



Prepared by the Lake Whatcom
Interjurisdictional Coordinating Team

Lake Whatcom **Management Program** **2015-2019 Work Plan**

April, 2015

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Lake Whatcom Management Program

lakewhatcom.whatcomcounty.org



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PROGRAM OVERVIEW

Introduction

Lake Whatcom's water quality has deteriorated as a result of excessive phosphorus entering the lake from residential development, logging, airborne deposition, and natural processes. This phosphorus loading has contributed to algal blooms and dissolved oxygen deficits, causing problems for the City's water supply system, aquatic biota, and recreational users of the lake.

The City of Bellingham, Whatcom County, and the Lake Whatcom Water and Sewer District came together in 1998 to formalize, by interlocal agreement, the Lake Whatcom Management Program. The goal of the Program is to improve lake water quality by jointly implementing programs affecting the Lake Whatcom Watershed.

In 1998, Lake Whatcom water quality failed to meet state dissolved oxygen standards and was placed on Washington's list of impaired waters. In subsequent years, total phosphorus and fecal coliform were added to the list of impairments. In response to these listings, a Total Maximum Daily Load (TMDL) study was developed by the Washington Department of Ecology (DOE) to determine the actions needed to return the lake to acceptable water quality standards (See Phosphorus Focus, page 4).

To improve selection and implementation of watershed management projects, the three jurisdictions created the Interjurisdictional Coordinating Team (ICT) in 2000 to coordinate Lake Whatcom Management Program activities.

The ICT, composed of staff from each of the three jurisdictions and the Sudden Valley Community Association, meets regularly to coordinate work plans, evaluate program effectiveness, and analyze data collection and monitoring results. The ICT prepared this plan.

This Lake Whatcom Management Program 2015-2019 Work Plan is the fourth five-year work plan developed by the team. During the next five years, this work plan will guide management of actions that will reduce the amount of phosphorus reaching the lake and address other watershed issues.

Consistent with previous efforts, the 2015-2019 Work Plan is organized around Program Areas, each with unique objectives and performance measures. This structure was adopted in order to make the plan more accessible to readers while providing the structure needed for consistent and data-driven accounting of activities and progress. Additional information on the Program Area structure is available on page 7.

While projects to reduce the amount of phosphorus and fecal coliform continue to be a major focus of the Lake Whatcom Management Program, other program areas, most notably Land Preservation and Aquatic Invasive Species, continue to be very active in preventing additional pollutant loading and protecting other aspects of the Lake Whatcom ecosystem.

This work plan is founded on our long-standing commitment to protect, preserve and enhance the water quality of Lake Whatcom.

In reaffirming this commitment last year, we worked with our Councils and Commission to establish milestones for removing phosphorus and bacteria from stormwater entering Lake Whatcom.

Since then, we have clarified the work, costs, and funding necessary to restore lake water quality to a near-natural condition. Our collaborative efforts are reflected in this 2015-2019 Work Plan.

We are pleased to report that we remain on task and on schedule toward achieving a clean and protected source of drinking water, and a healthy habitat for wildlife and people.

Kelli Linville, Bellingham Mayor

Jack Louws, County Executive

Patrick Sorensen, District General Manager

PROGRAM OVERVIEW

Watershed and Lake Facts

Population and Drinking Water Supply

- Lake Whatcom is the drinking water source for about 100,000 residents of Whatcom County, about half the county's population.
- Lake Whatcom provides drinking water for the City of Bellingham, Lake Whatcom Water and Sewer District, several smaller water districts and associations, and a few hundred homes that draw water directly from the lake.
- The City of Bellingham withdraws water from the lake's middle basin through a 1,200-foot wooden pipeline that leads to the water treatment plant.
- About 15,500 people live in the Lake Whatcom Watershed, in about 6,900 homes (as of February, 2015).

Volume, Area, Elevation

- Lake Whatcom holds about 250 billion gallons of water.
- Lake Whatcom is about 10 miles long and just over one mile wide at its widest point.
- Total shoreline length is approximately 30 miles.
- The surface area of Lake Whatcom is about 5,000 acres, with eight percent within city limits.
- The surface area of the Lake Whatcom Watershed is about 56 square miles (36,000 acres), with about three percent within city limits.
- The maximum allowed lake level is 314.94 feet above sea level.

Tributaries and Drainage

- Lake Whatcom is fed by numerous perennial and intermittent streams including Silver Beach Creek, Carpenter Creek, Olsen Creek, Smith Creek, Anderson Creek, Brannian Creek, and Austin Creek.
- Lake Whatcom also receives water diverted from the Middle Fork of the Nooksack River.
- Lake Whatcom naturally drains into Bellingham Bay through Whatcom Creek.

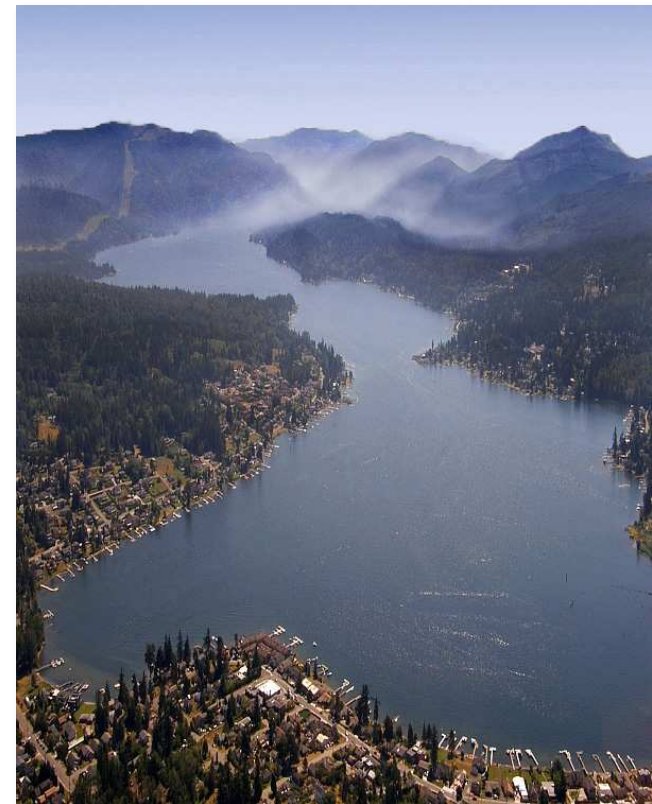


Photo by City of Bellingham, 2010

PROGRAM OVERVIEW

1992 General Program Goals

- To recognize Lake Whatcom and its watershed as the major drinking-water reservoir for the county and develop public and private management principles for the lake and watershed consistent with a drinking water reservoir environment.
- To protect, preserve and enhance water quality and manage water quantity to ensure long-term sustainable supplies for a variety of uses, with priority placed on domestic water supply. Management programs and actions will be made in recognition of existing contractual agreements and potential review and renegotiation in light of these goals.
- To prioritize protection over treatment in managing Lake Whatcom and its watersheds. Management actions shall reflect a long-term view of replacement or treatment costs.
- To manage water quantity to sustain long-term efficient use of the water for beneficial uses within the county that are consistent with a drinking-water reservoir, and recognize the integral link with the Nooksack River and associated water resource concerns.
- To ensure that opportunities for public comment and participation are provided in policy and management program development, and to promote public awareness and responsible individual actions.
- To promote learning, research, and information opportunities which better our understanding of the watershed system, the impacts of activities, and the benefits and potentials of policies implemented.

General Goal Statements from the Joint Resolution (1992) of the City of Bellingham, Whatcom County, and the Lake Whatcom Water and Sewer District.

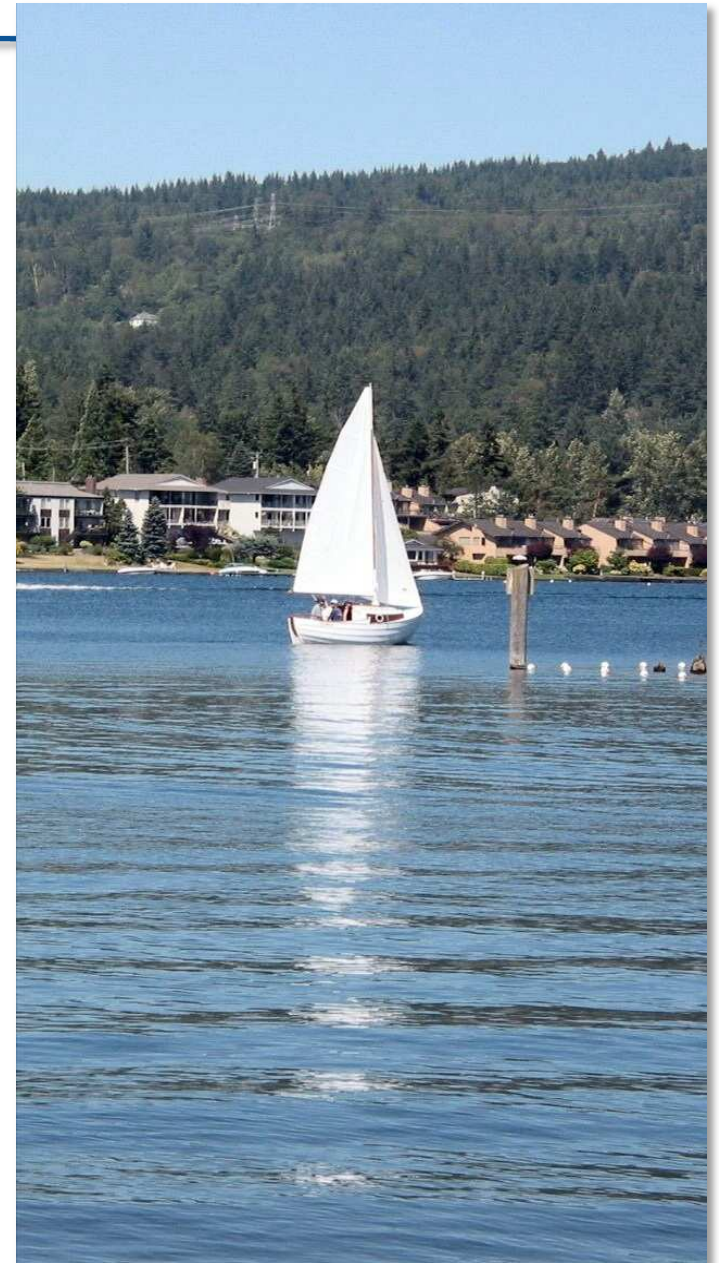


Photo from City of Bellingham Archive, 2004

PROGRAM OVERVIEW

Phosphorus Focus

What is phosphorus?

Phosphorus is a naturally occurring nutrient that stimulates plant growth and is essential for animal and plant life.

Where does phosphorus come from?

In nature phosphorus is found in soils, sediments, and organic material. Phosphorus is transported by water and air. Specific sources include:

- Exposed soil from construction and landscaping
- Lawn and garden products such as fertilizers and pesticides
- Leaves, grass clippings, and other compost
- Pet and wildlife droppings
- Failing septic systems
- Phosphorus-based soaps and detergents

How does phosphorus get into the lake?

While phosphorus is a naturally occurring nutrient, human activity often increases the amount of phosphorus entering the lake in stormwater. Surfaces such as roads, roofs, driveways, and yards cannot adequately absorb and filter stormwater and so it runs directly into storm drains that lead to the nearest lake or stream. On natural landscapes, stormwater slowly seeps into the ground where it is naturally filtered by forests and soils.

Phosphorus and Lake Whatcom

In 1998, Lake Whatcom was included on the state's list of water bodies that failed to meet water quality standards. Lake Whatcom was listed for low dissolved oxygen levels, a direct result of high levels of phosphorus entering the lake.

Based on this listing, the Washington State Department of Ecology began working on a mandatory water quality improvement plan, called the Lake Whatcom TMDL (Total Maximum Daily Load). The plan sets the phosphorus reduction target needed for the lake to meet federal and state water quality standards.

Achieving this target requires investment of millions of dollars over many decades; however, the City of Bellingham and Whatcom County are already taking significant steps to protect Lake Whatcom.

Since the early 1990s, the City of Bellingham and Whatcom County have been working together to reduce phosphorus loading to the lake by:

- Adopting stormwater and land use regulations to reduce phosphorus loading
- Constructing, operating, and maintaining stormwater treatment facilities

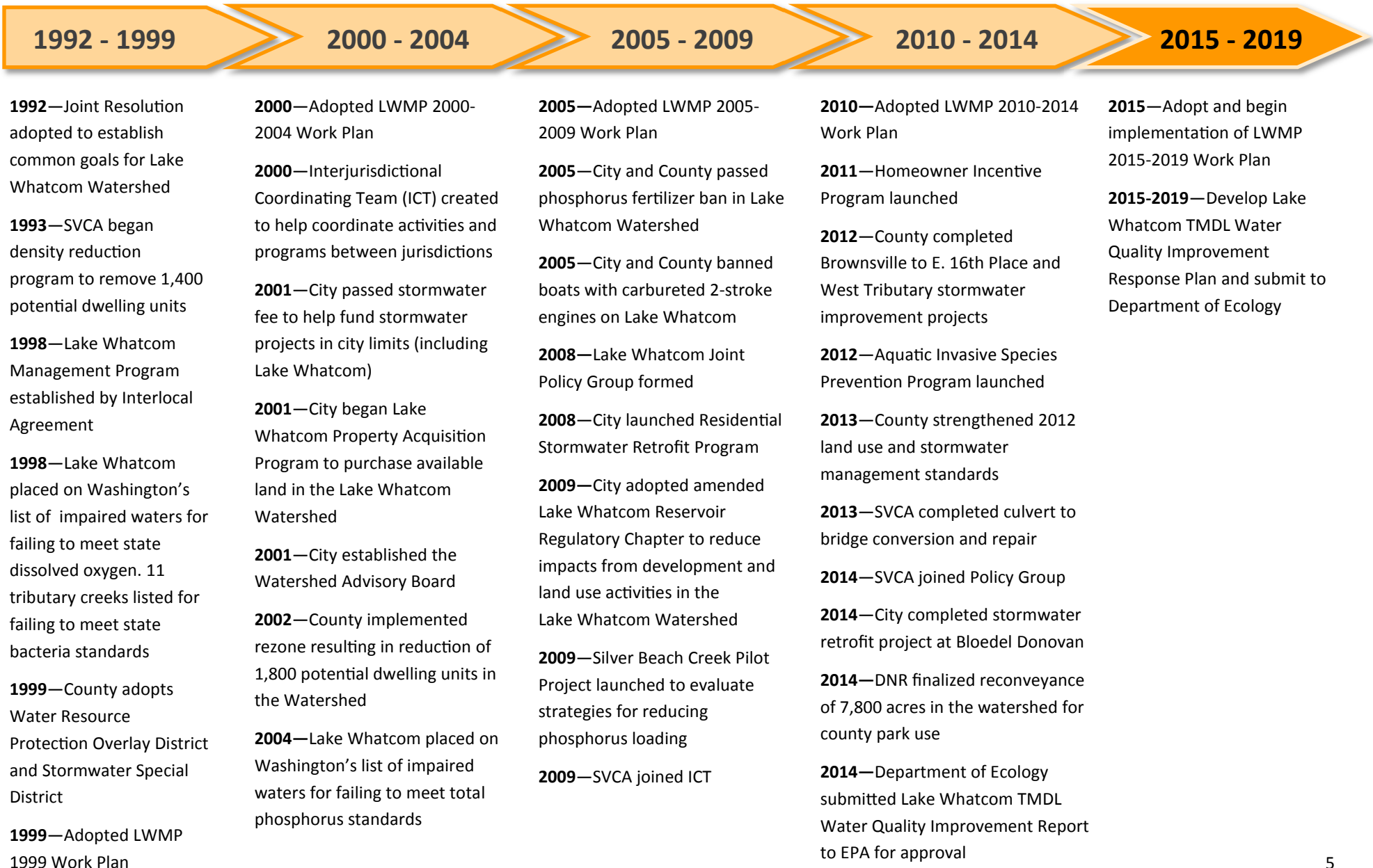
- Piloting residential retrofit programs to reduce phosphorus loading from developed lots
- Preserving land in the watershed that might otherwise be susceptible to development or other land disturbance activities

These efforts have resulted in a reduction of approximately 380 pounds of phosphorus entering Lake Whatcom between 2004 and 2014. These accomplishments are just the beginning. Over the next five years, the City of Bellingham and Whatcom County plan to construct additional stormwater treatment facilities in the Lake Whatcom Watershed, while improving the effectiveness of facilities. Additional efforts will include the continuation of incentive programs to reduce phosphorus coming from developed lots. The success of these efforts also depends on the effectiveness of stormwater and land use regulations, and active participation of watershed residents.

More detail regarding activities planned for the 2015-2019 Work Plan is found on the succeeding pages.

PROGRAM OVERVIEW

Program Development & Accomplishments Timeline



PROGRAM OVERVIEW

Program Areas and Objectives

1. Land Preservation

Preserve and restore land that might otherwise be susceptible to development or other land disturbance to protect water quality and fish and wildlife habitat.

2. Stormwater

Prevent water quality and quantity impacts associated with stormwater runoff by implementing best management practices, pollutant source control, construction and maintenance of stormwater facilities, inspections, and compliance.

3. Land Use

Prevent water quality and quantity impacts from new residential development and redevelopment, and from forest practices.

4. Monitoring & Data

Collect and manage data to increase our understanding of water quality and pollution sources, and to guide management decisions.

5. Hazardous Materials

Prevent water quality impacts associated with improper storage and handling of hazardous materials, and ensure that spill prevention and response programs adequately protect water quality.

6. Recreation

Promote recreational opportunities that are consistent with water quality goals, and improve ways to reduce impacts of existing activities.

7. Aquatic Invasive Species

Prevent new aquatic invasive species (AIS) introductions to Lake Whatcom and other waterbodies and minimize impacts associated with established invasive species.

8. Utilities & Transportation

Prevent water quality and quantity impacts from water, sewer, and transportation systems.

9. Education & Engagement

Protect water quality by educating and engaging watershed residents and visitors.

10. Administration

Coordinate and support implementation of the Lake Whatcom Management Program Work Plan.

The 2015-2019 Work Plan differs somewhat from previous five-year plans. Some Program Area topics are combined to bring similar topics together or recognize similarities in implementation. Transportation topics are moved to the Utilities Program Area. Forestry/Fish/Wildlife is eliminated as a Program Area heading. Forestry joins development issues in the Land Use Program Area. Fish/Wildlife is implemented in Land Preservation and other Program Areas that improve or protect habitat. Enforcement is now part of Stormwater since most inspection and enforcement services are related to stormwater regulations and runoff. Education and engagement topics can be found both under Education & Engagement as well as under their respective Program Areas.

PROGRAM OVERVIEW

Reading the Work Plan

The **Program Area name** can be found here.

The Program Area **Objective** can be found here. This area also includes **Leads** and potential **Partners** responsible for accomplishing the actions listed below.

Program Area **cost estimates** for the 2015-2019 period can be found here. Cost estimates for each Program Area can be found in the **Cost Estimates Table** on page 42.

Land Preservation

OBJECTIVE: Preserve and restore land that might otherwise be susceptible to development or other land disturbance to protect water quality and fish and wildlife habitat.

Leads: City of Bellingham, Whatcom County

Partners: Whatcom Land Trust, Watershed Advisory Board, Sudden Valley Community Association

Estimated Investments:
\$25 million

1.1 Property Acquisition

Purchase property to reduce development and other land use impacts and maintain natural functions of the watershed.

1. Purchase watershed properties based on criteria and priorities.

1.2 Conservation Easements

Use conservation easements to provide long term protection of land.

1. Create conservation easements for new preserves.
2. Modify existing conservation easements to include additional properties.

1.3 Property Management

Manage watershed properties to improve the watershed's water quality and fish and wildlife habitat.

1. Create management plans that address forestry, recreation (facilities, trails, roads), and vegetation (planting and maintenance) management needs for all properties.
2. Develop management plan for new Whatcom County Park Property to include road and trail assessment and actions to protect water quality.

*See Action Timeline Table on page 30 for a list of actions and their estimated occurrence

Performance Measures:

- Number of development units removed from watershed
- Number of acres acquired or otherwise protected in the watershed

Performance Measures can be found here and indicate how progress toward completing the Program Area objective is being measured.

Program Areas are organized into **Action Categories** that are identified by the Program Area number and the category number (e.g. 1.1). Under each category, there is a brief definition of the category's purpose followed by a numbered list of **Actions** that will be implemented over the 2015-2019 period to achieve that purpose.

A complete list of actions and their estimated occurrence during the 2015-2019 period can be found in the Action Timeline Table starting on page 30.

This colored box is also used to highlight **Resources** such as websites, reports, and references to applicable regulations.

This section is used to highlight **Program Area accomplishments** or to provide additional background information.

In 2014, Whatcom County and the State Department of Natural Resources finalized the conveyance of 8,844 acres (approximately 7,800 acres are in the Lake Whatcom Watershed) to the County. The addition of this acreage to the protected category of lands in the Lake Whatcom Watershed is a significant step in management of the Watershed for improvement and protection of water quality.

Photo by T. Calderon, 2013

Land Preservation

OBJECTIVE: Preserve and restore land that might otherwise be susceptible to development or other land disturbance to protect water quality and fish and wildlife habitat.

Leads: City of Bellingham, Whatcom County

Partners: Whatcom Land Trust, Watershed Advisory Board, Sudden Valley Community Association

Estimated Investments:
\$25 million

1.1

Property Acquisition

Purchase property to reduce development and other land use disturbances that degrade the natural functions of the watershed.

1. Purchase watershed properties based on criteria and availability.

1.2

Conservation Easements

Use conservation easements to provide long term protection to watershed properties.

1. Create conservation easements for new preserves.
2. Modify existing conservation easements to include additional properties in existing preserves.

1.3

Property Management

Manage watershed properties to improve the watershed's natural functions that protect water quality and fish and wildlife habitat.

1. Create management plans that address forestry, recreation (facilities, trails, roads), and vegetation (planting and maintenance) management needs for all properties.
2. Develop management plan for new Whatcom County Park Property to include road and trail assessment and actions to protect water quality.

***See Action Timeline Table on page 30 for a list of actions and their estimated occurrence**

Performance Measures:

- Number of development units removed from watershed
- Number of acres acquired or otherwise protected in the watershed
- Acres affected/actions taken to enhance or restore natural functions on watershed properties

In 2014, Whatcom County and the State Department of Natural Resources finalized the reconveyance of 8,844 acres (approximately 7,800 acres are in the Lake Whatcom Watershed) to the County. The addition of this acreage to the protected category of lands in the Lake Whatcom Watershed is a significant step in management of the Watershed for improvement and protection of water quality.

Land Preservation

OBJECTIVE: Preserve and restore land that might otherwise be susceptible to development or other land disturbance to protect water quality and fish and wildlife habitat.

Leads: City of Bellingham, Whatcom County

Partners: Whatcom Land Trust, Watershed Advisory Board, Sudden Valley Community Association

Estimated Investments:
\$25 million

1.3

Property Management Continued...

Manage watershed properties to improve the watershed's natural functions that protect water quality and fish and wildlife habitat.

3. Implement management plans for all properties.
4. Conduct periodic inspections to monitor restoration sites, invasive species control sites and other property management actions.
5. Actively respond to encroachments and other property management issues.
6. Engage watershed residents and recreational users in watershed property stewards program (e.g. mountain bikers, property owners, etc.).

The City of Bellingham began purchasing available land in the Lake Whatcom Watershed through the Property Acquisition Program starting in 2001. As of 2014, the City has purchased approximately 1,892 acres of land at a cost of \$29.5 million dollars. The City has also protected an additional 164 acres of land through conservation easements or restrictive covenants.

Resources:

Lake Whatcom Property Acquisition Program
cob.org/services/environment/lake-whatcom/lw-property-acquisition-program.aspx

Whatcom County Parks & Recreation—Reconveyance
whatcomcounty.us/625/Lake-Whatcom-Reconveyance

Protected Property in the Lake Whatcom Watershed Map
cob.org/documents/pw/lw/acquisition-land-map.pdf

Stormwater

OBJECTIVE: Prevent water quality and quantity impacts associated with stormwater runoff.

Leads: City of Bellingham, Whatcom County

Partners: Lake Whatcom Water & Sewer District, Sudden Valley Community Association, watershed residents and property owners, Sustainable Connections, Whatcom Conservation District, RE Sources

Estimated Investments:
\$14 million



2.1

Capital Facilities

Construct and retrofit capital facilities to reduce water quality and quantity impacts associated with stormwater runoff.

1. Complete scheduled capital improvement projects in the Lake Whatcom Watershed. (See 2015-2019 Stormwater Capital Projects & Funding Commitments, page 44).
2. Inform the public about timelines, impacts and purpose of projects during design and construction through press releases, web posts, public meetings, tours, and signage.

2.2

Residential Stormwater Projects

Address unmanaged runoff and phosphorus from residential streets, alleys, and private properties around Lake Whatcom.

1. Implement program to help watershed property owners reduce runoff from their properties using low-impact development strategies.
2. Investigate barriers to residential projects and adapt program to address those barriers.
3. Provide financial, technical, and/or development incentives (e.g. site visits, project options, one-on-one assistance) to encourage completion of private retrofits.
4. Facilitate, plan, and support neighborhood-scale retrofits of public and private properties.

Performance Measures:

- Acres treated by stormwater facilities and projects in watershed
- Pounds of phosphorus reduced annually as a result of stormwater facilities and projects
- Phosphorus removal efficiency of stormwater facilities
- Fecal coliform removal efficiency of stormwater facilities (reported in 2019)
- Number of properties completing residential stormwater projects

In 2014, Whatcom County completed the Coronado/Fremont Stormwater Improvement Project. This project provides stormwater quality treatment for 170 acres using a combination of constructed facilities to prevent erosion, reduce velocities, and trap sediments including bio-infiltration swales, storm canister vaults, and bank stabilization.

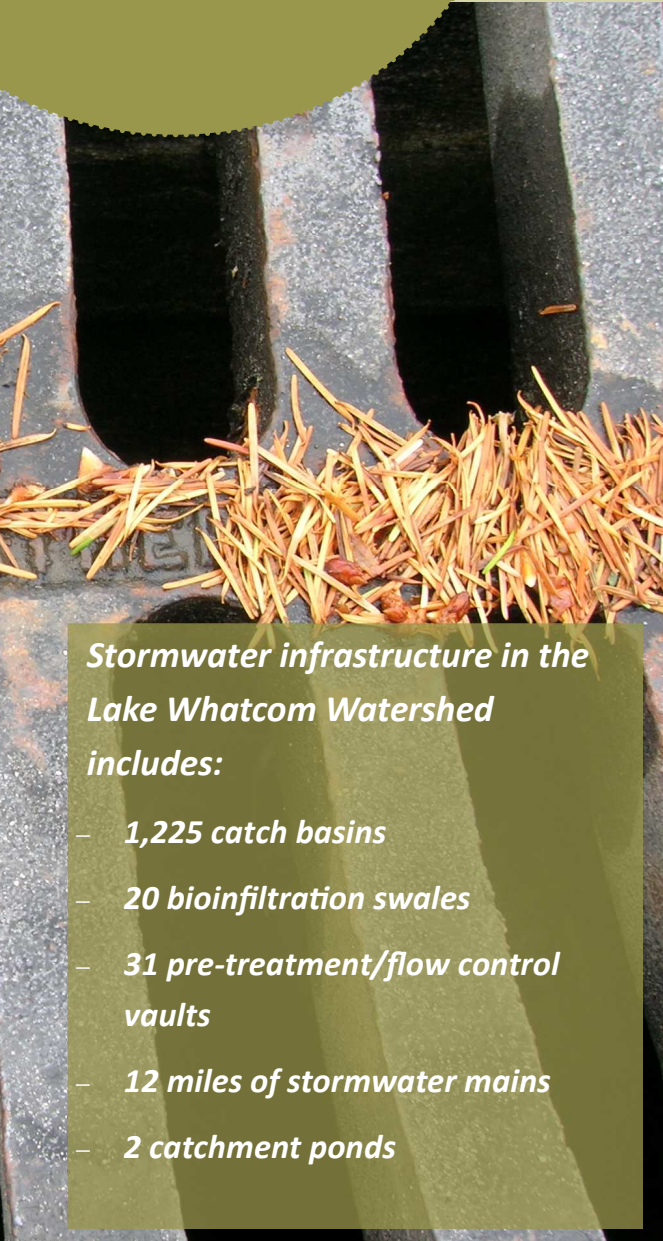
Stormwater

OBJECTIVE: Prevent water quality and quantity impacts associated with stormwater runoff.

Leads: City of Bellingham, Whatcom County

Partners: Lake Whatcom Water & Sewer District, Sudden Valley Community Association, watershed residents and property owners, Sustainable Connections, Whatcom Conservation District, RE Sources

Estimated Investments:
\$14 million



Stormwater infrastructure in the Lake Whatcom Watershed includes:

- 1,225 catch basins
- 20 bioinfiltration swales
- 31 pre-treatment/flow control vaults
- 12 miles of stormwater mains
- 2 catchment ponds

2.3

Public Facility Operation, Inspection and Maintenance

Operate, inspect, and maintain all public stormwater facilities.

1. Inspect all public stormwater facilities in accordance with the 2013-2018 Western Washington Phase II Municipal Stormwater Permit.
2. Schedule regular maintenance of public stormwater facilities.
3. Inspect and maintain all other publicly-owned stormwater infrastructure as necessary.
4. Continue enhanced street sweeping to capture roadway pollution prior to entering stormwater systems.

2.4

Private Facility Inspection and Maintenance

Ensure, to the maximum extent practicable, that private stormwater facilities are inspected and maintained.

1. Inspect private stormwater facilities, consistent with legal authority, and provide technical assistance when needed, to ensure post-construction maintenance standards are met.
2. Track and report inspections and correction actions to assure long-term effectiveness of private systems and investments.
3. Support inspection and maintenance by instructing owners about system needs and maintenance requirements.

Performance Measures:

- Number of inspection and maintenance activities at public and private facilities
- Number of inspection and enforcement actions associated with development activities in the watershed.
- Percentage of people who are aware of the impacts of stormwater pollution and benefits of low impact development (measured once in five-year period)
- Number and types of incentives distributed to watershed residents

Stormwater

OBJECTIVE: Prevent water quality and quantity impacts associated with stormwater runoff.

Leads: City of Bellingham, Whatcom County

Partners: Lake Whatcom Water & Sewer District, Sudden Valley Community Association, watershed residents and property owners, Sustainable Connections, Whatcom Conservation District, RE Sources

Estimated Investments:
\$14 million

2.5

Development Review

Reduce polluted stormwater runoff from prospective development.

1. Review all development activities to assure compliance with phosphorus reduction regulations.
2. Use low impact development (LID) strategies to the maximum extent practicable.
3. Inspect and enforce requirements for erosion controls.
4. Track and report inspection and enforcement activities associated with water quality impacts to Lake Whatcom.
5. Continue to assess the effectiveness of stormwater and development regulations.

2.6

Community Education and Engagement

Educate and engage the community to reduce practices that contribute to stormwater impacts.

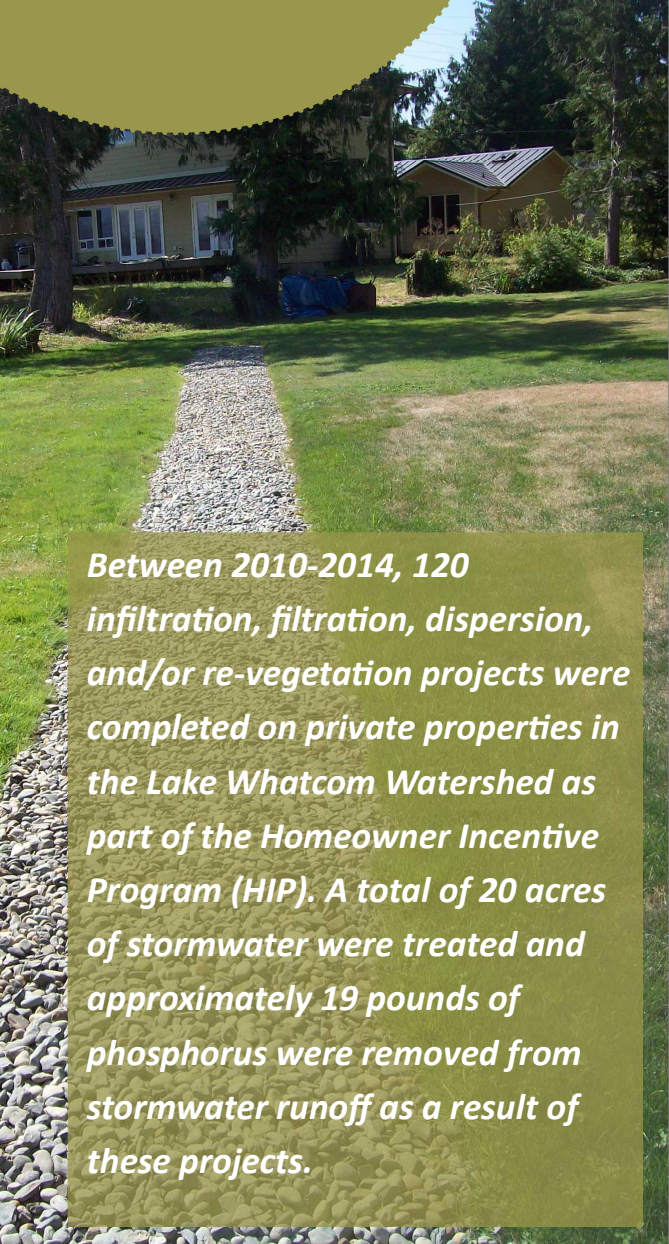
1. Raise awareness about causes and impacts of stormwater pollution and benefits of low impact development (LID).
2. Remove barriers and provide incentives to facilitate behaviors that protect water quality, including watershed-friendly yard care techniques, proper pet waste management, and proper vehicle, equipment and building maintenance.
3. Provide outreach to watershed residents to increase compliance with stormwater regulations.

Resources:

Lake Whatcom Management Program Capital Improvement Projects website
lakewhatcom.whatcomcounty.org/our-programs/capital-projects

City of Bellingham 2007 Comprehensive Stormwater Plan
cob.org/documents/pw/storm/2007-stormwater-comp-plan.pdf

Whatcom County 2008 Lake Whatcom Comprehensive Stormwater Plan
whatcomcounty.us/1022/Lake-Whatcom-Comprehensive-Stormwater-PI



Between 2010-2014, 120 infiltration, filtration, dispersion, and/or re-vegetation projects were completed on private properties in the Lake Whatcom Watershed as part of the Homeowner Incentive Program (HIP). A total of 20 acres of stormwater were treated and approximately 19 pounds of phosphorus were removed from stormwater runoff as a result of these projects.

Land Use

OBJECTIVE: Prevent water quality and quantity impacts from new residential development and redevelopment, and from forest practices.

Leads: City of Bellingham, Whatcom County

Partners: Interjurisdictional Committee, Department of Natural Resources, Department of Ecology

Estimated Investments:

\$165,000

3.1

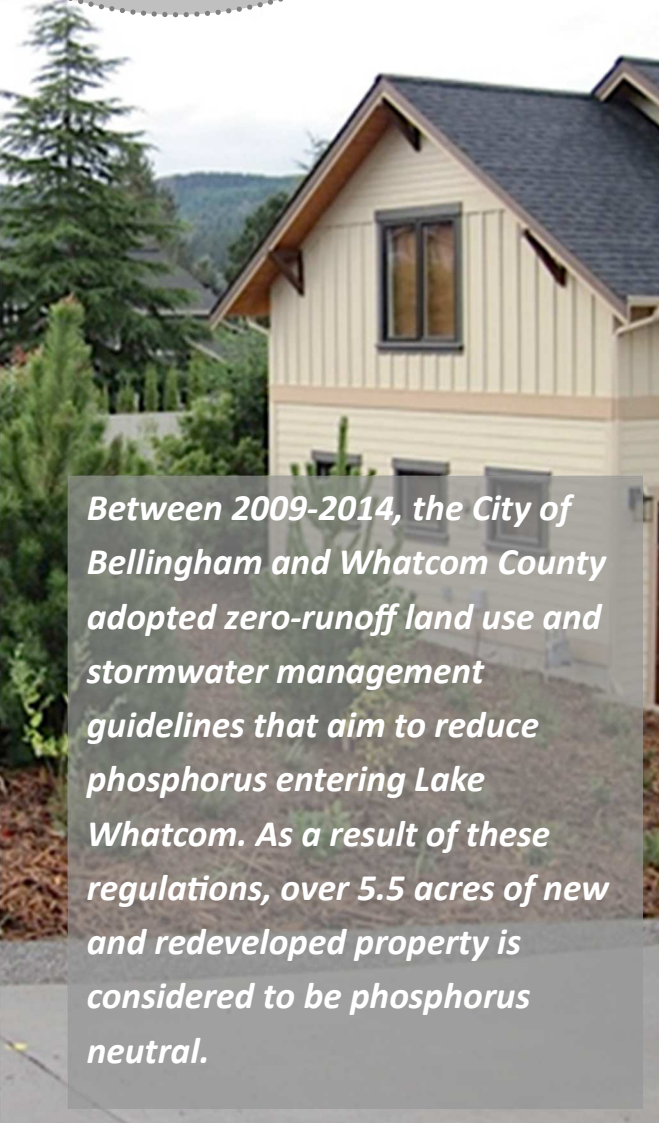
Development

Use development regulations to protect lake water quality.

1. Standardize tracking and performance measurement across jurisdictions.
2. Track all building and development activities in the watershed and make information accessible to City, County, and District (Annual Buildout Report).
3. Track and report on the number and type of land use and development-related permit violations in the watershed. (See 2.5 for Stormwater Violations, page 12).
4. Continue collaboration between City and County when developing or revising development regulations.
5. Continue to assess the effectiveness of development regulations.
6. Continue to monitor properties (including Natural Vegetation Protection Areas) over time to ensure performance standards are met.
7. Develop Low Impact Development standards in accordance with the Western Washington Phase II Municipal Stormwater Permit, to be adopted by December 13, 2016.
8. Provide outreach to watershed residents to increase compliance with development regulations.

Performance Measures:

- Total area of new and redeveloped properties considered phosphorus neutral
- Number of development-related permit violations in the watershed
- Acres of timber harvested on public and private forestry lands
- Amount of road constructed/abandoned on public and private forestry lands
- Acres treated with herbicides on public and private forestry lands
- Acres replanted on public and private forestry lands



Between 2009-2014, the City of Bellingham and Whatcom County adopted zero-runoff land use and stormwater management guidelines that aim to reduce phosphorus entering Lake Whatcom. As a result of these regulations, over 5.5 acres of new and redeveloped property is considered to be phosphorus neutral.

Land Use

OBJECTIVE: Prevent water quality and quantity impacts from new residential development and redevelopment, and from forest practices.

Leads: City of Bellingham, Whatcom County

Partners: Interjurisdictional Committee, Department of Natural Resources, Department of Ecology

Estimated Investments:

\$165,000

3.2

Forestry

Assess forestry activities to verify that adverse water quality impacts are minimized.

1. Review Interjurisdictional Committee reports of Department of Natural Resources activities.
2. Review and comment on private property forest practice applications where merited.
3. Track permitted forest practice activities to develop a summary of forest conditions in the watershed.
4. Work with private forest landowners to improve forest practices that protect water quality.
5. Continue to assess the effectiveness of the Department of Ecology's water quality assurances.
6. Improve forestry best management practices through interagency agreements or code modifications.

The Lake Whatcom Interjurisdictional Committee was convened in 2004 to provide technical review and recommendations to DNR for site-specific forest management proposals. Areas of primary focus include slope stability, water quality and public safety.

Resources:

Lake Whatcom Landscape Pilot Project: Report to the Board of Natural Resources
www.dnr.wa.gov/Publications/lm_lkwa_pilot_11report.pdf

Bellingham Municipal Code (BMC) 16.80 (Lake Whatcom Reservoir Regulatory Chapter), 15.42 (Stormwater Regulations), 16.55 (Critical Areas Ordinance), Title 22 (Shoreline Master Program)
codepublishing.com/wa/bellingham/

Whatcom County Code (WCC) 20.51 (Lake Whatcom Watershed Overlay District & Stormwater Regulations), 16.16 (Critical Areas Ordinance), Title 23 (Shoreline Management Program)
codepublishing.com/wa/whatcomcounty/

Monitoring & Data

OBJECTIVE: Collect and manage data to increase our understanding of water quality and pollution sources, and to guide management decisions.

Leads: City of Bellingham, Whatcom County, Lake Whatcom Water & Sewer District

Partners: Institute for Watershed Studies

Estimated Investments:
\$2 million

4.1 Lake Whatcom Monitoring

Continue long-term baseline water quality monitoring in Lake Whatcom and selected tributary streams.

1. Contract with Western Washington University Institute for Watershed Studies.
2. Discuss monitoring results and receive updates on water quality trends.

4.2 Tributary Monitoring

Continue contracts for monitoring of Lake Whatcom tributaries including the collection of data on phosphorus concentrations and turbidity during stormwater events, and fecal coliform.

1. Oversee and refine tributary monitoring contracts.
2. Discuss tributary monitoring results and determine policy implications.
3. Develop water quality monitoring program for non-urban areas in the watershed.

4.3 Stormwater Monitoring

Continue to monitor stormwater facilities to evaluate their effectiveness at removing phosphorus and fecal coliform before it enters Lake Whatcom.

1. Receive updates on stormwater monitoring program results.
2. Develop recommendations to improve removal of phosphorus and fecal coliform by stormwater facilities; update best management practices as needed.

Performance Measures:

- Update and calibrate models annually
- Provide annual summary of monitoring activities and reports

The City of Bellingham and Western Washington University have collaborated on lake water quality monitoring efforts since the early 1960s. Beginning in 1988, a more formal monitoring program was initiated by the City and the Institute for Watershed Studies to provide long-term water quality data for the lake and its tributaries.

Monitoring & Data

OBJECTIVE: Collect and manage data to increase our understanding of water quality and pollution sources, and to guide management decisions.

Leads: City of Bellingham, Whatcom County, Lake Whatcom Water & Sewer District

Partners: Institute for Watershed Studies

Estimated Investments:
\$2 million

4.4

Load and Response Models

Continue to support data collection needed to improve accuracy of hydrologic and phosphorus load and response models.

1. Identify data and monitoring needs and implement projects to acquire the needed information.
2. Continue to generate high quality streamflow, water quality, and weather data.
3. Update and recalibrate the phosphorus loading model with additional data.
4. Develop and implement strategy to update and recalibrate response model.
5. Conduct third party review to assess lake model's methodology for simulating phosphorus loading.

4.5

Information

Manage and develop summaries of monitoring data and reports.

1. Review and summarize monitoring studies and reports to determine water quality trends and policy implications, and make information easily accessible to the public.
2. Maintain and update Data Catalog.
3. Provide open access storage of monitoring reports.

The Data Management Team, comprised of staff from the City, Whatcom County, Lake Whatcom Water and Sewer District, Department of Ecology, and consultants, meets monthly to review monitoring and modeling results and to determine their policy implications.

Resources:

Lake Whatcom Monitoring Reports (Western Washington University - Institute for Watershed Studies)
www.wu.edu/iws/

Lake Whatcom Data Catalog

Copies of documents are available at the Whatcom County Public Works Water Resources Library and the Bellingham Public Library

Hazardous Materials

OBJECTIVE: Prevent water quality impacts associated with improper storage and handling of hazardous materials, and ensure that spill prevention and response programs adequately protect water quality.

Leads: City of Bellingham, Whatcom County

Partners: Department of Ecology

Estimated Investments:
\$50,000

5.1 Hazardous Materials

Facilitate removal of hazardous materials from watershed residences.

1. Conduct a hazardous materials collection event at locations in the watershed.
2. Promote and provide education on proper use and storage of hazardous materials.

5.2 Spill Prevention and Response

Protect water quality by providing adequate spill prevention and response programs.

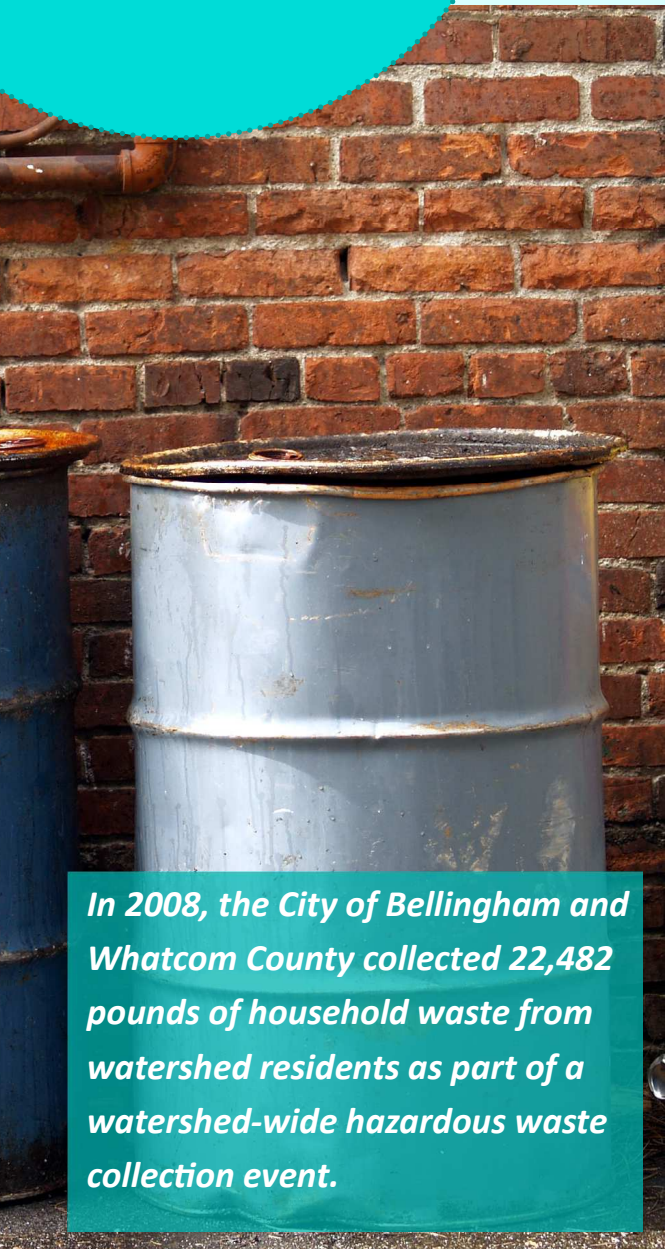
1. Continue to detect and remediate illicit discharges, connections, and improper disposal, including spills into the City and District sewer systems.
2. Educate watershed residents and visitors on how to prevent and report spills.
3. Continue to record and respond to all calls regarding illicit discharges or illegal spills received via the stormwater hotline number.
4. Review spill response procedures and reporting protocols.
5. Conduct ongoing field staff training regarding spill prevention and response.

Performance Measures:

- Pounds of hazardous materials collected from watershed residents
- Number of participants in hazardous materials collection event
- Number of spills, illicit discharges, or incidents reported in the watershed

Resources:

Washington Toxics Coalition
watoxics.org



In 2008, the City of Bellingham and Whatcom County collected 22,482 pounds of household waste from watershed residents as part of a watershed-wide hazardous waste collection event.

Recreation

OBJECTIVE: Promote recreational opportunities that are consistent with water quality goals, and improve ways to reduce impacts of existing activities.

Leads: Whatcom County, City of Bellingham

Partners: Sudden Valley Community Association, recreational user groups (e.g. boaters, bikers, hikers, horseback riders)

Estimated Investments:
\$1.1 million

6.1

Recreational Facilities

Develop or improve recreational facilities to promote recreational opportunities while reducing impacts to lake water quality.


1. Explore options for providing recreational amenities (including parking, signage, picnic sites, shelters, information kiosks, trash and pet waste receptacles, and restrooms).
2. Create low maintenance nutrient and pesticide-free landscapes.
3. Infiltrate or treat stormwater following stormwater best management practices.

6.2

Trails

Develop or improve trails and roads to reduce impacts to water quality.

1. Build and maintain trails and roads to prevent erosion and ensure runoff is infiltrated before reaching a water body.
2. Connect trails to other parks, trails, facilities and transportation networks.
3. Provide trailhead amenities such as restrooms and information kiosks when feasible.
4. Install directional and use signs on trails.



In 2014, Whatcom County and the State Department of Natural Resources finalized the reconveyance of 8,844 acres to the County for park use. The Whatcom County Parks Department has initiated a public process to help determine the best use of these lands for recreation and water quality protection.

Performance Measures:

- Number of new recreational facilities constructed in watershed
- Number of new or improved trails created in watershed
- Number of individuals using parks/trails in watershed
- Number of interpretive/informational exhibits installed

Recreation

OBJECTIVE: Promote recreational opportunities that are consistent with water quality goals, and improve ways to reduce impacts of existing activities.

Leads: Whatcom County, City of Bellingham

Partners: Sudden Valley Community Association, recreational user groups (e.g. boaters, bikers, hikers, horseback riders)

Estimated Investments:
\$1.1 million

6.3

Public Access

Provide low impact public access opportunities.


1. Provide public access using existing parks and trails whenever possible.
2. Improve bike lanes and transit services to recreational facilities.
3. Maintain and develop access to key viewpoints in watershed.

6.4

Public Information and Stewardship

Provide watershed stewardship information to recreational users.

1. Install interpretive and/or informational exhibits at trailheads when feasible.
2. Provide opportunities for community engagement in watershed stewardship activities.
3. Work with recreational user groups (e.g. mountain bikers, horseback riders, hikers, etc.) to reduce water quality impacts (e.g. erosion) resulting from improper trail use.
4. Explore options for promoting watershed-friendly recreational opportunities in the watershed including stewardship messages



In 2014, the City completed stormwater and shoreline improvement projects at Bloedel Donovan Park including stormwater mitigation, the removal of the existing concrete bulkhead, beach improvements, as well as expanding native planting areas. These projects mitigate for, or eliminate sources of nutrient and bacteria loading in stormwater runoff from Bloedel Donovan Park into Lake Whatcom.

Resources:

Whatcom County Parks & Recreation—Reconveyance
whatcomcounty.us/625/Lake-Whatcom-Reconveyance

Whatcom County Parks & Recreation Comprehensive Parks, Recreation and Open Space Plan
co.whatcom.wa.us/653/2008-Comprehensive-Plan

City of Bellingham Comprehensive Parks, Recreation and Open Space Plan
cob.org/documents/parks/development/pro-plan/pro-plan-full.pdf

Aquatic Invasive Species

OBJECTIVE: Prevent new aquatic invasive species (AIS) introductions to Lake Whatcom and other waterbodies and minimize impacts associated with established invasive species.

Leads: City of Bellingham, Whatcom County, Lake Whatcom Water & Sewer District

Partners: Washington Department of Fish and Wildlife

Estimated Investments:
\$1.5 million



Almost 13,000 watercraft inspections for aquatic invasive species have been conducted since the launch of the Aquatic Invasive Species Prevention Program in 2012.

Photo by City of Bellingham, 2014

7.1 Watercraft Inspections

Implement mandatory watercraft inspection program at Lake Whatcom and Lake Samish.

1. Hire, train, and manage seasonal aquatic invasive species inspectors.
2. Evaluate and adjust hours of operation and level of service at check stations based on boat inspection data.
3. Organize group/community-level inspections to enhance efficiency of on-call inspections.
4. Improve efficiency and accuracy of data collection at check stations.

7.2 Watercraft Decontaminations

Improve capability to decontaminate watercraft that do not pass inspection.

1. Develop standard decontamination protocols for inspection staff.
2. Provide decontamination training to inspection staff.
3. Decontaminate watercraft that do not pass inspection.
4. Maintain decontamination equipment.

7.3 Monitoring and Response

Implement comprehensive aquatic invasive species monitoring program for Lake Whatcom.

1. Develop and implement AIS Monitoring Plan for Lake Whatcom.
2. Conduct regular zebra/quagga mussel monitoring events in Whatcom County waters.
3. Develop AIS Rapid Response Plan for Lake Whatcom.

Performance Measures:

- Number of watercraft inspections conducted
- Number of watercraft decontaminations conducted
- Number of monitoring events conducted in watershed
- Number of opportunities to collaborate with local and regional partners
- Number of people who were sent informational materials

Aquatic Invasive Species

OBJECTIVE: Prevent new aquatic invasive species (AIS) introductions to Lake Whatcom and other waterbodies and minimize impacts associated with established invasive species.

Leads: City of Bellingham, Whatcom County, Lake Whatcom Water & Sewer District

Partners: Washington Department of Fish and Wildlife

Estimated Investments:
\$1.5 million



In September of 2011, invasive Asian clams (Corbicula fluminea) were discovered in Lake Whatcom, Lake Padden, and Whatcom Creek.

Photo by City of Bellingham, 2011

7.4

Research and Collaboration

Collaborate with local and regional partners to develop regional prevention strategy and summarize research on prevention and management strategies.

1. Track the spread of AIS and incorporate any new prevention and management efforts being implemented at the local, regional, and national levels.
2. Communicate with local, state, and regional aquatic invasive species personnel to share information and resources.

7.5

Education and Engagement

Provide AIS education to and facilitate stewardship by watershed residents, boaters and other lake visitors.

1. Inform watershed residents, boaters, and other lake visitors about AIS issues and engage them in prevention activities through informational materials, online education tools, community events and public meetings, and in-person conversations during inspections.
2. Provide opportunities for community engagement in monitoring activities.

Performance Measures:

- Number of unique visitors to Whatcom Boat Inspections website
- Number of people who completed the online AIS Awareness Course

Resources:

Lake Whatcom Aquatic Invasive Species Annual Reports and Documents
lakewhatcom.whatcomcounty.org/resources

Whatcom Boat Inspections website
whatcomboatinspections.com

Aquatic Invasive Species Awareness Course
whatcomboatinspections.com/ais-awareness-course

Utilities & Transportation

OBJECTIVE: Prevent water quality and quantity impacts from water, sewer, and transportation systems.

Leads: Lake Whatcom Water & Sewer District, City of Bellingham, Whatcom County

Partners: Whatcom Transit Authority

Estimated Investments:
\$1.4 million

8.1

Water

Manage water supply systems to minimize water quality and quantity impacts.

1. Evaluate the City's water supply infrastructure, diversion water quality, and lake management for opportunities to reduce impacts to lake water quality.
2. Conduct water audits to detect and repair water system leaks to reduce water waste.
3. Encourage water-use efficiency through public education and outreach, water meter installation, and/or rebate projects.

8.2

Sewer and On-Site Sewer Systems

Reduce water quality degradation from on-site sewer (septic) systems and sewers.

1. Provide sewer service to areas with on-site treatment when permissible.
2. Maintain and replace sanitary sewer infrastructure in the watershed to reduce the potential of sewer overflows.
3. Enforce on-site sewer system operation and maintenance regulations, update database of on-site sewer systems, and respond to failing septic systems.
4. Provide training courses (online and in person) to certify homeowners to inspect their own septic systems.

Performance Measures:

- Complete evaluation of City's water supply system by October 1, 2015
- Estimated gallons of water conserved in City and District service areas
- Number of watershed homeowners certified in on-site sewer system inspection
- Number of overflows and on-site sewer system failures
- Number of new connections made within 200 feet of sewer line

The City of Bellingham and the Lake Whatcom Water and Sewer District are required to provide annual drinking water quality reports to their water customers. These reports highlight drinking water monitoring results and show that the City and the District are committed to meeting drinking water standards established by the federal Safe Drinking Water Act.

Utilities & Transportation

OBJECTIVE: Prevent water quality and quantity impacts from water, sewer, and transportation systems.

Leads: Lake Whatcom Water & Sewer District, City of Bellingham, Whatcom County

Partners: Whatcom Transit Authority

Estimated Investments:

\$1.4 million

8.3

Roads and Transportation

Inform watershed residents and visitors about alternative transport opportunities and design and develop transportation systems to protect water quality.

1. Employ road design standards to reduce impacts to water quality.
2. Evaluate road design, construction and maintenance projects in the watershed for effectiveness at reducing impacts to water quality.
3. Inform watershed residents and visitors about alternative transportation opportunities to limit the number of vehicle trips being made in the watershed.

Performance Measures (Continued):

- Number of drive-alone trips replaced by alternative transportation methods

Resources:

City of Bellingham Drinking Water Quality Reports

cob.org/services/environment/lake-whatcom/water-quality.aspx

Lake Whatcom Water and Sewer District Consumer Confidence Reports

lwwsd.org/resources/customer-information/

City of Bellingham's Water Use Efficiency Program 2014-2019

cob.org/documents/pw/environment/water-conservation/2014-2019-water-use-efficiency-program.pdf

City of Bellingham Water Use Efficiency Annual Performance Reports

cob.org/services/environment/conservation/goals-measures.aspx

Whatcom County On-Site Sewage System Program, WCC 24.05

whatcomcounty.us/documentcenter/view/2053

Lake Whatcom Water & Sewer District 2010 Water System Comprehensive Plan

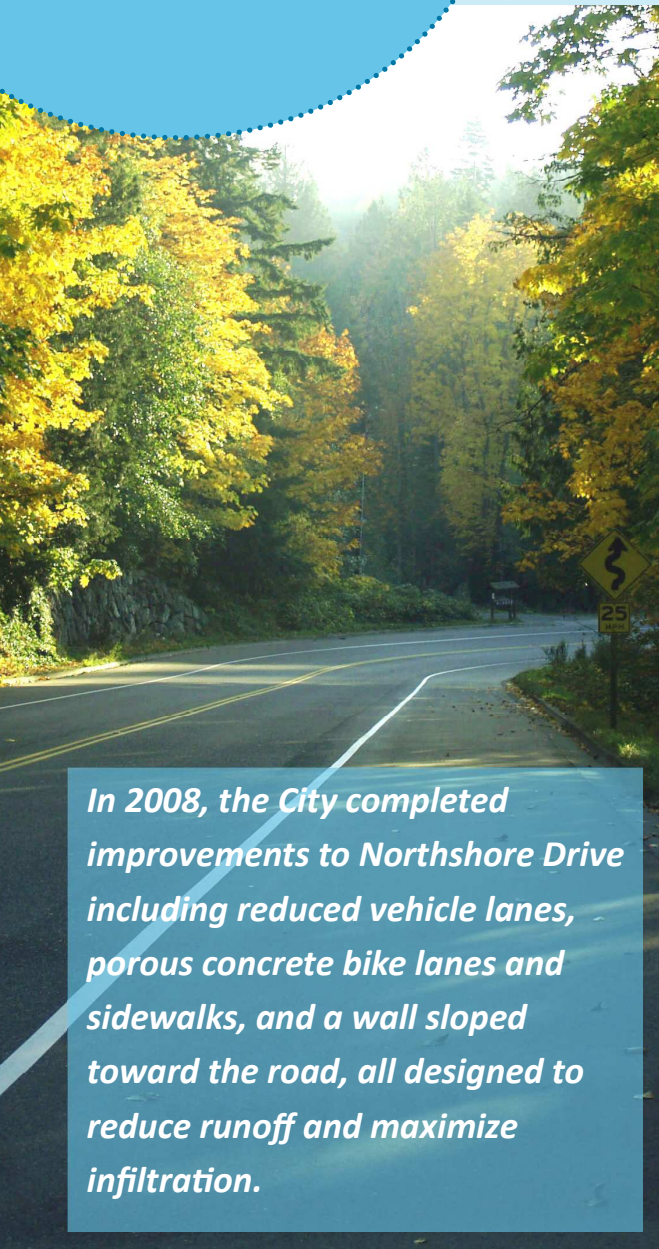
lwwsd.org/resources/2010-water-system-comprehensive-plan/

Lake Whatcom Water & Sewer District 2014 Sewer Comprehensive Plan

lwwsd.org/resources/2007-comprehensive-sewer-plan/

Whatcom Smart Trips

whatcomsmarttrips.org/



In 2008, the City completed improvements to Northshore Drive including reduced vehicle lanes, porous concrete bike lanes and sidewalks, and a wall sloped toward the road, all designed to reduce runoff and maximize infiltration.

Education & Engagement

OBJECTIVE: Protect water quality by educating and engaging watershed residents and visitors.

Leads: City of Bellingham, Whatcom County

Partners: Sudden Valley Community Association, WSU Extension, Sustainable Connections, RE Sources, Whatcom Conservation District

Estimated Investments:

\$60,000*

*Total Cost Estimate of Education and Engagement Activities from all Program Areas: \$3.4 million.

The way we think about community outreach has evolved over time. In order to protect Lake Whatcom, it is essential to have engaged community members that take action. While information and education can raise awareness and increase understanding, alone, they do not motivate most people to act. In order to facilitate an engaged community, we must provide incentives that motivate people to act and remove barriers that might make it more difficult for people to act. In this plan, we have redistributed outreach activities to their corresponding program area because they are essential to reaching each program's objectives. We believe the integration of outreach activities with other program activities is a better representation of the total work being done to meet program goals. Our outreach specialists work on multiple programs, and our program area specialists often provide outreach to the public for their programs.

9.1

General Lake Whatcom Education and Engagement

Provide education and outreach to watershed residents, property owners, visitors, and the community about Lake Whatcom and the Lake Whatcom Management Program.

1. Provide introductory education about Lake Whatcom to new watershed residents, community members and Lake Whatcom visitors.
2. Provide information to watershed residents and visitors about Lake Whatcom Management Program activities and programs.
3. Maintain up-to-date information and resources online.
4. Measure watershed residents' understanding of watershed issues and adoption of stewardship behaviors at least once very five years, and use the results to adapt programs and direct resources more effectively.

Performance Measures:

These performance measures are for 9.1 activities only. Performance measures for 9.2 activities can be found under the respective Program Areas.

- Number of new watershed residents sent informational materials
- Number of unique visitors to Lake Whatcom web pages
- Percentage of watershed residents participating in stewardship behaviors (reported by behavior once per five-year period)

Between 2010 and 2014, WSU Extension offered Gardening Green workshops to increase awareness about sustainable landscaping practices and to empower watershed residents to implement on-the-ground changes to their properties.

Education & Engagement

OBJECTIVE: Protect water quality by educating and engaging watershed residents and visitors.

Leads: City of Bellingham, Whatcom County

Partners: Sudden Valley Community Association, WSU Extension, Sustainable Connections, RE Sources, Whatcom Conservation District

Estimated Investments:

\$60,000*

*Total Cost Estimate of Education and Engagement Activities from all Program Areas: \$3.4 million.

9.2

Program Area-Specific Education and Engagement Activities

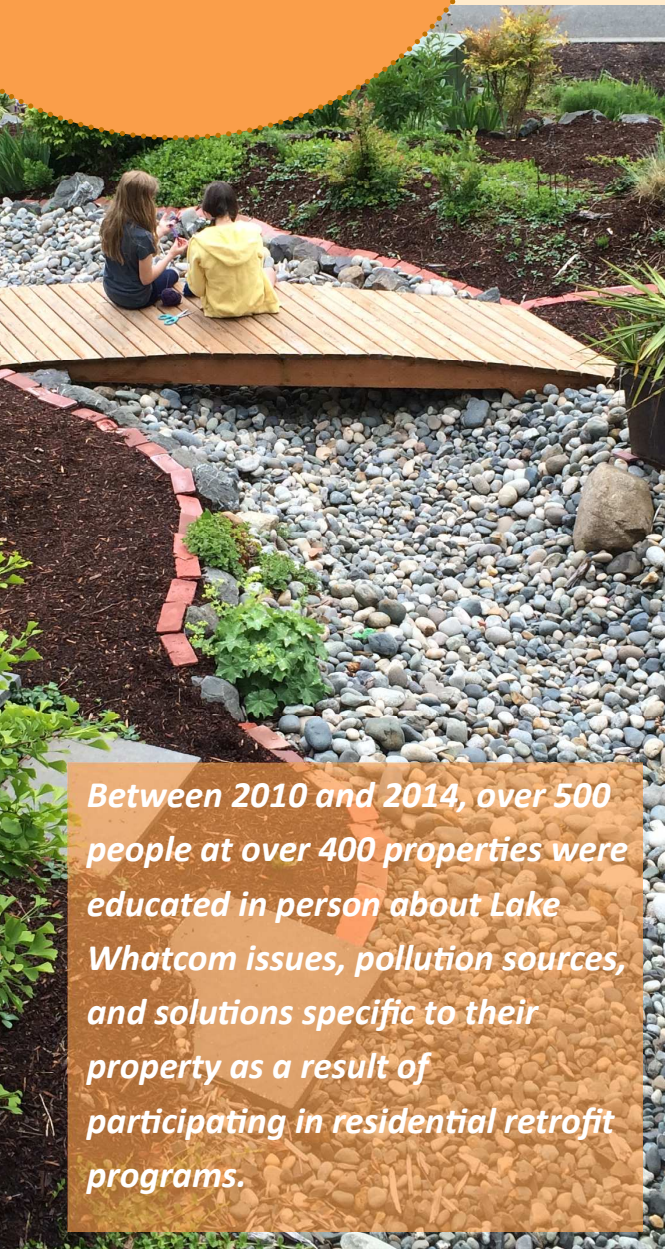
The following Program Area-specific education and engagement activities are also listed under their respective Program Area which is provided in parentheses.

1. Land Preservation

1. Engage watershed residents and recreational users in watershed property stewards program (e.g. mountain bikers, property owners, etc.). (1.3)

2. Stormwater

2. Inform the public about timelines, impacts and purpose of projects during design and construction. (2.1)
3. Engage residents during and after construction of projects in conversations about what they can do to reduce pollution from their properties. (2.1)
4. Implement program to help watershed property owners reduce runoff from their properties using low impact development strategies. (2.2)
5. Investigate barriers to residential projects and adapt program to address those barriers. (2.2)
6. Provide financial, technical, and/or development incentives (e.g. site visits, project options, one-on-one assistance, etc.) to encourage completion of retrofits. (2.2)
7. Facilitate, plan, and support neighborhood-scale retrofits of public and private properties. (2.2)
8. Support inspection and maintenance by instructing owners about system needs and maintenance requirements. (2.4)
9. Raise awareness about causes and impacts of stormwater pollution and benefits of low impact development (LID). (2.6)



Between 2010 and 2014, over 500 people at over 400 properties were educated in person about Lake Whatcom issues, pollution sources, and solutions specific to their property as a result of participating in residential retrofit programs.

Photo by J. Johnson, 2014

Performance measures for 9.2 activities can be found under the respective Program Areas.

Education & Engagement

OBJECTIVE: Protect water quality by educating and engaging watershed residents and visitors.

Leads: City of Bellingham, Whatcom County

Partners: Sudden Valley Community Association, WSU Extension, Sustainable Connections, RE Sources, Whatcom Conservation District

Estimated Investments:

\$60,000*

*Total Cost Estimate of Education and Engagement Activities from all Program Areas: \$3.4 million.



Photo by City of Bellingham, 2014

9.2

Program Area-Specific Education and Engagement Activities — Continued...

2. Stormwater

10. Remove barriers and provide incentives to facilitate behaviors that protect water quality, including watershed-friendly yard care techniques, proper pet waste management, and proper vehicle, equipment and building maintenance. (2.6)
11. Provide outreach to watershed residents to increase compliance with stormwater regulations. (2.6)

3. Land Use

12. Provide outreach to watershed residents to increase compliance with stormwater regulations. (3.1)
13. Work with private forest landowners to improve forest practices that protect water quality. (3.2)

4. Monitoring & Data

14. Review and summarize monitoring studies and reports to determine water quality trends and policy implications, and to make information easily accessible to the public. (4.5)

5. Hazardous Materials

15. Conduct a hazardous materials collection event at locations in the watershed. (5.1)
16. Promote and provide education on proper use and storage of hazardous materials. (5.1)
17. Educate watershed residents and visitors on how to prevent and report spills. (5.2)

6. Recreation

18. Install interpretive and/or informational exhibits at trailheads when feasible. (6.4)
19. Provide opportunities for community engagement in watershed stewardship activities. (6.4)
20. Work with recreational user groups (e.g. mountain bikers, horseback riders, hikers, etc.) to reduce water quality impacts (e.g. erosion) resulting from improper trail use. (6.4)

Performance measures for 9.2 activities can be found under the respective Program Areas.

Education & Engagement

OBJECTIVE: Protect water quality by educating and engaging watershed residents and visitors.

Leads: City of Bellingham, Whatcom County

Partners: Sudden Valley Community Association, WSU Extension, Sustainable Connections, RE Sources, Whatcom Conservation District

Estimated Investments:

\$60,000*

*Total Cost Estimate of Education and Engagement Activities from all Program Areas: \$3.4 million.



Between 2012 and 2014, aquatic invasive species inspectors interacted with almost 13,000 boat owners and park users through the boat inspection program to engage them in aquatic invasive species prevention efforts.

Photo by City of Bellingham, 2013

9.2

Program Area-Specific Education and Engagement Activities — Continued...

6. Recreation

21. Explore options for promoting watershed-friendly recreational opportunities in the watershed including stewardship messages. (6.4)

7. Aquatic Invasive Species

22. Inform watershed residents, boaters, and other lake visitors about AIS issues and engage them in prevention activities through informational materials, online education tools, community events and public meetings, and in-person conversations during inspections. (7.5)
23. Provide opportunities for community engagement in monitoring activities. (7.5)

8. Utilities & Transportation

24. Encourage water-use efficiency through public education and outreach, water meter installation, and/or rebate projects. (8.1)
25. Provide training courses (online and in person) that certify homeowners to inspect their own septic systems. (8.2)
26. Inform watershed residents and visitors about alternative transport opportunities to limit the number of vehicle trips being made in the watershed. (8.3)

10. Administration

27. Schedule annual meetings to coordinate community education and engagement efforts by Lake Whatcom Management Program staff and partners. (10.1)
28. Inform the community about opportunities for involvement in public meetings, comment periods and decision-making processes. (10.1)

Resources:

Lake Whatcom Management Program
lakewhatcom.whatcomcounty.org

Administration

OBJECTIVE: Coordinate and support implementation of the Lake Whatcom Management Program Work Plan.

Leads: City of Bellingham, Whatcom County, Lake Whatcom Water & Sewer District

Estimated Investments:
\$400,000

10.1

Coordination

Coordinate Lake Whatcom Management Program meetings and information-sharing opportunities by scheduling meetings, providing topic research and presentations, creating agendas and minutes, and other work products.

1. Schedule monthly meetings of the Lake Whatcom Watershed Advisory Board to discuss management program issues and receive citizen comments and suggestions.
2. Schedule monthly meetings of the Data Management Team to address issues related to monitoring, modeling, Total Maximum Daily Load (TMDL) requirements and other data management.
3. Schedule monthly meetings of the Interjurisdictional Coordinating Team to oversee work plan implementation efforts and work product development.
4. Schedule monthly meetings of the Lake Whatcom Joint Policy Group to discuss Lake Whatcom policy topics and provide guidance and direction to staff.
5. Schedule annual Joint Councils and Commission meeting to discuss Lake Whatcom Management Program works plans and accomplishments.
6. Schedule Management Team meetings as needed to provide staff with administrative direction.
7. Schedule annual meetings to coordinate community education and engagement efforts by Lake Whatcom Management Program staff and partners.
8. Inform the community about opportunities for involvement in public meetings, comment periods, and decision-making processes.

Performance Measures:

- Number of coordination meetings held
- Number of contracts overseen
- Develop annual progress reports to highlight program accomplishments



The City and County Councils and the Lake Whatcom Water and Sewer District Commissioners continue to meet together annually to discuss program accomplishments and goals for moving forward.

Administration

OBJECTIVE: Coordinate and support implementation of the Lake Whatcom Management Program Work Plan.

Leads: City of Bellingham, Whatcom County, Lake Whatcom Water & Sewer District

Estimated Investments:
\$400,000



The Lake Whatcom Management Program was established in 1998 by an Interlocal Agreement between the City of Bellingham, Whatcom County and the Lake Whatcom Water and Sewer District.

Photo from City of Bellingham Archive, 2004

10.2 Work Plans and Reports

Support development of work plans, presentations, and reports.

1. Develop Lake Whatcom Management Program five-year work plans.
2. Develop annual work plans.
3. Develop annual Lake Whatcom Management Program progress reports.
4. Refine performance measure tracking and reporting.
5. Develop presentations as needed.
6. Oversee development of work products for Lake Whatcom programs as directed.

10.3 Funding

Establish work plan funding needs and strategy to support work plan implementation.

1. Communicate funding needs in City/County/District budget processes.
2. Identify and seek grant funding to support implementation of work plan tasks.

10.4 Regulatory Agencies

Support work plan implementation by communicating with agencies.

1. Communicate with regulatory agencies regarding lake water quality, natural resources, and land use activities in the watershed.

10.5 Contracts

Oversee variety of consultant and contractor projects, contracts, and work products.

1. Oversee all contracts with consultants and contractors.

Resources:

1992 Lake Whatcom Joint Resolution

lakewhatcom.whatcomcounty.org/1992JointResolution.pdf

Lake Whatcom Management Program Work Plans and Progress Reports

lakewhatcom.whatcomcounty.org/resources

2015-2019 Work Plan – Action Timeline

Occurrence: The estimated timeline for completing the action can be found here (e.g. ongoing, as needed, 2015, annually, monthly, etc.)

1.	Land Preservation	Occurrence
1.1	1. Purchase watershed properties based on criteria and availability	Ongoing
1.2	1. Create conservation easements for new preserves	As needed
	2. Modify existing conservation easements to include additional properties in existing preserves	As needed
	– Include Galbraith Mountain properties in conservation easements for adjacent preserves	2015
	– Include Shetabi property in Agate Bay Preserve conservation easement	2015
1.3	1. Create management plans that address forestry, recreation, and vegetation management needs for all properties	As needed
	– Develop management plans for Shetabi, Mullen and other newly acquired properties	2015
	2. Develop management plan for new Whatcom County Park Property to include road and trail assessment and actions to protect water quality	2015-2016
	3. Implement management plans for all properties	Ongoing
	– Implement forest practices on Galbraith Mountain properties to improve natural functions	2015-2016
	– Complete planting of west portion of Agate Bay Preserve	2015
	4. Conduct periodic inspections to monitor restoration sites, invasive species control sites and other property management activities.	Ongoing
	5. Actively respond to encroachments and other property management issues	Ongoing
	– Reconsider Bonneville Power Administration easement management criteria	2015-2016
	6. Engage watershed residents and recreational users in watershed property stewards program	Ongoing
	– Work with recreational mountain biking organizations to reduce erosion potential from trails	2015

2015-2019 Work Plan – Action Timeline

Occurrence: The estimated timeline for completing the action can be found here (e.g. ongoing, as needed, 2015, annually, monthly, etc.)

2.	Stormwater	Occurrence
2.1	1. Complete scheduled capital improvement projects in the Lake Whatcom Watershed	Ongoing
	– Complete treatment facilities along Northshore Drive from Britton Rd. to E. North Street	2015
	– Construct treatment facilities at Huntington and Shepardson Streets	2015
	– Construct City/County joint treatment facility	2015
	– Design and begin construction of treatment facility at E. North Street	2015
	– Design treatment facility at E. Oregon and Stanley Streets	2015
	– Design treatment facility for Agate Heights/Bay Lane	2015
	– Design treatment facility for Britton Road from Lahti Drive to Northshore Drive	2015
	– Design pilot treatment system at E. Oregon east of Chautauqua	2015
	2. Inform the public about timelines, impacts and purpose of projects during design and construction through press releases, web posts, public meetings, tours, and signage	Ongoing
2.2	1. Implement program to help watershed property owners reduce runoff from their properties using low-impact development strategies	Ongoing
	2. Investigate barriers to residential projects and adapt program to address those barriers	Ongoing
	– Assess successes and failures of Homeowner Incentive Program, identify barriers and benefits to residential retrofits, use resulting information to improve residential retrofit program, including focus group testing of proposed program	2015
	3. Provide financial, technical, and/or development incentives to encourage completion of private retrofits	Ongoing
	4. Facilitate, plan, and support neighborhood-scale retrofits of public and private properties	Ongoing
2.3	1. Inspect all public stormwater facilities in compliance with the 2013-2018 Western Washington Phase II Municipal Stormwater Permit	Per Schedule
	2. Schedule regular maintenance of public stormwater facilities	Per Schedule
	3. Inspect and maintain all other publicly-owned stormwater infrastructure as necessary	Per Schedule
	4. Continue enhanced street sweeping to capture roadway pollution prior to entering stormwater systems	Per Schedule

2015-2019 Work Plan – Action Timeline

Occurrence: The estimated timeline for completing the action can be found here (e.g. ongoing, as needed, 2015, annually, monthly, etc.)

2.	Stormwater	Occurrence
2.4	1. Inspect private stormwater facilities, consistent with legal authority, and provide technical assistance when needed, to ensure post-construction maintenance standards are met	Per Schedule
	2. Track and report inspections and correction actions to assure long-term effectiveness of private systems and investments	Ongoing
	3. Support inspection and maintenance by instructing owners about system needs and maintenance requirements	Ongoing
2.5	1. Review all development activities to assure compliance with phosphorus reduction regulations	Ongoing
	2. Use low impact development strategies to the maximum extent practicable	Ongoing
	3. Inspect and enforce requirements for erosion controls	Ongoing
	4. Track and report inspection and enforcement activities associated with water quality impacts to Lake Whatcom	Ongoing
	5. Continue to assess the effectiveness of stormwater and development regulations	Ongoing
2.6	1. Raise awareness about causes and impacts of stormwater pollution and benefits of low impact development	Ongoing
	2. Remove barriers and provide incentives to facilitate behaviors that protect water quality, including watershed-friendly yard care techniques, proper pet waste management, and proper vehicle, equipment and building maintenance	Ongoing
	– Contract with WSU Whatcom Extension to provide Sustainable Landscaping Course in fall and spring	2015
	– Participate in regional vehicle leaks campaign, Don't Drip and Drive, within the Bellingham community	2015
	– Make community-wide pet waste and car washing program available to watershed residents at additional watershed resident-targeted outlets	2015
	3. Provide outreach to watershed residents to increase compliance with stormwater regulations	Ongoing

2015-2019 Work Plan – Action Timeline

Occurrence: The estimated timeline for completing the action can be found here (e.g. ongoing, as needed, 2015, annually, monthly, etc.)

3.	Land Use	Occurrence
3.1	1. Standardize tracking and performance measurement across jurisdictions	2015
	2. Track all building and development activities in the watershed and make information accessible to City, County, and District	Ongoing
	3. Track and report on the number and type of land use and development-related permit violations in the watershed	Ongoing
	4. Continue collaboration between City and County when developing or revising development regulations	Ongoing
	5. Continue to assess the effectiveness of development regulations	Ongoing
	6. Continue to monitor properties (including Natural Vegetation Protection Areas) over time to ensure performance standards are met	Ongoing
	7. Develop Low Impact Development standards in accordance with the Western Washington Phase II Municipal Permit, to be adopted by December 13, 2016	2015-2016
	8. Provide outreach to watershed residents to increase compliance with development regulations	Ongoing
3.2	1. Review Interjurisdictional Committee reports of Department of Natural Resources activities	As needed
	2. Review and comment on private property forest practice applications where merited	As needed
	3. Track permitted forest practice activities to develop a summary of forest conditions in the watershed	Ongoing
	4. Work with private forest landowners to improve forest practices that protect water quality	2015-2016
	5. Continue to assess the effectiveness of the DOE water quality assurances	Ongoing
	6. Improve forestry best management practices through interagency agreements or code modifications	2015-2016

2015-2019 Work Plan – Action Timeline

Occurrence: The estimated timeline for completing the action can be found here (e.g. ongoing, as needed, 2015, annually, monthly, etc.)

4.	Monitoring and Data	Occurrence
4.1	1. Contract with Western Washington University Institute for Watershed Studies	Biennially
	2. Discuss monitoring results and receive updates on water quality trends	Ongoing
4.2	1. Oversee and refine tributary monitoring contracts	Annually
	2. Discuss tributary monitoring results and determine policy implications	Ongoing
	3. Develop water quality monitoring program for non-urban areas in the watershed	2015
4.3	1. Receive updates on stormwater monitoring program results	Ongoing
	2. Develop recommendations to improve removal of phosphorus and fecal coliform by stormwater facilities; update best management practices as needed	Ongoing
4.4	1. Identify data and monitoring needs and implement projects to acquire the needed information	Ongoing
	2. Continue to generate high quality streamflow, water quality, and weather data	Ongoing
	3. Update and recalibrate the phosphorus loading model with additional data	Annually
	– Receive lake model data gap analysis from Hydrologic Services	2015
	4. Develop and implement strategy to update and recalibrate response model	2015-2016
	5. Conduct third party review to assess lake load model's methodology for simulating phosphorus loading	2015
4.5	1. Review and summarize monitoring studies and reports to determine water quality trends, policy implications, and make information easily accessible to the public.	Annually
	2. Maintain and update Data Catalog	Biennially
	3. Provide open access storage of monitoring reports	Annually

2015-2019 Work Plan – Action Timeline

Occurrence: The estimated timeline for completing the action can be found here (e.g. ongoing, as needed, 2015, annually, monthly, etc.)

5.	Hazardous Materials	Occurrence
5.1	1. Conduct a hazardous materials collection event at locations in the watershed	2016
	2. Promote and provide education on proper use and storage of hazardous materials	Ongoing
5.2	1. Continue to detect and remediate illicit discharges, connections, and improper disposal, including spills into the City and District sewer systems	As needed
	2. Educate watershed residents and visitors on how to prevent and report spills	Ongoing
	3. Continue to record and respond to all calls regarding illicit discharges or illegal spills that are received via the stormwater hotline number	As needed
	4. Review spill response procedures and reporting protocols	As needed
	5. Conduct ongoing field staff training regarding spill prevention and response	Ongoing

2015-2019 Work Plan – Action Timeline

Occurrence: The estimated timeline for completing the action can be found here (e.g. ongoing, as needed, 2015, annually, monthly, etc.)

6.	Recreation	Occurrence
6.1	1. Explore options for providing recreational amenities	Per Plan
	2. Create low maintenance nutrient and pesticide-free landscapes	Per Plan
	3. Infiltrate or treat stormwater following stormwater best management practices	Per Plan
6.2	1. Build and maintain trails and roads to prevent erosion and ensure runoff is infiltrated before reaching a water body	Ongoing
	2. Connect trails to other parks, trails, facilities and transportation networks	Per Plan
	3. Provide trailhead amenities such as restrooms and information kiosks when feasible	Ongoing
	4. Install directional and use signs on trails	Ongoing
6.3	1. Provide public access using existing parks and trails whenever possible	Ongoing
	2. Improve bike lanes and transit services to recreational facilities	When feasible
	3. Maintain and develop access to key viewpoints in watershed	Per Plan
6.4	1. Install interpretive and/or informational exhibits at trailheads when feasible	Ongoing
	2. Provide opportunities for community engagement in watershed stewardship activities	Ongoing
	3. Work with recreational user groups to reduce water quality impacts resulting from improper trail use	Ongoing
	4. Explore options for promoting watershed-friendly recreational opportunities in the watershed including stewardship messages	Ongoing
	– Develop and disseminate informational brochures to inform the public of new recreational opportunities and stewardship messages	2015

2015-2019 Work Plan – Action Timeline

Occurrence: The estimated timeline for completing the action can be found here (e.g. ongoing, as needed, 2015, annually, monthly, etc.)

7.	Aquatic Invasive Species	Occurrence
7.1	1. Hire, train, and manage seasonal aquatic invasive species inspectors	Seasonally
	2. Evaluate and adjust hours of operation and level of service at Check Stations based on boat inspection data	As needed
	3. Organize group/community-level inspections to enhance efficiency of on-call inspections	Seasonally
	4. Improve efficiency and accuracy of data collection at Check Stations	As needed
7.2	1. Develop standard decontamination protocols for inspection staff	2015
	2. Provide decontamination training to inspection staff	Seasonally
	3. Decontaminate watercraft that do not pass inspection	As needed
	4. Maintain decontamination equipment	Annually
7.3	1. Develop and implement AIS Monitoring Plan for Lake Whatcom	Seasonally
	– Develop AIS Monitoring Plan for Lake Whatcom	2015
	2. Conduct regular zebra/quagga mussel monitoring events in Whatcom County waters	Monthly
	3. Develop AIS Rapid Response Plan for Lake Whatcom	2015-2016
7.4	1. Track the spread of AIS as well as any new prevention and management efforts being implemented at the local, regional, and national levels	Weekly
	2. Communicate with local, state, and regional aquatic invasive species personnel to share information and resources	Quarterly
7.5	1. Inform watershed residents, boaters, and other lake visitors about AIS issues and engage them in AIS prevention and monitoring efforts through informational materials, online education tools, community events and public meetings, and in-person conversation during inspections	Seasonally
	2. Provide opportunities for community engagement in monitoring activities	Seasonally

2015-2019 Work Plan – Action Timeline

Occurrence: The estimated timeline for completing the action can be found here (e.g. ongoing, as needed, 2015, annually, monthly, etc.)

8.	Utilities and Transportation	Occurrence
8.1	1. Evaluate the City's water supply infrastructure, diversion water quality, and lake management for opportunities to reduce impacts to lake water quality	2015-2016
	2. Conduct water audits to detect and repair water system leaks to reduce water waste	Ongoing
	3. Encourage water-use efficiency through public education and outreach, water meter installation, and/or rebate projects	Ongoing
8.2	1. Provide sewer to areas with on-site treatment when permissible	When feasible
	2. Maintain and replace sanitary sewer infrastructure in the watershed to reduce the potential of sewer overflows	Ongoing
	3. Enforce septic system operation and maintenance regulations, update database of septic systems, and respond to failing septic systems	Ongoing
	4. Provide training courses (online and in person) to certify homeowners to inspect their own on-site sewer systems	Ongoing
8.3	1. Employ road design standards to reduce impacts to water quality	Ongoing
	2. Evaluate road design, construction and maintenance projects in the watershed for effectiveness at reducing impacts to water quality	Ongoing
	3. Inform watershed residents and visitors about alternative transportation opportunities to limit the number of vehicle trips being made in the watershed	Ongoing

2015-2019 Work Plan – Action Timeline

Occurrence: The estimated timeline for completing the action can be found here (e.g. ongoing, as needed, 2015, annually, monthly, etc.)

9.	Education and Engagement	Occurrence
9.1	1. Provide introductory education about Lake Whatcom to new watershed residents, community members and Lake Whatcom visitors	Ongoing
	– Develop process for regularly identifying new watershed owners and residents to provide them with introductory information about Lake Whatcom and to connect them with stewardship resources and opportunities	2015
	2. Provide information to watershed residents and visitors about Lake Whatcom Management Program activities and programs	Ongoing
	3. Maintain up-to-date information and resources online	Ongoing
	4. Measure watershed residents' understanding of watershed issues and adoption of stewardship behaviors at least once very five years, and use the results to adapt programs and direct resources more effectively	2016
9.2	1. Engage watershed residents and recreational users in watershed property stewards program (1.3)	Ongoing
	2. Inform the public about timelines, impacts and purpose of projects during design and construction (2.1)	Ongoing
	3. Engage residents during and after construction of projects in conversations about what they can do to reduce pollution from their properties (2.1)	Ongoing
	4. Implement program to help watershed property owners reduce runoff from their properties using low impact development strategies (2.2)	Ongoing
	5. Investigate barriers to residential projects and adapt program to address those barriers (2.2)	Ongoing
	6. Provide financial, technical, and/or development incentives to encourage completion of retrofits (2.2)	Ongoing
	7. Facilitate, plan, and support neighborhood-scale retrofits of public and private properties (2.2)	Ongoing
	8. Support inspection and maintenance by instructing owners about system needs and maintenance requirements (2.4)	Ongoing
	9. Raise awareness about causes and impacts of stormwater pollution and benefits of low impact development (2.6)	Ongoing
	10. Remove barriers and provide incentives to facilitate behaviors that protect water quality, including watershed-friendly yard care techniques, proper pet waste management, and proper vehicle, equipment and building maintenance (2.6)	Ongoing
	11. Provide outreach to watershed residents to increase compliance with stormwater regulations (2.6)	Ongoing
	12. Provide outreach to watershed residents to increase compliance with stormwater regulations (3.1)	Ongoing

2015-2019 Work Plan – Action Timeline

Occurrence: The estimated timeline for completing the action can be found here (e.g. ongoing, as needed, 2015, annually, monthly, etc.)

9.	Education and Engagement	Occurrence
9.2	13. Work with private forest landowners to improve forest practices that protect water quality (3.2)	2015-2016
	14. Review and summarize monitoring studies and reports to determine water quality trends and policy implications, and to make information easily accessible to the public (4.5)	Annually
	15. Conduct a hazardous materials collection event at locations in the watershed (5.1)	2016
	16. Promote and provide education on proper use and storage of hazardous materials (5.1)	Ongoing
	17. Educate watershed residents and visitors on how to prevent and report spills (5.2)	Ongoing
	18. Install interpretive and/or informational exhibits at trailheads when feasible (6.4)	Ongoing
	19. Provide opportunities for community engagement in watershed stewardship activities (6.4)	Ongoing
	20. Work with recreational user groups to reduce water quality impacts resulting from improper trail use (6.4)	Ongoing
	21. Explore options for promoting watershed-friendly recreational opportunities in the watershed including stewardship messages (6.4)	Ongoing
	22. Inform watershed residents, boaters, and other lake visitors about AIS issues and engage them in prevention activities through informational materials, online education tools, community events and public meetings, and in-person conversations during inspections (7.5)	Seasonally
	23. Provide opportunities for community engagement in monitoring activities (7.5)	Seasonally
	24. Encourage water-use efficiency through public education and outreach, water meter installation, and/or rebate projects (8.1)	Ongoing
	25. Provide training courses that certify homeowners to inspect their own septic systems (8.2)	Ongoing
	26. Inform watershed residents and visitors about alternative transport opportunities to limit the number of vehicle trips being made in the watershed (8.3)	Ongoing
	27. Schedule annual meetings to coordinate community education and engagement efforts by Lake Whatcom Management Program staff and partners (10.1)	Annually
	28. Inform the community about opportunities for involvement in public meetings, comment periods and decision-making processes (10.1)	As needed

2015-2019 Work Plan – Action Timeline

Occurrence: The estimated timeline for completing the action can be found here (e.g. ongoing, as needed, 2015, annually, monthly, etc.)

10.	Administration	Occurrence
10.1	1. Schedule monthly meetings of the Lake Whatcom Watershed Advisory Board	Ongoing
	2. Schedule monthly meetings of the Data Management Team	Ongoing
	3. Schedule monthly meetings of the Interjurisdictional Coordinating Team (ICT)	Ongoing
	4. Schedule monthly of the Lake Whatcom Joint Policy Group to discuss Lake Whatcom policy topics and to provide policy guidance and direction to staff	Ongoing
	5. Schedule annual Joint Councils and Commission meeting to discuss Lake Whatcom Management Program works plans and accomplishments	Annually
	6. Schedule Management Team Meetings as needed to provide staff with administrative direction	As needed
	7. Schedule annual meetings to coordinate community education and engagement efforts by Lake Whatcom Management Program staff and partners	Annually
	8. Inform the community about opportunities for involvement in public meetings, comment periods, and decision-making processes	As needed
10.2	1. Develop Lake Whatcom Management Program five-year work plans	2019
	2. Develop annual work plans	Annually
	3. Develop annual Lake Whatcom Management Program progress reports	Annually
	4. Refine performance measure tracking and reporting	2015
	5. Develop presentations as needed	As needed
	6. Oversee development of work products for Lake Whatcom programs as directed	As directed
10.3	1. Communicate funding needs in City/County/District budget processes	Biennially
	2. Identify and seek grant funding to support implementation of work plan tasks	As needed
10.4	1. Communicate with regulatory agencies regarding lake water quality, natural resources, and land use activities in the watershed	As needed
10.5	1. Oversee all contracts with consultants and contractors	Ongoing

2015-2019 Work Plan – Cost Estimates

2015-2019 Work Plan Cost Estimates				
Program Area	Staff Costs	Capital Costs	Other Costs*	Total
1. Land Preservation	\$850,000	\$23.8 million	\$400,000	\$25 million
2. Stormwater	\$3 million	\$9.5 million	\$1.5 million	\$14 million
3. Land Use	\$90,000	–	\$75,000	\$165,000
4. Monitoring & Data	\$100,000	–	\$1.9 million	\$2 million
5. Hazardous Materials	\$25,000	–	\$25,000	\$50,000
6. Recreation	\$100,000	\$1 million	–	\$1.1 million
7. Aquatic Invasive Species	\$1.3 million	\$5,000	\$200,000	\$1.5 million
8. Utilities & Transportation	\$500,000	–	\$900,000	\$1.4 million
9. Education & Engagement**	\$40,000	–	\$20,000	\$60,000
10. Administration	\$400,000	–	–	\$400,000
LWMP Work Plan Total	\$6.4 million	\$34.3 million	\$5 million	\$45.7 million
<p>*Other Costs include supplies, materials, equipment, consultant fees, and procedural costs.</p> <p>**Cost estimates for Program-Area-specific education and engagement actions are included in the totals of each respective Program Area. The total estimated cost of all education activities for the 2015-2019 Work Plan is \$3.4 million.</p>				

2015-2019 Work Plan – Funding Sources

Program Area	Jurisdiction	Funding Sources
1. Land Preservation	Whatcom County	Conservation Futures Tax, General Fund
	City of Bellingham	Lake Whatcom Property Acquisition Fees, Water Utility Fees
	Lake Whatcom Water and Sewer District	Utility Fees
2. Stormwater	Whatcom County	Flood Control Zone District Taxes, Real Estate Excise Taxes, Grants
	City of Bellingham	Stormwater Utility Fees, Lake Whatcom Property Acquisition Fees, Grants
	Lake Whatcom Water and Sewer District	Utility Fees
3. Land Use	Whatcom County	Development Fees, General Fund
	City of Bellingham	Development Fees, General Fund, Lake Whatcom Property Acquisition Fees
	Lake Whatcom Water and Sewer District	Utility Fees
4. Data and Monitoring	Whatcom County	Flood Control Zone District Tax
	City of Bellingham	Stormwater Utility Fees, Water Utility Fees
	Lake Whatcom Water and Sewer District	Utility Fees
5. Hazardous Materials	Whatcom County	Solid Waste Excise Tax
	City of Bellingham	Stormwater Utility Fees, Water Utility Fees
	Lake Whatcom Water and Sewer District	Not Applicable
6. Recreation	Whatcom County	Conservation Excise Tax, General Fund
	City of Bellingham	Greenways Tax, General Fund
	Lake Whatcom Water and Sewer District	Not Applicable
7. Aquatic Invasive Species	Whatcom County	General Fund, Boat Inspection Fees
	City of Bellingham	Water Utility Fees, Boat Inspection Fees
	Lake Whatcom Water and Sewer District	Utility Fees, Boat Inspection Fees
8. Utilities and Transportation	Whatcom County	County Road Taxes
	City of Bellingham	Street Funds, Utility Fees
	Lake Whatcom Water and Sewer District	Utility Fees
9. Education and Outreach	Whatcom County	Flood Control Zone District Taxes, Grants
	City of Bellingham	Stormwater Utility Fees, Water Utility Fees, Grants
	Lake Whatcom Water and Sewer District	Utility Fees
10. Administration	Whatcom County	Flood Control Zone District Taxes
	City of Bellingham	Stormwater Utility Fees, Water Utility Fees
	Lake Whatcom Water and Sewer District	Utility Fees

2015-2019 Stormwater Capital Projects & Funding Commitments

Project Information				Funding Commitments*		
Project Title	Short Description	Funding Jurisdiction	Region	Current Cycle (2015-2016)	Future (2017-2020)	Total
Academy Road/Joint with COB	Pretreatment, bioinfiltration swale, filter cartridge vault, high flow bypass, vegetated buffer	Whatcom County	Basin 1 East	\$845,000.00	\$0.00	\$845,000.00
Academy Road/Joint with COB	Pretreatment, bioinfiltration swale, filter cartridge vault, high flow bypass, vegetated buffer	City of Bellingham	Basin 1 East	\$300,000.00	\$0.00	\$300,000.00
Cedar Hills/Euclid	Rain gardens, filter vaults, swales	Whatcom County	Geneva UGA	\$630,000.00	\$0.00	\$630,000.00
Agate Heights Estate/Bay Lane	System upgrades to improve water quality (bioinfiltration swales, reduce ditch erosion)	Whatcom County	Basin 3 East	\$110,000.00	\$500,000.00	\$610,000.00
Beaver Creek	Restore and repair eroded sections of Creek	Whatcom County	Basin 3 West	\$105,000.00	\$470,000.00	\$575,000.00
Sudden Valley	Drainage system upgrades and outfall retrofits	Whatcom County	Sudden Valley	\$0.00	\$640,000.00	\$640,000.00
Silver Beach Creek	Main channel restoration below Hillsdale using natural vegetation	Whatcom County	Hillsdale UGA	\$0.00	\$200,000.00	\$200,000.00
East Oregon St. Infiltration and Dispersion Facility	Infiltration and treatment system on undeveloped, City-owned property	City of Bellingham	Basin 1 North	\$100,000.00	\$0.00	\$100,000.00
Britton Road Improvements	Retrofit existing system for water quality treatment	City of Bellingham	Basin 1 North	\$300,000.00	\$0.00	\$300,000.00
Anderson Creek Restoration	Maximize phosphorus sequestration in creek system including reduction of diversion inputs	City of Bellingham	Basin 3 East	\$600,000.00	\$0.00	\$600,000.00
Silver Beach Creek Easements	Reduce bank loss and erosion in constrained creek channel	City of Bellingham	Basin 1 North	\$0.00	\$700,000.00	\$700,000.00
Lake Whatcom SSWU Improvements	Implement retrofit projects on neighborhood-scale	City of Bellingham	City only	\$0.00	\$1,000,000.00	\$1,000,000.00
Park Place Alum Facility	Retrofit existing system for water quality treatment	City of Bellingham	Basin 1 North	\$0.00	\$100,000.00	\$100,000.00
Mill Creek Pond Improvements	Retrofit pond system to provide for water quality benefits	City of Bellingham	Basin 1 West	\$0.00	\$700,000.00	\$700,000.00
				Approximate Whatcom County Capital Costs		\$3,500,000.00
				Average Whatcom County Costs		\$700,000.00
				Approximate City of Bellingham Capital Costs		\$3,800,000.00
				Average City of Bellingham Costs		\$760,000.00

Residential Retrofit Projects	Short Description	Funding Jurisdiction	Region	Current Cycle (2015-2016)	Future (2017-2020)	Total
Residential Retrofits, within City	Provide funding for residential retrofitting projects within City	City of Bellingham	City only	\$200,000.00	\$300,000.00	\$500,000.00
Residential Retrofits, Watershed-Wide	Provide funding for residential retrofitting projects watershed-wide	LWMP (Combined Funding)	Watershed-Wide	\$250,000.00	\$975,000.00	\$1,225,000.00
				Approximate Residential Retrofit Program Costs		\$1,725,000.00

*Projects are based on City and County six year plan data.

Proposed expenditures for 2017-2019 do not have budget approval.

Approximate Grand Total Funding	\$9,025,000.00
Average Annual Funding	\$1,805,000.00

Resources and Contacts

Land Preservation

Lake Whatcom Property Acquisition Program
cob.org/services/environment/lake-Whatcom/lw-property-acquisition-program.aspx

Whatcom County Parks & Recreation—Reconveyance
co.whatcom.wa.us/625/Lake-Whatcom-Reconveyance

Protected Property in the Lake Whatcom Watershed Map
cob.org/documents/pw/lw/acquisition-land-map.pdf

Stormwater

Lake Whatcom Management Program Capital Improvement Projects
lakewhatcom.whatcomcounty.org/our-programs/capital-projects

Capital Projects Update: Presentation (12/01/2014)
lakewhatcom.whatcomcounty.org/resources

City of Bellingham 2007 Comprehensive Stormwater Plan
cob.org/documents/pw/storm/2007-stormwater-comp-plan.pdf

Whatcom County 2008 Lake Whatcom Comprehensive Stormwater Plan
whatcomcounty.us/1022/Lake-Whatcom-Comprehensive-Stormwater-Pl

Land Use

[Bellingham Municipal Code \(BMC\)](#) 16.80 (Lake Whatcom Reservoir Regulatory Chapter), 15.42 (Stormwater Regulations), 16.55 (Critical Areas Ordinance), Title 22 (Shoreline Master Program)
codepublishing.com/wa/bellingham/

[Whatcom County Code \(WCC\)](#) 20.51 (Lake Whatcom Watershed Overlay District & Stormwater Regulations), 16.16 (Critical Areas Ordinance), Title 23 (Shoreline Management Program)
codepublishing.com/wa/whatcomcounty/

Lake Whatcom Landscape Pilot Project: Report to the Board of Natural Resources
www.dnr.wa.gov/publications/lm_lkwa_pilot_11report.pdf

Lake Whatcom Watershed Annual Build-Out Analysis Reports
lakewhatcom.whatcomcounty.org/resources

Monitoring and Data

Lake Whatcom Monitoring Reports
www.edu/iws/

Lake Whatcom Data Catalog
Copies of documents are available at the Whatcom County Public Works Water Resources Library and the Bellingham Public Library

Hazardous Materials

Whatcom County Emergency Management Plan
whatcomready.org/wp-content/uploads/2012/06/Whatcom-County-CEMP-2008.pdf

Washington Toxics Coalition
watoxics.org

Stormwater Hotline: (360) 778-7979
cob.org/services/environment/stormwater/stormwater-report-form.aspx

Recreation

Whatcom County Parks & Recreation—Reconveyance
co.whatcom.wa.us/625/Lake-Whatcom-Reconveyance

Whatcom County Comprehensive Parks, Recreation and Open Space Plan
co.whatcom.wa.us/653/2008-Comprehensive-Plan

City of Bellingham Comprehensive Parks, Recreation and Open Space Plan
cob.org/documents/parks/development/pro-plan/pro-plan-full.pdf

Aquatic Invasive Species

Lake Whatcom Aquatic Invasive Species Program Annual Reports and Documents
lakewhatcom.whatcomcounty.org/resources

Whatcom Boat Inspections
whatcomboatinspections.com

Aquatic Invasive Species Awareness Course
whatcomboatinspections.com/ais-awareness-course

Whatcom Boat Inspections Hotline: (360) 778-7975

Resources and Contacts

Utilities and Transportation

City of Bellingham Drinking Water Quality Reports
cob.org/services/environment/lake-whatcom/water-quality.aspx

Lake Whatcom Water and Sewer District Consumer Confidence Reports
lwwsd.org/resources/customer-information/

City of Bellingham's Water Use Efficiency Program 2014-2019
cob.org/documents/pw/environment/water-conservation/2014-2019-water-use-efficiency-program.pdf

City of Bellingham Water Use Efficiency Annual Performance Reports
cob.org/services/environment/conservation/goals-measures.aspx

Whatcom County On-Site Sewage System Program, WCC 24.05
whatcomcounty.us/documentcenter/view/2053

Lake Whatcom Water & Sewer District 2010 Water System Comprehensive Plan
lwwsd.org/resources/2010-water-system-comprehensive-plan/

Lake Whatcom Water & Sewer District 2014 Sewer Comprehensive Plan
lwwsd.org/resources/2007-comprehensive-sewer-plan/

Whatcom Smart Trips
whatcomsmarttrips.org/

Education and Engagement

Lake Whatcom Management Program
lakewhatcom.whatcomcounty.org

City of Bellingham Lake Whatcom Stewardship
cob.org/services/environment/lake-whatcom/stewardship-solutions.aspx

WSU Whatcom County Extension Sustainable Landscaping
whatcom.wsu.edu/ch/sustainable.html

Administration

1992 Lake Whatcom Joint Resolution
lakewhatcom.whatcomcounty.org/1992JointResolution.pdf

Lake Whatcom Management Program Work Plans and Progress Reports
lakewhatcom.whatcomcounty.org/resources

Lake Whatcom Meetings and Agendas
lakewhatcom.whatcomcounty.org/news

Lake Whatcom Management Program Contacts
lakewhatcom.whatcomcounty.org/contacts

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Lake Whatcom Management Program 2010-2014 Work Plan Accomplishments

Prepared by the Lake Whatcom
Interjurisdictional Coordinating Team

April, 2015

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Lake Whatcom Management Program

www.lakewhatcom.whatcomcounty.org



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Introduction

In 2010, the Whatcom County Council, Bellingham City Council and the Lake Whatcom Water and Sewer District Commission approved the *Lake Whatcom Management Program 2010-2014 Work Plan*. As with the previous work plans, tasks included in this five-year plan continued to be guided by the original Lake Whatcom Management Program strategies and goals that were formulated in 1992 by the City of Bellingham (City), Whatcom County (County) and the Lake Whatcom Water and Sewer District (District) and formally adopted by the Lake Whatcom Management Program partners in 1998.

This report summarizes the work accomplished during the past five years by the County, City, and District, as well as community partners Washington State University Extension and the Sudden Valley Community Association.

This Accomplishments Report continues to utilize the Program Areas structure of the *Lake Whatcom Management Program 2010-2014 Work Plan*, and previous management program plans and reports. In addition to the original 12 Program Areas, a thirteenth program area was added for aquatic invasive species prevention and response efforts.

Each Program Area section includes brief descriptions of the goal and purpose of the Program Area, an update on performance measures (many of which have been re-visited since 2010), and a summary of program area activities, with one or more highlights from the past five years. Most program areas identify additional reference materials including links to web based information.

This report focuses on accomplishments made at the program area level. Whenever possible the report has aggregated the work of the whole five-year period into one reportable number or statement, instead of reporting each annual accomplishment separately. Also, when possible, similar actions implemented by more than one of the partner organizations are combined into one reported accomplishment.

In 2011, the format for reporting Work Plan accomplishments was revised in order to improve the ability to track performance measures. Where the previous format presented performance measures for each task (each Program Area had several tasks), the revised format consolidated and improved the task based performance measures into a list of performance measures presented at the Program Area level. The format change also included the addition of a Summary of Program Area Activities that replaced reporting on the task level. These changes simplified the report making it more accessible to readers while providing for a consistent and data driven accounting of activities and progress.

For much of the term of the 2010-2014 Work Plan the Silver Beach Creek Pilot Project was the focus of phosphorus reduction projects. Consideration of several factors determined the selection of Silver Beach Creek for the pilot area: 1) it has one of the highest levels of phosphorus of all the Lake Whatcom tributaries, 2) it is an urbanized tributary with a mix of land uses, 3) the City and County share jurisdiction, and 4) flow and water quality data were readily available. The Pilot Project implemented actions from the Stormwater, Education and Outreach, and Data Management and Information Program Areas in a multi-faceted effort to reduce phosphorus and fecal coliform pollution. Accomplishments include several stormwater projects that treat over one thousand acres of runoff as well as the start of the Homeowner Incentive Program, developed in partnership with the Department of Ecology to retrofit private lots with projects that capture and infiltrate stormwater. An enhanced monitoring program that targeted project effectiveness concluded that the concentration of effort in this geographic area resulted in improved water quality fecal coliform counts and reduction of phosphorus loading to the lake.

The development of a Lake Whatcom Watershed Total Phosphorus and Bacteria Total Maximum Daily Loads (TMDL) study Volume 2 - the Water Quality Improvement Report and Implementation Strategy neared final approval during the 5 years of the 2010-2014 Work Plan. Upon approval by the U.S. Environmental Protection Agency a timeline for completion of required elements of a Water Quality Improvement Plan (WQIP) will begin. However, in anticipation of those WQIP requirements work was started in 2014 to identify projects, establish implementation timelines, estimate funding amounts, and identify funding sources. Specifics of this initial work will be reported in greater detail as the 2015-2019 Work Plan and the WQIP are developed.

While phosphorus reduction projects continue to be a major focus of the Lake Whatcom Management Program, other program areas have seen significant accomplishments during the 2010-2014 work period. Most notably Land Preservation and Aquatic Invasive Species have been very active in preventing additional loading and protecting other aspects of the Lake Whatcom ecosystem.

Cost Estimates for all Program Areas have been moved to a separate section of the Report that summarizes the costs for the 2010-2014 period in a single table.

Program Area: 1. Land Preservation

Goal:

Pursue public ownership and protection of the watershed whenever possible through public/private partnerships, tax exemptions, transfer of development rights, land trusts, and other means.

Program Area Description: This program area aims to reduce and prevent future water quality impacts by preserving land within the watershed that might otherwise be made available for development. Land preservation strategies help preserve or rehabilitate natural areas for the benefit of protecting water quality. Strategies that have been used in the Lake Whatcom watershed include: acquisition, conservation easements, transfer of development rights, and purchase of development rights, lot consolidation, and other incentive programs.

Performance Measures 2010-2014 (total since 2002):

- **Development units removed from watershed:**
 - Watershed Acquisition Program - 78 units (782 units)
 - Easements and Covenants - 0
- **Acres acquired or otherwise protected:**
 - Watershed Acquisition Program - 581.73 acres (2,058.61 acres)
 - Conservation Easements - (989 acres)
 - Reconveyance of State Lands - 7,800 acres in watershed

Summary of Program Area Activities 2010-2014:

- County and the State Department of Natural Resources finalized the reconveyance of 8,844 acres (approximately 7,800 acres are in the Lake Whatcom Watershed) of state timber lands to the County. To comply with the state law that regulates reconveyance procedures the properties will be managed by the Whatcom County Parks Department for park use. Since the definition of park use includes a broad range of passive and active uses, a public process to identify preferred uses has been initiated by the Parks Department. The addition of this acreage to the protected category of lands in the Lake Whatcom watershed is a significant step in management of the watershed for improvement and protection of water quality. *Cost of process to County: \$331,000.*
- City purchased several properties in the Austin/Beaver Creek watershed as well as significant additions to the Agate Bay Preserve in 2014.
- City received donation of Scudder's Pond from the North Cascades Audubon Society. The property adds to the area of Whatcom Falls Park.
- Sudden Valley assessed 99 of its vacant SVCA-owned properties in 2010 and ranked them in terms of development and natural features. 30 lots with the least development potential were then selected for conversion to green space in 2011 (assessed value of approximately \$885,000).
- Property management activities include: property inspections, forest thinning, removal of invasive species, planting of native species, parking and restroom improvements at the Lookout Mountain Preserve, abatement of encroachments, creation of stewardship plans, and recruitment of volunteer stewards.

Table 1: Lake Whatcom Watershed Property Acquisitions 2010-2014

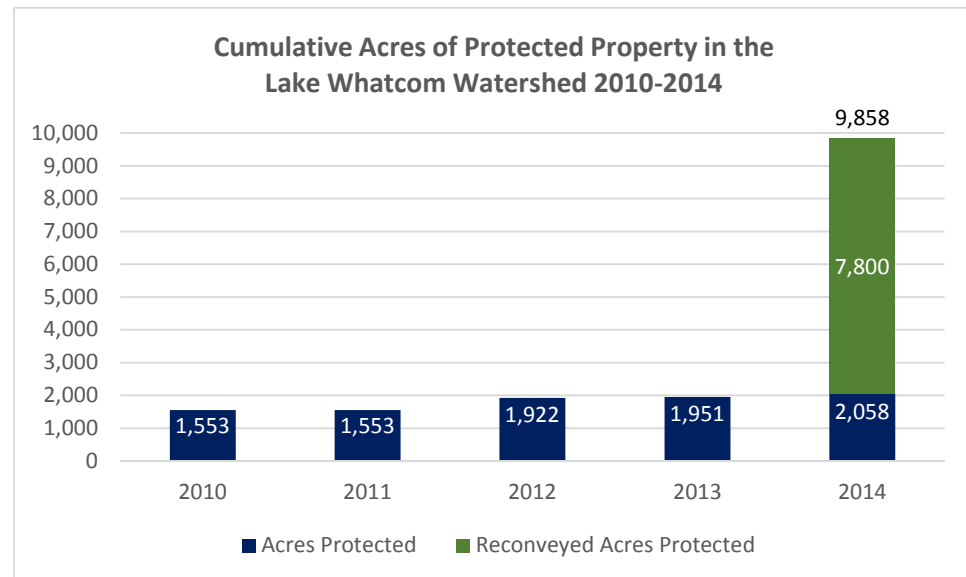
Year/Property	Price	Acres	Units	Per Acre	Per Unit	Score	Description
2010/WS-58	\$290,000	21	5	\$13,810	\$58,000	428	Adds to Anderson Creek Preserve
2010/WS-59	\$400,000	10.25	2	\$39,024	\$200,000	557	Adds to Dutch Harbor Preserve
2010/WS-61	\$100,000	4.5	2	\$22,222	\$50,000	472	Adds to Dutch Harbor Preserve
2010/WS-60	\$1,020,000	24	12	\$42,500	\$85,000	525	Adds to Dutch Harbor Preserve
2010/WS-62	\$803,000	17.2	3	\$47,006	\$269,500	515	Waterfront in basin 3
2012/WS-63	\$2,200,000	47	28	\$46,809	\$78,571	616	Adds to Agate Bay Preserve
2012/WS-64	\$350,000	1.7	1	\$205,882	\$350,000	404	Waterfront near Three Creeks Preserve
2012/WS-65	\$2,630,000	320	17	\$8,219	\$154,706	481	Adds to Lookout Mt., Lake Geneva, Oriental Preserves
2013/WS-66	\$213,728	29	1	\$7,370	\$213,728	478	Adds to North Galbraith Preserve
2014/WS-68	\$37,500	5	0	\$7,500	\$0	428	Adds to South Galbraith Preserve
2014/WS-69	\$249,500	7.55	1	\$33,046	\$249,500	389	Adds to Geneva Preserve
2014/WS-71	\$700,000	91.97	4	\$7,611	\$175,000	415	Adds to Agate Bay Preserve
2014/WS-72	\$0	2	0	\$0	\$0	553	Scudder's Pond adjacent to Bloedel Donovan (Donation)
2014/WS-73	\$30,000	0.56	2	\$53,571	\$15,000	532	Adds to Geneva Preserve
Totals (Average)	\$9,023,728	581.73	78	(\$38,183)	(\$135,643)		

Reference Documents:

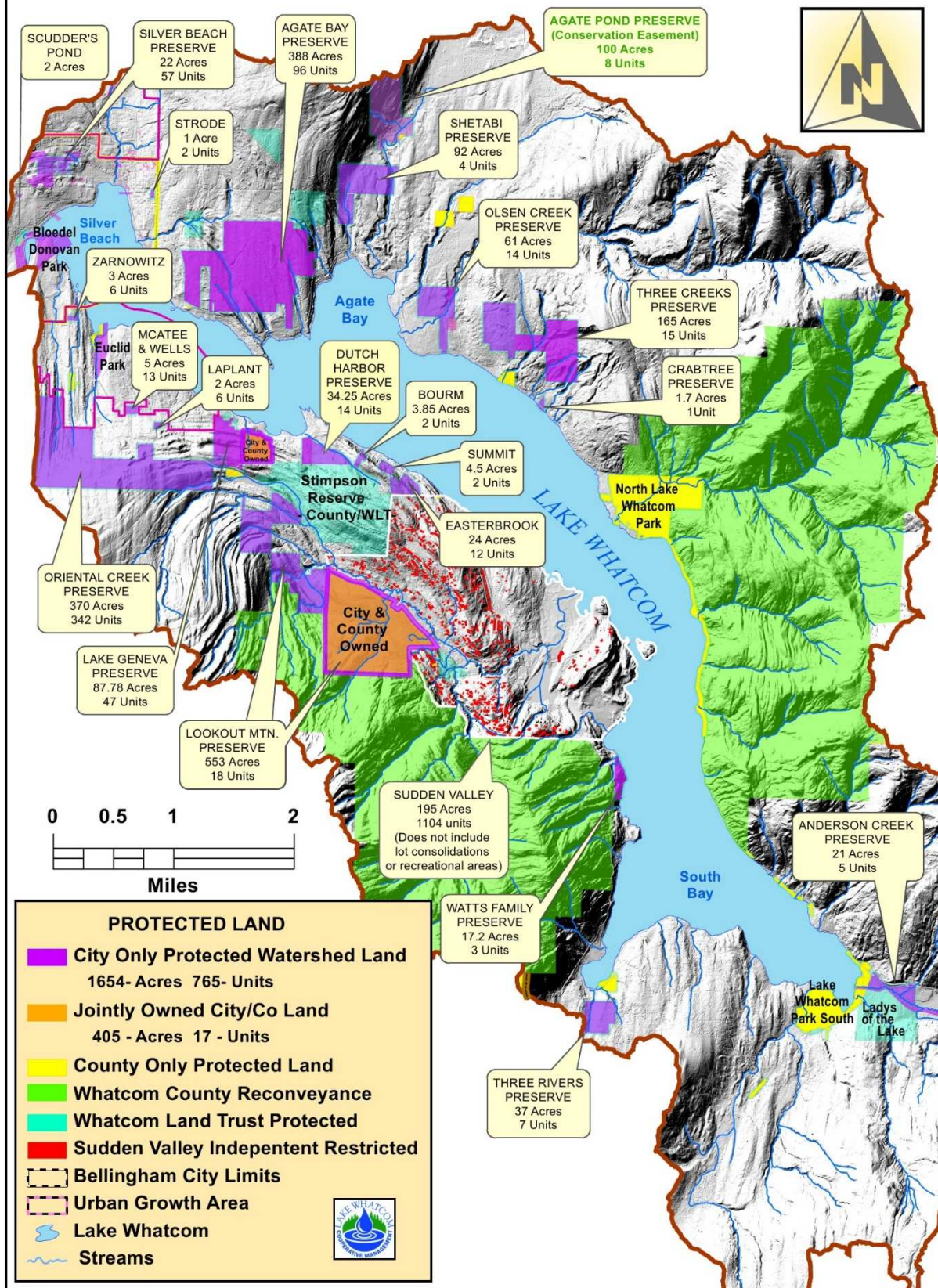
Lake Whatcom Property Acquisition Program

<http://www.cob.org/services/environment/lake-whatcom/lw-property-acquisition-program.aspx>

Whatcom County Parks & Recreation - Reconveyance

<http://www.whatcomcounty.us/625/Lake-Whatcom-Reconveyance>


PROTECTED PROPERTY IN THE LAKE WHATCOM WATERSHED (As of 12-4-2014)



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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.

Program Area Description: This 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.

Performance Measures 2010-2014:

- **Acres of stormwater treated in watershed by facilities:**
 - County: 587 acres (170 acres in 2014)
 - City: 285 acres
- **Total amount of phosphorus removed per year from stormwater runoff by facilities:**
 - City: 221 lbs. (42 lbs. in 2014)
 - County: 141.4 lbs. (33 lbs. in 2014)
- **Phosphorus removal efficiency of stormwater treatment facilities:**
 - The County's phosphorus removal efficiency for all stormwater facilities constructed from 2010-2014 has ranged from 50% to 70% with an average of about 64% removal of phosphorus from the treated area.
 - The City's phosphorus removal efficiency for all stormwater facilities constructed from 2010-2014 is 85%, including all projects completed under the Homeowner Incentive Program.
- **Fecal coliform removal efficiency of public stormwater treatment facilities:**
 - City:
 - Sand filters - 80% - 98%
 - Rain gardens - 81%
 - County:
 - Bio-infiltration swales - 75% - 80%
 - Treatment vaults - 80%
- **Pounds of phosphorus removed by Homeowner Incentive Program (HIP) projects:**
 - Number of projects completed: 120 properties retrofitted (59 in 2014)
 - Amount of phosphorus removed per year: 15.81 lbs. (5.49 lbs. in 2014)
 - Projected phosphorus removal from HIP Grant: Based on cost approx. 19 lbs.
- **Acres of stormwater treated by Homeowner Incentive Program (HIP) projects:**
 - 15.15 acres (5.97 in 2014)

Summary of Program Area Activities 2010-2014:

- **Lahti Drive/Britton Road Bio-infiltration Swale (2010)**
 - This project provides a stormwater quality treatment facility for a 31-acre residential area west of Britton Road in the Hillsdale sub-basin that drains into Silver Beach Creek. Project components include an 8-cell bio-infiltration swale to reduce transport of stormwater pollutants including phosphorus and bacteria to Silver Beach Creek and Lake Whatcom.
 - Estimated phosphorus removal of 12 lbs. from the area treated.

- **Flynn Street Reforestation and Lakeside Lane Phosphorus Filter Upgrade (2011)**
 - These projects include upgrades to a stormwater quality treatment facility as well as roadside improvements for Flynn Street near Lake Whatcom. Project components include a stormwater treatment facility with phosphorus-removing filter cartridges, additional piping and drainage structures, as well as extensive planting of native vegetation. Estimated phosphorus removal of 109 lbs. from the area treated.
- **Barkley/Britton Pond Conversion to Rock Plant Filter (2011)**
 - This project modified the existing Barkley Britton wet pond to a rock plant filter design emulating the system used by WWU treating their south campus. This project is still being monitored for effectiveness but has shown removal of approximately 50% of total phosphorus with an annual removal of approximately 12 lbs. from its 22 acre tributary area.
- **Residential Stormwater Retrofit Program (RSRP) - (2008- 2011)**
 - The Residential Stormwater Retrofit Program provided free 95-gallon rain barrels, project design, installation, and inspection to residential homeowners located in the project area. In exchange for this, homeowners participated in a stormwater education workshop. A total of 136 residential homes in the Lake Whatcom watershed participated in the RSRP with 267, 95-gallon rain barrels installed. Approximately 3.9 million gallons of stormwater per year is diverted as a result of this program.
- **Silver Beach Creek Stormwater Improvements – Brownsville Drive to E. 16th Place (2011-2012)**
 - These improvements provide treatment and reduce erosion from a 340-acre drainage area. Project components include channel stabilization, a 13-cell bio-infiltration swale, and vaults. This project was awarded the 2012 Environmental Project of the Year by the American Public Works Association (APWA) Washington State Chapter and the 2011 Local Civil Engineering Achievement Honor Award by the American Society of Civil Engineers (ASCE) Seattle Section. Estimated phosphorus removal of 30 lbs.
- **Silver Beach Creek Stormwater Improvements – West Tributary (2012)**
 - This project includes a bio-infiltration swale, vaults, and stream restoration to provide stormwater quality treatment facility for a 40-acre residential sub-basin that drains into Silver Beach Creek. It was awarded the 2012 Local Civil Engineering Achievement Honor Award by the American Society of Civil Engineers (ASCE) Seattle Section. Estimated phosphorus removal of 15 lbs.
- **Gate 9 Culvert to Bridge Conversion and Wintercress Way culvert Repair (2013)**
 - Sudden Valley completed two large-scale capital projects, the Gate 9 culvert to bridge conversion and the Wintercress Way culvert repair/replacement project, as well as a comprehensive evaluation of the stormwater drainage system for the entire development.
- **Coronado/Fremont Stormwater Improvements (2013-2014)**
 - This project provides stormwater quality treatment for 170 acres using a combination of constructed facilities to prevent incision, reduce velocities, and trap sediments including bio-infiltration swales, storm canister vaults, and bank stabilization. Estimated phosphorus removal of 33 lbs.
- **Homeowner Incentive Program (2011-2014)**
 - This program provides support for homeowners to install projects that increase water infiltration on their properties. Project examples include riparian plantings, impervious surface removal, lawn removal and replacement, and the installation of infiltration trenches and porous paving materials. Staff provides on-site consultations, project design, permitting assistance, and materials and services reimbursement. A total of 120 properties have been retrofitted as part of this program resulting in a total of 14.46 acres of stormwater treated and a total of 19 lbs. of phosphorus removed.
- **Bloedel Donovan Retrofit (2014)**
 - This project provided a stormwater retrofit for the western park portion of Bloedel Donovan Park. This area was found to have high phosphorus and fecal contamination in the areas of turf. The park had highly compacted soils and high runoff rates that were carrying contaminants to the lake. The combination of a treatment trench and conversion of shoreline to sand beaches provides the treatment mechanisms for this area. It is estimated that the 6-acre area has reached a 90% treatment goal with an approximate phosphorus reduction of 6 lbs/yr. (Before and after photos shown under Program Area 9: Recreation).

- **Lake Whatcom Right-of-Way Retrofit (2014-2015)**

- This project was mostly completed in 2014 with some follow-up to occur in the summer of 2015. This project is utilizing a new BMP developed by the Department of Transportation for treatment of phosphorus. The project involves the installation of treatment swales along Northshore Drive from Britton Road to E. North Street. This project is estimated to be approximately 85% effective for phosphorus removal and is removing approximately 30 pounds of phosphorus from a 36-acre tributary area.

Reference Documents:

Lake Whatcom Management Program Capital Improvement Projects website

<http://www.lakewhatcom.whatcomcounty.org/our-programs/capital-projects>

City of Bellingham 2007 Comprehensive Stormwater Plan

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

Whatcom County 2008 Lake Whatcom Comprehensive Stormwater Plan

<http://www.whatcomcounty.us/1022/Lake-Whatcom-Comprehensive-Stormwater-Pl>



**Wintercress Way Culvert Project
Sudden Valley 2013**



**Gate 9 Culvert to Bridge Conversion Project
Sudden Valley 2013**

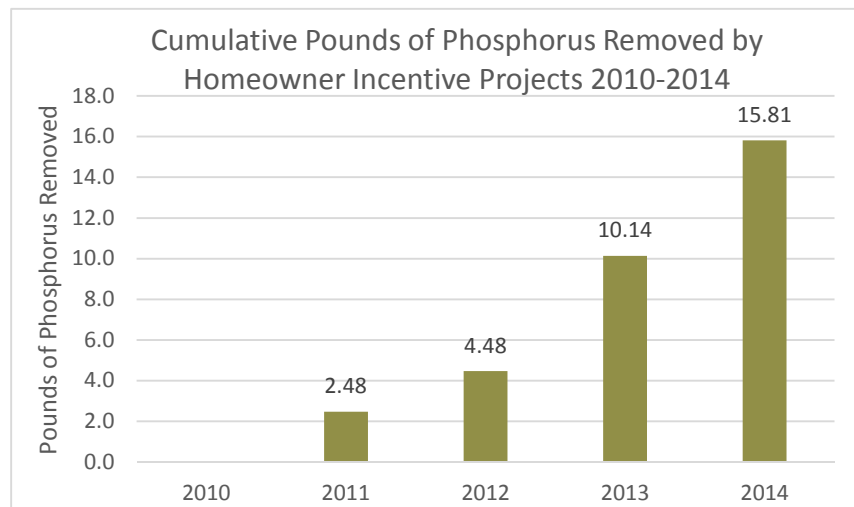
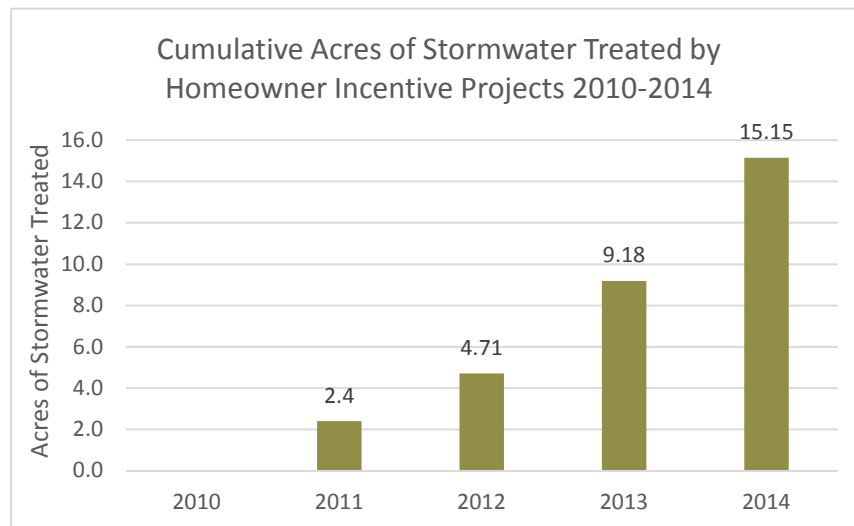


**West Reach Water Quality Improvement Project
Whatcom County Public Works 2013**

Left (Erosion in West Tributary creek bed prior to construction),
Middle (Bio-infiltration swale, post-construction), Right (Creek
bed with logs, post -construction)



**Homeowner Incentive Program Projects
City of Bellingham**





**Coronado/Fremont Stormwater Improvement Project
Whatcom County Public Works 2013/2014**

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Program Area: 3. Urbanization & Land Development

Goal:

Prevent water quality degradation associated with urban development through zoning changes, development standards and density limits.

Program Area Description: This program area aims to reduce water quality impacts resulting from residential and land use activities by way of development regulations. As areas are developed, land cover is often converted into less pervious surfaces that result in increased stormwater runoff entering the lake. The focus of this program area is to identify and adopt and implement development regulations that will result in reduced water quality impacts from residential and other land uses. Another focus of this program area has been the improvement of data sharing between jurisdictions and the joint review of significant projects.

Performance Measures 2010-2014:

- **Number of new homes and redevelopment, including lot size, and total area with residential permit activity (City):**
 - Single Family Residential: 15
 - Total lot area: 232,020 square feet (5.3 acres)
 - Lot size range: 6,159 square feet (0.14 acres) to 16,948 square feet (0.38 acres)
- **Number of new homes and remodels (County):**
 - Commercial permits: 47 (18 new construction)
 - Detached Building Permits: 87 (53 new construction)
 - Mobile Homes: 3 (2 new construction)
 - Single Family Residential: 266 (95 new construction)
 - Total number of new construction building permits: 168
- **Total area of new and redeveloped properties considered phosphorus neutral due to Lake Whatcom stormwater and development requirements:**
 - Since 2009 BMC 16.80 (Lake Whatcom Reservoir Regulatory Chapter) changes: 247,197 square feet (5.67 acres)
 - Of the 5.67 acres, 83,725 square feet (1.9 acres) is Native Vegetation Protection Area (NVPA) (forested)

Summary of Program Area Activities 2010-2014:

- City monitors each NVPA for 5 years to ensure its success
- City continues to offer a no-fee pre-application meeting for the project development team for increased understanding of regulation
- City and County staff continue to collaborate to meet TMDL requirements
- Whatcom County adopted new land use and stormwater management standards in 2013 that strengthen phosphorus reduction associated with new development and redevelopment.
- In 2012, Whatcom County became one of the first jurisdictions to implement the 2012 DOE Stormwater Management Manual for Western Washington. This manual represents the Best Available Science for stormwater mitigation from development projects in Western Washington.
- Joint reviews of 3 SEPA determinations, resulting in improved phosphorus controls for proposed development in 2010.
- Sudden Valley implemented over 20 major guideline regulation revisions which were adopted in 2010 to provide consistency between Sudden Valley and other jurisdictions.

Reference Documents:

Bellingham Municipal Code (BMC) 16.80 (Lake Whatcom Reservoir Regulatory Chapter), 15.42 (Stormwater Regulations), 16.55 (Critical Areas Ordinance), Title 22 (Shoreline Master Program)

Whatcom County Code (WCC) 20.51 (Lake Whatcom Watershed Overlay District & Stormwater Regulations), 16.16 (Critical Areas Ordinance), Title 23 (Shoreline Management Program)

Lake Whatcom Watershed Annual Build-out Analyses

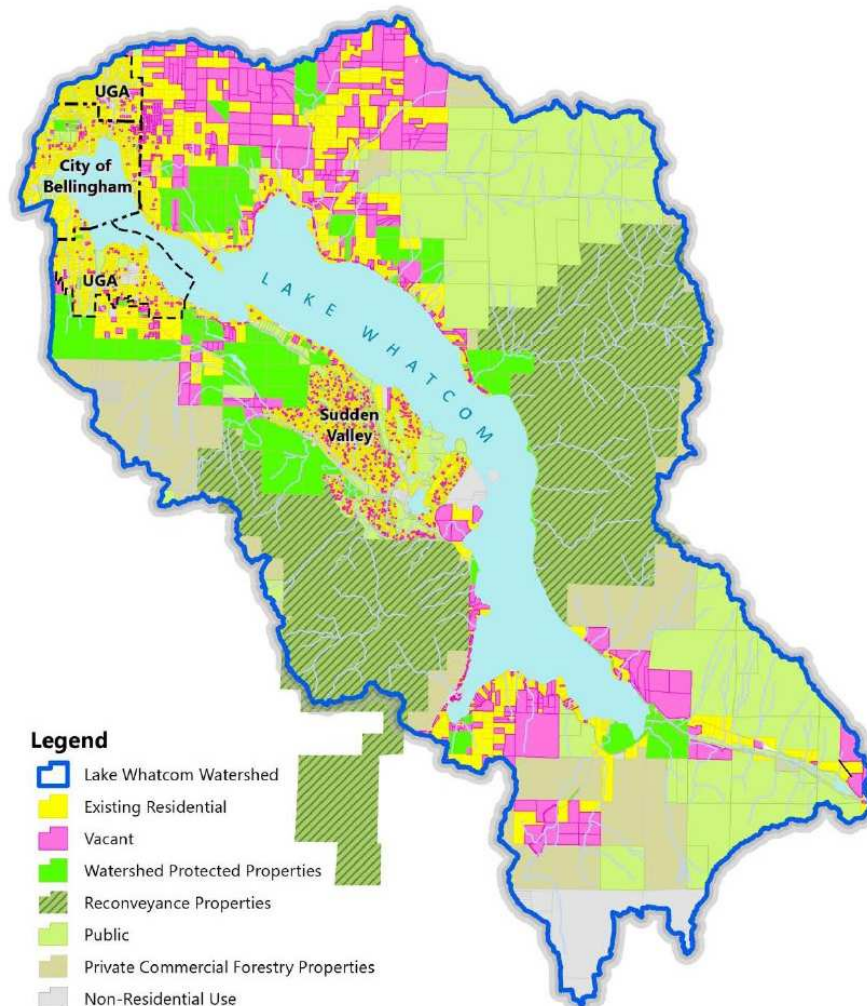
<http://www.lakewhatcom.whatcomcounty.org/resources>

2014 Lake Whatcom Watershed Buildout Analysis

Starting in 2005, the City of Bellingham Planning Department has performed a Lake Whatcom Watershed Build-out Analysis of existing residential housing units and potential developable lands in the watershed. This annual analysis provides a summary of development in the Lake Whatcom Watershed.

2014 Lake Whatcom Watershed Buildout Analysis

Watershed Breakout Areas	Existing Dwelling Units As of Jan 2014	Developable Capacity (Potential Units on Vacant Lands)	Gross Potential Buildout (Existing Units + Potential Units)	Developable (Vacant) Acres	Total Assessed Value of Developable (Vacant) Lands
City	1,595	132	1,727	29	\$9,981,388
UGA	1,551	114	1,665	53	\$7,969,679
Sudden Valley	2,566	664	3,230	192	\$23,958,375
Rural Watershed	1,165	901	2,066	3,855	\$63,080,627
Totals	6,877	1,811	8,688	4,129	\$104,990,069



Program Area: 4. Community Outreach

Goal:

Increase lake stewardship and reduce urban impacts through the provision of educational programs and materials to watershed residents, the general public and decision makers on topics related to water quality, source control, and land use and development regulations.

Program Area Description: This program area aims to protect water quality by encouraging watershed residents and visitors to become stewards of the lake. The stewardship behaviors encouraged include picking up and properly disposing pet waste, conserving water, engaging in lake-friendly gardening/landscaping and watershed-friendly car washing and maintenance practices, completing stormwater retrofits on residential properties, and cleaning, draining, and drying watercraft and recreational equipment between uses.

In the past, this program area has encouraged lake stewardship primarily through the distribution of written materials and outreach events. These efforts helped to increase understanding and awareness within the community regarding Lake Whatcom issues. In the past five years, Lake Whatcom Management Program education staff has begun to encourage lake stewardship through the use of incentives, workshops, and one-on-one education. These new efforts have helped to facilitate on-the-ground actions being taken by watershed residents.

Performance Measures 2010-2014:

- **Number of people contacted/educational materials distributed:**
 - Events: 3,200 people at 44 events
 - 700 active participants at 14 workshops/trainings
 - 2,500 passive participants at 30 displays/presentations
 - Online (2014)
 - LWMP website: 5,443 unique visitors www.lakewhatcom.whatcomcounty.org
 - COB Lake Whatcom page: 9,600 unique visitors www.cob.org/lakewhatcom
 - Whatcom Boat Inspections: 3,156 unique visitors (launched April, 2014) www.whatcomboatinspections.com
 - Aquatic Invasive Species Awareness Course: Passed by 1,367 individuals since launched in April, 2014 www.whatcomboatinspections.com/ais-awareness-course
 - Sudden Valley Community and Environmental Services page: www.suddenvalley.com > information > natural resources development
 - WSU Sustainable Landscaping page: whatcom.wsu.edu/ch/sustainable.html
 - Face-to-face
 - Almost 13,000 boaters received education regarding the Whatcom Boat Inspection Program while getting their boats inspected between 2012 and 2014.
 - At least 5,000 elementary school students and 50 teachers visited Lake Whatcom and the water treatment plant to learn about water treatment and watershed stewardship
 - At least 920 people through Homeowner Incentive Program (HIP) and Residential Retrofit Program (RSRP) site visits between 2008 and 2014 (assessment, installation, inspection, follow-up). Received education regarding Lake Whatcom issues, pollution sources and solutions that were unique to the individual property.
 - 28 site assessments as part of Sustainable Landscaping: Gardening Green classes in 2013
 - Printed materials
 - Distributed indirectly to community members: 4,275 (4,000 brochures, 135 signs, 100 posters/A-frames, around 25 newsletter articles and press releases)

- Delivered directly to watershed residents: 25,418 (at least 22,200 mailed postcards, letters and information packets, 818 door-hangers, 2,400 best management practice and plant information sheets)
- Topics included: Homeowner Incentive Program, Whatcom Boat Inspection Program, Sustainable Landscaping brochures, and signage/brochures related to the Lake Whatcom fertilizer regulations.
- **Estimated response to educational materials (i.e. changes in behavior):**
(The following behavior changes are estimated based on the number of incentives distributed)
 - Home car washes prevented:
 - Up to 313 watershed residents' cars washed using commercial car wash coupons
 - An estimated 500 vehicles washed city-wide at 28 events using Car Wash Kits
 - Dog poops scooped in the watershed:
 - Around 480,000 poops scooped using bags distributed at 24 dispenser stations
 - At least 56 dog owners using bag dispensers on their leashes they received from LWMP
 - Three surveys of Bellingham dog owners between 2008-2013 found that:
 - 39% of dog owners scoop at home daily, and 48% scoop at least weekly
 - Around 75% of dog owners dispose of pet waste properly in the trash, while 16% dispose of it in a compost pile, yard waste bin, or the bushes
 - Barriers to proper disposal include: bad weather (24%), lack of time (37%), forgetting to go back or being unaware the dog pooped (21%), and it being too dark to find it (29%)
 - Native plants purchased:
 - Up to \$6,610 of native plants purchased by 214 watershed residents using coupons
 - 32 trips to native plant nursery for Gardening Green class participants with consultation from instructor and discounted prices
 - More than 7,700 native plants purchased by Homeowner Incentive Program (HIP) participants (126 new native planting areas were created to replace lawn area)
 - Sustainable landscaping strategies practiced: Six months after the Gardening Green classes, the 52 participants reported using the following strategies learned in the class:
 - 56% used stormwater management strategies
 - 83% managed or protected healthy soil
 - 82% made appropriate plant choices for the site
 - 85% used strategies to conserve water
 - 75% reduced their use of fertilizers and other chemicals
 - 65% reduced the size of their lawn
 - 76% improved wildlife habitat through the use of native plants
 - Bus trips taken:
 - Up to 50 bus trips taken using bus tokens distributed by request of watershed residents
 - An average of 42,120 round trip bus rides taken each year to or from the watershed, according to the WTA
 - AIS permits purchased/issued with education incentive (2014):
 - 2,572 discounted AIS permits issued to people who successfully passed the online AIS Awareness Course
 - Water conservation tools distributed/installed:
 - 3,525 water conservation kits distributed
 - 4,624 meters installed city-wide
 - 544 residential and commercial fixtures retrofitted
 - Rain barrels installed:
 - 429 55-gallon rain barrels sold to City water customers
 - 260 95-gallon rain barrels installed at 131 watershed properties (RSRP 2010-2011)
 - 22 95-gallon rain barrels given to County watershed property owners
 - Number of properties installing Low Impact Development Best Management Practices (HIP 2010-2014):
 - 351 Homeowner Incentive Program (HIP) Best Management Practices installed on 145 unique sites (116 single family properties, 24 independent right-of-way projects, 2 schools, 2 community areas, and one alley)

- 187 reforestation projects (native planting, invasive species removal, replacing lawn or pavement with native plants, vegetated berms, slopes and terraces, etc.)
 - 111 infiltration projects (infiltration trenches, permeable paving, bioretention facilities)
 - 15 treatment projects (sand filters, shoreline beach restoration, media filter drains)
 - 38 rainwater harvesting and water re-use projects
- **Number of opportunities to coordinate with education staff:**
 - 31 meetings, as well as regular email and phone communication

Summary of Program Area Activities 2010-2014:

• **Staff Collaboration**

- The Lake Whatcom Education Team is comprised of staff from the City of Bellingham, Whatcom County, Sudden Valley Community Association and WSU Whatcom County Extension, with occasional participation by project consultants and partners. The team coordinated through regular meetings, emails and phone calls, organized and staffed events, and worked to align messages and programs to reduce conflicting messaging. Staff coordinated regionally and nationally to share successes and learn from others.

• **General Lake Whatcom Education and Outreach**

The Lake Whatcom Education Team raised general awareness of residents and visitors regarding watershed issues and encouraged residents and visitors to engage in stewardship behaviors through:

- Increased online presence:
 - Created 2 new websites: Lake Whatcom Management Program and Whatcom Boat Inspections
 - Fully updated content on City of Bellingham Lake Whatcom page
 - Added content to Sudden Valley and WSU Extension websites
 - Steady increase in unique visitors to our web pages each year
 - Lake Whatcom E-Newsletter was created in 2011 as an additional online education/outreach tool to engage watershed residents. 8 issues were disseminated between 2011 and 2012 (197 subscribers)
- Events:
 - Events intended to raise awareness and increase knowledge include open houses and informational fairs where displays were presented and/or presentations were given. Examples include the Institute for Watershed Studies 50th Anniversary Open House (2012), the Silver Beach Creek Bioswale Tour and Watershed Friendly Project Expo (2013), and World Water Day events (2010-2014), events hosted as part of Whatcom Water Weeks, and Whatcom Boat Inspection Program information sessions.
 - Events intended to facilitate action include workshops and trainings. These events are targeted at smaller groups to facilitate one-on-one assistance to participants. Examples include the Lake Whatcom Solutions Workshop (2014), the Elementary School Rain Garden Planting Parties held in 2012 and 2013, and the Gardening Green Landscaping Classes (2010-2014).
- School Program:
 - Sharing Our Watersheds school program reaches over 1,000 5th grade students and their teachers each year with classroom visits and a field trip. The program uses Lake Whatcom as a case study for learning about watersheds, drinking water treatment, and stormwater pollution prevention. It includes a take-home activity that reaches 1,000 adults per year.
- Signage:
 - Developed new aquatic invasive species informational signs to be installed at non-motorized launches
 - Installed rain garden signs for elementary schools in the watershed
 - Updated and installed additional road signs with rotating stewardship messages
 - Installed AIS signage for motorized and non-motorized boaters at launches
 - Delivered required signage to fertilizer retailers to inform their customers of the Lake Whatcom phosphorus fertilizer regulations
 - Residential Stormwater Retrofit Program (RSRP) rain barrel recipients posted yard signs to encourage neighbors to participate

- **Evaluating awareness, knowledge, and behavior change resulting from outreach efforts**
 - Sudden Valley developed and conducted a survey of the Association's approximately 3,200 member households in 2014. The survey focused on best practices in the Lake Whatcom watershed, with an emphasis on identifying opportunities for targeted outreach relating to reducing phosphorus and fecal coliform loading.
 - City conducted 20 phone interviews in 2014 (10 with successful HIP participants, 10 with residents that showed interest in HIP but didn't complete projects) regarding the Homeowner Incentive Program (HIP). Results were compiled to help understand motivators and barriers to completing private stormwater retrofit projects in the Lake Whatcom watershed.
 - 2012 and 2013 surveys of dog owners city-wide found a significant increase in owners who pick up pet waste both at home and on walks. Surveys also showed opportunity for improvement by informing dog owners that the trash, not the compost or yard waste pile, is the best place to dispose of pet waste.
 - In 2012, postcards on four topics were mailed to all Lake Whatcom Watershed residents within the city limits. Each postcard included an educational message, a few short survey questions, and a positive behavior change incentive connected to four topics: pet waste, car washing, native planting, and trip reduction. The design of this outreach strategy was meant to achieve three goals:
 - to encourage people to read the educational message on the mailing and have some way to track whether it was being read
 - to give people a tool that aids them and incentivizes them to make a positive behavioral change that benefits Lake Whatcom water quality
 - to gather some information that may help inform future outreach messaging and strategies
- **Animal Waste Reduction**
 - Bag dispensers: 24 poop scoop bag dispensers within the Lake Whatcom Watershed are maintained by volunteers, COB staff, County staff, LWWSD staff and Sudden Valley staff.
 - City-wide program: Program focus has shifted from scooping in public places to scooping frequently at home and disposing of waste in the trash, not compost.
- **Vehicle Pollution Reduction**
 - Home car washes: Postcards explaining the danger of water pollution from car washing practices were sent to watershed residents. Coupons for a free commercial car wash were mailed directly to residents requesting them.
 - Fundraising car washes: City lent free car wash kits that redirect wash water to sewers, and encouraged groups to sell car wash coupons instead.
 - Vehicle leaks: City participated in the regional Don't Drip & Drive campaign by hosting vehicle leak check events and distributing leak repair coupons.
- **Landscaping Practices**
 - Gardening Green Sustainable Landscaping Class (2010-2014): Whatcom County and the City of Bellingham contracted with WSU Extension to facilitate a Gardening Green: Sustainable Landscaping workshop series to increase awareness about sustainable landscaping practices and to empower watershed residents to implement on-the-ground changes to their properties. Participants contributed to community capacity building of the program via tours, talks to neighborhood groups, friends, neighbors, and gardening green parties. WSU Extension completed evaluation of sustainable landscaping workshops and classes to evaluate knowledge change, behavioral change, and community capacity building.
 - Phosphorus Fertilizer Ordinance and Guidelines for Gardening Materials and Practices (2011): The ordinance was updated in 2011 to include regulations for retailers of phosphorus-containing fertilizers, mulches and soil amendments. City staff provided the required signs and brochures to alert customers of the ban on the use of those materials in the watershed.
- **Residential Stormwater Retrofits**
 - City staff provided site assessments via the Residential Stormwater Retrofit Program (2008-2011) and the Homeowner Incentive Program (2010-2014). These site assessments proved to be valuable opportunities for providing one-on-one education to watershed residents. The Homeowner Incentive Program also provided Lake Whatcom education staff the opportunity to engage local businesses in water quality improvement efforts with around 40 businesses participating in HIP workshops and over 120 local businesses providing goods and services to program participants.

- **Water Conservation**

Distributed to COB water customers:

- Indoor Water Conservation Kits (low-flow shower head, faucet aerators, toilet leak detection tables and educational flyer) available for pickup at Bellingham City Hall
- Residential & Commercial Fixture Retrofits (clothes washers, toilets, drip irrigation, and cisterns) through rebate from City of Bellingham
- Water Meters through the Voluntary Metering Program from 2010-2011 and through the mandatory program beginning in 2013 (including the Silver Beach Neighborhood)
- Rain Barrels through the Residential Stormwater Retrofit Program and the Homeowner Incentive Program

- **Aquatic Invasive Species Prevention**

- Aquatic invasive species inspectors conducted almost 13,000 watercraft inspections between 2012 and 2014. These inspections gave staff the opportunity to educate watercraft owners and operators regarding the importance of cleaning, draining, and drying their watercraft between uses to prevent the spread of aquatic invasive species to and from Whatcom County waters.
- Over 1,800 visitors stopped by the Aquatic Invasive Species Check Stations at Lake Whatcom and Lake Samish to learn about the program, ask questions, and to collect outreach materials.
- 1,367 individuals took the online Aquatic Invasive Species Awareness course in 2014 to learn about the program and ways to prevent the spread of aquatic invasive species to Whatcom County waters.
- Aquatic invasive species inspectors had an additional 6,000 interactions with boaters when sealing/unsealing watercraft as part of our Wire Seal Program that resulted in additional opportunities to engage boaters in the program. Additional AIS outreach efforts are highlighted under Program Area 13: Aquatic Invasive Species.

Non-Motorized Aquatic Invasive Species Program Signs

In 2014, staff developed new informational signs with the clean, drain, dry message to be installed at non-motorized launches around Lake Whatcom, Lake Samish, and Lake Padden. These signs aim to encourage non-motorized users to clean, drain, and dry their boats and gear completely between outings to prevent the spread of aquatic invasive species.



Lake Whatcom Incentive Survey Postcard Examples

In 2012, postcards on four topics were mailed to all Lake Whatcom Watershed residents within the city limits. Each postcard included an educational message, a few short survey questions, and a positive behavior change incentive connected to four topics: pet waste, car washing, native planting, and trip reduction.

Please help us count the dogs in your neighborhood!

If you have a dog, please fill out and return this postcard.

How many dogs? _____ What size(s)? _____ lbs

Are you interested in volunteering to refill a dog bag dispenser if we add one in your neighborhood? ☐ Yes
Bags provided. (If yes, include address or call 778-7970)

get a leash bag dispenser
The #1 reason pet owners don't pick up, is when they forget a bag. Thanks for protecting Lake Whatcom!
Would you like a free bag dispenser?
☐ Yes, please! ☐ No, thanks.

Name: _____
Address: _____
City, State, Zip: _____

Funded
by a grant
from: 

ATTENTION: Dangerously high levels of fecal coliform bacteria have been found in waterways leading to Lake Whatcom.

We need your help! Runoff from your property drains into ditches or storm drains which flow into Lake Whatcom. Pet waste and failing septic systems are the main sources of fecal coliform bacteria.

Pet waste is not fertilizer. It's not safe to compost it or bury it. Bacteria from pet waste can survive for weeks or years on the ground and in water.

Always scoop dog poop when on walks. In your yard, pick it up at least once a week. Daily pickup is best. Put it in the garbage.

Scoop it. Bag it. Trash it.

www.cob.org/lakewhatcom

Pet waste is raw sewage. It contains harmful bacteria (like *E. coli*) that can cause illness in children and pets.

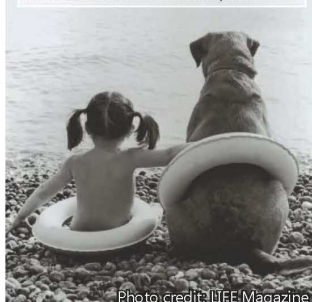


Photo credit: LIFE Magazine

Please help us understand the watershed...

How much of your outdoor property is covered in lawn?

___none ___1-25% ___25-50% ___50-75% ___75-100%

Considering that lawn is a pollution source for Lake Whatcom, how much of your lawn are you interested in replacing with native plants?

___none ___1-25% ___25-50% ___50-75% ___75-100%

get a coupon for \$24 of plants!
Beautify your property while filtering and slowing down stormwater. Thank you for protecting Lake Whatcom!
☐ **Yes! Please send me a coupon!**
(get a coupon while supplies last)

Name: _____
Address: _____
City, State, Zip: _____

Funded
by a grant
from: 

Native plants improve lake water quality!

Where native plants once helped the Lake Whatcom Watershed filter and slow rain runoff, now impervious surfaces and lawns allow rainwater to carry natural pollutants (such as sediments, bacteria, and nutrients) and human pollutants (including soaps, pet waste, metals, and fertilizers) directly into the lake with little to no natural filtration.

You can help us restore the Lake Whatcom Watershed by planting native plants on your property. Native plants require less water and maintenance than lawns and non-native plants.

**Help this watershed function like a forest:
plant native trees and shrubs!**

Want to do more? Search "HIP" at www.cob.org



Lake Whatcom Rotating Stewardship Signs

Posted at entrances to the Lake Whatcom Watershed and along main routes within the watershed. There are 13 locations and 15 rotating messages. Originally installed in 2005, these signs were updated in 2012 using funds from the 2008 Centennial Clean Water Fund grant project.



Students, parents and staff from Silver Beach Elementary School helped plan and plant this rain garden as part of the Homeowner Incentive Program. The sign at this demonstration project explains the benefits of rain gardens and how they work to filter water.



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Program Area: 5. Data Management & Information

Goal:

Maintain and enhance databases sufficient for detection of water quality and quantity trends, assessment of problems, evaluation and selection of management actions, and monitoring of action effectiveness.

Program Area Description: This program area aims to collect and manage data to increase our understanding of water quality, pollution source, and land use trends and to guide management decisions accordingly. This Program Area is administered by a Data Management Team composed of staff from the City, County, District, WWU's Institute for Watershed Studies, and the Department of Ecology (DOE).

Monitoring contracts overseen:

- ☐ Lake Whatcom Monitoring Contract (WWU - Institute for Watershed Studies)
- ☐ United States Geological Survey
- ☐ Brown and Caldwell Tributary Monitoring
- ☐ Hydrologic Services

Summary of Program Area Activities 2010-2014:

- The Data Management Team continued to meet on a monthly basis between 2010 and 2014.
- Data Management Team received regular updates on the Lake Whatcom Monitoring Contract with WWU's Institute for Watershed Studies (IWS).
- Lake Whatcom Annual Water Quality Monitoring Reports, produced annually, are available on the Institute for Watershed Studies website. The 2013/2014 Report will be available in early 2015.
 - ☐ During 2014, the parameters of algae and chlorophyll continue to remain stabilized at the highest levels recorded over the past 3 decades. A species of golden algae was observed in numbers not observed previously, and is thought to be responsible for the persistent taste and odor complaints in the treated water responsible for over a hundred of formal customer complaints since June 2014. The drainages of Anderson, Austin and Brannian Creeks are being monitored over high flow conditions to provide data that has been determined to be lacking, to inform modeling of the impacts to Lake Whatcom.
- Data Management Team received updates on Middle Fork Diversion sampling program that was initiated to assess water quality impacts from the diversion system.
- Data Management Team received updates on hydrologic model refinements to include loading calculations from the Middle Fork diversion system and assessment of turbidity as a suitable surrogate.
- Brown and Caldwell Consultants released quarterly tributary monitoring reports.
- Data Management Team received regular updates on the status of the *TMDL Water Quality Improvement Plan* for Lake Whatcom from the Department of Ecology.
- Brown and Caldwell Consultants released their quarterly tributary monitoring reports.
- Data Management Team received regular updates on stormwater monitoring data for new stormwater facilities and best management practice (BMP) projects designed to remove phosphorus and fecal coliform before it enters the lake.
- Data Management Team received updates on monthly grab sampling at Silver Beach Creek. This sampling approach was chosen to inform the targeting of management activities in the Silver Beach Creek Watershed to minimize pollutant loading. Sampling affirmed unexpected bacteria loading that Whatcom County staff tracked to an expected source.

- Data Management Team received update from Hydrologic Services on redefined portions of the drainage area as defined by the watershed planning process (WRIA1) for the Euclid and Mill Wheel drainage. New boundary designation will be incorporated into HFAM model and TMDL.
- Data Management Team discussed monitoring and data collection needed to improve accuracy of phosphorus loading models in order to update the TMDL set load reduction targets.
- City of Bellingham Water Utility staff worked with project engineers utilizing the triple bottom line-plus approach to determine the preferred path forward with water filtration plant upgrades. Assessment criteria include such factors as public safety, cost, and ease of operation, and maintenance and site constraints.
- Data Management Team received regular updates on aquatic invasive species prevention and management efforts.

Reference Documents:

Lake Whatcom Data Catalog

Copies of the documents are available at the Whatcom County Public Works Water Resources Library and the Bellingham Public Library

Lake Whatcom Monitoring Reports

<http://www.wvu.edu/iws/>

Department of Ecology: Water Quality Improvement Project (TMDL) for Lake Whatcom

<http://www.ecy.wa.gov/programs/wq/tmdl/LkWhatcom/LkWhatcomTMDL.html>

Golden Algae - *Uroglena americana*

A species of golden algae (possibly *Uroglena americana*) is thought to be responsible for persistent taste and odor complaints from over 100 water customers since June, 2014 (Image of *Uroglena americana* by Dr. Robin Matthews from the Institute for Watershed Studies website: www.wvu.edu/iws/).



Program Area: 6. Spill Response & Hazardous Materials

Goal:

Prevent water quality degradation due to hazardous material spills through spill prevention and response programs and continual improvement of communication network to handle spill response.

Program Area Description: This program area aims to prevent water quality impacts associated with improper storage and handling of hazardous materials within the watershed and to ensure that spill prevention and response programs adequately protect water quality. The focus of this program area has been to improve spill response time to water quality threats by coordinating spill response reporting and information sharing between jurisdictions. Aquatic Invasive Species Program response efforts are now reported in Program Area 13.

Performance Measures 2010-2014:

- **Number of spills/incidents:**
 - No spills/incidents reported
- **Pounds of hazardous materials collected from watershed:**
 - No hazardous materials collection events held
- **Number of Spill Response Team meetings held:**
 - No Spill Response Team meetings held

Summary of Program Area Activities 2010-2014:

- **Brief report on actions taken to prevent and/or manage spills or incidents:**
 - Whatcom County adopted an Illicit Discharge Detection and Elimination Ordinance (Ord. 2010-002) for the entire Lake Whatcom Watershed in 2010.

Reference Documents:

Washington Toxics Coalition
<http://www.watoxics.org>

City of Bellingham Emergency Operations Plan
Annex 6 – Hazardous Materials

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7. Forestry/Fish/Wildlife

Program Area: 7. Forestry/Fish/Wildlife

Goal:

Develop and maintain a comprehensive watershed forest management plan that minimizes impacts to water quality, and promotes actions and programs that protect and enhance fish and wildlife habitat.

Program Area Description: This program area aims to protect the clean water functions provided by forests and fish/wildlife habitat located in the Lake Whatcom watershed. The Lake Whatcom watershed provides habitat for a wide variety of fish and wildlife species. Most of the land in the watershed is in a forested condition and is managed by the State Department of Natural Resources, timber management companies, or private landowners.

Performance Measures 2010-2014 (2014):

- **Amount harvested on DNR lands:**
 - 645 acres (120.2 acres in 2014)
- **Amount harvested on private lands:**
 - 2,241 acres (116 acres approved from Forest Practice Applications in 2014)
- **Acres treated with herbicides on public and private forestry lands:**
 - 180 acres treated with herbicides (0 acres treated with herbicides in 2014)
- **Amount of road constructed/abandoned on public and private forestry lands:**
 - 158,185 feet of road constructed and 40,801 feet of road abandoned (24,680 feet of road constructed and 6,874 feet of road abandoned in 2014)
- **Number of DNR projects reviewed by IJC:** 14

Summary of Program Area Activities 2010-2014:

- IJC continued to regularly review and report out on forest practice applications in the Lake Whatcom watershed.
- DNR staff presented to the Lake Whatcom Joint Policy Group on 2010 water quality assurances as well as other DNR activity in the watershed scheduled for early 2011.
- IJC completed their annual Report to the Board of Natural Resources regarding the Lake Whatcom Landscape Pilot Project in June 2011.
- IJC met and submitted their annual report to DNR outlining activities by DNR in the watershed from 2009 and made recommendations to the pilot program outlined in the DNR Landscape Plan (2010).

Reference Documents:

City of Bellingham Critical Areas Ordinance (BMC 16.55)

<http://www.cob.org/documents/planning/comprehensive-plan-code-amendments/critical-area-ordinance/2005-12-06-final-cao.pdf>

City of Bellingham Shoreline Master Program (BMC Title 22)

<http://www.cob.org/documents/planning/shoreline-master-program/november-final-draft-cc.pdf>

Whatcom County Critical Areas Ordinance (WCC 16.16)

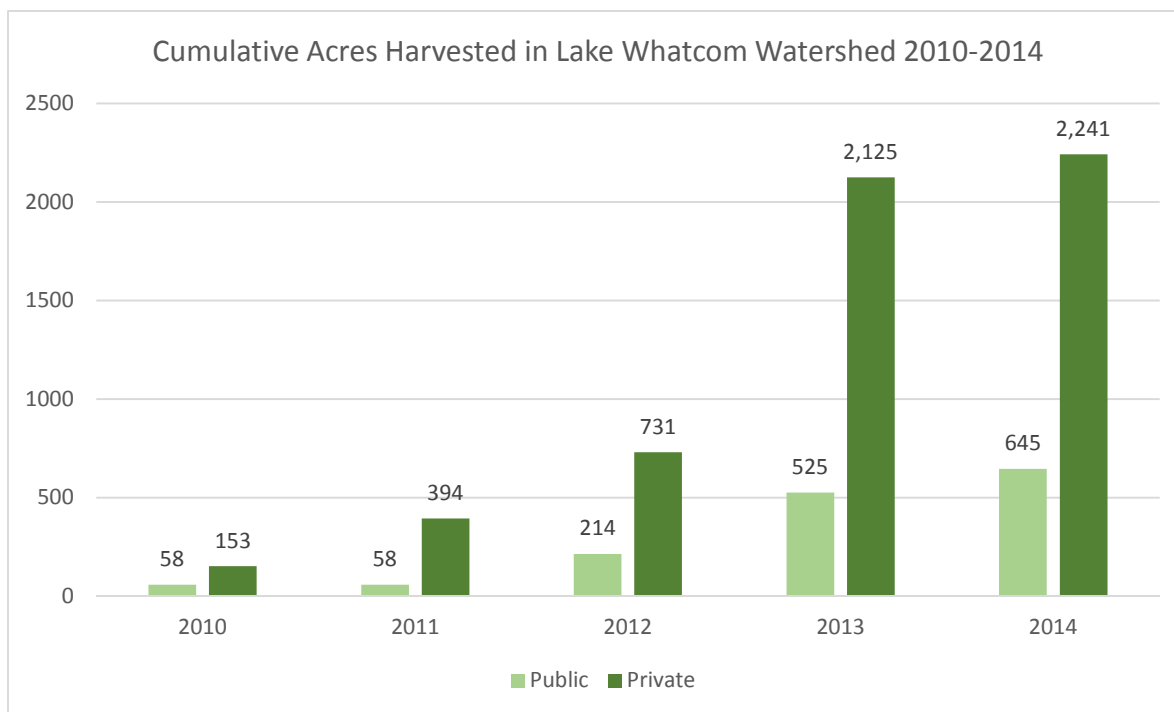
<http://www.whatcomcounty.us/723/Critical-Areas>

Whatcom County Shoreline Management Program (WCC Title 23)

<http://www.whatcomcounty.us/837/Shoreline-Management-Program>

Interjurisdictional Committee (IJC) Reports

http://www.dnr.wa.gov/Publications/lm_lkwa_pilot_11report.pdf



8. Transportation

Program Area: 8. Transportation

Goal:

Design and develop transportation systems that include alternatives to automobiles, locate “through” routes away from the lakeshore, and ensure treatment of runoff before entering the lake or otherwise protects water quality.

Program Area Description: This program area aims to limit transportation-related impacts to water quality by encouraging watershed residents to use alternative transport and to limit the number of vehicle mile trips being made in the watershed. Motorized vehicles are a source of a variety of pollutants found in stormwater runoff. Pollutants such as oil, antifreeze, rubber, heavy metals, and transmission and brake fluid can be deposited and accumulate on roadway surfaces through normal vehicle use. These pollutants can be carried during rain events to storm drains and ditches and eventually end up in our streams and lakes.

Performance Measures 2010-2014:

- **Changes in public transportation use in the watershed:**
 - Vehicle mile trip reduction: unknown
 - Bus ridership in the Watershed: unknown
- **Number of new bus stops in watershed: 0**
- **Number of new high visibility covered bus stations in Sudden Valley/Geneva: 0**

Summary of Program Area Activities 2010-2014:

- City and County transportation staff discussed road design standards and impacts to water quality at the Lake Whatcom Joint Policy Group meeting in September 2010. Staff and policy group members discussed the impacts of state funding and standards on optimal road design, the differences between City and County road programs, local efforts to adapt road design standards to reduce impacts to water quality, as well as ideas for enhancing road design standards in the Lake Whatcom watershed to help meet water quality targets.
- 1,046 stewardship survey postcards about trip reduction and 50 bus tokens and bike/bus maps were mailed to City watershed residents in 2012. Respondents to this survey reported taking regular trips to the following locations: downtown (63%), Barkley (61%), Lakeway (49%), Guide Meridian (37%), schools (24%).

Reference Documents:

City of Bellingham Comprehensive Plan Ch. 3 Transportation Element
TG 38 and TG 39

Whatcom County Comprehensive Plan Ch. 6 Transportation Element

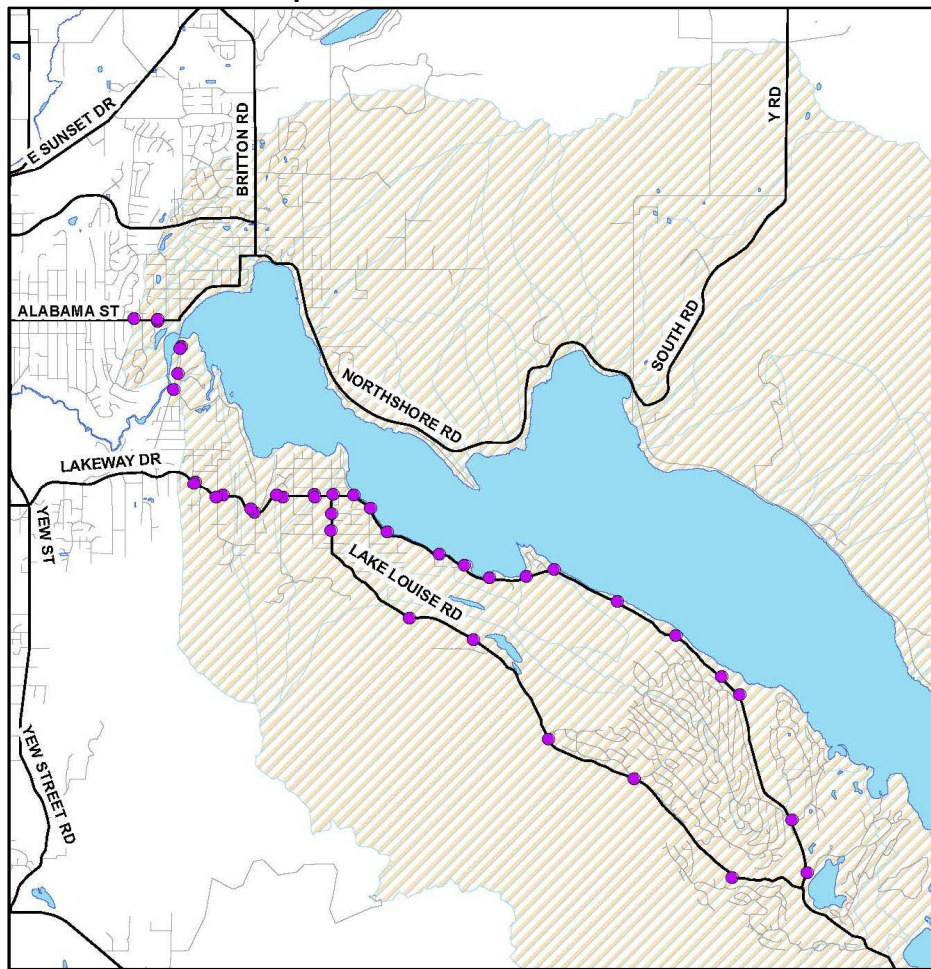
Smart Trips – Whatcom County

<http://www.whatcomsmarttrips.org/>

Whatcom Transit Authority - Ridership Reports & Schedules

<http://www.ridewta.com>

WTA Bus Stops within the Lake Whatcom Watershed



Program Area: 9. Recreation

Goal:

Promote recreational opportunities that do not degrade water quality, and improve on ways to reduce impacts of existing activities.

Program Area Description: This program area aims to promote recreational opportunities that minimize impacts to water quality while reducing the impacts of existing recreational activities. The Lake Whatcom watershed is a popular recreational site for local residents and visitors. Recreational opportunities in the watershed include boating, swimming, fishing, hiking, biking, and horseback riding. Some of these activities have the potential to adversely impact the watershed and water quality through the release of pollutants, the destruction of wildlife habitat, and the spread of invasive species. Aquatic Invasive Species Program prevention efforts are reported in Program Area 13.

Performance Measures 2010-2014:

- **Number of recreational users contacted:**
 - Over 100 people attended a planning meeting regarding the forest lands around Lake Whatcom that were transferred to Whatcom County from the Washington Department of Natural Resources through reconveyance. The planning process will include the identification of recreational opportunities for those lands that minimize impacts to Lake Whatcom water quality.
 - Over 50 people received information on the proposed stormwater and shoreline improvement projects at Bloedel Donovan Park via public meetings, steering committee meetings, and via reports and updates to City Council, and the Parks Board in 2013 and 2014.
- **Number of individuals using trails and parks in watershed:**
 - Over 84,000 individuals visited the Hertz Lake trails, Stimpson Reserve trails, and Lookout Mountain Forest Preserve trails in 2013 and 2014 (Estimate is based on Whatcom County Parks & Recreation trail counter results and does not include equestrian trail usage or activity occurring at locations without trail counters installed).
 - Usage data for other parks and trails in the watershed was not collected in 2014.

Summary of Program Area Activities 2010-2014:

- Whatcom County and the State Department of Natural Resources finalized the reconveyance of 8,844 acres (approximately 7,800 acres are in the Lake Whatcom Watershed) to the County. To comply with state law that regulates reconveyance procedures the properties will be managed by the Whatcom County Parks Department for park use. Since the definition of park use includes a broad range of passive and active uses, a public process to identify preferred uses has been initiated by the Parks Department. A planning meeting was held on April 29, 2014 to identify important issues, goals and opportunities to assist the planning process. Additional meetings will be held in 2015 to help plan the future of Whatcom County's newest park area.
- Completed stormwater and shoreline improvement projects at Bloedel Donovan Park including onsite stormwater mitigation, the removal of the existing concrete bulkhead, beach improvements, as well as expanding native planting areas.
- City staff from Public Works and Parks met on several occasions to discuss the Aquatic Invasive Species Prevention Program and to problem solve potential impacts of the inspection program on other recreational activities taking place at the Bloedel Donovan Park.

Reference Documents:

Bellingham Municipal Code (BMC) 16.80 (Lake Whatcom Reservoir Regulatory Chapter), 15.42 (Stormwater Regulations), 16.55 (Critical Areas Ordinance), Title 22 (Shoreline Master Program)

Bloedel Donovan Stormwater & Shoreline Improvement Project

Stormwater and shoreline improvements included removal of the existing bulkhead, beach improvements, as well as expanding native planting areas. The project was completed in November 2014.



BEFORE BULKHEAD REMOVAL & BEACH IMPROVEMENTS



AFTER BULKHEAD REMOVAL & BEACH IMPROVEMENTS

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Program Area: 10. Utilities & Waste Management

Goal:

Promote conservation of water resources and provision of city sewer to areas with on-site treatment.

Program Area Description: This program area aims to promote water efficiency amongst all user groups (residential, industrial, and commercial) and to minimize water quality impacts associated with on-site waste system and sewage overflows. Reducing water withdrawal demands on Lake Whatcom reduces water treatment costs. On-site septic systems must be properly maintained in order to effectively treat sewage without leaching into surrounding soils. Reducing the number of overflows in sewage systems will prevent additional nutrient loading into Lake Whatcom.

Performance Measures 2010-2014:

- **Estimate of gallons of water conserved in City:** 19 million gallons in 2013 (Report: June, 2014)
- **Number of meters installed in City (% of meter installations completed):** 4,000 meters and assembly boxes installed between 2013 and 2014 (47% of City have metered water bills)
- **Estimate of water use reduction in the District service area:** 6.1 million less gallons produced in 2014 compared to 2013 as a result of on-going conservation education efforts and the repair of water leaks in District water lines. This follows a 3.1 million gallon reduction in 2013.
- **Number of overflows in District Service Area:** 2 (1 in 2011 and 1 in 2014)
- **Number of new connections made by District within 200 feet of sewer line:**
 - 67 new connections (15 new connections in 2014)

Summary of Program Area Activities 2010-2014:

- An estimated 19 million gallons of water was saved in 2013 as a result of the City's Water Conservation Program (Report: June, 2014)
- 2013 estimated water savings were achieved through the City's adopted water conservation program measures: public outreach (rain barrel program, leak detection, water conservation kit distribution), single-family water conservation rebate project (the City's Community Energy Challenge and Water Conservation Program partnership), and the multi-unit residential and irrigation water conservation rebate projects.
- County Health Department continued to enforce septic system operation and maintenance regulations, update database of septic systems, respond to failing septic systems, and conduct homeowner education.
- The District continued to maintain and replace their sanitary sewer infrastructure in the watershed following its 6-year capital improvement plan with the intent of reducing the potential of sewer over flows and in reducing potable water waste. Toward this end the District updated its Sewer Comprehensive Plan in the summer and added for the first time a storm water element section. The Plan was approved by both the Washington Department of Ecology and the Whatcom County Council.
- The District also completed the following capital projects in 2014:
 - Annual repair of numerous sewer manholes and main spot repairs done through an on-going systematic review of both the District's water distribution and sewer collection lines
 - Rebuilt Boulevard Sewer Pump Station adjacent to Lake Whatcom in Geneva
 - Pre-design for rebuild of Strawberry Point Sewer Pump Station in Geneva
 - Pre-design for future 2.5 miles of Water main replacement in Geneva
 - Completion of budgeted annual Capacity, Management, Operation & Maintenance (CMOM) program utilized to find leaks in the water distribution system within the Sudden Valley community

- The District's water conservation efforts began in 2011 and are based upon voluntary compliance through its ratepayers and continued efforts to identify leaks and repair them. Public notification recommend odd/even address watering during the summer months. The District utilizes notices through its website, billings, and outdoor signage used during the summer months.

Reference Documents:

Washington State 2003 Municipal Water Supply-Efficiency Requirements Act

<http://www.doh.wa.gov/ehp/dw/Programs/wue.htm>

City of Bellingham's Water Use Efficiency Program

<http://www.cob.org/documents/pw/utilities/2008-water-use-efficiency-program.pdf>

City of Bellingham Water Use Efficiency Annual Performance Report - 2012

<http://www.cob.org/documents/pw/environment/water-conservation/wue-report-2012.pdf>

On-Site Sewage System Rules and Regulations, Whatcom County Health Department, WCC 24.05

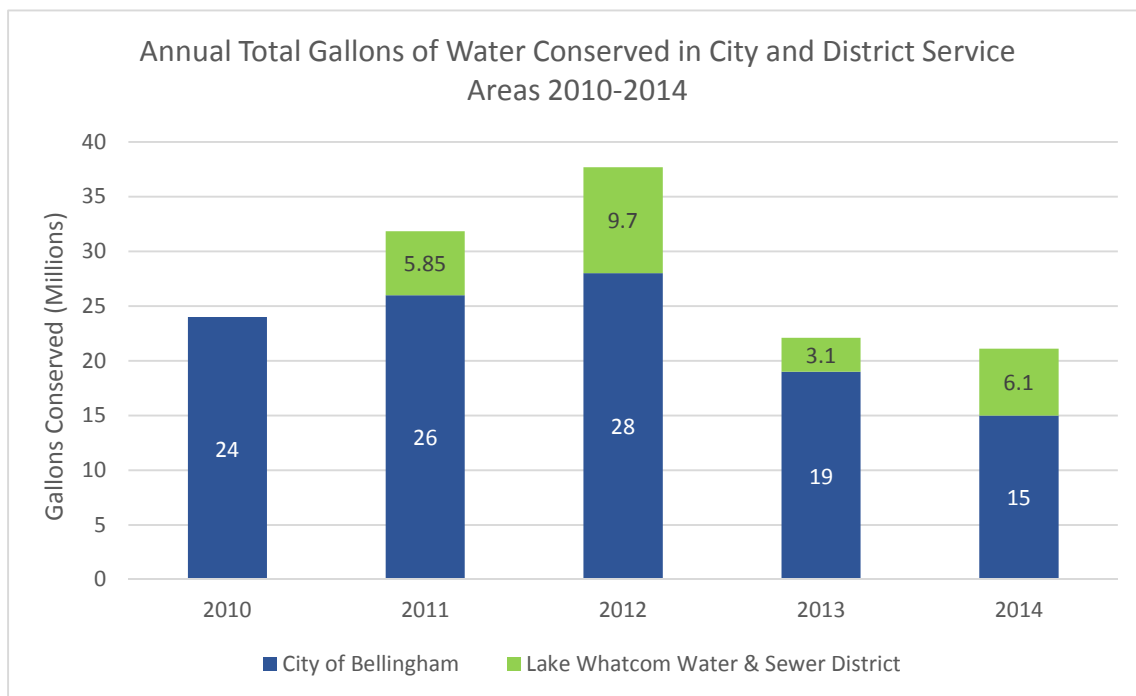
<http://www.whatcomcounty.us/documentcenter/view/2053>

Lake Whatcom Water & Sewer District 2010 Water System Comprehensive Plan

<http://lwwsd.org/resources/2010-water-system-comprehensive-plan/>

Lake Whatcom Water & Sewer District 2007 Comprehensive Sewer Plan

<http://lwwsd.org/resources/2007-comprehensive-sewer-plan/>



Program Area: 11. Administration

Goal:

Administer and coordinate ICT and committee activities to support Management Plan implementation.

Program Area Description: This program area aims to effectively administer and coordinate the Interjurisdictional Coordinating Team (ICT) and Program Area Committee activities to support the successful implementation of the Lake Whatcom Management Plan.

Summary of Program Area Activities 2010-2014:

- The ICT met on a regular basis to identify task implementation issues, discuss program updates, and prepare topics for meetings of the Lake Whatcom Joint Policy Group.
- Lake Whatcom Joint Policy Group meetings were held monthly. Topics included: the Homeowner Incentive Program and retrofitting properties in the watershed, updates on the aquatic invasive species prevention program, TMDL approval process, education and outreach efforts and strategies, Whatcom County Lake Whatcom overlay stormwater regulations, Lake Whatcom budget/work plan priorities, stormwater projects, Build-Out Analysis Report updates; and discussion of role of Policy Group, its operating principles, and possible changes needed to make group more effective in addressing budget and policy issues.
- The City and County Councils and the LWWSD Commission met together annually to discuss program accomplishments from the previous year and program goals for the following year.
- Reports that were valuable to management efforts between 2010-2014 include:
 - Lake Whatcom Annual Water Quality Monitoring Reports
 - Aquatic Invasive Species Program Action Plan and Annual Reports
 - Brown and Caldwell - Lake Whatcom Tributary Monitoring Phase 2 Report
 - Cost-Benefit Study of Phosphorus-Reducing Activities in the Lake Whatcom Watershed
 - Filter-Clogging Algae Mitigation Evaluation Report
 - Lake Whatcom Watershed Annual Build-Out Analysis Reports
 - Lake Whatcom Watershed Total Phosphorus and Bacteria Total Maximum Daily Loads: Volume 2. Water Quality Improvement Report and Implementation Strategy.
 - Lake Whatcom Watershed Total Phosphorus and Bacteria Total Maximum Daily Loads: Volume 1. Water Quality Study Findings.

Reference Documents:

1992 Lake Whatcom Joint Resolution

<http://www.lakewhatcom.whatcomcounty.org/1992JointResolution.pdf>

Lake Whatcom Management Program Work Plans and Progress Reports

<http://www.lakewhatcom.whatcomcounty.org/resources>

Lake Whatcom Meetings and Agendas

<http://www.lakewhatcom.whatcomcounty.org/news>

Lake Whatcom Management Program Contacts

<http://www.lakewhatcom.whatcomcounty.org/contacts>

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Program Area: 12. Enforcement

Goal:

Improve City and County enforcement of regulations aimed at protecting lake water quality.

Program Area Description: This program area aims to support enforcement of land use, development and other associated regulations to protect the water quality of Lake Whatcom. An enforcement team was convened by the Interjurisdictional Coordinating Team (ICT) in 2008 to improve enforcement actions in the watershed.

Performance Measures 2010-2014:

- **Number of enforcement activities in Lake Whatcom watershed in 2014:**
 - City: (Conducted daily during construction season and twice weekly during seasonal closure)
 - Conducted a total of 7,336 site inspections in watershed
 - Number of permitted watershed sites: 103
 - Number of stop work orders issued for permitted sites: 2
 - Conducted a total of 614 site inspections on unpermitted sites in watershed
 - Number of unpermitted watershed sites: 9
 - Number of stop work orders issued for unpermitted sites: 7
 - Number of correction notices issued in watershed: 43
 - County: (Conducted at least twice weekly during seasonal closure)
 - Conducted a total of 13,684 site inspections in watershed
 - Total number of enforcement cases: 107
 - Number of correction notices issued: 105
 - Number of stop work orders issued: 2

Summary of Program Area Activities 2010-2014:

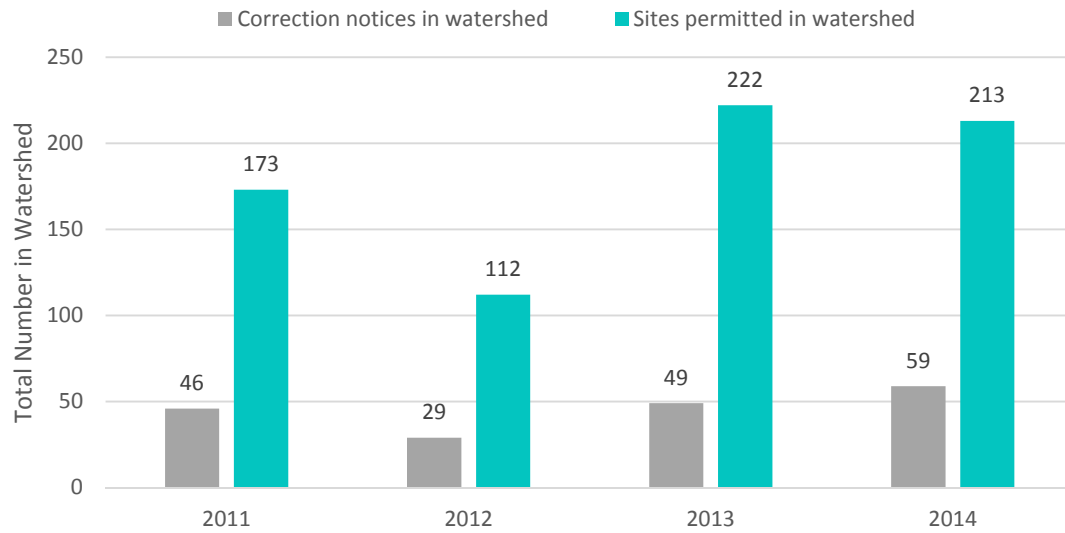
- The City of Bellingham continues to prioritize inspections and enforcement in the Lake Whatcom watershed. Daily inspections of the watershed are conducted between June and October when construction is authorized. Twice weekly inspections are conducted during the closed period to assure compliance with seasonal requirements.
- The County conducts regular weekly monitoring during the construction season and bi-weekly monitoring during the seasonal closure to assure compliance with seasonal requirements.
- Sudden Valley implemented enforcement-related revisions adopted in 2010 as well as enforced the many other provisions contained in the Architectural Control Committee Guidelines.

Reference Documents:

Bellingham Municipal Code (BMC) 16.80 (Lake Whatcom Reservoir Regulatory Chapter), 15.42 (Stormwater Regulations), 16.55 (Critical Areas Ordinance), Title 22 (Shoreline Master Program)

Whatcom County Code (WCC) 20.51 (Lake Whatcom Watershed Overlay District & Stormwater Regulations), 16.16 (Critical Areas Ordinance), Title 23 (Shoreline Management Program)

Annual Total Number of Correction Notices Compared to Total
Number of Sites Permitted in the Lake Whatcom Watershed
2011-2014



Program Area: 13. Aquatic Invasive Species

Goal:

Prevent new aquatic invasive species introductions to Lake Whatcom and other area waterbodies and minimize impacts associated with established aquatic invasive species.

Program Area Description: This program area aims to prevent and minimize the impacts of aquatic invasive species infestations on municipal and private water supply infrastructure, water quality, recreational opportunities, and on the existing aquatic ecosystem. The Aquatic Invasive Species Program includes strategies for preventing the introduction of aquatic invasive species, such as zebra and quagga mussels, and for stopping the spread of established aquatic invasive species to new waters. These strategies include education and outreach, inspecting and decontaminating watercraft and recreational equipment, monitoring Lake Whatcom and other area lakes to detect the presence/absence of new aquatic invasive species, and the adoption of more stringent regulations and enforcement.

Performance Measures 2010-2014:

- **Number of watercraft inspections conducted:**
 - Nearly 13,000 watercraft inspections conducted since July, 2012
 - 7,859 watercraft inspections conducted between 4/1/2014 and 9/29/2014
 - 5,058 inspections conducted at Bloedel Donovan AIS Check Station
 - 1,579 inspections conducted at private residences on Lake Whatcom and Lake Samish
 - 171 inspections conducted at Sudden Valley Marina
 - 819 inspections conducted at the WDFW Lake Samish boat launch
 - 7 inspections conducted at Nevada Street
 - 225 inspections conducted at the WDFW Lake Whatcom launch at South Bay
- **Number of watercraft requiring further action before being allowed to launch:**
 - 203 boats found to be transporting vegetation that had to be removed (120 in 2014)
 - 190 boats with standing water on board that had to be drained or towel dried (145 in 2014)
 - 6 boats found to be transporting other organisms: saltwater mussels, bryozoans, snails (2 in 2014)
 - 5 watercraft decontaminated using high-pressure, hot-water mobile decontamination unit
 - 1 boat found to be transporting dead quagga mussels was intercepted at the Bloedel Donovan AIS Check Station in June, 2014
- **Aquatic Invasive Species Monitoring Program results:**
 - Asian clam infestations confirmed in Lake Whatcom, Whatcom Creek, and Lake Padden in 2011 (Estimated area infested based on shoreline surveys: ~ 8 acres)
 - 10 Whatcom County lakes surveyed by the Whatcom County Noxious Weed Board for the presence/absence of aquatic invasive species in 2012 and 2013
 - 3 new non-native plant species discovered in Cain Lake in 2013
 - 100 acres of Eurasian watermilfoil discovered in Lake Terrell in 2013
 - No new invasive species discovered in Lake Whatcom or Lake Samish
 - No evidence of zebra or quagga mussels found on artificial substrates in Lake Whatcom or Lake Samish

Summary of Program Area Activities 2010-2014:

- Released the Aquatic Invasive Species Action Plan for Lake Whatcom Reservoir in September, 2011.
- Launched Aquatic Invasive Species Prevention Program at Bloedel Donovan in 2012. Interacted with 1,794 watercraft owners/operators through boater surveys, visual inspections and education/outreach at Aquatic Invasive Species Check Station between 7/14/2012 and 9/30/2012.

- Launched mandatory Watercraft Inspection Program for motorized/trailer watercraft at Bloedel Donovan on 4/27/2013. Aquatic invasive species inspectors conducted a total of 3,192 watercraft inspections.
- Completed third season of Watercraft Inspection Program on 9/30/2014, which required all watercraft, including non-motorized, to be inspected and permitted prior to launching or operating on Lake Whatcom or Lake Samish. Aquatic Invasive Species Check Stations were located at Bloedel Donovan, the Washington Department of Fish and Wildlife (WDFW) launch at South Bay, and the WDFW launch at Lake Samish. Additional inspections were conducted at private residences as well as at the Sudden Valley Marina. Aquatic invasive species inspectors conducted a total of 7,859 watercraft inspections.
 - 10 boats had last been launched in lakes with established zebra or quagga mussel populations and 43 watercraft operators reported having taken their watercraft to a waterbody infested with zebra or quagga mussels in the past.
- Continued to monitor the spread of aquatic invasive species as well as any new prevention and management efforts being implemented at the local, regional, and national levels.
- Continued to communicate with local, state, and regional aquatic invasive species personnel to share information and gather resources to aid in the prevention and management of aquatic invasive species in Lake Whatcom.

Reference Documents:

Lake Whatcom Aquatic Invasive Species Program Annual Reports and Documents

<http://www.lakewhatcom.whatcomcounty.org/resources>

Aquatic Invasive Species Action Plan for Lake Whatcom Reservoir

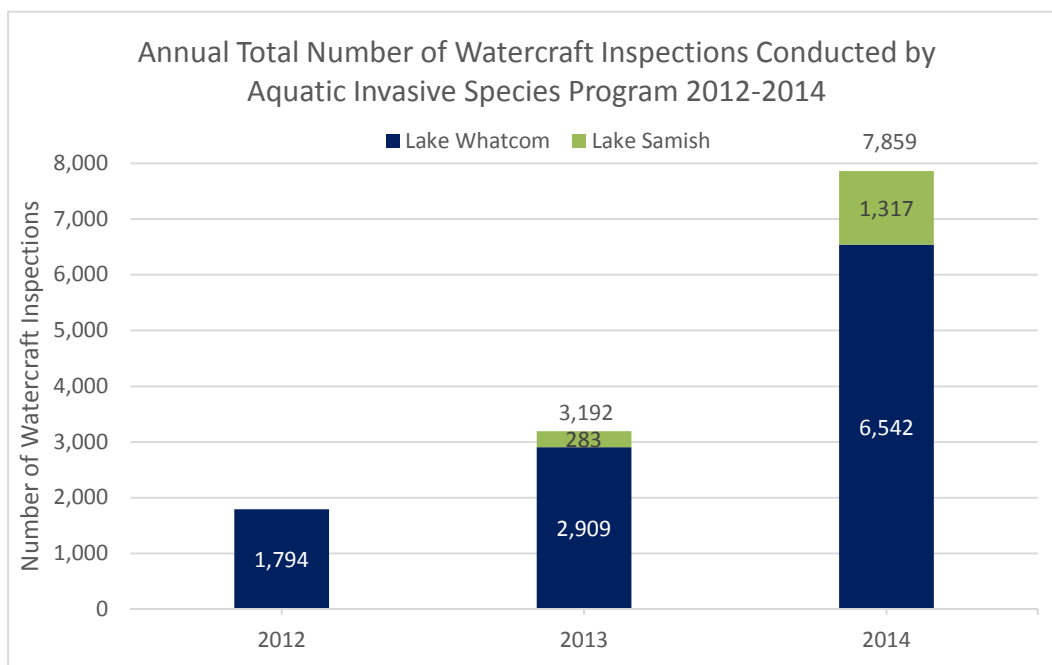
<http://www.lakewhatcom.whatcomcounty.org/resources>

Lake Whatcom Aquatic Invasive Species Incident Report: Asian clams

<http://www.cob.org/documents/pw/lw/lake-whatcom-incident-report-9-30-2011.pdf>

Whatcom Boat Inspections website

www.whatcomboatinspections.com



Cost Estimates 2010-2014

Program Area	Staff Costs	Capital Costs	Other Costs*	Total
Land Preservation	\$900,000	\$9.023 million	\$331,000	\$10.25 million
Stormwater Management	\$2.4 million	\$4.63 million	\$765,000	\$7.8 million
Urbanization & Land Development	\$374,000			\$374,000
Community Outreach	\$748,000	\$1,000	\$376,981	\$1.13 million
Data Management & Information	\$26,000		\$2.08 million	\$2.1 million
Spill Response & Hazardous Materials	\$0			\$0
Forestry/Fish/Wildlife	\$35,000			\$35,000
Transportation	\$0			\$0
Recreation	\$2,000			\$2,000
Utilities & Waste Management	\$467,000	\$2.86 million	\$1.03 million	\$4.4 million
Administration	\$380,000			\$380,000
Enforcement	\$520,000			\$520,000
Aquatic Invasive Species	\$706,000	\$30,000	\$143,276	\$879,276

*Other Costs include supplies, materials, equipment, consultant fees, and procedural costs.

Total: \$27.9 million

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