Appendix A
Storm Drainage Master Plan (Part 1)

APPENDIX A
Storm Drainage Master Plan

Section 9.0 of the Storm Drainage Master Plan includes Modeling Data and files. These files are available upon request from the USACE, Sacramento Regulatory Office. Please contact Marc Fugler at (916) 557-5225 to request more information.

APPENDIX A

Storm Drainage Master Plan

Section 9.0 of the Storm Drainage Master Plan includes the Modeling Data and files and is only provided in the electronic copy of this Environmental Impact Study.

REVISION OF THE

STORM DRAINAGE MASTER PLAN

FOR THE

ELVERTA SPECIFIC PLAN

SACRAMENTO COUNTY
CONTROL #99-SFB-0351

Prepared For:

Elverta Owners Group

Prepared By:

MacKay & Somps
Civil Engineering, Planning & Surveying

1552 Eureka Road, Suite 100
Roseville, CA 95661

M&S Project #7501-30 June 10, 2011

Revision to the

STORM DRAINAGE MASTER PLAN

for the

ELVERTA SPECIFIC PLAN

Sacramento County, California

TABLE OF CONTENTS

TABLES INDEX

EXHIBITS INDEX

LIST OF APPENDICES

PREFACE

The 1,744+/- acre Elverta Specific Plan is a proposed master-planned community consisting of a diverse mix of land uses located in the northwestern part of Sacramento County. In 1998 the Sacramento County Board of Supervisors initiated the planning process for this community at the request of the Elverta Specific Plan Property Owners Group[1]. Through a collaborative effort of the County Planning Department and its consultants, the Elverta Specific Plan Property Owners Group, and a Board of Supervisors' appointed Citizen's Advisory Committee, a draft land use plan known then as the "Preferred Land Use Concept Plan" was developed, for which an Administrative Draft Specific Plan text document and various supporting technical studies were subsequently completed in 2000 and 2003, respectively[2].

In May of 2003, the County of Sacramento acting as the Lead Agency published and circulated a Draft Environmental Impact Report for public review and comment pursuant to CEQA requirements. After a lengthy public outreach and hearing process and in response to comments received during this process, the original draft land use plan was revised, resulting in the land use plan known as "Plan 4, as Revised" and "Refined Plan, Land Use Plan #4" as shown in Exhibit 1.

This revised and updated land use plan, supporting technical studies, and several other documents were incorporated into the Final EIR published by the County in May of 2007, which then served as the basis for multiple public hearings before the County Board of Supervisors, before eventually being certified on August 8, 2007[3].

Participating land use ownership has changed significantly subsequent to that date, driven mostly by economic conditions of the last few years. This new Elverta Owners Group (see Exhibit 3) has since initiated consultation with the natural resources agencies in pursuit of U.S. Clean Water Act, Section 404 permits needed for implementation of the project as approved by the Board of Supervisors. The 404 permitting involves the eventual issuance of one overall County-sponsored permit associated with the construction of the backbone infrastructure necessary to serve the Phase 1 development within the Plan Area, as well as 15 additional individual permits for the various landowner based development plans of the Elverta Owners Group constituting Phase 1 development. As part of this process, the federal resource agencies have required a NEPA Environmental Impact Statement (EIS) for the project.

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1 The Elverta Specific Plan Property Owners Group, also known as the "participating property owners", consists of those Specific Plan area land owners who participated financially in the Specific Plan Process and received rezoning for their properties subsequent to the Specific Plan approval and FEIR certification.

2 Source: Final Environmental Impact Report, Volume 1 (of 4), Elverta Specific Plan, Sacramento County Control #99-SFB-0351 and State Clearinghouse #SCH 2000092026.

3 For the complete time line and full description of the lengthy environmental review process and associated public hearings, please refer to the County of Sacramento records. To facilitate review of this study, some portions of the FEIR and original drainage master plan text and information have been incorporated into this study verbatim as indicated.

In an effort to create a more environmentally sound proposal, the Elverta Owners Group revised the original drainage corridor alignments approved in the Specific Plan to reflect more natural alignments that largely follow the existing drainages. The design of the revised corridors was also modified significantly to allow enhancement and restoration of natural resources within these corridors, while at the same time managing potential impacts due to hydromodification caused by the proposed urbanization of the project. The Elverta Owners Group also decided to create the flexibility for potential future densification of the Project in accordance with a density bonus provision contained in the approved Specific Plan text that allows for an increase in residential densities of up to 25% based on a concurrent energy efficiency increases above a given threshold. This latest land use plan is consistent with current trends in urban land use planning leaning toward denser urban development on smaller footprints and is reflected in Exhibit 2.

The following study updates the hydrologic and hydraulic analysis for these revised drainage corridors and a potential residential density increase of up to 25%[4]. The completed analysis is being incorporated into the EIS being prepared for the Specific Plan.

[4] As a result of basing this drainage master plan analysis on the increased density (6,188 DU), calculated runoff rates and volume are slightly higher than they would be, had the calculations been based on a total of 4,950 DU. The results and associated facility requirements (mitigation measures) are thus considered to be conservative when compared to results based on the lower density.

1.0 EXECUTIVE SUMMARY

On August 8, 2007, nearly 14 years after initiation of the Rio Linda/Elverta Community Plan update, subsequent Specific Plan land use planning, technical study and EIR preparation, and public outreach/public hearing processes, the Sacramento County Board of Supervisors certified the Environmental Impact Report (EIR) for the Elverta Specific Plan (ESP). A few weeks later, various entitlements including a General Plan Amendment, Specific Plan, Financing Plan, and related documents were approved, the basis of which was a land use plan known as the “Plan 4, as revised” and “Refined Plan, Land Use Plan #4” (see Exhibit 1). The technical studies for the Specific Plan EIR were completed between 2002 and 2003, including a “Storm Drainage Master Plan for the Elverta Specific Plan, Sacramento County”, completed on October 16, 2002.

Said Storm Drainage Master Plan for the Elverta Specific Plan analyzed the referenced land use plan (Exhibit 1) consisting of:

1. Residential land uses ranging from rural-type agricultural-residential densities of 1 to 5-acre minimum sized parcels (AR 1-5) through low, medium, and high density residential apartment-style zoning at up to 20 dwelling units per acre (RD 1-2, RD 3-5, RD 6-7, RD 10, and HDR-20, respectively). The holding capacity of the approved Specific Plan was limited to 4,950 residential dwelling units (DU). This consists of 450 rural density ag-res DU and 4,500 DU of more urban-style density;
2. Commercial uses;
3. A community center;
4. Two elementary schools, and
5. Supporting backbone infrastructure, including major roads, parks, drainage corridors, a power line corridor, and other ancillary land uses.

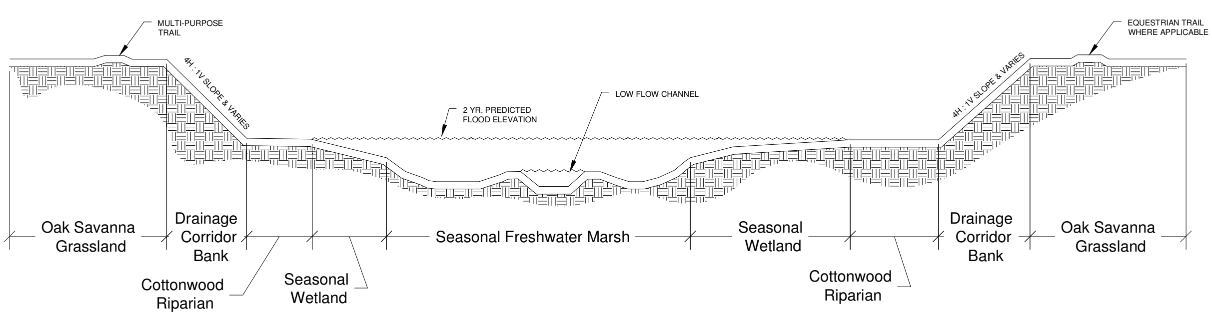
Since approval of the Specific Plan, the Elverta Owners Group, i.e. those property owners seeking development entitlements and funding ongoing natural resource permitting efforts, has undergone a change in participation, driven largely by the economic malaise of the last three to four years. The current Owners Group initiated consultations with the US Army Corps of Engineers (USACOE) in pursuit of U.S. Clean Water Act, Section 404 permits required for implementation of the approved project. Based on feedback the group received during the consultation meetings, a more biologically sound alternative to the approved land use plan was developed. In this new, preferred alternative, the proposed drainage corridors for drainage sheds B, C, and D (the three southernmost drainage sheds in the Specific Plan area containing a majority of the urban land uses proposed for the Project) were realigned to largely coincide with the underlying existing drainages. Additionally, these proposed drainage corridors were widened significantly to manage the potential impacts of hydromodification due to urbanization of the Project area. The resulting wide drainage corridors allow for habitat creation and enhancement within these corridors much superior to that found in the Plan Area today.

This current 2010 Drainage Master Plan for the Elverta Specific Plan analyzes drainage impacts resulting from updates to the Elverta Specific land use plan and associated drainage corridor realignments depicted in Exhibit 2. The analysis defines how the proposed revised development can occur in a responsible and safe manner and how potential impacts on existing downstream drainages can be fully mitigated to existing or better than existing conditions. It further defines how a portion of the Plan Area made up of parcels owned or controlled by the Elverta Owners Group (Phase 1 development area as reflected in Exhibit 3) may develop in a safe and responsible manner consistent with all applicable standards and regulations. The analysis is being incorporated into a NEPA Environmental Impact Statement (EIS) for the Specific Plan, required by the resource agencies to support the U.S. Clean Water Act, Section 401 and 404 permitting processes.

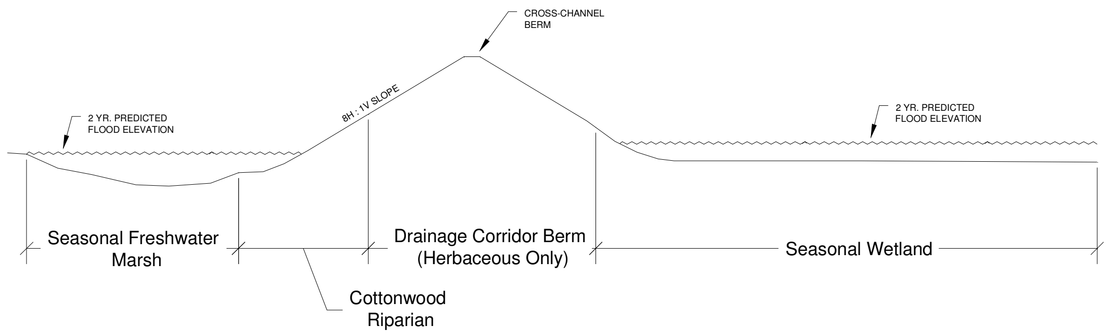
The revised project as proposed can be implemented in a safe and responsible manner that appropriately mitigates all development impacts on stormwater runoff to existing or better than existing conditions at the downstream end of the project and upstream of non-participating properties for both buildout conditions and Phase 1 interim conditions. This is clearly demonstrated in the following Table 1, which compares peak runoff rates resulting from the 100-year design storm for both existing conditions and developed conditions (with full implementation of identified drainage improvements).

Development impacts to water quality will be fully mitigated by the implementation of a combination of Low Impact Development (LID) measures, Best Management Practices, and point-of-discharge water quality treatment basins as discussed in Chapter 5.0 of this study. Hydromodification management will occur in-stream through the attenuation of frequently occurring storm events via a number of cross channel berms that discharge runoff into the downstream drainages through calibrated vertical openings in these berms (see Chapter 3.5 and Appendix 9.2 of this study). The width and slope of the proposed drainage channels cause runoff to flow very slowly through the channels, further helping to reduce the erosion potential within the defined on-site channel limits.

The drainage corridor sections shown below depict the conceptual layout of the proposed drainage channels within the Project limits. Wetland and riparian habitat will be restored, created, or enhanced within these expanded drainage corridors to exceed the functional value of the habitat that currently exists within the degraded drainages on-site. This is further discussed in Chapter 7.0 of this report, with conceptual habitat development plans appended (Appendix 9.5).



<u>Proposed Channel Cross Section</u>

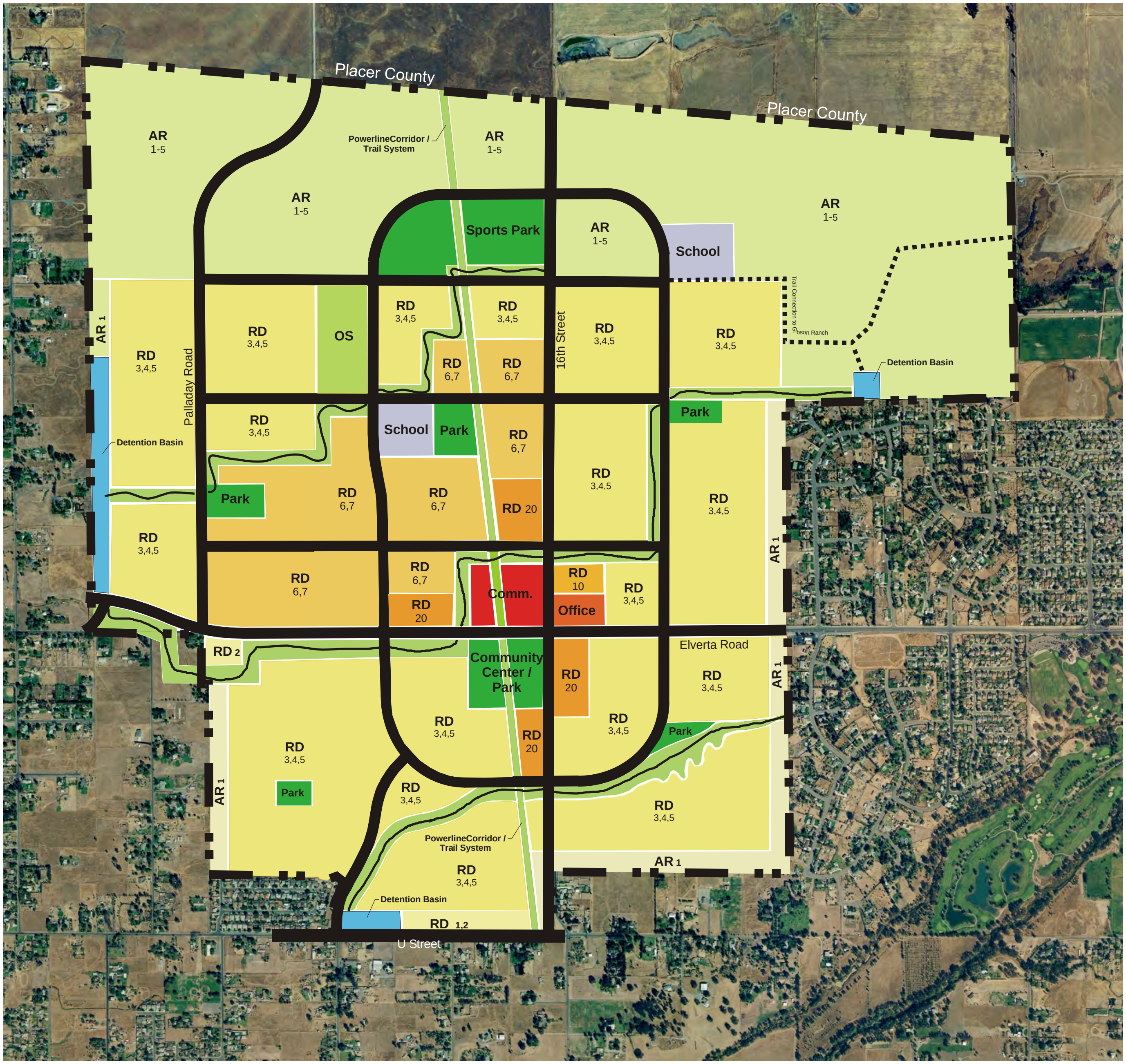


Proposed Longitudinal Channel Section

TABLE 1:
PRE- AND POST-DEVELOPMENT 100-YR PEAK RUNOF COMPARISON

Location	Ex. Sta.	Dev. Sta.	100yr Flow (cfs)		
			Existing	Phase 1	Developed
600- and 700-Series Sheds:					
Node B-2 (downstream compliance)	n/a		296	n/a	311
Node 600UP (downstream compliance)	n/a		27	n/a	39
Node 702UP (downstream compliance)	n/a		29	n/a	41
Note: 600- and 700-Series shed analysis results based on 2002 Storm Drainage Master Plan					
Shed A:					
Node A (donstream compliance)	n/a		101	n/a	67
Note: Shed A analysis results based on 2002 Storm Drainage Master Plan					
Corridor B:					
Loop Road	55+00	50+00	184.76	n/a	101.71
Non-Participant	44+00	39+75	198.09	n/a	106.54
Palladay Road	26+00	22+75	176.75	n/a	91.84
Downstream Compliance	14+51	13+00	181.94	172.39	137.64
Corridor C:					
Loop Road	111+80	117+00	197.17	169.49	204.83
16th Street	87+33	97+00	256.19	198.51	210.8
Dowstream Berm	35+00	57+00	418.32	320.13	347.78
Downstream Compliance	28+00	48+00	396.71	301.74	322.33
Offsite Elverta Rd	16+91	33+90	395.74	270.4	275.37
Corridor D:					
Downstream Culvert	5+50	18+70	151.94	n/a	62.13

EXHIBIT 1



Land Use	Acreage
Agricultural Residential (AR) 1-5	502.3
Agricultural Residential (AR) 1	49.5
Residential Development (RD) 2	3.2
Residential Development (RD) 1, 2	6.9
Residential Development (RD) 3, 4, 5	662.7
Residential Development (RD) 6,7	161.7
Residential Development (RD) 10	7.0
Residential Development (RD) 20	38.8

Land Use	Acreage
Office / Professional	4.4
Commercial	15.0
Community / Sports / Neighborhood Parks	73.3
Elementary School	20.2
Drainage / Trails	101.3
Detention / Joint Use	
Powerline Corridor*, and Trail System	16.3
Open Space	18.4
Major Roads - Other	74.3
Total	1,744.6

*Includes 10.68 acres of powerline corridor acreage in park, RD 20 and Commercial landuse statiestics where corridor is adjacent to or within said landuse designations. (Total acreage nets out these 10.68 acres)

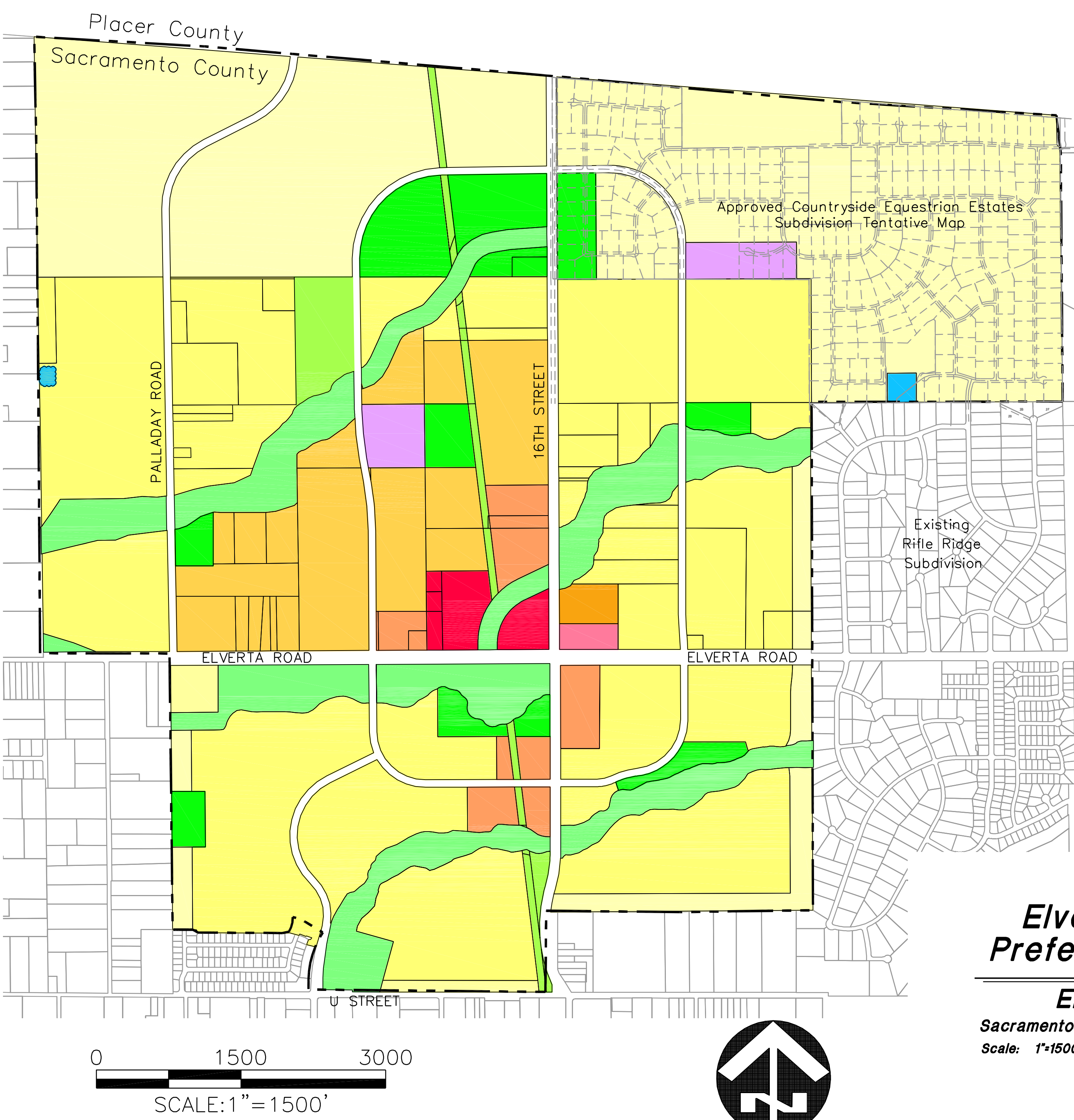
Total Plan Holding Capacity of 4,950 Dwelling Units

(4) *1-30-04*

ELVERTA SPECIFIC PLAN
(PLAN 4, AS REVISED)

NORTH NO SCALE

LFR LEVINE•FRICKE Planning & Development Services



Land Use Summary Table						
		Approved Specific Plan Multiplier		Modified Multiples to Achieve Target Units[1]		25% EE Bonus
Land Use Type	Area (AC)[2]	Multiplier	Units	Multiplier	Units	Units
AR 1	41.9	1.0000	42	1.0000	42	53
AR 1-5	499.3	0.8960	447	0.9013	450	563
RD 1,2	5.3	1.5000	8	1.5000	10	13
RD 2	5.5	2.0000	11	2.0000	7	9
RD 3,4,5 (Inside Loop)	142.9	5.0000	715	5.0000	715	893
RD 3,4,5 (Outside Loop)	474.6	3.8505	1,827	4.3458	2,063	2,578
RD 6,7	143.9	5.6660	815	6.3238	910	1,138
RD 10	5.6	8.0000	45	10.0000	56	70
RD 20	34.3	18.0000	617	20.3499	698	873
Commercial	17.1	n/a	0		0	0
Office	3.7	n/a	0		0	0
School	19.5	n/a	0		0	0
						0
Park	72.0	n/a	0		0	0
Drainage/Riparian Corridor	166.9	n/a	0		0	0
Detention	2.1	n/a	0		0	0
Open Space	31.1	n/a	0		0	0
Major Roads/Other	78.9	n/a	0		0	0
Wetlands/Habitat Avoidance Area	0.0	n/a	0		0	0
Total Specific Plan Area	1,744.6		4,528		4950	6,188
Target Unit Allocation			4,950		4950	6,188
Differential			422		0	0

1. Target unit counts are as approved in the Specific Plan.
2. Land use acreages are approximate only and based on APN and County parcel map information. Property surveys will be required for more accurate information.

LEGEND:

- PROJECT BNDY.
- AR 1
- AR 1-5
- RD 1,2
- RD 2
- RD 3,4,5
- RD 6,7
- RD 10
- RD 20
- Commercial
- Office
- School
- Multiuse Drainage Corridor
- Detention
- Open Space
- Park

Exhibit 2
Elverta Specific Plan
Preferred Land Use Plan

Elverta Specific Plan

Sacramento County, California

Scale: 1"=1500' **June, 2011**

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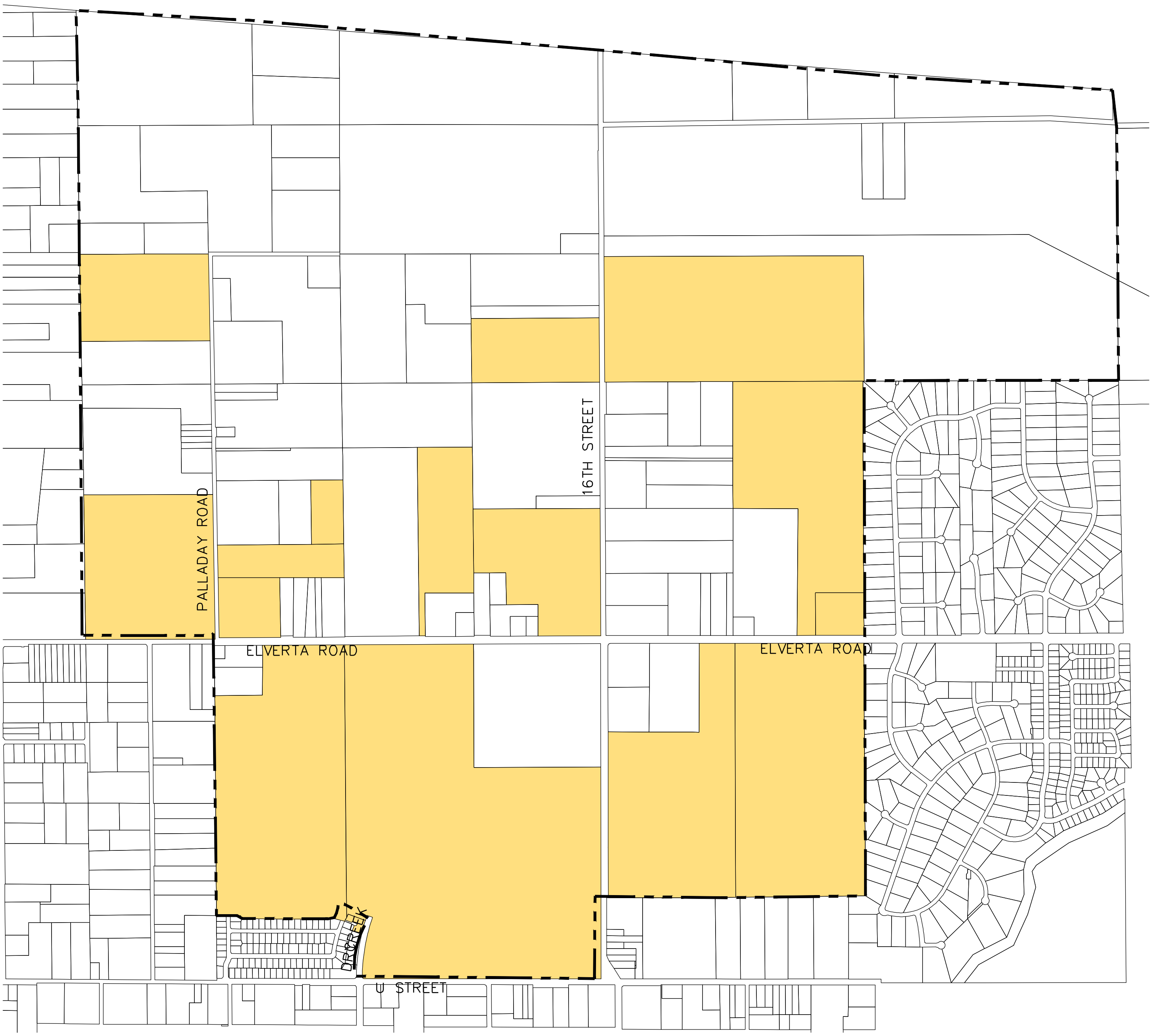

LEGEND:

PROJECT BNDY.

PARTICIPATING PARCELS

Exhibit 3
Elverta Owners Group
(Participants, Phase 1 Development)

Elverta Specific Plan

Sacramento County, California

Scale: 1"=1500' January, 2011

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SCALE: 1"=1500'

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2.0 INTRODUCTION

2.1 STUDY PURPOSE

A Storm Drainage Master Plan (dated October 16, 2002) was prepared for the Elverta Specific Plan (the Plan Area) and approved by the Sacramento County Department of Water Resources early in 2003 for inclusion in the project's Environmental Impact Report, certified in 2007. The drainage analysis studied existing conditions and determined what facilities would be required to allow buildout of the proposed "Plan 4, as Revised" land uses (Exhibit 1) to occur in a responsible and safe manner and to fully mitigate the Plan Area's development impacts on downstream properties. The hydraulic analysis of the major drainages completed for the 2002 plan relied on the US Army Corps of Engineers Hydrologic Engineering Center River Analysis System (HEC RAS), Version 3.0 Steady State computer modeling software.

The current (2011) Drainage Master Plan for the Elverta Specific Plan analyzes drainage impacts resulting from updates to the Elverta Specific land use plan and associated drainage corridor realignments made since Project approval in 2007 - changes made in response to feedback received from federal regulatory resource agencies (see Exhibit 2). The analysis defines how the proposed revised development can occur in a responsible and safe manner and how potential impacts on existing downstream drainages can be fully mitigated to existing or better than existing conditions. The outcome of this analysis will be incorporated into a required NEPA Environmental Impact Statement (EIS) for the Specific Plan and to support of the U.S. Clean Water Act, Sections 401 and 404 permitting processes.

This study adheres to specific requirements for the planning and analysis of drainage facilities as set forth in:

1. the Storm Drain Design Standards of the Municipal Services Agency of Sacramento County Department of Water Resources,
2. the Sacramento County Water Agency Drainage Ordinance,
3. the Sacramento City/County Drainage Manual Volume 2: Hydrology Standards,
4. the Sacramento County Water Agency Code Titles 1 and 2,
5. the Sacramento County Floodplain Management Ordinance,
6. the Stormwater Quality Design Manual for the Sacramento and South Placer Regions,
7. the Sacramento County Department of Water Resources Plan Submittal Take-In Check List, and
8. the draft Sacramento Stormwater Quality Partnership Hydromodification Management Plan, dated January 28, 2011.

The study was prepared under the responsible supervision of Ken Giberson, a State of California registered Civil Engineer.

2.2 PROJECT DESCRIPTION

The Elverta Specific Plan underwent rigorous technical and environmental analysis through the early part of this past decade, culminating in the preparation of a Draft Environmental Impact Report (EIR)[5] by the County in May of 2003. The EIR was then the subject of a lengthy public review and hearing process, concluding with its certification by the Sacramento County Board of Supervisors on August 8, 2007. Shortly thereafter, the Specific Plan, land use plan (known as “Plan 4, as Revised” and “Refined Plan, Land Use Plan #4”, see Exhibit 1), associated Public Facilities Financing Plan, and other related documents were approved.

The land use plan subject of the EIR contains a broad range of land uses, including:

1. Residential land uses ranging from rural-type agricultural-residential densities of 1 to 5-acre minimum sized parcels (AR 1-5) through low, medium, and high density residential apartment-style zoning at up to 20 dwelling units per acre (RD 1-2, RD 3-5, RD 6-7, RD 10, and HDR-20, respectively);
2. Commercial uses;
3. A community center;
4. Two elementary schools; and
5. Project backbone infrastructure, including major roads, parks, drainage corridors, a power line corridor, and other ancillary land uses.

Though the holding capacity of the approved plan was limited to 4,950 residential dwelling units (450 rural density ag-res units and 4,500 units of more urban-style density), the Final (2007) EIR notes that “*…the holding capacity for each property may increase […] in cases where additional units are allowed in conformance with the density bonus provisions of the Elverta Specific Plan Affordable Housing Plan or other applicable state laws or local ordinances*.”[6] Under the County’s density bonus provisions regarding energy efficiency, overall density may also be increased by up to 25% consistent with a commensurate energy efficiency increase. The Elverta Owners Group thus calculated the overall land use capacity to potential increase to 6,188 DU, which would result in a net weighted average percent impervious cover increase of 4.4 percent (from 26.9% to 31.3%).

The current Elverta Owners Group initiated consultations with the US Army Corps of Engineers (USACOE) in pursuit of U.S. Clean Water Act, Section 401 and 404 permits required for implementation of the approved project. Based on feedback the group received during the consultation meetings, a more biologically sound alternative to the approved land use plan was developed. In this new, preferred alternative, the proposed drainage corridors for drainage sheds B, C, and D (the three southernmost drainage sheds in the Specific Plan area, containing a majority of the urban land uses proposed for the Project) were realigned to largely coincide with the underlying existing drainages. Additionally, these proposed drainage corridors were widened significantly to manage

5 County of Sacramento Control Number 99-SFB-0351; State Clearinghouse Number SCH 2000092026

6 Elverta Specific Plan FEIR, Land Use Chapter 4, Page13.

the potential impacts of hydromodification due to urbanization of the Project area. The resulting wide drainage corridors allow for habitat creation and enhancement within these corridors much superior to that found in the Plan Area today[7].

Modifying the alignment and width of the drainage corridors required some minor land use changes to the Approved Project, most notably a rearrangement of the Town Center, as the drainage corridor now bisects the site rather than following an alignment along its edge. In addition, portions of the Loop Road to the south of Elverta Road were re-aligned to provide for more efficient land use configurations to accommodate the widened corridor to the south. RD-20 sites were also moved and reconfigured in order to get close to the necessary acreage requirements associated with the Project's Affordable Housing Plan - reference Exhibit 2 for the revised land use plan and drainage corridor alignments. This 2011 Drainage Master Plan revision contains updated analysis reflecting these revised drainage corridor alignments and minor land use changes. The northernmost shed areas designated in the original drainage study as 600B & C, 600UP, 700UP, and AA did not experience any land use or drainage corridor changes and as such, were not re-analyzed in this drainage master plan update. Additionally, none of the properties located within those drainage sheds have expressed any development interest at this time, nor are they participating financially in the ongoing entitlement and environmental permitting processes. The analysis of these northern sheds contained in the original drainage study dated October 16, 2002 as included in the FEIR for the Elverta Specific Plan dated May 2007 referenced under the County Control Number 99-SFB-0351 and the State Clearinghouse Number SCH 2000092026 was carried forth "as is" within this revised 2011 Drainage Master Plan.

2.3 EXISTING SITE CONDITIONS

The 1,744± acre Elverta Specific Plan (ESP) is located within the watershed of the Natomas East Stream Group (NESG)[8] as shown on Exhibit 4: *Regional Drainage Sheds.* The NESG consists of 13 tributaries that drain approximately 27 square miles and outfall to Steelhead Creek (formerly known as the Natomas East Main Drainage Canal, aka the NEMDC). ESP area runoff drains to Tributaries F, G, and I of the NESG.

Historically, the drainage within the ESP area flows from northeast to southwest through a series of both natural and improved, but mostly ill-defined small intermittent drainages with minimal, primarily grassy vegetation. These existing drainages intersect Steelhead Creek about 2.3± miles downstream (west) of the project. Steelhead Creek then drains to the south and then westerly, eventually outfalling to the Sacramento River at the confluence with the American River (see Exhibit 5: Existing Regional Topography)[9].

7 Wetland Functions And Values Assessment, Elverta Specific Plan, dated December 2010

8 Natomas East Stream Group (NESG), Hydraulic & Hydraulic Study prepared by Borcalli & Associates for the Sacramento Area Flood Control Agency (SAFCA) dated September, 1994.

9 Elverta Specific Plan FEIR, Volume 1, Chapter 7, Page 1.

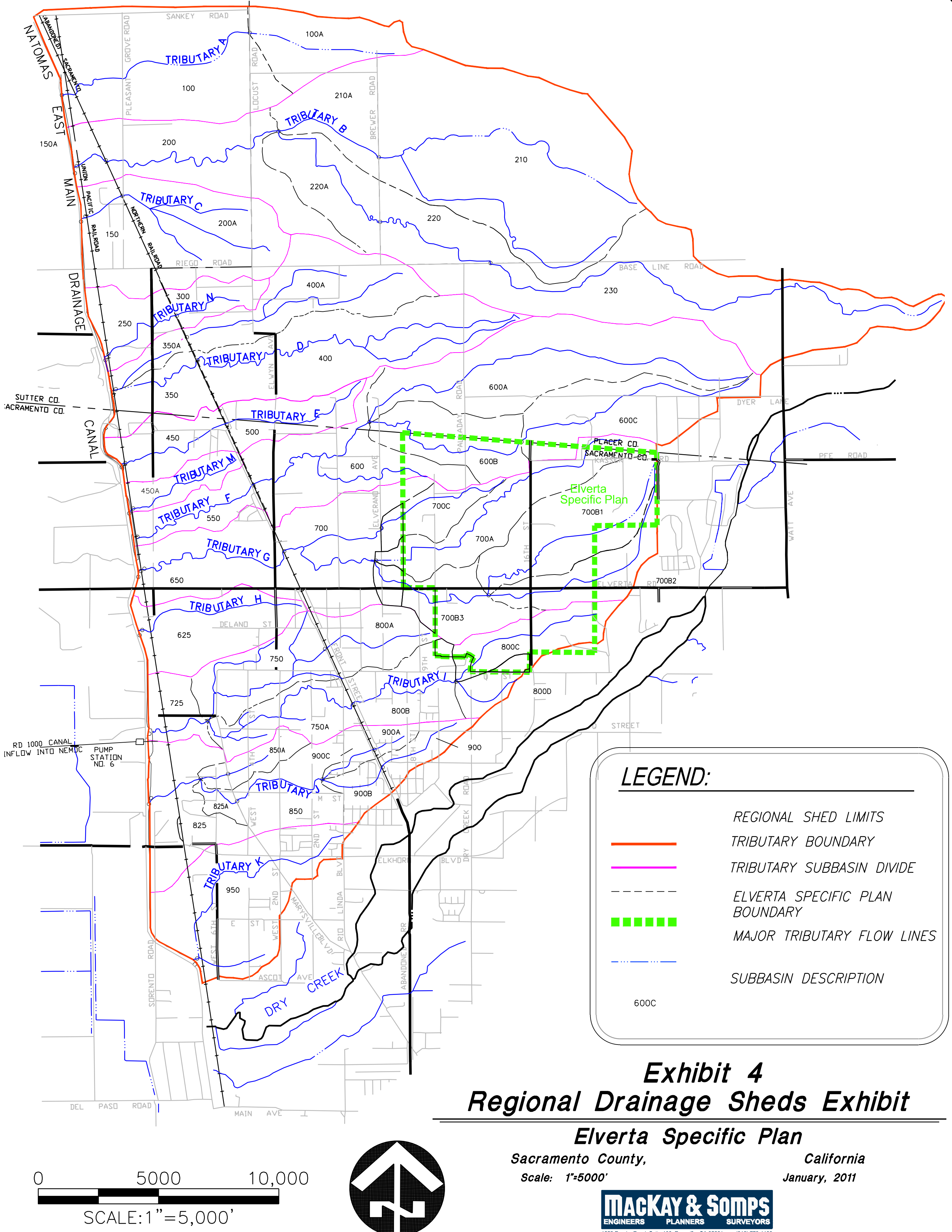

Exhibit 4
Regional Drainage Sheds Exhibit

Elverta Specific Plan

Sacramento County, California

Scale: 1"=5000' **January, 2011**

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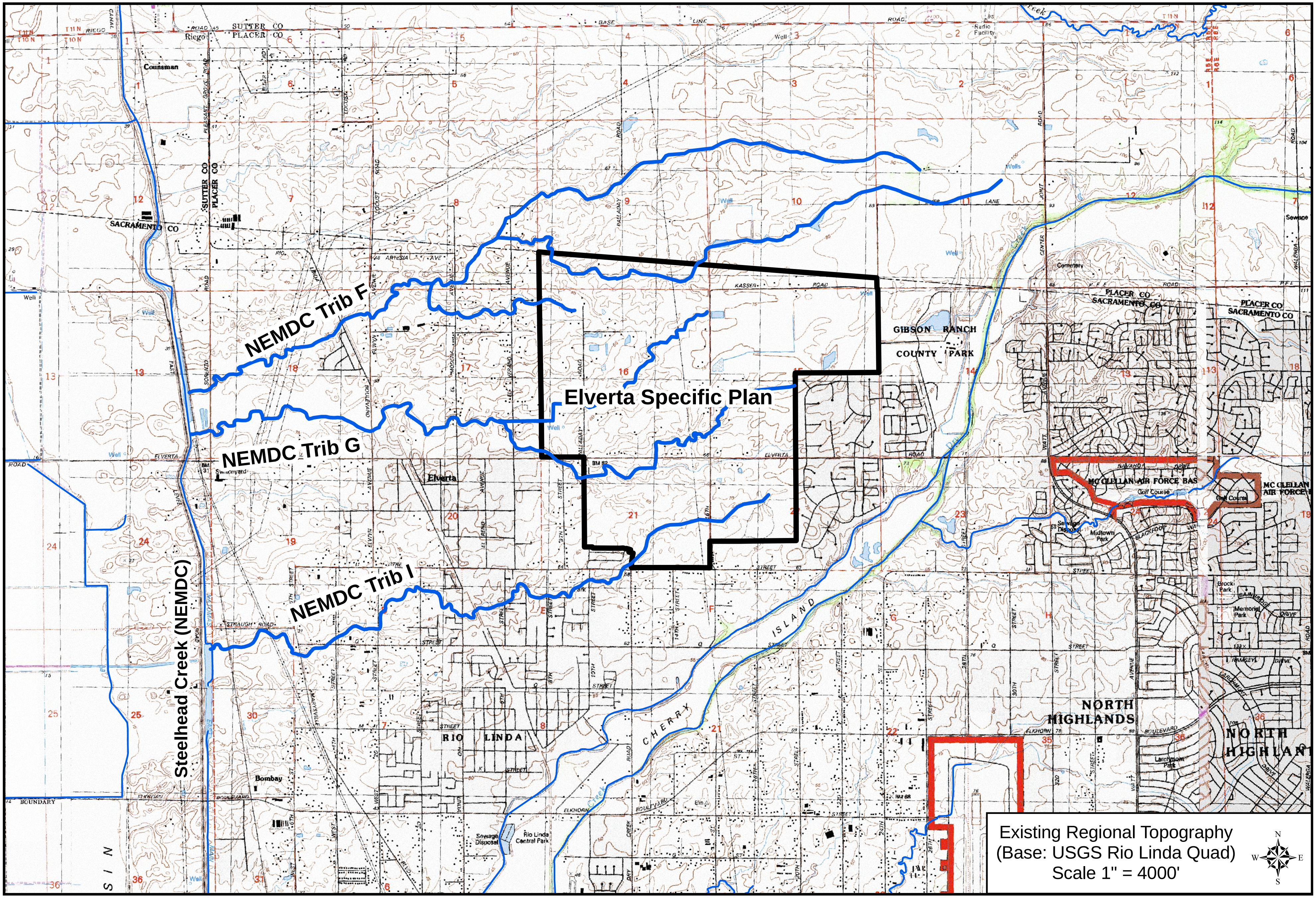


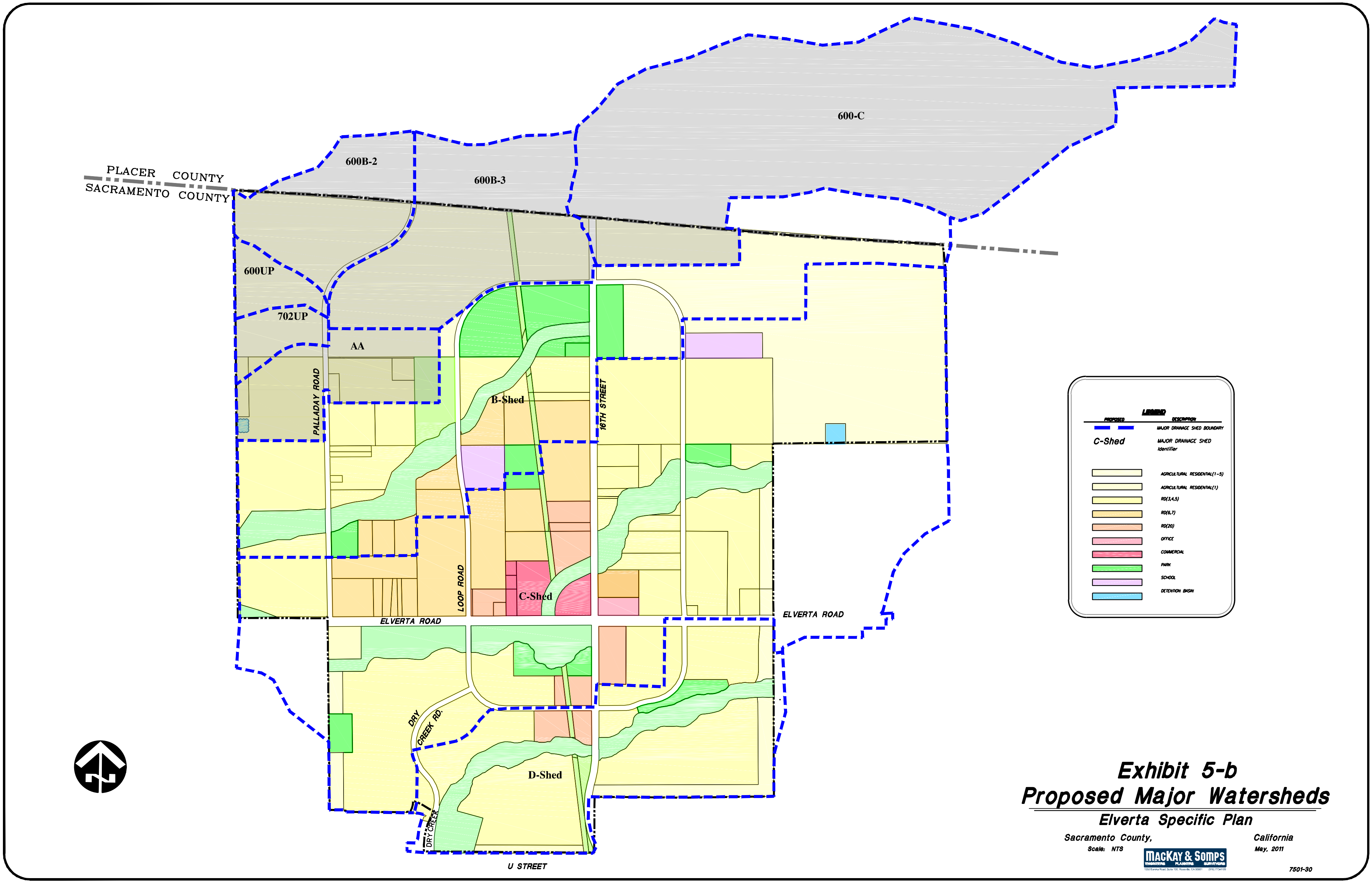
Exhibit 5 : Existing Regional Topography

The Plan Area's topography varies from an elevation of 89 feet at the northeast corner to approximately 50 feet on the west side near Elverta Road. Current land uses within the project consist of small agricultural operations and grazing fields, with roughly a dozen homesteads scattered across the Plan Area. Roadside ditches and cross-culverts intersect the more-or-less natural drainages at various locations and as such form part of the existing drainage network at the site.

Based on existing topography, the ESP area is divided into five existing major drainage basins, which are further divided into smaller sub-basins (see Exhibit 8: *Existing Conditions Watershed Map*). The northern on-site basin (600 & 700 series) includes 255± acres of existing open fields and agricultural land and is designated for rural-type development by the Specific Plan with Ag-Res zoning with minimum parcel sizes of 1 to 5 acres. This basin drains to the northwest and is tributary to the NESG Tributary "F". Its drainage is isolated from the more urban development, which drains to the southwest.

The other four existing basins are designated as A, B, C and D, in a north to south progression, with on-site basins A, B, and C making up the upstream end of the NESG Tributary "G" and on-site basin D being the headwater of the NESG Tributary "I". Under existing conditions, drainage is collected and conveyed through these basins in often ill-defined, meandering, and branching shallow drainages formed through decades of agricultural operations. Some segments of these drainages have been confined to small man-made, linear ditches to better align with property lines and other physical features.

Significant urban development is proposed to occur within these basins as depicted in the revised land use plan (see Exhibit 2). Only basins B, C, and D are proposed to contain major open space drainage corridors that will convey drainage from their tributary sheds totaling several hundred acres each within basins B, C, and D. Basin A is isolated to approximately 88 acres (developed conditions) located along the western Plan Area boundary. Under existing conditions, runoff from this shed is conveyed in a southwesterly direction across Palladay Road and then off-site in very shallow, ill-defined drainages.



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"B" Shed:

The "B" drainage basin originates upstream of the Plan Area in Placer County. Approximately 45 acres of the basin are located in Placer County in the proposed Placer Vineyards project. Based on said project's drainage master plan, it was determined that runoff leaving Placer County under developed conditions had to be reduced to no more than 90% of its existing runoff rate. To be conservative, this drainage analysis thus assumed 'existing conditions' runoff rates for both existing and developed conditions.

Downstream of the County line, the "B" drainage runs across a couple of rural properties, crosses Kasser Road through a small culvert and then flows across the western portion of the proposed Countryside Equestrian Estates project into an existing agriculture pond just upstream of 16th Street. Runoff then crosses 16th Street through a small culvert and continues in a southwesterly direction in an ill-defined meandering channel to Palladay Road. The low-lying nature of the tributary shed upstream of 16th Street coupled with a culvert of inadequate capacity to convey peak runoff rates is causing ponding to occur upstream of 16th Street, with 16th Street likely being flooded at this location during major storm events. Though a detailed analysis of this existing condition is beyond the scope of this drainage master plan, the analysis contained herein is based on the assumption that 'existing conditions' flows are being conveyed from the shed area upstream of 16th Street under both existing and developed conditions. In an effort to make assumptions that would yield conservative results and thus a safe design, "in situ" attenuation under existing conditions has been accounted for in the hydrology through a long time of concentration. The applicant for the Countryside Equestrian Estates project will have to submit to the County a project-specific drainage analysis prior to submittal of improvement plans, which details existing conditions runoff and proposed development mitigation which mitigates development impacts on storm drainage to match existing conditions.

Toward the western Plan Area boundary, the existing "B" shed drainage conveyance consists of a small, man-made, linear drainage ditch flowing in a westerly direction. It crosses beneath Palladay Road through a small culvert and continues to the Plan Area boundary confined to a small, man-made, low-capacity drainage swale. At the Plan Area boundary it then drains through a small agriculture pond before discharging unimpeded into a more natural downstream drainage across an undeveloped parcel.

"C" Shed":

The original headwaters of the "C" basin originates upstream of the Specific Plan Area in Placer County and then drains into Gibson Ranch Park immediately to the east of the Plan Area and the proposed Countryside Equestrian Estates project. As detailed in the FEIR for the Elverta Specific Plan[10], the drainage is then diverted by an existing berm and directed to flow into Dry Creek. The mitigation as outlined in the referenced FEIR is not proposed to be changed as part of this current drainage master plan update. Both the existing and proposed conditions analyses are based on the assumption of this existing shed diversion remaining in place.

10 Elverta Specific Plan FEIR, Volume 1, Section 7, Page 43

The upper end of the shed thus is limited to the eastern portion of the CEE project. It drains into an existing pond, before discharges into a small existing open concrete channel located on developed properties in the Rifle Ridge Estates subdivision. This channel then discharges into the "C" corridor within the boundary of the Specific Plan area. Both existing and developed conditions models included herein assume 'existing conditions' runoff rates.

The conveyance capacity of the existing concrete channel leaving the CEE project has not been verified. The runoff exiting the concrete channel was calculated based on the hydrology of the shed upstream of its discharge location. The hydrology of said shed, as modeled, accounts for flat terrain and a long time of concentration sufficient for regional modeling at the Specific Plan level. Consistent with County DWR standards, the applicants for the Countryside Equestrian Estates subdivision will be required to submit project-specific drainage modeling prior to submittal of improvement plans, which will entail a higher degree of detail specific to said subdivision than this master plan study contains.

After re-entering the Plan Area, the "C" drainage continues in ill-defined, meandering, and multi-branched drainages in a southwesterly direction to 16th Street. It crosses beneath 16th Street through a small 36"x22" arch culvert, continues in an ill-defined drainage in a southwesterly direction toward Elverta Road, and then crosses beneath Elverta Road through another culvert, before turning in a westerly direction.

An existing branch of the "C" drainage headwaters originates within the Existing Rifle Ridge Estates subdivision. Its runoff is discharged at the ESP boundary to a drainage ditch paralleling the north side of Elverta Road. It crosses beneath Elverta Road through a small culvert located just east of 16th Street, then crosses 16th Street, flows through a large vernal pool/depressional wetland feature, before combining with the main branch of the existing "C" drainage. The flow entering the vernal pool at the southwest corner of Elverta Rd. and 16th was calculated based on the hydrology of the sub-shed upstream of its discharge location described above. The hydraulics of the roadside ditch conveyance were accounted for in the SacCalc routing of the runoff hydrograph from the tributary sub-shed.

Near the downstream Plan Area boundary, the existing "C" basin drainage flows in a shallow, winding alignment along the south side of Elverta Road, before being confined to a narrow man-made ditch just east of the Specific Plan boundary. It continues on to 9th Street, crosses beneath said street through four 48" culverts, parallels the south side of Elverta Road for approximately 215+/- feet and then crosses to the north side of Elverta Road though another set of four 48" culverts. Both of these sets of culverts have insufficient capacity to freely convey the existing 100-year peak runoff, thus causing backwater conditions.

The confluence of the "B" and "C" drainage swales is located approximately ¼ mile downstream of the Plan Area boundary, just to the west of El Verano Avenue. They continue on as single meandering swale known as NESG Trib "G", flowing into Steelhead Creek roughly 2.1 miles west of the Plan Area. The confluence was deemed to not affect the hydraulic grade line within the study area.

<u>"D" Shed:</u>
The "D" basin is located entirely south of Elverta Road. It originates upstream of the Plan Area, where 4.2 acres of the existing rural Quail Ranch development convey runoff in roadside ditches adjacent to Class "C" streets to the existing "D" basin swale. This swale then flows through a man-made agriculture pond, through a small culvert beneath 16th Street, and onward in a southeasterly direction toward the intersection of Dry Creek Road with U-Street.

Just north of this intersection, runoff from the "D" basin flows through a 24-inch CMP culvert beneath Dry Creek Road, parallels U-Street for about 270' in a man-made ditch, before finally turning southward beneath U-Street through a elliptical 24-inch by 30-inch CMP culvert. These existing culverts are of insufficient capacity to convey peak runoff rates, causing the intersection to flood during major storm events.

Downstream of the culvert, the drainage continues on as NESG Trib "I" toward Steelhead Creek about 2.8 miles (along a meandering path) downstream of the Plan Area.

2.4 SOILS INFORMATION

According to USDA NRCS soils mapping and the Sacramento County soil type maps included in the City/County Drainage Manual (see Exhibit 6), Type D soils are predominant within the study area limits. As these soils exhibit less infiltration than the Type B soils that occur infrequently within the project area, storm drainage runoff calculated using SACPRE intermediate files based on Type D soils will be slightly greater than would otherwise have been the case had the few occurrences of Type B soils been incorporated. This theoretically results in more conservative calculations, though the difference would likely be very minor, given the predominance of Type D soils within the study limits.

The results of the published data review have been corroborated by actual field work and subsequent laboratory analysis as described in a report titled *Soil Landscape of the […] Elverta Project, […], Sacramento County, California* prepared in November 2010 by Kelley & Associates Environmental Sciences, Inc. (see Appendix 9.3). Due to limited access rights, said field exploration had to be limited to those properties owned by participants in the Elverta Owners Group. Additional analysis may have to be undertaken on other properties wishing to develop in the future.

The purpose of the field work was to analyze the soil characteristics within the limits of the proposed drainage corridors B, C, and D so as to inform the proposed detailed design of the corridors and drainages. Beyond the basic water quality treatment and flood control/mitigation that are the main focus of this drainage master plan, considerations for the creation of natural resources habitat within these corridors and drainages such as the depth of the existing duripan below ground (see Appendix 9.4) have been incorporated into the overall analysis. The viability and long-term sustainability of the proposed naturalized corridors are extremely important considerations in the overall drainage facilities design and have thus been studied much more extensively than might otherwise traditionally have been the case. Further discussion on corridor design details and natural resources restoration can be found in Chapter 7.0 of this master plan.

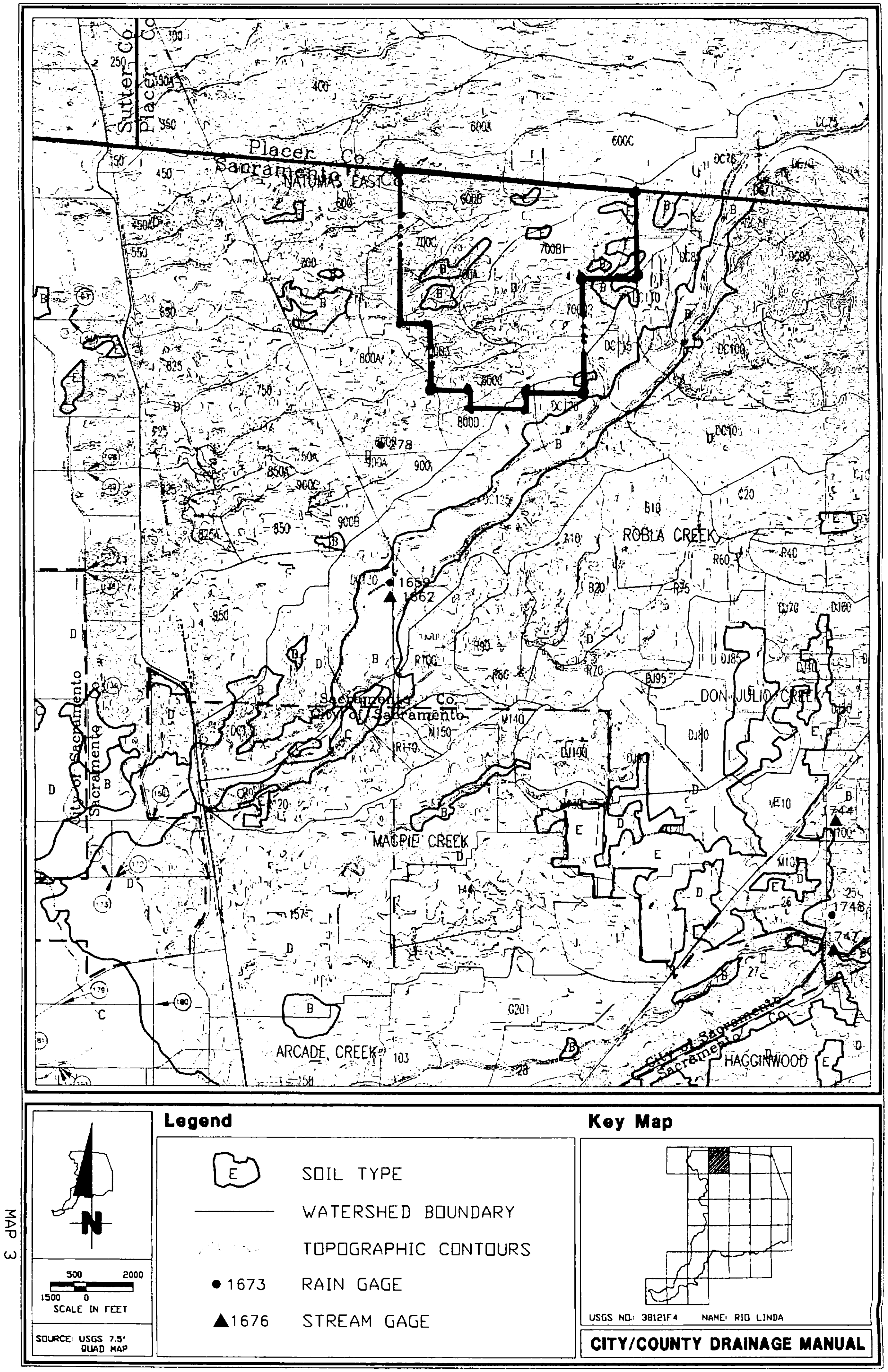


EXHIBIT 6 - ELVERTA SOILS MAP

2.5 FEMA SETTING

Exhibit 7 excerpted from the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps (FIRM) No. 0602620055F and No. 0602620060D depicts the extent of the mapped 100-yr floodplain in the vicinity of the Plan Area. As depicted, the entire 1,744+/- acre ESP area is located outside the 500-year floodplain; however, a small portion of about 5 +/- acres near the intersection of Elverta Road and 9th Street is within the mapped 100-year floodplain of NESG Tributary G.

The detailed FEMA study limits for Tributary G extend into the ESP area just south of Elverta Road east of 9th Street. For NESG Tributary I, the FEMA-mapped floodplain does not extend into the ESP area. The limits of the existing detailed FEMA study stop at U-Street.

The Elverta Owners Group will have to file a CLOMR (Letter of Map Revision) for existing conditions with FEMA in accordance with the County's flood plain ordinance, extending the limits of the detailed 100-yr floodplain analysis and resulting existing conditions floodplain mapping across the ESP area. As individual rezone entitlements for participating properties have already been approved for the ESP, DWR has indicated that the existing conditions CLOMR for the entire ESP area will have to be filed prior to submittal of the first of any large-lot or small-lot tentative parcel maps (whichever occurs first).

Subsequent to approval of the existing conditions LOMR, yet prior to any fill being placed within the mapped existing conditions 100-yr floodplain and ahead of construction of the Phase 1 drainage corridor improvements identified in Chapter 4 of this drainage study, the Elverta Owners Group will need to file a Conditional Letter of Map Revision (CLOMR) with FEMA for approval. Consistent with Rio Linda/Elverta Community Plan policies PF-10/DR-1 and PF17, any associated loss in floodplain storage resulting from such fill will need to be mitigated to the satisfaction of the County Department of Water Resources to prevent downstream flooding impacts. The hydrologic and hydraulic analyses contained within this report will eventually form the basis of the required floodplain mapping for FEMA submittals.

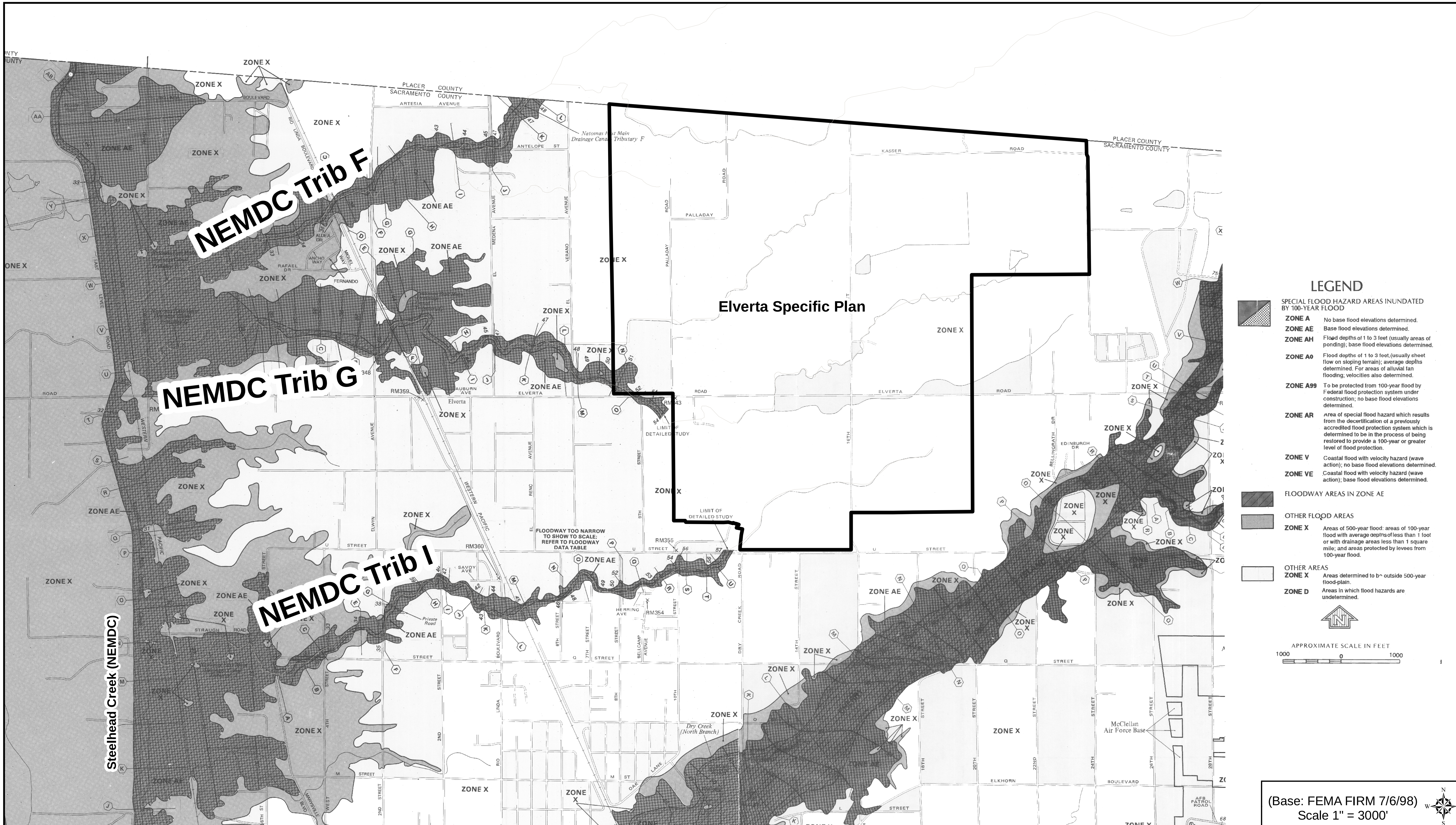


Exhibit 7 : FEMA Regional Floodplain Delineation

(Datum : NGVD29)

3.0 HYDROLOGY & HYDRAULICS FOR EXISTING & PROPOSED CONDITIONS

3.1 PREVIOUS STUDIES

The nature of the existing drainages and topography of the NESG, consisting of basically uncontrolled drainages that at numerous locations have been modified or realigned by agricultural operations, draining through a gently undulating, but mostly flat terrain, has contributed historically to the frequent flooding in the Rio Linda/Elverta community. This regional problem is exacerbated not only by backwater conditions in the NESG tributaries caused by high flood stages in the Sacramento and American Rivers, but also by local conditions caused by roadside ditches and driveway culverts of inadequate capacity to convey local runoff away from structures and streets. Additionally, local drainage swales through private properties are also subject to flooding due to obstructions placed or constructed in the swales, causing diversion or ponding of stormwater runoff.

As referenced in the FEIR for the Project, in an effort to master plan flood control facilities, in the early 1990 the Sacramento County Department of Water Resources undertook comprehensive analyses of the three largest NESG tributaries for existing conditions as well as to formulate a plan to mitigate future development impacts. A plan based on the results of the County's analysis that focused on NESG Tributary "I" which flows through the most developed area of the Rio Linda/Elverta community was met by strong opposition from the community and thus dropped by the County.

In 1994 the Sacramento Area Flood Control Agency (SAFCA) through their consultant Borcalli & Associates conducted the *Natomas East Stream Group Hydrology and Hydraulics Study* to determine alternatives to the channelization project previously pursued by the County. That study concluded that detention in reaches of the NESG tributaries upstream of Rio Linda Boulevard would be the most effective solution to mitigating future development impacts in the NESG[11].

In the late 1990's SAFCA then undertook various NESG watershed flood control improvement projects as part of their North Area Local Project. These included construction of a new pump station (known as the D15 pump station) and construction of a new levee on the north side of Dry creek between the D15 pump station and Rio Linda Boulevard. Implementation of all of these improvements has resulted in lowering of the 100-year water surface elevation in Steelhead Creek north of the pump station by approximately 3-4 feet[12].

The Final EIR for the Rio Linda / Elverta Community Plan Update contained further drainage analyses assessing the impacts associated with buildout of four different community plan land use alternatives being considered. As stated in the ESP Final EIR *Because the currently proposed Elverta Specific Plan land uses fall within the range of land use densities/intensities analyzed in the drainage studies for the RLECP Final EIR,*

11 ESP Final EIR, Volume 1, Chapter 7, Page 5

12 P. Ghelfi, SAFCA, December 2002

the conclusions of those drainage studies as set forth in the Final EIR would apply to the currently proposed [Elverta] Specific Plan as well.[13]

Subsequent to the completion of the original drainage master plan for the Elverta Specific Plan on October 16, 2002, SAFCA responded to questions raised by the County regarding impacts to the Steelhead Creek (formerly known as NEMDC) D15 pump station. With the help of MBK engineers, SAFCA utilized the Elverta drainage master plan modeling results to analyze the project's potential impacts. SAFCA's consultant concluded that rather than causing an environmental impact, buildout of the Elverta Specific Plan as proposed would cause an economic impact that could easily be mitigated with an impact fee. Based on this, the County Infrastructure Finance Section recommended that rather than have the Project pay an impact fee equivalent to $55/acre (gross), the Project should annex into the operations and maintenance district that funds ongoing operations of the pump station and associated facilities.[14]

The northernmost portion of the Specific Plan area is located in the 600-series sub-sheds tributary to a drainage originating north of the project in Placer County. This drainage enters the Elverta SP area just west of 16th Street, flows through ag-res zoning designated land uses west thereof, before leaving the Plan area near its northwest corner, flowing back into Placer County. This drainage originates in a proposed project in Placer County known as Placer Vineyards. That project, a master planned community of roughly 5,000 +/- acres abuts the Elverta Specific Plan area along its entire northern boundary. As part of the Placer Vineyards project, a drainage analysis was prepared by Civil Solutions, Inc. to address the impacts and required facilities of said project. Their analysis is contained in a document titled "Master Project Drainage Study, Placer Vineyards, Placer County, CA; Revised August 7, 2006". Flood plain mapping of this 600-series drainage for existing and developed/proposed conditions was completed for the Placer Vineyards project. As said flood plain mapping covers the portion of the drainage located within the boundary of the Elverta Specific Plan, the pertinent exhibits thereof have been included in this drainage master plan for the Elverta Specific Plan as Exhibits 10a-2 and 10b-2 for reference purposes.

3.2 SAC CALC WATERSHED RUNOFF ANALYSIS

As mentioned in Section 2.2 of this study, new drainage analyses contained within this drainage master plan are limited to analyses of those on-site shed areas where the Elverta Owners Group is proposing drainage corridor re-alignments and associated land use plan revisions. Affected corridors thusly included are the B, C, and D corridors within the B, C, and D sheds, draining into NESG Tributaries "G" and "I", respectively. For the 600 series, 700 series, and A shed areas, within which no changes to the originally proposed land use and design are being proposed by the current Elverta Owners Group, the drainage analysis that was reviewed and approved by the County DWR in the fall of 2002 and subsequently incorporated into the certified FEIR for the Elverta Specific Plan is still applicable and has thus been incorporated in its entirety "as is" into this current drainage master plan for completeness' sake.

13 ESP Final EIR, Volume 1, Chapter 7, Pages 5-8

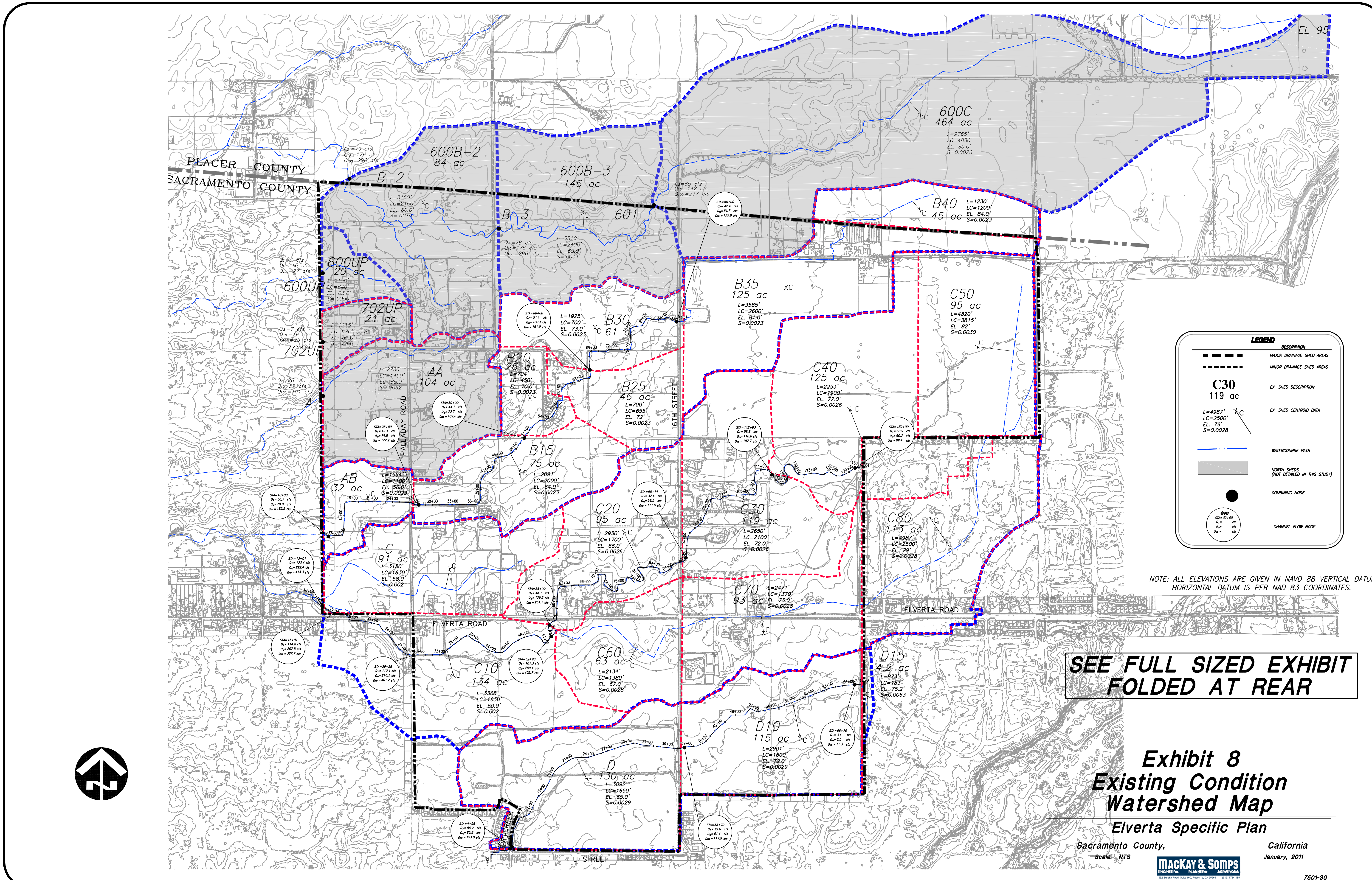
14 ESP Final EIR, Volume 1, Chapter 7, Pages 25-29; and Volume 3, Chapter HY-2

In accordance with the current Sacramento City/County Drainage Manual – Volume 2 (Hydrology Standards), runoff hydrographs for existing and developed conditions have been calculated using a Windows based application called the Sacramento Calculator (SacCalc) with what is commonly referred to as "the Sacramento Method". Using the SacCalc preprocessor within HEC-1 to process local hydrologic parameters and precipitation to create HEC-1 input data, HEC-1 was then run to calculate, route, and combine runoff hydrographs. The Elverta Specific Plan watershed is located in Rainfall Zone 2 of the Sacramento Method rainfall zone designations.

Though the previous models completed in 2002 using SacCalc required the same input data, the current effort reviewed all 'existing conditions' model input parameters for the B-, C-, and D-shed areas and updated them, as necessary, to reflect up-to-date information. Starting with revisiting shed delineations, soil type data, and existing land use, lengths and slopes of each water course, centroid locations, and distance thereof to the associated water course were determined as part of developing the hydrology map for each shed (see Exhibit 8: *Existing Conditions Watershed Map*).

For developed conditions, the existing conditions shed boundaries were laid on top of the proposed land use and adjusted, as appropriate, to account not only for the proposed drainage corridor alignments, but also to reflect implementation practicalities such as ownership boundaries, while avoiding major shed diversions. Percent Impervious Cover was then calculated based on weighted average of each land use within the shed (see Appendix 9.1). For the B-, C-, and D-corridors, lengths and slopes of the proposed drainage corridors, as well as the location of centroids and their distance to the proposed water courses were determined for input into the model (see Exhibit 9: *Proposed Ultimate Conditions Watershed Map*).

Within the smaller A-shed, storm runoff will be conveyed within standard subdivision drainage pipes directly into its proposed combined water quality treatment and detention facility to be located at the western project boundary. The historic flow direction of storm runoff and the existing points of release from the project site will thus be preserved.



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The northern portion of the SP area drains west into Tributary F of NEMDC. As previously stated, the proposed zoning for this portion of the ESP is Ag-Res at 1 to 5 acres per unit. Such rural low-density development will have only slight impacts on existing storm drainage runoff, much less than urban densities in other parts of the plan area. Once development plans are known for these areas additional project-specific analysis will need to be provided to the County DWR to show how project-specific impacts will be mitigated to existing conditions (or better). These mitigation requirements will be project-specific and not a responsibility of the ESP as a whole. For this reason they are not addressed in this Drainage Master Plan.

Routing parameters of the main reaches the hydrographs were routed through include reach length, slope, channel shape, and Manning's roughness coefficient "n". For the existing conditions model, the reach length, slope, and channel length used are based on an analysis of the aerial topography of the site with a 1-foot contour interval. A site assessment of the existing drainage swales within the B-, C-, and D-sheds yielded a Manning's "n" of 0.06 for existing conditions.

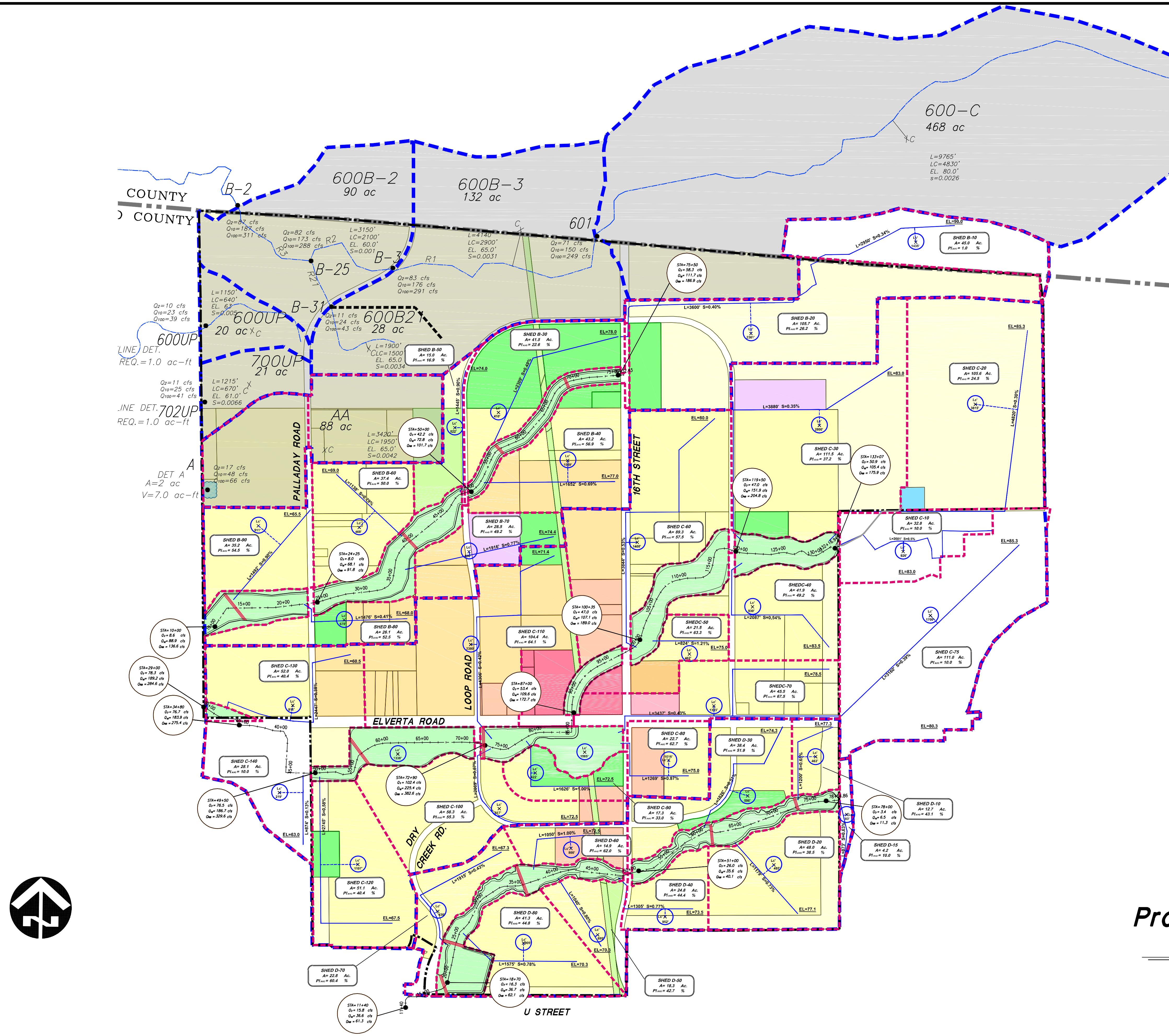
It should be noted that the assumed roughness coefficient of the existing drainages swales in the northern sheds (600, 700, and A) equal to a Manning's "n" of 0.08 is consistent with the larger parcel sizes and associated less-intense agricultural land uses that exist within those sheds, thus leading to slightly heavier vegetated drainage swales. Nonetheless, given the proposed ag-res land use densities within the 600 and 700 series sheds and the fact that the existing drainages within the A shed are not proposed to be preserved, any slight variation in the roughness coefficient used in the existing conditions analyses of these sheds is not going to have any notable impact on required drainage impact mitigation and associated drainage facilities to be implemented upon development. Project-specific drainage analysis to be submitted to DWR for review and approval for any project wishing to move ahead will allow the County to make the appropriate determination at the project level at that time.

For developed conditions for the B-, C-, and D-corridors, routing parameters are based on the proposed channel alignments and shape thereof. Preliminary earthwork analysis targeting a balanced site not requiring soil import, coupled with existing flow line constraints at the Project's boundary were used to establish proposed channel grades. Basic trapezoidal cross sections of varying depth with 4:1 side slopes and incorporating small, 1-foot deep low flow channels were used in the modeling runs to establish basic channel geometrics.

A Manning's "n" of 0.06 for developed conditions reflecting unmaintained, naturally overgrown channels was incorporated into the model runs for the proposed realigned channels within the B-, C-, and D- sheds. The natural habitat restoration planting proposal discussed further in Chapter 7.0 is consistent with this roughness coefficient. It should be noted that a high channel roughness leads to greater flow attenuation within a channel than a lower roughness coefficient based on a well-maintained channel or one in which vegetation has not yet matured. However, by utilizing cross-channel berms with carefully calibrated openings/notches to control flow through the berms, coupled with a very flat channel slope causing low runoff velocities, downstream conveyance is not very sensitive to changes in the channel roughness coefficient.

Design storms for the 2-, 10-, and 100-year recurrence interval were modeled; the 2-yr event to determine low flow event inundation levels to support proposed wetland and riparian habitat within the channels; the 10-year event to determine the water surface elevations in the channel used in the design of the piped trunk drainage system discharging into the channels; and the 100-year design storm event for flood management and mitigation purposes. Tables that summarize peak flows from the various sub-sheds for existing, Phase 1, and Buildout conditions are included in Appendix 9.1.3. The tables denote the channel stations that the sub-shed hydrographs connect to the channels at and they show the peak flow resulting in the channel at the tie-in location as projected by the HEC RAS model.

As part of the 2002 drainage master plan, storms of varying durations were evaluated so that the critical duration (the duration that results in the highest stage and/or detention volume required for flood mitigation) could be identified. That 2002 analysis showed that the 24-hour design storm produced the largest flows in the channel and highest peak stages in the detention basins compared with the other design storm durations (6-hour, 12-hour, 24-hopur, 36-hour, 5-day, 10-day). Based on those results, the current 2011 hydrology also utilizes the 24-hour design storm to determine runoff.



LEGEND

PROPOSED	DESCRIPTION
	MAJOR DRAINAGE SHED AREAS
	MINOR DRAINAGE SHED AREAS
	PROPOSED SHED DESCRIPTION
	PROPOSED SHED CENTROID DATA
L=3000' S=0.15%	PROPOSED WATERCOURSE PATH
	NORTH SHEDS (NOT DETAILED IN THIS STUDY– REFER TO NOV. 2002 DMP IN FEIR)
	IMPROVED DRAINAGE CHANNEL (TOPS/TOES AND CORRIDOR AREA)
	PROPOSED WEIR LOCATION
	CHANNEL FLOW NODE
	AGRICULTURAL RESIDENTIAL(1–5)
	AGRICULTURAL RESIDENTIAL(1)
	RD(3,4,5)
	RD(6,7)
	RD(20)
	OFFICE
	COMMERCIAL
	PARK
	SCHOOL
	DETENTION BASIN

NOTE: ALL ELEVATIONS ARE GIVEN IN NAVD 88 VERTICAL DATUM. HORIZONTAL DATUM IS PER NAD 83 COORDINATES.

SEE FULL SIZED EXHIBIT FOLDED AT REAR

Exhibit 9
Proposed Ultimate Condition Watershed Map

Elverta Specific Plan

Sacramento County, California

Scale: NTS

January, 2011

MacKAY & SOMPS
ENGINEERS PLANNERS SURVEYORS

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[1] P:\7501\master plans\Elverta DMP\Exhibit Bases\Elverta-Prop Hydro Sheds1.dwg [2] P:\7501\master plans\Elverta DMP\Exhibit Bases\B-C-D corridor alignments.dwg [3] P:\7501\master plans\Elverta DMP\Exhibit Bases\Elverta LUP_Base.dwg [4] P:\7501\master plans\Elverta DMP\Exhibit Bases\Ult-Ex Hydro Sheds-North.dwg

3.3 HEC-RAS 4.0 UNSTEADY STATE HYDRAULIC ANALYSIS

The 2002 drainage master plan analysis relied on the then-current Army Corps of Engineers Hydrologic Engineering Center (HEC) – River Analysis System (RAS), Version 3.0 computer modeling software to analyze the existing and proposed major drainage conveyance channels to serve the Elverta Specific Plan Area. The updated HEC RAS Version 4.0 software was utilized in the current analysis to model the existing and proposed "B", "C", and "D" drainage channels within the Elverta Specific Plan area. Both the old and new software versions allow one to perform one-dimensional unsteady flow simulation of natural and constructed channels.

Drainage alignments and locations of cross sections spaced in accordance with the County's requirements are determined in AutoCAD. For 'existing conditions', the software generates the channel geometry based on the terrain model of the Project Area's topography. For 'developed conditions', the modeler defines the basic channel geometry and "daylights" the top of the channel to the existing ground model. The program then exports geospatial data sets that are input into HEC RAS to define the conveyance geometry. The modeler then enters parameters for in-stream structures such as berms and culverts, before running the model. Model output files in GIS format are then imported into ArcMap's HEC GeoRAS extension. Using the channel geometry and computed water surface profiles, inundation depth, and floodplain boundary data sets are then created through HEC GeoRAS. (It's worth noting that the 2002 analysis did not utilize geo-referenced cross sections, but required the modeler to manually plug channel cross section parameters defining channel geometry into the RAS model. This approach does not change the modeling results, however, when compared to the current approach).

The proposed "B", "C", and "D" Corridor drainage conveyance channels and the following plans (design studies) were analyzed as part of the current analysis update:

B Corridor	Hydraulic Analysis of Drainage Channel B – Developed Conditions (2, 10 & 100 Yr-24 Hr)
B Corridor	Hydraulic Analysis of Drainage Channel B – Phase 1 Interim Conditions (2, 10 & 100 Yr-24 Hr)
B Corridor	Hydraulic Analysis of Drainage Channel B – Existing Conditions (2, 10 & 100 Yr-24 Hr)
C Corridor	Hydraulic Analysis of Drainage Channel C – Developed Conditions (2, 10 & 100 Yr-24 Hr)
C Corridor	Hydraulic Analysis of Drainage Channel C – Phase 1 Interim Conditions (2, 10 & 100 Yr-24 Hr)
C Corridor	Hydraulic Analysis of Drainage Channel C – Existing Conditions (2, 10 & 100 Yr-24 Hr)
D Corridor	Hydraulic Analysis of Drainage Channel D – Developed Conditions (2, 10 & 100 Yr-24 Hr)
D Corridor	Hydraulic Analysis of Drainage Channel D – Existing Conditions (2, 10 & 100 Yr-24 Hr)

In addition to "compliance points", i.e. locations at which proposed conditions runoff rates have to meet existing conditions, the study also identifies other hydraulic "points of interest" at proposed street crossings, junction nodes, etc. In Table 2, results of the HEC

RAS modeling for pre- and post-development (with drainage improvements implemented) conditions for the 2-, 10-, and 100-year design storms are listed opposite of each other to allow a verification of design objectives to meet existing conditions at these specific nodes. In addition to current analysis results for the B-, C-, and D-corridors, Table 2 also reflects results from the 2002 analysis for existing and developed conditions flows at the Project boundary for the 600-, 700-, and A-sheds.

Of note is that at the detailed project design stage, fine-tuning of the cross-channel berms acting as in-stream flow duration control structures at the downstream project limits will allow for post-development conditions 100-yr peak flow rates to more closely match existing conditions runoff rates, if so desired by the County. Alternatively, the increased attenuation of such peak flows on-site below the existing conditions runoff rates as modeled would help reduce potential downstream flooding occurring under existing conditions. On Corridor D, 100-yr peak runoff reductions as modeled serve to eliminate the existing conditions flooding occurring at the intersection of Dry Creek Road with U-Street when coupled with proposed intersection improvements as depicted in Exhibit 12.

Projected flood plain limits for both existing and buildout conditions as calculated by HEC RAS are depicted in Exhibits 10a and 10b, respectively, full-sized copies of which can be found in the Appendix. These exhibits also reflect the peak stages occurring at each of the identified cross sections due to the 100-yr storm event. As previously mentioned, flood plain mapping for the 600-series shed area and associated drainage was completed by Civil Solutions, Inc. as part of the Placer Vineyards project located in Placer County immediately to the north of the Elverta Specific Plan. See Exhibits 10a-2 and 10b-2 included herein for reference purposes.

Note that runoff from the "D" basin leaving the site at Node D0 under developed conditions is approximately 38% of the calculated runoff under existing pre-development conditions. At present pre-development conditions, the intersection of Dry Creek Road with U-Street will flood under peak flow conditions. Limiting developed conditions runoff as noted and improving the intersection and downstream drainage conveyance as identified in the FEIR will eliminate this flooding under design storm peak runoff conditions (see Exhibit 12: *FEIR Plate HY-14 Dry Creek Road/U Street Intersection Improvements for Flood Mitigation*).

For the submittal of a CLOMR to FEMA, the on-site floodplain mapping will need to tie into the existing "detailed study" limits as mapped on the previously referenced FEMA FIRM Panel No. 0602620055F. Any datum and modeling discrepancies will have to be addressed at that time. Upon development of the ESP area, including buildout of the proposed drainage corridors, peak post-development runoff from the B-, C, and D-sheds leaving the Plan area as modeled for the 100-yr storm event will be significantly less than under existing pre-development levels. This will have a positive impact on downstream flood elevations.

Also, any potential loss of floodplain storage due to the proposed fill of the FEMA mapped floodplain extending into the Plan Area at the downstream end of the C-corridor is being more than compensated for by the extensive upstream channel excavation being proposed. This is evidenced by the reduction in peak 100-yr runoff rates from 388.74

cubic feet per second (cfs) to 275.37 cfs. This is consistent with Rio Linda Elverta Community Plan Policy PF10/DR-1 which states:

> *"Significant increases in peak flows within the NESG, specifically NEMDC Tributaries F, G, and I, shall be mitigated through the implementation of regional detention facilities. In addition, restoration of any lost floodplain storage within the NESG (particularly Tributary G) shall require in-kind replacement, preferably on-site."*

The trapezoidal cross sections modeled in HEC RAS will be 'naturalized' as discussed in Chapter 7 and reflected in the Habitat Development Plans (Appendix 9.5) through the creation of habitat benches and depressional features within the drainage channel bottom and by varying the steepness of the side slopes of the channel along the length of each channel. The fine-grading and naturalization of each channel will occur in a way that either maintains or increases the hydraulic cross section defined in HEC RAS and depicted in Appendix 9.1, thereby ensuring that flood control as designed will either be maintained or enhanced. Implementation of the Habitat Development Plans will ensure that the created drainages not only look natural and function as designed from a flood control and hydromodification management perspective, but that they become functional and sustainable habitat forming an integral part of the community that surrounds them.

Flood mitigation and hydromodification management is designed to occur in-channel to the maximum extent practicable by means of flow retardation and attenuation behind cross-channel berms. These berms then release water at a specified rate through carefully calibrated V-notches in the berms. Details of these shallow cross-channel berms are shown in Exhibit 11.

TABLE 2:
PRE- AND POST-DEVELOPMENT (BUILDOUT) PEAK RUNOFF COMPARISON

Northern Sheds (results based on 2002 Drainage Master Plan analysis)

Location	Ex. Sta.	Dev. Sta.	100yr Flow (cfs)		10yr Flow (cfs)		2yr Flow (cfs)	
			Existing	Developed*	Existing	Developed	Existing	Developed
B-2	Project boundary		296	311	176	187	79	87
600UP	Project boundary		27	39	16	23	7	10
702UP	Project boundary		29	41	16	25	7	11
A	Project boundary		101	67	59	48	26	17

(*Note: project-specific drainage analysis to identify detailed mitigation resulting in peak flow mitigation to existing conditions flows (or better)

Corridor B

Location	Ex. Sta.	Dev. Sta.	100yr Flow (cfs)		10yr Flow (cfs)		2yr Flow (cfs)	
			Existing	Developed	Existing	Developed	Existing	Developed
Loop Road	55+00	80+00	184.76	101.71	75.69	72.83	43.63	42.22
Non-Participant	44+00	39+78	198.09	106.54	70.13	72.73	45.13	43.28
Palladay Road	26+00	22+78	176.75	91.84	74.74	68.05	49.07	8.06
Downstream Compliance	14+51	13+00	181.94	137.64	77.37	89.89	50.32	8.63

Corridor C

Location	Ex. Sta.	Dev. Sta.						
			Existing	Developed	Existing	Developed	Existing	Developed
Loop Road	111+80	117+00	197.17	204.83	118.48	151.94	58.70	46.95
16th Street	87+33	97+00	256.19	210.80	143.65	124.44	48.03	52.59
Dowstream Berm	35+00	57+00	418.32	347.78	214.24	183.69	110.86	79.43
Downstream Compliance	28+00	48+00	396.71	322.33	214.63	188.09	112.28	76.66
Offsite Elverta Rd	16+91	33+90	385.74	275.37	206.36	183.88	114.17	76.68

Corridor D

Location	Ex. Sta.	Dev. Sta.						
			Existing	Developed	Existing	Developed	Existing	Developed
Downstream Culvert	5+50	18+70	151.94	62.13	85.16	35.72	56.23	16.3

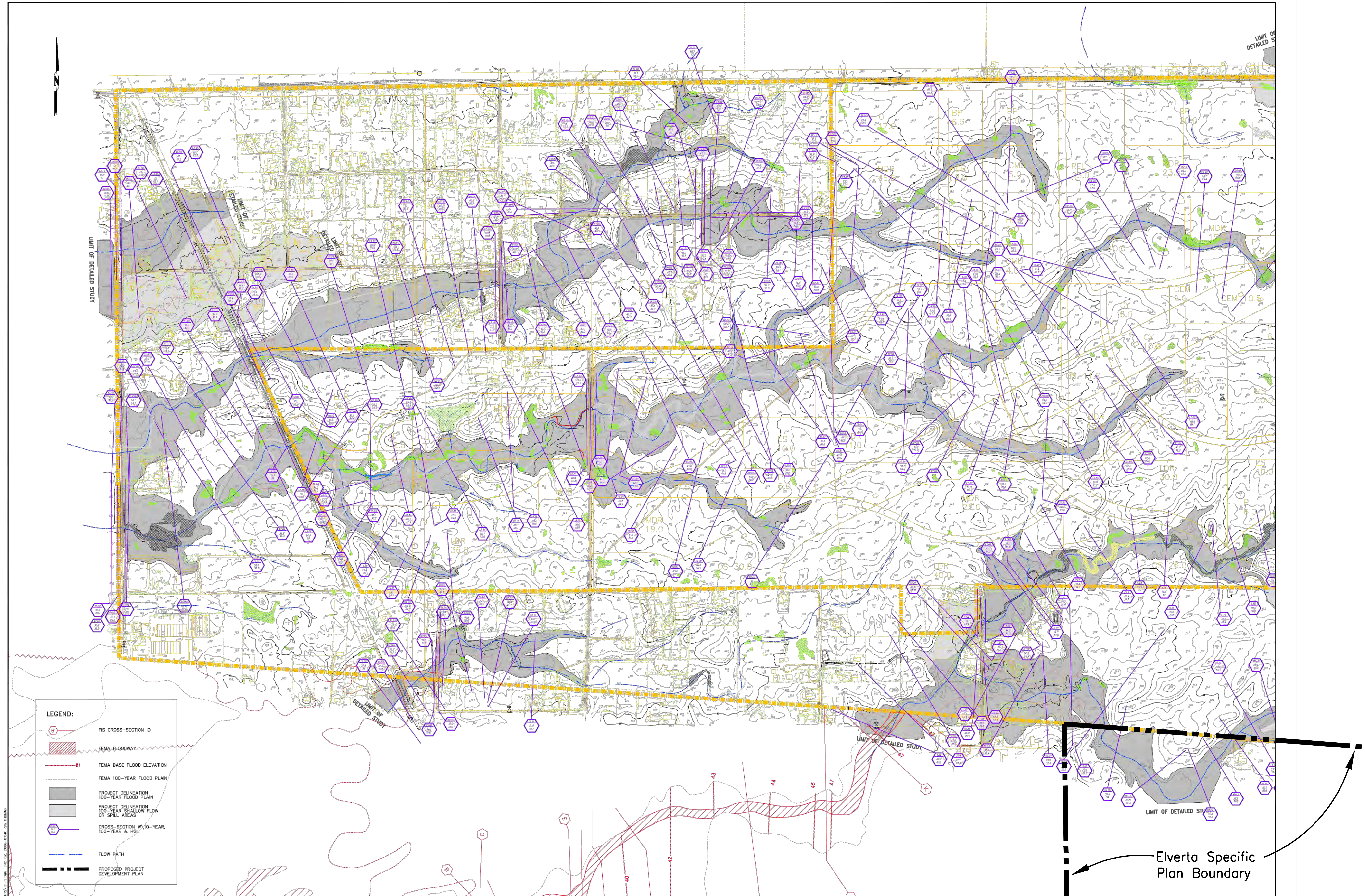
Complete HEC-RAS model result summary tables are located in Appendix 9.1 of this study. The tables provide summaries of the specific HEC-RAS model design information used in the hydraulic model setup. The tables also summaries the projected water surface elevations that were calculated by the HEC-RAS model as part of the hydraulic analysis.

Exhibit 10A
Existing Conditions
100 Year Flood Plain
Sacramento County, California

MACKAY & SOMPS
ENGINEERS PLANNERS SURVEYORS
1552 Eureka Road, Suite 100, Roseville CA
Job No: 7501.30 Date:06/09/2011

Exhibit 10B
Proposed Conditions
100 Year Flood Plain
Sacramento County, California

MacKAY & SOMPS
ENGINEERS PLANNERS SURVEYORS
1552 Eureka Road, Suite 100, Roseville CA
Job No: 7501.20 Date:06/08/2011



DRAWN BY: R.L.T./L.J.H. DESIGN BY: T.S.P.	REVISION	DATE	DESCRIPTION	APPROVED	DATE
CHECKED BY: T.S.P. DWG: FP-1					
Dwg. P:\Projects\2005.15\eng_shts\FP-1.dwg					

CIVIL ENGINEERING SOLUTIONS INC.
1325 Howe Avenue, Suite 202
Sacramento CA. 95825
(916) 563 - 7300
fax (916) 563 - 7362

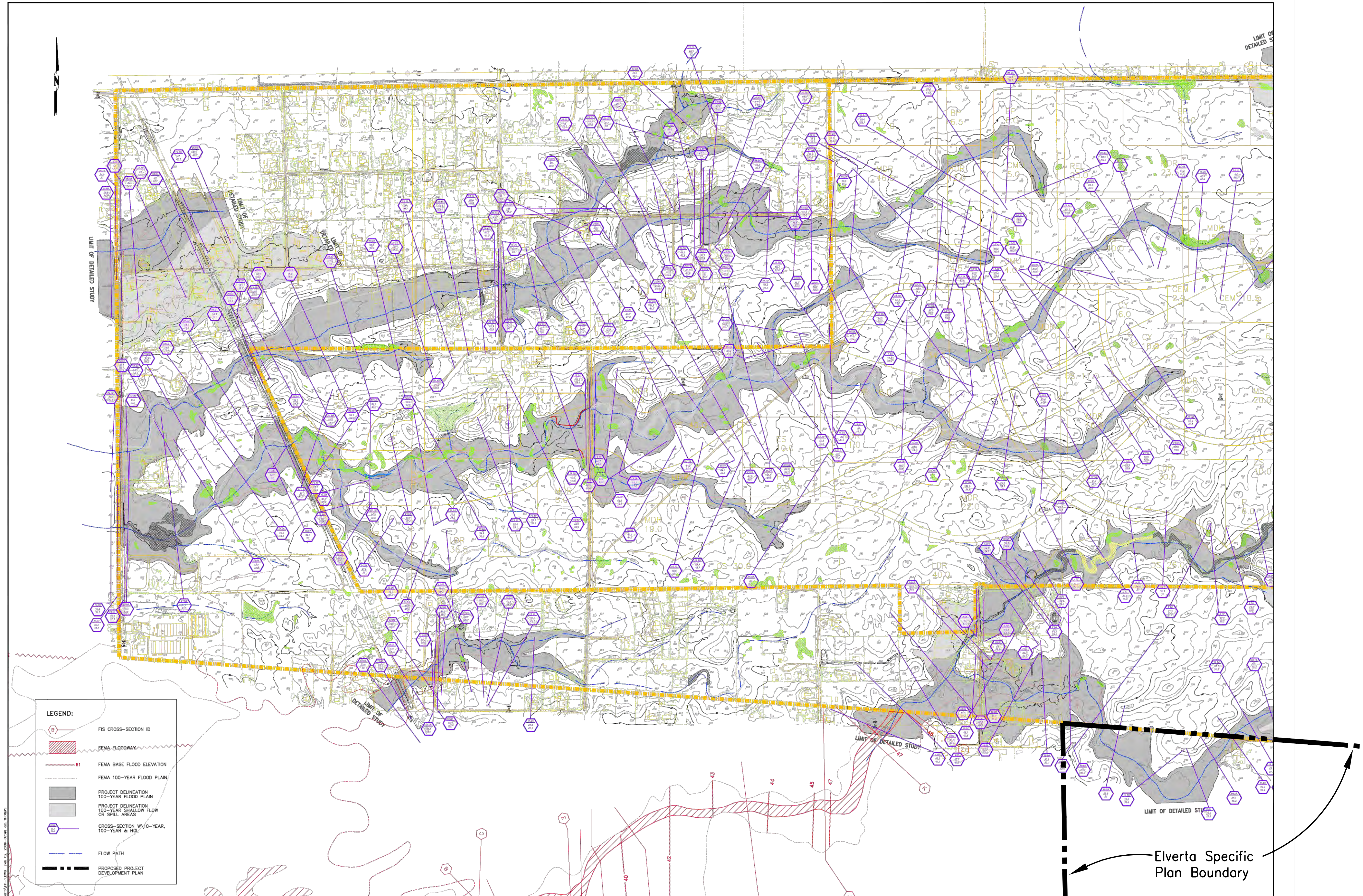
PLACER VINEYARDS
PRE-PROJECT FLOOD PLAIN

PLACER COUNTY CALIFORNIA

DATE: 01/2006
SCALE: 1"=300'
W.O. NO. 2005.16

SHEET FP-1 OF 1 OF 3

Exhibit 10a-2



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REVISION	DATE	DESCRIPTION	APPROVED	DATE

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(916) 563 - 7300
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PLACER VINEYARDS
PRE-PROJECT FLOOD PLAIN

PLACER COUNTY CALIFORNIA

DATE: 01/2006
SCALE: 1"=300'
W.O. NO. 2005.16

SHEET FP-1 OF 1 OF 3

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Exhibit 10b-2

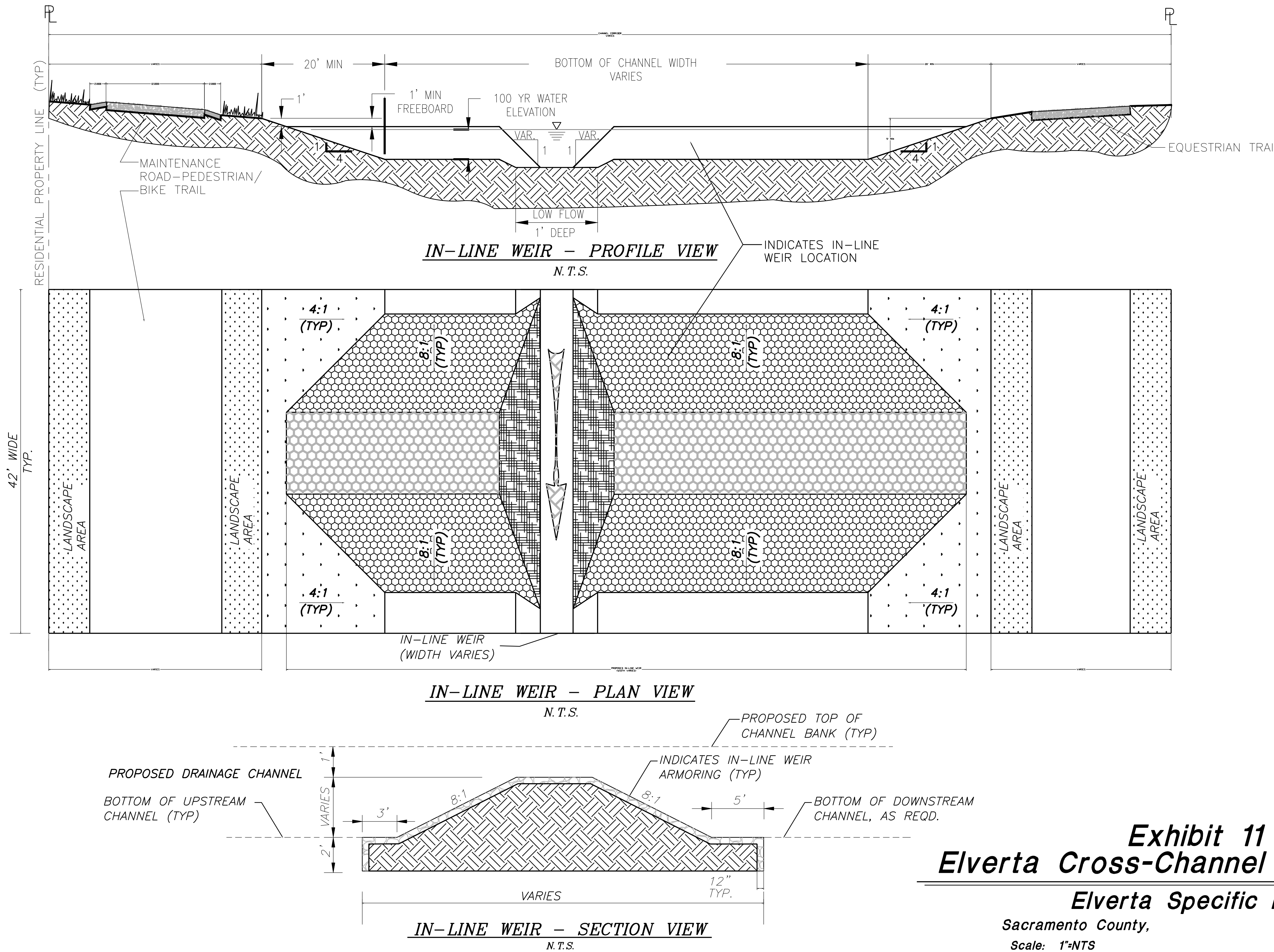

Exhibit 11
Elverta Cross-Channel Berm Detail

Elverta Specific Plan

Sacramento County, California

Scale: 1"=NTS

January, 2011

MACKAY & SOMPS
ENGINEERS PLANNERS SURVEYORS
1552 Eureka Road, Suite 100, Roseville, CA 95661 (916) 773-1189

7501-30

1-21-2011 14:36:59 hfuerst P:\7501\master plans\Elverta DMP\Exhibits\Exhibit 11 - Cross-Channel Berm Details.dwg
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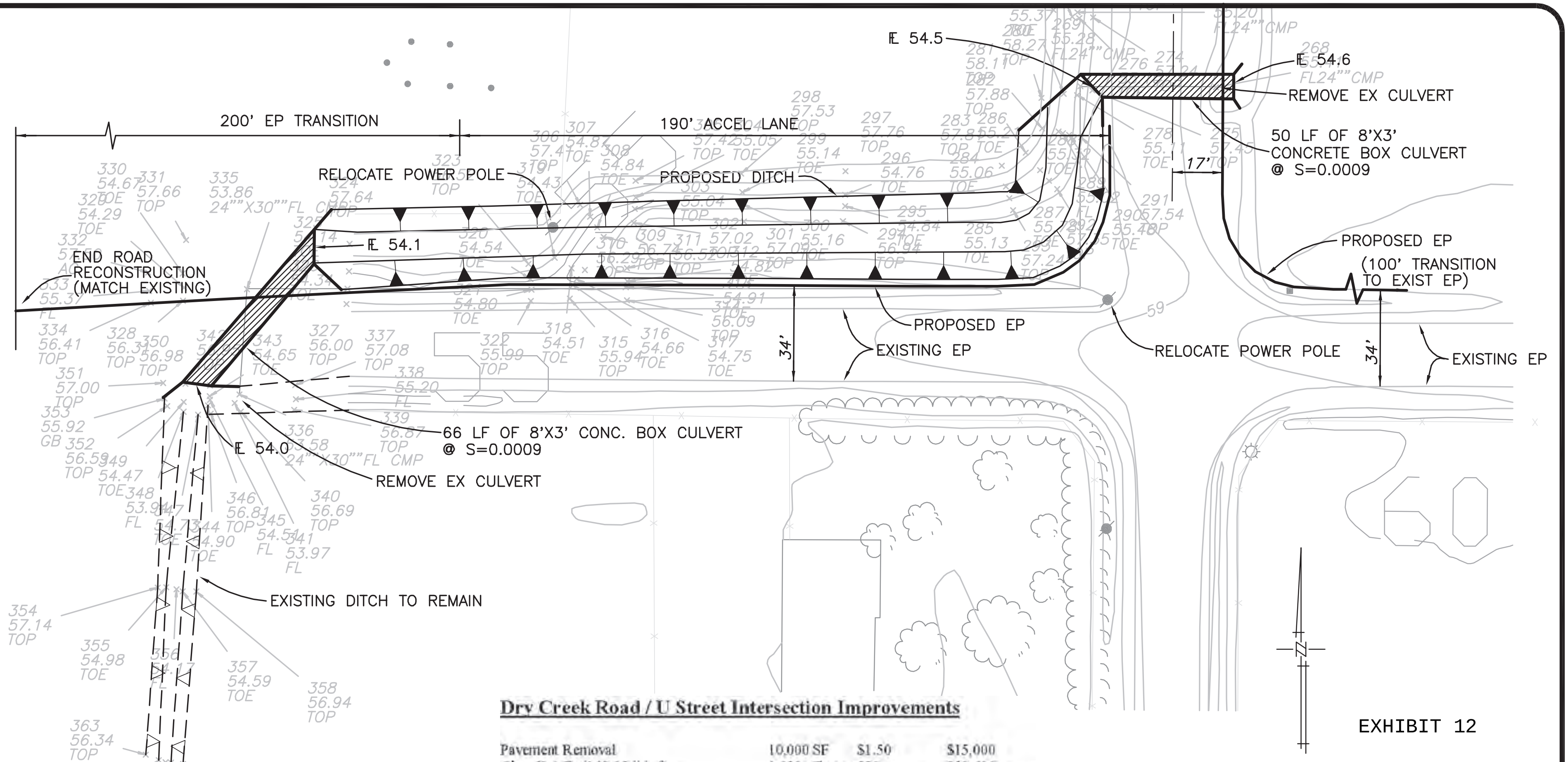

EXHIBIT 12

Dry Creek Road / U Street Intersection Improvements

Pavement Removal	10,000	SF	$1.50	$15,000
Class II A.B. (148.15 # / cf)	1,020	Tons	$30	$30,600
A.C. (155.55# / cf)	560	Tons	$65	$36,400
8'x3' Box Culvert	116	LF	$380	$44,080
Headwalls	4	Ea	$6,000	$24,000
Channel Grading (10' BW; 2:1 SS)	670	CY	$5	$3,350
Roadside Ditch Regrading	1	LS	$500	$500
Power Pole Relocation	2	Ea	$5,000	$10,000
Erosion Control	1	LS	$4,000	$4,000
			Sub-Total	$167,930
			35% Contingency	$58,776
			Grand Total	$226,706
			Use	$227,000

Project Description:

Improvements entail placement of 50 lf of 8'x3' box culvert across Dry Creek Road, placement of 66 lf of 8'x3' box culvert at an angle across U Street and interconnection of these culverts with 300 lf of trapezoidal ditch. The west leg of the intersection on U Street will need to be raised 1' to 1.5' to accommodate the culvert; the north leg (Dry Creek Road) by about 6" for the same purpose. Additionally, east and west bound intersection legs will be widened to 34' to allow for 5' shoulders each way. Dry Creek Road widening is part of the proposed Dry Creek Road project identified elsewhere in the C.I.P. Road project elsewhere in the C.I.P.

DRY CREEK ROAD
U STREET
INTERSECTION IMPROVEMENTS

MACKAY & SOMPS
CIVIL ENGINEERS, INC.
SACRAMENTO, CALIFORNIA (916) 929-6092
JOB NUMBER:7501-10 DATE:01/03/03

3.4 HYDROMODIFICATION MANAGEMENT PLAN

An assessment of potential hydromodification impacts due to development of the Elverta Specific Plan on the receiving waters within and downstream of the SP area was made to inform the overall design of the planned multi-function open space corridors traversing the Project. These multi-function open space corridors are designed to provide drainage conveyance, flood control, water quality treatment, natural resources habitat, recreational opportunities, and aesthetic appeal, as practicable. The primary mechanism for attenuating urbanized runoff from the developed areas is through the integration of flood control measures into the design of the corridors, with the potential to also provide flow duration control of runoff due to the more frequently occurring storm events. The proposed flood control measures, as described in greater detail in Chapter 3.3, included a series of in-line cross channel berms spanning the width of the corridors with notches of varying dimensions. Furthermore, major road crossings are designed to provide additional in-stream peak flow attenuation.

The purpose of this assessment was to determine what additional controls or strategies were needed to minimize potential hydromodification impacts to the downstream receiving waters. Two possible strategies exist within the context of this project to achieve necessary flow duration control. First, it is possible to achieve the required flow duration control at the downstream end of each of the drainage corridors by creating additional low-flow attenuation (detention) behind the most-downstream in-line berms and integrating additional flow duration controls, i.e. specialized orifice plates, into these berms. An alternative strategy would be to implement additional incremental flow duration control at each in-line berm and road crossing along the entire length of each of the corridors.

With the first option, significant amounts of additional detention storage and flow duration controls would be needed at four locations, one at the downstream limit of each of the three corridors as well as at the upstream compliance point at the Loop Road in Corridor C. With the second option, flow duration controls would be needed at each cross channel berm and road crossing within the proposed limits of the corridors to achieve a similar degree of incremental flow duration control upon urbanization of the SP area.

This hydromodification assessment evaluated both options, i.e. the downstream attenuation option for the D-corridor and the feasibility of implementing incremental flow duration control at each of cross-channel berm/weir locations and roadway crossings for the B- and C-corridors within the Specific Plan Area described above. With the D-corridor, the downstream attenuation approach seeks to take advantage of the previously identified detention basin that was originally implemented to reduce the flooding potential of the Dry Creek Road/U-Street intersection. The upstream cross-channel berms and calibrated V-notches nonetheless provide some measure of low-flow attenuation within the D-channel. On the B- and C-corridors, were there was no such downstream flood attenuation requirement, the “incremental” approach seeks to fairly and evenly distribute the hydromodification impact mitigation requirements across the tributary sheds within each corridor, minimizes the overall land that has to be identified and preserved as open space for drainage purposes, and maximizes the habitat creation potential within the limits of the proposed drainage channels.

While the current 2011 drainage master plan flood control analysis demonstrated the ability of the proposed moderate-width channels and cross-channel berms to adequately attenuate peak development flows to achieve targeted flood control objectives without requiring ancillary detention, the results of the hydromodification assessment identified the need for additional low-flow event detention storage and flow duration controls within each of the three channels to minimize potential hydromodification impacts to the downstream receiving waters. This caused the re-introduction of the downstream detention basin on the D-corridor, which otherwise was no longer required for pure flood control purposes. The hydromodification mitigation on the B- and C- corridors necessitated significant widening of the drainage channel downstream of the Loop Road on the B-corridor and throughout the on-site segments of the C-corridor (with the exception of the segment traversing the commercial center at the intersection of Elverta Road and 16th Street.

Typical flow duration controls integrated into each cross-channel berm were simplified for modeling purposes and generally include a low flow orifice (e.g., 12 inches) and a V-notch weir of varying dimension. The simplification of a specialized orifice plate as a low flow orifice plus V-notch weir for modeling purposes could be transformed into an appropriately sized orifice plate by replication of the stage-discharge relationship of each control structure.

Due to the rural nature of the ag-res densities approved within the on-site 600- and 700-series northern shed areas with lot sizes ranging from 1 to 5 acres per lot, it is anticipated that implementation of LID measures concurrent with development will mitigate for any increases in runoff both at the low flow and high flow events, thus not requiring further flood control or hydromodification mitigation. Alternatively, or in the case of the A-shed, previously identified detention basins may be increased by approximately 20% along with implementation of flow duration control detention basin outlet works to mitigate the hydromodification impacts. Project-specific development proposals at the small-lot tentative map stage will have to be submitted to DWR for review and approval to demonstrate appropriate mitigation.

TABLE 3:
Flow Duration Controls

C-Corridor			
Condition	**River Station**	**Low Flow Orifices**	**High Flow Orifices[1]**
Interim	119+00	3 x 11.5 inch	160^{o} V notch w/ IE = 72.30 ft
Buildout	119+00	3 x 12.0 inch	6 x 5.0 ft x 1.0 ft box w/ IE = 71.60 ft
Buildout	97+90	2 x 12.0 inch	6 x 5.0 ft x 1.5 ft box w/ IE = 66.00 ft
Buildout	72+25	3 x 13.0 inch	60 ft x 1.5 ft culvert w/ IE = 60.50 ft
Buildout	57+50	3 x 12.0 inch	170^{o} V notch w/ IE = 54.70 ft
B-Corridor			
Condition	**River Station**	**Low Flow Orifices**	**High Flow Orifices1**
Buildout	49+50	1 x 12.0 inch	2 x 3.5 ft x 1.6 ft box w/ IE = 61.40 ft
Buildout	23+70	1 x 15.0 inch	2 x 7.0 ft x 0.5 ft box w/ IE = 57.79 ft
Buildout	14+00	1 x 12.0 inch	120o V notch w/ IE = 54.25 ft
D-Corridor			
Condition	**River Station**	**Low Flow Orifices**	**High Flow Orifices [1]**
Buildout	18+90 to 23+70	added hydromod. attenuation volume = 12.6 ac-ft	
Buildout	18+90	1 x 15.6 inch	120^{o} V notch w/ IE = 59.0 ft, 50 ft weir, crest El. = 60.6 ft

[1] The high flow orifices in the hydromodification analysis at road crossings were initially simulated by cbec as broad V notches (assuming no road crown), which were then converted by M&S to a series of high flow culverts beneath the road to also convey Q100. Both the low flow and high flow orifices will be incorporated into box culvert structures to be designed as part of future roadway crossing design.

4.0 DEVELOPMENT PHASING

As property ownership and/or developer involvement in ESP changes over time, the projected Phase 1 development area may change along with it. The following conceptual Phase 1 development plan was prepared on information available at the time this study was prepared, with the goal of providing flexibility in terms of which properties participate in the 1st phase of development. Phase 1 drainage and corridor habitat improvements have been designed in such a way that they will function in perpetuity on a stand-alone basis, as there is no way to predict if and when current non-participating properties will develop.

Each of the major drainage basins, including drainage Sheds B, C, and D addressed in this study, function independent of each other and as such, may present their unique phasing opportunities as well as constraints. The same applies to the individual properties within the ESP area. When modifications to the phasing plan are being proposed, the proponents thereof will need to provide the County DWR sufficient information in support thereof in accordance with the Agency's requirements to allow DWR to make the determination that proposed revised development phasing can occur in a responsible and safe manner and that potential impacts on existing downstream drainages are going to be fully mitigated to existing or better than existing conditions. Such information to be submitted will need to address the various DWR regulatory objectives within the drainage shed the subject property is located in, including appropriate flood control (mitigation of peak runoff volumes and stages), hydromodification management, and water quality treatment.

The current Elverta Owners Group is comprised of those property owners and developers with controlling interests in properties within the ESP area seeking U.S. Clean Water Act, Section 404 permits in order to be able to develop. In aggregate, they comprise the Phase 1 development area of the project. Of the total 1,744+/- acre Specific Plan area, the Elverta Owners Group owns or controls approximately 687 acres with the project as depicted in Exhibit 3.

As it is financially infeasible to pay for the construction and associated mitigation of all drainage facilities in their entirety, including those located on non-developing non-participating properties, a facilities phasing plan had to be developed that would allow Phase 1 participants to develop in a safe and responsible manner consistent with all applicable requirements and regulations. This includes mitigation of any and all development impacts to existing or better than existing conditions not only at the downstream Plan Area boundary, but also at each location were drainage runoff flows from a developing property and/or drainage corridor onto a non-developing property.

To that end, this analysis has identified "compliance points" at each of those locations, points at which the analysis compares existing conditions impact with those projected to occur upon Phase 1 development after implementation of the drainage improvements stipulated in this study. "Compliance" with existing conditions, i.e. mitigation of all projected impacts due to development, including increases to peak runoff rates, hydromodification, and water quality to existing or better than existing conditions can thus be evaluated. The following Table 4 compares peak flow conditions occurring under 'existing conditions' to those under 'proposed/developed conditions with mitigation' at each of the "compliance points.

As noted in Chapter 2.5 of this drainage study, a CLOMR for the existing conditions 100-yr floodplain will have to be filed with FEMA by the Elverta Owners Group (EOG) prior to submittal of any large-lot or small-lot tentative parcel maps (whichever comes first). Then, prior to placement of any fill within the mapped 100-yr floodplain, the EOG will need to process a CLOMR for the proposed conditions 100-yr floodplain with FEMA for approval.

TABLE 4:
PHASE 1 PRE- AND POST- DEVELOPMENT PEAK RUNOFF COMPARISON

Corridor B

Location	Ex. Sta.	Dev. Sta.	100yr Flow (cfs)	
			Existing	Phase 1
Loop Road	55+00	50+00	184.76	n/a*
Non-Participant	44+00	39+75	198.09	n/a*
Loop Road	26+00	22+75	176.75	n/a*
Downstream Compliance	14+51	13+00	181.94	172.39

*Note: "n/a" denotes 'no Phase 1 development upstream of this location' - Phase 1 properties upstream of Palladay Road wishing to develop are assumed to mitigate development impacts on-site on an interim basis

Corridor C

Location	Ex. Sta.	Dev. Sta.	100yr Flow (cfs)	
			Existing	Phase 1
Loop Road	111+80	117+00	197.17	169.49
16th Street	87+33	97+00	256.19	198.51
Ex Farm Property	35+00	57+00	418.32	320.13
Downstream Compliance	28+00	48+00	396.71	301.74
Offsite Elverta Rd	16+91	33+90	385.74	270.4

Corridor D

Location	Ex. Sta.	Dev. Sta.	100yr Flow (cfs)	
			Existing	Phase 1**
Downstream Culvert	5+50	18+70	151.94	62.13

**Note: Phase 1 consists of buildout of Shed D

As noted in Table 4 above, peak flow conditions at all of the "compliance points" are mitigated to equal or better than existing conditions upon buildout of Phase 1 properties and associated drainage improvements described as follows and depicted in Exhibit 13: Proposed *Phase 1 Conditions Watershed Map*).

<u>Drainage Corridor "B" improvement requirements under Phase 1:</u>
The only segment of the "B" corridor proposed to be constructed as part of Phase 1 development is located downstream of Palladay Road. Its downstream end is defined by the Specific Plan boundary, at which location the proposed drainage corridor will drain by gravity through a flow duration control structure into the existing downstream drainage.

Upstream of Palladay Road, two participating properties that drain into segments of the "B" corridor not identified to be constructed as part of the first development phase are a 20-acre property (APN 202-0070-013) owned by Elverta/Rio Linda Partners No. 17, Ltd. And a 5-acre property (APN 202-0080-058) owned by Country Builder, LLC. Both of these properties are designated for LDR 3-5 land use. Unless the Elverta Owners Group ultimately deems it practicable for Phase 1 development to acquire the necessary property, construct the ultimate drainage channel downstream to Palladay Road, and mitigate for the natural resources impacts this segment of the channel construction would incur, for these properties to develop in the first development phase, the applicants representing these properties will have to analyze and design temporary, project-specific on- or off-site detention and water quality treatment basins to mitigate their development impacts. The design for this facility will have to be submitted to the County Department of Water Resources for approval prior to submittal of any improvement plans.

The only property located upstream of 16th Street wishing and able to develop as part of Phase 1 is the entitled Countryside Equestrian Estates (CEE) project[15]. Drainage impacts due to the development of this project will be mitigated upstream of 16th Street by means of construction of a project-specific on-site stormwater water quality treatment and detention basin to be sized and designed by the CEE applicant at the improvement plan stage for the project. Due to existing conditions constraints downstream of the CEE project, the basin will need to discharge at existing grade into the existing downstream drainages. The projected increases in peak runoff rates and hydromorphologicly significant runoff volume (25% of Q2 through Q10) due to development that will need to be mitigated are expected to be relatively minor, however, given the rural nature of the proposed project, including local drainage conveyance by means of roadside ditches adjacent to Class "C" streets. Coupled with yet-unknown implementation of LID measures, the size of the required basin may be substantially reduced through accounting of such measures as part of further project-specific drainage analysis required to be submitted to the County for approval prior to submittal of improvement plans.

Drainage Corridor "C" improvement requirements under Phase 1:

The proposed development phasing of properties within the "C" shed creates a more fragmented patchwork of properties wishing to develop as part of Phase 1 and those that are not participating in the Elverta Owners Group's efforts and thus not projected to develop in the foreseeable future.

The upper end of the shed consists of the eastern portion of the CEE project. It discharges from an existing pond into a small existing open concrete channel located on developed properties in the Rifle Ridge Estates subdivision, before that channel then discharges into the "C" corridor within the boundary of the Specific Plan area. The CEE peak 100-year storm event discharge into this channel has to be limited to the capacity of the channel in order to not cause flooding of the developed properties the concrete channel it is located on. This is consistent with the historically occurring ponding of stormwater runoff on the CEE property due to its past agricultural land use as a rice field. Attenuation of the runoff under developed conditions will be accomplished by maintaining and enhancing the existing pond located within the CEE project just upstream of the existing concrete channel as shown on the project's approved Tentative Map. Project-specific drainage analyses demonstrating compliance with this master plan's assumptions will need to be submitted by the CEE applicant to the County for approval prior to submittal of improvement plans.

15 A project-specific environmental analysis and small lot tentative map for the Countryside Equestrian Estates project was processed concurrent with and as a part of the overall programmatic EIR for the Elverta Specific (FEIR, Sacramento County Control #00-RZB-SDP-0442).

Downstream of the Rifle Ridge Estates subdivision the existing concrete channel discharges onto a proposed Phase 1 development property in the ESP area. The proposed “C” corridor as modeled starts at this location. Approximately 1,300 LF of the “C” corridor will be constructed downstream of the Plan Area boundary at this location as part of Phase 1. It then crosses the proposed Loop Road and enters non-participating properties. A “compliance point” (Node C-35) is noted in the hydraulic model at this location, allowing a comparison of pre- and post-development flows to ensure that peak runoff from the developing property onto the non-developing property does not exceed existing conditions runoff. And as the upstream drainage corridor construction is intended to be permanent, the proposed culverts beneath the Loop Road to be constructed in Phase 1 are sized based on this mitigated peak flow rate.

The “C” drainage channel then continues in a southwesterly direction to its intersection with 16th Street in an existing unimproved condition. A “point of interest” (Node C-30) is located at 16th Street. On the downstream side of 16th Street, there will be a step in grade down into a proposed Phase 1 segment of the “C” corridor across the commercial center to be located at the northwest corner of the intersection of 16th Street with Elverta Road. To prevent scour and erosion, this grade differential will have to be armored as part of the proposed improvements.

Between 16th Street and Elverta Road the proposed “C” corridor turns southerly across the proposed commercial center, rather than following its natural alignment. This segment is a part of Phase 1 drainage improvements. The reasons for this proposed re-alignment are two-fold. First, the existing alignment snakes between two existing residences located on non-participating properties to the west of the proposed commercial center. Aligning the proposed channel on this course would require condemnation of at least one of these structures. Second, although neither alignment alternative is ideal for the design of the commercial center, a crucial component of the overall land use master plan, the applicant’s planner indicated the proposed alignment to nonetheless be a better land use fit. It does, however, require the acquisition of a couple of small, undeveloped non-participating properties just upstream of Elverta Road in order to avoid having to relocate a high-voltage power line tower. The hydraulic model includes another “point of interest” (Node C25) upstream of Elverta Road to allow proper sizing of the roadway culverts and a comparison of pre- and post-development flows.

Upon crossing Elverta Road, the proposed channel makes a sharp turn to the west in order to minimize the potential impacts on a large vernal pool located in this vicinity. Phase 1 environmental permitting is avoiding impacts to this vernal pool. Associate Phase 1 channel improvements in the vicinity of the vernal pool are thus limited to a channel with a top width of only 45 feet paralleling Elverta Road. The remaining section of the “C” corridor downstream to the Plan Area boundary is proposed to be constructed as part of Phase 1 improvements. Just downstream of the aforementioned vernal pool, the channel widens significantly on account of attenuation requirements to manage hydromodification impacts. A cross-channel berm with a notched opening located just upstream of the Plan Area boundary will allow peak flow mitigation to existing conditions as well as hydromodification management through flow duration control so as to not cause downstream flood and erosion impacts. The proposed drainage channel will discharge through this flow duration control structure to the existing downstream drainage at existing grade. A "compliance point "(Node C15) was inserted into the model at this location. No downstream off-site improvements will be required on this corridor under either phased or built out conditions.

Drainage Corridor "D" improvement requirements under Phase 1:
The "D" corridor will be constructed in its entirety as part of Phase 1 improvements, as its entire length is located on participating properties. This includes downstream culvert and intersection improvements at Dry Creek Road and U-Street (see Exhibit 12).

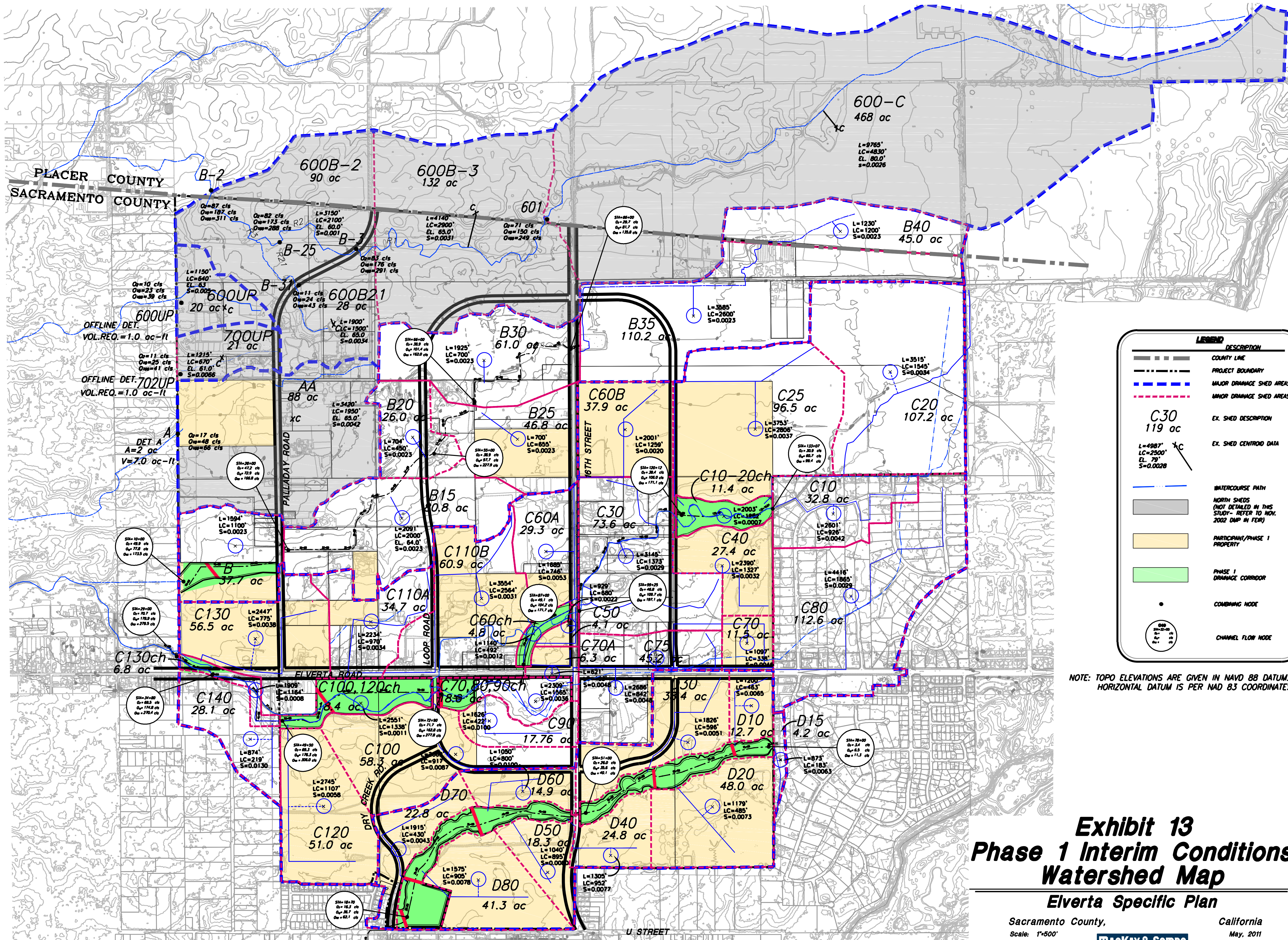

Exhibit 13
Phase 1 Interim Conditions Watershed Map

Elverta Specific Plan

Sacramento County, California

Scale: 1"=500'

May, 2011

MacKAY & SOMPS ENGINEERS PLANNERS SURVEYORS

7501-30

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5.0 WATER QUALITY

In an urban environment, untreated post-development stormwater runoff may include a number of pollutants, including, but not limited to sediment, nutrients, trash, metals, bacteria, oil and grease, and organics/pesticides. Such pollutants have documented harmful effects on the natural environment. Under the federal Clean Water Act, stormwater discharges are therefore regulated through the National Pollutant Discharge Elimination System (NPDES) Municipal Stormwater Permits. Regionally, the Central Valley Regional Water Quality Board issues and enforces NPDES stormwater permits. Through the Phase 1 Sacramento Areawide NPDES Municipal Stormwater Permit the local agencies including the County of Sacramento regulate and manage the quality of urban runoff throughout their jurisdiction, including runoff from new development such as the Elverta Specific Plan.

The general purpose of the proposed water quality treatment features to be implemented in the Elverta Specific Plan is to reduce the urban runoff pollution from the proposed development to the maximum extent practicable (MEP). It is intended to satisfy the regulatory requirements of the Sacramento Areawide NPDES Permit. The goal of the identified treatment measures is to protect the quality of the proposed drainage corridors and the restored and enhanced wetland and riparian habitat being created within them.

At buildout of the various individual development proposals contained within the Plan Area, the network of water quality treatment facilities proposed will function in aggregate to reduce the projected pollutants to the maximum extent practicable. The network of envisioned facilities will include site-specific source control measures such as small-scale Low Impact Development (LID) measures, Best Management Practices (BMPs), point-of-discharge water quality treatment basins, and vegetated swale discharges there from.

Low Impact Development (LID) emphasizes the conservation and use of available on-site natural resources to protect the environment – especially water. Small-scale LID projects dispersed throughout the watershed combine with point-of-discharge water quality treatment basins, in-channel flood control and hydromodification management to manage post-development stormwater runoff and maintain or restore pre-development watershed conditions.

In general, LID replaces the traditional development approach of conveying runoff through miles of costly pipes to acres of expansive detention ponds with an approach that mimics nature, using natural vegetation and small-scale treatment systems to retard, treat, evaporate, and infiltrate stormwater runoff close to where it originates. LID reduces the effective imperviousness of development, increasing stormwater infiltration and thus helping to recharge groundwater resources when the on-site soil profiles can accommodate such infiltration. Typically, reducing the amount of runoff at the source in the first place not only reduces the need for point-of-discharge facilities (detention and water quality basins), but reduces impacts on receiving waters carrying stormwater.

Based on the on-site soil types and as noted in the soils report, however, *The soil landscape of the project area is mostly treeless and is underlain by soils with strong rooting and permeability constraints* (reference Section 2.4 *Soils* and the *Elverta Soils Report* included in the Appendix). Additionally, the proposed wetland and riparian restoration proposed for the open space drainage corridors would benefit from the increased recurrence of low volume runoff typical of urban development during summer months due to over-irrigation and washing of cars. Whereas developments typically seek to prevent such summer runoff from entering the receiving waters, in this Plan Area, the proposed landscape and planting palette of the open space drainage corridors has been designed specifically with the intent of receiving such runoff. Projected inundation levels within the D-corridor based on summer nuisance flows and 2-yr design storm runoff are depicted in Exhibits 15 and 16 included in Chapter 7 of this study. (Note: the D-corridor was designed in 3D contouring to allow a more detailed hydraulic analysis and subsequent resources restoration design than would be required at this level of entitlement. This was done so that the D-corridor might be used as a prototypical example of how the trapezoidal cross sections incorporated into the 2-dimensional hydraulic HEC RAS model for the B- and C-corridors might be shaped and "naturalized" as part of the final design thereof).

As previously mentioned, it is not yet known what individual project-specific LID proposals will be forthcoming. The LID toolbox provides for of a variety of environmentally sound and cost-effective techniques including green infrastructure, conservation design, and sustainable stormwater management practices. New development will typically be able to maximize the benefit of advanced stormwater management through the implementation of a number of these tools in combination to replicate the predevelopment hydrology of the site.

The numerical benefits of actual BMPs and LID features specific to land use and site layout have not been considered in the analysis of point-of-discharge water quality basins required to fully mitigate the water quality impacts of this project on the receiving drainage channels. It is projected that these benefits will be calculated and accounted for prior to actual design of the water quality treatment basins, thus allowing these basins to be reduced in size and possibly even be eliminated (depending on the level of LID implementation).

The following Table 5 identifies water quality basin design parameters for each pipe outfall into the proposed drainage corridors based on the Stormwater Quality Design Manual for the Sacramento and South Placer Regions. The proposed dry-extended basins were designed to release 75% of the water quality volume in a minimum of 24 hours and 100% within 48 hours total. It is anticipated that they will be incorporated into the upland drainage channel buffers where feasible. In any case, the water quality treatment basins are to be integrated seamlessly into the adjacent landscape design so that they may become community amenities rather than fenced off nuisances that the community would rather turn its back to. Additional basin detail regarding the dry weather treatment in the form of specifically designed vegetation beds suitable to such an environment is described further in the Conceptual Habitat Development Plan (see Appendix 9.5).

Water Quality Flow (WQF) volume noted in Table 5 as calculated in accordance with the requirements of the referenced design manual ($WQV=P_0 \bullet A/12$) will be split off in specially designed flow separation structures located upstream of each basin, in-line with the drainage pipe conveying runoff from the development to the open drainage channel. Peak flows in the pipe system will thus be passed by the water quality treatment basins, preventing larger runoff volumes from washing pollutants that have collected in the treatment basins into the receiving waters. The treatment basins will be discharged by gravity through calibrated structures into vegetated swales draining into the drainage channels. A typical conceptual configuration of a water quality treatment basin and grassy swale outfall channel is shown in the Conceptual Habitat Development Plans (see Appendix 9.5).

TABLE 5 - PRELIMINARY WATER QUALITY BASIN SIZING

SHED	AREA [ac.]	WT. PI	STORAGE (FT.) (from Fig. E-3)*	VOL. (AC.FT) DRY	"C"	WQF (CFS)	Inflow Pipe (IN.)
B10	45	1.0	0	0.00	0.05	0.39	12
B20	105.67	26.3	0.018	1.90	0.21	3.90	21
B30	41.5	22.3	0.017	0.71	0.18	1.37	12
B40	43.2	57.0	0.035	1.51	0.39	3.01	18
B50	15.1	17.0	0.014	0.21	0.15	0.42	12
B60	38.9	50.0	0.031	1.21	0.34	2.38	15
B70	28.5	51.0	0.031	0.88	0.35	1.77	15
B80	26.1	46.8	0.029	0.76	0.32	1.50	12
B90	36.1	51.0	0.031	1.12	0.35	2.25	15
C10	24.2	50.0	0.031	0.75	0.34	1.48	12
C20	105.6	25.0	0.018	1.90	0.20	3.77	21
C30	111.5	37.2	0.024	2.68	0.26	5.30	24
C40	41.9	47.4	0.03	1.26	0.32	2.44	15
C50	21.5	63.2	0.038	0.82	0.43	1.68	15
C60	89.6	57.7	0.035	3.14	0.39	6.32	24
C70	45.5	67.5	0.043	1.96	0.47	3.86	21
C75	111	10.0	0.01	1.11	0.11	2.21	15
C80	22.7	63.0	0.039	0.89	0.43	1.77	15
C90	17.3	35.9	0.023	0.40	0.26	0.80	12
C100	58.3	55.9	0.035	2.04	0.38	3.98	21
C110	104.4	64.6	0.04	4.18	0.45	8.38	30
C120	51.1	40.4	0.026	1.33	0.28	2.59	18
C130	52	58.1	0.035	1.82	0.39	3.69	21
C140	28.1	10.0	0.01	0.28	0.11	0.56	12
D10	12.7	43.5	0.027	0.34	0.30	0.69	12
D20	48	36.5	0.024	1.15	0.26	2.25	15
D30	38.4	36.6	0.024	0.92	0.26	1.80	15
D40	24.8	30.1	0.02	0.50	0.23	1.01	12
D50	18.3	34.9	0.023	0.42	0.25	0.83	12
D60	14.9	51.9	0.032	0.48	0.35	0.94	12
D70	22.8	38.9	0.025	0.57	0.27	1.12	12
D80	41.3	46.9	0.03	1.20	0.32	2.38	15

* Stormwater Quality Design Manual for the Sacramento and South Placer Regions, May 2007

Another key benefit of extensive LID implementation is the reduction of Stormwater runoff, specifically during the more frequently occurring low flow events. The numerical benefits of such runoff reduction may eventually be accounted for in the final design of the drainage conveyance channels, possibly resulting in reduced hydromod. attenuation requirements. However, concrete development proposals that include specifics on proposed LID implementation are required before any resulting benefits thereof can be accounted for. Absent these specifics, the design included in this storm drainage master plan does not provide for any numerical credits for such features.

6.0 MISCELLANEOUS DRAINAGE SYSTEM COMPONENTS

Piped Trunk Drainage System:

The Trunk Drainage Shed Map (Exhibit 14) depicts a conceptual trunk (30 acres) pipe storm drainage system. In absence of proposed small-lot subdivision layouts, the Drainage Shed Map delineates the relative location of the trunk storm drainage pipe outfalls based on current interpretations of the proposed land use plan and drainage shed boundaries. Pipes were sized based on flows determined using the Nolte design method. To evaluate the hydraulic grade line elevations (HGL's) within the proposed pipe system, starting water surface elevations at the pipe outfall locations was based on the 10-yr storm event within the major drainage channels. Average pipe slopes of 0.2 percent (S=0.002) were then extended up the length of each pipe system. Based on the County's design standards regarding unimproved lands with no current development plans, the future gutter flow line is assumed at one and on-half feet (1.5') below the natural ground elevation for purposes of pipe hydraulics calculations.

Backwater elevations due to submerged outlet conditions of the furthest-downstream weirs near the western (downstream) Plan Area boundary were incorporated into the on-site drainage analysis of the open channels. The pipe outfalls incorporated these elevated starting water surface elevations into the HGL analysis to verify adequate cover on proposed schematic trunk drainage facilities. Lower-lying areas within the Plan Area, especially near the intersection of U-Street and Dry Creek Road will ultimately require some import fill dirt to be placed over the site and the piped system to provide adequate HGL cover. Plenty of usable fill dirt should become available as a result of the required channel excavations, but it is not yet known exactly if and how much fill may actually be needed. Future tentative map layouts and additional site-specific detailed grading and drainage analyses will be needed to establish actual needs.

The trunk storm pipe outlet locations, and drainage basin boundaries are considered to be schematic in nature, and are subject to future revisions based on the detailed lotting and development plans that will be prepared as part of the Tentative and Final Mapping process for individual projects within the ESP project area. Ultimately, it will be the responsibility of the future Tentative Map applicants to prove substantial compliance or reasonable alternatives to the approved Master Storm Drainage Study.

Drainage Corridor Maintenance Access:
Many areas of the drainage channels are adjacent to streets. In these locations, maintenance access is available from the adjacent street. A separate joint-use recreational/maintenance path subject to the County's and Rio Linda Park District's approval will be provided elsewhere. At appropriate intervals yet to be determined,

maintenance access ramps will be provided to the drainage channel bottoms as required by County Water Resources Division improvement standards.

Trails:
The Elverta Specific Plan's Community Advisory Council has stressed their desire for a significant recreational trail system within the Plan Area. The drainage corridors are major components of that system. They will include an improved surface for a multi-use pedestrian/bike path on one side of the corridor. Separate equestrian trails may be provided on the opposite site where practicable. As described above, the pedestrian/bike path may be combined with the County's service/maintenance access path, while equestrian trails would be kept separate from both.

Along the edges of the B- and C-corridors where hydromod. attenuation requirements dictated extensive channel widening out to the edges of the open space corridor, there will be limited upland open space buffer available beyond the top of bank to locate the trail in. In such cases, the trail is proposed to be located on a terrace to be incorporated into the channel bank above the 2-yr event water surface elevation. During infrequent storm events with a recurrence interval less than the 2-yr event, such trails would be allowed to flood. The flooding, however, is projected to last at most, a couple of days, before once again receding below the trail elevations.

Exhibit 14
Proposed Trunk Drainage Pipe Schematics

Elverta Specific Plan

Sacramento County, California

Scale: 1"=500'

April, 2011

MacKay & Somps ENGINEERS PLANNERS SURVEYORS

7501-30

7.0 NATURAL RESOURCES IMPACT & RESTORATION

The hydrologic connectivity of the historic vernal pool and swale system in the Elverta Specific Plan area has been dramatically altered since at least the 1930s by extensive modification of the historic drainage network via topographic and land use changes. The present-day system of channels and swales in the ESP area clearly exhibits various stages of hydrologic, geomorphic and ecologic degradation. Land use modifications for grazing and urbanization continue to cause geomorphic degradation in the form of channel incision.

Two approaches to stormwater management have traditional been followed, including: (1) construction of *an engineered stormwater channel* consisting of either trapezoidal or rectangular concrete- or grass-lined waterways; or (2) setting aside *a "preserved" channel* that responds to regulatory resource concerns. An alternative to either of these approaches is being proposed in the ESP, where existing ill-defined and degraded drainage corridors would be modified, stabilized, rehabilitated, and re-contoured in place to function more resiliently under future urbanized conditions and hydrology. As such, the D-corridor was designed and modeled in 3D contouring to allow a more detailed hydraulic analysis and subsequent resources restoration design than would normally be required at this level of entitlement. This was done so that the D-corridor might be used as a prototypical example of how the trapezoidal cross sections incorporated into the 2-dimensional hydraulic HEC RAS model for the B- and C-corridors might be shaped and "naturalized" as part of the final design thereof.

The enhanced, multiple use drainage corridors being proposed will incorporate hydromodification measures such as flow duration control structures and low impact design (LID) source control features. Upland buffers will feature multi-use pedestrian/bicycle trails on one side and, where practicable, equestrian paths on the other. Additionally, water quality/sedimentation basins at end-of-pipe discharge locations will be located within or near the limits of the drainage corridors, yet outside the limits of the actual drainage channels. At locations where the upland buffer area within the drainage corridors is insufficient to accommodate the required water quality basin footprint, they will be incorporated seamlessly in to adjacent landscaping as part of the adjacent subdivision design. (Full WQ treatment in accordance with the NPDES permit requirements of Sacramento County will result from a combination of LID measures and off-channel WQ treatment basins - see Chapter 5). These multi-objective drainage corridors will thus not only provide additional stability and resiliency for the channel system, but also improved water quality, habitat, recreational, and aesthetic function. "*Elverta Specific Plan - Drainage Corridors B, C, and D – Conceptual Habitat Development Plan*" by Restoration Resources (see Appendix 9.5) provides further details of this proposal.

The design of these conceptual plans allows for a complex of valley floor upland, riparian, and wetland habitats appropriate to the proposed site conditions and is based upon extensive soils studies, combined with models of future topographic and hydrologic conditions. In addition to the designed habitats, the plan requires the salvaging of existing vernal pool inoculums and clay soils for later reapplication to proposed restored pools and other wetland features.

Using base maps of the overall corridor extents, the excavated drainage corridor, cross-channel berms, hydrologic models displaying frequency and depth of flooding, and soil profiles, Restoration Resources developed diverse habitats with species in each palette capable of adapting to wetter or drier conditions than what was originally modeled. The corridor excavation operations will, in many locations, cut through the existing duripan and into more readily drainable sub-soils, allowing for the establishment of wetland and transitional riparian vegetated habitats (reference the duripan profiles, Appendix 9.4). Salvaged topsoil from excavation operations will be reapplied to over-excavated channel and bank habitats to meet proposed finished grades and create a 6 inch planting medium. Seasonal wetland basins and terraces designed within the corridor bottom will provide valuable wetland species habitat and will be excavated below the modeled corridor bottom. The fill generated from this habitat construction activity will be used on the side slopes of the excavated channel, creating gentler slopes and increased habitat diversity while maintaining or increasing the minimum hydraulic cross section of the drainage channel determined utilizing HEC RAS modeling. This method of maintaining the average channel cross section reflected in the calculations this drainage master plan is based on, while undulating the channel bottom and side slope to create natural looking drainages capable of supporting sustainable habitat of a wide variety, will ensure the hydraulic integrity of the flood control as modeled (increasing the hydraulic cross section without modifying the proposed cross-channel berms and outlet structures/notches will enhance the storage capacity of the drainage channels, thus increasing conveyance attenuation and thus overall flood control).

The plan is designed to create naturalistic perennial drainage patterns with varying channel widths and depths and off-channel seasonal and perennial wetland basins that will support seasonal wetland and freshwater marsh habitats. To that end, very detailed 2-dimensional hydraulic analyses of low flow conditions occurring during summer nuisance and 2-year design storm events were prepared by cbec, Inc. for the D-corridor drainage channel using SRH2D modeling software. Exhibits 15 and 16 depict the resulting inundation levels calculated by the model. These inundation depths calculated for the D-corridor drainage channel were then extrapolated to the B and C corridor drainage channels using the water surface elevations (and thus inundation depths) calculated for the 2-year design storm event using HEC RAS as described in Chapter 3.4, thus allowing Restoration Resources to design appropriate habitat mosaics for these channels as well. (Note: the habitat restoration design for the B- and C-corridors as currently reflected in the plans by Restoration Resources as includes in Appendix 9.5 of this study has yet to be adjusted to reflect the latest channel widening based on the latest hydraulic modeling design. These adjustments will be made as part of the 404-permit processing and well ahead of any final drainage design).

The regularly inundated corridor bottom outside of the low flow channel and created wetland basins and terraces, but still within the 2 year flood zone, will support seasonally flooded riparian habitats such as riparian grassland, willow riparian woodland, and some cottonwood riparian woodland. Less frequently inundated riparian habitats within the corridor and along the corridor side slopes are designed with appropriate plant species associated with cottonwood riparian woodland, oak riparian woodland, and the drainage corridor bank habitat types. On the upland grassland buffer outside the drainage corridor banks, the soils and depth to duripan were analyzed to determine the location of proposed vernal pools, grasslands, and oak plantings for the creation of oak savanna grassland and vernal pool grassland habitats. The overall goal of the restoration plan is to create a mosaic of upland and wetland habitats so that over time, a person walking through the drainage corridors on one of the designed trails 10 years after establishment will see a complex and dynamic system of diverse habitats, encompassing a wide variety of plants and animals interacting with each other and the surrounding environment.

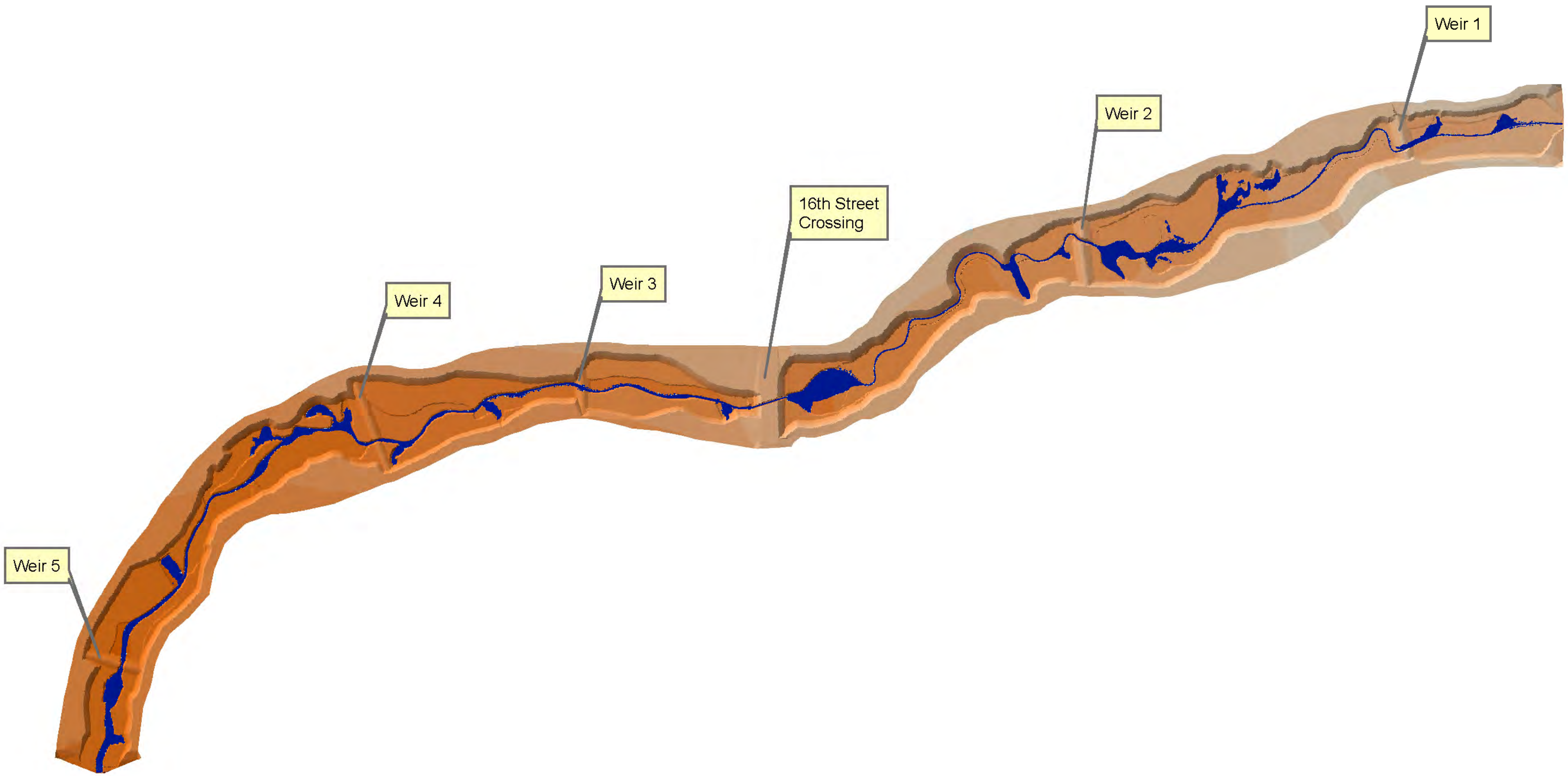
The re-construction and enhancement of existing, ephemeral drainages within the ESP area will result in an initial loss of approximately 29 acres of seasonal wetlands, swales, and vernal pools. Ultimately, however, approximately 33 acres of wetlands (willow riparian, seasonal wetland, seasonal freshwater marsh, and vernal pools and swales) will be created and enhance in the proposed, multi-use corridors. An additional approximately 26 acres of transitional wetlands (cottonwood riparian, oak riparian, and riparian grassland) may be created dependent on year-to-year rainfall fluctuations or an increase in total water conveyance within the corridors. Consequently, there could be a net gain of up to almost 59 acres of wetlands associated with creation of the proposed drainage corridors, including creation of new freshwater emergent marsh, willow riparian scrub, and riparian woodland habitats where none currently exist. (Note: the habitat numbers listed will need to be updated based on the final design for the B- and C-corridors).

Table 6:
Elverta Specific Plan Proposed Post-Project Wetland Acreage

Drainage Corridor	Wetland Acres	Transitional Wetland Acres*
B (Northern)	7.94	11.07
C (Central)	17.51	3.16
D (Southern)	7.14	12.01
Total	**32.59**	**26.24**

* Dependent on yearly rainfall or increase in drainage runoff conveyance

Extant wetlands in the ESP provide minimal hydrologic input to the Sacramento River watershed (via the Natomas East Main Drainage Canal); transform and cycle elements; retain and remove dissolved substances; accumulate and retain inorganic sediments; and maintain plant communities and some level of energy flow within the system. However, these services are extremely limited as a result of the impacts of historic anthropogenic changes to the surrounding landscape, including the complete extirpation of pre-settlement natural communities via land use (e.g. agricultural) conversion, alteration and/or truncation of natural drainage patterns and hydrologic regime, and elimination of critical species habitat for a number of plant and wildlife species. While the ESP area is not small, increasing urban build-out will eventually result in even more fragmentation of remaining wildlife habitat, contributing to the overall decline of native biodiversity within the area. Some of these impacts to local and regional wildlife resources can be mitigated to a great extent by the proposed creation of three perennial drainage corridors within the framework of the Elverta Specific Plan, thereby resulting in more ecologically complex and diverse habitats than presently exist.



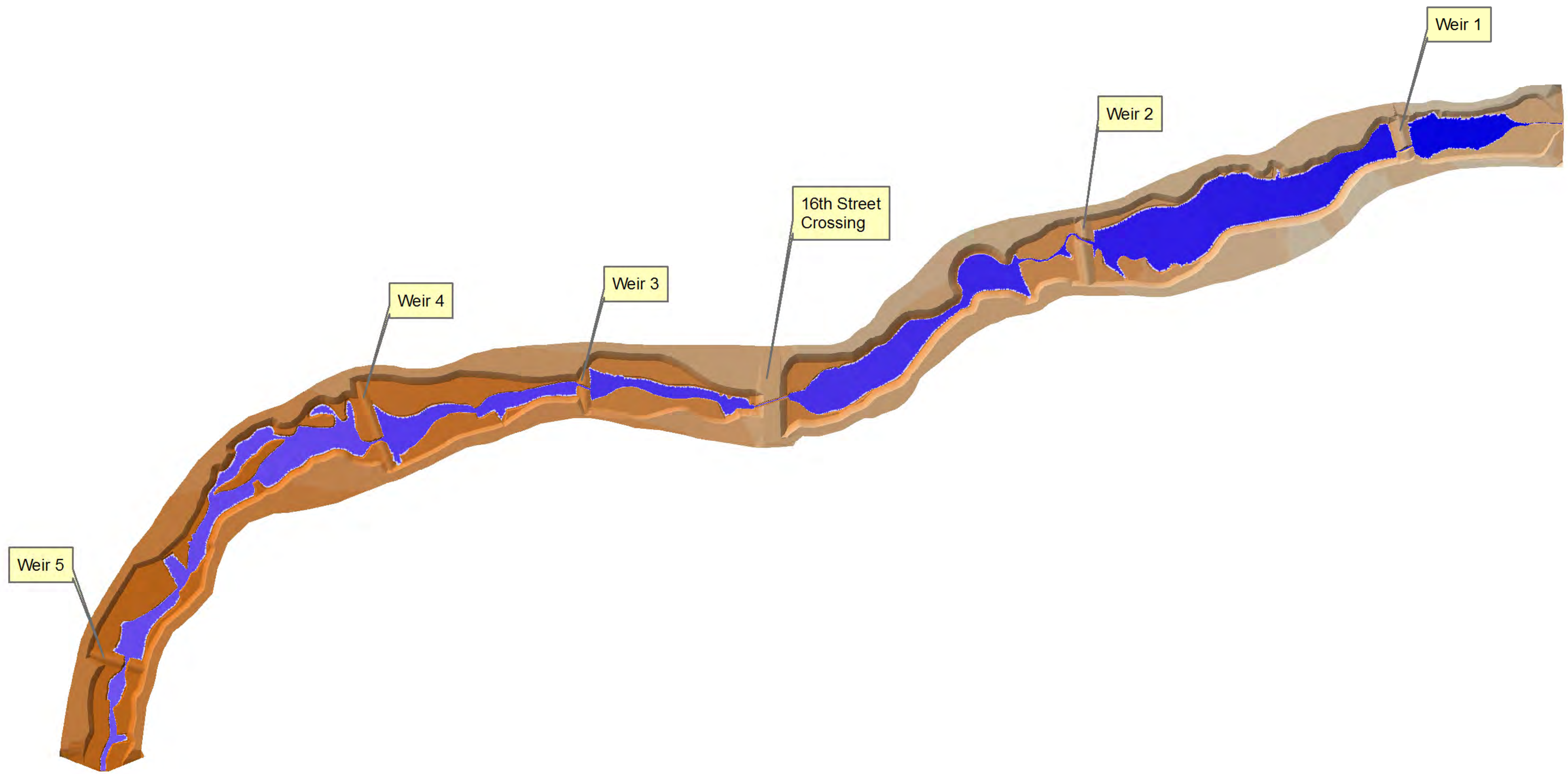
Notes:

cbec eco engineering

Elverta Specific Plan

D Corridor Summer Flows Maximum Inundation

Project No. 09-1036	Created By: SLD	**Exhibit 15**



Notes:

Elverta Specific Plan

D Corridor 2-Year Maximum Inundation

Project No. 09-1036	Created By: SLD	**Exhibit 16**

8.0 REGIONAL DRAINAGE BASIN IMPACT ANALYSIS

As concluded in the Rio Linda Elverta Community Plan (RLECP) Update Final EIR and by the Sacramento Area Flood Control District, regional buildout of the NESG drainage basin has the potential to cause significant increases in the runoff volumes the receiving water of Steelhead Creek has to deal with and pump out to the American and Sacramento Rivers. This may cause adverse backwater conditions, exacerbating local flooding conditions. However, the RLECP Update Final EIR also concluded that the Rio Linda Elverta Community of which the Elverta Specific Plan is a part of makes up such a small share of the overall NESG drainage basin that buildout of the community alone *would have little impact on NEMDC* [Steelhead Creek] *flooding*.

According to the County of Water Resource Division's own analysis, buildout of the Elverta Specific Plan may cause an increase in the water surface elevation of Steelhead Creek of about 0.2 feet. At the same time the County acknowledged that the receiving water's 100-yr water surface elevations are not only controlled by peak flows, but also by the performance of the D15 pump station and the storage in its very wide floodplain.

As described in Chapter 3.1 of this study, SAFCA had a consultant analyze potential impacts on the D15 pump station. SAFCA's consultant concluded that rather than causing an environmental impact, buildout of the Elverta Specific Plan as proposed would cause an economic impact [on the D15 pump station] that could easily be mitigated with an impact fee. ended that rather than have the Project pay an impact fee equivalent to $55/acre, the Project should annex into the operations and maintenance district that funds ongoing operations of the pump station and associated facilities.[16]

16 ESP Final EIR, Volume 1, Chapter 7, Pages 25-29; and Volume 3, Chapter HY-2

9.0 APPENDICES

9.1 Drainage Model Data Files, Result Summary, Profiles, & Sections

9.1.1 SacCalc Hydrologic Calculator:

Elverta_B_shed_Exist.scalc	Elverta Specific Plan – Existing Conditions Analysis (2 Yr, 10 Yr and 100 yr Design Storm, 24-hr duration)
Elverta_B_shed_Int.scalc	Elverta Specific Plan – Interim Conditions Analysis (2 Yr, 10 Yr and 100 Yr Design Storm, 24-hr duration)
Elverta_B_shed_scalc	Elverta Specific Plan – Developed Conditions Analysis (2 Yr, 10 Yr and 100 Yr Design Storm, 24-hr duration)
Elverta_C_shed_Exist.scalc	Elverta Specific Plan – Existing Conditions Analysis (2 Yr, 10 Yr and 100 Yr Design Storm, 24 hr duration)
Elverta_C_shed_Int.scalc	Elverta Specific Plan – Interim Conditions Analysis (2 Yr, 10 Yr, and 100 Yr Design Storm, 24-hr duration)
Elverta_C_shed_scalc	Elverta Specific Plan – Developed Conditions Analysis (2 Yr, 10 Yr, and 100 Yr Design Storm, 24-hr duration)
Elverta_D_shed_Exist.scalc	Elverta Specific Plan – Existing Conditions Analysis (2 Yr, 10 Yr and 100 Yr Design Storm, 24-hr duration)
Elverta_D_shed.scalc	Elverta Specific Plan – Developed Conditions Analysis (2 Yr, 10 Yr and 100 Yr Design Storm, 24-hr duration)

9.1.2 HEC-RAS 4.0 Hydraulic Model Data Files:

B Corridor	Hydraulic Analysis of Drainage Channel B – Developed Conditions (2, 10 & 100 Yr-24 Hr)
B Corridor	Hydraulic Analysis of Drainage Channel B – Phase 1 Interim Conditions (2, 10 & 100 Yr-24 Hr)
B Corridor	Hydraulic Analysis of Drainage Channel B – Existing Conditions (2, 10 & 100 Yr-24 Hr)
C Corridor	Hydraulic Analysis of Drainage Channel C – Developed Conditions (2, 10 & 100 Yr-24 Hr)
C Corridor	Hydraulic Analysis of Drainage Channel C – Phase 1 Interim Conditions (2, 10 & 100 Yr-24 Hr)
C Corridor	Hydraulic Analysis of Drainage Channel C – Existing Conditions (2, 10 & 100 Yr-24 Hr)
D Corridor	Hydraulic Analysis of Drainage Channel D – Developed Conditions (2, 10 & 100 Yr-24 Hr)
D Corridor	Hydraulic Analysis of Drainage Channel D – Existing Conditions (2, 10 & 100 Yr-24 Hr)

9.1.3 Modeling Results Summary (SacCalc & HEC-RAS)

Elverta - summary inflow information -Existing

Shed(s)	HEC-RAS Inflow Station	HEC-RAS Sta Inflow Applied	Subshed Peak Flow	100yr Peak Flow In Creek	
B35, B40	8600.171	8600.171	135.77	135.77	JB35
B30	8402.062	8200.812	67.98	140.20	Uniform Lateral Inflow to Sta 6600.481
B25	6500.082	6299.85	64.13	170.20	Uniform Lateral Inflow to Sta 6600.284
B20	5800.152	5600.48	39.04	182.29	Uniform Lateral Inflow to Sta 5000.639
B15	4800.247	4600.325	65.57	193.43	Uniform Lateral Inflow to Sta 2799.844
B	2601.559	2406.84	33.71	177.95	Uniform Lateral Inflow to Sta 1153.125
C50	12999.63	12999.63	99.42	99.42	
C40	12744.63	12574.63	112.66	113.03	Uniform Lateral Inflow to Sta 11293.47
C30	11180.76	11055.95	98.88	200.79	Uniform Lateral Inflow to Sta 9014.39
C20	8939.39	8838.97	80.85	111.58	Uniform Lateral Inflow to Sta 5599.9
C60,C70,C80	5449.15	5298.41	259.58	402.74	J60C
C10	5298.41	5200.78	108.53	403.84	Uniform Lateral Inflow to Sta 1501.04
C	1501.04	1301.04	72.93	413.27	
D15	6670.417	6670.417	11.27	11.27	
D10	6470.417	6370.41	100.80	16.82	Uniform Lateral Inflow to Sta 3870.417
D	3670.417	3620.41	111.64	118.14	Uniform Lateral Inflow to Sta 496.275

B - B Coriidor tributary
C - C Corridor tributary
D - D Corridor tributary

Elverta - summary inflow information -Developed

Shed(s)	HEC-RAS Inflow Station	HEC-RAS Sta Inflow Applied	Subshed Peak Flow	100yr Peak Flow In Creek	
B10, B20	7550	7550	186.87	186.87	JB20
B20CH	7300	7100	21.52	133.34	Uniform Lateral Inflow to Sta 5250
B30	5550	5450	83.08	107.09	
B40	5450	5250	99.02	111.60	
B50	4700	4500	27.60	104.52	
B50CH	4500	4250	17.20	105.58	Uniform Lateral Inflow to Sta 2650
B60	3887.5	3800	102.81	136.95	
B70	3800	3550	63.36	165.65	
B80	2100	1850	60.93	94.84	
B80CH	1850	1600	7.84	101.09	Uniform Lateral Inflow to Sta 1375
B90	1600	1512.5	85.84	137.88	
C10, C20	13307	13307	175.90	175.90	JNC001
C10CH	12950	12800	9.48	121.45	Uniform Lateral Inflow to Sta 12200
C30,C40	12200	12137.5	205.94	236.98	JNC003
C30CH	11115	10965	13.88	179.74	Uniform Lateral Inflow to Sta 9925
C50	10142	10035	66.56	189.04	
C60	9925	9900	168.22	210.80	
C60CH	9300	9100	5.83	180.38	Uniform Lateral Inflow to Sta 8900
C70,C70CH,C75,C80	8050	7850	168.82	265.37	C1020R
C90	7850	7650	40.87	276.33	
C100	7650	7440	133.88	307.58	
C110	7440	7290	168.56	382.61	
C100CH	6934	6856	15.05	367.72	Uniform Lateral Inflow to Sta 5950
C120	5200	4950	95.46	329.56	
C140	4950	4800	77.01	322.33	
C130CH	4800	4575	5.90	297.73	Uniform Lateral Inflow to Sta 3900
C130	3300	3200	102.39	284.65	
D15	7800	7800	11.27	11.27	
D1CH	7700	7499.71	5.23	14.70	Uniform Lateral Inflow to Sta 7400
D1	7400	7360	32.31	25.32	
D2CH	7280	7250	10.58	25.18	Uniform Lateral Inflow to Sta 6300.12
D2	6500	6300.12	120.26	64.37	
D3	6300.13	6115	90.08	85.71	Uniform Lateral Inflow to Sta 5024.42
D3CH	6130	6079.98	12.48	84.40	
D4	5100.02	4850	57.32	59.92	Uniform Lateral Inflow to Sta 4850
D4-8CH	5000	4800	18.94	59.52	
D6	4100	3900	40.30	59.18	
D5	3900	3700	42.30	96.60	
D7	3860	3200.02	57.92	70.94	
D8	2670	2500	94.15	80.60	

B - B Coriidor tributary
C - C Corridor tributary
D - D Corridor tributary

Elverta - summary inflow information - Interim

Shed(s)	HEC-RAS Inflow Station	HEC-RAS Sta Inflow Applied	Subshed Peak Flow	100yr Peak Flow In Creek	
B35, B40	8600.171	8600.171	135.77	135.77	JB35
B30	8402.062	8200.812	67.98	140.20	Uniform Lateral Inflow to Sta 6600.481
B25	6500.082	6299.85	64.13	170.25	Uniform Lateral Inflow to Sta 6000.284
B20	5800.152	5600.48	39.04	182.23	Uniform Lateral Inflow to Sta 5000.639
B15	4800.247	4600.325	65.57	192.68	Uniform Lateral Inflow to Sta 2799.844
DET00B	2601.559	2406.84	42.75	167.73	Uniform Lateral Inflow to Sta 1153.125
C10, C20	13307	13307	99.42	99.42	C50
C10CH	12950	12800	9.48	94.10	Uniform Lateral Inflow to Sta 12200
C25,C40	12200	12137.5	171.89	205.18	JNC003
C30	11825	10965	85.48	179.80	Uniform Lateral Inflow to Sta 9900
C50	9925	9900	11.26	198.51	
C60A, C60B	9500	9300	120.66	191.63	JNC005
C60CH	9300	9100	5.83	178.57	Uniform Lateral Inflow to Sta 8700
C70A	8900	8700	22.16	171.70	
C70,C70CH,C75,C80	8300	8050	165.46	279.33	C1020R
C90	7850	7650	36.07	280.05	
C100	7012	6934	126.43	293.32	
C100CH	6934	6856	14.87	291.41	Uniform Lateral Inflow to Sta 5950
C110A, C110B	6200	5950	126.63	349.00	JNC004
C120	5200	4950	95.30	305.97	
C140	4950	4800	77.02	301.74	
C130CH	4800	4575	5.90	281.88	Uniform Lateral Inflow to Sta 3900
C130	3300	3200	109.16	279.64	
D Corridor					
Not applicable					

B - B Coriidor tributary
C - C Corridor tributary
D - D Corridor tributary

Appendix 9.1.1 SacCalc Hydrologic Calculator:

Elverta_B_shed_Exist.scalc	Elverta Specific Plan – Existing Conditions Analysis (2 Yr, 10 Yr and 100 yr Design Storm, 24-hr duration)
Elverta_B_shed_Int.scalc	Elverta Specific Plan – Interim Conditions Analysis (2 Yr, 10 Yr and 100 Yr Design Storm, 24-hr duration)
Elverta_B_shed_scalc	Elverta Specific Plan – Developed Conditions Analysis (2 Yr, 10 Yr and 100 Yr Design Storm, 24-hr duration)
Elverta_C_shed_Exist.scalc	Elverta Specific Plan – Existing Conditions Analysis (2 Yr, 10 Yr and 100 Yr Design Storm, 24 hr duration)
Elverta_C_shed_Int.scalc	Elverta Specific Plan – Interim Conditions Analysis (2 Yr, 10 Yr, and 100 Yr Design Storm, 24-hr duration)
Elverta_C_shed_scalc	Elverta Specific Plan – Developed Conditions Analysis (2 Yr, 10 Yr, and 100 Yr Design Storm, 24-hr duration)
Elverta_D_shed_Exist.scalc	Elverta Specific Plan – Existing Conditions Analysis (2 Yr, 10 Yr and 100 Yr Design Storm, 24-hr duration)
Elverta_D_shed.scalc	Elverta Specific Plan – Developed Conditions Analysis (2 Yr, 10 Yr and 100 Yr Design Storm, 24-hr duration)

Sacramento Hydrologic Calculator Report

May 6, 2011 9:50

Project Title: Elverta
Comments: Elverta - B Corridor Existing Conditions
Prepared by: KEC

Method: Sacramento County HEC-1 method
Date: 5/6/2011

Watershed Hydrologic Summary Data

Watershed	Area (acres)	Mean Elevation (ft)	Lag Times		Basin "n"		Loss Rates		Percent Impervious	
			Method	Lag Time (min)	Method	Basin "n"	Method	Loss Rate (in/hr)	Method	Impervious Area (%)
B40	45	84	Basin "n"	-	Specified	0.115	Computed	-	Specified	2
B25	46	72	Basin "n"	-	Specified	0.115	Computed	-	Specified	2
B30	61	73	Basin "n"	-	Specified	0.115	Computed	-	Specified	2
B35	125	81	Basin "n"	-	Specified	0.115	Computed	-	Specified	2
B20	26	70	Basin "n"	-	Specified	0.115	Computed	-	Specified	2
B15	75	64	Basin "n"	-	Specified	0.115	Computed	-	Specified	2
B	32	56	Basin "n"	-	Specified	0.115	Computed	-	Specified	2

Basin "n" Method Data for Lag Time Computation

Watershed	Channel Length (ft)	Centroid Length (ft)	Slope (ft/ft)	Channelization	Land Use Impervious Area Percent (% or acres)																	
					95	90	85	80	75	70	60	50	40	30	25	20	15	10	5	2	1	1*
B40	1230	1200	.0023	Undeveloped	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				Developed	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B25	700	655	.0023	Undeveloped	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				Developed	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B30	1925	700	.0023	Undeveloped	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				Developed	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B35	3585	2600	.0023	Undeveloped	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				Developed	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B20	704	450	0.0023	Undeveloped	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				Developed	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B15	2091	2000	.0023	Undeveloped	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				Developed	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B	1594	1100	0.0023	Undeveloped	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				Developed	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Refer to the Drainage manual for Land Use Impervious Area Percent

*Dense Oaks, Shrubs, Vines

Infiltration Loss Rate Data

Watershed	Soil Cover Group	Land Use Impervious Area Percent (% or acres)																	
		95	90	85	80	75	70	60	50	40	30	25	20	15	10	5	2	1	1*
B40	B																		
	C																		
	D																100		
B25	B																		
	C																		
	D																100		
B30	B																		
	C																		
	D																100		
B35	B																		
	C																		
	D																100		
B20	B																		
	C																		
	D																100		
B15	B																		
	C																		
	D																100		
B	B																		
	C																		
	D																100		

Refer to the help file for Land Use Impervious Area Percent

*Dense Oaks, Shrubs, Vines

Hydrograph Routing – Muskingum–Cunge (Standard)

Routing ID	Route From	Route To	Channel Type	Length (ft)	Slope (ft/ft)	Width or Diameter (ft)	Side Slope (H:V)	Mannings "n"
RB1	B40	JB35	Trapezoidal	3983.	0.0023	10	5:1	0.048
RB2	JB35	JB30	Trapezoidal	2139.	0.0023	10	5:1	0.048
RB3	JB30	JB25	Trapezoidal	728.	0.0023	10	5:1	0.048
RB4	JB25	JB20	Trapezoidal	782.	0.0023	10	5:1	0.048
RB5	JB20	JB15	Trapezoidal	2323.	0.0023	10	5:1	0.048
RB6	JB15	JB	Trapezoidal	1771	0.0023	10	5:1	0.048

Sacramento Hydrologic Calculator Report

May 6, 2011 10:01

Project Title: Elverta
Comments: Elverta - B Corridor -Interim Conditions
Prepared by: KEC

Method: Sacramento County HEC-1 method
Date: 12/17/2010

Watershed Hydrologic Summary Data

Watershed	Area (acres)	Mean Elevation (ft)	Lag Times		Basin "n"		Loss Rates		Percent Impervious	
			Method	Lag Time (min)	Method	Basin "n"	Method	Loss Rate (in/hr)	Method	Impervious Area (%)
B40	45	83	Basin "n"	-	Specified	0.115	Computed	-	Specified	1
B25	46.8	72	Basin "n"	-	Specified	0.082	Computed	-	Specified	27.6
B35	110.2	81	Basin "n"	-	Specified	0.115	Computed	-	Specified	1
B30	61	73	Basin "n"	-	Specified	0.115	Computed	-	Specified	1
B20	43.2	71.3	Basin "n"	-	Specified	0.115	Computed	-	Specified	1
B	37.7	56	Basin "n"	-	Specified	0.096	Computed	-	Specified	15.2
B15	80.8	64	Basin "n"	-	Specified	0.111	Computed	-	Specified	3.7

Basin "n" Method Data for Lag Time Computation

Watershed	Channel Length (ft)	Centroid Length (ft)	Slope (ft/ft)	Channelization	Land Use Impervious Area Percent (% or acres)																	
					95	90	85	80	75	70	60	50	40	30	25	20	15	10	5	2	1	1*
B40	1230	1200	.0023	Undeveloped	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				Developed	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B25	700	655	.0023	Undeveloped	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				Developed	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B35	3595	2600	.0023	Undeveloped	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				Developed	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B30	1925	700	.0023	Undeveloped	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				Developed	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B20	704	450	0.0023	Undeveloped	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				Developed	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B	1594	1100	0.0023	Undeveloped	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				Developed	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B15	2091	2000	.0023	Undeveloped	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				Developed	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Refer to the Drainage manual for Land Use Impervious Area Percent

*Dense Oaks, Shrubs, Vines

Infiltration Loss Rate Data

Watershed	Soil Cover Group	Land Use Impervious Area Percent (% or acres)																	
		95	90	85	80	75	70	60	50	40	30	25	20	15	10	5	2	1	1*
B40	B																		
	C																		
	D																	100	
B25	B																		
	C																		
	D																	100	
B35	B																		
	C																		
	D																	100	
B30	B																		
	C																		
	D																	100	
B20	B																		
	C																		
	D																	100	
B	B																		
	C																		
	D																	100	
B15	B																		
	C																		
	D																	100	

Refer to the help file for Land Use Impervious Area Percent

*Dense Oaks, Shrubs, Vines

Hydrograph Routing – Muskingum–Cunge (Standard)

Routing ID	Route From	Route To	Channel Type	Length (ft)	Slope (ft/ft)	Width or Diameter (ft)	Side Slope (H:V)	Mannings "n"
RB1	B40	JB35	Trapezoidal	3983	0.0023	10	5:1	0.048
RB3	JB35	JNC001	Trapezoidal	728	.0023	10	5:1	0.048

View HEC-1 output

Sacramento method results
(Project: Elverta)
(100-year, 1-day rainfall)

ID	Peak flow (cfs)	Time of peak (hours)	Basin area (sq. mi)	Peak stage (feet)	Peak storage (ac-ft)	Diversion volume (ac-ft)
B	34.	12:37	.05			
B15	66.	12:50	.12			
B20	39.	12:20	.04			
B25	64.	12:23	.07			
B30	68.	12:34	.10			
B35	92.	13:06	.20			
B40	49.	12:35	.07			
RB1	44.	13:09	.07			
JB35	136.	13:08	.27			
RB2	132.	13:21	.27			
JB30	165.	13:18	.36			
RB3	164.	13:22	.36			
JB25	184.	13:20	.43			
RB4	183.	13:24	.43			
JB20	193.	13:23	.47			
RB5	191.	13:34	.47			
JB15	246.	12:52	.59			
RB6	242.	13:01	.59			
JB	266.	12:59	.64			

(10-year, 1-day rainfall)

ID	Peak flow (cfs)	Time of peak (hours)	Basin area (sq. mi)	Peak stage (feet)	Peak storage (ac-ft)	Diversion volume (ac-ft)
B	20.	12:38	.05			
B15	40.	12:51	.12			
B20	23.	12:20	.04			
B25	38.	12:23	.07			
B30	41.	12:34	.10			
B35	56.	13:07	.20			
B40	30.	12:35	.07			
RB1	26.	13:14	.07			
JB35	82.	13:11	.27			
RB2	80.	13:25	.27			
JB30	99.	13:23	.36			
RB3	98.	13:27	.36			

JB25	110.	13:25	.43
RB4	109.	13:30	.43
JB20	115.	13:29	.47
RB5	113.	13:42	.47
JB15	145.	12:54	.59
RB6	143.	13:06	.59
JB	156.	13:04	.64

(2-year, 1-day rainfall)

ID	Peak flow (cfs)	Time of peak (hours)	Basin area (sq. mi)	Peak stage (feet)	Peak storage (ac-ft)	Diversion volume (ac-ft)
B	11.	12:38	.05			
B15	21.	12:51	.12			
B20	12.	12:21	.04			
B25	20.	12:24	.07			
B30	21.	12:35	.10			
B35	30.	13:08	.20			
B40	15.	12:36	.07			
RB1	14.	13:22	.07			
JB35	42.	13:15	.27			
RB2	41.	13:33	.27			
JB30	51.	13:29	.36			
RB3	51.	13:35	.36			
JB25	57.	13:33	.43			
RB4	56.	13:38	.43			
JB20	59.	13:37	.47			
RB5	58.	13:53	.47			
JB15	73.	12:58	.59			
RB6	72.	13:13	.59			
JB	79.	13:10	.64			

View HEC-1 output

Sacramento method results
(Project: Elverta)
(100-year, 1-day rainfall)

ID	Peak flow (cfs)	Time of peak (hours)	Basin area (sq. mi)	Peak stage (feet)	Peak storage (ac-ft)	Diversion volume (ac-ft)
B25	81.	12:16	.07			
B30	67.	12:34	.10			
B20	64.	12:20	.07			
B	45.	12:31	.06			
B15	72.	12:48	.13			
B35	80.	13:06	.17			
B40	49.	12:35	.07			
RB1	44.	13:09	.07			
JB35	123.	13:08	.24			
RB3	122.	13:12	.24			
JNC001	317.	12:31	.66			

(10-year, 1-day rainfall)

ID	Peak flow (cfs)	Time of peak (hours)	Basin area (sq. mi)	Peak stage (feet)	Peak storage (ac-ft)	Diversion volume (ac-ft)
B25	48.	12:16	.07			
B30	40.	12:34	.10			
B20	38.	12:20	.07			
B	27.	12:31	.06			
B15	43.	12:49	.13			
B35	48.	13:07	.17			
B40	29.	12:35	.07			
RB1	26.	13:14	.07			
JB35	73.	13:11	.24			
RB3	73.	13:16	.24			
JNC001	189.	12:33	.66			

(2-year, 1-day rainfall)

ID	Peak flow (cfs)	Time of peak (hours)	Basin area (sq. mi)	Peak stage (feet)	Peak storage (ac-ft)	Diversion volume (ac-ft)
B25	25.	12:16	.07			
B30	21.	12:35	.10			
B20	19.	12:21	.07			
B	14.	12:31	.06			

B15	22.	12:49	.13
B35	25.	13:08	.17
B40	15.	12:36	.07
RB1	13.	13:22	.07
JB35	37.	13:16	.24
RB3	37.	13:22	.24
JNC001	97.	12:33	.66

Sacramento Hydrologic Calculator Report

May 6, 2011 10:07

Project Title: Elverta B Shed
Comments: Elverta - B Corridor -Developed
Prepared by: KEC-BTH

Method: Sacramento County HEC-1 method
Date: 3/22/2011

Watershed Hydrologic Summary Data

Watershed	Area (acres)	Mean Elevation (ft)	Lag Times		Basin "n"		Loss Rates		Percent Impervious	
			Method	Lag Time (min)	Method	Basin "n"	Method	Loss Rate (in/hr)	Method	Impervious Area (%)
B10	45	85	Basin "n"	-	Specified	0.075	Computed	-	Specified	1
B30	41.7	71.4	Basin "n"	-	Specified	0.057	Computed	-	Specified	22.8
B20	105.9	77.8	Basin "n"	-	Specified	0.051	Computed	-	Specified	26.3
B20CH	24.5	70.3	Basin "n"	-	Specified	0.12	Computed	-	Specified	1
B40	43.3	71.3	Basin "n"	-	Specified	0.039	Computed	-	Specified	56.9
B50	15	67.5	Basin "n"	-	Specified	0.065	Computed	-	Specified	16.9
B80CH	9.4	52.4	Basin "n"	-	Specified	0.12	Computed	-	Specified	1
B60	37.4	64.5	Basin "n"	-	Specified	0.04	Computed	-	Specified	50
B70	28.5	67.1	Basin "n"	-	Specified	0.0425	Computed	-	Specified	49.2
B90	35.23	58.75	Basin "n"	-	Specified	0.039	Computed	-	Specified	54.5
B50CH	20.2	59.5	Basin "n"	-	Specified	0.12	Computed	-	Specified	1
B80	26.1	65	Basin "n"	-	Specified	0.0411	Computed	-	Specified	52.5

Basin "n" Method Data for Lag Time Computation

Watershed	Channel Length (ft)	Centroid Length (ft)	Slope (ft/ft)	Channelization	Land Use Impervious Area Percent (% or acres)																	
					95	90	85	80	75	70	60	50	40	30	25	20	15	10	5	2	1	1*
B10	2950	1435	0.0034	Undeveloped	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				Developed	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B30	2309	410	0.0049	Undeveloped	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				Developed	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B20	3600	2315	0.0040	Undeveloped	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				Developed	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B20CH	2940	1245	.0024	Undeveloped	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				Developed	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B40	1652	1059	0.0069	Undeveloped	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				Developed	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B50	1445	822	0.009	Undeveloped	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				Developed	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B80CH	2400	1683	.0018	Undeveloped	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				Developed	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B60	1138	469	0.0079	Undeveloped	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				Developed	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B70	1916	850	0.0077	Undeveloped	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				Developed	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B90	1492	911	0.009	Undeveloped	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				Developed	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B50CH	2656	1415	.0019	Undeveloped	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				Developed	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B80	1476	678	0.0041	Undeveloped	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				Developed	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Refer to the Drainage manual for Land Use Impervious Area Percent

*Dense Oaks, Shrubs, Vines

Infiltration Loss Rate Data

Watershed	Soil Cover Group	Land Use Impervious Area Percent (% or acres)																	
		95	90	85	80	75	70	60	50	40	30	25	20	15	10	5	2	1	1*
B10	B																		
	C																		
	D																100		
B30	B																		
	C																		
	D	4.65							7.31							28.5		1.22	
B20	B																		
	C																		
	D	4.92										90.84				10.11			
B20CH	B																		
	C																		
	D																100		
B40	B																		
	C																		
	D	3.22						24.02	14.22									1.8	
B50	B																		
	C																		
	D	1.78										3.01							10.25
B80CH	B																		
	C																		
	D																100		
B60	B																		
	C																		
	D								100										
B70	B																		
	C																		
	D	2.49						11.15	9.47							4.66		0.74	
B90	B																		
	C																		
	D	3.54							31.68										
B50CH	B																		
	C																		
	D																100		
B80	B																		
	C																		
	D	3.21						10.93	7.77							4.2			

Refer to the help file for Land Use Impervious Area Percent

*Dense Oaks, Shrubs, Vines

Hydrograph Routing – Muskingum–Cunge (Standard)

Routing ID	Route From	Route To	Channel Type	Length (ft)	Slope (ft/ft)	Width or Diameter (ft)	Side Slope (H:V)	Mannings "n"
B10R	B10	JB20	Trapezoidal	650	0.002	010	4:1	0.06

View HEC-1 output

Sacramento method results
(Project: Elverta B Shed)
(100-year, 1-day rainfall)

ID	Peak flow (cfs)	Time of peak (hours)	Basin area (sq. mi)	Peak stage (feet)	Peak storage (ac-ft)	Diversion volume (ac-ft)
B30	83.	12:12	.07			
B20CH	22.	12:50	.04			
B40	99.	12:09	.07			
B50	28.	12:14	.02			
B80CH	7.8	12:54	.01			
B60	103.	12:06	.06			
B70	63.	12:09	.04			
B90	86.	12:08	.06			
B50CH	17.	12:52	.03			
B20	145.	12:25	.17			
B10	54.	12:30	.07			
B10R	51.	12:36	.07			
JB20	187.	12:26	.24			
B80	61.	12:08	.04			
JNC001	614.	12:10	.68			

(10-year, 1-day rainfall)

ID	Peak flow (cfs)	Time of peak (hours)	Basin area (sq. mi)	Peak stage (feet)	Peak storage (ac-ft)	Diversion volume (ac-ft)
B30	49.	12:12	.07			
B20CH	13.	12:50	.04			
B40	58.	12:09	.07			
B50	16.	12:14	.02			
B80CH	4.7	12:55	.01			
B60	60.	12:06	.06			
B70	37.	12:09	.04			
B90	50.	12:08	.06			
B50CH	10.	12:53	.03			
B20	87.	12:25	.17			
B10	32.	12:30	.07			
B10R	31.	12:37	.07			
JB20	112.	12:27	.24			
B80	36.	12:08	.04			
JNC001	366.	12:10	.68			

(2-year, 1-day rainfall)

ID	Peak flow (cfs)	Time of peak (hours)	Basin area (sq. mi)	Peak stage (feet)	Peak storage (ac-ft)	Diversion volume (ac-ft)
B30	25.	12:12	.07			
B20CH	6.8	12:51	.04			
B40	30.	12:09	.07			
B50	8.1	12:14	.02			
B80CH	2.5	12:55	.01			
B60	31.	12:06	.06			
B70	19.	12:10	.04			
B90	26.	12:08	.06			
B50CH	5.5	12:53	.03			
B20	46.	12:25	.17			
B10	17.	12:31	.07			
B10R	16.	12:39	.07			
JB20	58.	12:27	.24			
B80	19.	12:08	.04			
JNC001	192.	12:10	.68			

Sacramento Hydrologic Calculator Report

May 6, 2011 9:53

Project Title: Elverta
Comments: Elverta - C Corridor Existing Conditions
Prepared by: KEC
Method: Sacramento County HEC-1 method
Date: 10/25/2010

Watershed Hydrologic Summary Data

Watershed	Area (acres)	Mean Elevation (ft)	Lag Times		Basin "n"		Loss Rates		Percent Impervious	
			Method	Lag Time (min)	Method	Basin "n"	Method	Loss Rate (in/hr)	Method	Impervious Area (%)
C51	95	82	Basin "n"	-	Specified	0.115	Computed	-	Specified	2
C20	95	66	Basin "n"	-	Specified	0.115	Computed	-	Specified	2
C30	119	72	Basin "n"	-	Specified	0.115	Computed	-	Specified	2
C40	125	77	Basin "n"	-	Specified	0.111	Computed	-	Specified	3.63
C80	159	79	Basin "n"	-	Specified	0.076	Computed	-	Specified	17.41
C70	93	73	Basin "n"	-	Specified	0.115	Computed	-	Specified	2
C60	63	67	Basin "n"	-	Specified	0.115	Computed	-	Specified	2
C	91	56	Basin "n"	-	Specified	0.115	Computed	-	Specified	2
C10	134	60	Basin "n"	-	Specified	0.115	Computed	-	Specified	2
C52	32.8	77.5	Basin "n"	-	Specified	0.06	Computed	-	Specified	10

Basin "n" Method Data for Lag Time Computation

Watershed	Channel Length (ft)	Centroid Length (ft)	Slope (ft/ft)	Channelization	Land Use Impervious Area Percent (% or acres)																	
					95	90	85	80	75	70	60	50	40	30	25	20	15	10	5	2	1	1*
C51	3170	1700	.0026	Undeveloped	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				Developed	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
C20	2930	1700	.0026	Undeveloped	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				Developed	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
C30	2650	2100	.0026	Undeveloped	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				Developed	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
C40	2253	1900	.0026	Undeveloped	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				Developed	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
C80	4987	2500	0.0028	Undeveloped	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				Developed	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
C70	2471	1370	.0028	Undeveloped	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				Developed	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
C60	2134	1380	0.0028	Undeveloped	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				Developed	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
C	3150	1830	.002	Undeveloped	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				Developed	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
C10	3368	1630	0.002	Undeveloped	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				Developed	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
C52	2601	926	0.005	Undeveloped	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				Developed	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Refer to the Drainage manual for Land Use Impervious Area Percent

*Dense Oaks, Shrubs, Vines

Infiltration Loss Rate Data

Watershed	Soil Cover Group	Land Use Impervious Area Percent (% or acres)																	
		95	90	85	80	75	70	60	50	40	30	25	20	15	10	5	2	1	1*
C51	B																		
	C																		
	D																100		
C20	B																		
	C																		
	D																100		
C30	B																		
	C																		
	D																100		
C40	B																		
	C																		
	D																100		
C80	B																		
	C																		
	D																100		
C70	B																		
	C																		
	D																100		
C60	B																		
	C																		
	D																100		
C	B																		
	C																		
	D																100		
C10	B																		
	C																		
	D																100		
C52	B																		
	C																		
	D																100		

Refer to the help file for Land Use Impervious Area Percent

*Dense Oaks, Shrubs, Vines

Hydrograph Routing – Muskingum–Cunge (Standard)

Routing ID	Route From	Route To	Channel Type	Length (ft)	Slope (ft/ft)	Width or Diameter (ft)	Side Slope (H:V)	Mannings "n"
C80R	C80	J70-80	Trapezoidal	2745	0.0028	10	5:1	0.048
C60R	J70-80	J60C	Trapezoidal	2371	0.0028	10	5:1	0.048
CHA001	C51	C50	Trapezoidal	1032	0.005	10	3:1	0.015

View HEC-1 output

Sacramento method results
(Project: Elverta)
(100-year, 1-day rainfall)

ID	Peak flow (cfs)	Time of peak (hours)	Basin area (sq. mi)	Peak stage (feet)	Peak storage (ac-ft)	Diversion volume (ac-ft)
C20	81.	12:52	.15			
C30	99.	12:54	.19			
C40	113.	12:48	.20			
C	73.	12:58	.14			
C10	109.	12:57	.21			
C60	61.	12:43	.10			
C70	87.	12:45	.15			
C80	148.	12:46	.25			
C80R	144.	13:01	.25			
J70-80	219.	12:56	.39			
C60R	215.	13:08	.39			
J60C	260.	13:05	.49			
JNC001	715.	12:57	1.37			
C52	53.	12:18	.05			
C51	79.	12:54	.15			
CHA001	79.	12:56	.15			
C50	99.	12:51	.20			

(10-year, 1-day rainfall)

ID	Peak flow (cfs)	Time of peak (hours)	Basin area (sq. mi)	Peak stage (feet)	Peak storage (ac-ft)	Diversion volume (ac-ft)
C20	49.	12:53	.15			
C30	60.	12:55	.19			
C40	68.	12:48	.20			
C	44.	12:58	.14			
C10	66.	12:57	.21			
C60	37.	12:43	.10			
C70	52.	12:45	.15			
C80	90.	12:46	.25			
C80R	88.	13:03	.25			
J70-80	132.	12:59	.39			
C60R	130.	13:12	.39			
J60C	156.	13:09	.49			
JNC001	427.	12:58	1.37			
C52	31.	12:18	.05			

C51	48.	12:54	.15
CHA001	48.	12:57	.15
C50	61.	12:51	.20

(2-year, 1-day rainfall)

ID	Peak flow (cfs)	Time of peak (hours)	Basin area (sq. mi)	Peak stage (feet)	Peak storage (ac-ft)	Diversion volume (ac-ft)
C20	24.	12:54	.15			
C30	30.	12:56	.19			
C40	33.	12:49	.20			
C	22.	12:59	.14			
C10	33.	12:58	.21			
C60	18.	12:44	.10			
C70	26.	12:46	.15			
C80	45.	12:47	.25			
C80R	44.	13:08	.25			
J70-80	65.	13:04	.39			
C60R	64.	13:20	.39			
J60C	77.	13:17	.49			
JNC001	209.	13:00	1.37			
C52	15.	12:18	.05			
C51	24.	12:55	.15			
CHA001	24.	12:58	.15			
C50	31.	12:56	.20			

Sacramento Hydrologic Calculator Report
May 6, 2011 10:04

Project Title: Elverta
Comments: Elverta - C Corridor - Interim Conditions
Prepared by: KEC
Method: Sacramento County HEC-1 method
Date: 12/9/2010

Watershed Hydrologic Summary Data

			Lag Times		Basin "n"		Loss Rates		Percent Impervious	
Watershed	Area (acres)	Mean Elevation (ft)	Method	Lag Time (min)	Method	Basin "n"	Method	Loss Rate (in/hr)	Method	Impervious Area (%)
C10	24.2	77	Basin "n"	-	Specified	0.04	Computed	-	Specified	50
C25	96.5	67	Basin "n"	-	Specified	0.046	Computed	-	Specified	34.5
C20	94.5	85	Basin "n"	-	Specified	0.05	Computed	-	Specified	25
C10CH	11.4	70.3	Basin "n"	-	Specified	0.12	Computed	-	Specified	1
C40	27.4	73.2	Basin "n"	-	Specified	0.044	Computed	-	Specified	40.9
C110B	60.9	68.5	Basin "n"	-	Specified	0.052	Computed	-	Specified	28.3
C50	4.1	72	Basin "n"	-	Specified	0.031	Computed	-	Specified	59.3
C60CH	4.8	58.8	Basin "n"	-	Specified	0.12	Computed	-	Specified	1
C60A	29.3	70.5	Basin "n"	-	Specified	0.066	Computed	-	Specified	16.8
C70CH	18	59.7	Basin "n"	-	Specified	0.12	Computed	-	Specified	1
C70	11.5	74.5	Basin "n"	-	Specified	0.045	Computed	-	Specified	35.7
C80	112.6	79.5	Basin "n"	-	Specified	0.06	Computed	-	Specified	10
C75	45.2	71.5	Basin "n"	-	Specified	0.075	Computed	-	Specified	1
C90	17.76	64.4	Basin "n"	-	Specified	0.068	Computed	-	Specified	6.7
C100	58.3	63.5	Basin "n"	-	Specified	0.043	Computed	-	Specified	38.3
C100CH	18.4	53	Basin "n"	-	Specified	0.12	Computed	-	Specified	1
C110A	34.7	68	Basin "n"	-	Specified	0.066	Computed	-	Specified	9.6
C120	51	59.6	Basin "n"	-	Specified	0.045	Computed	-	Specified	40.4
C130	56.5	55.9	Basin "n"	-	Specified	0.046	Computed	-	Specified	32.1
C130CH	6.8	50.8	Basin "n"	-	Specified	0.12	Computed	-	Specified	1
C140	28.1	57.3	Basin "n"	-	Specified	0.06	Computed	-	Specified	10
C30	73.6	71.5	Basin "n"	-	Specified	0.075	Computed	-	Specified	1
C60B	37.9	78	Basin "n"	-	Specified	0.041	Computed	-	Specified	48.4
C70A	6.3	68.5	Basin "n"	-	Specified	0.030	Computed	-	Specified	35.7

Basin "n" Method Data for Lag Time Computation

Watershed	Channel Length (ft)	Centroid Length (ft)	Slope (ft/ft)	Channelization	Land Use Impervious Area Percent (% or acres)																	
					95	90	85	80	75	70	60	50	40	30	25	20	15	10	5	2	1	1*
C10	1055	505	.0114	Undeveloped	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				Developed	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
C25	3753	2806	.0037	Undeveloped	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				Developed	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
C20	3515	1545	.0034	Undeveloped	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				Developed	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
C10CH	2003	1262	.0007	Undeveloped	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				Developed	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
C40	2390	1327	0.0032	Undeveloped	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				Developed	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
C110B	3554	2564	.0031	Undeveloped	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				Developed	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
C50	929	680	0.0022	Undeveloped	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				Developed	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
C60CH	1140	492	.0012	Undeveloped	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				Developed	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
C60A	1685	746	0.0053	Undeveloped	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				Developed	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
C70CH	2309	1565	.0036	Undeveloped	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				Developed	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
C70	1097	338	0.0046	Undeveloped	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				Developed	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
C80	4416	1865	0.0029	Undeveloped	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				Developed	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
C75	2686	842	0.0048	Undeveloped	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				Developed	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
C90	1626	422	0.01	Undeveloped	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				Developed	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
C100	2069	917	0.0087	Undeveloped	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				Developed	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
C100CH	2551	1338	.0011	Undeveloped	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				Developed	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
C110A	2334	970	0.0034	Undeveloped	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				Developed	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
C120	2745	1107	0.0058	Undeveloped	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				Developed	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
C130	2447	775	0.0038	Undeveloped	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				Developed	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
C130CH	1909	1164	.0008	Undeveloped	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				Developed	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
C140	874	219	0.013	Undeveloped	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				Developed	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
C30	3145	1373	0.0029	Undeveloped	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				Developed	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
C60B	2001	1259	0.002	Undeveloped	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				Developed	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
C70A	621	163	0.0048	Undeveloped	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				Developed	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Refer to the Drainage manual for Land Use Impervious Area Percent

*Dense Oaks, Shrubs, Vines

Infiltration Loss Rate Data

Watershed	Soil Cover Group	Land Use Impervious Area Percent (% or acres)																	
		95	90	85	80	75	70	60	50	40	30	25	20	15	10	5	2	1	1*
C10	B																		
	C																		
	D																100		
C25	B																		
	C																		
	D																100		
C20	B																		
	C																		
	D																100		
C10CH	B																		
	C																		
	D																100		
C40	B																		
	C																		
	D																100		
C110B	B																		
	C																		
	D																100		
C50	B																		
	C																		
	D																100		
C60CH	B																		
	C																		
	D																100		
C60A	B																		
	C																		
	D																100		
C70CH	B																		
	C																		
	D																100		
C70	B																		
	C																		
	D																100		
C80	B																		
	C																		
	D																100		
C75	B																		
	C																		
	D																	100	
C90	B																		
	C																		
	D																100		
C100	B																		
	C																		
	D																100		
C100CH	B																		
	C																		
	D																	100	
C110A	B																		
	C																		
	D																100		
C120	B																		
	C																		
	D																100		
C130	B																		
	C																		
	D																100		
C130CH	B																		
	C																		
	D																100		
	B																		

C140	C																		
	D															100			
C30	B																		
	C																		
	D																1		
C60B	B																		
	C																		
	D															100			
C70A	B																		
	C																		
	D															100			

Refer to the help file for Land Use Impervious Area Percent

*Dense Oaks, Shrubs, Vines

Hydrograph Routing – Muskingum–Cunge (Standard)

Routing ID	Route From	Route To	Channel Type	Length (ft)	Slope (ft/ft)	Width or Diameter (ft)	Side Slope (H:V)	Mannings "n"
C20R	C20	JNC001	Trapezoidal	1200	0.004	20	3:1	0.05
C75R	C80	JNC002	Trapezoidal	2900	0.0017	20	3:1	0.05
RC60B	C60B	JNC005	Pipe	1689	0.005	4		0.015

Hydrograph Routing – Modified Puls (Storage)

Routing ID	Route From	Route To	No. Steps	Initial Flow (cfs)	Storage-Discharge Relationship											
C1020R	JNC002	-	1	0	Volume (acre-ft)	0	1.12	2.21	3.31	5.08						
					Flow (cfs)	0	63.5	147.9	260	650						

View HEC-1 output

Sacramento method results
(Project: Elverta)
(100-year, 1-day rainfall)

ID	Peak flow (cfs)	Time of peak (hours)	Basin area (sq. mi)	Peak stage (feet)	Peak storage (ac-ft)	Diversion volume (ac-ft)
C10CH	9.5	12:54	.02			
C50	11.	12:06	.01			
C60CH	5.8	12:30	.01			
C90	36.	12:11	.03			
C100	126.	12:10	.09			
C100CH	15.	12:56	.03			
C120	95.	12:14	.08			
C130	109.	12:13	.09			
C130CH	5.9	12:51	.01			
C140	77.	12:05	.04			
C10	69.	12:05	.04			
C20	140.	12:21	.15			
C20R	136.	12:27	.15			
JNC001	157.	12:26	.19			
C70CH	17.	12:46	.03			
C70	30.	12:06	.02			
C75	63.	12:23	.07			
C80	134.	12:31	.18			
C75R	116.	12:51	.18			
JNC002	171.	12:47	.29			
C1020R	165.	12:54	.29	.0	2.4	
C25	133.	12:24	.15			
C40	49.	12:15	.04			
JNC003	172.	12:22	.19			
C30	85.	12:31	.12			
C70A	22.	12:02	.01			
C110B	79.	12:27	.10			
C110A	51.	12:21	.05			
JNC004	127.	12:24	.15			
C60A	51.	12:16	.05			
C60B	70.	12:14	.06			
RC60B	70.	12:17	.06			
JNC005	121.	12:16	.11			

(10-year, 1-day rainfall)

ID	Peak flow (cfs)	Time of peak (hours)	Basin area (sq. mi)	Peak stage (feet)	Peak storage (ac-ft)	Diversion volume (ac-ft)
C10CH	5.7	12:55	.02			
C50	6.6	12:06	.01			
C60CH	3.5	12:30	.01			
C90	21.	12:11	.03			
C100	74.	12:10	.09			
C100CH	8.9	12:56	.03			
C120	57.	12:14	.08			
C130	65.	12:13	.09			
C130CH	3.6	12:51	.01			
C140	45.	12:05	.04			
C10	40.	12:05	.04			
C20	84.	12:21	.15			
C20R	82.	12:28	.15			
JNC001	94.	12:27	.19			
C70CH	10.0	12:47	.03			
C70	18.	12:06	.02			
C75	37.	12:23	.07			
C80	80.	12:31	.18			
C75R	70.	12:55	.18			
JNC002	102.	12:51	.29			
C1020R	98.	12:59	.29	.0	1.6	
C25	80.	12:24	.15			
C40	29.	12:15	.04			
JNC003	104.	12:22	.19			
C30	51.	12:32	.12			
C70A	13.	12:02	.01			
C110B	47.	12:27	.10			
C110A	31.	12:21	.05			
JNC004	76.	12:24	.15			
C60A	30.	12:16	.05			
C60B	42.	12:14	.06			
RC60B	42.	12:17	.06			
JNC005	72.	12:17	.11			

(2-year, 1-day rainfall)

ID	Peak flow (cfs)	Time of peak (hours)	Basin area (sq. mi)	Peak stage (feet)	Peak storage (ac-ft)	Diversion volume (ac-ft)
C10CH	2.8	12:56	.02			

C50	3.1	12:06	.01		
C60CH	1.7	12:30	.01		
C90	9.9	12:11	.03		
C100	35.	12:10	.09		
C100CH	4.4	12:57	.03		
C120	27.	12:14	.08		
C130	31.	12:13	.09		
C130CH	1.8	12:52	.01		
C140	20.	12:05	.04		
C10	19.	12:05	.04		
C20	40.	12:21	.15		
C20R	39.	12:30	.15		
JNC001	46.	12:29	.19		
C70CH	4.9	12:47	.03		
C70	8.2	12:06	.02		
C75	18.	12:23	.07		
C80	39.	12:31	.18		
C75R	34.	13:01	.18		
JNC002	50.	12:58	.29		
C1020R	48.	13:08	.29	.0	.8
C25	39.	12:24	.15		
C40	14.	12:15	.04		
JNC003	51.	12:22	.19		
C30	24.	12:31	.12		
C70A	5.8	12:02	.01		
C110B	23.	12:27	.10		
C110A	15.	12:21	.05		
JNC004	37.	12:24	.15		
C60A	14.	12:16	.05		
C60B	20.	12:14	.06		
RC60B	20.	12:18	.06		
JNC005	34.	12:17	.11		

Sacramento Hydrologic Calculator Report

May 6, 2011 10:08

Project Title: Elverta C Shed
Comments: Elverta - C Corridor Developed
Prepared by: KEC-BTH

Method: Sacramento County HEC-1 method
Date: 3/22/2011

Watershed Hydrologic Summary Data

			Lag Times		Basin "n"		Loss Rates		Percent Impervious	
Watershed	Area (acres)	Mean Elevation (ft)	Method	Lag Time (min)	Method	Basin "n"	Method	Loss Rate (in/hr)	Method	Impervious Area (%)
C10	32.8	77.5	Basin "n"	-	Specified	0.06	Computed	-	Specified	10
C30	111.5	76.15	Basin "n"	-	Specified	0.0455	Computed	-	Specified	37.3
C20	107.67	85.5	Basin "n"	-	Specified	0.0505	Computed	-	Specified	24.5
C10CH	11.4	70.3	Basin "n"	-	Specified	0.12	Computed	-	Specified	1
C40	41.9	74.9	Basin "n"	-	Specified	0.0408	Computed	-	Specified	49.2
C30CH	17.9	62.2	Basin "n"	-	Specified	0.12	Computed	-	Specified	1
C50	21.5	70	Basin "n"	-	Specified	0.037	Computed	-	Specified	63.3
C60CH	4.8	58.8	Basin "n"	-	Specified	0.12	Computed	-	Specified	1
C60	89.3	69.8	Basin "n"	-	Specified	0.03651	Computed	-	Specified	57.5
C70CH	18	59.7	Basin "n"	-	Specified	0.12	Computed	-	Specified	1
C70	42.48	71.1	Basin "n"	-	Specified	0.0043	Computed	-	Specified	65.6
C75	111	75.2	Basin "n"	-	Specified	0.06	Computed	-	Specified	10
C80	22.7	69.5	Basin "n"	-	Specified	0.037	Computed	-	Specified	63
C90	17.3	64.4	Basin "n"	-	Specified	0.0511	Computed	-	Specified	33
C100	58.297	62.35	Basin "n"	-	Specified	0.039	Computed	-	Specified	55.3
C100CH	18.4	53	Basin "n"	-	Specified	0.12	Computed	-	Specified	1
C110	104.4	62.4	Basin "n"	-	Specified	0.037	Computed	-	Specified	64.1
C120	51.09	59.6	Basin "n"	-	Specified	0.045	Computed	-	Specified	40.4
C130	52	55.9	Basin "n"	-	Specified	0.0425	Computed	-	Specified	47.6
C130CH	6.8	50.8	Basin "n"	-	Specified	0.12	Computed	-	Specified	1
C140	28.1	57.31	Basin "n"	-	Specified	0.06	Computed	-	Specified	10

Basin “n” Method Data for Lag Time Computation

Watershed	Channel Length (ft)	Centroid Length (ft)	Slope (ft/ft)	Channelization	Land Use Impervious Area Percent (% or acres)																	
					95	90	85	80	75	70	60	50	40	30	25	20	15	10	5	2	1	1*
C10	2601	926	0.005	Undeveloped	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				Developed	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
C30	3880	2800	0.0035	Undeveloped	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				Developed	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
C20	3540	2530	0.0031	Undeveloped	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				Developed	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
C10CH	2003	1262	.0007	Undeveloped	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				Developed	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
C40	2087	930	0.0054	Undeveloped	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				Developed	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
C30CH	3520	1056	.0008	Undeveloped	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				Developed	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
C50	824	462	0.0121	Undeveloped	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				Developed	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
C60CH	1140	492	.0012	Undeveloped	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				Developed	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
C60	3844	1408	0.0053	Undeveloped	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				Developed	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
C70CH	2309	1565	.0036	Undeveloped	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				Developed	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
C70	3437	1393	0.003651	Undeveloped	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				Developed	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
C75	3160	1700	0.0064	Undeveloped	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				Developed	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
C80	1269	1016	0.0087	Undeveloped	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				Developed	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
C90	1626	422	0.0087	Undeveloped	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				Developed	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
C100	2069	917	0.0087	Undeveloped	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				Developed	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
C100CH	2551	1338	.0011	Undeveloped	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				Developed	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
C110	3090	1164	0.0055	Undeveloped	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				Developed	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
C120	2745	1107	0.0058	Undeveloped	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				Developed	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
C130	2447	911	0.0038	Undeveloped	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				Developed	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
C130CH	1909	1164	.0008	Undeveloped	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				Developed	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
C140	874	219	0.013	Undeveloped	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				Developed	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Refer to the Drainage manual for Land Use Impervious Area Percent

*Dense Oaks, Shrubs, Vines

Infiltration Loss Rate Data

Watershed	Soil Cover Group	Land Use Impervious Area Percent (% or acres)																	
		95	90	85	80	75	70	60	50	40	30	25	20	15	10	5	2	1	1*
C10	B																		
	C																		
	D																100		
C30	B																		
	C																		
	D																100		
C20	B																		
	C																		
	D																100		
C10CH	B																		
	C																		
	D																100		
C40	B																		
	C																		
	D																100		
C30CH	B																		
	C																		
	D																100		
C50	B																		
	C																		
	D																100		
C60CH	B																		
	C																		
	D																100		
C60	B																		
	C																		
	D																100		
C70CH	B																		
	C																		
	D																100		
C70	B																		
	C																		
	D																100		
C75	B																		
	C																		
	D																100		
C80	B																		
	C																		
	D																100		
C90	B																		
	C																		
	D																100		
C100	B																		
	C																		
	D																100		
C100CH	B																		
	C																		
	D																100		
C110	B																		
	C																		
	D																100		
C120	B																		
	C																		
	D																100		
C130	B																		
	C																		
	D																100		
C130CH	B																		
	C																		
	D																100		
	B																		

C140	C																		
	D																100		

Refer to the help file for Land Use Impervious Area Percent

*Dense Oaks, Shrubs, Vines

Hydrograph Routing – Muskingum–Cunge (Standard)

Routing ID	Route From	Route To	Channel Type	Length (ft)	Slope (ft/ft)	Width or Diameter (ft)	Side Slope (H:V)	Mannings "n"
C20R	C20	JNC001	Trapezoidal	1200	0.004	20	3:1	0.05
C75R	C75	JNC002	Trapezoidal	2900	0.0017	20	3:1	0.05

Hydrograph Routing – Modified Puls (Storage)

Routing ID	Route From	Route To	No. Steps	Initial Flow (cfs)	Storage-Discharge Relationship											
C1020R	JNC002	-	1	0	Volume (acre-ft)	0	1.12	2.21	3.31	5.08						
					Flow (cfs)	0	63.5	147.9	260	650						

View HEC-1 output

Sacramento method results
(Project: Elverta C Shed)
(100-year, 1-day rainfall)

ID	Peak flow (cfs)	Time of peak (hours)	Basin area (sq. mi)	Peak stage (feet)	Peak storage (ac-ft)	Diversion volume (ac-ft)
C10CH	9.5	12:54	.02			
C30CH	14.	13:01	.03			
C50	67.	12:04	.03			
C60CH	5.8	12:30	.01			
C60	168.	12:14	.14			
C90	41.	12:08	.03			
C100	134.	12:09	.09			
C100CH	15.	12:56	.03			
C110	212.	12:12	.16			
C120	95.	12:14	.08			
C130	102.	12:12	.08			
C130CH	5.9	12:51	.01			
C140	77.	12:05	.04			
C10	53.	12:18	.05			
C20	142.	12:26	.17			
C20R	139.	12:32	.17			
JNC001	176.	12:30	.22			
C70CH	17.	12:46	.03			
C70	150.	12:02	.07			
C80	57.	12:07	.04			
C75	156.	12:23	.17			
C75R	129.	12:43	.17			
JNC002	224.	12:03	.30			
C1020R	169.	12:48	.30	.0	2.4	
C30	153.	12:25	.17			
C40	90.	12:10	.07			
JNC003	206.	12:22	.24			

(10-year, 1-day rainfall)

ID	Peak flow (cfs)	Time of peak (hours)	Basin area (sq. mi)	Peak stage (feet)	Peak storage (ac-ft)	Diversion volume (ac-ft)
C10CH	5.7	12:55	.02			
C30CH	8.4	13:01	.03			
C50	39.	12:04	.03			
C60CH	3.5	12:30	.01			

C60	100.	12:14	.14			
C90	24.	12:08	.03			
C100	79.	12:09	.09			
C100CH	9.1	12:56	.03			
C110	126.	12:12	.16			
C120	57.	12:14	.08			
C130	61.	12:12	.08			
C130CH	3.6	12:51	.01			
C140	45.	12:05	.04			
C10	31.	12:18	.05			
C20	85.	12:26	.17			
C20R	84.	12:33	.17			
JNC001	105.	12:31	.22			
C70CH	10.0	12:47	.03			
C70	87.	12:02	.07			
C80	34.	12:07	.04			
C75	93.	12:23	.17			
C75R	77.	12:47	.17			
JNC002	131.	12:03	.30			
C1020R	101.	12:53	.30	.0	1.6	
C30	92.	12:25	.17			
C40	53.	12:10	.07			
JNC003	125.	12:22	.24			

(2-year, 1-day rainfall)

ID	Peak flow (cfs)	Time of peak (hours)	Basin area (sq. mi)	Peak stage (feet)	Peak storage (ac-ft)	Diversion volume (ac-ft)
C10CH	2.8	12:56	.02			
C30CH	4.2	13:02	.03			
C50	18.	12:04	.03			
C60CH	1.7	12:30	.01			
C60	49.	12:14	.14			
C90	11.	12:08	.03			
C100	37.	12:09	.09			
C100CH	4.5	12:57	.03			
C110	61.	12:12	.16			
C120	27.	12:14	.08			
C130	29.	12:12	.08			
C130CH	1.8	12:52	.01			
C140	20.	12:05	.04			
C10	15.	12:18	.05			

C20	41.	12:26	.17			
C20R	41.	12:34	.17			
JNC001	51.	12:33	.22			
C70CH	4.9	12:47	.03			
C70	40.	12:02	.07			
C80	16.	12:07	.04			
C75	44.	12:23	.17			
C75R	37.	12:52	.17			
JNC002	63.	12:03	.30			
C1020R	53.	13:02	.30	.0	.9	
C30	45.	12:25	.17			
C40	25.	12:10	.07			
JNC003	62.	12:22	.24			

View HEC-1 output

Sacramento method results
(Project: Elverta)
(100-year, 1-day rainfall)

ID	Peak flow (cfs)	Time of peak (hours)	Basin area (sq. mi)	Peak stage (feet)	Peak storage (ac-ft)	Diversion volume (ac-ft)
D	112.	12:52	.20			
D10	101.	12:50	.18			
D15	11.	12:06	.01			
RD1	7.3	12:49	.01			
JD10	108.	12:50	.19			
RD2	104.	13:11	.19			
JD	201.	13:03	.39			

(10-year, 1-day rainfall)

ID	Peak flow (cfs)	Time of peak (hours)	Basin area (sq. mi)	Peak stage (feet)	Peak storage (ac-ft)	Diversion volume (ac-ft)
D	68.	12:52	.20			
D10	61.	12:50	.18			
D15	6.5	12:06	.01			
RD1	4.3	12:55	.01			
JD10	65.	12:52	.19			
RD2	62.	13:15	.19			
JD	118.	13:07	.39			

(2-year, 1-day rainfall)

ID	Peak flow (cfs)	Time of peak (hours)	Basin area (sq. mi)	Peak stage (feet)	Peak storage (ac-ft)	Diversion volume (ac-ft)
D	36.	12:53	.20			
D10	33.	12:51	.18			
D15	3.4	12:06	.01			
RD1	2.3	13:04	.01			
JD10	34.	12:56	.19			
RD2	33.	13:21	.19			
JD	62.	13:12	.39			

Sacramento Hydrologic Calculator Report

June 9, 2011 11:20

Project Title: Elverta
Comments: Elverta - D Corridor Existing Conditions
Prepared by: KEC

Method: Sacramento County HEC-1 method
Date: 10/25/2010

Watershed Hydrologic Summary Data

Watershed	Area (acres)	Mean Elevation (ft)	Lag Times		Basin "n"		Loss Rates		Percent Impervious	
			Method	Lag Time (min)	Method	Basin "n"	Method	Loss Rate (in/hr)	Method	Impervious Area (%)
D15	4.2	75.15	Basin "n"	-	Specified	0.06	Computed	-	Specified	10
D	130	65	Basin "n"	-	Specified	0.115	Computed	-	Specified	2
D10	115	72	Basin "n"	-	Specified	0.115	Computed	-	Specified	2

Basin "n" Method Data for Lag Time Computation

Watershed	Channel Length (ft)	Centroid Length (ft)	Slope (ft/ft)	Channelization	Land Use Impervious Area Percent (% or acres)																	
					95	90	85	80	75	70	60	50	40	30	25	20	15	10	5	2	1	1*
D15	873	183	.0063	Undeveloped	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				Developed	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
D	3092	1650	.0029	Undeveloped	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				Developed	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
D10	2901	1600	.0029	Undeveloped	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				Developed	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Refer to the Drainage manual for Land Use Impervious Area Percent

*Dense Oaks, Shrubs, Vines

Infiltration Loss Rate Data

Watershed	Soil Cover Group	Land Use Impervious Area Percent (% or acres)																	
		95	90	85	80	75	70	60	50	40	30	25	20	15	10	5	2	1	1*
D15	B																		
	C																		
	D																100		
D	B																		
	C																		
	D																100		
D10	B																		
	C																		
	D																100		

Refer to the help file for Land Use Impervious Area Percent

*Dense Oaks, Shrubs, Vines

Hydrograph Routing – Muskingum–Cunge (Standard)

Routing ID	Route From	Route To	Channel Type	Length (ft)	Slope (ft/ft)	Width or Diameter (ft)	Side Slope (H:V)	Mannings "n"
RD1	D15	JD10	Trapezoidal	3223.	0.0029	10	5:1	0.048
RD2	JD10	JD	Trapezoidal	3435.	0.0029	10	5:1	0.048

Infiltration Loss Rate Data

Watershed	Soil Cover Group	Land Use Impervious Area Percent (% or acres)																	
		95	90	85	80	75	70	60	50	40	30	25	20	15	10	5	2	1	1*
D15	B																		
	C																		
	D																100		
D	B																		
	C																		
	D																100		
D10	B																		
	C																		
	D																100		

Refer to the help file for Land Use Impervious Area Percent

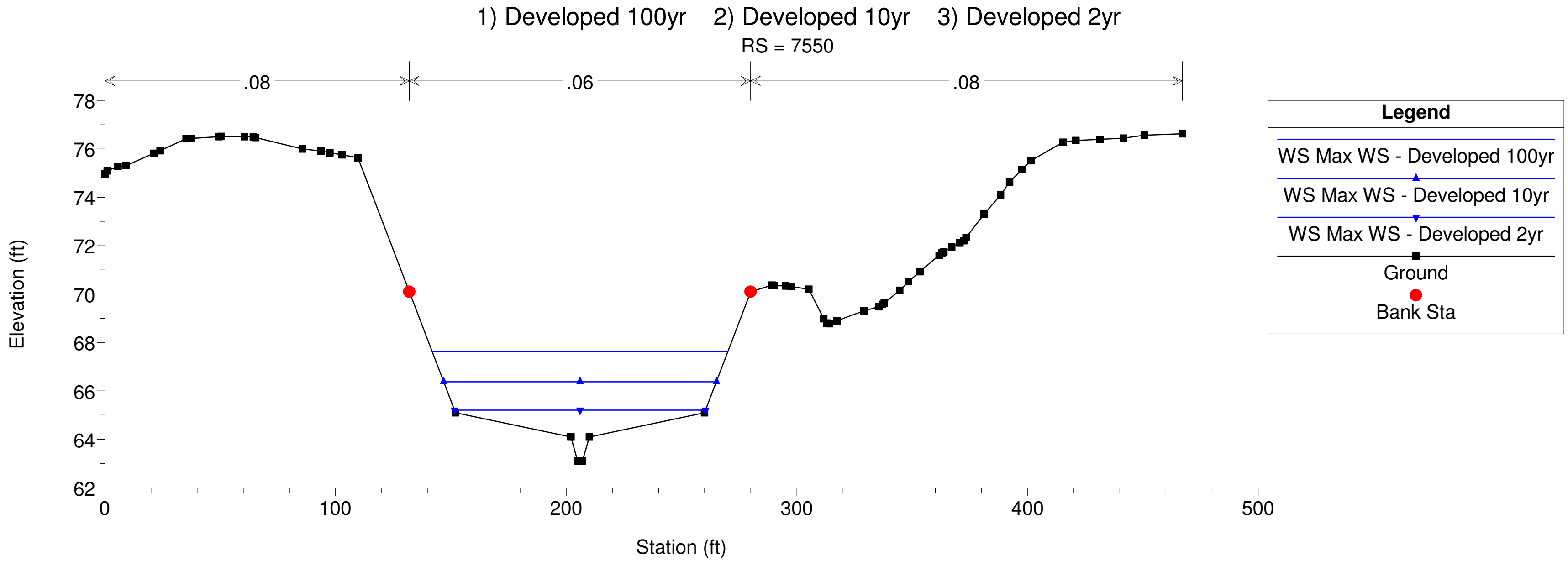
*Dense Oaks, Shrubs, Vines

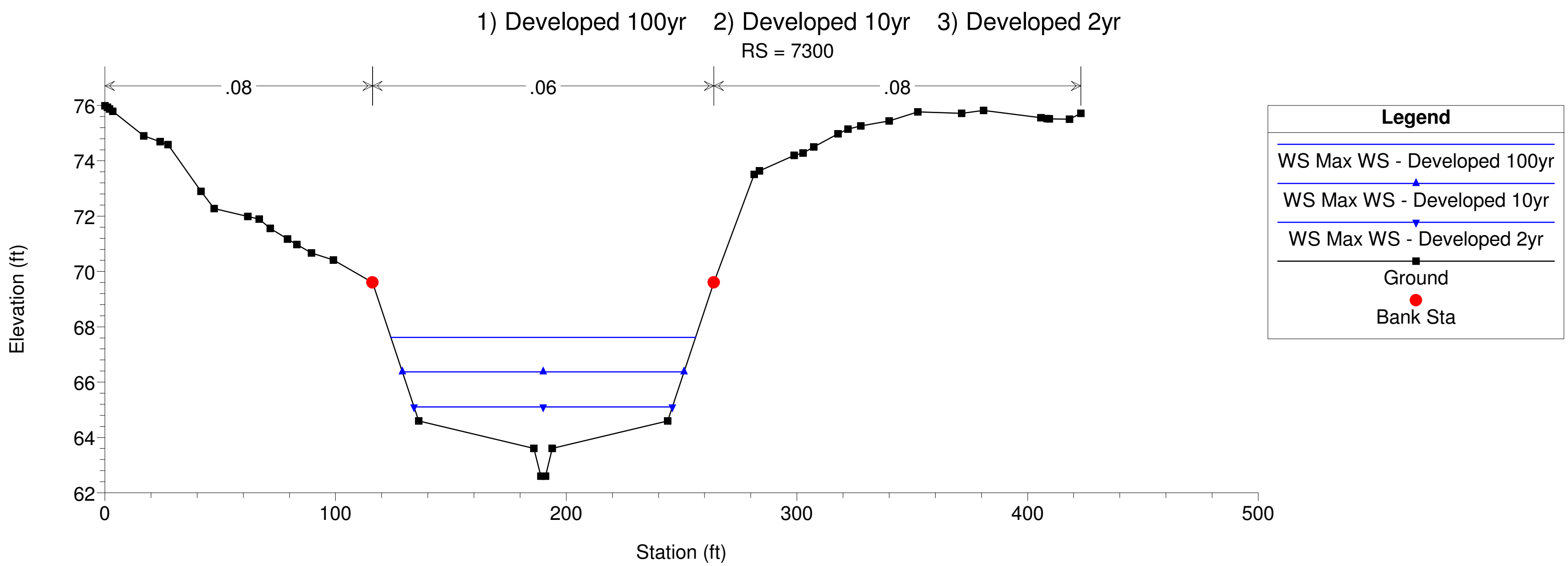
Hydrograph Routing – Muskingum–Cunge (Standard)

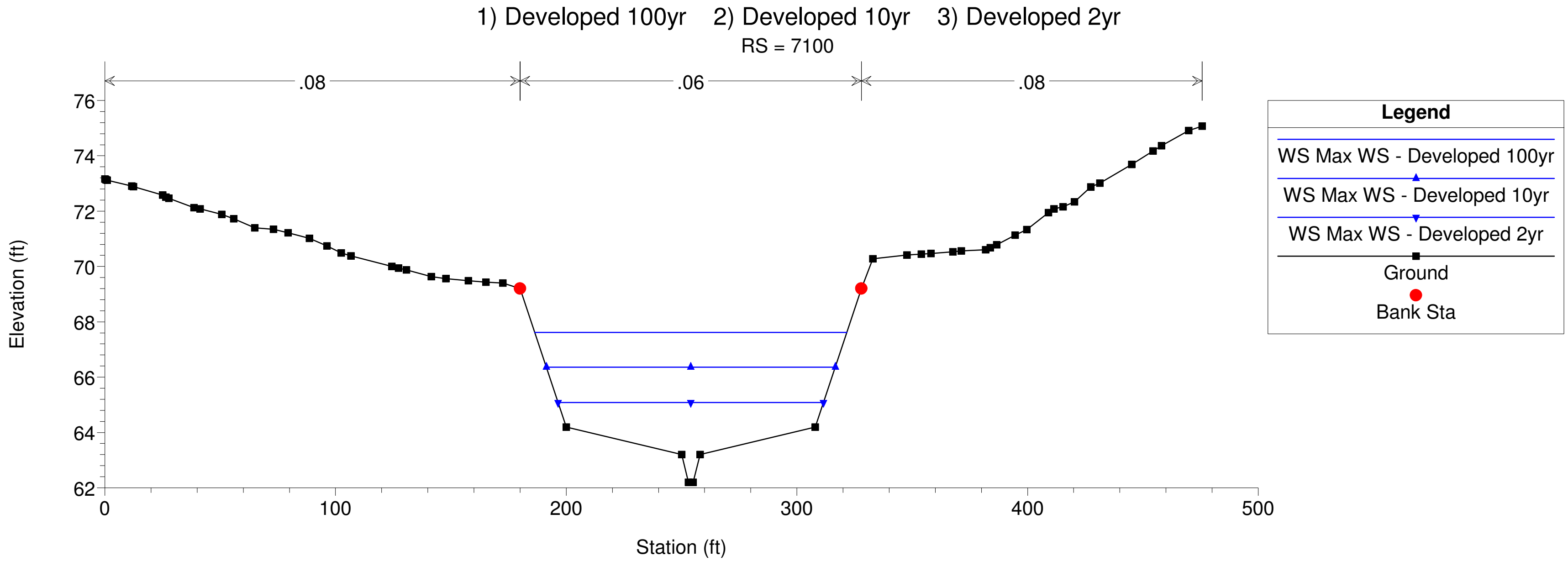
Routing ID	Route From	Route To	Channel Type	Length (ft)	Slope (ft/ft)	Width or Diameter (ft)	Side Slope (H:V)	Mannings "n"
RD1	D15	JD10	Trapezoidal	3223.	0.0029	10	5:1	0.048
RD2	JD10	JD	Trapezoidal	3435.	0.0029	10	5:1	0.048

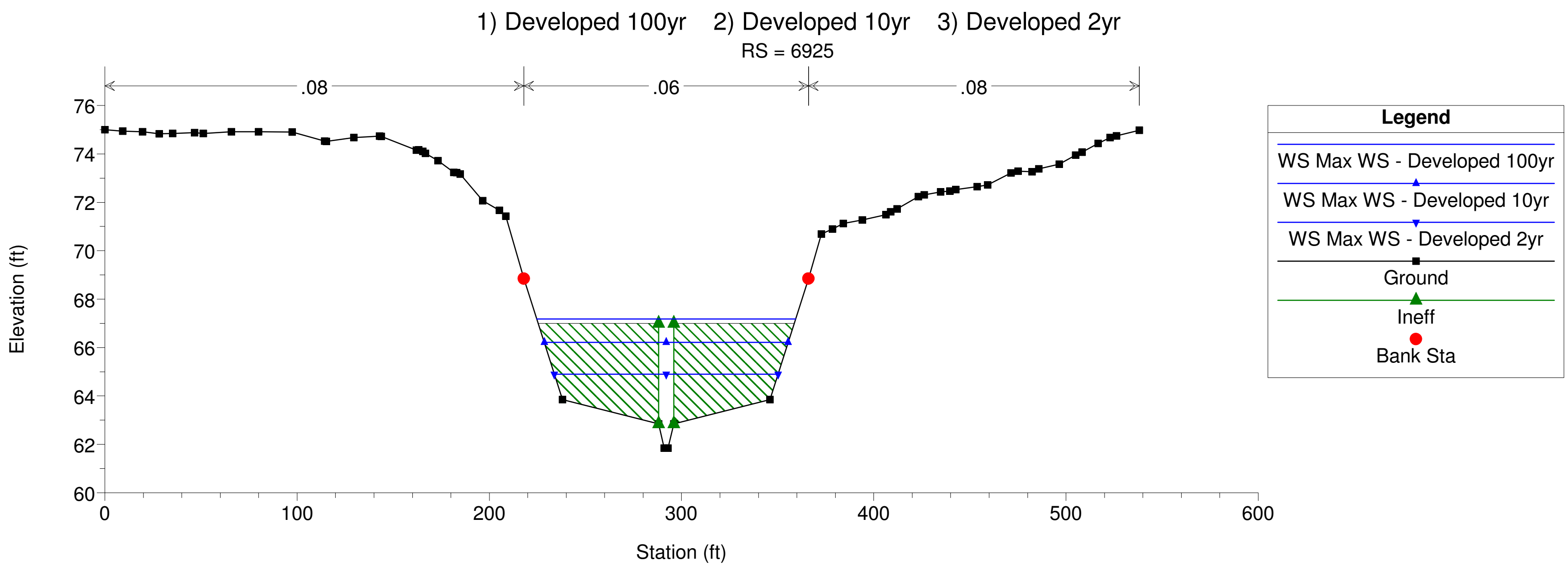
Appendix 9.1.2 HEC-RAS 4.0 Hydraulic Model Data Files:

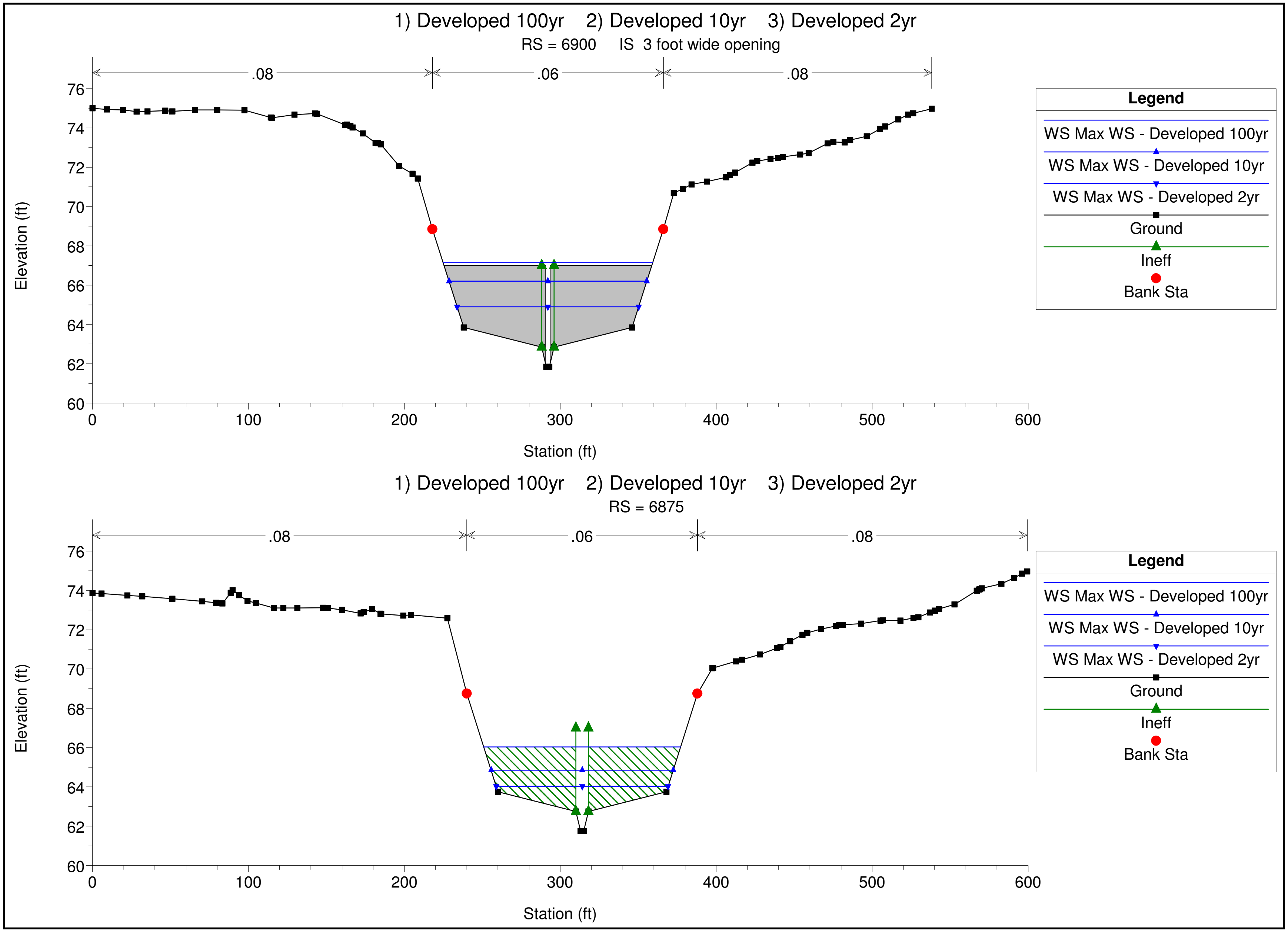
B Corridor	Hydraulic Analysis of Drainage Channel B – Developed Conditions (2, 10 & 100 Yr-24 Hr)
B Corridor	Hydraulic Analysis of Drainage Channel B – Phase 1 Interim Conditions (2, 10 & 100 Yr-24 Hr)
B Corridor	Hydraulic Analysis of Drainage Channel B – Existing Conditions (2, 10 & 100 Yr-24 Hr)
C Corridor	Hydraulic Analysis of Drainage Channel C – Developed Conditions (2, 10 & 100 Yr-24 Hr)
C Corridor	Hydraulic Analysis of Drainage Channel C – Phase 1 Interim Conditions (2, 10 & 100 Yr-24 Hr)
C Corridor	Hydraulic Analysis of Drainage Channel C – Existing Conditions (2, 10 & 100 Yr-24 Hr)
D Corridor	Hydraulic Analysis of Drainage Channel D – Developed Conditions (2, 10 & 100 Yr-24 Hr)
D Corridor	Hydraulic Analysis of Drainage Channel D – Existing Conditions (2, 10 & 100 Yr-24 Hr)


1) Developed 100yr 2) Developed 10yr 3) Developed 2yr
RS = 7550
.08
.06
.08
Elevation (ft)
Station (ft)
Legend
WS Max WS - Developed 100yr
WS Max WS - Developed 10yr
WS Max WS - Developed 2yr
Ground
Bank Sta

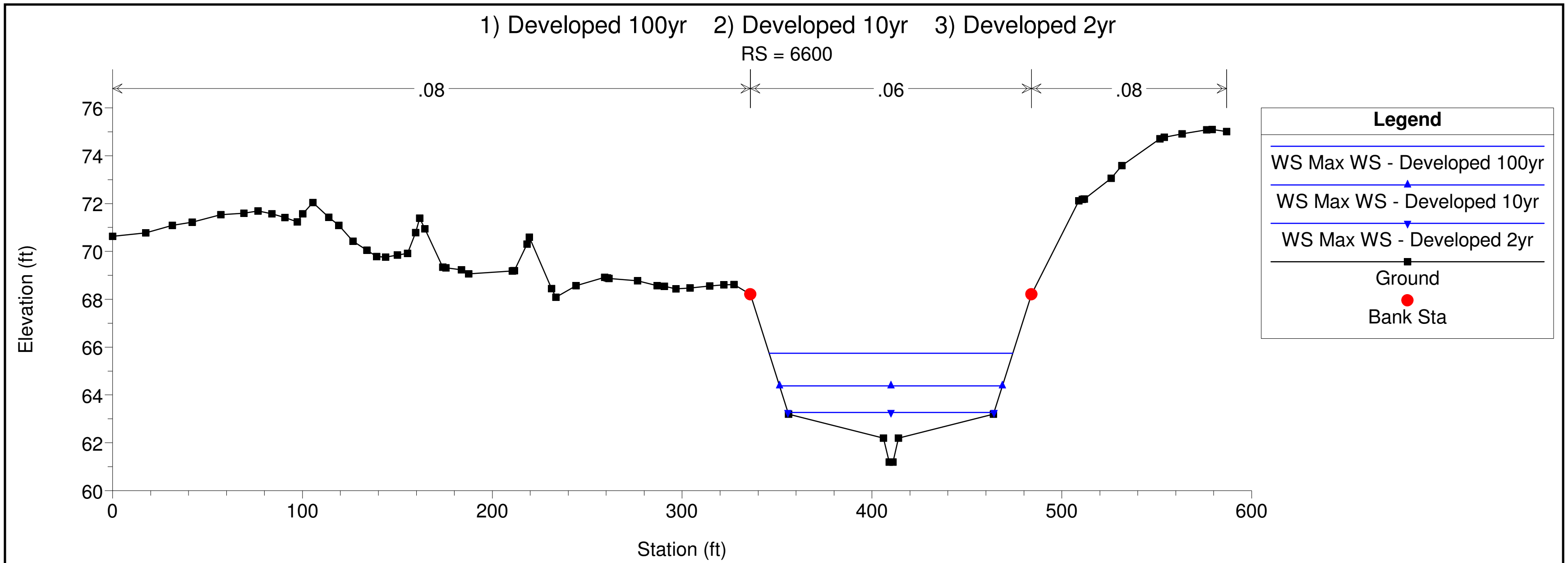

1) Developed 100yr 2) Developed 10yr 3) Developed 2yr
RS = 7300
.08
.06
.08
Elevation (ft)
Station (ft)
Legend
WS Max WS - Developed 100yr
WS Max WS - Developed 10yr
WS Max WS - Developed 2yr
Ground
Bank Sta


1) Developed 100yr 2) Developed 10yr 3) Developed 2yr
RS = 7100
.08
.06
.08
Legend
WS Max WS - Developed 100yr
WS Max WS - Developed 10yr
WS Max WS - Developed 2yr
Ground
Bank Sta
Elevation (ft)
Station (ft)

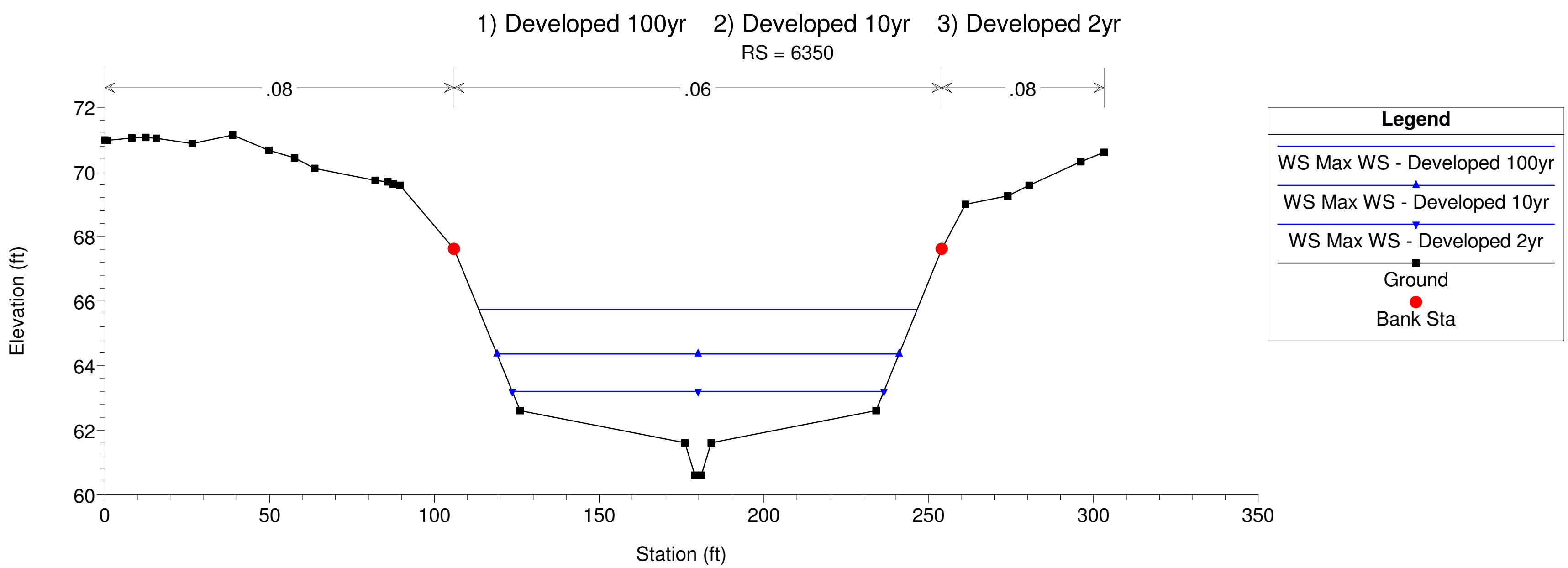

1) Developed 100yr 2) Developed 10yr 3) Developed 2yr
RS = 6925
.08
.06
.08
Legend
WS Max WS - Developed 100yr
WS Max WS - Developed 10yr
WS Max WS - Developed 2yr
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)



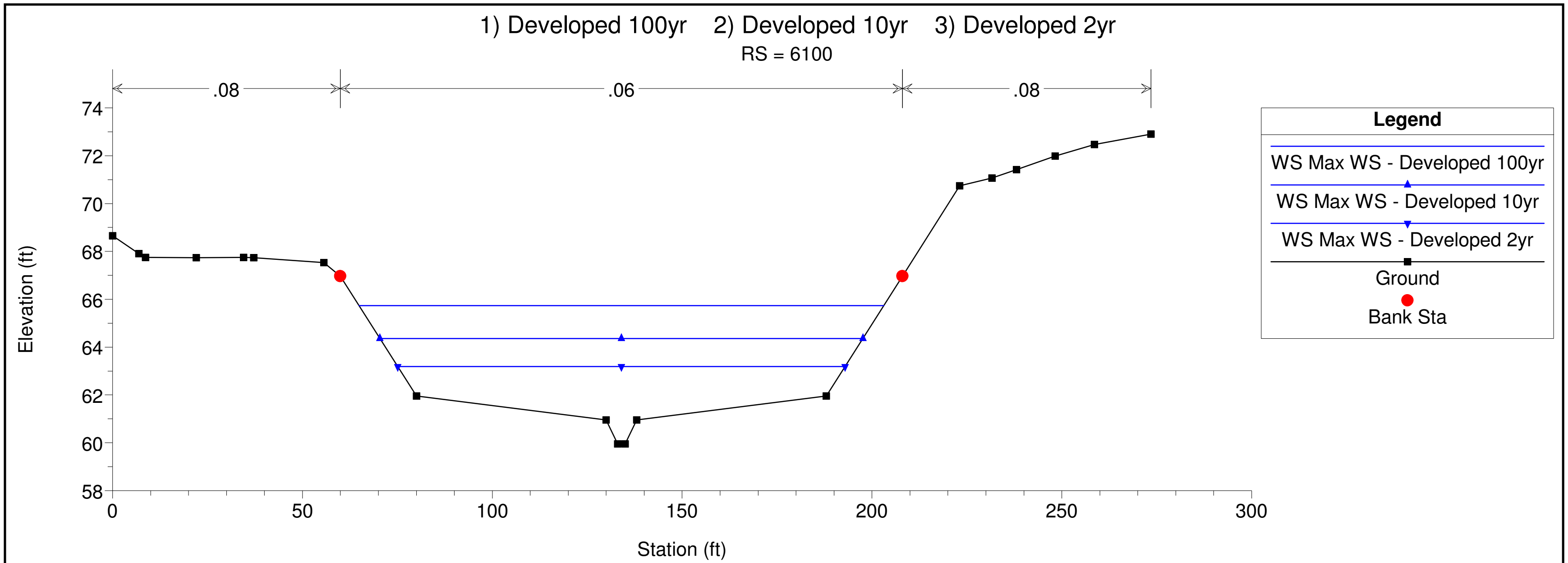
1) Developed 100yr 2) Developed 10yr 3) Developed 2yr
RS = 6900 IS 3 foot wide opening
.08
.06
.08
Elevation (ft)
Station (ft)
Legend
WS Max WS - Developed 100yr
WS Max WS - Developed 10yr
WS Max WS - Developed 2yr
Ground
Ineff
Bank Sta
1) Developed 100yr 2) Developed 10yr 3) Developed 2yr
RS = 6875
.08
.06
.08
Elevation (ft)
Station (ft)
Legend
WS Max WS - Developed 100yr
WS Max WS - Developed 10yr
WS Max WS - Developed 2yr
Ground
Ineff
Bank Sta

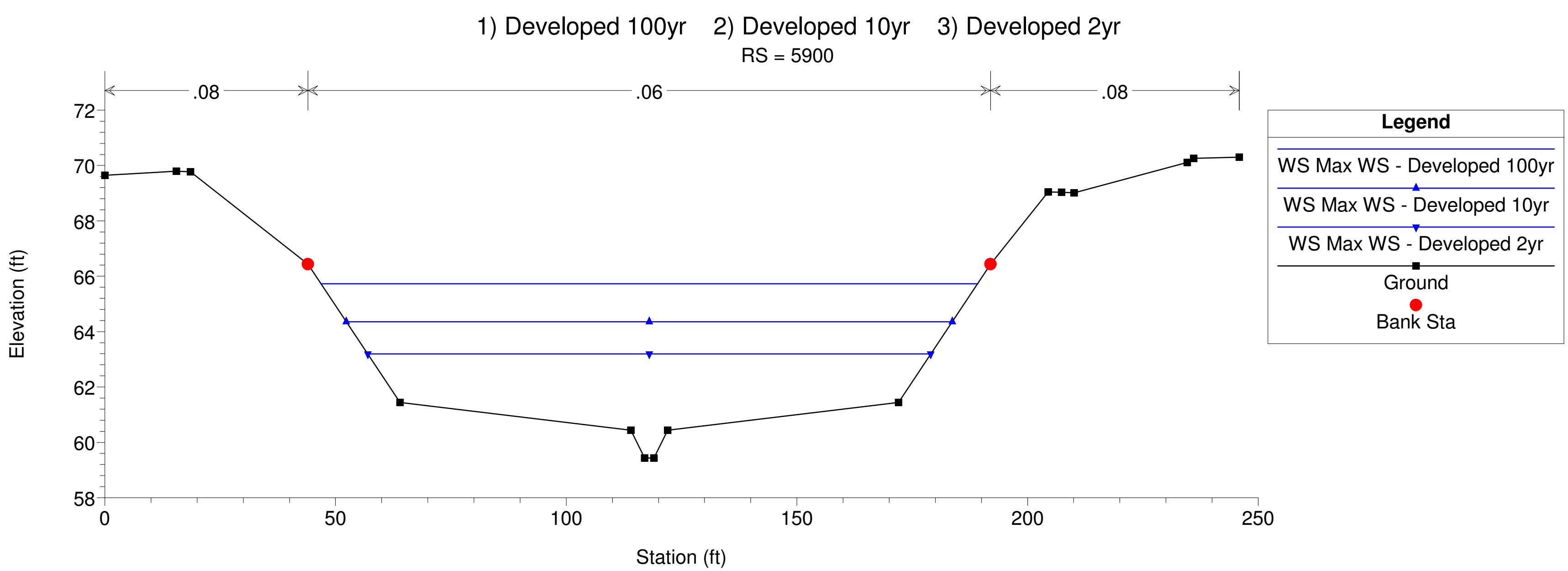


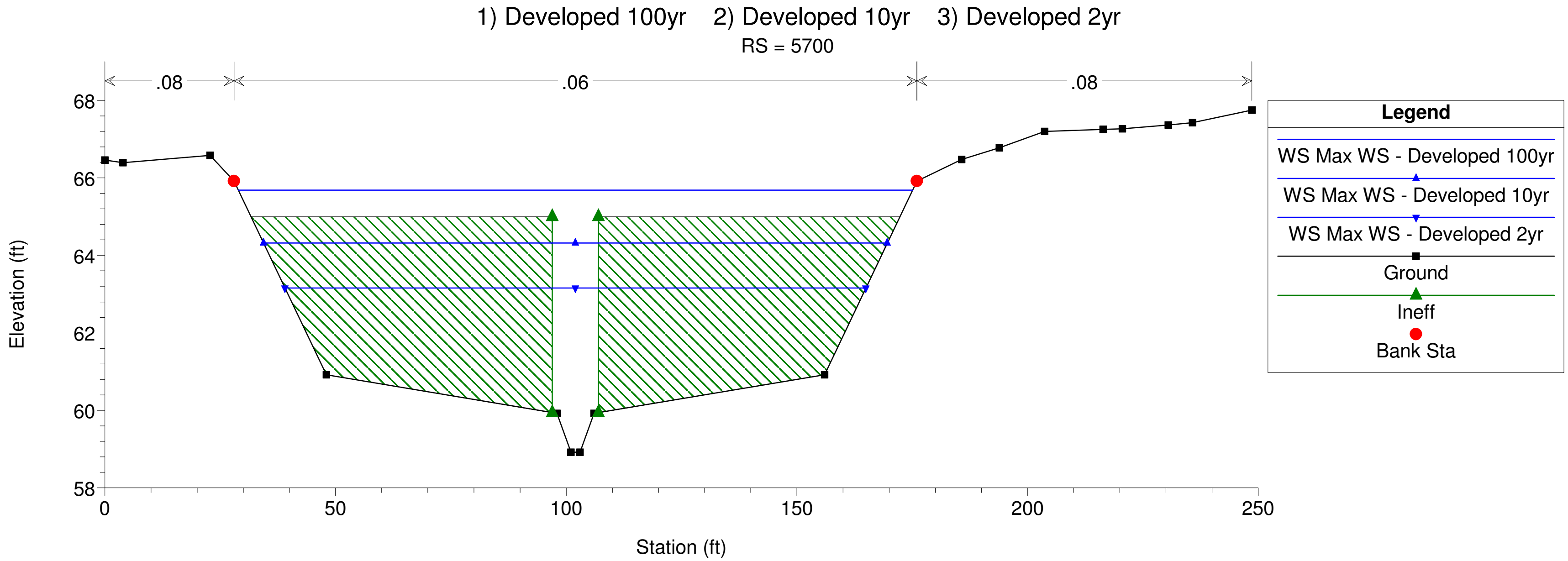
1) Developed 100yr 2) Developed 10yr 3) Developed 2yr
RS = 6600
.08
.06
.08
Elevation (ft)
Station (ft)
Legend
WS Max WS - Developed 100yr
WS Max WS - Developed 10yr
WS Max WS - Developed 2yr
Ground
Bank Sta

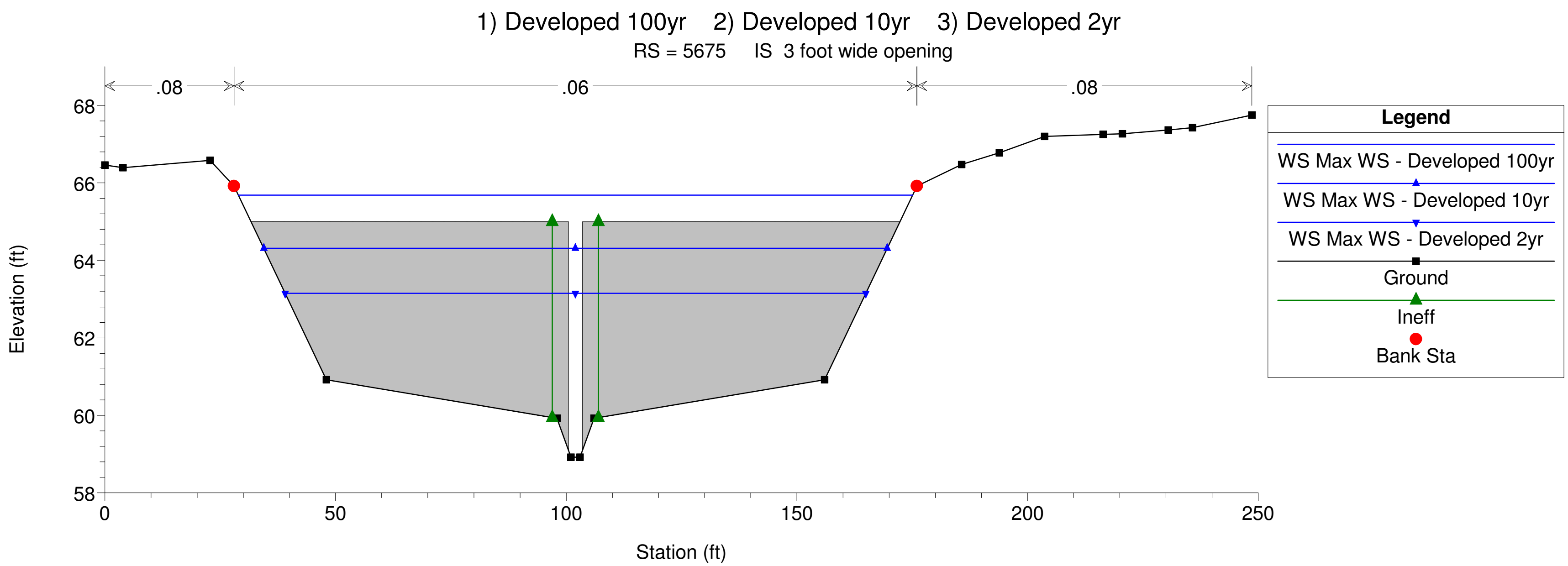


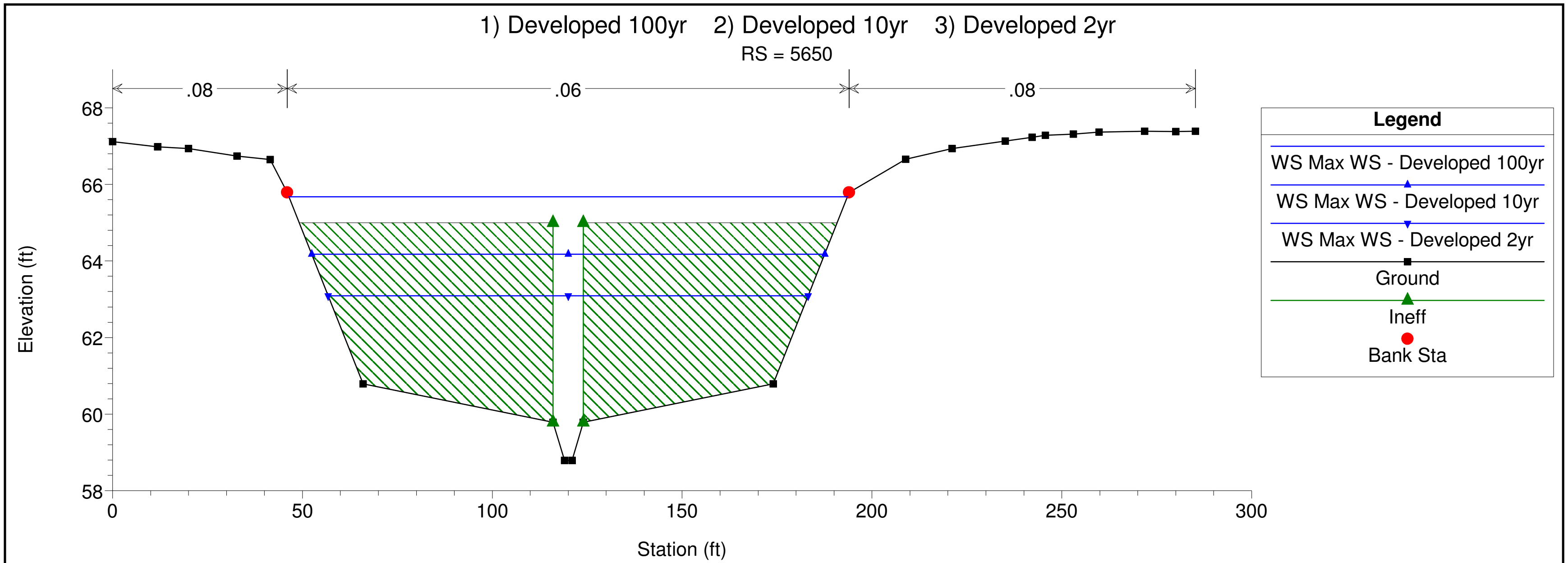
1) Developed 100yr 2) Developed 10yr 3) Developed 2yr
RS = 6350
.08
.06
.08
Elevation (ft)
Station (ft)
Legend
WS Max WS - Developed 100yr
WS Max WS - Developed 10yr
WS Max WS - Developed 2yr
Ground
Bank Sta

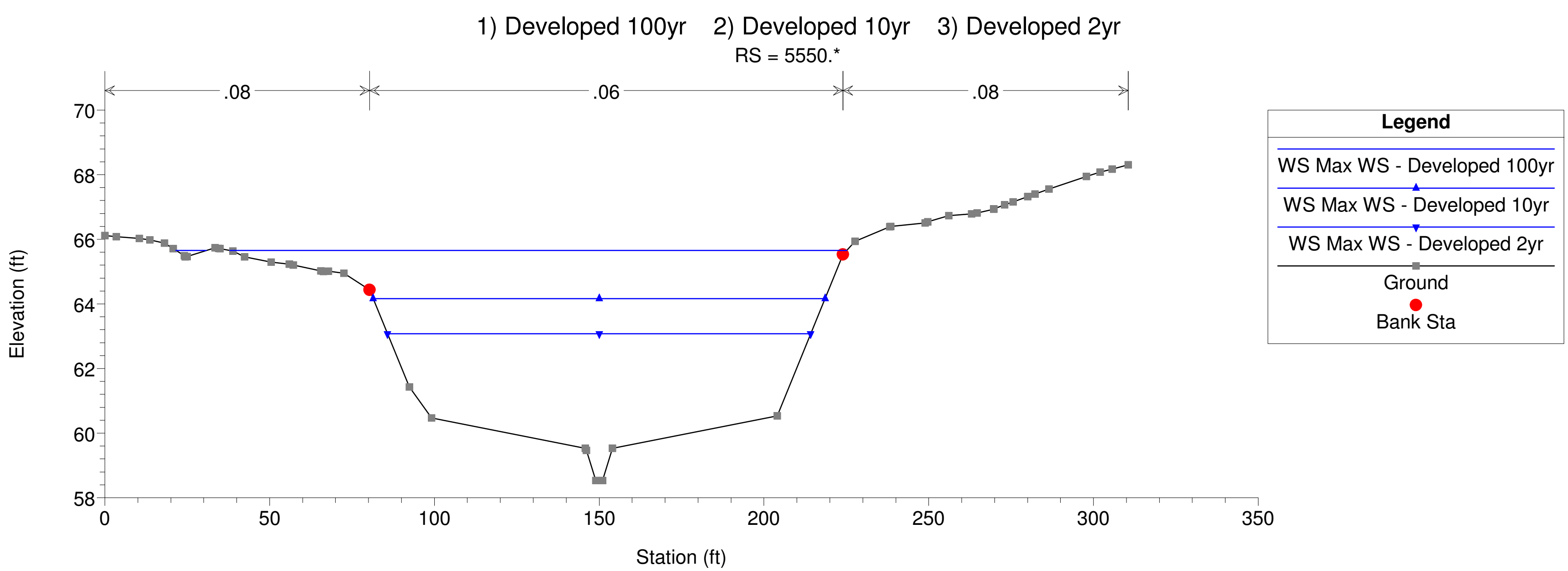

1) Developed 100yr 2) Developed 10yr 3) Developed 2yr
RS = 6100
.08
.06
.08
Elevation (ft)
Station (ft)
Legend
WS Max WS - Developed 100yr
WS Max WS - Developed 10yr
WS Max WS - Developed 2yr
Ground
Bank Sta

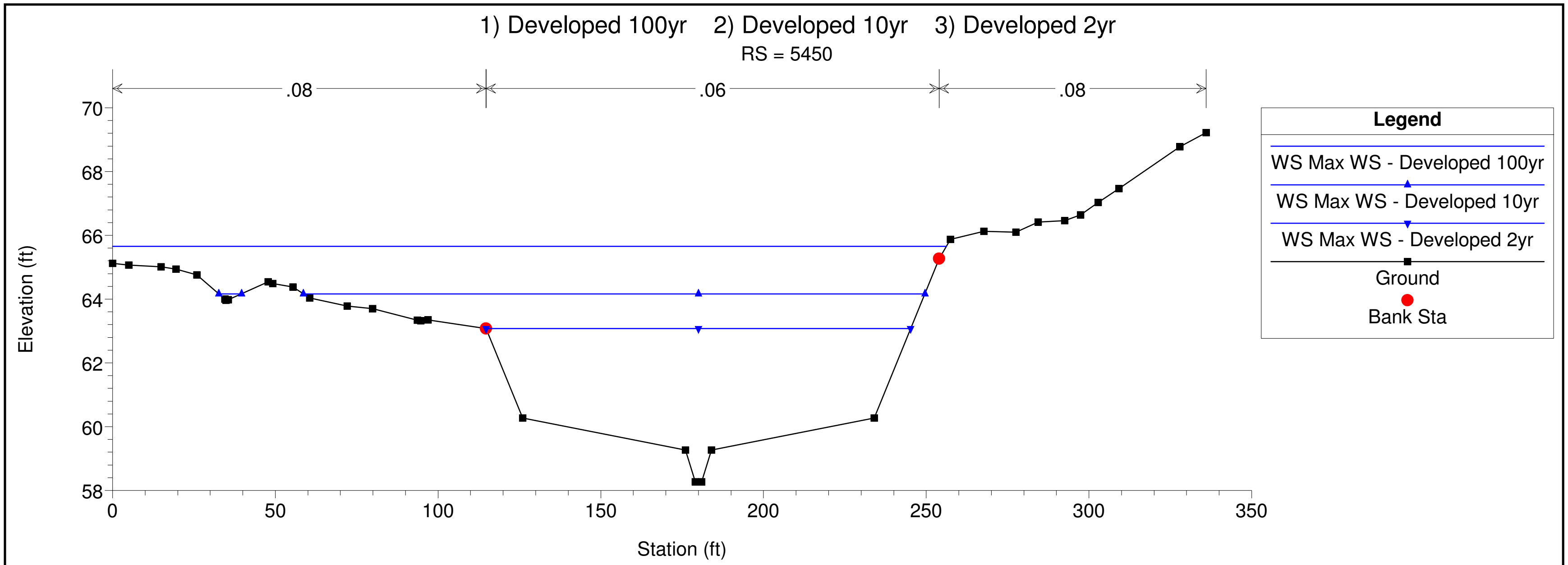

1) Developed 100yr 2) Developed 10yr 3) Developed 2yr
RS = 5900
.08
.06
.08
Elevation (ft)
Station (ft)
Legend
WS Max WS - Developed 100yr
WS Max WS - Developed 10yr
WS Max WS - Developed 2yr
Ground
Bank Sta

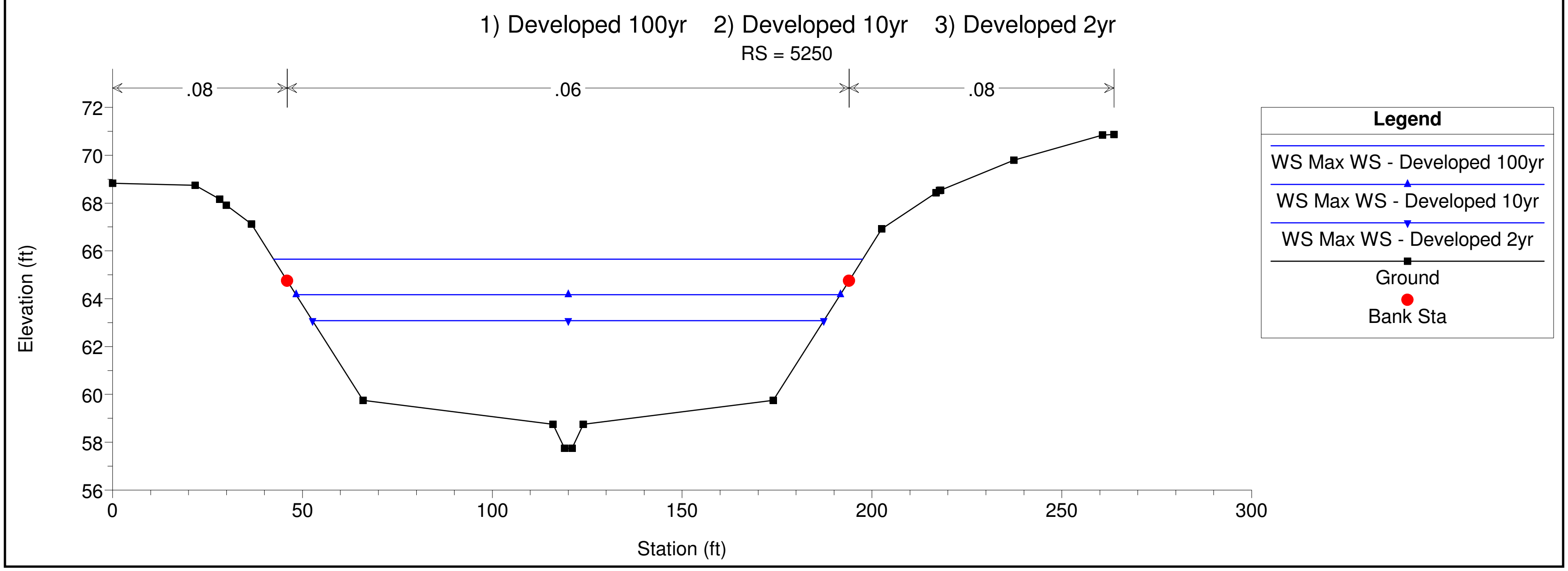

1) Developed 100yr 2) Developed 10yr 3) Developed 2yr
RS = 5700
.08
.06
.08
Elevation (ft)
68
66
64
62
60
58
0
50
100
150
200
250
Station (ft)
Legend
WS Max WS - Developed 100yr
WS Max WS - Developed 10yr
WS Max WS - Developed 2yr
Ground
Ineff
Bank Sta

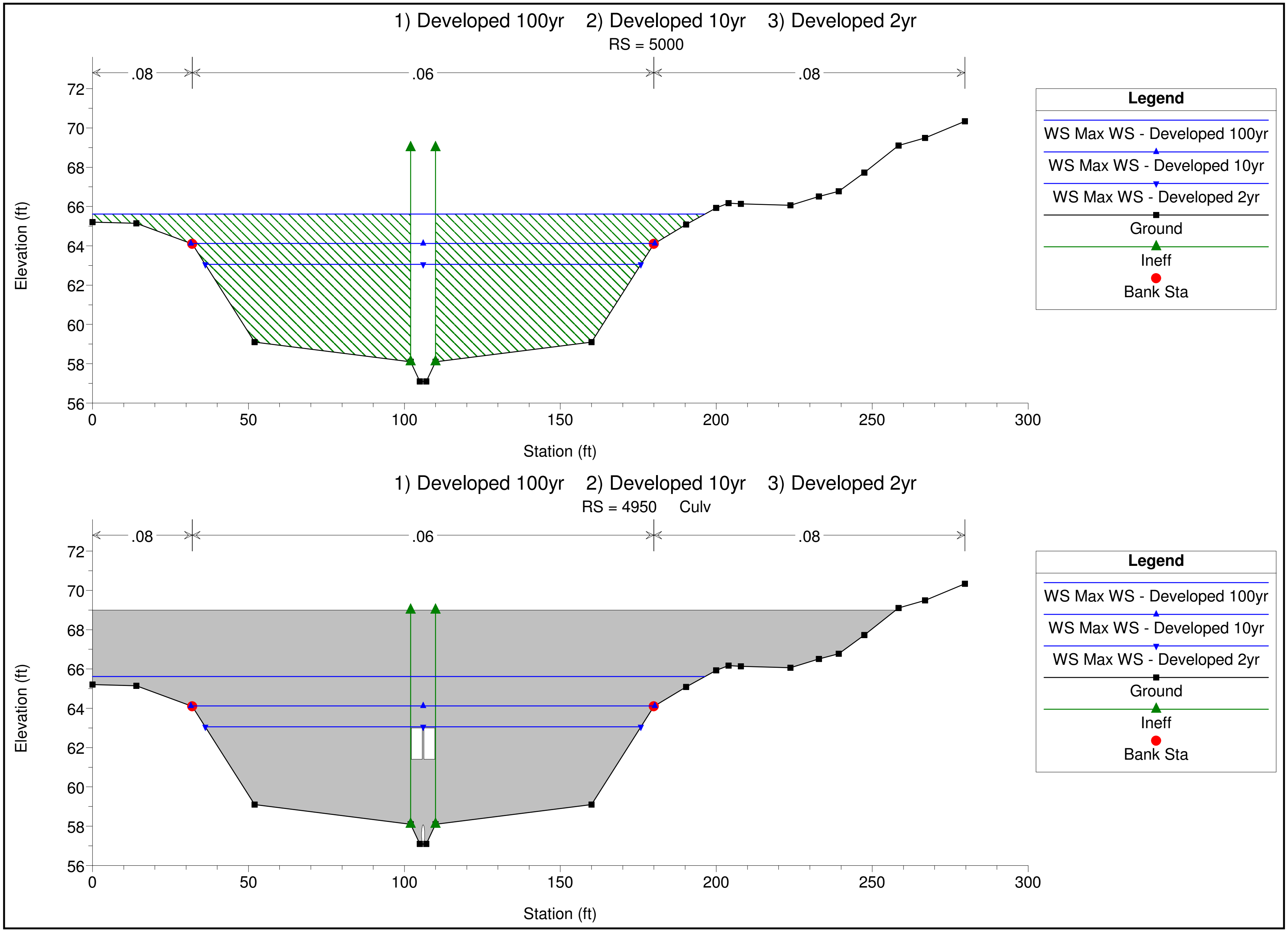

1) Developed 100yr 2) Developed 10yr 3) Developed 2yr
RS = 5675 IS 3 foot wide opening
.08
.06
.08
Elevation (ft)
68
66
64
62
60
58
0
50
100
150
200
250
Station (ft)
Legend
WS Max WS - Developed 100yr
WS Max WS - Developed 10yr
WS Max WS - Developed 2yr
Ground
Ineff
Bank Sta


1) Developed 100yr 2) Developed 10yr 3) Developed 2yr
RS = 5650
.08
.06
.08
Elevation (ft)
Station (ft)
Legend
WS Max WS - Developed 100yr
WS Max WS - Developed 10yr
WS Max WS - Developed 2yr
Ground
Ineff
Bank Sta

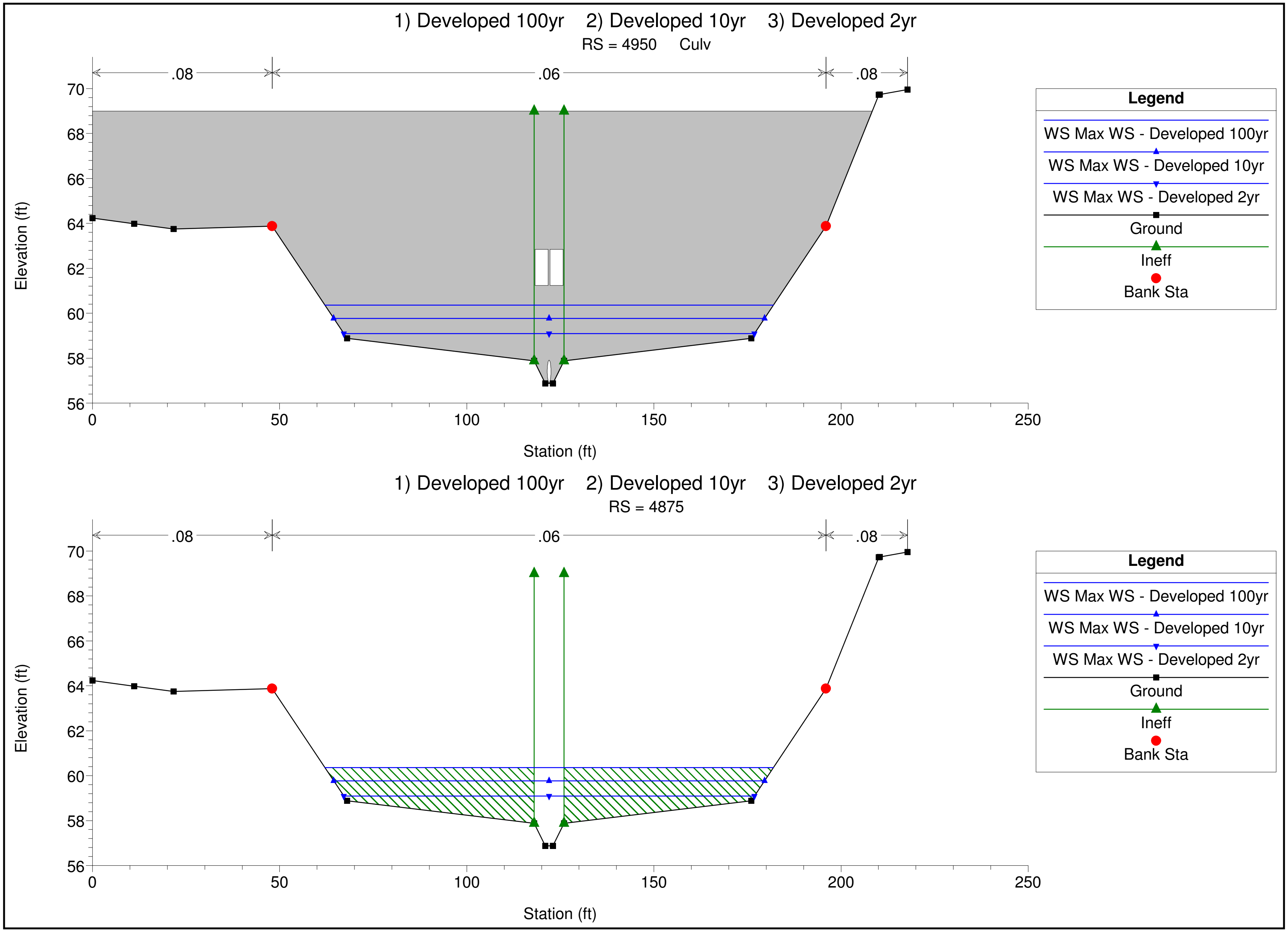

1) Developed 100yr 2) Developed 10yr 3) Developed 2yr
RS = 5550.*
.08
.06
.08
Elevation (ft)
Station (ft)
Legend
WS Max WS - Developed 100yr
WS Max WS - Developed 10yr
WS Max WS - Developed 2yr
Ground
Bank Sta

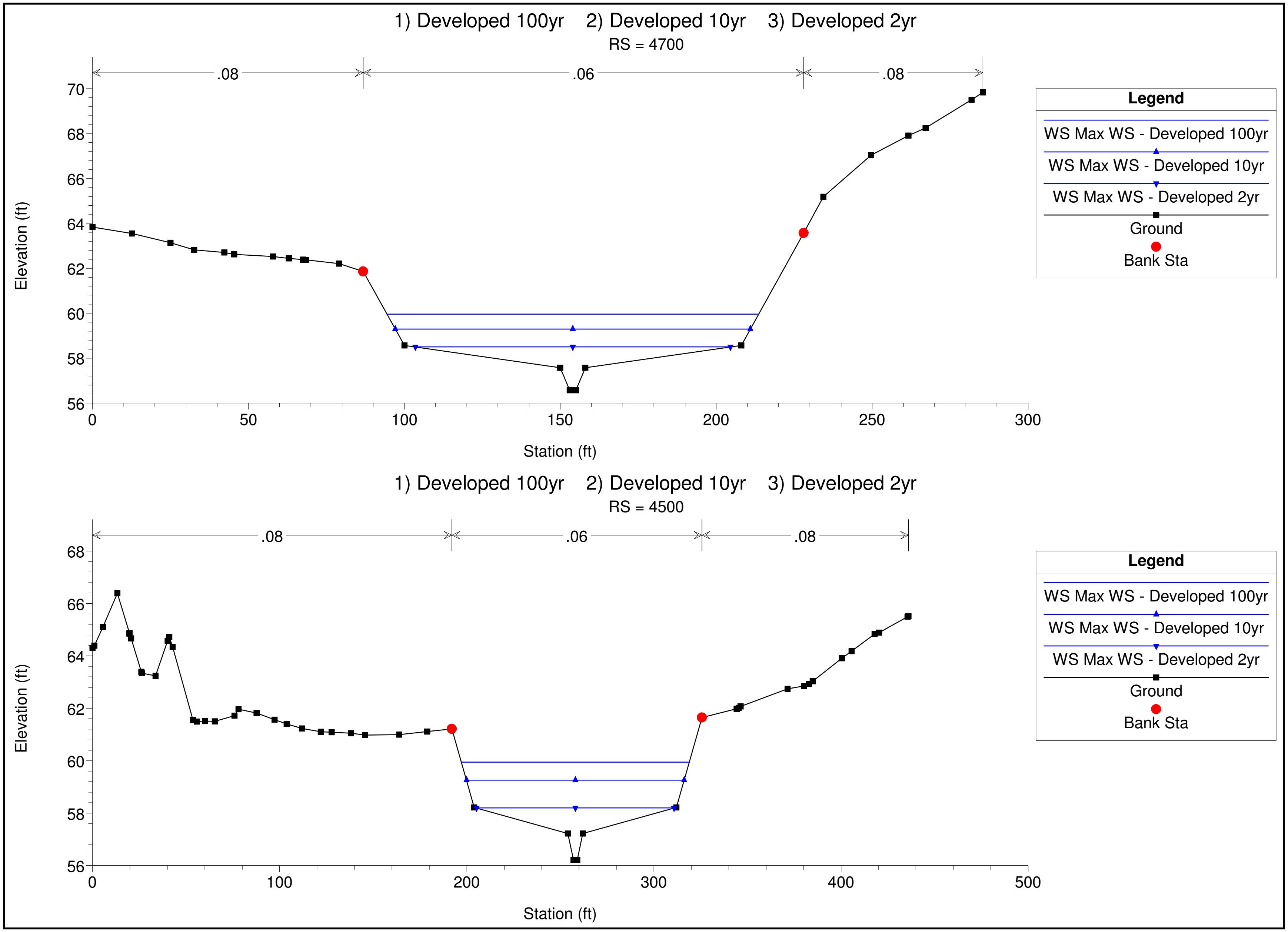

1) Developed 100yr 2) Developed 10yr 3) Developed 2yr
RS = 5450
.08
.06
.08
Elevation (ft)
Station (ft)
Legend
WS Max WS - Developed 100yr
WS Max WS - Developed 10yr
WS Max WS - Developed 2yr
Ground
Bank Sta

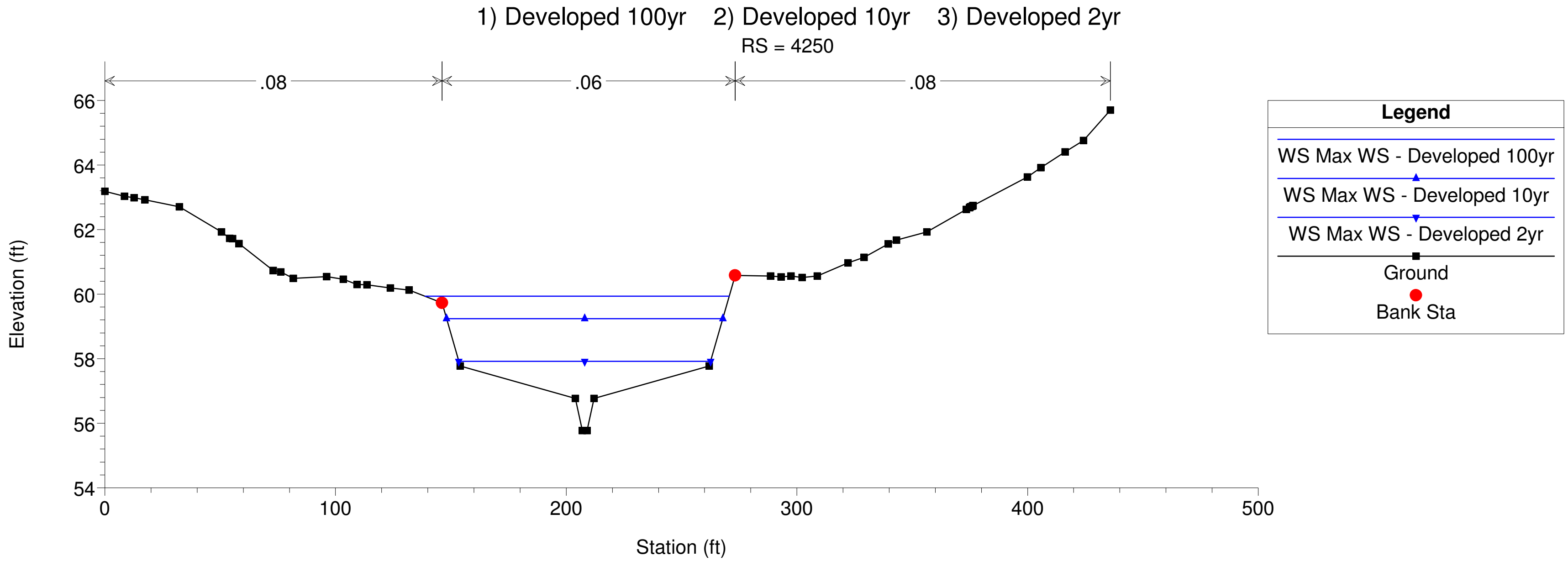

1) Developed 100yr 2) Developed 10yr 3) Developed 2yr
RS = 5250
.08
.06
.08
Elevation (ft)
Station (ft)
Legend
WS Max WS - Developed 100yr
WS Max WS - Developed 10yr
WS Max WS - Developed 2yr
Ground
Bank Sta



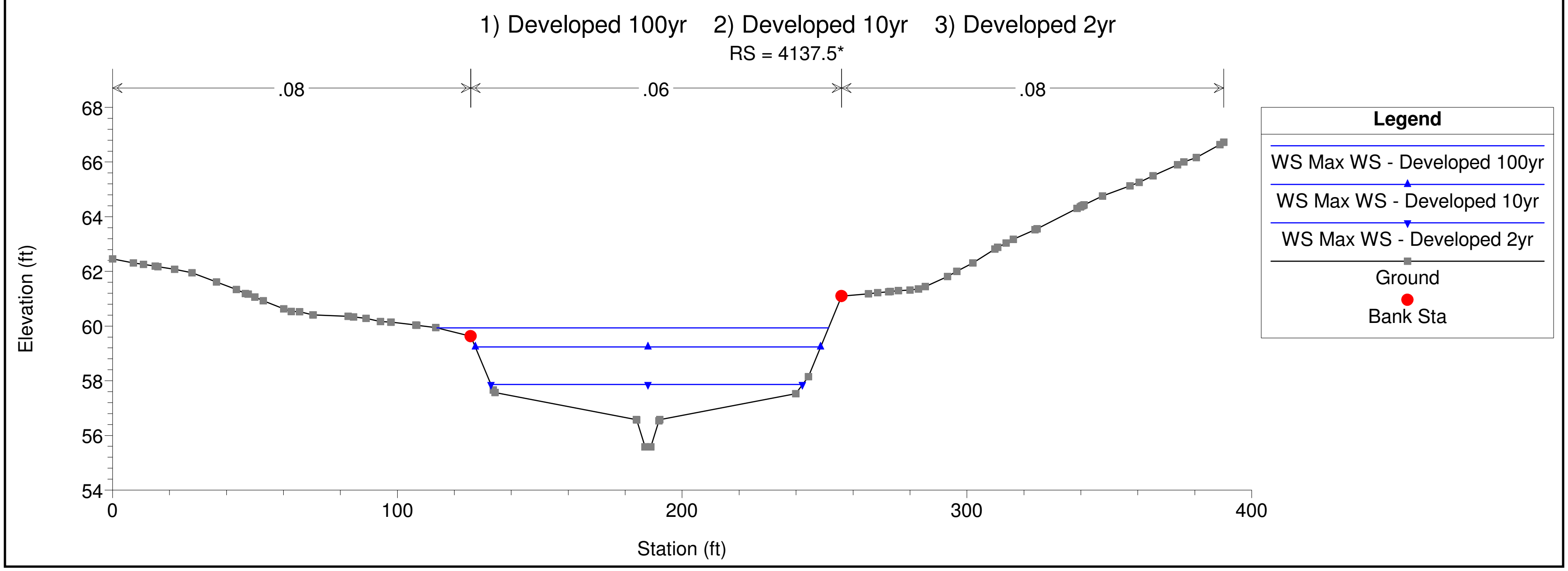
1) Developed 100yr 2) Developed 10yr 3) Developed 2yr
RS = 5000
.08
.06
.08
Elevation (ft)
Station (ft)
Legend
WS Max WS - Developed 100yr
WS Max WS - Developed 10yr
WS Max WS - Developed 2yr
Ground
Ineff
Bank Sta
1) Developed 100yr 2) Developed 10yr 3) Developed 2yr
RS = 4950 Culv
.08
.06
.08
Elevation (ft)
Station (ft)
Legend
WS Max WS - Developed 100yr
WS Max WS - Developed 10yr
WS Max WS - Developed 2yr
Ground
Ineff
Bank Sta


1) Developed 100yr 2) Developed 10yr 3) Developed 2yr
RS = 4950 Culv
.08
.06
.08
Elevation (ft)
Station (ft)
Legend
WS Max WS - Developed 100yr
WS Max WS - Developed 10yr
WS Max WS - Developed 2yr
Ground
Ineff
Bank Sta
1) Developed 100yr 2) Developed 10yr 3) Developed 2yr
RS = 4875
.08
.06
.08
Elevation (ft)
Station (ft)
Legend
WS Max WS - Developed 100yr
WS Max WS - Developed 10yr
WS Max WS - Developed 2yr
Ground
Ineff
Bank Sta

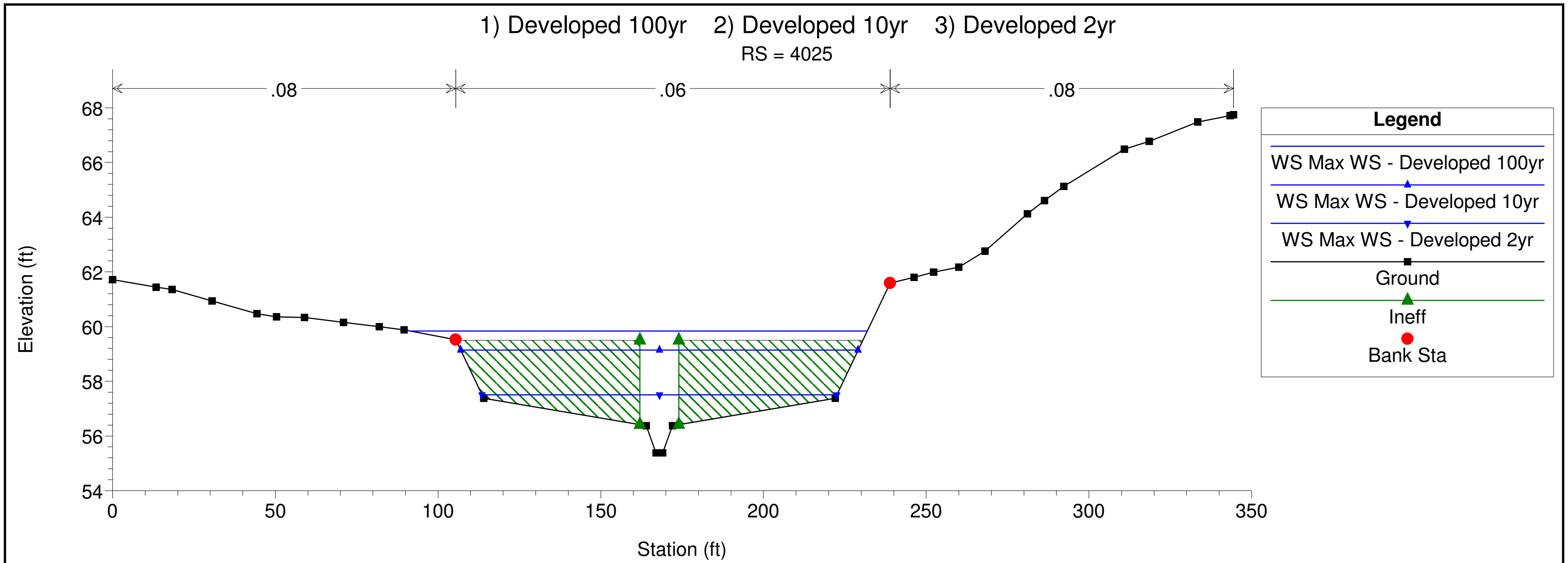

1) Developed 100yr 2) Developed 10yr 3) Developed 2yr
RS = 4700
.08
.06
.08
Elevation (ft)
Station (ft)
Legend
WS Max WS - Developed 100yr
WS Max WS - Developed 10yr
WS Max WS - Developed 2yr
Ground
Bank Sta
1) Developed 100yr 2) Developed 10yr 3) Developed 2yr
RS = 4500
.08
.06
.08
Elevation (ft)
Station (ft)
Legend
WS Max WS - Developed 100yr
WS Max WS - Developed 10yr
WS Max WS - Developed 2yr
Ground
Bank Sta

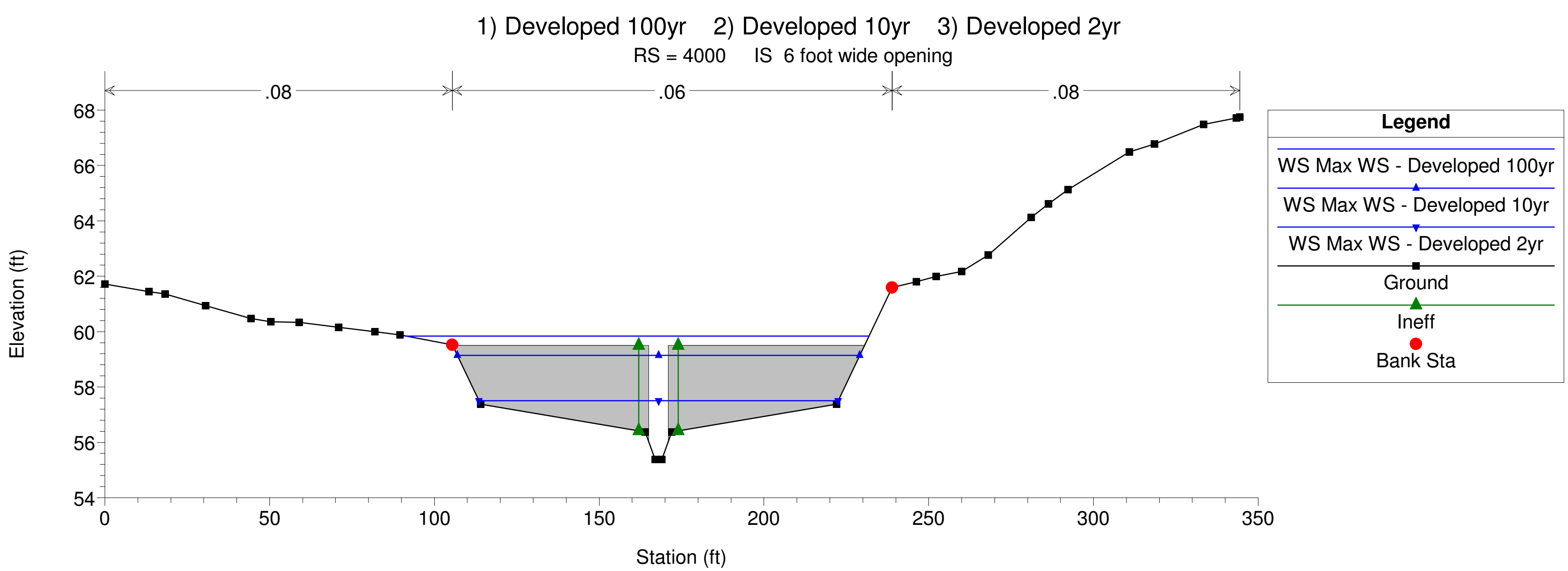


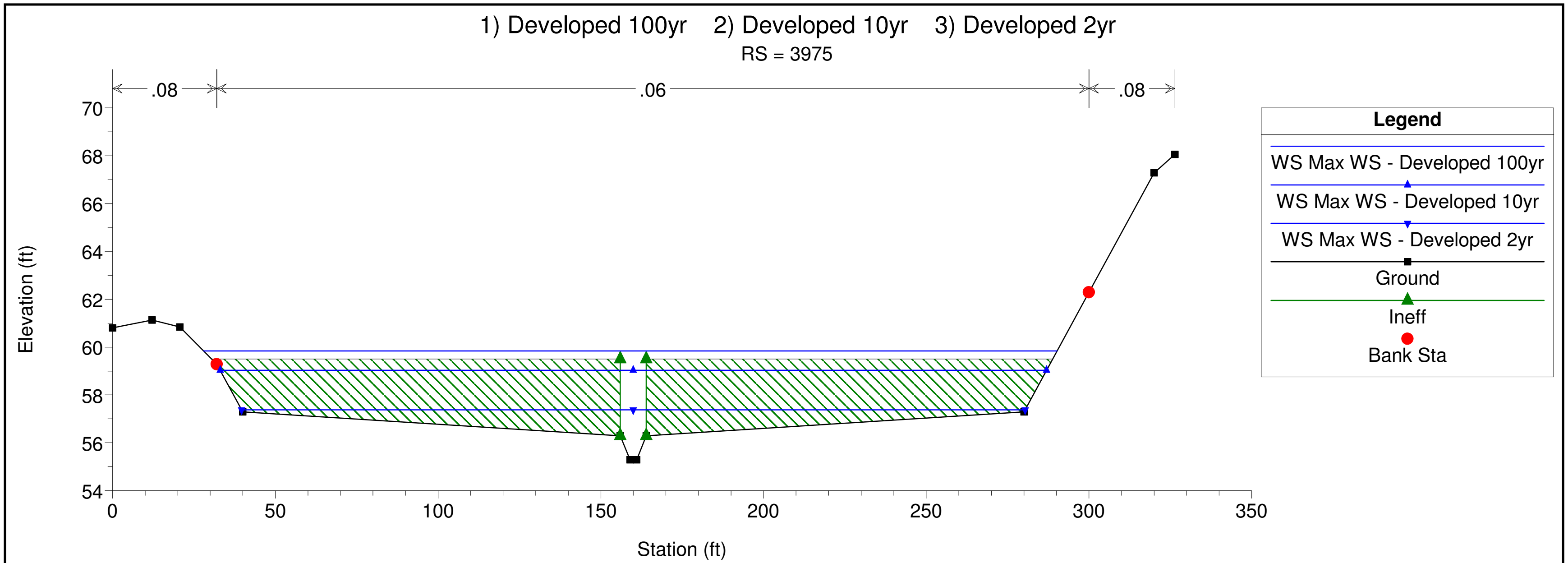
1) Developed 100yr 2) Developed 10yr 3) Developed 2yr
RS = 4250
.08
.06
.08
Elevation (ft)
Station (ft)
Legend
WS Max WS - Developed 100yr
WS Max WS - Developed 10yr
WS Max WS - Developed 2yr
Ground
Bank Sta

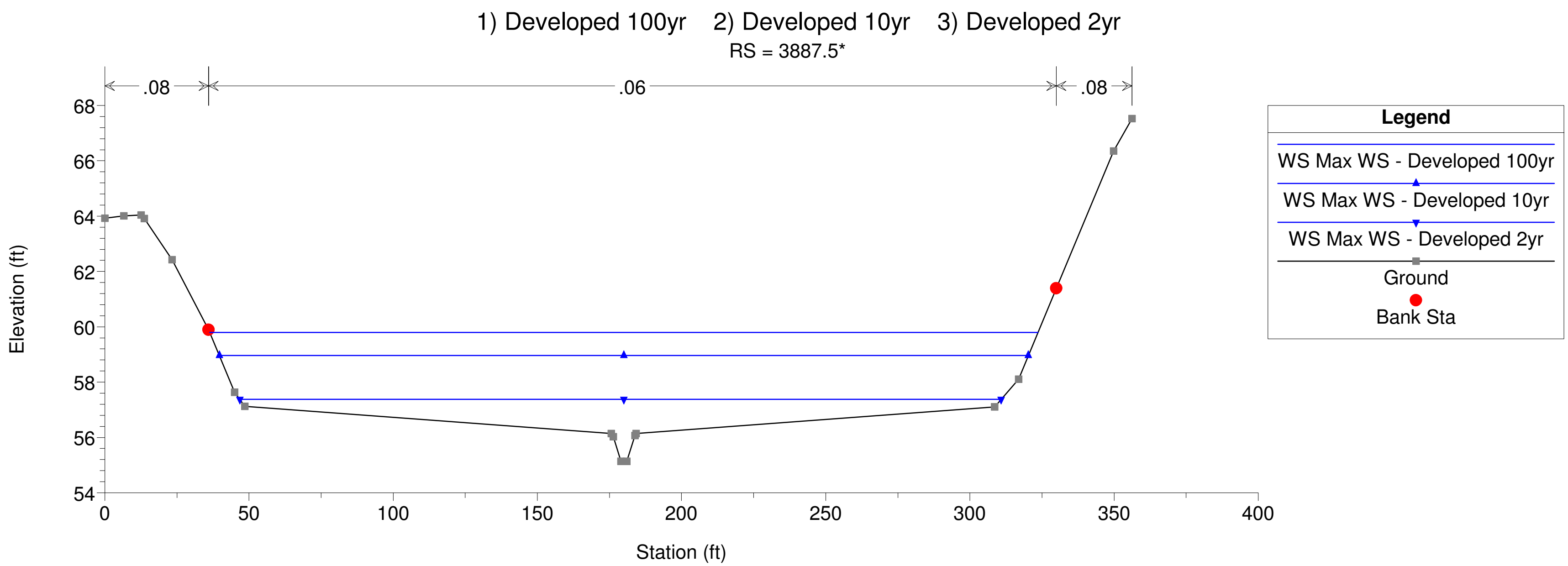


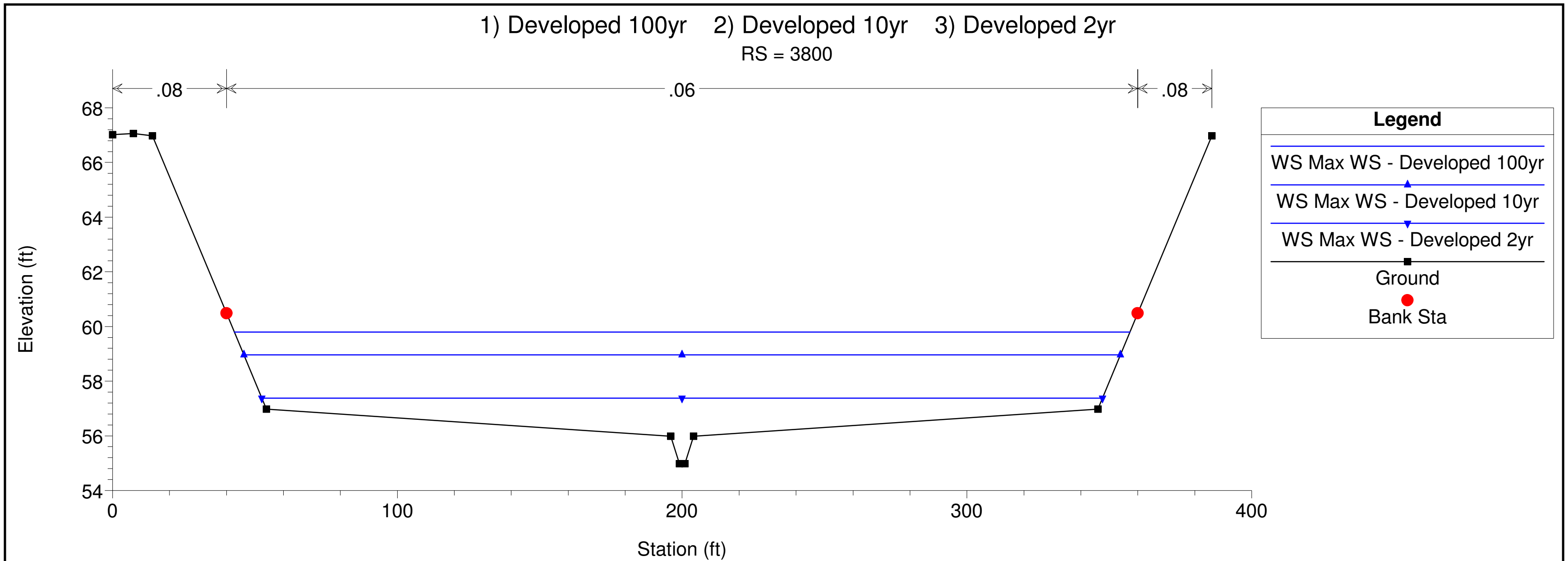
1) Developed 100yr 2) Developed 10yr 3) Developed 2yr
RS = 4137.5*
.08
.06
.08
Elevation (ft)
Station (ft)
Legend
WS Max WS - Developed 100yr
WS Max WS - Developed 10yr
WS Max WS - Developed 2yr
Ground
Bank Sta

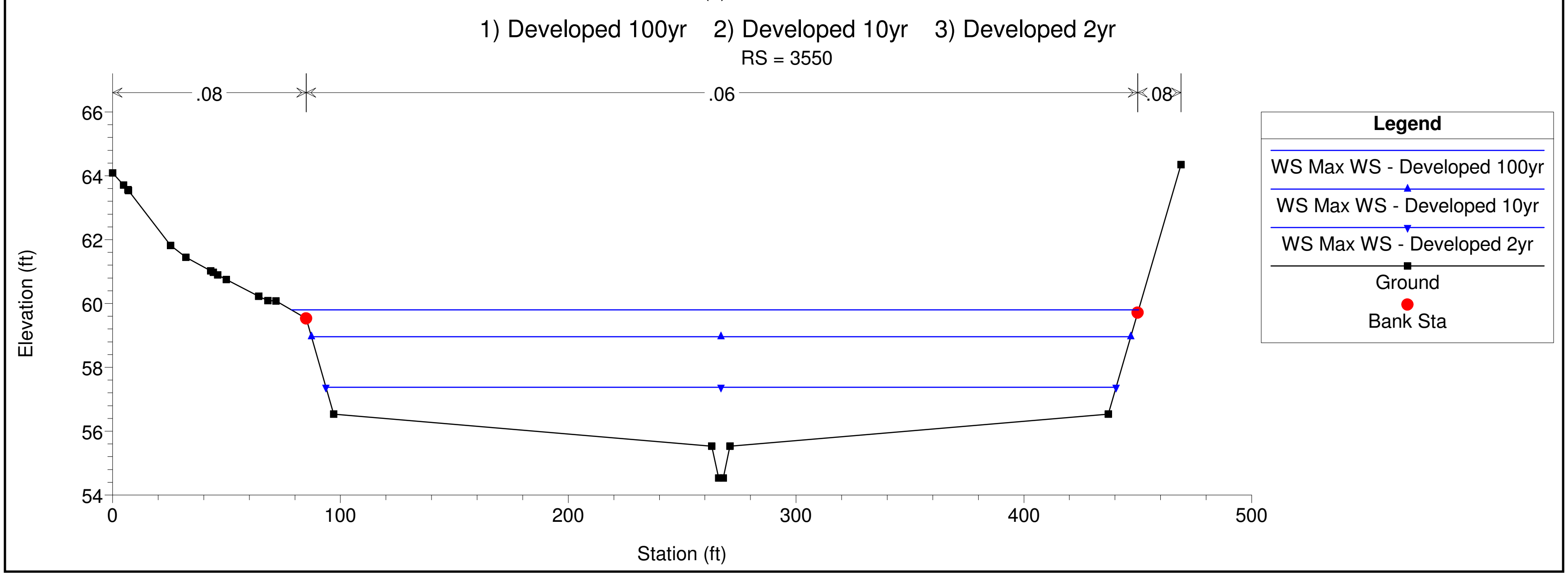

1) Developed 100yr 2) Developed 10yr 3) Developed 2yr
RS = 4025
.08
.06
.08
Elevation (ft)
Station (ft)
Legend
WS Max WS - Developed 100yr
WS Max WS - Developed 10yr
WS Max WS - Developed 2yr
Ground
Ineff
Bank Sta

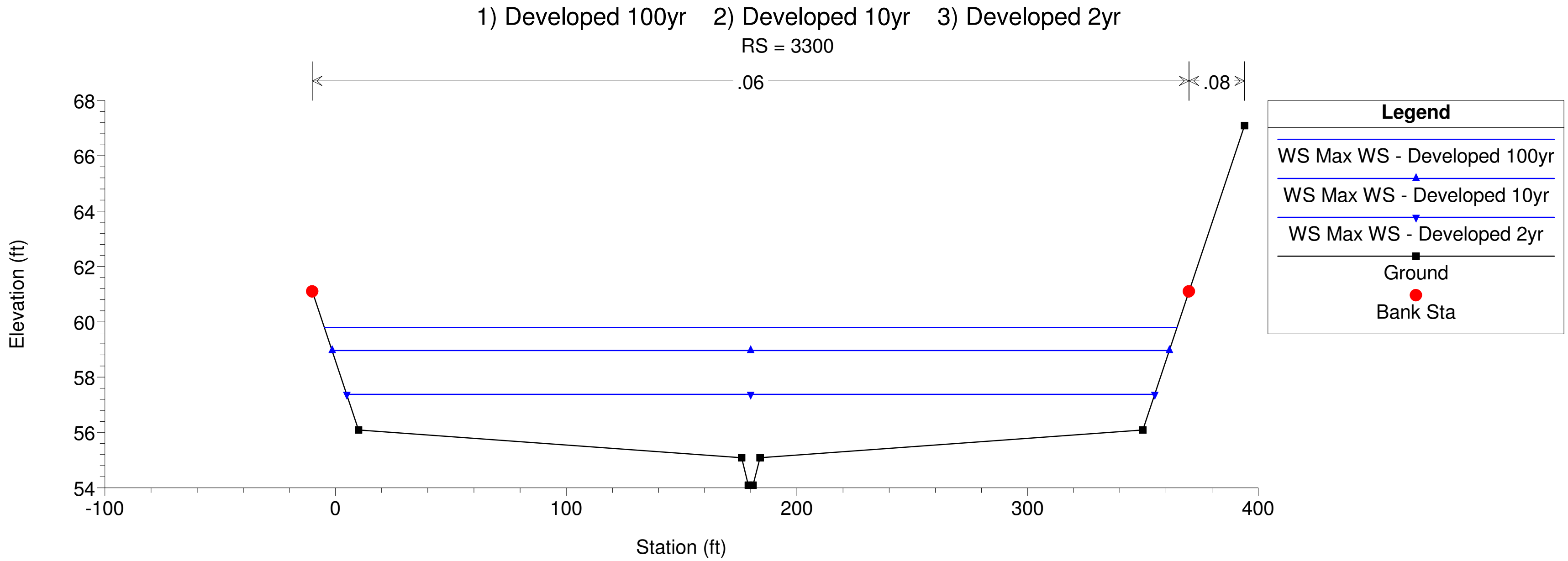

1) Developed 100yr 2) Developed 10yr 3) Developed 2yr
RS = 4000 IS 6 foot wide opening
.08
.06
.08
Elevation (ft)
Station (ft)
Legend
WS Max WS - Developed 100yr
WS Max WS - Developed 10yr
WS Max WS - Developed 2yr
Ground
Ineff
Bank Sta


1) Developed 100yr 2) Developed 10yr 3) Developed 2yr
RS = 3975
.08
.06
.08
Elevation (ft)
Station (ft)
Legend
WS Max WS - Developed 100yr
WS Max WS - Developed 10yr
WS Max WS - Developed 2yr
Ground
Ineff
Bank Sta

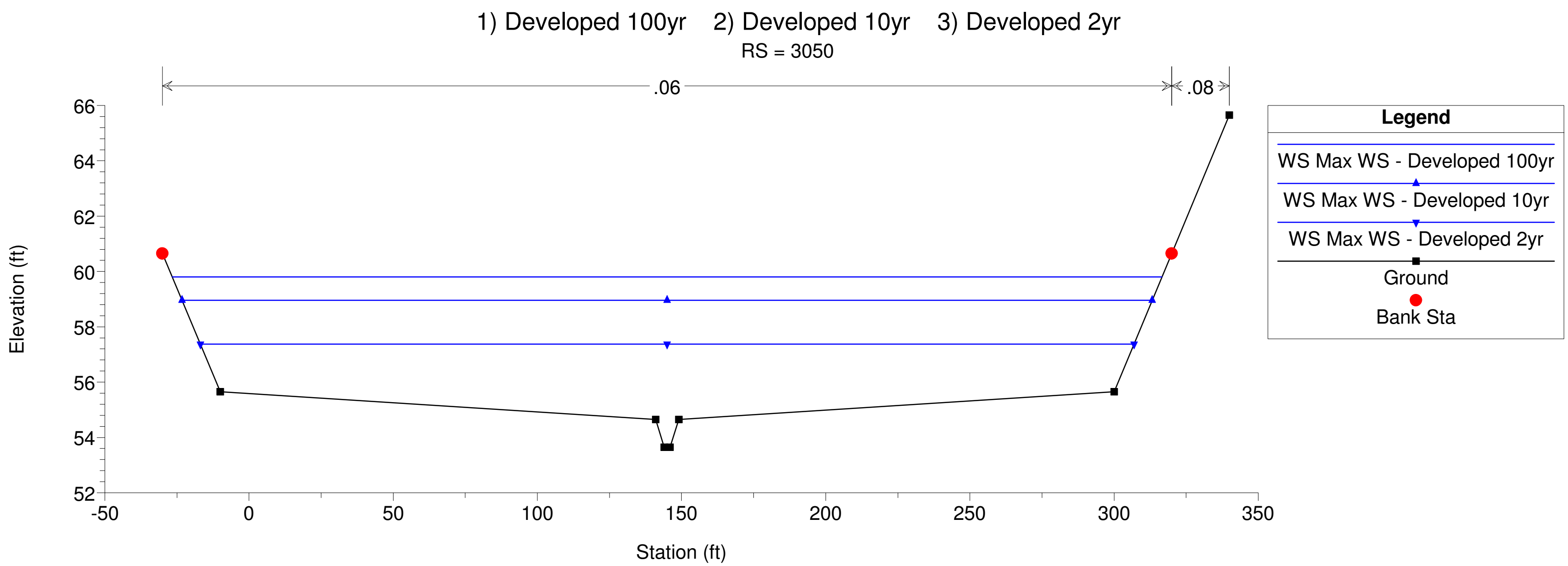

1) Developed 100yr 2) Developed 10yr 3) Developed 2yr
RS = 3887.5*
.08
.06
.08
Elevation (ft)
Station (ft)
Legend
WS Max WS - Developed 100yr
WS Max WS - Developed 10yr
WS Max WS - Developed 2yr
Ground
Bank Sta


1) Developed 100yr 2) Developed 10yr 3) Developed 2yr
RS = 3800
.08
.06
.08
Elevation (ft)
68
66
64
62
60
58
56
54
0
100
200
300
400
Station (ft)
Legend
WS Max WS - Developed 100yr
WS Max WS - Developed 10yr
WS Max WS - Developed 2yr
Ground
Bank Sta

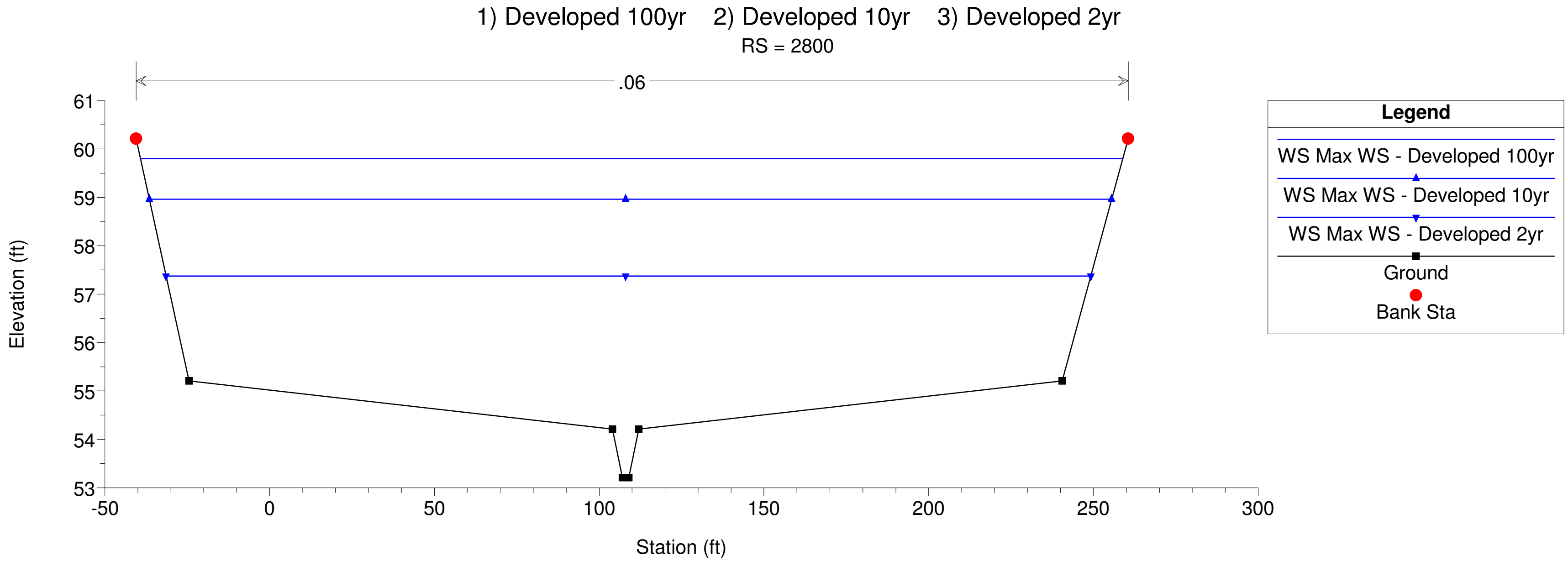

1) Developed 100yr 2) Developed 10yr 3) Developed 2yr
RS = 3550
.08
.06
.08
Elevation (ft)
66
64
62
60
58
56
54
0
100
200
300
400
500
Station (ft)
Legend
WS Max WS - Developed 100yr
WS Max WS - Developed 10yr
WS Max WS - Developed 2yr
Ground
Bank Sta

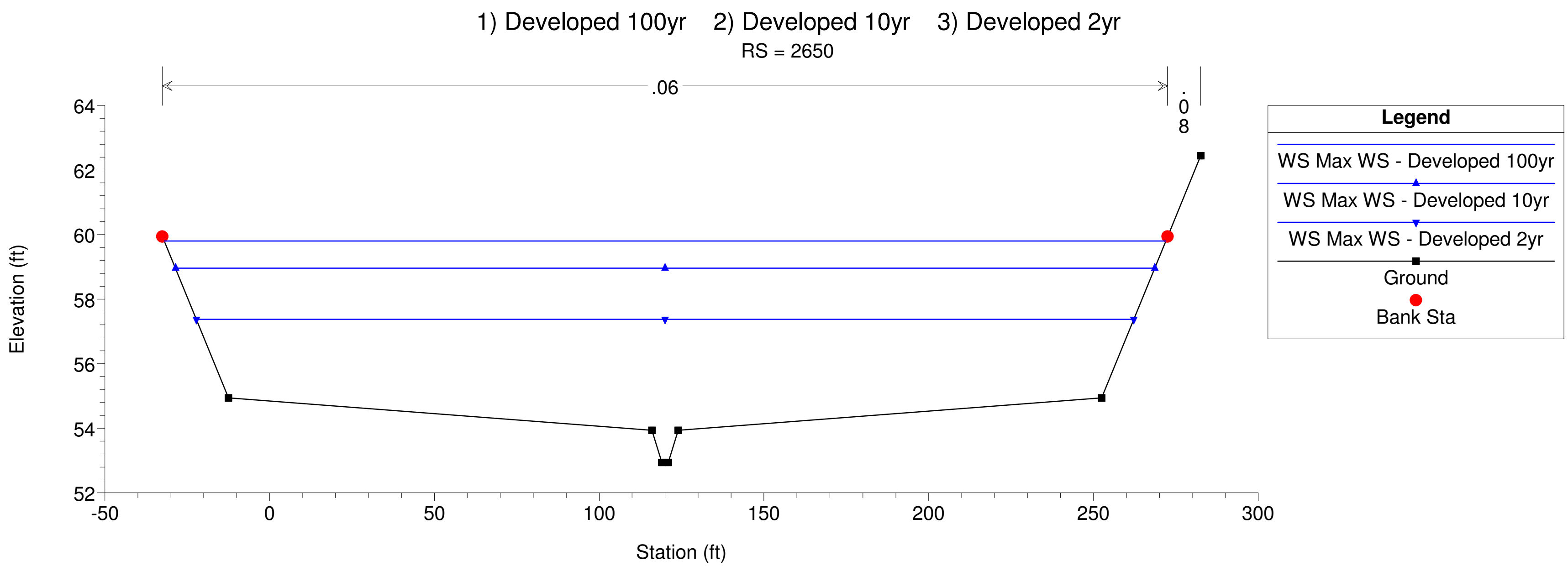


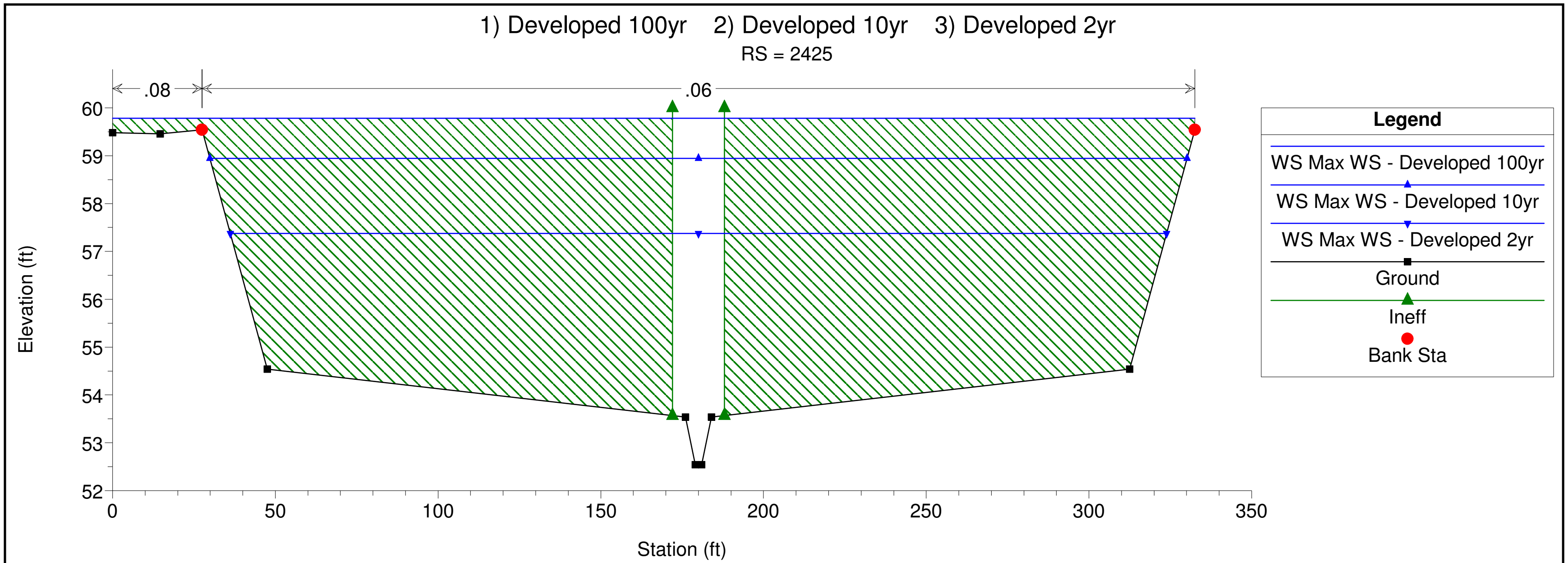
1) Developed 100yr 2) Developed 10yr 3) Developed 2yr
RS = 3300
.06
.08
Elevation (ft)
Station (ft)
68
66
64
62
60
58
56
54
-100
0
100
200
300
400
Legend
WS Max WS - Developed 100yr
WS Max WS - Developed 10yr
WS Max WS - Developed 2yr
Ground
Bank Sta

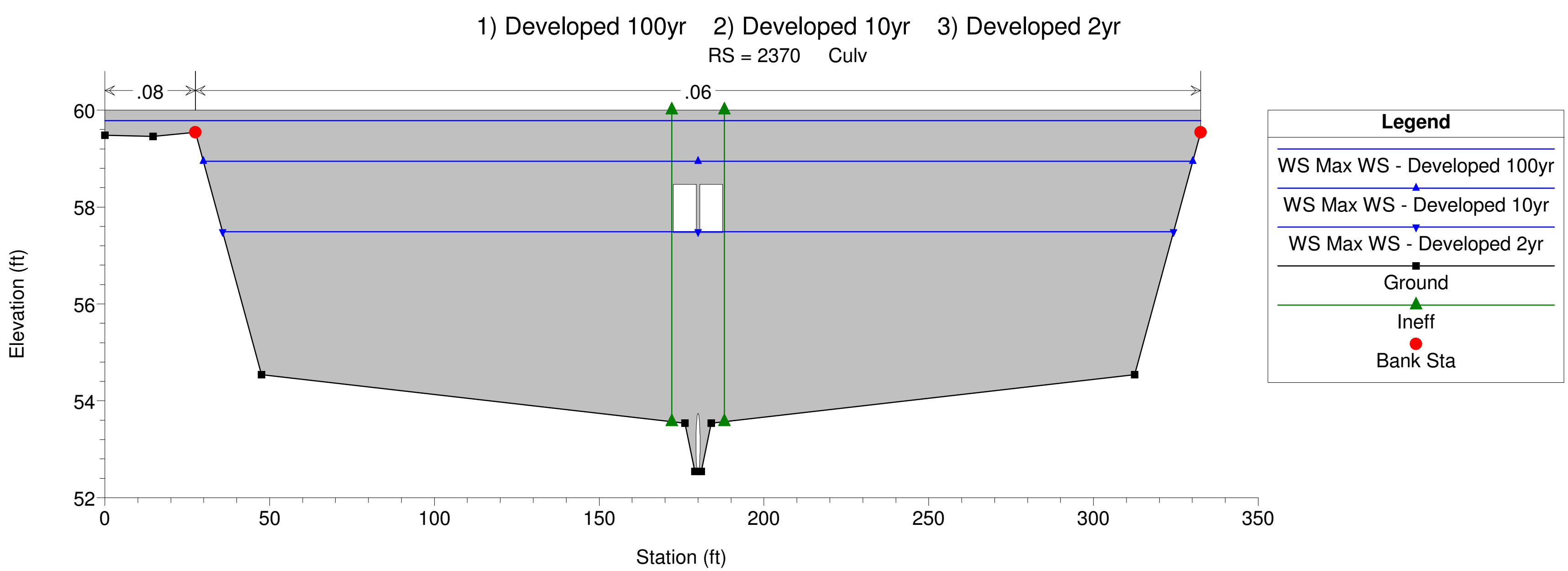


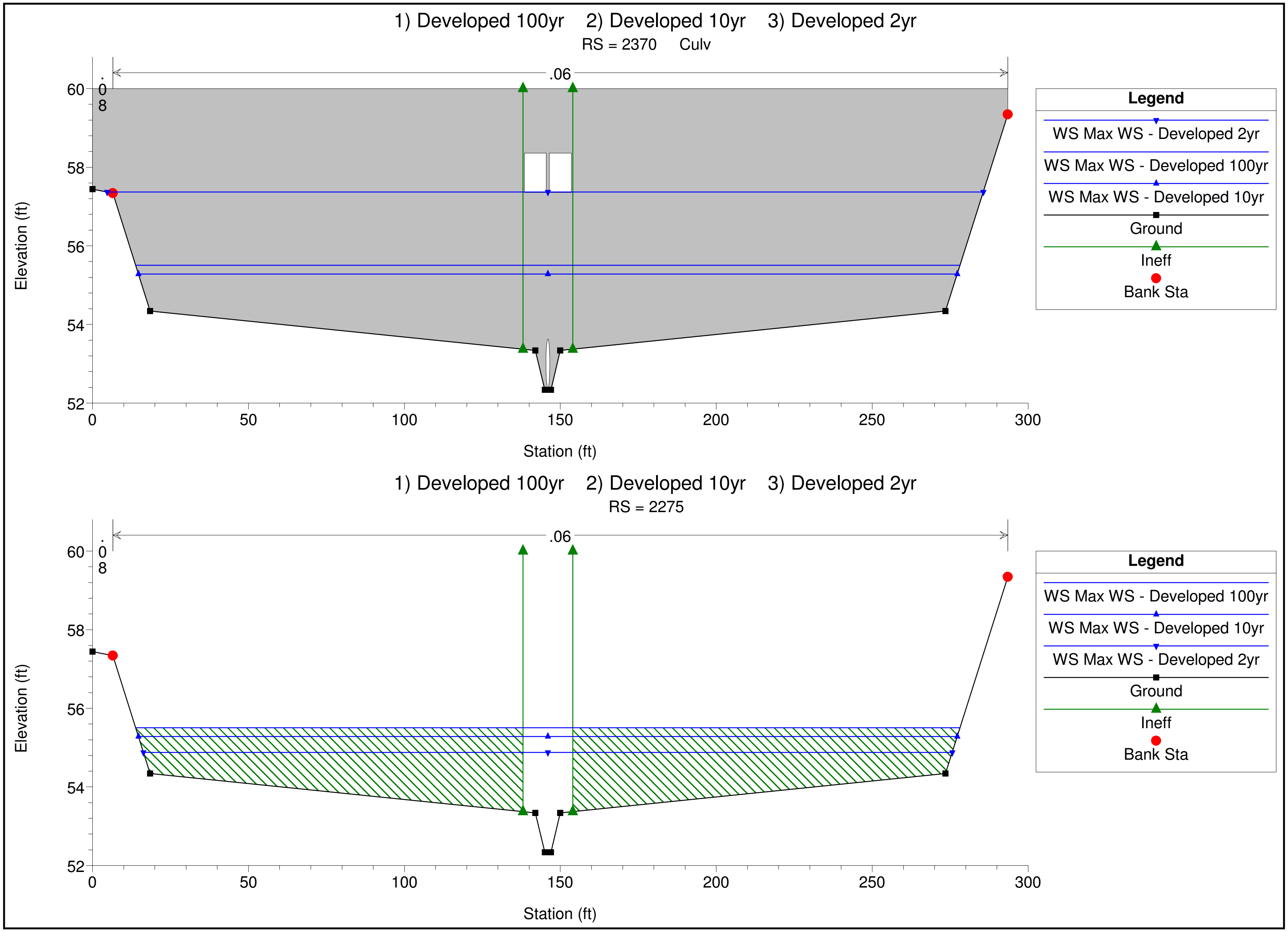
1) Developed 100yr 2) Developed 10yr 3) Developed 2yr
RS = 3050
.06
.08
Elevation (ft)
Station (ft)
66
64
62
60
58
56
54
52
-50
0
50
100
150
200
250
300
350
Legend
WS Max WS - Developed 100yr
WS Max WS - Developed 10yr
WS Max WS - Developed 2yr
Ground
Bank Sta


1) Developed 100yr 2) Developed 10yr 3) Developed 2yr
RS = 2800
.06
Elevation (ft)
61
60
59
58
57
56
55
54
53
-50
0
50
100
150
200
250
300
Station (ft)
Legend
WS Max WS - Developed 100yr
WS Max WS - Developed 10yr
WS Max WS - Developed 2yr
Ground
Bank Sta

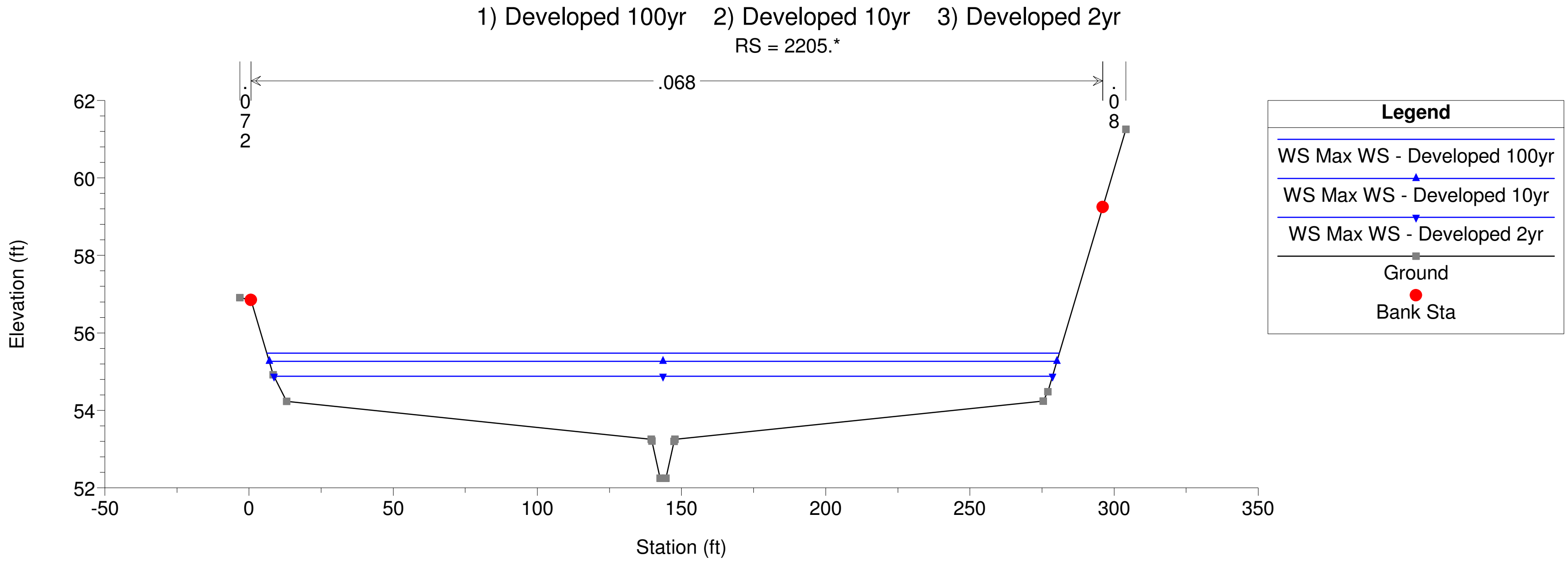

1) Developed 100yr 2) Developed 10yr 3) Developed 2yr
RS = 2650
.06
.08
Elevation (ft)
64
62
60
58
56
54
52
-50
0
50
100
150
200
250
300
Station (ft)
Legend
WS Max WS - Developed 100yr
WS Max WS - Developed 10yr
WS Max WS - Developed 2yr
Ground
Bank Sta


1) Developed 100yr 2) Developed 10yr 3) Developed 2yr
RS = 2425
.08
.06
Elevation (ft)
Station (ft)
Legend
WS Max WS - Developed 100yr
WS Max WS - Developed 10yr
WS Max WS - Developed 2yr
Ground
Ineff
Bank Sta

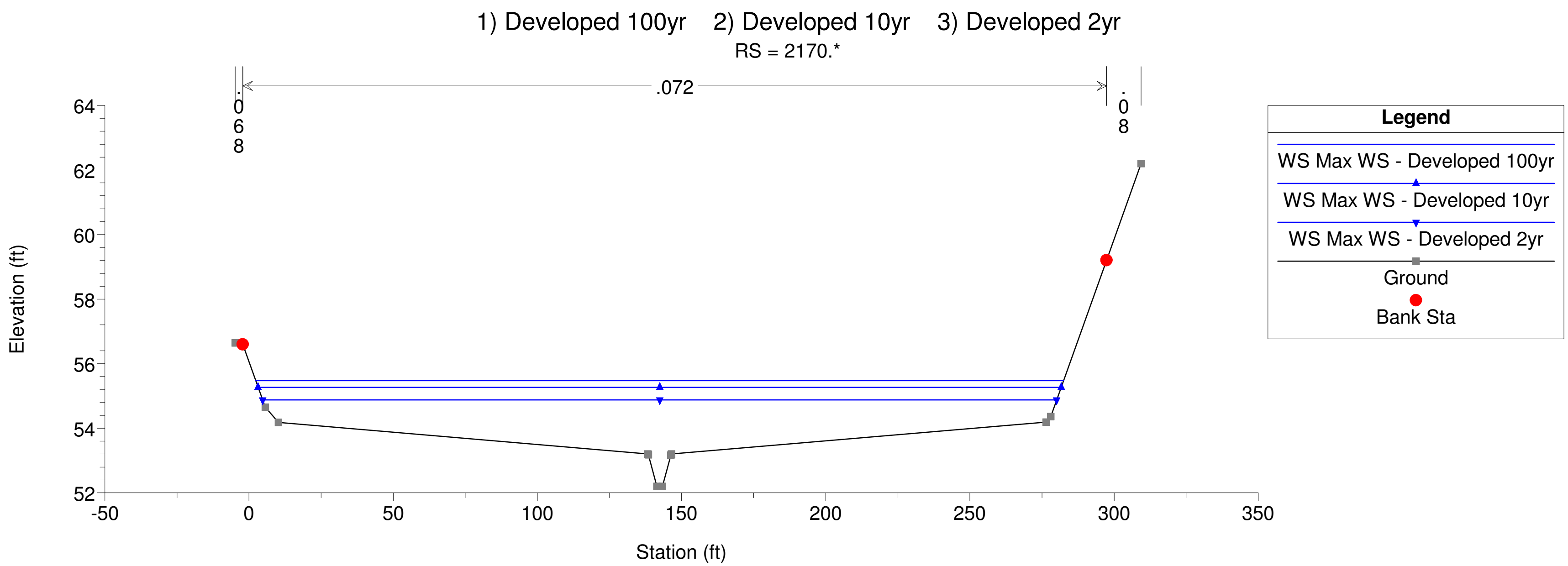

1) Developed 100yr 2) Developed 10yr 3) Developed 2yr
RS = 2370 Culv
.08
.06
Elevation (ft)
Station (ft)
Legend
WS Max WS - Developed 100yr
WS Max WS - Developed 10yr
WS Max WS - Developed 2yr
Ground
Ineff
Bank Sta



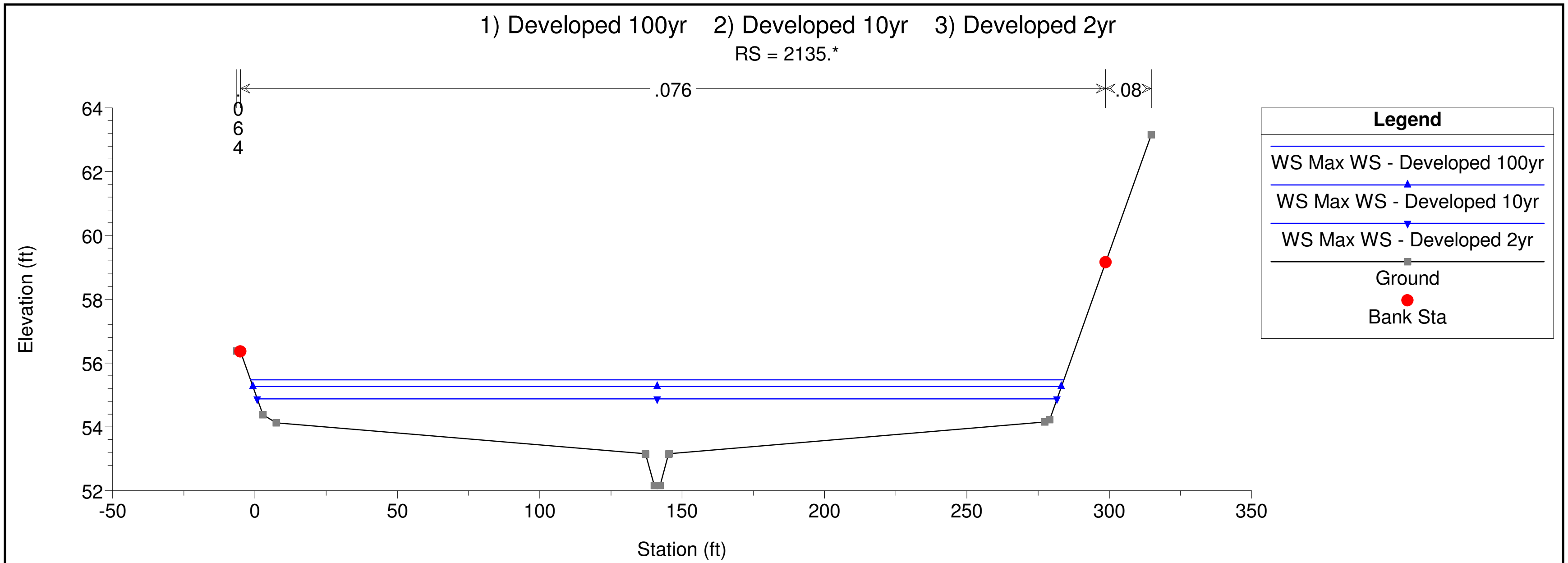
1) Developed 100yr 2) Developed 10yr 3) Developed 2yr
RS = 2370 Culv
.06
.08
Legend
WS Max WS - Developed 2yr
WS Max WS - Developed 100yr
WS Max WS - Developed 10yr
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)
1) Developed 100yr 2) Developed 10yr 3) Developed 2yr
RS = 2275
.06
.08
Legend
WS Max WS - Developed 100yr
WS Max WS - Developed 10yr
WS Max WS - Developed 2yr
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)

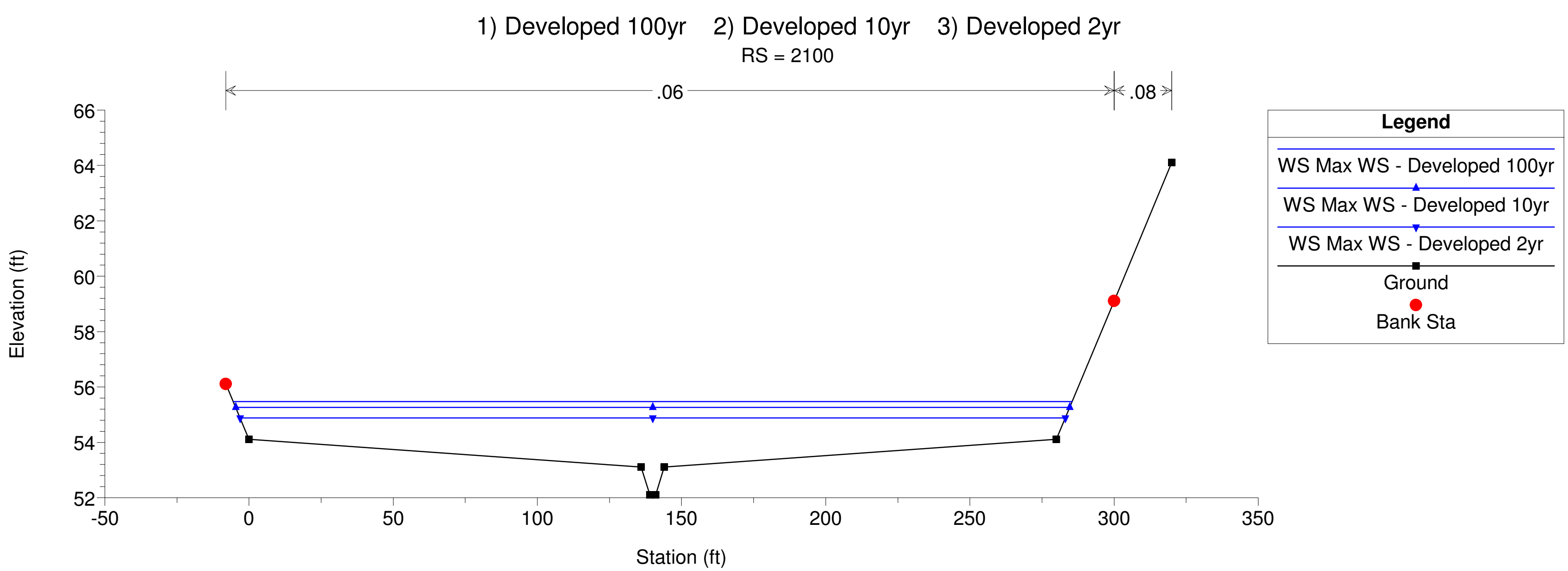


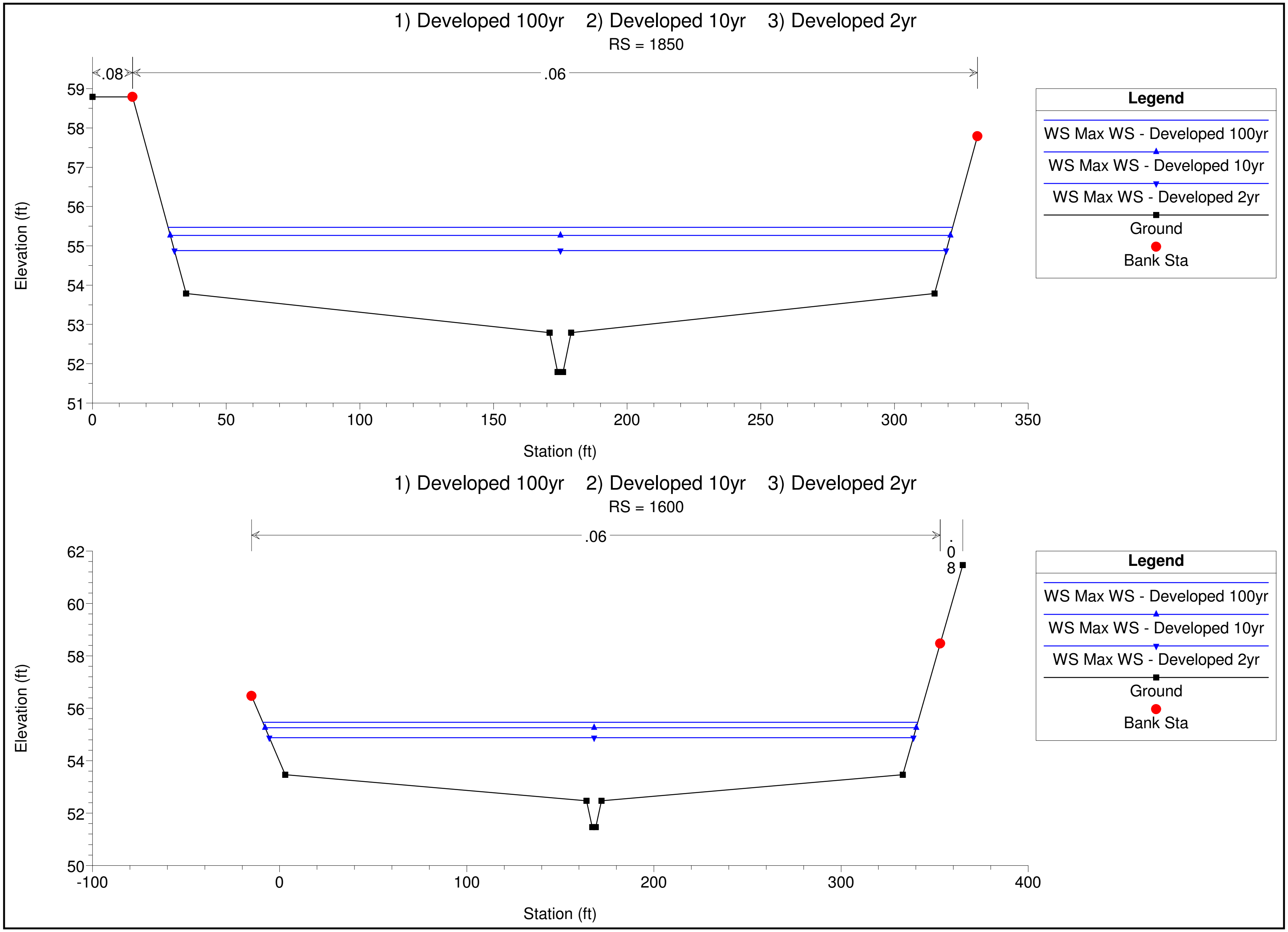
1) Developed 100yr 2) Developed 10yr 3) Developed 2yr
RS = 2205.*
.068
.072
.08
Legend
WS Max WS - Developed 100yr
WS Max WS - Developed 10yr
WS Max WS - Developed 2yr
Ground
Bank Sta
Elevation (ft)
Station (ft)

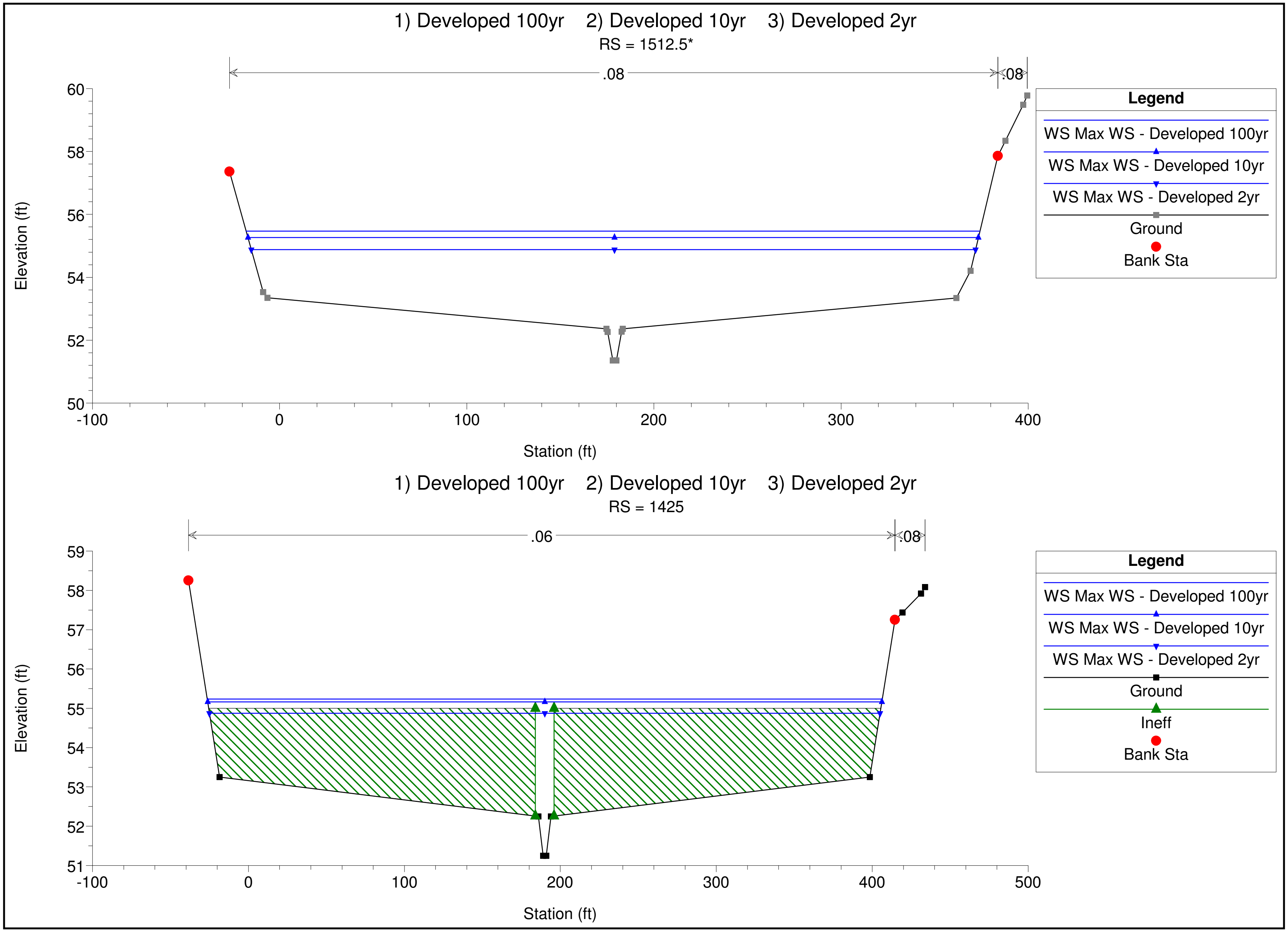


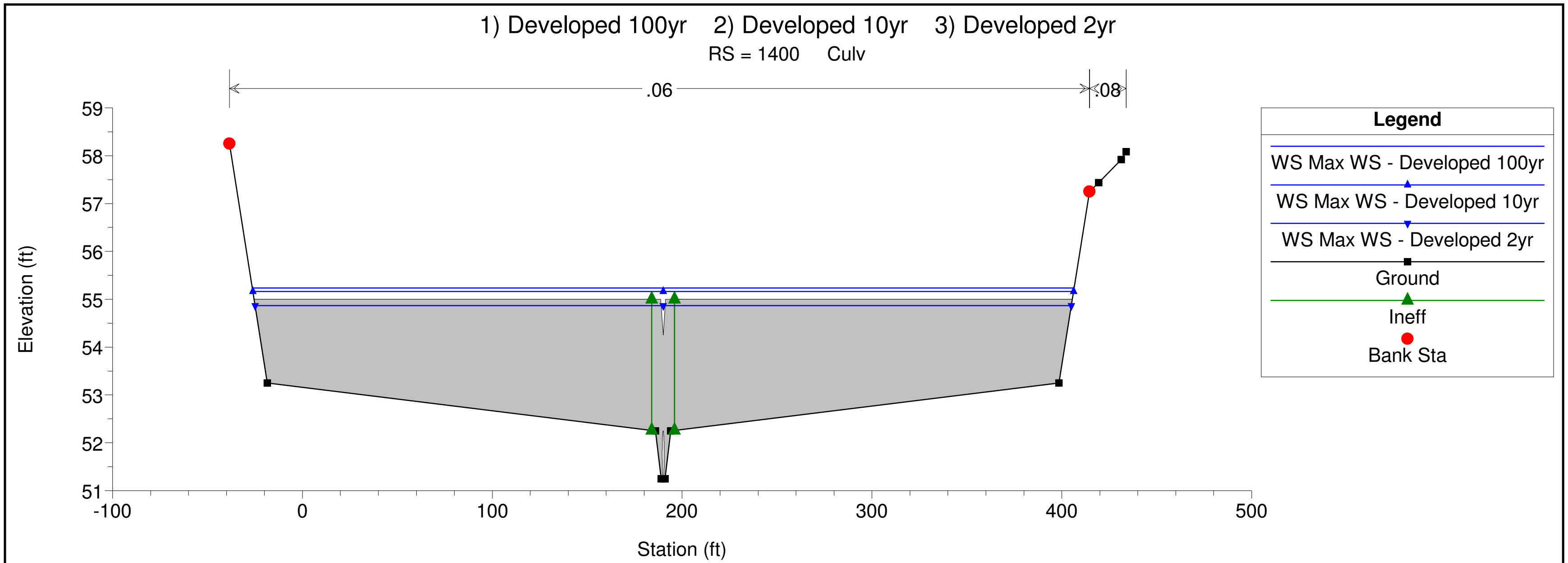
1) Developed 100yr 2) Developed 10yr 3) Developed 2yr
RS = 2170.*
.072
.068
.08
Legend
WS Max WS - Developed 100yr
WS Max WS - Developed 10yr
WS Max WS - Developed 2yr
Ground
Bank Sta
Elevation (ft)
Station (ft)

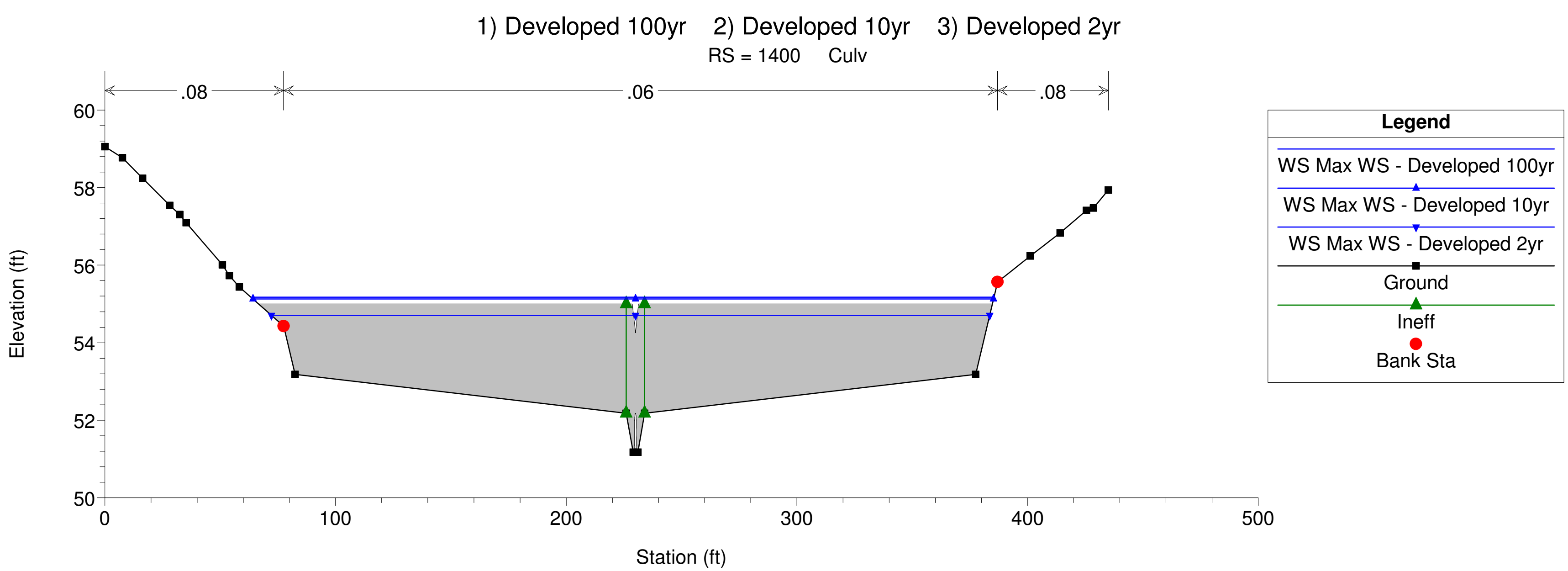

1) Developed 100yr 2) Developed 10yr 3) Developed 2yr
RS = 2135.*
.076
.08
0
6
4
Elevation (ft)
Station (ft)
Legend
WS Max WS - Developed 100yr
WS Max WS - Developed 10yr
WS Max WS - Developed 2yr
Ground
Bank Sta

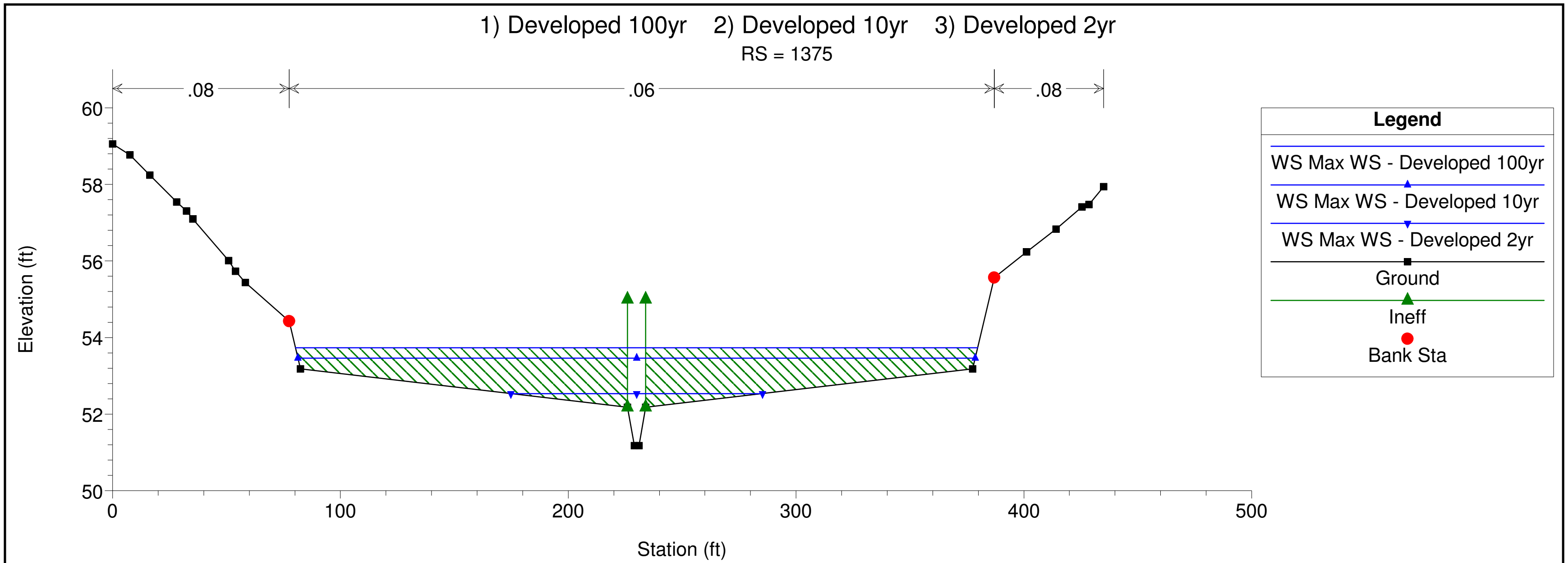

1) Developed 100yr 2) Developed 10yr 3) Developed 2yr
RS = 2100
.06
.08
Elevation (ft)
Station (ft)
Legend
WS Max WS - Developed 100yr
WS Max WS - Developed 10yr
WS Max WS - Developed 2yr
Ground
Bank Sta

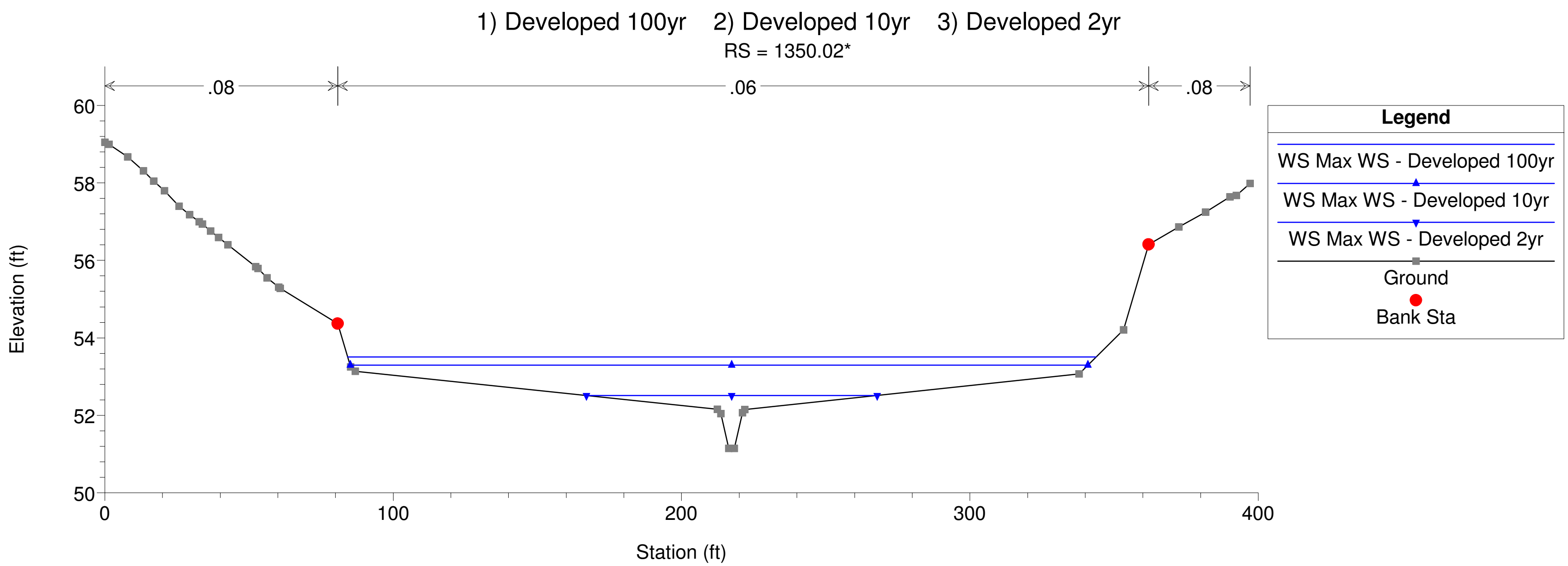

1) Developed 100yr 2) Developed 10yr 3) Developed 2yr
RS = 1850
.08
.06
Legend
WS Max WS - Developed 100yr
WS Max WS - Developed 10yr
WS Max WS - Developed 2yr
Ground
Bank Sta
Elevation (ft)
Station (ft)
1) Developed 100yr 2) Developed 10yr 3) Developed 2yr
RS = 1600
.06
.08
Legend
WS Max WS - Developed 100yr
WS Max WS - Developed 10yr
WS Max WS - Developed 2yr
Ground
Bank Sta
Elevation (ft)
Station (ft)

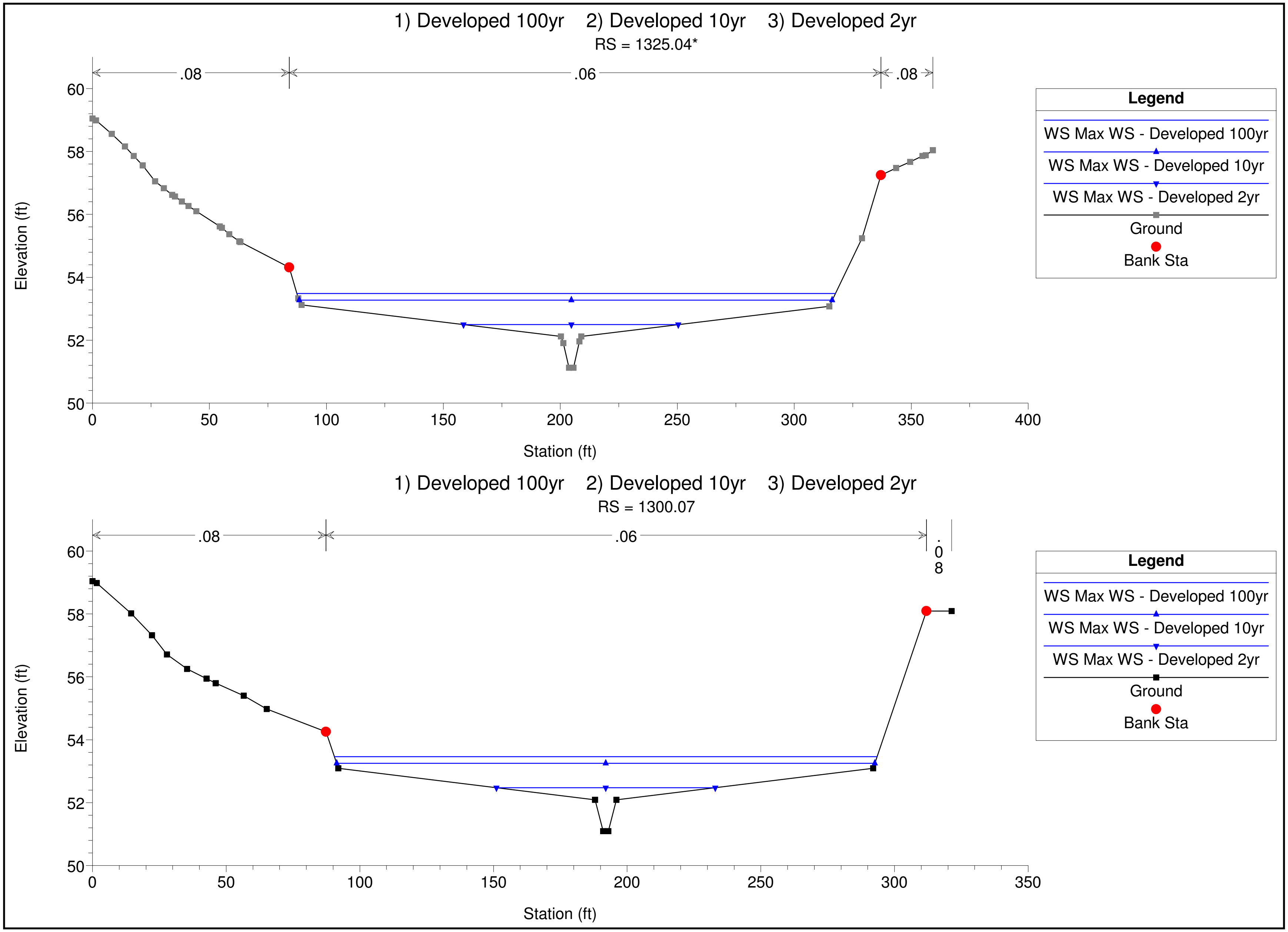

1) Developed 100yr 2) Developed 10yr 3) Developed 2yr
RS = 1512.5*
.08
.08
Legend
WS Max WS - Developed 100yr
WS Max WS - Developed 10yr
WS Max WS - Developed 2yr
Ground
Bank Sta
Elevation (ft)
Station (ft)
1) Developed 100yr 2) Developed 10yr 3) Developed 2yr
RS = 1425
.06
.08
Legend
WS Max WS - Developed 100yr
WS Max WS - Developed 10yr
WS Max WS - Developed 2yr
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)


1) Developed 100yr 2) Developed 10yr 3) Developed 2yr
RS = 1400 Culv
.06
.08
Elevation (ft)
59
58
57
56
55
54
53
52
51
-100
0
100
200
300
400
500
Station (ft)
Legend
WS Max WS - Developed 100yr
WS Max WS - Developed 10yr
WS Max WS - Developed 2yr
Ground
Ineff
Bank Sta

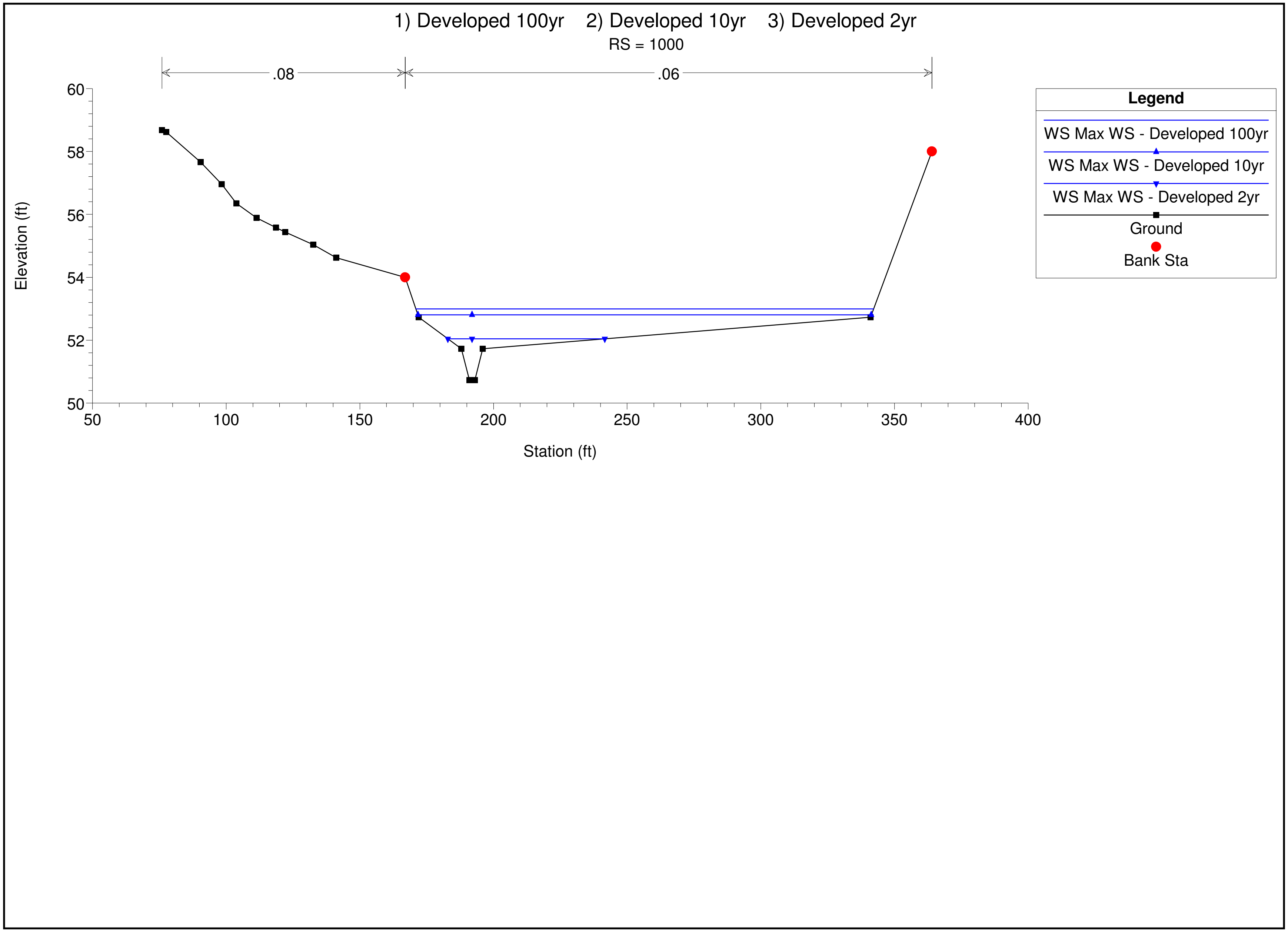

1) Developed 100yr 2) Developed 10yr 3) Developed 2yr
RS = 1400 Culv
.08
.06
.08
Elevation (ft)
60
58
56
54
52
50
0
100
200
300
400
500
Station (ft)
Legend
WS Max WS - Developed 100yr
WS Max WS - Developed 10yr
WS Max WS - Developed 2yr
Ground
Ineff
Bank Sta

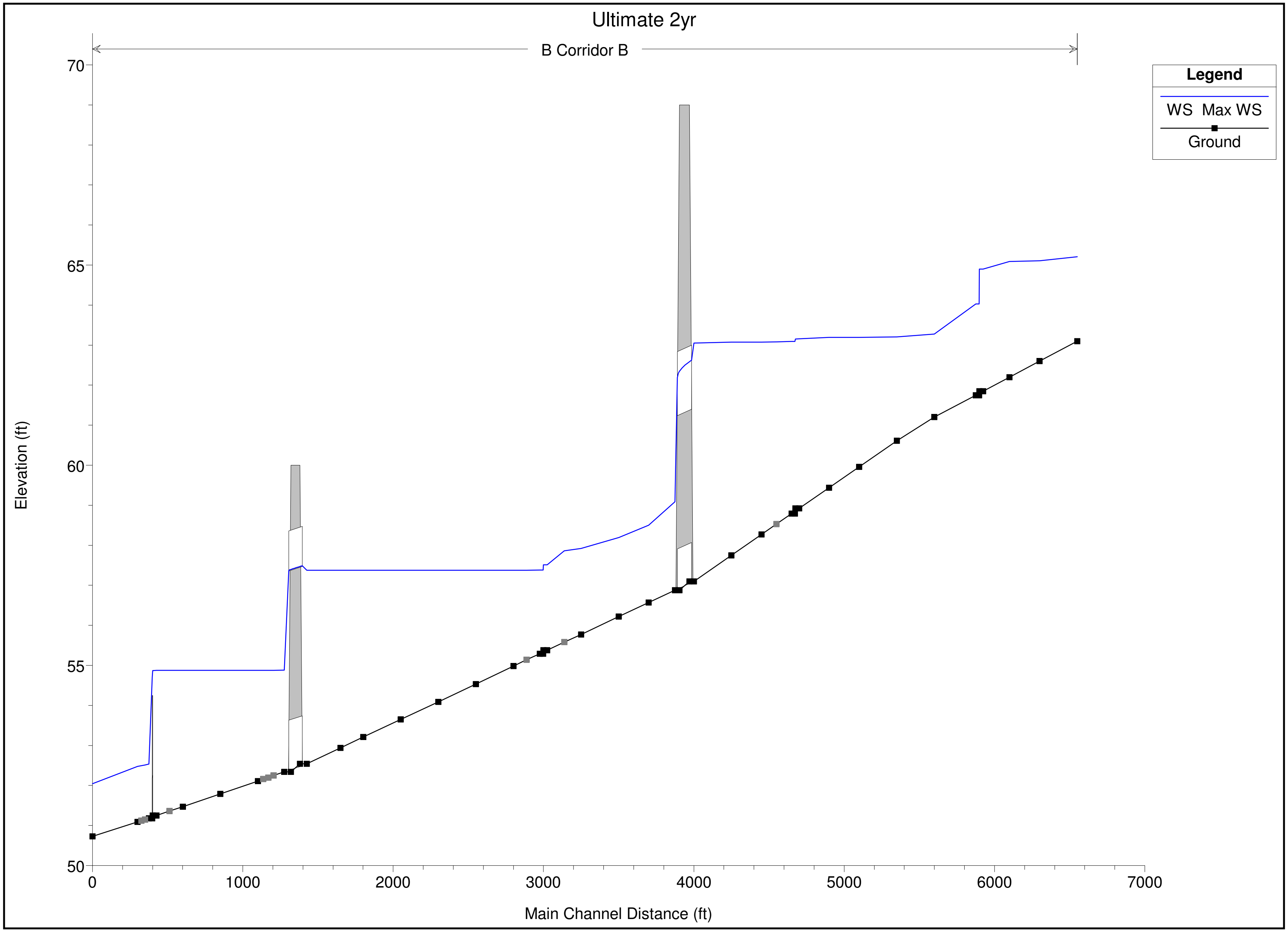

1) Developed 100yr 2) Developed 10yr 3) Developed 2yr
RS = 1375
.08
.06
.08
Elevation (ft)
Station (ft)
Legend
WS Max WS - Developed 100yr
WS Max WS - Developed 10yr
WS Max WS - Developed 2yr
Ground
Ineff
Bank Sta


1) Developed 100yr 2) Developed 10yr 3) Developed 2yr
RS = 1350.02*
.08
.06
.08
Elevation (ft)
Station (ft)
Legend
WS Max WS - Developed 100yr
WS Max WS - Developed 10yr
WS Max WS - Developed 2yr
Ground
Bank Sta



1) Developed 100yr 2) Developed 10yr 3) Developed 2yr
RS = 1325.04*
.08
.06
.08
Elevation (ft)
Station (ft)
Legend
WS Max WS - Developed 100yr
WS Max WS - Developed 10yr
WS Max WS - Developed 2yr
Ground
Bank Sta
1) Developed 100yr 2) Developed 10yr 3) Developed 2yr
RS = 1300.07
.08
.06
.08
Elevation (ft)
Station (ft)
Legend
WS Max WS - Developed 100yr
WS Max WS - Developed 10yr
WS Max WS - Developed 2yr
Ground
Bank Sta


1) Developed 100yr 2) Developed 10yr 3) Developed 2yr
RS = 1000
.08
.06
Legend
WS Max WS - Developed 100yr
WS Max WS - Developed 10yr
WS Max WS - Developed 2yr
Ground
Bank Sta
Elevation (ft)
Station (ft)
60
58
56
54
52
50
50
100
150
200
250
300
350
400



Ultimate 2yr
B Corridor B
Legend
WS Max WS
Ground
Elevation (ft)
70
65
60
55
50
0
1000
2000
3000
4000
5000
6000
7000
Main Channel Distance (ft)

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

```
X     X  XXXXXX   XXXX        XXXX       XX      XXXX
X     X  X       X    X       X   X     X  X    X
X     X  X       X            X   X    X    X   X
XXXXXXX  XXXX    X      XXX   XXXX     XXXXXX    XXXX
X     X  X       X            X  X     X    X        X
X     X  X       X    X       X   X    X    X        X
X     X  XXXXXX   XXXX        X    X   X    X   XXXXX
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PROJECT DATA
Project Title: Bproposed
Project File : Bproposed.prj
Run Date and Time: 5/5/2011 4:31:36 PM

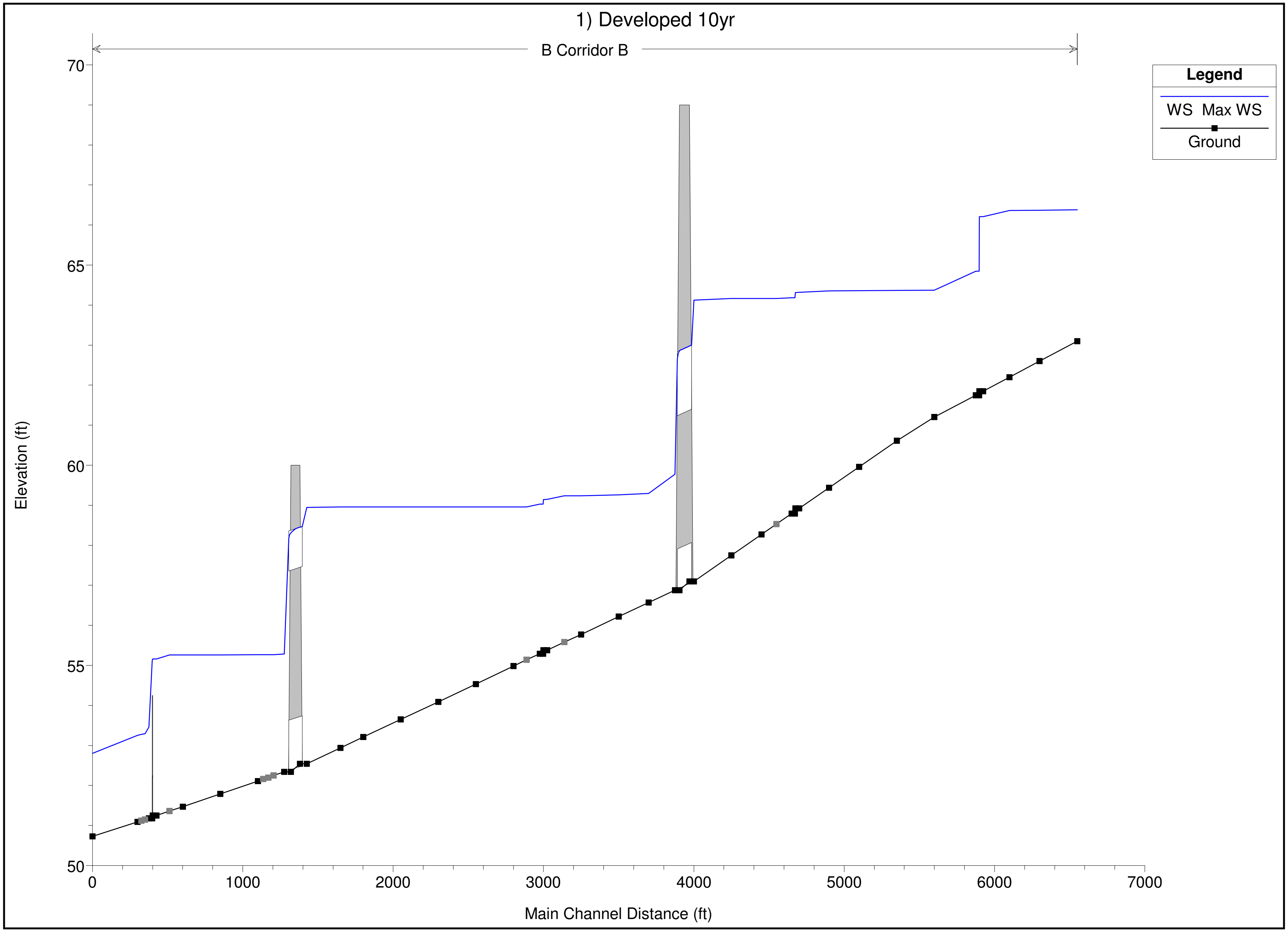
Project in English units

Project Description:
B Corridor - Developed, Interim and Existing Conditions
2 yr 24 hr Developed

Profile Output Table - Standard Table 1

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
Corridor B	7550	Max WS	44.26	63.10	65.21		65.21	0.000948	0.59	74.75	108.87	0.13
Corridor B	7300	Max WS	41.23	62.60	65.11		65.11	0.000182	0.35	119.02	112.07	0.06
Corridor B	7100	Max WS	41.74	62.20	65.09		65.09	0.000069	0.26	161.83	115.09	0.04
Corridor B	6925	Max WS	42.18	61.85	64.90	63.17	64.96	0.001803	1.97	21.39	116.39	0.21
Corridor B	6900		Inl Struct									
Corridor B	6875	Max WS	42.09	61.75	64.03		64.15	0.005586	2.77	15.21	110.21	0.35
Corridor B	6600	Max WS	34.50	61.20	63.28		63.28	0.000677	0.48	71.16	108.60	0.11
Corridor B	6350	Max WS	33.76	60.61	63.21		63.21	0.000094	0.26	128.91	112.78	0.04
Corridor B	6100	Max WS	33.98	59.96	63.19		63.19	0.000023	0.17	202.33	117.87	0.02
Corridor B	5900	Max WS	34.32	59.44	63.19		63.19	0.000010	0.13	264.34	122.01	0.02
Corridor B	5700	Max WS	34.67	58.92	63.16	60.13	63.17	0.000253	0.93	37.37	125.91	0.08
Corridor B	5675		Inl Struct									
Corridor B	5650	Max WS	34.67	58.79	63.09		63.11	0.000339	1.10	31.40	126.40	0.10
Corridor B	5550.*	Max WS	34.85	58.53	63.08		63.08	0.000004	0.10	362.85	128.40	0.01
Corridor B	5450	Max WS	38.13	58.27	63.08		63.08	0.000003	0.10	397.74	130.46	0.01
Corridor B	5250	Max WS	42.22	57.75	63.08		63.08	0.000003	0.09	466.58	134.62	0.01
Corridor B	5000	Max WS	42.22	57.10	63.05		63.07	0.000156	0.95	44.62	139.62	0.07
Corridor B	4950		Culvert									
Corridor B	4875	Max WS	42.22	56.88	59.09		59.22	0.006340	2.88	14.67	109.67	0.37
Corridor B	4700	Max WS	42.22	56.57	58.50		58.51	0.002079	0.76	55.72	101.03	0.18
Corridor B	4500	Max WS	42.79	56.22	58.19		58.20	0.001737	0.71	60.31	105.48	0.17
Corridor B	4250	Max WS	42.98	55.77	57.92		57.92	0.000743	0.54	79.12	109.19	0.11
Corridor B	4137.5*	Max WS	43.12	55.58	57.86		57.86	0.000427	0.46	93.67	109.38	0.09
Corridor B	4025	Max WS	43.28	55.38	57.51	56.70	57.60	0.005208	2.34	18.48	109.04	0.33
Corridor B	4000		Inl Struct									
Corridor B	3975	Max WS	7.18	55.29	57.38		57.39	0.000229	0.52	13.74	240.74	0.07

Corridor B	3887.5*	Max WS	6.78	55.14	57.37		57.37	0.000003	0.03	204.56	264.02	0.01
Corridor B	3800	Max WS	7.49	54.98	57.37		57.37	0.000001	0.03	270.73	295.15	0.01
Corridor B	3550	Max WS	8.05	54.53	57.37		57.37	0.000000	0.02	468.85	346.83	0.00
Corridor B	3300	Max WS	8.06	54.09	57.37		57.37	0.000000	0.01	622.14	350.27	0.00
Corridor B	3050	Max WS	8.05	53.65	57.37		57.37	0.000000	0.01	710.31	323.79	0.00
Corridor B	2800	Max WS	8.05	53.21	57.37		57.37	0.000000	0.01	731.80	280.58	0.00
Corridor B	2650	Max WS	8.05	52.94	57.37		57.37	0.000000	0.01	810.19	284.47	0.00
Corridor B	2425	Max WS	8.05	52.54	57.37		57.37	0.000004	0.12	66.21	287.67	0.01
Corridor B	2370		Culvert									
Corridor B	2275	Max WS	7.85	52.34	54.88		54.88	0.000052	0.27	29.49	259.31	0.03
Corridor B	2205.*	Max WS	7.82	52.25	54.88		54.88	0.000001	0.03	309.42	269.93	0.00
Corridor B	2170.*	Max WS	7.80	52.20	54.88		54.88	0.000001	0.02	328.18	275.40	0.00
Corridor B	2135.*	Max WS	7.78	52.16	54.88		54.88	0.000001	0.02	345.69	280.77	0.00
Corridor B	2100	Max WS	7.76	52.11	54.88		54.88	0.000001	0.02	366.20	286.14	0.00
Corridor B	1850	Max WS	8.15	51.79	54.88		54.88	0.000000	0.02	458.15	288.70	0.00
Corridor B	1600	Max WS	7.97	51.47	54.88		54.88	0.000000	0.01	648.27	344.07	0.00
Corridor B	1512.5*	Max WS	8.67	51.36	54.88		54.88	0.000000	0.01	771.31	386.91	0.00
Corridor B	1425	Max WS	8.63	51.25	54.88		54.88	0.000021	0.24	36.49	430.01	0.02
Corridor B	1400		Culvert									
Corridor B	1375	Max WS	8.63	51.18	52.54		52.56	0.002125	1.10	7.86	110.49	0.20
Corridor B	1350.02*	Max WS	8.63	51.15	52.51		52.52	0.001263	0.35	24.93	100.76	0.12
Corridor B	1325.04*	Max WS	8.63	51.12	52.50		52.50	0.001278	0.36	23.93	91.75	0.12
Corridor B	1300.07	Max WS	8.63	51.09	52.47		52.48	0.001392	0.39	22.29	81.87	0.13
Corridor B	1000	Max WS	8.62	50.73	52.04	51.34	52.05	0.003012	0.56	15.48	58.64	0.19



1) Developed 10yr
B Corridor B
Legend
WS Max WS
Ground
Elevation (ft)
Main Channel Distance (ft)
70
65
60
55
50
0
1000
2000
3000
4000
5000
6000
7000

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```
X     X  XXXXXX   XXXX        XXXX      XX      XXXX
X     X  X       X    X       X   X    X  X    X
X     X  X       X            X   X   X    X   X
XXXXXXX  XXXX    X      XXX   XXXX    XXXXXX    XXXX
X     X  X       X            X  X    X    X        X
X     X  X       X    X       X   X   X    X        X
X     X  XXXXXX   XXXX        X    X  X    X   XXXXX
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Run Date and Time: 5/5/2011 4:31:18 PM

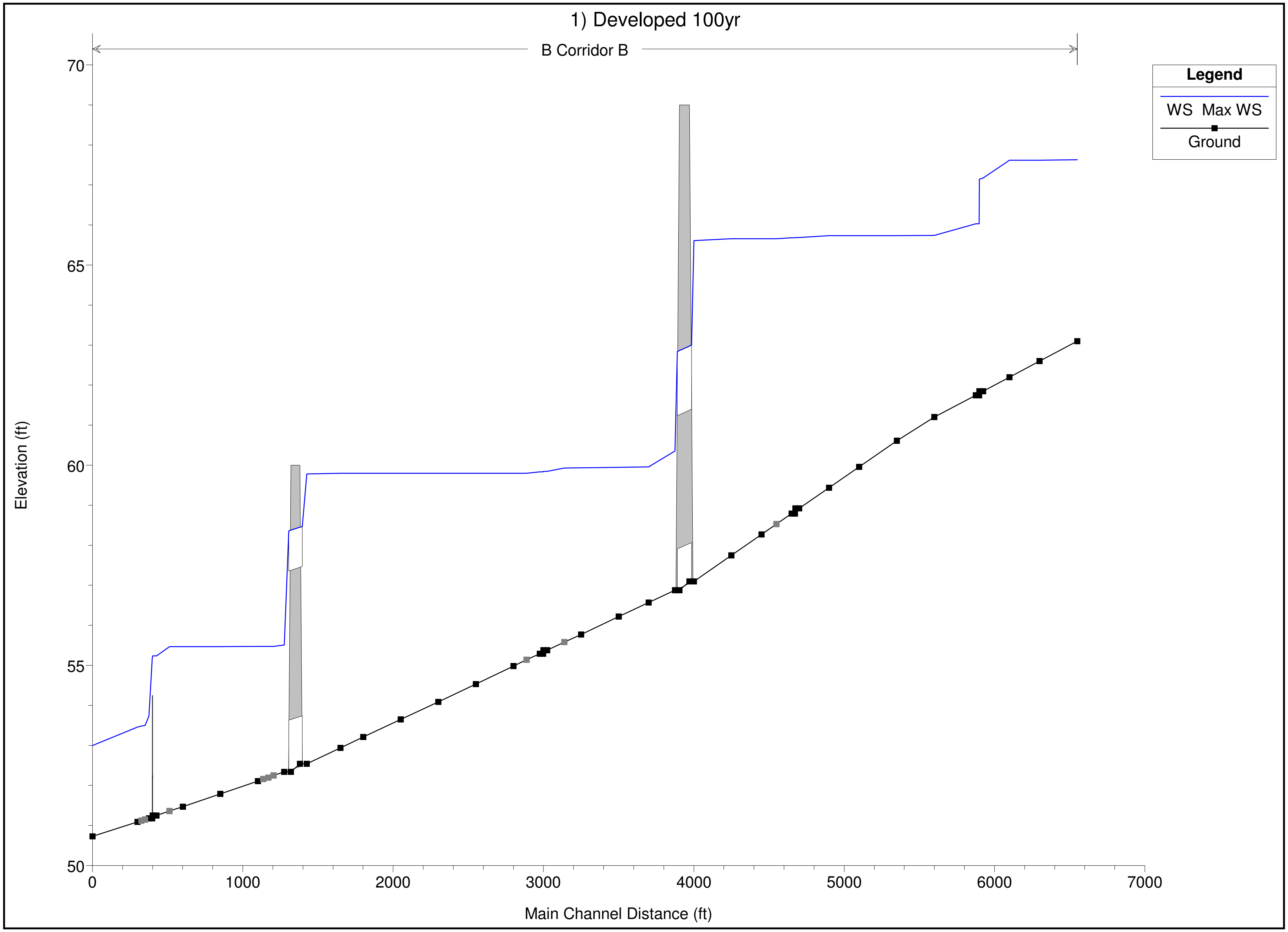
Project in English units

Project Description:
B Corridor - Developed, Interim and Existing Conditions
10 yr 24 hr Developed

Profile Output Table - Standard Table 1

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
Corridor B	7550	Max WS	71.40	63.10	66.38		66.38	0.000091	0.34	207.94	118.25	0.05
Corridor B	7300	Max WS	70.11	62.60	66.37		66.37	0.000040	0.26	266.27	122.13	0.03
Corridor B	7100	Max WS	71.30	62.20	66.36		66.36	0.000025	0.23	315.01	125.28	0.03
Corridor B	6925	Max WS	72.29	61.85	66.21	63.58	66.29	0.001399	2.27	31.88	126.88	0.20
Corridor B	6900	Inl Struct										
Corridor B	6875	Max WS	66.48	61.75	64.85		64.99	0.004217	3.05	21.77	116.77	0.33
Corridor B	6600	Max WS	57.46	61.20	64.37		64.38	0.000072	0.29	195.41	117.40	0.04
Corridor B	6350	Max WS	57.94	60.61	64.36		64.36	0.000028	0.22	264.64	122.03	0.03
Corridor B	6100	Max WS	58.74	59.96	64.36		64.36	0.000013	0.17	345.05	127.19	0.02
Corridor B	5900	Max WS	59.41	59.44	64.36		64.36	0.000007	0.14	412.03	131.33	0.01
Corridor B	5700	Max WS	60.08	58.92	64.32	60.45	64.34	0.000309	1.23	48.94	135.17	0.10
Corridor B	5675	Inl Struct										
Corridor B	5650	Max WS	59.97	58.79	64.18		64.21	0.000448	1.49	40.12	135.12	0.12
Corridor B	5550.*	Max WS	60.31	58.53	64.17		64.17	0.000004	0.12	507.41	137.11	0.01
Corridor B	5450	Max WS	66.22	58.27	64.17		64.17	0.000004	0.12	577.91	197.97	0.01
Corridor B	5250	Max WS	72.86	57.75	64.17		64.17	0.000003	0.12	617.89	143.33	0.01
Corridor B	5000	Max WS	72.83	57.10	64.12		64.15	0.000258	1.37	53.20	148.68	0.09
Corridor B	4950	Culvert										
Corridor B	4875	Max WS	71.83	56.88	59.77		59.97	0.006381	3.57	20.14	115.14	0.40
Corridor B	4700	Max WS	68.09	56.57	59.30		59.30	0.000270	0.47	143.73	113.82	0.07
Corridor B	4500	Max WS	68.08	56.22	59.26		59.26	0.000132	0.38	179.78	116.33	0.05
Corridor B	4250	Max WS	68.05	55.77	59.24		59.24	0.000060	0.30	230.23	119.75	0.04
Corridor B	4137.5*	Max WS	68.09	55.58	59.23		59.23	0.000045	0.27	252.30	121.25	0.03
Corridor B	4025	Max WS	66.44	55.38	59.15	56.95	59.19	0.001100	1.74	38.11	122.12	0.17
Corridor B	4000	Inl Struct										
Corridor B	3975	Max WS	64.87	55.29	59.03		59.12	0.001982	2.41	26.91	253.91	0.23
Corridor B	3887.5*	Max WS	61.96	55.14	58.96		58.96	0.000005	0.10	638.13	280.57	0.01
Corridor B	3800	Max WS	64.65	54.98	58.96		58.96	0.000004	0.09	748.70	307.84	0.01
Corridor B	3550	Max WS	67.04	54.53	58.96		58.96	0.000002	0.07	1028.71	359.65	0.01

Corridor B	3300	Max WS	67.36	54.09	58.96		58.96	0.000001	0.06	1187.25	362.95	0.01
Corridor B	3050	Max WS	67.59	53.65	58.96		58.96	0.000001	0.05	1233.39	336.47	0.01
Corridor B	2800	Max WS	67.90	53.21	58.96		58.96	0.000001	0.06	1185.35	291.99	0.01
Corridor B	2650	Max WS	68.07	52.94	58.96		58.96	0.000001	0.05	1270.88	297.14	0.00
Corridor B	2425	Max WS	68.05	52.54	58.95		58.95	0.000091	0.74	91.37	300.25	0.05
Corridor B	2370		Culvert									
Corridor B	2275	Max WS	37.35	52.34	55.28		55.30	0.000614	1.04	35.95	262.54	0.12
Corridor B	2205.*	Max WS	36.89	52.25	55.27		55.27	0.000010	0.09	414.81	273.14	0.01
Corridor B	2170.*	Max WS	36.83	52.20	55.27		55.27	0.000009	0.08	435.57	278.51	0.01
Corridor B	2135.*	Max WS	36.78	52.16	55.26		55.26	0.000009	0.08	455.08	283.87	0.01
Corridor B	2100	Max WS	36.72	52.11	55.26		55.26	0.000005	0.08	477.61	289.24	0.01
Corridor B	1850	Max WS	59.07	51.79	55.26		55.26	0.000007	0.10	570.04	291.78	0.01
Corridor B	1600	Max WS	60.08	51.47	55.26		55.26	0.000003	0.08	781.20	347.91	0.01
Corridor B	1512.5*	Max WS	90.20	51.36	55.26		55.26	0.000009	0.10	920.34	390.24	0.01
Corridor B	1425	Max WS	90.58	51.25	55.16		55.17	0.007513	0.85	107.10	432.28	0.30
Corridor B	1400		Culvert									
Corridor B	1375	Max WS	90.21	51.18	53.46		54.00	0.025574	5.92	15.23	297.23	0.76
Corridor B	1350.02*	Max WS	89.55	51.15	53.29		53.30	0.000693	0.51	176.20	255.78	0.11
Corridor B	1325.04*	Max WS	89.53	51.12	53.27		53.28	0.000833	0.56	159.22	227.81	0.12
Corridor B	1300.07	Max WS	89.49	51.09	53.25		53.26	0.001052	0.63	141.26	201.29	0.13
Corridor B	1000	Max WS	88.93	50.73	52.80	52.21	52.81	0.002173	0.84	105.71	169.60	0.19



1) Developed 100yr
B Corridor B
Legend
WS Max WS
Ground
Elevation (ft)
70
65
60
55
50
0
1000
2000
3000
4000
5000
6000
7000
Main Channel Distance (ft)

```
                    HEC-RAS Version 4.1.0 Jan 2010
                     U.S. Army Corps of Engineers
                    Hydrologic Engineering Center
                          609 Second Street
                          Davis, California

 X     X  XXXXXX    XXXX        XXXX       XX      XXXX
 X     X  X        X    X       X   X     X  X    X
 X     X  X        X            X   X    X    X   X
 XXXXXXX  XXXX     X       XXX  XXXX     XXXXXX    XXXX
 X     X  X        X            X  X     X    X        X
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PROJECT DATA
Project Title: Bproposed
Project File : Bproposed.prj
Run Date and Time: 5/5/2011 4:31:00 PM

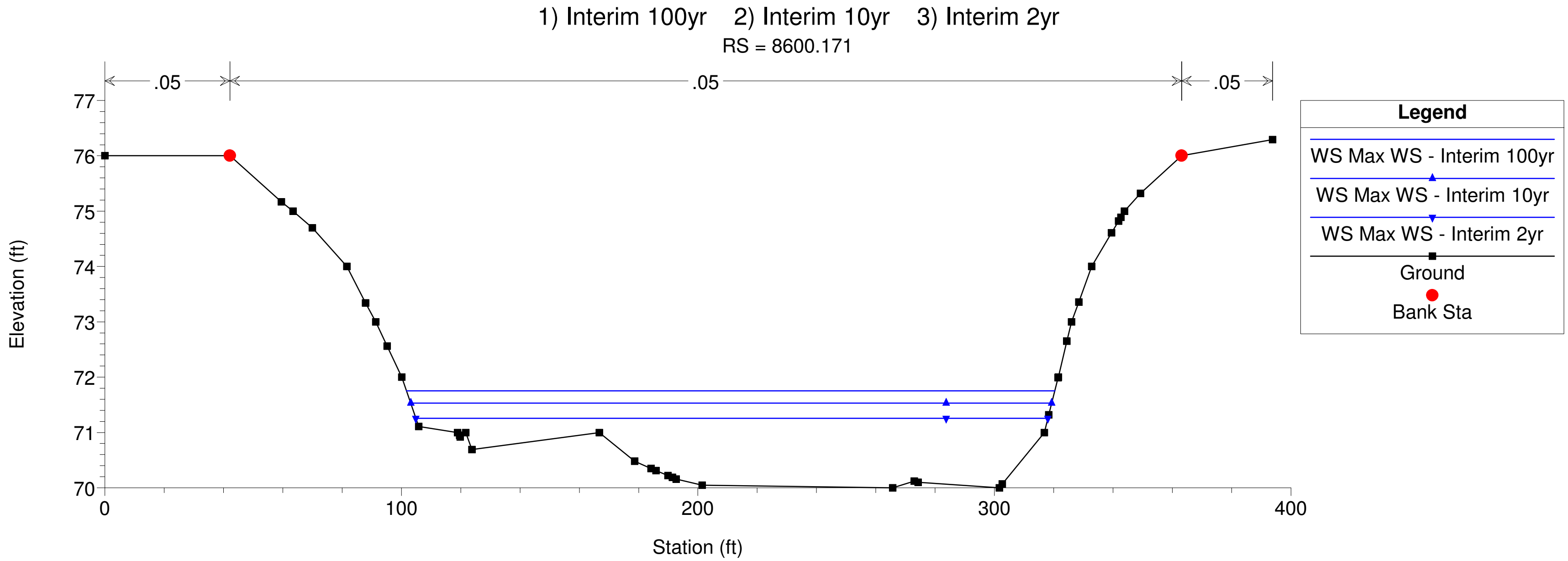
Project in English units

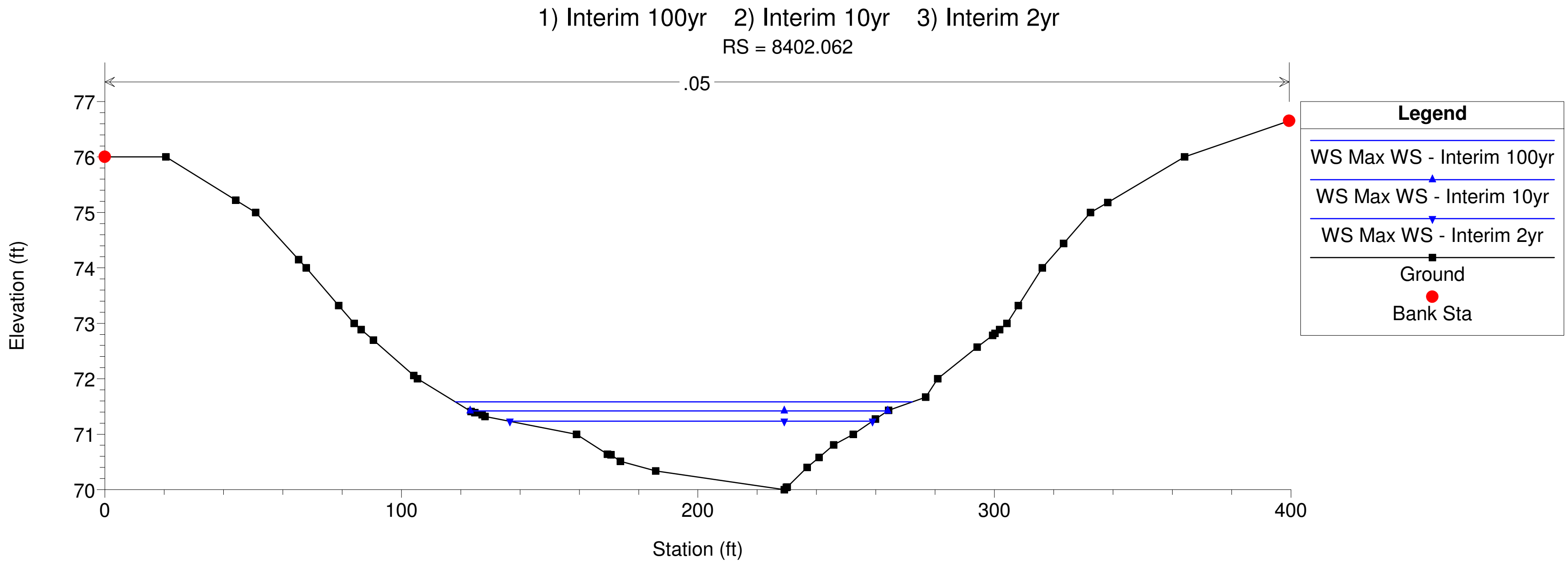
Project Description:
B Corridor - Developed, Interim and Existing Conditions
100 yr 24 hr Developed

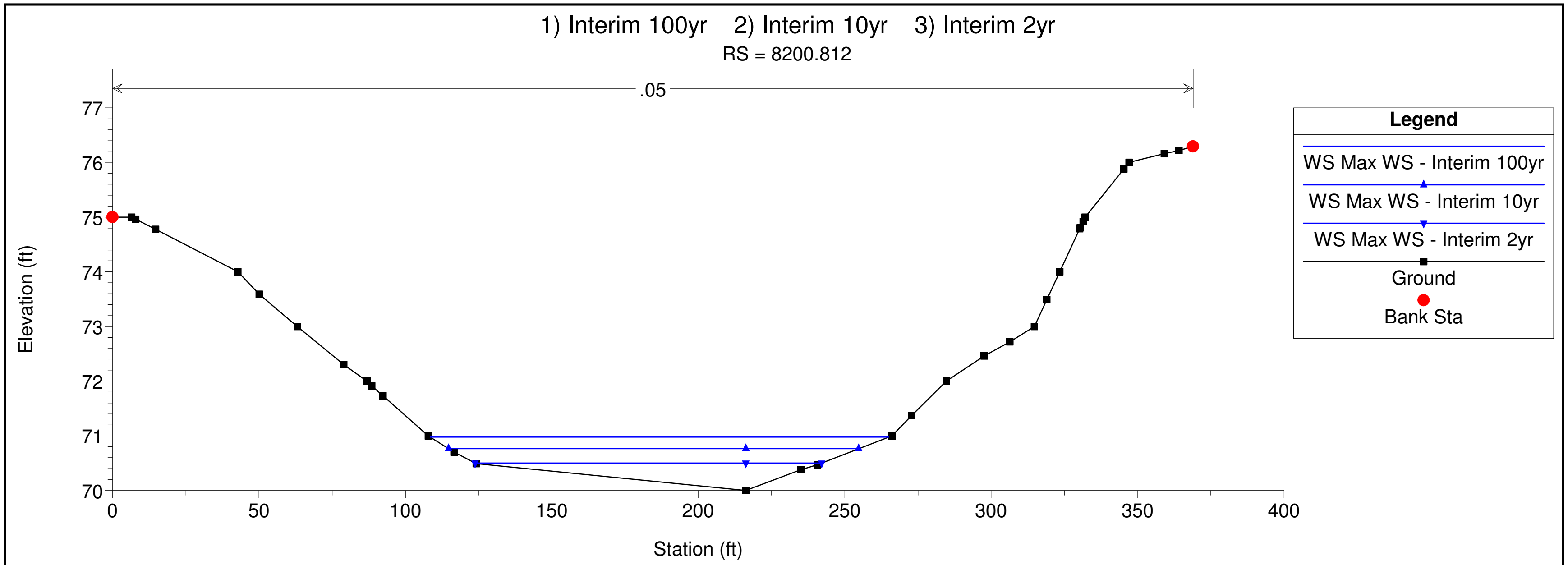
Profile Output Table - Standard Table 1

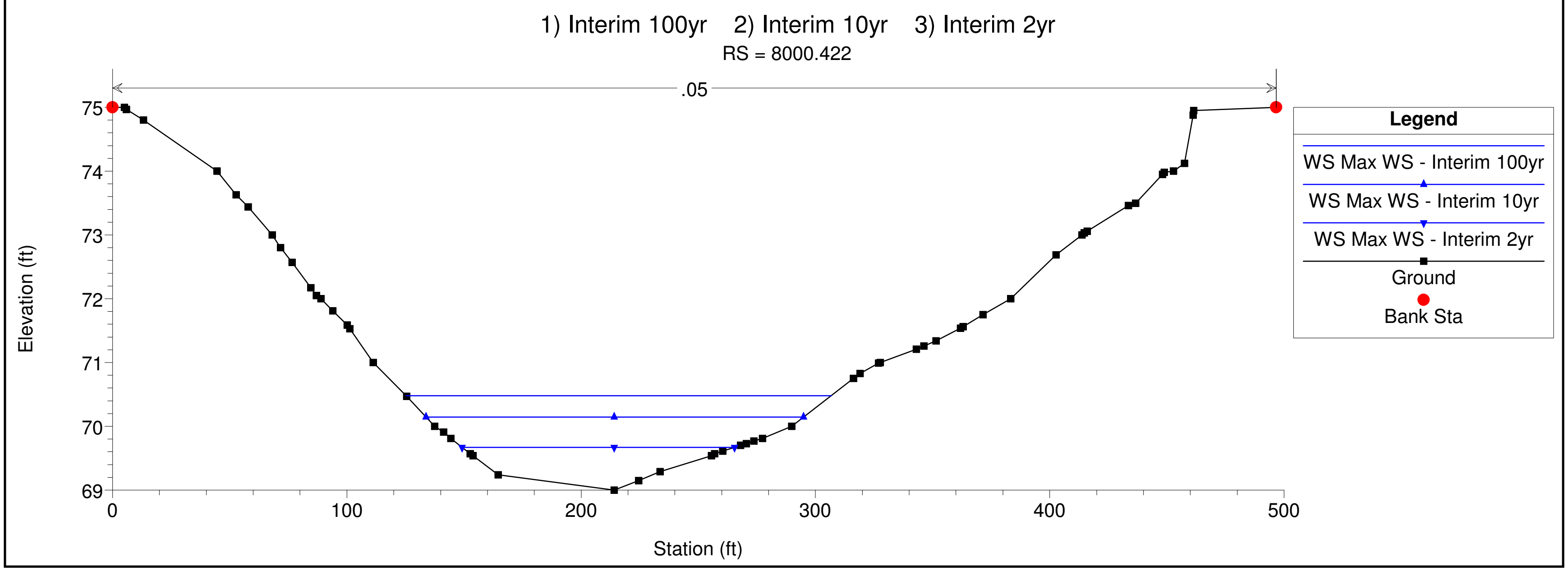
Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
Corridor B	7550	Max WS	132.58	63.10	67.63		67.63	0.000055	0.37	361.88	128.24	0.04
Corridor B	7300	Max WS	129.87	62.60	67.62		67.62	0.000032	0.31	425.73	132.17	0.03
Corridor B	7100	Max WS	131.97	62.20	67.62		67.62	0.000023	0.28	478.55	135.33	0.03
Corridor B	6925	Max WS	133.65	61.85	67.17	64.27	67.25	0.022002	2.17	61.61	134.60	0.57
Corridor B	6900	Inl Struct										
Corridor B	6875	Max WS	114.08	61.75	66.03		66.24	0.003720	3.65	31.26	126.26	0.33
Corridor B	6600	Max WS	79.53	61.20	65.74		65.74	0.000020	0.22	363.09	128.32	0.02
Corridor B	6350	Max WS	80.79	60.61	65.74		65.74	0.000011	0.18	439.73	133.01	0.02
Corridor B	6100	Max WS	81.93	59.96	65.73		65.73	0.000007	0.16	527.61	138.19	0.01
Corridor B	5900	Max WS	82.89	59.44	65.73		65.73	0.000005	0.14	600.41	142.35	0.01
Corridor B	5700	Max WS	83.15	58.92	65.69	60.70	65.69	0.000448	0.54	154.11	146.13	0.09
Corridor B	5675	Inl Struct										
Corridor B	5650	Max WS	82.85	58.79	65.68		65.69	0.000550	0.57	145.00	147.13	0.10
Corridor B	5550.*	Max WS	83.33	58.53	65.66		65.66	0.000003	0.12	740.59	196.44	0.01
Corridor B	5450	Max WS	92.05	58.27	65.66		65.66	0.000002	0.11	926.82	256.19	0.01
Corridor B	5250	Max WS	101.85	57.75	65.66		65.66	0.000002	0.12	840.22	155.17	0.01
Corridor B	5000	Max WS	101.71	57.10	65.61		65.65	0.000256	1.56	65.10	196.34	0.10
Corridor B	4950	Culvert										
Corridor B	4875	Max WS	98.71	56.88	60.36		60.60	0.006023	3.98	24.80	119.80	0.40
Corridor B	4700	Max WS	87.47	56.57	59.96		59.96	0.000113	0.40	221.02	119.13	0.05
Corridor B	4500	Max WS	87.59	56.22	59.94		59.95	0.000067	0.34	261.15	121.80	0.04
Corridor B	4250	Max WS	87.49	55.77	59.93		59.93	0.000037	0.28	315.90	131.76	0.03
Corridor B	4137.5*	Max WS	87.52	55.58	59.93		59.93	0.000029	0.26	340.22	137.49	0.03
Corridor B	4025	Max WS	84.61	55.38	59.84	57.12	59.86	0.002671	0.98	87.81	140.69	0.21
Corridor B	4000	Inl Struct										
Corridor B	3975	Max WS	84.61	55.29	59.84		59.84	0.002432	0.72	118.07	262.17	0.19

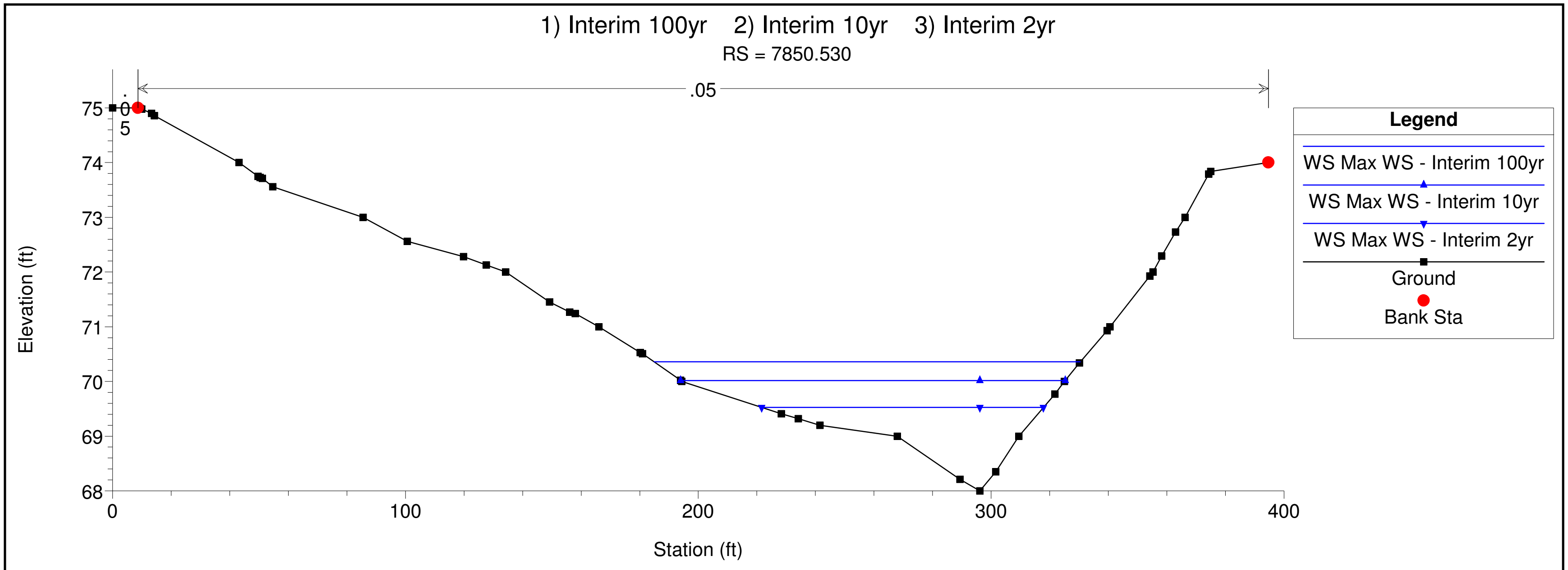
Corridor B	3887.5*	Max WS	83.34	55.14	59.80		59.80	0.000003	0.10	876.27	287.27	0.01
Corridor B	3800	Max WS	87.18	54.98	59.80		59.80	0.000003	0.09	1009.75	314.55	0.01
Corridor B	3550	Max WS	90.43	54.53	59.80		59.80	0.000001	0.07	1334.05	371.87	0.01
Corridor B	3300	Max WS	90.87	54.09	59.80		59.80	0.000001	0.06	1494.62	369.66	0.01
Corridor B	3050	Max WS	91.20	53.65	59.80		59.80	0.000001	0.06	1518.54	343.18	0.01
Corridor B	2800	Max WS	91.63	53.21	59.80		59.80	0.000001	0.06	1432.90	298.03	0.01
Corridor B	2650	Max WS	91.86	52.94	59.80		59.80	0.000001	0.06	1523.03	303.86	0.00
Corridor B	2425	Max WS	91.84	52.54	59.78		59.79	0.000105	0.88	104.75	332.50	0.06
Corridor B	2370		Culvert									
Corridor B	2275	Max WS	61.50	52.34	55.51		55.55	0.001212	1.56	39.55	264.34	0.17
Corridor B	2205.*	Max WS	60.97	52.25	55.48		55.48	0.000017	0.13	472.36	274.82	0.02
Corridor B	2170.*	Max WS	60.91	52.20	55.47		55.48	0.000017	0.12	494.18	280.19	0.02
Corridor B	2135.*	Max WS	60.85	52.16	55.47		55.47	0.000017	0.12	514.74	285.54	0.02
Corridor B	2100	Max WS	60.80	52.11	55.47		55.47	0.000009	0.11	538.34	290.91	0.01
Corridor B	1850	Max WS	92.61	51.79	55.47		55.47	0.000013	0.15	630.89	293.45	0.02
Corridor B	1600	Max WS	94.74	51.47	55.47		55.47	0.000006	0.11	853.42	349.98	0.01
Corridor B	1512.5*	Max WS	137.48	51.36	55.47		55.47	0.000016	0.14	1001.06	392.04	0.02
Corridor B	1425	Max WS	138.28	51.25	55.23		55.25	0.007296	0.99	139.35	432.88	0.31
Corridor B	1400		Culvert									
Corridor B	1375	Max WS	137.75	51.18	53.73	53.65	54.70	0.038114	7.91	17.42	299.42	0.94
Corridor B	1350.02*	Max WS	137.38	51.15	53.50		53.51	0.000678	0.60	230.69	259.48	0.11
Corridor B	1325.04*	Max WS	137.01	51.12	53.48		53.49	0.000820	0.66	207.33	230.17	0.12
Corridor B	1300.07	Max WS	137.00	51.09	53.46		53.47	0.001046	0.75	183.31	202.95	0.14
Corridor B	1000	Max WS	136.63	50.73	53.00	52.34	53.01	0.002087	0.98	138.99	171.22	0.19


1) Interim 100yr 2) Interim 10yr 3) Interim 2yr
RS = 8600.171
.05
.05
.05
Elevation (ft)
Station (ft)
Legend
WS Max WS - Interim 100yr
WS Max WS - Interim 10yr
WS Max WS - Interim 2yr
Ground
Bank Sta


1) Interim 100yr 2) Interim 10yr 3) Interim 2yr
RS = 8402.062
.05
Elevation (ft)
Station (ft)
Legend
WS Max WS - Interim 100yr
WS Max WS - Interim 10yr
WS Max WS - Interim 2yr
Ground
Bank Sta


1) Interim 100yr 2) Interim 10yr 3) Interim 2yr
RS = 8200.812
.05
Elevation (ft)
Station (ft)
Legend
WS Max WS - Interim 100yr
WS Max WS - Interim 10yr
WS Max WS - Interim 2yr
Ground
Bank Sta


1) Interim 100yr 2) Interim 10yr 3) Interim 2yr
RS = 8000.422
.05
Elevation (ft)
Station (ft)
Legend
WS Max WS - Interim 100yr
WS Max WS - Interim 10yr
WS Max WS - Interim 2yr
Ground
Bank Sta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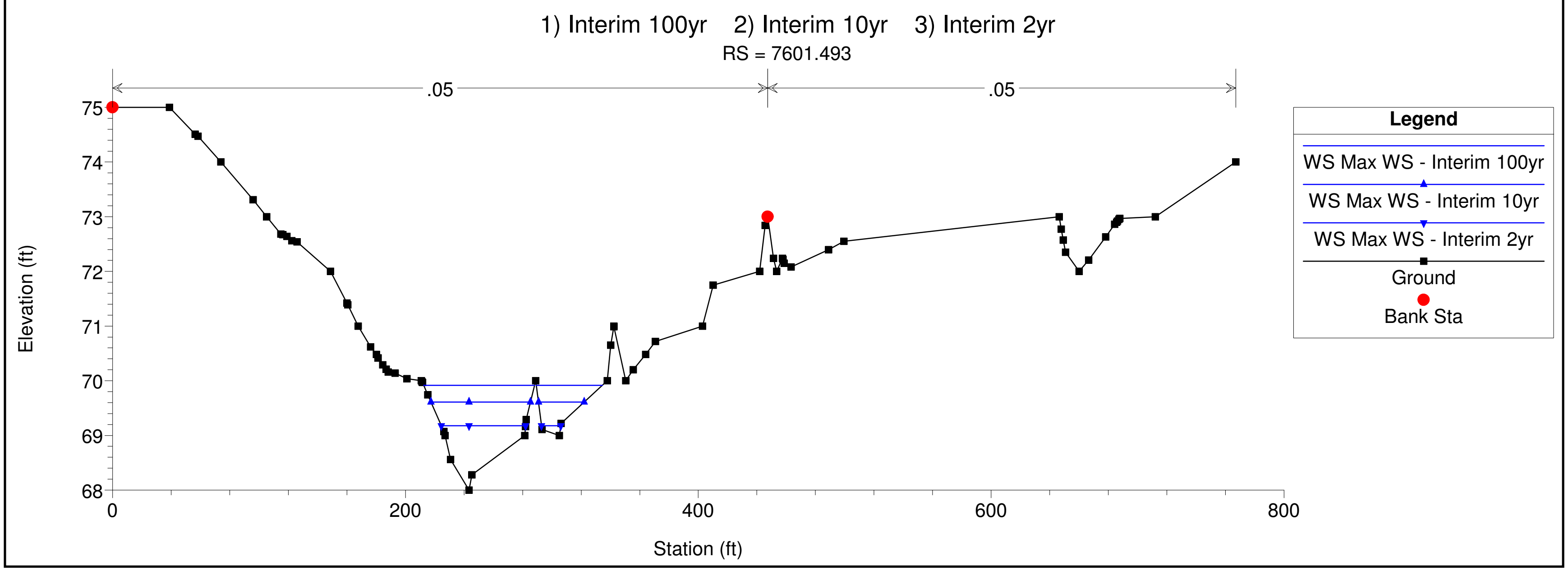
.05
Elevation (ft)
Station (ft)
Legend
WS Max WS - Interim 100yr
WS Max WS - Interim 10yr
WS Max WS - Interim 2yr
Ground
Bank Sta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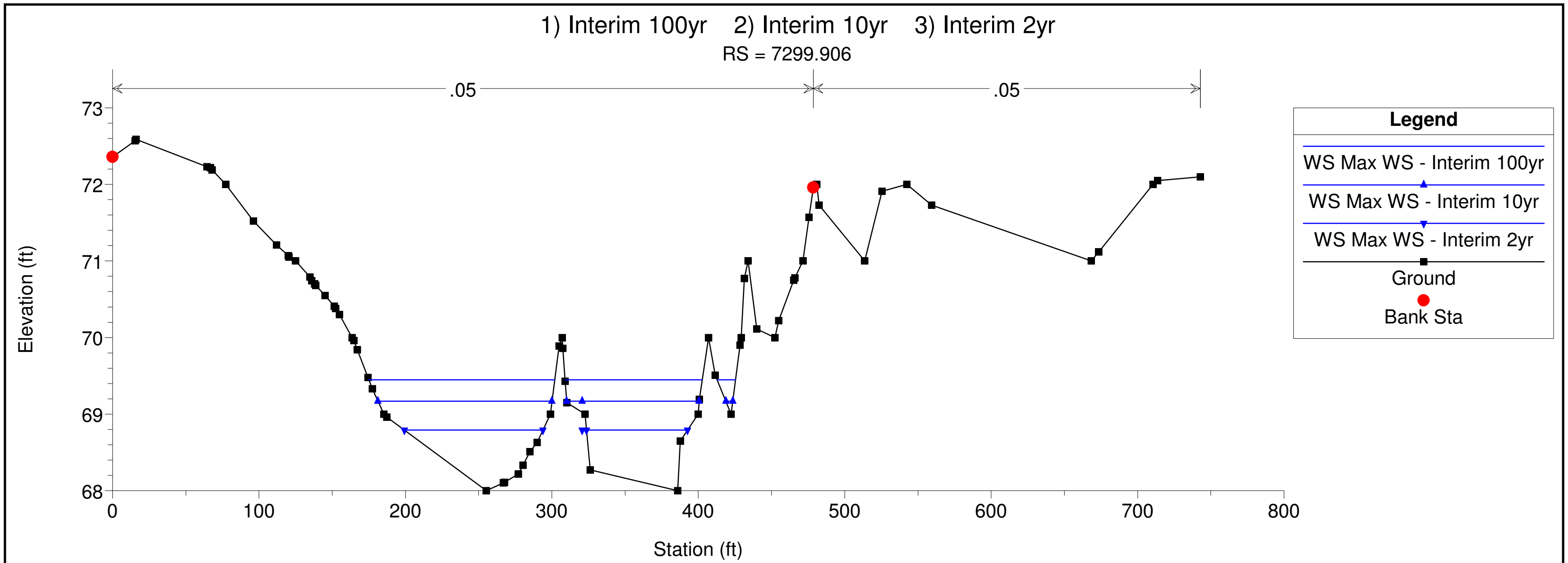
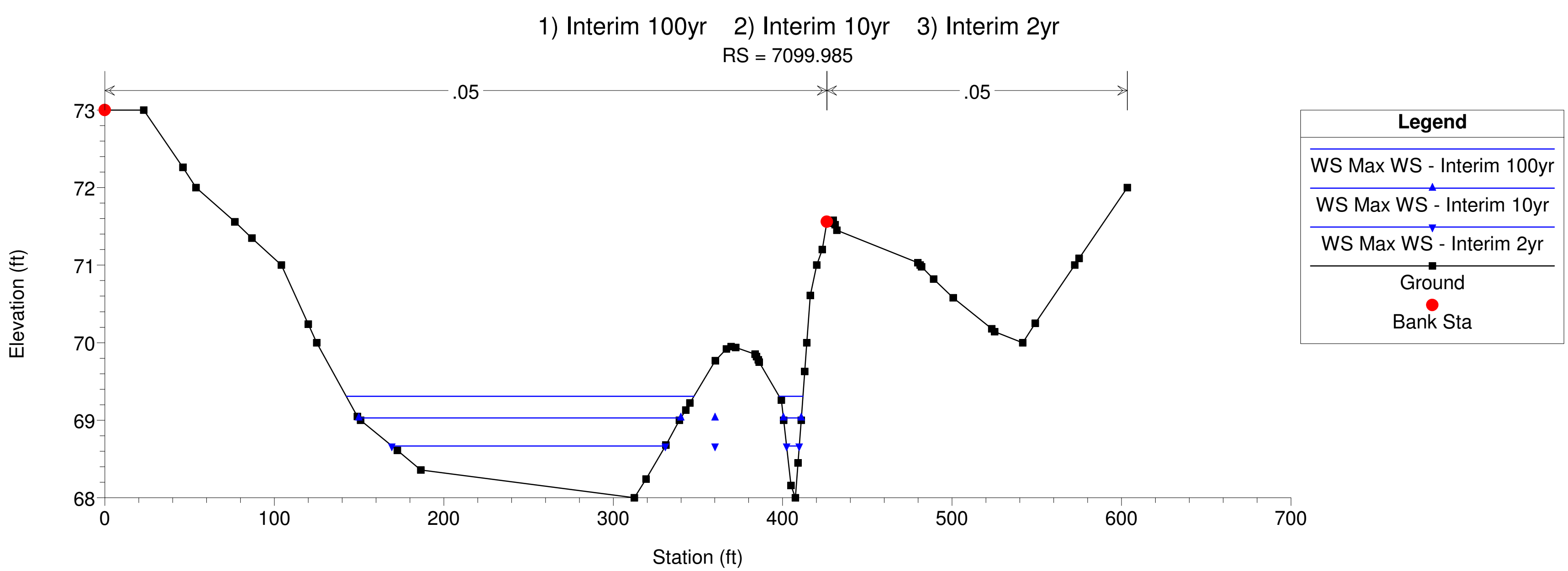
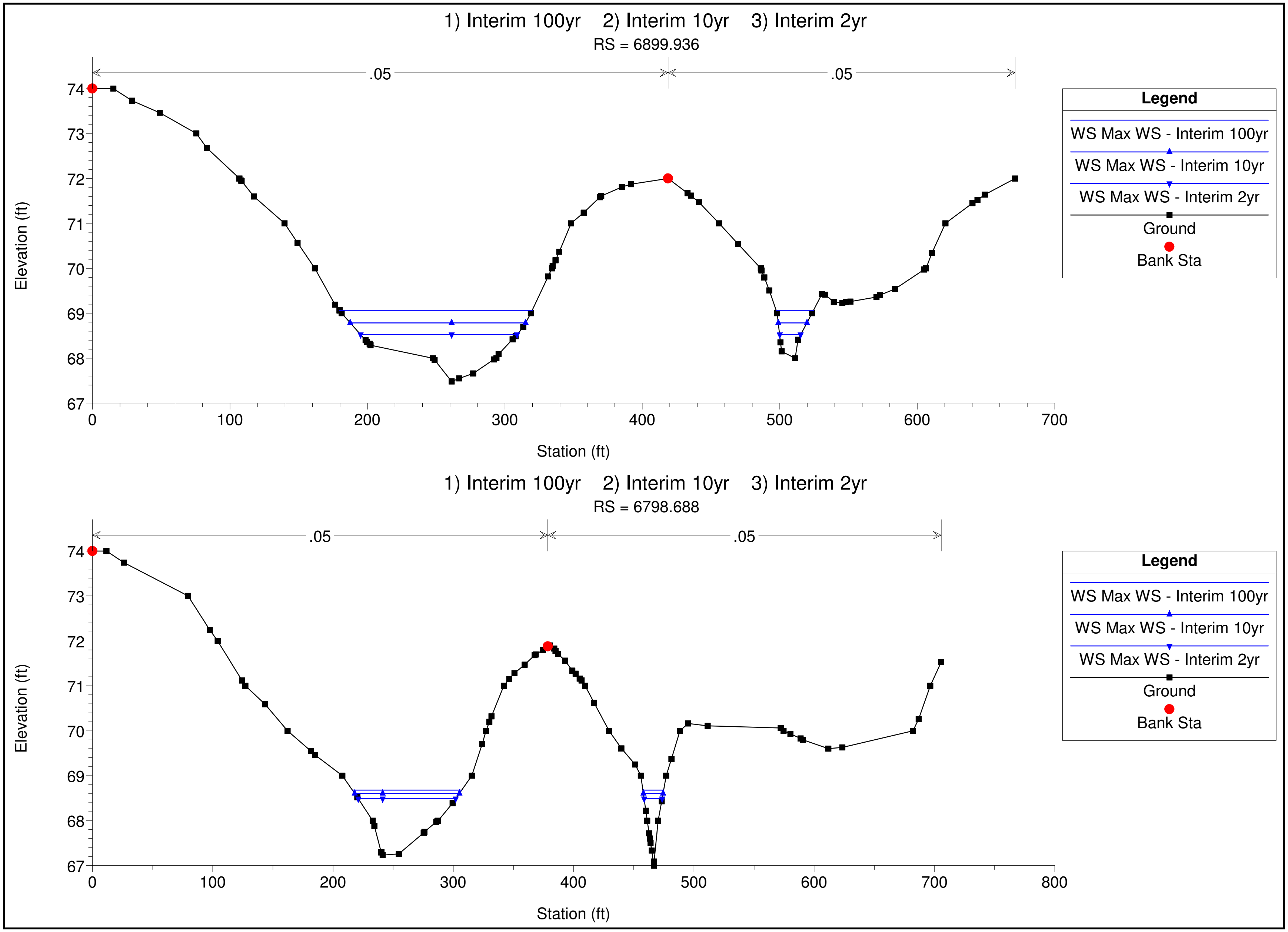
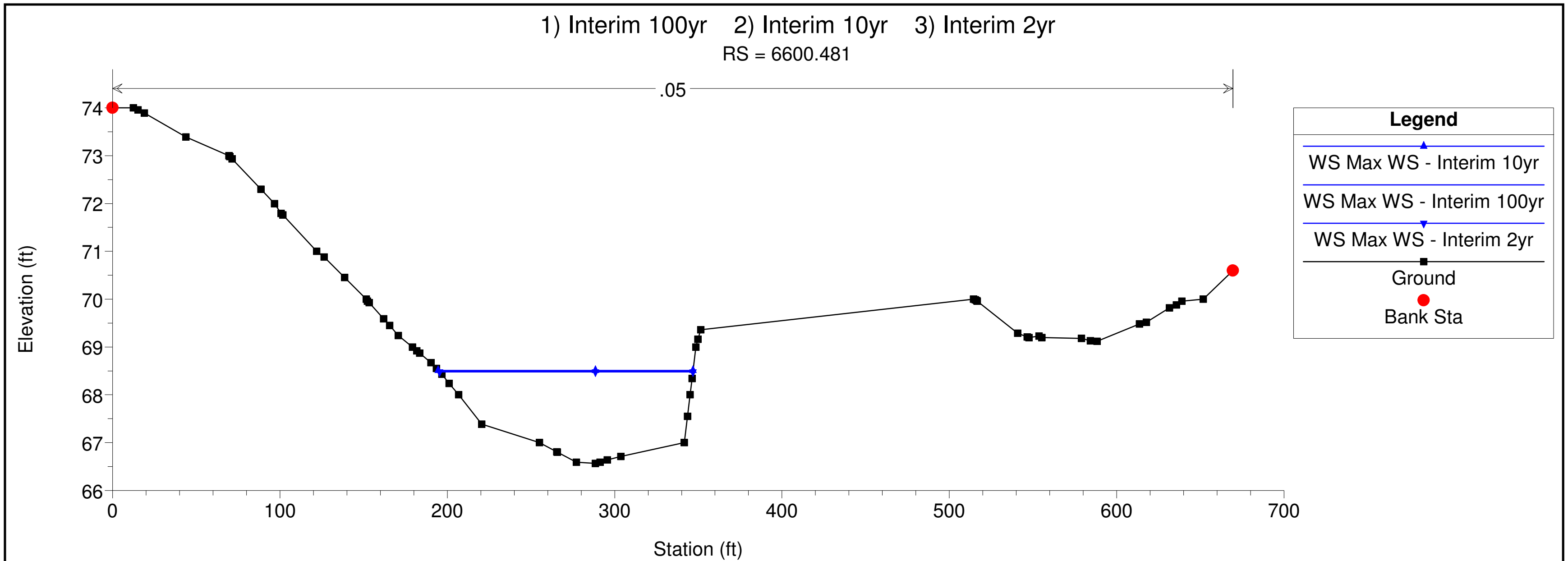
RS = 7601.493
.05
.05
Elevation (ft)
Station (ft)
Legend
WS Max WS - Interim 100yr
WS Max WS - Interim 10yr
WS Max WS - Interim 2yr
Ground
Bank Sta


1) Interim 100yr 2) Interim 10yr 3) Interim 2yr
RS = 7299.906
.05
.05
Elevation (ft)
Station (ft)
Legend
WS Max WS - Interim 100yr
WS Max WS - Interim 10yr
WS Max WS - Interim 2yr
Ground
Bank Sta


1) Interim 100yr 2) Interim 10yr 3) Interim 2yr
RS = 7099.985
.05
.05
Elevation (ft)
Station (ft)
Legend
WS Max WS - Interim 100yr
WS Max WS - Interim 10yr
WS Max WS - Interim 2yr
Ground
Bank Sta



1) Interim 100yr 2) Interim 10yr 3) Interim 2yr
RS = 6899.936
.05
.05
Elevation (ft)
Station (ft)
Legend
WS Max WS - Interim 100yr
WS Max WS - Interim 10yr
WS Max WS - Interim 2yr
Ground
Bank Sta
1) Interim 100yr 2) Interim 10yr 3) Interim 2yr
RS = 6798.688
.05
.05
Elevation (ft)
Station (ft)
Legend
WS Max WS - Interim 100yr
WS Max WS - Interim 10yr
WS Max WS - Interim 2yr
Ground
Bank Sta



1) Interim 100yr 2) Interim 10yr 3) Interim 2yr
RS = 6600.481
.05
Legend
WS Max WS - Interim 10yr
WS Max WS - Interim 100yr
WS Max WS - Interim 2yr
Ground
Bank Sta
Elevation (ft)
Station (ft)
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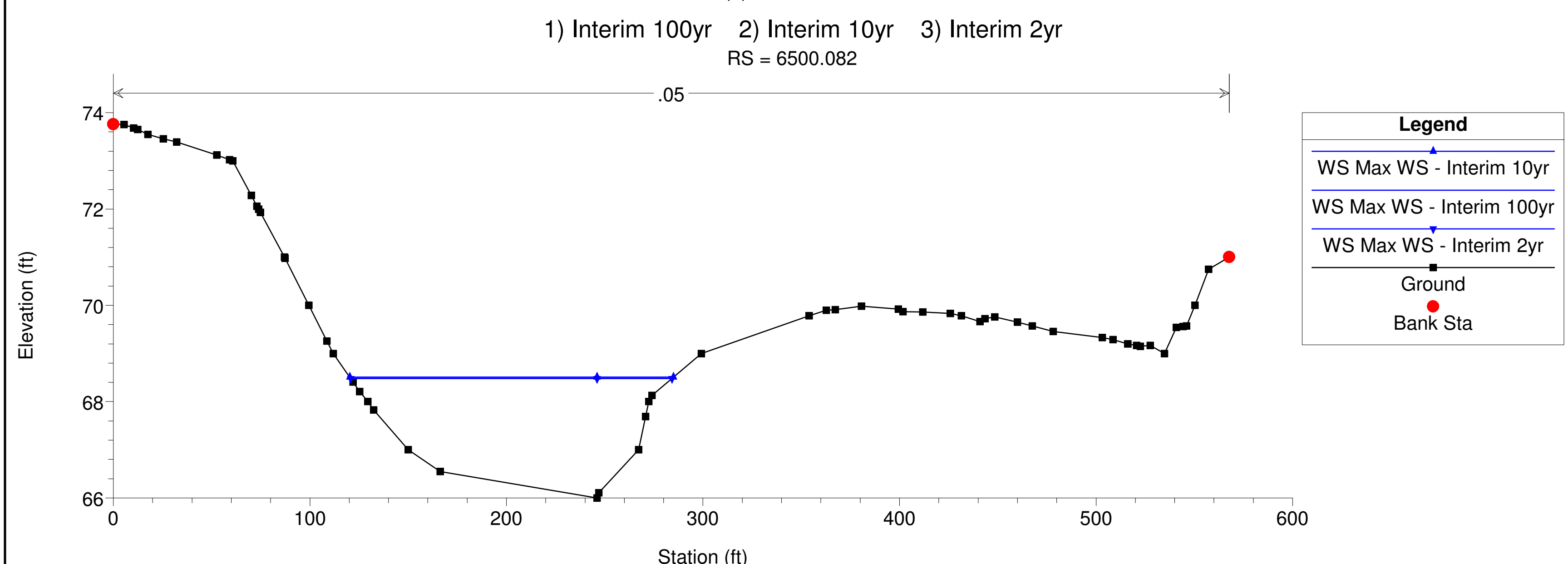
67
68
69
70
71
72
73
74
0
100
200
300
400
500
600
700



1) Interim 100yr 2) Interim 10yr 3) Interim 2yr
RS = 6500.082
.05
Legend
WS Max WS - Interim 10yr
WS Max WS - Interim 100yr
WS Max WS - Interim 2yr
Ground
Bank Sta
Elevation (ft)
Station (ft)
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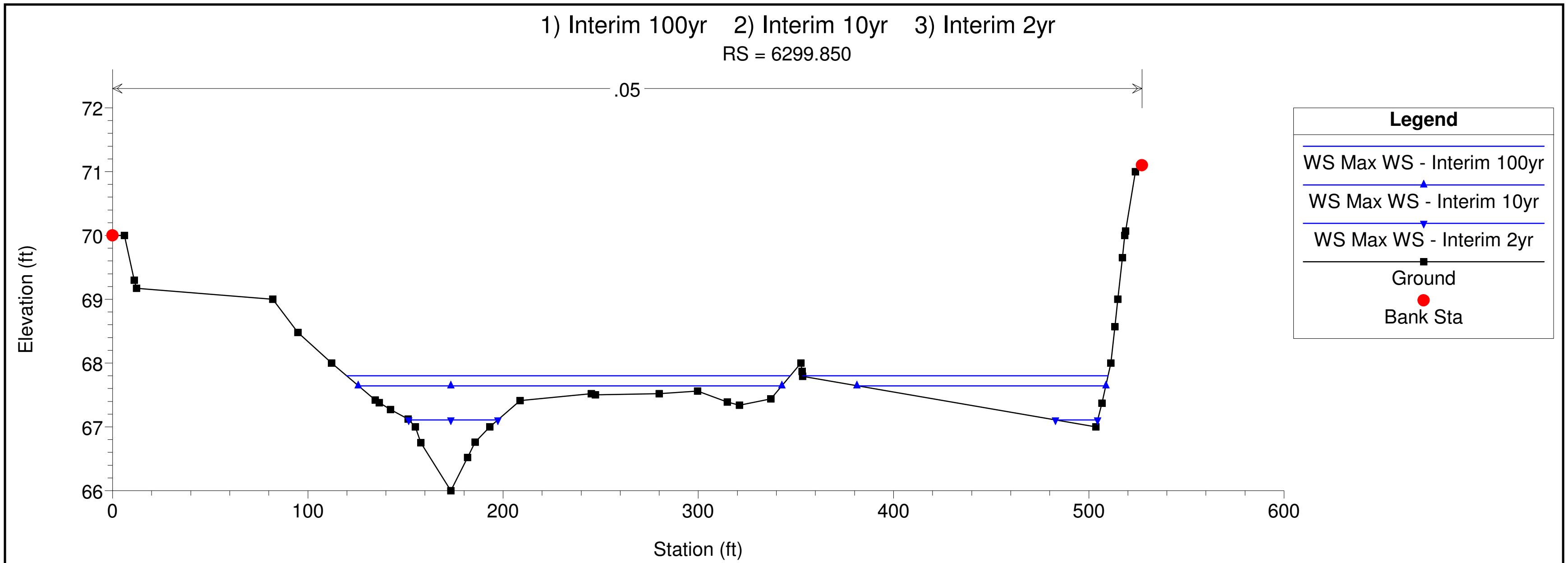
68
70
72
74
0
100
200
300
400
500
600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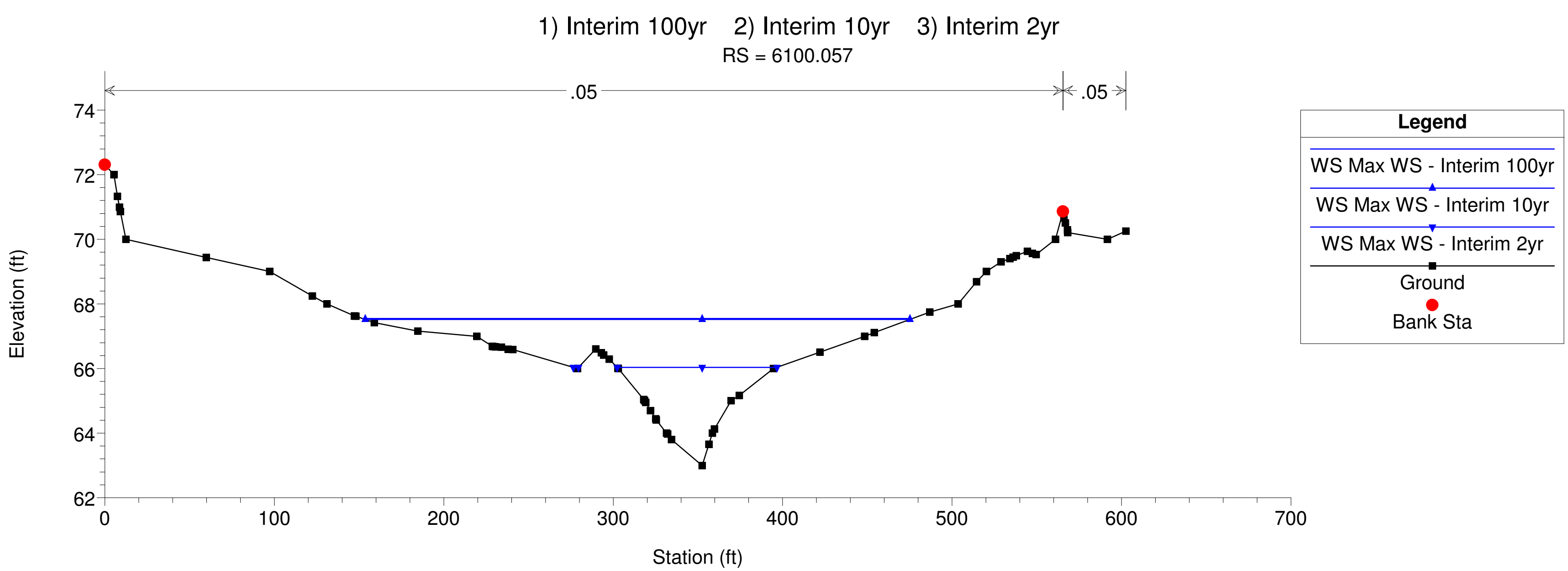
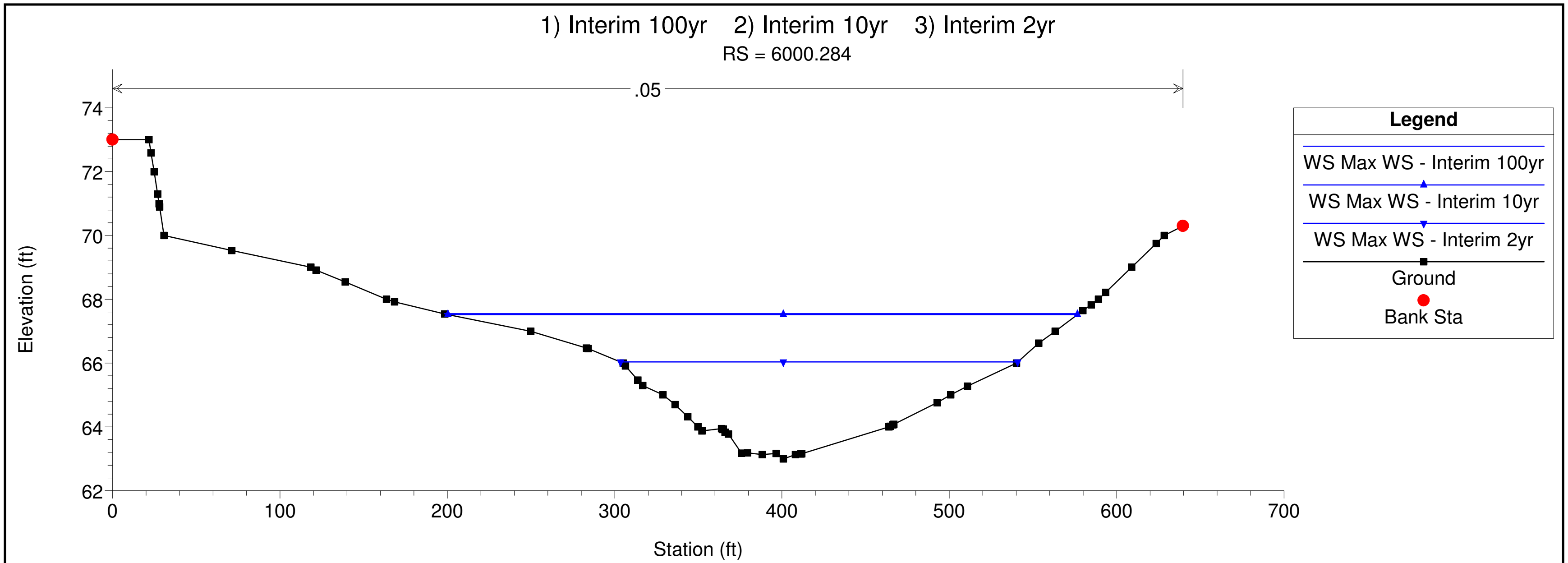
Elevation (ft)
Station (ft)
Legend
WS Max WS - Interim 100yr
WS Max WS - Interim 10yr
WS Max WS - Interim 2yr
Ground
Bank Sta


1) Interim 100yr 2) Interim 10yr 3) Interim 2yr
RS = 6100.057
.05
.05
Elevation (ft)
Station (ft)
Legend
WS Max WS - Interim 100yr
WS Max WS - Interim 10yr
WS Max WS - Interim 2yr
Ground
Bank Sta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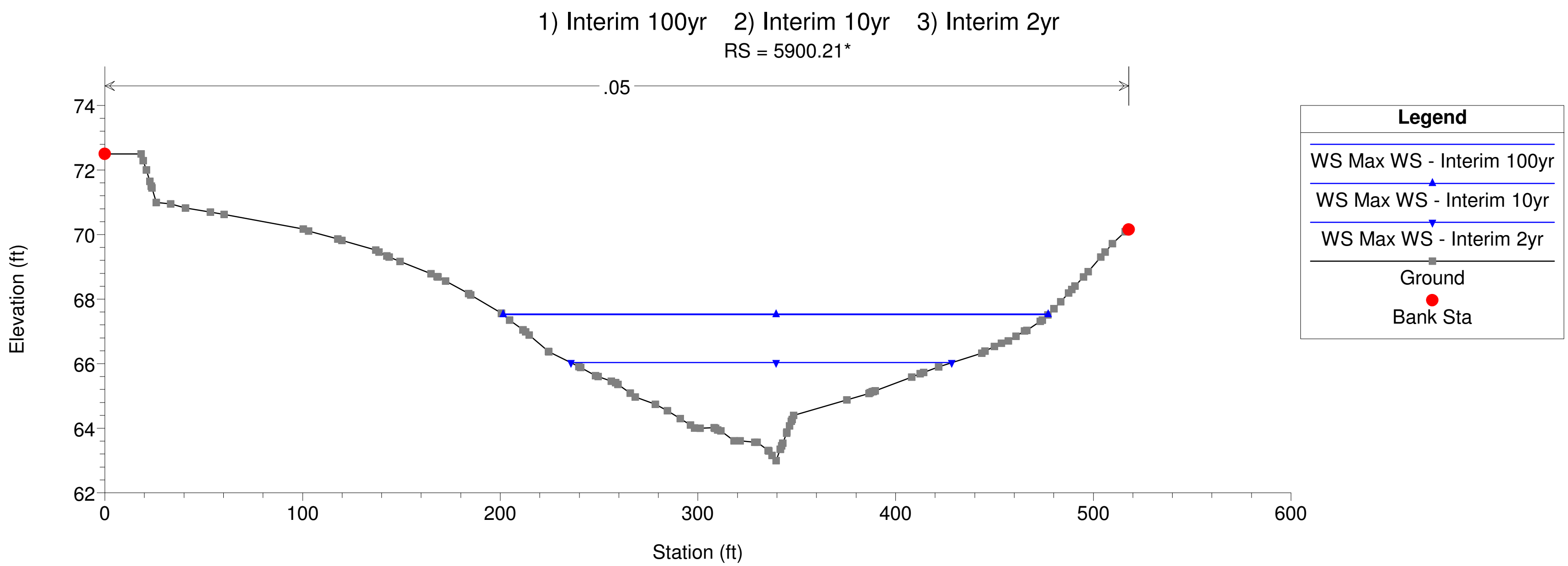
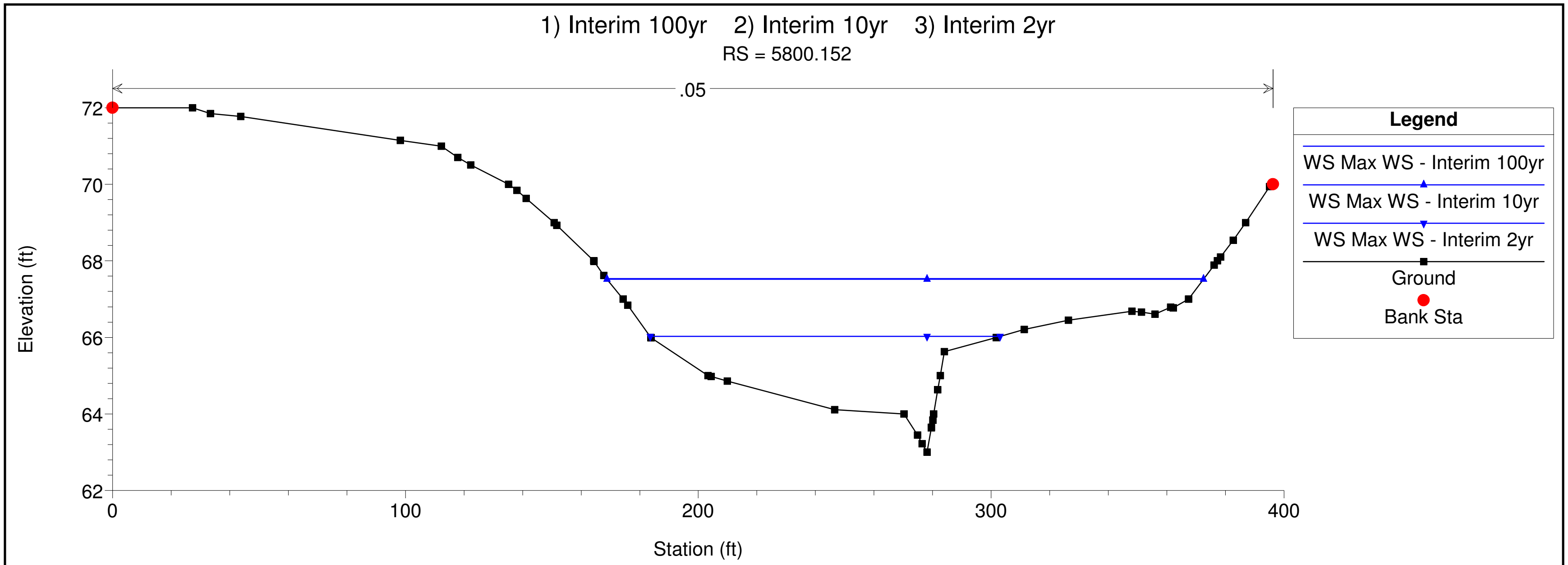
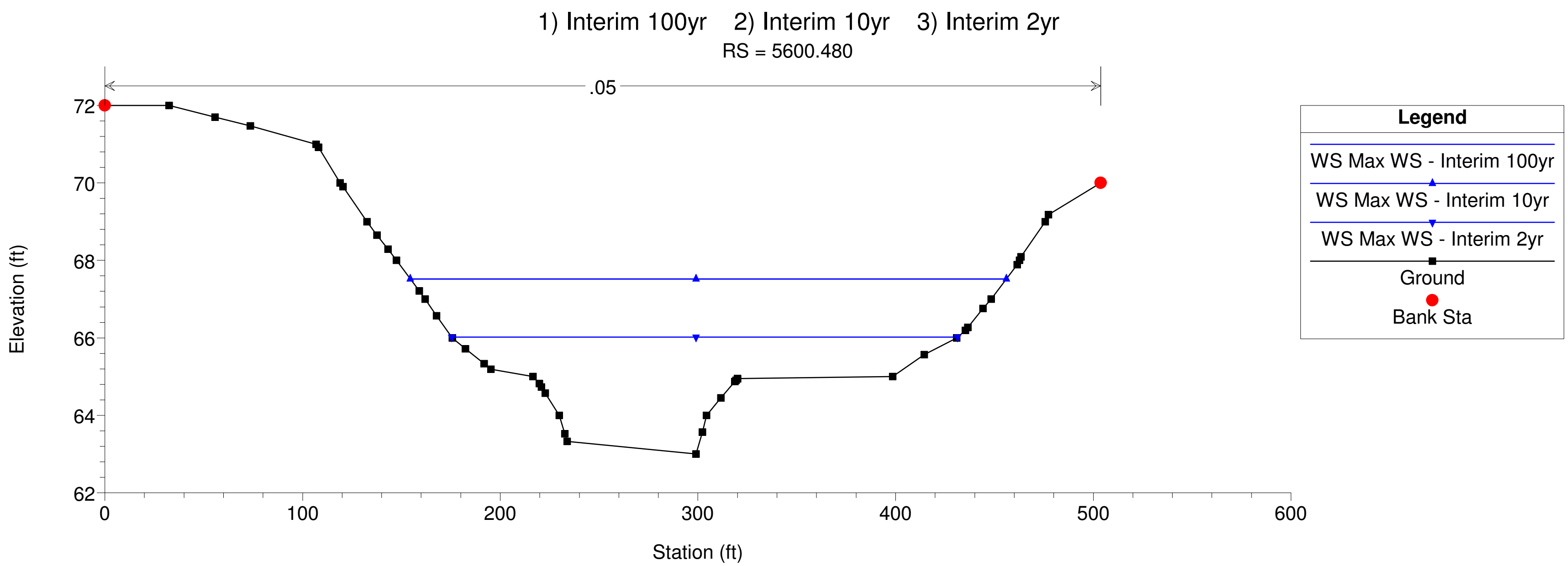
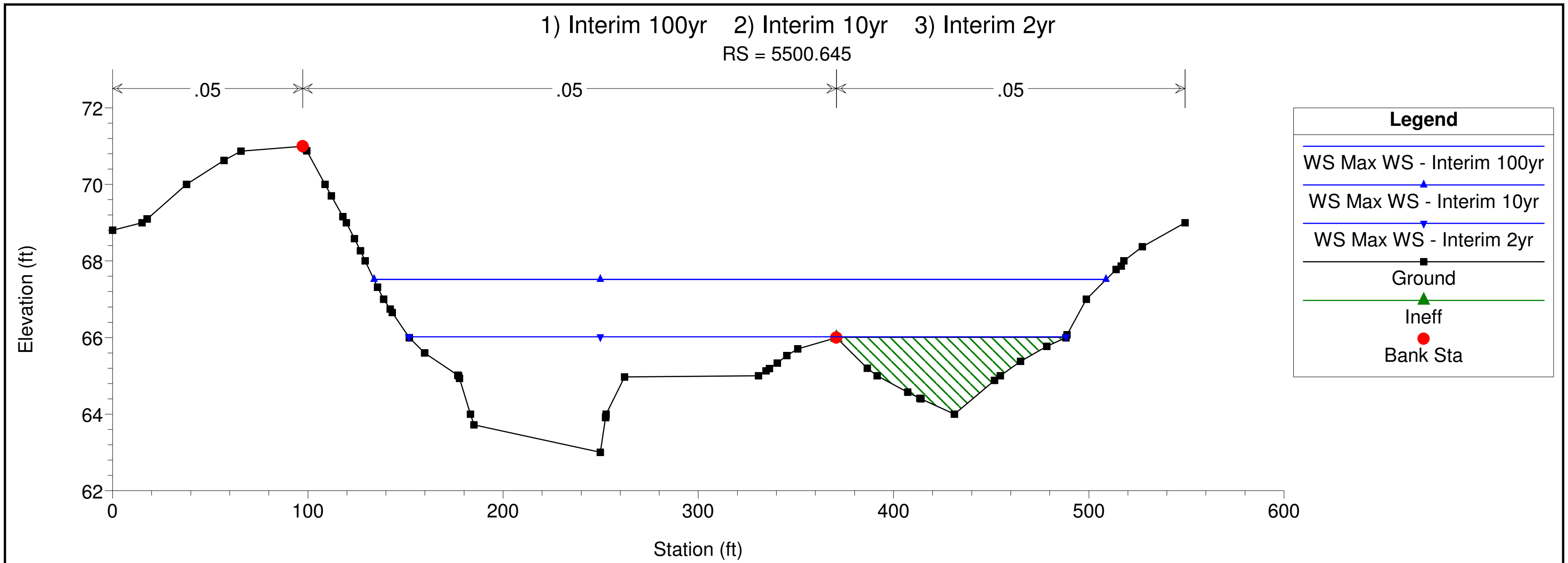
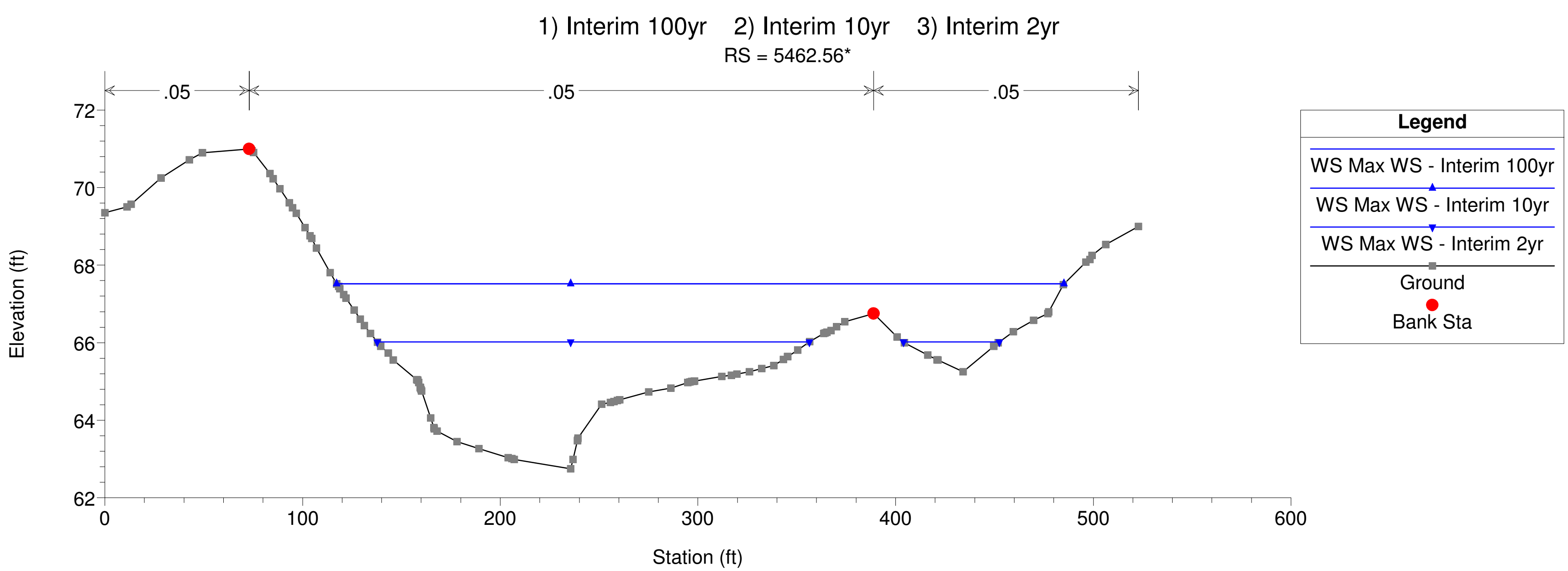
RS = 6000.284
.05
Elevation (ft)
74
72
70
68
66
64
62
0
100
200
300
400
500
600
700
Station (ft)
Legend
WS Max WS - Interim 100yr
WS Max WS - Interim 10yr
WS Max WS - Interim 2yr
Ground
Bank Sta

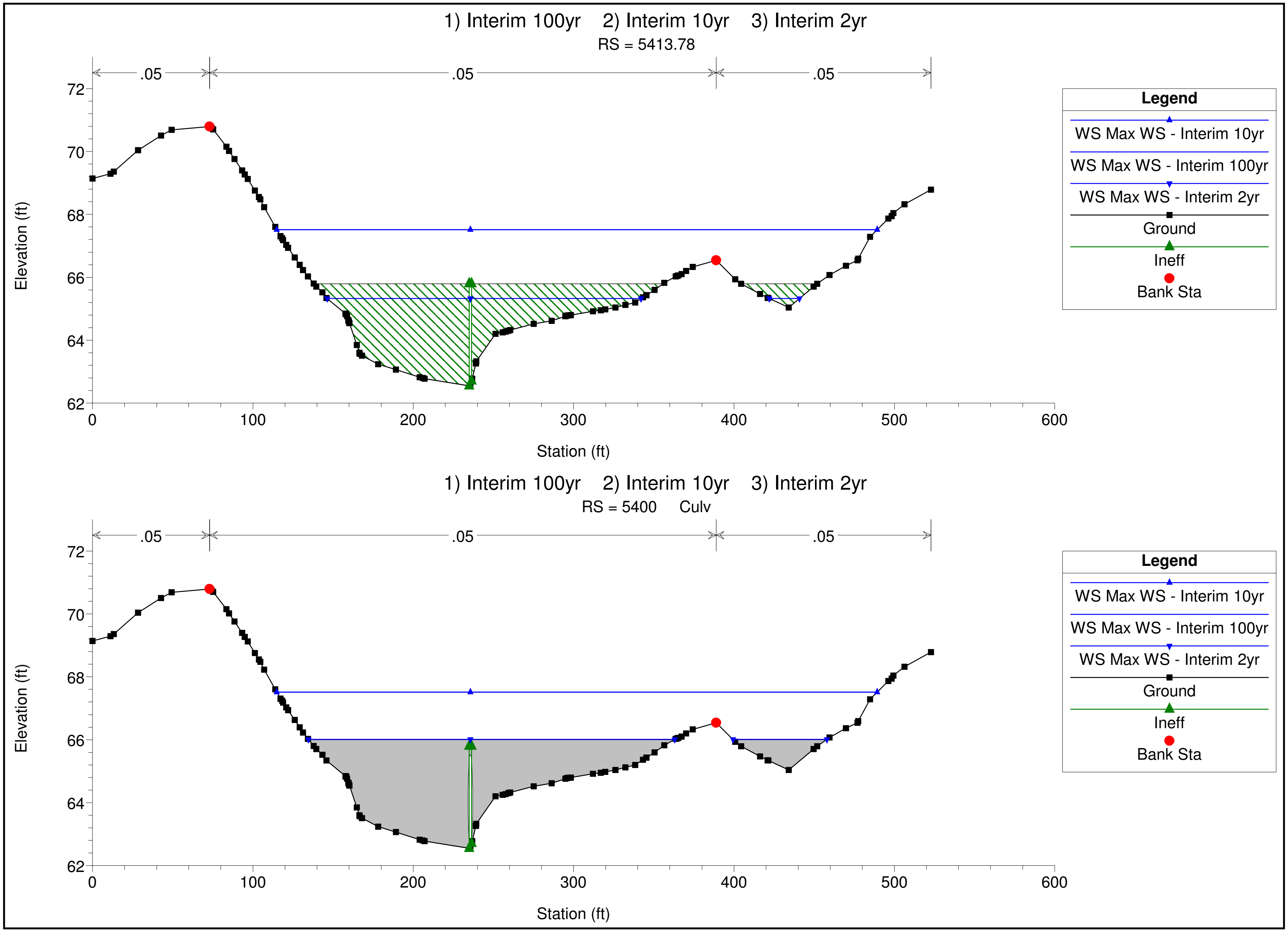

1) Interim 100yr 2) Interim 10yr 3) Interim 2yr
RS = 5900.21*
.05
Elevation (ft)
74
72
70
68
66
64
62
0
100
200
300
400
500
600
Station (ft)
Legend
WS Max WS - Interim 100yr
WS Max WS - Interim 10yr
WS Max WS - Interim 2yr
Ground
Bank Sta


1) Interim 100yr 2) Interim 10yr 3) Interim 2yr
RS = 5800.152
.05
Elevation (ft)
72
70
68
66
64
62
0
100
200
300
400
Station (ft)
Legend
WS Max WS - Interim 100yr
WS Max WS - Interim 10yr
WS Max WS - Interim 2yr
Ground
Bank Sta

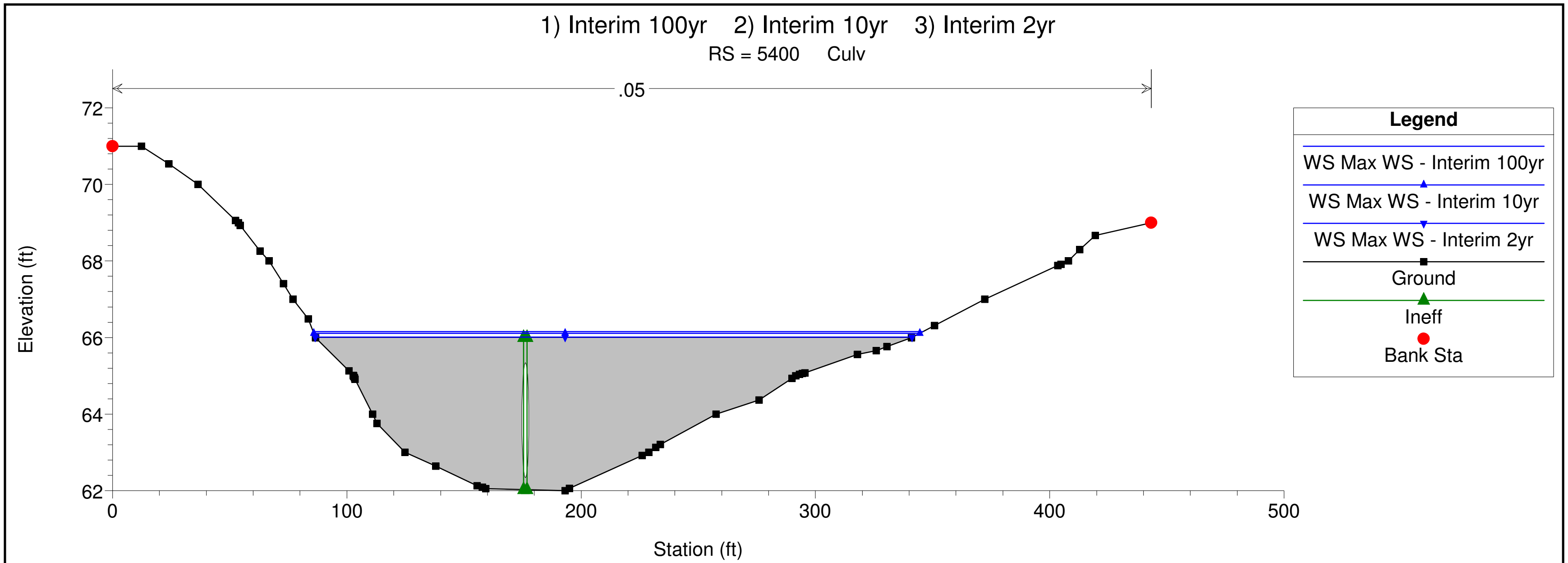

1) Interim 100yr 2) Interim 10yr 3) Interim 2yr
RS = 5600.480
.05
Elevation (ft)
72
70
68
66
64
62
0
100
200
300
400
500
600
Station (ft)
Legend
WS Max WS - Interim 100yr
WS Max WS - Interim 10yr
WS Max WS - Interim 2yr
Ground
Bank Sta

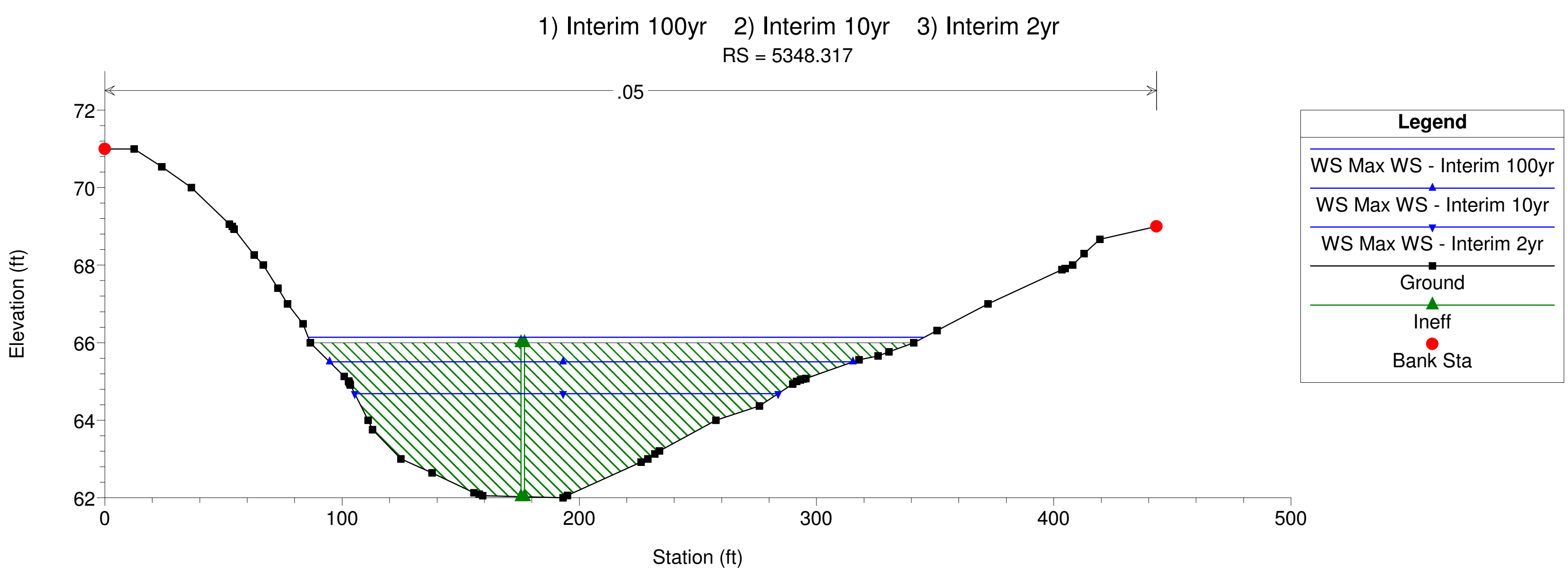

1) Interim 100yr 2) Interim 10yr 3) Interim 2yr
RS = 5500.645
.05
.05
.05
Elevation (ft)
Station (ft)
Legend
WS Max WS - Interim 100yr
WS Max WS - Interim 10yr
WS Max WS - Interim 2yr
Ground
Ineff
Bank Sta

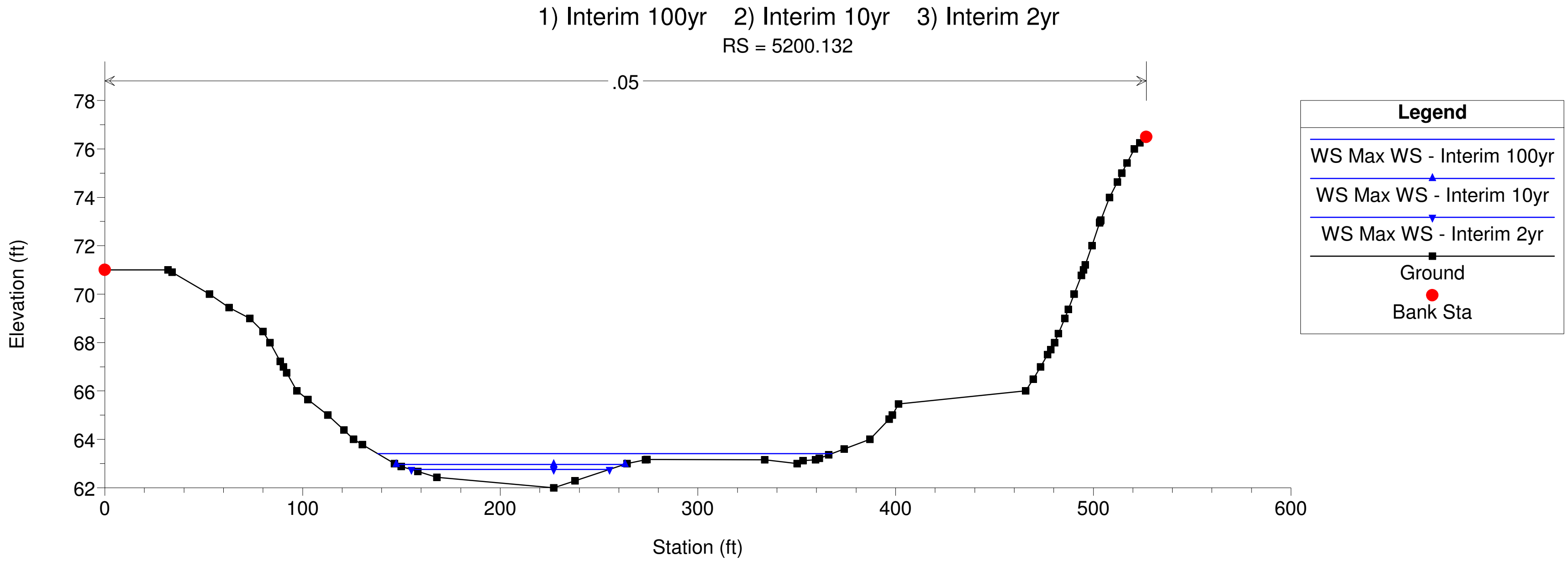

1) Interim 100yr 2) Interim 10yr 3) Interim 2yr
RS = 5462.56*
.05
.05
.05
Elevation (ft)
Station (ft)
Legend
WS Max WS - Interim 100yr
WS Max WS - Interim 10yr
WS Max WS - Interim 2yr
Ground
Bank Sta

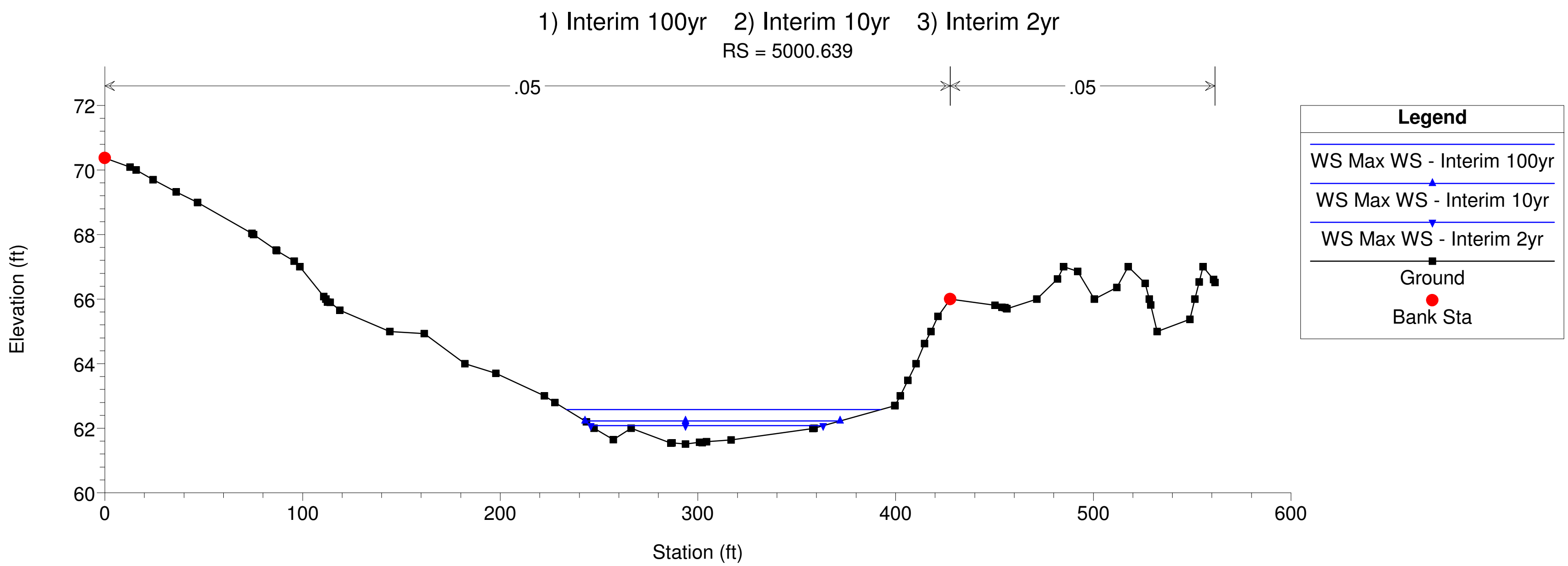


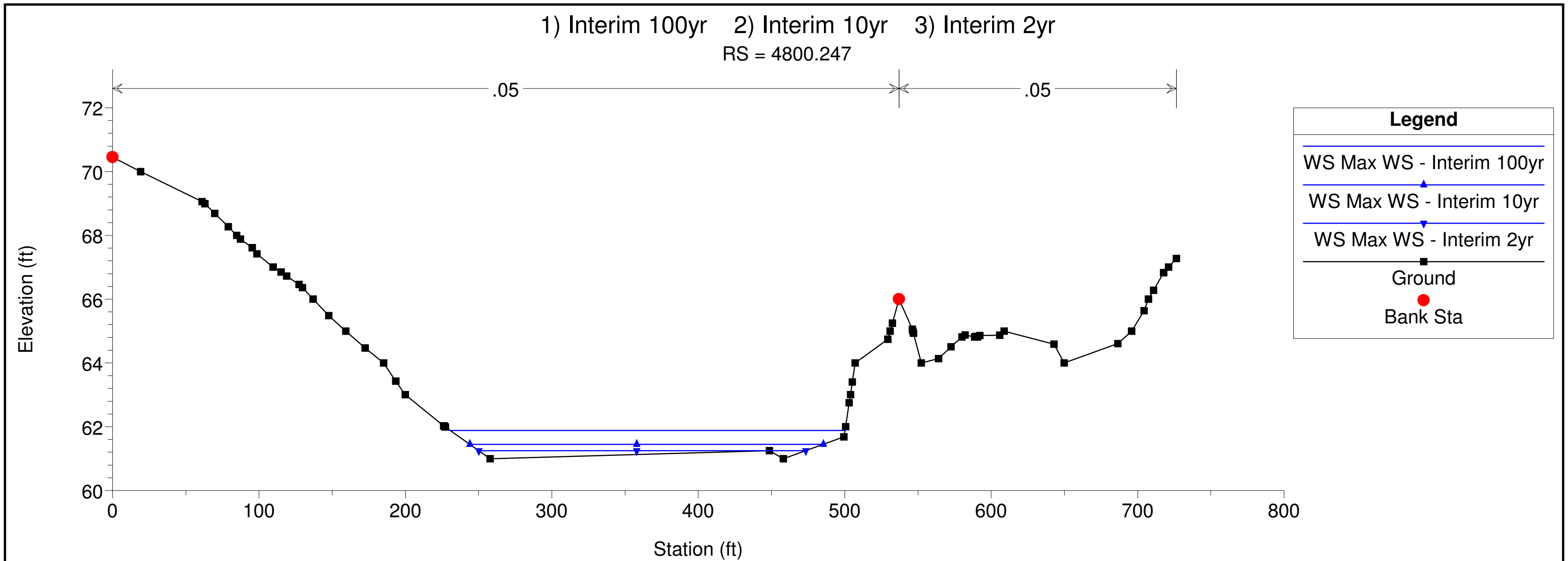
1) Interim 100yr 2) Interim 10yr 3) Interim 2yr
RS = 5413.78
.05
.05
.05
Elevation (ft)
Station (ft)
Legend
WS Max WS - Interim 10yr
WS Max WS - Interim 100yr
WS Max WS - Interim 2yr
Ground
Ineff
Bank Sta
1) Interim 100yr 2) Interim 10yr 3) Interim 2yr
RS = 5400 Culv
.05
.05
.05
Elevation (ft)
Station (ft)
Legend
WS Max WS - Interim 10yr
WS Max WS - Interim 100yr
WS Max WS - Interim 2yr
Ground
Ineff
Bank Sta

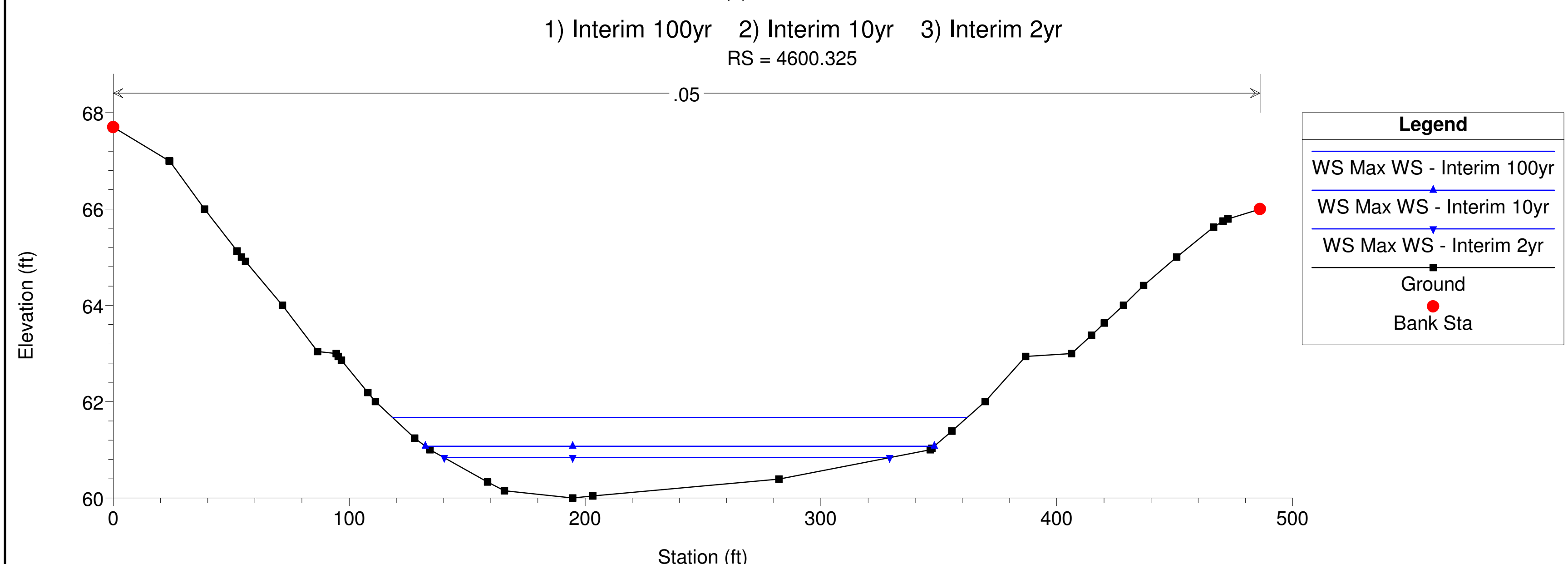

1) Interim 100yr 2) Interim 10yr 3) Interim 2yr
RS = 5400 Culv
.05
Elevation (ft)
Station (ft)
72
70
68
66
64
62
0
100
200
300
400
500
Legend
WS Max WS - Interim 100yr
WS Max WS - Interim 10yr
WS Max WS - Interim 2yr
Ground
Ineff
Bank Sta

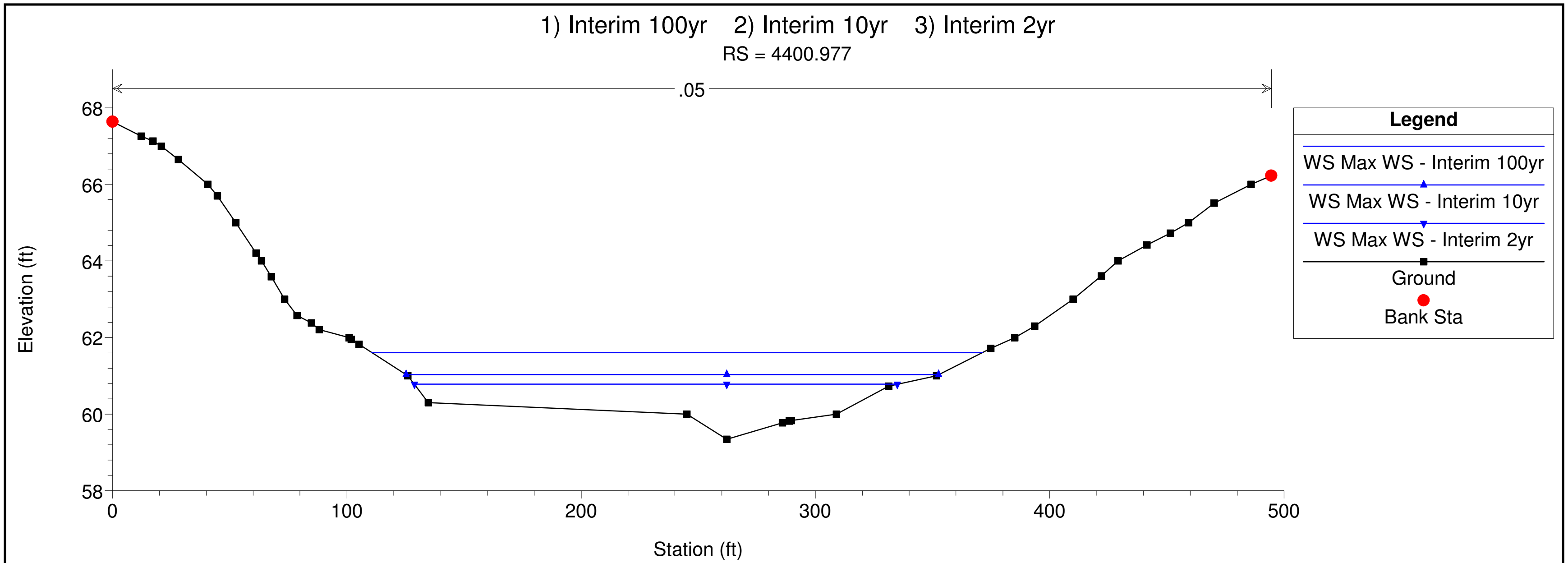

1) Interim 100yr 2) Interim 10yr 3) Interim 2yr
RS = 5348.317
.05
Elevation (ft)
Station (ft)
72
70
68
66
64
62
0
100
200
300
400
500
Legend
WS Max WS - Interim 100yr
WS Max WS - Interim 10yr
WS Max WS - Interim 2yr
Ground
Ineff
Bank Sta

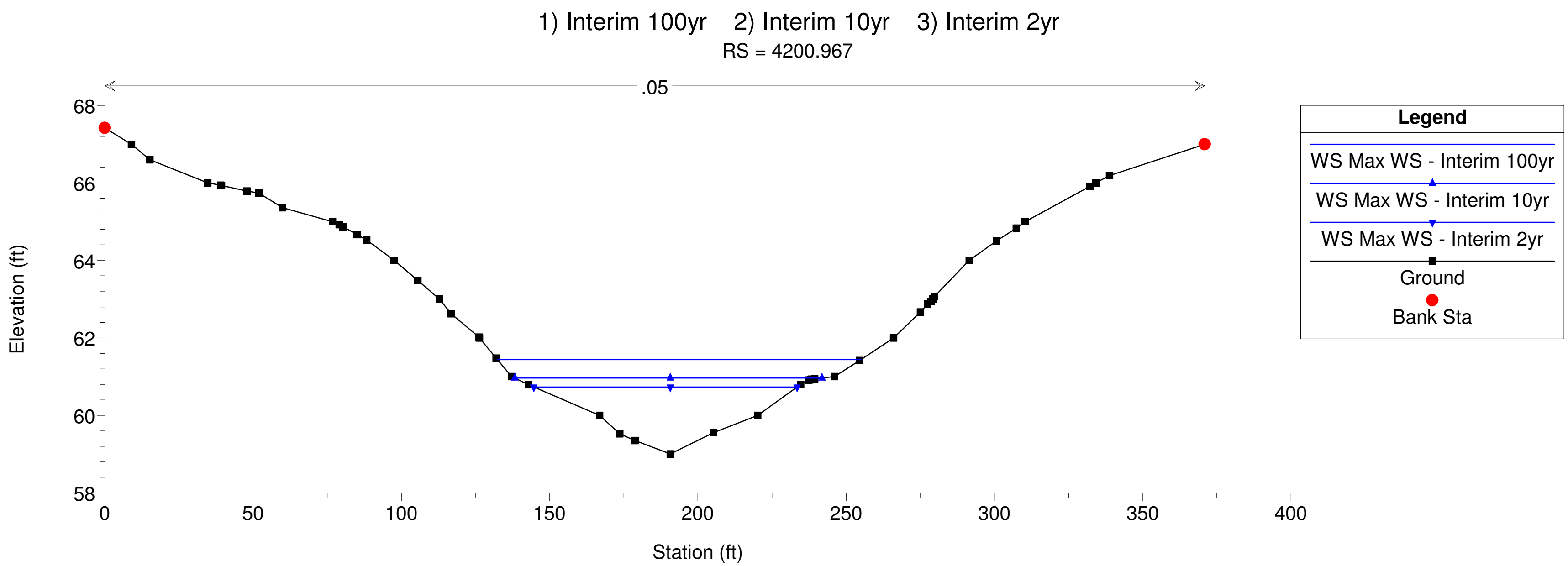

1) Interim 100yr 2) Interim 10yr 3) Interim 2yr
RS = 5200.132
.05
Elevation (ft)
Station (ft)
78
76
74
72
70
68
66
64
62
0
100
200
300
400
500
600
Legend
WS Max WS - Interim 100yr
WS Max WS - Interim 10yr
WS Max WS - Interim 2yr
Ground
Bank Sta

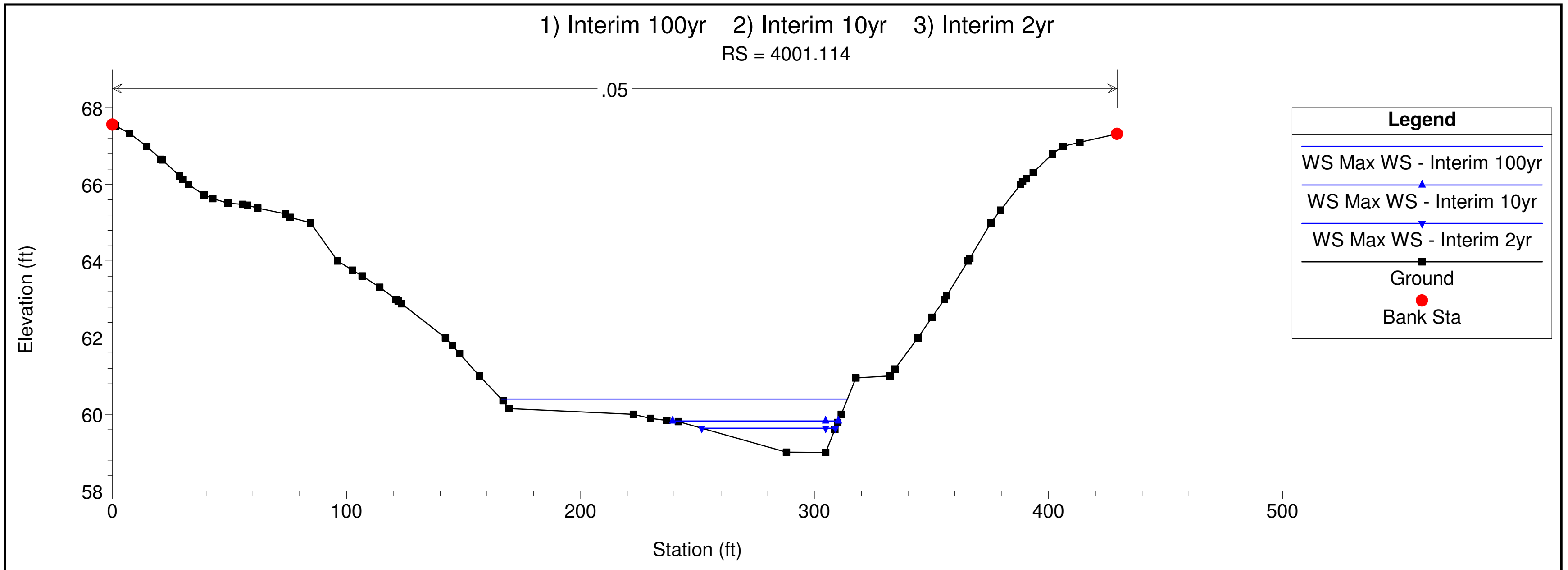

1) Interim 100yr 2) Interim 10yr 3) Interim 2yr
RS = 5000.639
.05
.05
Elevation (ft)
Station (ft)
72
70
68
66
64
62
60
0
100
200
300
400
500
600
Legend
WS Max WS - Interim 100yr
WS Max WS - Interim 10yr
WS Max WS - Interim 2yr
Ground
Bank Sta

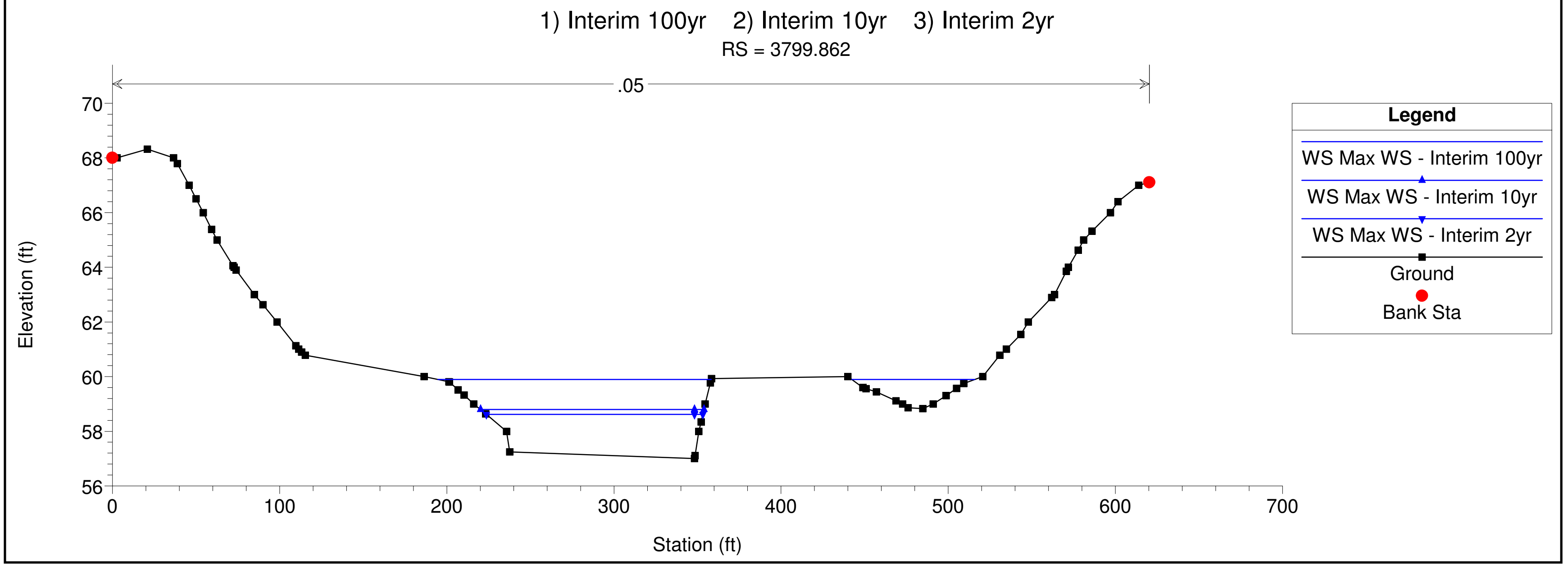

1) Interim 100yr 2) Interim 10yr 3) Interim 2yr
RS = 4800.247
.05
.05
Legend
WS Max WS - Interim 100yr
WS Max WS - Interim 10yr
WS Max WS - Interim 2yr
Ground
Bank Sta
Elevation (ft)
Station (ft)
72
70
68
66
64
62
60
0
100
200
300
400
500
600
700
800

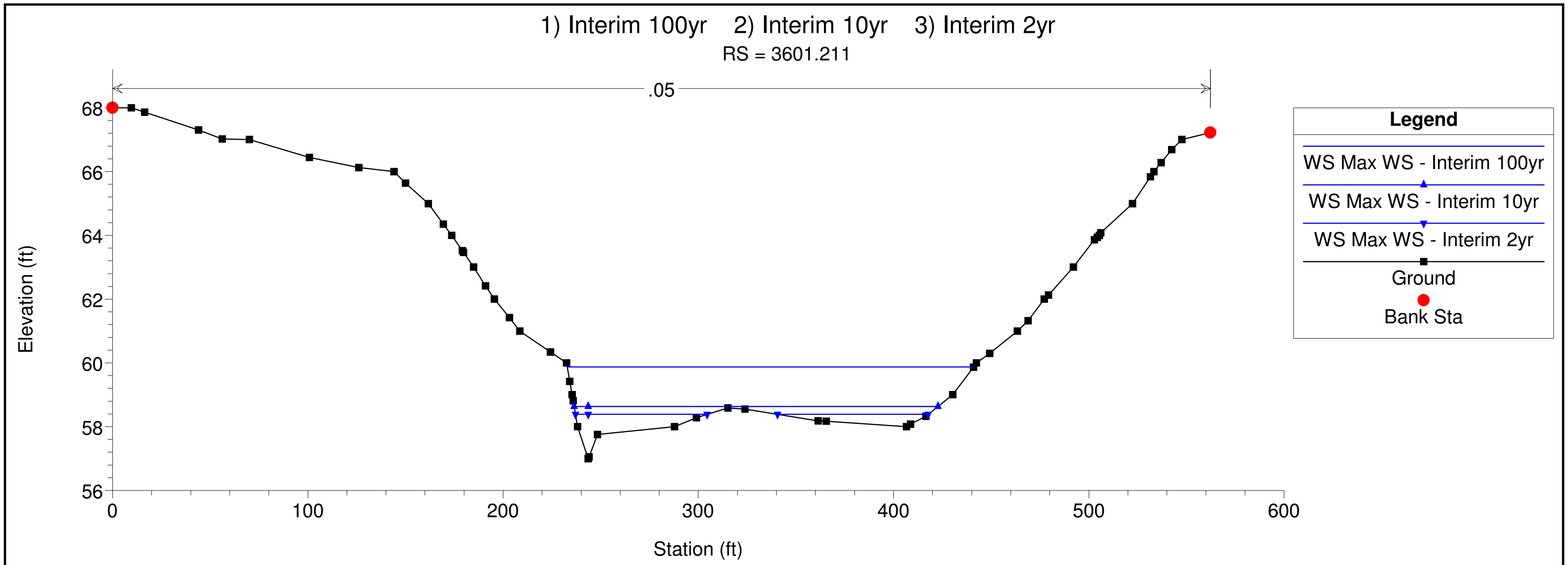

1) Interim 100yr 2) Interim 10yr 3) Interim 2yr
RS = 4600.325
.05
Legend
WS Max WS - Interim 100yr
WS Max WS - Interim 10yr
WS Max WS - Interim 2yr
Ground
Bank Sta
Elevation (ft)
Station (ft)
68
66
64
62
60
0
100
200
300
400
500

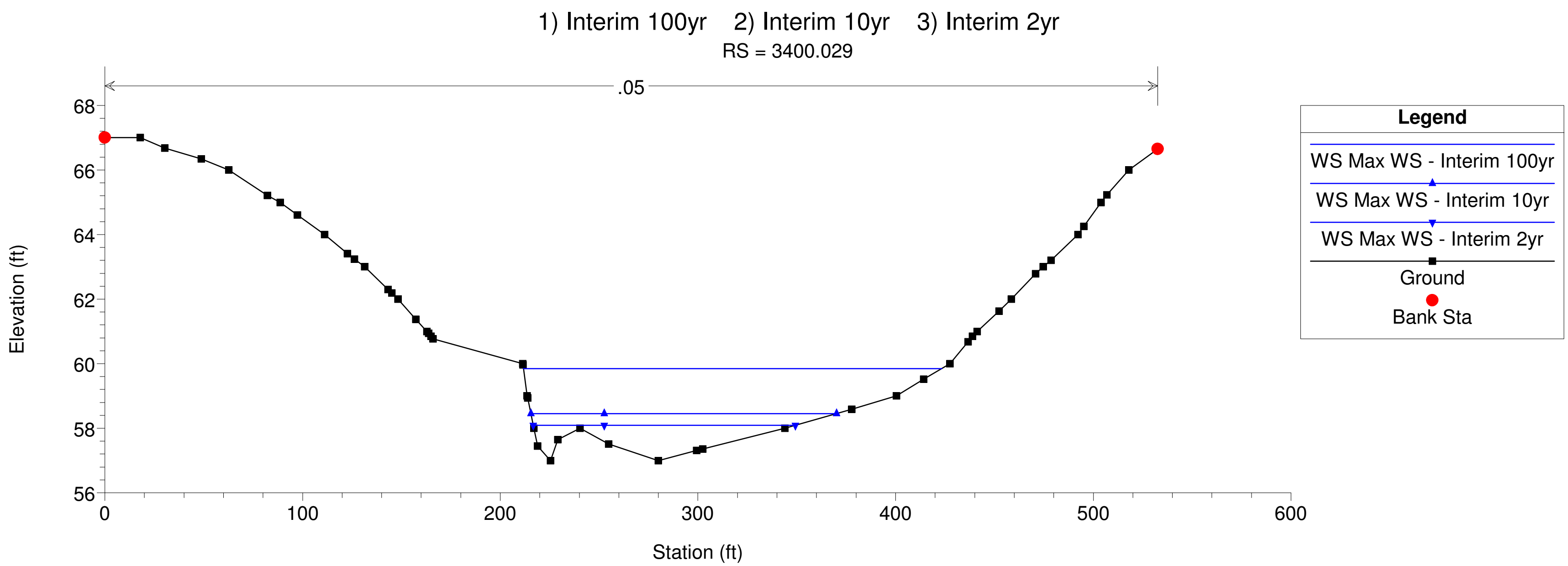

1) Interim 100yr 2) Interim 10yr 3) Interim 2yr
RS = 4400.977
.05
Elevation (ft)
Station (ft)
Legend
WS Max WS - Interim 100yr
WS Max WS - Interim 10yr
WS Max WS - Interim 2yr
Ground
Bank Sta

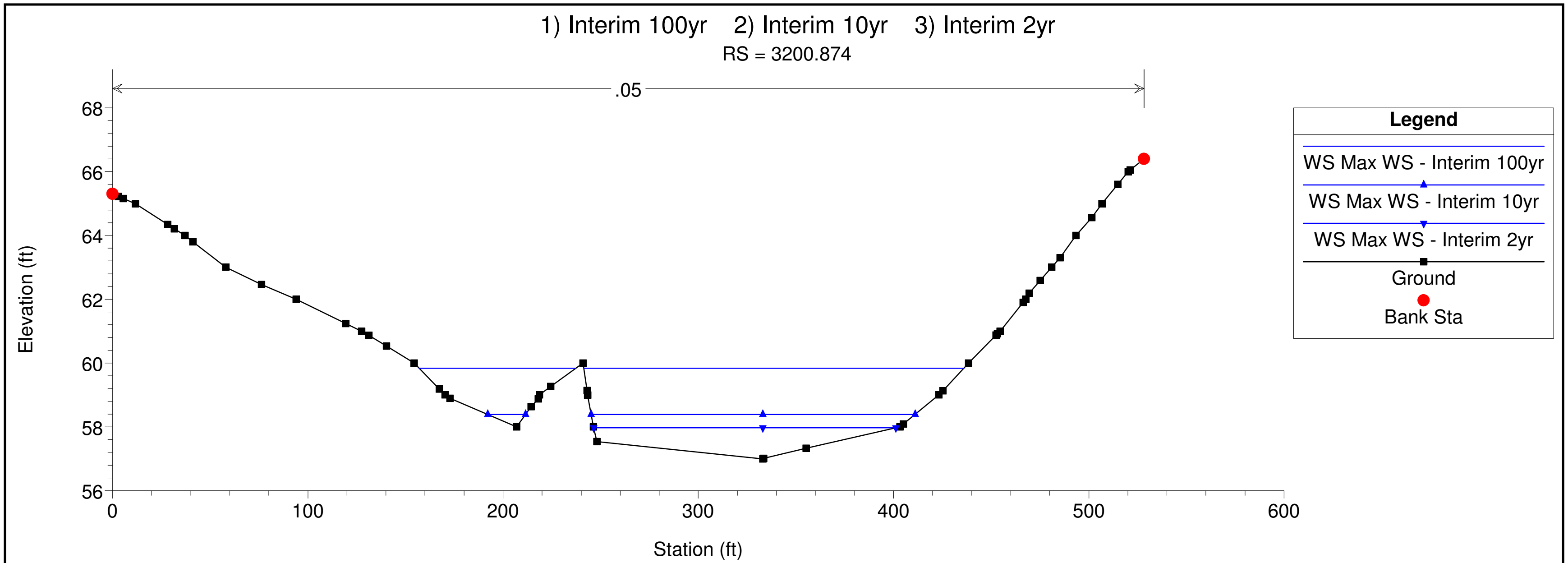

1) Interim 100yr 2) Interim 10yr 3) Interim 2yr
RS = 4200.967
.05
Elevation (ft)
Station (ft)
Legend
WS Max WS - Interim 100yr
WS Max WS - Interim 10yr
WS Max WS - Interim 2yr
Ground
Bank Sta

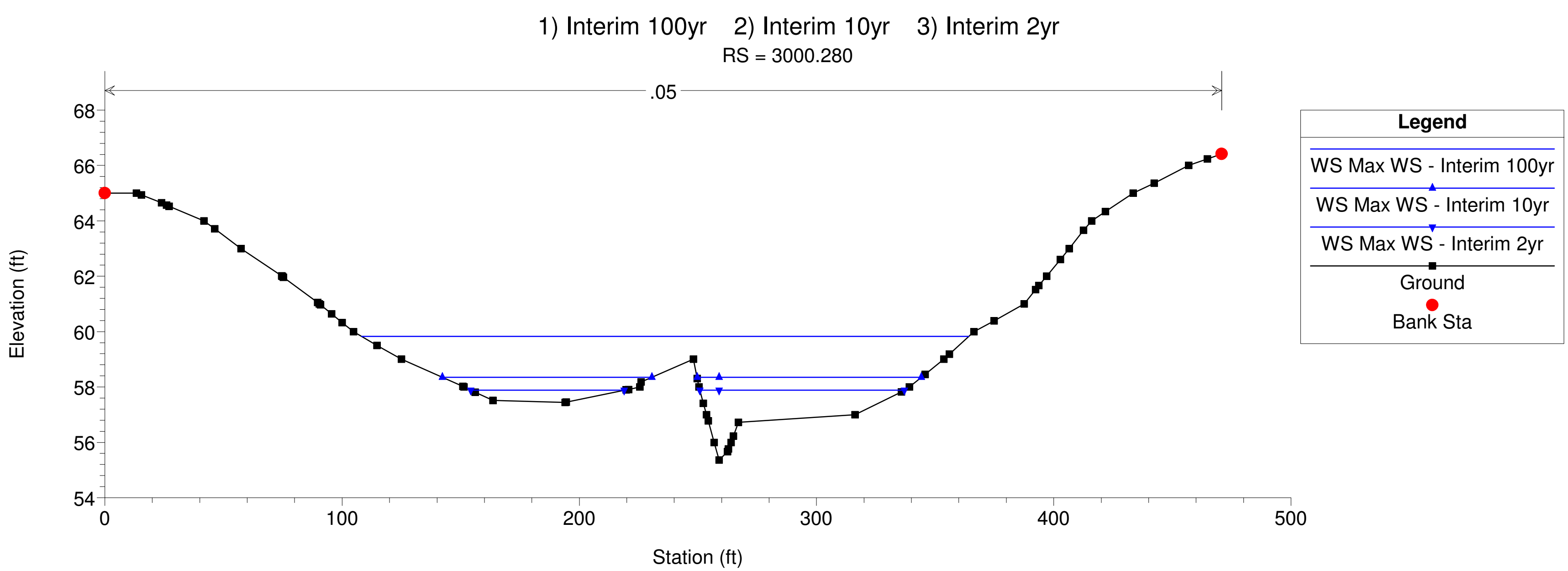

1) Interim 100yr 2) Interim 10yr 3) Interim 2yr
RS = 4001.114
.05
Elevation (ft)
Station (ft)
Legend
WS Max WS - Interim 100yr
WS Max WS - Interim 10yr
WS Max WS - Interim 2yr
Ground
Bank Sta

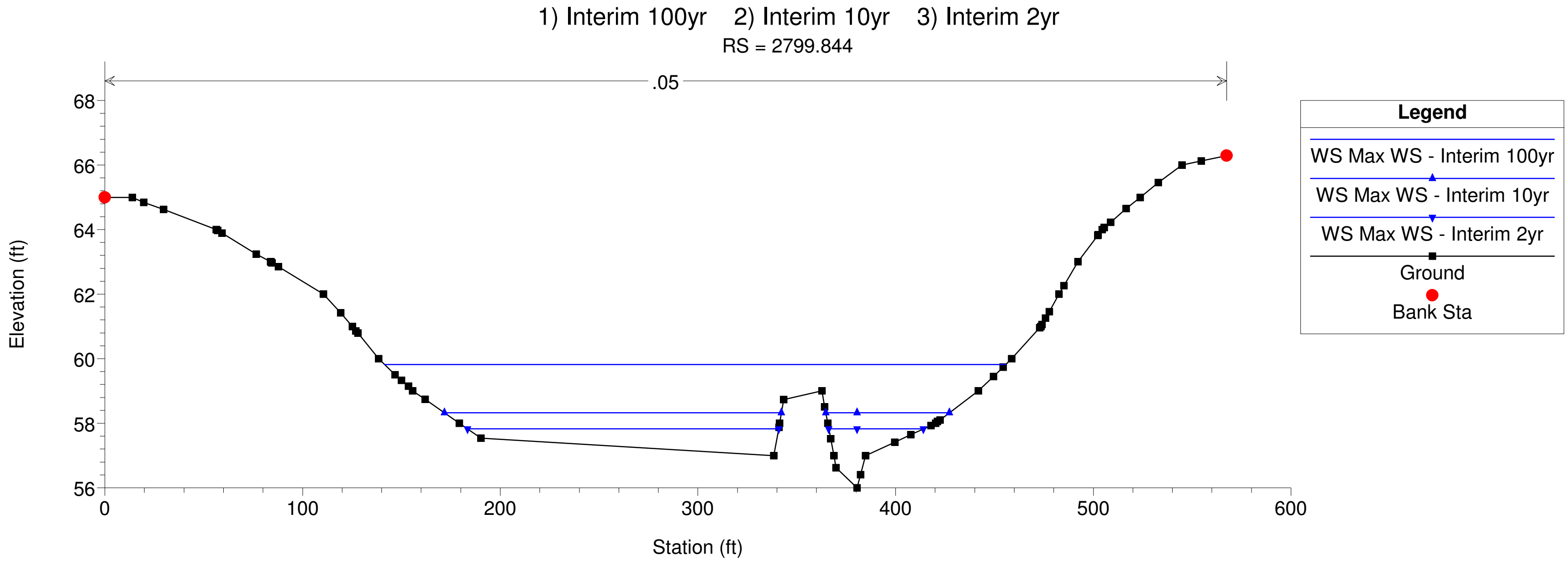

1) Interim 100yr 2) Interim 10yr 3) Interim 2yr
RS = 3799.862
.05
Elevation (ft)
Station (ft)
Legend
WS Max WS - Interim 100yr
WS Max WS - Interim 10yr
WS Max WS - Interim 2yr
Ground
Bank Sta

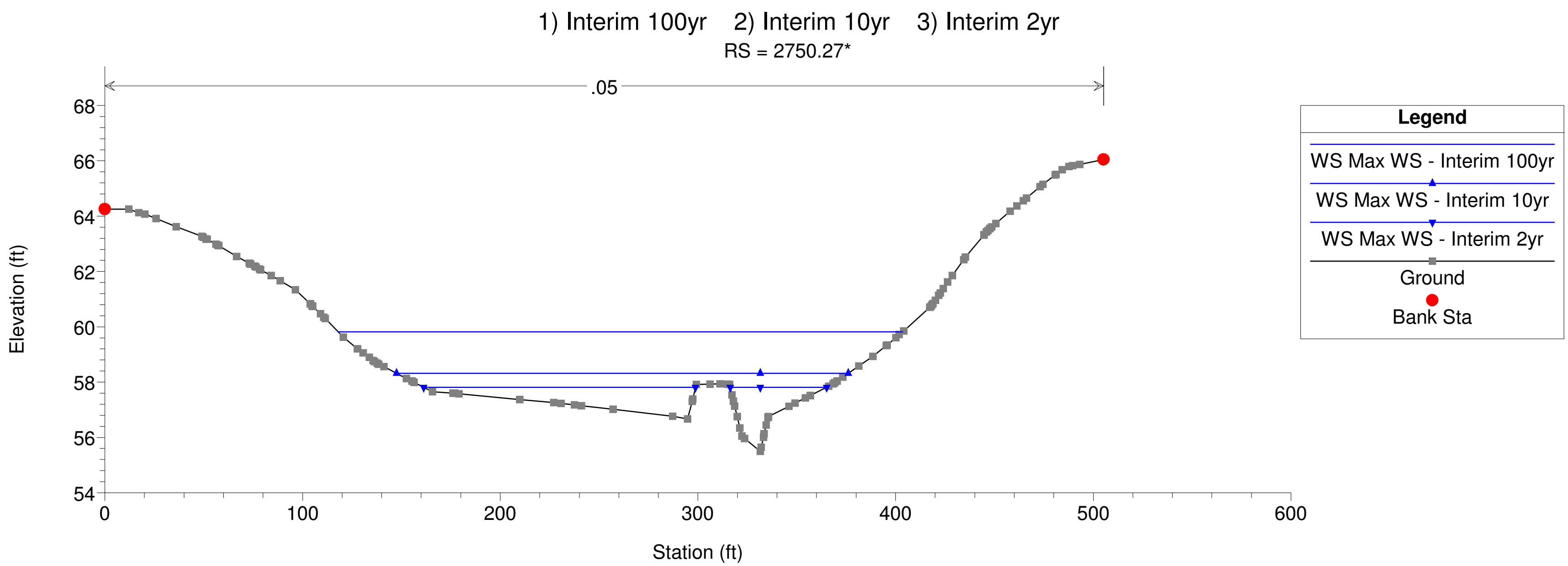

1) Interim 100yr 2) Interim 10yr 3) Interim 2yr
RS = 3601.211
.05
Elevation (ft)
Station (ft)
Legend
WS Max WS - Interim 100yr
WS Max WS - Interim 10yr
WS Max WS - Interim 2yr
Ground
Bank Sta

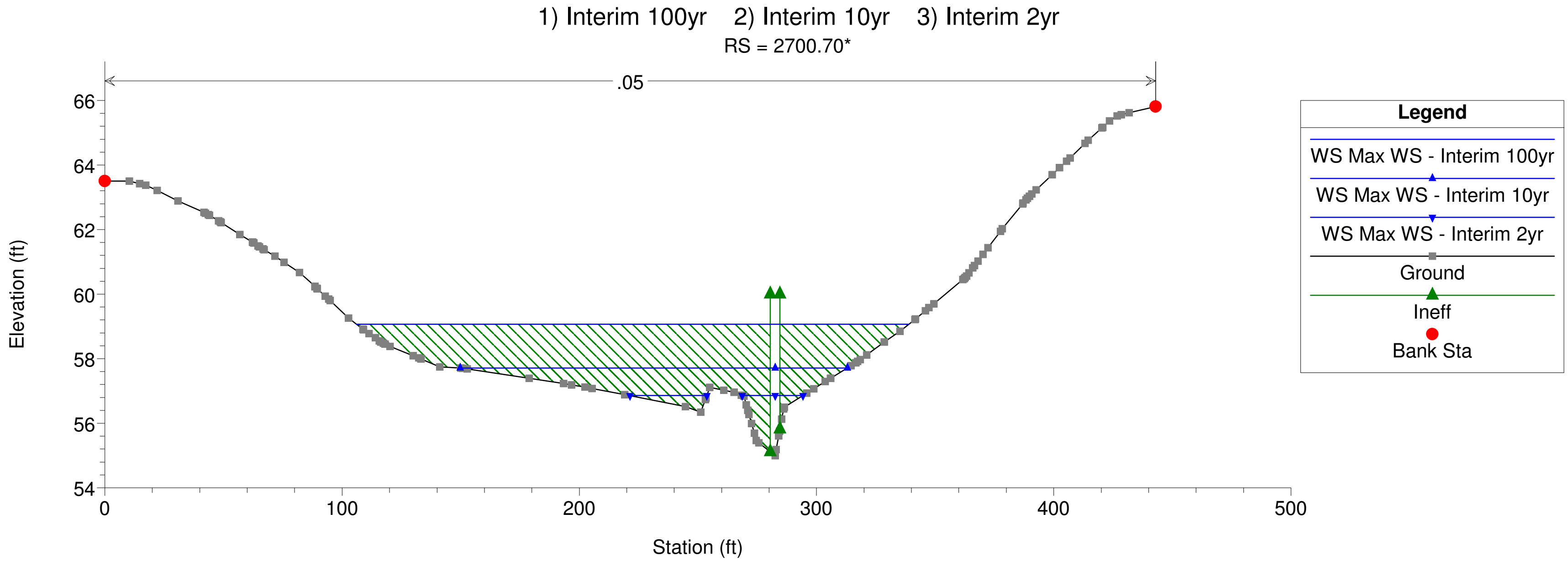

1) Interim 100yr 2) Interim 10yr 3) Interim 2yr
RS = 3400.029
.05
Elevation (ft)
Station (ft)
Legend
WS Max WS - Interim 100yr
WS Max WS - Interim 10yr
WS Max WS - Interim 2yr
Ground
Bank Sta

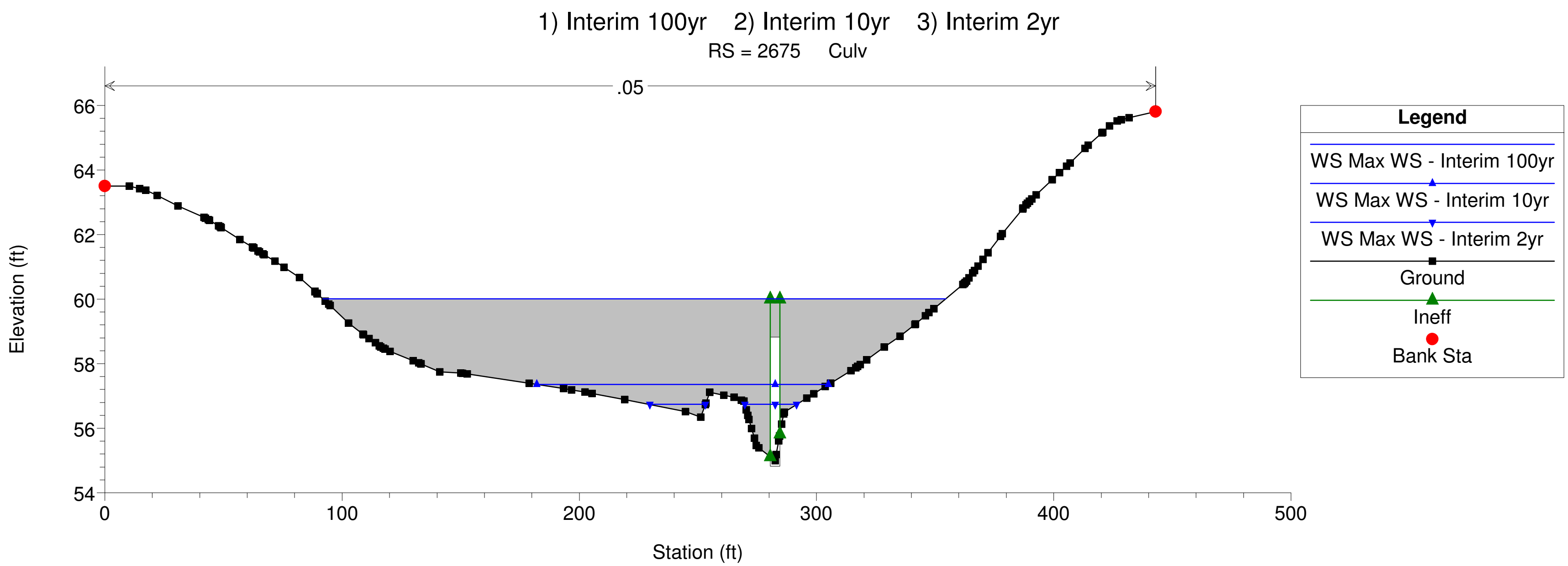

1) Interim 100yr 2) Interim 10yr 3) Interim 2yr
RS = 3200.874
.05
Elevation (ft)
Station (ft)
Legend
WS Max WS - Interim 100yr
WS Max WS - Interim 10yr
WS Max WS - Interim 2yr
Ground
Bank Sta

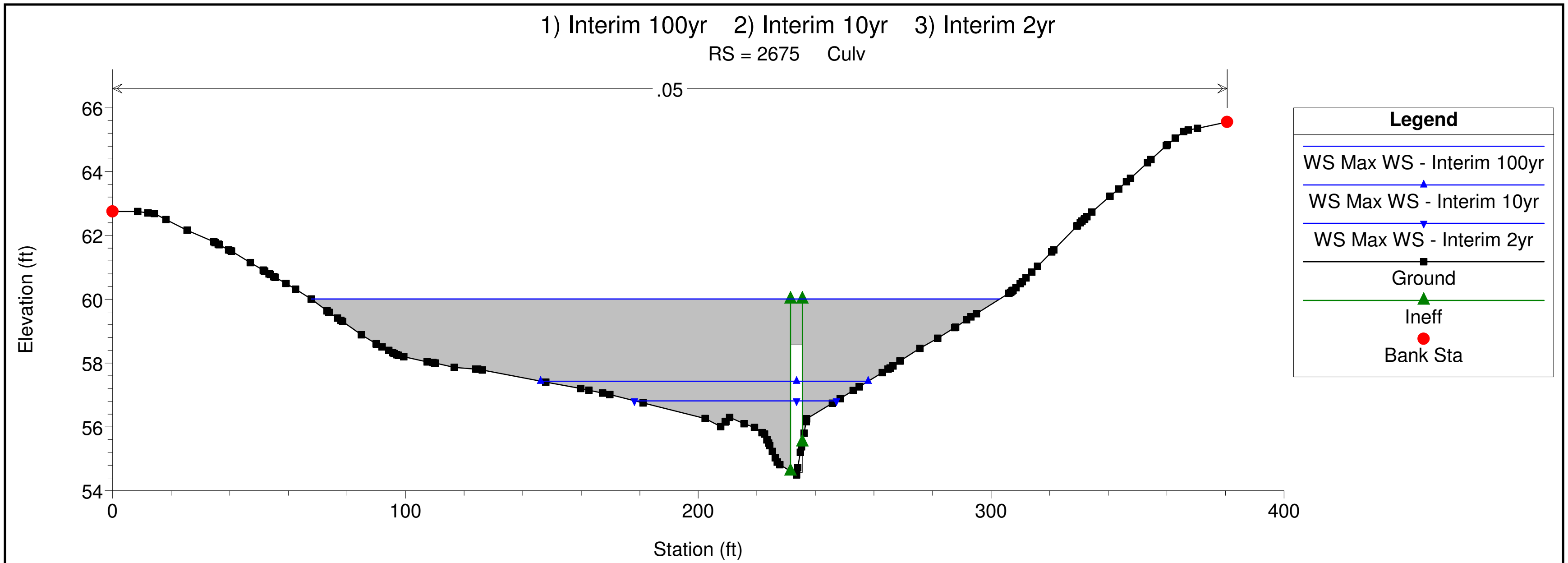

1) Interim 100yr 2) Interim 10yr 3) Interim 2yr
RS = 3000.280
.05
Elevation (ft)
Station (ft)
Legend
WS Max WS - Interim 100yr
WS Max WS - Interim 10yr
WS Max WS - Interim 2yr
Ground
Bank Sta

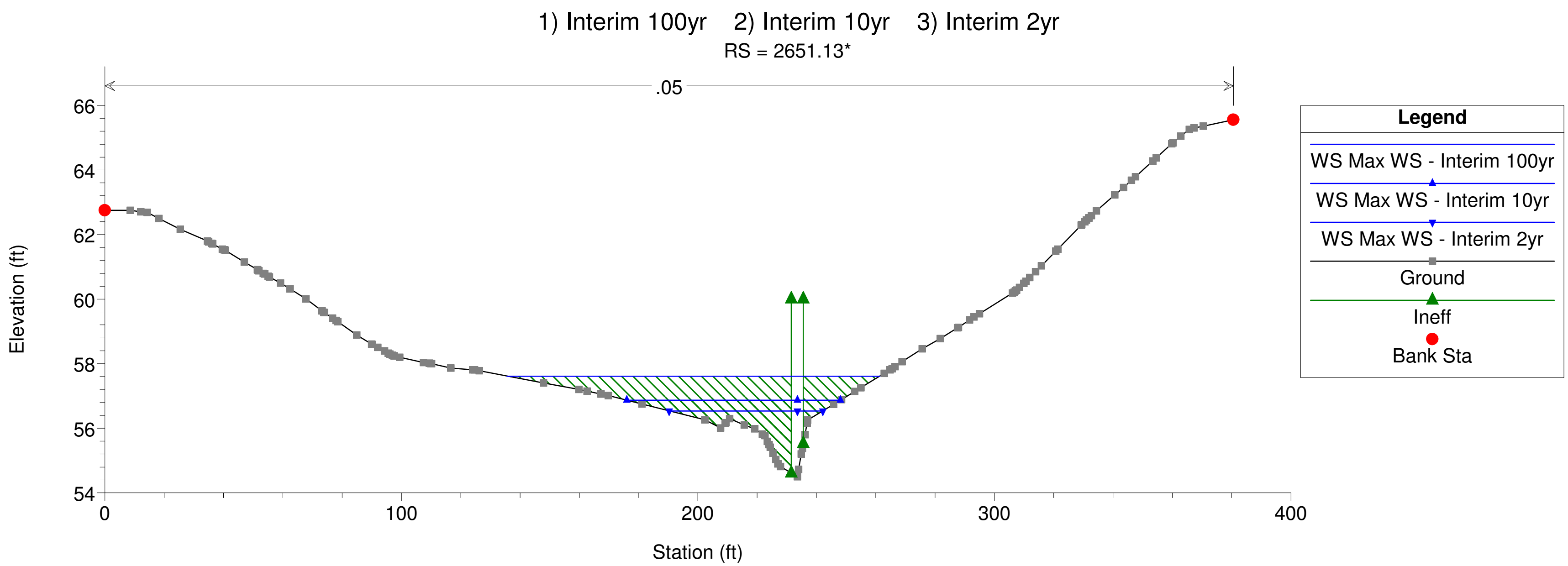

1) Interim 100yr 2) Interim 10yr 3) Interim 2yr
RS = 2799.844
.05
Elevation (ft)
Station (ft)
Legend
WS Max WS - Interim 100yr
WS Max WS - Interim 10yr
WS Max WS - Interim 2yr
Ground
Bank Sta

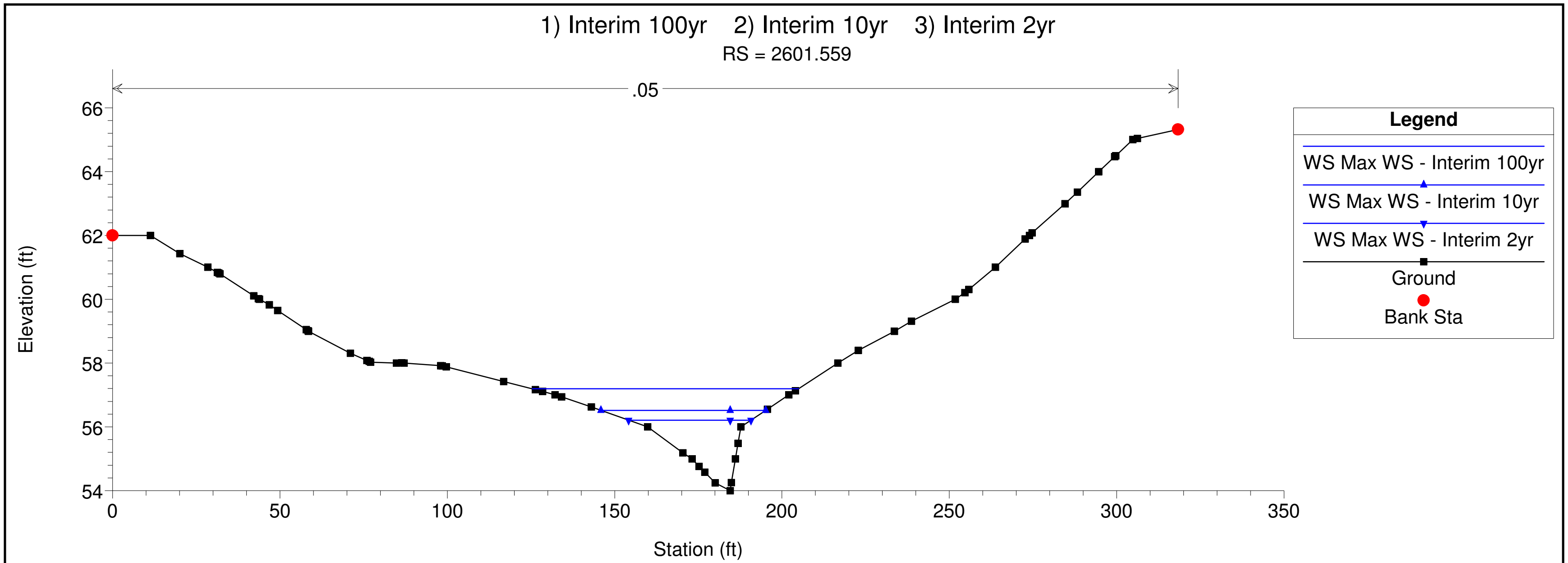

1) Interim 100yr 2) Interim 10yr 3) Interim 2yr
RS = 2750.27*
.05
Elevation (ft)
Station (ft)
Legend
WS Max WS - Interim 100yr
WS Max WS - Interim 10yr
WS Max WS - Interim 2yr
Ground
Bank Sta

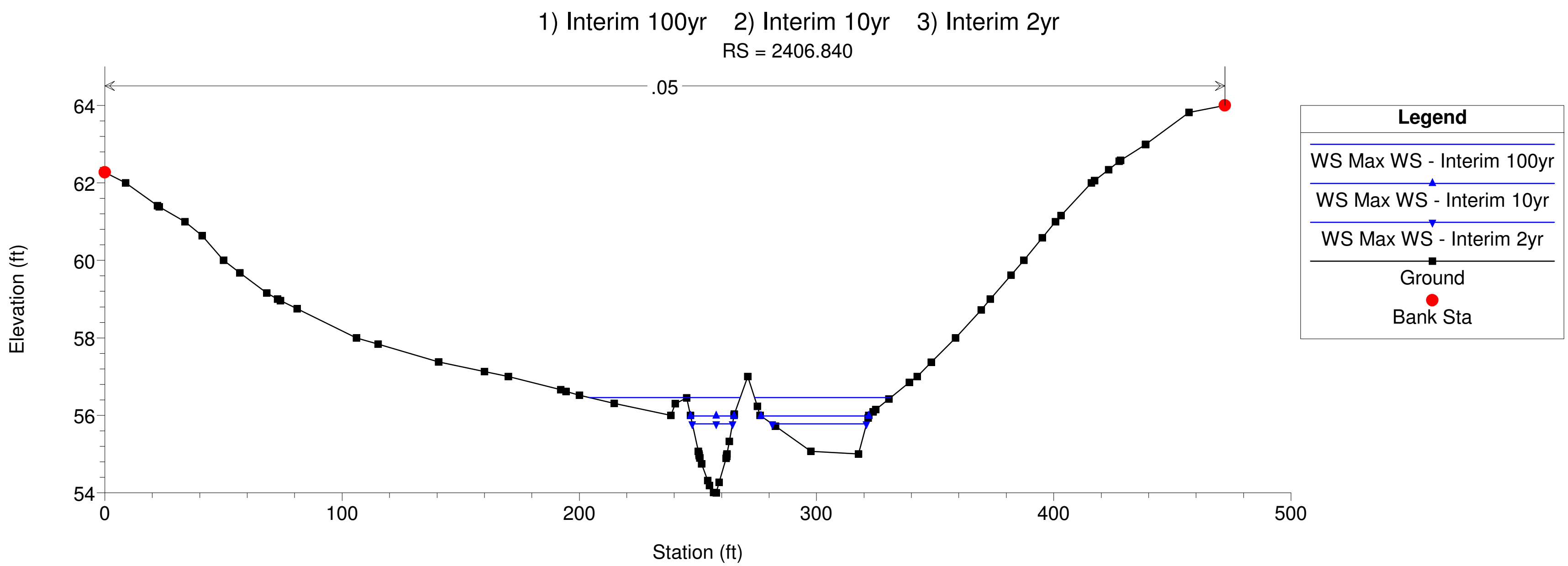

1) Interim 100yr 2) Interim 10yr 3) Interim 2yr
RS = 2700.70*
.05
Elevation (ft)
Station (ft)
Legend
WS Max WS - Interim 100yr
WS Max WS - Interim 10yr
WS Max WS - Interim 2yr
Ground
Ineff
Bank Sta

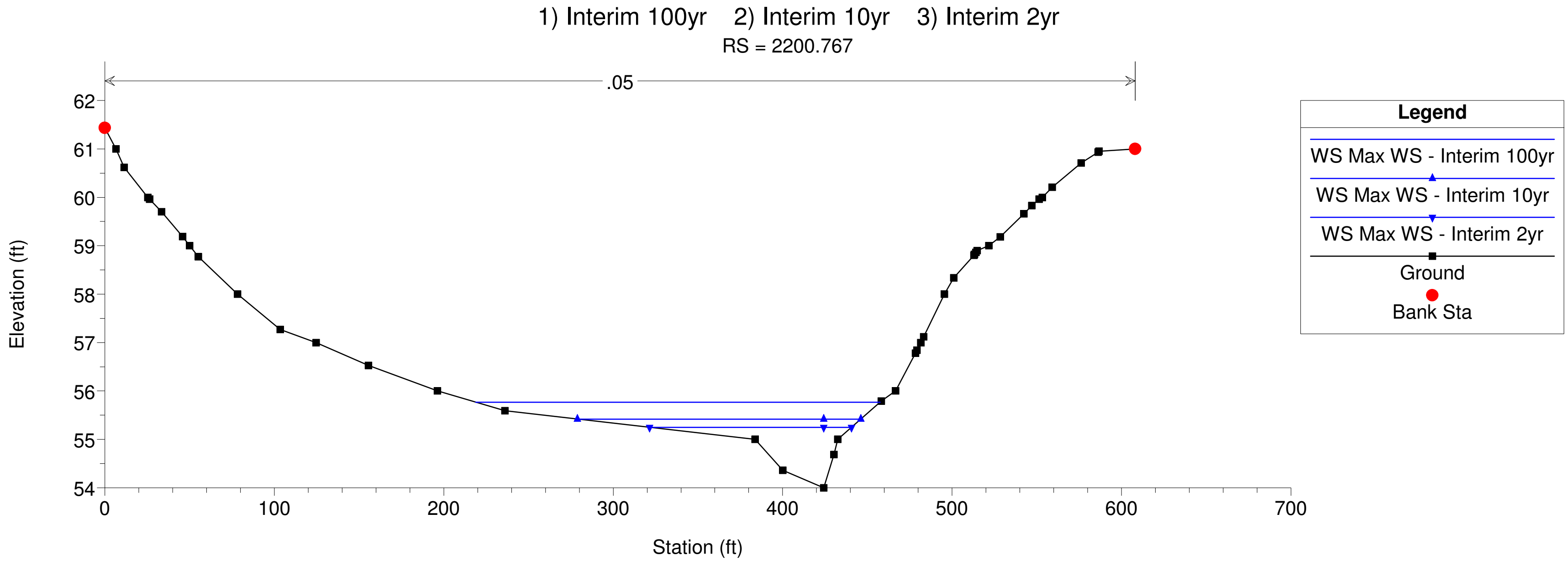

1) Interim 100yr 2) Interim 10yr 3) Interim 2yr
RS = 2675 Culv
.05
Elevation (ft)
Station (ft)
Legend
WS Max WS - Interim 100yr
WS Max WS - Interim 10yr
WS Max WS - Interim 2yr
Ground
Ineff
Bank Sta


1) Interim 100yr 2) Interim 10yr 3) Interim 2yr
RS = 2675 Culv
.05
Elevation (ft)
Station (ft)
Legend
WS Max WS - Interim 100yr
WS Max WS - Interim 10yr
WS Max WS - Interim 2yr
Ground
Ineff
Bank Sta

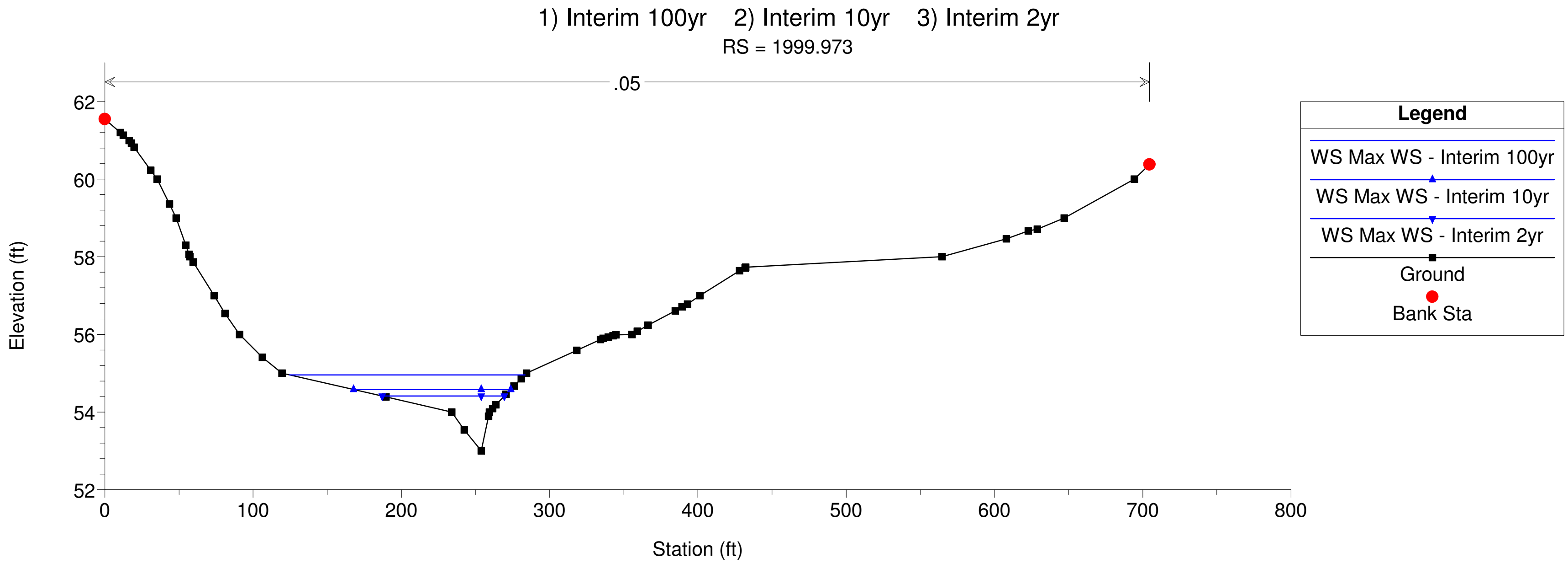

1) Interim 100yr 2) Interim 10yr 3) Interim 2yr
RS = 2651.13*
.05
Elevation (ft)
Station (ft)
Legend
WS Max WS - Interim 100yr
WS Max WS - Interim 10yr
WS Max WS - Interim 2yr
Ground
Ineff
Bank Sta


1) Interim 100yr 2) Interim 10yr 3) Interim 2yr
RS = 2601.559
.05
Elevation (ft)
Station (ft)
54
56
58
60
62
64
66
0
50
100
150
200
250
300
350
Legend
WS Max WS - Interim 100yr
WS Max WS - Interim 10yr
WS Max WS - Interim 2yr
Ground
Bank Sta

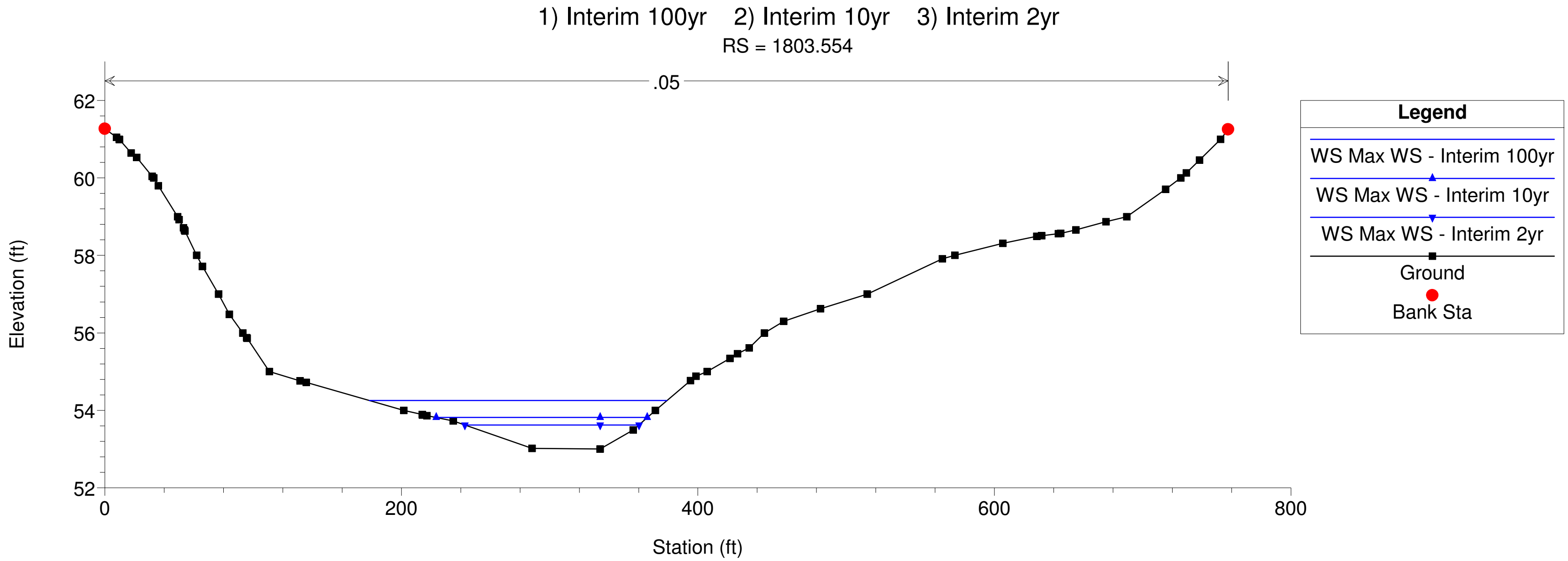

1) Interim 100yr 2) Interim 10yr 3) Interim 2yr
RS = 2406.840
.05
Elevation (ft)
Station (ft)
54
56
58
60
62
64
0
100
200
300
400
500
Legend
WS Max WS - Interim 100yr
WS Max WS - Interim 10yr
WS Max WS - Interim 2yr
Ground
Bank Sta



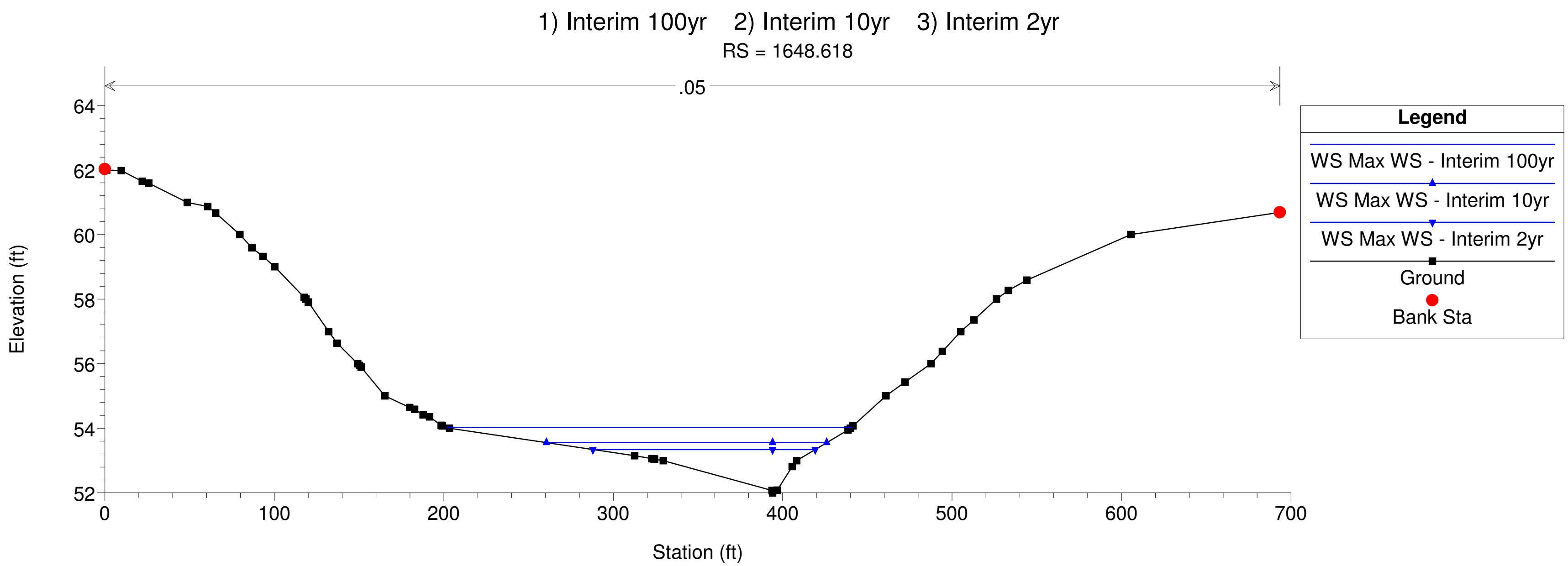
1) Interim 100yr 2) Interim 10yr 3) Interim 2yr
RS = 2200.767
.05
Elevation (ft)
Station (ft)
Legend
WS Max WS - Interim 100yr
WS Max WS - Interim 10yr
WS Max WS - Interim 2yr
Ground
Bank Sta



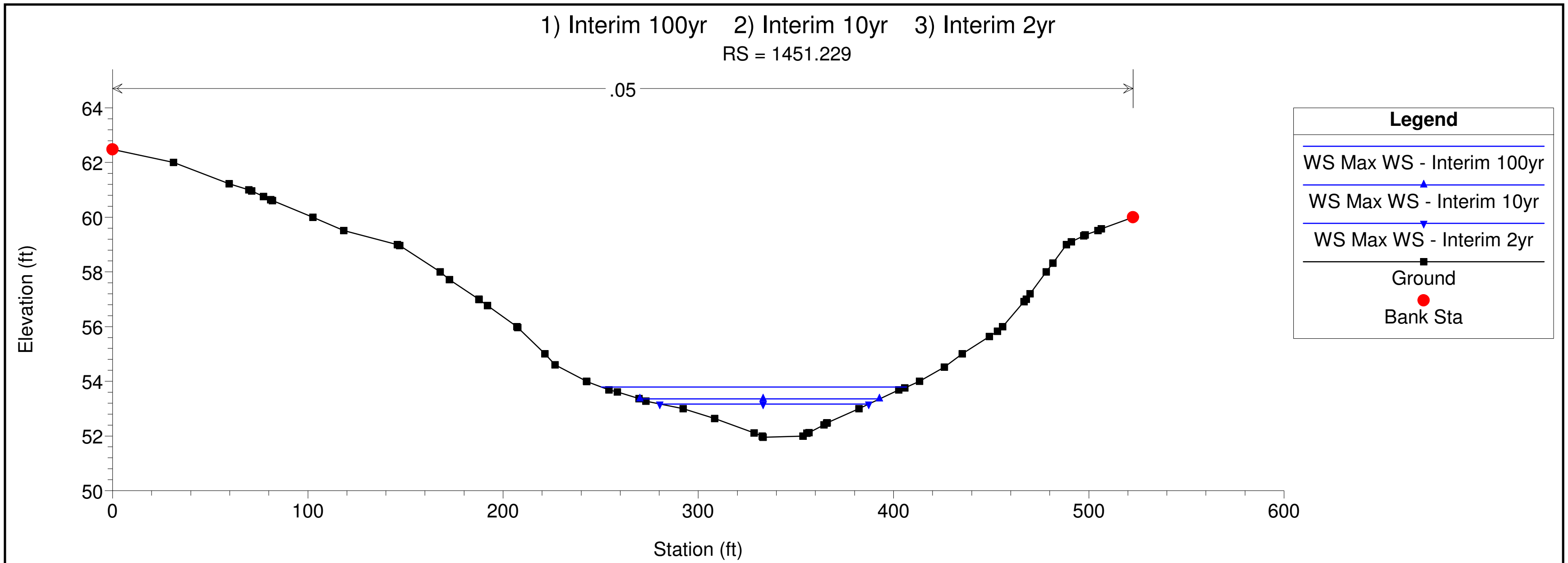
1) Interim 100yr 2) Interim 10yr 3) Interim 2yr
RS = 1999.973
.05
Elevation (ft)
Station (ft)
Legend
WS Max WS - Interim 100yr
WS Max WS - Interim 10yr
WS Max WS - Interim 2yr
Ground
Bank Sta

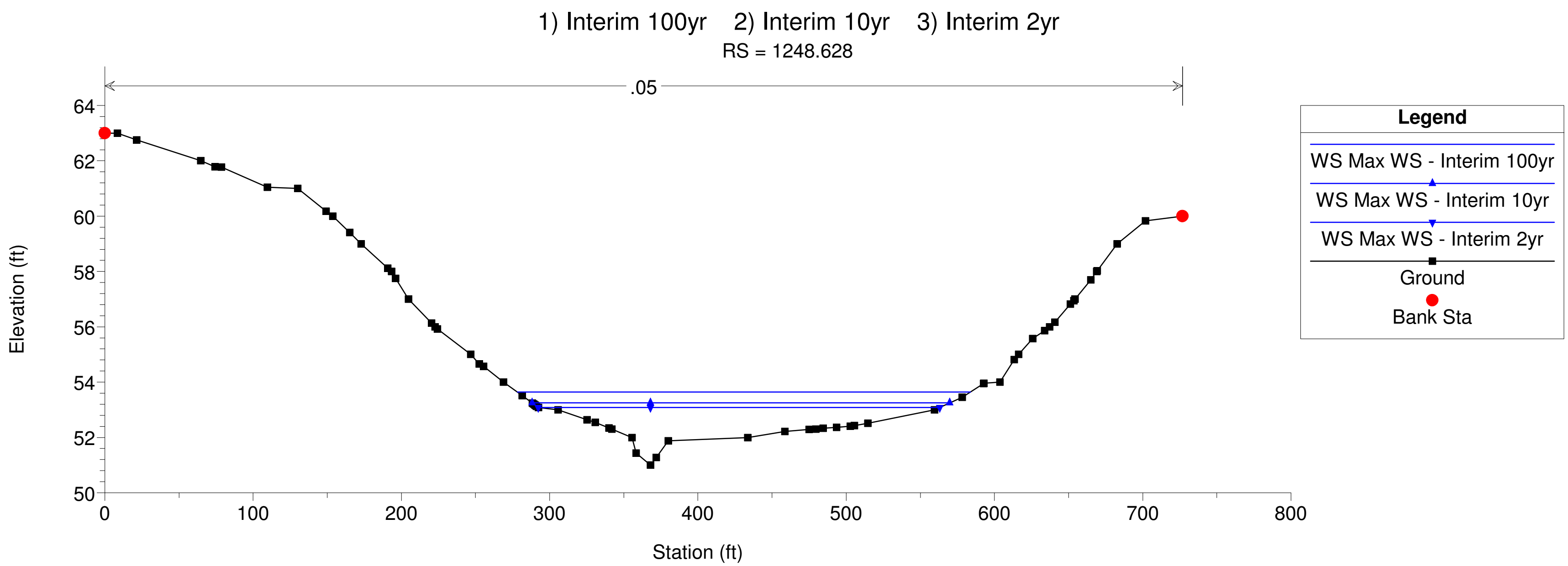


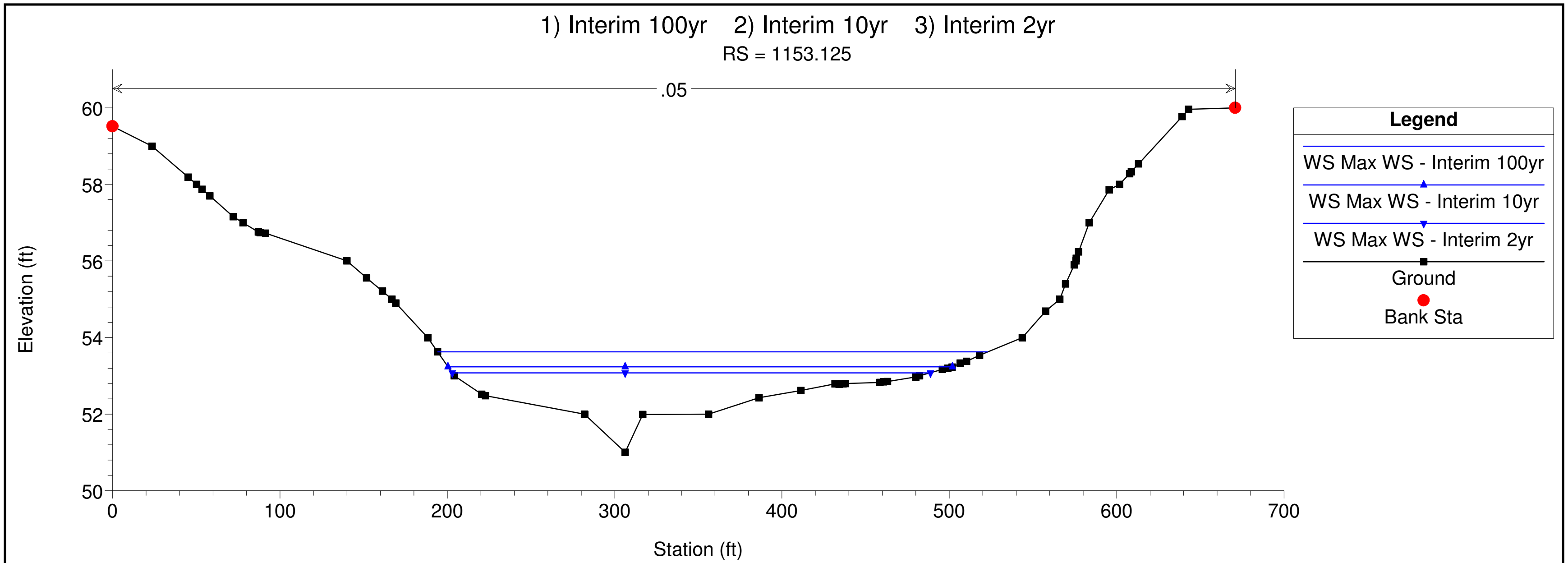
1) Interim 100yr 2) Interim 10yr 3) Interim 2yr
RS = 1803.554
.05
Elevation (ft)
62
60
58
56
54
52
0
200
400
600
800
Station (ft)
Legend
WS Max WS - Interim 100yr
WS Max WS - Interim 10yr
WS Max WS - Interim 2yr
Ground
Bank Sta

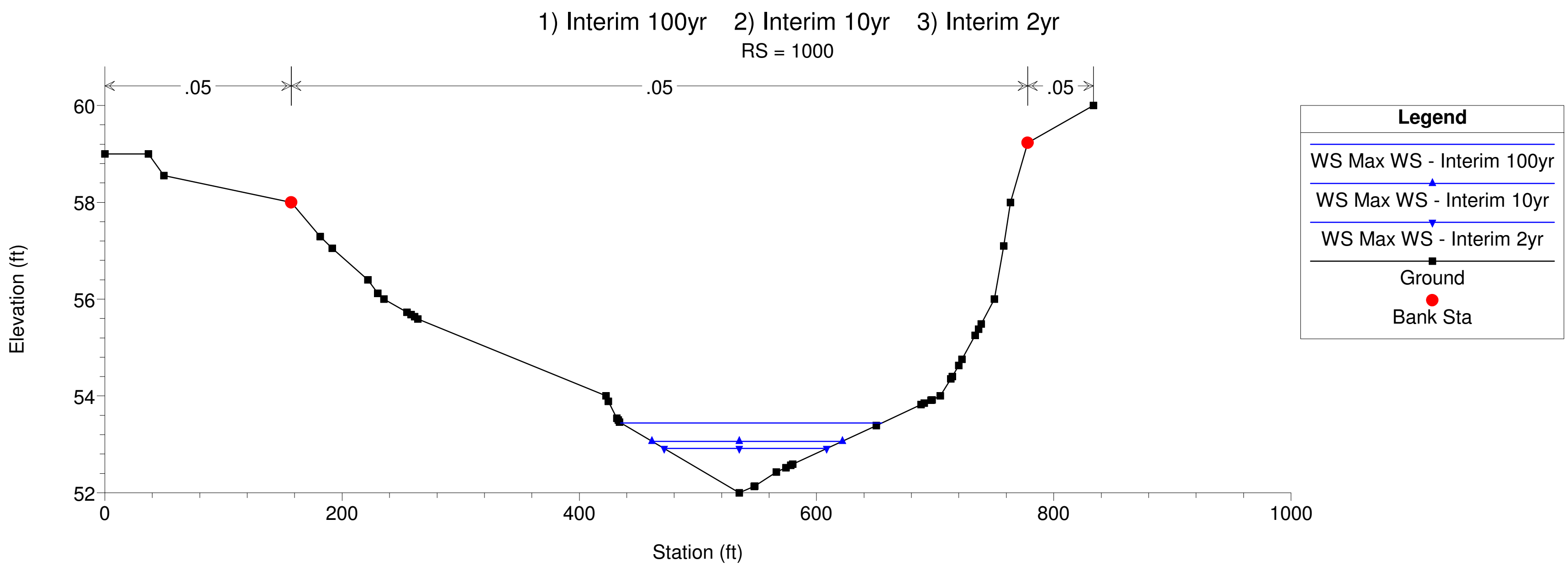


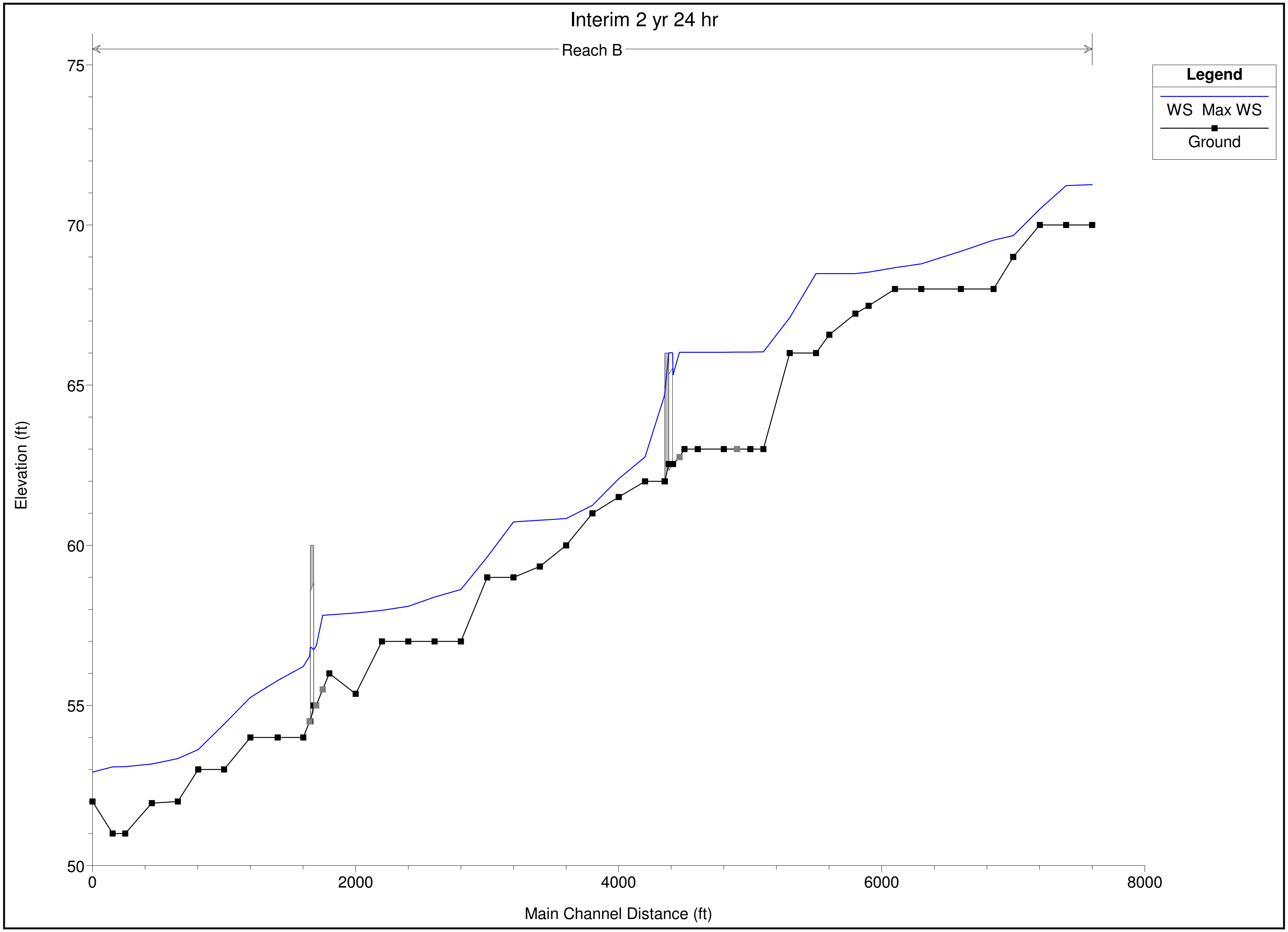
1) Interim 100yr 2) Interim 10yr 3) Interim 2yr
RS = 1648.618
.05
Elevation (ft)
64
62
60
58
56
54
52
0
100
200
300
400
500
600
700
Station (ft)
Legend
WS Max WS - Interim 100yr
WS Max WS - Interim 10yr
WS Max WS - Interim 2yr
Ground
Bank Sta


1) Interim 100yr 2) Interim 10yr 3) Interim 2yr
RS = 1451.229
.05
Elevation (ft)
Station (ft)
Legend
WS Max WS - Interim 100yr
WS Max WS - Interim 10yr
WS Max WS - Interim 2yr
Ground
Bank Sta


1) Interim 100yr 2) Interim 10yr 3) Interim 2yr
RS = 1248.628
.05
Elevation (ft)
Station (ft)
Legend
WS Max WS - Interim 100yr
WS Max WS - Interim 10yr
WS Max WS - Interim 2yr
Ground
Bank Sta


1) Interim 100yr 2) Interim 10yr 3) Interim 2yr
RS = 1153.125
.05
Elevation (ft)
Station (ft)
Legend
WS Max WS - Interim 100yr
WS Max WS - Interim 10yr
WS Max WS - Interim 2yr
Ground
Bank Sta


1) Interim 100yr 2) Interim 10yr 3) Interim 2yr
RS = 1000
.05
.05
.05
Elevation (ft)
Station (ft)
Legend
WS Max WS - Interim 100yr
WS Max WS - Interim 10yr
WS Max WS - Interim 2yr
Ground
Bank Sta



Interim 2 yr 24 hr
Reach B
Legend
WS Max WS
Ground
Elevation (ft)
Main Channel Distance (ft)
75
70
65
60
55
50
0
2000
4000
6000
8000

HEC-RAS Version 4.1.0 Jan 2010
U.S. Army Corps of Engineers
Hydrologic Engineering Center
609 Second Street
Davis, California

```
X     X  XXXXXX    XXXX        XXXX       XX      XXXX
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X     X  X        X            X   X    X    X   X
XXXXXXX  XXXX     X       XXX  XXXX     XXXXXX    XXXX
X     X  X        X            X  X     X    X        X
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PROJECT DATA
Project Title: Bproposed
Project File : Bproposed.prj
Run Date and Time: 5/5/2011 2:28:01 PM

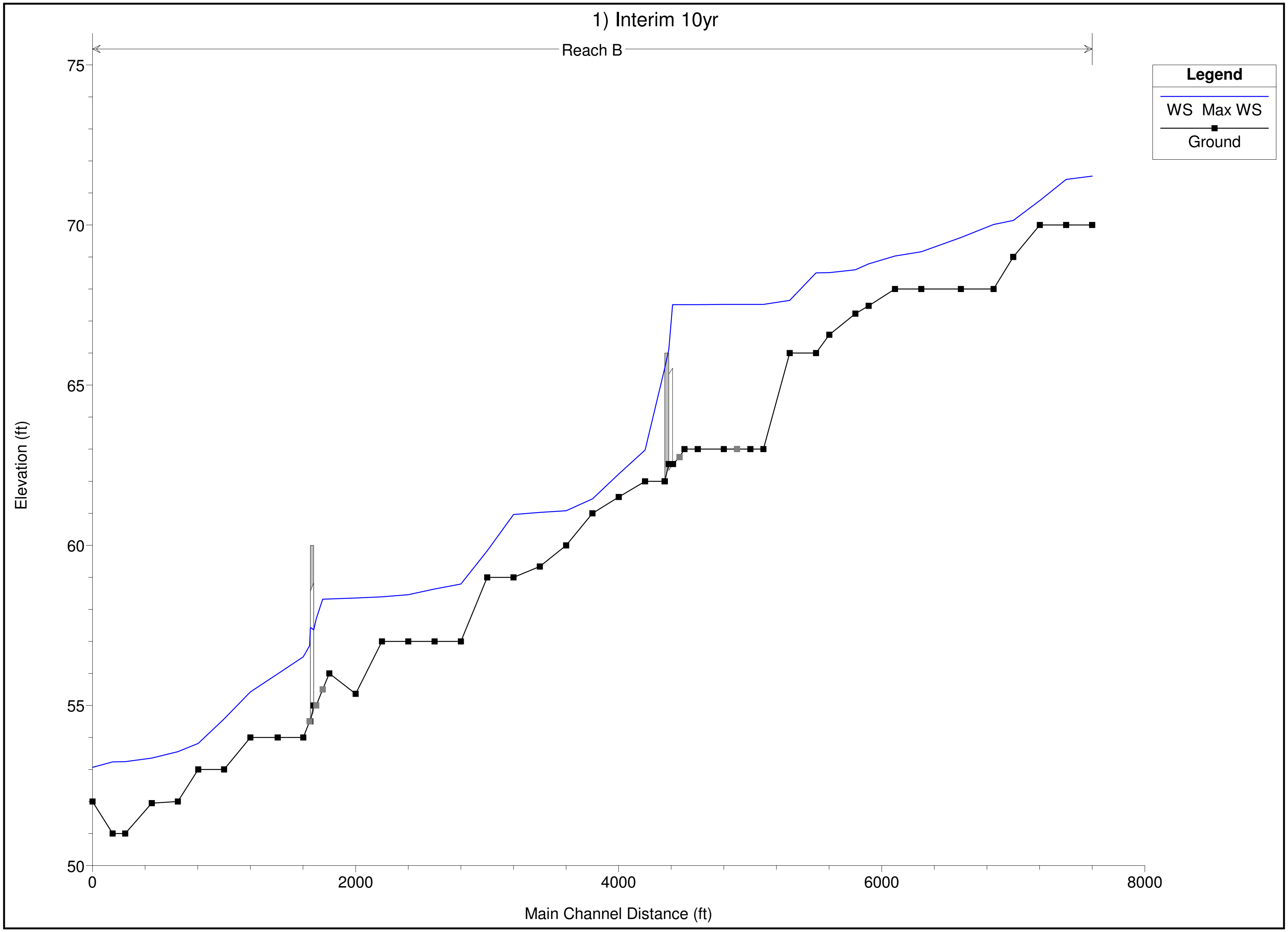
Project in English units

Project Description:
B Corridor - Developed, Interim and Existing Conditions
2 yr 24 hr Interim

Profile Output Table - Standard Table 1

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
B	8600.171	Max WS	28.11	70.00	71.26		71.26	0.000031	0.15	185.70	213.14	0.03
B	8402.062	Max WS	27.89	70.00	71.23		71.24	0.000223	0.34	82.00	122.26	0.07
B	8200.812	Max WS	29.41	70.00	70.50		70.51	0.006989	0.99	29.73	118.29	0.35
B	8000.422	Max WS	30.21	69.00	69.67		69.68	0.001550	0.64	47.14	116.31	0.18
B	7850.530	Max WS	31.77	68.00	69.53		69.53	0.000593	0.53	60.09	96.18	0.12
B	7601.493	Max WS	32.31	68.00	69.18		69.19	0.002216	0.89	36.15	70.66	0.22
B	7299.906	Max WS	34.13	68.00	68.79		68.79	0.000475	0.41	82.94	163.48	0.10
B	7099.985	Max WS	35.25	68.00	68.67		68.67	0.000802	0.48	73.18	168.89	0.13
B	6899.936	Max WS	28.73	67.48	68.53		68.53	0.000558	0.45	64.58	129.13	0.11
B	6798.688	Max WS	12.95	67.23	68.49		68.49	0.000063	0.19	68.76	95.77	0.04
B	6600.481	Max WS	12.93	66.57	68.48		68.48	0.000003	0.06	210.26	151.40	0.01
B	6500.082	Max WS	12.93	66.00	68.48		68.48	0.000001	0.05	275.17	163.42	0.01
B	6299.850	Max WS	42.25	66.00	67.11		67.16	0.013272	1.74	24.33	67.29	0.51
B	6100.057	Max WS	37.76	63.00	66.04		66.04	0.000068	0.29	128.53	97.20	0.05
B	6000.284	Max WS	38.29	63.00	66.03		66.03	0.000005	0.09	415.53	237.37	0.01
B	5900.21*	Max WS	38.28	63.00	66.03		66.03	0.000020	0.16	246.47	192.66	0.02
B	5800.152	Max WS	38.26	63.00	66.03		66.03	0.000050	0.25	154.62	119.52	0.04
B	5600.480	Max WS	38.38	63.00	66.02		66.02	0.000007	0.10	379.47	255.99	0.01
B	5500.645	Max WS	38.68	63.00	66.02		66.02	0.000011	0.12	312.24	336.76	0.02
B	5462.56*	Max WS	38.73	62.75	66.02		66.02	0.000007	0.11	378.52	267.21	0.01
B	5413.78	Max WS	38.80	62.54	65.32		66.71	0.026633	9.43	4.11	214.59	1.00
B	5400		Culvert									
B	5348.317	Max WS	38.80	62.00	64.68	64.77	66.15	0.029125	9.73	3.99	178.42	1.05
B	5200.132	Max WS	39.06	62.00	62.76		62.77	0.002551	0.88	44.64	100.27	0.23
B	5000.639	Max WS	39.37	61.51	62.08		62.10	0.005674	1.05	37.59	117.42	0.33
B	4800.247	Max WS	39.36	61.00	61.25		61.28	0.035992	1.41	27.92	223.24	0.70

B	4600.325	Max WS	40.33	60.00	60.84		60.84	0.000470	0.41	97.38	188.83	0.10
B	4400.977	Max WS	40.69	59.34	60.78		60.78	0.000131	0.27	148.61	206.15	0.06
B	4200.967	Max WS	41.50	59.00	60.73		60.73	0.000348	0.52	80.15	88.72	0.10
B	4001.114	Max WS	41.92	59.00	59.64		59.69	0.012191	1.80	23.27	57.15	0.50
B	3799.862	Max WS	42.74	57.00	58.62		58.62	0.000046	0.25	174.34	129.46	0.04
B	3601.211	Max WS	43.98	57.00	58.39		58.40	0.003539	0.87	50.35	144.71	0.26
B	3400.029	Max WS	44.67	57.00	58.09		58.10	0.000818	0.59	76.15	132.65	0.14
B	3200.874	Max WS	45.84	57.00	57.97		57.97	0.000553	0.50	92.52	154.82	0.11
B	3000.280	Max WS	46.57	55.36	57.89		57.89	0.000353	0.44	105.90	150.91	0.09
B	2799.844	Max WS	47.19	56.00	57.82		57.83	0.000357	0.39	120.27	205.22	0.09
B	2750.27*	Max WS	47.19	55.50	57.81		57.81	0.000263	0.37	126.78	186.19	0.08
B	2700.70*	Max WS	47.18	55.00	56.86		57.68	0.033152	7.27	6.49	58.01	1.01
B	2675		Culvert									
B	2651.13*	Max WS	47.18	54.50	56.54		57.24	0.026397	6.74	7.00	51.84	0.90
B	2601.559	Max WS	47.18	54.00	56.21		56.24	0.002326	1.36	34.57	36.53	0.25
B	2406.840	Max WS	47.60	54.00	55.78		55.80	0.002590	1.19	39.95	56.58	0.25
B	2200.767	Max WS	47.90	54.00	55.25		55.26	0.003254	0.95	50.28	119.28	0.26
B	1999.973	Max WS	48.78	53.00	54.41		54.44	0.006736	1.38	35.28	82.53	0.37
B	1803.554	Max WS	48.91	53.00	53.62		53.64	0.003247	0.97	50.62	117.45	0.26
B	1648.618	Max WS	49.33	52.00	53.34		53.35	0.001103	0.67	73.53	131.19	0.16
B	1451.229	Max WS	49.38	51.95	53.17		53.18	0.000936	0.69	71.25	107.01	0.15
B	1248.628	Max WS	49.61	51.00	53.09		53.09	0.000084	0.23	213.35	270.98	0.05
B	1153.125	Max WS	49.91	51.00	53.08		53.08	0.000091	0.23	213.53	285.77	0.05
B	1000	Max WS	49.90	52.00	52.91	52.49	52.92	0.002145	0.81	61.71	137.01	0.21


1) Interim 10yr
Reach B
Legend
WS Max WS
Ground
Elevation (ft)
75
70
65
60
55
50
0
2000
4000
6000
8000
Main Channel Distance (ft)

HEC-RAS Version 4.1.0 Jan 2010
U.S. Army Corps of Engineers
Hydrologic Engineering Center
609 Second Street
Davis, California

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X     X  XXXXXX   XXXX        XXXX       XX      XXXX
X     X  X       X    X       X   X     X  X    X
X     X  X       X            X   X    X    X   X
XXXXXXX  XXXX    X       XXX  XXXX     XXXXXX    XXXX
X     X  X       X            X  X     X    X        X
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PROJECT DATA
Project Title: Bproposed
Project File : Bproposed.prj
Run Date and Time: 5/5/2011 2:27:26 PM

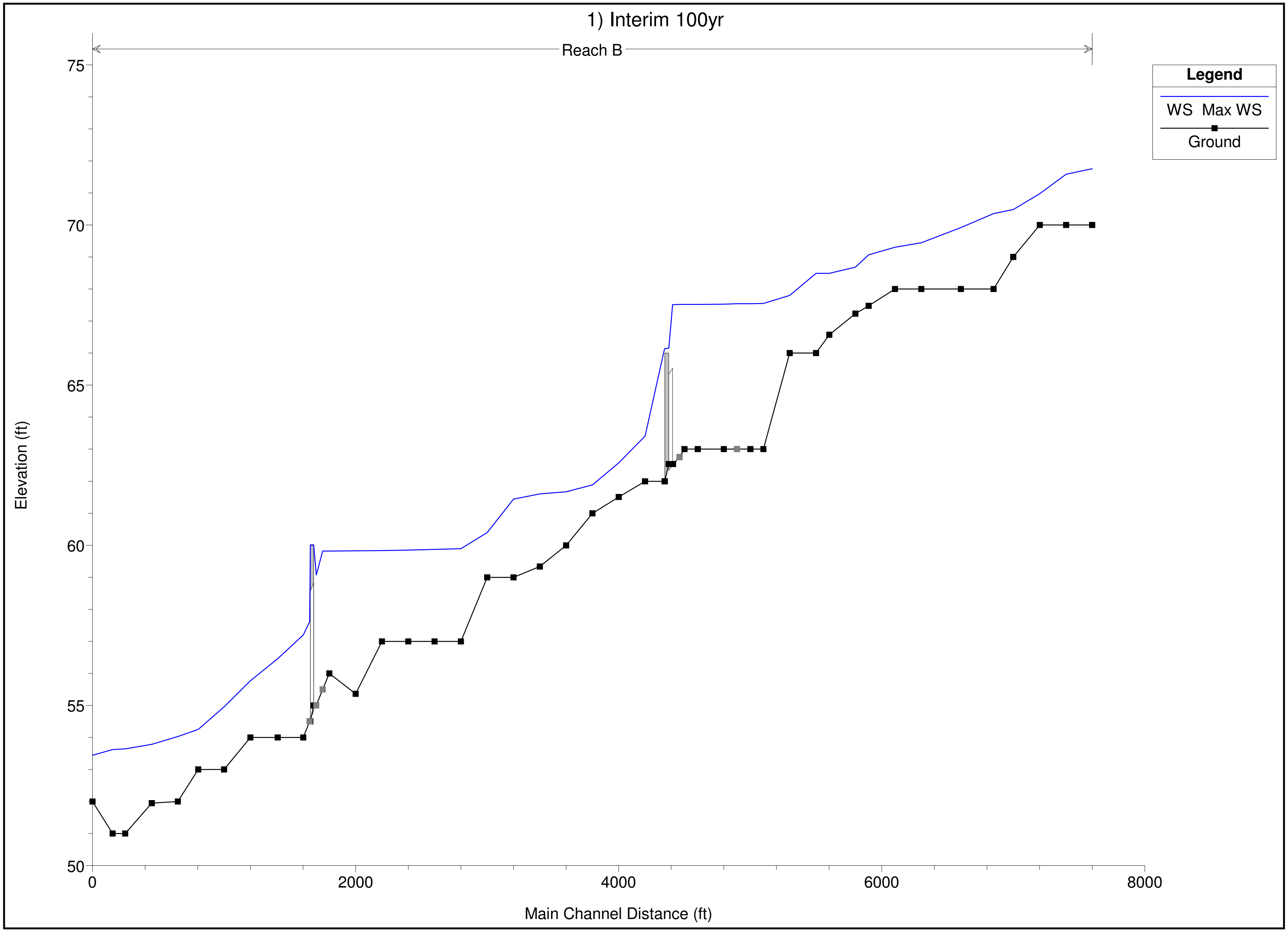
Project in English units

Project Description:
B Corridor - Developed, Interim and Existing Conditions
10 yr 24 hr Interim

Profile Output Table - Standard Table 1

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
B	8600.171	Max WS	81.40	70.00	71.53		71.53	0.000107	0.33	244.17	216.17	0.06
B	8402.062	Max WS	81.18	70.00	71.42		71.43	0.000944	0.76	106.87	140.87	0.15
B	8200.812	Max WS	83.91	70.00	70.76		70.79	0.005591	1.32	63.77	139.97	0.34
B	8000.422	Max WS	84.93	69.00	70.14		70.15	0.000991	0.74	114.19	161.12	0.16
B	7850.530	Max WS	87.66	68.00	70.02		70.03	0.000759	0.75	116.23	131.32	0.14
B	7601.493	Max WS	88.38	68.00	69.61		69.63	0.002572	1.22	72.43	99.22	0.25
B	7299.906	Max WS	91.19	68.00	69.17		69.17	0.000613	0.59	154.24	213.98	0.12
B	7099.985	Max WS	93.16	68.00	69.03		69.04	0.000813	0.67	139.93	200.64	0.14
B	6899.936	Max WS	94.31	67.48	68.79		68.80	0.001638	0.96	100.78	148.39	0.20
B	6798.688	Max WS	71.65	67.23	68.60		68.62	0.001256	0.90	80.51	103.32	0.18
B	6600.481	Max WS	54.21	66.57	68.51		68.51	0.000046	0.25	214.78	152.36	0.04
B	6500.082	Max WS	54.13	66.00	68.51		68.51	0.000021	0.19	279.54	164.64	0.03
B	6299.850	Max WS	65.79	66.00	67.64		67.65	0.001285	0.54	122.83	344.41	0.16
B	6100.057	Max WS	66.59	63.00	67.52		67.52	0.000017	0.15	440.39	321.54	0.02
B	6000.284	Max WS	67.16	63.00	67.52		67.52	0.000002	0.08	858.55	376.15	0.01
B	5900.21*	Max WS	66.77	63.00	67.52		67.52	0.000005	0.11	603.07	275.72	0.01
B	5800.152	Max WS	66.61	63.00	67.52		67.52	0.000012	0.16	409.93	203.67	0.02
B	5600.480	Max WS	61.62	63.00	67.52		67.52	0.000002	0.08	796.63	301.44	0.01
B	5500.645	Max WS	60.62	63.00	67.52		67.52	0.000002	0.08	842.65	374.93	0.01
B	5462.56*	Max WS	60.18	62.75	67.52		67.52	0.000002	0.07	875.79	367.91	0.01
B	5413.78	Max WS	59.61	62.54	67.52		67.52	0.000006	0.10	585.73	374.42	0.01
B	5400		Culvert									
B	5348.317	Max WS	72.09	62.00	65.50	66.10	68.47	0.040967	13.81	5.22	220.64	1.30
B	5200.132	Max WS	70.90	62.00	62.97		62.99	0.002545	1.05	67.67	115.80	0.24
B	5000.639	Max WS	69.78	61.51	62.23		62.25	0.005434	1.25	55.75	129.02	0.34
B	4800.247	Max WS	68.23	61.00	61.45		61.46	0.004657	0.92	74.01	241.45	0.29
B	4600.325	Max WS	66.68	60.00	61.08		61.08	0.000393	0.46	146.49	215.83	0.10
B	4400.977	Max WS	66.50	59.34	61.03		61.03	0.000142	0.33	202.57	227.21	0.06
B	4200.967	Max WS	67.76	59.00	60.96		60.97	0.000509	0.66	102.07	103.57	0.12
B	4001.114	Max WS	68.31	59.00	59.82		59.88	0.010920	1.94	35.13	70.83	0.49

B	3799.862	Max WS	61.05	57.00	58.79		58.79	0.000065	0.31	197.30	133.61	0.04
B	3601.211	Max WS	70.36	57.00	58.63		58.64	0.001714	0.77	91.81	186.42	0.19
B	3400.029	Max WS	70.25	57.00	58.46		58.46	0.000437	0.55	128.31	154.74	0.11
B	3200.874	Max WS	71.27	57.00	58.39		58.39	0.000252	0.43	163.93	185.34	0.08
B	3000.280	Max WS	72.09	55.36	58.35		58.35	0.000174	0.39	183.77	182.91	0.07
B	2799.844	Max WS	72.84	56.00	58.32		58.32	0.000116	0.32	229.74	233.01	0.06
B	2750.27*	Max WS	72.83	55.50	58.32		58.32	0.000106	0.31	234.20	228.49	0.05
B	2700.70*	Max WS	72.82	55.00	57.71		58.55	0.019303	7.36	9.90	163.18	0.82
B	2675		Culvert									
B	2651.13*	Max WS	72.82	54.50	56.87	56.95	58.06	0.035349	8.75	8.32	72.08	1.07
B	2601.559	Max WS	72.82	54.00	56.52		56.55	0.002797	1.53	47.75	49.28	0.27
B	2406.840	Max WS	73.33	54.00	55.99		56.02	0.002891	1.40	52.55	63.76	0.27
B	2200.767	Max WS	73.69	54.00	55.42		55.43	0.003239	0.99	74.65	167.36	0.26
B	1999.973	Max WS	74.71	53.00	54.58		54.61	0.006446	1.46	51.00	105.91	0.37
B	1803.554	Max WS	74.84	53.00	53.81		53.83	0.002651	1.00	74.98	142.29	0.24
B	1648.618	Max WS	76.00	52.00	53.56		53.56	0.001082	0.72	105.17	165.46	0.16
B	1451.229	Max WS	76.33	51.95	53.36		53.37	0.001116	0.82	92.69	122.65	0.17
B	1248.628	Max WS	77.04	51.00	53.25		53.25	0.000115	0.30	257.26	281.56	0.06
B	1153.125	Max WS	77.84	51.00	53.24		53.24	0.000125	0.30	259.05	301.43	0.06
B	1000	Max WS	77.83	52.00	53.06	52.59	53.08	0.002306	0.93	84.00	160.57	0.23



1) Interim 100yr
Reach B
Legend
WS Max WS
Ground
75
70
65
60
55
50
0
2000
4000
6000
8000
Elevation (ft)
Main Channel Distance (ft)

HEC-RAS Version 4.1.0 Jan 2010
U.S. Army Corps of Engineers
Hydrologic Engineering Center
609 Second Street
Davis, California

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X     X  XXXXXX   XXXX        XXXX     XX     XXXX
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X     X  X       X            X   X  X    X  X
XXXXXXX  XXXX    X      XXX   XXXX   XXXXXX   XXXX
X     X  X       X            X  X   X    X       X
X     X  X       X    X       X   X  X    X       X
X     X  XXXXXX   XXXX        X    X X    X  XXXXX
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PROJECT DATA
Project Title: Bproposed
Project File : Bproposed.prj
Run Date and Time: 5/5/2011 2:27:19 PM

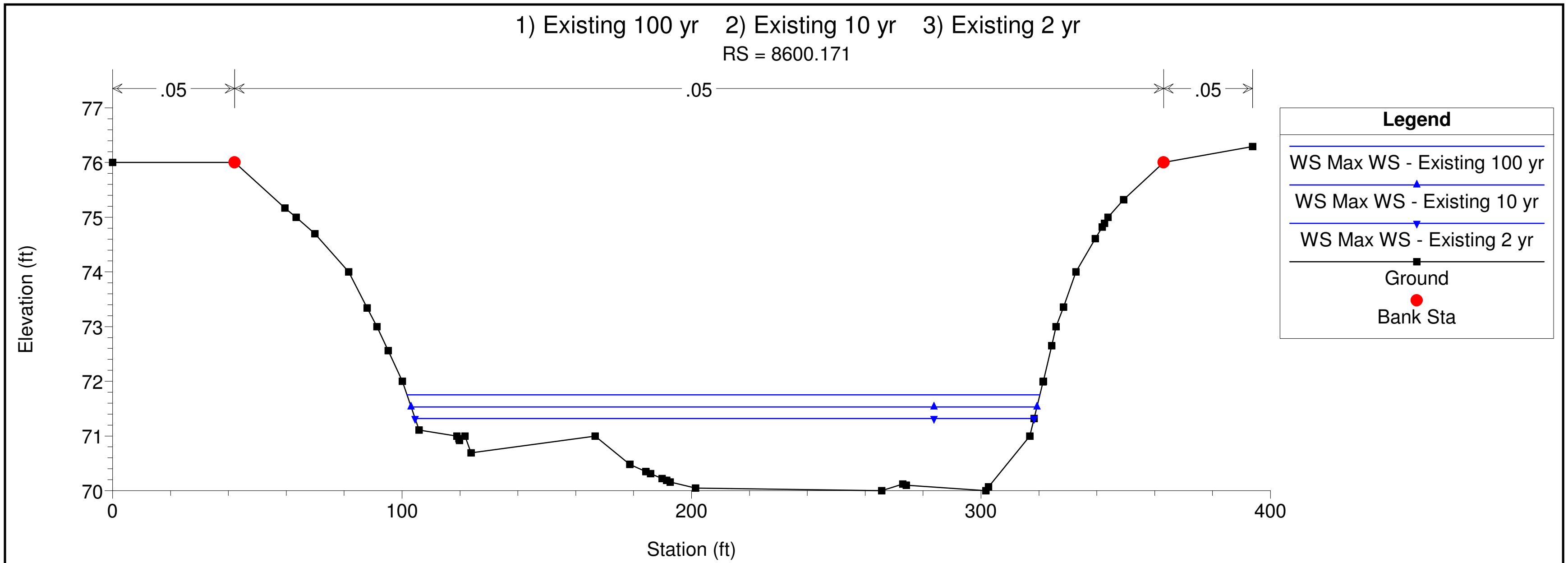
Project in English units

Project Description:
B Corridor - Developed, Interim and Existing Conditions
100 yr 24 hr Interim

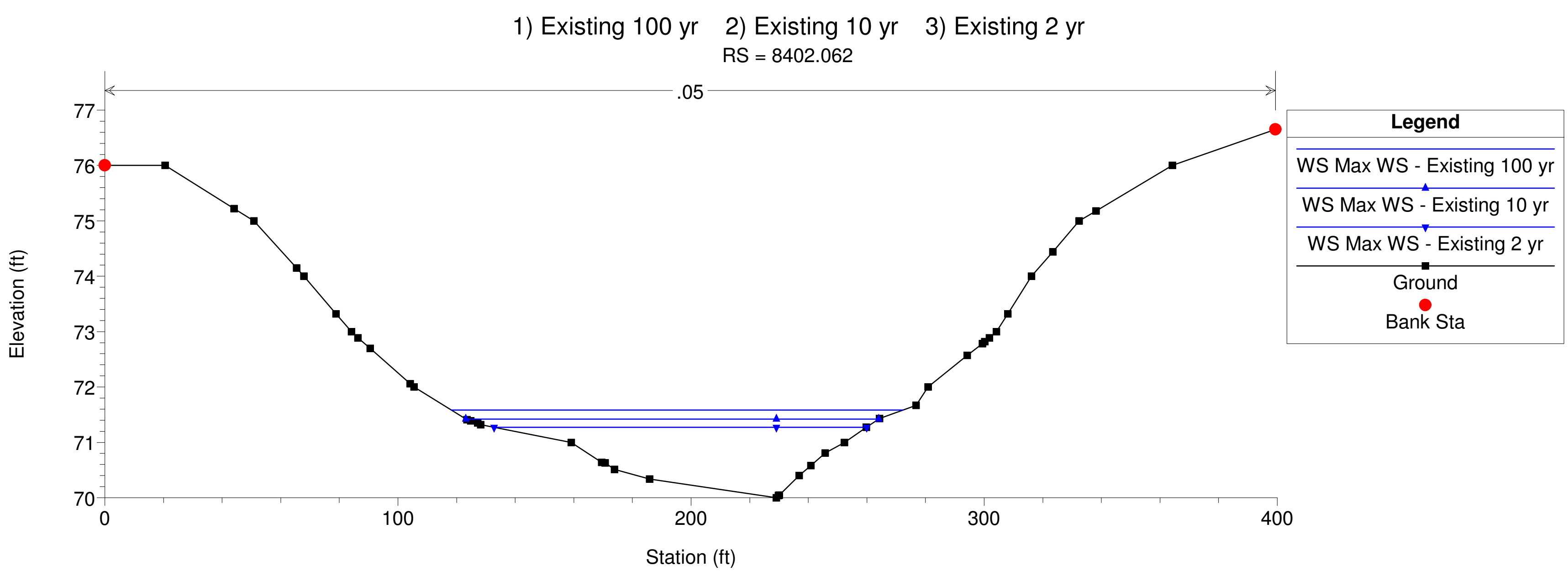
Profile Output Table - Standard Table 1

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
B	8600.171	Max WS	135.65	70.00	71.75		71.76	0.000165	0.46	292.67	218.66	0.07
B	8402.062	Max WS	135.35	70.00	71.58		71.60	0.001508	1.03	130.85	154.12	0.20
B	8200.812	Max WS	139.95	70.00	70.98		71.01	0.004684	1.46	95.59	156.51	0.33
B	8000.422	Max WS	141.61	69.00	70.48		70.49	0.000830	0.82	171.71	181.55	0.15
B	7850.530	Max WS	146.33	68.00	70.36		70.37	0.000778	0.90	163.46	145.49	0.15
B	7601.493	Max WS	147.65	68.00	69.92		69.95	0.002602	1.39	106.30	120.92	0.26
B	7299.906	Max WS	152.12	68.00	69.45		69.46	0.000613	0.70	216.97	233.03	0.13
B	7099.985	Max WS	155.26	68.00	69.31		69.32	0.000793	0.78	198.38	219.03	0.14
B	6899.936	Max WS	158.15	67.48	69.07		69.09	0.001600	1.12	145.13	167.41	0.21
B	6798.688	Max WS	161.32	67.23	68.68		68.73	0.004949	1.84	88.43	108.14	0.36
B	6600.481	Max WS	64.53	66.57	68.49		68.49	0.000067	0.30	212.01	151.77	0.05
B	6500.082	Max WS	63.64	66.00	68.49		68.49	0.000030	0.23	276.29	163.73	0.03
B	6299.850	Max WS	170.25	66.00	67.80		67.81	0.002784	0.95	179.93	383.66	0.24
B	6100.057	Max WS	155.59	63.00	67.55		67.55	0.000088	0.35	449.09	324.38	0.05
B	6000.284	Max WS	159.61	63.00	67.54		67.54	0.000013	0.18	867.27	378.89	0.02
B	5900.21*	Max WS	158.65	63.00	67.54		67.54	0.000027	0.26	608.62	276.45	0.03
B	5800.152	Max WS	158.29	63.00	67.53		67.53	0.000065	0.38	412.73	203.96	0.05
B	5600.480	Max WS	136.07	63.00	67.52		67.52	0.000009	0.17	798.20	301.59	0.02
B	5500.645	Max WS	137.99	63.00	67.52		67.52	0.000009	0.18	843.34	374.98	0.02
B	5462.56*	Max WS	165.45	62.75	67.52		67.52	0.000012	0.20	876.04	367.93	0.02
B	5413.78	Max WS	91.30	62.54	67.51		67.52	0.000015	0.16	585.13	374.37	0.02
B	5400		Culvert									
B	5348.317	Max WS	185.49	62.00	66.14	66.20	66.45	0.258827	4.46	41.61	259.66	1.96
B	5200.132	Max WS	187.39	62.00	63.41		63.43	0.003287	1.27	147.66	229.67	0.28
B	5000.639	Max WS	189.43	61.51	62.58		62.63	0.006160	1.78	106.20	158.77	0.38
B	4800.247	Max WS	187.28	61.00	61.88		61.90	0.001880	1.01	186.10	269.62	0.21
B	4600.325	Max WS	192.41	60.00	61.67		61.68	0.000427	0.68	283.48	243.76	0.11

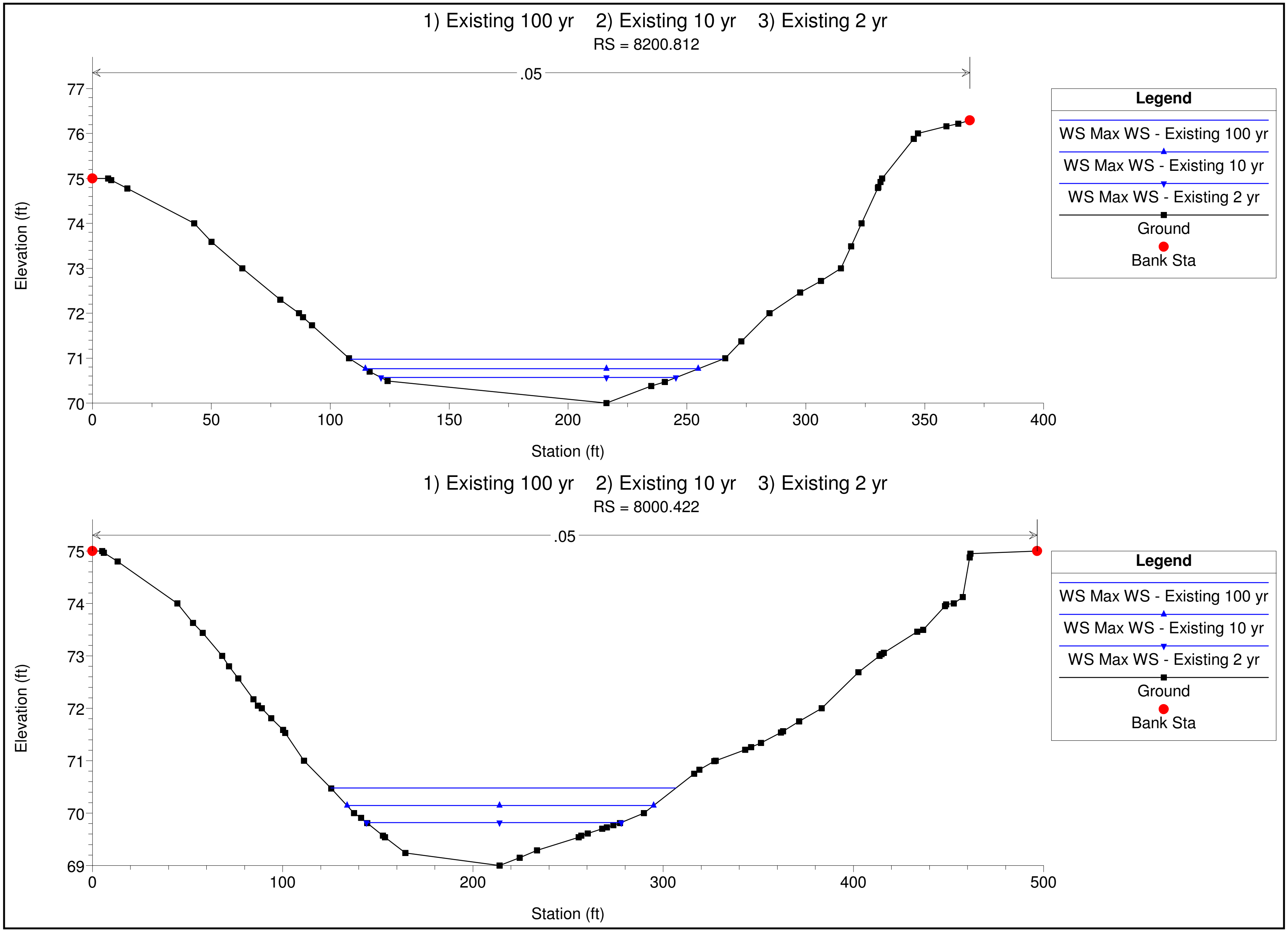
B	4400.977	Max WS	193.11	59.34	61.61		61.61	0.000247	0.56	343.70	260.61	0.09
B	4200.967	Max WS	190.75	59.00	61.44		61.47	0.001194	1.21	157.39	122.62	0.19
B	4001.114	Max WS	194.21	59.00	60.40		60.45	0.006635	1.90	102.48	147.82	0.40
B	3799.862	Max WS	157.11	57.00	59.89		59.90	0.000086	0.39	401.49	236.91	0.05
B	3601.211	Max WS	158.78	57.00	59.87		59.87	0.000133	0.47	337.22	208.28	0.07
B	3400.029	Max WS	159.63	57.00	59.85		59.85	0.000084	0.41	390.37	211.68	0.05
B	3200.874	Max WS	162.95	57.00	59.84		59.84	0.000054	0.33	501.04	274.97	0.04
B	3000.280	Max WS	164.95	55.36	59.83		59.83	0.000045	0.32	518.34	255.92	0.04
B	2799.844	Max WS	166.59	56.00	59.82		59.82	0.000029	0.26	648.28	314.28	0.03
B	2750.27*	Max WS	166.52	55.50	59.82		59.82	0.000029	0.27	623.86	285.54	0.03
B	2700.70*	Max WS	122.47	55.00	59.07		60.06	0.012720	7.99	15.33	232.85	0.72
B	2675		Culvert									
B	2651.13*	Max WS	166.49	54.50	57.61	58.55	60.98	0.066450	14.72	11.31	125.71	1.54
B	2601.559	Max WS	166.48	54.00	57.19		57.25	0.003209	1.83	90.98	79.56	0.30
B	2406.840	Max WS	167.72	54.00	56.46		56.51	0.004802	1.75	95.70	121.09	0.35
B	2200.767	Max WS	168.57	54.00	55.77		55.79	0.002796	1.14	147.75	238.76	0.26
B	1999.973	Max WS	171.00	53.00	54.96		55.00	0.005994	1.70	100.71	158.73	0.38
B	1803.554	Max WS	171.10	53.00	54.25		54.27	0.002119	1.13	151.11	200.66	0.23
B	1648.618	Max WS	172.07	52.00	54.03		54.04	0.001046	0.86	200.92	238.84	0.16
B	1451.229	Max WS	172.03	51.95	53.79		53.81	0.001486	1.13	152.63	156.31	0.20
B	1248.628	Max WS	172.60	51.00	53.64		53.64	0.000185	0.46	373.32	305.44	0.07
B	1153.125	Max WS	173.58	51.00	53.62		53.63	0.000192	0.46	381.40	328.31	0.07
B	1000	Max WS	173.52	52.00	53.44	52.81	53.46	0.002211	1.11	156.14	220.12	0.23

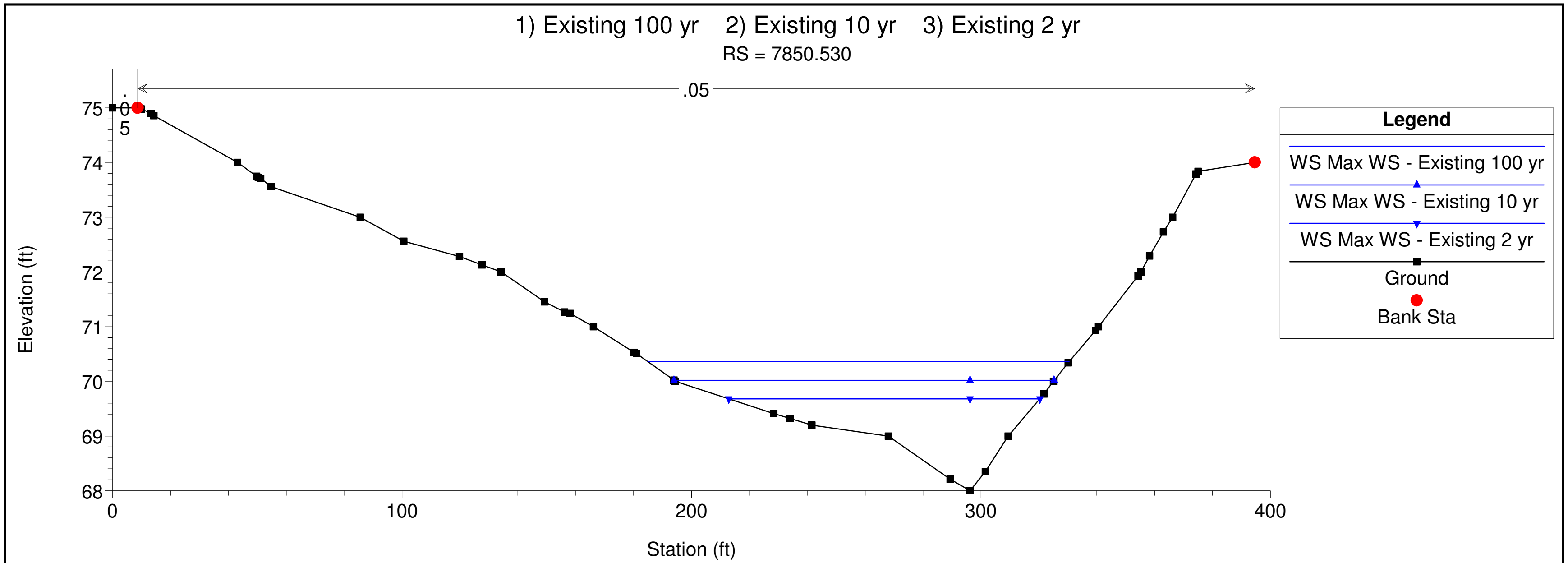


1) Existing 100 yr 2) Existing 10 yr 3) Existing 2 yr
RS = 8600.171
.05
.05
.05
Elevation (ft)
Station (ft)
Legend
WS Max WS - Existing 100 yr
WS Max WS - Existing 10 yr
WS Max WS - Existing 2 yr
Ground
Bank Sta

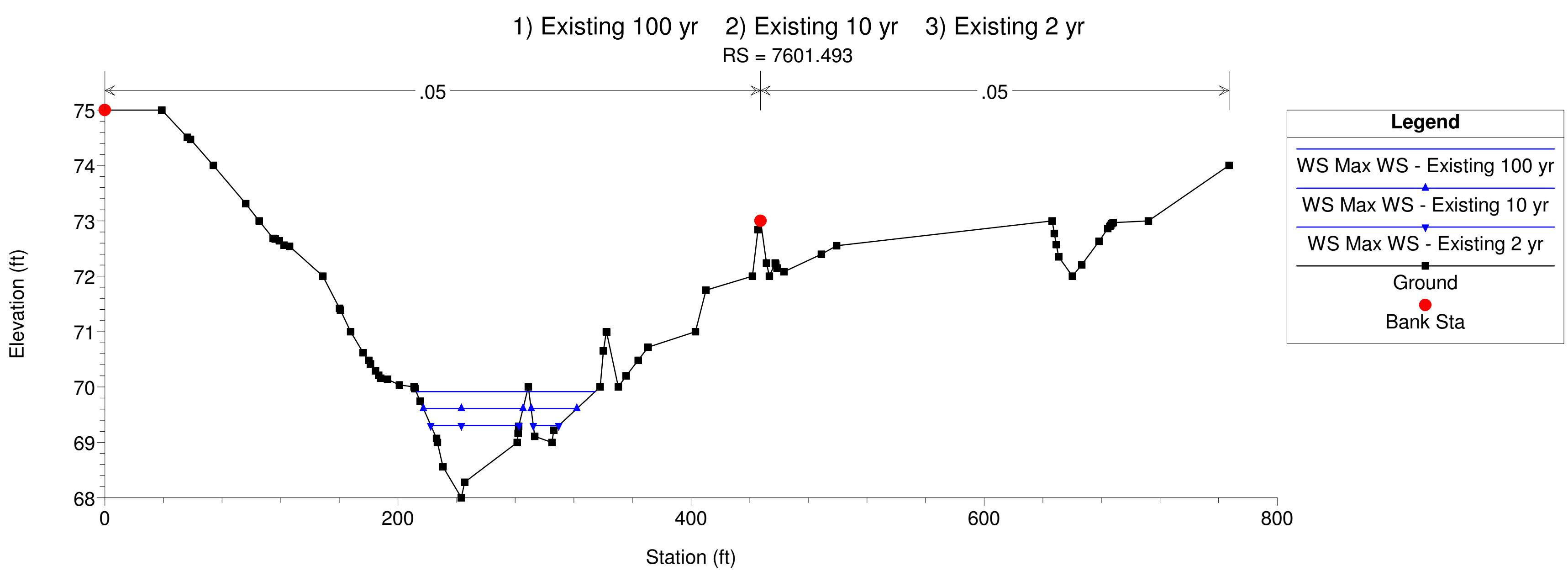


1) Existing 100 yr 2) Existing 10 yr 3) Existing 2 yr
RS = 8402.062
.05
Elevation (ft)
Station (ft)
Legend
WS Max WS - Existing 100 yr
WS Max WS - Existing 10 yr
WS Max WS - Existing 2 yr
Ground
Bank Sta

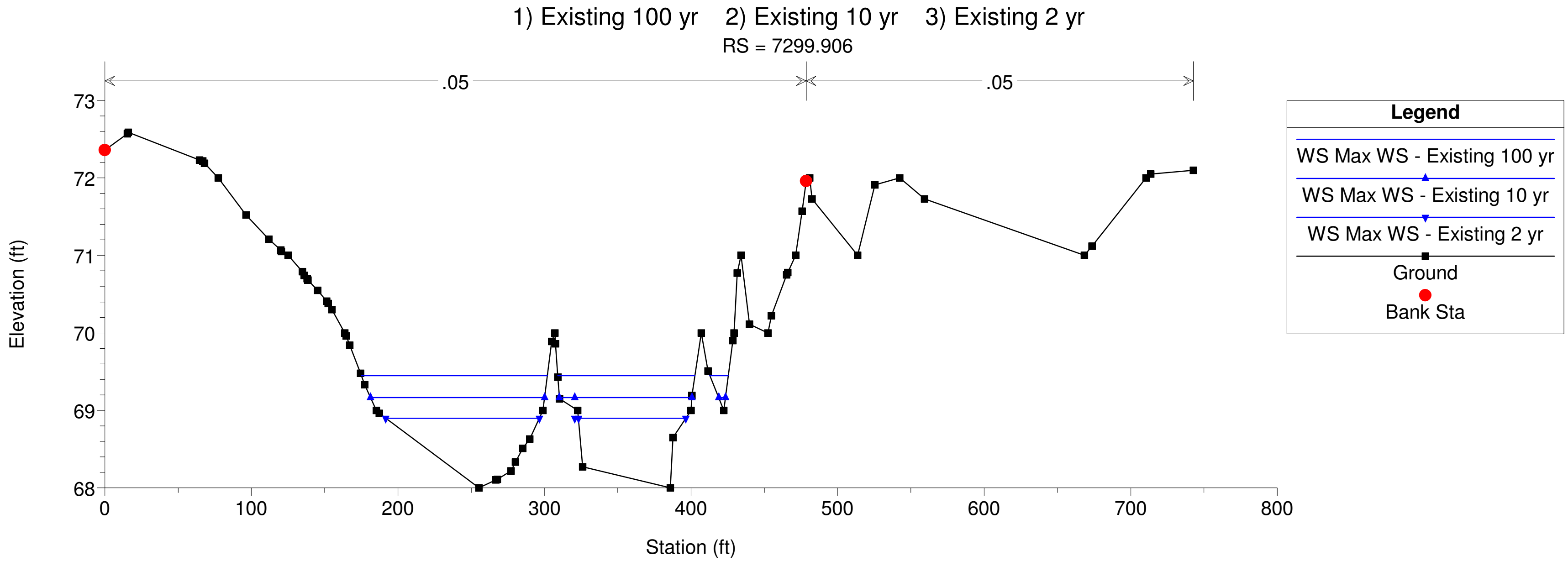

1) Existing 100 yr 2) Existing 10 yr 3) Existing 2 yr
RS = 8200.812
.05
Elevation (ft)
77
76
75
74
73
72
71
70
0
50
100
150
200
250
300
350
400
Station (ft)
Legend
WS Max WS - Existing 100 yr
WS Max WS - Existing 10 yr
WS Max WS - Existing 2 yr
Ground
Bank Sta
1) Existing 100 yr 2) Existing 10 yr 3) Existing 2 yr
RS = 8000.422
.05
Elevation (ft)
75
74
73
72
71
70
69
0
100
200
300
400
500
Station (ft)
Legend
WS Max WS - Existing 100 yr
WS Max WS - Existing 10 yr
WS Max WS - Existing 2 yr
Ground
Bank Sta



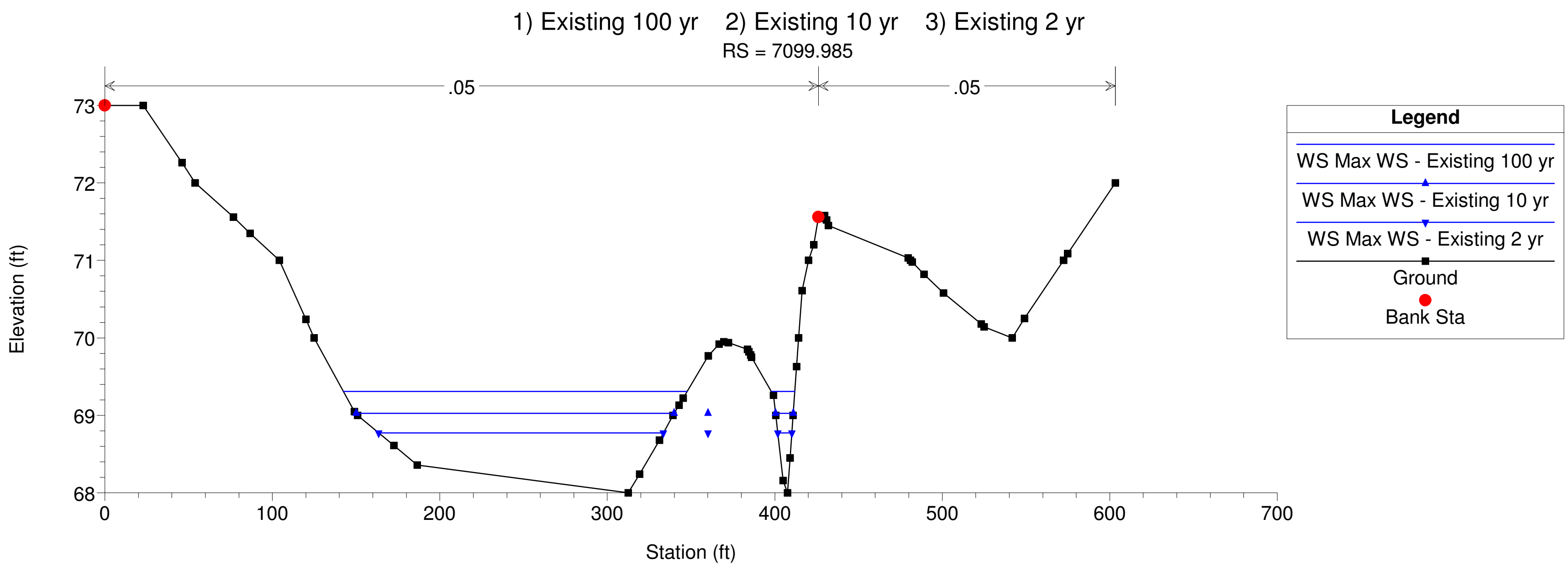
1) Existing 100 yr 2) Existing 10 yr 3) Existing 2 yr
RS = 7850.530
.05
Elevation (ft)
Station (ft)
Legend
WS Max WS - Existing 100 yr
WS Max WS - Existing 10 yr
WS Max WS - Existing 2 yr
Ground
Bank Sta



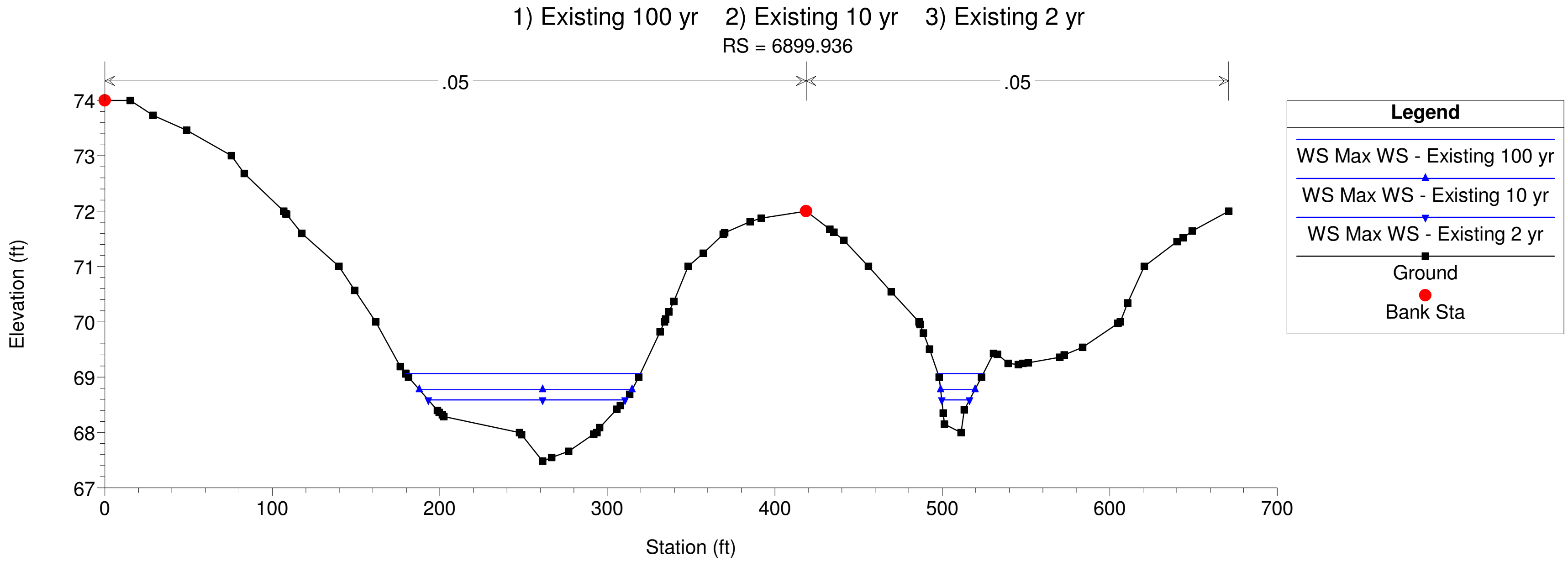
1) Existing 100 yr 2) Existing 10 yr 3) Existing 2 yr
RS = 7601.493
.05
.05
Elevation (ft)
Station (ft)
Legend
WS Max WS - Existing 100 yr
WS Max WS - Existing 10 yr
WS Max WS - Existing 2 yr
Ground
Bank Sta

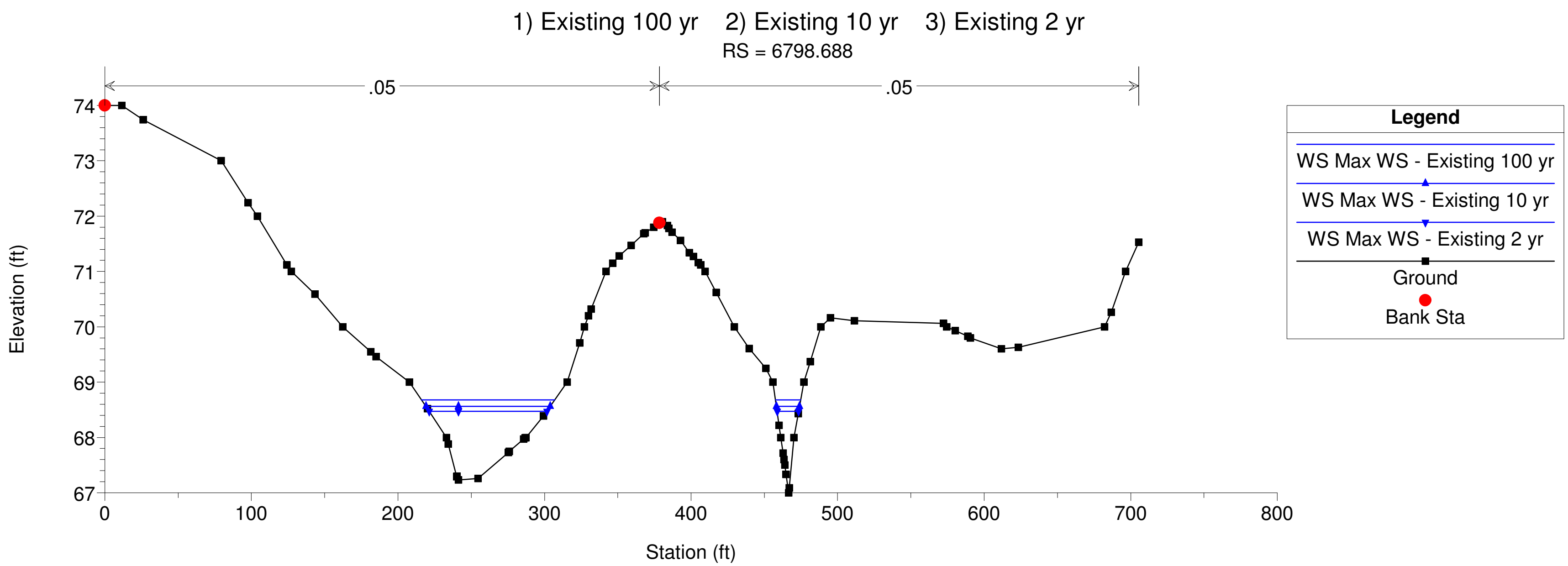


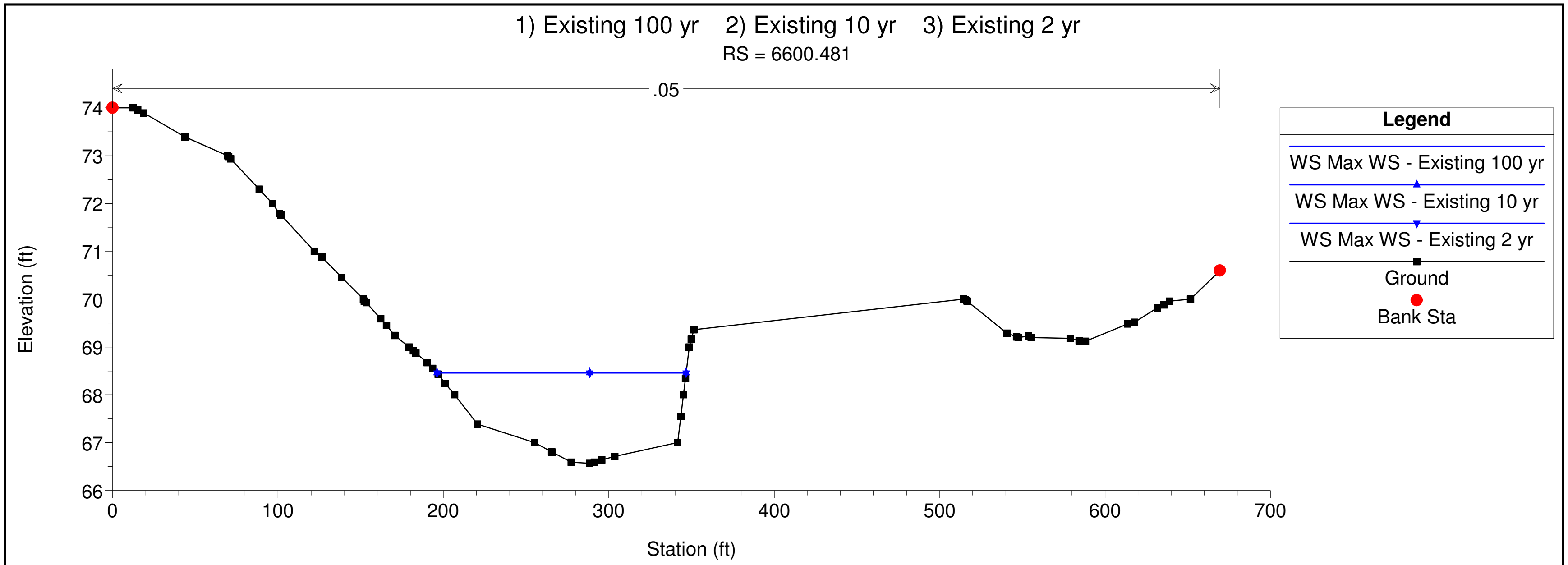
1) Existing 100 yr 2) Existing 10 yr 3) Existing 2 yr
RS = 7299.906
.05
.05
Elevation (ft)
Station (ft)
73
72
71
70
69
68
0
100
200
300
400
500
600
700
800
Legend
WS Max WS - Existing 100 yr
WS Max WS - Existing 10 yr
WS Max WS - Existing 2 yr
Ground
Bank Sta

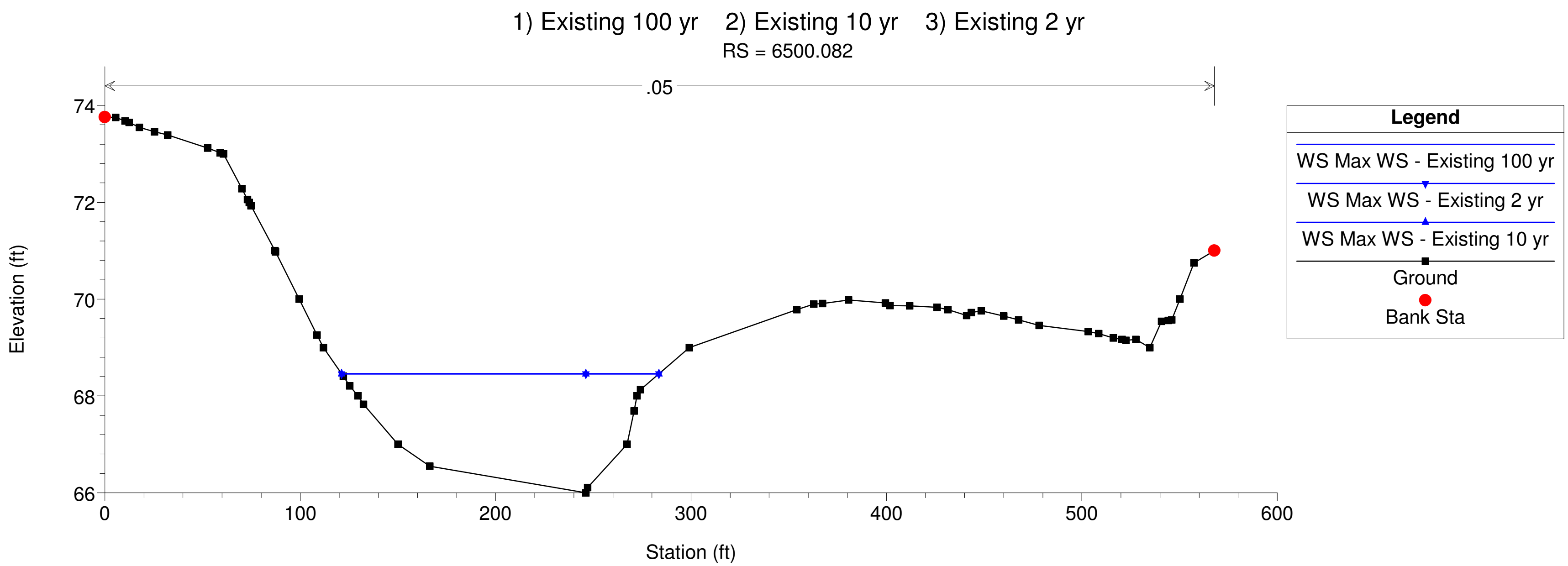


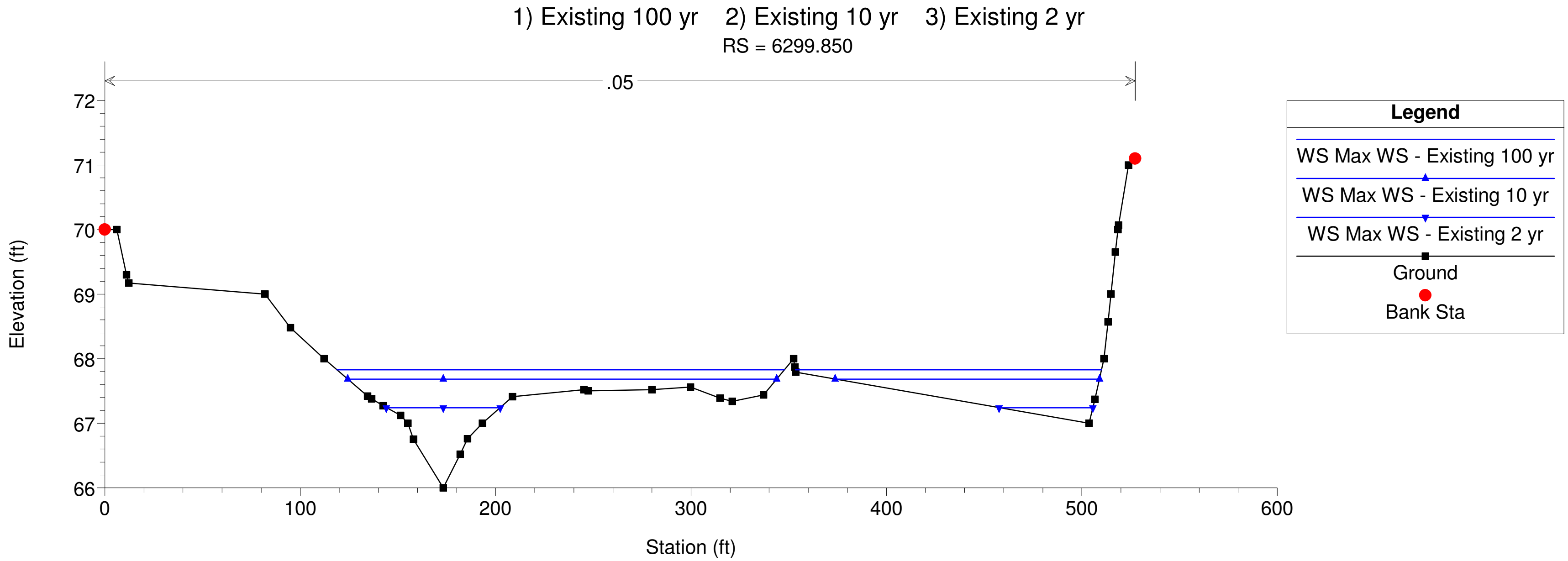
1) Existing 100 yr 2) Existing 10 yr 3) Existing 2 yr
RS = 7099.985
.05
.05
Elevation (ft)
Station (ft)
73
72
71
70
69
68
0
100
200
300
400
500
600
700
Legend
WS Max WS - Existing 100 yr
WS Max WS - Existing 10 yr
WS Max WS - Existing 2 yr
Ground
Bank Sta


1) Existing 100 yr 2) Existing 10 yr 3) Existing 2 yr
RS = 6899.936
.05
.05
Elevation (ft)
Station (ft)
Legend
WS Max WS - Existing 100 yr
WS Max WS - Existing 10 yr
WS Max WS - Existing 2 yr
Ground
Bank Sta

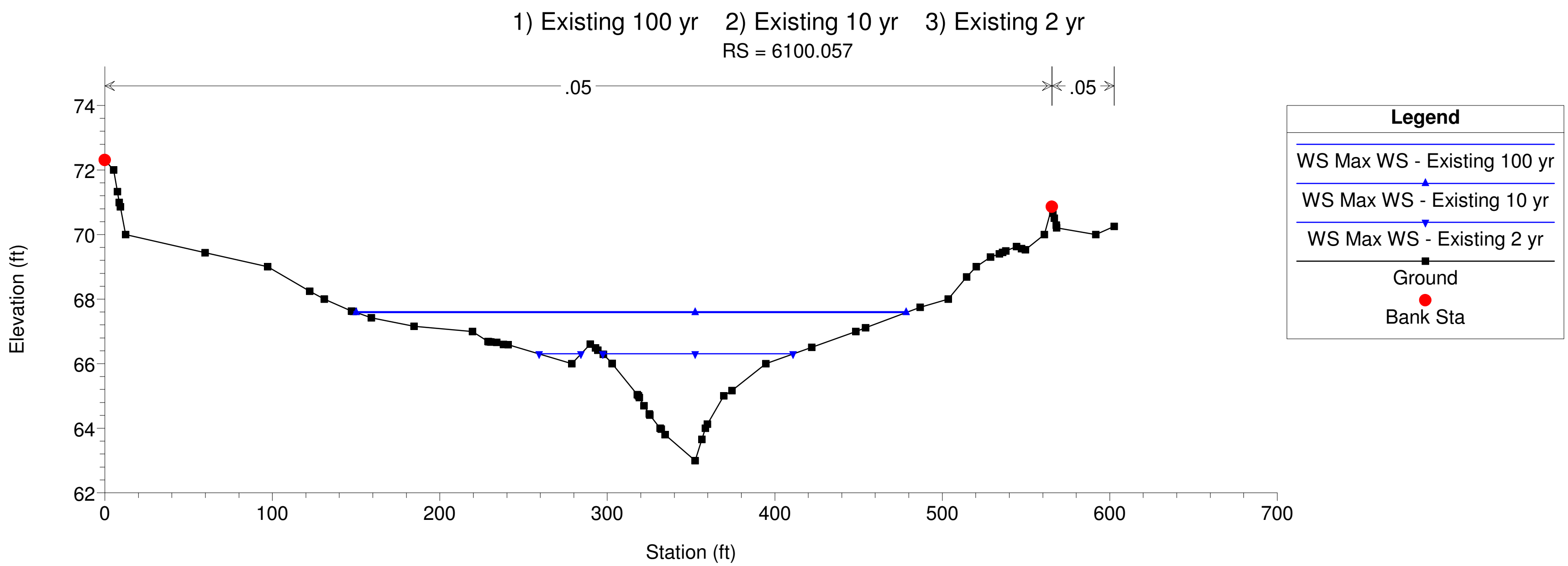

1) Existing 100 yr 2) Existing 10 yr 3) Existing 2 yr
RS = 6798.688
.05
.05
Elevation (ft)
Station (ft)
Legend
WS Max WS - Existing 100 yr
WS Max WS - Existing 10 yr
WS Max WS - Existing 2 yr
Ground
Bank Sta


1) Existing 100 yr 2) Existing 10 yr 3) Existing 2 yr
RS = 6600.481
.05
Elevation (ft)
74
73
72
71
70
69
68
67
66
0
100
200
300
400
500
600
700
Station (ft)
Legend
WS Max WS - Existing 100 yr
WS Max WS - Existing 10 yr
WS Max WS - Existing 2 yr
Ground
Bank Sta

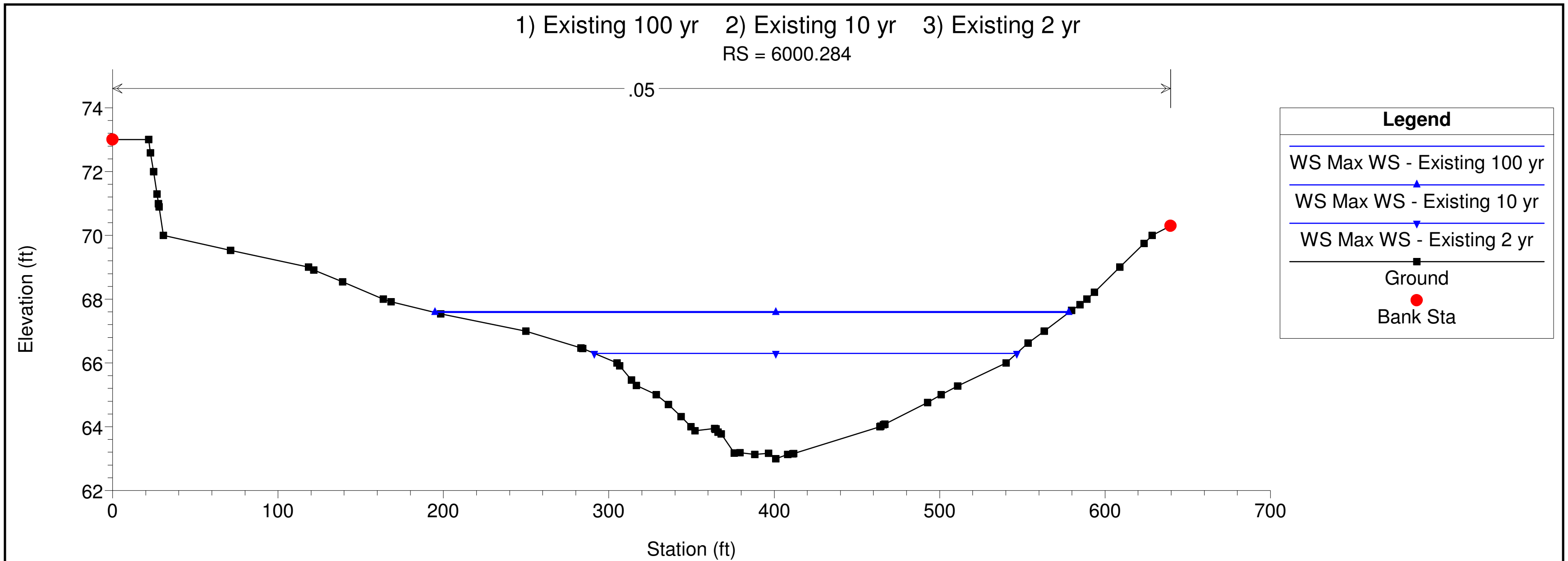

1) Existing 100 yr 2) Existing 10 yr 3) Existing 2 yr
RS = 6500.082
.05
Elevation (ft)
74
72
70
68
66
0
100
200
300
400
500
600
Station (ft)
Legend
WS Max WS - Existing 100 yr
WS Max WS - Existing 2 yr
WS Max WS - Existing 10 yr
Ground
Bank Sta

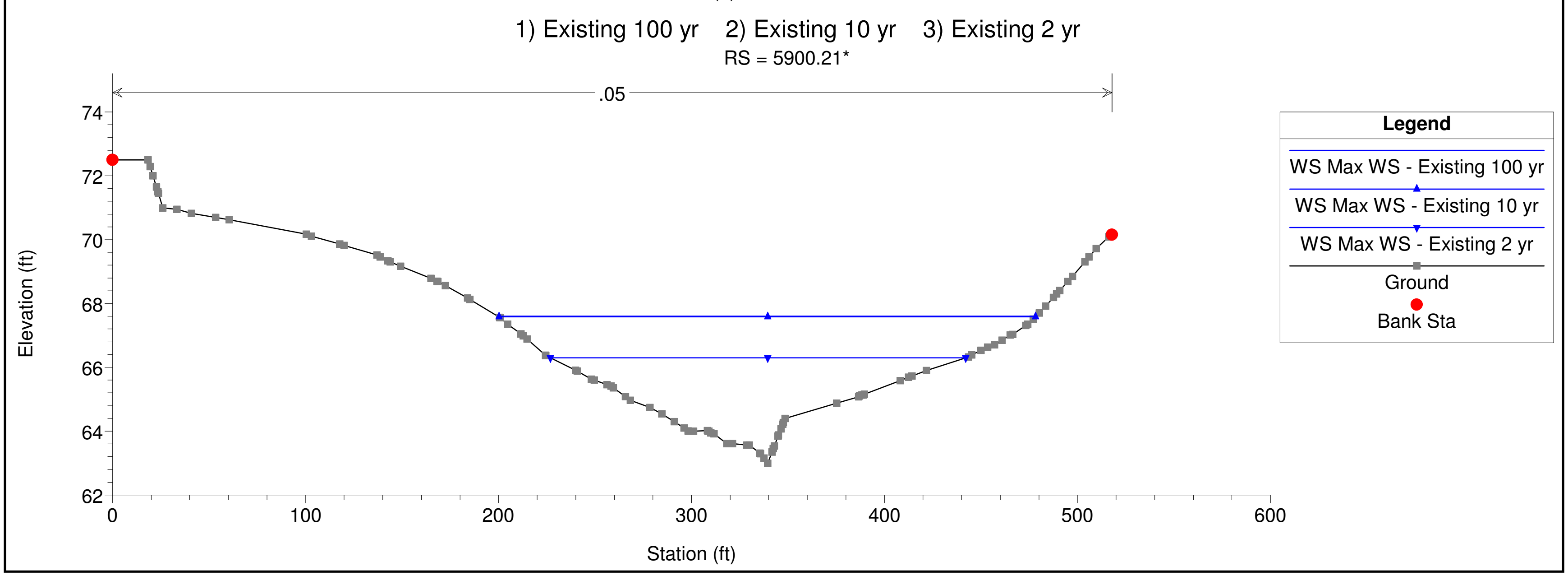


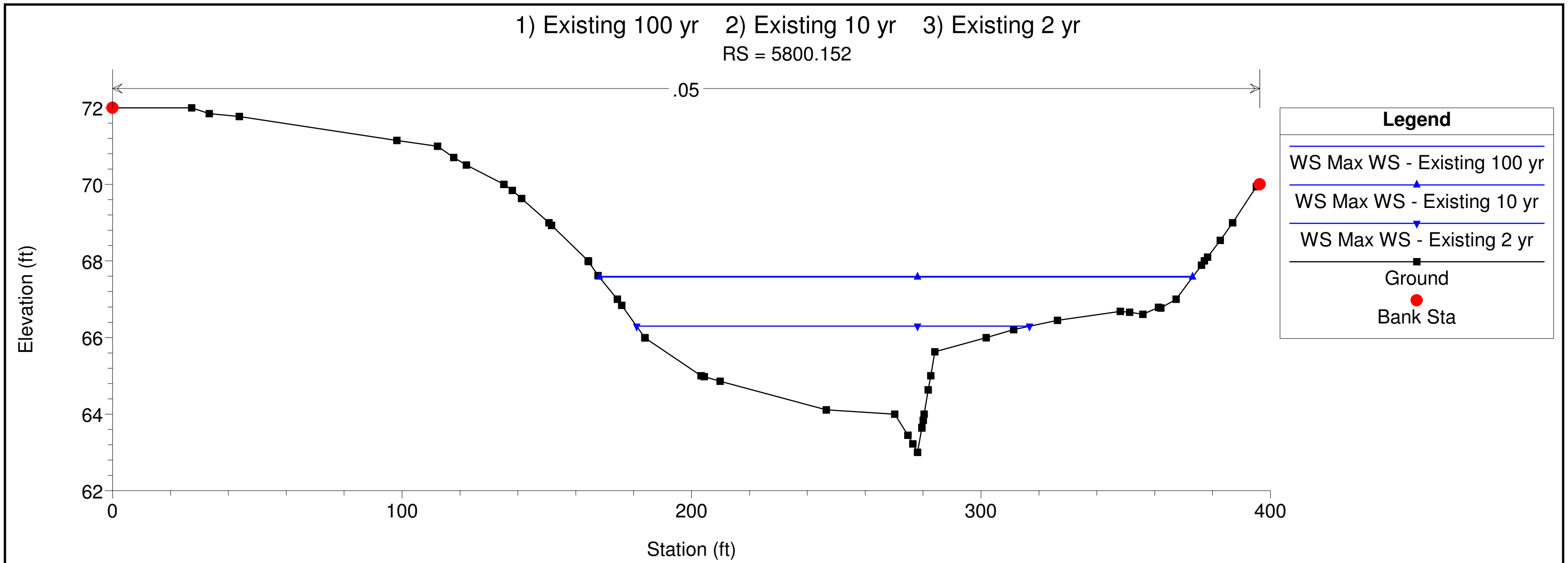
1) Existing 100 yr 2) Existing 10 yr 3) Existing 2 yr
RS = 6299.850
.05
Elevation (ft)
Station (ft)
72
71
70
69
68
67
66
0
100
200
300
400
500
600
Legend
WS Max WS - Existing 100 yr
WS Max WS - Existing 10 yr
WS Max WS - Existing 2 yr
Ground
Bank Sta



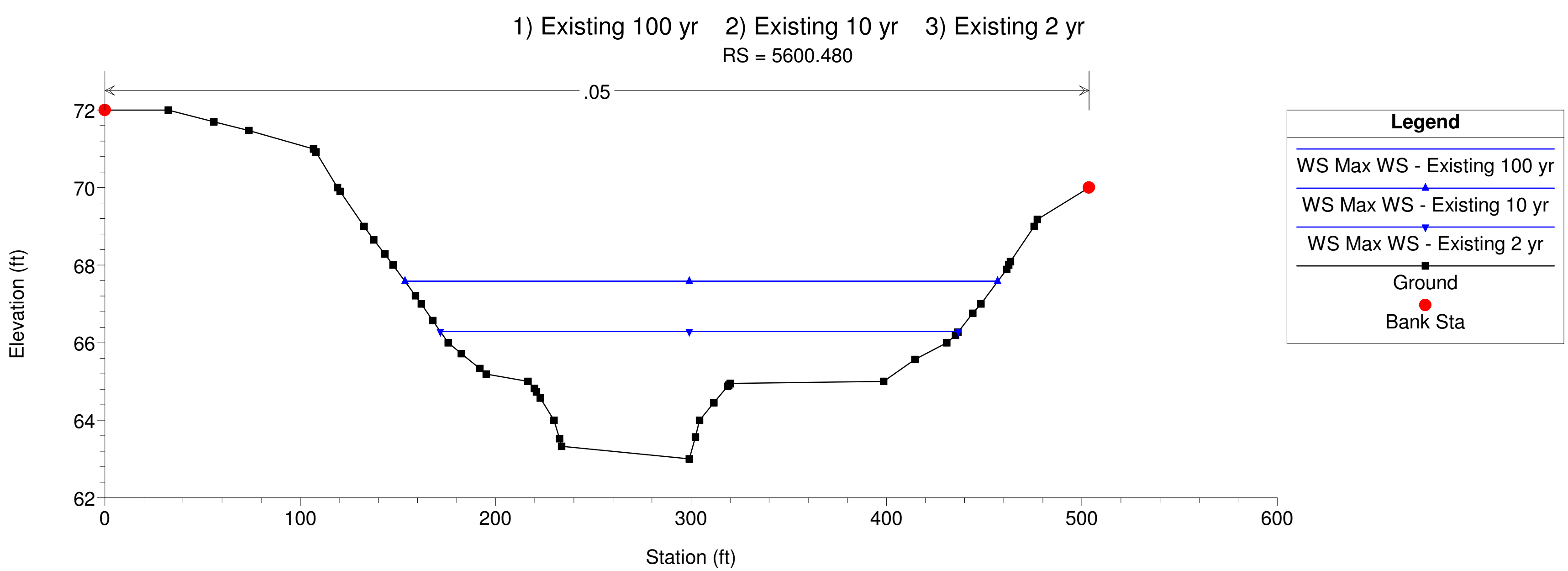
1) Existing 100 yr 2) Existing 10 yr 3) Existing 2 yr
RS = 6100.057
.05
.05
Elevation (ft)
Station (ft)
74
72
70
68
66
64
62
0
100
200
300
400
500
600
700
Legend
WS Max WS - Existing 100 yr
WS Max WS - Existing 10 yr
WS Max WS - Existing 2 yr
Ground
Bank Sta


1) Existing 100 yr 2) Existing 10 yr 3) Existing 2 yr
RS = 6000.284
.05
Elevation (ft)
Station (ft)
Legend
WS Max WS - Existing 100 yr
WS Max WS - Existing 10 yr
WS Max WS - Existing 2 yr
Ground
Bank Sta

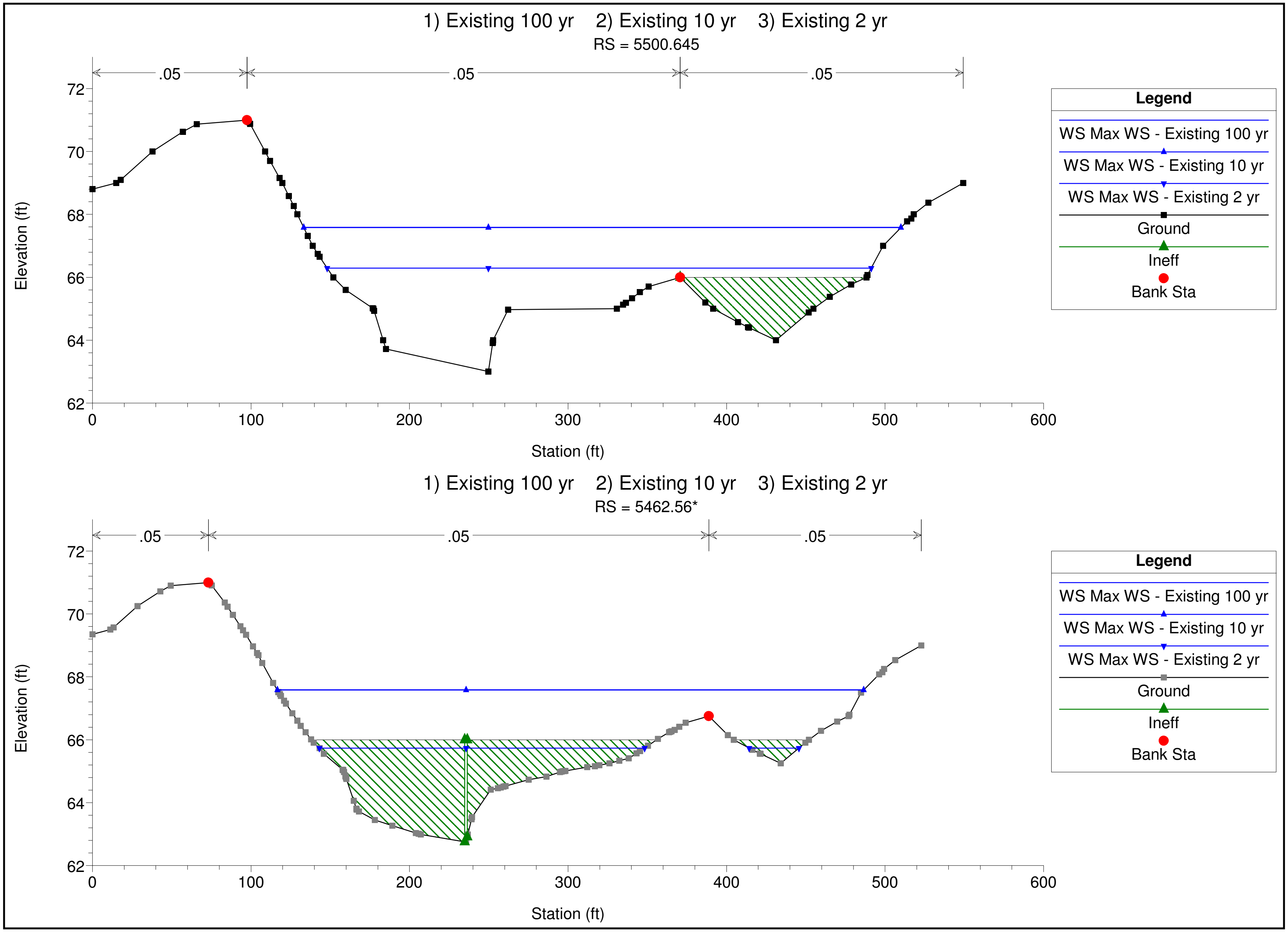

1) Existing 100 yr 2) Existing 10 yr 3) Existing 2 yr
RS = 5900.21*
.05
Elevation (ft)
Station (ft)
Legend
WS Max WS - Existing 100 yr
WS Max WS - Existing 10 yr
WS Max WS - Existing 2 yr
Ground
Bank Sta

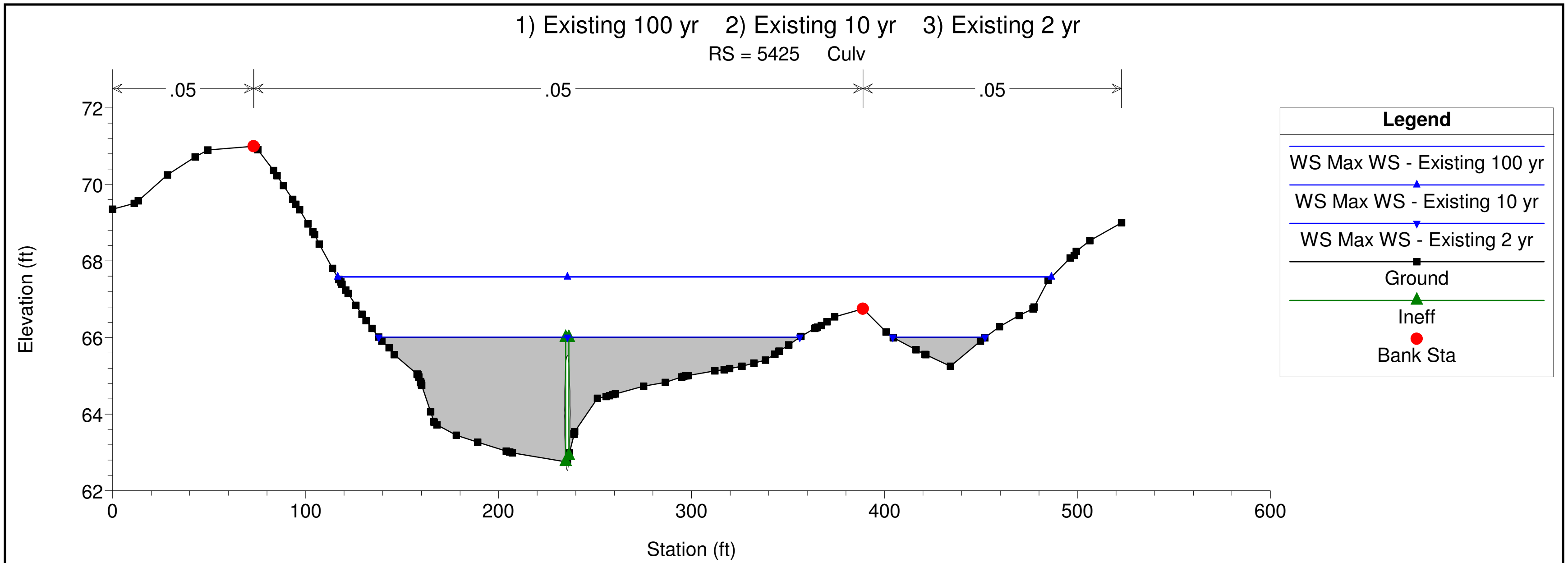


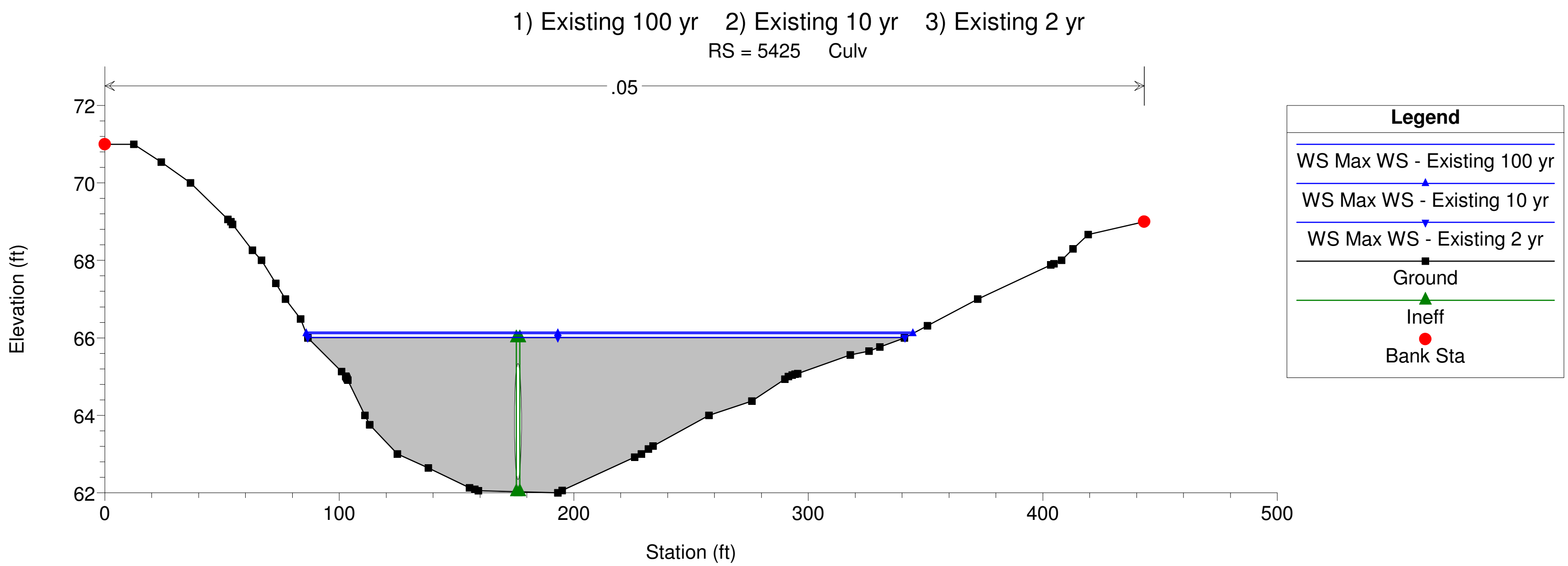
1) Existing 100 yr 2) Existing 10 yr 3) Existing 2 yr
RS = 5800.152
.05
Elevation (ft)
72
70
68
66
64
62
0
100
200
300
400
Station (ft)
Legend
WS Max WS - Existing 100 yr
WS Max WS - Existing 10 yr
WS Max WS - Existing 2 yr
Ground
Bank Sta

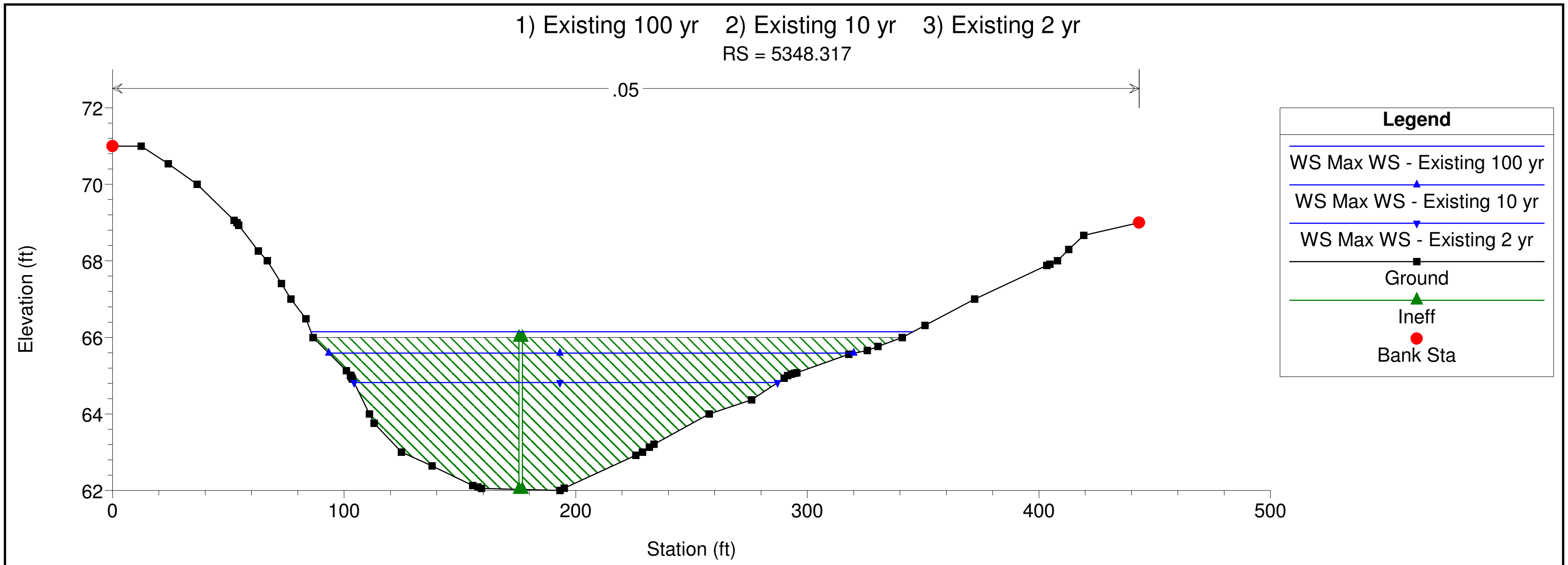


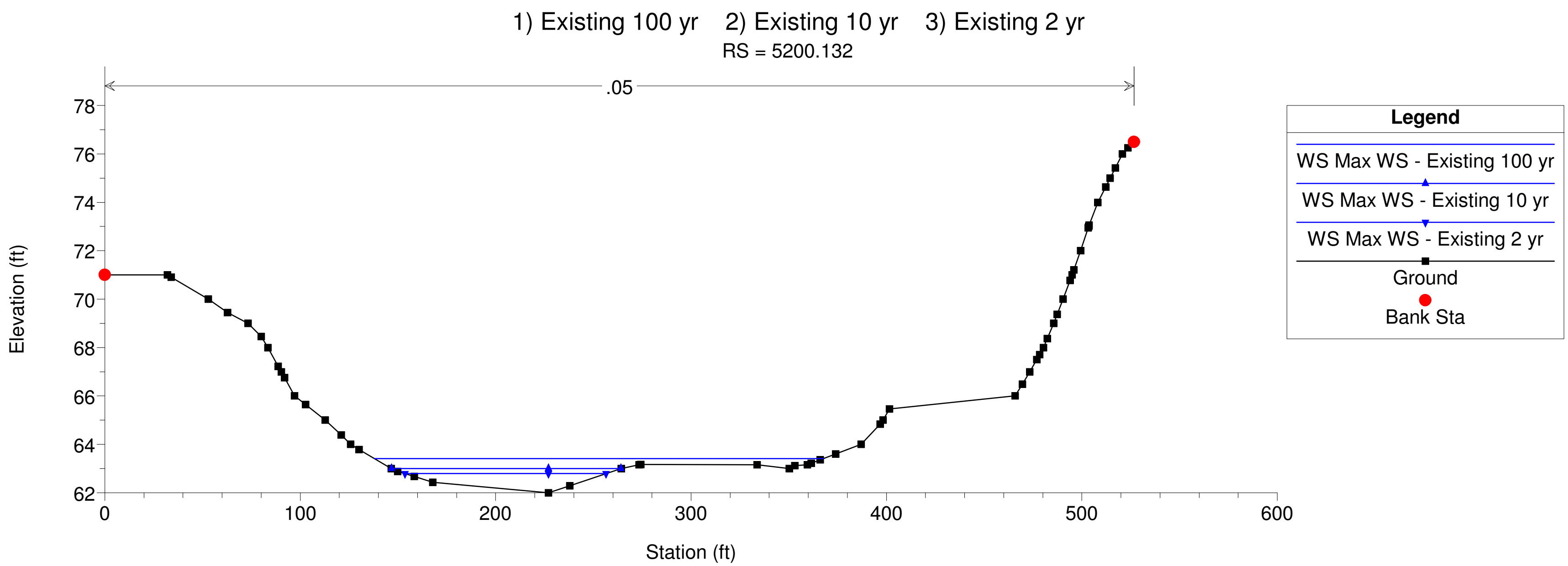
1) Existing 100 yr 2) Existing 10 yr 3) Existing 2 yr
RS = 5600.480
.05
Elevation (ft)
72
70
68
66
64
62
0
100
200
300
400
500
600
Station (ft)
Legend
WS Max WS - Existing 100 yr
WS Max WS - Existing 10 yr
WS Max WS - Existing 2 yr
Ground
Bank Sta

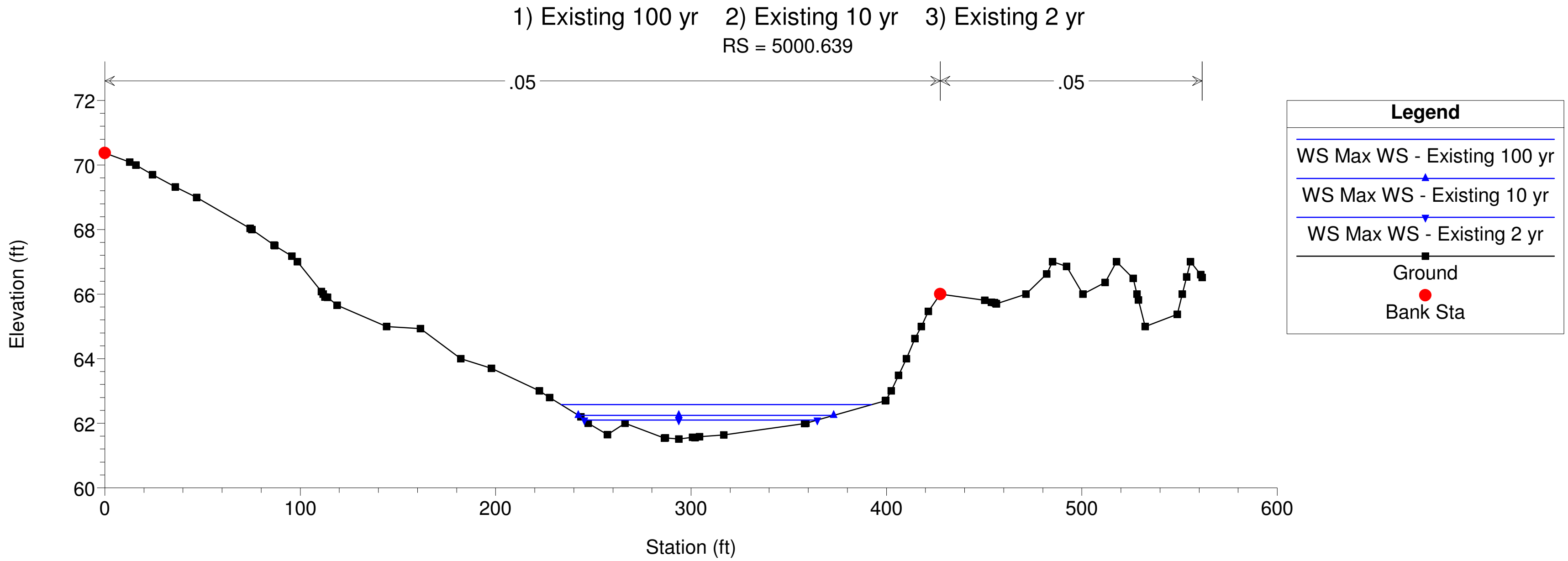

1) Existing 100 yr 2) Existing 10 yr 3) Existing 2 yr
RS = 5500.645
.05
.05
.05
Elevation (ft)
Station (ft)
Legend
WS Max WS - Existing 100 yr
WS Max WS - Existing 10 yr
WS Max WS - Existing 2 yr
Ground
Ineff
Bank Sta
1) Existing 100 yr 2) Existing 10 yr 3) Existing 2 yr
RS = 5462.56*
.05
.05
.05
Elevation (ft)
Station (ft)
Legend
WS Max WS - Existing 100 yr
WS Max WS - Existing 10 yr
WS Max WS - Existing 2 yr
Ground
Ineff
Bank Sta

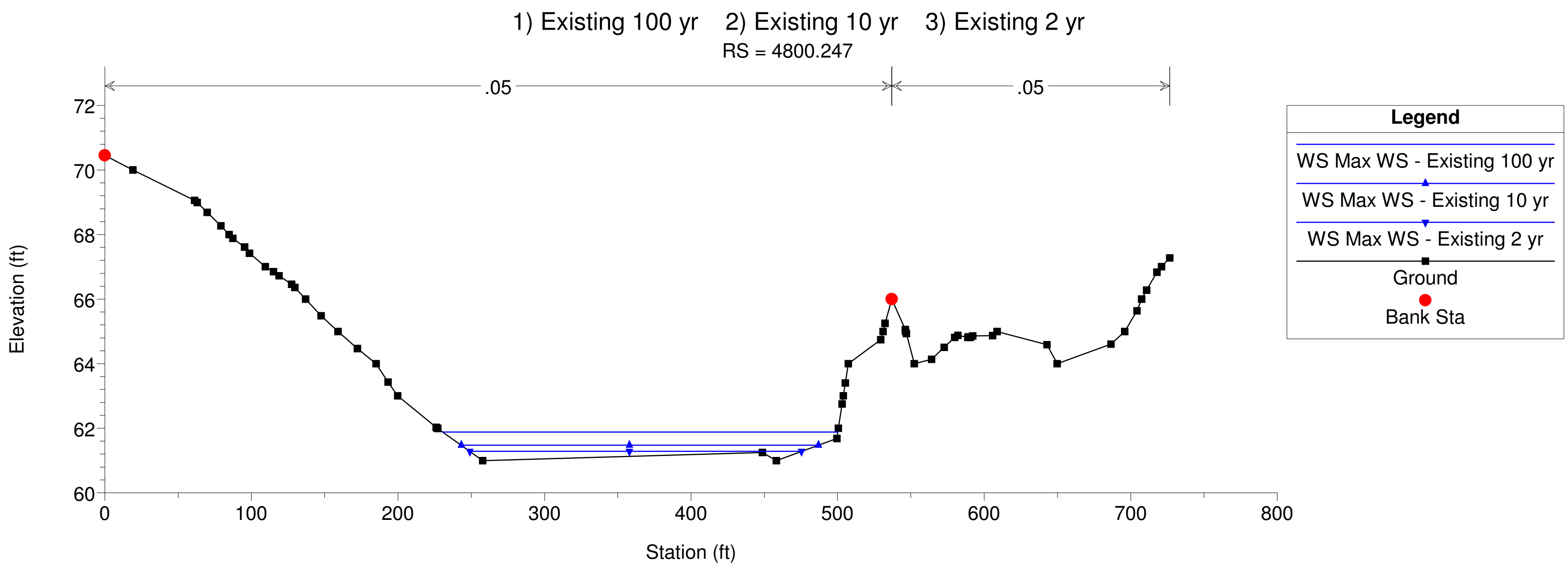

1) Existing 100 yr 2) Existing 10 yr 3) Existing 2 yr
RS = 5425 Culv
.05
.05
.05
72
70
68
66
64
62
Elevation (ft)
0
100
200
300
400
500
600
Station (ft)
Legend
WS Max WS - Existing 100 yr
WS Max WS - Existing 10 yr
WS Max WS - Existing 2 yr
Ground
Ineff
Bank Sta

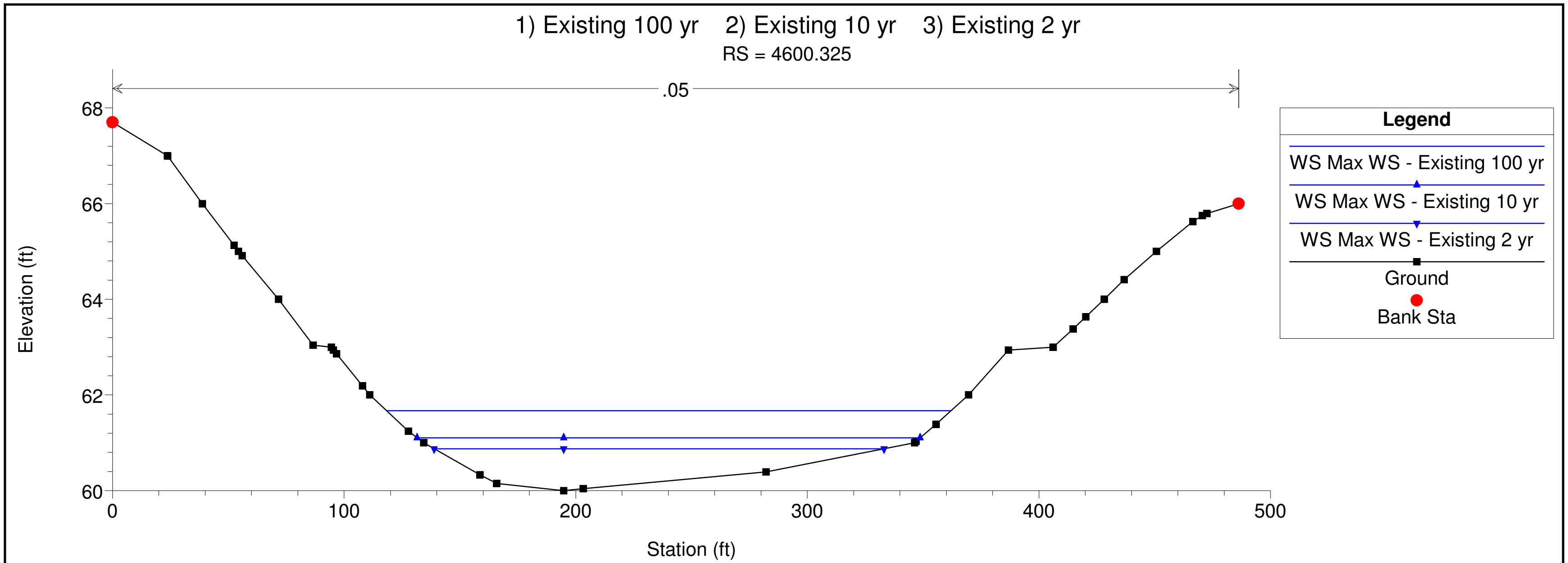

1) Existing 100 yr 2) Existing 10 yr 3) Existing 2 yr
RS = 5425 Culv
.05
72
70
68
66
64
62
Elevation (ft)
0
100
200
300
400
500
Station (ft)
Legend
WS Max WS - Existing 100 yr
WS Max WS - Existing 10 yr
WS Max WS - Existing 2 yr
Ground
Ineff
Bank Sta

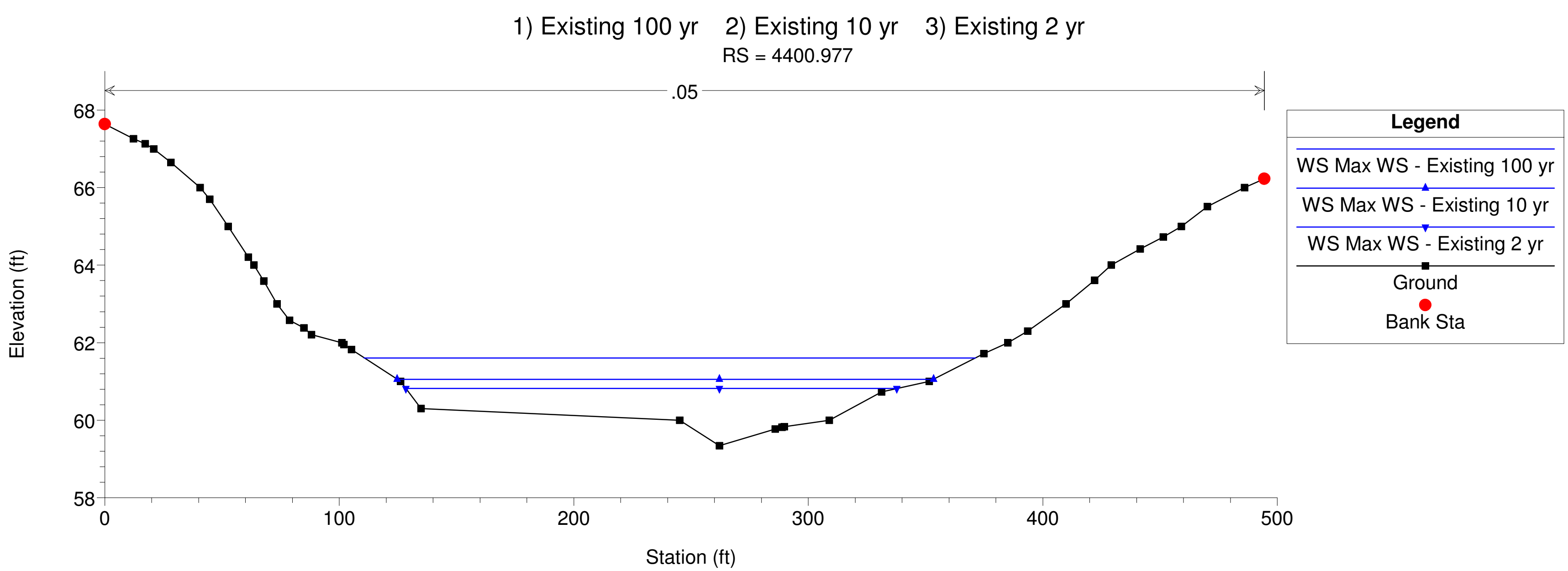

1) Existing 100 yr 2) Existing 10 yr 3) Existing 2 yr
RS = 5348.317
.05
Elevation (ft)
Station (ft)
Legend
WS Max WS - Existing 100 yr
WS Max WS - Existing 10 yr
WS Max WS - Existing 2 yr
Ground
Ineff
Bank Sta

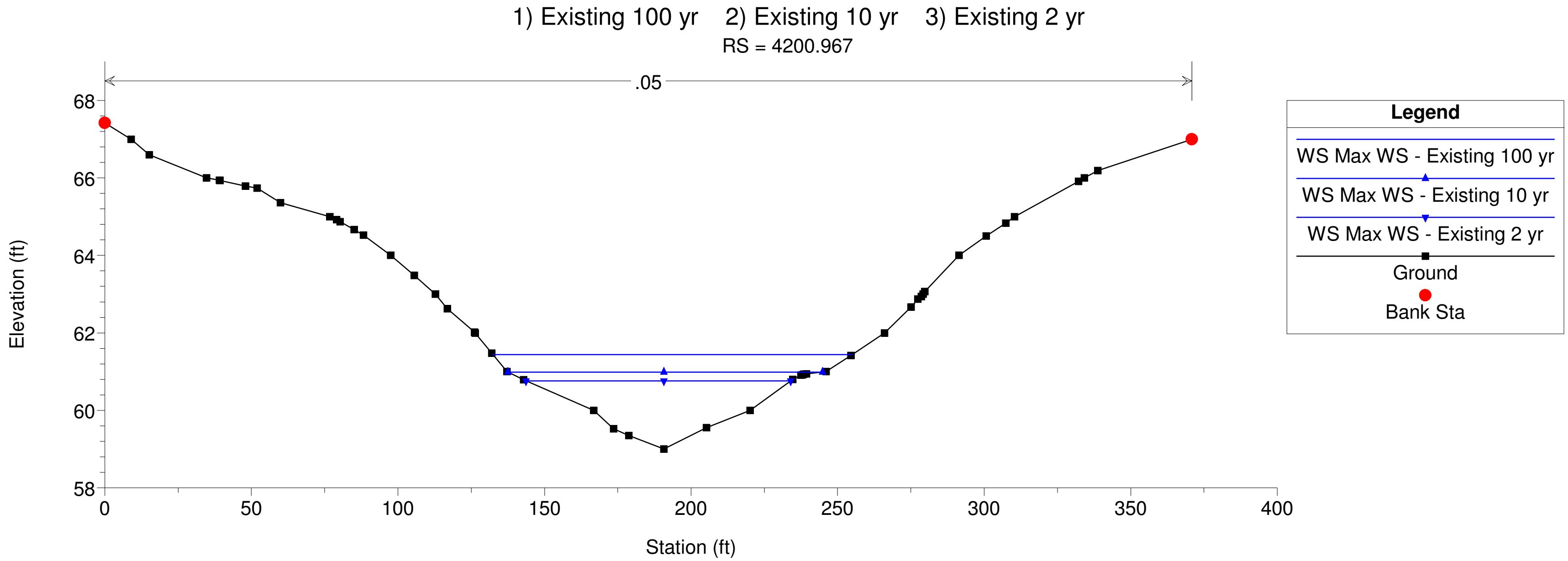

1) Existing 100 yr 2) Existing 10 yr 3) Existing 2 yr
RS = 5200.132
.05
Elevation (ft)
Station (ft)
Legend
WS Max WS - Existing 100 yr
WS Max WS - Existing 10 yr
WS Max WS - Existing 2 yr
Ground
Bank Sta

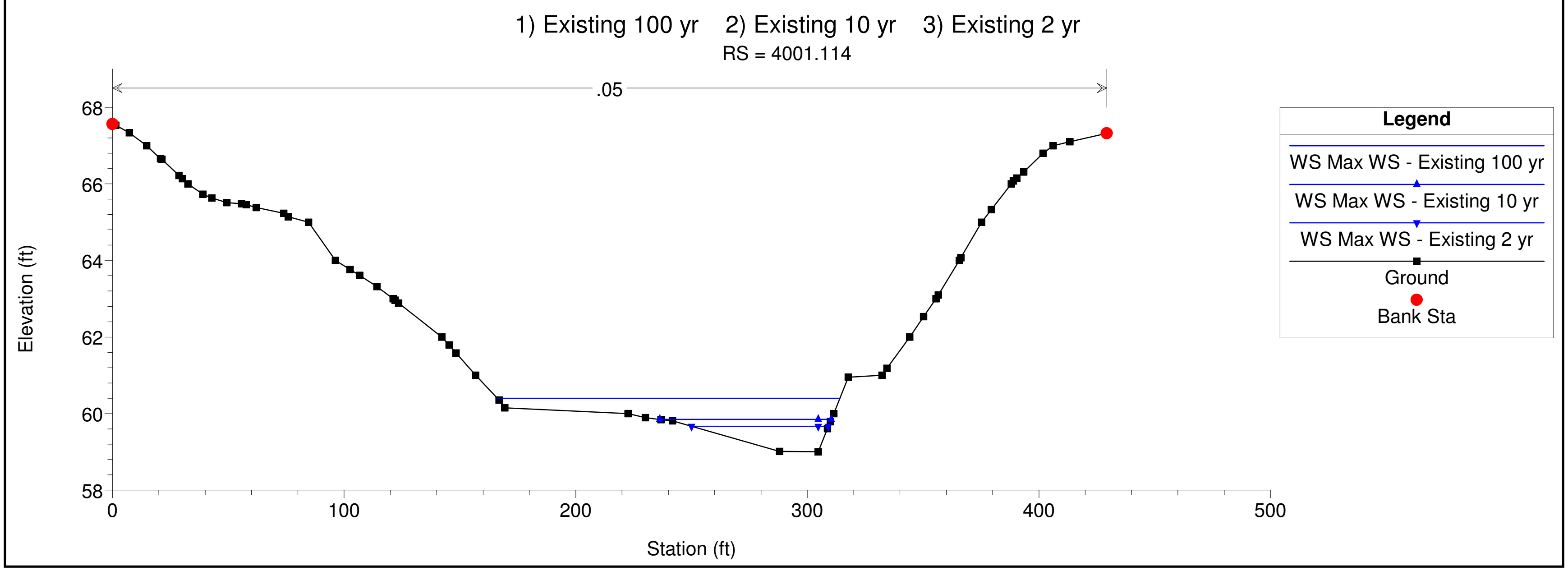

1) Existing 100 yr 2) Existing 10 yr 3) Existing 2 yr
RS = 5000.639
.05
.05
Elevation (ft)
Station (ft)
72
70
68
66
64
62
60
0
100
200
300
400
500
600
Legend
WS Max WS - Existing 100 yr
WS Max WS - Existing 10 yr
WS Max WS - Existing 2 yr
Ground
Bank Sta

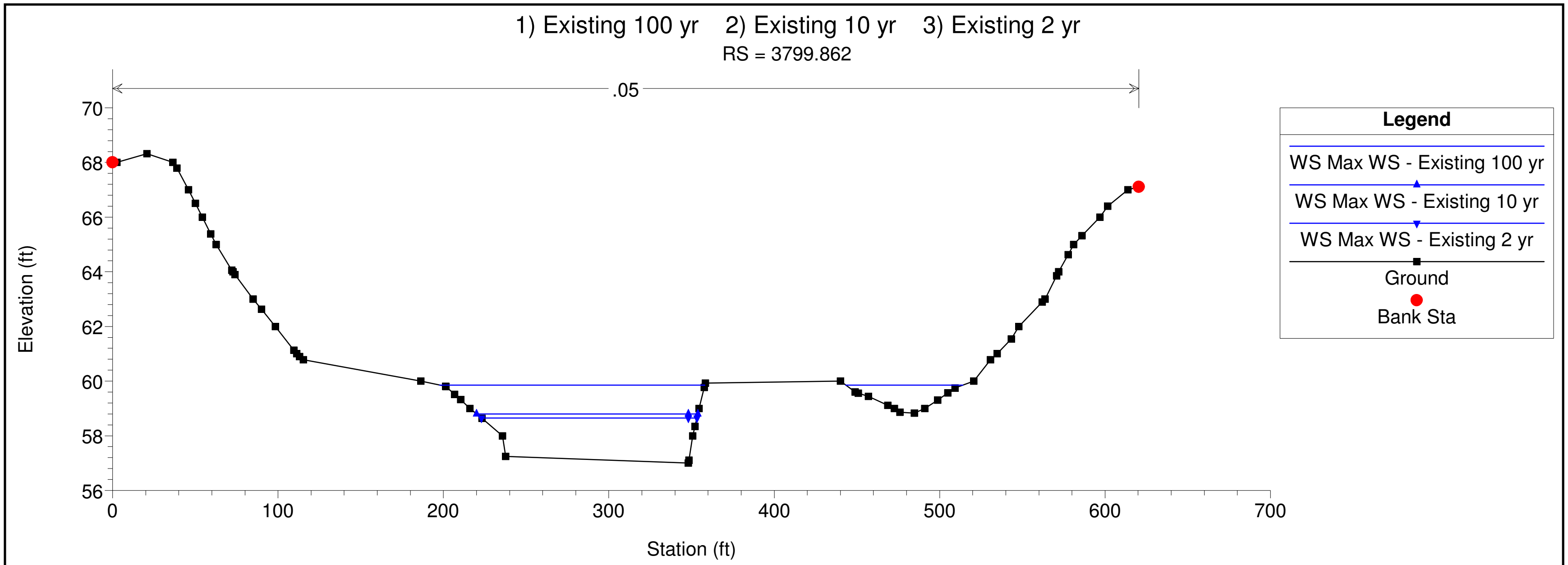

1) Existing 100 yr 2) Existing 10 yr 3) Existing 2 yr
RS = 4800.247
.05
.05
Elevation (ft)
Station (ft)
72
70
68
66
64
62
60
0
100
200
300
400
500
600
700
800
Legend
WS Max WS - Existing 100 yr
WS Max WS - Existing 10 yr
WS Max WS - Existing 2 yr
Ground
Bank Sta

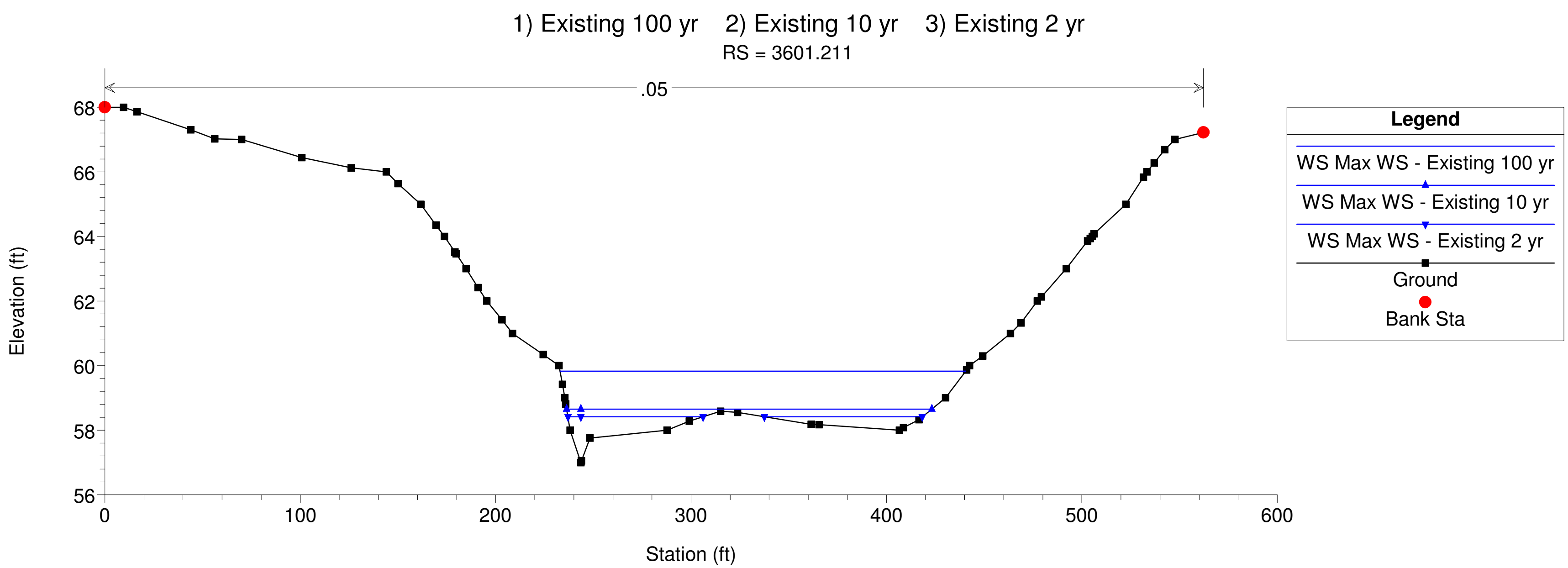

1) Existing 100 yr 2) Existing 10 yr 3) Existing 2 yr
RS = 4600.325
.05
Elevation (ft)
Station (ft)
Legend
WS Max WS - Existing 100 yr
WS Max WS - Existing 10 yr
WS Max WS - Existing 2 yr
Ground
Bank Sta

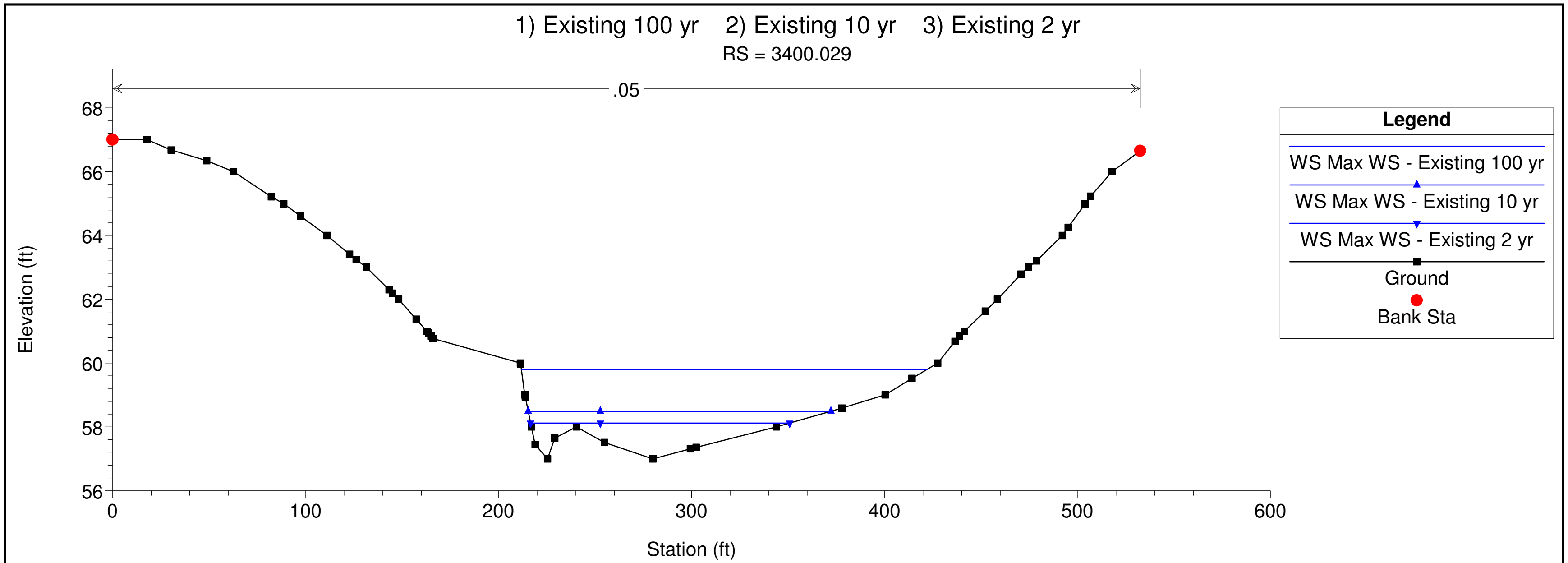

1) Existing 100 yr 2) Existing 10 yr 3) Existing 2 yr
RS = 4400.977
.05
Elevation (ft)
Station (ft)
Legend
WS Max WS - Existing 100 yr
WS Max WS - Existing 10 yr
WS Max WS - Existing 2 yr
Ground
Bank Sta

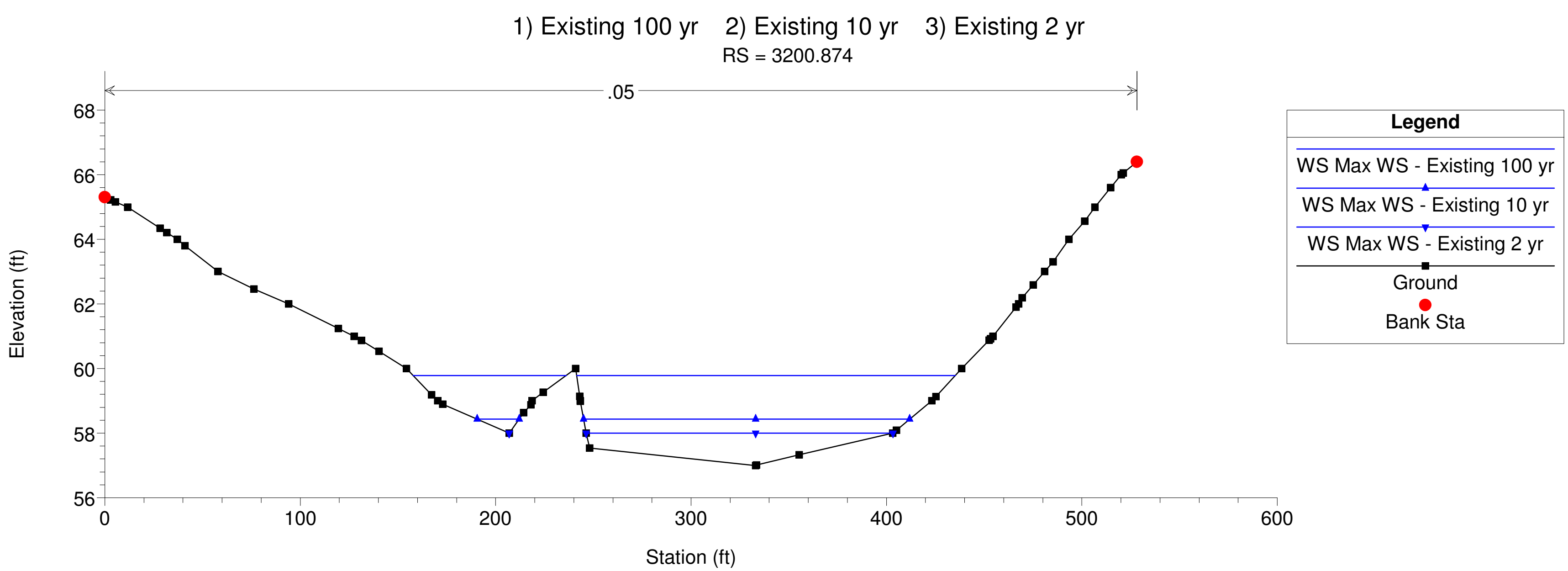

1) Existing 100 yr 2) Existing 10 yr 3) Existing 2 yr
RS = 4200.967
.05
Elevation (ft)
Station (ft)
Legend
WS Max WS - Existing 100 yr
WS Max WS - Existing 10 yr
WS Max WS - Existing 2 yr
Ground
Bank Sta

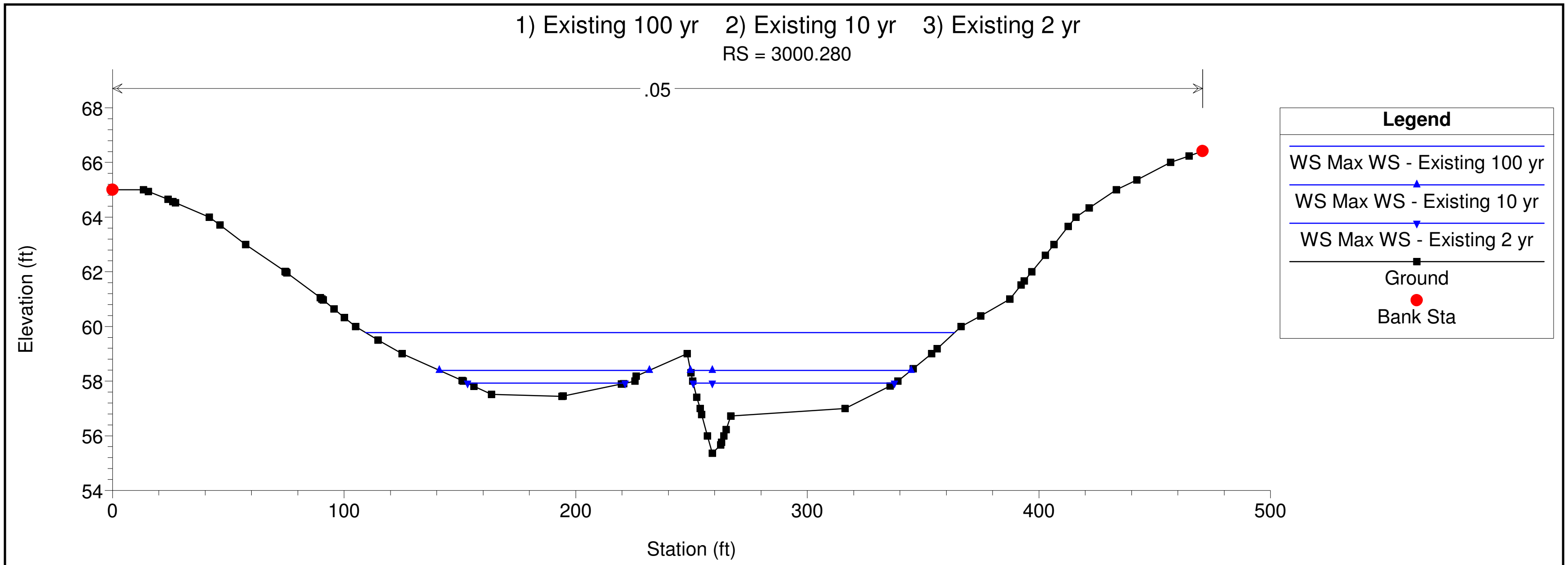

1) Existing 100 yr 2) Existing 10 yr 3) Existing 2 yr
RS = 4001.114
.05
Elevation (ft)
Station (ft)
Legend
WS Max WS - Existing 100 yr
WS Max WS - Existing 10 yr
WS Max WS - Existing 2 yr
Ground
Bank Sta


1) Existing 100 yr 2) Existing 10 yr 3) Existing 2 yr
RS = 3799.862
.05
70
68
66
64
62
60
58
56
Elevation (ft)
0
100
200
300
400
500
600
700
Station (ft)
Legend
WS Max WS - Existing 100 yr
WS Max WS - Existing 10 yr
WS Max WS - Existing 2 yr
Ground
Bank Sta

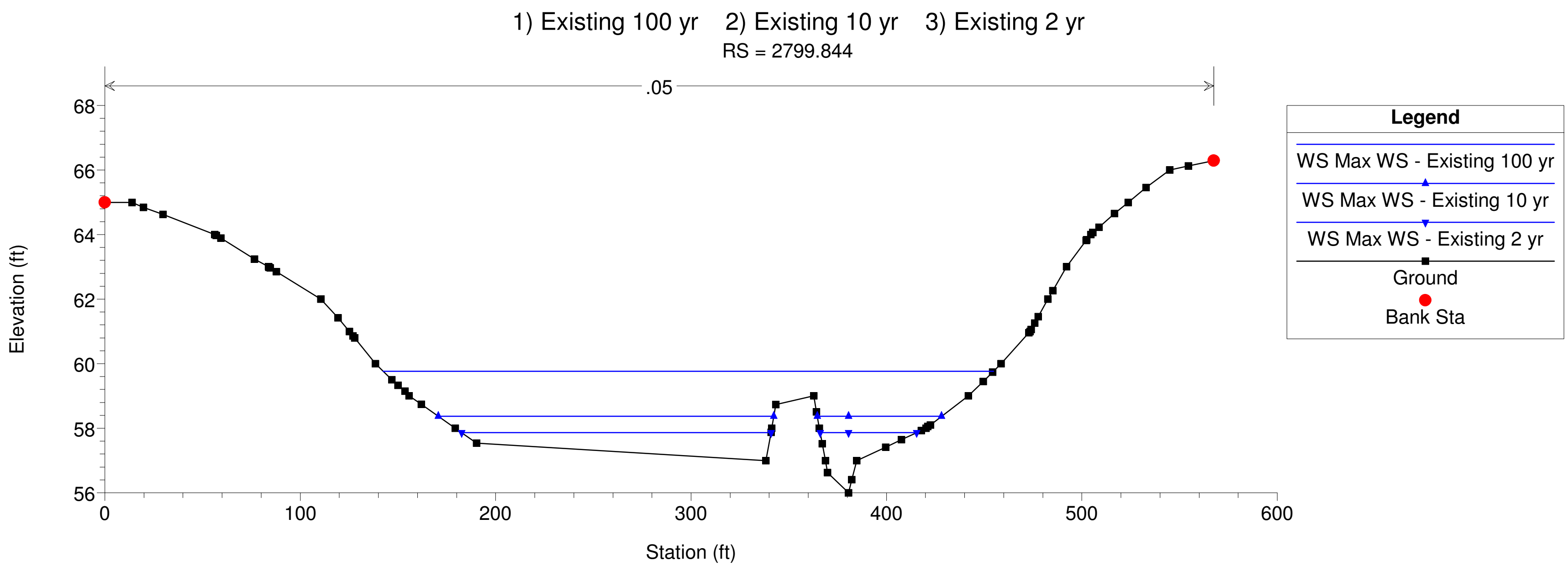

1) Existing 100 yr 2) Existing 10 yr 3) Existing 2 yr
RS = 3601.211
.05
68
66
64
62
60
58
56
Elevation (ft)
0
100
200
300
400
500
600
Station (ft)
Legend
WS Max WS - Existing 100 yr
WS Max WS - Existing 10 yr
WS Max WS - Existing 2 yr
Ground
Bank Sta


1) Existing 100 yr 2) Existing 10 yr 3) Existing 2 yr
RS = 3400.029
.05
Elevation (ft)
68
66
64
62
60
58
56
0
100
200
300
400
500
600
Station (ft)
Legend
WS Max WS - Existing 100 yr
WS Max WS - Existing 10 yr
WS Max WS - Existing 2 yr
Ground
Bank Sta

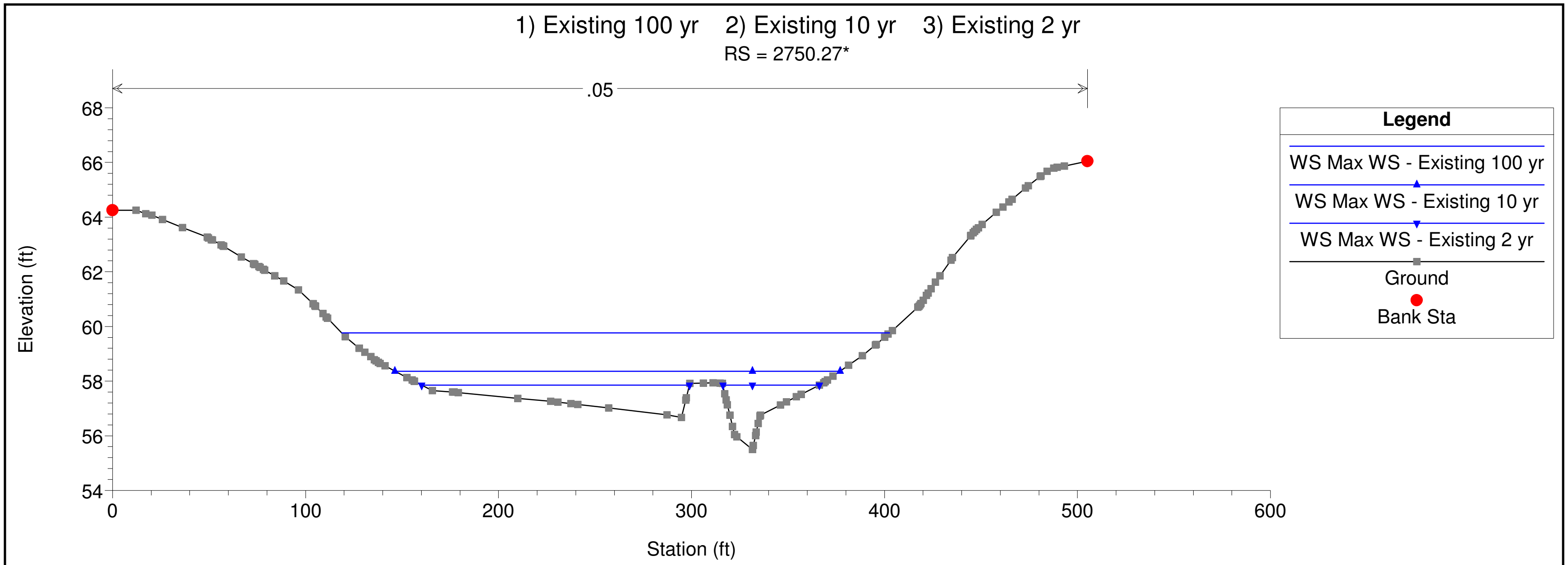

1) Existing 100 yr 2) Existing 10 yr 3) Existing 2 yr
RS = 3200.874
.05
Elevation (ft)
68
66
64
62
60
58
56
0
100
200
300
400
500
600
Station (ft)
Legend
WS Max WS - Existing 100 yr
WS Max WS - Existing 10 yr
WS Max WS - Existing 2 yr
Ground
Bank Sta

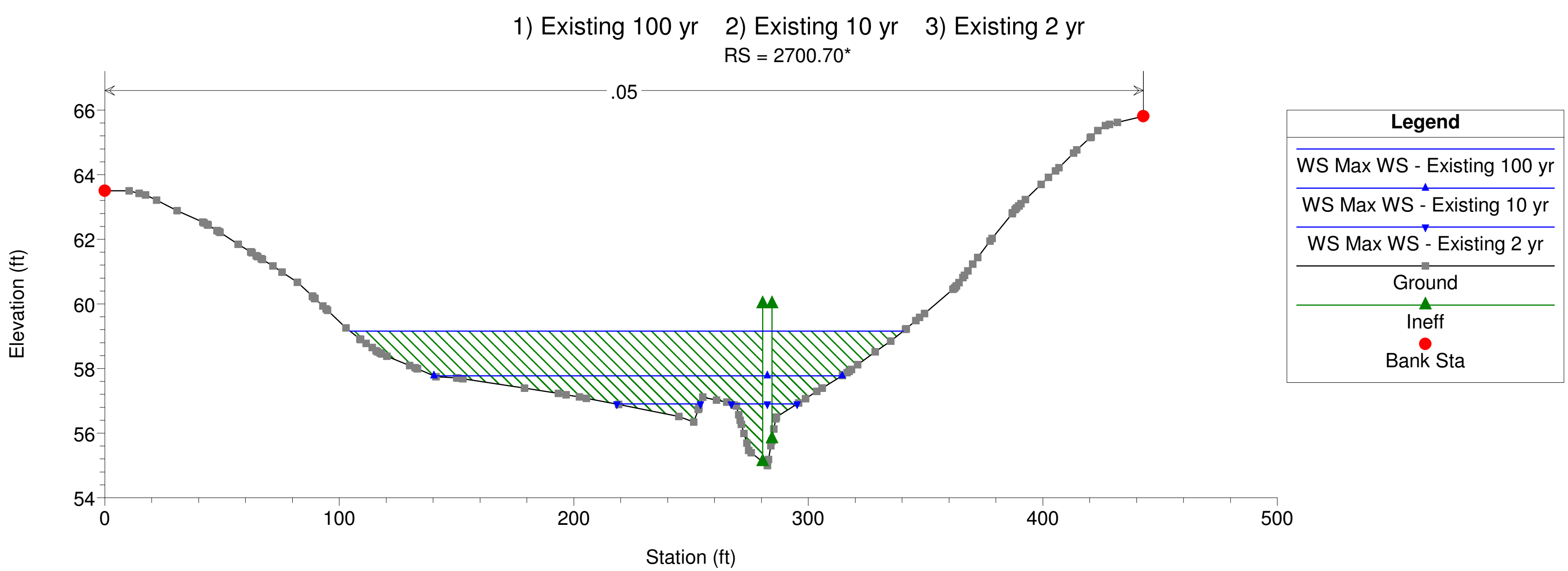


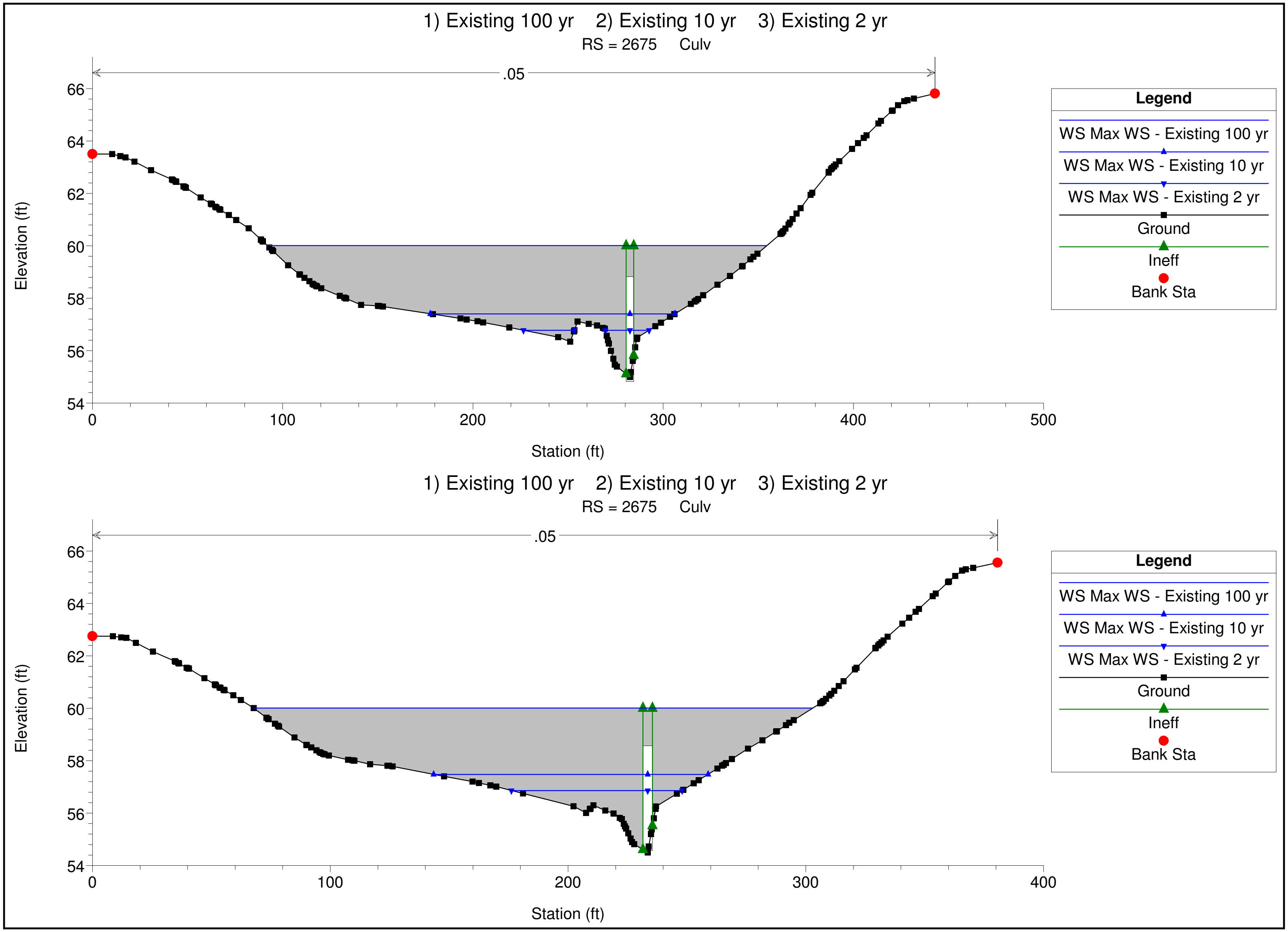
1) Existing 100 yr 2) Existing 10 yr 3) Existing 2 yr
RS = 3000.280
.05
Elevation (ft)
Station (ft)
Legend
WS Max WS - Existing 100 yr
WS Max WS - Existing 10 yr
WS Max WS - Existing 2 yr
Ground
Bank Sta



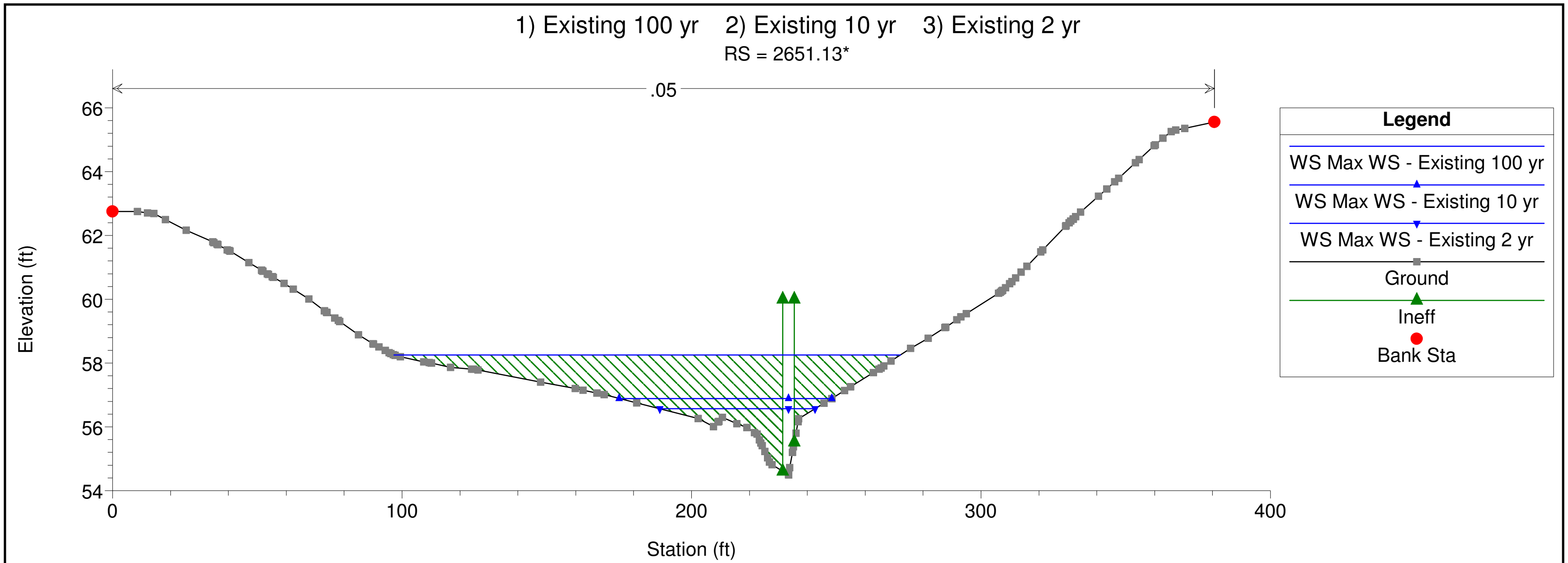
1) Existing 100 yr 2) Existing 10 yr 3) Existing 2 yr
RS = 2799.844
.05
Elevation (ft)
Station (ft)
Legend
WS Max WS - Existing 100 yr
WS Max WS - Existing 10 yr
WS Max WS - Existing 2 yr
Ground
Bank Sta

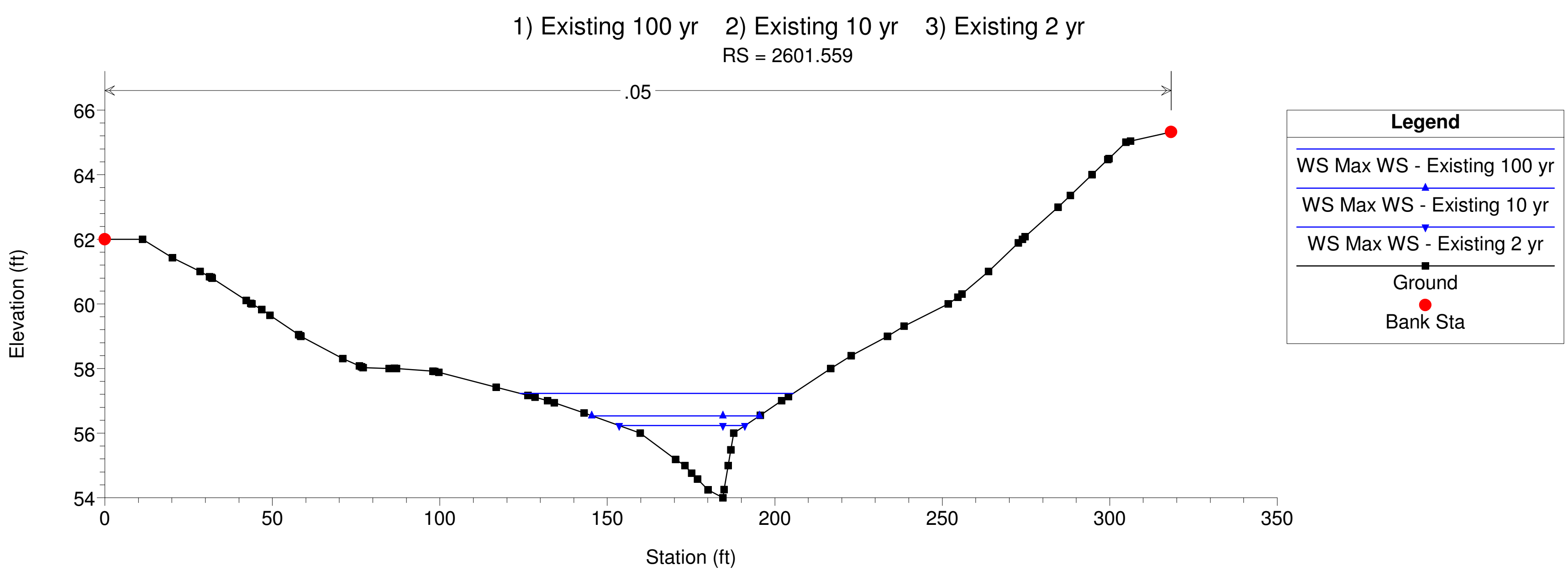

1) Existing 100 yr 2) Existing 10 yr 3) Existing 2 yr
RS = 2750.27*
.05
Elevation (ft)
Station (ft)
Legend
WS Max WS - Existing 100 yr
WS Max WS - Existing 10 yr
WS Max WS - Existing 2 yr
Ground
Bank Sta

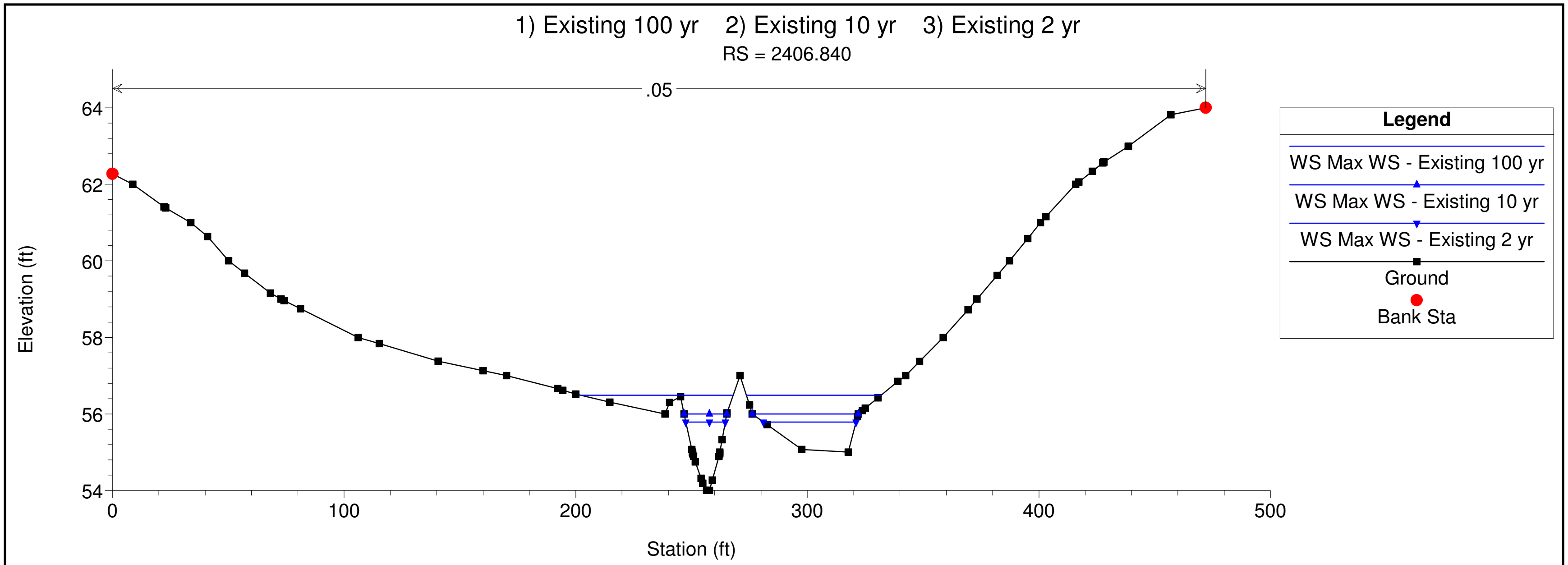

1) Existing 100 yr 2) Existing 10 yr 3) Existing 2 yr
RS = 2700.70*
.05
Elevation (ft)
Station (ft)
Legend
WS Max WS - Existing 100 yr
WS Max WS - Existing 10 yr
WS Max WS - Existing 2 yr
Ground
Ineff
Bank Sta

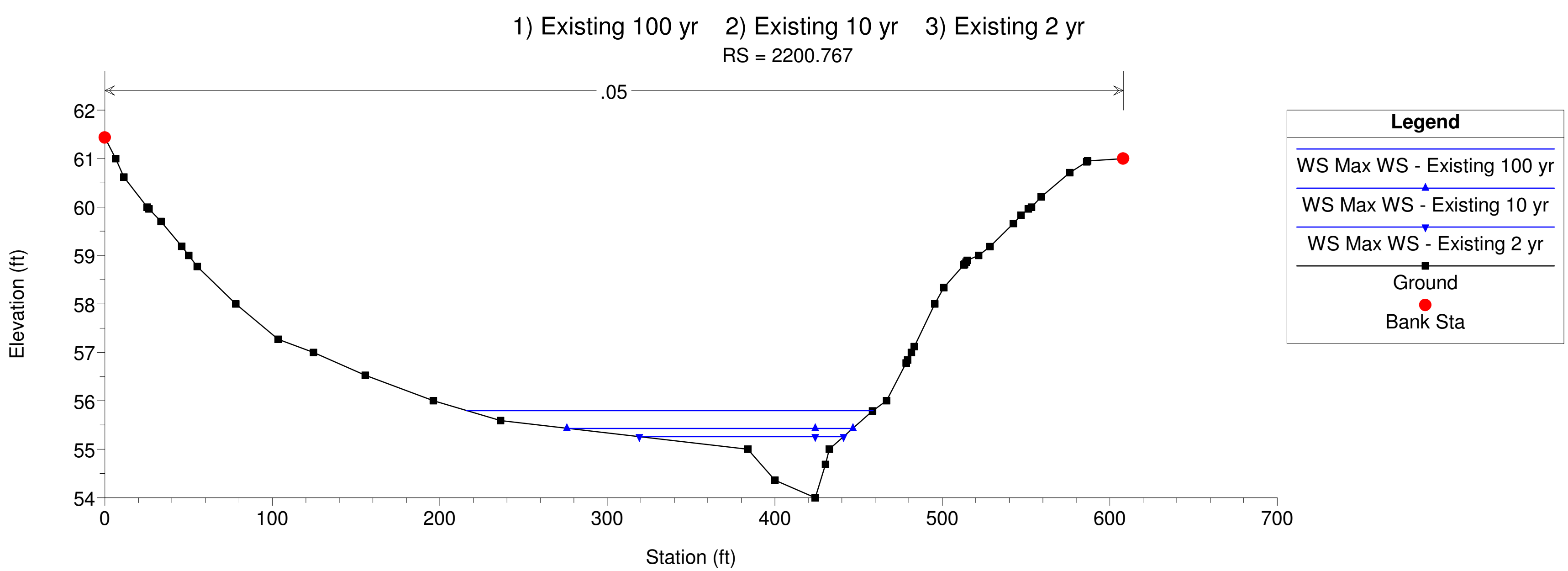


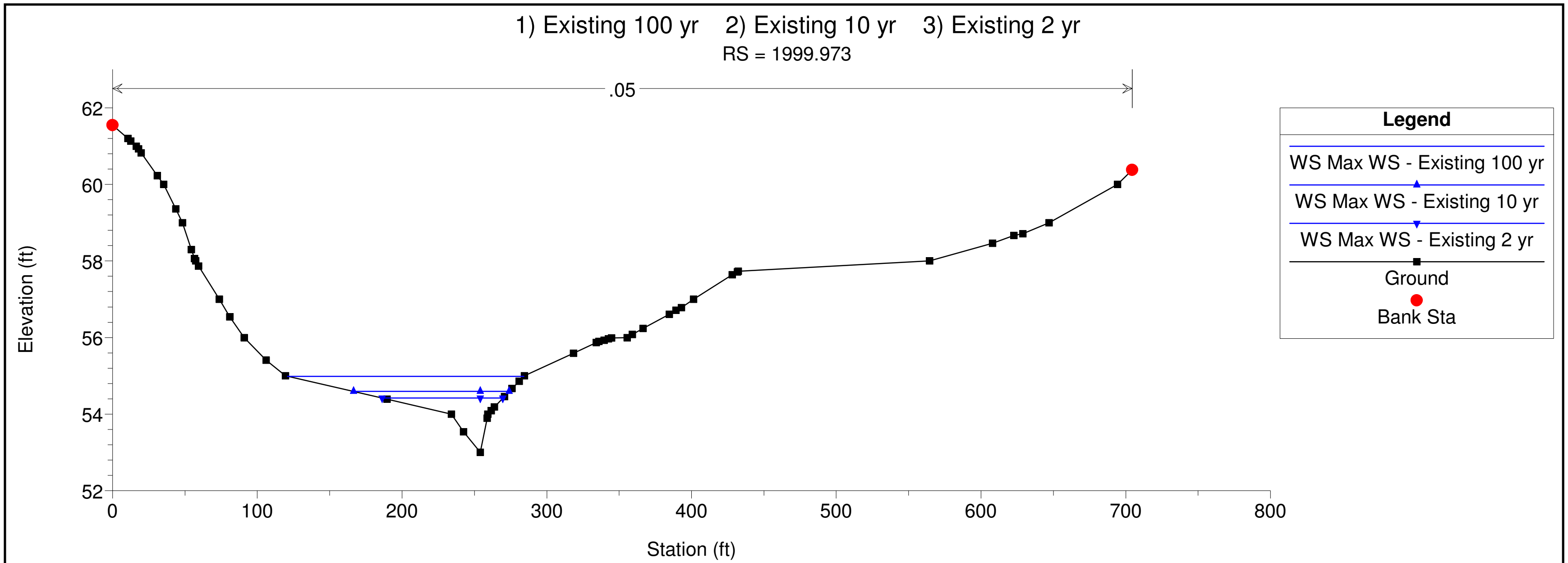
1) Existing 100 yr 2) Existing 10 yr 3) Existing 2 yr
RS = 2675 Culv
.05
Elevation (ft)
Station (ft)
Legend
WS Max WS - Existing 100 yr
WS Max WS - Existing 10 yr
WS Max WS - Existing 2 yr
Ground
Ineff
Bank Sta
1) Existing 100 yr 2) Existing 10 yr 3) Existing 2 yr
RS = 2675 Culv
.05
Elevation (ft)
Station (ft)
Legend
WS Max WS - Existing 100 yr
WS Max WS - Existing 10 yr
WS Max WS - Existing 2 yr
Ground
Ineff
Bank Sta

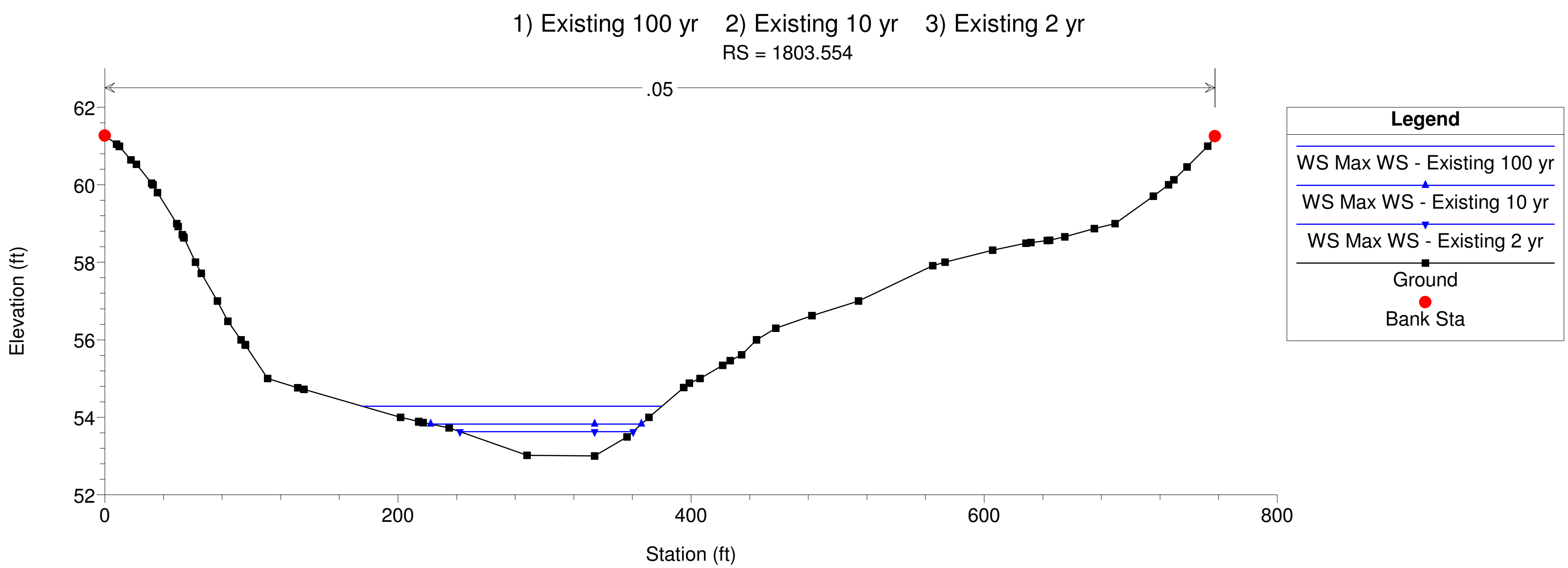

1) Existing 100 yr 2) Existing 10 yr 3) Existing 2 yr
RS = 2651.13*
.05
Elevation (ft)
Station (ft)
Legend
WS Max WS - Existing 100 yr
WS Max WS - Existing 10 yr
WS Max WS - Existing 2 yr
Ground
Ineff
Bank Sta

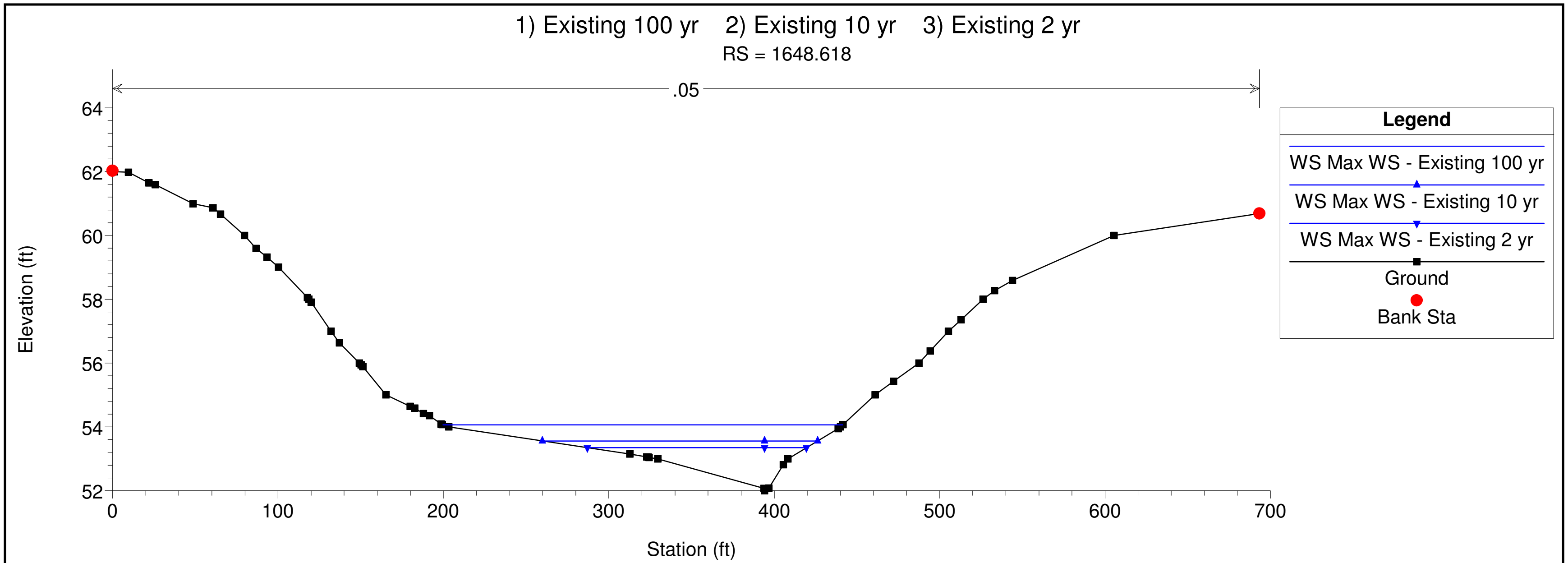

1) Existing 100 yr 2) Existing 10 yr 3) Existing 2 yr
RS = 2601.559
.05
Elevation (ft)
Station (ft)
Legend
WS Max WS - Existing 100 yr
WS Max WS - Existing 10 yr
WS Max WS - Existing 2 yr
Ground
Bank Sta


1) Existing 100 yr 2) Existing 10 yr 3) Existing 2 yr
RS = 2406.840
.05
Elevation (ft)
Station (ft)
Legend
WS Max WS - Existing 100 yr
WS Max WS - Existing 10 yr
WS Max WS - Existing 2 yr
Ground
Bank Sta

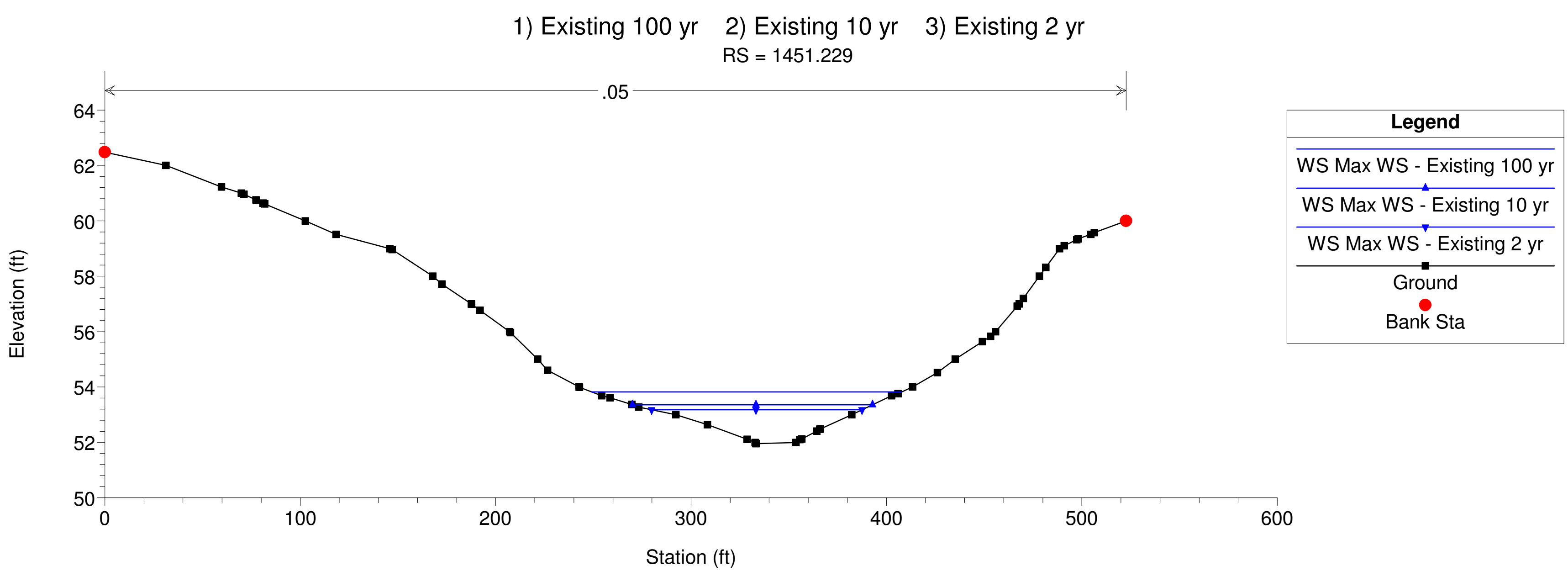

1) Existing 100 yr 2) Existing 10 yr 3) Existing 2 yr
RS = 2200.767
.05
Elevation (ft)
Station (ft)
Legend
WS Max WS - Existing 100 yr
WS Max WS - Existing 10 yr
WS Max WS - Existing 2 yr
Ground
Bank Sta


1) Existing 100 yr 2) Existing 10 yr 3) Existing 2 yr
RS = 1999.973
.05
Elevation (ft)
Station (ft)
Legend
WS Max WS - Existing 100 yr
WS Max WS - Existing 10 yr
WS Max WS - Existing 2 yr
Ground
Bank Sta

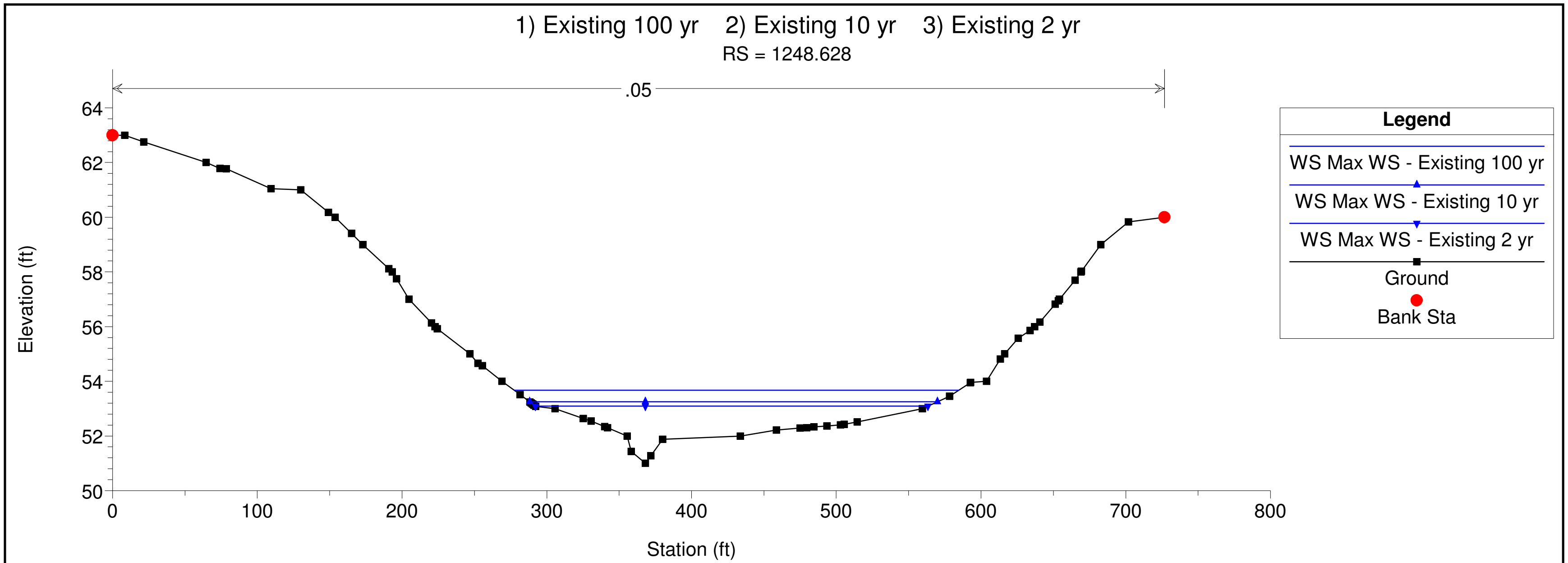

1) Existing 100 yr 2) Existing 10 yr 3) Existing 2 yr
RS = 1803.554
.05
Elevation (ft)
Station (ft)
Legend
WS Max WS - Existing 100 yr
WS Max WS - Existing 10 yr
WS Max WS - Existing 2 yr
Ground
Bank Sta



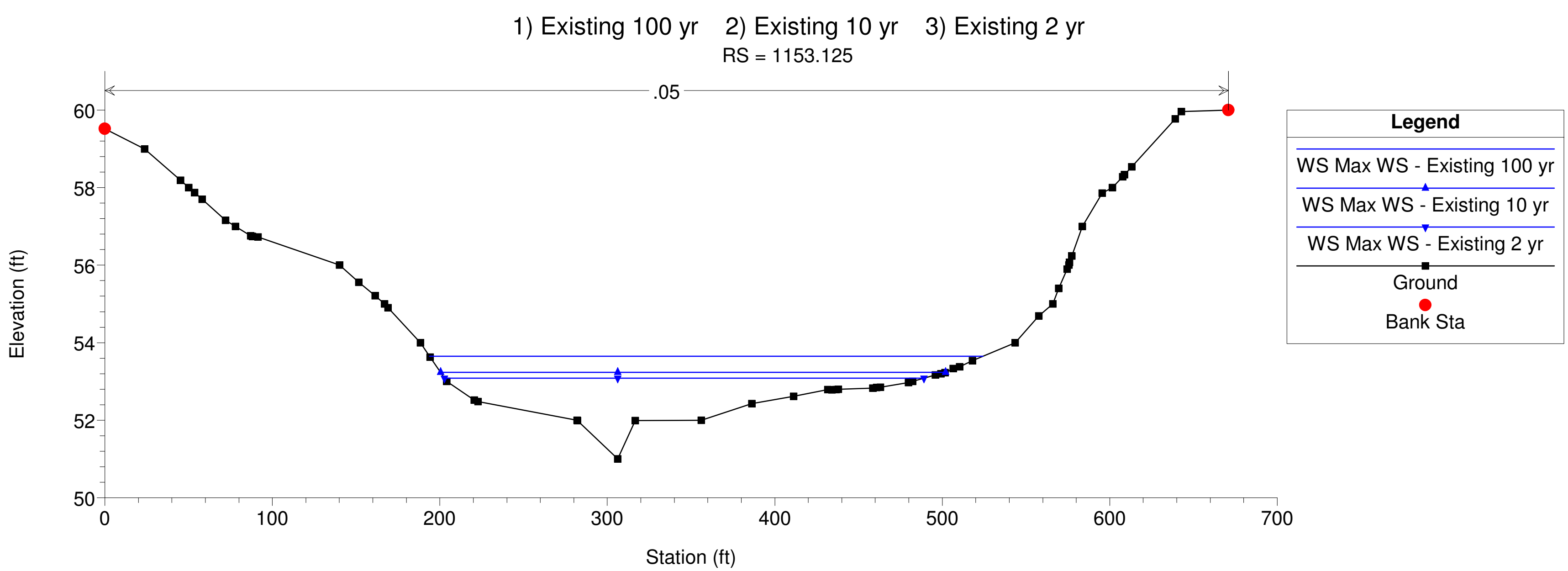
1) Existing 100 yr 2) Existing 10 yr 3) Existing 2 yr
RS = 1648.618
.05
Elevation (ft)
Station (ft)
Legend
WS Max WS - Existing 100 yr
WS Max WS - Existing 10 yr
WS Max WS - Existing 2 yr
Ground
Bank Sta



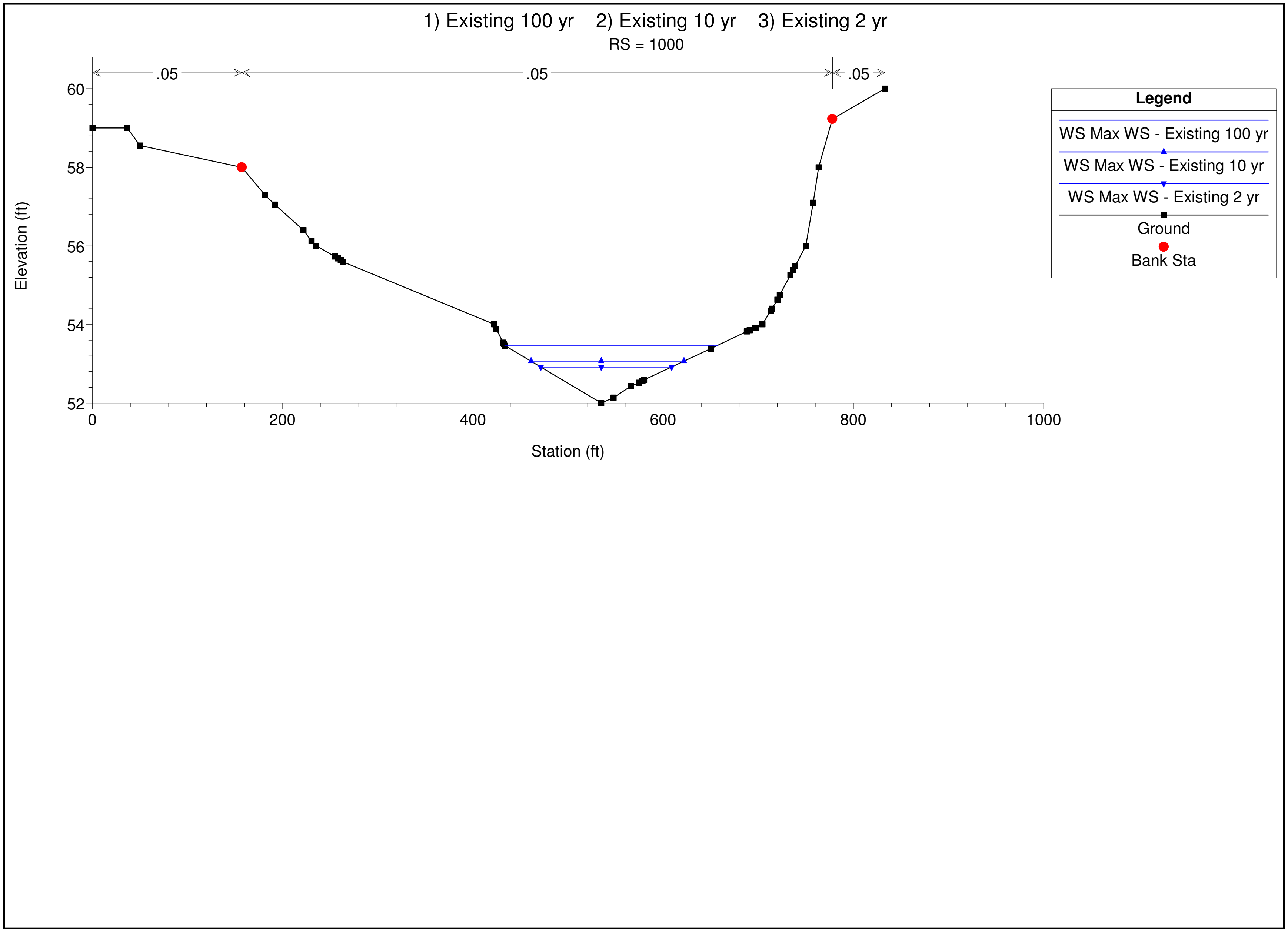
1) Existing 100 yr 2) Existing 10 yr 3) Existing 2 yr
RS = 1451.229
.05
Elevation (ft)
Station (ft)
Legend
WS Max WS - Existing 100 yr
WS Max WS - Existing 10 yr
WS Max WS - Existing 2 yr
Ground
Bank Sta

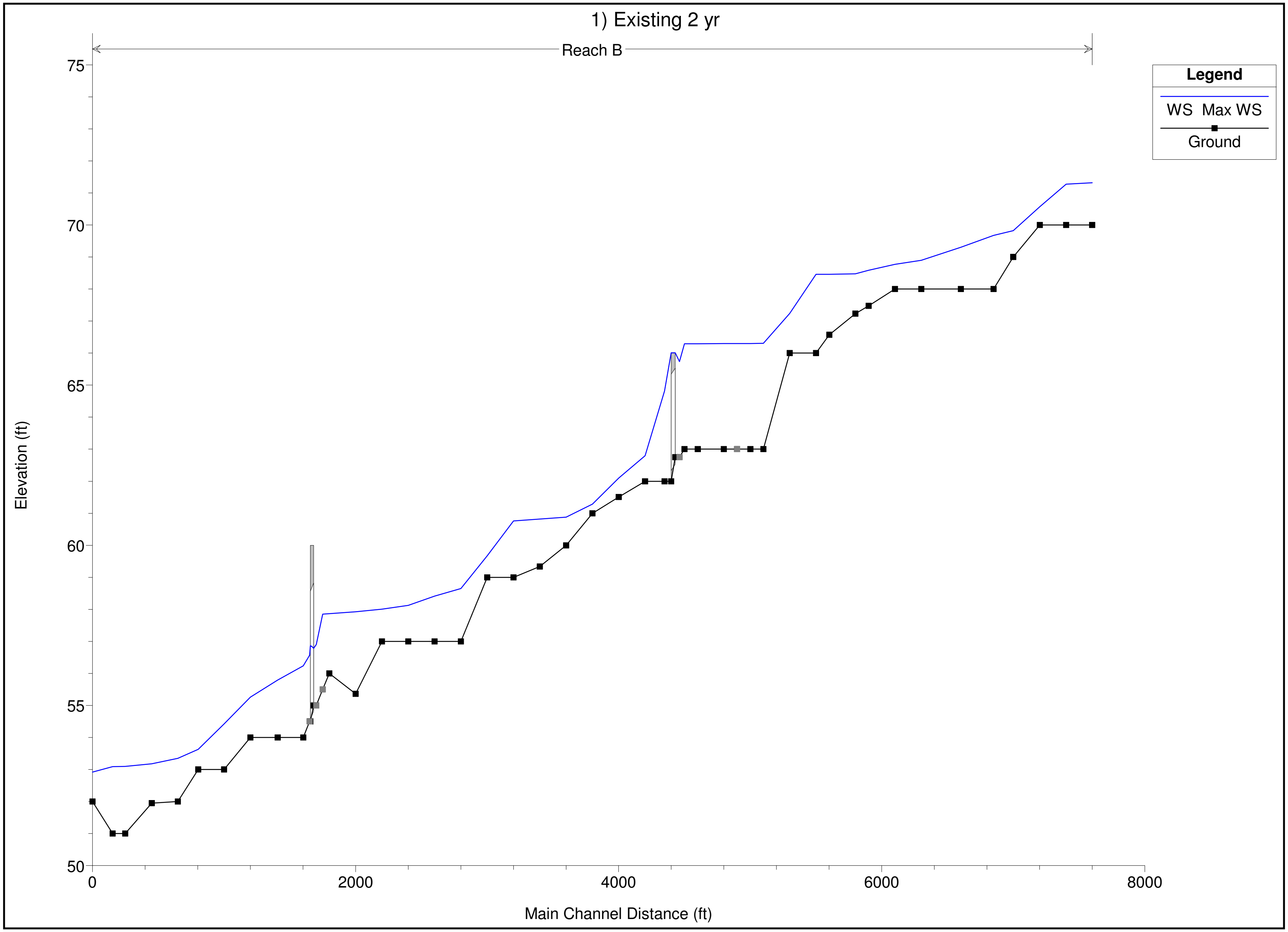


1) Existing 100 yr 2) Existing 10 yr 3) Existing 2 yr
RS = 1248.628
.05
Elevation (ft)
Station (ft)
Legend
WS Max WS - Existing 100 yr
WS Max WS - Existing 10 yr
WS Max WS - Existing 2 yr
Ground
Bank Sta



1) Existing 100 yr 2) Existing 10 yr 3) Existing 2 yr
RS = 1153.125
.05
Elevation (ft)
Station (ft)
Legend
WS Max WS - Existing 100 yr
WS Max WS - Existing 10 yr
WS Max WS - Existing 2 yr
Ground
Bank Sta


1) Existing 100 yr 2) Existing 10 yr 3) Existing 2 yr
RS = 1000
.05
.05
.05
Elevation (ft)
60
58
56
54
52
0
200
400
600
800
1000
Station (ft)
Legend
WS Max WS - Existing 100 yr
WS Max WS - Existing 10 yr
WS Max WS - Existing 2 yr
Ground
Bank Sta


1) Existing 2 yr
Reach B
Legend
WS Max WS
Ground
Elevation (ft)
75
70
65
60
55
50
0
2000
4000
6000
8000
Main Channel Distance (ft)

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

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X     X  XXXXXX   XXXX        XXXX       XX      XXXX
X     X  X       X    X       X   X     X  X    X
X     X  X       X            X   X    X    X   X
XXXXXXX  XXXX    X      XXX   XXXX     XXXXXX    XXXX
X     X  X       X            X  X     X    X        X
X     X  X       X    X       X   X    X    X        X
X     X  XXXXXX   XXXX        X    X   X    X   XXXXX
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PROJECT DATA
Project Title: Bproposed
Project File : Bproposed.prj
Run Date and Time: 4/20/2011 1:39:31 PM

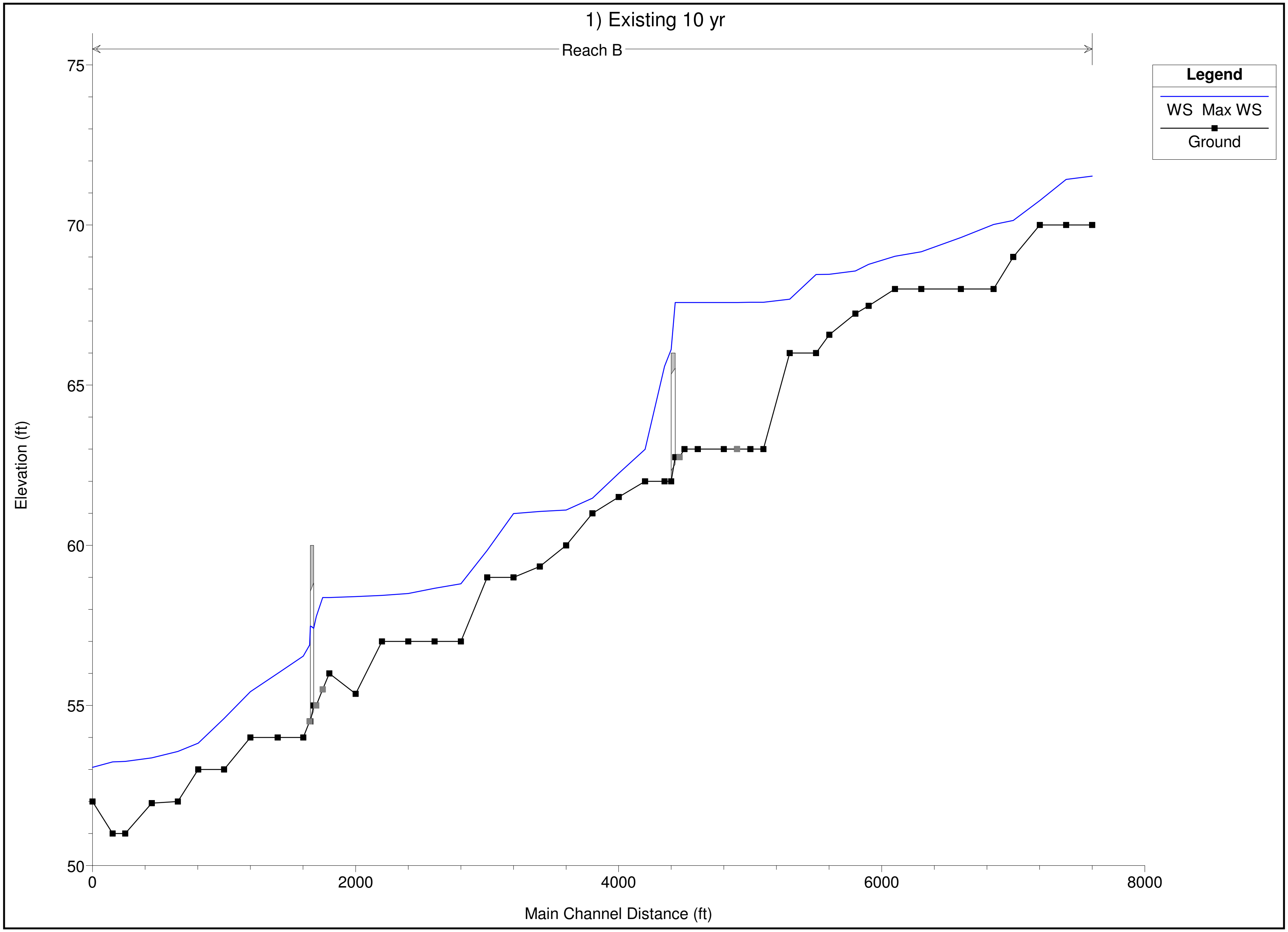
Project in English units

Project Description:
B Corridor - Developed, Interim and Existing Conditions
2 yr 24 hr Existing

Profile Output Table - Standard Table 1

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
B	8600.171	Max WS	41.76	70.00	71.32		71.32	0.000055	0.21	198.44	213.80	0.04
B	8402.062	Max WS	39.57	70.00	71.27		71.28	0.000391	0.46	86.82	127.06	0.10
B	8200.812	Max WS	44.39	70.00	70.57		70.59	0.007450	1.17	38.05	124.06	0.37
B	8000.422	Max WS	44.65	69.00	69.82		69.83	0.001342	0.68	65.84	133.95	0.17
B	7850.530	Max WS	46.03	68.00	69.68		69.68	0.000672	0.61	75.57	107.40	0.13
B	7601.493	Max WS	46.30	68.00	69.31		69.32	0.002391	1.02	45.52	77.59	0.23
B	7299.906	Max WS	47.07	68.00	68.90		68.90	0.000518	0.46	101.36	178.02	0.11
B	7099.985	Max WS	47.82	68.00	68.77		68.78	0.000754	0.52	91.49	178.33	0.13
B	6899.936	Max WS	48.59	67.48	68.59		68.59	0.001132	0.68	72.62	133.86	0.16
B	6798.688	Max WS	49.42	67.23	68.47		68.48	0.000960	0.74	67.53	94.95	0.15
B	6600.481	Max WS	12.93	66.57	68.46		68.46	0.000003	0.06	206.80	150.67	0.01
B	6500.082	Max WS	12.92	66.00	68.46		68.46	0.000001	0.05	271.43	162.37	0.01
B	6299.850	Max WS	54.96	66.00	67.24		67.28	0.011340	1.53	35.86	106.32	0.47
B	6100.057	Max WS	42.51	63.00	66.30		66.30	0.000066	0.27	159.99	138.56	0.04
B	6000.284	Max WS	43.01	63.00	66.30		66.30	0.000004	0.09	481.41	255.42	0.01
B	5900.21*	Max WS	43.00	63.00	66.30		66.30	0.000015	0.14	301.06	215.19	0.02
B	5800.152	Max WS	43.00	63.00	66.30		66.30	0.000038	0.23	188.76	135.74	0.03
B	5600.480	Max WS	43.24	63.00	66.29		66.29	0.000005	0.10	449.83	265.26	0.01
B	5500.645	Max WS	43.52	63.00	66.29		66.29	0.000008	0.11	404.01	343.17	0.02
B	5462.56*	Max WS	43.57	62.75	65.74		67.25	0.026494	9.86	4.42	236.51	1.01
B	5425		Culvert									
B	5348.317	Max WS	43.57	62.00	64.82	64.98	66.50	0.031133	10.40	4.19	182.93	1.10
B	5200.132	Max WS	43.83	62.00	62.79		62.81	0.002597	0.91	48.09	102.97	0.24
B	5000.639	Max WS	44.12	61.51	62.10		62.12	0.005789	1.10	40.24	119.15	0.33
B	4800.247	Max WS	44.08	61.00	61.28		61.31	0.021213	1.25	35.20	226.22	0.56
B	4600.325	Max WS	44.84	60.00	60.87		60.88	0.000473	0.43	104.75	194.28	0.10
B	4400.977	Max WS	45.13	59.34	60.82		60.82	0.000139	0.29	156.37	209.45	0.06
B	4200.967	Max WS	45.82	59.00	60.76		60.77	0.000385	0.55	83.09	90.31	0.10
B	4001.114	Max WS	46.15	59.00	59.67		59.72	0.012039	1.84	25.09	59.16	0.50
B	3799.862	Max WS	46.74	57.00	58.65		58.65	0.000051	0.26	178.65	130.24	0.04

B	3601.211	Max WS	47.39	57.00	58.41		58.43	0.003276	0.87	54.65	149.87	0.25
B	3400.029	Max WS	47.71	57.00	58.12		58.13	0.000814	0.60	79.73	134.28	0.14
B	3200.874	Max WS	48.34	57.00	58.00		58.01	0.000527	0.50	97.49	157.22	0.11
B	3000.280	Max WS	48.72	55.36	57.92		57.93	0.000338	0.44	111.42	154.97	0.09
B	2799.844	Max WS	49.08	56.00	57.86		57.87	0.000317	0.38	128.22	207.75	0.09
B	2750.27*	Max WS	49.08	55.50	57.85		57.85	0.000240	0.37	134.15	188.62	0.08
B	2700.70*	Max WS	49.08	55.00	56.90		57.74	0.032875	7.37	6.66	63.66	1.01
B	2675		Culvert									
B	2651.13*	Max WS	49.08	54.50	56.57		57.30	0.027048	6.89	7.12	53.60	0.91
B	2601.559	Max WS	49.07	54.00	56.23		56.26	0.002399	1.39	35.43	37.50	0.25
B	2406.840	Max WS	49.30	54.00	55.79		55.81	0.002624	1.21	40.78	57.08	0.25
B	2200.767	Max WS	49.45	54.00	55.26		55.27	0.003318	0.96	51.40	121.90	0.26
B	1999.973	Max WS	49.90	53.00	54.42		54.45	0.006789	1.39	35.84	83.48	0.37
B	1803.554	Max WS	49.99	53.00	53.63		53.65	0.003228	0.97	51.52	118.24	0.26
B	1648.618	Max WS	50.25	52.00	53.35		53.36	0.001105	0.67	74.60	132.49	0.16
B	1451.229	Max WS	50.32	51.95	53.18		53.18	0.000951	0.70	71.87	107.59	0.15
B	1248.628	Max WS	50.48	51.00	53.09		53.09	0.000086	0.24	214.53	271.28	0.05
B	1153.125	Max WS	50.66	51.00	53.08		53.09	0.000092	0.24	214.73	286.17	0.05
B	1000	Max WS	50.66	52.00	52.92	52.49	52.93	0.002159	0.81	62.26	137.65	0.21



1) Existing 10 yr
Reach B
Legend
WS Max WS
Ground
Elevation (ft)
75
70
65
60
55
50
0
2000
4000
6000
8000
Main Channel Distance (ft)

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Hydrologic Engineering Center
609 Second Street
Davis, California

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X     X  XXXXXX    XXXX        XXXX      XX      XXXX
X     X  X        X    X       X   X    X  X    X
X     X  X        X            X   X   X    X   X
XXXXXXX  XXXX     X       XXX  XXXX    XXXXXX    XXXX
X     X  X        X            X  X    X    X        X
X     X  X        X    X       X   X   X    X        X
X     X  XXXXXX    XXXX        X    X  X    X   XXXXX
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PROJECT DATA
Project Title: Bproposed
Project File : Bproposed.prj
Run Date and Time: 4/20/2011 1:39:13 PM

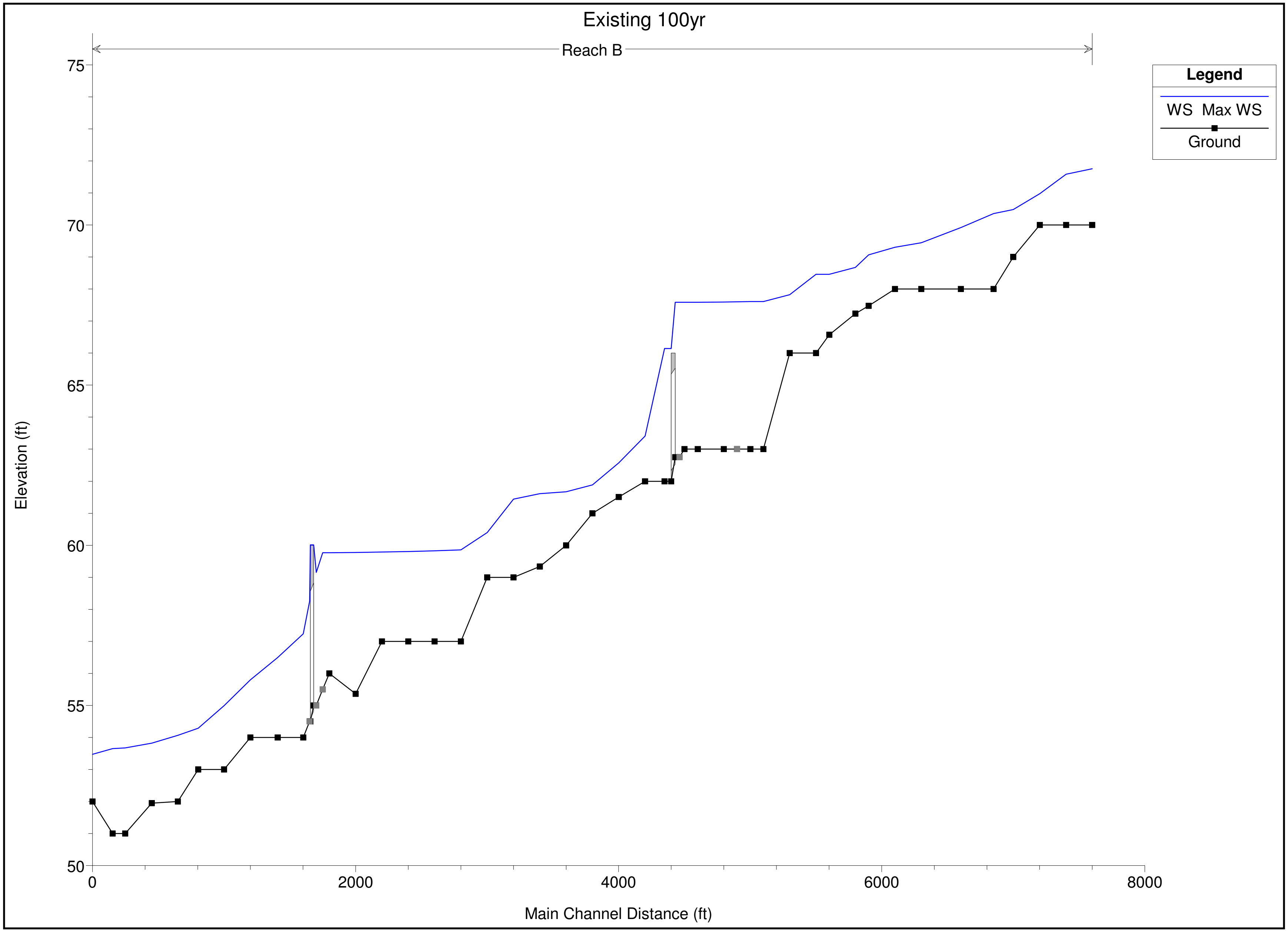
Project in English units

Project Description:
B Corridor - Developed, Interim and Existing Conditions
10 yr 24 hr Existing

Profile Output Table - Standard Table 1

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
B	8600.171	Max WS	81.40	70.00	71.53		71.53	0.000107	0.33	244.17	216.17	0.06
B	8402.062	Max WS	81.18	70.00	71.42		71.43	0.000945	0.76	106.87	140.87	0.15
B	8200.812	Max WS	83.91	70.00	70.76		70.79	0.005591	1.32	63.78	139.97	0.34
B	8000.422	Max WS	84.93	69.00	70.14		70.15	0.000991	0.74	114.20	161.12	0.16
B	7850.530	Max WS	87.66	68.00	70.02		70.03	0.000758	0.75	116.24	131.32	0.14
B	7601.493	Max WS	88.38	68.00	69.61		69.63	0.002579	1.22	72.35	99.16	0.25
B	7299.906	Max WS	91.12	68.00	69.17		69.17	0.000618	0.59	153.76	213.83	0.12
B	7099.985	Max WS	92.98	68.00	69.02		69.03	0.000822	0.67	139.23	200.39	0.14
B	6899.936	Max WS	94.63	67.48	68.78		68.79	0.001726	0.98	99.23	147.68	0.21
B	6798.688	Max WS	72.46	67.23	68.56		68.58	0.001487	0.96	76.25	100.64	0.19
B	6600.481	Max WS	49.90	66.57	68.46		68.46	0.000043	0.24	206.88	150.68	0.04
B	6500.082	Max WS	12.96	66.00	68.46		68.46	0.000001	0.05	271.19	162.30	0.01
B	6299.850	Max WS	69.89	66.00	67.68		67.69	0.001057	0.51	136.66	354.83	0.15
B	6100.057	Max WS	70.46	63.00	67.59		67.59	0.000017	0.15	461.28	328.31	0.02
B	6000.284	Max WS	70.55	63.00	67.58		67.58	0.000002	0.08	882.97	383.19	0.01
B	5900.21*	Max WS	69.64	63.00	67.58		67.58	0.000005	0.11	620.87	278.06	0.01
B	5800.152	Max WS	69.10	63.00	67.58		67.58	0.000012	0.16	423.07	205.00	0.02
B	5600.480	Max WS	69.36	63.00	67.58		67.58	0.000002	0.09	815.82	303.30	0.01
B	5500.645	Max WS	61.33	63.00	67.58		67.58	0.000002	0.08	866.49	376.77	0.01
B	5462.56*	Max WS	60.65	62.75	67.58		67.58	0.000009	0.12	531.20	369.85	0.02
B	5425		Culvert									
B	5348.317	Max WS	76.22	62.00	65.59	66.11	68.75	0.042395	14.27	5.34	226.66	1.33
B	5200.132	Max WS	74.65	62.00	63.00		63.01	0.002503	1.06	70.53	117.38	0.24
B	5000.639	Max WS	73.56	61.51	62.25		62.27	0.005282	1.26	58.33	130.71	0.33
B	4800.247	Max WS	71.92	61.00	61.47		61.48	0.004087	0.90	79.72	243.61	0.28
B	4600.325	Max WS	69.16	60.00	61.10		61.11	0.000374	0.45	152.42	217.23	0.10

B	4400.977	Max WS	69.37	59.34	61.06		61.06	0.000141	0.33	209.10	228.86	0.06
B	4200.967	Max WS	70.65	59.00	60.99		61.00	0.000529	0.67	105.01	107.41	0.12
B	4001.114	Max WS	71.23	59.00	59.84		59.90	0.011051	1.95	36.54	74.05	0.49
B	3799.862	Max WS	72.32	57.00	58.80		58.80	0.000090	0.37	198.14	133.76	0.05
B	3601.211	Max WS	73.00	57.00	58.66		58.66	0.001602	0.76	95.87	186.93	0.19
B	3400.029	Max WS	72.21	57.00	58.49		58.50	0.000408	0.54	133.90	156.93	0.10
B	3200.874	Max WS	73.26	57.00	58.43		58.44	0.000233	0.43	171.71	188.36	0.08
B	3000.280	Max WS	74.06	55.36	58.39		58.40	0.000162	0.39	192.02	186.05	0.07
B	2799.844	Max WS	74.77	56.00	58.37		58.37	0.000107	0.31	240.61	235.37	0.05
B	2750.27*	Max WS	74.76	55.50	58.36		58.37	0.000098	0.31	244.94	230.67	0.05
B	2700.70*	Max WS	74.76	55.00	57.78		58.62	0.018617	7.35	10.17	174.18	0.81
B	2675		Culvert									
B	2651.13*	Max WS	74.76	54.50	56.89	56.99	58.12	0.035995	8.89	8.41	73.41	1.08
B	2601.559	Max WS	74.76	54.00	56.54		56.57	0.002813	1.53	48.75	50.11	0.27
B	2406.840	Max WS	75.24	54.00	56.00		56.03	0.002904	1.41	53.46	64.26	0.27
B	2200.767	Max WS	75.57	54.00	55.43		55.45	0.003199	0.99	76.68	170.76	0.26
B	1999.973	Max WS	76.52	53.00	54.59		54.62	0.006364	1.46	52.27	107.56	0.37
B	1803.554	Max WS	76.70	53.00	53.82		53.84	0.002673	1.01	76.20	143.71	0.24
B	1648.618	Max WS	77.23	52.00	53.56		53.57	0.001093	0.73	106.12	166.37	0.16
B	1451.229	Max WS	77.38	51.95	53.36		53.37	0.001133	0.83	93.08	122.85	0.17
B	1248.628	Max WS	77.69	51.00	53.25		53.25	0.000116	0.30	257.62	281.65	0.06
B	1153.125	Max WS	78.07	51.00	53.24		53.24	0.000125	0.30	259.43	301.51	0.06
B	1000	Max WS	78.06	52.00	53.07	52.59	53.08	0.002305	0.93	84.20	160.76	0.23



Existing 100yr
Reach B
Legend
WS Max WS
Ground
Elevation (ft)
Main Channel Distance (ft)
75
70
65
60
55
50
0
2000
4000
6000
8000

HEC-RAS Version 4.1.0 Jan 2010
U.S. Army Corps of Engineers
Hydrologic Engineering Center
609 Second Street
Davis, California

```
X     X  XXXXXX    XXXX        XXXX      XX      XXXX
X     X  X        X    X       X   X    X  X    X
X     X  X        X            X   X   X    X   X
XXXXXXX  XXXX     X      XXX   XXXX    XXXXXX    XXXX
X     X  X        X            X  X    X    X        X
X     X  X        X    X       X   X   X    X        X
X     X  XXXXXX    XXXX        X    X  X    X   XXXXX
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PROJECT DATA
Project Title: Bproposed
Project File : Bproposed.prj
Run Date and Time: 4/22/2011 9:00:46 AM

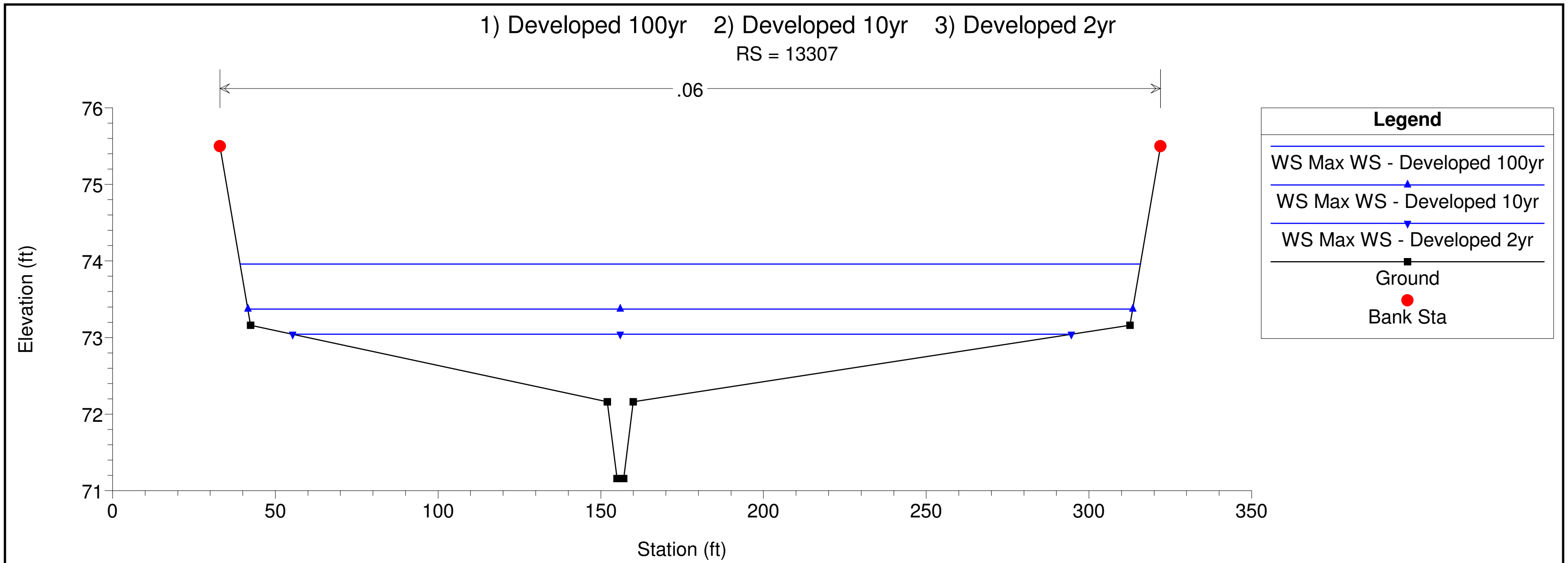
Project in English units

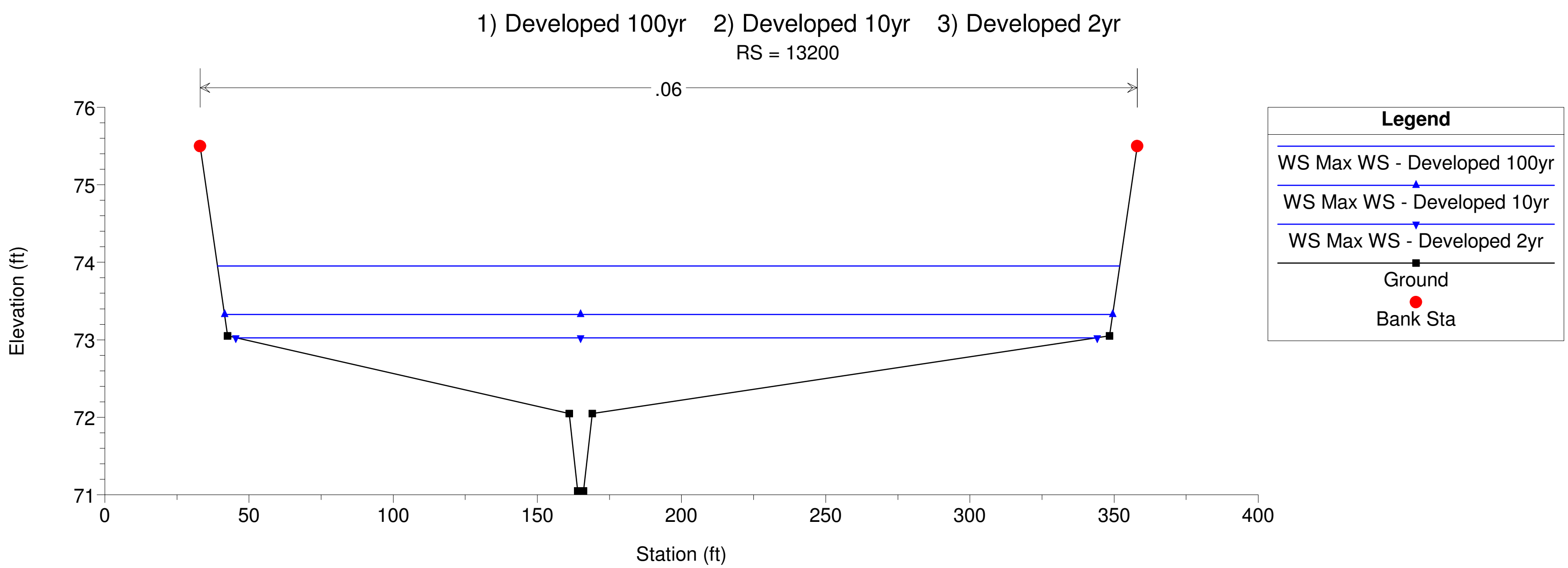
Project Description:
B Corridor - Developed, Interim and Existing Conditions
100 yr 24 hr Existing

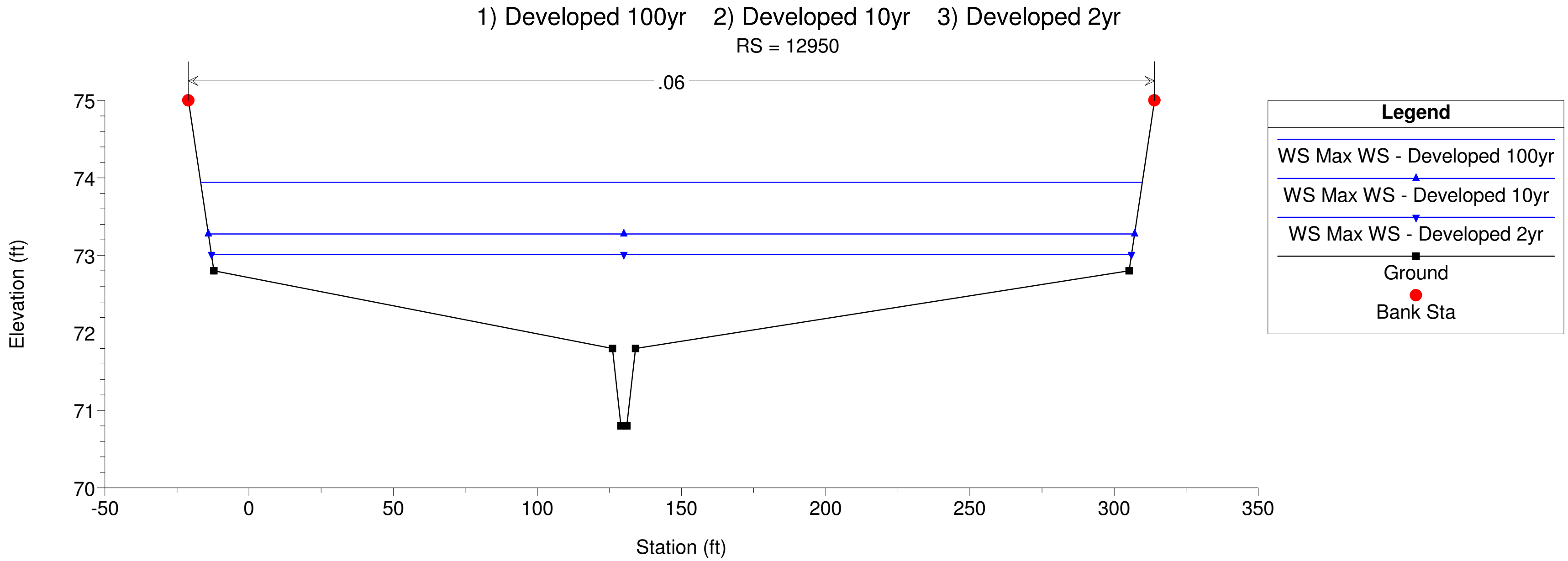
Profile Output Table - Standard Table 1

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
B	8600.171	Max WS	135.65	70.00	71.75		71.76	0.000165	0.46	292.67	218.66	0.07
B	8402.062	Max WS	135.35	70.00	71.58		71.60	0.001508	1.03	130.85	154.12	0.20
B	8200.812	Max WS	139.95	70.00	70.98		71.01	0.004684	1.46	95.59	156.51	0.33
B	8000.422	Max WS	141.61	69.00	70.48		70.49	0.000830	0.82	171.71	181.54	0.15
B	7850.530	Max WS	146.33	68.00	70.36		70.37	0.000778	0.90	163.46	145.49	0.15
B	7601.493	Max WS	147.65	68.00	69.92		69.95	0.002603	1.39	106.29	120.91	0.26
B	7299.906	Max WS	152.09	68.00	69.45		69.46	0.000614	0.70	216.94	233.03	0.13
B	7099.985	Max WS	155.22	68.00	69.31		69.32	0.000793	0.78	198.36	219.02	0.14
B	6899.936	Max WS	158.10	67.48	69.07		69.09	0.001598	1.12	145.14	167.42	0.21
B	6798.688	Max WS	161.28	67.23	68.68		68.73	0.004987	1.84	88.16	107.98	0.36
B	6600.481	Max WS	62.36	66.57	68.46		68.47	0.000067	0.30	207.76	150.87	0.05
B	6500.082	Max WS	13.28	66.00	68.46		68.46	0.000001	0.05	271.89	162.50	0.01
B	6299.850	Max WS	170.20	66.00	67.83		67.84	0.002332	0.90	190.10	385.71	0.22
B	6100.057	Max WS	149.72	63.00	67.61		67.61	0.000072	0.32	470.10	331.14	0.05
B	6000.284	Max WS	154.85	63.00	67.61		67.61	0.000011	0.17	891.92	385.62	0.02
B	5900.21*	Max WS	130.17	63.00	67.60		67.60	0.000017	0.21	626.62	278.98	0.02
B	5800.152	Max WS	126.67	63.00	67.60		67.60	0.000038	0.30	426.36	205.33	0.04
B	5600.480	Max WS	78.15	63.00	67.59		67.59	0.000003	0.10	818.87	303.60	0.01
B	5500.645	Max WS	65.71	63.00	67.59		67.59	0.000002	0.08	870.29	377.06	0.01
B	5462.56*	Max WS	60.81	62.75	67.59		67.59	0.000009	0.12	534.94	370.16	0.02
B	5425		Culvert									
B	5348.317	Max WS	185.19	62.00	66.15	66.20	66.43	0.223874	4.26	43.43	259.93	1.84
B	5200.132	Max WS	187.20	62.00	63.41		63.43	0.003293	1.27	147.48	229.63	0.28
B	5000.639	Max WS	189.35	61.51	62.58		62.63	0.006144	1.78	106.27	158.81	0.38
B	4800.247	Max WS	187.82	61.00	61.88		61.90	0.001879	1.01	186.47	269.67	0.21
B	4600.325	Max WS	193.09	60.00	61.67		61.68	0.000428	0.68	283.73	243.81	0.11
B	4400.977	Max WS	193.99	59.34	61.61		61.61	0.000249	0.56	343.92	260.66	0.09
B	4200.967	Max WS	192.12	59.00	61.44		61.47	0.001212	1.22	157.36	122.61	0.19
B	4001.114	Max WS	196.97	59.00	60.40		60.46	0.006715	1.91	103.00	147.90	0.40
B	3799.862	Max WS	168.66	57.00	59.86		59.86	0.000104	0.43	392.47	231.14	0.06

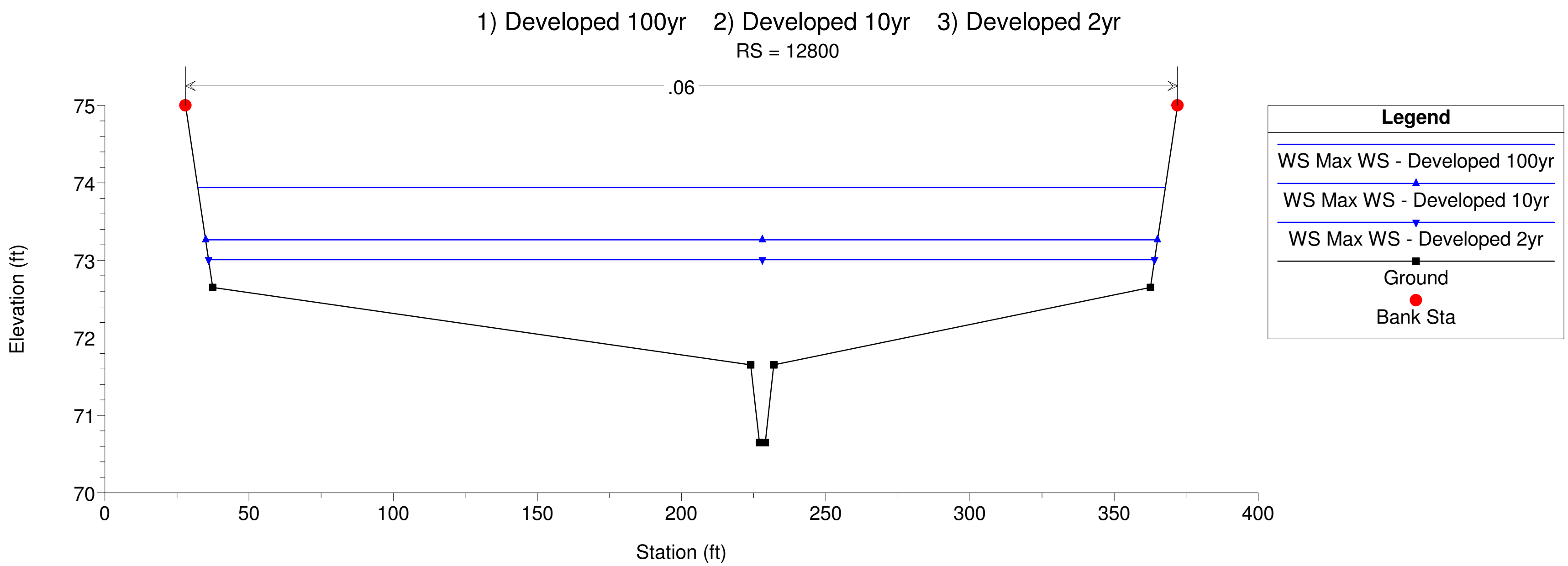
B	3601.211	Max WS	168.72	57.00	59.83		59.83	0.000163	0.51	328.17	207.64	0.07
B	3400.029	Max WS	169.56	57.00	59.80		59.81	0.000103	0.45	380.24	210.23	0.06
B	3200.874	Max WS	173.08	57.00	59.79		59.79	0.000066	0.36	487.13	272.12	0.05
B	3000.280	Max WS	175.18	55.36	59.77		59.78	0.000055	0.35	504.82	254.21	0.04
B	2799.844	Max WS	176.87	56.00	59.77		59.77	0.000035	0.28	631.19	312.46	0.03
B	2750.27*	Max WS	176.79	55.50	59.76		59.77	0.000035	0.29	608.26	283.84	0.03
B	2700.70*	Max WS	176.76	55.00	59.16		61.13	0.024574	11.27	15.68	235.88	1.00
B	2675		Culvert									
B	2651.13*	Max WS	176.76	54.50	58.25	58.70	60.78	0.037973	12.74	13.87	175.01	1.21
B	2601.559	Max WS	176.75	54.00	57.24		57.29	0.003328	1.87	94.27	81.70	0.31
B	2406.840	Max WS	177.95	54.00	56.49		56.54	0.004899	1.79	99.60	124.29	0.35
B	2200.767	Max WS	178.76	54.00	55.80		55.82	0.002738	1.15	155.05	242.77	0.25
B	1999.973	Max WS	181.12	53.00	54.99		55.03	0.005881	1.71	106.06	163.38	0.37
B	1803.554	Max WS	180.86	53.00	54.29		54.31	0.002099	1.15	157.96	204.80	0.23
B	1648.618	Max WS	181.54	52.00	54.06		54.07	0.001029	0.87	209.48	241.68	0.16
B	1451.229	Max WS	181.48	51.95	53.82		53.84	0.001502	1.15	158.00	158.63	0.20
B	1248.628	Max WS	182.00	51.00	53.67		53.68	0.000191	0.48	382.65	307.11	0.08
B	1153.125	Max WS	182.91	51.00	53.65		53.66	0.000198	0.47	391.21	330.43	0.08
B	1000	Max WS	182.87	52.00	53.47	52.82	53.49	0.002198	1.12	162.57	224.11	0.23


1) Developed 100yr 2) Developed 10yr 3) Developed 2yr
RS = 13307
.06
Elevation (ft)
76
75
74
73
72
71
0
50
100
150
200
250
300
350
Station (ft)
Legend
WS Max WS - Developed 100yr
WS Max WS - Developed 10yr
WS Max WS - Developed 2yr
Ground
Bank Sta

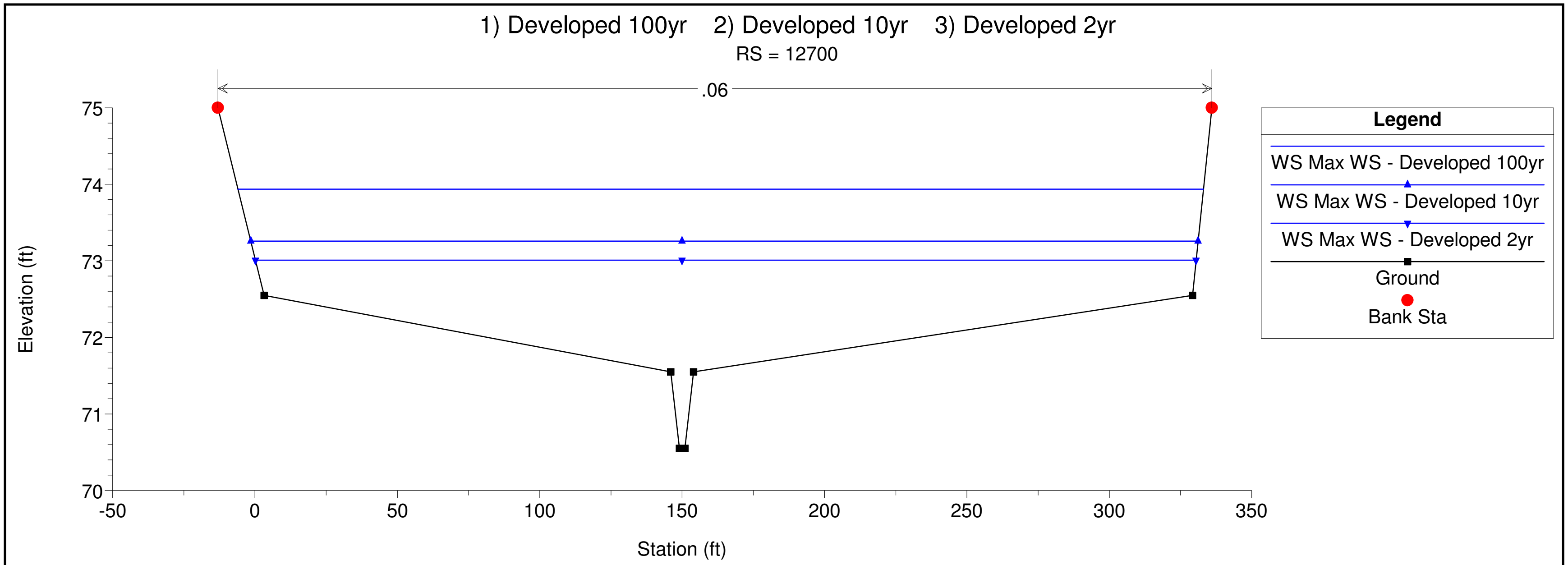

1) Developed 100yr 2) Developed 10yr 3) Developed 2yr
RS = 13200
.06
Elevation (ft)
76
75
74
73
72
71
0
50
100
150
200
250
300
350
400
Station (ft)
Legend
WS Max WS - Developed 100yr
WS Max WS - Developed 10yr
WS Max WS - Developed 2yr
Ground
Bank Sta



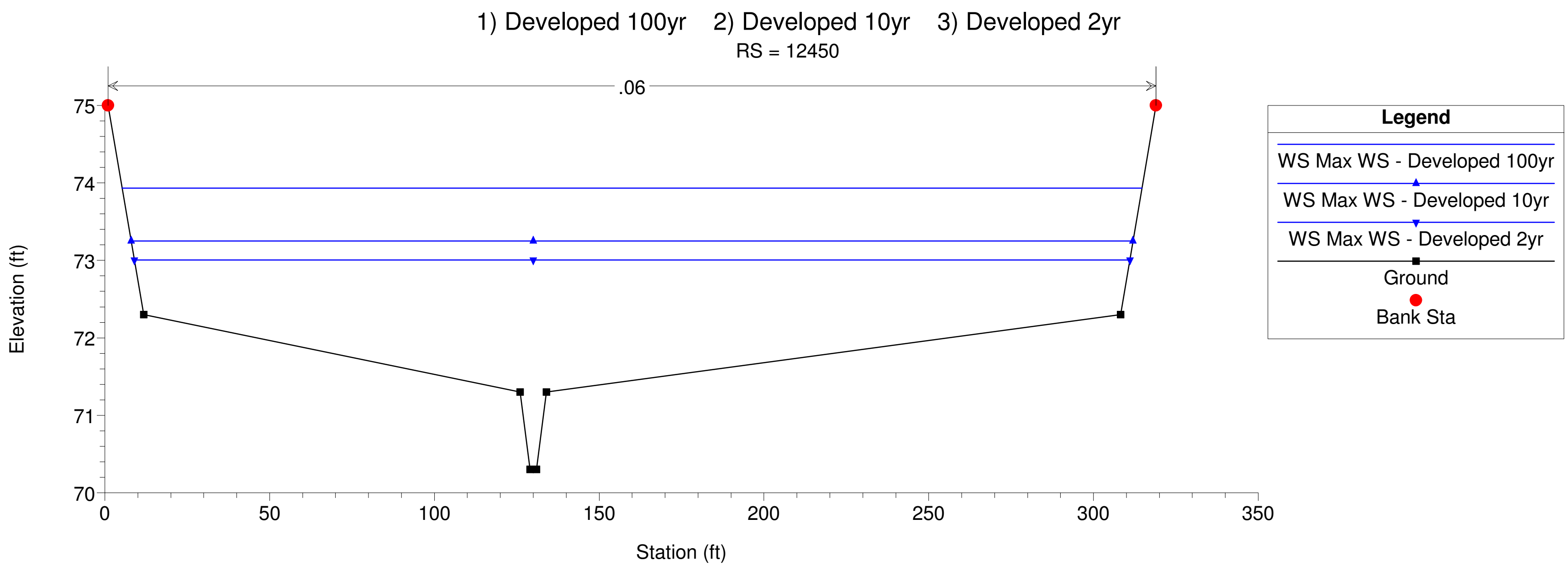
1) Developed 100yr 2) Developed 10yr 3) Developed 2yr
RS = 12950
.06
Elevation (ft)
75
74
73
72
71
70
-50
0
50
100
150
200
250
300
350
Station (ft)
Legend
WS Max WS - Developed 100yr
WS Max WS - Developed 10yr
WS Max WS - Developed 2yr
Ground
Bank Sta



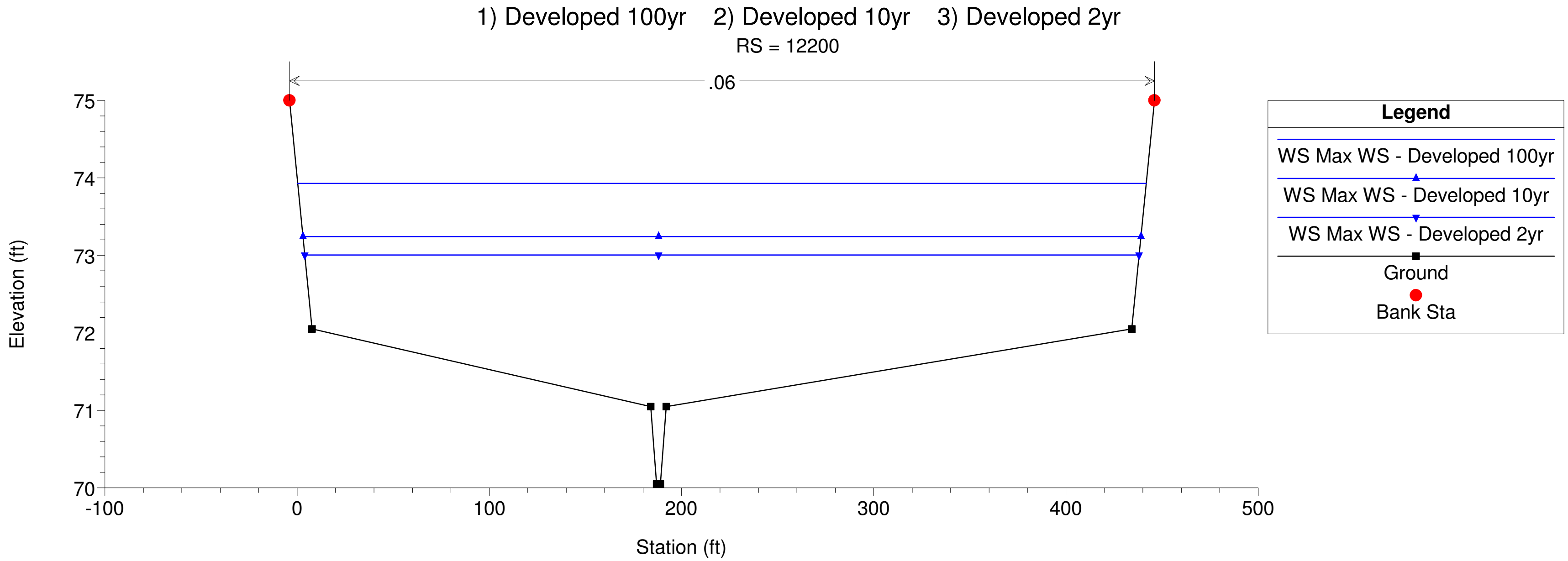
1) Developed 100yr 2) Developed 10yr 3) Developed 2yr
RS = 12800
.06
Elevation (ft)
75
74
73
72
71
70
0
50
100
150
200
250
300
350
400
Station (ft)
Legend
WS Max WS - Developed 100yr
WS Max WS - Developed 10yr
WS Max WS - Developed 2yr
Ground
Bank Sta

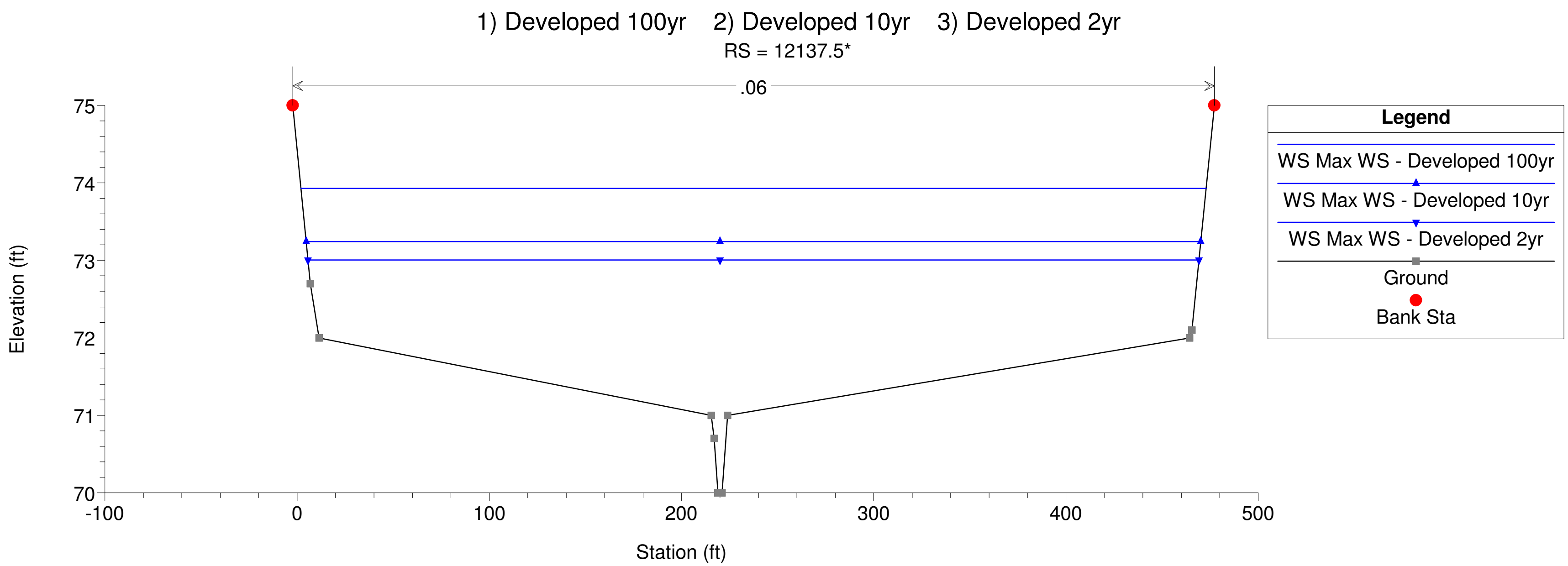


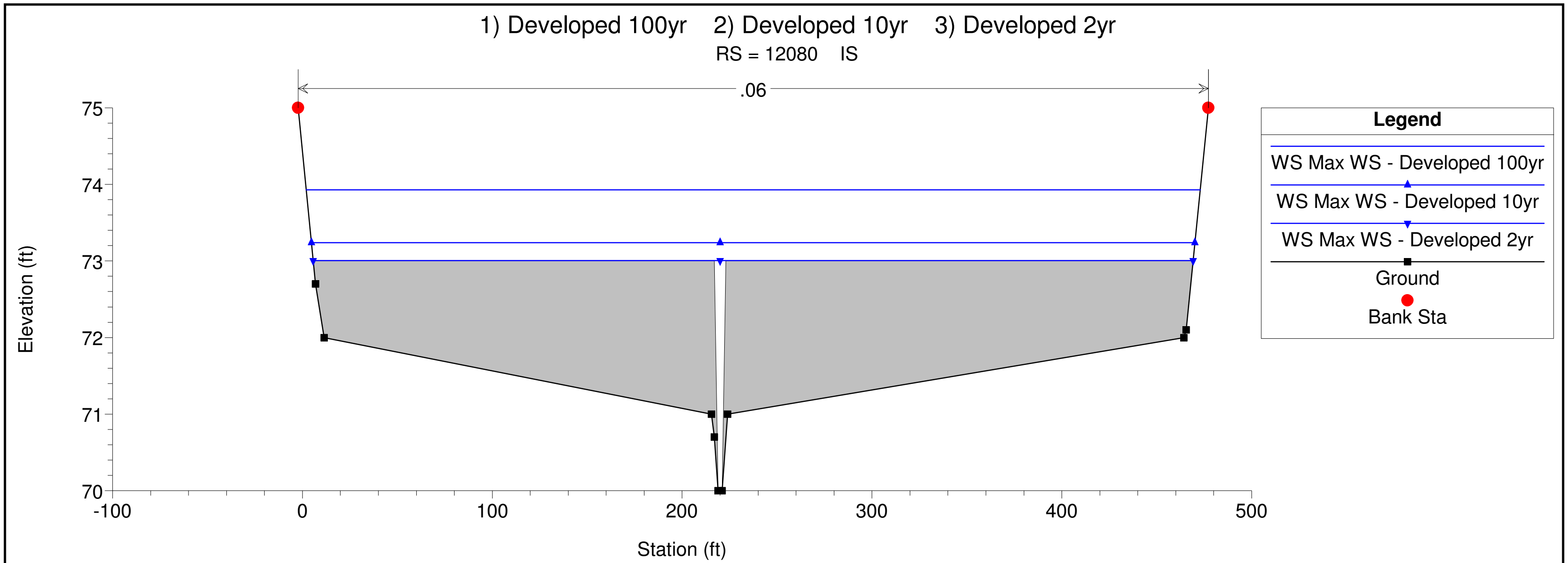
1) Developed 100yr 2) Developed 10yr 3) Developed 2yr
RS = 12700
.06
Elevation (ft)
75
74
73
72
71
70
-50
0
50
100
150
200
250
300
350
Station (ft)
Legend
WS Max WS - Developed 100yr
WS Max WS - Developed 10yr
WS Max WS - Developed 2yr
Ground
Bank Sta



1) Developed 100yr 2) Developed 10yr 3) Developed 2yr
RS = 12450
.06
Elevation (ft)
75
74
73
72
71
70
0
50
100
150
200
250
300
350
Station (ft)
Legend
WS Max WS - Developed 100yr
WS Max WS - Developed 10yr
WS Max WS - Developed 2yr
Ground
Bank Sta


1) Developed 100yr 2) Developed 10yr 3) Developed 2yr
RS = 12200
.06
Elevation (ft)
Station (ft)
Legend
WS Max WS - Developed 100yr
WS Max WS - Developed 10yr
WS Max WS - Developed 2yr
Ground
Bank Sta


1) Developed 100yr 2) Developed 10yr 3) Developed 2yr
RS = 12137.5*
.06
Elevation (ft)
Station (ft)
Legend
WS Max WS - Developed 100yr
WS Max WS - Developed 10yr
WS Max WS - Developed 2yr
Ground
Bank Sta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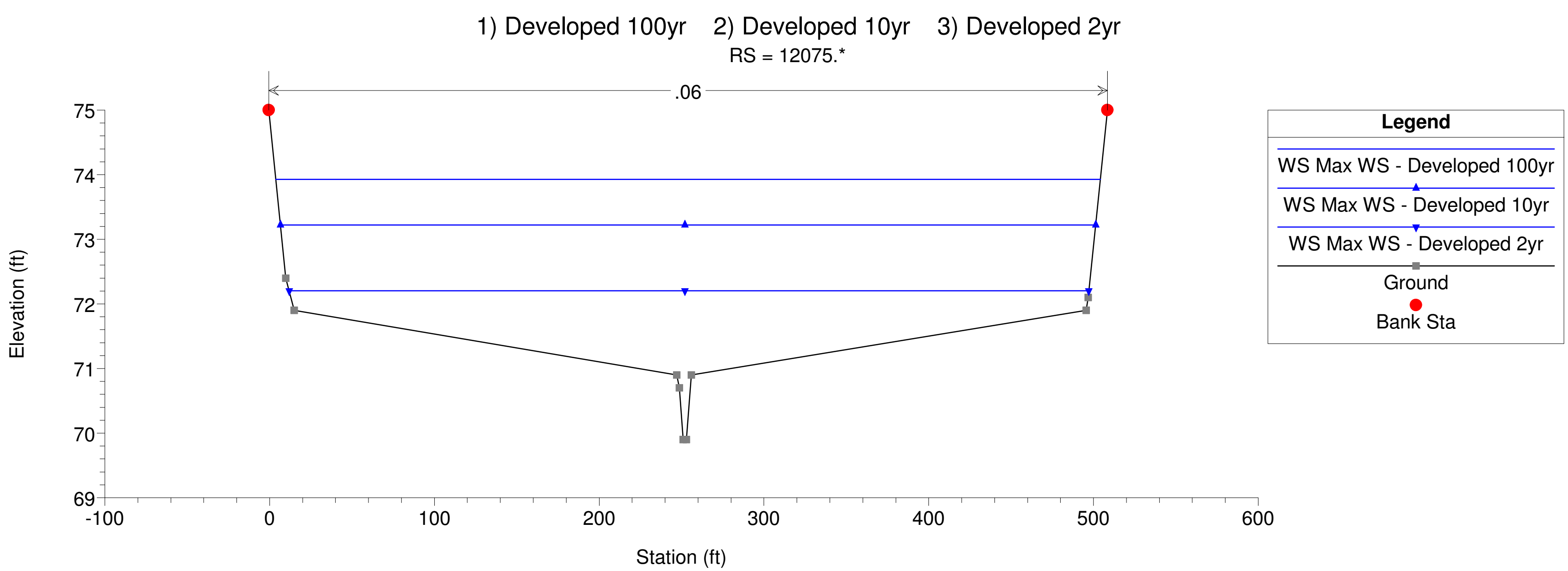
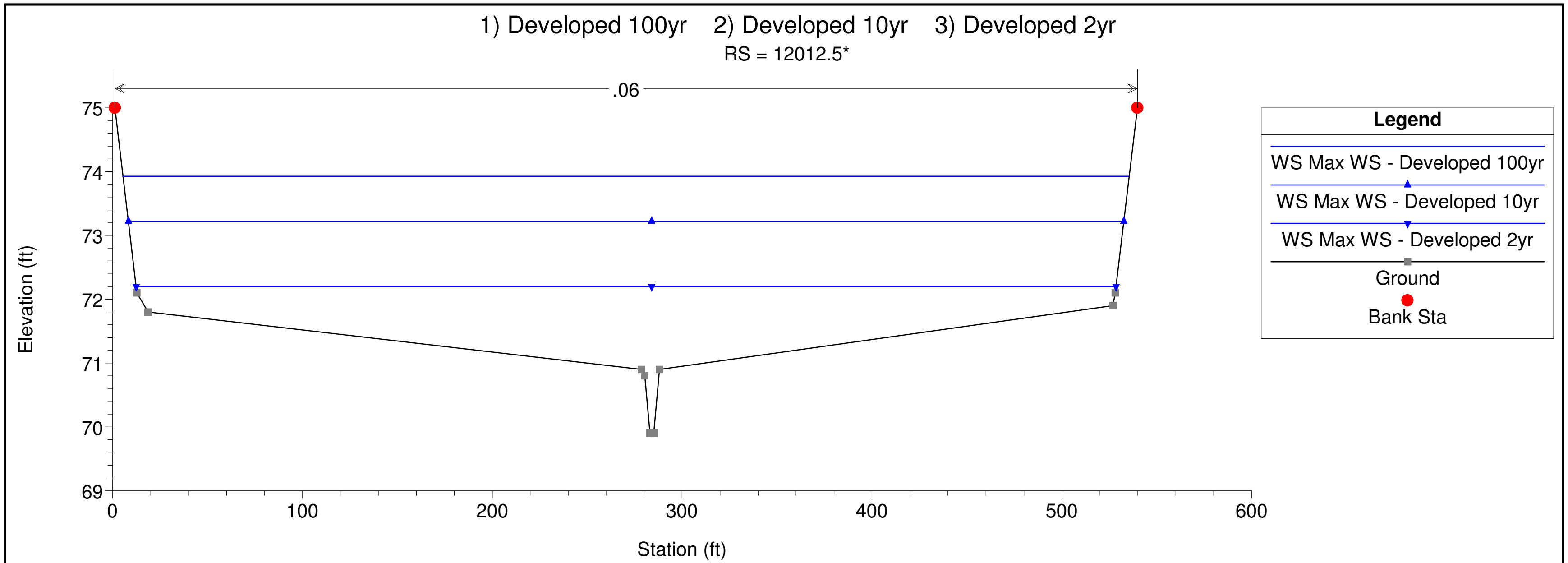
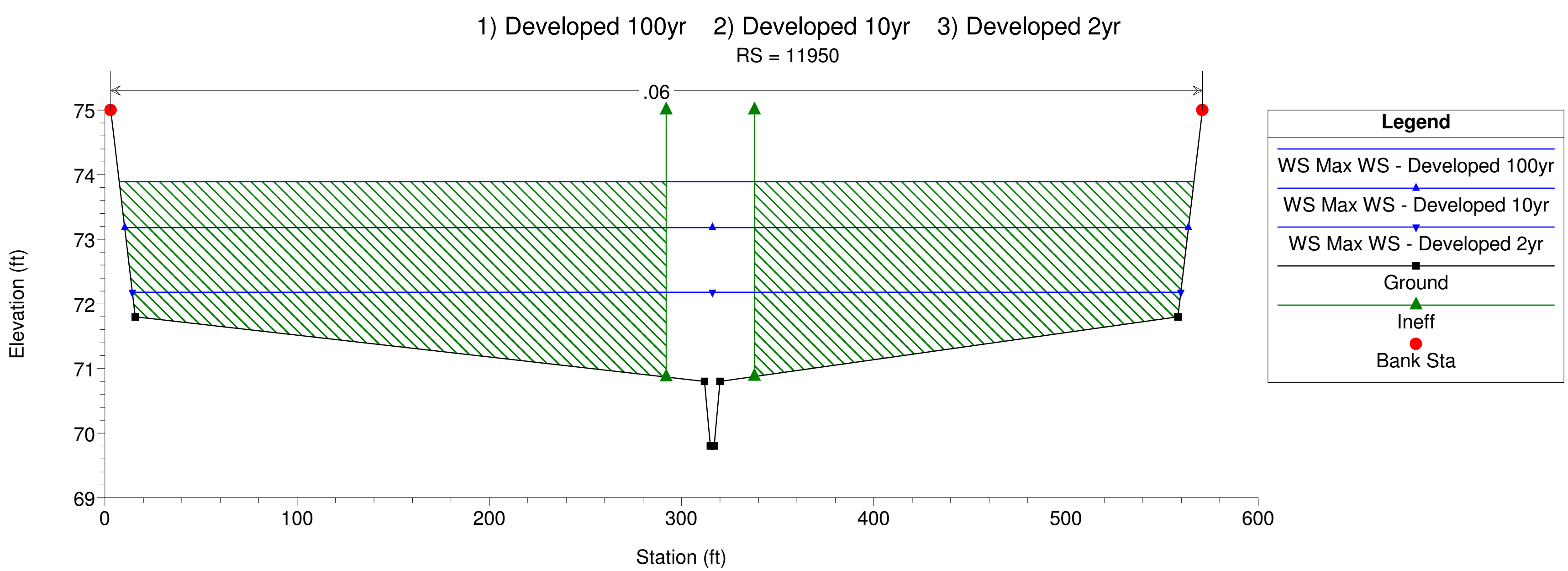
RS = 12080 IS
.06
Elevation (ft)
Station (ft)
75
74
73
72
71
70
-100
0
100
200
300
400
500
Legend
WS Max WS - Developed 100yr
WS Max WS - Developed 10yr
WS Max WS - Developed 2yr
Ground
Bank Sta


1) Developed 100yr 2) Developed 10yr 3) Developed 2yr
RS = 12075.*
.06
Elevation (ft)
Station (ft)
75
74
73
72
71
70
69
-100
0
100
200
300
400
500
600
Legend
WS Max WS - Developed 100yr
WS Max WS - Developed 10yr
WS Max WS - Developed 2yr
Ground
Bank Sta


1) Developed 100yr 2) Developed 10yr 3) Developed 2yr
RS = 12012.5*
.06
Elevation (ft)
Station (ft)
Legend
WS Max WS - Developed 100yr
WS Max WS - Developed 10yr
WS Max WS - Developed 2yr
Ground
Bank Sta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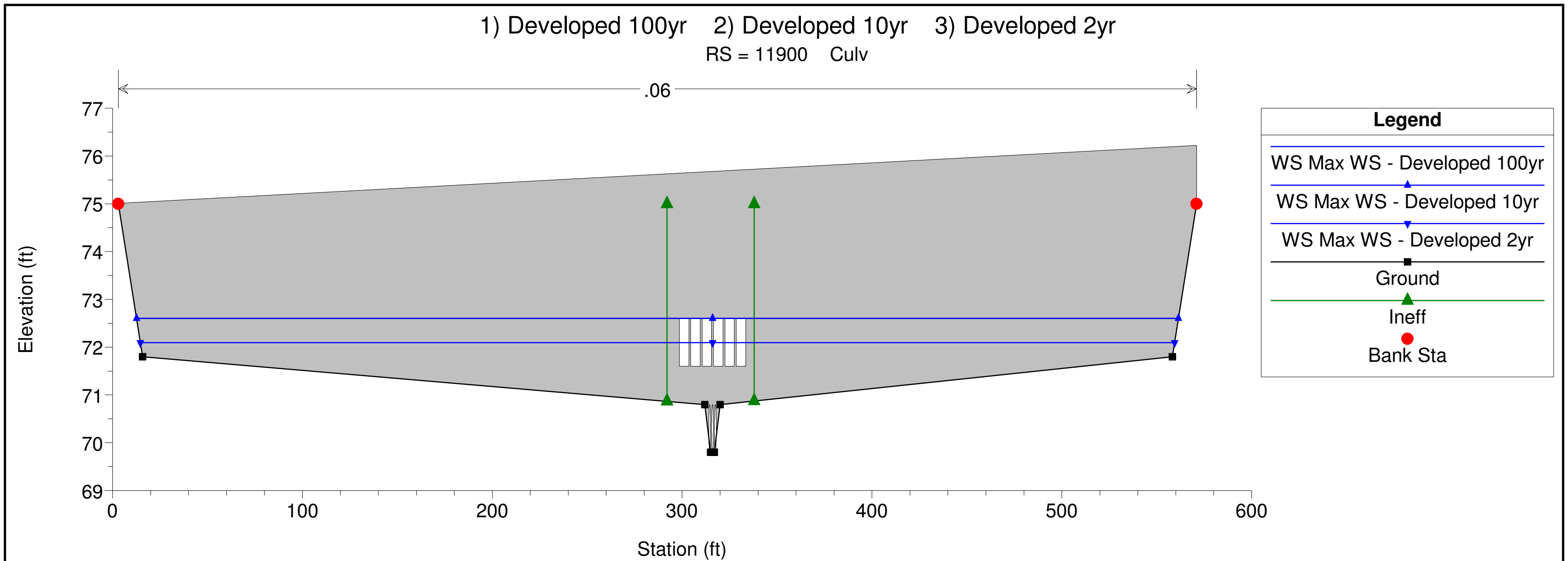
RS = 11950
.06
Elevation (ft)
Station (ft)
Legend
WS Max WS - Developed 100yr
WS Max WS - Developed 10yr
WS Max WS - Developed 2yr
Ground
Ineff
Bank Sta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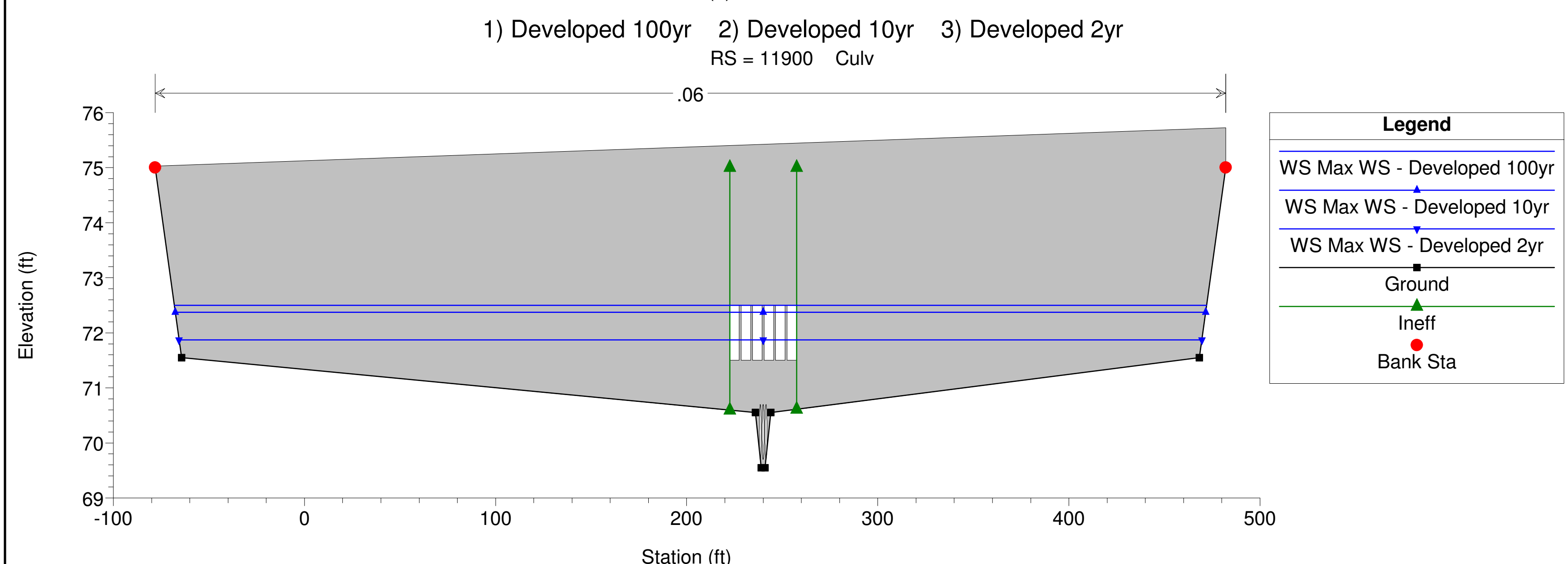
RS = 11900 Culv
.06
Elevation (ft)
77
76
75
74
73
72
71
70
69
0
100
200
300
400
500
600
Station (ft)
Legend
WS Max WS - Developed 100yr
WS Max WS - Developed 10yr
WS Max WS - Developed 2yr
Ground
Ineff
Bank Sta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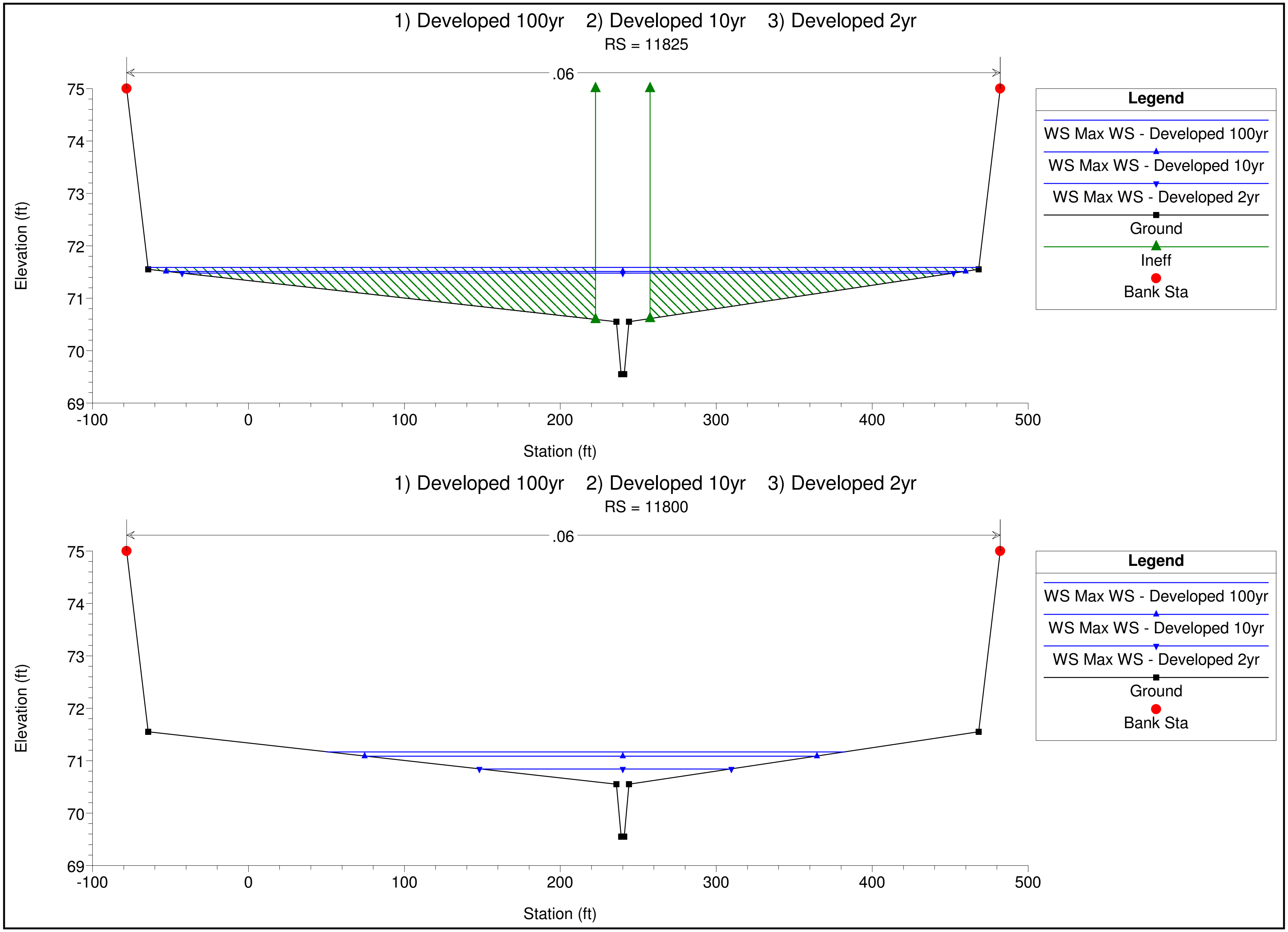
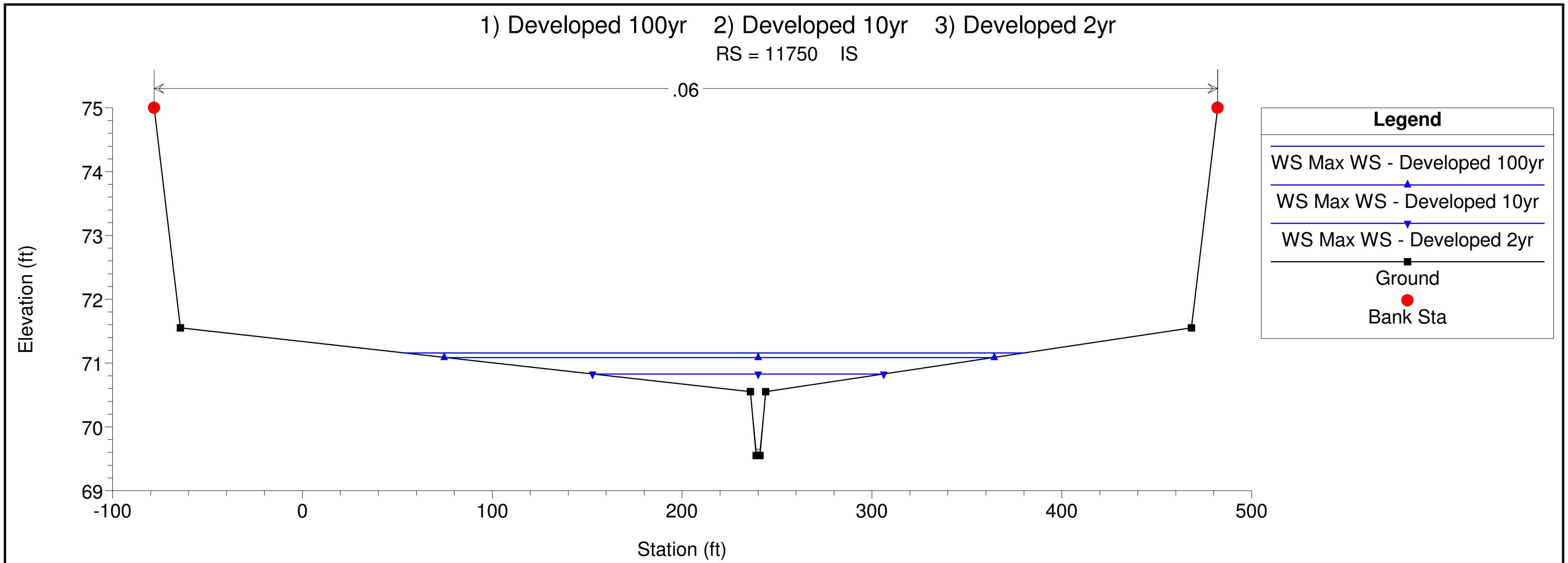
RS = 11900 Culv
.06
Elevation (ft)
76
75
74
73
72
71
70
69
-100
0
100
200
300
400
500
Station (ft)
Legend
WS Max WS - Developed 100yr
WS Max WS - Developed 10yr
WS Max WS - Developed 2yr
Ground
Ineff
Bank Sta


1) Developed 100yr 2) Developed 10yr 3) Developed 2yr
RS = 11825
.06
Elevation (ft)
75
74
73
72
71
70
69
-100
0
100
200
300
400
500
Station (ft)
Legend
WS Max WS - Developed 100yr
WS Max WS - Developed 10yr
WS Max WS - Developed 2yr
Ground
Ineff
Bank Sta
1) Developed 100yr 2) Developed 10yr 3) Developed 2yr
RS = 11800
.06
Elevation (ft)
75
74
73
72
71
70
69
-100
0
100
200
300
400
500
Station (ft)
Legend
WS Max WS - Developed 100yr
WS Max WS - Developed 10yr
WS Max WS - Developed 2yr
Ground
Bank Sta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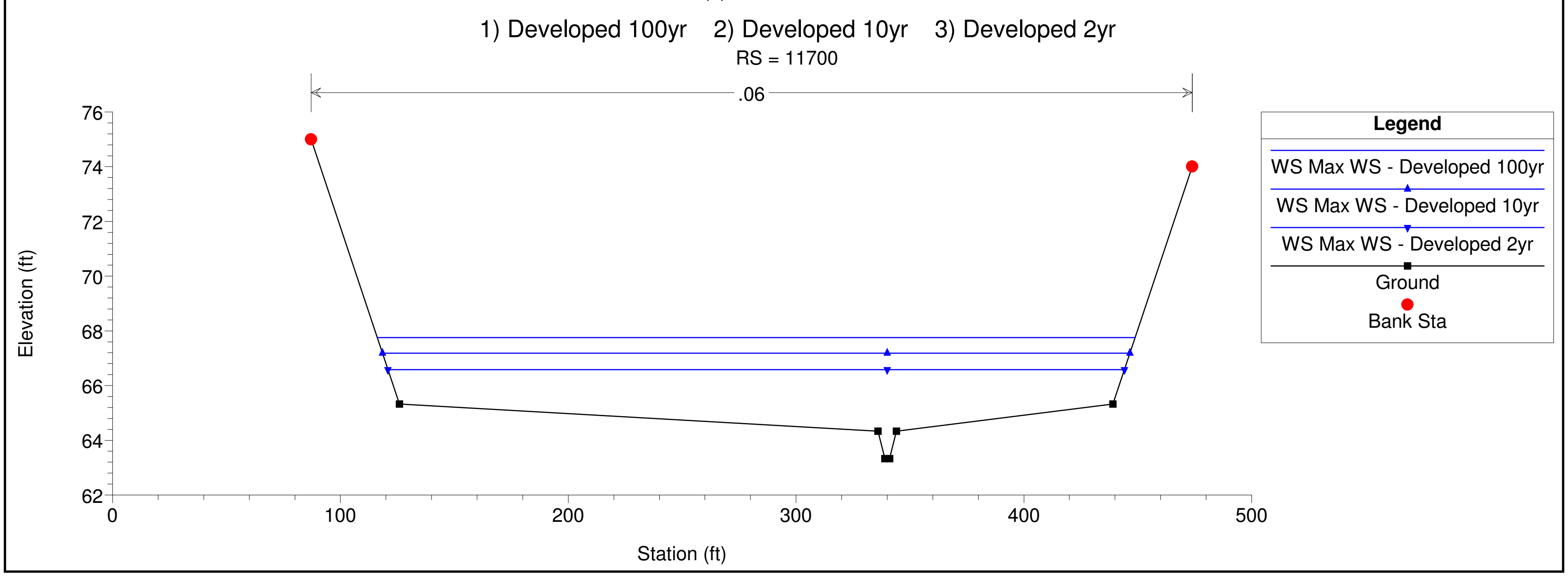
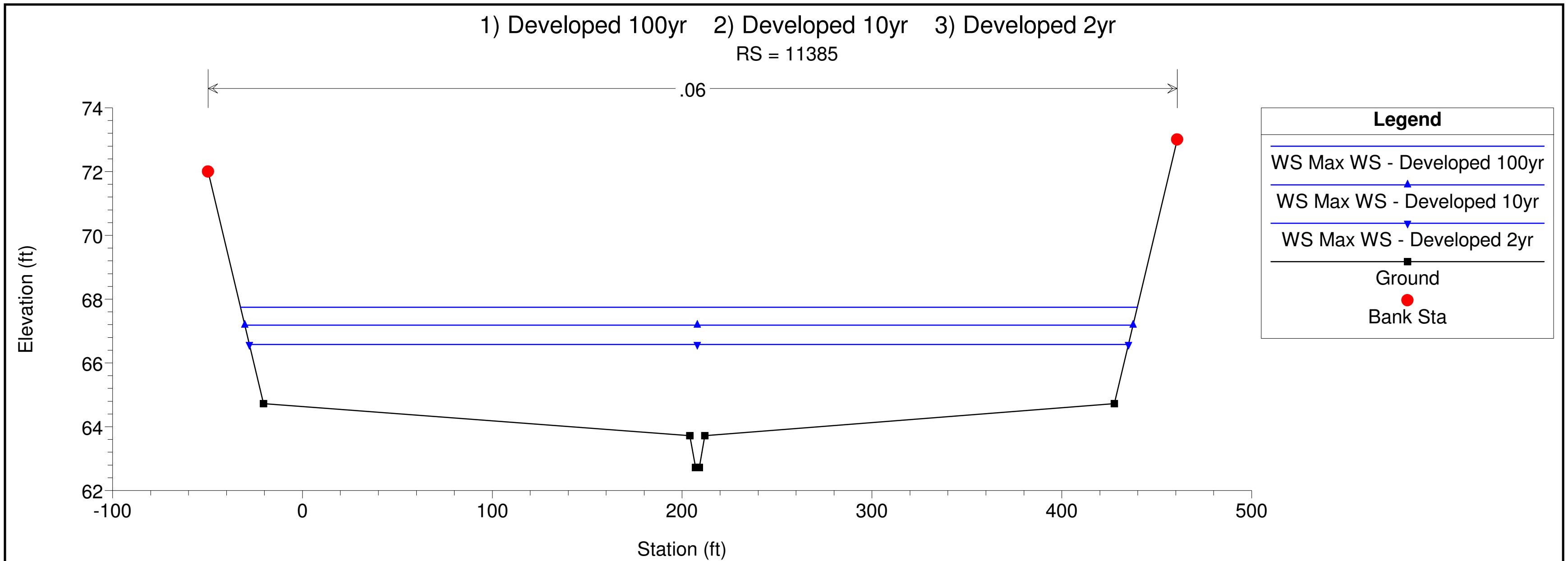
RS = 11750 IS
.06
Elevation (ft)
Station (ft)
75
74
73
72
71
70
69
-100
0
100
200
300
400
500
Legend
WS Max WS - Developed 100yr
WS Max WS - Developed 10yr
WS Max WS - Developed 2yr
Ground
Bank Sta


1) Developed 100yr 2) Developed 10yr 3) Developed 2yr
RS = 11700
.06
Elevation (ft)
Station (ft)
76
74
72
70
68
66
64
62
0
100
200
300
400
500
Legend
WS Max WS - Developed 100yr
WS Max WS - Developed 10yr
WS Max WS - Developed 2yr
Ground
Bank Sta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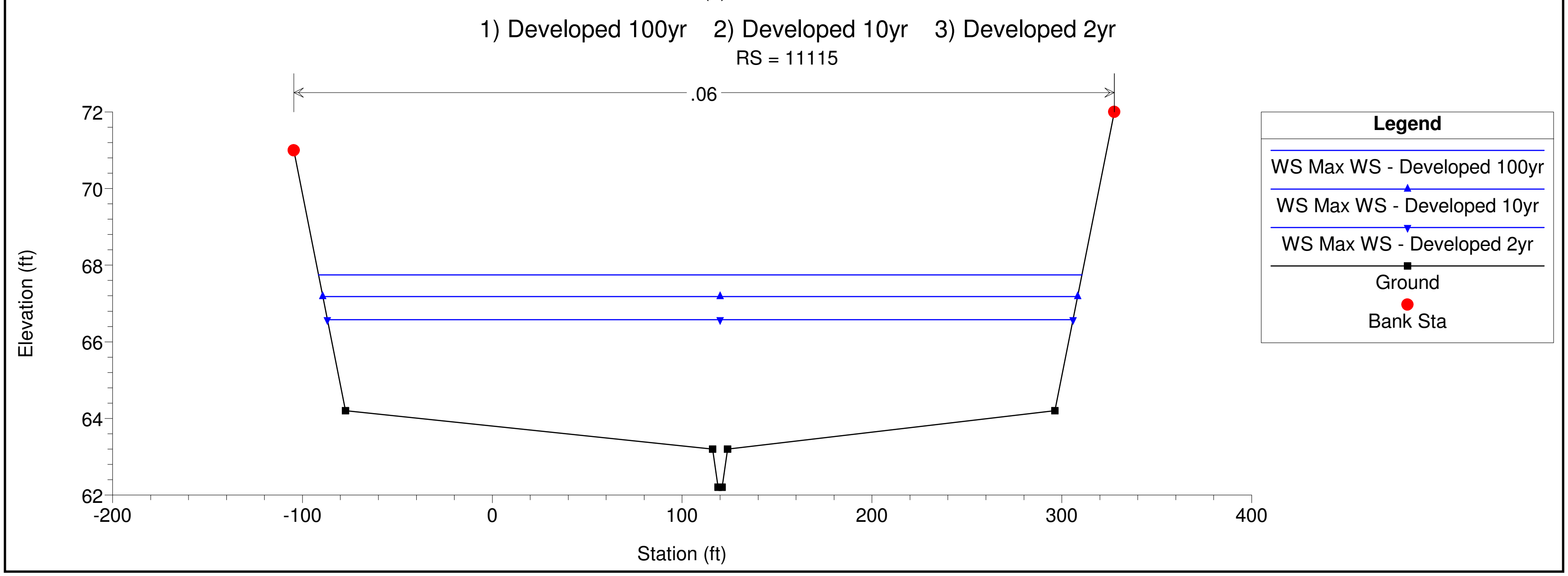
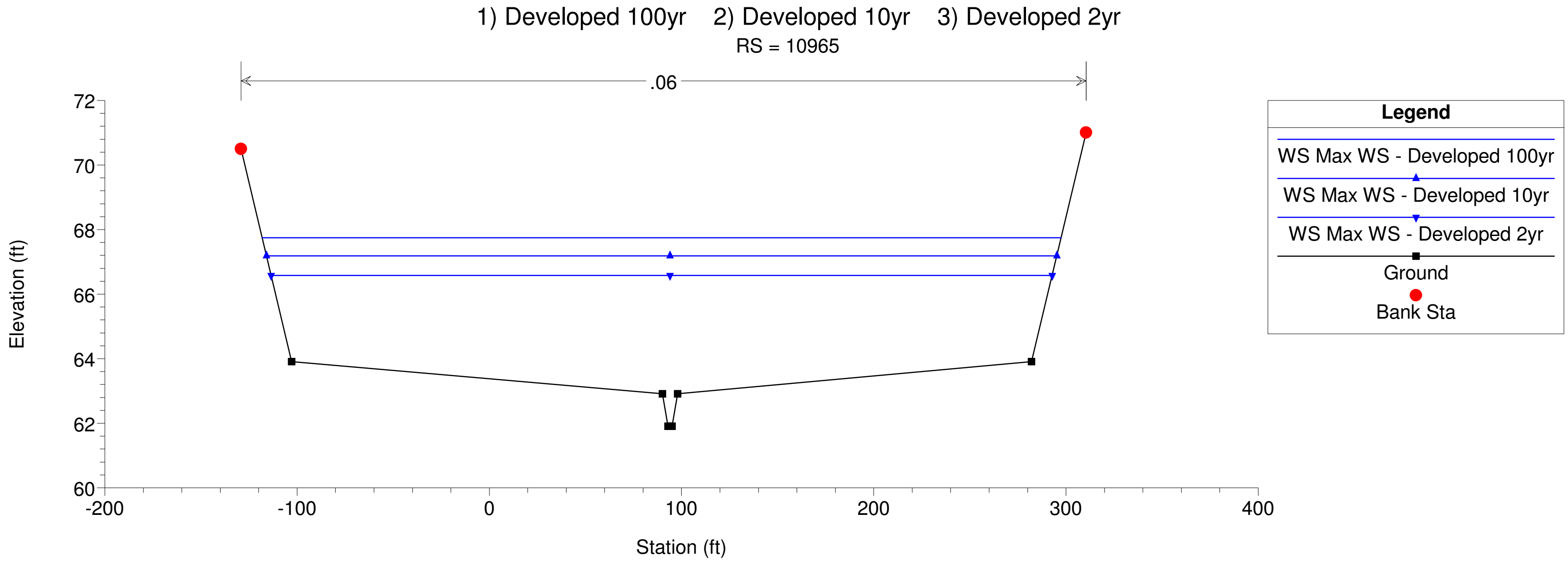
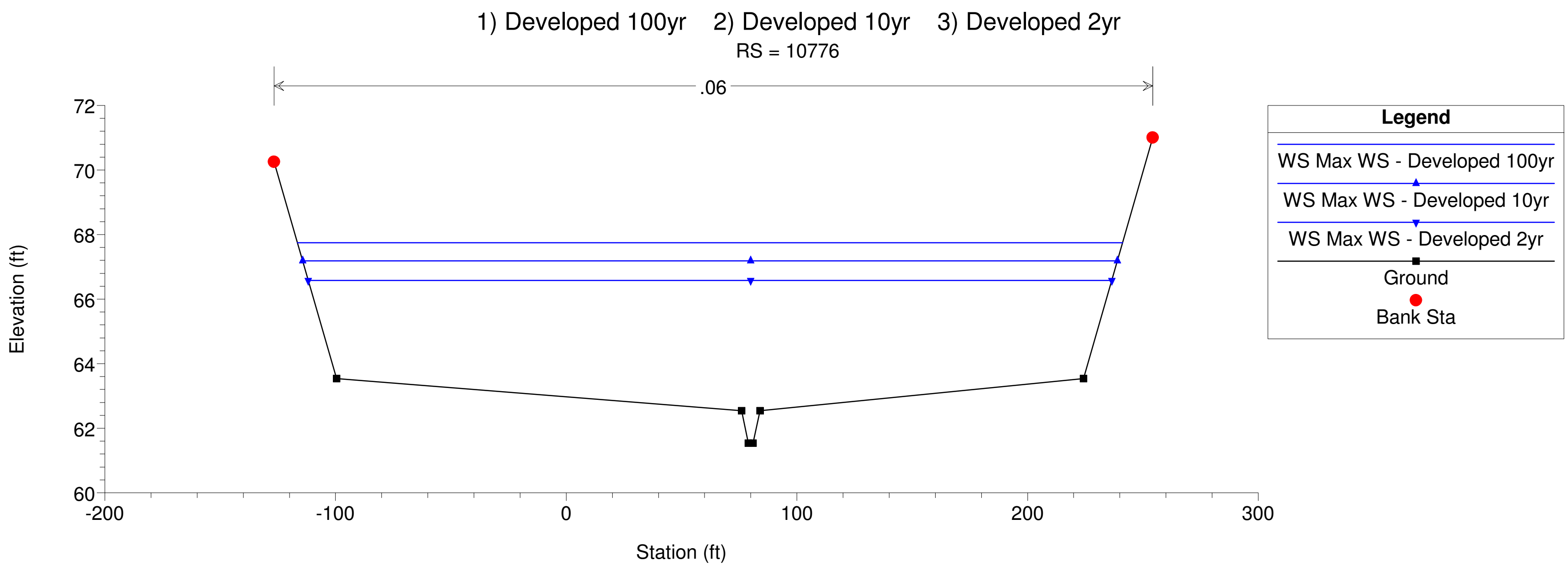
RS = 11385
.06
Elevation (ft)
74
72
70
68
66
64
62
-100
0
100
200
300
400
500
Station (ft)
Legend
WS Max WS - Developed 100yr
WS Max WS - Developed 10yr
WS Max WS - Developed 2yr
Ground
Bank Sta


1) Developed 100yr 2) Developed 10yr 3) Developed 2yr
RS = 11115
.06
Elevation (ft)
72
70
68
66
64
62
-200
-100
0
100
200
300
400
Station (ft)
Legend
WS Max WS - Developed 100yr
WS Max WS - Developed 10yr
WS Max WS - Developed 2yr
Ground
Bank Sta


1) Developed 100yr 2) Developed 10yr 3) Developed 2yr
RS = 10965
.06
Elevation (ft)
72
70
68
66
64
62
60
-200
-100
0
100
200
300
400
Station (ft)
Legend
WS Max WS - Developed 100yr
WS Max WS - Developed 10yr
WS Max WS - Developed 2yr
Ground
Bank Sta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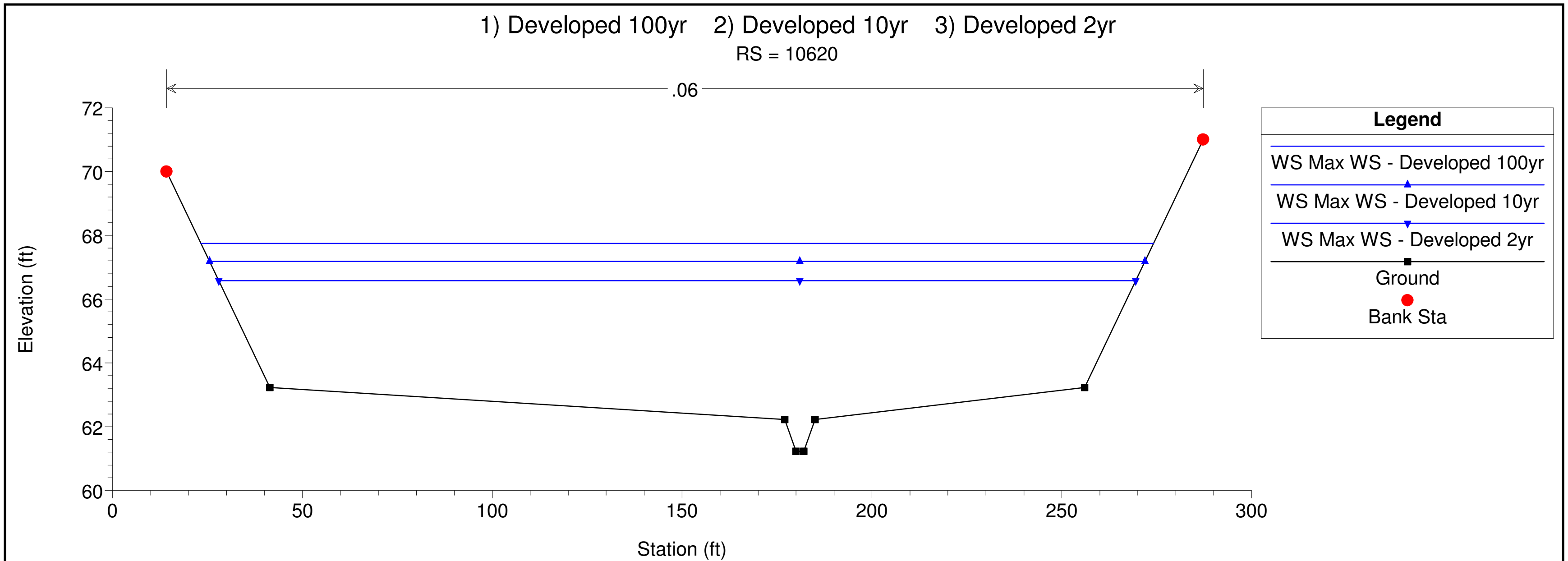
RS = 10776
.06
Elevation (ft)
72
70
68
66
64
62
60
-200
-100
0
100
200
300
Station (ft)
Legend
WS Max WS - Developed 100yr
WS Max WS - Developed 10yr
WS Max WS - Developed 2yr
Ground
Bank Sta



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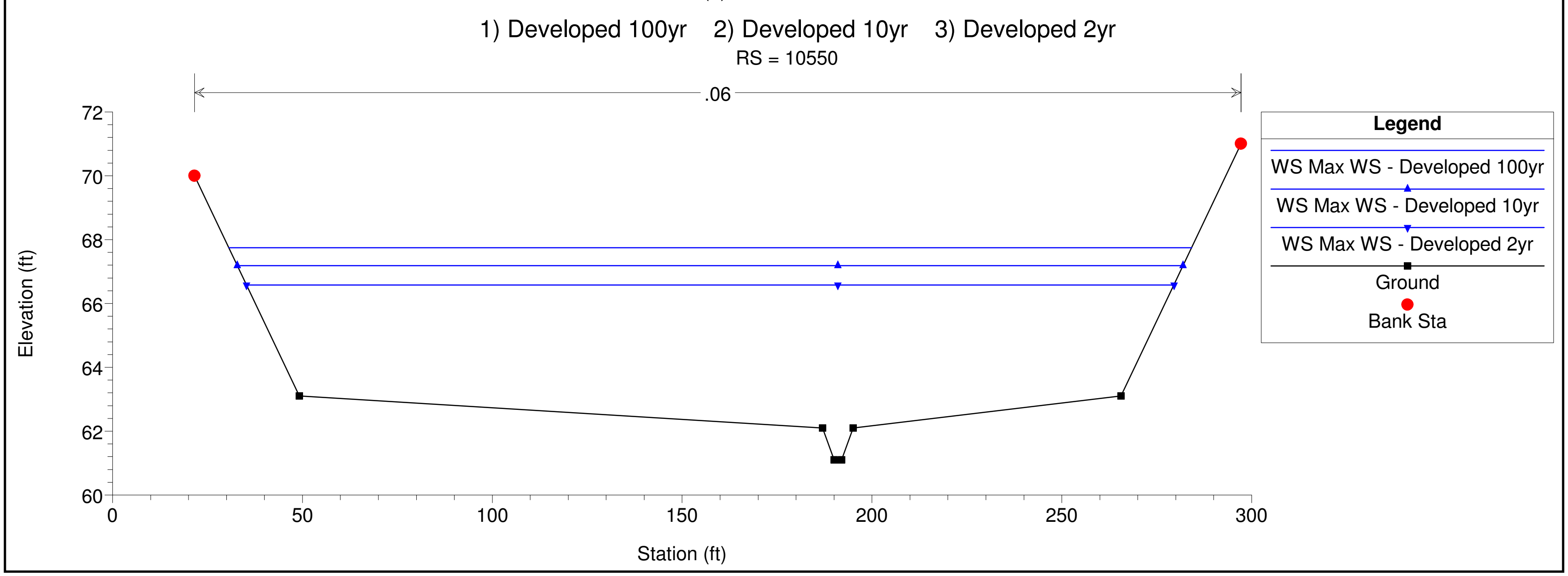
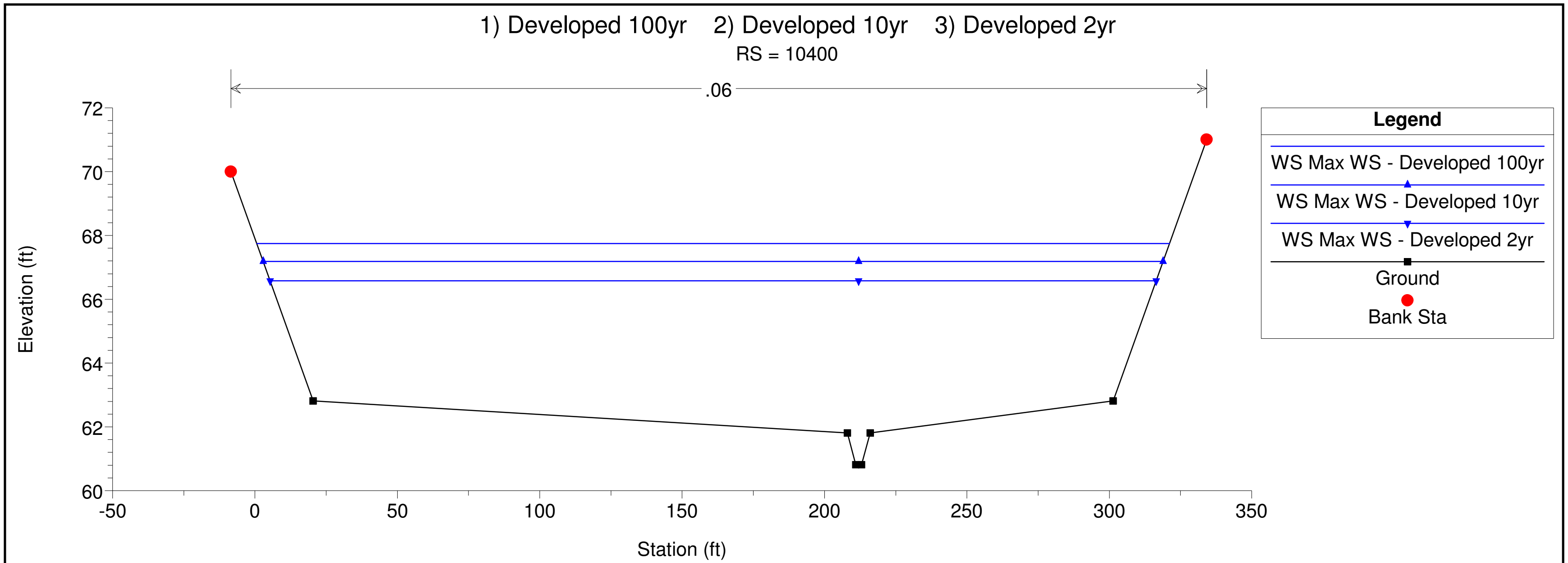
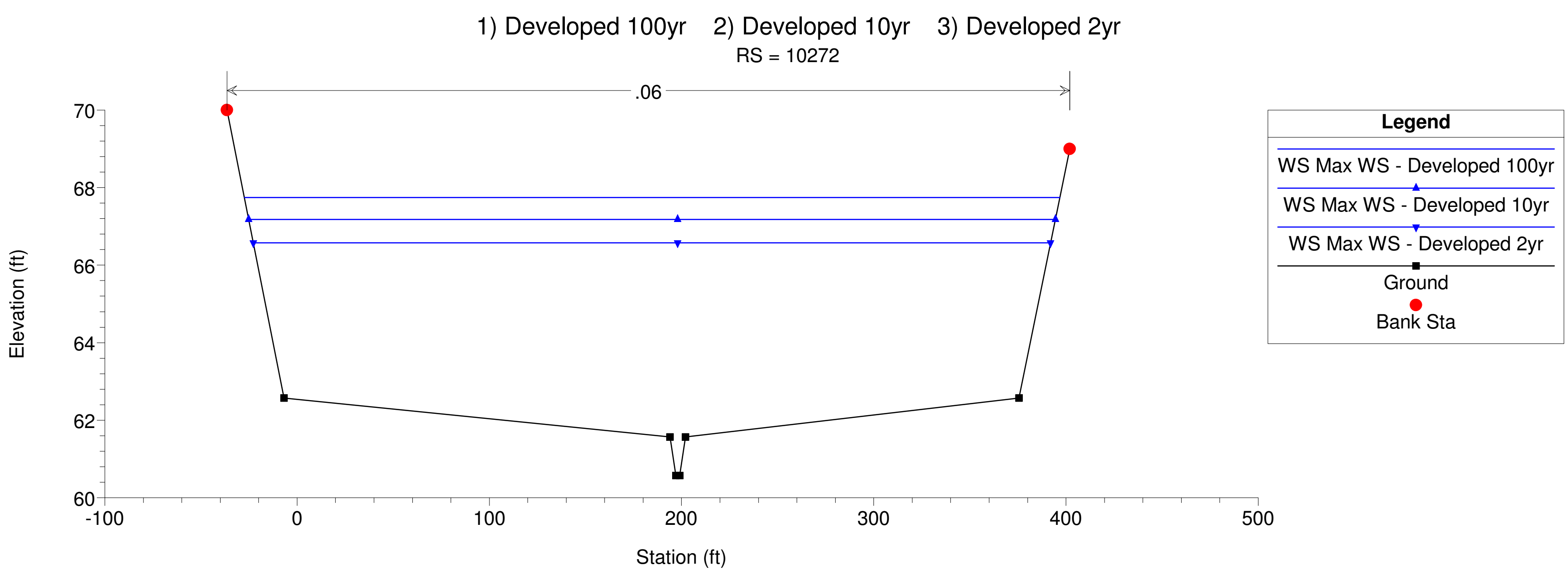
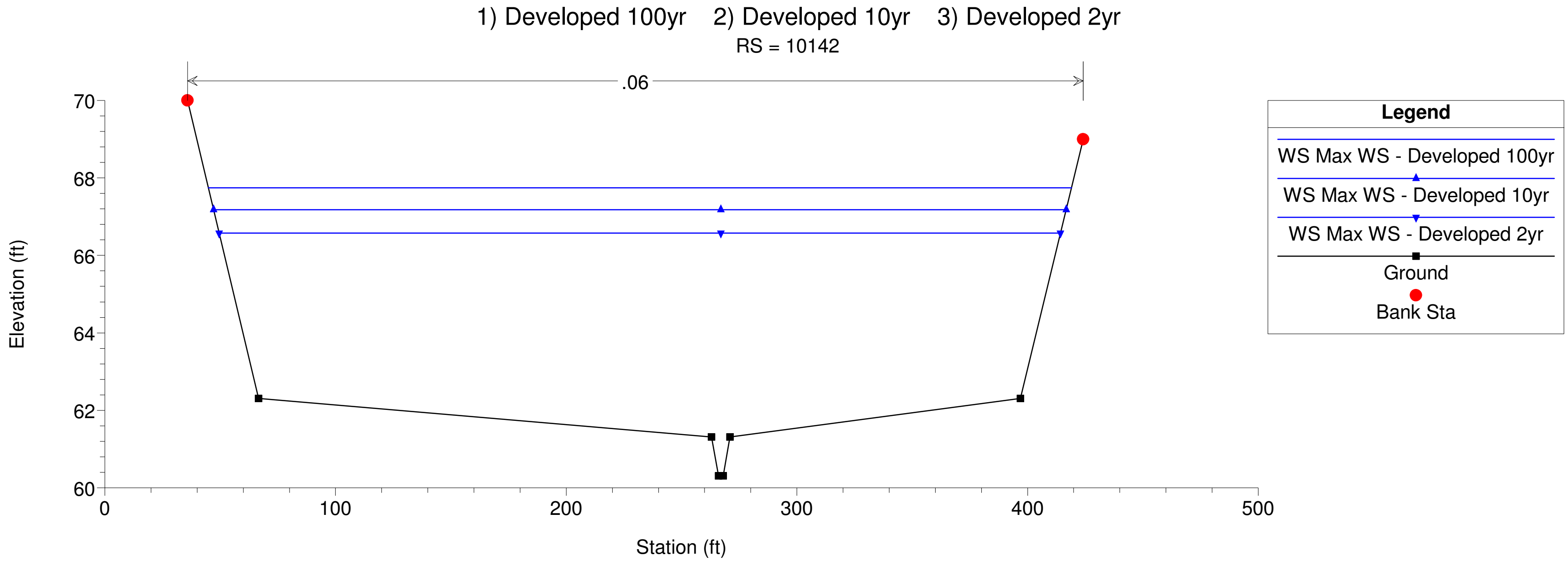
RS = 10620
.06
Elevation (ft)
72
70
68
66
64
62
60
0
50
100
150
200
250
300
Station (ft)
Legend
WS Max WS - Developed 100yr
WS Max WS - Developed 10yr
WS Max WS - Developed 2yr
Ground
Bank Sta

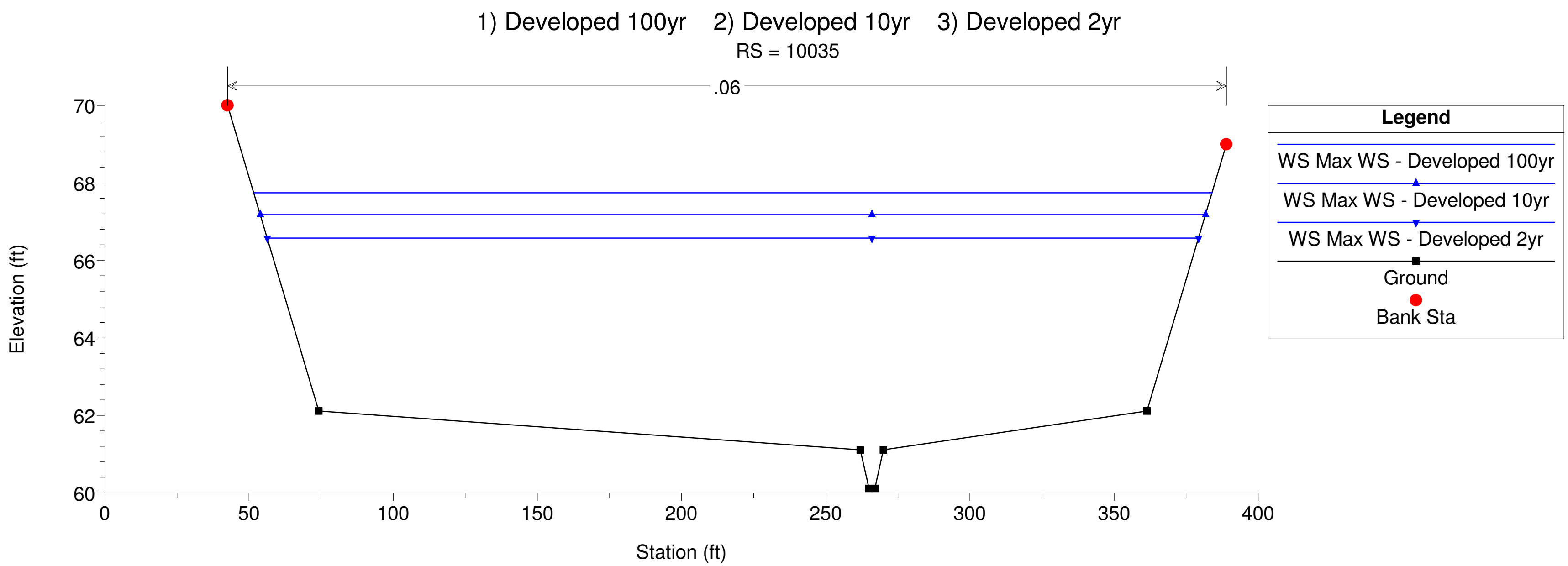


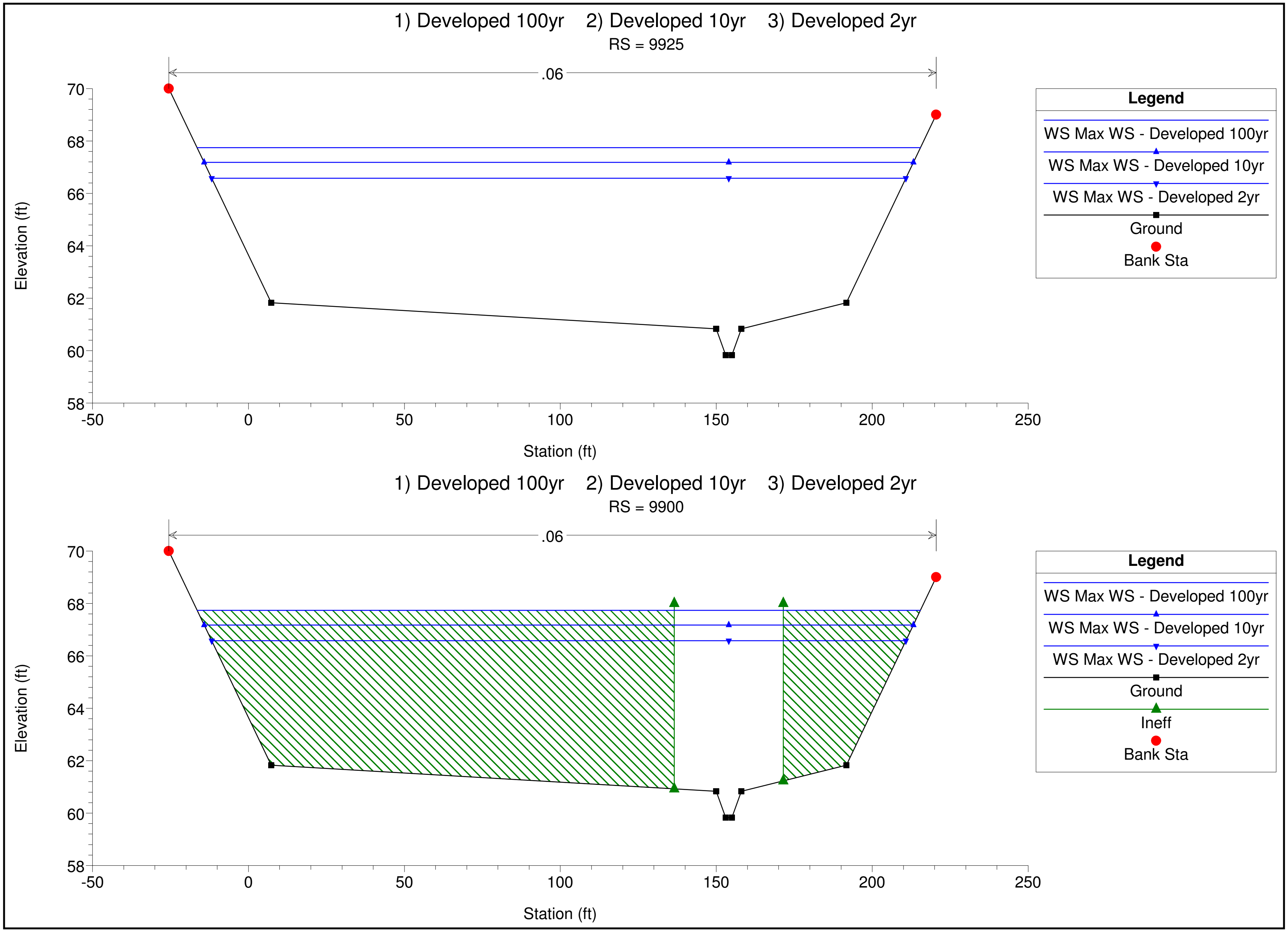
1) Developed 100yr 2) Developed 10yr 3) Developed 2yr
RS = 10550
.06
Elevation (ft)
72
70
68
66
64
62
60
0
50
100
150
200
250
300
Station (ft)
Legend
WS Max WS - Developed 100yr
WS Max WS - Developed 10yr
WS Max WS - Developed 2yr
Ground
Bank Sta


1) Developed 100yr 2) Developed 10yr 3) Developed 2yr
RS = 10400
.06
Elevation (ft)
Station (ft)
Legend
WS Max WS - Developed 100yr
WS Max WS - Developed 10yr
WS Max WS - Developed 2yr
Ground
Bank Sta

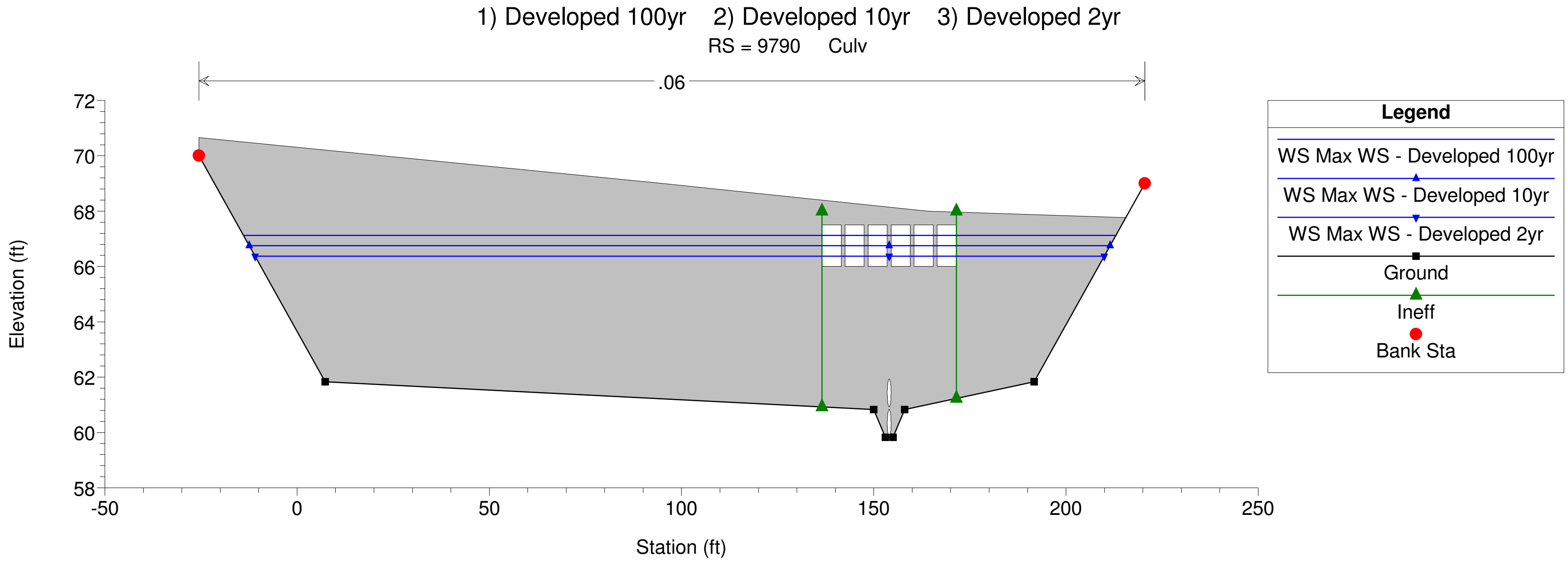

1) Developed 100yr 2) Developed 10yr 3) Developed 2yr
RS = 10272
.06
Elevation (ft)
Station (ft)
Legend
WS Max WS - Developed 100yr
WS Max WS - Developed 10yr
WS Max WS - Developed 2yr
Ground
Bank Sta


1) Developed 100yr 2) Developed 10yr 3) Developed 2yr
RS = 10142
.06
Elevation (ft)
Station (ft)
Legend
WS Max WS - Developed 100yr
WS Max WS - Developed 10yr
WS Max WS - Developed 2yr
Ground
Bank Sta

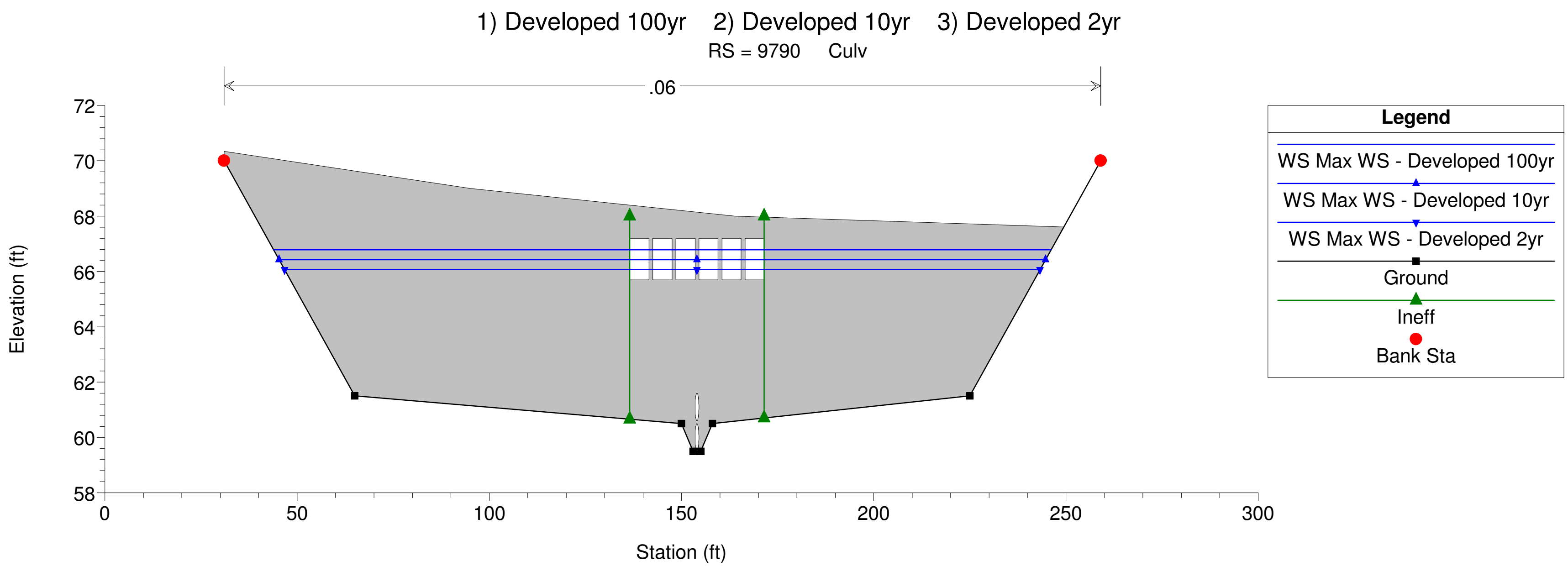

1) Developed 100yr 2) Developed 10yr 3) Developed 2yr
RS = 10035
.06
Elevation (ft)
Station (ft)
Legend
WS Max WS - Developed 100yr
WS Max WS - Developed 10yr
WS Max WS - Developed 2yr
Ground
Bank Sta



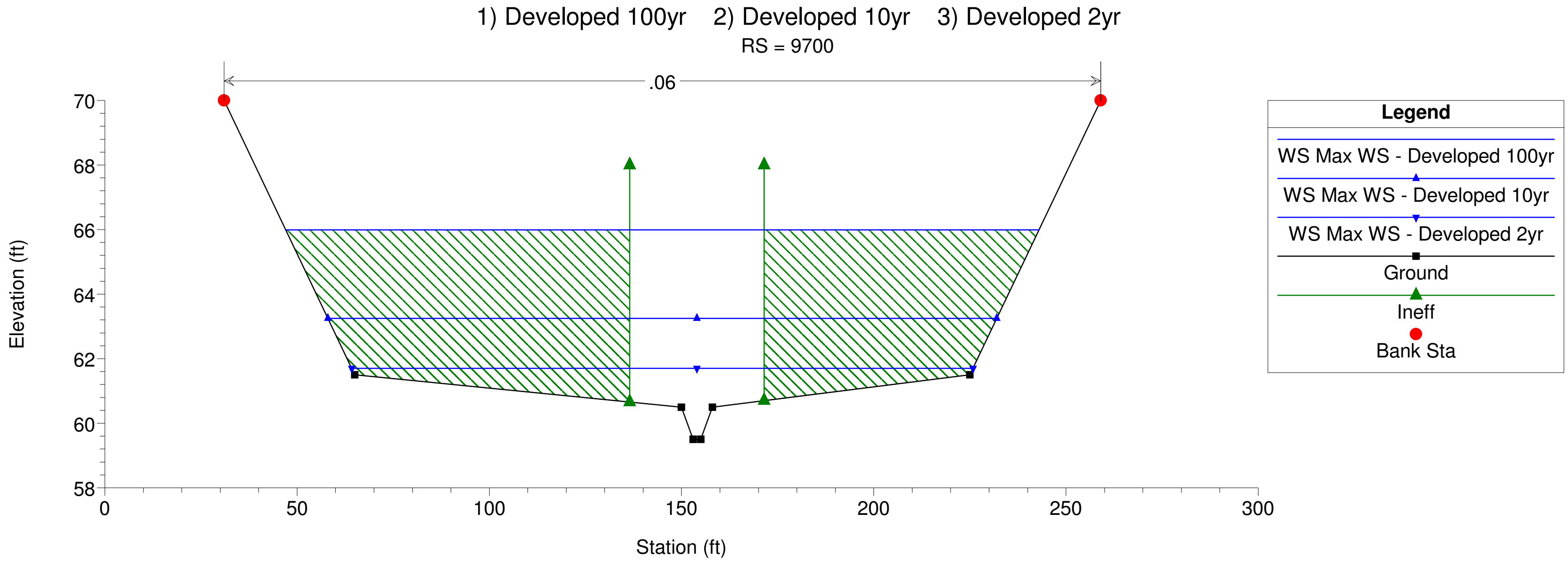
1) Developed 100yr 2) Developed 10yr 3) Developed 2yr
RS = 9925
.06
Elevation (ft)
70
68
66
64
62
60
58
-50
0
50
100
150
200
250
Station (ft)
Legend
WS Max WS - Developed 100yr
WS Max WS - Developed 10yr
WS Max WS - Developed 2yr
Ground
Bank Sta
1) Developed 100yr 2) Developed 10yr 3) Developed 2yr
RS = 9900
.06
Elevation (ft)
70
68
66
64
62
60
58
-50
0
50
100
150
200
250
Station (ft)
Legend
WS Max WS - Developed 100yr
WS Max WS - Developed 10yr
WS Max WS - Developed 2yr
Ground
Ineff
Bank Sta



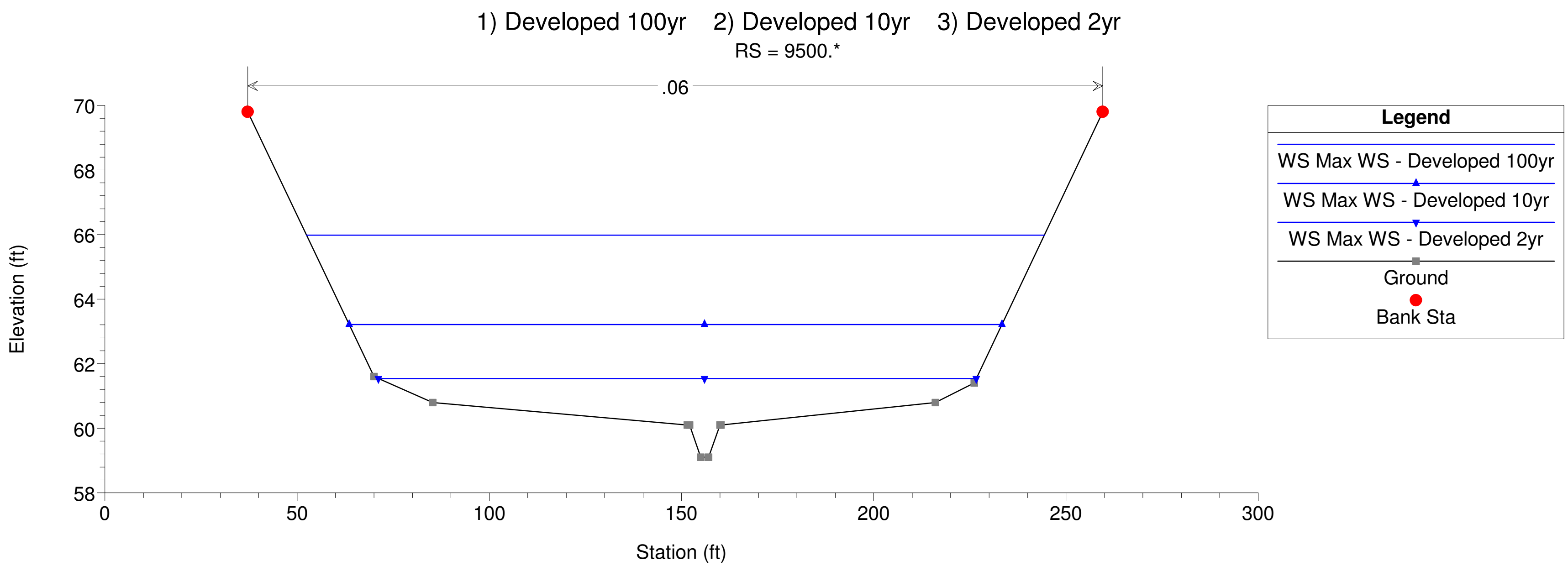
1) Developed 100yr 2) Developed 10yr 3) Developed 2yr
RS = 9790 Culv
.06
Elevation (ft)
72
70
68
66
64
62
60
58
-50
0
50
100
150
200
250
Station (ft)
Legend
WS Max WS - Developed 100yr
WS Max WS - Developed 10yr
WS Max WS - Developed 2yr
Ground
Ineff
Bank Sta



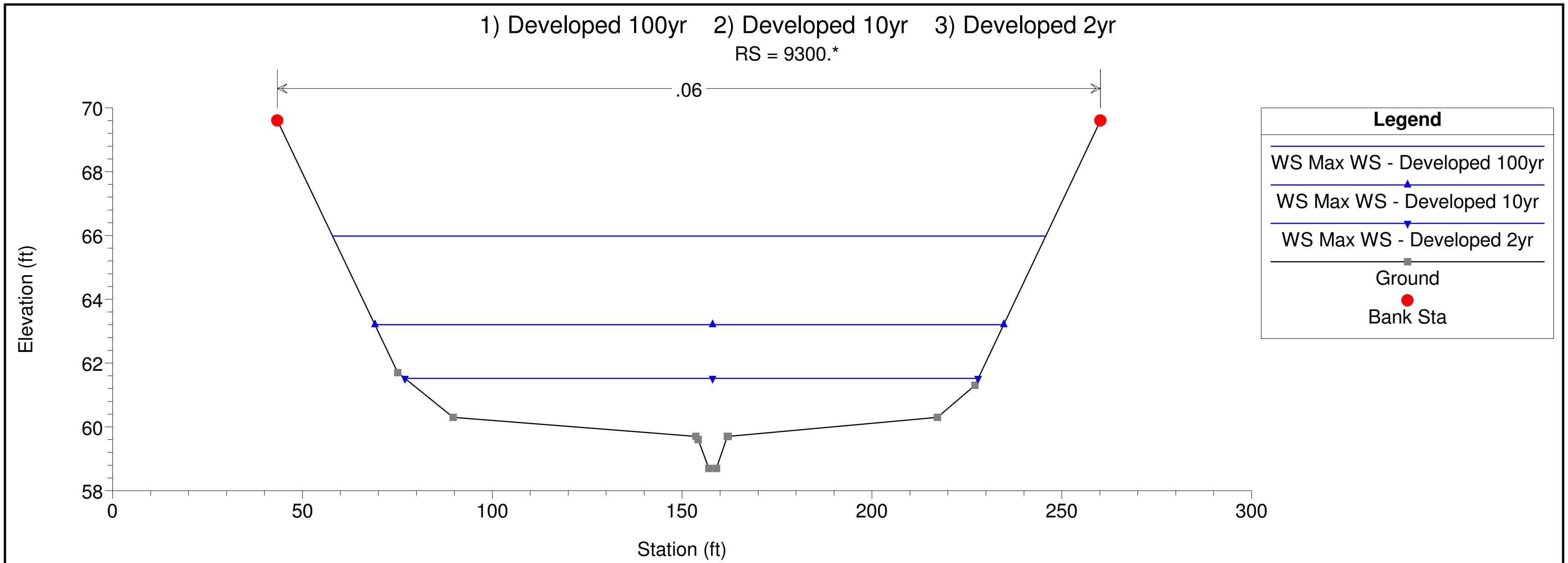
1) Developed 100yr 2) Developed 10yr 3) Developed 2yr
RS = 9790 Culv
.06
Elevation (ft)
72
70
68
66
64
62
60
58
0
50
100
150
200
250
300
Station (ft)
Legend
WS Max WS - Developed 100yr
WS Max WS - Developed 10yr
WS Max WS - Developed 2yr
Ground
Ineff
Bank Sta

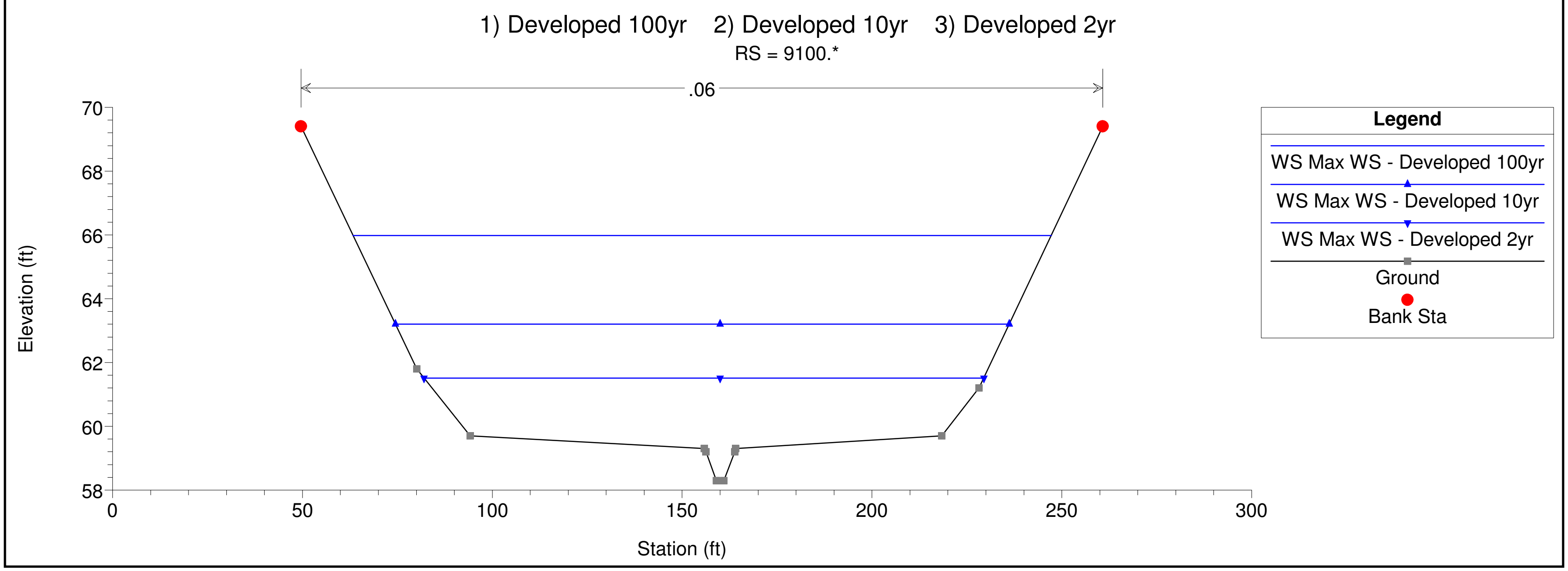


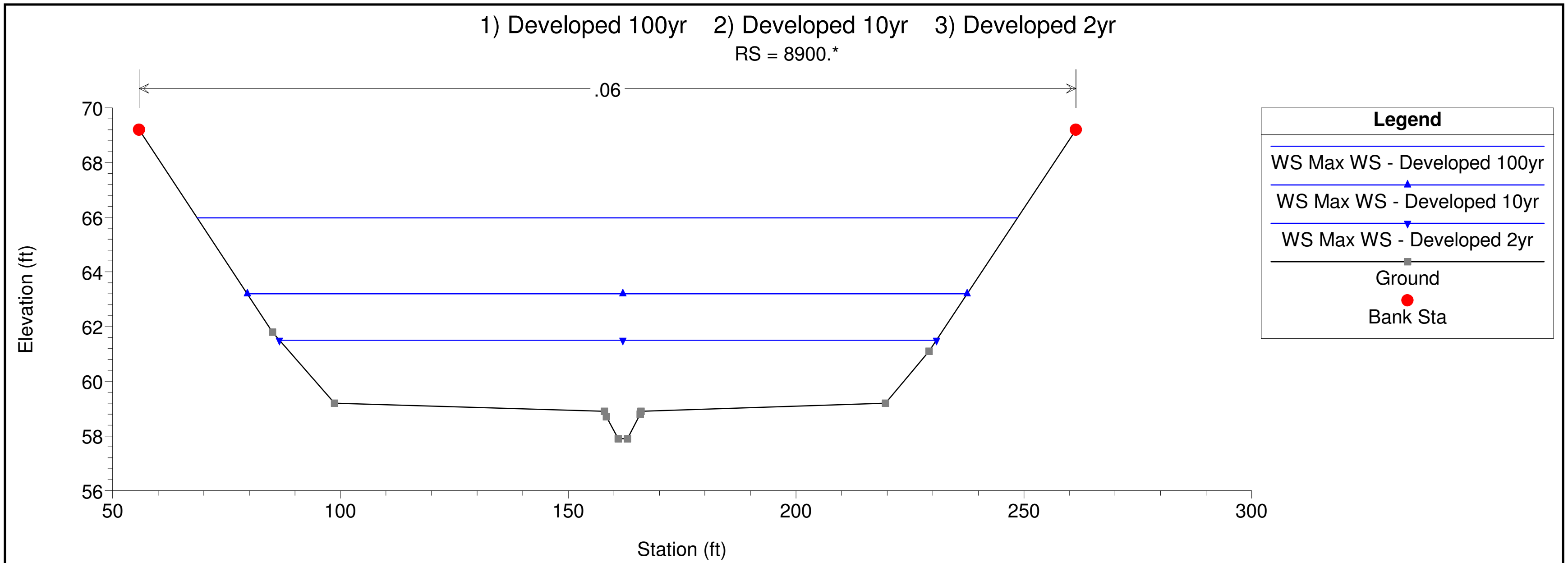
1) Developed 100yr 2) Developed 10yr 3) Developed 2yr
RS = 9700
.06
Elevation (ft)
70
68
66
64
62
60
58
0
50
100
150
200
250
300
Station (ft)
Legend
WS Max WS - Developed 100yr
WS Max WS - Developed 10yr
WS Max WS - Developed 2yr
Ground
Ineff
Bank Sta



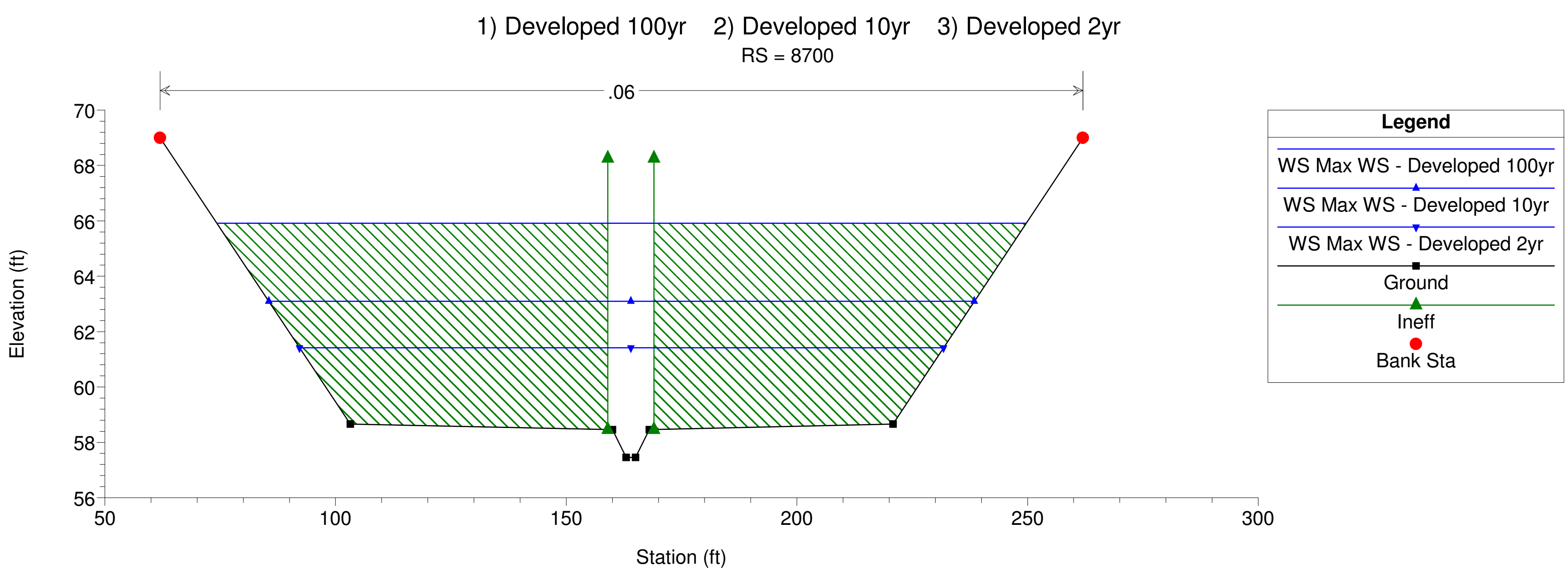
1) Developed 100yr 2) Developed 10yr 3) Developed 2yr
RS = 9500.*
.06
Elevation (ft)
70
68
66
64
62
60
58
0
50
100
150
200
250
300
Station (ft)
Legend
WS Max WS - Developed 100yr
WS Max WS - Developed 10yr
WS Max WS - Developed 2yr
Ground
Bank Sta


1) Developed 100yr 2) Developed 10yr 3) Developed 2yr
RS = 9300.*
.06
Elevation (ft)
Station (ft)
70
68
66
64
62
60
58
0
50
100
150
200
250
300
Legend
WS Max WS - Developed 100yr
WS Max WS - Developed 10yr
WS Max WS - Developed 2yr
Ground
Bank Sta

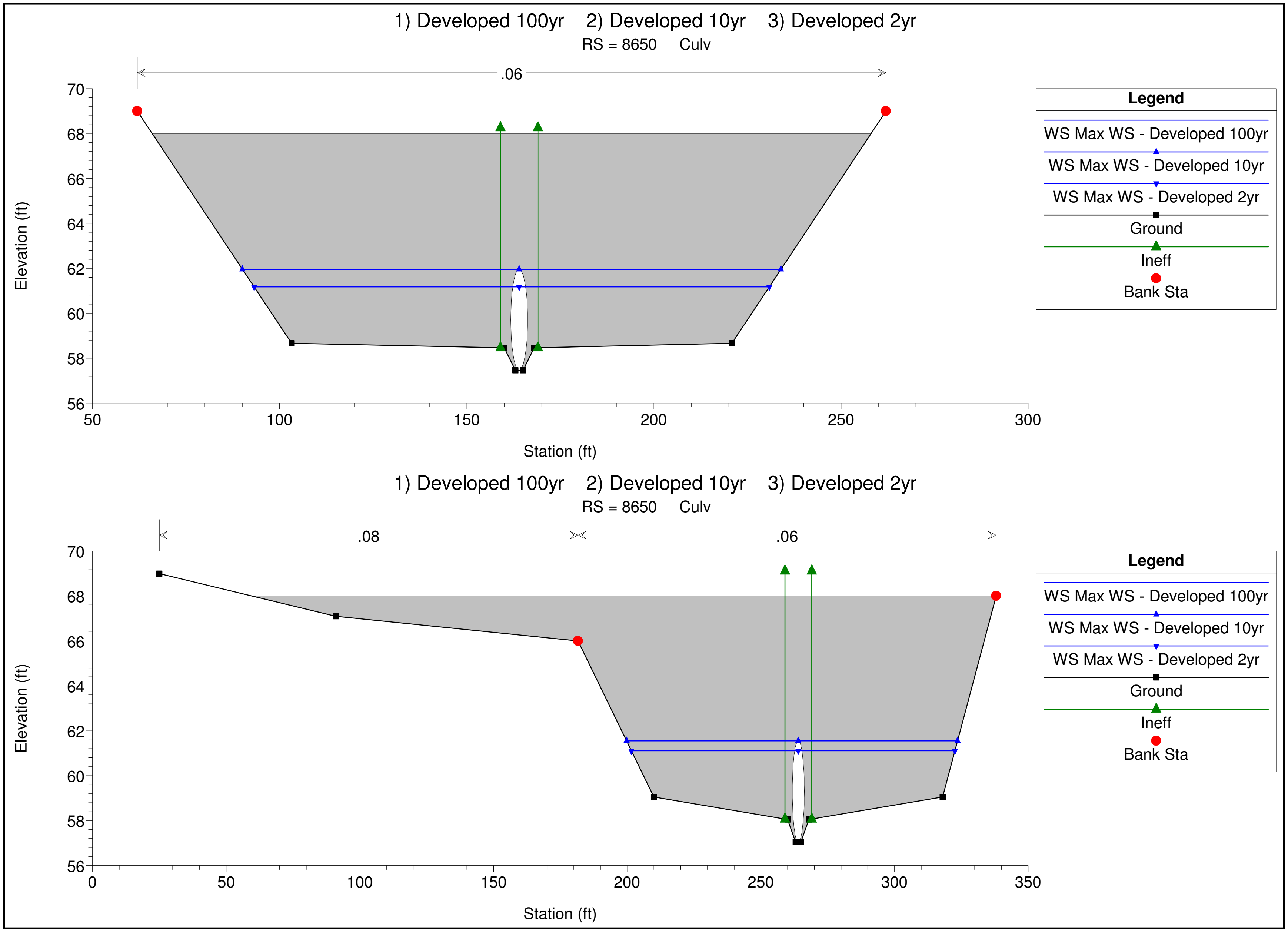

1) Developed 100yr 2) Developed 10yr 3) Developed 2yr
RS = 9100.*
.06
Elevation (ft)
Station (ft)
70
68
66
64
62
60
58
0
50
100
150
200
250
300
Legend
WS Max WS - Developed 100yr
WS Max WS - Developed 10yr
WS Max WS - Developed 2yr
Ground
Bank Sta



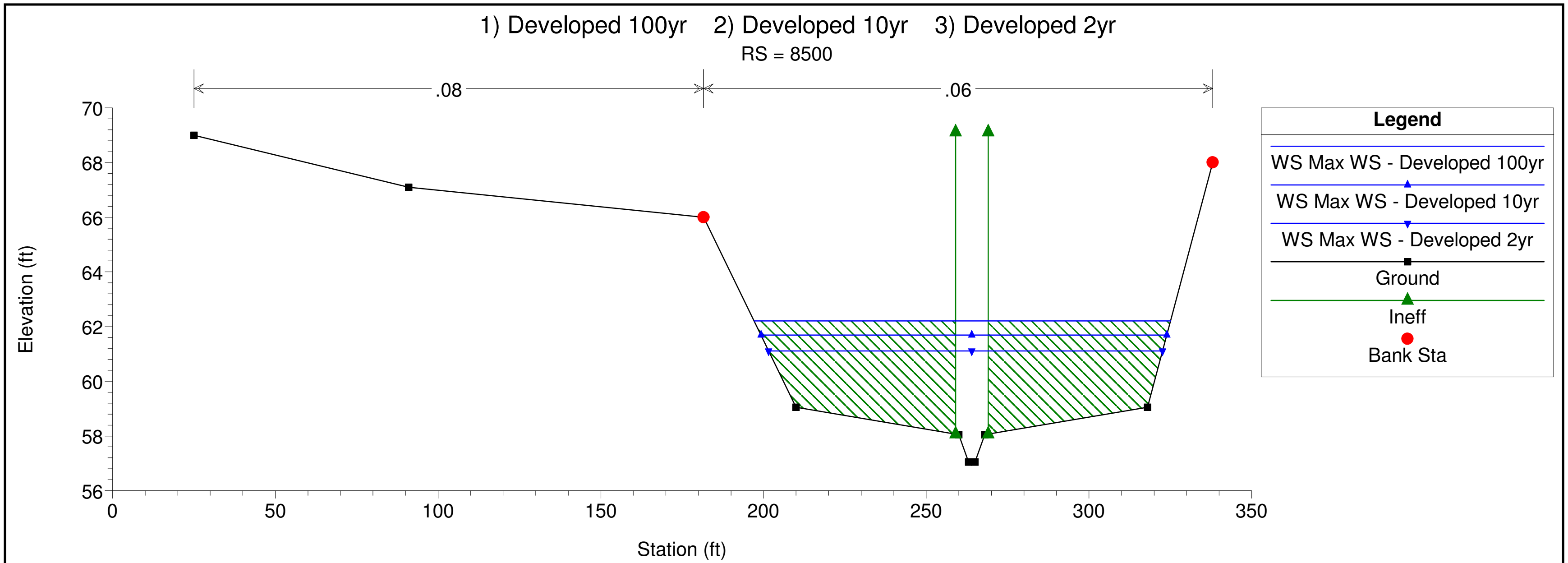
1) Developed 100yr 2) Developed 10yr 3) Developed 2yr
RS = 8900.*
.06
Elevation (ft)
70
68
66
64
62
60
58
56
50
100
150
200
250
300
Station (ft)
Legend
WS Max WS - Developed 100yr
WS Max WS - Developed 10yr
WS Max WS - Developed 2yr
Ground
Bank Sta



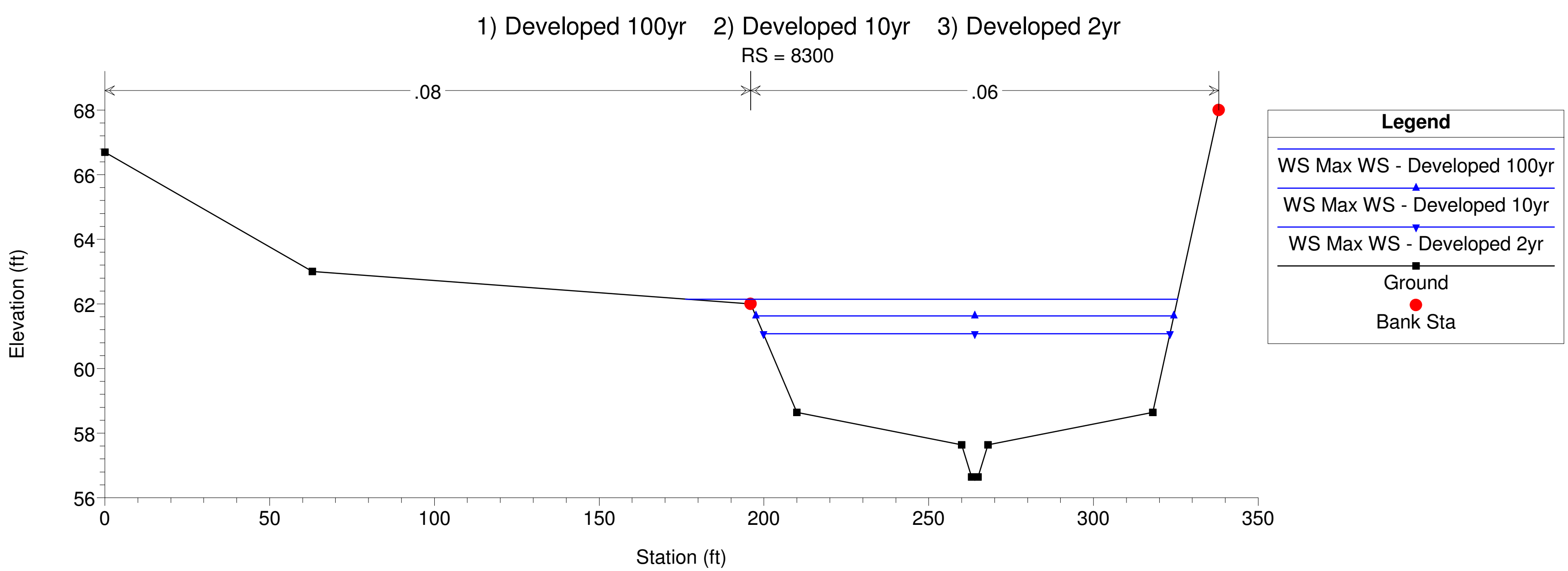
1) Developed 100yr 2) Developed 10yr 3) Developed 2yr
RS = 8700
.06
Elevation (ft)
70
68
66
64
62
60
58
56
50
100
150
200
250
300
Station (ft)
Legend
WS Max WS - Developed 100yr
WS Max WS - Developed 10yr
WS Max WS - Developed 2yr
Ground
Ineff
Bank Sta



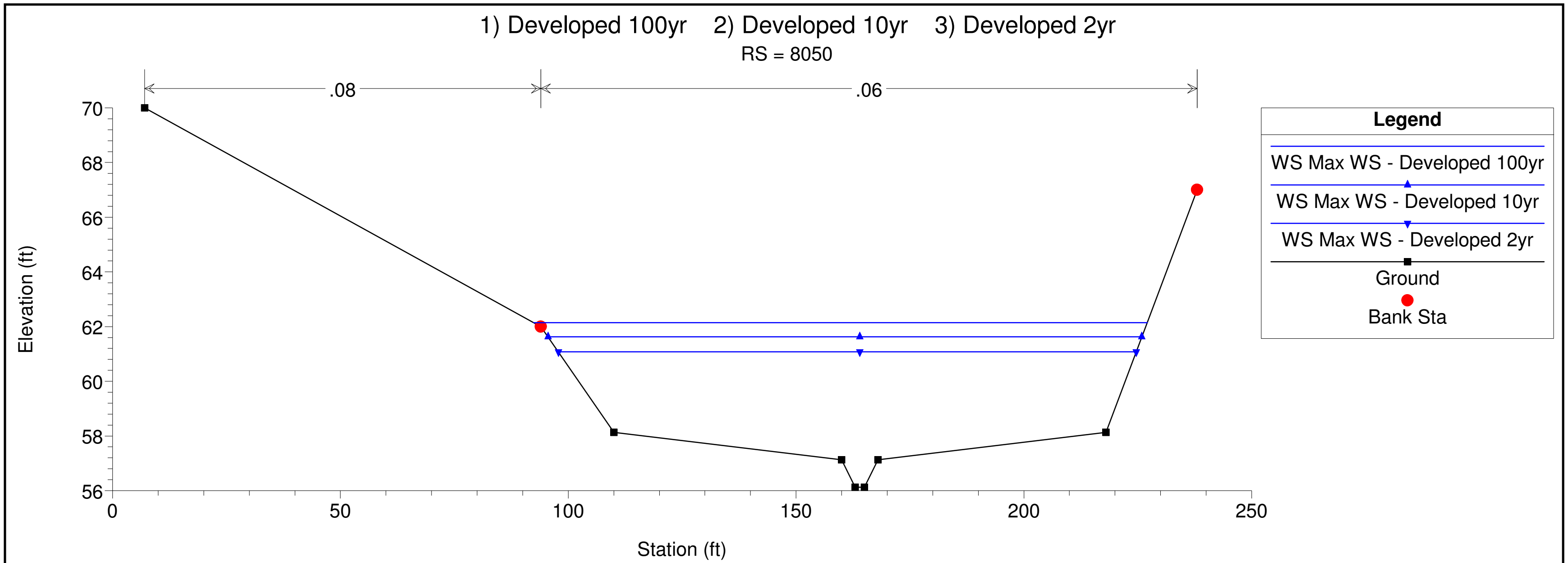
1) Developed 100yr 2) Developed 10yr 3) Developed 2yr
RS = 8650 Culv
.06
Elevation (ft)
Station (ft)
Legend
WS Max WS - Developed 100yr
WS Max WS - Developed 10yr
WS Max WS - Developed 2yr
Ground
Ineff
Bank Sta
1) Developed 100yr 2) Developed 10yr 3) Developed 2yr
RS = 8650 Culv
.08
.06
Elevation (ft)
Station (ft)
Legend
WS Max WS - Developed 100yr
WS Max WS - Developed 10yr
WS Max WS - Developed 2yr
Ground
Ineff
Bank Sta

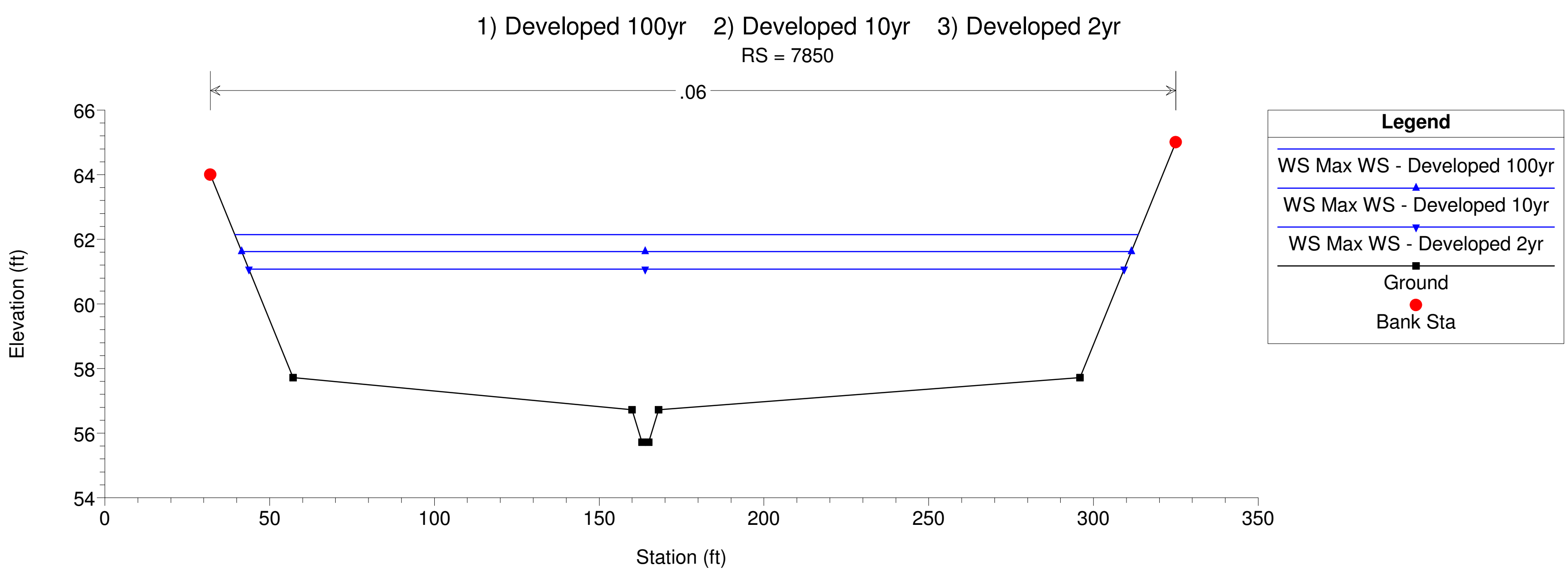


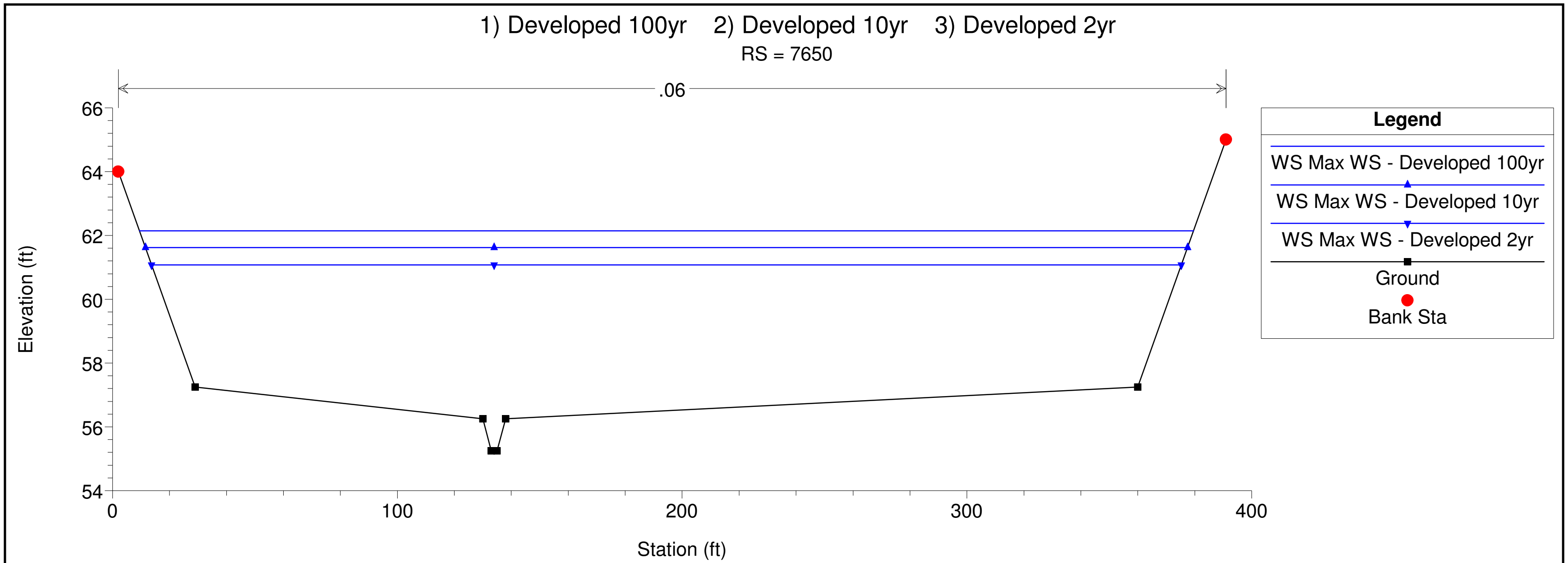
1) Developed 100yr 2) Developed 10yr 3) Developed 2yr
RS = 8500
.08
.06
Elevation (ft)
70
68
66
64
62
60
58
56
0
50
100
150
200
250
300
350
Station (ft)
Legend
WS Max WS - Developed 100yr
WS Max WS - Developed 10yr
WS Max WS - Developed 2yr
Ground
Ineff
Bank Sta

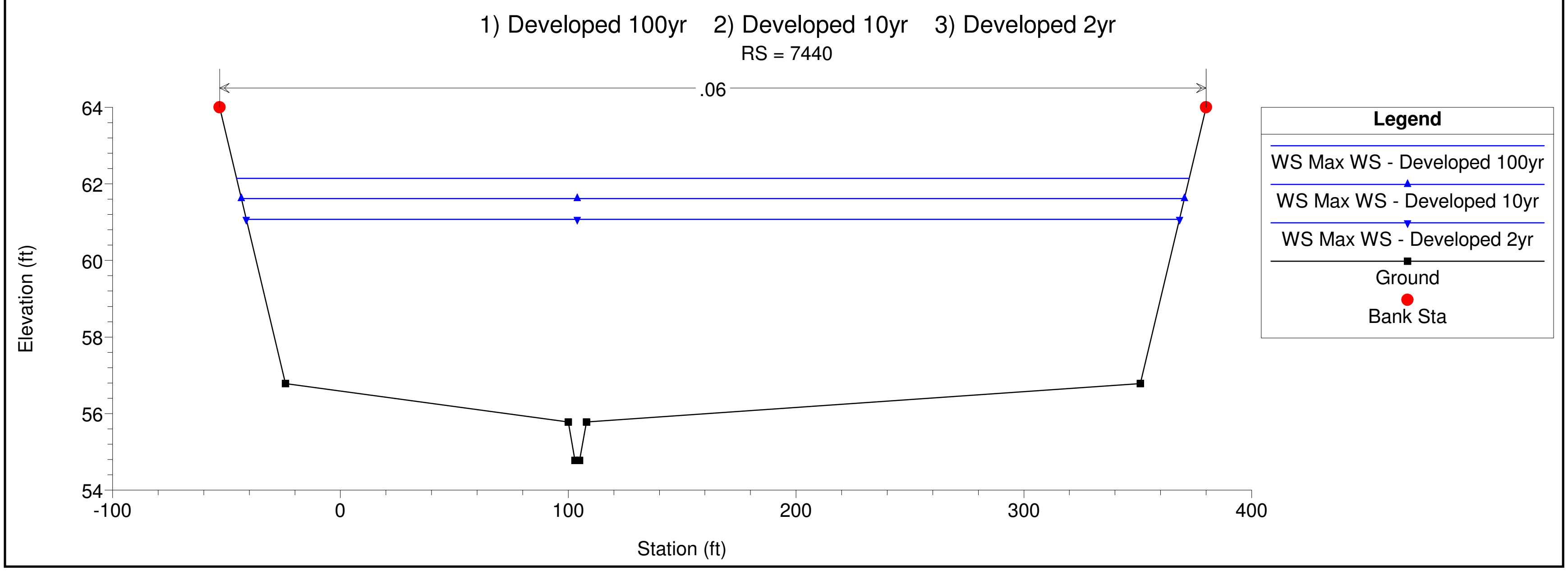


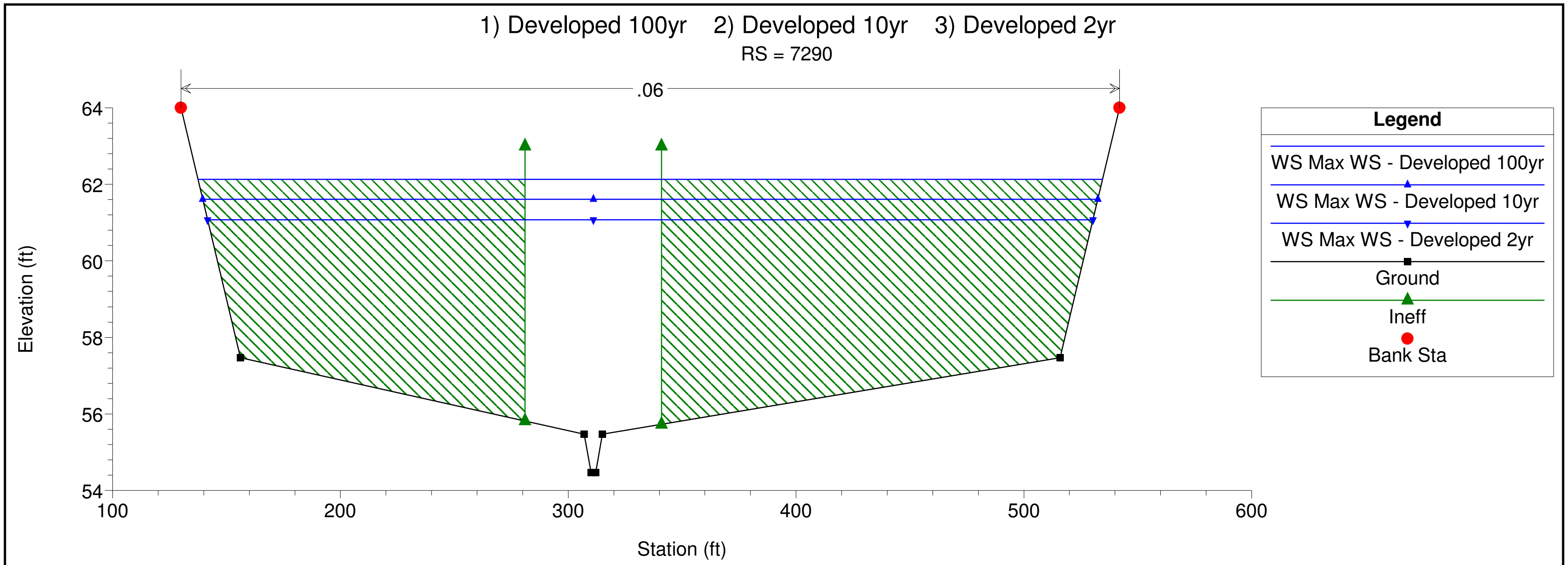
1) Developed 100yr 2) Developed 10yr 3) Developed 2yr
RS = 8300
.08
.06
Elevation (ft)
68
66
64
62
60
58
56
0
50
100
150
200
250
300
350
Station (ft)
Legend
WS Max WS - Developed 100yr
WS Max WS - Developed 10yr
WS Max WS - Developed 2yr
Ground
Bank Sta

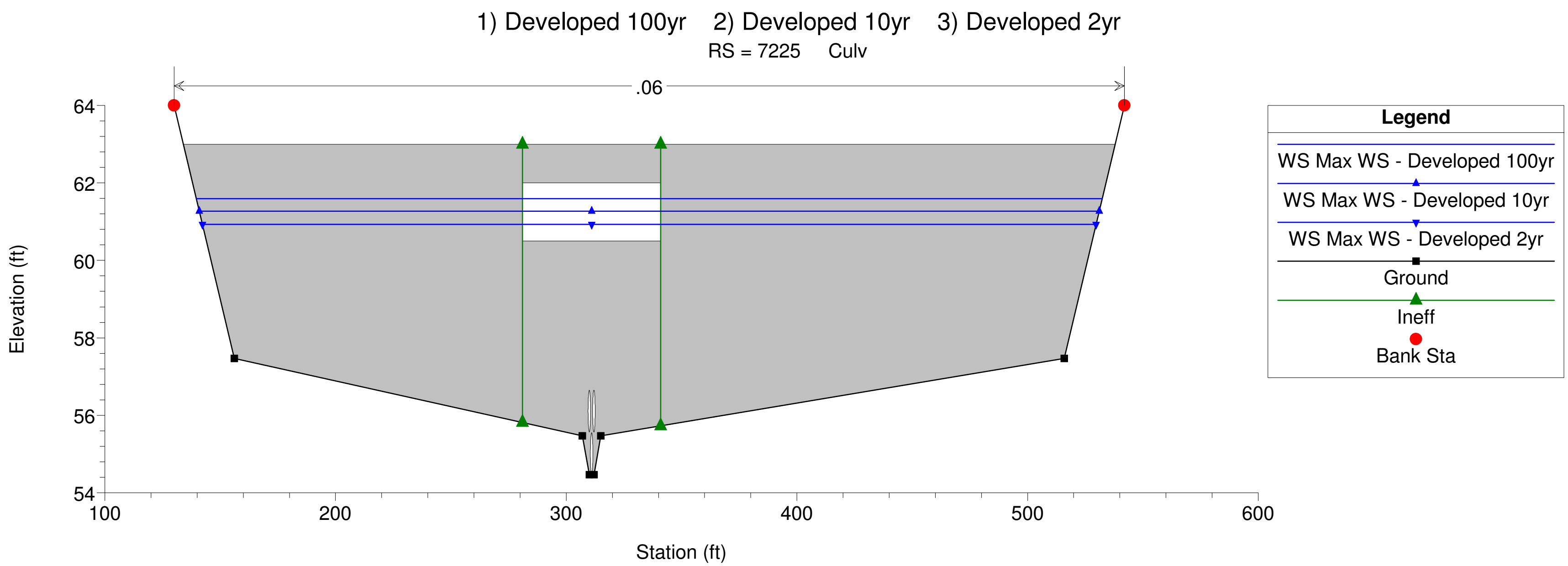

1) Developed 100yr 2) Developed 10yr 3) Developed 2yr
RS = 8050
.08
.06
Elevation (ft)
70
68
66
64
62
60
58
56
0
50
100
150
200
250
Station (ft)
Legend
WS Max WS - Developed 100yr
WS Max WS - Developed 10yr
WS Max WS - Developed 2yr
Ground
Bank Sta

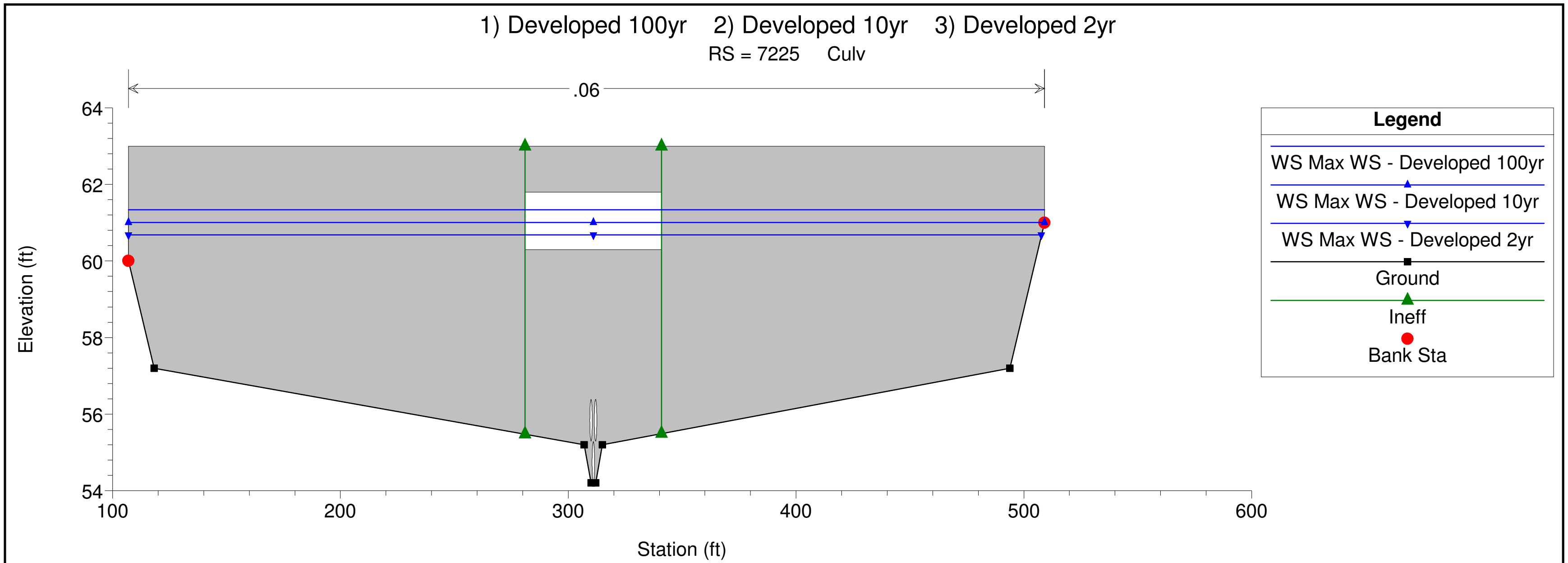

1) Developed 100yr 2) Developed 10yr 3) Developed 2yr
RS = 7850
.06
Elevation (ft)
66
64
62
60
58
56
54
0
50
100
150
200
250
300
350
Station (ft)
Legend
WS Max WS - Developed 100yr
WS Max WS - Developed 10yr
WS Max WS - Developed 2yr
Ground
Bank Sta

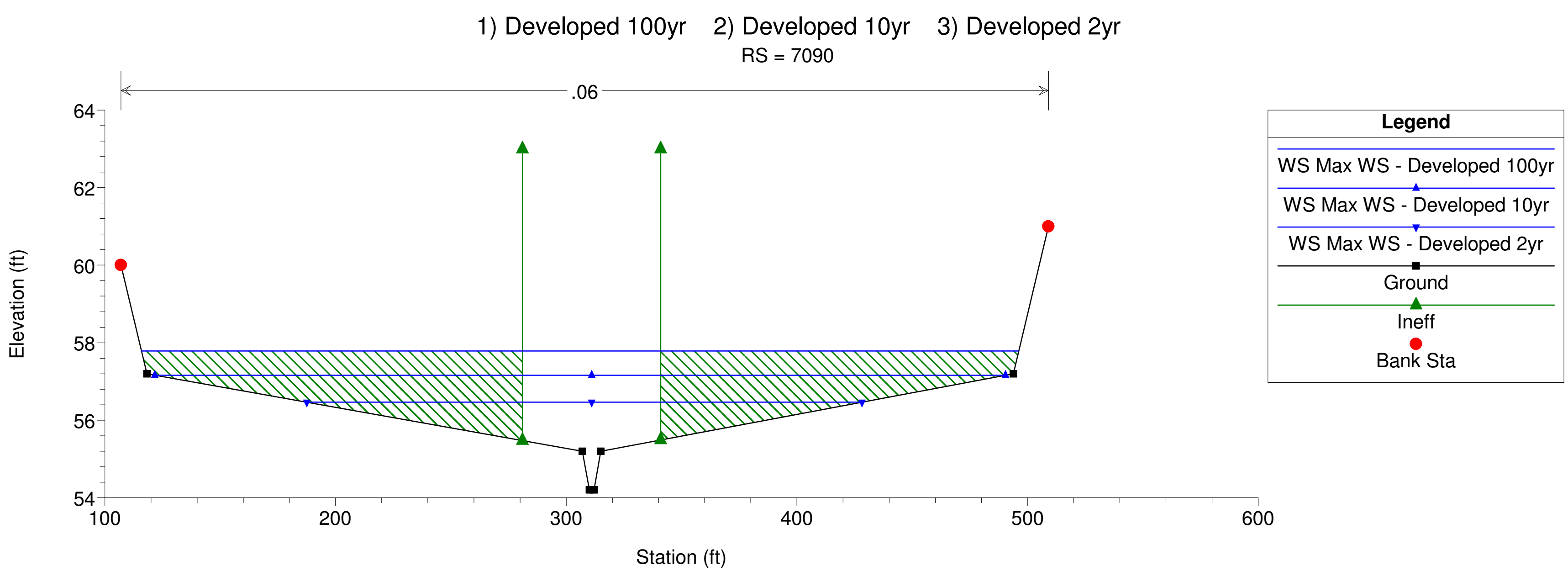

1) Developed 100yr 2) Developed 10yr 3) Developed 2yr
RS = 7650
.06
Elevation (ft)
66
64
62
60
58
56
54
0
100
200
300
400
Station (ft)
Legend
WS Max WS - Developed 100yr
WS Max WS - Developed 10yr
WS Max WS - Developed 2yr
Ground
Bank Sta

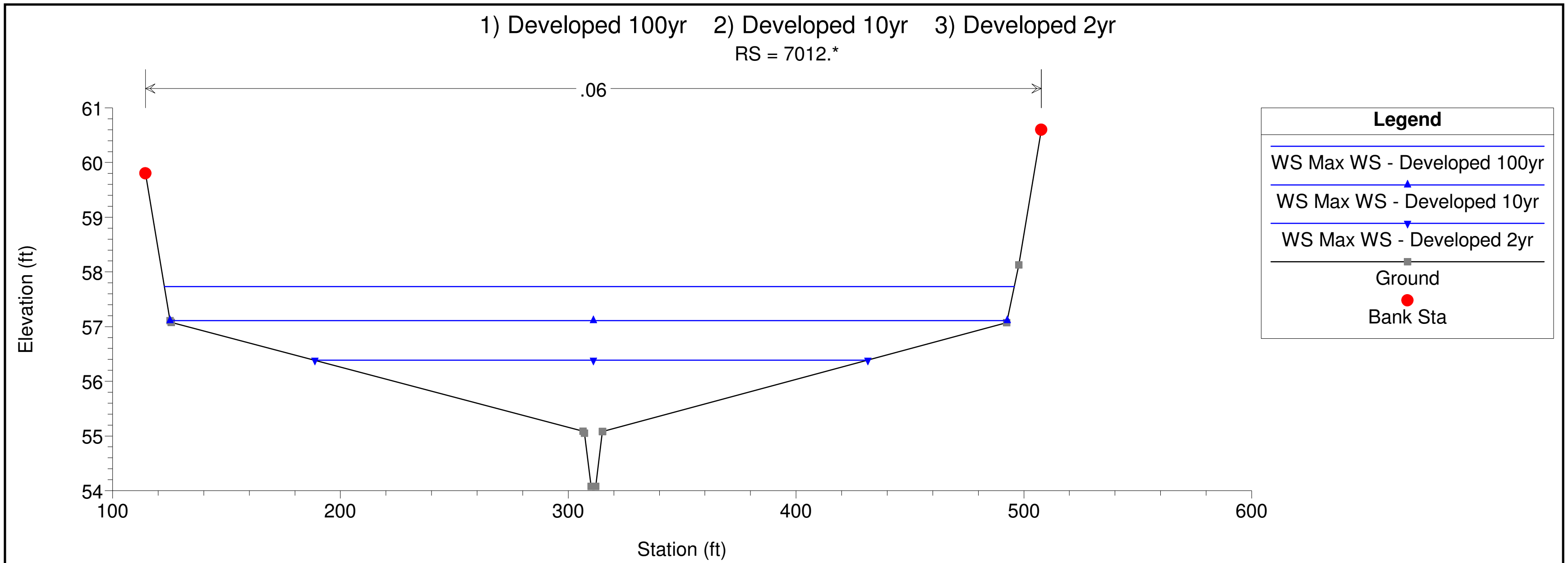

1) Developed 100yr 2) Developed 10yr 3) Developed 2yr
RS = 7440
.06
Elevation (ft)
64
62
60
58
56
54
-100
0
100
200
300
400
Station (ft)
Legend
WS Max WS - Developed 100yr
WS Max WS - Developed 10yr
WS Max WS - Developed 2yr
Ground
Bank Sta

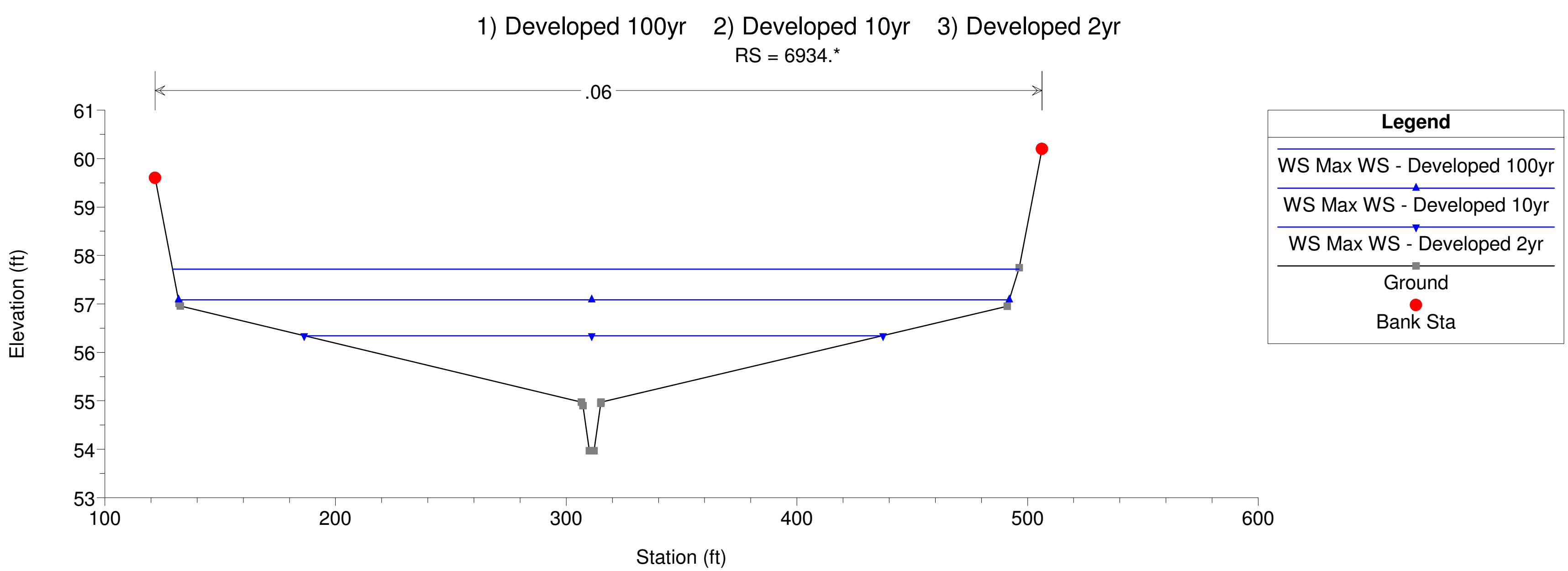

1) Developed 100yr 2) Developed 10yr 3) Developed 2yr
RS = 7290
.06
Elevation (ft)
Station (ft)
Legend
WS Max WS - Developed 100yr
WS Max WS - Developed 10yr
WS Max WS - Developed 2yr
Ground
Ineff
Bank Sta

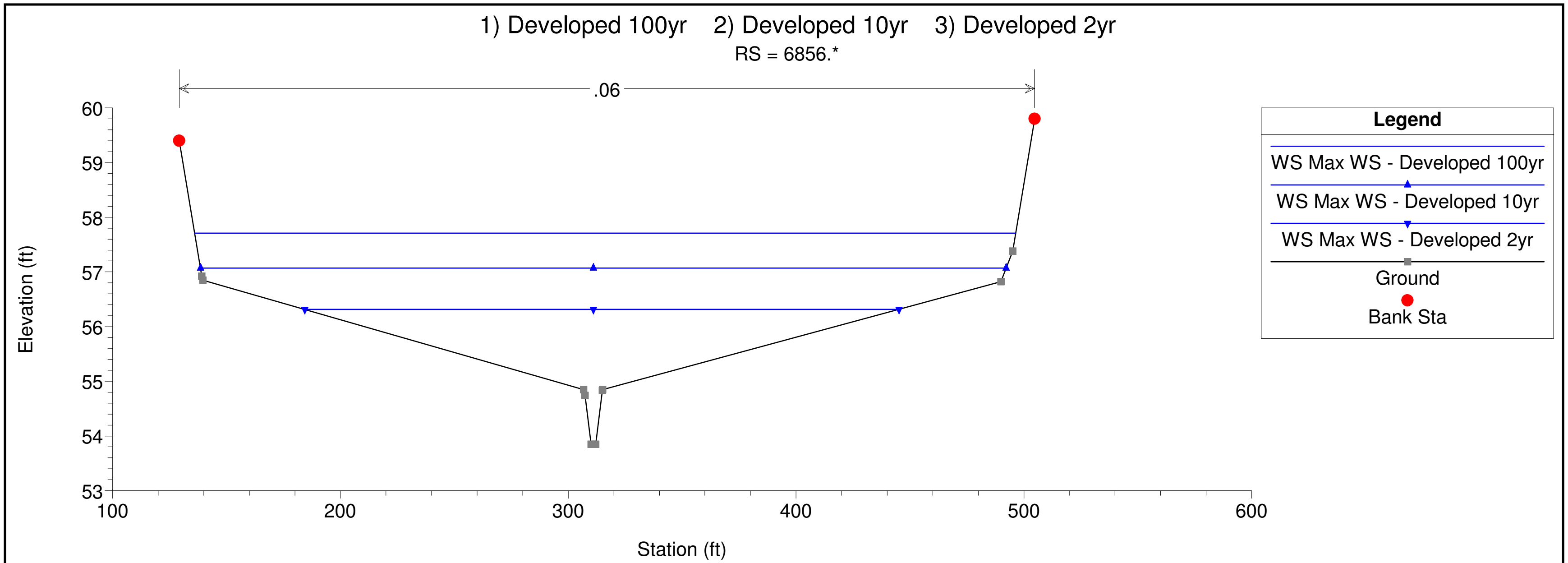

1) Developed 100yr 2) Developed 10yr 3) Developed 2yr
RS = 7225 Culv
.06
Elevation (ft)
Station (ft)
Legend
WS Max WS - Developed 100yr
WS Max WS - Developed 10yr
WS Max WS - Developed 2yr
Ground
Ineff
Bank Sta

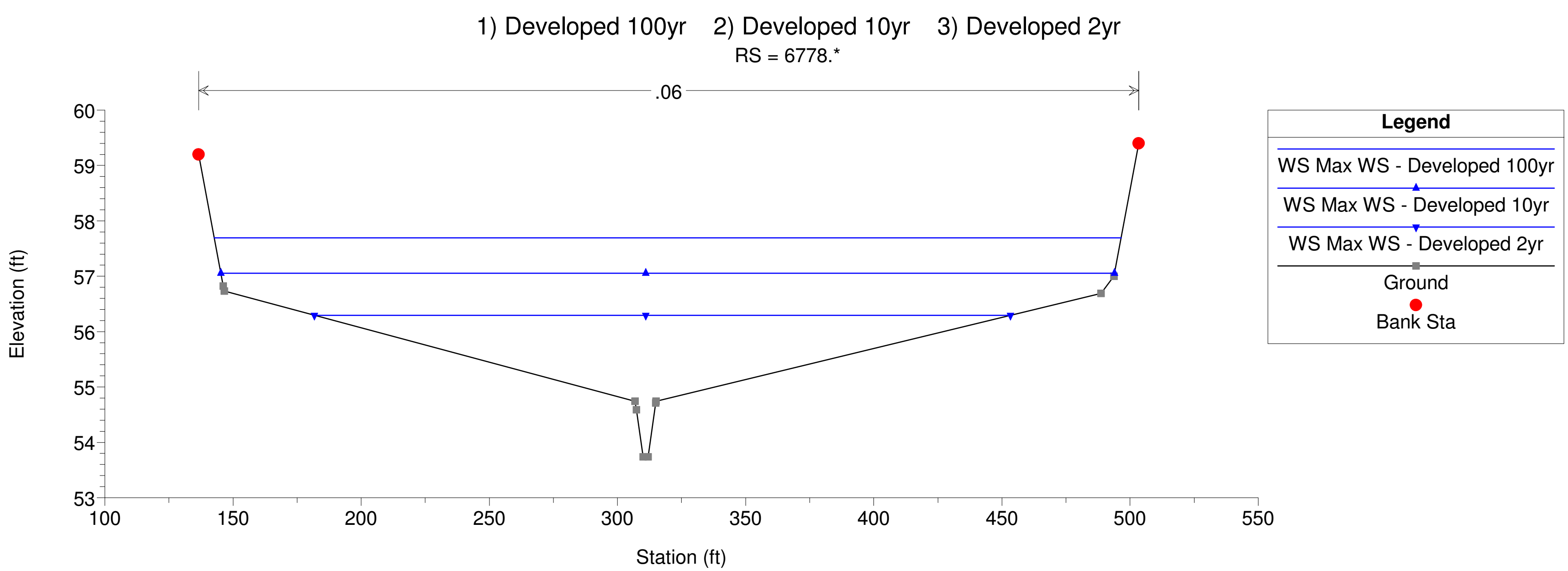

1) Developed 100yr 2) Developed 10yr 3) Developed 2yr
RS = 7225 Culv
.06
Elevation (ft)
Station (ft)
Legend
WS Max WS - Developed 100yr
WS Max WS - Developed 10yr
WS Max WS - Developed 2yr
Ground
Ineff
Bank Sta

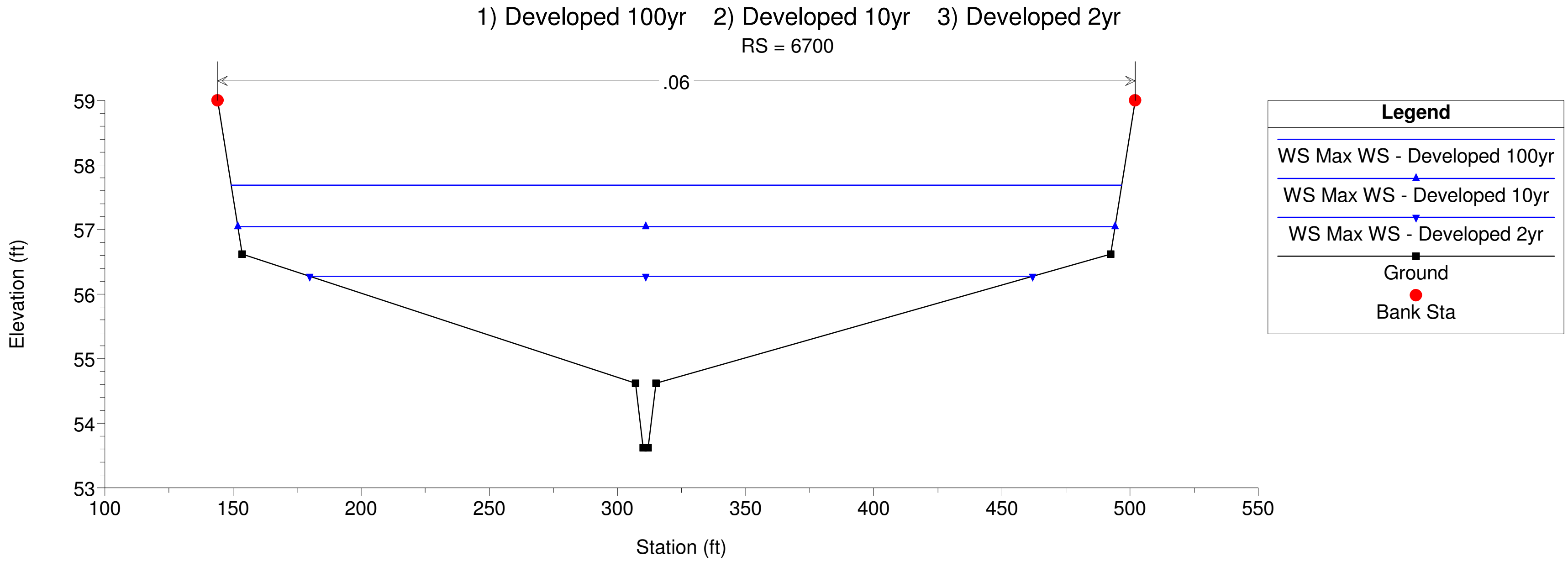

1) Developed 100yr 2) Developed 10yr 3) Developed 2yr
RS = 7090
.06
Elevation (ft)
Station (ft)
Legend
WS Max WS - Developed 100yr
WS Max WS - Developed 10yr
WS Max WS - Developed 2yr
Ground
Ineff
Bank Sta

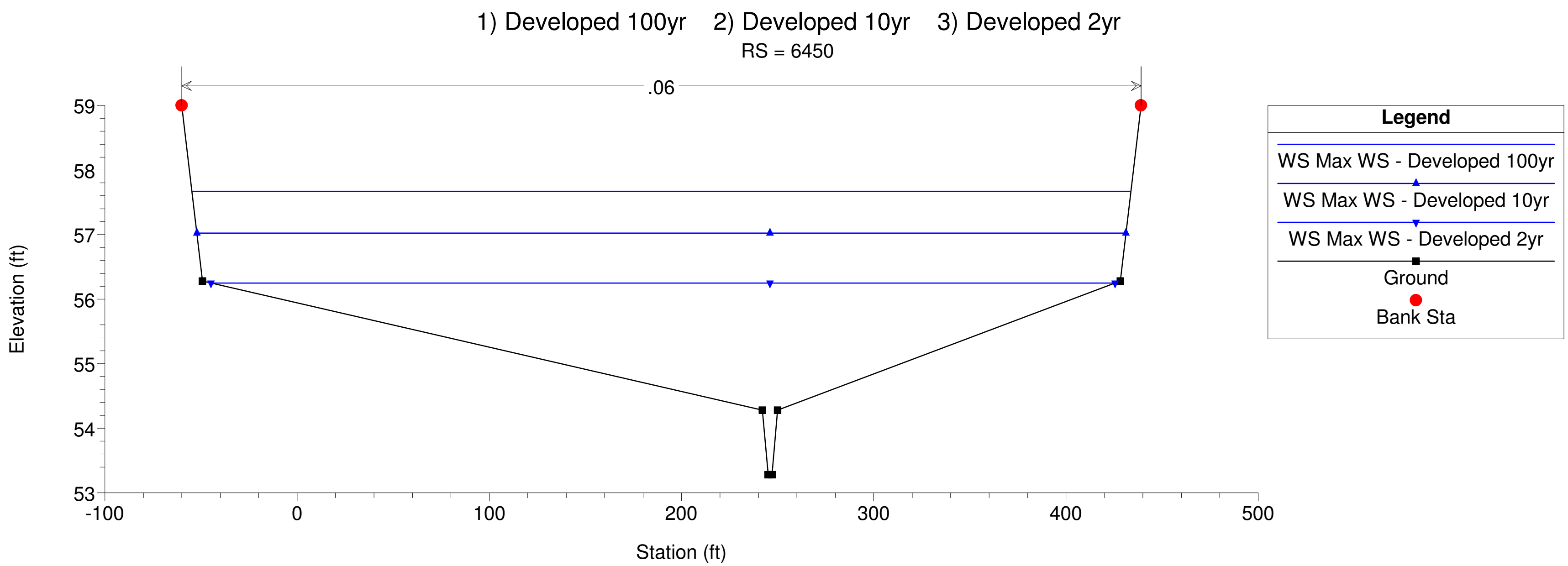

1) Developed 100yr 2) Developed 10yr 3) Developed 2yr
RS = 7012.*
.06
Elevation (ft)
61
60
59
58
57
56
55
54
100
200
300
400
500
600
Station (ft)
Legend
WS Max WS - Developed 100yr
WS Max WS - Developed 10yr
WS Max WS - Developed 2yr
Ground
Bank Sta

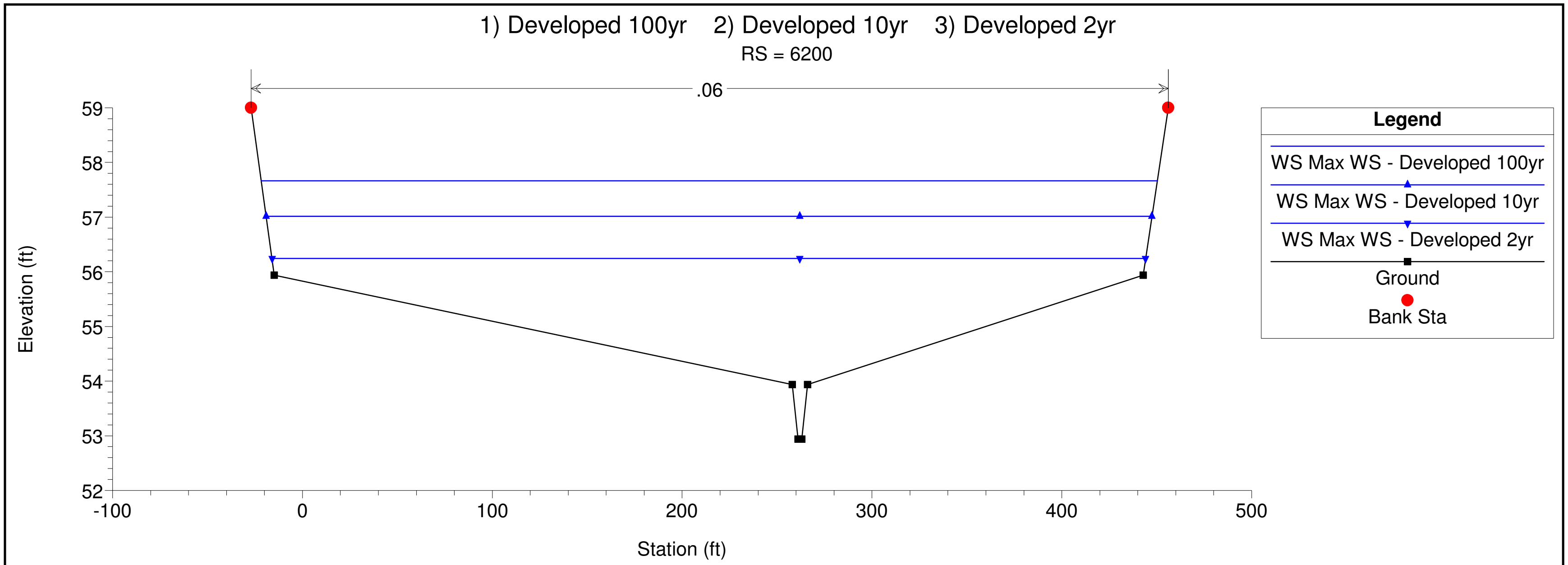

1) Developed 100yr 2) Developed 10yr 3) Developed 2yr
RS = 6934.*
.06
Elevation (ft)
61
60
59
58
57
56
55
54
53
100
200
300
400
500
600
Station (ft)
Legend
WS Max WS - Developed 100yr
WS Max WS - Developed 10yr
WS Max WS - Developed 2yr
Ground
Bank Sta


1) Developed 100yr 2) Developed 10yr 3) Developed 2yr
RS = 6856.*
.06
Elevation (ft)
60
59
58
57
56
55
54
53
100
200
300
400
500
600
Station (ft)
Legend
WS Max WS - Developed 100yr
WS Max WS - Developed 10yr
WS Max WS - Developed 2yr
Ground
Bank Sta

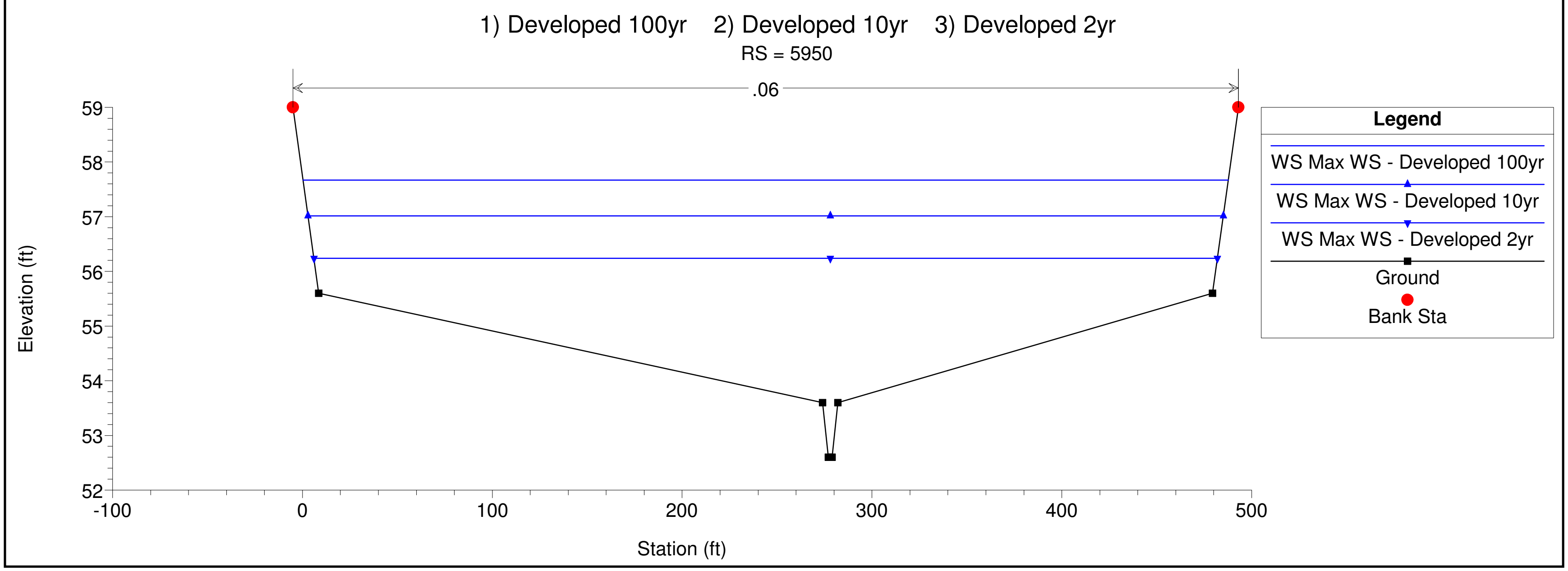

1) Developed 100yr 2) Developed 10yr 3) Developed 2yr
RS = 6778.*
.06
Elevation (ft)
60
59
58
57
56
55
54
53
100
150
200
250
300
350
400
450
500
550
Station (ft)
Legend
WS Max WS - Developed 100yr
WS Max WS - Developed 10yr
WS Max WS - Developed 2yr
Ground
Bank Sta


1) Developed 100yr 2) Developed 10yr 3) Developed 2yr
RS = 6700
.06
Elevation (ft)
Station (ft)
59
58
57
56
55
54
53
100
150
200
250
300
350
400
450
500
550
Legend
WS Max WS - Developed 100yr
WS Max WS - Developed 10yr
WS Max WS - Developed 2yr
Ground
Bank Sta

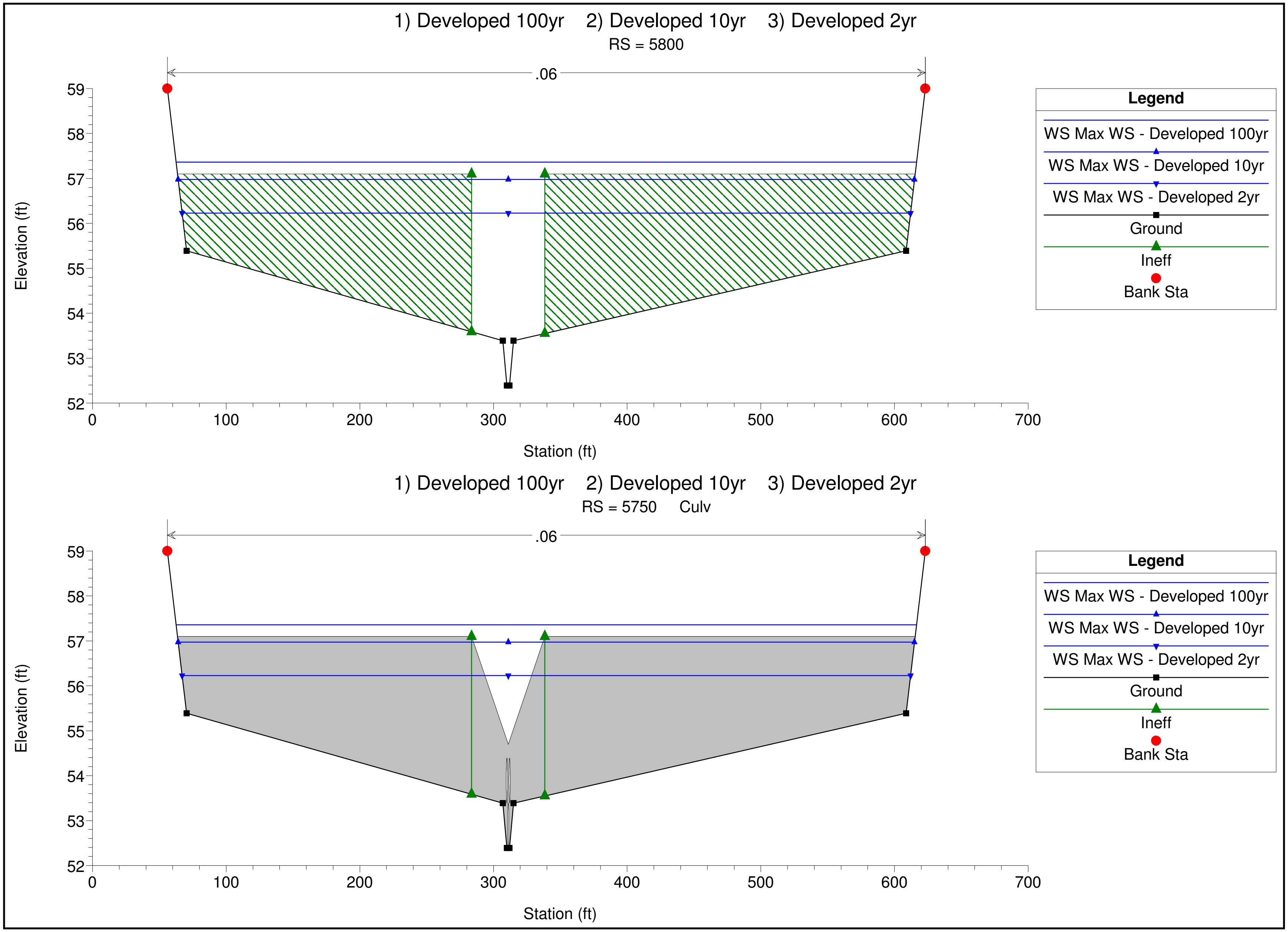

1) Developed 100yr 2) Developed 10yr 3) Developed 2yr
RS = 6450
.06
Elevation (ft)
Station (ft)
59
58
57
56
55
54
53
-100
0
100
200
300
400
500
Legend
WS Max WS - Developed 100yr
WS Max WS - Developed 10yr
WS Max WS - Developed 2yr
Ground
Bank Sta



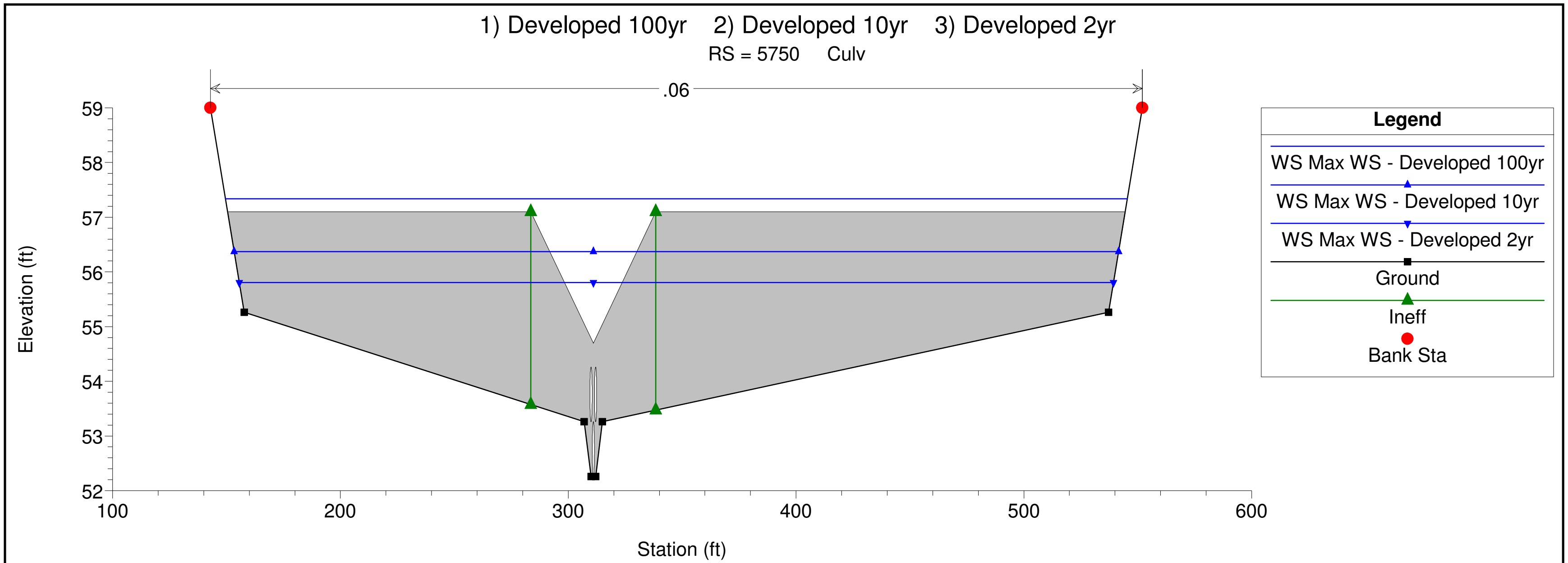
1) Developed 100yr 2) Developed 10yr 3) Developed 2yr
RS = 6200
.06
Legend
WS Max WS - Developed 100yr
WS Max WS - Developed 10yr
WS Max WS - Developed 2yr
Ground
Bank Sta
Elevation (ft)
59
58
57
56
55
54
53
52
-100
0
100
200
300
400
500
Station (ft)

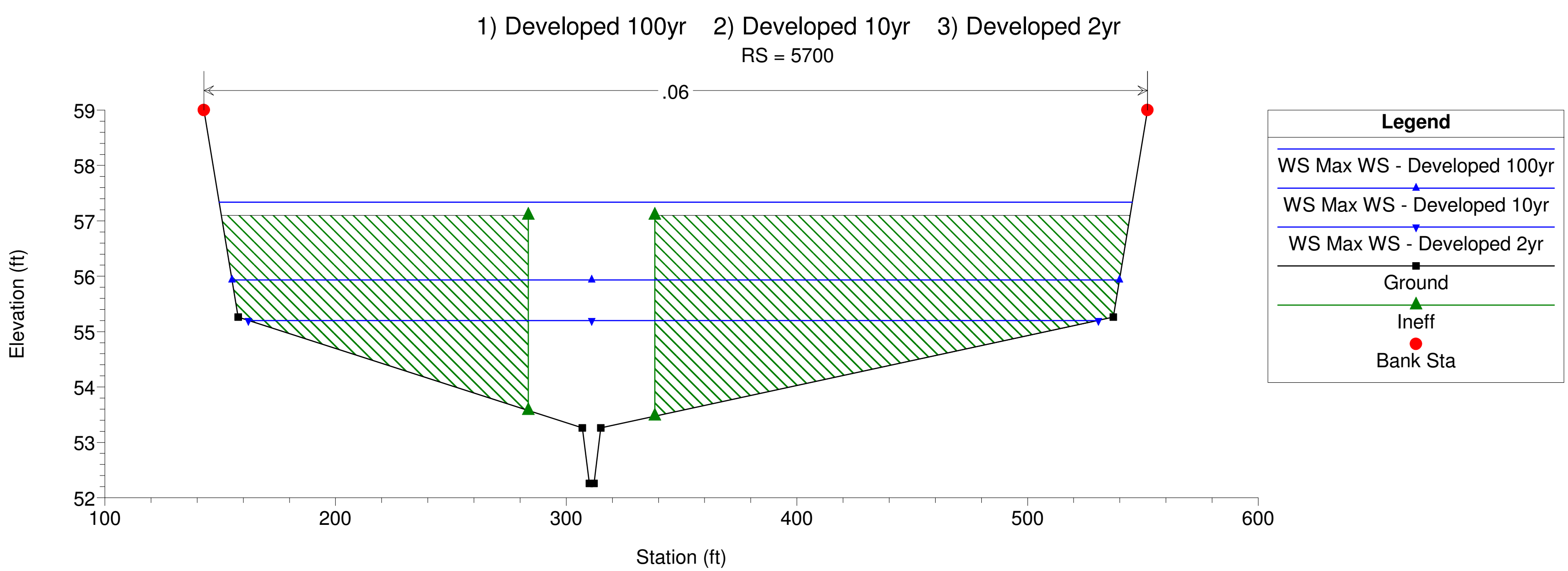


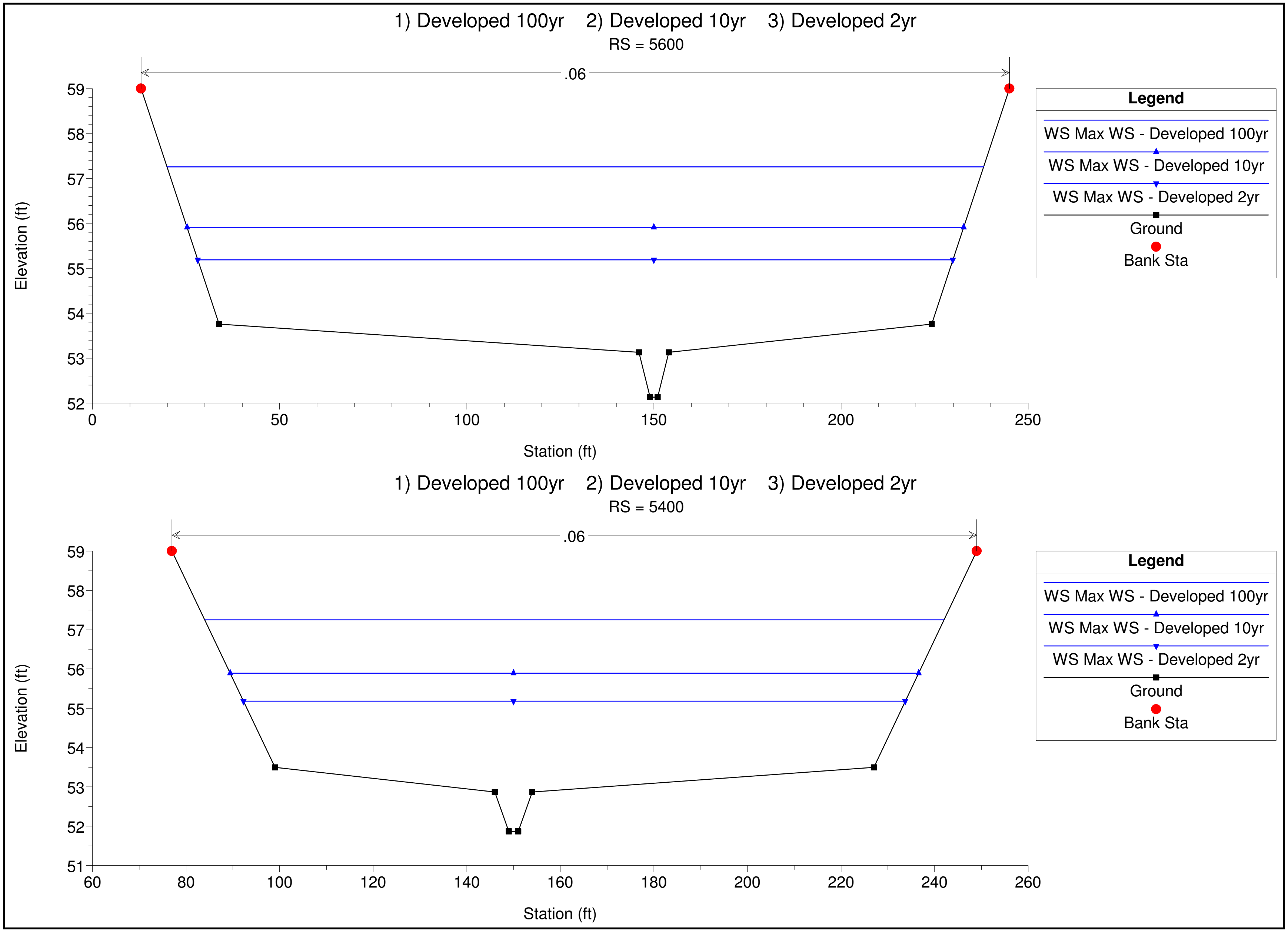
1) Developed 100yr 2) Developed 10yr 3) Developed 2yr
RS = 5950
.06
Legend
WS Max WS - Developed 100yr
WS Max WS - Developed 10yr
WS Max WS - Developed 2yr
Ground
Bank Sta
Elevation (ft)
59
58
57
56
55
54
53
52
-100
0
100
200
300
400
500
Station (ft)

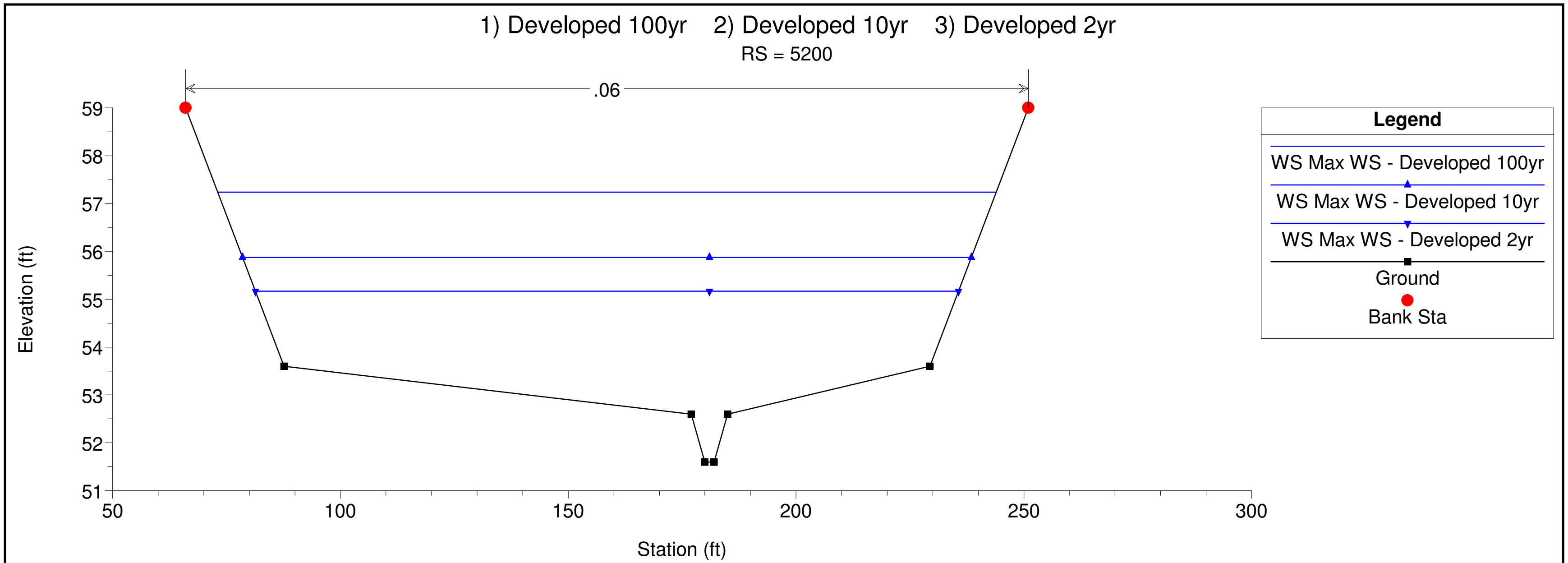


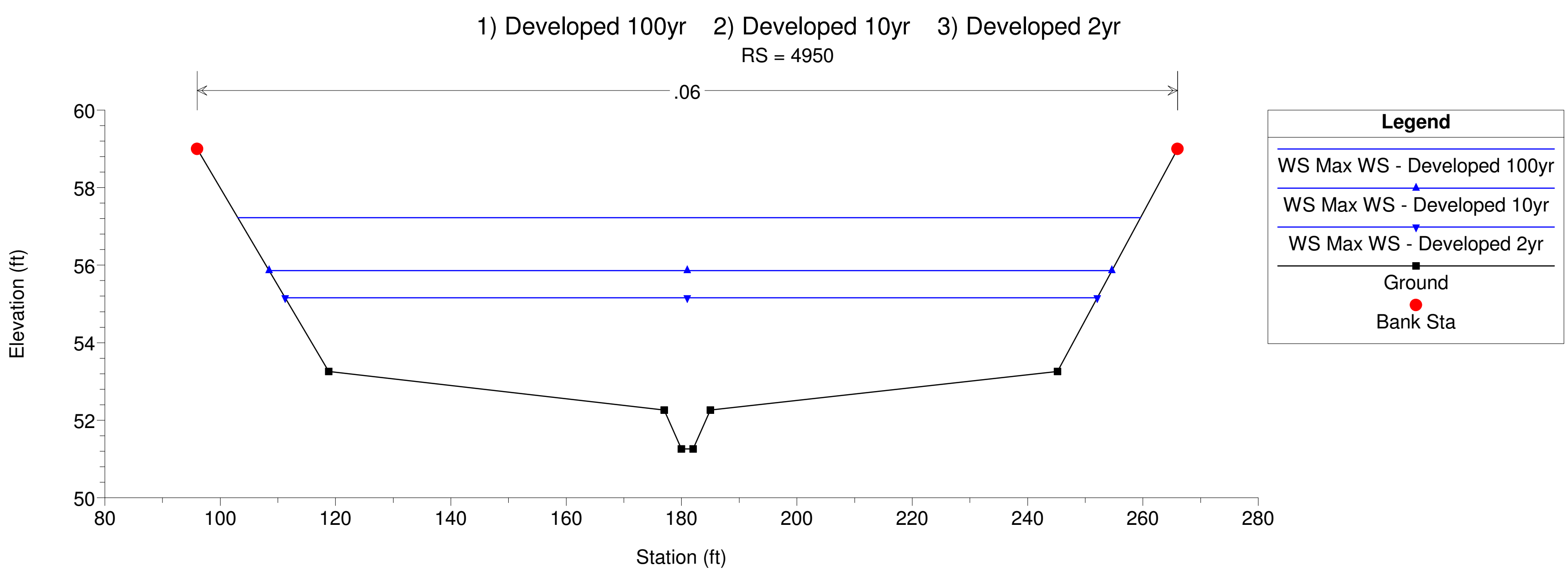
1) Developed 100yr 2) Developed 10yr 3) Developed 2yr
RS = 5800
.06
Elevation (ft)
Station (ft)
Legend
WS Max WS - Developed 100yr
WS Max WS - Developed 10yr
WS Max WS - Developed 2yr
Ground
Ineff
Bank Sta
1) Developed 100yr 2) Developed 10yr 3) Developed 2yr
RS = 5750 Culv
.06
Elevation (ft)
Station (ft)
Legend
WS Max WS - Developed 100yr
WS Max WS - Developed 10yr
WS Max WS - Developed 2yr
Ground
Ineff
Bank Sta

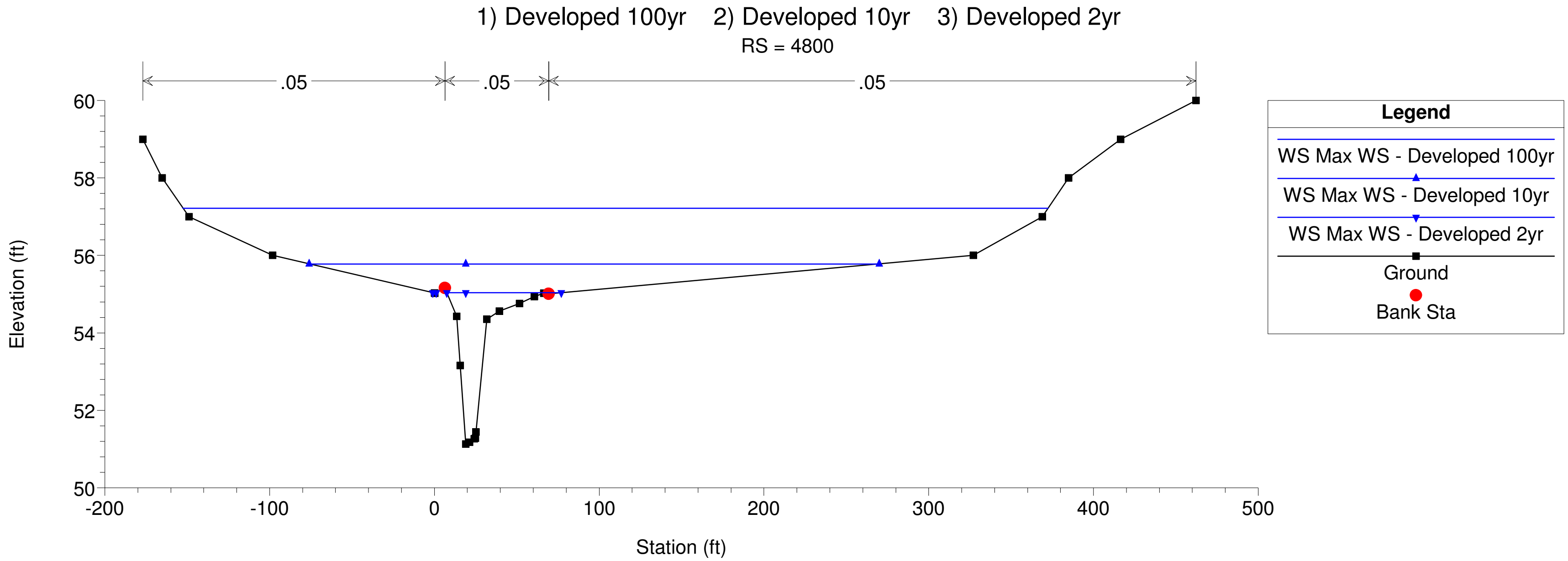

1) Developed 100yr 2) Developed 10yr 3) Developed 2yr
RS = 5750 Culv
.06
Elevation (ft)
59
58
57
56
55
54
53
52
100
200
300
400
500
600
Station (ft)
Legend
WS Max WS - Developed 100yr
WS Max WS - Developed 10yr
WS Max WS - Developed 2yr
Ground
Ineff
Bank Sta


1) Developed 100yr 2) Developed 10yr 3) Developed 2yr
RS = 5700
.06
Elevation (ft)
59
58
57
56
55
54
53
52
100
200
300
400
500
600
Station (ft)
Legend
WS Max WS - Developed 100yr
WS Max WS - Developed 10yr
WS Max WS - Developed 2yr
Ground
Ineff
Bank Sta

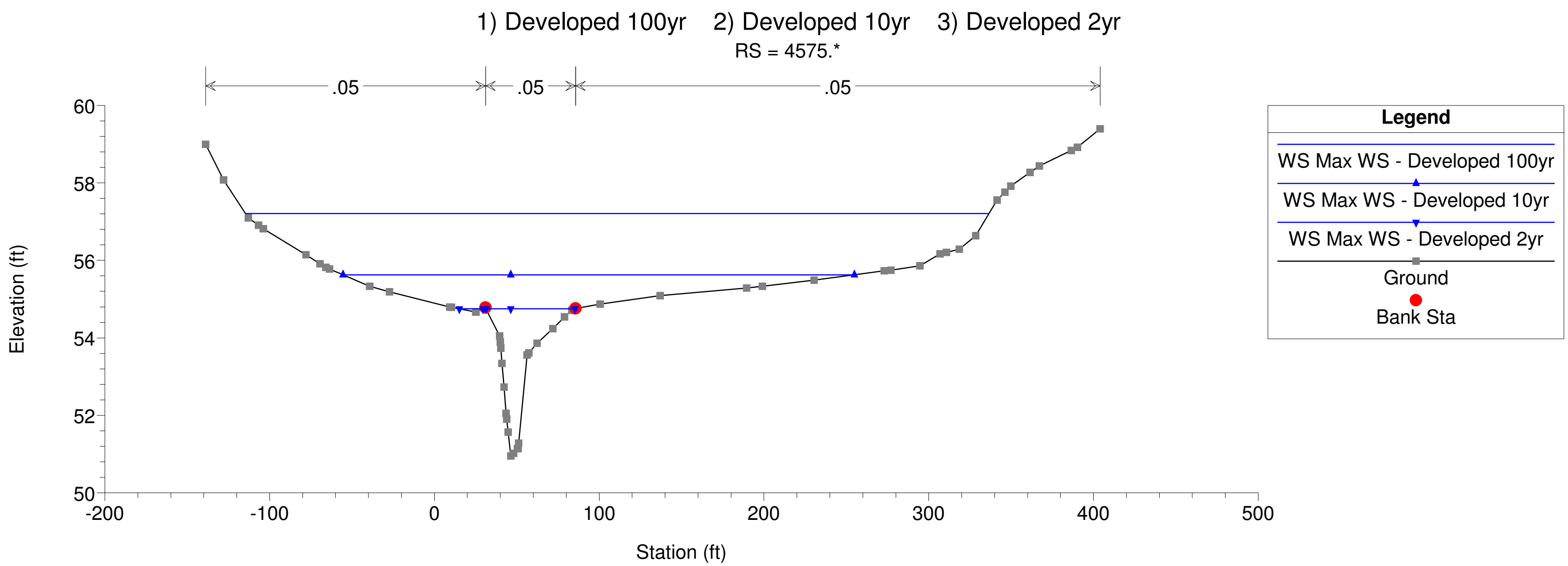

1) Developed 100yr 2) Developed 10yr 3) Developed 2yr
RS = 5600
.06
Elevation (ft)
59
58
57
56
55
54
53
52
0
50
100
150
200
250
Station (ft)
Legend
WS Max WS - Developed 100yr
WS Max WS - Developed 10yr
WS Max WS - Developed 2yr
Ground
Bank Sta
1) Developed 100yr 2) Developed 10yr 3) Developed 2yr
RS = 5400
.06
Elevation (ft)
59
58
57
56
55
54
53
52
51
60
80
100
120
140
160
180
200
220
240
260
Station (ft)
Legend
WS Max WS - Developed 100yr
WS Max WS - Developed 10yr
WS Max WS - Developed 2yr
Ground
Bank Sta


1) Developed 100yr 2) Developed 10yr 3) Developed 2yr
RS = 5200
.06
Elevation (ft)
59
58
57
56
55
54
53
52
51
50
100
150
200
250
300
Station (ft)
Legend
WS Max WS - Developed 100yr
WS Max WS - Developed 10yr
WS Max WS - Developed 2yr
Ground
Bank Sta

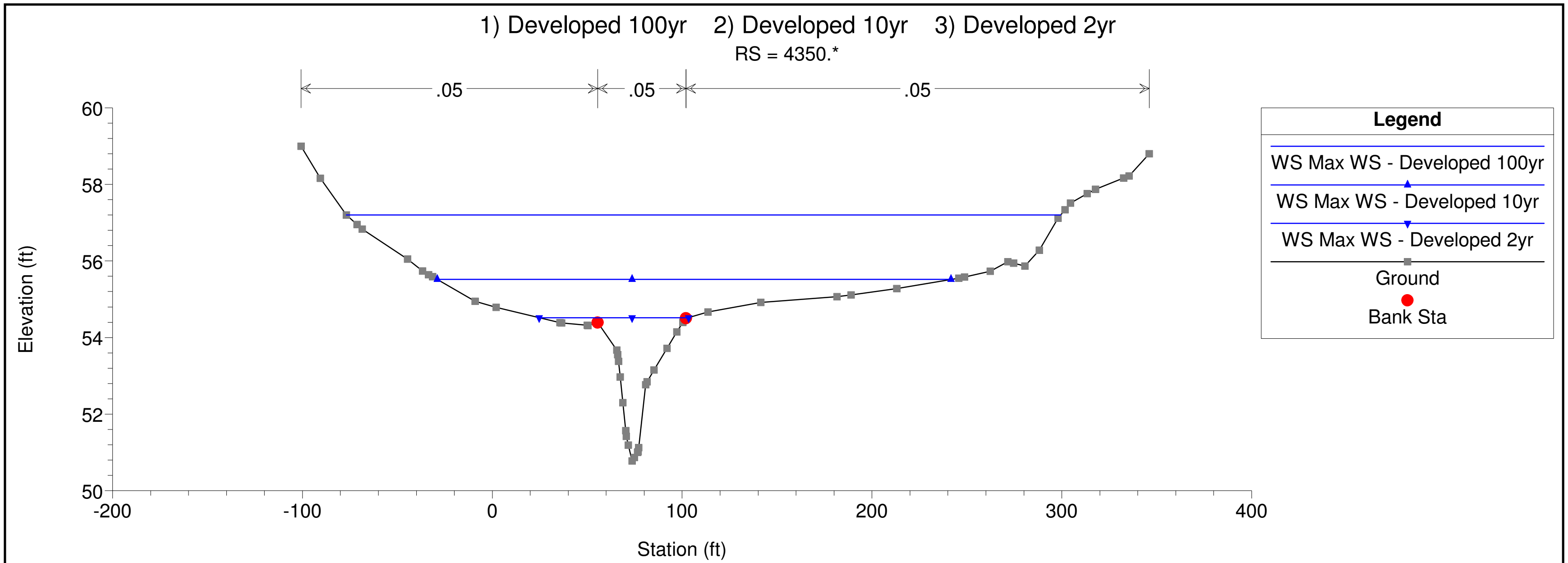

1) Developed 100yr 2) Developed 10yr 3) Developed 2yr
RS = 4950
.06
Elevation (ft)
60
58
56
54
52
50
80
100
120
140
160
180
200
220
240
260
280
Station (ft)
Legend
WS Max WS - Developed 100yr
WS Max WS - Developed 10yr
WS Max WS - Developed 2yr
Ground
Bank Sta

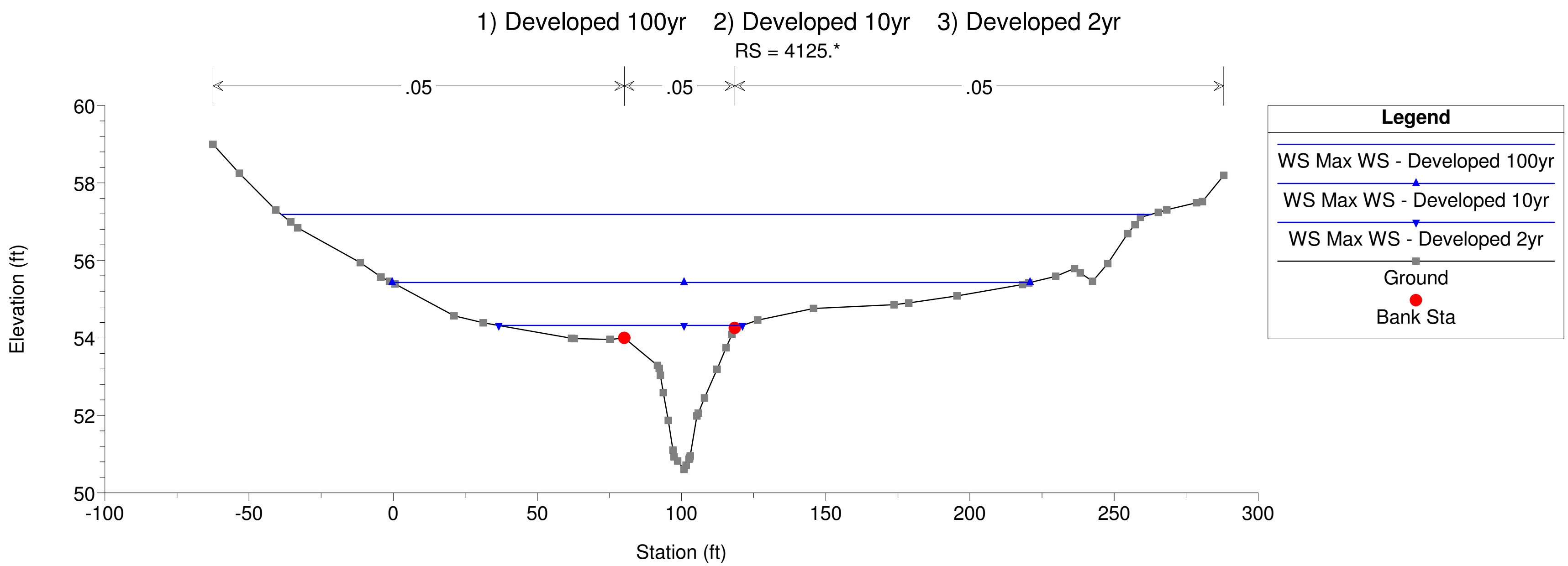


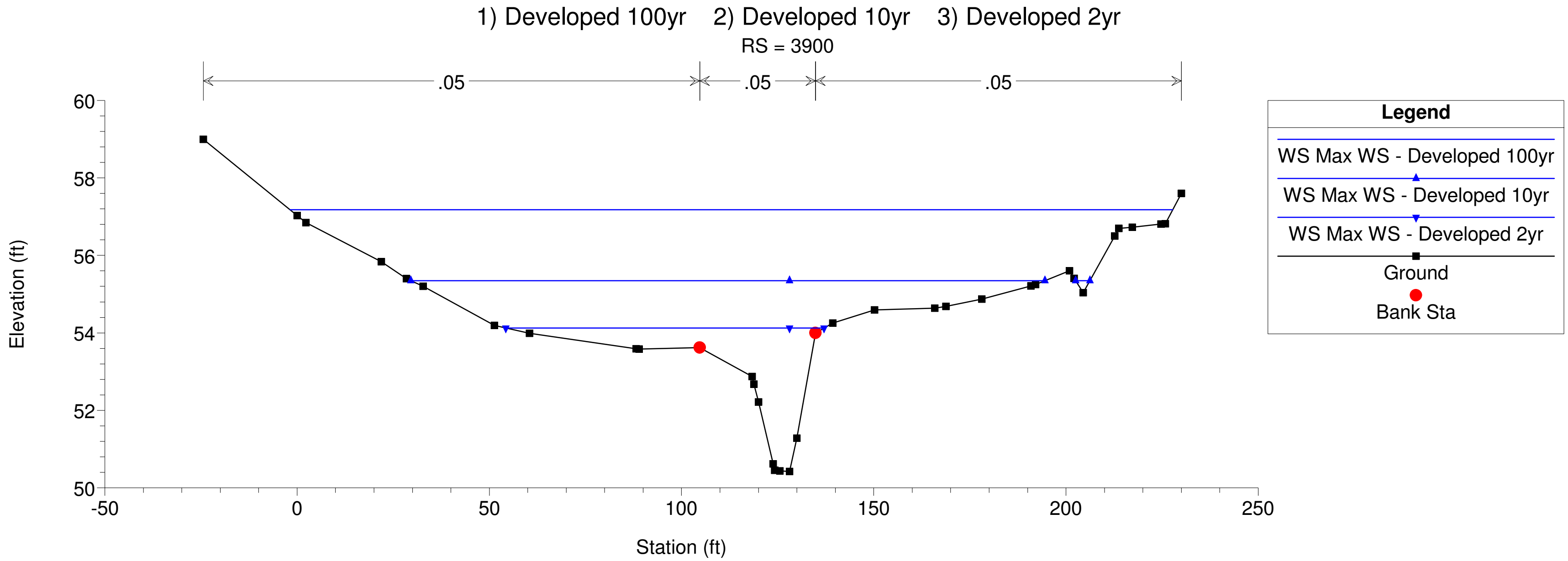
1) Developed 100yr 2) Developed 10yr 3) Developed 2yr
RS = 4800
.05
.05
.05
Elevation (ft)
Station (ft)
60
58
56
54
52
50
-200
-100
0
100
200
300
400
500
Legend
WS Max WS - Developed 100yr
WS Max WS - Developed 10yr
WS Max WS - Developed 2yr
Ground
Bank Sta

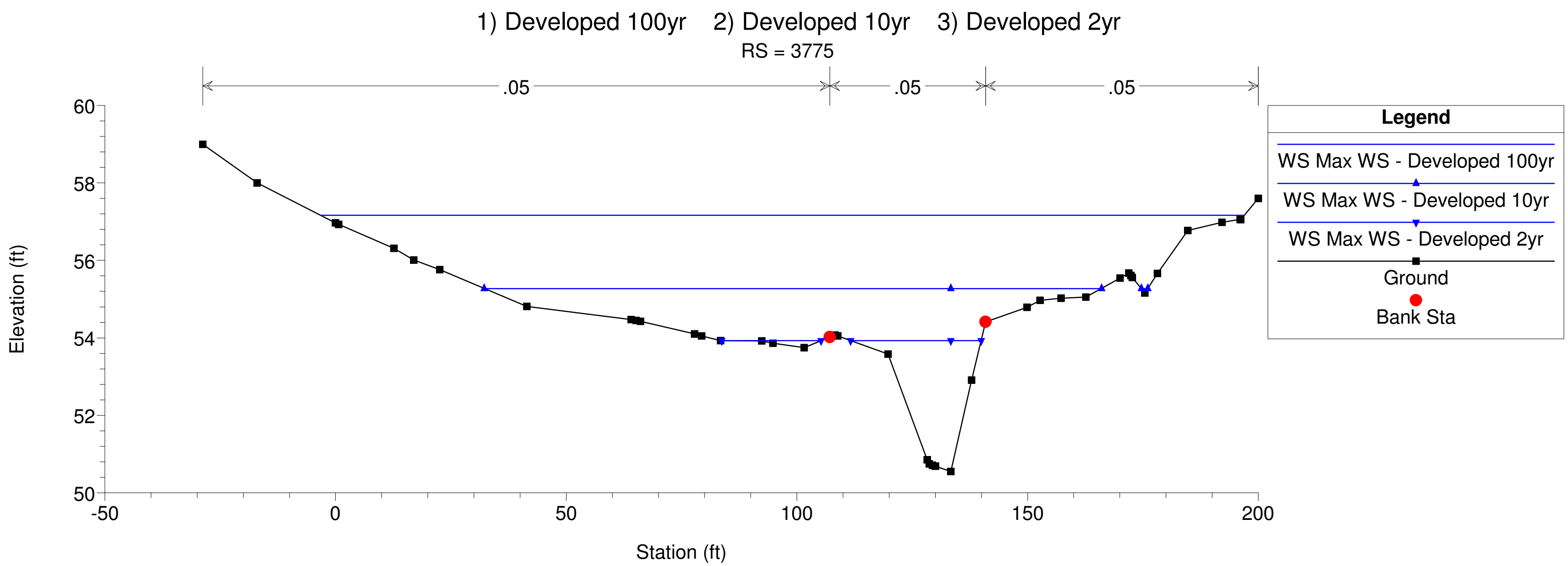


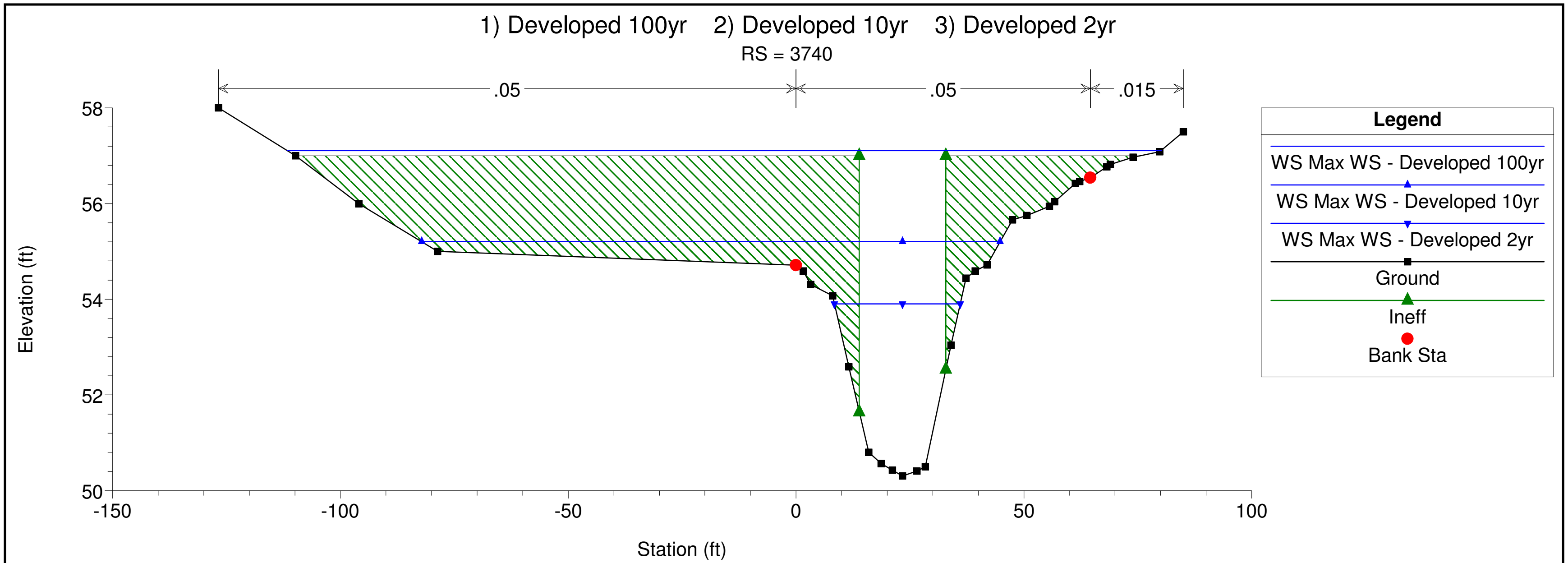
1) Developed 100yr 2) Developed 10yr 3) Developed 2yr
RS = 4575.*
.05
.05
.05
Elevation (ft)
Station (ft)
60
58
56
54
52
50
-200
-100
0
100
200
300
400
500
Legend
WS Max WS - Developed 100yr
WS Max WS - Developed 10yr
WS Max WS - Developed 2yr
Ground
Bank Sta

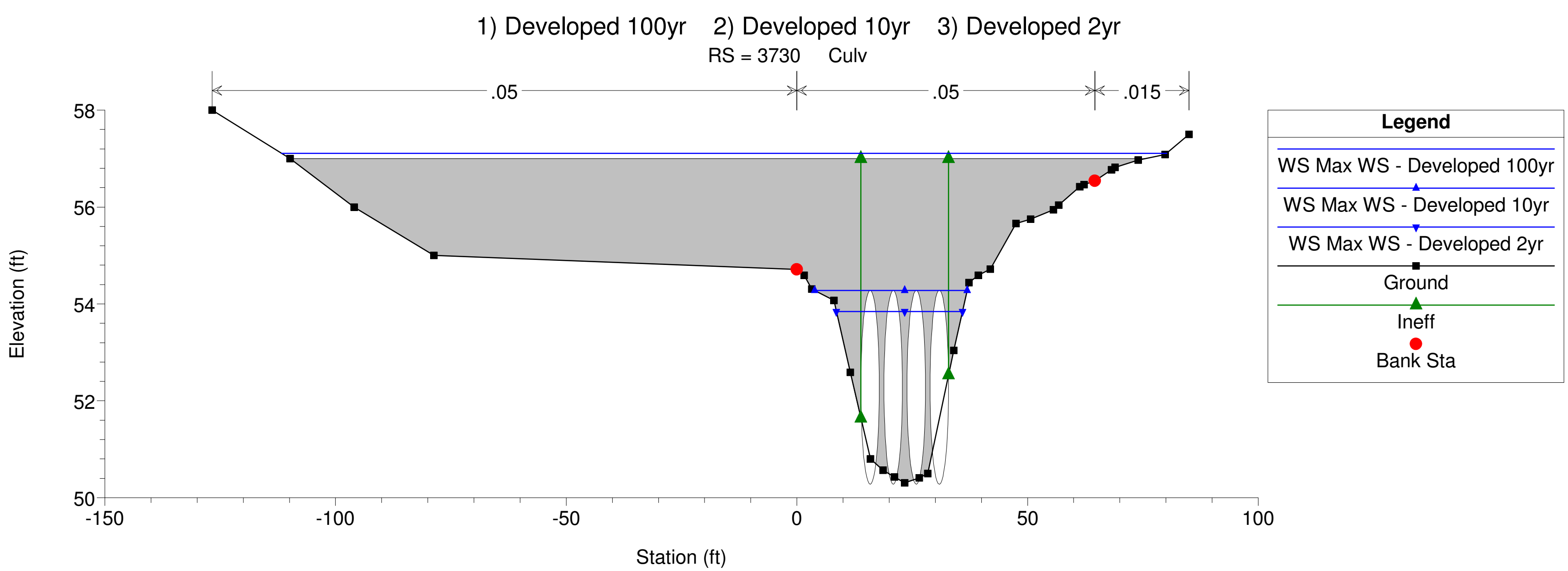

1) Developed 100yr 2) Developed 10yr 3) Developed 2yr
RS = 4350.*
.05
.05
.05
Elevation (ft)
Station (ft)
Legend
WS Max WS - Developed 100yr
WS Max WS - Developed 10yr
WS Max WS - Developed 2yr
Ground
Bank Sta

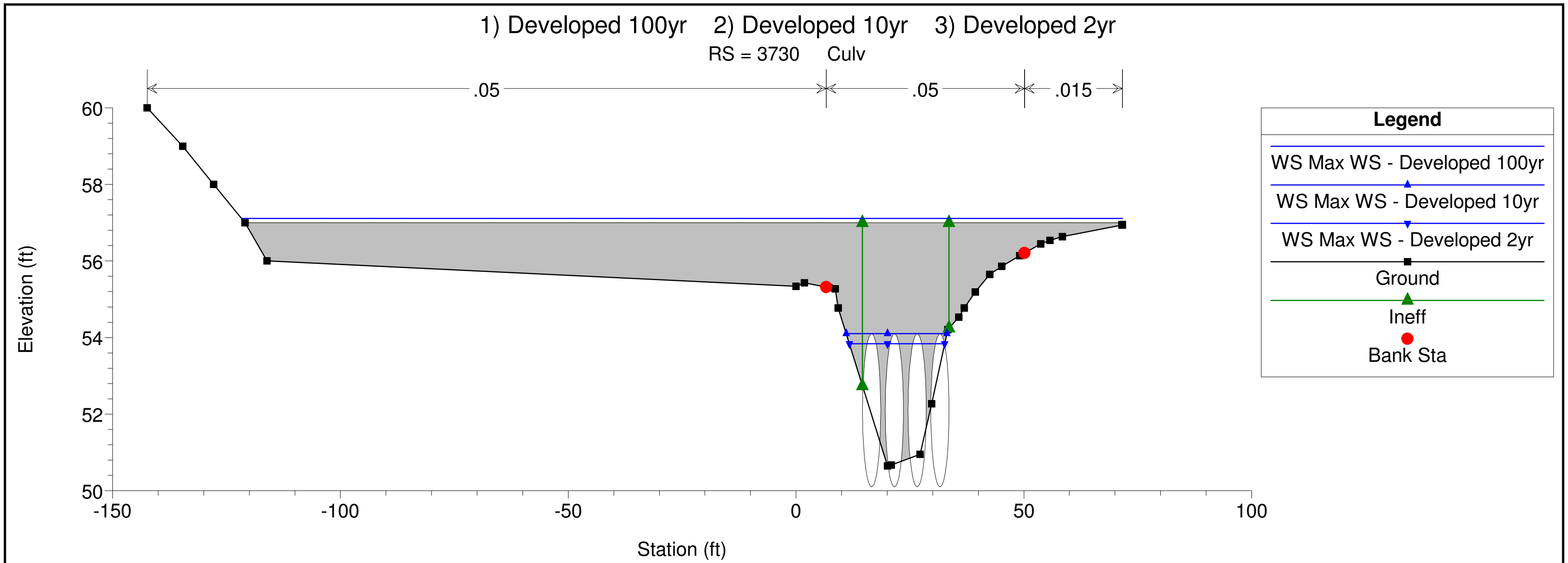

1) Developed 100yr 2) Developed 10yr 3) Developed 2yr
RS = 4125.*
.05
.05
.05
Elevation (ft)
Station (ft)
Legend
WS Max WS - Developed 100yr
WS Max WS - Developed 10yr
WS Max WS - Developed 2yr
Ground
Bank Sta

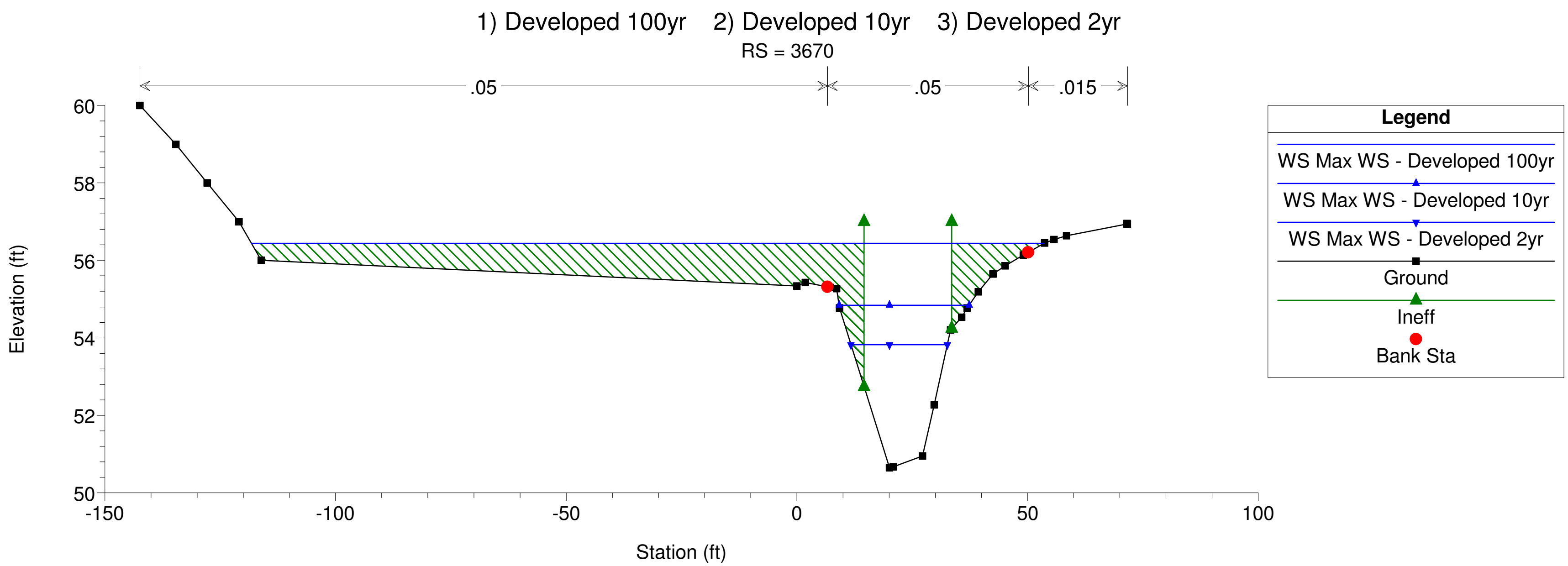

1) Developed 100yr 2) Developed 10yr 3) Developed 2yr
RS = 3900
.05
.05
.05
Elevation (ft)
Station (ft)
Legend
WS Max WS - Developed 100yr
WS Max WS - Developed 10yr
WS Max WS - Developed 2yr
Ground
Bank Sta

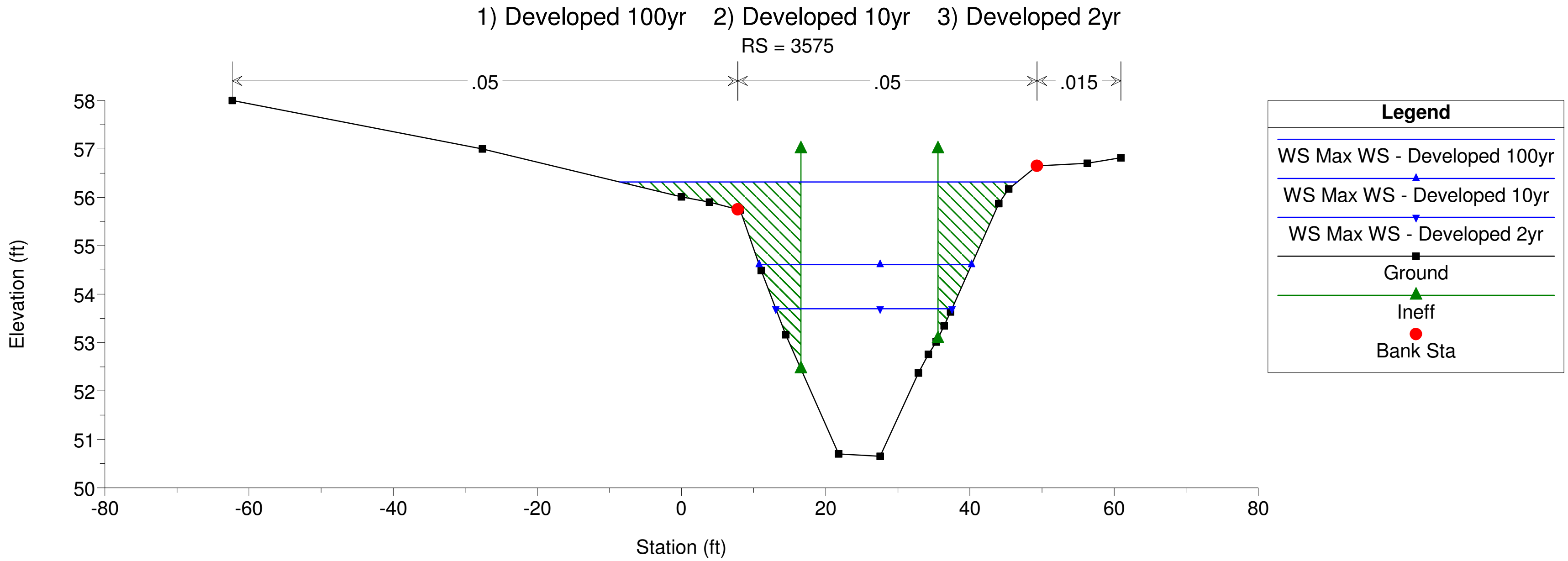

1) Developed 100yr 2) Developed 10yr 3) Developed 2yr
RS = 3775
.05
.05
.05
Elevation (ft)
Station (ft)
Legend
WS Max WS - Developed 100yr
WS Max WS - Developed 10yr
WS Max WS - Developed 2yr
Ground
Bank Sta

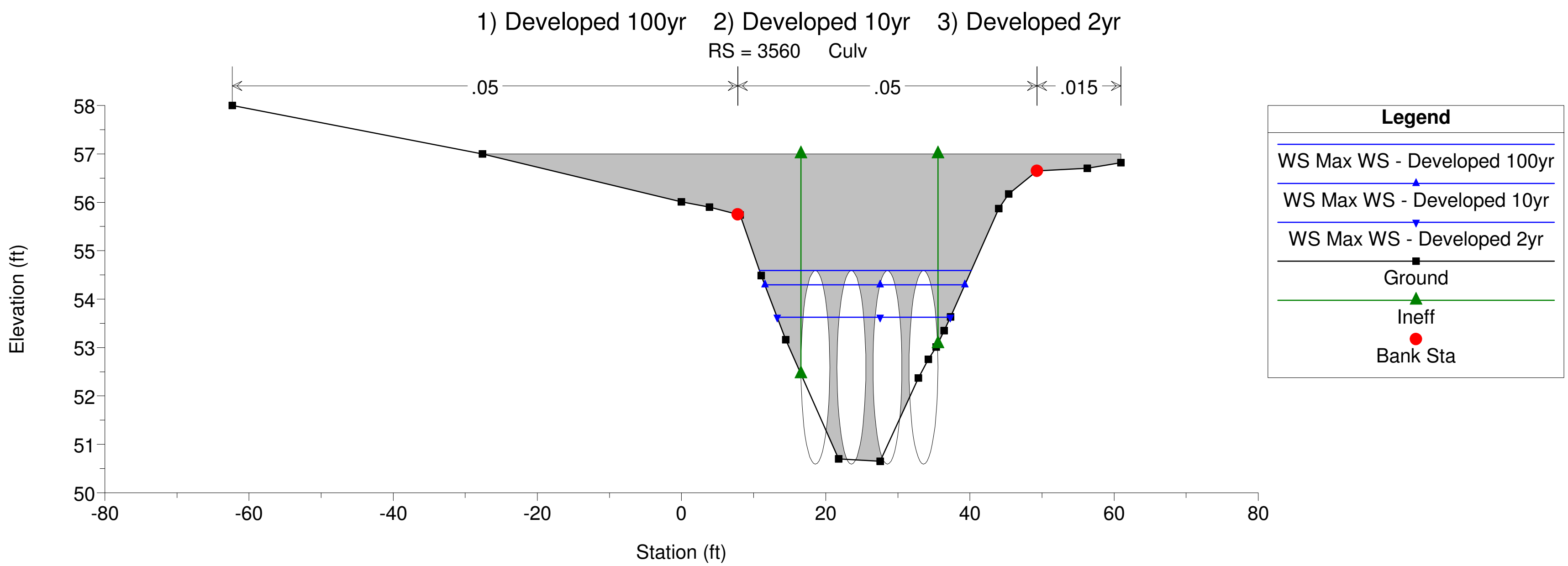

1) Developed 100yr 2) Developed 10yr 3) Developed 2yr
RS = 3740
.05
.05
.015
Elevation (ft)
58
56
54
52
50
-150
-100
-50
0
50
100
Station (ft)
Legend
WS Max WS - Developed 100yr
WS Max WS - Developed 10yr
WS Max WS - Developed 2yr
Ground
Ineff
Bank Sta

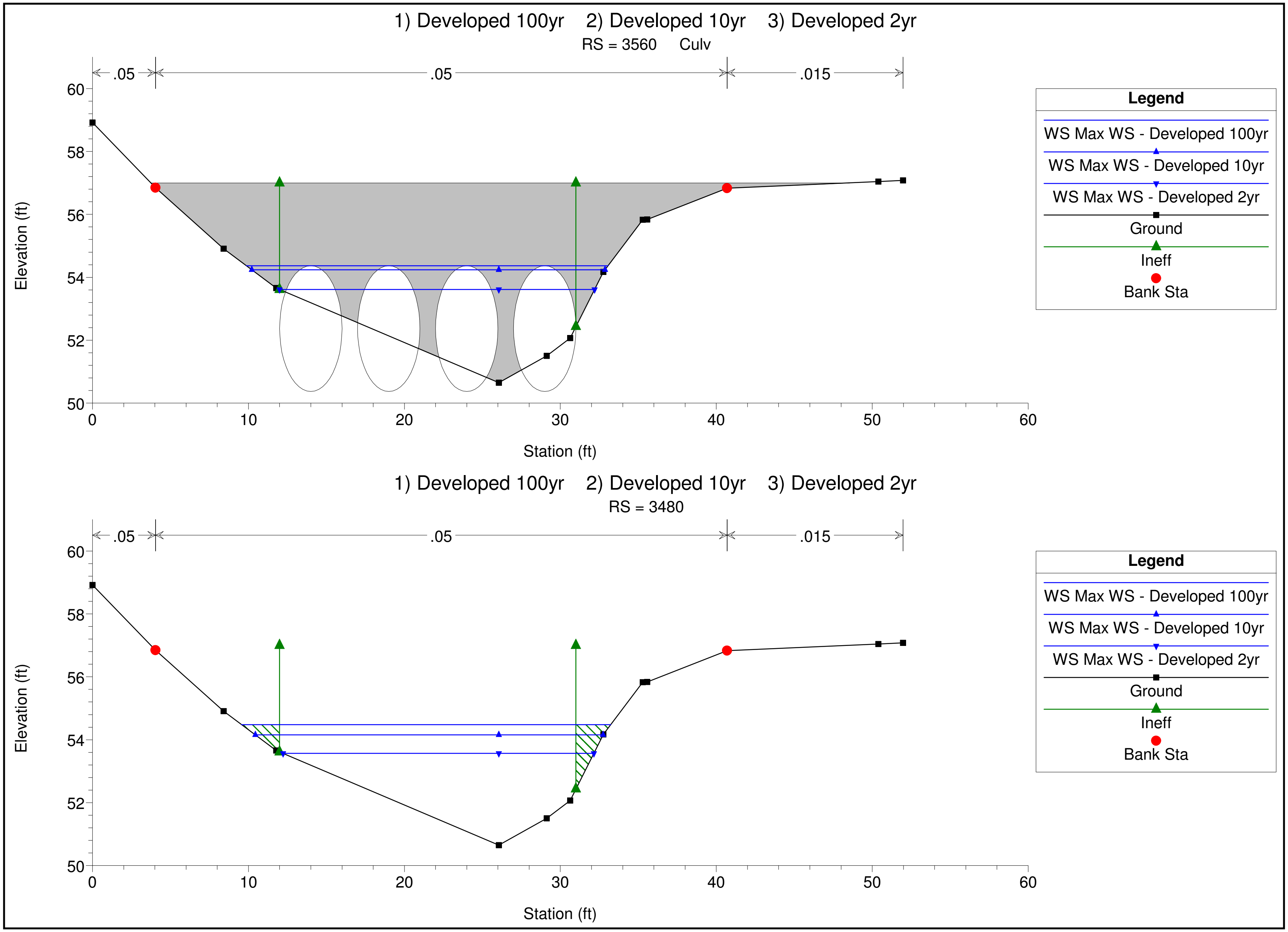

1) Developed 100yr 2) Developed 10yr 3) Developed 2yr
RS = 3730 Culv
.05
.05
.015
Elevation (ft)
58
56
54
52
50
-150
-100
-50
0
50
100
Station (ft)
Legend
WS Max WS - Developed 100yr
WS Max WS - Developed 10yr
WS Max WS - Developed 2yr
Ground
Ineff
Bank Sta


1) Developed 100yr 2) Developed 10yr 3) Developed 2yr
RS = 3730 Culv
.05
.05
.015
Elevation (ft)
60
58
56
54
52
50
-150
-100
-50
0
50
100
Station (ft)
Legend
WS Max WS - Developed 100yr
WS Max WS - Developed 10yr
WS Max WS - Developed 2yr
Ground
Ineff
Bank Sta

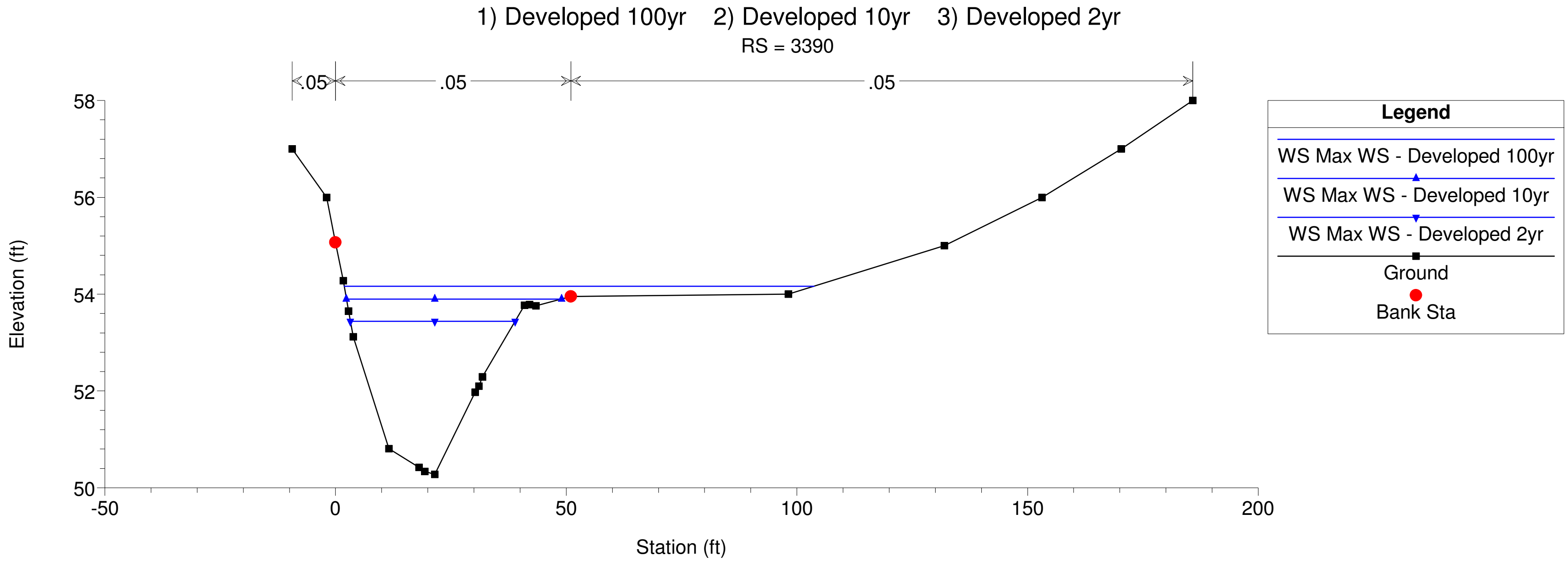

1) Developed 100yr 2) Developed 10yr 3) Developed 2yr
RS = 3670
.05
.05
.015
Elevation (ft)
60
58
56
54
52
50
-150
-100
-50
0
50
100
Station (ft)
Legend
WS Max WS - Developed 100yr
WS Max WS - Developed 10yr
WS Max WS - Developed 2yr
Ground
Ineff
Bank Sta

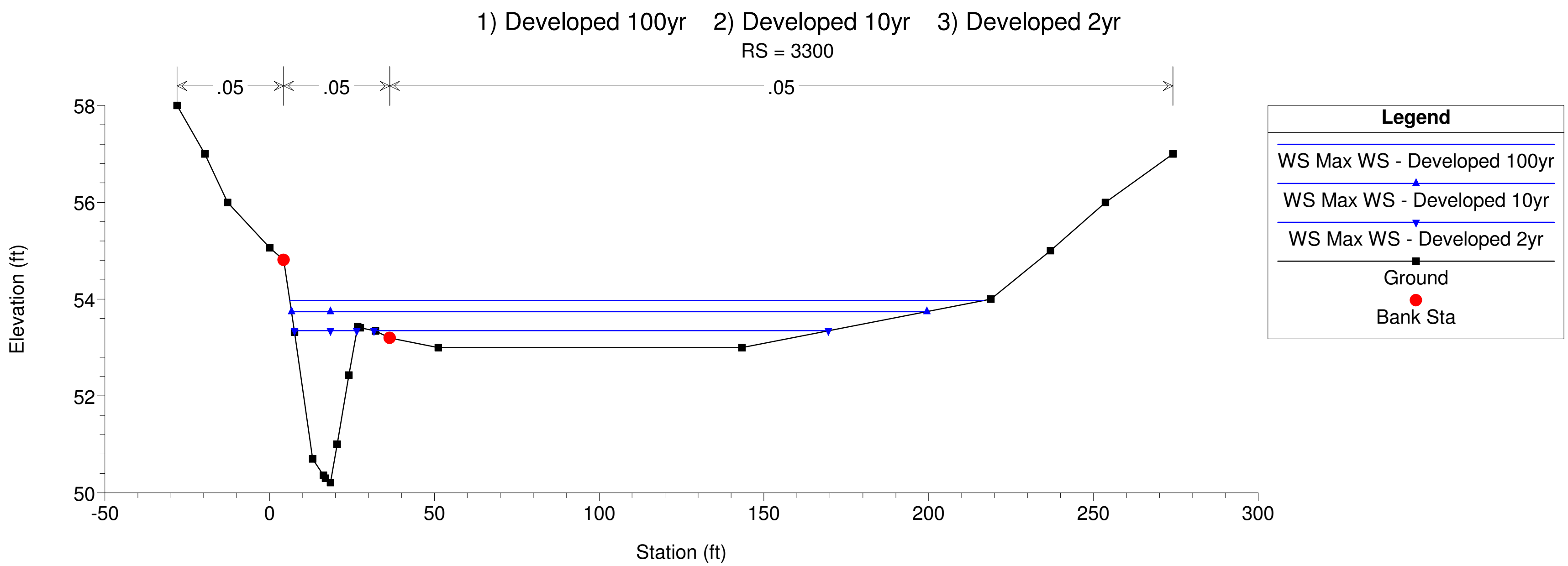

1) Developed 100yr 2) Developed 10yr 3) Developed 2yr
RS = 3575
.05
.05
.015
Elevation (ft)
Station (ft)
Legend
WS Max WS - Developed 100yr
WS Max WS - Developed 10yr
WS Max WS - Developed 2yr
Ground
Ineff
Bank Sta

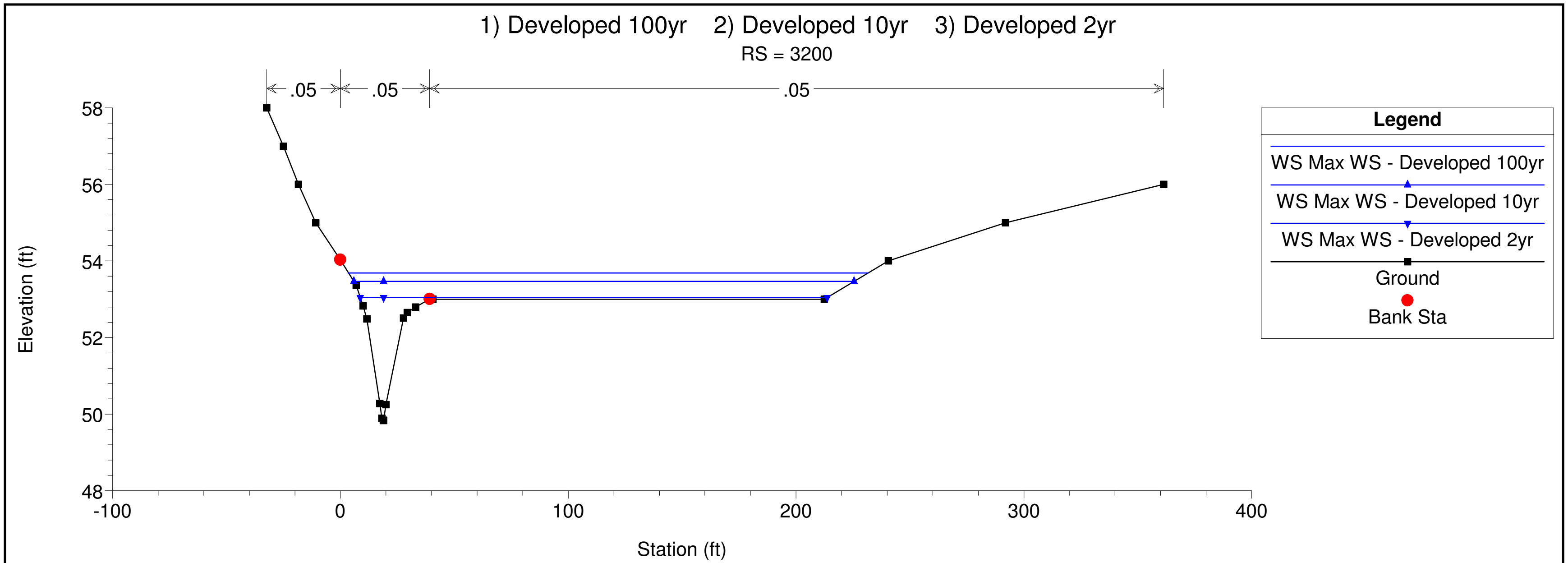

1) Developed 100yr 2) Developed 10yr 3) Developed 2yr
RS = 3560 Culv
.05
.05
.015
Elevation (ft)
Station (ft)
Legend
WS Max WS - Developed 100yr
WS Max WS - Developed 10yr
WS Max WS - Developed 2yr
Ground
Ineff
Bank Sta



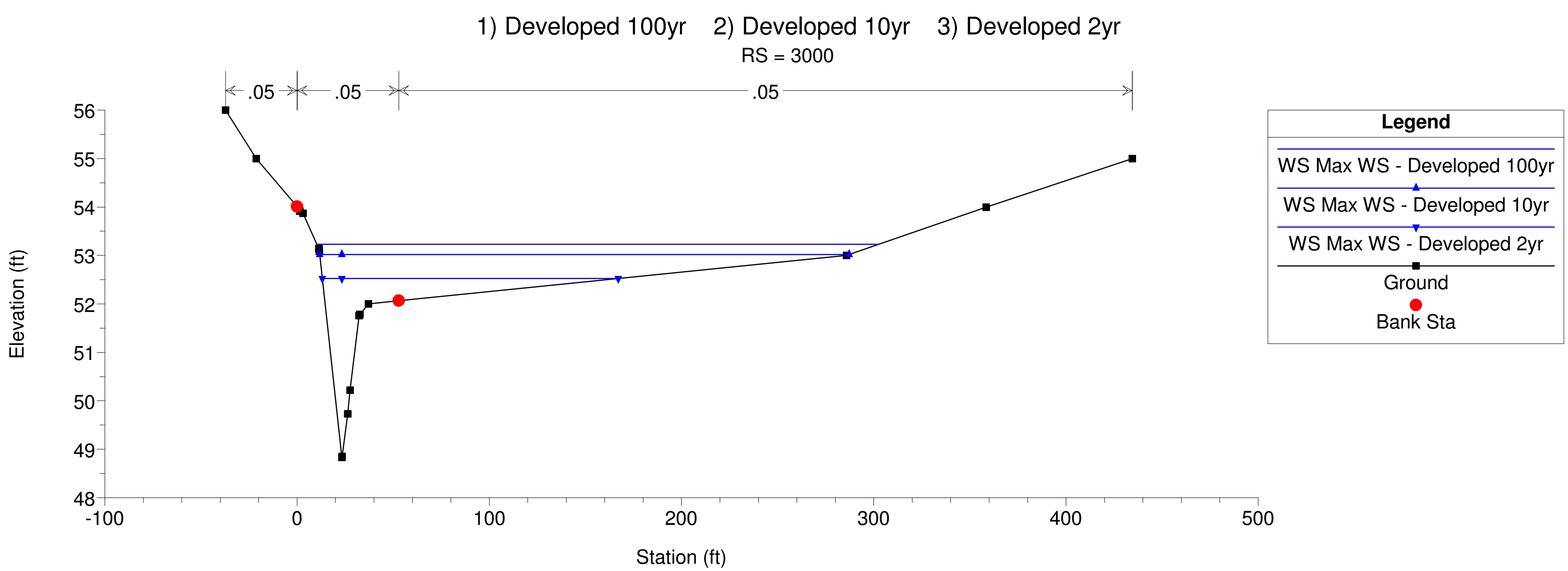
1) Developed 100yr 2) Developed 10yr 3) Developed 2yr
RS = 3560 Culv
.05
.05
.015
Elevation (ft)
Station (ft)
Legend
WS Max WS - Developed 100yr
WS Max WS - Developed 10yr
WS Max WS - Developed 2yr
Ground
Ineff
Bank Sta
1) Developed 100yr 2) Developed 10yr 3) Developed 2yr
RS = 3480
.05
.05
.015
Elevation (ft)
Station (ft)
Legend
WS Max WS - Developed 100yr
WS Max WS - Developed 10yr
WS Max WS - Developed 2yr
Ground
Ineff
Bank Sta


1) Developed 100yr 2) Developed 10yr 3) Developed 2yr
RS = 3390
.05
.05
.05
Elevation (ft)
Station (ft)
Legend
WS Max WS - Developed 100yr
WS Max WS - Developed 10yr
WS Max WS - Developed 2yr
Ground
Bank Sta

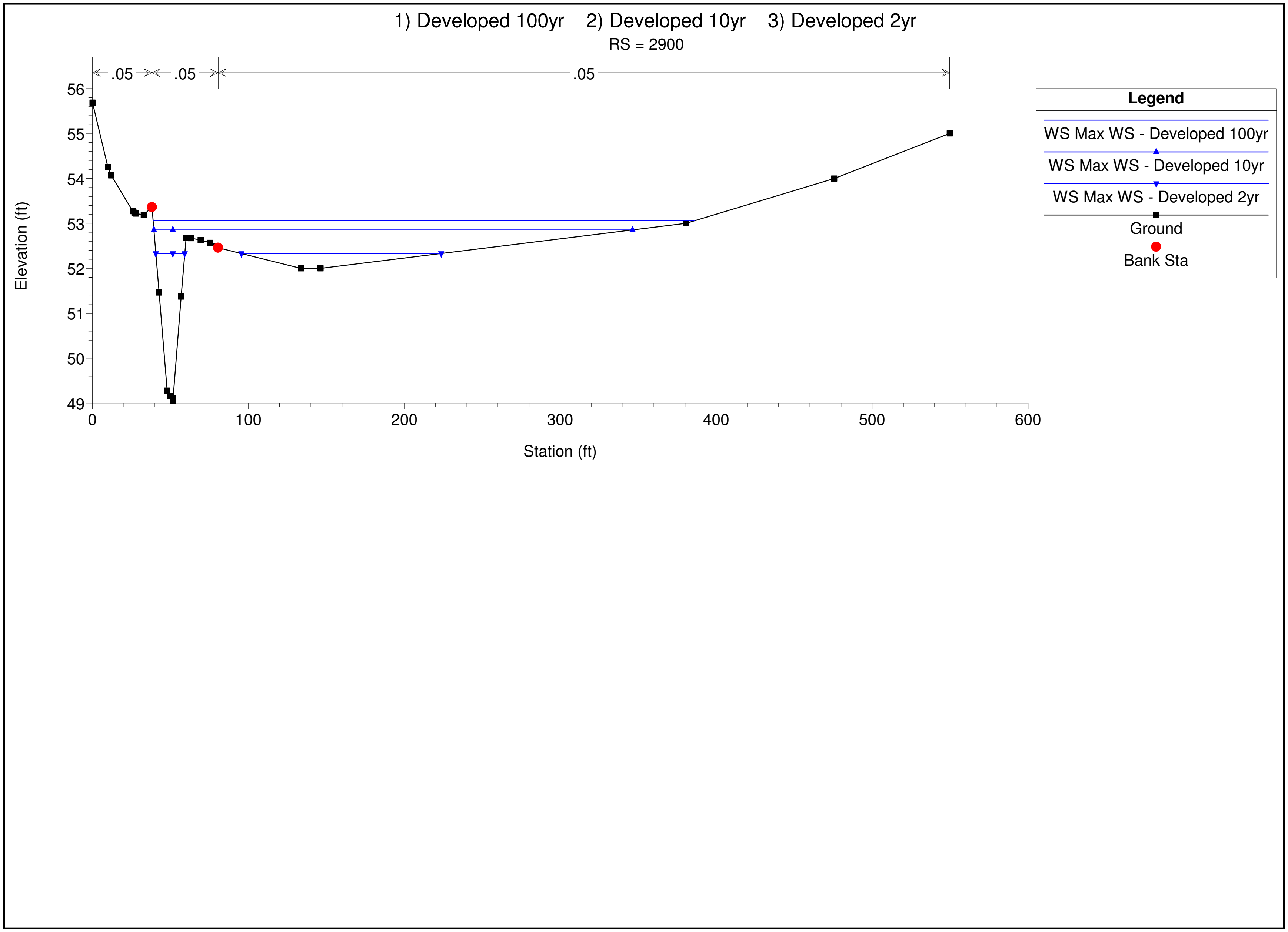

1) Developed 100yr 2) Developed 10yr 3) Developed 2yr
RS = 3300
.05
.05
.05
Elevation (ft)
Station (ft)
Legend
WS Max WS - Developed 100yr
WS Max WS - Developed 10yr
WS Max WS - Developed 2yr
Ground
Bank Sta



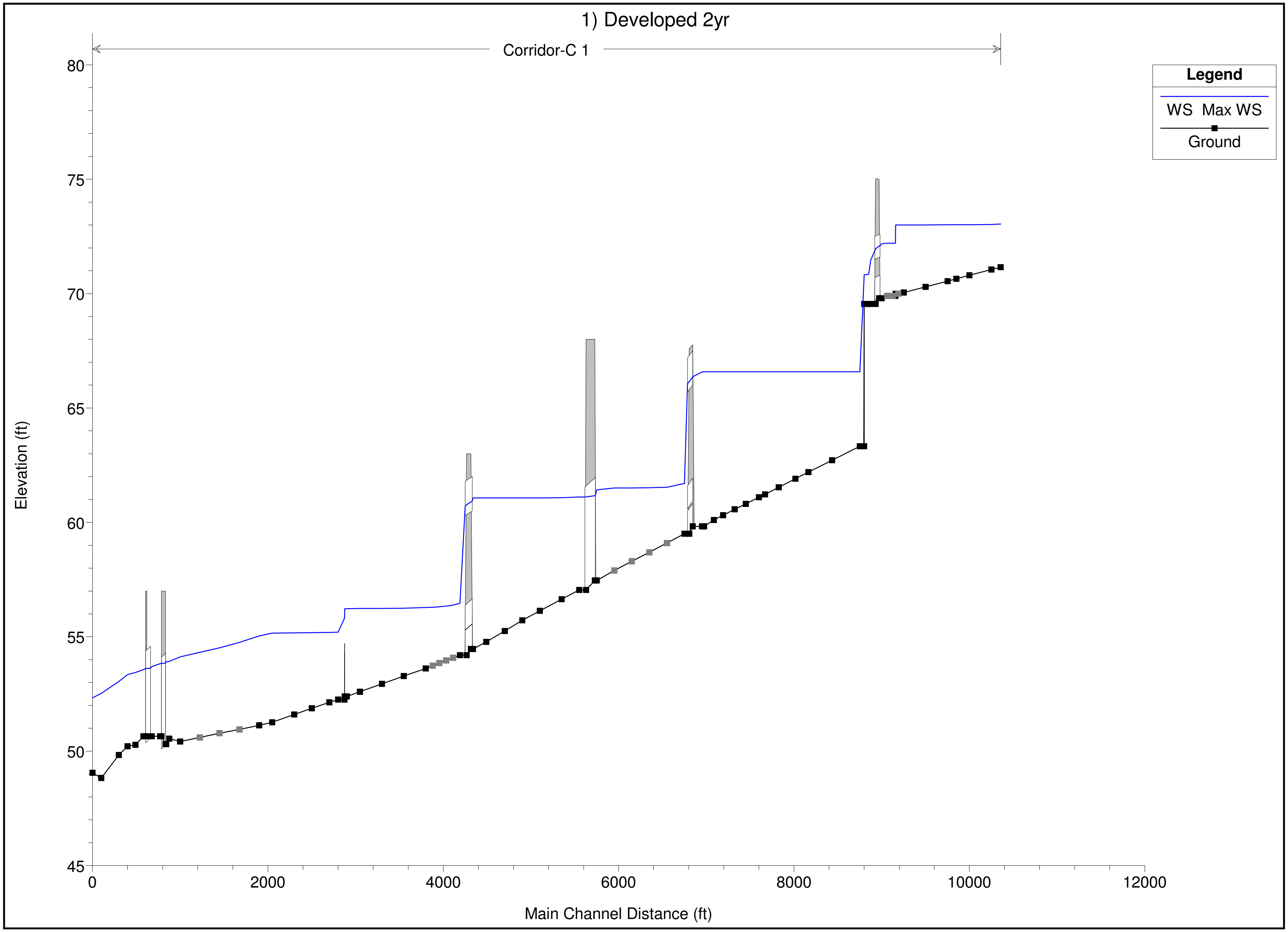
1) Developed 100yr 2) Developed 10yr 3) Developed 2yr
RS = 3200
.05
.05
.05
Elevation (ft)
Station (ft)
58
56
54
52
50
48
-100
0
100
200
300
400
Legend
WS Max WS - Developed 100yr
WS Max WS - Developed 10yr
WS Max WS - Developed 2yr
Ground
Bank Sta



1) Developed 100yr 2) Developed 10yr 3) Developed 2yr
RS = 3000
.05
.05
.05
Elevation (ft)
Station (ft)
56
55
54
53
52
51
50
49
48
-100
0
100
200
300
400
500
Legend
WS Max WS - Developed 100yr
WS Max WS - Developed 10yr
WS Max WS - Developed 2yr
Ground
Bank Sta



1) Developed 100yr 2) Developed 10yr 3) Developed 2yr
RS = 2900
.05
.05
.05
Legend
WS Max WS - Developed 100yr
WS Max WS - Developed 10yr
WS Max WS - Developed 2yr
Ground
Bank Sta
Elevation (ft)
Station (ft)
56
55
54
53
52
51
50
49
0
100
200
300
400
500
600


1) Developed 2yr
Corridor-C 1
Legend
WS Max WS
Ground
Elevation (ft)
Main Channel Distance (ft)
80
75
70
65
60
55
50
45
0
2000
4000
6000
8000
10000
12000

HEC-RAS Version 4.1.0 Jan 2010
U.S. Army Corps of Engineers
Hydrologic Engineering Center
609 Second Street
Davis, California

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X     X  XXXXXX    XXXX        XXXX       XX      XXXX
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X     X  X        X            X  X     X    X        X
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PROJECT DATA
Project Title: Corridor-C
Project File : CorridorC.prj
Run Date and Time: 5/6/2011 8:05:37 AM

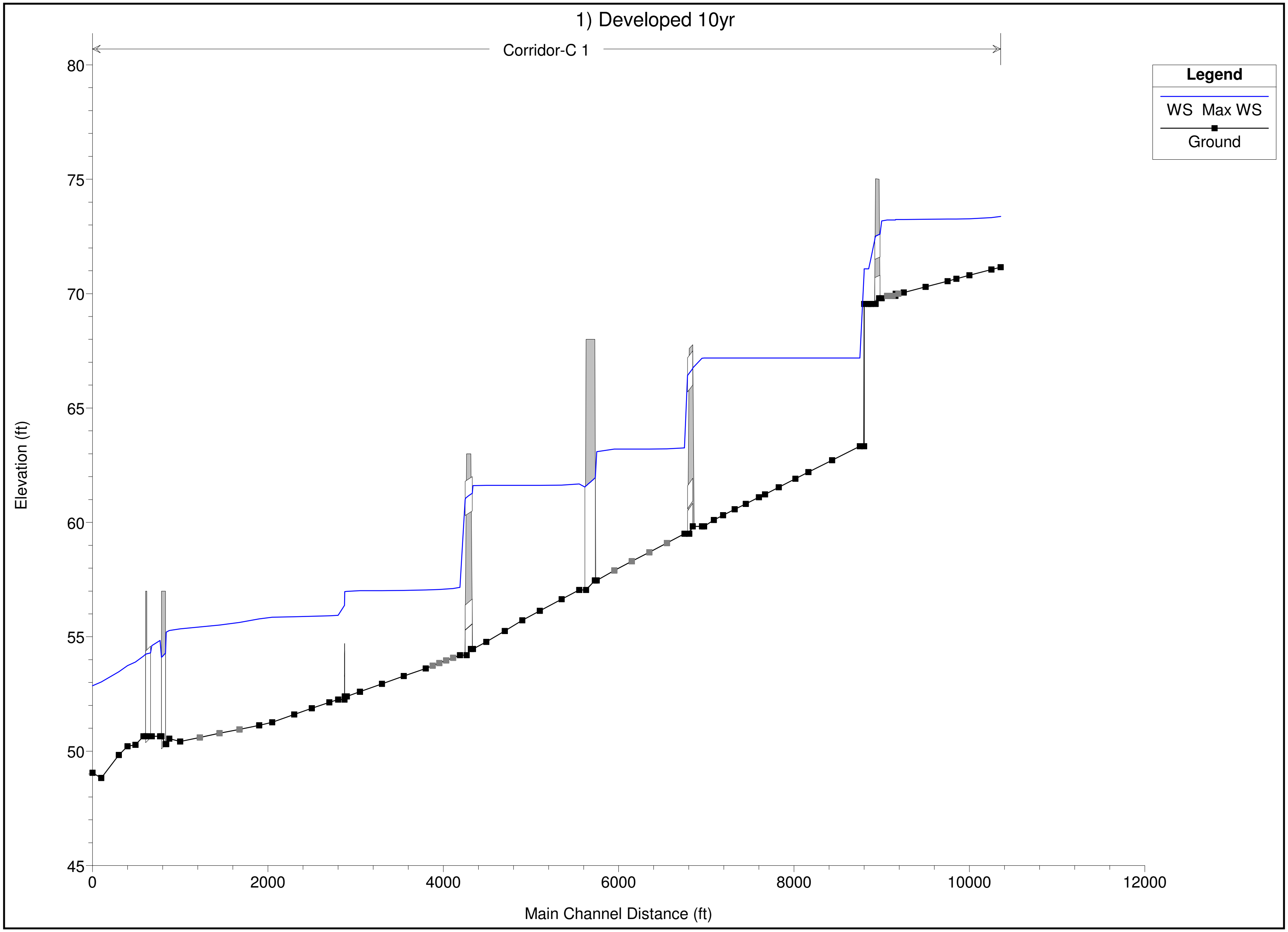
Project in English units

Project Description:
C Corridor - Developed, Interim and Existing Conditions
2 yr 24 hr Developed

Profile Output Table - Standard Table 1

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
1	13307	Max WS	25.86	71.16	73.04		73.04	0.000225	0.23	114.07	239.30	0.06
1	13200	Max WS	24.86	71.05	73.03		73.03	0.000101	0.16	154.71	298.71	0.04
1	12950	Max WS	23.64	70.80	73.01		73.01	0.000025	0.10	235.32	319.10	0.02
1	12800	Max WS	23.81	70.65	73.01		73.01	0.000013	0.08	289.12	328.08	0.02
1	12700	Max WS	24.07	70.55	73.01		73.01	0.000009	0.07	322.53	330.31	0.01
1	12450	Max WS	24.70	70.30	73.01		73.01	0.000006	0.07	368.72	302.06	0.01
1	12200	Max WS	25.31	70.05	73.01		73.01	0.000002	0.04	633.50	434.05	0.01
1	12137.5*	Max WS	46.94	70.00	73.01	71.22	73.01	0.000004	0.07	697.27	463.55	0.01
1	12080		Inl Struct									
1	12075.*	Max WS	47.12	69.90	72.20		72.20	0.000030	0.12	396.05	485.36	0.02
1	12012.5*	Max WS	47.01	69.90	72.20		72.20	0.000025	0.11	431.54	516.11	0.02
1	11950	Max WS	46.95	69.80	72.18		72.19	0.000485	0.70	67.20	545.45	0.10
1	11900		Culvert									
1	11825	Max WS	39.67	69.55	71.48		71.50	0.001802	1.08	36.75	494.58	0.19
1	11800	Max WS	46.93	69.55	70.84	70.77	70.88	0.038618	1.58	29.79	161.49	0.65
1	11750		Inl Struct									
1	11700	Max WS	43.31	63.33	66.58		66.58	0.000005	0.08	563.73	323.24	0.01
1	11385	Max WS	43.29	62.72	66.58		66.58	0.000001	0.04	1080.57	463.03	0.00
1	11115	Max WS	43.32	62.20	66.58		66.58	0.000001	0.04	1108.26	392.84	0.00
1	10965	Max WS	43.51	61.91	66.58		66.58	0.000000	0.03	1257.72	406.29	0.00
1	10776	Max WS	43.76	61.54	66.58		66.58	0.000000	0.04	1192.78	348.36	0.00
1	10620	Max WS	44.04	61.23	66.58		66.58	0.000001	0.05	880.26	241.51	0.00
1	10550	Max WS	44.11	61.10	66.58		66.58	0.000001	0.05	918.67	244.24	0.00
1	10400	Max WS	44.23	60.81	66.58		66.58	0.000000	0.03	1265.73	311.20	0.00
1	10272	Max WS	44.37	60.57	66.58		66.58	0.000000	0.02	1798.12	414.74	0.00
1	10142	Max WS	44.53	60.31	66.58		66.58	0.000000	0.03	1658.00	364.76	0.00
1	10035	Max WS	46.18	60.11	66.58		66.58	0.000000	0.03	1516.33	323.01	0.00
1	9925	Max WS	46.39	59.83	66.58		66.58	0.000000	0.04	1067.63	222.55	0.00
1	9900	Max WS	52.59	59.83	66.58		66.58	0.000011	0.26	202.87	222.54	0.02
1	9790		Culvert									

1	9700	Max WS	52.55	59.50	61.70		61.72	0.001660	1.18	44.59	161.61	0.18
1	9500.*	Max WS	52.53	59.10	61.54		61.54	0.000170	0.33	159.99	155.48	0.06
1	9300.*	Max WS	52.52	58.70	61.52		61.52	0.000060	0.24	215.99	150.97	0.04
1	9100.*	Max WS	52.63	58.30	61.51		61.51	0.000025	0.19	277.94	147.38	0.02
1	8900.*	Max WS	52.74	57.90	61.51		61.51	0.000014	0.16	330.55	144.18	0.02
1	8700	Max WS	52.46	57.46	61.42		61.45	0.000749	1.52	34.57	139.57	0.14
1	8650	Culvert										
1	8500	Max WS	41.71	57.05	61.11		61.13	0.000431	1.17	35.57	121.02	0.11
1	8300	Max WS	39.64	56.64	61.07		61.07	0.000006	0.12	344.63	123.35	0.01
1	8050	Max WS	39.62	56.13	61.07		61.07	0.000003	0.10	408.57	126.81	0.01
1	7850	Max WS	78.37	55.72	61.07		61.07	0.000002	0.08	973.86	265.58	0.01
1	7650	Max WS	79.92	55.25	61.07		61.07	0.000001	0.05	1498.23	361.58	0.00
1	7440	Max WS	86.24	54.78	61.07		61.07	0.000000	0.05	1881.03	409.58	0.00
1	7290	Max WS	102.42	54.47	61.07		61.07	0.000016	0.31	333.18	388.56	0.02
1	7225	Culvert										
1	7090	Max WS	94.76	54.20	56.47		56.49	0.002074	1.29	73.59	240.67	0.20
1	7012.*	Max WS	81.16	54.08	56.39		56.39	0.000618	0.48	168.39	242.65	0.10
1	6934.*	Max WS	79.01	53.97	56.34		56.35	0.000461	0.43	183.36	250.95	0.09
1	6856.*	Max WS	77.46	53.85	56.32		56.32	0.000336	0.38	202.24	260.83	0.08
1	6778.*	Max WS	76.46	53.74	56.29		56.30	0.000252	0.34	222.27	271.55	0.07
1	6700	Max WS	75.93	53.62	56.28		56.28	0.000189	0.31	245.26	282.03	0.06
1	6450	Max WS	75.25	53.28	56.25		56.25	0.000040	0.16	476.09	470.31	0.03
1	6200	Max WS	75.32	52.94	56.24		56.24	0.000017	0.12	609.68	460.12	0.02
1	5950	Max WS	75.44	52.60	56.24		56.24	0.000008	0.10	786.80	475.92	0.01
1	5800	Max WS	75.43	52.39	56.23		56.23	0.000094	0.48	156.48	544.91	0.05
1	5750	Culvert										
1	5700	Max WS	75.14	52.26	55.20		55.21	0.000351	0.71	105.26	368.54	0.09
1	5600	Max WS	75.09	52.13	55.19		55.19	0.000037	0.22	347.34	201.73	0.03
1	5400	Max WS	75.05	51.87	55.18		55.18	0.000051	0.27	273.91	141.43	0.03
1	5200	Max WS	75.04	51.60	55.17		55.17	0.000037	0.24	312.33	154.36	0.03
1	4950	Max WS	76.48	51.26	55.16		55.16	0.000029	0.23	326.27	140.84	0.03
1	4800	Max WS	76.61	51.13	55.04		55.06	0.001687	1.22	63.11	71.48	0.21
1	4575.*	Max WS	76.60	50.95	54.75		54.77	0.001298	1.19	65.10	68.51	0.19
1	4350.*	Max WS	76.61	50.78	54.52		54.54	0.001011	1.16	69.06	78.73	0.17
1	4125.*	Max WS	76.63	50.60	54.32		54.34	0.000852	1.18	72.67	84.50	0.16
1	3900	Max WS	76.68	50.42	54.12		54.15	0.000882	1.27	72.58	82.78	0.17
1	3775	Max WS	76.68	50.55	53.93		53.98	0.002058	1.75	45.00	49.84	0.25
1	3740	Max WS	76.68	50.31	53.91		53.93	0.000441	1.30	58.98	27.62	0.13
1	3730	Culvert										
1	3670	Max WS	76.68	50.65	53.82		53.88	0.001416	1.86	41.14	20.85	0.22
1	3575	Max WS	76.68	50.65	53.70		53.75	0.001295	1.79	42.72	24.42	0.21
1	3560	Culvert										
1	3480	Max WS	76.68	50.65	53.57		53.66	0.003720	2.47	31.01	19.93	0.34
1	3390	Max WS	76.68	50.28	53.44		53.46	0.000659	1.14	66.98	35.70	0.15
1	3300	Max WS	76.65	50.21	53.35		53.37	0.001628	1.53	76.16	156.85	0.22
1	3200	Max WS	78.27	49.83	53.05		53.12	0.005142	2.24	41.77	204.88	0.37
1	3000	Max WS	78.25	48.83	52.52		52.55	0.001562	1.34	76.05	154.02	0.21
1	2900	Max WS	78.25	49.05	52.33	50.86	52.38	0.002022	1.95	58.27	146.75	0.25


1) Developed 10yr
Corridor-C 1
Legend
WS Max WS
Ground
Elevation (ft)
80
75
70
65
60
55
50
45
0
2000
4000
6000
8000
10000
12000
Main Channel Distance (ft)

```
                 HEC-RAS Version 4.1.0 Jan 2010
                 U.S. Army Corps of Engineers
                 Hydrologic Engineering Center
                       609 Second Street
                       Davis, California

      X     X  XXXXXX    XXXX        XXXX       XX       XXXX
      X     X  X        X    X       X   X     X  X     X
      X     X  X        X            X   X    X    X    X
      XXXXXXX  XXXX     X       XXX  XXXX     XXXXXX     XXXX
      X     X  X        X            X  X     X    X         X
      X     X  X        X    X       X   X    X    X         X
      X     X  XXXXXX    XXXX        X    X   X    X    XXXXX
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PROJECT DATA
Project Title: Corridor-C
Project File : CorridorC.prj
Run Date and Time: 5/6/2011 8:05:07 AM

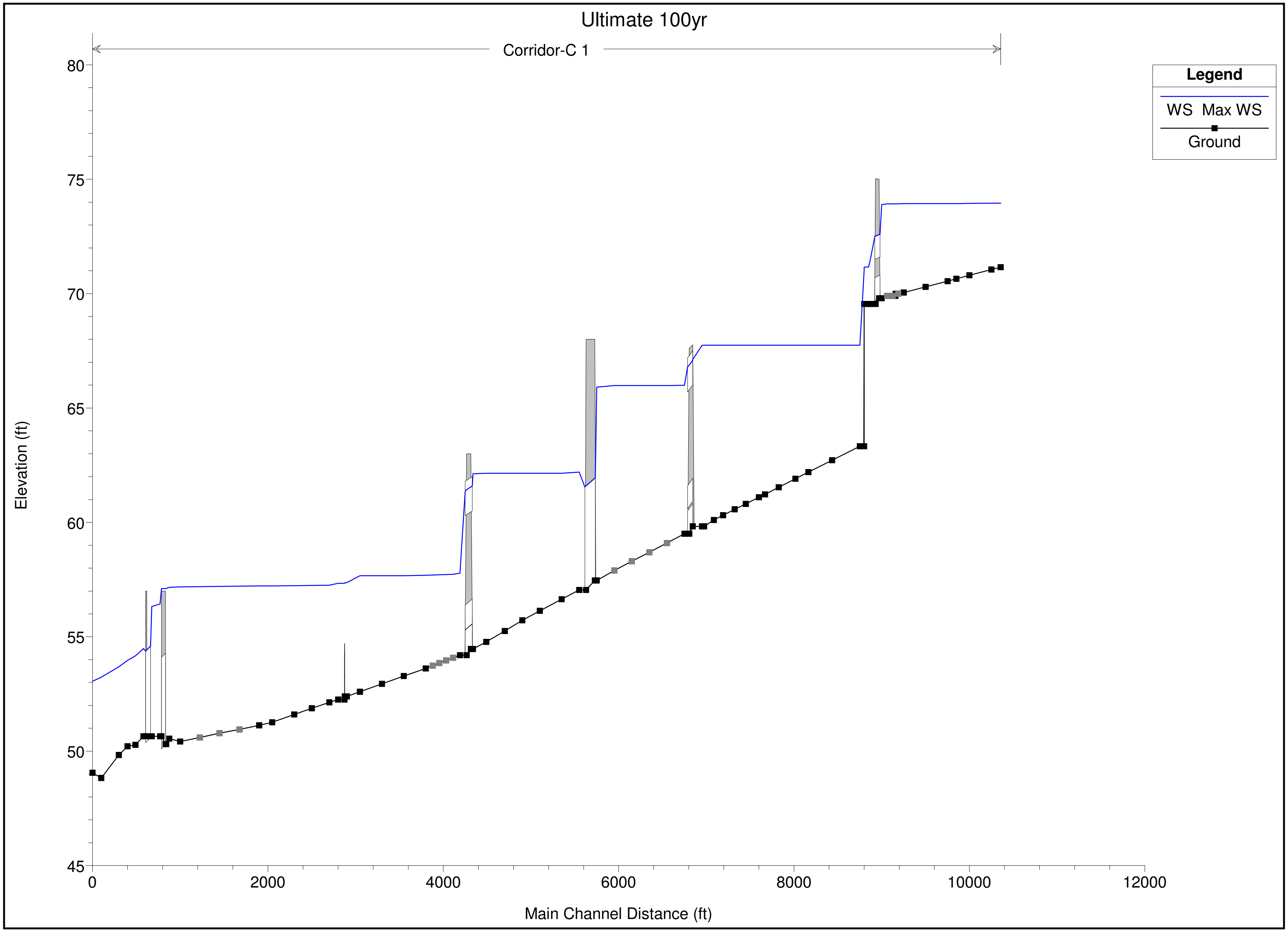
Project in English units

Project Description:
C Corridor - Developed, Interim and Existing Conditions
10 yr 24 hr Developed

Profile Output Table - Standard Table 1

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
1	13307	Max WS	98.16	71.16	73.37		73.38	0.000575	0.49	201.84	271.91	0.10
1	13200	Max WS	94.50	71.05	73.33		73.33	0.000320	0.38	247.11	307.98	0.08
1	12950	Max WS	79.82	70.80	73.28		73.28	0.000102	0.25	319.82	321.21	0.04
1	12800	Max WS	79.35	70.65	73.26		73.27	0.000063	0.21	373.04	330.12	0.04
1	12700	Max WS	79.08	70.55	73.26		73.26	0.000048	0.19	405.66	332.66	0.03
1	12450	Max WS	80.91	70.30	73.25		73.25	0.000033	0.18	442.28	304.00	0.03
1	12200	Max WS	82.26	70.05	73.24		73.24	0.000010	0.11	737.24	435.96	0.02
1	12137.5*	Max WS	152.83	70.00	73.24	71.43	73.24	0.000028	0.19	807.27	465.43	0.03
1	12080		Inl Struct									
1	12075.*	Max WS	152.19	69.90	73.22		73.22	0.000021	0.17	895.62	494.77	0.02
1	12012.5*	Max WS	152.03	69.90	73.22		73.22	0.000018	0.16	961.55	524.30	0.02
1	11950	Max WS	151.94	69.80	73.18		73.21	0.000893	1.34	113.17	553.45	0.15
1	11900		Culvert									
1	11825	Max WS	134.97	69.55	71.51		71.71	0.018715	3.55	37.97	512.77	0.60
1	11800	Max WS	151.92	69.55	71.09	70.97	71.14	0.026676	1.78	85.12	290.04	0.58
1	11750		Inl Struct									
1	11700	Max WS	99.39	63.33	67.19		67.19	0.000009	0.13	760.73	328.10	0.02
1	11385	Max WS	99.12	62.72	67.18		67.18	0.000002	0.07	1361.85	467.88	0.01
1	11115	Max WS	98.83	62.20	67.18		67.18	0.000002	0.07	1347.03	397.67	0.01
1	10965	Max WS	99.51	61.91	67.18		67.18	0.000001	0.07	1504.58	411.13	0.01
1	10776	Max WS	100.28	61.54	67.18		67.18	0.000001	0.07	1404.61	353.22	0.01
1	10620	Max WS	101.20	61.23	67.18		67.18	0.000002	0.10	1027.51	246.36	0.01
1	10550	Max WS	101.38	61.10	67.18		67.18	0.000002	0.09	1067.54	249.07	0.01
1	10400	Max WS	101.75	60.81	67.18		67.18	0.000001	0.07	1454.98	316.03	0.01
1	10272	Max WS	102.14	60.57	67.18		67.18	0.000000	0.05	2049.84	419.62	0.00
1	10142	Max WS	102.60	60.31	67.18		67.18	0.000001	0.05	1879.54	369.62	0.00
1	10035	Max WS	105.96	60.11	67.18		67.18	0.000001	0.06	1712.65	327.84	0.00

1	9925	Max WS	106.65	59.83	67.18		67.18	0.000001	0.09	1203.32	227.39	0.01
1	9900	Max WS	124.44	59.83	67.18		67.18	0.000043	0.56	223.90	227.37	0.04
1	9790		Culvert									
1	9700	Max WS	109.61	59.50	63.25		63.27	0.000507	1.11	98.91	174.02	0.12
1	9500.*	Max WS	109.13	59.10	63.21		63.21	0.000030	0.25	432.63	169.76	0.03
1	9300.*	Max WS	109.03	58.70	63.21		63.21	0.000020	0.23	484.16	165.64	0.02
1	9100.*	Max WS	109.23	58.30	63.20		63.20	0.000013	0.20	540.16	161.69	0.02
1	8900.*	Max WS	109.43	57.90	63.20		63.20	0.000010	0.19	586.86	158.00	0.02
1	8700	Max WS	109.38	57.46	63.09		63.16	0.000873	2.13	51.32	152.92	0.17
1	8650		Culvert									
1	8500	Max WS	74.88	57.05	61.69		61.74	0.000841	1.81	41.34	124.66	0.16
1	8300	Max WS	65.41	56.64	61.62		61.63	0.000009	0.16	413.43	126.81	0.02
1	8050	Max WS	65.37	56.13	61.62		61.62	0.000005	0.14	479.20	130.32	0.01
1	7850	Max WS	163.70	55.72	61.62		61.62	0.000005	0.15	1120.67	269.97	0.01
1	7650	Max WS	168.38	55.25	61.62		61.62	0.000002	0.10	1697.52	365.96	0.01
1	7440	Max WS	185.56	54.78	61.62		61.62	0.000001	0.09	2106.50	413.96	0.01
1	7290	Max WS	225.42	54.47	61.61		61.62	0.000056	0.62	365.71	392.90	0.04
1	7225		Culvert									
1	7090	Max WS	185.27	54.20	57.16		57.20	0.001769	1.61	115.41	368.77	0.20
1	7012.*	Max WS	182.61	54.08	57.11		57.11	0.000329	0.47	390.66	367.47	0.08
1	6934.*	Max WS	181.77	53.97	57.09		57.09	0.000256	0.44	416.47	360.23	0.07
1	6856.*	Max WS	181.67	53.85	57.07		57.07	0.000203	0.41	443.25	353.62	0.06
1	6778.*	Max WS	181.57	53.74	57.05		57.06	0.000165	0.39	469.29	348.73	0.06
1	6700	Max WS	181.46	53.62	57.04		57.05	0.000133	0.37	496.03	342.22	0.05
1	6450	Max WS	181.96	53.28	57.02		57.02	0.000036	0.21	847.76	483.31	0.03
1	6200	Max WS	182.54	52.94	57.02		57.02	0.000022	0.19	968.25	466.54	0.02
1	5950	Max WS	183.43	52.60	57.01		57.01	0.000013	0.16	1156.96	482.10	0.02
1	5800	Max WS	183.30	52.39	56.98		56.99	0.000256	0.93	197.54	550.88	0.09
1	5750		Culvert									
1	5700	Max WS	179.44	52.26	55.93		55.96	0.000681	1.23	145.40	384.73	0.13
1	5600	Max WS	178.76	52.13	55.91		55.91	0.000067	0.36	495.60	207.48	0.04
1	5400	Max WS	178.55	51.87	55.89		55.90	0.000105	0.47	377.11	147.15	0.05
1	5200	Max WS	178.35	51.60	55.88		55.88	0.000080	0.42	423.31	160.01	0.05
1	4950	Max WS	183.29	51.26	55.86		55.86	0.000073	0.43	426.00	146.12	0.04
1	4800	Max WS	184.72	51.13	55.78		55.80	0.000839	1.23	219.68	345.88	0.16
1	4575.*	Max WS	183.79	50.95	55.63		55.64	0.000601	1.16	232.18	310.35	0.14
1	4350.*	Max WS	183.62	50.78	55.52		55.53	0.000441	1.10	244.66	270.60	0.13
1	4125.*	Max WS	183.74	50.60	55.43		55.44	0.000364	1.09	244.33	221.29	0.12
1	3900	Max WS	183.89	50.42	55.35		55.36	0.000361	1.14	225.88	168.63	0.12
1	3775	Max WS	183.89	50.55	55.27		55.30	0.000685	1.44	168.84	135.19	0.16
1	3740	Max WS	183.88	50.31	55.20		55.28	0.000793	2.20	83.63	126.95	0.18
1	3730		Culvert									
1	3670	Max WS	183.88	50.65	54.84		54.99	0.002457	3.05	60.27	28.19	0.30
1	3575	Max WS	183.88	50.65	54.61		54.76	0.002390	3.06	60.08	29.47	0.30
1	3560		Culvert									
1	3480	Max WS	183.88	50.65	54.15		54.45	0.007806	4.36	42.15	22.30	0.52
1	3390	Max WS	183.88	50.28	53.90		53.97	0.002454	2.17	84.86	46.66	0.28
1	3300	Max WS	183.87	50.21	53.74		53.78	0.002152	1.82	146.14	192.78	0.25
1	3200	Max WS	189.21	49.83	53.47		53.51	0.003485	2.17	131.17	219.61	0.32
1	3000	Max WS	189.17	48.83	53.02		53.05	0.001435	1.57	183.76	275.50	0.21
1	2900	Max WS	189.17	49.05	52.85	52.39	52.88	0.002181	1.55	179.66	306.94	0.25



Ultimate 100yr
Corridor-C 1
Legend
WS Max WS
Ground
Elevation (ft)
80
75
70
65
60
55
50
45
0
2000
4000
6000
8000
10000
12000
Main Channel Distance (ft)

HEC-RAS Version 4.1.0 Jan 2010
U.S. Army Corps of Engineers
Hydrologic Engineering Center
609 Second Street
Davis, California

```
X     X  XXXXXX    XXXX        XXXX      XX      XXXX
X     X  X        X    X       X   X    X  X    X
X     X  X        X            X   X   X    X   X
XXXXXXX  XXXX     X       XXX  XXXX    XXXXXX    XXXX
X     X  X        X            X  X    X    X        X
X     X  X        X    X       X   X   X    X        X
X     X  XXXXXX    XXXX        X    X  X    X   XXXXX
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PROJECT DATA
Project Title: Corridor-C
Project File : CorridorC.prj
Run Date and Time: 5/6/2011 8:04:43 AM

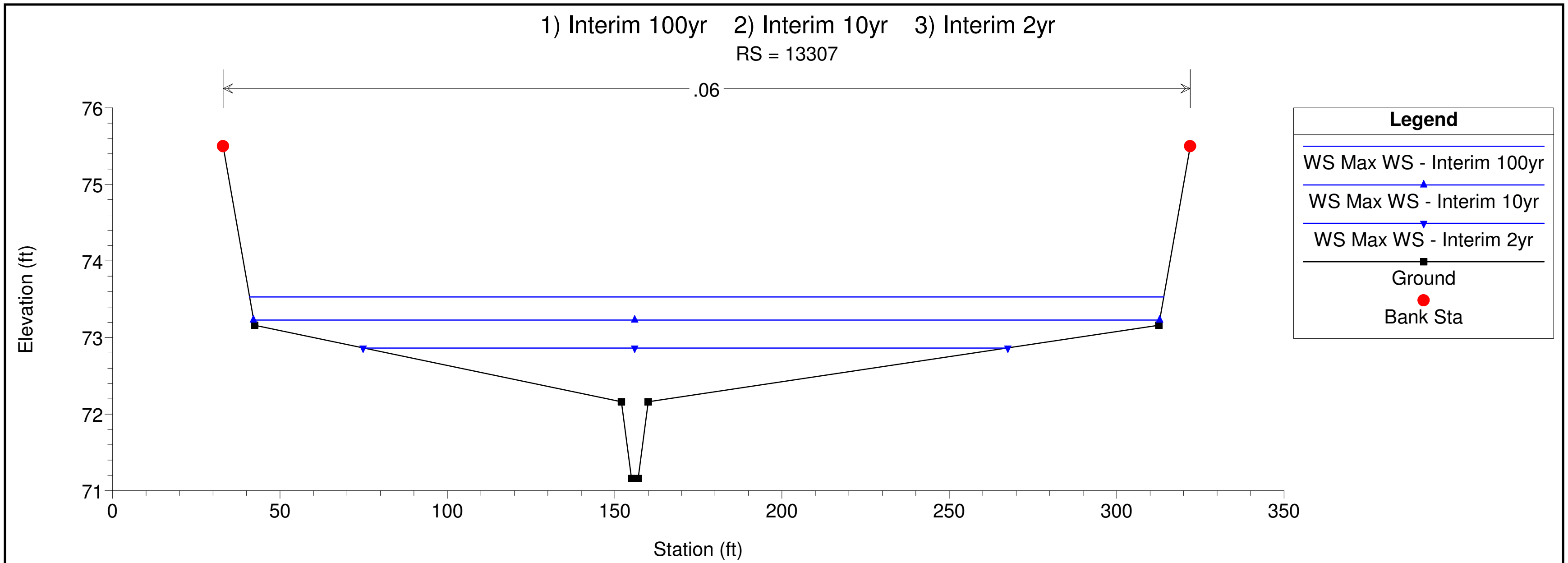
Project in English units

Project Description:
C Corridor - Developed, Interim and Existing Conditions
100 yr 24 hr Developed

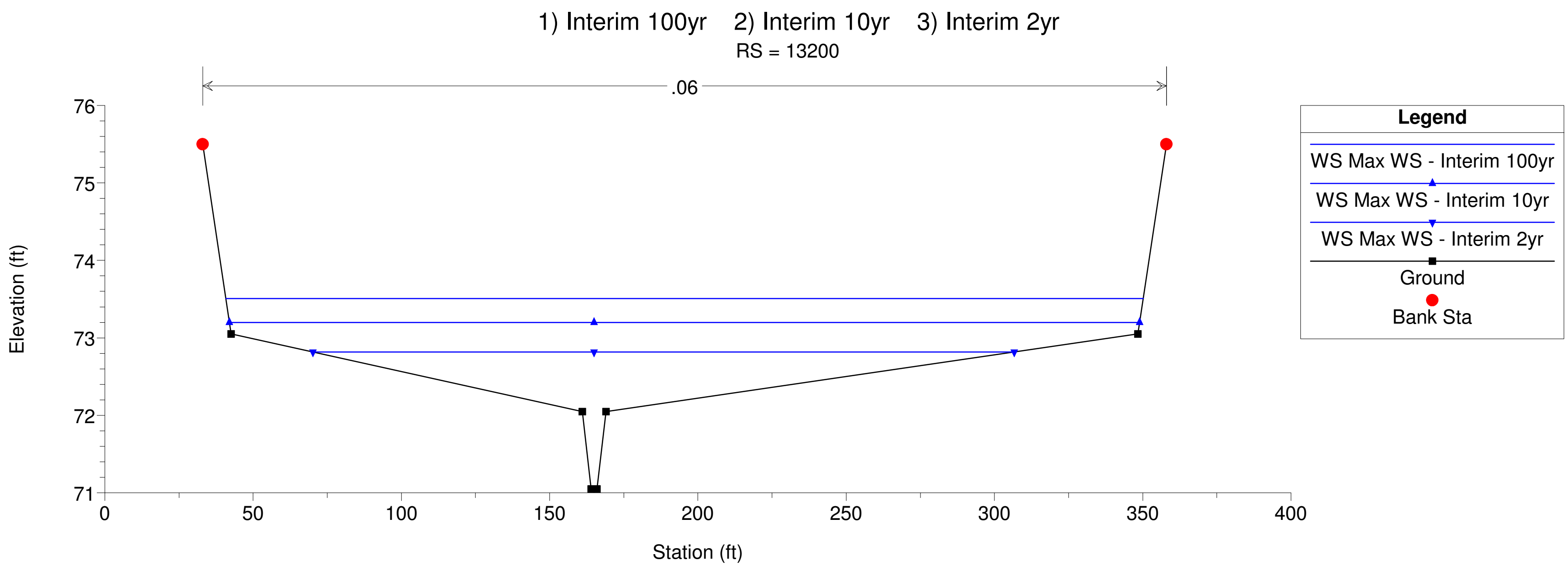
Profile Output Table - Standard Table 1

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
1	13307	Max WS	105.20	71.16	73.96		73.96	0.000095	0.29	363.08	276.63	0.04
1	13200	Max WS	103.09	71.05	73.95		73.95	0.000056	0.23	441.41	312.88	0.03
1	12950	Max WS	102.68	70.80	73.94		73.94	0.000031	0.19	535.82	326.55	0.03
1	12800	Max WS	103.45	70.65	73.94		73.94	0.000023	0.17	597.61	335.52	0.02
1	12700	Max WS	104.69	70.55	73.94		73.94	0.000019	0.17	633.36	339.03	0.02
1	12450	Max WS	107.78	70.30	73.93		73.93	0.000017	0.17	651.89	309.46	0.02
1	12200	Max WS	110.89	70.05	73.93		73.93	0.000006	0.11	1038.11	441.44	0.01
1	12137.5*	Max WS	204.86	70.00	73.93	71.50	73.93	0.000017	0.18	1128.58	470.89	0.02
1	12080	Inl Struct										
1	12075.*	Max WS	204.86	69.90	73.93		73.93	0.000013	0.16	1246.73	500.42	0.02
1	12012.5*	Max WS	204.84	69.90	73.93		73.93	0.000011	0.15	1333.73	529.97	0.02
1	11950	Max WS	204.84	69.80	73.89		73.92	0.000696	1.40	145.92	559.14	0.14
1	11900	Culvert										
1	11825	Max WS	204.83	69.55	71.59		71.98	0.034222	5.03	40.69	532.92	0.82
1	11800	Max WS	204.83	69.55	71.17	71.03	71.22	0.024483	1.86	110.36	332.57	0.57
1	11750	Inl Struct										
1	11700	Max WS	176.36	63.33	67.75		67.75	0.000014	0.19	946.89	332.62	0.02
1	11385	Max WS	176.30	62.72	67.75		67.75	0.000004	0.11	1626.30	472.39	0.01
1	11115	Max WS	176.22	62.20	67.75		67.75	0.000003	0.11	1571.79	402.17	0.01
1	10965	Max WS	177.37	61.91	67.75		67.75	0.000003	0.10	1736.81	415.63	0.01
1	10776	Max WS	178.67	61.54	67.75		67.75	0.000003	0.11	1604.19	357.73	0.01
1	10620	Max WS	180.11	61.23	67.74		67.74	0.000005	0.15	1166.98	250.87	0.01
1	10550	Max WS	180.42	61.10	67.74		67.74	0.000005	0.15	1208.49	253.55	0.01
1	10400	Max WS	181.06	60.81	67.74		67.74	0.000002	0.11	1633.42	320.52	0.01
1	10272	Max WS	181.76	60.57	67.74		67.74	0.000001	0.08	2286.34	424.15	0.01
1	10142	Max WS	182.55	60.31	67.74		67.74	0.000001	0.09	2087.98	374.15	0.01
1	10035	Max WS	187.43	60.11	67.74		67.74	0.000002	0.10	1897.61	332.33	0.01
1	9925	Max WS	188.50	59.83	67.74		67.74	0.000003	0.14	1331.95	231.89	0.01
1	9900	Max WS	210.80	59.83	67.73		67.75	0.000093	0.87	243.30	231.82	0.06

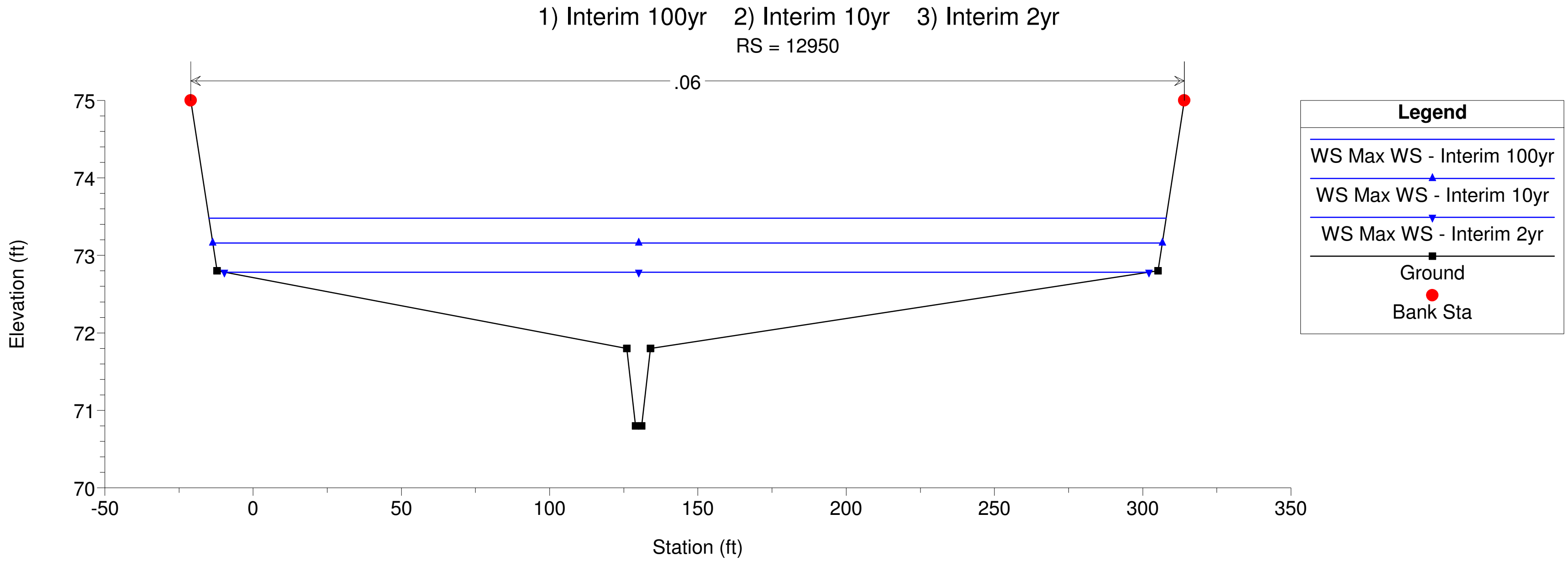
1	9790		Culvert									
1	9700	Max WS	172.86	59.50	65.99		66.00	0.000132	0.89	194.79	195.94	0.07
1	9500.*	Max WS	171.92	59.10	65.99		65.99	0.000007	0.18	934.37	191.93	0.01
1	9300.*	Max WS	171.88	58.70	65.98		65.98	0.000006	0.18	975.19	187.87	0.01
1	9100.*	Max WS	172.31	58.30	65.98		65.98	0.000005	0.17	1020.57	183.90	0.01
1	8900.*	Max WS	172.74	57.90	65.98		65.98	0.000004	0.16	1057.03	180.07	0.01
1	8700	Max WS	172.71	57.46	65.91		65.99	0.000506	2.17	79.52	175.39	0.14
1	8650		Culvert									
1	8500	Max WS	92.85	57.05	62.20		62.27	0.000873	2.00	46.52	127.93	0.16
1	8300	Max WS	62.55	56.64	62.15		62.15	0.000005	0.13	482.20	149.31	0.01
1	8050	Max WS	62.52	56.13	62.15		62.15	0.000003	0.11	548.52	134.66	0.01
1	7850	Max WS	206.89	55.72	62.15		62.15	0.000006	0.16	1263.28	274.16	0.01
1	7650	Max WS	220.46	55.25	62.14		62.14	0.000003	0.12	1890.32	370.15	0.01
1	7440	Max WS	268.49	54.78	62.14		62.14	0.000002	0.12	2324.29	418.15	0.01
1	7290	Max WS	382.61	54.47	62.13		62.14	0.000123	0.96	396.53	397.01	0.07
1	7225		Culvert									
1	7090	Max WS	322.96	54.20	57.78		57.85	0.002117	2.12	152.65	380.27	0.23
1	7012.*	Max WS	317.85	54.08	57.73		57.74	0.000215	0.51	622.79	373.09	0.07
1	6934.*	Max WS	316.27	53.97	57.72		57.72	0.000183	0.49	646.79	366.86	0.06
1	6856.*	Max WS	317.03	53.85	57.71		57.71	0.000159	0.47	671.30	360.36	0.06
1	6778.*	Max WS	316.42	53.74	57.70		57.70	0.000138	0.46	694.40	353.88	0.06
1	6700	Max WS	317.18	53.62	57.69		57.69	0.000121	0.44	717.46	347.40	0.05
1	6450	Max WS	268.09	53.28	57.67		57.67	0.000027	0.23	1160.83	488.42	0.03
1	6200	Max WS	249.06	52.94	57.67		57.67	0.000017	0.20	1272.71	471.93	0.02
1	5950	Max WS	222.36	52.60	57.67		57.67	0.000008	0.15	1474.14	487.34	0.02
1	5800	Max WS	263.04	52.39	57.37		57.37	0.001684	0.75	351.11	553.96	0.17
1	5750		Culvert									
1	5700	Max WS	262.42	52.26	57.34		57.35	0.001757	0.87	302.74	395.84	0.17
1	5600	Max WS	261.29	52.13	57.26		57.26	0.000033	0.33	782.16	218.17	0.03
1	5400	Max WS	261.03	51.87	57.25		57.25	0.000058	0.45	583.76	157.98	0.04
1	5200	Max WS	261.03	51.60	57.24		57.24	0.000045	0.40	648.76	170.91	0.04
1	4950	Max WS	269.97	51.26	57.23		57.23	0.000046	0.43	633.31	156.53	0.04
1	4800	Max WS	273.90	51.13	57.22		57.22	0.000048	0.44	891.09	524.98	0.04
1	4575.*	Max WS	274.29	50.95	57.21		57.21	0.000043	0.45	868.97	451.14	0.04
1	4350.*	Max WS	274.65	50.78	57.20		57.20	0.000042	0.48	812.76	376.23	0.04
1	4125.*	Max WS	275.02	50.60	57.19		57.19	0.000047	0.54	719.21	301.89	0.05
1	3900	Max WS	275.39	50.42	57.18		57.18	0.000063	0.65	591.44	229.56	0.05
1	3775	Max WS	275.37	50.55	57.17		57.17	0.000097	0.78	486.11	200.21	0.06
1	3740	Max WS	275.36	50.31	57.11		57.18	0.002280	2.16	138.31	191.84	0.27
1	3730		Culvert									
1	3670	Max WS	275.37	50.65	56.44		56.58	0.001413	3.04	90.64	171.80	0.25
1	3575	Max WS	275.36	50.65	56.32		56.46	0.001271	2.98	92.52	55.20	0.24
1	3560		Culvert									
1	3480	Max WS	275.37	50.65	54.48		54.99	0.011050	5.69	48.39	23.68	0.63
1	3390	Max WS	275.37	50.28	54.16		54.28	0.003549	2.76	107.08	101.84	0.35
1	3300	Max WS	275.34	50.21	53.97		54.01	0.002305	2.04	192.16	210.53	0.27
1	3200	Max WS	284.63	49.83	53.69		53.74	0.003293	2.23	180.88	228.15	0.32
1	3000	Max WS	284.60	48.83	53.23		53.26	0.001572	1.74	243.83	292.42	0.23
1	2900	Max WS	284.58	49.05	53.06	52.62	53.08	0.002103	1.68	247.23	347.34	0.25

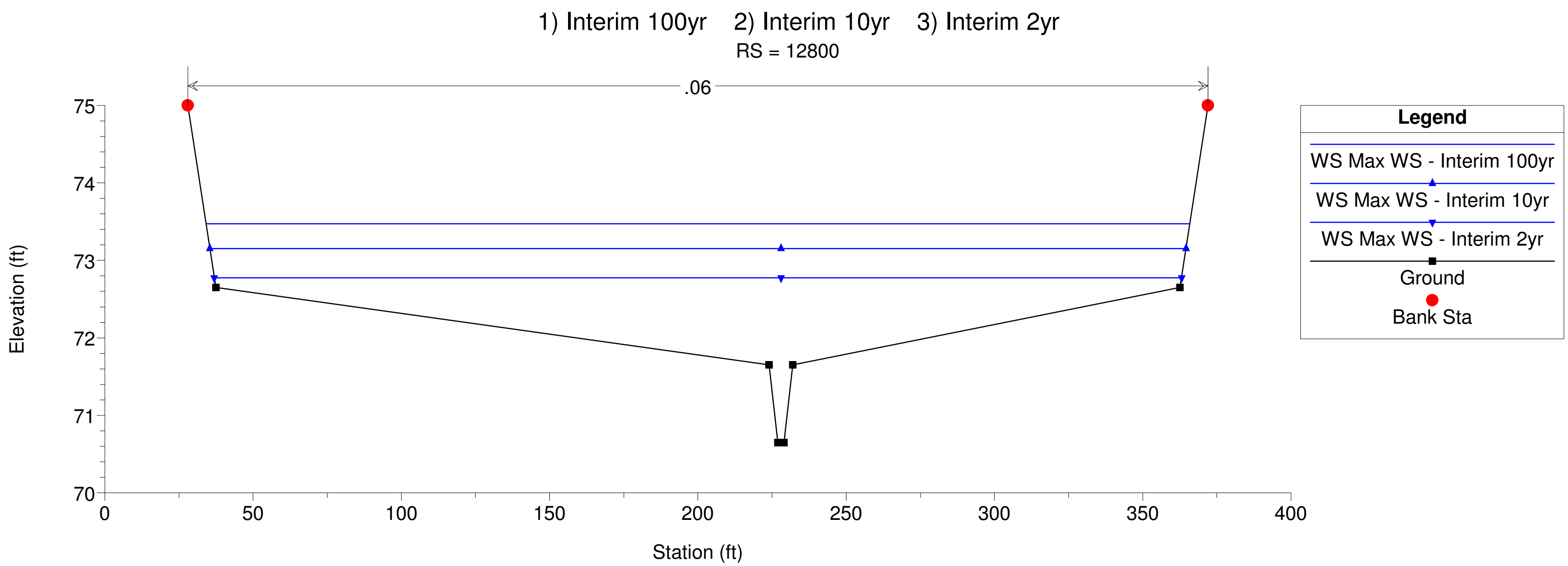


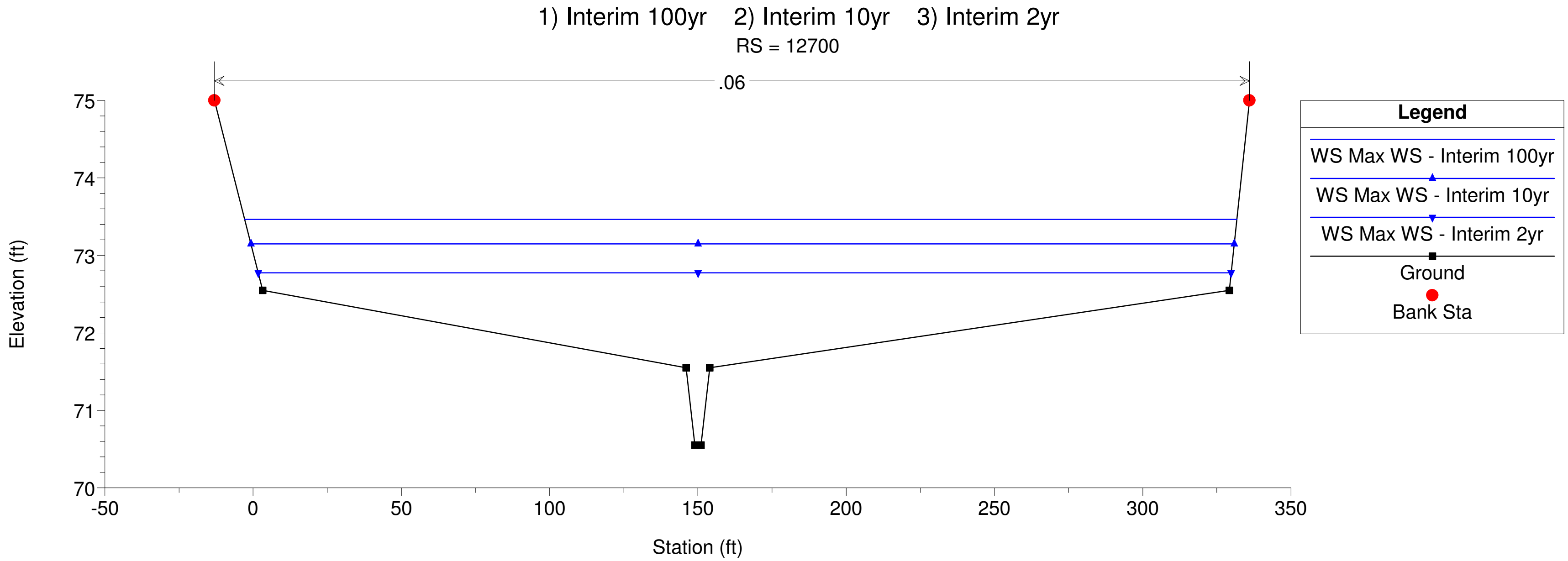
1) Interim 100yr 2) Interim 10yr 3) Interim 2yr
RS = 13307
.06
Elevation (ft)
76
75
74
73
72
71
0
50
100
150
200
250
300
350
Station (ft)
Legend
WS Max WS - Interim 100yr
WS Max WS - Interim 10yr
WS Max WS - Interim 2yr
Ground
Bank Sta

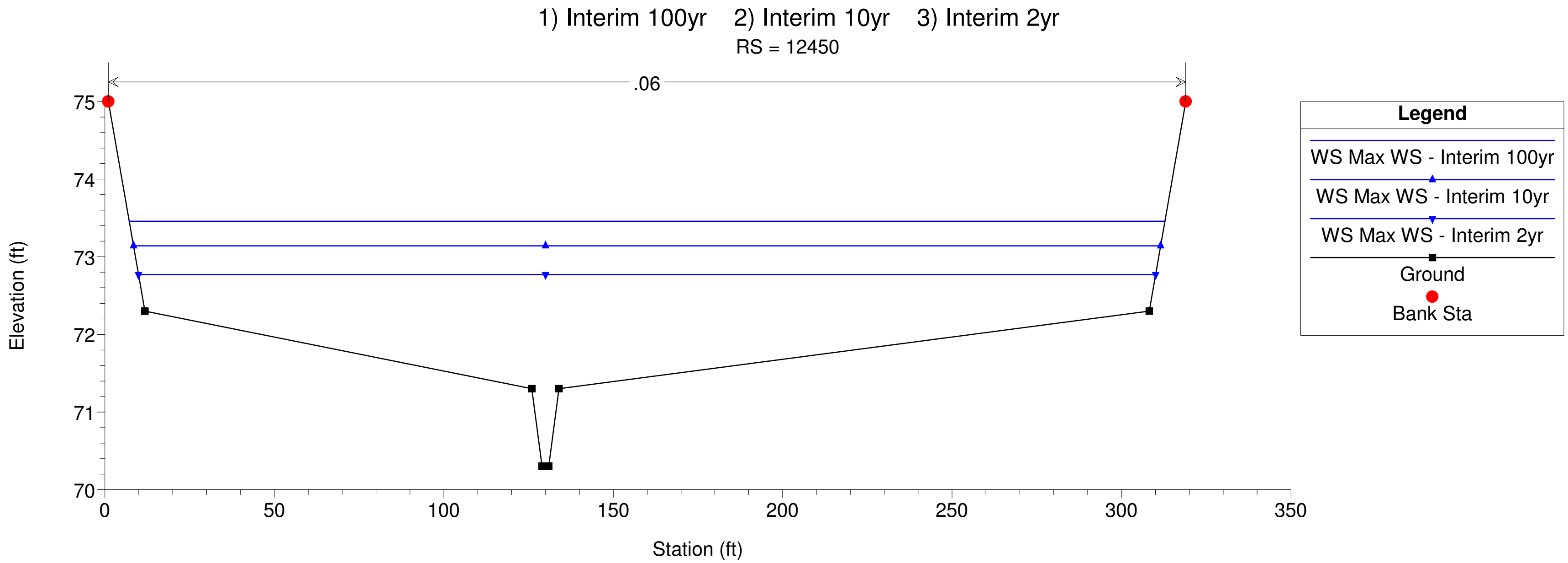


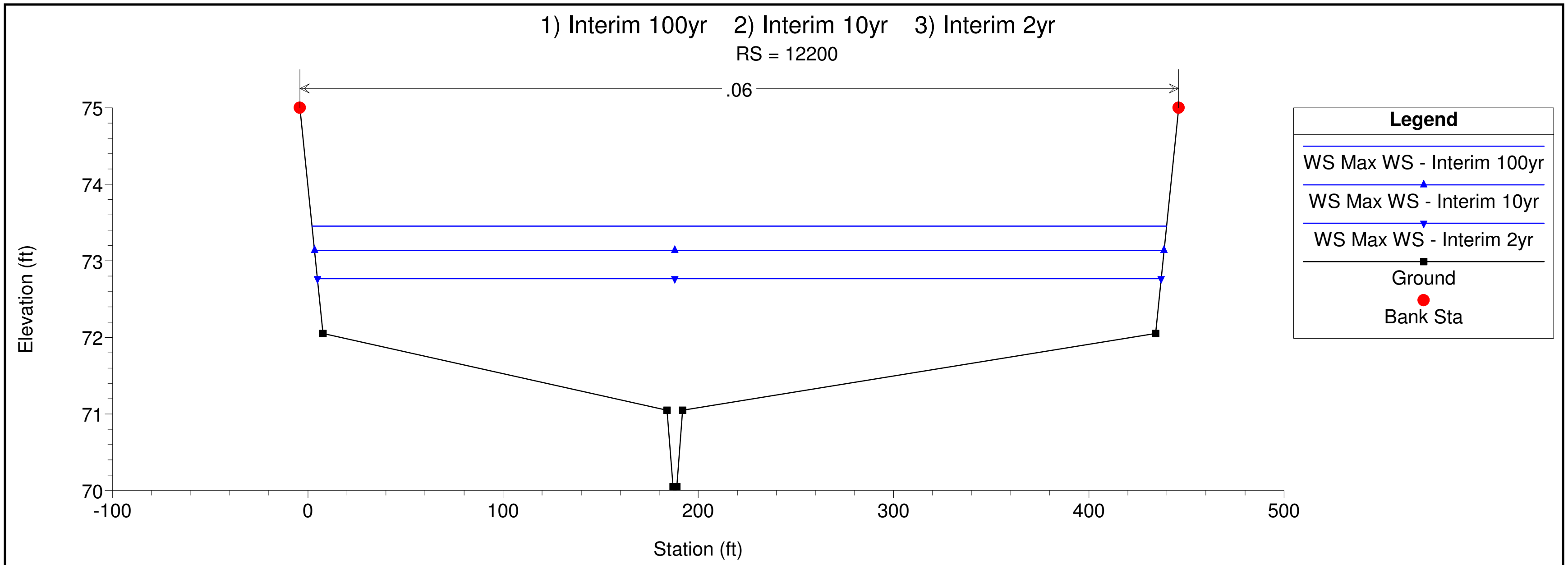
1) Interim 100yr 2) Interim 10yr 3) Interim 2yr
RS = 13200
.06
Elevation (ft)
76
75
74
73
72
71
0
50
100
150
200
250
300
350
400
Station (ft)
Legend
WS Max WS - Interim 100yr
WS Max WS - Interim 10yr
WS Max WS - Interim 2yr
Ground
Bank Sta

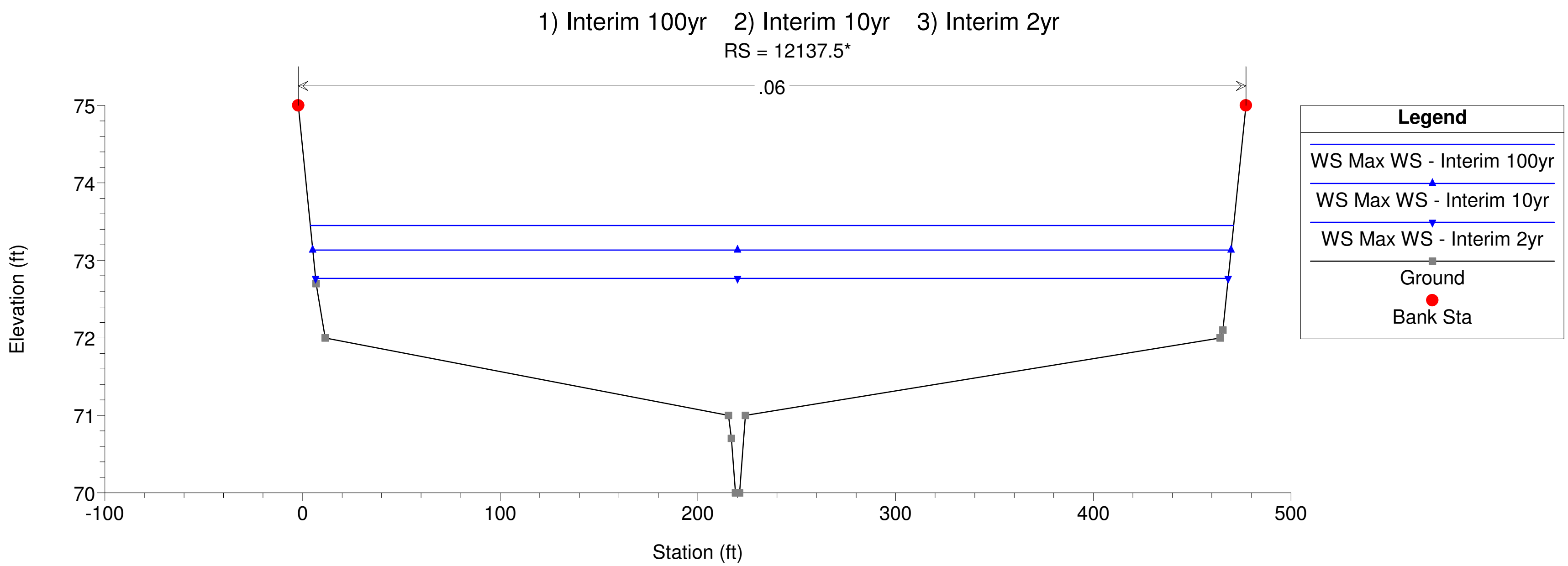

1) Interim 100yr 2) Interim 10yr 3) Interim 2yr
RS = 12950
.06
Elevation (ft)
Station (ft)
Legend
WS Max WS - Interim 100yr
WS Max WS - Interim 10yr
WS Max WS - Interim 2yr
Ground
Bank Sta

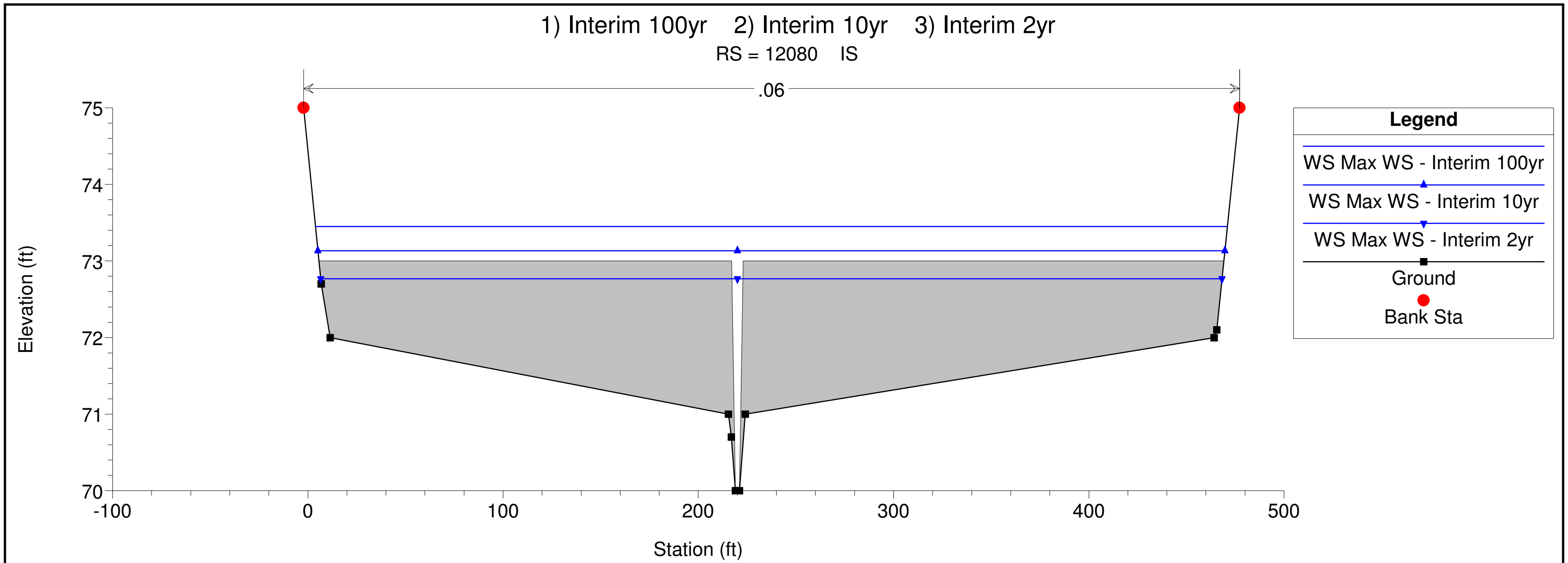

1) Interim 100yr 2) Interim 10yr 3) Interim 2yr
RS = 12800
.06
Elevation (ft)
Station (ft)
Legend
WS Max WS - Interim 100yr
WS Max WS - Interim 10yr
WS Max WS - Interim 2yr
Ground
Bank Sta

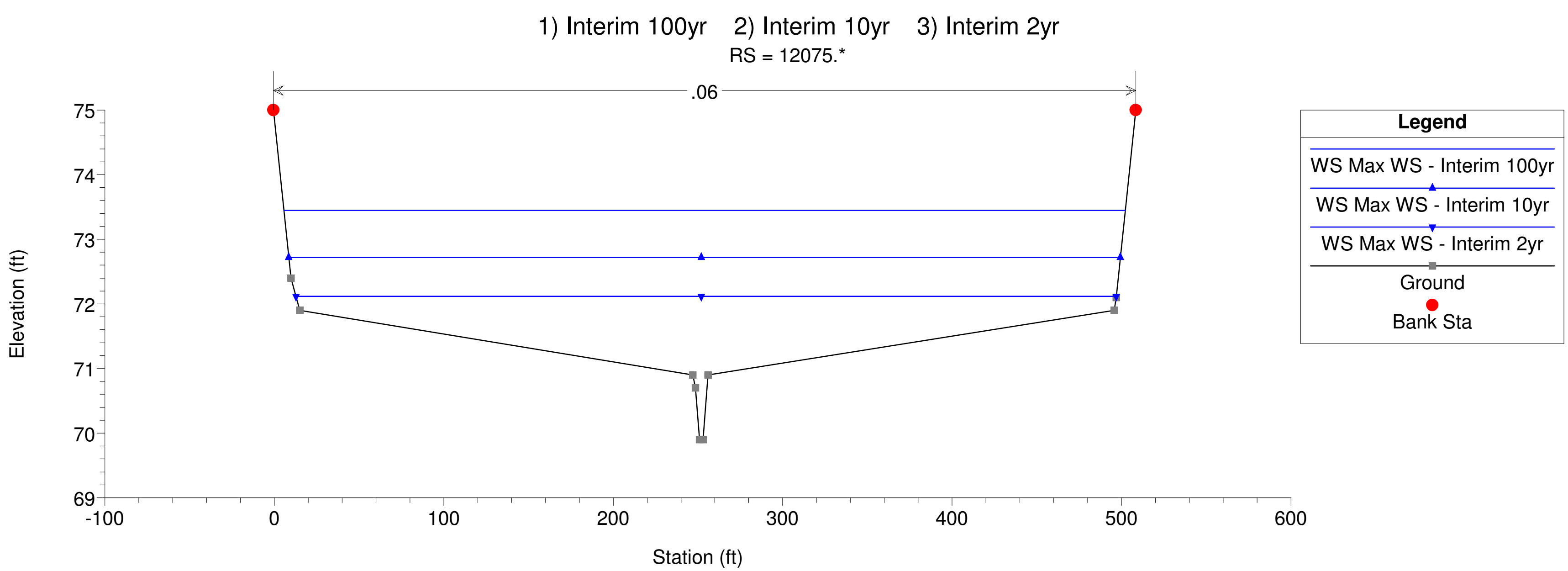

1) Interim 100yr 2) Interim 10yr 3) Interim 2yr
RS = 12700
.06
Elevation (ft)
75
74
73
72
71
70
-50
0
50
100
150
200
250
300
350
Station (ft)
Legend
WS Max WS - Interim 100yr
WS Max WS - Interim 10yr
WS Max WS - Interim 2yr
Ground
Bank Sta

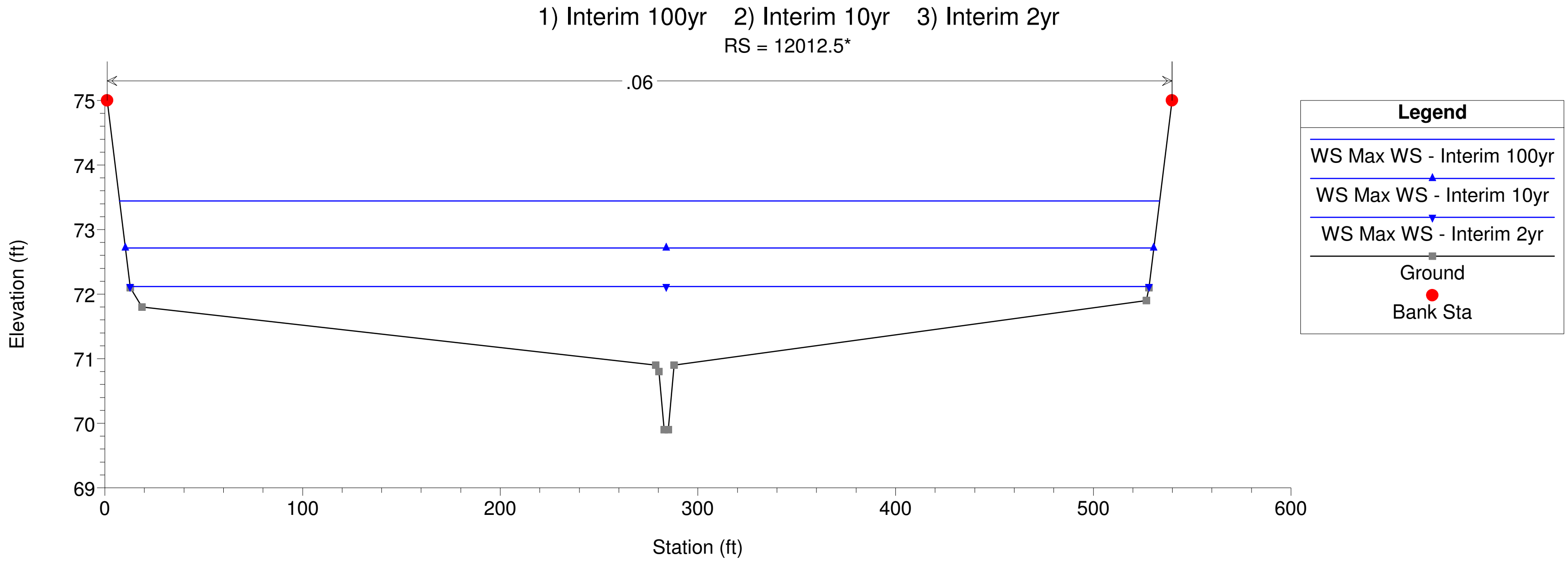

1) Interim 100yr 2) Interim 10yr 3) Interim 2yr
RS = 12450
.06
Elevation (ft)
75
74
73
72
71
70
0
50
100
150
200
250
300
350
Station (ft)
Legend
WS Max WS - Interim 100yr
WS Max WS - Interim 10yr
WS Max WS - Interim 2yr
Ground
Bank Sta

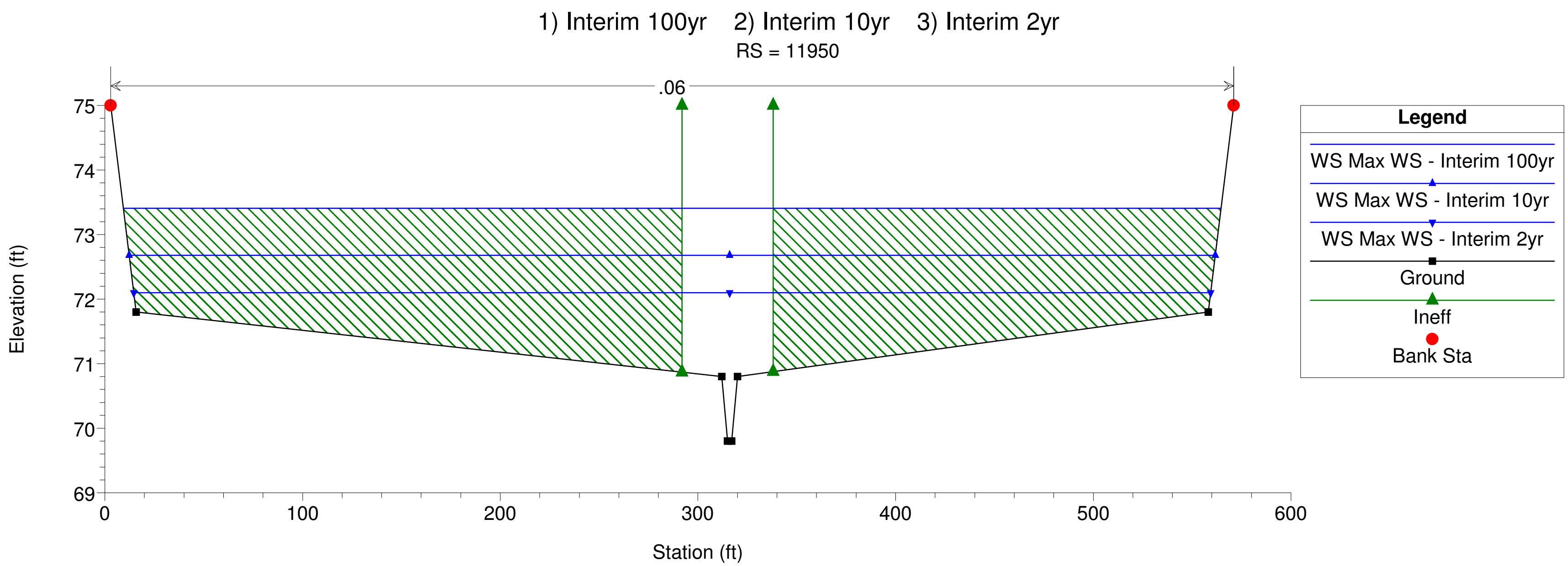

1) Interim 100yr 2) Interim 10yr 3) Interim 2yr
RS = 12200
.06
Elevation (ft)
75
74
73
72
71
70
-100
0
100
200
300
400
500
Station (ft)
Legend
WS Max WS - Interim 100yr
WS Max WS - Interim 10yr
WS Max WS - Interim 2yr
Ground
Bank Sta

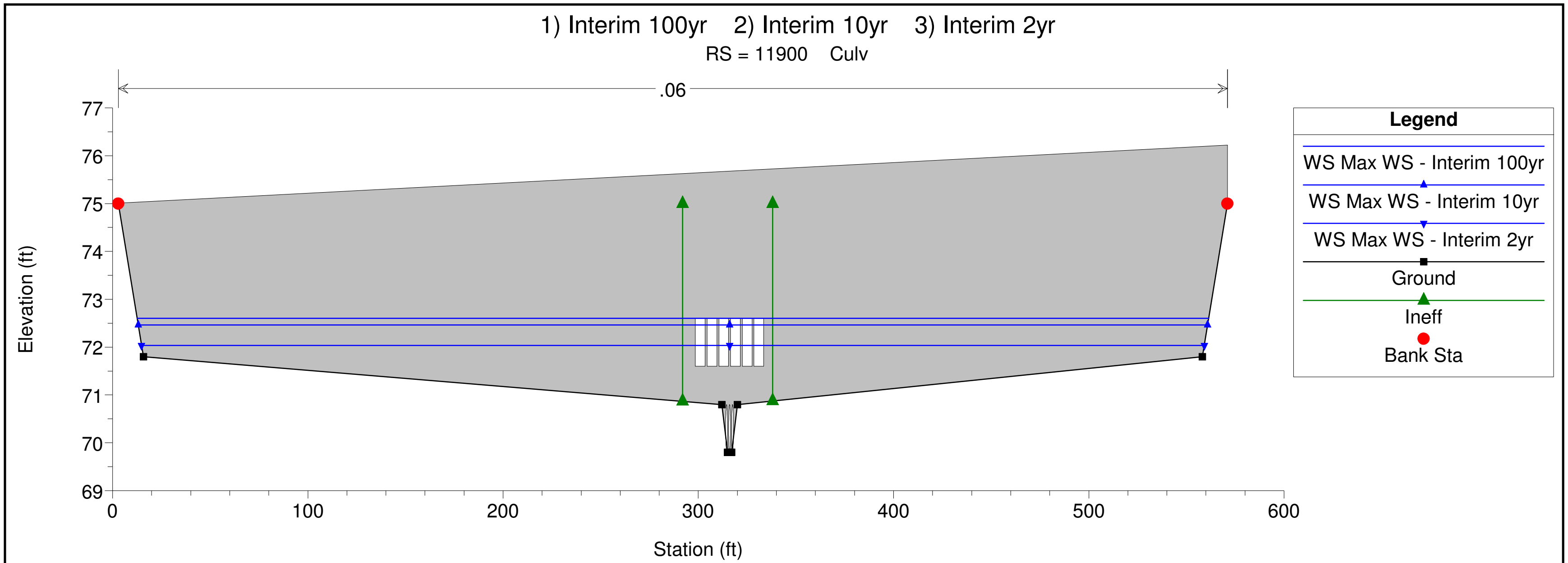

1) Interim 100yr 2) Interim 10yr 3) Interim 2yr
RS = 12137.5*
.06
Elevation (ft)
75
74
73
72
71
70
-100
0
100
200
300
400
500
Station (ft)
Legend
WS Max WS - Interim 100yr
WS Max WS - Interim 10yr
WS Max WS - Interim 2yr
Ground
Bank Sta

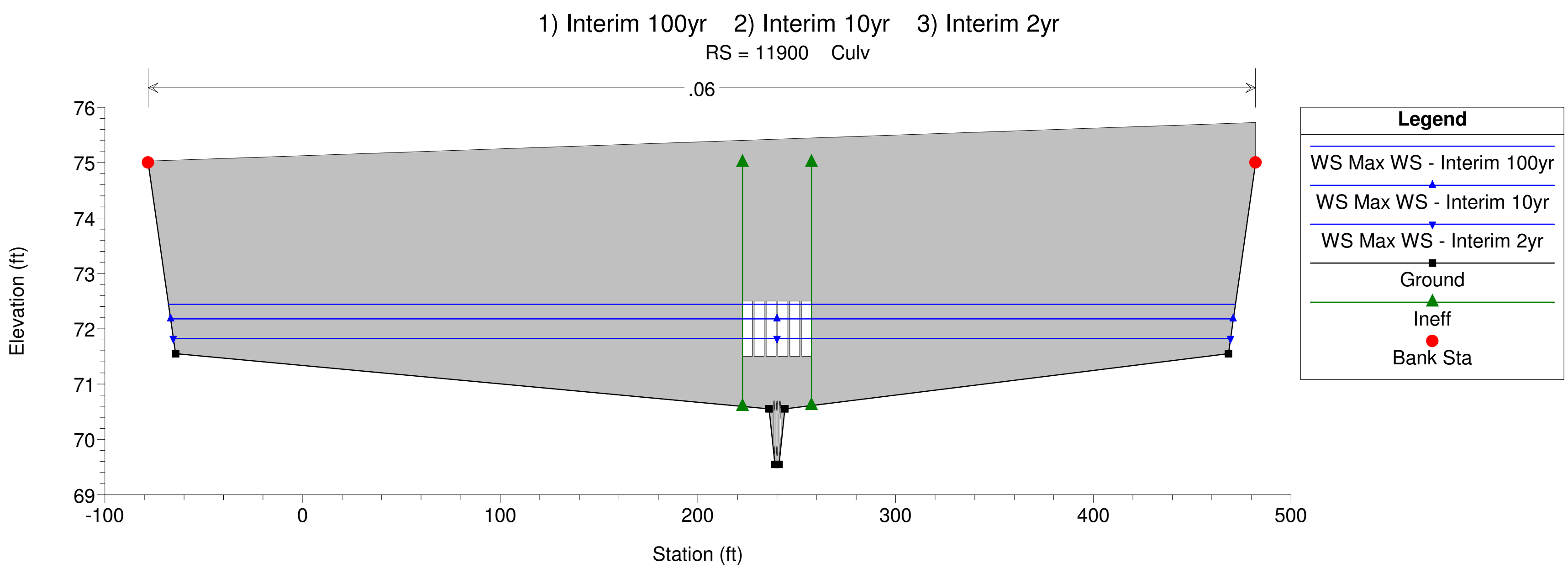

1) Interim 100yr 2) Interim 10yr 3) Interim 2yr
RS = 12080 IS
.06
Elevation (ft)
75
74
73
72
71
70
-100
0
100
200
300
400
500
Station (ft)
Legend
WS Max WS - Interim 100yr
WS Max WS - Interim 10yr
WS Max WS - Interim 2yr
Ground
Bank Sta

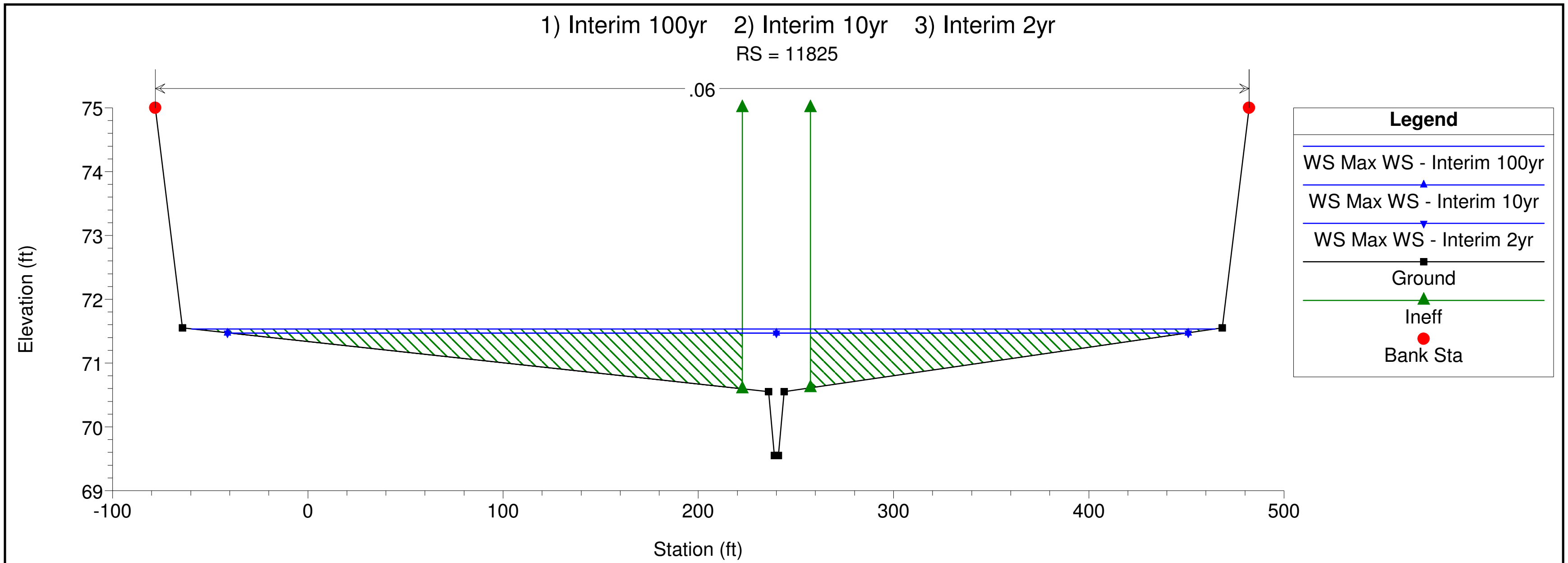

1) Interim 100yr 2) Interim 10yr 3) Interim 2yr
RS = 12075.*
.06
Elevation (ft)
75
74
73
72
71
70
69
-100
0
100
200
300
400
500
600
Station (ft)
Legend
WS Max WS - Interim 100yr
WS Max WS - Interim 10yr
WS Max WS - Interim 2yr
Ground
Bank Sta

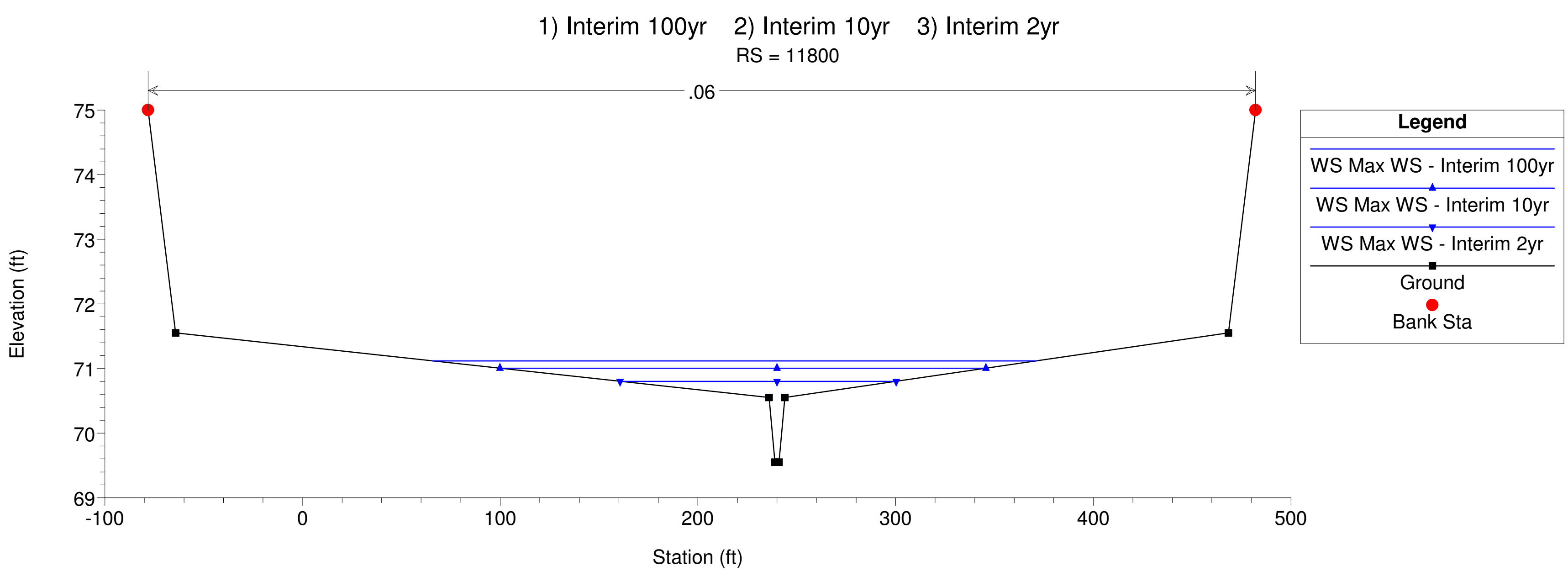

1) Interim 100yr 2) Interim 10yr 3) Interim 2yr
RS = 12012.5*
.06
Elevation (ft)
Station (ft)
Legend
WS Max WS - Interim 100yr
WS Max WS - Interim 10yr
WS Max WS - Interim 2yr
Ground
Bank Sta

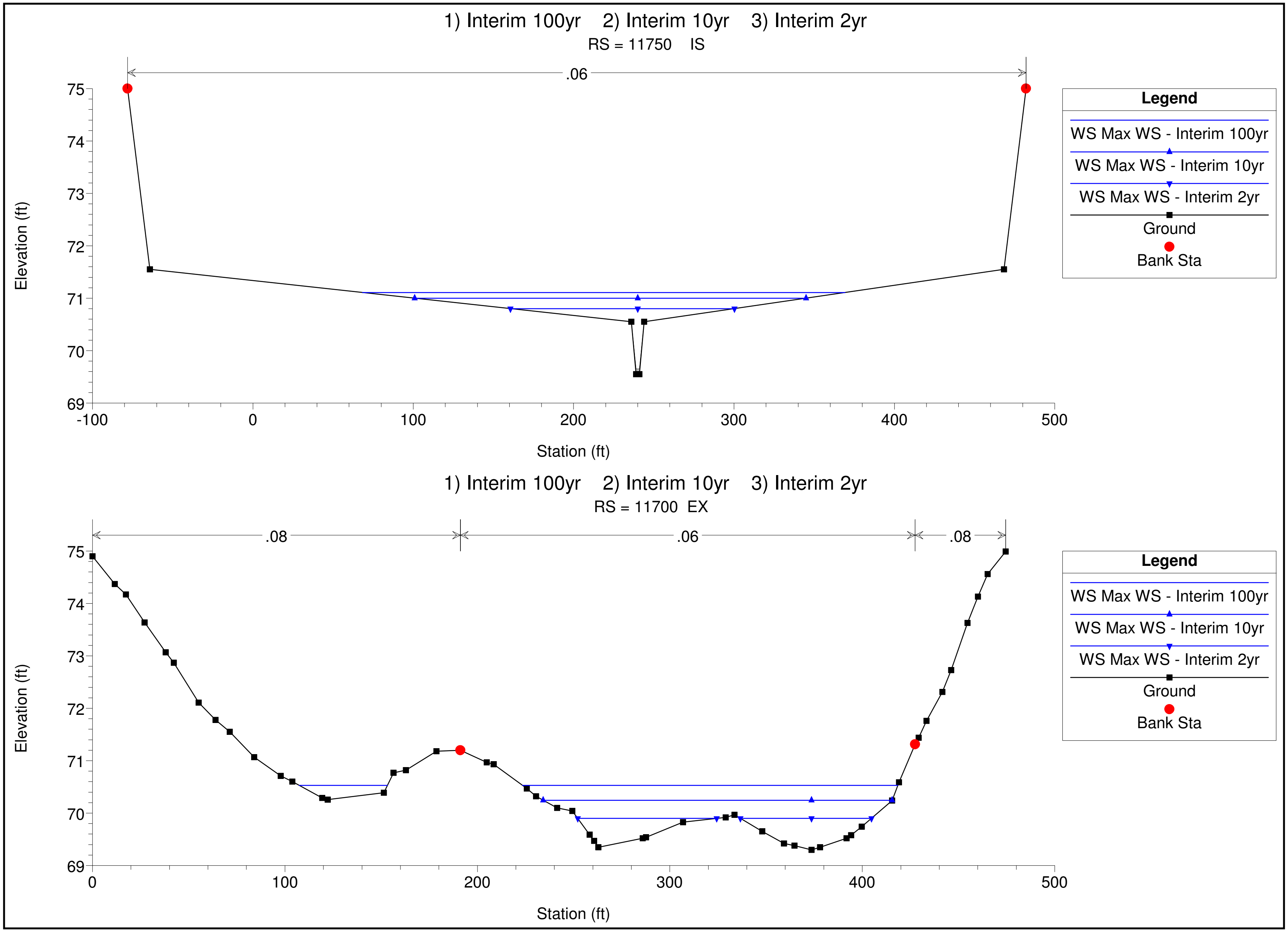

1) Interim 100yr 2) Interim 10yr 3) Interim 2yr
RS = 11950
.06
Elevation (ft)
Station (ft)
Legend
WS Max WS - Interim 100yr
WS Max WS - Interim 10yr
WS Max WS - Interim 2yr
Ground
Ineff
Bank Sta

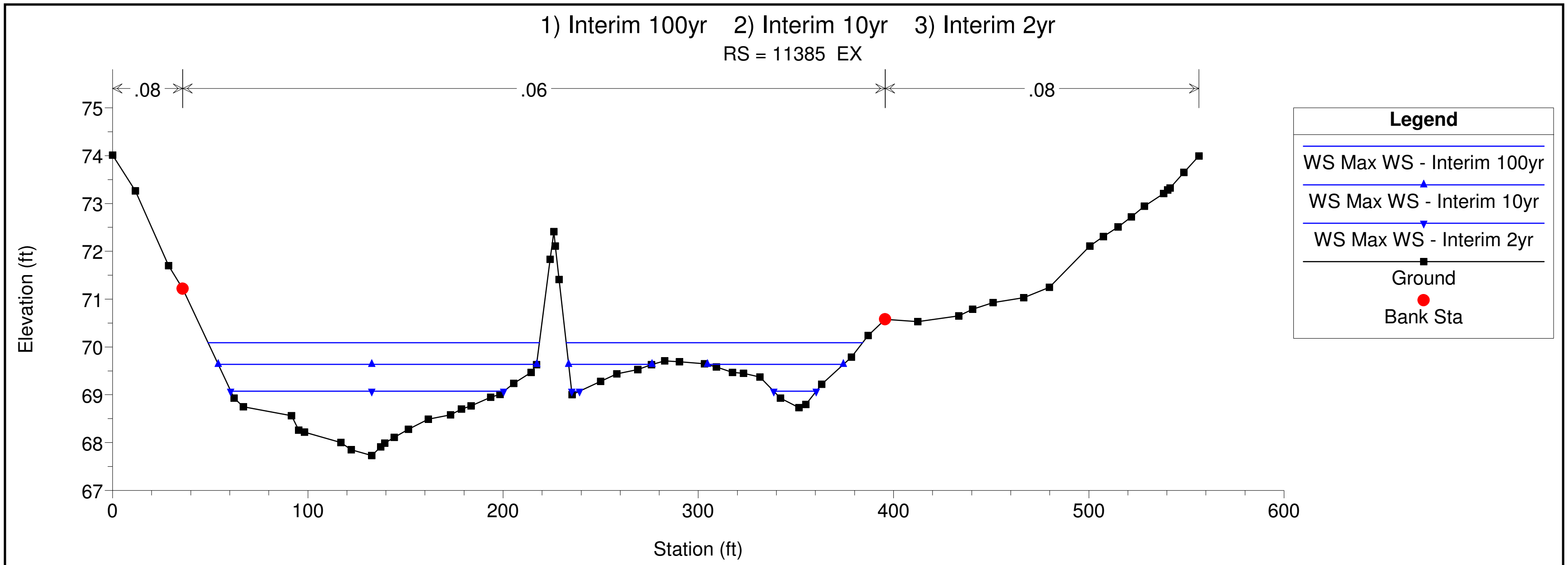

1) Interim 100yr 2) Interim 10yr 3) Interim 2yr
RS = 11900 Culv
.06
Elevation (ft)
Station (ft)
77
76
75
74
73
72
71
70
69
0
100
200
300
400
500
600
Legend
WS Max WS - Interim 100yr
WS Max WS - Interim 10yr
WS Max WS - Interim 2yr
Ground
Ineff
Bank Sta

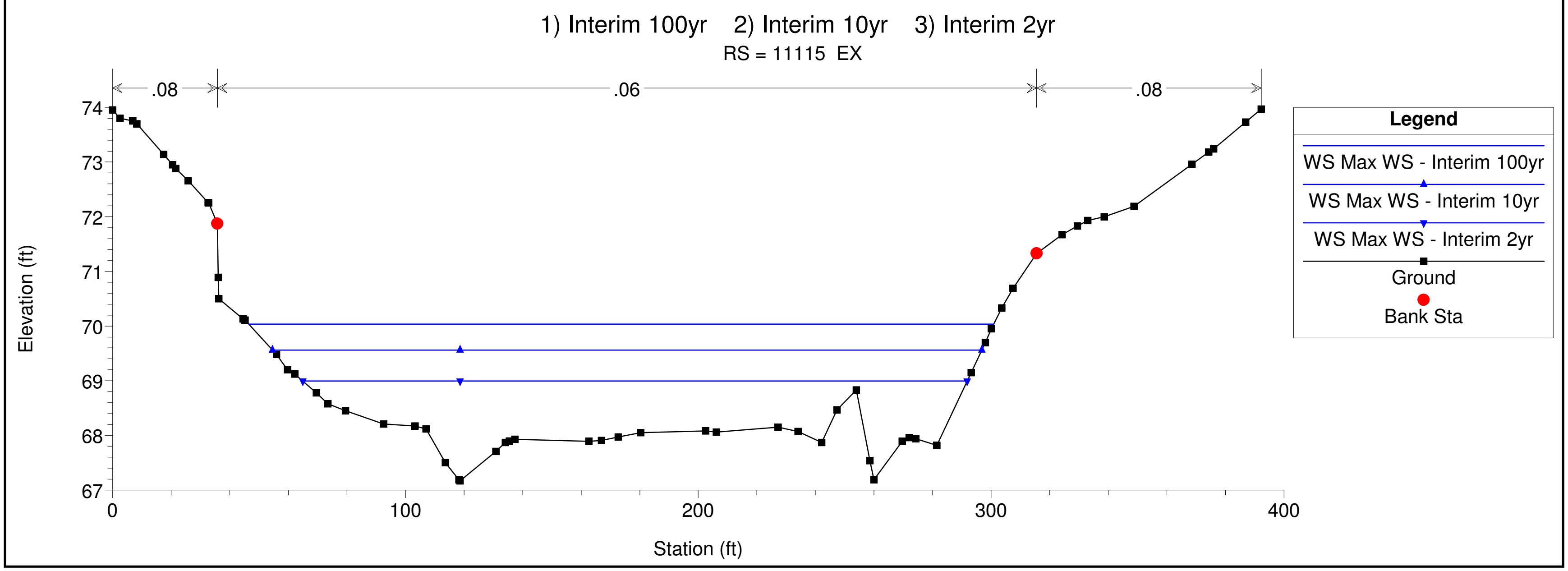

1) Interim 100yr 2) Interim 10yr 3) Interim 2yr
RS = 11900 Culv
.06
Elevation (ft)
Station (ft)
76
75
74
73
72
71
70
69
-100
0
100
200
300
400
500
Legend
WS Max WS - Interim 100yr
WS Max WS - Interim 10yr
WS Max WS - Interim 2yr
Ground
Ineff
Bank Sta

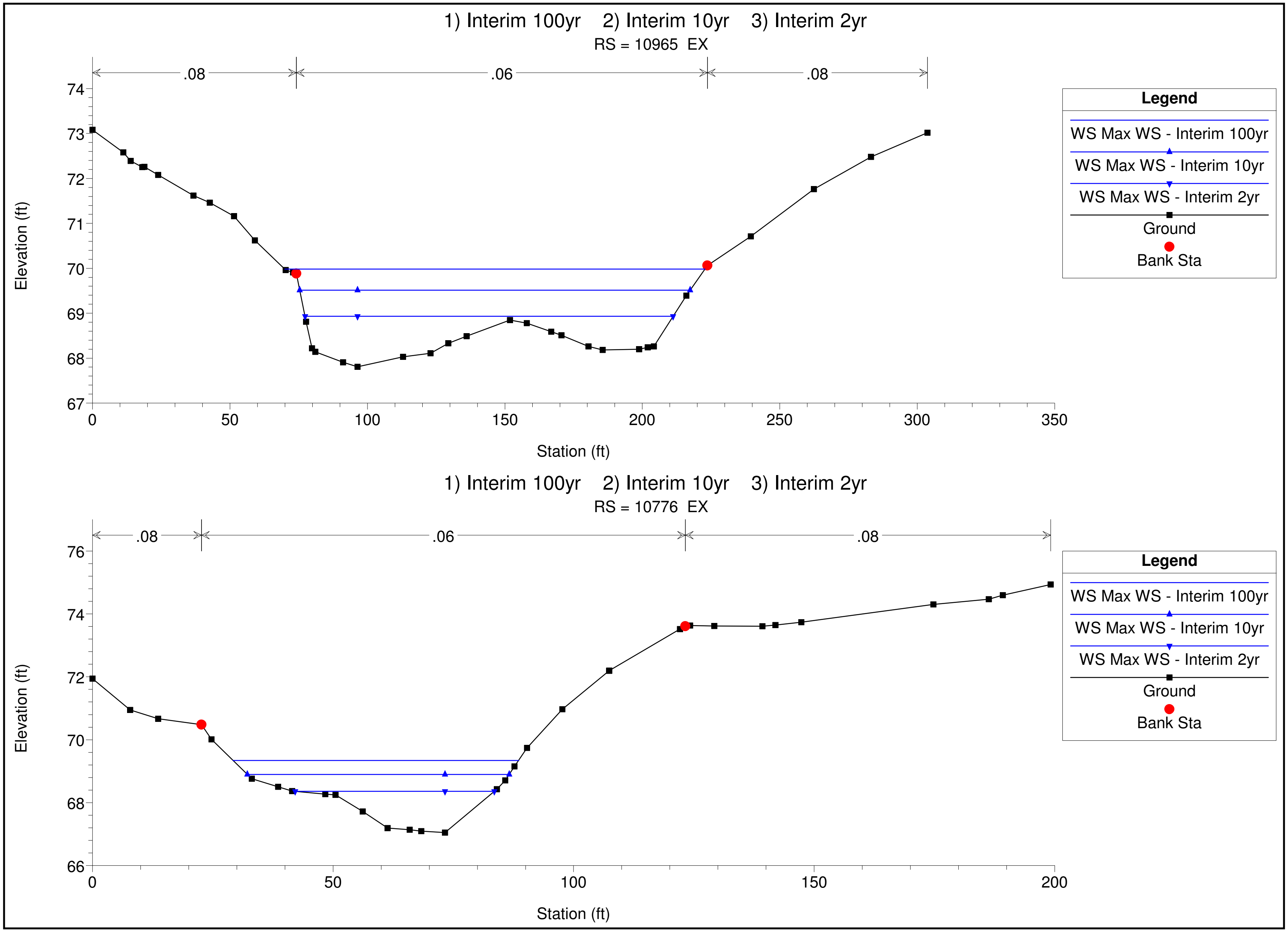

1) Interim 100yr 2) Interim 10yr 3) Interim 2yr
RS = 11825
.06
Elevation (ft)
Station (ft)
Legend
WS Max WS - Interim 100yr
WS Max WS - Interim 10yr
WS Max WS - Interim 2yr
Ground
Ineff
Bank Sta

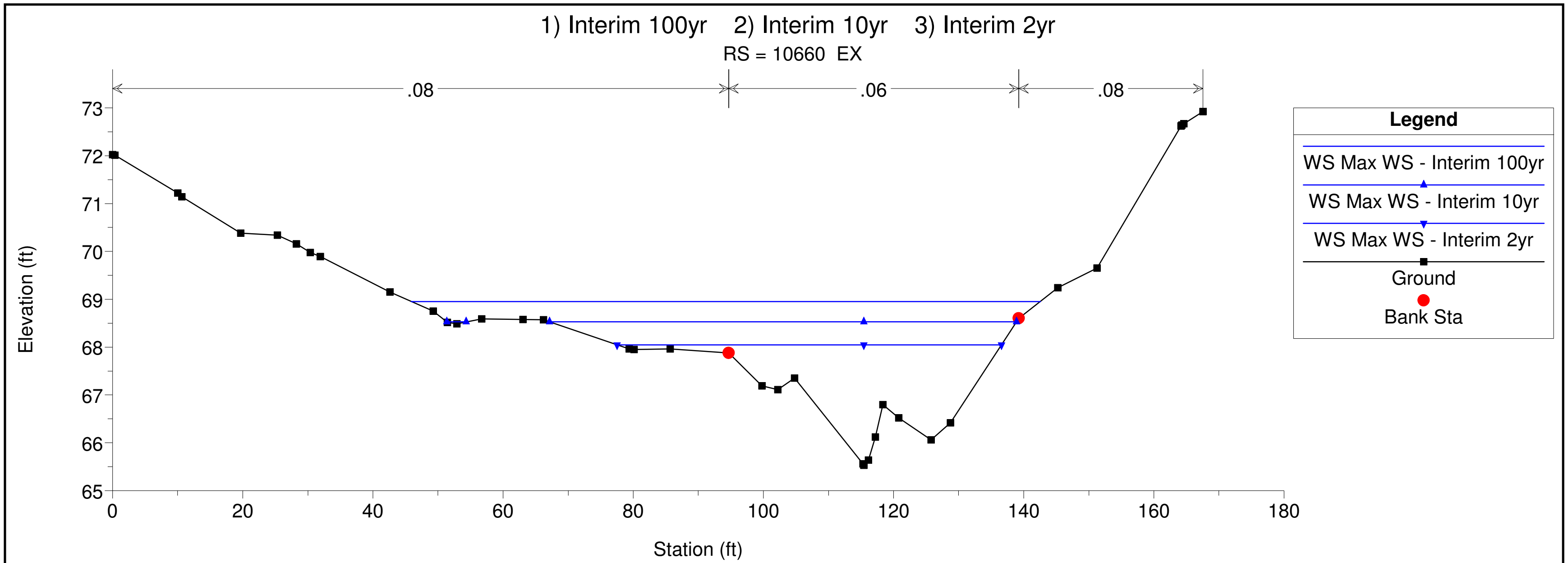

1) Interim 100yr 2) Interim 10yr 3) Interim 2yr
RS = 11800
.06
Elevation (ft)
Station (ft)
Legend
WS Max WS - Interim 100yr
WS Max WS - Interim 10yr
WS Max WS - Interim 2yr
Ground
Bank Sta

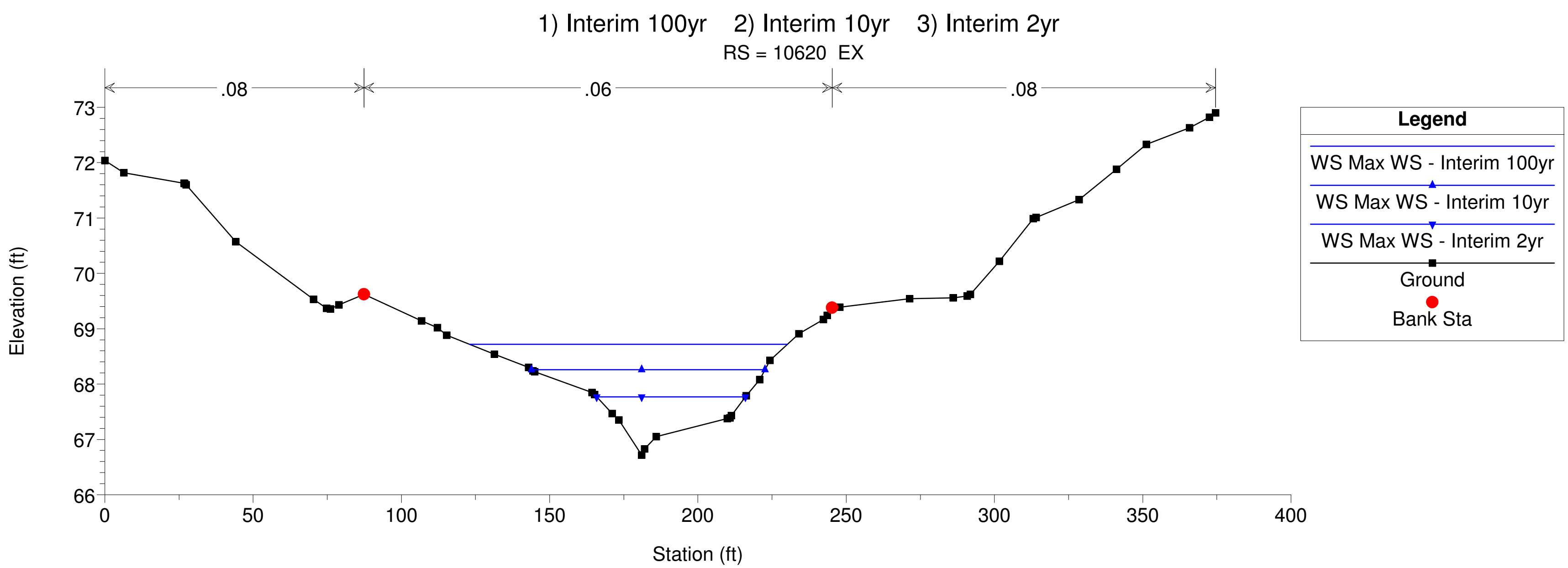

1) Interim 100yr 2) Interim 10yr 3) Interim 2yr
RS = 11750 IS
.06
Elevation (ft)
Station (ft)
Legend
WS Max WS - Interim 100yr
WS Max WS - Interim 10yr
WS Max WS - Interim 2yr
Ground
Bank Sta
1) Interim 100yr 2) Interim 10yr 3) Interim 2yr
RS = 11700 EX
.08
.06
.08
Elevation (ft)
Station (ft)
Legend
WS Max WS - Interim 100yr
WS Max WS - Interim 10yr
WS Max WS - Interim 2yr
Ground
Bank Sta

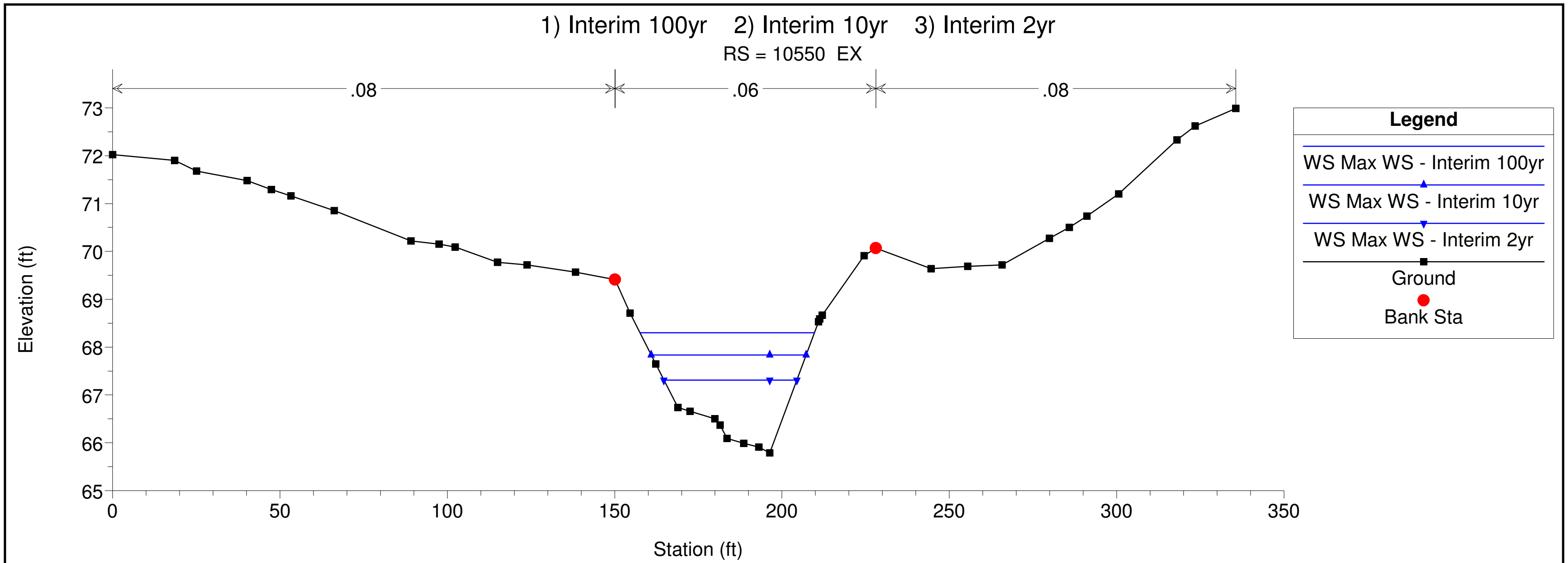

1) Interim 100yr 2) Interim 10yr 3) Interim 2yr
RS = 11385 EX
.08
.06
.08
Elevation (ft)
Station (ft)
Legend
WS Max WS - Interim 100yr
WS Max WS - Interim 10yr
WS Max WS - Interim 2yr
Ground
Bank Sta


1) Interim 100yr 2) Interim 10yr 3) Interim 2yr
RS = 11115 EX
.08
.06
.08
Elevation (ft)
Station (ft)
Legend
WS Max WS - Interim 100yr
WS Max WS - Interim 10yr
WS Max WS - Interim 2yr
Ground
Bank Sta

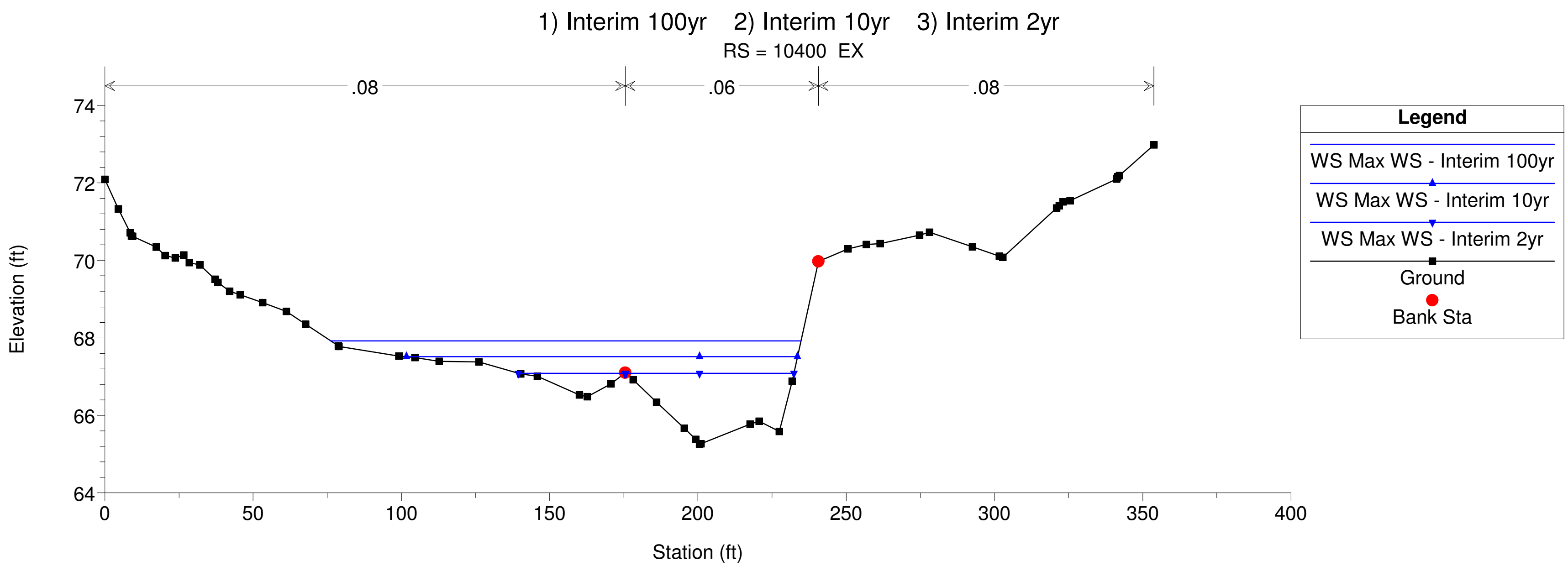

1) Interim 100yr 2) Interim 10yr 3) Interim 2yr
RS = 10965 EX
.08
.06
.08
Elevation (ft)
Station (ft)
Legend
WS Max WS - Interim 100yr
WS Max WS - Interim 10yr
WS Max WS - Interim 2yr
Ground
Bank Sta
1) Interim 100yr 2) Interim 10yr 3) Interim 2yr
RS = 10776 EX
.08
.06
.08
Elevation (ft)
Station (ft)
Legend
WS Max WS - Interim 100yr
WS Max WS - Interim 10yr
WS Max WS - Interim 2yr
Ground
Bank Sta


1) Interim 100yr 2) Interim 10yr 3) Interim 2yr
RS = 10660 EX
.08
.06
.08
Elevation (ft)
Station (ft)
Legend
WS Max WS - Interim 100yr
WS Max WS - Interim 10yr
WS Max WS - Interim 2yr
Ground
Bank Sta

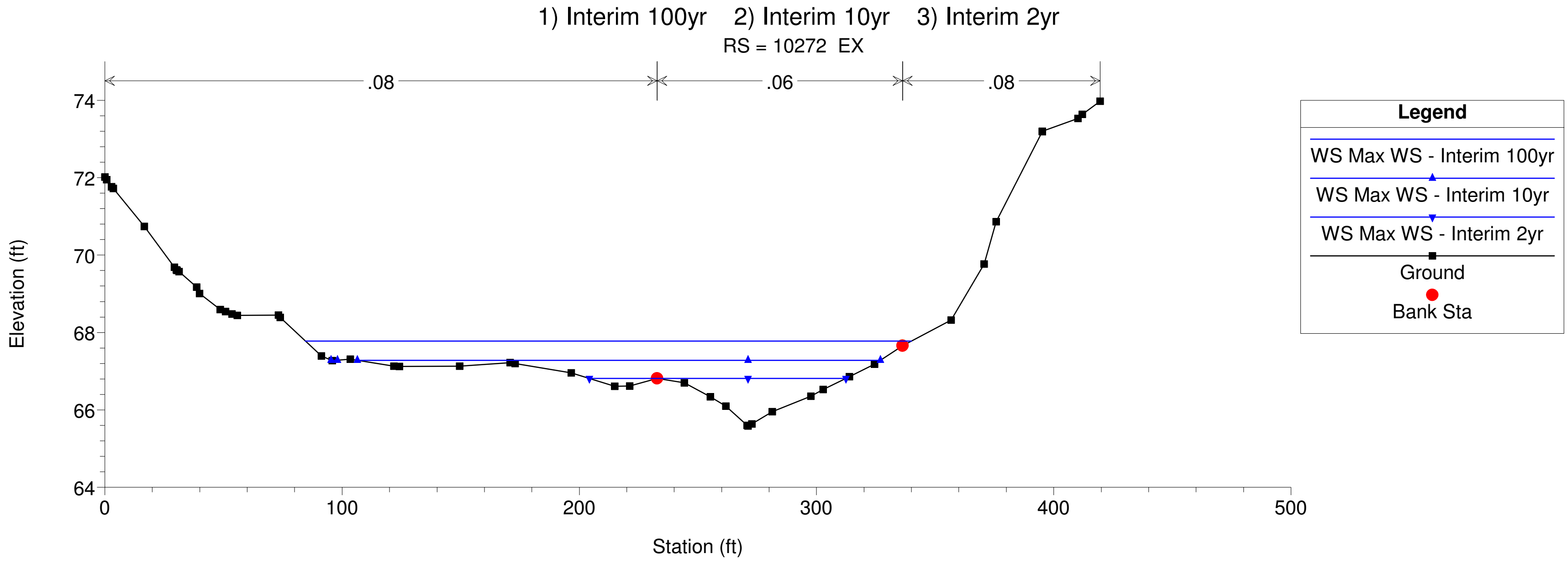

1) Interim 100yr 2) Interim 10yr 3) Interim 2yr
RS = 10620 EX
.08
.06
.08
Elevation (ft)
Station (ft)
Legend
WS Max WS - Interim 100yr
WS Max WS - Interim 10yr
WS Max WS - Interim 2yr
Ground
Bank Sta

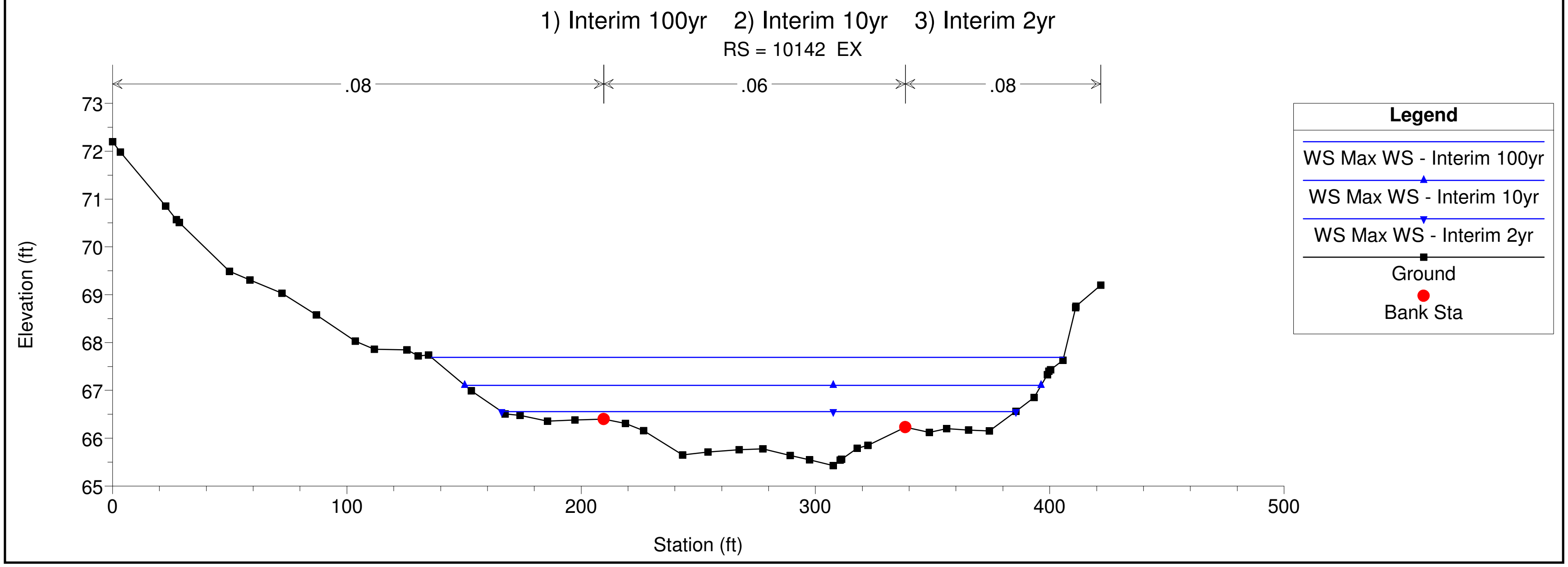


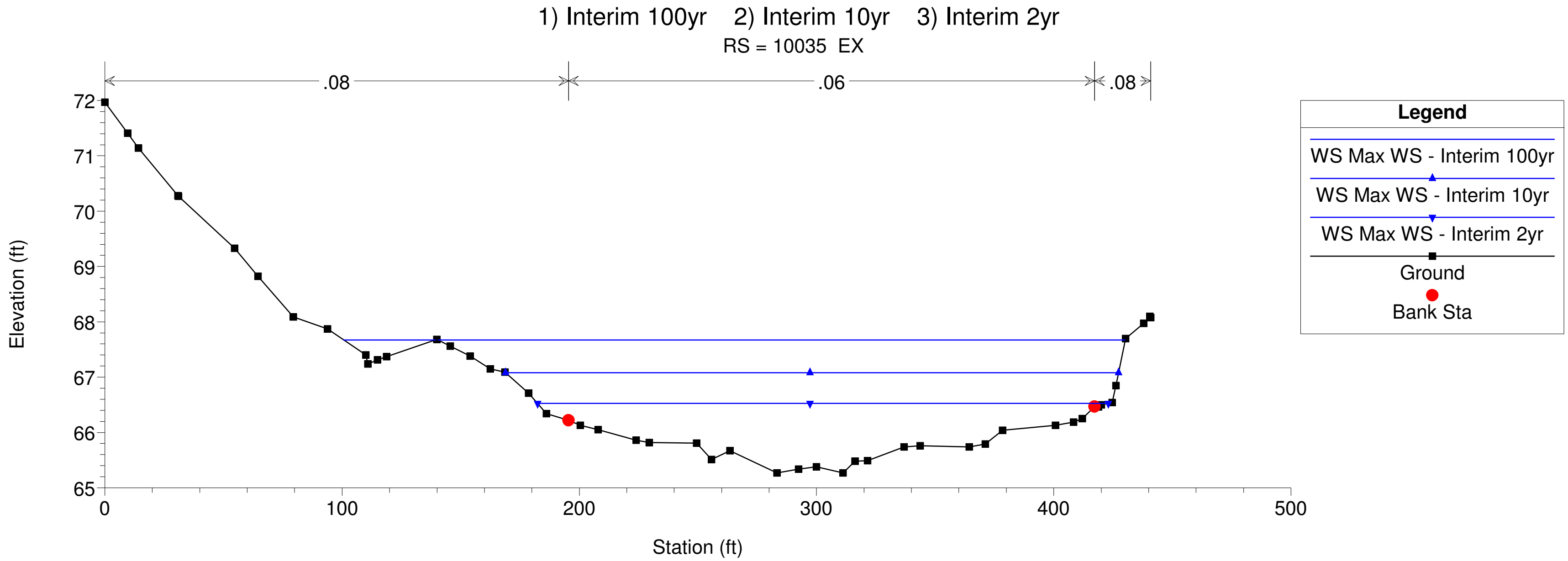
1) Interim 100yr 2) Interim 10yr 3) Interim 2yr
RS = 10550 EX
.08
.06
.08
Elevation (ft)
Station (ft)
Legend
WS Max WS - Interim 100yr
WS Max WS - Interim 10yr
WS Max WS - Interim 2yr
Ground
Bank Sta

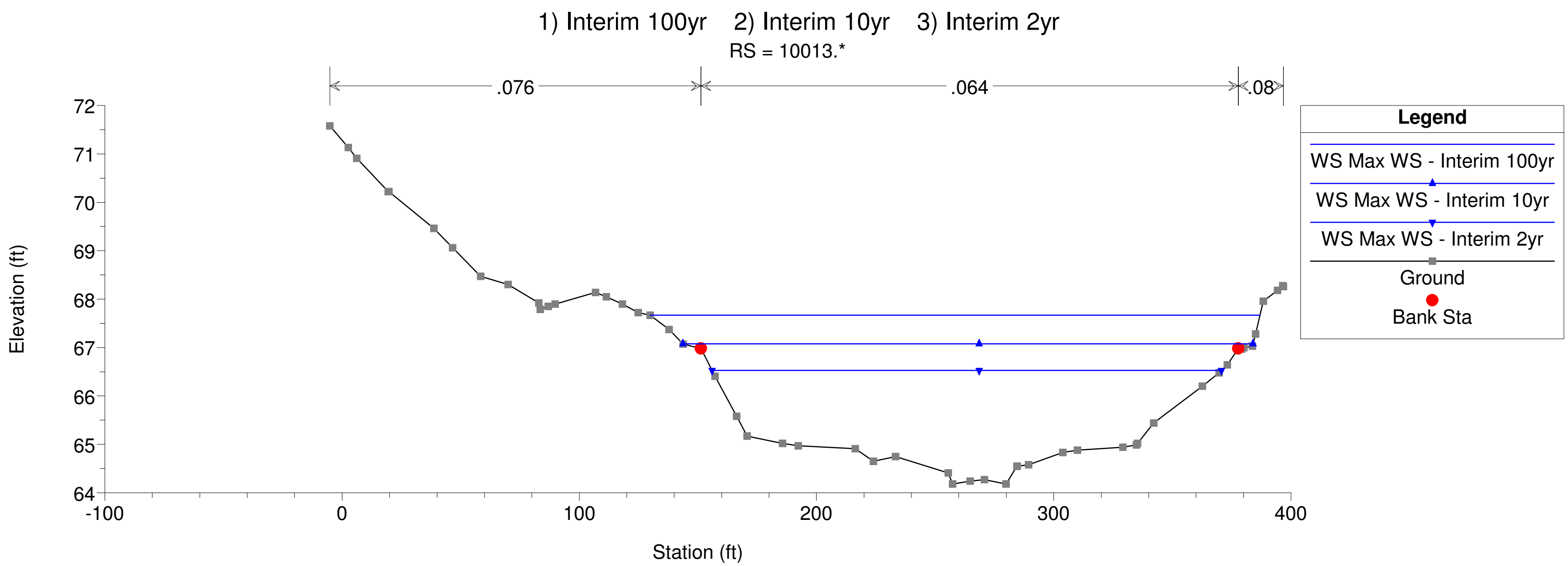


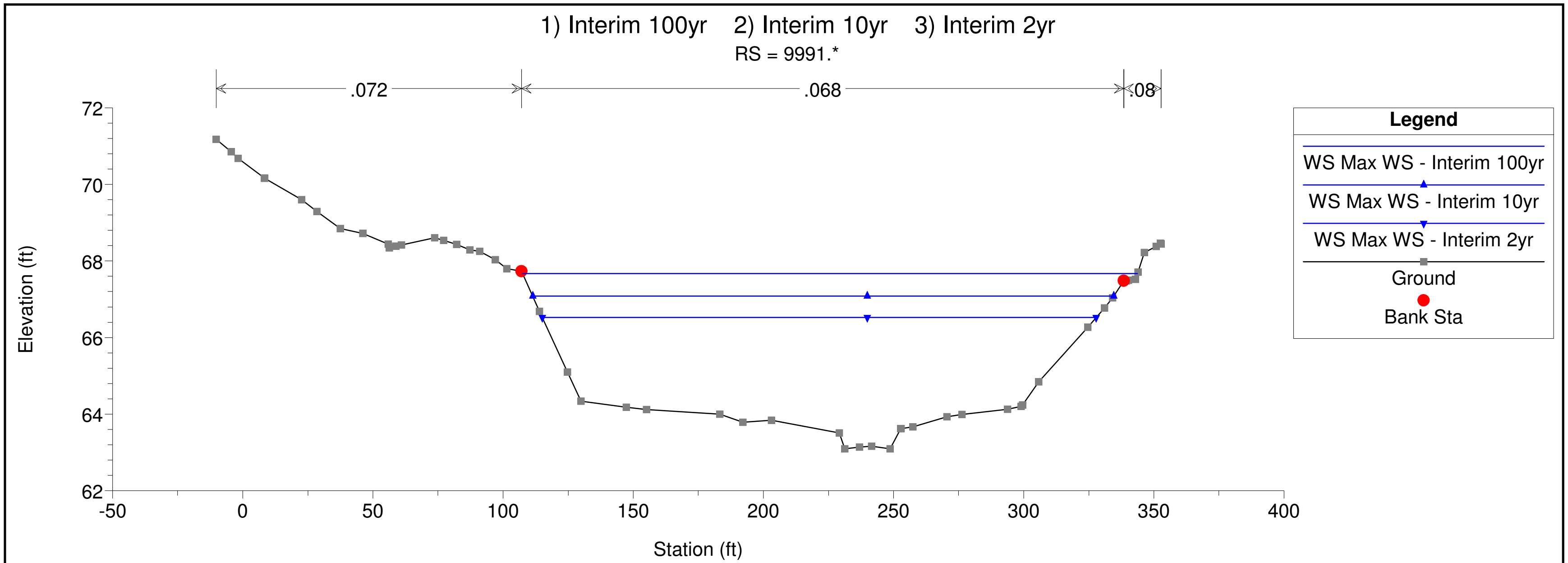
1) Interim 100yr 2) Interim 10yr 3) Interim 2yr
RS = 10400 EX
.08
.06
.08
Elevation (ft)
Station (ft)
Legend
WS Max WS - Interim 100yr
WS Max WS - Interim 10yr
WS Max WS - Interim 2yr
Ground
Bank Sta


1) Interim 100yr 2) Interim 10yr 3) Interim 2yr
RS = 10272 EX
.08
.06
.08
Elevation (ft)
Station (ft)
Legend
WS Max WS - Interim 100yr
WS Max WS - Interim 10yr
WS Max WS - Interim 2yr
Ground
Bank Sta

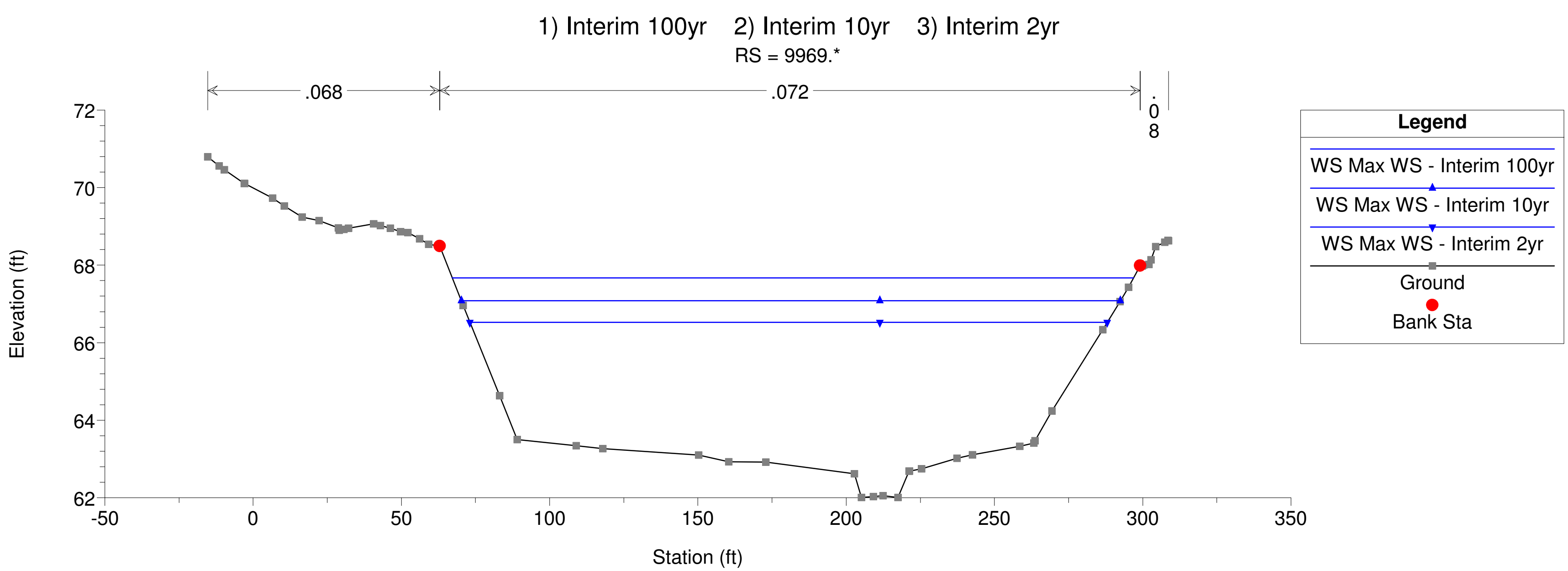

1) Interim 100yr 2) Interim 10yr 3) Interim 2yr
RS = 10142 EX
.08
.06
.08
Elevation (ft)
Station (ft)
Legend
WS Max WS - Interim 100yr
WS Max WS - Interim 10yr
WS Max WS - Interim 2yr
Ground
Bank Sta


1) Interim 100yr 2) Interim 10yr 3) Interim 2yr
RS = 10035 EX
.08
.06
.08
Elevation (ft)
Station (ft)
Legend
WS Max WS - Interim 100yr
WS Max WS - Interim 10yr
WS Max WS - Interim 2yr
Ground
Bank Sta

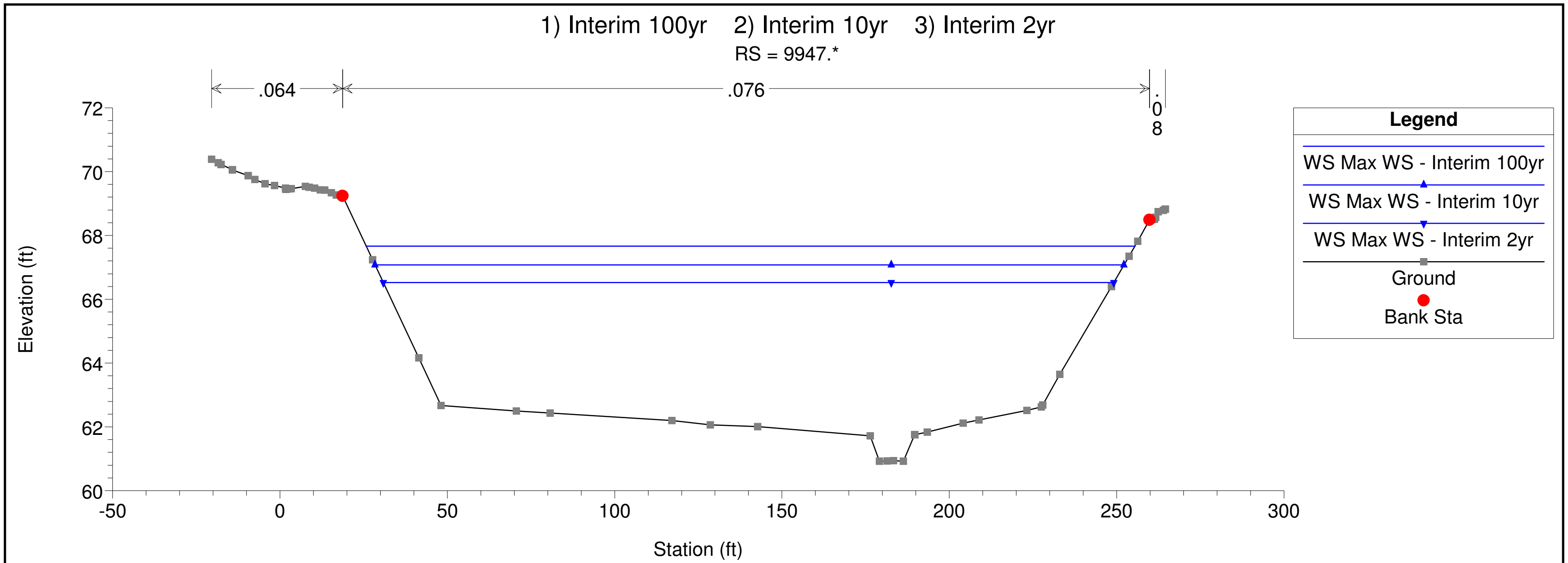

1) Interim 100yr 2) Interim 10yr 3) Interim 2yr
RS = 10013.*
.076
.064
.08
Elevation (ft)
Station (ft)
Legend
WS Max WS - Interim 100yr
WS Max WS - Interim 10yr
WS Max WS - Interim 2yr
Ground
Bank Sta

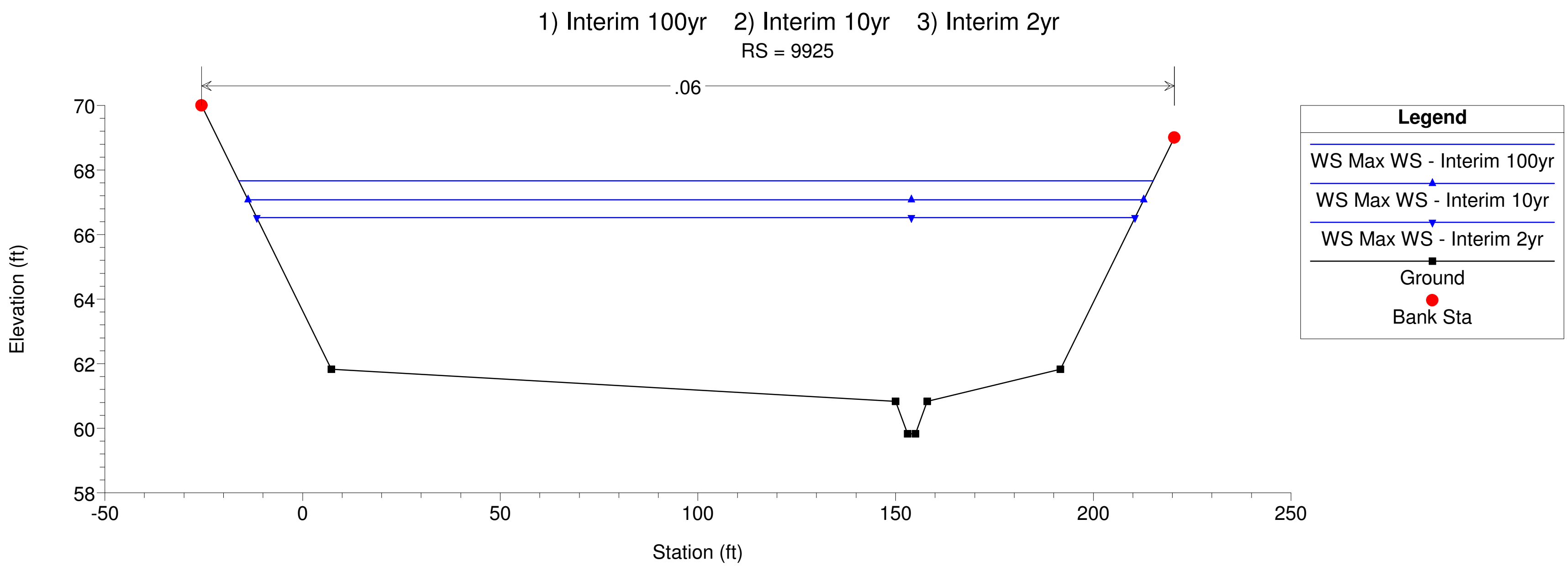


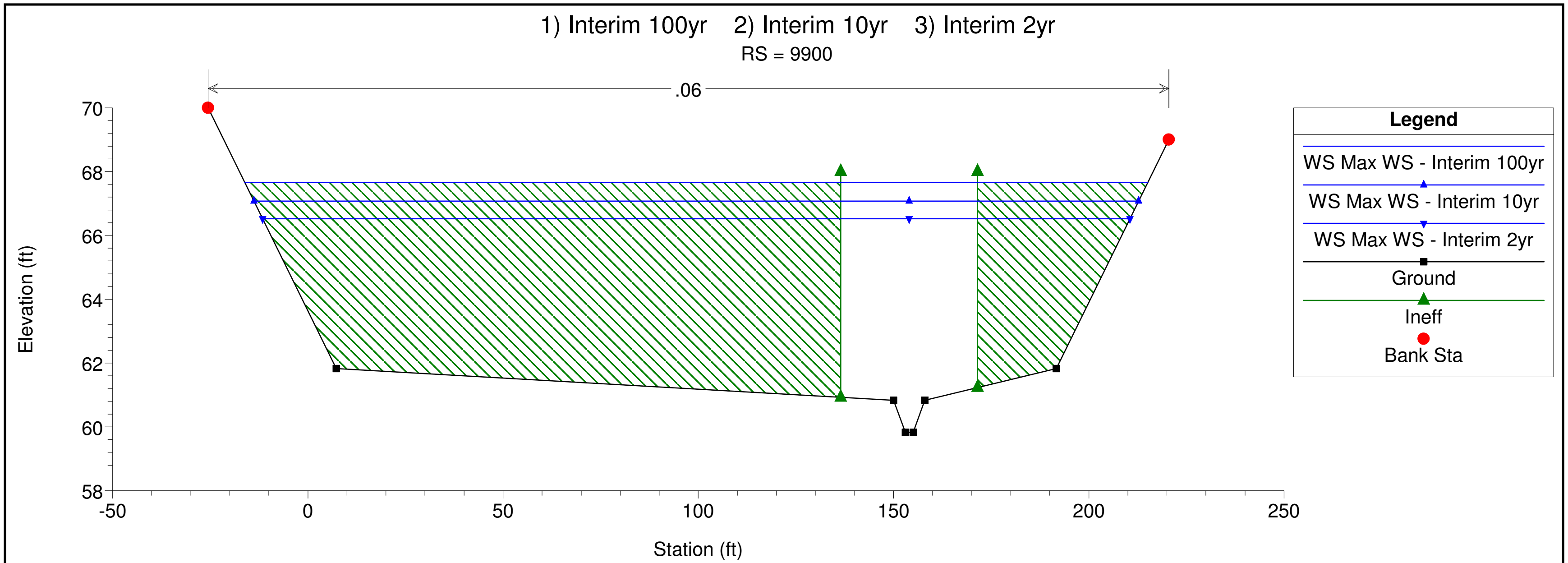
1) Interim 100yr 2) Interim 10yr 3) Interim 2yr
RS = 9991.*
.072
.068
.08
Legend
WS Max WS - Interim 100yr
WS Max WS - Interim 10yr
WS Max WS - Interim 2yr
Ground
Bank Sta
Elevation (ft)
72
70
68
66
64
62
-50
0
50
100
150
200
250
300
350
400
Station (ft)

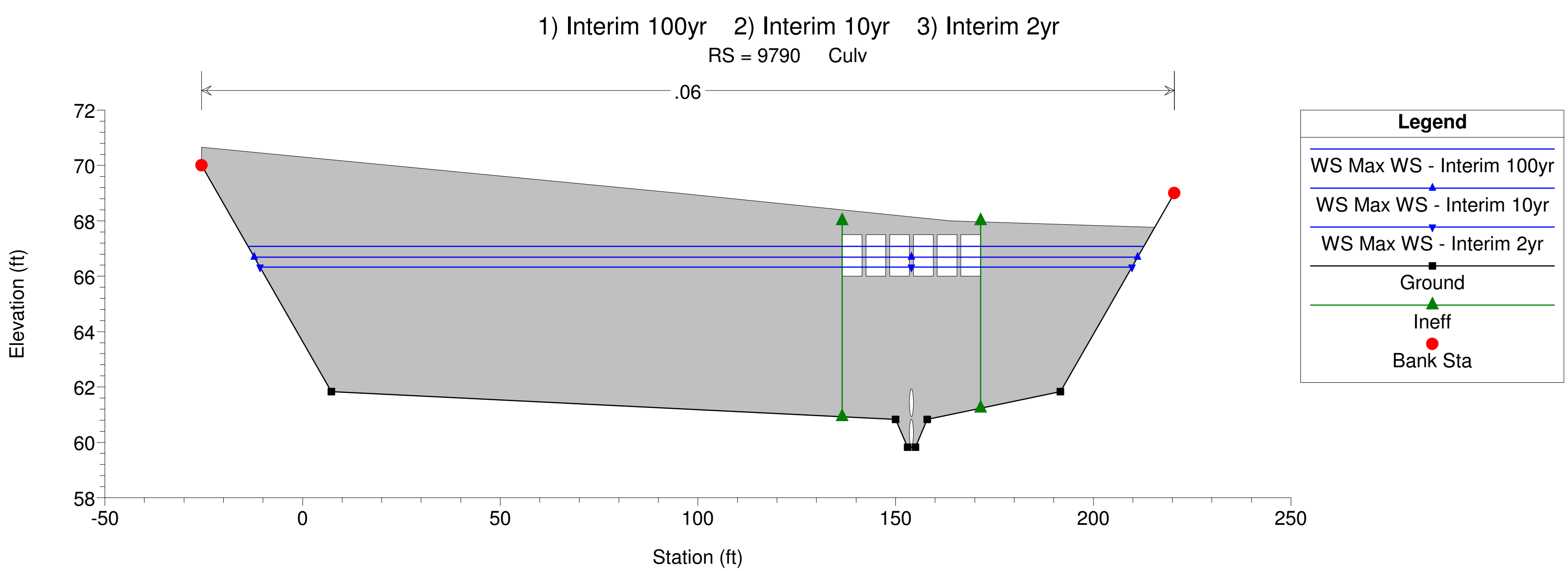


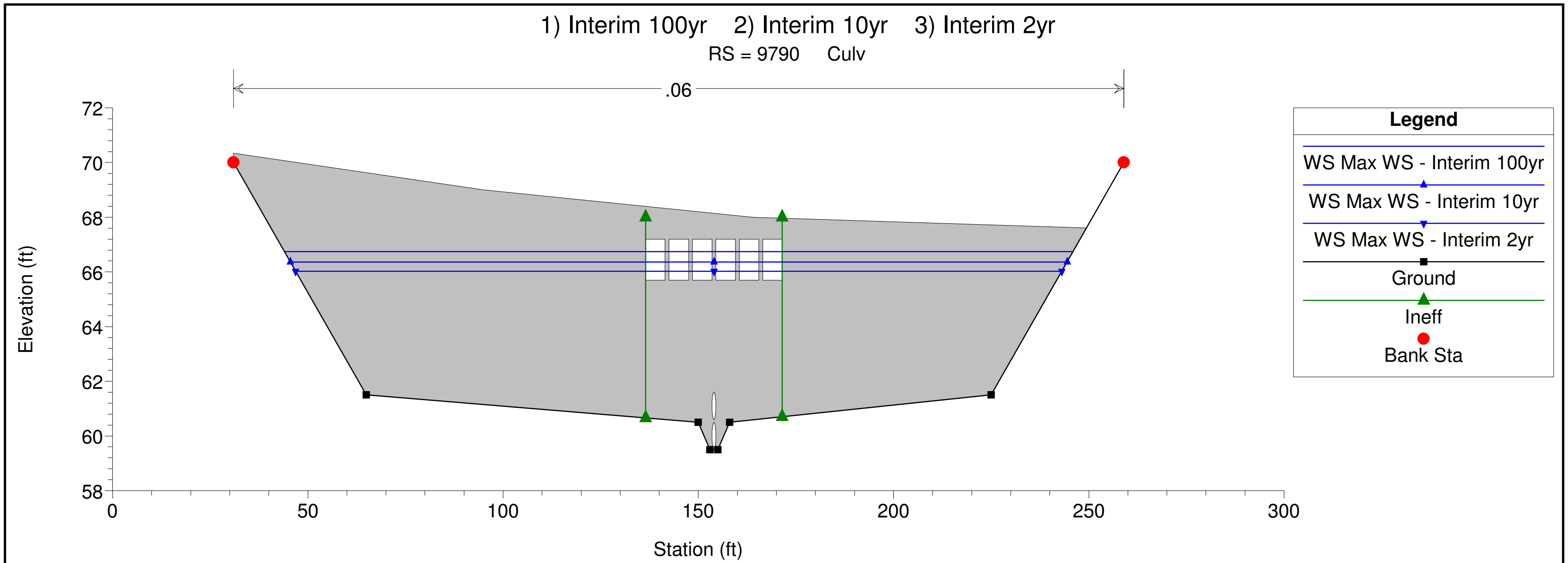
1) Interim 100yr 2) Interim 10yr 3) Interim 2yr
RS = 9969.*
.068
.072
.08
Legend
WS Max WS - Interim 100yr
WS Max WS - Interim 10yr
WS Max WS - Interim 2yr
Ground
Bank Sta
Elevation (ft)
72
70
68
66
64
62
-50
0
50
100
150
200
250
300
350
Station (ft)

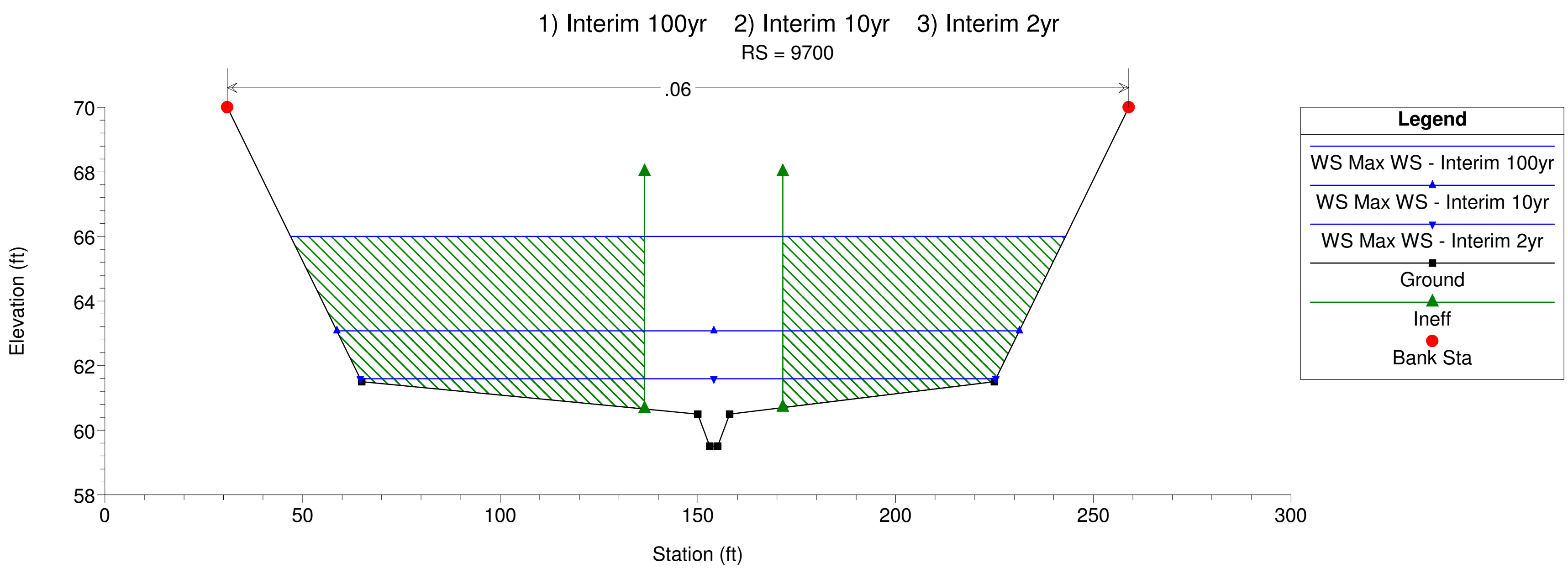

1) Interim 100yr 2) Interim 10yr 3) Interim 2yr
RS = 9947.*
.064
.076
.
0
8
Elevation (ft)
Station (ft)
Legend
WS Max WS - Interim 100yr
WS Max WS - Interim 10yr
WS Max WS - Interim 2yr
Ground
Bank Sta

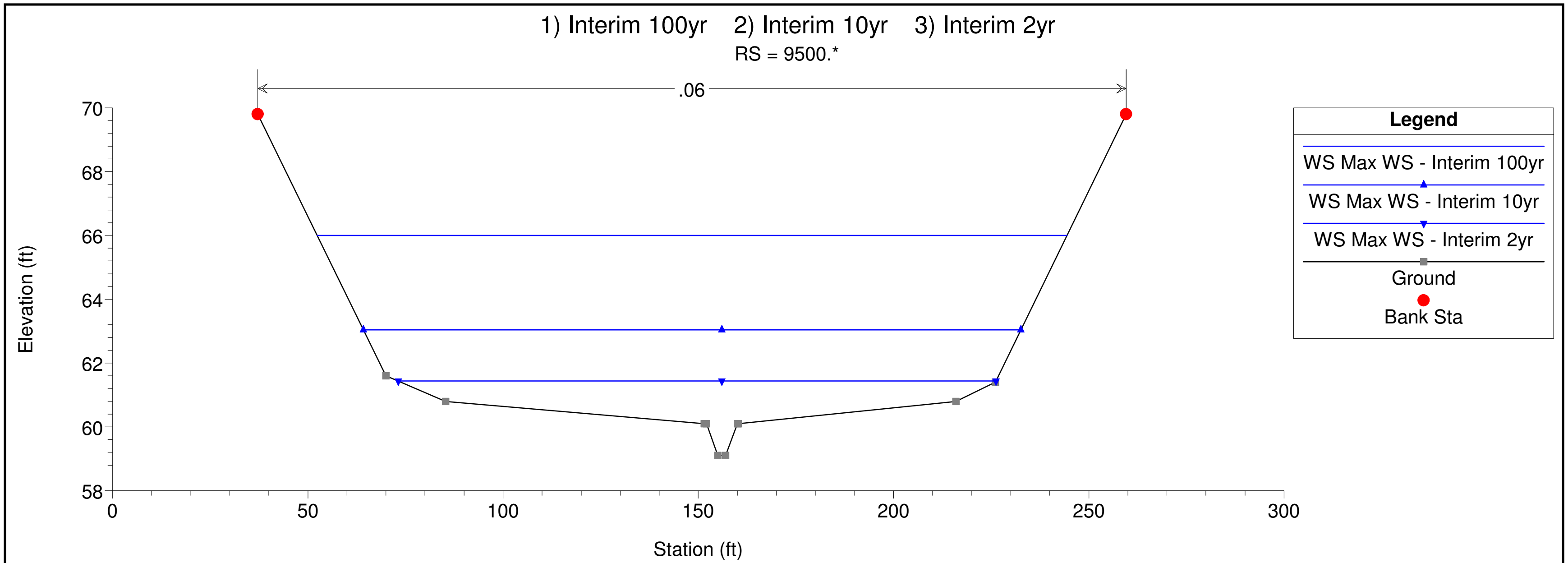

1) Interim 100yr 2) Interim 10yr 3) Interim 2yr
RS = 9925
.06
Elevation (ft)
Station (ft)
Legend
WS Max WS - Interim 100yr
WS Max WS - Interim 10yr
WS Max WS - Interim 2yr
Ground
Bank Sta


1) Interim 100yr 2) Interim 10yr 3) Interim 2yr
RS = 9900
.06
Elevation (ft)
70
68
66
64
62
60
58
-50
0
50
100
150
200
250
Station (ft)
Legend
WS Max WS - Interim 100yr
WS Max WS - Interim 10yr
WS Max WS - Interim 2yr
Ground
Ineff
Bank Sta

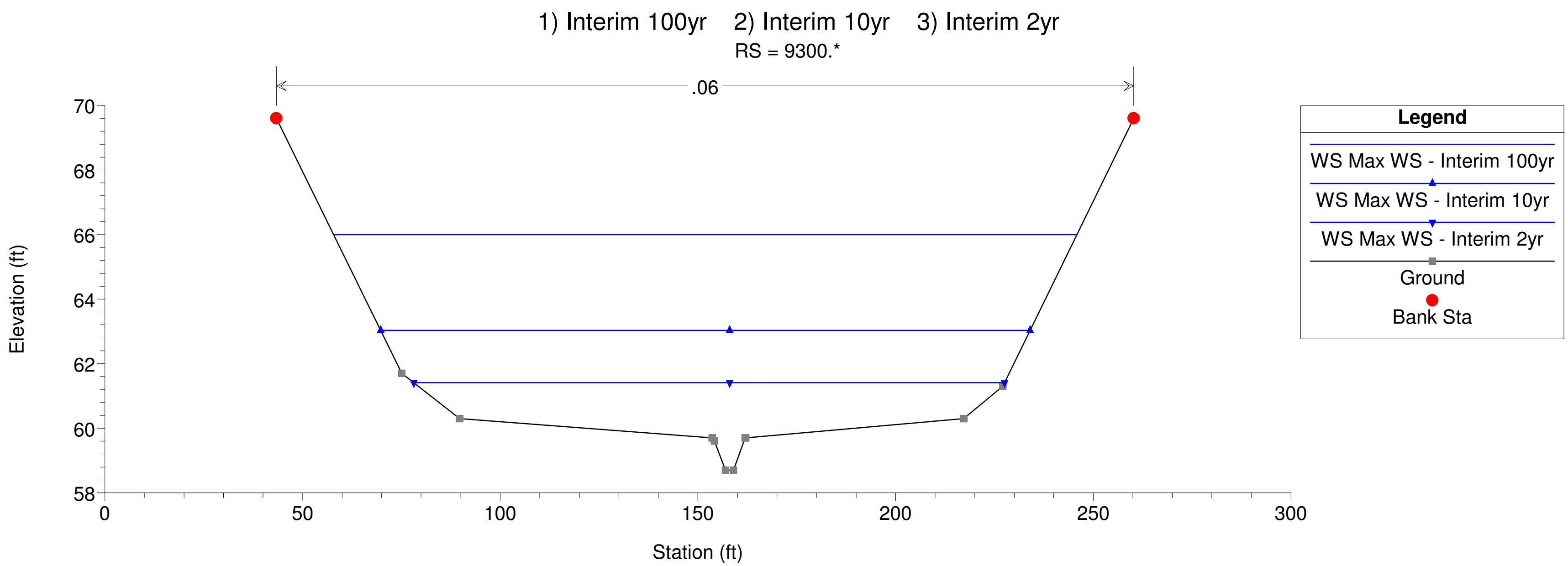

1) Interim 100yr 2) Interim 10yr 3) Interim 2yr
RS = 9790 Culv
.06
Elevation (ft)
72
70
68
66
64
62
60
58
-50
0
50
100
150
200
250
Station (ft)
Legend
WS Max WS - Interim 100yr
WS Max WS - Interim 10yr
WS Max WS - Interim 2yr
Ground
Ineff
Bank Sta


1) Interim 100yr 2) Interim 10yr 3) Interim 2yr
RS = 9790 Culv
.06
Elevation (ft)
Station (ft)
Legend
WS Max WS - Interim 100yr
WS Max WS - Interim 10yr
WS Max WS - Interim 2yr
Ground
Ineff
Bank Sta

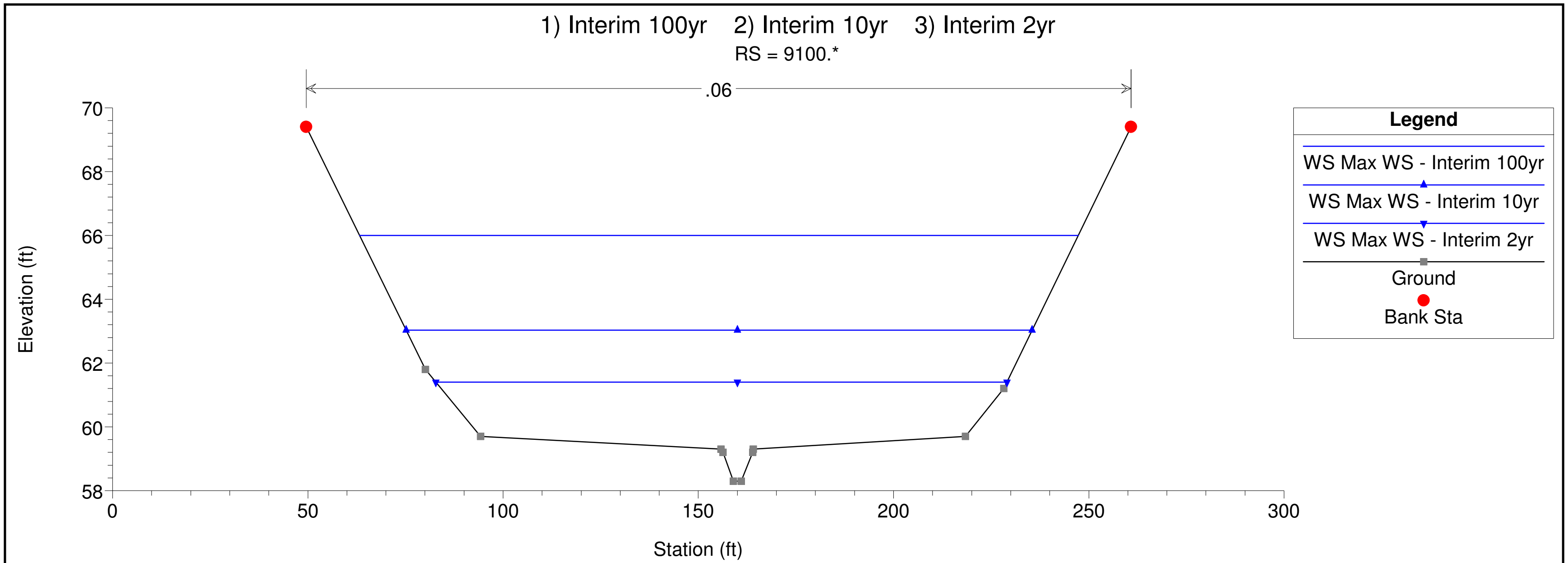

1) Interim 100yr 2) Interim 10yr 3) Interim 2yr
RS = 9700
.06
Elevation (ft)
Station (ft)
Legend
WS Max WS - Interim 100yr
WS Max WS - Interim 10yr
WS Max WS - Interim 2yr
Ground
Ineff
Bank Sta



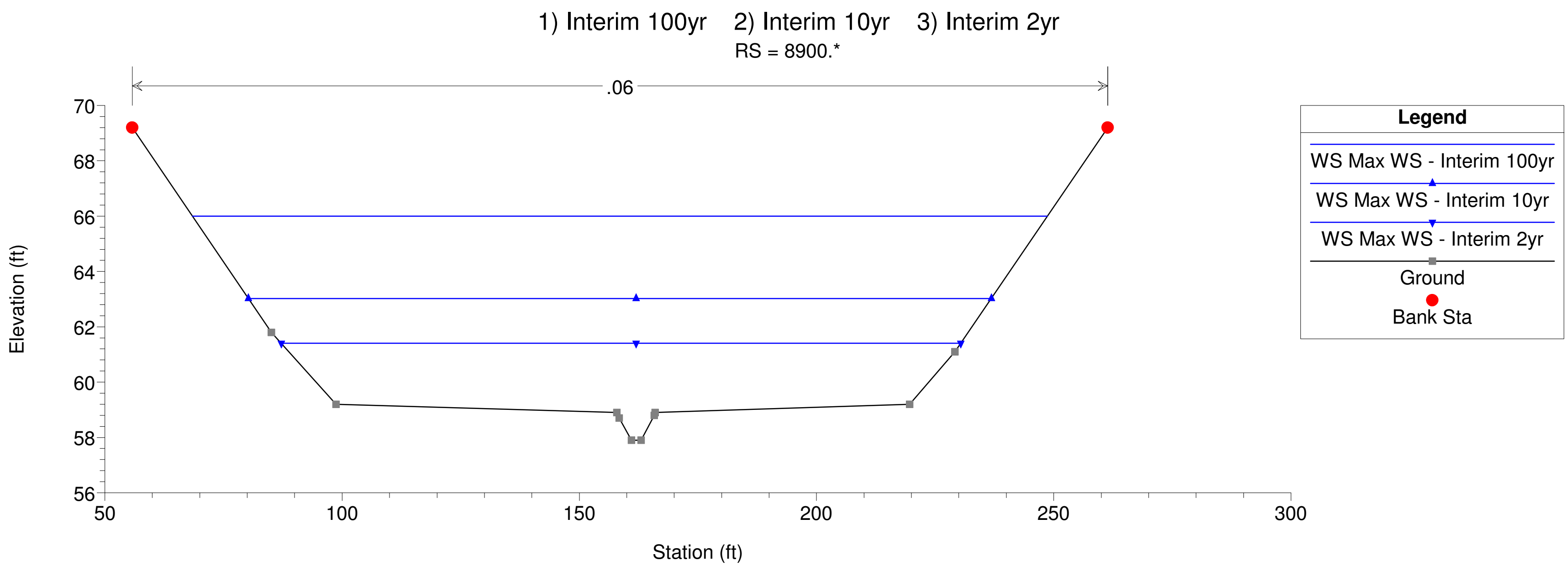
1) Interim 100yr 2) Interim 10yr 3) Interim 2yr
RS = 9500.*
.06
Legend
WS Max WS - Interim 100yr
WS Max WS - Interim 10yr
WS Max WS - Interim 2yr
Ground
Bank Sta
Elevation (ft)
Station (ft)



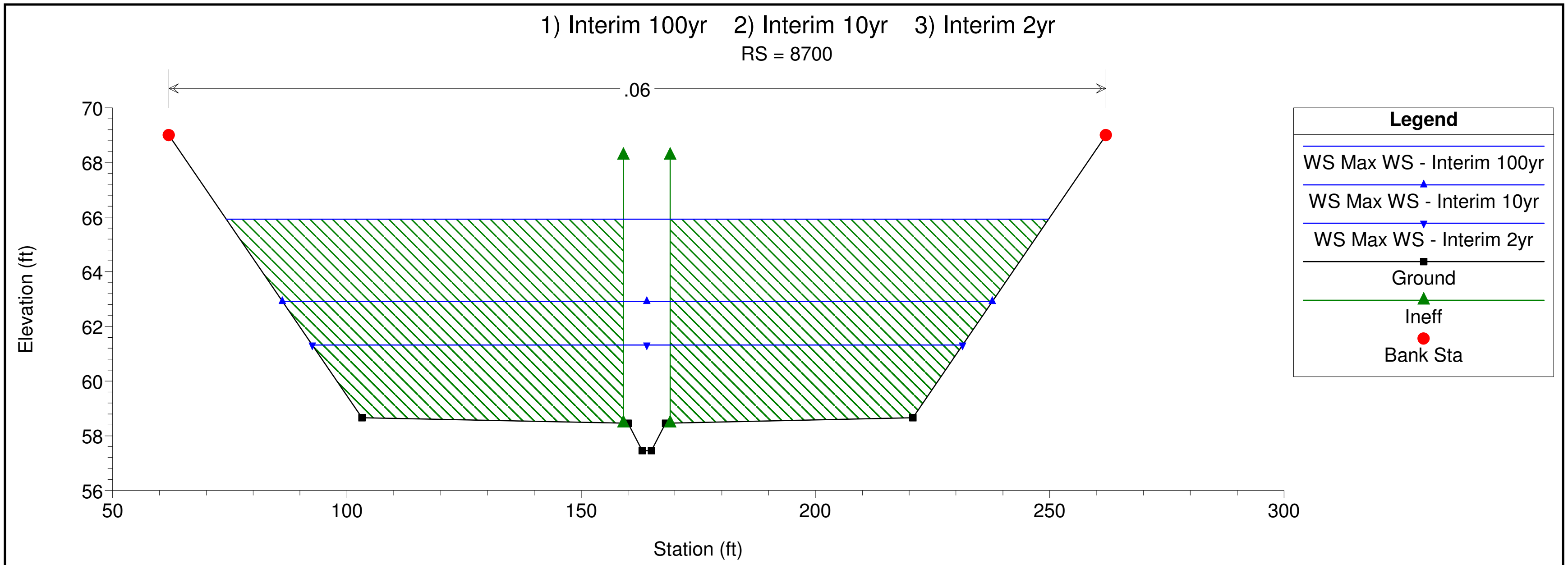
1) Interim 100yr 2) Interim 10yr 3) Interim 2yr
RS = 9300.*
.06
Legend
WS Max WS - Interim 100yr
WS Max WS - Interim 10yr
WS Max WS - Interim 2yr
Ground
Bank Sta
Elevation (ft)
Station (ft)

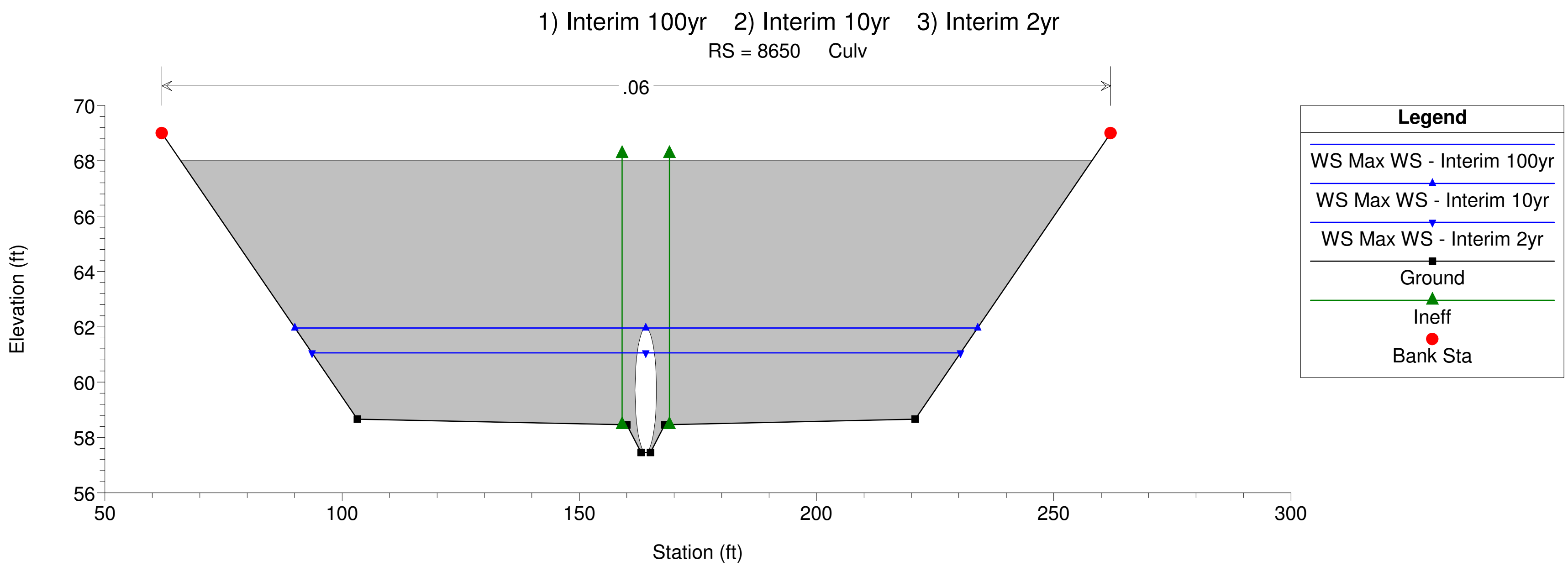


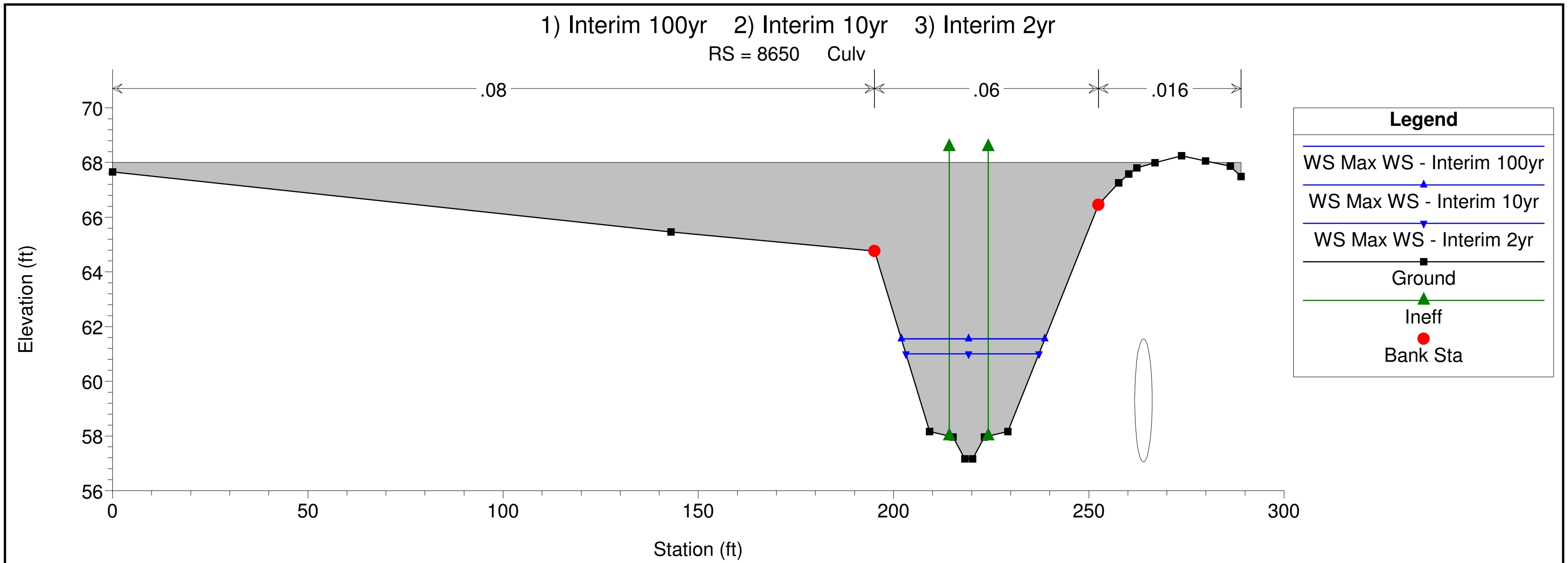
1) Interim 100yr 2) Interim 10yr 3) Interim 2yr
RS = 9100.*
.06
Legend
WS Max WS - Interim 100yr
WS Max WS - Interim 10yr
WS Max WS - Interim 2yr
Ground
Bank Sta
Elevation (ft)
70
68
66
64
62
60
58
0
50
100
150
200
250
300
Station (ft)

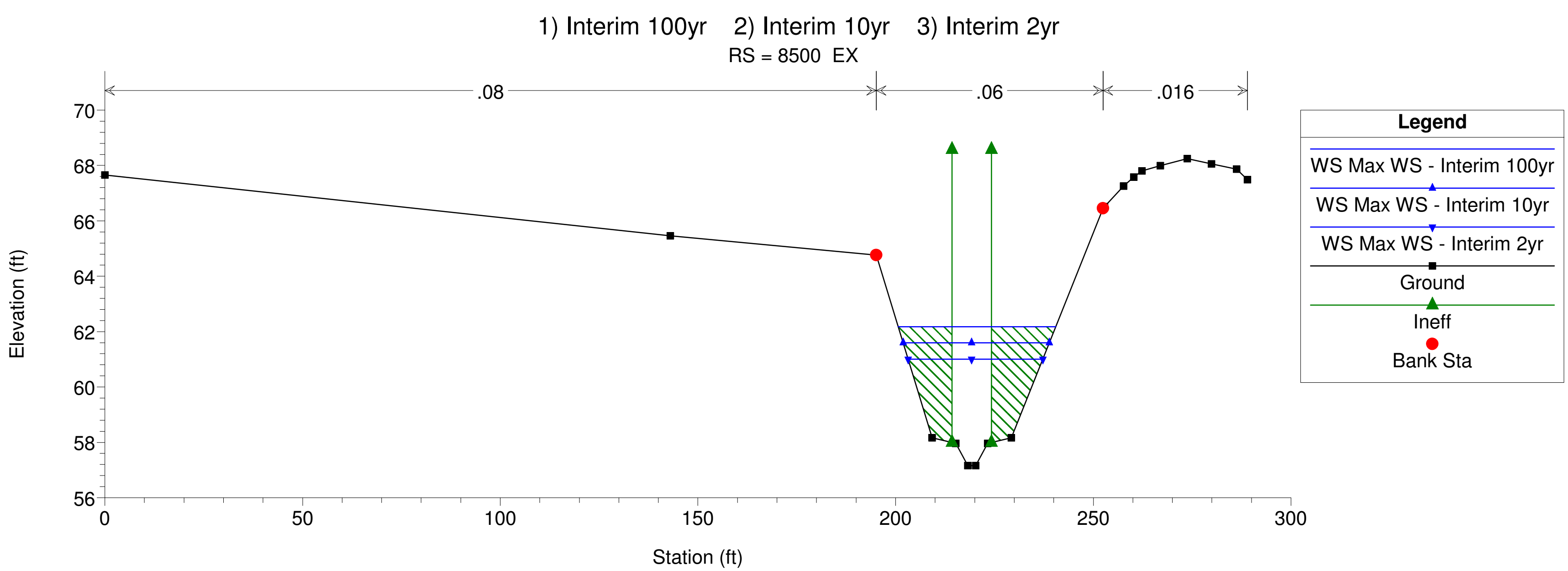


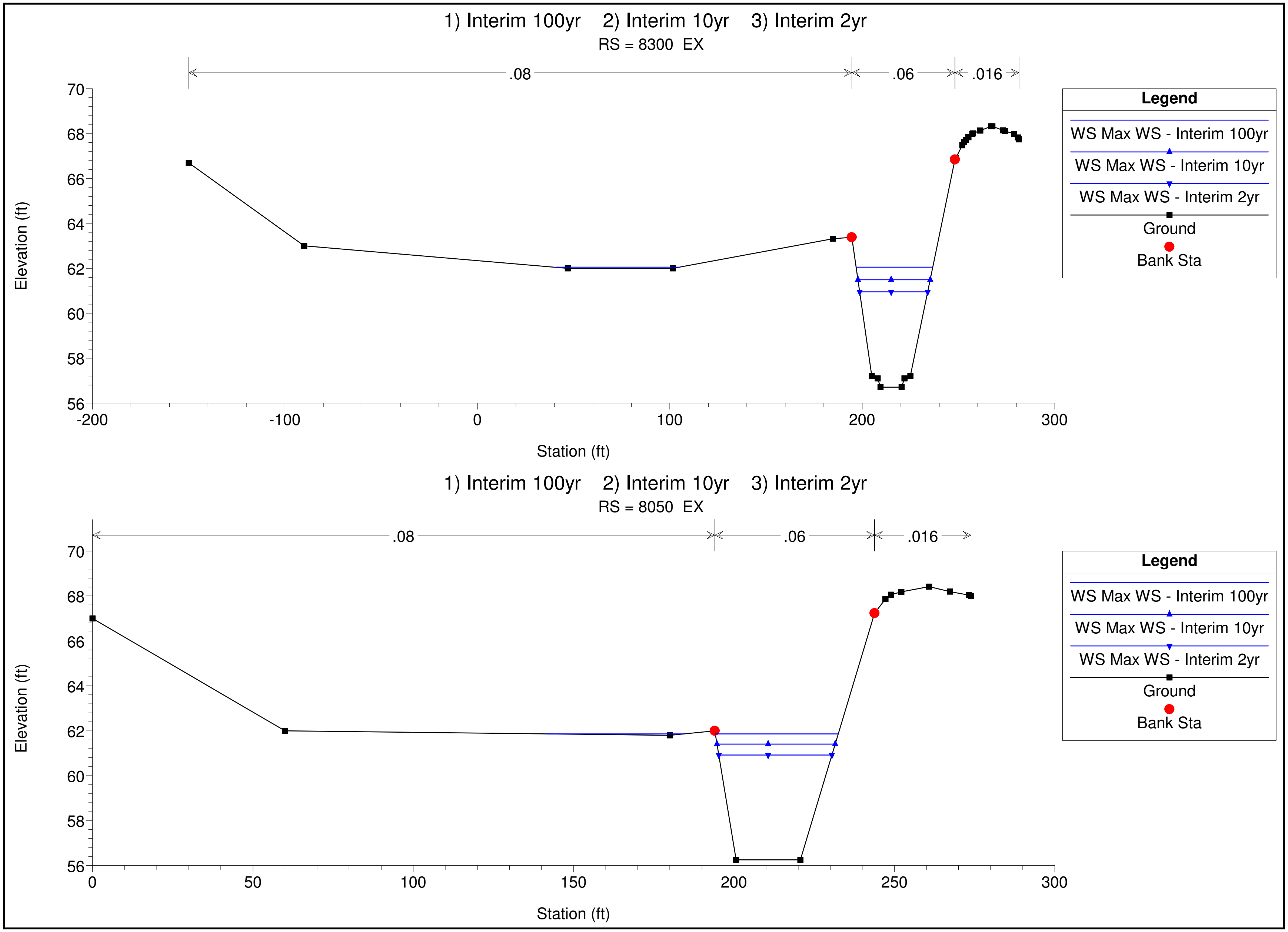
1) Interim 100yr 2) Interim 10yr 3) Interim 2yr
RS = 8900.*
.06
Legend
WS Max WS - Interim 100yr
WS Max WS - Interim 10yr
WS Max WS - Interim 2yr
Ground
Bank Sta
Elevation (ft)
70
68
66
64
62
60
58
56
50
100
150
200
250
300
Station (ft)


1) Interim 100yr 2) Interim 10yr 3) Interim 2yr
RS = 8700
.06
Elevation (ft)
Station (ft)
70
68
66
64
62
60
58
56
50
100
150
200
250
300
Legend
WS Max WS - Interim 100yr
WS Max WS - Interim 10yr
WS Max WS - Interim 2yr
Ground
Ineff
Bank Sta

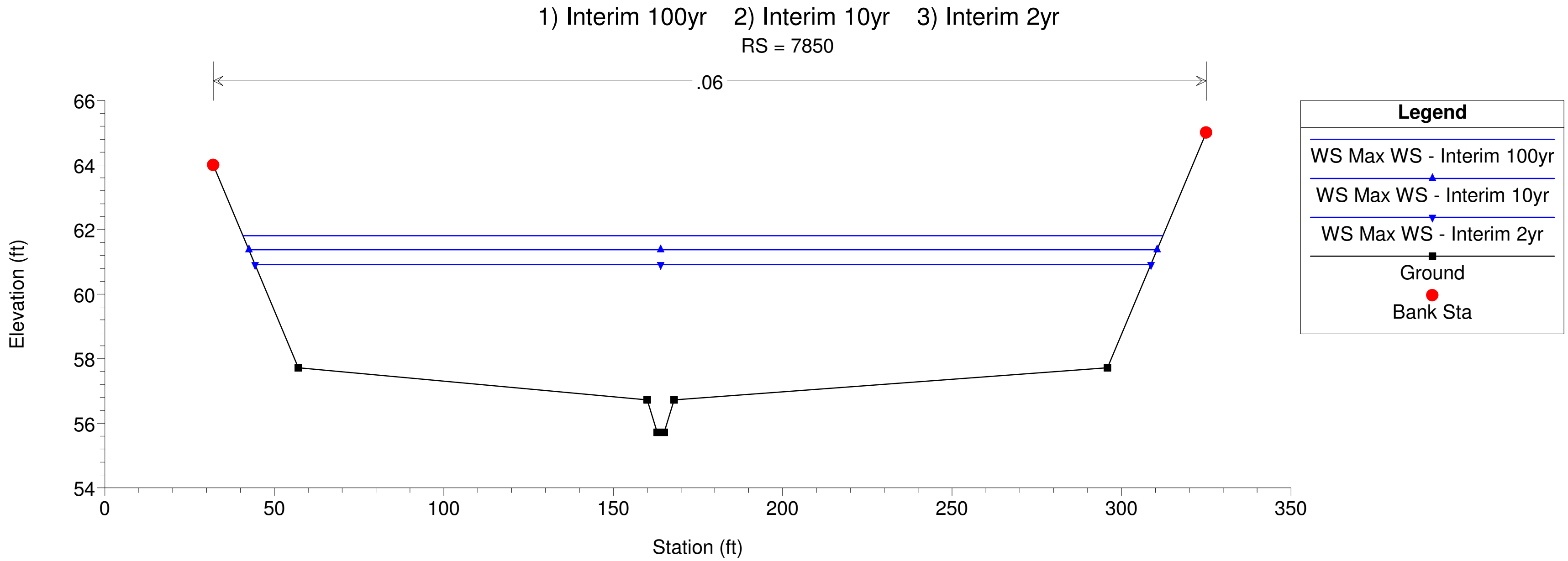

1) Interim 100yr 2) Interim 10yr 3) Interim 2yr
RS = 8650 Culv
.06
Elevation (ft)
Station (ft)
70
68
66
64
62
60
58
56
50
100
150
200
250
300
Legend
WS Max WS - Interim 100yr
WS Max WS - Interim 10yr
WS Max WS - Interim 2yr
Ground
Ineff
Bank Sta

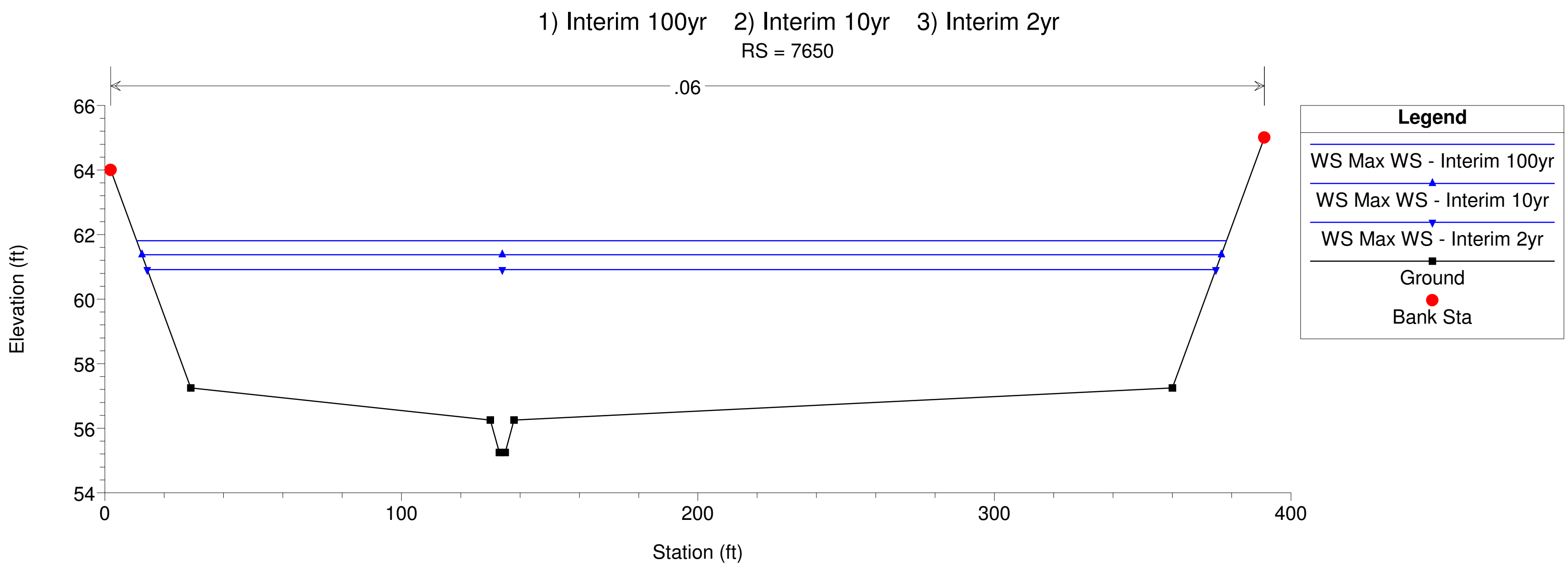

1) Interim 100yr 2) Interim 10yr 3) Interim 2yr
RS = 8650 Culv
.08
.06
.016
Elevation (ft)
Station (ft)
Legend
WS Max WS - Interim 100yr
WS Max WS - Interim 10yr
WS Max WS - Interim 2yr
Ground
Ineff
Bank Sta

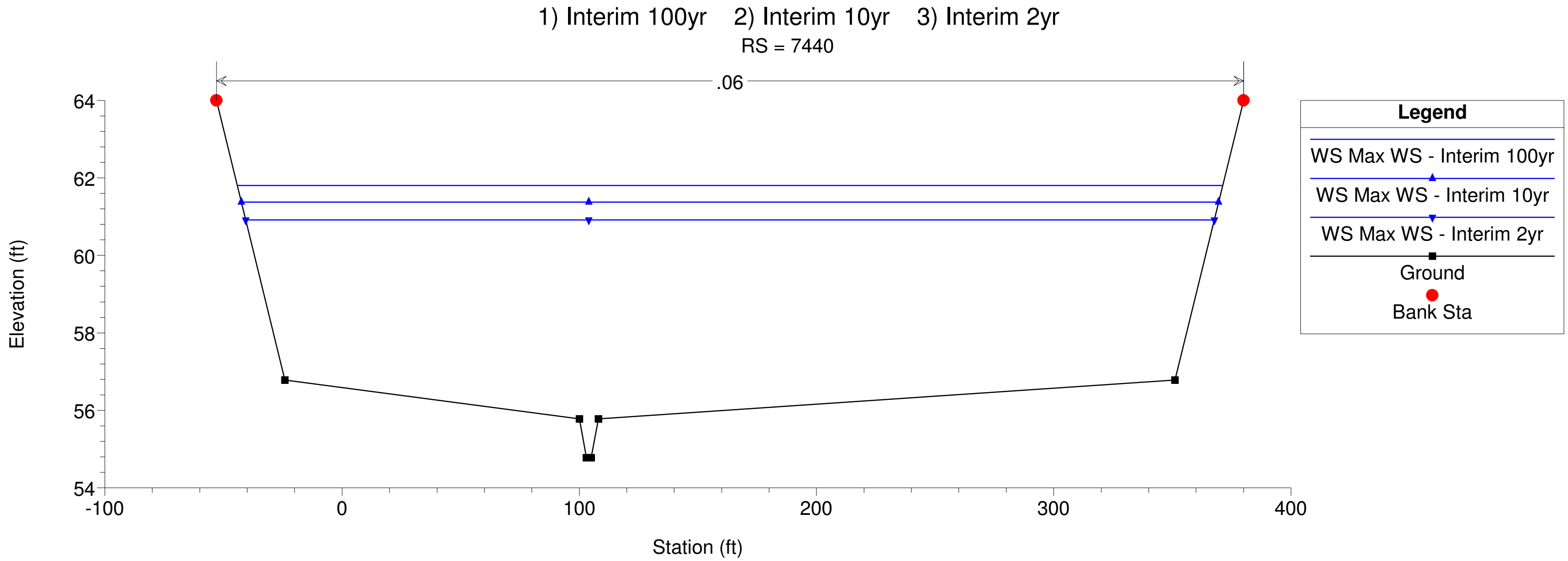

1) Interim 100yr 2) Interim 10yr 3) Interim 2yr
RS = 8500 EX
.08
.06
.016
Elevation (ft)
Station (ft)
Legend
WS Max WS - Interim 100yr
WS Max WS - Interim 10yr
WS Max WS - Interim 2yr
Ground
Ineff
Bank Sta

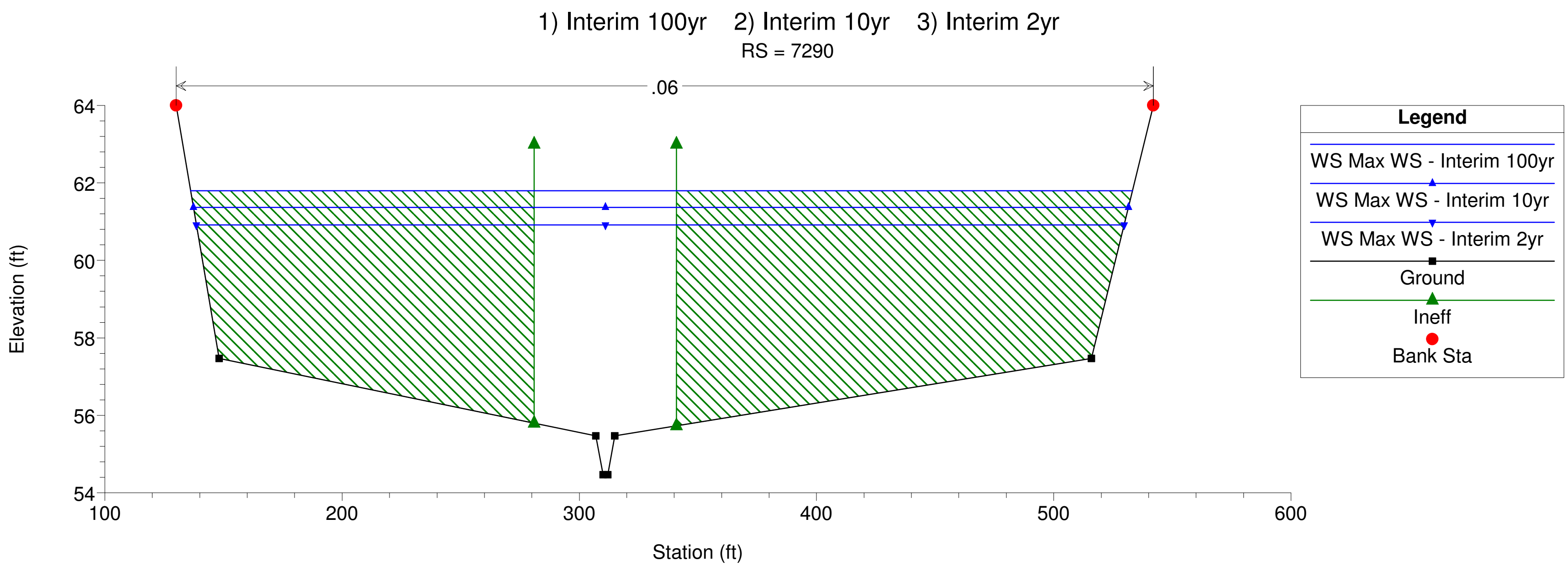


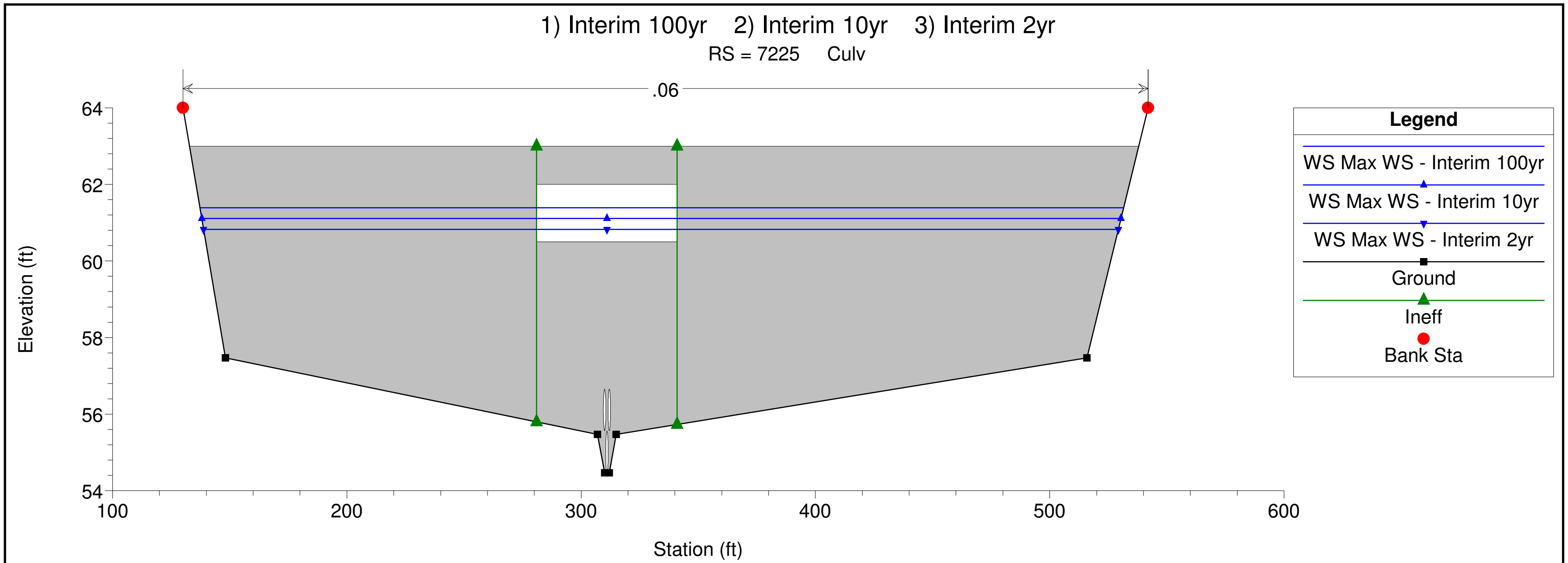
1) Interim 100yr 2) Interim 10yr 3) Interim 2yr
RS = 8300 EX
.08
.06
.016
70
68
66
64
62
60
58
56
-200
-100
0
100
200
300
Elevation (ft)
Station (ft)
Legend
WS Max WS - Interim 100yr
WS Max WS - Interim 10yr
WS Max WS - Interim 2yr
Ground
Bank Sta
1) Interim 100yr 2) Interim 10yr 3) Interim 2yr
RS = 8050 EX
.08
.06
.016
70
68
66
64
62
60
58
56
0
50
100
150
200
250
300
Elevation (ft)
Station (ft)
Legend
WS Max WS - Interim 100yr
WS Max WS - Interim 10yr
WS Max WS - Interim 2yr
Ground
Bank Sta


1) Interim 100yr 2) Interim 10yr 3) Interim 2yr
RS = 7850
.06
Elevation (ft)
Station (ft)
66
64
62
60
58
56
54
0
50
100
150
200
250
300
350
Legend
WS Max WS - Interim 100yr
WS Max WS - Interim 10yr
WS Max WS - Interim 2yr
Ground
Bank Sta

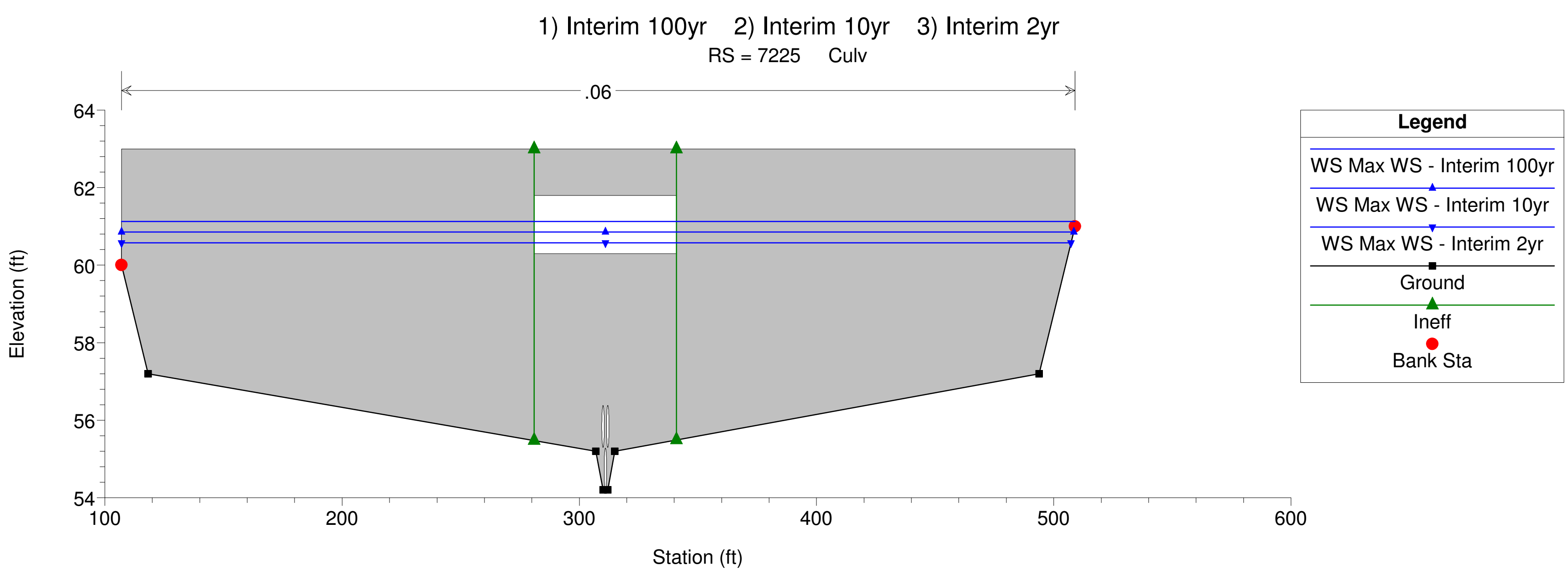

1) Interim 100yr 2) Interim 10yr 3) Interim 2yr
RS = 7650
.06
Elevation (ft)
Station (ft)
66
64
62
60
58
56
54
0
100
200
300
400
Legend
WS Max WS - Interim 100yr
WS Max WS - Interim 10yr
WS Max WS - Interim 2yr
Ground
Bank Sta


1) Interim 100yr 2) Interim 10yr 3) Interim 2yr
RS = 7440
.06
Elevation (ft)
64
62
60
58
56
54
-100
0
100
200
300
400
Station (ft)
Legend
WS Max WS - Interim 100yr
WS Max WS - Interim 10yr
WS Max WS - Interim 2yr
Ground
Bank Sta

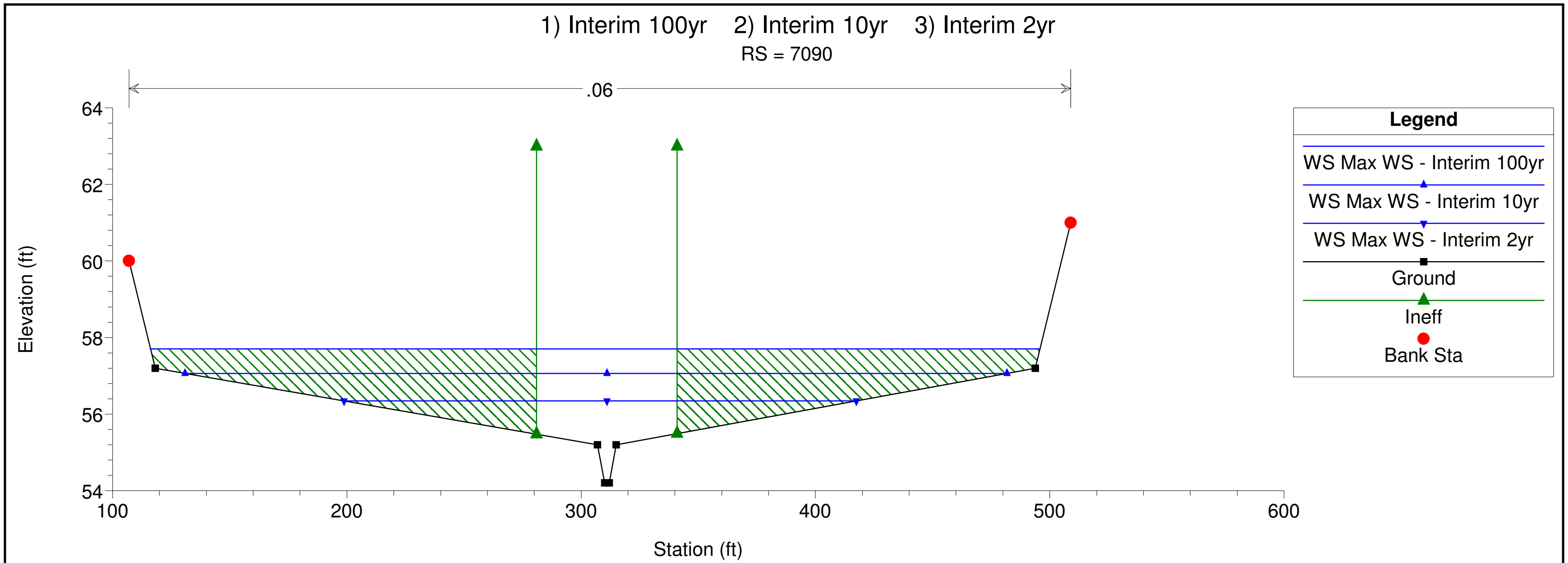

1) Interim 100yr 2) Interim 10yr 3) Interim 2yr
RS = 7290
.06
Elevation (ft)
64
62
60
58
56
54
100
200
300
400
500
600
Station (ft)
Legend
WS Max WS - Interim 100yr
WS Max WS - Interim 10yr
WS Max WS - Interim 2yr
Ground
Ineff
Bank Sta

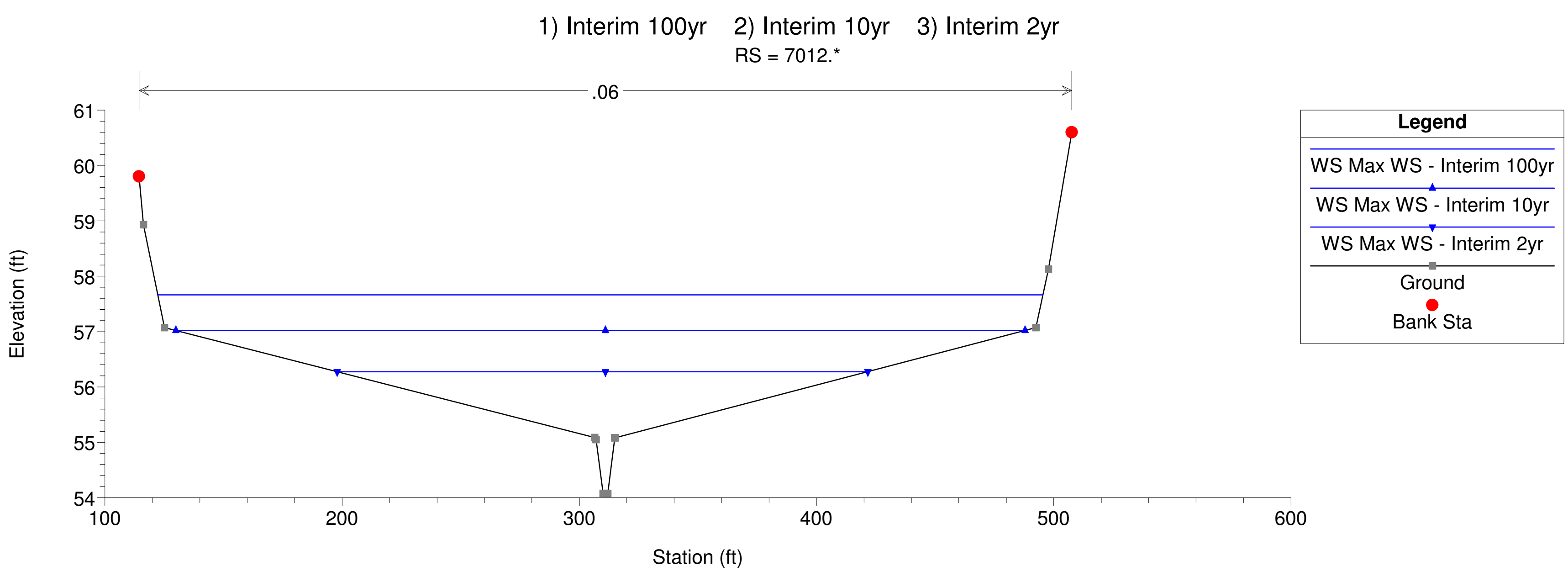


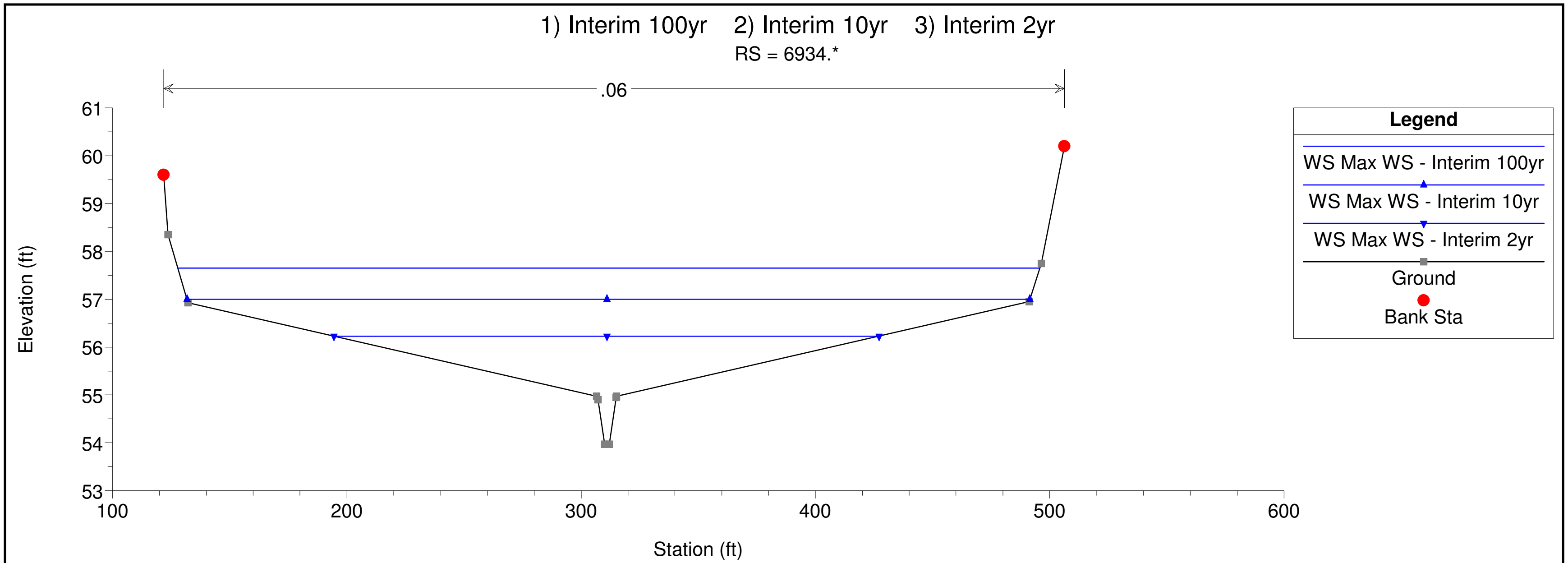
1) Interim 100yr 2) Interim 10yr 3) Interim 2yr
RS = 7225 Culv
.06
Legend
WS Max WS - Interim 100yr
WS Max WS - Interim 10yr
WS Max WS - Interim 2yr
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)

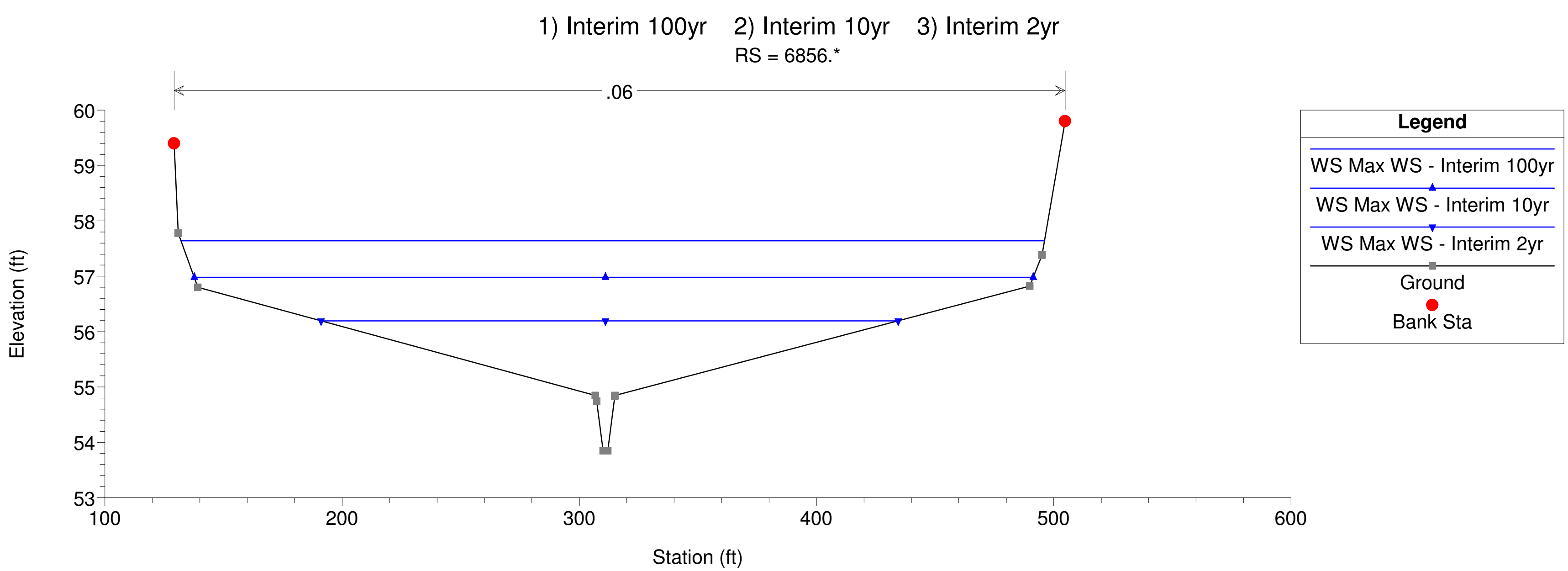


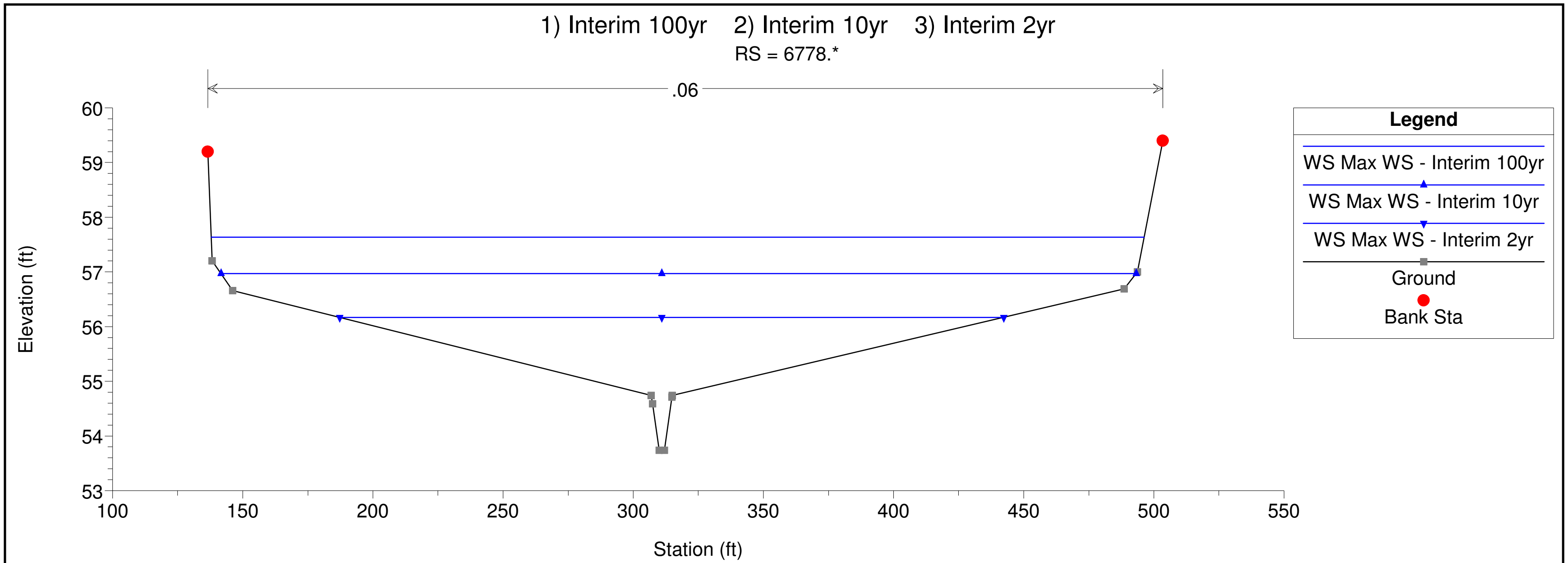
1) Interim 100yr 2) Interim 10yr 3) Interim 2yr
RS = 7225 Culv
.06
Legend
WS Max WS - Interim 100yr
WS Max WS - Interim 10yr
WS Max WS - Interim 2yr
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)


1) Interim 100yr 2) Interim 10yr 3) Interim 2yr
RS = 7090
.06
Elevation (ft)
64
62
60
58
56
54
100
200
300
400
500
600
Station (ft)
Legend
WS Max WS - Interim 100yr
WS Max WS - Interim 10yr
WS Max WS - Interim 2yr
Ground
Ineff
Bank Sta

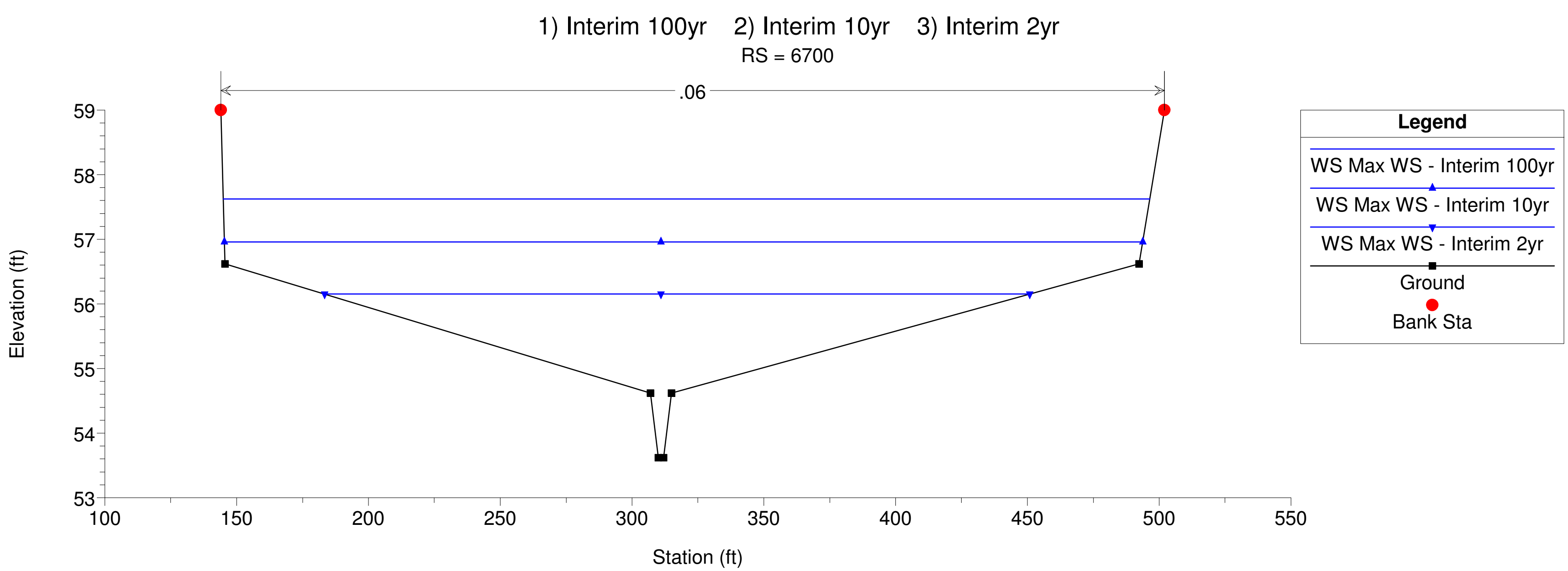

1) Interim 100yr 2) Interim 10yr 3) Interim 2yr
RS = 7012.*
.06
Elevation (ft)
61
60
59
58
57
56
55
54
100
200
300
400
500
600
Station (ft)
Legend
WS Max WS - Interim 100yr
WS Max WS - Interim 10yr
WS Max WS - Interim 2yr
Ground
Bank Sta


1) Interim 100yr 2) Interim 10yr 3) Interim 2yr
RS = 6934.*
.06
Elevation (ft)
61
60
59
58
57
56
55
54
53
100
200
300
400
500
600
Station (ft)
Legend
WS Max WS - Interim 100yr
WS Max WS - Interim 10yr
WS Max WS - Interim 2yr
Ground
Bank Sta

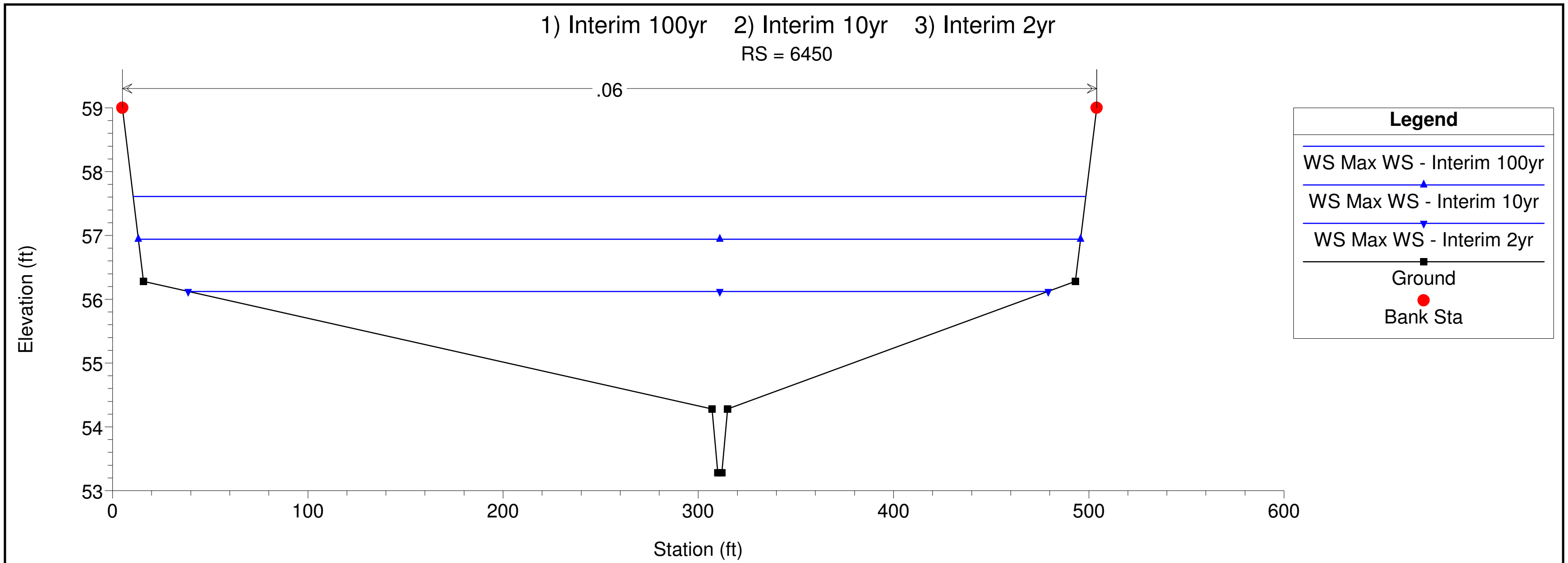

1) Interim 100yr 2) Interim 10yr 3) Interim 2yr
RS = 6856.*
.06
Elevation (ft)
60
59
58
57
56
55
54
53
100
200
300
400
500
600
Station (ft)
Legend
WS Max WS - Interim 100yr
WS Max WS - Interim 10yr
WS Max WS - Interim 2yr
Ground
Bank Sta



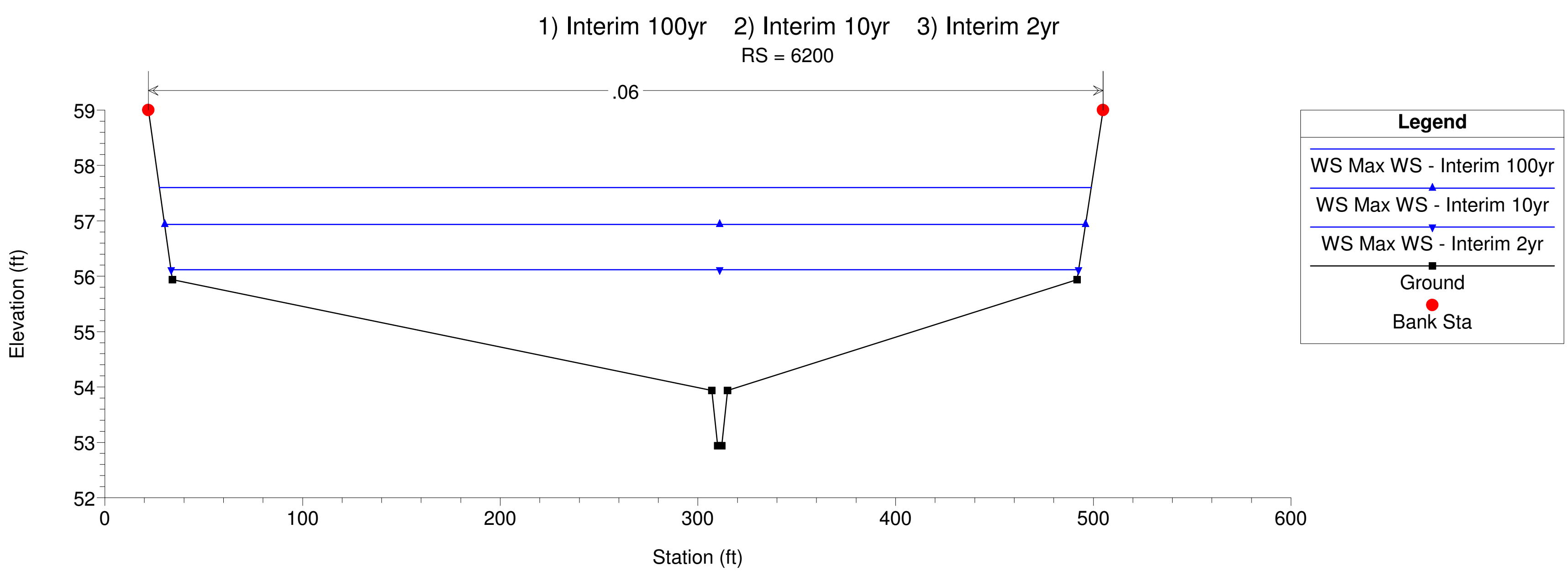
1) Interim 100yr 2) Interim 10yr 3) Interim 2yr
RS = 6778.*
.06
Elevation (ft)
Station (ft)
Legend
WS Max WS - Interim 100yr
WS Max WS - Interim 10yr
WS Max WS - Interim 2yr
Ground
Bank Sta



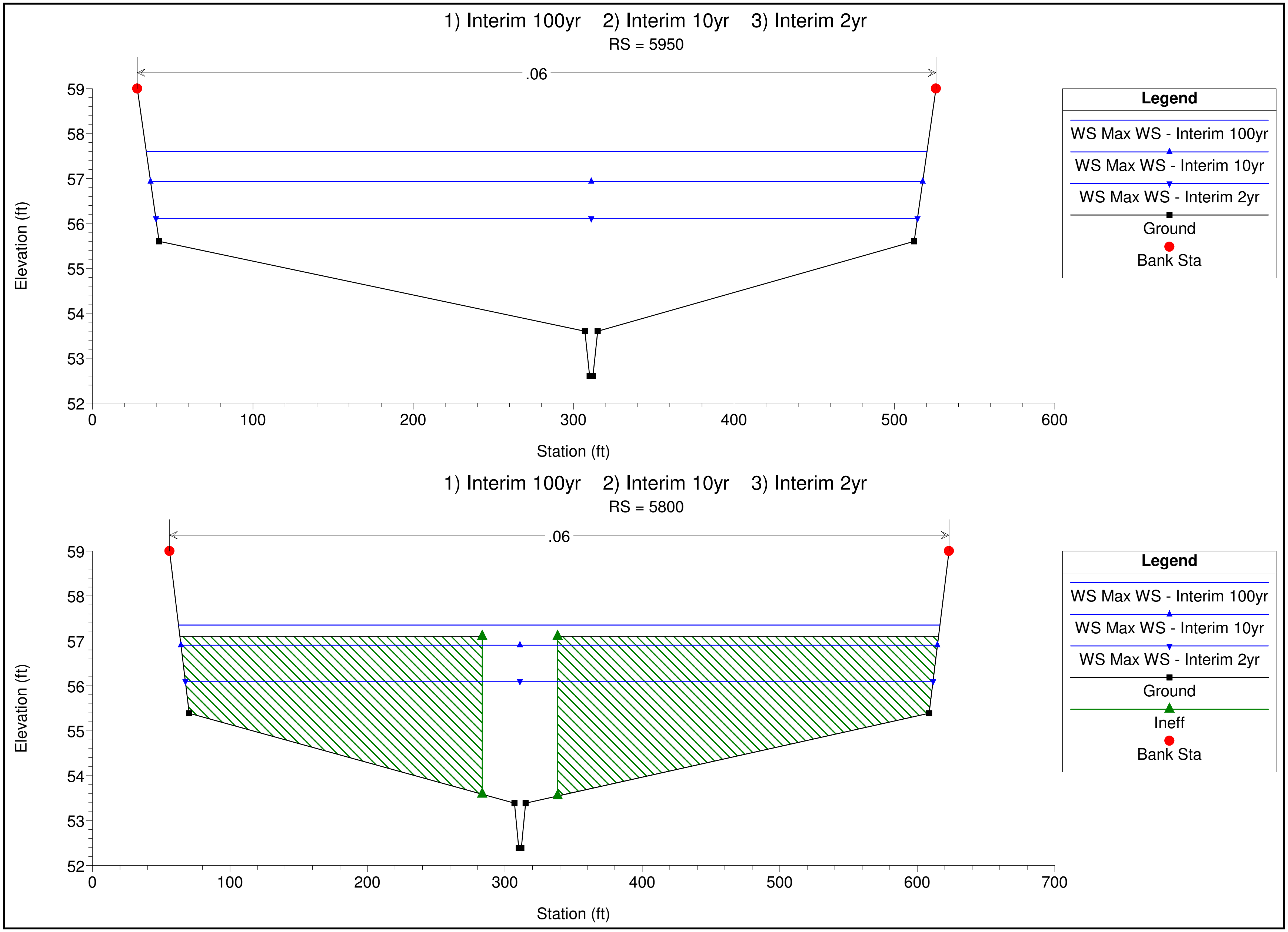
1) Interim 100yr 2) Interim 10yr 3) Interim 2yr
RS = 6700
.06
Elevation (ft)
Station (ft)
Legend
WS Max WS - Interim 100yr
WS Max WS - Interim 10yr
WS Max WS - Interim 2yr
Ground
Bank Sta

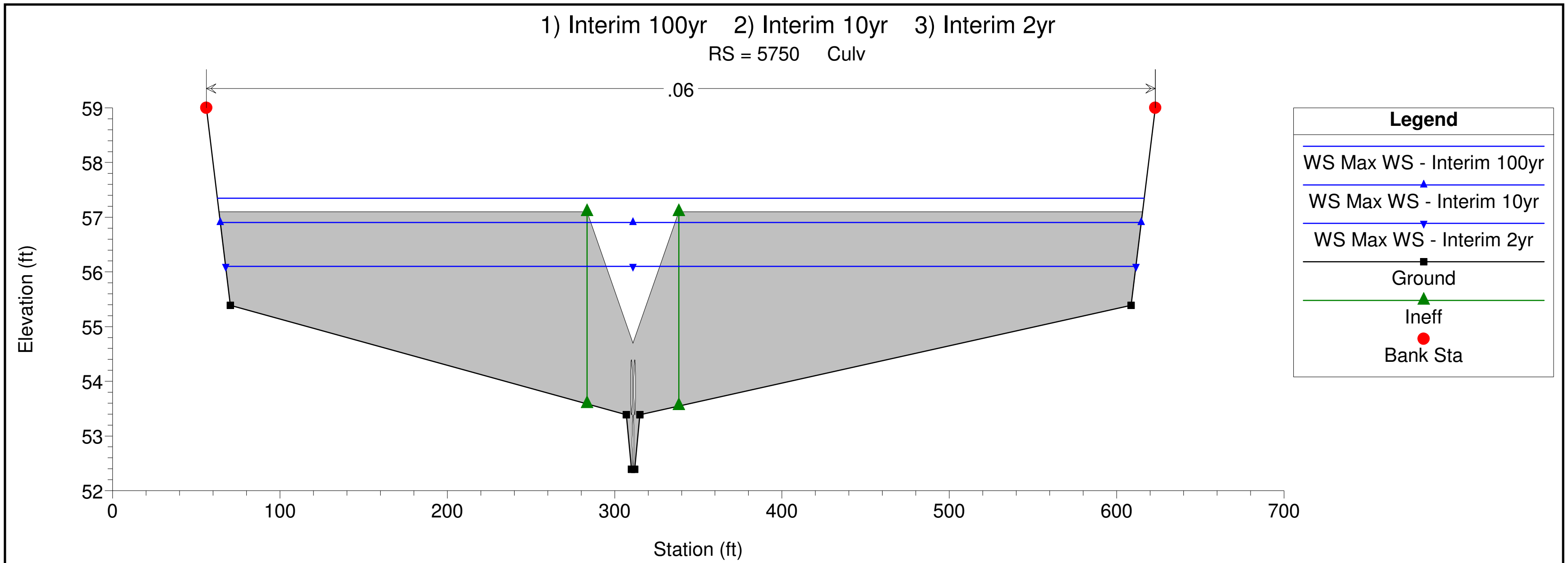


1) Interim 100yr 2) Interim 10yr 3) Interim 2yr
RS = 6450
.06
Elevation (ft)
Station (ft)
Legend
WS Max WS - Interim 100yr
WS Max WS - Interim 10yr
WS Max WS - Interim 2yr
Ground
Bank Sta

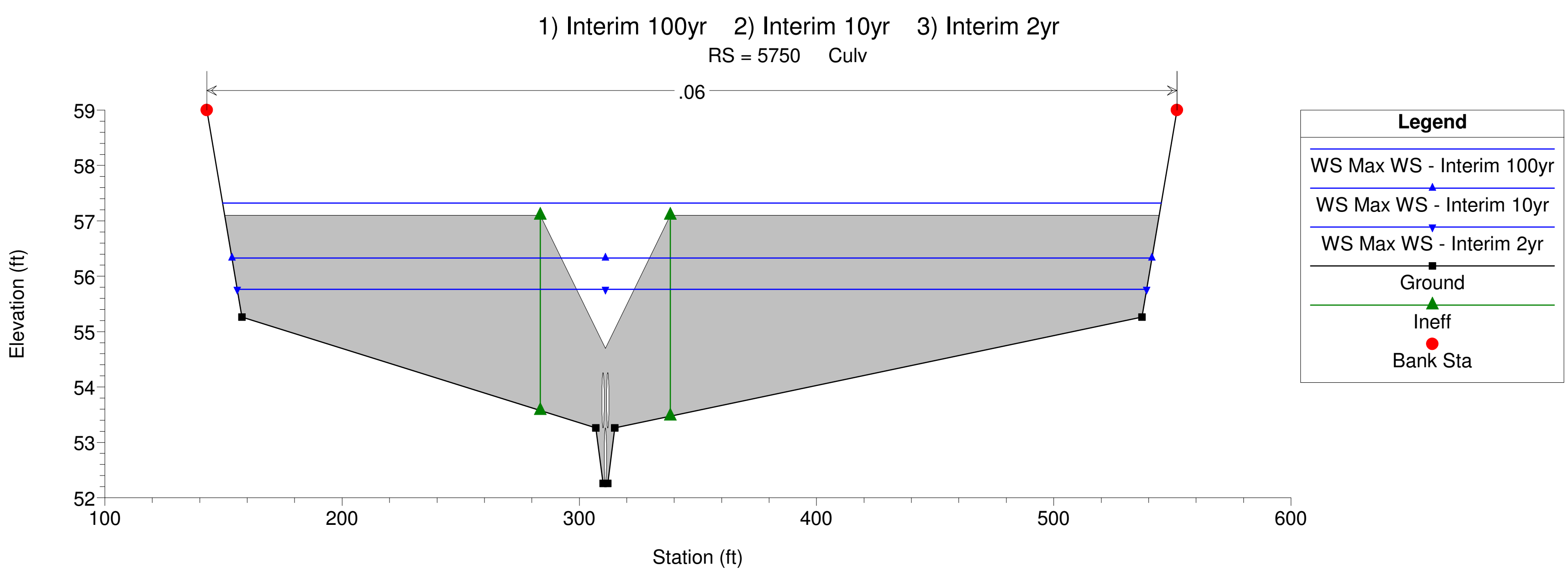


1) Interim 100yr 2) Interim 10yr 3) Interim 2yr
RS = 6200
.06
Elevation (ft)
Station (ft)
Legend
WS Max WS - Interim 100yr
WS Max WS - Interim 10yr
WS Max WS - Interim 2yr
Ground
Bank Sta

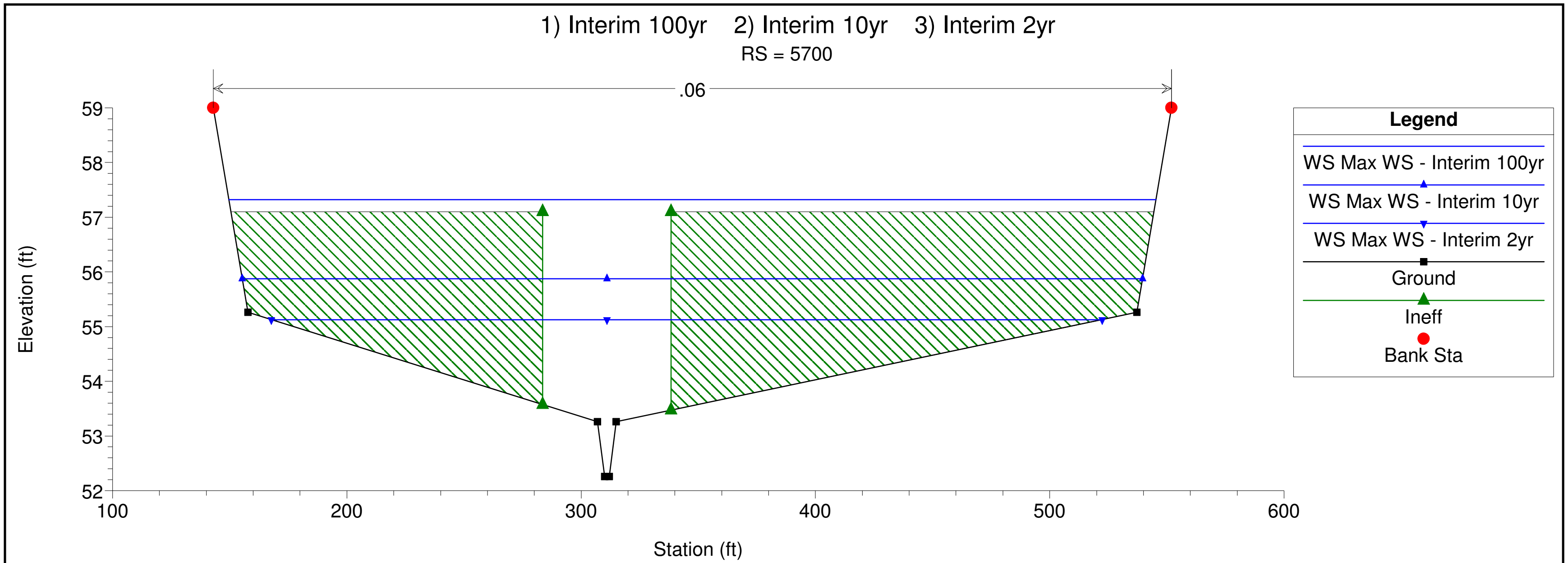

1) Interim 100yr 2) Interim 10yr 3) Interim 2yr
RS = 5950
.06
Elevation (ft)
59
58
57
56
55
54
53
52
0
100
200
300
400
500
600
Station (ft)
Legend
WS Max WS - Interim 100yr
WS Max WS - Interim 10yr
WS Max WS - Interim 2yr
Ground
Bank Sta
1) Interim 100yr 2) Interim 10yr 3) Interim 2yr
RS = 5800
.06
Elevation (ft)
59
58
57
56
55
54
53
52
0
100
200
300
400
500
600
700
Station (ft)
Legend
WS Max WS - Interim 100yr
WS Max WS - Interim 10yr
WS Max WS - Interim 2yr
Ground
Ineff
Bank Sta

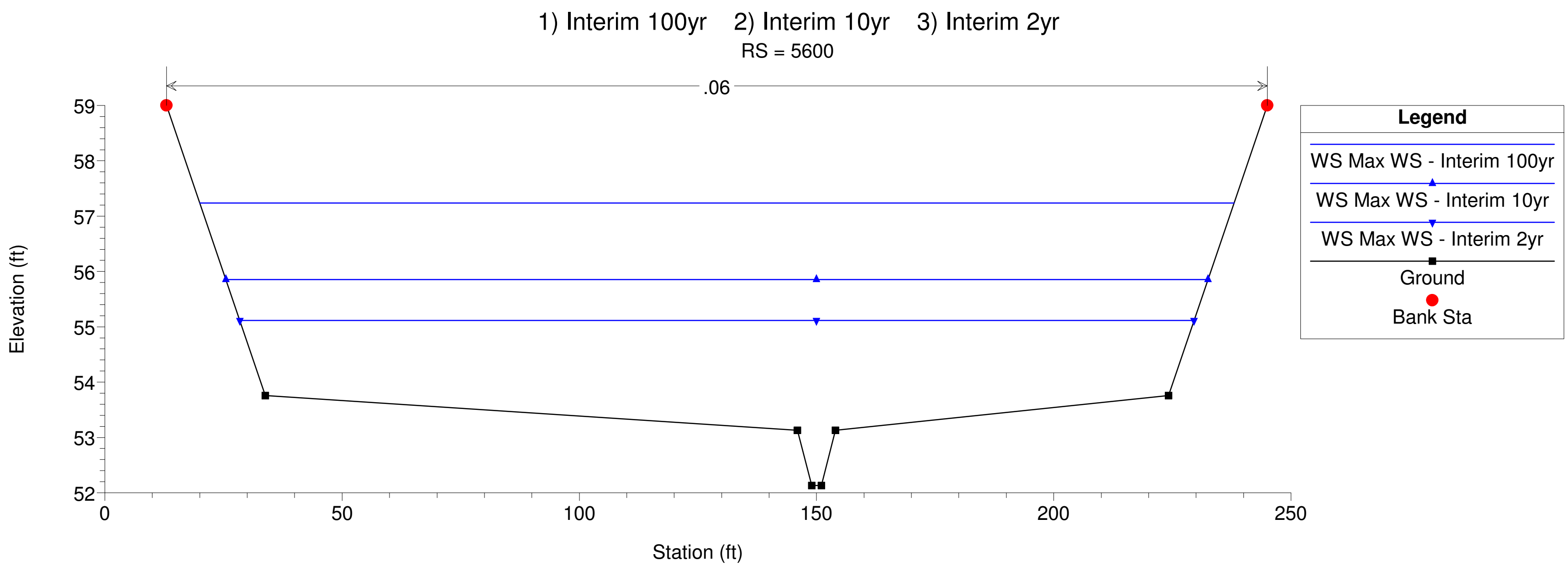


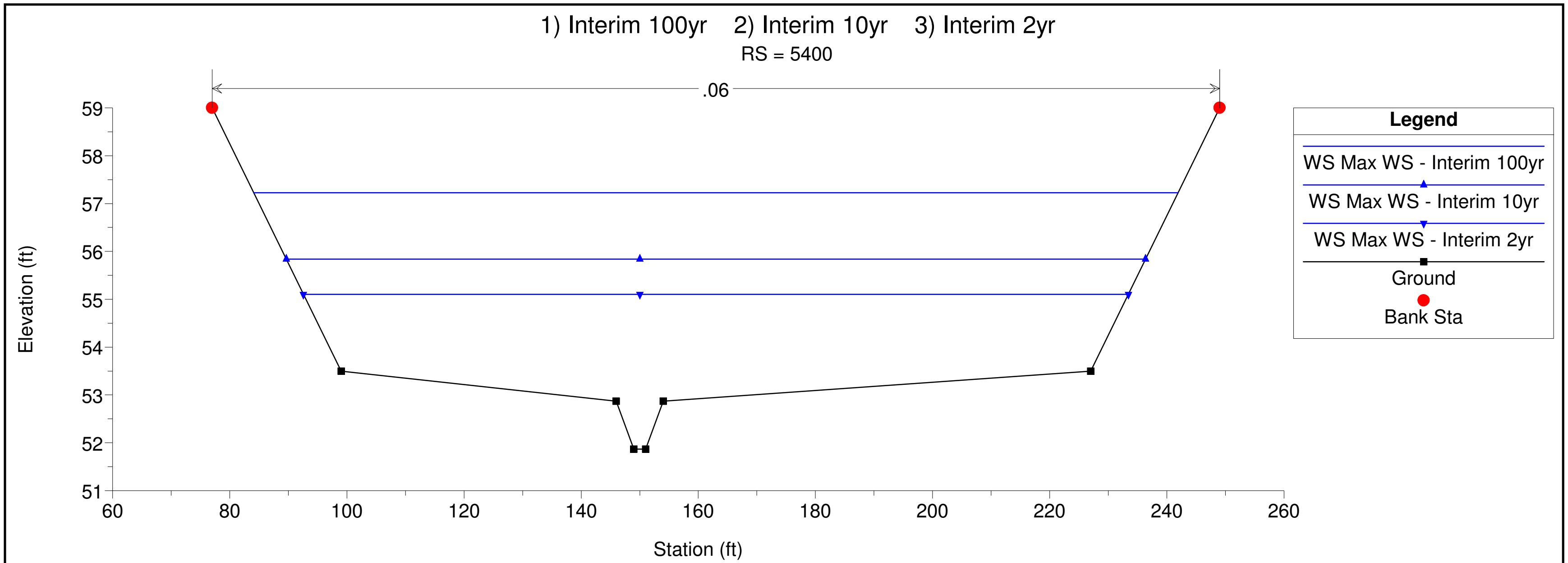
1) Interim 100yr 2) Interim 10yr 3) Interim 2yr
RS = 5750 Culv
.06
Legend
WS Max WS - Interim 100yr
WS Max WS - Interim 10yr
WS Max WS - Interim 2yr
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)
59
58
57
56
55
54
53
52
0
100
200
300
400
500
600
700



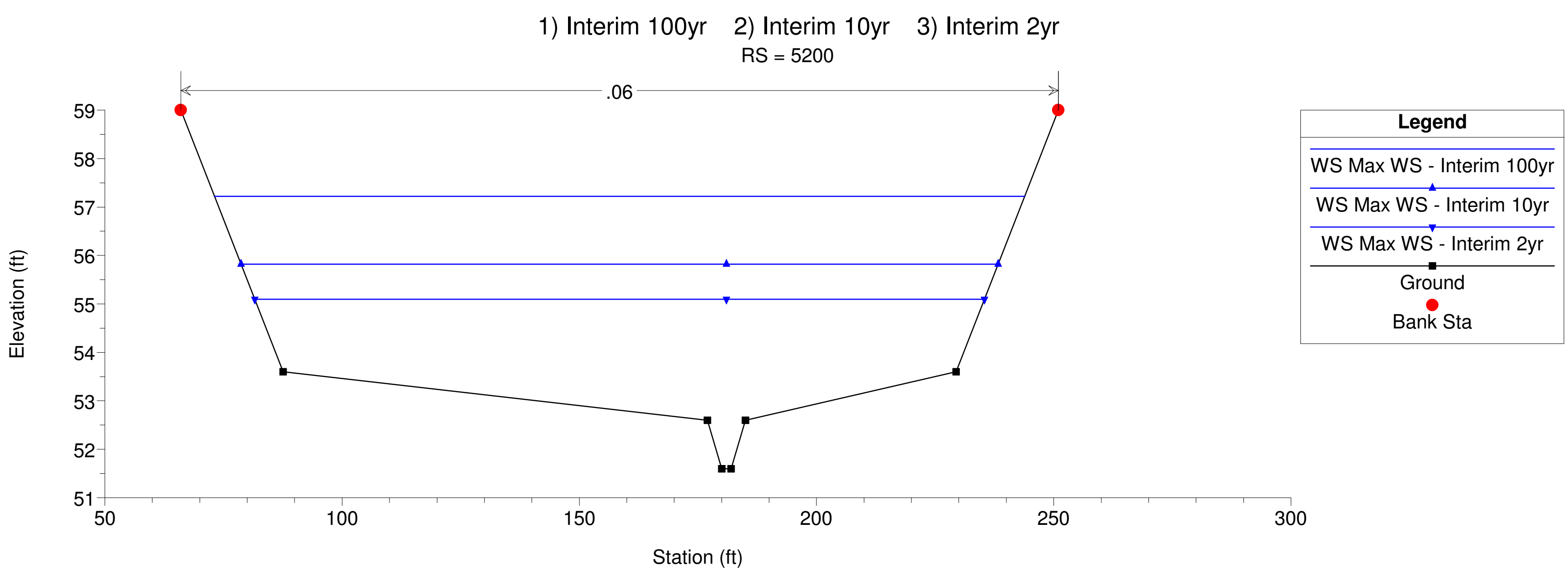
1) Interim 100yr 2) Interim 10yr 3) Interim 2yr
RS = 5750 Culv
.06
Legend
WS Max WS - Interim 100yr
WS Max WS - Interim 10yr
WS Max WS - Interim 2yr
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)
59
58
57
56
55
54
53
52
100
200
300
400
500
600


1) Interim 100yr 2) Interim 10yr 3) Interim 2yr
RS = 5700
.06
Legend
WS Max WS - Interim 100yr
WS Max WS - Interim 10yr
WS Max WS - Interim 2yr
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)
59
58
57
56
55
54
53
52
100
200
300
400
500
600

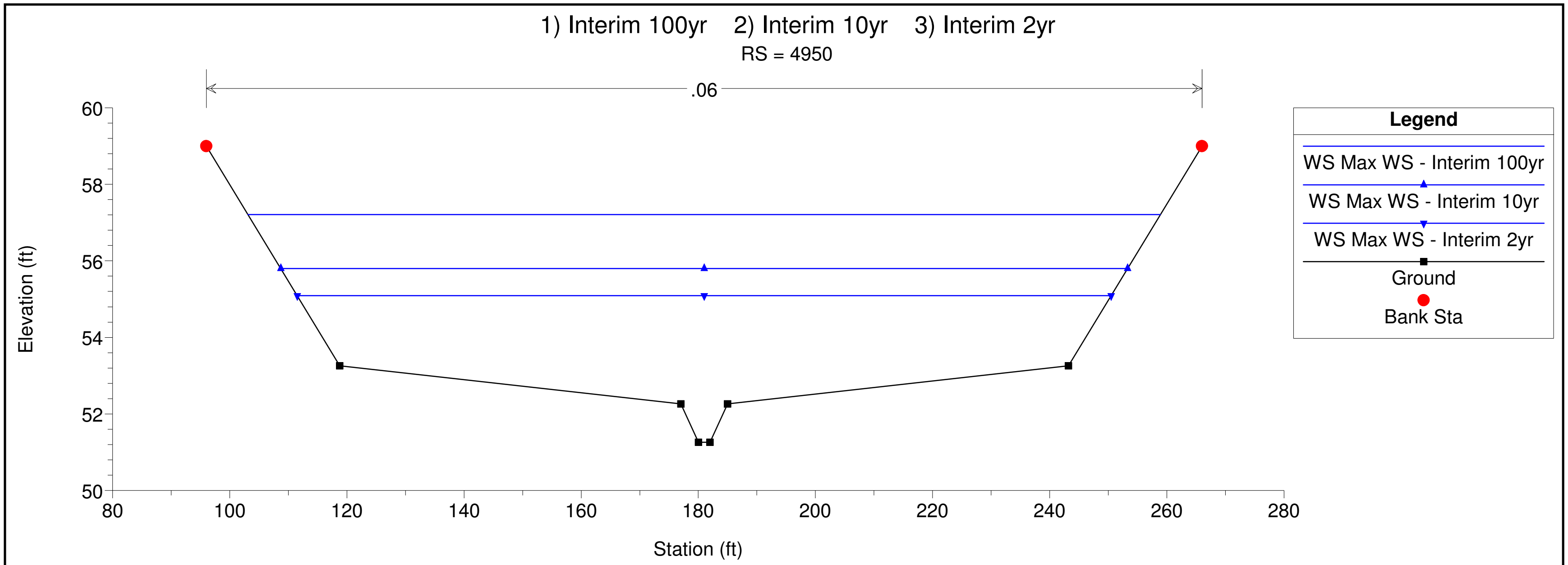

1) Interim 100yr 2) Interim 10yr 3) Interim 2yr
RS = 5600
.06
Legend
WS Max WS - Interim 100yr
WS Max WS - Interim 10yr
WS Max WS - Interim 2yr
Ground
Bank Sta
Elevation (ft)
Station (ft)
59
58
57
56
55
54
53
52
0
50
100
150
200
250



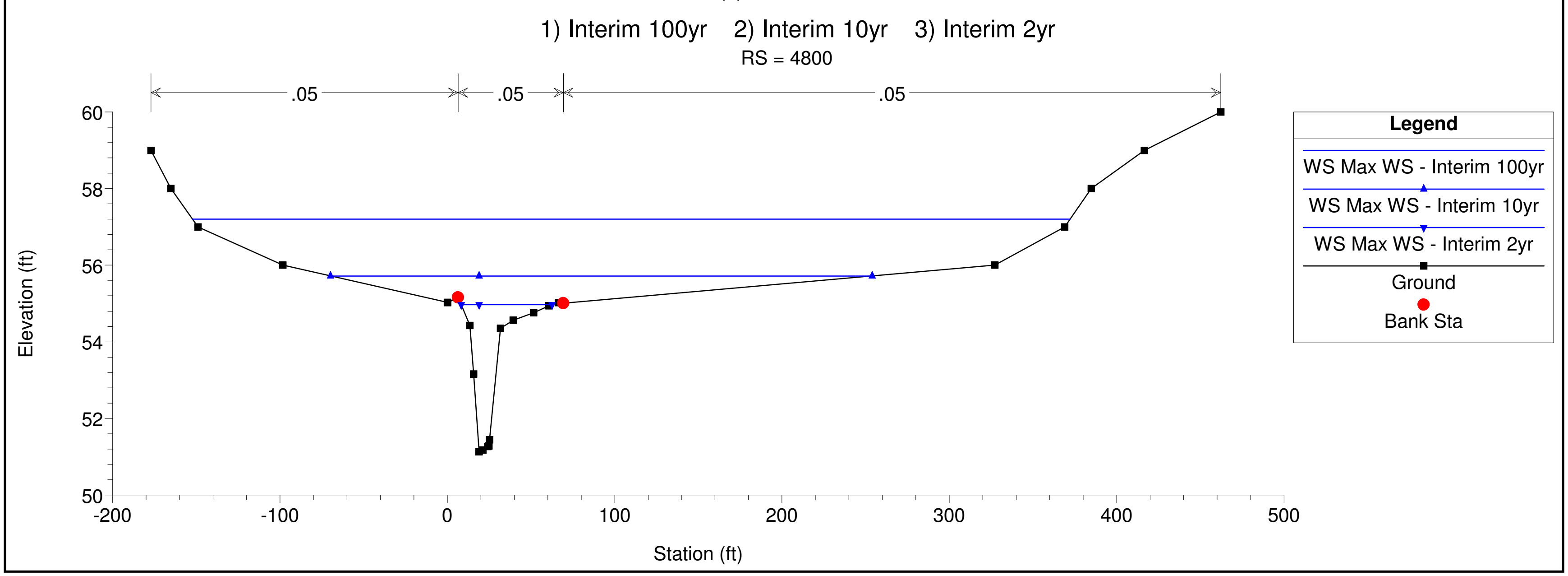
1) Interim 100yr 2) Interim 10yr 3) Interim 2yr
RS = 5400
.06
Elevation (ft)
59
58
57
56
55
54
53
52
51
60
80
100
120
140
160
180
200
220
240
260
Station (ft)
Legend
WS Max WS - Interim 100yr
WS Max WS - Interim 10yr
WS Max WS - Interim 2yr
Ground
Bank Sta



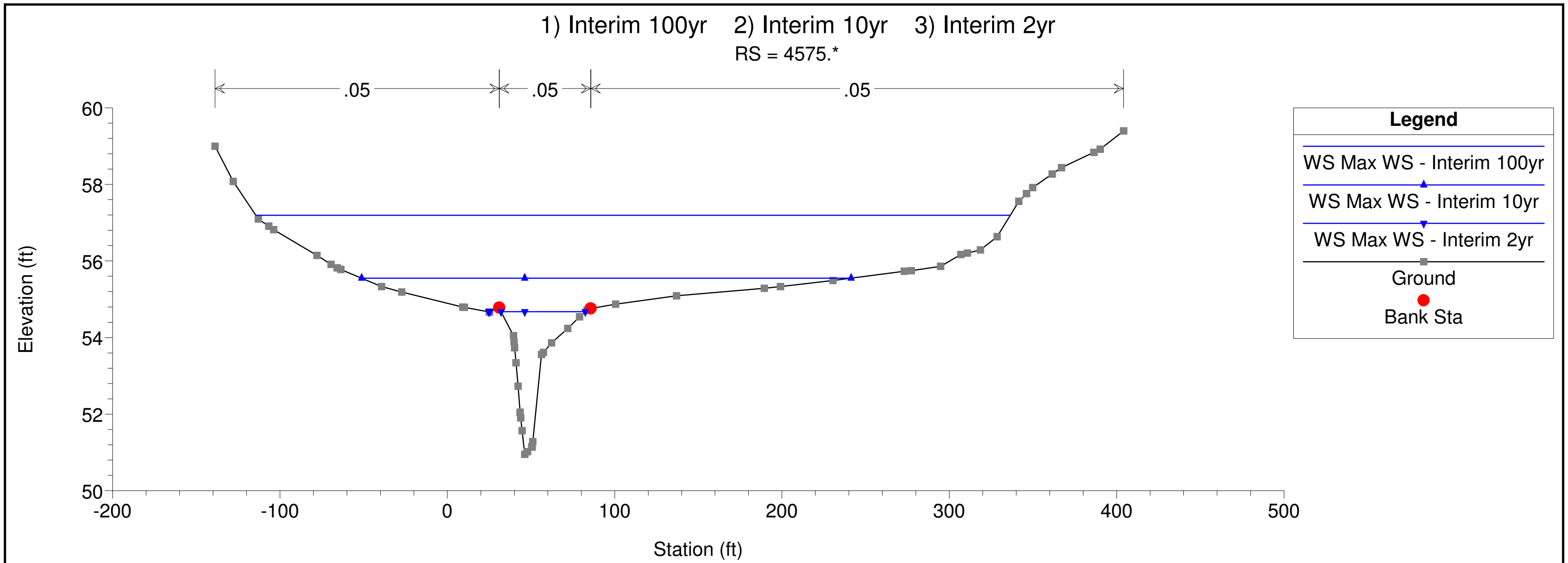
1) Interim 100yr 2) Interim 10yr 3) Interim 2yr
RS = 5200
.06
Elevation (ft)
59
58
57
56
55
54
53
52
51
50
100
150
200
250
300
Station (ft)
Legend
WS Max WS - Interim 100yr
WS Max WS - Interim 10yr
WS Max WS - Interim 2yr
Ground
Bank Sta

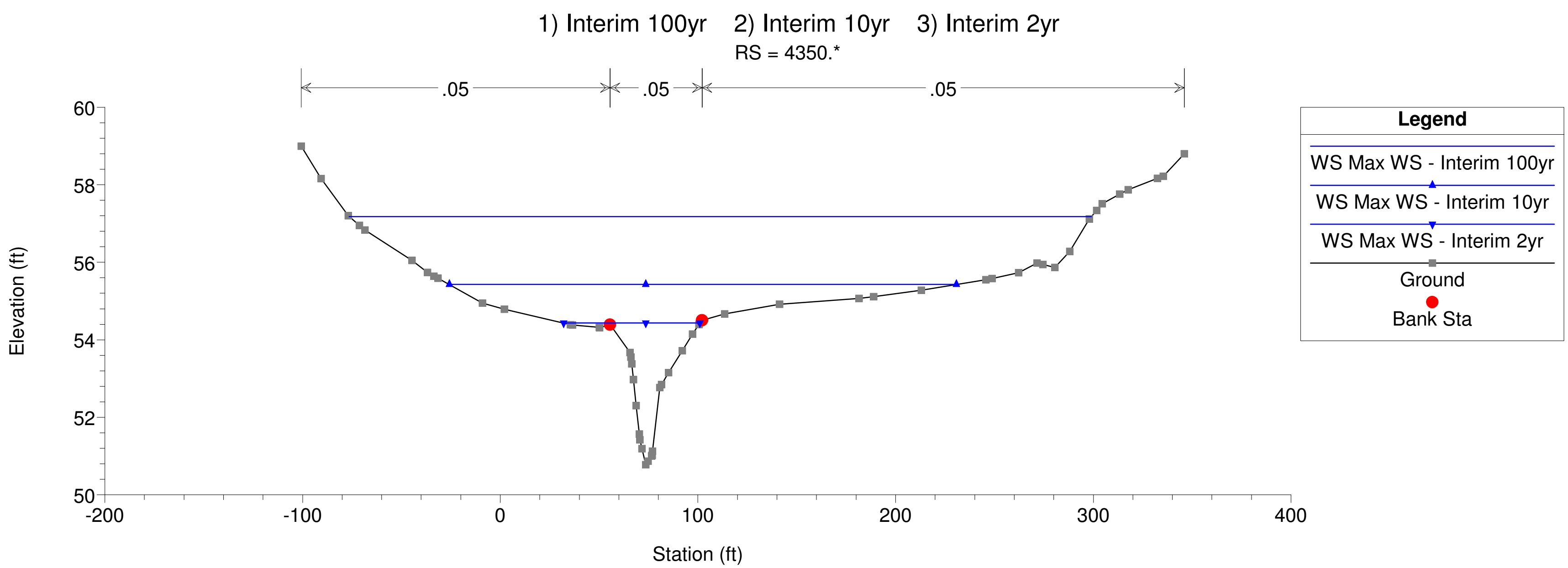


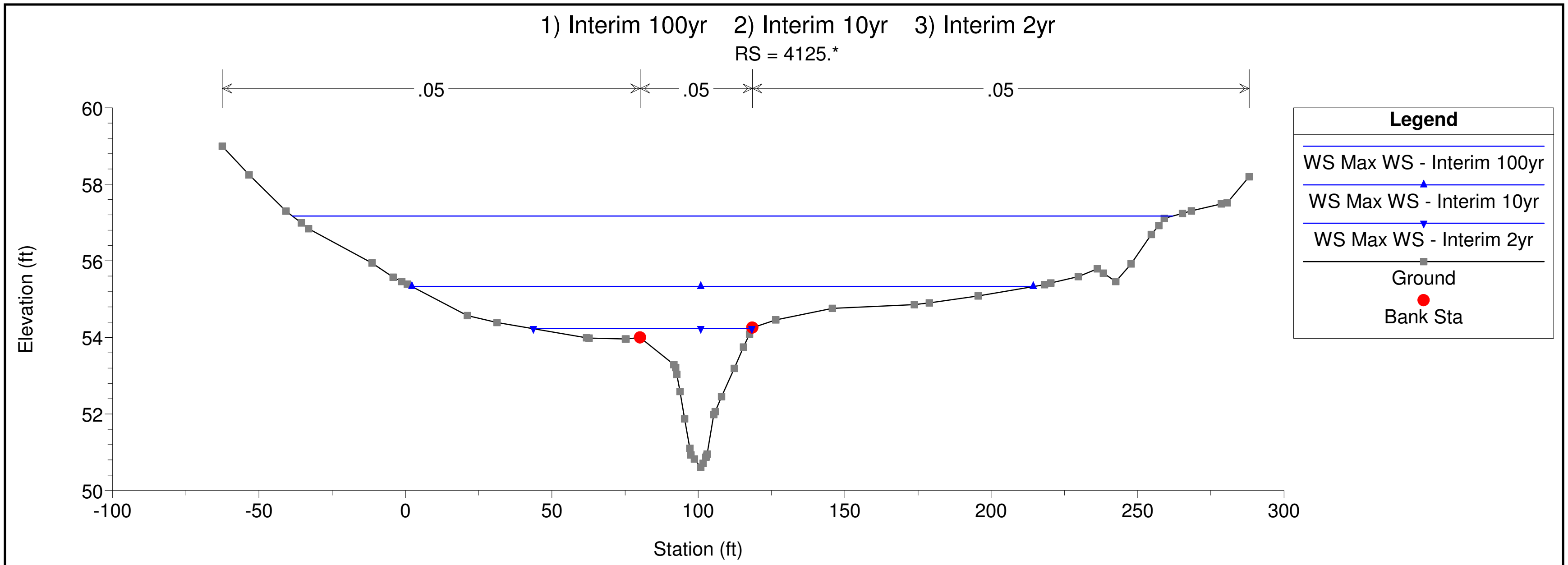
1) Interim 100yr 2) Interim 10yr 3) Interim 2yr
RS = 4950
.06
Legend
WS Max WS - Interim 100yr
WS Max WS - Interim 10yr
WS Max WS - Interim 2yr
Ground
Bank Sta
Elevation (ft)
Station (ft)

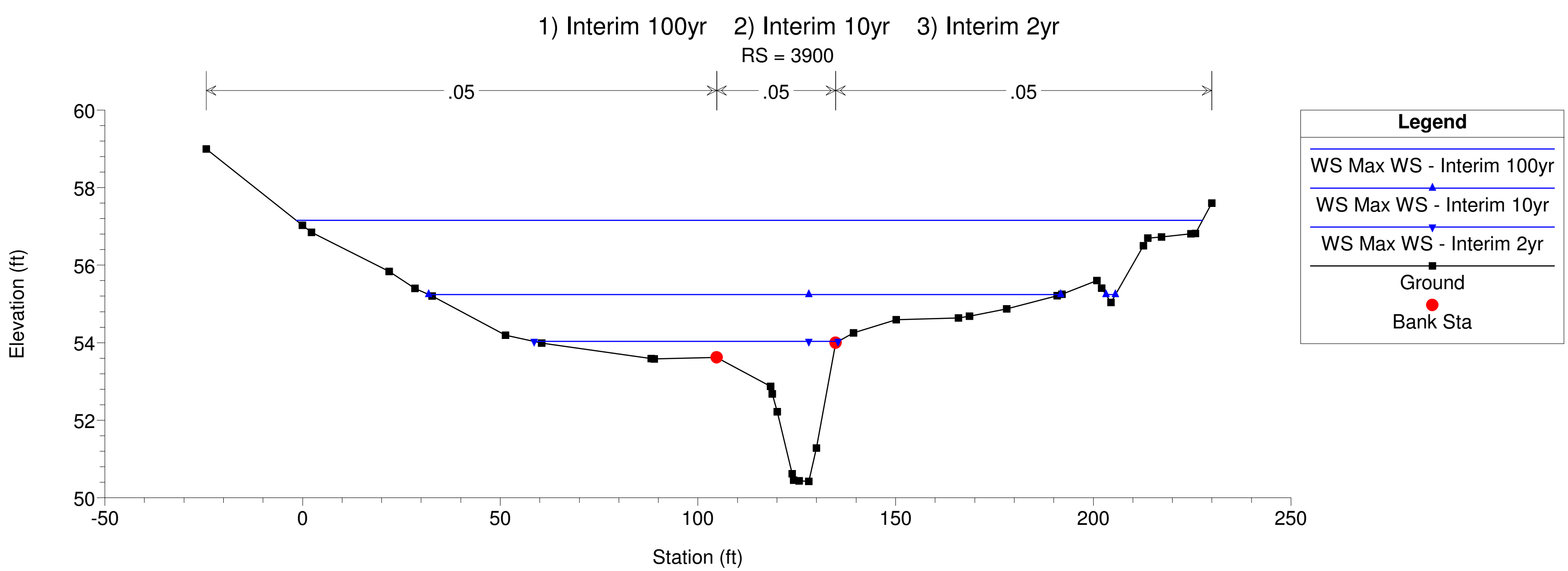


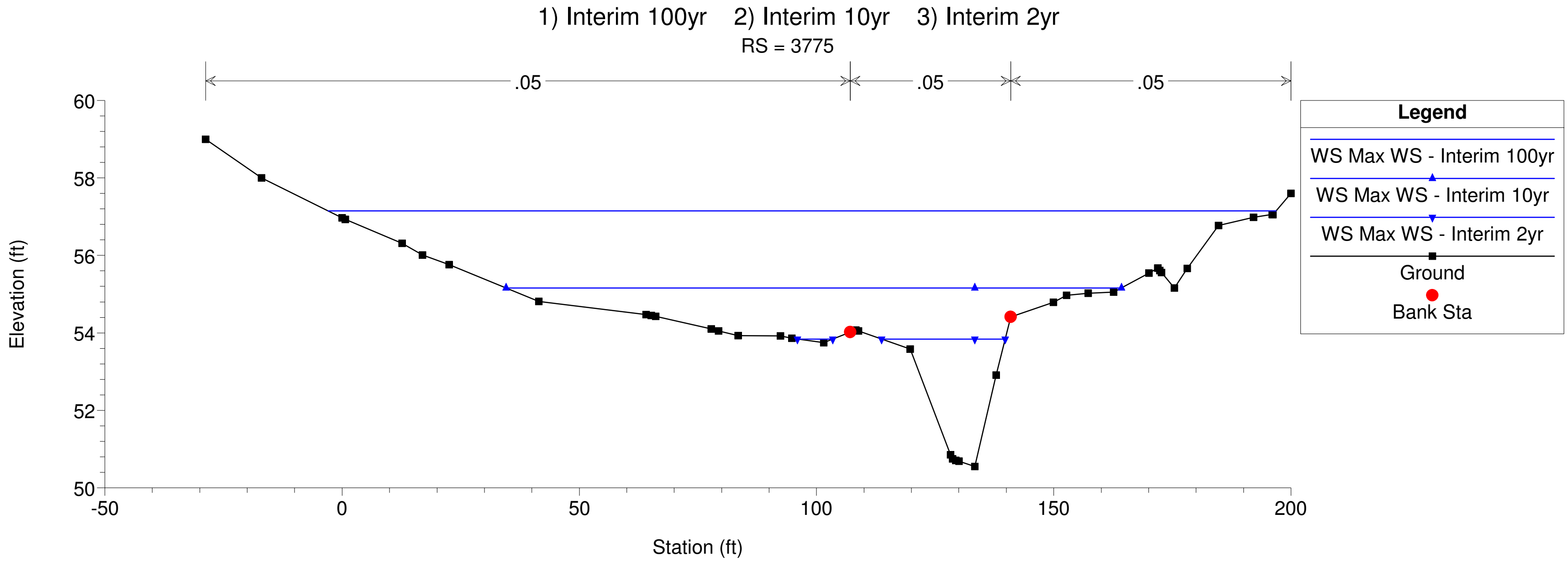
1) Interim 100yr 2) Interim 10yr 3) Interim 2yr
RS = 4800
.05
.05
.05
Legend
WS Max WS - Interim 100yr
WS Max WS - Interim 10yr
WS Max WS - Interim 2yr
Ground
Bank Sta
Elevation (ft)
Station (ft)

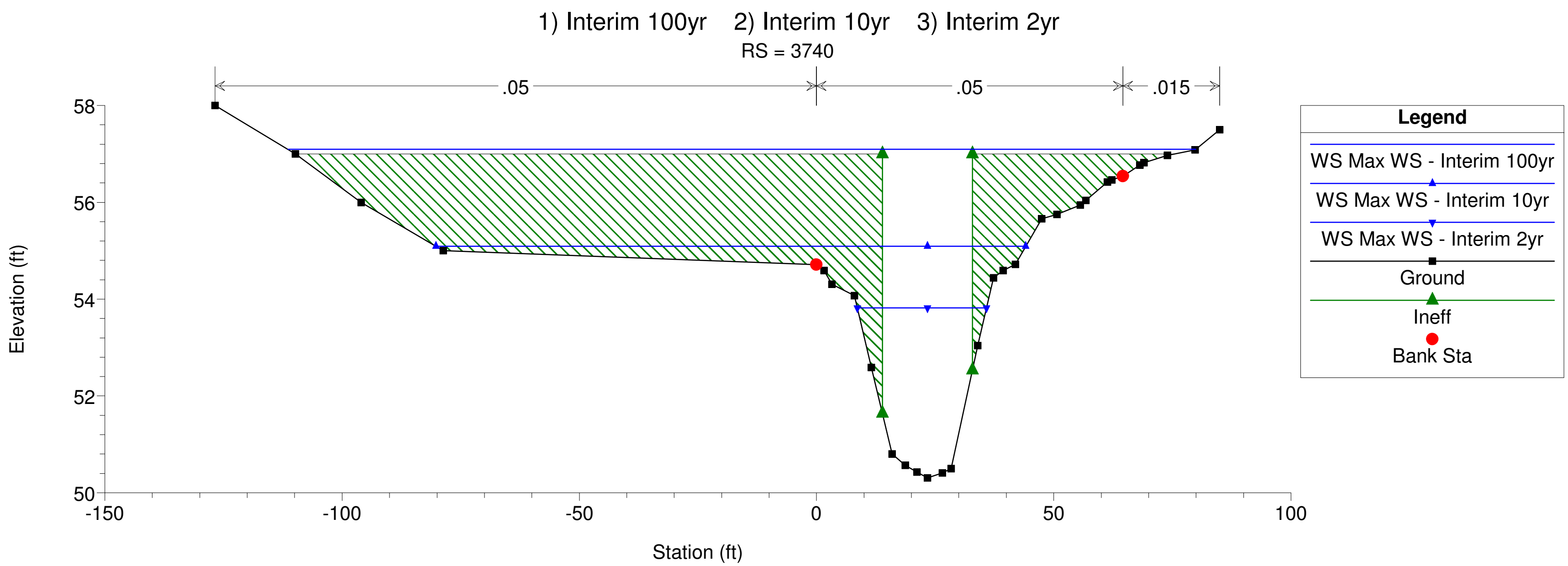

1) Interim 100yr 2) Interim 10yr 3) Interim 2yr
RS = 4575.*
.05
.05
.05
Elevation (ft)
Station (ft)
60
58
56
54
52
50
-200
-100
0
100
200
300
400
500
Legend
WS Max WS - Interim 100yr
WS Max WS - Interim 10yr
WS Max WS - Interim 2yr
Ground
Bank Sta

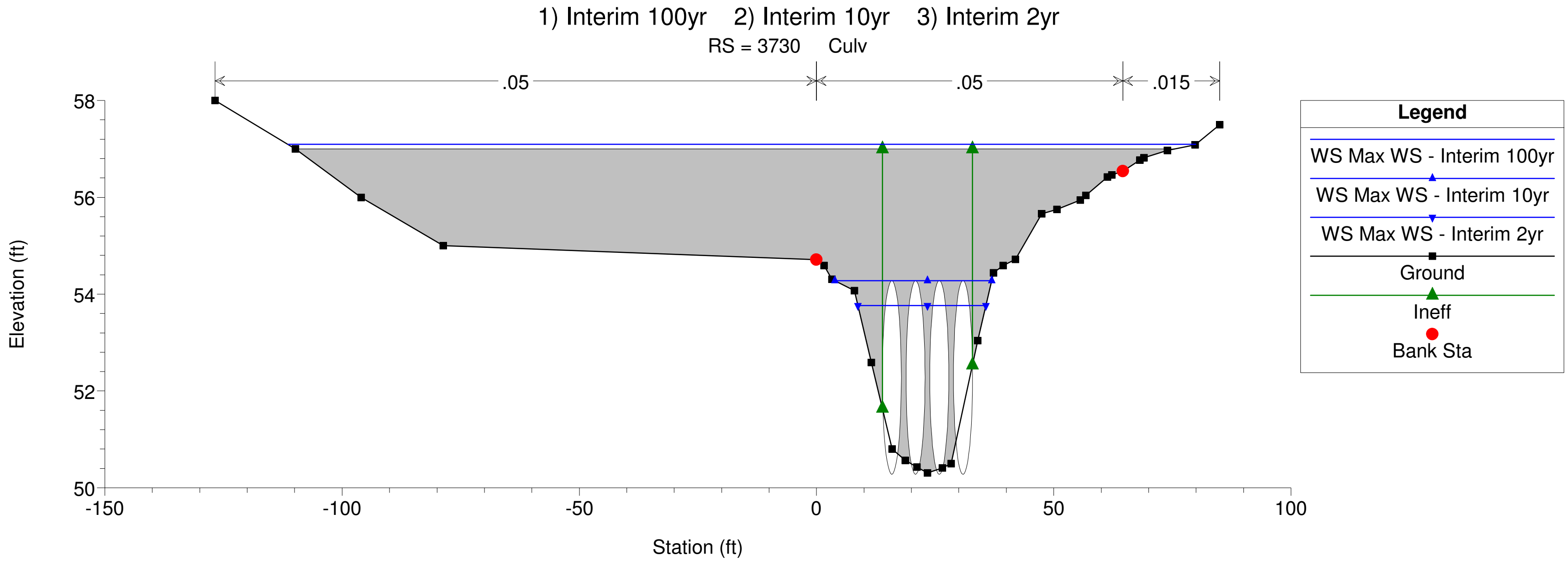

1) Interim 100yr 2) Interim 10yr 3) Interim 2yr
RS = 4350.*
.05
.05
.05
Elevation (ft)
Station (ft)
60
58
56
54
52
50
-200
-100
0
100
200
300
400
Legend
WS Max WS - Interim 100yr
WS Max WS - Interim 10yr
WS Max WS - Interim 2yr
Ground
Bank Sta

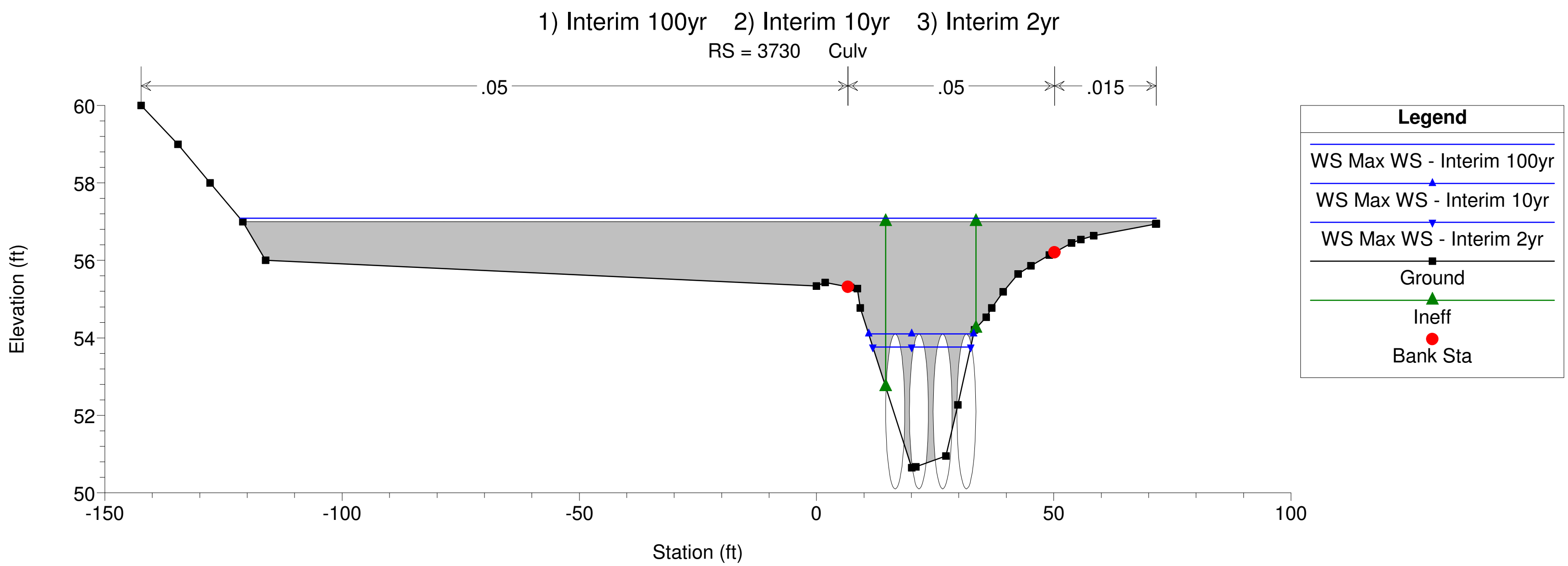

1) Interim 100yr 2) Interim 10yr 3) Interim 2yr
RS = 4125.*
.05
.05
.05
Elevation (ft)
Station (ft)
60
58
56
54
52
50
-100
-50
0
50
100
150
200
250
300
Legend
WS Max WS - Interim 100yr
WS Max WS - Interim 10yr
WS Max WS - Interim 2yr
Ground
Bank Sta

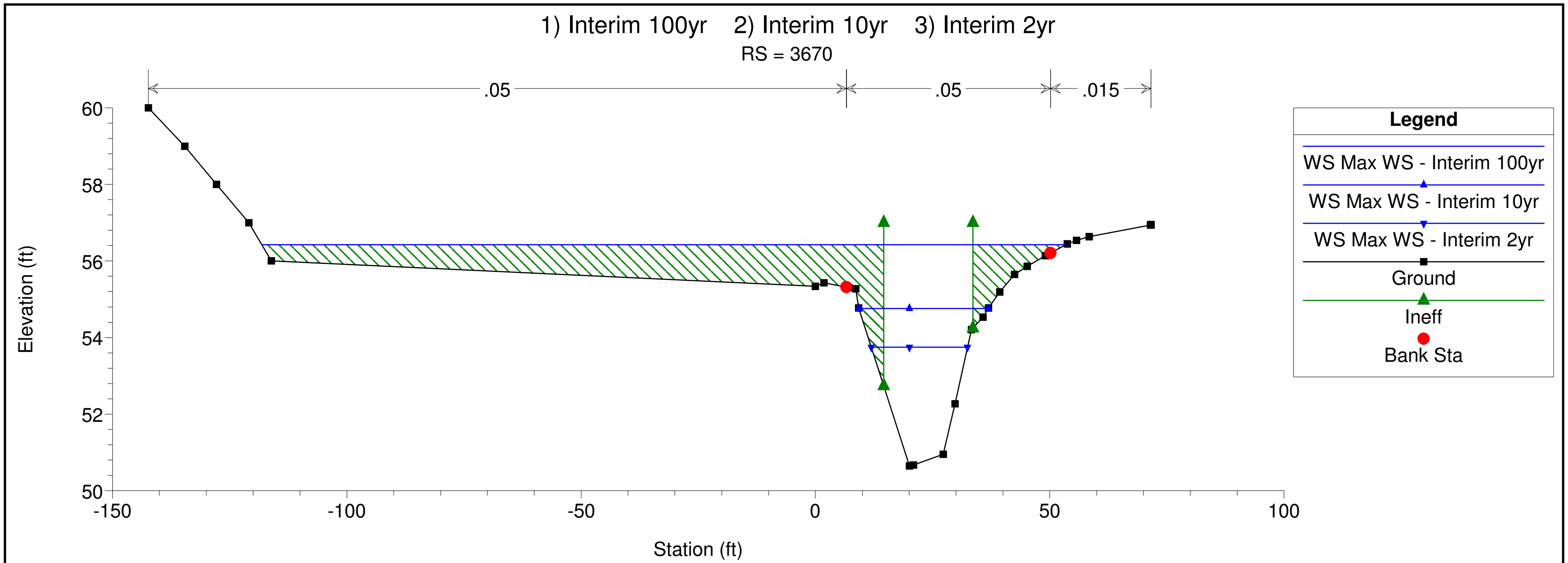

1) Interim 100yr 2) Interim 10yr 3) Interim 2yr
RS = 3900
.05
.05
.05
Elevation (ft)
Station (ft)
60
58
56
54
52
50
-50
0
50
100
150
200
250
Legend
WS Max WS - Interim 100yr
WS Max WS - Interim 10yr
WS Max WS - Interim 2yr
Ground
Bank Sta

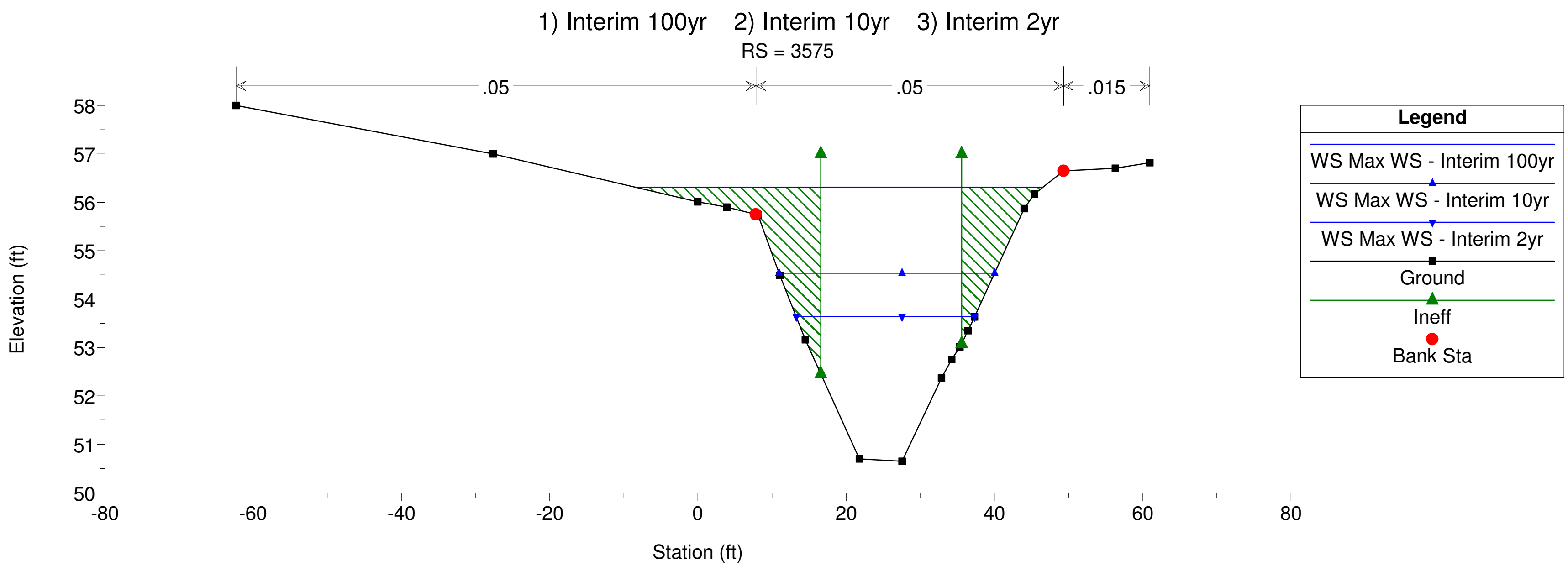

1) Interim 100yr 2) Interim 10yr 3) Interim 2yr
RS = 3775
.05
.05
.05
Legend
WS Max WS - Interim 100yr
WS Max WS - Interim 10yr
WS Max WS - Interim 2yr
Ground
Bank Sta
Elevation (ft)
Station (ft)
60
58
56
54
52
50
-50
0
50
100
150
200

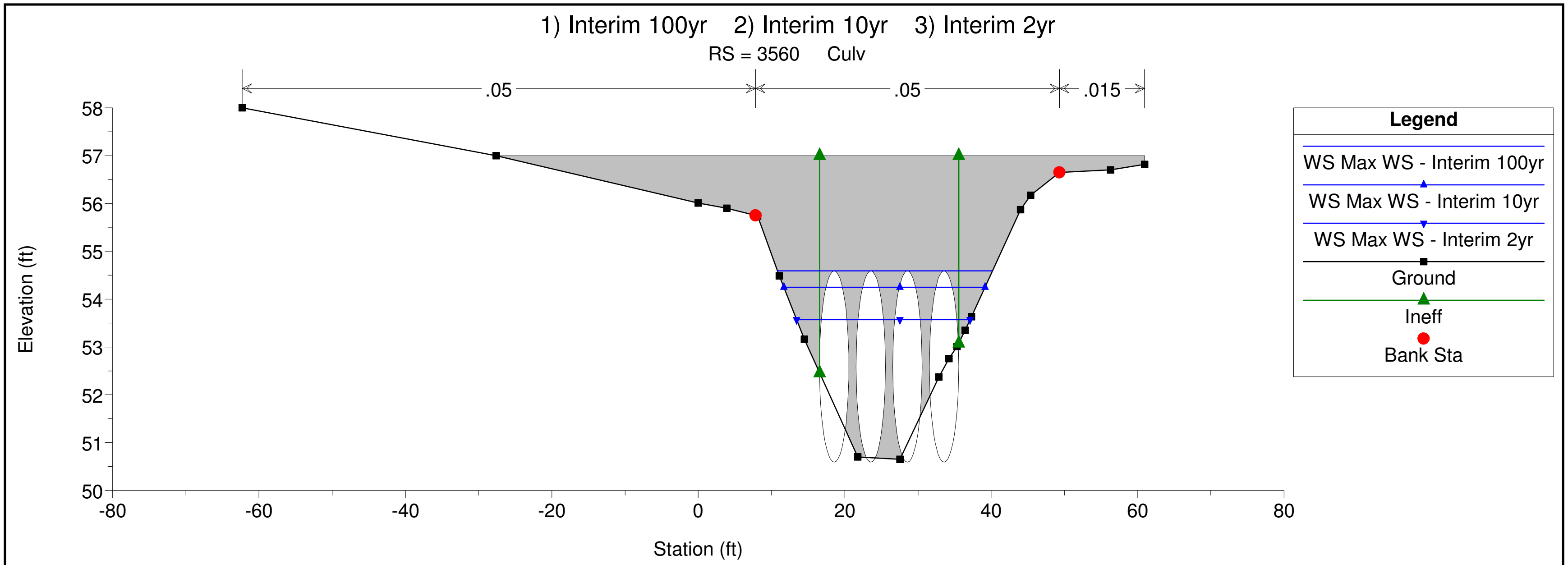

1) Interim 100yr 2) Interim 10yr 3) Interim 2yr
RS = 3740
.05
.05
.015
Legend
WS Max WS - Interim 100yr
WS Max WS - Interim 10yr
WS Max WS - Interim 2yr
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)
58
56
54
52
50
-150
-100
-50
0
50
100

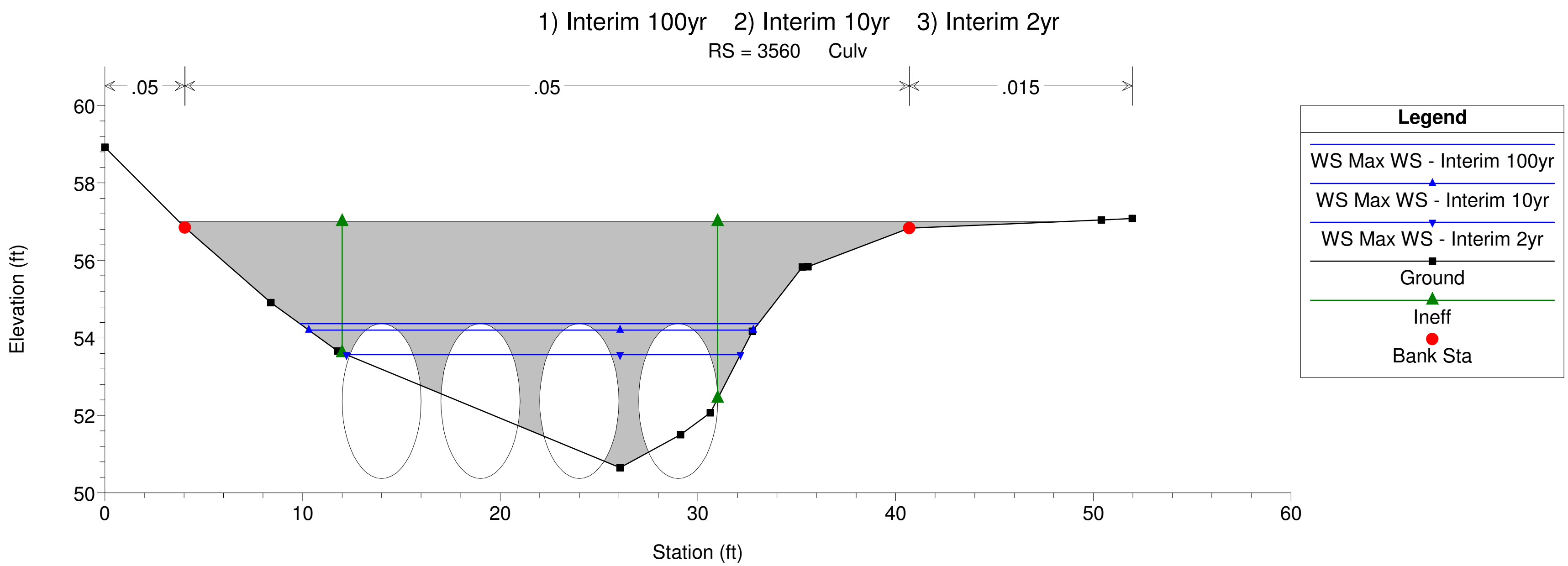

1) Interim 100yr 2) Interim 10yr 3) Interim 2yr
RS = 3730 Culv
.05
.05
.015
Elevation (ft)
Station (ft)
Legend
WS Max WS - Interim 100yr
WS Max WS - Interim 10yr
WS Max WS - Interim 2yr
Ground
Ineff
Bank Sta

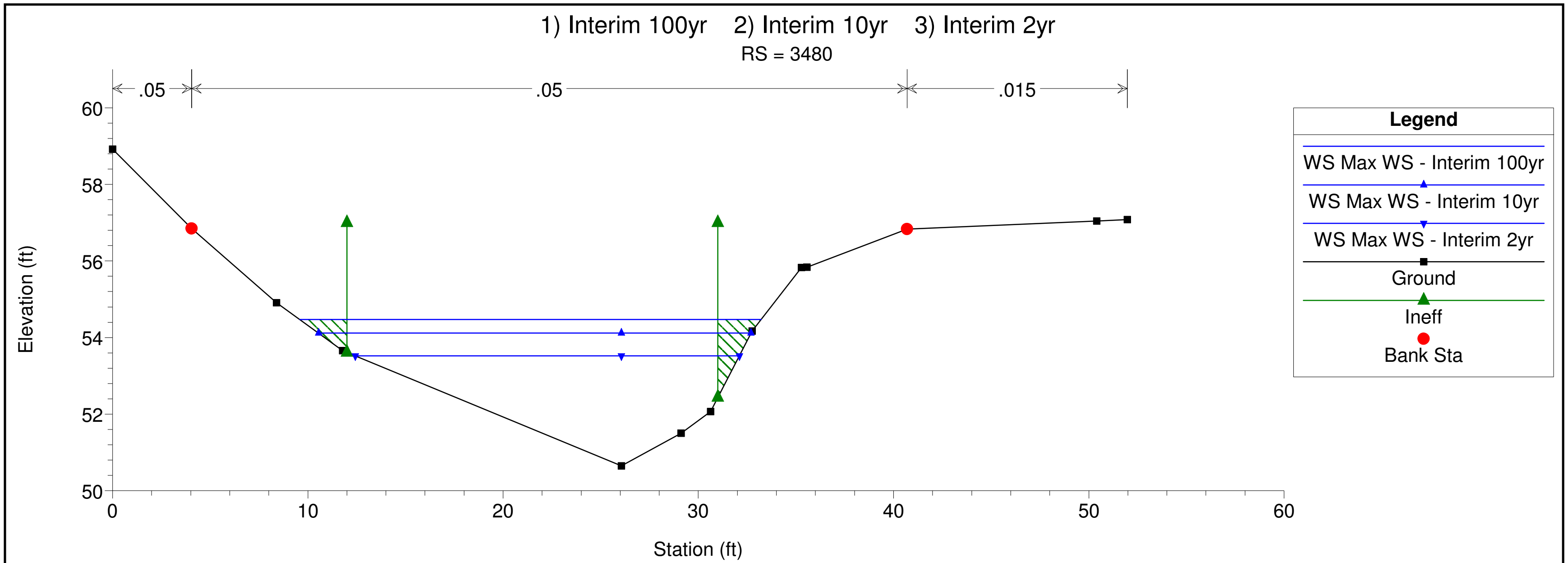

1) Interim 100yr 2) Interim 10yr 3) Interim 2yr
RS = 3730 Culv
.05
.05
.015
Elevation (ft)
Station (ft)
Legend
WS Max WS - Interim 100yr
WS Max WS - Interim 10yr
WS Max WS - Interim 2yr
Ground
Ineff
Bank Sta


1) Interim 100yr 2) Interim 10yr 3) Interim 2yr
RS = 3670
.05
.05
.015
Elevation (ft)
Station (ft)
Legend
WS Max WS - Interim 100yr
WS Max WS - Interim 10yr
WS Max WS - Interim 2yr
Ground
Ineff
Bank Sta

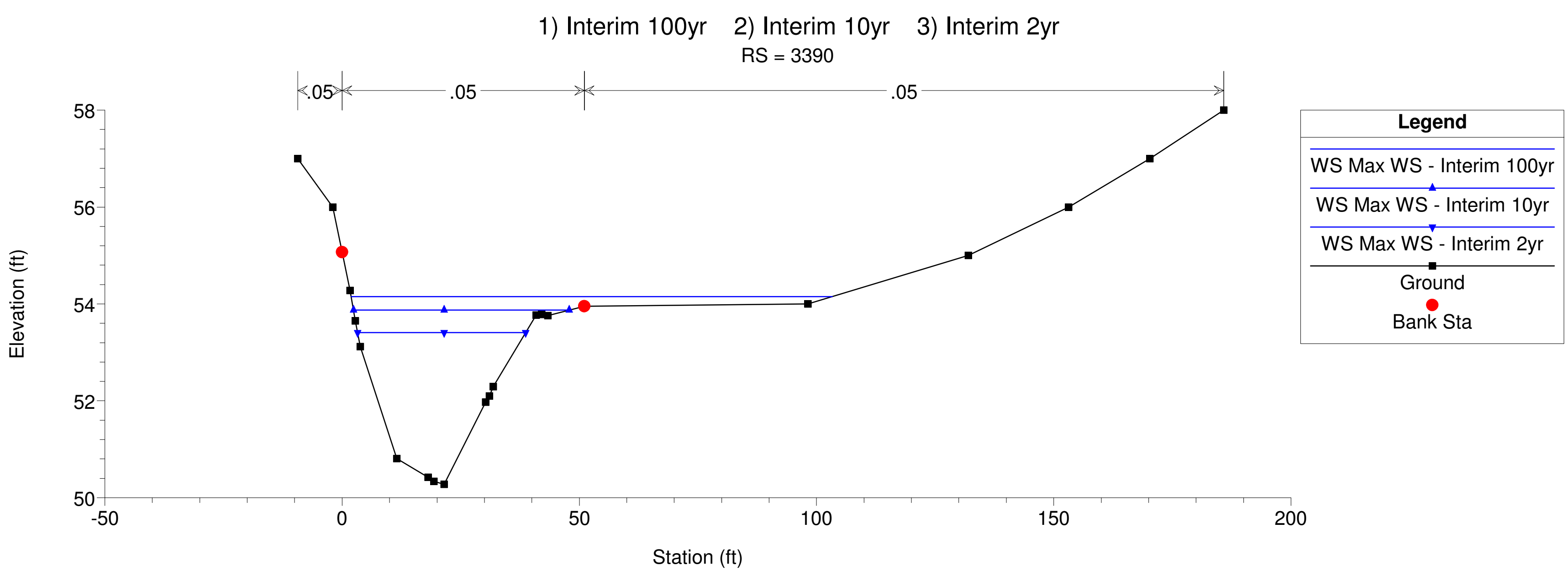

1) Interim 100yr 2) Interim 10yr 3) Interim 2yr
RS = 3575
.05
.05
.015
Elevation (ft)
Station (ft)
Legend
WS Max WS - Interim 100yr
WS Max WS - Interim 10yr
WS Max WS - Interim 2yr
Ground
Ineff
Bank Sta


1) Interim 100yr 2) Interim 10yr 3) Interim 2yr
RS = 3560 Culv
.05
.05
.015
Elevation (ft)
Station (ft)
Legend
WS Max WS - Interim 100yr
WS Max WS - Interim 10yr
WS Max WS - Interim 2yr
Ground
Ineff
Bank Sta

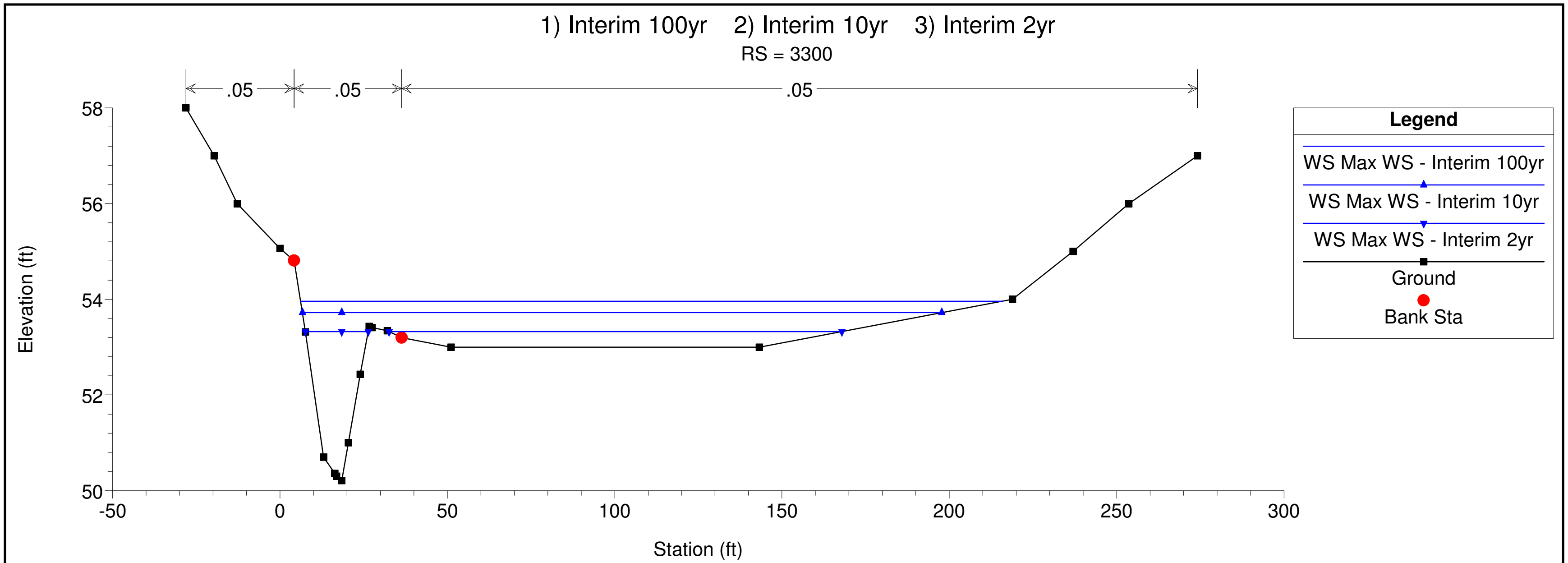

1) Interim 100yr 2) Interim 10yr 3) Interim 2yr
RS = 3560 Culv
.05
.05
.015
Elevation (ft)
Station (ft)
Legend
WS Max WS - Interim 100yr
WS Max WS - Interim 10yr
WS Max WS - Interim 2yr
Ground
Ineff
Bank Sta

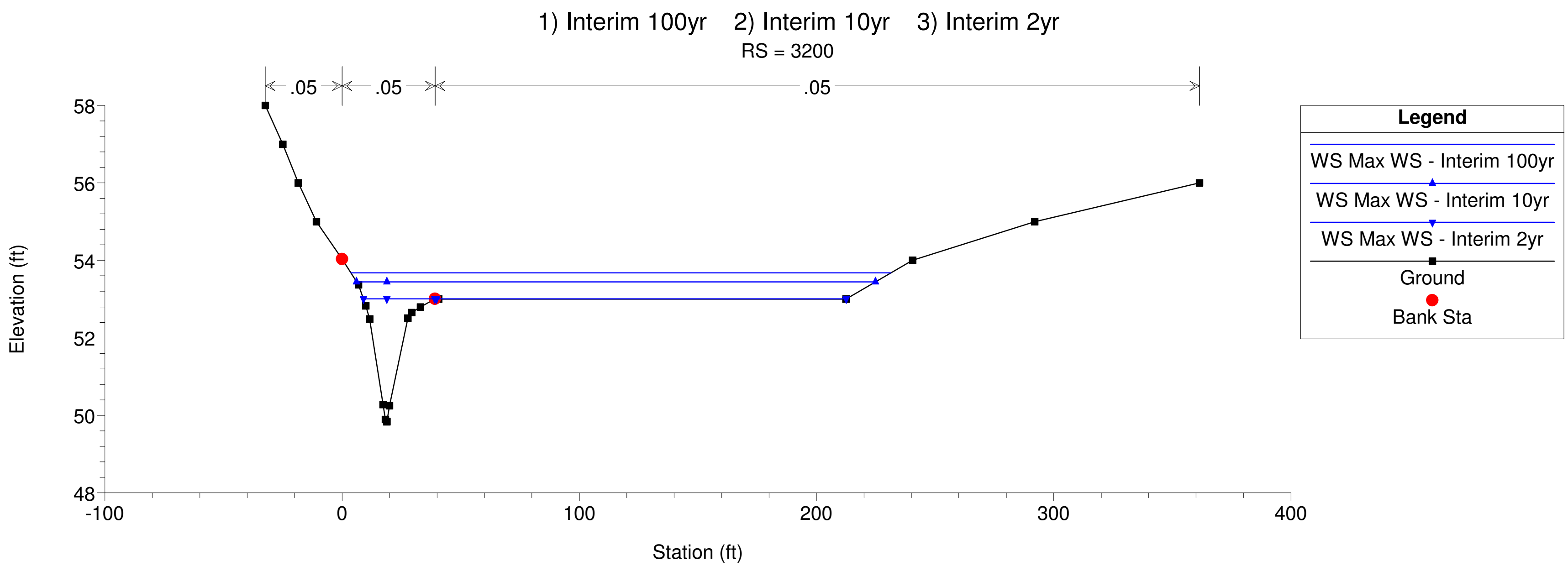


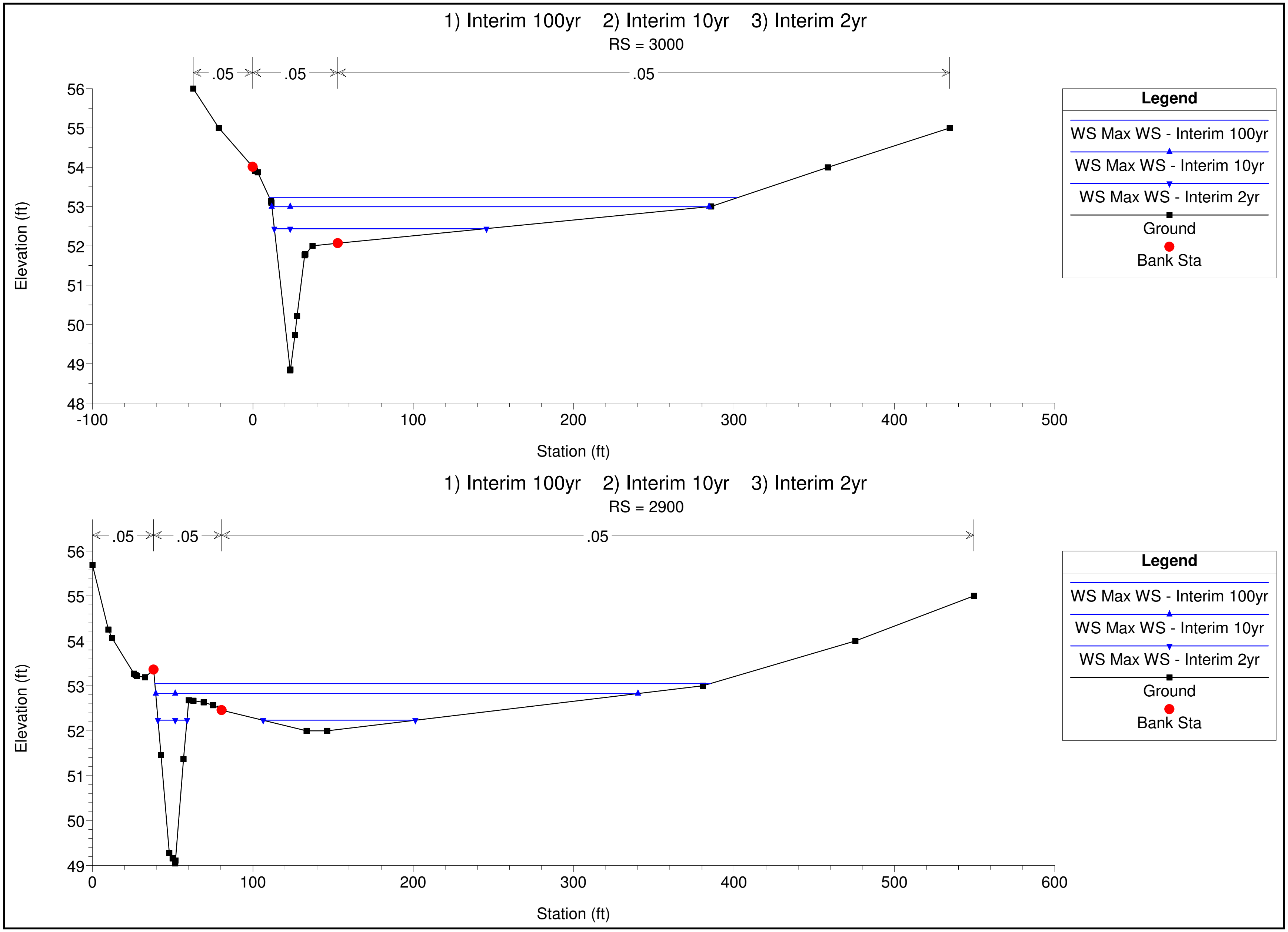
1) Interim 100yr 2) Interim 10yr 3) Interim 2yr
RS = 3480
.05
.05
.015
Elevation (ft)
Station (ft)
Legend
WS Max WS - Interim 100yr
WS Max WS - Interim 10yr
WS Max WS - Interim 2yr
Ground
Ineff
Bank Sta

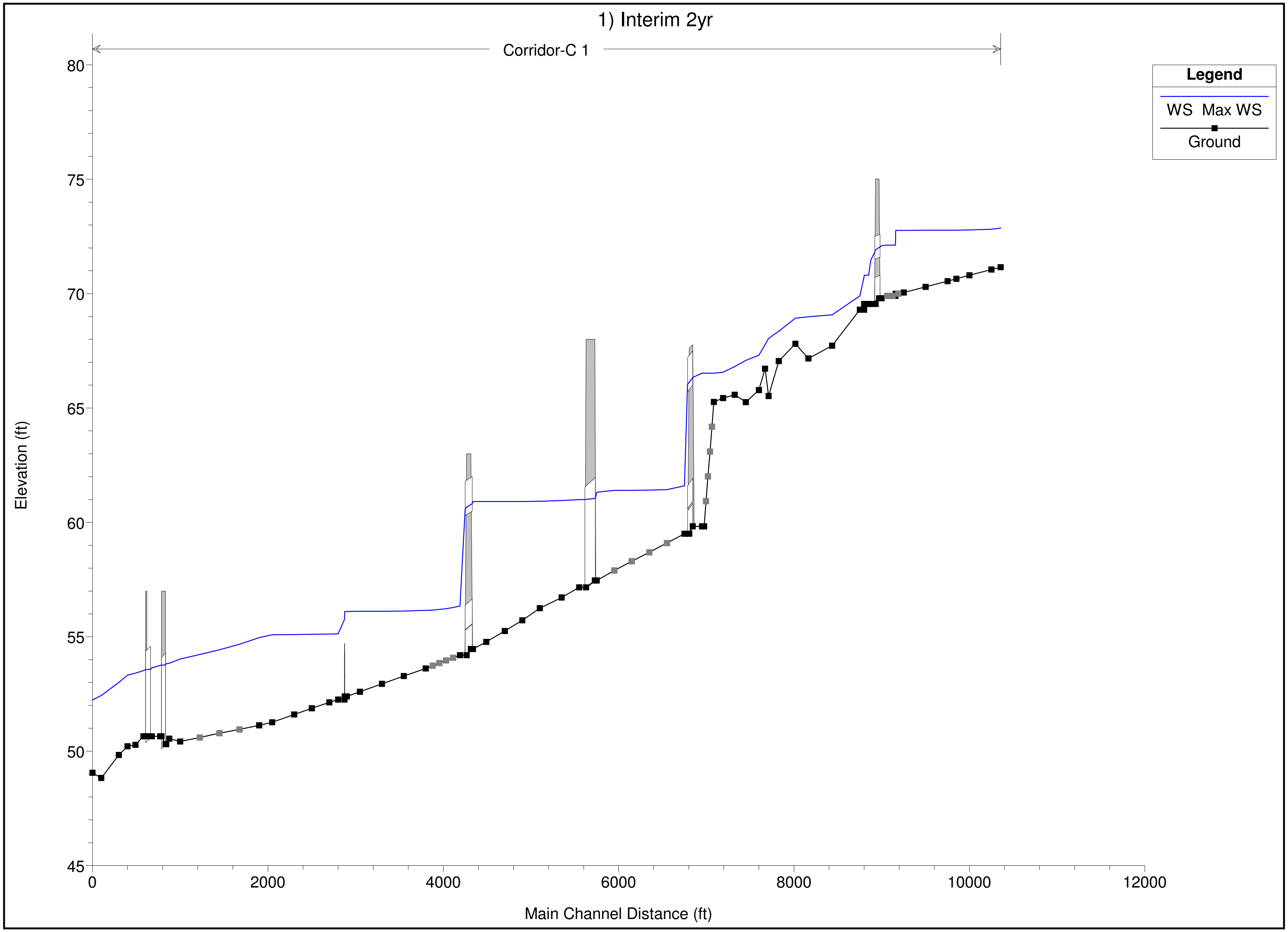


1) Interim 100yr 2) Interim 10yr 3) Interim 2yr
RS = 3390
.05
.05
.05
Elevation (ft)
Station (ft)
Legend
WS Max WS - Interim 100yr
WS Max WS - Interim 10yr
WS Max WS - Interim 2yr
Ground
Bank Sta


1) Interim 100yr 2) Interim 10yr 3) Interim 2yr
RS = 3300
.05
.05
.05
Elevation (ft)
Station (ft)
Legend
WS Max WS - Interim 100yr
WS Max WS - Interim 10yr
WS Max WS - Interim 2yr
Ground
Bank Sta


1) Interim 100yr 2) Interim 10yr 3) Interim 2yr
RS = 3200
.05
.05
.05
Elevation (ft)
Station (ft)
Legend
WS Max WS - Interim 100yr
WS Max WS - Interim 10yr
WS Max WS - Interim 2yr
Ground
Bank Sta


1) Interim 100yr 2) Interim 10yr 3) Interim 2yr
RS = 3000
.05
.05
.05
Elevation (ft)
Station (ft)
Legend
WS Max WS - Interim 100yr
WS Max WS - Interim 10yr
WS Max WS - Interim 2yr
Ground
Bank Sta
1) Interim 100yr 2) Interim 10yr 3) Interim 2yr
RS = 2900
.05
.05
.05
Elevation (ft)
Station (ft)
Legend
WS Max WS - Interim 100yr
WS Max WS - Interim 10yr
WS Max WS - Interim 2yr
Ground
Bank Sta


1) Interim 2yr
Corridor-C 1
Legend
WS Max WS
Ground
Elevation (ft)
Main Channel Distance (ft)
80
75
70
65
60
55
50
45
0
2000
4000
6000
8000
10000
12000

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

```
X     X  XXXXXX   XXXX        XXXX     XX     XXXX
X     X  X       X    X       X   X   X  X   X
X     X  X       X            X   X  X    X  X
XXXXXXX  XXXX    X       XXX  XXXX   XXXXXX   XXXX
X     X  X       X            X X    X    X       X
X     X  X       X    X       X  X   X    X       X
X     X  XXXXXX   XXXX        X   X  X    X  XXXXX
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PROJECT DATA
Project Title: Corridor-C
Project File : CorridorC.prj
Run Date and Time: 5/6/2011 8:08:13 AM

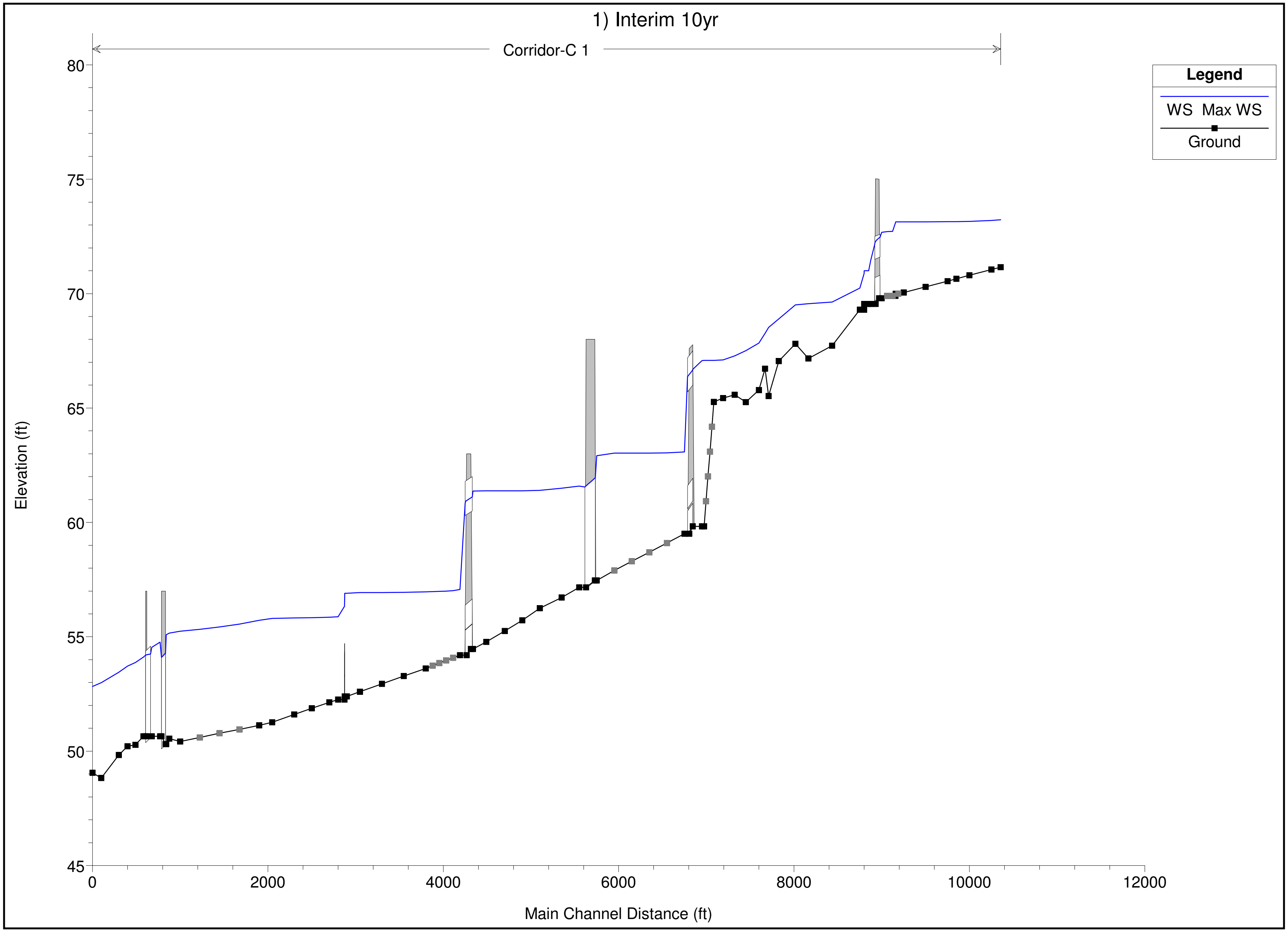
Project in English units

Project Description:
C Corridor - Developed, Interim and Existing Conditions
2 yr 24 hr Interim

Profile Output Table - Standard Table 1

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
1	13307	Max WS	28.65	71.16	72.86		72.87	0.000815	0.38	75.66	192.66	0.11
1	13200	Max WS	21.76	71.05	72.82		72.82	0.000253	0.22	98.83	236.53	0.06
1	12950	Max WS	20.61	70.80	72.78		72.78	0.000063	0.13	162.07	311.86	0.03
1	12800	Max WS	21.10	70.65	72.78		72.78	0.000028	0.10	212.54	326.21	0.02
1	12700	Max WS	21.48	70.55	72.77		72.77	0.000019	0.09	245.07	328.10	0.02
1	12450	Max WS	22.43	70.30	72.77		72.77	0.000009	0.08	297.39	300.16	0.01
1	12200	Max WS	23.18	70.05	72.77		72.77	0.000002	0.04	530.65	432.15	0.01
1	12137.5*	Max WS	39.55	70.00	72.77	71.20	72.77	0.000005	0.07	587.39	461.66	0.01
1	12080	Inl Struct										
1	12075.*	Max WS	39.44	69.90	72.12		72.12	0.000030	0.11	355.94	484.17	0.02
1	12012.5*	Max WS	39.43	69.90	72.12		72.12	0.000024	0.10	388.88	515.45	0.02
1	11950	Max WS	39.43	69.80	72.10		72.11	0.000412	0.62	63.53	544.81	0.09
1	11900	Culvert										
1	11825	Max WS	39.31	69.55	71.47		71.49	0.001796	1.07	36.59	492.07	0.19
1	11800	Max WS	39.52	69.55	70.80	70.75	70.84	0.049638	1.68	23.52	139.62	0.72
1	11750	Inl Struct										
1	11700	Max WS	39.53	69.30	69.90		69.91	0.006229	0.90	43.89	140.33	0.28
1	11385	Max WS	40.70	67.73	69.07		69.08	0.000566	0.42	98.02	165.68	0.10
1	11115	Max WS	41.38	67.17	68.99		68.99	0.000064	0.19	215.82	226.82	0.03
1	10965	Max WS	42.05	67.81	68.93		68.93	0.000783	0.50	83.30	133.86	0.11
1	10776	Max WS	42.82	67.05	68.36		68.39	0.005831	1.48	28.85	41.37	0.31
1	10660	Max WS	43.15	65.53	68.05		68.06	0.000768	0.80	55.48	59.06	0.12
1	10620	Max WS	43.74	66.72	67.77		67.81	0.010963	1.68	26.10	50.16	0.41
1	10550	Max WS	43.95	65.79	67.31		67.34	0.002819	1.22	35.89	39.71	0.23
1	10400	Max WS	44.41	65.26	67.09		67.09	0.000554	0.64	76.43	92.41	0.10
1	10272	Max WS	44.93	65.58	66.82		66.83	0.004240	1.05	45.35	108.23	0.26
1	10142	Max WS	45.52	65.43	66.56		66.56	0.000487	0.44	116.47	219.51	0.09
1	10035	Max WS	46.02	65.27	66.53		66.53	0.000168	0.27	172.99	240.69	0.05
1	10013.*	Max WS	46.18	64.18	66.53		66.53	0.000020	0.14	330.27	214.62	0.02

1	9991.*	Max WS	46.34	63.09	66.53		66.53	0.000006	0.09	501.42	212.79	0.01
1	9969.*	Max WS	46.49	62.01	66.53		66.53	0.000002	0.07	679.52	214.89	0.01
1	9947.*	Max WS	46.65	60.92	66.53		66.53	0.000001	0.05	864.01	218.26	0.00
1	9925	Max WS	46.81	59.83	66.53		66.53	0.000000	0.04	1055.49	222.11	0.00
1	9900	Max WS	47.27	59.83	66.52		66.53	0.000009	0.24	200.96	222.10	0.02
1	9790		Culvert									
1	9700	Max WS	45.22	59.50	61.60		61.61	0.001639	1.11	40.90	160.76	0.18
1	9500.*	Max WS	44.62	59.10	61.43		61.44	0.000171	0.31	143.91	153.07	0.06
1	9300.*	Max WS	48.31	58.70	61.41		61.41	0.000064	0.24	200.30	149.46	0.04
1	9100.*	Max WS	48.39	58.30	61.40		61.41	0.000026	0.18	262.54	146.26	0.02
1	8900.*	Max WS	48.47	57.90	61.40		61.40	0.000014	0.15	315.47	143.21	0.02
1	8700	Max WS	48.80	57.46	61.32		61.35	0.000716	1.45	33.57	138.77	0.14
1	8650		Culvert									
1	8500	Max WS	48.01	57.16	61.00		61.03	0.000630	1.40	34.38	34.05	0.13
1	8300	Max WS	47.75	56.71	60.95		60.95	0.000072	0.43	110.23	35.33	0.04
1	8050	Max WS	71.39	56.25	60.92		60.93	0.000098	0.55	129.22	35.28	0.05
1	7850	Max WS	71.17	55.72	60.92		60.92	0.000002	0.08	932.57	264.34	0.01
1	7650	Max WS	71.78	55.25	60.92		60.92	0.000001	0.05	1441.99	360.33	0.00
1	7440	Max WS	71.75	54.78	60.92		60.92	0.000000	0.04	1817.33	408.33	0.00
1	7290	Max WS	71.74	54.47	60.92		60.92	0.000008	0.22	324.12	391.10	0.02
1	7225		Culvert									
1	7090	Max WS	69.10	54.20	56.35		56.36	0.001552	1.04	66.42	218.70	0.17
1	7012.*	Max WS	67.13	54.08	56.27		56.28	0.000651	0.47	143.20	223.63	0.10
1	6934.*	Max WS	69.29	53.97	56.23		56.23	0.000538	0.44	157.01	232.74	0.09
1	6856.*	Max WS	68.52	53.85	56.20		56.20	0.000394	0.39	174.28	243.33	0.08
1	6778.*	Max WS	67.67	53.74	56.17		56.17	0.000290	0.35	193.23	255.12	0.07
1	6700	Max WS	66.10	53.62	56.15		56.15	0.000203	0.31	215.97	267.47	0.06
1	6450	Max WS	65.43	53.28	56.12		56.12	0.000043	0.16	418.30	440.53	0.03
1	6200	Max WS	65.50	52.94	56.12		56.12	0.000018	0.12	551.06	459.06	0.02
1	5950	Max WS	69.32	52.60	56.11		56.11	0.000008	0.10	726.06	474.90	0.01
1	5800	Max WS	69.24	52.39	56.10		56.11	0.000092	0.46	149.49	543.89	0.05
1	5750		Culvert									
1	5700	Max WS	67.85	52.26	55.13		55.13	0.000326	0.67	101.19	354.73	0.09
1	5600	Max WS	67.79	52.13	55.11		55.11	0.000035	0.20	332.53	201.15	0.03
1	5400	Max WS	67.78	51.87	55.11		55.11	0.000047	0.26	263.63	140.84	0.03
1	5200	Max WS	67.77	51.60	55.10		55.10	0.000034	0.22	301.22	153.78	0.03
1	4950	Max WS	69.21	51.26	55.09		55.09	0.000027	0.22	312.14	138.94	0.03
1	4800	Max WS	69.37	51.13	54.97		54.99	0.001478	1.18	58.79	54.43	0.20
1	4575.*	Max WS	69.39	50.95	54.67		54.69	0.001207	1.15	60.47	51.16	0.18
1	4350.*	Max WS	69.40	50.78	54.43		54.45	0.001013	1.13	62.63	68.96	0.17
1	4125.*	Max WS	69.44	50.60	54.23		54.25	0.000879	1.15	65.34	74.63	0.16
1	3900	Max WS	69.50	50.42	54.03		54.05	0.000918	1.25	65.20	76.89	0.17
1	3775	Max WS	69.50	50.55	53.84		53.88	0.001848	1.68	41.61	33.52	0.24
1	3740	Max WS	69.50	50.31	53.82		53.84	0.000398	1.21	57.37	27.22	0.12
1	3730		Culvert									
1	3670	Max WS	69.50	50.65	53.75		53.79	0.001283	1.75	39.82	20.52	0.21
1	3575	Max WS	69.50	50.65	53.64		53.68	0.001167	1.67	41.55	24.08	0.20
1	3560		Culvert									
1	3480	Max WS	69.50	50.65	53.52		53.61	0.003293	2.30	30.18	19.68	0.32
1	3390	Max WS	69.49	50.28	53.41		53.43	0.000567	1.06	65.84	35.44	0.14
1	3300	Max WS	69.46	50.21	53.33		53.35	0.001415	1.45	72.69	154.10	0.20
1	3200	Max WS	70.73	49.83	53.01		53.08	0.004911	2.16	33.74	202.80	0.36
1	3000	Max WS	70.70	48.83	52.44		52.46	0.001787	1.37	63.70	132.32	0.22
1	2900	Max WS	70.70	49.05	52.23	50.77	52.29	0.002174	1.99	45.90	112.98	0.26


1) Interim 10yr
Corridor-C 1
Legend
WS Max WS
Ground
Elevation (ft)
Main Channel Distance (ft)
80
75
70
65
60
55
50
45
0
2000
4000
6000
8000
10000
12000

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

X     X  XXXXXX    XXXX        XXXX       XX      XXXX
X     X  X        X    X       X   X     X  X    X
X     X  X        X            X   X    X    X   X
XXXXXXX  XXXX     X       XXX  XXXX     XXXXXX    XXXX
X     X  X        X            X  X     X    X        X
X     X  X        X    X       X   X    X    X        X
X     X  XXXXXX    XXXX        X    X   X    X   XXXXX
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PROJECT DATA
Project Title: Corridor-C
Project File : CorridorC.prj
Run Date and Time: 5/6/2011 8:07:49 AM

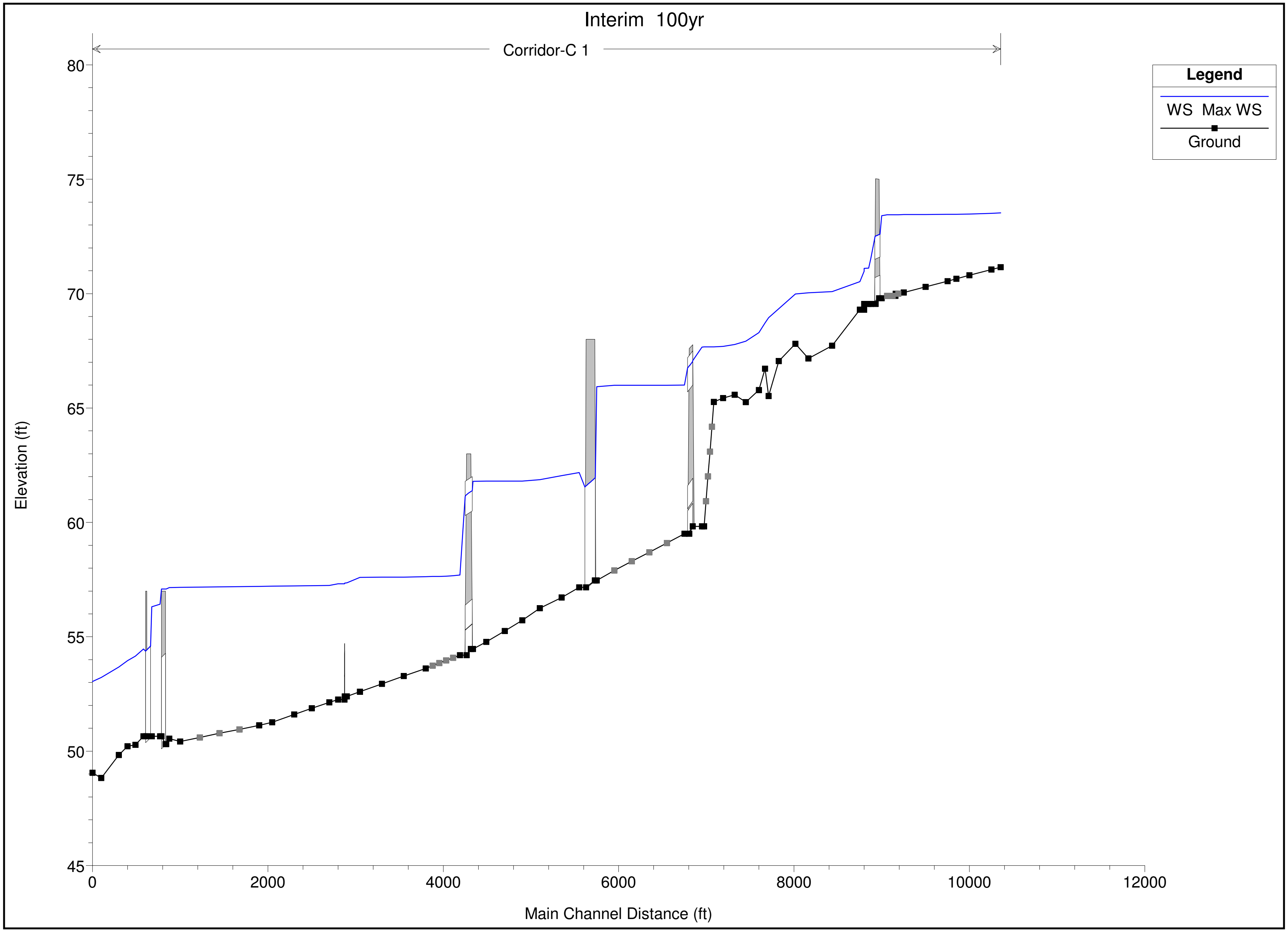
Project in English units

Project Description:
C Corridor - Developed, Interim and Existing Conditions
10 yr 24 hr Interim

Profile Output Table - Standard Table 1

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
1	13307	Max WS	59.14	71.16	73.23		73.23	0.000424	0.36	162.87	270.76	0.08
1	13200	Max WS	58.31	71.05	73.20		73.20	0.000220	0.28	206.87	306.95	0.06
1	12950	Max WS	57.70	70.80	73.16		73.16	0.000080	0.20	282.72	320.29	0.04
1	12800	Max WS	58.74	70.65	73.15		73.15	0.000049	0.17	335.64	329.21	0.03
1	12700	Max WS	59.42	70.55	73.15		73.15	0.000037	0.16	368.34	331.61	0.03
1	12450	Max WS	61.13	70.30	73.14		73.14	0.000025	0.15	408.84	303.12	0.02
1	12200	Max WS	62.87	70.05	73.14		73.14	0.000007	0.09	689.81	435.08	0.01
1	12137.5*	Max WS	108.72	70.00	73.13	71.37	73.13	0.000018	0.14	756.97	464.57	0.02
1	12080	Inl Struct										
1	12075.*	Max WS	105.91	69.90	72.72		72.72	0.000030	0.16	647.46	490.75	0.03
1	12012.5*	Max WS	105.69	69.90	72.72		72.72	0.000025	0.15	698.27	520.25	0.02
1	11950	Max WS	105.57	69.80	72.68		72.70	0.000925	1.17	90.01	549.42	0.15
1	11900	Culvert										
1	11825	Max WS	38.96	69.55	71.47		71.49	0.001764	1.06	36.59	492.10	0.18
1	11800	Max WS	105.89	69.55	71.00	70.90	71.05	0.029007	1.69	62.57	245.91	0.59
1	11750	Inl Struct										
1	11700	Max WS	104.38	69.30	70.25		70.26	0.003830	1.04	100.78	181.39	0.24
1	11385	Max WS	100.02	67.73	69.63		69.64	0.000472	0.46	217.66	275.47	0.09
1	11115	Max WS	101.01	67.17	69.56		69.56	0.000084	0.29	349.45	242.20	0.04
1	10965	Max WS	102.78	67.81	69.51		69.52	0.000537	0.63	163.29	141.96	0.10
1	10776	Max WS	104.77	67.05	68.90		68.95	0.005783	1.90	55.24	54.45	0.33
1	10660	Max WS	105.59	65.53	68.53		68.55	0.001515	1.35	86.98	74.71	0.18
1	10620	Max WS	106.92	66.72	68.26		68.32	0.008487	1.85	57.71	78.76	0.38
1	10550	Max WS	107.21	65.79	67.84		67.89	0.004053	1.83	58.45	46.29	0.29
1	10400	Max WS	107.59	65.26	67.51		67.53	0.001043	1.07	122.22	131.91	0.15
1	10272	Max WS	107.51	65.58	67.28		67.30	0.002591	1.15	114.99	223.25	0.22

1	10142	Max WS	107.57	65.43	67.10		67.11	0.000328	0.53	244.04	246.01	0.08
1	10035	Max WS	108.39	65.27	67.08		67.08	0.000146	0.36	311.56	258.36	0.06
1	10013.*	Max WS	108.65	64.18	67.08		67.08	0.000042	0.24	454.26	240.40	0.03
1	9991.*	Max WS	108.91	63.09	67.08		67.08	0.000016	0.17	622.37	223.19	0.02
1	9969.*	Max WS	109.17	62.01	67.08		67.08	0.000008	0.14	800.73	222.27	0.01
1	9947.*	Max WS	109.44	60.92	67.08		67.08	0.000004	0.11	986.57	223.81	0.01
1	9925	Max WS	109.70	59.83	67.08		67.08	0.000002	0.09	1179.88	226.56	0.01
1	9900	Max WS	110.42	59.83	67.08		67.08	0.000036	0.50	220.30	226.54	0.04
1	9790		Culvert									
1	9700	Max WS	97.21	59.50	63.08		63.09	0.000494	1.05	92.79	172.62	0.11
1	9500.*	Max WS	95.70	59.10	63.04		63.04	0.000029	0.24	403.16	168.37	0.03
1	9300.*	Max WS	103.01	58.70	63.03		63.03	0.000022	0.23	455.37	164.25	0.02
1	9100.*	Max WS	103.15	58.30	63.03		63.03	0.000014	0.20	512.04	160.30	0.02
1	8900.*	Max WS	103.29	57.90	63.03		63.03	0.000010	0.18	559.37	156.61	0.02
1	8700	Max WS	104.07	57.46	62.92		62.98	0.000888	2.10	49.55	151.51	0.17
1	8650		Culvert									
1	8500	Max WS	97.82	57.16	61.59		61.68	0.001541	2.43	40.30	36.98	0.21
1	8300	Max WS	85.44	56.71	61.49		61.50	0.000145	0.66	129.96	37.55	0.06
1	8050	Max WS	160.37	56.25	61.40		61.42	0.000345	1.09	146.48	36.85	0.10
1	7850	Max WS	160.03	55.72	61.38		61.38	0.000006	0.15	1054.78	268.01	0.01
1	7650	Max WS	162.89	55.25	61.38		61.38	0.000002	0.10	1608.11	364.00	0.01
1	7440	Max WS	162.84	54.78	61.38		61.38	0.000001	0.08	2005.37	412.00	0.01
1	7290	Max WS	162.81	54.47	61.37		61.37	0.000033	0.46	351.43	394.19	0.03
1	7225		Culvert									
1	7090	Max WS	153.88	54.20	57.07		57.10	0.001452	1.40	109.54	350.80	0.18
1	7012.*	Max WS	152.65	54.08	57.02		57.02	0.000293	0.42	359.27	357.92	0.07
1	6934.*	Max WS	157.87	53.97	57.00		57.00	0.000245	0.41	387.75	359.76	0.07
1	6856.*	Max WS	157.84	53.85	56.98		56.98	0.000187	0.38	417.33	353.75	0.06
1	6778.*	Max WS	157.82	53.74	56.97		56.97	0.000149	0.35	446.17	351.57	0.06
1	6700	Max WS	158.07	53.62	56.96		56.96	0.000117	0.33	477.65	348.40	0.05
1	6450	Max WS	158.62	53.28	56.94		56.94	0.000032	0.20	807.97	482.65	0.03
1	6200	Max WS	159.27	52.94	56.94		56.94	0.000019	0.17	930.21	465.86	0.02
1	5950	Max WS	172.47	52.60	56.93		56.93	0.000013	0.15	1117.76	481.45	0.02
1	5800	Max WS	172.46	52.39	56.91		56.92	0.000243	0.89	193.52	550.30	0.08
1	5750		Culvert									
1	5700	Max WS	170.15	52.26	55.88		55.90	0.000660	1.20	142.21	384.27	0.13
1	5600	Max WS	169.75	52.13	55.85		55.86	0.000065	0.35	483.56	207.02	0.04
1	5400	Max WS	169.55	51.87	55.84		55.84	0.000102	0.46	368.65	146.69	0.05
1	5200	Max WS	169.36	51.60	55.82		55.82	0.000077	0.41	414.22	159.55	0.04
1	4950	Max WS	174.31	51.26	55.80		55.80	0.000072	0.42	412.79	144.58	0.04
1	4800	Max WS	175.79	51.13	55.72		55.74	0.000929	1.26	199.19	323.75	0.17
1	4575.*	Max WS	174.74	50.95	55.55		55.57	0.000678	1.20	208.97	292.51	0.15
1	4350.*	Max WS	174.58	50.78	55.43		55.44	0.000499	1.14	220.79	256.48	0.13
1	4125.*	Max WS	174.69	50.60	55.33		55.34	0.000407	1.12	222.70	212.22	0.12
1	3900	Max WS	174.84	50.42	55.24		55.25	0.000397	1.17	208.12	162.21	0.12
1	3775	Max WS	174.83	50.55	55.16		55.18	0.000783	1.49	153.36	129.68	0.17
1	3740	Max WS	174.83	50.31	55.09		55.16	0.000782	2.15	81.46	124.31	0.18
1	3730		Culvert									
1	3670	Max WS	174.83	50.65	54.76		54.90	0.002416	2.98	58.76	27.63	0.30
1	3575	Max WS	174.83	50.65	54.54		54.67	0.002340	2.98	58.66	29.07	0.30
1	3560		Culvert									
1	3480	Max WS	174.83	50.65	54.12		54.39	0.007488	4.22	41.40	22.16	0.50
1	3390	Max WS	174.82	50.28	53.87		53.94	0.002258	2.09	83.54	45.45	0.27
1	3300	Max WS	174.80	50.21	53.72		53.75	0.002107	1.79	141.80	191.03	0.25
1	3200	Max WS	179.96	49.83	53.44		53.49	0.003479	2.16	126.25	218.74	0.32
1	3000	Max WS	179.92	48.83	52.99		53.02	0.001430	1.55	176.68	272.63	0.21
1	2900	Max WS	179.91	49.05	52.83	52.31	52.85	0.002217	1.54	171.73	300.76	0.25



Interim 100yr
Corridor-C 1
Legend
WS Max WS
Ground
Elevation (ft)
Main Channel Distance (ft)
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75
70
65
60
55
50
45
0
2000
4000
6000
8000
10000
12000

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                    HEC-RAS Version 4.1.0 Jan 2010
                     U.S. Army Corps of Engineers
                    Hydrologic Engineering Center
                          609 Second Street
                          Davis, California

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PROJECT DATA
Project Title: Corridor-C
Project File : CorridorC.prj
Run Date and Time: 5/6/2011 8:07:25 AM

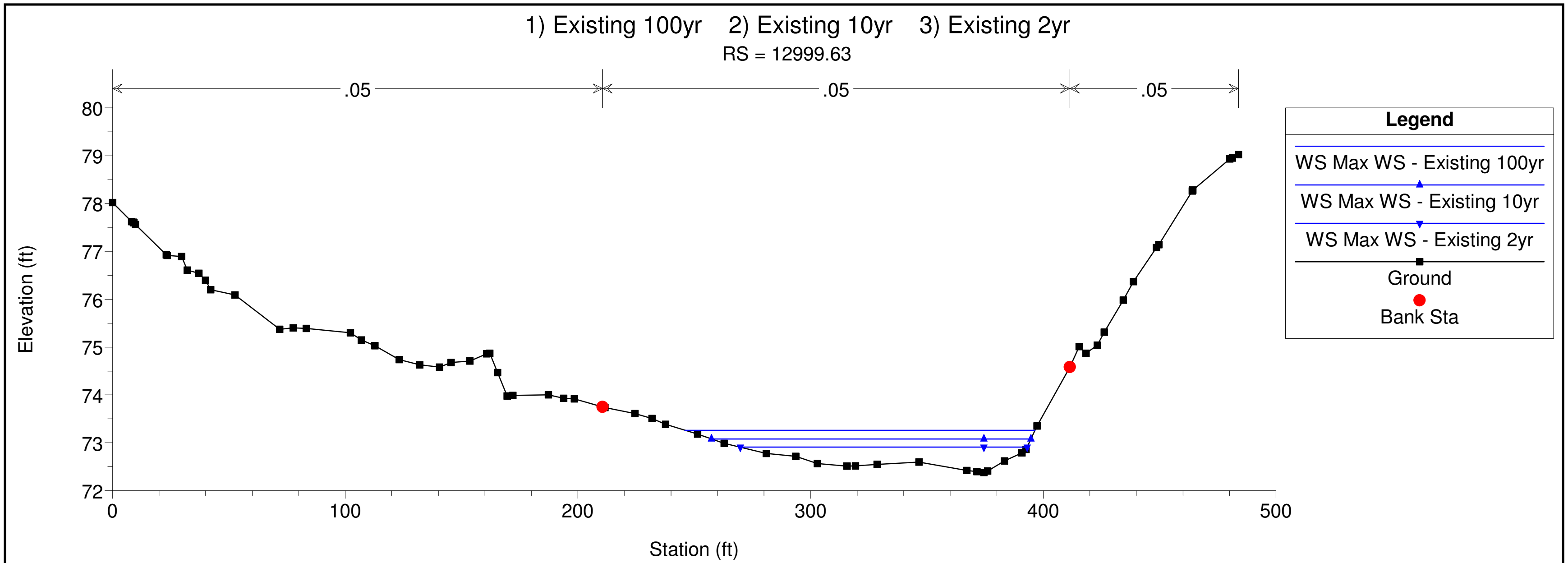
Project in English units

Project Description:
C Corridor - Developed, Interim and Existing Conditions
100 yr 24 hr Interim

Profile Output Table - Standard Table 1

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
1	13307	Max WS	94.84	71.16	73.53		73.53	0.000284	0.39	244.78	273.18	0.07
1	13200	Max WS	92.92	71.05	73.51		73.51	0.000158	0.31	302.84	309.39	0.05
1	12950	Max WS	92.02	70.80	73.48		73.48	0.000073	0.24	385.49	322.84	0.04
1	12800	Max WS	93.57	70.65	73.47		73.47	0.000050	0.21	441.39	331.77	0.03
1	12700	Max WS	94.39	70.55	73.47		73.47	0.000040	0.20	474.85	334.61	0.03
1	12450	Max WS	97.26	70.30	73.46		73.46	0.000031	0.19	505.79	305.66	0.03
1	12200	Max WS	100.13	70.05	73.45		73.45	0.000010	0.12	828.36	437.62	0.02
1	12137.5*	Max WS	168.94	70.00	73.45	71.46	73.45	0.000024	0.19	904.63	467.09	0.02
1	12080		Inl Struct									
1	12075.*	Max WS	168.94	69.90	73.45		73.45	0.000018	0.17	1007.42	496.58	0.02
1	12012.5*	Max WS	168.92	69.90	73.45		73.45	0.000015	0.16	1080.10	526.11	0.02
1	11950	Max WS	168.90	69.80	73.41		73.44	0.000822	1.37	123.65	555.27	0.15
1	11900		Culvert									
1	11825	Max WS	168.90	69.55	71.53		71.83	0.027424	4.36	38.73	524.22	0.73
1	11800	Max WS	169.49	69.55	71.12	70.98	71.17	0.025664	1.81	93.87	305.47	0.57
1	11750		Inl Struct									
1	11700	Max WS	168.67	69.30	70.53		70.55	0.002601	1.08	162.26	240.87	0.21
1	11385	Max WS	173.03	67.73	70.09		70.10	0.000325	0.48	359.79	321.58	0.08
1	11115	Max WS	176.45	67.17	70.04		70.04	0.000104	0.38	467.29	254.34	0.05
1	10965	Max WS	179.80	67.81	69.98		69.99	0.000545	0.78	231.93	152.83	0.11
1	10776	Max WS	183.63	67.05	69.34		69.42	0.005696	2.28	80.47	59.36	0.35
1	10660	Max WS	185.22	65.53	68.95		69.00	0.001962	1.77	125.43	96.67	0.22
1	10620	Max WS	187.80	66.72	68.72		68.77	0.006402	1.89	99.57	107.10	0.34
1	10550	Max WS	188.42	65.79	68.30		68.38	0.004918	2.32	81.10	52.04	0.33
1	10400	Max WS	189.67	65.26	67.92		67.95	0.001246	1.35	183.23	158.64	0.17
1	10272	Max WS	191.07	65.58	67.78		67.79	0.001263	1.04	236.32	255.41	0.16
1	10142	Max WS	192.89	65.43	67.69		67.69	0.000256	0.60	394.77	269.89	0.08
1	10035	Max WS	194.51	65.27	67.67		67.67	0.000131	0.44	481.25	328.32	0.06
1	10013.*	Max WS	195.03	64.18	67.67		67.67	0.000057	0.33	600.69	257.04	0.04
1	9991.*	Max WS	195.56	63.09	67.67		67.67	0.000029	0.26	757.48	236.22	0.03

1	9969.*	Max WS	196.08	62.01	67.67		67.67	0.000016	0.21	934.04	229.77	0.02
1	9947.*	Max WS	196.61	60.92	67.67		67.67	0.000010	0.18	1120.28	229.73	0.01
1	9925	Max WS	197.14	59.83	67.67		67.67	0.000004	0.15	1314.86	231.30	0.01
1	9900	Max WS	198.51	59.83	67.66		67.67	0.000086	0.82	240.78	231.24	0.06
1	9790		Culvert									
1	9700	Max WS	158.23	59.50	66.00		66.01	0.000110	0.81	195.21	196.03	0.06
1	9500.*	Max WS	158.10	59.10	66.00		66.00	0.000006	0.17	936.93	192.03	0.01
1	9300.*	Max WS	170.06	58.70	66.00		66.00	0.000006	0.17	977.69	187.98	0.01
1	9100.*	Max WS	170.18	58.30	66.00		66.00	0.000005	0.17	1023.03	184.01	0.01
1	8900.*	Max WS	170.31	57.90	66.00		66.00	0.000004	0.16	1059.45	180.17	0.01
1	8700	Max WS	171.64	57.46	65.93		66.00	0.000496	2.15	79.67	175.51	0.13
1	8650		Culvert									
1	8500	Max WS	141.42	57.16	62.18		62.33	0.002044	3.06	46.18	39.89	0.25
1	8300	Max WS	134.54	56.71	62.05		62.06	0.000234	0.89	154.22	103.77	0.08
1	8050	Max WS	273.54	56.25	61.86		61.91	0.000733	1.67	165.20	81.44	0.14
1	7850	Max WS	272.28	55.72	61.81		61.81	0.000013	0.23	1171.46	271.47	0.02
1	7650	Max WS	277.86	55.25	61.81		61.81	0.000005	0.16	1766.07	367.46	0.01
1	7440	Max WS	277.83	54.78	61.81		61.81	0.000003	0.13	2183.90	415.45	0.01
1	7290	Max WS	277.82	54.47	61.80		61.81	0.000077	0.74	376.98	397.07	0.05
1	7225		Culvert									
1	7090	Max WS	266.27	54.20	57.70		57.75	0.001598	1.80	147.91	379.64	0.20
1	7012.*	Max WS	264.85	54.08	57.67		57.67	0.000170	0.44	598.80	373.10	0.06
1	6934.*	Max WS	277.18	53.97	57.65		57.66	0.000157	0.44	626.21	367.95	0.06
1	6856.*	Max WS	277.09	53.85	57.64		57.64	0.000134	0.42	654.58	364.01	0.06
1	6778.*	Max WS	277.76	53.74	57.63		57.64	0.000115	0.41	682.52	358.37	0.05
1	6700	Max WS	278.40	53.62	57.62		57.63	0.000098	0.39	710.54	351.53	0.05
1	6450	Max WS	280.37	53.28	57.61		57.61	0.000033	0.25	1132.18	487.96	0.03
1	6200	Max WS	282.25	52.94	57.60		57.60	0.000023	0.23	1242.98	471.40	0.02
1	5950	Max WS	316.09	52.60	57.60		57.60	0.000019	0.22	1440.18	486.78	0.02
1	5800	Max WS	260.43	52.39	57.35		57.36	0.001759	0.76	344.45	553.87	0.17
1	5750		Culvert									
1	5700	Max WS	259.85	52.26	57.32		57.33	0.001847	0.88	296.44	395.71	0.18
1	5600	Max WS	257.66	52.13	57.24		57.24	0.000033	0.33	778.00	218.02	0.03
1	5400	Max WS	257.15	51.87	57.23		57.23	0.000057	0.44	580.78	157.83	0.04
1	5200	Max WS	257.13	51.60	57.22		57.22	0.000044	0.40	645.56	170.76	0.04
1	4950	Max WS	265.92	51.26	57.21		57.21	0.000047	0.43	624.20	155.76	0.04
1	4800	Max WS	269.14	51.13	57.20		57.20	0.000048	0.44	881.26	524.38	0.04
1	4575.*	Max WS	269.50	50.95	57.19		57.19	0.000042	0.45	860.56	450.60	0.04
1	4350.*	Max WS	269.81	50.78	57.18		57.18	0.000041	0.48	805.79	375.51	0.04
1	4125.*	Max WS	270.12	50.60	57.17		57.17	0.000046	0.54	713.67	300.71	0.04
1	3900	Max WS	270.44	50.42	57.16		57.16	0.000062	0.65	587.27	229.23	0.05
1	3775	Max WS	270.40	50.55	57.15		57.15	0.000095	0.77	482.52	199.79	0.06
1	3740	Max WS	270.39	50.31	57.09		57.16	0.002283	2.15	135.17	191.35	0.27
1	3730		Culvert									
1	3670	Max WS	270.40	50.65	56.43		56.57	0.001375	2.99	90.40	171.55	0.24
1	3575	Max WS	270.38	50.65	56.31		56.44	0.001233	2.93	92.35	54.88	0.23
1	3560		Culvert									
1	3480	Max WS	270.40	50.65	54.47		54.96	0.010856	5.62	48.12	23.62	0.62
1	3390	Max WS	270.40	50.28	54.15		54.27	0.003498	2.73	105.93	101.43	0.34
1	3300	Max WS	270.35	50.21	53.96		54.00	0.002296	2.03	189.86	209.68	0.27
1	3200	Max WS	279.62	49.83	53.68		53.73	0.003307	2.23	178.34	227.73	0.32
1	3000	Max WS	279.55	48.83	53.22		53.25	0.001561	1.73	241.12	291.64	0.22
1	2900	Max WS	279.52	49.05	53.05	52.61	53.07	0.002101	1.67	244.24	346.50	0.25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.05
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Station (ft)
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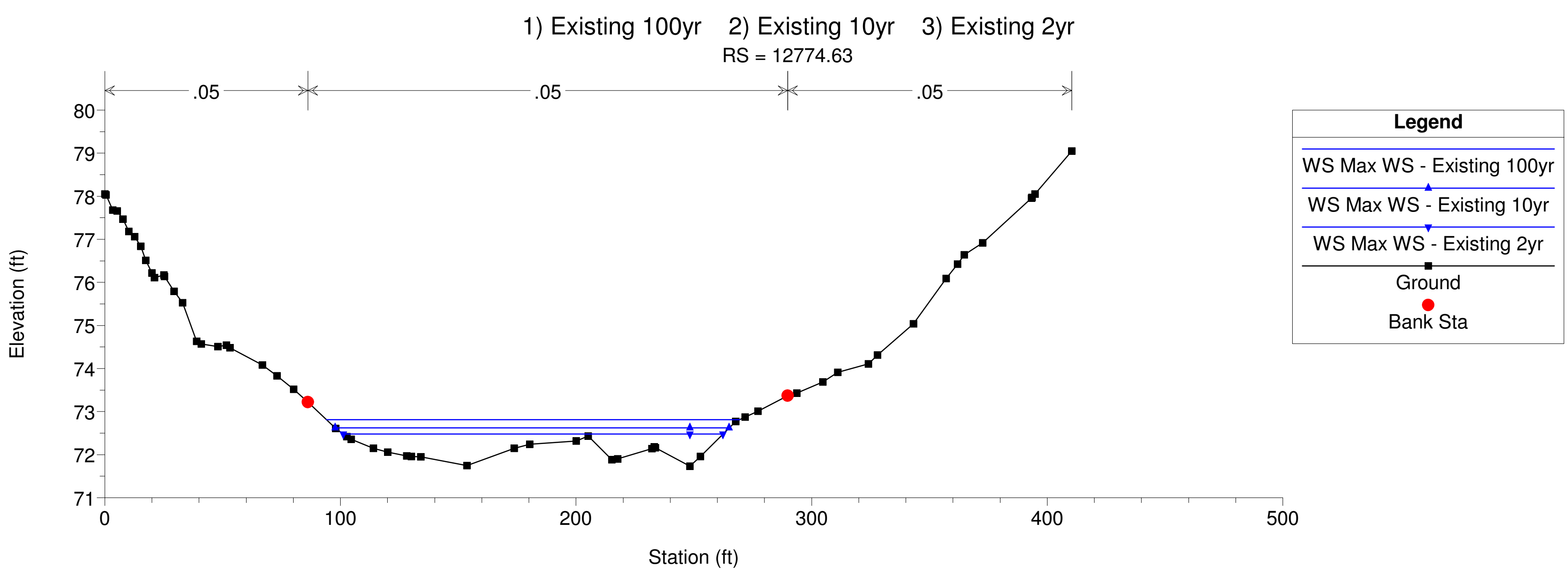
78
77
76
75
74
73
72
0
100
200
300
400
500
Legend
WS Max WS - Existing 100yr
WS Max WS - Existing 10yr
WS Max WS - Existing 2yr
Ground
Bank Sta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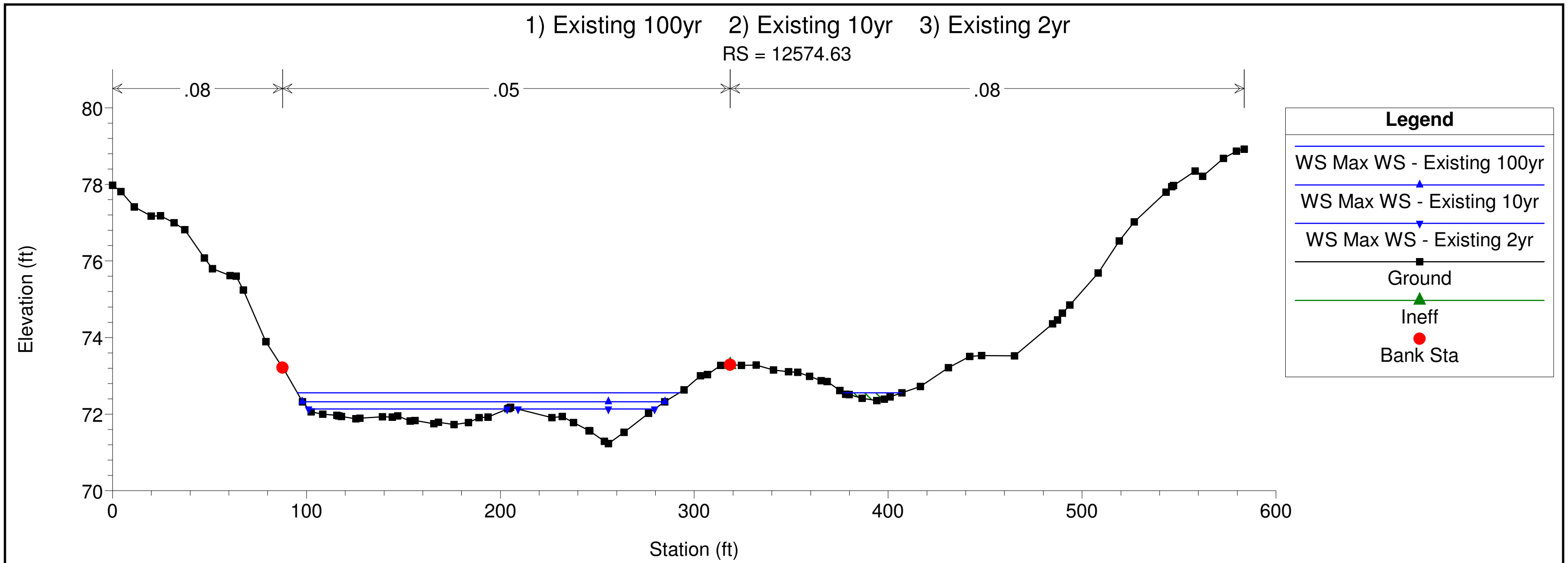
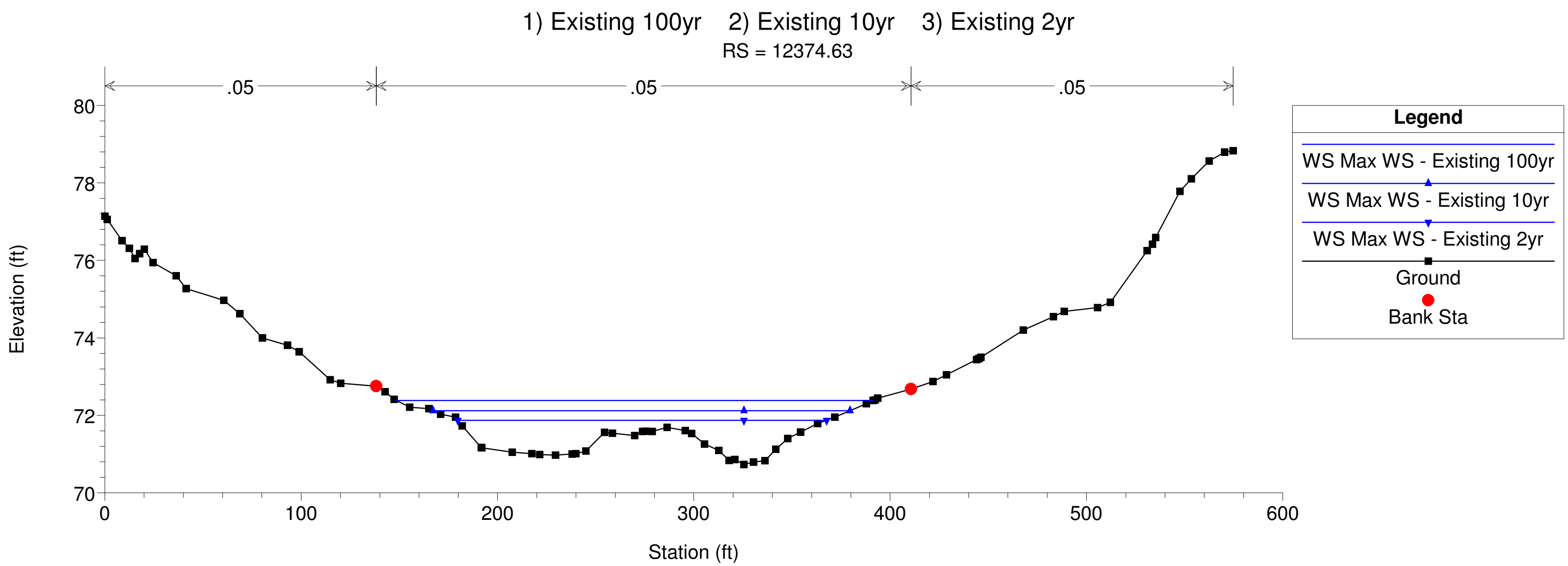
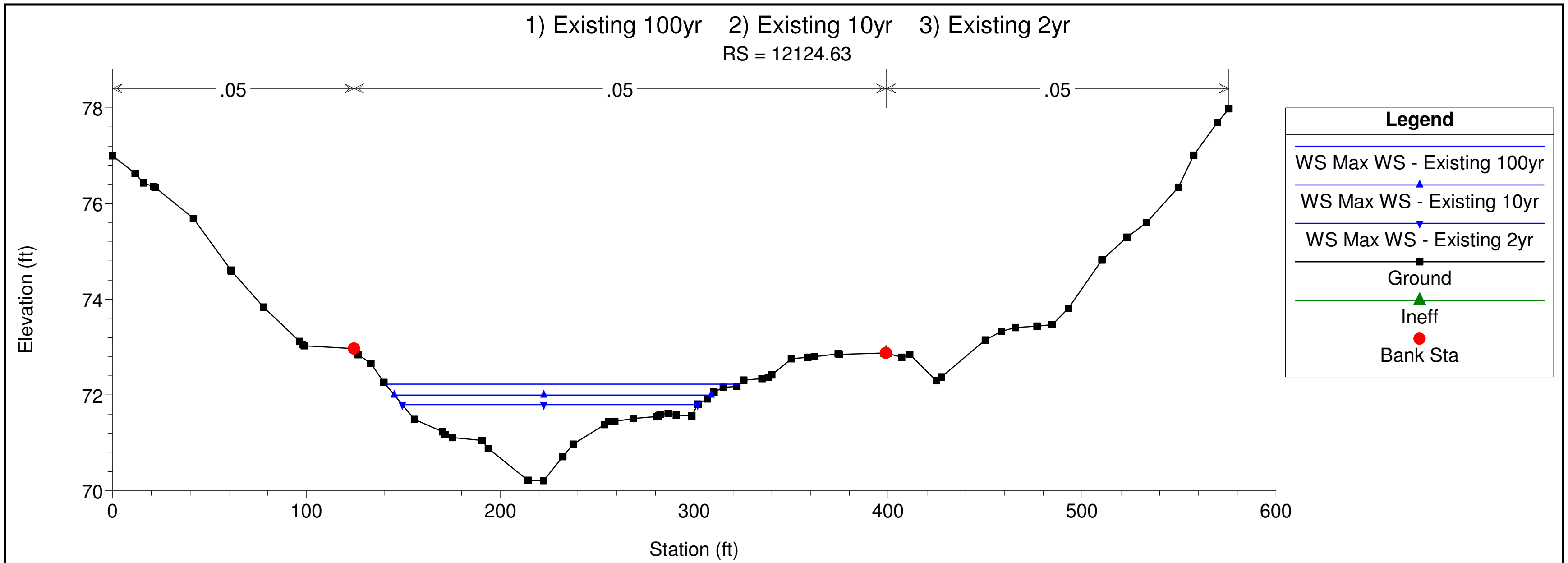
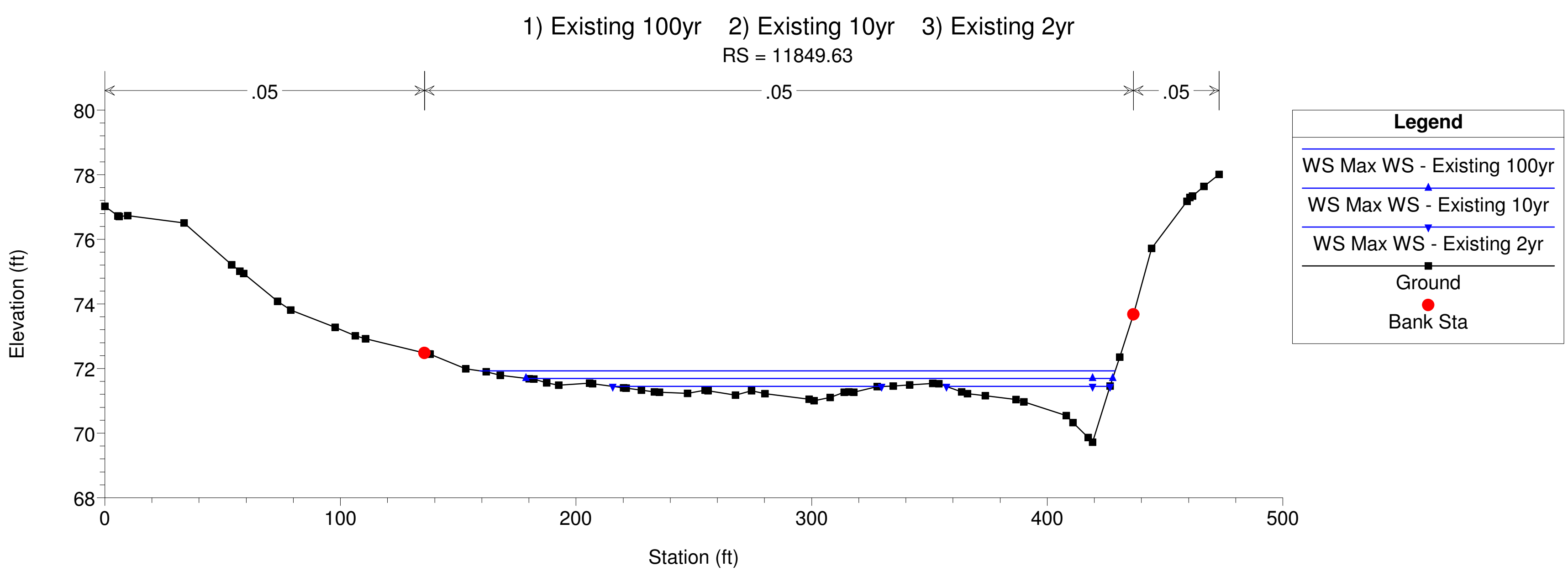
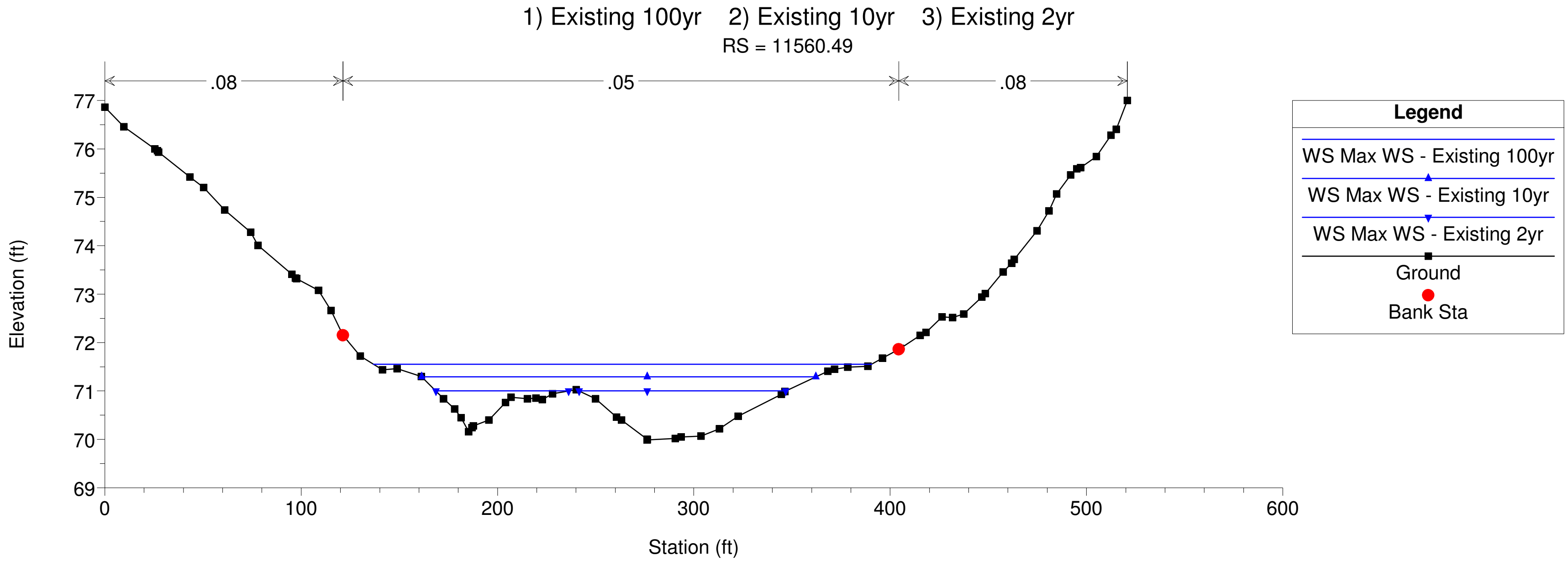
.05
.05
Elevation (ft)
Station (ft)
80
79
78
77
76
75
74
73
72
71
0
100
200
300
400
500
Legend
WS Max WS - Existing 100yr
WS Max WS - Existing 10yr
WS Max WS - Existing 2yr
Ground
Bank Sta

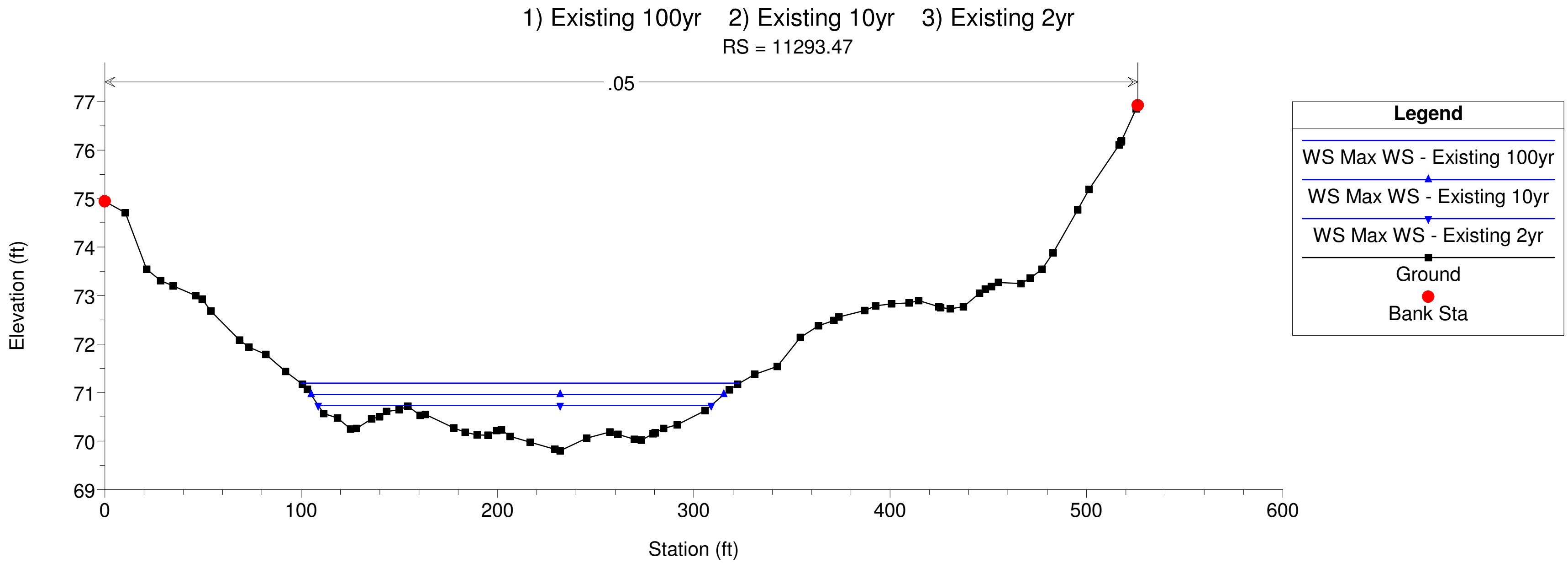

1) Existing 100yr 2) Existing 10yr 3) Existing 2yr
RS = 12574.63
.08
.05
.08
Elevation (ft)
Station (ft)
Legend
WS Max WS - Existing 100yr
WS Max WS - Existing 10yr
WS Max WS - Existing 2yr
Ground
Ineff
Bank Sta

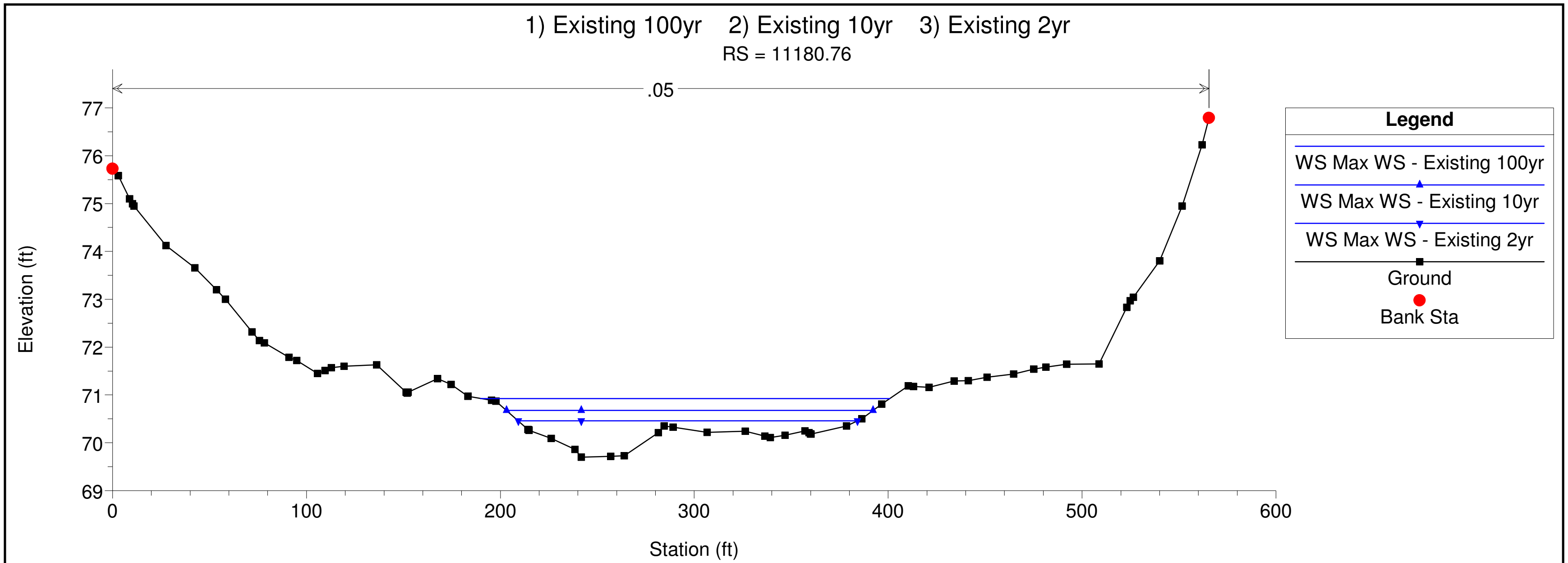

1) Existing 100yr 2) Existing 10yr 3) Existing 2yr
RS = 12374.63
.05
.05
.05
Elevation (ft)
Station (ft)
Legend
WS Max WS - Existing 100yr
WS Max WS - Existing 10yr
WS Max WS - Existing 2yr
Ground
Bank Sta


1) Existing 100yr 2) Existing 10yr 3) Existing 2yr
RS = 12124.63
.05
.05
.05
Elevation (ft)
78
76
74
72
70
0
100
200
300
400
500
600
Station (ft)
Legend
WS Max WS - Existing 100yr
WS Max WS - Existing 10yr
WS Max WS - Existing 2yr
Ground
Ineff
Bank Sta

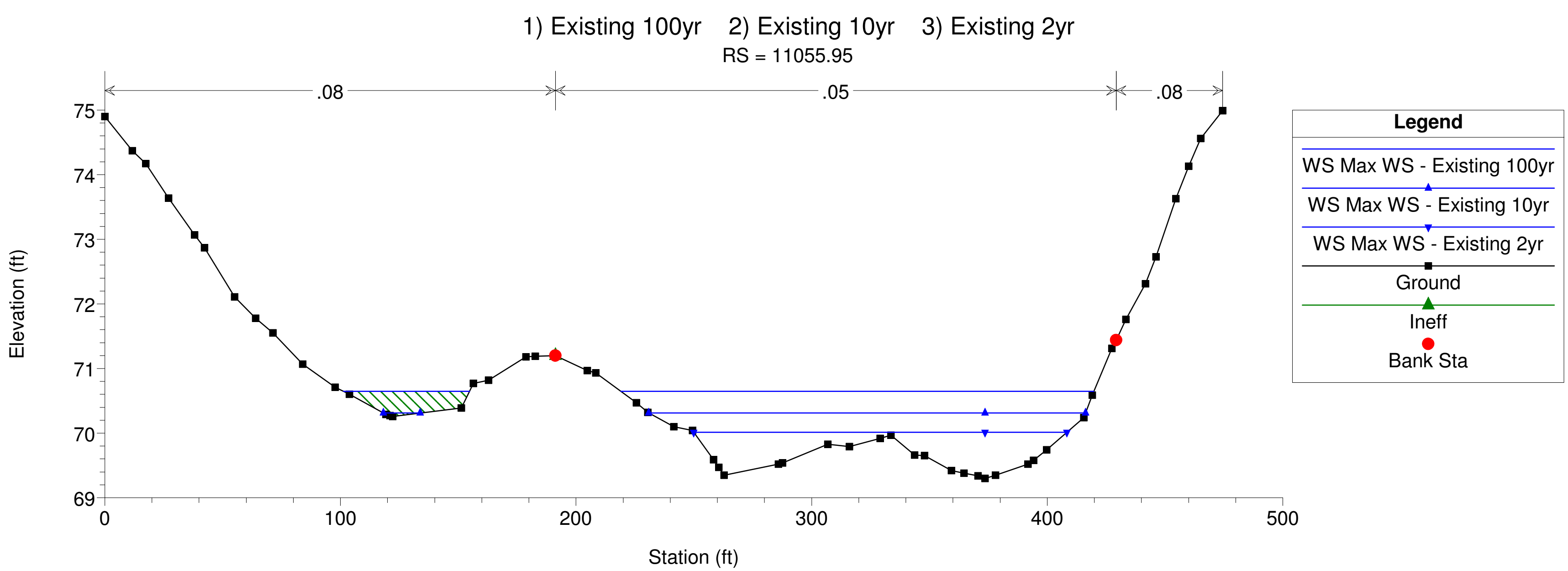

1) Existing 100yr 2) Existing 10yr 3) Existing 2yr
RS = 11849.63
.05
.05
.05
Elevation (ft)
80
78
76
74
72
70
68
0
100
200
300
400
500
Station (ft)
Legend
WS Max WS - Existing 100yr
WS Max WS - Existing 10yr
WS Max WS - Existing 2yr
Ground
Bank Sta


1) Existing 100yr 2) Existing 10yr 3) Existing 2yr
RS = 11560.49
.08
.05
.08
Elevation (ft)
Station (ft)
Legend
WS Max WS - Existing 100yr
WS Max WS - Existing 10yr
WS Max WS - Existing 2yr
Ground
Bank Sta

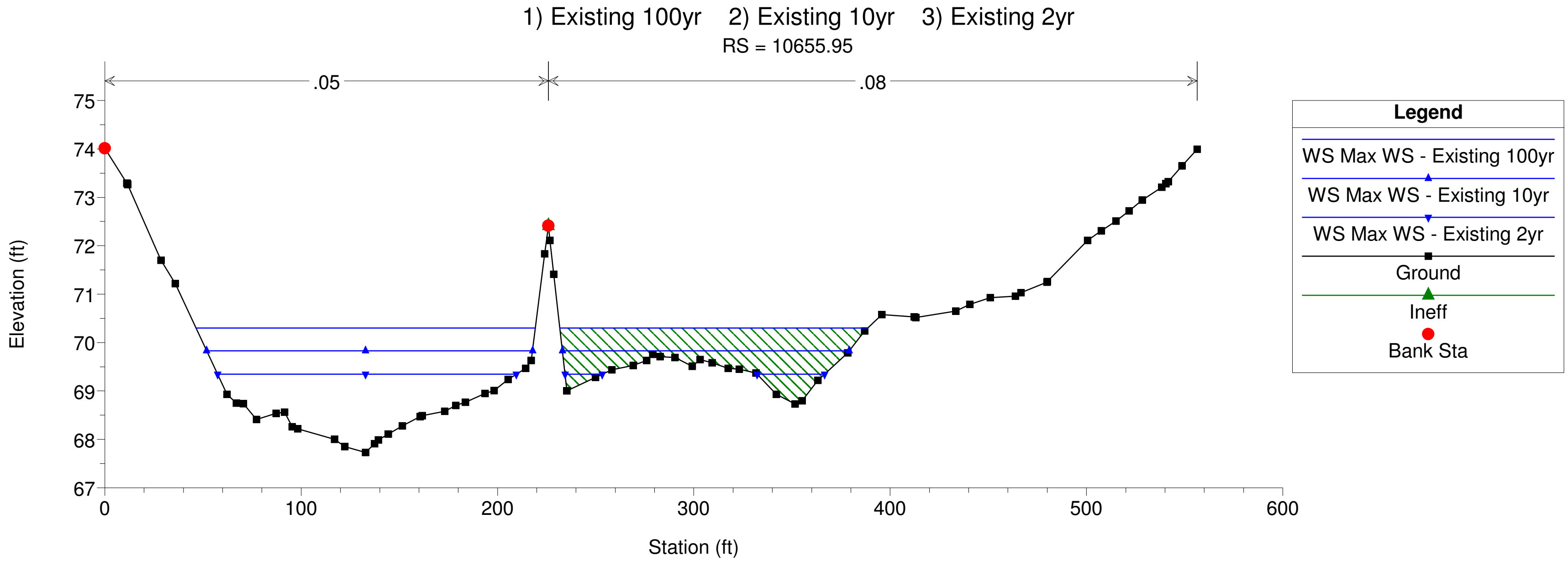

1) Existing 100yr 2) Existing 10yr 3) Existing 2yr
RS = 11293.47
.05
Elevation (ft)
Station (ft)
Legend
WS Max WS - Existing 100yr
WS Max WS - Existing 10yr
WS Max WS - Existing 2yr
Ground
Bank Sta



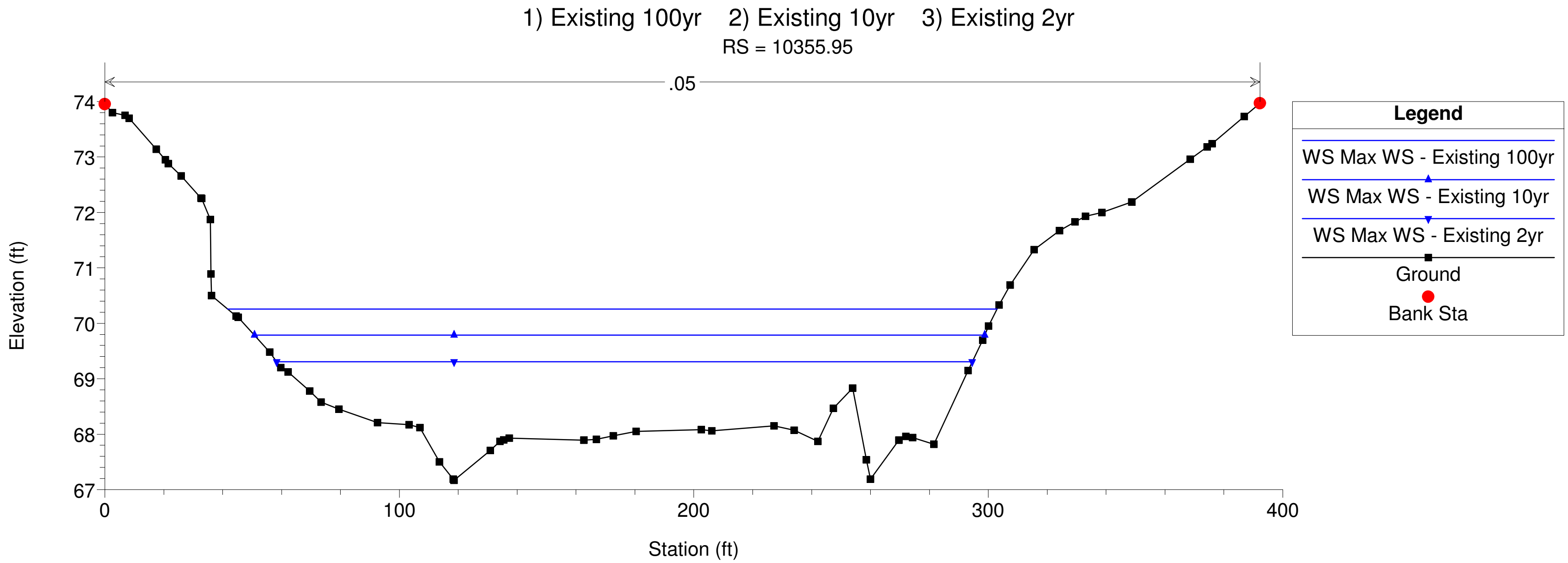
1) Existing 100yr 2) Existing 10yr 3) Existing 2yr
RS = 11180.76
.05
Elevation (ft)
Station (ft)
Legend
WS Max WS - Existing 100yr
WS Max WS - Existing 10yr
WS Max WS - Existing 2yr
Ground
Bank Sta



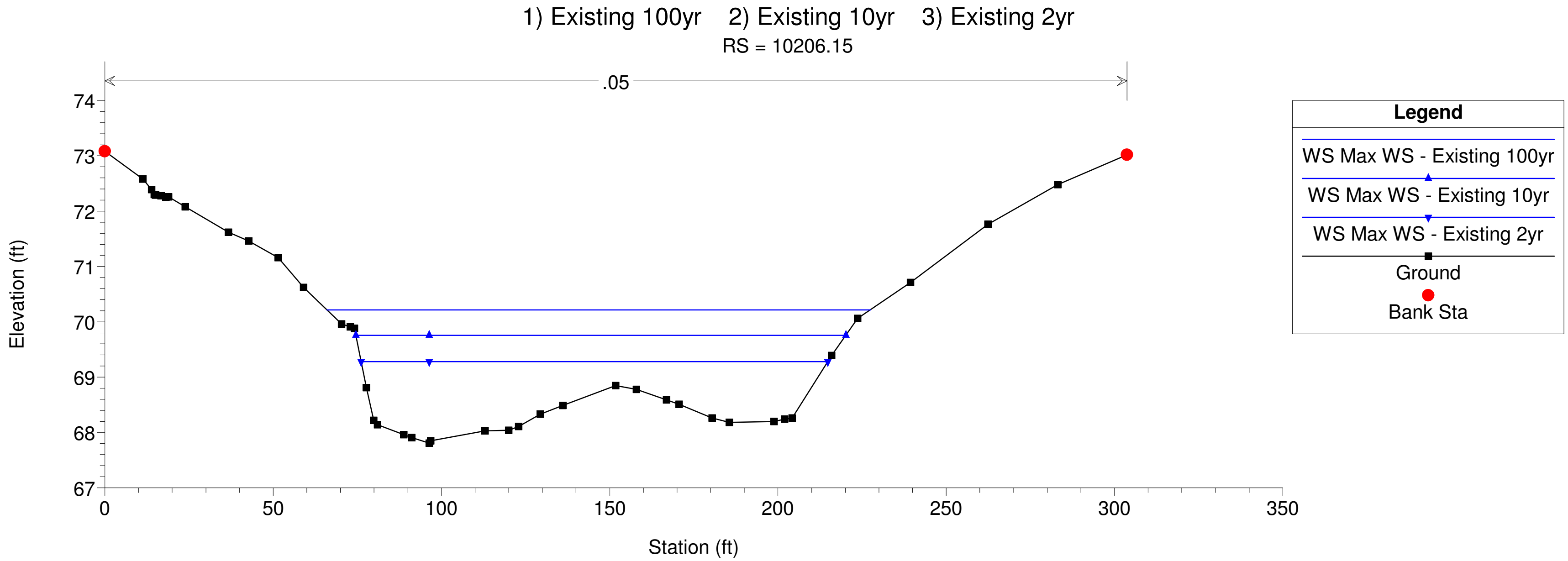
1) Existing 100yr 2) Existing 10yr 3) Existing 2yr
RS = 11055.95
.08
.05
.08
Elevation (ft)
Station (ft)
Legend
WS Max WS - Existing 100yr
WS Max WS - Existing 10yr
WS Max WS - Existing 2yr
Ground
Ineff
Bank Sta

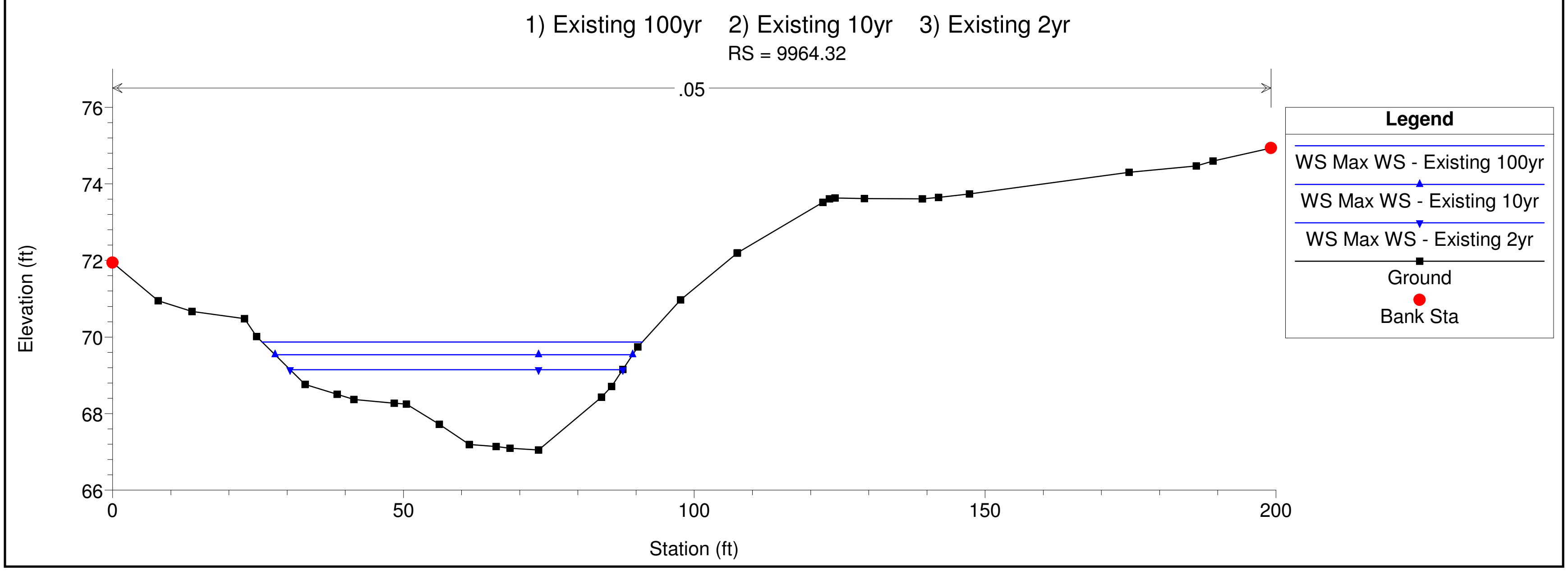


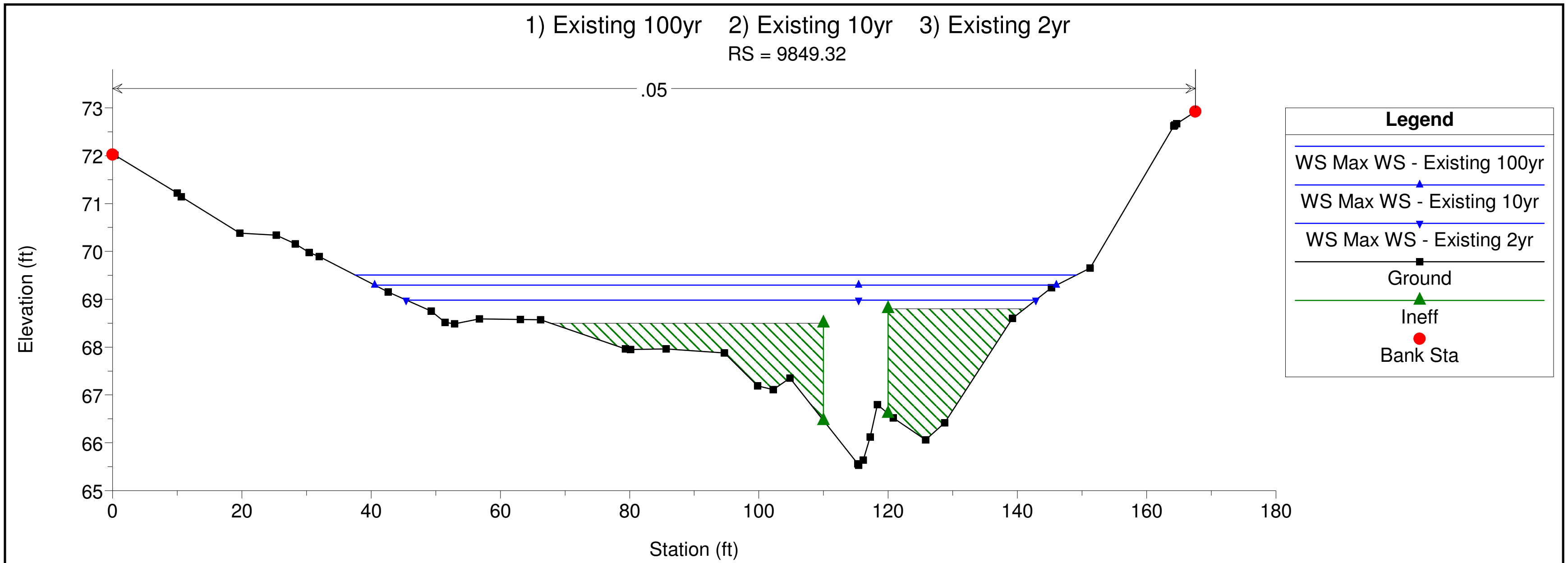
1) Existing 100yr 2) Existing 10yr 3) Existing 2yr
RS = 10655.95
.05
.08
Elevation (ft)
Station (ft)
Legend
WS Max WS - Existing 100yr
WS Max WS - Existing 10yr
WS Max WS - Existing 2yr
Ground
Ineff
Bank Sta



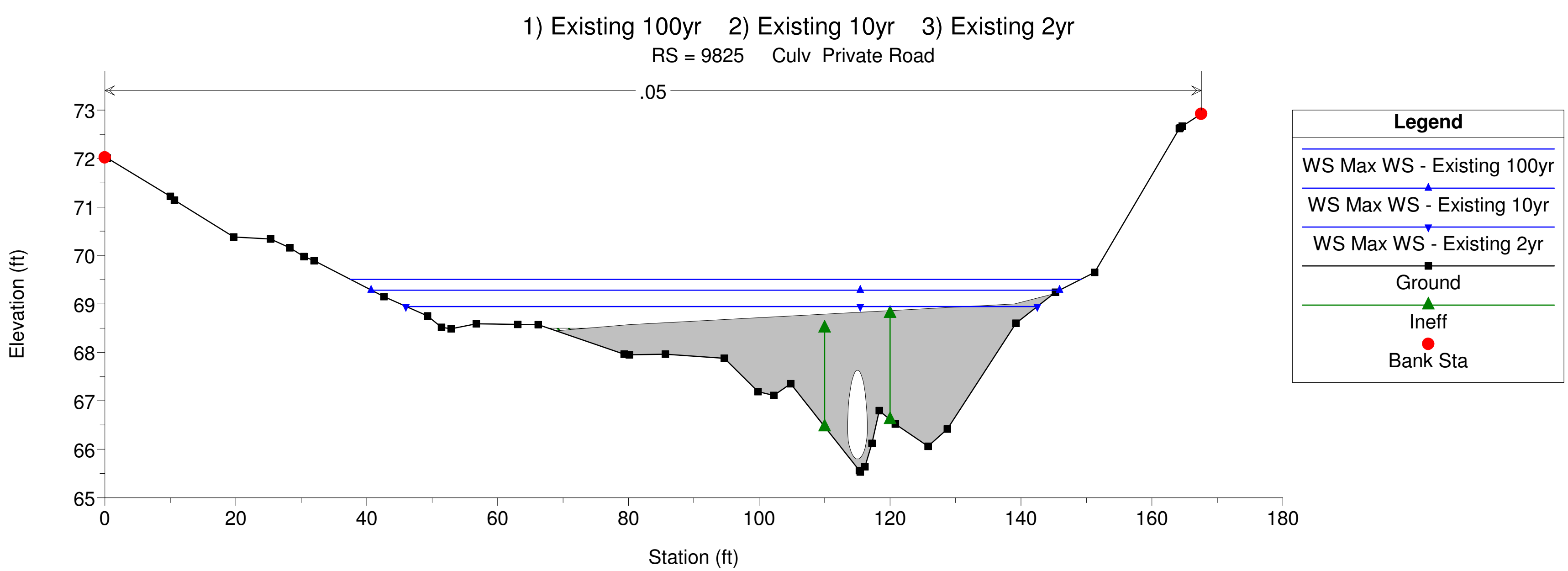
1) Existing 100yr 2) Existing 10yr 3) Existing 2yr
RS = 10355.95
.05
Elevation (ft)
Station (ft)
Legend
WS Max WS - Existing 100yr
WS Max WS - Existing 10yr
WS Max WS - Existing 2yr
Ground
Bank Sta


1) Existing 100yr 2) Existing 10yr 3) Existing 2yr
RS = 10206.15
.05
Elevation (ft)
Station (ft)
Legend
WS Max WS - Existing 100yr
WS Max WS - Existing 10yr
WS Max WS - Existing 2yr
Ground
Bank Sta

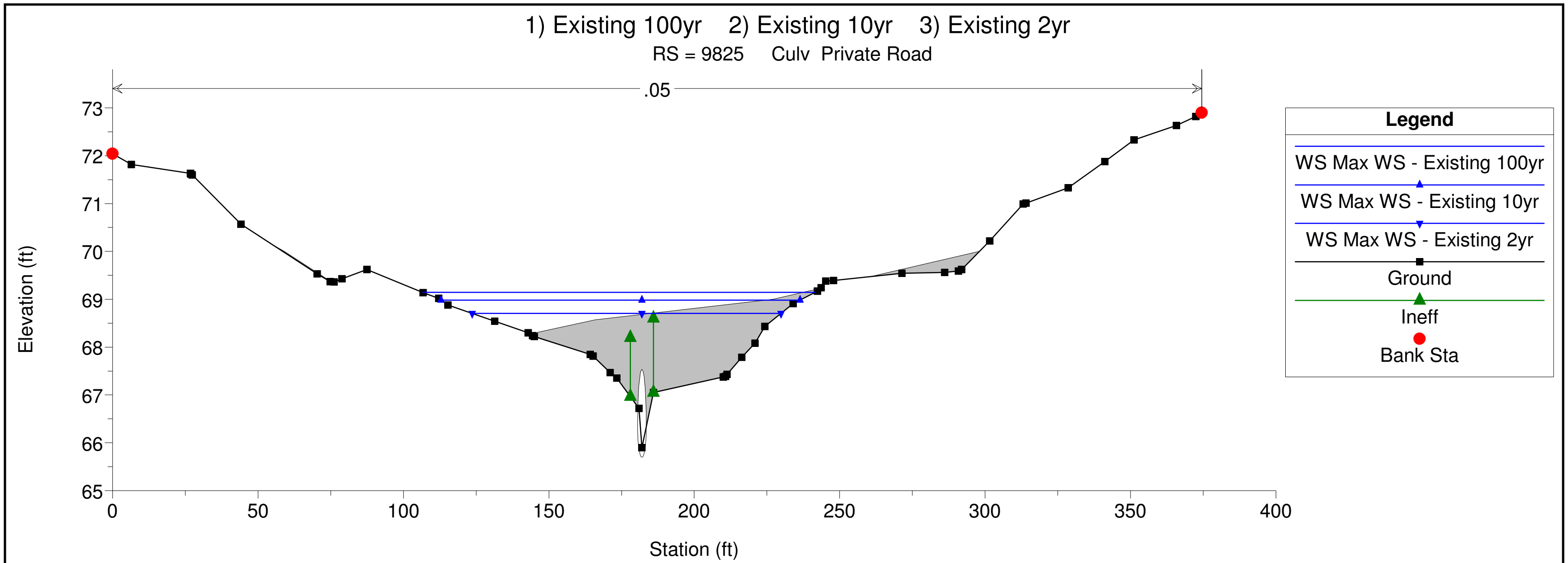

1) Existing 100yr 2) Existing 10yr 3) Existing 2yr
RS = 9964.32
.05
Elevation (ft)
Station (ft)
Legend
WS Max WS - Existing 100yr
WS Max WS - Existing 10yr
WS Max WS - Existing 2yr
Ground
Bank Sta



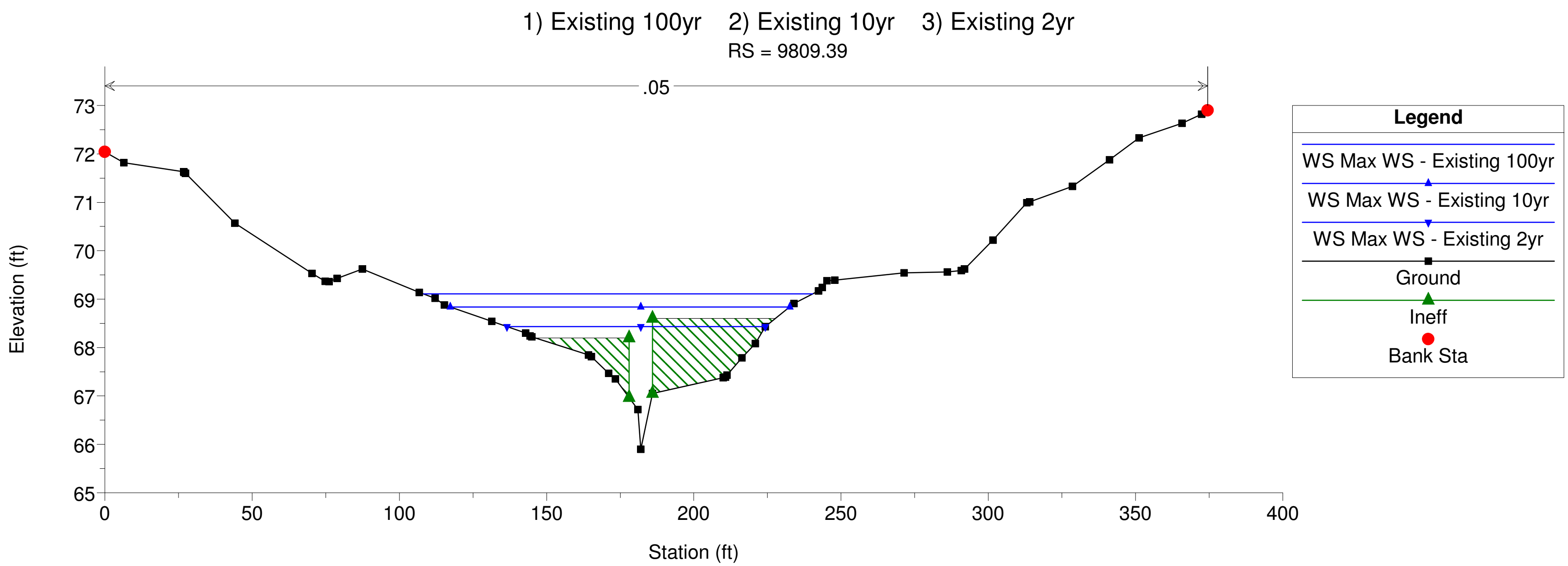
1) Existing 100yr 2) Existing 10yr 3) Existing 2yr
RS = 9849.32
.05
Elevation (ft)
Station (ft)
Legend
WS Max WS - Existing 100yr
WS Max WS - Existing 10yr
WS Max WS - Existing 2yr
Ground
Ineff
Bank Sta



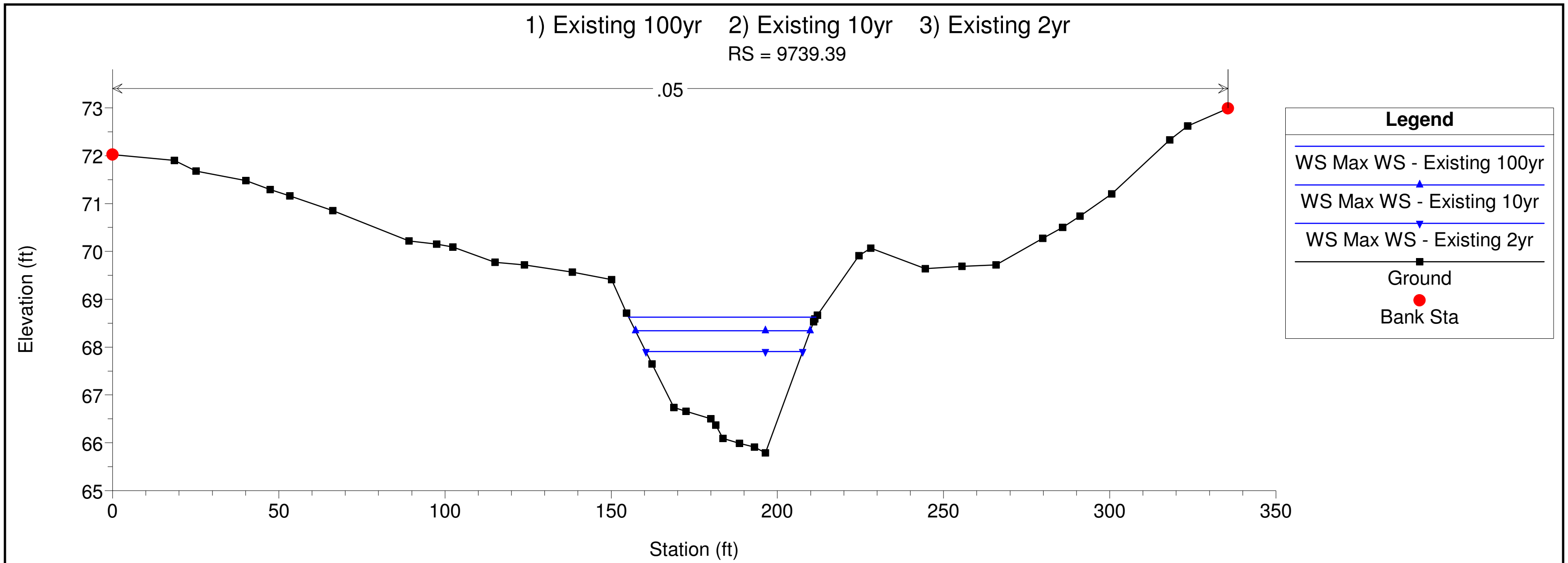
1) Existing 100yr 2) Existing 10yr 3) Existing 2yr
RS = 9825 Culv Private Road
.05
Elevation (ft)
Station (ft)
Legend
WS Max WS - Existing 100yr
WS Max WS - Existing 10yr
WS Max WS - Existing 2yr
Ground
Ineff
Bank Sta

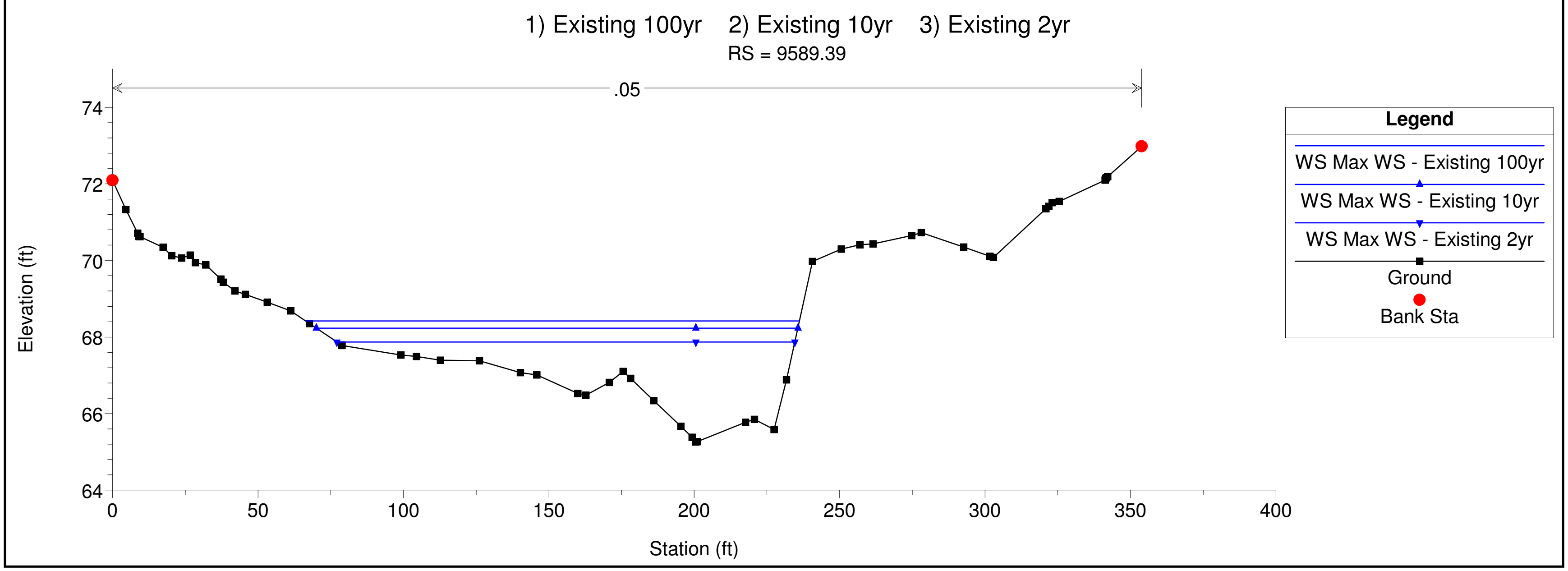


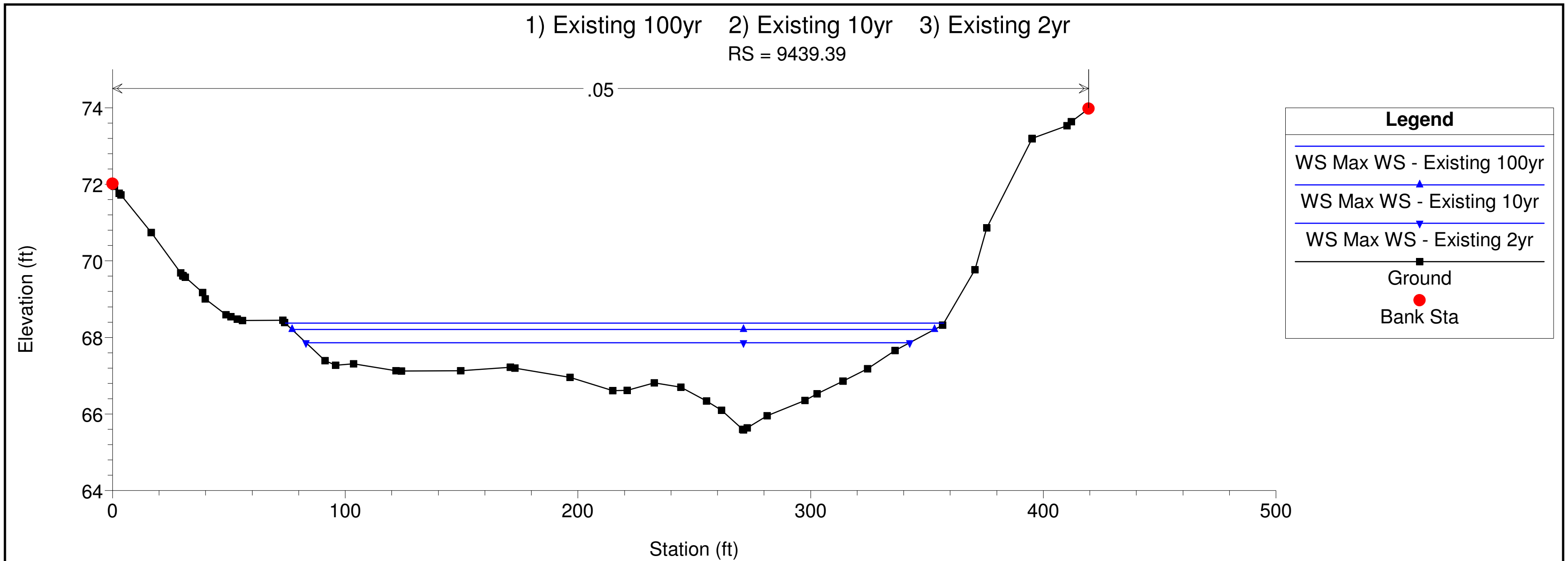
1) Existing 100yr 2) Existing 10yr 3) Existing 2yr
RS = 9825 Culv Private Road
.05
Elevation (ft)
Station (ft)
Legend
WS Max WS - Existing 100yr
WS Max WS - Existing 10yr
WS Max WS - Existing 2yr
Ground
Ineff
Bank Sta

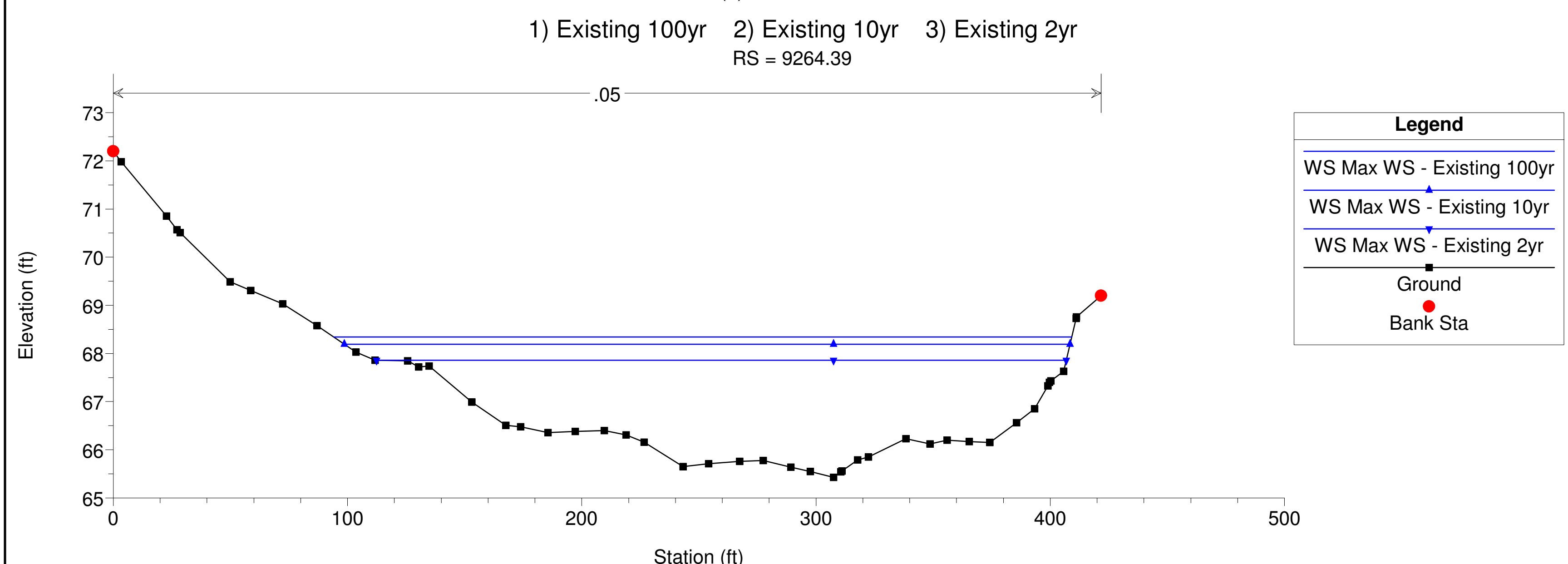


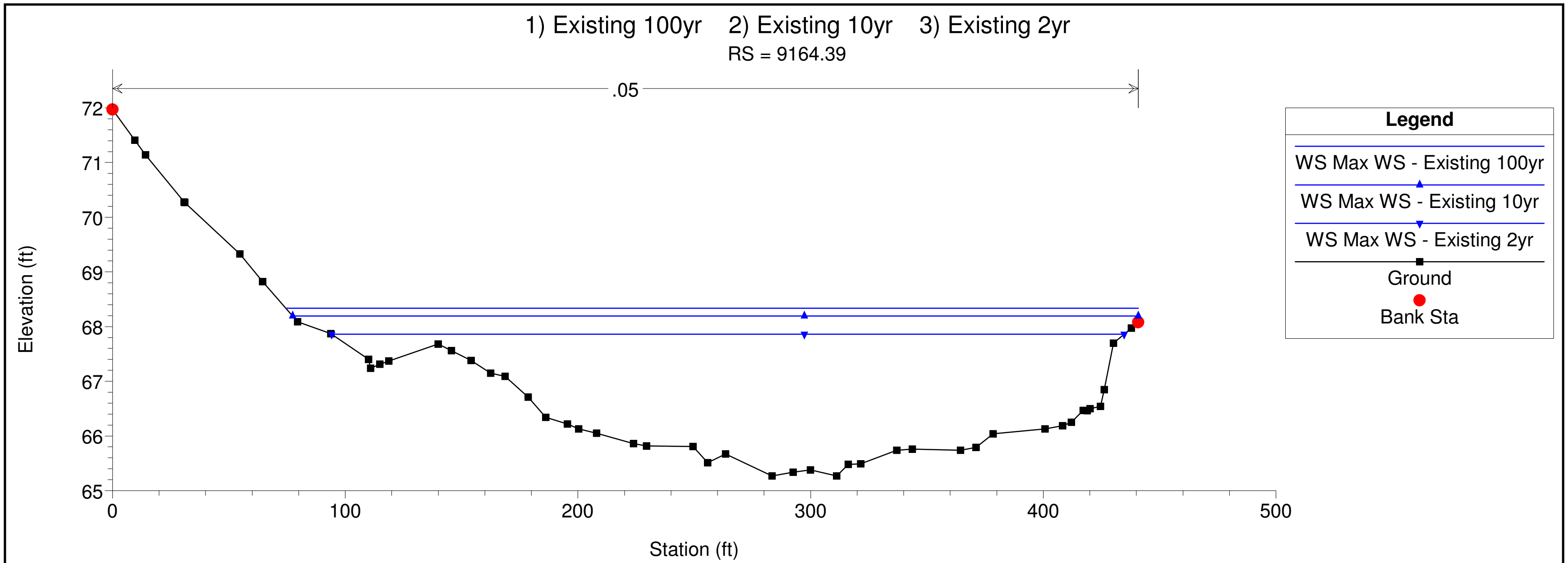
1) Existing 100yr 2) Existing 10yr 3) Existing 2yr
RS = 9809.39
.05
Elevation (ft)
Station (ft)
Legend
WS Max WS - Existing 100yr
WS Max WS - Existing 10yr
WS Max WS - Existing 2yr
Ground
Ineff
Bank Sta

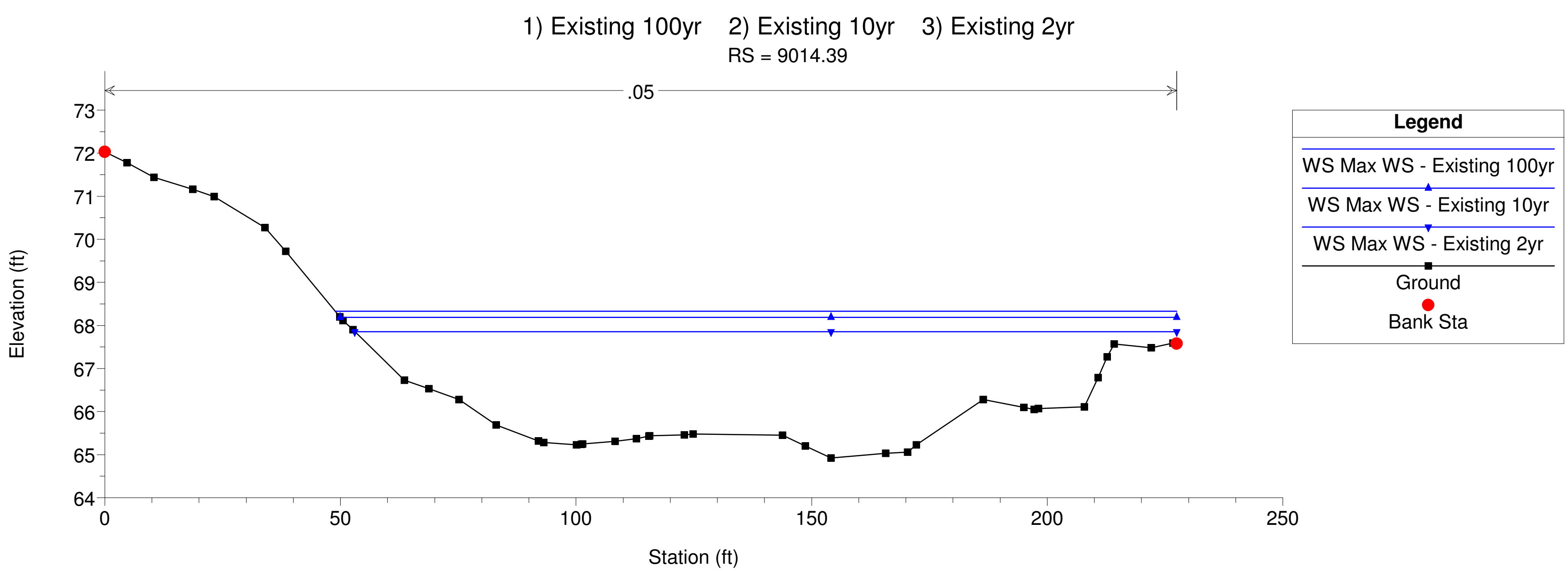

1) Existing 100yr 2) Existing 10yr 3) Existing 2yr
RS = 9739.39
.05
Elevation (ft)
Station (ft)
Legend
WS Max WS - Existing 100yr
WS Max WS - Existing 10yr
WS Max WS - Existing 2yr
Ground
Bank Sta

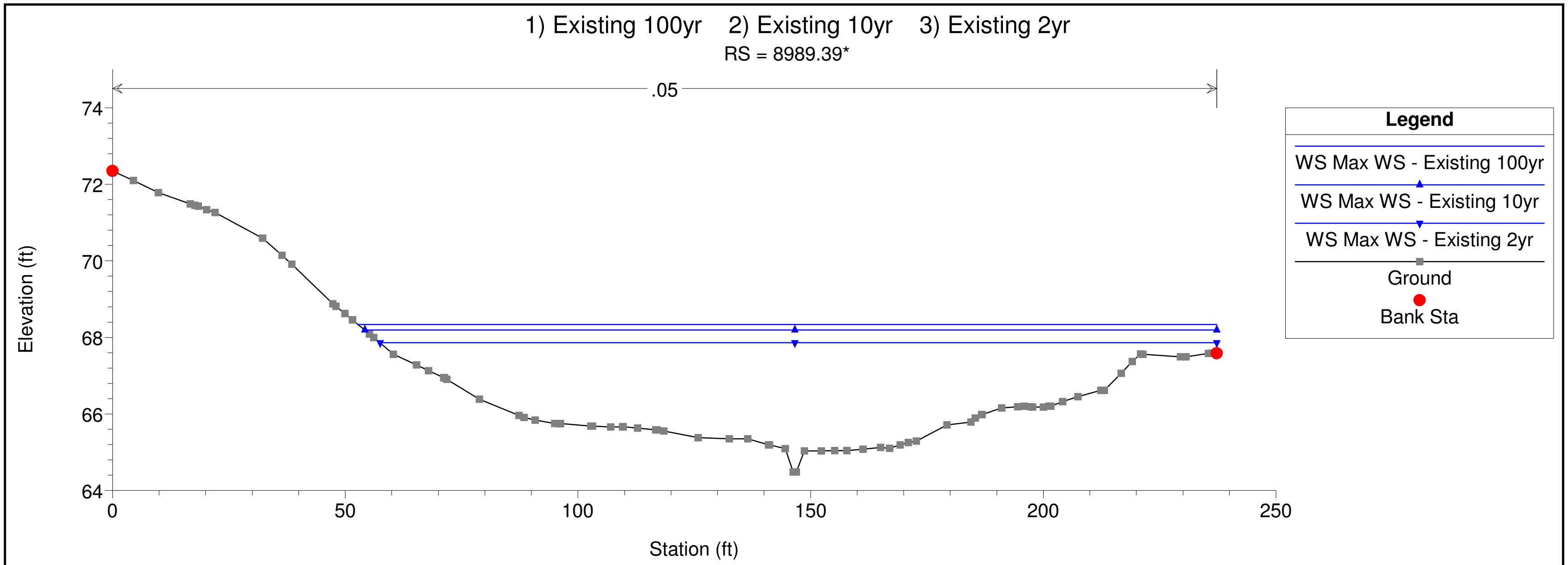

1) Existing 100yr 2) Existing 10yr 3) Existing 2yr
RS = 9589.39
.05
Elevation (ft)
Station (ft)
Legend
WS Max WS - Existing 100yr
WS Max WS - Existing 10yr
WS Max WS - Existing 2yr
Ground
Bank Sta

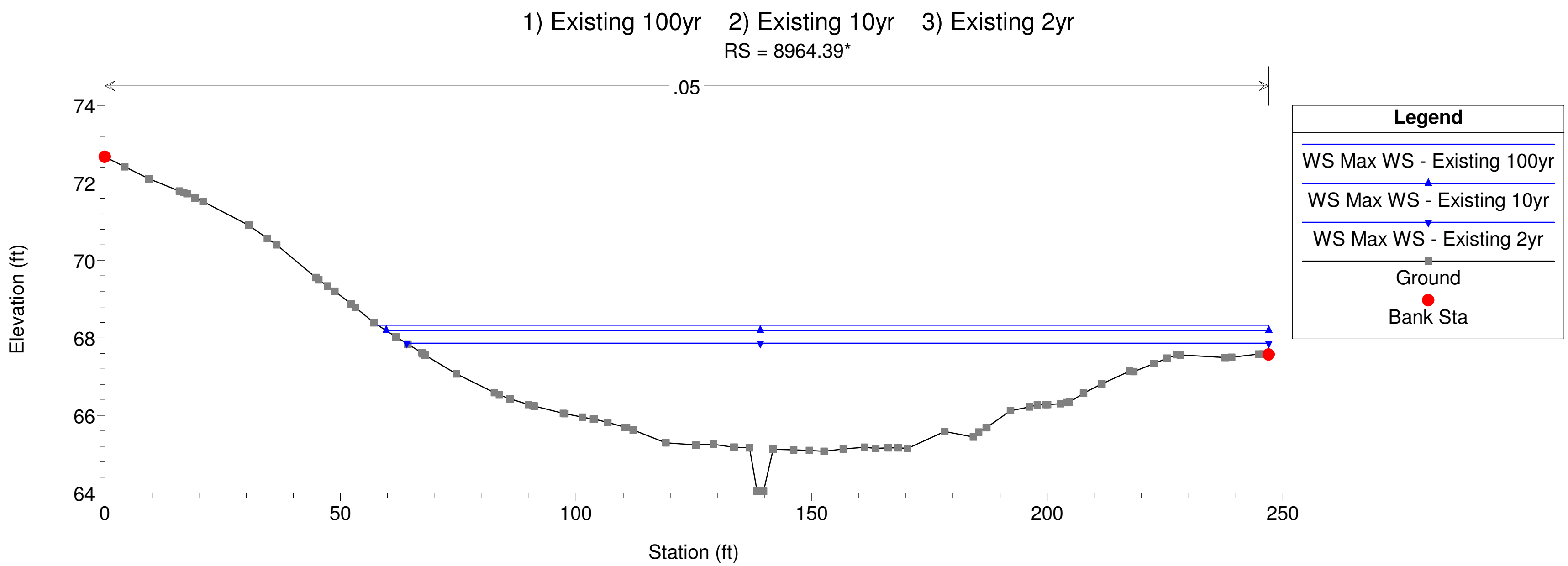

1) Existing 100yr 2) Existing 10yr 3) Existing 2yr
RS = 9439.39
.05
Elevation (ft)
74
72
70
68
66
64
0
100
200
300
400
500
Station (ft)
Legend
WS Max WS - Existing 100yr
WS Max WS - Existing 10yr
WS Max WS - Existing 2yr
Ground
Bank Sta

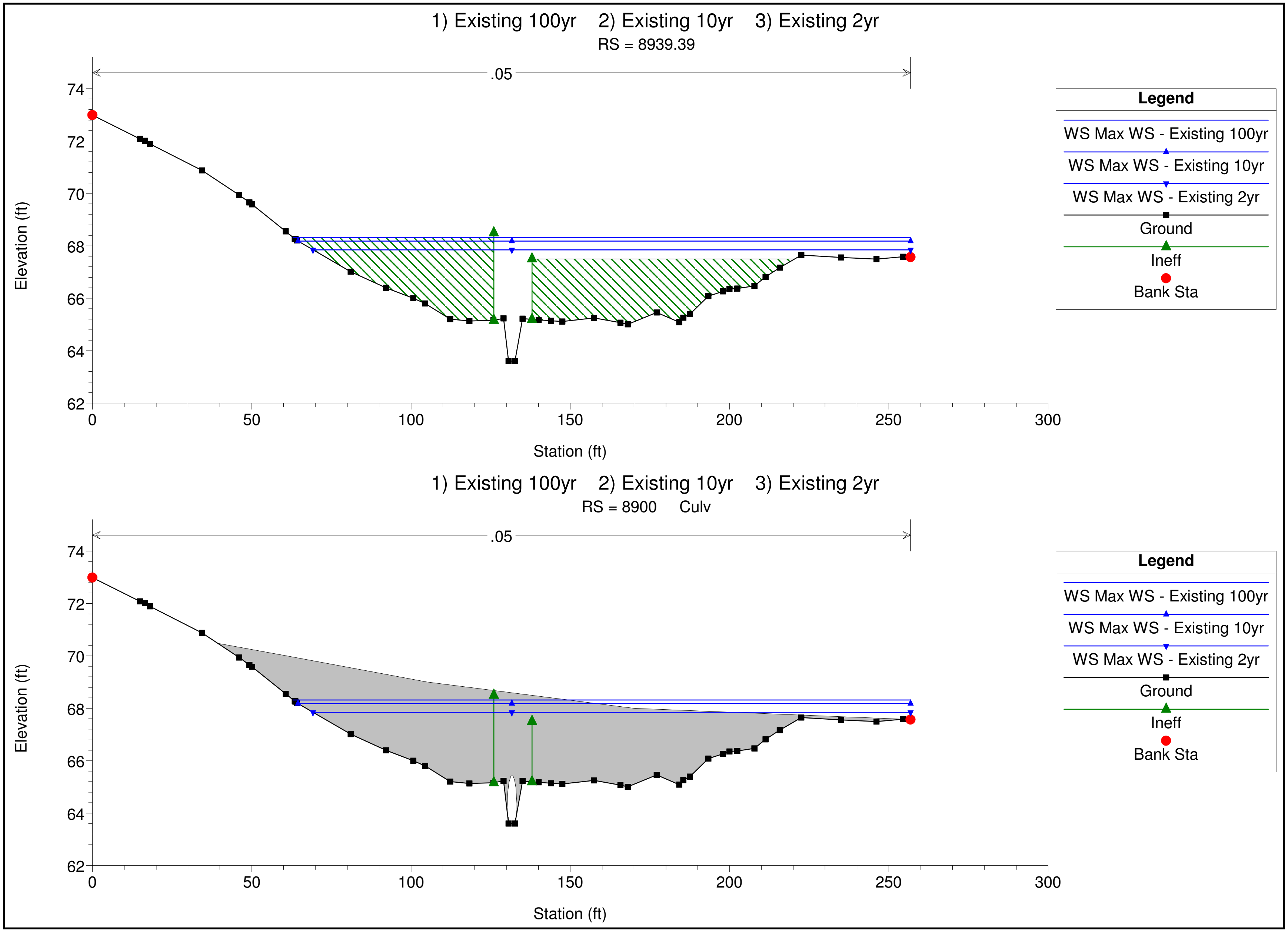

1) Existing 100yr 2) Existing 10yr 3) Existing 2yr
RS = 9264.39
.05
Elevation (ft)
73
72
71
70
69
68
67
66
65
0
100
200
300
400
500
Station (ft)
Legend
WS Max WS - Existing 100yr
WS Max WS - Existing 10yr
WS Max WS - Existing 2yr
Ground
Bank Sta

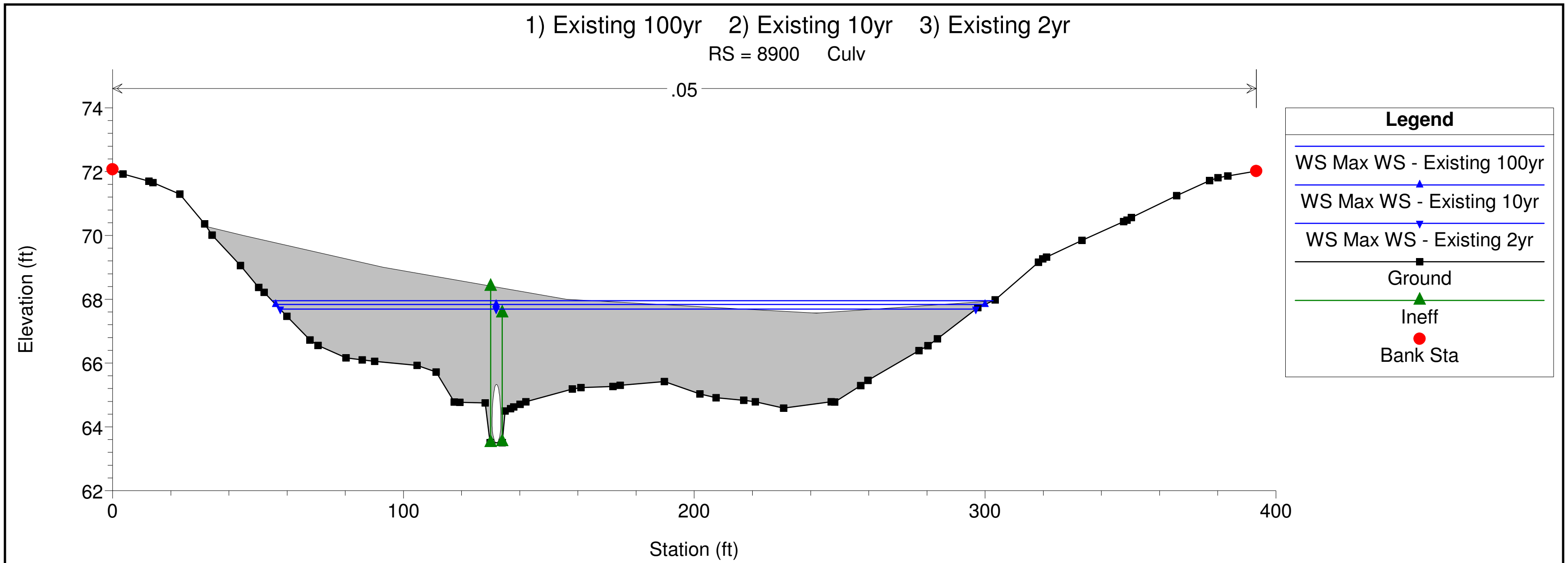

1) Existing 100yr 2) Existing 10yr 3) Existing 2yr
RS = 9164.39
.05
Elevation (ft)
Station (ft)
72
71
70
69
68
67
66
65
0
100
200
300
400
500
Legend
WS Max WS - Existing 100yr
WS Max WS - Existing 10yr
WS Max WS - Existing 2yr
Ground
Bank Sta


1) Existing 100yr 2) Existing 10yr 3) Existing 2yr
RS = 9014.39
.05
Elevation (ft)
Station (ft)
73
72
71
70
69
68
67
66
65
64
0
50
100
150
200
250
Legend
WS Max WS - Existing 100yr
WS Max WS - Existing 10yr
WS Max WS - Existing 2yr
Ground
Bank Sta

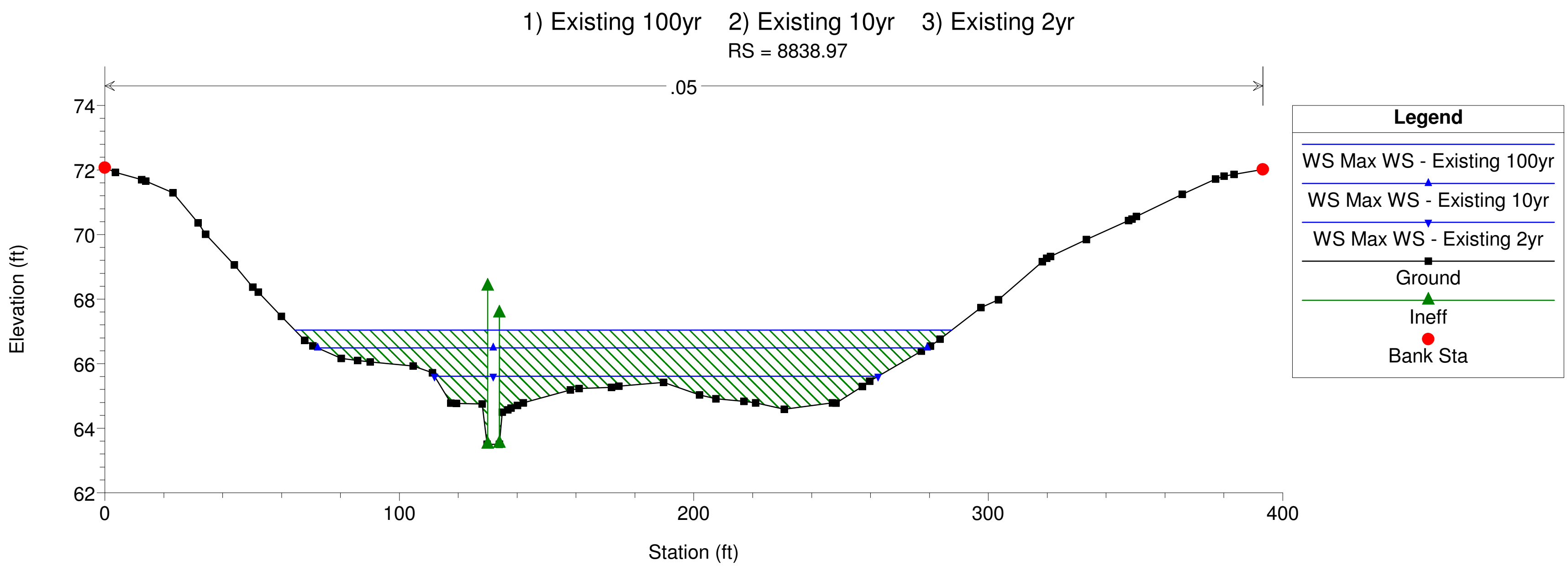

1) Existing 100yr 2) Existing 10yr 3) Existing 2yr
RS = 8989.39*
.05
Elevation (ft)
74
72
70
68
66
64
0
50
100
150
200
250
Station (ft)
Legend
WS Max WS - Existing 100yr
WS Max WS - Existing 10yr
WS Max WS - Existing 2yr
Ground
Bank Sta


1) Existing 100yr 2) Existing 10yr 3) Existing 2yr
RS = 8964.39*
.05
Elevation (ft)
74
72
70
68
66
64
0
50
100
150
200
250
Station (ft)
Legend
WS Max WS - Existing 100yr
WS Max WS - Existing 10yr
WS Max WS - Existing 2yr
Ground
Bank Sta

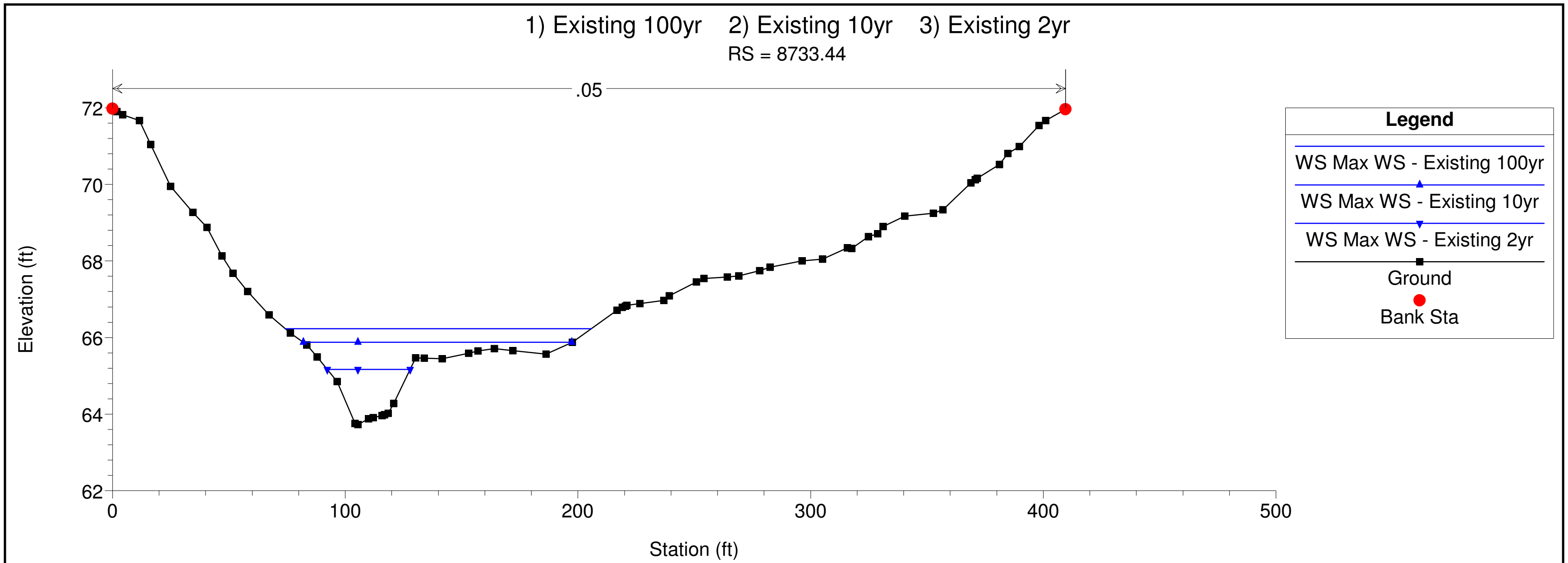

1) Existing 100yr 2) Existing 10yr 3) Existing 2yr
RS = 8939.39
.05
Elevation (ft)
Station (ft)
Legend
WS Max WS - Existing 100yr
WS Max WS - Existing 10yr
WS Max WS - Existing 2yr
Ground
Ineff
Bank Sta
1) Existing 100yr 2) Existing 10yr 3) Existing 2yr
RS = 8900 Culv
.05
Elevation (ft)
Station (ft)
Legend
WS Max WS - Existing 100yr
WS Max WS - Existing 10yr
WS Max WS - Existing 2yr
Ground
Ineff
Bank Sta

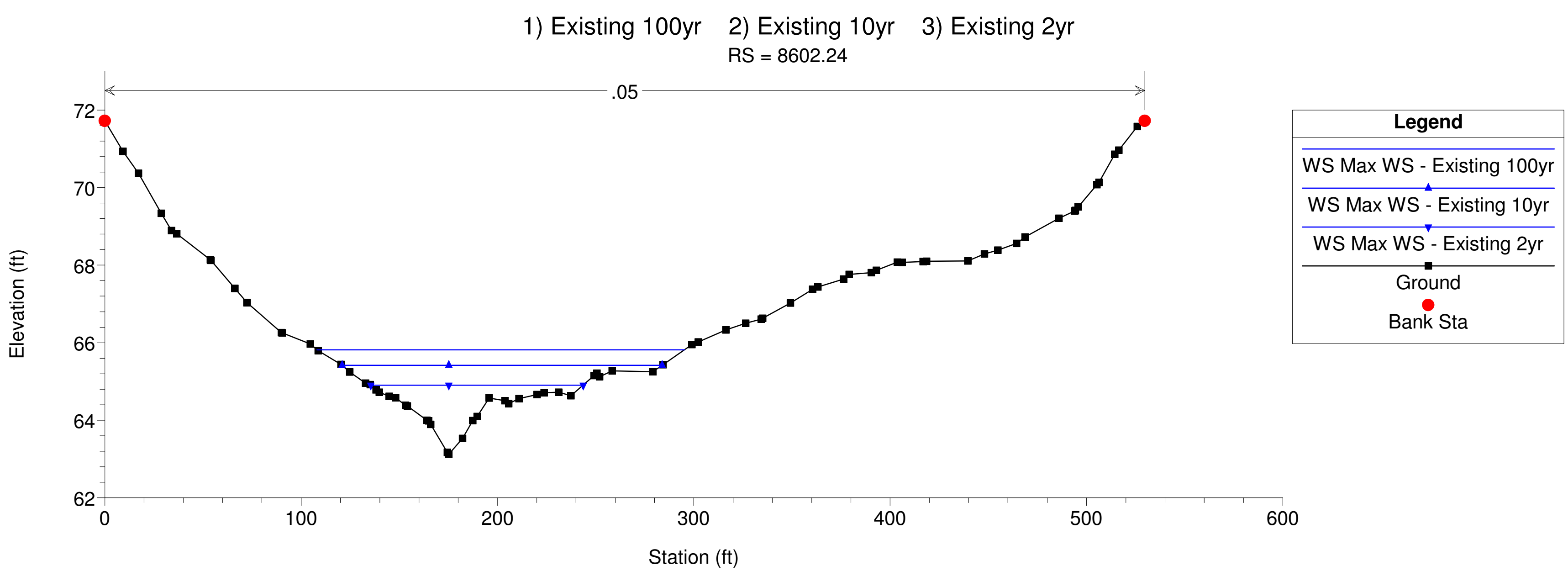


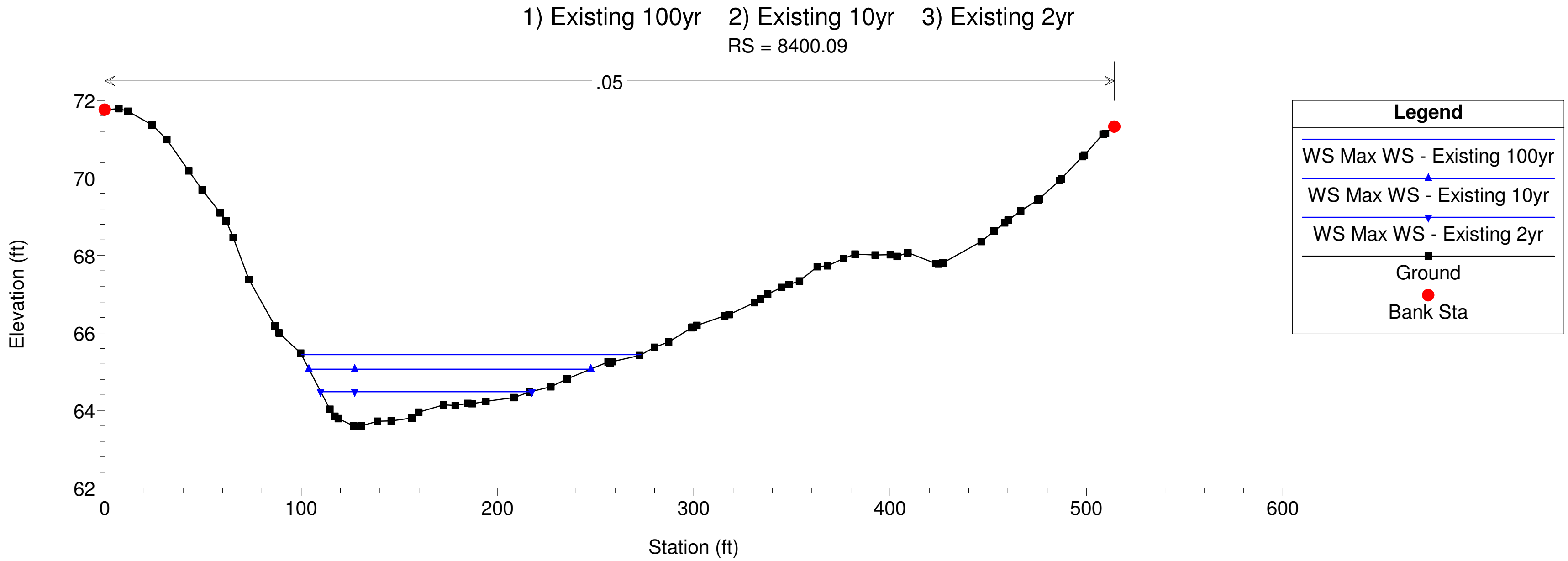
1) Existing 100yr 2) Existing 10yr 3) Existing 2yr
RS = 8900 Culv
.05
Elevation (ft)
Station (ft)
Legend
WS Max WS - Existing 100yr
WS Max WS - Existing 10yr
WS Max WS - Existing 2yr
Ground
Ineff
Bank Sta



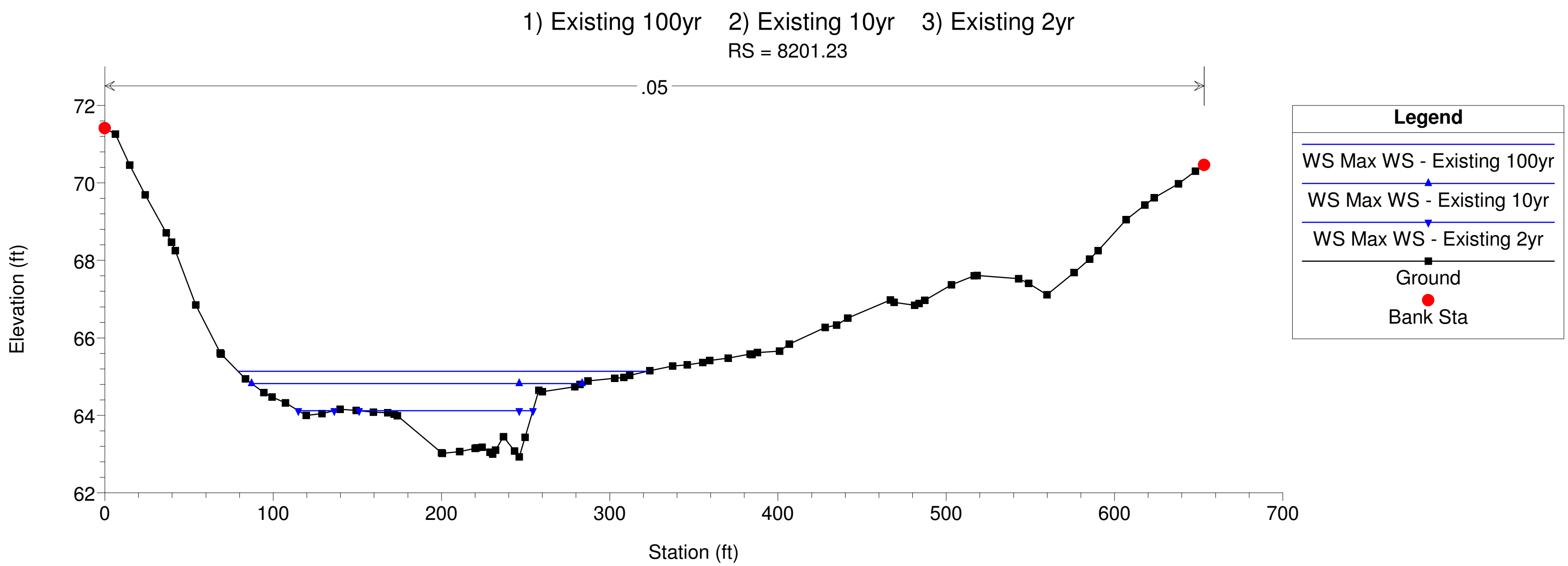
1) Existing 100yr 2) Existing 10yr 3) Existing 2yr
RS = 8838.97
.05
Elevation (ft)
Station (ft)
Legend
WS Max WS - Existing 100yr
WS Max WS - Existing 10yr
WS Max WS - Existing 2yr
Ground
Ineff
Bank Sta


1) Existing 100yr 2) Existing 10yr 3) Existing 2yr
RS = 8733.44
.05
Elevation (ft)
Station (ft)
72
70
68
66
64
62
0
100
200
300
400
500
Legend
WS Max WS - Existing 100yr
WS Max WS - Existing 10yr
WS Max WS - Existing 2yr
Ground
Bank Sta

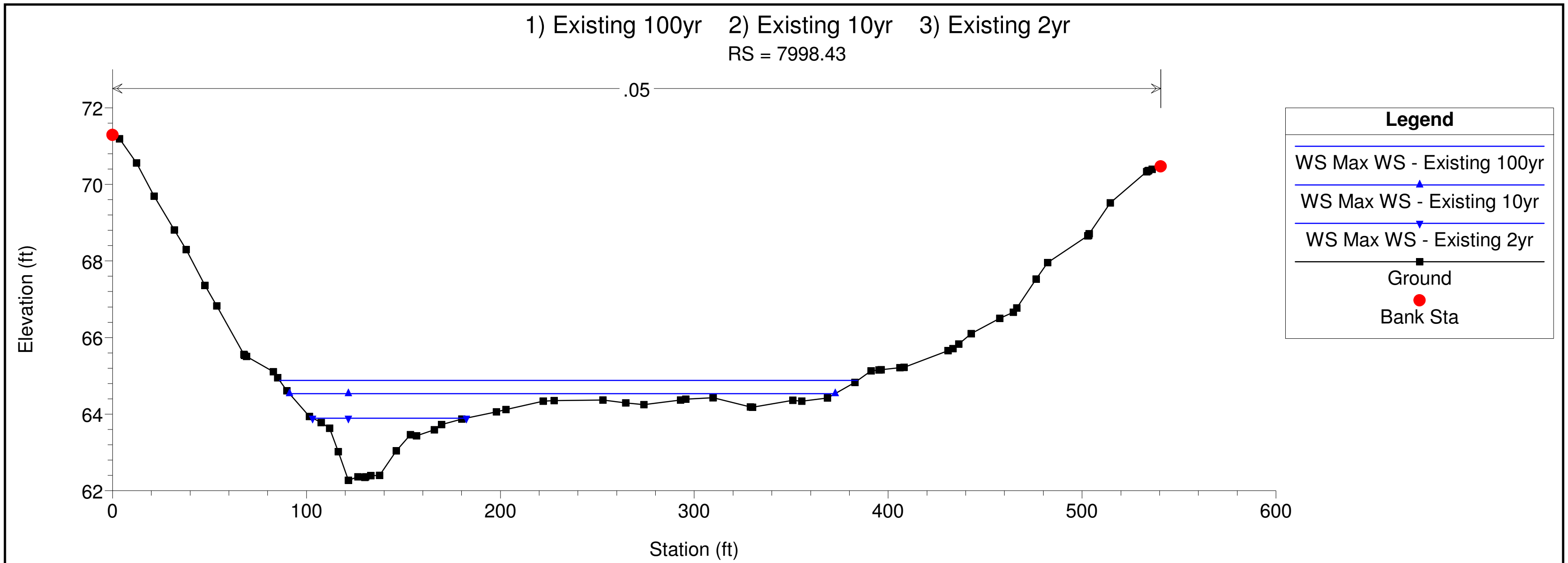

1) Existing 100yr 2) Existing 10yr 3) Existing 2yr
RS = 8602.24
.05
Elevation (ft)
Station (ft)
72
70
68
66
64
62
0
100
200
300
400
500
600
Legend
WS Max WS - Existing 100yr
WS Max WS - Existing 10yr
WS Max WS - Existing 2yr
Ground
Bank Sta



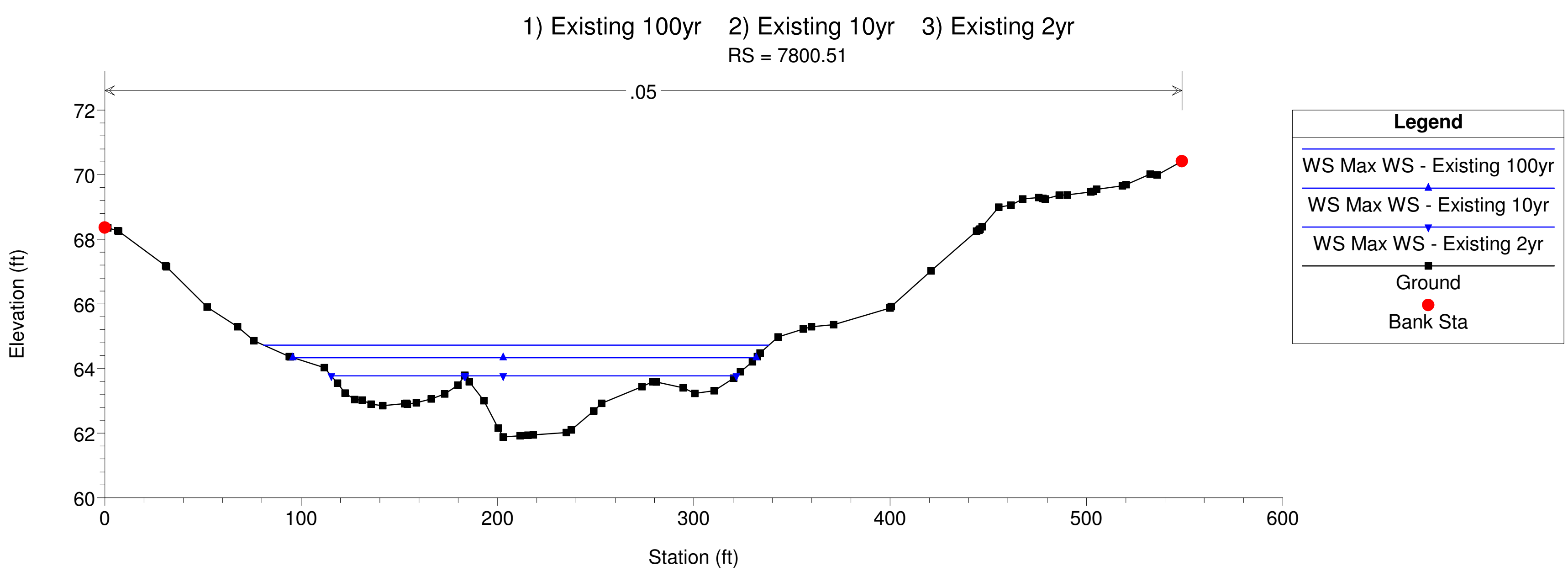
1) Existing 100yr 2) Existing 10yr 3) Existing 2yr
RS = 8400.09
.05
Elevation (ft)
72
70
68
66
64
62
0
100
200
300
400
500
600
Station (ft)
Legend
WS Max WS - Existing 100yr
WS Max WS - Existing 10yr
WS Max WS - Existing 2yr
Ground
Bank Sta



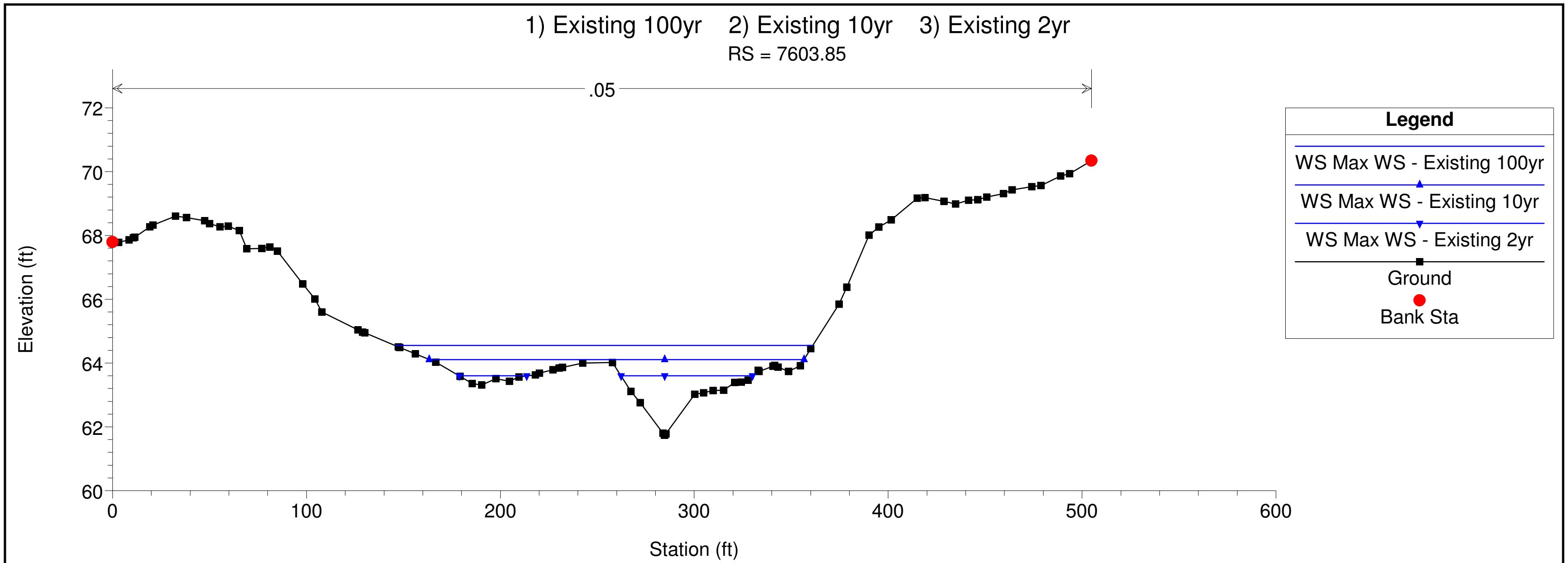
1) Existing 100yr 2) Existing 10yr 3) Existing 2yr
RS = 8201.23
.05
Elevation (ft)
72
70
68
66
64
62
0
100
200
300
400
500
600
700
Station (ft)
Legend
WS Max WS - Existing 100yr
WS Max WS - Existing 10yr
WS Max WS - Existing 2yr
Ground
Bank Sta



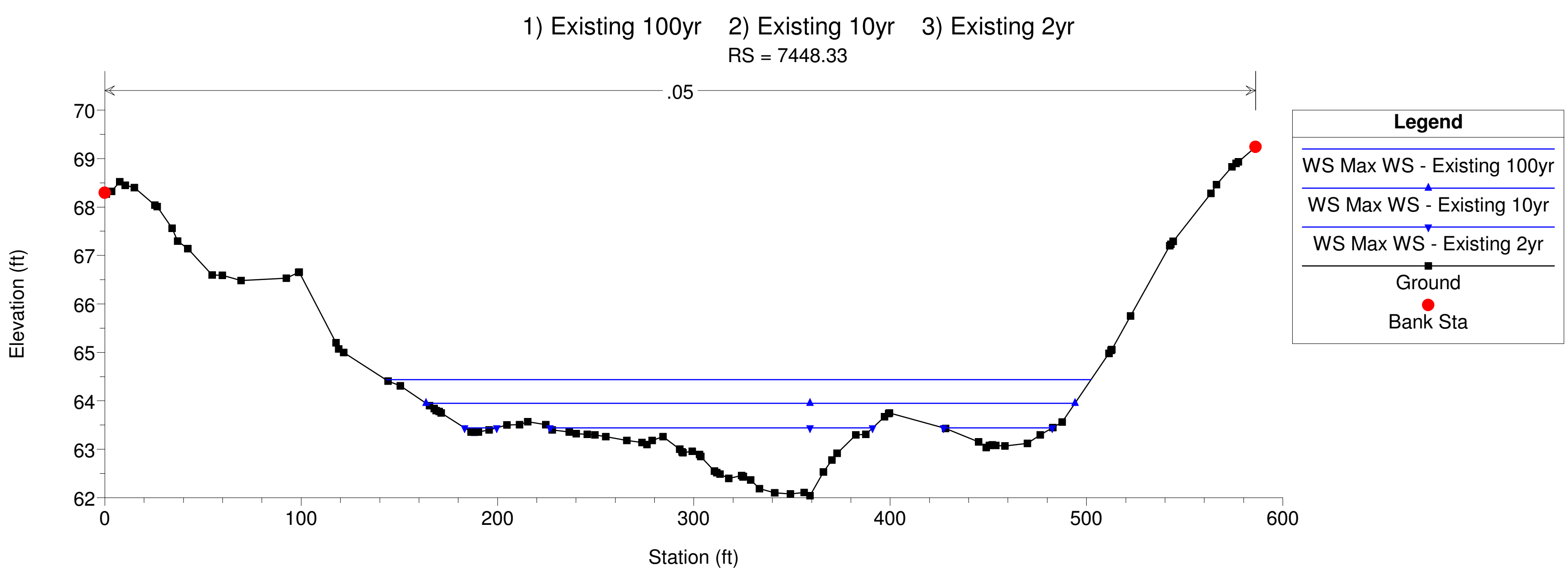
1) Existing 100yr 2) Existing 10yr 3) Existing 2yr
RS = 7998.43
.05
Elevation (ft)
Station (ft)
72
70
68
66
64
62
0
100
200
300
400
500
600
Legend
WS Max WS - Existing 100yr
WS Max WS - Existing 10yr
WS Max WS - Existing 2yr
Ground
Bank Sta



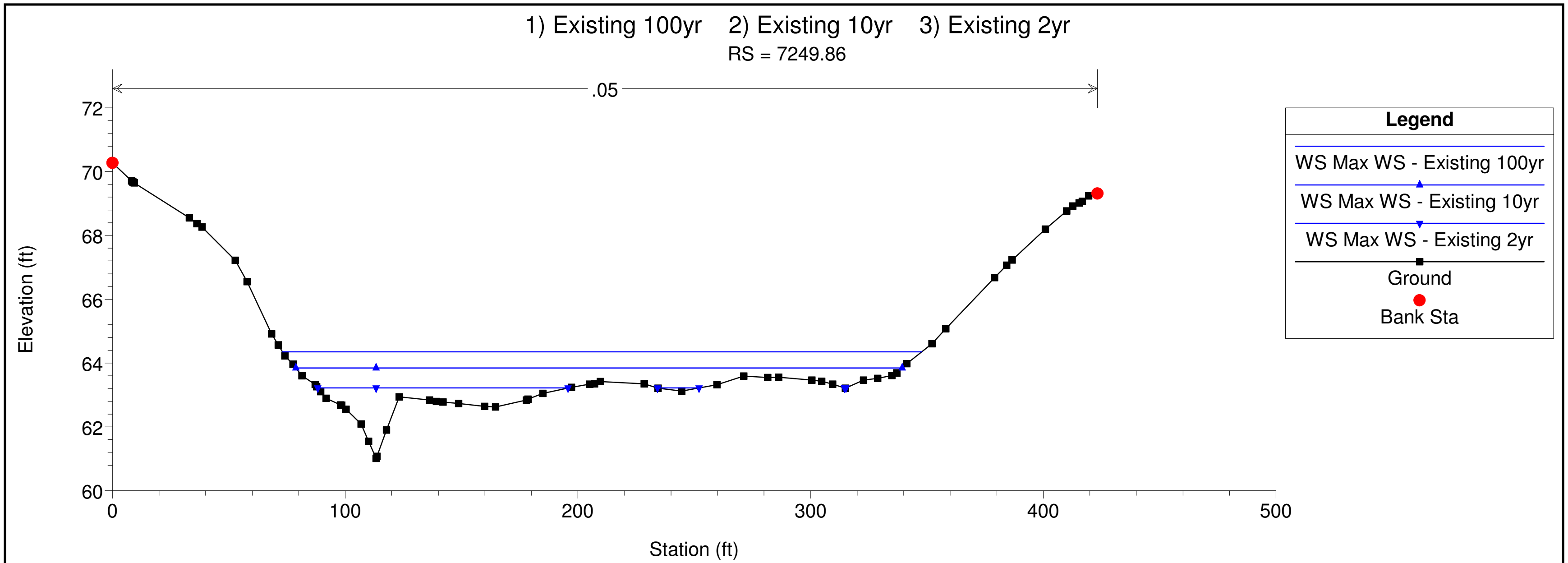
1) Existing 100yr 2) Existing 10yr 3) Existing 2yr
RS = 7800.51
.05
Elevation (ft)
Station (ft)
72
70
68
66
64
62
60
0
100
200
300
400
500
600
Legend
WS Max WS - Existing 100yr
WS Max WS - Existing 10yr
WS Max WS - Existing 2yr
Ground
Bank Sta



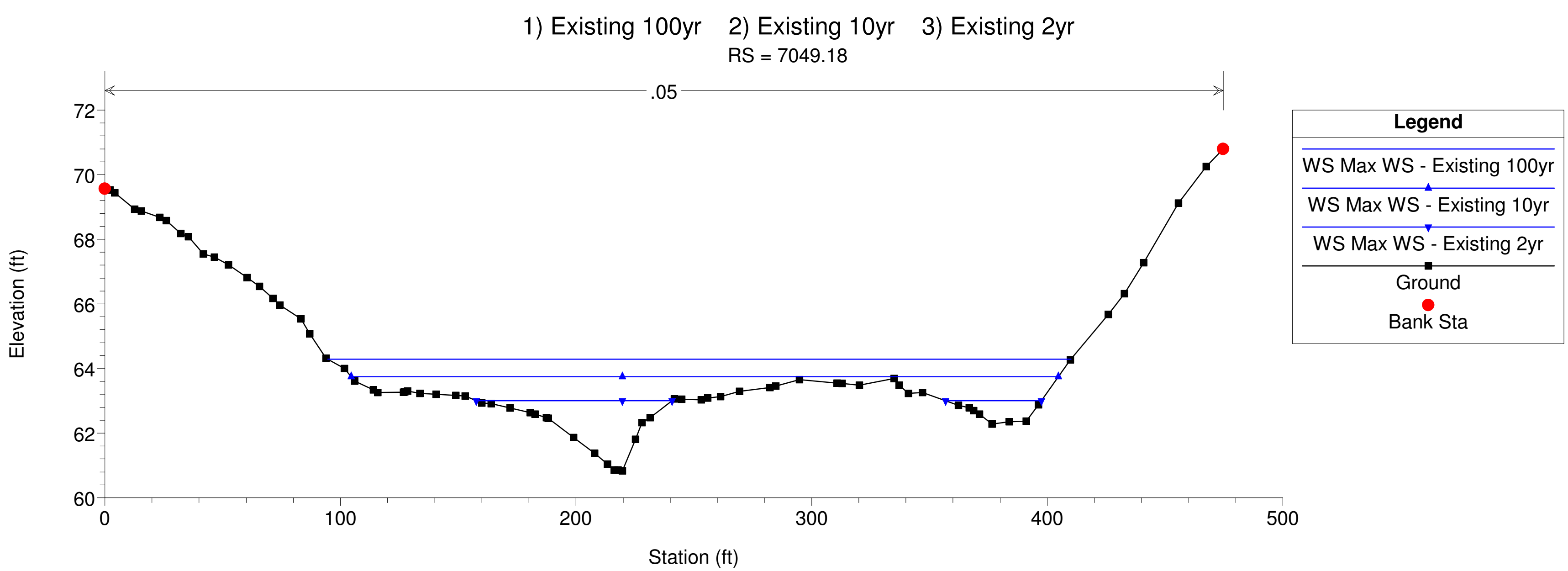
1) Existing 100yr 2) Existing 10yr 3) Existing 2yr
RS = 7603.85
.05
Elevation (ft)
Station (ft)
72
70
68
66
64
62
60
0
100
200
300
400
500
600
Legend
WS Max WS - Existing 100yr
WS Max WS - Existing 10yr
WS Max WS - Existing 2yr
Ground
Bank Sta



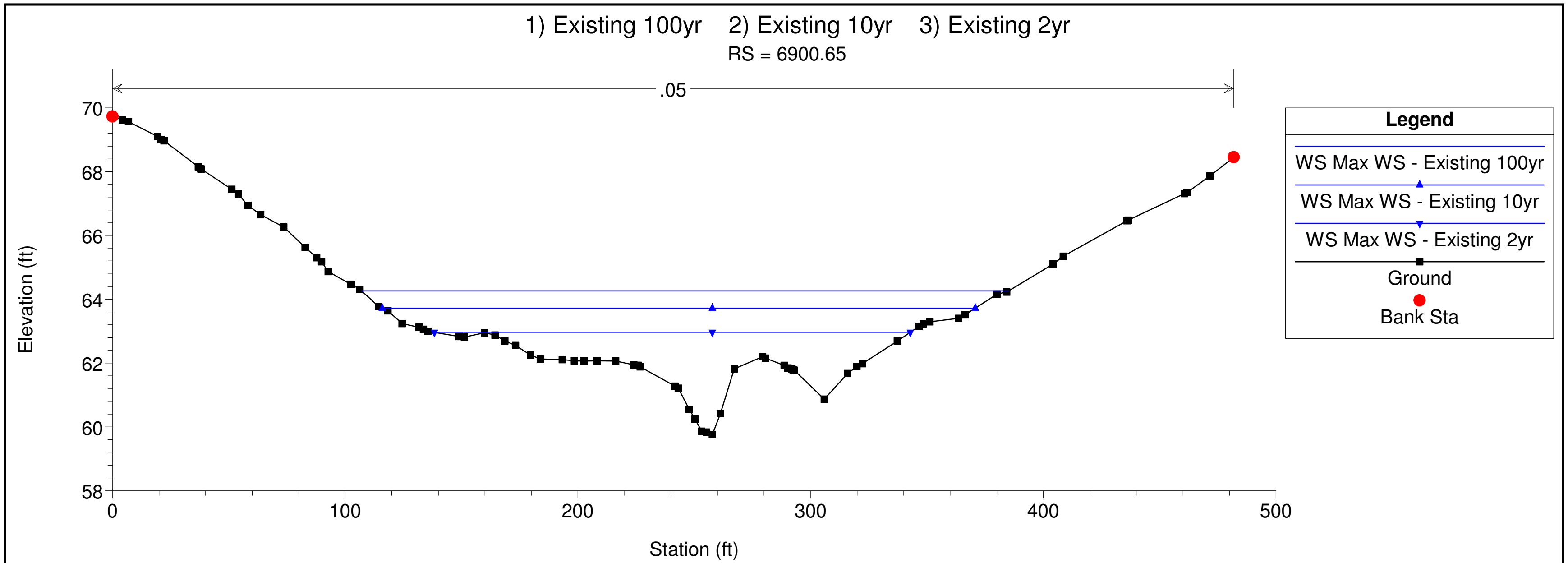
1) Existing 100yr 2) Existing 10yr 3) Existing 2yr
RS = 7448.33
.05
Elevation (ft)
Station (ft)
70
69
68
67
66
65
64
63
62
0
100
200
300
400
500
600
Legend
WS Max WS - Existing 100yr
WS Max WS - Existing 10yr
WS Max WS - Existing 2yr
Ground
Bank Sta

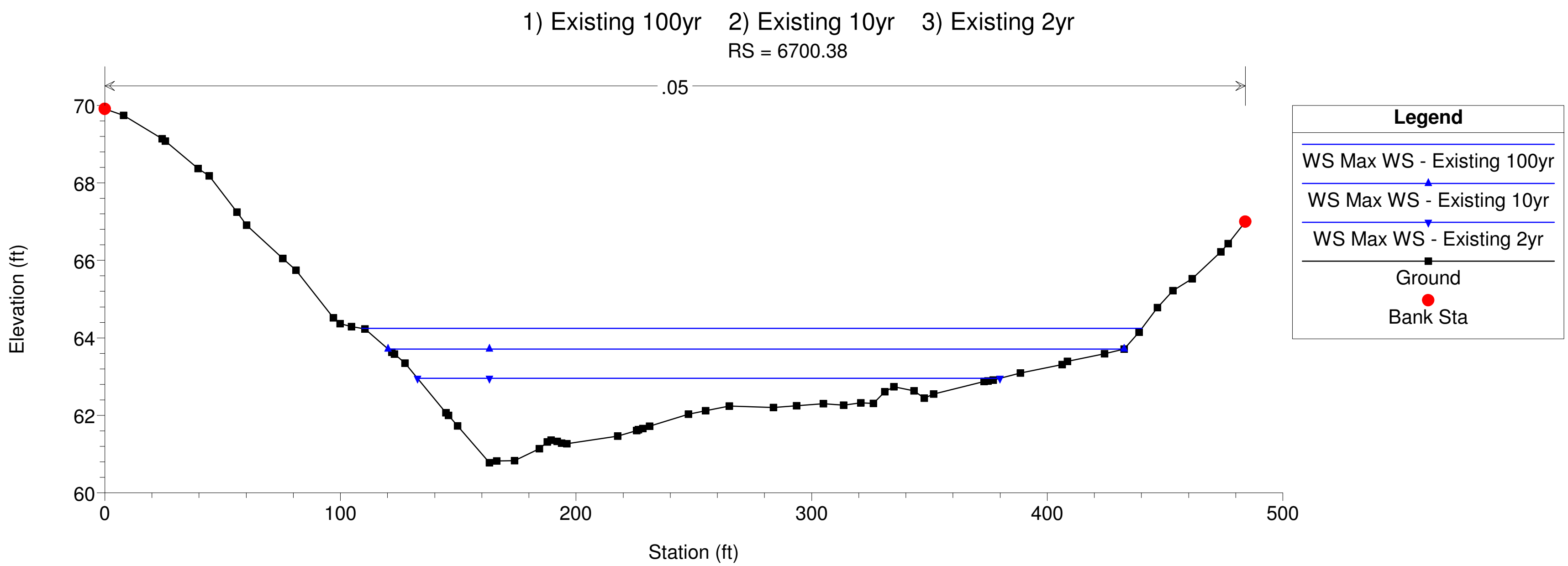


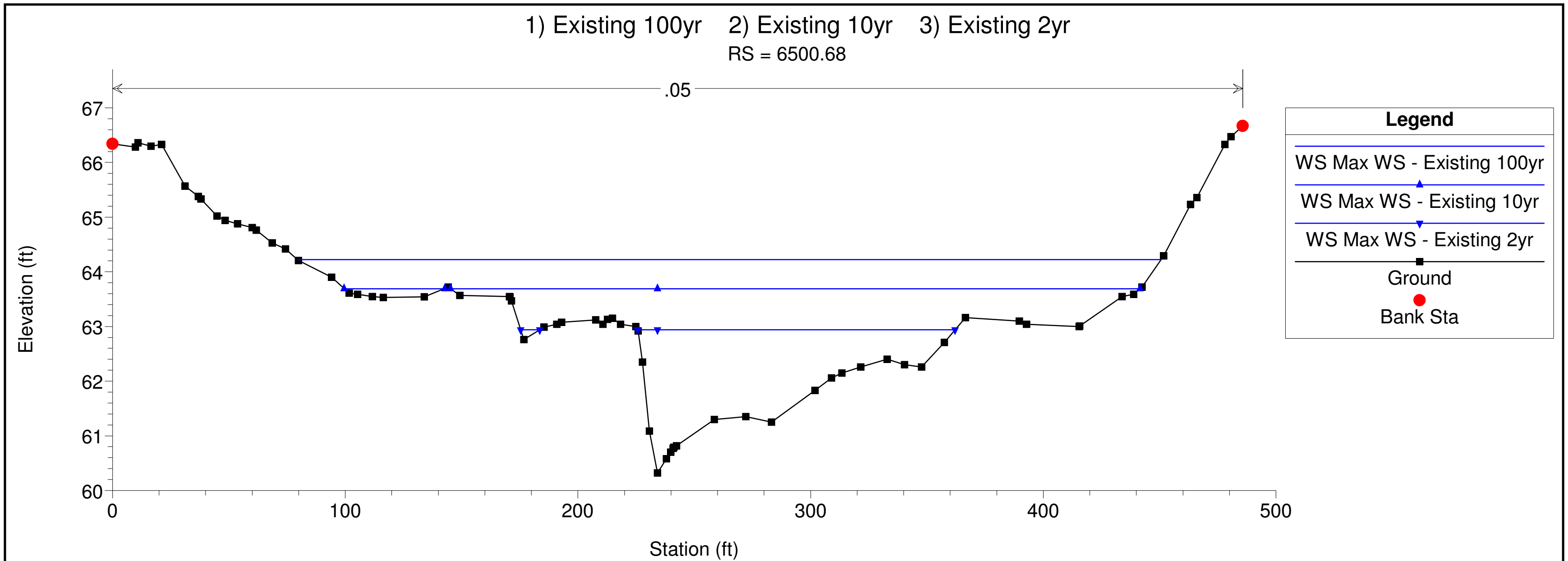
1) Existing 100yr 2) Existing 10yr 3) Existing 2yr
RS = 7249.86
.05
Elevation (ft)
72
70
68
66
64
62
60
0
100
200
300
400
500
Station (ft)
Legend
WS Max WS - Existing 100yr
WS Max WS - Existing 10yr
WS Max WS - Existing 2yr
Ground
Bank Sta

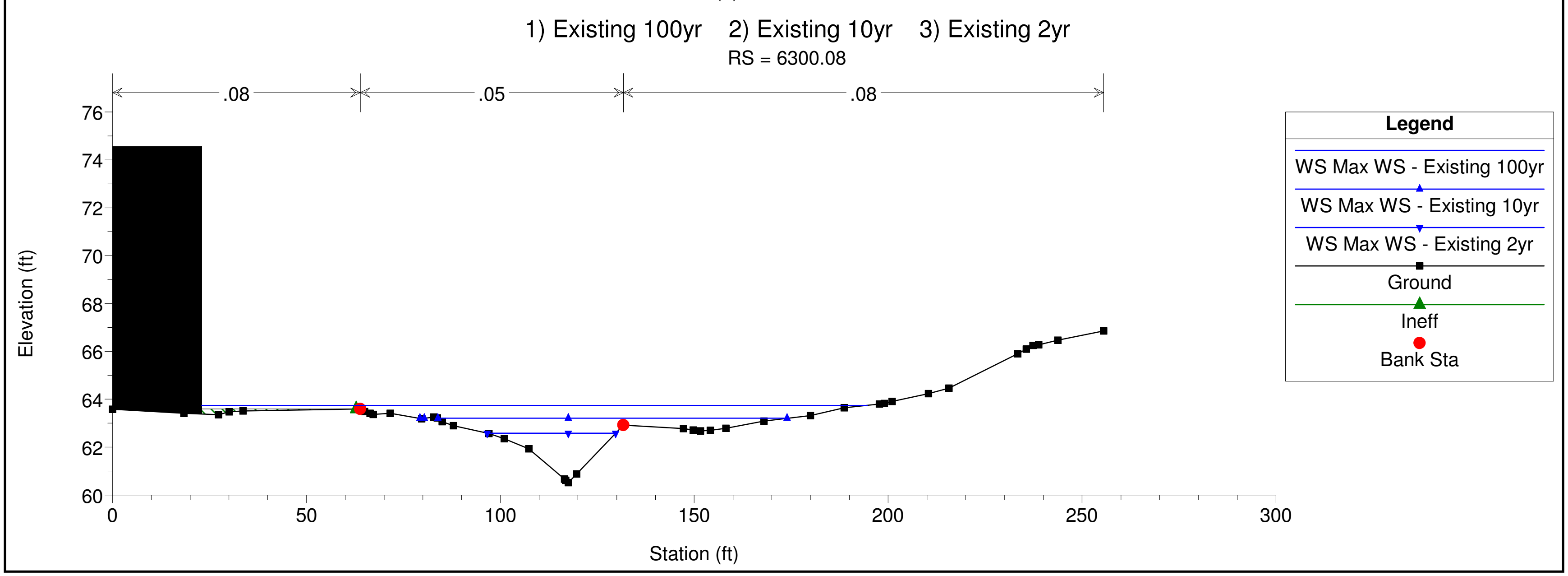


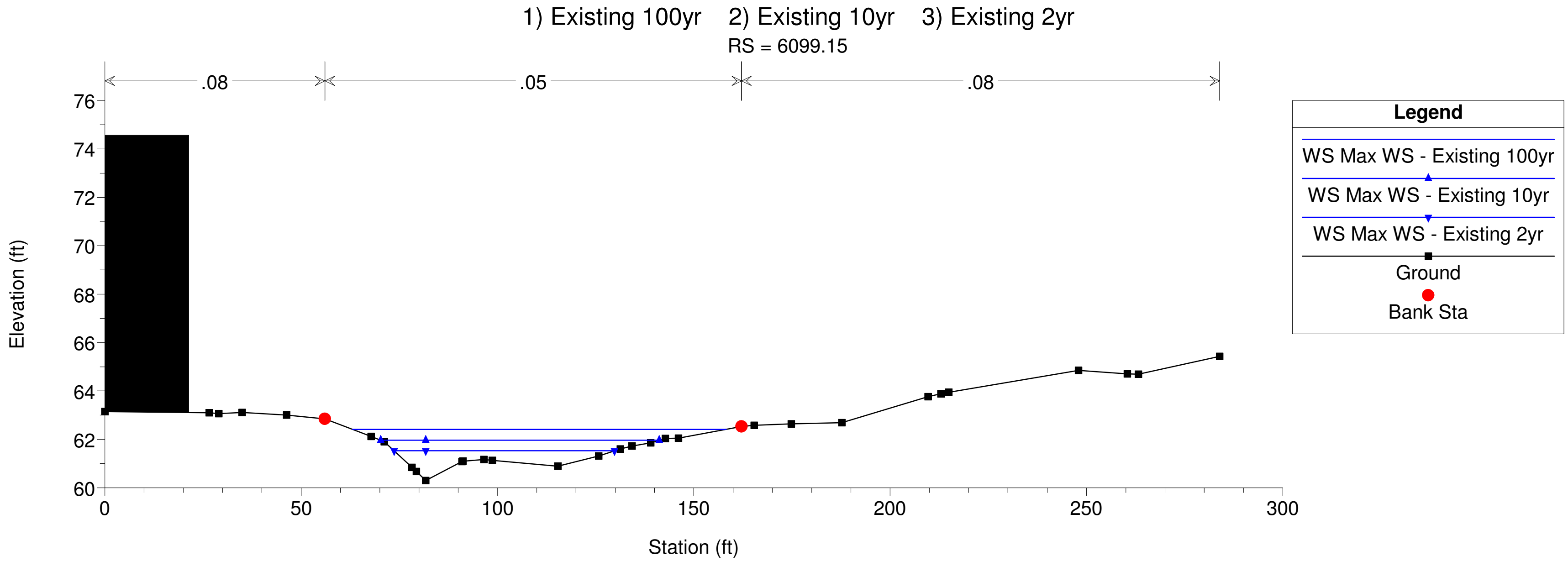
1) Existing 100yr 2) Existing 10yr 3) Existing 2yr
RS = 7049.18
.05
Elevation (ft)
72
70
68
66
64
62
60
0
100
200
300
400
500
Station (ft)
Legend
WS Max WS - Existing 100yr
WS Max WS - Existing 10yr
WS Max WS - Existing 2yr
Ground
Bank Sta

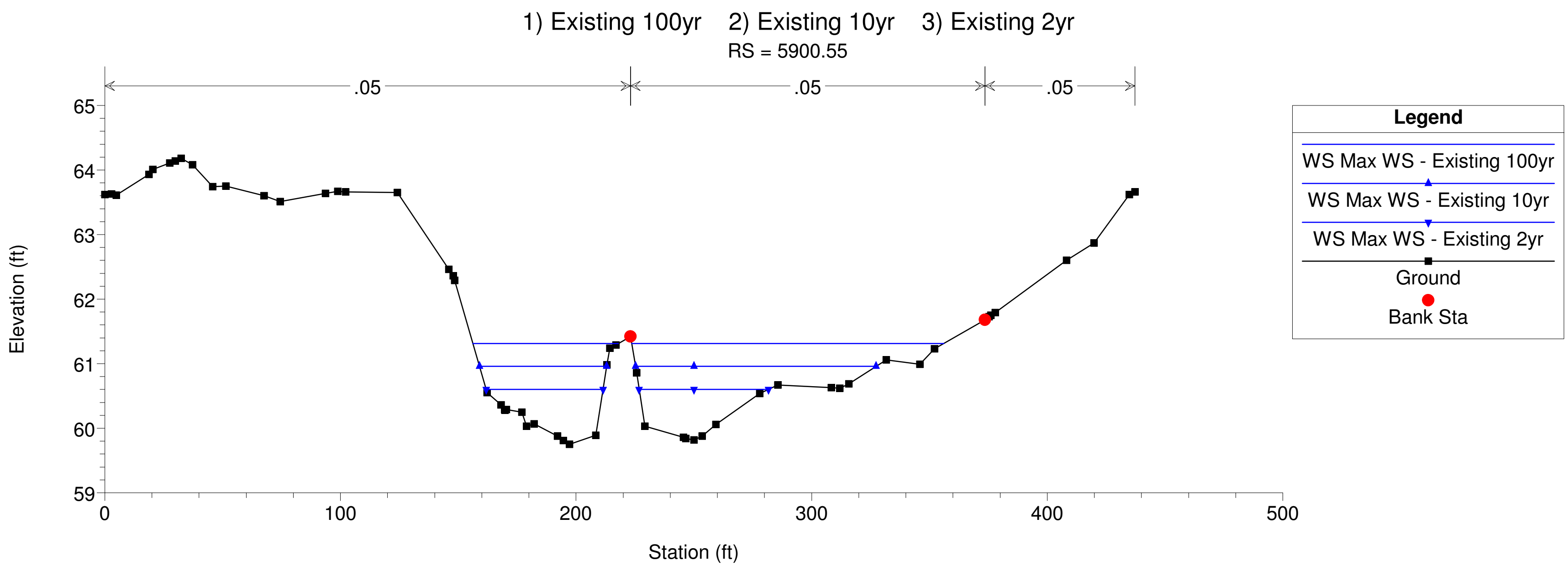

1) Existing 100yr 2) Existing 10yr 3) Existing 2yr
RS = 6900.65
.05
Elevation (ft)
Station (ft)
Legend
WS Max WS - Existing 100yr
WS Max WS - Existing 10yr
WS Max WS - Existing 2yr
Ground
Bank Sta

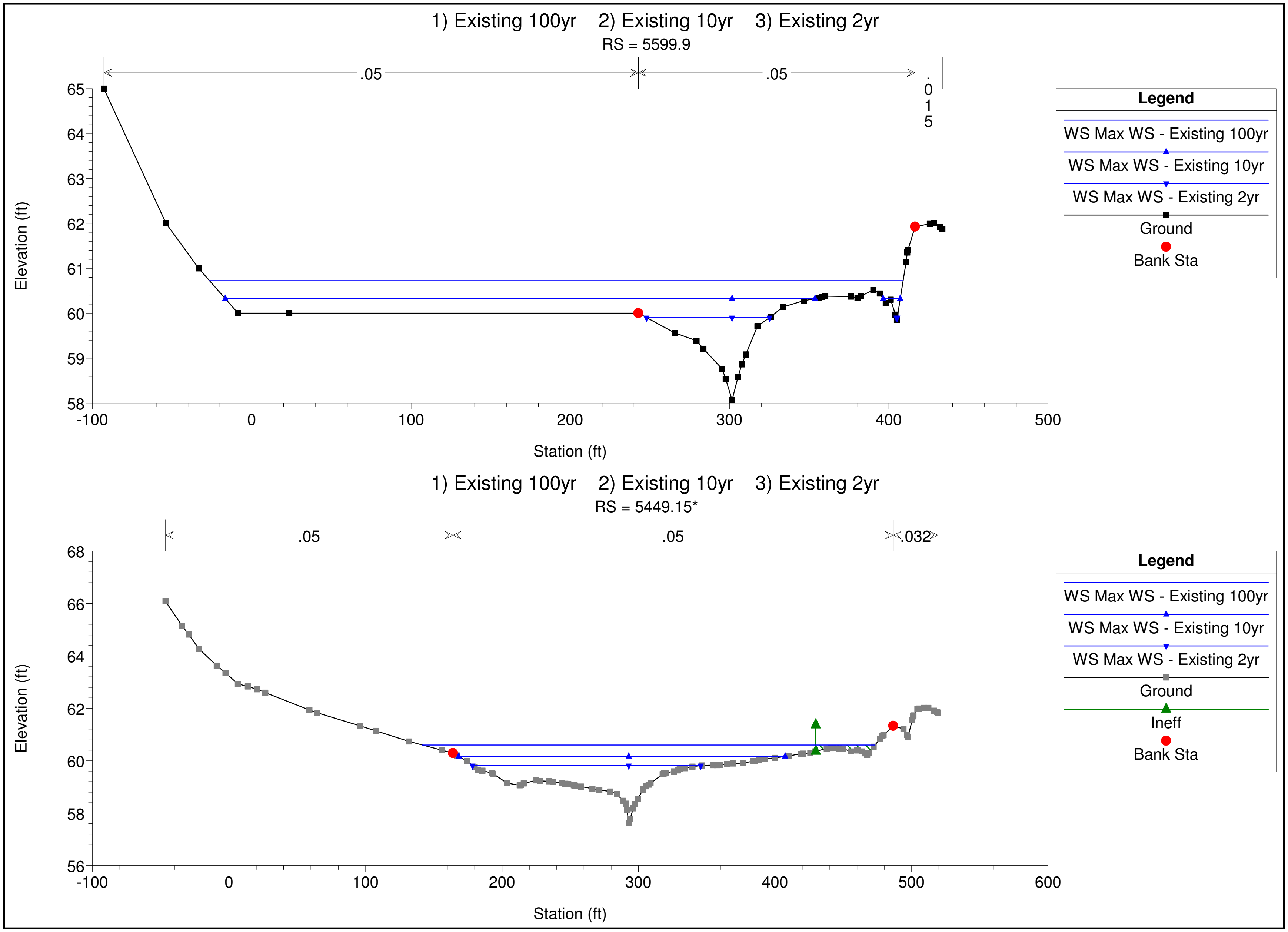

1) Existing 100yr 2) Existing 10yr 3) Existing 2yr
RS = 6700.38
.05
Elevation (ft)
Station (ft)
Legend
WS Max WS - Existing 100yr
WS Max WS - Existing 10yr
WS Max WS - Existing 2yr
Ground
Bank Sta


1) Existing 100yr 2) Existing 10yr 3) Existing 2yr
RS = 6500.68
.05
Elevation (ft)
Station (ft)
67
66
65
64
63
62
61
60
0
100
200
300
400
500
Legend
WS Max WS - Existing 100yr
WS Max WS - Existing 10yr
WS Max WS - Existing 2yr
Ground
Bank Sta

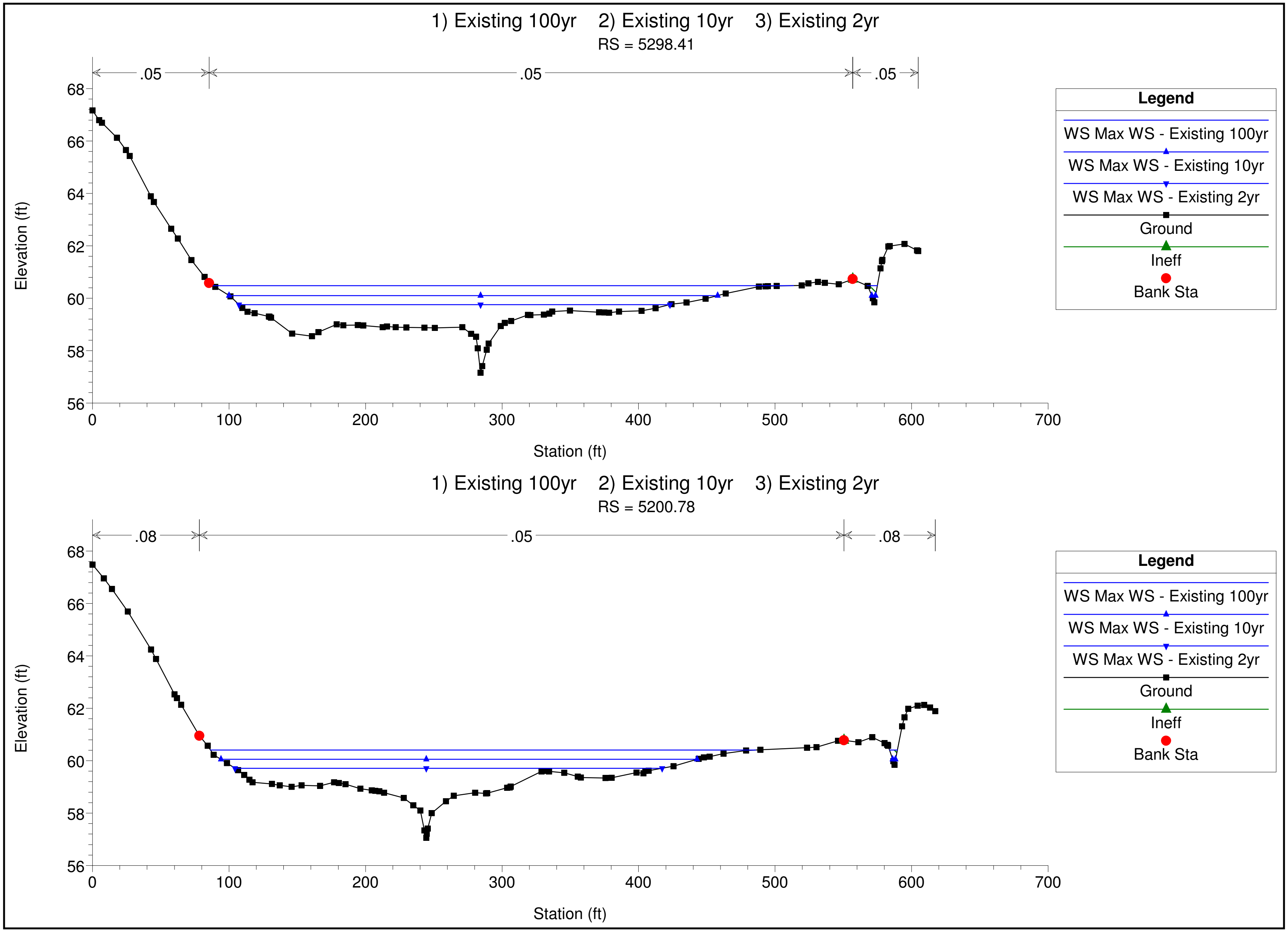

1) Existing 100yr 2) Existing 10yr 3) Existing 2yr
RS = 6300.08
.08
.05
.08
Elevation (ft)
Station (ft)
76
74
72
70
68
66
64
62
60
0
50
100
150
200
250
300
Legend
WS Max WS - Existing 100yr
WS Max WS - Existing 10yr
WS Max WS - Existing 2yr
Ground
Ineff
Bank Sta

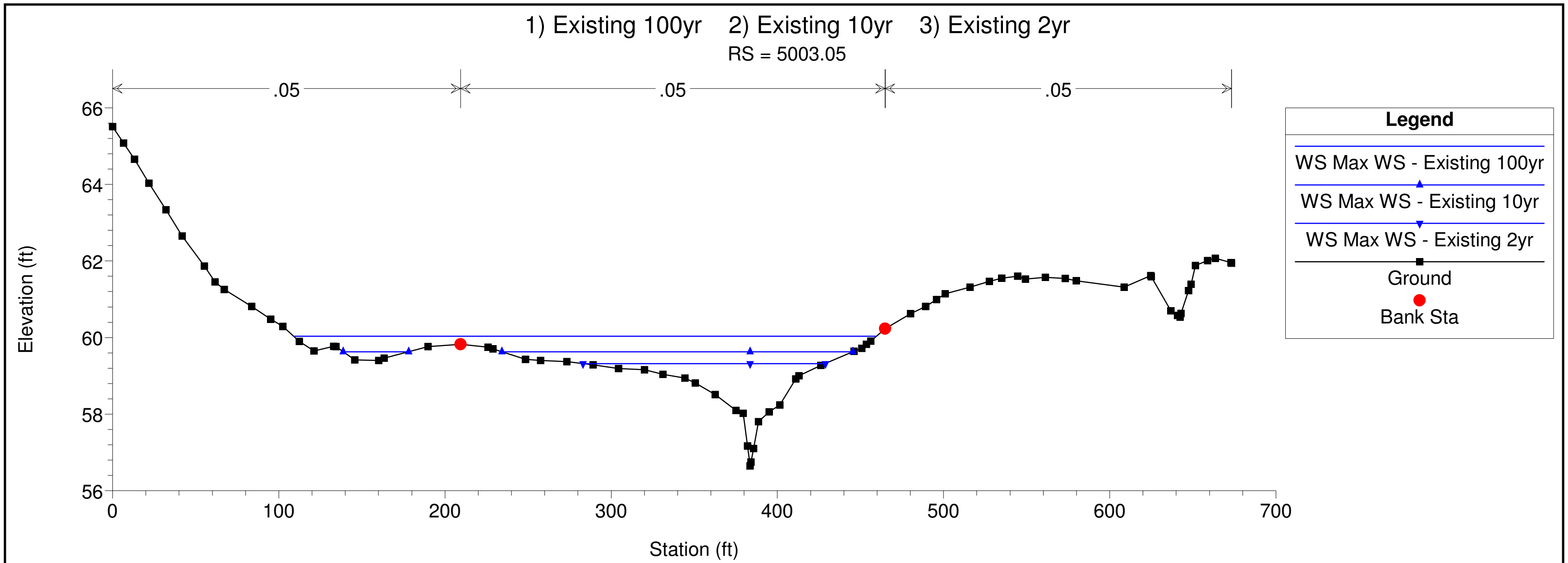

1) Existing 100yr 2) Existing 10yr 3) Existing 2yr
RS = 6099.15
.08
.05
.08
Elevation (ft)
Station (ft)
Legend
WS Max WS - Existing 100yr
WS Max WS - Existing 10yr
WS Max WS - Existing 2yr
Ground
Bank Sta

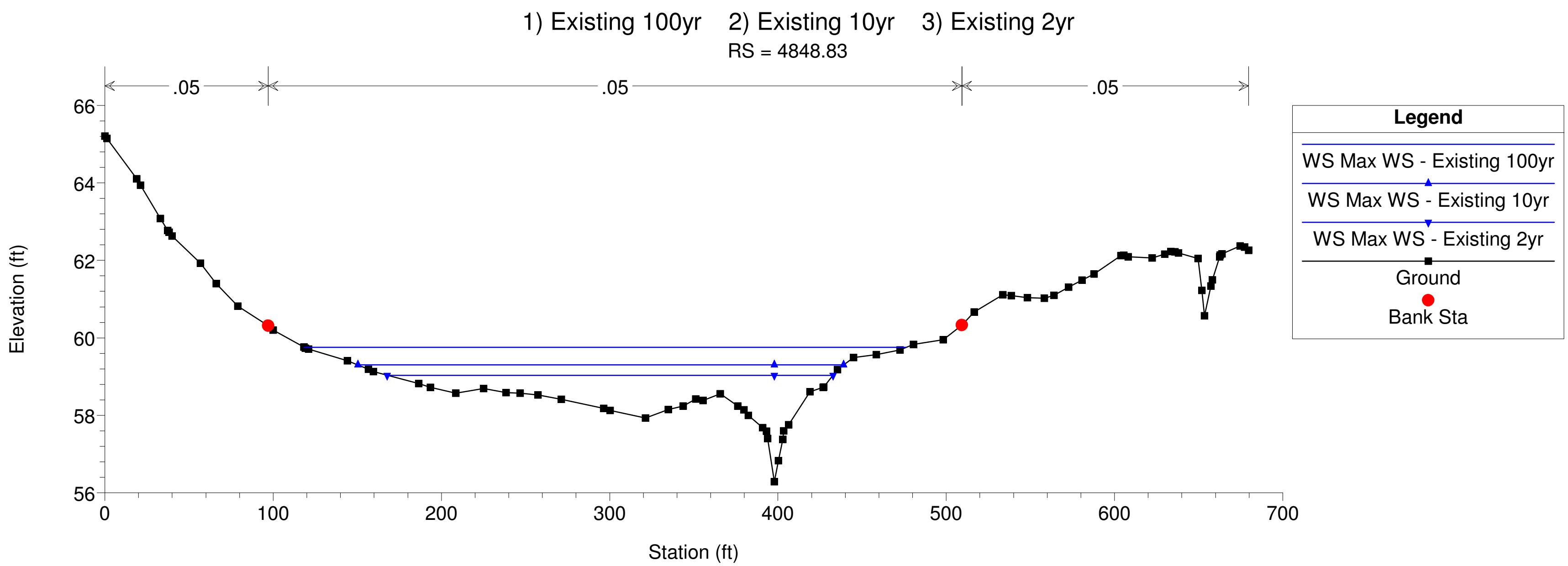

1) Existing 100yr 2) Existing 10yr 3) Existing 2yr
RS = 5900.55
.05
.05
.05
Elevation (ft)
Station (ft)
Legend
WS Max WS - Existing 100yr
WS Max WS - Existing 10yr
WS Max WS - Existing 2yr
Ground
Bank Sta

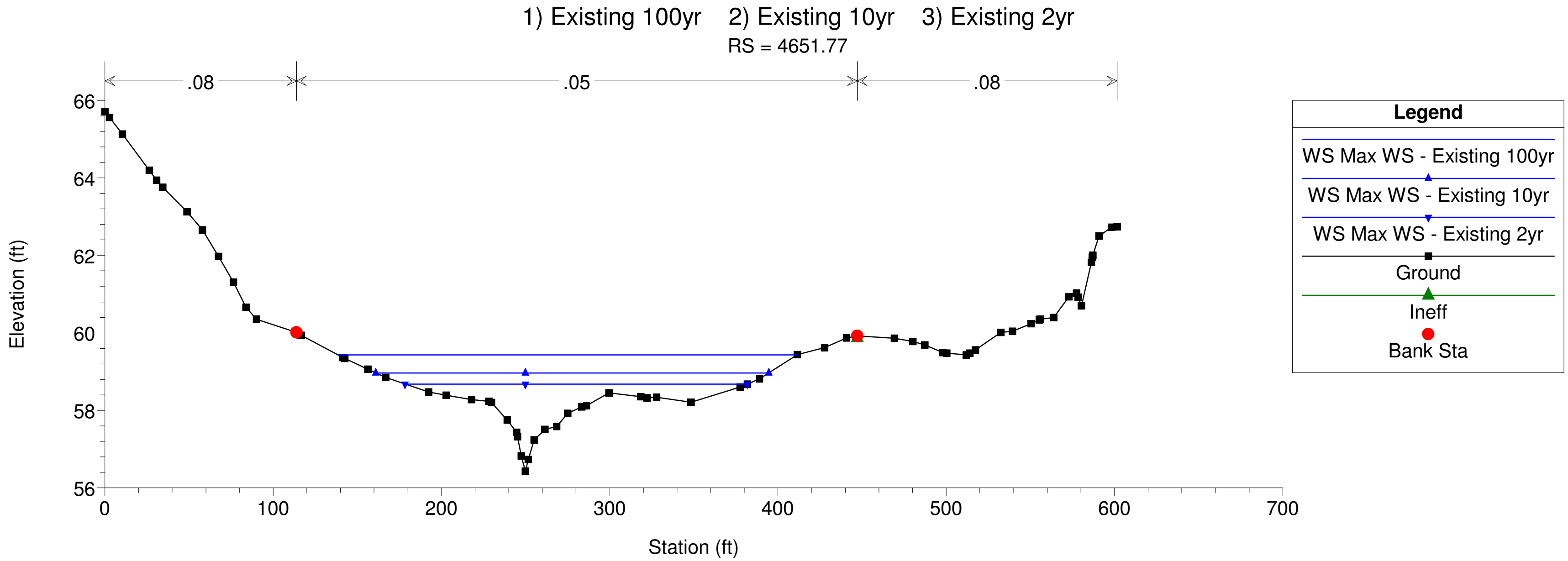


1) Existing 100yr 2) Existing 10yr 3) Existing 2yr
RS = 5599.9
.05
.05
.015
Legend
WS Max WS - Existing 100yr
WS Max WS - Existing 10yr
WS Max WS - Existing 2yr
Ground
Bank Sta
Elevation (ft)
Station (ft)
1) Existing 100yr 2) Existing 10yr 3) Existing 2yr
RS = 5449.15*
.05
.05
.032
Legend
WS Max WS - Existing 100yr
WS Max WS - Existing 10yr
WS Max WS - Existing 2yr
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)

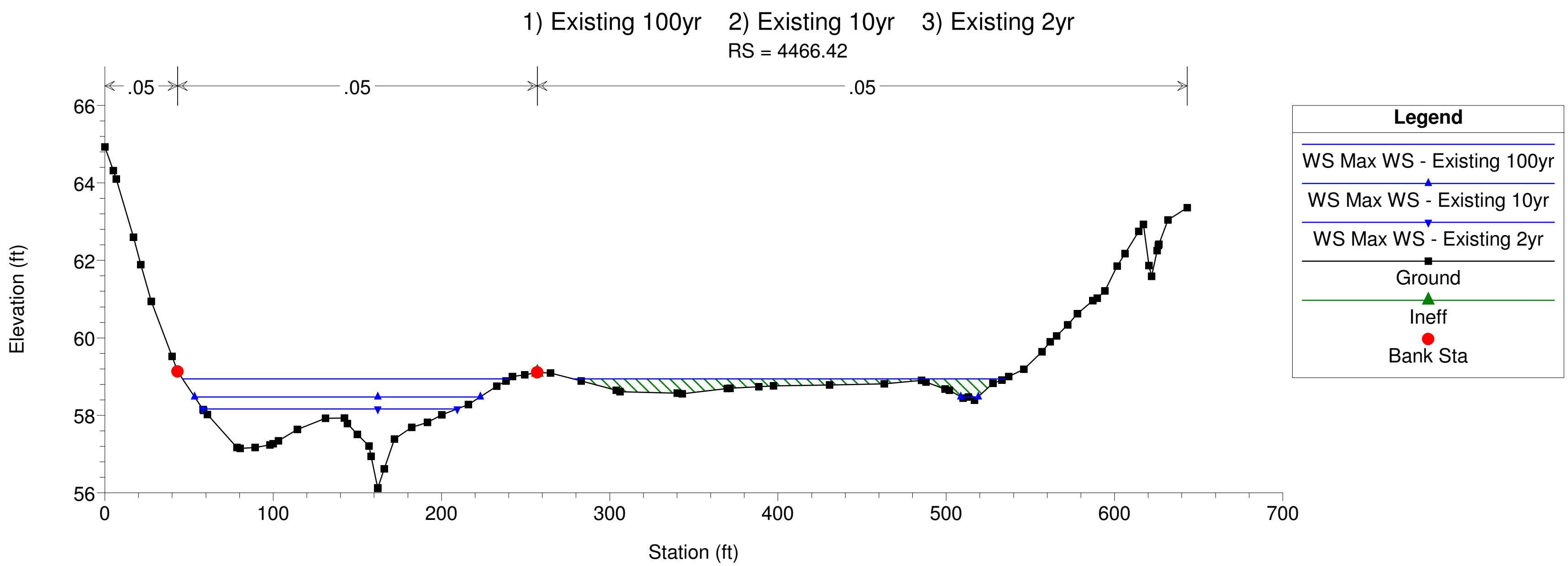

1) Existing 100yr 2) Existing 10yr 3) Existing 2yr
RS = 5298.41
.05
.05
.05
Elevation (ft)
Station (ft)
Legend
WS Max WS - Existing 100yr
WS Max WS - Existing 10yr
WS Max WS - Existing 2yr
Ground
Ineff
Bank Sta
1) Existing 100yr 2) Existing 10yr 3) Existing 2yr
RS = 5200.78
.08
.05
.08
Elevation (ft)
Station (ft)
Legend
WS Max WS - Existing 100yr
WS Max WS - Existing 10yr
WS Max WS - Existing 2yr
Ground
Ineff
Bank Sta


1) Existing 100yr 2) Existing 10yr 3) Existing 2yr
RS = 5003.05
.05
.05
.05
Elevation (ft)
66
64
62
60
58
56
0
100
200
300
400
500
600
700
Station (ft)
Legend
WS Max WS - Existing 100yr
WS Max WS - Existing 10yr
WS Max WS - Existing 2yr
Ground
Bank Sta

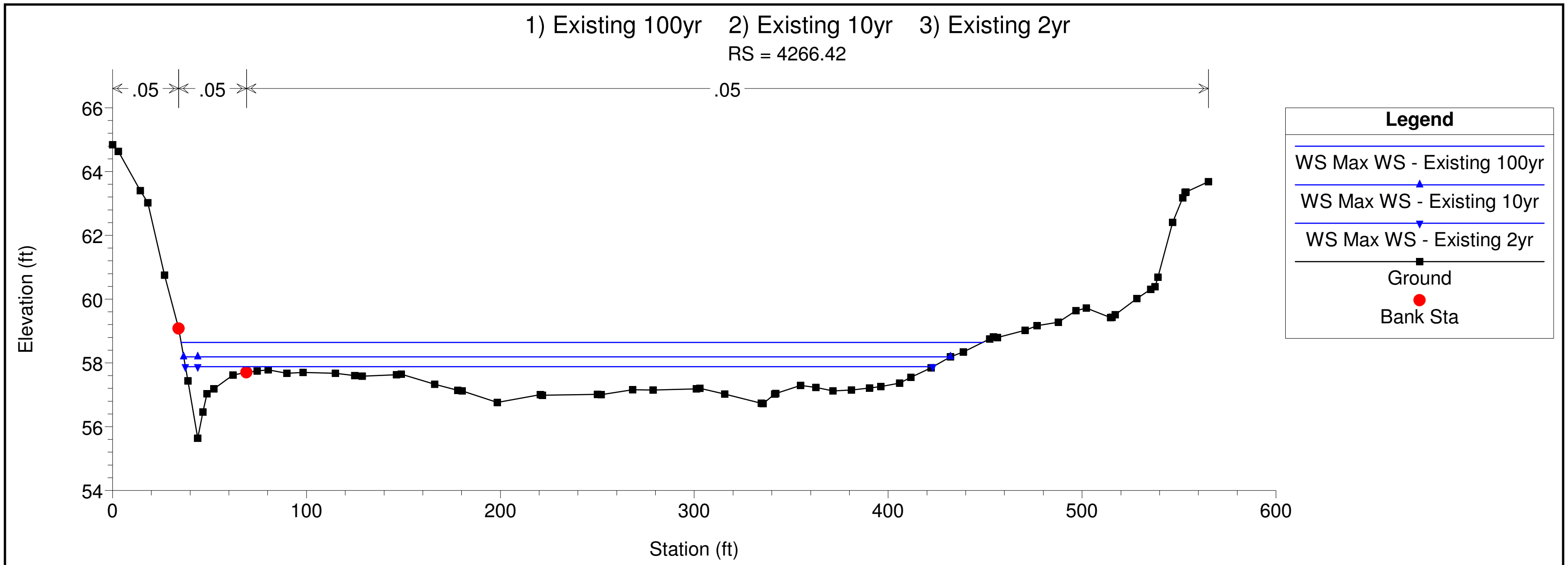

1) Existing 100yr 2) Existing 10yr 3) Existing 2yr
RS = 4848.83
.05
.05
.05
Elevation (ft)
66
64
62
60
58
56
0
100
200
300
400
500
600
700
Station (ft)
Legend
WS Max WS - Existing 100yr
WS Max WS - Existing 10yr
WS Max WS - Existing 2yr
Ground
Bank Sta

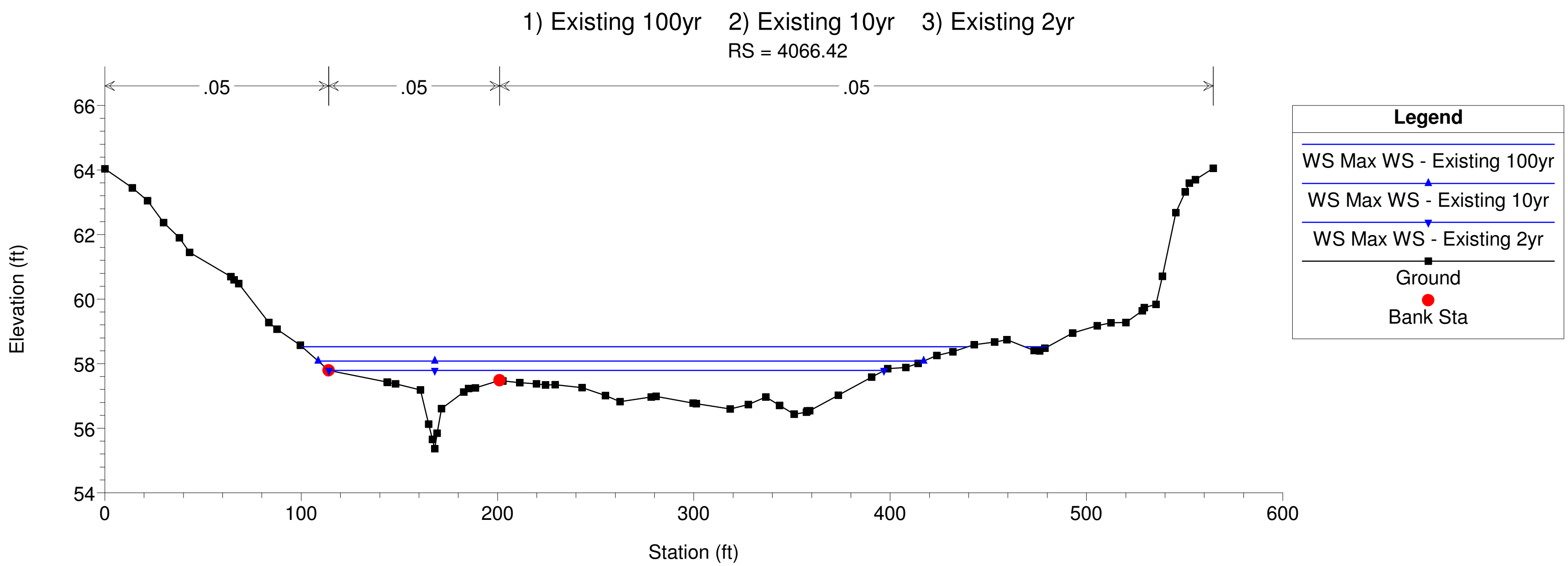


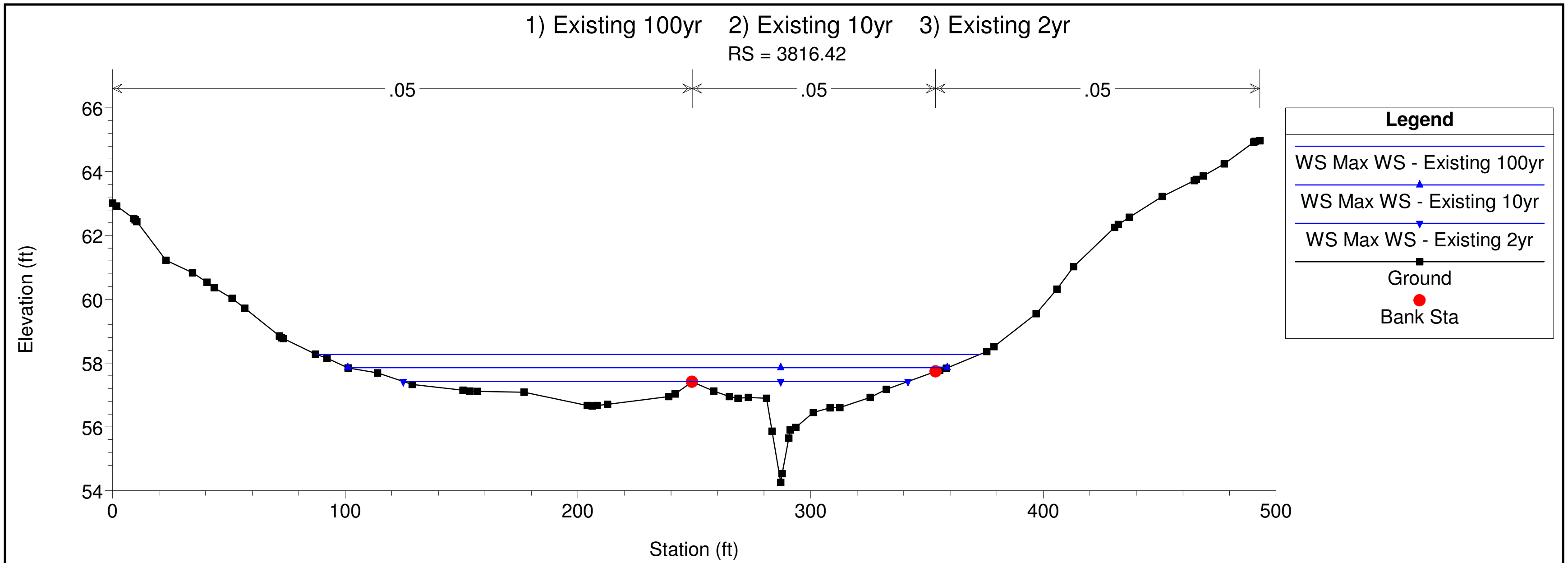
1) Existing 100yr 2) Existing 10yr 3) Existing 2yr
RS = 4651.77
.08
.05
.08
Elevation (ft)
Station (ft)
Legend
WS Max WS - Existing 100yr
WS Max WS - Existing 10yr
WS Max WS - Existing 2yr
Ground
Ineff
Bank Sta

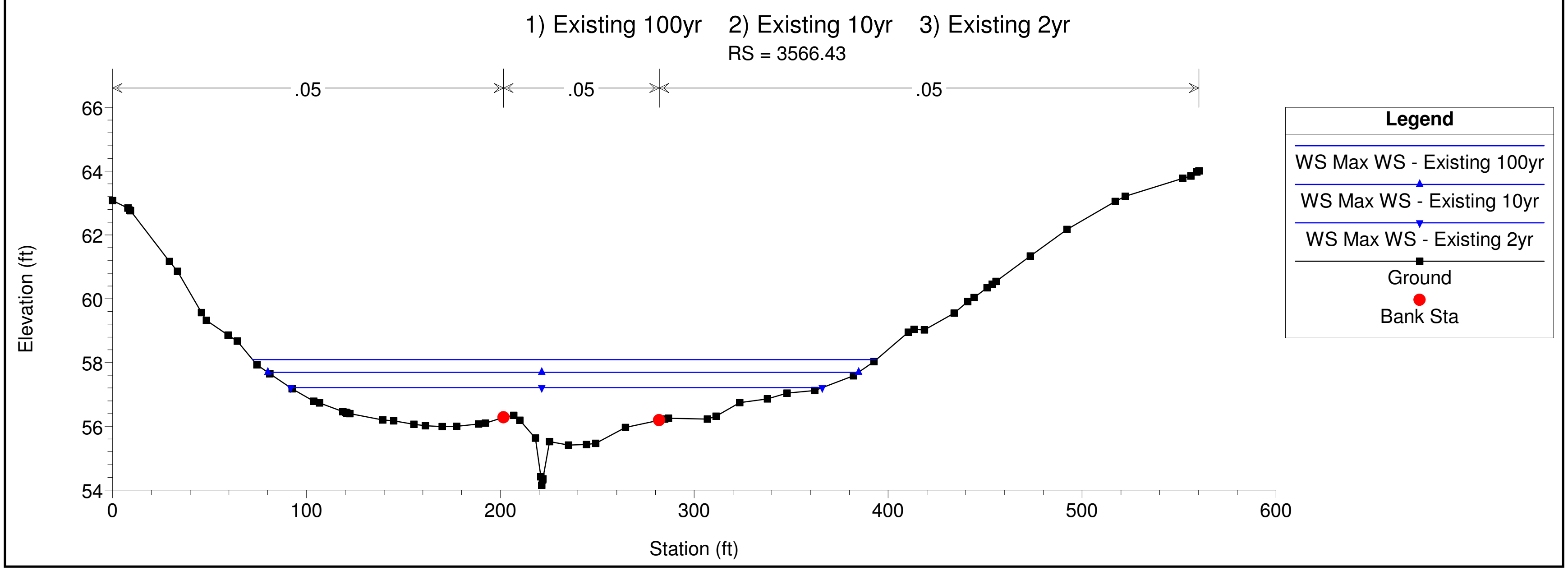


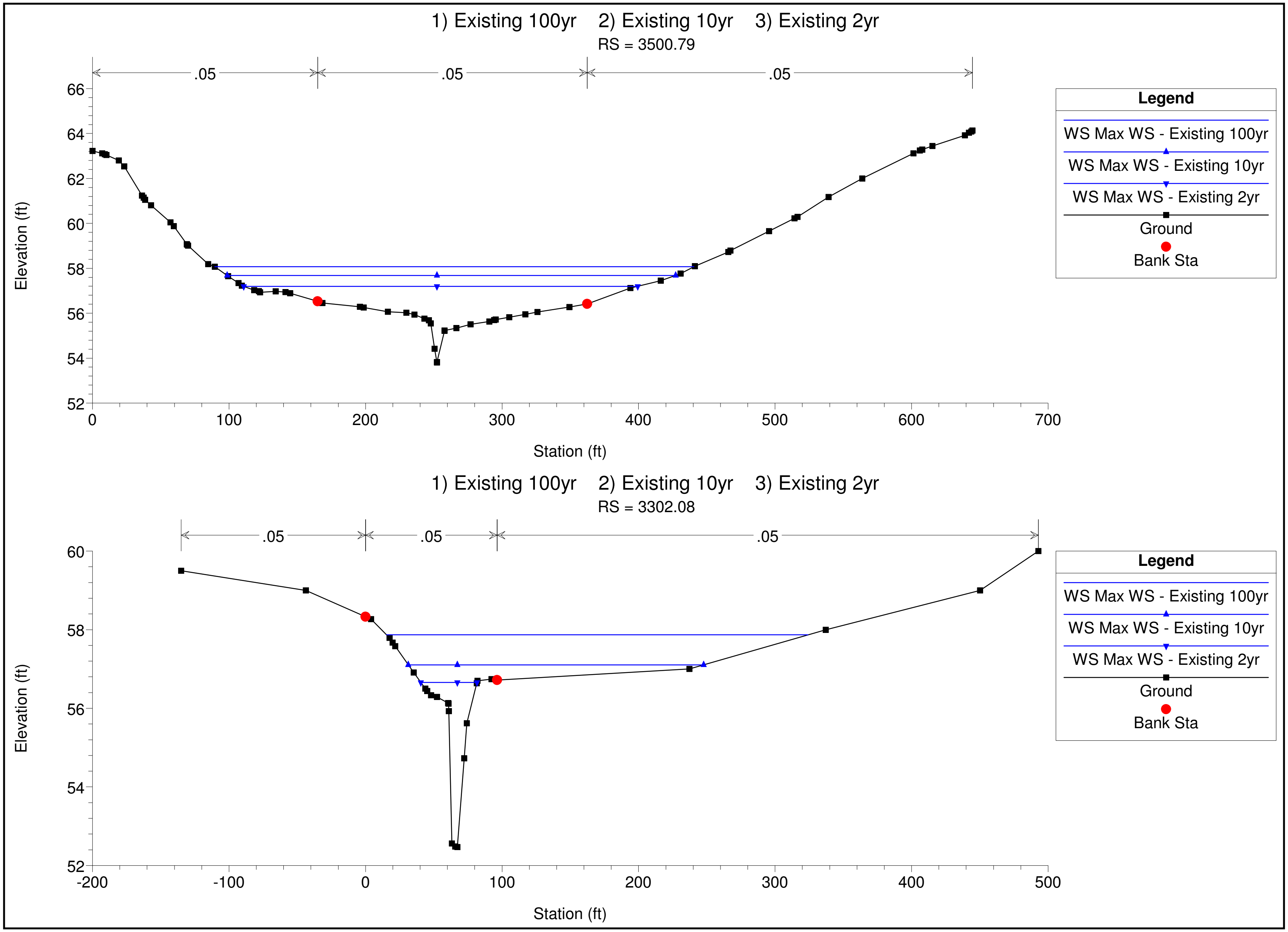
1) Existing 100yr 2) Existing 10yr 3) Existing 2yr
RS = 4466.42
.05
.05
.05
Elevation (ft)
Station (ft)
Legend
WS Max WS - Existing 100yr
WS Max WS - Existing 10yr
WS Max WS - Existing 2yr
Ground
Ineff
Bank Sta

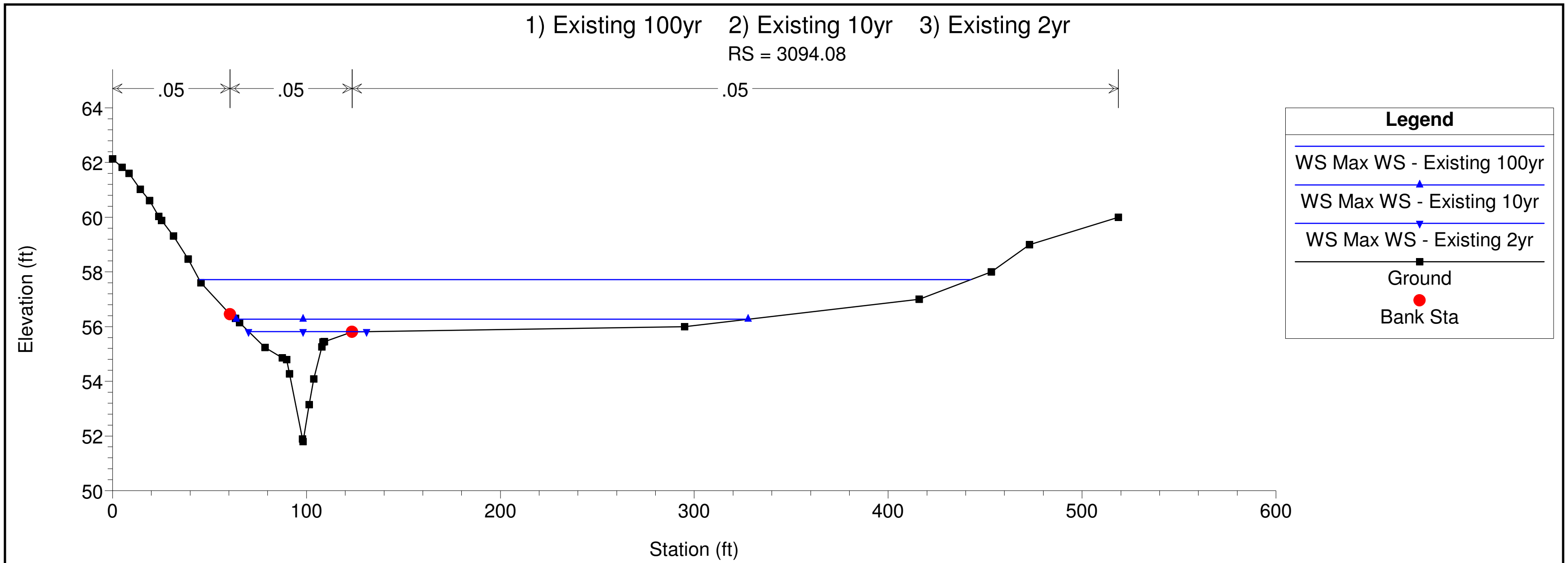

1) Existing 100yr 2) Existing 10yr 3) Existing 2yr
RS = 4266.42
.05
.05
.05
Elevation (ft)
Station (ft)
Legend
WS Max WS - Existing 100yr
WS Max WS - Existing 10yr
WS Max WS - Existing 2yr
Ground
Bank Sta

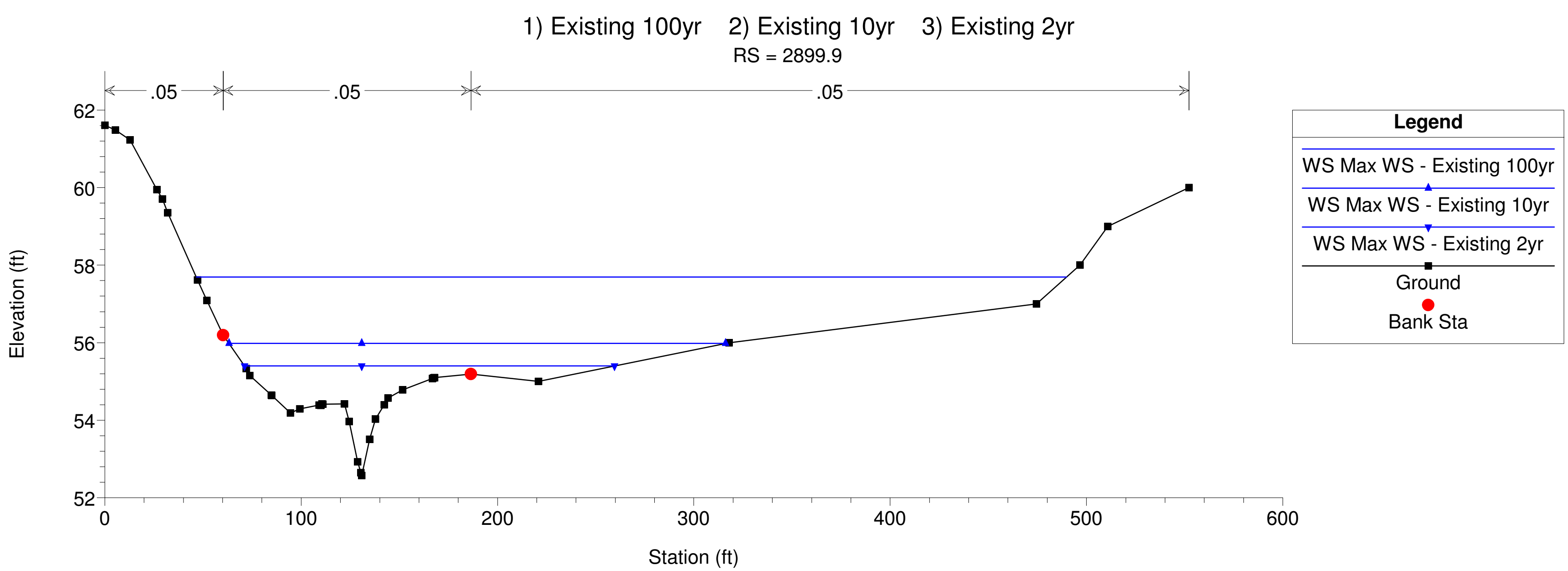

1) Existing 100yr 2) Existing 10yr 3) Existing 2yr
RS = 4066.42
.05
.05
.05
Elevation (ft)
Station (ft)
Legend
WS Max WS - Existing 100yr
WS Max WS - Existing 10yr
WS Max WS - Existing 2yr
Ground
Bank Sta

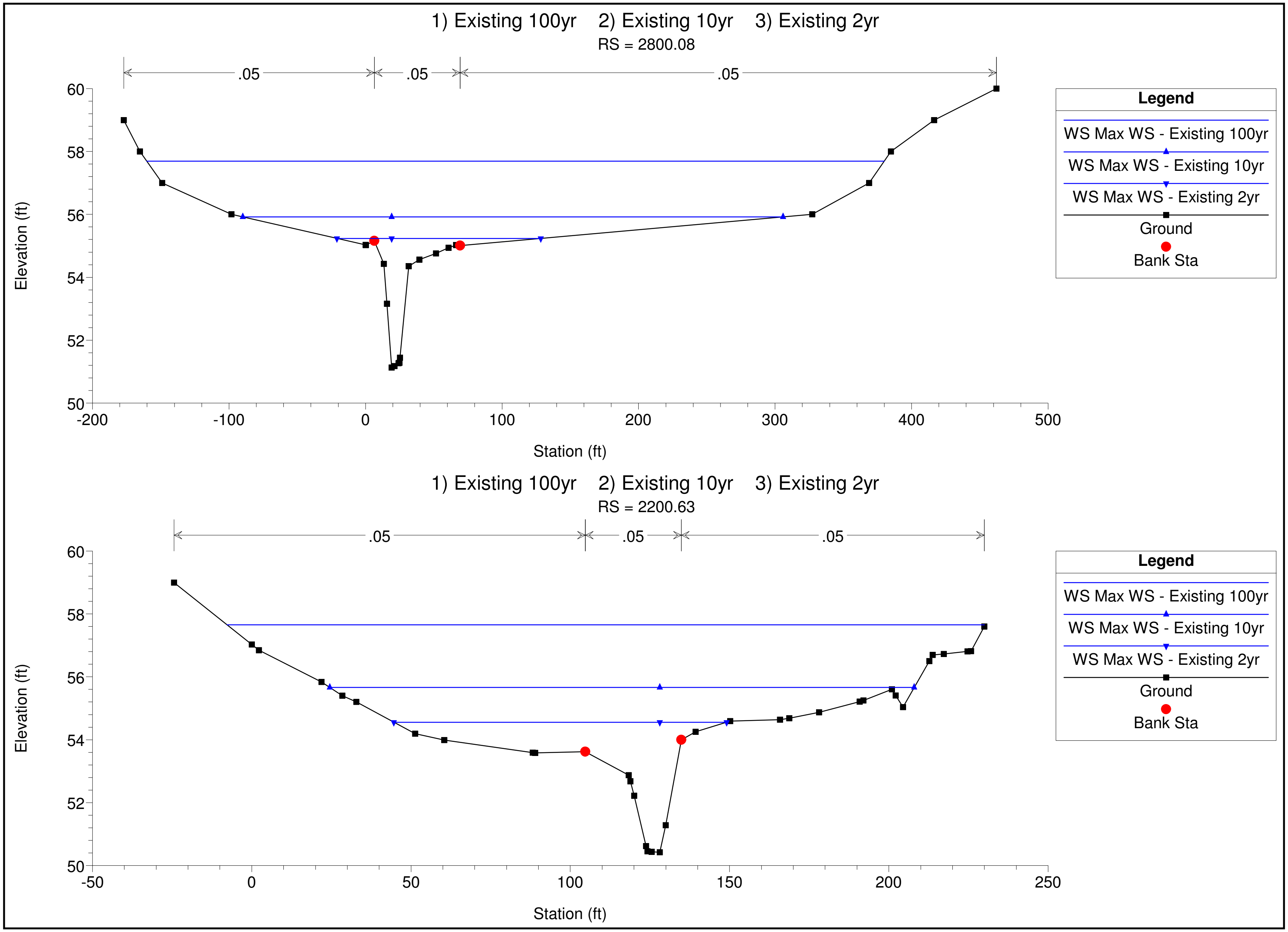

1) Existing 100yr 2) Existing 10yr 3) Existing 2yr
RS = 3816.42
.05
.05
.05
Elevation (ft)
Station (ft)
Legend
WS Max WS - Existing 100yr
WS Max WS - Existing 10yr
WS Max WS - Existing 2yr
Ground
Bank Sta


1) Existing 100yr 2) Existing 10yr 3) Existing 2yr
RS = 3566.43
.05
.05
.05
Elevation (ft)
Station (ft)
Legend
WS Max WS - Existing 100yr
WS Max WS - Existing 10yr
WS Max WS - Existing 2yr
Ground
Bank Sta

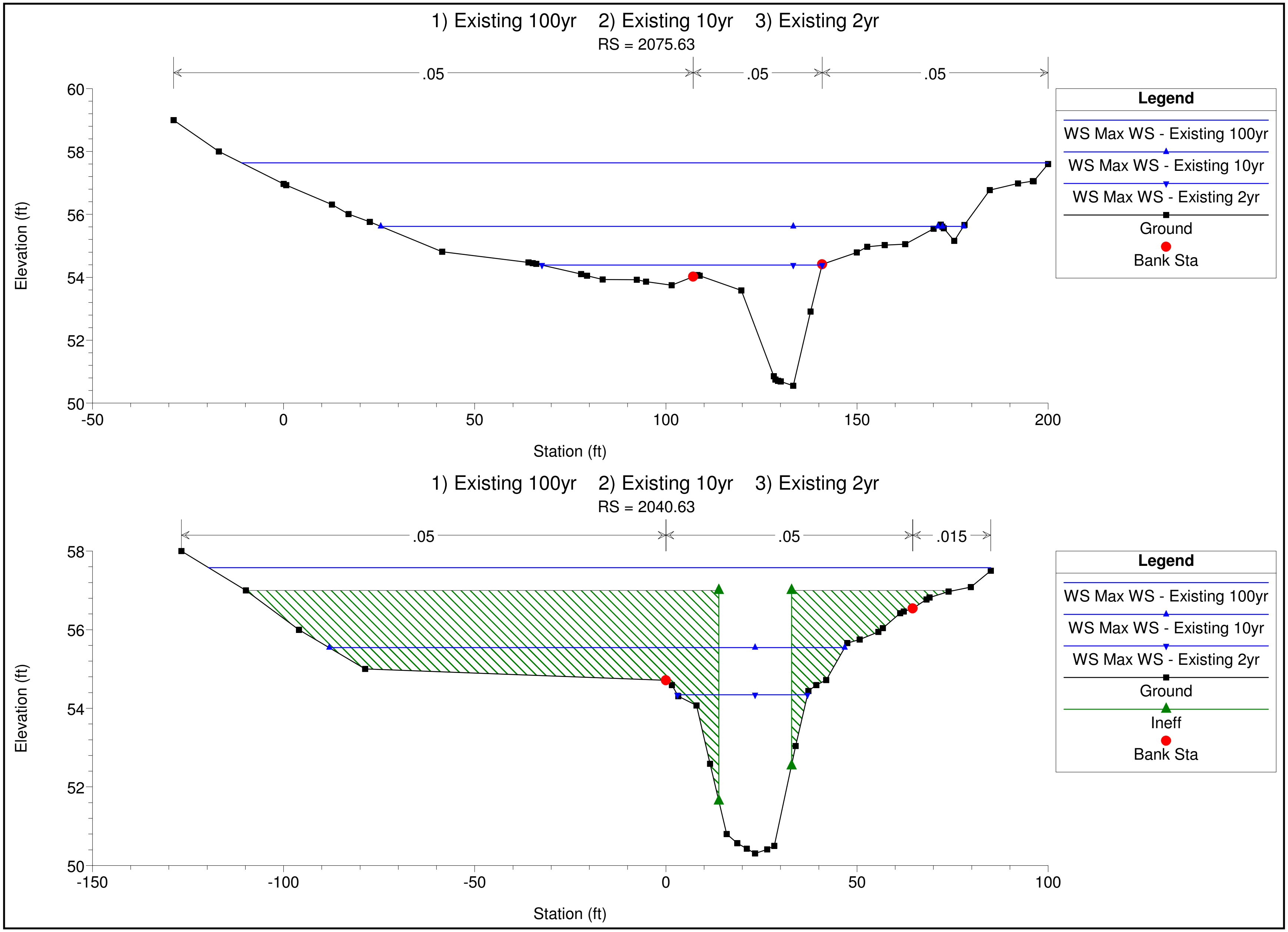

1) Existing 100yr 2) Existing 10yr 3) Existing 2yr
RS = 3500.79
.05
.05
.05
Elevation (ft)
Station (ft)
Legend
WS Max WS - Existing 100yr
WS Max WS - Existing 10yr
WS Max WS - Existing 2yr
Ground
Bank Sta
1) Existing 100yr 2) Existing 10yr 3) Existing 2yr
RS = 3302.08
.05
.05
.05
Elevation (ft)
Station (ft)
Legend
WS Max WS - Existing 100yr
WS Max WS - Existing 10yr
WS Max WS - Existing 2yr
Ground
Bank Sta


1) Existing 100yr 2) Existing 10yr 3) Existing 2yr
RS = 3094.08
.05
.05
.05
Elevation (ft)
Station (ft)
Legend
WS Max WS - Existing 100yr
WS Max WS - Existing 10yr
WS Max WS - Existing 2yr
Ground
Bank Sta

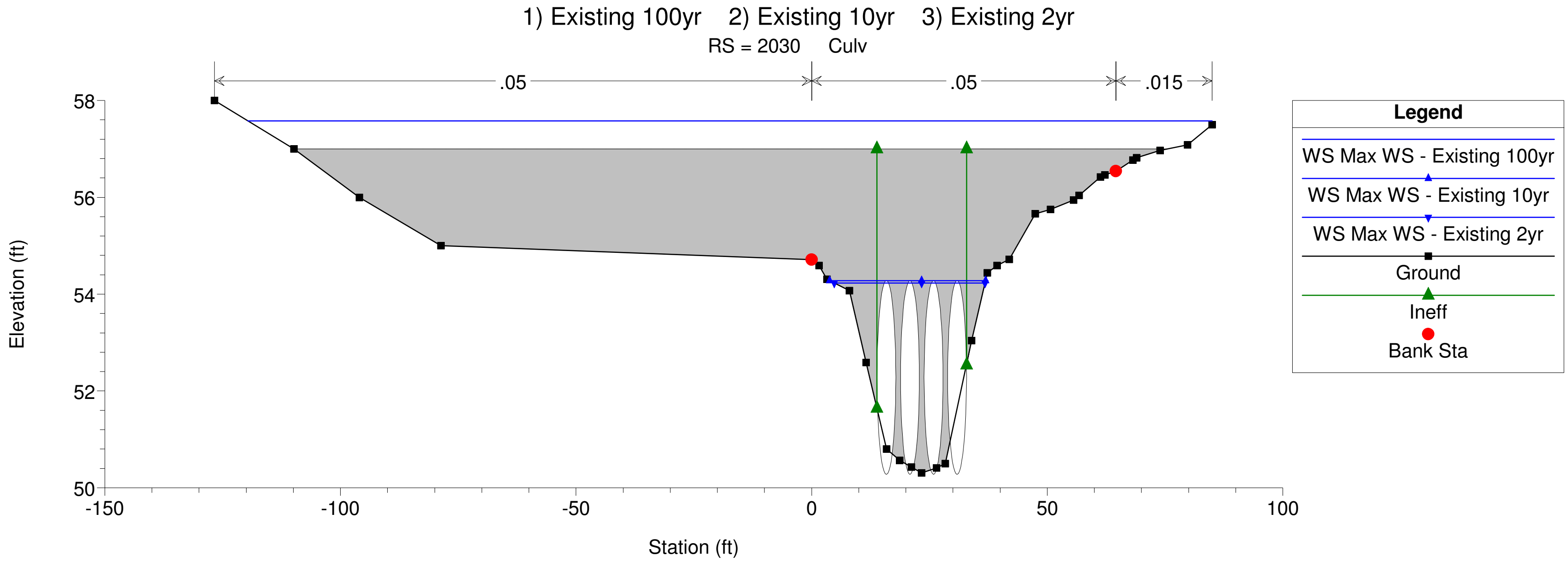

1) Existing 100yr 2) Existing 10yr 3) Existing 2yr
RS = 2899.9
.05
.05
.05
Elevation (ft)
Station (ft)
Legend
WS Max WS - Existing 100yr
WS Max WS - Existing 10yr
WS Max WS - Existing 2yr
Ground
Bank Sta

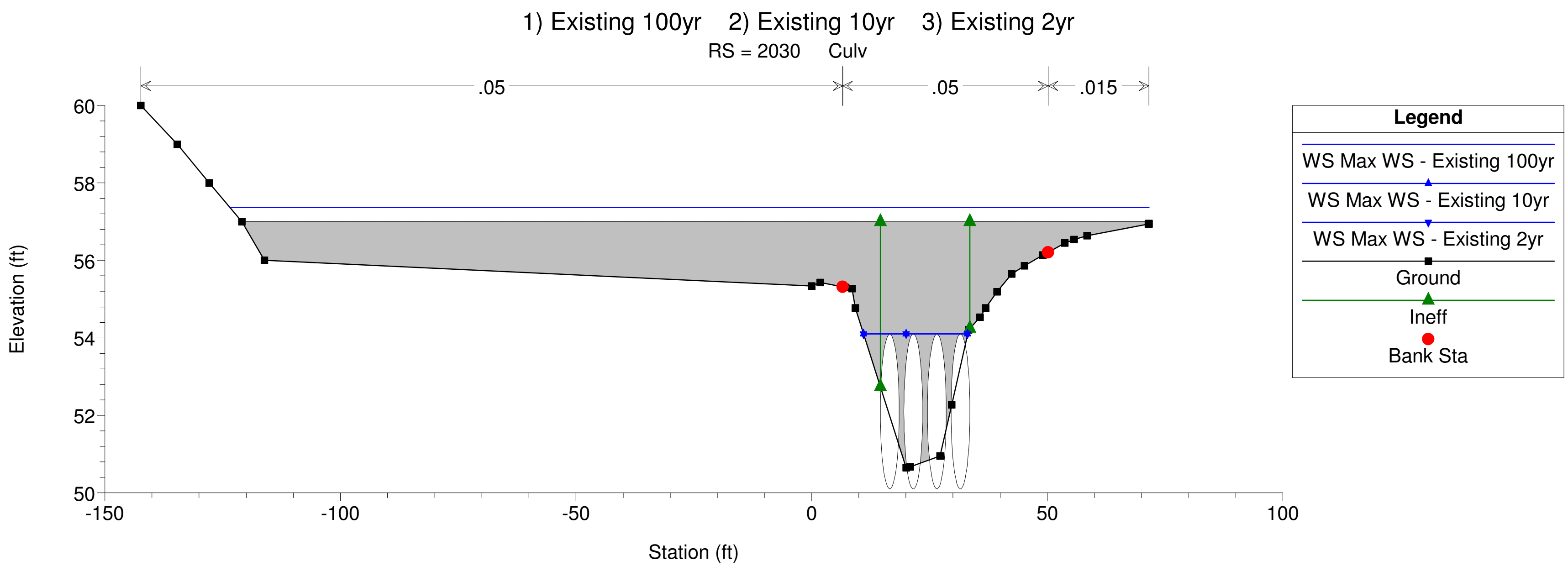


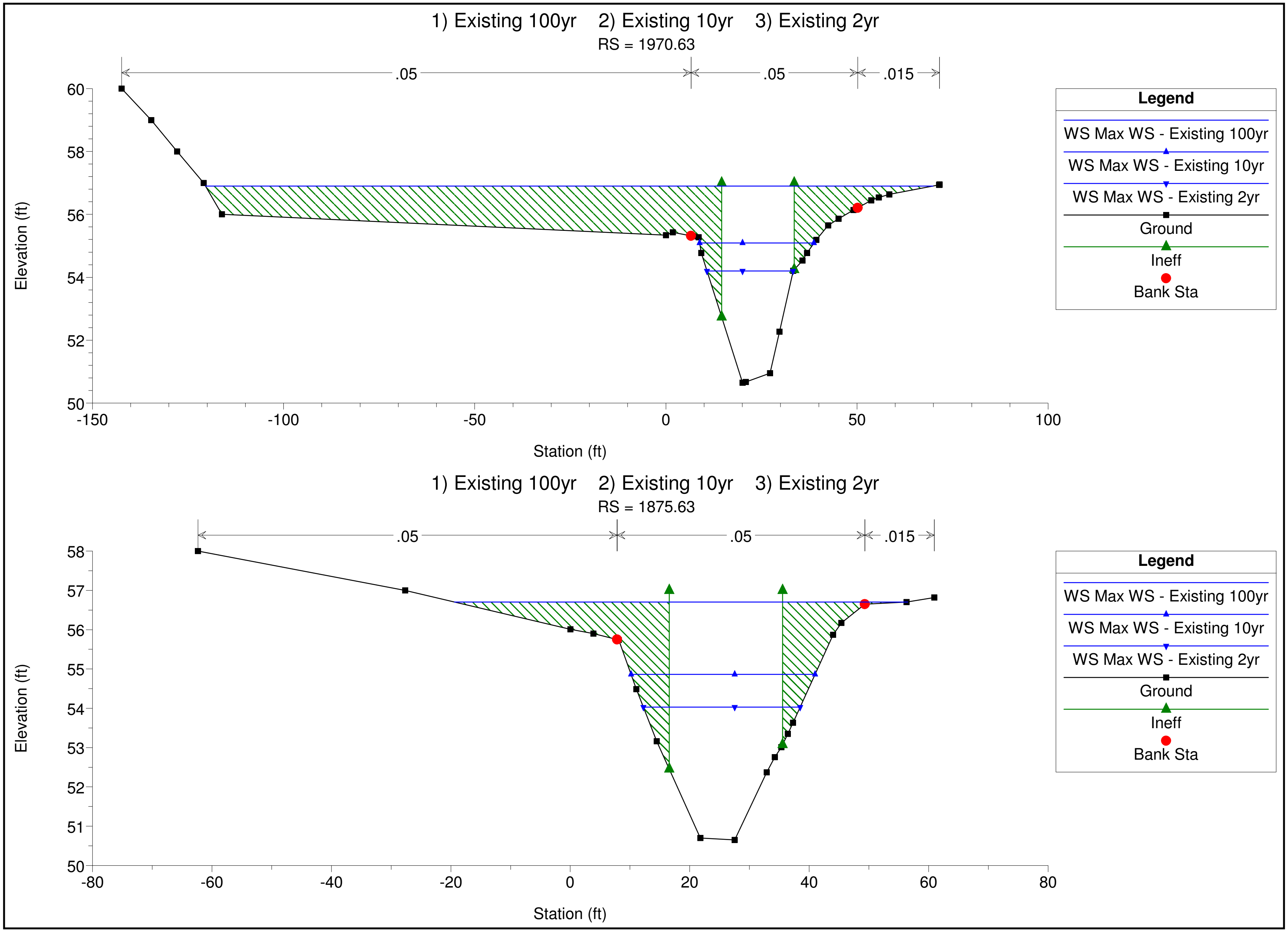
1) Existing 100yr 2) Existing 10yr 3) Existing 2yr
RS = 2800.08
.05
.05
.05
Elevation (ft)
Station (ft)
Legend
WS Max WS - Existing 100yr
WS Max WS - Existing 10yr
WS Max WS - Existing 2yr
Ground
Bank Sta
1) Existing 100yr 2) Existing 10yr 3) Existing 2yr
RS = 2200.63
.05
.05
.05
Elevation (ft)
Station (ft)
Legend
WS Max WS - Existing 100yr
WS Max WS - Existing 10yr
WS Max WS - Existing 2yr
Ground
Bank Sta



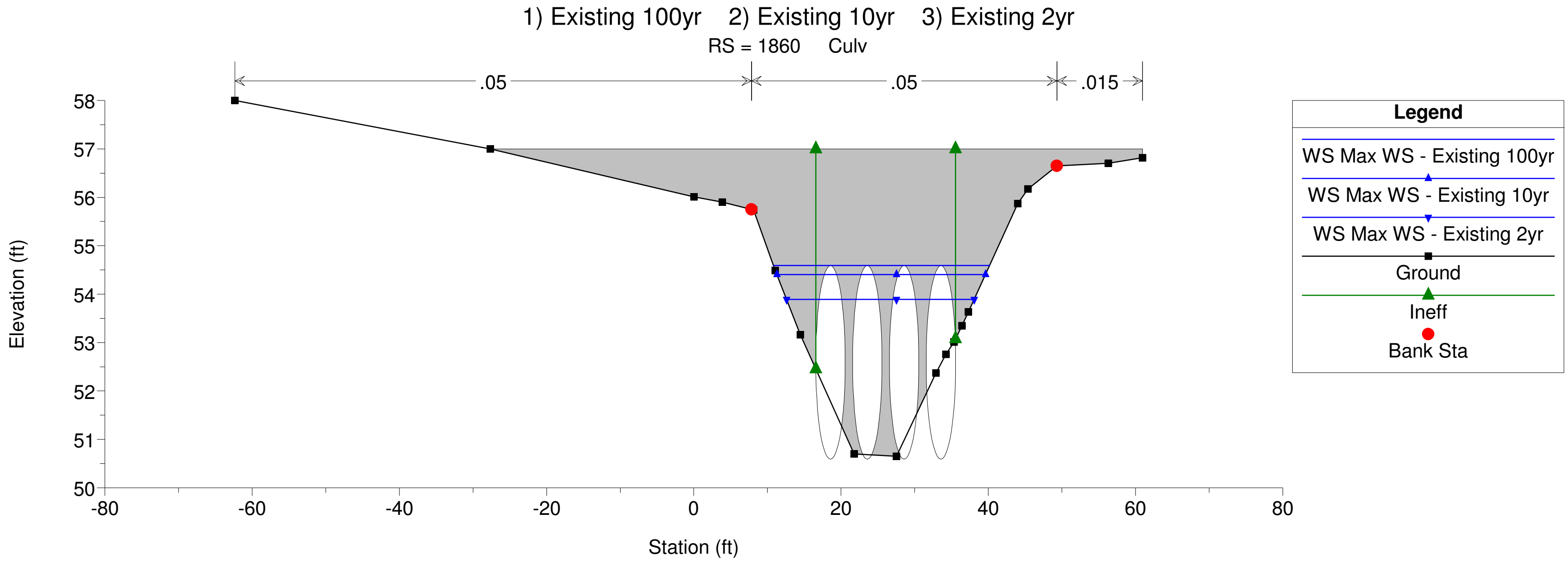
1) Existing 100yr 2) Existing 10yr 3) Existing 2yr
RS = 2075.63
.05
.05
.05
Elevation (ft)
Station (ft)
60
58
56
54
52
50
-50
0
50
100
150
200
Legend
WS Max WS - Existing 100yr
WS Max WS - Existing 10yr
WS Max WS - Existing 2yr
Ground
Bank Sta
1) Existing 100yr 2) Existing 10yr 3) Existing 2yr
RS = 2040.63
.05
.05
.015
Elevation (ft)
Station (ft)
58
56
54
52
50
-150
-100
-50
0
50
100
Legend
WS Max WS - Existing 100yr
WS Max WS - Existing 10yr
WS Max WS - Existing 2yr
Ground
Ineff
Bank Sta


1) Existing 100yr 2) Existing 10yr 3) Existing 2yr
RS = 2030 Culv
.05
.05
.015
Elevation (ft)
Station (ft)
58
56
54
52
50
-150
-100
-50
0
50
100
Legend
WS Max WS - Existing 100yr
WS Max WS - Existing 10yr
WS Max WS - Existing 2yr
Ground
Ineff
Bank Sta

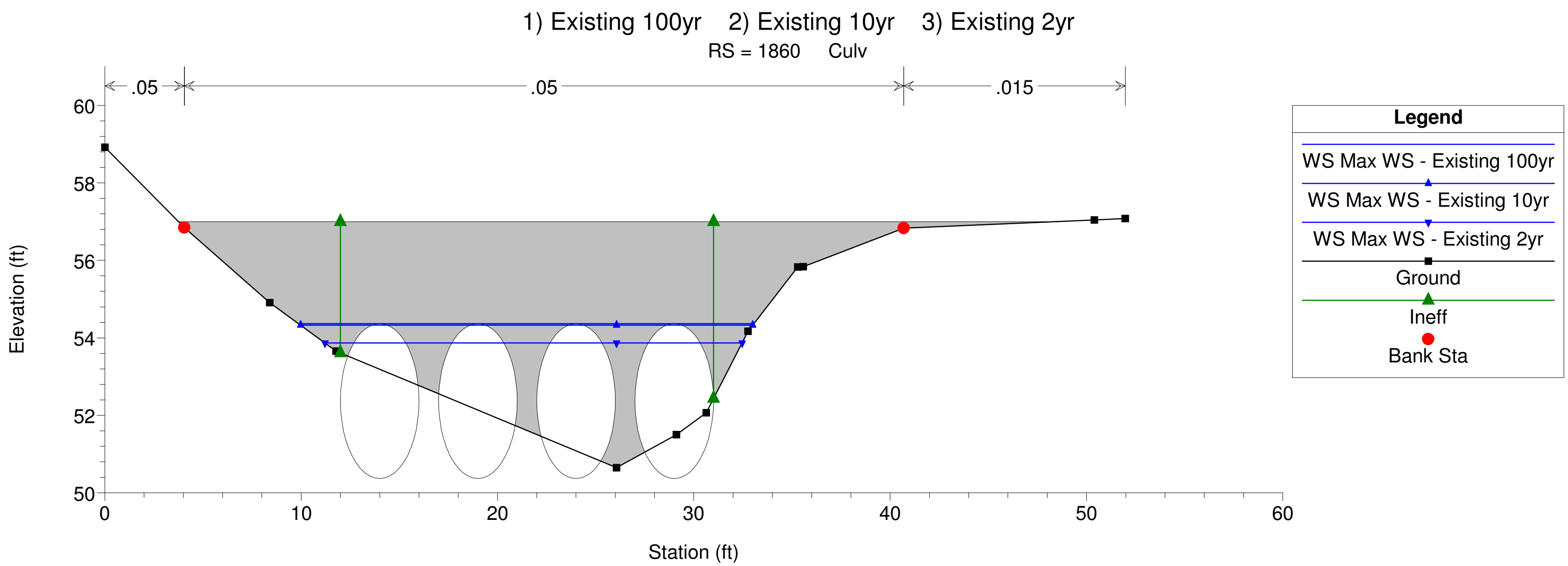

1) Existing 100yr 2) Existing 10yr 3) Existing 2yr
RS = 2030 Culv
.05
.05
.015
Elevation (ft)
Station (ft)
60
58
56
54
52
50
-150
-100
-50
0
50
100
Legend
WS Max WS - Existing 100yr
WS Max WS - Existing 10yr
WS Max WS - Existing 2yr
Ground
Ineff
Bank Sta



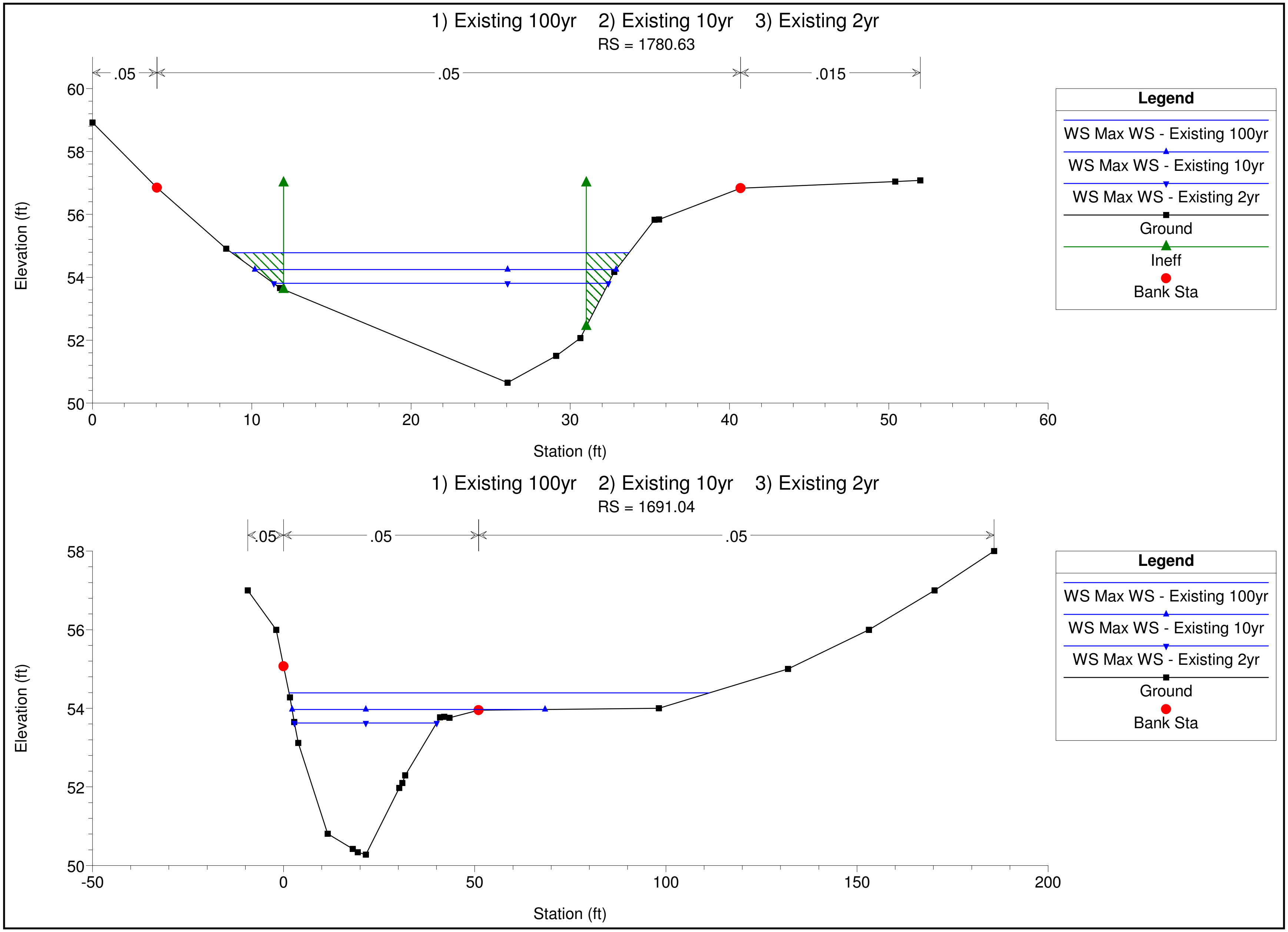
1) Existing 100yr 2) Existing 10yr 3) Existing 2yr
RS = 1970.63
.05
.05
.015
Elevation (ft)
Station (ft)
Legend
WS Max WS - Existing 100yr
WS Max WS - Existing 10yr
WS Max WS - Existing 2yr
Ground
Ineff
Bank Sta
1) Existing 100yr 2) Existing 10yr 3) Existing 2yr
RS = 1875.63
.05
.05
.015
Elevation (ft)
Station (ft)
Legend
WS Max WS - Existing 100yr
WS Max WS - Existing 10yr
WS Max WS - Existing 2yr
Ground
Ineff
Bank Sta

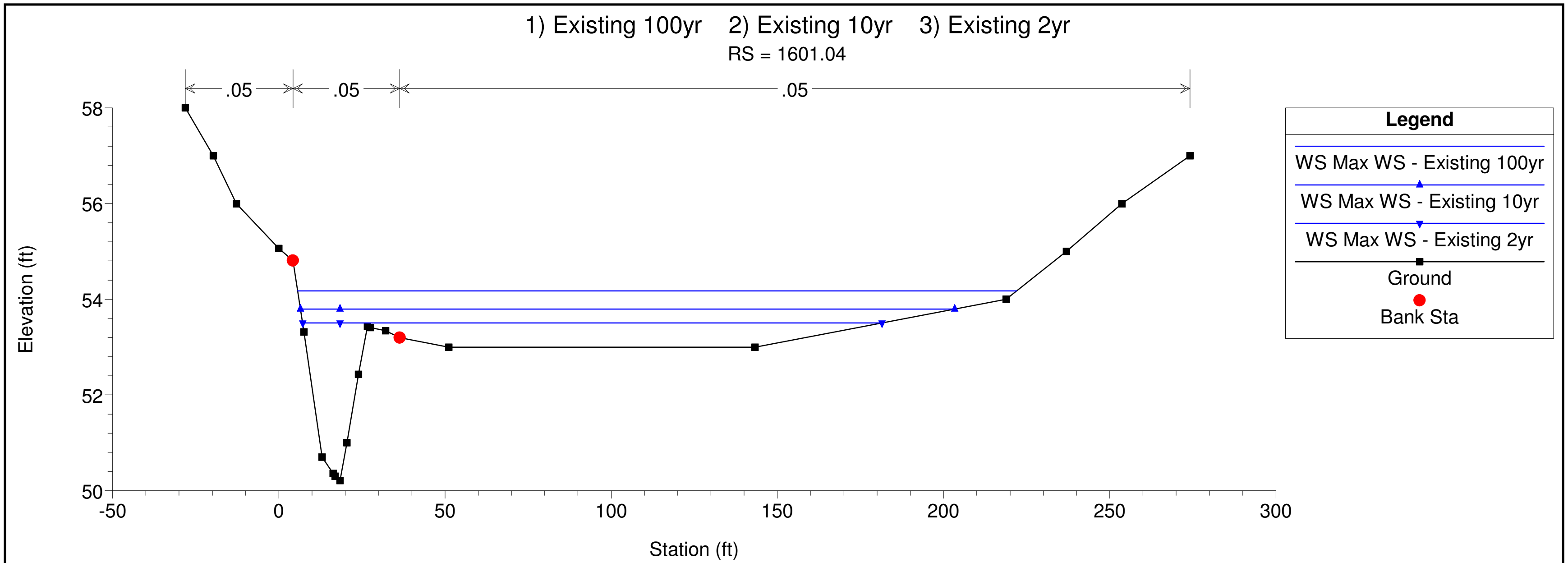


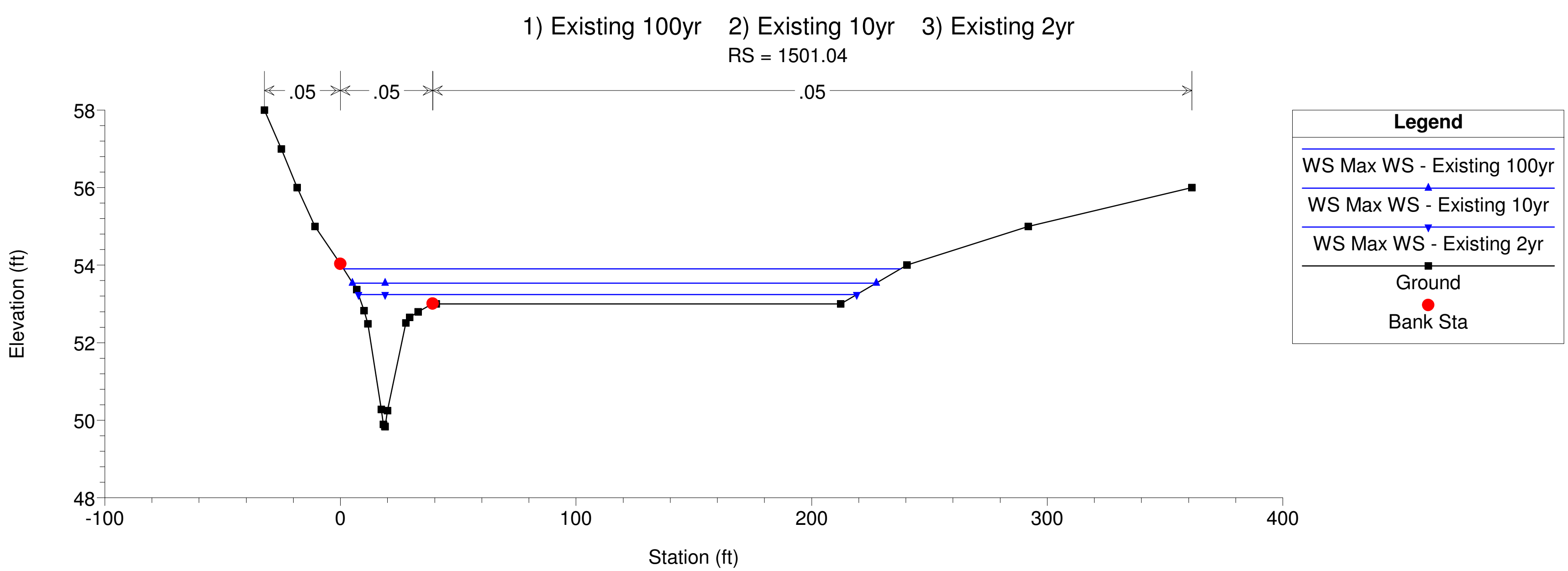
1) Existing 100yr 2) Existing 10yr 3) Existing 2yr
RS = 1860 Culv
.05
.05
.015
Elevation (ft)
Station (ft)
58
57
56
55
54
53
52
51
50
-80
-60
-40
-20
0
20
40
60
80
Legend
WS Max WS - Existing 100yr
WS Max WS - Existing 10yr
WS Max WS - Existing 2yr
Ground
Ineff
Bank Sta

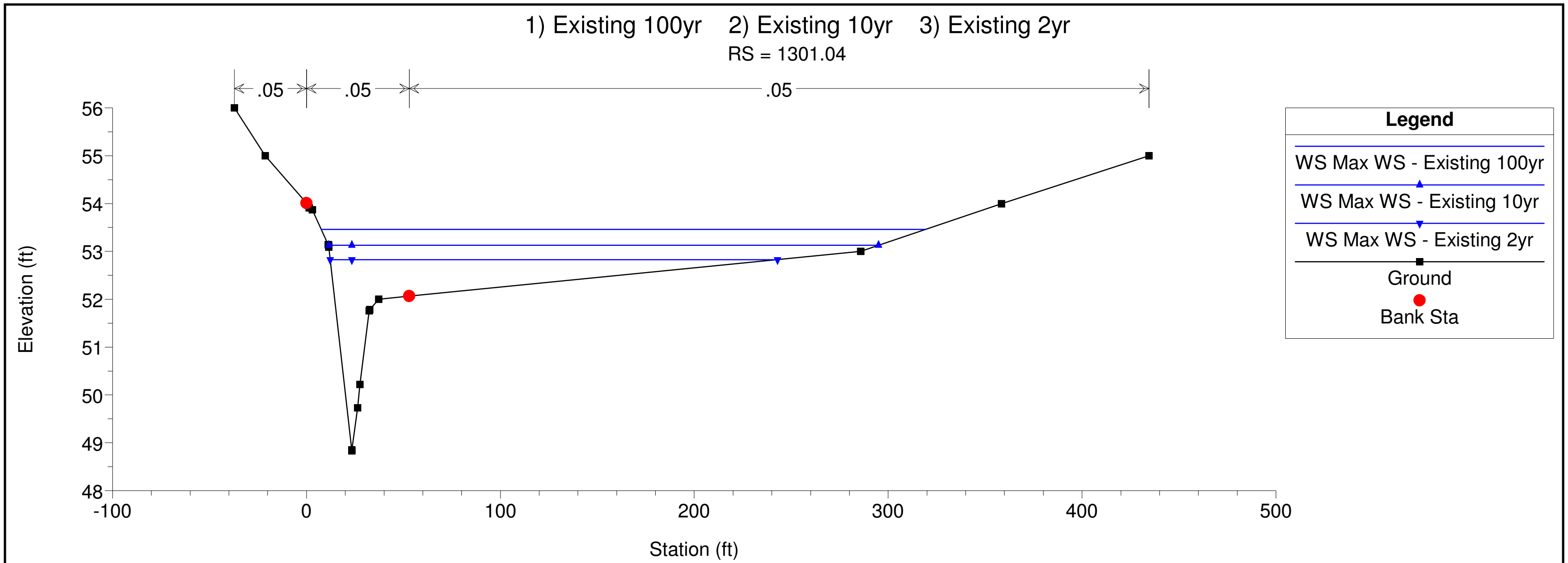


1) Existing 100yr 2) Existing 10yr 3) Existing 2yr
RS = 1860 Culv
.05
.05
.015
Elevation (ft)
Station (ft)
60
58
56
54
52
50
0
10
20
30
40
50
60
Legend
WS Max WS - Existing 100yr
WS Max WS - Existing 10yr
WS Max WS - Existing 2yr
Ground
Ineff
Bank Sta

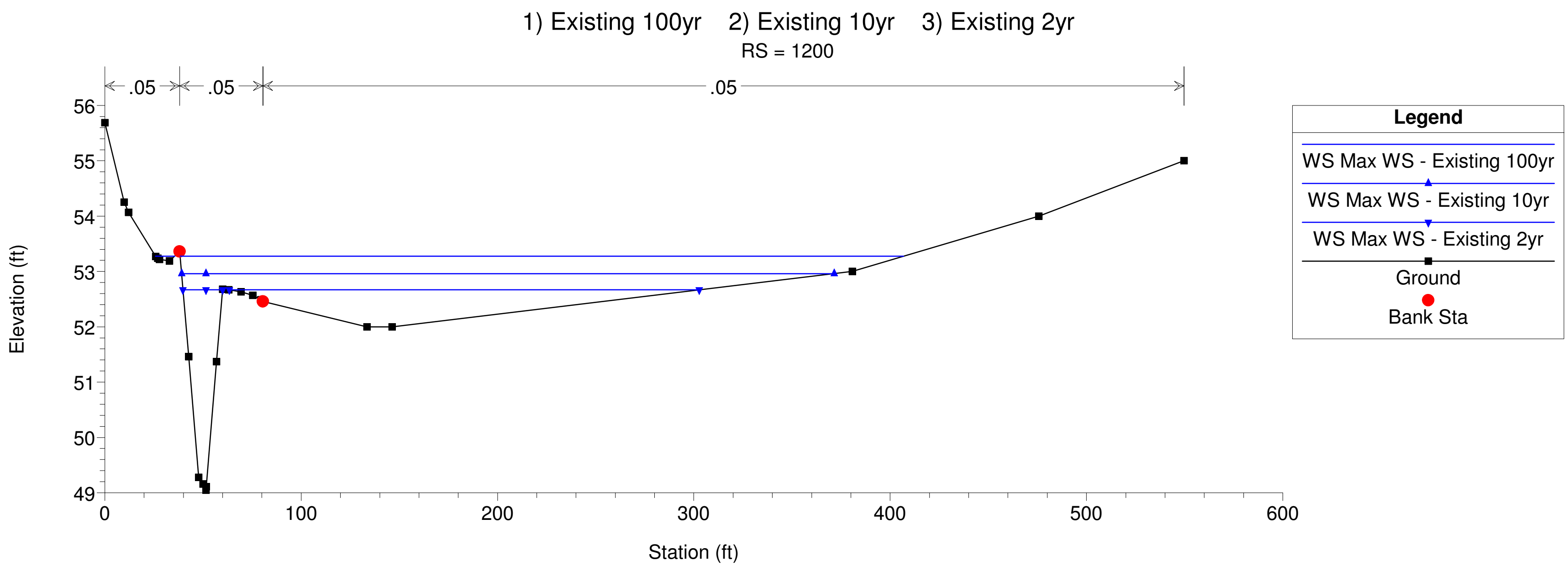

1) Existing 100yr 2) Existing 10yr 3) Existing 2yr
RS = 1780.63
.05
.05
.015
Legend
WS Max WS - Existing 100yr
WS Max WS - Existing 10yr
WS Max WS - Existing 2yr
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)
1) Existing 100yr 2) Existing 10yr 3) Existing 2yr
RS = 1691.04
.05
.05
.05
Legend
WS Max WS - Existing 100yr
WS Max WS - Existing 10yr
WS Max WS - Existing 2yr
Ground
Bank Sta
Elevation (ft)
Station (ft)


1) Existing 100yr 2) Existing 10yr 3) Existing 2yr
RS = 1601.04
.05
.05
.05
Elevation (ft)
Station (ft)
Legend
WS Max WS - Existing 100yr
WS Max WS - Existing 10yr
WS Max WS - Existing 2yr
Ground
Bank Sta

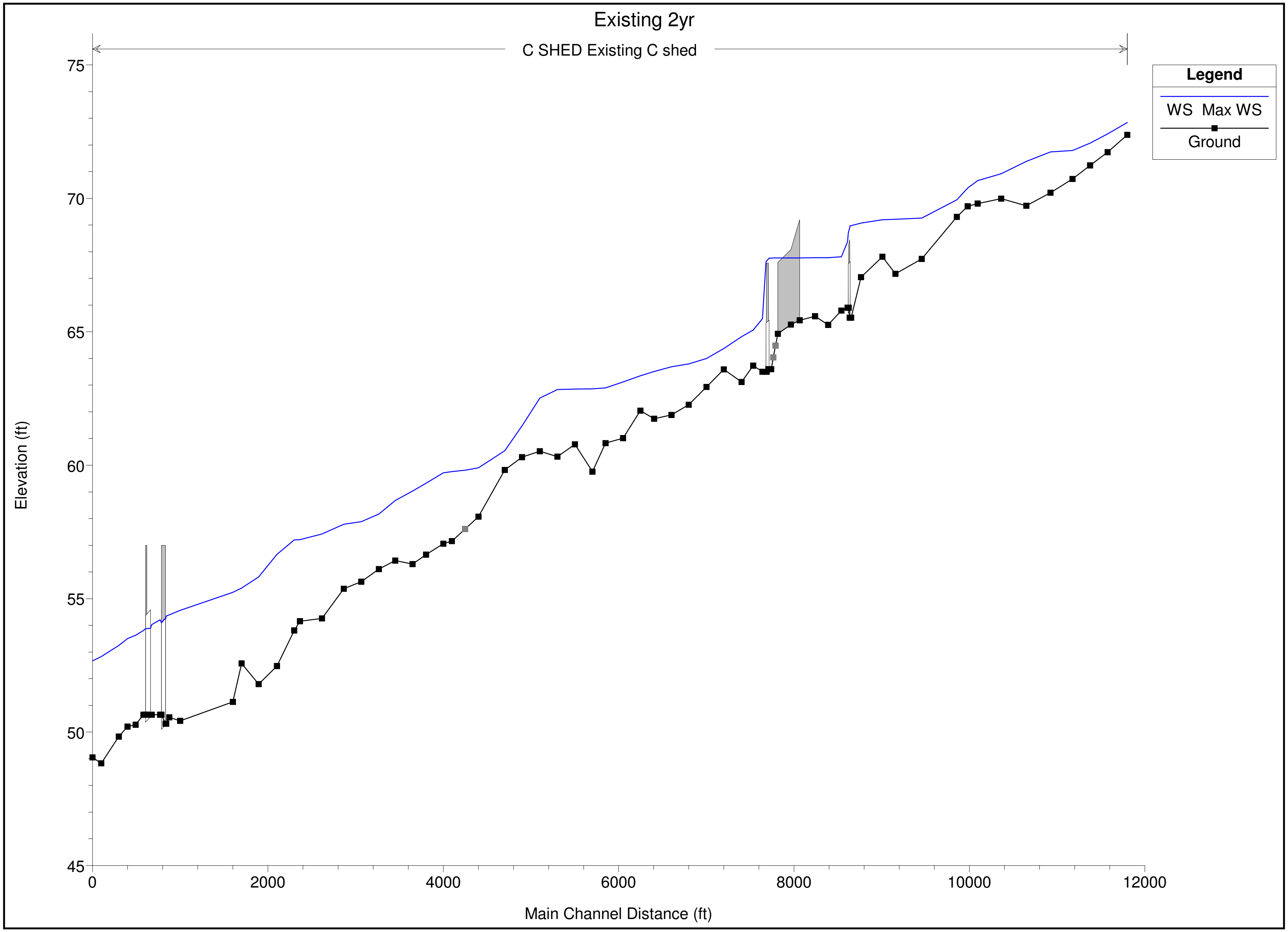

1) Existing 100yr 2) Existing 10yr 3) Existing 2yr
RS = 1501.04
.05
.05
.05
Elevation (ft)
Station (ft)
Legend
WS Max WS - Existing 100yr
WS Max WS - Existing 10yr
WS Max WS - Existing 2yr
Ground
Bank Sta



1) Existing 100yr 2) Existing 10yr 3) Existing 2yr
RS = 1301.04
.05
.05
.05
Elevation (ft)
Station (ft)
Legend
WS Max WS - Existing 100yr
WS Max WS - Existing 10yr
WS Max WS - Existing 2yr
Ground
Bank Sta



1) Existing 100yr 2) Existing 10yr 3) Existing 2yr
RS = 1200
.05
.05
.05
Elevation (ft)
Station (ft)
Legend
WS Max WS - Existing 100yr
WS Max WS - Existing 10yr
WS Max WS - Existing 2yr
Ground
Bank Sta



Existing 2yr
C SHED Existing C shed
Legend
WS Max WS
Ground
Elevation (ft)
Main Channel Distance (ft)
75
70
65
60
55
50
45
0
2000
4000
6000
8000
10000
12000

```
                 HEC-RAS Version 4.1.0 Jan 2010
                  U.S. Army Corps of Engineers
                 Hydrologic Engineering Center
                       609 Second Street
                       Davis, California

      X     X  XXXXXX    XXXX        XXXX      XX      XXXX
      X     X  X        X    X       X   X    X  X    X
      X     X  X        X            X   X   X    X   X
      XXXXXXX  XXXX     X       XXX  XXXX    XXXXXX    XXXX
      X     X  X        X            X  X    X    X        X
      X     X  X        X    X       X   X   X    X        X
      X     X  XXXXXX    XXXX        X    X  X    X   XXXXX
```

PROJECT DATA
Project Title: Corridor-C
Project File : CorridorC.prj
Run Date and Time: 5/6/2011 8:06:55 AM

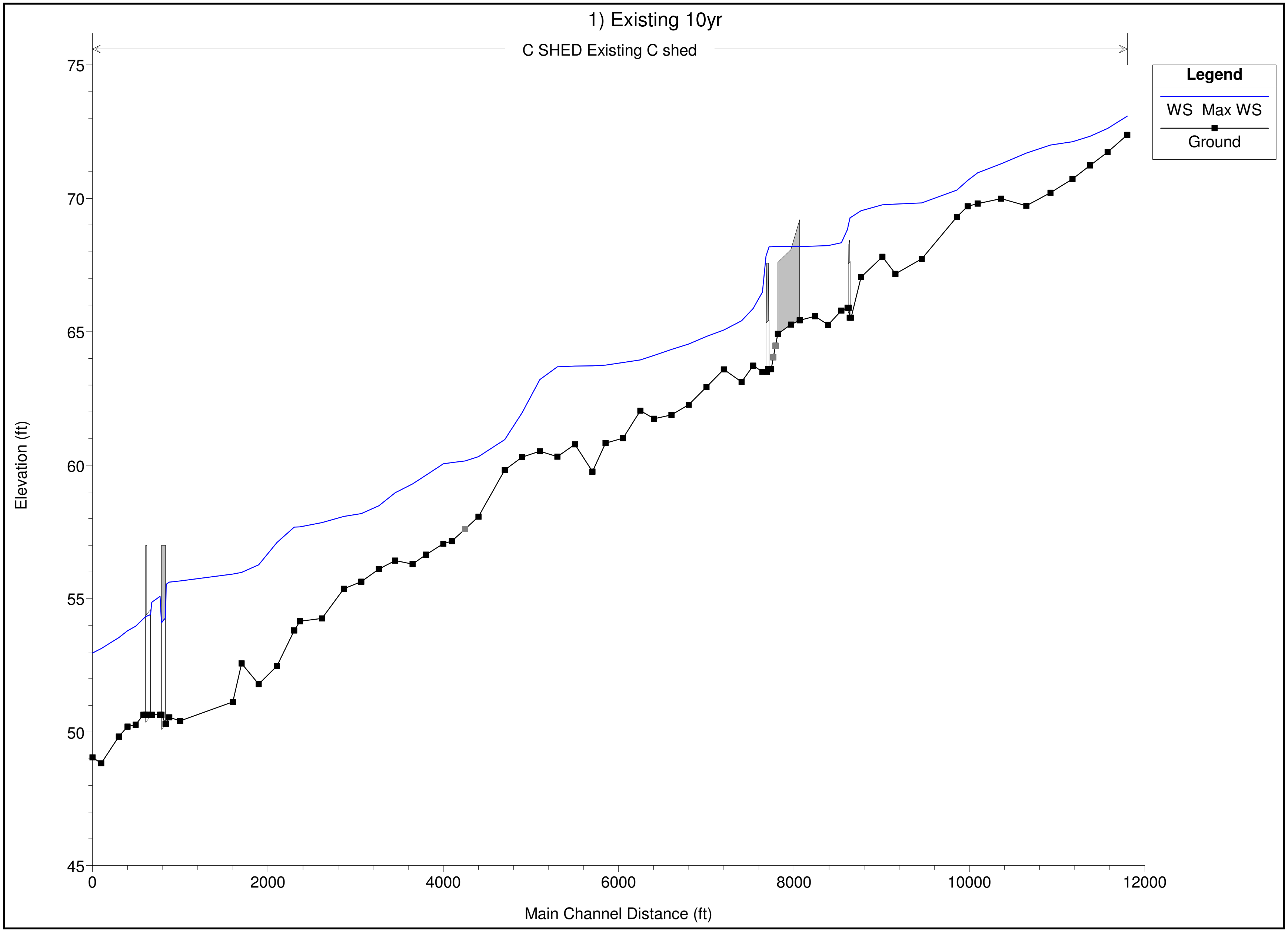
Project in English units

Project Description:
C Corridor - Developed, Interim and Existing Conditions
2 yr 24 hr Existing

Profile Output Table - Standard Table 1

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
Existing C shed	12999.63	Max WS	30.92	72.38	72.91		72.92	0.003563	0.81	38.12	123.26	0.26
Existing C shed	12774.63	Max WS	28.35	71.73	72.48		72.48	0.000696	0.43	65.74	161.16	0.12
Existing C shed	12574.63	Max WS	35.59	71.23	72.13		72.14	0.002858	0.70	50.71	172.73	0.23
Existing C shed	12374.63	Max WS	39.41	70.73	71.87		71.87	0.000273	0.35	112.77	187.70	0.08
Existing C shed	12124.63	Max WS	44.34	70.21	71.80		71.80	0.000351	0.43	103.22	152.29	0.09
Existing C shed	11849.63	Max WS	49.63	69.72	71.45		71.45	0.002599	0.76	65.28	183.44	0.22
Existing C shed	11560.49	Max WS	54.40	69.99	71.00		71.01	0.001227	0.64	84.36	172.93	0.16
Existing C shed	11293.47	Max WS	58.74	69.80	70.74		70.74	0.001163	0.62	95.14	200.07	0.16
Existing C shed	11180.76	Max WS	58.70	69.70	70.46		70.47	0.004767	0.99	59.03	174.96	0.30
Existing C shed	11055.95	Max WS	59.48	69.30	70.01		70.03	0.003559	0.95	62.43	158.45	0.27
Existing C shed	10655.95	Max WS	58.34	67.73	69.35		69.35	0.000246	0.43	135.32	205.40	0.08
Existing C shed	10355.95	Max WS	60.59	67.17	69.31		69.31	0.000038	0.21	288.20	236.24	0.03
Existing C shed	10206.15	Max WS	61.96	67.81	69.28		69.28	0.000275	0.47	130.82	138.66	0.09
Existing C shed	9964.32	Max WS	64.17	67.05	69.15		69.16	0.000763	0.93	69.11	57.20	0.15
Existing C shed	9849.32	Max WS	47.07	65.53	68.98		68.99	0.001291	0.77	60.76	97.45	0.17
Existing C shed	9825		Culvert									
Existing C shed	9809.39	Max WS	47.47	65.90	68.43		68.50	0.013354	2.05	23.11	87.76	0.53
Existing C shed	9739.39	Max WS	59.73	65.79	67.91		67.92	0.000746	0.97	61.75	47.17	0.15
Existing C shed	9589.39	Max WS	45.70	65.26	67.87		67.87	0.000067	0.26	174.98	157.46	0.04
Existing C shed	9439.39	Max WS	46.11	65.58	67.86		67.86	0.000037	0.18	257.83	259.46	0.03
Existing C shed	9264.39	Max WS	46.82	65.43	67.86		67.86	0.000007	0.11	441.75	294.36	0.02
Existing C shed	9263		Lat Struct									
Existing C shed	9164.39	Max WS	47.22	65.27	67.86		67.86	0.000005	0.09	544.23	340.53	0.01
Existing C shed	9014.39	Max WS	36.77	64.92	67.86		67.86	0.000005	0.11	342.35	174.48	0.01
Existing C shed	8989.39*	Max WS	36.77	64.48	67.86		67.86	0.000007	0.11	326.18	179.78	0.01
Existing C shed	8964.39*	Max WS	36.76	64.04	67.86		67.86	0.000007	0.12	319.32	182.99	0.02
Existing C shed	8939.39	Max WS	36.76	63.60	67.85		67.85	0.000530	0.48	77.09	187.60	0.11

Existing C shed	8900		Culvert									
Existing C shed	8838.97	Max WS	36.76	63.50	65.61		65.91	0.007924	4.35	8.45	150.62	0.53
Existing C shed	8733.44	Max WS	48.02	63.73	65.17		65.21	0.003201	1.54	31.27	35.66	0.29
Existing C shed	8602.24	Max WS	48.30	63.12	64.91		64.92	0.001378	0.77	62.91	108.20	0.18
Existing C shed	8400.09	Max WS	48.59	63.59	64.48		64.50	0.002754	0.95	51.15	107.58	0.24
Existing C shed	8201.23	Max WS	48.61	62.93	64.12		64.13	0.001205	0.70	69.60	124.80	0.16
Existing C shed	7998.43	Max WS	48.60	62.27	63.89		63.91	0.001323	0.86	56.46	79.30	0.18
Existing C shed	7800.51	Max WS	48.52	61.88	63.77		63.78	0.000112	0.28	173.41	205.94	0.05
Existing C shed	7603.85	Max WS	48.56	61.74	63.60		63.61	0.001903	0.87	56.09	102.63	0.21
Existing C shed	7448.33	Max WS	48.48	62.04	63.44		63.45	0.000555	0.43	113.15	236.23	0.11
Existing C shed	7249.86	Max WS	47.98	61.01	63.22		63.23	0.001750	0.77	62.02	126.00	0.19
Existing C shed	7049.18	Max WS	46.72	60.83	63.00		63.01	0.000543	0.54	86.03	123.72	0.11
Existing C shed	6900.65	Max WS	46.56	59.76	62.96		62.96	0.000051	0.22	213.34	204.52	0.04
Existing C shed	6700.38	Max WS	46.79	60.78	62.95		62.96	0.000045	0.20	239.03	247.19	0.04
Existing C shed	6500.68	Max WS	47.01	60.32	62.94		62.94	0.000075	0.28	166.69	144.72	0.05
Existing C shed	6300.08	Max WS	47.25	60.52	62.59		62.62	0.003314	1.58	29.81	33.13	0.29
Existing C shed	6099.15	Max WS	47.50	60.30	61.53		61.57	0.007420	1.64	28.92	56.12	0.40
Existing C shed	5900.55	Max WS	47.53	59.82	60.60		60.62	0.002183	0.86	53.51	104.55	0.22
Existing C shed	5599.9	Max WS	35.47	58.07	59.90		59.91	0.001284	0.76	46.80	77.81	0.17
Existing C shed	5449.15*	Max WS	33.41	57.61	59.81		59.82	0.000192	0.31	108.51	167.29	0.07
Existing C shed	5298.41	Max WS	107.32	57.16	59.76		59.76	0.000524	0.52	208.32	315.72	0.11
Existing C shed	5200.78	Max WS	107.95	57.06	59.71		59.72	0.000533	0.52	207.17	312.76	0.11
Existing C shed	5003.05	Max WS	108.97	56.65	59.32		59.35	0.003843	1.28	84.95	145.80	0.30
Existing C shed	4848.83	Max WS	109.50	56.29	59.04		59.04	0.000674	0.60	182.32	264.92	0.13
Existing C shed	4651.77	Max WS	110.57	56.43	58.68		58.70	0.002981	1.05	105.57	203.36	0.26
Existing C shed	4466.42	Max WS	111.58	56.11	58.17		58.19	0.002903	1.17	95.11	151.40	0.26
Existing C shed	4266.42	Max WS	112.63	55.64	57.88		57.89	0.000435	0.50	245.44	385.50	0.10
Existing C shed	4066.42	Max WS	111.99	55.37	57.79		57.79	0.000517	0.46	203.93	282.65	0.11
Existing C shed	3816.42	Max WS	111.17	54.26	57.42		57.44	0.001979	1.07	120.09	216.98	0.22
Existing C shed	3566.43	Max WS	110.01	54.15	57.21		57.21	0.000173	0.51	266.92	274.10	0.07
Existing C shed	3500.79	Max WS	110.25	53.81	57.20		57.20	0.000141	0.42	283.70	288.56	0.06
Existing C shed	3302.08	Max WS	111.05	52.47	56.66		56.73	0.004432	2.19	50.82	41.19	0.35
Existing C shed	3094.08	Max WS	111.68	51.80	55.82		55.88	0.004177	1.97	56.74	60.90	0.34
Existing C shed	2899.9	Max WS	111.75	52.57	55.40		55.41	0.001501	1.04	117.59	188.41	0.20
Existing C shed	2800.08	Max WS	111.85	51.13	55.24		55.27	0.001920	1.45	85.16	149.38	0.23
Existing C shed	2200.63	Max WS	113.03	50.42	54.56		54.58	0.000678	1.28	113.07	104.51	0.15
Existing C shed	2075.63	Max WS	113.42	50.55	54.39		54.43	0.001764	1.76	74.27	73.29	0.23
Existing C shed	2040.63	Max WS	113.54	50.31	54.35		54.39	0.000623	1.69	67.32	34.03	0.16
Existing C shed	2030		Culvert									
Existing C shed	1970.63	Max WS	113.54	50.65	54.20		54.29	0.001937	2.36	48.18	22.56	0.26
Existing C shed	1875.63	Max WS	113.87	50.65	54.03		54.11	0.001806	2.32	49.02	26.26	0.25
Existing C shed	1860		Culvert									
Existing C shed	1780.63	Max WS	113.87	50.65	53.80		53.96	0.005304	3.21	35.50	21.00	0.41
Existing C shed	1691.04	Max WS	114.16	50.28	53.63		53.66	0.001117	1.55	73.81	37.21	0.19
Existing C shed	1601.04	Max WS	114.46	50.21	53.51		53.53	0.002111	1.64	102.45	174.27	0.25
Existing C shed	1501.04	Max WS	114.78	49.83	53.24		53.30	0.003833	2.11	82.81	211.56	0.33
Existing C shed	1301.04	Max WS	123.36	48.83	52.83		52.85	0.001218	1.35	134.64	230.62	0.19
Existing C shed	1200	Max WS	123.34	49.05	52.67	51.30	52.69	0.002141	1.47	126.78	259.54	0.24



1) Existing 10yr
C SHED Existing C shed
Legend
WS Max WS
Ground
Elevation (ft)
75
70
65
60
55
50
45
0
2000
4000
6000
8000
10000
12000
Main Channel Distance (ft)

HEC-RAS Version 4.1.0 Jan 2010
U.S. Army Corps of Engineers
Hydrologic Engineering Center
609 Second Street
Davis, California

```
X     X  XXXXXX   XXXX        XXXX     XX     XXXX
X     X  X       X    X       X   X   X  X   X
X     X  X       X            X   X  X    X  X
XXXXXXX  XXXX    X      XXX   XXXX   XXXXXX   XXXX
X     X  X       X            X  X   X    X       X
X     X  X       X    X       X   X  X    X       X
X     X  XXXXXX   XXXX        X    X X    X  XXXXX
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PROJECT DATA
Project Title: Corridor-C
Project File : CorridorC.prj
Run Date and Time: 5/6/2011 8:06:31 AM

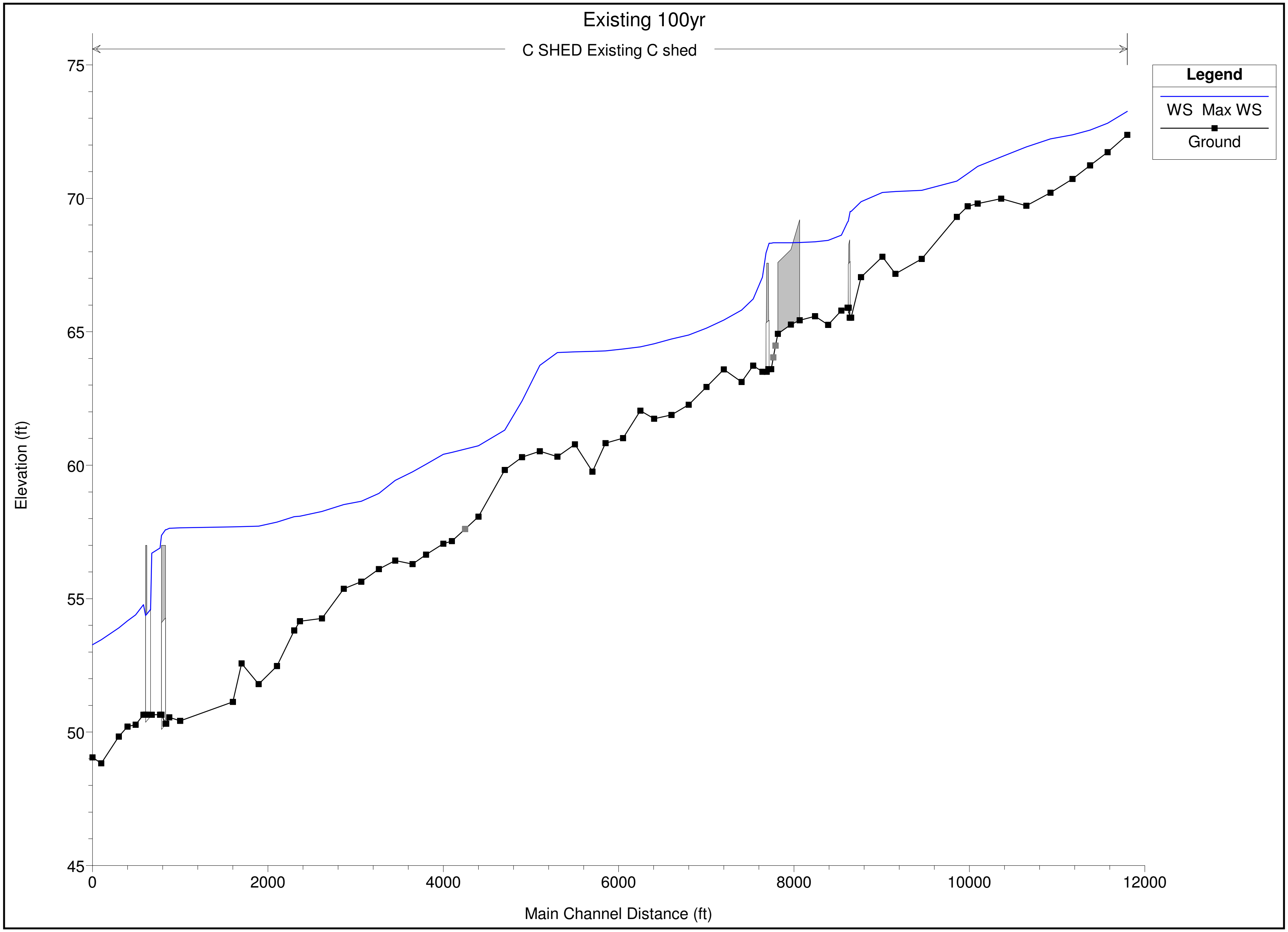
Project in English units

Project Description:
C Corridor - Developed, Interim and Existing Conditions
10 yr 24 hr Existing

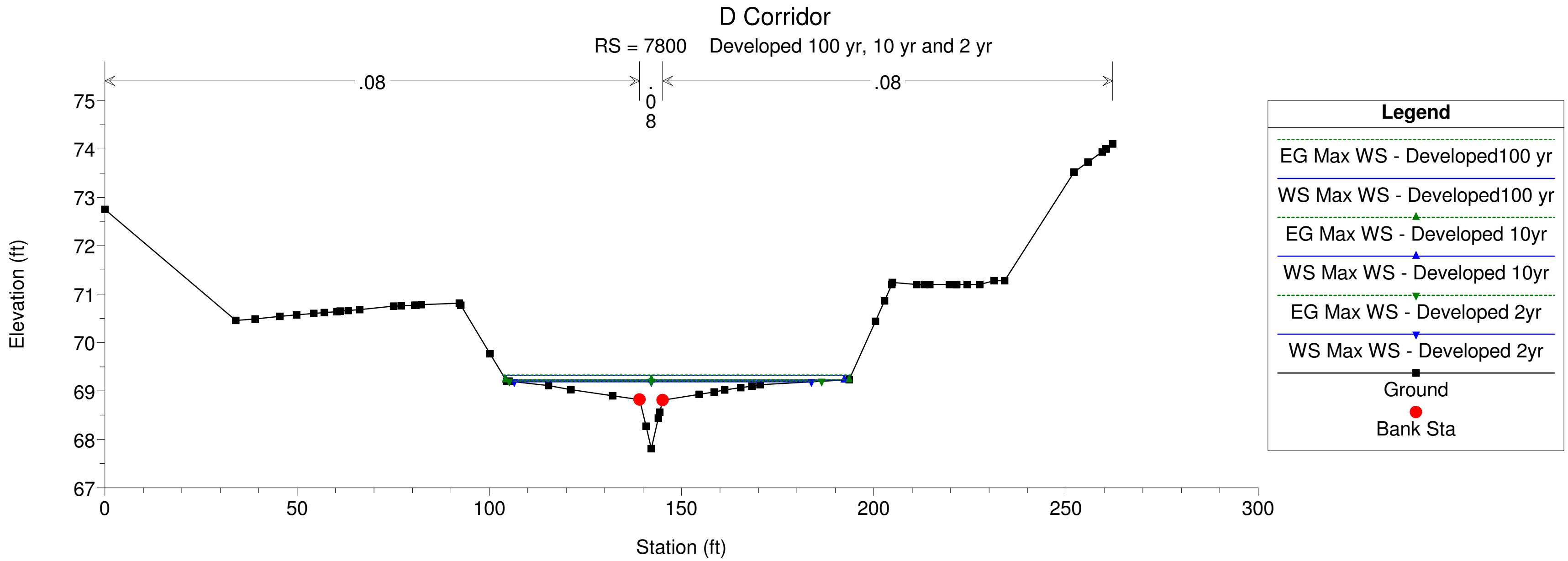
Profile Output Table - Standard Table 1

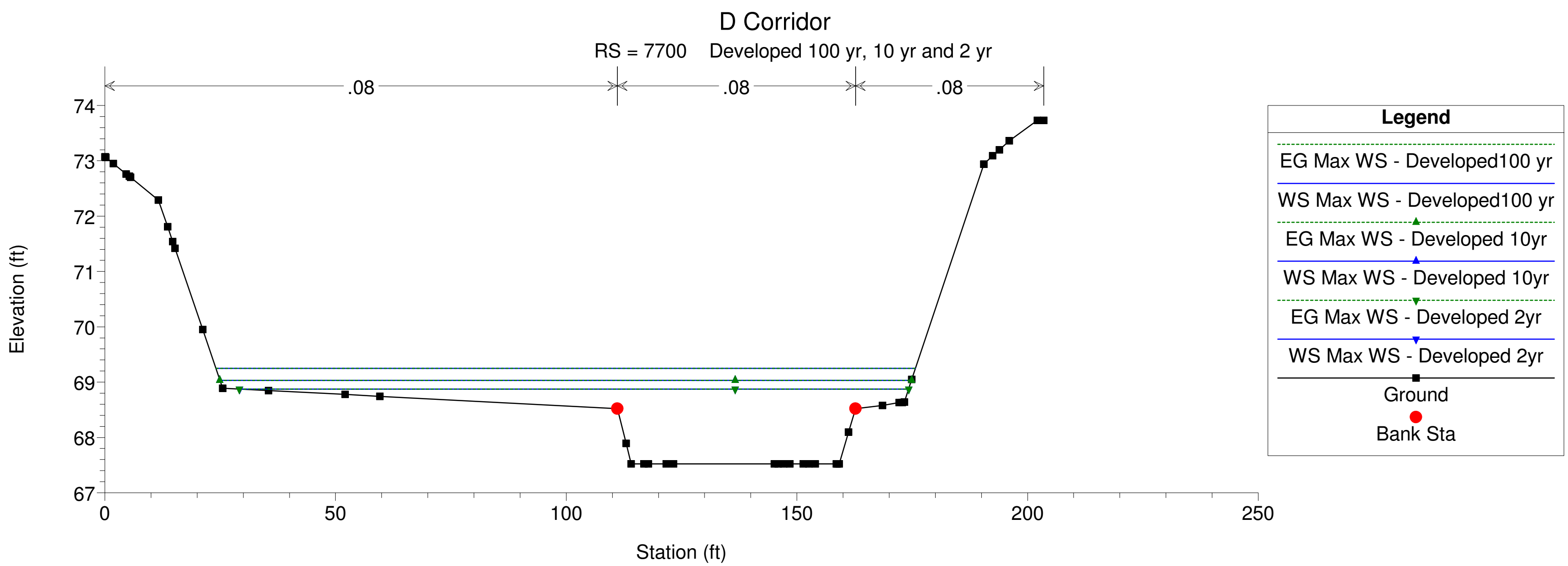
Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
Existing C shed	12999.63	Max WS	60.72	72.38	73.08		73.10	0.003396	1.00	60.53	137.31	0.27
Existing C shed	12774.63	Max WS	60.49	71.73	72.62		72.63	0.001217	0.68	88.93	167.22	0.16
Existing C shed	12574.63	Max WS	68.87	71.23	72.32		72.33	0.002064	0.80	85.78	187.02	0.21
Existing C shed	12374.63	Max WS	76.71	70.73	72.12		72.12	0.000366	0.47	161.83	212.31	0.10
Existing C shed	12124.63	Max WS	86.77	70.21	72.00		72.01	0.000598	0.64	135.45	163.50	0.12
Existing C shed	11849.63	Max WS	97.47	69.72	71.69		71.70	0.001887	0.80	121.75	249.00	0.20
Existing C shed	11560.49	Max WS	108.56	69.99	71.29		71.30	0.001105	0.78	139.87	200.76	0.16
Existing C shed	11293.47	Max WS	118.59	69.80	70.96		70.97	0.001357	0.84	141.25	210.21	0.18
Existing C shed	11180.76	Max WS	118.39	69.70	70.67		70.70	0.003893	1.20	98.57	189.03	0.29
Existing C shed	11055.95	Max WS	118.28	69.30	70.31		70.33	0.002313	1.04	114.27	200.97	0.23
Existing C shed	10655.95	Max WS	119.22	67.73	69.83		69.84	0.000253	0.56	213.37	312.07	0.09
Existing C shed	10355.95	Max WS	124.39	67.17	69.79		69.79	0.000056	0.31	404.94	248.00	0.04
Existing C shed	10206.15	Max WS	127.17	67.81	69.76		69.76	0.000308	0.64	198.55	145.61	0.10
Existing C shed	9964.32	Max WS	131.75	67.05	69.53		69.57	0.001362	1.43	92.08	61.48	0.21
Existing C shed	9849.32	Max WS	133.96	65.53	69.29		69.33	0.002891	1.45	92.20	105.48	0.27
Existing C shed	9825		Culvert									
Existing C shed	9809.39	Max WS	133.48	65.90	68.84		68.92	0.015442	2.32	57.60	115.29	0.58
Existing C shed	9739.39	Max WS	133.08	65.79	68.34		68.38	0.001579	1.60	83.31	52.57	0.22
Existing C shed	9589.39	Max WS	134.14	65.26	68.23		68.24	0.000238	0.57	233.42	165.61	0.09
Existing C shed	9439.39	Max WS	136.11	65.58	68.21		68.21	0.000125	0.39	350.02	276.13	0.06
Existing C shed	9264.39	Max WS	138.92	65.43	68.19		68.20	0.000035	0.26	543.26	309.82	0.03
Existing C shed	9263		Lat Struct									
Existing C shed	9164.39	Max WS	140.11	65.27	68.19		68.19	0.000023	0.21	662.16	363.52	0.03
Existing C shed	9014.39	Max WS	56.46	64.92	68.19		68.19	0.000008	0.14	400.90	177.56	0.02
Existing C shed	8989.39*	Max WS	56.45	64.48	68.19		68.19	0.000009	0.15	386.50	183.06	0.02
Existing C shed	8964.39*	Max WS	56.43	64.04	68.19		68.19	0.000010	0.15	380.87	187.33	0.02
Existing C shed	8939.39	Max WS	56.42	63.60	68.18		68.19	0.000281	0.47	120.74	192.32	0.09
Existing C shed	8900		Culvert									
Existing C shed	8838.97	Max WS	56.40	63.50	66.49		66.83	0.005898	4.72	11.94	206.97	0.48
Existing C shed	8733.44	Max WS	143.52	63.73	65.87		65.93	0.006165	1.81	79.18	115.44	0.39

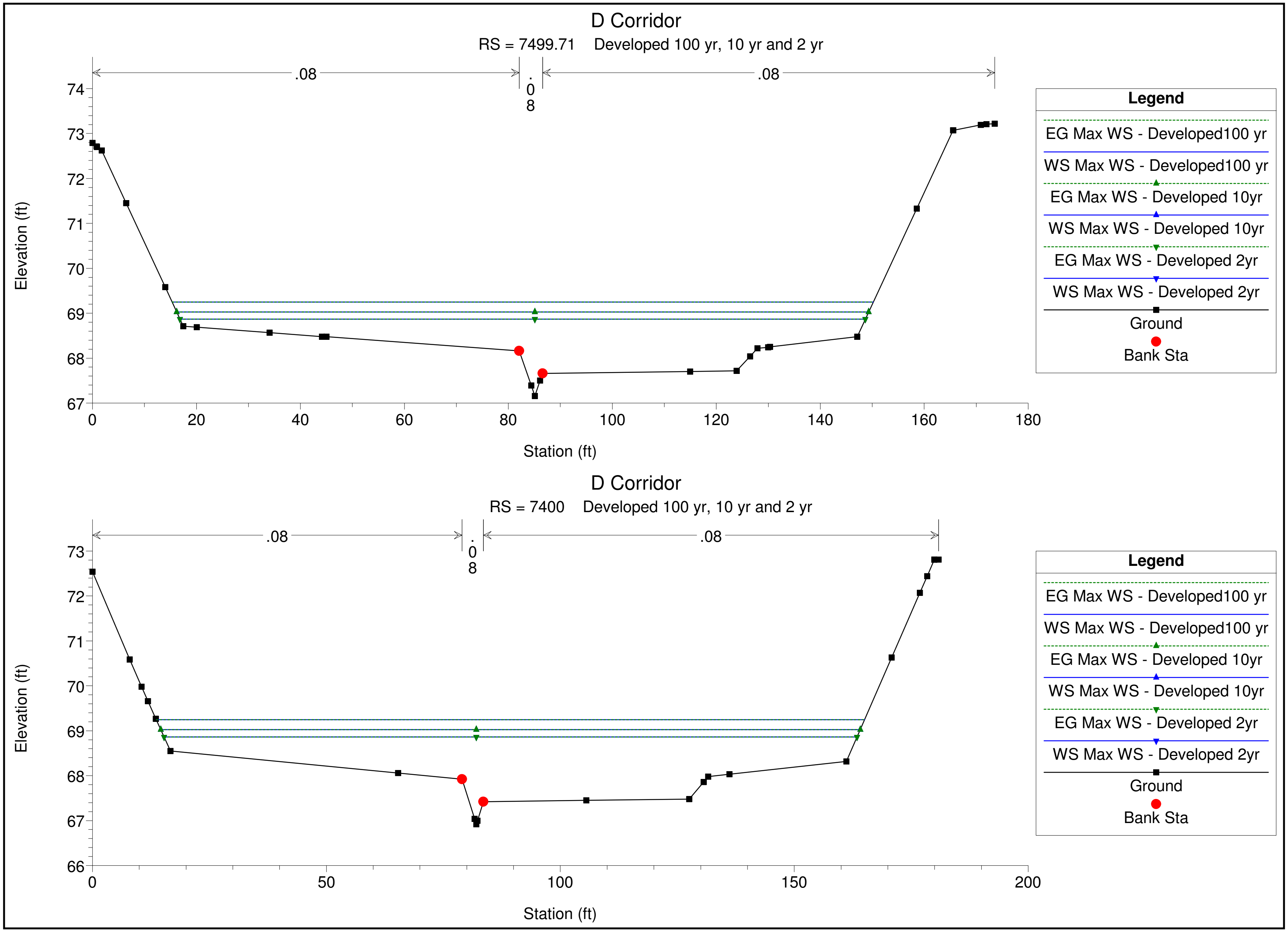
Existing C shed	8602.24	Max WS	143.74	63.12	65.42		65.43	0.001871	1.11	130.05	163.01	0.22
Existing C shed	8400.09	Max WS	144.81	63.59	65.06		65.09	0.001843	1.16	124.71	143.57	0.22
Existing C shed	8201.23	Max WS	146.26	62.93	64.82		64.83	0.000809	0.80	182.06	196.29	0.15
Existing C shed	7998.43	Max WS	144.99	62.27	64.54		64.55	0.002033	0.91	158.64	281.49	0.21
Existing C shed	7800.51	Max WS	144.84	61.88	64.34		64.34	0.000200	0.49	296.41	236.07	0.08
Existing C shed	7603.85	Max WS	143.89	61.74	64.11		64.13	0.002235	1.09	132.10	193.29	0.23
Existing C shed	7448.33	Max WS	135.66	62.04	63.95		63.95	0.000395	0.51	265.74	330.68	0.10
Existing C shed	7249.86	Max WS	125.60	61.01	63.84		63.85	0.000683	0.64	195.81	260.56	0.13
Existing C shed	7049.18	Max WS	123.56	60.83	63.75		63.75	0.000350	0.49	250.88	300.26	0.09
Existing C shed	6900.65	Max WS	123.71	59.76	63.72		63.72	0.000065	0.32	389.38	254.97	0.05
Existing C shed	6700.38	Max WS	124.21	60.78	63.71		63.71	0.000053	0.28	450.00	312.38	0.04
Existing C shed	6500.68	Max WS	125.10	60.32	63.69		63.69	0.000135	0.35	353.58	339.61	0.06
Existing C shed	6300.08	Max WS	125.99	60.52	63.20		63.27	0.004269	2.11	69.61	91.21	0.35
Existing C shed	6099.15	Max WS	126.89	60.30	61.96		62.04	0.007735	2.24	56.54	70.87	0.44
Existing C shed	5900.55	Max WS	127.70	59.82	60.96		60.98	0.002852	1.10	103.82	156.04	0.26
Existing C shed	5599.9	Max WS	129.01	58.07	60.32		60.33	0.001601	0.95	170.04	381.11	0.20
Existing C shed	5449.15*	Max WS	53.43	57.61	60.16		60.16	0.000143	0.30	181.02	238.97	0.06
Existing C shed	5298.41	Max WS	199.79	57.16	60.10		60.11	0.000487	0.61	325.19	360.69	0.11
Existing C shed	5200.78	Max WS	201.06	57.06	60.05		60.06	0.000499	0.63	320.59	350.86	0.12
Existing C shed	5003.05	Max WS	203.44	56.65	59.63		59.66	0.003855	1.41	147.59	250.51	0.30
Existing C shed	4848.83	Max WS	205.21	56.29	59.30		59.31	0.000859	0.80	255.70	288.66	0.15
Existing C shed	4651.77	Max WS	207.68	56.43	58.97		58.99	0.002662	1.23	168.48	233.54	0.26
Existing C shed	4466.42	Max WS	208.61	56.11	58.48		58.51	0.002902	1.44	144.93	180.16	0.27
Existing C shed	4266.42	Max WS	209.17	55.64	58.19		58.19	0.000417	0.61	364.24	395.37	0.11
Existing C shed	4066.42	Max WS	211.07	55.37	58.08		58.09	0.000628	0.67	291.52	308.46	0.13
Existing C shed	3816.42	Max WS	211.37	54.26	57.85		57.87	0.001206	1.07	221.14	257.64	0.18
Existing C shed	3566.43	Max WS	213.18	54.15	57.69		57.70	0.000191	0.64	407.38	304.64	0.08
Existing C shed	3500.79	Max WS	213.83	53.81	57.68		57.69	0.000159	0.55	433.38	328.59	0.07
Existing C shed	3302.08	Max WS	215.32	52.47	57.11		57.19	0.005566	2.42	112.07	216.42	0.39
Existing C shed	3094.08	Max WS	212.45	51.80	56.27		56.32	0.002902	1.96	149.62	264.05	0.29
Existing C shed	2899.9	Max WS	201.46	52.57	55.98		55.99	0.000666	0.94	246.18	252.89	0.14
Existing C shed	2800.08	Max WS	201.77	51.13	55.92		55.93	0.000643	1.13	270.78	395.73	0.15
Existing C shed	2200.63	Max WS	204.64	50.42	55.67		55.68	0.000256	1.03	282.22	183.50	0.10
Existing C shed	2075.63	Max WS	205.26	50.55	55.62		55.63	0.000453	1.27	217.73	151.28	0.13
Existing C shed	2040.63	Max WS	205.43	50.31	55.54		55.62	0.000772	2.28	90.07	134.82	0.18
Existing C shed	2030		Culvert									
Existing C shed	1970.63	Max WS	205.43	50.65	55.09		55.24	0.002388	3.16	64.96	29.91	0.30
Existing C shed	1875.63	Max WS	205.91	50.65	54.86		55.02	0.002321	3.17	64.87	30.82	0.30
Existing C shed	1860		Culvert									
Existing C shed	1780.63	Max WS	205.47	50.65	54.25		54.59	0.008502	4.68	43.91	22.69	0.54
Existing C shed	1691.04	Max WS	206.04	50.28	53.97		54.05	0.002879	2.34	88.34	66.15	0.31
Existing C shed	1601.04	Max WS	206.61	50.21	53.79		53.83	0.002274	1.91	156.18	196.79	0.26
Existing C shed	1501.04	Max WS	206.87	49.83	53.54		53.58	0.003075	2.08	147.13	222.39	0.30
Existing C shed	1301.04	Max WS	227.37	48.83	53.13		53.15	0.001403	1.61	213.87	283.64	0.21
Existing C shed	1200	Max WS	227.34	49.05	52.96	52.52	52.98	0.002001	1.57	213.96	332.35	0.24



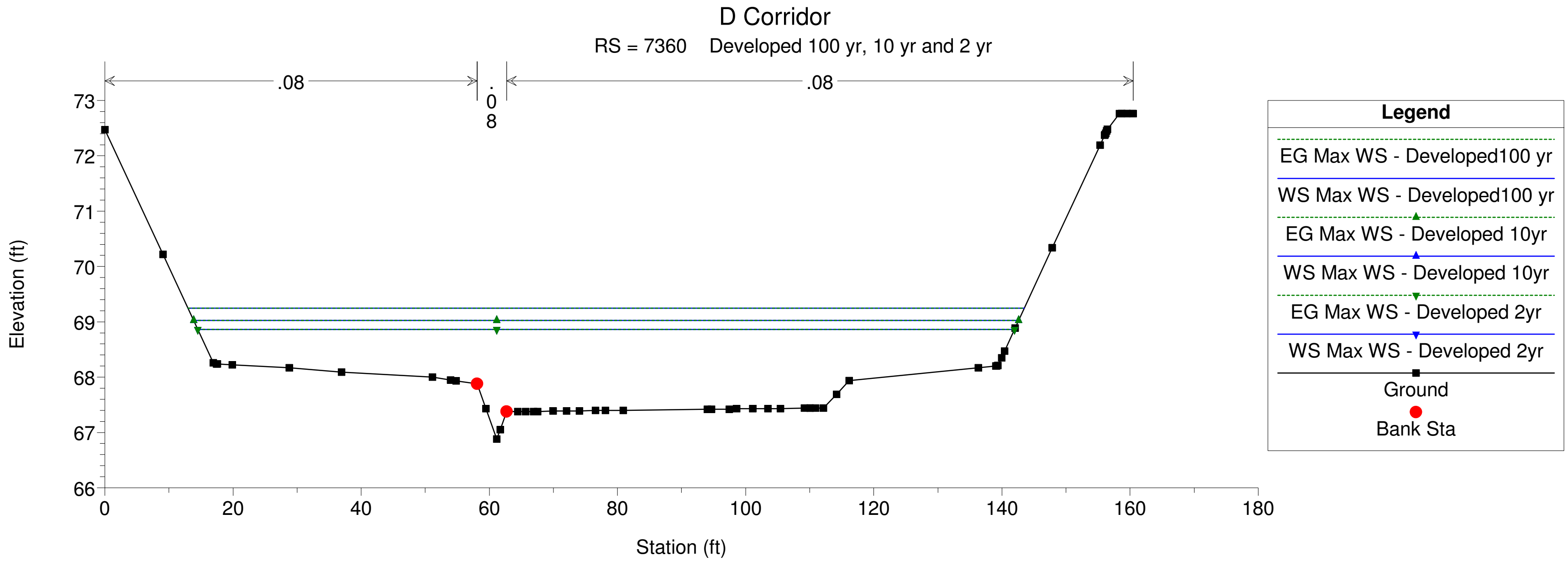
Existing 100yr
C SHED Existing C shed
Legend
WS Max WS
Ground
Elevation (ft)
75
70
65
60
55
50
45
0
2000
4000
6000
8000
10000
12000
Main Channel Distance (ft)

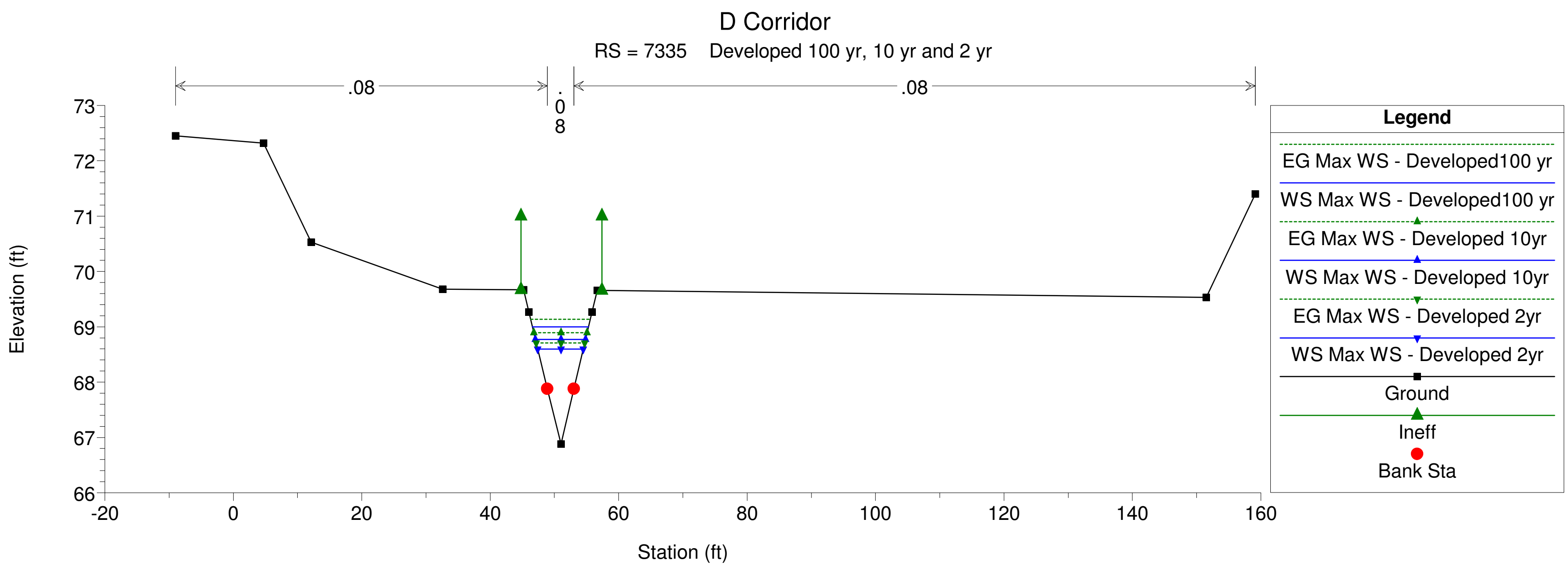

D Corridor
RS = 7800 Developed 100 yr, 10 yr and 2 yr
.08
.08
.08
Elevation (ft)
Station (ft)
Legend
EG Max WS - Developed100 yr
WS Max WS - Developed100 yr
EG Max WS - Developed 10yr
WS Max WS - Developed 10yr
EG Max WS - Developed 2yr
WS Max WS - Developed 2yr
Ground
Bank Sta

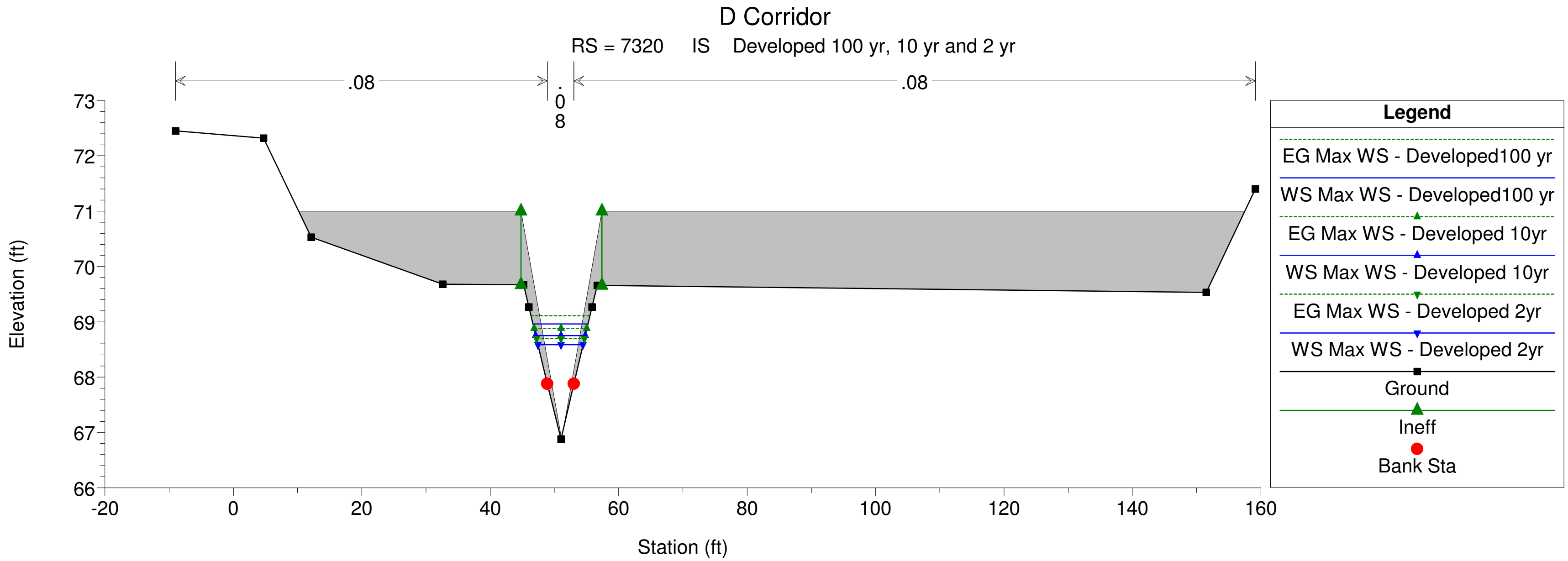

D Corridor
RS = 7700 Developed 100 yr, 10 yr and 2 yr
.08
.08
.08
Elevation (ft)
Station (ft)
Legend
EG Max WS - Developed100 yr
WS Max WS - Developed100 yr
EG Max WS - Developed 10yr
WS Max WS - Developed 10yr
EG Max WS - Developed 2yr
WS Max WS - Developed 2yr
Ground
Bank Sta



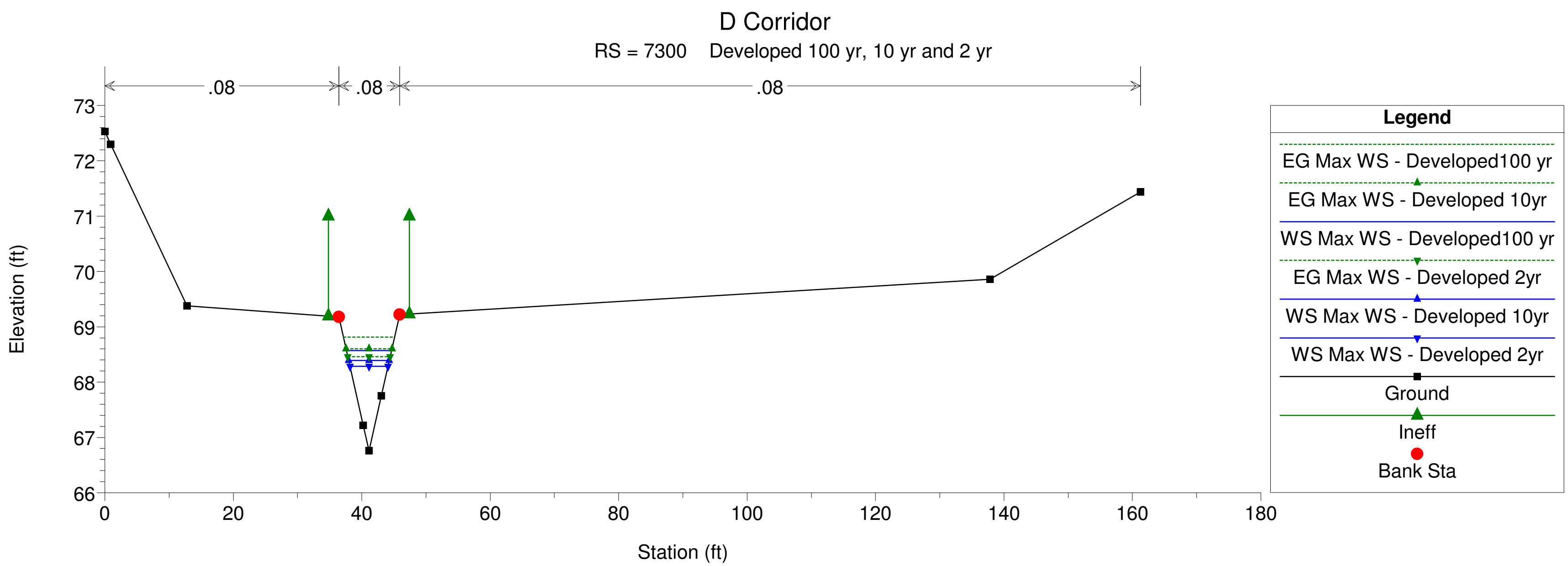
D Corridor
RS = 7499.71 Developed 100 yr, 10 yr and 2 yr
.08
.08
.08
Elevation (ft)
74
73
72
71
70
69
68
67
0
20
40
60
80
100
120
140
160
180
Station (ft)
Legend
EG Max WS - Developed100 yr
WS Max WS - Developed100 yr
EG Max WS - Developed 10yr
WS Max WS - Developed 10yr
EG Max WS - Developed 2yr
WS Max WS - Developed 2yr
Ground
Bank Sta
D Corridor
RS = 7400 Developed 100 yr, 10 yr and 2 yr
.08
.08
.08
Elevation (ft)
73
72
71
70
69
68
67
66
0
50
100
150
200
Station (ft)
Legend
EG Max WS - Developed100 yr
WS Max WS - Developed100 yr
EG Max WS - Developed 10yr
WS Max WS - Developed 10yr
EG Max WS - Developed 2yr
WS Max WS - Developed 2yr
Ground
Bank Sta


D Corridor
RS = 7360 Developed 100 yr, 10 yr and 2 yr
.08
.08
.08
Elevation (ft)
Station (ft)
Legend
EG Max WS - Developed100 yr
WS Max WS - Developed100 yr
EG Max WS - Developed 10yr
WS Max WS - Developed 10yr
EG Max WS - Developed 2yr
WS Max WS - Developed 2yr
Ground
Bank Sta

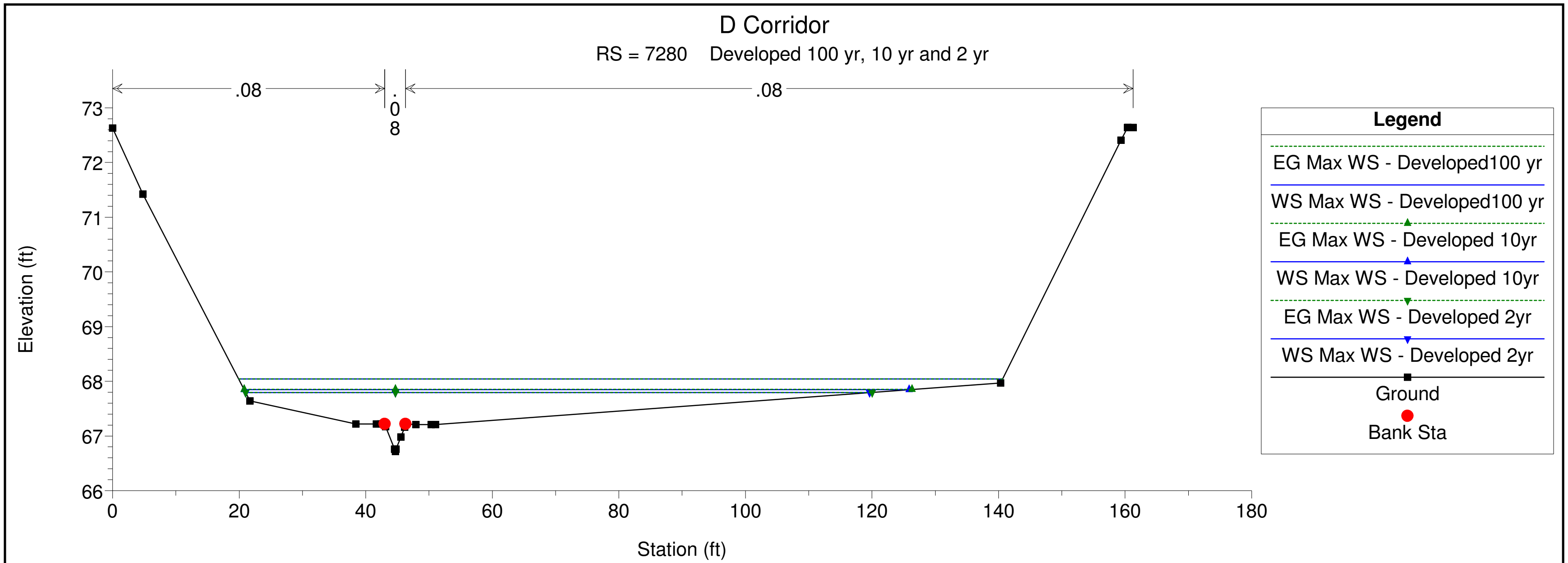

D Corridor
RS = 7335 Developed 100 yr, 10 yr and 2 yr
.08
.08
.08
Elevation (ft)
Station (ft)
Legend
EG Max WS - Developed100 yr
WS Max WS - Developed100 yr
EG Max WS - Developed 10yr
WS Max WS - Developed 10yr
EG Max WS - Developed 2yr
WS Max WS - Developed 2yr
Ground
Ineff
Bank Sta

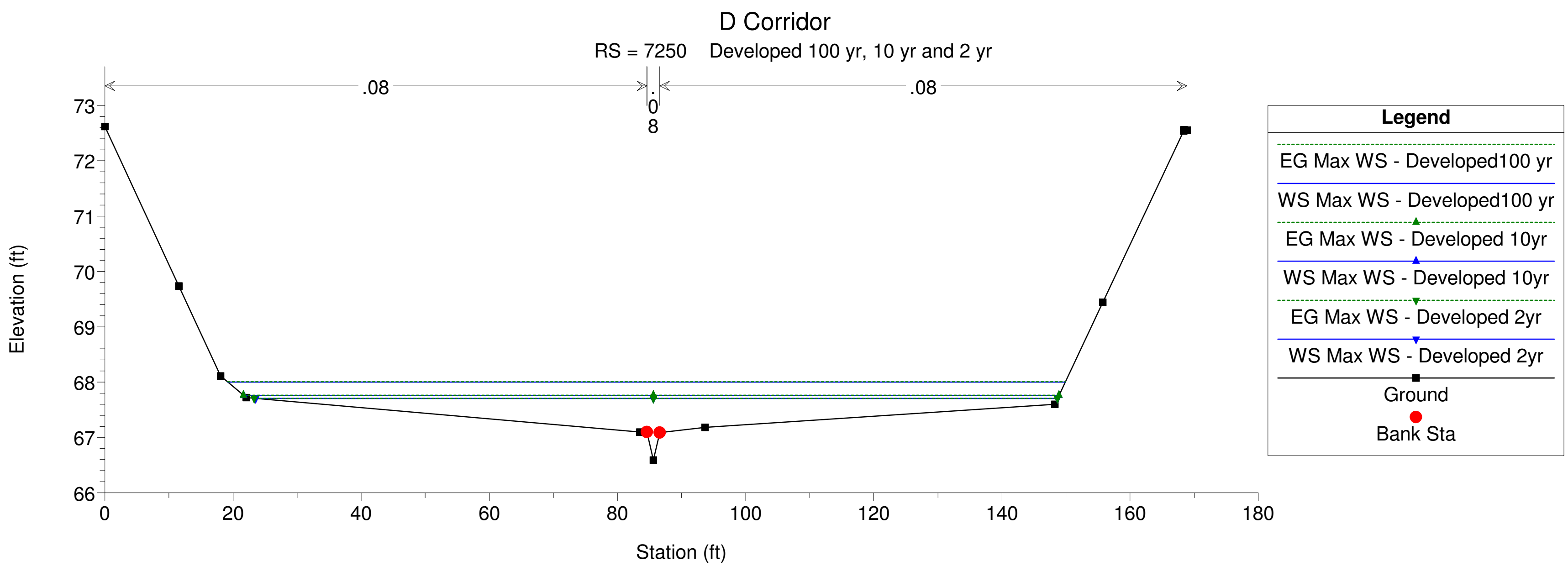


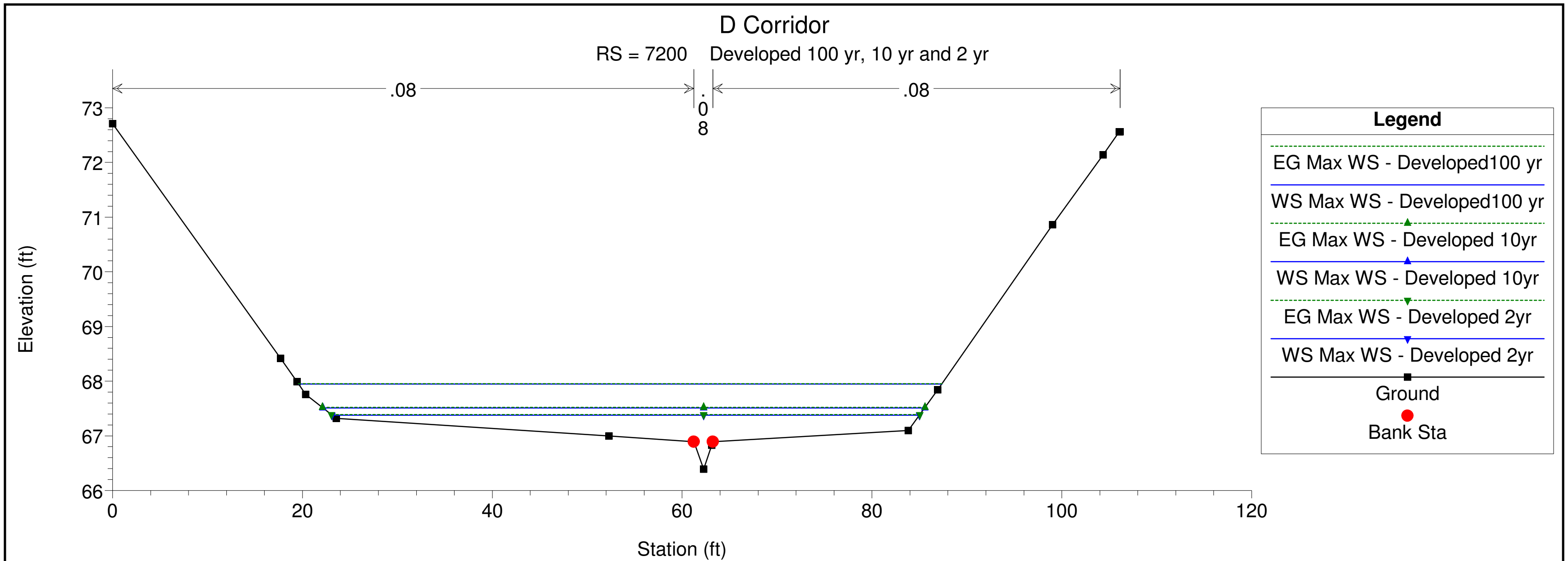
D Corridor
RS = 7320 IS Developed 100 yr, 10 yr and 2 yr
.08
.08
.08
Elevation (ft)
Station (ft)
Legend
EG Max WS - Developed100 yr
WS Max WS - Developed100 yr
EG Max WS - Developed 10yr
WS Max WS - Developed 10yr
EG Max WS - Developed 2yr
WS Max WS - Developed 2yr
Ground
Ineff
Bank Sta

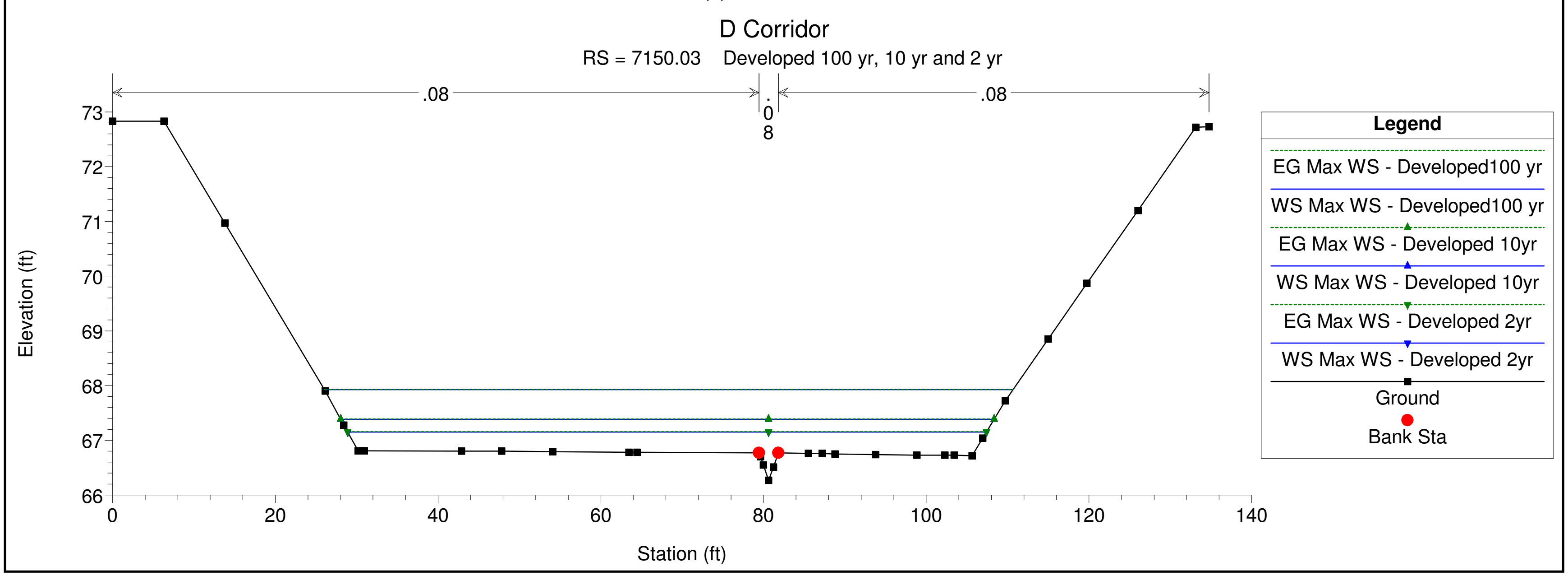


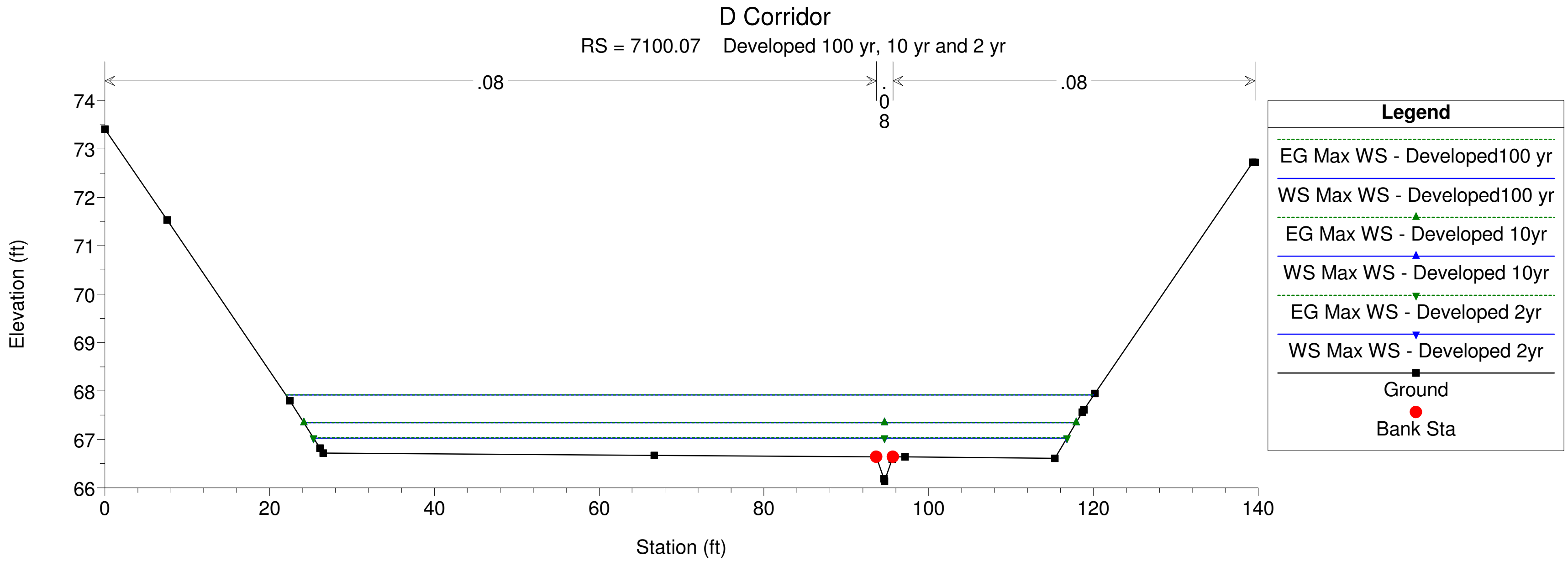
D Corridor
RS = 7300 Developed 100 yr, 10 yr and 2 yr
.08
.08
.08
Elevation (ft)
Station (ft)
Legend
EG Max WS - Developed100 yr
EG Max WS - Developed 10yr
WS Max WS - Developed100 yr
EG Max WS - Developed 2yr
WS Max WS - Developed 10yr
WS Max WS - Developed 2yr
Ground
Ineff
Bank Sta


D Corridor
RS = 7280 Developed 100 yr, 10 yr and 2 yr
.08
.08
.08
Elevation (ft)
Station (ft)
Legend
EG Max WS - Developed100 yr
WS Max WS - Developed100 yr
EG Max WS - Developed 10yr
WS Max WS - Developed 10yr
EG Max WS - Developed 2yr
WS Max WS - Developed 2yr
Ground
Bank Sta

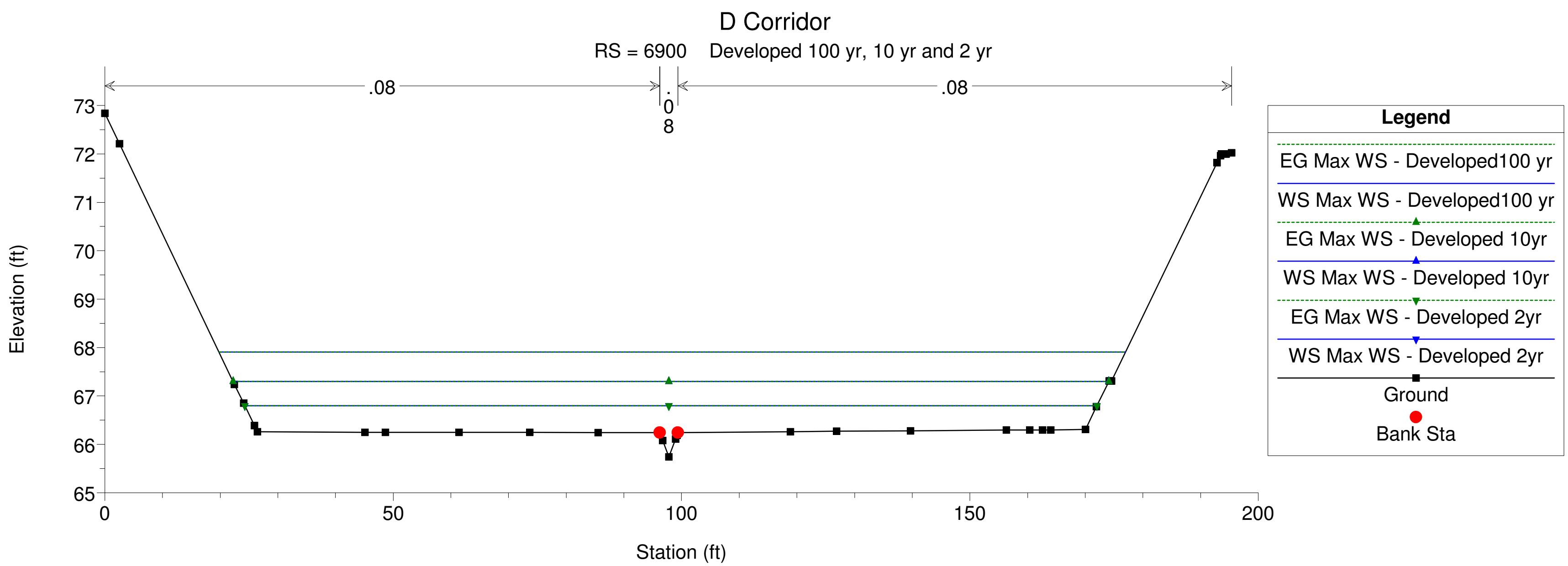

D Corridor
RS = 7250 Developed 100 yr, 10 yr and 2 yr
.08
.08
.08
Elevation (ft)
Station (ft)
Legend
EG Max WS - Developed100 yr
WS Max WS - Developed100 yr
EG Max WS - Developed 10yr
WS Max WS - Developed 10yr
EG Max WS - Developed 2yr
WS Max WS - Developed 2yr
Ground
Bank Sta


D Corridor
RS = 7200 Developed 100 yr, 10 yr and 2 yr
.08
.08
.08
Elevation (ft)
Station (ft)
Legend
EG Max WS - Developed100 yr
WS Max WS - Developed100 yr
EG Max WS - Developed 10yr
WS Max WS - Developed 10yr
EG Max WS - Developed 2yr
WS Max WS - Developed 2yr
Ground
Bank Sta

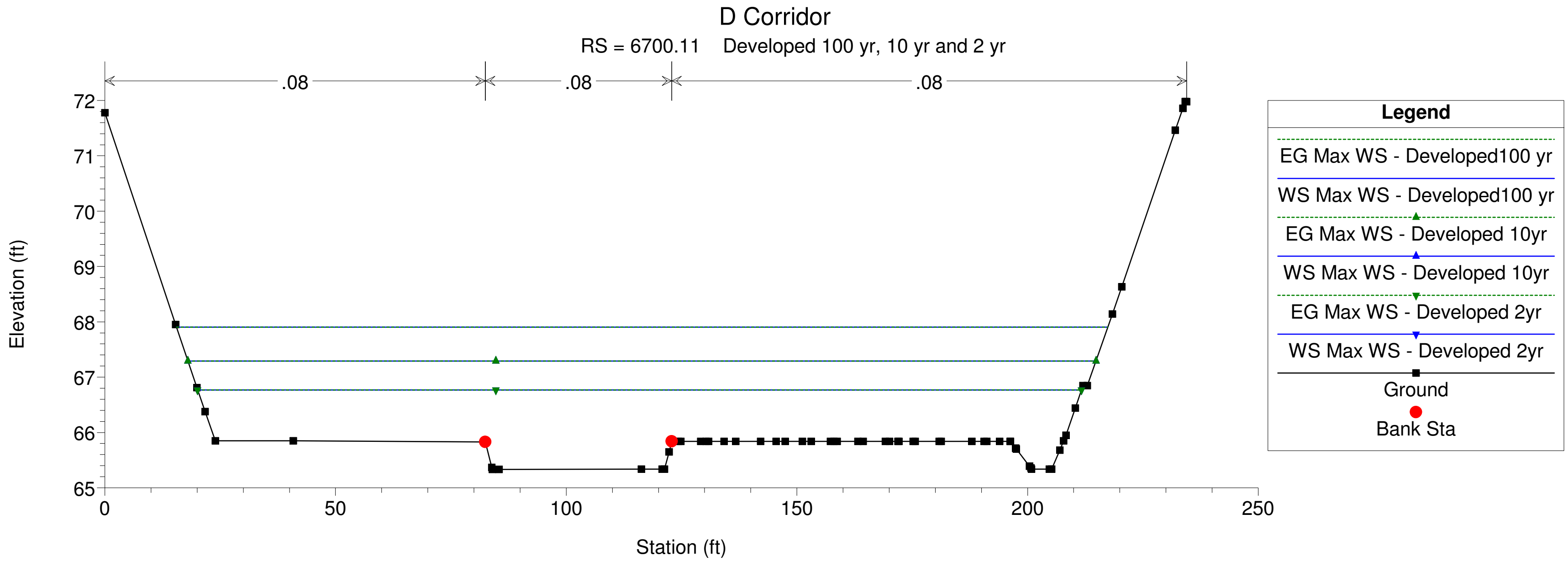

D Corridor
RS = 7150.03 Developed 100 yr, 10 yr and 2 yr
.08
.08
.08
Elevation (ft)
Station (ft)
Legend
EG Max WS - Developed100 yr
WS Max WS - Developed100 yr
EG Max WS - Developed 10yr
WS Max WS - Developed 10yr
EG Max WS - Developed 2yr
WS Max WS - Developed 2yr
Ground
Bank Sta

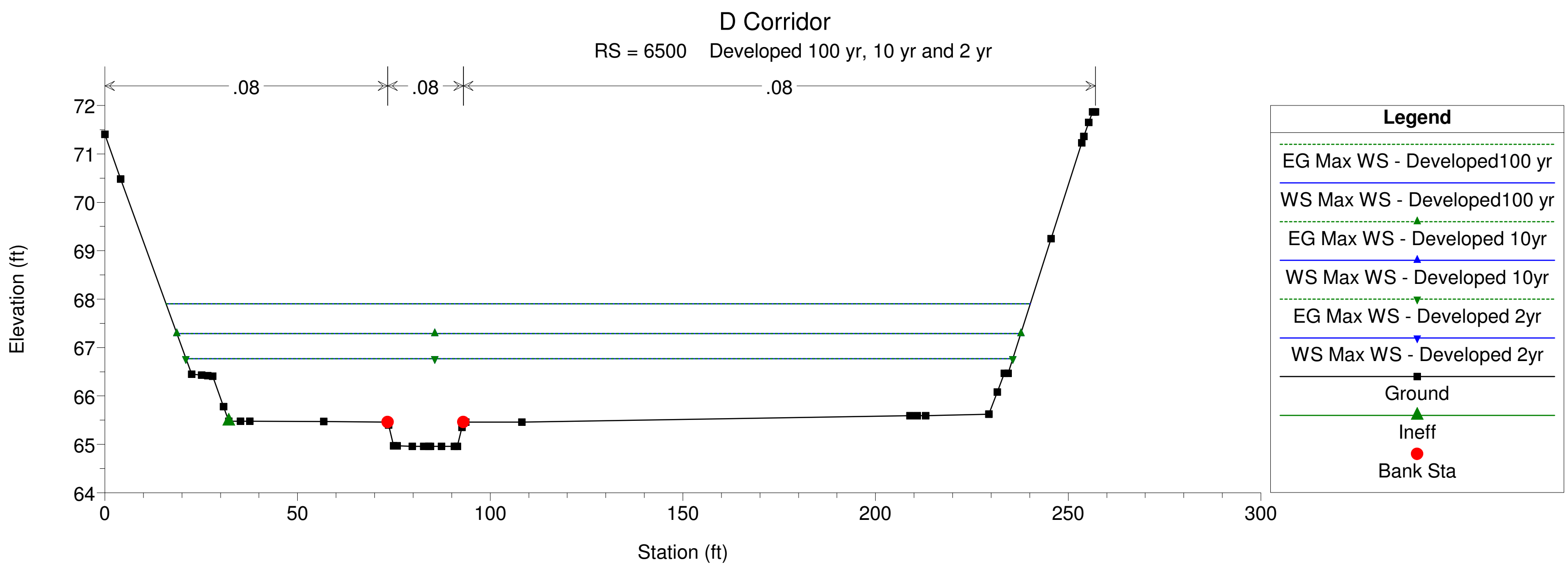


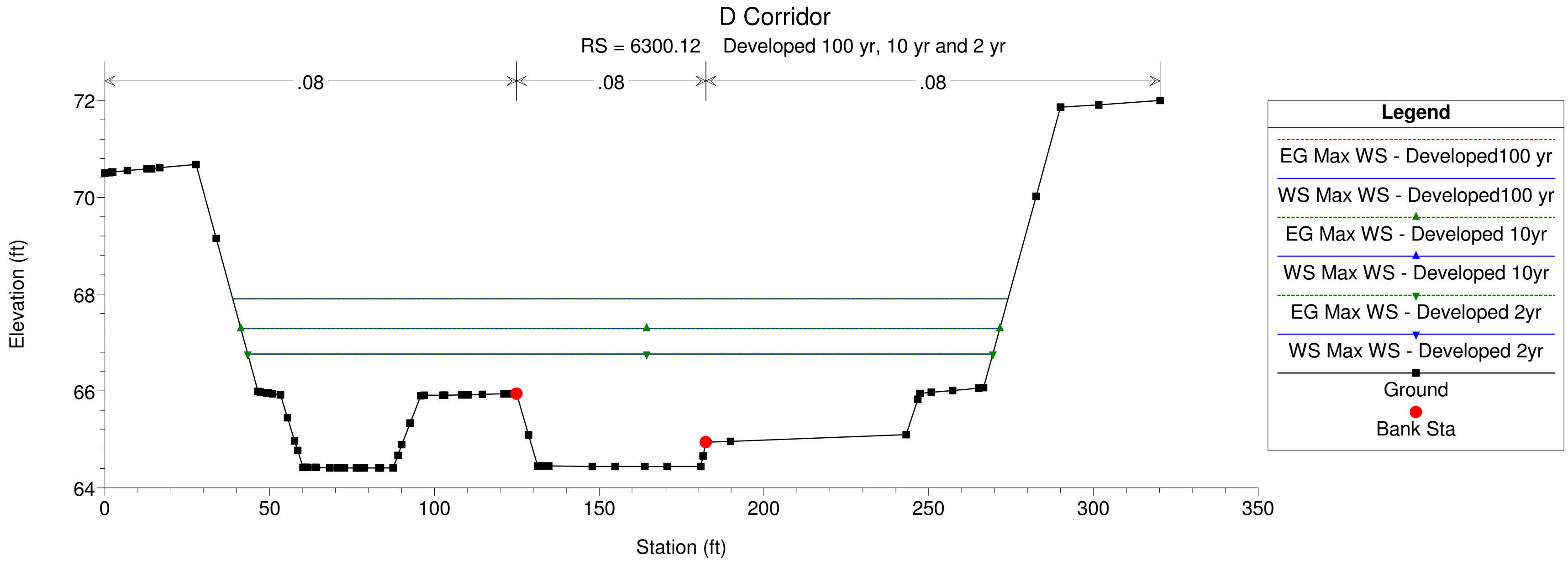
D Corridor
RS = 7100.07 Developed 100 yr, 10 yr and 2 yr
.08
.08
.08
Legend
EG Max WS - Developed100 yr
WS Max WS - Developed100 yr
EG Max WS - Developed 10yr
WS Max WS - Developed 10yr
EG Max WS - Developed 2yr
WS Max WS - Developed 2yr
Ground
Bank Sta
Elevation (ft)
Station (ft)

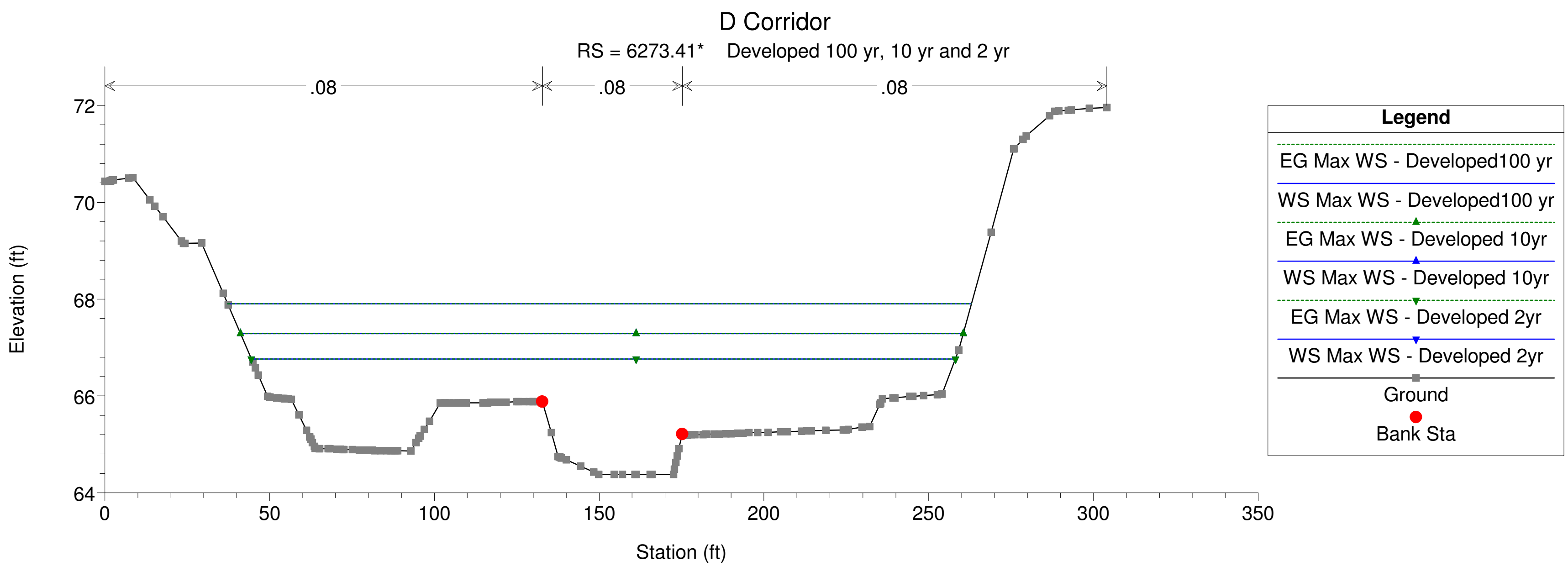


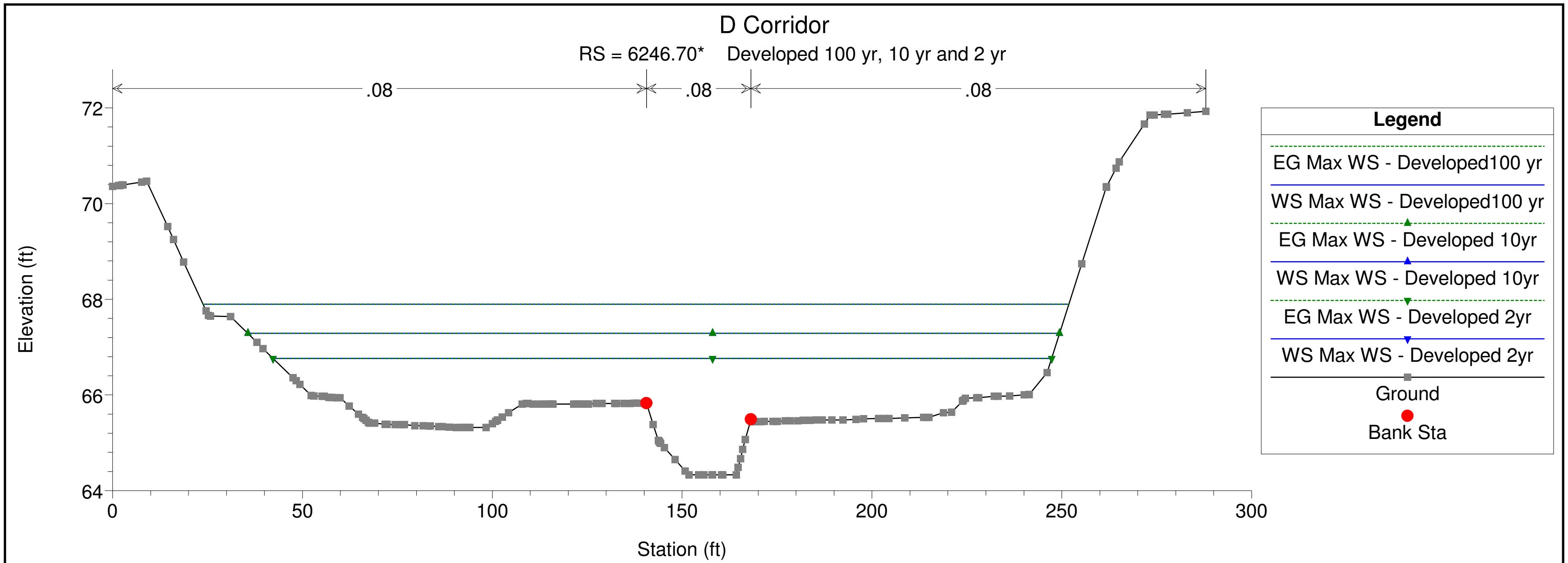
D Corridor
RS = 6900 Developed 100 yr, 10 yr and 2 yr
.08
.08
.08
Legend
EG Max WS - Developed100 yr
WS Max WS - Developed100 yr
EG Max WS - Developed 10yr
WS Max WS - Developed 10yr
EG Max WS - Developed 2yr
WS Max WS - Developed 2yr
Ground
Bank Sta
Elevation (ft)
Station (ft)

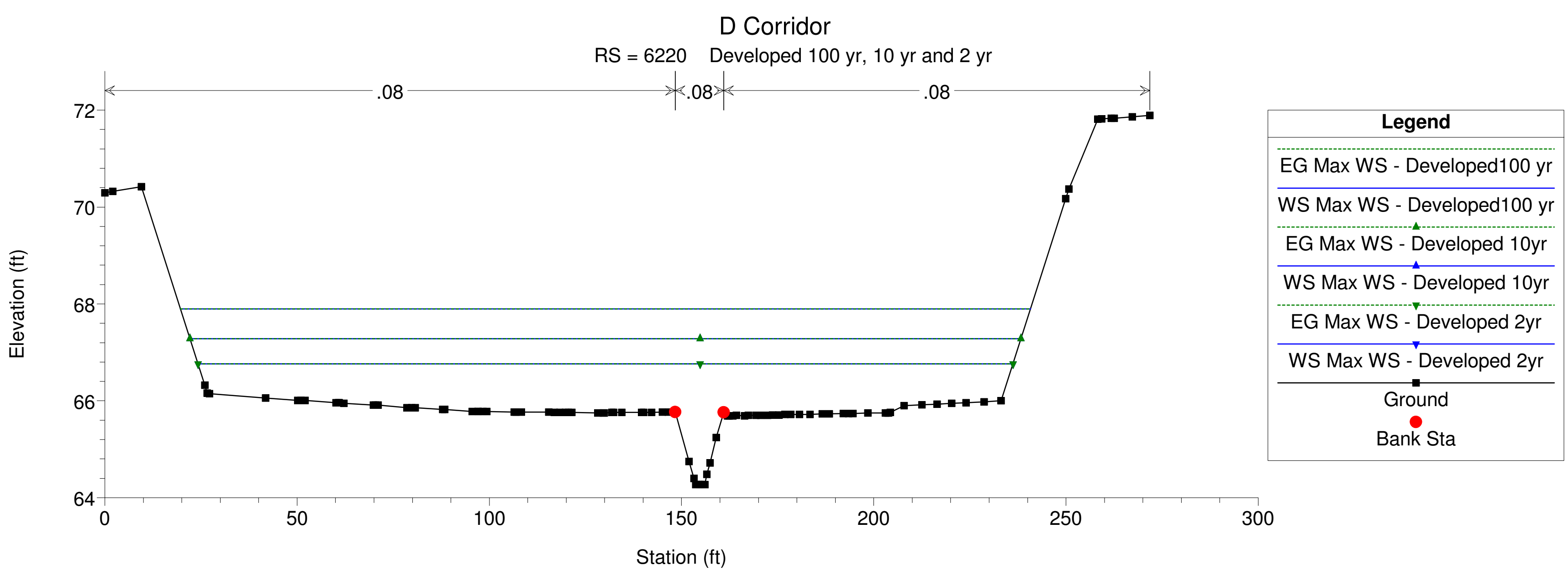

D Corridor
RS = 6700.11 Developed 100 yr, 10 yr and 2 yr
.08
.08
.08
Elevation (ft)
Station (ft)
Legend
EG Max WS - Developed100 yr
WS Max WS - Developed100 yr
EG Max WS - Developed 10yr
WS Max WS - Developed 10yr
EG Max WS - Developed 2yr
WS Max WS - Developed 2yr
Ground
Bank Sta

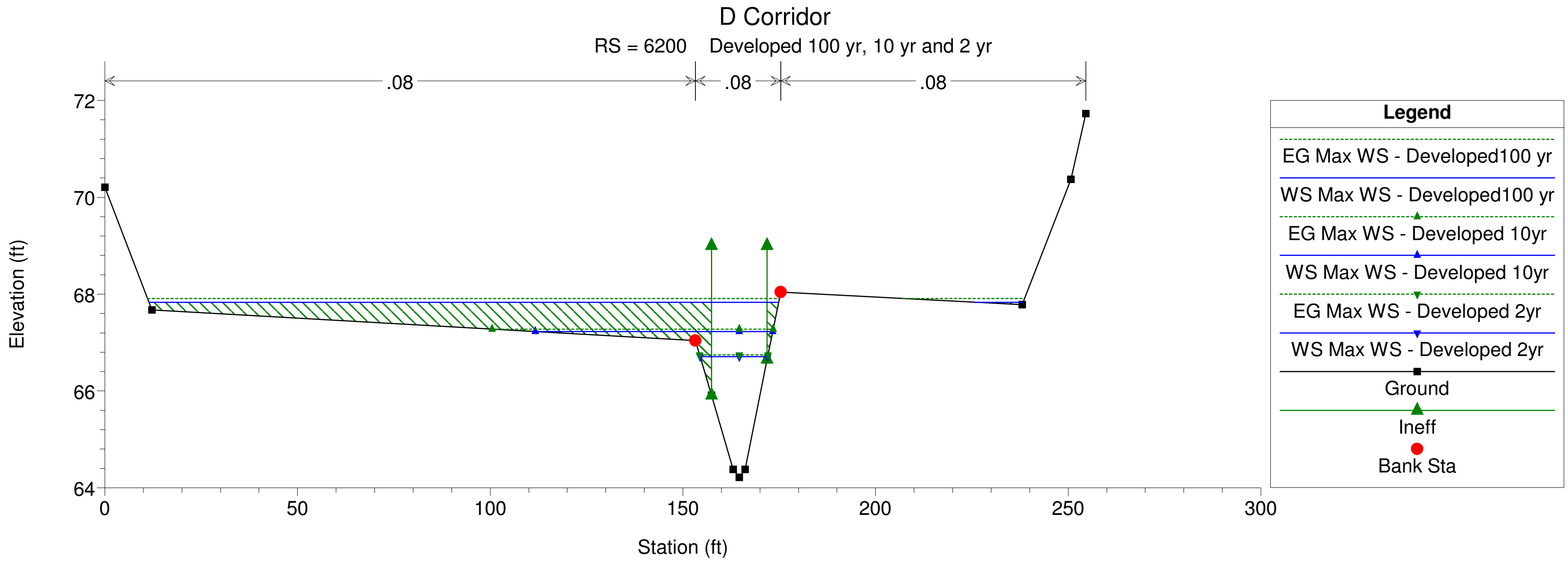

D Corridor
RS = 6500 Developed 100 yr, 10 yr and 2 yr
.08
.08
.08
Elevation (ft)
Station (ft)
Legend
EG Max WS - Developed100 yr
WS Max WS - Developed100 yr
EG Max WS - Developed 10yr
WS Max WS - Developed 10yr
EG Max WS - Developed 2yr
WS Max WS - Developed 2yr
Ground
Ineff
Bank Sta

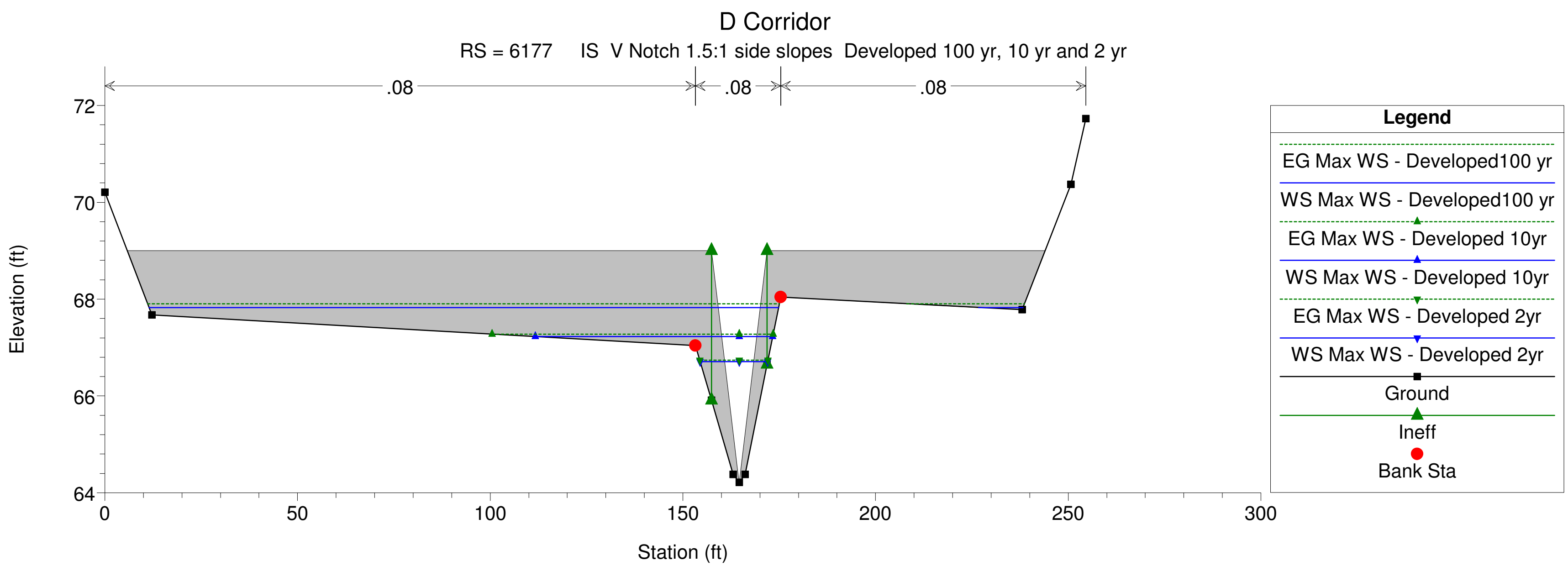

D Corridor
RS = 6300.12   Developed 100 yr, 10 yr and 2 yr
.08
.08
.08
Elevation (ft)
Station (ft)
64
66
68
70
72
0
50
100
150
200
250
300
350
Legend
EG Max WS - Developed100 yr
WS Max WS - Developed100 yr
EG Max WS - Developed 10yr
WS Max WS - Developed 10yr
EG Max WS - Developed 2yr
WS Max WS - Developed 2yr
Ground
Bank Sta

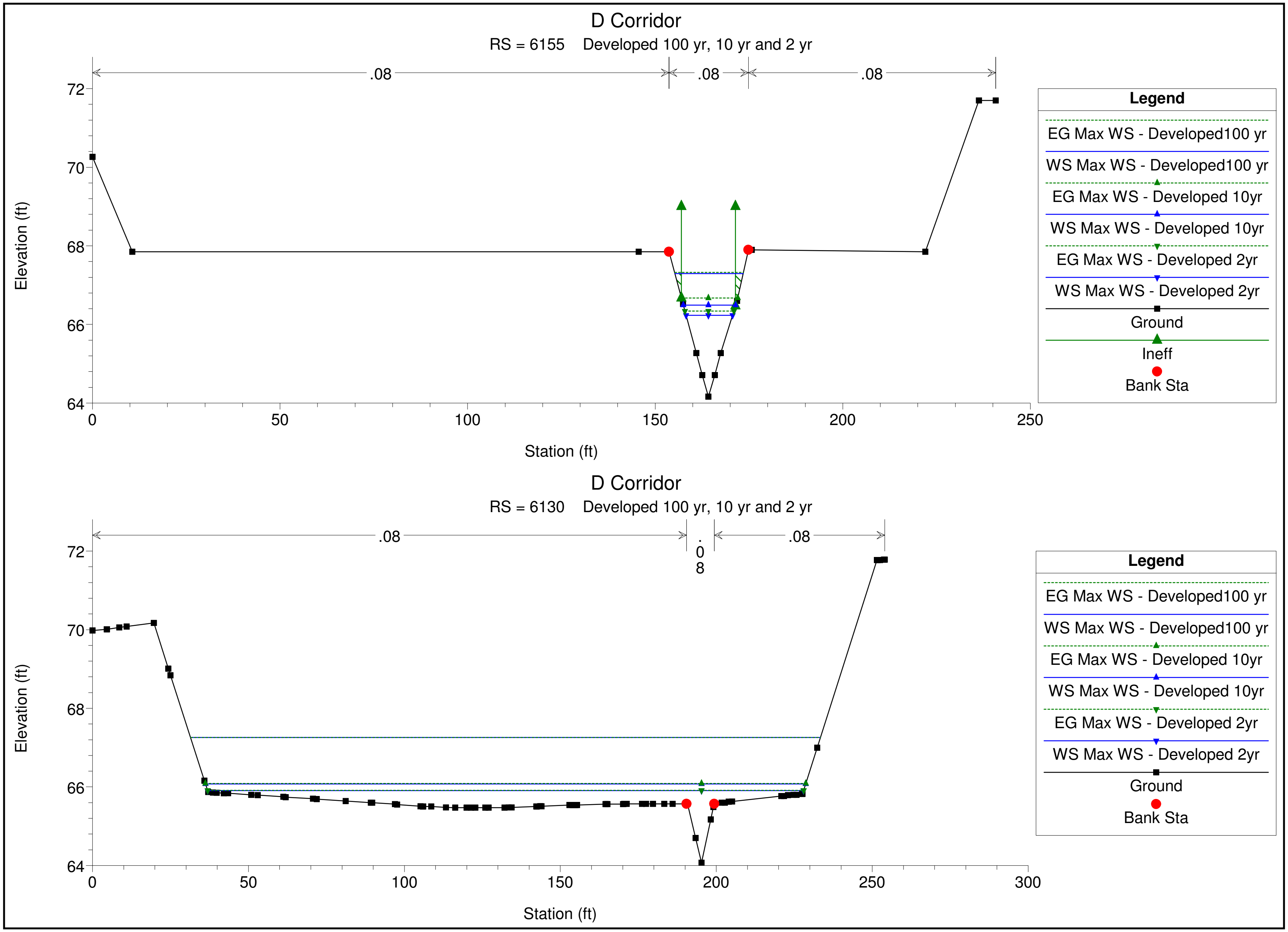

D Corridor
RS = 6273.41*   Developed 100 yr, 10 yr and 2 yr
.08
.08
.08
Elevation (ft)
Station (ft)
64
66
68
70
72
0
50
100
150
200
250
300
350
Legend
EG Max WS - Developed100 yr
WS Max WS - Developed100 yr
EG Max WS - Developed 10yr
WS Max WS - Developed 10yr
EG Max WS - Developed 2yr
WS Max WS - Developed 2yr
Ground
Bank Sta


D Corridor
RS = 6246.70*   Developed 100 yr, 10 yr and 2 yr
.08
.08
.08
Elevation (ft)
Station (ft)
Legend
EG Max WS - Developed100 yr
WS Max WS - Developed100 yr
EG Max WS - Developed 10yr
WS Max WS - Developed 10yr
EG Max WS - Developed 2yr
WS Max WS - Developed 2yr
Ground
Bank Sta

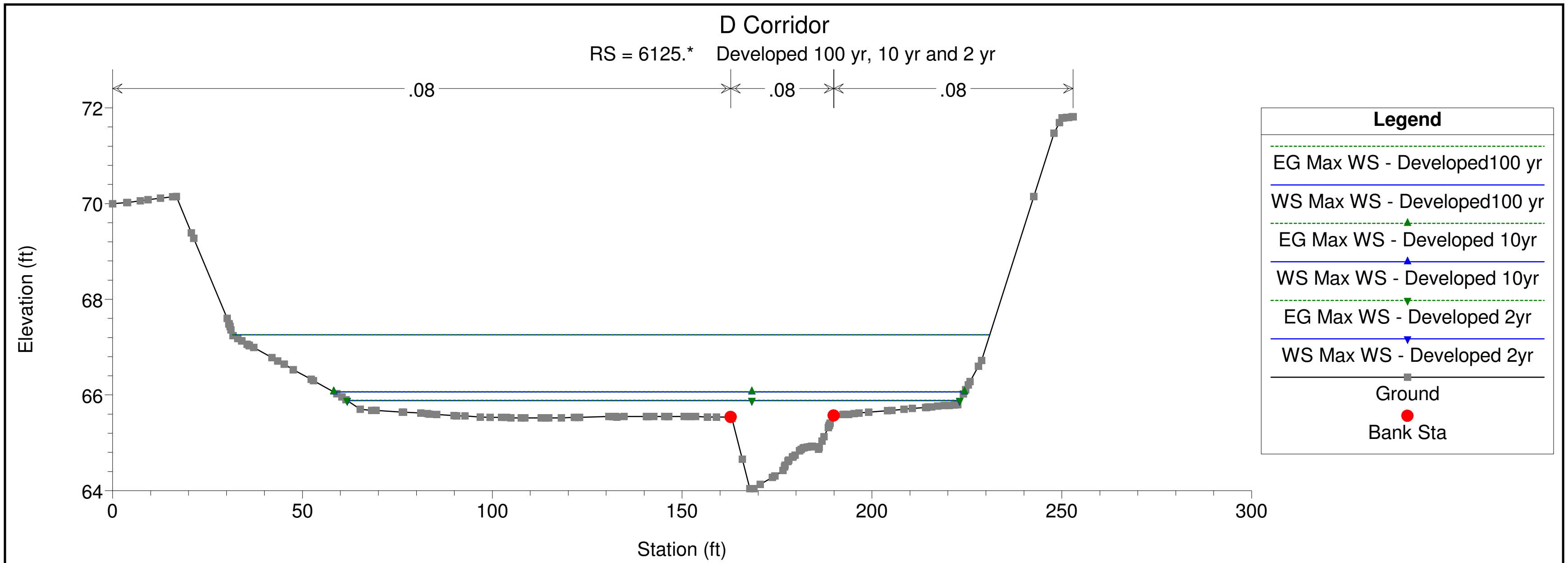

D Corridor
RS = 6220   Developed 100 yr, 10 yr and 2 yr
.08
.08
.08
Elevation (ft)
Station (ft)
Legend
EG Max WS - Developed100 yr
WS Max WS - Developed100 yr
EG Max WS - Developed 10yr
WS Max WS - Developed 10yr
EG Max WS - Developed 2yr
WS Max WS - Developed 2yr
Ground
Bank Sta

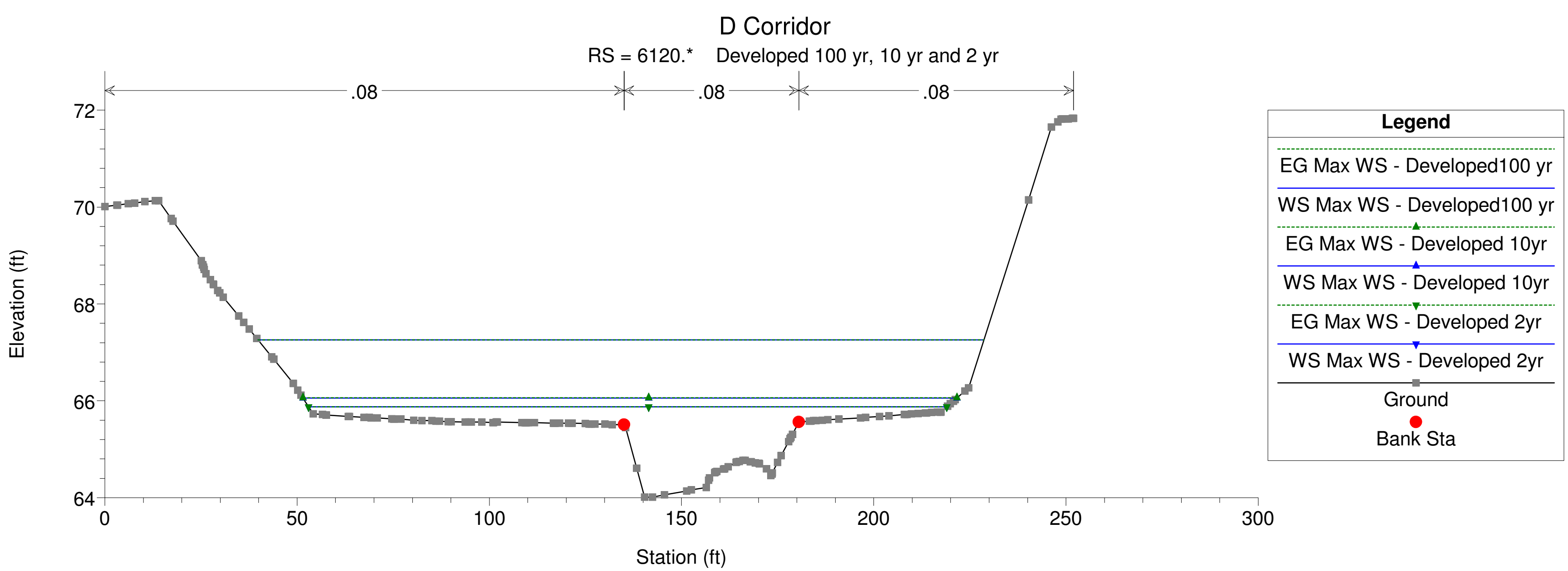

D Corridor
RS = 6200 Developed 100 yr, 10 yr and 2 yr
.08
.08
.08
Elevation (ft)
Station (ft)
Legend
EG Max WS - Developed100 yr
WS Max WS - Developed100 yr
EG Max WS - Developed 10yr
WS Max WS - Developed 10yr
EG Max WS - Developed 2yr
WS Max WS - Developed 2yr
Ground
Ineff
Bank Sta

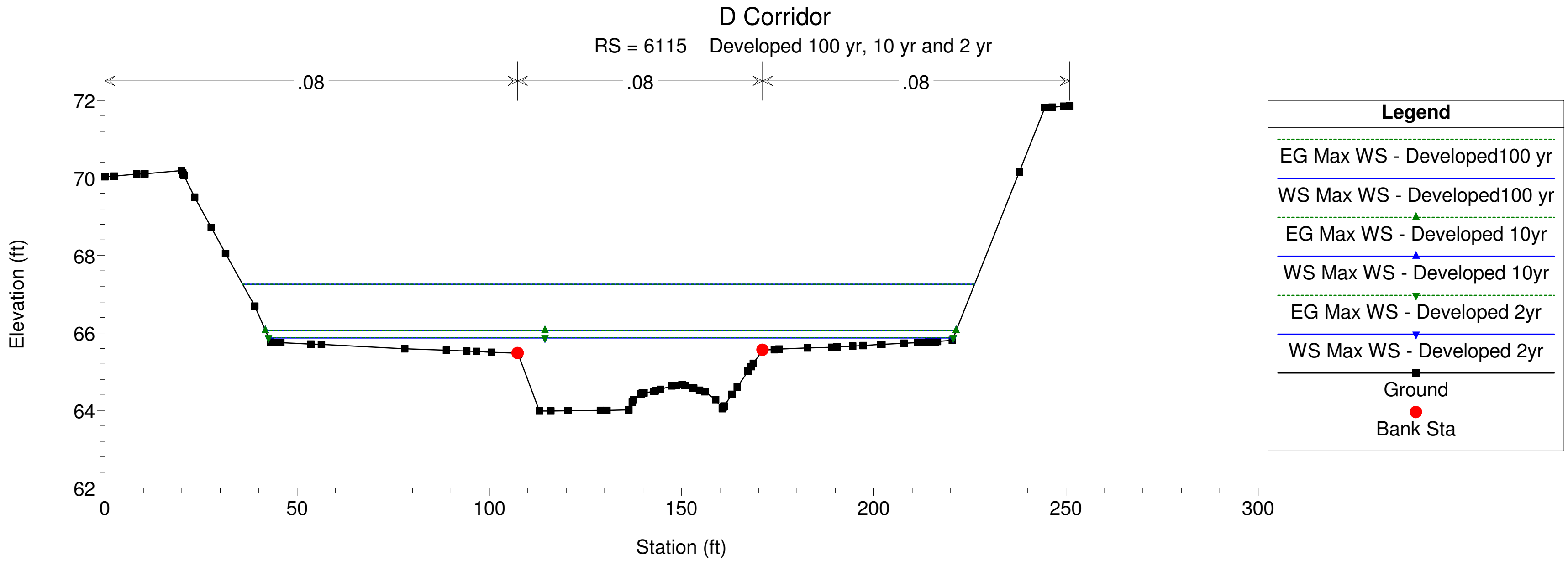

D Corridor
RS = 6177 IS V Notch 1.5:1 side slopes Developed 100 yr, 10 yr and 2 yr
.08
.08
.08
Elevation (ft)
Station (ft)
Legend
EG Max WS - Developed100 yr
WS Max WS - Developed100 yr
EG Max WS - Developed 10yr
WS Max WS - Developed 10yr
EG Max WS - Developed 2yr
WS Max WS - Developed 2yr
Ground
Ineff
Bank Sta



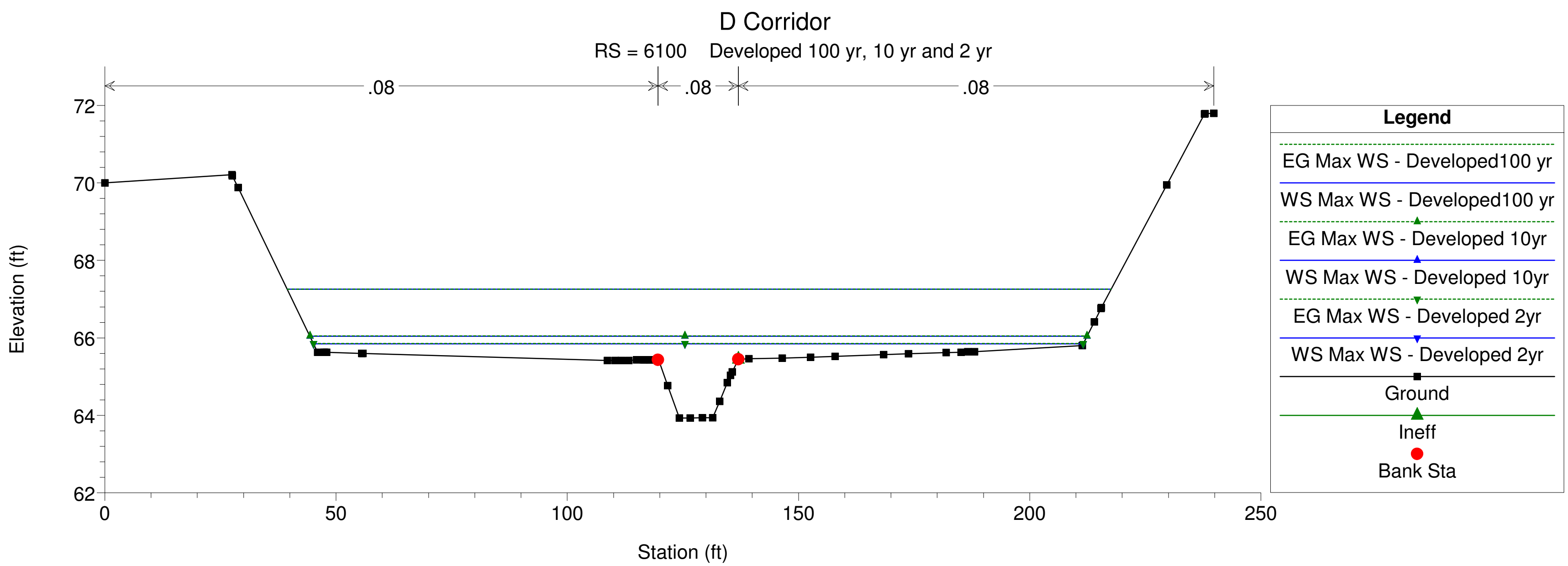
D Corridor
RS = 6155 Developed 100 yr, 10 yr and 2 yr
.08
.08
.08
Legend
EG Max WS - Developed100 yr
WS Max WS - Developed100 yr
EG Max WS - Developed 10yr
WS Max WS - Developed 10yr
EG Max WS - Developed 2yr
WS Max WS - Developed 2yr
Ground
Ineff
Bank Sta
Elevation (ft)
72
70
68
66
64
0
50
100
150
200
250
Station (ft)
D Corridor
RS = 6130 Developed 100 yr, 10 yr and 2 yr
.08
.08
.08
Legend
EG Max WS - Developed100 yr
WS Max WS - Developed100 yr
EG Max WS - Developed 10yr
WS Max WS - Developed 10yr
EG Max WS - Developed 2yr
WS Max WS - Developed 2yr
Ground
Bank Sta
Elevation (ft)
72
70
68
66
64
0
50
100
150
200
250
300
Station (ft)


D Corridor
RS = 6125.* Developed 100 yr, 10 yr and 2 yr
.08
.08
.08
Elevation (ft)
72
70
68
66
64
0
50
100
150
200
250
300
Station (ft)
Legend
EG Max WS - Developed100 yr
WS Max WS - Developed100 yr
EG Max WS - Developed 10yr
WS Max WS - Developed 10yr
EG Max WS - Developed 2yr
WS Max WS - Developed 2yr
Ground
Bank Sta

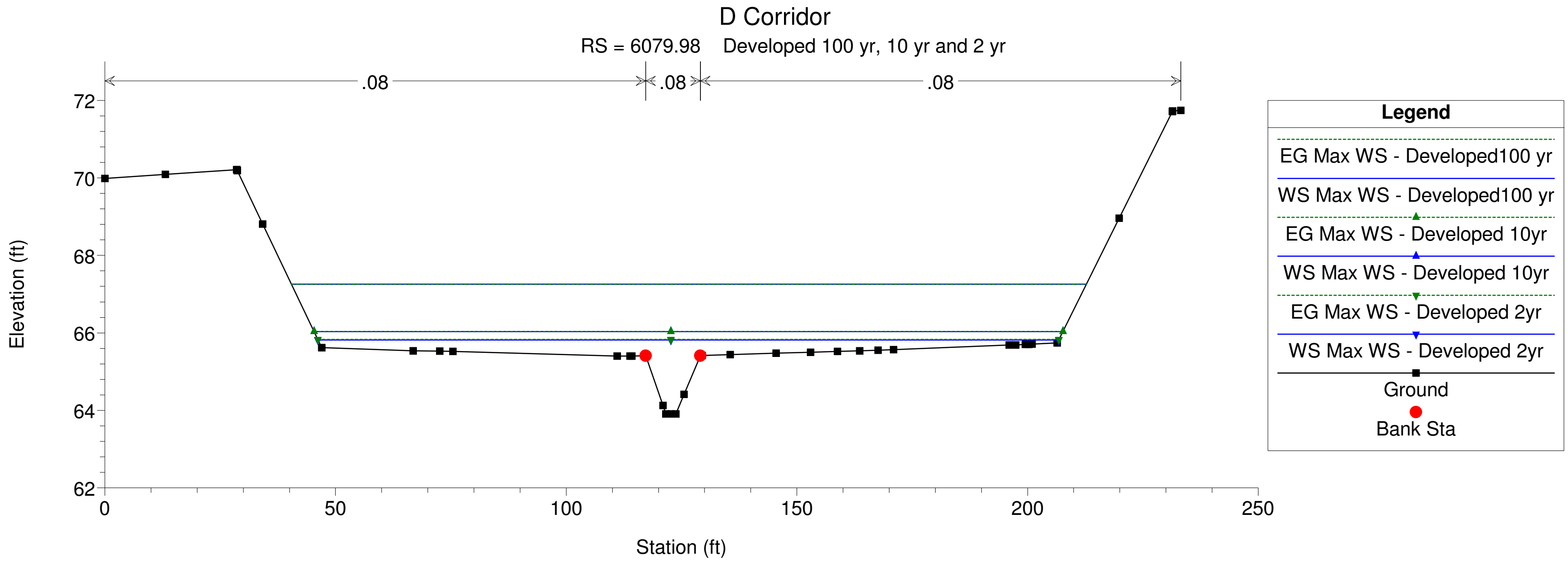

D Corridor
RS = 6120.* Developed 100 yr, 10 yr and 2 yr
.08
.08
.08
Elevation (ft)
72
70
68
66
64
0
50
100
150
200
250
300
Station (ft)
Legend
EG Max WS - Developed100 yr
WS Max WS - Developed100 yr
EG Max WS - Developed 10yr
WS Max WS - Developed 10yr
EG Max WS - Developed 2yr
WS Max WS - Developed 2yr
Ground
Bank Sta



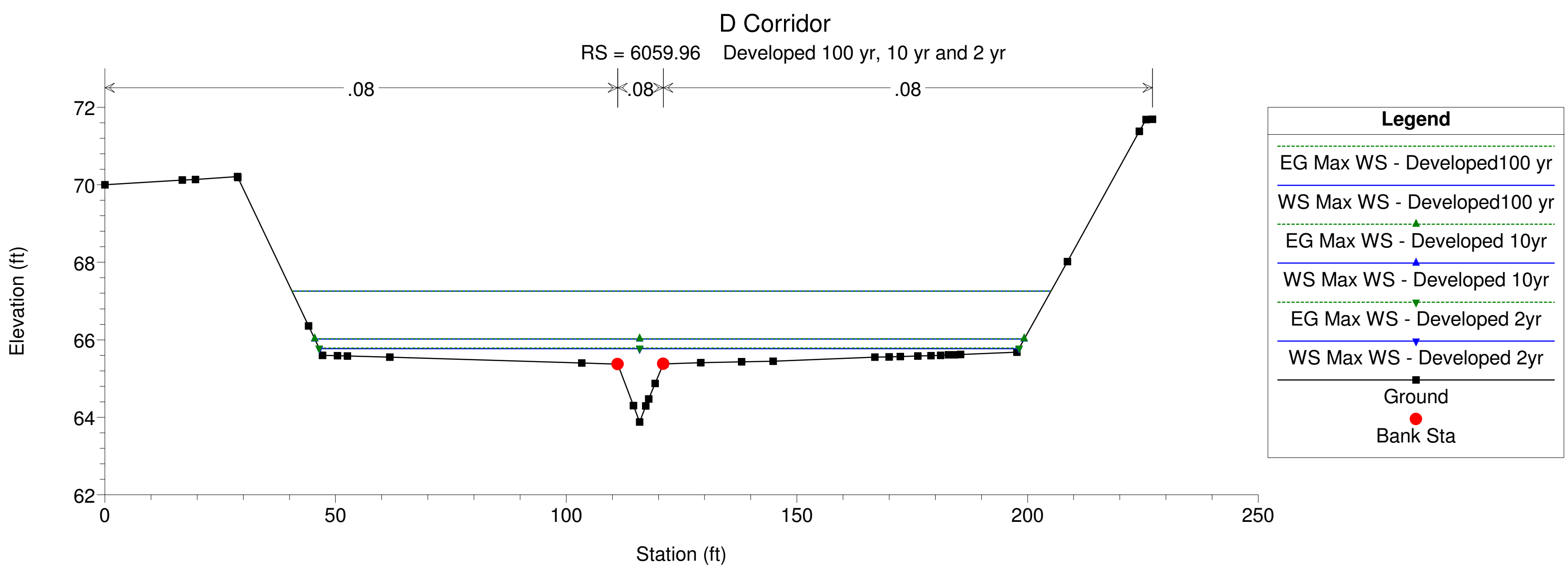
D Corridor
RS = 6115 Developed 100 yr, 10 yr and 2 yr
.08
.08
.08
Elevation (ft)
Station (ft)
62
64
66
68
70
72
0
50
100
150
200
250
300
Legend
EG Max WS - Developed100 yr
WS Max WS - Developed100 yr
EG Max WS - Developed 10yr
WS Max WS - Developed 10yr
EG Max WS - Developed 2yr
WS Max WS - Developed 2yr
Ground
Bank Sta



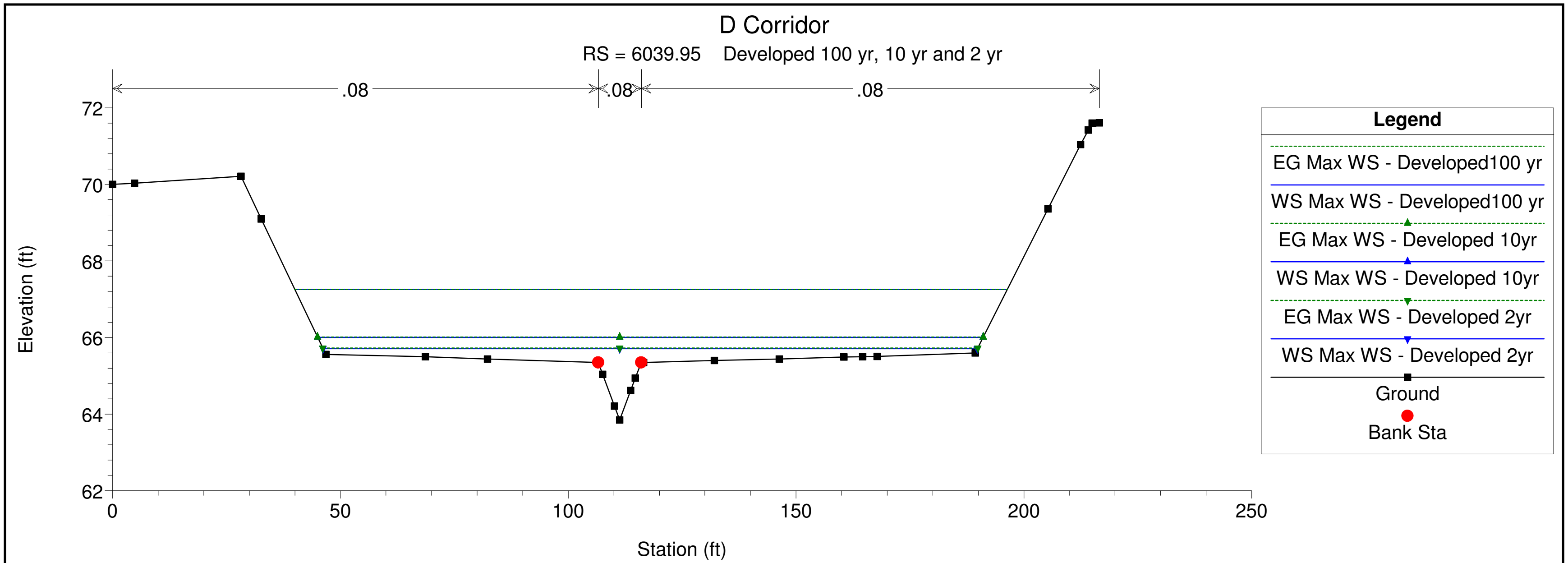
D Corridor
RS = 6100 Developed 100 yr, 10 yr and 2 yr
.08
.08
.08
Elevation (ft)
Station (ft)
62
64
66
68
70
72
0
50
100
150
200
250
Legend
EG Max WS - Developed100 yr
WS Max WS - Developed100 yr
EG Max WS - Developed 10yr
WS Max WS - Developed 10yr
EG Max WS - Developed 2yr
WS Max WS - Developed 2yr
Ground
Ineff
Bank Sta

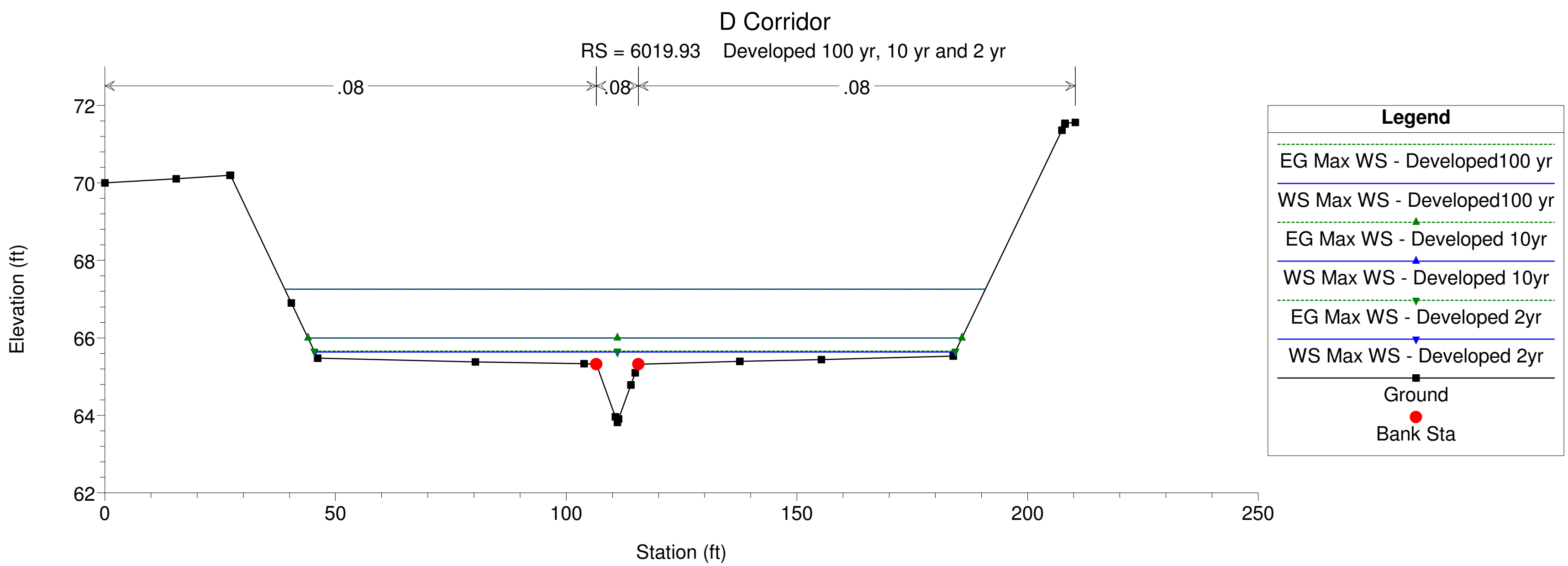


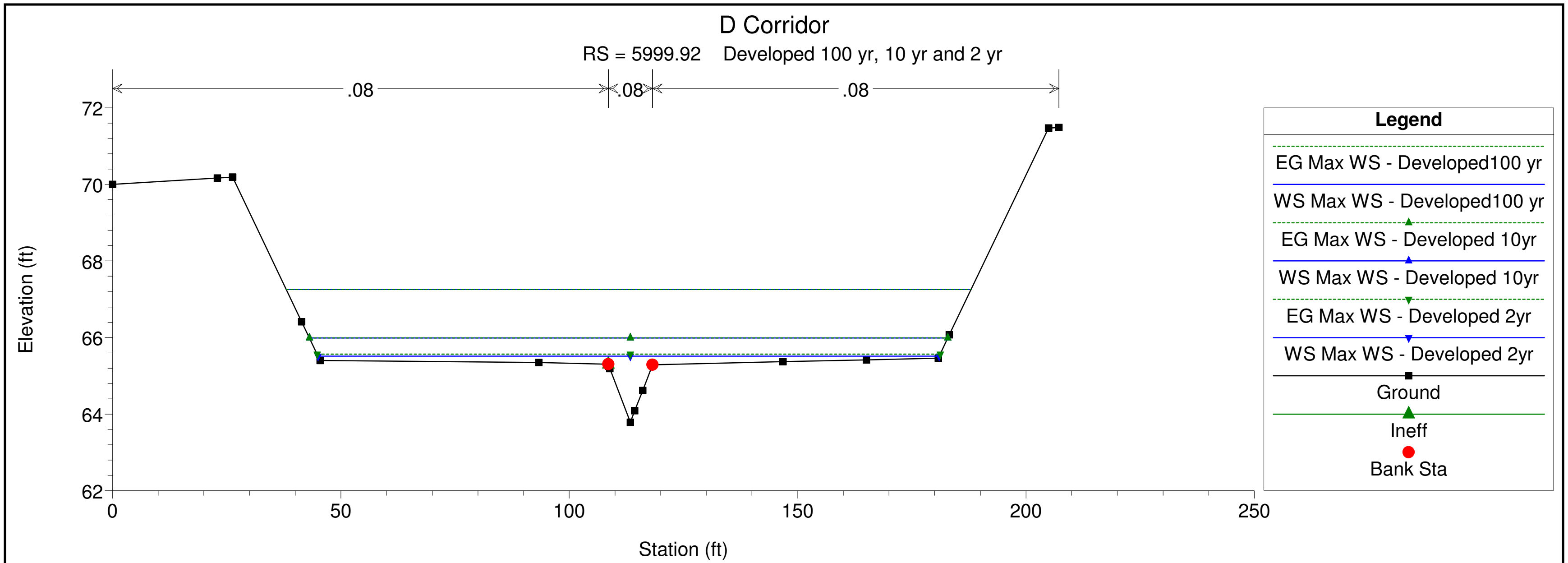
D Corridor
RS = 6079.98 Developed 100 yr, 10 yr and 2 yr
.08
.08
.08
Elevation (ft)
72
70
68
66
64
62
0
50
100
150
200
250
Station (ft)
Legend
EG Max WS - Developed100 yr
WS Max WS - Developed100 yr
EG Max WS - Developed 10yr
WS Max WS - Developed 10yr
EG Max WS - Developed 2yr
WS Max WS - Developed 2yr
Ground
Bank Sta

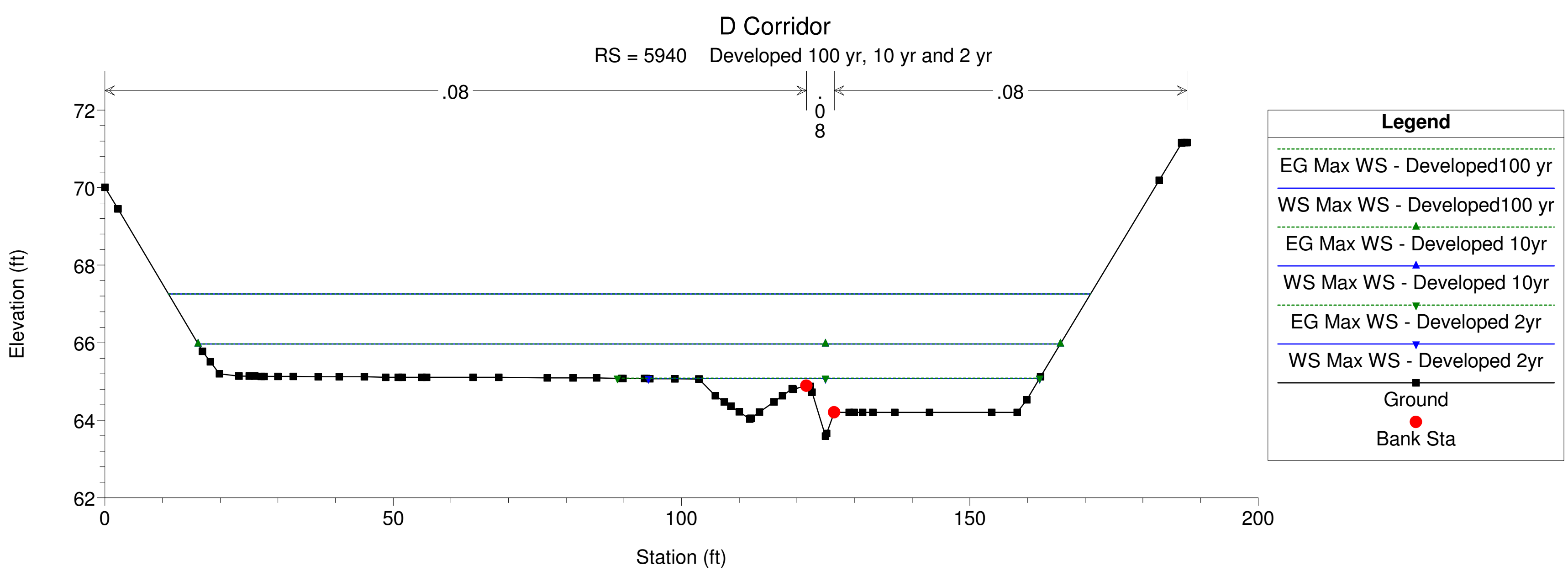


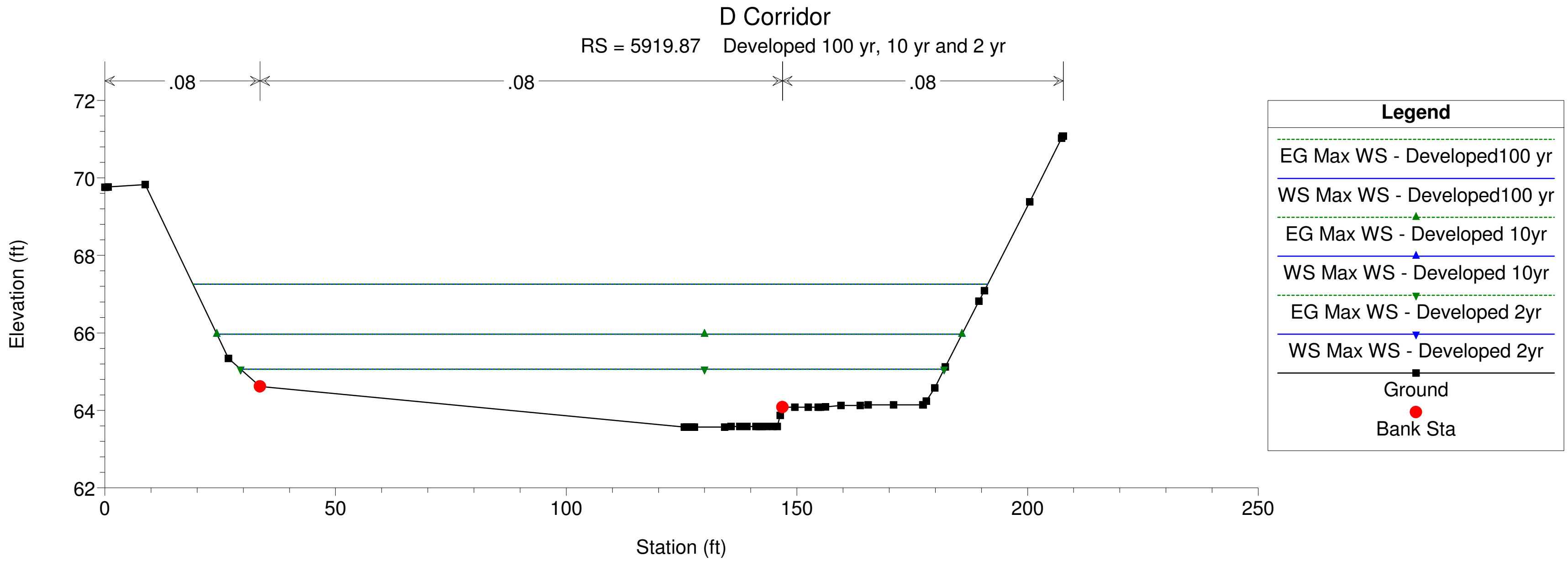
D Corridor
RS = 6059.96 Developed 100 yr, 10 yr and 2 yr
.08
.08
.08
Elevation (ft)
72
70
68
66
64
62
0
50
100
150
200
250
Station (ft)
Legend
EG Max WS - Developed100 yr
WS Max WS - Developed100 yr
EG Max WS - Developed 10yr
WS Max WS - Developed 10yr
EG Max WS - Developed 2yr
WS Max WS - Developed 2yr
Ground
Bank Sta


D Corridor
RS = 6039.95 Developed 100 yr, 10 yr and 2 yr
.08
.08
.08
Elevation (ft)
72
70
68
66
64
62
0
50
100
150
200
250
Station (ft)
Legend
EG Max WS - Developed100 yr
WS Max WS - Developed100 yr
EG Max WS - Developed 10yr
WS Max WS - Developed 10yr
EG Max WS - Developed 2yr
WS Max WS - Developed 2yr
Ground
Bank Sta

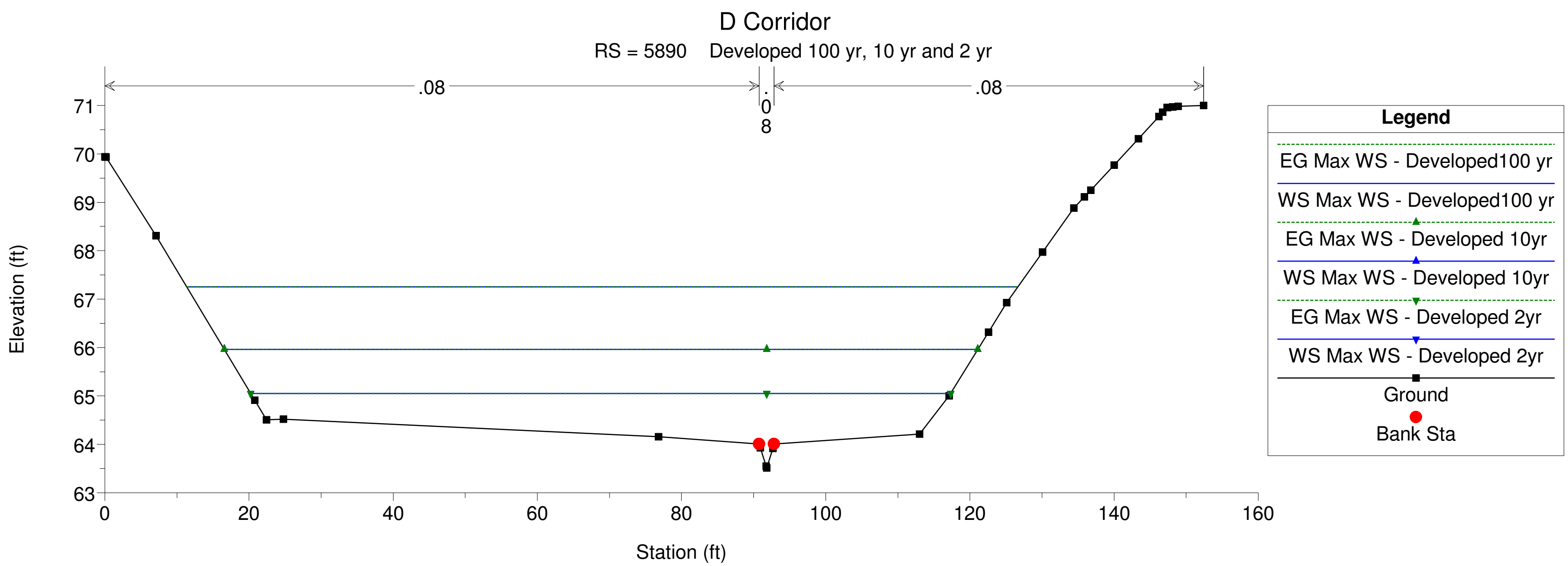

D Corridor
RS = 6019.93 Developed 100 yr, 10 yr and 2 yr
.08
.08
.08
Elevation (ft)
72
70
68
66
64
62
0
50
100
150
200
250
Station (ft)
Legend
EG Max WS - Developed100 yr
WS Max WS - Developed100 yr
EG Max WS - Developed 10yr
WS Max WS - Developed 10yr
EG Max WS - Developed 2yr
WS Max WS - Developed 2yr
Ground
Bank Sta


D Corridor
RS = 5999.92 Developed 100 yr, 10 yr and 2 yr
.08
.08
.08
Elevation (ft)
72
70
68
66
64
62
0
50
100
150
200
250
Station (ft)
Legend
EG Max WS - Developed100 yr
WS Max WS - Developed100 yr
EG Max WS - Developed 10yr
WS Max WS - Developed 10yr
EG Max WS - Developed 2yr
WS Max WS - Developed 2yr
Ground
Ineff
Bank Sta

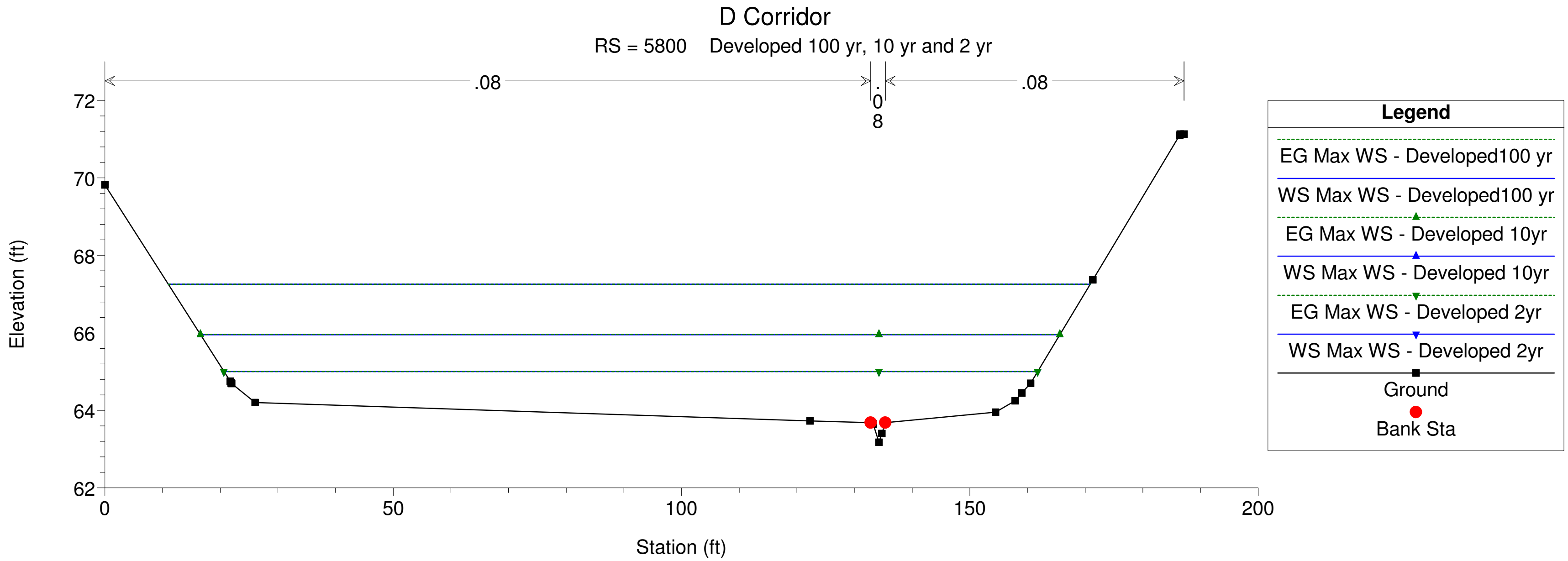

D Corridor
RS = 5940 Developed 100 yr, 10 yr and 2 yr
.08
.08
.08
Elevation (ft)
72
70
68
66
64
62
0
50
100
150
200
Station (ft)
Legend
EG Max WS - Developed100 yr
WS Max WS - Developed100 yr
EG Max WS - Developed 10yr
WS Max WS - Developed 10yr
EG Max WS - Developed 2yr
WS Max WS - Developed 2yr
Ground
Bank Sta

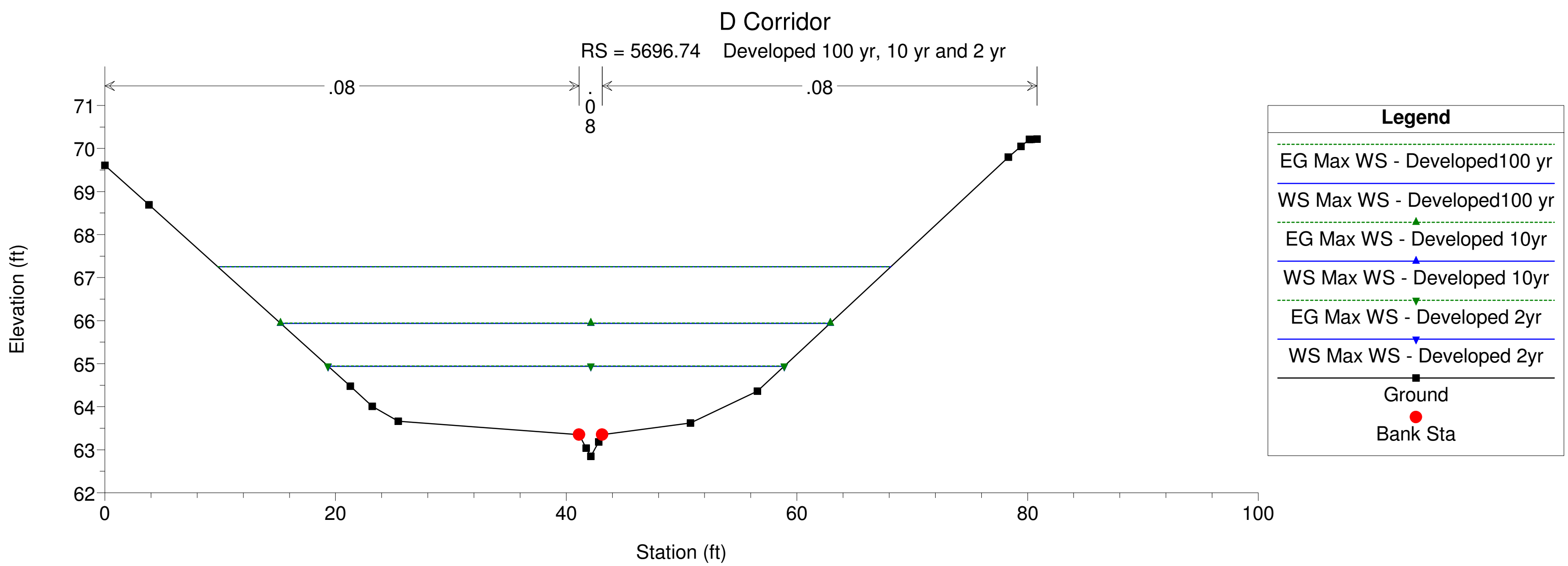


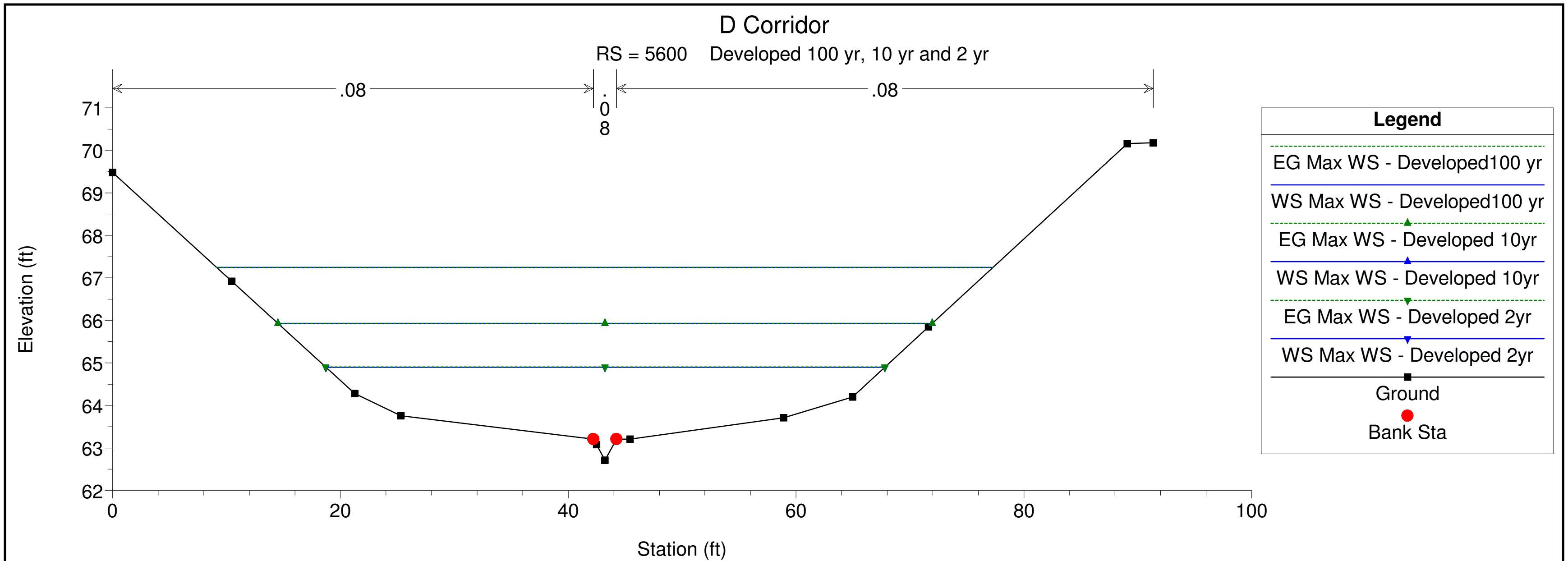
D Corridor
RS = 5919.87 Developed 100 yr, 10 yr and 2 yr
.08
.08
.08
Elevation (ft)
72
70
68
66
64
62
0
50
100
150
200
250
Station (ft)
Legend
EG Max WS - Developed100 yr
WS Max WS - Developed100 yr
EG Max WS - Developed 10yr
WS Max WS - Developed 10yr
EG Max WS - Developed 2yr
WS Max WS - Developed 2yr
Ground
Bank Sta

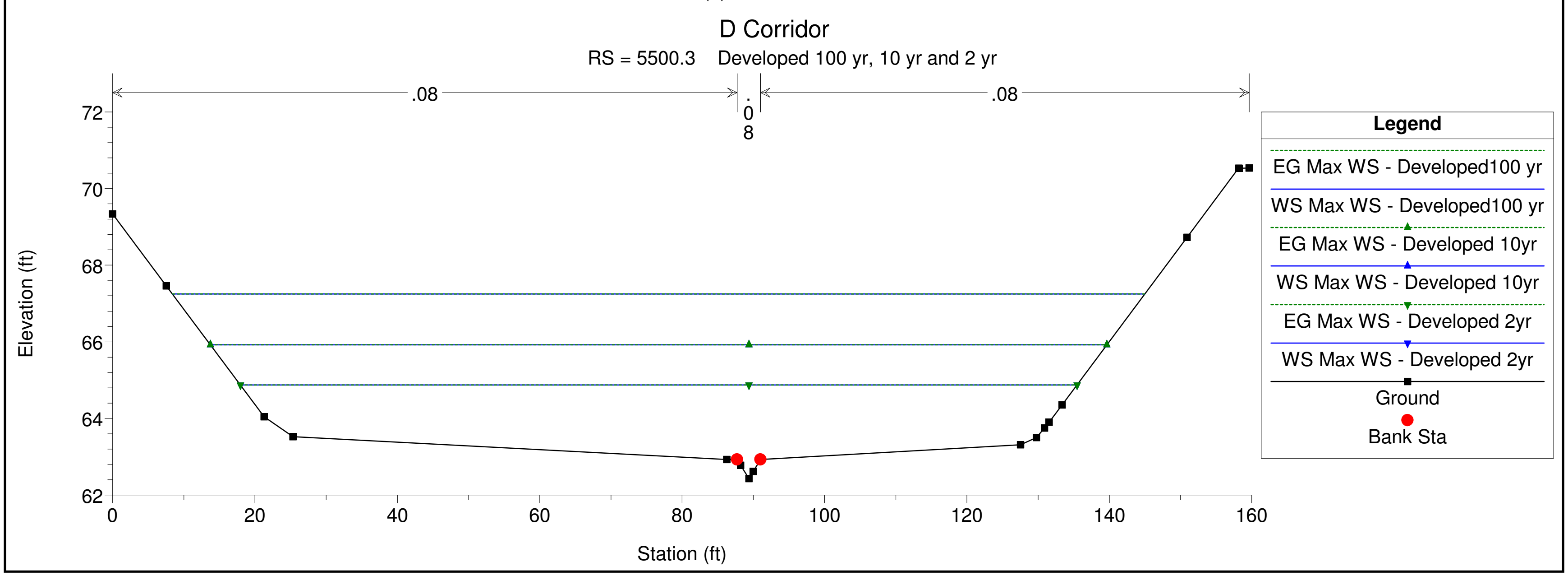


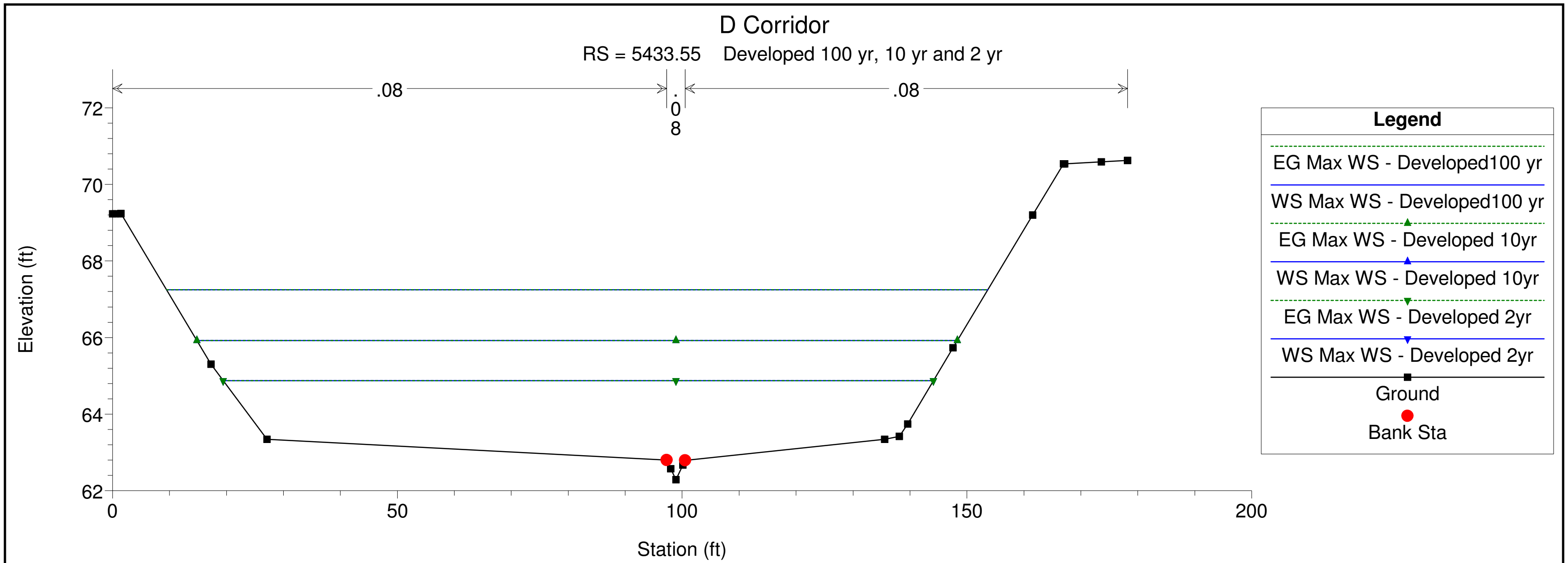
D Corridor
RS = 5890 Developed 100 yr, 10 yr and 2 yr
.08
.08
.08
Elevation (ft)
71
70
69
68
67
66
65
64
63
0
20
40
60
80
100
120
140
160
Station (ft)
Legend
EG Max WS - Developed100 yr
WS Max WS - Developed100 yr
EG Max WS - Developed 10yr
WS Max WS - Developed 10yr
EG Max WS - Developed 2yr
WS Max WS - Developed 2yr
Ground
Bank Sta

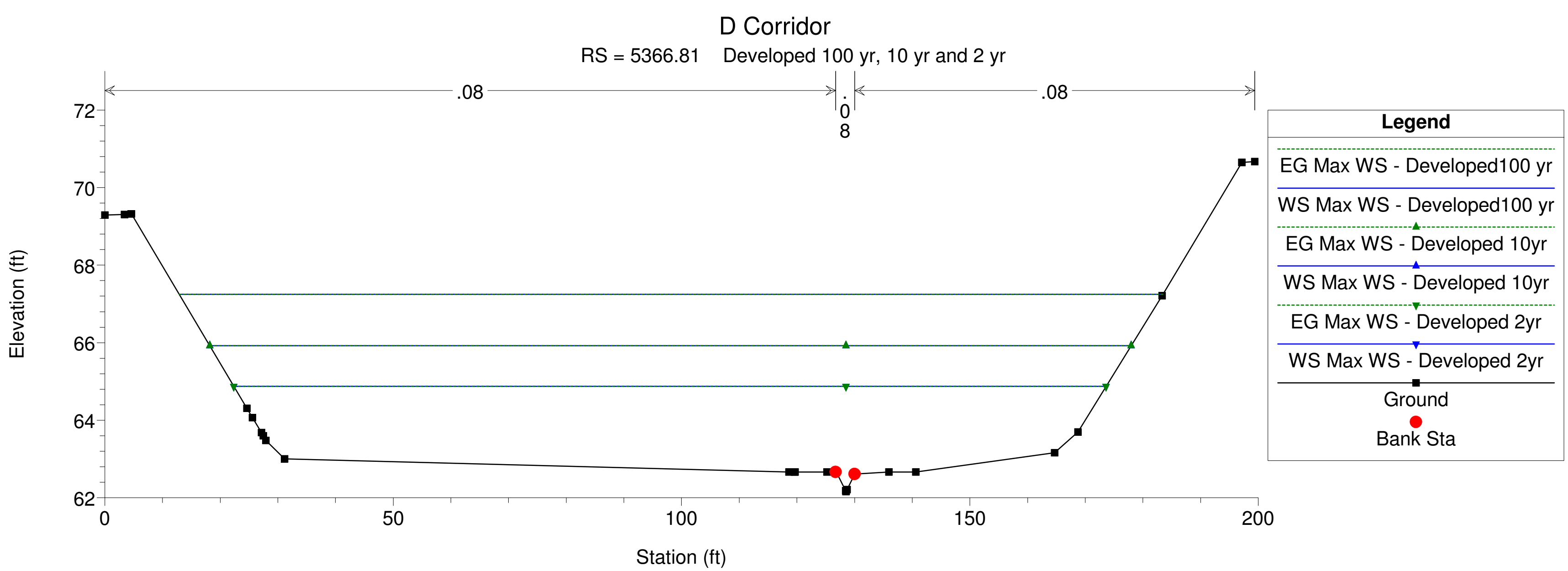

D Corridor
RS = 5800 Developed 100 yr, 10 yr and 2 yr
.08
.08
.08
Elevation (ft)
Station (ft)
72
70
68
66
64
62
0
50
100
150
200
Legend
EG Max WS - Developed100 yr
WS Max WS - Developed100 yr
EG Max WS - Developed 10yr
WS Max WS - Developed 10yr
EG Max WS - Developed 2yr
WS Max WS - Developed 2yr
Ground
Bank Sta

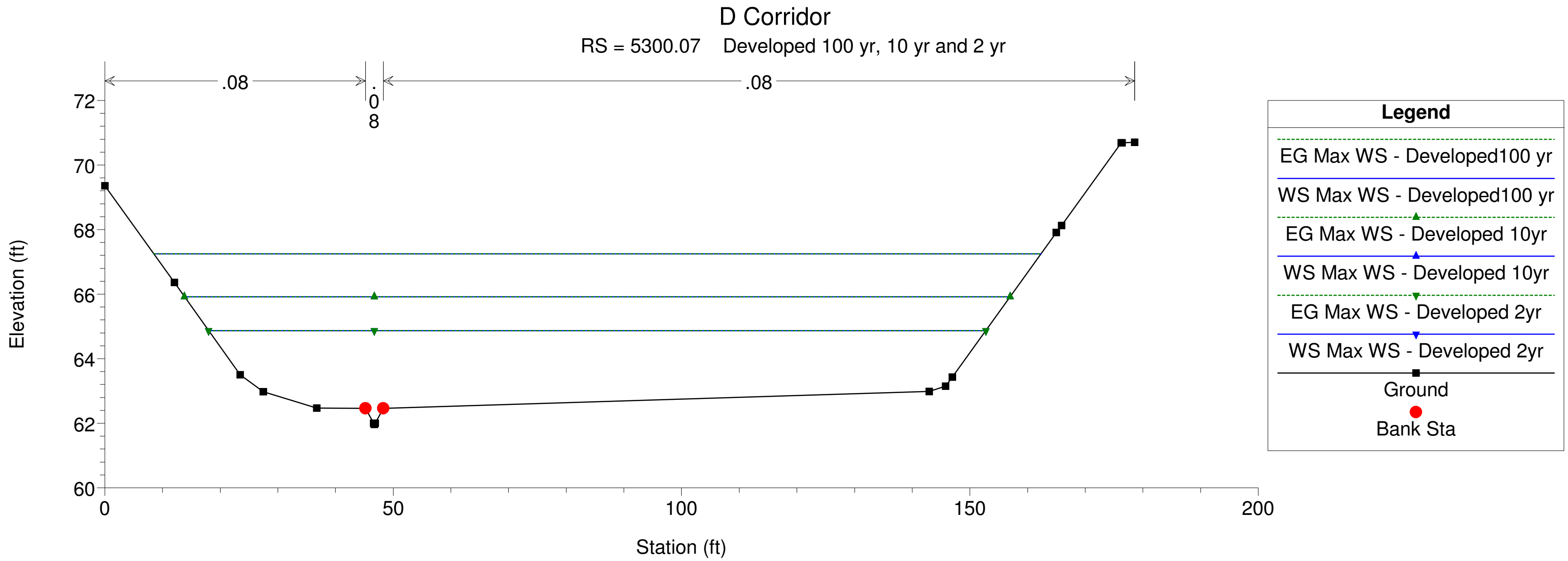

D Corridor
RS = 5696.74 Developed 100 yr, 10 yr and 2 yr
.08
.08
.08
Elevation (ft)
Station (ft)
71
70
69
68
67
66
65
64
63
62
0
20
40
60
80
100
Legend
EG Max WS - Developed100 yr
WS Max WS - Developed100 yr
EG Max WS - Developed 10yr
WS Max WS - Developed 10yr
EG Max WS - Developed 2yr
WS Max WS - Developed 2yr
Ground
Bank Sta


D Corridor
RS = 5600 Developed 100 yr, 10 yr and 2 yr
.08
.
0
8
.08
Elevation (ft)
71
70
69
68
67
66
65
64
63
62
0
20
40
60
80
100
Station (ft)
Legend
EG Max WS - Developed100 yr
WS Max WS - Developed100 yr
EG Max WS - Developed 10yr
WS Max WS - Developed 10yr
EG Max WS - Developed 2yr
WS Max WS - Developed 2yr
Ground
Bank Sta

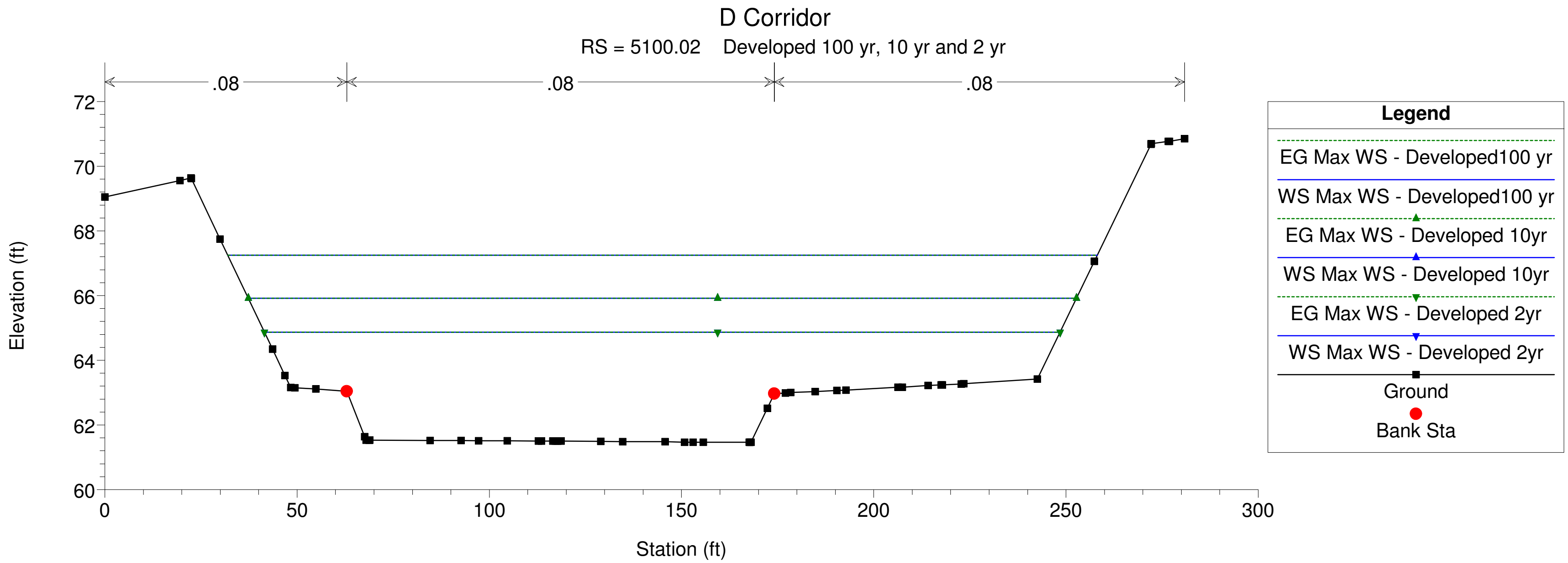

D Corridor
RS = 5500.3 Developed 100 yr, 10 yr and 2 yr
.08
.
0
8
.08
Elevation (ft)
72
70
68
66
64
62
0
20
40
60
80
100
120
140
160
Station (ft)
Legend
EG Max WS - Developed100 yr
WS Max WS - Developed100 yr
EG Max WS - Developed 10yr
WS Max WS - Developed 10yr
EG Max WS - Developed 2yr
WS Max WS - Developed 2yr
Ground
Bank Sta


D Corridor
RS = 5433.55 Developed 100 yr, 10 yr and 2 yr
.08
.08
.08
Elevation (ft)
72
70
68
66
64
62
0
50
100
150
200
Station (ft)
Legend
EG Max WS - Developed100 yr
WS Max WS - Developed100 yr
EG Max WS - Developed 10yr
WS Max WS - Developed 10yr
EG Max WS - Developed 2yr
WS Max WS - Developed 2yr
Ground
Bank Sta

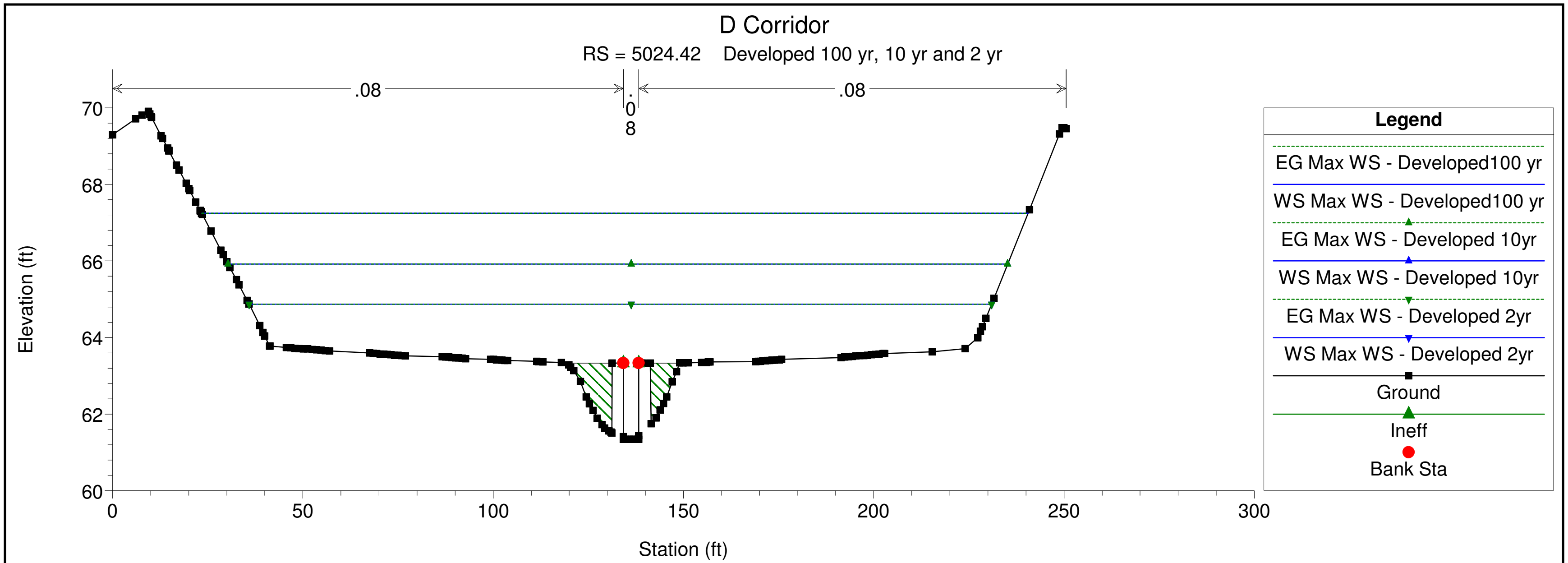

D Corridor
RS = 5366.81 Developed 100 yr, 10 yr and 2 yr
.08
.08
.08
Elevation (ft)
72
70
68
66
64
62
0
50
100
150
200
Station (ft)
Legend
EG Max WS - Developed100 yr
WS Max WS - Developed100 yr
EG Max WS - Developed 10yr
WS Max WS - Developed 10yr
EG Max WS - Developed 2yr
WS Max WS - Developed 2yr
Ground
Bank Sta



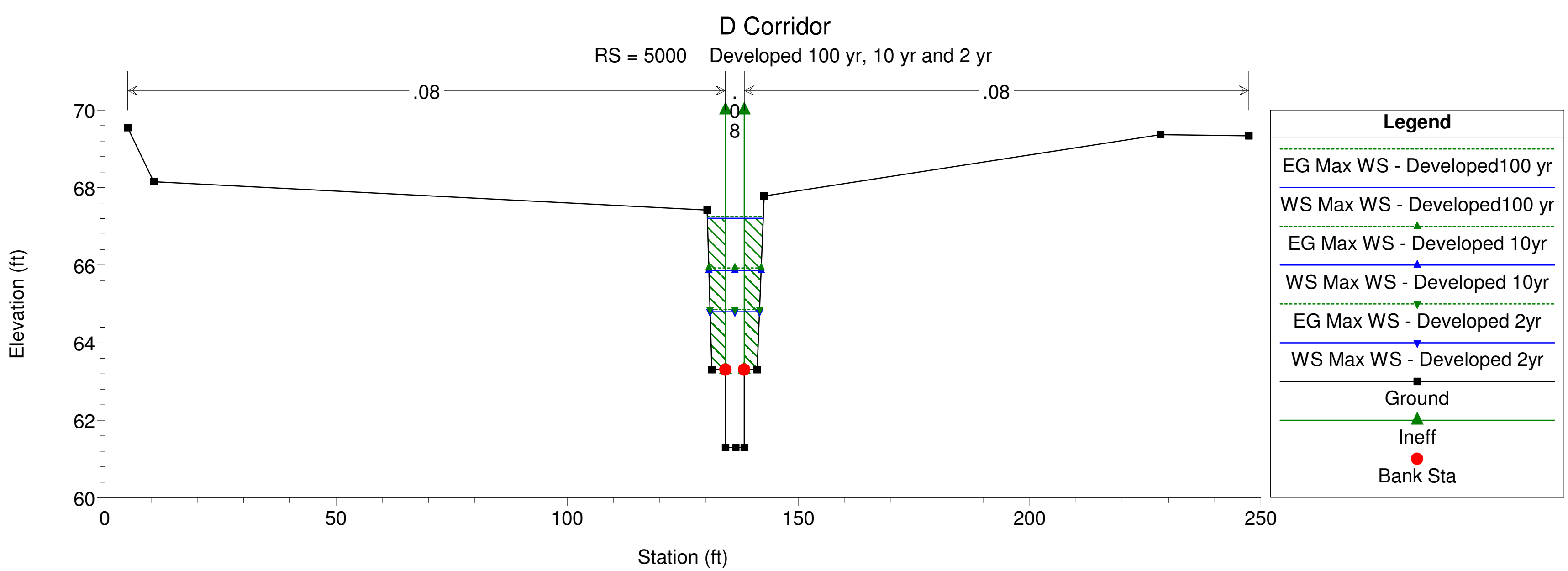
D Corridor
RS = 5300.07 Developed 100 yr, 10 yr and 2 yr
.08
.08
.08
Elevation (ft)
Station (ft)
72
70
68
66
64
62
60
0
50
100
150
200
Legend
EG Max WS - Developed100 yr
WS Max WS - Developed100 yr
EG Max WS - Developed 10yr
WS Max WS - Developed 10yr
EG Max WS - Developed 2yr
WS Max WS - Developed 2yr
Ground
Bank Sta



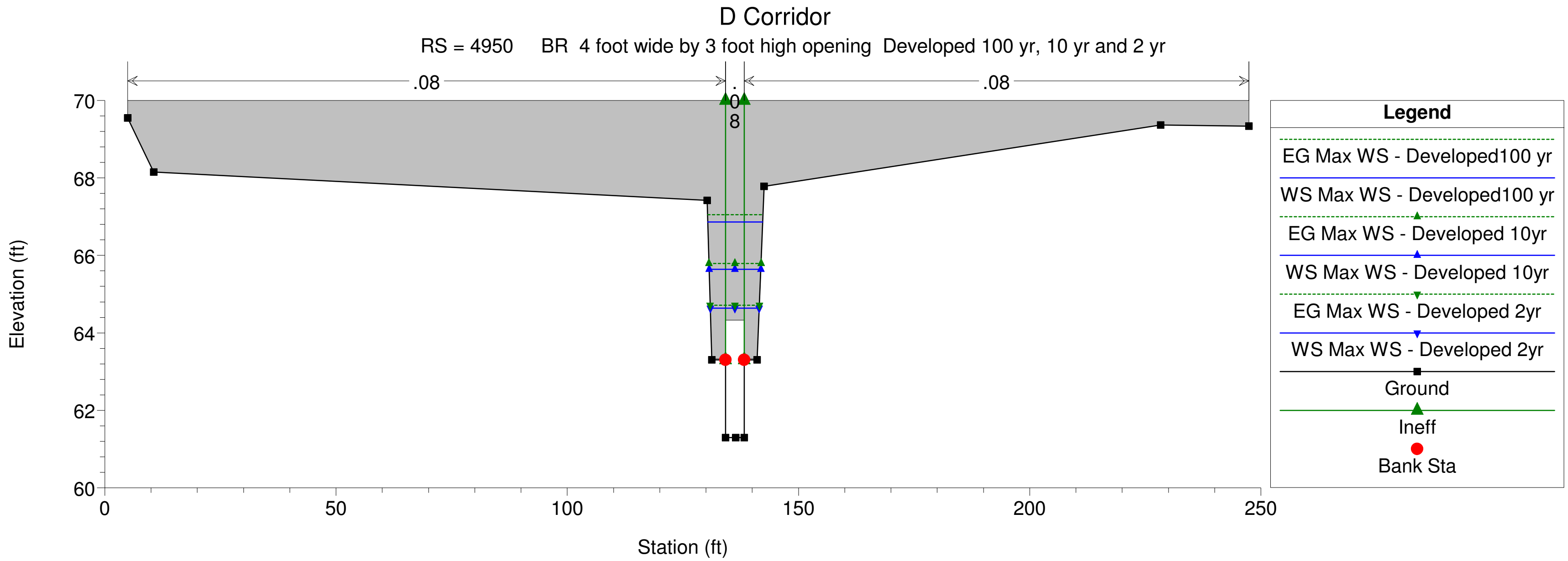
D Corridor
RS = 5100.02 Developed 100 yr, 10 yr and 2 yr
.08
.08
.08
Elevation (ft)
Station (ft)
72
70
68
66
64
62
60
0
50
100
150
200
250
300
Legend
EG Max WS - Developed100 yr
WS Max WS - Developed100 yr
EG Max WS - Developed 10yr
WS Max WS - Developed 10yr
EG Max WS - Developed 2yr
WS Max WS - Developed 2yr
Ground
Bank Sta

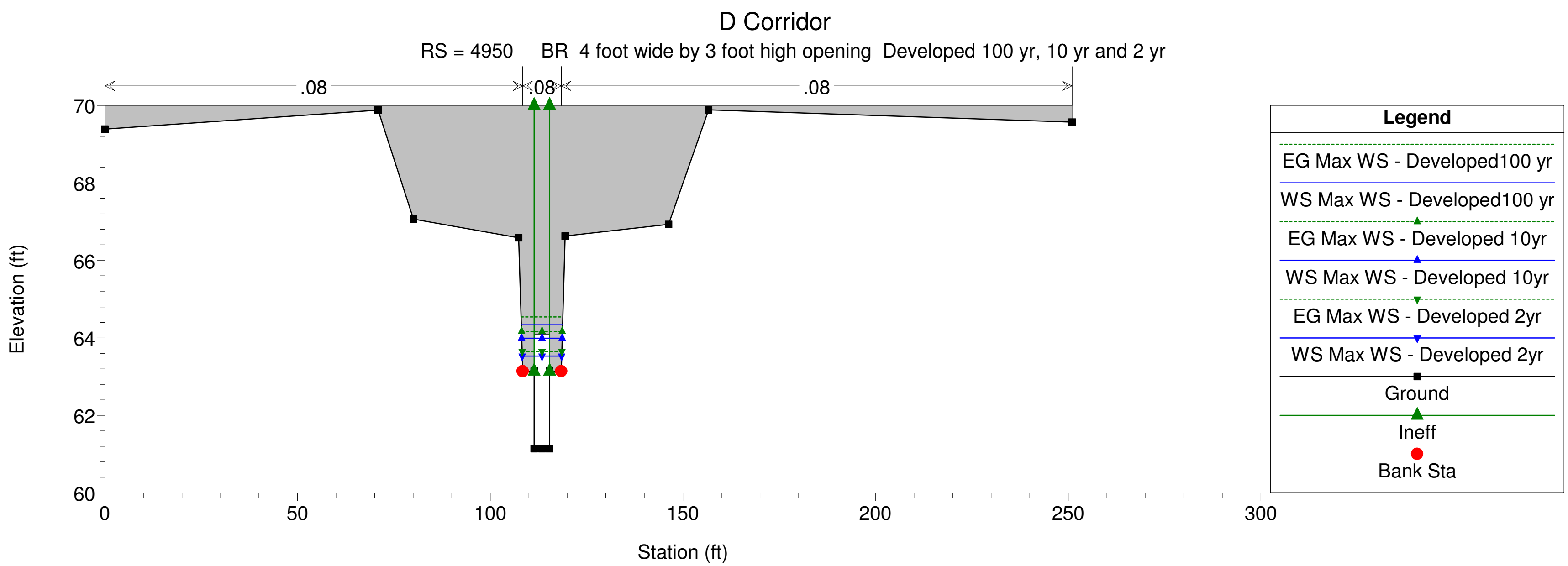


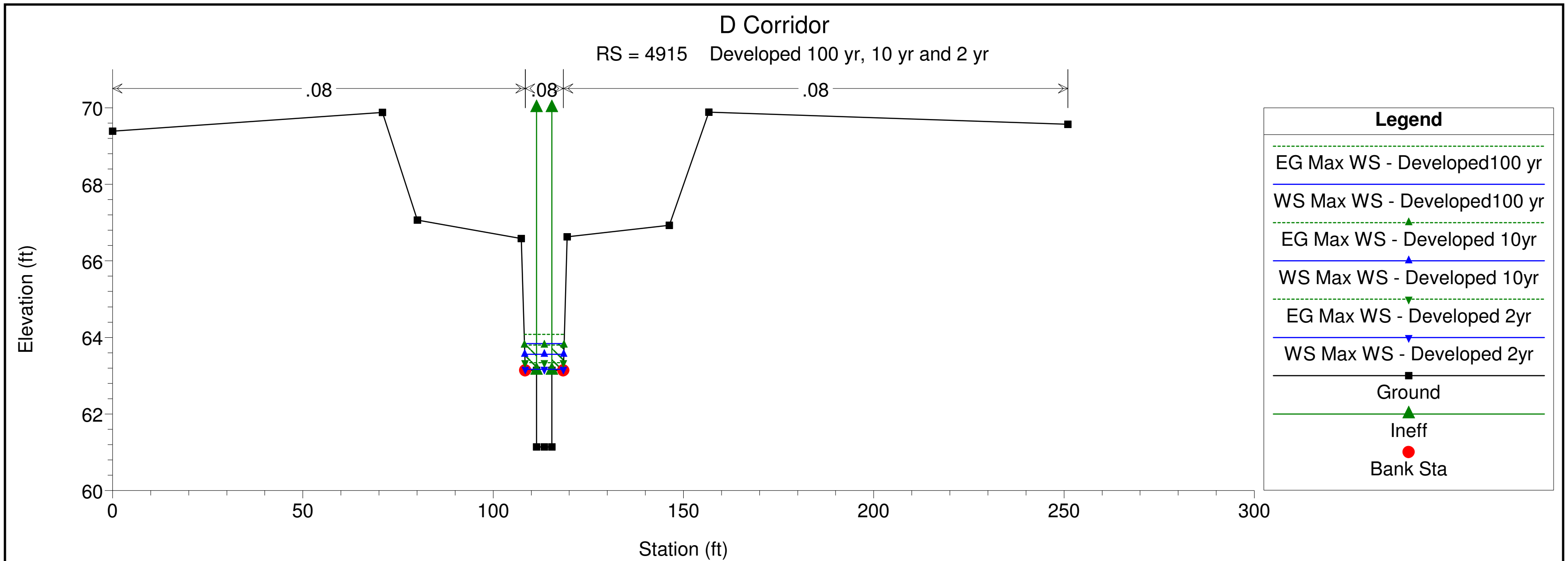
D Corridor
RS = 5024.42 Developed 100 yr, 10 yr and 2 yr
.08
.08
.08
Elevation (ft)
70
68
66
64
62
60
0
50
100
150
200
250
300
Station (ft)
Legend
EG Max WS - Developed100 yr
WS Max WS - Developed100 yr
EG Max WS - Developed 10yr
WS Max WS - Developed 10yr
EG Max WS - Developed 2yr
WS Max WS - Developed 2yr
Ground
Ineff
Bank Sta

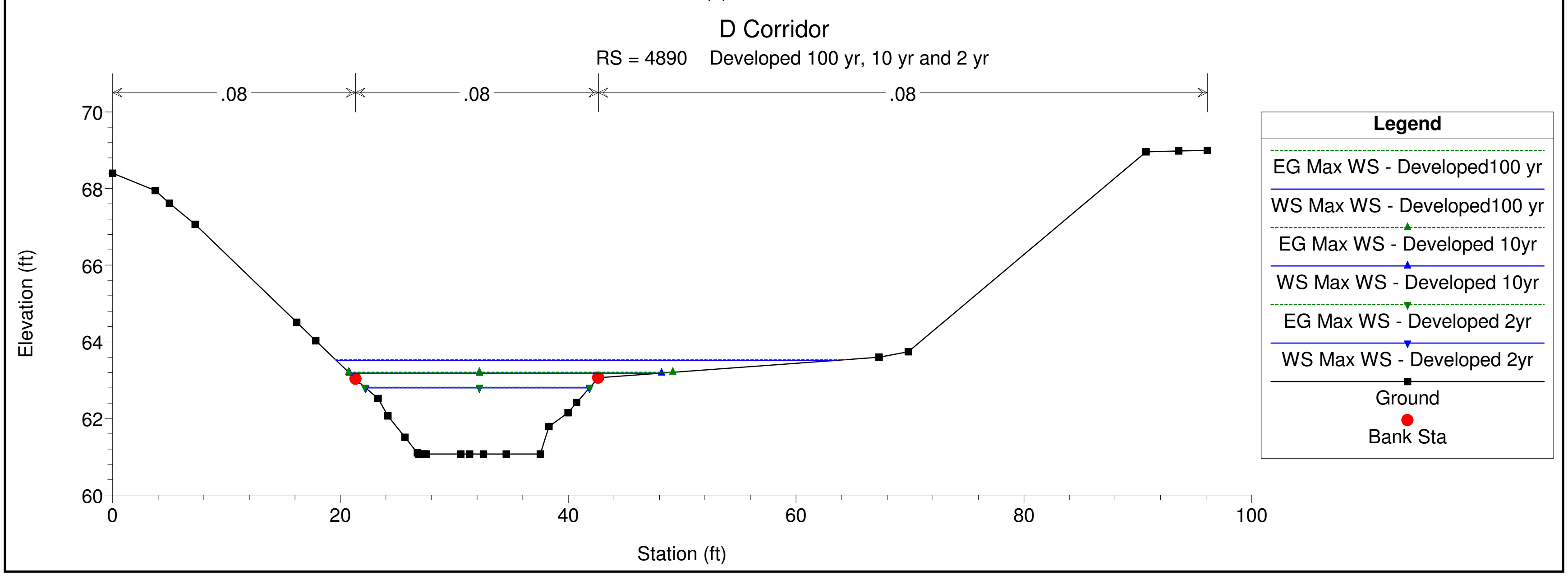


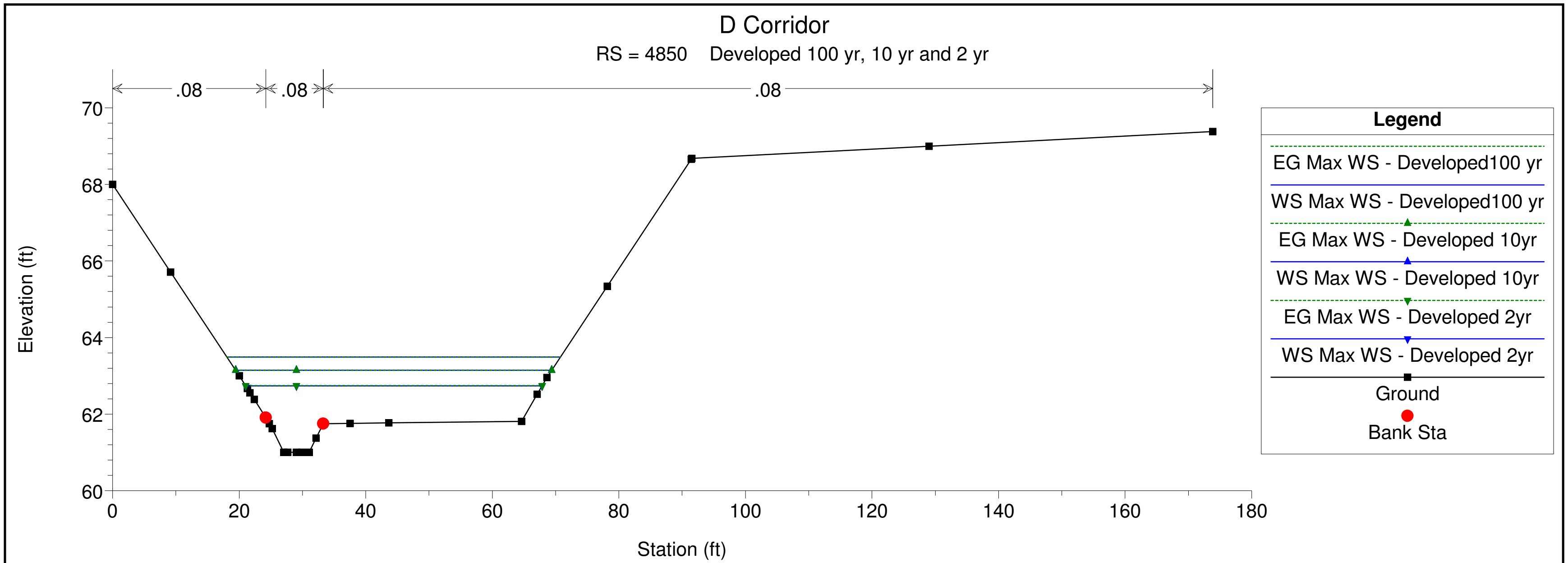
D Corridor
RS = 5000 Developed 100 yr, 10 yr and 2 yr
.08
.08
.08
Elevation (ft)
70
68
66
64
62
60
0
50
100
150
200
250
Station (ft)
Legend
EG Max WS - Developed100 yr
WS Max WS - Developed100 yr
EG Max WS - Developed 10yr
WS Max WS - Developed 10yr
EG Max WS - Developed 2yr
WS Max WS - Developed 2yr
Ground
Ineff
Bank Sta

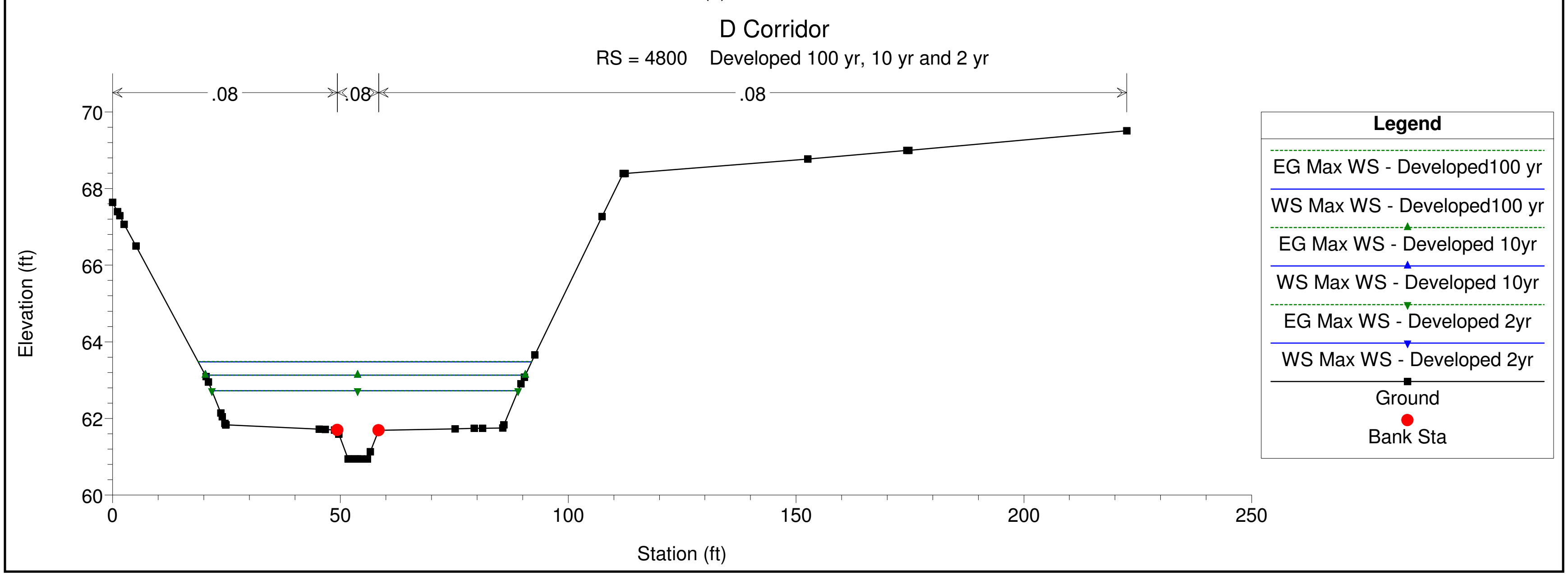

D Corridor
RS = 4950 BR 4 foot wide by 3 foot high opening Developed 100 yr, 10 yr and 2 yr
.08
.08
.
0
8
Elevation (ft)
Station (ft)
Legend
EG Max WS - Developed100 yr
WS Max WS - Developed100 yr
EG Max WS - Developed 10yr
WS Max WS - Developed 10yr
EG Max WS - Developed 2yr
WS Max WS - Developed 2yr
Ground
Ineff
Bank Sta

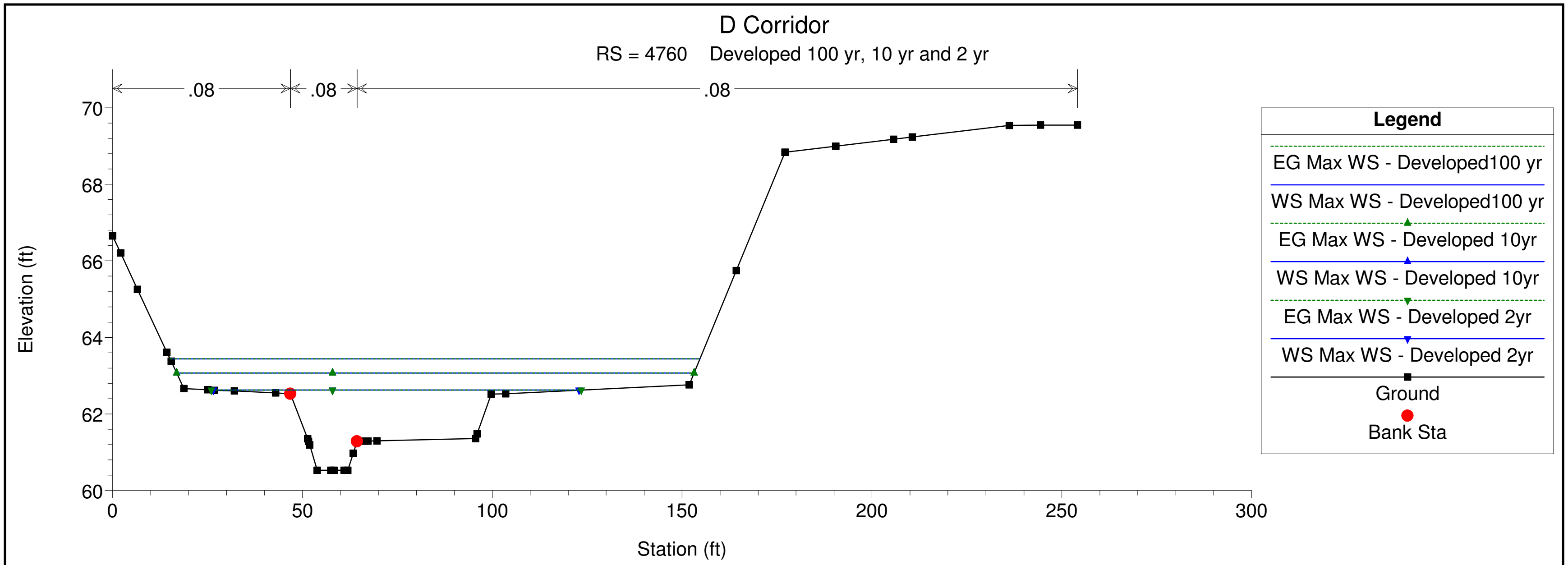

D Corridor
RS = 4950 BR 4 foot wide by 3 foot high opening Developed 100 yr, 10 yr and 2 yr
.08
.08
.08
Elevation (ft)
Station (ft)
Legend
EG Max WS - Developed100 yr
WS Max WS - Developed100 yr
EG Max WS - Developed 10yr
WS Max WS - Developed 10yr
EG Max WS - Developed 2yr
WS Max WS - Developed 2yr
Ground
Ineff
Bank Sta

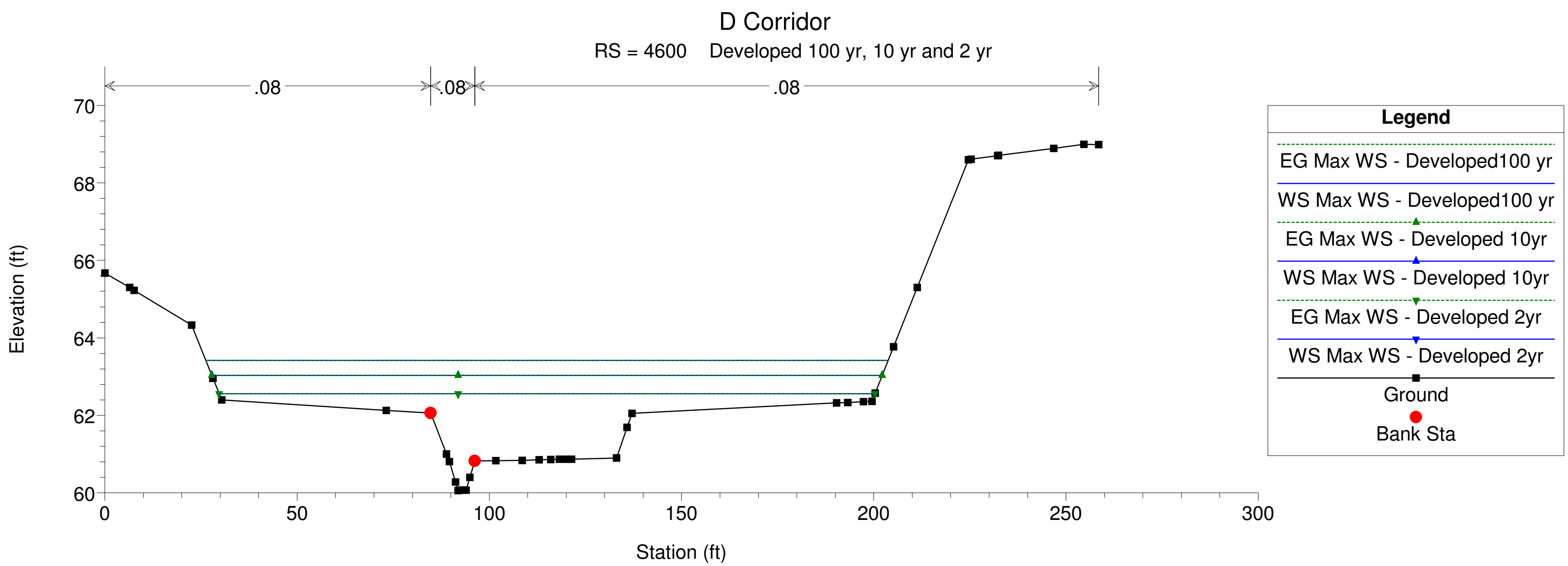

D Corridor
RS = 4915 Developed 100 yr, 10 yr and 2 yr
.08
.08
.08
Elevation (ft)
Station (ft)
Legend
EG Max WS - Developed100 yr
WS Max WS - Developed100 yr
EG Max WS - Developed 10yr
WS Max WS - Developed 10yr
EG Max WS - Developed 2yr
WS Max WS - Developed 2yr
Ground
Ineff
Bank Sta

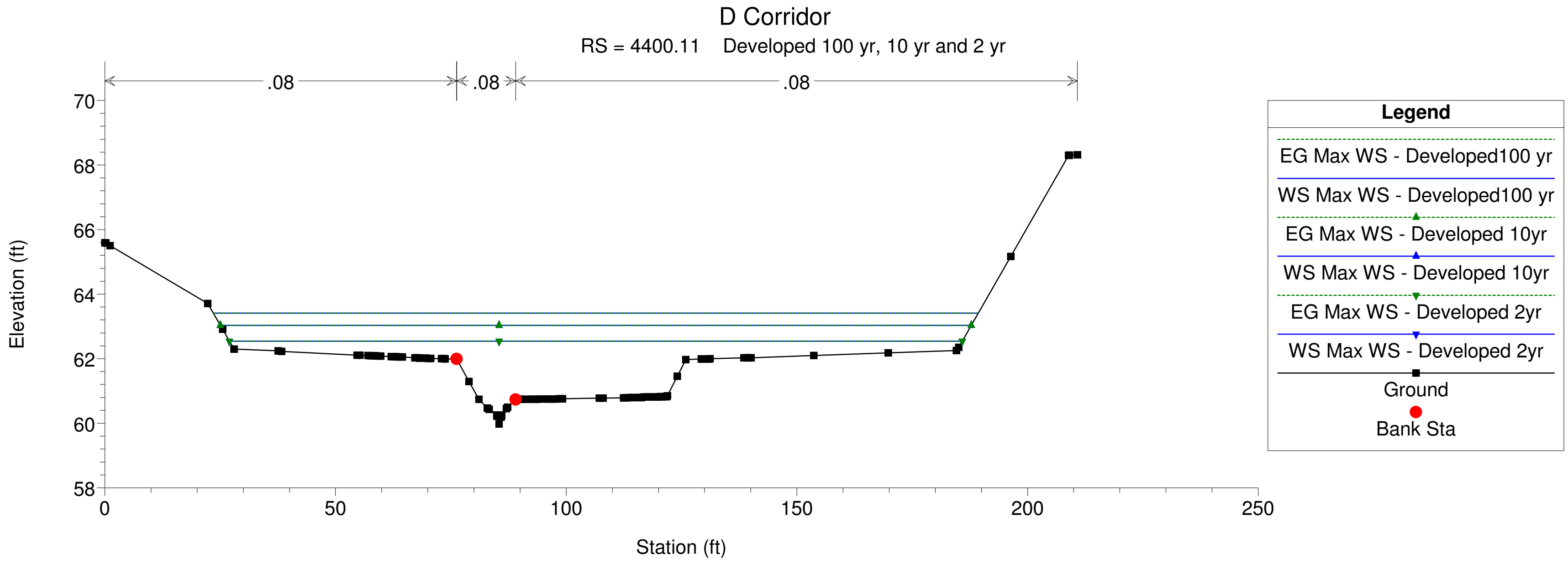

D Corridor
RS = 4890 Developed 100 yr, 10 yr and 2 yr
.08
.08
.08
Elevation (ft)
Station (ft)
Legend
EG Max WS - Developed100 yr
WS Max WS - Developed100 yr
EG Max WS - Developed 10yr
WS Max WS - Developed 10yr
EG Max WS - Developed 2yr
WS Max WS - Developed 2yr
Ground
Bank Sta


D Corridor
RS = 4850 Developed 100 yr, 10 yr and 2 yr
.08
.08
.08
Elevation (ft)
70
68
66
64
62
60
0
20
40
60
80
100
120
140
160
180
Station (ft)
Legend
EG Max WS - Developed100 yr
WS Max WS - Developed100 yr
EG Max WS - Developed 10yr
WS Max WS - Developed 10yr
EG Max WS - Developed 2yr
WS Max WS - Developed 2yr
Ground
Bank Sta

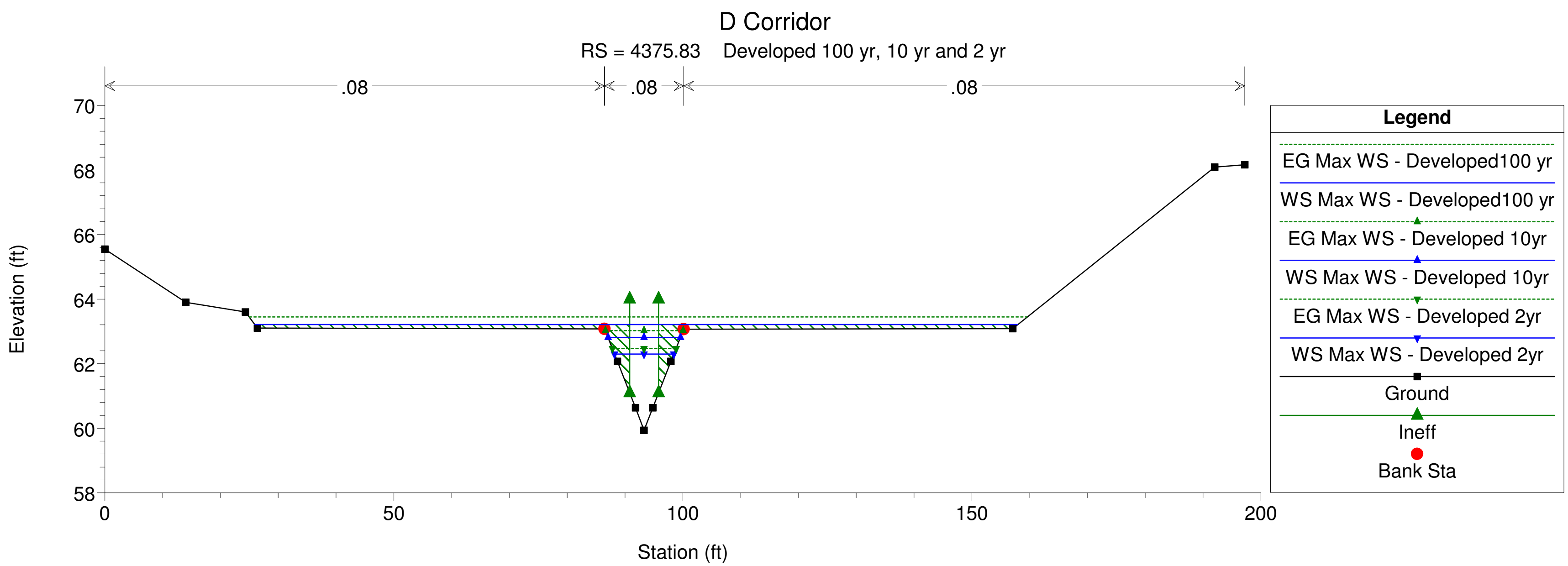

D Corridor
RS = 4800 Developed 100 yr, 10 yr and 2 yr
.08
.08
.08
Elevation (ft)
70
68
66
64
62
60
0
50
100
150
200
250
Station (ft)
Legend
EG Max WS - Developed100 yr
WS Max WS - Developed100 yr
EG Max WS - Developed 10yr
WS Max WS - Developed 10yr
EG Max WS - Developed 2yr
WS Max WS - Developed 2yr
Ground
Bank Sta


D Corridor
RS = 4760 Developed 100 yr, 10 yr and 2 yr
.08
.08
.08
Elevation (ft)
70
68
66
64
62
60
0
50
100
150
200
250
300
Station (ft)
Legend
EG Max WS - Developed100 yr
WS Max WS - Developed100 yr
EG Max WS - Developed 10yr
WS Max WS - Developed 10yr
EG Max WS - Developed 2yr
WS Max WS - Developed 2yr
Ground
Bank Sta

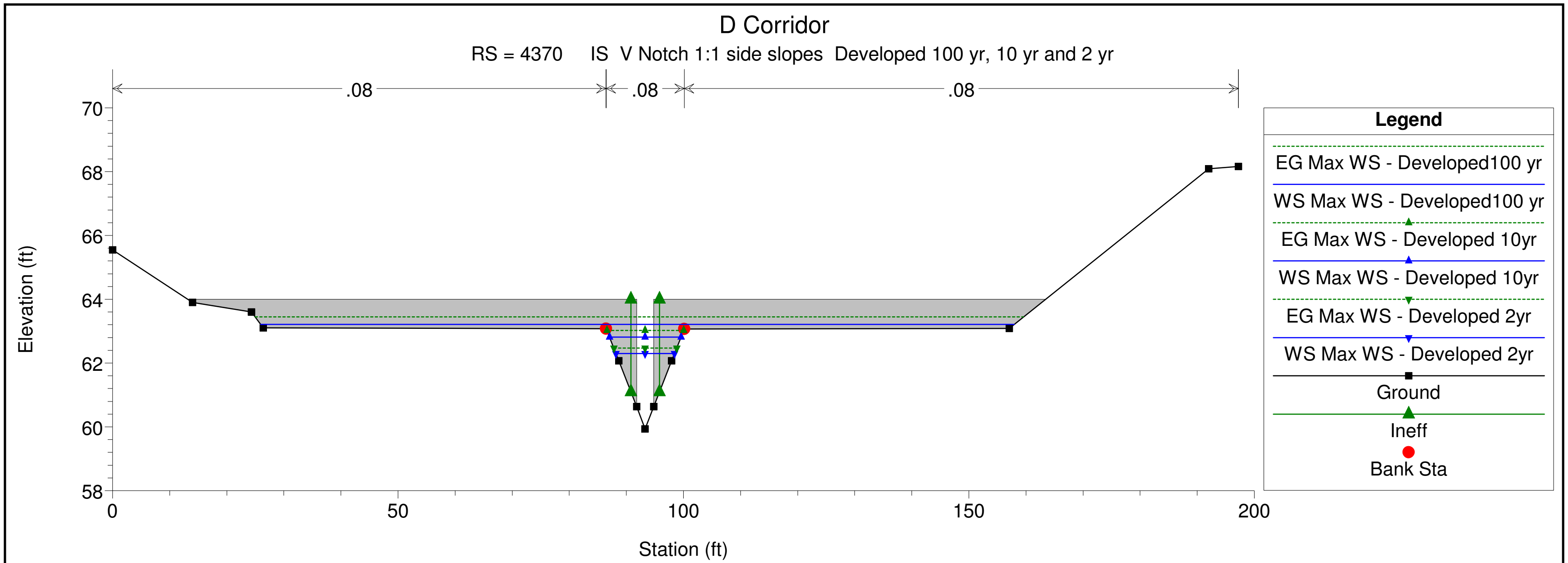

D Corridor
RS = 4600 Developed 100 yr, 10 yr and 2 yr
.08
.08
.08
Elevation (ft)
70
68
66
64
62
60
0
50
100
150
200
250
300
Station (ft)
Legend
EG Max WS - Developed100 yr
WS Max WS - Developed100 yr
EG Max WS - Developed 10yr
WS Max WS - Developed 10yr
EG Max WS - Developed 2yr
WS Max WS - Developed 2yr
Ground
Bank Sta

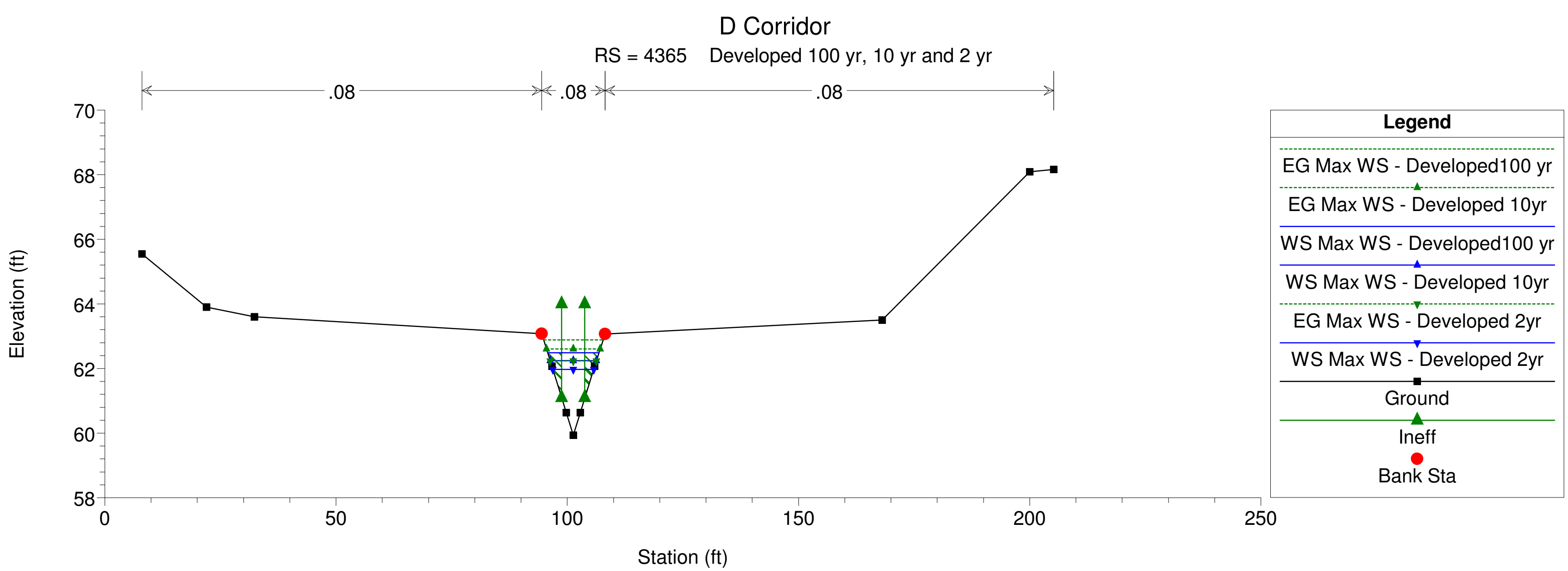


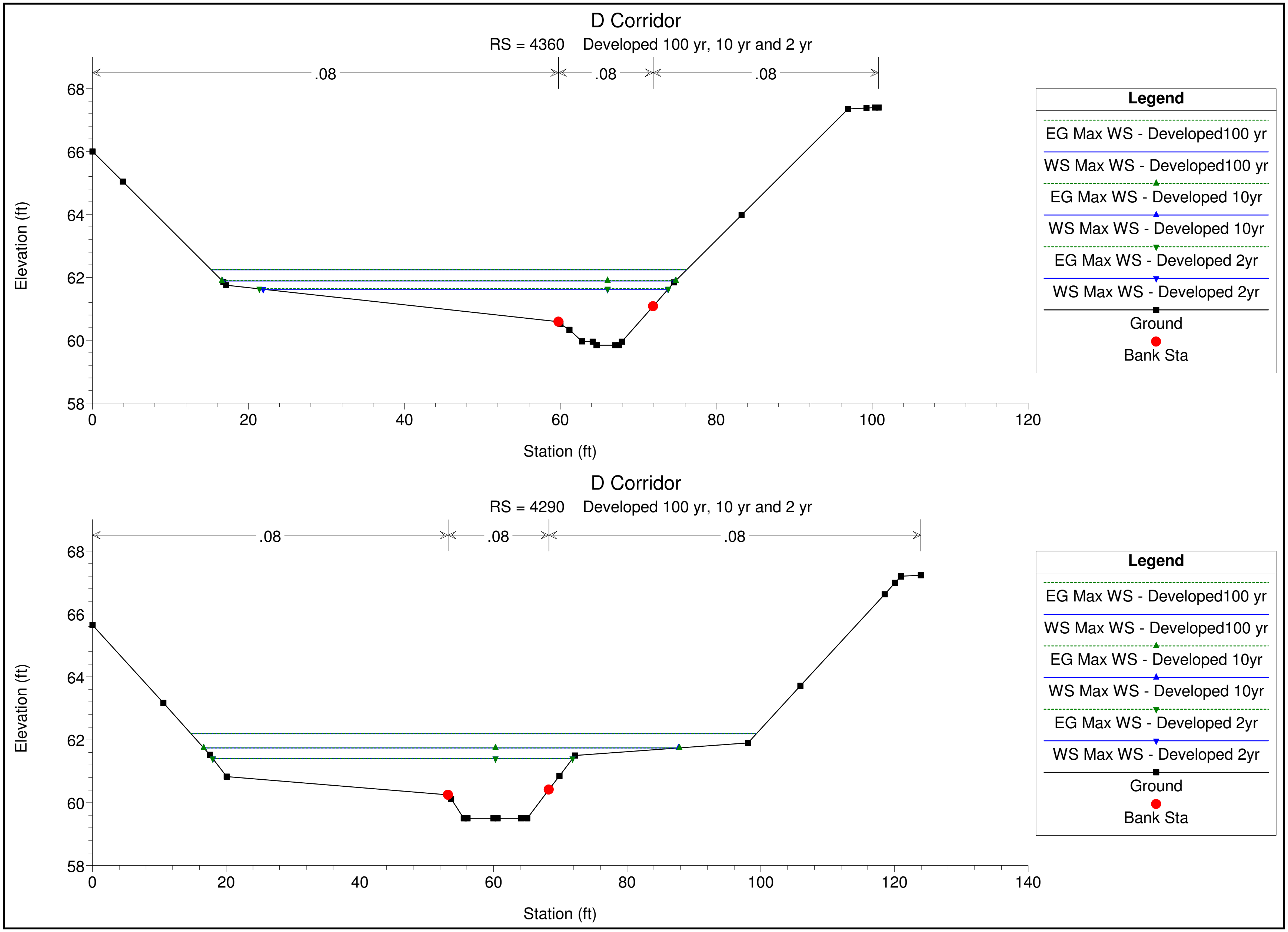
D Corridor
RS = 4400.11 Developed 100 yr, 10 yr and 2 yr
.08
.08
.08
Elevation (ft)
70
68
66
64
62
60
58
0
50
100
150
200
250
Station (ft)
Legend
EG Max WS - Developed100 yr
WS Max WS - Developed100 yr
EG Max WS - Developed 10yr
WS Max WS - Developed 10yr
EG Max WS - Developed 2yr
WS Max WS - Developed 2yr
Ground
Bank Sta

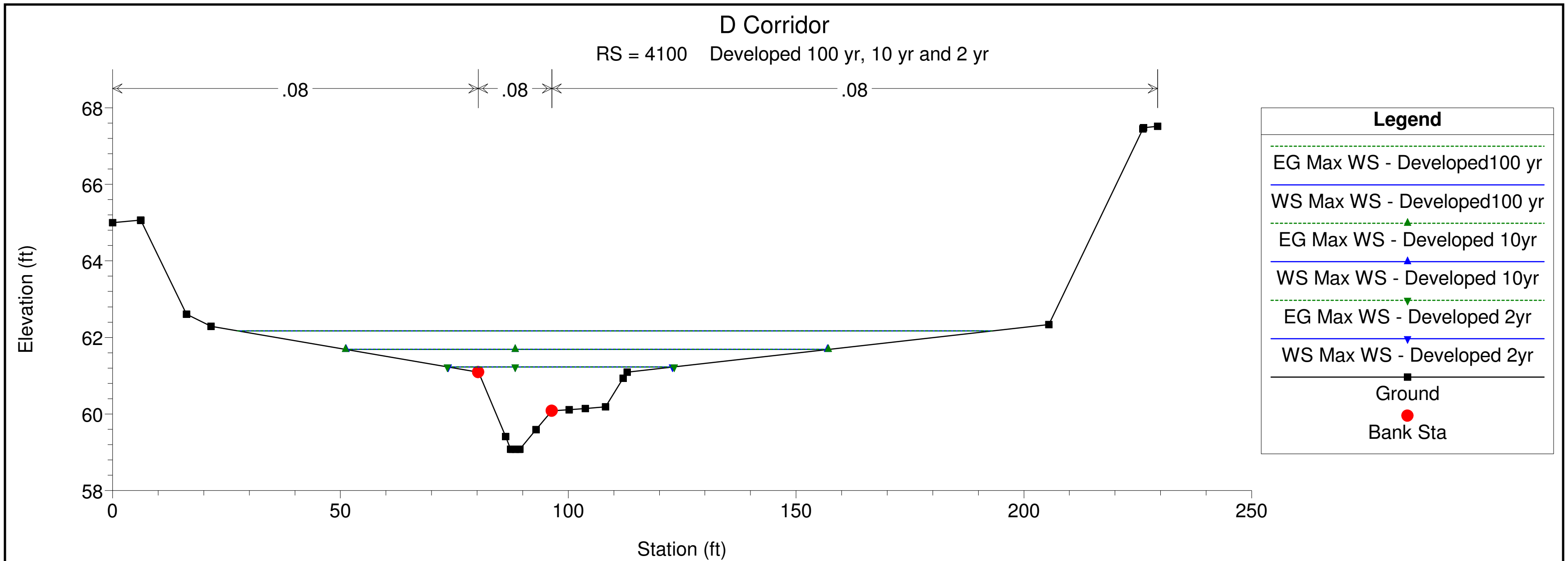


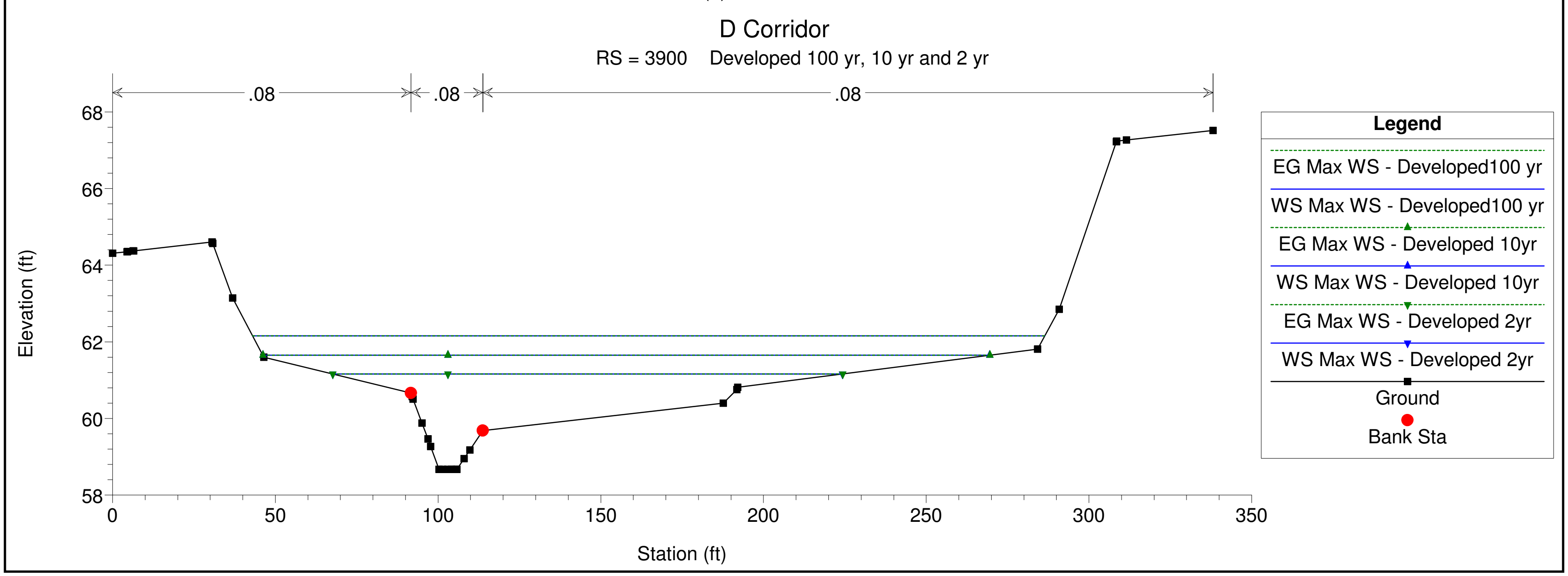
D Corridor
RS = 4375.83 Developed 100 yr, 10 yr and 2 yr
.08
.08
.08
Elevation (ft)
70
68
66
64
62
60
58
0
50
100
150
200
Station (ft)
Legend
EG Max WS - Developed100 yr
WS Max WS - Developed100 yr
EG Max WS - Developed 10yr
WS Max WS - Developed 10yr
EG Max WS - Developed 2yr
WS Max WS - Developed 2yr
Ground
Ineff
Bank Sta

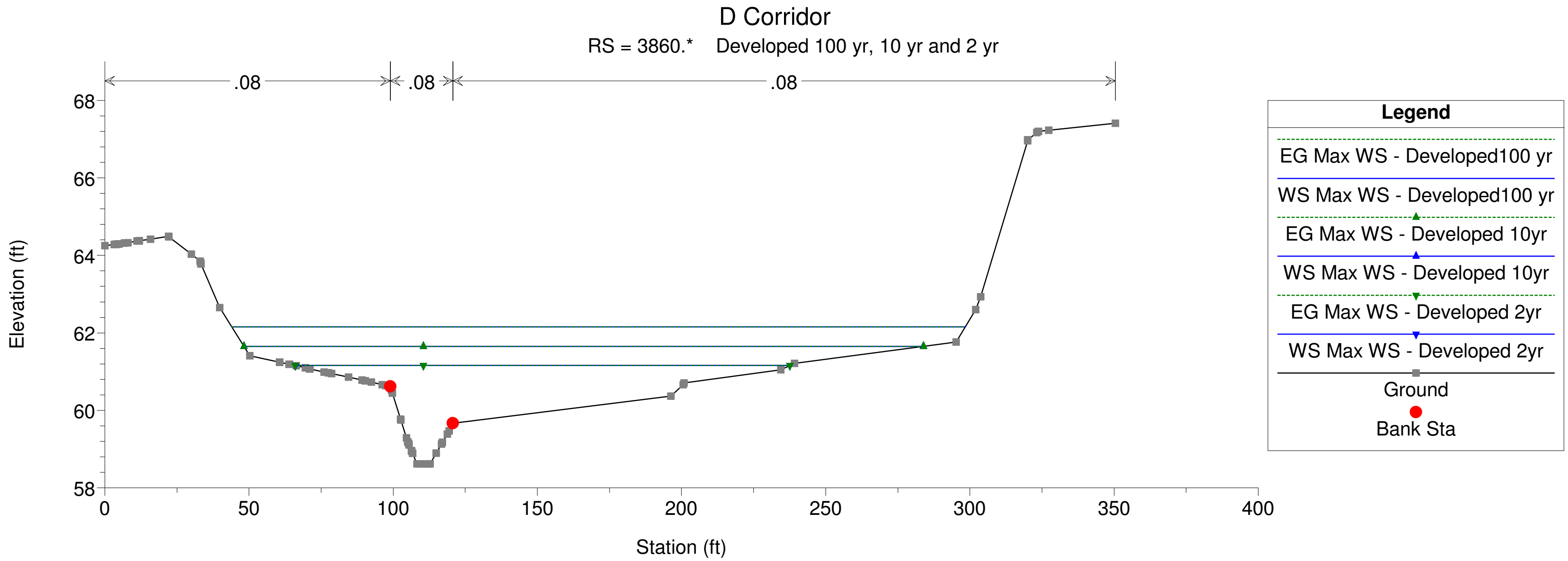

D Corridor
RS = 4370 IS V Notch 1:1 side slopes Developed 100 yr, 10 yr and 2 yr
.08
.08
.08
Elevation (ft)
70
68
66
64
62
60
58
0
50
100
150
200
Station (ft)
Legend
EG Max WS - Developed100 yr
WS Max WS - Developed100 yr
EG Max WS - Developed 10yr
WS Max WS - Developed 10yr
EG Max WS - Developed 2yr
WS Max WS - Developed 2yr
Ground
Ineff
Bank Sta


D Corridor
RS = 4365 Developed 100 yr, 10 yr and 2 yr
.08
.08
.08
Elevation (ft)
70
68
66
64
62
60
58
0
50
100
150
200
250
Station (ft)
Legend
EG Max WS - Developed100 yr
EG Max WS - Developed 10yr
WS Max WS - Developed100 yr
WS Max WS - Developed 10yr
EG Max WS - Developed 2yr
WS Max WS - Developed 2yr
Ground
Ineff
Bank Sta

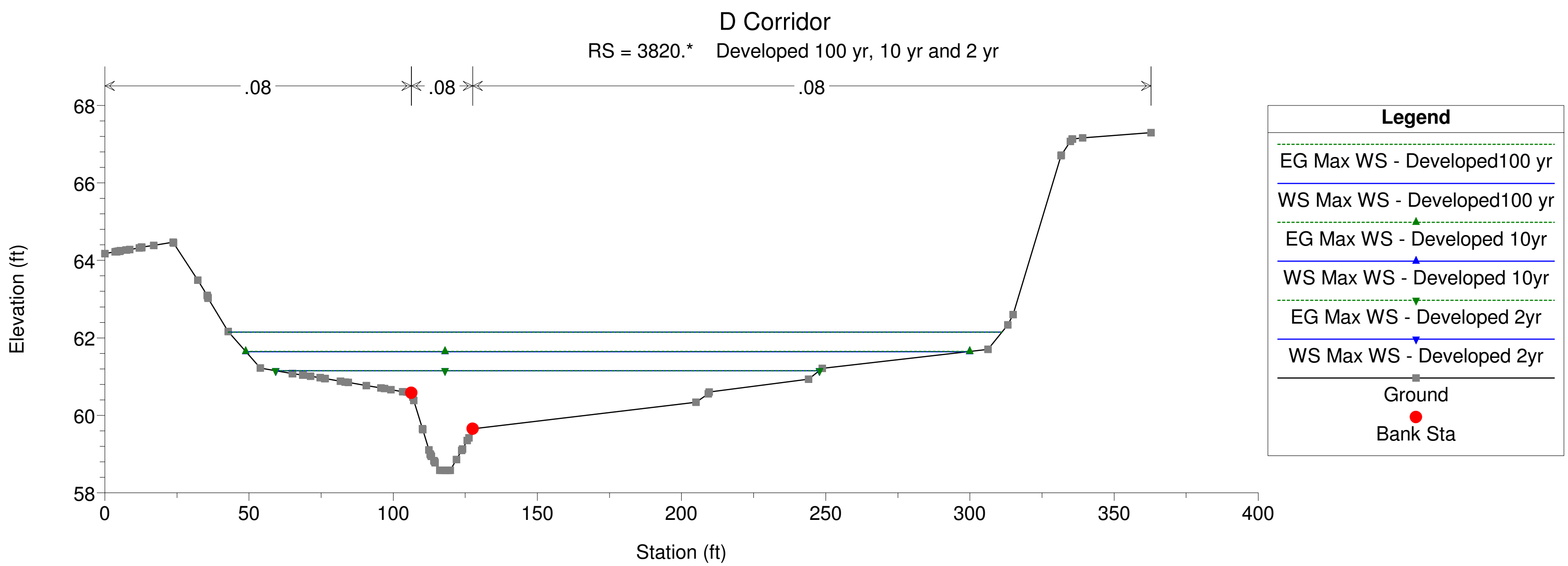

D Corridor
RS = 4360 Developed 100 yr, 10 yr and 2 yr
.08
.08
.08
Elevation (ft)
Station (ft)
68
66
64
62
60
58
0
20
40
60
80
100
120
Legend
EG Max WS - Developed100 yr
WS Max WS - Developed100 yr
EG Max WS - Developed 10yr
WS Max WS - Developed 10yr
EG Max WS - Developed 2yr
WS Max WS - Developed 2yr
Ground
Bank Sta
D Corridor
RS = 4290 Developed 100 yr, 10 yr and 2 yr
.08
.08
.08
Elevation (ft)
Station (ft)
68
66
64
62
60
58
0
20
40
60
80
100
120
140
Legend
EG Max WS - Developed100 yr
WS Max WS - Developed100 yr
EG Max WS - Developed 10yr
WS Max WS - Developed 10yr
EG Max WS - Developed 2yr
WS Max WS - Developed 2yr
Ground
Bank Sta


D Corridor
RS = 4100 Developed 100 yr, 10 yr and 2 yr
.08
.08
.08
Elevation (ft)
68
66
64
62
60
58
0
50
100
150
200
250
Station (ft)
Legend
EG Max WS - Developed100 yr
WS Max WS - Developed100 yr
EG Max WS - Developed 10yr
WS Max WS - Developed 10yr
EG Max WS - Developed 2yr
WS Max WS - Developed 2yr
Ground
Bank Sta

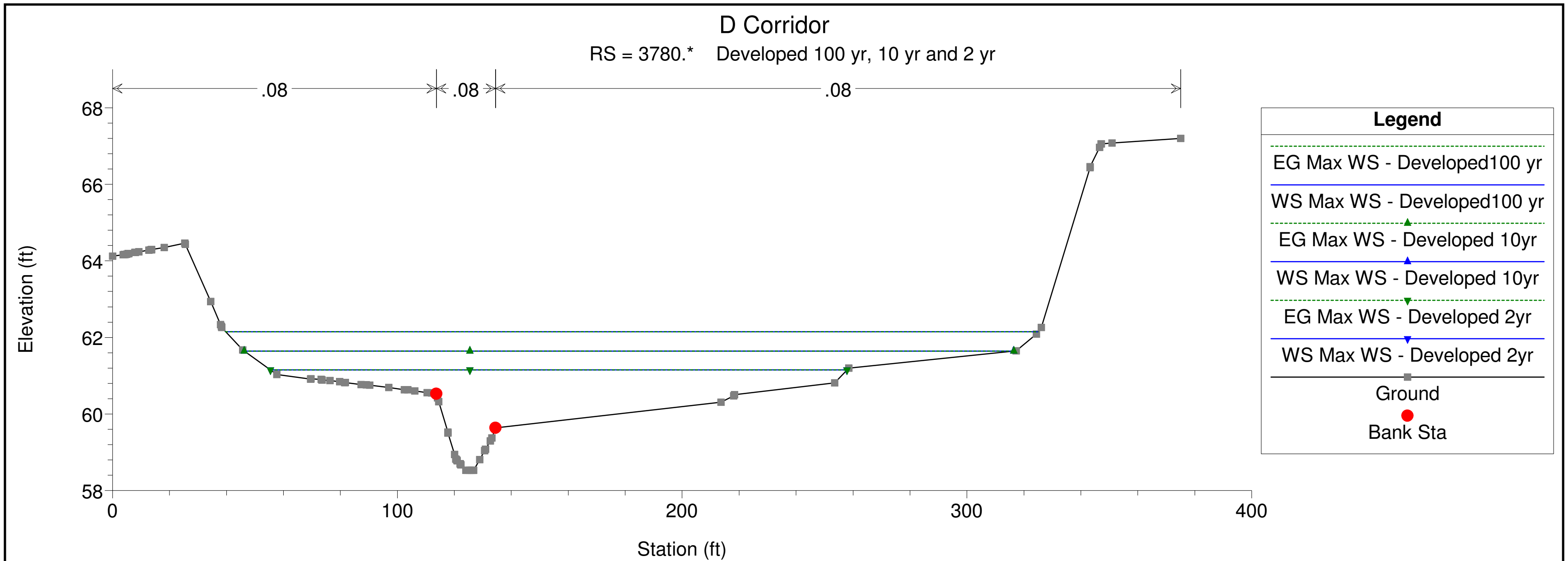

D Corridor
RS = 3900 Developed 100 yr, 10 yr and 2 yr
.08
.08
.08
Elevation (ft)
68
66
64
62
60
58
0
50
100
150
200
250
300
350
Station (ft)
Legend
EG Max WS - Developed100 yr
WS Max WS - Developed100 yr
EG Max WS - Developed 10yr
WS Max WS - Developed 10yr
EG Max WS - Developed 2yr
WS Max WS - Developed 2yr
Ground
Bank Sta

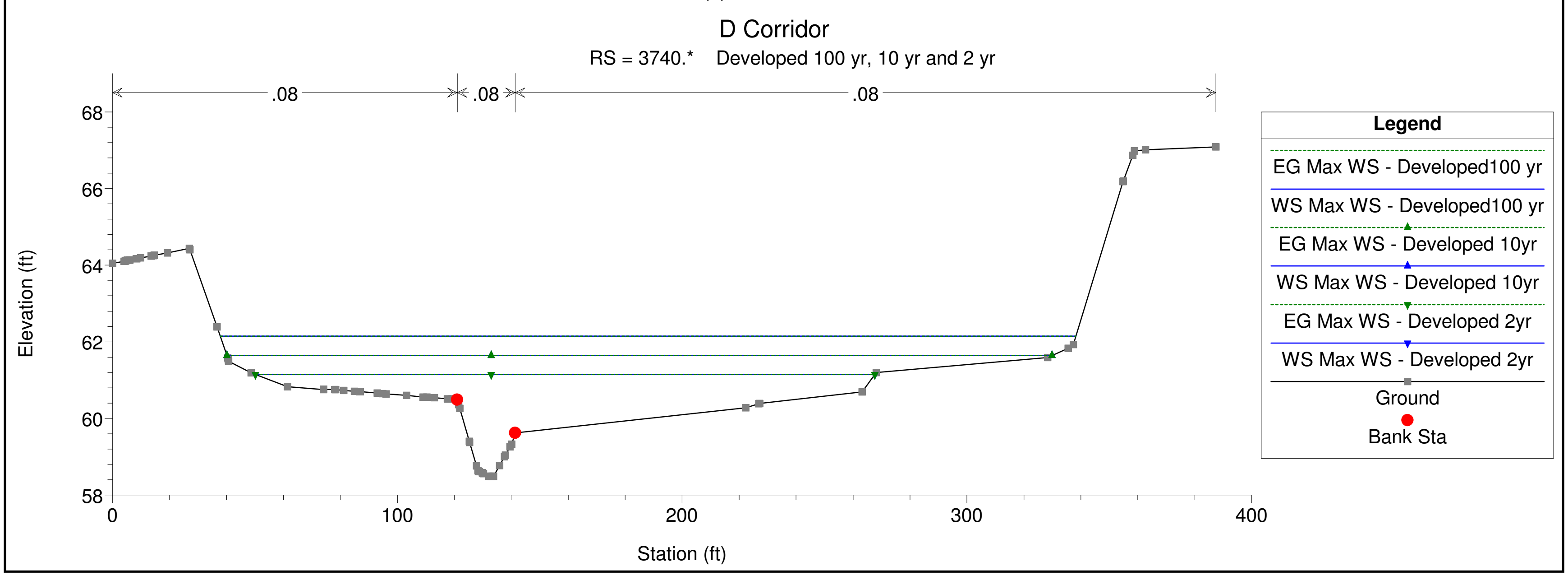


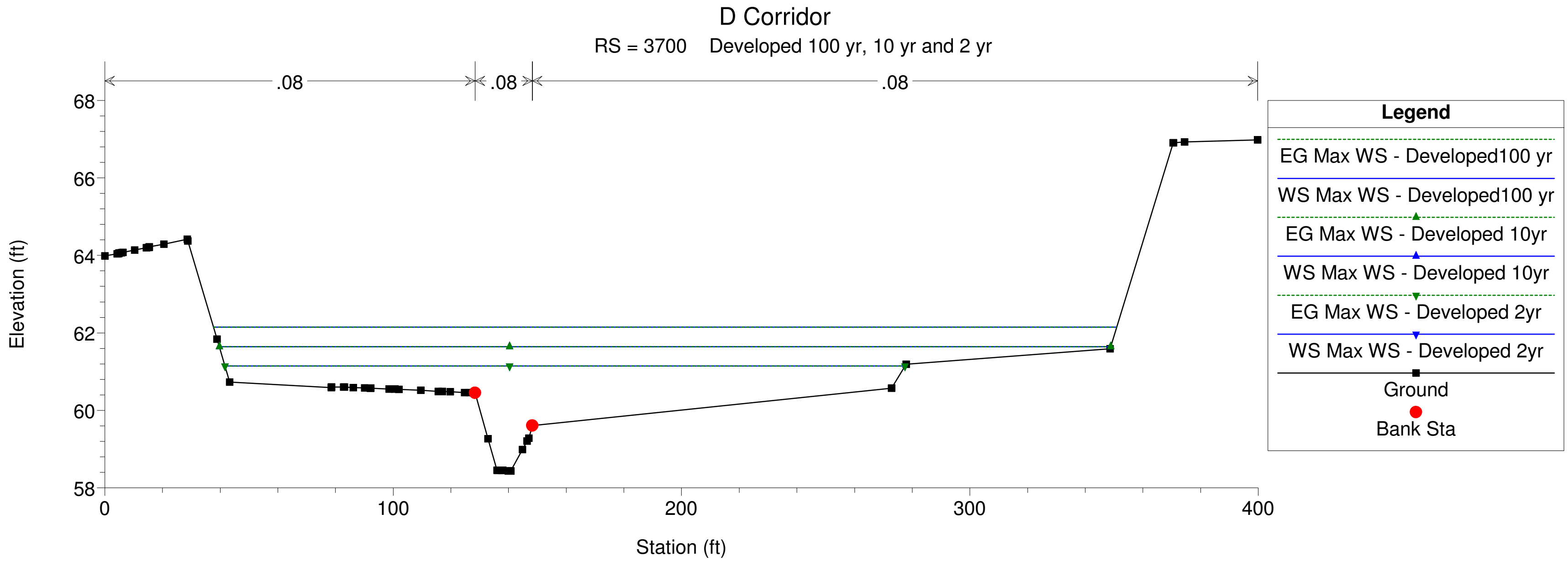
D Corridor
RS = 3860.* Developed 100 yr, 10 yr and 2 yr
.08
.08
.08
Elevation (ft)
Station (ft)
Legend
EG Max WS - Developed100 yr
WS Max WS - Developed100 yr
EG Max WS - Developed 10yr
WS Max WS - Developed 10yr
EG Max WS - Developed 2yr
WS Max WS - Developed 2yr
Ground
Bank Sta

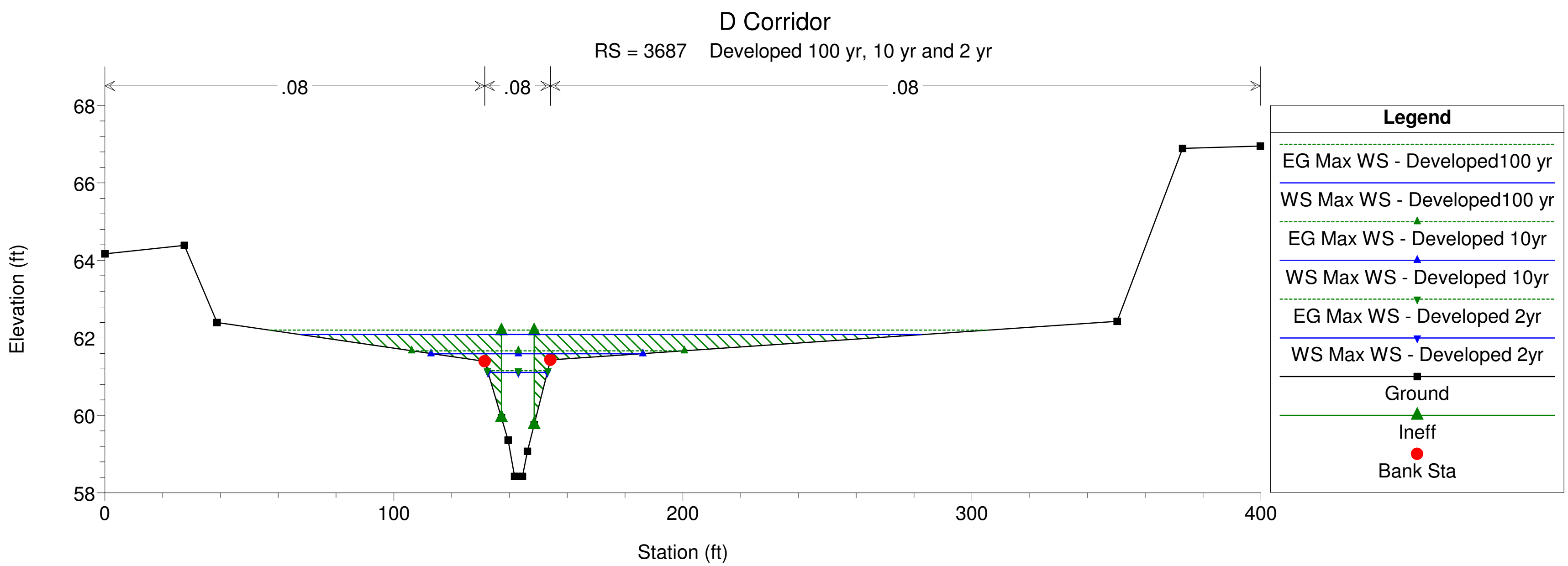


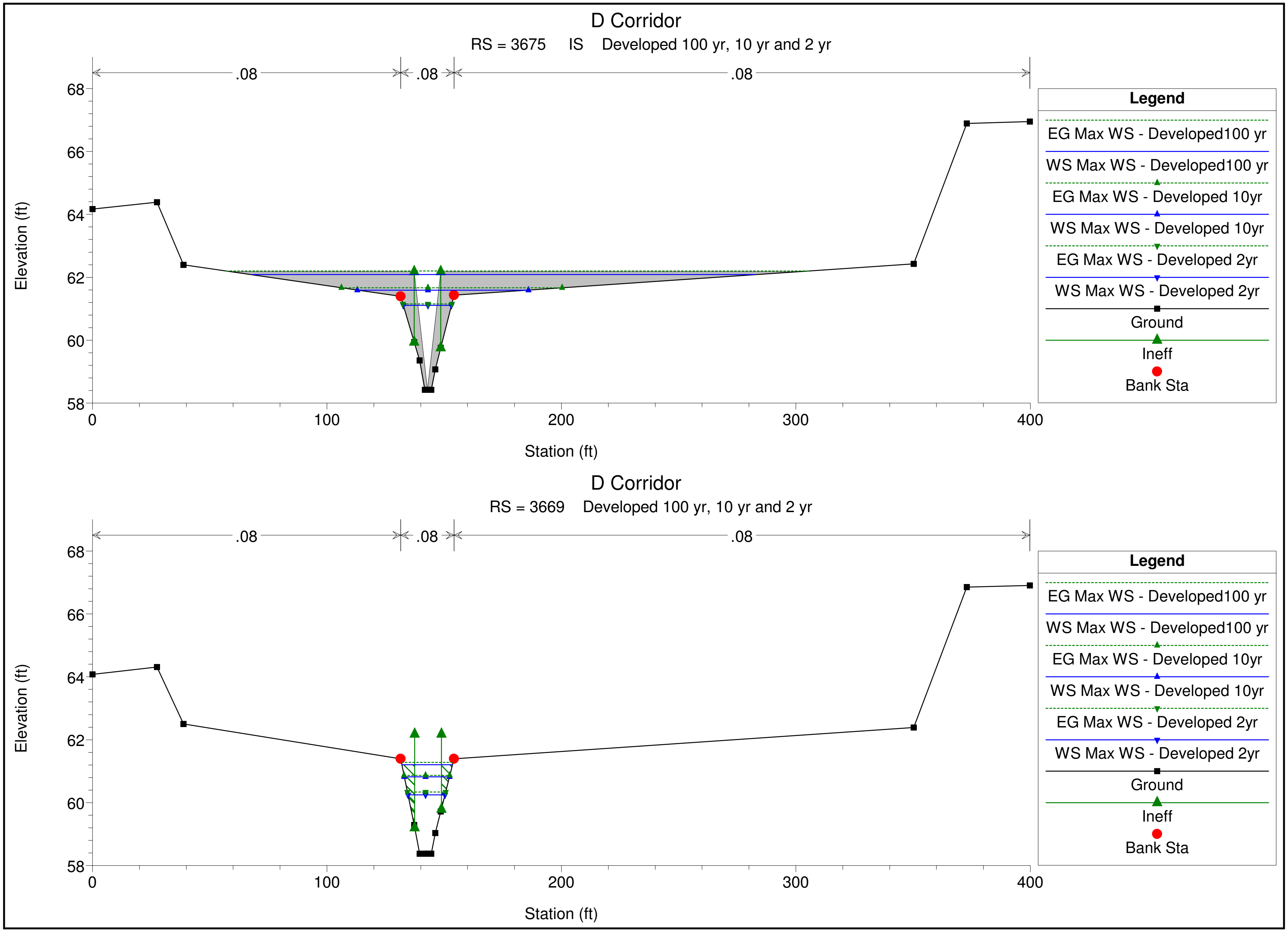
D Corridor
RS = 3820.* Developed 100 yr, 10 yr and 2 yr
.08
.08
.08
Elevation (ft)
Station (ft)
Legend
EG Max WS - Developed100 yr
WS Max WS - Developed100 yr
EG Max WS - Developed 10yr
WS Max WS - Developed 10yr
EG Max WS - Developed 2yr
WS Max WS - Developed 2yr
Ground
Bank Sta

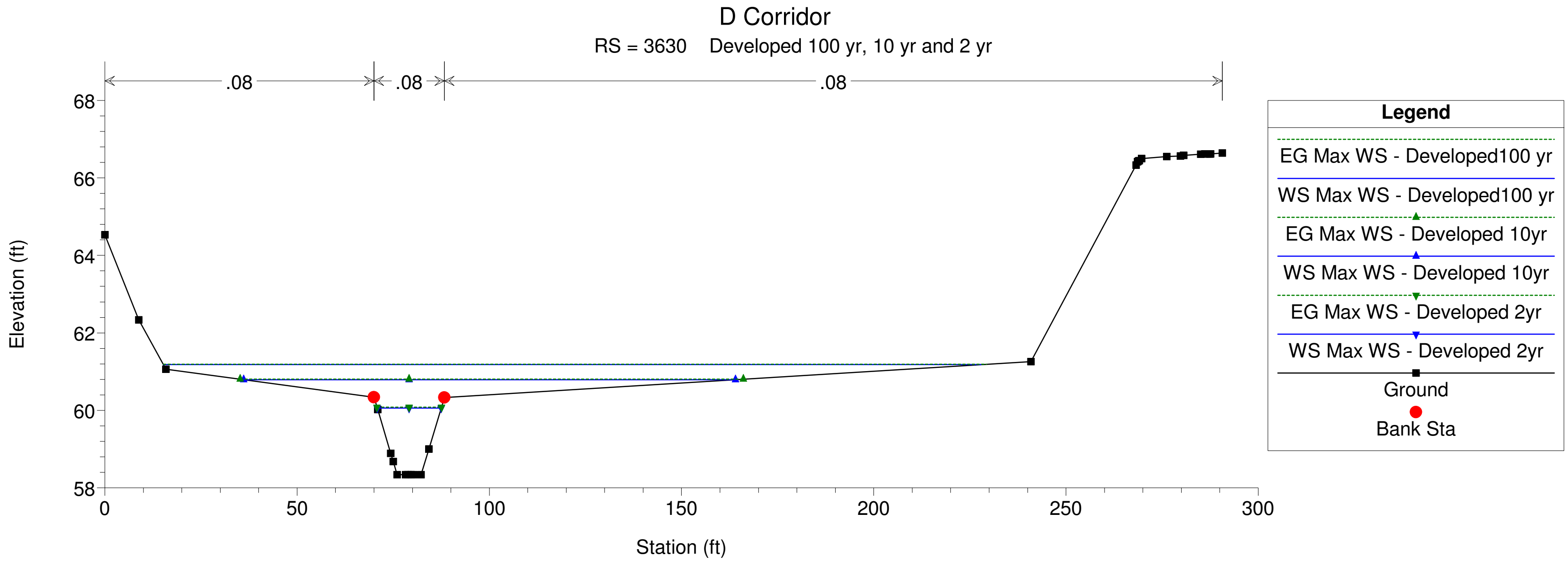

D Corridor
RS = 3780.* Developed 100 yr, 10 yr and 2 yr
.08
.08
.08
Elevation (ft)
Station (ft)
68
66
64
62
60
58
0
100
200
300
400
Legend
EG Max WS - Developed100 yr
WS Max WS - Developed100 yr
EG Max WS - Developed 10yr
WS Max WS - Developed 10yr
EG Max WS - Developed 2yr
WS Max WS - Developed 2yr
Ground
Bank Sta

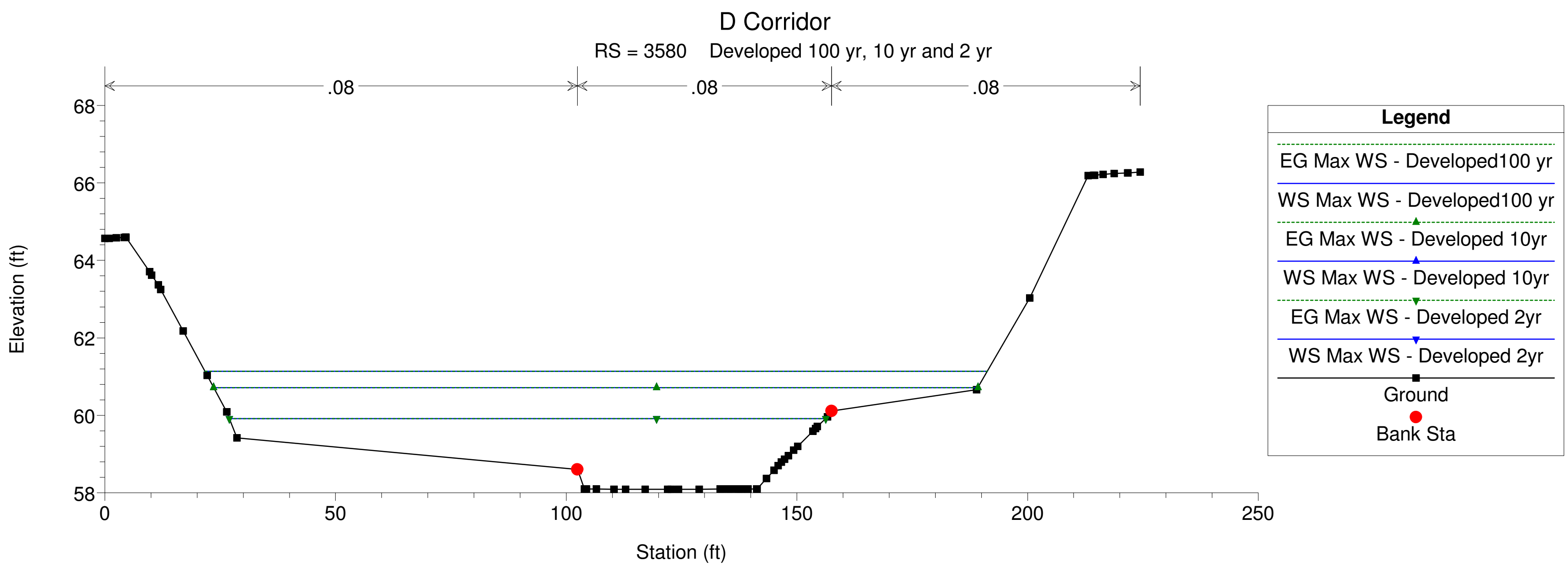

D Corridor
RS = 3740.* Developed 100 yr, 10 yr and 2 yr
.08
.08
.08
Elevation (ft)
Station (ft)
68
66
64
62
60
58
0
100
200
300
400
Legend
EG Max WS - Developed100 yr
WS Max WS - Developed100 yr
EG Max WS - Developed 10yr
WS Max WS - Developed 10yr
EG Max WS - Developed 2yr
WS Max WS - Developed 2yr
Ground
Bank Sta

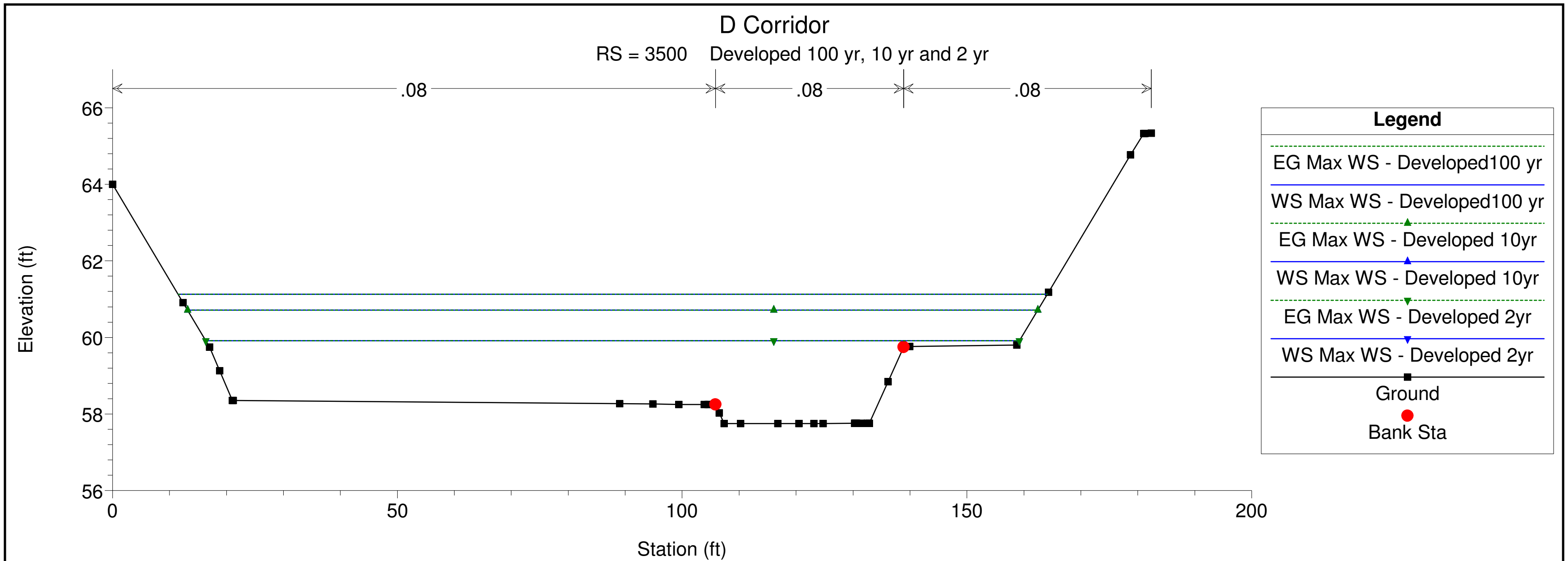

D Corridor
RS = 3700 Developed 100 yr, 10 yr and 2 yr
.08
.08
.08
Elevation (ft)
68
66
64
62
60
58
0
100
200
300
400
Station (ft)
Legend
EG Max WS - Developed100 yr
WS Max WS - Developed100 yr
EG Max WS - Developed 10yr
WS Max WS - Developed 10yr
EG Max WS - Developed 2yr
WS Max WS - Developed 2yr
Ground
Bank Sta


D Corridor
RS = 3687 Developed 100 yr, 10 yr and 2 yr
.08
.08
.08
Elevation (ft)
68
66
64
62
60
58
0
100
200
300
400
Station (ft)
Legend
EG Max WS - Developed100 yr
WS Max WS - Developed100 yr
EG Max WS - Developed 10yr
WS Max WS - Developed 10yr
EG Max WS - Developed 2yr
WS Max WS - Developed 2yr
Ground
Ineff
Bank Sta

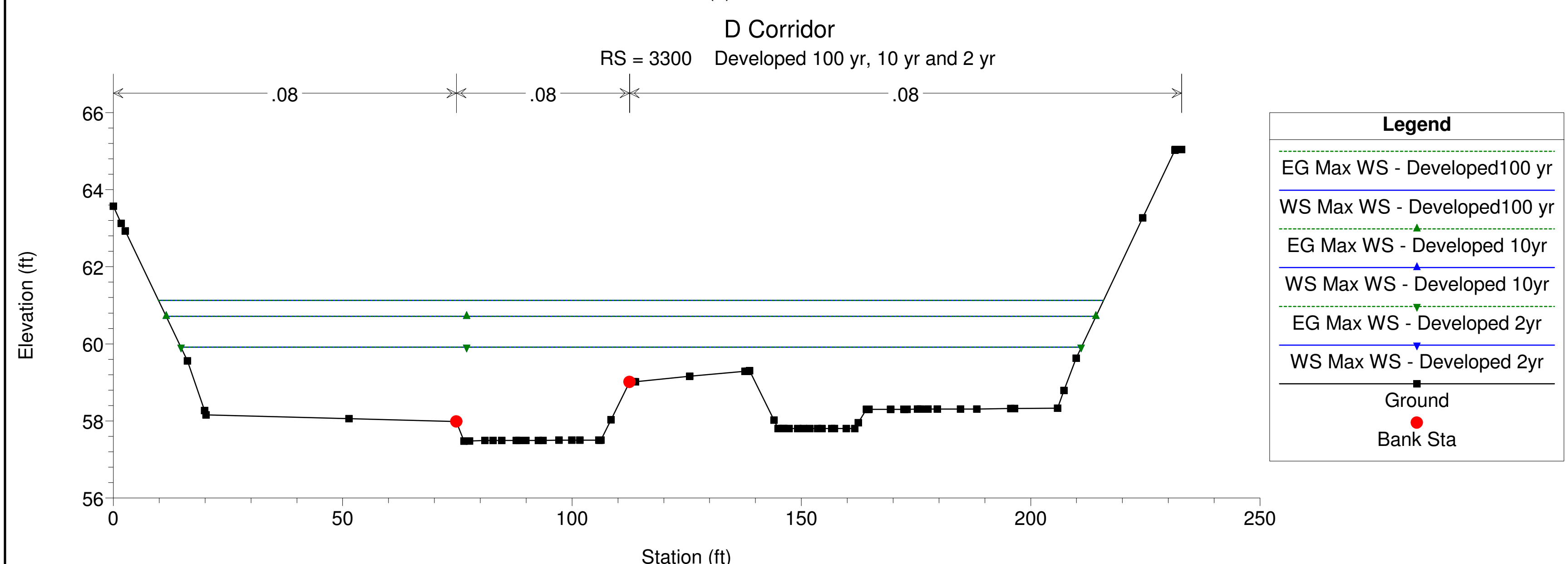

D Corridor
RS = 3675 IS Developed 100 yr, 10 yr and 2 yr
.08
.08
.08
Elevation (ft)
Station (ft)
Legend
EG Max WS - Developed100 yr
WS Max WS - Developed100 yr
EG Max WS - Developed 10yr
WS Max WS - Developed 10yr
EG Max WS - Developed 2yr
WS Max WS - Developed 2yr
Ground
Ineff
Bank Sta
D Corridor
RS = 3669 Developed 100 yr, 10 yr and 2 yr
.08
.08
.08
Elevation (ft)
Station (ft)
Legend
EG Max WS - Developed100 yr
WS Max WS - Developed100 yr
EG Max WS - Developed 10yr
WS Max WS - Developed 10yr
EG Max WS - Developed 2yr
WS Max WS - Developed 2yr
Ground
Ineff
Bank Sta


D Corridor
RS = 3630 Developed 100 yr, 10 yr and 2 yr
.08
.08
.08
68
66
64
62
60
58
Elevation (ft)
0
50
100
150
200
250
300
Station (ft)
Legend
EG Max WS - Developed100 yr
WS Max WS - Developed100 yr
EG Max WS - Developed 10yr
WS Max WS - Developed 10yr
EG Max WS - Developed 2yr
WS Max WS - Developed 2yr
Ground
Bank Sta

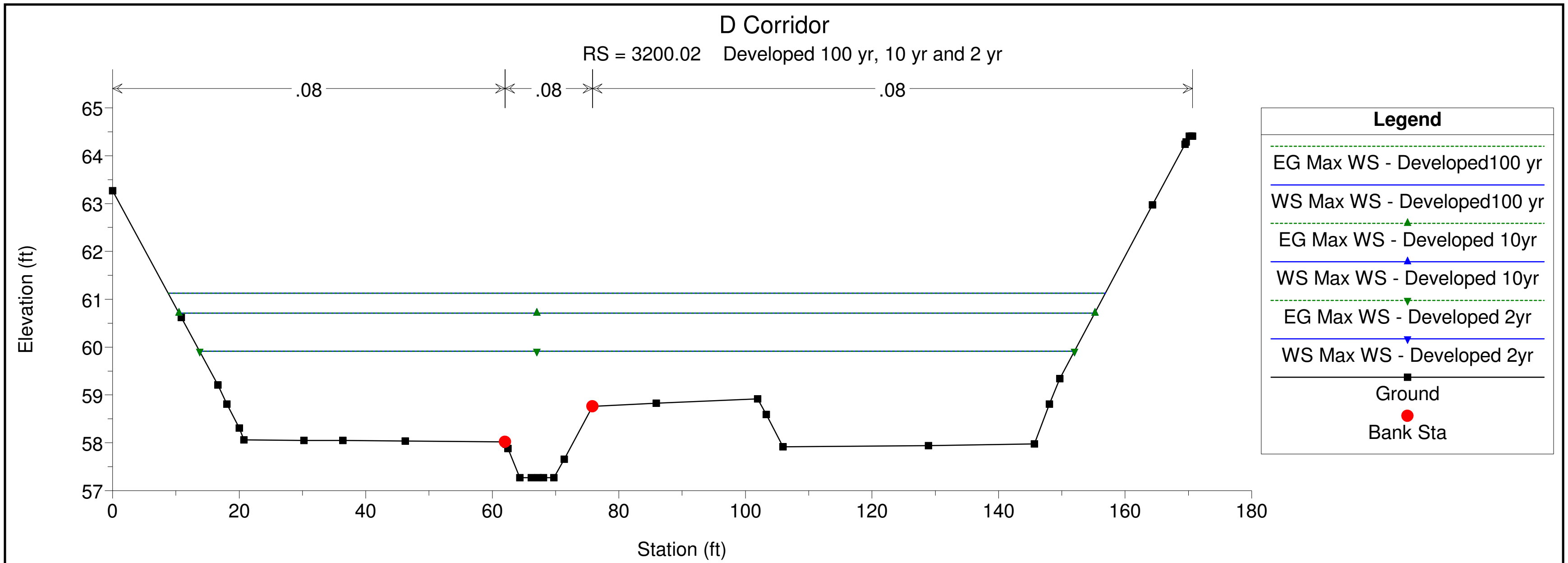

D Corridor
RS = 3580 Developed 100 yr, 10 yr and 2 yr
.08
.08
.08
68
66
64
62
60
58
Elevation (ft)
0
50
100
150
200
250
Station (ft)
Legend
EG Max WS - Developed100 yr
WS Max WS - Developed100 yr
EG Max WS - Developed 10yr
WS Max WS - Developed 10yr
EG Max WS - Developed 2yr
WS Max WS - Developed 2yr
Ground
Bank Sta



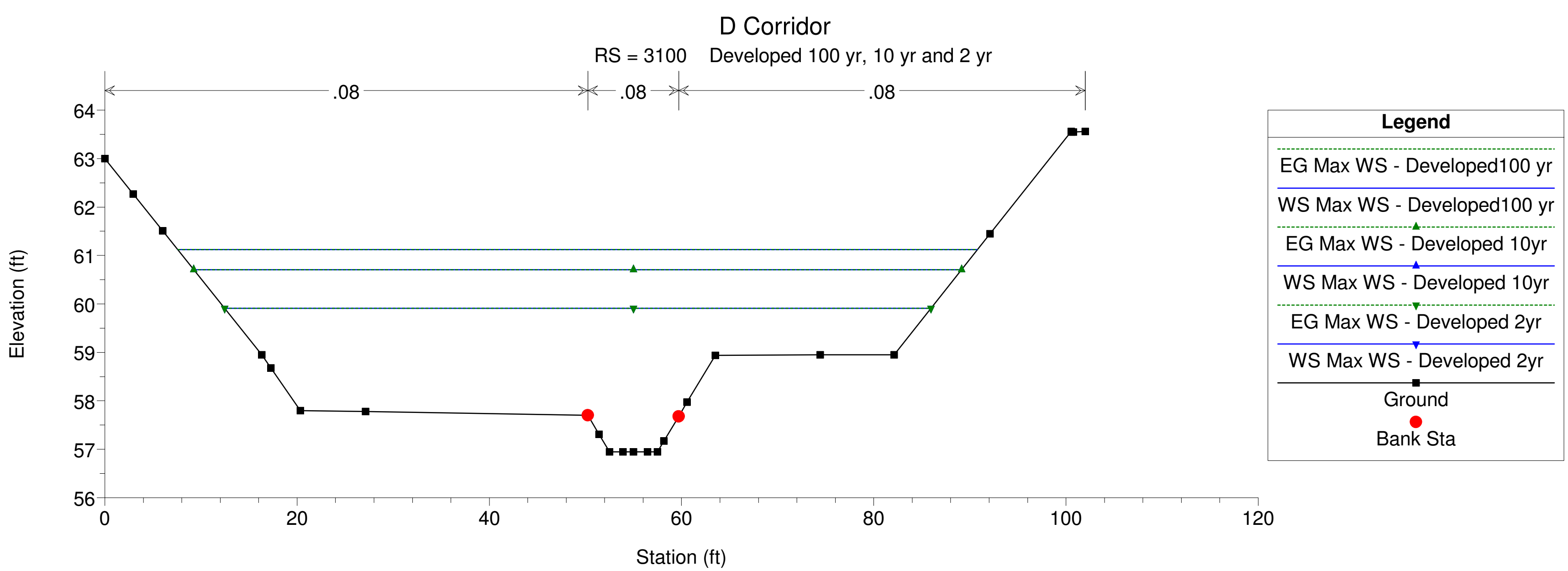
D Corridor
RS = 3500 Developed 100 yr, 10 yr and 2 yr
.08
.08
.08
Elevation (ft)
Station (ft)
Legend
EG Max WS - Developed100 yr
WS Max WS - Developed100 yr
EG Max WS - Developed 10yr
WS Max WS - Developed 10yr
EG Max WS - Developed 2yr
WS Max WS - Developed 2yr
Ground
Bank Sta



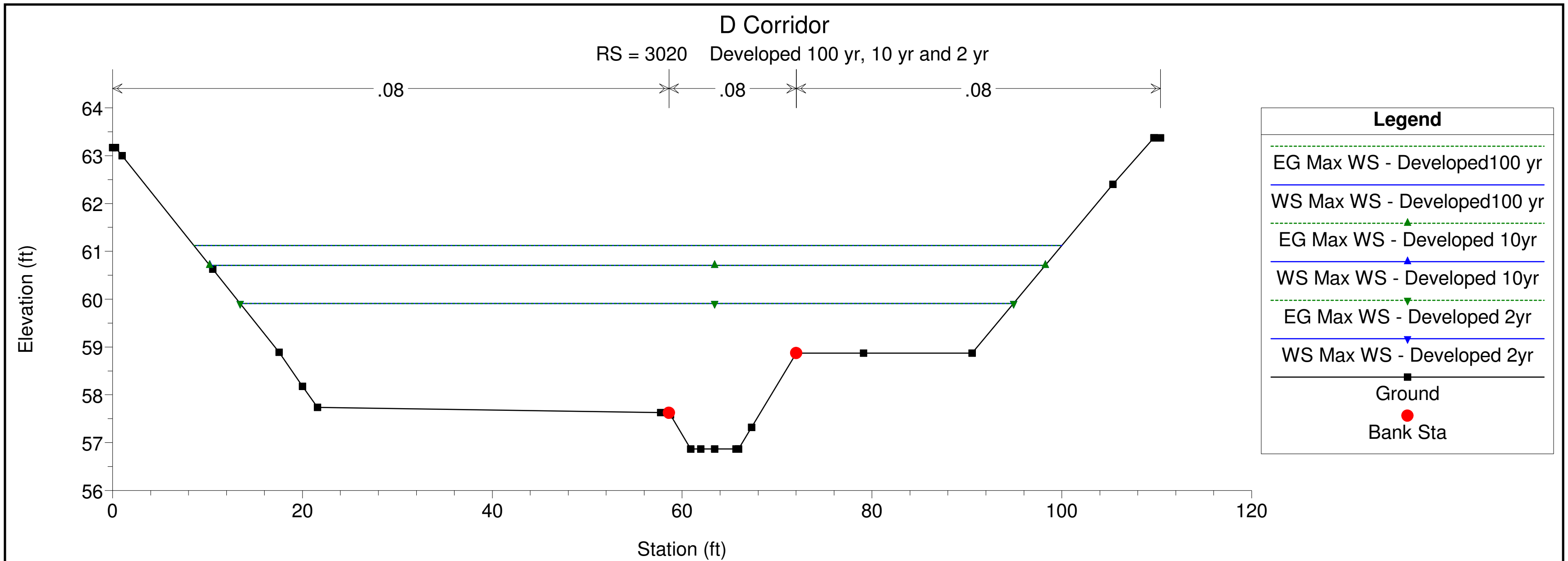
D Corridor
RS = 3300 Developed 100 yr, 10 yr and 2 yr
.08
.08
.08
Elevation (ft)
Station (ft)
Legend
EG Max WS - Developed100 yr
WS Max WS - Developed100 yr
EG Max WS - Developed 10yr
WS Max WS - Developed 10yr
EG Max WS - Developed 2yr
WS Max WS - Developed 2yr
Ground
Bank Sta

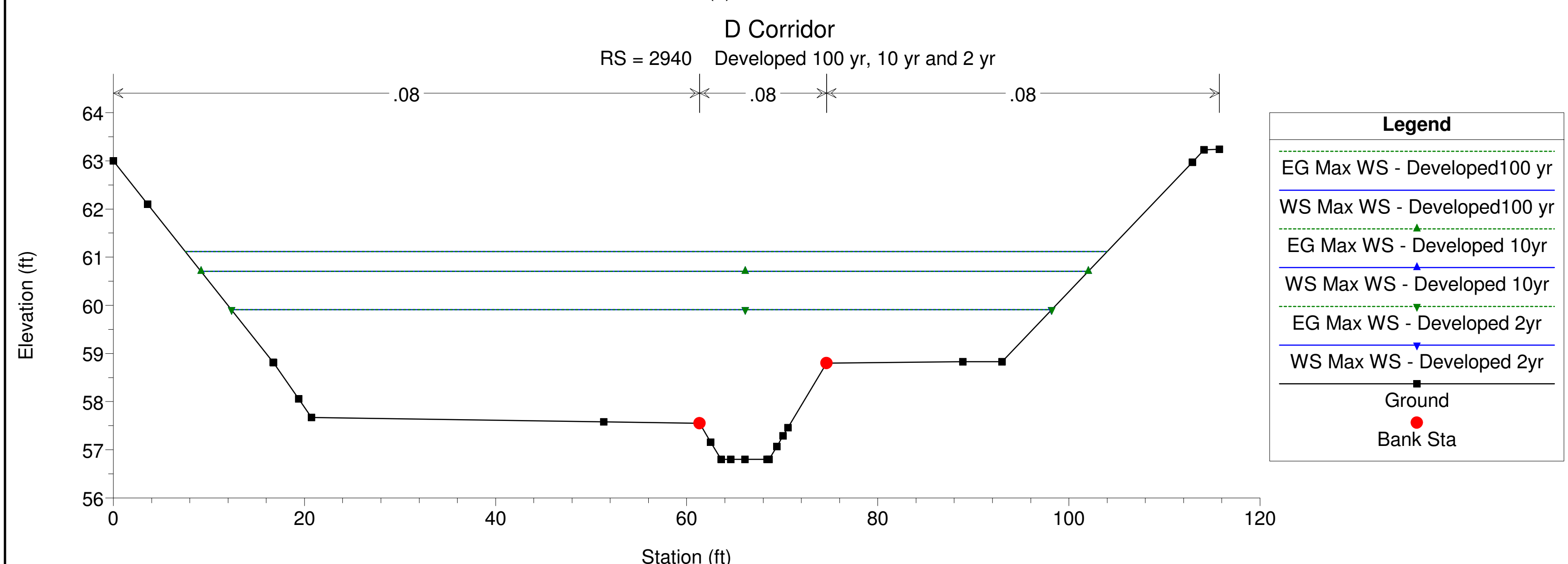


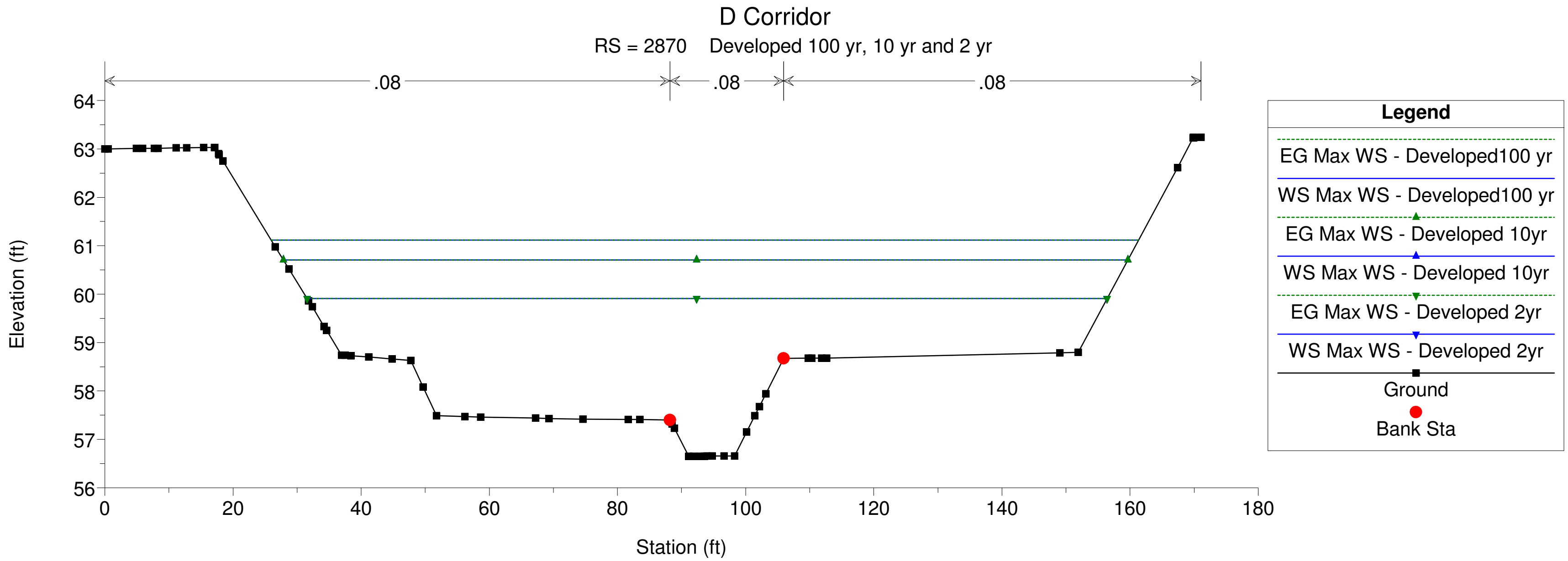
D Corridor
RS = 3200.02 Developed 100 yr, 10 yr and 2 yr
.08
.08
.08
Elevation (ft)
Station (ft)
Legend
EG Max WS - Developed100 yr
WS Max WS - Developed100 yr
EG Max WS - Developed 10yr
WS Max WS - Developed 10yr
EG Max WS - Developed 2yr
WS Max WS - Developed 2yr
Ground
Bank Sta

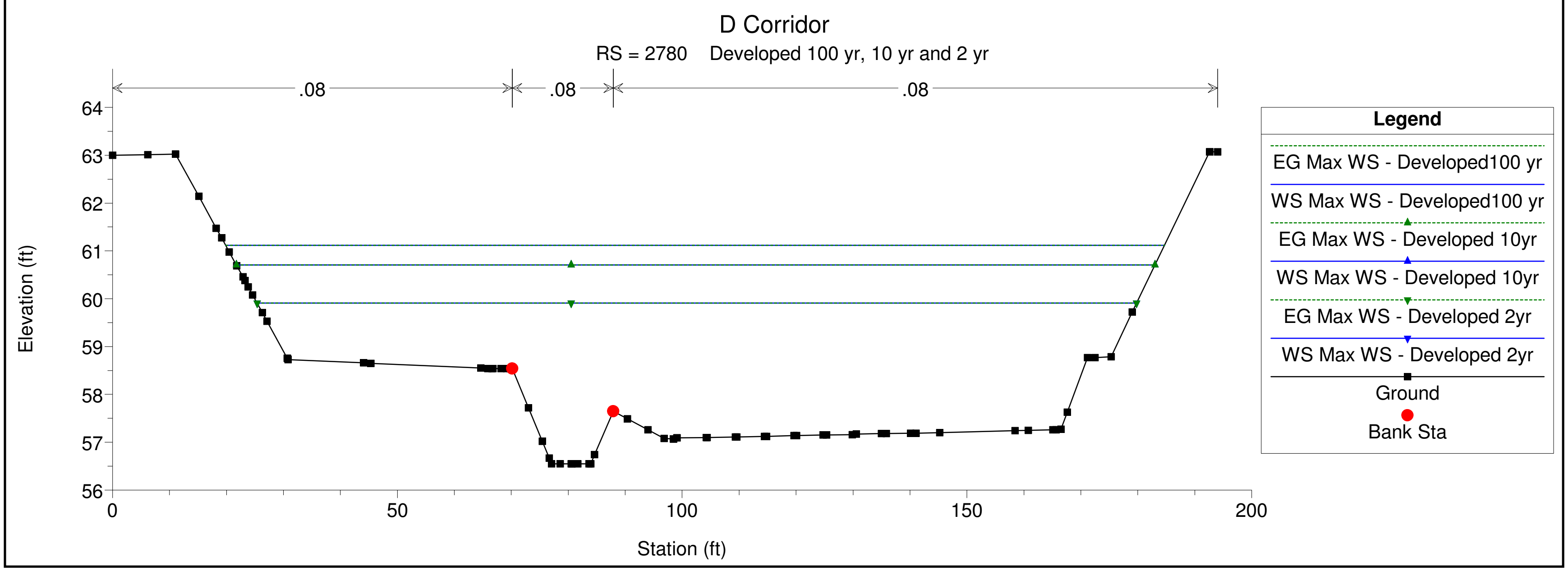


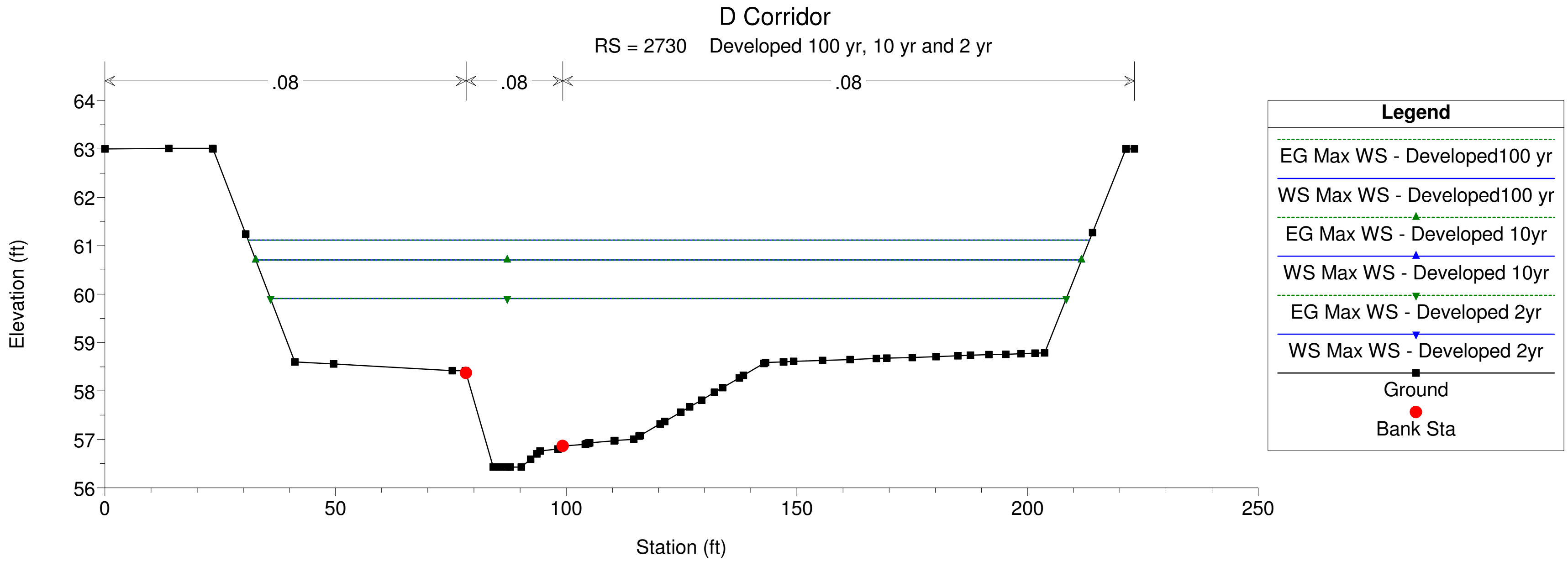
D Corridor
RS = 3100 Developed 100 yr, 10 yr and 2 yr
.08
.08
.08
Elevation (ft)
Station (ft)
Legend
EG Max WS - Developed100 yr
WS Max WS - Developed100 yr
EG Max WS - Developed 10yr
WS Max WS - Developed 10yr
EG Max WS - Developed 2yr
WS Max WS - Developed 2yr
Ground
Bank Sta


D Corridor
RS = 3020 Developed 100 yr, 10 yr and 2 yr
.08
.08
.08
Elevation (ft)
Station (ft)
Legend
EG Max WS - Developed100 yr
WS Max WS - Developed100 yr
EG Max WS - Developed 10yr
WS Max WS - Developed 10yr
EG Max WS - Developed 2yr
WS Max WS - Developed 2yr
Ground
Bank Sta

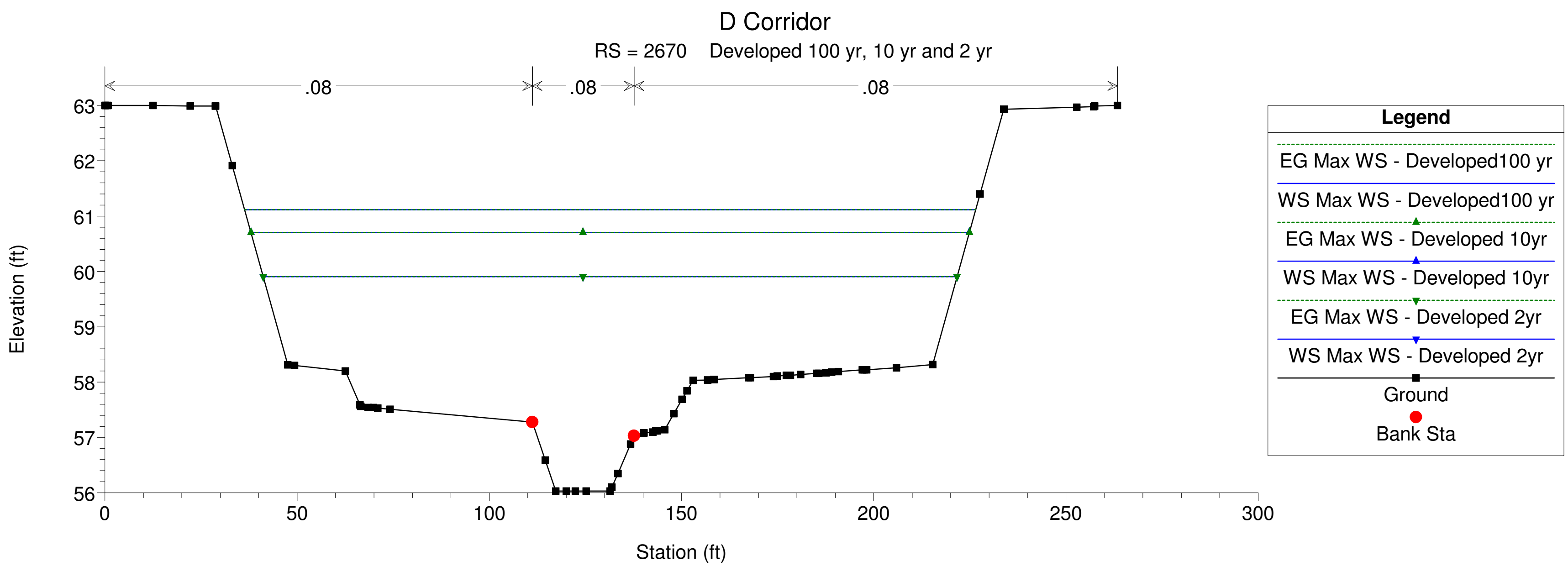

D Corridor
RS = 2940 Developed 100 yr, 10 yr and 2 yr
.08
.08
.08
Elevation (ft)
Station (ft)
Legend
EG Max WS - Developed100 yr
WS Max WS - Developed100 yr
EG Max WS - Developed 10yr
WS Max WS - Developed 10yr
EG Max WS - Developed 2yr
WS Max WS - Developed 2yr
Ground
Bank Sta


D Corridor
RS = 2870 Developed 100 yr, 10 yr and 2 yr
.08
.08
.08
Elevation (ft)
64
63
62
61
60
59
58
57
56
0
20
40
60
80
100
120
140
160
180
Station (ft)
Legend
EG Max WS - Developed100 yr
WS Max WS - Developed100 yr
EG Max WS - Developed 10yr
WS Max WS - Developed 10yr
EG Max WS - Developed 2yr
WS Max WS - Developed 2yr
Ground
Bank Sta

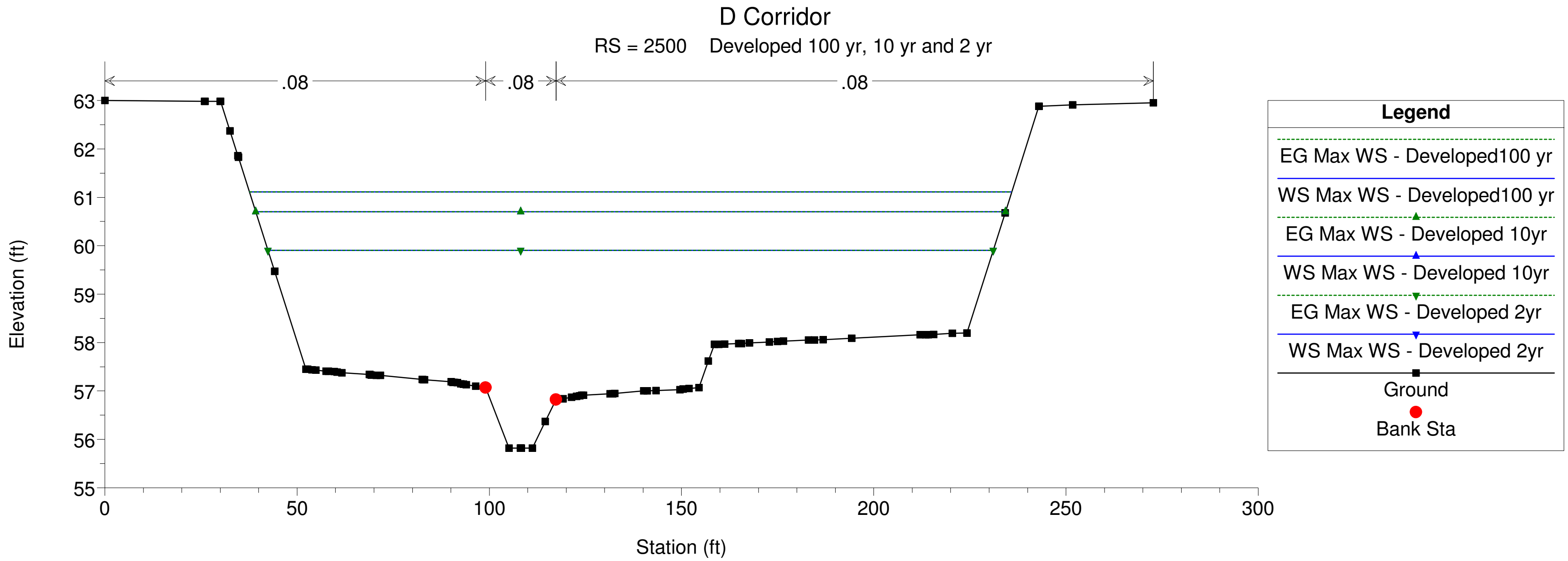

D Corridor
RS = 2780 Developed 100 yr, 10 yr and 2 yr
.08
.08
.08
Elevation (ft)
64
63
62
61
60
59
58
57
56
0
50
100
150
200
Station (ft)
Legend
EG Max WS - Developed100 yr
WS Max WS - Developed100 yr
EG Max WS - Developed 10yr
WS Max WS - Developed 10yr
EG Max WS - Developed 2yr
WS Max WS - Developed 2yr
Ground
Bank Sta



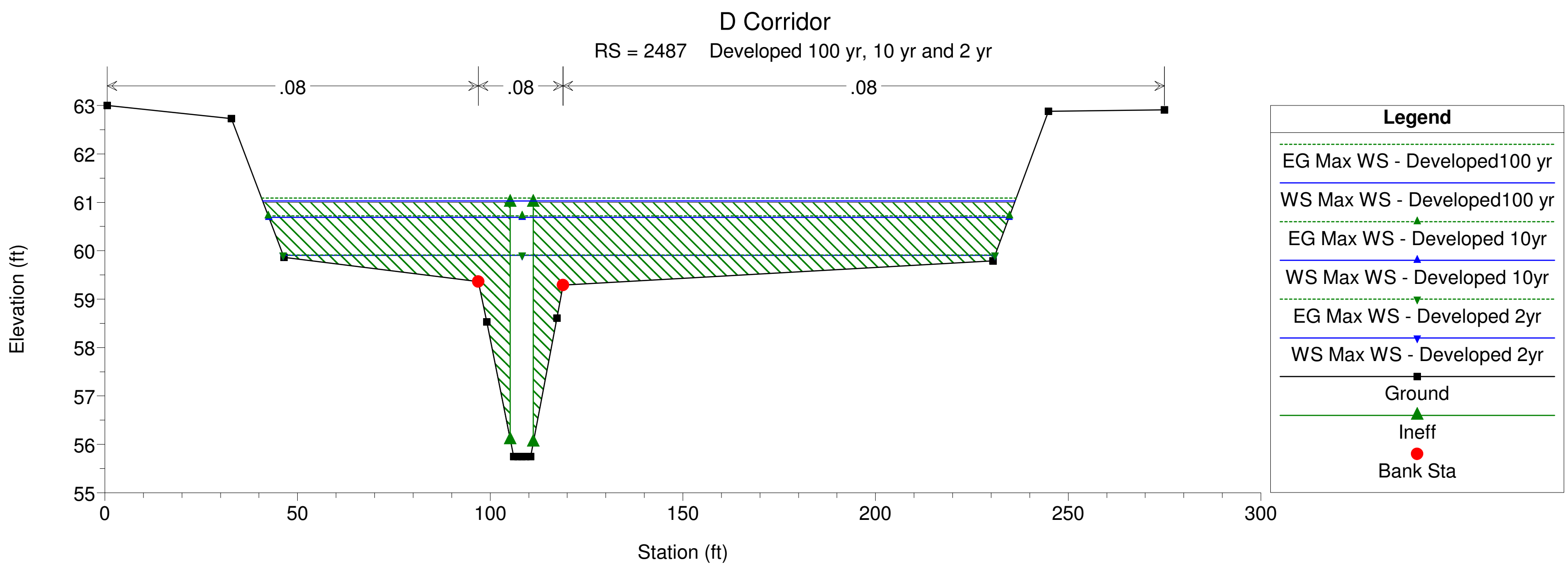
D Corridor
RS = 2730 Developed 100 yr, 10 yr and 2 yr
.08
.08
.08
Elevation (ft)
Station (ft)
Legend
EG Max WS - Developed100 yr
WS Max WS - Developed100 yr
EG Max WS - Developed 10yr
WS Max WS - Developed 10yr
EG Max WS - Developed 2yr
WS Max WS - Developed 2yr
Ground
Bank Sta



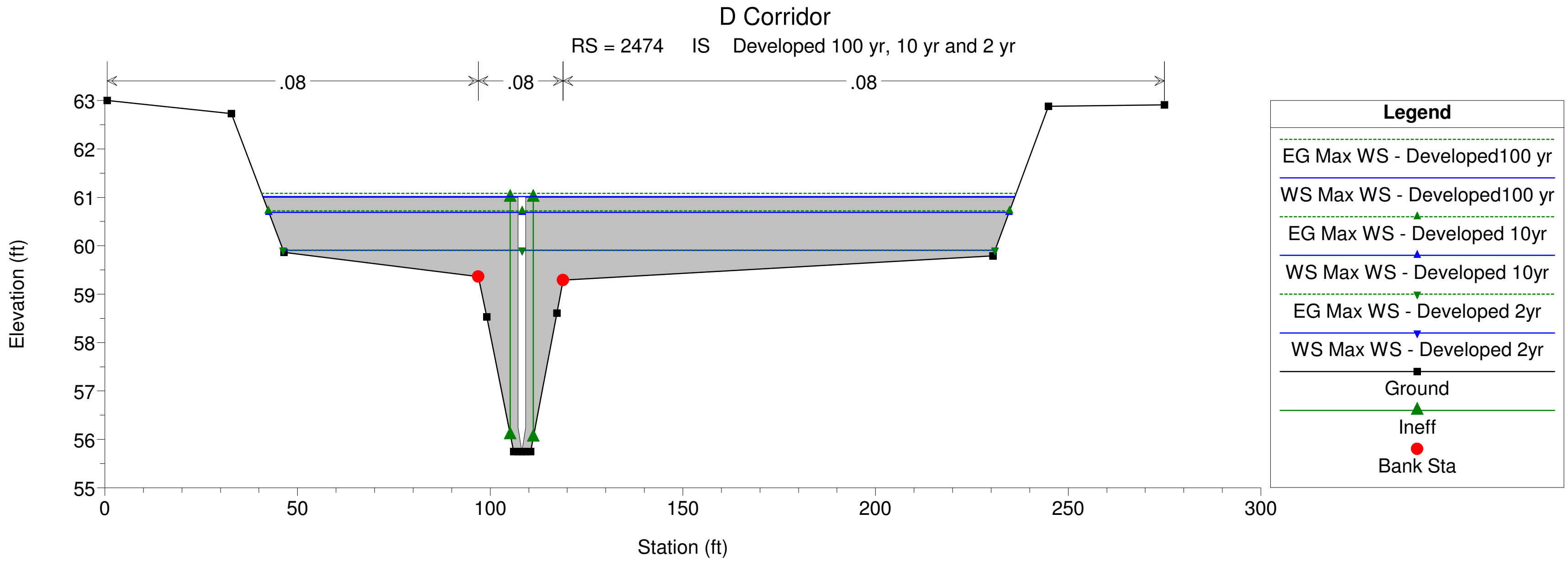
D Corridor
RS = 2670 Developed 100 yr, 10 yr and 2 yr
.08
.08
.08
Elevation (ft)
Station (ft)
Legend
EG Max WS - Developed100 yr
WS Max WS - Developed100 yr
EG Max WS - Developed 10yr
WS Max WS - Developed 10yr
EG Max WS - Developed 2yr
WS Max WS - Developed 2yr
Ground
Bank Sta



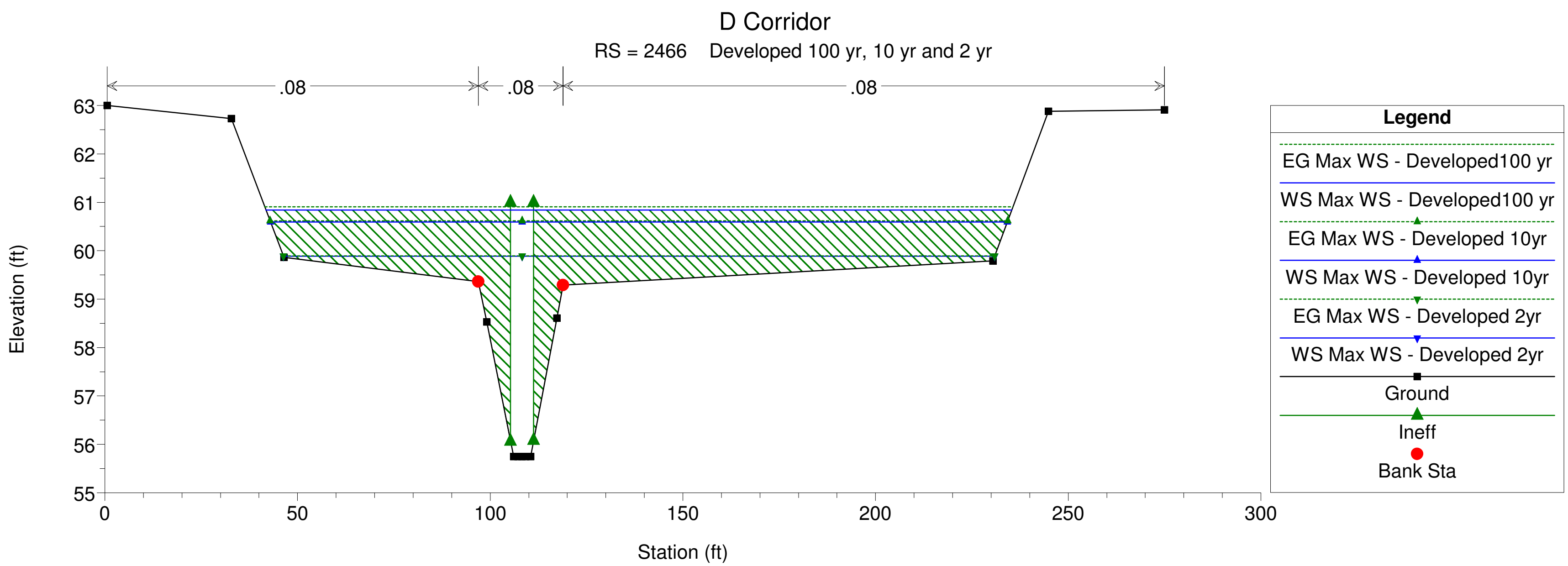
D Corridor
RS = 2500 Developed 100 yr, 10 yr and 2 yr
.08
.08
.08
Elevation (ft)
Station (ft)
Legend
EG Max WS - Developed100 yr
WS Max WS - Developed100 yr
EG Max WS - Developed 10yr
WS Max WS - Developed 10yr
EG Max WS - Developed 2yr
WS Max WS - Developed 2yr
Ground
Bank Sta



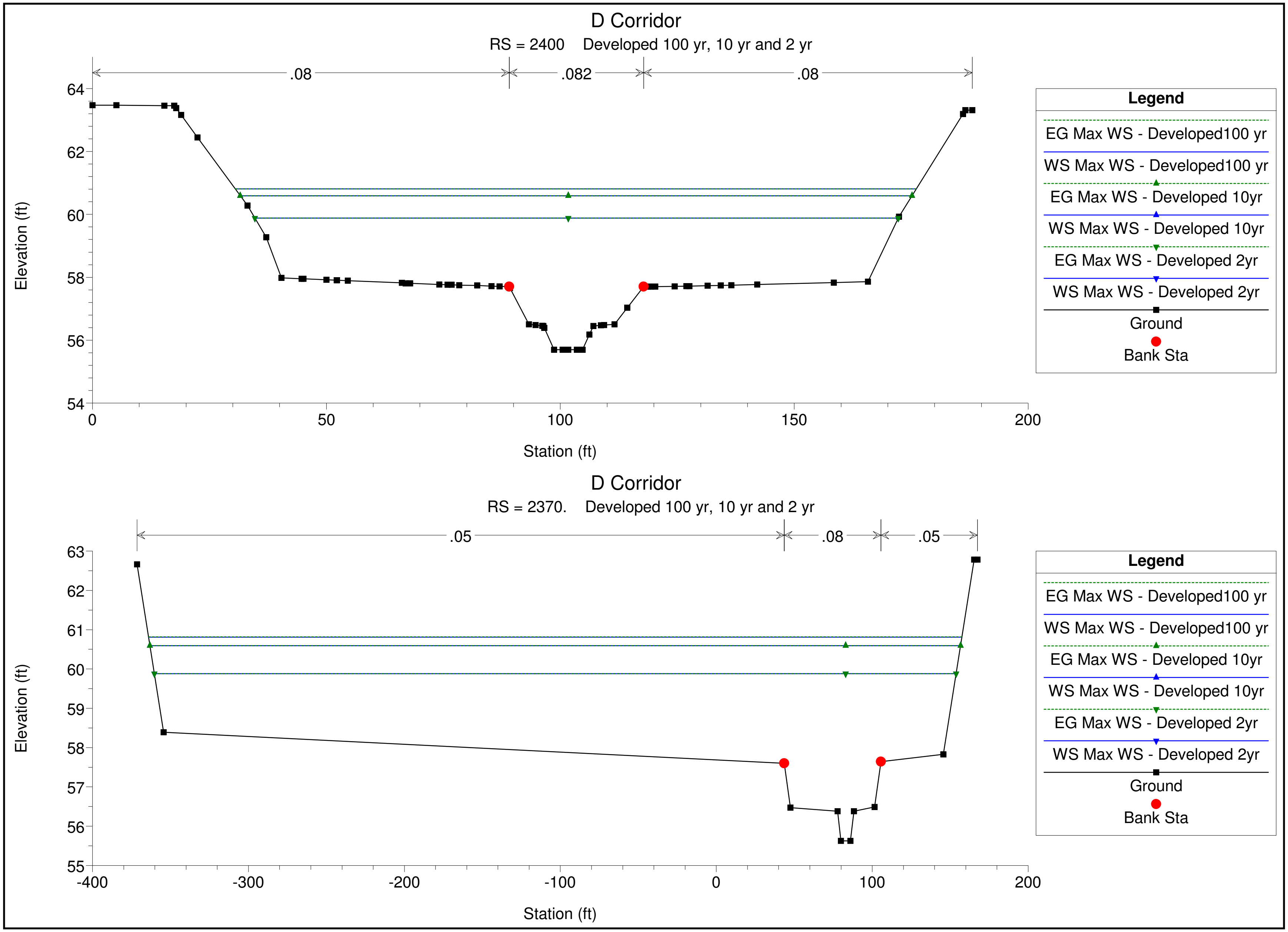
D Corridor
RS = 2487 Developed 100 yr, 10 yr and 2 yr
.08
.08
.08
Elevation (ft)
Station (ft)
Legend
EG Max WS - Developed100 yr
WS Max WS - Developed100 yr
EG Max WS - Developed 10yr
WS Max WS - Developed 10yr
EG Max WS - Developed 2yr
WS Max WS - Developed 2yr
Ground
Ineff
Bank Sta

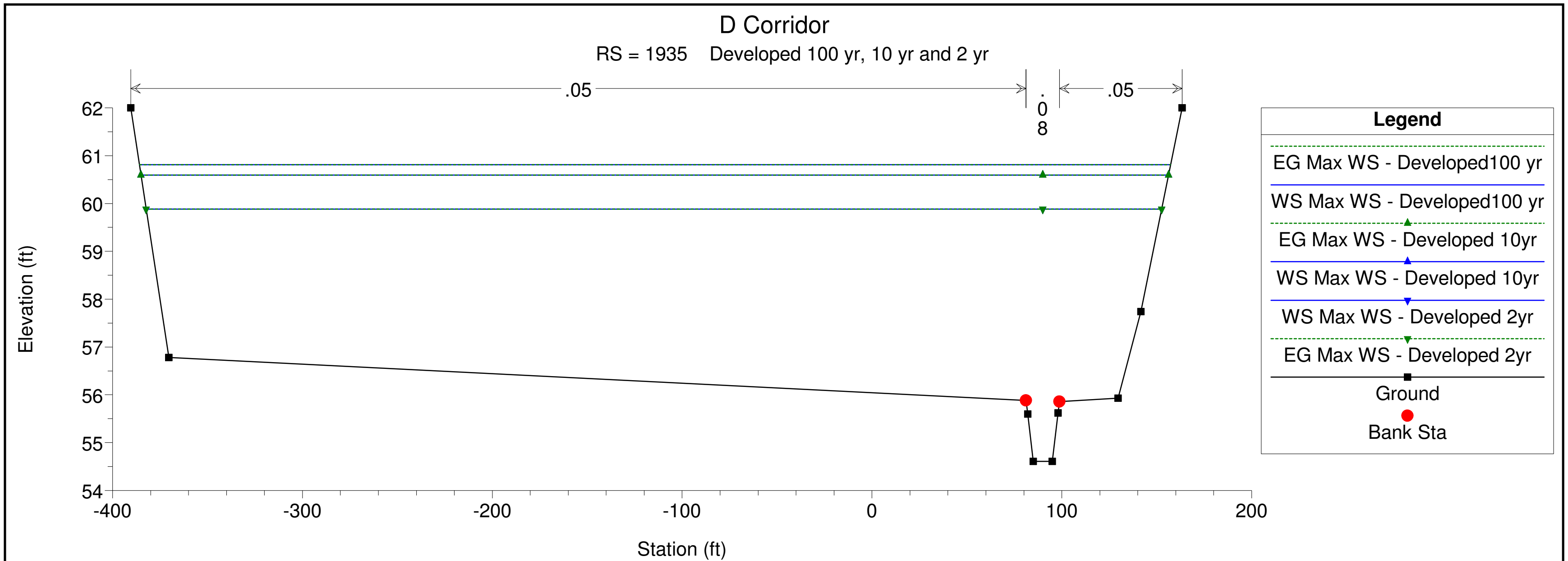


D Corridor
RS = 2474 IS Developed 100 yr, 10 yr and 2 yr
.08
.08
.08
Elevation (ft)
Station (ft)
63
62
61
60
59
58
57
56
55
0
50
100
150
200
250
300
Legend
EG Max WS - Developed100 yr
WS Max WS - Developed100 yr
EG Max WS - Developed 10yr
WS Max WS - Developed 10yr
EG Max WS - Developed 2yr
WS Max WS - Developed 2yr
Ground
Ineff
Bank Sta

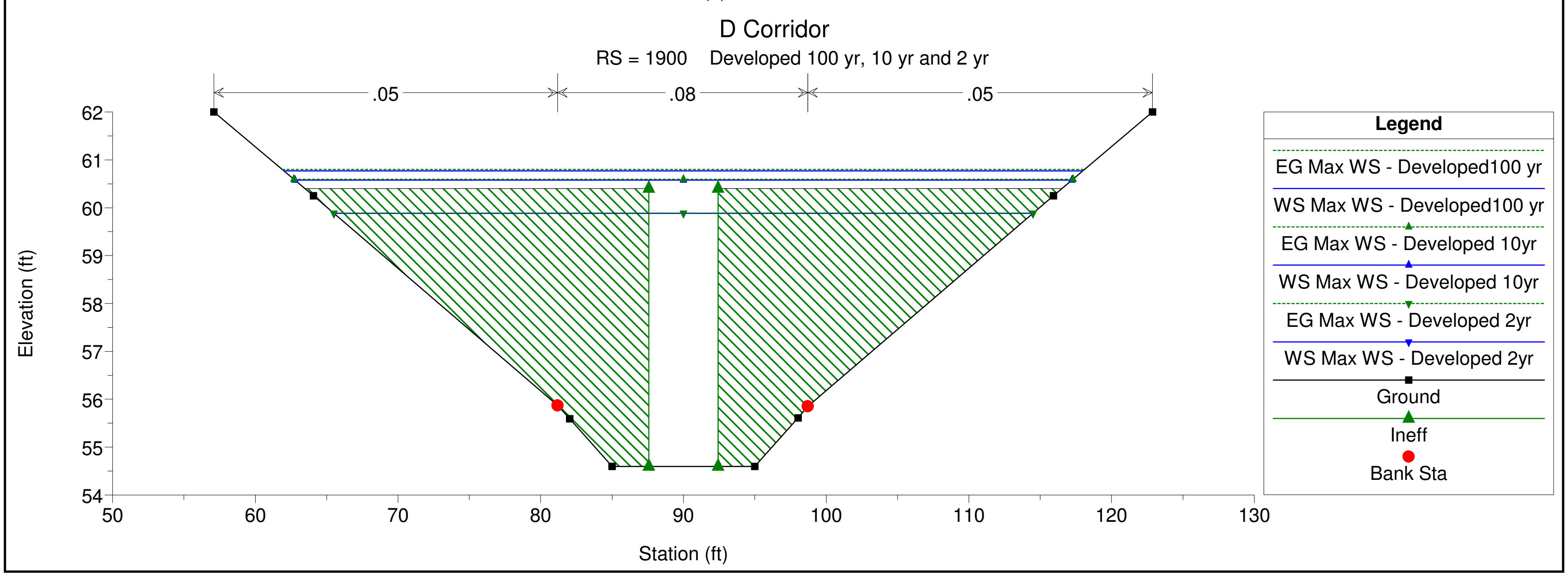


D Corridor
RS = 2466 Developed 100 yr, 10 yr and 2 yr
.08
.08
.08
Elevation (ft)
Station (ft)
63
62
61
60
59
58
57
56
55
0
50
100
150
200
250
300
Legend
EG Max WS - Developed100 yr
WS Max WS - Developed100 yr
EG Max WS - Developed 10yr
WS Max WS - Developed 10yr
EG Max WS - Developed 2yr
WS Max WS - Developed 2yr
Ground
Ineff
Bank Sta

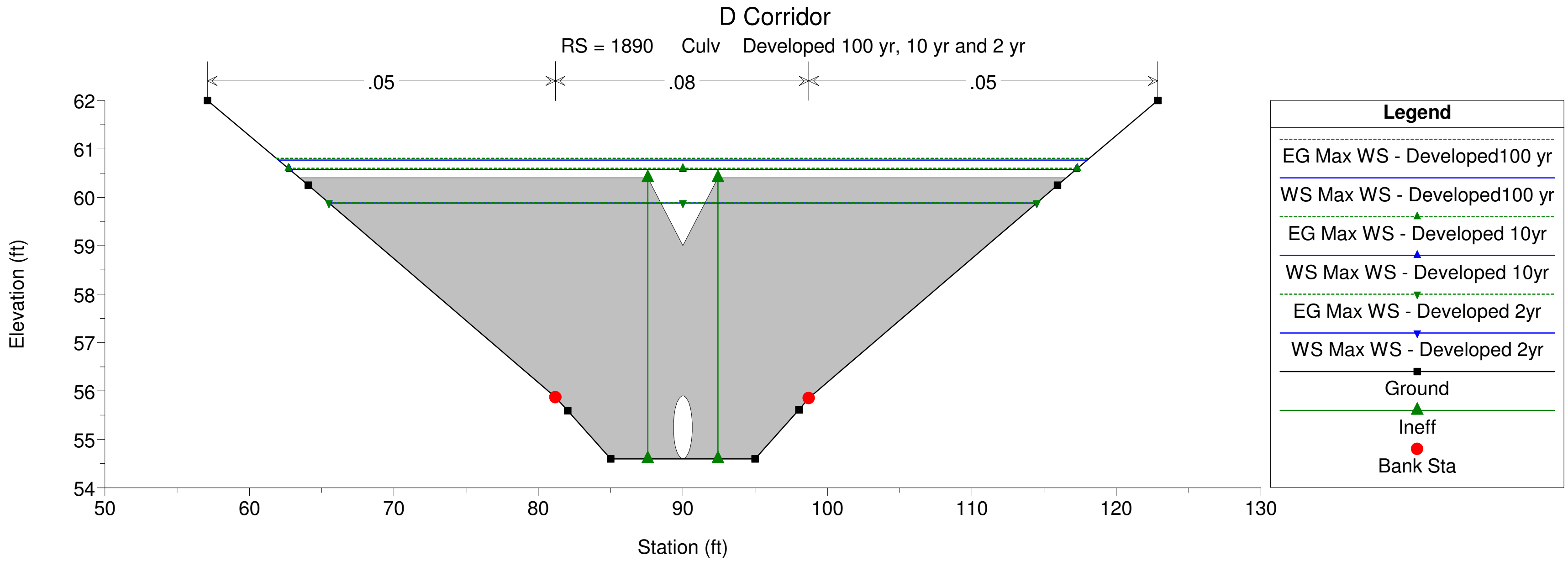

D Corridor
RS = 2400 Developed 100 yr, 10 yr and 2 yr
.08
.082
.08
Elevation (ft)
64
62
60
58
56
54
0
50
100
150
200
Station (ft)
Legend
EG Max WS - Developed100 yr
WS Max WS - Developed100 yr
EG Max WS - Developed 10yr
WS Max WS - Developed 10yr
EG Max WS - Developed 2yr
WS Max WS - Developed 2yr
Ground
Bank Sta
D Corridor
RS = 2370. Developed 100 yr, 10 yr and 2 yr
.05
.08
.05
Elevation (ft)
63
62
61
60
59
58
57
56
55
-400
-300
-200
-100
0
100
200
Station (ft)
Legend
EG Max WS - Developed100 yr
WS Max WS - Developed100 yr
EG Max WS - Developed 10yr
WS Max WS - Developed 10yr
EG Max WS - Developed 2yr
WS Max WS - Developed 2yr
Ground
Bank Sta

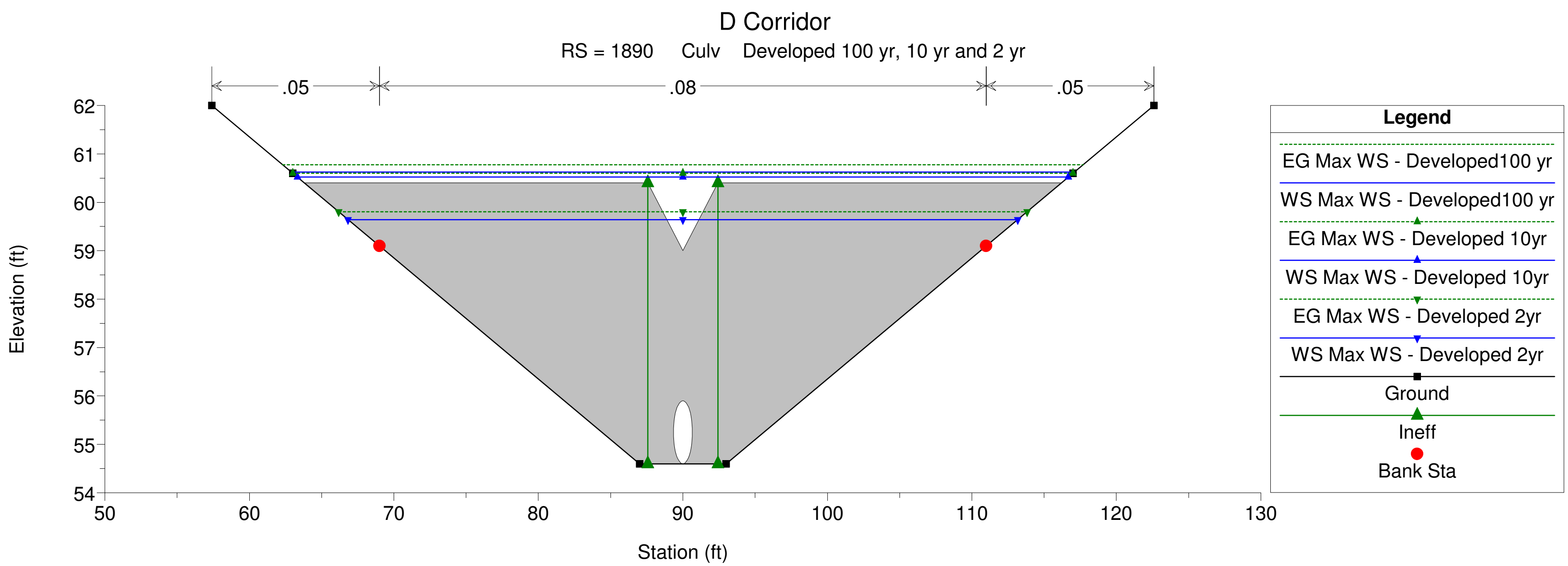


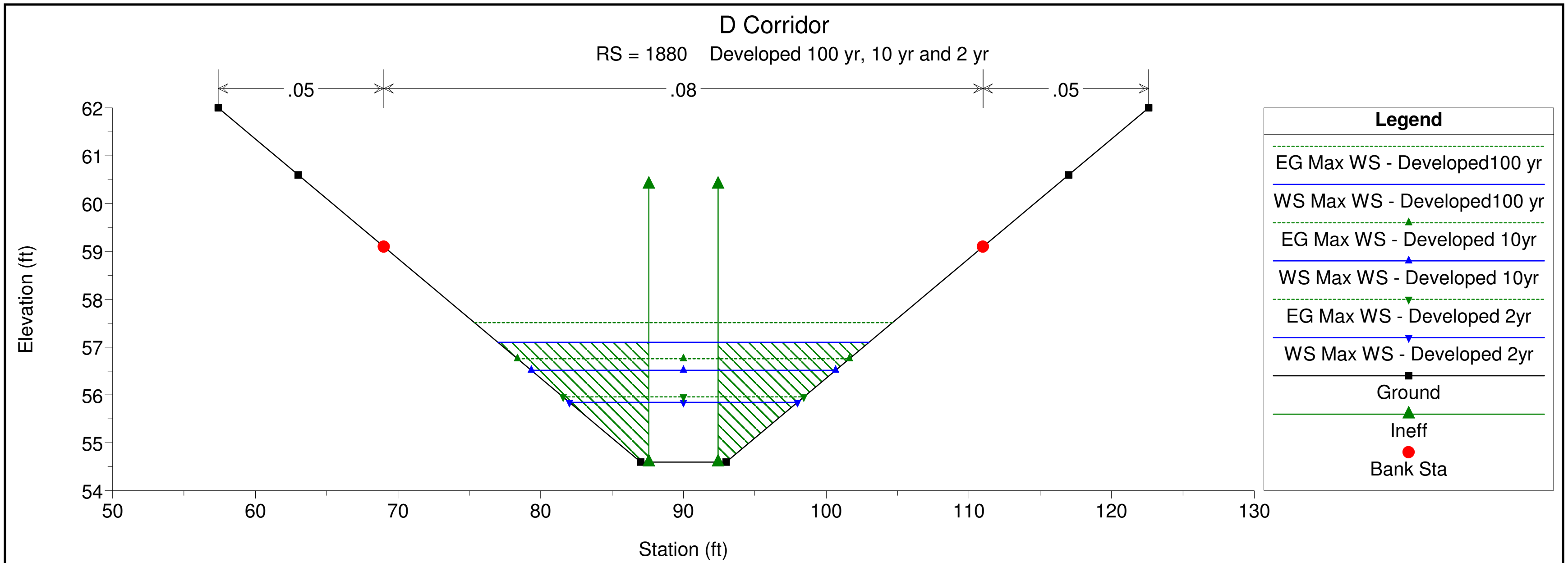
D Corridor
RS = 1935 Developed 100 yr, 10 yr and 2 yr
.05
.08
.05
Legend
EG Max WS - Developed100 yr
WS Max WS - Developed100 yr
EG Max WS - Developed 10yr
WS Max WS - Developed 10yr
WS Max WS - Developed 2yr
EG Max WS - Developed 2yr
Ground
Bank Sta
Elevation (ft)
Station (ft)



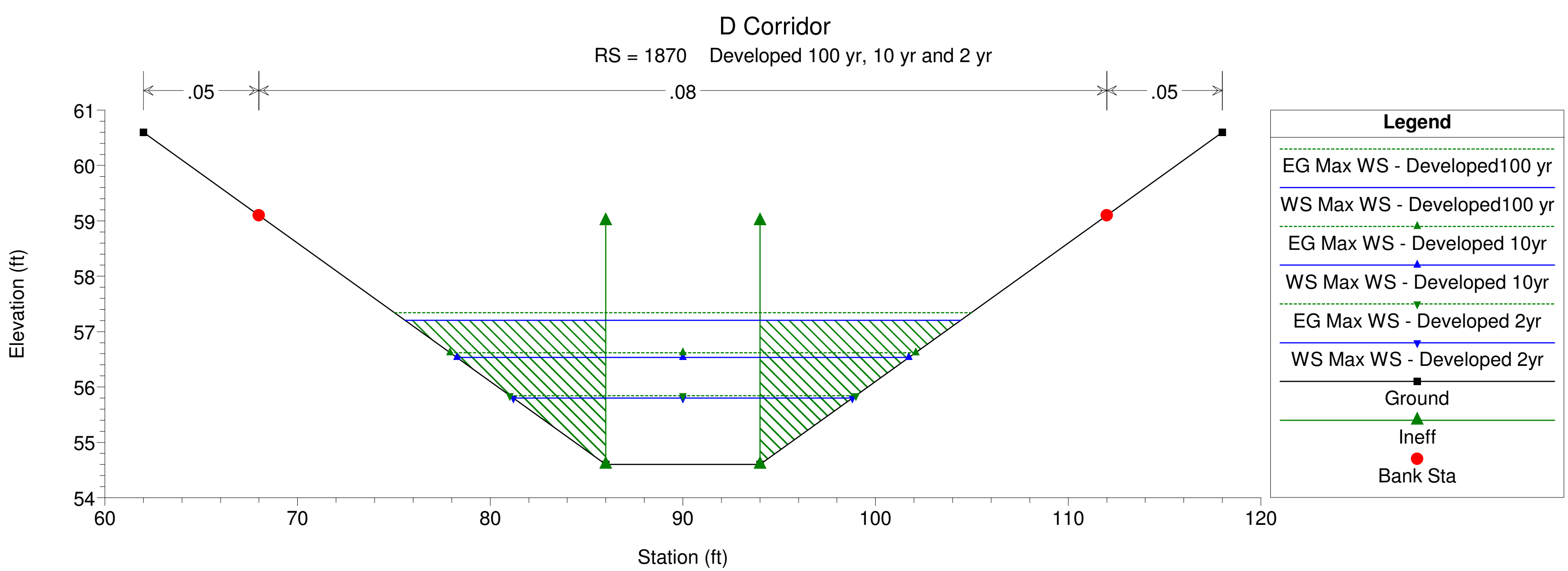
D Corridor
RS = 1900 Developed 100 yr, 10 yr and 2 yr
.05
.08
.05
Legend
EG Max WS - Developed100 yr
WS Max WS - Developed100 yr
EG Max WS - Developed 10yr
WS Max WS - Developed 10yr
EG Max WS - Developed 2yr
WS Max WS - Developed 2yr
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)


D Corridor
RS = 1890 Culv Developed 100 yr, 10 yr and 2 yr
.05
.08
.05
Elevation (ft)
Station (ft)
Legend
EG Max WS - Developed100 yr
WS Max WS - Developed100 yr
EG Max WS - Developed 10yr
WS Max WS - Developed 10yr
EG Max WS - Developed 2yr
WS Max WS - Developed 2yr
Ground
Ineff
Bank Sta

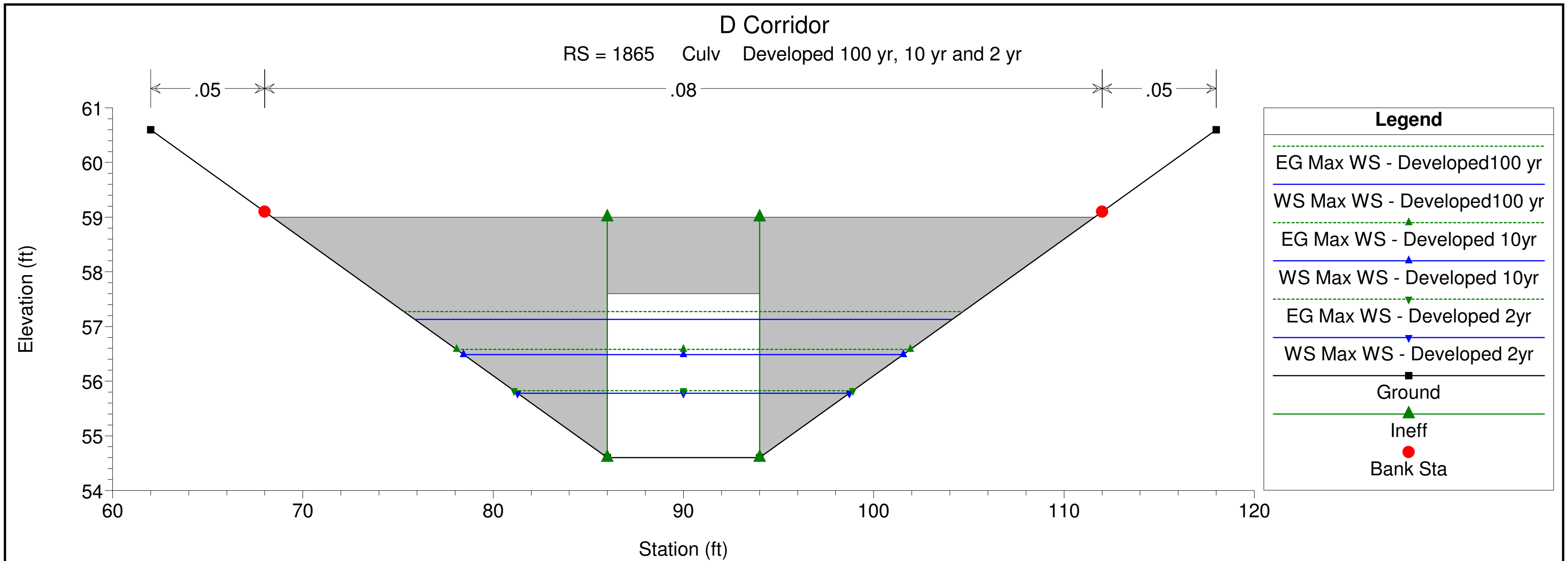

D Corridor
RS = 1890 Culv Developed 100 yr, 10 yr and 2 yr
.05
.08
.05
Elevation (ft)
Station (ft)
Legend
EG Max WS - Developed100 yr
WS Max WS - Developed100 yr
EG Max WS - Developed 10yr
WS Max WS - Developed 10yr
EG Max WS - Developed 2yr
WS Max WS - Developed 2yr
Ground
Ineff
Bank Sta



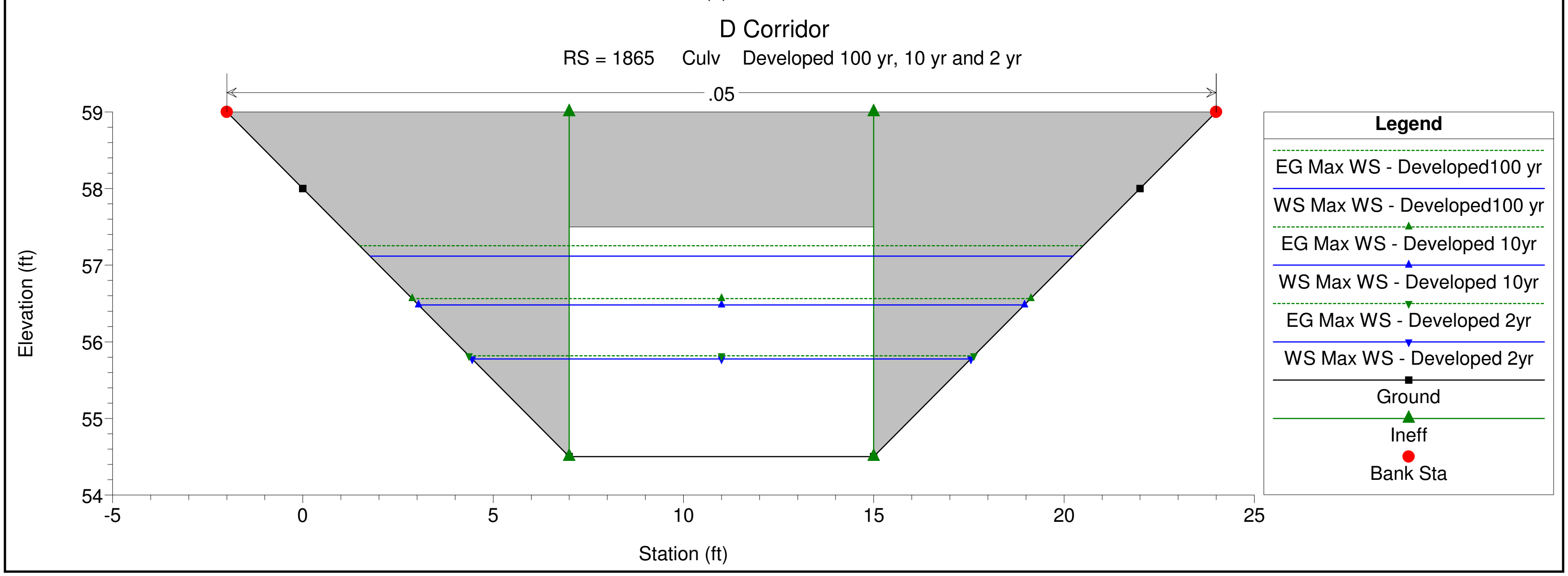
D Corridor
RS = 1880 Developed 100 yr, 10 yr and 2 yr
.05
.08
.05
Elevation (ft)
Station (ft)
62
61
60
59
58
57
56
55
54
50
60
70
80
90
100
110
120
130
Legend
EG Max WS - Developed100 yr
WS Max WS - Developed100 yr
EG Max WS - Developed 10yr
WS Max WS - Developed 10yr
EG Max WS - Developed 2yr
WS Max WS - Developed 2yr
Ground
Ineff
Bank Sta



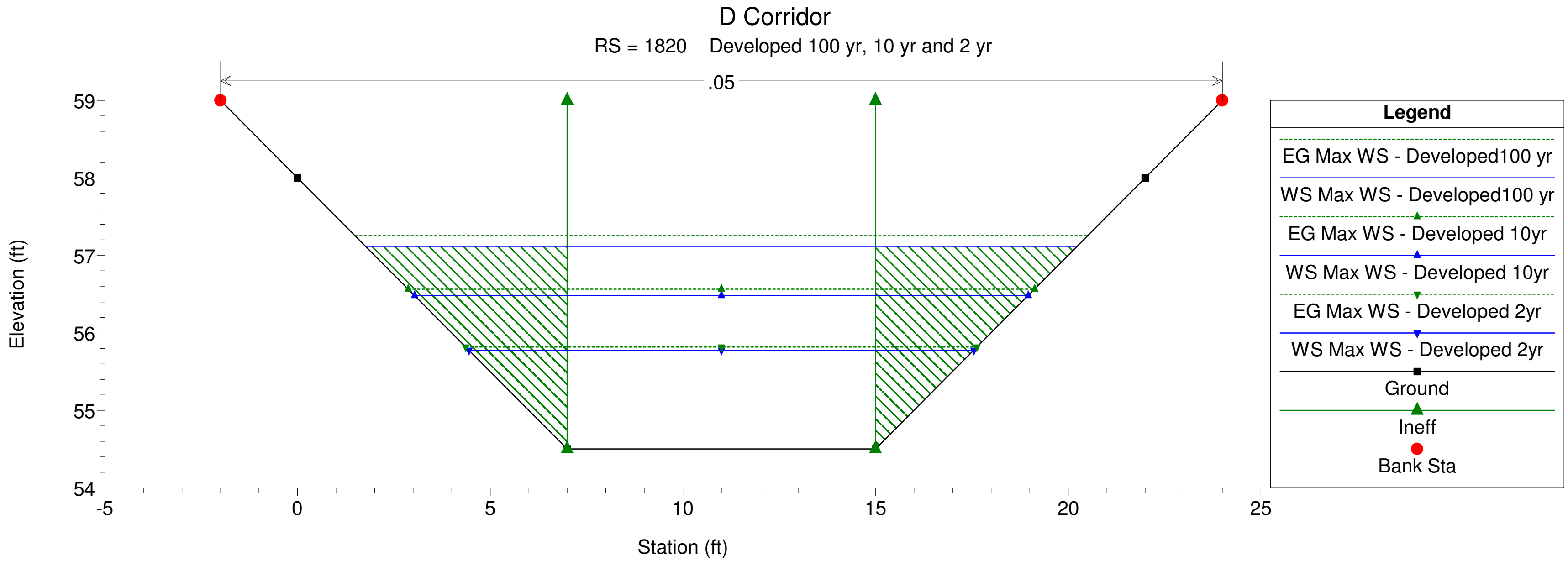
D Corridor
RS = 1870 Developed 100 yr, 10 yr and 2 yr
.05
.08
.05
Elevation (ft)
Station (ft)
61
60
59
58
57
56
55
54
60
70
80
90
100
110
120
Legend
EG Max WS - Developed100 yr
WS Max WS - Developed100 yr
EG Max WS - Developed 10yr
WS Max WS - Developed 10yr
EG Max WS - Developed 2yr
WS Max WS - Developed 2yr
Ground
Ineff
Bank Sta

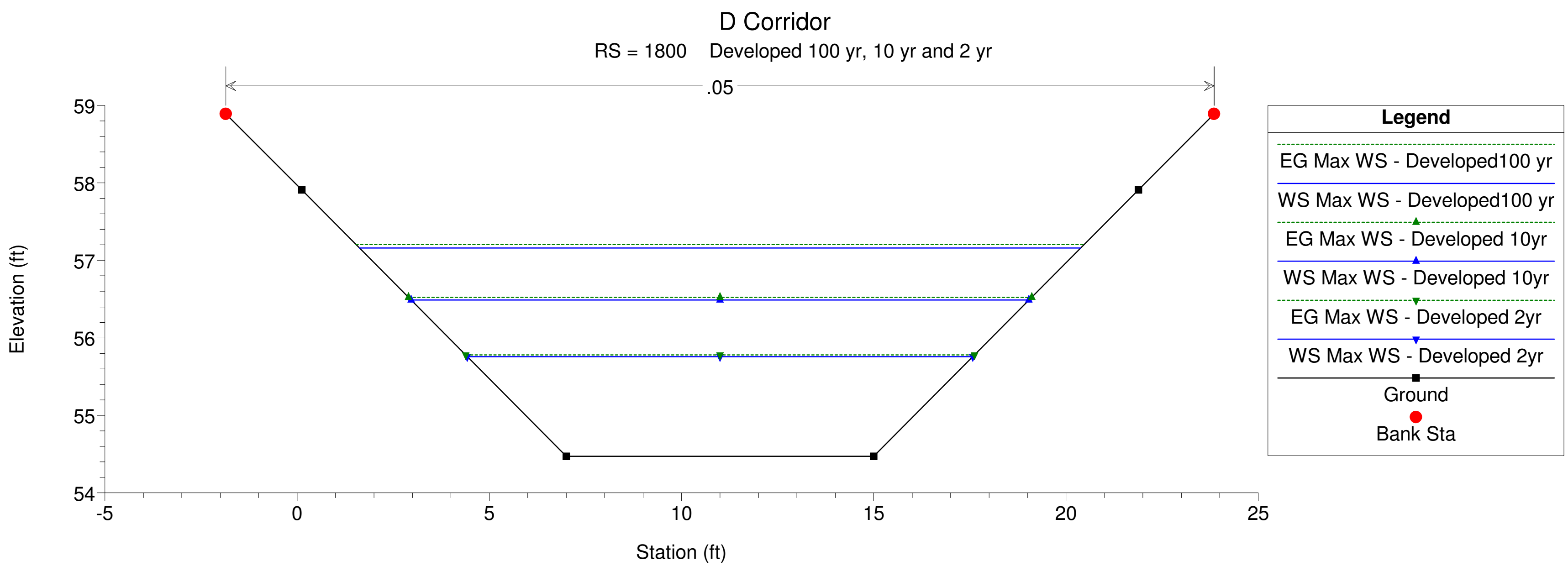


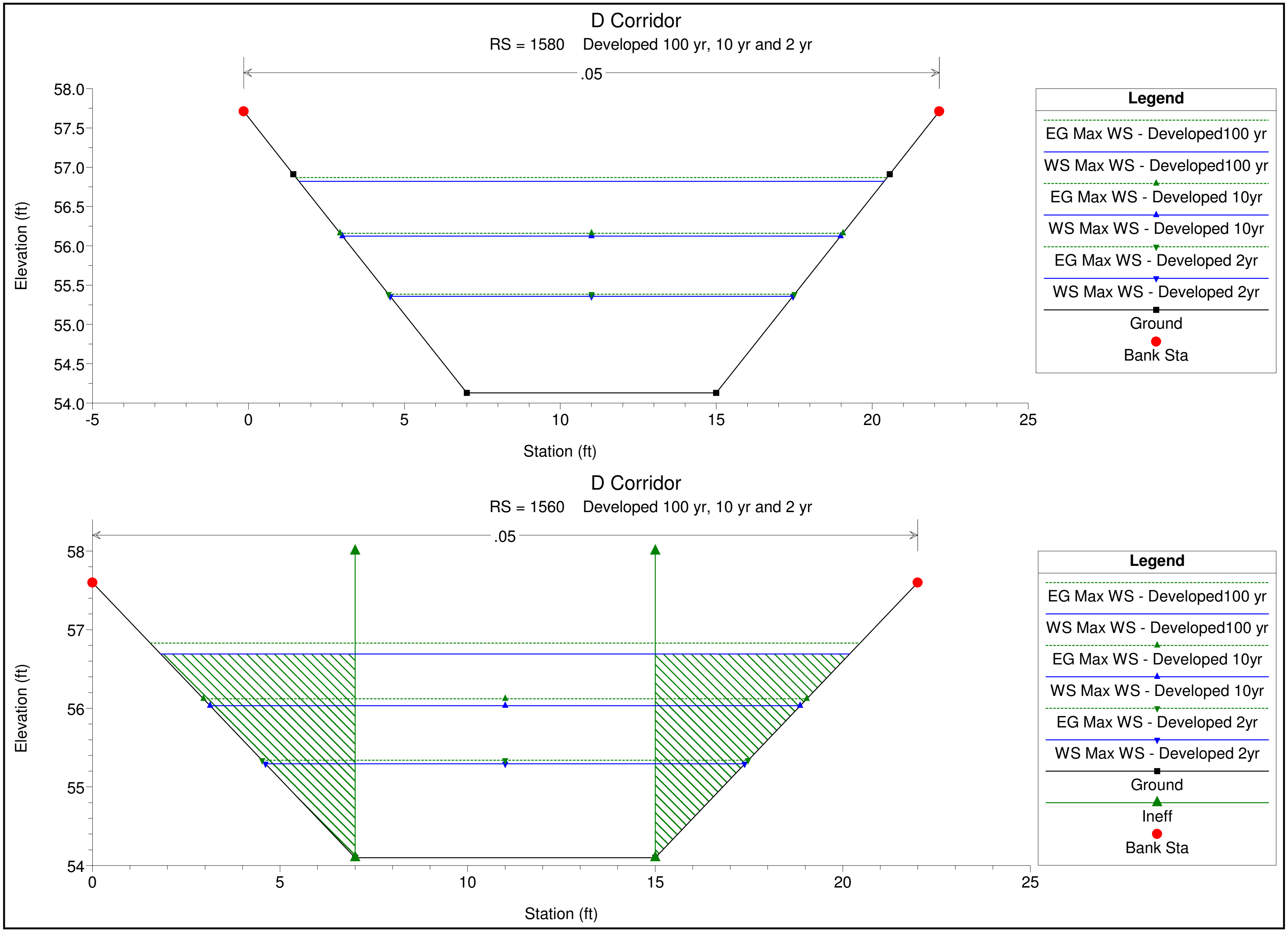
D Corridor
RS = 1865 Culv Developed 100 yr, 10 yr and 2 yr
.05
.08
.05
Elevation (ft)
Station (ft)
61
60
59
58
57
56
55
54
60
70
80
90
100
110
120
Legend
EG Max WS - Developed100 yr
WS Max WS - Developed100 yr
EG Max WS - Developed 10yr
WS Max WS - Developed 10yr
EG Max WS - Developed 2yr
WS Max WS - Developed 2yr
Ground
Ineff
Bank Sta



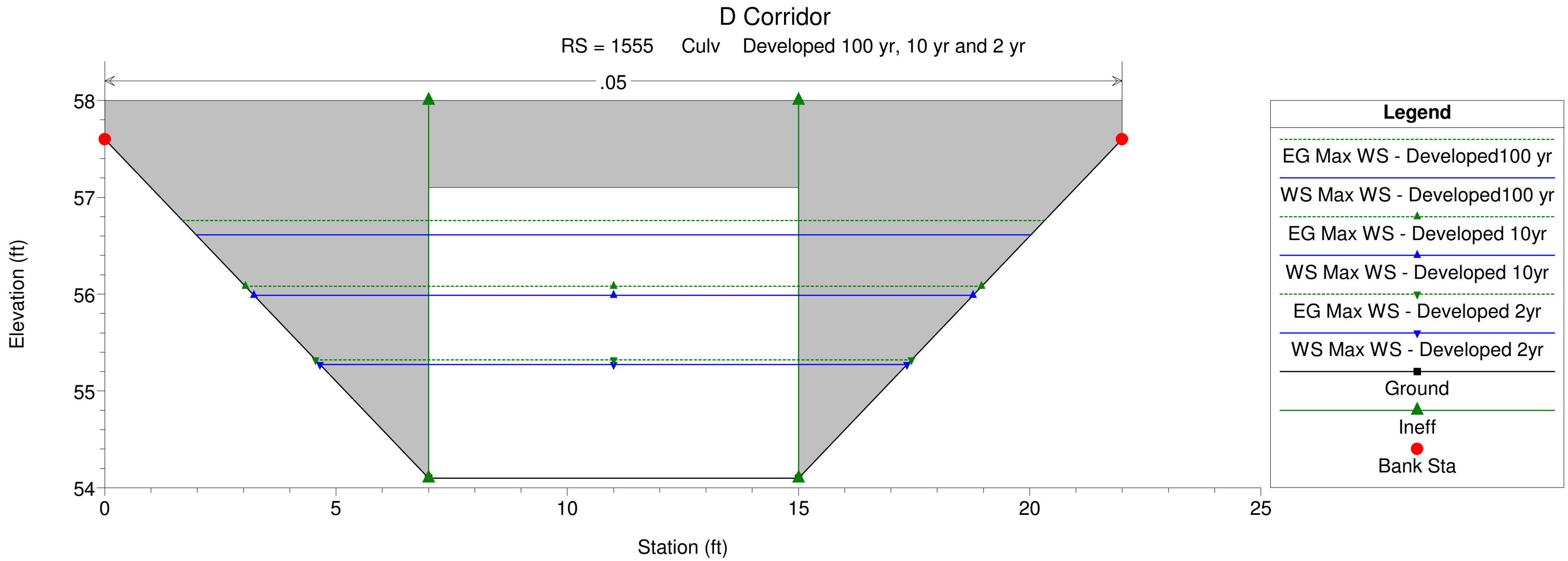
D Corridor
RS = 1865 Culv Developed 100 yr, 10 yr and 2 yr
.05
Elevation (ft)
Station (ft)
59
58
57
56
55
54
-5
0
5
10
15
20
25
Legend
EG Max WS - Developed100 yr
WS Max WS - Developed100 yr
EG Max WS - Developed 10yr
WS Max WS - Developed 10yr
EG Max WS - Developed 2yr
WS Max WS - Developed 2yr
Ground
Ineff
Bank Sta


D Corridor
RS = 1820 Developed 100 yr, 10 yr and 2 yr
.05
Elevation (ft)
59
58
57
56
55
54
-5
0
5
10
15
20
25
Station (ft)
Legend
EG Max WS - Developed100 yr
WS Max WS - Developed100 yr
EG Max WS - Developed 10yr
WS Max WS - Developed 10yr
EG Max WS - Developed 2yr
WS Max WS - Developed 2yr
Ground
Ineff
Bank Sta

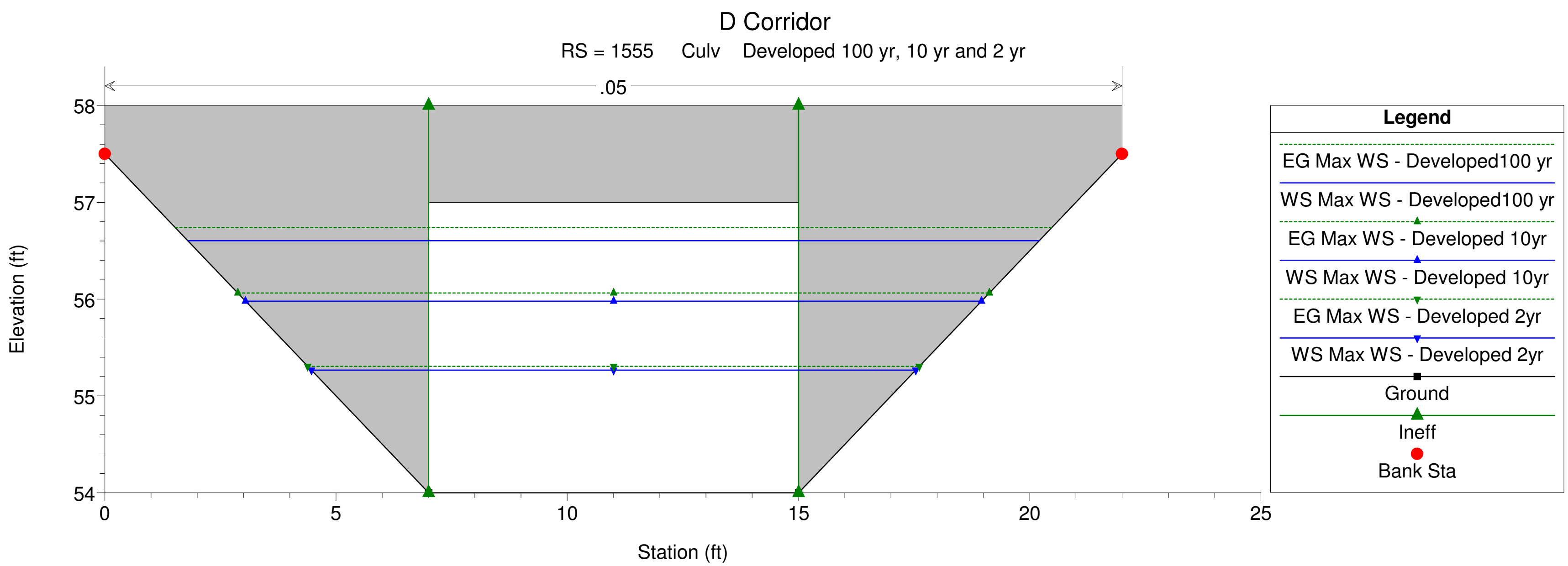

D Corridor
RS = 1800 Developed 100 yr, 10 yr and 2 yr
.05
Elevation (ft)
59
58
57
56
55
54
-5
0
5
10
15
20
25
Station (ft)
Legend
EG Max WS - Developed100 yr
WS Max WS - Developed100 yr
EG Max WS - Developed 10yr
WS Max WS - Developed 10yr
EG Max WS - Developed 2yr
WS Max WS - Developed 2yr
Ground
Bank Sta



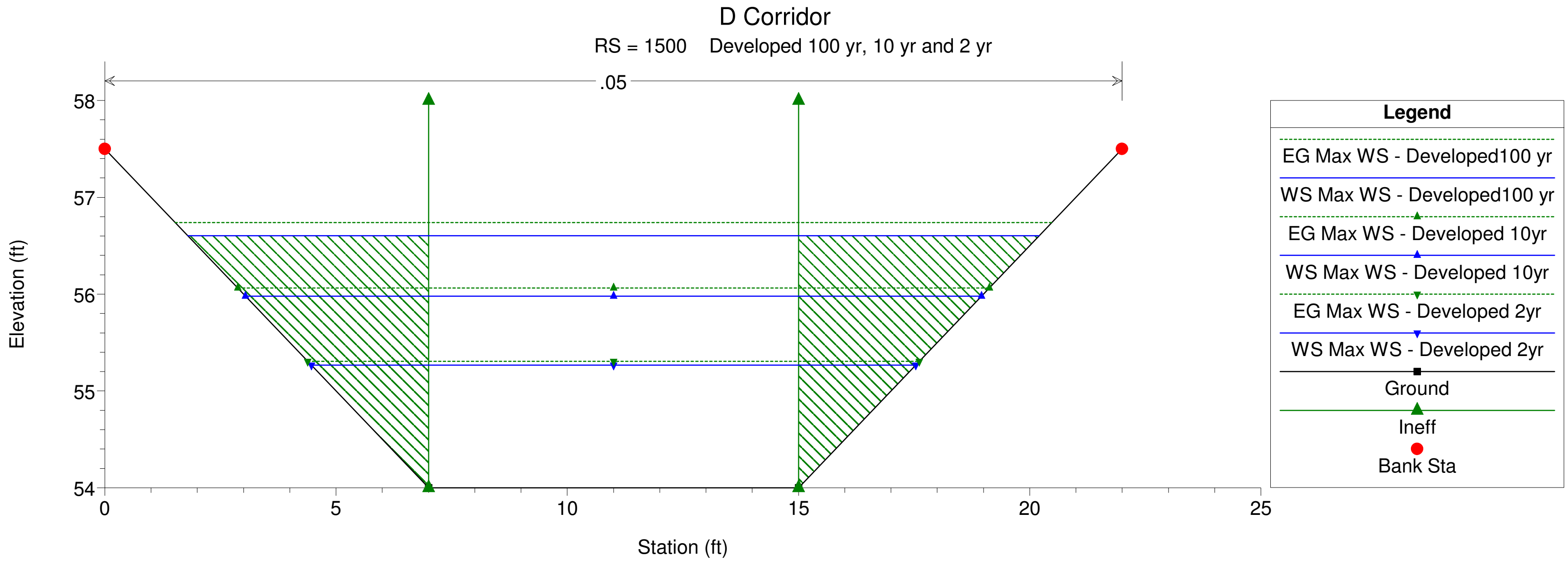
D Corridor
RS = 1580 Developed 100 yr, 10 yr and 2 yr
.05
Elevation (ft)
Station (ft)
58.0
57.5
57.0
56.5
56.0
55.5
55.0
54.5
54.0
-5
0
5
10
15
20
25
Legend
EG Max WS - Developed100 yr
WS Max WS - Developed100 yr
EG Max WS - Developed 10yr
WS Max WS - Developed 10yr
EG Max WS - Developed 2yr
WS Max WS - Developed 2yr
Ground
Bank Sta
D Corridor
RS = 1560 Developed 100 yr, 10 yr and 2 yr
.05
Elevation (ft)
Station (ft)
58
57
56
55
54
0
5
10
15
20
25
Legend
EG Max WS - Developed100 yr
WS Max WS - Developed100 yr
EG Max WS - Developed 10yr
WS Max WS - Developed 10yr
EG Max WS - Developed 2yr
WS Max WS - Developed 2yr
Ground
Ineff
Bank Sta



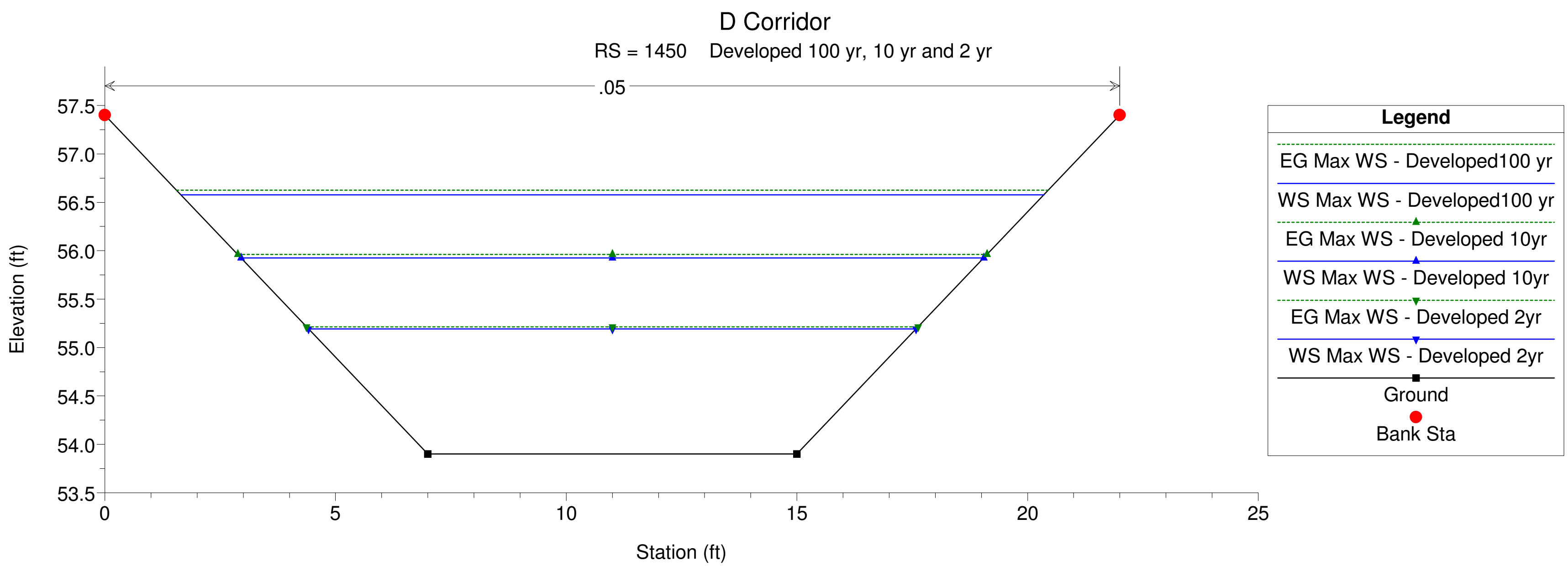
D Corridor
RS = 1555 Culv Developed 100 yr, 10 yr and 2 yr
.05
Elevation (ft)
Station (ft)
54
55
56
57
58
0
5
10
15
20
25
Legend
EG Max WS - Developed100 yr
WS Max WS - Developed100 yr
EG Max WS - Developed 10yr
WS Max WS - Developed 10yr
EG Max WS - Developed 2yr
WS Max WS - Developed 2yr
Ground
Ineff
Bank Sta



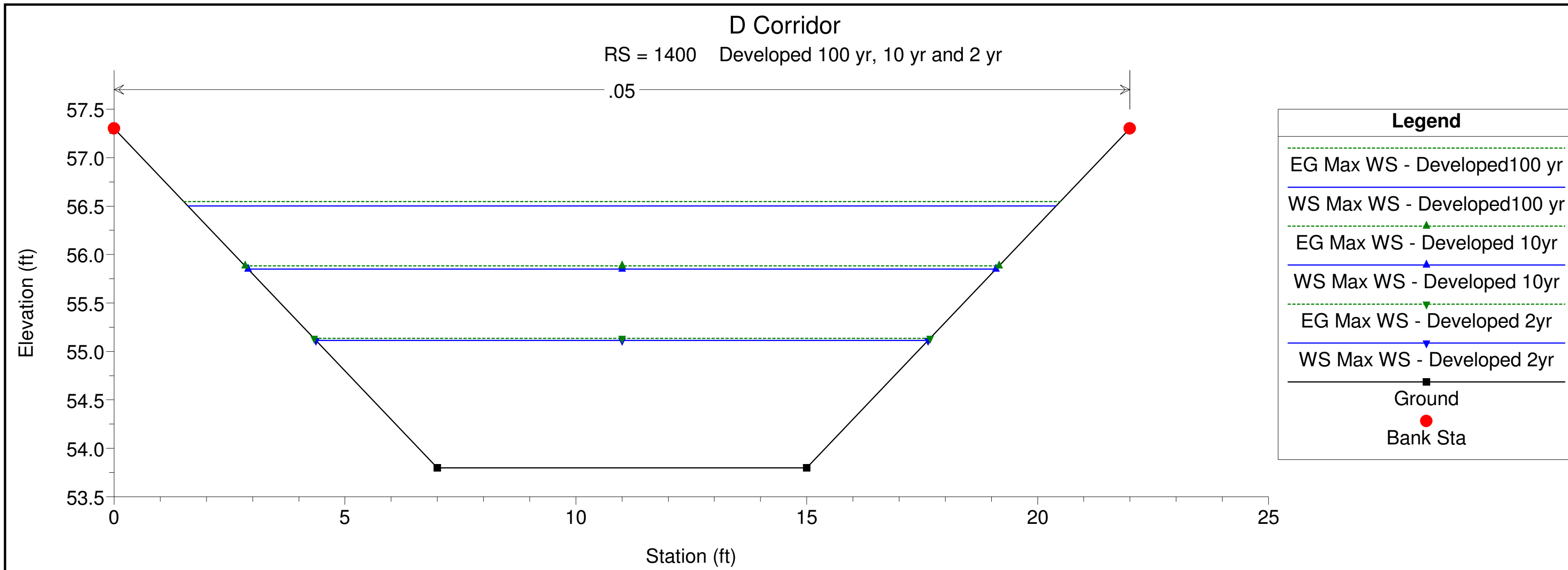
D Corridor
RS = 1555 Culv Developed 100 yr, 10 yr and 2 yr
.05
Elevation (ft)
Station (ft)
54
55
56
57
58
0
5
10
15
20
25
Legend
EG Max WS - Developed100 yr
WS Max WS - Developed100 yr
EG Max WS - Developed 10yr
WS Max WS - Developed 10yr
EG Max WS - Developed 2yr
WS Max WS - Developed 2yr
Ground
Ineff
Bank Sta



D Corridor
RS = 1500 Developed 100 yr, 10 yr and 2 yr
.05
58
57
56
55
54
Elevation (ft)
0
5
10
15
20
25
Station (ft)
Legend
EG Max WS - Developed100 yr
WS Max WS - Developed100 yr
EG Max WS - Developed 10yr
WS Max WS - Developed 10yr
EG Max WS - Developed 2yr
WS Max WS - Developed 2yr
Ground
Ineff
Bank Sta



D Corridor
RS = 1450 Developed 100 yr, 10 yr and 2 yr
.05
57.5
57.0
56.5
56.0
55.5
55.0
54.5
54.0
53.5
Elevation (ft)
0
5
10
15
20
25
Station (ft)
Legend
EG Max WS - Developed100 yr
WS Max WS - Developed100 yr
EG Max WS - Developed 10yr
WS Max WS - Developed 10yr
EG Max WS - Developed 2yr
WS Max WS - Developed 2yr
Ground
Bank Sta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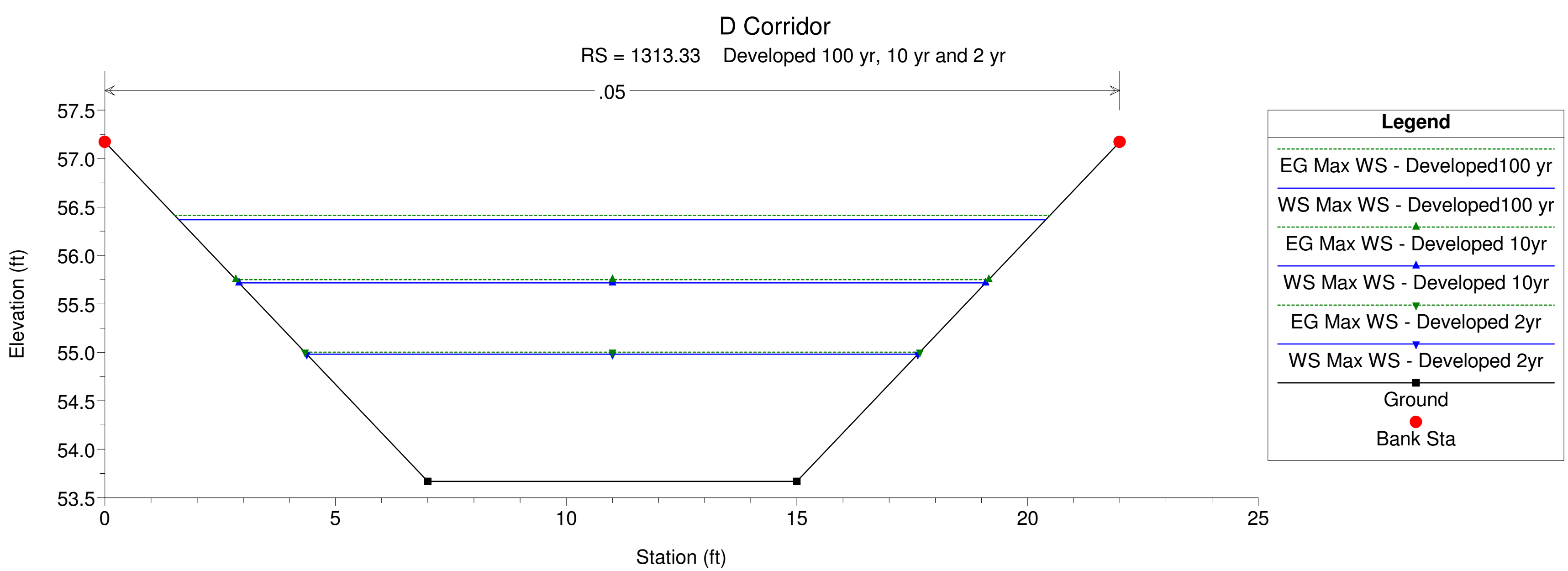
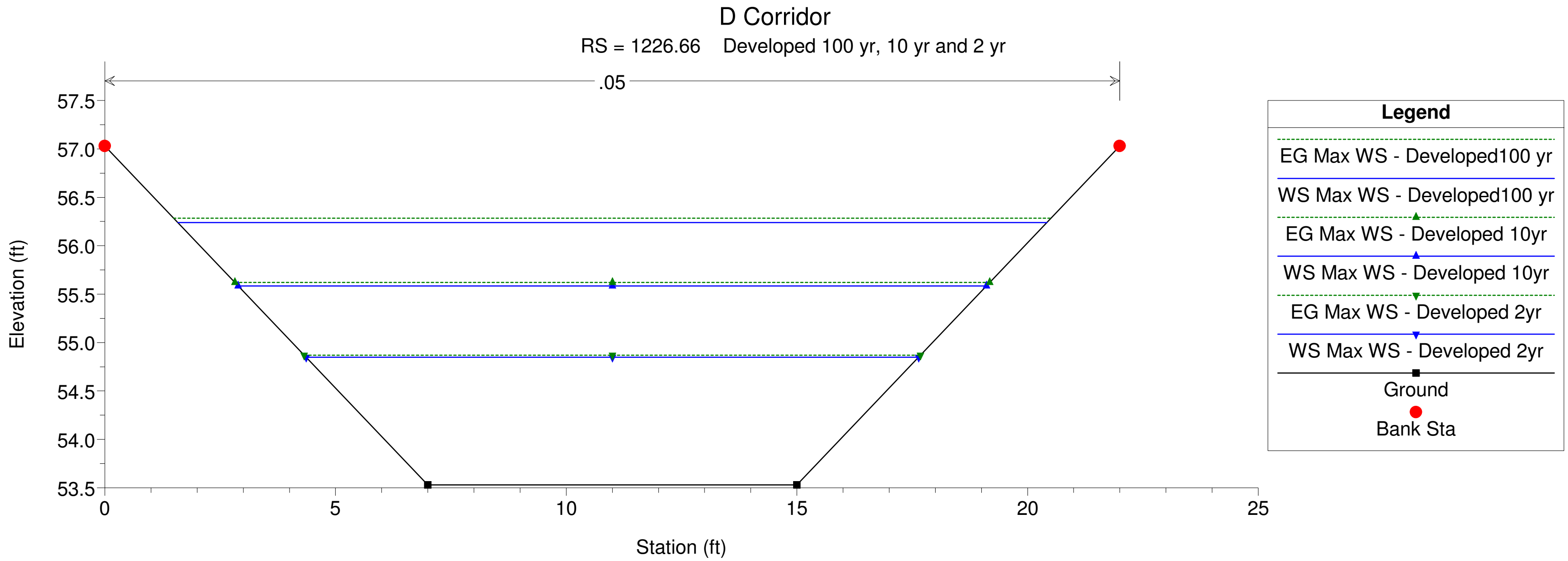
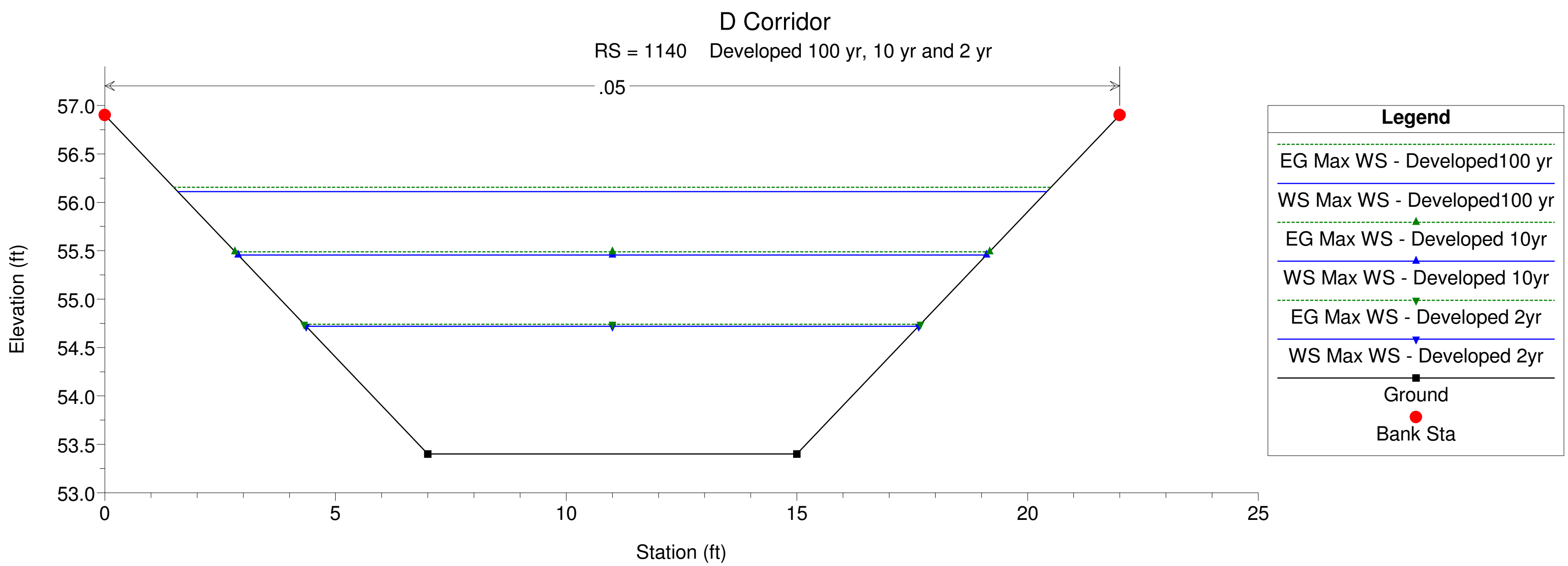
RS = 1400 Developed 100 yr, 10 yr and 2 yr
.05
57.5
57.0
56.5
56.0
55.5
55.0
54.5
54.0
53.5
Elevation (ft)
0
5
10
15
20
25
Station (ft)
Legend
EG Max WS - Developed100 yr
WS Max WS - Developed100 yr
EG Max WS - Developed 10yr
WS Max WS - Developed 10yr
EG Max WS - Developed 2yr
WS Max WS - Developed 2yr
Ground
Bank Sta


D Corridor
RS = 1313.33 Developed 100 yr, 10 yr and 2 yr
.05
57.5
57.0
56.5
56.0
55.5
55.0
54.5
54.0
53.5
Elevation (ft)
0
5
10
15
20
25
Station (ft)
Legend
EG Max WS - Developed100 yr
WS Max WS - Developed100 yr
EG Max WS - Developed 10yr
WS Max WS - Developed 10yr
EG Max WS - Developed 2yr
WS Max WS - Developed 2yr
Ground
Bank Sta


D Corridor
RS = 1226.66 Developed 100 yr, 10 yr and 2 yr
.05
Elevation (ft)
57.5
57.0
56.5
56.0
55.5
55.0
54.5
54.0
53.5
0
5
10
15
20
25
Station (ft)
Legend
EG Max WS - Developed100 yr
WS Max WS - Developed100 yr
EG Max WS - Developed 10yr
WS Max WS - Developed 10yr
EG Max WS - Developed 2yr
WS Max WS - Developed 2yr
Ground
Bank Sta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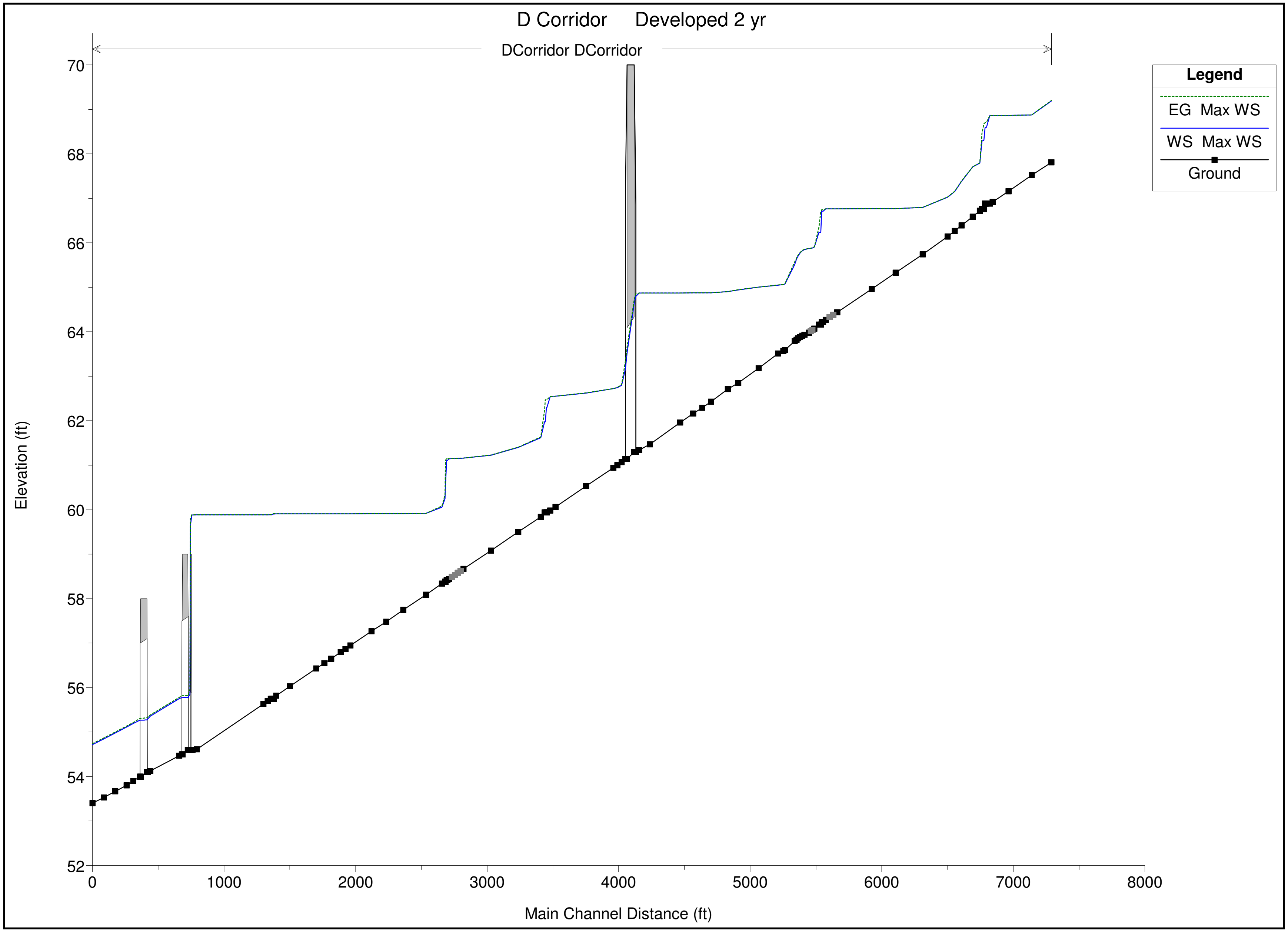
RS = 1140 Developed 100 yr, 10 yr and 2 yr
.05
Elevation (ft)
57.0
56.5
56.0
55.5
55.0
54.5
54.0
53.5
53.0
0
5
10
15
20
25
Station (ft)
Legend
EG Max WS - Developed100 yr
WS Max WS - Developed100 yr
EG Max WS - Developed 10yr
WS Max WS - Developed 10yr
EG Max WS - Developed 2yr
WS Max WS - Developed 2yr
Ground
Bank Sta



D Corridor Developed 2 yr
DCorridor DCorridor
Legend
EG Max WS
WS Max WS
Ground
Elevation (ft)
Main Channel Distance (ft)
70
68
66
64
62
60
58
56
54
52
0
1000
2000
3000
4000
5000
6000
7000
8000

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Hydrologic Engineering Center
609 Second Street
Davis, California

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X     X  X       X            X X      X    X         X
X     X  X       X    X       X  X     X    X         X
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PROJECT DATA
Project Title: D Corridor
Project File : DCorridor.prj
Run Date and Time: 6/7/2011 1:43:32 PM

Project in English units

Project Description:
D Corridor - Developed and Existing Conditions
Plan 1 - 100 yr 24 hr Developed

Plan 2 - 10 yr 24 hr Developed
Plan 3 - 2 yr 24 hr Developed
Plan 4 - 100
yr 24 hr Existing
Plan 5 - 10 yr 24 hr Existing
Plan 6 - 2 yr 24 hr Existing

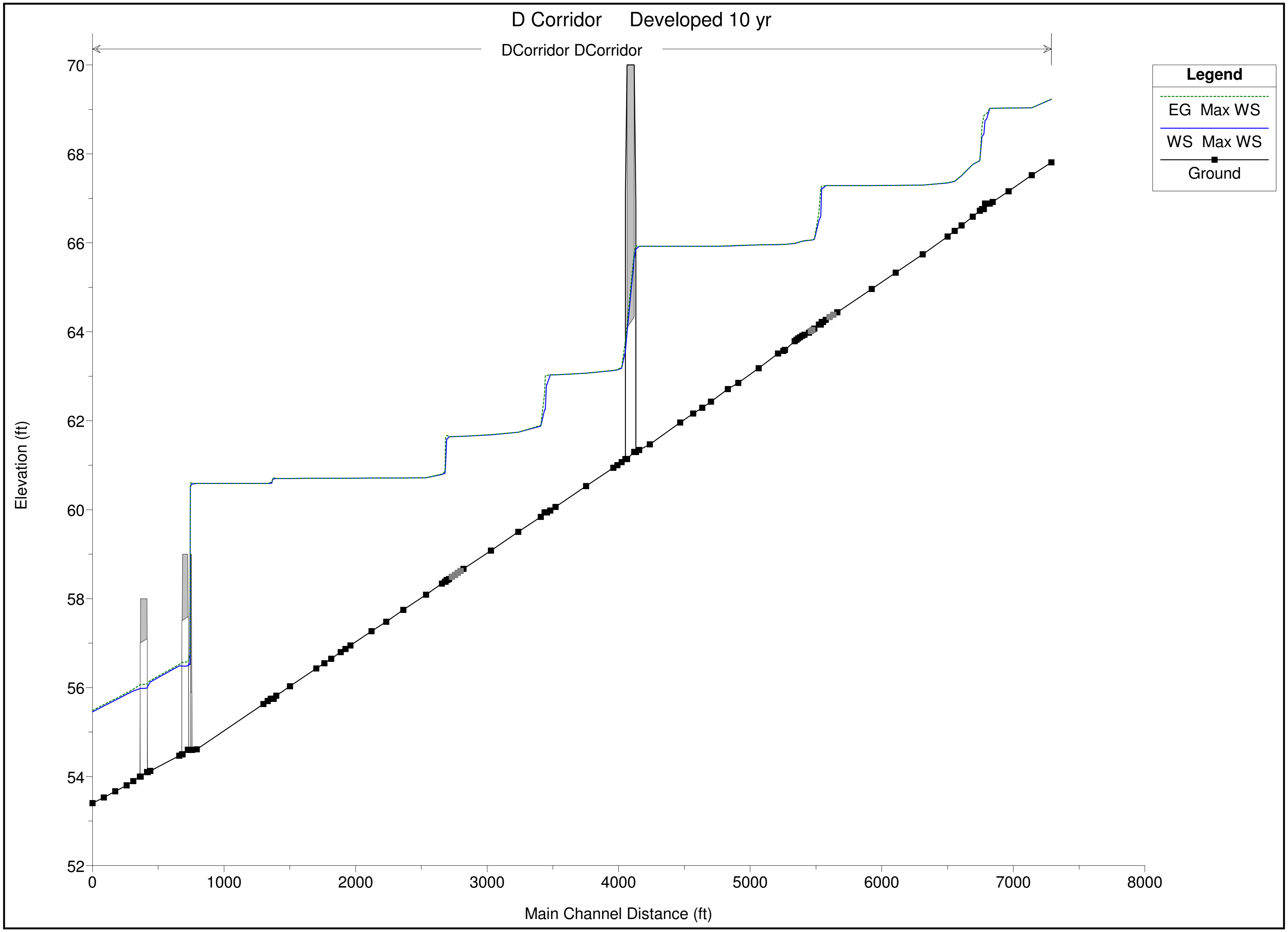
Profile Output Table - Standard Table 1

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
DCorridor	7800	Max WS	10.00	67.81	69.19		69.20	0.004418	1.09	16.86	77.26	0.21
DCorridor	7700	Max WS	9.98	67.52	68.88		68.88	0.000040	0.14	84.49	145.00	0.02
DCorridor	7499.71	Max WS	10.74	67.16	68.87		68.87	0.000056	0.16	91.48	131.82	0.02
DCorridor	7400	Max WS	11.15	66.92	68.86		68.86	0.000021	0.11	134.55	148.10	0.02
DCorridor	7360	Max WS	15.11	66.88	68.86		68.86	0.000032	0.14	135.31	127.44	0.02
DCorridor	7335	Max WS	15.11	66.88	68.60	68.14	68.71	0.019365	2.75	6.09	7.08	0.44
DCorridor	7320		Inl Struct									
DCorridor	7300	Max WS	15.11	66.76	68.29		68.46	0.054015	3.34	4.53	5.93	0.67
DCorridor	7280	Max WS	15.10	66.72	67.79		67.80	0.002159	0.74	34.23	98.56	0.14
DCorridor	7250	Max WS	15.25	66.59	67.71		67.71	0.001614	0.63	41.80	125.16	0.12
DCorridor	7200	Max WS	15.49	66.39	67.38		67.39	0.007612	1.23	19.80	61.88	0.25
DCorridor	7150.03	Max WS	15.61	66.27	67.15		67.16	0.002872	0.70	29.80	78.50	0.15
DCorridor	7100.07	Max WS	15.58	66.14	67.03		67.03	0.002496	0.64	33.01	91.45	0.14
DCorridor	6900	Max WS	15.78	65.74	66.80		66.80	0.000270	0.26	78.59	147.73	0.05

DCorridor	6700.11	Max WS	16.17	65.33	66.77		66.77	0.000018	0.10	197.99	191.60	0.01
DCorridor	6500	Max WS	16.52	64.96	66.77		66.77	0.000008	0.08	265.86	214.57	0.01
DCorridor	6300.12	Max WS	26.06	64.44	66.77		66.77	0.000007	0.08	375.08	226.12	0.01
DCorridor	6273.41*	Max WS	34.05	64.38	66.76		66.77	0.000020	0.14	311.11	213.65	0.02
DCorridor	6246.70*	Max WS	34.04	64.33	66.76		66.76	0.000039	0.19	248.95	205.05	0.02
DCorridor	6220	Max WS	34.04	64.27	66.76		66.76	0.000083	0.25	202.28	211.99	0.03
DCorridor	6200	Max WS	34.04	64.22	66.71	65.44	66.74	0.003606	1.48	23.01	17.49	0.21
DCorridor	6177		Inl Struct									
DCorridor	6155	Max WS	34.04	64.16	66.23		66.34	0.021256	2.67	12.76	12.38	0.46
DCorridor	6130	Max WS	34.03	64.07	65.90		65.91	0.003127	1.04	62.20	191.01	0.18
DCorridor	6125.*	Max WS	34.05	64.04	65.88		65.89	0.001170	0.72	70.75	161.32	0.11
DCorridor	6120.*	Max WS	34.08	64.01	65.88		65.88	0.000439	0.47	92.60	165.98	0.07
DCorridor	6115	Max WS	34.09	63.98	65.87		65.87	0.000186	0.33	122.09	178.11	0.05
DCorridor	6100	Max WS	34.16	63.93	65.85		65.85	0.001300	0.85	68.32	166.42	0.12
DCorridor	6079.98	Max WS	34.18	63.91	65.82		65.83	0.002623	1.10	57.31	160.56	0.17
DCorridor	6059.96	Max WS	34.21	63.88	65.77		65.79	0.004494	1.32	48.90	151.60	0.22
DCorridor	6039.95	Max WS	34.24	63.85	65.71		65.73	0.006040	1.50	43.30	143.60	0.25
DCorridor	6019.93	Max WS	34.26	63.82	65.64		65.66	0.008057	1.68	38.84	138.84	0.29
DCorridor	5999.92	Max WS	34.14	63.79	65.51		65.57	0.017701	2.35	27.29	135.97	0.42
DCorridor	5940	Max WS	29.26	63.59	65.07		65.08	0.002013	0.71	44.21	67.85	0.14
DCorridor	5919.87	Max WS	28.92	63.57	65.06		65.06	0.000102	0.19	152.53	152.51	0.03
DCorridor	5890	Max WS	28.38	63.51	65.05		65.05	0.000566	0.49	75.66	97.10	0.08
DCorridor	5800	Max WS	27.20	63.18	65.00		65.00	0.000093	0.23	147.49	141.12	0.03
DCorridor	5696.74	Max WS	26.15	62.85	64.94		64.95	0.000676	0.67	47.81	39.54	0.09
DCorridor	5600	Max WS	25.73	62.71	64.90		64.90	0.000401	0.54	60.38	49.08	0.07
DCorridor	5500.3	Max WS	25.56	62.43	64.88		64.88	0.000029	0.16	187.94	117.54	0.02
DCorridor	5433.55	Max WS	25.58	62.29	64.87		64.87	0.000021	0.14	211.80	124.72	0.02
DCorridor	5366.81	Max WS	25.60	62.16	64.87		64.87	0.000009	0.10	293.55	151.25	0.01
DCorridor	5300.07	Max WS	25.63	61.96	64.87		64.87	0.000010	0.11	273.24	134.79	0.01
DCorridor	5100.02	Max WS	25.68	61.47	64.87		64.87	0.000002	0.06	518.24	206.98	0.01
DCorridor	5024.42	Max WS	27.16	61.34	64.87		64.87	0.000020	0.12	270.06	195.08	0.01
DCorridor	5000	Max WS	27.16	61.30	64.80	62.42	64.85	0.005129	1.93	14.05	10.69	0.18
DCorridor	4950		Bridge									
DCorridor	4915	Max WS	26.98	61.14	63.17		63.34	0.031540	3.33	8.11	10.02	0.41
DCorridor	4890	Max WS	28.37	61.07	62.79		62.81	0.002719	1.12	25.34	19.63	0.17
DCorridor	4850	Max WS	29.99	61.00	62.74		62.75	0.001133	0.80	46.58	46.84	0.12
DCorridor	4800	Max WS	29.96	60.94	62.72		62.72	0.000535	0.57	67.92	67.22	0.08
DCorridor	4760	Max WS	29.84	60.53	62.62		62.62	0.000450	0.53	73.83	96.31	0.07
DCorridor	4600	Max WS	29.81	60.06	62.55		62.55	0.000190	0.36	126.32	170.50	0.05
DCorridor	4400.11	Max WS	29.81	59.98	62.55		62.55	0.000161	0.34	131.09	158.86	0.04
DCorridor	4375.83	Max WS	29.81	59.94	62.30	61.54	62.47	0.017017	3.34	8.92	10.26	0.44
DCorridor	4370		Inl Struct									
DCorridor	4365	Max WS	29.80	59.94	61.98		62.23	0.033136	4.08	7.30	8.83	0.60
DCorridor	4360	Max WS	29.78	59.84	61.62		61.63	0.002162	1.08	37.39	51.92	0.16
DCorridor	4290	Max WS	29.68	59.50	61.40		61.40	0.000621	0.66	57.01	53.81	0.09
DCorridor	4100	Max WS	19.76	59.08	61.22		61.23	0.000629	0.60	40.65	49.24	0.09
DCorridor	3900	Max WS	24.05	58.67	61.16		61.16	0.000078	0.25	139.24	156.60	0.03
DCorridor	3860.*	Max WS	31.94	58.62	61.16		61.16	0.000120	0.32	149.49	171.53	0.04
DCorridor	3820.*	Max WS	41.50	58.58	61.15		61.15	0.000172	0.38	162.20	188.53	0.05
DCorridor	3780.*	Max WS	41.48	58.53	61.15		61.15	0.000143	0.35	177.50	202.42	0.04
DCorridor	3740.*	Max WS	41.46	58.49	61.15		61.15	0.000116	0.32	196.23	217.47	0.04
DCorridor	3700	Max WS	41.44	58.44	61.14		61.15	0.000089	0.29	222.71	235.88	0.03
DCorridor	3687	Max WS	41.43	58.42	61.11	59.72	61.15	0.003488	1.75	23.74	20.53	0.21
DCorridor	3675		Inl Struct									
DCorridor	3669	Max WS	41.31	58.38	60.25		60.34	0.010104	2.41	17.16	15.76	0.34
DCorridor	3630	Max WS	26.59	58.34	60.06		60.08	0.004427	1.35	19.67	16.64	0.22
DCorridor	3580	Max WS	15.73	58.09	59.92		59.92	0.000024	0.12	150.95	129.25	0.02
DCorridor	3500	Max WS	15.72	57.75	59.91		59.91	0.000008	0.08	208.06	142.87	0.01

Proposed Condition

DCorridor	3300	Max WS	15.70	57.48	59.91		59.91	0.000003	0.06	330.05	196.27	0.01
DCorridor	3200.02	Max WS	15.68	57.27	59.91		59.91	0.000007	0.08	232.12	138.23	0.01
DCorridor	3100	Max WS	15.67	56.95	59.91		59.91	0.000020	0.16	124.68	73.48	0.02
DCorridor	3020	Max WS	15.67	56.87	59.91		59.91	0.000014	0.13	146.26	81.47	0.01
DCorridor	2940	Max WS	15.67	56.80	59.91		59.91	0.000011	0.11	159.62	85.81	0.01
DCorridor	2870	Max WS	15.66	56.65	59.91		59.91	0.000006	0.09	219.30	124.82	0.01
DCorridor	2780	Max WS	15.67	56.55	59.91		59.91	0.000002	0.05	333.66	154.40	0.01
DCorridor	2730	Max WS	15.66	56.43	59.91		59.91	0.000003	0.07	302.62	172.46	0.01
DCorridor	2670	Max WS	15.64	56.03	59.91		59.91	0.000001	0.05	398.18	180.51	0.00
DCorridor	2500	Max WS	16.39	55.82	59.91		59.91	0.000001	0.05	447.59	188.62	0.00
DCorridor	2487	Max WS	16.37	55.75	59.90	56.40	59.91	0.000199	0.66	24.67	184.71	0.06
DCorridor	2474		Inl Struct									
DCorridor	2466	Max WS	16.32	55.75	59.88		59.89	0.000201	0.66	24.56	184.54	0.06
DCorridor	2400	Max WS	16.30	55.70	59.88		59.88	0.000003	0.07	310.50	137.55	0.01
DCorridor	2370.	Max WS	16.30	55.63	59.88		59.88	0.000000	0.01	1066.59	514.18	0.00
DCorridor	1935	Max WS	16.30	54.61	59.88		59.88	0.000000	0.01	1882.56	534.87	0.00
DCorridor	1900	Max WS	16.30	54.60	59.88		59.89	0.000128	0.64	25.56	48.97	0.05
DCorridor	1890		Culvert									
DCorridor	1880	Max WS	16.30	54.60	55.85		55.96	0.015827	2.70	6.03	15.96	0.43
DCorridor	1870	Max WS	16.30	54.60	55.80		55.84	0.006553	1.70	9.60	17.60	0.27
DCorridor	1865		Culvert									
DCorridor	1820	Max WS	16.30	54.50	55.78		55.82	0.002085	1.60	10.21	13.11	0.25
DCorridor	1800	Max WS	16.30	54.47	55.76		55.78	0.001653	1.20	13.60	13.14	0.21
DCorridor	1580	Max WS	16.30	54.13	55.36		55.38	0.001948	1.27	12.84	12.91	0.22
DCorridor	1560	Max WS	16.30	54.10	55.29		55.34	0.002611	1.71	9.54	12.77	0.28
DCorridor	1555		Culvert									
DCorridor	1500	Max WS	16.30	54.00	55.27		55.31	0.002135	1.61	10.14	13.07	0.25
DCorridor	1450	Max WS	16.30	53.90	55.19		55.21	0.001629	1.19	13.66	13.16	0.21
DCorridor	1400	Max WS	16.30	53.80	55.11		55.13	0.001532	1.17	13.96	13.25	0.20
DCorridor	1313.33	Max WS	16.30	53.67	54.98		55.00	0.001544	1.17	13.92	13.24	0.20
DCorridor	1226.66	Max WS	16.30	53.53	54.85		54.87	0.001508	1.16	14.04	13.28	0.20
DCorridor	1140	Max WS	16.30	53.40	54.72	53.88	54.74	0.001508	1.16	14.04	13.28	0.20


D Corridor Developed 10 yr
DCorridor DCorridor
Legend
EG Max WS
WS Max WS
Ground
Elevation (ft)
Main Channel Distance (ft)
52
54
56
58
60
62
64
66
68
70
0
1000
2000
3000
4000
5000
6000
7000
8000

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

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X     X  X        X            X   X    X    X   X
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X     X  X        X            X  X     X    X        X
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PROJECT DATA
Project Title: D Corridor
Project File : DCorridor.prj
Run Date and Time: 6/7/2011 1:42:08 PM

Project in English units

Project Description:
D Corridor - Developed and Existing Conditions
Plan 1 - 100 yr 24 hr Developed

Plan 2 - 10 yr 24 hr Developed
Plan 3 - 2 yr 24 hr Developed
Plan 4 - 100
yr 24 hr Existing
Plan 5 - 10 yr 24 hr Existing
Plan 6 - 2 yr 24 hr Existing

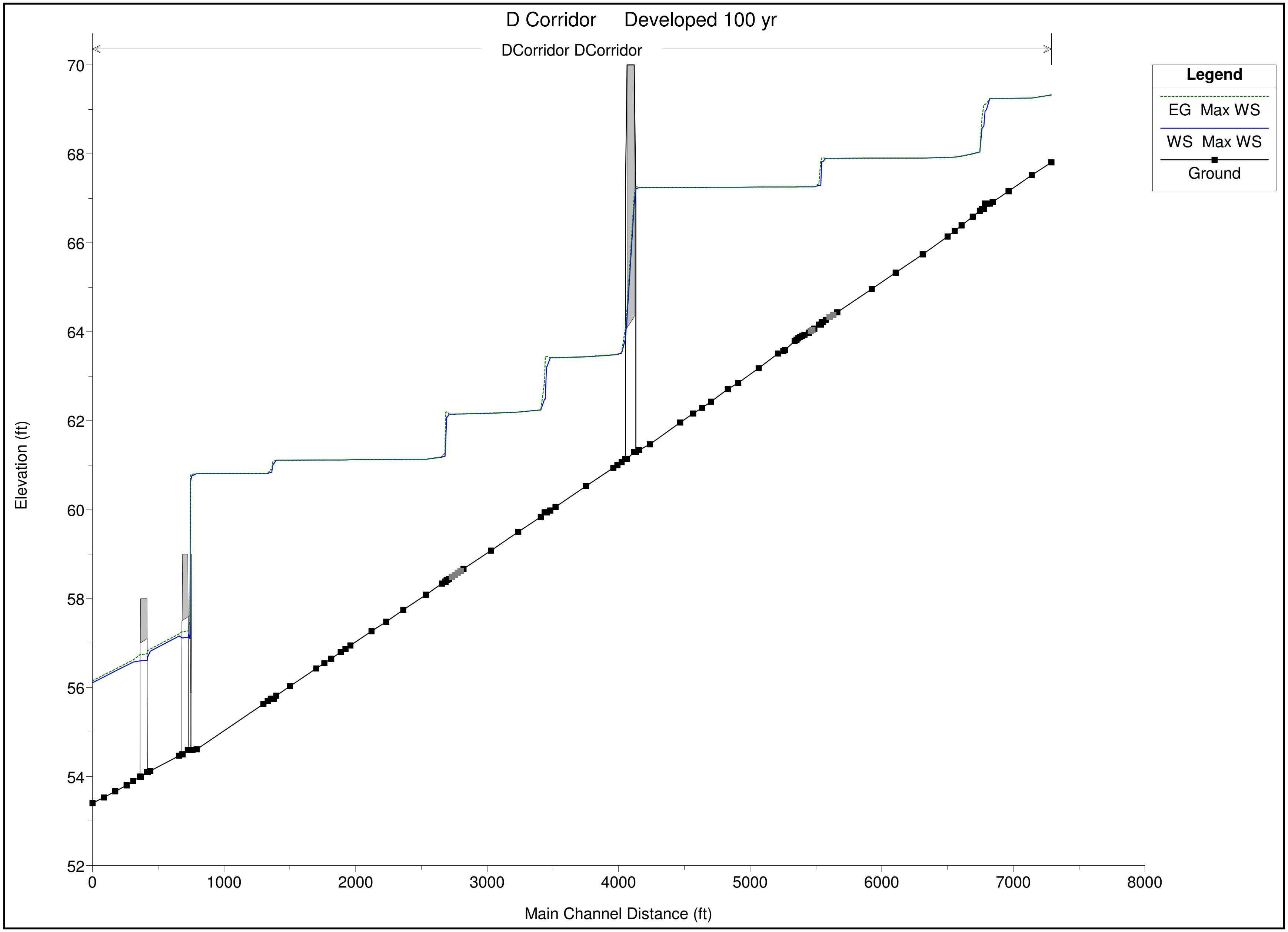
Profile Output Table - Standard Table 1

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
DCorridor	7800	Max WS	10.00	67.81	69.22		69.23	0.003195	0.95	19.90	87.97	0.18
DCorridor	7700	Max WS	9.98	67.52	69.03		69.03	0.000023	0.11	108.27	149.93	0.02
DCorridor	7499.71	Max WS	11.31	67.16	69.03		69.03	0.000033	0.13	113.06	133.12	0.02
DCorridor	7400	Max WS	12.21	66.92	69.03		69.03	0.000015	0.10	159.03	149.51	0.01
DCorridor	7360	Max WS	19.17	66.88	69.03		69.03	0.000032	0.15	156.38	128.76	0.02
DCorridor	7335	Max WS	19.16	66.88	68.77	68.27	68.89	0.018636	2.95	7.37	7.79	0.44
DCorridor	7320		Inl Struct									
DCorridor	7300	Max WS	19.16	66.76	68.39		68.60	0.061369	3.71	5.16	6.33	0.72
DCorridor	7280	Max WS	19.13	66.72	67.85		67.85	0.002320	0.80	39.65	105.05	0.15
DCorridor	7250	Max WS	19.23	66.59	67.76		67.76	0.001609	0.65	48.50	127.23	0.12
DCorridor	7200	Max WS	19.67	66.39	67.51		67.52	0.004173	1.01	27.91	63.37	0.19
DCorridor	7150.03	Max WS	19.72	66.27	67.38		67.39	0.000967	0.50	48.08	80.30	0.09
DCorridor	7100.07	Max WS	19.89	66.14	67.35		67.35	0.000504	0.37	62.57	93.75	0.07
DCorridor	6900	Max WS	20.62	65.74	67.30		67.30	0.000052	0.15	153.36	151.84	0.02

DCorridor	6700.11	Max WS	21.35	65.33	67.29		67.29	0.000008	0.08	299.13	196.82	0.01
DCorridor	6500	Max WS	22.00	64.96	67.29		67.29	0.000005	0.07	378.82	219.04	0.01
DCorridor	6300.12	Max WS	39.90	64.44	67.29		67.29	0.000007	0.09	494.07	230.32	0.01
DCorridor	6273.41*	Max WS	54.80	64.38	67.29		67.29	0.000019	0.16	424.01	219.33	0.02
DCorridor	6246.70*	Max WS	54.79	64.33	67.29		67.29	0.000033	0.20	358.13	213.76	0.02
DCorridor	6220	Max WS	54.77	64.27	67.28		67.28	0.000053	0.24	314.01	216.19	0.03
DCorridor	6200	Max WS	54.76	64.22	67.23	65.75	67.28	0.003666	1.80	30.45	61.62	0.22
DCorridor	6177		Inl Struct									
DCorridor	6155	Max WS	54.75	64.16	66.49		66.67	0.028943	3.38	16.21	13.98	0.55
DCorridor	6130	Max WS	54.60	64.07	66.08		66.08	0.002195	0.96	95.48	192.42	0.15
DCorridor	6125.*	Max WS	38.72	64.04	66.06		66.07	0.000622	0.57	100.23	166.02	0.09
DCorridor	6120.*	Max WS	38.35	64.01	66.06		66.06	0.000281	0.41	123.39	170.08	0.06
DCorridor	6115	Max WS	38.18	63.98	66.06		66.06	0.000134	0.30	155.00	179.66	0.04
DCorridor	6100	Max WS	37.50	63.93	66.04		66.05	0.000573	0.61	101.38	168.06	0.08
DCorridor	6079.98	Max WS	36.85	63.91	66.03		66.04	0.000818	0.68	92.08	162.33	0.10
DCorridor	6059.96	Max WS	36.38	63.88	66.02		66.02	0.000961	0.70	86.89	153.75	0.10
DCorridor	6039.95	Max WS	36.09	63.85	66.01		66.01	0.000912	0.68	86.40	146.06	0.10
DCorridor	6019.93	Max WS	35.65	63.82	66.00		66.00	0.000781	0.63	89.33	141.73	0.09
DCorridor	5999.92	Max WS	35.52	63.79	65.99		65.99	0.000670	0.60	92.92	139.78	0.09
DCorridor	5940	Max WS	35.03	63.59	65.96		65.96	0.000095	0.25	171.00	149.50	0.03
DCorridor	5919.87	Max WS	35.04	63.57	65.96		65.96	0.000018	0.12	294.23	161.51	0.02
DCorridor	5890	Max WS	35.07	63.51	65.96		65.96	0.000068	0.24	167.61	104.54	0.03
DCorridor	5800	Max WS	35.06	63.18	65.96		65.96	0.000018	0.14	285.48	149.04	0.02
DCorridor	5696.74	Max WS	34.98	62.85	65.94		65.94	0.000181	0.47	91.29	47.66	0.05
DCorridor	5600	Max WS	34.95	62.71	65.93		65.93	0.000107	0.37	115.08	57.42	0.04
DCorridor	5500.3	Max WS	34.96	62.43	65.92		65.92	0.000011	0.13	315.20	125.93	0.01
DCorridor	5433.55	Max WS	35.01	62.29	65.92		65.92	0.000008	0.12	347.05	133.54	0.01
DCorridor	5366.81	Max WS	35.06	62.16	65.92		65.92	0.000004	0.09	456.38	159.79	0.01
DCorridor	5300.07	Max WS	35.13	61.96	65.92		65.92	0.000005	0.10	418.83	143.20	0.01
DCorridor	5100.02	Max WS	35.30	61.47	65.92		65.92	0.000001	0.05	739.61	215.45	0.00
DCorridor	5024.42	Max WS	37.90	61.34	65.92		65.92	0.000006	0.08	479.76	204.84	0.01
DCorridor	5000	Max WS	37.90	61.30	65.86	62.70	65.92	0.004122	2.07	18.32	11.30	0.17
DCorridor	4950		Bridge									
DCorridor	4915	Max WS	37.85	61.14	63.56		63.80	0.034226	3.91	9.69	10.25	0.44
DCorridor	4890	Max WS	39.76	61.07	63.18		63.20	0.002371	1.19	33.75	27.37	0.17
DCorridor	4850	Max WS	41.96	61.00	63.14		63.15	0.000768	0.77	65.96	49.93	0.10
DCorridor	4800	Max WS	41.93	60.94	63.13		63.13	0.000358	0.55	95.97	70.20	0.07
DCorridor	4760	Max WS	41.84	60.53	63.07		63.07	0.000247	0.47	131.74	136.25	0.06
DCorridor	4600	Max WS	41.81	60.06	63.03		63.03	0.000083	0.28	209.06	174.36	0.03
DCorridor	4400.11	Max WS	41.81	59.98	63.03		63.03	0.000077	0.27	208.78	162.74	0.03
DCorridor	4375.83	Max WS	41.81	59.94	62.81	61.80	63.02	0.014371	3.64	11.49	12.54	0.42
DCorridor	4370		Inl Struct									
DCorridor	4365	Max WS	41.81	59.94	62.25		62.61	0.037084	4.83	8.65	10.02	0.65
DCorridor	4360	Max WS	41.80	59.84	61.88		61.89	0.001781	1.10	52.00	58.10	0.15
DCorridor	4290	Max WS	27.04	59.50	61.74		61.74	0.000224	0.45	77.58	71.05	0.05
DCorridor	4100	Max WS	25.24	59.08	61.68		61.69	0.000307	0.50	76.24	105.70	0.06
DCorridor	3900	Max WS	33.48	58.67	61.65		61.65	0.000046	0.22	232.92	223.31	0.03
DCorridor	3860.*	Max WS	47.35	58.62	61.65		61.65	0.000079	0.30	250.37	235.62	0.03
DCorridor	3820.*	Max WS	63.81	58.58	61.65		61.65	0.000124	0.38	270.21	250.98	0.04
DCorridor	3780.*	Max WS	63.73	58.53	61.64		61.64	0.000106	0.35	292.86	270.18	0.04
DCorridor	3740.*	Max WS	63.64	58.49	61.64		61.64	0.000086	0.32	322.07	289.73	0.04
DCorridor	3700	Max WS	63.55	58.44	61.64		61.64	0.000068	0.29	357.89	309.09	0.03
DCorridor	3687	Max WS	63.51	58.42	61.59	59.99	61.67	0.004078	2.17	29.27	73.33	0.24
DCorridor	3675		Inl Struct									
DCorridor	3669	Max WS	39.16	58.38	60.82		60.86	0.003121	1.66	23.64	19.27	0.20
DCorridor	3630	Max WS	38.80	58.34	60.79		60.80	0.001349	0.98	57.99	127.89	0.13
DCorridor	3580	Max WS	37.32	58.09	60.72		60.72	0.000024	0.16	267.16	165.68	0.02
DCorridor	3500	Max WS	37.25	57.75	60.71		60.71	0.000012	0.13	325.04	149.30	0.01

Proposed Condition

DCorridor	3300	Max WS	37.25	57.48	60.71		60.71	0.000005	0.09	489.73	202.70	0.01
DCorridor	3200.02	Max WS	37.24	57.27	60.71		60.71	0.000011	0.13	345.31	144.72	0.01
DCorridor	3100	Max WS	37.18	56.95	60.71		60.71	0.000035	0.25	185.88	79.87	0.02
DCorridor	3020	Max WS	37.18	56.87	60.71		60.71	0.000025	0.20	213.88	88.03	0.02
DCorridor	2940	Max WS	37.18	56.80	60.71		60.71	0.000021	0.19	230.85	92.84	0.02
DCorridor	2870	Max WS	37.12	56.65	60.70		60.71	0.000011	0.14	321.56	131.76	0.01
DCorridor	2780	Max WS	37.12	56.55	60.70		60.70	0.000004	0.09	459.45	161.29	0.01
DCorridor	2730	Max WS	37.12	56.43	60.70		60.70	0.000006	0.11	442.64	179.00	0.01
DCorridor	2670	Max WS	37.12	56.03	60.70		60.70	0.000003	0.09	544.49	186.89	0.01
DCorridor	2500	Max WS	38.44	55.82	60.70		60.70	0.000003	0.08	600.32	195.00	0.01
DCorridor	2487	Max WS	38.35	55.75	60.69	56.87	60.72	0.000609	1.30	29.40	192.12	0.10
DCorridor	2474		Inl Struct									
DCorridor	2466	Max WS	36.76	55.75	60.59		60.62	0.000599	1.28	28.81	191.19	0.10
DCorridor	2400	Max WS	36.76	55.70	60.59		60.59	0.000006	0.11	409.93	143.59	0.01
DCorridor	2370.	Max WS	36.76	55.63	60.59		60.59	0.000000	0.02	1432.56	519.85	0.00
DCorridor	1935	Max WS	36.73	54.61	60.59		60.59	0.000000	0.01	2263.39	541.21	0.00
DCorridor	1900	Max WS	36.72	54.60	60.58		60.59	0.001685	1.10	37.58	54.45	0.15
DCorridor	1890		Culvert									
DCorridor	1880	Max WS	36.72	54.60	56.52		56.76	0.019106	3.96	9.27	21.33	0.50
DCorridor	1870	Max WS	36.72	54.60	56.53		56.62	0.006794	2.38	15.46	23.46	0.30
DCorridor	1865		Culvert									
DCorridor	1820	Max WS	36.72	54.50	56.48		56.57	0.002439	2.32	15.86	15.93	0.29
DCorridor	1800	Max WS	36.72	54.47	56.49		56.52	0.001613	1.51	24.28	16.07	0.22
DCorridor	1580	Max WS	36.72	54.13	56.12		56.16	0.001684	1.54	23.91	15.98	0.22
DCorridor	1560	Max WS	36.72	54.10	56.03		56.12	0.002654	2.38	15.46	15.73	0.30
DCorridor	1555		Culvert									
DCorridor	1500	Max WS	36.72	54.00	55.98		56.06	0.002448	2.32	15.84	15.92	0.29
DCorridor	1450	Max WS	36.72	53.90	55.93		55.96	0.001590	1.50	24.40	16.10	0.22
DCorridor	1400	Max WS	36.72	53.80	55.85		55.88	0.001523	1.48	24.78	16.19	0.21
DCorridor	1313.33	Max WS	36.72	53.67	55.72		55.75	0.001529	1.48	24.75	16.19	0.21
DCorridor	1226.66	Max WS	36.72	53.53	55.59		55.62	0.001504	1.47	24.90	16.22	0.21
DCorridor	1140	Max WS	36.72	53.40	55.46	54.21	55.49	0.001503	1.47	24.90	16.22	0.21



D Corridor Developed 100 yr
DCorridor DCorridor
Legend
EG Max WS
WS Max WS
Ground
Elevation (ft)
70
68
66
64
62
60
58
56
54
52
0
1000
2000
3000
4000
5000
6000
7000
8000
Main Channel Distance (ft)

HEC-RAS Version 4.1.0 Jan 2010
U.S. Army Corps of Engineers
Hydrologic Engineering Center
609 Second Street
Davis, California

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X     X  XXXXXX   XXXX        XXXX      XX      XXXX
X     X  X       X    X       X   X    X  X    X
X     X  X       X            X   X   X    X   X
XXXXXXX  XXXX    X       XXX  XXXX    XXXXXX    XXXX
X     X  X       X            X  X    X    X        X
X     X  X       X    X       X   X   X    X        X
X     X  XXXXXX   XXXX        X    X  X    X   XXXXX
```

PROJECT DATA
Project Title: D Corridor
Project File : DCorridor.prj
Run Date and Time: 6/7/2011 11:44:50 AM

Project in English units

Project Description:
D Corridor - Developed and Existing Conditions
Plan 1 - 100 yr 24 hr Developed

Plan 2 - 10 yr 24 hr Developed
Plan 3 - 2 yr 24 hr Developed
Plan 4 - 100
yr 24 hr Existing
Plan 5 - 10 yr 24 hr Existing
Plan 6 - 2 yr 24 hr Existing

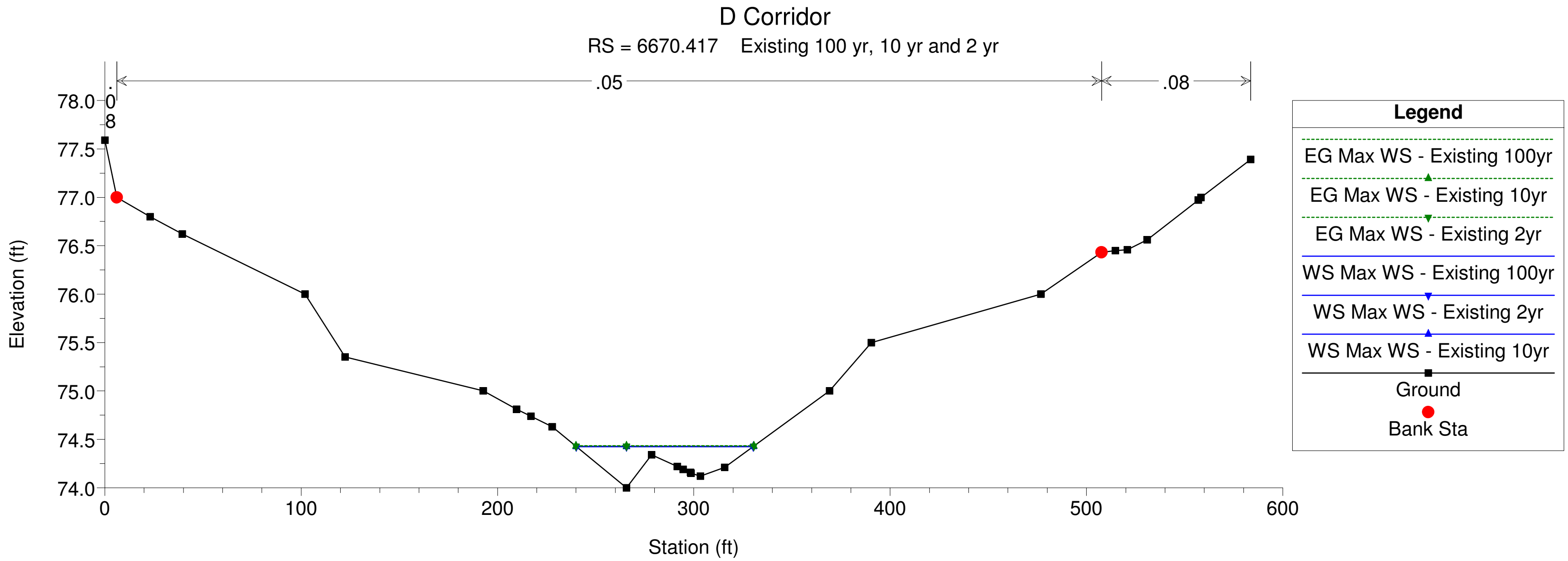
Profile Output Table - Standard Table 1

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
DCorridor	7800	Max WS	10.00	67.81	69.32		69.33	0.001209	0.63	28.93	90.60	0.11
DCorridor	7700	Max WS	10.00	67.52	69.25		69.25	0.000012	0.09	140.93	151.68	0.01
DCorridor	7499.71	Max WS	12.32	67.16	69.25		69.25	0.000019	0.11	142.38	134.88	0.01
DCorridor	7400	Max WS	13.90	66.92	69.25		69.25	0.000011	0.09	192.09	151.39	0.01
DCorridor	7360	Max WS	25.31	66.88	69.25		69.25	0.000033	0.16	184.85	130.52	0.02
DCorridor	7335	Max WS	25.30	66.88	69.00	68.46	69.14	0.017974	3.20	9.22	8.71	0.44
DCorridor	7320		Inl Struct									
DCorridor	7300	Max WS	25.11	66.76	68.57		68.81	0.059775	3.93	6.38	7.04	0.73
DCorridor	7280	Max WS	24.59	66.72	68.04		68.05	0.001046	0.61	62.30	120.73	0.10
DCorridor	7250	Max WS	24.95	66.59	68.00		68.00	0.000537	0.44	80.08	130.74	0.07
DCorridor	7200	Max WS	25.52	66.39	67.95		67.95	0.000739	0.56	56.83	67.77	0.09
DCorridor	7150.03	Max WS	25.91	66.27	67.93		67.93	0.000201	0.31	92.83	84.64	0.05
DCorridor	7100.07	Max WS	26.30	66.14	67.92		67.92	0.000115	0.25	117.45	98.05	0.03
DCorridor	6900	Max WS	27.69	65.74	67.91		67.91	0.000020	0.12	247.85	157.17	0.02

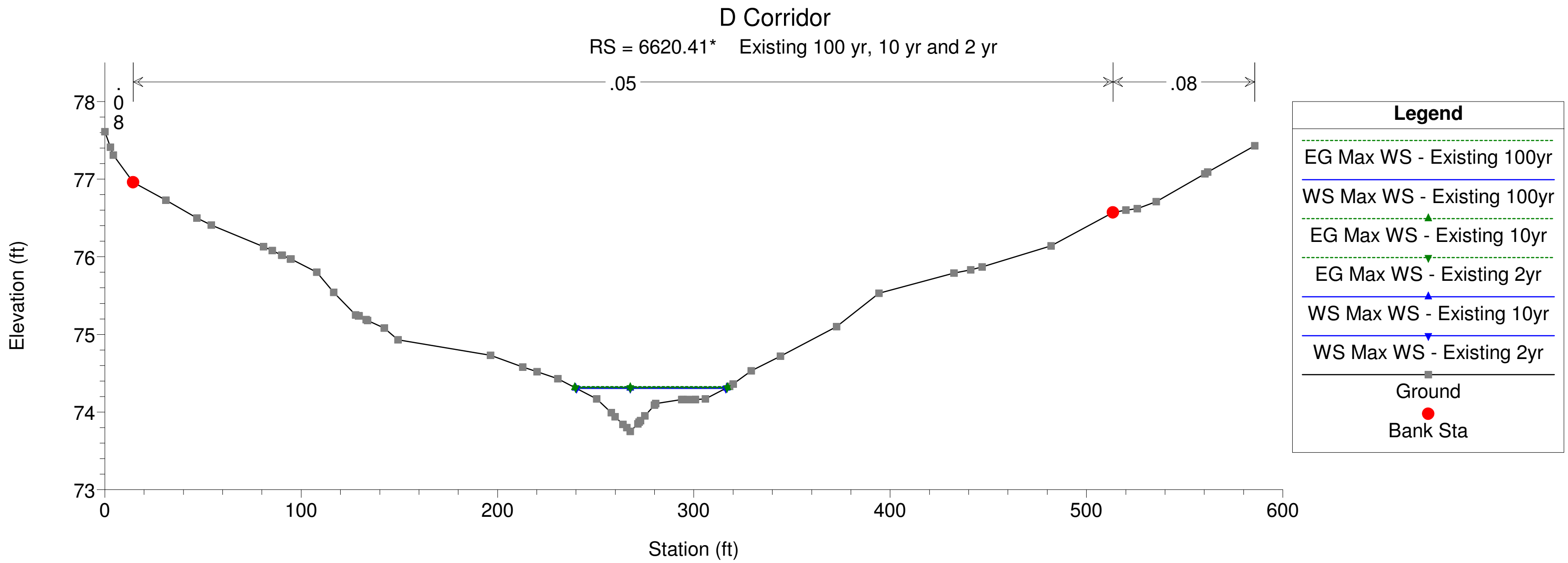
DCorridor	6700.11	Max WS	28.59	65.33	67.90		67.90	0.000005	0.08	421.57	201.88	0.01
DCorridor	6500	Max WS	29.62	64.96	67.90		67.90	0.000003	0.07	515.05	224.32	0.01
DCorridor	6300.12	Max WS	61.22	64.44	67.90		67.90	0.000007	0.11	637.13	235.26	0.01
DCorridor	6273.41*	Max WS	87.40	64.38	67.90		67.90	0.000020	0.19	560.72	225.68	0.02
DCorridor	6246.70*	Max WS	87.34	64.33	67.90		67.90	0.000031	0.23	493.86	228.05	0.02
DCorridor	6220	Max WS	87.28	64.27	67.90		67.90	0.000042	0.25	448.38	221.13	0.03
DCorridor	6200	Max WS	87.25	64.22	67.83	66.09	67.91	0.004028	2.23	39.15	175.98	0.24
DCorridor	6177		Inl Struct									
DCorridor	6155	Max WS	41.38	64.16	67.29		67.33	0.002921	1.50	27.65	18.18	0.19
DCorridor	6130	Max WS	36.56	64.07	67.26		67.26	0.000019	0.14	328.35	201.98	0.02
DCorridor	6125.*	Max WS	36.58	64.04	67.26		67.26	0.000019	0.15	319.57	199.40	0.02
DCorridor	6120.*	Max WS	36.60	64.01	67.26		67.26	0.000014	0.14	339.60	188.80	0.01
DCorridor	6115	Max WS	36.63	63.98	67.26		67.26	0.000010	0.12	377.26	190.42	0.01
DCorridor	6100	Max WS	36.68	63.93	67.26		67.26	0.000018	0.16	311.68	178.20	0.02
DCorridor	6079.98	Max WS	36.71	63.91	67.26		67.26	0.000021	0.16	297.07	172.35	0.02
DCorridor	6059.96	Max WS	36.73	63.88	67.26		67.26	0.000023	0.17	283.78	164.47	0.02
DCorridor	6039.95	Max WS	36.75	63.85	67.26		67.26	0.000024	0.17	275.30	156.38	0.02
DCorridor	6019.93	Max WS	36.77	63.82	67.26		67.26	0.000024	0.17	274.20	151.86	0.02
DCorridor	5999.92	Max WS	36.79	63.79	67.26		67.26	0.000023	0.17	276.69	149.95	0.02
DCorridor	5940	Max WS	36.90	63.59	67.26		67.26	0.000009	0.11	370.85	159.90	0.01
DCorridor	5919.87	Max WS	36.74	63.57	67.26		67.26	0.000003	0.08	509.86	172.26	0.01
DCorridor	5890	Max WS	36.80	63.51	67.25		67.26	0.000011	0.13	309.71	115.29	0.01
DCorridor	5800	Max WS	37.05	63.18	67.25		67.25	0.000004	0.08	486.06	159.85	0.01
DCorridor	5696.74	Max WS	37.30	62.85	67.25		67.25	0.000041	0.29	160.81	58.35	0.02
DCorridor	5600	Max WS	37.43	62.71	67.25		67.25	0.000025	0.23	197.94	68.16	0.02
DCorridor	5500.3	Max WS	37.63	62.43	67.25		67.25	0.000003	0.09	489.06	136.56	0.01
DCorridor	5433.55	Max WS	37.74	62.29	67.25		67.25	0.000003	0.08	531.07	144.18	0.01
DCorridor	5366.81	Max WS	37.84	62.16	67.25		67.25	0.000001	0.06	675.34	170.60	0.01
DCorridor	5300.07	Max WS	37.99	61.96	67.25		67.25	0.000002	0.07	615.72	153.85	0.01
DCorridor	5100.02	Max WS	38.34	61.47	67.25		67.25	0.000000	0.04	1032.42	226.16	0.00
DCorridor	5024.42	Max WS	42.98	61.34	67.25		67.25	0.000002	0.05	759.58	217.11	0.00
DCorridor	5000	Max WS	42.98	61.30	67.21	62.82	67.26	0.002228	1.81	23.76	12.08	0.13
DCorridor	4950		Bridge									
DCorridor	4915	Max WS	42.54	61.14	63.84		64.08	0.030060	3.94	10.81	10.42	0.42
DCorridor	4890	Max WS	46.86	61.07	63.52		63.54	0.001625	1.12	45.70	43.87	0.14
DCorridor	4850	Max WS	52.14	61.00	63.49		63.50	0.000577	0.75	83.77	52.71	0.09
DCorridor	4800	Max WS	52.14	60.94	63.48		63.48	0.000271	0.53	121.13	73.18	0.06
DCorridor	4760	Max WS	52.01	60.53	63.44		63.44	0.000145	0.40	182.70	139.53	0.05
DCorridor	4600	Max WS	51.98	60.06	63.42		63.42	0.000054	0.25	276.57	177.45	0.03
DCorridor	4400.11	Max WS	51.98	59.98	63.41		63.41	0.000052	0.25	271.99	165.82	0.03
DCorridor	4375.83	Max WS	51.97	59.94	63.22	62.00	63.45	0.012996	3.85	13.50	132.03	0.41
DCorridor	4370		Inl Struct									
DCorridor	4365	Max WS	50.09	59.94	62.49		62.89	0.034503	5.09	9.85	11.08	0.64
DCorridor	4360	Max WS	34.49	59.84	62.24		62.24	0.000443	0.62	73.35	61.00	0.08
DCorridor	4290	Max WS	32.90	59.50	62.19		62.20	0.000123	0.38	114.44	84.62	0.04
DCorridor	4100	Max WS	30.99	59.08	62.17		62.17	0.000122	0.36	142.02	165.35	0.04
DCorridor	3900	Max WS	45.85	58.67	62.15		62.15	0.000027	0.19	352.92	243.39	0.02
DCorridor	3860.*	Max WS	69.34	58.62	62.15		62.15	0.000053	0.28	376.06	254.42	0.03
DCorridor	3820.*	Max WS	96.84	58.58	62.15		62.15	0.000089	0.36	402.63	268.27	0.04
DCorridor	3780.*	Max WS	96.73	58.53	62.15		62.15	0.000076	0.34	433.60	285.30	0.03
DCorridor	3740.*	Max WS	96.61	58.49	62.15		62.15	0.000062	0.31	472.20	300.45	0.03
DCorridor	3700	Max WS	96.49	58.44	62.15		62.15	0.000050	0.28	515.44	313.18	0.03
DCorridor	3687	Max WS	95.99	58.42	62.08	60.31	62.20	0.005211	2.76	34.84	214.71	0.28
DCorridor	3675		Inl Struct									
DCorridor	3669	Max WS	61.14	58.38	61.20		61.28	0.004334	2.18	27.99	21.62	0.24
DCorridor	3630	Max WS	61.02	58.34	61.18		61.19	0.000808	0.87	125.72	212.88	0.10
DCorridor	3580	Max WS	60.79	58.09	61.14		61.14	0.000033	0.21	337.35	169.61	0.02
DCorridor	3500	Max WS	60.68	57.75	61.13		61.13	0.000019	0.17	388.06	152.66	0.02

Proposed Condition

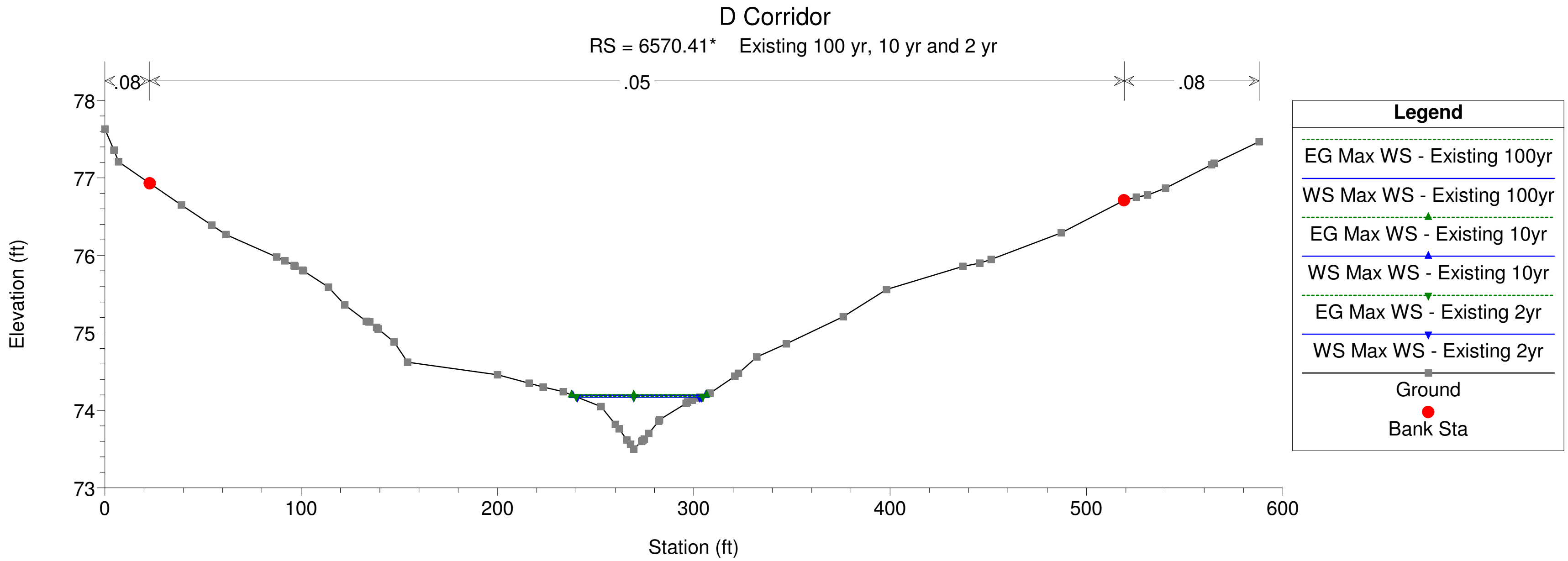
DCorridor	3300	Max WS	60.68	57.48	61.13		61.13	0.000008	0.12	574.92	206.04	0.01
DCorridor	3200.02	Max WS	60.67	57.27	61.13		61.13	0.000017	0.17	406.26	148.11	0.02
DCorridor	3100	Max WS	60.66	56.95	61.12		61.12	0.000058	0.35	219.60	83.18	0.03
DCorridor	3020	Max WS	60.66	56.87	61.12		61.12	0.000042	0.28	250.93	91.43	0.03
DCorridor	2940	Max WS	60.66	56.80	61.12		61.12	0.000036	0.26	269.89	96.47	0.02
DCorridor	2870	Max WS	60.66	56.65	61.12		61.12	0.000019	0.20	376.56	135.35	0.02
DCorridor	2780	Max WS	60.65	56.55	61.12		61.12	0.000008	0.13	526.57	164.83	0.01
DCorridor	2730	Max WS	60.65	56.43	61.12		61.12	0.000010	0.15	516.98	182.38	0.01
DCorridor	2670	Max WS	60.62	56.03	61.11		61.11	0.000005	0.12	621.94	190.19	0.01
DCorridor	2500	Max WS	66.18	55.82	61.11		61.11	0.000005	0.12	681.04	198.28	0.01
DCorridor	2487	Max WS	65.17	55.75	61.03	57.33	61.09	0.007880	2.02	36.54	195.28	0.30
DCorridor	2474		Inl Struct									
DCorridor	2466	Max WS	62.94	55.75	60.84		60.91	0.001487	2.08	30.29	193.51	0.16
DCorridor	2400	Max WS	62.17	55.70	60.81		60.81	0.000013	0.17	441.93	145.61	0.01
DCorridor	2370.	Max WS	62.17	55.63	60.81		60.81	0.000000	0.03	1547.81	521.62	0.00
DCorridor	1935	Max WS	62.13	54.61	60.81		60.81	0.000000	0.02	2383.37	543.19	0.00
DCorridor	1900	Max WS	62.13	54.60	60.77		60.80	0.002738	1.50	48.04	55.96	0.19
DCorridor	1890		Culvert									
DCorridor	1880	Max WS	62.13	54.60	57.10		57.51	0.022477	5.13	12.11	26.01	0.57
DCorridor	1870	Max WS	62.13	54.60	57.20		57.34	0.007194	2.98	20.83	28.83	0.33
DCorridor	1865		Culvert									
DCorridor	1820	Max WS	62.13	54.50	57.12		57.26	0.002757	2.97	20.95	18.48	0.32
DCorridor	1800	Max WS	62.13	54.47	57.16		57.21	0.001544	1.73	36.00	18.76	0.22
DCorridor	1580	Max WS	62.12	54.13	56.82		56.87	0.001541	1.72	36.02	18.77	0.22
DCorridor	1560	Max WS	62.12	54.10	56.69		56.83	0.002858	3.00	20.73	18.36	0.33
DCorridor	1555		Culvert									
DCorridor	1500	Max WS	62.12	54.00	56.60		56.74	0.002818	2.98	20.81	18.41	0.33
DCorridor	1450	Max WS	62.12	53.90	56.58		56.62	0.001573	1.74	35.75	18.71	0.22
DCorridor	1400	Max WS	62.12	53.80	56.50		56.55	0.001519	1.72	36.20	18.80	0.22
DCorridor	1313.33	Max WS	62.12	53.67	56.37		56.42	0.001523	1.72	36.17	18.80	0.22
DCorridor	1226.66	Max WS	62.11	53.53	56.24		56.28	0.001502	1.71	36.35	18.84	0.22
DCorridor	1140	Max WS	62.11	53.40	56.11	54.51	56.15	0.001502	1.71	36.35	18.84	0.22



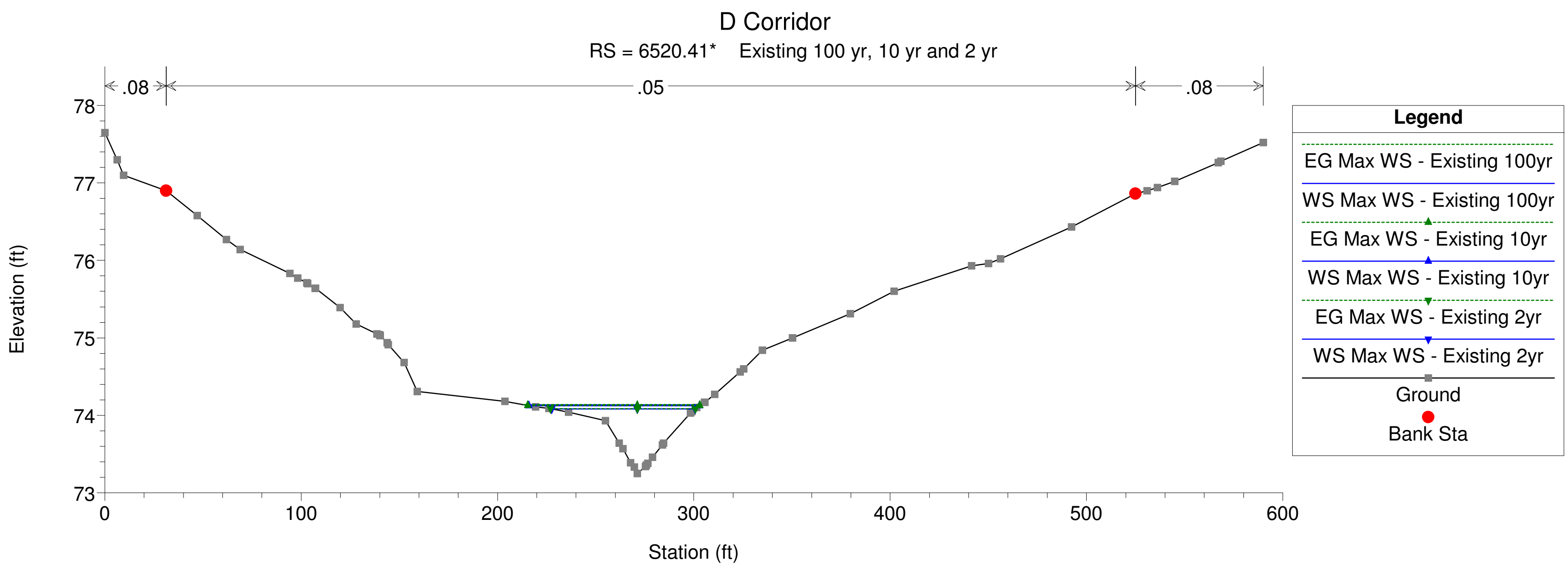
D Corridor
RS = 6670.417 Existing 100 yr, 10 yr and 2 yr
.05
.08
.08
Elevation (ft)
Station (ft)
Legend
EG Max WS - Existing 100yr
EG Max WS - Existing 10yr
EG Max WS - Existing 2yr
WS Max WS - Existing 100yr
WS Max WS - Existing 2yr
WS Max WS - Existing 10yr
Ground
Bank Sta



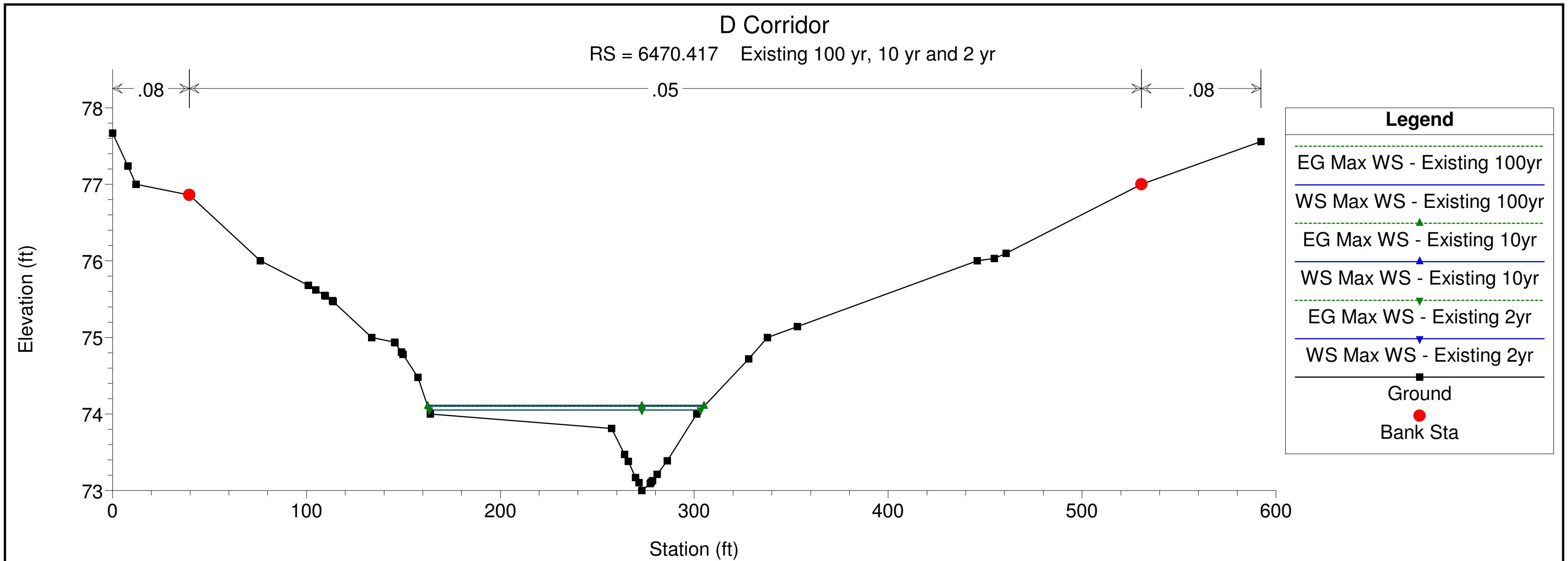
D Corridor
RS = 6620.41* Existing 100 yr, 10 yr and 2 yr
.05
.08
.08
Elevation (ft)
Station (ft)
Legend
EG Max WS - Existing 100yr
WS Max WS - Existing 100yr
EG Max WS - Existing 10yr
EG Max WS - Existing 2yr
WS Max WS - Existing 10yr
WS Max WS - Existing 2yr
Ground
Bank Sta

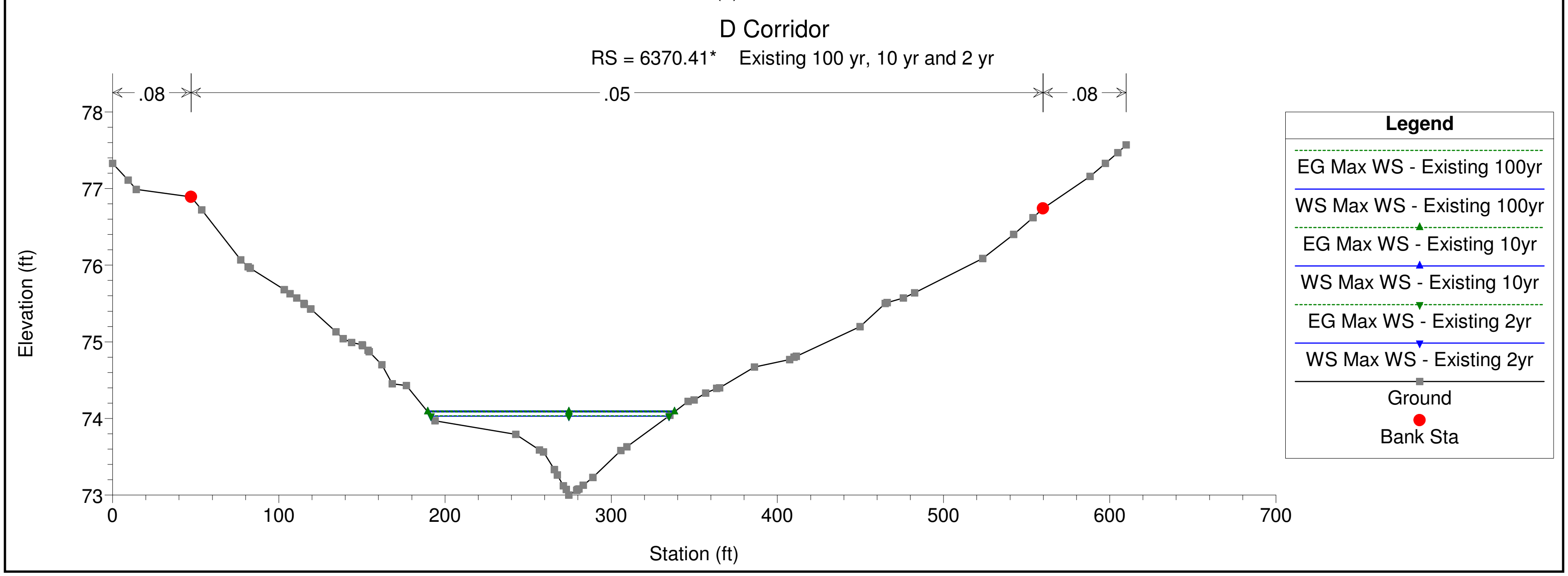


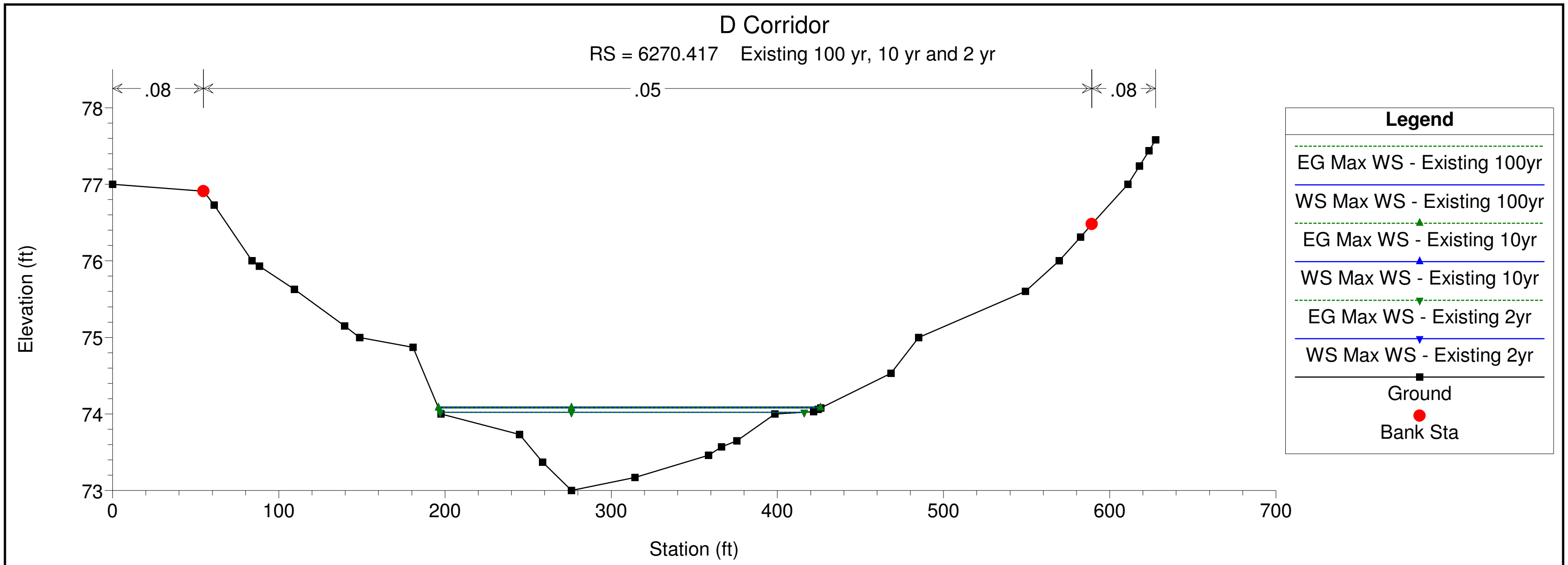
D Corridor
RS = 6570.41* Existing 100 yr, 10 yr and 2 yr
.08
.05
.08
Elevation (ft)
Station (ft)
73
74
75
76
77
78
0
100
200
300
400
500
600
Legend
EG Max WS - Existing 100yr
WS Max WS - Existing 100yr
EG Max WS - Existing 10yr
WS Max WS - Existing 10yr
EG Max WS - Existing 2yr
WS Max WS - Existing 2yr
Ground
Bank Sta

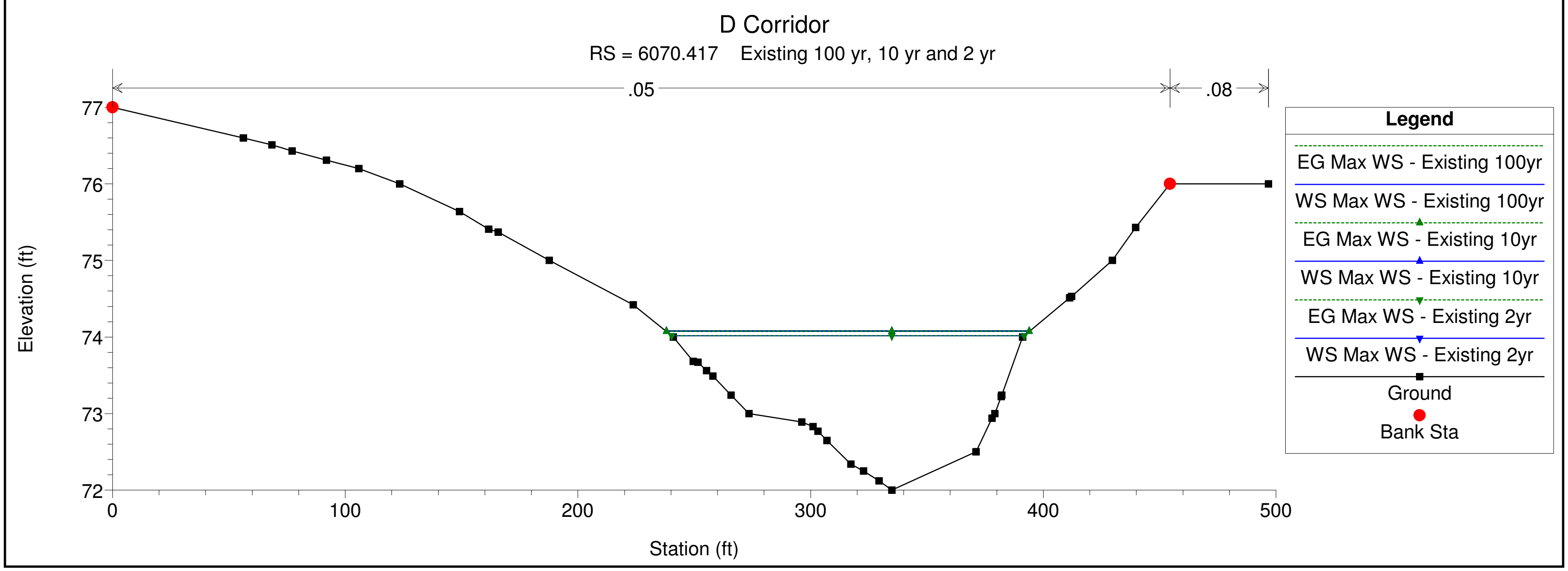


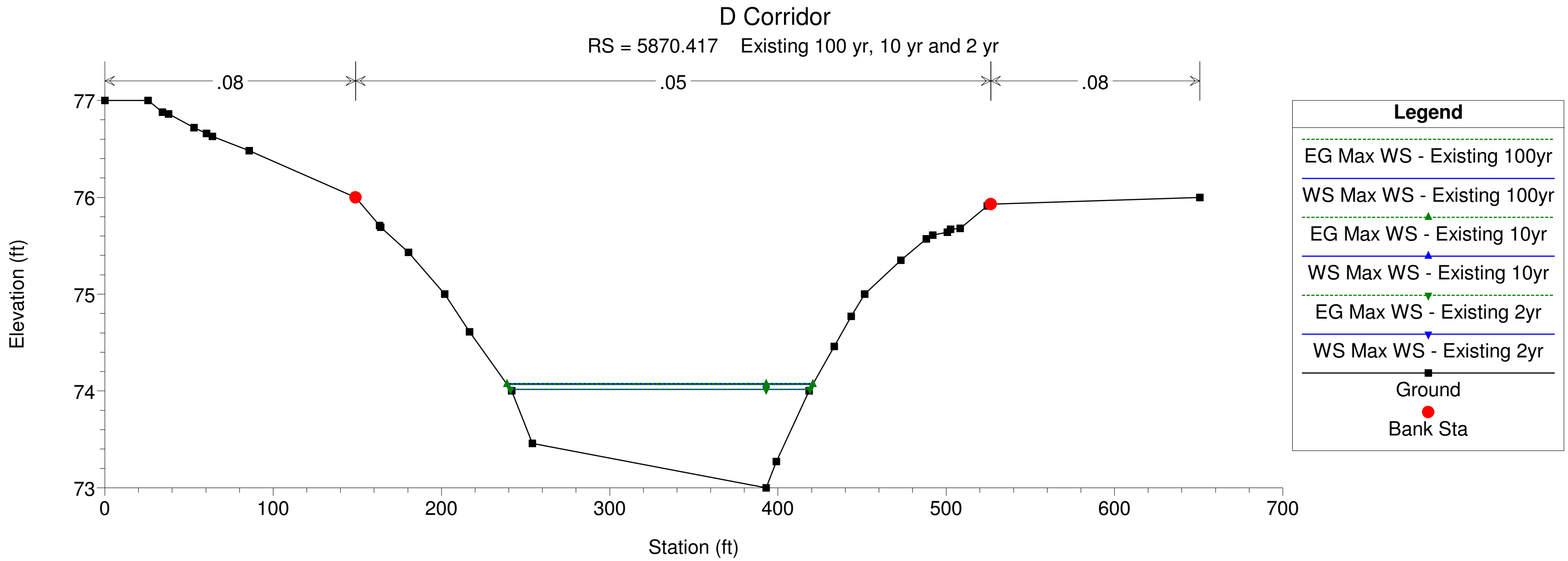
D Corridor
RS = 6520.41* Existing 100 yr, 10 yr and 2 yr
.08
.05
.08
Elevation (ft)
Station (ft)
73
74
75
76
77
78
0
100
200
300
400
500
600
Legend
EG Max WS - Existing 100yr
WS Max WS - Existing 100yr
EG Max WS - Existing 10yr
WS Max WS - Existing 10yr
EG Max WS - Existing 2yr
WS Max WS - Existing 2yr
Ground
Bank Sta

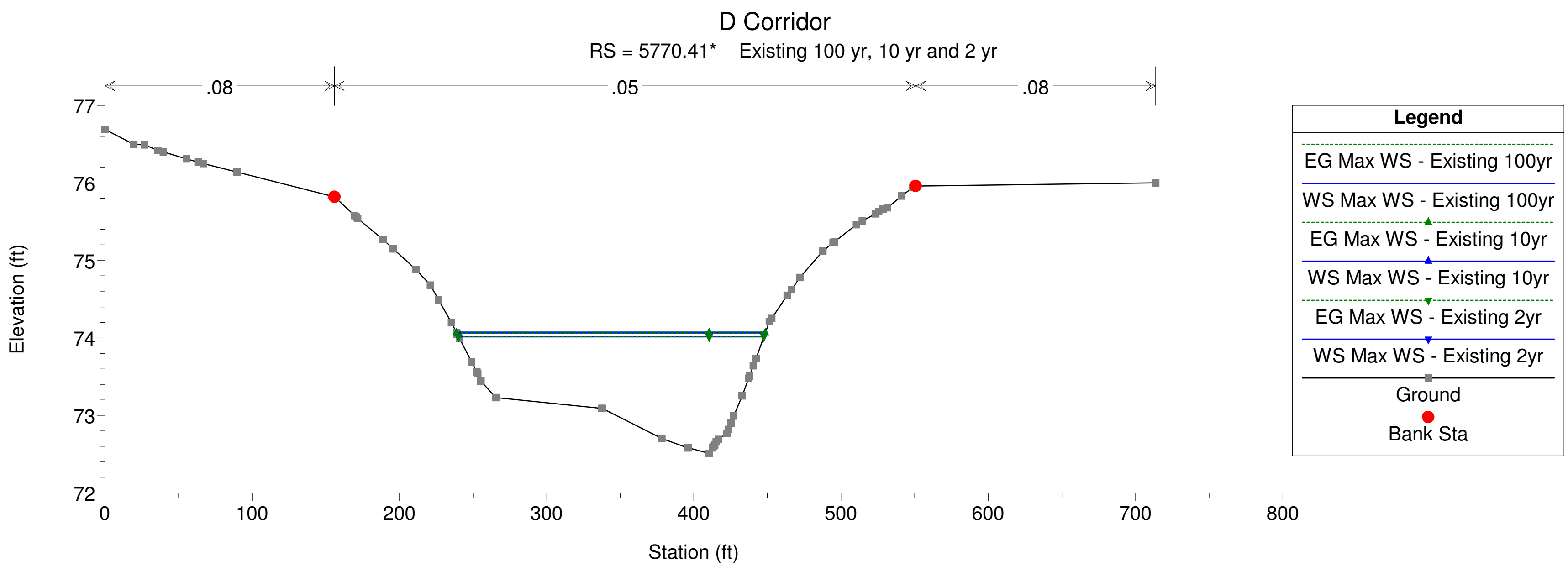

D Corridor
RS = 6470.417 Existing 100 yr, 10 yr and 2 yr
.08
.05
.08
Elevation (ft)
Station (ft)
78
77
76
75
74
73
0
100
200
300
400
500
600
Legend
EG Max WS - Existing 100yr
WS Max WS - Existing 100yr
EG Max WS - Existing 10yr
WS Max WS - Existing 10yr
EG Max WS - Existing 2yr
WS Max WS - Existing 2yr
Ground
Bank Sta

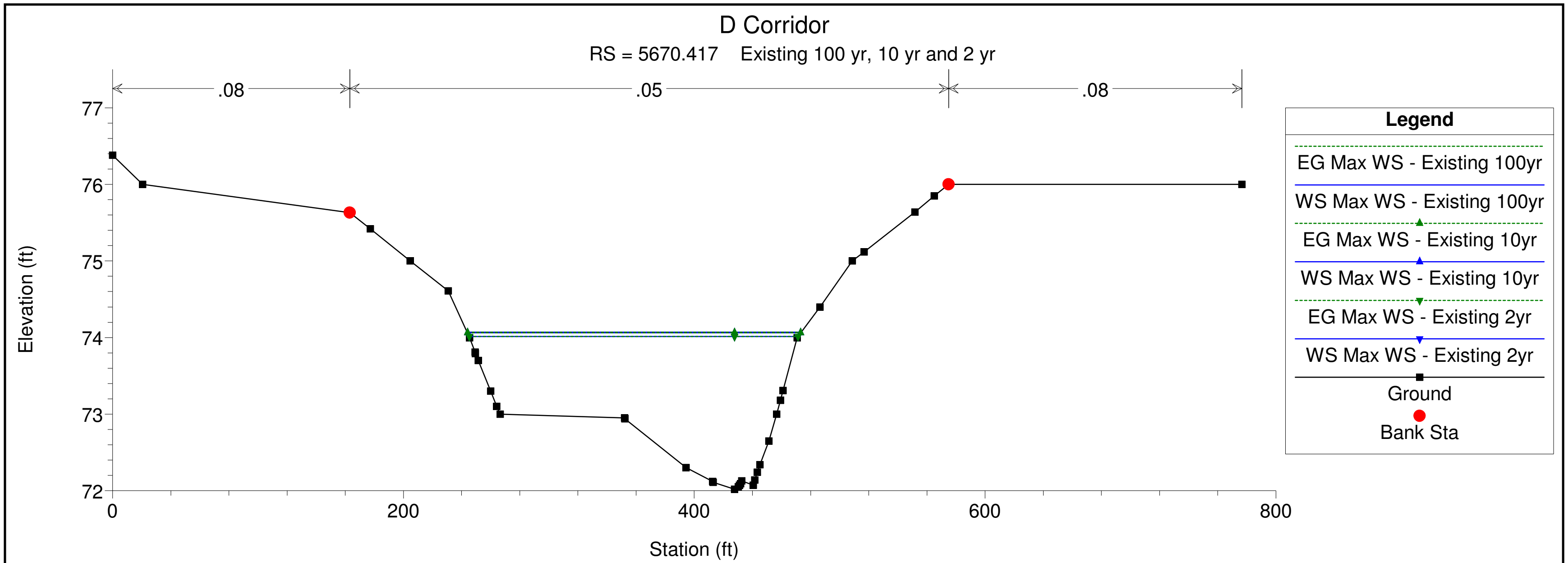

D Corridor
RS = 6370.41* Existing 100 yr, 10 yr and 2 yr
.08
.05
.08
Elevation (ft)
Station (ft)
78
77
76
75
74
73
0
100
200
300
400
500
600
700
Legend
EG Max WS - Existing 100yr
WS Max WS - Existing 100yr
EG Max WS - Existing 10yr
WS Max WS - Existing 10yr
EG Max WS - Existing 2yr
WS Max WS - Existing 2yr
Ground
Bank Sta

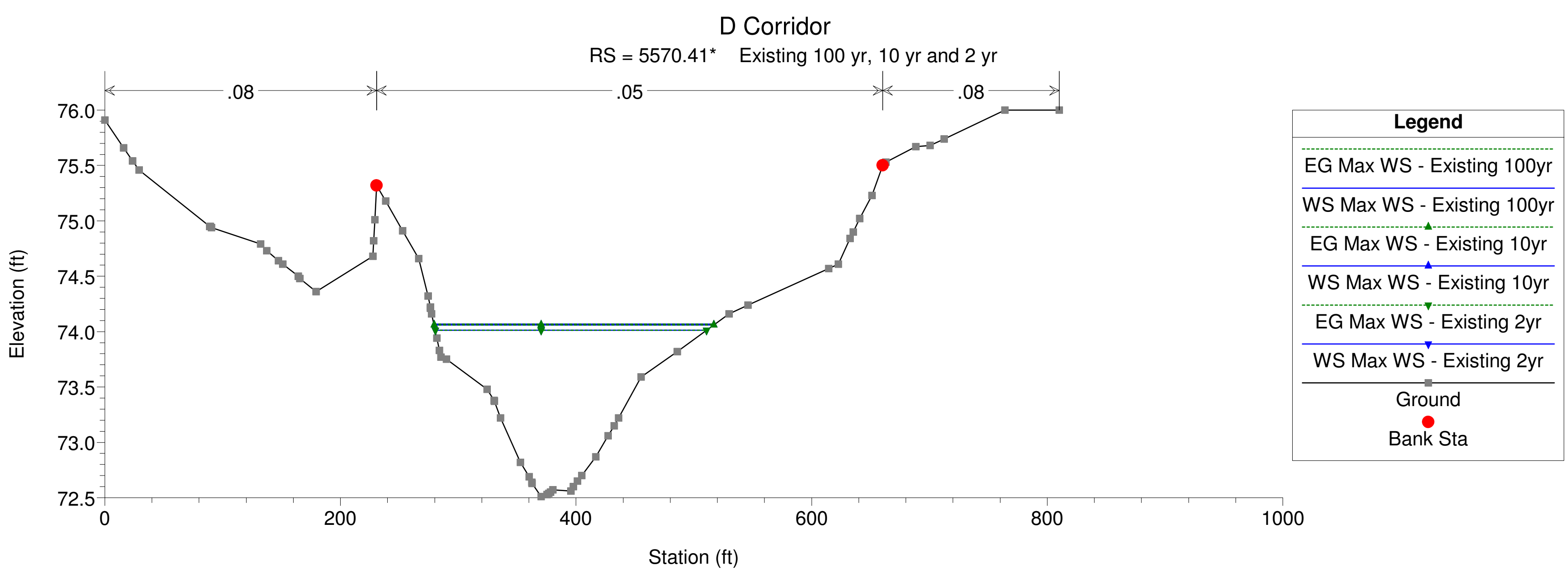

D Corridor
RS = 6270.417 Existing 100 yr, 10 yr and 2 yr
.08
.05
.08
Legend
EG Max WS - Existing 100yr
WS Max WS - Existing 100yr
EG Max WS - Existing 10yr
WS Max WS - Existing 10yr
EG Max WS - Existing 2yr
WS Max WS - Existing 2yr
Ground
Bank Sta
Elevation (ft)
78
77
76
75
74
73
0
100
200
300
400
500
600
700
Station (ft)

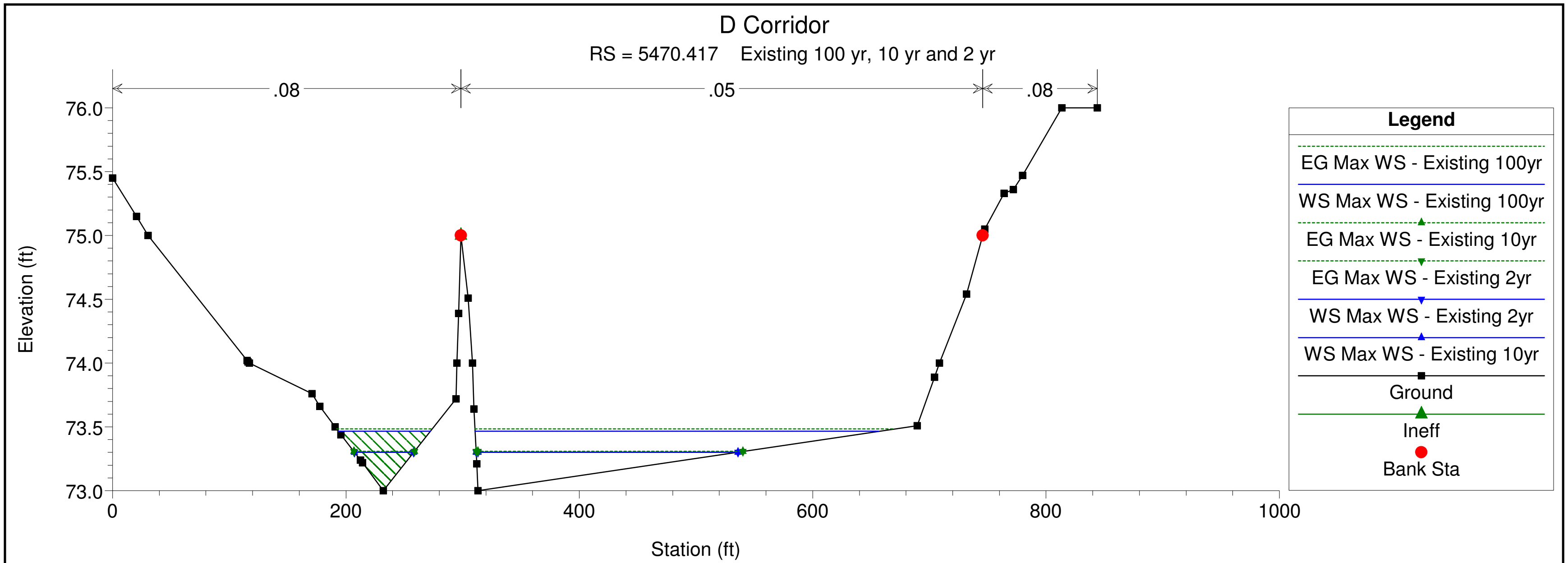

D Corridor
RS = 6070.417 Existing 100 yr, 10 yr and 2 yr
.05
.08
Legend
EG Max WS - Existing 100yr
WS Max WS - Existing 100yr
EG Max WS - Existing 10yr
WS Max WS - Existing 10yr
EG Max WS - Existing 2yr
WS Max WS - Existing 2yr
Ground
Bank Sta
Elevation (ft)
77
76
75
74
73
72
0
100
200
300
400
500
Station (ft)

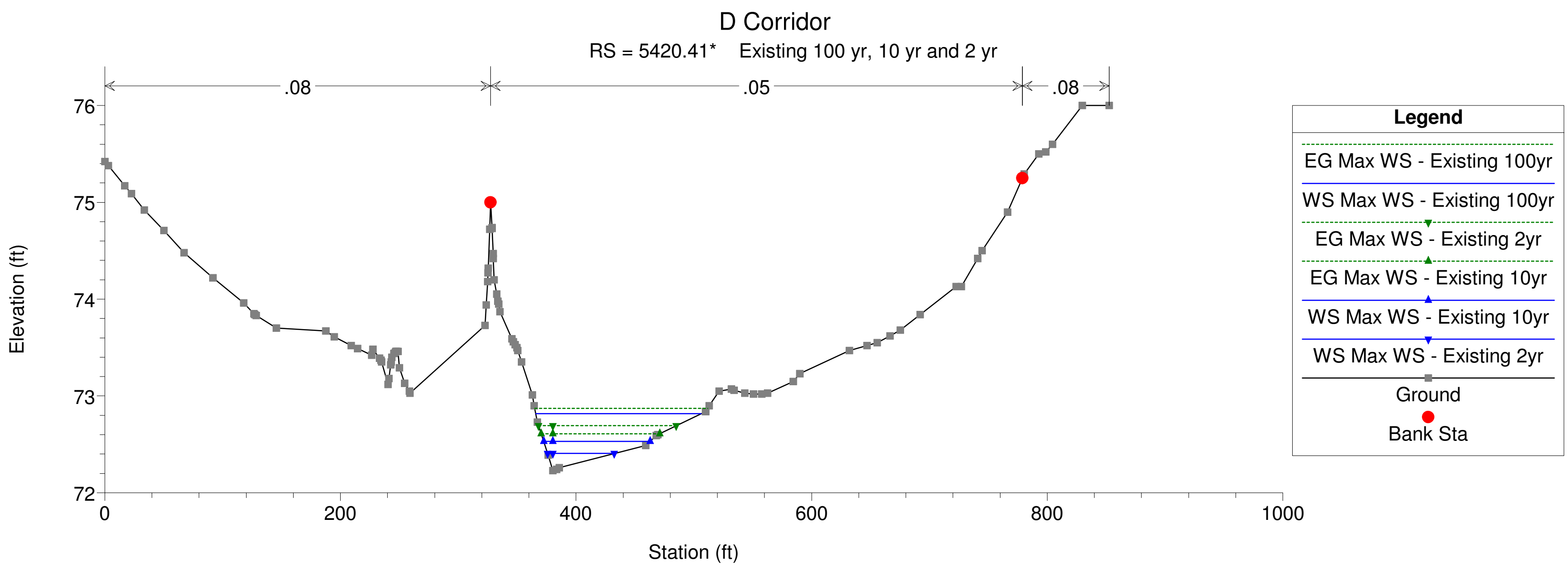

D Corridor
RS = 5870.417 Existing 100 yr, 10 yr and 2 yr
.08
.05
.08
Elevation (ft)
Station (ft)
Legend
EG Max WS - Existing 100yr
WS Max WS - Existing 100yr
EG Max WS - Existing 10yr
WS Max WS - Existing 10yr
EG Max WS - Existing 2yr
WS Max WS - Existing 2yr
Ground
Bank Sta

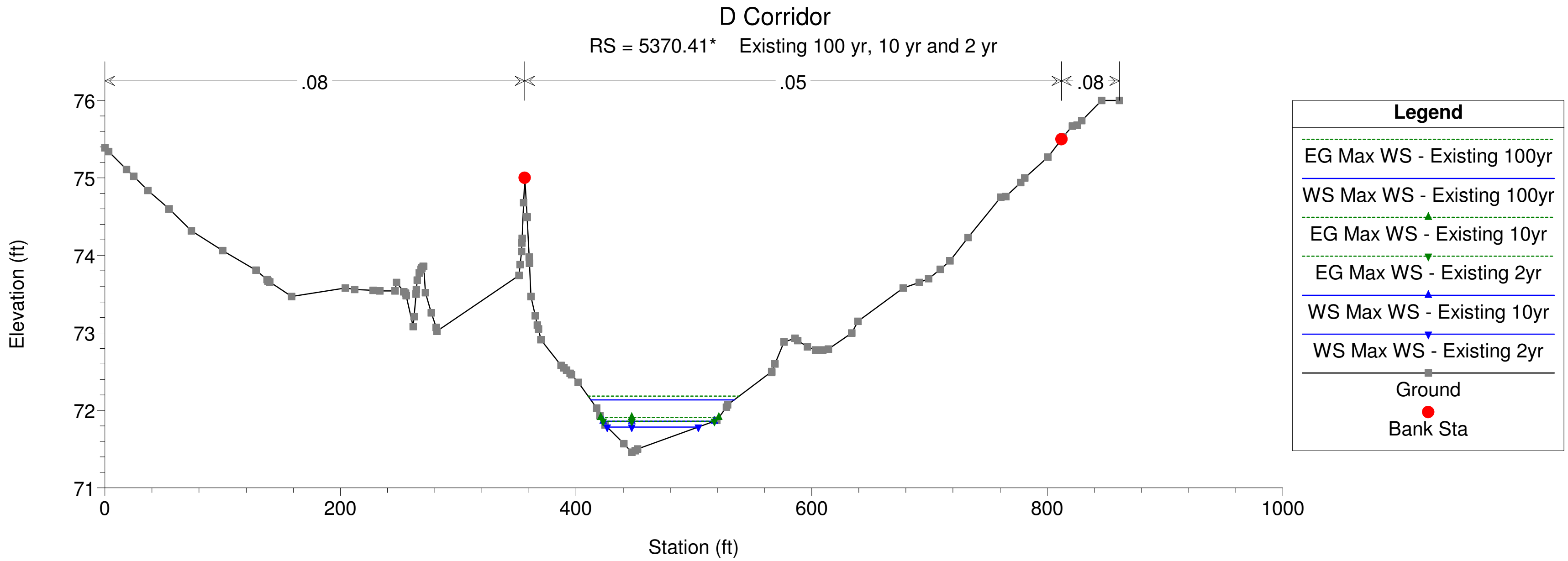

D Corridor
RS = 5770.41* Existing 100 yr, 10 yr and 2 yr
.08
.05
.08
Elevation (ft)
Station (ft)
Legend
EG Max WS - Existing 100yr
WS Max WS - Existing 100yr
EG Max WS - Existing 10yr
WS Max WS - Existing 10yr
EG Max WS - Existing 2yr
WS Max WS - Existing 2yr
Ground
Bank Sta


D Corridor
RS = 5670.417 Existing 100 yr, 10 yr and 2 yr
.08
.05
.08
Elevation (ft)
77
76
75
74
73
72
0
200
400
600
800
Station (ft)
Legend
EG Max WS - Existing 100yr
WS Max WS - Existing 100yr
EG Max WS - Existing 10yr
WS Max WS - Existing 10yr
EG Max WS - Existing 2yr
WS Max WS - Existing 2yr
Ground
Bank Sta

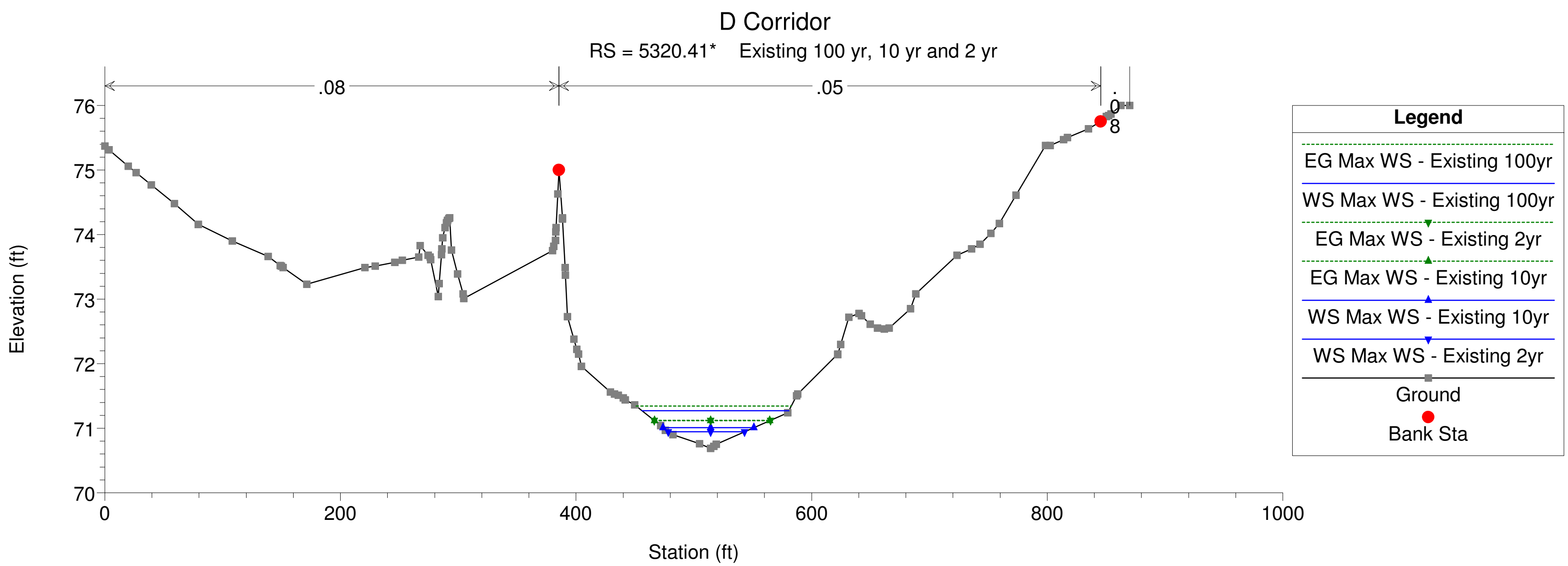

D Corridor
RS = 5570.41* Existing 100 yr, 10 yr and 2 yr
.08
.05
.08
Elevation (ft)
76.0
75.5
75.0
74.5
74.0
73.5
73.0
72.5
0
200
400
600
800
1000
Station (ft)
Legend
EG Max WS - Existing 100yr
WS Max WS - Existing 100yr
EG Max WS - Existing 10yr
WS Max WS - Existing 10yr
EG Max WS - Existing 2yr
WS Max WS - Existing 2yr
Ground
Bank Sta


D Corridor
RS = 5470.417 Existing 100 yr, 10 yr and 2 yr
.08
.05
.08
Elevation (ft)
76.0
75.5
75.0
74.5
74.0
73.5
73.0
0
200
400
600
800
1000
Station (ft)
Legend
EG Max WS - Existing 100yr
WS Max WS - Existing 100yr
EG Max WS - Existing 10yr
EG Max WS - Existing 2yr
WS Max WS - Existing 2yr
WS Max WS - Existing 10yr
Ground
Ineff
Bank Sta

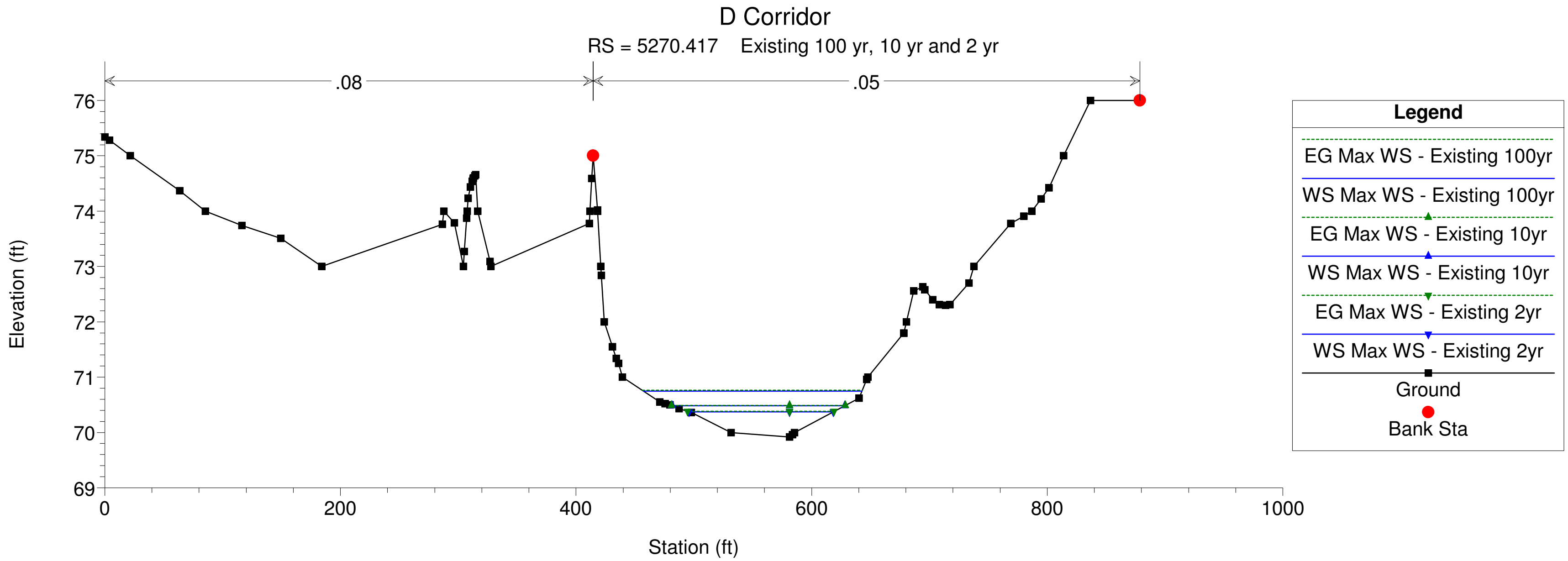

D Corridor
RS = 5420.41* Existing 100 yr, 10 yr and 2 yr
.08
.05
.08
Elevation (ft)
76
75
74
73
72
0
200
400
600
800
1000
Station (ft)
Legend
EG Max WS - Existing 100yr
WS Max WS - Existing 100yr
EG Max WS - Existing 2yr
EG Max WS - Existing 10yr
WS Max WS - Existing 10yr
WS Max WS - Existing 2yr
Ground
Bank Sta

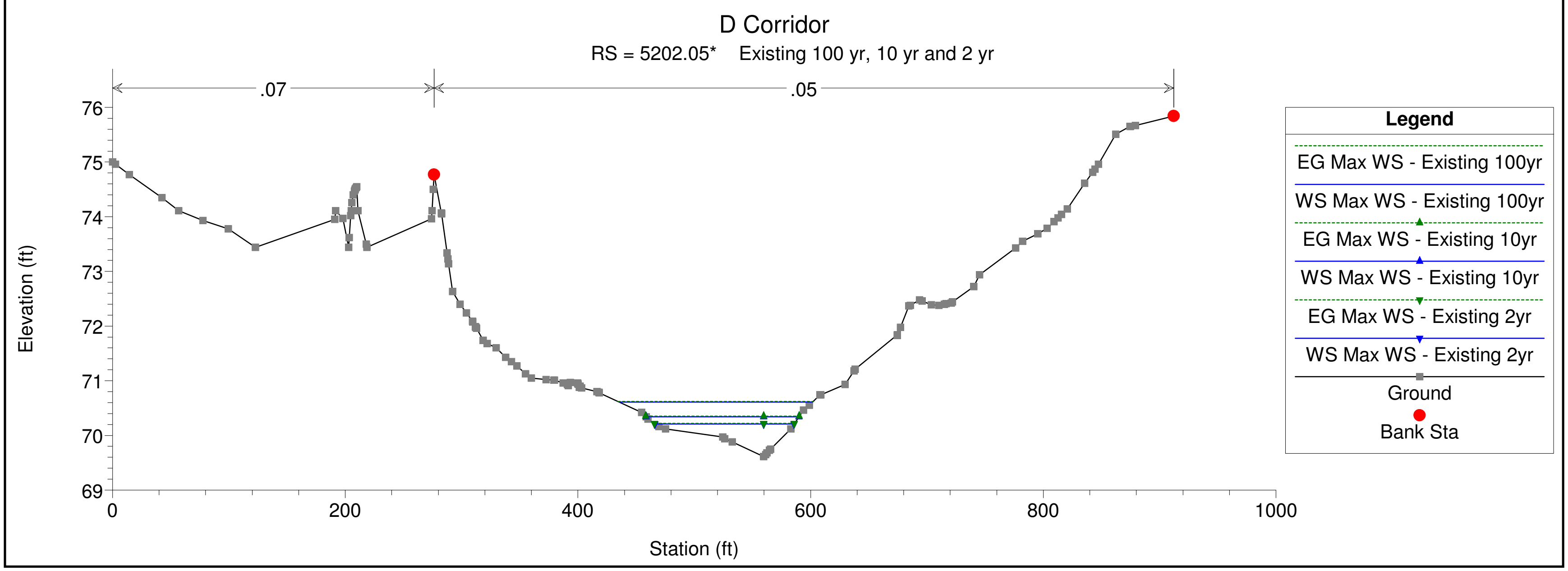


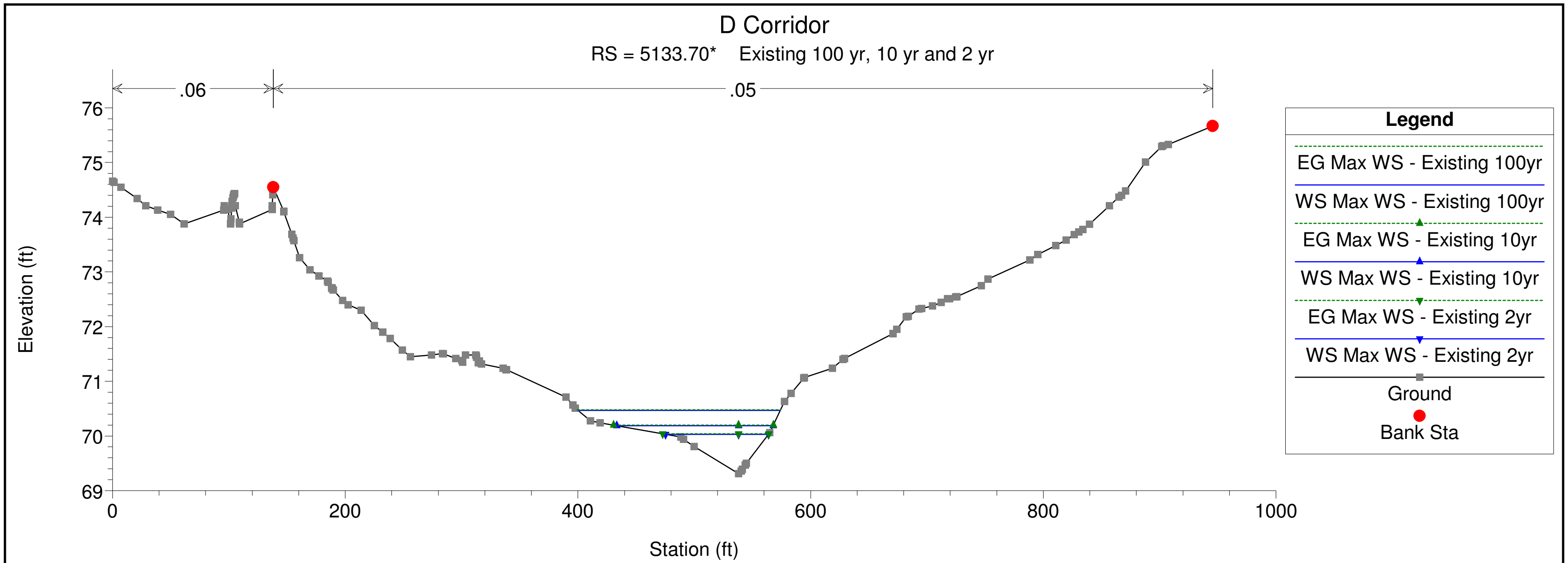
D Corridor
RS = 5370.41* Existing 100 yr, 10 yr and 2 yr
.08
.05
.08
Elevation (ft)
76
75
74
73
72
71
0
200
400
600
800
1000
Station (ft)
Legend
EG Max WS - Existing 100yr
WS Max WS - Existing 100yr
EG Max WS - Existing 10yr
EG Max WS - Existing 2yr
WS Max WS - Existing 10yr
WS Max WS - Existing 2yr
Ground
Bank Sta



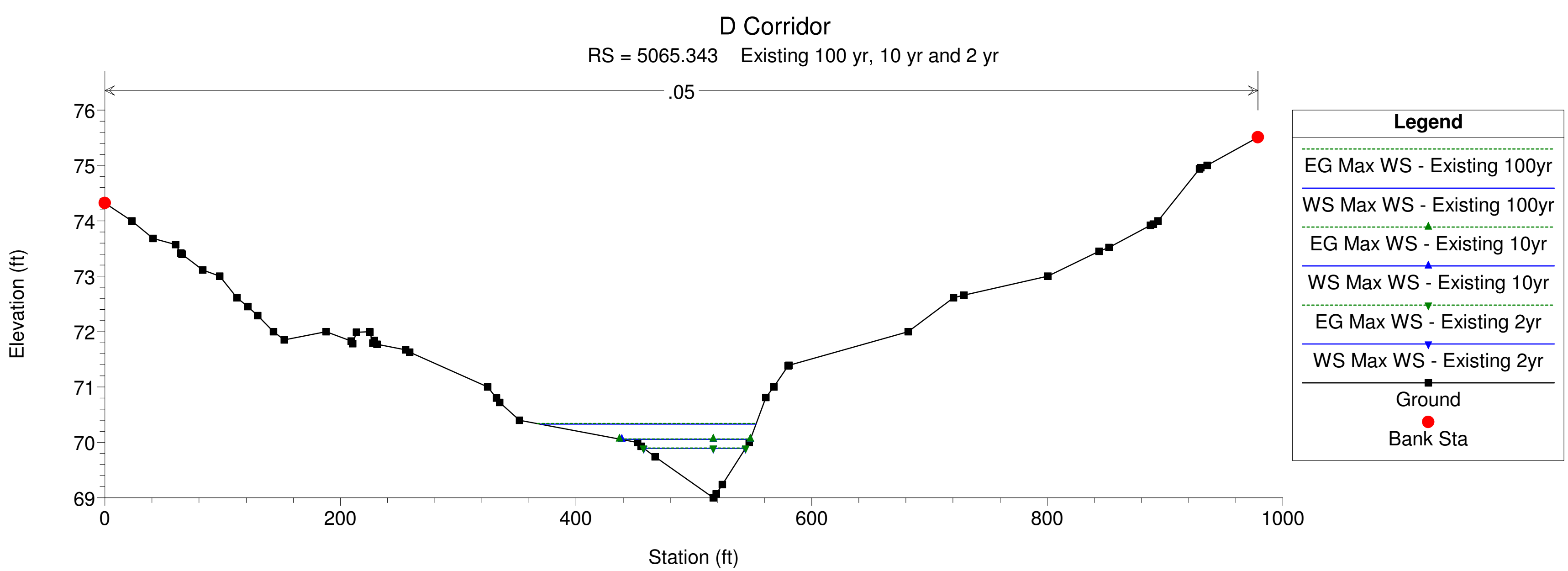
D Corridor
RS = 5320.41* Existing 100 yr, 10 yr and 2 yr
.08
.05
.0
8
Elevation (ft)
76
75
74
73
72
71
70
0
200
400
600
800
1000
Station (ft)
Legend
EG Max WS - Existing 100yr
WS Max WS - Existing 100yr
EG Max WS - Existing 2yr
EG Max WS - Existing 10yr
WS Max WS - Existing 10yr
WS Max WS - Existing 2yr
Ground
Bank Sta


D Corridor
RS = 5270.417   Existing 100 yr, 10 yr and 2 yr
.08
.05
Elevation (ft)
Station (ft)
69
70
71
72
73
74
75
76
0
200
400
600
800
1000
Legend
EG Max WS - Existing 100yr
WS Max WS - Existing 100yr
EG Max WS - Existing 10yr
WS Max WS - Existing 10yr
EG Max WS - Existing 2yr
WS Max WS - Existing 2yr
Ground
Bank Sta

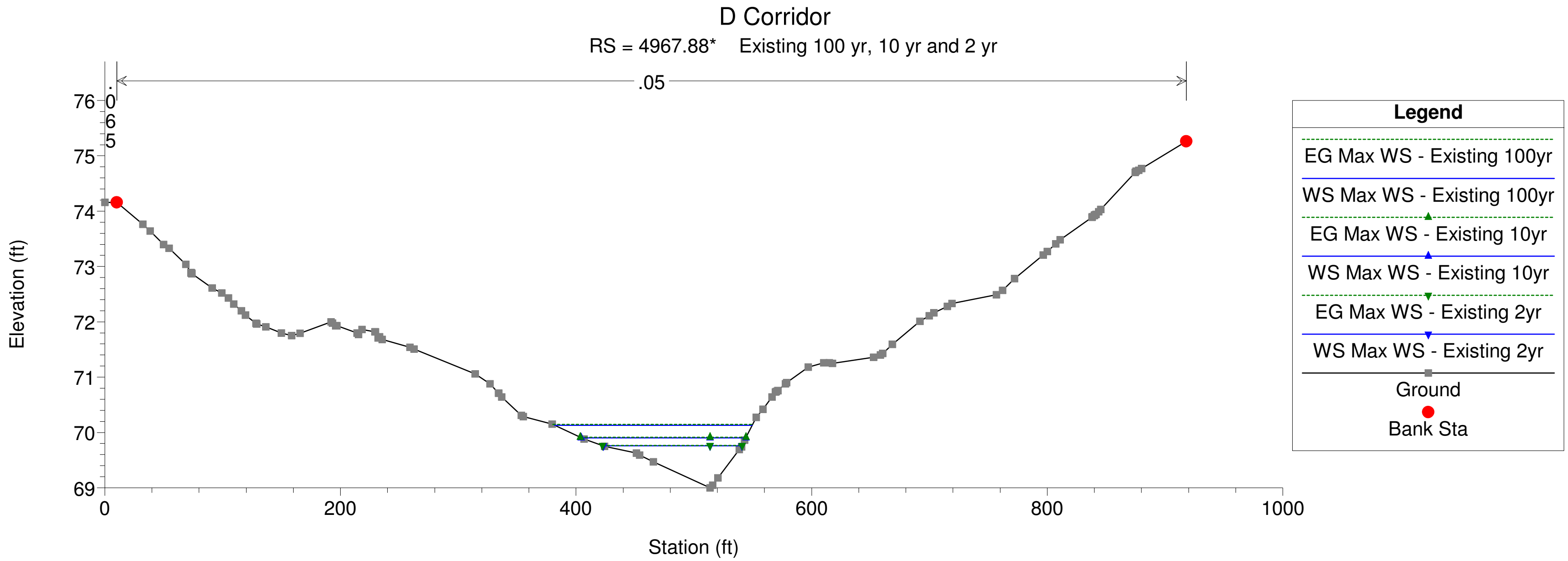

D Corridor
RS = 5202.05*   Existing 100 yr, 10 yr and 2 yr
.07
.05
Elevation (ft)
Station (ft)
69
70
71
72
73
74
75
76
0
200
400
600
800
1000
Legend
EG Max WS - Existing 100yr
WS Max WS - Existing 100yr
EG Max WS - Existing 10yr
WS Max WS - Existing 10yr
EG Max WS - Existing 2yr
WS Max WS - Existing 2yr
Ground
Bank Sta

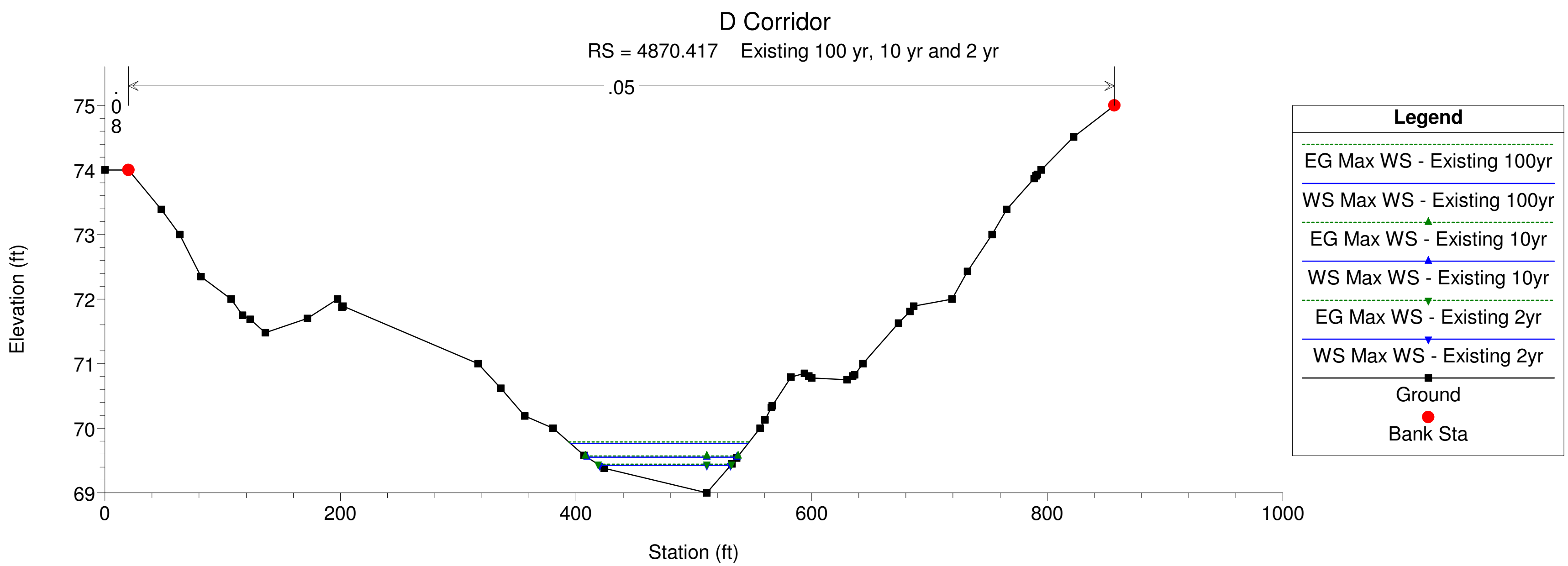


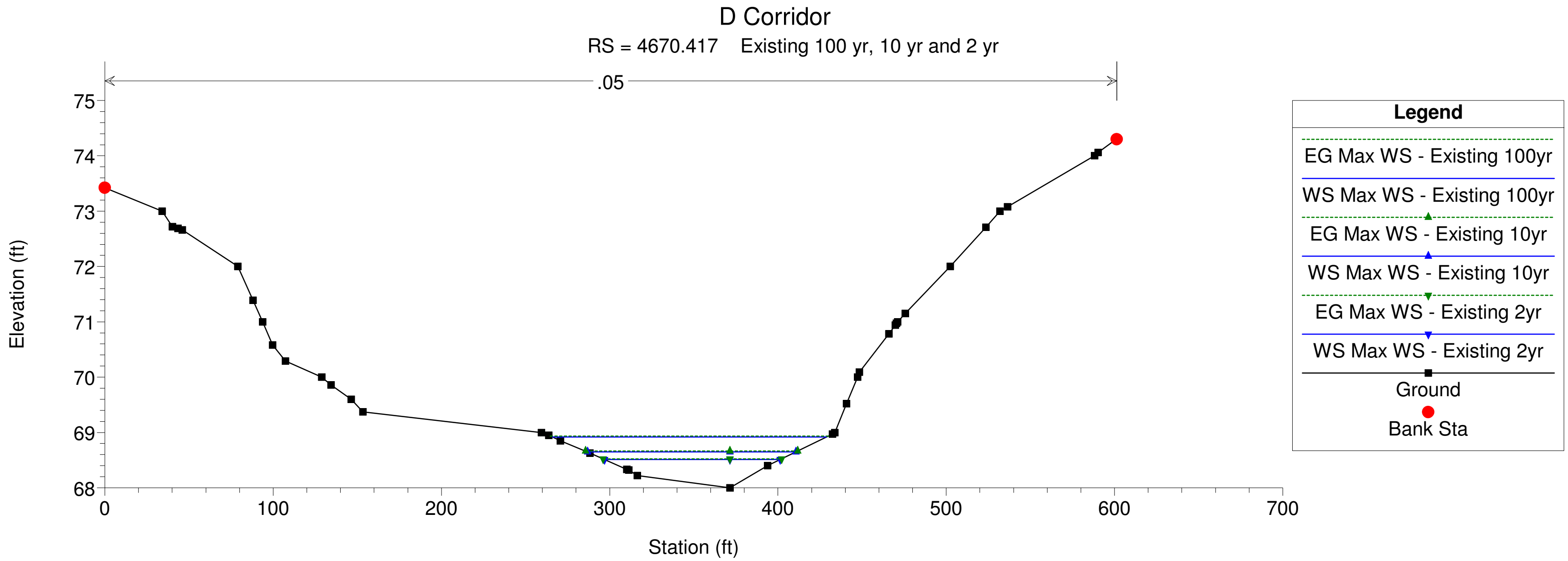
D Corridor
RS = 5133.70* Existing 100 yr, 10 yr and 2 yr
.06
.05
Elevation (ft)
Station (ft)
Legend
EG Max WS - Existing 100yr
WS Max WS - Existing 100yr
EG Max WS - Existing 10yr
WS Max WS - Existing 10yr
EG Max WS - Existing 2yr
WS Max WS - Existing 2yr
Ground
Bank Sta

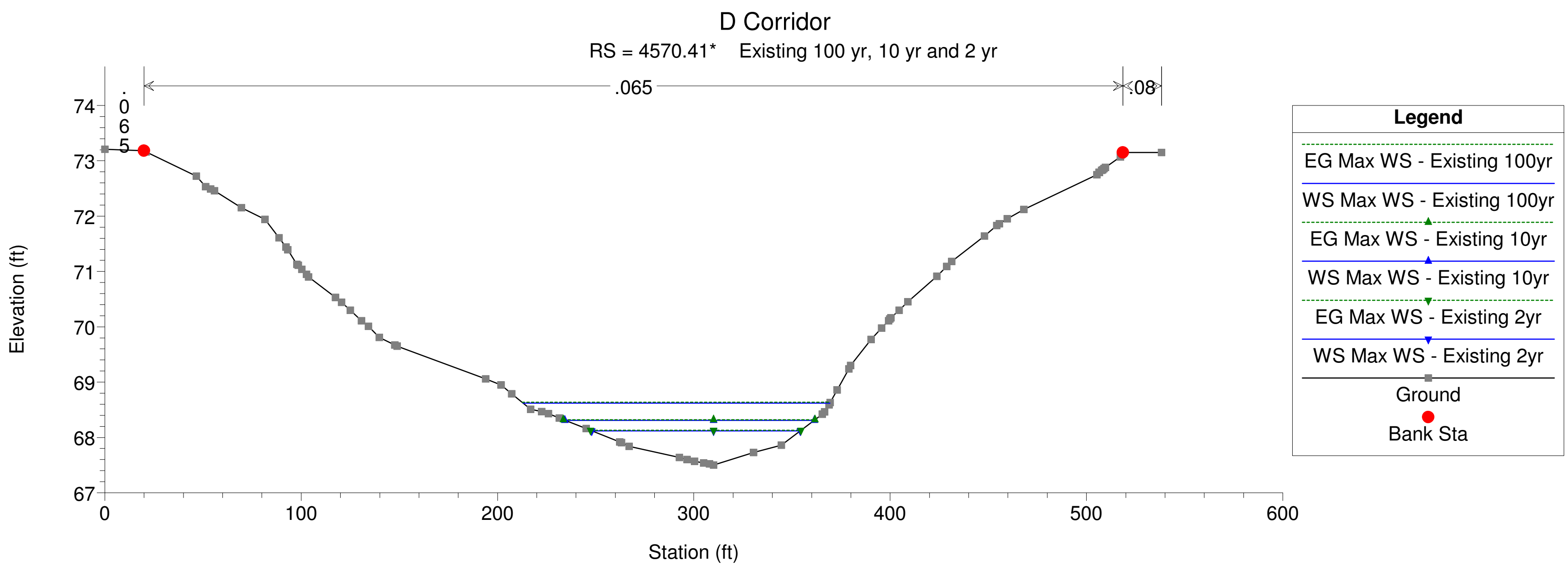


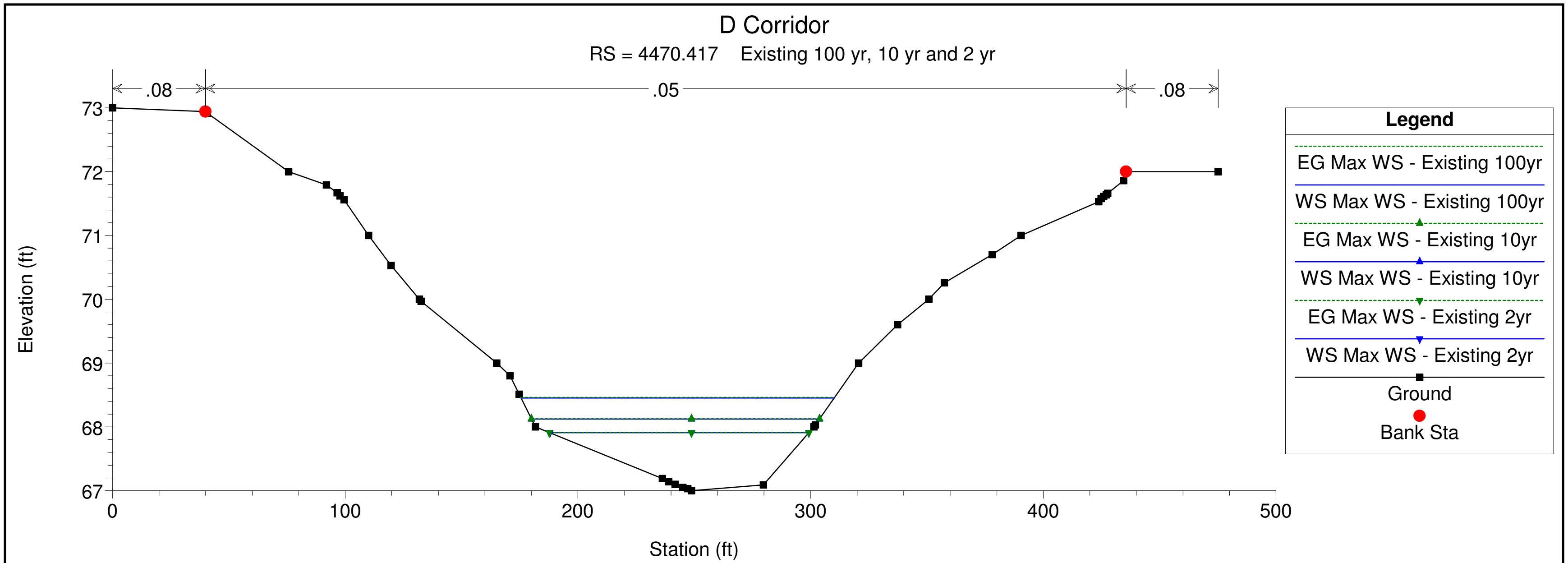
D Corridor
RS = 5065.343 Existing 100 yr, 10 yr and 2 yr
.05
Elevation (ft)
Station (ft)
Legend
EG Max WS - Existing 100yr
WS Max WS - Existing 100yr
EG Max WS - Existing 10yr
WS Max WS - Existing 10yr
EG Max WS - Existing 2yr
WS Max WS - Existing 2yr
Ground
Bank Sta

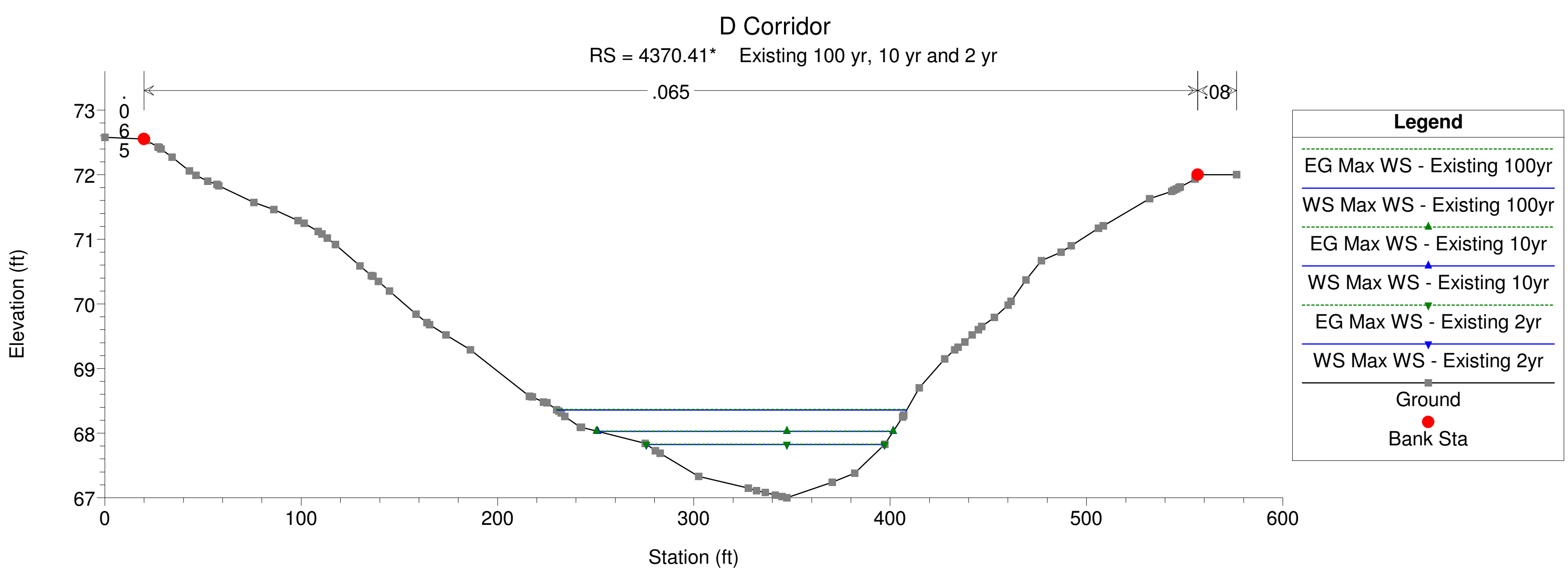

D Corridor
RS = 4967.88* Existing 100 yr, 10 yr and 2 yr
.05
.065
Legend
EG Max WS - Existing 100yr
WS Max WS - Existing 100yr
EG Max WS - Existing 10yr
WS Max WS - Existing 10yr
EG Max WS - Existing 2yr
WS Max WS - Existing 2yr
Ground
Bank Sta
Elevation (ft)
Station (ft)
69
70
71
72
73
74
75
76
0
200
400
600
800
1000

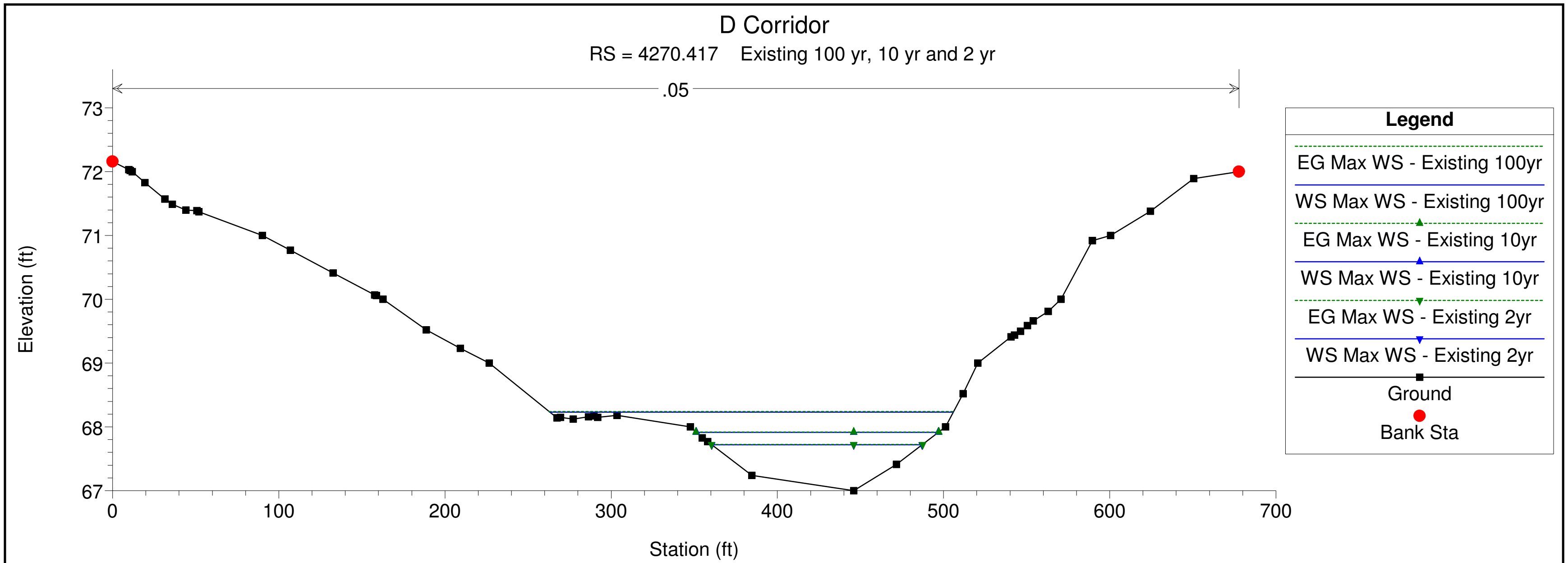

D Corridor
RS = 4870.417 Existing 100 yr, 10 yr and 2 yr
.05
.08
Legend
EG Max WS - Existing 100yr
WS Max WS - Existing 100yr
EG Max WS - Existing 10yr
WS Max WS - Existing 10yr
EG Max WS - Existing 2yr
WS Max WS - Existing 2yr
Ground
Bank Sta
Elevation (ft)
Station (ft)
69
70
71
72
73
74
75
0
200
400
600
800
1000

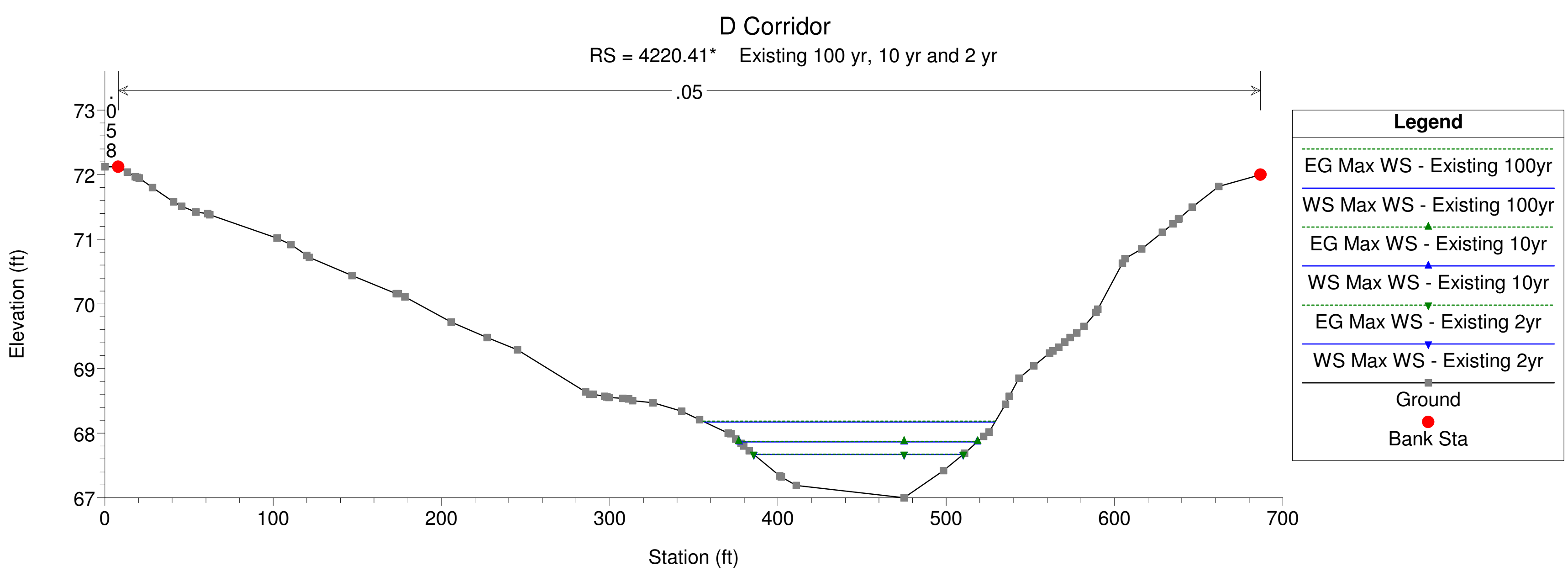

D Corridor
RS = 4670.417 Existing 100 yr, 10 yr and 2 yr
.05
Elevation (ft)
Station (ft)
75
74
73
72
71
70
69
68
0
100
200
300
400
500
600
700
Legend
EG Max WS - Existing 100yr
WS Max WS - Existing 100yr
EG Max WS - Existing 10yr
WS Max WS - Existing 10yr
EG Max WS - Existing 2yr
WS Max WS - Existing 2yr
Ground
Bank Sta

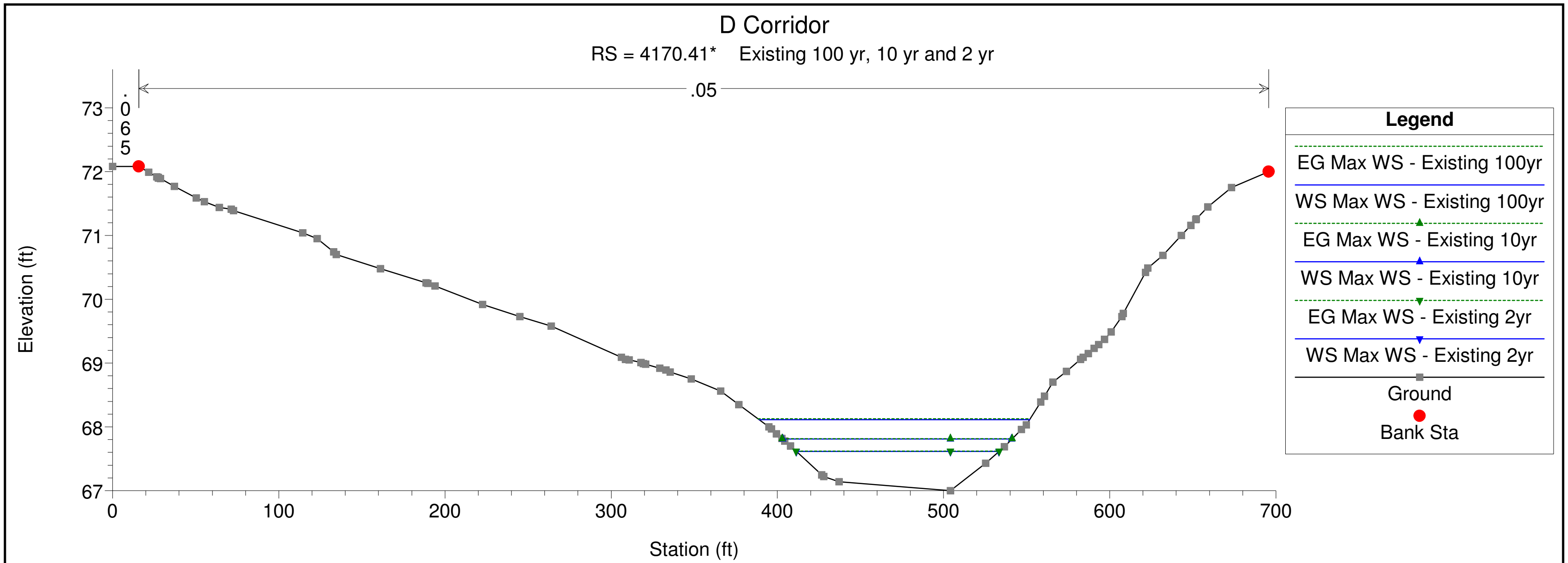

D Corridor
RS = 4570.41* Existing 100 yr, 10 yr and 2 yr
.065
.08
.065
Elevation (ft)
Station (ft)
74
73
72
71
70
69
68
67
0
100
200
300
400
500
600
Legend
EG Max WS - Existing 100yr
WS Max WS - Existing 100yr
EG Max WS - Existing 10yr
WS Max WS - Existing 10yr
EG Max WS - Existing 2yr
WS Max WS - Existing 2yr
Ground
Bank Sta

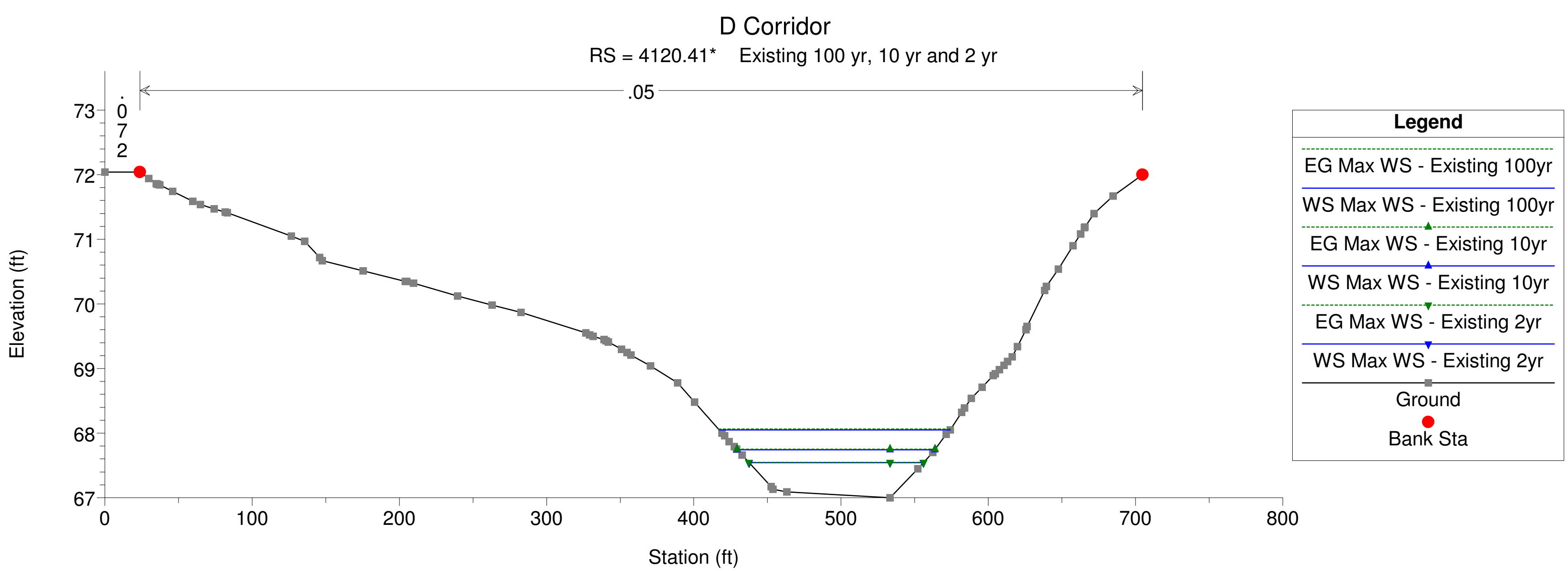

D Corridor
RS = 4470.417 Existing 100 yr, 10 yr and 2 yr
.08
.05
.08
Elevation (ft)
73
72
71
70
69
68
67
0
100
200
300
400
500
Station (ft)
Legend
EG Max WS - Existing 100yr
WS Max WS - Existing 100yr
EG Max WS - Existing 10yr
WS Max WS - Existing 10yr
EG Max WS - Existing 2yr
WS Max WS - Existing 2yr
Ground
Bank Sta

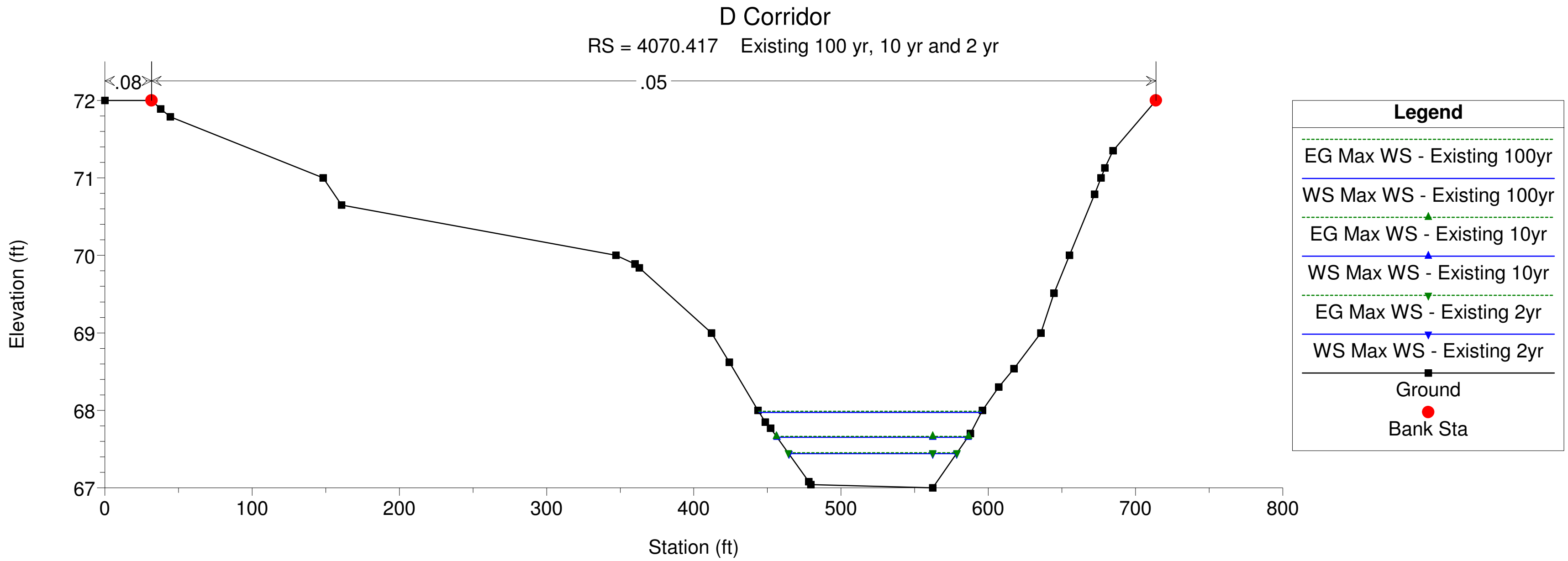

D Corridor
RS = 4370.41* Existing 100 yr, 10 yr and 2 yr
.065
.065
.08
Elevation (ft)
73
72
71
70
69
68
67
0
100
200
300
400
500
600
Station (ft)
Legend
EG Max WS - Existing 100yr
WS Max WS - Existing 100yr
EG Max WS - Existing 10yr
WS Max WS - Existing 10yr
EG Max WS - Existing 2yr
WS Max WS - Existing 2yr
Ground
Bank Sta

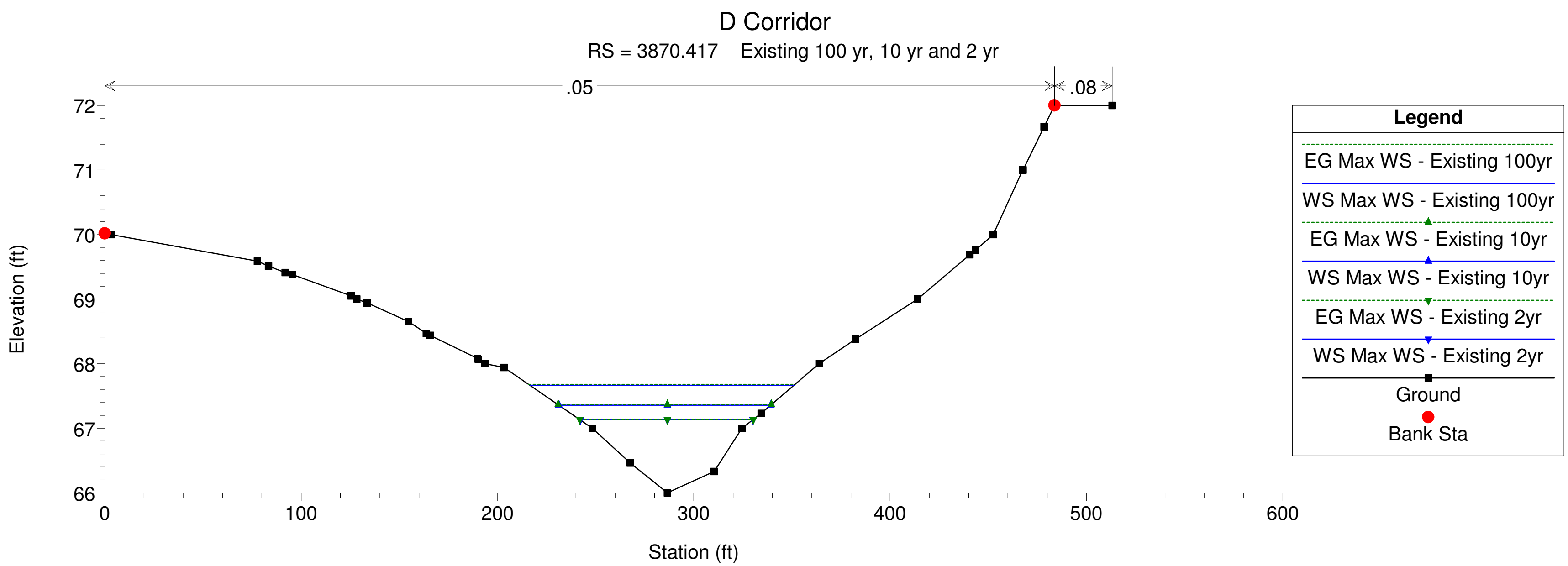

D Corridor
RS = 4270.417 Existing 100 yr, 10 yr and 2 yr
.05
Elevation (ft)
Station (ft)
Legend
EG Max WS - Existing 100yr
WS Max WS - Existing 100yr
EG Max WS - Existing 10yr
WS Max WS - Existing 10yr
EG Max WS - Existing 2yr
WS Max WS - Existing 2yr
Ground
Bank Sta

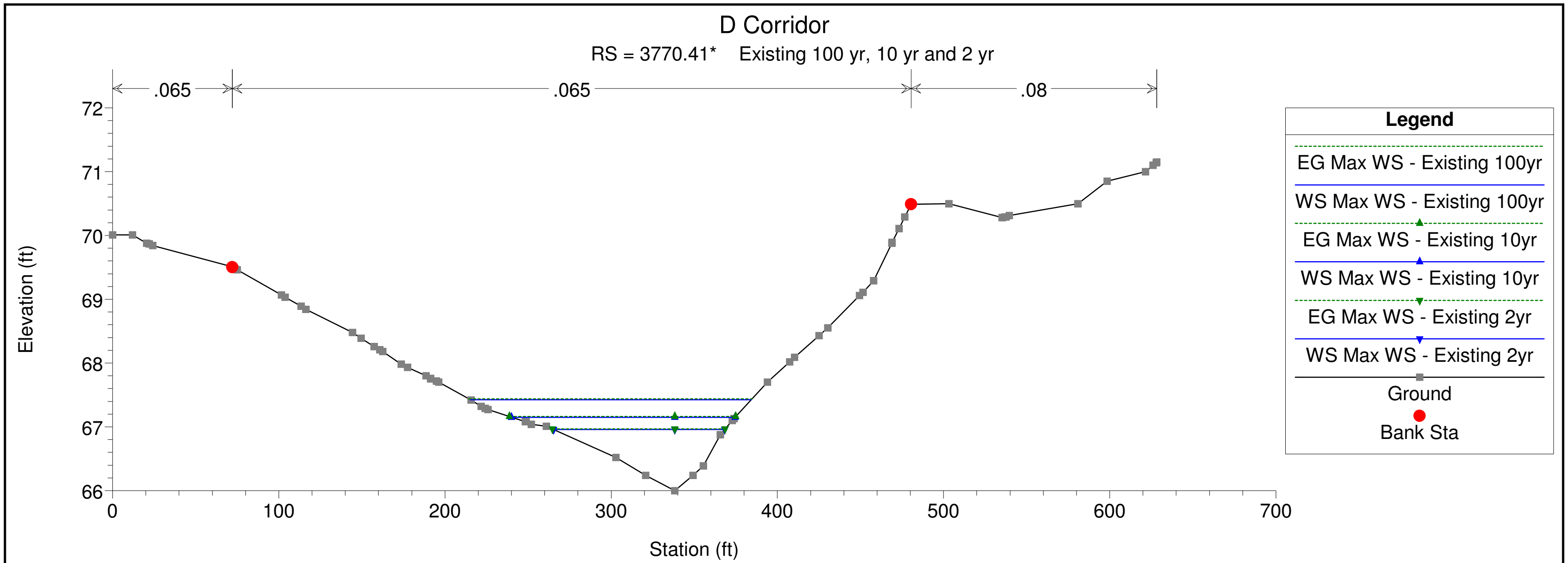

D Corridor
RS = 4220.41* Existing 100 yr, 10 yr and 2 yr
.05
.058
Elevation (ft)
Station (ft)
Legend
EG Max WS - Existing 100yr
WS Max WS - Existing 100yr
EG Max WS - Existing 10yr
WS Max WS - Existing 10yr
EG Max WS - Existing 2yr
WS Max WS - Existing 2yr
Ground
Bank Sta


D Corridor
RS = 4170.41* Existing 100 yr, 10 yr and 2 yr
.05
.065
Elevation (ft)
Station (ft)
73
72
71
70
69
68
67
0
100
200
300
400
500
600
700
Legend
EG Max WS - Existing 100yr
WS Max WS - Existing 100yr
EG Max WS - Existing 10yr
WS Max WS - Existing 10yr
EG Max WS - Existing 2yr
WS Max WS - Existing 2yr
Ground
Bank Sta

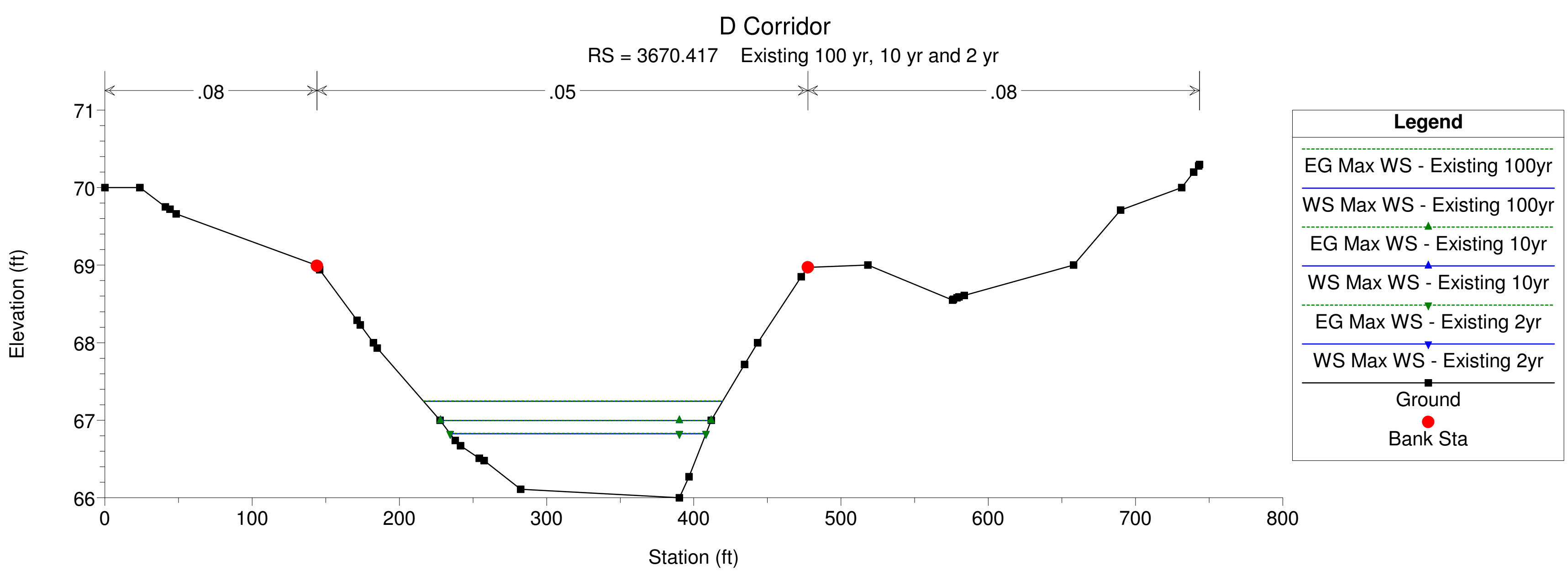

D Corridor
RS = 4120.41* Existing 100 yr, 10 yr and 2 yr
.05
.072
Elevation (ft)
Station (ft)
73
72
71
70
69
68
67
0
100
200
300
400
500
600
700
800
Legend
EG Max WS - Existing 100yr
WS Max WS - Existing 100yr
EG Max WS - Existing 10yr
WS Max WS - Existing 10yr
EG Max WS - Existing 2yr
WS Max WS - Existing 2yr
Ground
Bank Sta


D Corridor
RS = 4070.417 Existing 100 yr, 10 yr and 2 yr
.08
.05
Elevation (ft)
Station (ft)
Legend
EG Max WS - Existing 100yr
WS Max WS - Existing 100yr
EG Max WS - Existing 10yr
WS Max WS - Existing 10yr
EG Max WS - Existing 2yr
WS Max WS - Existing 2yr
Ground
Bank Sta

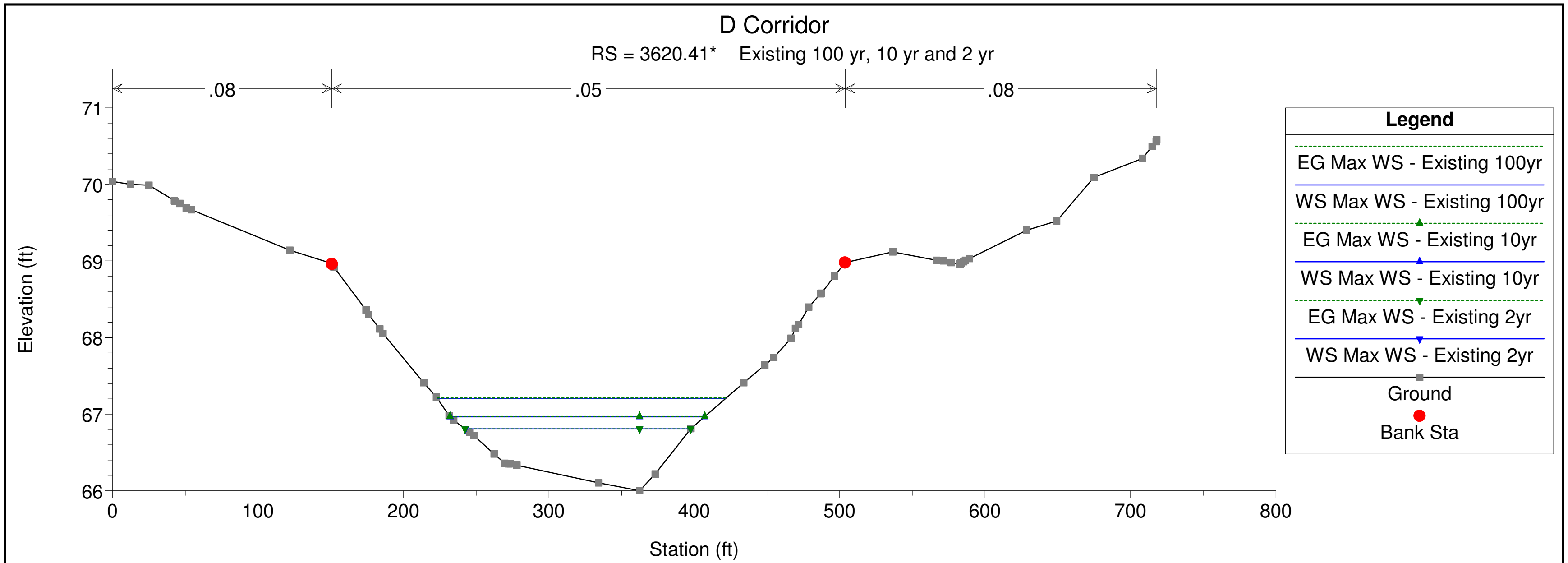

D Corridor
RS = 3870.417 Existing 100 yr, 10 yr and 2 yr
.05
.08
Elevation (ft)
Station (ft)
Legend
EG Max WS - Existing 100yr
WS Max WS - Existing 100yr
EG Max WS - Existing 10yr
WS Max WS - Existing 10yr
EG Max WS - Existing 2yr
WS Max WS - Existing 2yr
Ground
Bank Sta

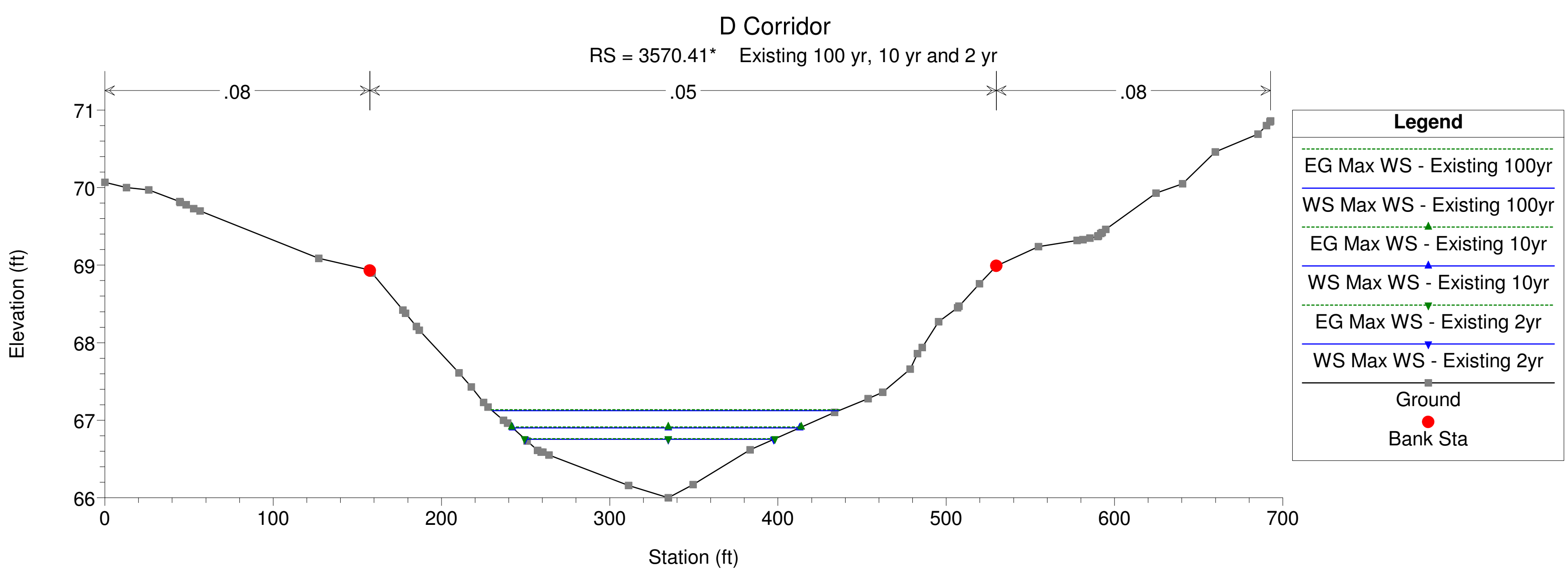


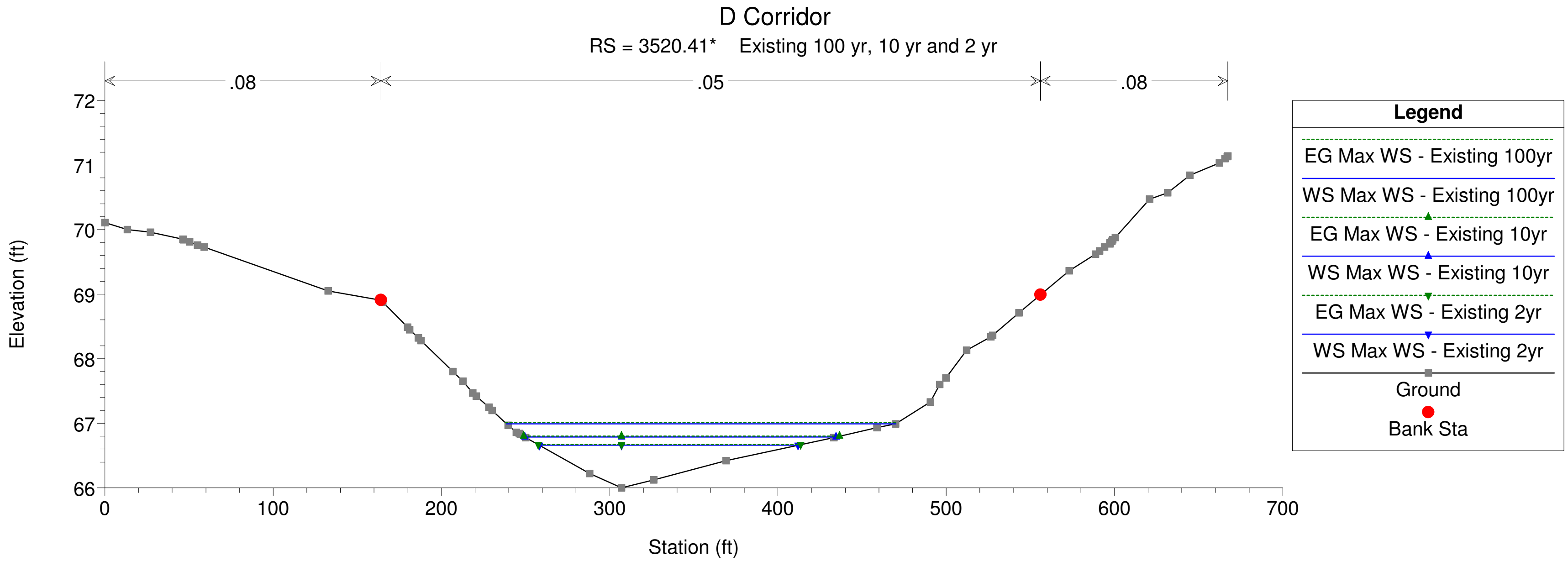
D Corridor
RS = 3770.41* Existing 100 yr, 10 yr and 2 yr
.065
.065
.08
Elevation (ft)
Station (ft)
Legend
EG Max WS - Existing 100yr
WS Max WS - Existing 100yr
EG Max WS - Existing 10yr
WS Max WS - Existing 10yr
EG Max WS - Existing 2yr
WS Max WS - Existing 2yr
Ground
Bank Sta

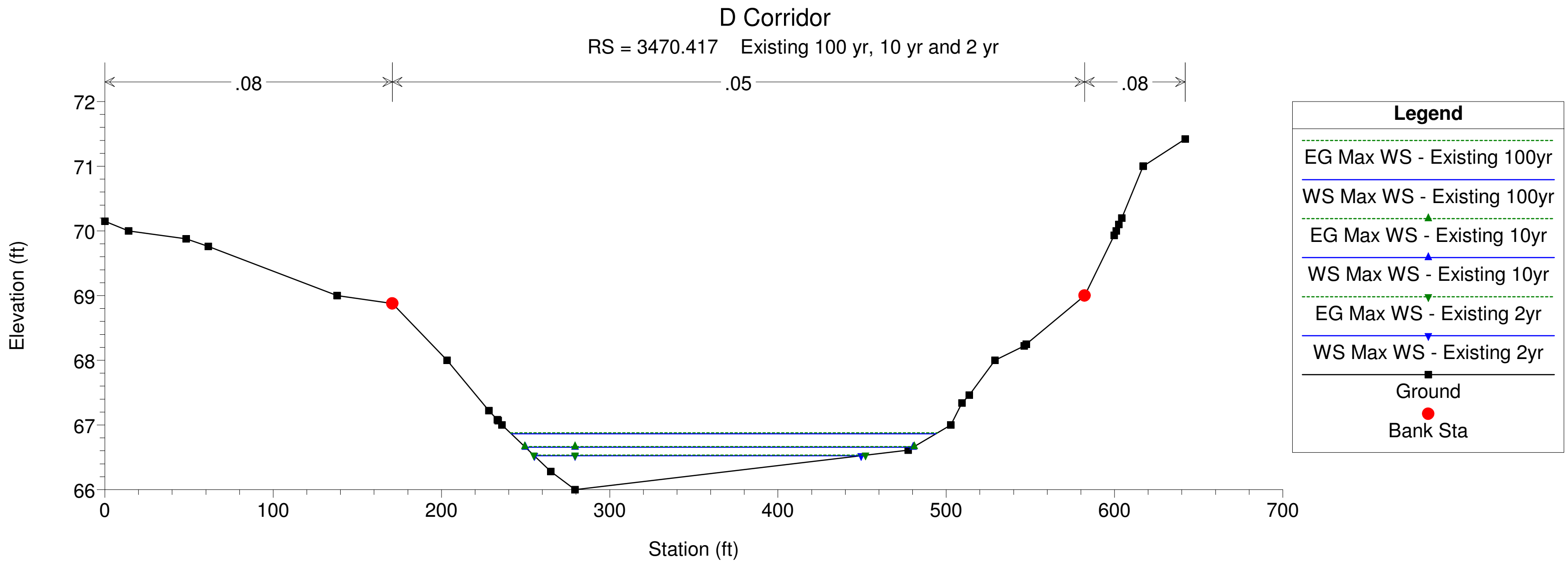


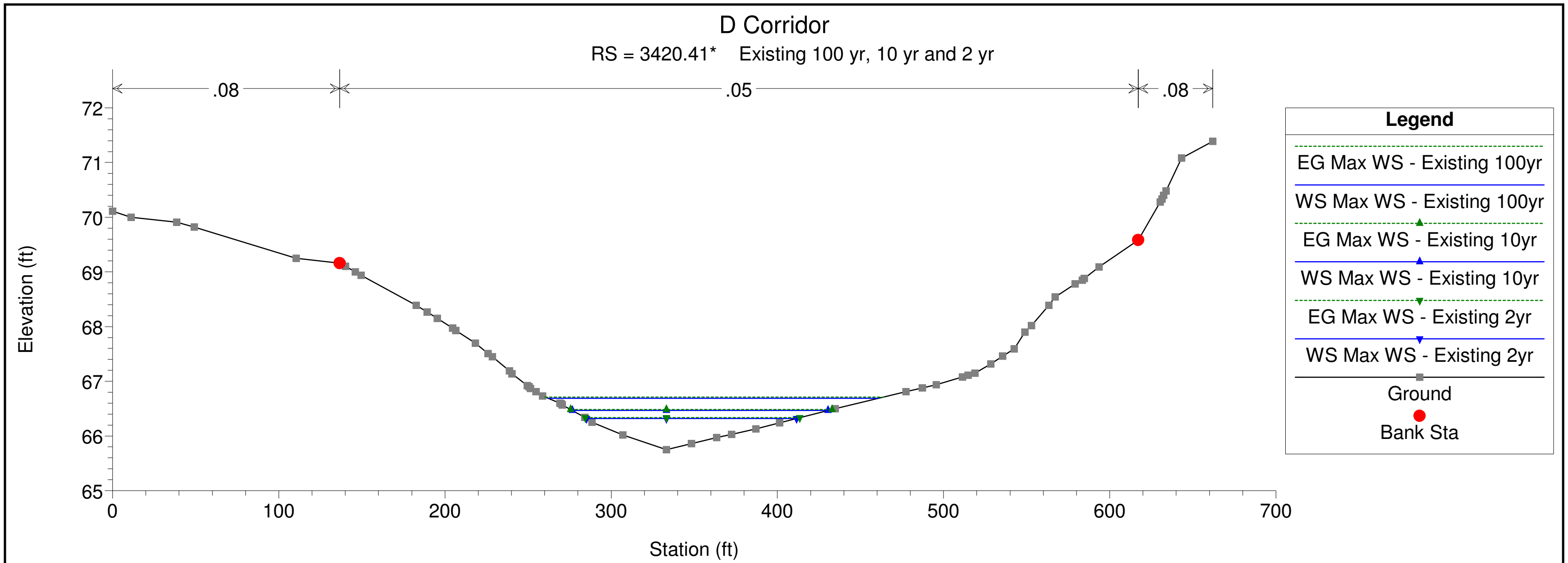
D Corridor
RS = 3670.417 Existing 100 yr, 10 yr and 2 yr
.08
.05
.08
Elevation (ft)
Station (ft)
Legend
EG Max WS - Existing 100yr
WS Max WS - Existing 100yr
EG Max WS - Existing 10yr
WS Max WS - Existing 10yr
EG Max WS - Existing 2yr
WS Max WS - Existing 2yr
Ground
Bank Sta

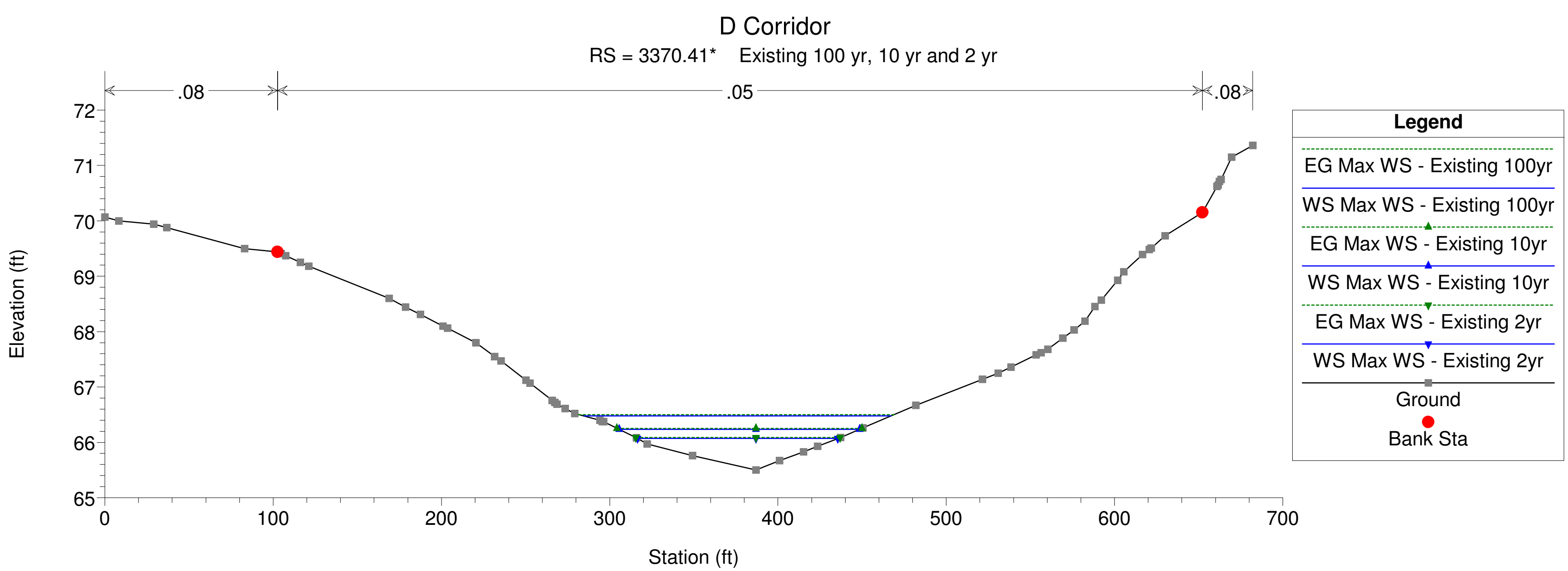

D Corridor
RS = 3620.41* Existing 100 yr, 10 yr and 2 yr
.08
.05
.08
Elevation (ft)
Station (ft)
Legend
EG Max WS - Existing 100yr
WS Max WS - Existing 100yr
EG Max WS - Existing 10yr
WS Max WS - Existing 10yr
EG Max WS - Existing 2yr
WS Max WS - Existing 2yr
Ground
Bank Sta

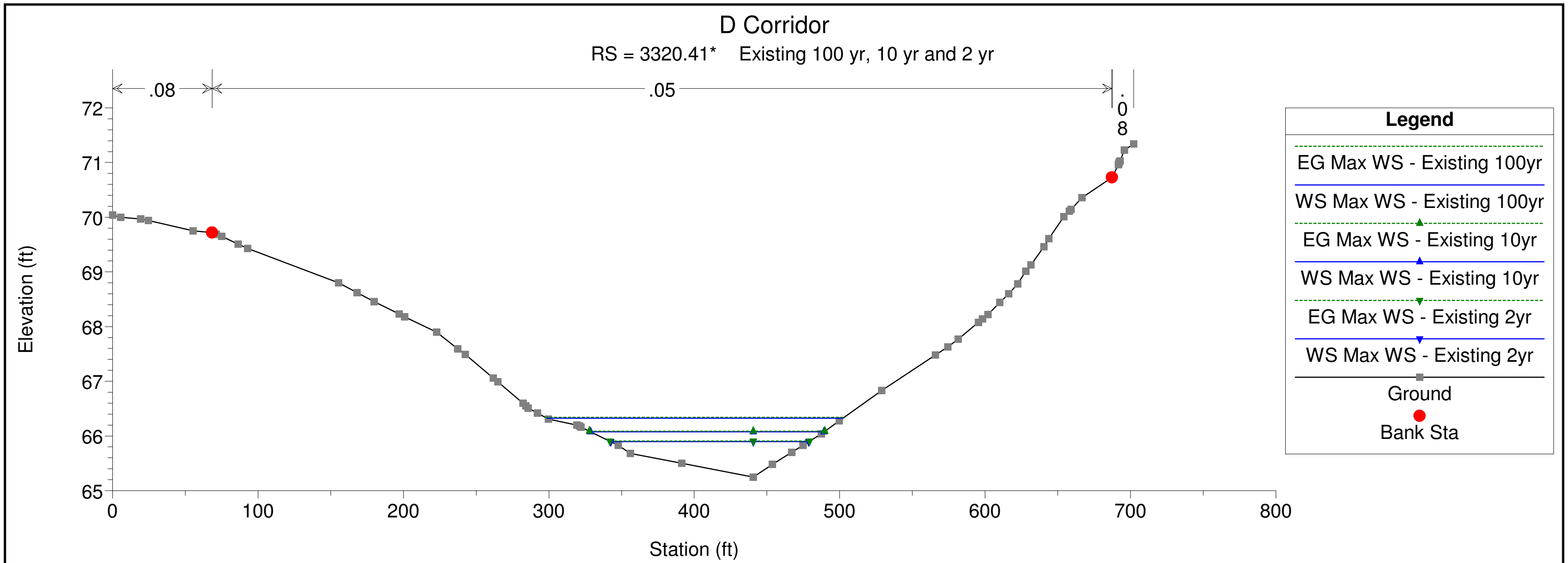

D Corridor
RS = 3570.41* Existing 100 yr, 10 yr and 2 yr
.08
.05
.08
Elevation (ft)
Station (ft)
Legend
EG Max WS - Existing 100yr
WS Max WS - Existing 100yr
EG Max WS - Existing 10yr
WS Max WS - Existing 10yr
EG Max WS - Existing 2yr
WS Max WS - Existing 2yr
Ground
Bank Sta


D Corridor
RS = 3520.41* Existing 100 yr, 10 yr and 2 yr
.08
.05
.08
Elevation (ft)
Station (ft)
Legend
EG Max WS - Existing 100yr
WS Max WS - Existing 100yr
EG Max WS - Existing 10yr
WS Max WS - Existing 10yr
EG Max WS - Existing 2yr
WS Max WS - Existing 2yr
Ground
Bank Sta

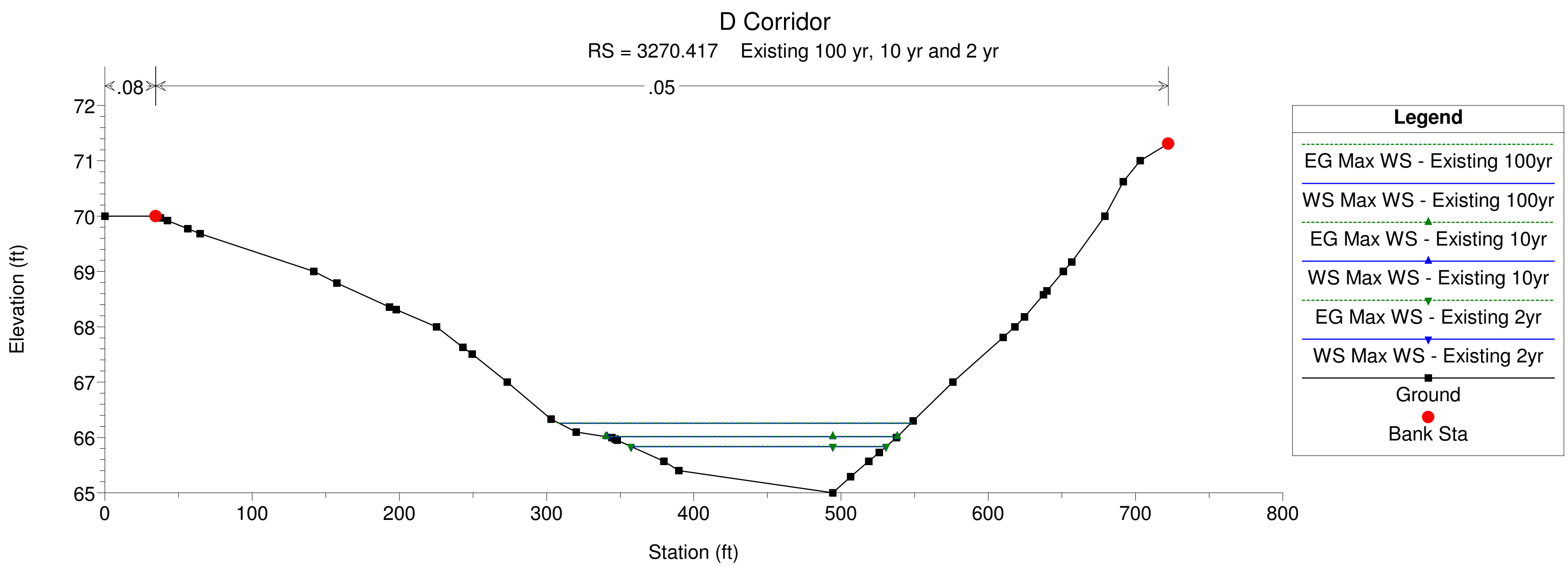

D Corridor
RS = 3470.417 Existing 100 yr, 10 yr and 2 yr
.08
.05
.08
Elevation (ft)
Station (ft)
Legend
EG Max WS - Existing 100yr
WS Max WS - Existing 100yr
EG Max WS - Existing 10yr
WS Max WS - Existing 10yr
EG Max WS - Existing 2yr
WS Max WS - Existing 2yr
Ground
Bank Sta


D Corridor
RS = 3420.41* Existing 100 yr, 10 yr and 2 yr
.08
.05
.08
Elevation (ft)
Station (ft)
Legend
EG Max WS - Existing 100yr
WS Max WS - Existing 100yr
EG Max WS - Existing 10yr
WS Max WS - Existing 10yr
EG Max WS - Existing 2yr
WS Max WS - Existing 2yr
Ground
Bank Sta

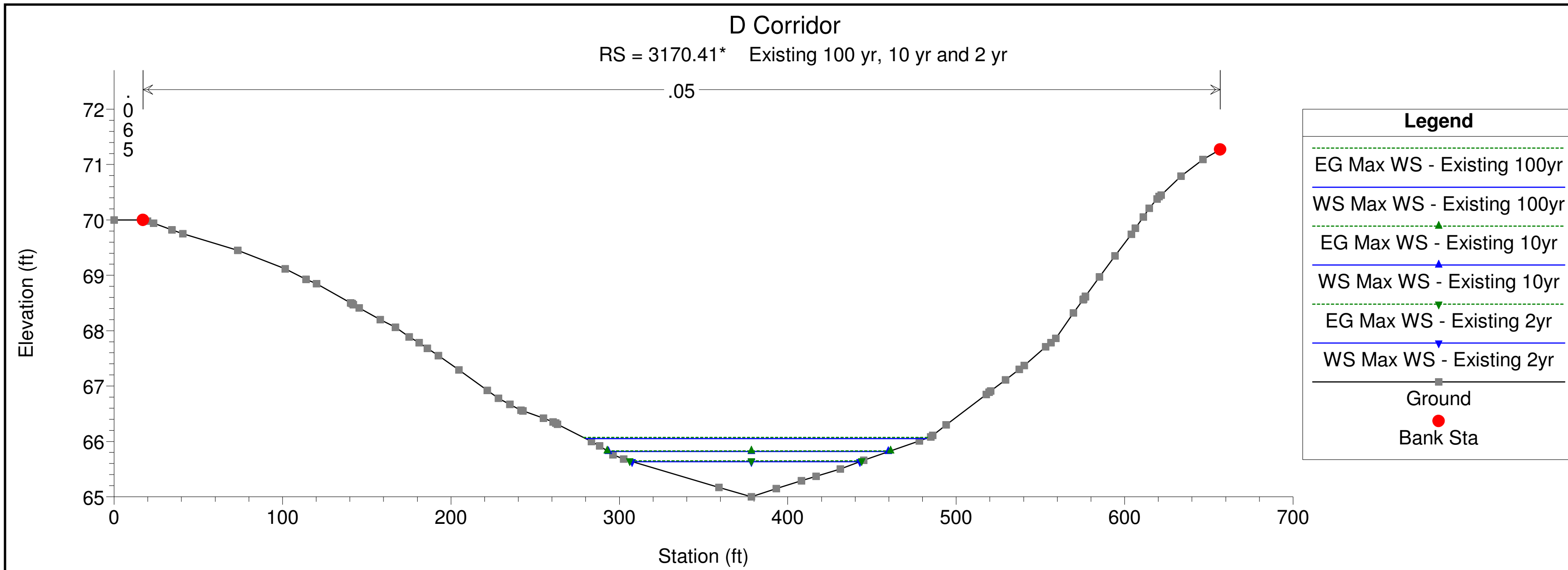

D Corridor
RS = 3370.41* Existing 100 yr, 10 yr and 2 yr
.08
.05
.08
Elevation (ft)
Station (ft)
Legend
EG Max WS - Existing 100yr
WS Max WS - Existing 100yr
EG Max WS - Existing 10yr
WS Max WS - Existing 10yr
EG Max WS - Existing 2yr
WS Max WS - Existing 2yr
Ground
Bank Sta

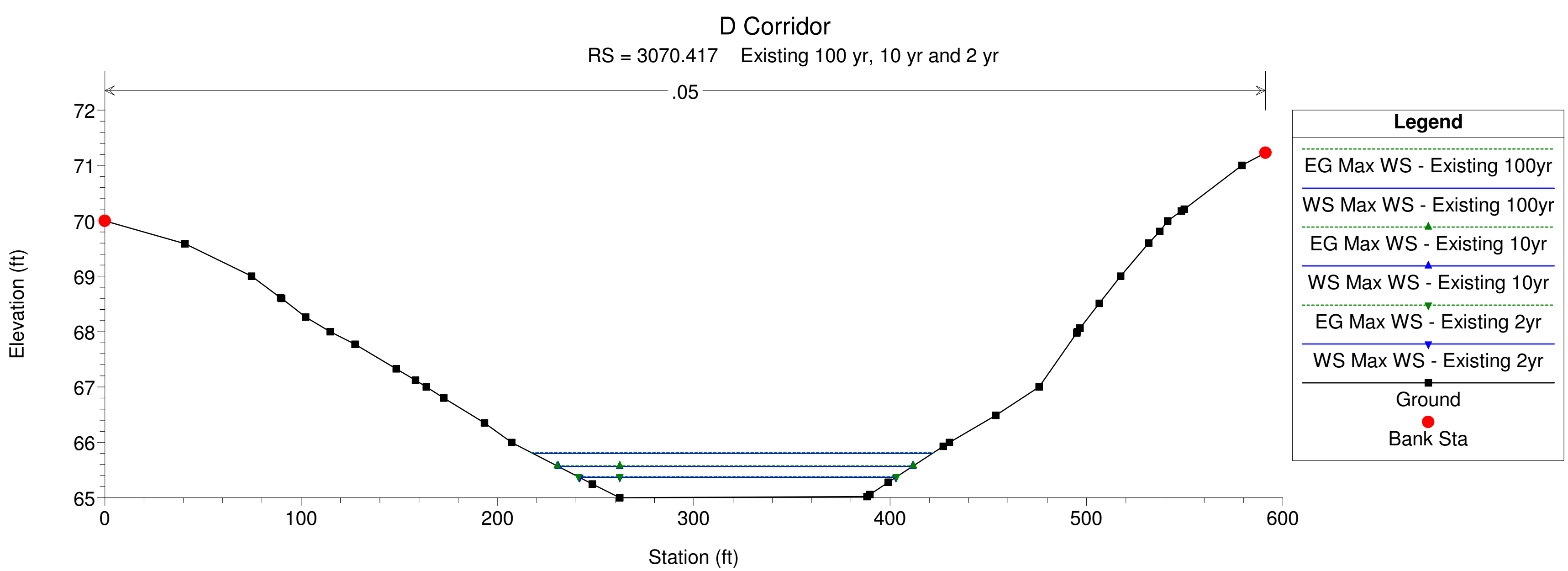


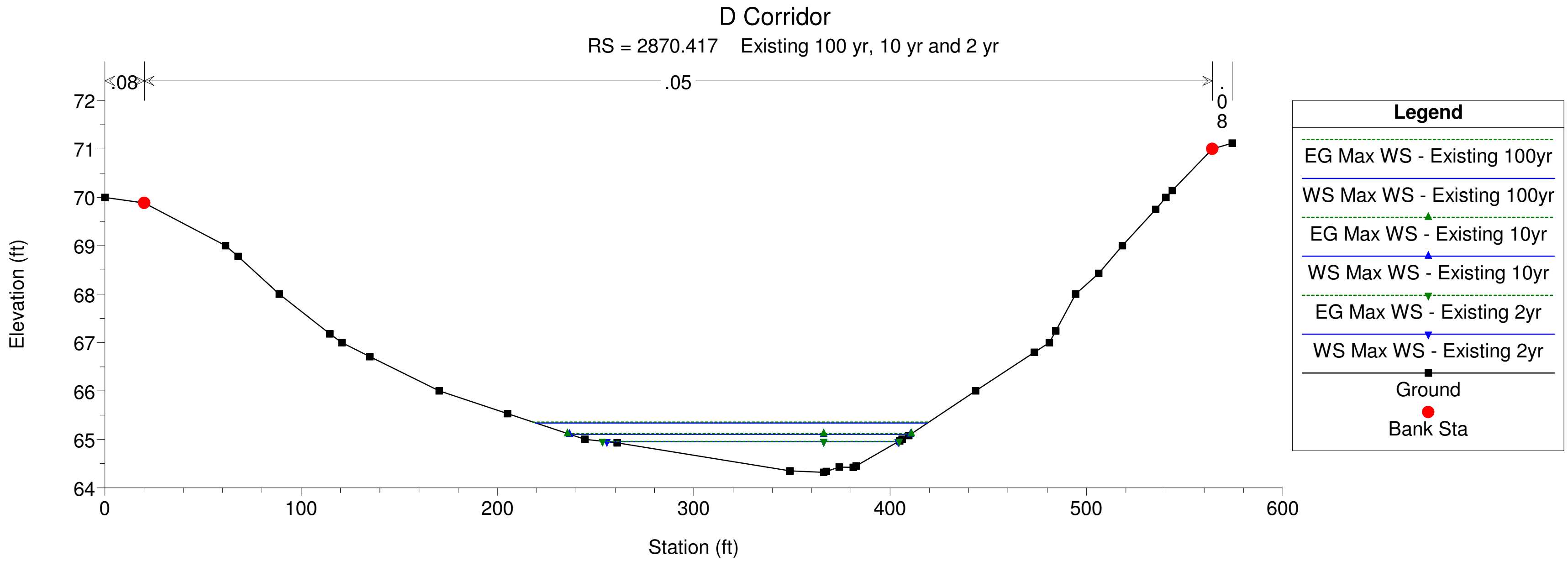
D Corridor
RS = 3320.41* Existing 100 yr, 10 yr and 2 yr
.08
.05
.
0
8
Elevation (ft)
Station (ft)
72
71
70
69
68
67
66
65
0
100
200
300
400
500
600
700
800
Legend
EG Max WS - Existing 100yr
WS Max WS - Existing 100yr
EG Max WS - Existing 10yr
WS Max WS - Existing 10yr
EG Max WS - Existing 2yr
WS Max WS - Existing 2yr
Ground
Bank Sta



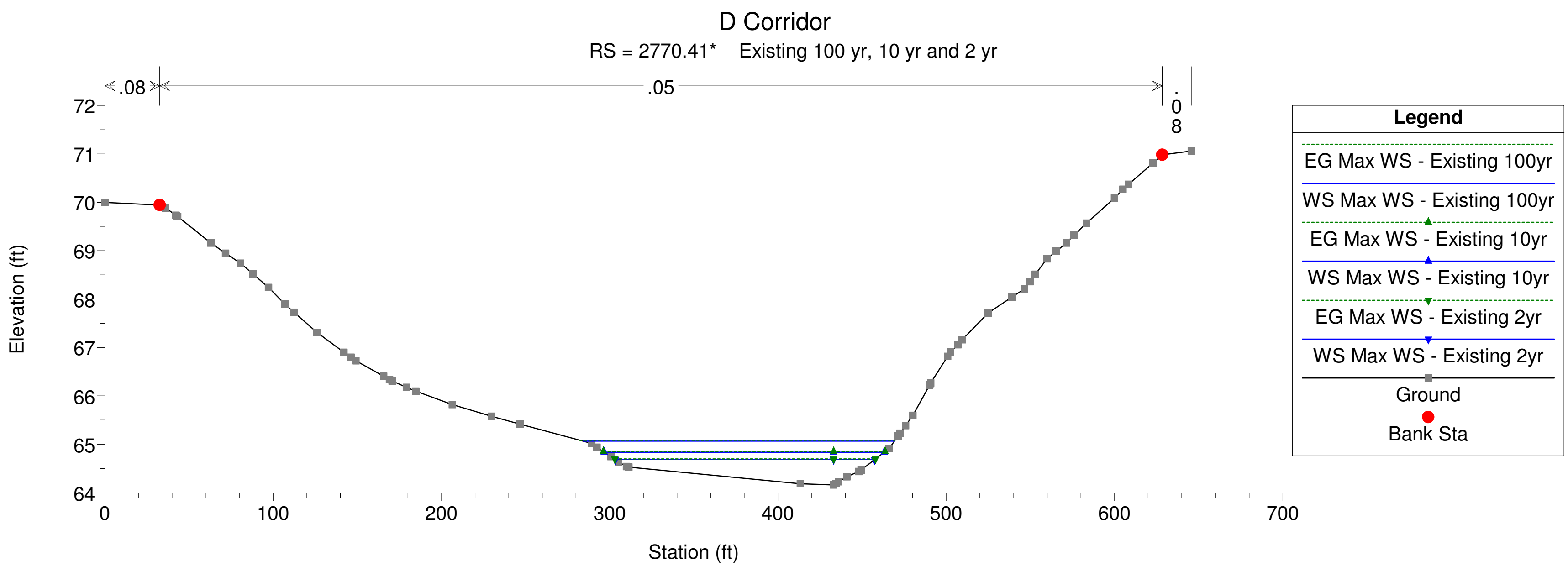
D Corridor
RS = 3270.417 Existing 100 yr, 10 yr and 2 yr
.08
.05
Elevation (ft)
Station (ft)
72
71
70
69
68
67
66
65
0
100
200
300
400
500
600
700
800
Legend
EG Max WS - Existing 100yr
WS Max WS - Existing 100yr
EG Max WS - Existing 10yr
WS Max WS - Existing 10yr
EG Max WS - Existing 2yr
WS Max WS - Existing 2yr
Ground
Bank Sta


D Corridor
RS = 3170.41* Existing 100 yr, 10 yr and 2 yr
.05
.065
Elevation (ft)
Station (ft)
Legend
EG Max WS - Existing 100yr
WS Max WS - Existing 100yr
EG Max WS - Existing 10yr
WS Max WS - Existing 10yr
EG Max WS - Existing 2yr
WS Max WS - Existing 2yr
Ground
Bank Sta

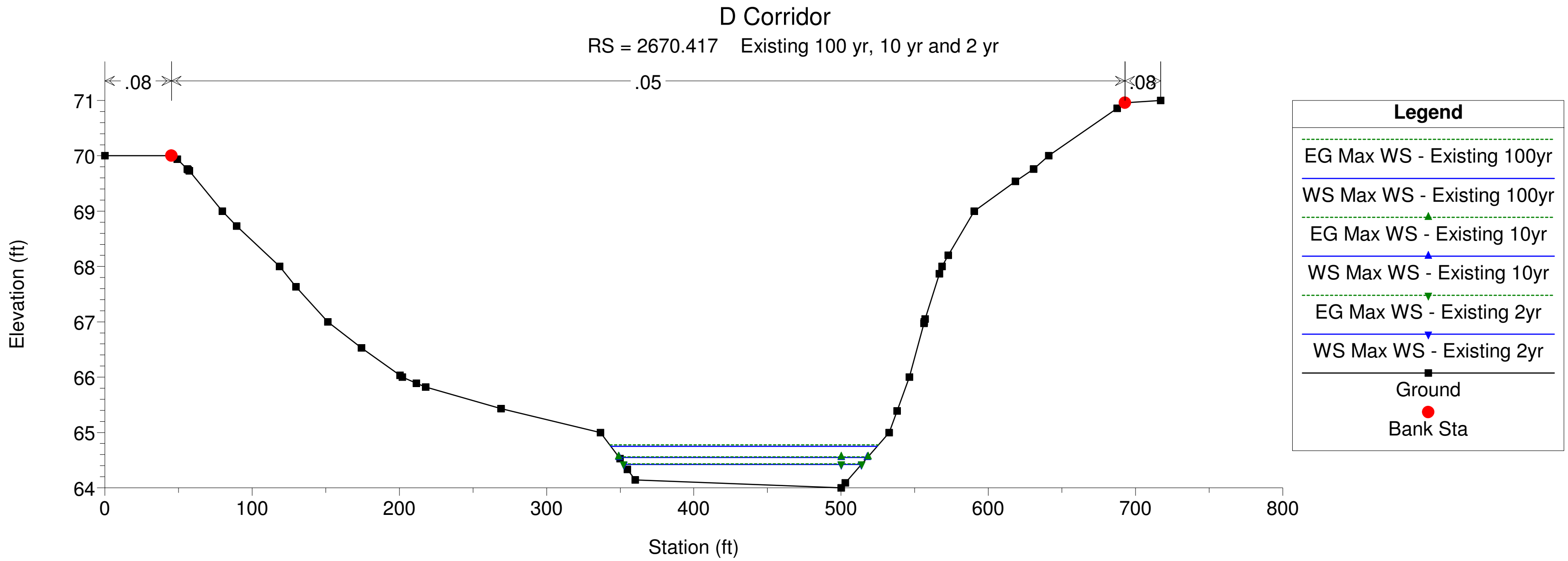

D Corridor
RS = 3070.417 Existing 100 yr, 10 yr and 2 yr
.05
Elevation (ft)
Station (ft)
Legend
EG Max WS - Existing 100yr
WS Max WS - Existing 100yr
EG Max WS - Existing 10yr
WS Max WS - Existing 10yr
EG Max WS - Existing 2yr
WS Max WS - Existing 2yr
Ground
Bank Sta

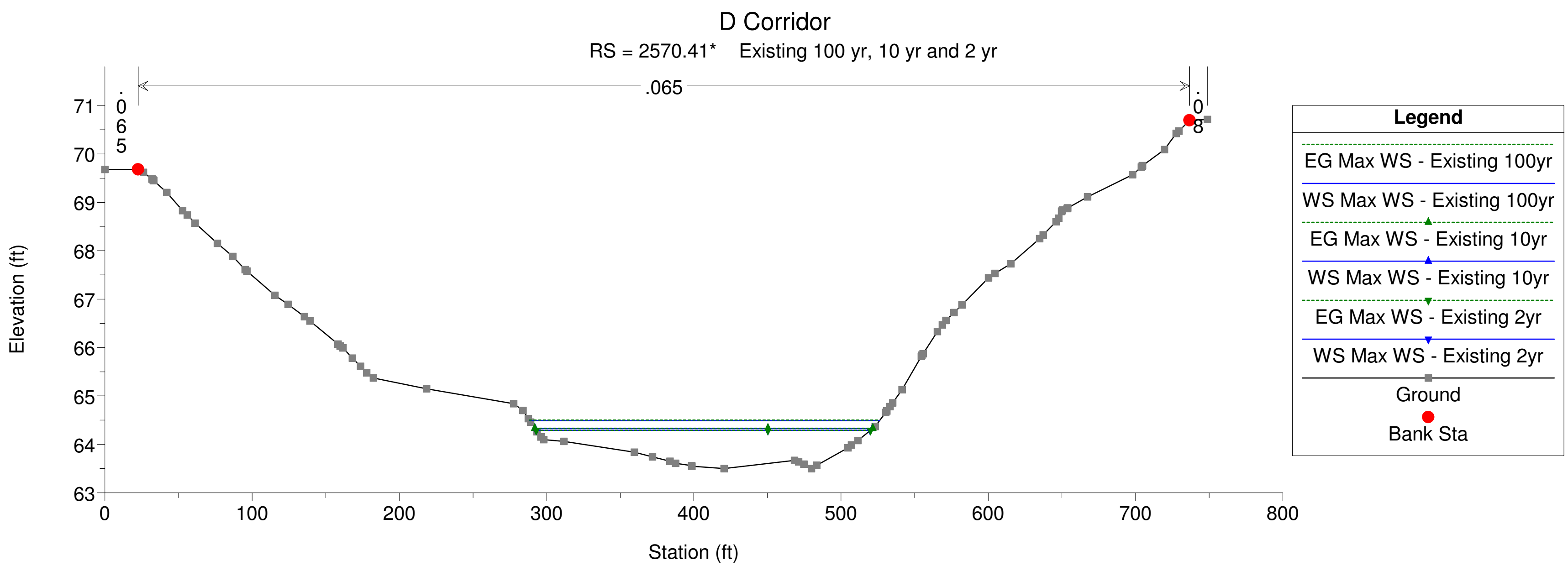


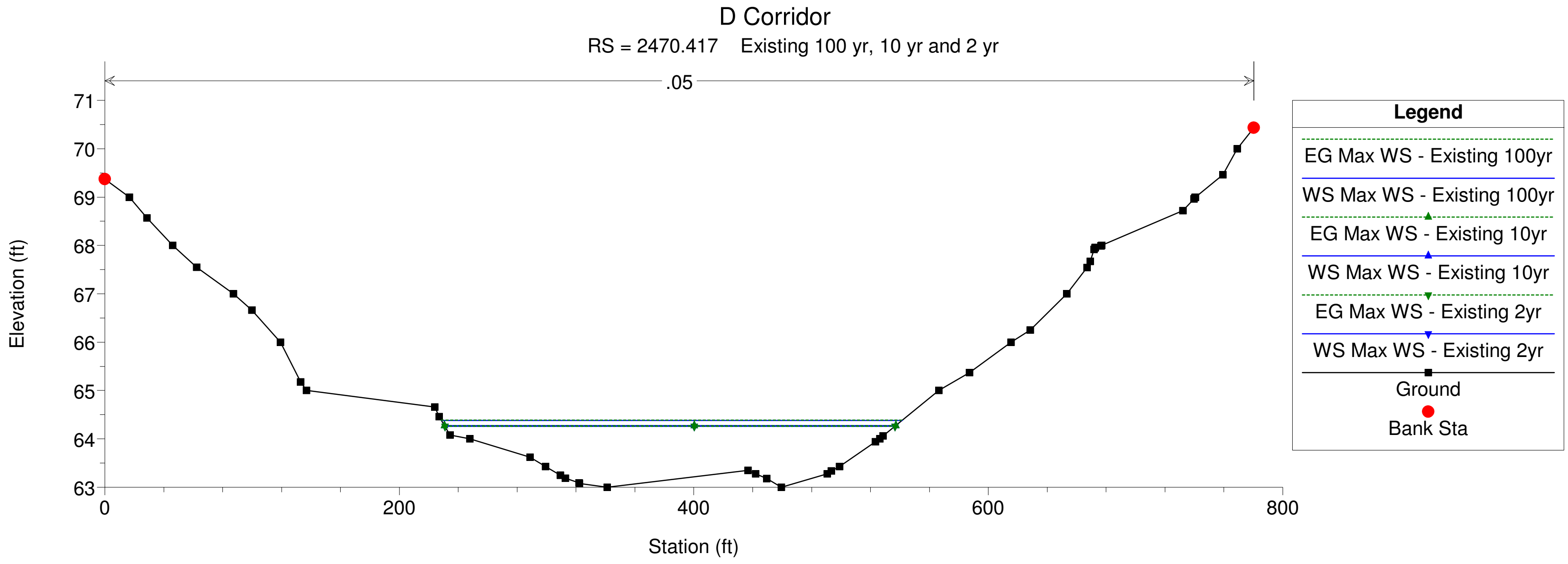
D Corridor
RS = 2870.417 Existing 100 yr, 10 yr and 2 yr
.08
.05
.
0
8
Elevation (ft)
Station (ft)
Legend
EG Max WS - Existing 100yr
WS Max WS - Existing 100yr
EG Max WS - Existing 10yr
WS Max WS - Existing 10yr
EG Max WS - Existing 2yr
WS Max WS - Existing 2yr
Ground
Bank Sta

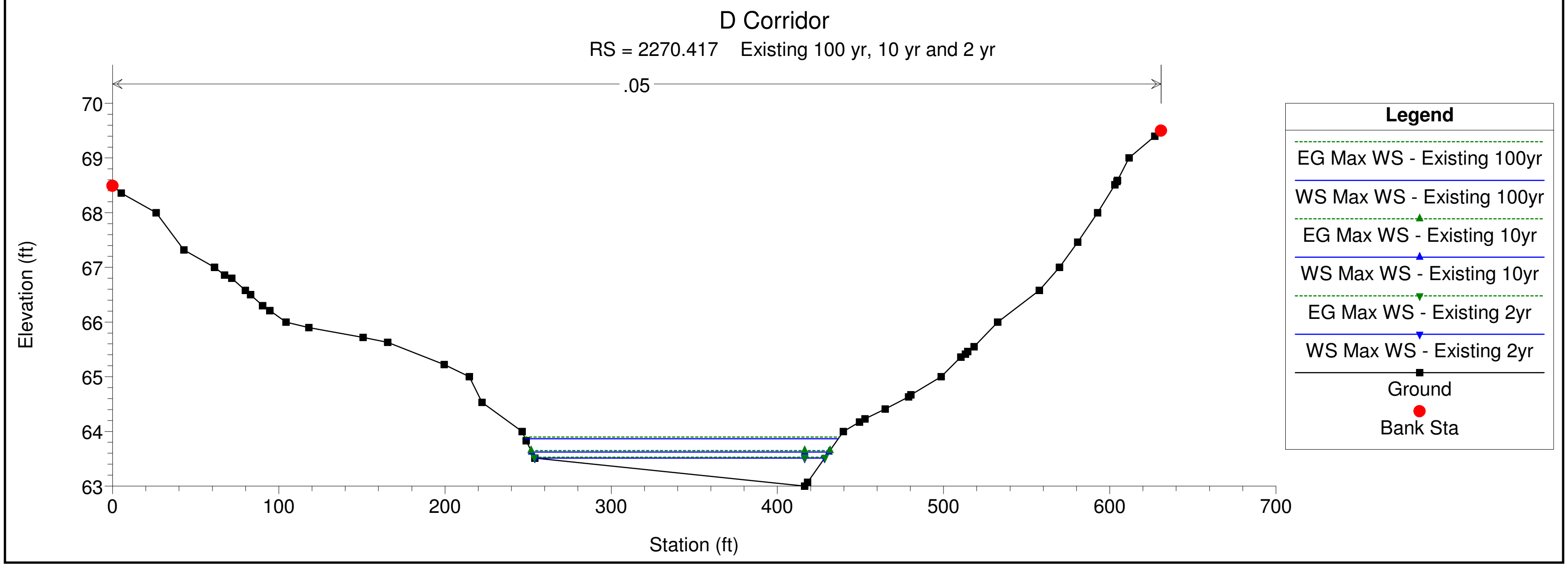


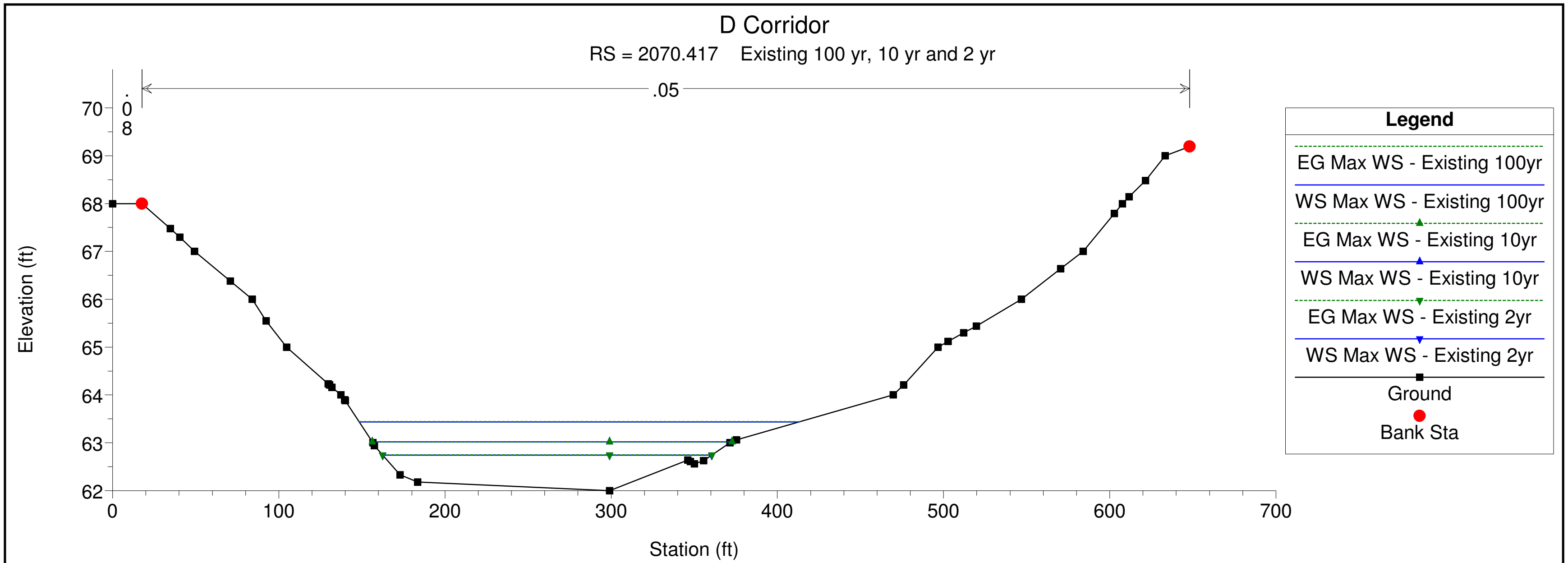
D Corridor
RS = 2770.41* Existing 100 yr, 10 yr and 2 yr
.08
.05
.
0
8
Elevation (ft)
Station (ft)
Legend
EG Max WS - Existing 100yr
WS Max WS - Existing 100yr
EG Max WS - Existing 10yr
WS Max WS - Existing 10yr
EG Max WS - Existing 2yr
WS Max WS - Existing 2yr
Ground
Bank Sta


D Corridor
RS = 2670.417 Existing 100 yr, 10 yr and 2 yr
.08
.05
.08
Elevation (ft)
Station (ft)
Legend
EG Max WS - Existing 100yr
WS Max WS - Existing 100yr
EG Max WS - Existing 10yr
WS Max WS - Existing 10yr
EG Max WS - Existing 2yr
WS Max WS - Existing 2yr
Ground
Bank Sta

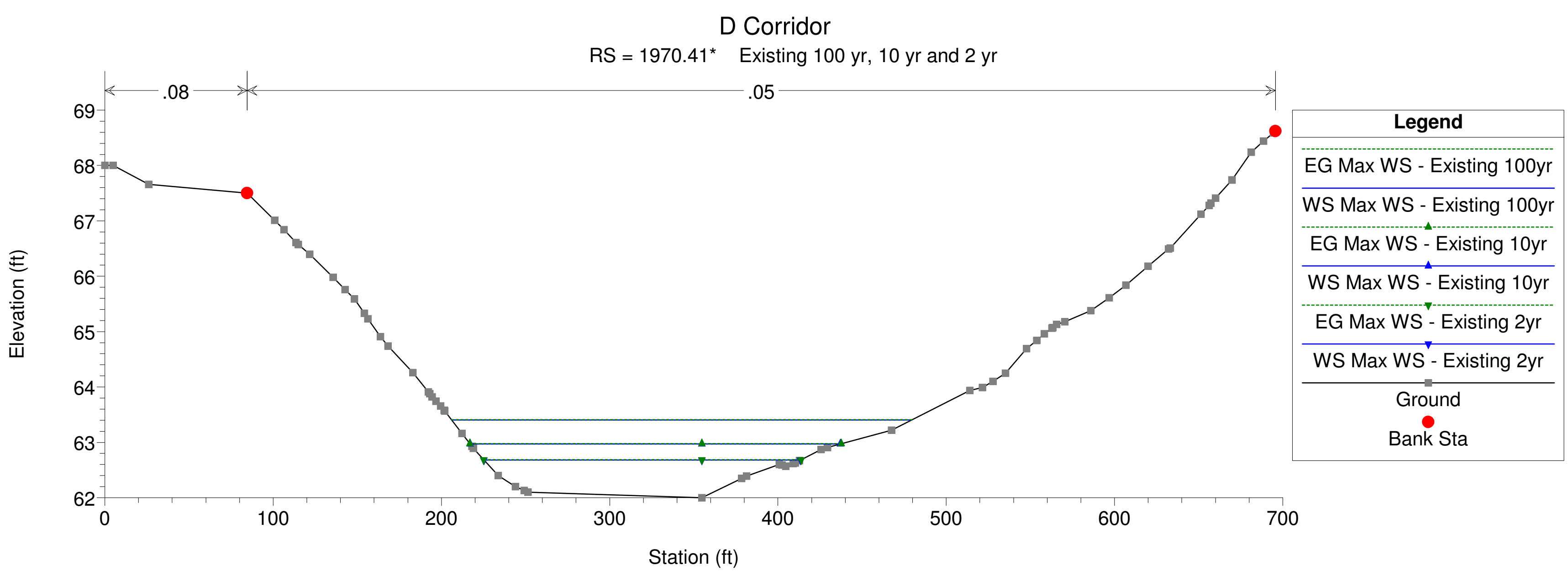

D Corridor
RS = 2570.41* Existing 100 yr, 10 yr and 2 yr
.065
.065
.08
Elevation (ft)
Station (ft)
Legend
EG Max WS - Existing 100yr
WS Max WS - Existing 100yr
EG Max WS - Existing 10yr
WS Max WS - Existing 10yr
EG Max WS - Existing 2yr
WS Max WS - Existing 2yr
Ground
Bank Sta


D Corridor
RS = 2470.417 Existing 100 yr, 10 yr and 2 yr
.05
71
70
69
68
67
66
65
64
63
Elevation (ft)
0
200
400
600
800
Station (ft)
Legend
EG Max WS - Existing 100yr
WS Max WS - Existing 100yr
EG Max WS - Existing 10yr
WS Max WS - Existing 10yr
EG Max WS - Existing 2yr
WS Max WS - Existing 2yr
Ground
Bank Sta

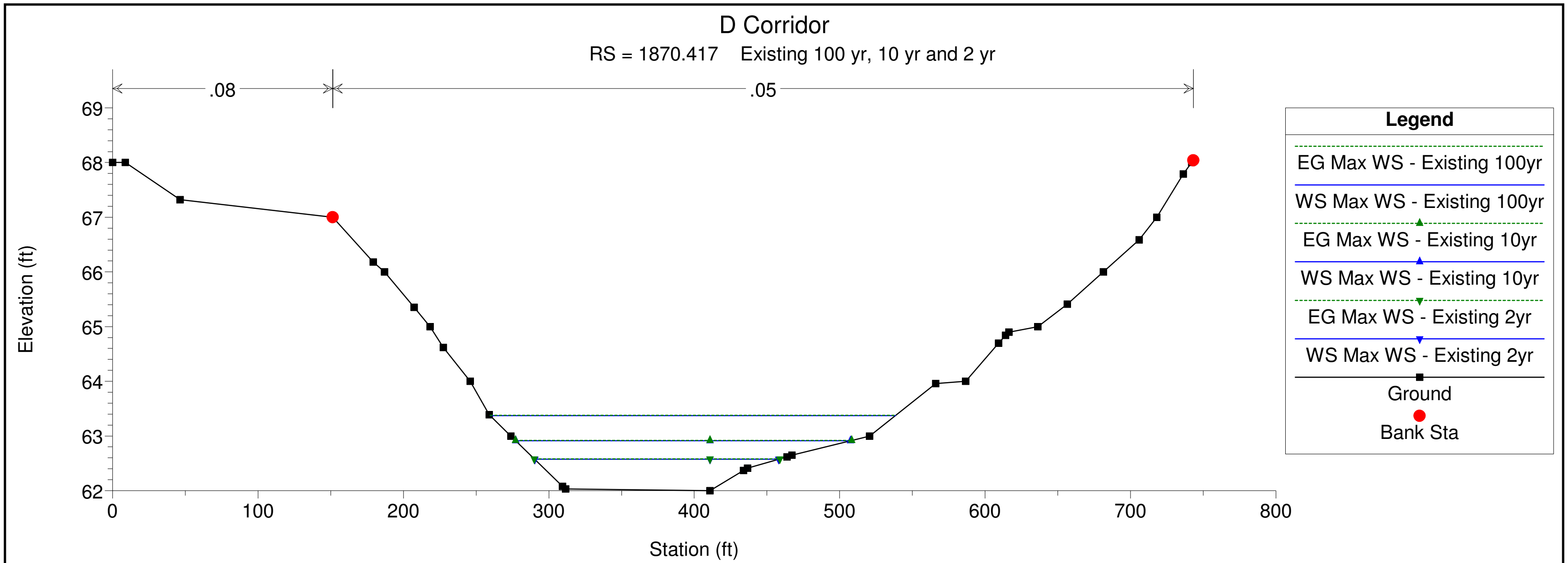

D Corridor
RS = 2270.417 Existing 100 yr, 10 yr and 2 yr
.05
70
69
68
67
66
65
64
63
Elevation (ft)
0
100
200
300
400
500
600
700
Station (ft)
Legend
EG Max WS - Existing 100yr
WS Max WS - Existing 100yr
EG Max WS - Existing 10yr
WS Max WS - Existing 10yr
EG Max WS - Existing 2yr
WS Max WS - Existing 2yr
Ground
Bank Sta

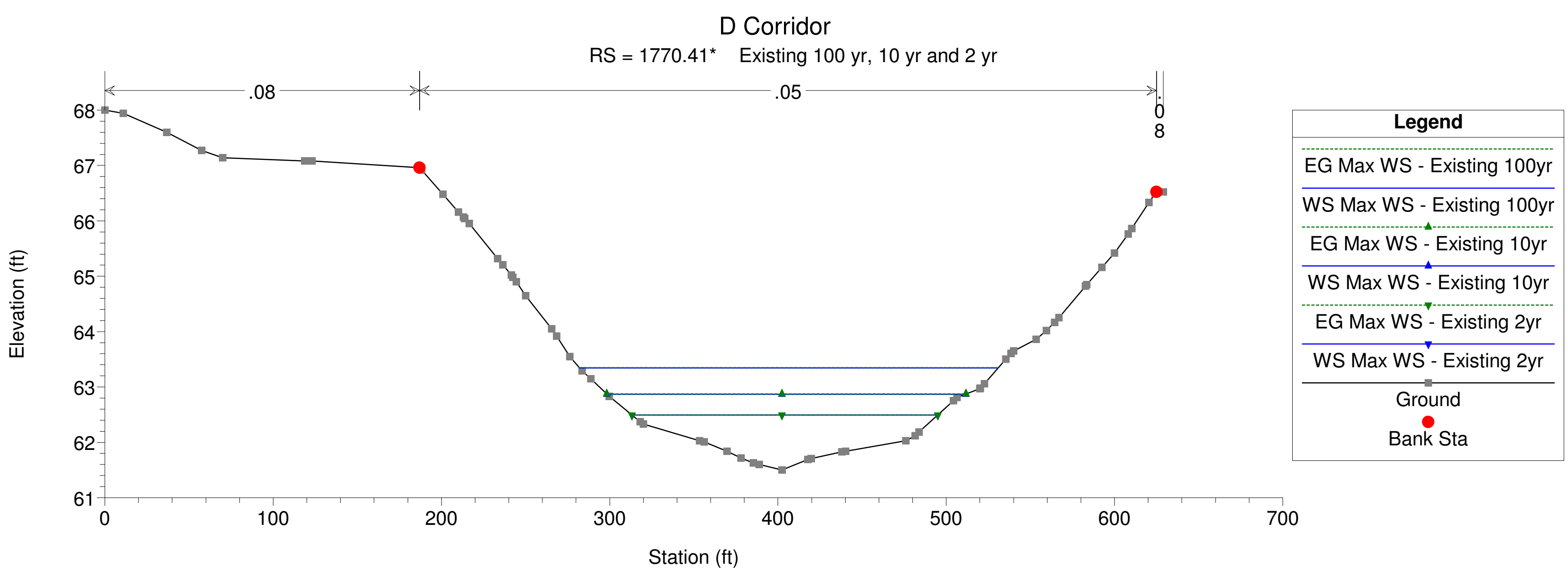


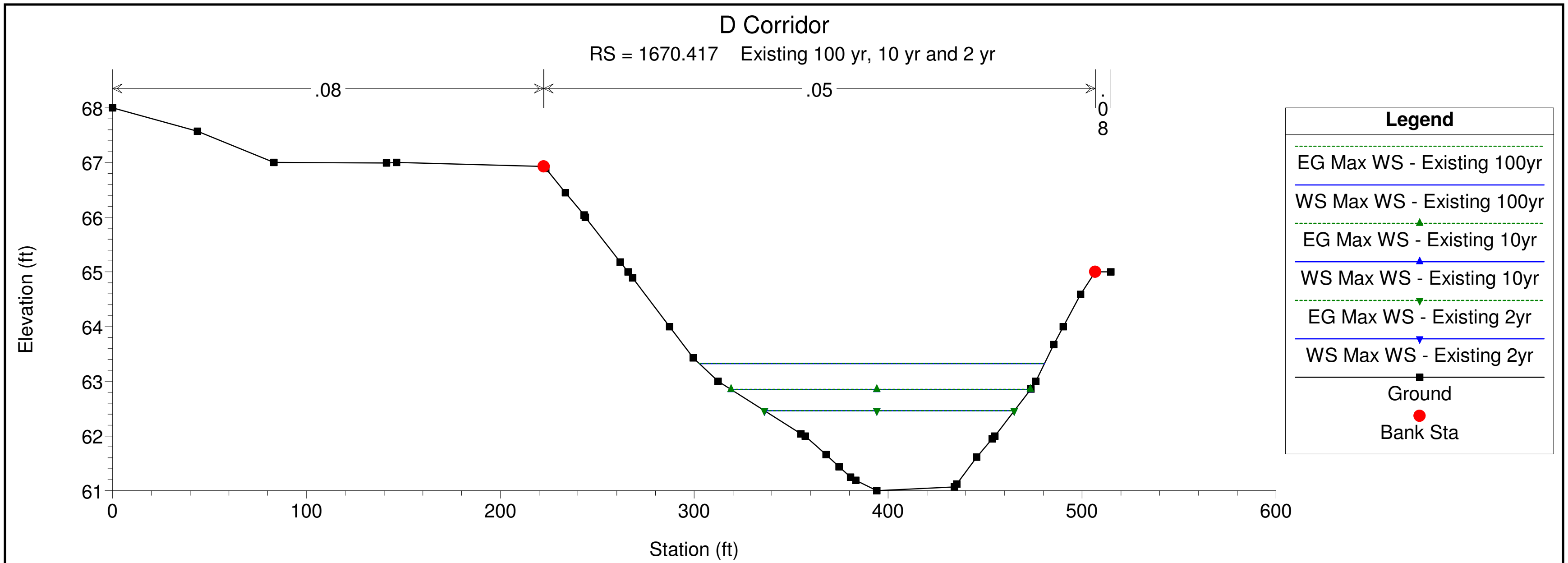
D Corridor
RS = 2070.417 Existing 100 yr, 10 yr and 2 yr
.08
.05
Elevation (ft)
Station (ft)
Legend
EG Max WS - Existing 100yr
WS Max WS - Existing 100yr
EG Max WS - Existing 10yr
WS Max WS - Existing 10yr
EG Max WS - Existing 2yr
WS Max WS - Existing 2yr
Ground
Bank Sta

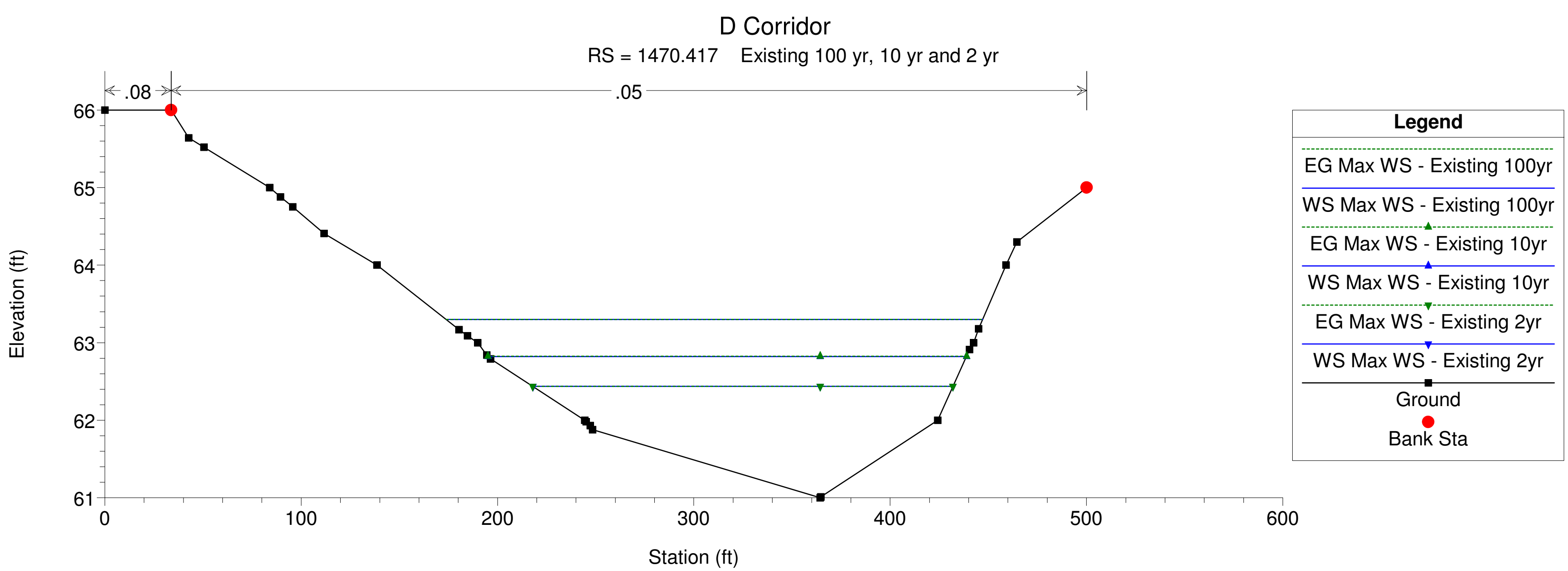


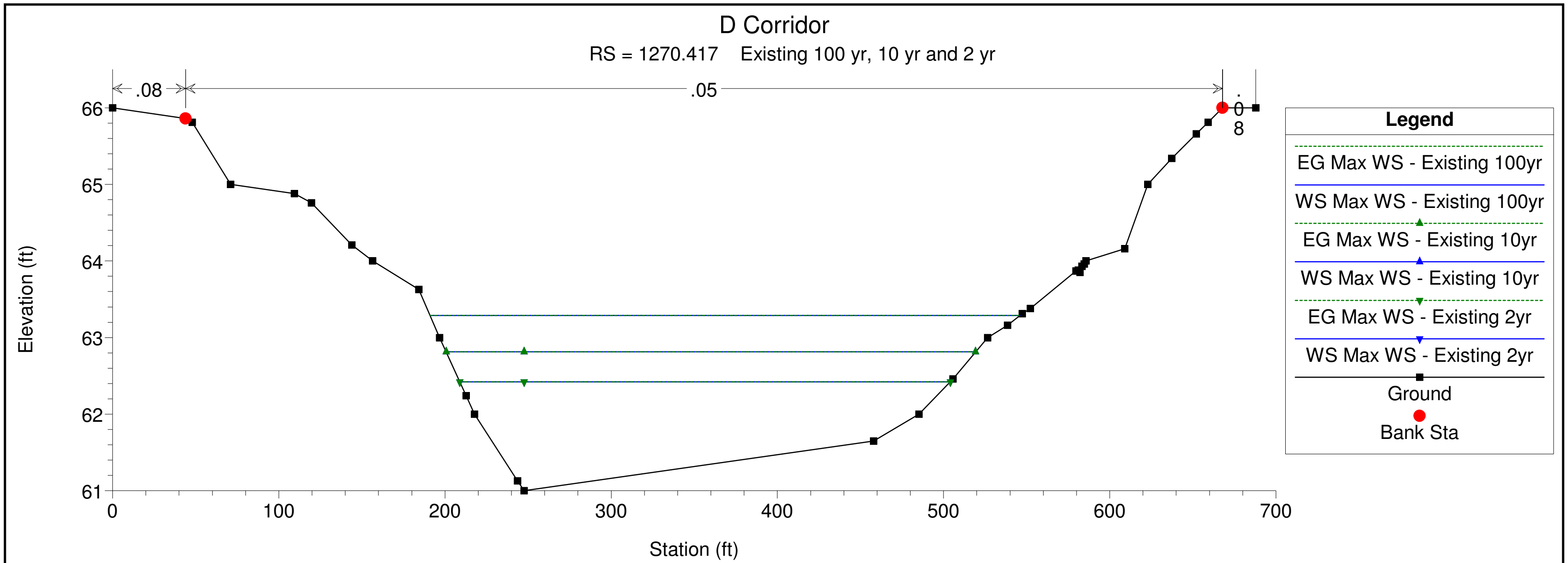
D Corridor
RS = 1970.41* Existing 100 yr, 10 yr and 2 yr
.08
.05
Elevation (ft)
Station (ft)
Legend
EG Max WS - Existing 100yr
WS Max WS - Existing 100yr
EG Max WS - Existing 10yr
WS Max WS - Existing 10yr
EG Max WS - Existing 2yr
WS Max WS - Existing 2yr
Ground
Bank Sta

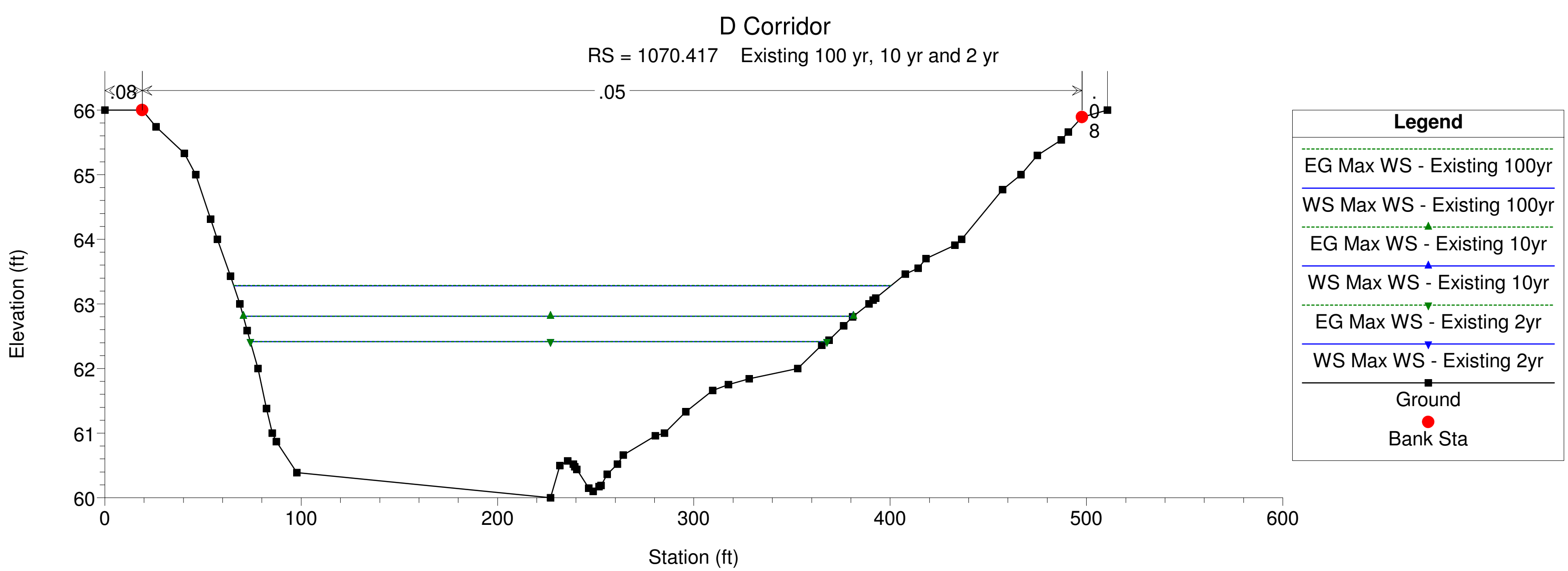

D Corridor
RS = 1870.417 Existing 100 yr, 10 yr and 2 yr
.08
.05
Elevation (ft)
Station (ft)
Legend
EG Max WS - Existing 100yr
WS Max WS - Existing 100yr
EG Max WS - Existing 10yr
WS Max WS - Existing 10yr
EG Max WS - Existing 2yr
WS Max WS - Existing 2yr
Ground
Bank Sta

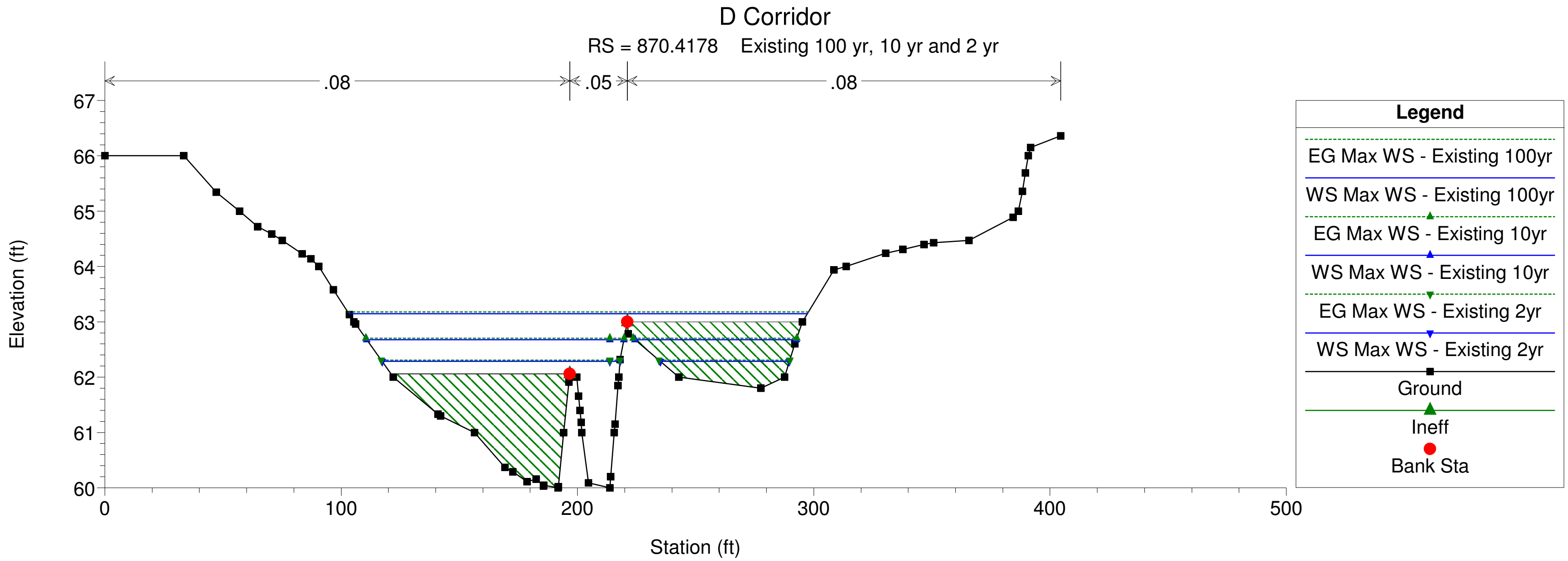

D Corridor
RS = 1770.41* Existing 100 yr, 10 yr and 2 yr
.08
.05
Elevation (ft)
Station (ft)
Legend
EG Max WS - Existing 100yr
WS Max WS - Existing 100yr
EG Max WS - Existing 10yr
WS Max WS - Existing 10yr
EG Max WS - Existing 2yr
WS Max WS - Existing 2yr
Ground
Bank Sta

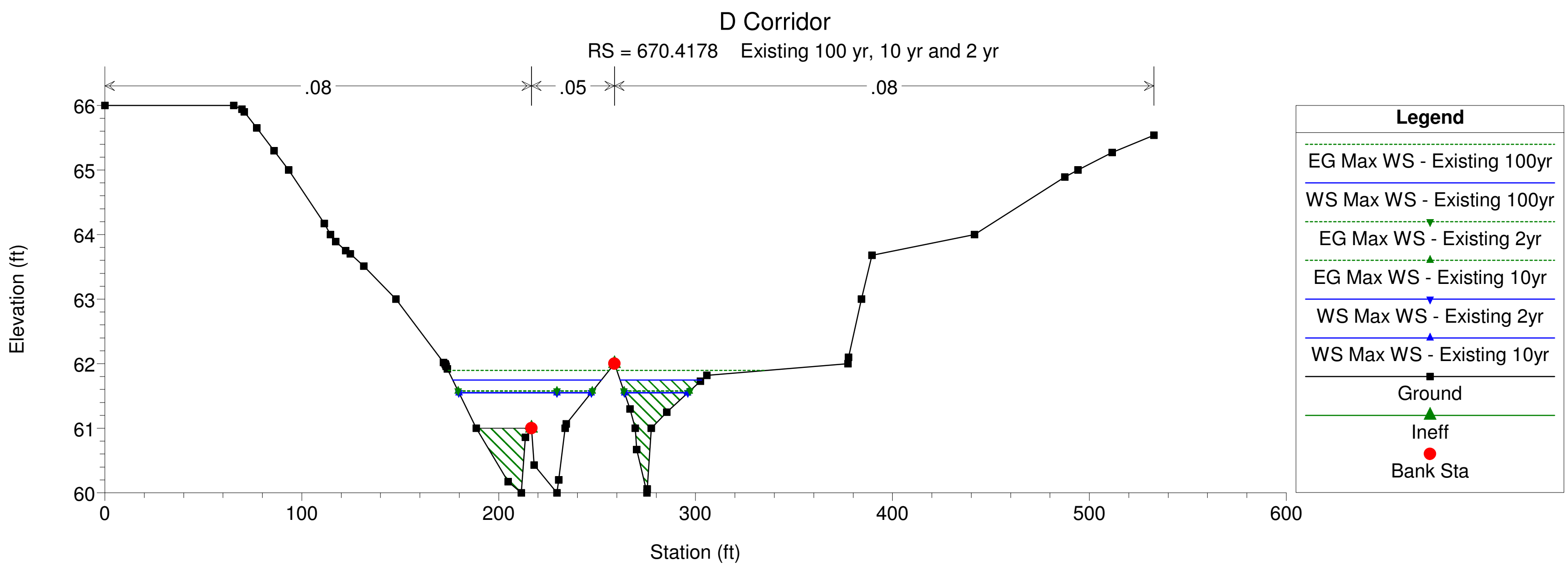

D Corridor
RS = 1670.417 Existing 100 yr, 10 yr and 2 yr
.08
.05
.08
Elevation (ft)
68
67
66
65
64
63
62
61
0
100
200
300
400
500
600
Station (ft)
Legend
EG Max WS - Existing 100yr
WS Max WS - Existing 100yr
EG Max WS - Existing 10yr
WS Max WS - Existing 10yr
EG Max WS - Existing 2yr
WS Max WS - Existing 2yr
Ground
Bank Sta

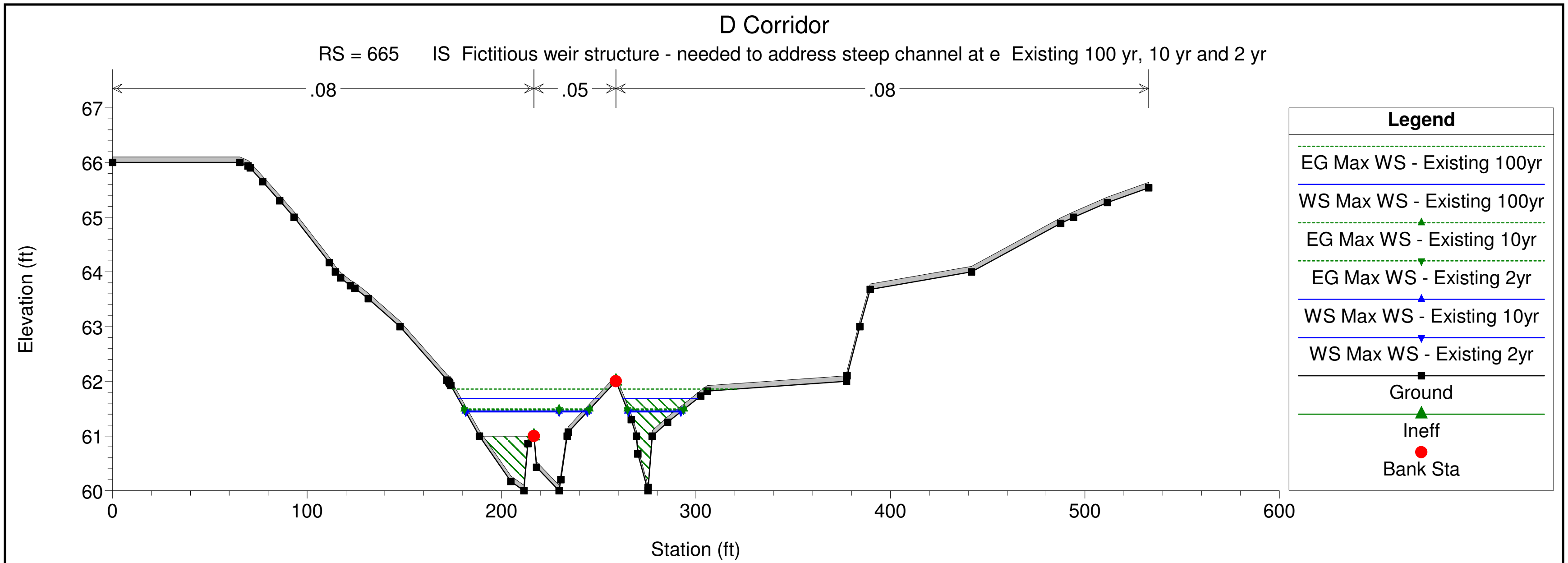

D Corridor
RS = 1470.417 Existing 100 yr, 10 yr and 2 yr
.08
.05
Elevation (ft)
66
65
64
63
62
61
0
100
200
300
400
500
600
Station (ft)
Legend
EG Max WS - Existing 100yr
WS Max WS - Existing 100yr
EG Max WS - Existing 10yr
WS Max WS - Existing 10yr
EG Max WS - Existing 2yr
WS Max WS - Existing 2yr
Ground
Bank Sta

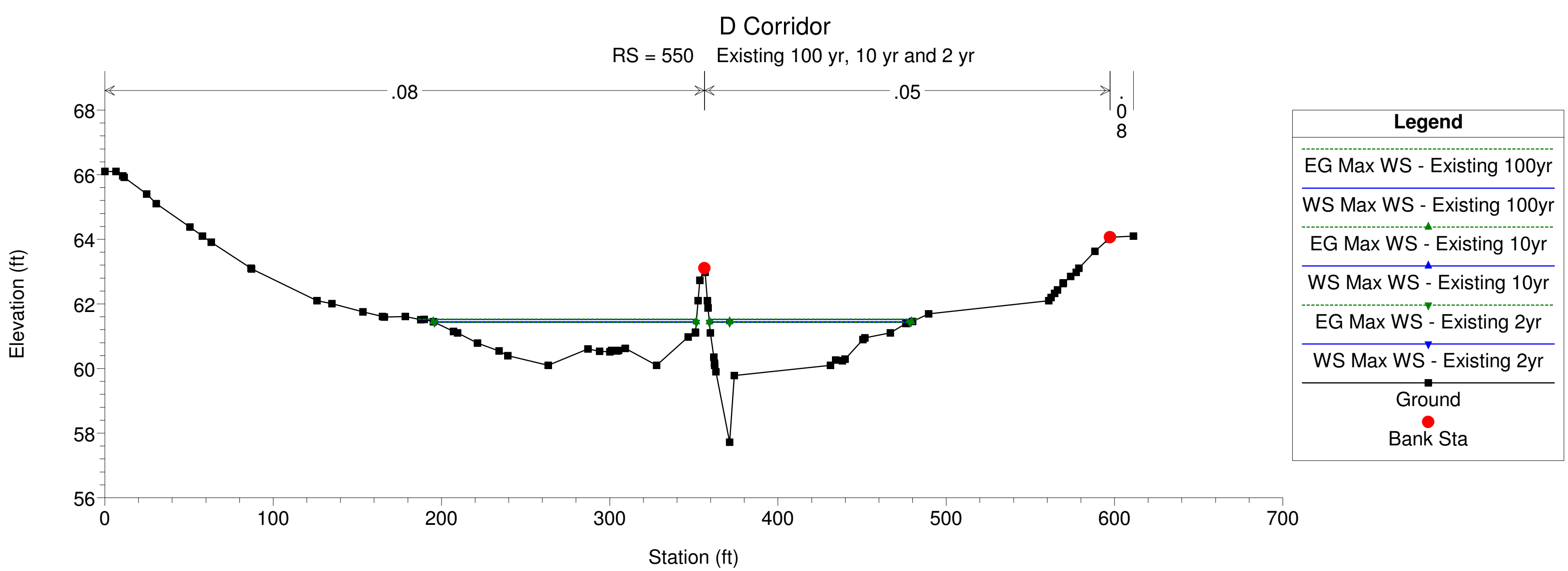

D Corridor
RS = 1270.417 Existing 100 yr, 10 yr and 2 yr
.08
.05
.08
Elevation (ft)
Station (ft)
Legend
EG Max WS - Existing 100yr
WS Max WS - Existing 100yr
EG Max WS - Existing 10yr
WS Max WS - Existing 10yr
EG Max WS - Existing 2yr
WS Max WS - Existing 2yr
Ground
Bank Sta

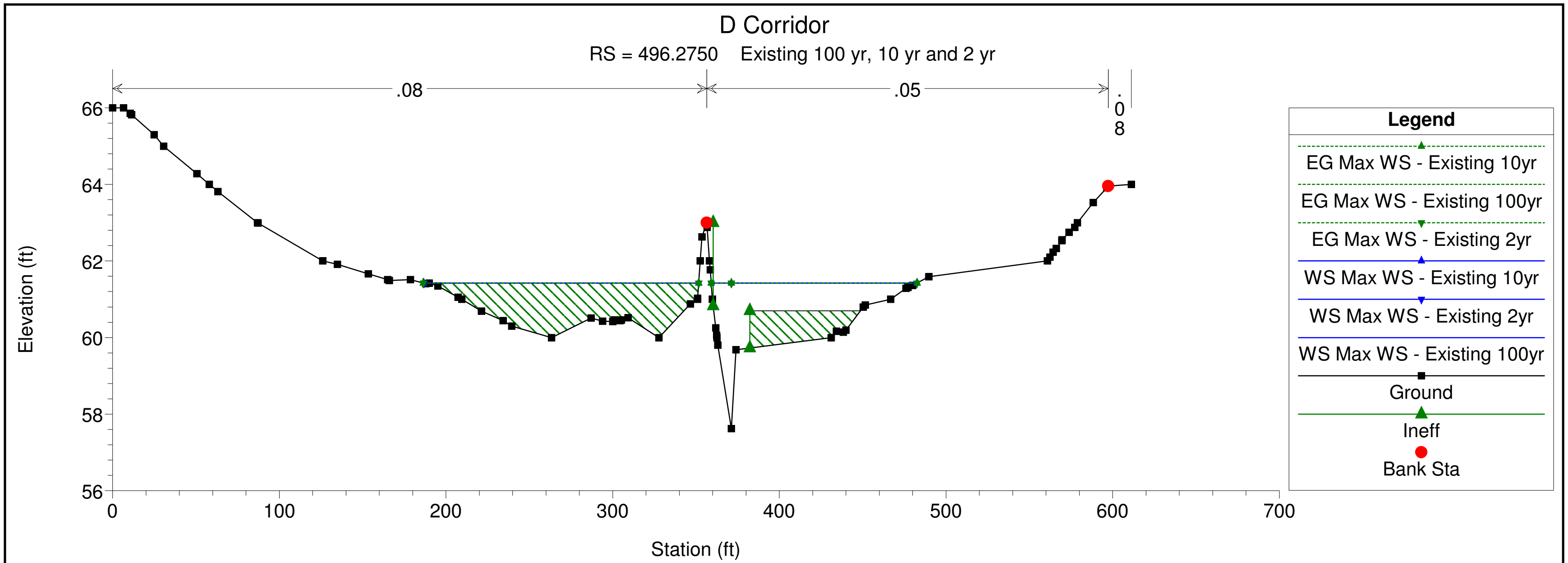

D Corridor
RS = 1070.417 Existing 100 yr, 10 yr and 2 yr
.08
.05
.08
Elevation (ft)
Station (ft)
Legend
EG Max WS - Existing 100yr
WS Max WS - Existing 100yr
EG Max WS - Existing 10yr
WS Max WS - Existing 10yr
EG Max WS - Existing 2yr
WS Max WS - Existing 2yr
Ground
Bank Sta

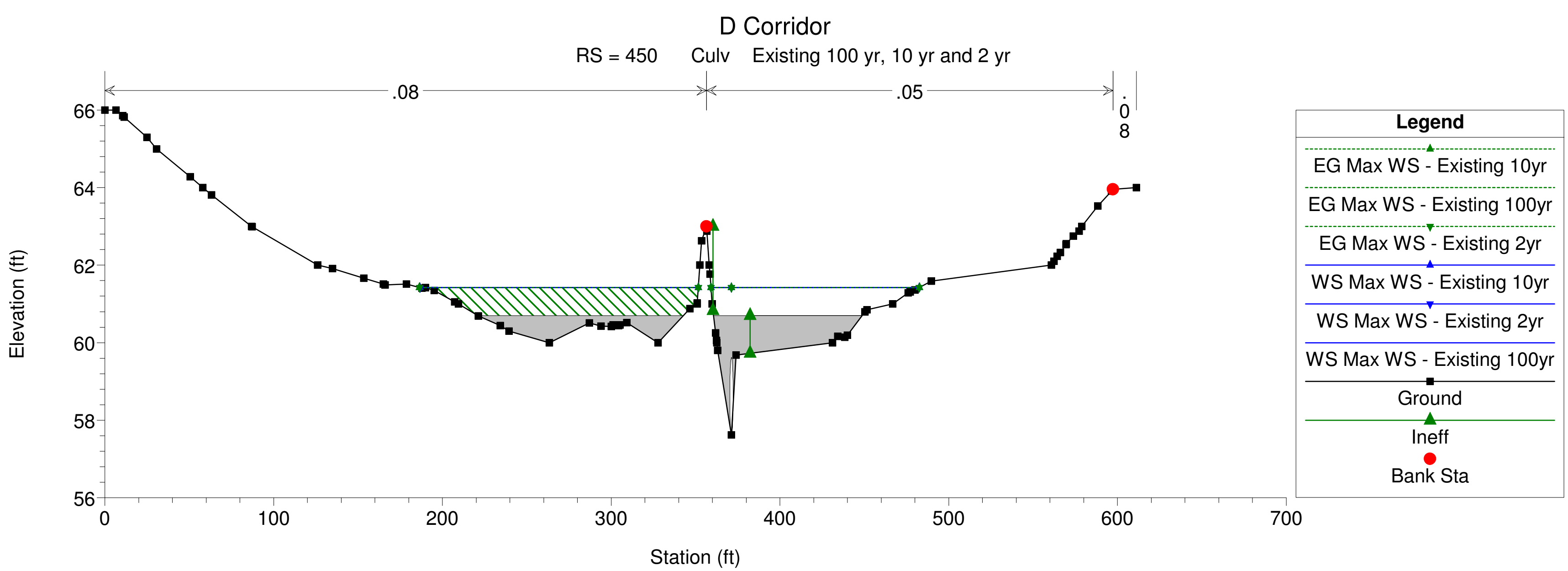

D Corridor
RS = 870.4178 Existing 100 yr, 10 yr and 2 yr
.08
.05
.08
Elevation (ft)
Station (ft)
Legend
EG Max WS - Existing 100yr
WS Max WS - Existing 100yr
EG Max WS - Existing 10yr
WS Max WS - Existing 10yr
EG Max WS - Existing 2yr
WS Max WS - Existing 2yr
Ground
Ineff
Bank Sta

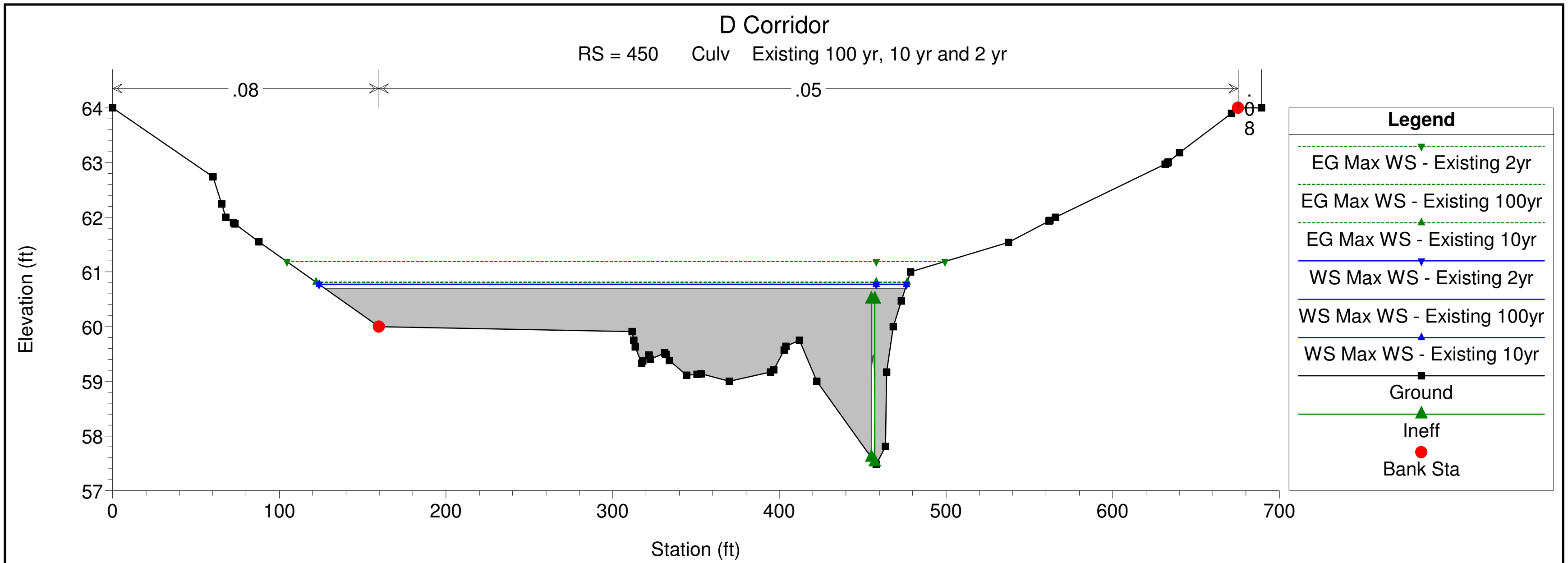

D Corridor
RS = 670.4178 Existing 100 yr, 10 yr and 2 yr
.08
.05
.08
Elevation (ft)
Station (ft)
Legend
EG Max WS - Existing 100yr
WS Max WS - Existing 100yr
EG Max WS - Existing 2yr
EG Max WS - Existing 10yr
WS Max WS - Existing 2yr
WS Max WS - Existing 10yr
Ground
Ineff
Bank Sta

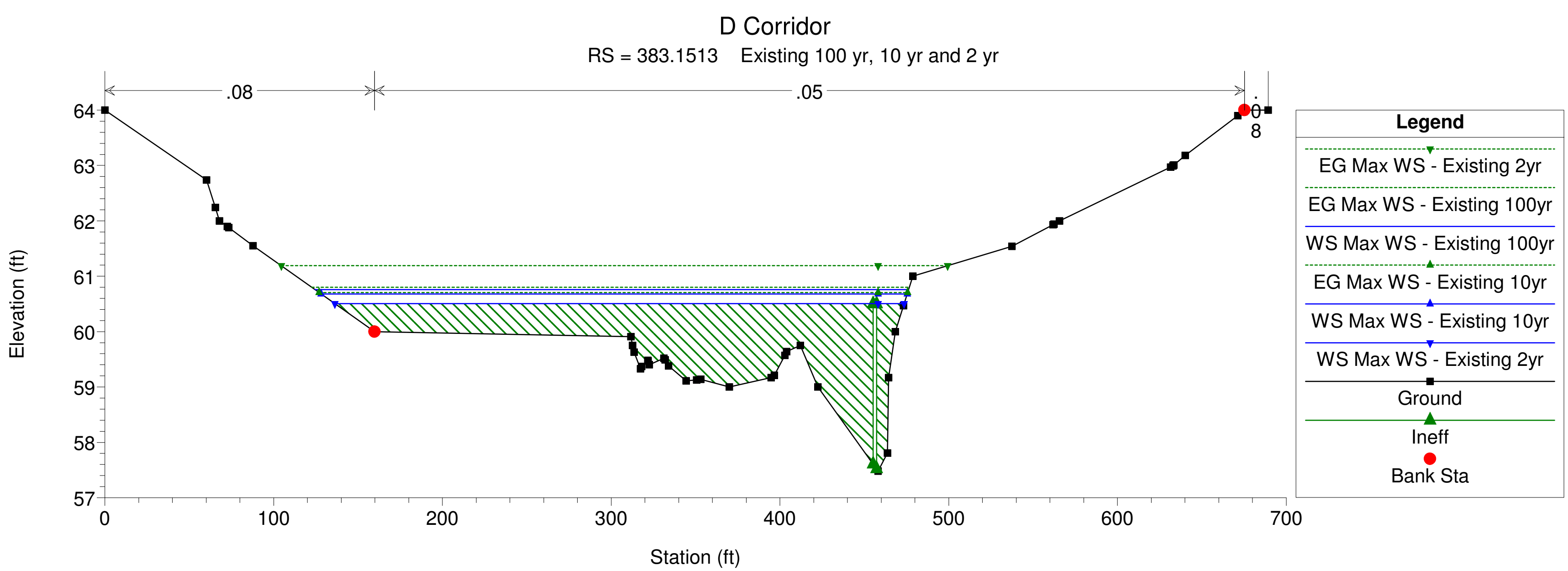

D Corridor
RS = 665 IS Fictitious weir structure - needed to address steep channel at e Existing 100 yr, 10 yr and 2 yr
.08
.05
.08
Elevation (ft)
Station (ft)
Legend
EG Max WS - Existing 100yr
WS Max WS - Existing 100yr
EG Max WS - Existing 10yr
EG Max WS - Existing 2yr
WS Max WS - Existing 10yr
WS Max WS - Existing 2yr
Ground
Ineff
Bank Sta

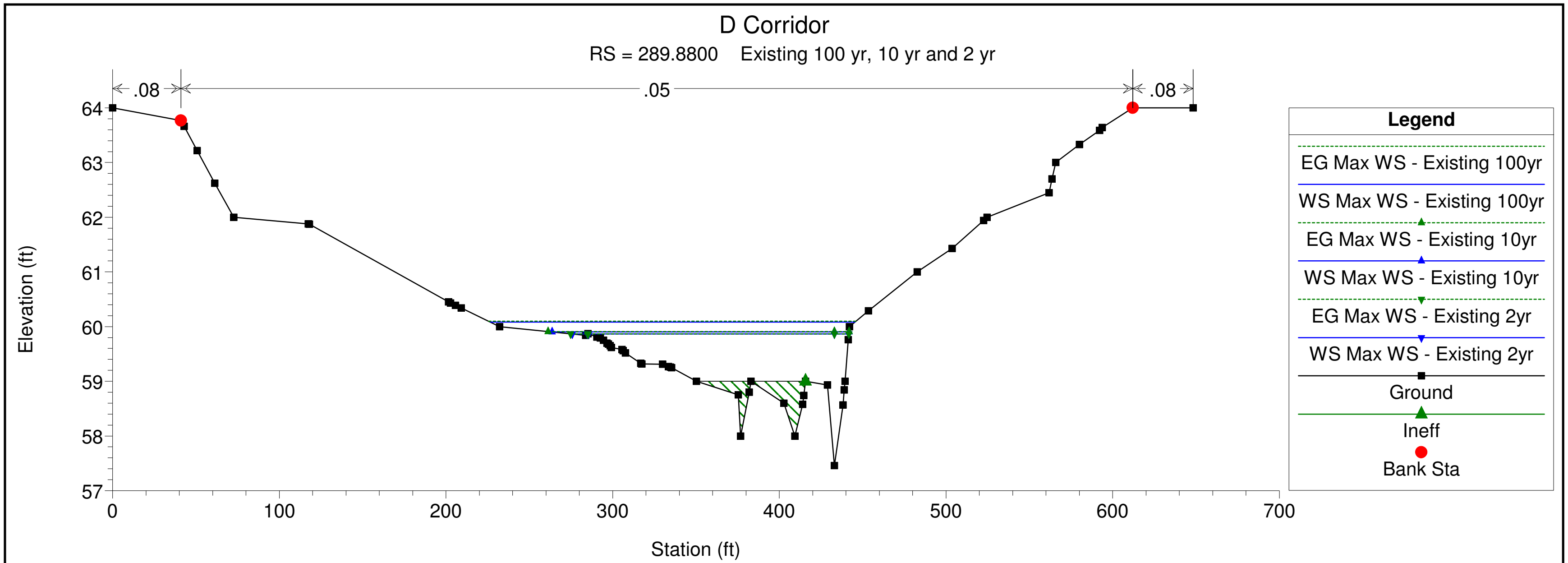

D Corridor
RS = 550 Existing 100 yr, 10 yr and 2 yr
.08
.05
.08
Elevation (ft)
Station (ft)
Legend
EG Max WS - Existing 100yr
WS Max WS - Existing 100yr
EG Max WS - Existing 10yr
WS Max WS - Existing 10yr
EG Max WS - Existing 2yr
WS Max WS - Existing 2yr
Ground
Bank Sta

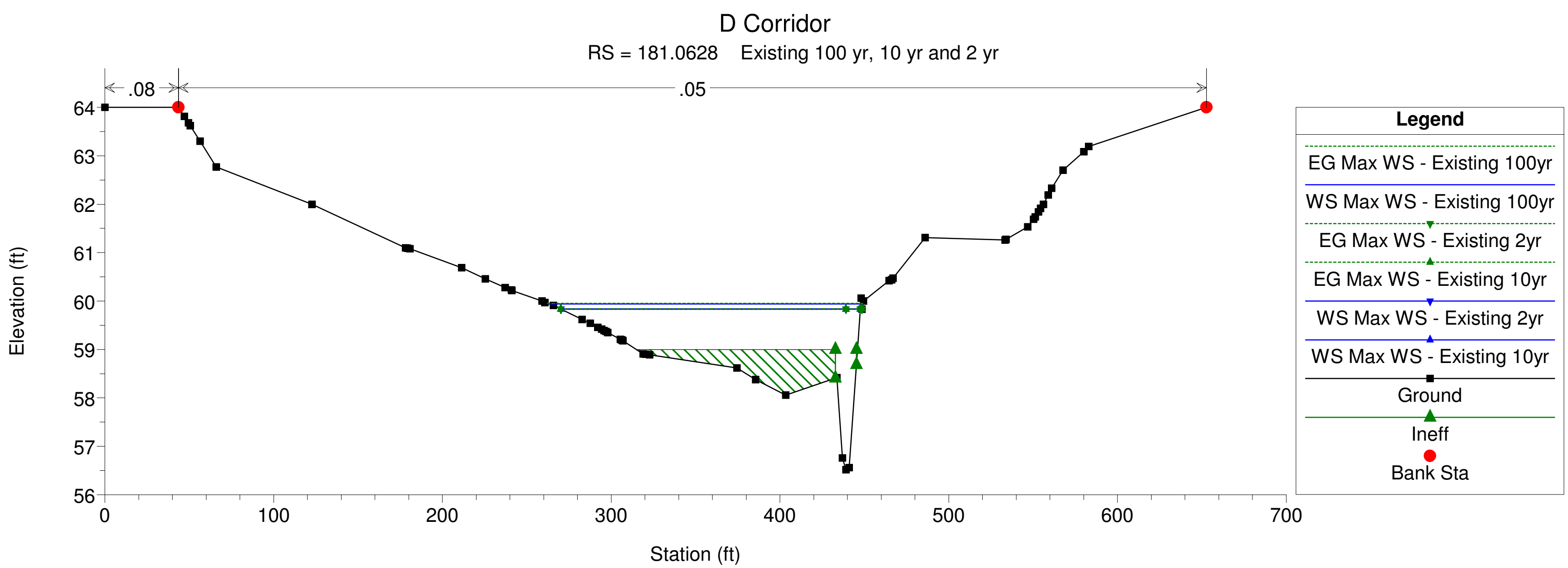

D Corridor
RS = 496.2750 Existing 100 yr, 10 yr and 2 yr
.08
.05
.
0
8
Elevation (ft)
Station (ft)
Legend
EG Max WS - Existing 10yr
EG Max WS - Existing 100yr
EG Max WS - Existing 2yr
WS Max WS - Existing 10yr
WS Max WS - Existing 2yr
WS Max WS - Existing 100yr
Ground
Ineff
Bank Sta

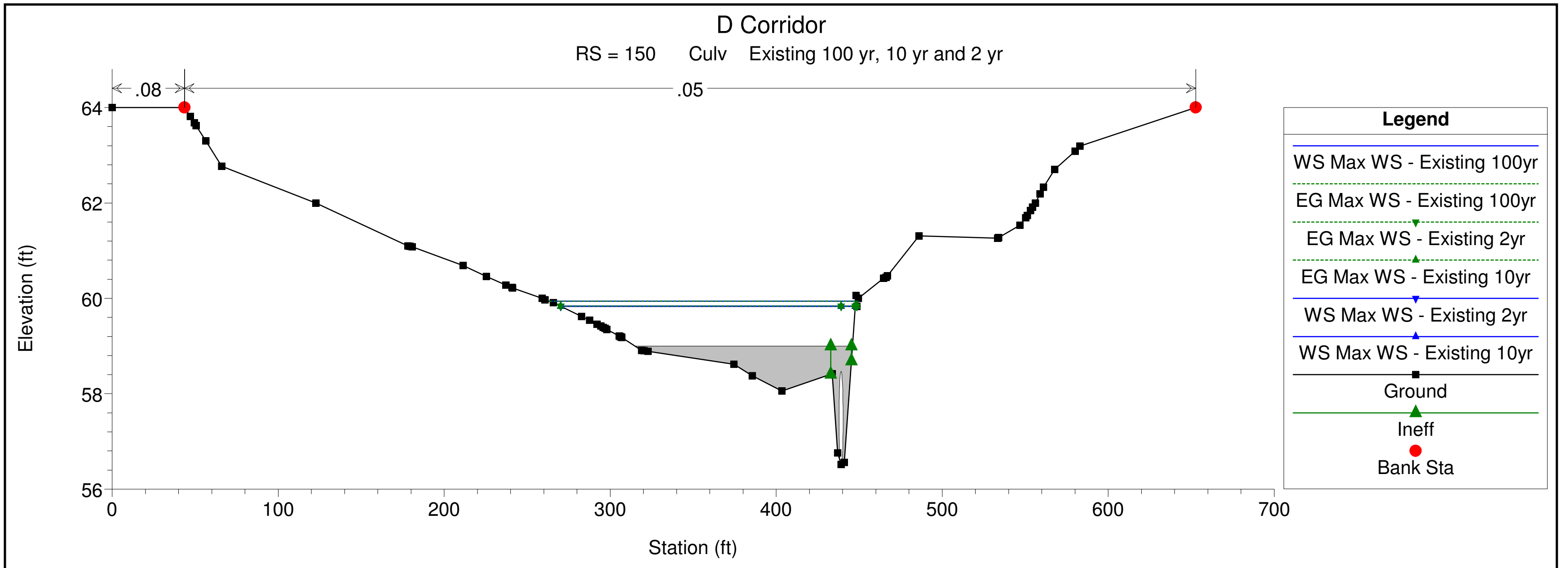

D Corridor
RS = 450 Culv Existing 100 yr, 10 yr and 2 yr
.08
.05
.
0
8
Elevation (ft)
Station (ft)
Legend
EG Max WS - Existing 10yr
EG Max WS - Existing 100yr
EG Max WS - Existing 2yr
WS Max WS - Existing 10yr
WS Max WS - Existing 2yr
WS Max WS - Existing 100yr
Ground
Ineff
Bank Sta


D Corridor
RS = 450 Culv Existing 100 yr, 10 yr and 2 yr
.08
.05
.08
Elevation (ft)
Station (ft)
Legend
EG Max WS - Existing 2yr
EG Max WS - Existing 100yr
EG Max WS - Existing 10yr
WS Max WS - Existing 2yr
WS Max WS - Existing 100yr
WS Max WS - Existing 10yr
Ground
Ineff
Bank Sta

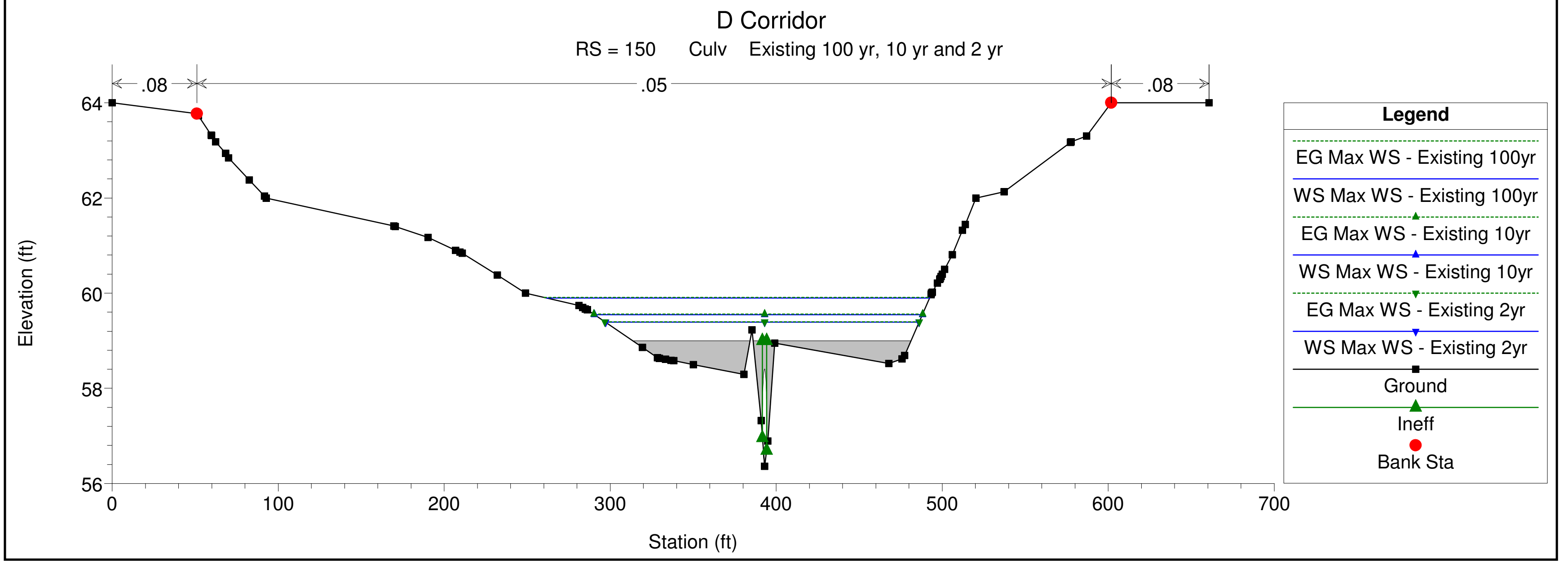

D Corridor
RS = 383.1513 Existing 100 yr, 10 yr and 2 yr
.08
.05
.08
Elevation (ft)
Station (ft)
Legend
EG Max WS - Existing 2yr
EG Max WS - Existing 100yr
WS Max WS - Existing 100yr
EG Max WS - Existing 10yr
WS Max WS - Existing 10yr
WS Max WS - Existing 2yr
Ground
Ineff
Bank Sta


D Corridor
RS = 289.8800 Existing 100 yr, 10 yr and 2 yr
.08
.05
.08
Elevation (ft)
Station (ft)
Legend
EG Max WS - Existing 100yr
WS Max WS - Existing 100yr
EG Max WS - Existing 10yr
WS Max WS - Existing 10yr
EG Max WS - Existing 2yr
WS Max WS - Existing 2yr
Ground
Ineff
Bank Sta

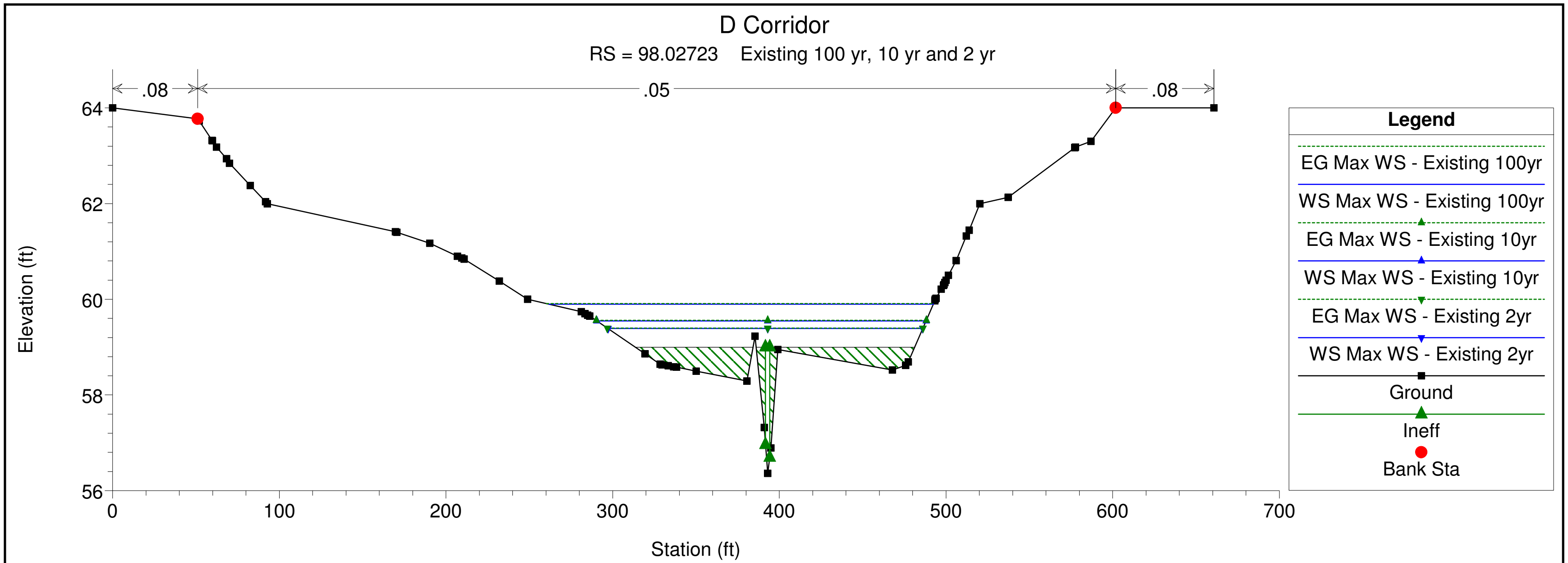

D Corridor
RS = 181.0628 Existing 100 yr, 10 yr and 2 yr
.08
.05
Elevation (ft)
Station (ft)
Legend
EG Max WS - Existing 100yr
WS Max WS - Existing 100yr
EG Max WS - Existing 2yr
EG Max WS - Existing 10yr
WS Max WS - Existing 2yr
WS Max WS - Existing 10yr
Ground
Ineff
Bank Sta

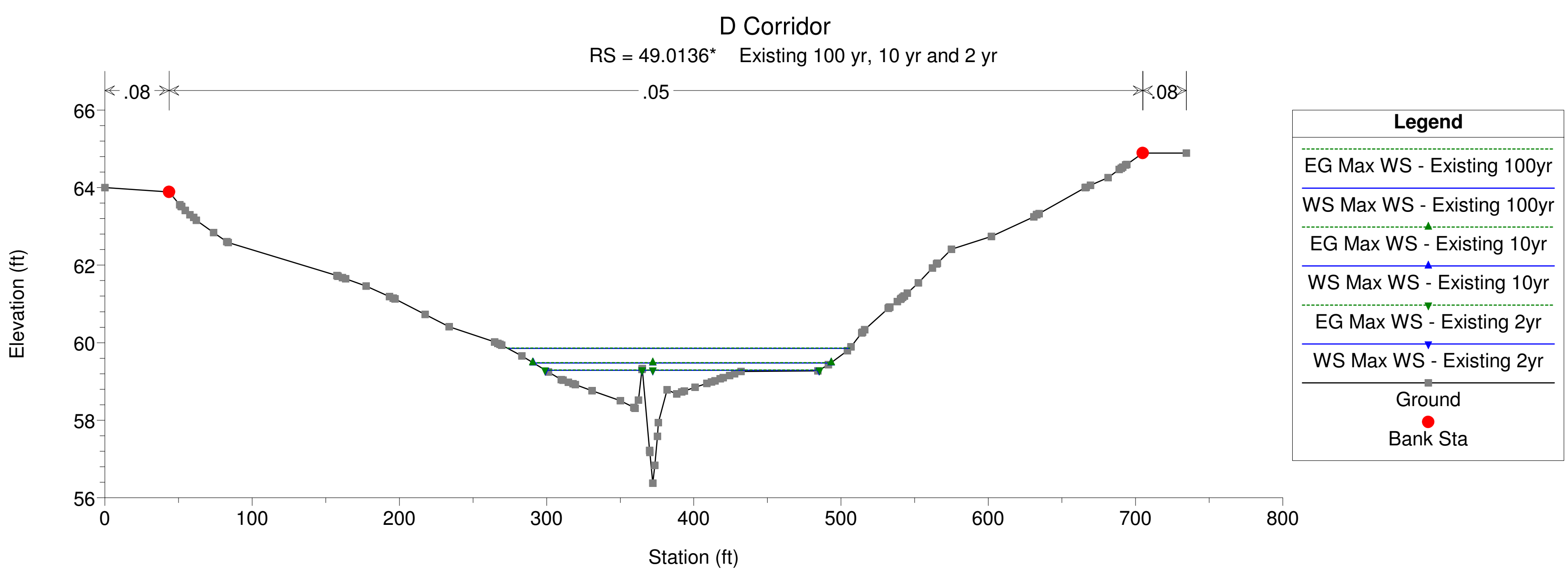


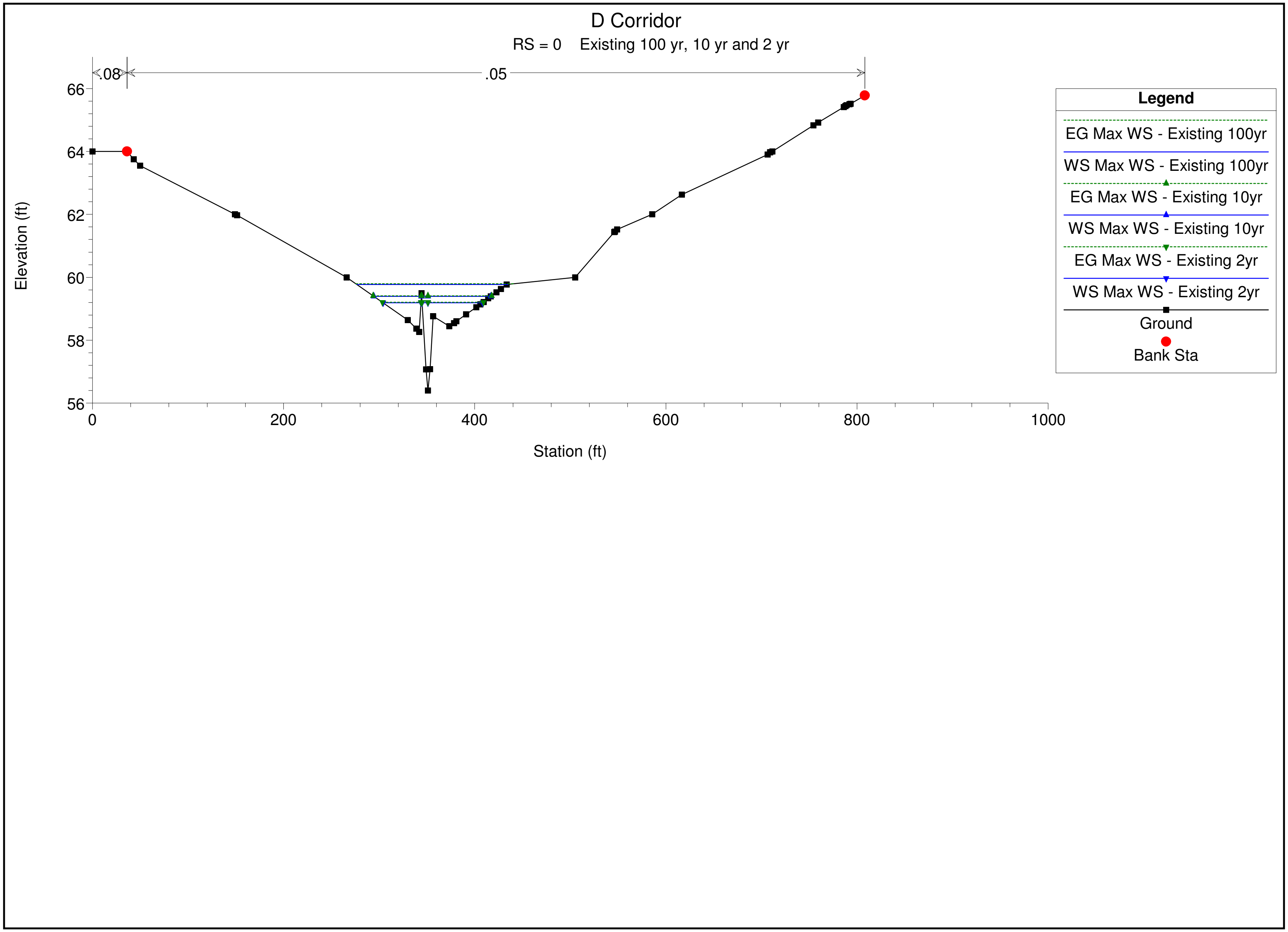
D Corridor
RS = 150 Culv Existing 100 yr, 10 yr and 2 yr
.08
.05
Elevation (ft)
Station (ft)
Legend
WS Max WS - Existing 100yr
EG Max WS - Existing 100yr
EG Max WS - Existing 2yr
EG Max WS - Existing 10yr
WS Max WS - Existing 2yr
WS Max WS - Existing 10yr
Ground
Ineff
Bank Sta

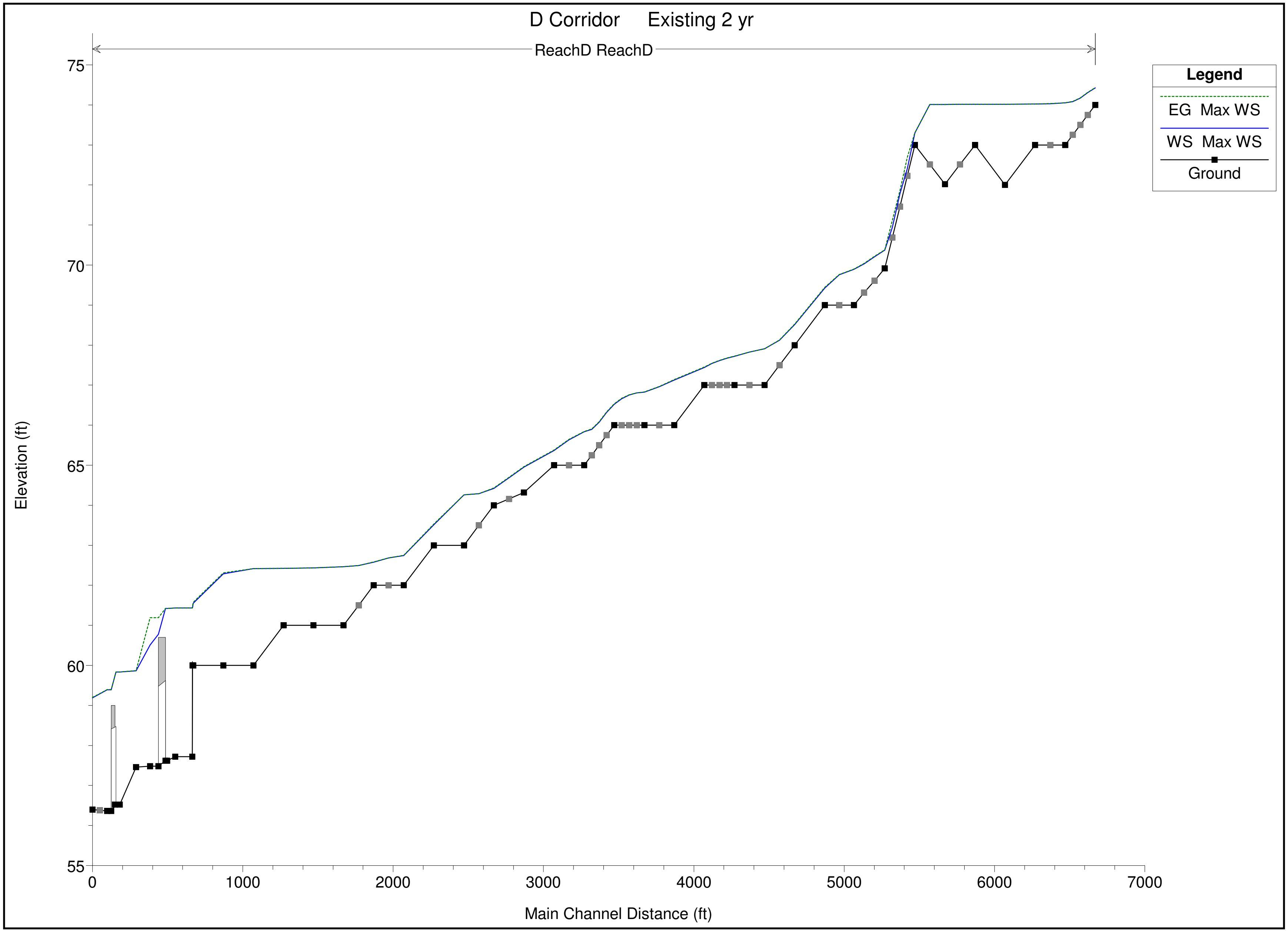


D Corridor
RS = 150 Culv Existing 100 yr, 10 yr and 2 yr
.08
.05
.08
Elevation (ft)
Station (ft)
Legend
EG Max WS - Existing 100yr
WS Max WS - Existing 100yr
EG Max WS - Existing 10yr
WS Max WS - Existing 10yr
EG Max WS - Existing 2yr
WS Max WS - Existing 2yr
Ground
Ineff
Bank Sta


D Corridor
RS = 98.02723 Existing 100 yr, 10 yr and 2 yr
.08
.05
.08
Elevation (ft)
Station (ft)
Legend
EG Max WS - Existing 100yr
WS Max WS - Existing 100yr
EG Max WS - Existing 10yr
WS Max WS - Existing 10yr
EG Max WS - Existing 2yr
WS Max WS - Existing 2yr
Ground
Ineff
Bank Sta


D Corridor
RS = 49.0136* Existing 100 yr, 10 yr and 2 yr
.08
.05
.08
Elevation (ft)
Station (ft)
Legend
EG Max WS - Existing 100yr
WS Max WS - Existing 100yr
EG Max WS - Existing 10yr
WS Max WS - Existing 10yr
EG Max WS - Existing 2yr
WS Max WS - Existing 2yr
Ground
Bank Sta


D Corridor
RS = 0 Existing 100 yr, 10 yr and 2 yr
.08
.05
Elevation (ft)
66
64
62
60
58
56
0
200
400
600
800
1000
Station (ft)
Legend
EG Max WS - Existing 100yr
WS Max WS - Existing 100yr
EG Max WS - Existing 10yr
WS Max WS - Existing 10yr
EG Max WS - Existing 2yr
WS Max WS - Existing 2yr
Ground
Bank Sta



D Corridor Existing 2 yr
ReachD ReachD
Legend
EG Max WS
WS Max WS
Ground
Elevation (ft)
75
70
65
60
55
0
1000
2000
3000
4000
5000
6000
7000
Main Channel Distance (ft)

HEC-RAS Version 4.1.0 Jan 2010
U.S. Army Corps of Engineers
Hydrologic Engineering Center
609 Second Street
Davis, California

```
X     X  XXXXXX    XXXX        XXXX      XX      XXXX
X     X  X        X    X       X   X    X  X    X
X     X  X        X            X   X   X    X   X
XXXXXXX  XXXX     X      XXX   XXXX    XXXXXX    XXXX
X     X  X        X            X  X    X    X       X
X     X  X        X    X       X   X   X    X       X
X     X  XXXXXX    XXXX        X    X  X    X   XXXXX
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PROJECT DATA
Project Title: D Corridor
Project File : DCorridor.prj
Run Date and Time: 6/7/2011 1:37:14 PM

Project in English units

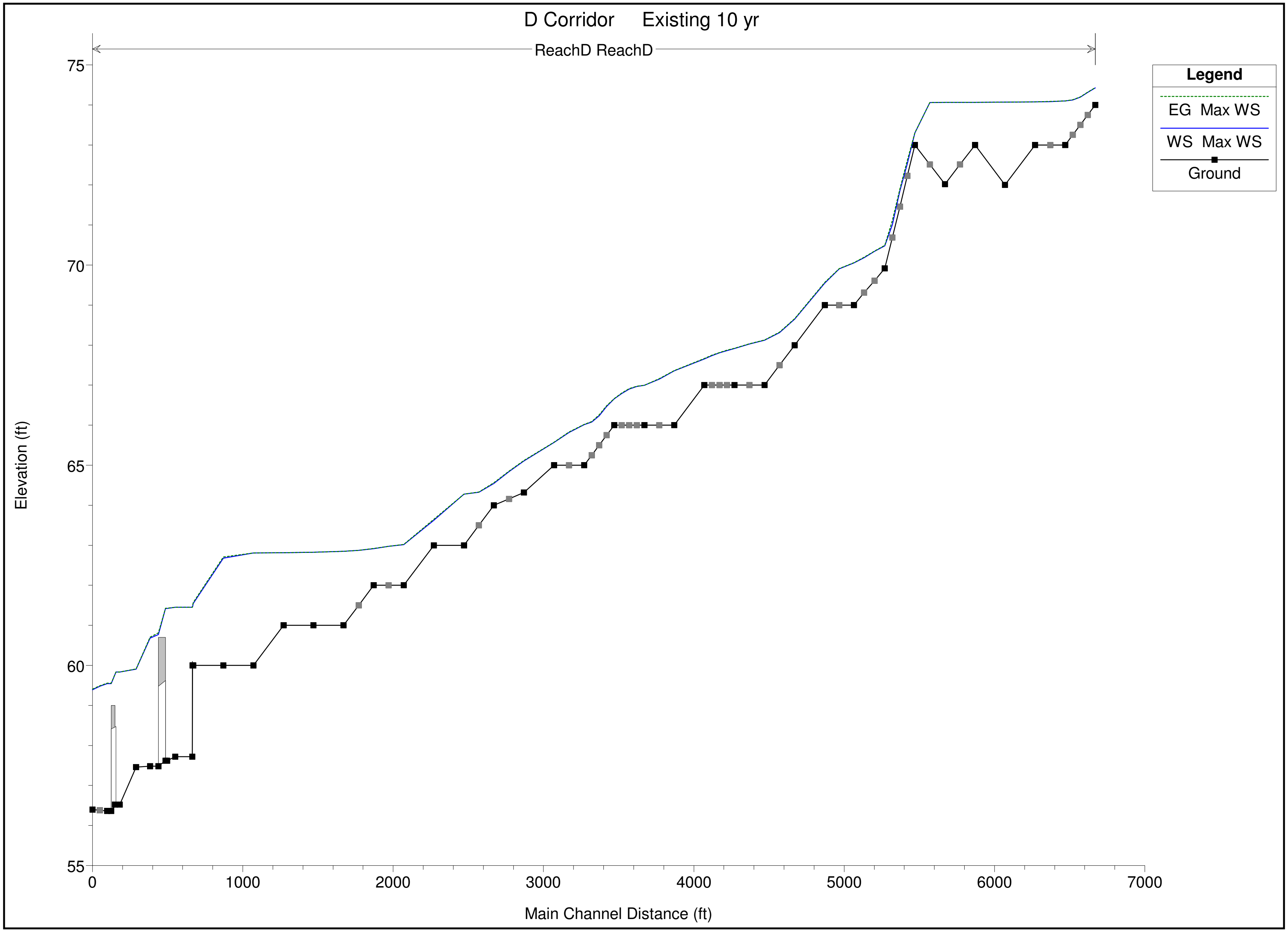
Project Description:
D Corridor - Developed and Existing Conditions
Plan 1 - 100 yr 24 hr Developed

Plan 2 - 10 yr 24 hr Developed
Plan 3 - 2 yr 24 hr Developed
Plan 4 - 100
yr 24 hr Existing
Plan 5 - 10 yr 24 hr Existing
Plan 6 - 2 yr 24 hr Existing

Profile Output Table - Standard Table 1

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
ReachD	6670.417	Max WS	10.00	74.00	74.43		74.43	0.002722	0.54	18.53	90.17	0.21
ReachD	6620.41*	Max WS	10.10	73.75	74.31		74.31	0.003468	0.62	16.20	76.18	0.24
ReachD	6570.41*	Max WS	10.04	73.50	74.17		74.17	0.002586	0.61	16.36	63.14	0.21
ReachD	6520.41*	Max WS	10.00	73.25	74.08		74.09	0.001142	0.45	22.11	73.03	0.14
ReachD	6470.417	Max WS	10.00	73.00	74.05		74.05	0.000355	0.25	40.71	140.01	0.08
ReachD	6370.41*	Max WS	10.96	73.00	74.03		74.03	0.000158	0.20	55.30	143.22	0.06
ReachD	6270.417	Max WS	11.92	73.00	74.02		74.02	0.000035	0.11	108.24	218.99	0.03
ReachD	6070.417	Max WS	14.44	72.00	74.02		74.02	0.000005	0.08	183.31	151.66	0.01
ReachD	5870.417	Max WS	15.54	73.00	74.02		74.02	0.000028	0.12	125.51	178.03	0.03
ReachD	5770.41*	Max WS	16.24	72.51	74.01		74.01	0.000008	0.08	195.93	207.41	0.02
ReachD	5670.417	Max WS	16.94	72.02	74.01		74.01	0.000003	0.06	277.07	226.02	0.01
ReachD	5570.41*	Max WS	18.41	72.51	74.01		74.01	0.000020	0.11	169.69	230.33	0.02
ReachD	5470.417	Max WS	20.77	73.00	73.30		73.31	0.005305	0.61	33.85	275.15	0.28
ReachD	5420.41*	Max WS	20.14	72.23	72.41	72.48	72.69	0.576658	4.30	4.69	56.43	2.63

ReachD	5370.41*	Max WS	26.82	71.46	71.78	71.78	71.86	0.065091	2.21	12.15	77.37	0.98
ReachD	5320.41*	Max WS	27.38	70.69	70.94	71.00	71.12	0.205676	3.37	8.11	64.76	1.68
ReachD	5270.417	Max WS	23.67	69.92	70.37		70.38	0.002763	0.68	34.96	122.55	0.22
ReachD	5202.05*	Max WS	21.90	69.61	70.21		70.22	0.003221	0.69	31.56	119.60	0.24
ReachD	5133.70*	Max WS	22.85	69.31	70.03		70.04	0.003066	0.78	29.13	88.53	0.24
ReachD	5065.343	Max WS	23.80	69.00	69.89		69.90	0.001211	0.61	39.06	86.36	0.16
ReachD	4967.88*	Max WS	24.75	69.00	69.76		69.76	0.001749	0.61	40.53	117.70	0.18
ReachD	4870.417	Max WS	25.70	69.00	69.42		69.44	0.008939	1.04	24.83	111.02	0.39
ReachD	4670.417	Max WS	28.03	68.00	68.51		68.52	0.004189	0.88	32.02	104.30	0.28
ReachD	4570.41*	Max WS	28.94	67.50	68.12		68.13	0.004357	0.76	38.04	106.22	0.22
ReachD	4470.417	Max WS	29.81	67.00	67.91		67.91	0.000564	0.48	62.24	111.31	0.11
ReachD	4370.41*	Max WS	30.71	67.00	67.82		67.83	0.001157	0.50	61.85	121.21	0.12
ReachD	4270.417	Max WS	31.60	67.00	67.72		67.73	0.000939	0.54	58.24	126.64	0.14
ReachD	4220.41*	Max WS	32.02	67.00	67.67		67.68	0.001087	0.57	55.76	124.28	0.15
ReachD	4170.41*	Max WS	32.42	67.00	67.61		67.62	0.001292	0.61	52.91	121.80	0.16
ReachD	4120.41*	Max WS	32.83	67.00	67.54		67.55	0.001727	0.68	48.31	118.32	0.19
ReachD	4070.417	Max WS	33.23	67.00	67.44		67.45	0.002822	0.80	41.35	113.84	0.23
ReachD	3870.417	Max WS	35.57	66.00	67.13		67.14	0.000884	0.65	55.03	87.93	0.14
ReachD	3770.41*	Max WS	35.55	66.00	66.96		66.97	0.002541	0.71	49.95	102.91	0.18
ReachD	3670.417	Max WS	35.52	66.00	66.83		66.83	0.000226	0.33	108.77	173.79	0.07
ReachD	3620.41*	Max WS	35.87	66.00	66.81		66.81	0.000578	0.46	78.81	155.00	0.11
ReachD	3570.41*	Max WS	36.23	66.00	66.76		66.76	0.001403	0.61	59.62	147.86	0.17
ReachD	3520.41*	Max WS	36.58	66.00	66.66		66.67	0.002639	0.73	50.41	153.82	0.22
ReachD	3470.417	Max WS	36.93	66.00	66.52		66.53	0.003470	0.72	51.28	194.26	0.25
ReachD	3420.41*	Max WS	37.20	65.75	66.32		66.33	0.005657	0.99	37.44	126.37	0.32
ReachD	3370.41*	Max WS	37.46	65.50	66.07		66.09	0.005938	1.04	36.17	118.92	0.33
ReachD	3320.41*	Max WS	37.72	65.25	65.90		65.91	0.002434	0.75	50.11	136.21	0.22
ReachD	3270.417	Max WS	37.98	65.00	65.84		65.84	0.000519	0.43	88.03	173.15	0.11
ReachD	3170.41*	Max WS	39.17	65.00	65.63		65.65	0.004251	0.91	43.24	135.23	0.28
ReachD	3070.417	Max WS	40.33	65.00	65.37		65.38	0.003208	0.79	51.33	160.98	0.25
ReachD	2870.417	Max WS	41.31	64.32	64.95		64.96	0.002788	0.79	52.57	148.38	0.23
ReachD	2770.41*	Max WS	41.77	64.16	64.69		64.70	0.003334	0.82	50.92	154.09	0.25
ReachD	2670.417	Max WS	42.21	64.00	64.42		64.43	0.003121	0.79	53.23	161.21	0.24
ReachD	2570.41*	Max WS	42.95	63.50	64.29		64.29	0.000599	0.36	118.41	226.96	0.09
ReachD	2470.417	Max WS	43.72	63.00	64.26		64.26	0.000038	0.17	262.70	305.71	0.03
ReachD	2270.417	Max WS	47.26	63.00	63.51		63.53	0.007827	1.06	44.61	174.35	0.37
ReachD	2070.417	Max WS	47.61	62.00	62.74		62.75	0.000552	0.46	104.43	198.02	0.11
ReachD	1970.41*	Max WS	48.00	62.00	62.68		62.69	0.000804	0.52	91.88	188.21	0.13
ReachD	1870.417	Max WS	46.73	62.00	62.58		62.58	0.001416	0.64	72.88	167.86	0.17
ReachD	1770.41*	Max WS	46.08	61.50	62.49		62.50	0.000490	0.45	102.52	181.67	0.11
ReachD	1670.417	Max WS	46.71	61.00	62.46		62.46	0.000183	0.39	121.04	128.73	0.07
ReachD	1470.417	Max WS	46.99	61.00	62.43		62.44	0.000096	0.26	180.49	213.92	0.05
ReachD	1270.417	Max WS	47.88	61.00	62.42		62.42	0.000035	0.17	280.47	295.14	0.03
ReachD	1070.417	Max WS	48.94	60.00	62.42		62.42	0.000006	0.10	479.64	293.72	0.01
ReachD	870.4178	Max WS	45.15	60.00	62.29		62.31	0.001106	1.27	49.89	155.23	0.18
ReachD	670.4178	Max WS	46.39	60.00	61.55	60.91	61.58	0.003151	1.43	42.29	99.51	0.28
ReachD	665		Inl Struct									
ReachD	550	Max WS	47.19	57.72	61.43		61.43	0.000044	0.22	279.33	274.55	0.04
ReachD	496.2750	Max WS	47.09	57.62	61.42		61.42	0.000262	0.44	107.33	288.18	0.08
ReachD	450		Culvert									
ReachD	383.1513	Max WS	55.85	57.48	60.51	60.57	61.19	6.320767	6.65	8.54	337.34	7.18
ReachD	289.8800	Max WS	55.52	57.46	59.86		59.87	0.000415	0.48	116.34	165.08	0.10
ReachD	181.0628	Max WS	45.04	56.52	59.83		59.84	0.000134	0.30	148.40	177.42	0.06
ReachD	150		Culvert									
ReachD	98.02723	Max WS	55.52	56.36	59.39		59.40	0.002242	0.75	74.00	188.88	0.21
ReachD	49.0136*	Max WS	55.45	56.38	59.29		59.30	0.001918	0.72	76.91	185.44	0.20
ReachD	0	Max WS	55.45	56.40	59.19	58.59	59.20	0.002246	0.95	58.14	102.96	0.22


D Corridor Existing 10 yr
ReachD ReachD
Legend
EG Max WS
WS Max WS
Ground
Elevation (ft)
75
70
65
60
55
0
1000
2000
3000
4000
5000
6000
7000
Main Channel Distance (ft)

HEC-RAS Version 4.1.0 Jan 2010
U.S. Army Corps of Engineers
Hydrologic Engineering Center
609 Second Street
Davis, California

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X     X  XXXXXX   XXXX        XXXX     XX     XXXX
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X     X  X       X            X  X   X    X       X
X     X  X       X    X       X   X  X    X       X
X     X  XXXXXX   XXXX        X    X X    X  XXXXX
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PROJECT DATA
Project Title: D Corridor
Project File : DCorridor.prj
Run Date and Time: 6/7/2011 11:42:20 AM

Project in English units

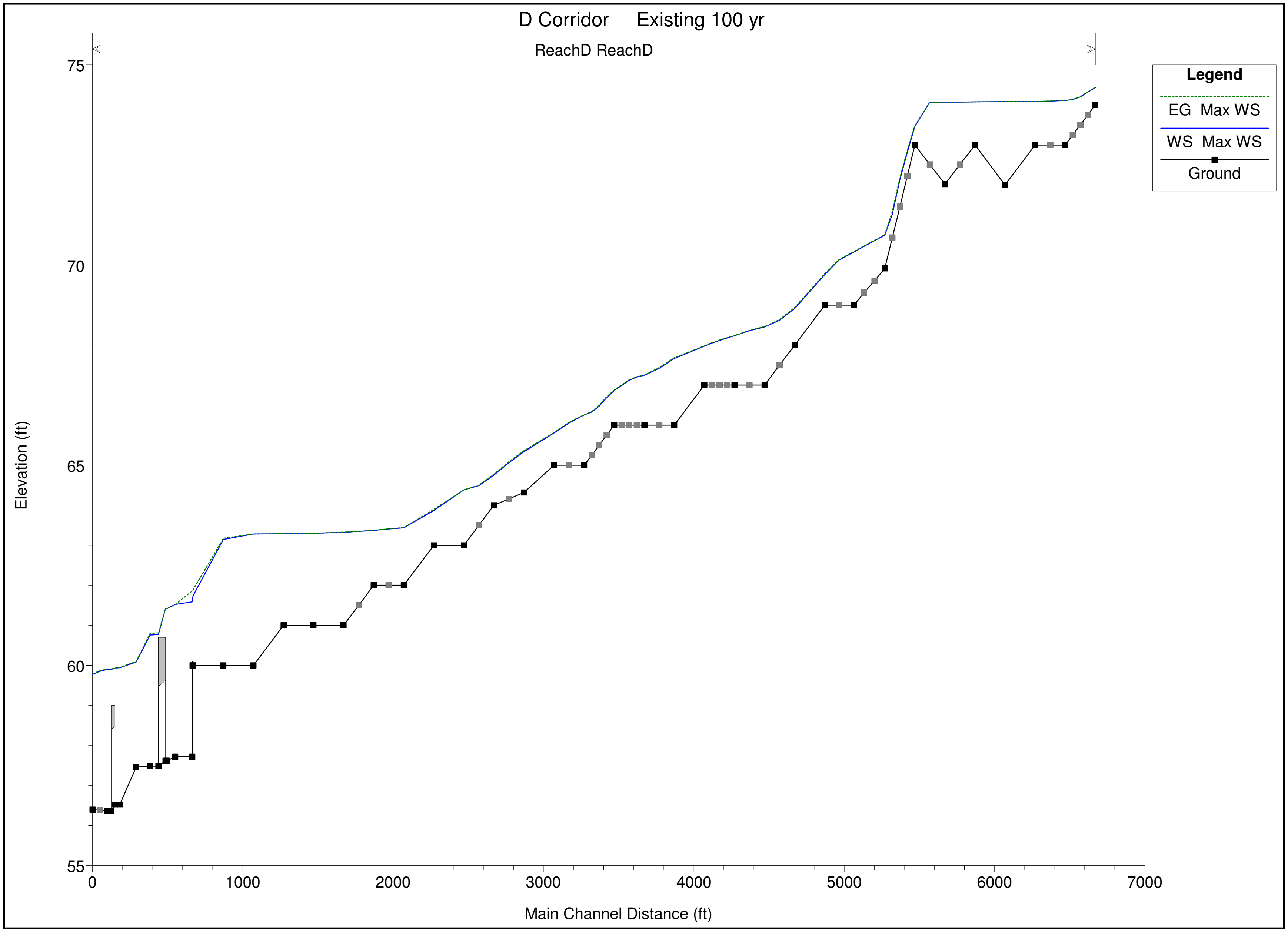
Project Description:
D Corridor - Developed and Existing Conditions
Plan 1 - 100 yr 24 hr Developed

Plan 2 - 10 yr 24 hr Developed
Plan 3 - 2 yr 24 hr Developed
Plan 4 - 100
yr 24 hr Existing
Plan 5 - 10 yr 24 hr Existing
Plan 6 - 2 yr 24 hr Existing

Profile Output Table - Standard Table 1

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
ReachD	6670.417	Max WS	10.00	74.00	74.43		74.43	0.002722	0.54	18.53	90.17	0.21
ReachD	6620.41*	Max WS	10.00	73.75	74.31		74.32	0.003195	0.60	16.57	76.91	0.23
ReachD	6570.41*	Max WS	10.00	73.50	74.19		74.20	0.002061	0.56	17.97	67.82	0.19
ReachD	6520.41*	Max WS	9.99	73.25	74.13		74.13	0.000893	0.39	25.49	86.92	0.13
ReachD	6470.417	Max WS	9.98	73.00	74.10		74.10	0.000215	0.21	47.61	142.48	0.06
ReachD	6370.41*	Max WS	12.07	73.00	74.08		74.09	0.000130	0.19	63.11	148.45	0.05
ReachD	6270.417	Max WS	14.18	73.00	74.08		74.08	0.000037	0.12	120.49	229.83	0.03
ReachD	6070.417	Max WS	19.72	72.00	74.07		74.07	0.000009	0.10	191.49	155.94	0.02
ReachD	5870.417	Max WS	22.14	73.00	74.07		74.07	0.000046	0.16	134.67	181.74	0.03
ReachD	5770.41*	Max WS	23.69	72.51	74.06		74.06	0.000015	0.11	206.30	209.73	0.02
ReachD	5670.417	Max WS	25.24	72.02	74.06		74.06	0.000006	0.09	288.27	229.15	0.01
ReachD	5570.41*	Max WS	28.48	72.51	74.06		74.06	0.000040	0.16	180.88	237.46	0.03
ReachD	5470.417	Max WS	20.77	73.00	73.30		73.31	0.005305	0.61	33.85	275.15	0.28
ReachD	5420.41*	Max WS	32.27	72.23	72.53	72.53	72.61	0.068432	2.27	14.23	90.26	1.01

ReachD	5370.41*	Max WS	32.85	71.46	71.86		71.91	0.030662	1.76	18.64	94.62	0.70
ReachD	5320.41*	Max WS	33.42	70.69	71.01	71.02	71.12	0.087506	2.64	12.68	77.27	1.15
ReachD	5270.417	Max WS	33.96	69.92	70.48		70.49	0.002236	0.68	49.66	146.27	0.21
ReachD	5202.05*	Max WS	35.85	69.61	70.34		70.35	0.002393	0.74	48.15	131.35	0.22
ReachD	5133.70*	Max WS	37.72	69.31	70.19		70.20	0.003026	0.81	46.70	134.45	0.24
ReachD	5065.343	Max WS	39.61	69.00	70.05		70.06	0.001541	0.73	54.16	109.09	0.18
ReachD	4967.88*	Max WS	41.48	69.00	69.90		69.91	0.001722	0.70	59.47	139.78	0.19
ReachD	4870.417	Max WS	43.35	69.00	69.55		69.57	0.006296	1.09	39.87	127.30	0.34
ReachD	4670.417	Max WS	47.81	68.00	68.65		68.66	0.004048	1.00	47.74	123.82	0.28
ReachD	4570.41*	Max WS	49.39	67.50	68.31		68.32	0.003461	0.82	60.35	127.15	0.21
ReachD	4470.417	Max WS	50.97	67.00	68.12		68.13	0.000607	0.58	87.64	123.76	0.12
ReachD	4370.41*	Max WS	52.56	67.00	68.03		68.03	0.001339	0.59	89.12	150.48	0.14
ReachD	4270.417	Max WS	54.15	67.00	67.91		67.92	0.000958	0.64	84.59	145.62	0.15
ReachD	4220.41*	Max WS	54.85	67.00	67.86		67.87	0.001072	0.67	81.44	141.44	0.16
ReachD	4170.41*	Max WS	55.61	67.00	67.81		67.82	0.001226	0.71	78.06	137.74	0.17
ReachD	4120.41*	Max WS	56.32	67.00	67.74		67.75	0.001491	0.77	73.34	133.99	0.18
ReachD	4070.417	Max WS	57.06	67.00	67.65		67.67	0.001953	0.85	67.30	129.68	0.21
ReachD	3870.417	Max WS	61.34	66.00	67.36		67.37	0.001116	0.79	77.21	107.84	0.17
ReachD	3770.41*	Max WS	61.19	66.00	67.15		67.16	0.003073	0.84	72.77	134.57	0.20
ReachD	3670.417	Max WS	61.11	66.00	66.99		67.00	0.000320	0.44	138.66	183.79	0.09
ReachD	3620.41*	Max WS	61.77	66.00	66.96		66.97	0.000770	0.59	105.11	174.75	0.13
ReachD	3570.41*	Max WS	62.42	66.00	66.90		66.91	0.001676	0.75	82.98	170.71	0.19
ReachD	3520.41*	Max WS	63.05	66.00	66.79		66.80	0.003065	0.88	71.93	184.95	0.25
ReachD	3470.417	Max WS	63.69	66.00	66.66		66.67	0.002958	0.80	79.87	230.48	0.24
ReachD	3420.41*	Max WS	64.16	65.75	66.47		66.49	0.005066	1.10	58.07	153.85	0.32
ReachD	3370.41*	Max WS	64.64	65.50	66.23		66.25	0.004766	1.12	57.69	142.94	0.31
ReachD	3320.41*	Max WS	65.11	65.25	66.08		66.09	0.002183	0.85	76.72	160.60	0.22
ReachD	3270.417	Max WS	65.58	65.00	66.01		66.02	0.000644	0.54	120.60	196.86	0.12
ReachD	3170.41*	Max WS	67.78	65.00	65.82		65.83	0.003235	0.96	70.84	166.30	0.26
ReachD	3070.417	Max WS	69.93	65.00	65.57		65.58	0.002073	0.82	85.22	180.43	0.21
ReachD	2870.417	Max WS	71.64	64.32	65.11		65.12	0.002822	0.92	77.64	173.72	0.24
ReachD	2770.41*	Max WS	72.50	64.16	64.84		64.85	0.003025	0.96	75.25	166.24	0.25
ReachD	2670.417	Max WS	73.38	64.00	64.55		64.56	0.003378	1.00	73.71	168.46	0.27
ReachD	2570.41*	Max WS	74.24	63.50	64.33		64.33	0.001443	0.59	126.84	229.28	0.14
ReachD	2470.417	Max WS	53.80	63.00	64.27		64.28	0.000055	0.20	267.11	306.57	0.04
ReachD	2270.417	Max WS	81.95	63.00	63.62		63.65	0.007046	1.27	64.70	178.82	0.37
ReachD	2070.417	Max WS	80.28	62.00	63.02		63.02	0.000416	0.50	161.17	216.24	0.10
ReachD	1970.41*	Max WS	79.71	62.00	62.97		62.98	0.000526	0.53	150.54	219.97	0.11
ReachD	1870.417	Max WS	77.94	62.00	62.91		62.92	0.000684	0.56	139.81	230.20	0.13
ReachD	1770.41*	Max WS	77.20	61.50	62.87		62.87	0.000278	0.44	176.70	213.26	0.08
ReachD	1670.417	Max WS	77.48	61.00	62.85		62.85	0.000185	0.44	175.67	154.28	0.07
ReachD	1470.417	Max WS	77.73	61.00	62.82		62.82	0.000082	0.29	269.44	243.65	0.05
ReachD	1270.417	Max WS	80.07	61.00	62.81		62.81	0.000033	0.20	400.14	318.54	0.03
ReachD	1070.417	Max WS	82.32	60.00	62.81		62.81	0.000009	0.14	597.57	310.71	0.02
ReachD	870.4178	Max WS	84.12	60.00	62.68		62.70	0.001231	1.50	91.07	177.15	0.20
ReachD	670.4178	Max WS	45.59	60.00	61.55	60.91	61.57	0.003096	1.42	41.99	99.11	0.28
ReachD	665		Inl Struct									
ReachD	550	Max WS	85.26	57.72	61.45		61.45	0.000136	0.39	284.44	276.38	0.06
ReachD	496.2750	Max WS	46.56	57.62	61.42		61.43	0.000255	0.43	107.53	288.39	0.08
ReachD	450		Culvert									
ReachD	383.1513	Max WS	85.77	57.48	60.68		60.71	0.016583	1.31	68.04	347.21	0.51
ReachD	289.8800	Max WS	85.77	57.46	59.90		59.91	0.000913	0.70	122.86	178.17	0.15
ReachD	181.0628	Max WS	53.76	56.52	59.83		59.84	0.000191	0.36	148.29	177.38	0.07
ReachD	150		Culvert									
ReachD	98.02723	Max WS	85.75	56.36	59.55		59.56	0.001792	0.82	104.58	197.50	0.20
ReachD	49.0136*	Max WS	85.74	56.38	59.48		59.49	0.001392	0.75	113.83	202.10	0.18
ReachD	0	Max WS	85.74	56.40	59.39	58.77	59.41	0.002218	1.06	81.07	121.96	0.23


D Corridor Existing 100 yr
ReachD ReachD
Legend
EG Max WS
WS Max WS
Ground
Elevation (ft)
75
70
65
60
55
0
1000
2000
3000
4000
5000
6000
7000
Main Channel Distance (ft)

HEC-RAS Version 4.1.0 Jan 2010
U.S. Army Corps of Engineers
Hydrologic Engineering Center
609 Second Street
Davis, California

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PROJECT DATA
Project Title: D Corridor
Project File : DCorridor.prj
Run Date and Time: 6/7/2011 11:40:08 AM

Project in English units

Project Description:
D Corridor - Developed and Existing Conditions
Plan 1 - 100 yr 24 hr Developed

Plan 2 - 10 yr 24 hr Developed
Plan 3 - 2 yr 24 hr Developed
Plan 4 - 100
yr 24 hr Existing
Plan 5 - 10 yr 24 hr Existing
Plan 6 - 2 yr 24 hr Existing

Profile Output Table - Standard Table 1

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
ReachD	6670.417	Max WS	11.27	74.00	74.43		74.43	0.003325	0.60	18.78	90.52	0.23
ReachD	6620.41*	Max WS	10.98	73.75	74.32		74.33	0.003419	0.63	17.30	78.35	0.24
ReachD	6570.41*	Max WS	9.96	73.50	74.20		74.20	0.001949	0.54	18.33	68.80	0.19
ReachD	6520.41*	Max WS	9.91	73.25	74.14		74.14	0.000820	0.38	26.35	89.62	0.12
ReachD	6470.417	Max WS	9.88	73.00	74.11		74.11	0.000189	0.20	49.21	143.05	0.06
ReachD	6370.41*	Max WS	12.48	73.00	74.10		74.10	0.000128	0.19	64.88	149.61	0.05
ReachD	6270.417	Max WS	15.28	73.00	74.09		74.09	0.000040	0.12	123.12	231.05	0.03
ReachD	6070.417	Max WS	21.36	72.00	74.08		74.08	0.000011	0.11	193.03	156.74	0.02
ReachD	5870.417	Max WS	23.67	73.00	74.08		74.08	0.000050	0.17	136.32	182.41	0.04
ReachD	5770.41*	Max WS	25.23	72.51	74.07		74.07	0.000017	0.12	208.13	210.06	0.02
ReachD	5670.417	Max WS	26.69	72.02	74.07		74.07	0.000007	0.09	290.24	229.69	0.01
ReachD	5570.41*	Max WS	30.48	72.51	74.07		74.07	0.000045	0.17	182.89	238.72	0.03
ReachD	5470.417	Max WS	88.32	73.00	73.47		73.48	0.009521	1.10	80.51	424.83	0.40
ReachD	5420.41*	Max WS	87.18	72.23	72.82		72.87	0.017145	1.87	46.65	140.17	0.57

ReachD	5370.41*	Max WS	85.28	71.46	72.14		72.18	0.011914	1.75	48.60	122.15	0.49
ReachD	5320.41*	Max WS	86.14	70.69	71.27		71.34	0.024942	2.18	39.50	124.71	0.68
ReachD	5270.417	Max WS	81.69	69.92	70.75		70.76	0.002035	0.86	95.14	185.63	0.21
ReachD	5202.05*	Max WS	81.04	69.61	70.61		70.62	0.002305	0.93	87.21	165.93	0.23
ReachD	5133.70*	Max WS	81.74	69.31	70.47		70.48	0.002130	0.89	91.43	173.72	0.22
ReachD	5065.343	Max WS	84.25	69.00	70.33		70.34	0.002192	0.89	94.17	182.63	0.22
ReachD	4967.88*	Max WS	86.95	69.00	70.13		70.14	0.002090	0.92	94.12	167.85	0.22
ReachD	4870.417	Max WS	89.87	69.00	69.76		69.79	0.005357	1.30	69.28	150.44	0.34
ReachD	4670.417	Max WS	96.92	68.00	68.92		68.94	0.003320	1.12	86.38	162.85	0.27
ReachD	4570.41*	Max WS	98.55	67.50	68.62		68.63	0.002877	0.94	104.87	156.28	0.20
ReachD	4470.417	Max WS	100.51	67.00	68.45		68.46	0.000699	0.77	130.61	134.67	0.14
ReachD	4370.41*	Max WS	102.52	67.00	68.36		68.36	0.001280	0.71	144.26	178.12	0.14
ReachD	4270.417	Max WS	105.09	67.00	68.23		68.24	0.001232	0.73	143.27	242.94	0.17
ReachD	4220.41*	Max WS	106.09	67.00	68.17		68.18	0.001107	0.82	129.78	172.63	0.17
ReachD	4170.41*	Max WS	107.52	67.00	68.11		68.13	0.001220	0.87	124.17	162.90	0.17
ReachD	4120.41*	Max WS	108.59	67.00	68.05		68.06	0.001390	0.92	118.28	156.82	0.19
ReachD	4070.417	Max WS	109.99	67.00	67.97		67.99	0.001615	0.98	112.20	150.86	0.20
ReachD	3870.417	Max WS	117.74	66.00	67.66		67.68	0.001480	1.03	114.57	134.39	0.20
ReachD	3770.41*	Max WS	117.36	66.00	67.42		67.44	0.003346	1.02	114.82	168.90	0.22
ReachD	3670.417	Max WS	116.97	66.00	67.24		67.25	0.000495	0.63	186.92	202.94	0.11
ReachD	3620.41*	Max WS	118.14	66.00	67.20		67.21	0.001032	0.79	149.34	198.01	0.16
ReachD	3570.41*	Max WS	119.22	66.00	67.12		67.14	0.002038	0.96	124.34	205.77	0.22
ReachD	3520.41*	Max WS	120.42	66.00	66.99		67.01	0.003173	1.05	114.79	231.40	0.26
ReachD	3470.417	Max WS	121.44	66.00	66.86		66.88	0.002385	0.93	130.13	252.33	0.23
ReachD	3420.41*	Max WS	122.30	65.75	66.69		66.71	0.004683	1.26	96.97	198.57	0.32
ReachD	3370.41*	Max WS	123.02	65.50	66.48		66.50	0.004264	1.27	96.76	182.41	0.31
ReachD	3320.41*	Max WS	123.62	65.25	66.33		66.34	0.002331	1.02	121.53	203.58	0.23
ReachD	3270.417	Max WS	124.16	65.00	66.25		66.26	0.000872	0.71	174.39	238.68	0.15
ReachD	3170.41*	Max WS	128.24	65.00	66.05		66.07	0.003040	1.12	114.39	202.15	0.26
ReachD	3070.417	Max WS	132.04	65.00	65.80		65.82	0.002087	1.01	130.72	203.65	0.22
ReachD	2870.417	Max WS	134.80	64.32	65.34		65.36	0.002717	1.11	121.34	199.79	0.25
ReachD	2770.41*	Max WS	136.21	64.16	65.07		65.09	0.003003	1.19	114.84	184.73	0.27
ReachD	2670.417	Max WS	137.77	64.00	64.75		64.78	0.003498	1.26	109.53	180.89	0.28
ReachD	2570.41*	Max WS	140.23	63.50	64.49		64.50	0.002213	0.85	165.81	237.73	0.18
ReachD	2470.417	Max WS	142.30	63.00	64.38		64.39	0.000268	0.47	300.50	313.00	0.09
ReachD	2270.417	Max WS	151.21	63.00	63.87		63.90	0.004514	1.39	109.01	188.24	0.32
ReachD	2070.417	Max WS	138.60	62.00	63.44		63.44	0.000321	0.53	262.12	265.01	0.09
ReachD	1970.41*	Max WS	136.98	62.00	63.41		63.41	0.000341	0.53	258.88	273.30	0.10
ReachD	1870.417	Max WS	135.51	62.00	63.37		63.38	0.000346	0.53	257.87	278.46	0.10
ReachD	1770.41*	Max WS	136.26	61.50	63.35		63.35	0.000210	0.47	287.48	248.83	0.08
ReachD	1670.417	Max WS	137.11	61.00	63.32		63.33	0.000202	0.54	255.35	178.02	0.08
ReachD	1470.417	Max WS	136.49	61.00	63.30		63.30	0.000085	0.35	391.97	273.17	0.05
ReachD	1270.417	Max WS	141.29	61.00	63.29		63.29	0.000039	0.25	559.61	354.89	0.04
ReachD	1070.417	Max WS	145.88	60.00	63.28		63.28	0.000015	0.19	750.64	334.83	0.02
ReachD	870.4178	Max WS	149.65	60.00	63.15		63.18	0.001231	1.69	155.59	194.01	0.20
ReachD	670.4178	Max WS	151.94	60.00	61.75	61.53	61.89	0.016703	3.47	56.23	116.94	0.66
ReachD	665		Inl Struct									
ReachD	550	Max WS	151.94	57.72	61.52		61.52	0.000363	0.66	304.24	287.98	0.10
ReachD	496.2750	Max WS	47.09	57.62	61.42		61.42	0.000262	0.44	107.33	288.18	0.08
ReachD	450		Culvert									
ReachD	383.1513	Max WS	152.95	57.48	60.76		60.80	0.017309	1.66	95.62	351.69	0.56
ReachD	289.8800	Max WS	152.40	57.46	60.08		60.10	0.001588	0.96	159.39	218.69	0.20
ReachD	181.0628	Max WS	152.34	56.52	59.94		59.95	0.001079	0.91	167.65	185.35	0.17
ReachD	150		Culvert									
ReachD	98.02723	Max WS	152.23	56.36	59.90		59.91	0.001167	0.85	178.55	230.79	0.17
ReachD	49.0136*	Max WS	152.19	56.38	59.85		59.86	0.000876	0.78	194.91	231.96	0.15
ReachD	0	Max WS	152.15	56.40	59.77	58.97	59.79	0.001823	1.13	134.49	158.25	0.22

```
                    HEC-RAS Version 4.1.0 Jan 2010
                     U.S. Army Corps of Engineers
                    Hydrologic Engineering Center
                          609 Second Street
                          Davis, California

  X     X  XXXXXX    XXXX        XXXX      XX      XXXX
  X     X  X        X    X       X   X    X  X    X
  X     X  X        X            X   X   X    X   X
  XXXXXXX  XXXX     X      XXX   XXXX    XXXXXX    XXXX
  X     X  X        X            X  X    X    X        X
  X     X  X        X    X       X   X   X    X        X
  X     X  XXXXXX    XXXX        X    X  X    X   XXXXX
```

PROJECT DATA
Project Title: Corridor-C
Project File : CorridorC.prj
Run Date and Time: 5/6/2011 8:06:07 AM

Project in English units

Project Description:
C Corridor - Developed, Interim and Existing Conditions
100 yr 24 hr Existing

Profile Output Table - Standard Table 1

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
Existing C shed	12999.63	Max WS	99.39	72.38	73.26		73.28	0.003102	1.15	86.71	150.44	0.27
Existing C shed	12774.63	Max WS	98.92	71.73	72.81		72.82	0.001209	0.81	122.01	175.52	0.17
Existing C shed	12574.63	Max WS	112.87	71.23	72.56		72.57	0.001470	0.87	130.44	226.95	0.19
Existing C shed	12374.63	Max WS	126.56	70.73	72.38		72.39	0.000413	0.57	222.33	242.93	0.10
Existing C shed	12124.63	Max WS	143.60	70.21	72.23		72.24	0.000819	0.82	174.24	182.55	0.15
Existing C shed	11849.63	Max WS	162.00	69.72	71.93		71.94	0.001478	0.88	183.49	269.77	0.19
Existing C shed	11560.49	Max WS	180.75	69.99	71.55		71.57	0.001310	0.91	198.22	253.83	0.18
Existing C shed	11293.47	Max WS	197.55	69.80	71.19		71.21	0.001480	1.03	191.52	223.46	0.20
Existing C shed	11180.76	Max WS	195.24	69.70	70.93		70.95	0.003140	1.32	148.33	211.04	0.28
Existing C shed	11055.95	Max WS	194.63	69.30	70.65		70.66	0.001573	1.09	178.55	254.16	0.20
Existing C shed	10655.95	Max WS	201.05	67.73	70.30		70.31	0.000264	0.69	293.24	329.64	0.09
Existing C shed	10355.95	Max WS	211.04	67.17	70.26		70.26	0.000073	0.40	523.86	261.20	0.05
Existing C shed	10206.15	Max WS	215.98	67.81	70.22		70.23	0.000372	0.80	268.64	161.50	0.11
Existing C shed	9964.32	Max WS	224.14	67.05	69.87		69.93	0.002136	1.97	113.49	65.43	0.26
Existing C shed	9849.32	Max WS	228.06	65.53	69.51		69.57	0.004275	1.98	115.44	111.71	0.34
Existing C shed	9825		Culvert									
Existing C shed	9809.39	Max WS	228.06	65.90	69.11		69.21	0.011863	2.51	90.73	132.02	0.53
Existing C shed	9739.39	Max WS	230.43	65.79	68.62		68.71	0.002944	2.33	98.75	56.30	0.31
Existing C shed	9589.39	Max WS	235.39	65.26	68.42		68.44	0.000493	0.89	265.54	169.93	0.12
Existing C shed	9439.39	Max WS	240.40	65.58	68.37		68.38	0.000267	0.61	396.06	282.98	0.09
Existing C shed	9264.39	Max WS	246.20	65.43	68.34		68.35	0.000086	0.42	589.55	315.03	0.05
Existing C shed	9263		Lat Struct									
Existing C shed	9164.39	Max WS	246.41	65.27	68.34		68.34	0.000055	0.34	714.91	366.47	0.04
Existing C shed	9014.39	Max WS	111.61	64.92	68.33		68.33	0.000025	0.26	426.29	178.64	0.03
Existing C shed	8989.39*	Max WS	111.58	64.48	68.33		68.33	0.000029	0.27	412.61	184.46	0.03
Existing C shed	8964.39*	Max WS	111.58	64.04	68.33		68.33	0.000031	0.27	407.51	189.17	0.03
Existing C shed	8939.39	Max WS	80.61	63.60	68.32		68.32	0.000363	0.58	138.47	193.82	0.10

Existing C shed	8900		Culvert									
Existing C shed	8838.97	Max WS	111.58	63.50	67.04		68.01	0.013035	7.87	14.18	223.19	0.74
Existing C shed	8733.44	Max WS	256.18	63.73	66.23		66.30	0.005347	2.08	123.25	131.54	0.38
Existing C shed	8602.24	Max WS	258.10	63.12	65.82		65.84	0.001723	1.29	200.14	187.12	0.22
Existing C shed	8400.09	Max WS	260.94	63.59	65.44		65.47	0.002125	1.42	183.29	172.94	0.24
Existing C shed	8201.23	Max WS	262.59	62.93	65.14		65.15	0.001179	1.04	251.88	243.69	0.18
Existing C shed	7998.43	Max WS	261.29	62.27	64.88		64.90	0.001406	1.01	258.16	298.01	0.19
Existing C shed	7800.51	Max WS	258.87	61.88	64.73		64.73	0.000281	0.66	392.56	257.46	0.09
Existing C shed	7603.85	Max WS	250.21	61.74	64.55		64.57	0.001402	1.13	221.08	215.27	0.20
Existing C shed	7448.33	Max WS	247.02	62.04	64.43		64.44	0.000288	0.57	432.59	359.06	0.09
Existing C shed	7249.86	Max WS	246.09	61.01	64.36		64.37	0.000478	0.74	333.39	274.89	0.12
Existing C shed	7049.18	Max WS	246.52	60.83	64.29		64.29	0.000275	0.59	416.01	315.37	0.09
Existing C shed	6900.65	Max WS	248.07	59.76	64.26		64.27	0.000103	0.47	532.97	277.98	0.06
Existing C shed	6700.38	Max WS	249.62	60.78	64.24		64.25	0.000079	0.40	621.58	331.16	0.05
Existing C shed	6500.68	Max WS	251.73	60.32	64.22		64.22	0.000148	0.46	541.84	371.13	0.07
Existing C shed	6300.08	Max WS	253.77	60.52	63.74		63.82	0.004364	2.36	137.88	171.62	0.36
Existing C shed	6099.15	Max WS	255.93	60.30	62.41		62.53	0.008603	2.73	93.82	95.08	0.48
Existing C shed	5900.55	Max WS	257.95	59.82	61.31		61.35	0.003226	1.42	167.08	194.20	0.28
Existing C shed	5599.9	Max WS	261.01	58.07	60.73		60.73	0.000916	0.84	339.64	435.46	0.16
Existing C shed	5449.15*	Max WS	258.80	57.61	60.60		60.61	0.000748	0.87	299.30	331.87	0.15
Existing C shed	5298.41	Max WS	402.53	57.16	60.48		60.49	0.000723	0.85	470.94	432.90	0.14
Existing C shed	5200.78	Max WS	403.63	57.06	60.41		60.42	0.000761	0.89	453.02	405.11	0.15
Existing C shed	5003.05	Max WS	405.98	56.65	60.03		60.07	0.002980	1.57	276.51	350.57	0.28
Existing C shed	4848.83	Max WS	407.83	56.29	59.75		59.77	0.001008	1.02	401.00	357.79	0.17
Existing C shed	4651.77	Max WS	410.10	56.43	59.43		59.46	0.002181	1.43	286.23	272.65	0.25
Existing C shed	4466.42	Max WS	411.68	56.11	58.94		58.99	0.002899	1.79	230.04	450.75	0.29
Existing C shed	4266.42	Max WS	412.47	55.64	58.65		58.65	0.000436	0.78	550.27	413.52	0.11
Existing C shed	4066.42	Max WS	413.86	55.37	58.53		58.54	0.000718	0.95	435.84	350.91	0.15
Existing C shed	3816.42	Max WS	409.40	54.26	58.27		58.29	0.001291	1.37	333.28	284.91	0.20
Existing C shed	3566.43	Max WS	403.70	54.15	58.09		58.10	0.000312	0.93	530.73	321.54	0.11
Existing C shed	3500.79	Max WS	403.08	53.81	58.07		58.08	0.000262	0.80	564.85	350.99	0.10
Existing C shed	3302.08	Max WS	383.47	52.47	57.87		57.90	0.001492	1.56	312.57	308.81	0.21
Existing C shed	3094.08	Max WS	375.54	51.80	57.72		57.72	0.000179	0.77	650.74	398.00	0.08
Existing C shed	2899.9	Max WS	375.97	52.57	57.69		57.70	0.000071	0.53	890.35	443.29	0.05
Existing C shed	2800.08	Max WS	376.92	51.13	57.69		57.69	0.000043	0.45	1141.11	540.06	0.04
Existing C shed	2200.63	Max WS	382.47	50.42	57.65		57.66	0.000073	0.75	702.67	237.71	0.06
Existing C shed	2075.63	Max WS	383.63	50.55	57.64		57.65	0.000113	0.90	583.55	211.02	0.07
Existing C shed	2040.63	Max WS	383.96	50.31	57.58		57.64	0.001443	1.99	232.00	204.67	0.23
Existing C shed	2030		Culvert									
Existing C shed	1970.63	Max WS	383.96	50.65	56.90		57.13	0.002018	3.86	99.44	190.28	0.30
Existing C shed	1875.63	Max WS	384.87	50.65	56.71		56.94	0.001924	3.85	99.88	75.91	0.30
Existing C shed	1860		Culvert									
Existing C shed	1780.63	Max WS	384.84	50.65	54.78		55.57	0.014957	7.13	54.01	24.93	0.74
Existing C shed	1691.04	Max WS	385.69	50.28	54.39		54.55	0.004528	3.33	131.03	109.92	0.40
Existing C shed	1601.04	Max WS	386.57	50.21	54.17		54.22	0.002497	2.26	235.47	216.29	0.28
Existing C shed	1501.04	Max WS	387.45	49.83	53.91		53.96	0.003014	2.25	231.26	236.50	0.31
Existing C shed	1301.04	Max WS	413.26	48.83	53.46		53.49	0.001724	1.90	311.85	311.34	0.24
Existing C shed	1200	Max WS	413.24	49.05	53.28	52.69	53.30	0.002005	1.79	325.55	378.23	0.25

Appendix 9.1.3 Modeling Results Summary (SacCalc & HEC-RAS)

Elverta - summary inflow information -Developed Job 7501.300 Date:June 8, 2011

Shed(s)	HEC-RAS Inflow Station	HEC-RAS Sta Inflow Applied	Subshed Peak Flow	100yr Peak Flow In Creek	
B10, B20	7550	7550	186.87	186.87	JB20
B20CH	7300	7100	21.52	133.34	Uniform Lateral Inflow to Sta 5250
B30	5550	5450	83.08	107.09	
B40	5450	5250	99.02	111.60	
B50	4700	4500	27.60	104.52	
B50CH	4500	4250	17.20	105.58	Uniform Lateral Inflow to Sta 2650
B60	3887.5	3800	102.81	136.95	
B70	3800	3550	63.36	165.65	
B80	2100	1850	60.93	94.84	
B80CH	1850	1600	7.84	101.09	Uniform Lateral Inflow to Sta 1375
B90	1600	1512.5	85.84	137.88	
C10, C20	13307	13307	175.90	175.90	JNC001
C10CH	12950	12800	9.48	121.45	Uniform Lateral Inflow to Sta 12200
C30,C40	12200	12137.5	205.94	236.98	JNC003
C30CH	11115	10965	13.88	179.74	Uniform Lateral Inflow to Sta 9925
C50	10142	10035	66.56	189.04	
C60	9925	9900	168.22	210.80	
C60CH	9300	9100	5.83	180.38	Uniform Lateral Inflow to Sta 8900
C70,C70CH,C75,C80	8050	7850	168.82	265.37	C1020R
C90	7850	7650	40.87	276.33	
C100	7650	7440	133.88	307.58	
C110	7440	7290	168.56	382.61	
C100CH	6934	6856	15.05	367.72	Uniform Lateral Inflow to Sta 5950
C120	5200	4950	95.46	329.56	
C140	4950	4800	77.01	322.33	
C130CH	4800	4575	5.90	297.73	Uniform Lateral Inflow to Sta 3900
C130	3300	3200	102.39	284.65	
D15	7800	7800	11.27	11.27	
D1CH	7700	7499.71	5.23	14.70	Uniform Lateral Inflow to Sta 7400
D1	7400	7360	32.31	25.32	
D2CH	7280	7250	10.58	25.18	Uniform Lateral Inflow to Sta 6300.12
D2	6500	6300.12	120.26	64.37	
D3	6300.13	6115	90.08	85.71	Uniform Lateral Inflow to Sta 5024.42
D3CH	6130	6079.98	12.48	84.40	
D4	5100.02	4850	57.32	59.92	Uniform Lateral Inflow to Sta 4850
D4-8CH	5000	4800	18.94	59.52	
D6	4100	3900	40.30	59.18	
D5	3900	3700	42.30	96.60	
D7	3860	3200.02	57.92	70.94	
D8	2670	2500	94.15	80.60	

B - B Coriidor tributary
C - C Corridor tributary
D - D Corridor tributary

Elverta - summary inflow information - Interim Job 7501.300 Date: June 8, 2011

Shed(s)	HEC-RAS Inflow Station	HEC-RAS Sta Inflow Applied	Subshed Peak Flow	100yr Peak Flow In Creek	
B35, B40	8600.171	8600.171	135.77	135.77	JB35
B30	8402.062	8200.812	67.98	140.20	Uniform Lateral Inflow to Sta 6600.481
B25	6500.082	6299.85	64.13	170.25	Uniform Lateral Inflow to Sta 6000.284
B20	5800.152	5600.48	39.04	182.23	Uniform Lateral Inflow to Sta 5000.639
B15	4800.247	4600.325	65.57	192.68	Uniform Lateral Inflow to Sta 2799.844
DET00B	2601.559	2406.84	42.75	167.73	Uniform Lateral Inflow to Sta 1153.125
C10, C20	13307	13307	99.42	99.42	C50
C10CH	12950	12800	9.48	94.10	Uniform Lateral Inflow to Sta 12200
C25,C40	12200	12137.5	171.89	205.18	JNC003
C30	11825	10965	85.48	179.80	Uniform Lateral Inflow to Sta 9900
C50	9925	9900	11.26	198.51	
C60A, C60B	9500	9300	120.66	191.63	JNC005
C60CH	9300	9100	5.83	178.57	Uniform Lateral Inflow to Sta 8700
C70A	8900	8700	22.16	171.70	
C70,C70CH,C75,C80	8300	8050	165.46	279.33	C1020R
C90	7850	7650	36.07	280.05	
C100	7012	6934	126.43	293.32	
C100CH	6934	6856	14.87	291.41	Uniform Lateral Inflow to Sta 5950
C110A, C110B	6200	5950	126.63	349.00	JNC004
C120	5200	4950	95.30	305.97	
C140	4950	4800	77.02	301.74	
C130CH	4800	4575	5.90	281.88	Uniform Lateral Inflow to Sta 3900
C130	3300	3200	109.16	279.64	
D Corridor					
Not applicable					

B - B Coriidor tributary
C - C Corridor tributary
D - D Corridor tributary

P:\7501\office\Tables,charts & calcs\HEC-RAS Inflow Information_Interim.xls

Elverta - summary inflow information -Existing Job 7501.300 Date: June 8, 2011

Shed(s)	HEC-RAS Inflow Station	HEC-RAS Sta Inflow Applied	Subshed Peak Flow	100yr Peak Flow In Creek	
B35, B40	8600.171	8600.171	135.77	135.77	JB35
B30	8402.062	8200.812	67.98	140.20	Uniform Lateral Inflow to Sta 6600.481
B25	6500.082	6299.85	64.13	170.20	Uniform Lateral Inflow to Sta 6600.284
B20	5800.152	5600.48	39.04	182.29	Uniform Lateral Inflow to Sta 5000.639
B15	4800.247	4600.325	65.57	193.43	Uniform Lateral Inflow to Sta 2799.844
B	2601.559	2406.84	33.71	177.95	Uniform Lateral Inflow to Sta 1153.125
C50	12999.63	12999.63	99.42	99.42	
C40	12744.63	12574.63	112.66	113.03	Uniform Lateral Inflow to Sta 11293.47
C30	11180.76	11055.95	98.88	200.79	Uniform Lateral Inflow to Sta 9014.39
C20	8939.39	8838.97	80.85	111.58	Uniform Lateral Inflow to Sta 5599.9
C60,C70,C80	5449.15	5298.41	259.58	402.74	J60C
C10	5298.41	5200.78	108.53	403.84	Uniform Lateral Inflow to Sta 1501.04
C	1501.04	1301.04	72.93	413.27	
D15	6670.417	6670.417	11.27	11.27	
D10	6470.417	6370.41	100.80	16.82	Uniform Lateral Inflow to Sta 3870.417
D	3670.417	3620.41	111.64	118.14	Uniform Lateral Inflow to Sta 496.275

B - B Coriidor tributary
C - C Corridor tributary
D - D Corridor tributary

9.1.4 B-Corridor Profile & Sections (included in Electronic Files in back of report)

9.1.5 C-Corridor Profile & Sections (included in Electronic Files in back of report)

9.1.6 D-Corridor Profile & Sections (included in Electronic Files in back of report)

9.1.7 Trunk Drainage Pipe System Analysis (Hydrology & Hydraulics)

ELVERTA STORM DRAIN MASTER PLAN

B Shed Hydraulic Results - Trunk Drainage Based on Nolte Design

Node Name	*Contrib-uting Shed*	*D/S Node*	n-value	Rim/Grate	Inv. U/S (out of pipe)	Inv. D/S (in D/S pipe)	Pipe D (in)	Slope (ft/ft)	length (ft)	Drop in MH (ft)	*Q design (cfs)*	*Approx. Depth of flow d*	Velocity (ft/s) *Approx. V*	*Approx. 75% of Vc*	*Approx. 125% of Vc*
B20															
B20-1	B-10a	B20-2	0.015	80	76	74.5	24	0.0023	661		9.10	1.39	3.33	4.42	7.37
B20-2	B-10b	B20-3	0.015	81.5	74.5	73	30	0.0023	661		12.31	1.44	3.65	4.62	7.70
B20-3	B-20a	B20-4	0.015	78.4	73	69	36	0.0018	2193		25.40	2.16	3.94	5.43	9.05
B20-4	B-20b	B20-6	0.015	74	69	68.2	36	0.0037	219		48.81	2.80	5.49	6.42	10.71
B20-6	B-20d	B20-7	0.015	75.9	68.2	67.2	54	0.0014	691		75.00	3.54	4.65	6.77	11.29
B20-7	B-20e		0.015	73.7	67.2	67	54	0.0020	100		75.89	3.17	5.39	6.80	11.33
B30															
B30-1	B-30a	B30-2	0.015	65	61.1	60.2	24	0.0020	442		8.43	1.37	3.15	4.34	7.23
B30-2	B-30b		0.015	64.5	60.2	60	24	0.0020	100		11.08	1.70	3.18	4.66	7.77
B40															
B40-1	B-40a	B40-2	0.015	67	63	62.2	24	0.0020	395		8.12	1.34	3.12	4.29	7.15
B40-2	B-40b	B40-3	0.015	70.9	62.2	61.6	24	0.0020	294		8.84	1.41	3.17	4.39	7.31
B40-3	B-40c	B40-4	0.015	70.5	61.6	60.4	24	0.0039	308		11.10	1.32	4.31	4.66	7.76
B40-4	B-40d		0.015	69.1	60.4	60	24	0.0040	100		13.40	1.49	4.48	4.89	8.15
B60															
B60-1	B-60a		0.015	59	56.3	56.1	24	0.0020	100		9.71	1.52	3.18	4.50	7.49
B90															
B90-1	B-90a		0.015	53	49.7	49.5	24	0.0020	100		10.00	1.47	3.16	4.44	7.40

ELVERTA STORM DRAIN MASTER PLAN

B Shed Hydrology Results - Nolte Method

			AR 1-5 25% PI		RD 3,4,5 50% PI		RD 6,7 60% PI		School 50% PI		Major Roads 95% PI		Park 5% PI		OS 1% PI		NODE TOTAL (Prelim sizing)				Flow
Node Name	*Contrib-uting Shed*	*D/S Shed*	*Acres*	*Cum. Acres*	*Acres*	*Cum. Acres*	*Acres*	*Cum. Acres*	*Acres*	*Cum. Acres*	*Acres*	*Cum. Acres*	*Acres*	*Cum. Acres*	*Acres*	*Cum. Acres*	*Acres*	*PI*	*Cum. Acres*	*PI_{AVG}*	*Q_{nolte}*
B20																					
B20-1	B-10a	B-10b													35.46	35.46	35.46	1%	35.46	1%	9.10
B20-2	B-10b	B-20a													9.54	45.00	9.54	1%	45.00	1%	12.31
B20-3	B-20a	B-20b	30.35	30.35												45.00	30.35	25%	75.35	11%	25.40
B20-4	B-20b	B-20d	41.41	71.76												45.00	41.41	25%	116.76	16%	48.81
B20-5	B-20c	B-20d	19.08	19.08							2.50	2.50					21.58	33%	21.58	33%	5.16
B20-6	B-20d	B-20e		90.84							1.05	3.55	10.11	10.11		45.00	11.16	13%	149.50	18%	75.00
B20-7	B-20e			90.84							1.22	4.77		10.11		45.00	1.22	95%	150.72	19%	75.89
B30																					
B30-1	B-30a	B-30b			0.51	0.51					3.06	3.06	28.50	28.50	1.22	1.22	33.29	14%	33.29	14%	8.43
B30-2	B-30b				6.80	7.31					1.44	4.50		28.50		1.22	8.24	58%	41.53	23%	11.08
B40																					
B40-1	B-40a	B-40b			12.43	12.43	11.11	11.11			3.22	3.22			1.80	1.80	28.56	56%	28.56	56%	8.12
B40-2	B-40b	B-40c			1.79	14.22	0.64	11.75				3.22				1.80	2.43	53%	30.99	56%	8.84
B40-3	B-40c	B-40d				14.22	6.28	18.03				3.22				1.80	6.28	60%	37.27	56%	11.10
B40-4	B-40d					14.22	5.99	24.02				3.22				1.80	5.99	60%	43.26	57%	13.40
B50																					
	B-50a		3.01	3.01							1.78	1.78			10.25	10.25	15.04	17%	15.04	17%	3.52
B60																					
B60-1	B-60a				37.40	37.40											37.40	50%	37.40	50%	9.71
B70																					
	B-70a						11.15	11.15	9.47	9.47	2.49	2.49	4.66	4.66	0.74	0.74	28.50	49%	28.50	49%	7.03
B80																					
	B-80a				7.77	7.77	10.93	10.93			3.21	3.21	4.20	4.20			26.10	52%	26.10	52%	6.78
B90																					
B90-1	B-90a				31.68	31.68					3.54	3.54					35.23	55%	35.23	55%	10.00

ELVERTA STORM DRAIN MASTER PLAN

C Shed Hydraulic Results - Trunk Drainage Based on Nolte Design

													Velocity (ft/s)		
Node Name	***Contrib-uting Shed***	***D/S Node***	**n-value**	**Rim/Grate**	**Inv. U/S (out of pipe)**	**Inv. D/S (in D/S pipe)**	**Pipe D (in)**	**Slope (ft/ft)**	**length (ft)**	**Drop in MH (ft)**	***Q_{design} (cfs)***	***Approx. Depth of flow d***	***Approx. V***	***Approx. 75% of Vc***	***Approx. 125% of Vc***
C20															
C20-1	C-20a	C20-2	0.015	82	76.2	74	24	0.0020	1111		9.04	1.45	3.14	4.41	7.35
C20-2	C-20b	C20-3	0.015	81	74	72.6	36	0.0020	685		23.99	2.00	4.10	5.35	8.92
C20-3	C-20c	C20-4	0.015	80	72.6	70.7	42	0.0020	955		40.95	2.63	4.59	6.06	10.10
C20-4	C-20d	C20-5	0.015	76.5	70.7	70.1	42	0.0023	264		40.95	2.50	4.87	6.06	10.10
C20-5	C-20e		0.015	74	70.1	69.9	42	0.0020	100		40.95	2.62	4.61	5.94	9.90
C30															
C30-1	C-30a	C30-2	0.015	79.6	72.2	71	24	0.0021	578		7.26	1.23	3.08	4.17	6.94
C30-2	C-30b	C30-4	0.015	79.9	71	69.6	24	0.0022	646		9.72	1.48	3.29	4.50	7.49
C30-3	C-30c	C30-4	0.015	76.9	72.5	69.6	24	0.0022	1322		6.07	1.08	3.03	3.98	6.63
C30-4	C-30d	C30-5	0.015	75	69.6	67.7	42	0.0021	904		37.96	2.39	4.64	5.89	9.82
C30-5	C-30e		0.015	74.5	67.7	67.5	42	0.0020	100		44.95	2.74	4.63	6.16	10.26
C40															
C40-1	C-40a	C40-2	0.015	71.1	68	66.8	24	0.0021	568		8.97	1.41	3.23	4.40	7.34
C40-2	C-40b		0.015	74.5	66.8	66.6	30	0.0020	100		11.19	1.41	3.41	4.51	7.51
C60															
C60-1	C-60a	C60-2	0.015	73	68	65.5	24	0.0037	673		10.46	1.29	4.19	4.58	7.64
C60-2	C-60b	C60-4	0.015	71	65.5	62.9	24	0.0031	844		10.46	1.38	3.87	4.58	7.64
C60-3	C-60c	C60-4	0.015	69.7	64.3	62.9	24	0.0020	686		6.08	1.51	3.21	3.98	6.63
C60-4	C-60d	C60-5	0.015	67	62.9	61.3	36	0.0020	800		29.21	2.68	4.13	5.63	9.39
C60-5	C-60e		0.015	66.5	61.3	61.1	42	0.0020	100		33.47	2.51	4.57	5.70	9.50
C70															
C70-1	C-75a	C70-2	0.015	70.8	68	65.1	24	0.0021	1358		45.77	1.22	3.11	5.86	9.76
C70-2	C-70a	C70-3	0.015	66.6	65.1	63.7	30	0.0021	672		64.94	1.31	3.38	6.36	10.60
C70-3	C-70b	C70-4	0.015	66	63.7	62.3	30	0.0020	687		74.34	1.42	3.45	6.48	10.80
C70-4	C-70c	C70-5	0.015	66.1	62.3	61.9	30	0.0022	180		82.48	1.48	3.65	6.56	10.93
C70-5	C-70d		0.015	66	61.9	61.7	30	0.0020	100		82.48	1.53	3.50	6.56	10.93
C100															
C100-1	C-100a	C100-2	0.015	61	57.5	56.3	24	0.0021	579		11.51	1.72	3.24	4.70	7.83
C100-2	C-100b	C100-3	0.015	66.8	56.3	54.8	30	0.0020	741		18.80	1.99	3.72	5.16	8.61
C100-3	C-100c		0.015	62.9	54.8	54.6	36	0.0020	100		19.63	1.77	3.91	5.08	8.46
C110															
C110-1	C-110b	C110-3	0.015	68.8	57.7	55	24	0.0020	1337		5.48	1.58	3.20	4.56	7.61
C110-3	C-110d		0.015	59.4	55	54.8	42	0.0020	100		43.44	2.67	4.62	6.10	10.17
C110-2	C-110e	C110-3	0.015	60.5	56.5	55	30	0.0020	754		14.60	1.67	3.59	4.83	8.05
C120															
C120-1	C-120a	C120-2	0.015	58.7	50.9	49.6	24	0.0021	630		10.72	1.62	3.24	4.61	7.69
C120-2	C-120b		0.015	53.7	49.6	49.4	30	0.0020	100		14.76	1.68	3.60	4.85	8.08
C130															
C130-1	C-130a	C130-2	0.015		49	47.2	24	0.0021	856		9.29	1.45	3.23	4.44	7.41
C130-2	C-130b		0.015		47.2	47	30	0.0020	100		15.24	1.72	3.62	4.89	8.15

ELVERTA STORM DRAIN MASTER PLAN

C Shed Hydrology Results - Nolte Method

			AR 1 10% PI		AR 1-5 25% PI		RD 3,4,5 50% PI		RD 6,7 60% PI		RD 10,20 70% PI		Commercial/Office 90% PI		School 50% PI		Major Roads 95% PI		Park 5% PI		OS 1% PI		NODE TOTAL (Prelim sizing)				Flow
Node Name	*Contrib-uting Shed*	*D/S Shed*	*Acres*	*Cum. Acres*	*Acres*	*Cum. Acres*	*Acres*	*Cum. Acres*	*Acres*	*Cum. Acres*	*Acres*	*Cum. Acres*	*Acres*	*Cum. Acres*	*Acres*	*Cum. Acres*	*Acres*	*Cum. Acres*	*Acres*	*Cum. Acres*	*Acres*	*Cum. Acres*	*Acres*	*PI*	*Cum. Acres*	*PI_{AVG}*	*Q_{nolte}*
C20																											
C20-1	C-20a	C-20b			35.27	35.27																	35.27	25%	35.27	25%	9.04
C20-2	C-20b	C-20c			36.60	71.87																	36.60	25%	71.87	25%	23.99
C20-3	C-20c	C-20d			31.66	103.53															2.07	2.07	33.73	24%	105.60	25%	40.95
C20-4	C-20d	C-20e				103.53																2.07			105.60	25%	40.95
C20-5	C-20e					103.53																2.07			105.60	25%	40.95
C30																											
C30-1	C-30a	C-30b			24.19	24.19									5.11	5.11							29.30	29%	29.30	29%	7.26
C30-2	C-30b	C-30d			2.71	26.90									4.88	9.99	0.54	0.54					8.13	45%	37.43	33%	9.72
C30-3	C-30c	C-30d			25.02	25.02																	25.02	25%	25.02	25%	6.07
C30-4	C-30d	C-30e				51.92	38.39	38.39								9.99		0.54					38.39	50%	100.84	37%	37.96
C30-5	C-30e					51.92	4.59	42.98								9.99	1.37	1.92	4.68	4.68			10.64	36%	111.48	37%	44.95
C40																											
	C-40a	C-40b			5.54	5.54	29.52	29.52															35.06	46%	35.06	46%	8.97
	C-40b					5.54	4.48	34.00									2.32	2.32					6.80	65%	41.86	49%	11.19
C50																											
	C-50a						11.75	11.75			5.64	5.64	2.57	2.57			1.54	1.54					21.50	63%	21.50	63%	7.02
C60																											
C60-1	C-60a	C-60b					36.74	36.74									1.63	1.63					38.37	52%	38.37	52%	10.46
C60-2	C-60b	C-60d						36.74										1.63							38.37	52%	10.46
C60-3	C-60c	C-60d							14.39	14.39	4.62	4.62											19.01	62%	19.01	62%	6.08
C60-4	C-60d	C-60e					19.28	56.02		14.39		4.62					4.15	5.78					23.43	58%	80.81	56%	29.21
C60-5	C-60e							56.02		14.39	8.49	13.11						5.78					8.49	70%	89.30	57%	33.47
C70																											
C70-1	C-75a	C-70a	112.63	112.63																			112.63	10%	112.63	10%	45.77
C70-2	C-70a	C-70b	3.06	115.69			17.17	17.17									3.92	3.92					24.15	52%	136.78	17%	64.94
C70-3	C-70b	C-70c		115.69			9.80	26.97									2.02	5.94					11.82	58%	148.61	21%	74.34
C70-4	C-70c	C-70d		115.69				26.97					6.97	6.97			5.60	11.54					12.57	92%	161.17	26%	82.48
C70-5	C-70d			115.69				26.97						6.97				11.54							161.17	26%	82.48
C80																											
	C-80a						11.83	11.83			8.01	8.01					2.86	2.86					22.70	63%	22.70	63%	7.35
C90																											
	C-90a						6.38	6.38			2.00	2.00					0.77	0.77	7.57	7.57	0.58	0.58	17.30	33%	17.30	33%	4.08
C100																											
C100-1	C-100a	C-100b					38.52	38.52									2.41	2.41					40.93	53%	40.93	53%	11.51
C100-2	C-100b	C-100c					10.37	48.89			2.87	2.87					2.34	4.75			0.45	0.45	16.03	59%	56.96	54%	18.80
C100-3	C-100c							48.89				2.87					1.34	6.09				0.45	1.34	95%	58.30	55%	19.63
C110																											
	C-110a	C-110c							14.42	14.42									2.74	2.74	2.23	2.23	19.39	45%	19.39	45%	4.60
	C-110b	C-110d							18.09	18.09													18.09	60%	18.09	60%	5.48
C110-1	C-110c	C-110d								14.42			11.35	11.35			2.32	2.32		2.74	1.23	3.46	14.90	83%	34.29	62%	11.25
C110-3	C-110d									70.89	4.83	4.83		11.35			4.89	11.12		2.74		3.46	9.72	83%	104.40	64%	43.44
C110-2	C-110e	C-110d							24.64	38.38							2.41	3.91					27.06	63%	42.30	63%	14.60
	C-110f	C-110e							13.74	13.74							1.50	1.50					15.24	63%	15.24	63%	4.95
C120																											
C120-1	C-120a	C-120b	4.10	4.10			31.80	31.80											4.57	4.57			40.47	41%	40.47	41%	10.72
C120-2	C-120b		3.04	7.14			7.58	39.38												4.57			10.62	39%	51.09	40%	14.76
C130																											
C130-1	C-130a	C-130b	4.70	4.70			9.44	9.44	12.55	12.55							3.90	3.90					36.07	49%	36.07	49%	9.29
C130-2	C-130b			4.70			13.90	23.34		12.55								3.90			2.02	2.02	15.92	44%	51.99	48%	15.24
C140																											
	C-140a		28.10	28.10																			28.10	0.10	28.10	0.10	6.92

ELVERTA STORM DRAIN MASTER PLAN

D Shed Hydraulic Results - Trunk Drainage Based on Nolte Design

Node Name	Contrib-uting Shed	D/S Shed	Cum. Ac.	n-value	Rim/Grate	Inv. U/S (out of pipe)	Inv. D/S (in D/S pipe)	Pipe D (in)	Slope (ft/ft)	length (ft)	Drop in MH (ft)	Q_{design} (cfs)	Approx. Depth of flow d	Velocity (ft/s) Approx. V	Approx. 75% of Vc	Approx. 125% of Vc
D20																
D20-1	D-20a		47.999	0.015		67.9	67.7	30	0.0020	100		13.43	1.57	3.53	4.73	7.88
D30																
D30-1	D-30a		38.4	0.015		66.4	66.2	24	0.0020	100		10.48	1.61	3.19	4.59	7.64
D80																
D80-1	D-80a		41.313	0.015		56.6	56.4	24	0.0020	100		11.008	1.683	3.186	4.646	7.743

ELVERTA STORM DRAIN MASTER PLAN

D Shed Hydrology Results - Nolte Method

			AR 1 10% PI		RD 1,2 25% PI		RD 3,4,5 50% PI		RD 10,20 70% PI		Major Roads 95% PI		Park 5% PI		OS 1% PI		NODE TOTAL (Prelim sizing)				Flow
Node Name	*Contrib-uting Shed*	*D/S Shed*	*Acres*	*Cum. Acres*	*Acres*	*Cum. Acres*	*Acres*	*Cum. Acres*	*Acres*	*Cum. Acres*	*Acres*	*Cum. Acres*	*Acres*	*Cum. Acres*	*Acres*	*Cum. Acres*	*Acres*	*PI*	*Cum. Acres*	*PI_{AVG}*	*Q_{nolte}*
D10																					
	D-10a		3.95	3.95			7.19	7.19			1.56	1.56					12.70	43%	12.70	43%	2.96
D15																					
	D-15a				1.10	1.10	3.13	3.13									4.23	43%	4.23	43%	0.97
D20																					
D20-1	D-20a		13.75	13.75			34.25	34.25									48.00	39%	48.00	39%	13.43
D30																					
D301	D-30a						27.40	27.40			6.32	6.32	4.68	4.68			38.40	52%	38.40	52%	10.48
D40																					
	D-40a		4.48	4.48			19.40	19.40			0.92	0.92					24.80	44%	24.80	44%	6.01
D50																					
	D-50a						11.78	11.78			1.98	1.98			4.54	4.54	18.30	0.43	18.30	0.43	4.33
D60																					
	D-60						5.57	5.57	7.10	7.10	1.55	1.55			0.68	0.68	14.90	0.62	14.90	0.62	4.69
D70																					
	D-70a						17.52	17.52			5.28	5.28					22.80	0.60	22.80	0.60	7.04
D80																					
D80-1	D-80a		5.32	5.32			35.99	35.99									41.31	0.45	41.31	0.45	11.01

9.2 Hydromodification Analysis (cbec)

cbec eco engineering
Hydraulics | Hydrology | Geomorphology | Design

MEMORANDUM

Date:	May 9, 2011
To:	Holger Fuerst
From:	Chris Campbell, Sam Diaz, Chris Bowles
Project:	09-1036 – Hydromodification Assessment and Concept Planning for the Elverta Specific Plan
Subject:	Hydromodification Assessment for the Elverta Specific Plan

EXECUTIVE SUMMARY

An assessment of potential hydromodification impacts due to development of the Elverta Specific Plan (SP) on the receiving waters within and downstream of the SP area was made to inform the overall design of the planned multi-function open space corridors traversing the Project. These multi-function open space corridors are designed to provide drainage conveyance, flood control, water quality treatment, natural resources habitat, recreational opportunities, and aesthetic appeal. The primary mechanism for attenuating urbanized runoff from the developed areas was through the integration of flood control measures into the design of the corridors, with the potential to also provide some flow duration control for hydromodification mitigation purposes. The proposed flood control measures, as described in greater detail in Chapter 3.3, included a series of in-line cross channel berms spanning the width of the corridors with notches of varying dimensions. Furthermore, major road crossings over the corridors were designed to provide additional in-corridor peak flow attenuation.

The purpose of this assessment was to determine what additional controls or strategies were needed to minimize potential hydromodification impacts to the downstream receiving waters. Two possible strategies existed within the context of this project to achieve necessary flow duration control that included:

1. Implementation of flow duration control at the downstream end of the drainage corridor by creating additional low-flow attenuation (or detention) behind the downstream most in-line cross channel berms and integrating additional flow duration controls, i.e. specialized orifice plates, into these berms.
2. Implementation of additional incremental flow duration control at each in-line berm and road crossing along the entire length of each corridor where needed.

The first strategy was implemented on Corridor D and the second strategy was implemented on Corridors C and B. Corridor D included concentrated flow duration control at the downstream end of the corridor, consistent with the 2002 DMP and FEIR, which identified ancillary flood detention basins at the downstream end of the three primary drainage corridors to achieve the flood control objectives for the project. However, only 4.5 acres of additional storage was required for hydromodification mitigation on the D-corridor compared to the previous estimate of 8 acres required for flood control in the 2002 DMP and FEIR. Corridors C and B deviated from the need for ancillary detention at the downstream end of each corridor by maximizing the transient storage within the multi-function open space corridors through the implementation of flow duration controls at multiple crossings (i.e., inline berms and road crossings).

1 INTRODUCTION

On behalf of the Elverta Owners Group, RCH Group requested that cbec, inc. (cbec) perform hydromodification assessment and concept planning to inform the multi-function open space corridor design and address potential hydromodification impacts associated with the Elverta Specific Plan. The focus of this document is the hydromodification assessment; the concept planning of the multi-function open space corridors is described in detail elsewhere. This assessment document was specifically developed to provide input into the Elverta Specific Plan Drainage Master Plan (DMP) to address potential impacts to the downstream receiving waters within and west of the Specific Plan Area by considering the following questions:

1. Does the proposed development of the Specific Plan area and construction of three (3) multi-function open space corridors through the proposed Specific Plan Area affect the hydromodification impacts to the downstream receiving areas?
2. Will the development and subsequent flow alterations significantly affect the geomorphic stability of the receiving waters by reducing sediment supply, generating excess sediment from channel erosion, and/or creating a larger than natural downstream sedimentation impact?
3. If hydromodification impacts are identified, how can this be mitigated using any combination of flow duration control, source control (Low Impact Development (LID)), or in-stream strategies in the design of the multi-function open space corridors?

To address these questions, hydrologic and hydraulic models developed for the Specific Plan Area (SacCalc and HEC RAS, respectively) were adapted to continuous simulation. Continuous simulation has emerged as the standard approach for addressing hydromodification impacts because it takes into account the cumulative effect of geomorphically-significant low and medium sized events more effectively than event-based simulation of larger capital flood events. The continuous simulations were used to compare existing and project flow duration curves and erosion potential to inform the project design so as to minimize the increase in the duration of flows corresponding to “dominant” or “channel forming” discharge, which may otherwise result in geomorphic instability of the downstream receiving waters.

This document presents our understanding of the project, a description of methods, the results of our work, and a summary of our findings and recommendations.

1.1 PROJECT UNDERSTANDING

As part of the Elverta Specific Plan, three (3) multi-function open space corridors were conceptualized to provide drainage conveyance, flood control benefit, water quality treatment, habitat creation, recreational opportunities, and aesthetic appeal. At the focus of this document were the hydromodification assessment, the flood control strategies of the Elverta Specific Plan, and the flood control functions of the corridors (see the DMP for more detail) that were important as they are the primary mechanism for attenuating runoff from the developed areas with the potential to provide some flow duration control. Traditional flood control detention basins from each storm drain unit were not proposed to attenuate runoff from developed areas prior to flows entering the corridors. Rather, runoff from the developed areas were routed to smaller water quality treatment facilities prior to discharging to the low flow channel within the corridors. To attenuate runoff from the developed areas for flood control purposes, a series of inline berms spanning the corridors with notches of varying dimensions were proposed. The inline berms and notches, to meet flood control purposes, are further described in the DMP and were developed prior to the hydromodification assessment. The purpose of this assessment was to determine what additional controls or strategies were needed in the context of maximizing the use of the multi-function corridors to minimize hydromodification impacts to the downstream receiving waters.

To further inform the hydromodification assessment, the following details specific to each corridor are provided (see Exhibit 11 in DMP).

1.1.1 Corridor D

Corridor D includes full land owner participation within its tributary shed. As such, the tributary development and corridor was assumed for modeling purposes to be in full buildout condition under Phase 1 of the project. The corridor includes five (5) inline berms and one (1) road crossing (i.e., 16th St) that provide flood control function within the corridor. While the inline berms as configured meet the flood control objectives at the intersection of U St and Dry Creek Rd by limiting the maximum discharge to 105 cfs (to satisfy conveyance constraints under the roadway and mitigate existing flooding of the same), they only provide limited flow duration control to meet the hydromodification objectives for the downstream receiving waters. By limiting the maximum discharge to 105 cfs, which is approximately the 10-year peak discharge for existing conditions (equal to approximately 50% of the 100-year discharge for existing conditions), an additional level of complexity was imposed onto the flow duration control analysis.

1.1.2 Corridor C

Corridor C does not include full land owner participation. As such, the tributary development and corridor was assumed for modeling purposes to have a phased interim condition that was integrated into the full buildout condition. The corridor includes one (1) inline berm and four (4) road crossings that provide flood control function within the corridor. The interim condition mainly affects the upstream reach of the corridor, resulting in the need for flow control compliance at Loop Rd (East). The full buildout condition also assumed partial disturbance to the western portion of the large vernal pool between Loop Rd (West) and 16th St south of Elverta Rd where the multi-function open space runs south under Elverta Rd and then cuts west to Loop Rd (West). With the corridor being excavated approximately 5 ft below existing grade and cutting below the top of the duripan, the outlet to the large vernal pool will be hanging and will require bank stabilization (to prevent scouring and headcutting) a subgrade clay berm or similar (to prevent premature dewatering of the pool subsurface). With implementation of bank stabilization and a subgrade clay berm, hydroregime impacts to the remainder of the large vernal pool to the east on non-participant property will be minimized. Even during infrequent flooding, hydromregime impacts to the larger vernal pool will be minimal since the corridor is relatively deep and shallow backwatering into the pool will be equally infrequent with runoff in the pool dominated by flows from the east.

1.1.3 Corridor B

Corridor B does not include full land owner participation, with only limited participation in the downstream reach. A couple of isolated participant properties without direct property connection to the proposed drainage corridor will need to be present project-specific Phase 1 mitigation proposals in order to be able to develop as part of the initial phase, as the Elverta Owners Group deemed it impracticable to develop the corridor in its entirety as part of Phase 1. However, for this assessment, the tributary development and corridor was assumed for modeling purposes to be in full buildout conditions. The corridor includes four (4) inline berms and two (2) road crossings that provide flood control function within the corridor.

1.1.4 Areas North of Corridor B

North of Corridor B, there are the 600, 700, and A series sub-watersheds. The 600 and 700 series sub-watersheds include agricultural residential lots (1-5 ac) draining to a swale adjacent to the Placer County line. The A sub-watershed includes low density residential (3-5 DU/ac) piped to a single 7 acre-foot detention basin. As part of this assessment, specific hydromodification analyses were not performed, but recommendations based on experience are provided to address potential hydromodification impacts.

1.2 HYDROMODIFICATION STANDARDS AND OBJECTIVE CRITERIA

In developing the hydromodification plan for the Elverta Specific Plan, and in the absence of specific guidance from Sacramento County DWR on interim hydromodification standards, the following approaches for hydromodification mitigation and Objective Standards (or Hydromodification Criteria) have been developed to provide methods by which to assess the results of this study.

1.2.1 TYPICAL APPROACHES FOR MANAGEMENT AND MITIGATION OF HYDROMODIFICATION

Typically, three broad approaches (often in some combination) are used to manage and mitigate the impacts of hydromodification:

1. Flow Control Approach - the use of modified storm detention basins (often called Flow Duration Control Basins or FDCs) or infiltration facilities (e.g., swales with underdrains) to control discharge into receiving waters that would otherwise increase channel erosion above an existing or natural condition. In other parts of Sacramento County, these flows have been found to lie between some fraction of the Q2 (2-year return period event) up to the Q10 (10-year return period event). Flows in this range are managed so that the pre- and post-development flow duration curves match within a predefined tolerance.

2. Landscape Approach - often referred to as Low Impact Development (LID), or source control approaches, in which impervious areas drain to a series of highly pervious landscaping areas that act as dispersed infiltration facilities. These infiltration facilities are sized based on pre-determined ratios (typically around 5% of the developed area) that have been found to infiltrate the excess runoff within the range of erosive flows.

3. In-stream Approach - the use of stream enhancement approaches to stabilize and recondition existing anthropogenically impacted receiving waters to better withstand potential future impacts of hydromodification (e.g., reducing channel slope by increasing sinuosity, installing engineered energy dissipation structures, or protecting stream banks using biotechnical bank stabilization).

We understand that the Flow Control Approach and In-stream Approach will be used to mitigate hydromodification impacts for this project, although it is highly likely that some degree of LID will also be proposed by the development, but the potential benefits of LID to mitigate for hydromodification impacts was not analyzed as part of this study. As part of the In-stream Approach implemented here, reducing impacts to offsite receiving waters was achieved by integrating FDC into the multi-function open space corridors as described in Sections 3.1 and 3.2.

1.2.2 APPROACH AND OBJECTIVE CRITERIA

Based on our understanding of the project as described in Section 1.1, we did not focus on LID. Rather, the criteria and standards developed here generally refer to FDC techniques implemented within the multi-function open space corridors, for managing and mitigating hydromodification impacts using flow duration curve matching or similar approaches. Generally, the criteria and standards implemented include:

1. Event-based existing and proposed conditions hydrology (to satisfy flood control criteria) was developed by M&S using SacCalc. SacCalc is the Sacramento City and County preprocessor for the hydrologic model HEC-1 and is the accepted standard in Sacramento County.

2. To assess the long-term hydrologic conditions in the watershed, and to take account of antecedent conditions appropriate for hydromodification planning, a long-term, continuous hydrologic simulation using the available 27-year precipitation record was used. Long-term continuous simulation has become the standard for comparing existing and post-development flow duration characteristics within the range of geomorphically-significant flows. For this purpose, the soil moisture accounting (SMA) algorithm in HEC-HMS (HMS) was used.

3. The long-term hydrology developed using HMS was used to provide the boundary conditions for the hydraulic model and spreadsheet tools to assess the hydraulic and geomorphic impacts of the Elverta Specific Plan. For this purpose, the unsteady hydraulic model HEC-RAS (RAS), along with spreadsheet tools, were used.

4. The hydraulic model output was used to calculate the erosive forces within each creek for each modeled condition. In the absence of adopted standards stating otherwise, and as a guide, runoff should be controlled in the range between 25% of Q2 up to Q10 per the draft HMP standards developed for the County (SSQP, 2011). In a recent study in the Laguna Creek watershed (Geosyntec, 2007), which was used in the development of the draft HMP standards, it was concluded through an assessment of cumulative sediment transport that 95% of the total erosion and sediment transport in the creek was accomplished by flows less than Q10. This study (Geosyntec, 2007) also concluded through field measurements of critical shear stress and modeling that erosion does not commence until flows are approximately 25% of Q2; hence our recommendation of this as the lower threshold.

5. For the flow range specified (25% of Q2 through Q10), the proposed condition discharge rates and durations should not deviate above the existing condition discharge rates and durations by more than 10% over more than 10% of the length of the flow duration curve. The flow duration curve relates to the percentage of time of the total period of record that a particular flow is equaled or exceeded. It does not refer to the duration of that particular flow event. Thus, the flow duration technique gives an indication of how the average flows are hydromodified between a specific flow range (area under the curve). Flow duration curves are the most commonly accepted method of analyzing the response of watersheds to perturbations; hence, we recommend them for this application for the Elverta Specific Plan.

6. For the flow range specified, the proposed condition peak flows should not exceed existing condition peak flows by more than 10% where possible.

7. In terms of potential erosive forces experienced by the receiving waters as a result of hydromodification, a preliminary standard could be based on the erosion potential methodology as proposed by a recent study in the Laguna Creek watershed (Geosyntec, 2007). In this study, an objective standard was stated that stormwater discharges from development projects shall not cause an increase in the erosion potential in the receiving channels by more than 20%. Based on field data collected and hydraulic modeling conducted in this study, the objective standard may be modified subsequently. However, it is initially recommended that this is a reasonable objective standard. A note of caution, if the development results in decreased sediment loads and size, it may be necessary to assess the implications of (up to) a 20% increase in erosion potential, and whether this increase will be detrimental (will there be less "resisting forces" for the development-related flow increase?). Generally, the objective is to determine the range of flows over a long period of record that does not exceed (or significantly alter) the existing equilibrium of supply and transport of sediment. As it relates to the Elverta Specific Plan, since sediment loading (namely in the form of washload) from the onsite watershed to the onsite and offsite swales is considered to be reasonably low given the anthropogenically modified landscape, the expectation is that project induced changes to sediment loading characteristics will be very minimal and not a concern given the trapping efficiency afforded by the design of the multi-function open space corridors.

8. The FDC curve matching and erosion potential approach will be used iteratively in an effort to manage and mitigate hydromodification impacts.

9. When the impacts of hydromodification have been mitigated through FDC the proposed improvements to the stormwater plan will be checked for stormwater detention purposes. The resulting plan will constitute the proposed plan.

10. Design concepts will be derived assuming perennial “nuisance” flows enter the corridors. These flows typically occur in the summer months and are entirely caused by irrigation runoff from lawns and other planted areas that are frequently irrigated. This runoff is typically nutrient laden with nitrates and phosphates, which could cause unfavorable conditions in the corridors, necessitating the need for water quality treatment before being released to the corridors.

2 ASSESSEMENT METHODS

As stated in Section 1.2.2, a combination of SacCalc, HEC-HMS, HEC-RAS models, and spreadsheet tools were used to inform our assessment methods and results. The first two (2) models were used to formulate the hydrologic modeling component of the assessment. The latter model and spreadsheets were used to formulate the hydraulic modeling component of the assessment, using hydrologic model outputs as inputs, to include calculations of erosive forces (or work) in the downstream receiving waters. A suite of models were developed for existing conditions (Existing), project conditions with multi-function open space corridors using inline berms for flood control (Project), and project conditions with FDC measures added (w/ FDC).

2.1 HYDROLOGIC MODEL DEVELOPMENT

Continuous HMS models were created by cbec from event-based SacCalc models developed by M&S. Initially, the SacCalc models were exported to the HEC-1 format before being imported into HMS. Once in HMS, the models were modified from the "initial and constant" method to the SMA algorithm. Canopy and surface storage were set to 0.08 and 0.3 inches, respectively, per the values in the calibrated HMS model for Laguna Creek as developed by Geosyntec (2007). The groundwater coefficient (200 hr) was also adopted from the Geosyntec model. These parameters were assumed to be reasonable given similarities in landscape position, anthropogenic impacts, and deeper subsurface character. Soil parameters, including soil and groundwater storage, maximum infiltration rates, and soil and groundwater percolation rates were computed from the NRCS soil survey as informed by the soil survey completed for the Elverta SP.

The runoff transformation method (USBR dimensionless urban unit hydrograph method) was retained in HMS from SacCalc. The linear reservoir option was used to model baseflow using values consistent with the calibrated Geosyntec HMS model as shown in Table 1:

Table 1. Linear reservoir parameters

Initial Type	GW 1 Initial (cfs/mi^2)	GW 1 Coeff. (hr)	GW 1 Reservoirs
Discharge/Unit Area	0	1450	1

A 27-year hourly climate record was generated from CIMIS (http://wwwcimis.water.ca.gov) data at Nicolaus #30 for the period of January 1983 to November 2010. Rainfall was scaled to the project site based on mean annual precipitation from PRISM data (http://www.prism.oregonstate.edu/). Evapotranspiration was calculated within HMS using the Priestley-Taylor method based on temperature, solar radiation, and crop coefficients.

Since the sub-watersheds had time of concentrations less than one hour and were relatively flashy, the hydrologic model results were output at a one minute interval in order to capture as much flow detail as possible from the long-term record.

2.2 HYDRAULIC MODEL DEVELOPMENT

The hydraulic model and spreadsheet tools were used to route annualized and long-term hydrographs through the existing swales and multi-function open space corridors for each modeled condition. Unsteady RAS models developed by M&S for existing and project conditions were modified to route low flows. Minimum flows were implemented in RAS to overcome instability issues and were kept relatively small (e.g., 1 cfs) so as not to mask the flows that initiate sediment transport and channel erosion.

To further simplify the analysis when needed, mainly due to the limitations of performing long-term simulations within RAS (i.e., instability at low flows, storage limitations), the HMS outputs as stored in HEC-DSS (DSS) were either 1) further processed in DSS to generate flow duration curves from which annualized flow duration hydrographs were created and run through RAS or 2) routed through storage-based routing spreadsheets and then run through RAS downstream of the downstream most hydraulic crossing. By implementing these simplifications, which retained the runoff characteristics of the simulated long-term records, shorter runtimes with manageable output datasets were realized.

2.3 FLOW DURATION CONTROL AND TOTAL WORK DONE

The RAS model outputs were then used to calculate the total work done and an erosion potential index to assess the hydromodification impacts of the Elverta Specific Plan on the downstream receiving waters. Total work done was calculated based on integrating effective stream power as:

$$W = \sum_{i=1}^{n} (\tau_i - \tau_c) \cdot V_i \cdot \Delta t_i$$

where *W* is the total work done (ft-lbf/ft^2), τ is the average channel shear stress, τ_c is the critical shear stress to initiate erosion, *V* is the velocity (ft/sec), and Δt is the numerical time step (sec). The critical shear stress values were estimated from the soil survey and ASCE (1993) for the downstream receiving waters. The values selected were based on the bank material, since the downstream receiving waters were presumed to be in similar geomorphic condition as the swales through the Specific Plan Area (i.e., modified and/or incised down to hardpan), and were found to range from 0.05 lbf/ft^2 for Hedge loam soils (at the downstream end of Corridor B and Corridor C) to 0.12 lbf/ft^2 for San Joaquin fine sandy loam soils (at the upstream end of Corridor C and the downstream end of Corridor D) based on published values (ASCE, 1993).

The erosion potential (EP) index was calculated as the ratio of W_P / W_E. The target index was initially 1 ± 20%, based on the criteria and standards stated in Section 1.2.2. To converge on this target guidance, flow duration control was integrated into the multi-function open space corridors to create modified inline berms at specific compliance points. The configuration of the flow duration control, further described in Section 3.2, was designed to bring the EP ratios within 20% of existing conditions.

3 ASSESSMENT RESULTS

This section identifies the compliance points where the hydromodification assessments were performed, the outcome of the assessments, and the proposed flow duration controls needed to meet the hydromodification objectives on the downstream receiving waters.

3.1 HYDROMODIFICATION COMPLIANCE

The following describes each of the compliance points (see Figure 1) for each multi-function open space corridors.

3.1.1 Corridor D Compliance

For Corridor D, flow duration control and work compliance was evaluated downstream of U St in offsite receiving waters. An additional inline berm was added just upstream of the U St and Dry Creek Rd intersection (see Exhibit 9 in the DMP) to provide additional detention and attenuation before exiting the property under the road. The inline berm (see Exhibit 11 in the DMP) was then modified with flow duration controls so as to satisfy the hydromodification objectives on the offsite downstream receiving waters.

3.1.2 Corridor C Compliance

For Corridor C, flow duration control and work compliance was evaluated downstream of Loop Rd (East) for the interim condition and downstream of the property boundary for buildout conditions. Loop Rd (East) was evaluated since the low flow channel in the corridor was required to tie into existing grade at Loop Rd (East) as a result of non-participating landowners in the interim condition. To satisfy the performance criteria on the non-participating and offsite downstream receiving waters, flow duration controls were implemented at the inline berms and road crossings to maximize attenuation and flow control upstream of each hydraulic crossing. In addition to modifying the controls, the topography within the multi-function open space corridor footprints was manipulated to maximize flow attenuation by providing additional transient storage. This approach differs from Corridor D whereby transient storage within the footprint of the corridor was maximized rather than treated by the addition of detention storage at the downstream end of the corridor.

3.1.3 Corridor B Compliance

For Corridor B, flow duration control compliance was evaluated downstream of the property. The two downstream most inline berms were modified with flow duration controls so as to satisfy the hydromodification objectives on the downstream receiving waters. In addition to modifying the controls, the topography within the multi-function open space corridor footprints was manipulated to maximize flow attenuation by providing additional transient storage. This approach differs from Corridor D whereby transient storage within the footprint of the corridor was maximized rather than treated by the addition of detention storage at the downstream end of the corridor.

3.2 FLOW DURATION AND TOTAL WORK DONE

To address potential hydromodification impacts on the downstream receiving waters, flow duration and total work was analyzed for existing and project conditions within the offsite receiving waters downstream of the project. If hydromodifcation objectives were not met with project conditions, then flow duration controls were implemented within the multifunction corridors to satisfy the hydromodification objectives.

3.2.1 Corridor D Buildout Basin

Figure 2 shows the flow duration curves and EP ratios in the downstream receiving waters. Based on existing conditions, a critical shear stress of 0.12 lbf/ft^2 was assumed for San Joaquin fine sandy loam soils and a critical discharge (i.e., 0.25Q_2) was calculated to be 19 cfs. After several iterations, it was determined that the additional inline berm just upstream of the intersection of U St and Dry Creek Rd should include a 15.6 inch low flow orifice, a 120 degree V-notch in the berm crest with the invert elevation set at 59.0 ft, a 50 foot spillway integrated into the V-notch with a crest elevation of 60.6 ft, and an additional 14.4 ac-ft of flow duration control storage (at elevation 61 feet with a foot print of 4.5 acres) integrated into the east bank of the multi-function open space corridor. As a result of implementing this flow duration control strategy, the EP ratio was reduced from 4.99 for project conditions to 1.14 (see Figure 2) by attenuating the volume from the higher flows and releasing it below the critical discharge.

3.2.2 Corridor C Interim Basin

Figure 3 shows the flow duration curves and EP ratios in the downstream receiving waters. Based on existing conditions, a critical shear stress of 0.12 lbf/ft^2 was assumed for San Joaquin fine sandy loam soils and a critical discharge (i.e., 0.25Q_2) was calculated to be 12 cfs. As shown by Figure 3, the EP ratio for project conditions was 1.64, which fell outside the acceptable limits (i.e., 1 ± 20%) identified in Section 1.2.2. After several iterations, it was determined that the inline berm upstream of Loop Rd (East) should include three (3) 11.5 inch orifices staggered above the channel invert (in an inverted triangular pattern to maximize wetland inundation) plus a shallow 160 degree V-notch in the berm crest, coupled with the creation of additional attenuation volume within the channel by widening of the overall cross section thereof. As a result of implementing this flow duration control strategy, mostly attributed to the orifice and added storage volume, the EP ratio was reduced from 1.64 for project conditions to 1.20 (see Figure 3) by attenuating the volume from the higher flows and releasing it below the critical discharge.

3.2.3 Corridor C Buildout Basin

Figure 4 shows the flow duration curves and EP ratios in the downstream receiving waters. Based on existing conditions, a critical shear stress of 0.05 lbf/ft^2 was assumed for Hedge loam soils and a critical discharge (i.e., 0.25Q_2) was calculated to be 50 cfs. As shown by Figure 4, there was a moderate increase in the duration of flows above the critical discharge for project conditions, resulting in an EP ratio of 2.5

which fell outside the acceptable limits (i.e., 1 ± 20%) identified in Section 1.2.2. To minimize the additional work afforded by this increase in flow duration above 50 cfs, it was necessary to integrate flow duration control under buildout conditions into Loop Rd (East), 16th St, Loop Road (West), and the last inline berm just upstream of the project boundary so as to control the release of this additional volume of water below the 50 cfs threshold. After several iterations, flow duration controls for each lateral crossing were identified in order to bring the EP ratio from 2.50 for project conditions down to 1.17 for the modified condition. In doing so, it was also necessary to maximize the transient storage volume within the multi-function open space corridors by widening the channel cross sections out to the corridor limits and by lowering the inset terraces (see the channel cross sections included as electronic files in the appendix of the DMP). Table 2 shows the resulting flow duration controls to replace the previously defined flood controls for Corridor C.

Table 2. Flow duration controls for Corridor C

Condition	River Station	Low Flow Orifices	High Flow Orifices[1]
Interim	119+00	3 x 11.5 inch	160^{o} V notch w/ IE = 72.30 ft
Buildout	119+00	3 x 12.0 inch	6 x 5.0 ft x 1.0 ft box w/ IE = 71.60 ft
Buildout	97+90	2 x 12.0 inch	6 x 5.0 ft x 1.5 ft box w/ IE = 66.00 ft
Buildout	72+25	3 x 13.0 inch	60 ft x 1.5 ft culvert w/ IE = 60.50 ft
Buildout	57+50	3 x 12.0 inch	170^{o} V notch w/ IE = 54.70 ft

[1] The high flow orifices in hydromodification analysis at road crossings were initially simulated as broad V notches (assuming no road crown), which were then converted by M&S to a series of high flow culverts beneath the road to also convey Q100. However, during final design, it may be possible at road crossings for the FDC weir and orifices to be constructed upstream of the road such that high flows spill across the top of the FDC weir and then through standard culverts beneath the roadway.

3.2.4 Corridor B Buildout Basin

Figure 5 shows the flow duration curves and EP ratios in the downstream receiving waters. Based on existing conditions, a critical shear stress of 0.05 lbf/ft^2 was assumed for Hedge loam soils and a critical discharge (i.e., $0.25Q_2$) was calculated to be 16 cfs. As shown by Figure 5, there is a significant increase in the durations and rates of flow above the critical discharge. To minimize the additional work afforded by this increase in flow duration above 16 cfs, it was necessary to integrate flow duration control into the inline berm at RS 49+50, Palladay Rd, and the inline berm just upstream of the downstream project boundary. After several iterations, flow duration controls for each lateral crossing were identified in order to bring the EP ratio from 3.78 for project conditions down to 1.15 for the modified condition. In doing so, it was also necessary to maximize the transient storage volume within the multi-function open space corridors by widening the channel cross sections to the limits of the corridor and by lowering the terraces downstream of Loop Rd (West). Table 3 shows the resulting flow duration controls to replace the previously defined flood controls for Corridor B.

Table 3. Flow duration controls for Corridor B

Condition	River Station	Low Flow Orifices	High Flow Orifices[1]
Buildout	49+50	1 x 12.0 inch	2 x 3.5 ft x 1.6 ft box w/ IE = 61.40 ft
Buildout	23+70	1 x 15.0 inch	2 x 7.0 ft x 0.5 ft box w/ IE = 57.79 ft
Buildout	14+00	1 x 12.0 inch	120^{o} V notch w/ IE = 54.25 ft

[1] The high flow orifices in hydromodification analysis at road crossings were initially simulated as broad V notches (assuming no road crown), which were then converted by M&S to a series of high flow culverts beneath the road to also convey Q100. However, during final design, it may be possible at road crossings for the FDC weir and orifices to be constructed upstream of the road such that high flows spill across the top of the FDC weir and then through standard culverts beneath the roadway.

4 SUMMARY AND RECOMMENDATIONS

This hydromodification assessment evaluated the feasibility of implementing flow duration controls within each multi-function open space corridor within the Specific Plan Area described above. Corridor D included concentrated flow duration control at the downstream end of the corridor, consistent with the 2002 DMP and FEIR, which identified ancillary flood detention basins at the downstream end of the three primary drainage corridors to achieve the flood control objectives for the project. However, only 4.5 acres of additional storage was required for mitigation of hydromodification effects compared to the previous estimate of 8 acres required for flood control in the 2002 DMP and FEIR. Corridors C and B deviated from the need for ancillary detention at the downstream end of each corridor by maximizing the transient storage within the multi-function open space corridors by implementing flow duration controls at multiple crossings (i.e., inline berms and road crossings), widening of the channel cross sections, and by lowering the terrace elevations within the corridors. While the current draft 2011 DMP flood control analysis demonstrated the ability of the proposed crossings to adequately attenuate peak development flows to achieve targeted flood control objectives without requiring ancillary detention, the results of the hydromodification assessment identified the need for additional detention storage, flow duration controls, and terrace lowering (to varying degrees within each corridor) to minimize potential hydromodification impacts to the downstream receiving waters. These results have been integrated into the M&S flood control models.

Pertaining to the areas north of Corridor B (i.e., the 600, 700, and A series subwatersheds), even though formal hydromodification analyses were not performed, the following recommendations are provided. For the 600 and 700 series subwatersheds draining to a swale adjacent to the Placer County line, given the relatively small percent increases in impervious cover and runoff that will be generated from the agricultural residential lots, it is recommended that LID measures be implemented at the lot scale as may be required to mitigate for these small increases in runoff to the swale. For the A subwatershed, consisting of low density residential lots with runoff piped to a 7 ac-ft detention basin, it is recommended that either 1) the detention basin volume be increased by 20% and flow duration controls be integrated into the outlet structure (in lieu of LID measures) or 2) LID measures be implemented and flow duration controls be integrated into the outlet structure. The recommendation to increase the basin volume by 20% is based on the general findings of multiple hydromodification studies within Sacramento County (see Geosyntec (2007), Sun Creek SDMP, and Cordova Hills SDMP). These studies also identify the likely configuration of the flow duration controls that will need to be integrated into the outlet structure to satisfy both flood control and hydromodification objectives. By combining LID implementation with FDC implementation, it may be possible to reduce the basin volume increase to something less than 20%.

5 REFERENCES

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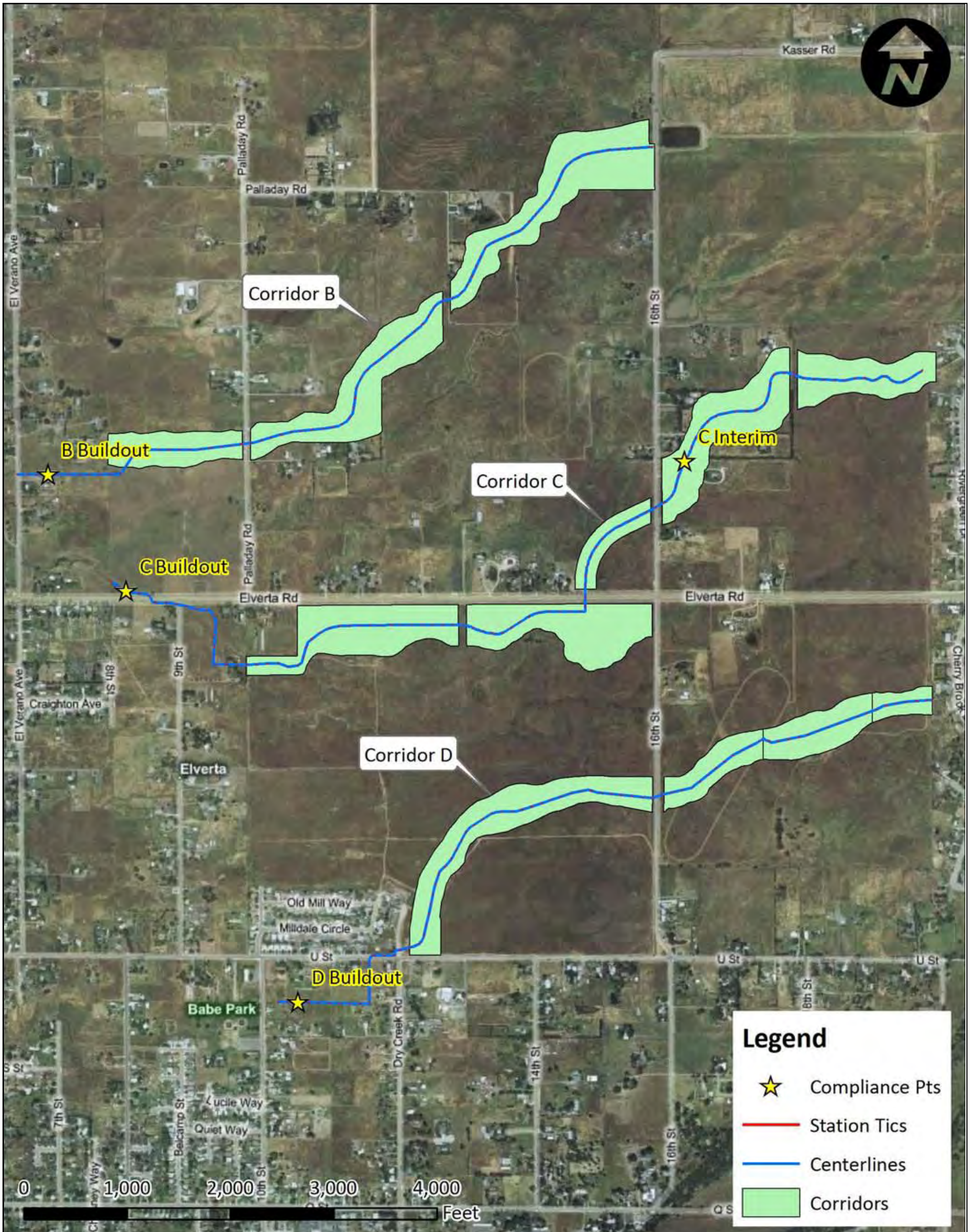

Notes:	cbec eco engineering	*Hydromodification Assessment for the Elverta Specific Plan* **Flow duration and total work compliance points**		
		Project No. 09-1036	Created By: CRC	**Figure 1**

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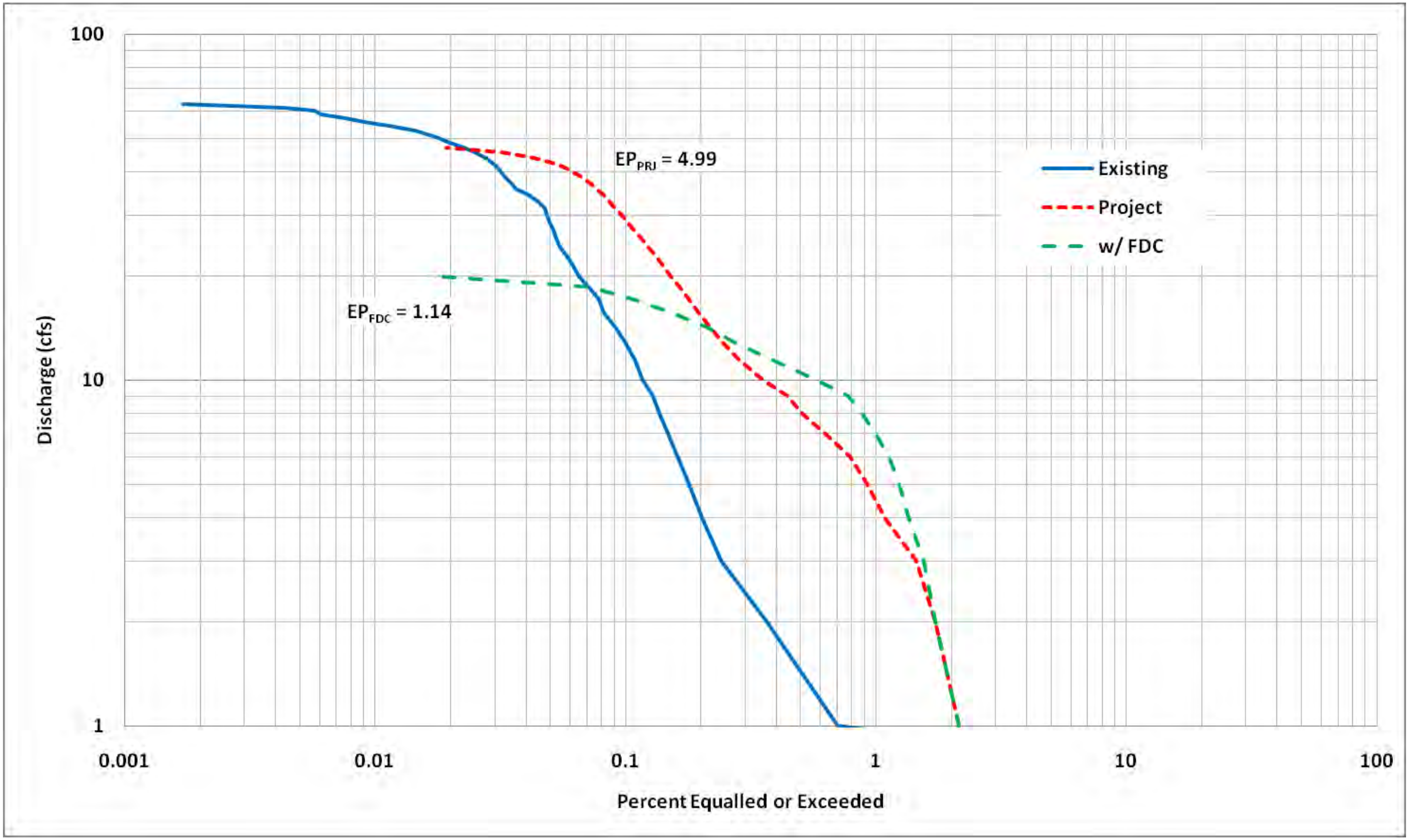

Notes:	cbec eco engineering	*Hydromodification Assessment for the Elverta Specific Plan* **Flow duration compliance – Corridor D – Buildout**		
		Project No. 09-1036	Created By: CRC	**Figure 2**

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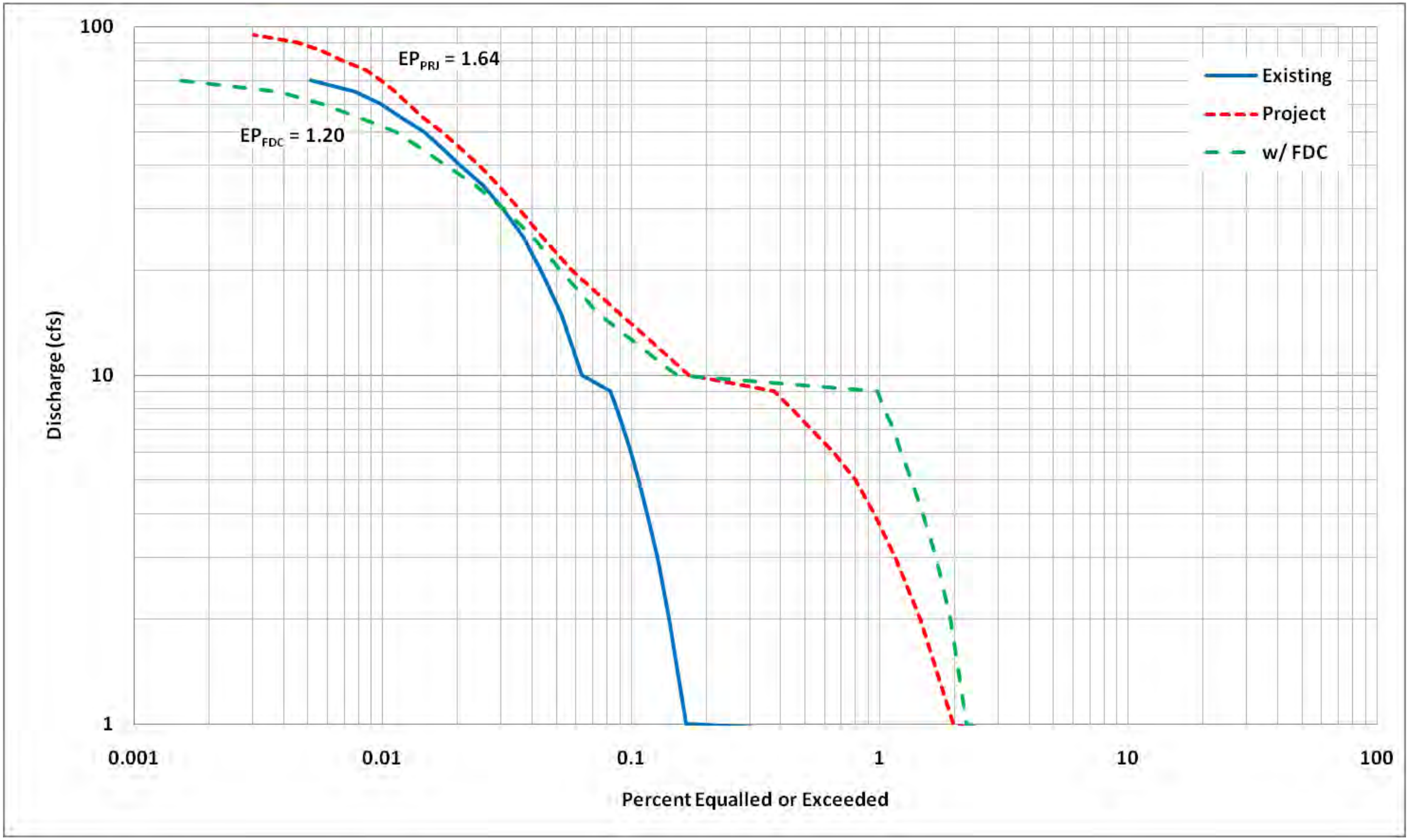
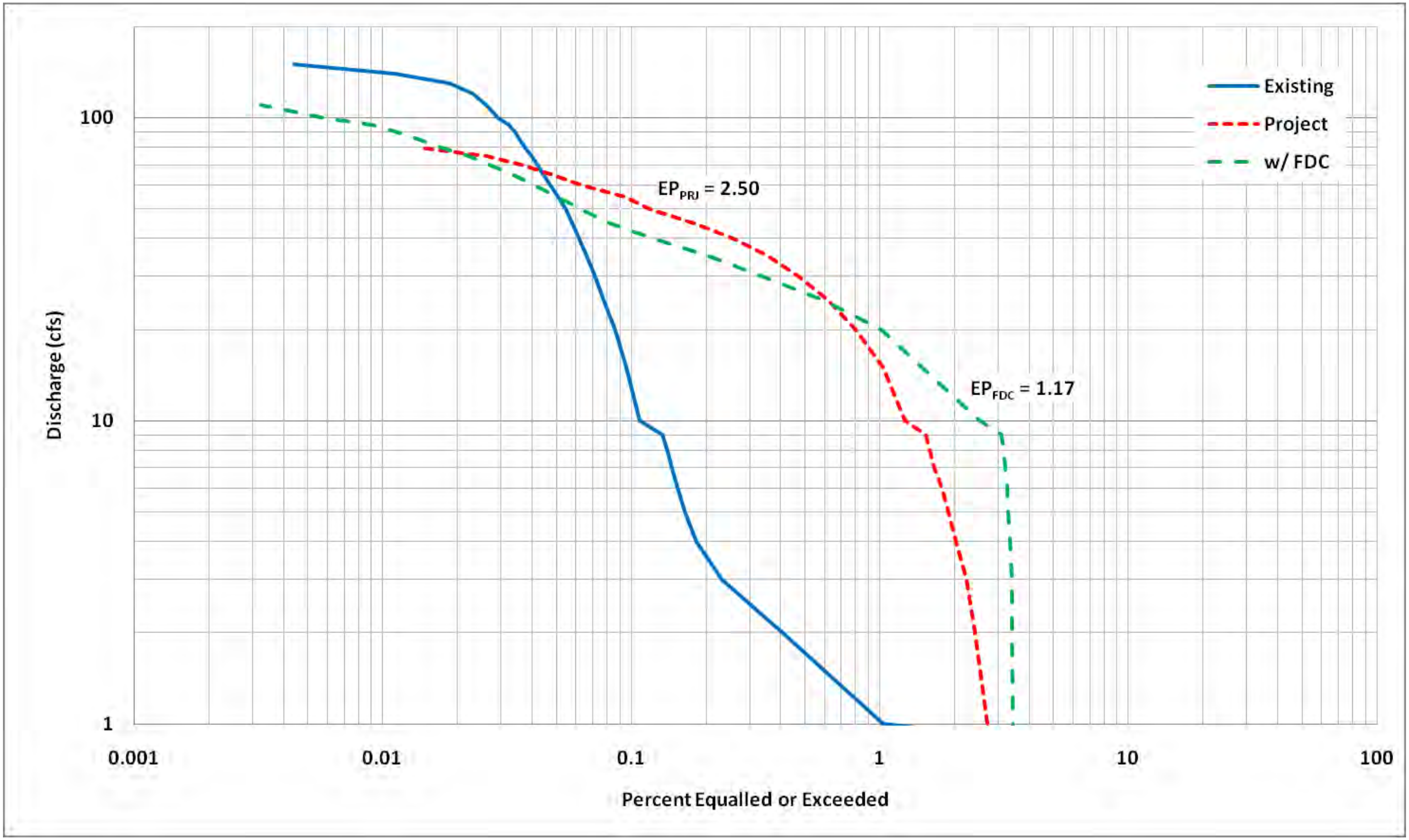


Notes:	cbec eco engineering	*Hydromodification Assessment for the Elverta Specific Plan* **Flow duration compliance – Corridor C – Interim**		
		Project No. 09-1036	Created By: CRC	**Figure 3**



Notes:	cbec eco engineering	*Hydromodification Assessment for the Elverta Specific Plan* **Flow duration compliance – Corridor C – Buildout**		
		Project No. 09-1036	Created By: CRC	**Figure 4**

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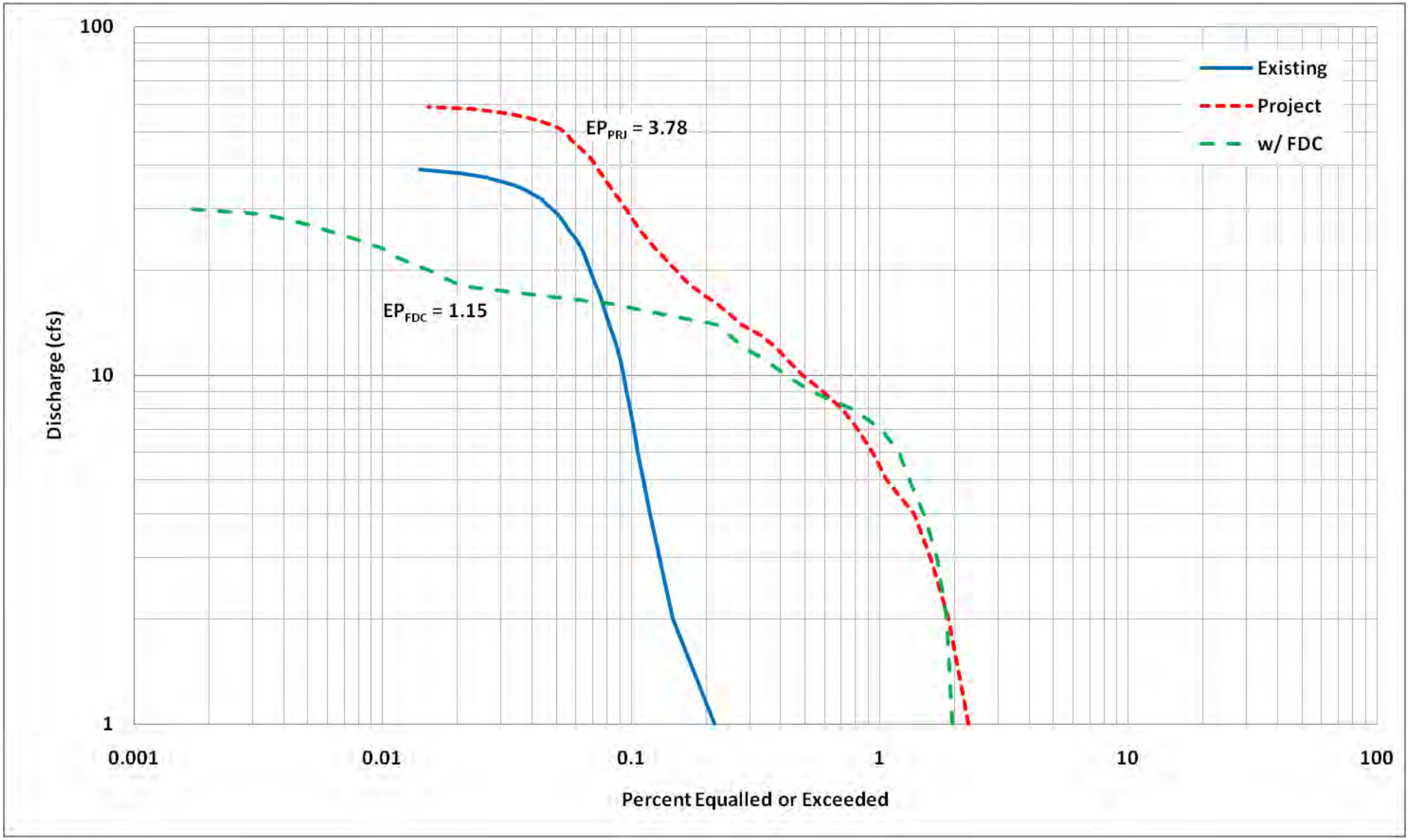

Notes:	cbec	*Hydromodification Assessment for the Elverta Specific Plan* **Flow duration compliance – Corridor B – Buildout**		
		Project No. 09-1036	Created By: CRC	**Figure 5**

9.3 Soils Analysis (David B. Kelley)

DAVID B. KELLEY
Consulting Plant and Soil Scientist

Soil Landscape of the RCH Group Elverta Project Elverta, Sacramento County, California

Soils of Elverta Project Area

Elverta, California, in the northwestern reaches of Sacramento County, is a community of mixed land resources, partially open agricultural land and partially mixed-density development. The project site described in this report is in the northern portion of the community, and covers several contiguous and separated parcels of generally open land with only a few structures and little infrastructure. The soil landscape of the project area is mostly treeless and is underlain by soils with strong rooting and permeability constraints. The shallow soils (above a duripan, for the most part) dry rapidly going into the summer, except for those soils found in vernal pool depressions and in lowland swales that stay moist into the early summer. The soils are, generally speaking, relatively uniform, have common parent materials, and are of relatively low fertility (because they have been in place for a long time and are well leached). The dominant soils are well developed though there are inclusions of deeper soils associated with terraces and relict backfilled stream channels that are not as well developed. These may be somewhat younger and less developed, they are generally deep, and most overlie a duripan.

Elverta occupies a portion of an old stabilized and dissected terrace (formerly a basin floor, now isolated from surface overflow and truncated and dissected by streamways and, in the western portions, partially covered by valley fill associated with the large fluvial system of the Sacramento River) that is generally of Pleistocene age and was formed from debris outflows and alluvial transport and deposition of materials from higher ground to the east. The surrounding grasslands are generally vegetated with non-native grassland species, but they also support vernal pools and swales that, in turn, support native plant and animal species. The land has, for the most part, been farmed and/or heavily grazed for many years. Most of

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the soils exhibit surface compaction from vehicular traffic, domestic livestock, and general agricultural activities.

The information presented in this report was developed in the course of a field resource assessment of the project site. Some of the information presented is available from various detailed studies and publications that have been produced from work conducted in the vicinity. The USDA's Soil Survey of Sacramento County, California (Tugel, A. J., 1993, and also online at the USDA Natural Resources Conservation Service's website) is a primary land use resource document available for the region. Soil descriptions and maps are available in that document. Older soil surveys of the region are also available. The general objective of the resource assessment described in this report was to characterize sub-surface soil conditions along three more-or-less linear corridors across the project site in order to provide soils information to aid in the design of future projects. The assessment effort was not designed to map soil units or otherwise provide detailed information on the extent and capabilities of soils across the project site; rather, the effort was undertaken to provide point source information along reaches of the design corridors. With the exception of the collection of samples for laboratory analysis of basic engineering information, no engineering data were developed nor was the effort detailed enough to provide comprehensive characterization of the engineering capabilities of soils or flooding characteristics of the project site.

Soils and Geomorphology

The soils of the landscape surrounding and including the Elverta project site are soils of old stabilized alluvial fans or basins and associated drainageways and stream or fan deposits. These features are now modern terraces defined by truncations and dissections along the edges and through the mapped soil units. The soils occupying the soil landscape are, for the most part, well-developed and relatively nutrient-poor (leached), with sub-surface root- and water-penetration constraints, though nutrient status is adequate to support native trees, shrubs, and grasses. The landscape supports ponding during the rainy season, primarily because of well-developed duripans and clay layers that underlie the surface; the soils support

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vernal pools and seasonal wetlands. Where hydraulic barriers (duripans and enriched clay layers) exist in near-surface horizons, the potential for development of vernal pools, riparian systems, other wetlands and attendant plant communities is high. Past land uses—involving grazing and wheeled agricultural traffic—have augmented the hydrologic constraints and are responsible for the expression of vernal pool vegetation in some flat, agriculturally modified areas in the vicinity and in surface depressions. A small intermittently filled stock pond occurs in the design corridor in the southeastern portion of the property. This feature was developed by excavating soils lying above a duripan and using them to create a berm across a distinct swale. Some other land manipulation has occurred in various portions of the project area, including some channel straightening and other grading activities.

Soils

Soils of the project area were mapped by the USDA's Soil Conservation Service (now renamed and repurposed as the Natural Resources Conservation Service, or NRCS) in the 1980's. Most of the soils of the project area were mapped as the relatively flat or undulating San Joaquin fine sandy loam series. Many of the existing wetlands are associated with the relatively flat-lying Hedge loam series (which occupies the lowest topographic positions of the landscape). From a functional perspective (with regard to the ability of the soils to support plant growth and expression of surface water features) these soils are similar. These series exhibit soil characters that would allow the development of vernal pools and swales or seasonal riparian wetland communities, and that determine the potential for vegetative expression. The plant growth constraints of these soils are primarily physical (shallow, compacted soils above a duripan, with stratified clays and clay loams); nutrient status of these soils is generally suitable for the growth of native plants as long as soil moisture is maintained adequately.

In the course of my work, I examined 55 backhoe excavations to approximate depths of 60 to 120 inches (see Figure 1), and other hand-excavated auger pits, tile probe explorations, and streamcuts and roadcuts. In general, thick, strongly developed duripans were encountered

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across most of the project area. The generally fine-textured, sandy loam surface soils are compacted and relatively infertile, with clayey horizons just above the underlying duripan (which occurs as a discrete horizon generally originating 30 to 48 inches below the surface and extending to depths of 60 to over 100"). Water permeability and root penetration are restricted and surface ponding during the rainy season is common.

Soils mapped by the SCS across the site include:

- Bruella sandy loam, 0 – 2% slopes
- Bruella sandy loam, 2 – 5% slopes
- Hedge loam, 0 – 2% slopes
- San Joaquin fine sandy loam, 0 – 3% slopes
- San Joaquin fine sandy loam, 3 – 8% slopes

The most extensive soils mapped on the project area, and for most practical purposes the primary functioning soil units, are sandy loams or loams with clay-enriched horizons above well-developed duripans (the Hedge and San Joaquin series). These series consist of soils with thick duripans and clay-enriched horizons above the duripan that also restrict throughflow of water and root penetration. Inclusions of deeper soils (some in the Hedge series, some in the Bruella series, and a few in portions of the San Joaquin series) may support perennial woody species and seasonal wetlands. These inclusions are not precisely identified on the NRCS map, and are associated with backfilled drainageways or colluvial fills along the edges of mapping units. Most of the soil units are suitable for consideration as vernal pool, vernal swale, or seasonal wetland construction targets as long as the duripan and its overlying clay horizons remain intact. It can be expected that drainageways excavated into the surface will be able to support riparian shrubs and trees if sufficient water is provided, and if sufficiently deep root zones are created (presumably by the disruption or removal of constraining duripans and clay layers).

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The San Joaquin fine sandy loams and the Hedge loams are taxonomically classified as Durixeralfs (clayey soils with cemented horizons). In the NRCS land capability classification (LCC) system, these soils are considered to be Class III soils (soils with a moderately strong agricultural impairment constraint—in their case, a duripan-restricted rooting zone). In most cases, the duripans are of silty or sandy texture, with strongly cemented particles and an abrupt smooth boundary between the duripan and overlying soils. The Bruella sandy loams are described in the SCS survey report as having no duripan, and are characterized by sandy and somewhat clayey loams above lower permeability clay accumulations in lower horizons. They are classified as Palexeralfs (old soils with pedogenic clay accumulations). These soils are considered to be LCC Class I or Class II soils when irrigation water is available, and Class III soils when it is not. (Class I soils are those without significant agricultural constraints; Class II soils are moderately constrained, but nevertheless of good agricultural capability.) In the San Joaquin and Hedge soils, the duripans and some of the clay-enriched zones are probably relictual features of old soils not necessarily genetically associated with existing overlying soils. The duripans and clay layers have high concentrations of relict redoximorphic features, including segregated iron nodules or concretions, manganese crystals plated onto ped faces and fracture surfaces, and concentrations of redox colors (bright oranges and blacks) reflecting the presence of concentrations of segregated iron and manganese. In most cases, the horizon boundaries between clay-enriched horizons and the duripans are abrupt, smooth, moist, and occupied by flattened roots of grasses or forbs. The subsurface features of these soil units are similar, in that both soils have a relatively shallow rooting depth, provide relatively low-fertility root environments (though sufficiently fertile for most native plants), and restrict the movement of water below restraining layers. The Bruella loams are deep soils probably associated with old channel fills that now are inversely expressed as higher topographic features. The Bruella soils, because their available rooting zones may be rather deep, are capable of supporting upland or riparian woody species if soil moisture supplies are sufficient.

When the duripan soils are charged with winter rainwater and on into the dry season, where the profiles are daylighted (for example, on roadcuts or stream channels, and in the various

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backhoe pits examined across the project area) the aquicludes created by the duripans show the potential for lateral movement of soil water on down-gradient paths. (The cuts may weep at the contact zone between the overlying clays and the duripans.) These moist strata supply summer moisture for deep-rooted late summer forbs, perennial grasses, and, in some cases, small shrubs.

In many instances, backhoe penetration of the duripans allowed an examination of the variable sediments below the uppermost cemented horizons. Those lower horizons are highly variable across the project area; their particle size distribution, degree of stratification, and degree of induration are not easily assessed without backhoe excavation because the horizons may be quite thin and may exhibit indistinct boundaries between horizons. Soil samples at selected locations across the project area (see Figure 1) were obtained by sampling directly from the walls of excavation trenches (for shallower samples) or by securing samples from materials brought up in the backhoe bucket (for deeper samples). Locations for acquiring these samples were chosen based on an assessment of the type of sediment (particle size) encountered, with an objective of attempting to secure samples representing some of the variability across the project area. The samples taken did not retain their *in situ* strength (the materials were loosely bagged and labeled), but were suitable for particle size analyses and other engineering characterization. These samples were characterized by Cooper Testing Laboratory and were summarized by cbec, inc. in Appendix B.

Potential for Creating Vernal Pools and Riparian Wetlands on Project Site

The soils across the site have well-developed, uniformly positioned, constraining horizons that support vernal pools and attendant vernal pool plant communities, vernal swales, and seasonal wetlands. Soil hydrology is dependent on winter and spring rains, for the most part, and is not a limiting factor in the development of pools. (Normal rainfall totals across the rainy season are sufficient to produce surface flows that routinely exceed volumes of pools and correlated water-holding capacities of soil profiles.) Shallow surface horizons are typically charged to saturation by rainfall early in the rainy season. Lateral movement of water through

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surface or subsurface flows along soil constraining layers helps maintain water levels in pools and other wetlands. The potential for creating vernal pools, vernal swales, and seasonal wetlands is high.

If the duripans are breached by excavation, the potential for soils along the investigated corridors for supporting riparian vegetation or other plantings of native species is good and dependent on the supply of moisture. In order to make planting decisions, an examination of post-grading soil conditions (depth, particle size, fertility, pH, soil moisture status, and other qualities) should be undertaken to develop specifications for plant selection and revegetation efforts.

If grading excavations on the site are undertaken, separate retention of top soil and subsoil clays will allow the use of those soil resources in the development of features such as vernal pools, stream corridors, other wetlands, or upland plant communities. Top soil resources are limited (most top soil horizons, as identified by carbon-enriched profiles) are thin. Clay horizons are also thin in most cases, but securing and separating these layers can be contemplated. In each case, the removal and separation of soil resource layers could occur through the observation and monitoring of real-time excavation activities. The depths and thicknesses of these profiles are variable across the site. Some pre-grading/pre-excavation mapping of recoverable soil resources could be accomplished through field sampling to identify resources of interest.

Soil Hydrology

The project area is generally rolling/undulating and supports numerous vernal pool wetlands (as surface depressions which pond surface runoff waters for long periods following the cessation of rainfall, and which develop unique associations of plant and animal species indigenous to the grasslands of the region) and associated swales and associated wetlands. The opportunity for restoration, creation, and enhancement of similar wetlands on the site is directly related to the soil characteristics (described above) and rainfall regimes of the region.

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Swales and pools that could be developed on the site could be wet enough, long enough, across the rainy seasons to allow the formation of hydric soils and hydrophytic plant communities.

Where hydraulic barriers—in this case, the relatively massive duripan and the well-developed clay horizons--occur in soil profiles, water from surface ponding does not easily enter permanent groundwater zones (as described above). In vernal pools on flat surfaces, water leaves the pools and swales by evaporation/transpiration, with some lateral sub-surface flows to down-gradient, lower topographic positions. Lateral flows would probably be minor components of the water balance of created pools on these surfaces. On some portions of the site where the duripan might locally dip toward swales and drainageways, lateral sub-surface flow may be a larger component of the hydrologic balance. In drainageways, some sub-surface perching of infiltrating surface waters (enough to daylight water at the soil surface by charging of surface horizons) could occur.

Surface flows across the site are probably attenuated by surface depressions, as with many vernal pool systems. Watersheds of individual vernal pools may be very small (on the order of tens of square meters) to somewhat larger, depending on size, surface topography (slope), and disturbances (for example, in some cases roadways and other fills create surface flow barriers which serve to allow water to pond long enough to create hydric soils and hydrophytic communities).

In general, permanent groundwater is not near enough to the surfaces of the various landforms of the project area to affect surface hydrology. Recharge of groundwater, over most of the site, probably does not occur on a large scale. The Bruella soils are possible recharge zones (the Bruella soils allow surface water infiltration and transmittal—they are permeable and deep).

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Conclusions

Soils of the project area define the expression of upland and wetland biological communities. The soil landscape is topographically variable (rolling) and relatively well watered seasonally. Soils across the landscape vary from moderately shallow soils above a duripan to deeper soils over a duripan to soils with subsurface clay-enriched horizons but no duripan. The soil properties of the mapped units across the landscape, as described above, are guidelines to decisions concerning management of surface waters, ecological restoration, and creation of diverse biological communities.

Pit descriptions/field notes and mapping coordinates for the intensive field study undertaken in the investigation of soils of this site are attached in Appendix A. The descriptions include, most prominently, depth to duripan at each pit, and some information on the nature of sub-duripan materials. It can be noted in the descriptions that the materials underlying the duripans are variably stratified and generally dry or slightly moist. Other field notes and reference documents are available on request.

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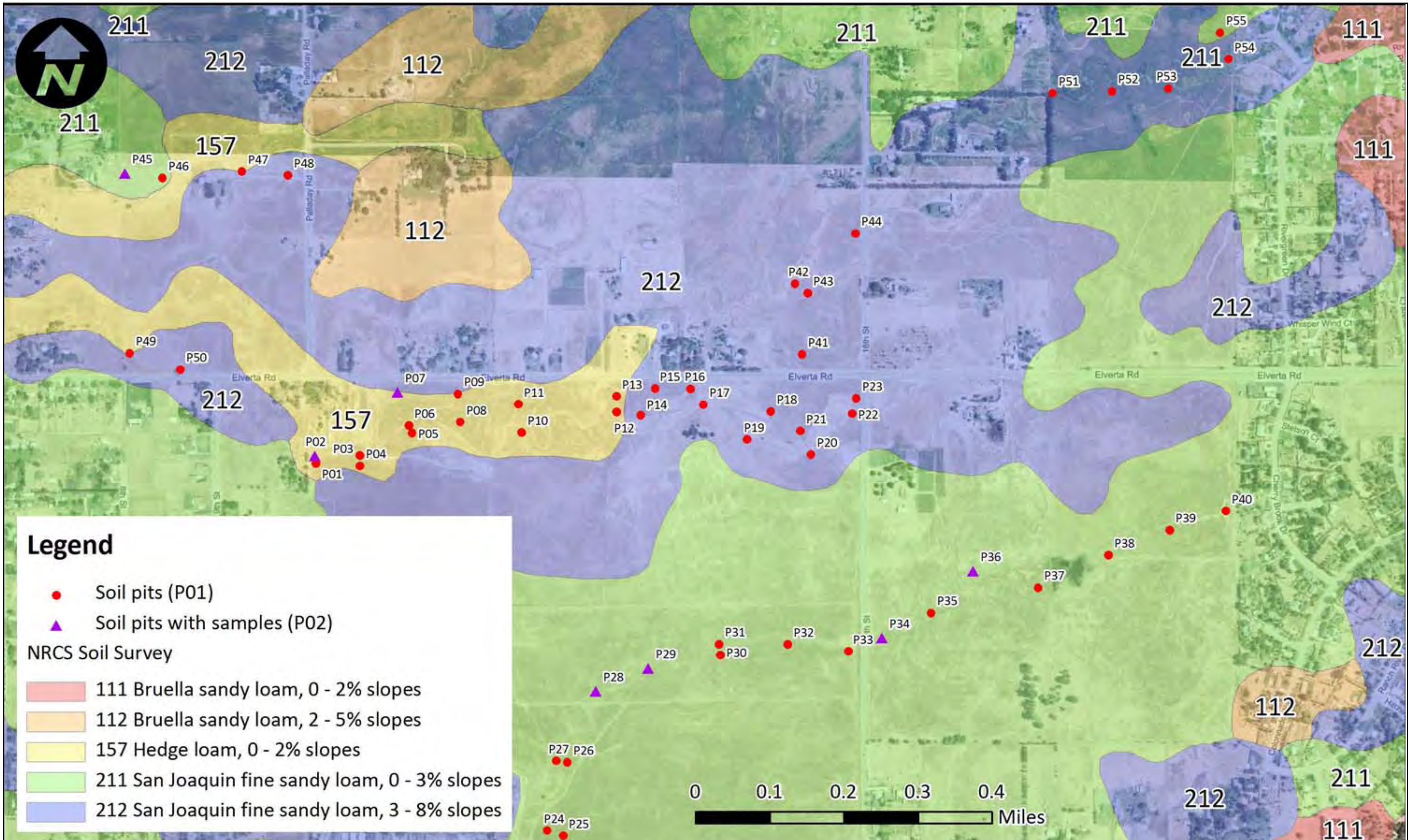

Source: 1) background courtesy of Bing Maps; 2) NRCS soil survey Sacramento County; 3) K&AES soil pits		*Elverta Specific Plan* **Soil sampling locations**
Project No. 09-1036	Created By: CRC	**Figure 1**

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12/8/2010

Appendix A – Field Notes

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Elverta Soils
Field Notes

David B. Kelley
02 – 04 August 2010

Elverta – 02 August 2010
Mike Kett/Backhoe
Jose Aguilar/Ranch Manager

Soils assessment of three corridors across scattered parcels centered on Elverta Road and 16th Street in Elverta. Potential sites marked by Chris Campbell and D. Kelley on 29 July 2010.
First pits opened along middle corridor, just south of Elverta Road, beginning at west end of corridor, heading east.
Annual grasses/weeds, including late summer tarweed. Heavily grazed, closed paddock with cattle.

Pit 1: San Joaquin fine sandy loam with high concentrations of redox features, including concretions and Mn staining in bands

West end of corridor, near fence, on mound (SJ soil)
Duripan near surface
Edge of terrace above swale
Soft duripan/slightly moist

0 – 8	Compacted fine sandy loam
8 – 16	Clay
16 – 28	Indurated pan/weathered, with coarse sandy clay materials
28 – 44	Consolidated/weakly cemented sandy loam
44 – 60	Silts interbedded with coarser materials

<u>Pit 2</u>: Hedge loam, disturbed (near enlarged drainage ditch)
West end of corridor
Near fence (6th post from west end)

0 – 4	Compacted
	Fine sandy loam
4 – 44	Sandy clay loam, slightly moist
44 – 48	Sandy clay – large root (+/- 3/4” diameter).
48 – 58	Duripan
58 > 62	Silt loam, slightly moist

Below 72”: Stratified silts/sandy loams/weakly indurated horizons
Other duripans - +/- 6” thick, alternating with silts and sandy loams
Permeability good in materials below duripan

Samples: Pit 2-A @ 20” -above clay/duripan

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Pit 2-B @ 72” -below duripan

<u>Pit 3</u>: (Hedge loam?)
Near fence, in invert from side swale, east of Pits 1 & 2
+/- 11 posts from east end of fence (corner)
Compacted surface
Duripan @ 15”

0 – 4	Compacted
4 – 15	Sandy loam
15 – 39	Weathered duripan, laminar cap
39 – 46	Silt
46 – 54	Duripan
54 > 70	Silty clay

<u>Pit 4</u>: San Joaquin fsl
60’ south of Pit 3, in small upland swale

0 – 8	Compacted surface loam
8 – 12	Dry blocky clay loam
12 – 16	Dark clay, moist
16 – 36	Duripan
	Abrupt/smooth upper boundary
	Coarse/small gravels/sand
36 – 40	Silty clay
40 – 48	Weak duripan
	Coarse/sandy
48 – 60	Silty clay
60 > 70	Weak duripan/coarse

<u>Pit 5</u>: Near depression on Hedge loam surface, below SJ ridge
Maybe Bruella sandy loam?
Doveweed/tarplant

0 – 10	Compacted surface
	Coarse sandy loam
10 – 48	Moist clayey sand (red-brown)
48 – 52	Clayey sand/sandy clay
52 – 66	Weathered duripan
66 – 72	Silty clay/silt stratifications

Duripan: Mn Stains
Coarse textured

<u>Pit 6</u>: North of Pit 5, near channel (near cbec stream gauge)

0 – 6	Compacted surface
6 – 38	Coarse sandy loam with small gravels in lower horizon, near dp
38 – 42	Clay
42 > 60	Weakly indurated, abrupt boundary
	Coarse sandy loam
Below 60:	Stratified duripans & thin clays/silt layers to > 80”

Pit 7: San Joaquin fsl
Near telephone pole – Elverta Rd./near locked gate
Higher terrace

0 – 6	Compacted sandy loam
6 – 16	Duripan/weakly indurated/dry
16 – 32	Coarse sand/dry
32 – 48	Coarse sand/very moist
48 – 56	Clayey sand
56 – 62	Clay
62 > 66	Duripan, weakly consolidated

Sample 7A: Soils below upper duripan at 25 to 35”
Moist/coarse
Above lower duripan and clay layers

Pit 8: (Hedge loam?)
Across Elverta Road from Day Care
Near nursery on Elverta
Low terrace near drainage

0 – 8	Compacted
	Coarse sandy loam
8 – 32	Coarse sandy loam
32 – 36	Sandy clay
36 – 73	Duripan, weak induration
73 > 78	Silty clay

Pit 9: North of Pit 8, near telephone pole with cable
Upper terrace

0 – 8	Compacted surface – coarse sandy loam
8 – 20	Coarse sandy clay, dry
20 – 48	Coarse sandy clay, moist
48 – 68	Duripan – weakly indurated
	Coarse sandy clay
68 – 74	Silts & clays

Pit 10: Low terrace, near drainage, south of marker

0 – 4	Compacted surface, sandy loam
4 – 40	Loamy coarse sand, moist at depth
40 – 48	Coarse clayey sand/sandy clay/moist
48 – 88	Layered duripan, weakly indurated
88 > 92	Silt

Pit 11: Low terrace, near Elverta Road

0 – 4	Moderately coarse sandy loam, compacted
4 – 36	Moderately coarse sands, moist
36 – 38	Clayey sand, moist

38 – 44	Duripan, weak induration
	Coarse sandy loam/ Abrupt color change (red > gray)
44 – 46	Gravelly sands, moist
46 > 72	Duripan, gray
	Silt loam to coarse sandy loam

Pit 12: Near drainage, near cbec marker
Low terrace
Gray soils/not as red-brown

0 – 8	Compacted
	Fine sandy loam
8 – 34	Coarse sandy loam
34 – 43	Coarse sandy clay loam or clayey sand
43 – 55	Duripan, weak induration
	Clayey sand
55 > 70	Stratified silts

Pit 13: San Joaquin/Hedge transition?
Low terrace, high point

0 – 4	Fine sandy loam/compacted
4 – 32	Coarse sandy loam, dry
32 – 38	Clayey coarse sandy, moist
38 – 80	Duripan, weak induration
80 – 90	Silts/coarse sand, stratified

Pit 14: Low terrace swale
East of Pit 12

0 – 8	Compacted sandy loam, dry
8 – 28	Coarse sandy loam, dry
28 – 36	Coarse sandy clay, moist
36 – 56	Duripan, weak induration
56 – 70	Stratified silts & clays

Pit 15: Near Elverta Road – High Point/terrace
Red coarse clayey sand over duripan

0 – 8	Compacted sandy loam, dry
8 – 24	Coarse sandy loam, dry
24 – 32	Coarse clayey sand/sandy clay, moist
32 – 36	Sandy clay
36 > 70	Duripan, weakly indurated
	Stratified below 60"

Pit 16: North edge of wetland, in disked area, near Elverta Road

0 – 8	Compacted platy surface, sandy loam, dry
8 – 24	Coarse sandy clay loam, moist
24 – 40	Duripan, weak induration, moist
40 > 70	Stratified duripans, weak induration, dry

Pit 17: Below trees (walnuts on hill), above wetlands

0 – 8	Compacted surface clay, dry
8 – 24	Dark clays, moist 10 YR 3/1
24 – 30	Dark clay, very moist 10 YR 3/1
30 – 60	Duripan, weak induration
60 – 80	Stratified silts, clay, duripans

Pit 18: Near edge of large mapped wetland

0 – 8	Compacted sandy loam
8 – 28	Sandy clay, dark, clay skins on red peds
28 – 40	Clay
40 > 70	Duripan, weak induration grading to stratified dps and silt layers below 60”

Pit 19: Base of small walnut tree, up from wetland
Side slope above wetlands
Walnut roots in upper 14”

0 – 4	Compacted sandy loam, dry
4 – 14	Sandy loam, dry
14 – 36	Coarse sandy clay, moist
36 – 56	Duripan, weakly indurated
56 – 70	Silty/clayey/stratified (dry)

Pit 20: Near power line tower, south of wetlands
Low terrace swale

0 – 8	Compacted sandy loam, dry
8 – 20	Clayey sand (coarse), slightly moist
20 – 48	Coarse sandy clay, moist
48 > 70	Duripan, weak induration
> 70	Silt and clay strata

Pit 21: Under power lines, high point

0 – 8	Sandy loam, compacted
8 – 30	Coarse sandy clay, dry
30 – 50	Coarse sandy clay, moist
50 > 70	Duripan, stratified at 60”

Pit 22: Near 16th street, next to wetland swale

0 – 8	Fine sandy loam, dry
8 – 45	Fine sandy loam, moist
45 – 73	Duripan, weak, moist
73 > 78	Silt strata, dry

Pit 23: Near 16th, north of Pit 22, near fence
Disked area

0 – 16	Fine sandy loam, moist
16 – 36	Dark clay, moist
36 – 42	Duripan, weak induration

42 > 60	Silty strata

Sample 23A: Silts from below duripan

<u>Elverta – Day 2, 03 August 2010</u>

Southwest corner of project site at Dry Creek Lane, southern corridor, west end

<u>Pit 24</u>: Mound (terrace remnant?), San Joaquin fsl
Near Dry Creek Lane
Duripan at 27", soft stratified sediments below

0 – 8	Compacted fine sandy loam, dry
8 – 27	Clay, slightly moist Angular, blocky Clay skins
27 – 53	Duripan, dry Laminar cap, abrupt
53 – 70	Stratified clays & silts

<u>Pit 25</u>: Edge of wetland, east southeast of Pit 24

0 – 4	Compacted surface Clay loam, dry
4 – 20	Dark reddish clay, slightly moist Angular, blocky
20 – 36	Duripan Laminar cap, abrupt
36 – 75	Stratified silts/clays, slightly moist Slightly indurated
75 – 80	Silty sands, slightly moist

<u>Pit 26</u>: Edge of Wetland

0 – 6	Compacted surface
6 – 16	Coarse sandy clay, moist, reddish
16 – 40	Coarse sandy clay, moist, slightly indurated
40 – 44	Coarse sandy clay, wet – sticky above duripan
44 > 70	Duripan, weak induration, stratified in lower horizons

Similar to Bruella soils (reddish), coarse sandy clay

<u>Pit 27</u>: Edge of wetland, west of Pit 26

0 – 4	Compacted surface Sandy clay loam
4 – 31	Clay Angular, blocky
31 – 66	Duripan, weak induration
66 – 80	Stratified silts & clays
80 > 82	Sandy clay, dry

<u>Pit 28</u>: Edge of wetland, edge of *Eryngium* flat

0 – 6	Compacted sandy clay loam
6 – 10	Blocky reddish clay with coarse sands
10 – 22	Angular, blocky coarse sandy clay (dark)
22 – 42	Duripan, weak induration
	Laminar cap
42 – 98	Clays & silts, stratified

Samples: 28A: Above duripan 10 – 20”, clays
28B: Below duripan 70 – 90”, silts/clays

Pit 29: Outside of wetland, northeast of Pit 28
Red coarse sands above duripan
Deep pit (to > 108”)

0 – 6	Compacted sandy clay loam
6 – 28	Coarse sandy clay, moist
28 – 36	Coarse sandy clay, very moist
36 – 58	Duripan
58 – 108	Stratified silts/clays

Sample: 29A: Above duripan, 20 – 30”, red clay
29B: Below duripan, 70 – 90”, silts & clays

Pit 30: Outside wetland, east of Pit 29 (2 pits at this marker)

0 – 8	Compacted surface
	Sandy loam
8 – 18	Coarse sandy clay, dry
18 – 36	Coarse sandy clay, moist
36 – 40	Indurated red sandy clay (+/- 4 inches)
40 – 62	Duripan, laminar cap
62 > 78	Stratified silts & clays

General notes on duripans of southern corridor:
Duripan strongest in upper 6 inches
Manganese (Mn) staining/concretions on ped faces
Partial induration in clay above duripan, partial induration throughout silts and clays below duripan.
No roots below duripan

Pit 31: North of Pit 30, outside of wetlands on small rise

0 – 8	Compacted sandy clay loam, dry
8 – 18	Sandy clay, moderately coarse sands, dry
18 – 26	Coarse sandy clay, moist
26 – 55	Duripan, laminar cap
55 > 72	Stratified silts, clays – some induration

Pit 32: East of Pit 29/30/31; outside of wetlands
Duripan @ 38”, below wet clays

0 – 8	Compacted sandy clay loam, dry
8 – 18	Coarse sandy clay, dry

Pit 32 continued:

18 – 30	Coarse sandy clay, moist
30 – 36	Coarse sandy clay, very moist
36 – 60	Duripan over stratified silts & duripans
60 – 72	Stratified silts/clays/sands
72 – 86	Duripan, weak induration with silt lenses

Upper duripan thickness: 24"

Pit 33: Near 16th St., east of Pit 32/outside of disked area

0 – 8	Compacted sandy clay loam, dry
8 – 22	Clay, dry, angular, blocky
22 – 62	Duripan, weakly indurated
62 > 80	Stratified silts/sands (moist)

Southern corridor, east of 16th Street

Pit 34: Nearest 16th Street, at west end of parcel
Near wetland swale

0 – 8	Compacted sandy clay loam, dry
8 – 20	Coarse sandy clay, angular, blocky, dry
20 – 24	Coarse sandy clay, moist
24 – 50	Duripan; laminar cap, hard at top, weaker with depth
50 > 78	Clayey sand, moist/interbedded with silts/sands, moist

Pit 35: East northeast of Pit 34
Duripan may have been ripped to > 30"

0 – 7	Compacted sandy clay loam
7 – 17	Sandy loam, dry or sandy clay loam, dry
17 – 24	Sandy clay, moist
24 – 76	Duripan, weakly cemented, laminar cap
76 > 90	Sandy, silty, moist

Pit 36: Northeast of Pit 35
Deep pit, to 112"
Sand, coarse, at bottom

0 – 8	Sandy loam, dry, compacted
8 – 14	Coarse sandy clay, dry
14 – 36	Duripan, weak, laminar cap
36 – 50	Fine sandy silts/clays
50 – 100	Silts/sands
At depth:	Coarse sands, wet

Sample: 36A: Deep sample (> 100")
No free water, but sands coarse & wet

Pit 37: East of Pit 36, near dam

0 – 8	Sandy clay loam, dry
8 – 16	Coarse sandy clay, dry
16 – 40	Duripan, laminar cap

40 > 70	Stratified duripans (coarse sands, clays, silts} probably all duripan, some lenses

Pit 38: Upstream edge of pond wetlands, outside of wetland swale
East of Pit 37

0 – 2	Compacted surface
2 – 8	Sandy clay loam, many roots, dry
8 – 32	Coarse sandy clay, moist
32 – 52	Duripan, weak, laminar cap
52 – 78	Stratified sands, silts – some induration

Pit 39: East of Pit 38, above wetlands

0 – 4	Compacted sandy clay loam, dry
4 – 24	Coarse sandy clay, dry
24 – 36	Coarse sandy clay, moist
36 – 50	Duripan, weak, moist, common small gravels to 1”
50 – 70	Coarse sands, clays, common small gravels to 1”

Pit 40: East end of southern corridor
Edge of wetlands, near fence

0 – 8	Compacted sandy clay loam
8 – 16	Coarse sandy clay
16 – 42	Duripan, weak, dry
42 – 78	Stratified sands, sandy clay, silts

Middle Corridor
Northwest corner of 16th and Elverta – Horse Pasture

Pit 41: Near power line tower, near Elverta Road, above wetland

0 – 8	Compacted surface
8 – 16	Sandy clay, dry
16 – 24	Sandy clay, slightly moist
24 – 68	Duripan, weak, dry, laminar cap
68 – 72	Stratified silts/sands

Pit 42: Near wetland, shoulder of hill
Red coarse sandy clay above duripan
Probably Bruella clay loam over deep duripan

0 – 8	Compacted
8 – 27	Coarse sandy clay, dry
27 – 39	Coarse sandy clay, moist
39 – 70	Duripan
70 – 80	Silts & sands

Pit 43: Top of hill in R. O. W. (Deep pit)
Indurated clays (coarse sandy) to 48”
Duripan, weathered, @ 48” to > 86”
Soils are indurated throughout
Dry throughout

<u>Pit 44</u>: Near fence @ 16th Street
Shoulder of swale

0 – 6	Compacted sandy clay loam, surface dry
6 – 30	Coarse sandy clay, weakly indurated
30 > 70	Duripan, weathered, weak induration, dry
Below 70:	Stratified, indurated silts/sands

Duripan hard in upper portions, induration throughout profile

Elverta – Day 3, 04 August 2010

<u>Pit 45</u>: Hedge Soils – Broad Swale
Northern Corridor – West End
Jose Aguilar Bull/Calf Pasture
Northwest corner of pasture
Apparent southern edge of terrace with duripan

North End – Pit 45

0 – 8	Compacted surface soils, sandy clay loam, dry
8 – 32	Sandy clay, dry
32 > 50	Duripan, weak, dry

South End, Pit 45 (8' south of N end)

0 – 8	Compacted surface
	Coarse sandy clay loam
8 – 20	Coarsesandy clay, dry
20 – 56	Coarse sandy clay, moist (red)
56 > 72	Duripan, weak induration
> 72	Stratified duripan to at least 118"

Sample: 45A: Below top of duripan, 75 – 95"

<u>Pit 46</u>: East end of pasture, east of Pit 45
Low position, near channeled ditch
South of N grate

0 – 6	Compacted surface, dry, sandy clay loam
6 – 16	Coarse sandy clay, dry
16 – 40	Coarse sandy clay, moist
40 – 60	Duripan, weak, moist
60 – 75	Silty clay/sand lenses

<u>Pit 47</u>: Near Jose Aguilar house
Between fences along entry road
North of road, next to north fence
Dry, near stored boat on trailer
Pasture too muddy to dig
Possibly several duripans with heavy clay overlying
Transition zone between two soils – Hedge/San Joaquin

0 – 6	Compacted sandy clay loam, dry
6 – 20	Coarse sandy clay, moist
20 – 34	Duripan, weathered, laminar cap, moist
34 – 48	Coarse clayey sand, some weak induration
48 – 60	Weathered duripan
60 – 66	Silt/Silty clay
66 – 72	Silt

Pit 48: San Joaquin fsl (mapped)—probably Bruella
East of Pit 47, along entryway road to Aguilar property
Base of small peach tree, near road/near hay bales
High position in landscape

0 – 8	Compacted surface – coarse sandy clay loam
8 – 36	Slightly indurated coarse sandy clay, moist with depth (red) Angular blocky in upper 10 inches with roots on ped faces
36 – 74	Very coarse sands, wet (dark red) Seeping at 74”
74 – 86	Sandy clay

Pit 49: Southwest corner of Aguilar pasture, near creek/drainage
Corner of field, near Elverta Road
Low terrace

0 – 4	Compact surface, dry
4 – 20	Coarse sandy clay, very dry, very hard
20 – 34	Coarse sandy clay, very hard, dry
34 > 72	Duripan, weathered Coarse sandy below duripan, moist

Pit 50: East of Pit 49, near Elverta Road
Near 30” dbh cottonwood
Large culverts under road just south of pit
Roots throughout, some to > 2” diameter
Sandy upper profile, moist
Weathered duripan? Or finer-textured fill soils

0 – 2	Compacted surface
2 – 20	Moderate coarse sands or sandy loam, dry
20 – 40	Moderate coarse sandy loam, moist
40 – 54	Moderate coarse sands Roots at 54
54 > 90	Duripan, weathered, roots to > 3/4” Sands/silts/coarse sands, moderately clayey Moist at 72”

Northern Corridor/Northeast Property, North of Elverta Road
Near Swale wetlands at western fence line, in disked area

Pit 51: Low terrace, near mapped wetlands

0 – 8	Disked, compacted Sandy clay loam

8 – 26	Moderately sandy clay, dry Angular, blocky
26 – 32	Sandy clay, slightly moist
32 – 56	Duripan, dry, weathered
56 – 78	Sands/silts, moderately indurated
78 – 86	Moist fine sands, not indurated

Pit 52: Low terrace, above wetland, east of Pit 51

0 – 10	Compacted surface, sandy clay loam
10 – 22	Sandy clay, dry
22 – 34	Sandy clay, moist
34 – 64	Duripan, moist, weathered
64 – 76	Sands/clays/clayey sands/stratified
76 – 88	Sands/moist fine sands

Pit 53: Near swale wetlands, East of Pit 52

0 – 8	Compacted sandy clay loam
8 – 18	Sandy clay, dry
18 – 36	Sandy clay, moist
36 – 56	Duripan, weathered
56 – 75	Sands/clays/stratified
75 – 86	Sands, moist

Pit 54: East northeast of Pit 53, in disked area near eastern fence, up from wetland

0 – 8	Compacted sandy clay loam, disked
8 – 22	Coarse sandy clay, moist
22 – 36	Coarse sandy clay, very moist
36 – 60	Duripan, hard, moist, laminar cap
60 > 86	Sands/moist/moderately coarse/slightly clayey

Pit 55: Northwest of Pit 54
Top of high terrace, near northeast corner of northeast corridor
(May be out of work area)
Possibly no duripan
Coarse red sandy clay
Water seeping at 9’
Compacted surface
Coarse red sands/sandy clays throughout
High point in northeast corner
Maybe Bruella clay loam

Appendix B – Saturated Hydraulic Conductivity

KELLEY & ASSOCIATES ENVIRONMENTAL SCIENCES, INC.
Consultation in Earth, Environmental, and Agricultural Sciences
20 E. BAKER STREET • WINTERS, CALIFORNIA 95694
TEL: 530-795-6006 • FAX: 530-795-6008 • E-MAIL: dbkelley@jps.net

MEMORANDUM

Date:	December 8, 2010
To:	Elverta Owners Group
From:	Chris Campbell
Project:	09-1036 – Elverta Specific Plan
Subject:	Saturated Hydraulic Conductivity of Elverta Specific Plan Area Soils

David Kelley with Kelley & Associates Environmental Sciences, Inc. (K&AES) conducted a soil assessment within the three drainage corridors proposed within the footprint of the Elverta Specific Plan. The field component of the soil assessment was conducted in August 2010, included 55 backhoe excavations, was limited by participating landowners, and included the collection of a limited number of soil samples. The soil samples were sent to Cooper Testing Laboratory for analysis of particle size distribution and hydraulic conductivity. The following reports the details of the laboratory results.

Figure 1 shows the location of the 55 backhoe excavations. Out of the 55 excavations, 7 locations (purple triangles) were sampled above and below the duripan (see Table 1 for details) to characterize the theoretical in situ and compacted hydraulic conductivity of the overlying and underlying material should the duripan be significantly disturbed. The theoretical in situ saturated hydraulic conductivities were calculated per the published soil-water relationships of Rawls et al. (1982) from the percentages of sand and clay and represent what may be encountered naturally. The falling head hydraulic conductivities were derived from laboratory analysis and represent what may be encountered with 90% compaction. Figure 2 shows a comparison of the theoretical and compacted saturated hydraulic conductivities to include the approximate saturated hydraulic conductivity of the duripan as reported in the NRCS soil survey for Sacramento County.

As demonstrated by Figure 2, saturated hydraulic conductivities of 90% compacted soils are typically 1 to 2 orders of magnitude smaller than those that occur naturally, but can be up to 3 orders of magnitude smaller depending on soil texture. However, greater than 90% compaction, or the use of clay linings, may be necessary to achieve a level of permeability similar to the duripans to sufficiently pond water within the drainage corridors to support proposed wetland habitats. Figure 2 also shows that the soils above the duripan generally result in lower saturated hydraulic conductivities compared to the soils below the duripan when compacted to 90%. As such, selective reuse of clean surface soils and clay-enriched horizons should be considered in the drainage corridor design rather than simply compacting soils below the duripan should the duripan be significantly disturbed.

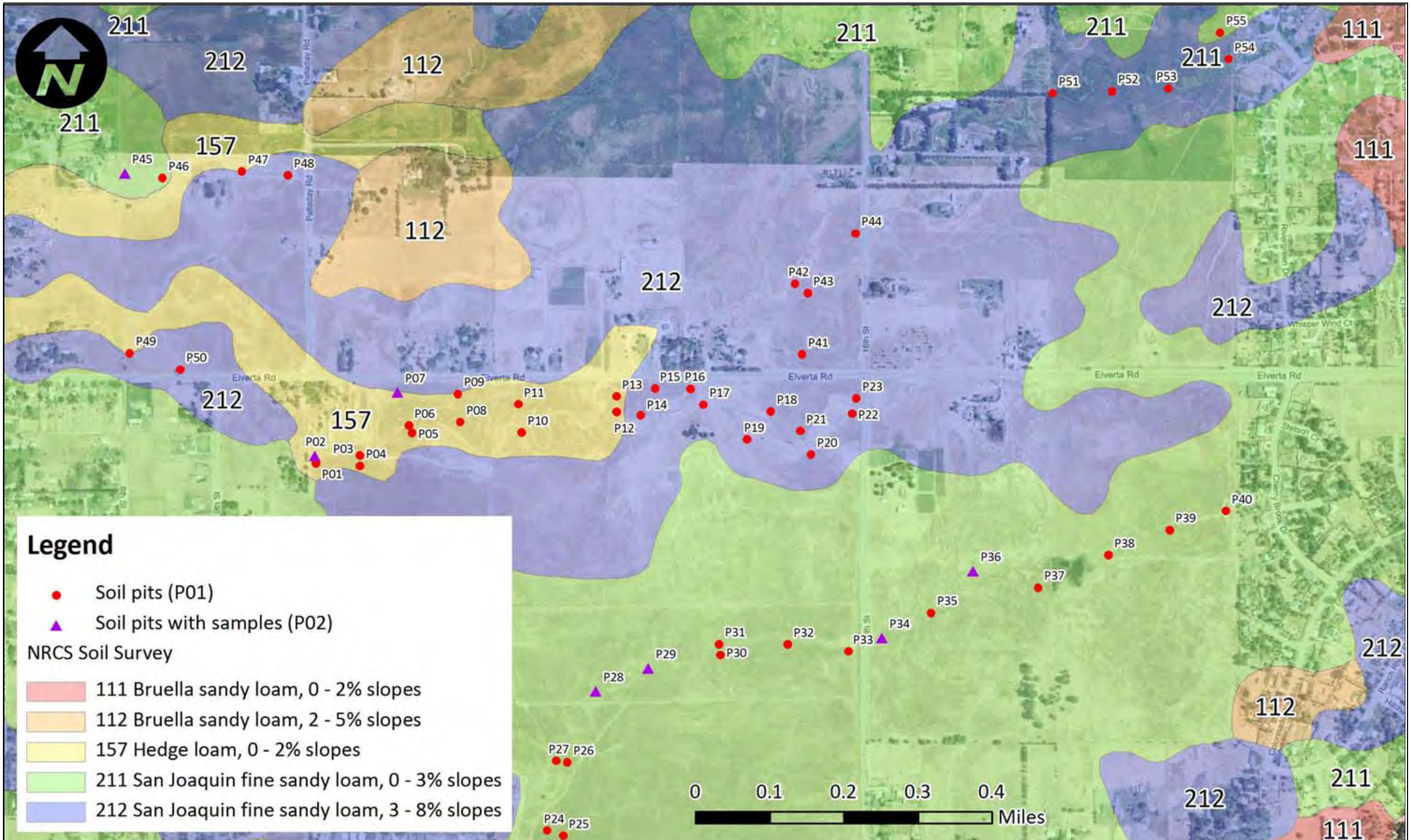
Table 1. Saturated hydraulic conductivity

Sample Location	Relative to Duripan	% Sand (per USDA)	% Clay (per USDA)	Theoretical Ksat (cm/hr)	Falling Head Ksat (cm/hr)
2-A	Above	57.6	9.3	2.90	0.0070
2-B	Below	24.6	14.1	1.94	0.0018
7-A	Below	75.2	11.8	2.11	0.0899
28-A	Above	51.5	24.6	0.47	0.0465
29-A	Above	30.2	31.2	0.37	0.0015
29-B	Below	36.9	8.7	3.16	0.0956
34-A	Above	27.3	33.6	0.33	0.0053
34-B	Below	55.7	8.1	3.37	0.2341
36-A	Below	69.6	13.6	1.60	1.0718
45-A	Below	76.1	2.0	8.04	0.5145

Laboratory data are provided in Appendix A, Appendix B, and Appendix C. Appendix A includes particle size distribution information to inform the percentage of sand and clay used in the Rawls et al. (1982) soil-water relationships. Appendix B includes chunk density information that was used to determine an approximate dry density for estimating the dry density at 90% compaction of remolded samples. Appendix C includes the falling head hydraulic conductivity tests per ASTM D 5084 standards for remolded samples.

REFERENCES

Rawls, W.J., D.L. Brakensiek, and K.E. Saxton. 1982. Estimation of soil water properties. Transactions of the ASAE, 1316-1328.



Source: 1) background courtesy of Bing Maps; 2) NRCS soil survey Sacramento County; 3) K&AES soil pits	KELLEY & ASSOCIATES ENVIRONMENTAL SCIENCES, INC.	cbec eco engineering	*Elverta Specific Plan* **Soil sampling locations**	
			Project No. 09-1036	Created By: CRC

Figure 1

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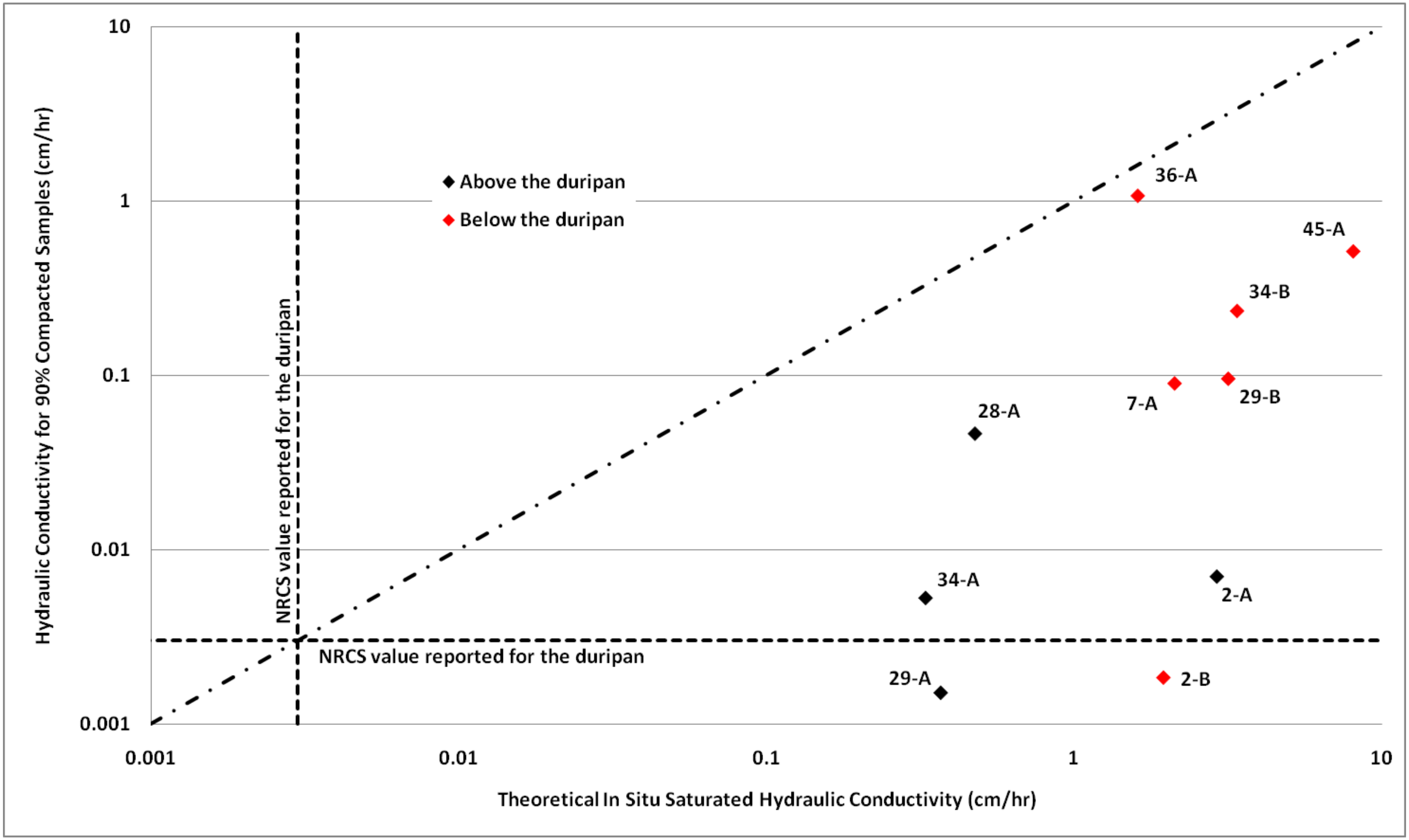
12/8/2010



Notes: theoretical in situ saturated hydraulic conductivity calculated per Rawls et al. (1982); falling head rising tailwater (per ASTM D 5084) reported for remolded soil samples compacted to approximately 90%; see Figure 1 for sample locations.

cbec eco engineering

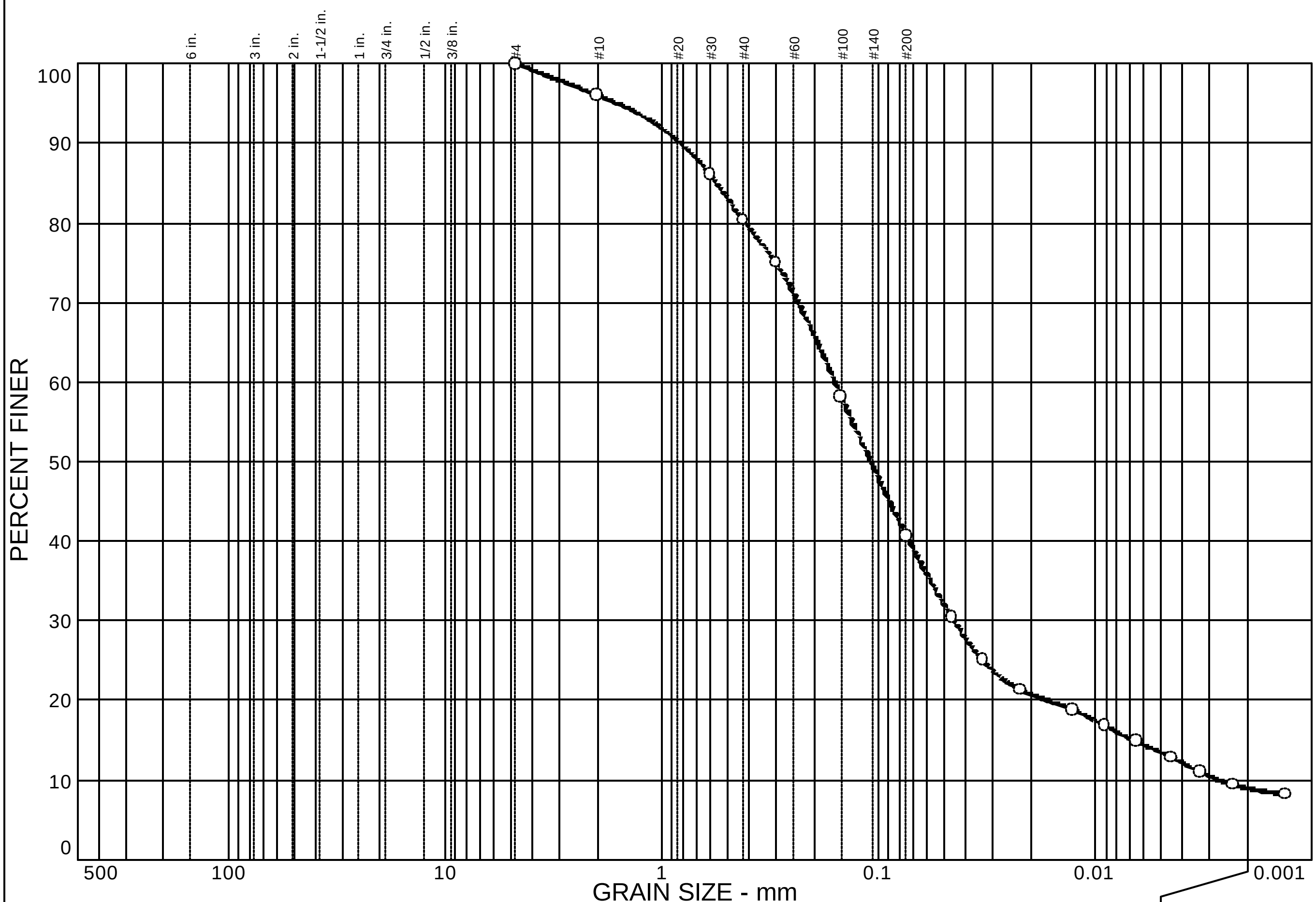
Elverta Specific Plan

Saturated hydraulic conductivity

Project No. 09-1036	Created By: CRC	**Figure 2**

APPENDIX A – PARTICLE SIZE DISTRIBUTION

Particle Size Distribution Report



% COBBLES	% GRAVEL	% SAND	% SILT	% CLAY
0.0	0.0	59.3	31.8	8.9

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
#4	100.0		
#10	96.1		
#30	86.0		
#40	80.4		
#50	75.0		
#100	58.2		
#200	40.7		
0.0462 mm.	30.4		
0.0333 mm.	25.0		
0.0221 mm.	21.3		
0.0127 mm.	18.8		
0.0091 mm.	16.8		
0.0065 mm.	14.8		
0.0044 mm.	12.8		
0.0033 mm.	11.0		
0.0023 mm.	9.4		
0.0013 mm.	8.2		

* (no specification provided)

Soil Description

Dark Reddish Brown Silty SAND w/ surface organics

Atterberg Limits

PL= LL= PI=

Coefficients

D_{85}= 0.563 D_{60}= 0.160 D_{50}= 0.110
D_{30}= 0.0452 D_{15}= 0.0067 D_{10}= 0.0027
C_u= 59.05 C_c= 4.69

Classification

USCS= AASHTO=

Remarks

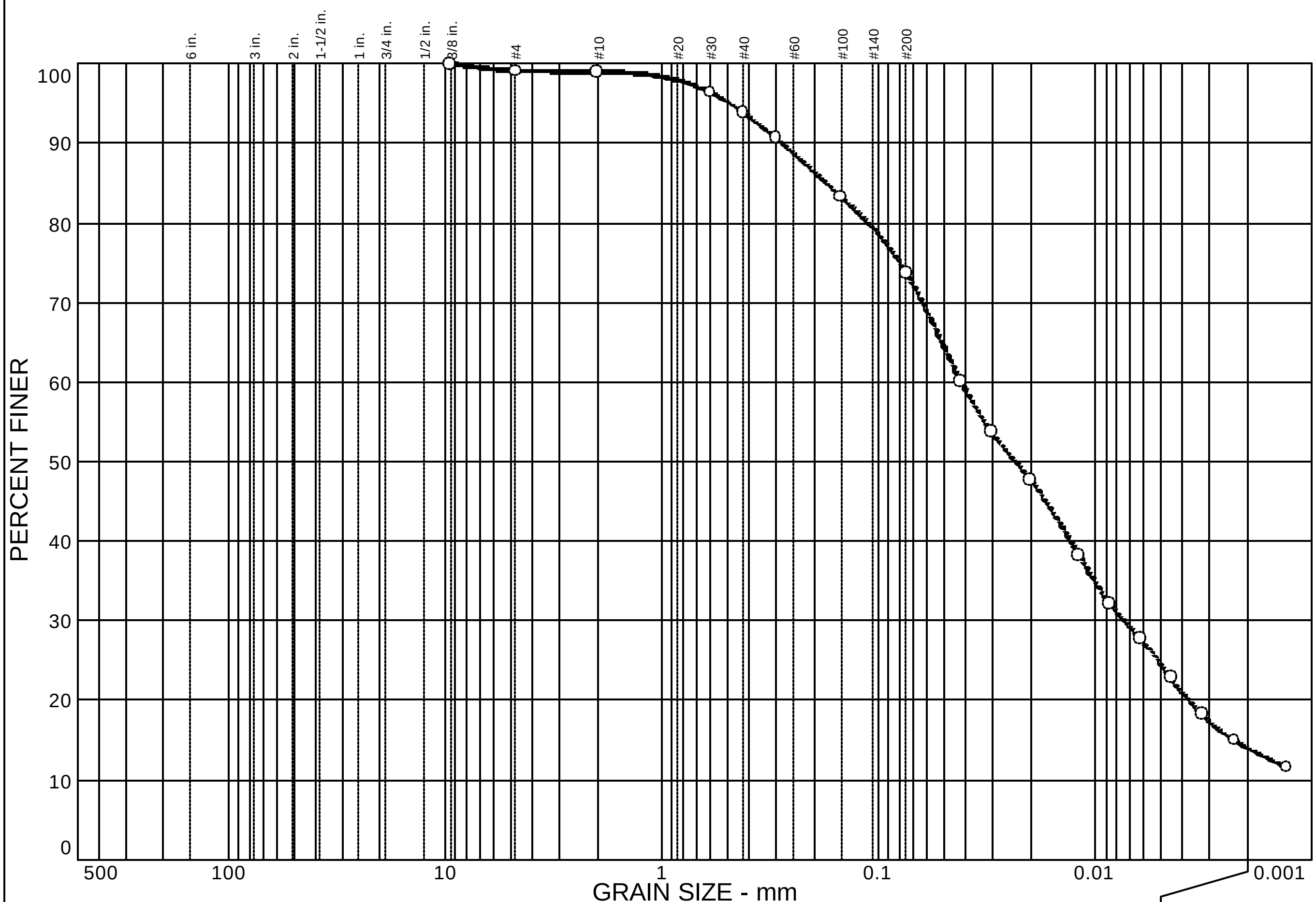
Sample No.: **Source of Sample:** 2-A **Date:**
Location: **Elev./Depth:** 1.67'

COOPER TESTING LABORATORY

Client: CBEC, Inc.
Project: ELVERTA HMP - 09-1036

Project No: 670-006 **Figure**

Particle Size Distribution Report



% COBBLES	% GRAVEL	% SAND	% SILT	% CLAY
0.0	0.9	25.4	59.7	14.0

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
3/8 in.	100.0		
#4	99.1		
#10	99.0		
#30	96.4		
#40	93.9		
#50	90.7		
#100	83.3		
#200	73.7		
0.0419 mm.	60.0		
0.0303 mm.	53.7		
0.0199 mm.	47.6		
0.0120 mm.	38.2		
0.0087 mm.	32.2		
0.0062 mm.	27.8		
0.0045 mm.	22.8		
0.0032 mm.	18.2		
0.0023 mm.	15.0		
0.0013 mm.	11.6		

* (no specification provided)

Soil Description

Pale Yellow SILT w/ Sand

Atterberg Limits

PL= LL= PI=

Coefficients

D_{85}= 0.175 D_{60}= 0.0419 D_{50}= 0.0235
D_{30}= 0.0074 D_{15}= 0.0023 D_{10}=
C_u= C_c=

Classification

USCS= AASHTO=

Remarks

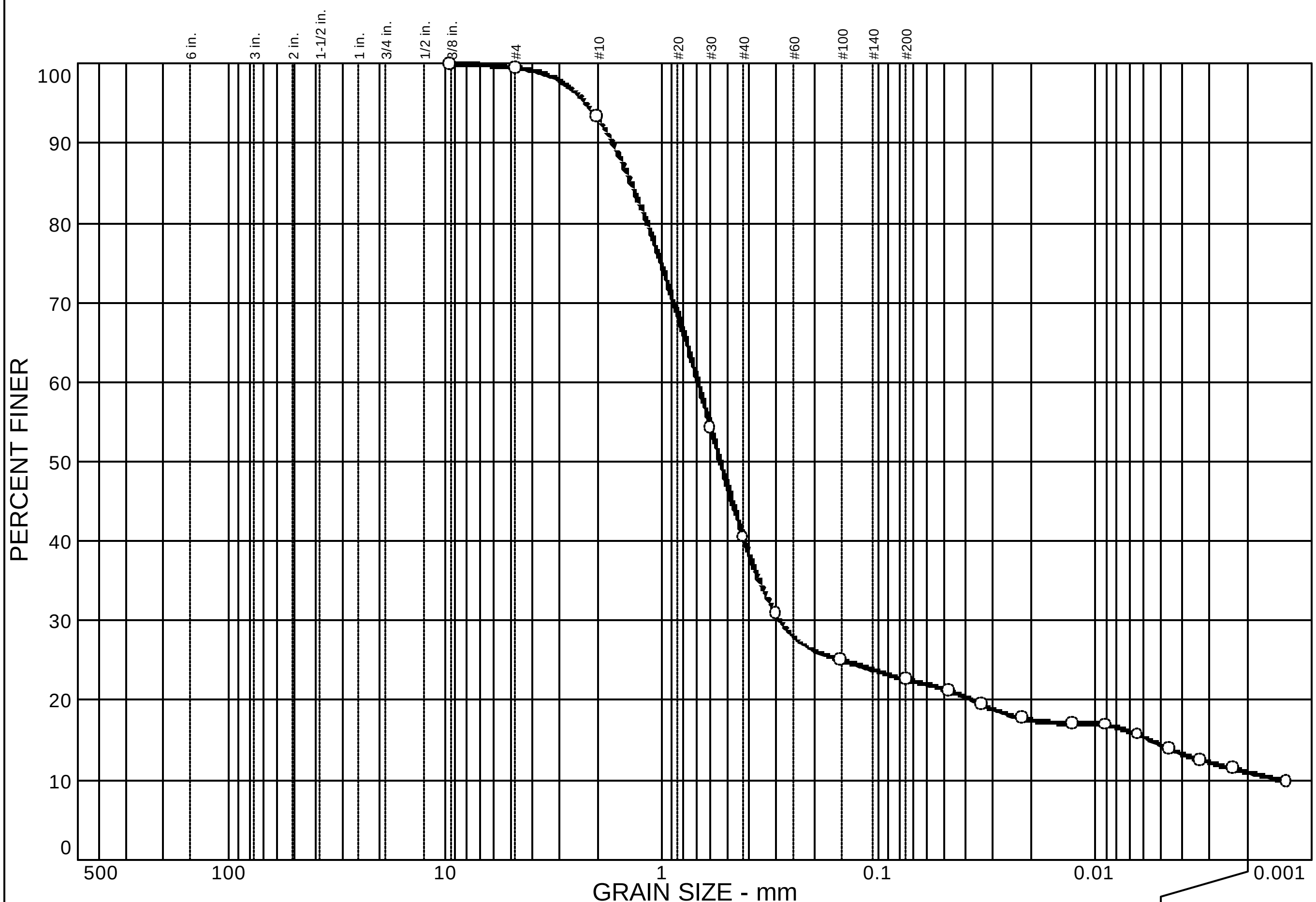
Sample No.: **Source of Sample:** 2-B **Date:**
Location: **Elev./Depth:** 6.00'

COOPER TESTING LABORATORY

Client: CBEC, Inc.
Project: ELVERTA HMP - 09-1036

Project No: 670-006 **Figure**

Particle Size Distribution Report



% COBBLES	% GRAVEL	% SAND	% SILT	% CLAY
0.0	0.5	76.9	11.6	11.0

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
3/8 in.	100.0		
#4	99.5		
#10	93.3		
#30	54.3		
#40	40.5		
#50	30.9		
#100	25.1		
#200	22.6		
0.0473 mm.	21.2		
0.0337 mm.	19.5		
0.0218 mm.	17.7		
0.0127 mm.	17.1		
0.0090 mm.	16.9		
0.0064 mm.	15.7		
0.0046 mm.	13.9		
0.0033 mm.	12.5		
0.0023 mm.	11.4		
0.0013 mm.	9.8		

* (no specification provided)

Soil Description

Yellowish Brown Clayey SAND

Atterberg Limits

PL= LL= PI=

Coefficients

D_{85}= 1.40 D_{60}= 0.689 D_{50}= 0.541
D_{30}= 0.286 D_{15}= 0.0056 D_{10}= 0.0014
C_u= 486.11 C_c= 83.50

Classification

USCS= SM AASHTO=

Remarks

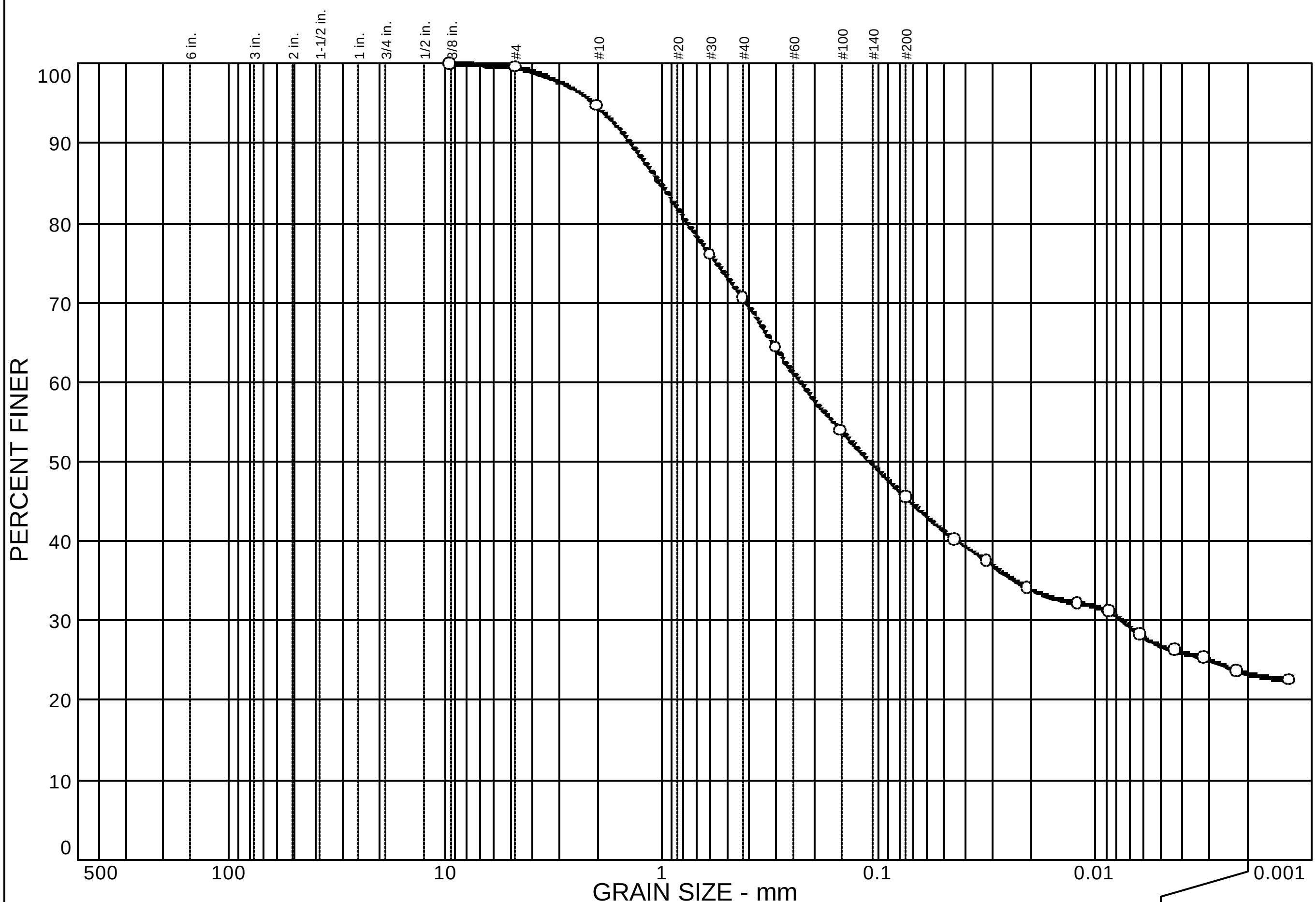
Sample No.: **Source of Sample:** 7-A **Date:**
Location: **Elev./Depth:** 6.25'

COOPER TESTING LABORATORY

Client: CBEC, Inc.
Project: ELVERTA HMP - 09-1036

Project No: 670-006 **Figure**

Particle Size Distribution Report



% COBBLES	% GRAVEL	% SAND	% SILT	% CLAY
0.0	0.4	54.1	22.2	23.3

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
3/8 in.	100.0		
#4	99.6		
#10	94.7		
#30	76.0		
#40	70.6		
#50	64.3		
#100	53.9		
#200	45.5		
0.0445 mm.	40.2		
0.0318 mm.	37.5		
0.0207 mm.	34.1		
0.0121 mm.	32.2		
0.0086 mm.	31.1		
0.0062 mm.	28.2		
0.0043 mm.	26.2		
0.0032 mm.	25.3		
0.0022 mm.	23.7		
0.0013 mm.	22.5		

* (no specification provided)

Soil Description

Dark Yellowish Brown Clayey SAND

Atterberg Limits

PL= LL= PI=

Coefficients

D_{85}= 1.02 D_{60}= 0.231 D_{50}= 0.110
D_{30}= 0.0075 D_{15}= D_{10}=
C_u= C_c=

Classification

USCS= AASHTO=

Remarks

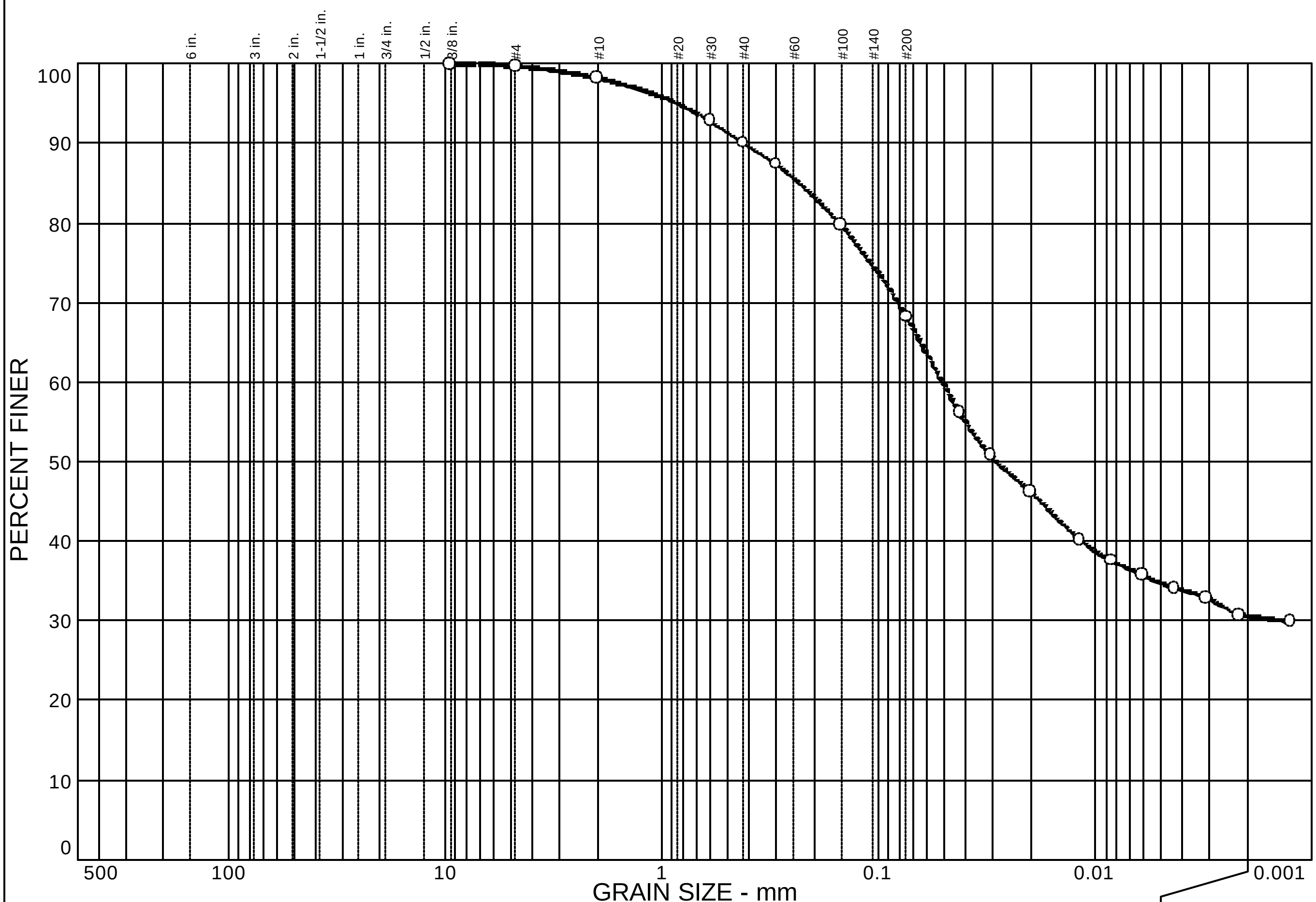
Sample No.: **Source of Sample:** 28-A **Date:**
Location: **Elev./Depth:** 1.67'

COOPER TESTING LABORATORY

Client: CBEC, Inc.
Project: ELVERTA HMP - 09-1036

Project No: 670-006 **Figure**

Particle Size Distribution Report



% COBBLES	% GRAVEL	% SAND	% SILT	% CLAY
0.0	0.3	31.5	37.6	30.6

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
3/8 in.	100.0		
#4	99.7		
#10	98.2		
#30	92.8		
#40	90.1		
#50	87.4		
#100	79.7		
#200	68.2		
0.0424 mm.	56.1		
0.0306 mm.	50.8		
0.0200 mm.	46.2		
0.0119 mm.	40.2		
0.0085 mm.	37.6		
0.0061 mm.	35.7		
0.0043 mm.	34.1		
0.0031 mm.	32.9		
0.0022 mm.	30.7		
0.0013 mm.	29.9		

* (no specification provided)

Soil Description

Brown Sandy CLAY

Atterberg Limits

PL= LL= PI=

Coefficients

D_{85}= 0.233 D_{60}= 0.0513 D_{50}= 0.0287
D_{30}= 0.0014 D_{15}= D_{10}=
C_u= C_c=

Classification

USCS= ML AASHTO=

Remarks

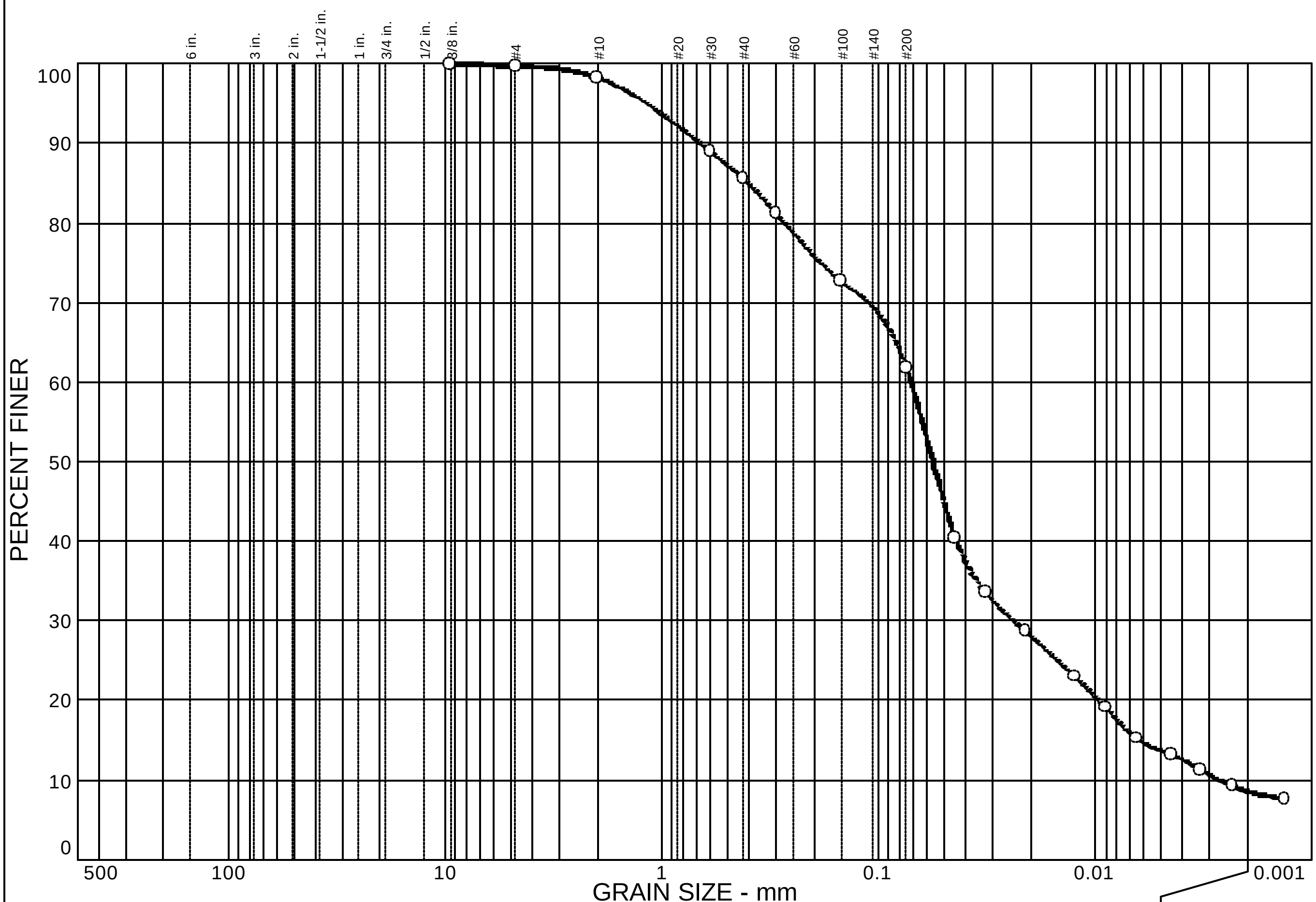
Sample No.: **Source of Sample:** 29-A **Date:**
Location: **Elev./Depth:** 1.67'

COOPER TESTING LABORATORY

Client: CBEC, Inc.
Project: ELVERTA HMP - 09-1036

Project No: 670-006 **Figure**

Particle Size Distribution Report



% COBBLES	% GRAVEL	% SAND	% SILT	% CLAY
0.0	0.3	38.0	53.1	8.6

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
3/8 in.	100.0		
#4	99.7		
#10	98.3		
#30	89.0		
#40	85.6		
#50	81.3		
#100	72.7		
#200	61.7		
0.0447 mm.	40.4		
0.0324 mm.	33.6		
0.0212 mm.	28.7		
0.0125 mm.	23.0		
0.0090 mm.	19.1		
0.0065 mm.	15.2		
0.0045 mm.	13.2		
0.0033 mm.	11.3		
0.0023 mm.	9.2		
0.0013 mm.	7.6		

* (no specification provided)

Soil Description

Brown Sandy SILT

Atterberg Limits

PL= LL= PI=

Coefficients

D_{85}= 0.403 D_{60}= 0.0716 D_{50}= 0.0567
D_{30}= 0.0240 D_{15}= 0.0063 D_{10}= 0.0027
C_u= 26.44 C_c= 2.97

Classification

USCS= AASHTO=

Remarks

Sample No.: **Source of Sample:** 29-B **Date:**
Location: **Elev./Depth:** 6.67'

COOPER TESTING LABORATORY

Client: CBEC, Inc.
Project: ELVERTA HMP - 09-1036

Project No: 670-006 **Figure**