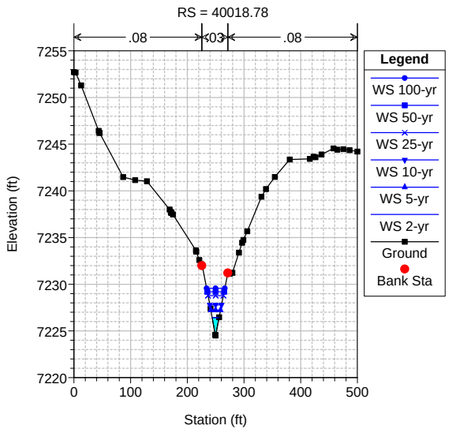
RS = 42418.78
RS = 42018.78
RS = 41774.80
RS = 41539.10
RS = 41465.66
RS = 41441.59 Culv WT 11 - Arroya Ln
RS = 41441.59 Culv WT 11 - Arroya Ln
RS = 41405.38
RS = 41368.0*
RS = 41330.7*
RS = 41293.4*
RS = 41256.1*
RS = 41218.78
RS = 40884.05
RS = 40418.78
.08
.05
Elevation (ft)
Station (ft)
Legend
WS 100-yr
WS 50-yr
WS 25-yr
WS 10-yr
WS 5-yr
WS 2-yr
Ground
Ineff
Bank Sta

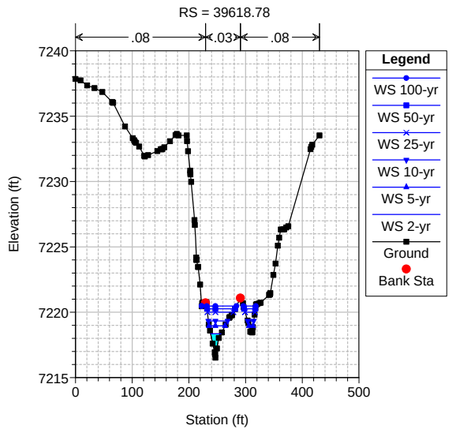
FalconDBPS_WestTrib Plan: Future Conditions 12/5/2011

RS = 40018.78



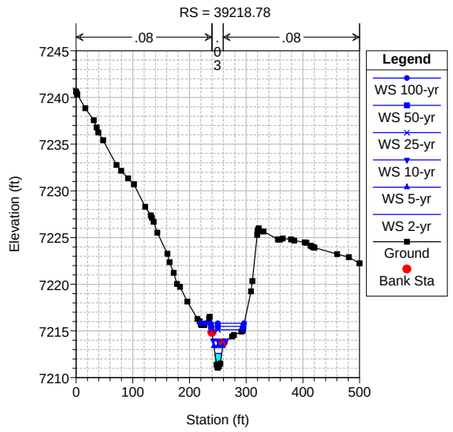
FalconDBPS_WestTrib Plan: Future Conditions 12/5/2011

RS = 39618.78



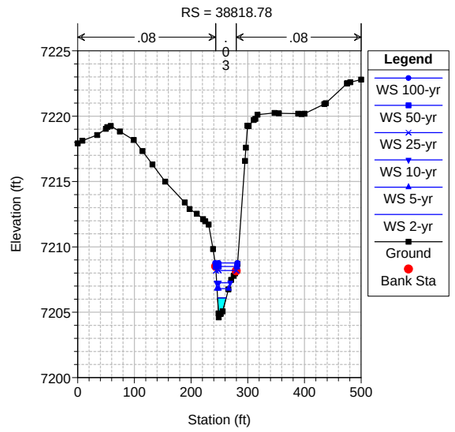
FalconDBPS_WestTrib Plan: Future Conditions 12/5/2011

RS = 39218.78



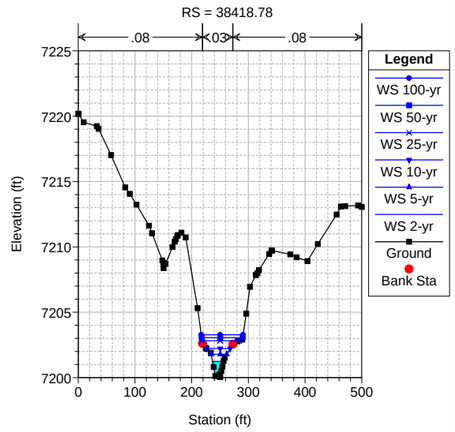
FalconDBPS_WestTrib Plan: Future Conditions 12/5/2011

RS = 38818.78



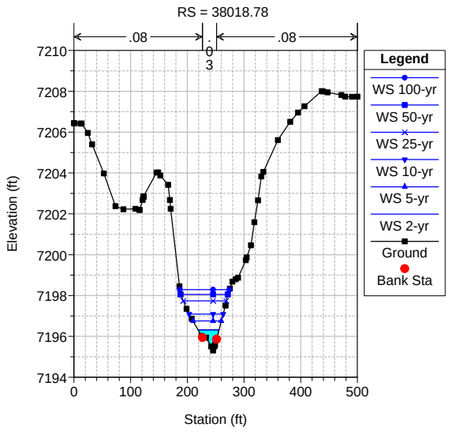
FalconDBPS_WestTrib Plan: Future Conditions 12/5/2011

RS = 38418.78



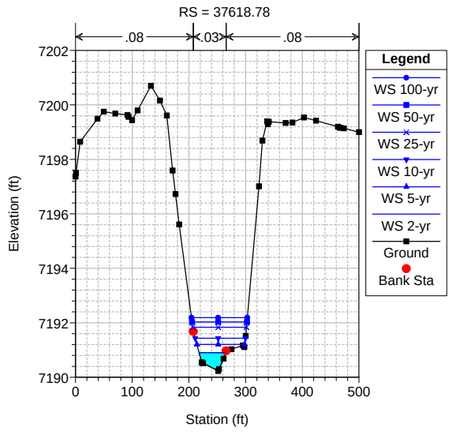
FalconDBPS_WestTrib Plan: Future Conditions 12/5/2011

RS = 38018.78



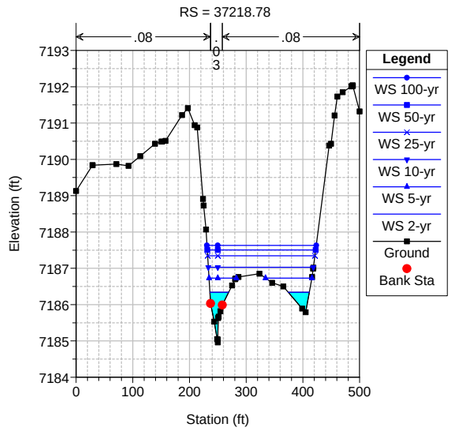
FalconDBPS_WestTrib Plan: Future Conditions 12/5/2011

RS = 37618.78



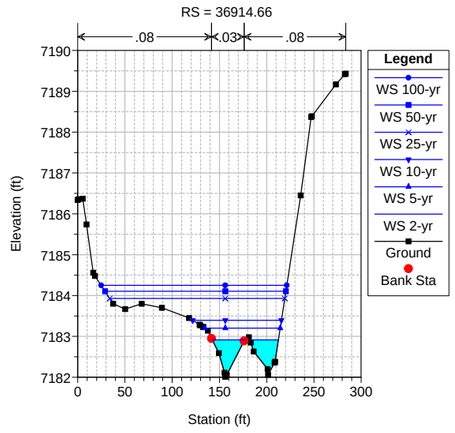
FalconDBPS_WestTrib Plan: Future Conditions 12/5/2011

RS = 37218.78



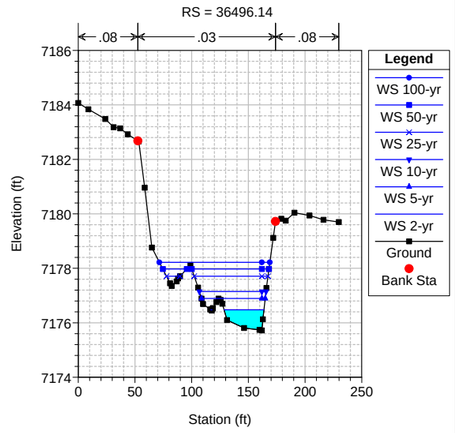
FalconDBPS_WestTrib Plan: Future Conditions 12/5/2011

RS = 36914.66



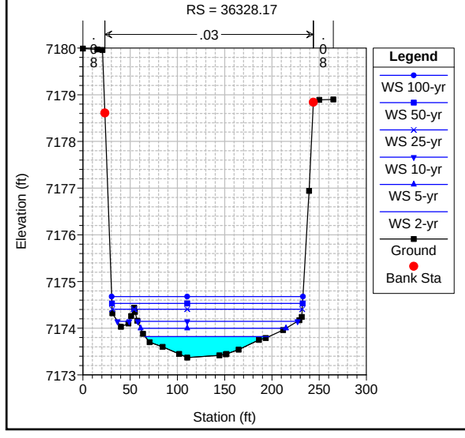
FalconDBPS_WestTrib Plan: Future Conditions 12/5/2011

RS = 36496.14



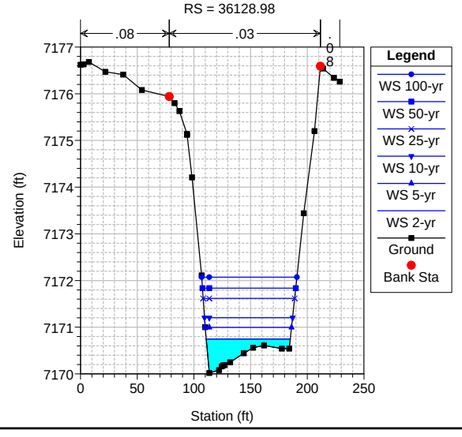
FalconDBPS_WestTrib Plan: Future Conditions 12/5/2011

RS = 36328.17



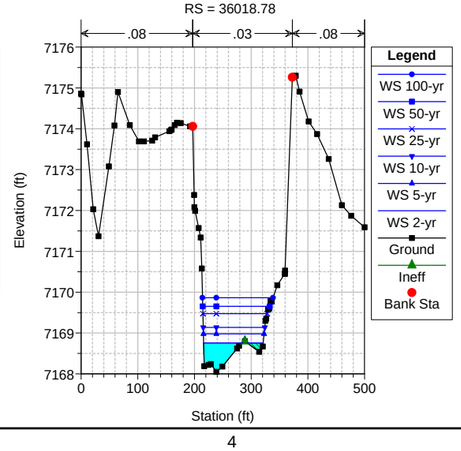
FalconDBPS_WestTrib Plan: Future Conditions 12/5/2011

RS = 36128.98



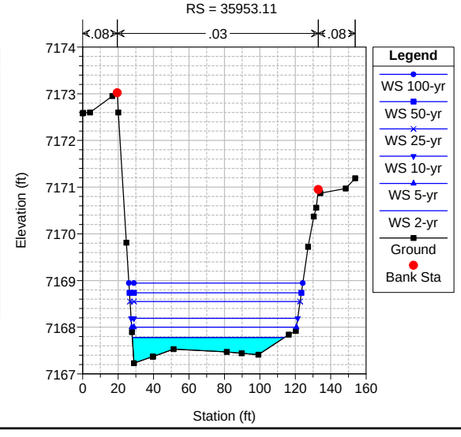
FalconDBPS_WestTrib Plan: Future Conditions 12/5/2011

RS = 36018.78



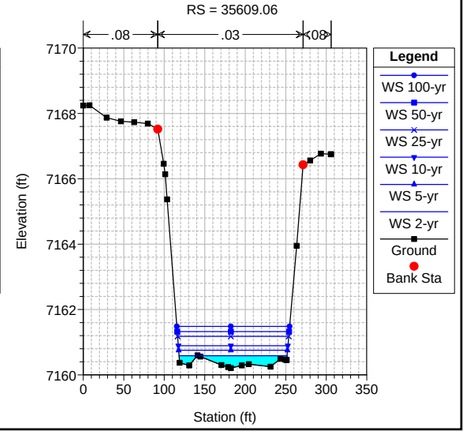
FalconDBPS_WestTrib Plan: Future Conditions 12/5/2011

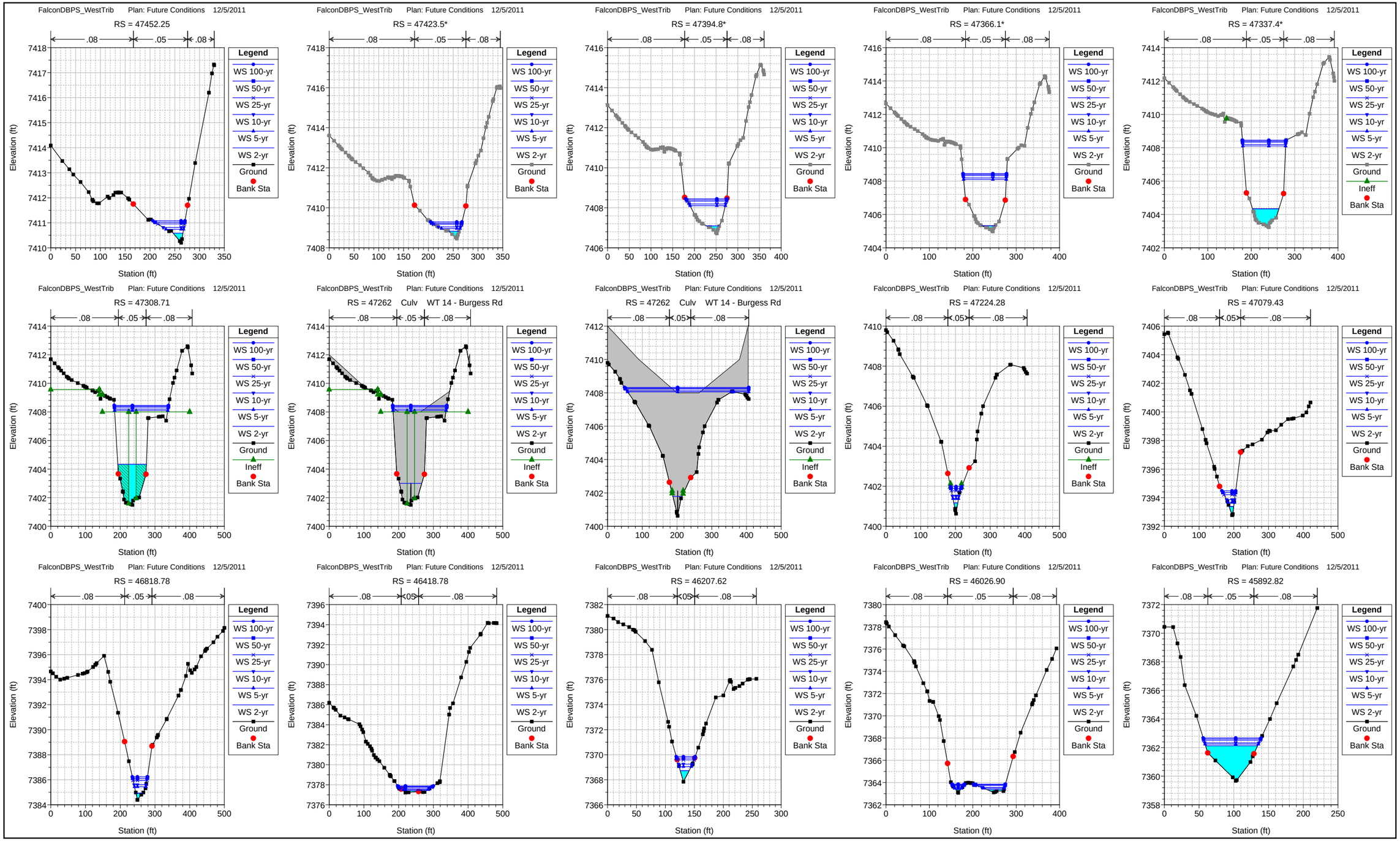
RS = 35953.11

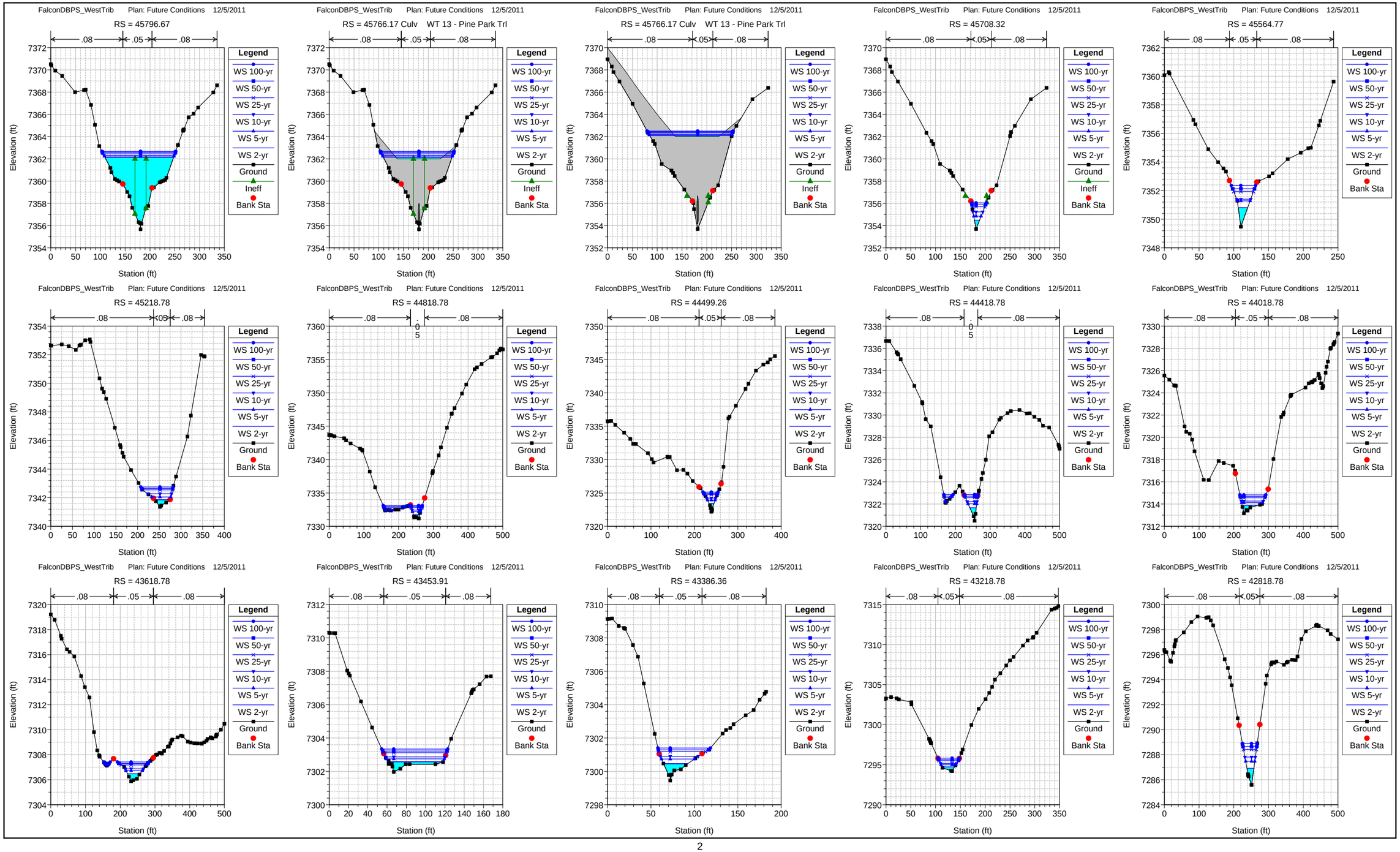


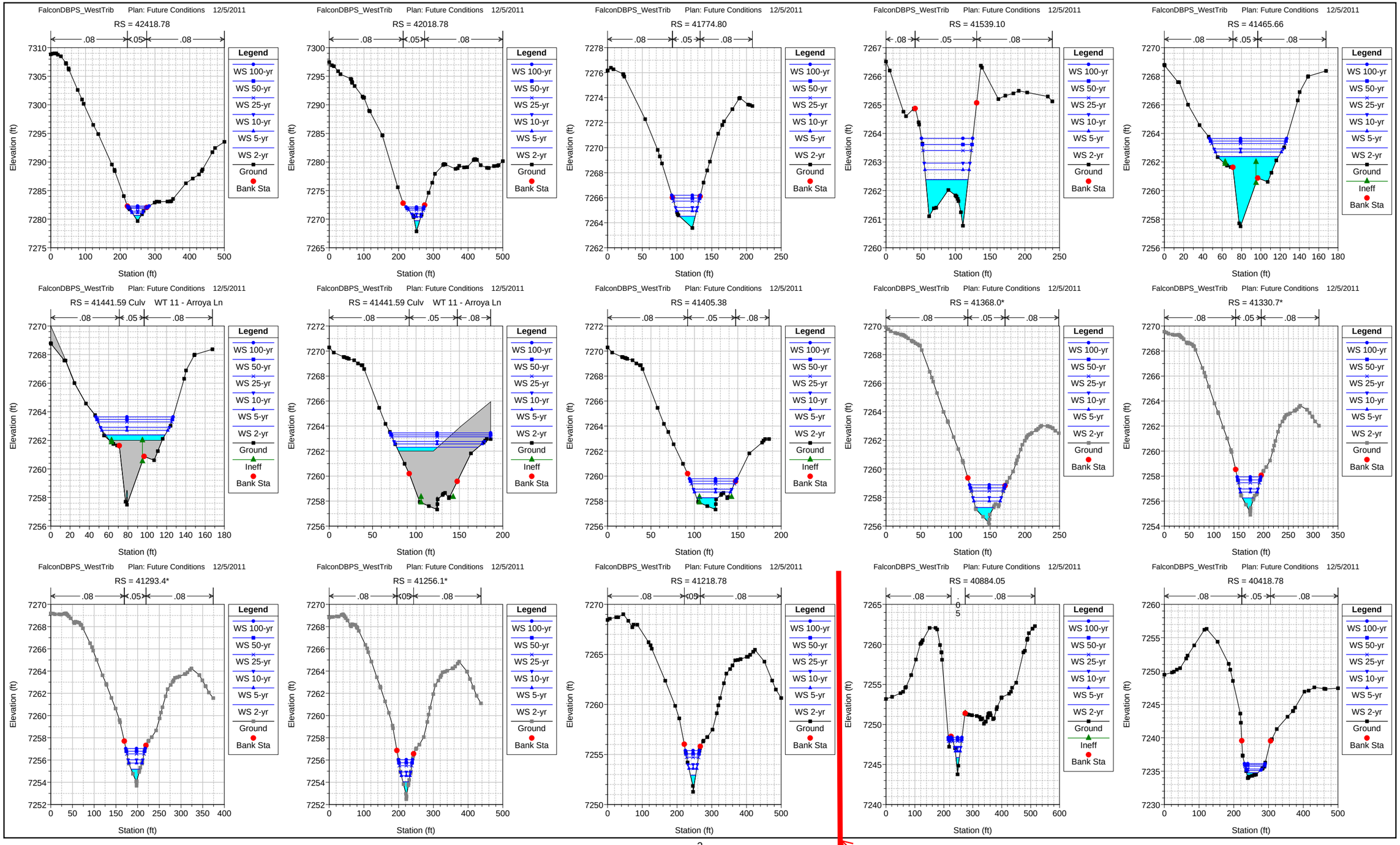
FalconDBPS_WestTrib Plan: Future Conditions 12/5/2011

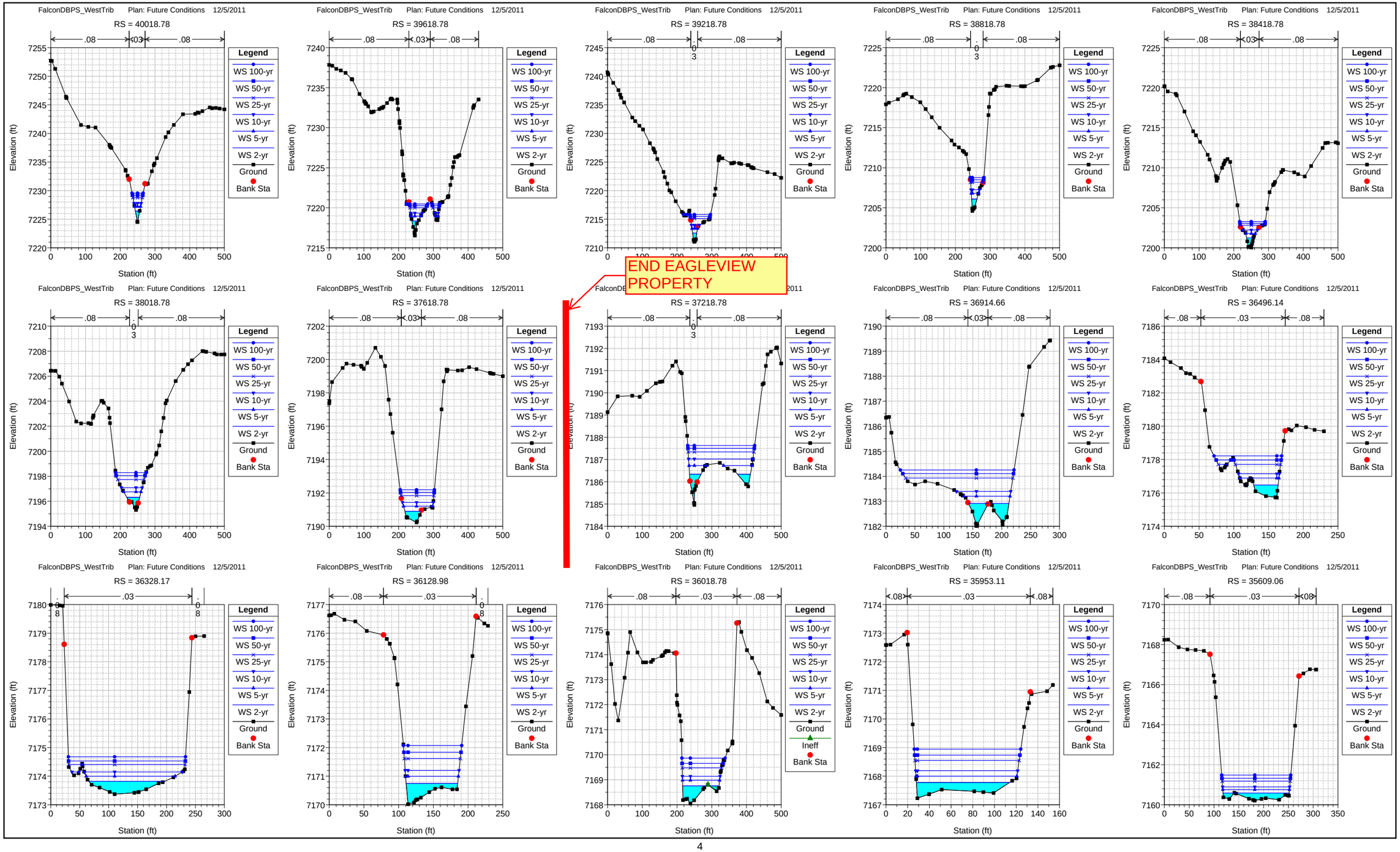
RS = 35609.06




FalconDBPS_WestTrib Plan: Future Conditions 12/5/2011
RS = 47452.25
RS = 47423.5*
RS = 47394.8*
RS = 47366.1*
RS = 47337.4*
RS = 47308.71
RS = 47262 Culv WT 14 - Burgess Rd
RS = 47262 Culv WT 14 - Burgess Rd
RS = 47224.28
RS = 47079.43
RS = 46818.78
RS = 46418.78
RS = 46207.62
RS = 46026.90
RS = 45892.82
.08
.05
.08
Legend
WS 100-yr
WS 50-yr
WS 25-yr
WS 10-yr
WS 5-yr
WS 2-yr
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)


FalconDBPS_WestTrib Plan: Future Conditions 12/5/2011
RS = 45796.67
RS = 45766.17 Culv WT 13 - Pine Park Trl
RS = 45766.17 Culv WT 13 - Pine Park Trl
RS = 45708.32
RS = 45564.77
RS = 45218.78
RS = 44818.78
RS = 44499.26
RS = 44418.78
RS = 44018.78
RS = 43618.78
RS = 43453.91
RS = 43386.36
RS = 43218.78
RS = 42818.78
.08
.05
Legend
WS 100-yr
WS 50-yr
WS 25-yr
WS 10-yr
WS 5-yr
WS 2-yr
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)


FalconDBPS_WestTrib Plan: Future Conditions 12/5/2011
RS = 42418.78
RS = 42018.78
RS = 41774.80
RS = 41539.10
RS = 41465.66
RS = 41441.59 Culv WT 11 - Arroya Ln
RS = 41441.59 Culv WT 11 - Arroya Ln
RS = 41405.38
RS = 41368.0*
RS = 41330.7*
RS = 41293.4*
RS = 41256.1*
RS = 41218.78
RS = 40884.05
RS = 40418.78
.08
.05
Elevation (ft)
Station (ft)
Legend
WS 100-yr
WS 50-yr
WS 25-yr
WS 10-yr
WS 5-yr
WS 2-yr
Ground
Ineff
Bank Sta
START EAGLEVIEW PROPERTY


FalconDBPS_WestTrib Plan: Future Conditions 12/5/2011
RS = 40018.78
RS = 39618.78
RS = 39218.78
RS = 38818.78
RS = 38418.78
RS = 38018.78
RS = 37618.78
RS = 37218.78
RS = 36914.66
RS = 36496.14
RS = 36328.17
RS = 36128.98
RS = 36018.78
RS = 35953.11
RS = 35609.06
Elevation (ft)
Station (ft)
Legend
WS 100-yr
WS 50-yr
WS 25-yr
WS 10-yr
WS 5-yr
WS 2-yr
Ground
Bank Sta
Ineff
END EAGLEVIEW PROPERTY

Falcon DBPS

Manning's n Values

West Tributary				
River Station	Frctn (n/K)	n #1	n #2	n #3
47452.25	n	0.08	0.05	0.08
47423.5*	n	0.08	0.05	0.08
47394.8*	n	0.08	0.05	0.08
47366.1*	n	0.08	0.05	0.08
47337.4*	n	0.08	0.05	0.08
47308.71	n	0.08	0.05	0.08
47262	Culvert			
47224.28	n	0.08	0.05	0.08
47079.43	n	0.08	0.05	0.08
46818.78	n	0.08	0.05	0.08
46418.78	n	0.08	0.05	0.08
46207.62	n	0.08	0.05	0.08
46026.9	n	0.08	0.05	0.08
45892.82	n	0.08	0.05	0.08
45796.67	n	0.08	0.05	0.08
45766.17	Culvert			
45708.32	n	0.08	0.05	0.08
45564.77	n	0.08	0.05	0.08
45218.78	n	0.08	0.05	0.08
44818.78	n	0.08	0.05	0.08
44499.26	n	0.08	0.05	0.08
44418.78	n	0.08	0.05	0.08
44018.78	n	0.08	0.05	0.08
43618.78	n	0.08	0.05	0.08
43453.91	n	0.08	0.05	0.08
43386.36	n	0.08	0.05	0.08
43218.78	n	0.08	0.05	0.08
42818.78	n	0.08	0.05	0.08
42418.78	n	0.08	0.05	0.08
42018.78	n	0.08	0.05	0.08
41774.8	n	0.08	0.05	0.08
41539.1	n	0.08	0.05	0.08
41465.66	n	0.08	0.05	0.08
41441.59	Culvert			
41405.38	n	0.08	0.05	0.08
41368.0*	n	0.08	0.05	0.08
41330.7*	n	0.08	0.05	0.08
41293.4*	n	0.08	0.05	0.08
41256.1*	n	0.08	0.05	0.08
41218.78	n	0.08	0.05	0.08
40884.05	n	0.08	0.05	0.08
40418.78	n	0.08	0.05	0.08

Middle Tributary				
River Station	Frctn (n/K)	n #1	n #2	n #3
15477.33	n	0.08	0.05	0.08
15411.72	n	0.08	0.05	0.08
15205.81	n	0.08	0.05	0.08
15182.0*	n	0.08	0.05	0.08
15158.2*	n	0.08	0.05	0.08
15134.4*	n	0.08	0.05	0.08
15110.6*	n	0.08	0.05	0.08
15086.8*	n	0.08	0.05	0.08
15063.05	n	0.08	0.05	0.08
14907.55	n	0.08	0.05	0.08
14773.98	n	0.08	0.05	0.08
14507.55	n	0.08	0.05	0.08
14107.55	n	0.08	0.05	0.08
13707.55	n	0.08	0.05	0.08
13306.32	n	0.08	0.05	0.08
13111.17	n	0.08	0.05	0.08
12893	n	0.08	0.05	0.08
12511.32	n	0.08	0.05	0.08
12037.33	n	0.08	0.05	0.08
11628.61	n	0.08	0.05	0.08
11228.61	n	0.08	0.05	0.08
10828.61	n	0.08	0.05	0.08
10741.93	n	0.08	0.05	0.08
10706	Culvert			
10665.96	n	0.08	0.05	0.08
10428.61	n	0.08	0.05	0.08
10028.61	n	0.08	0.05	0.08
9628.612	n	0.08	0.05	0.08
9228.612	n	0.08	0.05	0.08
8741.269	n	0.08	0.05	0.08
8483.946	n	0.08	0.05	0.08
7238	Culvert			
6738.77	n	0.15	0.07	0.15
6420.92	n	0.15	0.07	0.15
6411.64*	n	0.15	0.07	0.15
6402.37*	n	0.15	0.07	0.15
6393.09*	n	0.15	0.07	0.15
6383.82*	n	0.15	0.07	0.15
6374.54*	n	0.15	0.07	0.15
6365.27*	n	0.15	0.07	0.15
6356.00*	n	0.15	0.07	0.15
6346.727	n	0.15	0.07	0.15

East Tributary				
River Station	Frctn (n/K)	n #1	n #2	n #3
32631.79	n	0.08	0.05	0.08
32576.48	n	0.08	0.05	0.08
32537.9*	n	0.08	0.05	0.08
32499.3*	n	0.08	0.05	0.08
32460.7*	n	0.08	0.05	0.08
32422.2	n	0.08	0.05	0.08
32376.64	Culvert			
32335.71	n	0.08	0.05	0.08
32288.3*	n	0.08	0.05	0.08
32241.*	n	0.08	0.05	0.08
32193.6*	n	0.08	0.05	0.08
32146.2*	n	0.08	0.05	0.08
32098.94	n	0.08	0.05	0.08
31698.94	n	0.08	0.05	0.08
31657.1*	n	0.08	0.05	0.08
31615.3*	n	0.08	0.05	0.08
31573.5*	n	0.08	0.05	0.08
31531.79	n	0.08	0.05	0.08
31486	Culvert			
31411.01	n	0.08	0.05	0.08
31375.5*	n	0.08	0.05	0.08
31340.1*	n	0.08	0.05	0.08
31304.66	n	0.08	0.05	0.08
30904.66	n	0.08	0.05	0.08
30742.51	n	0.08	0.05	0.08
28941.08	n	0.08	0.05	0.08
28754.33	n	0.08	0.05	0.08
28478.62	n	0.08	0.05	0.08
28298.89	Culvert			
28137.71	n	0.08	0.07	0.08
28081.78	n	0.08	0.07	0.08
27748.51	n	0.08	0.07	0.08
27350.22	n	0.08	0.07	0.08
26950.22	n	0.08	0.07	0.08
26646.28	n	0.08	0.07	0.08
26550.03	n	0.08	0.07	0.08
26454.7	Culvert			
26366.53	n	0.08	0.07	0.08
26300.77	n	0.08	0.07	0.08
26150.22	n	0.08	0.07	0.08
25750.22	n	0.08	0.07	0.08
25599.02	n	0.08	0.07	0.08

Falcon DBPS

Manning's n Values

West Tributary				
River Station	Frctn (n/K)	n #1	n #2	n #3
40018.78	n	0.08	0.03	0.08
39618.78	n	0.08	0.03	0.08
39218.78	n	0.08	0.03	0.08
38818.78	n	0.08	0.03	0.08
38418.78	n	0.08	0.03	0.08
38018.78	n	0.08	0.03	0.08
37618.78	n	0.08	0.03	0.08
37218.78	n	0.08	0.03	0.08
36914.66	n	0.08	0.03	0.08
36496.14	n	0.08	0.03	0.08
36328.17	n	0.08	0.03	0.08
36128.98	n	0.08	0.03	0.08
36018.78	n	0.08	0.03	0.08
35953.11	n	0.08	0.03	0.08
35609.06	n	0.08	0.03	0.08
35576.41	n	0.08	0.03	0.08
35218.78	n	0.08	0.03	0.08
35054.37	n	0.08	0.03	0.08
35025.09	n	0.08	0.03	0.08
34818.78	n	0.08	0.03	0.08
34639.33	n	0.08	0.03	0.08
34399.04	n	0.08	0.03	0.08
34320.25	n	0.08	0.05	0.08
34018.33	n	0.08	0.05	0.08
33792.91	n	0.08	0.05	0.08
33635.33	n	0.08	0.05	0.08
33235.67	n	0.08	0.05	0.08
32862.6	n	0.08	0.05	0.08
32439.34	n	0.08	0.05	0.08
32034.26	n	0.08	0.05	0.08
31765.2	n	0.08	0.05	0.08
31571.99	n	0.08	0.05	0.08
31384.44	n	0.08	0.03	0.08
31149.9	n	0.08	0.03	0.08
30906.88	n	0.08	0.03	0.08
30466.36	n	0.08	0.03	0.08
30109.14	n	0.08	0.03	0.08
29876.27	n	0.08	0.03	0.08
29632.62	n	0.08	0.03	0.08
29330.53	n	0.08	0.03	0.08
29004.24	n	0.08	0.03	0.08
28833.58	n	0.08	0.03	0.08

Middle Tributary				
River Station	Frctn (n/K)	n #1	n #2	n #3
6320.979	n	0.15	0.07	0.15
6276.979	Bridge			
6210.5	n	0.15	0.07	0.15
6158.16*	n	0.15	0.07	0.15
6105.82*	n	0.15	0.07	0.15
6053.48*	n	0.15	0.07	0.15
6001.15*	n	0.15	0.07	0.15
5948.81*	n	0.15	0.07	0.15
5896.477	n	0.15	0.07	0.15
5551.916	n	0.15	0.07	0.15
5362.949	n	0.15	0.07	0.15
5337.60*	n	0.15	0.07	0.15
5312.26*	n	0.15	0.07	0.15
5286.91*	n	0.15	0.07	0.15
5261.57*	n	0.15	0.07	0.15
5236.23*	n	0.15	0.07	0.15
5210.887	n	0.15	0.07	0.15
5184.12	Bridge			
5159.05	n	0.15	0.07	0.15
5120.029	n	0.15	0.07	0.15
5091.662	n	0.15	0.07	0.15
5035.56	Culvert			
4988.302	n	0.15	0.07	0.15
4971.81*	n	0.15	0.07	0.15
4955.33*	n	0.15	0.07	0.15
4938.84*	n	0.15	0.07	0.15
4922.36*	n	0.15	0.07	0.15
4905.881	n	0.15	0.07	0.15
4751.912	n	0.15	0.07	0.15
4351.913	n	0.15	0.07	0.15
3951.913	n	0.15	0.07	0.15
3849.362	n	0.15	0.07	0.15
3822.34*	n	0.15	0.07	0.15
3795.32*	n	0.15	0.07	0.15
3768.30*	n	0.15	0.07	0.15
3741.28*	n	0.15	0.07	0.15
3714.26	n	0.15	0.07	0.15
3667.171	Culvert			
3619.655	n	0.15	0.07	0.15
3385.78*	n	0.15	0.07	0.15
3151.913	n	0.15	0.07	0.15
2744.492	n	0.15	0.07	0.15

East Tributary				
River Station	Frctn (n/K)	n #1	n #2	n #3
25501.42	n	0.08	0.07	0.08
25447.05	n	0.08	0.07	0.08
25383.89	n	0.08	0.07	0.08
25320.79	n	0.08	0.07	0.08
25265.56	n	0.08	0.07	0.08
25173.45	n	0.08	0.07	0.08
24950.22	n	0.08	0.07	0.08
24550.22	n	0.08	0.07	0.08
24161.18	n	0.08	0.07	0.08
24122.58	n	0.08	0.07	0.08
24087.33	n	0.08	0.07	0.08
24032.8	n	0.08	0.07	0.08
23750.22	n	0.08	0.07	0.08
23617.72	n	0.08	0.07	0.08
23513.91	n	0.08	0.07	0.08
23413.07	Culvert			
23316.27	n	0.15	0.07	0.15
23184.63	n	0.15	0.07	0.15
22950.22	n	0.15	0.07	0.15
22550.22	n	0.15	0.07	0.15
22150.22	n	0.15	0.07	0.15
21750.22	n	0.15	0.07	0.15
21732.7*	n	0.15	0.07	0.15
21715.3*	n	0.15	0.07	0.15
21697.9*	n	0.15	0.07	0.15
21680.48	n	0.15	0.07	0.15
21604.86	Culvert			
21520.49	n	0.08	0.07	0.08
21350.22	n	0.08	0.07	0.08
21169.19	n	0.08	0.07	0.08
21150.6*	n	0.08	0.07	0.08
21132.0*	n	0.08	0.07	0.08
21113.4*	n	0.08	0.07	0.08
21094.9*	n	0.08	0.07	0.08
21076.3*	n	0.08	0.07	0.08
21057.78	n	0.08	0.07	0.08
20950.22	n	0.08	0.07	0.08
20786.19	n	0.08	0.07	0.08
20763.13	n	0.08	0.07	0.08
20550.22	n	0.08	0.07	0.08
20452.99	n	0.08	0.07	0.08
20393.38	n	0.08	0.07	0.08

Falcon DBPS

West Tributary Existing Conditions HEC-RAS Outputs

Reach	River Sta	Profile	Q Left	Q Channel	Q Right	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # XS	Headloss	Shear Total
			(cfs)	(cfs)	(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)		(ft)	(lb/sq ft)
WestTrib	47452.25	2-yr		9		7410.2	7410.59	7410.57	7410.67	0.057877	2.38	3.78	19.64	0.96	1.76	0.69
WestTrib	47452.25	5-yr		21		7410.2	7410.74	7410.74	7410.85	0.059512	2.66	7.9	35.51	0.99	1.78	0.83
WestTrib	47452.25	10-yr		32		7410.2	7410.82	7410.82	7410.95	0.060295	2.96	10.83	41.98	1.03	1.72	0.97
WestTrib	47452.25	25-yr		58		7410.2	7410.96	7410.96	7411.13	0.056237	3.32	17.45	53.8	1.03	1.59	1.14
WestTrib	47452.25	50-yr		73		7410.2	7411.02	7411.02	7411.21	0.052171	3.42	21.35	59.69	1.01	1.52	1.16
WestTrib	47452.25	100-yr		89		7410.2	7411.08	7411.08	7411.28	0.051479	3.56	24.97	64.94	1.01	1.45	1.23
WestTrib	47423.5*	2-yr		9		7408.46	7408.83	7408.83	7408.92	0.06487	2.4	3.75	20.92	1	1.71	0.72
WestTrib	47423.5*	5-yr		21		7408.46	7408.97	7408.97	7409.08	0.064271	2.66	7.88	37.45	1.02	0.05	0.84
WestTrib	47423.5*	10-yr		32		7408.46	7409.05	7409.05	7409.17	0.059416	2.86	11.18	45.01	1.01	0.06	0.92
WestTrib	47423.5*	25-yr		58		7408.46	7409.18	7409.18	7409.34	0.054376	3.24	17.92	56.12	1.01	0.1	1.08
WestTrib	47423.5*	50-yr		73		7408.46	7409.24	7409.24	7409.42	0.05383	3.44	21.25	60.38	1.02	0.12	1.18
WestTrib	47423.5*	100-yr		89		7408.46	7409.3	7409.3	7409.49	0.049503	3.55	25.04	63.48	1	0.14	1.22
WestTrib	47394.8*	2-yr		9		7406.72	7407.1	7407.09	7407.16	0.05461	1.97	4.56	30.12	0.89	1.77	0.52
WestTrib	47394.8*	5-yr		21		7406.72	7408.11		7408.11	0.000148	0.32	66.51	81.27	0.06	0	0.01
WestTrib	47394.8*	10-yr		32		7406.72	7408.19		7408.2	0.000255	0.43	73.74	84.24	0.08	0	0.01
WestTrib	47394.8*	25-yr		58		7406.72	7408.33		7408.34	0.000553	0.68	85.71	89.84	0.12	0	0.03
WestTrib	47394.8*	50-yr		73		7406.72	7408.39		7408.4	0.000735	0.8	91.41	92.54	0.14	0.01	0.05
WestTrib	47394.8*	100-yr		89		7406.72	7408.45		7408.46	0.000934	0.92	96.86	95.05	0.16	0.01	0.06
WestTrib	47366.1*	2-yr		9		7404.98	7405.33	7405.33	7405.39	0.069848	2.11	4.27	30.72	1	0.04	0.61
WestTrib	47366.1*	5-yr	0.06	20.91	0.03	7404.98	7408.11		7408.11	0.000003	0.1	223.24	98.43	0.01	0	0
WestTrib	47366.1*	10-yr	0.11	31.84	0.05	7404.98	7408.19		7408.19	0.000007	0.14	231.86	98.92	0.02	0	0
WestTrib	47366.1*	25-yr	0.24	57.65	0.12	7404.98	7408.33		7408.33	0.000018	0.24	245.68	99.69	0.03	0	0
WestTrib	47366.1*	50-yr	0.32	72.52	0.16	7404.98	7408.4		7408.4	0.000027	0.3	251.92	100.04	0.03	0	0
WestTrib	47366.1*	100-yr	0.42	88.38	0.2	7404.98	7408.45		7408.46	0.000037	0.35	257.84	100.36	0.04	0	0.01
WestTrib	47337.4*	2-yr		9		7403.24	7404.34	7403.55	7404.34	0.000077	0.21	43.26	60.77	0.04	0	0
WestTrib	47337.4*	5-yr	0.2	20.69	0.11	7403.24	7408.11	7403.66	7408.11	0.000001	0.06	371.79	98.63	0.01	0	0
WestTrib	47337.4*	10-yr	0.32	31.51	0.17	7403.24	7408.19	7403.74	7408.19	0.000001	0.09	380.48	99.03	0.01	0	0
WestTrib	47337.4*	25-yr	0.63	57.04	0.33	7403.24	7408.33	7403.87	7408.33	0.000004	0.15	394.25	99.67	0.01	0	0
WestTrib	47337.4*	50-yr	0.81	71.76	0.43	7403.24	7408.4	7403.92	7408.4	0.000006	0.19	400.54	99.95	0.02	0	0
WestTrib	47337.4*	100-yr	1.02	87.48	0.5	7403.24	7408.45	7403.99	7408.46	0.000008	0.23	406.41	100.93	0.02	0	0
WestTrib	47308.71	2-yr		9		7401.5	7404.34	7401.82	7404.34	0.000008	0.16	56.79	82.41	0.02		0
WestTrib	47308.71	5-yr	0.33	20.4	0.27	7401.5	7408.11	7402.02	7408.11	0	0.04	532.04	153.26	0		0
WestTrib	47308.71	10-yr	0.52	31	0.48	7401.5	7408.19	7402.12	7408.19	0	0.07	545.54	154.06	0.01		0
WestTrib	47308.71	25-yr	0.97	55.93	1.1	7401.5	7408.33	7402.31	7408.33	0.000001	0.12	567.07	155.33	0.01		0
WestTrib	47308.71	50-yr	1.24	70.24	1.52	7401.5	7408.4	7402.41	7408.4	0.000002	0.14	576.79	155.9	0.01		0
WestTrib	47308.71	100-yr	1.54	85.46	2.01	7401.5	7408.45	7402.5	7408.45	0.000003	0.17	585.94	156.43	0.02		0

Falcon DBPS

West Tributary Existing Conditions HEC-RAS Outputs

Reach	River Sta	Profile	Q Left	Q Channel	Q Right	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # XS	Headloss	Shear Total
			(cfs)	(cfs)	(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)		(ft)	(lb/sq ft)
WestTrib	47262		Culvert													
WestTrib	47224.28	2-yr		9		7400.63	7401.17	7401.17	7401.3	0.051606	2.85	3.16	11.44	0.96	7.75	0.88
WestTrib	47224.28	5-yr		21		7400.63	7401.39	7401.39	7401.57	0.049322	3.46	6.06	15.88	0.99	6.9	1.17
WestTrib	47224.28	10-yr		32		7400.63	7401.51	7401.51	7401.75	0.050153	3.87	8.27	18.55	1.02	6.76	1.39
WestTrib	47224.28	25-yr		58		7400.63	7401.78	7401.78	7402.05	0.042725	4.12	14.07	25.48	0.98	6.21	1.47
WestTrib	47224.28	50-yr		73		7400.63	7401.89	7401.89	7402.18	0.042069	4.25	17.16	29.32	0.98	6.01	1.53
WestTrib	47224.28	100-yr		89		7400.63	7401.99	7401.99	7402.29	0.040745	4.43	20.11	32.57	0.98	5.93	1.61
WestTrib	47079.43	2-yr		15		7392.78	7393.38	7393.38	7393.56	0.054487	3.34	4.5	13.41	1.02		1.13
WestTrib	47079.43	5-yr		37		7392.78	7393.68	7393.68	7393.93	0.046548	3.99	9.27	18.78	1	4.58	1.43
WestTrib	47079.43	10-yr		57		7392.78	7393.87	7393.87	7394.16	0.044693	4.32	13.2	23.02	1.01	4.82	1.59
WestTrib	47079.43	25-yr		110		7392.78	7394.21	7394.21	7394.58	0.042686	4.84	22.75	32.36	1.02	5.03	1.86
WestTrib	47079.43	50-yr		140		7392.78	7394.36	7394.36	7394.75	0.040828	5.01	27.94	36.45	1.01	5.01	1.94
WestTrib	47079.43	100-yr		170		7392.78	7394.48	7394.48	7394.91	0.040699	5.23	32.51	39.7	1.02	5.18	2.07
WestTrib	46818.78	2-yr		15		7384.39	7384.93	7384.93	7385.06	0.059518	2.95	5.09	19.56	1.02		0.96
WestTrib	46818.78	5-yr		37		7384.39	7385.44	7385.16	7385.5	0.008998	1.96	18.89	32.54	0.45	7.88	0.33
WestTrib	46818.78	10-yr		57		7384.39	7385.6	7385.3	7385.69	0.009871	2.33	24.49	34.87	0.49	7.98	0.43
WestTrib	46818.78	25-yr		110		7384.39	7385.95		7386.08	0.010714	2.94	37.37	39.75	0.54	8.14	0.63
WestTrib	46818.78	50-yr		140		7384.39	7386.11		7386.27	0.010899	3.19	43.94	42.03	0.55	8.22	0.71
WestTrib	46818.78	100-yr		170		7384.39	7386.24		7386.42	0.011475	3.44	49.43	43.81	0.57	8.3	0.8
WestTrib	46418.78	2-yr		12.46	2.54	7377.22	7377.41	7377.41	7377.48	0.076519	2.18	8.01	64.73	1.02	6.46	0.59
WestTrib	46418.78	5-yr		29.54	7.46	7377.22	7377.51	7377.51	7377.63	0.072436	2.97	14.7	71.06	1.06	6.96	0.94
WestTrib	46418.78	10-yr	0.02	44.23	12.75	7377.22	7377.6	7377.6	7377.73	0.062682	3.17	21.23	84.91	1.03	6.89	0.98
WestTrib	46418.78	25-yr	1.15	83.51	25.34	7377.22	7377.75	7377.75	7377.94	0.052411	3.88	34.98	95.15	1.02	7	1.2
WestTrib	46418.78	50-yr	2.11	105.15	32.74	7377.22	7377.81	7377.81	7378.04	0.052187	4.25	41.24	99	1.05	7.12	1.36
WestTrib	46418.78	100-yr	3.38	126.17	40.46	7377.22	7377.88	7377.88	7378.13	0.04812	4.46	48.4	103.23	1.03	7.01	1.41
WestTrib	46207.62	2-yr		15		7367.84	7368.73	7368.56	7368.8	0.016352	2.2	6.81	15.33	0.58	5.36	0.45
WestTrib	46207.62	5-yr		37		7367.84	7369.06	7368.86	7369.19	0.018737	2.9	12.74	20.96	0.66	5.59	0.71
WestTrib	46207.62	10-yr		57		7367.84	7369.25	7369.06	7369.42	0.019939	3.3	17.25	24.51	0.69	5.73	0.87
WestTrib	46207.62	25-yr		110		7367.84	7369.59	7369.41	7369.86	0.022804	4.17	26.35	29.15	0.77	5.96	1.28
WestTrib	46207.62	50-yr	0.02	139.98		7367.84	7369.74	7369.57	7370.06	0.023527	4.57	30.69	31.09	0.81	6.06	1.44
WestTrib	46207.62	100-yr	0.13	169.85	0.02	7367.84	7369.85	7369.71	7370.24	0.024196	4.98	34.36	32.66	0.85	6.14	1.58
WestTrib	46026.9	2-yr		15		7363.08	7363.37	7363.37	7363.44	0.069538	2.12	7.06	50.05	1	0.03	0.61
WestTrib	46026.9	5-yr		37		7363.08	7363.49	7363.49	7363.6	0.06019	2.66	13.92	63.22	1	0.07	0.83
WestTrib	46026.9	10-yr		57		7363.08	7363.57	7363.57	7363.7	0.057661	2.96	19.23	71.76	1.01	0.1	0.96
WestTrib	46026.9	25-yr		110		7363.08	7363.73	7363.73	7363.91	0.051226	3.42	32.18	88.76	1	0.21	1.16
WestTrib	46026.9	50-yr		140		7363.08	7363.8	7363.8	7364	0.050828	3.6	38.89	98.66	1.01	0.27	1.25

Falcon DBPS

West Tributary Existing Conditions HEC-RAS Outputs

Reach	River Sta	Profile	Q Left	Q Channel	Q Right	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # XS	Headloss	Shear Total
			(cfs)	(cfs)	(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)		(ft)	(lb/sq ft)
WestTrib	46026.9	100-yr		170		7363.08	7363.86	7363.86	7364.08	0.05026	3.8	44.7	103.55	1.02	0.33	1.35
WestTrib	45892.82	2-yr	0.02	14.93	0.04	7359.67	7362.13		7362.13	0.000014	0.15	104.12	74.98	0.02	0	0
WestTrib	45892.82	5-yr	0.08	36.76	0.16	7359.67	7362.24		7362.25	0.000066	0.34	112.57	76.74	0.05	0	0.01
WestTrib	45892.82	10-yr	0.16	56.53	0.3	7359.67	7362.33		7362.33	0.000132	0.49	119.18	78.09	0.07	0	0.01
WestTrib	45892.82	25-yr	0.49	108.63	0.88	7359.67	7362.51		7362.52	0.00035	0.86	133.67	80.97	0.12	0.01	0.04
WestTrib	45892.82	50-yr	0.74	137.95	1.31	7359.67	7362.6		7362.61	0.000488	1.04	140.69	82.33	0.14	0.01	0.05
WestTrib	45892.82	100-yr	1.04	167.16	1.81	7359.67	7362.67		7362.7	0.000631	1.21	147.08	83.55	0.16	0.01	0.07
WestTrib	45796.67	2-yr	0.82	12.75	1.43	7355.67	7362.13	7356.68	7362.13	0	0.05	392.02	138.28	0		0
WestTrib	45796.67	5-yr	2.13	31.22	3.65	7355.67	7362.25	7357	7362.25	0.000002	0.12	407.6	140.42	0.01		0
WestTrib	45796.67	10-yr	3.4	47.83	5.77	7355.67	7362.33	7357.17	7362.33	0.000005	0.18	419.67	142.06	0.02		0
WestTrib	45796.67	25-yr	7.06	91.22	11.72	7355.67	7362.51	7357.56	7362.52	0.000015	0.33	446.15	145.59	0.03		0
WestTrib	45796.67	50-yr	9.29	115.46	15.25	7355.67	7362.6	7357.7	7362.6	0.000023	0.4	458.94	147.26	0.04		0
WestTrib	45796.67	100-yr	11.6	139.52	18.88	7355.67	7362.68	7357.88	7362.68	0.000032	0.48	470.51	148.76	0.04		0.01
WestTrib	45766.17		Culvert													
WestTrib	45708.32	2-yr		15		7353.69	7354.49	7354.49	7354.7	0.051554	3.63	4.13	10.32	1.01	3.11	1.27
WestTrib	45708.32	5-yr		37		7353.69	7354.84	7354.84	7355.13	0.044878	4.32	8.57	14.87	1	3.38	1.59
WestTrib	45708.32	10-yr		57		7353.69	7355.24	7355.07	7355.45	0.022188	3.7	15.42	19.95	0.74	3.71	1.06
WestTrib	45708.32	25-yr		110		7353.69	7355.7	7355.47	7355.98	0.020141	4.23	26.01	25.53	0.74	3.61	1.26
WestTrib	45708.32	50-yr		140		7353.69	7355.88	7355.66	7356.2	0.020748	4.56	30.69	27.48	0.76	3.59	1.42
WestTrib	45708.32	100-yr		170		7353.69	7356.04	7355.82	7356.4	0.020983	4.82	35.3	29.36	0.77	3.53	1.55
WestTrib	45564.77	2-yr		24		7349.48	7350.81	7350.54	7350.92	0.014295	2.66	9.01	13.56	0.58	8.94	0.58
WestTrib	45564.77	5-yr		59		7349.48	7351.29	7351	7351.48	0.016797	3.54	16.65	18.44	0.66	9.21	0.93
WestTrib	45564.77	10-yr		89		7349.48	7351.41	7351.27	7351.75	0.028106	4.7	18.95	20.24	0.86	9.29	1.61
WestTrib	45564.77	25-yr		170		7349.48	7351.93	7351.82	7352.38	0.028695	5.36	31.7	28.32	0.89	9.54	1.97
WestTrib	45564.77	50-yr		210		7349.48	7352.14	7352.02	7352.61	0.027924	5.55	37.83	31.47	0.89	9.63	2.06
WestTrib	45564.77	100-yr		260		7349.48	7352.36	7352.22	7352.87	0.026889	5.73	45.34	34.94	0.89	9.71	2.14
WestTrib	45218.78	2-yr		24		7341.36	7341.85	7341.85	7341.98	0.060057	2.82	8.51	35.3	1.01		0.9
WestTrib	45218.78	5-yr	0.13	58.74	0.13	7341.36	7342.06	7342.06	7342.26	0.048485	3.67	16.39	44.11	1.06		1.12
WestTrib	45218.78	10-yr	2.01	86.29	0.7	7341.36	7342.28	7342.2	7342.46	0.025402	3.52	27.43	55.24	0.87	9.78	0.79
WestTrib	45218.78	25-yr	10.12	157.2	2.68	7341.36	7342.55	7342.48	7342.84	0.026255	4.52	44.1	68.69	0.96	9.75	1.05
WestTrib	45218.78	50-yr	15.91	190.21	3.89	7341.36	7342.64	7342.61	7342.99	0.027507	4.95	50.88	71.76	0.99	9.75	1.22
WestTrib	45218.78	100-yr	24.03	230.41	5.56	7341.36	7342.75	7342.74	7343.16	0.029133	5.44	58.45	74.43	1.03	9.76	1.43
WestTrib	44818.78	2-yr		24		7331.17	7331.74	7331.74	7331.93	0.051582	3.52	6.82	18.02	1.01		1.21
WestTrib	44818.78	5-yr		59		7331.17	7332.21	7332.06	7332.41	0.022494	3.55	16.61	23.15	0.74	8.2	1
WestTrib	44818.78	10-yr	0.05	88.95		7331.17	7332.43	7332.27	7332.69	0.023538	4.07	22.06	35.99	0.92	8.15	0.89

Falcon DBPS

West Tributary Existing Conditions HEC-RAS Outputs

Reach	River Sta	Profile	Q Left	Q Channel	Q Right	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # XS	Headloss	Shear Total
			(cfs)	(cfs)	(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)		(ft)	(lb/sq ft)
WestTrib	44818.78	25-yr	19.65	150.35		7331.17	7332.8	7332.78	7333.1	0.02267	4.67	47.94	82.6	1.02	7.94	0.82
WestTrib	44818.78	50-yr	34.56	175.44		7331.17	7332.94	7332.9	7333.25	0.021695	4.8	60.33	92.72	0.97	7.84	0.88
WestTrib	44818.78	100-yr	55.01	204.99		7331.17	7333.1	7333.02	7333.41	0.020603	4.91	76.22	107.91	0.93	7.75	0.91
WestTrib	44499.26	2-yr		24		7322.18	7323.41	7323.34	7323.63	0.035359	3.78	6.34	11.04	0.88	1.87	1.23
WestTrib	44499.26	5-yr		59		7322.18	7323.93	7323.81	7324.21	0.029476	4.28	13.8	17.55	0.85	2.01	1.41
WestTrib	44499.26	10-yr		89		7322.18	7324.22	7324.08	7324.54	0.02768	4.59	19.38	21.15	0.85	2.08	1.55
WestTrib	44499.26	25-yr		170		7322.18	7324.74	7324.61	7325.17	0.027265	5.27	32.24	28.38	0.87	2.24	1.9
WestTrib	44499.26	50-yr		210		7322.18	7324.93	7324.8	7325.41	0.027826	5.54	37.92	31.52	0.89	2.3	2.05
WestTrib	44499.26	100-yr		260		7322.18	7325.12	7325.03	7325.66	0.028804	5.87	44.32	34.72	0.92	2.37	2.26
WestTrib	44418.78	2-yr		24		7320.5	7321.67	7321.46	7321.76	0.015852	2.43	9.86	18.6	0.59	7.81	0.52
WestTrib	44418.78	5-yr		59		7320.5	7322.02	7321.84	7322.2	0.020796	3.36	17.54	24.97	0.71	7.99	0.9
WestTrib	44418.78	10-yr	0.11	88.89		7320.5	7322.22	7322.05	7322.46	0.02362	3.91	22.99	31.97	0.81	8.09	1.05
WestTrib	44418.78	25-yr	4.9	165.1		7320.5	7322.58	7322.51	7322.93	0.027835	4.84	38.3	53.24	0.99	8.22	1.24
WestTrib	44418.78	50-yr	10.02	199.98		7320.5	7322.71	7322.67	7323.1	0.028729	5.13	45.96	60.23	1.01	8.23	1.36
WestTrib	44418.78	100-yr	17.49	242.5	0.01	7320.5	7322.85	7322.83	7323.29	0.029387	5.47	54.77	67.62	1.04	8.27	1.48
WestTrib	44018.78	2-yr		24		7313.17	7313.89		7313.95	0.024605	1.96	12.27	45.06	0.66	7.43	0.42
WestTrib	44018.78	5-yr		59		7313.17	7314.13	7314	7314.21	0.019092	2.31	25.57	60.6	0.63	7.38	0.5
WestTrib	44018.78	10-yr		89		7313.17	7314.27	7314.1	7314.37	0.017359	2.6	34.29	63.42	0.62	7.37	0.58
WestTrib	44018.78	25-yr		170		7313.17	7314.57	7314.33	7314.72	0.015595	3.14	54.13	69.41	0.63	7.36	0.76
WestTrib	44018.78	50-yr		210		7313.17	7314.69		7314.86	0.015256	3.35	62.72	71.85	0.63	7.36	0.83
WestTrib	44018.78	100-yr		260		7313.17	7314.82		7315.02	0.015121	3.58	72.55	74.54	0.64	7.39	0.92
WestTrib	43618.78	2-yr		24		7305.88	7306.48	7306.33	7306.53	0.014607	1.83	13.09	35.83	0.53	3.88	0.33
WestTrib	43618.78	5-yr		59		7305.88	7306.73		7306.83	0.017836	2.51	23.55	46.93	0.62	3.96	0.56
WestTrib	43618.78	10-yr		89		7305.88	7306.88	7306.7	7307.01	0.019575	2.89	30.85	53.32	0.67	3.99	0.71
WestTrib	43618.78	25-yr	0.02	169.98		7305.88	7307.18		7307.36	0.022017	3.42	49.79	76.36	0.75	4.02	0.9
WestTrib	43618.78	50-yr	0.52	209.48		7305.88	7307.3		7307.5	0.022583	3.58	59.46	92.57	0.79	4.02	0.9
WestTrib	43618.78	100-yr	2.16	257.84		7305.88	7307.42		7307.63	0.023056	3.74	71.65	109.86	0.81	3.98	0.94
WestTrib	43453.91	2-yr		24		7301.97	7302.58	7302.55	7302.65	0.044163	2.13	11.27	56.45	0.84	2.1	0.55
WestTrib	43453.91	5-yr		59		7301.97	7302.75	7302.72	7302.87	0.03413	2.75	21.43	60.07	0.81	1.98	0.76
WestTrib	43453.91	10-yr		89		7301.97	7302.87	7302.8	7303.02	0.030636	3.11	28.66	61.86	0.8	1.93	0.88
WestTrib	43453.91	25-yr	0	169.96	0.04	7301.97	7303.12	7303.02	7303.35	0.027117	3.82	44.55	65.43	0.82	1.87	1.15
WestTrib	43453.91	50-yr	0.05	209.81	0.15	7301.97	7303.22	7303.12	7303.48	0.026254	4.12	51.24	66.78	0.83	1.85	1.25
WestTrib	43453.91	100-yr	0.22	259.39	0.39	7301.97	7303.34	7303.22	7303.64	0.025233	4.43	59.25	68.38	0.84	1.84	1.36
WestTrib	43386.36	2-yr		24		7299.45	7300.46	7300.35	7300.55	0.023122	2.31	10.38	27.95	0.67	5.66	0.53
WestTrib	43386.36	5-yr		59		7299.45	7300.74	7300.62	7300.88	0.025357	3.02	19.56	37.97	0.74	5.63	0.81
WestTrib	43386.36	10-yr		89		7299.45	7300.9	7300.78	7301.08	0.026691	3.42	26.03	43.58	0.78	5.61	0.98

Falcon DBPS

West Tributary Existing Conditions HEC-RAS Outputs

Reach	River Sta	Profile	Q Left	Q Channel	Q Right	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # XS	Headloss	Shear Total
			(cfs)	(cfs)	(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)		(ft)	(lb/sq ft)
WestTrib	43386.36	25-yr	0.02	169.87	0.11	7299.45	7301.19	7301.09	7301.47	0.028076	4.28	39.97	53.96	0.88	5.54	1.29
WestTrib	43386.36	50-yr	0.1	209.31	0.6	7299.45	7301.29	7301.21	7301.63	0.028471	4.67	45.77	57.94	0.92	5.5	1.39
WestTrib	43386.36	100-yr	0.27	257.83	1.89	7299.45	7301.4	7301.34	7301.81	0.029194	5.12	52.5	60.62	0.96	5.47	1.56
WestTrib	43218.78	2-yr		24		7294.2	7294.74	7294.74	7294.89	0.053834	3.12	7.69	25.18	1	4.54	1.02
WestTrib	43218.78	5-yr		59		7294.2	7294.99	7294.99	7295.24	0.046436	4.01	14.7	29.58	1	4.57	1.44
WestTrib	43218.78	10-yr		89		7294.2	7295.17	7295.17	7295.47	0.042954	4.45	20.01	32.51	1	4.53	1.65
WestTrib	43218.78	25-yr		170		7294.2	7295.52	7295.52	7295.94	0.039207	5.24	32.46	38.54	1.01	4.8	2.05
WestTrib	43218.78	50-yr		210		7294.2	7295.66	7295.66	7296.13	0.038086	5.52	38.05	40.83	1.01	4.83	2.21
WestTrib	43218.78	100-yr	0	260	0	7294.2	7295.81	7295.81	7296.34	0.036629	5.82	44.66	43.31	1.01	5	2.35
WestTrib	42818.78	2-yr		24		7285.58	7286.91		7286.95	0.004739	1.65	14.57	19.95	0.34	6.03	0.21
WestTrib	42818.78	5-yr		59		7285.58	7287.47		7287.54	0.004972	2.14	27.54	26.33	0.37	6.06	0.32
WestTrib	42818.78	10-yr		89		7285.58	7287.81		7287.9	0.005019	2.4	37.13	30.19	0.38	6.05	0.38
WestTrib	42818.78	25-yr		170		7285.58	7288.42		7288.56	0.005593	2.95	57.56	37.1	0.42	6.12	0.53
WestTrib	42818.78	50-yr		210		7285.58	7288.66		7288.82	0.005687	3.14	66.92	39.87	0.43	6.12	0.59
WestTrib	42818.78	100-yr		260		7285.58	7288.9		7289.08	0.006047	3.39	76.66	42.56	0.45	6.12	0.67
WestTrib	42418.78	2-yr		43		7279.67	7280.66	7280.66	7280.92	0.04723	4.04	10.64	21.42	1.01	8.26	1.46
WestTrib	42418.78	5-yr		110		7279.67	7281.11	7281.11	7281.49	0.041499	4.92	22.37	30.42	1.01	8.8	1.9
WestTrib	42418.78	10-yr		170		7279.67	7281.39	7281.39	7281.84	0.039464	5.42	31.39	35.56	1.02	9.15	2.16
WestTrib	42418.78	25-yr		310		7279.67	7281.88	7281.88	7282.43	0.03659	5.95	52.13	48.51	1.01	9.38	2.44
WestTrib	42418.78	50-yr		389.99	0.01	7279.67	7282.1	7282.1	7282.69	0.035103	6.19	63.01	54.93	1.02	9.35	2.5
WestTrib	42418.78	100-yr	0	479.25	0.75	7279.67	7282.3	7282.3	7282.95	0.032552	6.47	74.91	62.59	1.04	9.2	2.42
WestTrib	42018.78	2-yr		43		7267.87	7269.74	7269.32	7269.87	0.011442	2.98	14.45	15.49	0.54	5.1	0.65
WestTrib	42018.78	5-yr		110		7267.87	7270.45	7269.98	7270.69	0.013499	3.99	27.55	21.53	0.62	5.36	1.05
WestTrib	42018.78	10-yr		170		7267.87	7270.91	7270.39	7271.21	0.014782	4.35	39.05	28.82	0.66	5.49	1.22
WestTrib	42018.78	25-yr		310		7267.87	7271.59	7271.13	7271.97	0.016158	4.92	62.95	41.5	0.7	5.58	1.5
WestTrib	42018.78	50-yr		390		7267.87	7271.87	7271.43	7272.29	0.016522	5.19	75.17	46.67	0.72	5.57	1.63
WestTrib	42018.78	100-yr		480		7267.87	7272.13	7271.7	7272.59	0.016944	5.46	87.88	51.52	0.74	5.56	1.77
WestTrib	41774.8	2-yr		43		7263.58	7264.52	7264.52	7264.77	0.049342	3.99	10.79	22.86	1.02	1.03	1.45
WestTrib	41774.8	5-yr		110		7263.58	7264.94	7264.94	7265.34	0.041569	5.03	21.88	28.73	1.02	1.74	1.96
WestTrib	41774.8	10-yr		170		7263.58	7265.23	7265.23	7265.71	0.037917	5.61	30.32	31.53	1.01	2.05	2.26
WestTrib	41774.8	25-yr		310		7263.58	7265.73	7265.73	7266.39	0.034384	6.52	47.55	36.58	1.01	2.44	2.76
WestTrib	41774.8	50-yr		390		7263.58	7265.97	7265.97	7266.71	0.033144	6.89	56.61	38.98	1.01	2.58	2.97
WestTrib	41774.8	100-yr	0.06	479.94	0.01	7263.58	7266.2	7266.2	7267.03	0.031712	7.32	65.65	41.24	1.02	2.7	3.12
WestTrib	41539.1	2-yr		43		7260.77	7262.38		7262.4	0.001382	0.92	46.7	60.95	0.19	0.01	0.07
WestTrib	41539.1	5-yr		110		7260.77	7262.73		7262.77	0.002736	1.61	68.12	63.84	0.28	0.05	0.18
WestTrib	41539.1	10-yr		170		7260.77	7262.96		7263.03	0.003453	2.03	83.54	65.85	0.32	0.09	0.27

Falcon DBPS

West Tributary Existing Conditions HEC-RAS Outputs

Reach	River Sta	Profile	Q Left	Q Channel	Q Right	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # XS	Headloss	Shear Total
			(cfs)	(cfs)	(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)		(ft)	(lb/sq ft)
WestTrib	41539.1	25-yr		310		7260.77	7263.4		7263.52	0.004484	2.74	113.25	69.54	0.38	0.15	0.45
WestTrib	41539.1	50-yr		390		7260.77	7263.61		7263.76	0.004878	3.05	128.04	71.31	0.4	0.19	0.54
WestTrib	41539.1	100-yr		480		7260.77	7263.83		7264	0.005266	3.34	143.65	73.73	0.42	0.22	0.63
WestTrib	41465.66	2-yr	0.64	38.16	4.2	7257.5	7262.38	7258.93	7262.38	0.000058	0.47	115.09	63.38	0.06		0.01
WestTrib	41465.66	5-yr	3.11	94.57	12.33	7257.5	7262.7	7259.66	7262.71	0.000257	1.06	136.22	68.35	0.12		0.03
WestTrib	41465.66	10-yr	6.34	143.06	20.6	7257.5	7262.91	7260.08	7262.94	0.000483	1.51	151.12	71.64	0.17		0.06
WestTrib	41465.66	25-yr	16.38	250.42	43.2	7257.5	7263.29	7260.8	7263.36	0.001069	2.39	179.21	76.25	0.25		0.15
WestTrib	41465.66	50-yr	23.32	309.2	57.48	7257.5	7263.47	7261.09	7263.57	0.001415	2.83	192.82	78.15	0.29		0.21
WestTrib	41465.66	100-yr	31.95	373.73	74.32	7257.5	7263.64	7261.43	7263.78	0.001804	3.28	206.8	80.07	0.32		0.28
WestTrib	41441.59		Culvert													
WestTrib	41405.38	2-yr		43		7257.33	7258.27	7258.14	7258.44	0.026369	3.35	12.83	25	0.77	0.99	0.95
WestTrib	41405.38	5-yr		110		7257.33	7258.73	7258.6	7258.95	0.026345	3.78	29.09	41.35	0.79	0.96	1.14
WestTrib	41405.38	10-yr		170		7257.33	7258.96	7258.8	7259.25	0.025956	4.36	38.97	44.22	0.82	0.94	1.41
WestTrib	41405.38	25-yr		310		7257.33	7259.39	7259.26	7259.81	0.024835	5.23	59.29	49.6	0.84	0.92	1.83
WestTrib	41405.38	50-yr		390	0	7257.33	7259.6	7259.44	7260.08	0.024336	5.59	69.8	52.17	0.85	0.9	2.01
WestTrib	41405.38	100-yr		479.9	0.1	7257.33	7259.79	7259.64	7260.35	0.023897	5.99	80.27	54.6	0.87	0.89	2.17
WestTrib	41368.0*	2-yr		43		7256.12	7257.31		7257.46	0.025882	3.1	13.85	26.11	0.75	1.02	0.85
WestTrib	41368.0*	5-yr		110		7256.12	7257.75		7257.98	0.024963	3.86	28.53	37.9	0.78	0.99	1.16
WestTrib	41368.0*	10-yr		170		7256.12	7258		7258.31	0.024299	4.42	38.49	40.86	0.8	0.98	1.41
WestTrib	41368.0*	25-yr		310		7256.12	7258.46		7258.9	0.023914	5.32	58.25	46.18	0.84	0.94	1.86
WestTrib	41368.0*	50-yr		390		7256.12	7258.68		7259.18	0.023643	5.69	68.57	48.77	0.85	0.92	2.05
WestTrib	41368.0*	100-yr		479.99	0.01	7256.12	7258.89	7258.7	7259.46	0.023453	6.06	79.22	51.56	0.86	0.9	2.22
WestTrib	41330.7*	2-yr		43		7254.91	7256.25	7256.15	7256.43	0.029059	3.38	12.73	23.05	0.8	1.07	0.99
WestTrib	41330.7*	5-yr		110		7254.91	7256.72		7256.99	0.028202	4.17	26.36	34.11	0.84	0.99	1.35
WestTrib	41330.7*	10-yr		170		7254.91	7256.98	7256.86	7257.33	0.027958	4.8	35.43	36.92	0.86	0.97	1.66
WestTrib	41330.7*	25-yr		310		7254.91	7257.47		7257.96	0.026031	5.65	54.83	42.31	0.88	0.92	2.08
WestTrib	41330.7*	50-yr		390		7254.91	7257.7	7257.55	7258.26	0.025458	6.01	64.85	44.85	0.88	0.91	2.27
WestTrib	41330.7*	100-yr		480		7254.91	7257.94	7257.78	7258.56	0.024713	6.32	75.91	47.61	0.88	0.89	2.43
WestTrib	41293.4*	2-yr		43		7253.69	7255.18		7255.37	0.027983	3.53	12.18	20.02	0.8	1.11	1.05
WestTrib	41293.4*	5-yr		110		7253.69	7255.73		7256	0.025079	4.19	26.25	30.83	0.8	1.05	1.32
WestTrib	41293.4*	10-yr		170		7253.69	7256.03		7256.38	0.02389	4.73	35.97	34	0.81	1.01	1.56
WestTrib	41293.4*	25-yr		310		7253.69	7256.55		7257.04	0.023281	5.62	55.21	39.51	0.84	0.96	2
WestTrib	41293.4*	50-yr		390		7253.69	7256.79		7257.35	0.023186	6	65.04	42.04	0.85	0.94	2.21
WestTrib	41293.4*	100-yr		480		7253.69	7257.04	7256.84	7257.66	0.023193	6.36	75.45	44.63	0.86	0.92	2.41
WestTrib	41256.1*	2-yr		43		7252.48	7254.04	7253.94	7254.27	0.031276	3.89	11.06	17.02	0.85	1.1	1.24

Falcon DBPS

West Tributary Existing Conditions HEC-RAS Outputs

Reach	River Sta	Profile	Q Left	Q Channel	Q Right	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # XS	Headloss	Shear Total
			(cfs)	(cfs)	(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)		(ft)	(lb/sq ft)
WestTrib	41256.1*	5-yr		110		7252.48	7254.59	7254.51	7254.96	0.031078	4.85	22.66	24.95	0.9	1.03	1.73
WestTrib	41256.1*	10-yr		170		7252.48	7254.93	7254.84	7255.37	0.030111	5.34	31.81	29.66	0.91	0.97	1.98
WestTrib	41256.1*	25-yr		310		7252.48	7255.49	7255.38	7256.08	0.027933	6.2	50.03	35.28	0.92	0.88	2.43
WestTrib	41256.1*	50-yr		390		7252.48	7255.76	7255.64	7256.42	0.026777	6.51	59.88	37.97	0.91	0.85	2.59
WestTrib	41256.1*	100-yr		480		7252.48	7256.03	7255.9	7256.75	0.02558	6.79	70.71	40.71	0.91	0.81	2.73
WestTrib	41218.78	2-yr		43		7251.27	7252.93	7252.81	7253.17	0.028003	3.92	10.98	15.23	0.81	7.11	1.22
WestTrib	41218.78	5-yr		110		7251.27	7253.6	7253.41	7253.94	0.024178	4.67	23.55	22.58	0.81	6.92	1.53
WestTrib	41218.78	10-yr		170		7251.27	7254.01	7253.79	7254.4	0.022229	5.04	33.71	27.1	0.8	6.81	1.68
WestTrib	41218.78	25-yr		310		7251.27	7254.73	7254.39	7255.21	0.018488	5.52	56.14	34.33	0.76	6.75	1.84
WestTrib	41218.78	50-yr		390		7251.27	7255.05	7254.68	7255.57	0.017662	5.77	67.57	37.36	0.76	6.77	1.95
WestTrib	41218.78	100-yr		480		7251.27	7255.4	7254.95	7255.94	0.016388	5.93	80.96	40.66	0.74	6.81	1.99
WestTrib	40884.05	2-yr		43		7243.77	7245.86	7245.55	7246.07	0.016636	3.68	11.69	11.71	0.65	11.15	0.98
WestTrib	40884.05	5-yr		110		7243.77	7246.66	7246.32	7247.02	0.017885	4.76	23.1	16.63	0.71	11.63	1.46
WestTrib	40884.05	10-yr		170		7243.77	7247.16	7246.78	7247.59	0.018671	5.28	32.19	20.57	0.74	11.91	1.73
WestTrib	40884.05	25-yr	2.11	307.89		7243.77	7247.89	7247.64	7248.46	0.022044	6.08	52.3	35.04	0.87	12.26	1.97
WestTrib	40884.05	50-yr	5.55	384.45		7243.77	7248.17	7247.99	7248.81	0.023272	6.46	62.85	40.77	0.91	12.37	2.15
WestTrib	40884.05	100-yr	10.22	469.78		7243.77	7248.39	7248.31	7249.13	0.02576	6.99	72.29	45.29	0.97	12.44	2.47
WestTrib	40418.78	2-yr		43		7233.96	7234.77	7234.73	7234.93	0.037324	3.17	13.57	32.96	0.87	8.02	0.96
WestTrib	40418.78	5-yr		110		7233.96	7235.11	7235.07	7235.38	0.03719	4.21	26.14	41.38	0.93	7.45	1.46
WestTrib	40418.78	10-yr		170		7233.96	7235.33	7235.29	7235.68	0.037068	4.76	35.7	46.83	0.96	7.06	1.76
WestTrib	40418.78	25-yr		310		7233.96	7235.75	7235.69	7236.2	0.03185	5.38	57.57	56.03	0.94	6.39	2.03
WestTrib	40418.78	50-yr		390		7233.96	7235.93	7235.86	7236.44	0.030457	5.76	67.69	57.51	0.94	6.09	2.23
WestTrib	40418.78	100-yr		480		7233.96	7236.14	7236.04	7236.7	0.027534	6	80.01	59.27	0.91	5.83	2.31
WestTrib	40018.78	2-yr		67		7224.51	7226.41	7226.41	7226.92	0.014516	5.71	11.74	11.96	1.01	5.72	0.85
WestTrib	40018.78	5-yr		160		7224.51	7227.23	7227.23	7227.94	0.012809	6.75	23.7	17.07	1.01	5.2	1.06
WestTrib	40018.78	10-yr		250		7224.51	7227.79	7227.79	7228.62	0.011921	7.33	34.13	20.62	1	4.91	1.17
WestTrib	40018.78	25-yr		470		7224.51	7228.73	7228.73	7229.81	0.011084	8.32	56.51	26.74	1.01	4.69	1.39
WestTrib	40018.78	50-yr		600		7224.51	7229.18	7229.18	7230.35	0.010591	8.68	69.1	29.63	1	4.57	1.47
WestTrib	40018.78	100-yr		740		7224.51	7229.58	7229.58	7230.86	0.01035	9.07	81.63	32.25	1	4.5	1.56
WestTrib	39618.78	2-yr		67		7216.53	7218.34	7218.31	7218.7	0.013852	4.81	13.94	18.21	0.97	5.64	0.65
WestTrib	39618.78	5-yr		157.41	2.59	7216.53	7218.96	7218.96	7219.43	0.012816	5.55	30.88	35.53	1.04	5.13	0.68
WestTrib	39618.78	10-yr		242.04	7.96	7216.53	7219.33	7219.33	7219.89	0.012185	6.05	45.85	44.33	1.03	4.74	0.77
WestTrib	39618.78	25-yr		443.43	26.57	7216.53	7219.98	7219.98	7220.65	0.011802	6.78	80.13	62.5	1.03	3.79	0.93
WestTrib	39618.78	50-yr		561.35	38.65	7216.53	7220.24	7220.24	7221	0.011696	7.2	97.54	68.85	1.03	3.75	1.02
WestTrib	39618.78	100-yr	0	687.1	52.9	7216.53	7220.5	7220.5	7221.33	0.011505	7.56	115.79	74.96	1.04	3.59	1.09
WestTrib	39218.78	2-yr		67		7211.07	7212.57	7212.57	7213.07	0.014258	5.71	11.74	11.86	1.01	5.68	0.84

Falcon DBPS

West Tributary Existing Conditions HEC-RAS Outputs

Reach	River Sta	Profile	Q Left	Q Channel	Q Right	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # XS	Headloss	Shear Total
			(cfs)	(cfs)	(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)		(ft)	(lb/sq ft)
WestTrib	39218.78	5-yr		160		7211.07	7213.38	7213.38	7214.14	0.01269	6.96	22.99	15.65	1.01	5.01	1.1
WestTrib	39218.78	10-yr		249.73	0.27	7211.07	7213.96	7213.96	7214.86	0.011376	7.64	33.28	22.95	1.12	4.8	0.98
WestTrib	39218.78	25-yr	0.03	441.83	28.15	7211.07	7215.09	7215.09	7216.06	0.007656	8.15	77.05	54.63	1.17	3.76	0.66
WestTrib	39218.78	50-yr	0.31	542.09	57.6	7211.07	7215.46	7215.46	7216.55	0.007552	8.81	97.71	56.92	1.13	3.62	0.79
WestTrib	39218.78	100-yr	1.75	642.33	95.92	7211.07	7215.86	7215.86	7217.02	0.007089	9.25	122.29	68.57	1.14	3.4	0.77
WestTrib	38818.78	2-yr		67		7204.61	7206.09	7206.07	7206.5	0.014015	5.17	12.97	15.09	0.98	4.98	0.72
WestTrib	38818.78	5-yr		160		7204.61	7206.81	7206.78	7207.4	0.012134	6.19	25.86	20.54	0.97	5.12	0.91
WestTrib	38818.78	10-yr		250		7204.61	7207.25	7207.25	7208.01	0.012439	7	35.69	23.94	1.01	5.26	1.11
WestTrib	38818.78	25-yr		470		7204.61	7208.16	7208.16	7209.04	0.011646	7.53	62.43	35.95	1.01	4.81	1.22
WestTrib	38818.78	50-yr		599.89	0.11	7204.61	7208.48	7208.48	7209.5	0.010925	8.09	74.31	37.64	1.02	4.42	1.29
WestTrib	38818.78	100-yr	0.07	739.26	0.67	7204.61	7208.79	7208.79	7209.96	0.010392	8.66	86.21	39.63	1.03	4.2	1.35
WestTrib	38418.78	2-yr		67		7200.04	7201.23	7201.15	7201.53	0.010975	4.39	15.27	19.33	0.87	4.93	0.53
WestTrib	38418.78	5-yr		160		7200.04	7201.78	7201.78	7202.29	0.013386	5.71	28.01	27.76	1	5.08	0.83
WestTrib	38418.78	10-yr		250		7200.04	7202.22	7202.22	7202.75	0.013561	5.81	42.99	42.06	1.01	4.81	0.86
WestTrib	38418.78	25-yr	0.02	469.46	0.52	7200.04	7202.79	7202.79	7203.46	0.01211	6.57	72.55	63.69	1.08	4.3	0.85
WestTrib	38418.78	50-yr	0.21	595.49	4.3	7200.04	7203.05	7203.05	7203.8	0.010797	6.99	90.61	72.18	1.09	3.96	0.84
WestTrib	38418.78	100-yr	0.66	728.2	11.14	7200.04	7203.29	7203.29	7204.14	0.010114	7.42	108.14	73.77	1.07	3.78	0.92
WestTrib	38018.78	2-yr	1.05	65.16	0.8	7195.31	7196.32	7196.31	7196.59	0.013916	4.24	17.8	36.85	1.06	5.51	0.42
WestTrib	38018.78	5-yr	7.68	147.86	4.46	7195.31	7196.76	7196.76	7197.21	0.011998	5.63	36.9	50.08	1.11	5.11	0.55
WestTrib	38018.78	10-yr	18.44	221.67	9.89	7195.31	7197.09	7197.09	7197.66	0.010713	6.4	55.48	59.76	1.11	4.67	0.62
WestTrib	38018.78	25-yr	55.05	386.96	28	7195.31	7197.72	7197.72	7198.49	0.009571	7.73	97.77	75.55	1.09	4.39	0.77
WestTrib	38018.78	50-yr	81.23	477.53	41.23	7195.31	7198.02	7198.02	7198.88	0.009065	8.27	122.21	82.56	1.08	4.18	0.84
WestTrib	38018.78	100-yr	114.71	570.67	54.63	7195.31	7198.31	7198.31	7199.25	0.008801	8.81	146.56	87.82	1.06	4.06	0.91
WestTrib	37618.78	2-yr		67		7190.23	7190.9	7190.86	7191.07	0.013496	3.3	20.28	46.56	0.88	4.54	0.37
WestTrib	37618.78	5-yr		157.66	2.34	7190.23	7191.21	7191.21	7191.51	0.013404	4.46	39.63	84.38	1.14		0.39
WestTrib	37618.78	10-yr		237.96	12.04	7190.23	7191.43	7191.43	7191.81	0.012448	5.03	59.15	88.67	1.06	3.84	0.52
WestTrib	37618.78	25-yr	0.02	428.64	41.34	7190.23	7191.82	7191.82	7192.36	0.012266	6.19	94.72	94.59	1.04	4.41	0.77
WestTrib	37618.78	50-yr	0.21	539.7	60.09	7190.23	7192.01	7192.01	7192.65	0.011787	6.7	113.3	96.65	1.04	4.44	0.86
WestTrib	37618.78	100-yr	0.71	658.19	81.11	7190.23	7192.2	7192.2	7192.92	0.011392	7.18	132.09	98.7	1.04	4.52	0.95
WestTrib	37218.78	2-yr	0.1	57.94	8.97	7184.96	7186.34	7186.28	7186.54	0.009658	3.88	27.2	69.67	1.02	3.49	0.23
WestTrib	37218.78	5-yr	0.87	118.97	40.17	7184.96	7186.73	7186.7	7187.04	0.009492	5.15	65.65	130.11	1.11	3.56	0.3
WestTrib	37218.78	10-yr	1.99	157.16	90.85	7184.96	7187.03	7187.03	7187.32	0.007525	5.37	117.02	185.32	0.95	3.21	0.3
WestTrib	37218.78	25-yr	4.59	247.57	217.84	7184.96	7187.33	7187.33	7187.75	0.009804	6.97	173.59	189.03	0.95	3.14	0.56
WestTrib	37218.78	50-yr	6.42	294.29	299.29	7184.96	7187.5	7187.5	7187.96	0.010252	7.57	204.49	191.02	0.93	3.19	0.68
WestTrib	37218.78	100-yr	8.53	343.9	387.57	7184.96	7187.64	7187.64	7188.16	0.010914	8.21	232.51	192.82	0.93	3.28	0.82
WestTrib	36914.66	2-yr		48.14	18.86	7182.01	7182.91	7182.83	7183.04	0.01365	3.31	28.87	64.94	0.76	6.29	0.38

Falcon DBPS

West Tributary Future Conditions HEC-RAS Outputs

Reach	River Sta	Profile	Q Left	Q Channel	Q Right	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # XS	Headloss	Shear Total
			(cfs)	(cfs)	(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)		(ft)	(lb/sq ft)
WestTrib	47452.25	2-yr		9		7410.2	7410.59	7410.57	7410.67	0.057877	2.38	3.78	19.64	0.96	1.76	0.69
WestTrib	47452.25	5-yr		21		7410.2	7410.74	7410.74	7410.85	0.059512	2.66	7.9	35.51	0.99	1.78	0.83
WestTrib	47452.25	10-yr		32		7410.2	7410.82	7410.82	7410.95	0.060295	2.96	10.83	41.98	1.03	1.72	0.97
WestTrib	47452.25	25-yr		58		7410.2	7410.96	7410.96	7411.13	0.056237	3.32	17.45	53.8	1.03	1.59	1.14
WestTrib	47452.25	50-yr		73		7410.2	7411.02	7411.02	7411.21	0.052171	3.42	21.35	59.69	1.01	1.52	1.16
WestTrib	47452.25	100-yr		89		7410.2	7411.08	7411.08	7411.28	0.051479	3.56	24.97	64.94	1.01	1.45	1.23
WestTrib	47423.5*	2-yr		9		7408.46	7408.83	7408.83	7408.92	0.06487	2.4	3.75	20.92	1	1.71	0.72
WestTrib	47423.5*	5-yr		21		7408.46	7408.97	7408.97	7409.08	0.064271	2.66	7.88	37.45	1.02	0.05	0.84
WestTrib	47423.5*	10-yr		32		7408.46	7409.05	7409.05	7409.17	0.059416	2.86	11.18	45.01	1.01	0.06	0.92
WestTrib	47423.5*	25-yr		58		7408.46	7409.18	7409.18	7409.34	0.054376	3.24	17.92	56.12	1.01	0.1	1.08
WestTrib	47423.5*	50-yr		73		7408.46	7409.24	7409.24	7409.42	0.05383	3.44	21.25	60.38	1.02	0.12	1.18
WestTrib	47423.5*	100-yr		89		7408.46	7409.3	7409.3	7409.49	0.049503	3.55	25.04	63.48	1	0.14	1.22
WestTrib	47394.8*	2-yr		9		7406.72	7407.1	7407.09	7407.16	0.05461	1.97	4.56	30.12	0.89	1.77	0.52
WestTrib	47394.8*	5-yr		21		7406.72	7408.11		7408.11	0.000148	0.32	66.51	81.27	0.06	0	0.01
WestTrib	47394.8*	10-yr		32		7406.72	7408.19		7408.2	0.000255	0.43	73.74	84.24	0.08	0	0.01
WestTrib	47394.8*	25-yr		58		7406.72	7408.33		7408.34	0.000553	0.68	85.71	89.84	0.12	0	0.03
WestTrib	47394.8*	50-yr		73		7406.72	7408.39		7408.4	0.000735	0.8	91.41	92.54	0.14	0.01	0.05
WestTrib	47394.8*	100-yr		89		7406.72	7408.45		7408.46	0.000934	0.92	96.86	95.05	0.16	0.01	0.06
WestTrib	47366.1*	2-yr		9		7404.98	7405.33	7405.33	7405.39	0.069848	2.11	4.27	30.72	1	0.04	0.61
WestTrib	47366.1*	5-yr	0.06	20.91	0.03	7404.98	7408.11		7408.11	0.000003	0.1	223.24	98.43	0.01	0	0
WestTrib	47366.1*	10-yr	0.11	31.84	0.05	7404.98	7408.19		7408.19	0.000007	0.14	231.86	98.92	0.02	0	0
WestTrib	47366.1*	25-yr	0.24	57.65	0.12	7404.98	7408.33		7408.33	0.000018	0.24	245.68	99.69	0.03	0	0
WestTrib	47366.1*	50-yr	0.32	72.52	0.16	7404.98	7408.4		7408.4	0.000027	0.3	251.92	100.04	0.03	0	0
WestTrib	47366.1*	100-yr	0.42	88.38	0.2	7404.98	7408.45		7408.46	0.000037	0.35	257.84	100.36	0.04	0	0.01
WestTrib	47337.4*	2-yr		9		7403.24	7404.34	7403.55	7404.34	0.000077	0.21	43.26	60.77	0.04	0	0
WestTrib	47337.4*	5-yr	0.2	20.69	0.11	7403.24	7408.11	7403.66	7408.11	0.000001	0.06	371.79	98.63	0.01	0	0
WestTrib	47337.4*	10-yr	0.32	31.51	0.17	7403.24	7408.19	7403.74	7408.19	0.000001	0.09	380.48	99.03	0.01	0	0
WestTrib	47337.4*	25-yr	0.63	57.04	0.33	7403.24	7408.33	7403.87	7408.33	0.000004	0.15	394.25	99.67	0.01	0	0
WestTrib	47337.4*	50-yr	0.81	71.76	0.43	7403.24	7408.4	7403.92	7408.4	0.000006	0.19	400.54	99.95	0.02	0	0
WestTrib	47337.4*	100-yr	1.02	87.48	0.5	7403.24	7408.45	7403.99	7408.46	0.000008	0.23	406.41	100.93	0.02	0	0
WestTrib	47308.71	2-yr		9		7401.5	7404.34	7401.82	7404.34	0.000008	0.16	56.79	82.41	0.02		0
WestTrib	47308.71	5-yr	0.33	20.4	0.27	7401.5	7408.11	7402.02	7408.11	0	0.04	532.04	153.26	0		0
WestTrib	47308.71	10-yr	0.52	31	0.48	7401.5	7408.19	7402.12	7408.19	0	0.07	545.54	154.06	0.01		0
WestTrib	47308.71	25-yr	0.97	55.93	1.1	7401.5	7408.33	7402.31	7408.33	0.000001	0.12	567.07	155.33	0.01		0
WestTrib	47308.71	50-yr	1.24	70.24	1.52	7401.5	7408.4	7402.41	7408.4	0.000002	0.14	576.79	155.9	0.01		0
WestTrib	47308.71	100-yr	1.54	85.46	2.01	7401.5	7408.45	7402.5	7408.45	0.000003	0.17	585.94	156.43	0.02		0

Falcon DBPS

West Tributary Future Conditions HEC-RAS Outputs

Reach	River Sta	Profile	Q Left	Q Channel	Q Right	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # XS	Headloss	Shear Total
			(cfs)	(cfs)	(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)		(ft)	(lb/sq ft)
WestTrib	47262		Culvert													
WestTrib	47224.28	2-yr		9		7400.63	7401.17	7401.17	7401.3	0.051606	2.85	3.16	11.44	0.96	7.75	0.88
WestTrib	47224.28	5-yr		21		7400.63	7401.39	7401.39	7401.57	0.049322	3.46	6.06	15.88	0.99	6.9	1.17
WestTrib	47224.28	10-yr		32		7400.63	7401.51	7401.51	7401.75	0.050153	3.87	8.27	18.55	1.02	6.76	1.39
WestTrib	47224.28	25-yr		58		7400.63	7401.78	7401.78	7402.05	0.042725	4.12	14.07	25.48	0.98	6.21	1.47
WestTrib	47224.28	50-yr		73		7400.63	7401.89	7401.89	7402.18	0.042069	4.25	17.16	29.32	0.98	6.01	1.53
WestTrib	47224.28	100-yr		89		7400.63	7401.99	7401.99	7402.29	0.040745	4.43	20.11	32.57	0.98	5.93	1.61
WestTrib	47079.43	2-yr		15		7392.78	7393.38	7393.38	7393.56	0.054487	3.34	4.5	13.41	1.02		1.13
WestTrib	47079.43	5-yr		37		7392.78	7393.68	7393.68	7393.93	0.046548	3.99	9.27	18.78	1	4.58	1.43
WestTrib	47079.43	10-yr		57		7392.78	7393.87	7393.87	7394.16	0.044693	4.32	13.2	23.02	1.01	4.82	1.59
WestTrib	47079.43	25-yr		110		7392.78	7394.21	7394.21	7394.58	0.042686	4.84	22.75	32.36	1.02	5.03	1.86
WestTrib	47079.43	50-yr		140		7392.78	7394.36	7394.36	7394.75	0.040828	5.01	27.94	36.45	1.01	5.01	1.94
WestTrib	47079.43	100-yr		170		7392.78	7394.48	7394.48	7394.91	0.040699	5.23	32.51	39.7	1.02	5.18	2.07
WestTrib	46818.78	2-yr		15		7384.39	7384.93	7384.93	7385.06	0.059518	2.95	5.09	19.56	1.02		0.96
WestTrib	46818.78	5-yr		37		7384.39	7385.44	7385.16	7385.5	0.008998	1.96	18.89	32.54	0.45	7.88	0.33
WestTrib	46818.78	10-yr		57		7384.39	7385.6	7385.3	7385.69	0.009871	2.33	24.49	34.87	0.49	7.98	0.43
WestTrib	46818.78	25-yr		110		7384.39	7385.95		7386.08	0.010714	2.94	37.37	39.75	0.54	8.14	0.63
WestTrib	46818.78	50-yr		140		7384.39	7386.11		7386.27	0.010899	3.19	43.94	42.03	0.55	8.22	0.71
WestTrib	46818.78	100-yr		170		7384.39	7386.24		7386.42	0.011475	3.44	49.43	43.81	0.57	8.3	0.8
WestTrib	46418.78	2-yr		12.46	2.54	7377.22	7377.41	7377.41	7377.48	0.076519	2.18	8.01	64.73	1.02	6.46	0.59
WestTrib	46418.78	5-yr		29.54	7.46	7377.22	7377.51	7377.51	7377.63	0.072436	2.97	14.7	71.06	1.06	6.96	0.94
WestTrib	46418.78	10-yr	0.02	44.23	12.75	7377.22	7377.6	7377.6	7377.73	0.062682	3.17	21.23	84.91	1.03	6.89	0.98
WestTrib	46418.78	25-yr	1.15	83.51	25.34	7377.22	7377.75	7377.75	7377.94	0.052411	3.88	34.98	95.15	1.02	7	1.2
WestTrib	46418.78	50-yr	2.11	105.15	32.74	7377.22	7377.81	7377.81	7378.04	0.052187	4.25	41.24	99	1.05	7.12	1.36
WestTrib	46418.78	100-yr	3.38	126.17	40.46	7377.22	7377.88	7377.88	7378.13	0.04812	4.46	48.4	103.23	1.03	7.01	1.41
WestTrib	46207.62	2-yr		15		7367.84	7368.73	7368.56	7368.8	0.016352	2.2	6.81	15.33	0.58	5.36	0.45
WestTrib	46207.62	5-yr		37		7367.84	7369.06	7368.86	7369.19	0.018737	2.9	12.74	20.96	0.66	5.59	0.71
WestTrib	46207.62	10-yr		57		7367.84	7369.25	7369.06	7369.42	0.019939	3.3	17.25	24.51	0.69	5.73	0.87
WestTrib	46207.62	25-yr		110		7367.84	7369.59	7369.41	7369.86	0.022804	4.17	26.35	29.15	0.77	5.96	1.28
WestTrib	46207.62	50-yr	0.02	139.98		7367.84	7369.74	7369.57	7370.06	0.023527	4.57	30.69	31.09	0.81	6.06	1.44
WestTrib	46207.62	100-yr	0.13	169.85	0.02	7367.84	7369.85	7369.71	7370.24	0.024196	4.98	34.36	32.66	0.85	6.14	1.58
WestTrib	46026.9	2-yr		15		7363.08	7363.37	7363.37	7363.44	0.069538	2.12	7.06	50.05	1	0.03	0.61
WestTrib	46026.9	5-yr		37		7363.08	7363.49	7363.49	7363.6	0.06019	2.66	13.92	63.22	1	0.07	0.83
WestTrib	46026.9	10-yr		57		7363.08	7363.57	7363.57	7363.7	0.057661	2.96	19.23	71.76	1.01	0.1	0.96
WestTrib	46026.9	25-yr		110		7363.08	7363.73	7363.73	7363.91	0.051226	3.42	32.18	88.76	1	0.21	1.16
WestTrib	46026.9	50-yr		140		7363.08	7363.8	7363.8	7364	0.050828	3.6	38.89	98.66	1.01	0.27	1.25

Falcon DBPS

West Tributary Future Conditions HEC-RAS Outputs

Reach	River Sta	Profile	Q Left	Q Channel	Q Right	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # XS	Headloss	Shear Total
			(cfs)	(cfs)	(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)		(ft)	(lb/sq ft)
WestTrib	46026.9	100-yr		170		7363.08	7363.86	7363.86	7364.08	0.05026	3.8	44.7	103.55	1.02	0.33	1.35
WestTrib	45892.82	2-yr	0.02	14.93	0.04	7359.67	7362.13		7362.13	0.000014	0.15	104.12	74.98	0.02	0	0
WestTrib	45892.82	5-yr	0.08	36.76	0.16	7359.67	7362.24		7362.25	0.000066	0.34	112.57	76.74	0.05	0	0.01
WestTrib	45892.82	10-yr	0.16	56.53	0.3	7359.67	7362.33		7362.33	0.000132	0.49	119.18	78.09	0.07	0	0.01
WestTrib	45892.82	25-yr	0.49	108.63	0.88	7359.67	7362.51		7362.52	0.00035	0.86	133.67	80.97	0.12	0.01	0.04
WestTrib	45892.82	50-yr	0.74	137.95	1.31	7359.67	7362.6		7362.61	0.000488	1.04	140.69	82.33	0.14	0.01	0.05
WestTrib	45892.82	100-yr	1.04	167.16	1.81	7359.67	7362.67		7362.7	0.000631	1.21	147.08	83.55	0.16	0.01	0.07
WestTrib	45796.67	2-yr	0.82	12.75	1.43	7355.67	7362.13	7356.68	7362.13	0	0.05	392.02	138.28	0		0
WestTrib	45796.67	5-yr	2.13	31.22	3.65	7355.67	7362.25	7357	7362.25	0.000002	0.12	407.6	140.42	0.01		0
WestTrib	45796.67	10-yr	3.4	47.83	5.77	7355.67	7362.33	7357.17	7362.33	0.000005	0.18	419.67	142.06	0.02		0
WestTrib	45796.67	25-yr	7.06	91.22	11.72	7355.67	7362.51	7357.56	7362.52	0.000015	0.33	446.15	145.59	0.03		0
WestTrib	45796.67	50-yr	9.29	115.46	15.25	7355.67	7362.6	7357.7	7362.6	0.000023	0.4	458.94	147.26	0.04		0
WestTrib	45796.67	100-yr	11.6	139.52	18.88	7355.67	7362.68	7357.88	7362.68	0.000032	0.48	470.51	148.76	0.04		0.01
WestTrib	45766.17		Culvert													
WestTrib	45708.32	2-yr		15		7353.69	7354.49	7354.49	7354.7	0.051554	3.63	4.13	10.32	1.01	3.11	1.27
WestTrib	45708.32	5-yr		37		7353.69	7354.84	7354.84	7355.13	0.044878	4.32	8.57	14.87	1	3.38	1.59
WestTrib	45708.32	10-yr		57		7353.69	7355.24	7355.07	7355.45	0.022188	3.7	15.42	19.95	0.74	3.71	1.06
WestTrib	45708.32	25-yr		110		7353.69	7355.7	7355.47	7355.98	0.020141	4.23	26.01	25.53	0.74	3.61	1.26
WestTrib	45708.32	50-yr		140		7353.69	7355.88	7355.66	7356.2	0.020748	4.56	30.69	27.48	0.76	3.59	1.42
WestTrib	45708.32	100-yr		170		7353.69	7356.04	7355.82	7356.4	0.020983	4.82	35.3	29.36	0.77	3.53	1.55
WestTrib	45564.77	2-yr		24		7349.48	7350.81	7350.54	7350.92	0.014295	2.66	9.01	13.56	0.58	8.94	0.58
WestTrib	45564.77	5-yr		59		7349.48	7351.29	7351	7351.48	0.016797	3.54	16.65	18.44	0.66	9.21	0.93
WestTrib	45564.77	10-yr		89		7349.48	7351.41	7351.27	7351.75	0.028106	4.7	18.95	20.24	0.86	9.29	1.61
WestTrib	45564.77	25-yr		170		7349.48	7351.93	7351.82	7352.38	0.028695	5.36	31.7	28.32	0.89	9.54	1.97
WestTrib	45564.77	50-yr		210		7349.48	7352.14	7352.02	7352.61	0.027924	5.55	37.83	31.47	0.89	9.63	2.06
WestTrib	45564.77	100-yr		260		7349.48	7352.36	7352.22	7352.87	0.026889	5.73	45.34	34.94	0.89	9.71	2.14
WestTrib	45218.78	2-yr		24		7341.36	7341.85	7341.85	7341.98	0.060057	2.82	8.51	35.3	1.01		0.9
WestTrib	45218.78	5-yr	0.13	58.74	0.13	7341.36	7342.06	7342.06	7342.26	0.048485	3.67	16.39	44.11	1.06		1.12
WestTrib	45218.78	10-yr	2.01	86.29	0.7	7341.36	7342.28	7342.2	7342.46	0.025402	3.52	27.43	55.24	0.87	9.78	0.79
WestTrib	45218.78	25-yr	10.12	157.2	2.68	7341.36	7342.55	7342.48	7342.84	0.026255	4.52	44.1	68.69	0.96	9.75	1.05
WestTrib	45218.78	50-yr	15.91	190.21	3.89	7341.36	7342.64	7342.61	7342.99	0.027507	4.95	50.88	71.76	0.99	9.75	1.22
WestTrib	45218.78	100-yr	24.03	230.41	5.56	7341.36	7342.75	7342.74	7343.16	0.029133	5.44	58.45	74.43	1.03	9.76	1.43
WestTrib	44818.78	2-yr		24		7331.17	7331.74	7331.74	7331.93	0.051582	3.52	6.82	18.02	1.01		1.21
WestTrib	44818.78	5-yr		59		7331.17	7332.21	7332.06	7332.41	0.022494	3.55	16.61	23.15	0.74	8.2	1
WestTrib	44818.78	10-yr	0.05	88.95		7331.17	7332.43	7332.27	7332.69	0.023538	4.07	22.06	35.99	0.92	8.15	0.89

Falcon DBPS

West Tributary Future Conditions HEC-RAS Outputs

Reach	River Sta	Profile	Q Left	Q Channel	Q Right	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # XS	Headloss	Shear Total
			(cfs)	(cfs)	(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)		(ft)	(lb/sq ft)
WestTrib	44818.78	25-yr	19.65	150.35		7331.17	7332.8	7332.78	7333.1	0.02267	4.67	47.94	82.6	1.02	7.94	0.82
WestTrib	44818.78	50-yr	34.56	175.44		7331.17	7332.94	7332.9	7333.25	0.021695	4.8	60.33	92.72	0.97	7.84	0.88
WestTrib	44818.78	100-yr	55.01	204.99		7331.17	7333.1	7333.02	7333.41	0.020603	4.91	76.22	107.91	0.93	7.75	0.91
WestTrib	44499.26	2-yr		24		7322.18	7323.41	7323.34	7323.63	0.035359	3.78	6.34	11.04	0.88	1.87	1.23
WestTrib	44499.26	5-yr		59		7322.18	7323.93	7323.81	7324.21	0.029476	4.28	13.8	17.55	0.85	2.01	1.41
WestTrib	44499.26	10-yr		89		7322.18	7324.22	7324.08	7324.54	0.02768	4.59	19.38	21.15	0.85	2.08	1.55
WestTrib	44499.26	25-yr		170		7322.18	7324.74	7324.61	7325.17	0.027265	5.27	32.24	28.38	0.87	2.24	1.9
WestTrib	44499.26	50-yr		210		7322.18	7324.93	7324.8	7325.41	0.027826	5.54	37.92	31.52	0.89	2.3	2.05
WestTrib	44499.26	100-yr		260		7322.18	7325.12	7325.03	7325.66	0.028804	5.87	44.32	34.72	0.92	2.37	2.26
WestTrib	44418.78	2-yr		24		7320.5	7321.67	7321.46	7321.76	0.015852	2.43	9.86	18.6	0.59	7.81	0.52
WestTrib	44418.78	5-yr		59		7320.5	7322.02	7321.84	7322.2	0.020796	3.36	17.54	24.97	0.71	7.99	0.9
WestTrib	44418.78	10-yr	0.11	88.89		7320.5	7322.22	7322.05	7322.46	0.02362	3.91	22.99	31.97	0.81	8.09	1.05
WestTrib	44418.78	25-yr	4.9	165.1		7320.5	7322.58	7322.51	7322.93	0.027835	4.84	38.3	53.24	0.99	8.22	1.24
WestTrib	44418.78	50-yr	10.02	199.98		7320.5	7322.71	7322.67	7323.1	0.028729	5.13	45.96	60.23	1.01	8.23	1.36
WestTrib	44418.78	100-yr	17.49	242.5	0.01	7320.5	7322.85	7322.83	7323.29	0.029387	5.47	54.77	67.62	1.04	8.27	1.48
WestTrib	44018.78	2-yr		24		7313.17	7313.89		7313.95	0.024605	1.96	12.27	45.06	0.66	7.43	0.42
WestTrib	44018.78	5-yr		59		7313.17	7314.13	7314	7314.21	0.019092	2.31	25.57	60.6	0.63	7.38	0.5
WestTrib	44018.78	10-yr		89		7313.17	7314.27	7314.1	7314.37	0.017359	2.6	34.29	63.42	0.62	7.37	0.58
WestTrib	44018.78	25-yr		170		7313.17	7314.57	7314.33	7314.72	0.015595	3.14	54.13	69.41	0.63	7.36	0.76
WestTrib	44018.78	50-yr		210		7313.17	7314.69		7314.86	0.015256	3.35	62.72	71.85	0.63	7.36	0.83
WestTrib	44018.78	100-yr		260		7313.17	7314.82		7315.02	0.015121	3.58	72.55	74.54	0.64	7.39	0.92
WestTrib	43618.78	2-yr		24		7305.88	7306.48	7306.33	7306.53	0.014607	1.83	13.09	35.83	0.53	3.88	0.33
WestTrib	43618.78	5-yr		59		7305.88	7306.73		7306.83	0.017836	2.51	23.55	46.93	0.62	3.96	0.56
WestTrib	43618.78	10-yr		89		7305.88	7306.88	7306.7	7307.01	0.019575	2.89	30.85	53.32	0.67	3.99	0.71
WestTrib	43618.78	25-yr	0.02	169.98		7305.88	7307.18		7307.36	0.022017	3.42	49.79	76.36	0.75	4.02	0.9
WestTrib	43618.78	50-yr	0.52	209.48		7305.88	7307.3		7307.5	0.022583	3.58	59.46	92.57	0.79	4.02	0.9
WestTrib	43618.78	100-yr	2.16	257.84		7305.88	7307.42		7307.63	0.023056	3.74	71.65	109.86	0.81	3.98	0.94
WestTrib	43453.91	2-yr		24		7301.97	7302.58	7302.55	7302.65	0.044163	2.13	11.27	56.45	0.84	2.1	0.55
WestTrib	43453.91	5-yr		59		7301.97	7302.75	7302.72	7302.87	0.03413	2.75	21.43	60.07	0.81	1.98	0.76
WestTrib	43453.91	10-yr		89		7301.97	7302.87	7302.8	7303.02	0.030636	3.11	28.66	61.86	0.8	1.93	0.88
WestTrib	43453.91	25-yr	0	169.96	0.04	7301.97	7303.12	7303.02	7303.35	0.027117	3.82	44.55	65.43	0.82	1.87	1.15
WestTrib	43453.91	50-yr	0.05	209.81	0.15	7301.97	7303.22	7303.12	7303.48	0.026254	4.12	51.24	66.78	0.83	1.85	1.25
WestTrib	43453.91	100-yr	0.22	259.39	0.39	7301.97	7303.34	7303.22	7303.64	0.025233	4.43	59.25	68.38	0.84	1.84	1.36
WestTrib	43386.36	2-yr		24		7299.45	7300.46	7300.35	7300.55	0.023122	2.31	10.38	27.95	0.67	5.66	0.53
WestTrib	43386.36	5-yr		59		7299.45	7300.74	7300.62	7300.88	0.025357	3.02	19.56	37.97	0.74	5.63	0.81
WestTrib	43386.36	10-yr		89		7299.45	7300.9	7300.78	7301.08	0.026691	3.42	26.03	43.58	0.78	5.61	0.98

Falcon DBPS

West Tributary Future Conditions HEC-RAS Outputs

Reach	River Sta	Profile	Q Left	Q Channel	Q Right	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # XS	Headloss	Shear Total
			(cfs)	(cfs)	(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)		(ft)	(lb/sq ft)
WestTrib	43386.36	25-yr	0.02	169.87	0.11	7299.45	7301.19	7301.09	7301.47	0.028076	4.28	39.97	53.96	0.88	5.54	1.29
WestTrib	43386.36	50-yr	0.1	209.31	0.6	7299.45	7301.29	7301.21	7301.63	0.028471	4.67	45.77	57.94	0.92	5.5	1.39
WestTrib	43386.36	100-yr	0.27	257.83	1.89	7299.45	7301.4	7301.34	7301.81	0.029194	5.12	52.5	60.62	0.96	5.47	1.56
WestTrib	43218.78	2-yr		24		7294.2	7294.74	7294.74	7294.89	0.053834	3.12	7.69	25.18	1	4.54	1.02
WestTrib	43218.78	5-yr		59		7294.2	7294.99	7294.99	7295.24	0.046436	4.01	14.7	29.58	1	4.57	1.44
WestTrib	43218.78	10-yr		89		7294.2	7295.17	7295.17	7295.47	0.042954	4.45	20.01	32.51	1	4.53	1.65
WestTrib	43218.78	25-yr		170		7294.2	7295.52	7295.52	7295.94	0.039207	5.24	32.46	38.54	1.01	4.8	2.05
WestTrib	43218.78	50-yr		210		7294.2	7295.66	7295.66	7296.13	0.038086	5.52	38.05	40.83	1.01	4.83	2.21
WestTrib	43218.78	100-yr	0	260	0	7294.2	7295.81	7295.81	7296.34	0.036629	5.82	44.66	43.31	1.01	5	2.35
WestTrib	42818.78	2-yr		24		7285.58	7286.91		7286.95	0.004739	1.65	14.57	19.95	0.34	6.03	0.21
WestTrib	42818.78	5-yr		59		7285.58	7287.47		7287.54	0.004972	2.14	27.54	26.33	0.37	6.06	0.32
WestTrib	42818.78	10-yr		89		7285.58	7287.81		7287.9	0.005019	2.4	37.13	30.19	0.38	6.05	0.38
WestTrib	42818.78	25-yr		170		7285.58	7288.42		7288.56	0.005593	2.95	57.56	37.1	0.42	6.12	0.53
WestTrib	42818.78	50-yr		210		7285.58	7288.66		7288.82	0.005687	3.14	66.92	39.87	0.43	6.12	0.59
WestTrib	42818.78	100-yr		260		7285.58	7288.9		7289.08	0.006047	3.39	76.66	42.56	0.45	6.12	0.67
WestTrib	42418.78	2-yr		43		7279.67	7280.66	7280.66	7280.92	0.04723	4.04	10.64	21.42	1.01	8.26	1.46
WestTrib	42418.78	5-yr		110		7279.67	7281.11	7281.11	7281.49	0.041499	4.92	22.37	30.42	1.01	8.8	1.9
WestTrib	42418.78	10-yr		170		7279.67	7281.39	7281.39	7281.84	0.039464	5.42	31.39	35.56	1.02	9.15	2.16
WestTrib	42418.78	25-yr		310		7279.67	7281.88	7281.88	7282.43	0.03659	5.95	52.13	48.51	1.01	9.38	2.44
WestTrib	42418.78	50-yr		389.99	0.01	7279.67	7282.1	7282.1	7282.69	0.035103	6.19	63.01	54.93	1.02	9.35	2.5
WestTrib	42418.78	100-yr	0	479.25	0.75	7279.67	7282.3	7282.3	7282.95	0.032552	6.47	74.91	62.59	1.04	9.2	2.42
WestTrib	42018.78	2-yr		43		7267.87	7269.74	7269.32	7269.87	0.011442	2.98	14.45	15.49	0.54	5.1	0.65
WestTrib	42018.78	5-yr		110		7267.87	7270.45	7269.98	7270.69	0.013499	3.99	27.55	21.53	0.62	5.36	1.05
WestTrib	42018.78	10-yr		170		7267.87	7270.91	7270.39	7271.21	0.014782	4.35	39.05	28.82	0.66	5.49	1.22
WestTrib	42018.78	25-yr		310		7267.87	7271.59	7271.13	7271.97	0.016158	4.92	62.95	41.5	0.7	5.58	1.5
WestTrib	42018.78	50-yr		390		7267.87	7271.87	7271.43	7272.29	0.016522	5.19	75.17	46.67	0.72	5.57	1.63
WestTrib	42018.78	100-yr		480		7267.87	7272.13	7271.7	7272.59	0.016944	5.46	87.88	51.52	0.74	5.56	1.77
WestTrib	41774.8	2-yr		43		7263.58	7264.52	7264.52	7264.77	0.049342	3.99	10.79	22.86	1.02	1.03	1.45
WestTrib	41774.8	5-yr		110		7263.58	7264.94	7264.94	7265.34	0.041569	5.03	21.88	28.73	1.02	1.74	1.96
WestTrib	41774.8	10-yr		170		7263.58	7265.23	7265.23	7265.71	0.037917	5.61	30.32	31.53	1.01	2.05	2.26
WestTrib	41774.8	25-yr		310		7263.58	7265.73	7265.73	7266.39	0.034384	6.52	47.55	36.58	1.01	2.44	2.76
WestTrib	41774.8	50-yr		390		7263.58	7265.97	7265.97	7266.71	0.033144	6.89	56.61	38.98	1.01	2.58	2.97
WestTrib	41774.8	100-yr	0.06	479.94	0.01	7263.58	7266.2	7266.2	7267.03	0.031712	7.32	65.65	41.24	1.02	2.7	3.12
WestTrib	41539.1	2-yr		43		7260.77	7262.38		7262.4	0.001382	0.92	46.7	60.95	0.19	0.01	0.07
WestTrib	41539.1	5-yr		110		7260.77	7262.73		7262.77	0.002736	1.61	68.12	63.84	0.28	0.05	0.18
WestTrib	41539.1	10-yr		170		7260.77	7262.96		7263.03	0.003453	2.03	83.54	65.85	0.32	0.09	0.27

Falcon DBPS

West Tributary Future Conditions HEC-RAS Outputs

Reach	River Sta	Profile	Q Left	Q Channel	Q Right	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # XS	Headloss	Shear Total
			(cfs)	(cfs)	(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)		(ft)	(lb/sq ft)
WestTrib	41539.1	25-yr		310		7260.77	7263.4		7263.52	0.004484	2.74	113.25	69.54	0.38	0.15	0.45
WestTrib	41539.1	50-yr		390		7260.77	7263.61		7263.76	0.004878	3.05	128.04	71.31	0.4	0.19	0.54
WestTrib	41539.1	100-yr		480		7260.77	7263.83		7264	0.005266	3.34	143.65	73.73	0.42	0.22	0.63
WestTrib	41465.66	2-yr	0.64	38.16	4.2	7257.5	7262.38	7258.93	7262.38	0.000058	0.47	115.09	63.38	0.06		0.01
WestTrib	41465.66	5-yr	3.11	94.57	12.33	7257.5	7262.7	7259.66	7262.71	0.000257	1.06	136.22	68.35	0.12		0.03
WestTrib	41465.66	10-yr	6.34	143.06	20.6	7257.5	7262.91	7260.08	7262.94	0.000483	1.51	151.12	71.64	0.17		0.06
WestTrib	41465.66	25-yr	16.38	250.42	43.2	7257.5	7263.29	7260.8	7263.36	0.001069	2.39	179.21	76.25	0.25		0.15
WestTrib	41465.66	50-yr	23.32	309.2	57.48	7257.5	7263.47	7261.09	7263.57	0.001415	2.83	192.82	78.15	0.29		0.21
WestTrib	41465.66	100-yr	31.95	373.73	74.32	7257.5	7263.64	7261.43	7263.78	0.001804	3.28	206.8	80.07	0.32		0.28
WestTrib	41441.59		Culvert													
WestTrib	41405.38	2-yr		43		7257.33	7258.27	7258.14	7258.44	0.026281	3.35	12.85	25.05	0.77	0.99	0.95
WestTrib	41405.38	5-yr		110		7257.33	7258.73	7258.6	7258.95	0.026345	3.78	29.09	41.35	0.79	0.96	1.14
WestTrib	41405.38	10-yr		170		7257.33	7258.96	7258.8	7259.25	0.025956	4.36	38.97	44.22	0.82	0.94	1.41
WestTrib	41405.38	25-yr		310		7257.33	7259.39	7259.26	7259.81	0.024835	5.23	59.29	49.6	0.84	0.92	1.83
WestTrib	41405.38	50-yr		390	0	7257.33	7259.6	7259.44	7260.08	0.024336	5.59	69.8	52.17	0.85	0.9	2.01
WestTrib	41405.38	100-yr		479.9	0.1	7257.33	7259.79	7259.64	7260.35	0.023897	5.99	80.27	54.6	0.87	0.89	2.17
WestTrib	41368.0*	2-yr		43		7256.12	7257.31		7257.46	0.025954	3.11	13.84	26.1	0.75	1.02	0.85
WestTrib	41368.0*	5-yr		110		7256.12	7257.75		7257.98	0.024963	3.86	28.53	37.9	0.78	0.99	1.16
WestTrib	41368.0*	10-yr		170		7256.12	7258		7258.31	0.024299	4.42	38.49	40.86	0.8	0.98	1.41
WestTrib	41368.0*	25-yr		310		7256.12	7258.46		7258.9	0.023914	5.32	58.25	46.18	0.84	0.94	1.86
WestTrib	41368.0*	50-yr		390		7256.12	7258.68		7259.18	0.023643	5.69	68.57	48.77	0.85	0.92	2.05
WestTrib	41368.0*	100-yr		479.99	0.01	7256.12	7258.89	7258.7	7259.46	0.023453	6.06	79.22	51.56	0.86	0.9	2.22
WestTrib	41330.7*	2-yr		43		7254.91	7256.26	7256.15	7256.43	0.028858	3.37	12.76	23.08	0.8	1.07	0.98
WestTrib	41330.7*	5-yr		110		7254.91	7256.72		7256.99	0.028202	4.17	26.36	34.11	0.84	0.99	1.35
WestTrib	41330.7*	10-yr		170		7254.91	7256.98	7256.86	7257.33	0.027958	4.8	35.43	36.92	0.86	0.97	1.66
WestTrib	41330.7*	25-yr		310		7254.91	7257.47		7257.96	0.026003	5.65	54.85	42.31	0.87	0.92	2.08
WestTrib	41330.7*	50-yr		390		7254.91	7257.7	7257.55	7258.26	0.025458	6.01	64.85	44.85	0.88	0.91	2.27
WestTrib	41330.7*	100-yr		480		7254.91	7257.94	7257.78	7258.56	0.024713	6.32	75.91	47.61	0.88	0.89	2.43
WestTrib	41293.4*	2-yr		43		7253.69	7255.18		7255.37	0.028162	3.54	12.15	20	0.8	1.11	1.05
WestTrib	41293.4*	5-yr		110		7253.69	7255.73		7256	0.025079	4.19	26.25	30.83	0.8	1.05	1.32
WestTrib	41293.4*	10-yr		170		7253.69	7256.03		7256.38	0.02389	4.73	35.97	34	0.81	1.01	1.56
WestTrib	41293.4*	25-yr		310		7253.69	7256.55		7257.04	0.023327	5.62	55.17	39.5	0.84	0.96	2.01
WestTrib	41293.4*	50-yr		390		7253.69	7256.8		7257.35	0.023165	5.99	65.06	42.05	0.85	0.94	2.21
WestTrib	41293.4*	100-yr		480		7253.69	7257.04	7256.84	7257.66	0.023193	6.36	75.45	44.63	0.86	0.92	2.41
WestTrib	41256.1*	2-yr		43		7252.48	7254.04	7253.94	7254.27	0.03109	3.88	11.09	17.04	0.85	1.11	1.24

supercritical flows identified. Provide complete modeling for comparison showing effects of grade control/drops eliminating these

Falcon DBPS

West Tributary Future Conditions HEC-RAS Outputs

Reach	River Sta	Profile	Q Left	Q Channel	Q Right	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # XS	Headloss	Shear Total
			(cfs)	(cfs)	(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)		(ft)	(lb/sq ft)
WestTrib	41256.1*	5-yr		110		7252.48	7254.59	7254.51	7254.96	0.031078	4.85	22.66	24.95	0.9	1.03	1.73
WestTrib	41256.1*	10-yr		170		7252.48	7254.93	7254.84	7255.37	0.030111	5.34	31.81	29.66	0.91	0.97	1.98
WestTrib	41256.1*	25-yr		310		7252.48	7255.49	7255.38	7256.08	0.027826	6.19	50.1	35.3	0.92	0.88	2.42
WestTrib	41256.1*	50-yr		390		7252.48	7255.76	7255.64	7256.42	0.0268	6.51	59.86	37.96	0.91	0.84	2.59
WestTrib	41256.1*	100-yr		480		7252.48	7256.03	7255.9	7256.75	0.02556	6.79	70.73	40.72	0.91	0.8	2.72
WestTrib	41218.78	2-yr		43		7251.27	7252.93	7252.81	7253.17	0.028204	3.93	10.95	15.21	0.82	7.11	1.23
WestTrib	41218.78	5-yr		110		7251.27	7253.6	7253.41	7253.94	0.024178	4.67	23.55	22.58	0.81	6.92	1.53
WestTrib	41218.78	10-yr		170		7251.27	7254.01	7253.79	7254.4	0.022229	5.04	33.71	27.1	0.8	6.81	1.68
WestTrib	41218.78	25-yr		310		7251.27	7254.72	7254.39	7255.2	0.018931	5.57	55.65	34.19	0.77	6.74	1.88
WestTrib	41218.78	50-yr		390		7251.27	7255.07	7254.68	7255.58	0.017152	5.71	68.3	37.55	0.75	6.77	1.9
WestTrib	41218.78	100-yr		480		7251.27	7255.4	7254.95	7255.94	0.016345	5.92	81.03	40.68	0.74	6.81	1.99
WestTrib	40884.05	2-yr		43		7243.77	7245.86	7245.55	7246.07	0.016529	3.67	11.72	11.72	0.65	11.14	0.97
WestTrib	40884.05	5-yr		110		7243.77	7246.66	7246.32	7247.02	0.017885	4.76	23.1	16.63	0.71	11.63	1.46
WestTrib	40884.05	10-yr		170		7243.77	7247.16	7246.78	7247.59	0.018671	5.28	32.19	20.57	0.74	11.91	1.73
WestTrib	40884.05	25-yr	2.26	307.74		7243.77	7247.91	7247.64	7248.47	0.021378	6	53.04	35.48	0.86	12.27	1.91
WestTrib	40884.05	50-yr	5.27	384.73		7243.77	7248.14	7247.99	7248.8	0.024108	6.55	61.86	40.27	0.93	12.36	2.22
WestTrib	40884.05	100-yr	10.2	469.8		7243.77	7248.39	7248.31	7249.13	0.025814	7	72.22	45.26	0.97	12.44	2.48
WestTrib	40418.78	2-yr		43		7233.96	7234.77	7234.73	7234.93	0.037584	3.18	13.53	32.93	0.87	8	0.96
WestTrib	40418.78	5-yr		110		7233.96	7235.11	7235.07	7235.38	0.03719	4.21	26.14	41.38	0.93	7.45	1.46
WestTrib	40418.78	10-yr		170		7233.96	7235.33	7235.29	7235.68	0.037068	4.76	35.7	46.83	0.96	7.06	1.76
WestTrib	40418.78	25-yr		310		7233.96	7235.73	7235.69	7236.2	0.033161	5.45	56.84	55.92	0.95	6.35	2.09
WestTrib	40418.78	50-yr		390		7233.96	7235.94	7235.86	7236.44	0.029161	5.68	68.65	57.65	0.92	6.06	2.16
WestTrib	40418.78	100-yr		480		7233.96	7236.14	7236.04	7236.7	0.027473	5.99	80.07	59.28	0.91	5.86	2.3
WestTrib	40018.78	2-yr		68		7224.51	7226.42	7226.42	7226.93	0.014505	5.73	11.88	12.02	1.02	5.73	0.85
WestTrib	40018.78	5-yr		160		7224.51	7227.23	7227.23	7227.94	0.012809	6.75	23.7	17.07	1.01	5.2	1.06
WestTrib	40018.78	10-yr		250		7224.51	7227.79	7227.79	7228.62	0.011921	7.33	34.13	20.62	1	4.91	1.17
WestTrib	40018.78	25-yr		480		7224.51	7228.78	7228.78	7229.85	0.01089	8.3	57.8	27.05	1	4.64	1.38
WestTrib	40018.78	50-yr		610		7224.51	7229.2	7229.2	7230.39	0.01073	8.76	69.63	29.75	1.01	4.6	1.49
WestTrib	40018.78	100-yr		730		7224.51	7229.56	7229.56	7230.83	0.010388	9.05	80.69	32.06	1.01	4.53	1.56
WestTrib	39618.78	2-yr		68		7216.53	7218.35	7218.32	7218.71	0.013929	4.83	14.09	18.35	0.97	5.62	0.65
WestTrib	39618.78	5-yr		157.41	2.59	7216.53	7218.96	7218.96	7219.43	0.012816	5.55	30.88	35.53	1.04	5.13	0.68
WestTrib	39618.78	10-yr		242.04	7.96	7216.53	7219.33	7219.33	7219.89	0.012185	6.05	45.85	44.33	1.03	4.74	0.77
WestTrib	39618.78	25-yr		452.51	27.49	7216.53	7220	7220	7220.68	0.011744	6.8	81.63	63.07	1.03	3.76	0.93
WestTrib	39618.78	50-yr		570.37	39.63	7216.53	7220.26	7220.26	7221.03	0.011665	7.22	98.92	69.33	1.03	3.74	1.02
WestTrib	39618.78	100-yr	0	678.31	51.69	7216.53	7220.47	7220.47	7221.3	0.011639	7.56	114.04	74.31	1.04	3.66	1.09
WestTrib	39218.78	2-yr		68		7211.07	7212.58	7212.58	7213.09	0.014094	5.71	11.91	11.93	1.01	5.64	0.84

Falcon DBPS

West Tributary Future Conditions HEC-RAS Outputs

Reach	River Sta	Profile	Q Left	Q Channel	Q Right	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # XS	Headloss	Shear Total
			(cfs)	(cfs)	(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)		(ft)	(lb/sq ft)
WestTrib	39218.78	5-yr		160		7211.07	7213.38	7213.38	7214.14	0.01269	6.96	22.99	15.65	1.01	5.01	1.1
WestTrib	39218.78	10-yr		249.73	0.27	7211.07	7213.96	7213.96	7214.86	0.011376	7.64	33.28	22.95	1.12	4.8	0.98
WestTrib	39218.78	25-yr	0.04	449.42	30.54	7211.07	7215.13	7215.13	7216.1	0.007574	8.18	79.08	54.9	1.16	3.72	0.67
WestTrib	39218.78	50-yr	0.35	549.63	60.03	7211.07	7215.49	7215.49	7216.59	0.007548	8.85	99.22	57.07	1.13	3.62	0.8
WestTrib	39218.78	100-yr	1.41	636.39	92.2	7211.07	7215.82	7215.82	7216.99	0.00725	9.28	119.37	67.49	1.15	3.45	0.78
WestTrib	38818.78	2-yr		68		7204.61	7206.1	7206.08	7206.51	0.013993	5.19	13.11	15.16	0.98	4.98	0.73
WestTrib	38818.78	5-yr		160		7204.61	7206.81	7206.78	7207.4	0.012134	6.19	25.86	20.54	0.97	5.12	0.91
WestTrib	38818.78	10-yr		250		7204.61	7207.25	7207.25	7208.01	0.012439	7	35.69	23.94	1.01	5.26	1.11
WestTrib	38818.78	25-yr		480	0	7204.61	7208.19	7208.19	7209.08	0.011531	7.56	63.45	36.1	1.01	4.75	1.22
WestTrib	38818.78	50-yr		609.87	0.13	7204.61	7208.51	7208.51	7209.53	0.0109	8.14	75.15	37.75	1.02	4.42	1.3
WestTrib	38818.78	100-yr	0.06	729.33	0.62	7204.61	7208.77	7208.77	7209.92	0.010415	8.62	85.4	39.52	1.03	4.2	1.35
WestTrib	38418.78	2-yr		68		7200.04	7201.24	7201.15	7201.54	0.010999	4.41	15.42	19.41	0.87	4.95	0.54
WestTrib	38418.78	5-yr		160		7200.04	7201.78	7201.78	7202.29	0.013386	5.71	28.01	27.76	1	5.08	0.83
WestTrib	38418.78	10-yr		250		7200.04	7202.22	7202.22	7202.75	0.013561	5.81	42.99	42.06	1.01	4.81	0.86
WestTrib	38418.78	25-yr	0.03	479.31	0.66	7200.04	7202.82	7202.82	7203.49	0.011913	6.6	74.06	65.2	1.09	4.26	0.84
WestTrib	38418.78	50-yr	0.23	605.11	4.66	7200.04	7203.07	7203.07	7203.83	0.010814	7.03	91.67	72.27	1.1	3.93	0.85
WestTrib	38418.78	100-yr	0.62	718.74	10.64	7200.04	7203.28	7203.28	7204.11	0.010119	7.39	107.06	73.67	1.07	3.78	0.91
WestTrib	38018.78	2-yr	1.08	66.1	0.82	7195.31	7196.32	7196.31	7196.6	0.013949	4.27	17.98	37	1.06	5.53	0.42
WestTrib	38018.78	5-yr	7.68	147.86	4.46	7195.31	7196.76	7196.76	7197.21	0.011998	5.63	36.9	50.08	1.11	5.11	0.55
WestTrib	38018.78	10-yr	18.44	221.67	9.89	7195.31	7197.09	7197.09	7197.66	0.010713	6.4	55.48	59.76	1.11	4.67	0.62
WestTrib	38018.78	25-yr	56.92	394.13	28.95	7195.31	7197.74	7197.74	7198.52	0.009554	7.78	99.55	76.08	1.09	4.36	0.78
WestTrib	38018.78	50-yr	83.58	484.01	42.42	7195.31	7198.05	7198.05	7198.91	0.008932	8.28	124.63	83.23	1.07	4.12	0.83
WestTrib	38018.78	100-yr	112.2	564.14	53.62	7195.31	7198.29	7198.29	7199.23	0.008819	8.77	144.85	87.48	1.06	4.07	0.91
WestTrib	37618.78	2-yr		68		7190.23	7190.9	7190.86	7191.08	0.013536	3.32	20.46	46.67	0.88	4.53	0.37
WestTrib	37618.78	5-yr		157.66	2.34	7190.23	7191.21	7191.21	7191.51	0.013404	4.46	39.63	84.38	1.14		0.39
WestTrib	37618.78	10-yr		237.96	12.04	7190.23	7191.43	7191.43	7191.81	0.012448	5.03	59.15	88.67	1.06	3.84	0.52
WestTrib	37618.78	25-yr	0.03	437.11	42.87	7190.23	7191.84	7191.84	7192.39	0.012103	6.21	96.52	94.79	1.04	4.39	0.77
WestTrib	37618.78	50-yr	0.25	548	61.75	7190.23	7192.03	7192.03	7192.67	0.011588	6.71	115.24	96.86	1.03	4.42	0.86
WestTrib	37618.78	100-yr	0.65	649.82	79.52	7190.23	7192.19	7192.19	7192.91	0.011465	7.16	130.6	98.54	1.04	4.52	0.95
WestTrib	37218.78	2-yr	0.1	58.65	9.25	7184.96	7186.34	7186.28	7186.55	0.009589	3.89	27.68	70.37	1.02	3.49	0.23
WestTrib	37218.78	5-yr	0.87	118.97	40.17	7184.96	7186.73	7186.7	7187.04	0.009492	5.15	65.65	130.11	1.11	3.56	0.3
WestTrib	37218.78	10-yr	1.99	157.16	90.85	7184.96	7187.03	7187.03	7187.32	0.007525	5.37	117.02	185.32	0.95	3.21	0.3
WestTrib	37218.78	25-yr	4.72	251.14	224.14	7184.96	7187.35	7187.35	7187.77	0.009817	7.01	176.27	189.2	0.95	3.13	0.57
WestTrib	37218.78	50-yr	6.56	297.87	305.57	7184.96	7187.51	7187.51	7187.97	0.010296	7.61	206.63	191.16	0.93	3.21	0.69
WestTrib	37218.78	100-yr	8.38	340.39	381.23	7184.96	7187.63	7187.63	7188.15	0.010866	8.16	230.62	192.7	0.93	3.3	0.81
WestTrib	36914.66	2-yr		48.87	19.13	7182.01	7182.91	7182.83	7183.05	0.013791	3.34	29.06	65.23	0.77	6.3	0.38

Sheet 6-16
Falcon DBPS
Conceptual Plan
West Tributary
El Paso County, CO

Show and label property boundary, limits of proposed changes...

Small Drop Structure
See Detail on Sheet 6-54

Paint Brush Hills Pond C
EURV = 2.2 AF
100-yr Volume = 6.8 AF
$Q_{2\ in}$ = 56 cfs
$Q_{2\ out}$ = 3 cfs
$Q_{100\ in}$ = 300 cfs
$Q_{100\ out}$ = 140 cfs
See Detail on Sheet 6-55

PBHC Outlet

PBHC Outlet

matchline - see Sheet 6-15

matchline - See Sheet 6-17

RWT124_upstream

RWT122

RWT094

West Tributary

Rockingham Dr

Drainageway Crossing
Stream Centerline
Existing Approximate 100-yr Floodplain*
Floodplain Study Limit

Storm Sewer
Inlet
Manhole
Pipe

Reach Improvements
Natural Channel Design
Protect In Place
Roadside Ditch Improvement
Small Drop Structures w/ Toe Protection
Existing Detention
Proposed Detention
Proposed Detention Grading
Small Drop Structure
Cross Vane
Immediate Action Required to Preserve Existing Condition

0 100 200 Feet

* These approximate 100-yr floodplain boundaries are for planning purposes only. This information is not intended to replace the information provided on the FEMA Flood Insurance Rate Maps for this area.
** These are conceptual design drawings and are subject to change. These drawings are not intended for construction purposes.

Index Map

Note:
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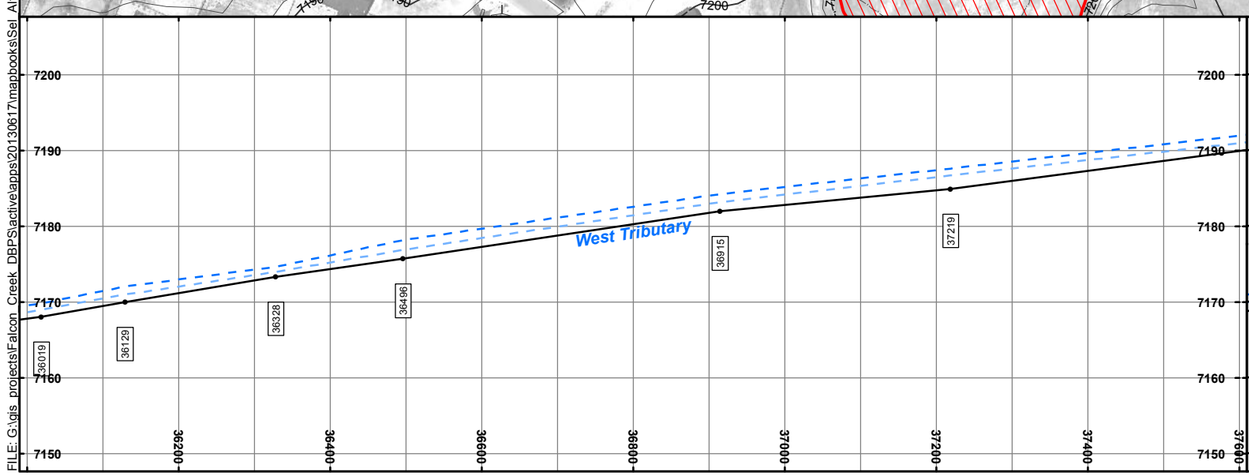
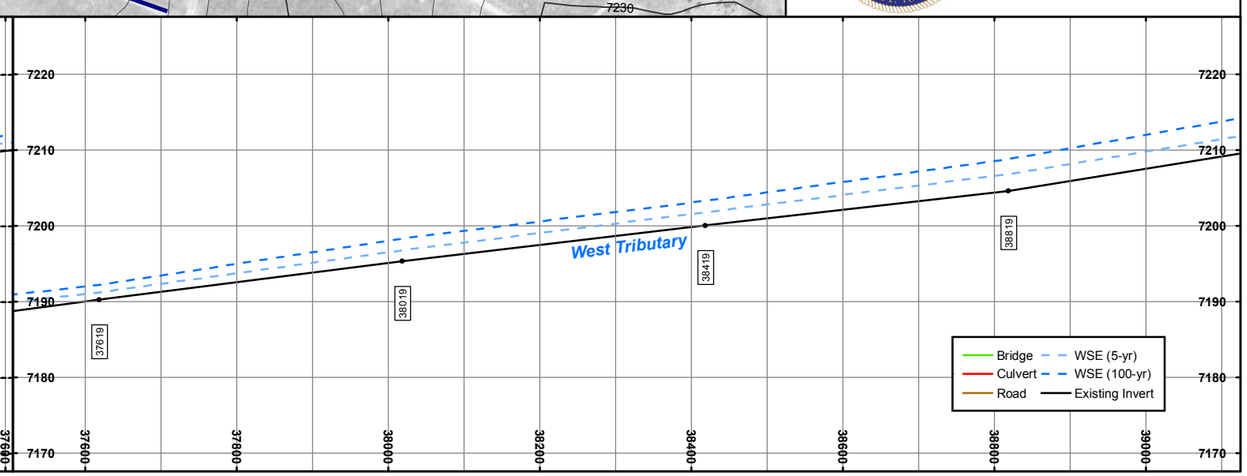
EL PASO COUNTY COLORADO EST. 1861

Matrix DESIGN GROUP





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Sheet 6-17
Falcon DBPS
Conceptual Plan
West Tributary
El Paso County, CO

Small Drop Structure
See Detail on Sheet 6-54

Sub Regional Pond SR1
WQCV = 1.6 AF
100-yr Volume = 11 AF
$Q_{2\ in}$ = 54 cfs
$Q_{2\ out}$ = 42 cfs
$Q_{100\ in}$ = 610 cfs
$Q_{100\ out}$ = 510 cfs
See Detail on Sheet 6-55

RWT080
RWT092
RWT094
RWT054

Rodgwick Heights

WT 11

Small Drop Structure
See Detail on Sheet 6-54

WT 11 - Arroya Ln.
EX Size: 1' Circular CMP (x1)
Private drive; no modifications are proposed.

West Tributary

matchline - see Sheet 6-16

matchline - see Sheet 6-18

Drainageway Crossing
Stream Centerline
Existing Approximate 100-yr Floodplain*
Floodplain Study Limit

Storm Sewer
Inlet
Manhole
Pipe

Reach Improvements
Natural Channel Design
Protect In Place
Roadside Ditch Improvement
Small Drop Structures w/ Toe Protection
Existing Detention
Proposed Detention
Proposed Detention Grading
Small Drop Structure
Cross Vane
Immediate Action Required to Preserve Existing Condition

0 100 200 Feet

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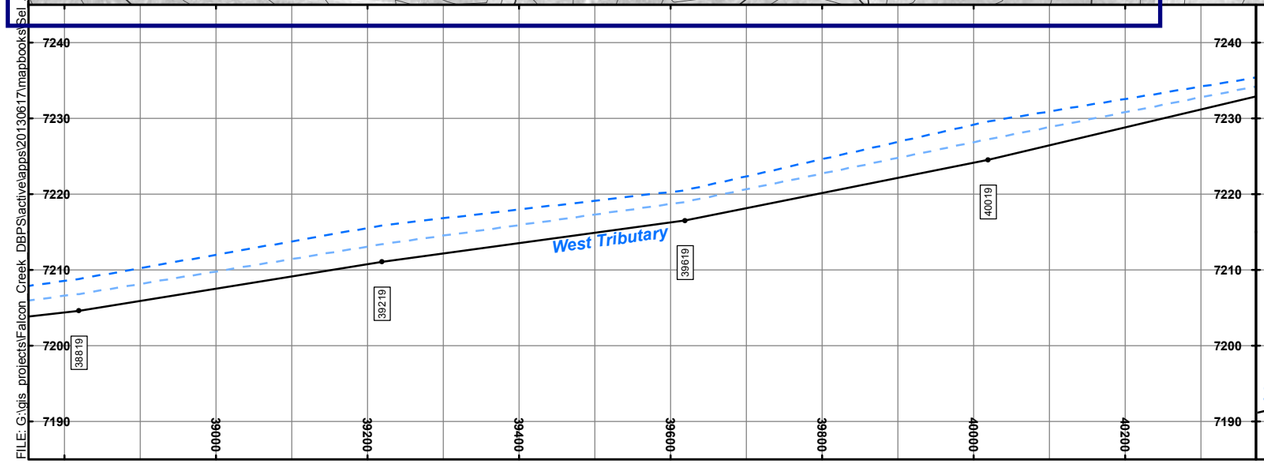

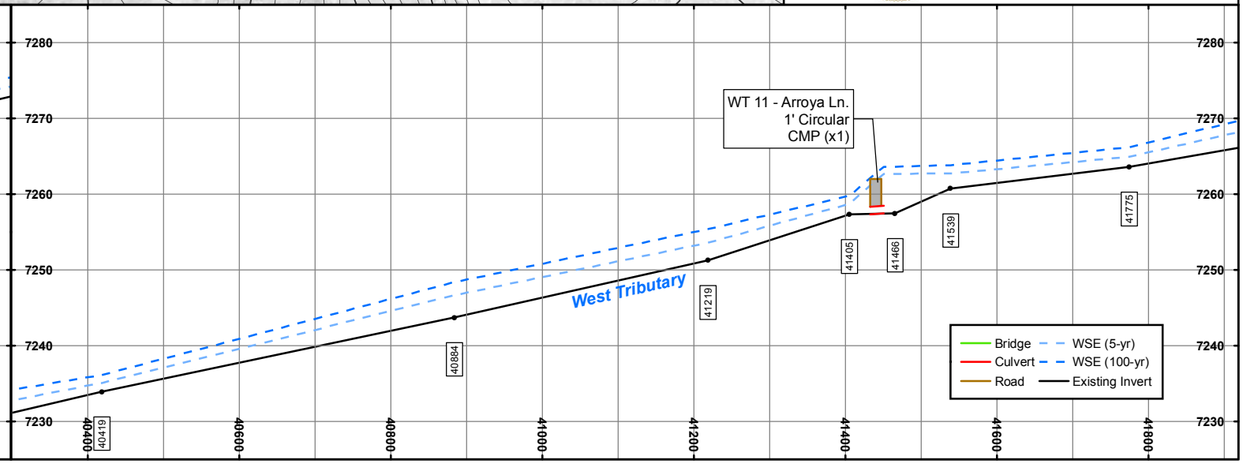

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Sheet 6-18
Falcon DBPS
Conceptual Plan
West Tributary
El Paso County, CO

Drainageway Crossing
Stream Centerline
Existing Approximate 100-yr Floodplain*
Floodplain Study Limit

Storm Sewer
Inlet
Manhole
Pipe

Reach Improvements
Natural Channel Design
Protect In Place
Roadside Ditch Improvement
Small Drop Structures w/ Toe Protection
Existing Detention
Proposed Detention
Proposed Detention Grading
Small Drop Structure
Cross Vane
Immediate Action Required to Preserve Existing Condition

0 100 200 Feet

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Index Map

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Small Drop Structure
See Detail on Sheet 6-54

matchline - see Sheet 6-17

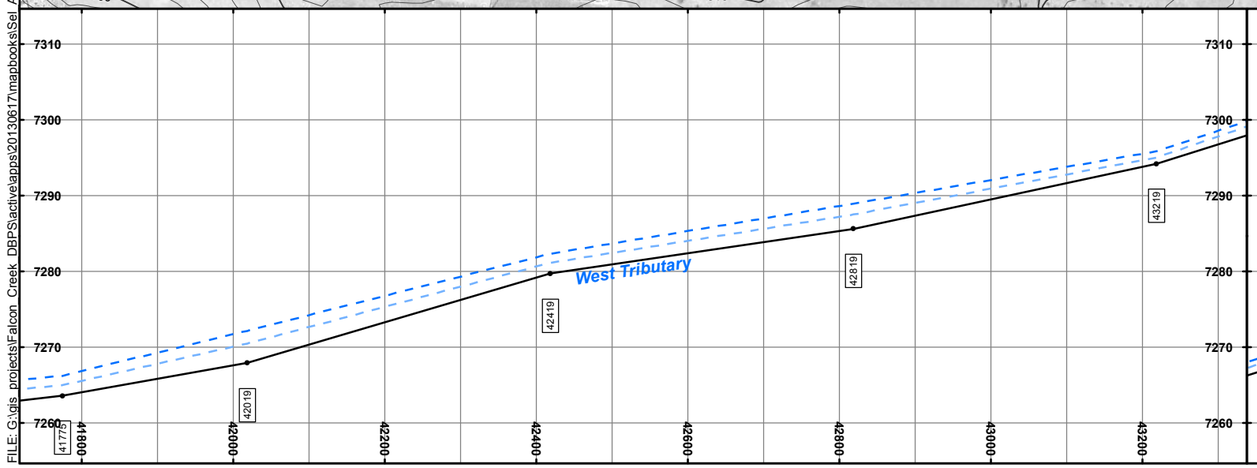
matchline - see Sheet 6-19

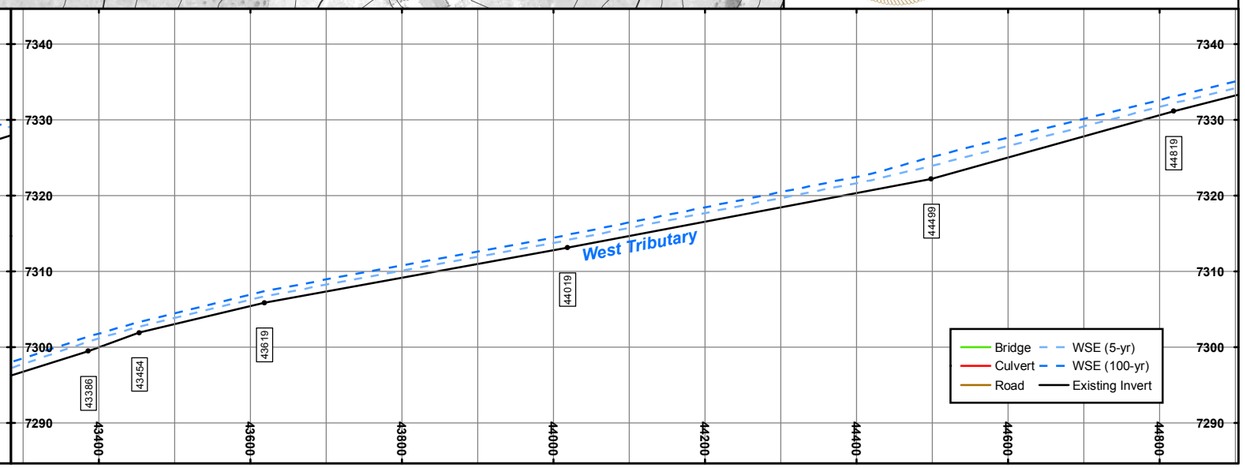
Salbeck Ln

West Tributary

RWT054

RWT046





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Sheet 6-19
Falcon DBPS
Conceptual Plan
West Tributary
El Paso County, CO

Drainageway Crossing
Stream Centerline
Existing Approximate 100-yr Floodplain*
Floodplain Study Limit

Storm Sewer
Inlet
Manhole
Pipe

Reach Improvements
Natural Channel Design
Protect In Place
Roadside Ditch Improvement
Small Drop Structures w/ Toe Protection
Existing Detention
Proposed Detention
Proposed Detention Grading
Small Drop Structure
Cross Vane
Immediate Action Required to Preserve Existing Condition

0 100 200 Feet

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Index Map

WT 14 - Burgess Rd.
EX Size: 1.5' Circular CMP (x1)
PR Size: 5' Circular RCP (x1)

WT 13 - Pine Park Trl.
EX Size: 2.5' Circular CMP (x1)
PR Size: 4.5' Circular RCP (x1)

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Rocki Ln
Pine Park Trl
Crestbrook Ln
Greentree Rd
Burgess Rd
West Tributary
RWT042
RWT044
RWT046
WT 13
WT 14
matchline - see Sheet 6-18

WT 13 - Pine Park Trl.
2.5' Circular CMP (x1)

WT 14 - Burgess Rd.
1.5' Circular CMP (x1)

Bridge
Culvert
Road
WSE (5-yr)
WSE (100-yr)
Existing Invert

APPENDIX E: OPCC

Kimley»Horn
2 North Nevada, Suite 900
Colorado Springs, Colorado 80903

Project: Eagleview Regional Drainage Improvements
Project Number:
Date: October 13, 2023

Prepared By: DM
Checked By: KRK

Regional Drainage Pond- SR1 (County Cost)					
Rip Rap Chute #1 / Forebay	CY	190	$ 116	$	22,040
Rip Rap Chute #2/ Forebay	CY	70	$ 116	$	8,120
Pond Earthwork	CY	7635	$ 5	$	38,175
Concrete Trickle Channel	LF	235	$ 50	$	11,750
Concrete Micropool	EA	1	$ 8,000	$	8,000
Concrete Outlet Structure	EA	1	$ 12,000	$	12,000
Concrete Outfall Pipe	LF	70	$ 228	$	15,960
Concrete FES w/ Toe Wall	EA	1	$ 3,500	$	3,500
Rip Rap Emergency Spillway	CY	305	$ 116	$	35,380
Maintenance Road (6" Thick)	CY	425	$ 56	$	23,800
Certification	EA	1	$ 8,000	$	8,000
Erosion Control	LS	1	$ 10,750	$	10,750
Subtotal				$	197,475
Reach RWT092 (County Cost)					
Concrete Check Wall (38' wide x 6' deep x 1' thick) (4)	CY	34	$ 1,800	$	61,200
Riprap Protection (Type M - 12")	CY	340	$ 116	$	39,440
Rip Rap Chute (18" Riprap) (Junction)	CY	170	$ 116	$	19,720
Maintenance Road (6" Thick)	CY	260	$ 56	$	14,560
Erosion Control	LS	1	$ 7,500	$	7,500
Subtotal				$	142,420
Reach RWT054 (County Cost)					
Concrete Check Wall (38' wide x 6' deep x 1' thick) (5)	LF	43	$ 1,800	$	77,400
Riprap Protection (Type M - 12")	CY	425	$ 116	$	49,300
Maintenance Road (6" Thick)	CY	310	$ 56	$	17,360
Erosion Control	LS	1	$ 8,000	$	8,000
Subtotal				$	152,060
Subtotal County Costs				$	491,955
Contingency (35%)				$	172,184
TOTAL COUNTY COST				$	664,139
Reach RWT094 (Developer Cost)					
South of Proposed Road/ 72" Culverts					
Earthwork	CY	6610	$ 5	$	33,050
Riprap Protection (Type M -12") (Riffle) (4)	CY	580	$ 116	$	67,280
Riprap Protection (Type VL - 6")	CY	98	$ 116	$	11,394
Coir Mat 40	SY	6952	$ 8	$	55,616
North of Proposed Road/ 72" Culverts					
Concrete Check Wall (42' wide x 6' deep x 1' thick) (5)	LF	47	$ 1,800	$	84,600
Riprap Protection (Type M - 12")	CY	470	$ 116	$	54,520
Maintenance Road (6" Thick)	CY	443	$ 56	$	24,801
Erosion Control	LS	1	$ 16,800	$	16,800
Subtotal				$	348,061
Subtotal Developer Costs				$	348,061
Contingency (35%)				$	121,821
TOTAL DEVELOPER COST				$	469,882
TOTAL REGIONAL DRAINAGE COST				$	1,134,021

Conceptual Opinion of Probable Construction Cost

The Engineer has no control over the cost of labor, materials, equipment, or over the Contractor's methods of determining prices or over competitive bidding or market conditions. Opinions of probable costs provided herein are based on the information known to Engineer at this time and represent only the Engineer's judgment as a design professional familiar with the construction industry. The Engineer cannot and does not guarantee that proposals, bids, or actual construction costs will not vary from its opinions of probable costs.