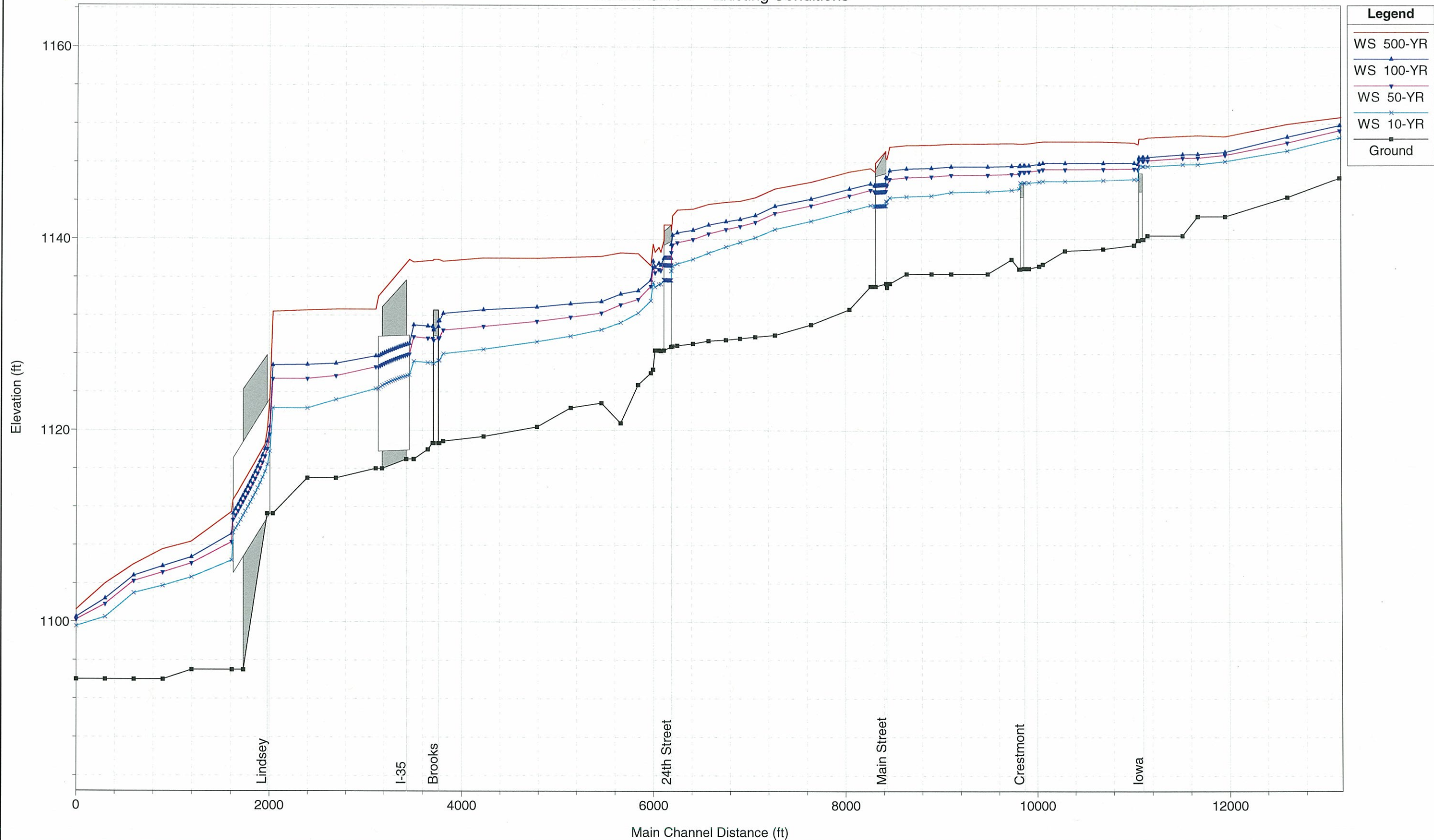


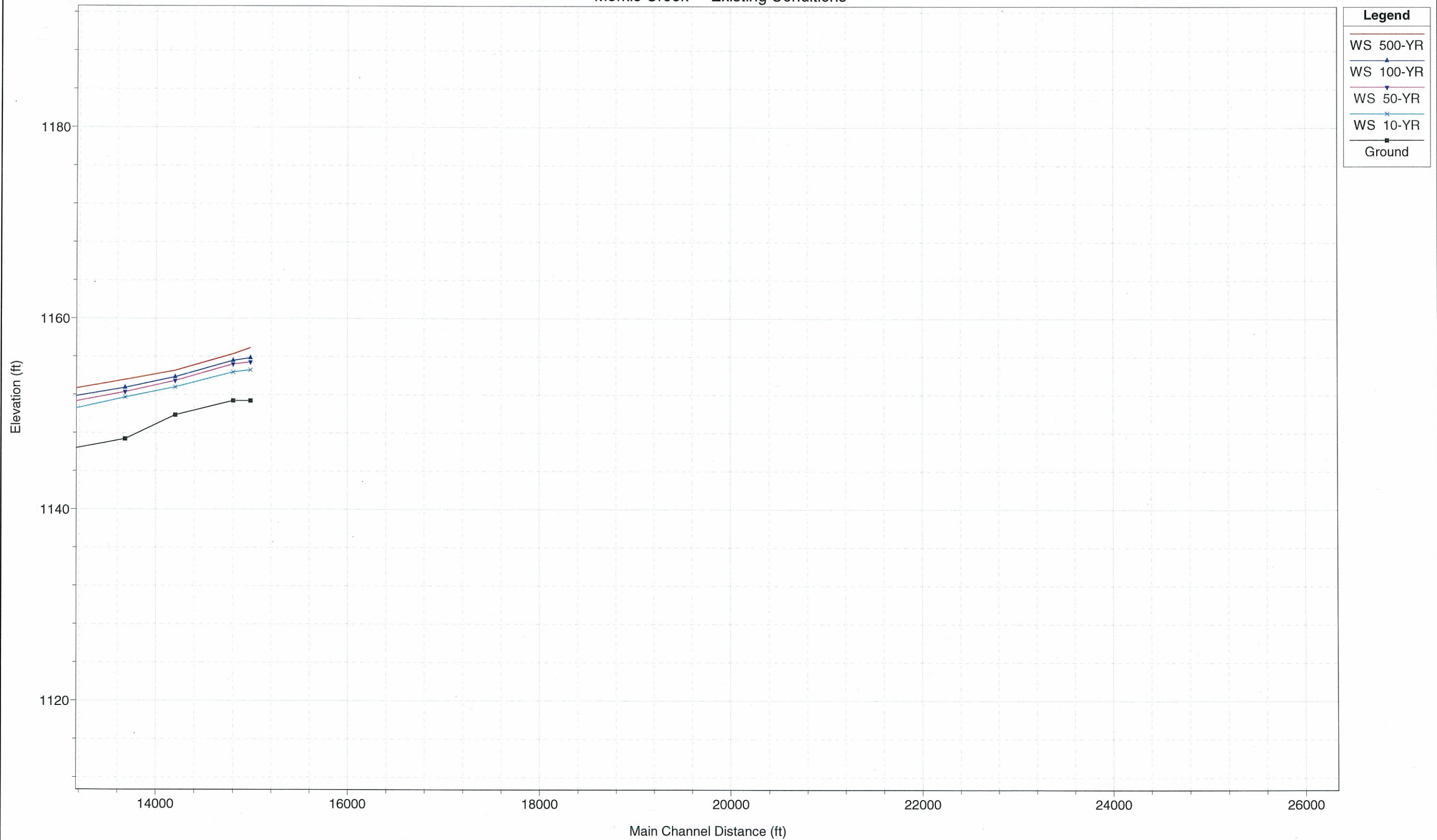
Merkle Creek Existing Conditions



- Legend**
- WS 500-YR
 - WS 100-YR
 - WS 50-YR
 - WS 10-YR
 - Ground

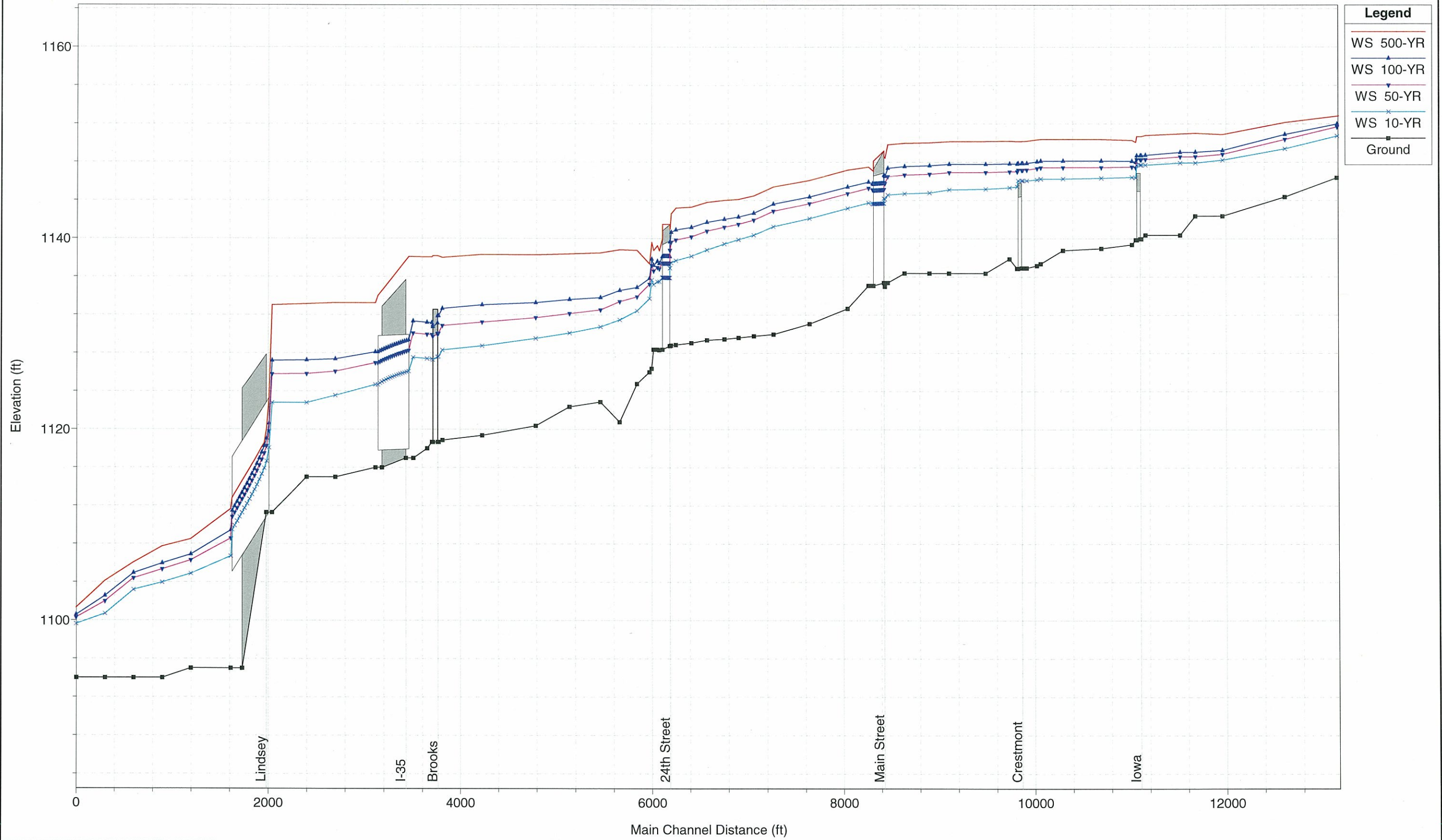
1 in Horiz. = 1000 ft 1 in Vert. = 10 ft

Merkle Creek Existing Conditions



1 in Horiz. = 1000 ft 1 in Vert. = 10 ft

Merkle Creek Future Conditions

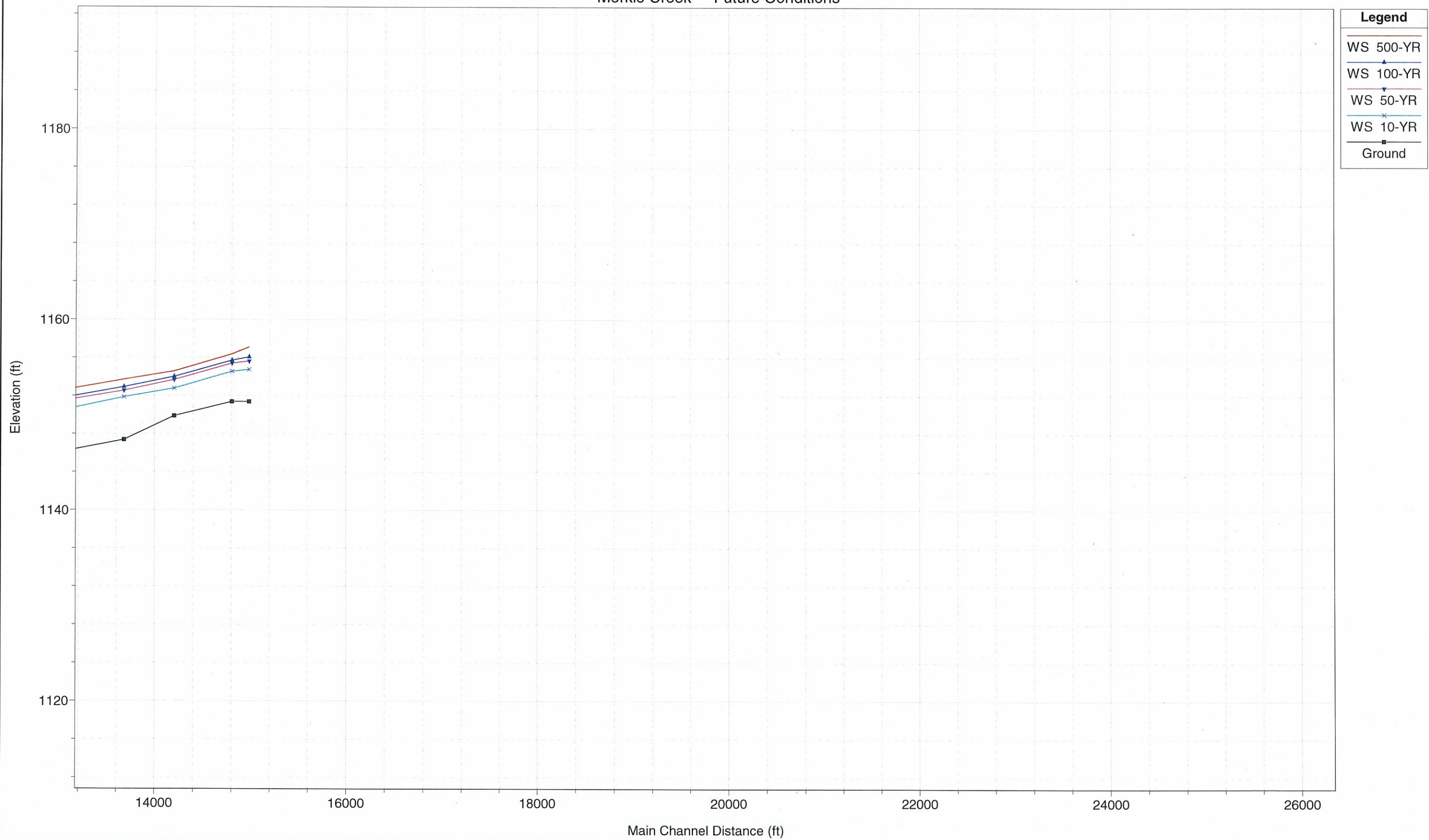


Legend

- WS 500-YR
- WS 100-YR
- WS 50-YR
- WS 10-YR
- Ground

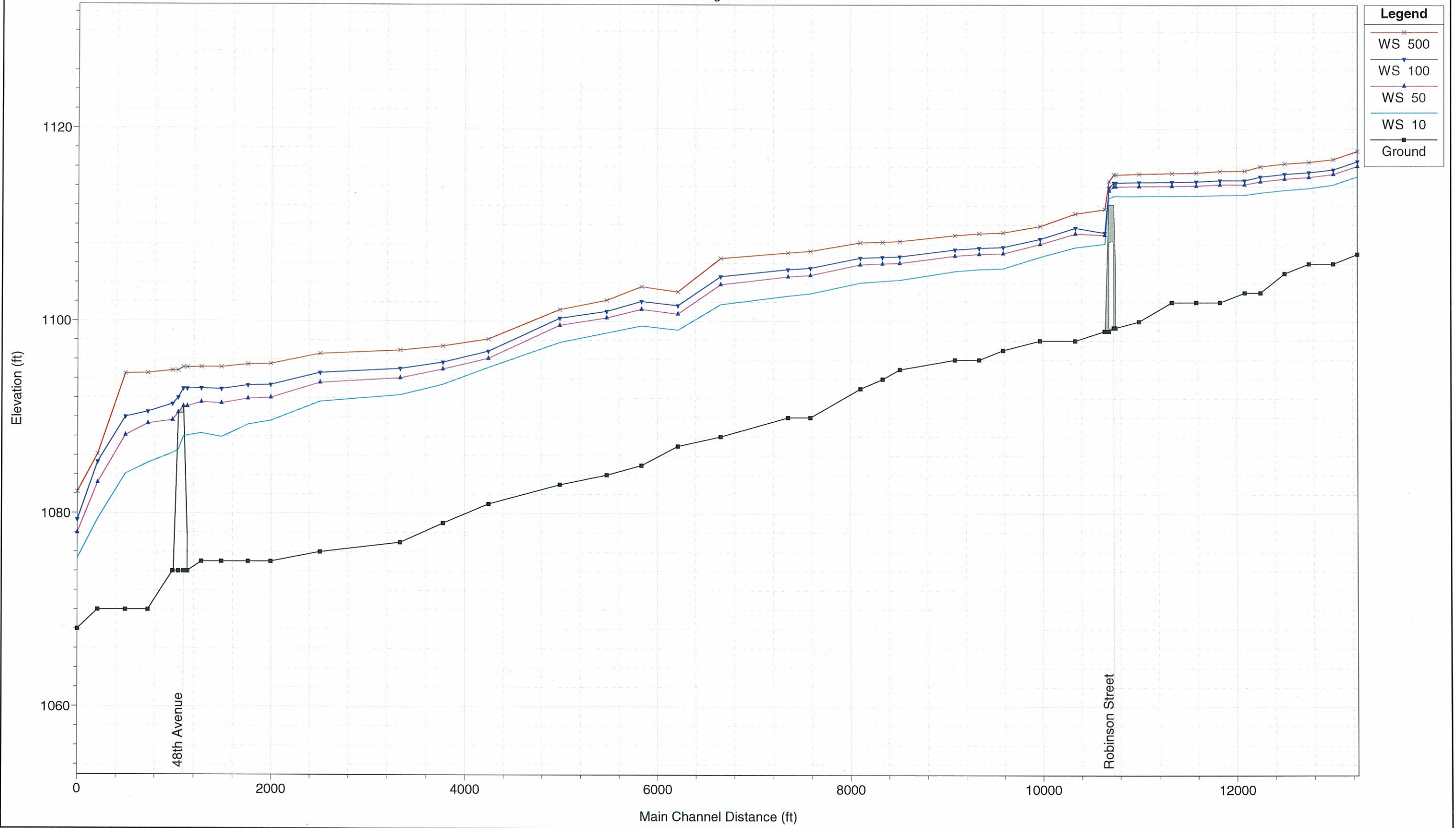
1 in Horiz. = 1000 ft 1 in Vert. = 10 ft

Merkle Creek Future Conditions



1 in Horiz. = 1000 ft 1 in Vert. = 10 ft

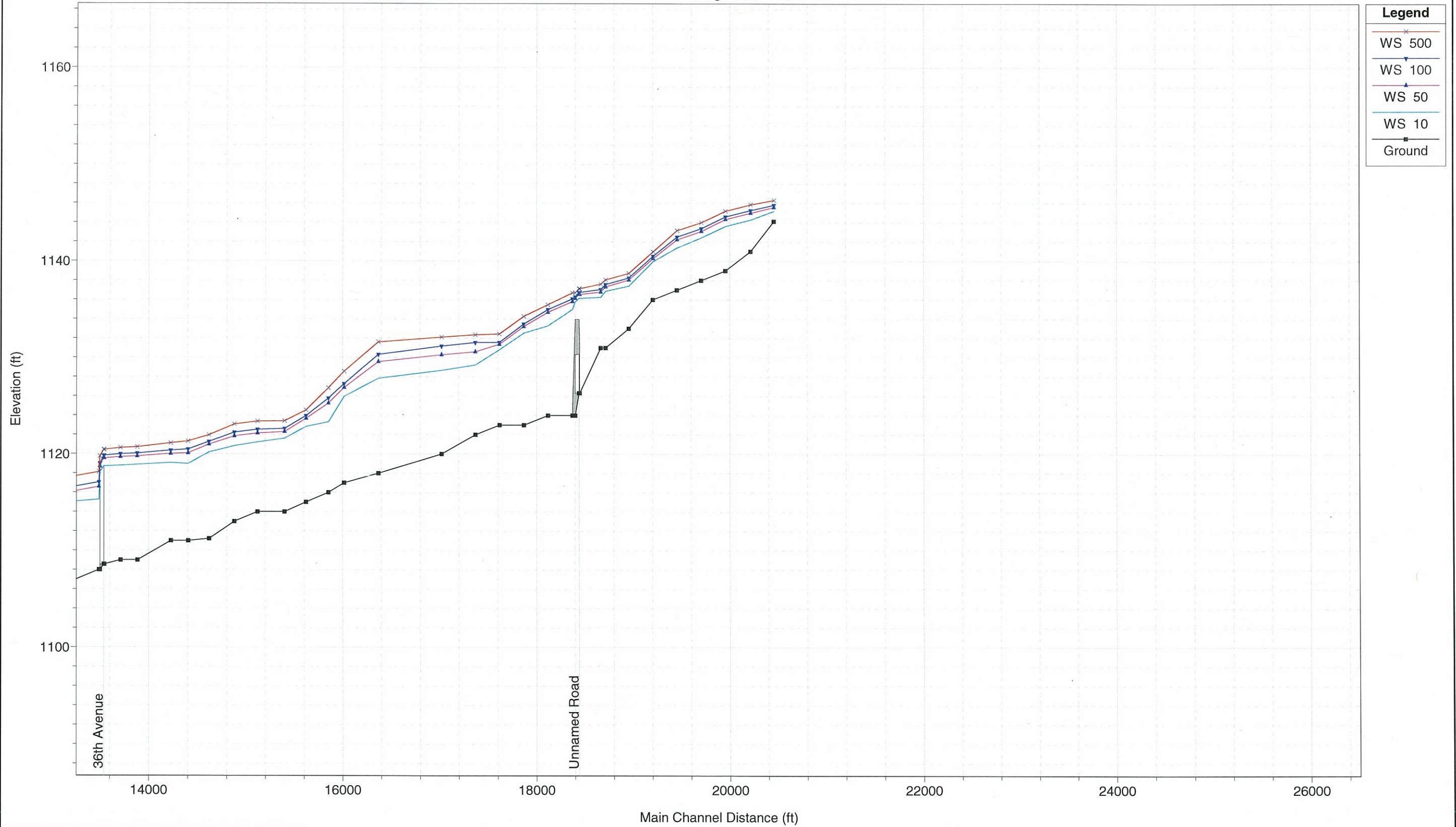
Rock Creek Mainstem
Existing Conditions



- Legend**
- WS 500
 - WS 100
 - WS 50
 - WS 10
 - Ground

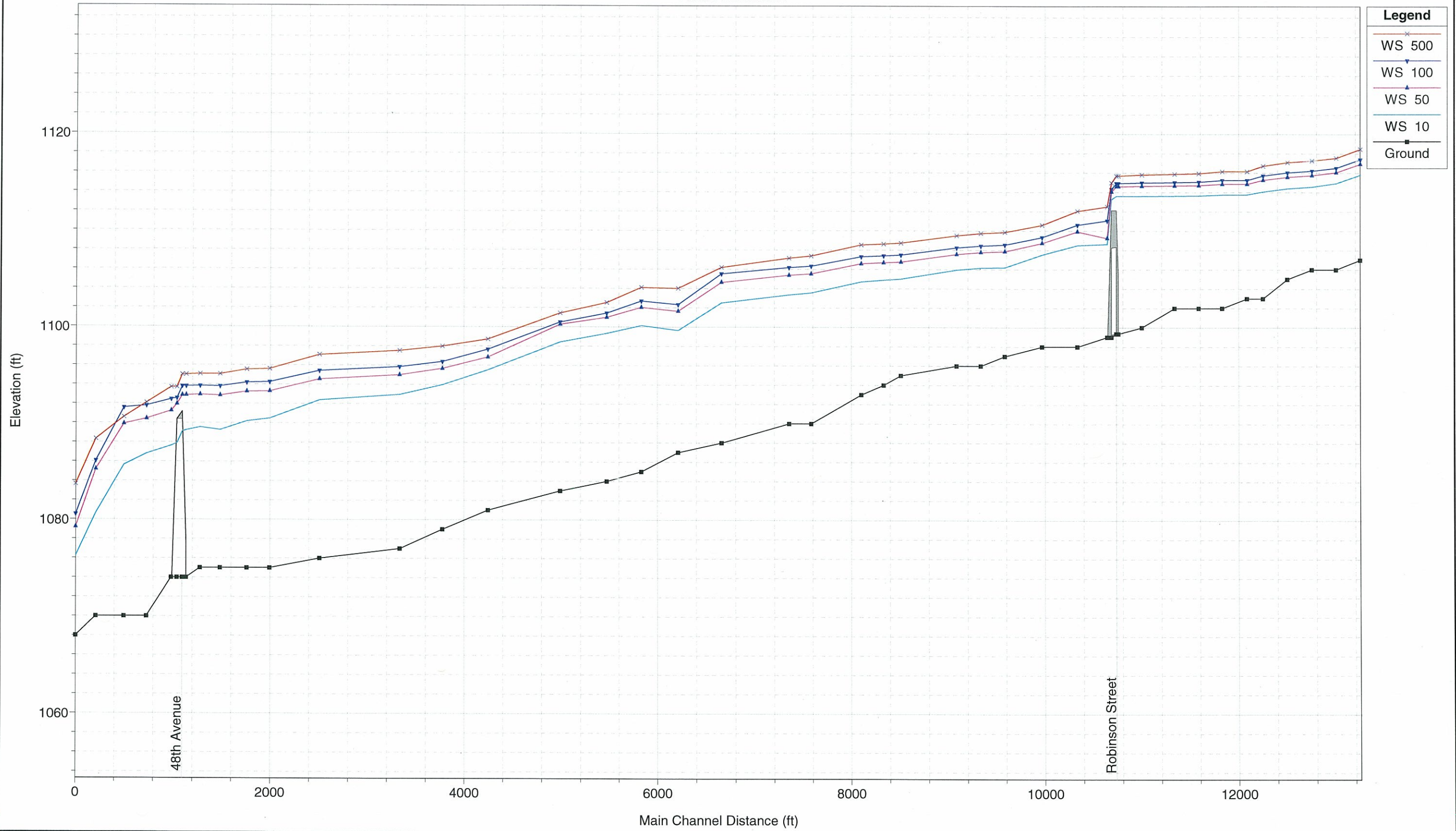
1 in Horiz. = 1000 ft 1 in Vert. = 10 ft

Rock Creek Mainstem
Existing Conditions



1 in Horiz. = 1000 ft 1 in Vert. = 10 ft

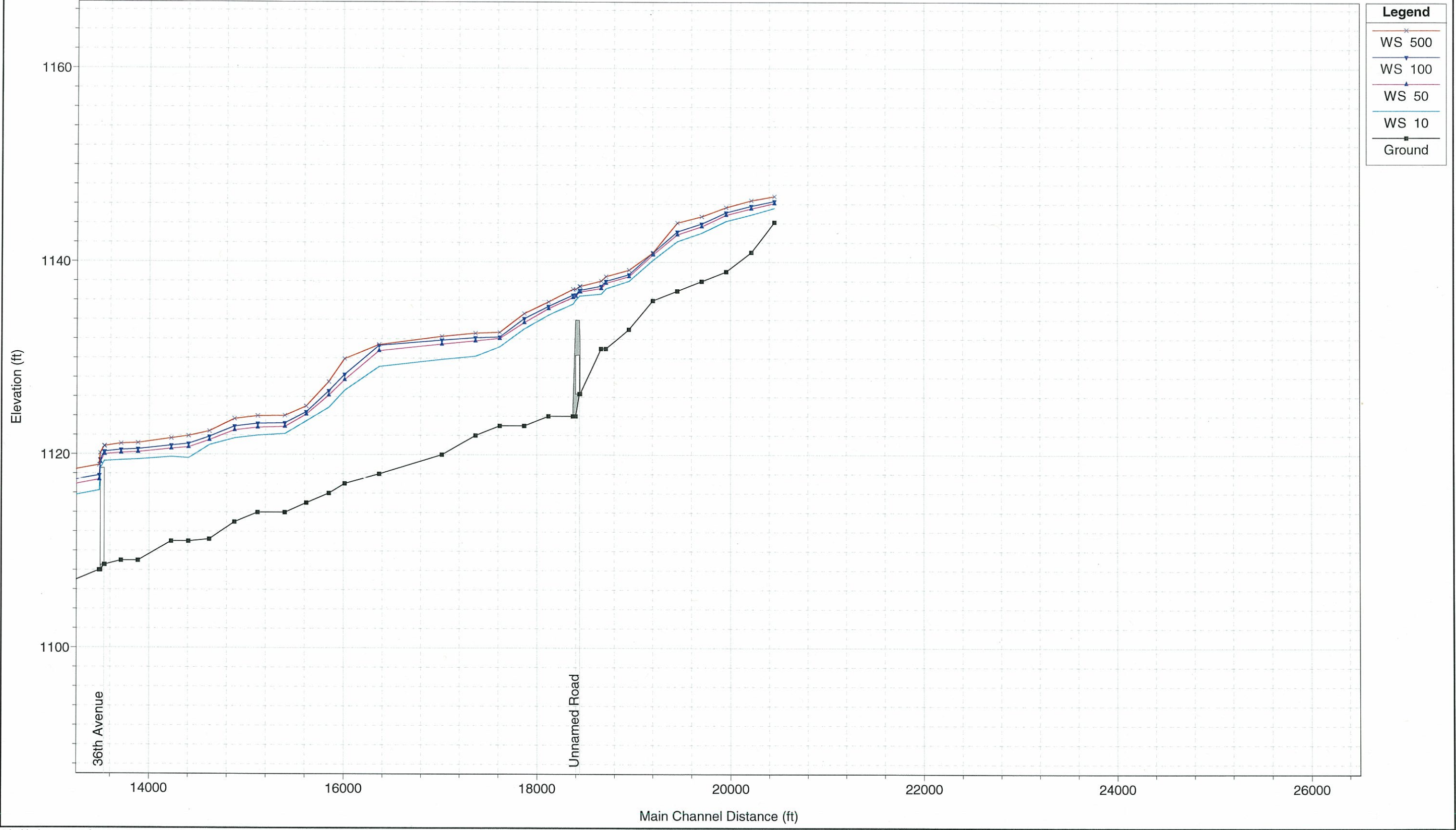
Rock Creek Mainstem
Future Conditions



- Legend**
- WS 500
 - WS 100
 - WS 50
 - WS 10
 - Ground

1 in Horiz. = 1000 ft 1 in Vert. = 10 ft

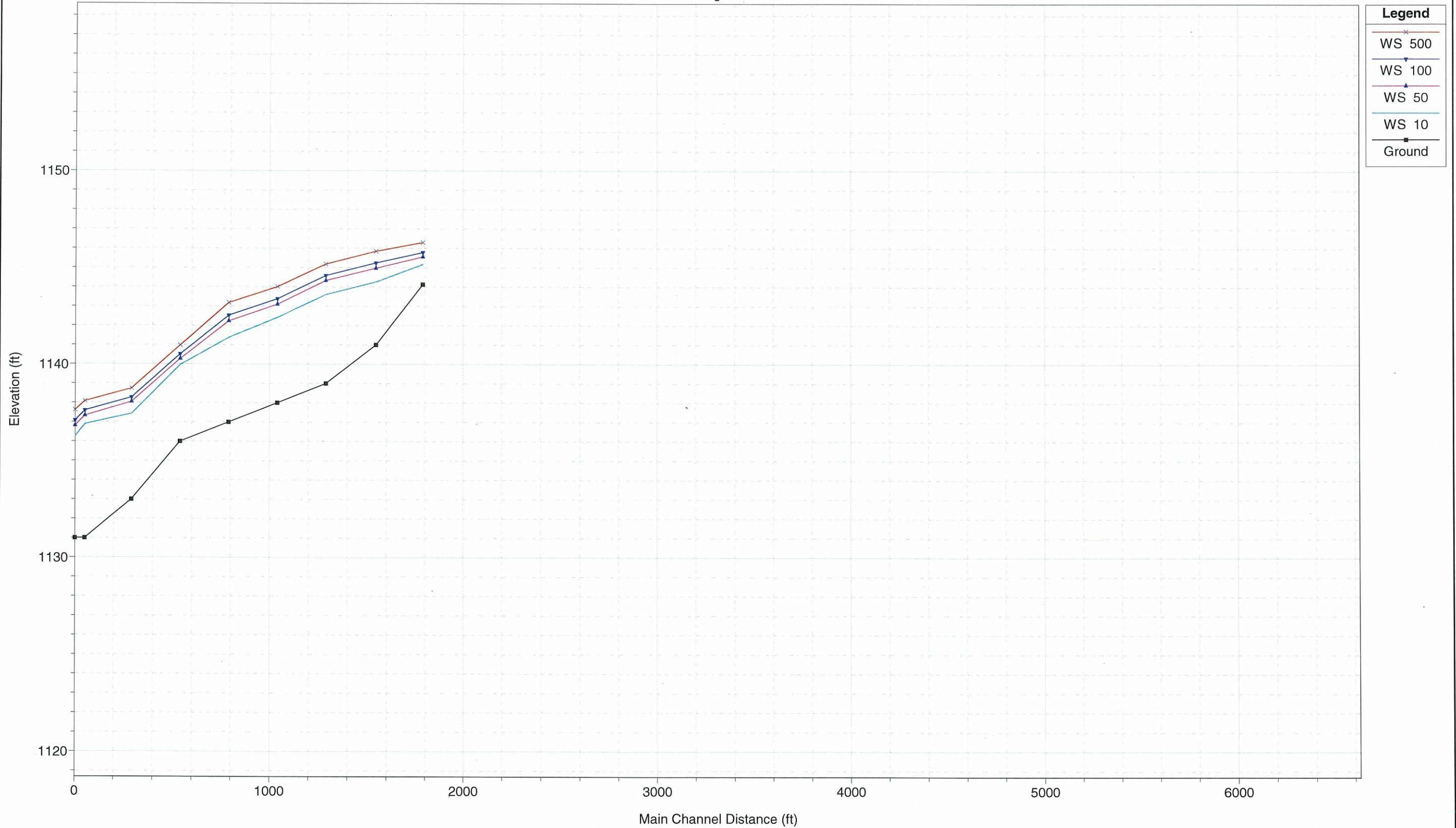
Rock Creek Mainstem
Future Conditions



Legend	
WS 500	x
WS 100	▼
WS 50	▲
WS 10	◆
Ground	■

1 in Horiz. = 1000 ft 1 in Vert. = 10 ft

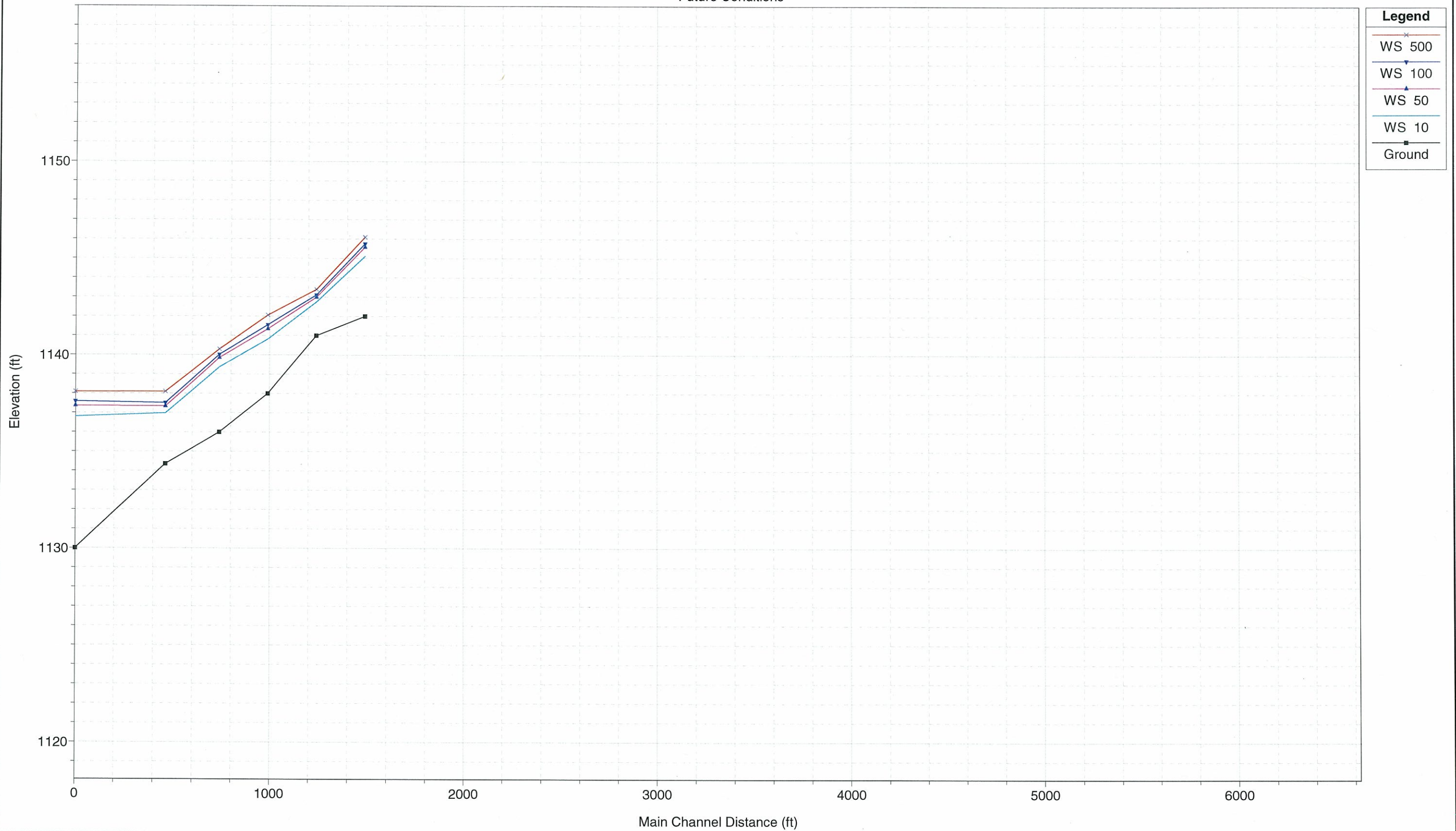
Tributary A to Rock Creek
Existing Conditions



Legend	
x	WS 500
▼	WS 100
▲	WS 50
◆	WS 10
■	Ground

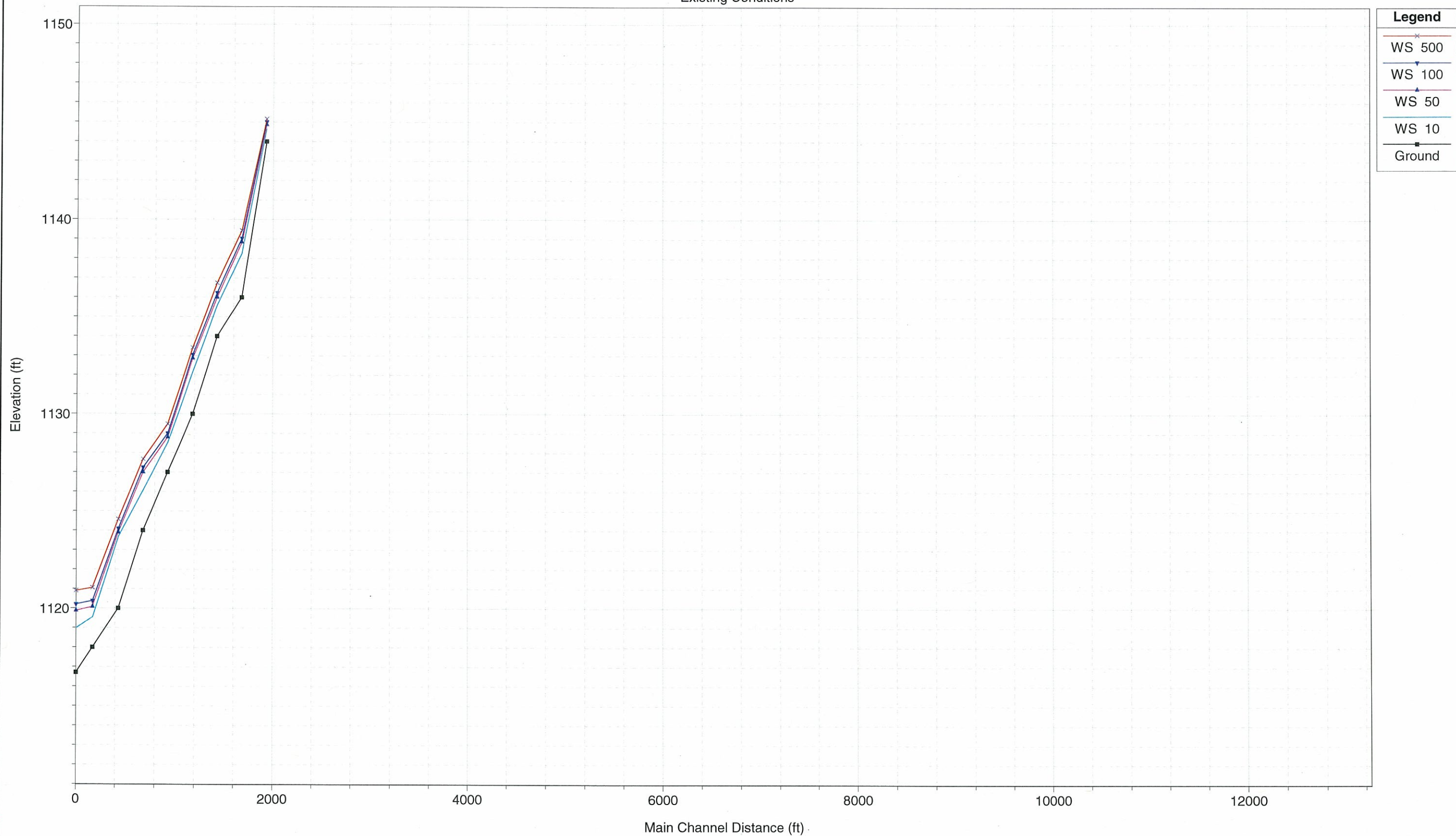
1 in Horiz. = 500 ft 1 in Vert. = 5 ft

Tributary A to Rock Creek
Future Conditions



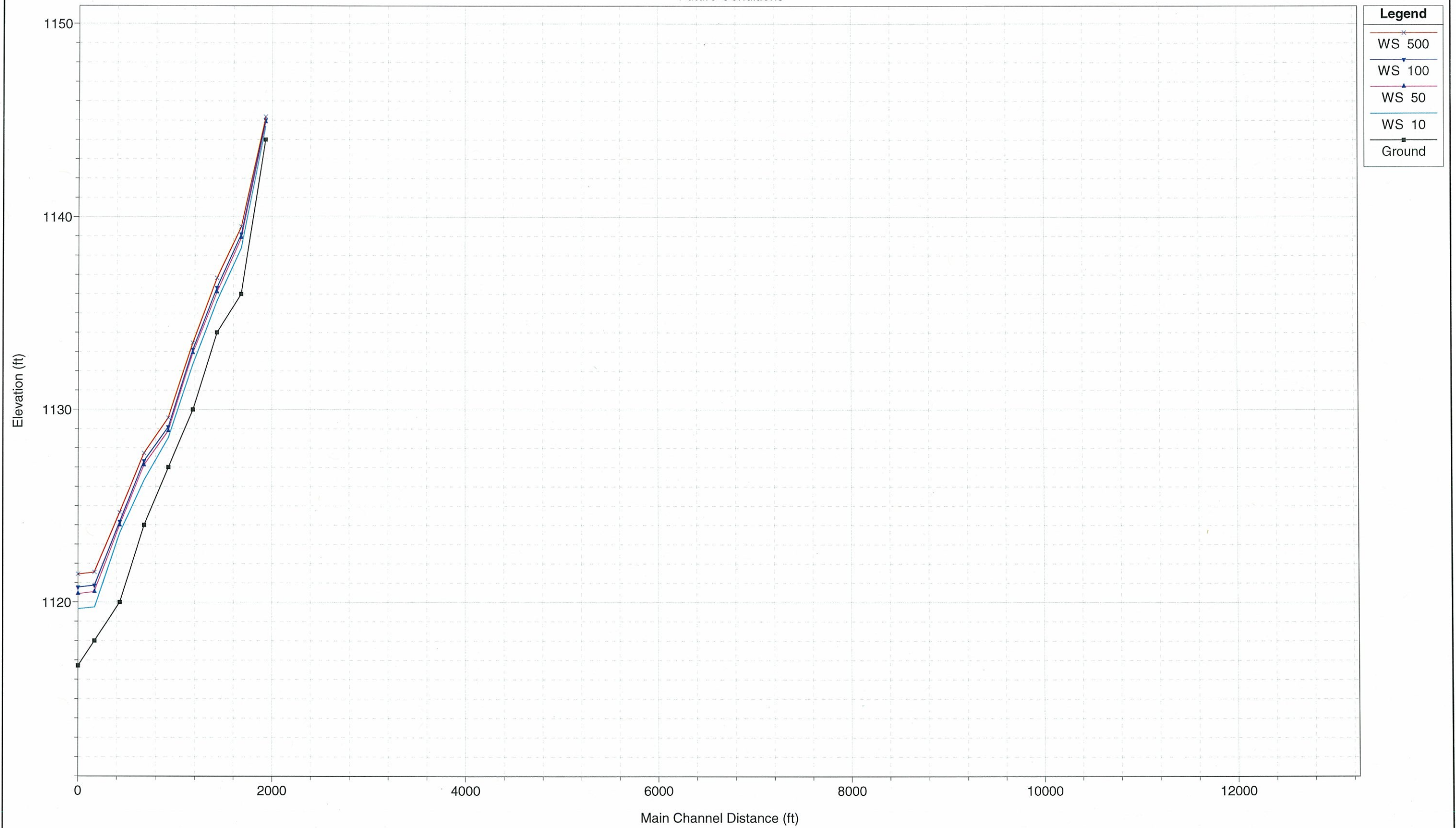
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Tributary B to Rock Creek
Existing Conditions



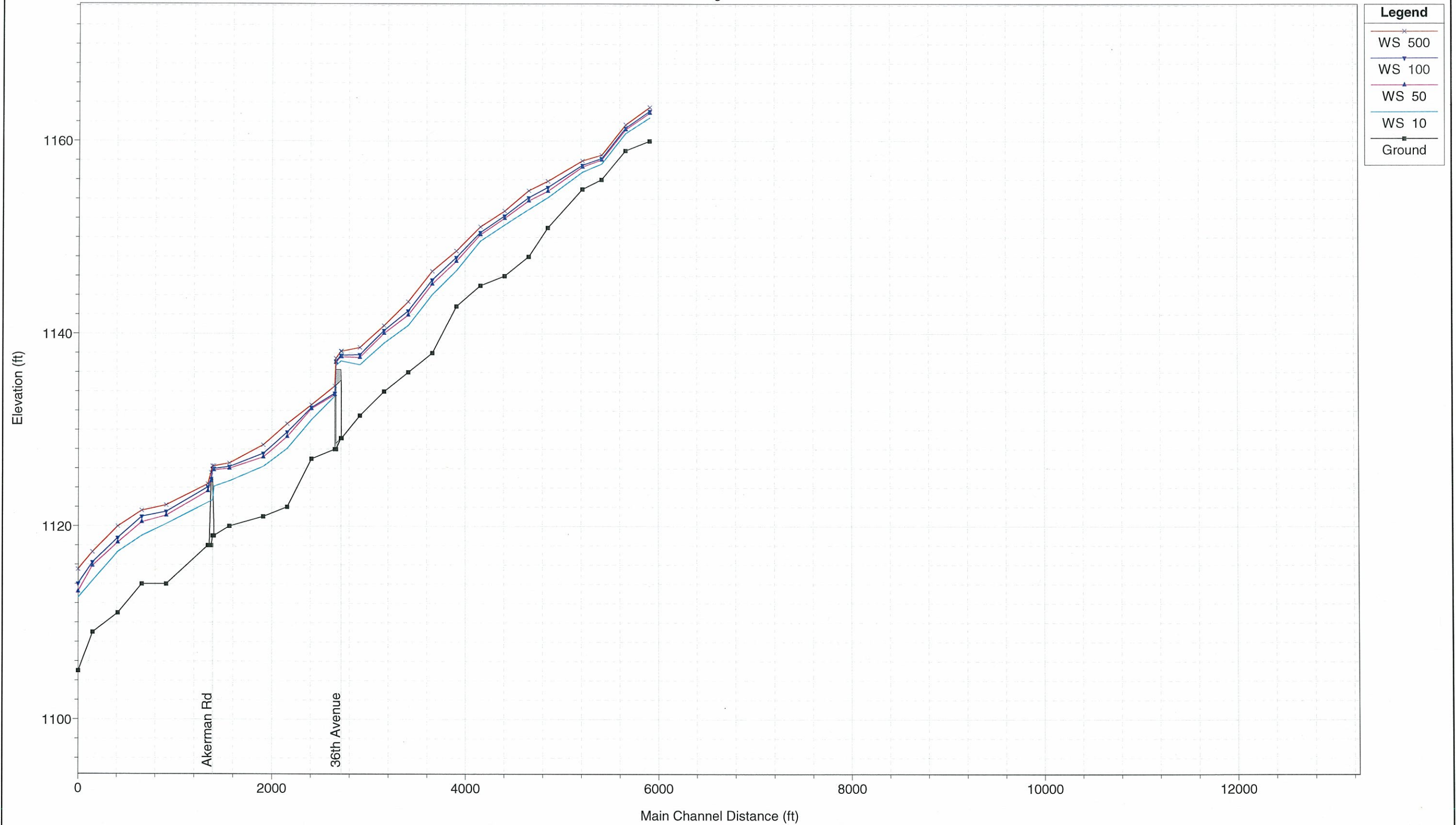
1 in Horiz. = 1000 ft 1 in Vert. = 5 ft

Tributary B to Rock Creek
Future Conditions



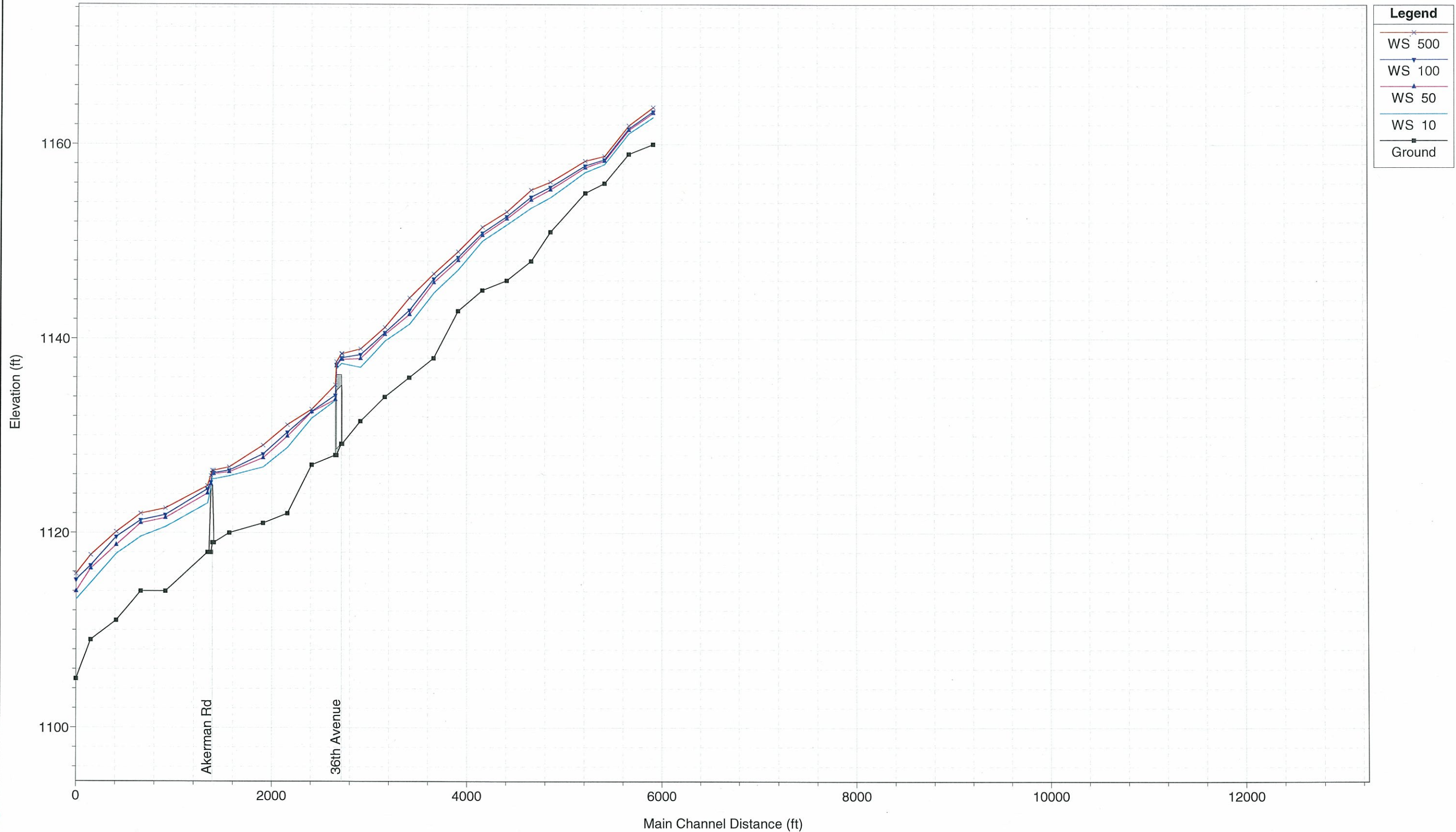
1 in Horiz. = 1000 ft 1 in Vert. = 5 ft

Tributary C to Rock Creek
Existing Conditions



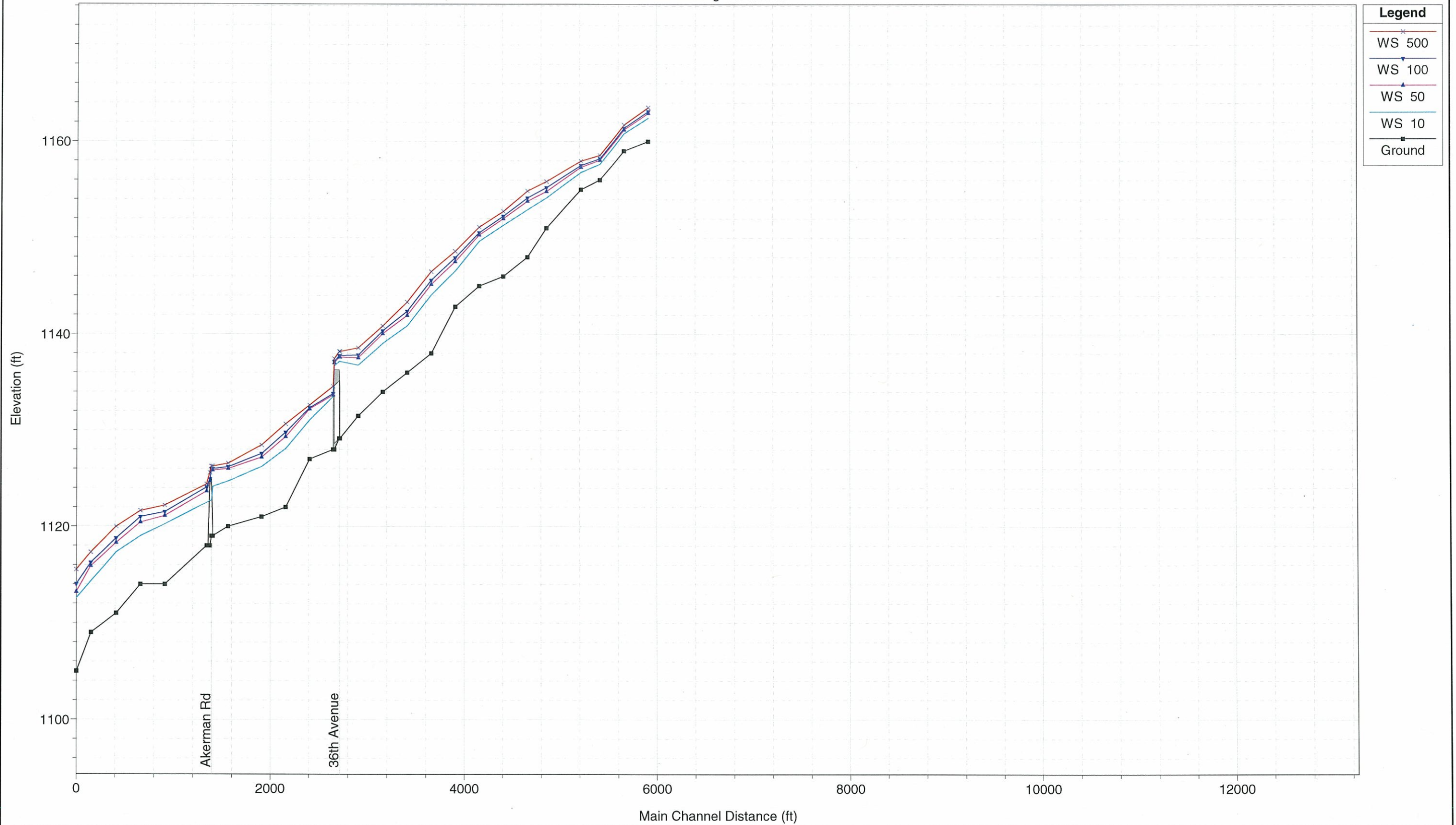
1 in Horiz. = 1000 ft 1 in Vert. = 10 ft

Tributary C to Rock Creek
Future Conditions



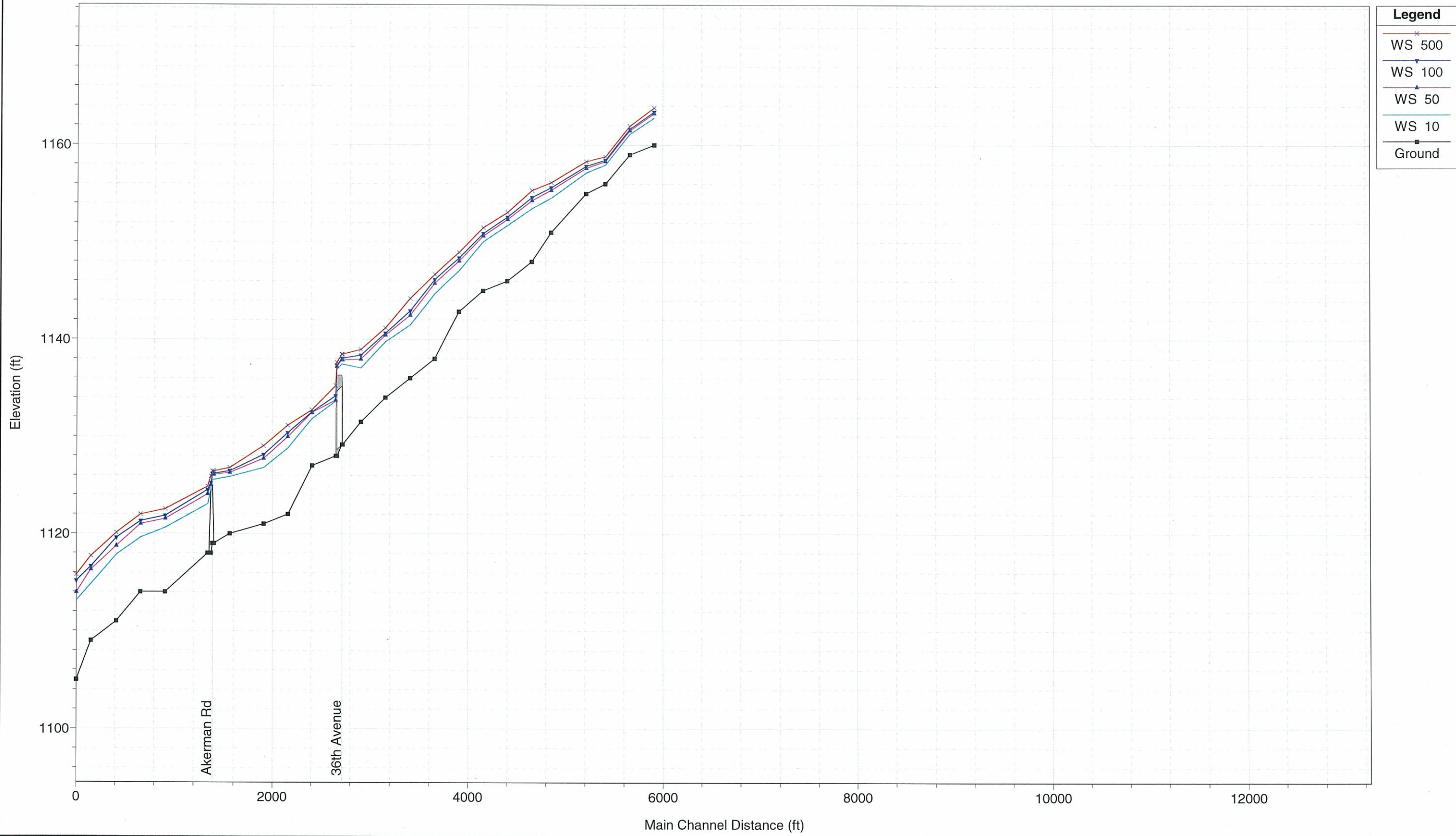
1 in Horiz. = 1000 ft 1 in Vert. = 10 ft

Tributary D to Rock Creek
Existing Conditions



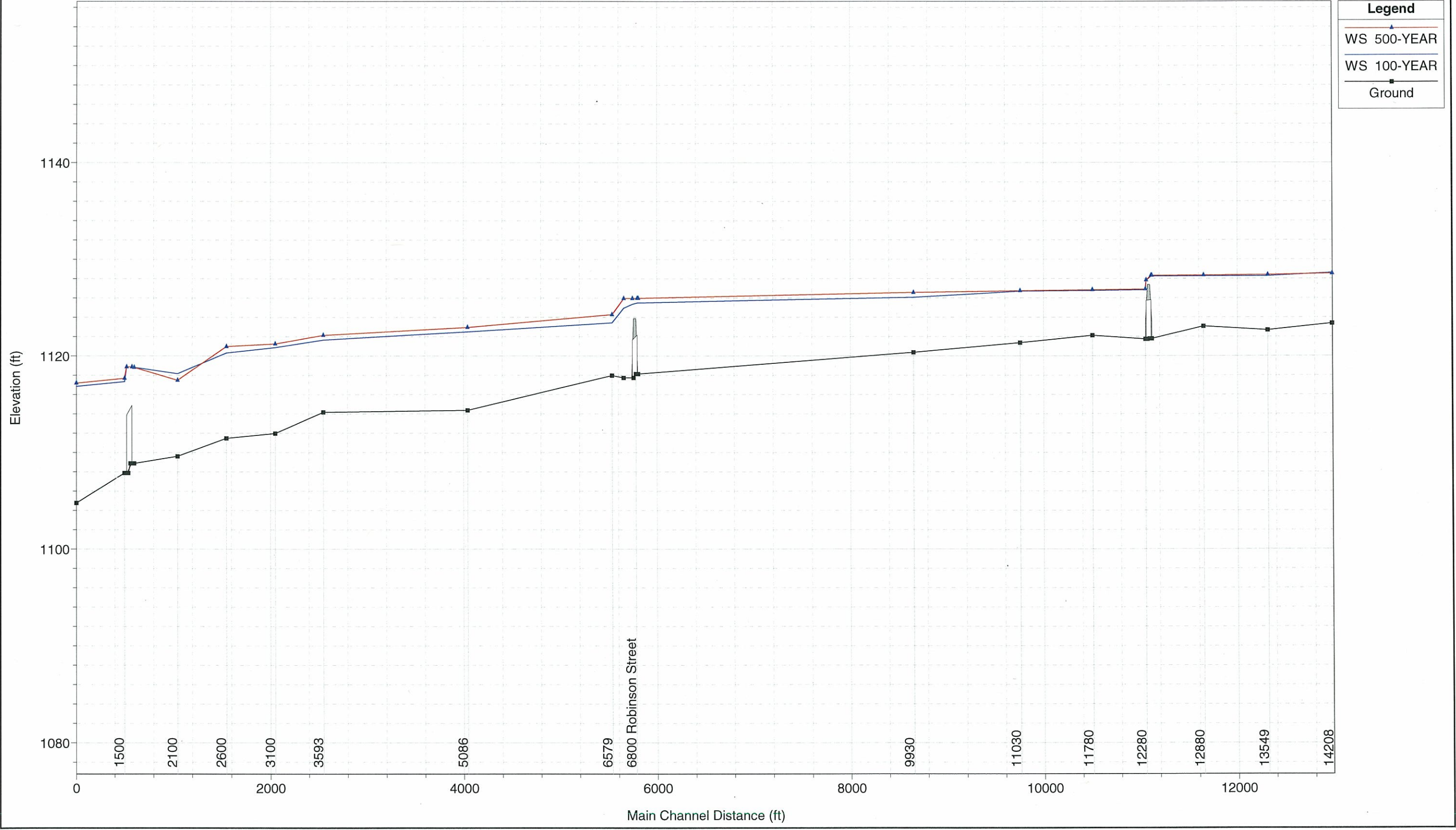
1 in Horiz. = 1000 ft 1 in Vert. = 10 ft

Tributary D to Rock Creek
Future Conditions



1 in Horiz. = 1000 ft 1 in Vert. = 10 ft

Ten Mile Flat Creek
Existing Conditions

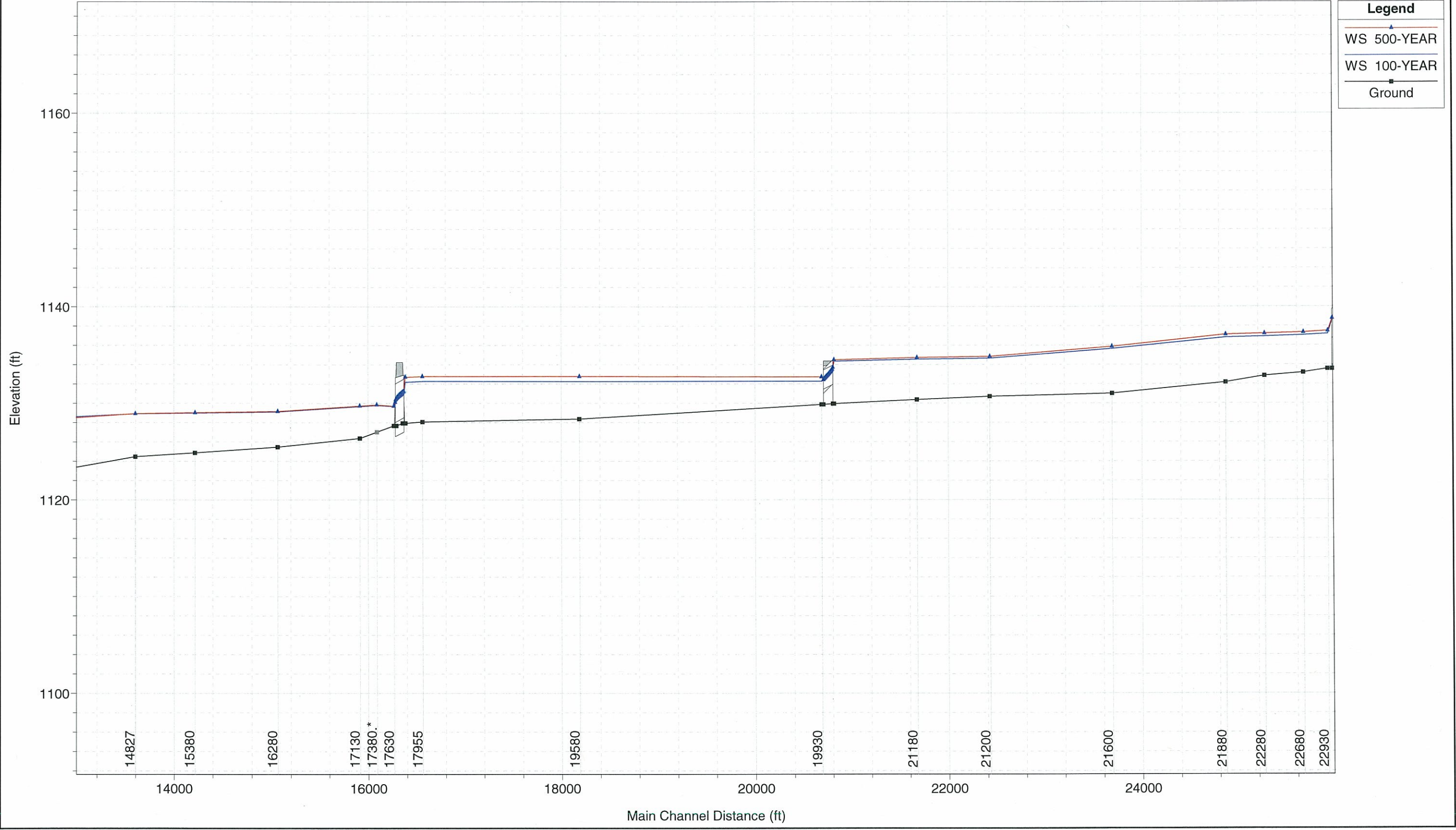


Legend

- WS 500-YEAR
- WS 100-YEAR
- Ground

1 in Horiz. = 1000 ft 1 in Vert. = 10 ft

Ten Mile Flat Creek
Existing Conditions

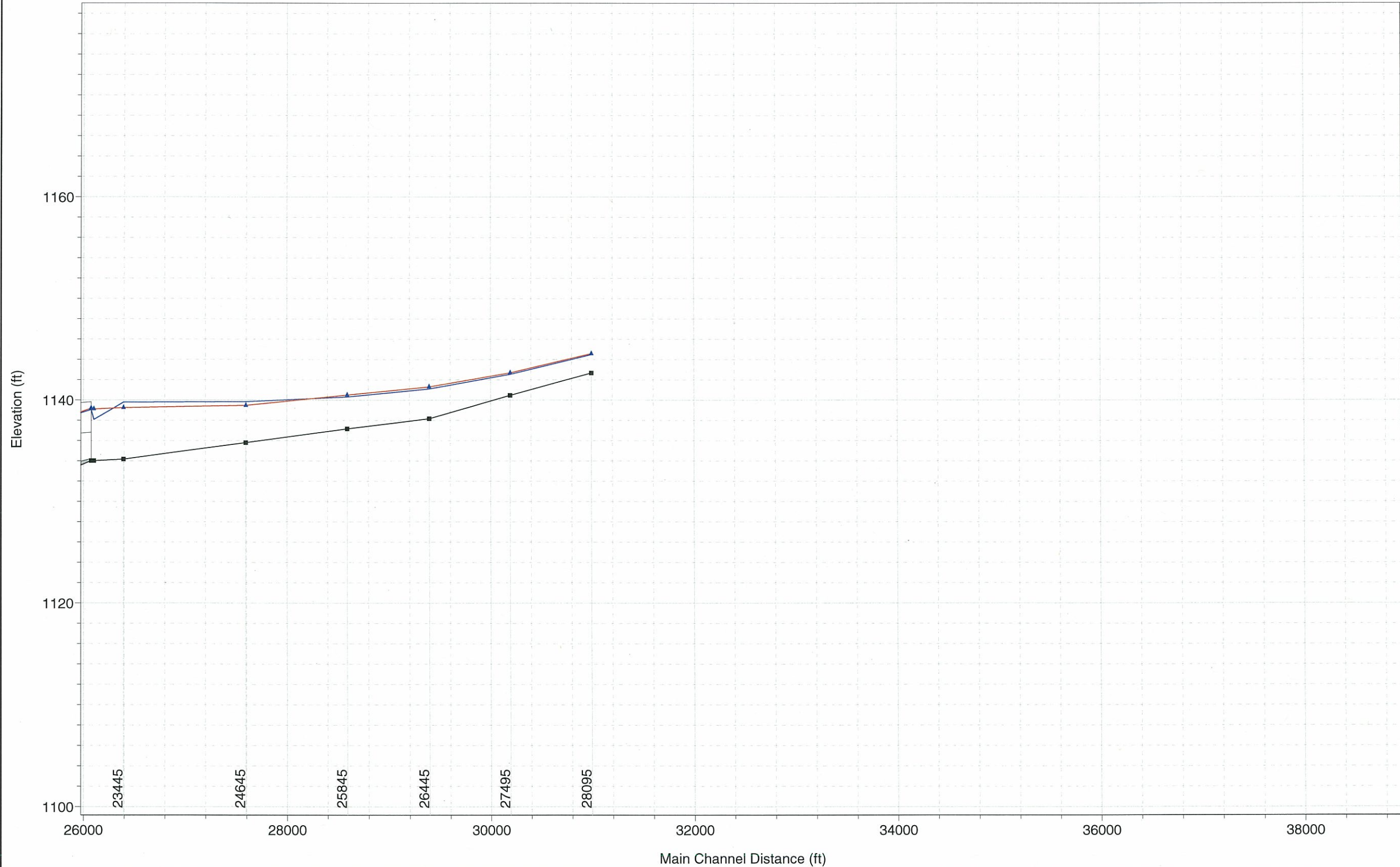


Legend

- WS 500-YEAR (Red line with triangle marker)
- WS 100-YEAR (Blue line with triangle marker)
- Ground (Black line with square marker)

1 in Horiz. = 1000 ft 1 in Vert. = 10 ft

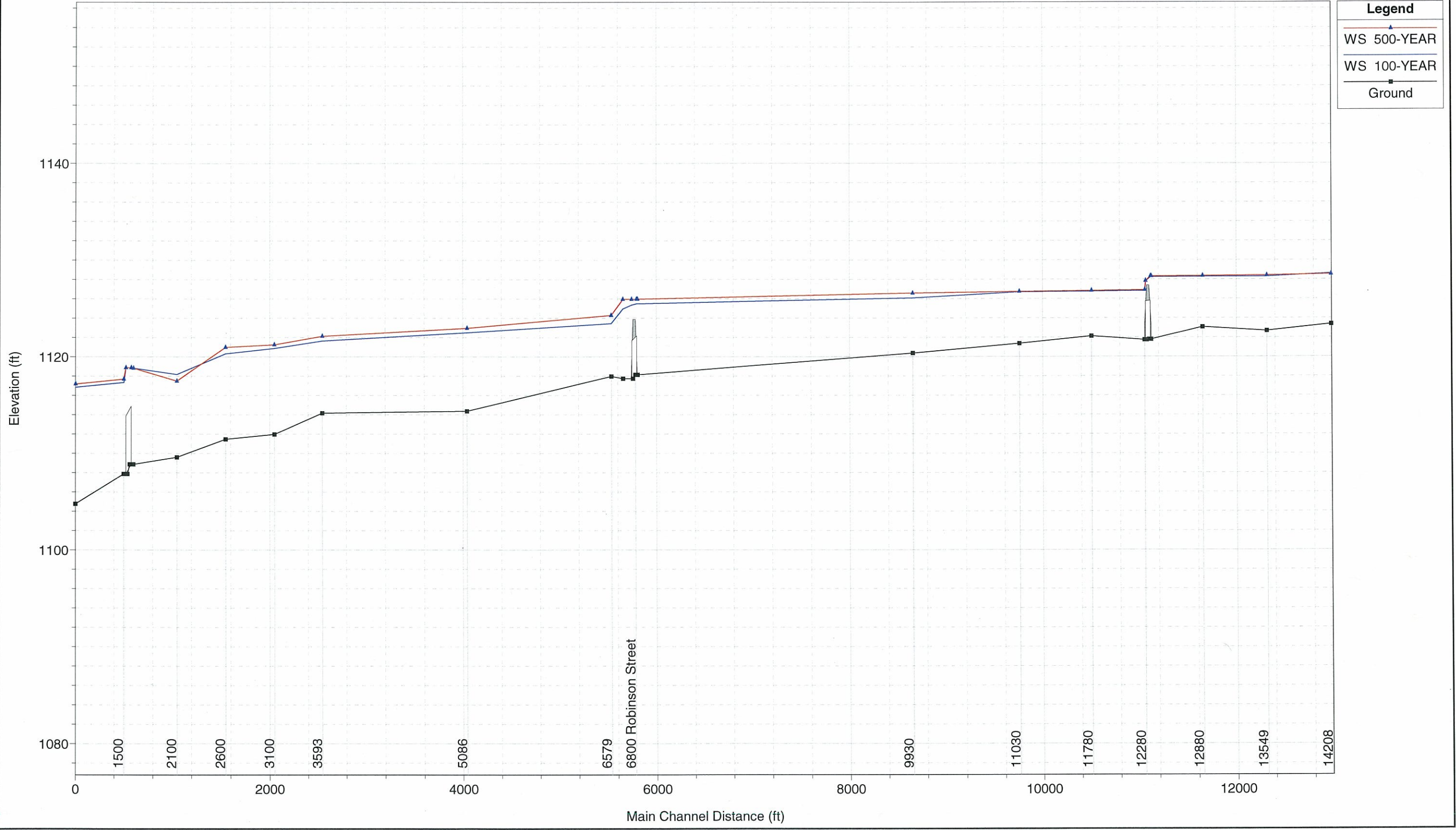
Ten Mile Flat Creek
Existing Conditions



Legend	
WS 500-YEAR	▲
WS 100-YEAR	▲
Ground	■

1 in Horiz. = 1000 ft 1 in Vert. = 10 ft

Ten Mile Flat Creek
Future Conditions

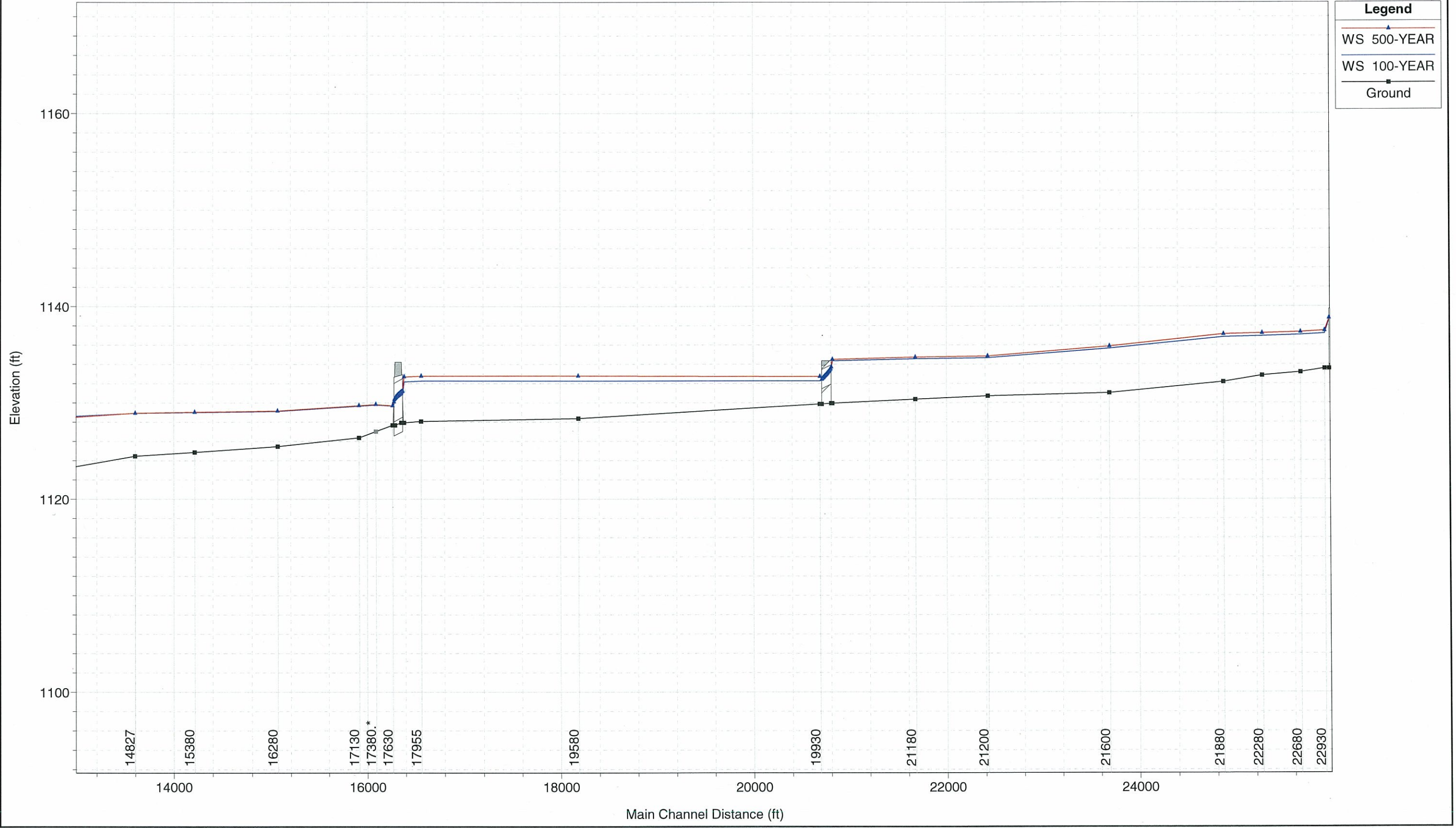


Legend

- WS 500-YEAR (red line with triangle marker)
- WS 100-YEAR (blue line with triangle marker)
- Ground (black line with square marker)

1 in Horiz. = 1000 ft 1 in Vert. = 10 ft

Ten Mile Flat Creek
Future Conditions

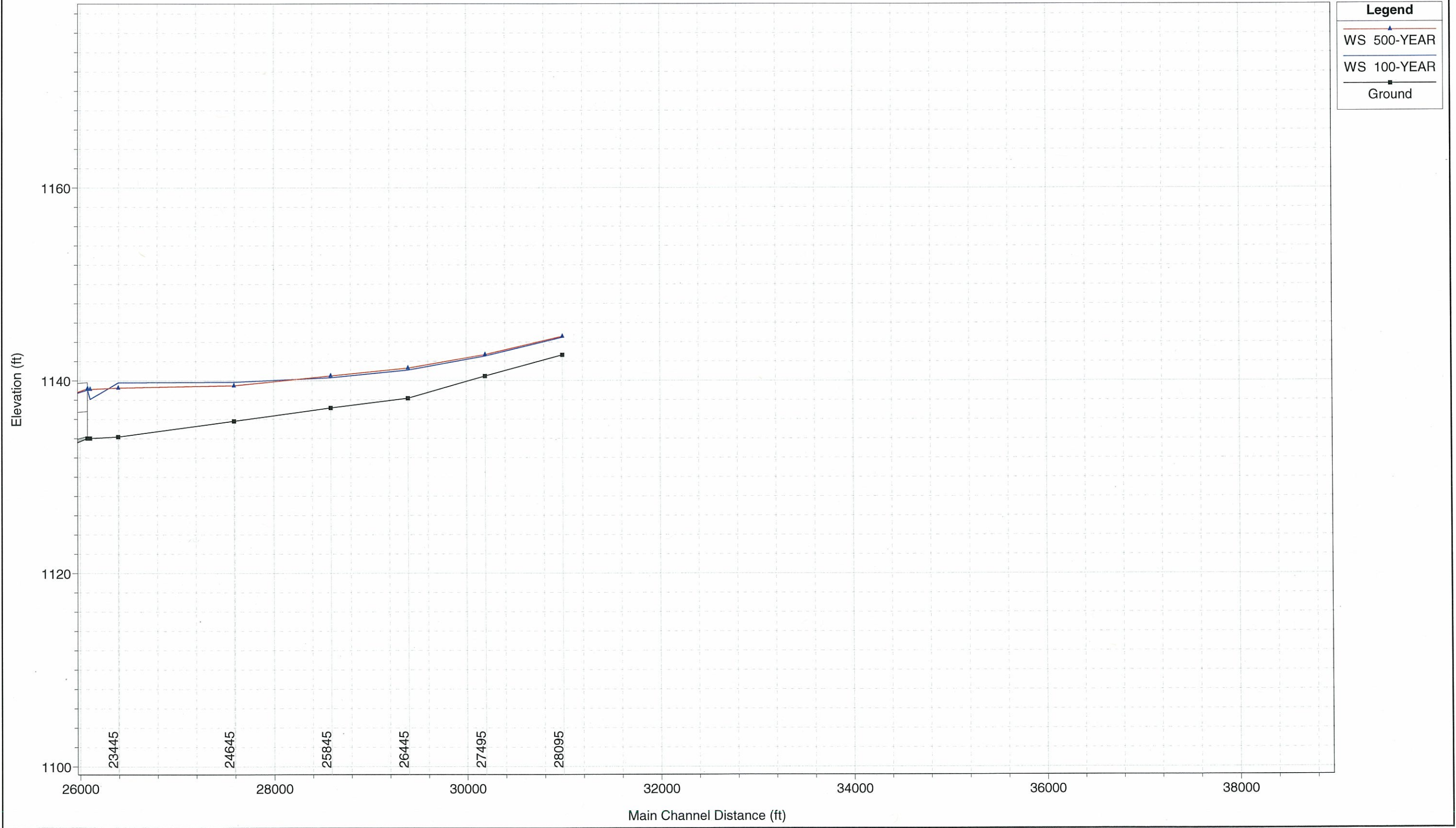


Legend

- WS 500-YEAR
- WS 100-YEAR
- Ground

1 in Horiz. = 1000 ft 1 in Vert. = 10 ft

Ten Mile Flat Creek
Future Conditions



1 in Horiz. = 1000 ft 1 in Vert. = 10 ft

**Storm Water Master Plan
City of Norman
Cleveland County, Oklahoma**

October 2009

Appendix K

Results from National and University Specific Storm Water Surveys

Appendix K Results from National and University Specific Stormwater Surveys

Background: During the course of the Project several questions were brought up by the Citizens Task Force, City staff and/or the City Council. These questions were:

- ❖ What is the most popular basis for determining stormwater user fees?
- ❖ Are stormwater fees usually adequate to cover the full cost of operations, maintenance, and required capital projects?
- ❖ What user classes are exempt from paying stormwater user fees, if any? In particular are Universities exempt.

To provide some insight into these questions the PBS&J Project Team reviewed two recent National Stormwater Utility Surveys (National survey) and also performed a more limited survey of 18 City's with major Universities (University survey). The National Surveys are:

- ❖ *Western Kentucky University Stormwater Utility Survey (2008).* The main goal of the WKU survey was to provide as complete a data set on storm water utilities (SWUs) as possible. The data gathered for each community was comprised of location, average size of an equivalent residential unit (ERU), monthly fee per ERU, date the stormwater utility was created, and the population served. They identified 923 SWUs nationally in their study and provided some valuable statistics:
 - The national average square footage of an ERU is 2983 square feet. The size of the ERU is very important to the distribution of cost to different land uses and the comparison of residential monthly fees. For instance the average square footage of an ERU in Norman is 3887 or 1.3 times higher than the national average.
 - The monthly residential fees ranged from \$0.00 to \$35 per month. At least one community appears to have enacted a stormwater utility without a fee. The average of these monthly fees is \$4.00. An apples to apples comparison of this average rate based on Norman's increased size of an ERU of 1.3 is \$5.20 per month.
- ❖ *2007 Stormwater Utility Survey by Black & Veatch.* The main goal of this survey was to help those involved with stormwater utilities stay well-informed regarding how others in their industry are addressing important issues. Responses were received from 71 utilities in 22 states. Although the survey has fewer respondents it provides more in-depth insight into the operations of a stormwater utility. The survey results provide insight into the following topics:
 - Organization/administration
 - Planning

- Operations
- Finance/accounting
- Stormwater user fees and billing
- Quality issues – Best Management Practices
- Public information/education
- Major challenges recently faced
- Significant events affecting utilities

Copies of both of these surveys will be included in a technical appendix to the Master Plan.

Key Issues and Options:

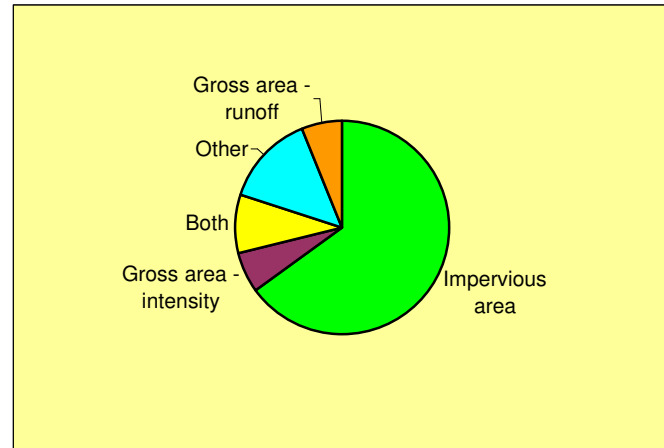
Issue 1: What is the most popular basis for determining stormwater user fees?

Discussion: A sound stormwater utility rate structure is developed around two major themes. The first is the "user pay" concept -- the parties that have the most stormwater runoff and receive the most benefits from the management program pay their proportionate share. The second is that the utility is structured so that it can be administered fairly and cost-effectively.

As illustrated in the following graphics, in both the National survey and the University survey determining the stormwater user fee based on impervious surface is clearly the most popular way to allocate costs equitably to all users. All of these options were reviewed with City staff and the Task Force. Both City staff and the Task Force supported using impervious surface to allocate costs to the City's customers. The concept used in developing the Norman user rates is that all City customers will pay for their individual square footage of impervious surface.

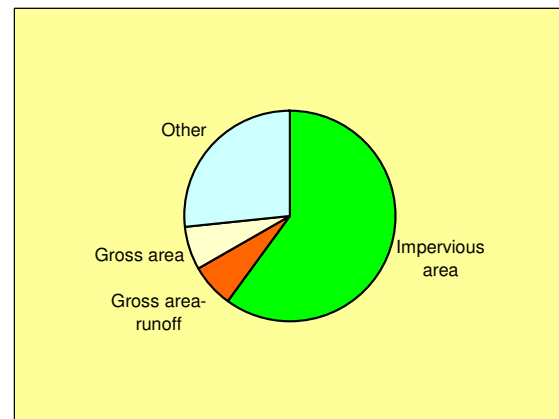
What is the basis for your user fees? National survey.

Impervious area	65%
Gross area - intensity	6%
Both	9%
Other	14%
Gross area -runoff	6%



What is the basis of the fee? University survey.

Impervious area	9	60%
Gross area-runoff	1	7%
Gross area	1	7%
Other	4	27%
	<u>15</u>	<u>100%</u>



- Use another method to allocate costs to all users. As noted in the graphics there are other ways to establish the cost allocations for a stormwater user fee. Although the National survey does not explain what “other” methodologies are we can gain insight from the University survey. Four of the cities fell into the “other” category. Of those three of them merely increase their sewer rates to pay for the costs of their stormwater requirements. Although this is a viable alternative it makes the justification to the City’s customers that the increase in the sewer bill is only for stormwater costs more difficult.

Oklahoma City, allocates costs based on the size of the customer’s water meter. In discussions with City staff it was gleaned that the reason they chose this methodology was that they needed to establish the utility quickly (within one month) and that the water meter size of their customers was the most readily available data. This too is a viable alternative but it does not create a strong nexus between the cost drivers of the stormwater program and the actual fee charged.

Issue 2: Are stormwater fees usually adequate to cover the full cost of operations, maintenance, and required capital projects?

Discussion: The National survey provided insight into what the “average” stormwater fee is across the communities surveyed. The monthly residential fees ranged from \$0.00 to \$35 per month. At least one community appears to have enacted a stormwater utility without a fee. The average of these monthly fees is \$4.00. This is similar to the statistics produced by the University survey where the average residential user is paying \$4.90 per month. The University survey provides more detail into the fees charged by the communities with major universities as illustrated in the following table:

Options:

- Use impervious surface as a basis for establishing the stormwater user fee. The impervious area (defined as rooftops, driveways, parking lots, etc) of a parcel is the largest single contributor to stormwater runoff. And especially in the case of driveways and parking lots where grease and oil accumulate and are then washed into the stormwater system when it rains causing increased pollutant levels. Currently the City staff and Task Force are recommending that each parcel’s stormwater fee is established base on their unique square footage of impervious area. Thus the larger the impervious area the higher the fee.

An alternative is to determine an average square footage for all single family parcels and charge all single family users the same user fee. All other parcels would be charged on their unique impervious square footage. While this may be easier to establish and administer it lacks in equity between large homes and small homes.

University	City	Monthly \$
University of Texas	Austin, TX	\$ 7.15
University of Colorado	Boulder, CO	\$ 8.45
University of Missouri	Columbus, MO	\$ 1.15
University of North Texas	Denton, TX	
University of Kansas	Lawrence, KS	\$ 4.00
Kansas State University	Manhattan, KS	\$ 3.50
Baylor University	Waco, TX	
Oklahoma State University	Stillwater, OK	\$ 5.00
Oklahoma State University	Oklahoma City, OK	\$ 3.40
University of Central Oklahoma	Edmond, OK	\$ 3.00
University of Nebraska	Lincoln, NB	
University of Iowa	Iowa City, IA	\$ 2.00
Wichita State University	Wichita, KS	\$ 2.00
University of Arkansas	Fayetteville, AK	
University of New Mexico	Albuquerque, NM	
Colorado State University	Fort Collins, CO	\$ 14.26
University of Illinois	Chicago, ILL	
University of Arizona	Tucson, AZ	
Average All Monthly Fees		\$ 4.90
Average All Adequate Program Fees		\$ 9.95

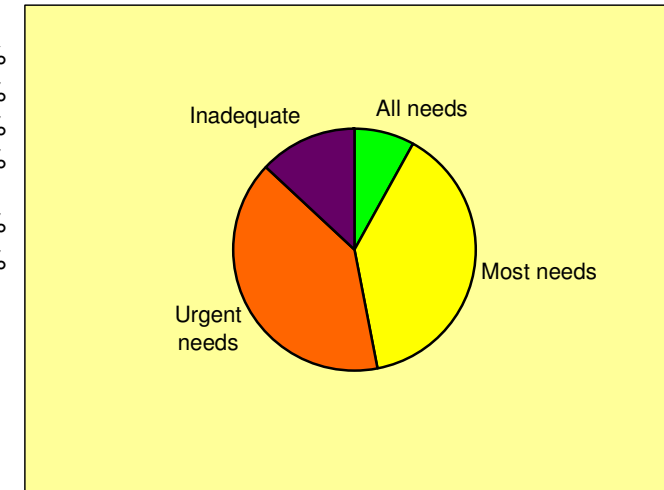
However when asked the question whether their fees were adequate to cover the cost of their operation, maintenance, and capital costs only three of the university communities said they were. They are Austin, TX, Boulder, CO, and Fort Collins, CO. This increases the average residential fee to \$9.95 per month for full cost recovery.

One of the stormwater programs that the PBS&J project team is extremely familiar with is the City of Ft. Collins, CO. This is a mature program that was established in 1982 in response to severe flooding that caused several deaths. Their program fully funds all capital needs on a regional and local basis as well as operations and maintenance costs. Their monthly residential fee is \$14.26. The program for Norman is based in part on the Ft. Collins model of service levels and capital program funding.

The other communities supplemented their user fee revenues with general fund monies or did not have a capital program. Half of the university communities stated that they either were in the process or would be shortly increasing their user fees to cover more of the programs costs. The National survey substantiates what we found in discussions with the university communities in the following graphic. In 2007 more than half of the communities surveyed did not have adequate funding for their entire program. Only 8% were fully funding their entire program costs.

How adequate is available funding? National survey.

All needs	8%
Most needs	39%
Urgent needs	40%
Inadequate	13%
All or Most	47%
Urgent or Inadequate	53%



Options:

1. Fully fund the City's stormwater utility. As shown in the following table the projected budget for full cost recovery for the City's stormwater utility is estimated to be \$6 million per year for a 20-year master planning program. In a companion paper on the Stormwater Utility Rates the stormwater user rates will be discussed and broken out in detail to provide the reader and insight into how much each component costs to fund.

Stormwater Budget	FY 09/10
Total O&M	\$ 432,008
Shared City Services	\$ 119,698
Minimum Control Measures	\$ 651,353
Reserve Funding	\$ 175,000
Subtotal Budget	\$ 1,378,059
Enhanced Maintenance (Trails, Detention Ponds, Creek)	\$ 1,200,000
Trail Construction	\$ 1,000,000
Easements and Right of Way	\$ 1,200,000
Debt Service for Large Cap Projects	\$ 1,291,000
Total Cash Needs for Stormwater	\$ 6,069,059

2. Fund the stormwater utility at less than full cost recovery. The City currently relies on general fund revenues to fund their stormwater program. Some or all of the program costs could still be paid from general fund revenues. This however is not recommended for many reasons. The most important of which is that a stormwater utility operates much like other utilities -- water, sewer, or power, for example -- that are funded by service fees and administered separately from the general fund, thereby providing a dedicated and stable source of funds that are raised through charges based on a user's contribution to the local stormwater runoff problems. While few people

enjoy paying regulatory fees, this is an approach often seen as more equitable to rate payers. And, our experience with stormwater utilities has shown that they are capable of generating substantial revenues for local stormwater management programs at relatively nominal charges and that general fund revenues are much better spent on such projects as parks and social services.

Issue 3: What user classes are exempt from paying stormwater user fees, if any? In particular are universities exempt?

Discussion: The concept of exempting properties from stormwater fees or giving those credits in the form of reduced rates started with exempting new developments required to construct stormwater management facilities to control runoff. These requirements are enacted to reduce the downstream flooding resulting from increasing impervious areas, or to reduce the degradation of the water quality of receiving streams. Much of the cost of service of a stormwater program would be reduced if older developments had implemented stormwater controls at the time of their development. Many municipalities operating stormwater utilities give credits to the service charge of properties with stormwater “best management practices” such as detention or retention basins, infiltration trenches, oil and grease traps, grass swales, etc.

In addition stormwater user fees are not normally charged on streets and highways, undeveloped land, rail right-of-ways, and public parks. However giving credits to other classes of users have evolved to a lesser extent. The following table shows the results of the National survey on exemptions. Also included in the column marked “Norman” is the exemptions included in the City’s current program.

What types of properties are exempt from user fees? National survey.

Exempt Property	Survey	Norman	Percent of Respondents									
Streets/highways	61%	X	[Bar chart showing 61% exemption]									
Undeveloped land	52%	X	[Bar chart showing 52% exemption]									
Rail right-of-ways	41%	X	[Bar chart showing 41% exemption]									
Public parks	23%	X	[Bar chart showing 23% exemption]									
Government	19%		[Bar chart showing 19% exemption]									
School districts	13%		[Bar chart showing 13% exemption]									
Colleges/universities	7%		[Bar chart showing 7% exemption]									
Waterfronts	7%		[Bar chart showing 7% exemption]									
Airports	3%		[Bar chart showing 3% exemption]									
Churches	3%		[Bar chart showing 3% exemption]									
Other	19%		[Bar chart showing 19% exemption]									
None	19%		[Bar chart showing 19% exemption]									

Note: Respondents were given the opportunity to select more than one response, so the percentage total greater than 100 %.

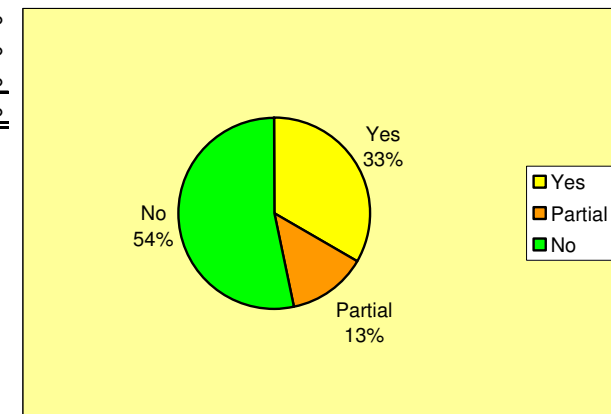
The National survey shows that only 7% of the respondents exempted colleges/universities. As in other categories contained in the National survey no explanation is included. However the University survey provides more in-depth insight into the practices of university communities.

A tabulation of the University survey is included followed by a summary graphic. Although 5 of the 15 respondents exempt universities the majority of them (public universities in Texas and Iowa) do so because they are required to by State law. Only one university community (Oklahoma State University, Stillwater) currently does not charge their university, and that is by oversight and they are correcting that in their current rate study.

University	City	Exempt	Reason for Exemption or Reduction
University of Texas	Austin, TX	Yes	State law
University of Colorado	Boulder, CO	No	
University of Missouri	Columbus, MO	Partially	60% - University maintains some facilities
University of North Texas	Denton, TX	Yes	State law
University of Kansas	Lawrence, KS	Partially	58% on two lots; rest full rate
Kansas State University	Manhattan, KS	No	
Baylor University	Waco, TX	Yes	Not connected to City's system
Oklahoma State University	Stillwater, OK	Yes	Planning to include them in upcoming rate study
Oklahoma State University	Oklahoma City, OK	No	
University of Central Oklahoma	Edmond, OK	No	
University of Nebraska	Lincoln, NB	No	
University of Iowa	Iowa City, IA	Yes	State law
Wichita State University	Wichita, KS	No	
University of Arkansas	Fayetteville, AK	N/A	
University of New Mexico	Albuquerque, NM	N/A	
Colorado State University	Fort Collins, CO	No	
University of Illinois	Chicago, ILL	No	
University of Arizona	Tucson, AZ	N/A	

Does the City exempt the University? University survey

Yes	5	33%
Partial	2	13%
No	8	53%
	15	100%



Option 1: Charge a stormwater utility fee to all parcels including the University of Oklahoma.

As more fully discussed in the companion white paper on Stormwater Utility Fees there is an economic impact on all other users if some parcels are exempted from paying the fees. The utility rate program looked at the rate impacts on the average single family user for a 20 year and a 30 year master planning period. It also looked at the economic impact on the average single family user rates of exempting all users that are exempt from property taxes (schools, churches, State and federal properties, and other non-profit entities) and the University of Oklahoma from stormwater user fees. The following table shows the range of average single family fees that would be needed based on the number of parcels exempted from paying the user fees for the 20-year program.

Monthly Rates - \$90M -20 Year CIP	FY 09/10 - FY 13/14	
All Parcels	\$	8.32
With Exempt Parcels but without OU Participation	\$	8.79
Without Exempt Parcels but with OU Participation	\$	9.66
Without Exempt Parcels and without OU Participation	\$	10.30

Option 2: Charge all exempt parcels and give the University of Oklahoma a partial credit for their internal stormwater program.

As shown in the University survey two of the university communities give partial exemptions to their universities. The first one, Columbus, MO gives a 40% reduction in rates to the University of Missouri because the University maintains a fairly extensive on-campus stormwater system. The second community, Lawrence, KS charges 58% of the normal rate on two university parcels (by new football facility with detention ponds) that are under runoff rate of 1.8 cubic feet per second per acre. Lawrence charges the University their full rates on all other parcels

Option 3: Exempt all tax exempt parcels and the University from stormwater user fees.

This is an option. However it would raise the average single family user's monthly rate by \$2.00. An alternative would be for the City to continue with a general fund subsidy to the utility equal to the amount of lost revenue. Based on an annual utility budget of \$6 million, this would equate to approximately \$1 million per year.

**Storm Water Master Plan
City of Norman
Cleveland County, Oklahoma**

October 2009

Appendix L

Creation of a Storm Water Utility and Associated User Charges

APPENDIX L CREATION OF A STORMWATER UTILITY AND ASSOCIATED USER CHARGES

Background: Historically, funding stormwater management programs has been problematic for most local governments. Today hundreds of local governments have discovered a viable option: the stormwater utility.

A stormwater utility operates much like other utilities -- water, sewer, or power, for example -- that are funded by service fees and administered separately from the general fund, thereby providing a dedicated and stable source of funds that are raised through charges based on a user's contribution to the local stormwater runoff problems. While few people enjoy paying regulatory fees, this is an approach often seen as more equitable to rate payers. And, our experience with stormwater utilities has shown that they are capable of generating substantial revenues for local stormwater management programs at relatively nominal charges.

A sound stormwater utility rate structure is developed around two major themes. The first is the "user pay" concept -- the parties that have the most stormwater runoff and receive the most benefits from the management program pay their proportionate share. The second is that the utility is structured so that it can be administered fairly and cost-effectively.

Rate Considerations

The unit of measurement for service is most often based on impervious surface area and the establishment of a base-billing unit, commonly referred to as an equivalent runoff, or residential unit (ERU), or an equivalent stormwater unit (ESU) that satisfies the revenue requirements of the stormwater utility. However, there are many elements to consider and policy decisions to be made before a base-billing unit can be calculated, including the utility's watershed and land use characteristics, how developments without existing stormwater facilities can be provided with credit incentives to implement best management practices, crediting in general, and phasing rates to eventually include capital improvement construction, just to highlight a few.

Other topics for discussion when establishing rate structures include using fixed rates for overhead costs, assessing additional surcharges to areas with more complex stormwater requirements, and the need to meet federal requirements.

Paramount to the establishment of stormwater utility rates is obtaining buy-in from the community. It is recommended that public education is started at least a year before any fee program or change is put into place. If people understand what is being done and think it is fair, they will support and become part of the outreach process and pass the word along.

There is not one type of stormwater utility rate-setting strategy that fits the needs of all communities. Being equitable across the board, having a solid basis for measuring service, and establishing a solid administration structure are the keys to success.

To this end the City staff and the PBS&J project team has spent the last year developing a comprehensive stormwater master plan as a basis for the creation of the utility, its associated operations and maintenance costs to meet the City's current Phase II permit requirements and the upcoming expansion of Phase II

requirements, its capital program costs, and the establishment of a funding program. This master plan and funding program has been reviewed with the Task Force and the general public through a series of meetings.

Stormwater Revenue Sources

The funding program contains the following revenue sources:

- User fees based on each customer's individual parcel's impervious area to recover the cost of operation and maintenance for permit requirements, purchase of right-of-ways and easements, and trail construction.
- A revenue bond program to recover the costs of stormwater capital projects.
- A new development fee or franchise tax program to recover the cost of system expansion.
- Grants and low interest loans as they become available.

This white paper is intended to address the first two bullet points as the new development fees and the grants and loan program have not been developed.

The user fee and bond program have been established based on two scenarios. Both scenarios include full cost recovery of all program expenses including funding of the capital program. The differences in the scenarios are:

- Scenario 1 spreads the capital program over a twenty year planning horizon
- Scenario 2 spreads the capital program over a thirty year planning horizon.

For clarity the tables in this white paper are based on the twenty year program. At the end of this white paper the impact on the average single family user rate is contrasted between funding the master plan capital projects over twenty or thirty years.

Stormwater Utility Budget

The stormwater budget for the next five years is broken into eight main cost components:

1. Operation and maintenance: These are the City's current costs subsidized by the general fund for such things as street sweeping and stormwater system maintenance provided by the streets department. As shown on the following table these costs are adjusted each year based on projected inflation.
2. Share City costs: These costs are similar to those included in the City's water and wastewater user fees. They recover the costs of departments such as finance and City administration whose staff and services support the utility but are not directly charged. As shown on the following table these costs are adjusted each year based on projected inflation.

3. Minimum control measures: These are the costs associated with compliance with the City's current stormwater permit and are more fully described in an accompanying white paper. As shown on the following table these costs increase dramatically in FY12/13 to cover the costs of the City's upcoming expanded Phase II permit.
4. Reserve funding: All utilities need a moderate amount of reserves for unforeseen operational or capital events. The funding plan for the utility phases in a reserve program over a ten-year period to minimize the impact on user rates.
5. Enhanced maintenance: The City has millions of dollars in deferred trail, detention pond and creek maintenance. During the course of the master plan an annual program was defined and an annual average budget established at \$1.2 million.
6. Trail construction: As part of the master planning process a separate trails master plan was prepared and is more fully discussed in an accompanying white paper. Many communities have successfully established a dual purpose stormwater/trail program that incorporates stormwater and flooding concerns with recreation. An annual amount of \$1 million has been incorporated for such a plan over the planning period.
7. Easements and Right-of-Way acquisition: As part of the master planning process it was determined that the City has acquired only a fraction of easements and/or right-of-ways to operate and maintain their stormwater facilities. This is discussed in more detail in an accompanying white paper. \$1.2 million dollars for year is incorporated into this funding plan to assist the City in this program.
8. Debt service for large capital projects: The master plan has identified \$90 million in needed capital projects. This funding program assumes that all capital projects are funded through a revenue bond program. Revenue bonds would be issued every three years for the upcoming three years of capital projects and the associated debt service is incorporated in the user rates. The planning period of three years is based on Security Exchange Commission (SEC) regulations that all bond proceeds must be spent within three years from the date of bond issuance. For purpose of each bond issue we have assumed an interest rate of 5.6% and financing costs to be 3% of the total debt issuance. It also includes a debt service reserve of one years principal and interest expense. These numbers are based on current industry trends and could change either up or down depending on interest rates, financing costs, and terms at the time the debt is issued. This funding plan assumes each debt issue is repaid over twenty years. Since stormwater capital projects are for long-term capital needs it is inequitable to ask existing users to pay the full costs of a project in one or two years and thus the project costs should be spread out over the anticipated useful life of the benefit received by the City's customers. The twenty year program provides for \$4.5 million per year of capital project funding and the thirty year program provides for \$3 million per year of capital projects.

Impervious Surface Determination

Impervious data for each parcel was extracted from the City's GIS database and reviewed by Vieux & Associates for accuracy and completeness. This data was further divided into five user classes as shown in the table below. There are 39,851 parcels within the study area for a total of 292 million square feet of impervious surface. The table divides the impervious surface by user class and shows the percentage of the total impervious area the user class represents of the total as well as the percentage of the total area that is impervious.

All Parcels						
User Class	Parcel Count	Total Area Sq. Ft.	Imp. Area Sq. Ft.	% of Total Impervious Area	Avg Impervious Area (ft^2)	% of Total Area that is Impervious
Single Family	26,276	679,315,764	102,147,540	35%	3,887	15%
Multi-family	6,626	193,751,640	42,293,081	14%	6,383	22%
Comm/Indust/Agri/Office	6,732	4,033,757,314	124,910,675	43%	18,555	3%
OU	199	76,314,671	15,637,104	5%	78,578	20%
Miscellaneous*	18	17,709,556	6,827,420	2%	379,301	39%
Total	39,851	5,000,848,945	291,815,821	100%		

The user rates have been established based on four scenarios as discussed in an accompanying white paper. All scenarios include full cost recovery of all program expenses including funding of the capital program. The differences in the scenarios are:

- Scenario 1 charges **all** parcels based on their unique impervious foot-print. No rate credits or exemptions are included.
- Scenario 2 charges all parcels except the University of Oklahoma.
- Scenario 3 charges all parcels except tax exempt parcels. These include churches, schools, government buildings, and other tax exempt non-profits.
- Scenario 4 charges all parcels except for the University and the exempt parcels.

The square footage of impervious surface contained within the study area for each of these scenarios is shown in the following table. This square footage was determined based on the City's GIS mapping system as discussed earlier.

Scenario	Total Impervious Square Feet
All Parcels	291,815,821
With Exempt Parcels but without OU Participation	276,178,717
Without Exempt Parcels but with OU Participation	251,417,966
Without Exempt Parcels and without OU Participation	235,780,862

As shown in the rate tables at the end of this white paper the more square footage included in the calculation the lower the fees to all users. For clarity the tables in this white paper are based on the twenty year program and impervious area Scenario 1. At the end of this white paper the impact on the average single family user

Stormwater Budget	FY 09/10	FY 10/11	FY 11/12	FY 12/13	FY 13/14
Total O&M	\$ 432,008	\$ 445,684	\$ 459,799	\$ 474,367	\$ 489,403
Shared City Services	\$ 119,698	\$ 124,486	\$ 129,465	\$ 134,644	\$ 140,029
Minimum Control Measures	\$ 651,353	\$ 737,745	\$ 748,616	\$ 1,334,552	\$ 1,530,561
Reserve Funding	\$ 175,000	\$ 175,000	\$ 175,000	\$ 175,000	\$ 175,000
Subtotal Budget	\$ 1,378,059	\$ 1,482,915	\$ 1,512,880	\$ 2,118,563	\$ 2,334,993
Enhanced Maintenance (Trails, Detention Ponds, Creek)	\$ 1,200,000	\$ 1,200,000	\$ 1,200,000	\$ 1,200,000	\$ 1,200,000
Trail Construction	\$ 1,000,000	\$ 1,000,000	\$ 1,000,000	\$ 1,000,000	\$ 1,000,000
Easements and Right of Way	\$ 1,200,000	\$ 1,200,000	\$ 1,200,000	\$ 1,200,000	\$ 1,200,000
Debt Service for Large Cap Projects	\$ 1,291,000	\$ 1,291,000	\$ 2,582,000	\$ 2,582,000	\$ 2,582,000
Total Cash Needs for Stormwater	\$ 6,069,059	\$ 6,173,915	\$ 7,494,880	\$ 8,100,563	\$ 8,316,993

rate is contrasted between funding the master plan capital projects over twenty or thirty years at each of the square footage levels.

Determination of Stormwater User Fees

The following table provides a summary of the costs per square foot of impervious surface for each one of the budget categories discussed earlier in this white paper. The proposed cost per square foot of impervious area starts at \$0.0208 per square foot and increases in FY 13/14 to \$0.0285 due in large to the increase costs associated with the minimum control measures for the City’s required upcoming Phase II permit and the inclusion of debt service cost for the second bond issue in FY11/12.

Stormwater Rate -- \$ / Imp. Sq. Ft.	FY 09/10	FY 10/11	FY 11/12	FY 12/13	FY 13/14
O&M Rate	\$ 0.0015	\$ 0.0015	\$ 0.0016	\$ 0.0016	\$ 0.0017
Shared City Services Rate	\$ 0.0004	\$ 0.0004	\$ 0.0004	\$ 0.0005	\$ 0.0005
Min. Control Measures (Phase II) Rate	\$ 0.0022	\$ 0.0025	\$ 0.0026	\$ 0.0046	\$ 0.0052
Reserve Funding Rate	\$ 0.0006	\$ 0.0006	\$ 0.0006	\$ 0.0006	\$ 0.0006
Base Rate	\$ 0.0047	\$ 0.0051	\$ 0.0052	\$ 0.0073	\$ 0.0080
Enhanced Maintenance (Trails, Detention Ponds, Creek)	\$ 0.0041	\$ 0.0041	\$ 0.0041	\$ 0.0041	\$ 0.0041
Capital Improvement Program	\$ -	\$ -	\$ -	\$ -	\$ -
Trail Construction	\$ 0.0034	\$ 0.0034	\$ 0.0034	\$ 0.0034	\$ 0.0034
Easements and Right of Way	\$ 0.0041	\$ 0.0041	\$ 0.0041	\$ 0.0041	\$ 0.0041
Debt Service for Large Cap Projects	\$ 0.0044	\$ 0.0044	\$ 0.0088	\$ 0.0088	\$ 0.0088
Rate Including the Above	\$ 0.0208	\$ 0.0212	\$ 0.0257	\$ 0.0278	\$ 0.0285

As discussed earlier, stormwater utility rates are expressed in terms of an ERU. A review of the City’s total individual single family data shows that the “average” single family residence has 3,887 square feet of impervious surface. When applied to each line item of budget costs the projected monthly cost per ERU is summarized in the following table for the period of FY09/10 to FY13/14.

Stormwater Rate -- \$ / Imp. Sq. Ft.	FY 09/10	FY 10/11	FY 11/12	FY 12/13	FY 13/14
Monthly Rates					
O&M Rate	\$ 0.48	\$ 0.49	\$ 0.51	\$ 0.53	\$ 0.54
Shared City Services Rate	\$ 0.13	\$ 0.14	\$ 0.14	\$ 0.15	\$ 0.16
Min. Control Measures (Phase II) Rate	\$ 0.72	\$ 0.82	\$ 0.83	\$ 1.48	\$ 1.70
Reserve Funding Rate	\$ 0.19	\$ 0.19	\$ 0.19	\$ 0.19	\$ 0.19
Base Rate	\$ 1.53	\$ 1.65	\$ 1.68	\$ 2.35	\$ 2.59
Enhanced Maintenance (Trails, Detention Ponds, Creek)	\$ 1.33	\$ 1.33	\$ 1.33	\$ 1.33	\$ 1.33
Capital Improvement Program	\$ -	\$ -	\$ -	\$ -	\$ -
Trail Construction	\$ 1.11	\$ 1.11	\$ 1.11	\$ 1.11	\$ 1.11
Easements and Right of Way	\$ 1.33	\$ 1.33	\$ 1.33	\$ 1.33	\$ 1.33
Debt Service for Large Cap Projects	\$ 1.43	\$ 1.43	\$ 2.87	\$ 2.87	\$ 2.87
Rate Including the Above	\$ 6.74	\$ 6.85	\$ 8.32	\$ 8.99	\$ 9.23

A key thing to note on this table is that each million dollars in program expense translates to \$1.11 per month if all of the City’s customers are charged for the program.

Establishment of Five-Year Programs

The City is required to go to a vote of the people in order to fund their stormwater program. Internal discussions have centered on establishing a program based on five-year rates. This means that each five years the City would go out to the electorate to establish the rates for the next five years. The following two tables show the proposed rates for the first five years of the stormwater program based on a 20-year and 30-year capital program. It also shows the impact on the average single family rate of exempting parcels.

Projected rates for the rest of the program are included as benchmarks but should not be established until just prior to their program years.

Monthly Rates - \$90M -20 Year CIP	FY 09/10 - FY 13/14	FY 14/15 - FY 18/19	FY 19/20 - FY 23/24	FY 24/25 - FY 28/29
All Parcels	\$ 8.32	\$ 11.35	\$ 14.65	\$ 17.63
With Exempt Parcels but without OU Participation	\$ 8.79	\$ 11.99	\$ 15.48	\$ 18.63
Without Exempt Parcels but with OU Participation	\$ 9.66	\$ 13.18	\$ 17.00	\$ 20.46
Without Exempt Parcels and without OU Participation	\$ 10.30	\$ 14.05	\$ 18.13	\$ 21.82

Monthly Rates - \$90M -30 Year CIP	FY 09/10 - FY 13/14	FY 14/15 - FY 18/19	FY 19/20 - FY 23/24	FY 24/25 - FY 28/29
All Parcels	\$ 7.36	\$ 9.91	\$ 12.24	\$ 13.78
With Exempt Parcels but without OU Participation	\$ 7.77	\$ 10.47	\$ 12.93	\$ 14.56
Without Exempt Parcels but with OU Participation	\$ 8.54	\$ 11.50	\$ 14.20	\$ 16.00
Without Exempt Parcels and without OU Participation	\$ 9.11	\$ 12.26	\$ 15.15	\$ 17.06

Based on the assumption that the City will charge all parcels the difference between a 20-year and 30-year capitol program is only \$1.00 per month per average single family user.

It should be noted that if all parcels are charged the proposed and projected monthly fees in the 30-year program, Norman’s projected FY28/29 rate is **lower** that the **current** monthly rate of \$14.26 currently being charged by Ft. Collins, CO. As discussed in a companion white paper the City of Norman stormwater program is modeled in part of the service standards (industry standards) that the Fort Collins residents have enjoyed since 1982. Both the proposed 20-year and 30-year capital program monthly rates of \$8.32 and \$7.36 respectively are almost half of the cost of the single family user in Ft. Collins in the current fiscal year. When comparing rates to other communities the proposed five-year rates must be compared against other communities that have based their programs of fully funding industry standard programs and required capital program costs.

Key Issues and Options:

Issue 1: Are the identified master plan capital projects funded over twenty or thirty years?

Discussion: Selecting an annual capital amount to be funded is based on two key factors. The first is the public’s perception of the importance and timing of capital projects and the benefit they will receive from them. This equates to the funding level they are willing to accept and approve in an upcoming vote of the people. The second is the annual capital projects that can be performed using the existing City staff. Additional staff may be needed to perform increased dollar amounts of capital projects per year. Alternative delivery systems are also being employed by many public agencies nationally. They include hiring a Program Manager from private engineering firms to perform either all or part of the planning and execution of capital projects.

Option 1: Adopt the 20-year capital program. User fee impacts are discussed earlier.

Option 2: Adopt the 30-year capital program. User fee impacts are discussed earlier.

Option 3: Establish an annual amount for a capital budget. User fee impacts to be determined based on funding level. As stated earlier, each \$1 million in program costs equates to \$1.11 per month on the average single family user rate based on all parcels contributing their fair share of the stormwater program costs.

Key Issue 2: Are credits or exemptions going to be offered to select user classes such as the University of Oklahoma or tax exempt parcels within the study area?

Discussion: A companion white paper reviews the outputs from two national surveys and a PBS&J survey of university communities. Based on the findings from these three surveys exemptions from the stormwater fees are almost non-existent and university communities do not exempt their universities from their fees charged to all parcels unless these charges are precluded by State law. Oklahoma does not have a state law that precludes the City of Norman from charging the University of Oklahoma.

Option 1: Establish a stormwater program fee based on all parcels. This is the recommended approach and is the most equitable to all users. Although the University of Oklahoma does have some on-site facilities all of their stormwater runoff is discharged to the City's stormwater system and therefore ends up in the City's receiving waters. In addition their on-site facilities do not mitigate the impact of the additional traffic on City streets from University activities such as sporting events. Increased traffic equates to increased pollutant levels.

Option 2: Establish a stormwater program fee with a credit to the University of Oklahoma for their on-site program. In the companion white paper it was determined that two of the 18 surveyed university communities give their university customers a reduced fee. One community reduces the University's fee by 40% for their on-site program and the other reduces two University parcels based on University installed detention facilities that reduce the volume of stormwater runoff into the City's stormwater system. All other parcels are charged at the regular user rate. If Norman was to provide an exemption to the University of Oklahoma for on-site facilities it is unknown what the impacts of this would be on other City customer's user rates as this would be based on negotiations.

STORM WATER MASTER PLAN

