



**City of Mercer Island  
Request for Qualifications  
Subbasin 29 Watercourse Stabilization Design**

**Released:** June 11, 2024

**Due:** 2 pm (PST), June 25, 2024 to [bids@mercerisland.gov](mailto:bids@mercerisland.gov)

**Contact:** Elayne Grueber, P.E., [elayne.grueber@mercerisland.gov](mailto:elayne.grueber@mercerisland.gov)  
Project # 24-29

## INTRODUCTION

The City of Mercer Island (City) is soliciting proposals from qualified professional engineering firms interested in providing technical services to support a watercourse stabilization project intended to reduce erosion, improve the channel grade control, and stabilize the bank for a watercourse within the City.

The City invites interested engineering firms or teams with proven experience in evaluating, designing, and permitting watercourse restoration work to submit their qualifications. The intent of this RFQ is to select a firm to provide the design services for this project. The awarded firm shall be licensed and lawfully engaged in providing engineering services in the State of Washington.

## PROJECT BACKGROUND AND DESCRIPTION

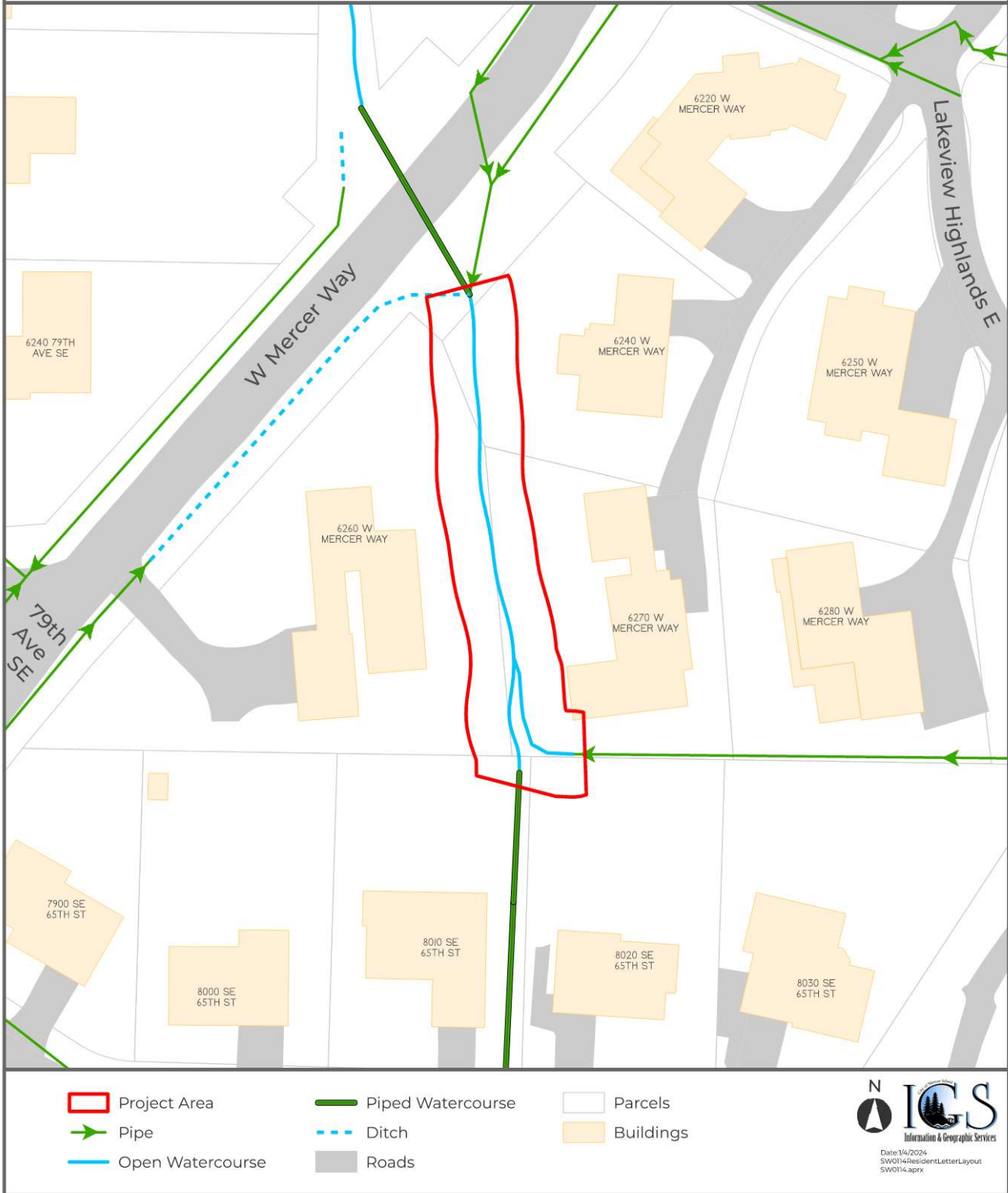
The City of Mercer Island is situated on an island in Lake Washington. The Island is divided into approximately 54 stormwater subbasins, each equipped with a stormwater collection system comprised of a combination of piped flow and natural watercourses. Since 2006, the City has actively undertaken watercourse stabilization initiatives across the Island to address erosion and stability concerns. This project targets the stabilization one section of watercourse within Subbasin 29.

The proposed work in Subbasin 29 involves stabilizing approximately 150 feet of watercourse east of West Mercer Way, aiming to enhance stream health and shore up bank stability (see Figure 1).

The watercourse is on private property and **should not be accessed** for the purposes of completing this RFQ. This RFQ and attachments show the location of the work and provide information on conditions of the site, Attachment A from 2024 and Attachment B for 2018. Instead, please refer to the information in Attachments A and B. The selected firm will have an opportunity for a site visit as part of the development of the scope and fee for this project.

# FIGURE 1

## Sub-Basin 29.3 Watercourse Stabilization



## SCOPE OF WORK

The project will include the review of existing information, preparation of preliminary remediation options, the development of detailed construction plans, specifications, and cost estimates, and supporting the permitting process as necessary, to produce a bid ready package for construction.

The selected consultant may be retained for construction support services and construction oversight, these tasks should be included as optional tasks as part of the proposal.

## CORE PROJECT DELIVERABLES

The selected consultant will develop/produce/obtain the following:

- Construction Plans, Specifications and Construction Cost Estimate proposed at 30% design, 60% design, 90% design, 100% design, and final bid-ready set. The final-bid ready set shall include bidding instructions/forms, special provisions, project plans, and bid tab/final construction cost estimate. Note that the City will provide templates for bidding instructions and forms to be included as part of the bid package.
- Permits in compliance with local, state, and federal standards.

## PROJECT TIMELINE

The targeted completion date for bid-ready plans, specifications, and cost estimate is December of 2024. Construction is currently planned for 2026 to provide time for USACE permitting.

## STATEMENT OF QUALIFICATIONS

Submitted RFQs shall include:

**Letter of Intent (maximum of 1 page):** Summarize your firm's background, resources, commitment to providing the described services, interest in this project and working for the City, and any other information that would assist the City in making its selection. Indicate the address and telephone number of the respondent's office located nearest to Mercer Island, Washington, and the office from which the services will be managed.

**Project Understanding, Approach, and Schedule:** Describe your team's understanding of the project objectives and your team's approach, strategy, and methodology to meeting the project objectives. Provide a discussion of common issues to be considered for this type of project and solutions your team has to these concerns. Please include your team's understanding of applicable permits and permitting process for this project. Include any additional services that should be incorporated into the scope, if applicable. Qualified firms should demonstrate knowledge and understanding of best practices for watercourse restoration projects.

Include a proposed project schedule for the project that identifies project tasks and deliverables, including how frequently check-in meetings will occur, and when deliverables

will be provided. The City requires at least 72 hours for document review. The project schedule should demonstrate commitment to completing the design and bid-ready documents per the proposed timeline outlined in this document.

**Project Team:** Provide a brief description of the company background and the individuals on the team, including their roles, relevant experience, and qualifications. Include any additional information that distinguishes your team and their qualifications from others.

**Project Experience:** Provide evidence of relevant experience with similar projects. Include the following information for three relevant projects managed by the proposed project manager within the last five years:

- Description of project, location, and status;
- Project results and challenges;
- Permitting;
- Description of professional services provided by the consultant team;
- Initial project budget, final cost, and end date (if applicable); and
- Primary client contact for the project (name, title, address, phone number, and email).

**City of Mercer Island Business License:** Provide a statement to the effect that the respondent understands and agrees to obtain a [City of Mercer Island business license](#) if selected. A principal or officer of the firm authorized to execute contracts or other similar documents on the firm's behalf must sign the letter. Alternatively, provide evidence of a current business license with the City of Mercer Island.

**References:** Provide three references from clients for whom your firm has performed similar work within the last five years. Include contact name, current phone number, and current e-mail address for all references.

**Disclosure of Conflict of Interest:** Disclose any potential conflict of interest due to any other clients, contracts, or property interests regarding private development of any property within the City of Mercer Island.

### **RFQ Submittal Format & Deadline**

- Submit a PDF of your proposal electronically to [bids@mercerisland.gov](mailto:bids@mercerisland.gov) no later than 2 pm on June 25, 2024. A confirmation will be sent to verify receipt of your proposal. The City will not be responsible for failure of delivery prior to the stated date and time.
- All proposal emails shall be clearly titled: RFQ for Subbasin 29 Watercourse Stabilization Design
- Please limit submittals to 8 pages using at least 12pt font (excluding references, dividers, and resumes).
- All questions on the projects are due by June 19, 2024, at 5 pm (PST). Questions will only be accepted electronically to Elayne Grueber at [elayne.grueber@mercerisland.gov](mailto:elayne.grueber@mercerisland.gov) It is the obligation and responsibility of the submitter to learn of addendums, responses, or notices issued by the City relative to this RFQ. These will be posted on the City website at [www.mercerisland.gov/rfps](http://www.mercerisland.gov/rfps).

## Conditions of Submittal

**Costs for Development of Submittals:** All costs for developing submittals in response to this RFQ are the obligation of the consultant and are not chargeable to the City. All submittals will become property of the City and will not be returned. Submittals may be withdrawn at any time prior to the published close date, provided notification is received in writing to Elayne Grueber at [elayne.grueber@mercerisland.gov](mailto:elayne.grueber@mercerisland.gov).

**Professional Services Agreement:** The City's standard Professional Services Agreement (PSA) is provided as Attachment 2. Consultants that submit proposals are expected to meet the terms contained in the PSA, as shown in Attachment 2, no modifications will be permitted.

**Americans with Disabilities Act (ADA) Information:** This material can be made available in an alternate format by calling 206-275-7833.

**Non-Discrimination:** The City of Mercer Island, in accordance with Title VI of the Civil Rights Act of 1964, 78 Stat. 252, 42 U.S.C. 2000d to 2000d-4 and Title 49, Code of Federal Regulations, Department of Transportation, Subtitle A, Office of the Secretary, Part 21, Nondiscrimination in Federally-assisted programs of the Department of Transportation issued pursuant to such Act, hereby notifies all bidders that it will affirmatively ensure that in any contract entered into pursuant to this advertisement, disadvantaged business enterprises as defined at 49 CFR Part 23 will be afforded full opportunity to submit bids in response to this invitation and will not be discriminated against on the grounds of race, color, national origin, or sex in consideration for an award.

## SELECTION PROCESS

The City anticipates using the following general timeline for evaluating proposals and initiating a contract in response to this solicitation.

Project Milestones	Date
RFQ release	June 11, 2024
Deadline for questions	June 19, 2024, 5 pm PST
City response to questions	June 23, 2024
Proposals due	June 25, 2024, 2pm PST
Consultant Selected	July 15, 2024
Design contract awarded	July 29, 2024
Target completion for Design	December 2024
Permitting	Ongoing through 2025
Construction	Summer 2026

## Evaluation Criteria

The selection process will include a review process for each RFQ submitted and potentially an interview process for short-listed firms.

A committee of City personnel will evaluate and rate each submitted RFQ using a qualification-based process using the following criteria:

**Project Understanding and Methodology:** The RFQ demonstrates thorough understanding of the project; how the team plans to address the needs of the City; and the team's unique qualities as they relate to the project.

**Project Team Qualifications and Experience:** The submittal provides a complete explanation of team members' roles and responsibilities, including a summary of each firm on the team, office locations, number of staff, and area(s) of expertise. It demonstrates the team's strengths and unique qualities as well as that the team design meets the needs of the project.

**Relevant Project Experience:** The submittal demonstrates relevant and successful experience with similar watercourse rehabilitation planning, design, and/or construction projects.

**Project Schedule/Deadlines:** Demonstrate the ability of the team to meet the proposed schedule(s), including assigned staff availability.

## **Interviews**

If interviews are held, selected firms should plan to have the project manager assigned to the project and up to two other key project team members who will be assigned to work on the project and/or subconsultant representatives present during interviews. The format of the interview will be an informal question and answer format with a panel of City staff.

Final selections will be based on both the submitted RFQ and the interview. Firms participating in interviews will be contacted shortly after interviews are held and informed of the City's final selection.

## **Additional Information**

The City of Mercer Island reserves the right to reject any or all responses received as a result of this solicitation; to extend the submission due date; to modify, amend, reissue, or rewrite this document; and to procure any or all services by other means.

This solicitation does not oblige the City to award a contract to any respondent. The final selection is the sole decision of the City, and the respondents to this formal request have no guaranteed appeal rights or procedures. At its option, the City reserves the right to waive as informality any irregularities in proposals and/or to reject any or all proposals.

## **ATTACHMENTS**

Attachment A: Subbasin 29 Assessment Reports 2024

Attachment B: Subbasin 29 Assessment Reports 2018

Attachment C: Sample City of Mercer Island Professional Services Agreement

**ATTACHMENT A**  
**SUBBASIN 29 Watercourse Assessment**  
**2024**



Photo source: NHC

# Subbasin 29 and 34 Watercourse Project

## Subbasin 29 Watercourse Assessment Summary

### Report

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May 31, 2024  
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**Document Tracking**

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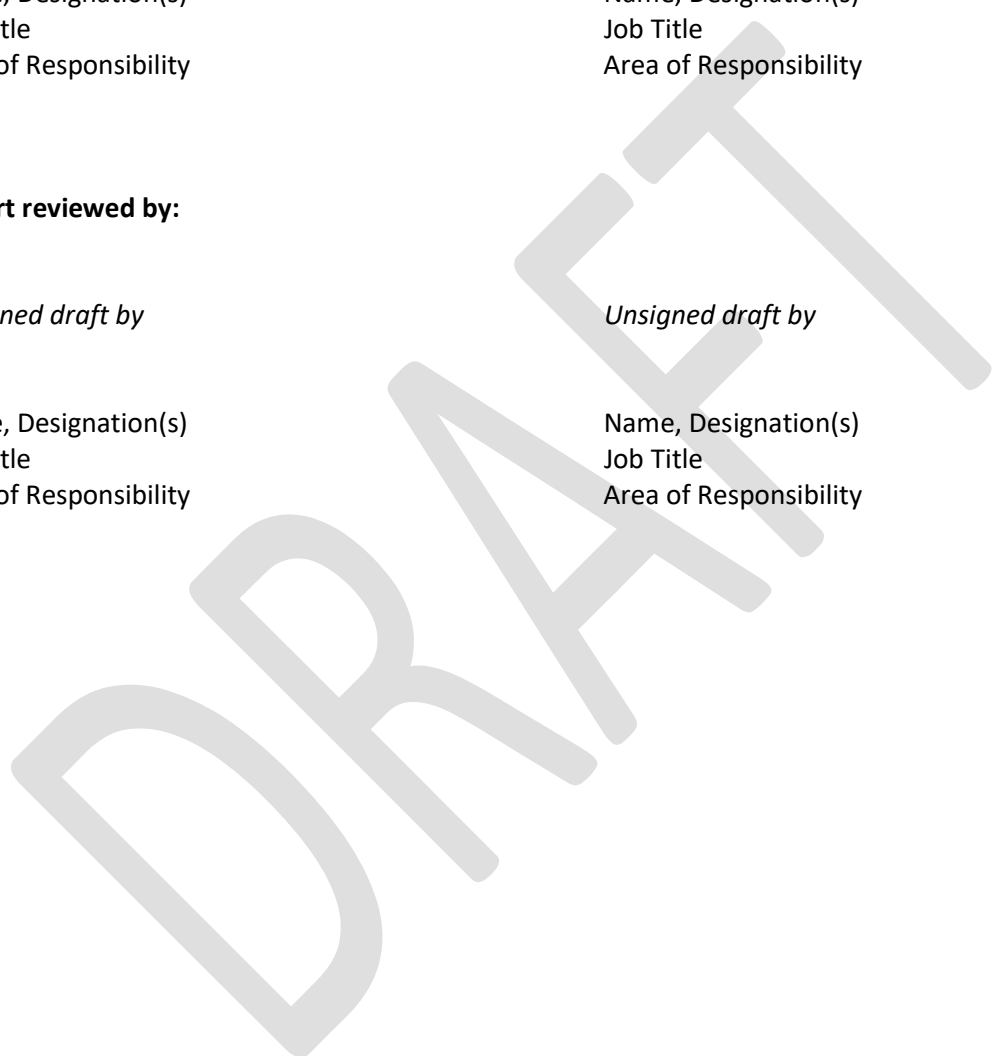
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## DISCLAIMER

This document has been prepared by **Northwest Hydraulic Consultants Inc.** in accordance with generally accepted engineering practices and is intended for the exclusive use and benefit of **City of Mercer Island** and their authorized representatives for specific application to the Subbasin 29 and 34 Watercourse Project in Mercer Island, Washington, USA. The contents of this document are not to be relied upon or used, in whole or in part, by or for the benefit of others without specific written authorization from **Northwest Hydraulic Consultants Inc.** No other warranty, expressed or implied, is made.

Northwest Hydraulic Consultants Inc. and its officers, directors, employees, and agents assume no responsibility for the reliance upon this document or any of its contents by any parties other than **City of Mercer Island**.

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## CREDITS AND ACKNOWLEDGEMENTS

The authors would like to thank the City of Mercer Island for initiating this study and for the support provided during the project, in particular:

- Elayne Grueber CIP Project Manager, Public Works

The following NHC personnel participated in the study:

- Dan Heckendorf Project Manager, Hydraulic Engineering
- Peter Brooks Principal-in-Charge
- Peter Hurst Engineering Technician

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## 1 INTRODUCTION

Ongoing erosion of the Sub-basin 29 and Sub-basin 34 Watercourses results in bank instabilities and adverse impacts to downstream water quality and aquatic habitat. The City of Mercer Island (City) started assessments of the watercourses on the Island in 2006, with the latest update in 2020. The City is seeking an updated assessment for Sub-basin 29 to document current channel conditions and assist with prioritization of capital improvement projects (CIP).

Northwest Hydraulic Consultants Inc. (NHC) has been retained by the City to conduct channel stability and risk assessments for each watercourse. NHC conducted the following services as part of the assessment update:

- Field survey and stream walk to document current channel conditions
- Channel stability and risk assessment, including recommendations for programmatic or capital actions
- Development of concept solutions and project cost estimates for mitigation actions

This report documents the work associated with the Sub-basin 29 Watercourse Assessment (project). Documentation of the Sub-basin 34 assessment will be provided in a separate report.

## 2 EXISTING CONDITIONS

NHC conducted a ground survey and a stream-walk on April 2, 2024, to observe existing channel conditions. Basin scale characteristics were determined based on a desktop analysis using readily available GIS data, such as geology and stormwater mapping data. The reach scale analysis was conducted primarily using direct field observations and collected survey data. The project reach spans 250 feet of the Sub-basin 29 watercourse, between SE 65<sup>th</sup> Street and West Mercer Way (Figure 2.1) and is referred to as the “Sub-basin 29.3 Watercourse” in City planning records. The following sections provide a characterization of the watercourse at the basin and reach scale.

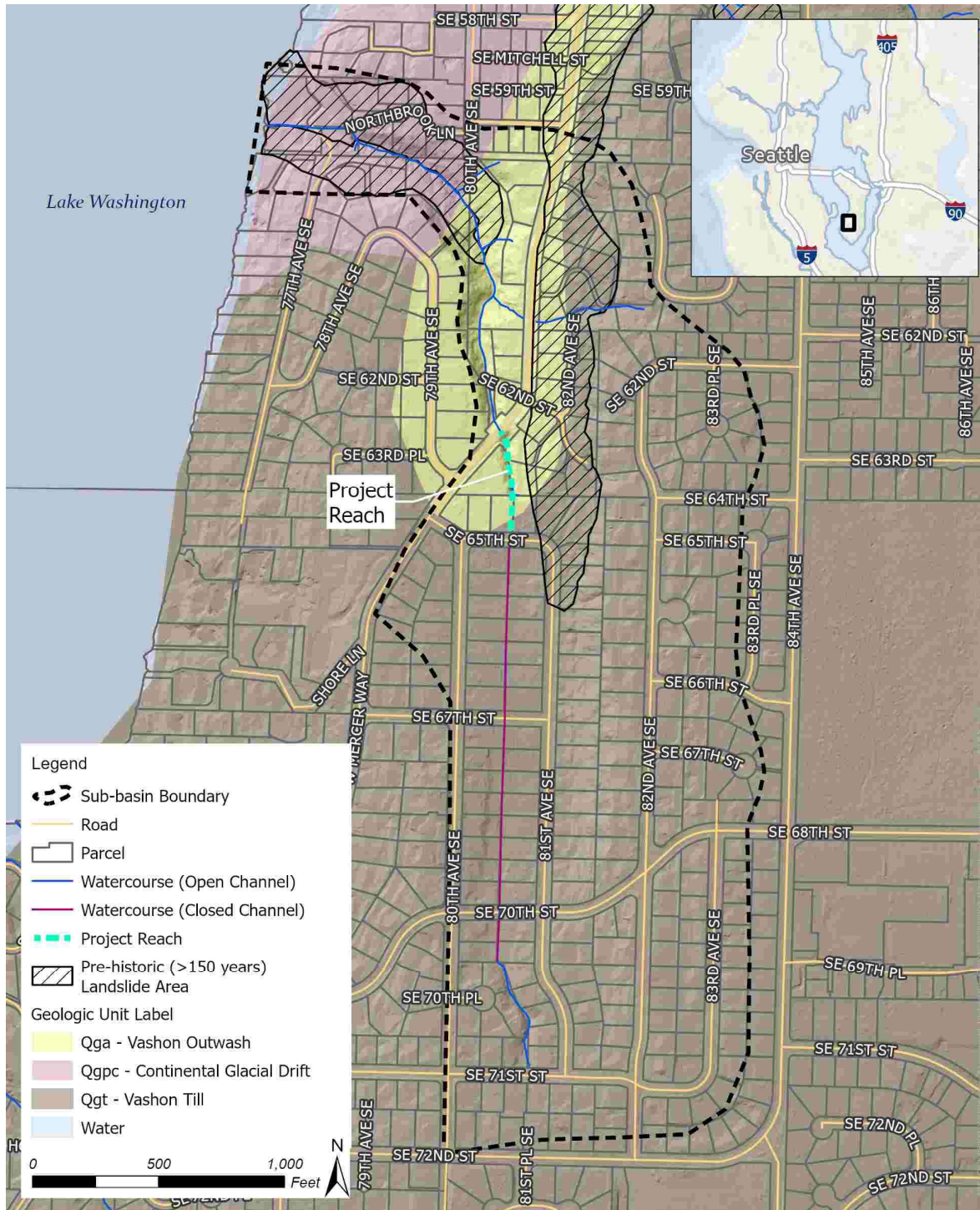


Figure 2.1 Location map and landslide area mapping (Mickelson et al., 2019).

## Basin Characteristics and Reach Description

The Sub-basin 29 Watercourse extends from its headwaters just north of SE 72<sup>nd</sup> Street and is conveyed via open channel and closed storm pipe for approximately 4,800 feet to its outlet at Lake Washington. The contributing basin area to the project reach is about 70 acres and landuse is primarily residential. The watercourse originates at the edge of a plateau composed of glacial sediments, then descends into a steep ravine at the upstream end of the project reach (Figure 2.1). Geologic units in the ravine are advance glacial outwash, late Pleistocene glacial drift, and late Pleistocene glacial till (Yount et al., 1993). Mickelson et al. (2019) has mapped landslide deposits upslope of West Mercer Way as shown in Figure 2.2. Landslide age was distinguished as pre-historic, i.e., greater than 150 years old (Mickelson et al. 2019).

Upper sub-basin runoff is collected within closed storm pipe systems and discharged to the upstream end of the project reach via a 24-inch diameter HDPE<sup>1</sup> pipe, approximately 168 feet north of SE 65<sup>th</sup> Street. A 12-inch diameter concrete pipe drains a smaller portion upper sub-basin and discharges to the east bank of the ravine near Station (STA) 1+68<sup>2</sup>. The ravine within the project reach is characterized by steep, forested slopes. The West Mercer Way roadway fill prism bisects the ravine at the north end of the project reach. Residential development surrounds much of the ravine extents within the project reach. Land within the ravine is private ownership. The City has a 20 foot wide maintenance easement along the watercourse within the project reach.

Residential structures along the project reach are generally within 35 and 45 feet of the channel on the left and right banks, respectively (Figure 2.2).

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<sup>1</sup> High Density Polyethylene

<sup>2</sup> Stream stationing shown on Figure 2.2 begins at the roadway centerline of SE 65<sup>th</sup> Street and progresses in the downstream direction along the watercourse.





Figure 2.2 Project reach map with stream station and landslide areas.

### 2.1.1 Previous Projects

Over the past 25 years, the City has taken various measures to improve drainage and stabilize the watercourse within the project reach. In 1999, the City completed improvements to the West Mercer

Way culvert including installation of a concrete headwall at the upstream end, and placement of outfall rock protection at the outlet (City of Mercer Island, 1999). NHC observed numerous rock check dams placed between about STA 2+00 to 2+80. The construction date for these features is unknown but they are believed to have been part of the 1999 drainage improvements (E. Grueber, personal comm., 2024). These features were generally observed as damaged and non-functional.

In 2009, the City replaced the 24-inch diameter pipe from SE 65<sup>th</sup> Street and installed outfall protection, comprising of quarry spall and 2-man rock from about STA 1+62 and 1+76 (City of Mercer Island, 2009). NHC observed some displacement of the outfall protection rock and bank erosion along the left bank. Further discussion related to the functionality of these features and the 1999 project reach improvements is provided in Section 2.2.

The most recent assessment of this watercourse was completed in 2018, as part of the Comprehensive Basin Review and Watercourse Monitoring Program (City of Mercer Island, 2018). This assessment identified approximately 150 lineal feet (LF) of channel instability consisting of erosion of both left and right banks, and a knickpoint, but documents no risk to property or infrastructure. The 2018 assessment proposed 150 LF of stream restoration and bank stabilization measures, such as streambed gravel mix, logs, and riparian plantings (City of Mercer Island, 2018). The location of the improvements, within the project reach is not defined. The 2018 assessment is included as Appendix A.

## 2.2 Reach Assessment

NHC conducted the reach assessment using a combination of desktop and field methods. These are described in the following sections.

### 2.2.1 Longitudinal Profile

The watercourse within the project reach can be classified into two separate sub-reaches based on slope and channel controls. Figure 2.3 illustrates these sub-reaches as well as culvert and structure locations, adjacent bank elevations, and computed sub-reach slopes. Longitudinal profiles provided on Figure 2.3 were derived from 2016 and 2021 LiDAR and 2024 ground survey data collected by NHC.

LiDAR coverage on small Mercer Island tributaries has been found to provide reasonably accurate channel ground elevation estimates when compared with accurate ground survey (NHC, 2024). Elevation differences between the LiDAR and survey within the project reach are appreciable, generally greater than 1 foot, and tend to correspond to areas of observed channel erosion. Thus, elevation information derived from LiDAR was considered reasonable for use in assessment of changes in the channel profile over time. However, the absolute accuracy of past LiDAR cannot be verified. It is recommended that future watercourse assessments include survey of channel bed levels.

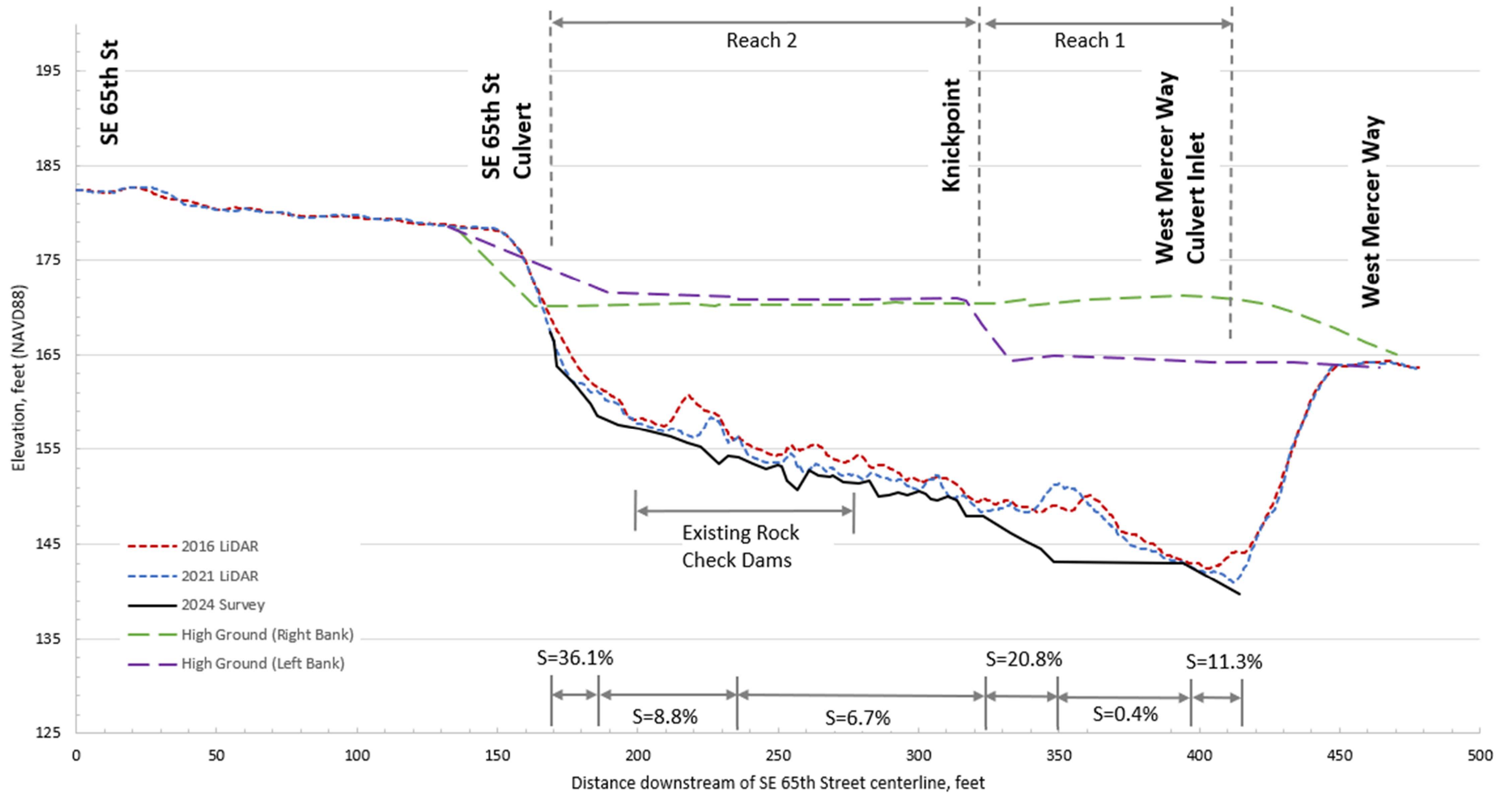
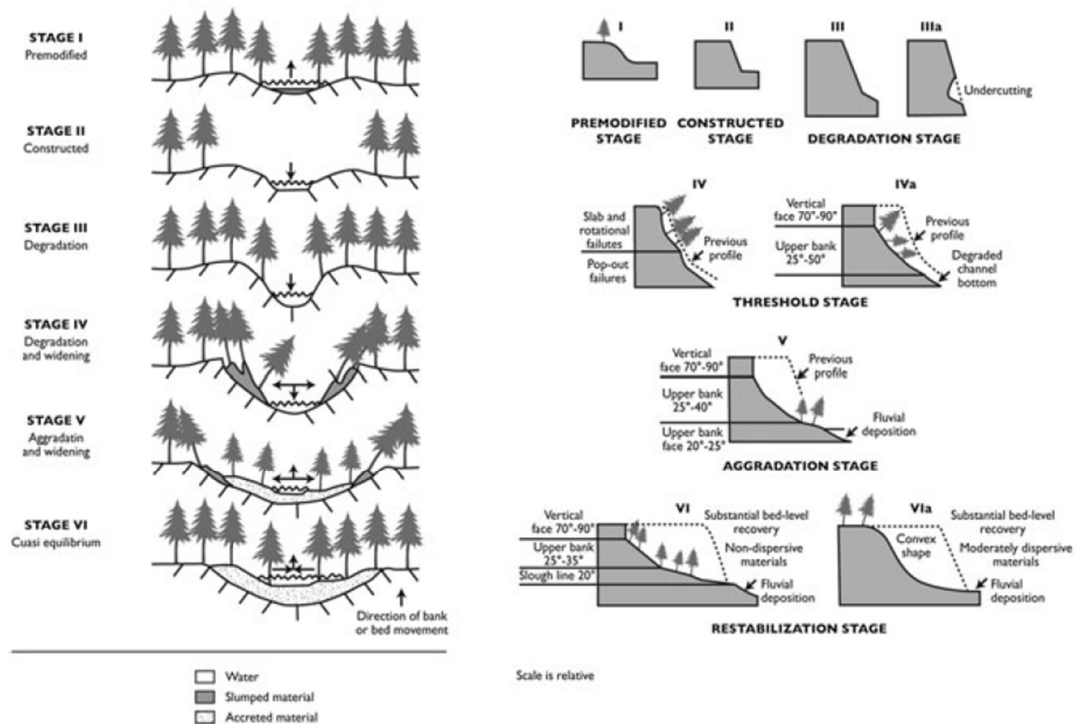


Figure 2.3 Subbasin 29 Watercourse Profile (Project Reach)

## 2.2.2 Channel Geometry

Cluer and Thorne's (2014) channel evolution model (CEM) provides a useful template for understanding morphological responses to landscape modifications (such as channelization) or changes to flow conditions and sediment transport. The CEM was used to guide the reach descriptions provided below. Figure 2.4 provides a visual description of the CEM template used.



**Figure 2.4 Channel Evolution Model [from Cluer and Thorne's (2014)]**

The channel appears to be incising, with various knickpoints observed along the project reach (See Figure 2.3). Upper portions of the bank were generally held in place by vegetation with erosion at the channel toe, resulting in channel widening and classification of the project reach as stage 4 in Figure 2.4. It appears that hillslope instabilities are initiated more by toe erosion than upslope geotechnical processes. Downstream of a pronounced knickpoint at Fig 2.3 STA 3+22, the channel is relatively stable due to large woody material (LWM) accumulations that are storing gravels and holding bed elevations.

### Reach 1: Knickpoint to West Mercer Way Culvert (STA 3+22 to 4+12)

Reach 1 extends from the West Mercer Way culvert upstream 90 feet to a knickpoint formed by a localized lens of what appears to be relatively non-erodible material (STA 3+50) (Photo 2.1). This reach appears to have experienced significant degradation over recent history, with an estimated average 3-foot drop in bed elevation since 2016 (Figure 2.3). This reach exhibits a wood-forced step-pool morphology. LWM accumulations, approximately 60 feet upstream of West Mercer Way (STA 3+90) currently control bed elevations (Photo 2.2), with overall channel slopes of 0.4% upstream of this location, and 11.3% downstream of it. This sub-reach is generally straight with a sinuosity of 1.0. The

low-flow channel width is moderately wide, ranging from 8.1 to 14.3 feet. Approximate top of bank elevations are provided in Figure 2.3 and show bank heights ranging from 16 to 28 feet, indicating relatively high levels of channel entrenchment within the reach. Bank erosion was observed throughout Reach 1 and was found to be more pronounced on the left (south) bank, indicating less resistant bank materials and with the left bank, compared to the right bank. In general, relatively high bank heights limit floodplain connection. Side slopes on both banks are generally 1.5H:1V or steeper.



**Photo 2.1** View of watercourse looking upstream from the base on the knickpoint (STA 3+50). Note, level rod indicating relative drop in bed elevation.



**Photo 2.2** View of watercourse looking downstream from the base of the knickpoint. Note LWM accumulation (background) (STA 3+90) retaining gravels and holding channel bed elevation (foreground).

### Reach 2: SE 65<sup>th</sup> Street Culvert to Knickpoint (STA 1+68 to 3+22)

The 154-foot reach downstream of the SE 65<sup>th</sup> Street culvert outlet exhibits a step-pool morphology. Channel slopes were 8.8% within the upper portion of the reach (upstream of STA 2+36) and about 6.7% within the downstream section. Figure 2.3 indicates that bed elevations have likely been steadily lowering over recent history, with an estimated average drop in bed elevation of about 2 feet since 2016. This consistent change in bed level indicates that constructed rock check dams (Section 2.1.1) are ineffective in providing stability of the channel bed. This is not surprising as these features were generally all observed to be flanked, with rock displaced in the downstream direction (Photo 2.3). This sub-reach is also generally straight with a sinuosity of 1.0. The low-flow channel width is highly variable, ranging from 2.9 to 17.2 feet. Approximate top of bank elevations provided in Figure 2.3 show bank heights ranging from 13 to 20 feet, indicating relatively high levels of channel entrenchment throughout reach. Side slopes on both banks are generally 1.5H:1V or steeper. Bank slopes are steepest on the left bank, from the SE 65<sup>th</sup> Street culvert to approximately 40 feet downstream (STA 2+20), consistent with the location of observed bank erosion and some displacement of outfall rock protection (Photo 2.4). Erosion of the channel banks was observed throughout the reach, and like Reach 1, was consistently more pronounced on the left bank, especially near the location of existing rock check dams. This is likely a result of flow concentration where the dams had been flanked.



**Photo 2.3** View of watercourse looking upstream about 50 feet downstream of the SE 65<sup>th</sup> Street culvert outlet (STA 2+20). Note, flanking of rock check dam and displacement of rock.



**Photo 2.4** View of watercourse standing on right bank facing west about 30 feet downstream of SE 65<sup>th</sup> Street culvert outlet (STA 2+00). Note, observed left bank erosion and displacement of outlet protection rock.

### 3 SUMMARY AND RECOMMENDATIONS

Existing rock check dams are not functioning as intended. As a result, the channel appears to be actively incising, with average lowering of the channel bed estimated between 2 to 3 feet since 2016 (Figure 2.3), based on comparison of LiDAR data and survey data. Observations indicate the channel also appears to be widening, resulting in impacts to in-channel and riparian habitat and potential threats to adjacent residential structures. Bank erosion was observed to be more pronounced on the left (south) bank. Capital improvements are recommended within all reaches, totaling 244 lineal feet of proposed improvements with the project reach. The extents of improvements are shown on Figure 3.1 and summarized below within Table 3-1. Concepts and cost information should be considered conceptual, requiring further engineering analyses and preparation of detailed design drawings.

Figure 3.2 provides an example detail of a potential bed control structure that could be employed within the project reach. Alternative treatments should be considered in final design to accommodate variations in channel width and construction access. Bed control structure spacing was determined via use of empirical research related stable step height and spacing in natural stream and observations of stable step geometry within the watercourse longitudinal profile (Thomas et al., 2000; Church and Zimmerman, 2007). Quantities were based on application of this bed control structure type in addition to the design assumptions described above and shown on Figure 3.1. Unit costs were developed using available bid tabs for recently constructed projects with similar project elements. Assuming a 40 percent planning level contingency, the project construction cost is estimated at \$221,000 (2024 dollars). Total project costs (construction and design) are estimated at \$376,000 (2024 dollars).

**Table 3-1. Summary of capital improvement recommendations.**

Type	Reach	Extents (STA)	Length (ft)	Description
Channel stabilization	1	3+22 to 4+12	90	Existing LWM observed to be working to hold bed elevations. However, installation of 4 bed control structures is recommended to mitigate against the risk of loss of channel stability via re-positioning of existing LWM features during high water events and further increase channel and bank stability within the project reach. Application of streambed cobble along 30 lineal feet (STA 3+22 to 3+52) of channel is recommended to provide additional bed resistance within higher flow velocity zones along the existing knickpoint geometry. These improvements will also serve to protect future improvements within Reach 2.
Channel stabilization	2	1+68 to 3+22	154	Degradation and widening of the channel bed appears to be ongoing, resulting in potential threats to adjacent residential structures. Increase channel and bank stability via installation of 8 bed control structures.

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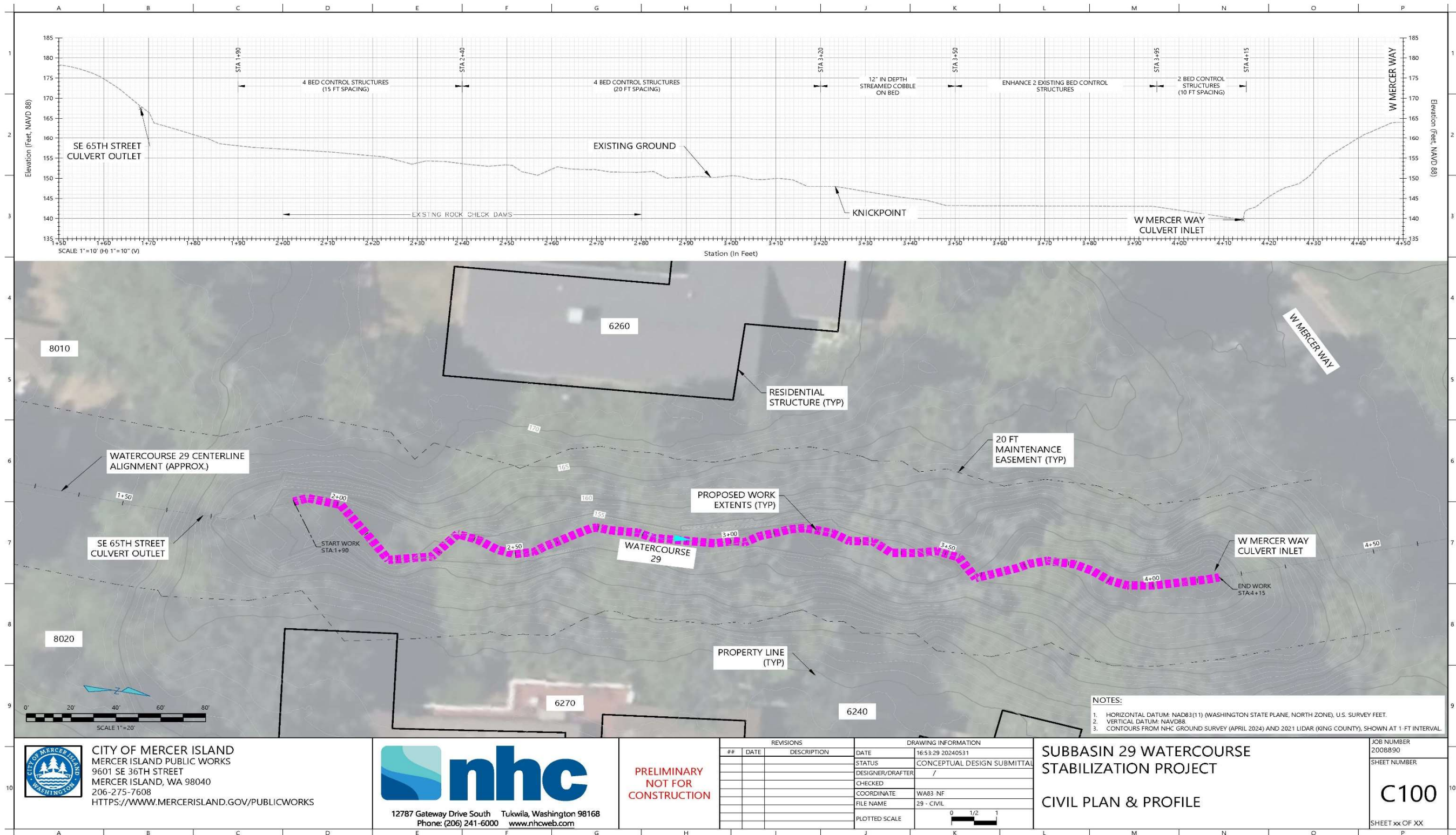


Figure 3.1 Capital improvement recommendations plan and profile.

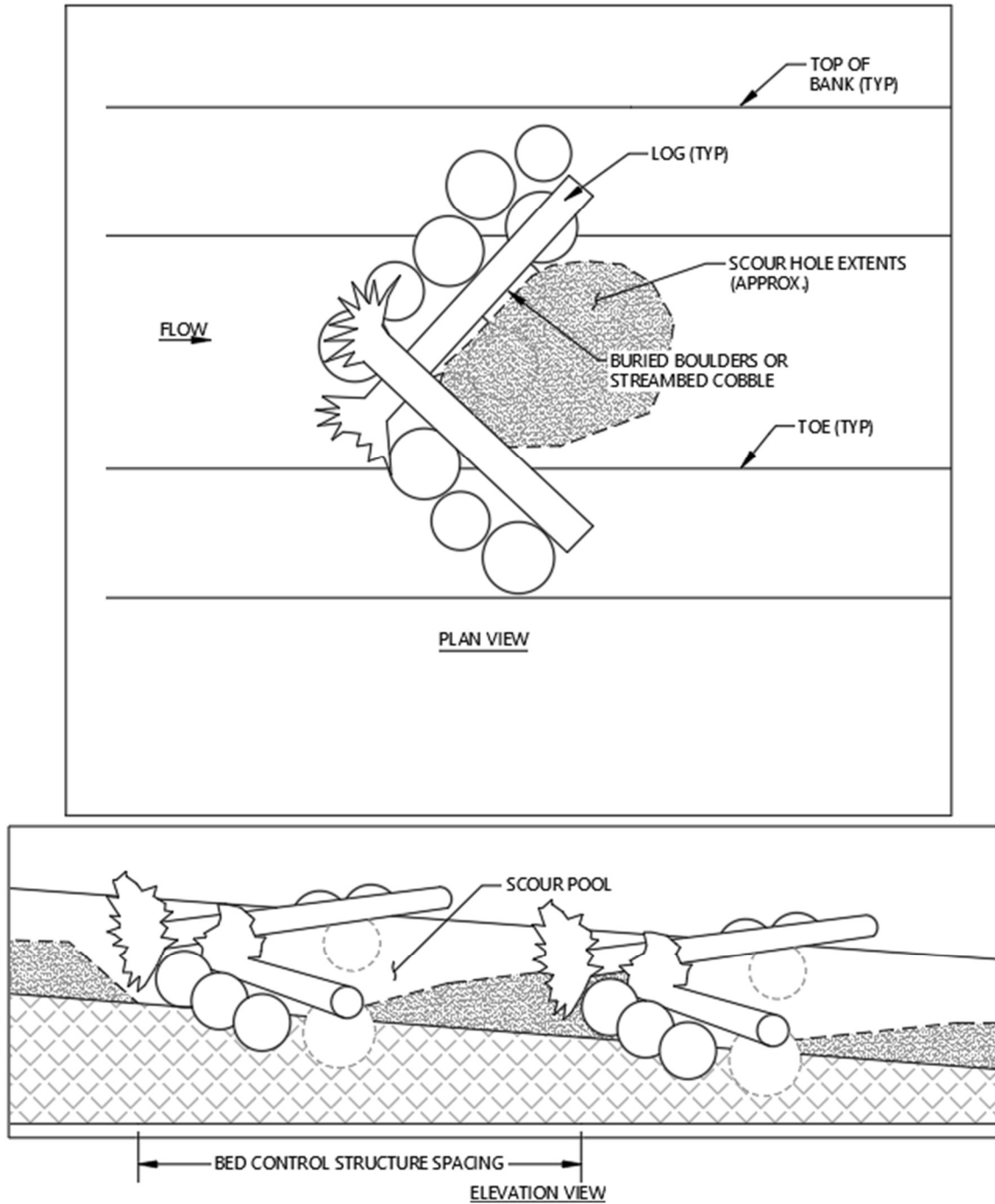


Figure 3.2 Example bed control structure detail.

## 4 REFERENCES

Church, Michael, and Andre Zimmerman. 2007. "Form and stability of step-pool channels: Research progress." *Water Resources Research* 43.3.

City of Mercer Island. 1999. 1999 Drainage Improvements – Design Drawings. Prepared by Public Works Department.

City of Mercer Island. 2009. SE 65th Street Storm Drain Pipe Replacement Project – Design Drawings. Prepared by Public Works Department.

City of Mercer Island. 2018. Comprehensive Basin Review and Watercourse Monitoring – Project Summary Sheet. Prepared by Public Works Department.

NHC. 2024. Subbasin 46a.3 Watercourse Stabilization Design Project – Preliminary Basis of Design Report. Draft Manuscript. April 2024.

Thomas, D.B., et al. 2000. "A design procedure for sizing step-pool structures." *Building Partnerships*. 1-10.

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**ATTACHMENT B**  
**SUBBASIN 29 Watercourse Assessment**  
**2018**

## PROJECT SUMMARY SHEET

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**Basin No.:** 29

**Project No:** 29.3

**Project Title:** **Stream Restoration and Bank Stabilization at 6200 block of West Mercer Way**

**Problem Description:** About midway between West Mercer Way and SE 65<sup>th</sup> St a 150-foot reach has one to two-foot drops, eroding banks and creating west bank instability. West bank instability may be the result of site grading for development of the residence at 6260 West Mercer Way. East slope of ravine mapped as Mass Wastage deposits. Bed is cohesive clay. Total watercourse length between culverts is about 240 feet.

**Project Description:** 150-foot stream restoration and bank stabilization

**Related Projects** None

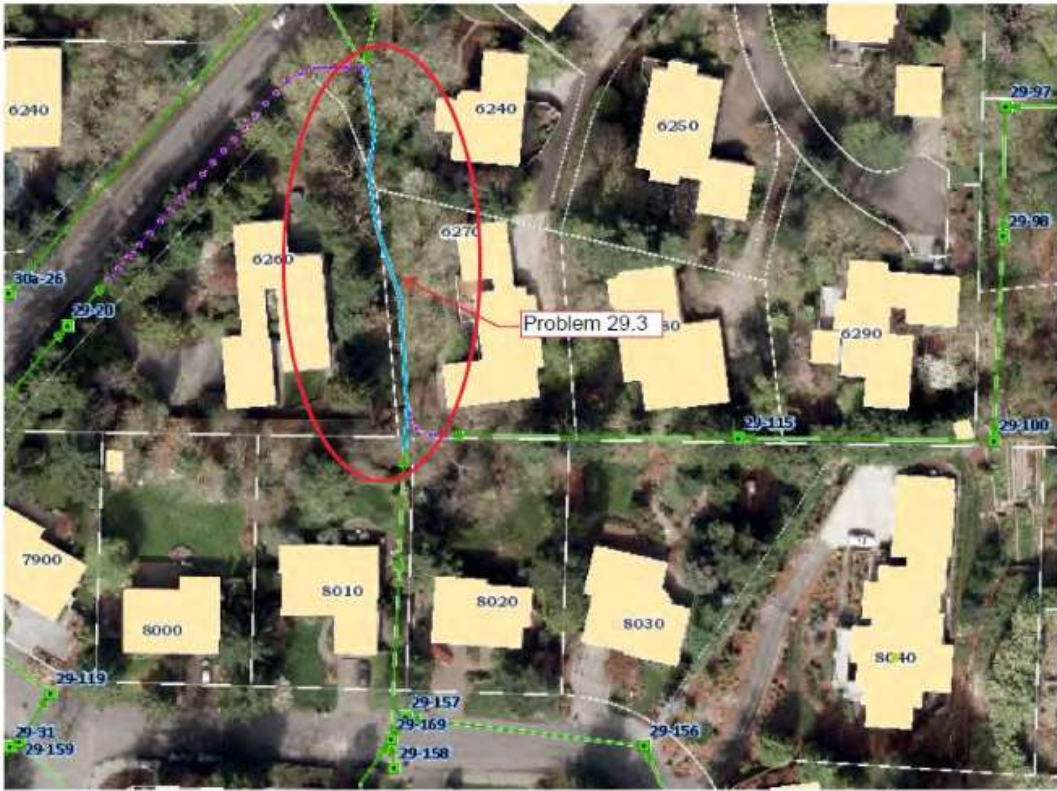
**Estimated Project Cost:** \$157,000



**Bank erosion below pipe outfall from 8010/8020 SE 65<sup>th</sup> Street. 01/19/2018**



**Observed west bank instability. Activity unknown. 01/19/2018**



Project Location Map

**PLANNING LEVEL CONSTRUCTION COST ESTIMATE-MERCER ISLAND CIP**

PROJECT: 29.3  
 BY: BJORK

CHECKED BY:  
 DATE: 6/19/2018

PROJECT LENGTH 150 LF

BID ITEM	QUANTITY	UNIT	UNIT PRICE	AMOUNT
<b>GENERAL</b>				
CLEARING AND GRUBBING	180	LF	\$ 18	\$ 3,240
HAND CLEARING AND GRUBBING		LF	\$ 30	\$ -
REMOVE/DISPOSE MISC DEBRIS	180	LF	\$ 2	\$ 360
TEMPORARY BYPASS	5,000	LS	\$ -	\$ -
STAGING, ACCESS (10' WIDE) AND RESTORATION	100	LF	\$ 100	\$ 10,000
PLANTING AND SEEDING	180	LF	\$ 20	\$ 3,600
			\$ -	
			\$ -	
<b>RESTORATION, STABILIZATION AND CHECK DAMS</b>				
EXCAVATION	30	CY	\$ 150	\$ 4,500
HAND EXCAVATION AND BACKFILL		CY	\$ 250	\$ -
BOULDERS/RIPRAP	60	TON	\$ 100	\$ 6,000
SMALL BOULDERS/QUARRY SPALLS		TON	\$ 150	\$ -
STREAMBED GRAVEL (FILL)	10	TON	\$ 100	\$ 1,000
STREAMBED GRAVEL (FILL)- HAND		TON	\$ 250	\$ -
LOGS		EA	\$ 500	\$ -
SMALL LOGS	20	EA	\$ 400	\$ 8,000
SMALL LOGS- HAND		EA	\$ 1,400	\$ -
ROOTWADS		EA	\$ 400	\$ -
REUSE ONSITE LOGS		EA	\$ 200	\$ -
<b>PIPE SYSTEM, BYPASS AND OUTFALLS</b>				
PAVEMENT RESTORATION		SY	\$ 20	\$ -
12" CPEP PIPE (TRENCHING,BEDDING,PIPE,BACKFILL)		LF	\$ 80	\$ -
18" CPEP PIPE (TRENCHING,BEDDING,PIPE,BACKFILL)		LF	\$ 90	\$ -
24" CPEP PIPE (TRENCHING,BEDDING,PIPE,BACKFILL)		LF	\$ 100	\$ -
MANHOLES/CB		EA	\$ 4,000	\$ -
EXCAVATION		CY	\$ 50	\$ -
SELECT FILL		CY	\$ 40	\$ -
RIPRAP/BOULDERS/QUARRY SPALLS		CY	\$ 70	\$ -
GEOTEXTILE		SY	\$ 3	\$ -
12" BUTT FUSED HDPE PIPE		LF	\$ 75	\$ -
ANCHOR BLOCK MH AND SPECIAL FITTINGS		EA	\$ 5,000	\$ -
CONNECT TO EXISTING SYSTEM		EA	\$ 3,000	\$ -
			<b>Subtotal</b>	\$ 36,700
SPECIAL ACCESS/CONSTRUCTION	5%			\$ 1,835
MISC	10%			\$ 3,670
EROSION & SEDIMENTATION CONTROL	5%			\$ 1,835
TRAFFIC CONTROL	1	LS	5000	\$ 5,000
			<b>Subtotal</b>	\$ 49,040
MOBILIZATION	10%			\$ 4,904
			<b>Subtotal</b>	\$ 54,000
CONTINGENCY	30%			\$ 16,200
			<b>Subtotal</b>	\$ 70,200
STATE SALES TAX	10.0%			\$ 7,020
			<b>Total Estimated Construction Cost (Rounded)</b>	\$ 77,000
<b>INDIRECT COSTS</b>				
SURVEYING AND DESIGN	60%			\$ 46,200
PERMITTING	20%			\$ 15,400
CONSTRUCTION ENGINEERING AND ADMINISTRATION	20%			\$ 15,400
EASEMENTS/LAND ACQUISITION ADMINISTRATION	3	PARCEL	\$ 1,000	\$ 3,000
			<b>Total Estimated 2018 Project Cost (Rounded)</b>	\$ 157,000

Notes:

1. Cost estimate is in 2018 dollars and does not include future escalation, financing, or O&M costs.
2. The construction items and quantities are based upon conceptual solution types and should be considered conceptual. See Report text.
3. Land Acquisition unit costs are for Administrative Costs only.
4. Costs include those for consultant, city and contractor



# Mercer Island Comprehensive Drainage Plan- Field Reconnaissance

Subbasin 29 Problem No. 3 By: J. Bjork 1/19/18 & Kimball

## Site Conditions

Geology: Qtb Qva Qvt Qvr Colluvium fill Undetermined slide  
 Flow Today: 50 gpm      cfs Approx. Channel Gradient 0-1% 2-5% 5-10% >10%  
 Bank Vegetation type: Native Invasive Landscaped  
 Bank Vegetation quality: Excellent Good Fair Poor  
 Aquatic Habitat: Excellent Good Fair Poor None  
 Proximity to Drainage Outfalls:      ft. up/downstream end 24 " CMP RCP PVC CPEP HDPE  
 Erosion of: bed left bank right bank headcut  
 Apparent rate of Erosion: stable Slow change Moderate change Rapid change

### Risks (Check Applicable)

	None	Private	Public	Creates Unsafe Condition
Bank Stability	<u>    </u>	<u>X</u>	<u>    </u>	<u>    </u>
Upper Slope Stability	<u>    </u>	<u>X</u>	<u>    </u>	<u>    </u>
Landslide	<u>    </u>	<u>X</u>	<u>    </u>	<u>    </u>
Sediment source	<u>    </u>	<u>X</u>	<u>    </u>	<u>    </u>
Habitat destruction	<u>    </u>	<u>X</u>	<u>    </u>	<u>    </u>
Threatens home	<u>X</u>	<u>    </u>	<u>    </u>	<u>    </u>
Threatens other structure	<u>X</u>	<u>    </u>	<u>    </u>	<u>    </u>
Threatens private road/driveway	<u>X</u>	<u>    </u>	<u>    </u>	<u>    </u>
Threatens infrastructure	<u>X</u>	<u>    </u>	<u>    </u>	<u>    </u>
Threatens public road	<u>X</u>	<u>    </u>	<u>    </u>	<u>    </u>
Risk to Homes:	Horiz (ft)	Vert (ft)	Address	Apparent Hazard
No risk <u>X</u>	<u>    </u>	<u>    </u>	<u>    </u>	Low Med High
	<u>    </u>	<u>    </u>	<u>    </u>	Low Med High

### Solutions

	yes	No		
Construction Access:	<u>X</u>	<u>    </u>	Conventional Equipment to site	
	<u>X</u>	<u>    </u>	Conventional Equipment down ravine	
	<u>    </u>	<u>X</u>	Conventional Equipment to top of ravine	
	<u>    </u>	<u>X</u>	Crane (less than 200')	
	<u>    </u>	<u>X</u>	Cable Way (straight line)	
	<u>X</u>	<u>    </u>	Small equipment	
	<u>X</u>	<u>    </u>	Chute/skid	
Potential Reduction in O&M costs	None	<u>Small</u>	Moderate	Significant
Restoration of construction access:		<u>Native</u>	<u>Landscaped</u>	<u>100</u> LF
Concept:	Outfall protection	<u>    </u>	LF	
	Bypass Pipe	<u>    </u>	LF	
	Check dams	<u>    </u>	LF	
	Channel restoration	<u>    </u>	LF	
	Stream restoration	<u>150</u>	LF	
	Other	<u>    </u>		

About midway between West Mercer Way and SE 65th St, a 150-foot reach has 1'-2' drops, eroding banks and west bank instability. Total mc. length between culverts is about 240'. Bed is cohesive clay. EAST bank mapped as MASS WASTAGE DEPOSITS.

Potential Monitoring Site: Yes No

**ATTACHMENT C**  
**Sample City of Mercer Island**  
**Professional Services Agreement**

**CITY OF MERCER ISLAND, WASHINGTON  
AGREEMENT FOR PROFESSIONAL SERVICES FOR  
[INSERT TITLE OF AGREEMENT/SERVICES]**

THIS AGREEMENT FOR PROFESSIONAL SERVICES (“Agreement”) dated [insert date agreement drafted] is effective on the date the Agreement is fully executed by the Parties. The Parties to this Agreement are the CITY OF MERCER ISLAND, a Washington municipal corporation (“City”) and [insert full legal name of consultant], a [insert state where formed] [choose type of person or entity] (“Consultant”).

**1. SERVICES BY CONSULTANT**

Consultant shall perform the services described in the scope of work attached hereto as Exhibit “A”, along with any Specifications, Addenda, and other Exhibits attached hereto, which documents are incorporated by this reference, (“Services”), in a manner consistent with the accepted practices for other similar services, performed to the City’s satisfaction, within the time period prescribed by the City and pursuant to the direction of the City Manager or their designee.

**2. PAYMENT**

2.1 City shall pay Consultant for the Services: (check one)

- Hourly:** \$            per hour, plus actual expenses, but not more than a total of \$            .
- Fixed Sum:** not to exceed \$            .
- Other:**            .

2.2 Consultant shall maintain time and expense records and provide them to the City monthly, along with monthly invoices in a format acceptable to the City for work performed to the date of the invoice.

2.3 All invoices shall be paid by mailing a City warrant within 45 days of receipt of a proper invoice.

2.4 Consultant shall keep cost records and accounts pertaining to this Agreement available for inspection by City representative for three (3) years after final payment. Copies shall be made available on request.

2.5 If the Services do not meet the requirements of the Agreement, Consultant will correct or modify the work to comply with the Agreement. City may withhold payment for such Services until the work meets the requirements of the Agreement.

**3. NON-DISCRIMINATION AND COMPLIANCE WITH LAWS**

3.1 Consultant agrees not to discriminate against any employee or applicant for employment or any other person in the performance of this Agreement because of race, creed, color, national origin, marital status, sex, sexual orientation, age, disability, or other circumstance prohibited by federal, state, or local law or ordinance, except for a bona fide occupational qualification.

- 3.2 Consultant shall comply with and perform the Services in compliance with all federal, state, and local laws and ordinances, as now existing or hereafter adopted or amended.
- 3.3 Violation of this Paragraph III shall be a material breach of this Agreement and may result in ineligibility for further work for the City.

**4. TERM AND TERMINATION OF AGREEMENT**

- 4.1 This Agreement shall commence on the effective date of this Agreement and shall remain in effect until completion of the Services and final payment, but in any event, no later than (‘‘Term’’).
- 4.2 This Agreement may be terminated immediately by the City with or without cause. The Consultant may terminate this Agreement upon thirty (30) days written notice, in which event all finished or unfinished documents, reports, or other material or work of Consultant pursuant to this Agreement shall be submitted to City, and Consultant shall be entitled to just and equitable compensation at the rate set forth in Paragraph II for any satisfactory work completed prior to the date of termination.

**5. OWNERSHIP OF WORK PRODUCT**

All data, materials, reports, memoranda, and other documents developed under this Agreement whether finished or not shall become the property of City, shall be forwarded to City at its request and may be used by City as it sees fit. Consultant shall not be held liable for reuse of documents or modifications thereof by City or its representatives for any purpose other than the intent of this Agreement.

**6. GENERAL ADMINISTRATION AND MANAGEMENT**

The of the City of Mercer Island, or their designee, shall be City’s representative and shall oversee and approve all Services to be performed, coordinate all communications, and review and approve all invoices, under this Agreement.

**7. HOLD HARMLESS**

- 7.1 Consultant shall defend, indemnify, and save harmless the City, its officers, elected officials, agents, volunteers, and employees from any and all costs, claims, injuries, damages, losses, suits, judgments, or awards of damages (including costs and attorney fees), arising out of or in any way resulting from the acts, errors or omissions of Consultant, its officers, employees, and agents in performing this Agreement. However, should a court of competent jurisdiction determine that this Agreement is subject to RCW 4.24.115, then, in the event of liability for damages arising out of bodily injury to persons or damages to property caused by or resulting from the concurrent negligence of the Consultant and the City, its officers, officials, agents, employees, and volunteers, the Consultant's liability, including the duty and cost to defend, hereunder shall be only to the extent of the Consultant’s negligence. Consultant waives any immunity that may be granted to it under the Washington State Industrial Insurance Act, Title 51 RCW. This waiver has been mutually negotiated by the parties. Consultant's indemnification shall not be limited in any way by any

limitation on the amount of damages, compensation or benefits payable to or by any third party under workers' compensation acts, disability benefit acts or any other benefits acts or programs.

7.2 The provisions of this Section shall survive the expiration or termination of this Agreement.

## **8. INSURANCE**

8.1 Consultant agrees to carry and maintain insurance per this section for the duration of this Agreement. Such insurance, as a minimum, be in such form and with such carriers who have a current A.M. Best rating of not less than A:VII or other industry rating which is satisfactory to the City. The City, at its discretion, may require additional types and greater limits of insurance coverage commensurate with the risk associated with the performance of the Services.

- A. Workers' compensation and employer's liability insurance in amounts sufficient pursuant to the laws of the State of Washington.
- B. Commercial general liability insurance shall be at least as broad as Insurance Services Office (ISO) occurrence form CG 00 01 and shall cover liability arising from premises, operations, stop gap, independent contractors and personal injury and advertising injury. The City shall be named as an additional insured under the Consultant's Commercial General Liability insurance policy with respect to the work performed for the City using an additional insured endorsement at least as broad as ISO endorsement form CG 20 26. Commercial General Liability insurance shall be written with limits no less than \$2,000,000 each occurrence, \$2,000,000 general aggregate.
- C. Automobile liability insurance covering all owned, non-owned, hired, and leased vehicles. Coverage shall be at least as broad as Insurance Services Office (ISO) form CA 00 01. If necessary, the policy shall be endorsed to provide contractual liability coverage, with a minimum combined single limit for bodily injury and property damage of \$1,000,000 per accident.
- D. Professional liability insurance appropriate to the Consultant's profession with limits of no less than \$2,000,000 per claim and \$2,000,000 policy aggregate limit.

8.2 The insurance policies for Commercial General Liability and Automobile Liability shall contain the following endorsements or provisions:

- A. The Consultant's insurance coverage shall be primary insurance as respect the City. Any insurance, self-insurance, or insurance pool coverage maintained by the City shall be excess of the Consultant's insurance and shall not contribute with it.
- B. The Consultant shall provide the City with written notice of any policy cancellation within two business days of the Consultant's receipt of such notice. Consultant shall furnish the City with original certificates and a copy of the amendatory endorsements, including without limitation the additional insured endorsement evidencing the insurance requirement of the Consultant before commencement of the Services. Consultant's failure to maintain such insurance policies as required shall constitute a material breach of this Agreement, upon which the City may, after giving five business days' notice to the

Consultant to correct the breach, immediately terminate the Agreement or, at its discretion, procure or renew such insurance and pay any and all premiums in connection therewith, with any sums so expended to be repaid to the City on demand, or at the sole discretion of the City, offset against funds due the Consultant from the City.

- 8.3 If the Consultant maintains higher insurance limits than the minimums shown above, the City shall be insured for the full available limits of Commercial General and Excess or Umbrella liability maintained by the Consultant, irrespective of whether such limits maintained by the Consultant are greater than those required by this Agreement or whether any certificate of insurance furnished to the City evidences limits of liability lower than those maintained by the Consultant.
- 8.4 The Consultant's maintenance of insurance as required by this Agreement shall not be construed to limit the liability of the Consultant to the coverage provided by such insurance, or otherwise limit the City's recourse to any remedy available in law or in equity.
- 8.5 The Consultant shall furnish the City with original certificates and a copy of the amendatory endorsements, including but not necessarily limited to the additional insured endorsement, evidencing the insurance requirements of the Agreement before commencement of the Services under this Agreement.

#### **9. SUBLETTING OR ASSIGNING CONTRACT**

Neither City nor Consultant shall assign, transfer, or encumber any rights, duties or interests accruing from this Agreement without the express prior written consent of the other party.

#### **10. FUTURE SUPPORT**

City makes no commitment and assumes no obligations for the support of Consultant's activities except as set forth in this Agreement.

#### **11. INDEPENDENT CONTRACTOR**

Consultant is and shall be at all times during the term of this Agreement an Independent Contractor and the City shall be neither liable nor obligated to pay Consultant sick leave, vacation pay, or any other benefit of employment nor to pay any social security or other tax which may arise as an incident of employment. The Consultant shall pay all income and other taxes as due.

#### **12. NON-APPLICATION OF FUNDS**

If sufficient funds are not appropriated or allocated for payment under this Agreement for any future fiscal period, the City will not be obligated to make payments for Services or amounts after the end of the current fiscal periods, and this Agreement will terminate upon the completion of all remaining Services for which funds are allocated. No penalty or expense shall accrue to the City in the event this provision applies.

**13. GENERAL PROVISIONS**

This Agreement, and any Specifications, Addenda, and other Exhibits attached hereto, contain all of the agreements of the Parties with respect to any matter covered or mentioned in this Agreement. No provision of the Agreement may be amended or modified except by written agreement signed by the Parties. This Agreement shall be binding upon and inure to the benefit of the Parties' successors in interest, heirs, and assigns. Any provision of this Agreement which is declared invalid, or illegal shall in no way affect or invalidate any other provision. In the event either of the Parties defaults on the performance of any terms of this Agreement or either Party places the enforcement of this Agreement in the hands of an attorney, or files a lawsuit, each Party shall pay all its own attorney fees, costs, and expenses. The venue for any dispute related to this Agreement shall be King County, Washington. Failure of the City to declare any breach or default immediately upon the occurrence thereof, or delay in taking any action in connection with, shall not waive such breach or default. In the event of a conflict between Exhibit A, Scope of Services, and this Agreement, this Agreement shall be controlling. Time is of the essence of this Agreement and each and all of its provisions in which performance is a factor.

IN WITNESS WHEREOF, the parties have executed this Agreement on the \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_.

**CONSULTANT:**

**CITY:**

[INSERT FULL LEGAL NAME OF CONSULTANT]

CITY OF MERCER ISLAND

By: \_\_\_\_\_  
Name: [insert full legal name of signator]  
Title: [insert title of signator]

By: \_\_\_\_\_  
Jessi Bon  
City Manager

Tax ID No.

9611 SE 36th Street  
Mercer Island, WA 98040

Address:

Staff name:  
Staff phone:  
Staff email:

Phone:  
Email:

Approved as to form:

By: \_\_\_\_\_  
Bio Park  
City Attorney