

Thornton Creek Watershed Annual Report
January through December 2008
Executive Summary

The Thornton Creek Watershed Five Year Action Agenda (Action Agenda) was developed in 2003 as the implementation tool for the draft 2001 Thornton Creek Watershed Action Plan (Plan). One of the Thornton Creek Watershed Oversight Council's roles is to review progress based on the schedule proposed in the Action Agenda. Through the term of the Action Agenda, Seattle Public Utilities has the responsibility of developing progress reports (City of Seattle Council Resolution 30709 Section 32).

Issued in July 2003, the Action Agenda prioritizes the recommendations contained in the Plan in three ways: doable in specific years, needing further study and not possible within five years (by July 2008). To be consistent, this report covers the *entire* year of 2008, instead of ending in July. This report covers progress from **January through December 2008**.

SPU remains committed in partnering with others to continue to protect and restore Thornton Creek Watershed health.

Mission from Plan:

To protect and restore the Thornton Creek ecosystem for the welfare of fish, wildlife and people; improve the quality of life in the watershed; and prevent further degradation as human population and development increase.

Goals from Plan:

1. Reduce stormwater-related flooding and damage to stream and wetland habitat, and increase infiltration
2. Improve water quality by reducing nonpoint pollution in Thornton Creek and its watershed.
3. Protect and improve instream, riparian, and upland habitat for the survival of remaining native species.
4. Increase public awareness and develop stewardship of the watershed



2008 Highlights

STORMWATER

Goal: To mimic natural flow patterns, minimize stormwater related habitat damage, and reduce flooding.

Storm A2: 1) The City of Seattle's Stormwater, Grading, and Drainage Control Code (SMC 22.808) and its associated Joint Seattle Public Utilities (SPU)/Department of Planning & Development (DPD) Directors' Rules were revised. All will be formally adopted in 2009. Key update to the code: required implementation of green stormwater infrastructure to the maximum extent feasible.

2) The City of Seattle's residential Rainwise program continued in 2008, developing information and guidance for homeowners interested in reducing runoff rates and volumes from impervious areas on their properties. This program, which includes the planting strip pilot project (see Storm A3. d)), provides education and outreach on how to slow, spread, filter and permeate stormwater.

Storm A3. d: The City of Seattle launched the Streetside Rain Garden demonstration project. The goals are to guide proper construction and maintenance of rain gardens installed in parking strips (and streetside public rights of way), conduct classes on proper construction and maintenance and select a few locations to install rain gardens.

Storm D3/Monit A4: Projects through the City of Seattle's Aquatic Habitat Grant Program required recipients in 2008 to sponsor baseline monitoring and post-project monitoring. Additionally, floodplain restoration and culvert replacement projects completed in 2008 (NE 104th and NE 105th) will be monitored for project effectiveness beginning in 2009. Pre-project monitoring is also being conducted at the Confluence and Knickerbocker reaches.

Storm E3: The City of Seattle's "Adopt-a-Drain" program was linked closely with "Take Winter by Storm" messages, which were played on television during prime time.

Storm E4: The City of Seattle's Fall Cleanup in 2008 was highly successful, and included volunteers from all over the City.

Storm E5: The City of Seattle partnered with Seattle King County Public Health to develop rainwater harvesting policy and procedures titled, "Rainwater Harvesting and Connection to Plumbing Fixtures." These apply to both commercial and residential rainwater harvesting systems, including system components.

NONPOINT POLLUTION

Goal: To restore water quality in Thornton Creek and its lakes and wetlands to meet, or be better than, the state's water quality standards.

Nonpoint C1: Diazinon was detected in Thornton Creek during the 2008 Surface Water Monitoring of Pesticides in Salmon-Bearing Streams.

Nonpoint C3: The City of Seattle provided training to 953 City staff members from all Departments, who as part of their normal job responsibilities might come into contact with or otherwise observe an illicit discharge or illicit connection to the separated storm sewer system.

Nonpoint E2: 1) Survey work for Seattle's Automotive Maintenance Program identified knowledge and behavior gaps about leaks and the impact of auto fluids on water quality.

Specific results indicate that people surveyed are not recycling oil, antifreeze and oil filters because they don't know where to take them.

2) Seattle's pet waste program (including Mutt Mitts) distributed 2,220 educational brochures to 49 pet stores and veterinary offices. The City of Seattle and volunteers also stocked 31,200 pet waste collection bags in 32 dispensers around the City.

HABITAT

Goal: To protect and improve habitat for nature fauna and flora within the Thornton Creek Watershed, and to provide opportunities for people to connect with nature.

Habitat A4. The City of Seattle conducted fish surveys to document the numbers of adult fish entering and outmigrating from Thornton Creek. This project, along with annual fall salmon spawning surveys, is part of an ongoing effort to monitor salmon production and usage of Thornton Creek. Ongoing monitoring work was performed at various sites within the Thornton Creek Watershed. These sites include the Knickerbocker site at NE 100th St & 20th Ave NE and the North & South fork confluence at 10718 35th Ave NE.

Strategic pre-project monitoring to evaluate performance of future stream restoration work was conducted by the US Fish & Wildlife Service (USFWS) for the City of Seattle continued in 2008.

Habitat C4. The City of Seattle partnered with private property owners to improve instream habitat along the North Fork and Little Brook Creek.

Habitat C7. 13,000 volunteers contributed nearly 80,000 hours towards restoring Seattle forests under the auspices of the Green Seattle Partnership.

The City of Seattle invested \$300,000 in 2008 to supplement riparian forest work performed by volunteers. Part of this funding supported the second year of the "watershed climate action grant" pilot - which awarded one week of assistance from EarthCorps.

A tree ordinance was developed in 2008 for Seattle Council review, which would limit the ability for private property owners to remove "exceptional trees", and trees 6" in diameter or greater.

Habitat C10. North Seattle Community College students and staff dedicated themselves to improving the natural area on their property, and signed the President's Commitment to Climate Neutrality, which commits the college to assessment of its carbon footprint and to designing steps to take to begin reducing that footprint within two years.

EDUCATION AND STEWARDSHIP

Goal: To improve awareness of, foster pride and responsibility for, and create learning opportunities within the watershed

Education/Stewardship A1. C. King County actively recruited advice from Thornton Creek representatives and built an educational kiosk that focuses on Thornton Creek and ecological values.

Education A6. The Homewaters Project provided three Long Walks to encourage citizens to explore the North and South Forks of Thornton Creek, co-hosted a beaver workshop, and held a new, shorter, very well-attended Thornton Creek Walk in the Northgate area.

Homewaters launched a blog in October 2008 -- "Watershed Experiences: Tips and activities from Homewaters Project to help you and your family explore and be good to your watershed" -- with links to projects and programs that help improve Thornton Creek health.

Education B2. The Homewaters Project reached 546 high school students with the Green Mapping and Water & Community GIS-based programs in the 2007-08 school year.

Education B3. Homewaters Project worked with Seattle and Shoreline Public School Districts to implement the Land & Water, Tiny Neighbors, and Water In Our Lives programs to reach 1,154 4th and 5th graders in the 2007-08 school year.

Education C3. The City of Seattle began a basinwide historic evaluation in the Thornton Creek Watershed of the historical channel alignment, and of the pre-development forest and wetland conditions. The information will be used to develop plans for both drainage system improvement and stream channel rehabilitation projects (e.g., confluence floodplain reconnection project).

REGULATION/ENFORCEMENT

Goal: To ensure that present and future regulations affecting the Thornton Creek watershed are fully enforced.

Regulation/Enforcement A3. The City of Seattle evaluated the water quality hotline to determine if it is an effective program to educate the general and businesses, including mobile, about the impacts of illicit discharges and how to report them. The determination is that making a hotline number available to the public is one of the best management practices Seattle can use to identify and resolve illicit discharges.

IMPLEMENTATION

Goal: To ensure timely and effective implementation of the Thornton Creek Watershed Action Plan, consistent with priorities identified in the Plan and ongoing direction from interested citizens and stakeholders

Implementation A2. New members and alternates joined TCWOC in 2008. The City of Seattle supported the council with agenda development, facility rentals, speaker arrangements, refreshments, new-member orientation, a watershed tour, meeting summaries, subcommittee creation, issue resolution, and reporting.



Attachments

Action Agenda Matrix – Status of Actions (including acronym list)

Thornton Creek Action Agenda Progress/Status – January 1, 2008 – December 31, 2008

(Acronym list is at end of this document)

Agenda #	Plan Reference*	Plan Page #	Recommendation	Status	Implementing Sponsor	Budget Year	Progress
Stormwater Management							
Stormwater Objective A: Increase groundwater recharge (infiltration) and reduce the amount of impervious surface.							
1	Storm A1.	3-3	Use infiltration (recharge) area maps when examining drainage plans.	Y	SPU, DPD, USGS, Shoreline	Ongoing	Planners are using the University of Washington GIS layer showing infiltration potential when examining plans. In 2009, the City of Shoreline plans to investigate the possibility of obtaining and using these maps when examining drainage plans.
2	Storm A2.	3-3	Research and promote infiltration techniques.	Y	SPU, DPD, Shoreline	Ongoing	<p>The City of Seattle's Stormwater, Grading, and Drainage Control Code (SMC 22.800 - 22.808) and its associated Joint SPU/DPD Directors' Rules were revised as a requirement of the City's municipal stormwater permit. Seattle and Ecology worked in 2008 to develop minimum requirements that are equivalent to the Stormwater Management Manual for Western Washington and that account for Seattle's unique urban environment. Adoption of the final code is expected in 2009. The updated code will provide criteria and guidance on infiltration-based "best management practices" that reflect the current state-of-the-practice. Additionally, the revised code will require implementation of green stormwater infrastructure to the maximum extent feasible. Green stormwater infrastructure are drainage control facilities that use infiltration, evapotranspiration, and stormwater reuse, and include permeable pavement, bioretention, and green roofs.</p> <p>The residential Rainwise program developed information and guidance to homeowners interested in reducing runoff rates and volumes from impervious areas on their properties. Piloted residential rain garden and cistern installation and streetside bioretention identified locations, recruited homeowners and evaluated properties for suitability. This program, which includes the planting strip pilot project (see Storm A3. d)), provides education and outreach on how to slow, spread, filter and permeate stormwater. Free rain garden classes for public (in cooperation with Stewardship Partners), information and brochures (web and hard copy) and ProjectDX, an internet-based education, recruitment, tracking and marketplace outreach tool. To reach landscapers and contractors, Seattle will hold rain garden construction training and workshops to build capacity in the landscape contractor community to construct rain gardens.</p> <p>With the City of Shoreline's adoption of the 2005 Ecology Stormwater Manual, use of Low Impact Development (LID) infiltration techniques are promoted.</p>
3	Storm A3. a)	3-4	Develop strategies for reducing impervious surface on existing public and private land.	Y	SPU, SDOT, DPD, Shoreline	2007 - 2009	<p>The revised Stormwater Code provides criteria and guidance on permeable pavement design for vehicular access roads, driveways and sidewalks. The revised code will require implementation of green stormwater infrastructure, which by definition includes permeable pavement, to the maximum extent feasible.</p> <p>The City of Seattle reduced nearly 3 acres of impervious surface at the headwaters of Thornton Creek with the Thornton Creek Water Quality</p>

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							<p>Channel project.</p> <p>The City of Seattle is monitoring its first porous street as well as many porous concrete sidewalks that were installed as part of High Point Redevelopment project. Evaluation of the porous residential street with will help define if future porous streets will be permitted within Seattle. The Seattle Department of Transportation's Right-of-way manual updates (2008) define where porous sidewalks are allowed and which materials can be used.</p> <p>Infiltration testing, and working through repair and restoration protocols at various porous concrete sidewalk applications has allowed the City of Seattle to better respond to citywide concerns on the new materials.</p> <p>The City of Shoreline adopted the 2005 Ecology Stormwater Manual which encourages Low Impact Development (LID) infiltration techniques. Use of incentives and other strategies are also being explored.</p>
4	Storm A3. b)	3-4	Design and evaluate stormwater infiltration technology, including technologies that allow for partial infiltration.	Y	SPU	2007-2009	The revised Stormwater Code provides criteria and guidance on stormwater infiltration technologies, including bioretention facilities, permeable paving, and infiltration facilities. Hydraulic monitoring at the Broadview green grid in Northwest Seattle and at High Point in Southwest Seattle will be used by City of Seattle to better evaluate and predict performance of bioretention designs.
5	Storm A3. c)	3-4	Revise Land Use Code and Critical Areas Code based on information available from research conducted in Storm A, B.	Y	DPD	Done	The Environmentally Critical Areas Code was adopted by Council on March 27, 2006. The regulations went into effect on May 9, 2006.
6	Storm A3. d)	3-4	Target Natural Drainage System improvements to right-of-ways in unimproved areas draining to key creek systems for infiltration, detention and treatment of stormwater runoff.	Y	SPU, SDOT	2007-2009	<p>Completed Pinehurst Natural Drainage System project, targeting peak flow reduction, total volume reduction and water quality treatment from a 59-acre subbasin of Kramer Creek.</p> <p>See Storm A2.</p> <p>Seattle initiated the Streetside Rain Garden demonstration project to develop reference materials on the proper construction and maintenance of rain gardens installed in parking strips (and streetside public rights of way), conduct classes on proper construction and maintenance and select a few locations to install rain gardens. Finding locations was challenging as a result of numerous site constraints (existing trees in the Right-of-Ways, too much slope which would result in higher engineering and installation costs, too few homes per block, etc). Demonstration sites will be installed with residents in 2009.</p>
7	Storm A3. e)	3-4	Purchase additional public property in targeted areas to improve groundwater recharge and stormwater treatment.	N-T	SPU	TBD	The Natural Drainage project at Pinehurst provides infiltration and stormwater treatment. No property purchases were required in 2008, and this serves as the model for future public-private partnerships.
8	Storm A4	3-6	Incorporate policies to promote pervious surfaces into new Neighborhood Design Guidelines	Y	DPD, Neighborhood groups	Ongoing	Neighborhood Design Guidelines are periodically updated. Neighborhood specific guidelines are evaluated based on the unique conditions of each neighborhood and in consultation with all available resources (including use of pervious surfaces).

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9	Storm A5.	3-7	Integrate creative alternatives to traditional sidewalks, curbs and gutters into drainage projects when technically feasible to promote creek health.	Y	SPU	Ongoing	<p>The Natural Drainage System chapter of the new Right-of-Way Improvement Manual (now complete) provides guidance.</p> <p>The City of Seattle provided technical assistance and review to encourage the telescoping bioretention system at the Northgate north parking lot, construction winter/spring 2006/07.</p> <p>The revised Stormwater Code's flow control thresholds and performance standards will require implementation of green stormwater infrastructure to the maximum extent feasible for sidewalk projects with over 2,000 square feet of new plus replaced impervious surface. Also see Storm A5.</p>
10	Storm A6	3-8	Assess the impact of stormwater contributions to sanitary sewer overflows in this watershed and develop disconnect program (if impact is significant)	N – T, R, \$	SPU	TBD	<p>The impact of stormwater to sanitary sewer overflows is limited to extreme storm events, as documented in the Thornton Creek Watershed Characterization Report (p.9-3). More significant impacts occur in combined sewer basins (in which downspouts and road drains direct water to the sewer lines).</p> <p>The Residential Rainwise Program and the revised Stormwater Code could help reduce illegal stormwater contributions to the sanitary sewer system.</p>
11	Storm A7.	3-8	Identify alternatives to infiltration facilities when it is incompatible with development or site conditions cannot accommodate it.	Y	SPU, SDOT	TBD	<p>The revised Stormwater Code contains minimum requirements for flow control that include infiltration and also alternatives for flow control when infiltration is not appropriate.</p>
Stormwater Objective B: Increase detention throughout the watershed on both private and public properties.							
12	Storm B1	3-9	Increase on-site detention for new construction and redevelopment to the extent possible.	Y	DPD, SPU	2007 - 2009	<p>The revised Stormwater Code contains revised flow control performance standards for development projects that are more protective of creek systems than the current code. The current requirements are based on reducing the peak flow rates from sites; the revised requirements are aimed at mitigating both the peak flows and the duration of high flows during storm events. The revised code will require implementation of green stormwater infrastructure to the maximum extent feasible to meet the flow control requirements. See Storm A2.</p>
13	Storm B2.	3-9	Improve existing and create new regional detention facilities.	Y	SPU, SDOT	TBD	<p>Additional detention above Meadowbrook Pond and other flood-prone areas has been proposed to the City of Seattle's Asset Management Committee, and designs should be produced in 2009. There are plans to enlarge the existing Stone Pond detention facility as part of the mitigation requirements for the Seattle Department of Transportation's Aurora Ave project.</p>
14	Storm B3	3-11	Incorporate surface detention during Lake City Civic Core redevelopment.	Y	SDOT, WSDOT, DON, Parks, SPU	Ongoing	<p>Detention was put in under the street on 30th when new sidewalks were installed on 30th Avenue NE and NE 130th. Various developments were required to provide detention in accordance with Seattle building codes (e.g., Low Income Housing Institute buildings on 33rd Avenue NE).</p> <p>Detention was also added when the multi-modal improvements project was implemented for SR-522 through Lake City.</p>

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							The City of Seattle and the community have made efforts to coordinate with property owners and other agencies to explore future possibilities.
15	Storm B4	3-11	Create a flood easement program.	N-R	SPU, DPD	TBD	The City of Seattle is currently not planning work at this time due to regulatory constraints. However, the City of Seattle works closely with agencies that have programs that can assist frequently flooded home owners.
16	Storm B5	3-12	Evaluate and optimize the frequency of private drainage system inspections.	Y	SPU	2008-2009	Inspections have not occurred frequently enough to create a large enough data set for an analysis of cleaning frequency by land use. However, an Inspector was hired in the fall of 2008 to work part time on this program. Additional staff will be hired in 2009.
Stormwater Objective C: Improve public stormwater conveyance system.							
17	Storm C1.	3-12	Evaluate and where appropriate improve maintenance to public stormwater conveyance system.	Y	SPU	Ongoing	The City of Seattle has analyzed, developed, and implemented schedules for maintenance and investments in the catch basin infrastructure. Priority areas include critical sites (i.e., those that tend to fail in a rain event), water quality protection and infrastructure stability (e.g., steep slope areas). The City of Seattle has instituted an annual catch basin inspection & cleaning program as part of its stormwater permit. The City of Seattle is currently in the process of developing and implementing Strategic Asset Management Plans for all of its drainage and wastewater assets. The function of these plans is to develop a short-term planning document that guides the actions we take to manage our assets in a way that ensures continuity and quality of service to customers.
18	Storm C2	3-13	Map the existing storm drains, ditches and culverts in Shoreline	Y	City of Shoreline	Done	The City of Shoreline completed the mapping in December 2003.
19	Storm C3.	3-13	Improve local stormwater collection systems.	Y	SPU	Ongoing	The Localized Flood Control Program – within City of Seattle's Drainage and Wastewater CIP Fund – supported the improvement of the local drainage systems throughout the City. This program, together with routine maintenance, the SPOT Drainage Program, and large CIP projects, aims to address the full range of drainage needs throughout the city. Many localized flooding sites listed in the Comprehensive Drainage Plan were on "Winter Watch" to determine flood frequency, duration and magnitude.
Stormwater Objective D: Improve the process of evaluating, selecting, designing, implementing, and managing, capital investments.							
20	Storm D1.	3-14	Study flows in Thornton Creek.	Y	SPU	Ongoing	In several locations on Thornton Creek, improved flow monitoring equipment was installed to increase data accuracy. The City of Seattle is utilizing current flow-monitoring stations and flow data to update the watershed hydrologic model and revise the FEMA floodplain maps (to be completed in 2009). The hydrologic software used to manage this data set is called HYDSTRA, owned by Kisters.
21	Storm D2	3-14	As part of SPU staffed TCWOC meetings, review Capital Improvement Projects and other relevant projects.	Y	SPU, Parks, SDOT, Shoreline,	Ongoing	Presentations were given to the TCWOC on Seattle and Shoreline CIP projects, including site visits on private and public properties in both Seattle and Shoreline during the July 2008 watershed tour.

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					TCWOC		
22	Storm D3/ Monit A4	3-15 9-4	Evaluate and report on effectiveness of creek restoration projects in the watershed; adapt or modify as necessary.	Y	SPU	Ongoing	Numerous creek restoration projects were implemented and maintained along Thornton Creek. City of Seattle monitors the Jackson Park Golf Course Detention Pond project, the Lake City Way fish ladder, the Littlebrook Culvert, and the Homewood Park projects on an annual basis, consisting of one field visit by City of Seattle staff during the summer. Intermediate checks are done on a case-by-case basis. Projects through City of Seattle's Aquatic Habitat Grant Program required recipients to sponsor baseline monitoring and post-project monitoring. Additionally, floodplain restoration and culvert replacement projects completed in 2008 (NE 104 th and NE 105 th) will be monitored for project effectiveness beginning in 2009. Pre-project monitoring is also being conducted at the Confluence and Knickerbocker reaches.
23	Storm D4.	3-15	Continue funding drainage capital improvement projects, implementing improved selection and design criteria.	Y	SPU	Ongoing	The Pinehurst project is complete and is being monitored and maintained. The Thornton Creek Water Quality Channel project progressed greatly in 2008 and will be completed in 2009 and will be monitored for water quality & flow. Significant projects such as these will be considered within City of Seattle's budget to address water quality and stream flows in the watershed.
24	Storm D5.	3-16	Update stormwater manuals regularly as required by Seattle's MS4 NPDES permit.	Y	SPU	2007 - 2009	See Storm A2.
Stormwater Objective E: Improve private management of stormwater and runoff.							
25	Storm E1 A	3-17	Require detention or infiltration for developments meeting applicability thresholds.	Y	SPU, DPD	Done	Flow control continues to be a requirement for development projects exceeding applicable thresholds (see Grading and Drainage Control Ordinance (Approved by Ordinance no. 108080 on March 23, 1979).
26	Storm E1 B	3-17	Promote water conservation.	Y	SPU	Ongoing	The Saving Water Partnership and Natural Yard Care programs provide outreach, education, and discounts on mulch, soaker hoses and water wands for water conservation. Northwest Natural Yard Days store promotions brought discounts on compost, mulch, water conservation tools, and less toxic yard products to hardware and garden stores in the Thornton watershed and around Seattle throughout 2008. The Saving Water Partnership also targeted gardening customers via classes and promotions at nurseries and a seasonal electronic newsletter (The Savvy Gardener).
27	Storm E2	3-17	Evaluate whether to study options to provide financial incentives to private property owners. Evaluate and develop programs to create financial incentives to businesses and/or homeowners to better manage surface water runoff.	Y	SPU — Resource Planning	2009	City of Seattle encourages creekside homeowners to manage their properties to minimize impacts to the creeks and our conveyance system. The City of Seattle website, Aquatic Habitat Grant program, and the Green Seattle Partnership/ Seattle ReLeaf volunteer programs foster public involvement in improving water quality and storm flow in the watershed. The Seattle City Council approved a drainage rate credit program in 2006 for properties that incorporate stormwater management, which will be implemented in 2009. The Rainwise program will complement this

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							program by providing residents with "how to" materials for manage surface water runoff.
28	Storm E3	3-18	Educate homeowners and businesses on the importance of keeping storm drains and ditches free of leaves and inlets trash through outreach programs.	Y	SPU	2005-2009	<p>The City of Seattle encouraged neighbors to work with crews through the "Adopt-a-Drain" Program to keep drains clear of debris. Articles were published in Seattle's Fall Curb Waste and Conserve newsletters requesting citizens to remove or report debris from drains, and compost if possible.</p> <p>Articles were published in Fall Curb Waste and Conserve newsletters to all customers requesting citizens to remove debris from drains or call these into the city. City of Seattle actively promoted the "Adopt-a-Drain" program, including a short video and links to the televised and online "Taking Winter by Storm" messages.</p> <p>The curbside yard waste program was extended to include additional pickups of green waste and branches due to fall windstorm events.</p>
29	Storm E4.	3-18	Coordinate Fall Clean-up Program on public property	Y	SPU	2005-07	<p>The City of Seattle hosted a citywide Fall Clean-up event (another is planned for 2009). Adopt-a-Street groups in all parts of Seattle obtained information about how they can help keep drains clear of debris and who to call. The Seattle Mayor's Clean and Green Program provided cleanups on public properties, including leaf pickup and drain stenciling. North Seattle was targeted for extensive outreach, due to the amount of deciduous trees.</p>
30	Storm E5.	3-19	Develop pilot to promote water re-use through rainwater cisterns and/or gray water systems.	Y	SPU, DPD	2007, 2008	<p>Small demonstration project rainwater cisterns were placed in Ballard/Fremont area in 2004. Follow-up demonstrations are planned as part of the Lakewood RainCatcher project. See Action item #2</p> <p>Cisterns are also proposed as technology in the drainage rate credit program described in Action Item #27.</p> <p>The City of Seattle partnered with Seattle King County Public Health to develop rainwater harvesting policy and procedures titled, "Rainwater Harvesting and Connection to Plumbing Fixtures." The policy provides design guidelines and addresses specific regulatory requirements and procedures for commercial and residential rainwater harvesting systems, including system components. The guideline is online at www.metrokc.gov/health/plumbing/guidelines.htm, and in the Department of Planning and Development's Client Assistance Memo 701: http://www.seattle.gov/DPD/Publications/CAM/CAM701.pdf.</p>

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Non-Point Pollution							
Non-Point Pollution Objective A: Improve existing non-point pollution prevention programs.							
31	NP A1.	4-5	Review the existing non-point pollution programs in Seattle to ensure they are being applied to the Thornton Creek watershed. (e.g., Natural Lawn Care, Household Hazardous Waste Drop-off, Green Cleaning and Green Cleaning Kits, Water Quality Investigations..)	Y	SPU	Ongoing	Brochures, other outreach and education programs on reducing and preventing nonpoint pollution are available to residents and are implemented in the Thornton Creek watershed. The Ecology is aware of the programs and encourages their continuation. A comprehensive review has not occurred, but programs always make services and information available for the benefit of Thornton Creek.
32	NP A2.	4-6	Meet the requirements of existing and future NPDES permits.	Y	SPU, SDOT	Ongoing	The City of Seattle began implementing the new Phase I Municipal Stormwater Permit in 2007.
33	NP A3	4-6	Brief the Watershed Oversight Council during the development of the stormwater management program and stormwater code for the NPDES permit for Seattle.	Y	SPU ,TCWOC	Ongoing	TCWOC was consulted numerous times during the code and permit revisions, and was able to provide constructive comments. Update briefings on the Seattle's NPDES permit and stormwater management program will be available in 2009 upon request.
Non-Point Pollution Objective B: Improve water quality							
34	NP B1	4-7	Monitor coliform exceedances.	Y	SPU	Ongoing	Thornton Creek is on the 303 (d) list of impaired waterbodies for fecal coliform bacteria. In 2007, City of Seattle completed the Thornton Creek and Matthews Beach Microbial Source Tracking Study which evaluated potential sources of bacteria in Thornton Creek and at Matthews Beach. City of Seattle worked with the Department of Ecology on fecal coliform bacteria issues in several creek watersheds in 2008.
35	NP B2.	4-7	Identify breaks, leaks and illicit sewer connections as identified that discharge into Thornton Creek.	Y	SPU	Ongoing	Illicit connections to the storm drain system are identified through several programs - business inspections, private drainage system inspections and surface water quality complaint investigations. When found, inspectors work with property and business owners to terminate and re-plumb the illicit connection.
36	NP B3.	4-8	Collect additional information on locations and frequency of exceedance of State standards for water temperature and dissolved oxygen.	Y	Regional Agency, SPU	2007-2009	City of Seattle continued work on developing a city-wide monitoring program to assess monitoring needs related to various waterbodies.
37	NP B4	4-8	Study intergravel temperature and dissolved oxygen in areas where adult salmon are spawning in the watershed.	N-T	Regional Agency, SPU	TBD	City of Seattle technical staff are evaluating feasibility of conducting this type of study since it is unusual for there to be problems with temperature and dissolved oxygen during the time of year that adult salmon spawn.
38	NP B5	4-9	Determine methods to measure turbidity throughout Thornton Creek.	Y	Regional Agency, SPU	Done	Methods are available and in use.
39	NP B6	4-9	Continue program to periodically sample Thornton Creek for levels of phosphorus and nitrogen.	N-T	Regional Agency, SPU	TBD	City of Seattle technical staff are researching the feasibility of this type of program.
40	NP B7	4-9	Continue monitoring and periodically	Y	TCWOC, King	Ongoing	In November 2006, the Department of Ecology updated the "Water Quality

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			review the literature for standards for metals.		County, DOE		Standards for Surface Waters of the State of Washington," which includes references to metal standards. SPU has been studying bacteria and fungus that will absorb or break down heavy metals, but a thorough literature review was not performed.
41	NP B8.	4-10	Continue periodic monitoring of the benthic index of biological integrity (B-IBI).	Y	King County, SPU	Ongoing	2007 Data from Thornton Creek is on Puget Sound Benthos website: http://www.pugetsoundstreambenthos.org/ City of Seattle interns and staff will collect the Thornton Creek benthic macroinvertebrate samples in September 2009, along with supplemental habitat information.
42	NP B9.	4-10	Fund a research study to determine the impact of sediment contamination on the biological productivity in Thornton Creek.	Y	Regional agency, King County	1999, 2007-2008	The USGS sampled sediment contamination in Thornton Creek, published in 1999, and collected in 2007/08, by the National Water Quality Assessment program (NAWQA). The results are available on line http://water.usgs.gov/nawqa/ .
43	NP B10	4-10	Determine and rank the potential non-point pollutants in the watershed and their sources.	P	SPU	TBD	Ranking will be considered as part of the City of Seattle's water quality monitoring program. Criteria for ranking and addressing pollutants are under development. See Nonpoint B3.
Non-Point Pollution Objective C: Reduce pollutant discharges from public facilities.							
44	NP C1	4-11	Eliminate the use of Diazinon on public properties.	Y	Seattle departments, WSDOT	n/a	The use of Diazinon virtually ended in the City of Seattle in 2000 and was not used at all beyond December 2004. Diazinon detected in Thornton Creek during the 2008 pesticide research is assumed to be from stockpiles on private properties.
45	NP C2	4-11	Determine what pesticides and herbicides are being used by public agencies in the Thornton Creek watershed and reduce use over time.	Y	Seattle departments	Ongoing	All Seattle Departments adhere to the City's aggressive "Pesticide Reduction Strategy," citywide integrated pest management and best management practices. Parks uses a database to track all pesticide use on park land, and has achieved a 76% percent reduction in overall pesticide use. Herbicides are used for limited spot treatment of weeds in hard surfaces, along some fencelines and for controlling invasive and noxious weeds where present. Golf courses use fungicides on putting greens and tees. In all applications, only trained and licensed staff apply products and with best management practices to assure great care is taken to prevent product drift or runoff.
46	NP C3. A	4-11	Reduce non-point pollution caused by maintenance activities on public property including promoting integrated pest management and reducing pesticides and fertilizers.	Y	Seattle departments	Ongoing	See Nonpoint C2. Integrated pest management and pesticide/fertilizer reduction are part of the new stormwater NPDES Permit.
47	NP C3. B	4-11	Train maintenance staff in non-point pollution reduction goals and techniques.	Y	Seattle departments, Shoreline	Ongoing	The City of Seattle trained 953 of its staff in the following areas in 2008: illicit discharges, improper disposal, and illicit connections. Oil spill training and Hazardous Waste Operations and Emergency Response Standard (HAZWOPER) training were included as appropriate. The City targeted staff members who through their job functions could impact stormwater quality. The City is working to develop an on-going training program.

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48	NP C3. C	4-11	Set targets for reducing all pesticides per City reduction goals, and commit to eliminating Tier 1 pesticide use".	Y	Seattle departments	Done	The targets were set in the Pesticide Reduction Program, and the City of Seattle is committed to eliminate Tier 1 pesticide use. Parks continually reviews new products for addition to the approved list that are alternatives to current products, targeting those that can replace Tier 1 pesticides.
49	NP C4.	4-13	Evaluate current street cleaning methods in terms of their impact on pollution of Thornton Creek.	Y	SDOT	Ongoing	As part of its Street Maintenance Program, Seattle conducts street cleaning and street sweeping in various areas throughout the City (http://www.seattle.gov/transportation/streetmaintenance.htm#sc). The City of Seattle recently completed a pilot study (not in the Thornton Creek Watershed) evaluating potential water quality benefits of street sweeping. City of Seattle is currently evaluating the potential to expand the City's street sweeping program to improve water quality in receiving water bodies.
50	NP C5.	4-13	Fund a research study to evaluate the effectiveness of devices installed to treat stormwater runoff from streets and parking lots.	Y	SPU	Ongoing	The City of Seattle monitors selected natural drainage system projects with the University of Washington. These projects provide flow and water quality treatment for stormwater runoff within the public right of way. In addition to the monitoring efforts, the City of Seattle initiated block scale monitoring of the bioretention swale system at the High Point redevelopment project. Treatment devices are the best available and are effective. The monitoring data will support the use of similar facilities in future projects.
51	NP C6.	4-13	Identify additional potential road treatment sites based on drainage characteristics, traffic volume, and land use.	P	SPU	TBD	The City of Seattle is starting to evaluate road impacts and potential approaches for water quality protection. Effort is starting at the city-wide level and will most likely target selected known arterial street improvements.
52	NP C7	4-14	Support and promote use of public transit systems and other alternative modes of transportation.	Y	SDOT	Ongoing	The City of Seattle continues to support and promote public and alternative modes of transit.
53	NP C8.	4-14	Incorporate water quality improvements into CIP projects.	Y	SPU	Ongoing	The City of Seattle considers water quality improvements as part of capital projects. Funding decisions are based on water quality priorities, asset management principles, and available resources.
54	NP C9.	4-14	Remove trash and sediments from detention ponds.	Y	SPU	Ongoing	All the facilities within the Thornton basin are inspected on a regular basis to address any maintenance issues which could affect the flood control function of each facility. Meadowbrook forebay and first cell were last cleaned in 2006. Cleaning will likely be needed again in 2010 or 2011.
Non-Point Pollution Objective D. Reduce pollutant discharges from businesses.							
55	NP D1	4-15	Conduct an outreach and inspection program for priority commercial, multifamily, industrial, institutional and government-owned sites within the watershed.	Y	SPU	Ongoing	All businesses in the Thornton Creek watershed that engage in any of eight high risk pollution generating activities were inspected 2004-2006. Due to staffing limitations, in 2007 and 2008 businesses in Thornton Creek were inspected on a complaint basis. If funding becomes available, the inspections could be expanded to include more frequent inspections.
56	NP D2	4-16	Require source control best management practices (BMPs) be applied as	Y	DPD	Ongoing	The City of Seattle specifically requires best management practices at construction sites (see Grading and Drainage Control Code (Approved by

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			appropriate to all construction sites in the watershed.				Ordinance no. 116425 on November 13, 1992).
57	NP D3	4-16	Develop and implement a program to address pollutant discharge from mobile business.	Y	SPU	2007, 2008	City of Seattle has worked with Resource Venture to address the need for mobile business outreach. Resource Venture is on contract to assist Seattle businesses in improving environmental performance. When complaints are received, Inspectors follow up with an inspection or if the business is located outside of Seattle, with a letter.
Non-Point Pollution Objective E. Reduce pollutant discharges from residential properties.							
58	NP E1	4-17	Encourage the discontinuation of Diazinon use on private property.	Y	King County, SPU	Ongoing	The Local Hazardous Waste Management Program, City of Seattle's Green Gardening Program, Natural Lawn & Garden Hotline and Natural Yard Care Programs continued to educate home gardeners and landscape professionals on alternatives to the use of diazinon and other pesticides. These audiences were informed that the sale of diazinon is banned.
59	NP E2	4-17	Continue and improve where possible existing programs to inform the public about non-point pollution and how they can reduce it.	Y	SPU	Ongoing	Seattle's Automotive Maintenance Program targets the use, storage and disposal of car products. Survey work in 2008 identified knowledge and behavior gaps about leaks and the impact of auto fluids on water quality. Specific results indicate that people surveyed are not recycling oil, antifreeze and oil filters because they don't know where to take them. This information is guiding outreach and education strategies for 2009. In 2008 this program made inroads with two substantial new audience access points for do-it yourselfers and those who go out for auto service. The City's pet waste program (including Mutt Mitts) was implemented in public places city-wide. In 2008, the City distributed 2,220 educational brochures in brochure dispensers at 49 pet stores and veterinary offices. A new brochure was designed in 2008 to continue education on impacts of pet waste on water quality and best management practices for pet waste. The City and volunteers also stocked 31,200 pet waste collection bags in 32 dispensers around the city.
60	NP E3	4-18	Complement the regional non-point pollution messages by targeting the Thornton Creek watershed.	Y	SPU	2008	The non-point pollution messages are delivered through the Natural Yard Care Neighborhood classes.
61	NP E4	4-18	Explore the feasibility of developing a Thornton Creek watershed incentive program to encourage activities to decrease non-point pollution throughout the watershed's residential areas.	N - \$	SPU	TBD	This incentive program idea needs future evaluation before it can be developed, as there are other programs that continually encourage the reduction of nonpoint pollution throughout the Thornton Creek watershed.
62	NP E5	4-19	Continue existing programs to inspect, repair, and replace on-site septic systems.	Y	King County Health Dept.	Ongoing	King County is continuing these efforts.
63	NP E6	4-19	Promote lower use of pesticides, herbicides and fertilizers.	Y	SPU	Ongoing	See Nonpoint E3 (Agenda Item #60) above. The City of Seattle sponsors Northwest Natural Yard Days in spring and fall each year. Further, messaging normally includes promotes the use of

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							organic fertilizers, mulch, and alternatives to pesticide and herbicide use.
Habitat							
Habitat Objective A: Prevent harm to existing natural habitat.							
64	Habitat A1.	5-4	Restrict development in riparian corridors and wetlands.	Y	DPD	Ongoing	The Environmental Critical Areas code (2006) has appropriate limits on development in proximity to wetlands and in riparian corridors.
65	Habitat A2.	5-4	Help streamside property owners control erosion and improve habitat.	Y	DPD, SPU	Ongoing	The City of Seattle continues development of client assistance memos for creek riparian owners, with input from City of Seattle. City of Seattle provides advises property owners on what can be done on their properties on a case-by-case basis and in coordination with high priority floodplain restoration project areas.
66	Habitat A3	5-5	Encourage builders to retain areas of native vegetation on their site and to use natural techniques to manage storm water.	Y	DPD	Ongoing	Seattle's Environmental Critical Areas code and tree protection ordinance require and encourage the maintenance of vegetation barriers to manage stormwater. The Seattle Green Factor requirements in Commercial zones will improve natural stormwater management. Revisions to Multifamily Code requirements and new tree protection requirements in 2007 incorporated additional mechanisms for natural stormwater management.
67	Habitat A4	5-5	Conduct fish and wildlife surveys.	Y	SPU	Ongoing	<p>2008 marked the 10th consecutive year of Thornton creek Fall salmon spawning surveys conducted by Wild Fish Conservancy for City of Seattle. Partial Spring adfluvial cutthroat surveys (in its 8th consecutive year) were also conducted into early February, 2009. Adfluvial cutthroat surveys were shortened due to budget constraints.</p> <p>These surveys are part of ongoing work to document the numbers of adult salmon and adfluvial cutthroat trout entering the Thornton Creek system.</p> <p>2008 also marked the 8th consecutive year of smolt trapping conducted by City of Seattle counting outmigrating juvenile salmon from Thornton Creek. This project, along with annual fall salmon spawning surveys, is part of an ongoing effort to monitor salmon production and usage of Thornton Creek.</p> <p>Strategic pre-project monitoring to evaluate performance of future stream restoration work was conducted by the US Fish & Wildlife Service (USFWS) in 2008. Ongoing monitoring work was performed at various sites within the Thornton Creek watershed. These sites include the Knickerbocker site at NE 100th St & 20th Ave NE and the North & South Fork confluence at 10718 35th Ave NE. Fish were sampled to determine species diversity, biomass, abundance, population size, and age class structure. In addition to fish sampling, physical habitat characteristics were also collected. Information will be used to evaluate project success. The USFWS began tagging juvenile cutthroat trout in 2007 and continued in 2008 to study the movement of cutthroat trout within Thornton Creek and between Thornton Creek and Lake Washington. In 2007, approximately 1320 juvenile cutthroat were tagged and an additional 900 juvenile cutthroat were tagged in 2008.</p>

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68	Habitat A5	5-6	Develop a central contact to coordinate wetland expertise in the watershed.	N-R	Seattle Departments, King County	TBD	No central contact designated. Each agency has its own experts, which share their findings.
69	Habitat A6	5-6	Publicize opportunities for private land-owners to receive credit and assistance to conserve private open space.	Y	King County	Ongoing	King County continues to publicize such opportunities. Cascade Land Conservancy also works in partnership with property owners to ensure the land is preserved in perpetuity.
Habitat Objective B: Improve migration corridors for fish and wildlife.							
70	Habitat B1.	5-7	Remove fish passage barriers.	Y	SPU, Parks	Ongoing	The City of Seattle has a prioritized fish-passage barrier list for the entire City. Culvert replacement projects are initiated based on this priority ranking. The last barrier culvert on the South Fork of Thornton Creek is scheduled to be replaced in 2010 (NE 105 th & 17 th).
71	Habitat B2.	5-8	Look for collaborative ways between public and private property owners to enhance and promote connectivity of migratory corridors for wildlife within the watershed.	Y	SPU, Parks, SDOT (street ends)	Ongoing	City of Seattle continually strategizes with other agencies and property owners to connect and improve migratory corridors. This process can take multiple years. Property acquisition and creek restoration are implemented when funding allows. The City of Seattle Aquatic Habitat Matching Grant provided opportunities in 2008, and City of Seattle staff worked closely with the community to build capacity to make more improvements in the future.
Habitat Objective C: Improve the quality of habitat for fish and wildlife.							
72	Habitat C1.	5-8	Develop guiding principles for in-stream restoration done by Seattle or community groups.	Y	SPU and other agencies	Done	The City of Seattle completed a Science Framework for Ecological Health in 2007, which serves as a roadmap for making improvements in Seattle's streams.
73	Habitat C2	5-10	Host a Thornton Creek Watershed Urban Fish Workshop.	Y	King County	Done	King County runs a Salmon Watchers, in which volunteers receive a free evening of training in "urban" fish identification and behavior, creek health, and sightings in past years.
74	Habitat C3	5-10	Improve Thornton Creek stream flows.	Y	SPU	Ongoing	The City of Seattle has implemented projects in the Northgate area that include natural drainage strategies that remove pollutants from stormwater, reduce peak flows and/or infiltrate stormwater runoff. The City of Seattle completed work on the Jackson Park Detention Ponds, and the Pinehurst project to improve flows. The City of Seattle partnered with the community to broaden the floodplain in Maple Leaf Reach and improve the riparian area. Other floodplain restoration projects are in the planning phase of development. These projects include Matthews Beach, the Thornton Creek Confluence, Nathan Hale High School reach, Knickerbocker, 125 th NE, and Jackson Park.
75	Habitat C4.	5-11	Improve in-stream conditions on public land.	Y	SPU	Ongoing	Riparian revegetation - a total of 7 restoration projects on public and private property have been awarded Aquatic Habitat Matching grants in various tributaries and reaches of Thornton Creek. Great strides were made in public/private instream projects such as Maple

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							<p>Leaf Reach and the North Fork Restoration Project. In-stream restoration - North Fork Thornton and Maple Leaf Reach flood plain restoration projects on private property (installed or constructed) in 2007 continue to function well. Victory Creek, North Fork Thornton, Maple Leaf Reach, and Little Brook Natural Area are in maintenance, monitoring phases; South Fork Thornton (Park 2) is in second invasive removal and planting phase. Little Brook includes a demonstrated planting on one of the Little Brook properties. (Note that some of these projects are on private land.)</p> <p>Two more were awarded grants in the 2008 round - another property in the North Fork scheduled to be (installed or constructed) summer 2009, and a restoration plan for a reach in Little Brook.</p> <p>The City of Seattle is also assisting in floodplain reconnection projects at Knickerbocker, and the North-South Fork Confluence.</p>
76	Habitat C5. A	5-11	Inventory and assess riparian habitat.	Y	SPU	Ongoing	The City of Seattle published the State of the Waters Report, which complements the Riparian Assessment and earlier reports. A presentation was given to the TCWOC in January 2008.
77	Habitat C5. B	5-11	Enhance and maintain areas with good riparian habitat.	Y	SPU	Ongoing	See Habitat C4 and C7 (Items #75 and #79.
78	Habitat C6	5-12	Encourage native plant use through programs.	Y	SPU, Parks, GSP	Ongoing	The Green Seattle Partnership (Seattle Public Utilities and Parks are partners), Seattle Public Utilities' riparian area grants, and Parks Adopt-A-Park program all support natural area restoration projects use of native plants. Parks developed landscape areas are considered opportunities for native plantings.
79	Habitat C7.	5-14	Increase the number of trees and understory shrubs	Y	Parks, SPU, DPD, SDOT	Ongoing	<p>In 2005, the Green Seattle Partnership (GSP) developed a 20 year strategic plan for the restoration of 2500 acres of park forest land by 2025. In 2008 alone, GSP restored 122 acres of forested parkland citywide up from 100.5 acres the year before. To date, GSP currently maintains 386.5 acres of restored forested parkland. Additionally in 2008, 13,000 volunteers contributed nearly 80,000 hours towards restoring our forests.</p> <p>City of Seattle invested \$300,000 in 2008 to supplement riparian forest work performed by volunteers. Part of this funding supported the second year of the "watershed climate action grant" pilot – which awarded one week of assistance from EarthCorps.</p> <p>A Mayor's Executive Order now requires that 2 trees be planted for every one removed on developed public property.</p> <p>A tree ordinance was developed in 2008 for Seattle Council review, which would limit the ability for private property owners to remove "exceptional trees", and trees 6" in diameter or greater.</p>
80	Habitat C8	5-15	Remove and control noxious weeds and invasive plants on public property in conjunction with ecosystem or landscape restoration efforts.	Y	Citywide	Ongoing	The City crews and community volunteers contribute to the control of noxious weeds adjacent to Thornton Creek on public property.
81	Habitat C9	5-16	Develop programs to reuse trees that are cut down.	Y	TCA with Parks and	Ongoing	Parks obtains logs through forestry operations, and those that are not fit for sale are returned to park landscapes as mulch. Those that have

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					SPU		commercial value are sold to the highest bidder.
82	Habitat C 10	5-17	Develop North Seattle Community College programs to protect wildlife.	Y	NSCC, Homewaters		<p>The Homewaters Project and the North Seattle Community College have developed birding trails and restored several wetland sites on campus. In 2008, the College continued working to relocate the trail up out of the buffer zone around Campus Pond to the berm separating the pond from the flood plain, west of the pond. Students and grounds staff planted 50 new small trees to develop an understory within groves of 40 year old trees in the campus greenbelt. In addition, much of the woodland south of the pond has newly applied mulch to suppress weeds and enhance soil tilth. This is an ongoing task, to ramp up the development of rich soil in understory planting areas.</p> <p>The College signed the President's Commitment to Climate Neutrality, which commits the college to assessment of its carbon footprint and to designing steps to take to begin reducing that footprint within two years. Sustainability studies may be added to the College's science classes.</p>
Habitat Objective D: Protect and restore habitat							
83	Habitat D1	5-17	Continue to purchase wetland and creek-side property for habitat value.	Y	Parks, SPU	Ongoing	The greenbelts along Thornton Creek have increase greatly in the last five years through purchases and habitat restoration (both public and private land). Improvements were made on public property and through partnerships with private property owners in 2008. Purchases are based on opportunities presented by sellers; none were made in 2008.
84	Habitat D2.	5-18	Restore, create or re-create wetland habitat	P	Parks	TBD	No new wetlands were created or restored in 2008 in this basin. However, such restoration efforts are considered as part of future projects.
85	Habitat D3	5-18	Develop a program to accept land donations to Seattle Parks Departments.	Y	Parks	Done	The Parks Foundation was established to accept donations to the Seattle Parks and Recreation. Parks can commit to accepting land on a case-by-case basis.
86	Habitat D4	5-19	Establish a Thornton Creek Conservancy to seek funding for purchase of property along the creek corridor and near local wetlands	N-T, \$	Thornton Creek Alliance		This organization has not been created due to budget limitations. This idea was offered prior to the formation of the Cascade Land Conservancy, which is designed to acquire properties and broker conservation easements in the watershed. However, citizens, non-profits and governmental agencies are seeking or providing funding on a regular basis.
Habitat Objective E: Improve access for humans to appropriate natural sites							
87	Habitat E1	5-19	Inventory and evaluate trails on Parks land within the Thornton Creek Watershed	Y	Seattle Parks	Ongoing	Parks continues to inventory and evaluate many of the trails, and use this information to do trail maintenance. Parks is in the process of checking park maps for accuracy and confirming with district staff as to what trails should be listed on maps.

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Education and Stewardship							
Education and Stewardship Objective A: Increase basic awareness of and appreciation for Thornton Creek and its watershed.							
88	Ed/Stew A1. A	6-2	Create and produce a brochure, which describes the watershed.	Y	SPU, Homewaters Project	2006-2008	The Homewaters Project updated the Thornton Creek brochure with input from the TCWOC and others, and distributed 509 copies in 2008.
89	Ed/Stew A1. B	6-2	Install welcome signs and creek crossing signs.	Y	TCWOC, SDOT		SDOT produces and installs signs on an as needed basis.
90	Ed/Stew A1. C	6-2	Creatively use murals about the watershed through public private partnerships.	Y	TCWOC, Thornton Creek Alliance		King County worked closely in 2007 with the community and other stakeholders during the North Transfer Station remodel. The interpretive kiosk, built in 2008, has a depiction of a north branch reach done as a glass mosaic tiles and uses a quote from David Williams "The Street Smart Naturalist" regarding the creek. There will be interpretive displays and streamlike water features that are artistic and attractive at the Northgate Urban Center Park.
91	Ed/Stew A2	6-3	Work with King County Envirostars to develop a stormwater component.	N – T, \$	SPU, TCWOC, KC		The EnviroStars program does not have a stormwater component. However, the Business and Industry Resource Venture, a free resource conservation service for the commercial sector provides advice on stormwater pollution prevention.
92	Ed/Stew A3	6-4	Conduct educational outreach by meeting with community groups, businesses, service providers.	Y	TCWOC, SPU, Homewaters Project	Ongoing	Educational outreach is ongoing through the Homewaters Project, the City of Seattle's Natural Yardcare program, Parks' Forest Steward Program, GSP/Seattle ReLeaf and Watershed/Community Councils.
93	Ed/Stew A4	6-6	Promote the "Master Home Environmentalist" program and incorporate additional watershed friendly tips.	N-T, \$	WA Toxics coalition	TBD	The Washington Toxics coalition has invested in educating citizens on salmon recovery and reducing pesticide use. However, the Master Home Environmentalist program does not specifically include watershed-friendly tips.
94	Ed/Stew A5	6-7	Promote appreciation for and care of local wildlife, plants, parks and open spaces. Use a variety of techniques. Brochures, signs, newsletter, websites.	Y	TCWOC, TCA Parks, SPU, Homewaters Project	Ongoing	Websites, mailings, programs, brochures, and newsletters are used together to build appreciation for wildlife, plants, and green space.
95	Ed/Stew A6	6-8	Encourage residents to explore and learn about the watershed.	Y	SPU, Homewaters Project	Ongoing	The Homewaters Project provided three annual Long Walks for citizens in 2008 to explore the North and South Forks of Thornton Creek, and the Thornton Creek Watershed Guide encourages citizens to get out and walk the stream. In addition, Homewaters introduced and guided a new, shorter, very well-attended Thornton Creek Walk in the Northgate area. Homewaters and the City of Seattle co-hosted a Living With Beavers public program at Meadowbrook Pond. Homewaters launched a blog in October 2008 -- "Watershed Experiences:

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							Tips and activities from Homewaters Project to help you and your family explore and be good to your watershed" -- with links to projects and programs that help improve Thornton Creek health.
Education and Stewardship Objective B: Integrate watershed education into school programs at all levels. Maintain and improve existing programs							
96	Ed/Stew B1.A	6-8	Fund a part-time City staff Watershed Educator responsible for coordinating outreach and education within the watershed.	Y	SPU, Parks	Ongoing	This body of work is split between the Homewaters Project, the City of Seattle Customer Service Branch and Seattle Parks.
97	Ed/Stew B1.B	6-8	Fund selected Thornton Creek education and outreach programs through the Homewaters Project.	Y	SPU	Ongoing	The City continues to fund education and outreach activities through Homewaters that support common priorities in the Thornton Creek Watershed. Teachers and students benefit from their support through various programs. Their website is continually improved and updated, and citizens contact Homewaters regularly about Thornton Creek."
98	Ed/Stew B1.C	6-8	Provide on-going funding for additional Thornton Creek Project positions.	Y	SPU	N/A	The "Thornton Creek Project" no longer exists. It became the Homewaters Project in 2002. See Action Item #97.
99	Ed/Stew B1.D	6-8	Convene a watershed education co-ordination group of community and school educators	Y	Homewaters Project, SPU	Done	Homewaters convened an Education Advisory Task force to inform development of watershed education programs now delivered in Seattle public schools, and continues to monitor and participate in watershed education through the Seattle School District.
100	Ed/Stew B2	6-12	Encourage and support watershed-related learning experiences in schools.	Y	SPU, Homewaters Project	Ongoing	Homewaters Project reached 546 8 th -12 th grade students with the Green Mapping and Water & Community GIS-based programs in the 2007-08 school year.
101	Ed/Stew B3	6-12	Provide support for educators who connect their students with the watershed.	Y	SPU, Homewaters Project	Ongoing	Homewaters Project worked with Seattle and Shoreline Public School Districts to implement the Land & Water, Tiny Neighbors, and Water In Our Lives programs to reach 1,154 4th and 5th graders in the 2007-08 school year.
102	Ed/Stew B4	6-13	Review regularly and modify the Salmon-in-the-Classroom program.	Y	SPU, Homewaters Project	Ongoing	Popular field trips, as part of the Homewaters Land and Water program, include a visit to the Macroinvertebrate station and discussion and observation of salmon habitat.
103	Ed/Stew B5	6-13	Integrate elements of watershed education into drivers' education courses.	N-T	Homewaters Project, SPU and School District	TBD	No action is being taken at this time, due to funding constraints and possible lack of interest in the School District to amend their curricula.
Education and Stewardship Objective C: Provide learning opportunities for the general public							
104	Ed/Stew C1	6-14	Continue and expand existing programs offering learning opportunities – such as A) Volunteer monitoring opportunities B & C) "Watershed Learning Centers" D) multi-lingual multi-cultural outreach programs E) information to managers or apartment managers and owners	N-\$	SPU		The City of Seattle partnered with King County Department of Natural Resources and Parks to host Salmon Watchers, a program where volunteers record their salmon sightings in a regional database. Creekside property owners kept Seattle, Shoreline, Ecology and the Department of Fish and Wildlife updated on any water quality issues, fish kills, beaver ponding, flooding, and blockages. The Homewaters Project was pivotal in providing online information on Thornton Creek. The City of Seattle met with property owners throughout 2008 on a case-by-case

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							basis, including managers of apartment complexes. No programs were expanded in 2008.
105	Ed/Stew C2	6-16	Package existing information in accessible and friendly formats.	Y	SPU, Homewaters Project, TCWOC, and TCA	Ongoing	The sponsors have friendly, accessible materials and are continually looking for new and creative opportunities to package and distribute information.
106	Ed/Stew C3	6-17	Document Watershed History	Y	SPU FEMA Homewaters Project	2008 - 2009 2008 Ongoing	<p>The City of Seattle contracted Natural Systems Design in November 2008 to begin conducting a basinwide historic evaluation in Thornton Creek Watershed of the historical channel alignment, and of the pre-development forest and wetland conditions. The information will be used to develop plans for both drainage system improvement and stream channel rehabilitation projects (e.g., confluence floodplain reconnection project). As part of this effort, Wild Fish Conservancy and Patrick Trotter will be interviewing (2009) at least six long-time local residents to reconstruct a picture of the condition of Thornton Creek at different points of time as the area was becoming developed.</p> <p>The City of Seattle also worked on re-mapping portions of the 100-year floodway in coordination with the Federal Emergency Management Agency.</p> <p>Homewaters Project continued to provide community access to current and historical Watershed information via their website, including the new Virtual Tour of Thornton Creek. Watershed information is distributed widely through "The Source" and the e-newsletter "Meanderings". City of Seattle has initiated a study of the historic stream channel characteristics and watershed land-use & land-cover in the Thornton Creek basin (to be completed in 2009).</p>
107	Ed/Stew C4	6-18	Educate developers about the Thornton Creek Watershed and their role within it.	Y	DPD, w/ support from SPU, TCWOC	Ongoing	The City of Seattle educates developers through the permitting process.
108	Ed/Stew D1.A	6-18	Promote Stewardship by sponsoring work parties and community stream restoration projects.	Y	SPU, Parks	Ongoing	In the Thornton Creek Watershed, City of Seattle worked with 26 site stewards on long and short term restoration projects. Most of the volunteer work was done on Parks properties. These projects involved 155 volunteers giving 736 hours of their time.
Education and Stewardship Objective D: Promote Stewardship							
109	Ed/Stew D1.B	6-18	Improve existing programs such as adopt-a-creek program, block watch program, volunteer monitoring opportunities, adopt-a-park program, and reforestation plans.	Y	SPU, Parks, Seattle Police Department, Shoreline	Ongoing	Seattle Parks Urban Forestry program adds new forest restoration plans and projects to the Parks budget each year. Also, the Green Seattle Partnership is moving forward; a 20 program leveraging funding with volunteer forest stewards to put 2500 acres of natural area into restoration. The program expands each year, adding new sites and continuing to care for those in restoration.
110	Ed/Stew D2	6-19	Use a variety of programs to encourage individual residents to make their yards,	Y	WDFW, Seattle	Ongoing	Seattle Audubon and Washington Department of Fish & Wildlife have ongoing programs dedicated to encouraging residents to preserve wildlife.

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			pets, and wildlife interactions friendlier to wildlife.		Audubon		
111	Ed/Stew D3	6-20	Promote business support and recognition programs.	Y	SPU	Ongoing	<p>The City of Seattle financially supports the Resource Venture, which assists Seattle businesses in improving environmental performance. The Resource Venture promotes pollution prevention awareness and provides technical assistance to businesses with high risk pollutant-generating activities to help minimize impacts of stormwater pollution.</p> <p>The City conducted an evaluation of the spill kit program to determine if it is an effective program for use and storage of automotive chemicals, hazardous cleaning supplies and other hazardous materials. The evaluation included a survey of kit recipients since 2004 to assess their understanding of stormwater pollution prevention and their use of spill plans and kits. A previous survey was conducted among Seattle businesses in 2005. A new survey in 2008 of spill kit recipients included many elements of the previous survey to examine changes since 2005. The majority of those surveyed were auto repair and maintenance businesses (24%). Industry, restaurants and sales made up the next highest business types (~14% each).</p> <p>Among respondents who reported experiencing spills that require spill kit materials, more respondents in 2008 said that they do not wash any spills away with a hose (85% in 2008 and 65% in 2005). In addition, fewer respondents say they wash away oil or coolant (2% in 2008 and 8% in 2005).</p> <p>Similar percentages of respondents in 2008 and 2005 said that their business had written and posted a plan for dealing with a spill, but more respondents in 2008 said that the plan was posted near the spill kit.</p> <p>Respondents in 2008 express similar confidence to respondents in 2005 about their ability to clean up spills quickly, knowledge of whom to contact for help containing or cleaning up a spill, stock of spill clean-up materials on hand, and knowledge of where to obtain and dispose of clean-up material. However, respondents in 2008 expressed higher levels of agreement that having a spill plan and clean-up kit makes their employees more aware of surface water pollution and how their business practices can help reduce impacts on water quality.</p> <p>The high percentage of positive behaviors by those surveyed suggests that the Spill Kit Program is an appropriate best management practice for reducing or eliminating behaviors and practices that cause or contribute to adverse stormwater impacts. The program will continue for the foreseeable future and will continue to be used for education and outreach on use and storage of automotive chemicals, hazardous cleaning supplies and other hazardous materials.</p> <p>Resource Venture also provides free car wash kits and educational information to individuals and organizations on proper disposal of car</p>

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							wash water. The car wash kits capture car wash water and direct it to the sanitary system rather than allowing the wash water to flow into the MS4. Kits are available to the public from a variety of locations throughout the City. Car Wash kits are advertised on the Resource Venture website, and in Camp Long & Carkeek Park seasonal program brochures and web, education and flyers are posted at common carwash businesses.
Regulation and Enforcement							
Regulatory Objective A: Improve enforcement of existing regulations							
112	Reg/Enf A1.A	7-2	Assure proactive enforcement of existing watershed-related Stormwater, and Drainage Control Code regulations.	Y	DPD, SPU	Ongoing	All businesses in the Thornton Creek watershed that engage in any of eight high risk pollution generating activities were inspected 2004-6. Few inspections were made in 2007 and 2008, as other watersheds were targeted.
113	Reg/Enf A1.B Reg/Enf A2	7-2 7-3	Assure proactive enforcement of existing watershed related Critical Areas, Stormwater, Grading and Drainage Control Code and Land Use regulations.	Y	DPD	Ongoing	The Seattle Department of Planning and Development's Site Team enforced the regulations, and were alerted by TCWOC members on specific issues.
114	Reg/Enf A3	7-4	Advertise ways to report environmental problems.	Y	TCWOC, SPU, Shoreline	Ongoing	<p>The City of Seattle staffs a 24-hour water quality hotline to allow citizens and businesses to report illicit discharges.</p> <p>In 2008, the City conducted an evaluation of the water quality hotline to determine if it is an effective program to educate the general and businesses, including mobile, about the impacts of illicit discharges and how to report them. The evaluation team contacted 85 citizens who had called the Water Quality Hotline in the previous year to determine - the demographics of the caller, how they had heard about the Water Quality Hotline, the primary reason for their call and their awareness of the MS4 and water quality impacts from illicit discharges.</p> <p>The results indicate that most callers are white male residents from all parts of the City and less than five percent identified themselves as business owners. The majority of callers learned about the Water Quality Hotline from the web site (21%), from other people in the community (11%) or advertisements (5%). Over half the callers reported illegal dumping and spills (54%). Approximately 16% of respondents called because they noticed negative effects of water quality or toxic substances, such as a foam or film on the water or dead birds and grass. Other respondents reported a drainage problem (9%), contaminated or construction runoff (8%), or a sewage problem (4%). The evaluation found that most callers expressed an understanding of water quality incidents that warrant a report to the hotline.</p> <p>This management practice has resulted in over 1,300 resolved cases from 1,900 calls to the hotline over the last 6 years showing that making a hotline number available to the public is one of the best management practices Seattle can use to identify and resolve illicit discharges.</p>

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							The City of Shoreline uses the City website, monthly newsletter and related brochures, such as those related to car washing, to advertise the State and City hotline numbers for reporting environmental problems.
115	Reg/Enf A4	7-4	Revive the Interagency Water Quality Trouble Call/Emergency Response Network.	Y	King County	Ongoing	King County refers citizens to the Seattle's water quality hotline, which serves the same purpose.
Regulatory Objective B: Strengthen land use and development regulations							
116	Reg/Enf B1.B	7-5	During Stormwater Drainage codes updates, review watershed studies and findings and modify codes as appropriate.	Y	SPU	2005-08	Completed watershed studies (or similar) were reviewed as part of the Stormwater Code update. Pertinent information has been used, as appropriate, to evaluate various options to modify existing code and, in turn, recommend final changes to The Ecology.
117	Reg/Enf B1.A	7-5	Review and modify the Environmental Critical Areas (ECA) and Land Use codes to provide additional stream and wetland protection based on watershed studies and findings.	Y	DPD	2003-04	The Environmentally Critical Areas Code was adopted by Council in 2006. The code was not reviewed or modified in 2008.
118	Reg/Enf B2	7-6	Restrict development in riparian corridors and wetlands.	Y	DPD	2003-04	See Reg/Enf B1.A (Action Item #117)
119	Reg/Enf B3.	7-6	Identify opportunities to daylight piped or culverted streams.	Y	SPU	Ongoing	Opportunities to daylight streams have been identified through the Watershed Assessment, the Comprehensive Drainage Plan, the Restore Our Waters initiative, City of Seattle planning efforts, and in response to Resolution #30850. In 2008, City of Seattle discussed daylighting opportunities in conjunction with redevelopment proposals, and with community members.
120	Reg/Enf B4	7-7	Revise Design Review Guidelines to include environmental concerns.	Y	DPD	2008-2009	DPD is in the process of revising citywide neighborhood design guidelines. This update process includes the evaluation of goals that encourage buildings that respond to the environmental context of the site including water and stormwater issues.
121	Reg/Enf B5	7-8	Involve citizens in the review of notification procedures relating to development of new code or revisions to existing codes, and to development projects.	Y	DPD	Ongoing	This is an ongoing and standard practice in DPD.
122	Reg/Enf B7	7-9	Continue to use citizen review committees to review city codes affecting surface water and water quality.	Y	DPD	Ongoing	This is an ongoing and standard practice in DPD.

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123	Reg/Enf B8 Storm A3	7-9	Modify City policies, codes, regulations, procedures and designs to promote infiltration where appropriate	Y	DPD, SPU	Ongoing	Major new zoning initiatives such as the Neighborhood Business District Strategy, new zoning for neighborhood commercial business districts, and new multifamily zoning requirements incorporate the new Seattle Green Factor, a menu of landscaping strategies intended to increase the amount of urban landscaping. The green factor, in addition to landscaping, encourages vegetated walls, green roofs and permeable paving. Seattle includes infiltration technologies in Stormwater Manuals, and City of Seattle's Natural System Program also promotes infiltration.
124	Reg/Enf B9	7-10	Address short plat and subdivision impacts in the Thornton Creek watershed	Y	DPD	Ongoing	DPD tracks short plat and subdivision development and addresses watershed impacts on a case-by-case basis.
Implementation							
Implementation Objective A: Provide watershed oversight.							
125	Imp A1	8-5	Establish a Thornton Creek Watershed Oversight Council.	Y	SPU	Done	The Thornton Creek Watershed Oversight Council first met in 2003.
126	Imp A2	8-6	Develop and Sustain the Thornton Creek Oversight Council	Y	SPU	2003-2008	City of Seattle and TCWOC recruited, TCWOC nominated and then City of Seattle appointed TCWOC members and officially formed the TCWOC May 2005. Bylaws were adopted and the Chair elected September 2005. The TCWOC meets on a bimonthly basis. New members and alternates joined TCWOC in 2008. City of Seattle supported the council with agenda development, facility rentals, speaker arrangements, refreshments, new-member orientation, a watershed tour, meeting summaries, subcommittee creation, issue resolution, and reporting. The Seattle Parks representative helped with note taking in November 2008.
127	Imp A3 (A)	8-7	Establish SPU as the lead agency for the Thornton Creek Watershed Action Plan.	Y	SPU, Shoreline	Done	City of Seattle was established as the lead agency.
128	Imp A3 (B)	8-7	Establish City of Shoreline as co-lead agency for the Thornton Creek Watershed Action Plan.	Y	Shoreline	Done	The City of Shoreline is a TCWOC member, but has not adopted the co-lead role.
129	Imp A4	8-8	Provide staff to coordinate and support the Action Agenda	Y	SPU	2003-2008	The City of Seattle continued to staff the Watershed Oversight Council, and documented progress on the Action Agenda items.
Implementation Objective B: Improve coordination and plan integration.							
130	Imp B1.	8-9	Coordinate and integrate the Watershed Action Plan with other existing and future plans, such as the Comprehensive Drainage Plan.	Y	SPU	Ongoing	Implementing priority actions in the Thornton Creek watershed is incorporated into the City of Seattle's adopted Comprehensive Drainage Plan, as well as the City of Seattle's Restore Our Waters Initiative. City of Seattle initiatives aimed at Thornton Creek Watershed health complement the Watershed Action Plan, even when not directly integrated.
131	Imp B2. (A)	8-10	Improve coordination between Seattle, Shoreline, King County, and within agencies and cities concerning the watershed, including water quality and quantity, restoration, protection, habitat,	Y	SPU, SDOT, Parks, Shoreline, King County	Ongoing	All agencies with jurisdiction in the watershed seek to improve coordination. Many of the agencies are represented at the Thornton Creek Watershed Oversight Council meetings where issues can be brought to the table for discussion and coordination

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			and related or similar issues.				
132	Imp B2. (B)	8-10	Develop a formal agreement between Seattle and Shoreline, such as an Inter-local Agreement, that states the manner in which these two governments will work together, and sets forth mutual expectations of ways the Thornton Creek watershed will be protected.	N-R, T, \$	Seattle, Shoreline	TBD	Seattle and Shoreline coordinate closely on many watershed programs and issues, without formal agreements.
133	Imp B3	8-11	Improve coordination between agencies and citizens	Y	SPU, TCWOC	Ongoing	TCWOC connects citizens with sources of information and assistance involving the Department of Planning & Development and City of Seattle in instances involving tree cutting, stream bank failures, dumping material in the creek, creek blockage, beaver damage, and facilities conditions. Ongoing coordination is provided by the TCWOC Coordinator. TCWOC also arranges to have presentations from implementing agencies in Seattle and Shoreline.
Implementation Objective C: Track and report progress.							
134	Imp C1	8-11	Report to the Watershed Oversight Council annually	Y	SPU	Ongoing	The first annual report covering July 2003 through December 2004 was completed in October 2005. The second report covering 2005-2006 was completed in March 2007. The 2007 report was finalized in 1 st Quarter 2008, and this report will be finalized in 1 st Quarter 2009.
135	Imp C2	8-11	Lead agency (Seattle, see A3 above), with the assistance of co-lead agency (Shoreline) should develop and consistently update a project management tool to track and monitor status of implementation of recommendations in this Plan.	Y	SPU	Ongoing	This matrix serves as a tracking tool, in addition to an annual list of priority topics updated bi-monthly by the TCWOC.
136	Imp C3	8-12	Create annual watershed report card.	N-\$, T	TCWOC, SPU	TBD	The report card content has not been determined, nor a budget assigned for gathering and distributing information. City of Seattle gathered scientific data to produce the State of the Waters Report, which is a resource for determining the health and problem areas of Thornton Creek.
137	Imp C4	8-12	Support an On-line Library of information about the Thornton Creek Watershed	Y	SPU, Homewaters Project	Ongoing	Homewaters Project updated its online library for the Thornton Creek watershed (as well as the virtual tour of the watershed).
138	Imp C5	8-13	Provide coordination among City technical staff to improve management of streams and wetlands.	Y	SPU, DPD	Ongoing	City of Seattle staff provide coordination among City expertise (natural resources, engineering, building, and endangered species teams, just to name a few). A wetlands specialist is on Seattle's Department of Planning and Development site team.
Implementation Objective D: Update this plan regularly.							
139	Imp D1	8-14	Track progress of action agenda implementation	Y	SPU	Ongoing	Tracking is done through this matrix as well as presentations to TCWOC.

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Monitoring							
Monitoring Objective A: Monitor the health of the watershed to assure the Plan recommendations are having the desired effect.							
140	Monit A1.	9-2	Develop and support a voluntary, coordinated watershed-wide Monitoring Panel. SPU recommends that TCWOC develop a subcommittee and invite appropriate expertise.	N-T, \$	TCWOC, SPU	TBD	A subcommittee has not yet been convened for this purpose.
141	Monit A2	9-3	The Monitoring Panel will develop recommendations to improve existing monitoring programs by sharing data, coordinating research and analysis, sponsoring monitor training, and improving protocols.	N-\$, T	TCWOC, SPU	TBD	A Monitoring Panel subcommittee has not yet been convened for this purpose (see #140 above)
142	Monit A3	9-4	Establish baseline information for the Thornton Creek watershed.	Y	SPU, King County	Done	Seattle's Urban Blueprint (2003) reports results of studies for baseline conditions. http://www.seattle.gov/util/About_SPU/Management/SPU_&_the_Environment/SalmonFriendlySeattle/SPU01_002751.asp The Seattle State of the Waters Report (2007) summarizes baseline data for hydrology, water quality, physical habitat and biota for Seattle's major streams, including Thornton Creek. The Watershed Assessment was completed for Thornton Creek, with the exception of ongoing biological surveys (spawning surveys, smolt trapping, coho pre-spawn mortality, benthic invertebrates). King County performed monthly sampling for temperature, dissolved oxygen, nutrients, fecal, alkalinity at creek mouth; bacteria and temperature at Matthews Beach; for metals at six storm events; and annual sampling at the mouth. Seattle performed nutrient testing of detention pond performance at Jackson Park Golf Course (continued quarterly for three years, ending in 2007.)
143	Monit A4 Storm D3.	9-4 3-15	Evaluate and report on effectiveness of creek restoration projects in the watershed; adapt or modify as necessary.	Y	SPU	Ongoing	Effectiveness has been measured on a project-by-project basis. City of Seattle is developing a city-wide monitoring program, which will include receiving waters.
144	Monit. A5	9-5	Provide technical information on request for community restoration efforts.	Y	SPU	Ongoing	City of Seattle sponsors projects that involve working with the community, including monitoring work, and all monitoring data is publicly available.
145	Monit A6	9-5	Support Citizen Monitoring and Data Gathering for benthic invertebrates, fish	Y	SPU	Ongoing	Due to a shortage of City of Seattle staff time and budget to support volunteer monitoring, the 2009 benthic macroinvertebrate collection will be conducted by City of Seattle interns and staff.
146	Monit A7	9-6	Develop an Index of Watershed Integrity (IWI) for Seattle's creeks. Use this index to help the public understand the "state of	Y	SPU	2007	City of Seattle's Ecological Framework and State of the Waters Report, released in late-2007, may be used as baseline information to measure changes in the health of Thornton Creek.

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			the creek* in Thornton Creek.				

ACRONYM LIST

CDP	Comprehensive Drainage Plan
CIP	Capital Improvement Project
DOE	Washington State Department of Ecology
DON	Seattle Department of Neighborhoods
DPD	Seattle Department of Planning and Development
Ecology	Washington State Department of Ecology
EPA	U.S. Environmental Protection Agency
ESA	Endangered Species Act
FEMA	Federal Emergency Management Agency
GIS	Geographic Information Systems
GSP	Green Seattle Partnership
KC	King County
LCW	Lake City Way
NDS	Natural Drainage System
NOAA	National Oceanic and Atmospheric Administration
NPDES	National Pollutant Discharge Elimination System
NSSC	North Seattle Community College
Parks	Seattle Department of Parks and Recreation
SDOT	Seattle Department of Transportation
Shoreline	City of Shoreline
SMC	Seattle Municipal Code
SPU	Seattle Public Utilities
TBD	To be determined
TCA	Thornton Creek Alliance
TCWOC	Thornton Creek Watershed Oversight Council
TMDL	Total Maximum Daily Load
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
UW	University of Washington
WDFW	Washington Department of Fish and Wildlife
WSDOT	Washington State Department of Transportation

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