

# Site Screening and Selection Guide for High-Impact Stormwater Treatment

## Scope of Work Template for Siting Green Stormwater Infrastructure

**Summary:** The Nature Conservancy (TNC) in Washington State has developed this template and associated case studies to help organizations and communities identify, prioritize, and site high-impact stormwater treatment facilities. This template serves as a customizable baseline for users to personalize with their community's values and priorities.

### Intended Users

- **Primary:** Municipalities, Utilities, Stormwater Planners, Transportation Planners
- **Secondary:** Consultants, Non-profits

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# FOREWORD

## OUR STORMWATER PROBLEM:

Stormwater carries millions of pounds of pollution into Puget Sound waterways annually, harming aquatic life and humans. Busy highways and roads are the largest source of stormwater pollution that poisons our ecosystems with heavy metals, excessive organic materials, and toxic chemicals. Roads and highways also contribute high loads of 6PPD-q, the chemical responsible for salmon toxicity and mortality. Older roads and infrastructure that was developed before current regulations, focused on moving runoff away from roads and buildings as quickly as possible to prevent flooding. These systems typically did not include a process for slowing and treating stormwater, resulting in high flow rates discharging untreated stormwater into natural water bodies.

## NATURE-BASED SOLUTIONS FOR CLEAN WATER

Nature-Based Solutions (NBS) to stormwater runoff can help us fix our stormwater problems while addressing other urban challenges.

NBS are practices for sustainable planning, design, environmental management, and engineering that weave natural features or processes into the built environment. NBS promotes adaptation and resilience of systems to increasing environmental and climate change pressures. NBS for stormwater uses soil-water-plant systems to intercept and treat stormwater through infiltration and filtration processes. These practices can simultaneously remove pollutants while slowing stormwater flow rates that damage ecosystems. Common examples include bioswales, wetlands, and engineered planter systems.

## SITE SCREENING AND SELECTION - THE FIRST STEP TO CLEAN WATER

Planning and siting GSI correctly to improve water quality and the well-being of communities is the first step to ensure maximum benefit. **This tool will help cities and counties treat road runoff by streamlining the identification and siting of high-impact treatment, from selecting a priority waterway to picking the final stormwater site.**

It also provides a framework to consider co-benefits beyond clean water when siting treatment facilities. Used as a scope-of-work template, this tool allows project sponsors to save time and money by providing consultants or in-house teams a pre-defined process and potential resources to make high-quality siting recommendations, avoiding amendments and the addition of un-scoped work. At the conclusion of this body of work, the Client should be well prepared to pursue additional funding through internal budget, state, or federal grants and finance systems for design and construction.

## CASE STUDIES AND EXAMPLES OF WORK

TNC has piloted this scope of work template in the Green River and the Tacoma Mall areas. Case studies can be found here along with detailed information about TNC motivations, consultants and jurisdictional partners, lessons learned, and decision processes.



# INSTRUCTIONS

## USER GUIDANCE

The Site Screening and Selection Scope of Work Template is intended for a user to download and adapt for their needs. This template is a framework built off of project specific experiences with input from a variety of sources. It is meant to be an adaptable framework and **must be reviewed and edited for your needs and desired outcomes.**

The template is arranged into **five main tasks.**

1. **AGREEMENT ON PROJECT GOALS AND DESIRED OUTCOMES**
2. **SELECT A TARGET WATERWAY OR REACH WITHIN PROJECT BOUNDARIES**
3. **GATHER DETAILED INFORMATION ABOUT THE PREFERRED WATERWAY OR REACH**
4. **IDENTIFY POTENTIAL SITES FOR INTERVENTION**
5. **SCREEN SITE AND SELECT A PREFERRED PROJECT LOCATION**

Steps begin at the regional or watershed scale and sequentially move toward the selection of one or more preferred site(s).

At the conclusion of Task 5, users should have selected a site, be able to integrate with Capital Improvement Plans, and be well-prepared to begin an initial design or pursue supplemental funding through grants or larger initiatives.

Users of the template should feel empowered to adapt the portions of the template that are relevant to their work. It is recommended to include Task 1 in any project to ensure client objectives, values, and priorities are reflected through the work. However, depending on prior work in the watershed, current initiatives, or other priorities, the user may choose to skip portions of a task or whole tasks entirely. For example, Phase II jurisdictions may skip Task 2 and use areas identified in their Stormwater Management Action Plans for the focus of Task 3.

Throughout the document there are suggested numbers and frequencies for meetings, number of project sites, etc. These numbers should be updated to reflect your scope, budget and priorities.

The numbers are bolded and underlined for your convenience. The sole focus of this document is on the suggested tasks and deliverables that would be undertaken by a consultant.

We have intentionally excluded any preamble or contractual language as this will likely be specific to each project and contracting organization.

**The Client** refers to the organization or individual procuring stormwater services. **The Consultant** refers to the party or parties providing professional services to the Client.

## SUGGESTED MINIMUM MEETING SCHEDULE

The Client should meet regularly with the Consultant to discuss any issues, project processes, deliverables, and decisions. Biweekly is a common cadence but should be tailored to your schedule and needs. This engagement should be discussed and agreed upon as part of the Scope of Work (SOW).

## BUDGET ESTIMATE RANGES

A budget estimate that includes cost, Consultant hours, and Client hours by task is provided in Appendix A. This estimate was completed in 2023 for the case study projects and includes recommended management reserves by task. Your budget will vary based on project priorities, data availability, complexity of the planning process, scope of the overall evaluation, and the number of parcels evaluated in Tasks 4 and 5.





# SCOPE OF WORK TEMPLATE

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## TASK 1: AGREEMENT ON PROJECT GOALS AND DESIRED OUTCOMES



### OBJECTIVES:

- Ensure Client vision and needs are translated into specific project targets that enables Consultant delivery and creativity within known constraints.
- Convene Client and Consultant teams to communicate Client objectives, values and priorities clearly.

### SUBTASKS:

- Alignment on Client Objectives, Values, and Priorities
- Effective Kickoff Workshop

### DELIVERABLES:

- 1.1A Written confirmation of Client goals (format TBD as agreed by client)
- 1.1B Written confirmation of outcomes (format TBD as agreed by Client)
- 1.2A Kickoff meeting notes summarizing decisions and agreements
- 1.2B Project Risk Register

*Note: Task 1 or portions of Task 1 may be included in a request for proposals and/or discussed with the consultant and outlined in the contract*



### 1.1 Alignment on Client Objectives, Values and Priorities

During this step, the Client will provide project objectives, values, and priorities to the Consultant, and ensure Client definition of “high impact” is well understood. The Consultant will then ask clarifying questions to ensure the project team has adequate guidance around the Client’s priorities and objectives for the project and that these can be met within the available budget. This process will ensure the Consultant has clarity on the competing priorities. These bounds also better enable the consultant to provide innovative solutions and justify recommendations throughout each phase of the project. Engagement may occur in an initial project meeting with follow-up and written confirmation. Alignment is particularly important when optimizing for co-benefits and community needs. **The Client may not have the knowledge or expertise to translate their language into specific targets and should have an initial discussion with experts (possibly the Consultant depending on sequencing) to refine their values into clear language for the Consultant.** While project priorities will vary based on a given project’s outcome and type, the Client should consider and state targets for the following categories at the outset of the project and RFP process:

#### 1. SPECIFY PERFORMANCE OR TREATMENT EXPECTATIONS

If a volumetric and/or water quality management target is a pre-requisite for project success it should be explicitly stated. While the granularity of such a target will differ based on the scale of the assessment and project objectives, it is important to project as much specificity as possible.

This will help ensure the consultant team is examining and bringing forth project opportunities that meet or exceed water management in addition to achieving other co-benefits. Examples include, but are not limited to:

- *Projects should focus on sites that have an estimated mean concentration at least 3x greater than typical distributed sites in the area.*
- *Sites should drain from at least 500 acres of impervious surfaces, and proposed practices should detain a minimum volume equivalent to the 85% event.*

#### 2. SPECIFY A TARGET RANGE FOR COST-EFFECTIVENESS

Whenever possible a range of unit cost targets in dollars per volume (event-basis or annual) – should be included in an RFP. The assumptions for how the volume are derived should also be included. This range does not have to be absolute in all cases, but it can provide a goalpost to guide the Consultant’s planning and siting recommendations more easily, as well as the Client’s responses. Examples include, but are not limited to:

- *Cost per volume treated should stay below \$/gal.*
- *Cost per gallon (event or annual basis)*
- *Cost per Acre-Ft*
- *Vegetated GSI BMP should be considered whenever the cost-effectiveness is comparable or within (15%) of other types of vegetated infrastructure and enables community benefit.*

#### 3. SPECIFIC HABITAT OR ECOSYSTEM RESTORATION PRIORITIES

Incorporation of specific habitat or ecosystem restoration priorities will help guide site selection. There are often many potential sites that discharge into various systems with different issues. Examples may include, but are not limited to:

- *Sites should be located in basins that discharge into salmon spawning and rearing locations with degraded water quality.*
- *Sites should prioritize outfalls flowing into current TMDL bodies of water.*
- *Sites should be located in areas currently experiencing streambank erosion due to uncontrolled discharges from impervious surfaces.*





## TASK 1: AGREEMENT ON PROJECT GOALS AND DESIRED OUTCOMES

### 4. DESIRED TARGET OF VEGETATED VS. NON-VEGETATED FOOTPRINT OF A GIVEN PRACTICE

Stormwater infrastructure may need to use a combination of green and gray infrastructure to achieve the Client's vision. Additionally, different technologies provide varying levels of vegetation and providing specific guidance can allow the Consultant to screen sites effectively. Examples include, but are not limited to:

- Minimum vegetated area of total footprint.
- Minimum ratio of vegetated to non-vegetated area.

### 5. KNOWN SITE CONSTRAINTS OR ADDITIONAL OPTIMIZATION THAT MUST BE CONSIDERED IN THE FINAL PROJECT DESIGN AND/OR SITE SELECTION

There may be site constraints that are specific to partners or the function of the area. It is important to include only the required constraints and not desired functions at this stage to avoid confusion. Constraints will vary by project, funding source, and partners. Examples include, but are not limited to:

- ADA accessibility, parking or mobility requirements.
- The regional facility should achieve enhanced treatment standards to enable fee in lieu payments from developers.
- Any known maintenance considerations or constraints.
  - Pretreatment should be easily accessed by a Vactor truck.
  - Design should be compatible with the tools currently in use by maintenance division.
- Maintenance crews should be consulted as part of Task 3 to ensure requirements are known before beginning site evaluation.

- Set aside roughly 10% of the area for pretreatment such as vortex separators or hydro cyclones.
- If building bioretention, the practice cannot be lined.
- No loss of recreational field space (this may be a requirement if partnering with a local parks department).
- The evaluation will be limited to publicly owned or large institutional properties.

Since many vegetated stormwater management projects aspire to achieve co-benefits and multiple outcomes, the list is often extensive and can feel overwhelming for the Client to narrow down at the project ideation stage. In turn, this leads to a tendency for clients to include multiple over-arching objectives in an RFP, in the hopes that the consultant will help them achieve them. However, that approach often leads to significantly more time and cost overruns. By providing a more targeted set of criteria, the consultant team can respond more effectively, which saves the project time and budget.

TABLE 1: EXAMPLE CLIENT OBJECTIVES TO BE REFINED INTO SPECIFIC TARGETS

| PRIMARY OBJECTIVES                                                                                                                                                                                                                                                | SECONDARY OBJECTIVES                                                                                              |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------|
| Identify a high-impact basin (high volume with high pollutant concentrations).                                                                                                                                                                                    | Discuss willing utility for project and creative financing.                                                       |
| Determine the potential for health and community benefits in areas with high health and greenspace disparities.                                                                                                                                                   | Seek project areas that have a public and private partnership capacity.                                           |
| Consider intentional opportunities for integration of co-benefits, such as project site location in an area that has no park within a 10-minute walk, has low tree canopy/greenspace, or has an opportunity for connection of pedestrian pathways or green belts. | Consider areas posed for redevelopment, part of a capital improvement plan, or a priority area of a jurisdiction. |

## TASK 1: AGREEMENT ON PROJECT GOALS AND DESIRED OUTCOMES

### 1.2 Project Kickoff Workshop

The purpose of this task is to start off the project with the entire project team, define the project mission and objectives, establish communications, and prepare a risk management plan. The Consultant will provide **Kickoff Meeting Notes** that include a written summary of decisions and agreements made during the workshop. The Consultant will also complete a **Project Risk Register**. The project team kickoff workshop will accomplish the following:

- Share and identify motivation, community values, and drivers for stormwater treatment with the broader project team.
- Define who is impacted and will be involved throughout the process.
- Describe the expected outcomes and key performance metrics developed in Task 1.1.
- Discuss and agree on the format of deliverables.
- Develop a communications plan and identify preferences.
- Builds a risk register to identify and manage risks to a successful plan development and outcome.

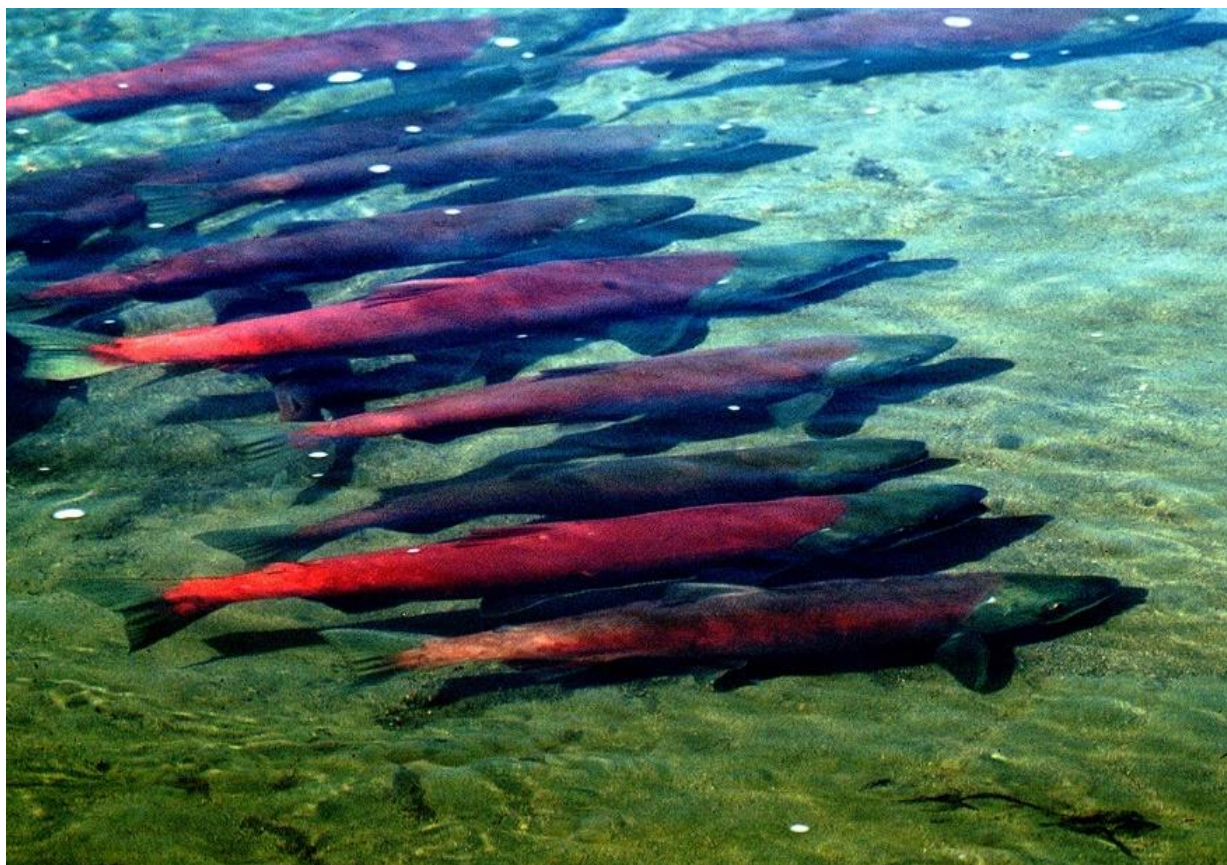
#### **DELIVERABLES:**

1.1A Written confirmation of Client goals (format TBD as agreed by Client)

1.1B Written confirmation of outcomes (format TBD as agreed by Client)

1.2A Kickoff meeting notes summarizing decisions and agreements

1.2B Project Risk Register





## TASK 2: TARGET WATERWAY OR REACH SELECTION



### CITY, COUNTY, OR WATERSHED SCALE ANALYSIS

#### OBJECTIVES:

- Identify, review, and compile existing data and reports relevant to Client objectives into one system for decision making.
- Select a receiving waterway or reach for stormwater intervention and improvements.

#### SUBTASKS:

- 2.1: Create Regional Data Collection System
- 2.2: Data and Information Gathering Review
- 2.3: Contact Relevant State and Local Bodies
- 2.4: Priority Waterway or Reach Selection.

#### DELIVERABLES:

- 2.1A Regional Data Collection Tool Template (format TBD as agreed upon by the client)
- 2.2A Populated Draft Regional Data Collection Tool and User Guide
- 2.2B Comment Summary and Resolution Table
- 2.3A Draft Interview List
- 2.3B Interview Summary Memorandum/Notes
- 2.3C Final Regional Data Tool and Report
- 2.4A Draft Scoring Methodology
- 2.4B Final Scoring Methodology
- 2.4C Scoring Analysis and Waterway or Reach Selection



## TASK 2: TARGET WATERWAY OR REACH SELECTION

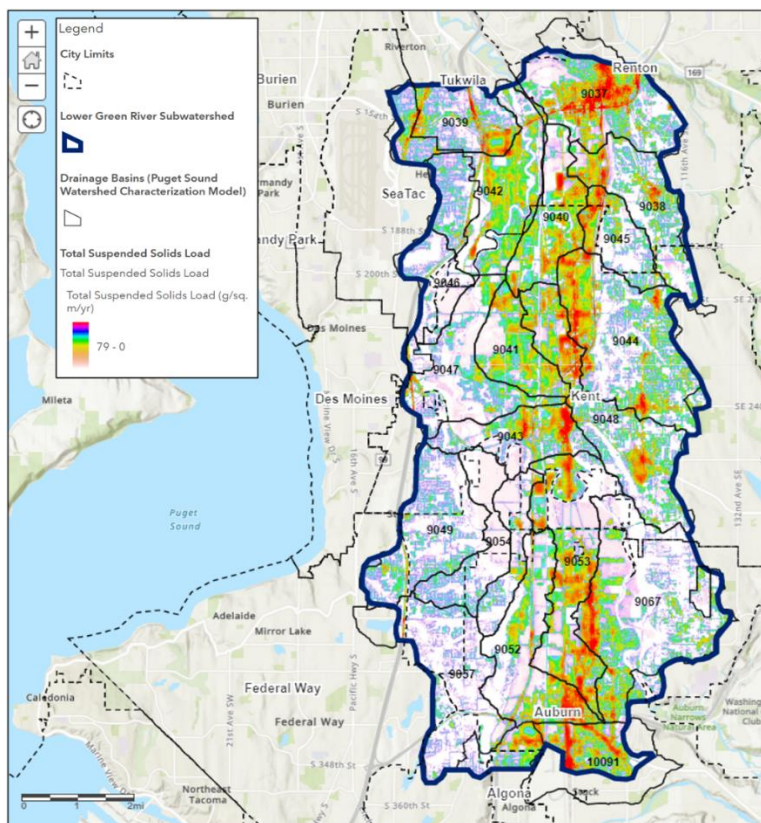
### 2.1 Create Regional Data Collection System

The Consultant shall develop a method for collecting and evaluating information collected during the Waterway or Reach Selection task if not dictated by the Client. For example, one method includes a Geographic Information System (GIS) based annotated map for data storage with accompanying spreadsheets. The resulting Regional Data Collection Tool shall include and identify all of the potential waterways or reaches to be considered for intervention, which may include larger downstream receiving waters as well as smaller tributary streams. The tool will be annotated and populated with information from this initial research stage. Information should be organized in a manner that enables attributes and data to be clearly accessed, visualized, and sorted.

The Consultant shall meet with the Client to review a draft version of the data collection tool before proceeding further.

#### DELIVERABLES:

2.1 A Regional Data Collection Tool Template  
(format TBD as agreed upon by the client)



Task 2 – Pollutant Loading Layer | Data Source: TNC Stormwater Heat Map

### 2.2 Data and Information Gathering and Review

During this task, the Consultant shall identify, review and summarize the most relevant resources available within the region. This may include simultaneous outreach to existing groups in the study area (Task 2.3).

The Client should provide any relevant available information to the Consultant. Some suggested resources and areas for exploration during the preliminary investigation are identified below. However, the Consultant shall use professional judgment in determining which resources are most relevant and identify other resources as appropriate. Judgement should consider the Client's values, objectives, and priorities identified in Task 1 and rely upon the most credible and up-to-date information available. If a data source produces a uniform result across the area of study, additional information to differentiate sub-areas should be found. Examples of information sources may include, but are not limited to, the following:

#### 1. LAND USE AND POLLUTION DATA

The Consultant should identify land use and corresponding contaminant source data. Discrete data, where available, should be incorporated to ensure pollution hot spots are not averaged out with other surrounding land areas.

- The [Stormwater Heatmap](#), developed by TNC for the Puget Sound watershed, identifies land use types and pollutant loading that can be selected by the user. Layers can be downloaded and integrated into a GIS map. Useful layers may include impervious areas, total suspended solids, nutrient loads, and metals.
- Local monitoring or available maps.
- Known contaminant loading sources.



## TASK 2: TARGET WATERWAY OR REACH SELECTION

### 2. ECOSYSTEM AND SPECIES-SPECIFIC PRIORITIES

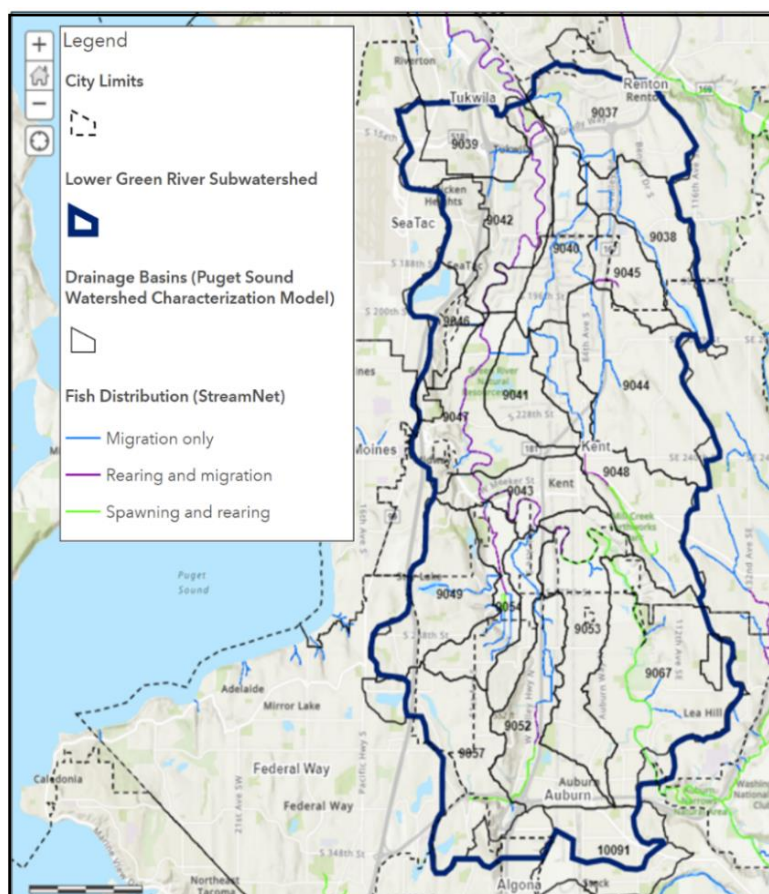
The Consultant shall determine and assess the most relevant resources related to the already established ecosystem and species-specific priorities, including consideration for population, population health, and opportunity for recovery. The Consultant, with potential identification and introduction from the client, should contact local recovery groups and biologists to integrate finer community knowledge with the coarser resources identified below.

- a. [Streamnet](#) provides maps and data about fish for areas in the Northwest.
- b. The [Priority Habitats and Species \(PHS\)](#) List includes known locations of species and habitats for which special conservation measures should be taken.

### 3. DETERMINE IMPACT ON TRIBAL RIGHTS AND TREATY RESERVE RESOURCES

The Consultant, **in conjunction with the Client's tribal liaison or relationship manager**, shall review project information and determine tribal nations and entities that have treaty rights, heritage, usual and accustomed areas, or interests in the study area. The liaison or relationship manager should reach out to identify tribal priorities in the area of study if an impact is identified. Several resources to begin this review include:

- a. [The Governor's Office of Indian Affairs](#) includes tribal searches and [maps of reservations and ceded land](#).
- b. The [Northwest Indian Fisheries Commission](#) is a natural resources management support service organization for 20 treaty Indian tribes in western Washington.
- c. [Northwest Treaty Tribes](#) is a news service provided by the Northwest Indian Fisheries Commission and may be useful in searching a region.



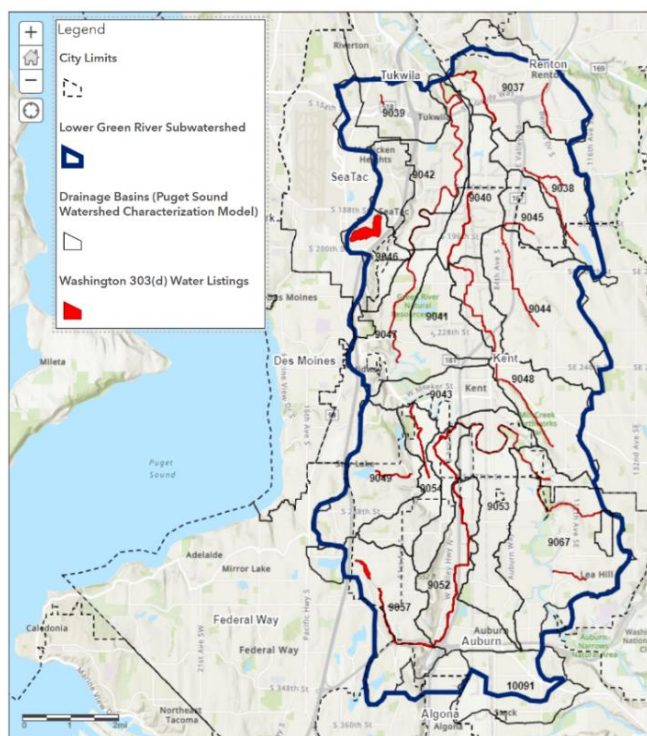
Task 2 – Salmon Spawning, Rearing and Migration Distribution | Data Source: StreamNet

## TASK 2: TARGET WATERWAY OR REACH SELECTION

### 4. EXISTING WATER QUALITY

The Consultant shall establish the existing water quality using the best available and relevant information. With potential identification and introduction from the Client, the Consultant should contact local community groups and biologists to integrate more specific water quality data if available. Example resources are listed below, but more locally specific resources may be available.

- The **Washington State List of Impaired Water Bodies** (303d list) and existing or planned **Total Maximum Daily Load (TMDL)** programs are available from the [Department of Ecology \(Ecology\)](#). The Consultant shall note which pollutants impair each waterway and how this pollution impacts waterway use. The Consultant shall establish “pollutants of concern” for each potential waterway or reach as appropriate.
- The [Benthic Index of Biotic Integrity \(B-IBI\)](#) uses a scoring system to determine stream health based on benthic macroinvertebrate populations. [Maps](#) exist for many counties and cities in WA. This may be helpful to understand more localized water quality if the area of interest has multiple impaired water bodies.

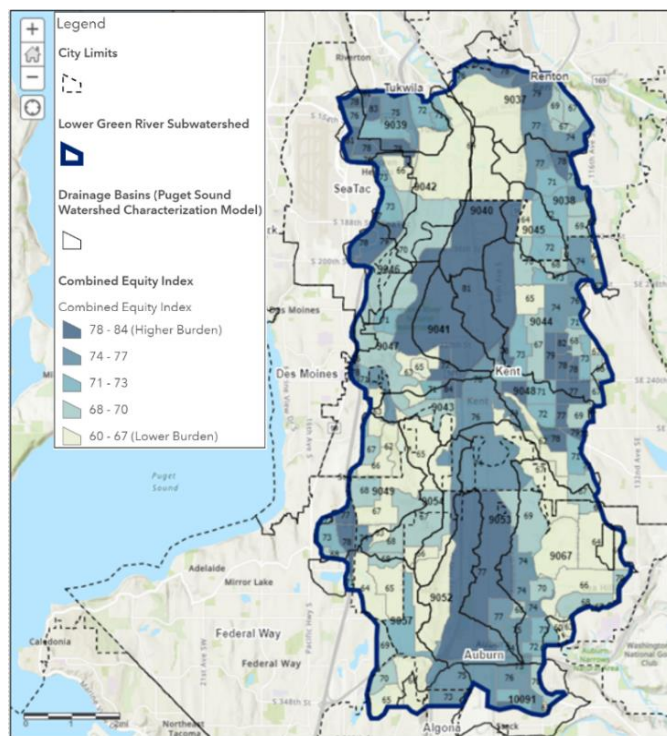


Task 2 – 303d Water Listings | Data Source: WA Department of Ecology

### 5. COMMUNITY NEEDS AND PRIORITIES

The Consultant shall identify communities within the chosen region that may experience the most benefit from the implementation of nature-based stormwater infrastructure. Contact with nature provides a multitude of health benefits and may be an important factor in disease prevention and health promotion for people who live in urban areas.

- The [Washington Health Disparities Map](#) identifies various layers of information regarding inequity in exposure and health outcomes. The Consultant should consider, in collaboration with the Client, which layers related to environmental exposures, environmental effects, sensitive populations, and socioeconomics are most relevant.
- Maps of any relevant sub-area plans and/or identified gaps in community parks and greenspace to identify areas that may be suitable for new greenspace. If available, integrate any existing plans for 10-minute walk to park areas, tree canopy planting areas, etc.
- Integrate local maps of accessible greenspace areas to identify areas where people may benefit most from introduction of greenspace.
- The [Tree Equity Score](#) maps tree cover by census block and reports other useful indicators.



Task 2 – Combined Equity Index | Data Source: EJ SCREEN and Parametrix



## TASK 2: TARGET WATERWAY OR REACH SELECTION

### 6. COUNTY OR MUNICIPAL PRIORITIES AND LOCAL PLANS

The Consultant shall review information related to county and municipal plans for stormwater improvements or needs as available. Capital improvement plans for county and municipal agencies may also offer insight into the types and locations of planned stormwater projects which may have a bearing on the project or resulting prioritization. **This may be a mandatory part of the process and may require an additional early consultation step to determine what additional information is available.**

### 7. WATER RESOURCE INVENTORY AREAS (WRIAs)

WRIAs represent the 62 administrative and planning boundaries under the authority of Ecology. Some, though not all, WRIAs have organized around planning committees, boards, or working groups **and may have additional data information and resources available.** Some can be found on Ecology's [Committees, Boards and Working Group](#) webpage. [Ecology's Statewide WRIA Finder](#) is a searchable database for WRIAs. Additional related plans, documents, and resources for some WRIAs can also be found on the [Encyclopedia of Puget Sound](#) website, though this resource has not been updated recently.

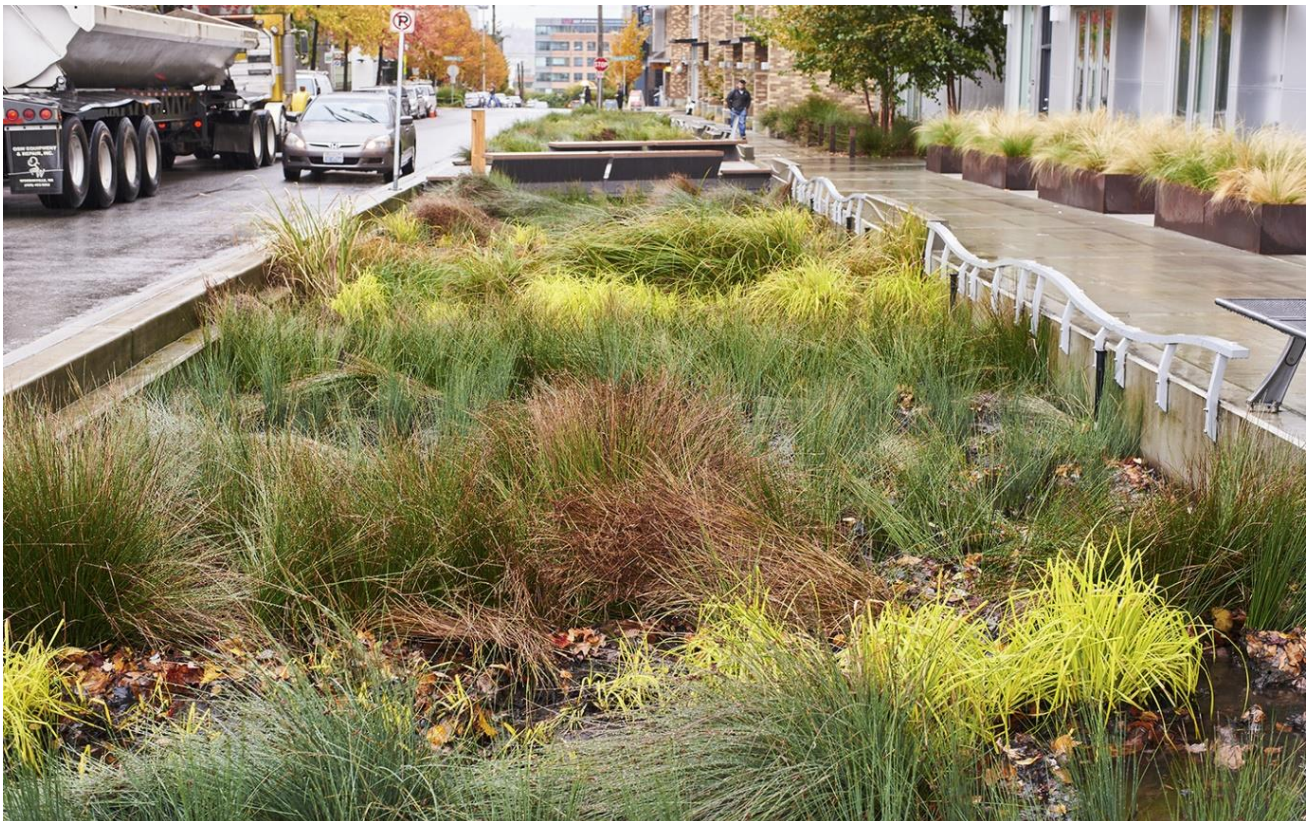
The Consultant shall compile all information using the tool developed in Task 2.1 and include a detailed reference list. In addition to providing the populated tool, the Consultant shall prepare an accompanying **Draft Regional Data Tool User Guide** to explain any components of the tool that may require user guidance, summarize data fields and sources, explain any assumptions or methodologies, highlight peculiarities in the data like gaps or inconsistent data, and to recommend any next steps as deemed appropriate. In the case of some tool types, this User Guide may be included as a sheet or addendum within the tool itself.

The Draft Regional Data Collection Tool and User Guide shall be submitted for Client review. The Client will provide any comment within 2 weeks of submittal. The Consultant shall prepare a **Comment Summary and Resolution Table** indicating the approach to solving individual comments. Following approval of the Comment Summary Table, the Consultant shall proceed with the next task prior to developing a Final Regional Data and Information Report.

#### **DELIVERABLES:**

*2.2A Populated Draft Regional Data Collection Tool and User Guide*

*2.2B Comment Summary and Resolution Table*





### 2.3 Contact Relevant State and Local Bodies

During this stage, the Consultant shall contact and potentially interview members of relevant organizations or agencies for additional information and to determine whether there are additional resources or studies that may have been overlooked in the Data Gathering and Review Task (Task 2.2). The Client should make relevant introductions and, if known, should identify potential contacts to aid the Consultant. The Consultant will then provide a **Draft Interview List** to share with the Client for feedback. The Consultant shall prepare an **Interview Summary Memorandum or Interview Notes** highlighting relevant information and shall also add any salient new information into a **Final Regional Data and Information Report**. The Consultant shall undertake up to (3) phone or in-person interviews during this task. Suggested outreach includes:

- If within the Puget Sound drainage area, the Consultant should connect with and/or review material from the [Local Integrating Organization \(LIO\)](#). LIOs are local forums that work collaboratively to develop, coordinate, and implement strategies and actions that contribute to the protection and recovery of local ecosystems. LIOs often have relationships and connections within local communities that may inform the Consultant.
- Members of local water utilities, watershed planning groups or councils, universities or extension offices, conservation districts, salmon enhancement groups, and regional Ecology offices.

#### DELIVERABLES:

2.3A Draft Interview List

2.3B Interview Summary Memorandum/Notes

2.3C Final Regional Data Tool and Report

2.4A Draft Scoring Methodology

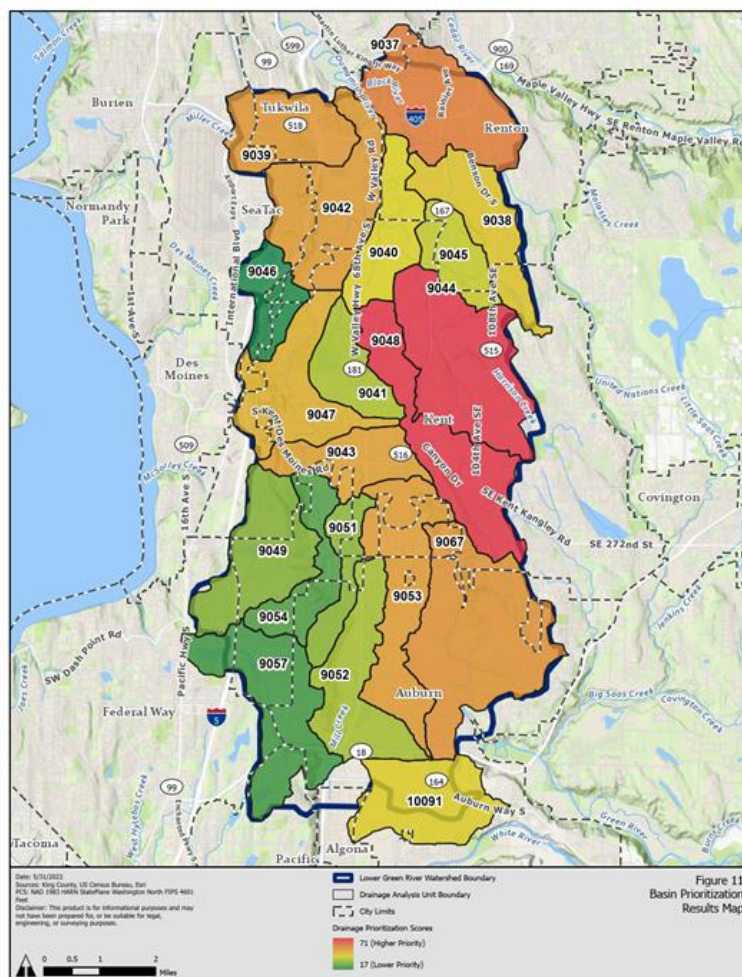
2.4B Final Scoring Methodology

2.4C Scoring Analysis and Waterway or Reach Selection

### 2.4 Priority Waterway or Reach Selection

Based on available information from previous tasks, the Consultant shall develop a scoring methodology that accounts for the variety of factors and information available and shall use this methodology to identify a preferred waterway or reach for targeted water quality and flood control improvements.

The methodology should reflect the Client's goals and objectives agreed upon in Task 1. The Consultant shall develop a **Draft Scoring Methodology** for discussion with the Client prior to finalizing the methodology and undertaking the analysis, developing the **Final Scoring Methodology and Scoring Analysis** and Waterway or Reach Selection.



Task 2 – Final Basin Prioritization



## TASK 2: TARGET WATERWAY OR REACH SELECTION

TABLE 2: EXAMPLE SCORING METHODOLOGY

|       |            | NORMALIZED SCORES             |        |                       |        |               |        |                           |        | TOTAL SCORE |
|-------|------------|-------------------------------|--------|-----------------------|--------|---------------|--------|---------------------------|--------|-------------|
|       |            | TOTAL SUSP. SED. LOAD (KG/YR) |        | COMBINED EQUITY INDEX |        | B-IBI POINTS  |        | SPAWNING OR REARING SITES |        |             |
| Basin | Basin Area | Initial Score                 | Weight | Initial Score         | Weight | Initial Score | Weight | Initial Score             | Weight | Weighted    |
| 9048  | 5813       | 0.8                           | 1      | 0.7                   | 1      | 1.0           | 0.5    | 0.3                       | 0.5    | 71          |
| 9044  | 7423       | 1.0                           | 1      | 0.8                   | 1      | 0.3           | 0.5    | 0.3                       | 0.5    | 71          |
| 9037  | 6223       | 1.0                           | 1      | 0.5                   | 1      | 0.3           | 0.5    | 0.1                       | 0.5    | 57          |
| 9067  | 9311       | 0.8                           | 1      | 0.3                   | 1      | 0.7           | 0.5    | 0.3                       | 0.5    | 53          |
| 9039  | 3900       | 0.5                           | 1      | 0.9                   | 1      | 0.3           | 0.5    | 0.0                       | 0.5    | 52          |
| 9053  | 5823       | 0.9                           | 1      | 0.3                   | 1      | 0.3           | 0.5    | 0.4                       | 0.5    | 51          |
| 9042  | 6213       | 0.7                           | 1      | 0.5                   | 1      | 0.0           | 0.5    | 0.6                       | 0.5    | 51          |
| 9043  | 3073       | 0.3                           | 1      | 1.0                   | 1      | 0.0           | 0.5    | 0.3                       | 0.5    | 50          |
| 9047  | 4820       | 0.3                           | 1      | 1.0                   | 1      | 0.0           | 0.5    | 0.2                       | 0.5    | 47          |
| 9038  | 3931       | 0.4                           | 1      | 0.4                   | 1      | 1.0           | 0.5    | 0.0                       | 0.5    | 43          |
| 10091 | 4531       | 0.8                           | 1      | 0.4                   | 1      | 0.0           | 0.5    | 0.0                       | 0.5    | 41          |
| 9040  | 3257       | 0.4                           | 1      | 0.7                   | 1      | 0.0           | 0.5    | 0.1                       | 0.5    | 40          |
| 9045  | 2279       | 0.2                           | 1      | 0.7                   | 1      | 0.3           | 0.5    | 0.1                       | 0.5    | 37          |
| 9041  | 2595       | 0.3                           | 1      | 0.7                   | 1      | 0.0           | 0.5    | 0.0                       | 0.5    | 34          |
| 9052  | 4749       | 0.5                           | 1      | 0.3                   | 1      | 0.0           | 0.5    | 0.3                       | 0.5    | 33          |
| 9051  | 1975       | 0.0                           | 1      | 0.3                   | 1      | 0.7           | 0.5    | 0.5                       | 0.5    | 30          |
| 9049  | 4978       | 0.3                           | 1      | 0.4                   | 1      | 0.3           | 0.5    | 0.1                       | 0.5    | 29          |
| 9054  | 2785       | 0.0                           | 1      | 0.0                   | 1      | 0.3           | 0.5    | 1.0                       | 0.5    | 23          |
| 9057  | 5840       | 0.2                           | 1      | 0.4                   | 1      | 0.0           | 0.5    | 0.1                       | 0.5    | 21          |
| 9046  | 2203       | 0.0                           | 1      | 0.5                   | 1      | 0.0           | 0.5    | 0.0                       | 0.5    | 17          |

## TASK 3: GATHER DETAILED INFORMATION ABOUT THE PREFERRED WATERWAY OR REACH



### NEIGHBORHOOD, WATERWAY, OR REACH SCALE ANALYSIS

#### OBJECTIVES:

- Gather more detailed information relevant to early screening of sites and design.
- Delineate catchments and map drainage and current infrastructure.
- Calculate pollutant loads and runoff volumes of catchments.

#### SUBTASKS:

- 3.1: Gather Input from Communities, Interested and Affected Parties, and Tribes
- 3.2: Characterization of Stormwater Infrastructure and Runoff
- 3.3: Collect and Review Additional Relevant Local Information

#### DELIVERABLES:

- 3.1A Community and Interested and Affected Parties Input Memorandum*
- 3.2A Stormwater Infrastructure Base Maps*
- 3.2B Highly Polluting and Accessible Runoff Sources mapping and calculations, including catchments, interception points, and volumes.*
- 3.3A Structured data filing system and Data Summary Spreadsheet*



### 3.1 Gather Input from Communities, Interested and Affected Parties, and Tribes

The main objectives of this task are to seek overlap of desired outcomes, to foster collaboration and knowledge sharing, and to potentially identify project sites aligned with community and tribal needs. **The first step is to identify active neighborhood, community, or planning groups (these may also include local utilities or community service districts) who may have detailed knowledge of local priorities and agendas.** This should be done in partnership with the Client.

The Consultant shall contact relevant groups in an effort to understand land use priorities and ongoing projects, particularly those that might serve a dual purpose as stormwater intervention sites. The Client should make any relevant introductions as able. The Consultant should be sure to use terms relevant to each group's priorities in their communications. For example, terms like "land use" and "GSI" may not be appropriate in all contexts.

The Client's tribal liaison or representative, **with the support of the Consultant**, should inform tribal governments of the area prioritized and engage to learn their priorities, knowledge, and understanding of the area's issues and opportunities. Early notification, coordination, and involvement throughout the project are strongly recommended. If members of the project team are unfamiliar with engaging with tribal governments, it is recommended to seek knowledge and understanding before doing so. In addition to the resources below, a course such as [Indian Country 101 & 102](#), developed by TNC and the Whitener Group could be considered to support growth in your engagement skills.

The Consultant shall prepare a **Tribal, Community, and Interested and Affected Parties Input Memorandum** summarizing interactions and relevant findings. This scope assumes **(3)** engagements with relevant community and interested and affected groups and a minimum of **(3)** hours support for tribal engagement.

*Note: Effective community engagement guidance is beyond the scope of this template but is an essential component of project design and implementation. The Client should consider if Task 3.1 is best met through the Consultant or through other means. Portions of Task 3.1 may be within the scope and capacity of the Client's broader organization and/or require a secondary consultant.*

#### DELIVERABLES:

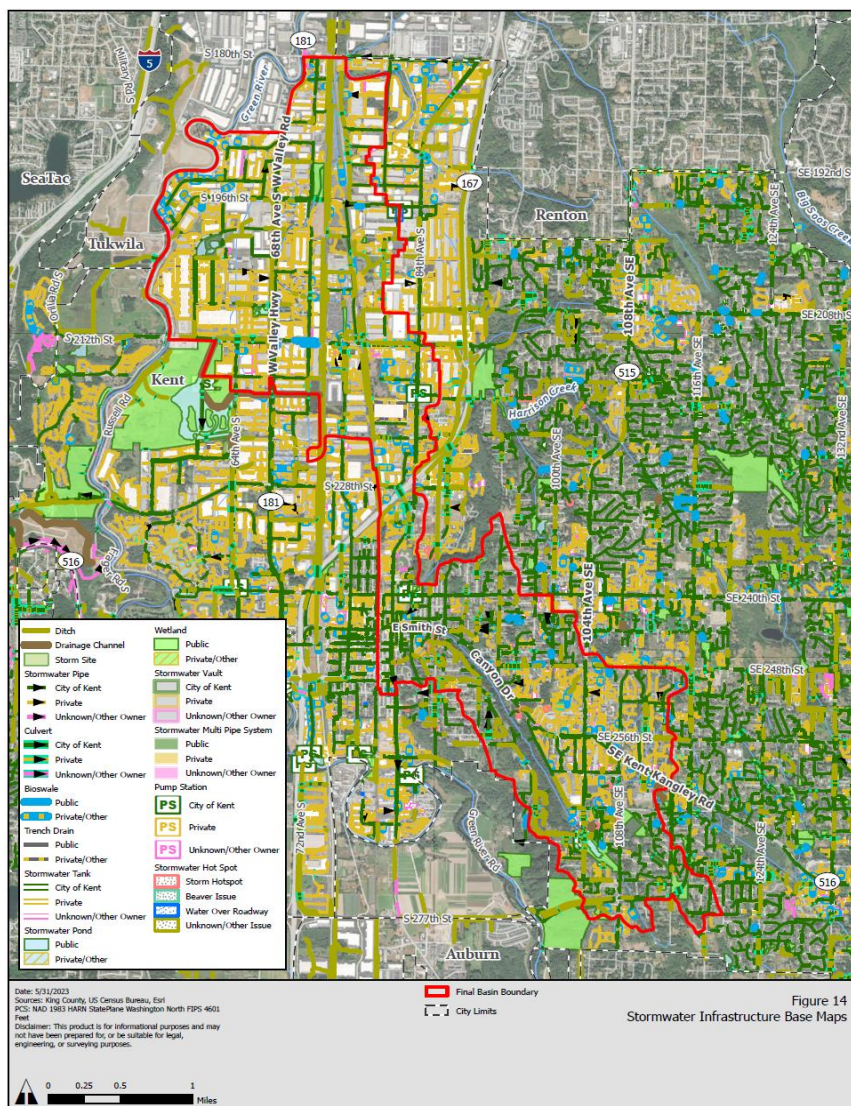
3.1A Community and Interested and Affected Parties Input Memorandum



## 3.2 Characterization of Stormwater Infrastructure and Runoff

To gain a firm understanding of local stormwater infrastructure and to characterize opportunities to intercept the most highly polluting and accessible stormwater runoff sources, the Consultant shall undertake the following:

1. Within the vicinity of the selected waterway, the Consultant shall gather, review, and **develop base maps** of stormwater infrastructure, building off any information provided by the Client. Maps should be developed that are consistent with the Client's preferred information system. This will include combined and separate stormwater system layouts, catchment delineations, existing green infrastructure projects, and outfalls owned by the respective city and/or county, WSDOT, Federal Highways Administration, and tribal governments. Any illicit discharge points should also be identified to either correct or ensure no harm to the proposed work. This data should be integrated into the same information system identified in Task 2.1. The main objective is to establish an overall picture of the stormwater conveyance and management system layout around the selected waterway to inform the site selection process. **If information is not up to date, incomplete, or suspected to be incorrect, site visits may be warranted at this stage (Task 4).**



Task 3 – Stormwater Infrastructure | Data Source: City of Kent

Overlaying land ownership from relevant potential partners including parks departments, the Department of Transportation, and other public entities with shared interests may be useful at this stage.

The Consultant shall also review maps of existing nature-based stormwater infrastructure assets available from [Soundimpacts.org](https://www.soundimpacts.org).

While this is a useful resource, it is by no means comprehensive, and other sources should also be consulted.

In preparing the base maps, the Consultant shall **identify and map “runoff ownership.”** Many outfalls receive runoff from various jurisdictional authorities and “ownership” of runoff typically falls to the operator of the outfall or storm sewer. However, jurisdictions contributing runoff to outfalls

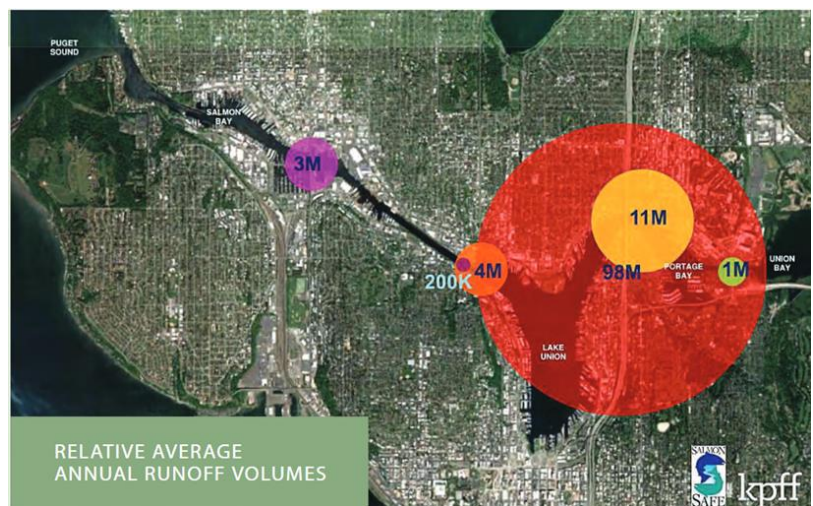
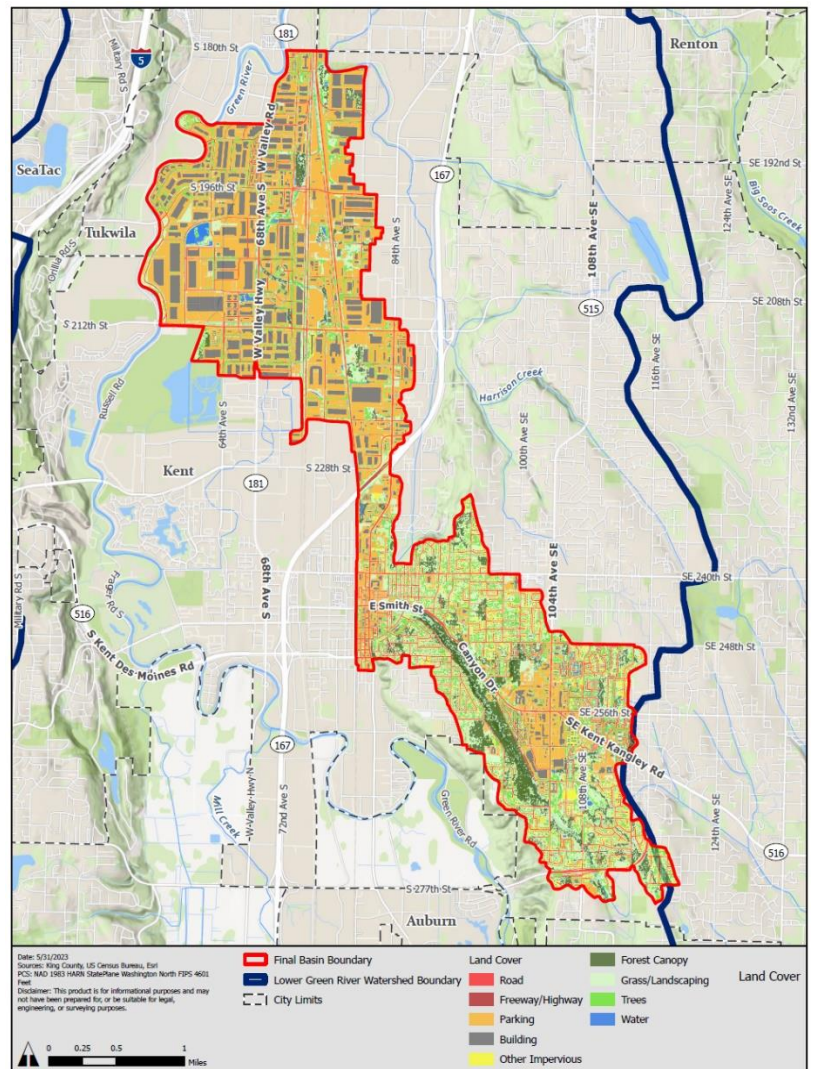


## TASK 3: GATHER DETAILED INFORMATION ABOUT THE PREFERRED WATERWAY OR REACH

maybe motivated to participate in joint projects in order to fulfill regulatory mandates. While other sources may be consulted, the information provided below includes information on WSDOT-managed outfalls. The Consultant shall check with local stormwater authorities for additional information.

- a. The Consultant shall review and map WSDOT outfall locations and review WSDOT's most recent Transportation Asset Management Plan (TAMP) for relevant information.
2. Within the vicinity of the selected waterway, the Consultant shall **identify, map, and evaluate the highest impact (as defined in Task 1) and accessible stormwater runoff sources in the area of interest**. The Consultant shall identify and evaluate those sources of roadway runoff that can be intercepted and routed to a new project site. These typically include elevated highways and bridges, shallow stormwater sewers and outfalls, and, in some instances, "long-run" surface flow from roadways that have not yet drained to a sewer system. Using the information gathered previously on local stormwater conveyance and management infrastructure, the Consultant shall:

- a. Identify, delineate, and map catchments and potential interception points of highly polluting and accessible runoff sources. For each catchment, tabulate areas of distinct surface types (e.g. freeway/highway, surface street, parking lot, roof, other impervious and pervious/landscaped areas)
- b. Calculate the volume of runoff that can be diverted at each interception point, including calculations for design storm events (confirm design standards with local authorities or permits based on runoff "ownership") and annual capture, and a breakdown of the portion of runoff derived from various surface types. Calculate potential pollutant loads at each interception point given good Event Mean Concentration (EMC) data.



Runoff Volume Opportunity



## TASK 3: GATHER DETAILED INFORMATION ABOUT THE PREFERRED WATERWAY OR REACH

- c. Determine and/or map existing treatment percentage within each catchment to identify help prioritize catchments for intervention. Existing stormwater infrastructure may be fully absent, designed to vintage thresholds, or meet the current thresholds. Assessing the stormwater manual updates will allow the Consultant to determine categorization based on age of infrastructure.

### DELIVERABLES:

3.2A Stormwater Infrastructure Base Maps

3.2B Highly Polluting and Accessible Runoff Sources mapping and calculations, including catchments, interception points, and volumes.

## 3.3 Collect and Review Additional Relevant Local Information

During this task, the Consultant will collect and review additional relevant data and information to inform a site selection process. The Client should provide any local relevant information to the Consultant, including the following:

### 1. SOIL SURVEY MAPS

Identify areas with adequate infiltration capacity that may be better suited for siting nature-based stormwater infrastructure. While it is always better to have site-specific soil boring and infiltration test data soil survey maps can provide an initial indication of suitability during the site screening stage. Natural Resource Conservation Service (NRCS) soil surveys for Washington State can be sourced through the [NRCS website](#).

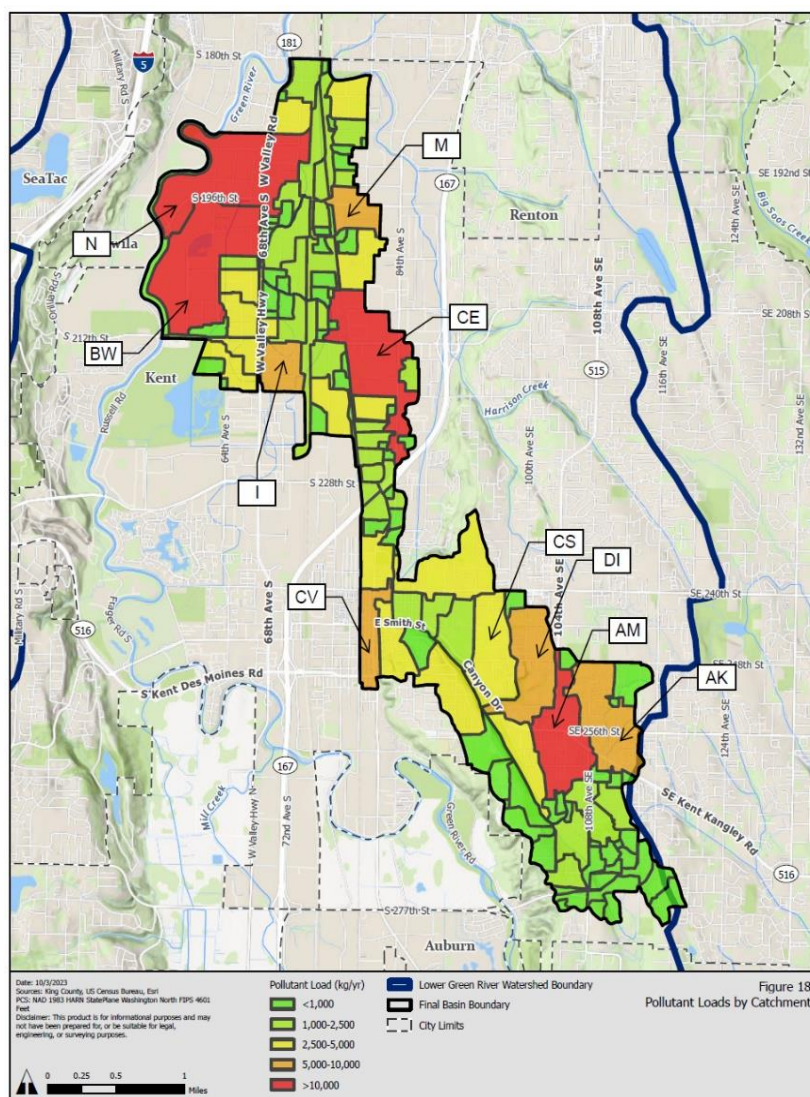
### 2. SOIL CONTAMINATION ISSUES.

The Consultant shall use judgment when deciding whether a site should be excluded from further analysis based on available contamination data.

The [“What’s in My Neighborhood”](#) map from Ecology may provide some initial insights into contamination and cleanup efforts. A search for [leaking underground storage tanks](#) can be made through Ecology’s website.

### 3. FLOOD MAPS

Siting nature-based stormwater infrastructure within flood zones is not ideal and an understanding of the flood risk at potential project sites will help screen for suitable locations.



Task 3 - Pollutant Loading | Data Source: TNC Stormwater Heat Map

While there may be designs that can better accommodate flooding, such as planting flood-tolerant vegetation, flooding of stormwater management facilities can create an increase in maintenance requirements due to the accumulation of sediment and damage to facilities during flood events. The Consultant should review the flood [map platform](#) from Ecology as well as Federal Emergency Management Agency (FEMA) [flood maps](#).



## TASK 3: GATHER DETAILED INFORMATION ABOUT THE PREFERRED WATERWAY OR REACH

4. **GROUNDWATER SYSTEMS AND WELL HEAD PROTECTION BOUNDARIES** that should be considered to protect drinking water supply. The WA Department of Health maintains time of travel maps that may be helpful.
5. **LOCAL, STATE, AND FEDERAL AGENCY PLANS** that impact the area, including transportation and utility plans, neighborhood plans, and business districts. If available, neighborhood-scale land use mapping will aid in better understanding the area. Use discretion in determining what types of information might be relevant to the project.
6. **REGULATORY MANDATES** of jurisdictional authorities contributing runoff to the selected waterway. These might include transportation, industrial or regional/municipal NPDES permits, local stormwater ordinances, or other local planning regulations. Identify design storm requirements and approved treatment processes or interventions.
7. **CLIMATE SCENARIOS** including predicted changes to rainfall depth, rainfall intensity, flood maps, air temperature, sea level rise, and impact on tidal systems. Relevant climate change information for Puget Sound is hosted by a number of organizations including the [Department of Ecology](#), [Puget Sound Institute](#), and the [University of Washington Climate Impacts Group](#). Sea level rise information is available in the report, [“Projected Sea Level Rise for Washington State.”](#) from the Washington Coastal Resilience Project.

The Consultant shall collect and save data in a designated filing system and shall maintain a **Data Summary Spreadsheet** outlining types of data available, relevant source references, and notes on information gathered. This may be integrated with the tool developed in Task 2.1 as appropriate.

### **DELIVERABLES:**

3.3A Structured data filing system and Data Summary Spreadsheet





## TASK 4: IDENTIFY POTENTIAL SITES FOR COMMUNITY AND NATURE BASED SOLUTIONS



### OBJECTIVES:

- Identification of up to **(15)** potential sites that are suitable for community and nature-based solutions.
- Conduct site visits to the top **(5-10)** sites to screen and select the **(5)** best sites for final evaluation.

### SUBTASKS:

- 4.1: Desktop Block Scale Analysis
- 4.2: Site Visits and Recommendations

### DELIVERABLES:

- 4.1A Draft Short List or Spreadsheet of Potential Sites (up to 15 sites)*
- 4.1B Comments Summary and Resolution Table*
- 4.2A Field Notes (if requested from the Client)*
- 4.2B Final Short List of Potential Sites (up to five sites) and Data Summary Spreadsheet*



## TASK 4: IDENTIFY POTENTIAL SITES FOR COMMUNITY AND NATURE BASED SOLUTIONS

### 4.1 Desktop Block Scale Analysis

The Consultant shall undertake a desktop screening of parcels that may be appropriate for nature-based stormwater projects. These may be parcels nearby or adjacent to existing outfalls, parcels which can capture significant impermeable and roadway surfaces, or parcels which, on their own, contribute significantly to stormwater issues. This task includes the following activities:

1. Based on the combination of information gathered, Client objectives, and observations thus far, the Consultant shall create a **Draft Short List of Potential Sites**. This list can include up to **(15)** sites. This list should be presented to the Client for review with all available and pertinent information for each site.
2. Review available GIS and stormwater conveyance data for each site. Using engineering judgement, determine the relative hydraulic feasibility for stormwater interventions at each site.
3. Using the approved list, the Consultants shall **contact property owners** and other interested and affected parties to discuss the possibility of developing stormwater infrastructure projects. The local municipality may be helpful to gather information about multiple parcels and to directly engage property owners. Sites where property owners are strictly opposed to projects or where ownership is uncertain will be eliminated. During discussions, the Consultant shall be prepared to share some examples of projects considered to be exemplary in terms of design, co-benefit, and amenity value.

The Client will provide examples to the Consultant. The Consultant will make meeting notes available to the Client. It is assumed that the Consultant will connect with up to **(15)** property owners during this task.

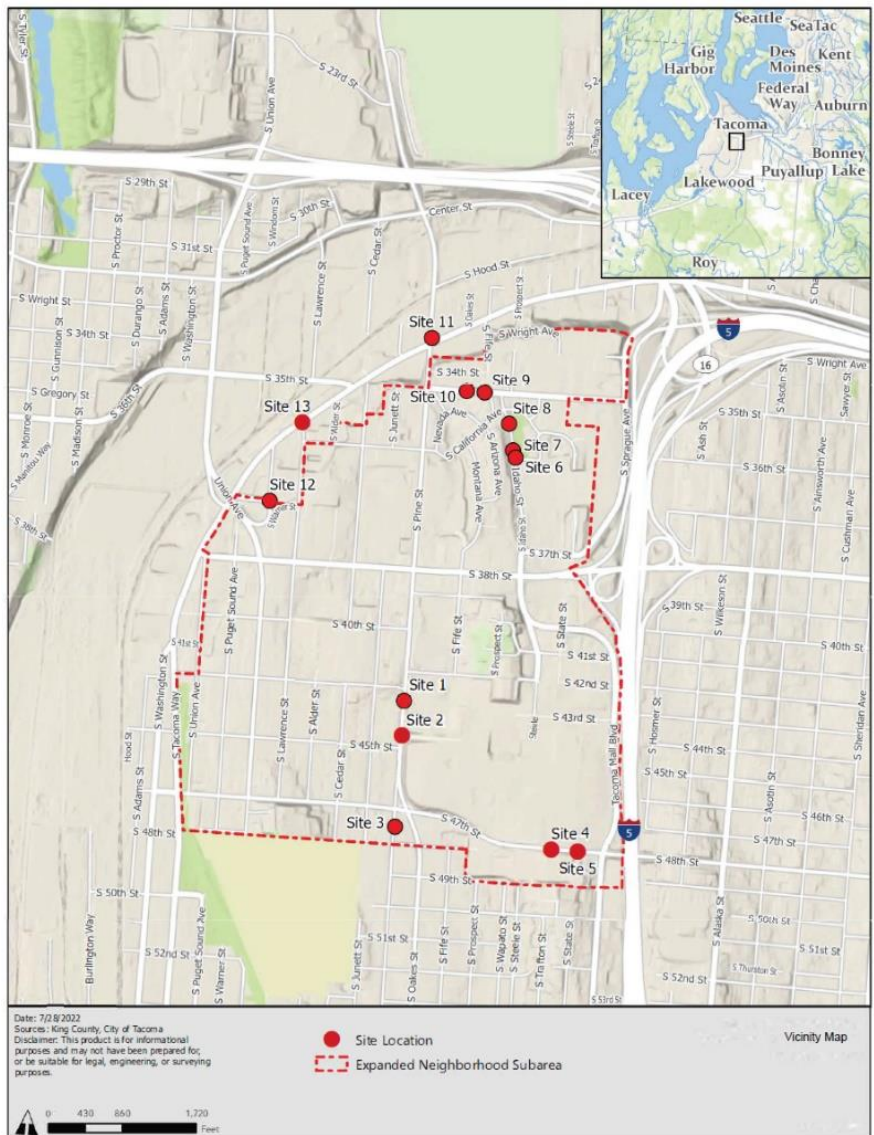
The site evaluation analysis shall be summarized in a **Draft Short List or Spreadsheet of Potential Sites**.

Following receipt and documentation of the Client's comments in a **Comments Summary and Resolution Table**, the Consultant shall proceed to site visits.

#### DELIVERABLES:

*4.1A Draft Short List or Spreadsheet of Potential Sites (up to 15 sites)*

*4.1B Comments Summary and Resolution Table*



Task 4 - Vicinity Map

### 4.2 Site Visits and Recommendations

1. **Undertake site visits** to the most promising (5-10) sites based on the analysis of highly polluting and accessible runoff sources. Using the previously prepared base maps; the Consultant shall make observations of outfalls, parcel, and embankment conditions, and take photographs of possible intervention sites. Some form of in-field data collection software is preferred to facilitate accurate observations and easy access to information post-survey. Alternately, prior to the site visit, the Consultant shall prepare a large-scale parcel map (with utility information) to take notes and to confirm and ground truth the information discovered during desktop analysis. **Field notes** shall be made available to the Client.
2. **A final short list of potential intervention sites** will be prepared with no more than **five (5)** of the most promising sites to be advanced to the next task.
3. Identify and assess willingness for who would be responsible for long term operations and maintenance of the most promising sites. This may be, for example, the property owner, a utility, or local neighborhood groups.

#### **DELIVERABLES:**

4.2A *Field Notes (if requested from the Client)*

4.2B *Final Short List of Potential Sites (up to five sites)*





## TASK 5: SCREEN AND SELECT PREFERRED PROJECT SITE(S)



### SITE SCALE ANALYSIS

#### OBJECTIVES:

- Analyze the five (5) shortlisted sites using specific parameters, estimate the cost of treatment, and footprint.
- Rank the shortlisted sites and select the final site(s) for design.

#### SUBTASKS:

Task 5.1: Site Evaluation  
Task 5.2: Scoring and Final Site Selection

#### DELIVERABLES:

*5.1A Draft Site Evaluation Report*  
*5.1B Comments Summary and Resolution Table*  
*5.2A Draft Scoring Methodology*  
*5.2B Final Scoring Analysis and Site Selection Recommendations*  
*5.2C Final Site Evaluation Report*

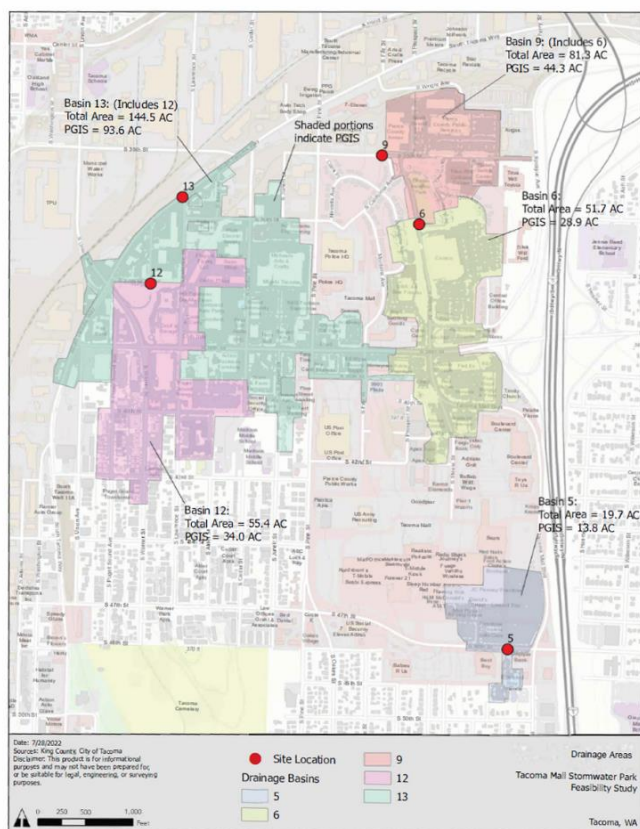


## TASK 5: SCREEN AND SELECT PREFERRED PROJECT SITE(S)

### 5.1 Site Evaluation

For each of the **five (5)** shortlisted sites the Consultant shall evaluate the following:

- Delineate potential contributing catchment areas and land use types if finer scale is required from Task 3.
- Calculate Design Storm Volumes and Annual Pollutant Loading for selected parameters using appropriate local or regional stormwater design standards.
- Conduct a desktop review of available geotechnical and soil information to determine if there is a potential for infiltration at the site.
- Calculate rough footprint areas necessary for stormwater interventions (e.g. bioretention basin, flow through planters, constructed wetland etc.). Ensure conservative maintenance and pretreatment estimates are included in footprint estimates.
- Identify an appropriate location(s) on each property for an intervention with consideration for footprint requirements, drainage patterns, slopes, soils, existing site programing and utilities.
- Clarify which community or other planning priorities each opportunity could potentially address or align with for outcomes and/or funding. Examples of plans include transportation, neighborhood, parks, recreation, and open space plans.
- Confirm identity and willingness of responsible party for long-term operations and maintenance of the most promising sites. This may be, for example, the property owner, a utility, or local neighborhood groups. Consider long-term costs and capacity and determine funding sources as well as possible need for maintenance easements.
- Calculate the rough cost of stormwater interventions for each site and report estimates for construction and maintenance. (i.e. \$/gal treated, \$/acre)



Task 5 – Drainage Areas

#### TECHNICAL MEMORANDUM (CONTINUED)



### Tacoma Mall Neighborhood Stormwater Park Feasibility Study

Site 12: S Tacoma Way Cloverleaf Bioretention



S Tacoma Way Cloverleaf

#### Description

A stormwater treatment facility is proposed within the grassy clover leaf area along the on-ramp from S Tacoma Way to Union Ave. Available subsurface data suggests that underlying Steilacoom Gravels are highly permeable.; therefore, it is proposed that this facility would be a combination bioretention and infiltration facility.

This facility would treat runoff from the residential, commercial, and roadway runoff from adjacent streets to the east and south. See Figure 5

#### Site Benefits

- Utilizes a relatively unused piece of public land
- Future sections of the Water Flume Line Trail will be near the facility
- Sufficient space available for the proposed facility
- Infiltration of stormwater may help alleviate flooding issues
- Underlying Steilacoom Gravel has very high infiltration capacity

#### Site Constraints/Difficulties

- 33 Percent of the PGIS treated by this site has existing water quality treatment
- The sloped site makes construction slightly more challenging; the facility may need to be constructed in stepped bioretention cells or require additional supporting structure

|                                |                                                        |
|--------------------------------|--------------------------------------------------------|
| <b>RETROFIT TYPE</b>           | Bioretention and Infiltration Facility                 |
| <b>LOCATION</b>                | S Tacoma Way and Union Ave                             |
| <b>EXISTING USE</b>            | None - Open Grassy Area                                |
| <b>TRIBUTARY DRAINAGE AREA</b> | 55.4 acres<br>43.8 acres impervious<br>34.0 acres PGIS |
| <b>SITING NOTES</b>            | Parcel is owned by City of Tacoma                      |
| <b>FACILITY AREA</b>           | 23,000 square feet                                     |
| <b>ANNUAL TREATMENT VOLUME</b> | 34.1 MGAL                                              |
| <b>TREATMENT FLOW RATE</b>     | 3.998 cfs                                              |
| <b>COST RANGE</b>              | \$3,730,000 - \$6,654,000                              |



## TASK 5: SCREEN AND SELECT PREFERRED PROJECT SITE(S)

The site evaluation analysis shall be summarized in a **Draft Site Evaluation Report**. This shall include graphics/maps and other figures that provide a visualization of different opportunity's locations, BMP types, treatment volumes, catchment areas, and other appropriate information.

Following receipt and documentation of the Client's comments in a **Comments Summary and Resolution Table**, the Consultant shall proceed to scoring and final site selection.



TABLE 3: POTENTIAL POLLUTANT REMOVAL BY SITE

| POLLUTANT OF CONCERN   | POTENTIAL AMOUNT REMOVED (LBS/YEAR) |        |        |         |         | PERCENT REMOVED |
|------------------------|-------------------------------------|--------|--------|---------|---------|-----------------|
|                        | SITE 5                              | SITE 6 | SITE 9 | SITE 12 | SITE 13 |                 |
| Total Suspended Solids | 9420                                | 19690  | 30150  | 23180   | 63760   | 89%             |
| Total Copper           | 1.7                                 | 3.5    | 5.3    | 4.1     | 11.2    | 75%             |
| Dissolved Copper       | 0.14                                | 0.29   | 0.44   | 0.34    | 0.94    | 25%             |
| Total Zinc             | 10.6                                | 22.3   | 34.1   | 26.2    | 72.1    | 79%             |
| Dissolved Zinc         | 2.4                                 | 4.9    | 7.5    | 5.8     | 15.9    | 55%             |

### DELIVERABLES:

5.1A Draft Site Evaluation Report

5.1B Comments Summary and Resolution Table

## 5.2. Scoring and Final Site Selection

Based on both quantitative and qualitative site characteristics, the Consultant shall create a **Draft Scoring Matrix** with key site characteristics defined and classifications or scores, for example, “unsuitable”, “poor”, “good”, “better”, “best” used to define scores of 1-5. Examples of site characteristics include hydraulic feasibility, treatment potential, feasibility of land use, cost (including grant funding feasibility), and community benefit. However, selection based purely on quantified scoring may not always be as straightforward or effective as making a qualified decision based on knowledge, judgment, and objectives. Some site characteristics may simply exclude a site from consideration or weaken its standing to the extent that it no longer makes sense to consider.

The Consultant and Client shall agree on a **Final Scoring Methodology** based on the scoring and qualitative considerations, after which time the Consultant shall undertake the scoring analysis, make a final recommendation for site selection, and update the site evaluation report with the final recommendation.

### DELIVERABLES:

5.2A Draft Scoring Methodology

5.2B Final Scoring Analysis and Site Selection Recommendations

5.2C Final Site Evaluation Report

TABLE 4: EXAMPLE OF FINAL SCORING METHODOLOGY

| SITE # | SITE DESCRIPTION OR ADDRESS  | POLLUTANT REMOVAL POTENTIAL | HYDRAULIC FEASIBILITY | EXISTING WQ | PROPERTY ACQUISITION FEASIBILITY | PUBLIC USE | ALIGNMENT W/EXISTING PLANS | OVERALL SCORE |
|--------|------------------------------|-----------------------------|-----------------------|-------------|----------------------------------|------------|----------------------------|---------------|
|        | % Weight                     | 25%                         | 20%                   | 5%          | 25%                              | 20%        | 5%                         |               |
| 5      | SW Corner Tacoma Mall        | 1                           | 5                     | 5           | 3                                | 3          | 3                          | 3.0           |
| 6      | Lincoln Heights Park         | 2                           | 2                     | 5           | 4                                | 5          | 3                          | 3.3           |
| 9      | 2602 S 35th St               | 3                           | 3                     | 4           | 1                                | 3          | 5                          | 2.7           |
| 12     | S Tacoma Way Clover Leaf     | 2                           | 3                     | 1           | 5                                | 3          | 5                          | 3.3           |
| 13     | S Tacoma Way Railroad Parcel | 5                           | 1                     | 5           | 1                                | 1          | 1                          | 2.2           |



# CLIENT NEXT STEPS

This template should produce high-level conceptual designs and cost estimates that can be integrated into Capital Improvement Plans and prioritized for implementation. The results may also provide sufficient information to apply for design funding opportunities through state or federal programs. Some resources to consider include:

- **Green Infrastructure Funding Opportunities** – compilation of resources
- **Water Quality Grants and Loans** - Washington State Department of Ecology
- **Hazard Mitigation Assistance Grants** – FEMA (If also mitigating flood risks)



# APPENDIX A – NOTIONAL BUDGET

|                     |                                                                   |                    |             | Sr. Consultant<br>(PM) | Sr. Engineer      | Journey Engineer   | Sr. GIS Analyst    | Publication<br>Supervisor | Project Controls<br>Specialist | City Staff Hours |
|---------------------|-------------------------------------------------------------------|--------------------|-------------|------------------------|-------------------|--------------------|--------------------|---------------------------|--------------------------------|------------------|
| 2023 Billing Rates: |                                                                   |                    |             | \$260.00               | \$180.00          | \$150.00           | \$135.00           | \$145.00                  | \$135.00                       |                  |
| Task                | Description                                                       | Labor Dollars      | Labor Hours |                        |                   |                    |                    |                           |                                |                  |
| 1                   | Agreement on Project Goals and Desired Outcomes                   | \$2,170.00         | 10          | 5                      | 4                 | 1                  | 0                  | 0                         | 0                              | 7                |
|                     | Agreement on Project Goals and Desired Outcomes                   | \$1,290.00         | 6           | 3                      | 2                 | 1                  |                    |                           |                                | 4                |
|                     | Project Kickoff Workshop                                          | \$880.00           | 4           | 2                      | 2                 |                    |                    |                           |                                | 3                |
| 2                   | Target Waterway or Reach Selection                                | \$26,292.00        | 140         | 5                      | 15                | 114                | 6                  | 0                         | 0                              | 34               |
|                     | Create Regional Data Collection System                            | \$3,675.00         | 25          |                        |                   | 20                 | 5                  |                           |                                |                  |
|                     | Data and Information Gathering and Review                         | \$9,435.00         | 61          |                        | 10                | 50                 | 1                  |                           |                                | 10               |
|                     | Contact Relevant State and Local Bodies                           | \$1,900.00         | 9           | 5                      |                   | 4                  |                    |                           |                                | 20               |
|                     | Priority Waterway or Reach Selection                              | \$6,900.00         | 45          |                        | 5                 | 40                 |                    |                           |                                | 4                |
|                     | Management reserve (20%)                                          | \$4,382.00         |             |                        |                   |                    |                    |                           |                                |                  |
| 3                   | Gather detailed information about the preferred waterway or reach | \$29,975.00        | 175         | 20                     | 5                 | 60                 | 90                 | 0                         | 0                              | 44               |
|                     | Tribal, Community and Interested and Affected Parties Input       | \$2,600.00         | 10          | 10                     |                   |                    |                    |                           |                                | 40               |
|                     | Characterization of Stormwater Infrastructure and Runoff          | \$17,470.00        | 119         | 5                      | 4                 | 40                 | 70                 |                           |                                |                  |
|                     | Collect and Review Additional Relevant Local Information          | \$7,180.00         | 46          | 5                      | 1                 | 20                 | 20                 |                           |                                | 4                |
|                     | Management reserve (10%)                                          | \$2,725.00         |             |                        |                   |                    |                    |                           |                                |                  |
| 4                   | Identify Potential Sites for Community and Nature Based Solutions | \$9,427.00         | 55          | 4                      | 6                 | 25                 | 20                 | 0                         | 0                              | 0                |
|                     | Desktop Block Scale Analysis                                      | \$6,710.00         | 43          | 4                      | 4                 | 15                 | 20                 |                           |                                |                  |
|                     | Site Visits and Recommendations                                   | \$1,860.00         | 12          |                        | 2                 | 10                 |                    |                           |                                |                  |
|                     | Management reserve (10%)                                          | \$857.00           |             |                        |                   |                    |                    |                           |                                |                  |
| 5                   | Screen and Select Preferred Project Site(s)                       | \$21,208.00        | 120         | 8                      | 16                | 80                 | 0                  | 16                        | 0                              | 4                |
|                     | Site Evaluation                                                   | \$9,980.00         | 62          | 4                      | 8                 | 50                 |                    |                           |                                |                  |
|                     | Scoring and Final Site Selection                                  | \$9,300.00         | 58          | 4                      | 8                 | 30                 |                    | 16                        |                                | 4                |
|                     | Management reserve (10%)                                          | \$1,928.00         |             |                        |                   |                    |                    |                           |                                |                  |
| 0                   | Project Management                                                | \$7,860.00         | 36          | 24                     | 0                 | 0                  | 0                  | 0                         | 12                             | 12               |
|                     | Project management and invoicing                                  | \$7,860.00         | 36          | 24                     |                   |                    |                    |                           | 12                             | 12               |
|                     |                                                                   |                    |             |                        |                   |                    |                    |                           |                                |                  |
|                     |                                                                   |                    |             |                        |                   |                    |                    |                           |                                |                  |
|                     | <b>Labor Totals: (hours)</b>                                      |                    | 526         | 61                     | 42                | 279                | 116                | 16                        | 12                             | 101              |
|                     | <b>Totals:</b>                                                    | <b>\$96,932.00</b> |             | <b>\$15,860.00</b>     | <b>\$7,560.00</b> | <b>\$41,850.00</b> | <b>\$15,660.00</b> | <b>\$2,320.00</b>         | <b>\$1,620.00</b>              |                  |
|                     | <b>Other Direct Expenses</b>                                      |                    |             |                        |                   |                    |                    |                           |                                |                  |
|                     | Mileage - \$0.575/mile                                            | \$57.50            |             |                        |                   |                    |                    |                           |                                |                  |
|                     | <b>Other Direct Expenses Total:</b>                               | <b>\$57.50</b>     |             |                        |                   |                    |                    |                           |                                |                  |
|                     | <b>Total</b>                                                      | <b>\$96,989.50</b> |             |                        |                   |                    |                    |                           |                                |                  |





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