

Program Area: 2. Stormwater Management

Goal:

Prevent water quality and quantity impacts due to stormwater runoff by implementation of best management standards and practices, pollutant source control, and construction, maintenance and retrofit of stormwater facilities.

The Stormwater Management Program Area aims to prevent water quality and quantity impacts associated with stormwater runoff. This program area focuses on the implementation of options for stormwater control including best management practices and standards, capital projects, pollutant source control and treatment, and the evaluation of stormwater control options that can be applied to both existing and new development in the watershed.

Notable Accomplishments:

For almost 20 years, the City and County have been engaged in protecting the lake through stormwater management efforts. During that time, the City's Stormwater Code has been revised four times to reflect new information on the water quality of the Lake (1990, 1995, 2006, 2009) and the County adopted three major changes to its code to add protections for Lake Whatcom and other sensitive watersheds (1994, 1999, 2002). Over the years, the City and County have continued to increase their investments in capital projects designed to slow the amount of phosphorus entering the lake.

In 2010, the City plans to complete the last of a series of capital projects to provide a first line of defense to the Lake from major stormwater inputs from City public stormwater systems. Due to differences in the treatment effectiveness of previously completed projects, the City will also concentrate on making previously completed stormwater systems more efficient at removing phosphorus and will assist private property owners to take actions to reduce water quality impacts originating on their properties.

Over the next few years, the County has plans to complete several capital improvement projects to reduce water quality impacts associated with stormwater runoff. The County will also work to provide resources and information to private property owners to help them minimize water quality impacts from their properties. Both the City and County have submitted grant proposals that could significantly increase these activities if approved.

Reference Documents:

City of Bellingham 2007 Comprehensive Stormwater Plan

<http://www.cob.org/documents/pw/storm/2007-stormwater-comp-plan.pdf>

City 1990 Watershed Stormwater Ordinance 10023

City 1995 Stormwater Ordinance 10633

City 2006 Ordinance 2006-05-047 (Amendment to BMC 15, 16, 15.40, 15.42)

City 2009 Ordinance 2009-06-041 (Amendment to BMC 15.42 Stormwater Code)

Whatcom County 2008 Lake Whatcom Comprehensive Stormwater Plan (LWCSWMP)

<http://www.whatcomcounty.us/publicworks/water/compstormwaterplan.jsp>

County 1994 Stormwater Conformance Ordinance 94-022

County 1999 Water Resource Protection Overlay District Ordinance 99-086

County 2002 Stormwater Special Districts Ordinance 2002-034

Program Area: 2. Stormwater Management
Task: 2.1 Identify and prioritize stormwater projects utilizing models

Period	Responsible Party	Cost Estimate	Status	P Reduction
2010 - 2014	City/County	\$490,000*	Active	Indirect

Task Objective: Prioritize nutrient reduction projects in the watershed using sub-watershed scale pollutant loading models

Actions:

- Define criteria for prioritization of stormwater projects
- Use pollutant loading models to identify priority stormwater projects in the sub-basins of the watershed
- Identify suitable sites for stormwater retrofits
- Inspect and evaluate all seven stormwater treatment facilities in the upper SBC watershed and prepare pre-design reports for retrofitting

Intended Lake Benefits: Phosphorus Reduction Fecal Coliform Reduction Sediment Reduction Other

If other, please describe: Remove pollutants e.g. oil, grease and metals

Performance Measures: Annual report to include:

- 1) Criteria for prioritization of projects
- 2) Prioritized list of stormwater projects in the watershed, updated annually
- 3) Prioritized list of suitable sites for stormwater retrofits including options, costs, and timelines for projects
- 4) Formalized plan to retrofit existing facilities and other suitable sites

Cost Estimates:

Year	Party	FTEs (\$)	Capital Costs	Other	Total
2010	City	0.1 (\$10,000)		\$100,000	\$110,000
	County	0.1 (\$10,000)		\$115,000	\$125,000
	District/Other				
2011	City	0.1 (\$10,000)		\$100,000	\$110,000
	County	0.1 (\$10,000)		\$75,000	\$85,000
	District/Other				
2012	City	0.1 (\$10,000)			\$10,000
	County	0.1 (\$10,000)			\$10,000
	District/Other				
2013	City	0.1 (\$10,000)			\$10,000
	County	0.1 (\$10,000)			\$10,000
	District/Other				
2014	City	0.1 (\$10,000)			\$10,000
	County	0.1 (\$10,000)			\$10,000
	District/Other				
Total		1.0 (\$100,000)		\$390,000*	\$490,000*

Program Area: 2. Stormwater Management
Task: 2.2 Improve phosphorus removal in stormwater facilities

Period	Responsible Party	Cost Estimate	Status	P Reduction
2010 – 2011	City/County	\$580,000	Active/Hold*	Direct

Task Objective: Improve phosphorus removal in stormwater facilities

Actions:

- City and County will assess stormwater facilities
- City will conduct full scale testing for Imbrium Systems phosphorus removal media (2010)
- County will conduct testing for PhosphoSorb phosphorus removal media (2010)
- County will retrofit private stormwater ponds in Silver Beach Creek Watershed (2010-2011)
- City will reconstruct Barkley/Britton wet pond to a rock/plant filter design (similar to site at WWU)

Intended Lake Benefits: Phosphorus Reduction Fecal Coliform Reduction Sediment Reduction Other

If other, please describe: Remove pollutants e.g. oil, grease and metals

Performance Measures: Annual report to include:

- 1) Number of stormwater facilities assessed, actions taken, percent treatment improvement for phosphorus, reductions in phosphorus, fecal coliform, flow velocity, TSS, and turbidity.
- 2) Summary of phosphorus removal efficiency of Imbrium and PhosphoSorb media
- 3) Summary of Barkley/Britton wet pond project

Cost Estimates:

Year	Party	FTEs (\$)	Capital Costs	Other	Total
2010	City	0.1 (\$10,000)	\$170,000		\$180,000
	County	0.2 (\$20,000)	\$125,000	\$10,000	\$155,000
	District/Other				
2011	City	0.1 (\$10,000)	\$100,000		\$110,000
	County	0.1 (\$10,000)	\$125,000		\$135,000
	District/Other				
Total		0.5 (\$50,000)	\$520,000	\$10,000	\$580,000

Program Area: 2. Stormwater Management
Task: 2.3 Implement comprehensive stormwater plans

Period	Responsible Party	Cost Estimate	Status	P Reduction
2010 - 2014	City/County	\$ 2.74 million	Active/Hold*	Direct

Task Objective: Implement existing comprehensive stormwater plans for phosphorus control

Actions:

Public Property Actions:

- Pilot projects to reduce phosphorus using bio-infiltration in public rights of ways
- Institute a tree/vegetation project on streets in watershed to increase vegetated cover
- Schedule reconfiguration of roadside ditches & regular maintenance
- County will construct projects in the Silver Beach Creek watershed to reduce erosion
- County will complete construction of Lahti Drive/Britton Road Bioswale

Private Property Actions:

- Prioritize infiltration project techniques and locations based on the outcome of soil studies
- Pilot infiltration projects providing technical assistance and financial incentives to property owners
- Establish design standards for types of infiltration techniques and a homeowner's handbook with descriptions and illustrations for each

Intended Lake Benefits: Phosphorus Reduction Fecal Coliform Reduction Sediment Reduction Other

If other, please describe:

Performance Measures: Annual report to include:

- 1) Summary (cost, location, site conditions, project type, area treated and monitoring plan) for all public and private infiltration and treatment projects
- 2) Homeowner's Handbook of design standards and infiltration techniques

Cost Estimates:

Year	Party	FTEs (\$)	Capital Costs	Other	Total
2010	City	0.2 (\$20,000)	\$175,000		\$195,000
	County	0.4 (\$40,000)	\$750,000		\$790,000
	District/Other				
2011	City	0.4 (\$40,000)	\$100,000		\$140,000
	County	0.4 (\$40,000)	\$600,000		\$640,000
	District/Other				
2012	City	0.4 (\$40,000)	\$100,000		\$140,000
	County	undetermined*	\$300,000		\$300,000
	District/Other				
2013	City	0.4 (\$40,000)	\$100,000		\$140,000
	County	undetermined*	\$300,000		\$300,000
	District/Other				
2014	City	0.4 (\$40,000)	\$50,000		\$90,000
	County	undetermined*	undetermined*		
	District/Other				
Total		2.6 (\$260,000)	\$2.48 million		\$2.74million

Program Area: 2. Stormwater Management
Task: 2.4 Conduct Inspections and Assessments

Period	Responsible Party	Cost Estimate	Status	P Reduction
2010 - 2014	City/County/SVCA	\$1.1 million	Active	Indirect

Task Objective: Conduct daily stormwater inspections of active development projects and conduct regular site assessments throughout the watershed

Actions:

- County will continue year-round daily inspections of development projects in the watershed
- City will provide daily inspections during construction window and twice weekly inspections outside of window
- City and County will conduct routine surveillance for non-permitted actions in watershed in coordination with Lake Whatcom permit inspection program
- Sudden Valley will continue to require and inspect on-site infiltration systems and conduct regular erosion control inspections for new construction projects and additions
- Sudden Valley will continue to conduct on-site assessments and provide education for property modifications

Intended Lake Benefits: Phosphorus Reduction Fecal Coliform Reduction Sediment Reduction Other

If other, please describe:

Performance Measures: Annual report to include:
 1) Number of permit/non-permit related inspections conducted
 2) Number of corrections notices and corrections made

Cost Estimates:

Year	Party	FTEs (\$)	Capital Costs	Other	Total
2010	City	1.0 (\$100,000)			\$100,000
	County	1.0 (\$100,000)			\$100,000
	District/Other	0.2 (SVCA) (\$20,000)			\$20,000
2011	City	1.0 (\$100,000)			\$100,000
	County	1.0 (\$100,000)			\$100,000
	District/Other	0.2 (SVCA) (\$20,000)			\$20,000
2012	City	1.0 (\$100,000)			\$100,000
	County	1.0 (\$100,000)			\$100,000
	District/Other	0.2 (SVCA) (\$20,000)			\$20,000
2013	City	1.0 (\$100,000)			\$100,000
	County	1.0 (\$100,000)			\$100,000
	District/Other	0.2 (SVCA) (\$20,000)			\$20,000
2014	City	1.0 (\$100,000)			\$100,000
	County	1.0 (\$100,000)			\$100,000
	District/Other	0.2 (SVCA) (\$20,000)			\$20,000
Total		11.0 (\$1.1 million)			\$1.1 million

Program Area: 2. Stormwater Management
Task: 2.5 Coordinate NPDES Phase II Implementation

Period	Responsible Party	Cost Estimate	Status	P Reduction
2010 - 2014	City/County	\$ 500,000	Active	Indirect

Task Objective: Coordination and implementation of NPDES Phase II stormwater requirements will demonstrate the ability to positively influence water quality to conform with TMDL and NPDES permit requirements

Actions:

- Share resources for the *Silver Beach Creek Pilot Project (SBCP)*
- Adopt required resolutions and ordinances as needed
- Continue to coordinate NPDES required programs: Illicit Discharge Detection, Construction Site Controls, Permanent Water Quality Facilities, Public Outreach, and Public Education
- Perform required public outreach activities and train staff for required duties to meet requirements

Intended Lake Benefits: Phosphorus Reduction Fecal Coliform Reduction Sediment Reduction Other

If other, please describe: Remove pollutants e.g. oil, grease and metals

Performance Measures: Annual report to include:
 1) Number of times and amount of resources shared
 2) Regulations and ordinances adopted out of number needed
 3) Dates and outcomes of NPDES program coordination efforts
 4) Date, number of participants and purpose of public outreach events
 5) Date, number of participants and purpose of training events
 6) Number of permit requirements that are in compliance

Cost Estimates:

Year	Party	FTEs (\$)	Capital Costs	Other	Total
2010	City	0.5 (\$50,000)			\$50,000
	County	0.5 (\$50,000)			\$50,000
	District/Other				
2011	City	0.5 (\$50,000)			\$50,000
	County	0.5 (\$50,000)			\$50,000
	District/Other				
2012	City	0.5 (\$50,000)			\$50,000
	County	0.5 (\$50,000)			\$50,000
	District/Other				
2013	City	0.5 (\$50,000)			\$50,000
	County	0.5 (\$50,000)			\$50,000
	District/Other				
2014	City	0.5 (\$50,000)			\$50,000
	County	0.5 (\$50,000)			\$50,000
	District/Other				
Total		5.0 (\$500,000)			\$500,000

Program Area: 2. Stormwater Management
Task: 2.6 Restore Stream Riparian Areas

Period	Responsible Party	Cost Estimate	Status	P Reduction
2010 - 2014	City/County	\$70,000	Active	Direct

Task Objective: Stabilize and re-vegetate stream riparian areas to decrease sedimentation sources from eroding stream banks and poorly vegetated stream areas. Include instream features when appropriate.

Actions:

- Identify suitable sites for restoration of privately owned stream segments
- Contract with property owners to place projects on their properties

Intended Lake Benefits: Phosphorus Reduction Fecal Coliform Reduction Sediment Reduction Other

If other, please describe: Remove pollutants e.g. oil, grease and metals

Performance Measures: Annual report to include:

- 1) Number of contracts for private property projects
- 2) Summary of upland acres restored
- 3) Linear feet of riparian restoration
- 4) Number and type of instream projects

Cost Estimates:

Year	Party	FTEs (\$)	Capital Costs	Other	Total
2010	City	0.1 (\$10,000)			\$10,000
	County	0.1 (\$10,000)			\$10,000
	District/Other				
2011	City	0.1 (\$10,000)			\$10,000
	County	0.1 (\$10,000)			\$10,000
	District/Other				
2012	City				
	County	0.1 (\$10,000)			\$10,000
	District/Other				
2013	City				
	County	0.1 (\$10,000)			\$10,000
	District/Other				
2014	City				
	County	0.1 (\$10,000)			\$10,000
	District/Other				
Total		0.7 (\$70,000)			\$70,000

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