

City of Lakewood



Stormwater Management Action Plan: Receiving Water Prioritization

prepared by

City of Lakewood
Public Works and Engineering

in accordance with

NPDES Western Washington Phase II Municipal Stormwater Permit

June 2022

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Introduction

The City of Lakewood owns and operates a stormwater conveyance system that discharges collected stormwater into bodies of surface water under the terms of the NPDES Western Washington Phase II Municipal Stormwater Permit. The current iteration of the NPDES permit, issued August 19, 2019, stipulates in special condition S5.C.1.d that each permittee must complete a Stormwater Management Action Plan (SMAP). The SMAP is a planning process that will result in the identification of specific actions to address water quality concerns in a high-priority watershed within the permittee's jurisdiction. The SMAP is a three-part requirement. The schedule for the three parts is as follows:

- | | | |
|------|---------------------------------------|----------------|
| i. | Receiving Water Conditions Assessment | March 31, 2022 |
| ii. | Receiving Water Prioritization | June 30, 2022 |
| iii. | Stormwater Management Action Plan | March 31, 2023 |

The *Receiving Water Conditions Assessment* (RWCA) was submitted to Ecology as part of the City's Stormwater Management Program annual report in March 2022. The RWCA examined the conditions of water bodies whose watersheds are wholly or partly situated within Lakewood, including discussions of water quality impairments, land use and land cover, and expected future development.

This document presents the second step of SMAP: *Receiving Water Prioritization*. This step builds on the work of the RWCA by evaluating and ranking a pared-down list of receiving waters that have been identified as potential candidates for SMAP planning. The document contains three sections:

1. Explanation of the prioritization criteria that are used to rank the receiving waters
2. Discussion and scoring of the candidate receiving waters
3. Conclusions and recommendations

Prioritization Criteria

Ecology's SMAP guidance document (Ecology 2019a), while providing a list of general principles that should be considered in the ranking of receiving waters, encourages each permittee to develop a process that is specific to their jurisdiction and represents the actual priorities of local stakeholders. In the case of Lakewood, each receiving water is evaluated holistically using two general criteria: **importance** of the receiving water and **opportunity** of the City to influence the receiving water through SMAP actions.

Importance

This criterion considers the value that each receiving water holds for the City, its residents, and local wildlife. The following types of water bodies will be prioritized:

- Water bodies that are large and well-known to the public^{1,7}
- Water bodies that provide habitat to salmon, which are environmentally and economically important in Puget Sound⁵
- Water bodies that are used recreationally for swimming, fishing, and/or boating⁶
- Water bodies that have public access points, particularly for members of underserved or overburdened communities⁶

Opportunity

This criterion considers the extent to which the City can protect or restore the water body through targeted actions that are within the scope of SMAP. Such actions include strategic stormwater retrofits, land management strategies, and targeted NPDES permit actions such as maintenance, source control inspections, and public outreach efforts. The following types of water bodies will be prioritized:

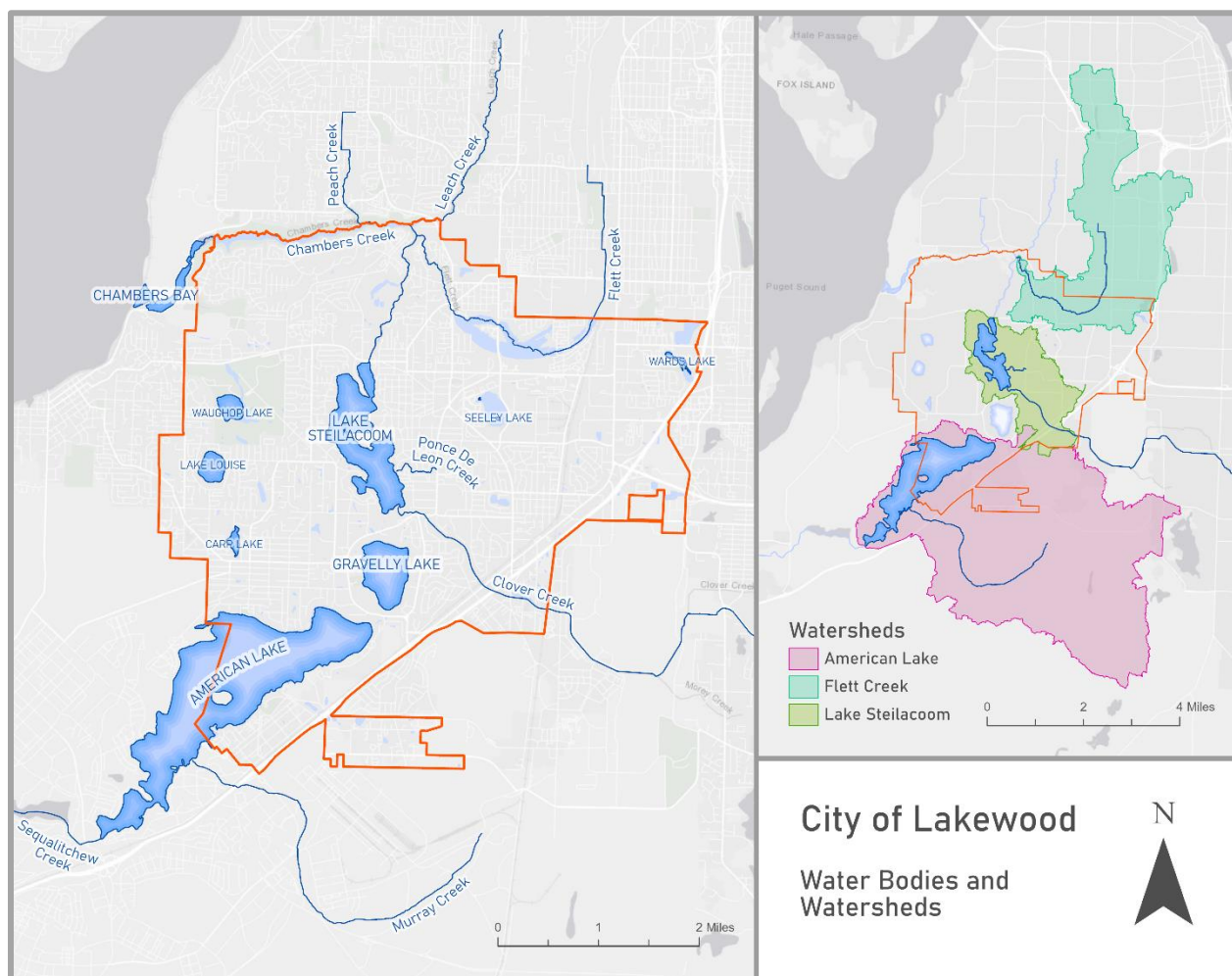
- Water bodies whose watersheds are located mainly within city limits. If large portions of the watershed are located upstream (especially if these areas are highly developed), the City will have less influence over pollutants entering the water body.²
- Water bodies that may benefit from stormwater retrofits (added or upgraded BMPs/treatment facilities to address stormwater impacts from existing development). A water body might benefit from retrofits if there are areas within its drainage basin inside the City that meet the following criteria⁴:
 - a) the area contains land use and land cover types that typically generate pollutants or alter hydrologic regimes (industrial uses, intensive urban development, or high-traffic roads)
 - b) stormwater from the area discharges directly into the receiving water rather than infiltrating or discharging to a storm pond, and
 - c) flow control and/or treatment facilities are not in place or are not sufficient to mitigate impacts from the discharge
- Water bodies with riparian zones (i.e. streambanks) that may be able to be protected or improved through land management strategies, such as restoration efforts or conservation.⁸
- Water bodies whose watersheds contain businesses and residents that would be good targets for outreach efforts.³ Outreach to residents mostly consists of education about best practices for lawn care, car washing, and pet waste management. Outreach to businesses typically involves education about spill prevention and cleanup, storage and handling of hazardous materials, and proper waste disposal.

Candidate Receiving Waters

The *Receiving Water Conditions Assessment* identified eight waters as potential candidates for SMAP planning. For the purposes of this next planning phase, it has been determined that only three receiving waters are actually under consideration: American Lake, Flett Creek, and Lake Steilacoom. Specific reasoning behind omitting the other waters is as follows:

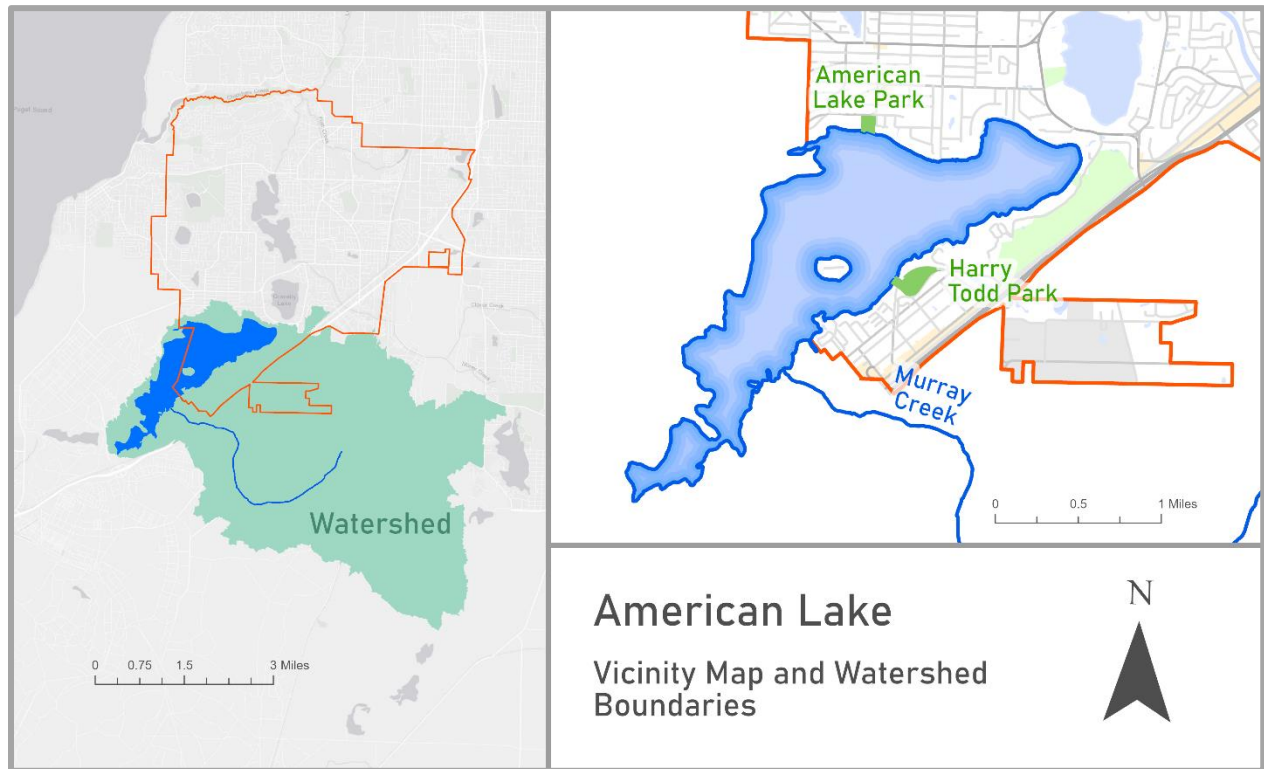
- **Chambers Bay and Chambers Creek:** The watershed size for these waters is several orders of magnitude larger than the recommended size for SMAP planning (400-600 acres). Chambers Creek has a number of tributary waters, including Lake Steilacoom and Flett Creek, that are closer to a suitable size, and SMAP planning in these waters will likely also benefit any downstream waters. No significant opportunity for SMAP actions exists in the portion of the watershed that is exclusive to Chambers Bay/Chambers Creek.
- **Ponce de Leon Creek:** This water will be considered as part of the Lake Steilacoom watershed, along with the portion of Clover Creek that is in Lakewood.
- **Seeley Lake and Carp Lake:** These lakes lack importance: they are very small, have no inlet or outlet streams and no salmonid presence, and have no public access for water recreation.

The three receiving waters still under consideration are discussed and evaluated on the following pages. The figure below gives an overview of all of Lakewood's receiving waters and shows the watersheds of the three candidate waters.



American Lake

American Lake is located at the southern end of the City. Slightly more than half of the lake's 1,128 acres—and slightly less than half of the 12 miles of shoreline—are within city limits; the other half is located on Joint Base Lewis-McChord (JBLM). The lake is fed by Murray Creek, which is located entirely on base. At its southwestern end, the lake drains to Sequelitchew Creek, which flows through JBLM and the city of DuPont and then into Puget Sound. The City's portions of the watershed are mainly residentially developed, and the JBLM portions are largely forested and undeveloped.



Importance = High

Size and Visibility

Large and well-known lake; important to history of Lakewood

Salmon Habitat

Lake is used for salmonid habitat

Recreation

Used for swimming, fishing, and boating

Public Access

Two public parks which provide boat launch, swimming and fishing access; close to economically depressed Tillicum neighborhood

Opportunity = Low

Portion of Watershed in Lakewood

15%
Note: upstream area of watershed is not highly developed and likely contributes minimally to pollutant loading

Opportunity for Stormwater Retrofits

There are no untreated stormwater discharges of concern; future development will use infiltration to groundwater

Opportunity for Riparian Improvements or Protection

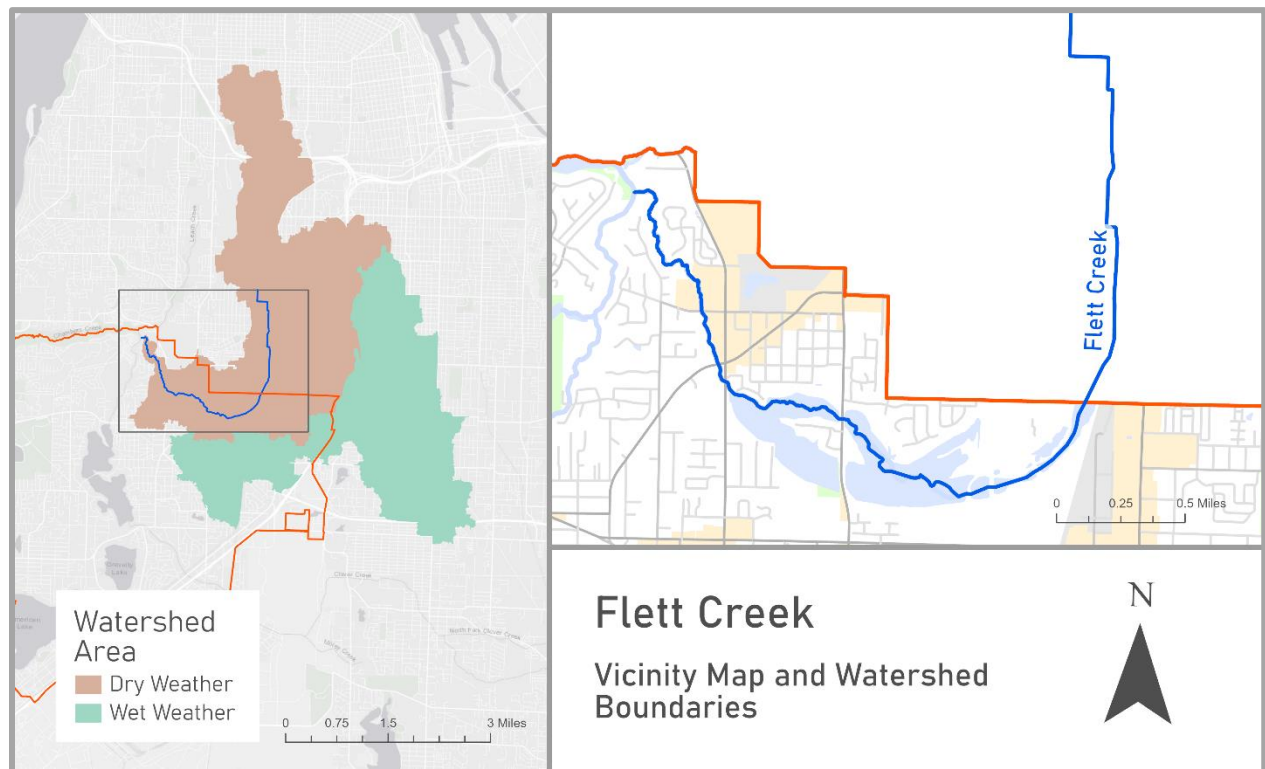
No stream corridors located in Lakewood

Opportunity for Education and Outreach

Residents of lake could continue to receive stormwater education

Flett Creek

Flett Creek is a 4.6-mile creek that flows through Tacoma and Lakewood. In Lakewood, the creek passes through a series of stormwater ponds owned by the City of Tacoma, a large wetland area, and then a more defined and forested downstream channel before flowing into Chambers Creek. Two nearby lakes—Wards Lake and Seeley Lake—act as stormwater holding facilities and have overflow channels to Flett Creek that may be active during heavy rainfall. The watersheds for these lakes are shown in the figure below; however, they will not be included in watershed calculations for this report.



Importance = Medium

Size and Visibility

Large portion of stream is in Lakewood; contains ecologically and historically important wetland

Salmon Habitat

Creek is used for salmonid habitat

Recreation

Not known to be used for swimming, fishing, or boating

Public Access

No public access for water recreation

Opportunity = Medium

Portion of Watershed in Lakewood

23%

Note: upstream watershed area in Tacoma is highly urbanized and may contribute disproportionately to pollutant loading

Opportunity for Stormwater Retrofits

Some untreated stormwater from high-traffic roads discharges into wetlands

Opportunity for Riparian Improvements or Protection

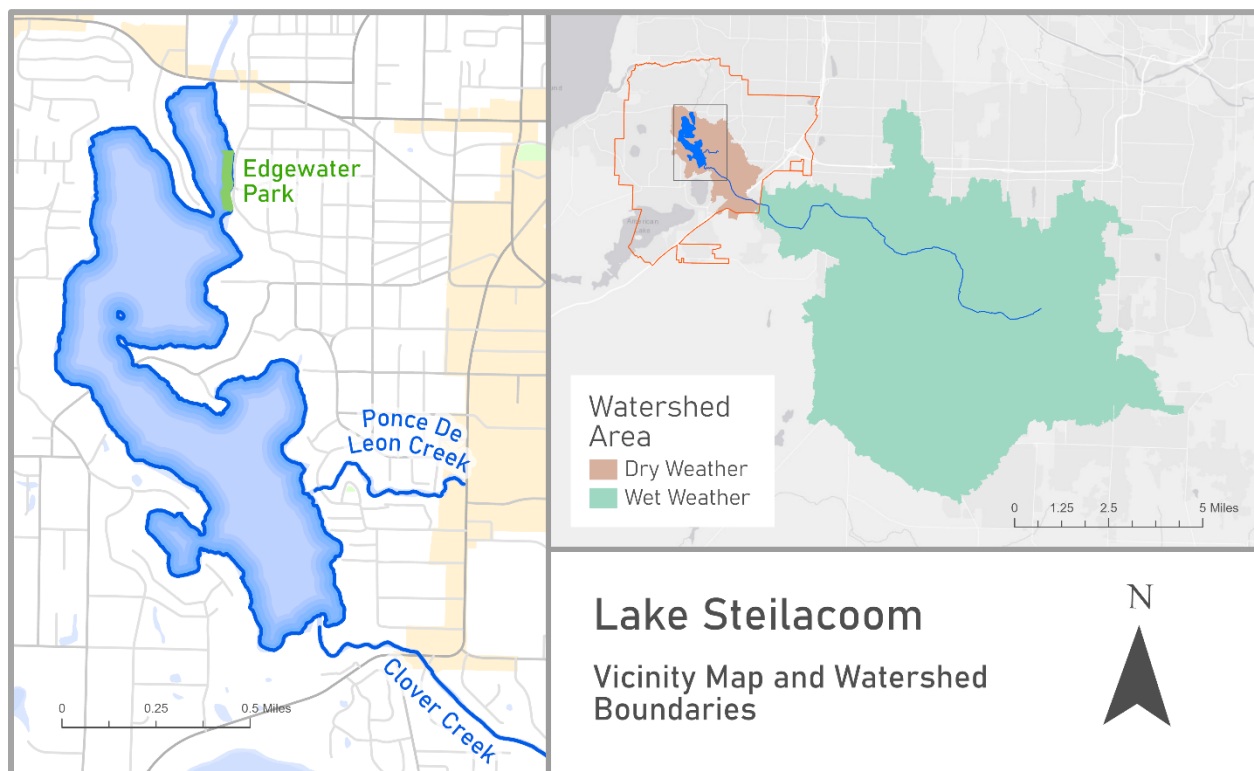
Large wetland buffer already exists along much of creek and is protected by conservation easement; downstream portion may be a good target for riparian restoration projects

Opportunity for Education and Outreach

Unique wetland habitat may allow for more effective/interesting public education opportunities; watershed contains some businesses that could be targets of outreach

Lake Steilacoom

Lake Steilacoom is a 310-acre lake located entirely within city limits. Its 6.3 miles of shoreline are mainly residentially developed. It is fed by two streams, Clover Creek and Ponce de Leon Creek. Although Clover Creek has a substantial watershed outside of Lakewood, upstream stretches of the creek dry up annually during the summer months, at which time Ponce de Leon Creek is the primary input of water to the lake. Because summer is typically associated with water quality issues such as toxic algae blooms, the dry weather scenario (as shown in figure below) is assumed in the calculations of watershed areas.



Importance = High

Size and Visibility

Large lake; entirely within City limits; close to downtown; important to history of Lakewood

Salmon Habitat

Lake and its two feeder streams are used for salmonid habitat

Recreation

Used for swimming, fishing, and boating

Public Access

Public park with boat launch; fishing access from Interlaaken Drive bridge

Opportunity = High

Portion of Watershed in Lakewood

100%

Opportunity for Stormwater Retrofits

Untreated stormwater discharges from downtown commercial area to Ponce de Leon Creek

Opportunity for Riparian Improvements or Protection

Clover Creek riparian corridor could be improved/restored

Opportunity for Education and Outreach

Residents of lake are concerned with water quality and may be receptive to outreach; downtown area in watershed contains many businesses that education efforts could target

Conclusions and Recommendations

The scoring process resulted in the following scores for the three candidate receiving waters:

Receiving Water	Importance	Opportunity
American Lake	High	Low
Flett Creek	Medium	Medium
Lake Steilacoom	High	High

Based on these scores, Lake Steilacoom appears to be the most suitable candidate, and it is recommended that the City proceed with SMAP planning for Lake Steilacoom. However, the recommended catchment size for SMAP is 400-600 acres. Lake Steilacoom's watershed, at 3.7 square miles (approximately 2,400 acres), is well outside of this range. Although the guidance document specifies that a jurisdiction may choose a catchment of a size that is outside of the recommended range if it is appropriate for their planning process, it is possible that the City may wish to conduct SMAP planning for a smaller catchment. If this is the case, the Ponce de Leon Creek sub-basin is closer to the recommended size at 1.15 square miles (736 acres) and would be a suitable choice.

Sources

City of Lakewood, 2022. SMAP: Receiving Water Conditions Assessment. March 2022.

Ecology, 2019. Stormwater Management Action Planning Guidance: Phase I and Western Washington Phase II Municipal Stormwater Permits. August 2019.

¹ Hydrography

Hydrography datasets were obtained from Pierce County and from the City's internal database. These datasets were used for determining stream network connectivity and calculating waterbody areas and stream and shoreline lengths. They are also used in cartographic products throughout the report.

² Watershed Delineations

Watershed delineations were created with the assistance of Pierce County Surface Water Management. LiDAR elevation data, plus elevation-derived catchment and flowline datasets, were provided by the County. Watershed boundaries were adjusted to account for stormwater infrastructure using data from City of Lakewood and WSDOT.

³ Land Use

Land use data for Washington State were downloaded from the Washington Geospatial Open Data Portal. For this report, right-of-way areas were reclassified into low-, medium-, and high-traffic roads using traffic count data internal to the City.

⁴ Drainage Areas

Areas that drain to each of the City's stormwater outfalls are included in the City's internal database. These areas are more specific than watersheds and show the particular streets, parking areas, etc. that contribute to each outfall. For this report, the land use category, receiving water, and any treatment BMPs were identified for each drainage area.

⁵ Salmon Habitat

The state water quality standards and fish stocking data were used to determine which water bodies are used by salmonids. Where in doubt, internal staff knowledgeable about the city's water bodies were consulted.

⁶ Recreation and Public Access

Recreational uses of water bodies and public access points were determined using a variety of sources including state water quality standards, fish stocking data, parks department web pages, and consultation with internal staff.

⁷ Historical Significance

Waterbodies that are of historic interest were identified from Lakewood Historical Society newsletters, City publications, and other news items.

⁸ Riparian Corridors

Information about condition of riparian corridors and any ongoing or planned restoration projects was obtained from new clippings, conversation with City personnel, and various salmon habitat suitability studies.