

Stormwater Management Action Plan (SMAP) for the Olson Creek Catchment Area – Auburn, Washington

Prepared for



March 2023

Prepared by
Parametrix

Stormwater Management Action Plan (SMAP) for the Olson Creek Catchment Area – Auburn, Washington

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CITATION

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for the Olson Creek Catchment Area – Auburn, Washington.
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- A Receiving Water Assessment
- B Receiving Water Prioritization Technical Memorandum
- C MODA, Cost Benefit Analysis, and Roadway Treatment Analysis
- D Capital Improvement Project Summaries

ACRONYMS AND ABBREVIATIONS

B-IBI	Benthic-Index of Biotic Integrity
BMP	Best Management Practice
CIP	Capital Improvement Project
City	City of Auburn
Ecology	Washington State Department of Ecology
EPA	Environmental Protection Agency
IDDE	Illicit Discharge Detection and Elimination
MODA	Multi-Objective Decision Analysis
NPDES	National Pollutant Discharge Elimination System
Permit	Ecology NPDES Western Washington Phase II Municipal Stormwater Permit
SMA	Stormwater Management Action
SMAP	Stormwater Management Action Plan

1. INTRODUCTION

1.1 Purpose

This report documents the City of Auburn’s (City’s) Stormwater Management Action Plan (SMAP) for the Olson Creek Catchment Area, which has been selected by the City as the high-priority basin for selected stormwater actions. For this SMAP development process, the City has followed the elements outlined in the Washington State Department of Ecology (Ecology) National Pollutant Discharge Elimination System (NPDES) Western Washington Phase II Municipal Stormwater Permit (Permit) Section S5.C.1 – Stormwater Planning (Ecology 2019a).

The goal of the Olson Creek SMAP is to address impacts from existing or planned development on priority receiving waters. The SMAP includes the following elements:

- Receiving Water Assessment in accordance with NPDES Phase II Permit Section S5.C.1.d.i.
- Receiving Water Prioritization in accordance with NPDES Phase II Permit Section S5.C.1.d.ii.
- Stormwater Management Action Plan (SMAP) in accordance with NPDES Phase II Permit Section S5.C.1.d.iii.

The Receiving Water Assessment has been completed, and the results are documented in the Receiving Water Assessment (Parametrix 2022a; see Appendix A). The Receiving Water Prioritization has been completed and the results documented in the Receiving Water Prioritization Technical Memorandum (Parametrix 2022b; see Appendix B).

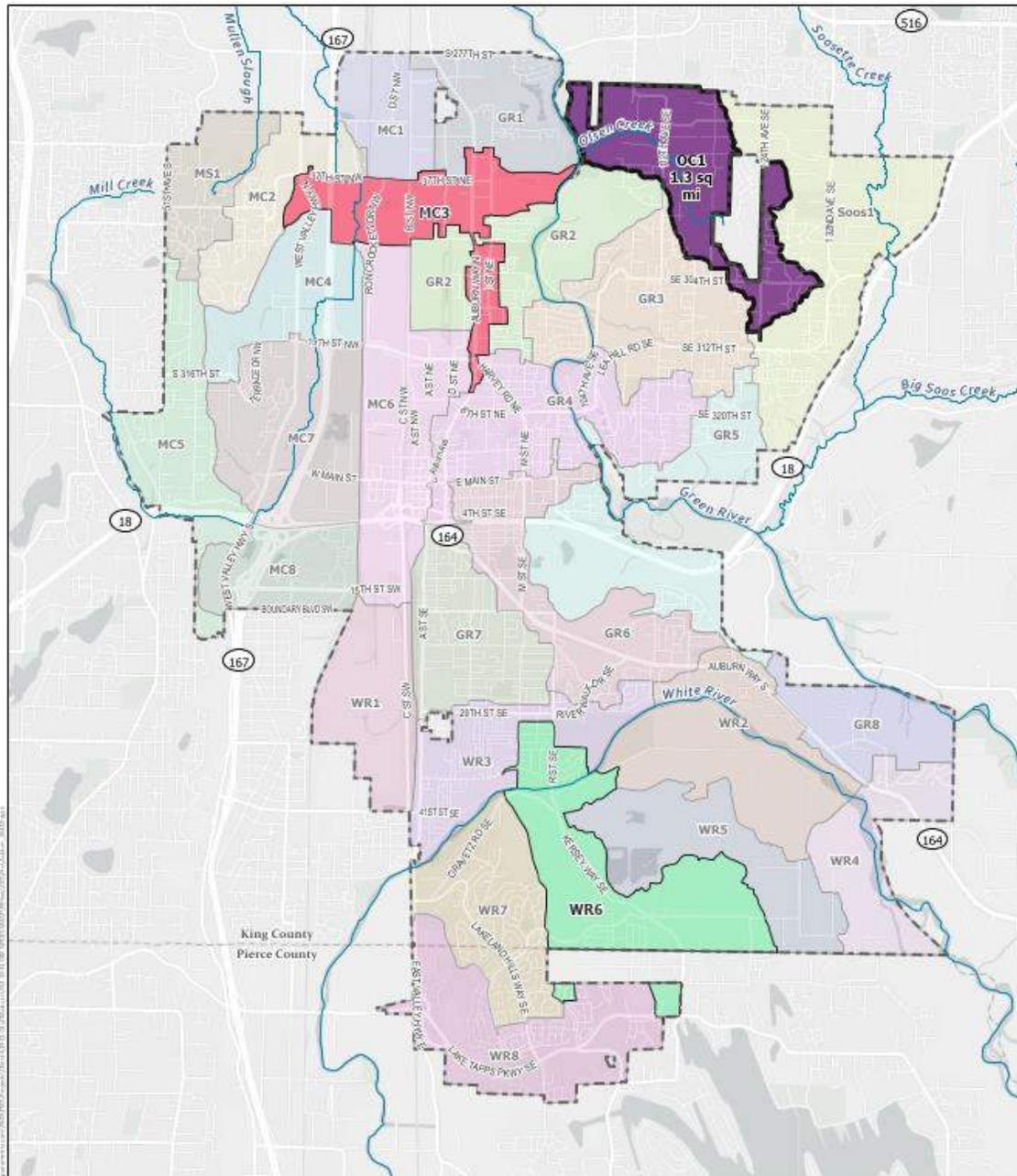
1.2 Selection of Priority Catchment Area

The Receiving Water Prioritization Technical Memorandum identified three high-priority catchment areas for the SMAP: Mill Creek 3, White River 6, and Olson Creek 1. The candidate priority catchment areas were advertised for public comment and evaluated by the City’s SMAP Interdisciplinary Team. Through review of all of the input, the City selected Olson Creek as the final SMAP high-priority catchment area (Figure 1). Key considerations regarding selection of the Olson Creek catchment area are as follows:

- The Olson Creek catchment area was shown to be more susceptible to degradation from future development during the FutureShed analysis described in the Receiving Water Prioritization Technical Memorandum.
- The Olson Creek catchment contains less than 30% impervious area throughout the basin and contains a benthic-index of biotic integrity (B-IBI) point at the outlet of the basin. In a summary from the Environmental Protection Agency (EPA), the physical, chemical, and biological parameters of urban streams decline with increased impervious cover. Several thresholds of stream health are reported between 1% and 40% impervious area. As such, decreasing the impervious area in a basin with a lower impervious area coverage (such as 30% to 20%) will have a greater impact on the B-IBI score than decreasing the impervious area in a basin with a higher amount of impervious area (such as 80% to 70% impervious area).

The Olson Creek catchment area surrounds a section of the City of Kent that is under consideration for annexation. However, the section belonging to the City of Kent is fully treated and will not require immediate considerations for stormwater improvements.

Stormwater Management Action Plan (SMAP) for the Olson Creek Catchment Area – Auburn, Washington
 City of Auburn



Date: 2/22/2023
 Sources: City of Auburn, King County, Pierce County, WA Ecology, WA DNR, USGS, ESRI
 Disclaimer: This product is for informational purposes and may not have been prepared for, or be suitable for legal, engineering, or surveying purposes.

- Auburn City Limits
- Major Stream
- Selected Priority Catchment**
- Olson Creek 1
- Other Identified Priority Catchments
- White River 6
- Mill Creek 3

Figure 1
 Selected High-Priority Catchment Area
 Stormwater Management Action Plan
 (SMAP) for Olson Creek 1



Auburn, WA

Figure 1. Selected High-Priority Olson Creek Catchment Area

2. STORMWATER MANAGEMENT ACTIONS OVERVIEW

The City’s planned stormwater management actions (SMAs) for Olson Creek are summarized below in Table 1 and described in detail in the sections that follow.

Table 1. Proposed Stormwater Management Actions

Proposed SMA		Budget	Implementa tion Schedule	Future Assessment Frequency
Stormwater Facility Retrofits				
Short-Term	CIP 1 - SE 287th St Road Retrofit	\$382,000	2024	Every year
	CIP 2 - SE 284th St and 109th Ave SE Road Retrofit	\$143,000	2027	Every year
	CIP 3 - SE 284th St West Road Retrofit	\$52,000	2029	Every year
Long-Term	CIP 4 - SE 284th St East Road Retrofit	\$28,000	2031	Every year
	CIP 5 - 124th Ave SE near SE 293rd St Road Retrofit	\$581,000	2033	Every year
	CIP 6 - Vintage Hills Existing Facility Retrofit	\$264,000	2036	Every year
	CIP 7 - 124th Ave SE near SE 302nd PI Road Retrofit	\$531,000	2038	Every year
	CIP 8 - 124th Ave SE near SE 307th PI Road Retrofit	\$531,000	2041	Every year
Land Management/Development Strategies				
Short-Term	Review mechanisms to transfer development density from higher-value areas of the catchment to other parts of the basin	TBD	2025	One time in short-term cycle
	Review stream buffer requirements for Olson Creek and consider updating protections	TBD	2026	One time in short-term cycle
	Initiate a floodplain study on Olson Creek and provide protection measures based on the study	TBD	2029	One time in short-term cycle
Long-Term	Identify high-value stream segments and stream elements (floodplains, buffer, riparian wetlands, basin wetlands) for restoration projects	TBD	2031	One time in long-term cycle
Tailored Stormwater Management Program				
Short-Term	Source Control – A source control program was started in 2023. Will continue to review the program as inspections and actions are identified and potentially broaden inspection inventory	TBD	2025	Every 2 years
	Operations and Maintenance – Review and consider expansion of the street sweeping program	TBD	2027	Every 5 years
Long-Term	Enhanced Maintenance – Develop improvements to the ditch maintenance program to improve water quality treatment and/or increase conveyance capacity in roadside ditches	TBD	2031	One time in long-term cycle

The column titled Implementation Schedule describes whether the project is planned to be implemented in the short term (0 to 6 years) or the long term (7 to 20 years).

The column titled Future Assessment Frequency is included in response to Permit Section S5.C.1.d.iii.(f), which requires the SMAP to include the following:

A process and schedule to provide future assessment and feedback to improve the planning process and implementation of procedures or projects.

All descriptions and details of the SMAs in this report are at the preliminary assessment level and will be updated as the SMA development progresses.

3. STORMWATER FACILITY RETROFITS

3.1 Requirement

Permit Section S5.C.1.d.iii.(a) requires the SMAP to include projects that improve stormwater quality through retrofitting developed areas that do not have stormwater management and retrofitting existing treatment facilities or areas with upgrades to current stormwater control practices. The City would, in assessing proposed site or facility retrofitting, establish the feasibility and the available potential benefits for each candidate retrofit. The projects would then be prioritized as short- and long-term actions.

3.2 Screening Methodology

The City has selected stormwater facility retrofit projects for the Olson Creek SMAP based on the process described below.

Step 1. Stormwater Management Coverage Assessment

The City's existing stormwater management "treatment coverage" was mapped throughout the Olson Creek Basin (Figure 2). The treatment coverage was identified using best available information, such as stormwater facilities, stormwater facility age, parcel age, drainage systems, and topography. The treatment coverage was divided into three categories: *no management* (no identified treatment in the area), *vintage* (all identified treatment was built before 2012), and *current standards* (all identified treatment was built after 2012 and, therefore, was designed to forested predeveloped conditions, as described in the Ecology Stormwater Management Manual for Western Washington; Ecology 2019b). More information about the treatment coverage categories can be found in Appendix B. These treatment coverage areas were then evaluated for retrofit opportunities based on the following criteria:

- Developed areas with no stormwater management.
- Developed areas with existing vintage stormwater management.
- Arterial roadways not generally affiliated with development projects with available right-of-way.
- Large, single-purpose development, such as schools.
- Areas receiving significant urban stormwater runoff where treatment could be consolidated.

Lands generally excluded from consideration for retrofitting were categorized as not needing controls or low priority. These were categorized and not further assessed, and they include those lands not usually responsible for urban stormwater runoff, including the following:

- Redevelopable lands – Underdeveloped parcels that will have current stormwater management when redeveloped or rural low-development-density lands that do not require stormwater management (Figure 2).
- Future Planned lands – Planned development that will provide current stormwater management (Figure 2).
- Critical areas, stream buffer, wetlands, and floodplains (although no floodplains are mapped the Olson Creek catchment).
- Intact upland forest.

This stormwater management coverage assessment provides a method to continue retrofitting the Olson Creek Basin after the SMAP process until all treatment coverage gaps within the basin are addressed and either meet current standards or do not need stormwater controls. From this assessment, 30 sites were identified for potential retrofitting.

Step 2. Candidate Project Screening

A high-level feasibility screening was conducted on the 30 potential retrofit sites by members of the City’s Interdisciplinary Team in order to narrow down potential project opportunities. The screening criteria was based on the following site attributes: ability to be executed with minimal delay (e.g., the land or facility is owned by the City), known obstacles to implementing the project at this time, and low potential benefits or small catchments with low impacts (generally less than 1 to 2 impervious acres). Through this screening, 11 preferred sites (listed in Appendix C) were selected to move on to a multi-objective decision analysis (MODA), detailed in Step 3.

Step 3. MODA, Cost Benefit Analysis, and Roadway Treatment Analysis

A multi-objective decision analysis (MODA) is a process used to help make decisions on complex issues involving multiple criteria and multiple invested parties. Through the MODA process, the City was able to consider and weigh certain factors while evaluating each alternative to help decide on a recommendation.

The first step of the MODA process was to determine and weight project criteria. Then each alternative was rated based on these criteria. Next, the rating factors for each alternative were multiplied with the weights of each criterion to determine the points earned by each project in each category. These points were then summed to produce the Total Weighted Criteria Points for each project. The Total Weighted Criteria Points helped inform which projects best meet plan objectives and could provide the overall highest benefit based on the criteria.

Following these MODA steps, the projects were ranked using a preliminary cost benefit analysis. To examine the benefits of each project even further, the City also compared the amount of treated roadway each project would provide. The complete results of the MODA, cost benefit, and treated roadway analyses can be found in Appendix C. Based on these analyses, the City is moving forward with 8 of the highest ranking 11 projects across all categories. These eight projects and their locations are listed in Table 2 below and detailed in Table 4, Table 5, and Appendix D. Opportunities for earlier implementation of any of the projects listed will be evaluated during the City’s capital planning process.

Table 2. Projects Chosen for Implementation

CIP Identifier	Project	Retrofit Type	Description
CIP 1	SE 287th St	Road Retrofit	Adding a manufactured treatment device to the end of SE 287th to provide enhanced water quality treatment for 7.3 acres
CIP 2	SE 284th St and 109th Ave SE	Road Retrofit	Adding two bioretention swales to the corner of SE 284th St and 109th Ave SE to provide basic water quality treatment for 20.6 acres
CIP 3	SE 284th St West	Road Retrofit	Adding two bioretention swales to SE 284th near 112th Ave SE—one on the north side of the road and one on the south side of the road—to provide basic water quality treatment for 2.2 acres
CIP 4	SE 284th St East	Road Retrofit	Adding one bioretention swale to the south side of SE 284th St near 118th Ave SE to provide basic water quality treatment for 1.8 acres
CIP 5	124th Ave SE near SE 293rd St	Road Retrofit	Adding manufactured treatment devices to 124th Ave SE to provide enhanced water quality treatment for 14.1 acres
CIP 6	Vintage Hills	Existing Facility Retrofit	Retrofitting the existing Vintage Hills swale (located on 124th Ave SE just north of SE 296th Way) to a bioretention best management practice to provide enhanced water quality treatment for 5.0 acres
CIP 7	124th Ave SE near SE 302nd Pl	Road Retrofit	Adding manufactured treatment devices to 124th Ave SE to provide enhanced water quality treatment for 2.9 acres
CIP 8	124th Ave SE near SE 307th Pl	Road Retrofit	Adding manufactured treatment devices to 124th Ave SE to provide enhanced water quality treatment for 5.9 acres

3.3 Selected Project Prioritization and Implementation

3.3.1 Project Descriptions

For those projects that remain after the MODA (Appendix C), capital project descriptions were developed to include background information, treatment area, preliminary design, best management practice (BMP) type, and planning-level cost (Appendix D).

3.3.2 Planning Horizon Selection and Prioritization

The pacing of project implementation is based on available staff resources, funding levels, and total cost of the program over the short-term (6-year) and long-term (20-year) planning horizons. The estimated capacity for delivery is based on available funding and project timeline.

The project timeline is a high-level estimate that was approximated using professional judgment and similar project timelines. These estimates were only used to help approximate the likely capacity to deliver projects in the SMAP timeframe (20 years). Based on the estimated timeline for the staff resources to plan, design, and construct a project (see Table 3), it is feasible to complete a project every 2 to 3 years. This means three projects in the short term (0 to 6 years) and five projects in the long term (7 to 20 years) could be implemented.

Table 3. Estimated Project Timelines

Project	Estimated Project Timeline (Months)					Total Years
	Project Evaluation	Preliminary Design	Final Design	Permitting	Construction	
CIP 1 – SE 287th St	0.25	0.25	1	0.75	0.5	3
CIP 2 – SE 284th St and 109th Ave SE	0.25	0.25	0.75	0.5	0.25	2
CIP 3 – SE 284th West	0.25	0.25	0.75	0.5	0.25	2
CIP 4 – SE 284th East	0.25	0.25	0.75	0.5	0.25	2
CIP 5 – SE 124th St near SE 293rd St	0.25	0.25	1	0.75	0.5	3
CIP 6 – Vintage Hills	0.25	0.25	0.75	0.5	0.25	2
CIP 7 – 124th Ave SE near SE 302nd Pl	0.25	0.25	1	0.75	0.5	3
CIP 8 – 124th Ave SE near SE 307th Pl	0.25	0.25	1	0.75	0.5	3

Three projects were prioritized for the first 6 years based on their MODA score, cost, and location. The capital and construction costs to deliver the three prioritized projects in the short term is \$577,000 (see Opinions of Probable Cost in Appendix D). The capital and construction costs to deliver the five prioritized projects in the long term is \$1,935,000 in 2023 dollars (see Opinions of Probable Cost in Appendix D). This will require approximately \$96,200 (in 2023 dollars) of capital budget on average each year in the first 6 years and \$138,200 (in 2023 dollars) of budget per year in the last 14 years. The City will review the list of stormwater facility retrofits each year of its capital programming update process and make revisions based on available funding and staff resources.

3.3.3 Short-Term (Years 1 to 6) Implementation Plan

Stormwater retrofits planned for the short-term horizon from 2024 to 2030 (0 to 6 years) and their tributary areas are summarized below in Table 4, shown in the map in Figure 3, and detailed in Appendix D.

Table 4. Short-Term Stormwater Facility Retrofits

Project Name	Description of BMP ¹	Tributary Area ² (acres)	Cost & Potential Funding	Schedule	Future Assessment Considerations
<i>Future Assessment note: All listed stormwater facility retrofits are contingent on site feasibility confirmation, permitting constraints, and staff and funding resources.</i>					
CIP 1 – SE 287th St	Road Retrofit – enhanced water quality	7.3	\$382,000	2024	Every year
CIP 2 – SE 284th St and 109th Ave SE	Road Retrofit – basic water quality	20.6	\$143,000	2027	Every year
CIP 3 – SE 284th West	Road Retrofit – basic water quality	2.2	\$52,000	2029	Every year

1. BMP = best management practice
2. The objective of the facility retrofits is to treat as much of the tributary area as possible; however, the final treatment area will be determined through advanced project design based on available facility footprint.

3.3.4 Long-Term (Years 7 to 20) Implementation Plan

Stormwater facility retrofits planned for the long-term horizon from 2031 to 2044 (7 to 20 years) and their tributary areas are summarized below in Table 5, shown in the map in Figure 3, and detailed in Appendix D.

Table 5. Long-Term Stormwater Facility Retrofits

Project Name	Description of BMP ¹	Tributary Area ² (acres)	Cost & Potential Funding	Schedule	Future Assessment Considerations
<i>Future Assessment note: All listed stormwater facility retrofits are contingent on site feasibility confirmation, permitting constraints, and staff and funding resources.</i>					
CIP 4 – SE 284th East	Road Retrofit – basic water quality	1.8	\$28,000	2031	Every year
CIP 5 – 124th Ave SE near SE 293rd St	Road Retrofit – enhanced water quality	14.1	\$581,000	2033	Every year
CIP 6 – Vintage Hills	Existing Facility Retrofit – enhanced water quality	5.0	\$264,000	2036	Every year
CIP 7 – 124th Ave SE near SE 302nd Pl	Road Retrofit – enhanced water quality	2.9	\$531,000	2038	Every year
CIP 8 – 124th Ave SE near SE 307th Pl	Road Retrofit – enhanced water quality	5.9	\$531,000	2041	Every year

1. BMP = best management practice
2. The objective of the facility retrofits is to treat as much of the tributary area as possible; however, the final treatment area will be determined through advanced project design based on available facility footprint.

4. LAND MANAGEMENT AND DEVELOPMENT STRATEGIES

4.1 Requirement

Permit Section S5.C.1.d.iii.(b) requires the SMAP to include the following:

Land management/development strategies and/or actions identified for water quality management.

One approach to receiving water protection is minimizing stormwater impacts before they can occur by redirecting or locating development and land conversion (e.g., impervious surface conversions or native vegetation removal) through land use policies. Strategies and policies for this approach can be a component of the action plan, which is especially important in the Olson Creek catchment area because it is not a fully developed watershed and contains a relatively small stream with good water quality.

4.2 Screening Methodology

Members of the City's Interdisciplinary Team reviewed potential land management and development strategies and considered actions that could most readily and reasonably be implemented to benefit the Olson Creek catchment area. Elements reviewed by the City included the following:

1. **Growth management:** Coordinating between City departments to update comprehensive plans across the City in ways that include long-range stormwater management and pollution-reducing strategies.
2. **Developer incentives:** Instituting incentives for developers to encourage designs that minimize impacts to natural waters.
3. **Code updates:** Reviewing the existing City ordinances and codes for potential updates to development requirements that help prevent pollution-generation.
4. **City policies:** Updating City policies for land development to promote better stormwater management practice.

4.3 Identified Actions

4.3.1 Short-Term Actions

Land and development management actions planned for the short-term horizon from 2024 to 2030 (0 to 6 years) are summarized below in Table 6. All proposed actions are included in the implementation plan. The cost and resources for the actions will be estimated closer to when the action is implemented.

Table 6. Short-Term Land Management Actions

Action	Schedule	Future Assessment Considerations
Review mechanisms to transfer development density from higher value areas of the catchment to other parts of the basin	2025	One time in short-term cycle
Review stream buffer requirements for Olson Creek, and consider updating protections	2026	One time in short-term cycle
Initiate a floodplain study on Olson Creek, and provide protection measures based on the study	2029	One time in short-term cycle

4.3.2 Long-Term Actions

Land and development management actions planned for the long-term horizon from 2030 to 2043 (7 to 20 years) are summarized below in Table 7.

Table 7. Long-Term Land Management Actions

Action	Schedule	Future Assessment Considerations
Identify high-value stream segments and stream elements (floodplains, buffer, riparian wetlands, basin wetlands) for restoration projects	2031	One time in long-term cycle

5. TAILORED STORMWATER MANAGEMENT PROGRAM

5.1 Requirement

Permit Section S5.C.1.d.iii.(c) requirements for the SMAP are as follows.

Targeted, enhanced, or customized implementation of stormwater management actions related to permit sections within S5, including:

- *IDDE field screening,*
- *Prioritization of Source Control inspections,*
- *O&M inspections or enhanced maintenance, or*
- *Public Education and Outreach behavior change programs.*

Identified actions shall support other specifically identified stormwater management strategies and actions for the basin overall, or for the catchment area in particular.

5.2 Screening Methodology

The City’s Utility staff reviewed the existing stormwater management program components and selected elements that could be enhanced to benefit the Olson Creek catchment area. Elements reviewed by the City included those listed in Permit Section S5.C.1.d.iii.(c). There will be a limited direct cost to implement these programs; however, there will be resource needs for City staff.

5.3 Selection Actions

5.3.1 Short-Term Actions

Tailored stormwater management program actions planned for the short-term horizon from 2024 to 2030 (0 to 6 years) are summarized below in Table 8.

Table 8. Short-Term Tailored Stormwater Management Program Actions

Permit Category	Action	Schedule	Future Assessment Considerations
Source Control	A source control program was started in 2023. Businesses operating within the basin will be evaluated for prioritized inspection and outreach.	2025	Every 2 years
Operations and Maintenance	Review and consider expansion of the street sweeping program	2027	Every 5 years
Education and Outreach	Enhance the current elementary education outreach program with additional materials focus on the topics of water resources, stormwater, and stream health.	2025	Every 5 years

5.3.2 Long-Term Actions

Tailored stormwater management program actions planned for the long-term horizon from 2031 to 2044 (7 to 20 years) are summarized below in Table 9.

Table 9. Long-Term Tailored Stormwater Management Program Actions

Permit Category	Action	Schedule	Future Assessment Considerations
Enhanced Maintenance	Develop a ditch maintenance program to improve water quality treatment and/or increase conveyance capacity in roadside ditches	2031	Every 5 years

6. LONG-RANGE PLANS

6.1 Requirement

Permit Section S5.C.1.d.iii.(e) requires the SMAP to include the following:

Identification of changes needed to local long-range plans, to address SMAP priorities.

6.2 Identified Long-Range Plan Coordination

The City has identified the following long-range plans and those needed for coordination throughout the implementation of the Olson Creek SMAP:

- City of Auburn Comprehensive Plan – Incorporate the SMAP into the next update of the Comprehensive Plan by reference.
- Parks, Arts, and Recreation – Evaluate stormwater management options related to parks and recreation for inclusion in the next update of the Parks and Recreation Open Space Plan.
- Comprehensive Storm Drainage Plan – Includes additional capital projects, program resource needs, new stormwater management policies, and asset management.

7. SCHEDULE AND BUDGET

7.1 Requirement

Permit Section S5.C.1.d.iii.(e) requirements for the SMAP are as follows.

A proposed implementation schedule and budget sources for:

- *Short-term actions (i.e., actions to be accomplished within 6 years, or from 2024 to 2030), and*
- *Long-term actions (i.e., actions to be accomplished within 7 to 20 years, or from 2031 to 2044).*

7.2 Estimated Schedules and Budgets

Estimated scheduled and budgets are listed above for each proposed SMA in Sections 3 through 5 of this report and summarized below in Figure 4.

Short Term Implementation Schedule

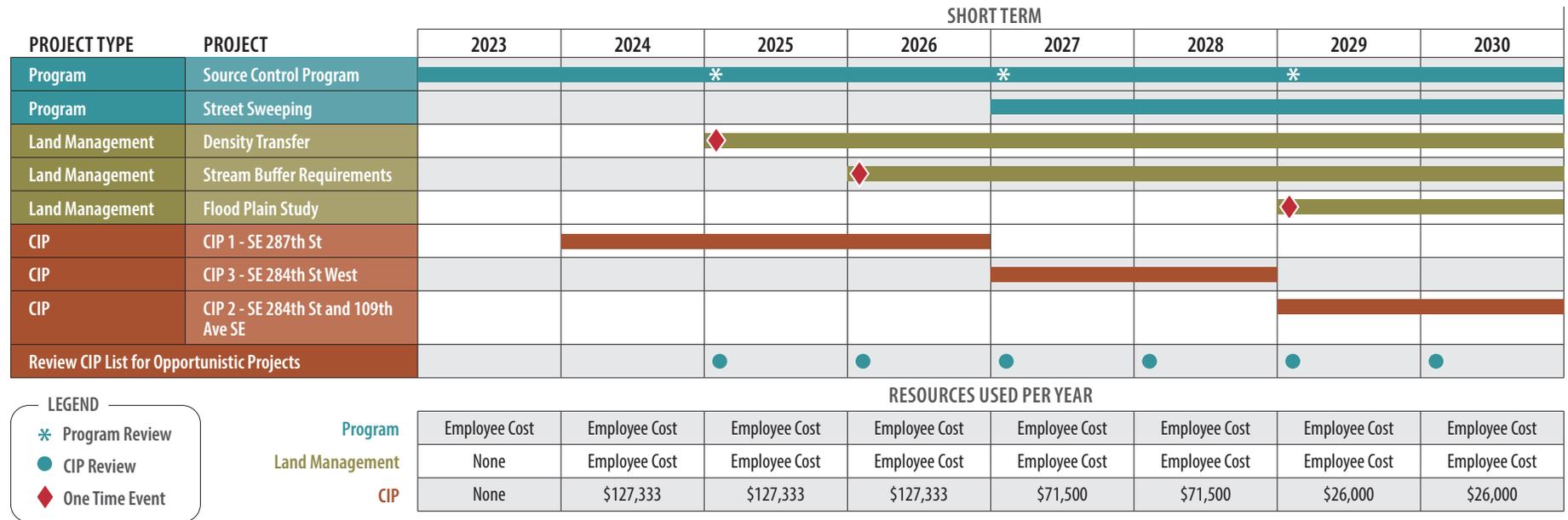


Figure 4. Short-Term Schedule

7.3 Potential Grant Funding

The City is tracking the grant opportunities outlined below in Table 10 and may apply for funding for projects identified in this SMAP.

Table 10. Potential Grant Opportunities Applicable to SMAs

Program Name	Description
Washington State Department of Ecology	
Coastal Protection Fund – Terry Husseman Account	Support locally sponsored projects that restore or enhance the environment and provide primary benefits to public land or water resources and affiliated infrastructure.
Streamflow Restoration Competitive Grants	Help state and local agencies, Tribal governments, and nonprofit organizations implement local watershed plans and projects to improve streamflow and aquatic resources.
Water Quality Combined Funding Program	Integrated funding program for projects that improve and protect water quality. The program combines grants and loans from state and federal funding sources and provides technical assistance in navigating the process.
Integrated Planning Grants	These grants provide funding to local governments to conduct assessments of brownfield properties and develop integrated project plans for their cleanup and adaptive reuse.
Stormwater Capacity Grants Program	Awarded to NPDES municipal stormwater permittees to implement their municipal stormwater programs as outlined in the municipal stormwater permits.
Washington State Recreation and Conservation Office	
Aquatic Lands Enhancement Account	Used for the acquisition, improvement, or protection of aquatic lands for public purposes. They also may be used to provide or improve public access to the waterfront.
Habitat Conservation Projects – Washington Wildlife and Recreation Program	Funding for a broad range of land conservation efforts.
Land and Water Conservation Fund	The Land and Water Conservation Fund provides funding to preserve and develop outdoor recreation resources, including parks, trails, and wildlife lands.
Recreation Projects – Washington Wildlife and Recreation Program	Provides funding for a broad range of land protection and outdoor recreation, including park acquisition and development, habitat conservation, farmland preservation, and construction of outdoor recreation facilities.
Salmon Recovery and Puget Sound Acquisition and Restoration	Used to restore degraded salmon habitat and protect existing, high-quality habitat to increase the amount and overall health of the places salmon live.

8. FUTURE ASSESSMENT

Permit Section S5.C.1.d.iii.(f) requires the SMAP to include the following:

A process and schedule to provide future assessment and feedback to improve the planning process and implementation of procedures or projects.

8.1 SMAP Evaluation Schedule

Each SMA identified in this plan will be reviewed based on the schedule outlined in Table 1.

8.2 SMAP Evaluation Process

During each review, the Future Assessment considerations listed in Tables 2 through 7 for each SMA will be evaluated. In addition, the status of the following progress metrics will be reviewed and documented:

1. Review the short- and long-term plans for updates on a regular basis (listed in each corresponding table).
2. Prepare a treatment coverage assessment. Identify and update changes every 2 years, including new development projects, implemented SMA projects, and other changes in protected or treated land areas.
3. Track the B-IBI scores over time and into the future against catchment project and program implementation. Complete a post-short-term evaluation (in approximately Year 8 [2032]) and additional evaluations approximately annually from Year 6 through Year 20.
4. Review and update the SMAP capital project schedule with the stormwater capital program schedule. Review for new coordinated and opportunistic projects.

9. CONCLUSION

The City identified the SMAs in this Olson Creek SMAP to address impacts from existing or planned development and provide improvements to the Olson Creek catchment area. All descriptions and details of the SMAs in this report are at the preliminary engineering level and may change as development of the SMAs progress. Implementation of these proposed actions will be tracked, evaluated, and updated through the future assessment process described above in the previous section to support continued progress toward protection and improvement of Olson Creek.

10. REFERENCES

- Ecology (Washington State Department of Ecology). 2019a. Western Washington Phase II Municipal Stormwater Permit – National Pollutant Discharge Elimination System (NPDES) and State Waste Discharge General Permit for Discharges from Small Municipal Separate Storm Sewers in Western Washington. Issuance Date: July 1, 2019; Effective Date: August 1, 2019; Expiration Date: July 31, 2024. Washington State Department of Ecology. Olympia, WA.
- Ecology. 2019b. 2019 Stormwater Management Manual for Western Washington (Ecology Manual). Publication No.19-10-021. Washington State Department of Ecology. Olympia, WA. Available at <https://fortress.wa.gov/ecy/ezshare/wq/Permits/Flare/2019SWMMWW/2019SWMMWW.htm>.
- EPA (U.S. Environmental Protection Agency). 2022. Urbanization – Stormwater Runoff. Available at <https://www.epa.gov/caddis-vol2/urbanization-stormwater-runoff>.
- Parametrix. 2022a. Receiving Water Assessment. Prepared for the City of Auburn by Parametrix, Seattle, WA.
- Parametrix. 2022b. Receiving Water Prioritization Technical Memorandum. Prepared for the City of Auburn by Parametrix, Seattle, WA.

Appendix A

Receiving Water Assessment



For size considerations, the Receiving Water Assessment is not reproduced in this copy of the SMAP. It can be viewed separately through the city's SMAP website.

Appendix B

Receiving Water Prioritization Technical Memorandum



For size considerations, the Receiving Water
Prioritization is not reproduced in this copy
of the SMAP. It can be viewed separately
through the city's SMAP website.

Appendix C

MODA, Cost Benefit Analysis, and
Roadway Treatment Analysis



Appendix C – MODA

To determine the order of implementation for the capital improvement projects, the Utility team at the City of Auburn worked with consultant Parametrix to perform a multi objective decision analysis (MODA).

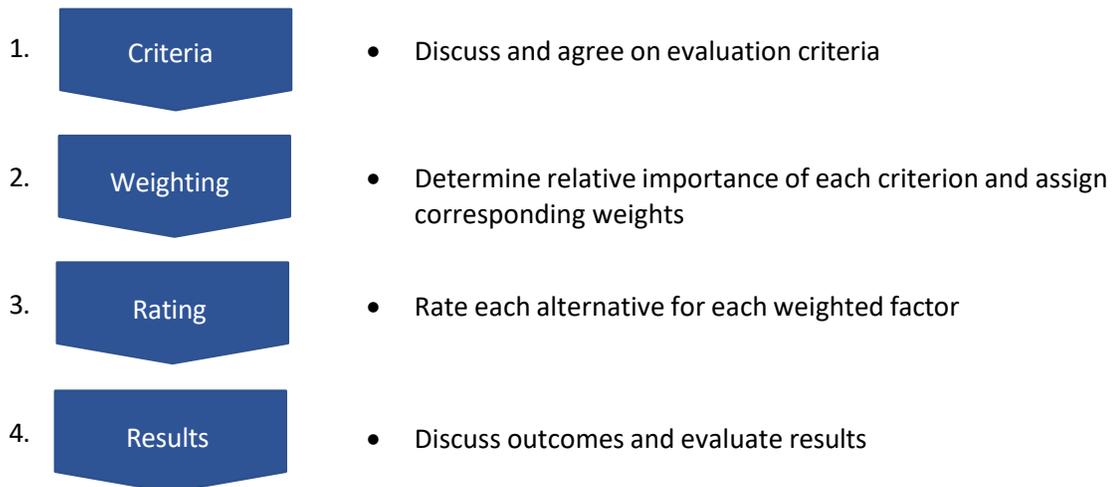
Below are the names and titles of those who participated in the Auburn Olson Creek Stormwater Management Action Plan Projects meeting held with Public Works leaders to decide which retrofit projects to move ahead with in the plan:

Tim Carlaw – Storm Drainage Engineer

Chris Thorn – Water Quality Programs Coordinator

Michael Murray – Associate Storm Drainage Engineer

MODA is a process used to help make decisions on complex issues involving multiple criteria and multiple invested parties. Through the MODA process, the City was able to consider and weigh certain factors while evaluating each alternative to help decide on a recommendation. The MODA process the City followed is as follows:



Criteria

The criteria were chosen after reviewing SMAP requirements, typical capital improvement project considerations, and environmental impacts. The criteria chosen were:

- **Structural Stormwater Control (SSC) Points** – refers to a method of assigning points to stormwater projects based on their potential to prevent or reduce impacts to waters of the state. This method was outlined by the Washington State Department of Ecology for all Phase I Municipal Stormwater permittees. Projects with greater SSC point potential were given higher scores.
- **Benefit to Basin** – the percentage of the Olson Creek basin impervious area treated by the project and type of treatment.

- **Uncertainty** – perceived risks to project timeline and cost.
- **Maintenance** – difficulty of upkeeping each site. The score is based on maintenance difficulty or frequency, costs of maintaining similar facilities on an annual basis.

Weighting

Once all relevant criteria were determined, each category was assigned a weight on a scale of 1 to 10 to determine its relative importance. Uncertainty was determined to hold the highest importance to help ensure projects are readily implementable in the short term. All criteria weights can be found in Table C-1.

Rating

Each alternative was then assigned a rating for each criterion relative to each other.

Results

Once all the alternatives were rated, the rating factors for each alternative were multiplied with the weights of each criterion to determine the points earned by each project in a given category. These points were then summed to produce the Total Weighted Criteria Points for each project. The Total Weighted Criteria Points help inform which project provides the overall highest **benefit** based on the criteria. The MODA analysis is shown in Table C-1.

Table C-1. Proposed Alternatives for SMAP

Projects	Weight	Ridge at Willow Park Tr. C		Ridge at Willow Park Tr. B		Vintage Hills		SE 287th St		124th Ave SE and SE 307th PI		124th Ave SE and SE 302nd PI		124th Ave SE and SE 293rd St		SE 284th St and 109th Ave SE		SE 284th St West		SE 284th St East		SE 284th St	
		Rating	Points	Rating	Points	Rating	Points	Rating	Points	Rating	Points	Rating	Points	Rating	Points	Rating	Points	Rating	Points	Rating	Points	Rating	Points
SSC Points	4	5	20	9	36	4	16	6	24	5	20	3	12	8	32	10	40	2	8	1	4	7	28
Benefit to Basin	1	3	3	3	3	1	1	8	8	7	7	6	6	10	10	5	5	4	4	4	4	9	9
Uncertainty	10	1	10	1	10	3	30	5	50	5	50	5	50	5	50	10	100	10	100	10	100	5	50
Maintenance	7	10	70	9	63	10	70	5	35	5	35	5	35	5	35	1	7	2	14	2	14	5	35
Total Weighted Criteria Points:	22	103		112		117		117		112		103		127		152		126		122		122	
Percent of All Possible:		47%		51%		53%		53%		51%		47%		58%		69%		57%		55%		55%	

Cost Benefit Analysis

The results from the MODA were then used to complete a high-level cost benefit analysis before official cost estimates were performed on the projects. The cost of each project was estimated using professional judgment based on similar facilities (see Table C-2).

The costs of the project were ranked from low cost to high cost and organized on a scale from 10 to 1, with 10 being the lowest cost and 1 being the highest cost, as shown in Table C-2. The cost points were then multiplied by the benefit points determined in the MODA to calculate the cost benefit of each project. This cost benefit metric is referred to as the value of the project.

Table C-2. Cost Benefit Analysis

Project	Cost		Points	Cost Benefit
Vintage Hills Swale Retrofit	Low	10	117	1170
SE 284th St and 109th Ave SE Road Retrofit	Low Med	6	152	912
SE 284th St West Road Retrofit	Low Med	6	126	756
SE 284th St Bioswale East Road Retrofit	Low Med	6	122	732
SE 287th St Road Retrofit	Low Med	6	117	702
124th Ave SE near SE 293rd St Road Retrofit	Med High	4	127	508
SE 284th St Road Retrofit	Med High	4	122	488
124th Ave SE near SE 307th Pl Road Retrofit	Med High	4	112	448
124th Ave SE near SE 302nd Pl Road Retrofit	Med High	4	103	412
Ridge at Willow Park TR B Pond Retrofit	High	1	112	112
Ridge at Willow Park TR C Pond Retrofit	High	1	103	103

The results of the cost benefit analysis showed that Vintage Hills, SE 284th Street Bioswale 1, and SE 284th Street Bioswale 2 have the highest cost benefit.

Road Treatment Analysis

The mileage of roadway treatment to be gained by each potential project was then measured and added to Table C-3.

Table C-3. Road Treatment

Project	Mileage of Road Treatment
SE 284th St and 109th Ave SE Road Retrofit	0.50
Ridge at Willow Park TR B Pond Retrofit	0.50
124th Ave SE near SE 302nd Pl Road Retrofit	0.30
124th Ave SE near SE 307th Pl Road Retrofit	0.24
SE 284th St Road Retrofit	0.23
Vintage Hills Swale Retrofit	0.20
SE 284th St East Road Retrofit	0.20
Ridge at Willow Park TR C Pond Retrofit	0.16
124th Ave SE near SE 293rd St Road Retrofit	0.15
SE 284th St West Road Retrofit	0.14
SE 287th St Road Retrofit	0.13

Results

Based all three analyses, the City has decided to move forward with eight projects listed in Table C-4. Each project was assigned a Capital Improvement Project (CIP) Identifier. The three projects removed were Ridge at Willow Park TR C (scored lowest in MODA and Cost Benefit Analysis), Ridge at Willow Park TR B (scored low in MODA and second lowest in Cost Benefit Analysis), and SE 284th Road Retrofit (scored medium in MODA and Cost Benefit Analysis but ranked worse than 124th Avenue SE Near SE 302nd Pl and 124th Avenue SE near SE 307th Pl in Mileage of Road Treatment).

Table C-4. Projects Chosen for Implementation

Project:	Implementation Schedule
CIP 1 - SE 287th St Road Retrofit	Short Term
CIP 2 - SE 284th St and 109th Ave SE Road Retrofit	Short Term
CIP 3 - SE 284th St West Road Retrofit	Short Term
CIP 4 - SE 284th St East Road Retrofit	Long Term
CIP 5 - 124th Ave SE near SE 293rd St Road Retrofit	Long Term
CIP 6 - Vintage Hills Swale Retrofit	Long Term
CIP 7 - 124th Ave SE near SE 302nd Pl Road Retrofit	Long Term
CIP 8 – 124th Ave SE near SE 307th Pl Road Retrofit	Long Term

Detailed information for each of the proposed projects is in Appendix D.

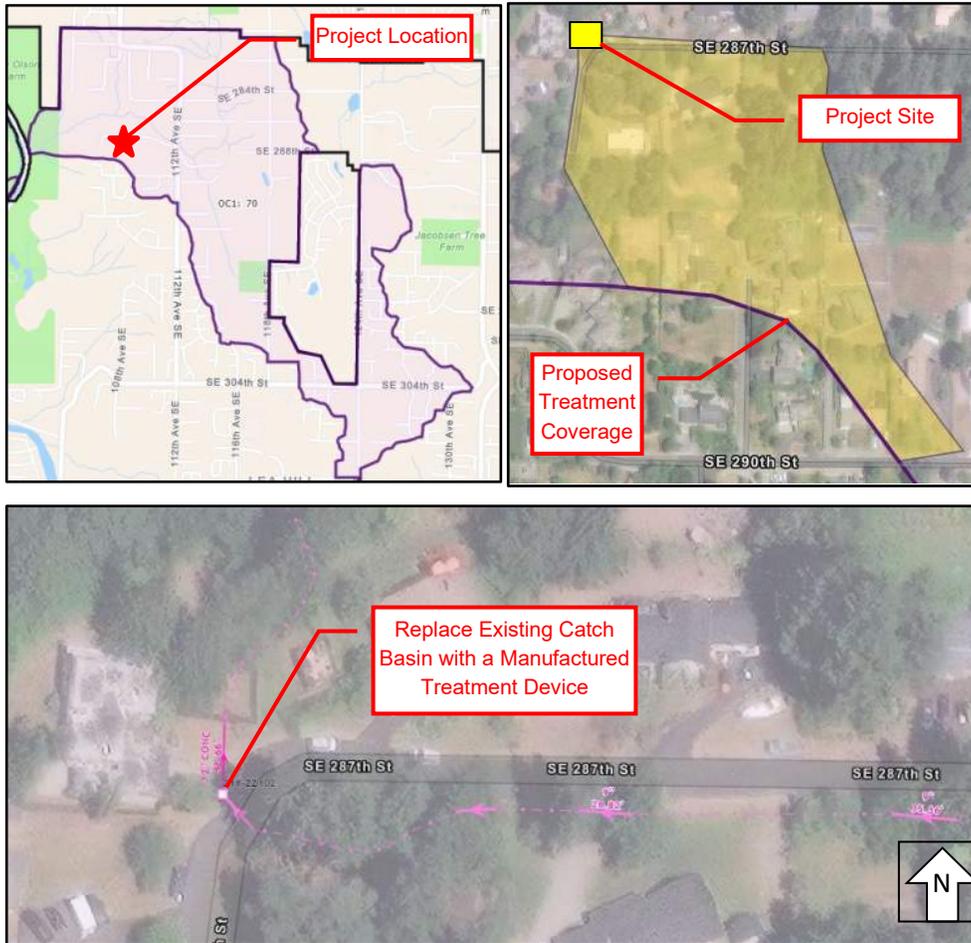
Appendix D

Capital Improvement Project Summaries



Parametrix

Retrofit Site: CIP 1 - SE 287th St
Road Retrofit



RETROFIT TYPE
Road Retrofit, Manufactured Treatment Device
LOCATION
At the end of SE 287th St
EXISTING USE
ROW
PROPOSED USE
ROW with Enhanced Runoff Treatment
CREEK BASIN AND WATERSHED
Olson Creek
TRIBUTARY DRAINAGE AREA
7.32 Acres Total 1.99 Acres Impervious
COST OPINION (2023 DOLLARS)
\$382,000

Project Description

The CIP 1 - SE 287th St project is proposing to replace the existing Type 1 catch basin with an Ecology TAPE approved manufactured treatment device to provide 7.31 acres with enhanced water quality treatment. This project would provide treatment for approximately 700 LF of roadway. The catch basin replacement will likely be low complexity since there is existing infrastructure in place and traffic control needs will be low. Final size, placement, and configuration of the project components may be adjusted as the design progresses.

Site Benefits

- Low traffic control requirements

Site Constraints/Difficulties

- WQ only, no flow control
- Need site survey to confirm catch basin is within located within City ROW

Opinion (Estimate) of Probable Cost

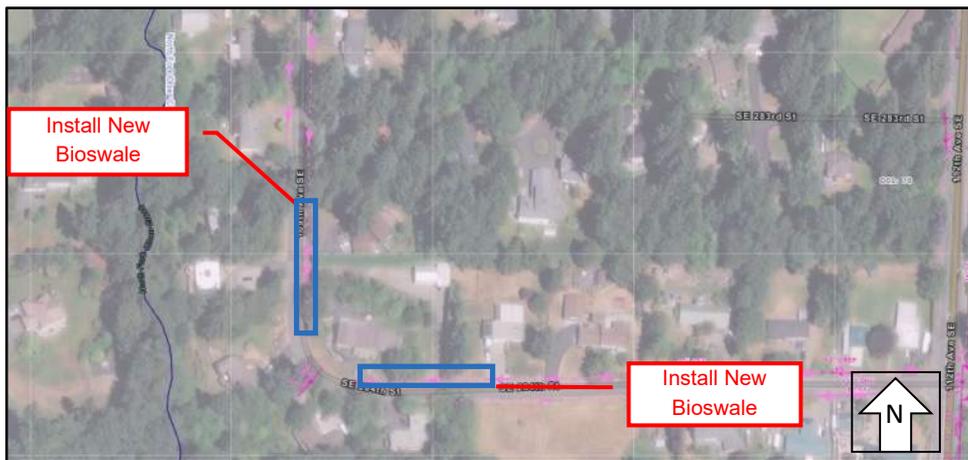
		Project No. 553-1931-048		Date March 2023		
Project Name CIP 1 - SE 287th Road Retrofit						
Location Near 10624 SE 287th St, Auburn, WA 98092						
Owner City of Auburn						
Estimated By: NR		Checked By: SR		Approved By: PF		
Date: 3/6/2023		Date: 3/8/2023		Date: 3/20/2023		
ITEM NO.	SPEC SECTION	DESCRIPTION	QTY	UNIT	UNIT PRICE	TOTAL COST
SITE PREP AND TESC						
1		MOBILIZATION (10%)	10%	% of lines 5-13		\$14,441.55
2		CONTRACTOR PROVIDED SURVEY (3%)	3%	% of lines 5-13		\$4,332.47
3		TESC (5%)	5%	% of lines 5-13		\$7,220.78
4		DEWATERING (2%)	2%	% of lines 5-13		\$2,888.31
Subtotal						\$28,883.11
MATERIALS						
5		SAWCUTTING	56	LF	\$30.63	\$1,715.28
6		PAVEMENT REMOVAL/RESTORATION	11	SY	\$220.00	\$2,346.67
7		ENHANCED MEDIA FILTER SYSTEM 6X8	2	EA	\$60,000.00	\$120,000.00
8		CONNECTION TO DRAINAGE STRUCTURE	4	EA	\$3,415.34	\$13,661.36
9		STRUCTURE EXCAVATION CLASS A INCL. HAUL	44	CY	\$41.04	\$1,824.00
10		SHORING OR EXTRA EXCAVATION CLASS B	1	LS	\$1,000.00	\$1,000.00
11		STRUCTURE EX AND SHORING LABOR (50% OF EACH)	50	% of lines 9-10		\$1,412.00
12		CRUSHED SURFACING BASE COURSE	3	TN	\$53.58	\$176.22
13		RECORD DRAWINGS	1	LS	\$2,280.00	\$2,280.00
Subtotal						\$144,415.53
Subtotal Project Cost						\$173,298.63
Design Contigency					50%	\$86,649.32
Permitting					5%	\$8,664.93
Design					25%	\$43,324.66
City Project Mgmt. Admin.					5%	\$8,664.93
Construction Management					25%	\$43,324.66
Management Reserve					10%	\$17,329.86
TOTAL PROJECT COST						\$382,000.00

Parametrix

Retrofit Site: CIP 2 - SE 284th St and 109th Ave SE Road Retrofit



RETROFIT TYPE
Road Retrofit, New Bioswale
LOCATION
SE 284th St and 109th Ave SE
CREEK BASIN AND WATERSHED
Olson Creek
EXISTING USE
ROW, vegetated and gravel driveway
PROPOSED USE
ROW with Basic Runoff Treatment
TRIBUTARY DRAINAGE AREA
20.6 Acres Total 3.0 Acres PGIS
COST OPINION (2023 DOLLARS)
\$143,000



Project Description

The CIP 2 - SE 284th St and 109th Ave SE project will retrofit a section of SE 284th St by adding two bioswale ditch enhancements. The bioswales will provide basic water quality treatment to 20.6 acres including approximately 2300 LF of roadway. Final size, placement, and configuration of the project components may be adjusted as the design progresses.

Site Benefits

- Treatment can be situated within ROW
- Provides some flow control

Site Constraints/Difficulties

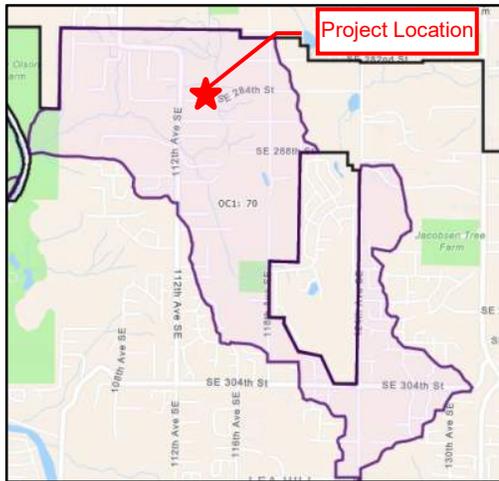
- Clearing and grubbing required

Opinion (Estimate) of Probable Cost

		Project No. 553-1931-048		Date March 2023		
Project Name CIP 2 - SE 284th St and 109th Ave SE Road Retrofit						
Location SE 284th St and 109th Ave SE						
Owner City of Auburn						
Estimated By: NR		Checked By: SR		Approved By: PF		
Date: 3/6/2023		Date: 3/8/2023		Date: 3/20/2023		
ITEM NO.	SPEC SECTION	DESCRIPTION	QTY	UNIT	UNIT PRICE	TOTAL COST
SITE PREP AND TESC						
1		MOBILIZATION (10%)	10%		% of lines 5-9	\$5,390.44
2		CONTRACTOR PROVIDED SURVEY (3%)	3%		% of lines 5-9	\$1,617.13
3		TESC (5%)	5%		% of lines 5-9	\$2,695.22
4		DEWATERING (2%)	2%		% of lines 5-9	\$1,078.09
Subtotal						\$10,780.88
MATERIALS						
5		CLEARING AND GRUBBING	0.1	ACRE	\$ 10,000.00	\$1,044.53
6		CHANNEL EXCAVATION INCL. HAUL	169	CY	\$ 39.90	\$6,723.89
7		TOPSOIL TYPE A	253	SY	\$ 65.67	\$16,599.07
8		COMPOST BLANKET	42	SY	\$ 8.00	\$337.04
9		SEEDING, FERTILIZING, AND MULCHING	505.6	SY	\$ 57.76	\$29,199.88
Subtotal						\$53,904.41
					Subtotal Project Cost	\$64,685.29
					Design Contingency	50%
					Permitting	5%
					Design	25%
					City Project Mgmt. Admin.	5%
					Construction Management	25%
					Management Reserve	10%
					TOTAL PROJECT COST	\$143,000.00

Parametrix

Retrofit Site: CIP 3 - SE 284th St West Road Retrofit



RETROFIT TYPE
Road Retrofit, New Bioswale
LOCATION
Along SE 284th St
EXISTING USE
Roadway
PROPOSED USE
ROW with Basic Runoff Treatment
CREEK BASIN AND WATERSHED
Olson Creek
TRIBUTARY DRAINAGE AREA
2.2 Acres Total 1.1 Acres Impervious
COST OPINION (2023 DOLLARS)
\$52,000

Project Description

The CIP 3 - SE 284th St West project will retrofit a section of SE 284th St by adding two bioswale ditch enhancements to the side of the road. The bioswales will provide basic water quality treatment to 4.0 acres including approximately 700 LF of roadway. Final size, placement, and configuration of the project components may be adjusted as the design progresses.

Site Benefits

- Treatment can be situated within ROW
- Provides some flow control

Site Constraints/Difficulties

- Clearing and grubbing required

Opinion (Estimate) of Probable Cost

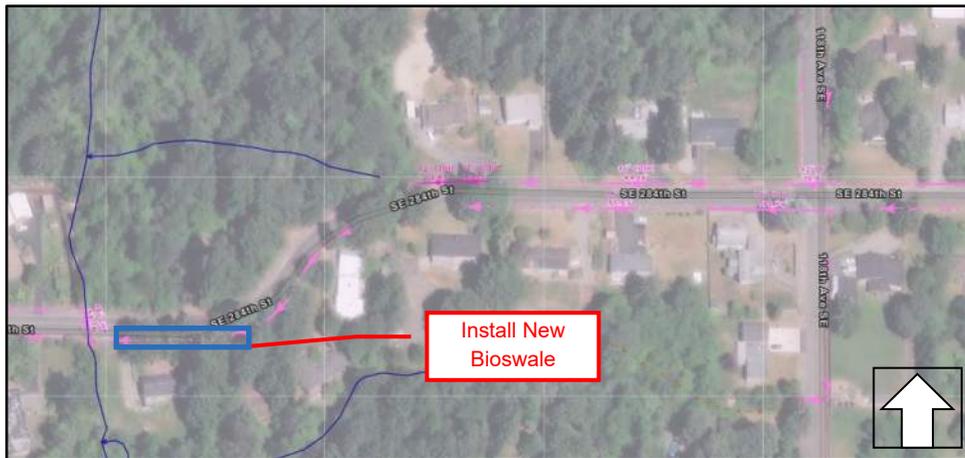
		Project No. 553-1931-048		Date March 2023		
Project Name CIP 3 - SE 284th St West Road Retrofit						
Location Near 11429 SE 284th St, Auburn, WA 98092						
Owner City of Auburn						
Estimated By: NR		Checked By: SR		Approved By: PF		
Date: 3/6/2023		Date: 3/8/2023		Date: 3/20/2023		
ITEM NO.	SPEC SECTION	DESCRIPTION	QTY	UNIT	UNIT PRICE	TOTAL COST
SITE PREP AND TESC						
1		MOBILIZATION (10%)	10%		% of lines 6-10	\$1,719.18
2		CONTRACTOR PROVIDED SURVEY (3%)	3%		% of lines 6-10	\$515.76
3		TESC (5%)	5%		% of lines 6-10	\$859.59
4		DEWATERING (2%)	2%		% of lines 6-10	\$343.84
5		PROJECT TEMPORARY TRAFFIC CONTROL (15%)	15%		% of lines 6-10	\$2,578.78
Subtotal						\$6,017.14
MATERIALS						
6		CLEARING AND GRUBBING	0.04	ACRE	\$ 10,000.00	\$419.19
7		CHANNEL EXCAVATION INCL. HAUL	68	CY	\$ 39.90	\$2,698.42
8		TOPSOIL TYPE A	34	SY	\$ 65.67	\$2,220.51
9		COMPOST BLANKET	17	SY	\$ 8.00	\$135.26
10		SEEDING, FERTILIZING, AND MULCHING	202.89	SY	\$ 57.76	\$11,718.46
Subtotal						\$17,191.83
					Subtotal Project Cost	\$23,208.98
					Design Contingency 50%	\$11,604.49
					Permitting 5%	\$1,160.45
					Design 25%	\$5,802.24
					City Project Mgmt. Admin. 5%	\$1,160.45
					Construction Management 25%	\$5,802.24
					Management Reserve 10%	\$2,320.90
					TOTAL PROJECT COST	\$52,000.00

Parametrix

Retrofit Site: CIP 4 - SE 284th St East Road Retrofit



RETROFIT TYPE
Road Retrofit, New Bioswale
LOCATION
Along SE 284th St
EXISTING USE
Roadside Ditch
CREEK BASIN AND WATERSHED
Olson Creek
TRIBUTARY DRAINAGE AREA
1.8 Acres Total 0.81 Acres Impervious
COST OPINION (2023 DOLLARS)
\$28,000



Project Description

The CIP 4 - SE 284th St East project will retrofit a section of SE 284th St by adding a bioswale ditch enhancement to the side of the road. This bioswale will provide basic water quality treatment to 4.0 acres including approximately 1600 LF of roadway. Final size, placement, and configuration of the project components may be adjusted as the design progresses.

Site Benefits

- Treatment can be situated within ROW
- Provides some flow control

Site Constraints/Difficulties

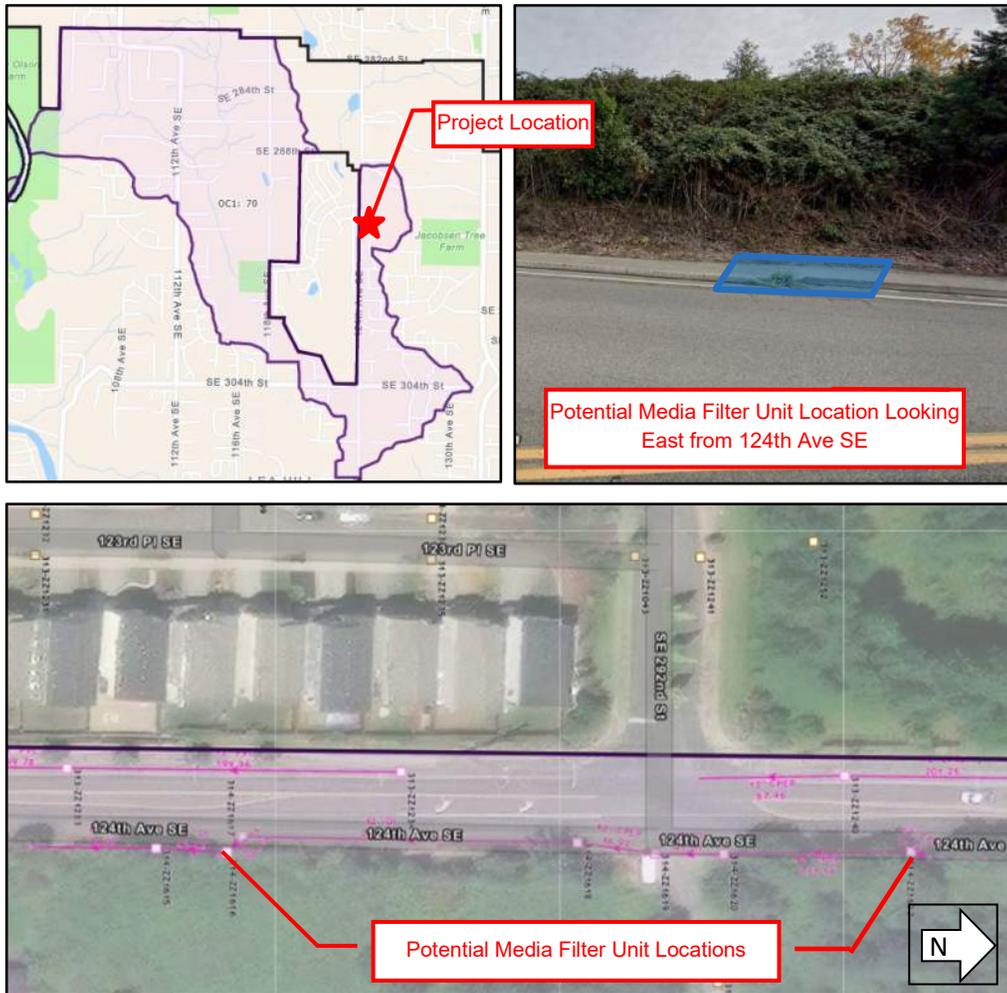
- Clearing and grubbing required

Opinion (Estimate) of Probable Cost

				Project No. 553-1931-048	Date March 2023	
Project Name CIP 4 - SE 284th St East Road Retrofit						
Location Near 11619 SE 284th St, Auburn, WA 98092						
Owner City of Auburn						
Estimated By: NR			Checked By: SR		Approved By: PF	
Date: 3/6/2023			Date: 3/8/2023		Date: 3/20/2023	
ITEM NO.	SPEC SECTION	DESCRIPTION	QTY	UNIT	UNIT PRICE	TOTAL COST
SITE PREP AND TESC						
1		MOBILIZATION (10%)	10%		% of lines 6-10	\$932.09
2		CONTRACTOR PROVIDED SURVEY (3%)	3%		% of lines 6-10	\$279.63
3		TESC (5%)	5%		% of lines 6-10	\$466.04
4		DEWATERING (2%)	2%		% of lines 6-10	\$186.42
5		PROJECT TEMPORARY TRAFFIC CONTROL (15%)	15%		% of lines 6-10	\$1,398.13
Subtotal						\$3,262.31
MATERIALS						
6		CLEARING AND GRUBBING	0.0	ACRE	\$ 10,000.00	\$227.27
7		CHANNEL EXCAVATION INCL. HAUL	37	CY	\$ 39.90	\$1,463.00
8		TOPSOIL TYPE A	18	SY	\$ 65.67	\$1,203.89
9		COMPOST BLANKET	9	SY	\$ 8.00	\$73.33
10		SEEDING, FERTILIZING, AND MULCHING	110.0	SY	\$ 57.76	\$6,353.38
Subtotal						\$9,320.87
					Subtotal Project Cost	\$12,583.18
					Design Contigency	50%
						\$6,291.59
					Permitting	5%
						\$629.16
					Design	25%
						\$3,145.79
					City Project Mgmt. Admin.	5%
						\$629.16
					Construction Management	25%
						\$3,145.79
					Management Reserve	10%
						\$1,258.32
					TOTAL PROJECT COST	\$28,000.00

Parametrix

Retrofit Site: CIP 5 - 124th Ave SE near 293rd St Road Retrofit



RETROFIT TYPE
Road Retrofit, Manufactured Treatment Device
LOCATION
124th Ave SE near 293rd St
CREEK BASIN AND WATERSHED
Olson Creek
EXISTING USE
Untreated ROW
PROPOSED USE
ROW with Enhanced Runoff Treatment
TRIBUTARY DRAINAGE AREA
14.14 Acres 2.41 Acres Impervious
COST OPINION (2023 DOLLARS)
\$581,000

Project Description

The CIP 5 - 124th Ave SE project will retrofit a section of 124th Ave SE by replacing existing Type 1 catch basins with an Ecology TAPE approved manufactured treatment device. The manufactured treatment devices will provide enhanced water quality treatment to 14.14 acres including approximately 800 LF of roadway. Final size, placement, and configuration of the project components may be adjusted as the design progresses.

Site Benefits

- Provides enhanced stormwater treatment for a high ADT roadway

Site Constraints/Difficulties

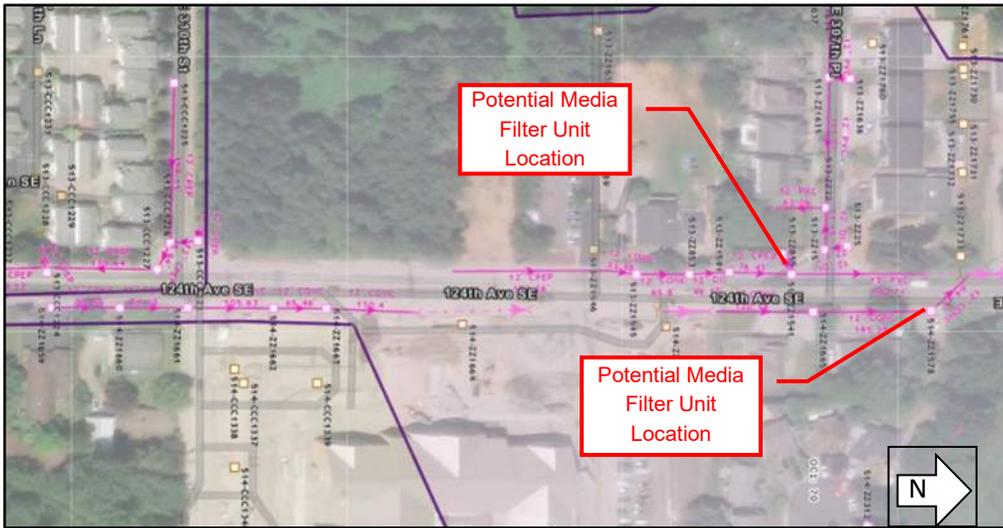
- May be constrained by outlet height
- Coordination with utilities

Opinion (Estimate) of Probable Cost

					Project No. 553-1931-048	Date March 2023
Project Name CIP 5 - SE 124th Ave SE near 293rd St Road Retrofit						
Location 124th Ave near 293rd St						
Owner City of Auburn						
Estimated By: NR			Checked By: SR		Approved By: PF	
Date: 3/6/2023			Date: 3/8/2023		Date: 3/20/2023	
ITEM NO.	SPEC SECTION	DESCRIPTION	QTY	UNIT	UNIT PRICE	TOTAL COST
SITE PREP AND TESC						
1		MOBILIZATION (10%)	10%		% of lines 6-16	\$19,561.61
2		CONTRACTOR PROVIDED SURVEY (3%)	3%		% of lines 6-16	\$5,868.48
3		TESC (5%)	5%		% of lines 6-16	\$9,780.81
4		DEWATERING (2%)	2%		% of lines 6-16	\$3,912.32
5		PROJECT TEMPORARY TRAFFIC CONTROL (15%)	15%		% of lines 6-16	\$29,342.42
Subtotal						\$68,465.64
MATERIALS						
6		UTILITY RELOCATION (SMALL)	1	LS	\$15,000.00	\$15,000.00
7		PAVEMENT REMOVAL/RESTORATION	52	SY	\$220.00	\$11,488.89
8		REMOVE CEMENT CONCRETE CURB AND GUTTER	20	LF	\$13.68	\$273.60
9		ENHANCED MEDIA FILTER SYSTEM 6X10	2	EA	\$68,000.00	\$136,000.00
10		CONNECTION TO DRAINAGE STRUCTURE	4	EA	\$3,415.34	\$13,661.36
11		STRUCTURE EXCAVATION CLASS A INCL. HAUL	52	CY	\$41.04	\$2,128.00
12		SHORING OR EXTRA EXCAVATION CLASS B	1	LS	\$1,000.00	\$1,000.00
13		STRUCTURE EX AND SHORING LABOR (50% OF EACH)	50		% of lines 9-10	\$1,564.00
14		CRUSHED SURFACING BASE COURSE	4	TN	\$53.58	\$220.27
15		SCHEDULE A STORM SEWER PIPE 12 IN. DIAM.	100	LF	\$120.00	\$12,000.00
16		RECORD DRAWINGS	1	LS	\$2,280.00	\$2,280.00
Subtotal						\$195,616.12
					Subtotal Project Cost	\$264,081.77
					Design Contingency 50%	\$132,040.88
					Permitting 5%	\$13,204.09
					Design 25%	\$66,020.44
					City Project Mgmt. Admin. 5%	\$13,204.09
					Construction Management 25%	\$66,020.44
					Management Reserve 10%	\$26,408.18
					TOTAL PROJECT COST	\$581,000.00

Opinion (Estimate) of Probable Cost

				Project No. 553-1931-048		Date March 2023	
Project Name CIP 6 - Vintage Hills Swale Retrofit							
Location Near 29501 125th Ave SE, Auburn, WA 98092							
Owner City of Auburn							
Estimated By: NR				Checked By: SR		Approved By: PF	
Date: 3/6/2023				Date: 3/8/2023		Date: 3/20/2023	
ITEM NO.	SPEC SECTION	DESCRIPTION	QTY	UNIT	UNIT PRICE	TOTAL COST	
SITE PREP AND TESC							
1		MOBILIZATION (10%)	10%	% of lines 6-13		\$10,457.70	
2		CONTRACTOR PROVIDED SURVEY (3%)	3%	% of lines 6-13		\$3,137.31	
3		TESC (5%)	5%	% of lines 6-13		\$5,228.85	
4		DEWATERING (2%)	2%	% of lines 6-13		\$2,091.54	
5		PROJECT TEMPORARY TRAFFIC CONTROL (15%)	15%	% of lines 6-13		\$15,686.55	
Subtotal						\$20,915.40	
MATERIALS							
6		CHANNEL EXCAVATION INCL. HAUL	151	CY	\$39.90	\$6,011.88	
7		EROSION CONTROL BLANKET	75	SY	\$9.12	\$687.07	
8		18" BIORETENTION SOIL	750	SF	\$120.00	\$90,000.00	
9		COMPOST BLANKET	75	SY	\$8.00	\$602.69	
10		QUARRY SPALLS	6	TN	\$69.54	\$424.07	
11		TRASH RACK	1	EA	\$500.00	\$500.00	
12		SEEDING, FERTILIZING, AND MULCHING	75	SY	\$57.76	\$4,351.30	
13		RECORD DRAWINGS	1	LS	\$2,000.00	\$2,000.00	
Subtotal						\$104,577.01	
					Subtotal Project Cost		\$125,492.41
					Design Contingency		50% \$62,746.21
					Permitting		5% \$6,274.62
					Design		15% \$18,823.86
					City Project Mgmt. Admin.		5% \$6,274.62
					Construction Management		25% \$31,373.10
					Management Reserve		10% \$12,549.24
					TOTAL PROJECT COST		\$264,000.00



RETROFIT TYPE	Road Retrofit, Manufactured Treatment Device
LOCATION	124th Ave SE near 307th PI
CREEK BASIN AND WATERSHED	Olson Creek
EXISTING USE	Untreated ROW
PROPOSED USE	ROW with Enhanced Runoff Treatment
TRIBUTARY DRAINAGE AREA	5.9 Acres 1.4 Acres PGIS
COST OPINION (2023 DOLLARS)	\$525,000

Project Description

The CIP 7 - 124th Ave SE near 307th PI project will retrofit a section of 124th Ave SE by replacing existing Type 1 catch basins with an Ecology TAPE approved manufactured treatment device. The manufactured treatment devices will provide enhanced water quality treatment to 5.9 acres including approximately 1200 LF of roadway. Final size, placement, and configuration of the project components may be adjusted as the design progresses.

Site Benefits

- Provides enhanced stormwater treatment for a high ADT roadway

Site Constraints/Difficulties

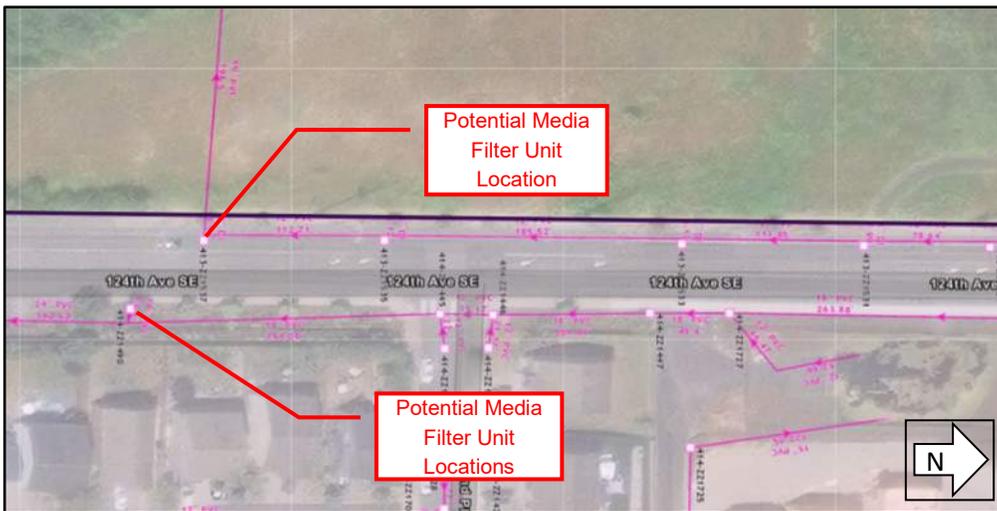
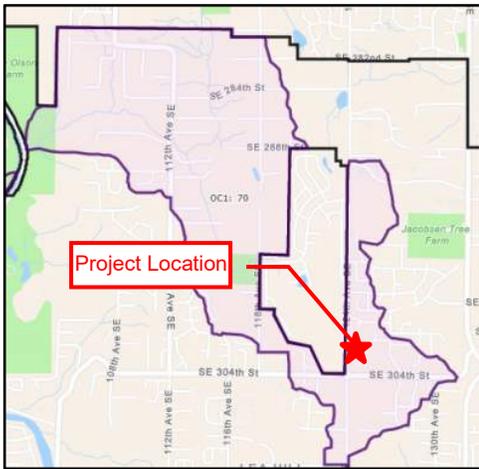
- May be constrained by outlet height
- Coordination with utilities
- Traffic control requirements

Opinion (Estimate) of Probable Cost

					Project No. 553-1931-048	Date March 2023
Project Name CIP 7 - 124th Ave SE near 302nd PI Road Retrofit						
Location 124th Ave near 302nd PI						
Owner City of Auburn						
Estimated By: NR			Checked By: SR		Approved By: PF	
Date: 3/6/2023			Date: 3/8/2023		Date: 3/20/2023	
ITEM NO.	SPEC SECTION	DESCRIPTION	QTY	UNIT	UNIT PRICE	TOTAL COST
SITE PREP AND TESC						
1		MOBILIZATION (10%)	10%	% of lines 6-16		\$17,847.47
2		CONTRACTOR PROVIDED SURVEY (3%)	3%	% of lines 6-16		\$5,354.24
3		TESC (5%)	5%	% of lines 6-16		\$8,923.73
4		DEWATERING (2%)	2%	% of lines 6-16		\$3,569.49
5		PROJECT TEMPORARY TRAFFIC CONTROL (15%)	15%	% of lines 6-16		\$26,771.20
Subtotal						\$62,466.14
MATERIALS						
6		UTILITY RELOCATION (SMALL)	1	LS	\$15,000.00	\$15,000.00
7		PAVEMENT REMOVAL/RESTORATION	50	SY	\$220.00	\$10,902.22
8		REMOVE CEMENT CONCRETE CURB AND GUTTER	16	LF	\$13.68	\$218.88
9		ENHANCED MEDIA FILTER SYSTEM 6X8	2	EA	\$60,000.00	\$120,000.00
10		CONNECTION TO DRAINAGE STRUCTURE	4	EA	\$3,415.34	\$13,661.36
11		STRUCTURE EXCAVATION CLASS A INCL. HAUL	44	CY	\$41.04	\$1,824.00
12		SHORING OR EXTRA EXCAVATION CLASS B	1	LS	\$1,000.00	\$1,000.00
13		STRUCTURE EX AND SHORING LABOR (50% OF EACH)	50	% of lines 9-10		\$1,412.00
14		CRUSHED SURFACING BASE COURSE	3	TN	\$53.58	\$176.22
15		SCHEDULE A STORM SEWER PIPE 12 IN. DIAM.	100	LF	\$120.00	\$12,000.00
16		RECORD DRAWINGS	1	LS	\$2,280.00	\$2,280.00
Subtotal						\$178,474.68
Subtotal Project Cost						\$240,940.82
Design Contingency 50%						\$120,470.41
Permitting 5%						\$12,047.04
Design 25%						\$60,235.20
City Project Mgmt. Admin. 5%						\$12,047.04
Construction Management 25%						\$60,235.20
Management Reserve 10%						\$24,094.08
TOTAL PROJECT COST						\$531,000.00

Parametrix

Retrofit Site: CIP 8 -124th Ave SE near 302nd PI Road Retrofit



RETROFIT TYPE
Road Retrofit, Manufactured Treatment Device
LOCATION
124th Ave SE near 302nd PI
CREEK BASIN AND WATERSHED
Olson Creek
EXISTING USE
Untreated ROW
PROPOSED USE
ROW with Enhanced Runoff Treatment
TRIBUTARY DRAINAGE AREA
2.9 Acres Total 1.3 Acres PGIS
COST OPINION (2023 DOLLARS)
\$531,000

Project Description

The CIP 6 - 124th Ave SE near 302nd PI project will retrofit a section of 124th Ave SE by replacing existing Type 1 catch basins with an Ecology TAPE approved manufactured treatment device. The manufactured treatment devices will provide enhanced water quality treatment to 2.9 acres including approximately 1600 LF of roadway. Final size, placement, and configuration of the project components may be adjusted as the design progresses.

Site Benefits

- Provides enhanced stormwater treatment for a high ADT roadway

Site Constraints/Difficulties

- May be constrained by outlet height
- Coordination with utilities
- Traffic control requirements

Opinion (Estimate) of Probable Cost

		Project No. 553-1931-048		Date March 2023		
Project Name CIP 8 - 124th Ave near 307th PI Road Retrofit						
Location 124th Ave near 307th PI						
Owner City of Auburn						
Estimated By: NR		Checked By: SR		Approved By: PF		
Date: 3/6/2023		Date: 3/8/2023		Date: 3/20/2023		
ITEM NO.	SPEC SECTION	DESCRIPTION	QTY	UNIT	UNIT PRICE	TOTAL COST
SITE PREP AND TESC						
1		MOBILIZATION (10%)	10%	% of lines 6-16		\$17,847.47
2		CONTRACTOR PROVIDED SURVEY (3%)	3%	% of lines 6-16		\$5,354.24
3		TESC (5%)	5%	% of lines 6-16		\$8,923.73
4		DEWATERING (2%)	2%	% of lines 6-16		\$3,569.49
5		PROJECT TEMPORARY TRAFFIC CONTROL (15%)	15%	% of lines 6-16		\$26,771.20
Subtotal						\$62,466.14
MATERIALS						
6		UTILITY RELOCATION (SMALL)	1	LS	\$15,000.00	\$15,000.00
7		PAVEMENT REMOVAL/RESTORATION	50	SY	\$220.00	\$10,902.22
8		REMOVE CEMENT CONCRETE CURB AND GUTTER	16	LF	\$13.68	\$218.88
9		ENHANCED MEDIA FILTER SYSTEM 6X8	2	EA	\$60,000.00	\$120,000.00
10		CONNECTION TO DRAINAGE STRUCTURE	4	EA	\$3,415.34	\$13,661.36
11		STRUCTURE EXCAVATION CLASS A INCL. HAUL	44	CY	\$41.04	\$1,824.00
12		SHORING OR EXTRA EXCAVATION CLASS B	1	LS	\$1,000.00	\$1,000.00
13		STRUCTURE EX AND SHORING LABOR (50% OF EACH)	50	% of lines 9-10		\$1,412.00
14		CRUSHED SURFACING BASE COURSE	3	TN	\$53.58	\$176.22
15		SCHEDULE A STORM SEWER PIPE 12 IN. DIAM.	100	LF	\$120.00	\$12,000.00
16		RECORD DRAWINGS	1	LS	\$2,280.00	\$2,280.00
Subtotal						\$178,474.68
Subtotal Project Cost						\$240,940.82
Design Contingency					50%	\$120,470.41
Permitting					5%	\$12,047.04
Design					25%	\$60,235.20
City Project Mgmt. Admin.					5%	\$12,047.04
Construction Management					25%	\$60,235.20
Management Reserve					10%	\$24,094.08
TOTAL PROJECT COST						\$531,000.00