

City of Bothell

Public Education and Outreach Program

Summary Report 2016



JanetG
12/21/2016

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Introduction

Most polluted stormwater runoff is caused by the everyday actions of people that live, work, travel through, or visit our area. While difficult, changing peoples' daily habits is more effective than attempting to clean up these pollutants after they've reached our streams.



Photo: children learning about how water flows through a watershed

Goal

The goal of the education and outreach program is to reduce or eliminate behaviors and practices that cause or contribute to polluted stormwater runoff.

Overview

Social marketing, using marketing to change behaviors for the good of the individual and community, has been used for over forty years in the realms of social services, public safety, and disease prevention (think of campaigns such as *Click it or Ticket*, *This is your Brain on Drugs*, or *Five a Day*). Social marketing combines standard marketing with social science and other practices to help determine the best way to motivate someone to change a

regular habit. The City of Bothell has chosen to use various social marketing strategies to change individual behaviors that pollute our local waterways.

The amount of people you reach and the amount of times you reach them also play a key role in establishing and maintaining the change in individual behaviors. In the City of Bothell, broad outreach strategies began in 2008 to provide understanding and education concerning several different water pollution issues. The goal was to give our residents, businesses, and the general public a clear view of the water pollution issues facing our community and establish a level of basic understanding concerning polluted stormwater runoff, pollution control, the flow of water, and the water cycle.



Photo: Parr Creek planting event for Martin Luther King Jr day of service

For 2016, broad education was provided to local target audiences through a variety of outreach media. These types of outreach included:

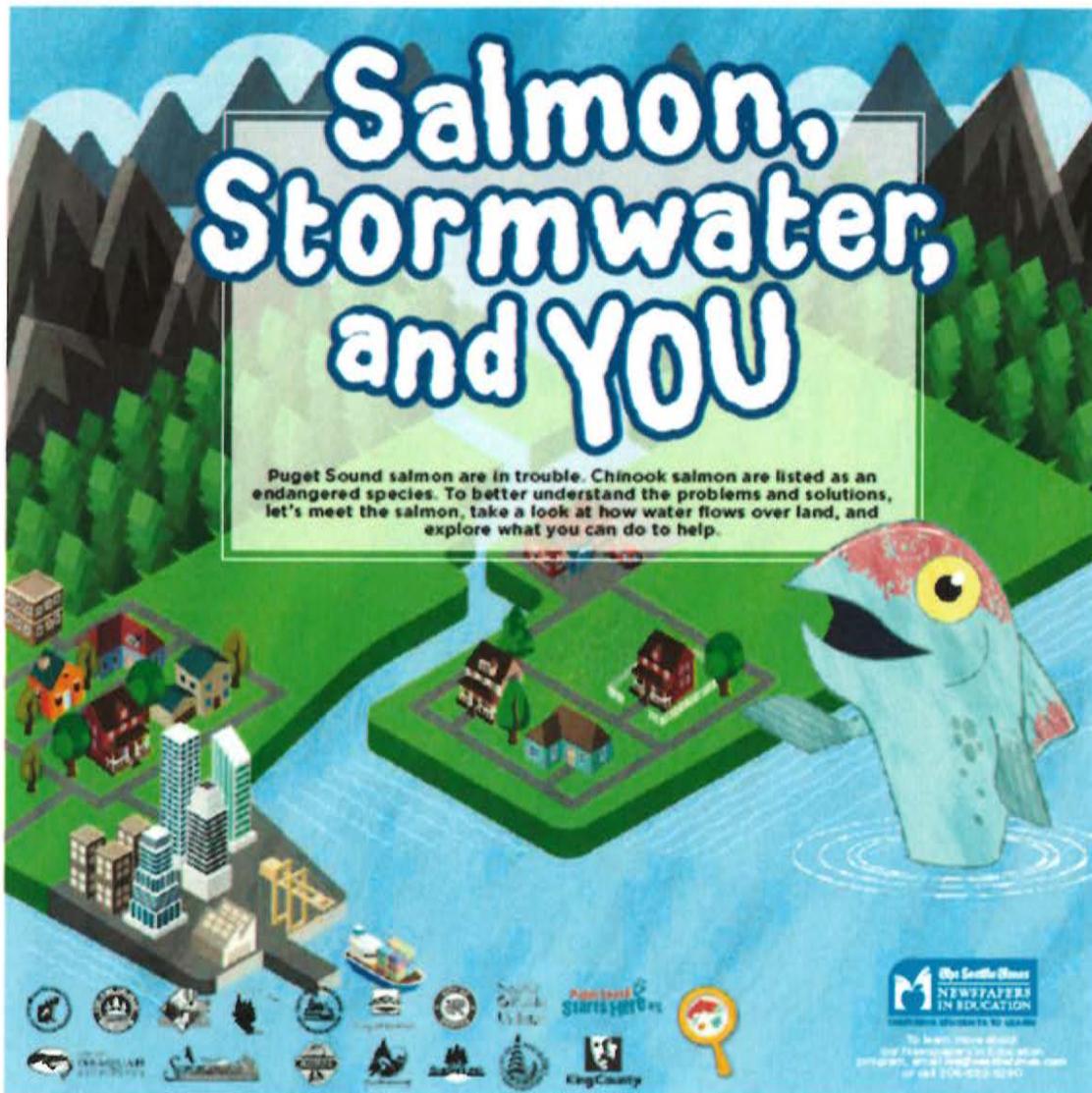
- Bothell Cable News (BCTV)
- Bothell Bridge
- City P.R.I.D.E. Post
- Newspaper inserts in Bothell Reporter, Seattle Times, etc.

- Press releases
- City website
- Regular posts on City social media sites (Facebook and Twitter)
- Water education presentations
- Workshops
- City-sponsored and private events
- Volunteer events
- Community newsletters
- Utility vehicle signs
- Bus ads
- Banners and stationary signs
- Online web ads
- You-tube videos
- Earned media interviews and articles

The City of Bothell will continue to utilize these outreach media sources in 2017 to ensure our messaging is received repeatedly through a variety of means.

Examples of print media outreach are provided in Appendix A.

Broad regional awareness messaging was conducted in 2016 in accordance with the Stormwater Outreach for Regional Municipalities (STORM) coalition and the Puget Sound Starts Here (PSSH) campaign found at www.pugetsoundstartshere.org. This allowed the City to align messaging with over 90+ surrounding county and city governments, 100+ businesses, 400+ non-profits, and provide better outreach through a combined and consistent regional message. The City of Bothell also co-chaired the STORM coalition to ensure limited funding resources were utilized effectively and topics were applicable for smaller jurisdictions. Sub-regional outreach was conducted through the Stormwater Outreach Group (known as the SOGgies) which consists of the cities of Bothell, Kirkland, Redmond, Shoreline, Bellevue, Sammamish, Kenmore, Issaquah, Lake Forest Park, Clyde Hill, Newcastle, and Seattle. These cities chose to pool funding for sub-regional messaging efforts and evaluation to reduce production costs and leverage larger jurisdictional resources.



Examples of sub-regional bus boards, newspaper inserts, and regional outreach we conducted are provided in Appendix B.

The City will continue to be an active participant in STORM and SOGgies in 2017 and will co-chair the STORM coalition as able to provide essential input and direction on future outreach efforts. The City will also continue to promote the PSSH campaign to raise awareness of individual impacts to Puget Sound and further regional messaging.

Targeted Outreach Programs

Natural Yard Care

Target audience: *Bothell residents located within Snohomish County with a parcel size under an acre (2015)*

Goal for success: *To reduce and potentially eliminate the use of chemical fertilizers and pesticides on residential lawns and gardens and provide information on protective yard care techniques.*



Photo: natural yard care workshop

The City chose to partner with Snohomish County and sixteen other cities for 2014-2015 to implement and evaluate the County's slightly different behavior change workshop model against the technical assistance program model in Thurston County and the King County neighborhood workshop model we've been using since 2010. The Snohomish County program was offered to randomly selected landowners with lots under an acre in size within the Snohomish County portion of Bothell. All homeowners were entered into a database and 1,000 homes were randomly selected to participate. These homeowners received two mailers inviting them to participate in a series of

workshops. Basic differences in the Snohomish program from the King County program include:

- Mailer solicitation was conducted at random instead of by geographic neighborhood location
- A much larger target group was selected
- Zero door-to-door canvassing took place
- There were only three touch points instead of seven
- Different mailers were used with slightly different graphics
- The workshops took place in a central church location outside of Bothell instead of a community center within City limits
- Online registration was changed
- Information packets were not given out
- No refreshments were provided
- Master gardeners were used to answer questions
- Different speakers were utilized for a few of the talks
- The consulting firm was different

Evaluation between the various models found that a hybrid of workshops and demonstrations should generate the highest rate of behavior change. Regional participants will meet in 2017 to determine the best way for all of us to utilize the information and develop the most effective program for our respective jurisdictions.

Final report for the Natural Yard Care program evaluation is available here:
www.bothellwa.gov/stormdocs

Pet Waste

Target audience: Bothell residents that own a dog

Goal for success: To reduce the amount of pet waste left on public and private property.

Within Bothell, the North and Swamp Creek watersheds have been listed on the 303 (d) list of impaired water bodies for fecal coliform bacteria and dissolved oxygen by the Department of Ecology (Ecology) since 1996. For this reason, Bothell has conducted a more robust program to reduce and eliminate known non-point sources of fecal coliform such as pet waste, failing septic, sewage, and bird feeding.

For pet waste, past surveys (most recent in 2012) have shown that picking up pet waste has been established as a social norm among

Bothell residents, so we were able to adapt our efforts to maintain this awareness and move to enforcement. In 2011, we established a pet waste ordinance that made leaving pet waste on public and private property a punishable offense (see BMC 6.16.011 and 8.06.240).

In 2015, we worked with our animal control officer to conduct targeted education and outreach concerning the right to enforce in problem parks, neighborhoods, and public spaces.

In 2016, we continued outreach efforts, met with Parks staff to ensure the pet waste park stations were available in every park, and began working with our Capital Improvement staff to try and increase pet waste stations and trash receptacles in our downtown area.

In 2017, because outreach is a continuum and needs to be revisited in order to maintain established behaviors, we will continue to promote the appropriate best management practice among our resident target audience. We will also work with staff to determine the best way to encourage dog owners to scoop the poop, bag it, and place it in the trash on public and private property.



Photo: pet owner showing the proper BMP

Examples of pet waste and bird feeding materials as well as the adopted ordinance are provided in Appendix C.

Youth Stormwater Education

Target audience: *All Bothell K-12 grade children attending public school.*

Goal for success: *To educate our Bothell students concerning their individual impacts on their local water, direct storm drain connections*

to local waterways, and basic knowledge concerning polluted stormwater runoff and the water cycle.

The City of Bothell began contracting in 2009 with the non-profit organization, Nature Vision, Inc., to administer water education courses to all service area schools. These classes are tailored to provide water education courses that meet teachers' Essential Academic Learning Requirements (EALR). Teachers are solicited electronically using a water education flyer (shown in Appendix F), and several classrooms sign up for programs averaging 2,000+ Bothell students per year. In order to be sure the stormwater messages are reaching the parents, a stormwater flyer and return postcard with stormwater education activities are given to all students and teachers (in both hard copy and electronic formats) providing an opportunity for parents to work with their children to understand and quantify their individual stormwater impacts.

A three tiered evaluation strategy is conducted each year to determine student retention of information, understanding, and teacher satisfaction over time.

The City also partnered in the regional Sammamish Watershed Festival which provides an all-day field trip event for over 800 4th grade students during the second week of March. The City worked within the steering committee to help administer a successful event at the Brightwater Education Center in Woodinville and help generate enthusiasm for water quality related topics. The committee decided not to continue the Festival stating that the cost per child ratio was simply too great. It would be better and more cost effective to offer field trips to schools rather than attempt to get multiple schools together (testing schedules inhibit regional participation).

In 2014-2015, the City also worked with the Puget Sound Partnership (PSP) and the Pacific Education Institute (PEI) to create new stormwater classroom curriculum that meets the new common core and next generation education standards and helps students prepare for the new testing requirements. This way, stormwater education can be incorporated into the general education requirements ensuring more students receive stormwater messaging at a more in-depth level.

In 2016-2017, the City is working with PEI, IslandWood, and King County to administer a regional Ecology grant allowing us to pilot the

new curriculum in the classroom, develop additional learning tools for the various modules, offer additional teacher training, and develop a similar curriculum tailored to Eastern Washington.



Photo: youth at Watershed Festival learning about wetlands as filters

Examples of youth education outreach are provided in Appendix D.

Dumpster Maintenance Assessment

Target audience: The target audience for this project is small quantity hazardous waste businesses which utilize products that can contribute to stormwater pollution (restaurants, auto repair, multi-family, etc.) within Bothell city limits.

Goals for success: To determine whether three business related dumpster maintenance practices are potentially contributing to storm water pollution in Bothell.

Improper dumpster maintenance at local businesses can contribute to stormwater pollution which impacts local streams. This assessment will serve as a tool to help determine the water quality benefit of a city-wide business dumpster maintenance program.

Objectives for this project include:

- Determine whether BMP #1-dumpster lid is closed after each use, is already being practiced with a majority of the target audience

- Determine whether BMP #2-dumpsters found leaking are repaired or replaced, is occurring between business owners/operators and the garbage hauling company
- Determine whether BMP #3-area around dumpster is clear of debris and staining, is being practiced with a majority of the target audience

Outreach Materials

Three outreach materials are also being evaluated to learn whether information is being received and passed along to other staff/employees:

- BMP #1 - a sticker depicting the BMP for placement on the dumpster by the business
- BMP #2 - a card with the hauler contact information distributed to all target businesses
- BMP #3 - notification to business or property management.

Site Visits

95 commercial dumpster customers received the outreach and materials over a one year period. Only commercial customers with dumpsters were tabulated (no small containers or trash compactors included). Site visits were scheduled in accordance with procedures established through the LSC program. Once site visits were set, the LSC Specialist conducted a pre-inspection and recorded current dumpster practices and the state of the dumpster. They then conducted their regular inspection and provided the described outreach materials along with verbally describing the desired BMP's. Any issues with a damaged or leaking dumpster were reported to the Special Projects Administrator and garbage hauler with a notice to correct per our contract.

The Surface Water Program Coordinator and Local Source Control Specialist followed up 15-30 days after each inspection and recorded whether the dumpster lid was closed, the sticker was placed, and if necessary, whether the dumpster was replaced.

Control

The control was 100 randomly selected from the 335 commercial customers after removing those eligible for the LSC program Bothell that

utilize dumpsters. The same initial observations of the three BMP's were tabulated but contact with the business was not made.

Findings for 2016

Evaluation findings for 2016 are provided below in reference to the categories above:

1) 102 control site inspections were conducted in and the BMP findings were as follows:

- BMP #1- 25% found with their lid open
- BMP #2- 2% found to be leaking or damaged
- BMP #3- 10% found with garbage outside the dumpster

95 experimental site visits with subsequent follow-up were conducted in June-November and the BMP findings were as follows:

- BMP #1- 15% found with lid open during pre-inspection and 13% were found during follow-up inspection
- BMP #2- 1% found with leaking or broken dumpster during pre-inspection and 1% were found during follow-up inspection
- BMP #3- 6% found with garbage around dumpster area during pre-inspection and 5% were found during follow-up inspection
- Stickers were placed on 45% of the dumpsters during the follow-up inspection

2) Review of our waste hauler contract has found no placement, containment, or drainage requirements. It does, however, contain requirements for keeping containers in good repair with no leaks and has provisions to contain, clean, and report any known spills to our stormwater drainage system to the City spill hotline.

Review of our City code has found that a disposal provider is required. All container locations are required to be screened from view, stored onsite, and all containers shall be closed. An interview with our Lead Stormwater Drainage Review Engineer found they are not willing to place any language requiring new and redevelopment to cover their dumpster enclosures and have them drain to sewer.

3) A work group with 55 participants from 35 organizations was formed to share knowledge, resources, materials, and findings. The group consisted of stormwater, solid waste, local source control, department of health, and FOG (fats, oils, and grease) professionals to determine the best way to address concerns without adding additional regulations for businesses.

Recommendations

After reviewing the assessment results, we feel the dumpster maintenance should be a lower priority on our BMP tier because many businesses have already adopted the appropriate BMP's to reduce and eliminate stormwater pollution in Bothell. Because technical assistance didn't seem to result in higher adoption rates, any attempt to improve behaviors should separate the groups into active vs. inactive to determine barriers and benefits.



Photo: Commercial dumpster showing all improper BMP's

Dumpster maintenance final report is available in Appendix E.

Environmental Stewardship Opportunities

Target audience: Interested volunteers and residents interested in learning more about stream ecology and maintaining streambanks to improve habitat function.

Goal for success: To engage residents in taking care of our local streams and increase the amount of riparian structure, input, and shading along **Bothell rivers, creeks, streams, lakes, and wetlands.**



Photo: planting and invasive removal event along the Sammamish

The City partnered with KCD from 2012-2016 to conduct a riparian enhancement project with a Rose Foundation grant. The project allows students, teachers, businesses, and the general public to learn about stream planting and participate in planting native trees and shrubs around Parr Creek in the North Creek Business Park. Projects will continue to be developed and maintained with volunteers through 2017.

In 2016, WRIA 8 stopped funding the Salmon Watcher program. Several long standing volunteers from various cities including Bothell complained to staff and requested that the program continue without regional funding. Bellevue and Bothell took over management of the program, hosted trainings, and worked with volunteers to continue the program efforts. We will continue this viable program in 2017 provided that Bellevue continues to participate.

Photos of stewardship activities are available in Appendix F.

Hazardous Materials Use, Storage, and Disposal

Target Audience: All Bothell residents that utilize hazardous products.

Goal for success: To increase the awareness of household hazardous materials, provide awareness of proper BMP's for use, handling and storage, increase the use of proper disposal sites, and reduce the amount of hazardous materials being used by our residents wherever possible.

The City has been participating in hazardous waste outreach for a number of years through funding from the Local Hazardous Waste Management Program (LHWMP). Bothell has offered several collection events as well as provided outreach at every Bothell festival to encourage proper use, storage, and disposal of hazardous household chemicals and materials. In 2011-2016, vouchers were given to Bothell residents to drop off hazardous materials at the Shoreline Transfer Station free of charge. A store was established by our garbage and recycling hauler so residents and businesses can drop off hazardous materials for collection and purchase items to assist them with proper handling, storage, and disposal. Curbside collection was also established to further encourage proper recycling and disposal. One event mailer, several flyers, and two articles were sent to all residents to provide reminders and the following education and information:

- Articles detailing Wastemobile dates, curbside recycling, and proper hazardous waste use, handling, and disposal information were printed in the Bothell Bridge, BothellCool Newsletter, and Bothell Reporter.
- A recycling event mailer was sent to all Bothell residences offering information on every program available such as the Wastemobile dates, the Take it Back program, recycling events, Waste watchers, Shoreline Transfer Station, the Recology store, curbside collection, City facilities that will accept certain waste, as well as information on use, handling, and storage of all household hazardous chemicals.
- A bill insert was provided to all Waste Management (contracted hauler within areas annexed from King County in 2012) customers detailing disposal dates, curbside collection, and our spill response hotline number.
- Flyers were given to the local Senior Center to provide information and solicit participation for the Wastemobile disposal dates among seniors.
- Videos were broadcast showing how easy it is to utilize the wastemobile.
- Regular social media posts provided tips and tricks for better use, reuse, handling, and disposal of hazardous materials.

All mailers sent people to our website for more information and offered LHWMP as an additional resource.

More education on use, handling, and storage will continue in 2017 through continued mailers, articles, collections, vouchers, and educational workshops through grant funding. Additional assistance with disposal will take place through free disposal opportunities with the wastemobile, curbside collection, and drop off options at the new Recology facility in Bothell.

Business outreach was also conducted in 2016 by our Local Source Control Specialist, focusing on companies that generate small quantities of hazardous waste while working and conducting business within Bothell. Technical assistance and training has been and will continue to be offered on-site to ensure proper application, handling, safety, and disposal of hazardous products in 2017.

Examples of outreach materials for 2016 are provided in Appendix G.

Mobile Business Generated Pollution

Target audience: Mobile cleaning companies that service the Bothell area including the North Creek and Canyon Creek Business Parks.

Goal for success: To reduce the amount of pollutants from mobile business chemical and wastewater use, handling, and improper disposal which discharge to Bothell's MS4.

2012-2015

Snohomish County determined that mobile businesses are not motivated to do the right thing regarding proper handling and disposal BMP's, so we reached out to educate those hiring for services and reinforce the need for property managers to hire reputable contractors that utilize proper BMP's in order to avoid fines for illegal discharges.

Our Local Source Control Specialist (LSCS) also made an effort to contact mobile businesses completing work within the City to provide technical assistance and inform them of the rules and regulations for proper disposal of their waste.

2016

Kitsap County, on behalf of the regional STORM group, obtained a grant from Ecology to develop a regional model to assist mobile businesses in adopting appropriate BMP's, but gave the funding back due to irreconcilable differences with Ecology financing staff.

2017

We are still trying to work regionally to solve this issue as the businesses travel between jurisdictions on a daily basis. The approach needs to be regional in order for it to be successful.

Illicit Discharge Identification, Education, and Reporting

Target audience: Bothell businesses most likely to have a spill occurrence (restaurants, landscaping companies, auto repair and maintenance) and the general public.

Goal for success: To reduce the amount of pollutants entering our stormwater system from spills and illicit discharges.

This program is currently being administered through the use of our LSCS hired through an Ecology grant. This position is designed to encourage the use of proper BMP's to reduce the amount of improperly disposed materials by small quantity hazardous material generators through direct outreach and technical assistance.

We are also educating staff and the general public through outreach media, trainings, incentive items with the spill hotline number (key chains, magnets, window clings, etc.) and will continue to get the spill number out through new and existing channels.

This program will continue through June 2017 and will be evaluated for success after that time.



Photos: Site visits at local businesses discussing desired BMP's

Examples of outreach materials are provided in Appendix H.

Vehicle Leaks

Target audience: The general public who live near or drive through Bothell

Goals for success: Reduce the amount of oil and mechanical fluids released on Bothell roads due to vehicle leaks, and provide education for what to do if a spill occurs.

This program was run through a regional effort by the STORM group known as the Don't Drip and Drive Campaign. An event was conducted in Bothell through the Snohomish County Washington State Extension

and paid for with a small STORM grant. Efforts in 2017 will be tailored after the regional Phase III effort.



Photo: maintenance inspection photo from vehicle leaks program

Examples of vehicle leaks outreach is provided in Appendix I.

Low Impact Development (LID)

Target audience: *City staff, developers, and the general public.*

Goal for success: *To increase the awareness, understanding and acceptance of LID techniques among key staff and the general public.*

Low impact development (LID) techniques involve educating several different groups including City staff and elected officials. The techniques add an element of complication due to lack of consistent language, individual site conditions, maintenance concerns, and the fact that each technique requires extensive education and expertise to ensure the success of design, installation, and maintenance. Further complications occur because most techniques require the use of a professional contracting company or consulting group for design review, site review, and proper installation.

We have several booklets available for the public from Washington State University (WSU) Extension that provide great information on all aspects of building a rain garden, including: detail design, placement, size, planting zones, and a list of native plants to suit each type of yard constraints.

In 2011-2013, we offered workshops on LID techniques in the fall and spring at the location of our demonstration rain garden (Bothell public library) so the public could view a working garden, begin to understand how they function, and gather information for their own property needs.

We also completed a guide to walk Bothell residents through each approved LID technique and provide resource materials for them to complete each of the techniques on their own property.

For 2014, we utilized a grant from Ecology to create a demonstration neighborhood within the Queensborough watershed in an effort to reduce localized flooding and stream bank erosion and educate residents on these practices. Unfortunately, all designs proved to be infeasible due to high groundwater tables, liability concerns, and site constraints.

For 2015, we worked with Stewardship Partners to review and purchase a maintenance manual for new home owners with facilities on their property.

For 2016, we hired a consultant to help us review all city development codes and determine which principles and techniques we can incorporate into our codes and design standards. We worked internally to prepare and include staff in the review process and externally to understand the wants and needs of the community and engage them in a dialog before final adoption of the code revisions and design changes took place.

For 2017, we plan to complete a literature review and conduct research regionally to determine a common suite of terms and definitions. Then, work to create materials that are relevant for a variety of audiences and encourage adoption of the desired behaviors.

Examples of rain garden maintenance manuals provided in Appendix J.

Conclusion

The City currently has an active education and outreach program designed to reduce and eliminate behaviors and practices that cause or contribute to adverse stormwater impacts. We also encourage the public to participate in stewardship activities both locally and regionally. Staff are tracking outreach efforts and maintaining records of current public education and outreach activities and budgets in accordance with State requirements.

Appendix A

RECREATION - TEEN & ADULT

FOOD FROM THE WILD OUTDOORS

Sign up for one or both of these classes and get ready to learn about fun Northwest food topics. Roger Urbaniak is an outdoor writer and has spent many years in Washington gathering wild edible food ranging from shellfish to wild asparagus.

Saltwater Shellfish Gathering Techniques (Ages 18 & up)

Learn how and when to safely harvest clams, oysters, and Dungeness crab as well as where you may find them. Roger will cover the basics including proper care of your harvest. You will be shown the proper use of tide tables, oyster knives, clam rakes, and crab pots, and a few recipes that will help you enjoy your catch. *Registrations must be received by Friday, March 11.*

T 3/15 6:30-8 p.m. Loc: Police Dept. Comm. Room #17888.....R \$15/ NR \$18

Gathering and Identifying Wild Foods (Ages 18 & up)

This class will discuss wild asparagus, morel and chanterelle mushrooms, wild blueberries, fruits and unusual foods such as cattails, nettles, licorice fern and chestnuts. Students will learn where and when to find these foods, how to properly identify them and recipes for cooking them. *Registrations must be received by Friday, April 15.*

Th 4/21 6:30-8 p.m. Loc: Police Dept. Comm. Room #17890.....R \$15/ NR \$18



CHOOSE NATIVE THIS YEAR Planting in your yard this SPRING?

Be sure to select plants that grow well in the Northwest and fit the sun, soil, and water conditions in your yard. Also, please take a moment to consider using **NATIVE PLANTS**. Native plants are naturally conditioned to our climate and once established they don't require the extra time and cost of fertilizers, pest control, and additional watering. They also provide food and shelter for our native wildlife.

Is your yard a little soggy? Native plants help reduce flooding, control erosion, and clean water by filtering out sediment and pollutants before they reach our local streams.

For a plant list and more great yard care tips, visit naturallyardcare.info



CLEAN OUT YOUR GARAGE

Spring is a great time to clean and organize your garage or storage shed. When cleaning, remember to consider proper handling and storage of hazardous chemicals like pesticides, fertilizers, cleaning supplies, and automotive chemicals. Here are some tips to help:

- Separate hazardous chemicals and materials from other products.
- Determine whether you need to keep them (please avoid stockpiling hazardous products).

IF SO,

- Be sure they are clearly labeled, in their original containers, and completely covered.
- Place them at least 4 feet off the floor and out of the reach of children or pets.
- If the container is empty, throw it in the trash (cans with lids off).

For more information on how to tell if a product is hazardous, see page 18.

IF NOT,

- **DON'T THROW THEM IN THE GARBAGE!**
- Determine whether they can be recycled curbside.
- See recologycleanscapes.com/bothell or wmnorthwest.com/bothell
- Take them to the Wastemobile.
- Take them to your county's drive-up household hazardous waste facility.
 - City of Bothell residents can visit www.hazwastehelp.org for more information.

Visit page 19 to learn about Wastemobile dates for 2016.



2016 RECYCLING VOUCHER JANUARY 1 – OCTOBER 31

VOUCHER MUST BE USED BY NOVEMBER 30, 2016

Location: Shoreline Recycling and Transfer Station
2300 N. 165th St, Shoreline

Who is eligible? City of Bothell Residential customers *(you must live in the City limits of Bothell to participate)*

FREE Vouchers have a \$22 value. Use to recycle large or hard to recycle items *(air conditioning units, washing machines, etc.)* Eligible items list available at bothellcool.org

How do you get your voucher? Visit The Recology Store – 22833 Bothell Everett Highway, Suite 111

For questions about the event, email recyclebothell@bothellwa.gov.

Exclusions and important information: *You can receive up to two vouchers per year, per household. The City has a limited number of vouchers to issue. You cannot use this voucher for garbage.*

COUNCIL CORNER

By Andy Rheume



New City Council wants to hear from you

It is an honor to be the new Mayor of Bothell. I'm proud of my hometown. Mayors from other cities frequently tell me how impressed they are with our ambition and tenacity in our effort to revitalize our City. We have more hard work to do, and the new Council knows that we need to finish what we've started in the heart of our City. At the same time, Council is very aware that we need to address other issues throughout our City.

As the new Council finds its footing and settles in I want to encourage you to talk to us. As the meeting chair I'm making changes to our meetings so that everyone feels welcome and safe to freely speak to us, and to ensure that you will receive a response from the City Council if you make a request.

With this last November 2015 election, the City Council has become the most ethnically diverse council in the history of Bothell. The current Council better reflects our community, which is diverse in age, cultures and ethnicity. The diversity of life experiences we now have on the Council will serve the community well.

The City Council also heard from the public, as reflected in the election results, that our community wants to see change from its elected leadership. As the City Council we need to carefully explore what that means to our community as a whole. What I think it means is that our community wants to feel heard, you want to know that your Council is here to serve you, that our actions are transparent, and that as a community we retain or improve our quality of life.

Your involvement and voice is critical as our City moves forward. This is your City and your City Council depends on hearing from you, in person or in writing, when making their decisions about what is best for Bothell.

Change is inevitable, but working together we will continue to shape Bothell's future in a way that respects our neighborhoods and families, welcomes businesses, protects our environment, and improves our quality of life.

The image shows two promotional banners for the "Puget Sound Starts Here" campaign. The left banner features a teal background with white text and a photograph of a garden. The right banner features a photograph of people holding blue fish-shaped signs at a stadium event.

Come Celebrate!
MAY IS PUGET SOUND STARTS HERE MONTH
Every year, millions of pounds of toxic chemicals are carried to Puget Sound in stormwater. The Puget Sound Starts Here campaign is working to raise awareness about polluted stormwater runoff and how you can help protect Puget Sound. To learn more about great events happening around the Puget Sound and what you can do to help, visit pugetsoundstartshere.org

I GROW.
You use less chemicals. Any questions?
USE COMPOST AS A NATURAL FERTILIZER

PUGET SOUND STARTS HERE NIGHT AT THE MARINERS
Join us - Saturday, May 14th against the Angels
DISCOUNTED TICKETS
\$12 for view level • \$27 for main level
All will receive a neat giveaway item.
To learn more and buy tickets, visit mariners.com/pugetsound

Clean Green this Spring!

This year, consider environmentally-minded alternatives instead of toxic chemical cleaners. If a product is labeled with the words "Danger," "Poison," "Warning," or "Caution," then the product contains ingredients that can be harmful if inhaled, swallowed, or handled without gloves. This spring, choose to clean green!

The Recology Store has everything you need to keep your home clean and toxin-free as you clean. Stop by The Recology Store, where you can learn how to make your own green cleaners from household items like baking soda and vinegar. While you're there, explore other eco-friendly cleaning products, such as microfiber cloths that will help you remove dirty bacteria with just water; no cleaning solutions needed!

Questions about The Recology Store? Visit recologycleanscapes.com/store or contact us at Bothell@recology.com or 425.453.0220.

JOIN

the City of Bothell
in celebrating

EARTH HOUR

March 19, 8-10 P.M.

Enjoy root beer floats,
snacks, glow in the dark
activities and more!

Bring household batteries
and CFL bulbs to recycle.

Bothell Operations Center
21233 20th Ave SE, Bothell
(behind Red Robin)

Get your tickets and more
details at bothellcool.org, check
out earthhour.org to learn more
about Earth Hour



City of Bothell™



Local Hazardous Waste
Management Program
in King County



curb the congestion
Community Transit

Glow in the Dark

BINGO!

& ROOT BEER

FREE Family Fun Event
Must Reserve Your Ticket
(Space is Limited)

Voters might see several future ballot measures to fund City needs

The City Council is considering ballot measures that voters could weigh in on this year or next. Three measures relate to funding; another is an advisory vote on fireworks.

Parks and Recreation

The Council will be evaluating options for a potential ballot measure to fund new park and open space amenities and their associated maintenance requirements. Voters might see this measure on ballots in 2016 or 2017.

Transportation Benefit District

The City of Bothell recently established a Transportation Benefit District to support needed street maintenance and improvements. The district was established to allow the Council some options to help fill transportation funding needs that include:

- Replace lost and one-time revenues
- Restore maintenance programs such as pavement and sidewalk repair
- Increase pavement preservation
- Increase sidewalk construction.

With a TBD, Council can enact a \$20 license fee.



Another option for Council is to ask voters for a higher license fee of up to \$100 per vehicle or additional sales and use tax up to 0.2%. In lieu of a TBD ballot measure, cities also have the option of asking voters for a property tax increase to fund these street and sidewalk needs.

A voted TBD or property tax measure supporting streets maintenance and improvements could be on a ballot in 2016 or 2017.

The City conducted a series of open houses this winter about the City's streets and sidewalks programs and funding options, and to get the public's input. So far the only consistent feedback is a desire for sidewalks, particularly in certain neighborhoods. There were a few suggestions about funding options.

Fireworks Advisory Measure

Council will ask voters whether fireworks should continue to be allowed in Bothell. This is an advisory vote only; Council would then determine whether to ban fireworks. This will be on the November 2016 ballot. Separately, the Council will consider an ordinance this spring which would provide them the authority to enact an emergency ban on fireworks due to adverse weather conditions. An emergency ban does not require voter approval.

Regional Fire Authority update

In February the Regional Fire Authority (RFA) Planning Committee determined not to move forward with an RFA. A study determined that an RFA would not provide current services for a lower cost or improve services for the same cost. The latest community survey shows that citizens value the City's Fire and E.M.S. Department. The department is committed to maintaining your trust through quality service.



Wastemobile

The Wastemobile travels to communities, including Bothell, to provide hazardous waste disposal services for residents and qualifying businesses. For a list of items to bring and Bothell event dates visit hazwastehelp.org

Location: Seattle Times Building - 19200 120th Ave NE, Bothell

Dates*: May 13 - 15, June 24 - 26, July 29 - 31,

September 16 - 18, October 21 - 23 *Dates/times may change

For more details call 206.296.4692 or visit hazwastehelp.org and click Wastemobile



Want to help put together a Bothell walking guide?

The City of Bothell Parks and Recreation Department will be working on the development of a community walking map/guide beginning this March. The Parks and Recreation Advisory Board placed high emphasis on developing this publication. City staff secured a grant from the National Park Service Rivers and Trails Program that will provide technical assistance. The goal of the program is to inform residents and visitors to Bothell of the walking opportunities in the area and to promote community wellness and physical fitness through walking. If you'd like to participate in the guide's development, contact John Keates at 425.806.6751 or john.keates@bothellwa.gov. Community outreach and meetings are planned for this spring. Check the City website for more details.



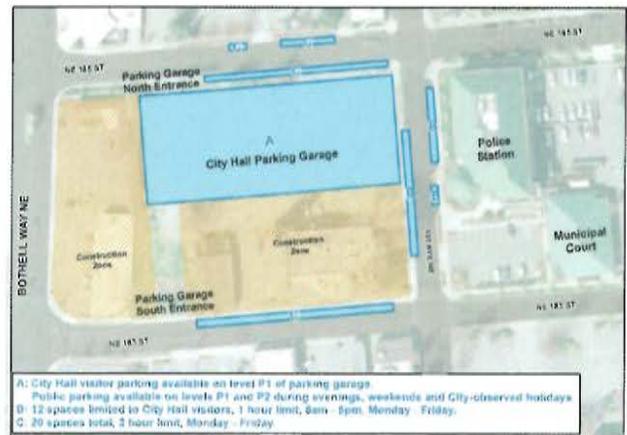
Change your clock, change your batteries

Daylight Saving Time starts again on March 13. Bothell Fire and E.M.S. reminds residents this is a good time to change the batteries in smoke alarms and carbon monoxide detectors.

Free parking available downtown

With the opening of the new City Hall, additional free public parking is now available to those visiting and shopping downtown.

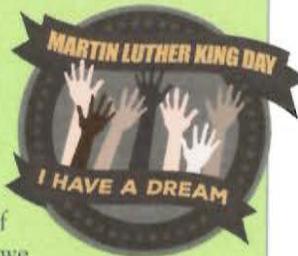
More than 40 free parking spaces are available to City Hall visitors during business hours, including on-street and garage stalls. The big benefit for downtown shoppers and others is new free parking available after 6 p.m. and on weekends, with more than 140 garage stalls plus on-street parking.



Bothell City Hall Visitor Parking Map

Thank You Bothell Volunteers!

Thank you to our wonderful volunteers for participating in our annual Martin Luther King Jr. Day of Service! With your kind assistance, we were able to plant 460 native trees and shrubs and help place mulch to protect them. We were also able to remove some invasive plants and add additional caging to protect new trees from our hungry North Creek beavers.



City Hall garage access

Garage doors open at 6:30 a.m. and close at midnight daily. Garage doors will allow for vehicles exiting the garage after hours. Vehicles access the garage from either 183rd or 185th streets.

Pedestrian access to the garage is via the elevator in the City Hall lobby 6:30 a.m. to midnight. After hours (5 p.m. - 8 a.m.), pedestrian access is also available from the northeast corner of the building, at the corner of NE 185th Street and 101st Avenue NE. For details, see bit.ly/1PccD1a



Each year, the City responds to more than 100 spills on our streets, driveways and parking lots. These spills enter our storm system, draining directly to the nearest lake, stream, or wetland.

Most of these spills are from vehicles and often contain pollutants like oil, grease, and other harmful chemicals. Help protect local streams by calling our spill hotline as soon as you see a spill: 425.806.6750

Remember, if you See Something, Say Something

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Registration for Recreation Classes begins June 1

CITY OF BOTHELL - Community Contacts

Bothell Historical Museum	425.486.1889	bothellhistoricalmuseum.org
Bothell Library	425.486.7811	kcls.org/bothell
Cottage Lake Swimming Pool	425.485.9797	seattlemca.org
Greater Bothell Chamber of Commerce	425.485.4353	bothellchamber.com
Kenmore Parks and Recreation	425.398.8900	cityofkenmore.com
King County Parks and Recreation	206.296.8687	kingcounty.gov/recreation/parks.aspx
Northshore School District	425.408.6000	nsd.org
Northshore Senior Center	425.487.2441	northshoreseniorcenter.org
Northshore YMCA	425.485.9797	seattlemca.org/page
Snohomish County Parks and Recreation	425.388.6600	snohomishcountywa.gov/1540/Parks-and-Recreation
Spill Hotline	425.806.6750	
Youth Sports - Please see listing on City's website		bothellwa.gov

Multiway Blvd. construction underway

Construction on Phase II of the Multiway Boulevard Project is now underway. The Boulevard will become a "showpiece street," which has already helped encourage economic revitalization in Bothell. The project is expected to last approximately 15 months, with completion in summer 2017.

It will complete the remainder of the Boulevard to Reder Way, realizing the City's goal of joining the new development on the west side of Bothell Way with the historic core on the east side.

What drivers can expect

Downtown drivers between State Route 522 and NE 188th Street, and on 183rd and 185th streets, can expect periodic lane closures and pedestrian route detours. Detours will be posted on the City website.

The estimated project cost is \$13.2 million. The City invested more than \$5.4 million of City funds and brought in over \$2 million of private money. A grant of up to \$6.75 million from the Washington State Transportation Improvement Board allowed construction to begin.



(L-R) Councilmember James McNeal, Deputy Mayor Davina Duerr, Councilmember Del Spivey, Alexa's Café and Catering owner Leigh Henderson, and Greg Armstrong of the Washington State Transportation Improvement Board at the groundbreaking on April 14.



228th St. Bothell-Everett Hwy. project complete

The contractor is scheduled to complete final paving and striping on the intersection improvement project by early June, weather-permitting. The project added capacity, providing some relief to drivers, who seem accustomed to the new lane configuration. A second left turn was added on the west leg of 228th, new signals, signage and lighting were installed, and the traffic islands were removed from three corners of the main intersection to enhance pedestrian safety.

Over the past few months, Snohomish County technicians have continued to fine-tune the signal operating cycles.



This summer, don't forget to scoop the poop

Pet waste left on yards and along roadways pollutes local streams and causes a potential human health risk. Dog waste, just like human waste, is raw sewage and contains harmful bacteria like E.coli that can make people and pets sick.

The great news is that it's easy to protect ourselves and our streams! Simply, SCOOP THE POOP, BAG IT, AND PLACE IT IN THE TRASH.

New protections for local streams

The City is updating its stormwater development-related codes and design standards to reduce flooding and the cost of increased infrastructure, as well as to provide better protection for local streams from pollution. These changes will require the use of Low Impact Development (LID) principles and Best Management Practices (BMPs) where possible.

LID techniques imitate natural forests by helping rain absorb into the ground, instead of running into pipes that drain to local lakes and streams. LID features such as rain gardens, pervious pavement, and green roofs also treat and retain stormwater at the source. Using these techniques helps to reduce flooding by slowing water down and allowing it to absorb into the soil. They also help protect fish and wildlife by removing some pollutants before they reach our lakes, streams, and Puget Sound.

Are you interested in reviewing the proposed code changes or being updated on the process? Visit bothellstorm.org to review a draft of the proposed code revisions, view the most updated information on the Planning Commission and City Council dates for review, and to sign up for email updates.



City buys riverfront land

The City of Bothell is now the proud owner of 4.3 acres of land along the Sammamish River, formerly owned by the Washington State Department of Transportation (WSDOT). The City bought the land from WSDOT for about \$51,000. The property is next to existing City property, northeast of the 96th Avenue tunnel. The property will remain as public open space and park land. The Sammamish River Trail runs through it.



Environmentally-friendly back to school and Zero Waste lunch supplies here!

Special recycling for CFL light bulbs, household batteries, old textiles, hard-cover books, small electronics and appliances, block Styrofoam™, and bicycles.

You can pick up free bio bags, a food scrap container, recycle event voucher and eco lunch pail.



Get \$150 when you choose smarter trips!*
Start earning rewards today!

CurbsideCongestion.org

*With the Curbside Congestion program, you can earn up to \$150 in rewards for each month you use the Curbside Congestion app to book a ride with a participating provider. Rewards are earned by using the app to book a ride through the Curbside Congestion app. \$150 reward per month. *Maximum reward \$1500.

Get involved in developing the City budget

One of the most important efforts underway at City Hall is the development of the 2017-18 budget. The city manager will submit a recommended budget to City Council for consideration this fall. The budget addresses all fiscal issues, including revenues, expenditures and service levels. It is a plan for spending residents' money on municipal services (public safety, streets and sidewalks, parks, etc.). The current budget (2015-2016) is just over \$200 million.

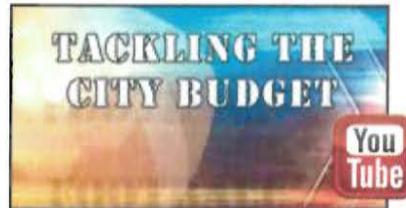
The City of Bothell uses a collaborative, decentralized approach to budgeting. Community engagement in the budget process helps ensure the City can discern the community's priorities, fund them, and carry them out.

Let us know what you think by:

- Talking with City staff and City Council;
- Responding to requests for public input;
- Sending emails to CityCouncil@bothellwa.gov;
- Attending public meetings (see schedule);
- Participating in surveys.

Learn more about Bothell's budgeting:

- **Tackling the Budget**, a 4-minute video featuring the Bothell High School football team: <http://bit.ly/1WQWhVk>



- **City website:** www.bothellwa.gov. Search for "budget" for new budget engagement tools.
- **Request a personal tour of the budget or a budget report:** email budget@bothellwa.gov

The budget information on the web is an interim step until the City can fund a new modernized financial system. The City is developing an Information Systems Strategic Plan that includes such software. A new financial system would provide the functionality needed for things like online bill pay, as well as a customer-friendly portal so that residents can access City financial information.



BUDGET TIMELINE

Ongoing: Implement and promote new public engagement efforts

June 1: City Manager's Official Budget "Call Letter" available online (defines guidelines for budget development and departmental roles and responsibilities)

Oct. 3: Revenue estimates provided to Council (online)

Oct. 18: City Manager's recommended 2017-2018 budget presented to Council and public

Oct. 25: Half-day Council Study Discussion of Proposed Budget

Nov. 1, Nov. 8, Nov. 15: Public hearings for citizen input

Dec. 6: Public hearings and potential budget adoption

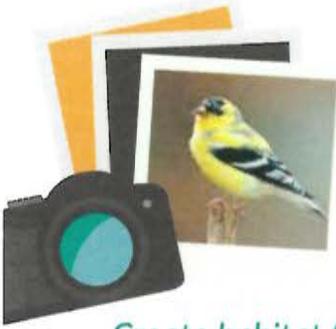


IT'S NOT JUST DIRT

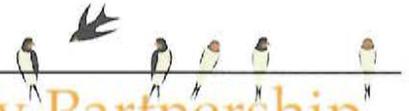
Washing your car at home sends gasoline, oil, heavy metals, solvents and other harmful pollutants into our storm drains which are connected to our local streams and ultimately Puget Sound. Please do your part, take your car to a commercial car wash.

Remember, Nothing but Rain Down the Drain

Puget Sound
Starts Here.org



How you can help local wildlife: Eastside Audubon Society Partnership



Increased development can affect native populations of fish and wildlife. Help offset these impacts to resident birds by protecting, restoring, and enhancing a landscape that allows them to survive in our growing community. Start by creating a friendly space in your own back yard and encouraging your friends and neighbors to do the same.

Create habitat for native birds in your back yard

Join the City of Bothell and Eastside Audubon Society by pledging to take a step towards native bird friendly-habitat. It's easy to get started:

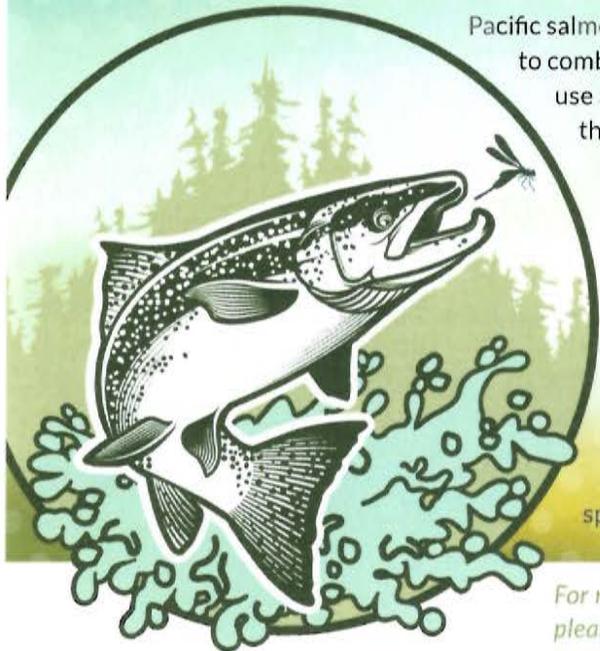
- 1) Plant native species that provide food and shelter to native bird populations
- 2) Retain dead snags and branches that serve as rest and nesting sites
- 3) Eliminate pesticides which can be fatal to birds and their food sources
- 4) Remove invasive species such as ivy and blackberry
- 5) Leave leaf litter to provide food for foraging birds
- 6) Keep cats indoors



For more information about how you can protect our local wildlife visit, <http://bit.ly/1rp5Ux8> To sign up for bird classes or learn more about our local native bird populations visit, eastsideaudubon.org

WHY CONSTRUCTION NOW?

Besides the weather and reduced commuter traffic, there are other reasons why a lot of stormwater and road-related construction is concentrated during the summer months.



Pacific salmon and other resident fish populations have been on a steep decline due to combined effects of dams, habitat destruction, over harvesting, poor land-use and transportation. Recovery and conservation of these populations and their habitats has led to regulations that focus on protecting native fish populations during their spawning season. This means that any regularly scheduled construction work which requires being in or over local streams must be completed within these summer months known as the "fish window."

This helps reduce the amount of spills and pollutants that can instantly kill these spawning fish as well as keeps crews from destroying or disturbing the eggs before they have a chance to hatch.

The Washington Department of Fish and Wildlife (WDFW) and Army Corp of Engineers (ACE) have varying fish windows depending on what species of fish are in the stream.

For more information on WDFW construction related permitting in or near streams, please visit the Department of Fish and Wildlife Hydraulic Project Approval (HPA) page: wdfw.wa.gov/licensing/hpa/faq.html

COUNCIL CORNER

By Del Spivey



Prepare now for inclement weather

As summer comes to an end and the kids go back to school, it's also time for all of us to prepare for fall and winter weather. While this summer's Main Street fire is a reminder that emergencies can strike at any time, fall and winter can bring many unexpected surprises (snow and ice, strong winds, and heavy rains).

Soon we'll be winterizing our homes, gardens and vehicles. We all know to cover our outside faucets to prevent freezing, have the snow shovel and deicer for the walk and driveway, clean the gutters, etc. But do you have emergency water? Food that can be eaten cold or a safe way to heat/cook meals if the power is out? We should all have a home emergency kit if the weather turns stormy and we lose power, or a heavy snow falls and we can't get to the store for a few days.

Other tips to consider at home:

- If you have a home generator, know the proper procedures for safe operations.
- While our Public Works staff does a great job in keeping the streets and gutters cleaned, when the leaves fall, it's important to help keep storm drains clear of leaves and debris to prevent flooding issues.

It's not just our home but our vehicles that need to be properly winterized and stocked with an emergency kit. Do you have water, food, blankets, foul weather gear, tire chains, etc.? What about the kids in school? Do they have the items that they will need if the weather gets bad or other disasters occur?

The above are just a few things to consider in preparing for the upcoming fall and winter. Visit the city's website at www.bothellwa.gov/preparedness and read the mailer you'll be receiving from our Emergency Preparedness division this month. If you have questions about emergency preparedness, call 425.806.6270.

Help prevent localized flooding



Many residents mistakenly blow or sweep their fallen leaves into the street, not realizing they become a safety and stormwater hazard to their property and neighborhood. The storm drains in your street capture, move, and release rain water into the nearest stream to keep excess water away from your property. If leaves

clog these drains, it can cause localized flooding.

There are more than 302 lane miles of public roads we maintain with over 8,400 storm drains in the City, so it's infeasible for crews to clear all of the drains before and during storms. Clogged storm drains can leave your neighborhood at risk.

How can you help?

Rake leaves into your yard waste bin

Use leaves as mulch on garden beds and landscaped areas

Join the Adopt-A-Drain program and pledge to remove leaves from at least four storm drains in your area. Extra yard waste bags are available through the program by contacting Janet Geer janet.geer@bothellwa.gov 425.806.6796.

Tell your friends and neighbors how to help themselves and their community

For more tips on mulch and natural yard care practices, visit www.naturalyardcare.info



CITY MANAGER'S MESSAGE

by *Bob Jean, Interim City Manager*

Two Bothell measures on November ballot

Voters this November will see a full ballot, both in Snohomish and King Counties. I encourage you to read the entire ballot; there are important local measures and state races as well as the presidential election. Let me draw your attention to two Bothell measures:

- Advisory Proposition 1, on banning fireworks, and
- The Safe Streets and Sidewalks Levy.

Fireworks are a time-honored tradition in Bothell, yet some residents have been asking for a ban to ensure safety for people and pets. This will be an opportunity for you to weigh in on whether to prohibit consumer fireworks in Bothell. The Council will take the results into consideration when making a decision on fireworks.

Public safety is one of the top functions of local government, and one we at the City take very seriously. Public safety is more than police and fire protection. It includes streets and sidewalks, too.

Revenues that fund street maintenance have declined over the past several years. Gas tax revenues have been going down on a per vehicle basis, as people drive more fuel-efficient or electric vehicles. Vehicle license fees and taxes have also been cut. During the Great Recession

the City cut its overall budget, including police and fire, to pick up some of the needed costs for basic streets maintenance. Those costs continue to grow faster than overall inflation. One-time revenues that we used to backfill the budget have dried up. We held off asking voters for additional funding during the recession, knowing things were tough for residents and businesses alike. Now we are out of other good options.

Without this levy for street maintenance and sidewalk improvements, we will be forced to cut the streets and sidewalk budgets even further. Safe streets benefit both drivers and bicyclists, and allow our emergency vehicles to get to you quickly in times of need. This also will provide safe routes to schools and parks. Now it's up to you to decide.

How much would this cost if approved? For the median Bothell household (\$376,000 assessed value), it would be about \$16 a month more or \$188 per year. The levy adds 50 cents per \$1,000 in assessed value, still keeping Bothell on par with other local jurisdictions' total tax rates.

I urge you to study these measures carefully and then vote. Ballots will arrive in mailboxes in mid-October for the general election. Remember to read your entire ballot, as Bothell measures will likely be near the end.

Pollution Prevention Week

SEPTEMBER 19-23, 2016

Join us as we celebrate 26 years of pollution prevention efforts by joining in "National Pollution Prevention Week." This effort focuses on stopping pollution at its source rather than focusing on treatment and disposal which are more costly and less effective.

You can help reduce or prevent pollution at the source through cost-effective daily habit changes:

- Wash your car at a commercial car wash • Check your vehicle for leaks and get it fixed
- Pick up your pet waste • Use little to no chemicals on your lawn and garden

Join other residents, industry and government working together to reduce pollution.

Learn more: www.bothellwa.gov/surfacewater



RECREATION - TEEN & ADULT

The Basics of Fly Fishing *(Ages 16 & up)*

Come join Johnny Boitano from Troutwater Fly Shop in Cle Elum/Ellensburg as he teaches the Basics of Fly Fishing.

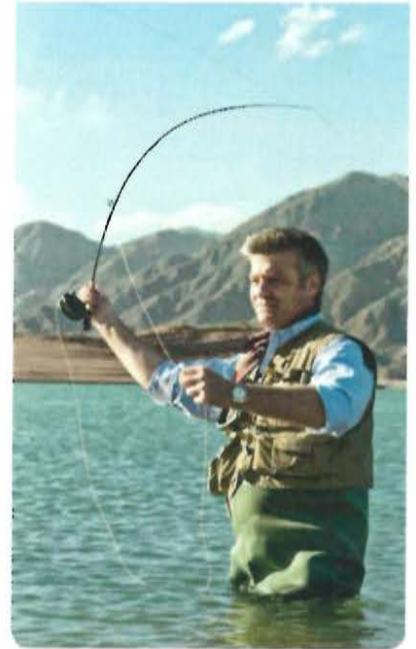
Course topics will include -

- Gear - rods, reels, tools, boots waders etc.
- Lines, Leaders, Tippetts and Knots
- Flies - types of bugs, dries, nymphs, streamers etc.
- Basics - reading the water, presenting the fly, setting the hook, landing fish etc.
- Casting - basic cast and the roll cast.

Whether you are brand new to the sport or, have been fishing for a while, this class has something for you. By the end of the day you will be much more prepared to find success in the amazing sport of fly fishing. Class fee includes a pizza and pop lunch.

#18454..... R \$25/NR \$30

S 1/21 10 a.m. - 3 p.m. Loc: Lytle House



Come Join the Salmon Watcher Program



Want to help identify salmon species and count spawning salmon in local streams? You're invited to attend a training program. Volunteers will attend one training session and pledge to watch a site along a local road or bridge for 15 minutes, twice a week from September to December. Representatives from sponsoring agencies and organizations will support you throughout the program.

This is the 21st year of the Salmon Watcher Program, a multi-jurisdictional partnership

focused on protecting salmon and educating the community. This program allows residents to see what's going on first-hand in our local streams, and help detect any potential barriers or issues that would prevent salmon from spawning safely. The more eyes watching, the more information we have about conditions and activity in our watersheds.

Your observations also add to information that scientists and policy-makers use to make recovery decisions. And, you get to experience the magic of spawning salmon in your neighborhood — an opportunity Bothellites are lucky to have.

TRAINING SESSION: TUESDAY, SEPTEMBER 13 • 7-9 PM

BELLEVUE CITY HALL, 450 110TH AVE NE, BELLEVUE

Questions about the program? Contact Janet Geer janet.geer@bothellwa.gov 425.806.6796

Here's hoping for a fish-filled fall.

Bothell FIT4MOM Classes *(Open to all moms)*



Are you a new or seasoned mom looking to get in shape, meet other moms, and set a positive example for your little one? Look no further, FIT4MOM of Bothell has partnered with the City of Bothell Parks & Recreation to bring you Stroller Strides classes! Stroller Strides is a 60 minute, total body fitness program for moms that

you can do with your baby. It includes power walking and intervals of body toning using exercise tubing, the environment, and the stroller. Taught by specially trained instructors who are also moms, Stroller Strides is designed to be a great workout for ANY level of exerciser. Your first class is FREE, come try one at any time!

Visit www.bothell-kirkland.fit4mom.com for our complete class schedule including times, days, and fees. All payments are taken at class. Contact Hilary Storey with any questions at hilarystorey@fit4mom.com

Monday - Saturday 9:30 a.m. Loc: Park at Bothell Landing *(This program will run through October if weather permits.)*

Give input into the East Norway Hill Park Master Plan

You're invited to a workshop to share ideas and suggestions for the East Norway Hill Park Master Plan. The Bothell Parks and Recreation Advisory Board and the Parks and Recreation Department want to hear from you:

Thursday, Oct. 13, 7 p.m.
Bothell City Hall, 18415 - 101st Ave NE

The City acquired East Norway Hill Park from King County during an annexation. The park, in southeast Bothell, is 25.1 acres. About 22 acres is undeveloped, and just shy of three acres is developed, with an informal field space and a few picnic tables. The park has no off-street parking, children's play equipment, restroom or other amenities commonly found at a neighborhood or community park.

The final master plan will be used to guide any future improvements to the park.

Questions? Contact John Keates, Parks and Recreation Director, john.keates@bothellwa.gov, 425.806.6751



FREE WORKSHOPS OFFER OIL LEAK INSPECTIONS

Does your car drip? Ever wondered if a 'spot' on the ground came from your car?

Join the experts for a FREE Auto Leaks workshop - a \$125 value. Open to everyone in Puget Sound.

- Get a free professional inspection from a certified automotive instructor
- Learn how to identify and prevent leaks
- Repair tips for minor leaks, preventive maintenance
- Leave class with a FREE Vehicle Maintenance Check Kit and the confidence to talk to your mechanic

Snohomish County Workshop Locations Include:
(One hour in class session and the rest is in the shop)

Marysville-Pilchuck High School:
Wednesdays and Saturdays

Cascade High School: Coming this fall

Sno-Isle Technical College: Coming this fall

Space is limited, so register now: www.fixcarleaks.org

See how we are working to contain spills to our roadways here: www.bothellwa.gov/surfacewater

FREE workshops brought to you by the Department of Ecology and WSU Snohomish County Extension.

UW Bothell and Cascadia College begin new campus master plan



If you've visited the University of Washington Bothell-Cascadia College campus recently, you may have noticed a new student Activities and Recreation Center, a surface parking lot, and more. As planned, the campus has grown since it first opened in 2000 at this location. It now

educates a combined 7,500 students a year and its academic buildings are at full capacity. That growth has prompted the UW Bothell, Cascadia, and the City of Bothell to prepare a new campus master plan and development agreement.

The 2017 Campus Master Plan will be an inclusive process designed to incorporate feedback from the campus, neighbors, business leaders, campus students, faculty and staff, and other community members. This work will evaluate enrollment projections, facility and parking needs, environmental and traffic impacts, connectivity to the downtown core, and other considerations to produce a comprehensive plan and development agreement that guide the institutions' future building projects. UW Bothell and Cascadia have already begun meeting with campus constituents, neighbors, business leaders, and other community members, and look forward to hearing from others at upcoming meetings. If you are interested in attending meetings and providing feedback, please visit one of these websites:

- <http://bit.ly/2eo8lu2>
- <http://bit.ly/2eo8YUE>



Voters have their say in general election

Thanks for voting in the general election, regardless of how you cast your vote. Voting is an important part of our democracy!

For election results, see www.bothellwa.gov/electionresults



SPILL HOTLINE:

If you see something, say something

Anything that enters Bothell storm drains is carried directly to the nearest lake, stream, or wetland without treatment. This is why it's so important to tell us right away if you see any spills on our streets or in our drains.

Call the SPILL HOTLINE: 425.806.6750

Remember, Nothing but Rain Down the Drain

See how we are working to contain spills to our roadways here: www.bothellwa.gov/surfacewater

CITY NEWS

We're searching for volunteers

Make a difference in your community! The City of Bothell is currently seeking applicants to serve on the following boards and commissions:

Planning Commission. The Planning Commission serves as an advisory board to the City Council in such matters as comprehensive plan and zoning code updates. There is currently one opening (Position #3) which will serve a four-year term expiring 3/31/2020. The Planning Commission typically meets the first three Wednesday evenings of the month at City Hall.

Parks and Recreation Board. The Parks and Recreation Board serves in advisory capacity regarding park programs, operations and expansion. There are three openings on the Parks Board: Position numbers 5, 6 & 7; each serves a three-year term expiring 3/31/2020. The Parks and Recreation Board meets on the 2nd Thursday of each month at 7 p.m. at City Hall

Lodging Tax Advisory Committee (LTAC). The Lodging Tax Advisory Committee advises the City Council on the Visitor Development Strategy. There are currently three openings on the board; two openings are designated for representatives from hotels, while one is from a tourism-related business. Each term is for two years and expires 3/31/2019. The Lodging Tax Advisory Committee meets quarterly, typically at 9 a.m. on a third Tuesday, with additional meetings as needed.

Landmark Preservation Board. The Landmark Preservation Board advises the City Council on historical preservation issues throughout the City. There is currently one opening on the board (Position #3)



which serves a five-year term expiring 3/31/2021. The Landmark Preservation Board meets on the 4th Tuesday of every month at 7:30 p.m. at City Hall.

Library Board. The Library Board advises the King County Library System on matters related to the Bothell Library. There is currently one opening (Position #3) which serves a five-year term expiring 3/31/2021. The Library Board meets on the second Thursday of the month at 7 p.m. at the Bothell Library.

The deadline to apply is February 17, 2017. All terms begin April 1, 2017.

For more information:

City Clerk's Office, 425.806.6151
www.bothellwa.gov/boards

For other volunteer opportunities, see
www.bothellwa.gov/volunteer



SURFACE WATER MANAGEMENT PLAN

Want to learn more about what we're doing to manage surface water or how you can get involved? Visit our surface water page and review the Surface Water Management Plan and other reports: www.bothellwa.gov/surfacewater

Have thoughts to share? Complete our citizen input form on the bottom right of the page.

Questions? Contact:

Janet Geer, janet.geer@bothellwa.gov or 425.806.6796

CITY NEWS



POLLUTED STORMWATER RUNOFF: What is it and what can you do about it?

When rain falls or snow melts in Bothell, where do you think the water goes? Does it soak into the ground? Does it sit in a puddle until it disappears? If you answered “yes” then you are partially correct – some water soaks into the ground or evaporates into the air.

But what happens to the rest of the rainwater? Most of it flows over hard surfaces (like roofs, parking lots, driveways, sidewalks, roads, etc.) and into the nearest storm drain, stream, or ditch without prior treatment. This water is called “runoff” or, sometimes, “stormwater runoff.”

As this water flows over our hard surfaces, it picks up harmful pollutants that we have left behind. Sometimes the pollution is something you can see like trash, oil, soap and dirt. Other pollution you can't see includes chemicals, bacteria, pesticides, and fertilizers.

Because this pollution is caused by each one of us, we all can make a difference. Simple steps like

- picking up your pet waste
- checking your vehicle for leaks, and
- not applying chemicals to your lawn really do make a difference.

See how we are working to reduce pollution and learn more about what you can do:

www.bothellwa.gov/surfacewater

WINTER UPDATE



Winter storms could make it unsafe to collect your containers. To find out about temporary service changes:

- ▶ Listen to a local radio or television station.
- ▶ Visit our website for service updates and information on temporary collection points.
- ▶ Check your voicemail for a message from Recology CleanScapes about service changes.

Remember:

- ▶ If your service schedule is disrupted, we will collect your containers when it is safe to do so, typically on your next collection day.
- ▶ Before taking a vacation, please notify us to suspend your service.
- ▶ We place carts upright with lids on after collection, but carts may topple on icy surfaces or with heavy winds.



Thank you!

recologycleanscapes.com

RESWINTER2016

Upcoming Date to Remember	Offices Closed In observance of Martin Luther King Jr. Day Monday, January 18	AWC Legislative Conference Wednesday & Thursday January 27 & 28 Olympia	Council Retreat Saturday, February 27 8 a.m. to 5 p.m. City Hall
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Horse Creek Update

The work completed in 2015 on the Horse Creek Project include:

- Undergrounding of franchise utilities (power, communications, cable, phone); relocation of wet utilities such as City’s water, storm and sewer systems.
- Full length of Channel construction completed, including Half-acre open space Horse Creek basin. This work is comprised of concrete channel walls, rockery walls, stream cobbles for low and high flow stream, placement of fish habitat features such as tree root wads, log jams, boulders.
- Wetland vegetation planted inside channel and within Park at Bothell landing which are undergoing plant establishment to prepare built channel for natural stream flow.
- Pedestrian bridge crossings poured and cured at Library, future road to Pop Keeney, and at future Half Acre open space.
- Significant amount of the curb and gutter and paving installed. Sidewalk along McMenamins section installed.
- Majority of the paving completed.

Upcoming milestones:

- First stages of channel receiving a percentage of stream water. Anticipated to be observable in early February.
- Illumination system gradual powering up in February.
- More plantings of stream vegetation and also streetscape landscaping and urban trees.
- Installation of Channel railings in early Spring.
- Completion of sidewalk other concrete surfaces.
- Final/top wearing surfaces of asphalt paving in Spring.

The full diversion of the stream into the new channel should occur by mid-July 2016.

Westhill Elementary Science Night



Sabrina Combs and Janet Geer from the Public Works Department provided a BothellCool booth at the Westhill Elementary School Science Night on Tuesday, January 12. The booth highlights were recycling and organics education, tips for properly disposing of

hazardous material and upcoming Wastemobile dates, tools for diverting material from the landfill, Recology Store resources for drop off services, and a water drop challenge. Parents participated in a survey by answering questions about how they recycle, hazardous materials they have at home and how they dispose of them.

Fire Chief Attends Cascadia Subduction Zone Earthquake Seminar

The last devastating (9.0 or greater) earthquake to hit western Washington was on January 26, 1700, and State experts predict that there is a 10% chance that Western Washington will experience another major earthquake of this magnitude within the next 50-years. Earthquakes of this size cause the ground to shake for three to six minutes (the Nisqually Earthquake shook for 40-seconds) resulting in damage, injury and death; after-shocks of 6.0 or greater will be common; drinking water will be in demand and fires will continue to burn due to lack of water; many roads and bridges will become impassible isolating communities; cell and hand lines will be impaired; and there will be no access to cash, power, or advanced medical care. The needs of the community will be greater than City resources so the answer is helping citizens take care of themselves and their neighbors. The City's work in emergency preparedness, establishing a ham radio network and providing Community Emergency Response Training (CERT) are steps in the right direction.

Temporary Road Closure

Public Works crews closed 240th Avenue SE between 30th Drive SE and 35th Avenue SE on Thursday afternoon, January 21, due to water over the roadway. They re-opened the road by 8:30 a.m. on Friday. Flaggers were on site this morning urging drivers to slow down because there is still water over the roadway. If conditions change and rain resumes, crews may need to close the road again.



Martin Luther King Jr Day of Service- Parr Creek Planting Project

On Saturday, January 16, the City of Bothell partnered with the King Conservation District (King CD), local business owners, and community members to complete some necessary maintenance work along Parr Creek just north of the Bothell sportsfields. 38 residents came out to help us reinforce beaver caging, replant conifers, and mulch around existing plants. The next steps will be to replace some willow live stakes along the banks and complete invasive plant removal with King CD crews before spring.

This work has been funded through a Rose Foundation grant, and King CD has committed to assisting with maintenance until plants have been established (three years after the closeout of the grant this June).



Suspect Search

On Tuesday, January 26, Bothell Police received reports of a carjacking in progress in Canyon Park. When officers arrived on scene, they were able to determine the incident was a failed narcotics theft incident. Witnesses reported to officers that they believed the suspect may have gotten onto the roof at Big 5 Sporting Goods.

Bothell Firefighters Derek Jones and Le Ann Crawford brought a ladder to the scene and were kind enough to hold onto it so Police Officer Cameron Stevie could search the roof. Ultimately, the suspect was located inside a neighboring store and was taken into custody.



Kudos to Captain Mike Johnson

His Twitter feeds continue to educate and entertain the followers of @BothellPolice.

Fuel Spill Response

Thanks to crews from Bothell Police, Fire and Public Works who responded to a collision on Thursday, January 28, that resulted in a fuel spill from a vehicle into the storm water system. The accident, involving a school bus (no kids were aboard) and two vehicles, did not result in any injuries. Public Works crews took every precautionary measure possible, including opening catch basins and adding absorbent. The gasoline mixed very quickly with water from recent rains and some flowed into the Sammamish River. As part of routine policy for such a situation, crews immediately notified the Washington State Department of Ecology.



Watershed Festival

Each year, school districts, cities, and water utility districts in the Sammamish watershed come together to teach our 4th grade students about the importance of water in our lives. The City of Bothell helped sponsor and host the festival again this year, which was held at the Brightwater Education Center on March 21-22. Approximately 150 Bothell students, parents, and teachers learned about watersheds, chemical engineering, wetlands, stormwater pollution, salmon, water sampling, and so much more. The teachers and students were very thankful for the field trip learning opportunity and the other agencies were very appreciative of Bothell's involvement and assistance.



Clark Meek's Retirement Celebration

On Friday, March 18, we celebrated the many hats Clark Meek has worn in his 37 years here at the City. These include Parks Operations, Volunteer Firefighter, Public Works Superintendent, Parks Capital Projects, Facilities Manager, Fleet Manager, and of course dedicated co-worker, friend, and mentor. Clark has done so much for the City and the community and we wish him well in his retirement. However, that won't be the last we see of Clark Meek because he continues to wear the hat of Bothell resident.



World Water Day Event

City of Bothell staff participated in a World Water Day event at the Brightwater Education Center on Saturday, March 26. World Water Day is an international observance that provides an opportunity to learn about water-related issues and how to take action to protect our important water resources. The United Nations designates a theme each year based on a current issue or future challenge we need to address, and this year the theme was "Water and Jobs." Booths, tours, and activities were provided for over 120 individuals and families to learn and explore the world of water and what it means to each of us.



Earth Hour

On Saturday, March 19, the Public Works staff hosted the third annual Earth Hour Bingo event at the Operations Center. Families came out to play Glow-in-the-Dark Bingo as part of the worldwide Earth Hour Celebration. The lights were turned off from 8:30 p.m. to 9:30 p.m. to celebrate conservation. This event provided families with an opportunity to reduce their impact on the environment and take a pledge to reduce, reuse, and recycle. Over 25 prizes were donated from local businesses including: Kaufman Chiropractic, Fred Meyer, Social Grounds Coffee & Tea, Caffe Ladro, Russell's, The Recology Store, Bonefish Grill, Uncle Peteza's, Gourmet Latte, Menchies, and the Green Bee Group.

Upcoming Dates to Remember

CFP Open House #1

Thursday, March 31
5:30 to 7 p.m.
City Hall Town Hall Rooms 107/108

Arbor Day Celebration

Saturday, April 30
10 a.m.
Stipek Park

CFP Open House #2

Wednesday, June 15
5:30 to 7 p.m.
City Hall Town Hall Rooms 107/108

Multiway Boulevard Groundbreaking Ceremony

Thursday, April 14
10 a.m.
In front of Six Oaks

Employee Recognition Luncheon

Thursday, June 9
11:30 a.m. to 1 p.m.
Int'l Union of Operating Engineers
Hall



City of Bothell™

*Highlights for the week ended April 29, 2016,
from City Manager Robert S. Stowe to the
Bothell City Council*

THE WEEKLY

Moody's Report for the City of Bothell

On Thursday, April 28, 2016, Moody's Local Government Issuer Comment Report for the City of Bothell was published on Moodys.com. The report notes Bothell's "very strong" credit position and reaffirms the City's Aa2 rating, which reflects a positive socioeconomic profile with an ample tax base and a small debt burden, along with a moderate pension liability. The report also incorporates a favorable financial position and says that management's ability to generate balanced financial operations is a component of prudent financial management.

Moody's Investors Service is a leading provider of credit ratings, research, and risk analysis. Moody's commitment and expertise contributes to transparent and integrated financial markets. The firm's ratings and analysis track debt covering more than 120 sovereign nations, approximately 11,000 corporate issuers, 21,000 public finance issuers, and 72,000 structured finance obligations. Further information is available at www.moodys.com

Earth Day was Earth Week in Bothell

In honor of Earth Day, Public Works staff and volunteers shared sustainability program information at events throughout the city and through social media last week.

Sabrina Combs attended two Earth Day events at UW Bothell on April 20th and at the PSE Earth Day event on April 22nd. Janet Geer hosted stormwater walking tours for over 100 Randstad and Google employees in the North Creek Business Park on April 22nd. Bothell resident Siobhan McComb shared tips on how to become a low or zero waste resident. Attendees at this event received a bonus gift pack as part of our Earth Day festivities.



The BothellCool social media pages (facebook.com/bothellcool and [@bothellcool](https://twitter.com/bothellcool)) shared tips and resources throughout the week on ways staff and residents could reduce their environmental impacts.

Uber driver rescued

The message below was emailed to Police Chief Carol Cummings last Monday. The citizen's name has been removed for privacy purposes.

"On Saturday May 14th 2016 I was the Uber driver who was struck by a suspected drunk driver and ended up in a retention pond. The vehicle began to sink and I was unable to get free from the drivers side while my passengers escaped thru the rear door. One of the passengers stayed with me trying to free me and keep me calm. Within a few minutes Officer John Lawless arrived on the scene.

"Without regard for his own safety he dove into the pond and swam to my vehicle. He cut my side airbag free and struggled to get the door open. He eventually was able to help free me and saw that I got to the shore safely. I can tell you without a doubt that night I might have drowned without his quick actions.

"I know that many would say Officer Lawless was doing his duty. I disagree. We are all the sum of our decisions. Officer Lawless could have still done his job from the shore. He could have put himself or his family first. He could have waited for others and still done his job but he did not. Heroes are not born of their jobs but of the hearts.

"I thank him for putting a stranger first. There are no words that can articulate my gratitude to you and the officers of the Bothell Police Department."

Puget Sound Starts Here Month

Governor Inslee has again declared May as "Puget Sound Starts Here" (PSSH) Month to raise awareness for stormwater pollution and help create a cohesive message for local jurisdictions and nonprofits throughout the region. The month kicked off with a Night at the Mariners event on Saturday, May 14 and Bothell staff and family attended for the fifth year in a row in support of the program. Bothell has participated in PSSH Month locally by working with local businesses to spread the brand message and provide education to their customers and staff.





City of Bothell™

*Highlights for the week ended September 16, 2016,
from Interim City Manager Bob Jean
to the Bothell City Council*

THE WEEKLY

Police Peer Support Team



The Bothell Police Department Peer Support Team recently recognized that the recent incidents in our country of violence against police officers may be putting significant strain on the family lives of our officers and our employees. To address this issue, our Peer Support Team worked with Code 4 Northwest and Behind the Badge to provide information at a recent spouse's luncheon. The Department Chaplains assisted and together we hosted the Bothell Police Department Spouse's Luncheon. The event took place at Evergreen Church who generously provided the room, child care, and the lunch. The event was attended by spouses, partners, and fiancés of department members. During the lunch, Code 4 NW and Behind the Badge provided

information on resources available for families feeling the stress of the law enforcement career. PTSD and depression are real ailments in law enforcement and this meeting hopefully laid the foundation for many more events where spouses and partners can learn about these issues and how to get help when the signs are observed. Attendees said they did not know these service groups existed and were very happy to have the information on these valuable resources.



Salmon Watcher Training

Over 30 residents from Bellevue and Bothell attended the salmon watcher training on Tuesday, September 13. Participants learned about salmon in the northwest, how to identify them, the effects of stormwater pollution on salmon, and what they can do to help. Then, all of them signed up to watch a section of stream in Bothell or Bellevue from September-December and count returning salmon.



City of Bothell™

*Highlights for the week ended September 23, 2016,
from Interim City Manager Bob Jean
to the Bothell City Council*

THE WEEKLY

Pollution Prevention Week - September 19-23

Each year the US produces millions of tons of pollution and spends tens of billions of dollars dealing with it. Most existing regulations and resources focus on treatment and disposal, rather than stopping pollution at its source, which is often cheaper and more effective. This year, the City of Bothell joined other cities across the Nation to highlight ways that residents and businesses can reduce pollution before it reaches local streams.

From pet waste bags given out in parks and at local vet offices, to vehicle leak inspections offered at local auto shops, the City is partnering with residents and businesses to make a difference.



Bothell Police Officer Honored

On September 21, one of our Bothell Police Officers was honored at the 2016 Crisis Intervention Team (CIT) Conference in Tacoma. Officer Erik Martin received the CIT Award. The person that nominated Officer Martin was a mother of a child who is autistic. She highlighted the personal steps Officer Martin has taken to help her son deal with his episodes. Clearly, he has been a very positive influence in the life of this young boy and his family.

Officers from around the state were nominated for this award for their great work dealing with persons who are in mental/emotional crisis. Most officers in the state have attended a 40 hour training class on how to approach, work with, and resolve incidents involving people who are experiencing crisis.



Officer Martin is an excellent example of how officers can apply this training to their day-to-day work. Officer Martin leads our department's efforts to assist the homeless and works with Public Works, Parks, and other regional partners to ensure the homeless population in our city receive the assistance they need.



Officer Martin is the second officer of our department to win this award. We are very proud of the work our officers are doing in this area.

“Salmon Seeson”- Celebrating 10 Years of Spotting Salmon in King County

Every year, adult sockeye, chinook, and coho salmon make their way back to local rivers and streams to complete the circle of life and spawn the next generation. This return culminates in one of nature's most exciting dramas. It begins with their migration as tiny juveniles from our small streams into the Sammamish River and Lake Washington, then to Puget Sound and out into the Pacific Ocean. Here they embark on an ocean journey that covers a few hundred to thousands of miles, taking anywhere from one to seven years. Eventually, they are drawn back to their stream of birth where we have the ability to witness their amazing journey throughout our area.

The Salmon Seeson program is focused on helping local residents find salmon-spotting locations, both tours and self-guided, and Bothell has listed a site along North Creek to help residents and visitors spot fish. For more information about Salmon Seeson, visit www.kingcounty.gov/salmon or contact Janet Geer at janet.geer@bothellwa.gov.



Upcoming Dates to Remember

Horse Creek Ribbon Cutting

Wednesday, October 5, 10:00 a.m., Bothell Library Plaza

Ecotober

Saturday, October 8, 10 a.m. to 1 p.m., City Hall Plaza



City of Bothell™

*Highlights for the week ended October 7, 2016,
from Interim City Manager Bob Jean
to the Bothell City Council*

THE WEEKLY

Horse Creek Ribbon Cutting Ceremony

Dozens of community members (many with their children), staff, consultants and members of Council attended the ribbon-cutting ceremony at the Bothell Library Plaza for the Horse Creek Improvements project on Wednesday, October 5. Mayor Andy Rheame gave brief remarks, followed by Eric Campbell, CEO Main Street Property Group; Erin Leonhart, Public Works Director; and Karen Hardiman, Library Cluster Manager.



The Mayor, joined by Deputy Mayor Davina Duerr, Councilmember Del Spivey, and Erin Leonhart, cut the ribbon for the project.

Young children enjoyed stickers, coloring and other activities offered by the City. Social Grounds and Hillcrest Bakery provided coffee and refreshments.

The complex stormwater project also improved the walkability of downtown, changed its land use potential and helped create a “sense of place” in the developing western side of downtown.



Boy Scout Volunteer Project at North Creek

Each fall for the past several years, Cub Scout Pack 584 volunteers to assist Public Works in completing projects throughout the City. This year, on Saturday, October 1, 60 scouts and parents helped us remove invasive plants, replant with natives, and place mulch around each plant along North Creek. We are grateful for their efforts and look forward to working with them next year.



City of Bothell™

*Highlights for the week ended October 28, 2016,
from Interim City Manager Bob Jean
to the Bothell City Council*

THE WEEKLY

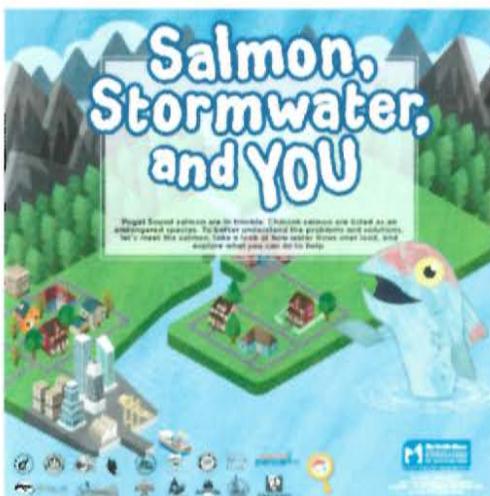
Customer Service Center Initiative

Customers shouldn't have to understand city business or how the city is organized to receive service. Services and information should be easy to access and customer needs should be addressed as simply as possible (one stop, one click, one call). That's the philosophy behind the City of Bothell's new Customer Service Center initiative.

Dean Perez, Human Resources Director, and Jennifer Haynes Suckut, Interim Customer Service Manager, will lead Bothell's customer service initiative starting November 1. The Customer Service Center initiative will be accomplished utilizing current City staff to deliver customer service and training. Don't expect to see much change at first as there is a lot of "behind the scene work" to be done both to the physical layout of the service desk and training.



The goal is to create a "one stop" customer service desk on the first floor of City Hall, where citizens can get a wide variety of services and information. Customer Service Representatives will be available to assist customers with paying bills, obtaining pet licenses, parks and recreation program registration, common complaint referrals and eventually passport services.



Puget Sound Starts Here in the Seattle Times this Sunday

The City of Bothell Public Works Department is partnering with 15 other jurisdictions to produce a 2nd eight-page stormwater and salmon educational insert that will run in the Seattle Times this Sunday, October 30. This insert will explain basic stormwater and salmon concepts and provide residents with ways they can help improve our streams and Puget Sound. These newspaper inserts are also used by teachers in Bothell and throughout the region as part of the "Newspapers in Education" program, which teach our students educational concepts using real world issues. Additional copies will be available for the City to use in its programs.

Let the games begin... in Bothell!

Submitted by the Wellness Committee

Don't miss out! Cabbage bowling started Thurs., June 30. Bowling is scheduled at each of the departments, and you are welcome to bowl at any location or time that works for you. These are the preliminaries, leading up to the Cabbage Bowl Olympics at this year's employee picnic on July 21.

Fire and E.M.S., starts June 30

Police Department, starts July 1

City Hall, July 6, 7, or 8

Operations Center, week of July 11-15

Watch for more details and times at each location.

Free workshops offer oil-leak inspections

Submitted by Janet Geer, Public Works

Does your car drip? Ever wondered if a 'spot' on the ground came from your car? Want to learn how to properly maintain your car?

Join the experts for a FREE Auto Leaks workshop - a \$125 value. Open to everyone in Puget Sound. At this workshop you'll:

- ◆ Get a free professional inspection from a certified automotive instructor.
- ◆ Learn how to identify and prevent leaks.
- ◆ Receive tips on repairing minor common leaks.
- ◆ Learn preventive maintenance.
- ◆ Leave the class with a FREE Vehicle Maintenance Check Kit and the confidence to talk to your mechanic.



Check out this promo video: <http://www.youtube.com/watch?v=UzCzBf1SXS8>

Snohomish County Workshop Locations Include: (One hour in-class session and you are in the shop for the rest of the time).

- * Marysville-Pilchuck High School-Wednesdays and Saturdays
- * Cascade High School-Coming this fall
- * Sno-Isle Technical College-Coming this fall

Watch this video and hear what past participants have to say: <http://www.youtube.com/watch?v=fEy1oTedzho>

Space is limited; register now at www.fixcarleaks.org

These free workshops are brought to you by the Department of Ecology and WSU Snohomish County

P.R.I.D.E. Post



City of Bothell™

*Professionalism, Respect, Innovation, Dependability,
Employee Accountability*

City of Bothell Employee Newsletter
October 2016

Upcoming Dates To Remember

Horse Creek Ribbon Cutting

Wednesday, October 5
10 a.m.
Bothell Library Plaza

Ecotober

Saturday, October 8
10 a.m. to 1 p.m.
City Hall Plaza

Bothell Beer Festival

Saturday, October 15
Noon to 6 p.m.
Festival Street

Benefits Fair

Thursday, November 3
8 to 10:30 a.m.
Council Chambers

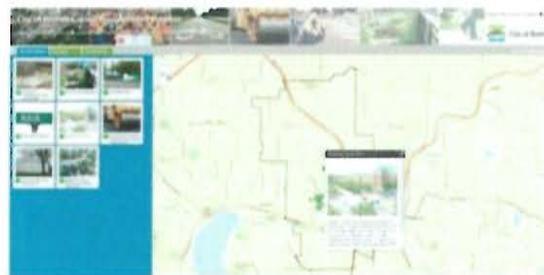
Super Bowl 51

Sunday, February 5, 2017
Houston, TX
Go Hawks!

Capital Improvement Projects Web Mapping Application: NEW!

Submitted by Daryn Brown, IS-GIS

The GIS Team and Public Works Capital Division is excited to tell you about an all new web application we created! It's a dynamic map that lets the public view the location of any Capital project in the City that's under construction, being designed, or recently completed. You'll find



project images and brief descriptions, plus links to each project's web page. As you zoom in and out of the map, you'll see the list of projects change based on the area you're viewing. We encourage everybody to take a minute and check it out!

<http://maps.bothellwa.gov/cip/>

Snake Rescue

Submitted by Janet Geer, Public Works

During a routine inspection, Public Works inspectors found a juvenile garter snake drowning in a detention vault. They quickly rescued him and relocated him to a secluded pond nearby. That's one happy snake (if you look close you can see he's smiling) 😊



Help Prevent Localized Flooding

Many residents mistakenly blow or sweep their fallen leaves into the street, not realizing they become a safety and stormwater hazard to their property and neighborhood.

The storm drains in your street capture, move, and release rain water into the nearest stream to keep excess water away from your property. If leaves clog these drains, it can cause localized flooding.

There are over 8,000 storm drains in the City, so it's infeasible for crews to clear all drains before and during storm events. Clogged storm drains can leave your neighborhood at risk.

How Can You Help?

- Rake leaves into your yard waste bin
- Use leaves as mulch on garden beds and landscaped areas
- Join the Adopt-A-Drain Program and pledge to remove leaves from at least four storm drains in your area

extra yard waste bags are available through the program by contacting

**Janet Geer at
425.806.6796**

or email: janet.geer@bothellwa.gov

- Tell your friends and neighbors how to help themselves and their community

For more tips on mulch and natural yard care, visit naturallyardcare.info



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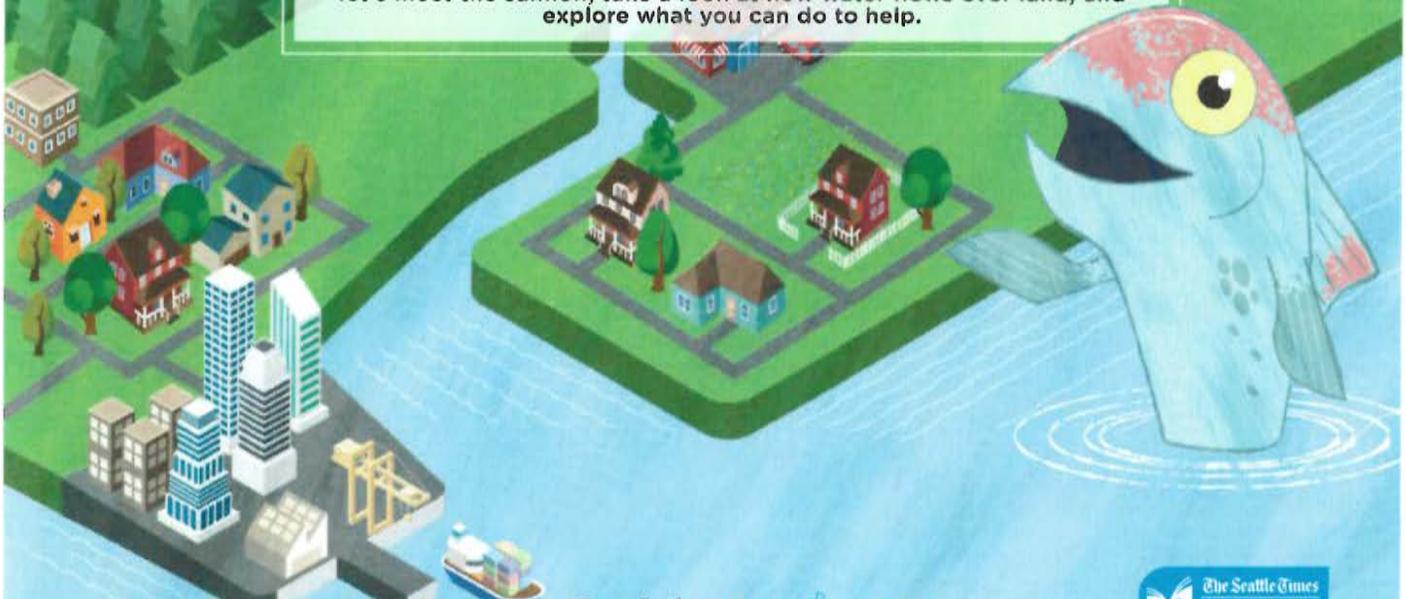
To learn more about adopting storm drains, visit bothellcool.org



Appendix B

Salmon, Stormwater, and YOU

Puget Sound salmon are in trouble. Chinook salmon are listed as an endangered species. To better understand the problems and solutions, let's meet the salmon, take a look at how water flows over land, and explore what you can do to help.



To learn more about our Newspapers in Education program, email nie@seattletimes.com or call 206-652-6290.

Where does the Puget Sound start?

As salmon return to the waters of Puget Sound and our streams and rivers, they are affected by what happens on the land all around them, the watershed. A watershed is an area of land where all the water drains in to the same place, like a lake, river or Puget Sound.

No matter where you are standing, you are in a watershed. Your home is likely within the watershed of a small neighborhood stream. Your home's watershed may also be part of the Cedar River, Sammamish River, or Lake Washington watershed, which together, include a much larger land area that stretches from the Cascade Mountains and through many cities before draining to Puget Sound. On an even larger scale, the Puget Sound Watershed covers 1.6 million acres (2500 square miles) across 12 counties inhabited by approximately 4.3 million people! It stretches from the Cascade Mountains in the east to the Olympic Mountains in the west and from the Canadian border in the north to Mt. Rainier in the south.

Every drop of water in the watershed – whether it is from your shower, lawn sprinkler, or car wash – finds its way to Puget Sound. This is why the Puget Sound Starts Here, with you, and why we all have a responsibility to keep the Puget Sound clean.

What is stormwater runoff?

When rain falls in a forest, most of the water soaks into the ground, evaporates back into the air, or is absorbed by trees. The forest acts like a sponge, capturing and holding the rain water before it can enter streams and lakes. But when forests are replaced with hard (or "impervious surfaces"), like buildings, streets, and parking lots, the water from the rain runs off the surface because it can no longer soak into the ground. This rain that does not infiltrate into the ground is called stormwater runoff. The combination of fewer trees and more impervious surfaces changes the way that rain water moves through the land, and how it enters natural waterways such as rivers, lakes and the Puget Sound. In the forest, approximately half of

the water either evaporates or is absorbed by trees. Another one third of the rain water is absorbed into the soil and slowly makes its way downhill, through the soil, to the waterways. In a forested landscape, only about one percent of the rain water flows over the surface of the land to enter a nearby waterway after a rain storm. Without trees and soil to slow down and absorb the rain water, it flows quickly over the surface of the land, sometimes through drains and pipes, to enter nearby rivers or lakes rapidly. Finally, as the rain washes over streets and lawns, it picks up pollution that is then carried into waterways.

Salmon and Trees

Salmon and trees have evolved together. When properly planted and cared for, trees can trap and hold rainwater in their leaves, branches, bark, and root systems, slowing the flow of rainwater and reducing stormwater runoff, flooding and erosion. Streamside trees shade and cool the water. The colder the water the more oxygen it can hold which is vital for salmon. The roots of streamside trees hold the soil and prevent erosion that can damage habitat. Fallen trees create diverse habitat including ripples, pools, and glides that salmon use during different phases of their life to rest or find gravel for spawning. These fallen trees also create shade, safe places to hide, and attract insects that become food for salmon.

When salmon return to spawn and die, their carcasses become food for animals such as bear, otter, eagles, mice and insects. After animals consume salmon bodies, they deposit the nutrients throughout the forest in their waste. Salmon bones not eaten by animals decompose into the soil creating nutrients that feed trees. Salmon are fertilizer for the forest!

Most of the time, stormwater flows into these natural bodies of water such as streams, lakes, and the Puget Sound without being treated. Only rain should go down a storm drain!

How does soil help stormwater?

Healthy soils help support plant growth, prevent erosion, and filter out pollutants. Poor soil is compact and lacks organic matter. In fact, organic matter in soil filters out pollution from road runoff which can be toxic to salmon. Healthy soil is a low tech way to manage stormwater by helping filter and store water. Soil quality is directly related to the health of streams and other bodies of water in the Pacific Northwest.

What is soil?

Soil is made up of decomposing rock, minerals, organic matter, air and water. Mineral particles – otherwise known as “dirt” – come in different sizes:

- Mineral particles come in different sizes:

Sand: Large particles with lots of space for air and water, but can't hold onto much water or nutrients for plants

Silt: Medium particles

Clay: Tiny particles that stick together. Clay can hold onto a lot of nutrients, but it's hard for air and water to penetrate it.

- Organic matter is made up of all the billions of soil organisms plus the dead decaying material that they eat. Healthy soil acts as an ecosystem, or a living community of an organism, which sustains plants, animals and humans.
- Air and water – about half the volume of healthy soil is space that can be filled by air and water.

How does healthy soil help fish?

Healthy soil can help to slow the flow of stormwater runoff and filter pollutants out of the water. In addition, healthy soils will absorb more water. This increases the volume of groundwater we have – a source for cool water to our creeks during our dry summers.

Composting helps build healthy soil:

Compost improves all soils. It helps sandy soils hold nutrients and water, and loosens clay soils for air and water to penetrate. Compost feeds the beneficial soil microorganisms, so it can feed and protect your plants. Lay on top, dig, or rototill in 1-3 inches of compost when you're making new beds or planting lawns.

Try it out! Make your own compost bin!

Leaves, chopped stalks, flowers and grass all make great compost in a pile or bin – just add water, keep it moist, and wait six months. Vegetable kitchen scraps also make good compost, but should be composted in a worm bin or other rodent-resistant container to prevent pest problems.

There are many different ways of composting, and other things you can do (such as adding worms) to speed up the process. Research some of these ideas on your own and try them out on your compost bin!

Mulch is another way to keep your soil healthy!

“Mulch” is a layer of organic material like leaves, wood chips, compost or grass clippings that you spread in spring or fall around your plants. (Keep it about an inch away from stems.) Mulch conserves water by keeping the soil moist, prevents weed growth and erosion, and replenishes organic material in the soil for healthier plants.

Mulch improves:

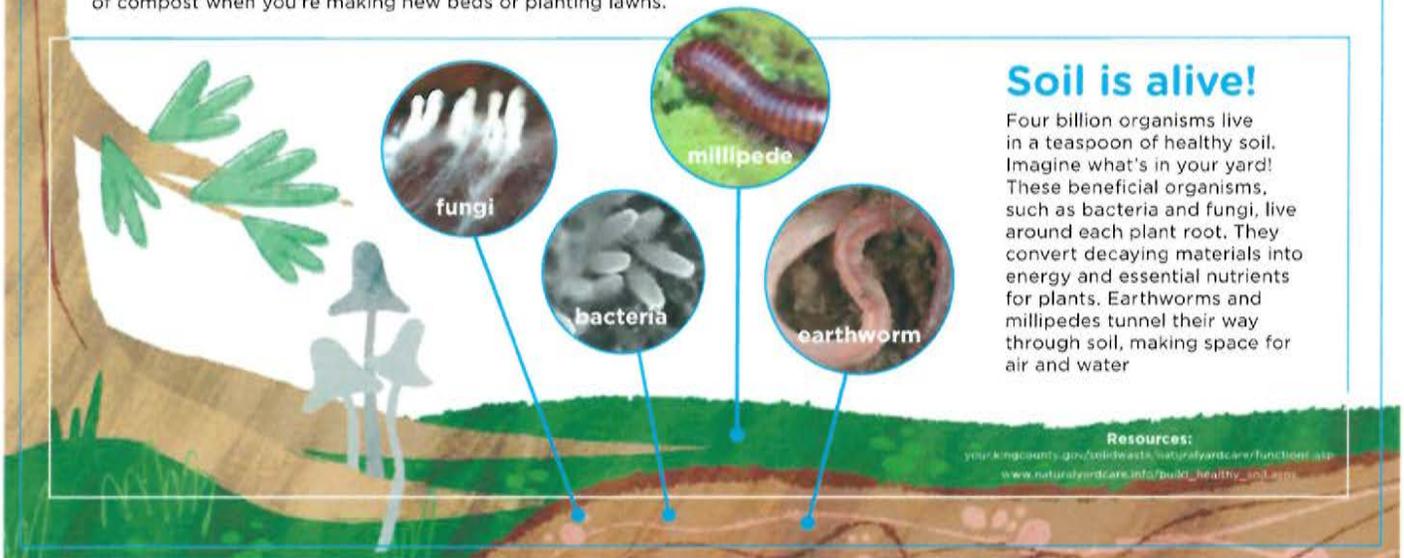
- Flower beds and vegetable gardens: Use 1-3 inches of leaves, compost or grass clippings.
- Trees, shrubs and woody perennials: Use 2-4 inches of woody mulches, like wood chips (get from a tree service) or bark. Fall leaves also work well.
- Lawns: Mulch your lawn? Yes, you can “grasscycle” (leave the clippings) and spread compost.

Soil is alive!

Four billion organisms live in a teaspoon of healthy soil. Imagine what's in your yard! These beneficial organisms, such as bacteria and fungi, live around each plant root. They convert decaying materials into energy and essential nutrients for plants. Earthworms and millipedes tunnel their way through soil, making space for air and water

Resources:

www.kingcounty.gov/soilhealth/naturalyardcare/function.asp
www.naturalyardcare.info/build_healthy_soil.asp



It is tough to be an urban fish!

Lake Washington fish have some complex challenges. One hundred years ago, Lake Washington used to flow out toward the south through the Black River and then the Duwamish River before reaching Puget Sound. The entire plumbing of Lake Washington changed when the Hiram M. Chittenden Locks (also called the Ballard Locks) were created. The goal was to allow ships to go between Puget Sound and Lake Washington for transporting logs, lumber and fishing vessels. In 1916, the final cut was made and Lake Washington began draining out of the ship canal. Because the water level of Lake Union was lower than Lake Washington, the water level in Lake Washington dropped 8.8 feet, changing habitat all around the lake - and how our salmon reach Puget Sound. Lake Washington salmon no longer have an estuary, an area where freshwater mixes with saltwater, that provides important habitat and food for many juvenile salmon. Lake Washington salmon now have to navigate in and out of man-made structures such as smolt slides, fish ladders, and the locks themselves.

As human populations increased, so did rooftops and streets. Storm drains were designed to help control flooding. However, human activities can cause polluted stormwater runoff that flows directly to our salmon habitat. There were so many salmon one hundred years ago that people did not realize what an impact development would have on fish. It happened slowly over time. What choices can we make now that protect habitat and water quality?





Be a Drain Ranger! Identify things you can do to help salmon by preventing stormwater pollution

Match each action you can take by writing the letter in each box.

Storm water flows directly to local streams, lakes and wetlands without treatment. See if you can match the places that water soaks in, runs off or flows on the picture.

Help protect water quality by making simple choices that prevent pollution.

A

Scoop pet poop, bag it and place it in the trash. Pet waste contains harmful microorganisms that can be transferred to humans.

B

Wash your car at a commercial car wash because they send the dirty water to the sewer for treatment. Soaps that get into our creeks can dissolve the protective mucous layer on fish and natural oils in the gills, making fish more susceptible to diseases. Even biodegradable soap pollutes water because it needs to go through soil to properly break down.

C

Find a fish-friendly fundraiser. Instead of car washes, try the following ideas instead: partner with a local business to sell doughnuts, hold a clothing drive, have a bingo night or silent auction, or sell environmentally sustainable products. Or, sell commercial car wash coupons to raise funds, stay dry, and promote a fish-friendly car wash!

E

Fix vehicle leaks. Oil allowed to flow down storm drains by the gallon or by the drop, pollutes our local streams, lakes, and Puget Sound. Automotive fluids cause environmental and safety hazards.

F

Build healthy soil by adding compost, mulch and other all-natural amendments. Healthy soils lead to robust plants that are more resistant to disease and insects. This will reduce your need for herbicides and pesticides. If you must, use slow-release organic fertilizer in spring.

G

Plant a tree. By maintaining and increasing the number of trees in your neighborhood you are helping intercept rainwater, which prevents flooding and problems from storm water runoff. Well-placed trees and bushes on your property can also help insulate your home from heat and cold, and can provide great habitat for birds, butterflies, and other local wildlife and keep the neighborhood cool for you and fish.

H

Store and dispose of household chemicals according to the instructions on the label. Try to use the least hazardous products you can whenever possible.

Examine your Schoolyard Storm System

Did you know that your schoolyard is also part of the stormwater system? Every system has various inputs and outputs—in this case, water going into and out of the system.

Spend 20-30 minutes drawing and labeling the parts of your school campus water system in a given area (this includes gutters, storm drains, the parking lot, sidewalks, buildings, trees, etc.). List the places where you can SEE water. What are the living and non-living parts of your schoolyard system? How does water flow through the system? Are there places where the water is moving? Where is it moving to? Is the water harmful or beneficial? How? What are the ways that humans have impacted this system?

Some ideas for making your drawing:

- Make a bird's eye view drawing
- Draw arrows to show the direction water flows
- Use a Google Maps image and label key parts
- Take photos and then label parts

ACTIVITY

Life against the current

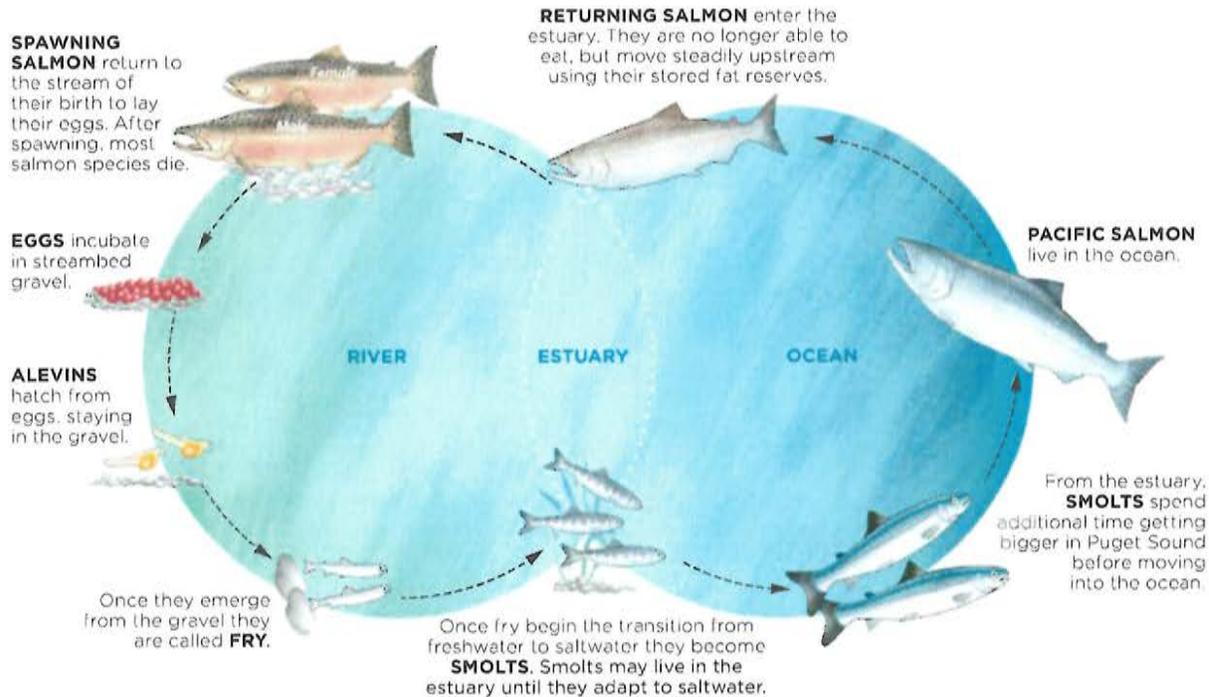
The nearshore waters and estuaries (where fresh and saltwater mix) of the Sound are critical habitat for salmon as they get ready for their migration from their home stream to the ocean and back.

After swimming back to the same stream where they were born, each female salmon deposits 2,000 to 4,000 eggs in the gravel of our region's rivers and streams. In about 50 days, the salmon hatch. At this point they are called alevin and still live in the gravel. Alevin get their food from a yolk sac - attached to their bellies. When they emerge from the gravel they are called fry. Where they go next depends on the kind of salmon they are. Coho fry stay in our streams for a year before migrating out to saltwater. Sockeye usually stay in a lake for at least a year. When salmon are ready to begin their journey to the sea they are called smolts. Puget Sound chinook and coho are typically 3-4 years old before they return to lay eggs, or spawn, in the same stream where they were born. Most salmon species die after spawning.

How does stormwater affect salmon?

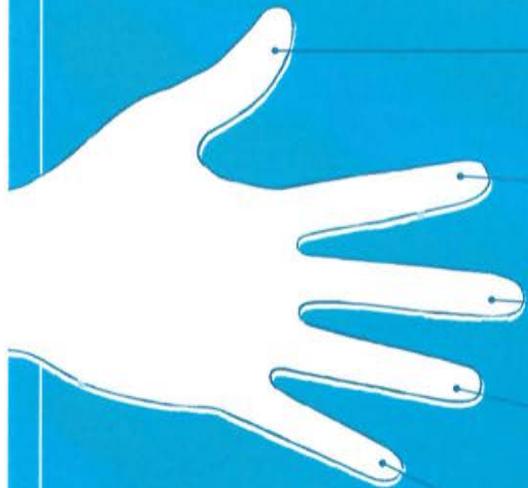
The time salmon spend in the rivers, streams, and lakes of the Puget Sound region is crucial to their survival. Human impacts to salmon habitat and water quality through development of towns

and cities have had a devastating effect on salmon. In urban areas, polluted runoff from streets is causing salmon, especially coho, to die before they spawn. Are there ways to filter polluted runoff? How can we prevent pollution before it happens? Scientists, engineers, and planners are working on ways to get more of that water to flow through soil and compost to filter pollutants before it reaches our streams and rivers. While we do not understand exactly how salmon are able to navigate back to their birth streams to spawn, scientists believe a salmon's sense of smell, combined with other cues in their environment, help them find their way home. Since their sense of smell helps salmon navigate, pollutants that contaminate the water can be particularly harmful. For example, tiny bits of copper from brakes can accumulate on roads and be washed into streams, rivers and Puget Sound with the next rainstorm. Washington state passed a law to phase out the use of copper brakes to address this issue. That's just a start - we have a long way to go to improve water quality for salmon.



Crossword puzzle answers: Across: 2. Watershed; 3. Storm; 4. Pollution; 5. Chinook; 8. Kokanee. Down: 1. Garbage; 2. Washington; 3. Storm; 4. Pollution; 5. Chinook; 8. Kokanee.

Use your hand to remember the salmon



Kokanee/silver trout - Land locked sockeye: I look like a sockeye but am much smaller because I never migrate out to saltwater, preferring to stay in a large lake to mature. Look closely and you might see small spots across my back. I am most common in streams that drain to Lake Sammamish.



Chum (Dog) - Rhymes with thumb: I have no spots but I do have vertical flame-like markings on my sides from my belly to my back that can be green, red, or purple.



Sockeye (Red) - If you were going to sock yourself in the eye you would probably use this finger: I have bright red sides and a green head and tail. I do not have spots. Males have a hump on their back and a long, hooked jaw.



King (Chinook) - Because it is the biggest: I am the largest species of salmon. My color can vary from olive-brown to black or even red but I always have numerous black spots on my back and the top and bottom of my tail.



Silver (Coho) - Like a ring on your ring finger: I am dark on top but can have red cheeks and a red belly. While I have numerous spots, they are only on the top half of my body and tail.



Pink - Your pinky, of course! I am known for the huge hump on the backs of the males, hence my nickname "humpy." I have large oval spots on my body as well as at the top and bottom of my tail. My body is mostly green. I often have a white belly.



Cutthroat - Many of us live in streams all year long and never go to saltwater, while others live in a lake or Puget Sound but return to our streams to spawn. Regardless of our size or location, we are covered with numerous small spots from top to bottom. We also maintain our sleek shape and silvery shine as we can spawn more than once.

Technology helps us track fish

To figure out how best to help salmon, fish scientists keep track of their migration and behavior.

In Puget Sound, chinook and coho from hatcheries have their adipose fin clipped off before they are released. This method may be low-tech but when they return as adults they can be quickly identified as hatchery stock by their missing fin. This is helpful for researching wild and hatchery fish and helps fishermen when they are only allowed to keep hatchery fish. While there is a sockeye hatchery in the Cedar River, their adipose fins are not clipped because the fish are too small upon release.

Occasionally hatcheries put a tiny metal coded wire tag in the nose of some fish before they are released. The tag, a rice-sized piece of metal, is magnetized and imprinted with information about where the fish originated. A metal detector that looks like a thick magic

wand can detect the magnet. Surveyors can wave the wand over a fish carcass, remove the tag if one is detected, and read it under a microscope. Coded wire tags also give us a better idea of where our salmon go when they are caught outside of Puget Sound.

Researchers also put similar passive integrated transponder (PIT) tags in salmon to monitor migrating habits, track behavior, evaluate restoration projects, and do other research. The electronic tag, 12 millimeters long, can be read by remote readers. Underwater antenna and transceivers capture each fish's information without needing to capture the actual fish which allows data to be collected multiple times and in multiple locations. At the Ballard Locks, PIT tag readers are located in the fish ladder, smolt slides, and within the locks themselves.

Crossword Puzzle

with clues from the inside

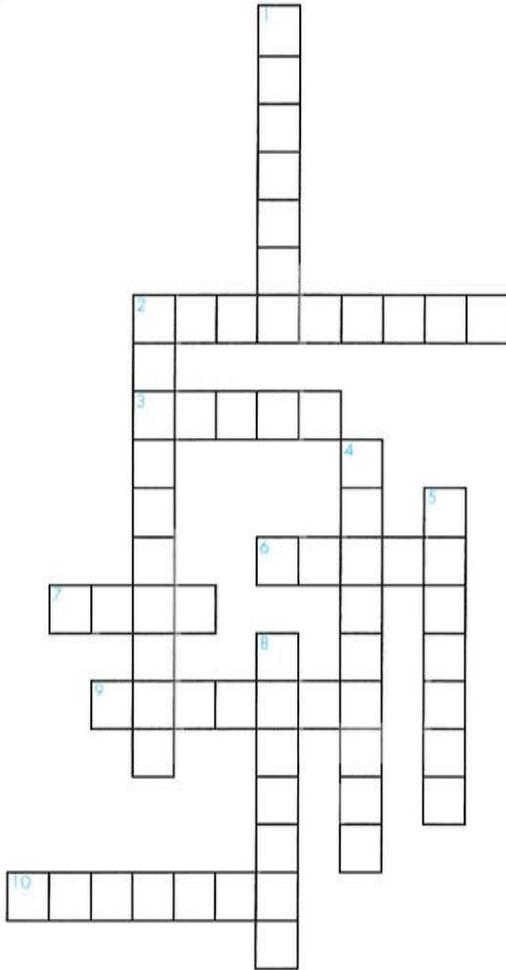
ACROSS

- Area of land that drains to a body of water
- Only rain should go down a _____ drain!
- This layer of organic material can feed soil, prevent weeds, and conserve water
- These help us monitor salmon for research
- I can help build healthy soil and keep water clean
- These mountains create the eastern border of the Puget Sound Watershed

DOWN

- Pet waste belongs here
- Lake _____ was lowered in 1916
- You can help prevent this
- I am the largest species of salmon
- I am a landlocked sockeye

Answers on page 6.



Name that Salmon

Do you remember the difference between salmon? Test your knowledge by matching the name with the salmon.

Chum Cutthroat Coho

Chinook Kokanee Sockeye

Pink



A



B



C



D



E



F



G

Building Language Skills with The Seattle Times

November 3, 2016

Article: “How does soil help stormwater?”

Sunday, October 30, 2016 in the print replica of The Seattle Times, Sponsored Newspapers In Education Content, page 3

Standard:

CCSS.ELA-LITERACY.RI.6.7

Integrate information presented in different media or formats (e.g., visually, quantitatively) as well as in words to develop a coherent understanding of a topic or issue.

Objective:

Students will read an informational text about soil, and then further understanding by conducting a comparative investigation of different types of soil.

Pre-Reading:

What is soil? Draw a picture of soil.

Vocabulary:

As you read, look for the following vocabulary words that appear in today’s article. Write down what you think the words mean based on the “context,” or how the words are used in the sentence in which they appear. Next, look up the definitions in a dictionary and see how close your guess was for each word.

clay

compost

erosion

minerals

mulch

organic

organisms

pollution

runoff

sand

silt

Comprehension:

1. Describe poor soil.
2. What is soil quality directly related to?
3. What are the largest mineral particles in soil?
4. What is a living community of organisms that sustains plants, animals and humans called?
5. What are some ways that healthy soil can help fish?
6. What are some ingredients that make good compost?
7. What is mulch?
8. How many organisms live in a teaspoon of healthy soil?

Post-Reading:

“Healthy soils help support plant growth, prevent erosion, and filter out pollutants. Poor soil is compact and lacks organic matter. In fact, organic matter in soil filters out pollution from road runoff which can be toxic to salmon. Healthy soil is a low tech way to manage stormwater by helping filter and store water. Soil quality is directly related to the health of streams and other bodies of water in the Pacific Northwest.”

Discuss the following questions in a group:

What is soil made of? Why is soil important? How does soil help fish? What are some things that you can do to keep soil healthy? What are some new things you learned about soil from reading the article? How do you think soil looks different or the same from the picture you drew during the warm up activity?

Building Language Skills:

After reading the article, complete the activity below:

Go outside and collect soil from different areas. Compare and contrast the different types of soil you find. What color is each soil? Is the soil dry or wet? How does the soil feel? What do you think each soil is made of—do some soils have more sand, silt or clay than others? How do you know? Create a map of where you found each type of soil (you'll want to make sure to label where you got each samples in order to do this). What do you think the location where the soil was found has to do with how it looks and feels?

Comprehension Question Answers:

1. Poor soil is compact and lacks organic matter.
2. The health of streams and other bodies of water in the Pacific Northwest
3. Sand particles
4. An ecosystem
5. Healthy soil can help to slow the flow of stormwater runoff and filter pollutants out of the water. In addition, healthy soils will absorb more water. This increases the volume of groundwater we have – a source for cool water to our creeks during our dry summers.
6. Leaves, chopped stalks, flowers, grass— or vegetable scraps in a worm bin or rodent resistant container
7. “Mulch” is a layer of organic material like leaves, wood chips, compost or grass clippings that you spread in spring or fall around your plants.
8. Four billion!

NEWS BREAK

Wednesday's News Break selects an article from Tuesday, October 25th, 2016 print replica of The Seattle Times for an in-depth reading of the news. Read the selected article and answer the attached study questions. **Please remember to always preview the content of the article before sharing with your students.**

Article: Feds step up efforts to protect ecosystem of Puget Sound (NW Wednesday, B1)

Objective: Students will learn about the Puget Sound ecosystem and efforts being made to preserve it.

Standards: EALR 1 Systems: Look at a complex situation and see how it can be analyzed as a system with boundaries, inputs, outputs, and flows.

Pre-Reading and Vocabulary

- What is the Puget Sound? Why is it important?

(Double check your answers by reading page 2 of the NIE Special Section, "Salmon Stormwater and YOU", in the Sunday, October 30th, 2016 print replica)

Vocabulary: Match the words to the numbered definitions in the chart below.

1. hailed	1. to acclaim; approve enthusiastically
2. agencies	2. the tidal mouth of a large river, where the tide meets the stream
3. caucus	3. the natural home or environment of an animal, plant, or other organism
4. dwindling	4. a meeting of the members of a legislative body who are members of a particular political party, to select candidates or decide policy
5. ecosystem	5. (of a problem, need, or situation) requiring quick or immediate action or attention
6. estuaries	6. a biological community of interacting organisms and their physical environment
7. federal	7. having or relating to a system of government in which several states form a unity but remain independent in internal affairs
8. habitat	8. diminish gradually in size, amount, or strength

9. pressing	9. business or organization established to provide a particular service, typically one that involves organizing transactions between two other parties
-------------	--

Comprehension

1. In your own words, what is the Puget Sound?
2. The Obama administration Tuesday stepped up efforts to protect Puget Sound that included what?
3. The federal action represents the latest in a string of efforts over the decades to tackle pressing environmental problems in the region, including what?
4. The federal action builds on similar efforts to protect which other ecosystems?
5. Who co-founded the Congressional Puget Sound Recovery Caucus?
6. The task force will include members from which federal agencies?

Group Discussion Questions or Extension Activities*:

- Consider water and how you use it every day. How many different ways of using water can you think of? How do you use water at home? How does your city use water? What do you think our lives would be like without fresh water? Hot water? Water from a tap? What would we have to do differently and how would we do it?
- Examine a map of Washington, and pay special attention to the different bodies of water that you see. Can you figure out the difference between the different types of bodies of water? For example, what is the difference between a sound and a bay? Research and create definitions for each body of water. Design a map of your own state or country – try to include at least one type of each body of water in it.
- Draw, paint or photograph five different forms/bodies of water and write five short poems about each. Focus on detail and description in your writing as well as telling the reader your relationship to the form of water.

*Some activities adapted from The Seattle Post-Intelligencer NIE program "The Zone - Water" by Kim Gonzales

News Break is posted to the Web on Wednesday and Friday. Please share this NIE News Break program with other teachers. To sign-up for the electronic edition for your class, please [register on-line](#) or call 206/652-6290 or toll-free 1-888/775-2655.

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Newsbreak Answer Key: November 2, 2016

Vocabulary

- A. 1
- B. 9
- C. 4
- D. 8
- E. 6
- F. 2
- G. 7
- H. 3
- I. 5

Comprehension Questions

1. Answers will vary.
2. Forming a new federal task force to identify priorities for restoring one of the nation's largest estuaries.
3. Dwindling salmon runs, water pollution and the rapid loss of wetlands and other wildlife habitat.
4. The Great Lakes and the Chesapeake Bay
5. U.S. Reps. Denny Heck and Derek Kilmer
6. The Navy, Homeland Security, Army Corps of Engineers, the National Oceanic and Atmospheric Administration and the Environmental Protection Agency.

Teaching News Is Elementary November 4, 2016

Each week, this lesson will share some classroom activity ideas that use the newspaper or other NIE resources. You are encouraged to modify this lesson to fit the needs of your students. For example, some classrooms may be able to use this as a worksheet and others might need to ask and answer the questions in a class discussion.

Please be sure to preview all NIE content before using it in your classroom to ensure it is appropriate for all of your students.

Materials you will need for this lesson: The Seattle Times print replica, computer or smart board, pencils or pens, and paper

Article: “Be a Drain Ranger! Identify things you can do to help salmon by preventing stormwater pollution”

Pages: Newspapers In Education Sponsored Content, Page 4 and 5

Date: Sunday, October 30, 2016

Standards:

CCSS.ELA-LITERACY.RI.3.2

Determine the main idea of a text; recount the key details and explain how they support the main idea.

CCSS.ELA-LITERACY.W.3.7

Conduct short research projects that build knowledge about a topic.

Objectives:

Students will read and recount details of an informational text about reducing stormwater pollution.

Students will conduct brief research on fundraiser and use their findings to plan their own fish friendly fundraiser.

Pre- Reading Discussion Questions:

Review stormwater pollution/runoff. What is it? Why is it bad? (Check your answers against the definition on Page 2)

Vocabulary:

Read the following quotes and determine the meaning of the word based on how it's used in the sentence.

"Soaps that get into our creeks can dissolve the **protective** mucous layer on fish and natural oils in the gills, making fish more **susceptible** to diseases."

Protective: to keep (someone or something) from being harmed, lost, etc.

Susceptible: likely or liable to be influenced or harmed by a particular thing

"**Automotive** fluids cause environmental and safety **hazards**."

Automotive: of, relating to, or concerned with motor vehicles

Hazards: a danger or risk

"Healthy soils lead to **robust** plants that are more **resistant** to disease and insects."

Robust: strong and healthy

Resistant: able to withstand the action or effect of

Journal Writing Prompts:

Imagine that you are a fish. How do you feel about stormwater running into your home?

Discussion Questions:

Either on your own or as a class complete the matching activity on page 4 and 5:

"Stormwater flows directly to local streams, lakes and wetlands without treatment. See if you can match the places that water soaks in, runs off or flows on the picture.

Help protect water quality by making simple choices that prevent pollution."

Review your answers. Why did you put your answers where you did? Have you or your family even done any of these things? What other things do you think you could do to prevent stormwater pollution? How could you encourage other people to reduce stormwater pollution?

Small group discussion and activity:

“Find a fish-friendly fundraiser. Instead of car washes, try the following ideas instead: partner with a local business to sell doughnuts, hold a clothing drive, have a bingo night or silent auction, or sell environmentally sustainable products. Or, sell commercial car wash coupons to raise funds, stay dry, and promote a fish-friendly car wash!”

- 1) Pretend your class needs to raise funds for something (or come up with an actual project to raise funds for).
- 2) On your own, conduct research about different types of fundraisers – brainstorm your own list of ten different types of fundraisers (you might want to include fundraisers you have participated in or heard about).
- 3) Share your list with the class to compile a class list of types of fundraisers. Which ones of these are fish friendly? Which ones are not? How do you know? Label the fundraisers of each type.
- 4) With a partner, choose one of the fish friendly fundraisers. Work together to create a list of steps that you and your classmates would need to take in order to execute this fundraiser. What would you need to do? Why? Who would do what? What would the time commitment be? Reflect on if you think this is an effective fundraiser or not.

< Mosul
FROM A1

and drone-launched missiles since the Mosul offensive began Oct. 17, according to the Pentagon.

But as the battle moves into a city of cobblestone pathways and clusters of shops, homes and Muslim shrines, U.S. pilots will exercise tactical restraint, "according to Lt. Gen. Jeffrey Harrigan, Air Force commander in the Middle East. "We're going to take a look in the area of the target to make sure there are no civilians moving toward the area," he said.

Last week, U.S. warplanes destroyed 40 empty trucks near Mosul that fighters planned to use to transport more civilians into the city, U.S. officials said.

"Our enemies recognize how much of an issue this is for us and how concerned we are about this," said Gen. Joseph Votel, U.S. commander in the Middle East, who visited Iraq last week. "I think trying to keep the population on our side by the way we conduct our operations is very important."

The Pentagon already is investigating allegations that a U.S. airstrike killed eight members of an Iraqi family, including three children, at their home in Fadhihlya, a village northwest of Mosul, during fighting Oct. 22.

"The coalition did conduct strikes in the area at the time of the allegation," said Col. John Dorrain, a spokesman for U.S. forces in Iraq. "We will investigate to determine what happened with this incident."

Chris Woods, director of Arrows, a nonprofit group that monitors civilian deaths from coalition air raids, said his analysts were tracking nine other airstrikes around Mosul in the last two weeks that he said had killed 50



Displaced residents stand Tuesday on the back of a truck at a checkpoint south of Mosul, Iraq. Many residents have fled as the Iraqi-led attack on the city grows more intense.

"Air power will be restricted in Mosul, there's no doubt about that. ... If you hold back too much, you're handing the enemy exactly what it wants."

DAVID DEPULA
Retired Air Force officer

people. The chance of hitting civilians has grown as the militants have forced civilians from surrounding districts into Mosul to serve as human shields, according to United Nations officials. In some cases, the militants shot civilians who refused to comply.

"The depraved, cowardly strategy is to attempt to use the presence of civilians to render certain points, areas or military forces immune from military operations, effectively using tens of thousands of women, men and children as human shields," said Zeid Ra'ad Al Hussein,

U.N. High Commissioner for human rights. The use of human shields is barred under international law, but humanitarian groups caution it is not an excuse for haphazard targeting.

"This does not absolve Iraqi and coalition forces from the obligation to take their presence into account, take all feasible precautions to minimize harm to civilians, and avoid launching attacks that could cause disproportionate harm to civilians," said Lynn Maakouf, deputy director for research

at Amnesty International's regional office in Beirut.

The Iraqi-led attack on Mosul is the largest and most ambitious by far since Islamic State fighters stormed out of Syria in 2014 and captured a dozen cities and vast territory in western and northern Iraq, abruptly pulling the Obama administration and dozens of allies into the war.

A series of ground offensives backed by coalition aircraft have recaptured most of the Iraqi cities since last year. But Mosul was home to 1 million people, and it presents special chal-

lenges. Heavy civilian casualties could undermine Iraqi Prime Minister Haider al-Abadi's fragile government in Baghdad and deepen the sectarian and political divisions that have fueled Sunni extremists since the U.S.-led 2003 invasion.

But limiting coalition airstrikes too much could hamper the ability of Iraqi and Kurdish forces to retake the city that the Islamic State group called its capital and considered its crown jewel.

"Air power will be restricted in Mosul, there's no doubt about that," said David Depula, a retired Air Force officer who is dean of the Mitchell Institute for Aerospace Studies in Arlington, Va. "However, it shouldn't be negated. If you hold back too much, you're handing the enemy exactly what it wants."

In hopes of avoiding street-to-street fighting, the Iraqis have left a 50-mile-wide opening west of Mosul so the militants can flee into the desert wastelands that lead to Syria.

Many Islamic State leaders and foot soldiers already have headed there to fight another day, according to U.S. military officials, who were not authorized to speak publicly about ongoing operations.

Islamic State fighters have been observed moving their families in recent weeks from Mosul to strongholds in Dair ez Zour and Raqqa, the

group's self-declared capital in Syria, even kicking residents out of their homes to make way for the new arrivals, officials said.

The outflow is expected to increase as Iraqi and Kurdish forces break through defensive lines around the city.

"For us, it moves our problem," one U.S. defense official said. "For Iraqis, it eliminates their problem."

As a result, U.S. military commanders have increased flights of spy planes and surveillance drones to watch traffic in and out of Mosul. U.S. drones equipped with infrared cameras, listening devices and air-to-ground missiles "orbit" over the area for 30 hours at a time.

The drones' video is beamed to a command hub in Qatar, where the coalition air campaign is run. The center looks like NASA's space command in Houston.

Hundreds of military personnel from more than a dozen countries sit before a dozen arrays of computer screens, video displays and digital maps.

A wall map the size of a movie screen shows Iraq and Syria. About 20 green airplane-shaped icons appear over Mosul, each showing the location of a coalition aircraft.

West of the city, a smaller group of aircraft icons fly in circles, a pattern the U.S. military calls "loopholes," tracking vehicles on the roads to Syria.

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Call for an appointment: 206.829.4220, 425.516.7677, 253.200.3474

THANK YOU Puget Sound Starts Here for your support of Newspapers In Education.

In partnership with Puget Sound Starts Here, The Seattle Times Newspapers In Education (NIE) presented "Salmon, Stormwater, and YOU" in order to provide information about how stormwater harms salmon and the Puget Sound, as well as what you can do to help!

Salmon, Stormwater, and YOU

Puget Sound salmon are in trouble. Choose salmon are listed as an endangered species. To better understand the problems and solutions, it's meet the salmon, how a lot how water flows over land, and explore what you can do to help.

Puget Sound Starts Here.org

The Seattle Times NEWSPAPERS IN EDUCATION INSPIRES STUDENTS TO LEARN

Responsible for half generations or to learn how to become a sponsored please visit: www.seattletimes.com/nie or call 206.462.4800



2016 STORM Symposium

FREE Stormwater Communication
and Outreach Training Opportunity

9:30 am - 3:30 pm, Tuesday, November 1
Brightwater Center, 22505 State Route 9 SE, Woodinville

Break-out Sessions

Choose one session from each time slot

Session 1: 10am-11am

- Multicultural outreach: Outreach considerations for multicultural audiences and Native American cultural awareness
- Property maintenance outreach: Continuous improvement of the pet waste program model and green moss removal practices

11am-12pm

Keynote: Recent findings on long term LID maintenance and associated water quality impacts. Dr. John Stark, Director, WSU Puyallup Research Center

John Stark is a full Professor and runs the Ecotoxicology Program at WSU. Dr. Stark earned a B.S. degree in Biology from Syracuse University (1978), a B.S. degree in Forest Biology from SUNY Syracuse (1978), an M.S. degree in Entomology from Louisiana State University (1981) and a Ph.D. in Toxicology from the University of Hawaii (1987). Dr. Stark's research interests focus on protection of endangered species and ecological risk assessment of pollutants with particular emphasis on salmon and aquatic invertebrates. He teaches courses in toxicology. Dr. Stark has published over 100 peer-reviewed papers in scientific journals, numerous book chapters and a recent book on ecological risk assessment entitled "Demographic Toxicity: Methods in Ecological Risk Assessment". He is also a member of the Puget Sound Partnership Science Panel (2007-present).

Session 2: 1pm-2pm

- Outreach program findings: Findings from programs including 10 years of car washing data in Bellevue and dumpster maintenance program findings from Bothell
- Outreach effectiveness study: Research findings to support benefits of and best practices for outreach

Session 3: 2pm-3pm

- Introduction to Interpretation: A communications process designed to help diverse audiences find meaning and relevance in your programs
- Strategies to extend your outreach budget and have effective programs: Using regional programs and non-profit partnerships for stewardship, training and multicultural outreach

2016 STORM Symposium

Additional Details

Schedule

Meet & Greet, Sign In, Refreshments	9:30-10:00
First breakout sessions	10:00-10:55
Intro and Keynote Address	11:00-12:00
Lunch Break, Networking, Sharing Slideshow	12:00-1:00
Second Sessions	1:00-2:00
Third Sessions	2:00-3:00
Wrap-up	3:00-3:30

Lunch Instructions:

Please bring your own lunch or purchase one in advance from Ingallina's. All purchased lunches will be delivered for you onsite that morning. There is nowhere to eat within walking distances of the facility and driving to the limited options offsite is not recommended.

To order from Ingallina's:

1. Go to www.ingallina.net
2. Enter Brightwater's address for delivery: 22505 State Route 9 SE, Woodinville, WA 98072
3. Choose your boxed lunch
4. Select November 1st for the date and 10:00-10:30 am for your delivery time
5. Make a comment in the special request box: "part of a larger order for STORM/Brightwater"

Driving Directions to Brightwater Center

1. Take to I-405 to exit 23A toward WA-522 East
2. Take exit for WA-9 North toward Snohomish/Arlington
3. Turn left onto WA-9 North/Snohomish-Woodinville Rd.
4. Turn right at the light at 228th St SE
5. On the site, turn left (north) at the "T"
6. At the next stop sign, go straight. You will see Brightwater Center on the left.

Chinook Book[®]

Everything we ♥ about the Puget Sound

Puget Sound
Starts Here.org



12 Month
Full Access Code

1511 (015 11)

Summary- Chinook Book Aug 1 - Oct 31

<i>Jurisdictions Participating</i>	<i>total codes</i>	<i>distributed to date</i>	<i>unlocks</i>	<i>sessions</i>	<i>redemptions</i>	<i>unlock %</i>
Bellevue, Bellingham, Bothell, Des Moines, Duvall, Everett, Kirkland, Lynnwood, Mercer Island, Puyallup, Seattle, Tacoma, King County	9350	1777	1545	116	158	8.89%

<i>Total Redemptions from all Chinook Book user Non-BMP</i>	<i>BMP-Related</i>
Redemptions: 33,261	1,854

<i>Redemptions by BMP Tag</i>	<i>NaturalYard</i>	<i>PetWaste</i>	<i>CarRed</i>	<i>NonToxic</i>	<i>CarWash</i>	<i>CarLeak</i>
Number of redemptions:	777	564	346	109	54	4

<i>Inline Ad Runs</i>	<i>headline</i>	<i>total ad views</i>	<i>total ad taps</i>	<i>Tap %</i>
Totals		65,424	292	0.45%

<i>Meaningful Actions July-October 2016</i>	<i>BMP Redemptions</i>	<i>Inline Clicks</i>	<i>Total</i>
# of Actions	1,854	292	2,146

Batch Code Unlocks and Activity: July - October

	total codes	distributed	unlocks	sessions	redemptions	unlock %
STORM - 2016-17 - City of Bellevue, 800 codes	800	N/A				#VALUE!
STORM - 2016-17 - City of Bellingham, 250 codes	250	69		7	50	10.14%
STORM - 2016-17 - City of Bellingham, 250 codes (DIGITAL)	250	0				#DIV/0!
STORM - 2016-17 - City of Bothell, 250 codes	250	200		16	143	8.00%
STORM - 2016-17 - City of Bothell, 250 codes (DIGITAL)	250	0				#DIV/0!
STORM - 2016-17 - City of Des Moines, 300 codes (DIGITAL)	250	1				0.00%
STORM - 2016-17 - City of Duvall, 250 codes	250	200		26	228	13.00%
STORM - 2016-17 - City of Duvall, 250 codes (DIGITAL)	250	12		7	37	58.33%
STORM - 2016-17 - City of Everett, 250 codes	250	115		9	66	7.83%
STORM - 2016-17 - City of Everett, 250 codes (DIGITAL)	250	0				#DIV/0!
STORM - 2016-17 - City of Kirkland, 250 codes	250	0		5	86	#DIV/0!
STORM - 2016-17 - City of Kirkland, 250 codes (DIGITAL)	250	0				#DIV/0!
STORM - 2016-17 - City of Lynnwood, 250 codes	250	172		28	403	16.28%
STORM - 2016-17 - City of Lynnwood, 250 codes (DIGITAL)	250	2				0.00%
STORM - 2016-17 - City of Mercer Island, 250 codes	250	36		9	40	25.00%
STORM - 2016-17 - City of Mercer Island, 250 codes (DIGITAL)	250	0				#DIV/0!
STORM - 2016-17 - City of Puyallup, 250 codes	250	15				0.00%
STORM - 2016-17 - City of Puyallup, 250 codes (DIGITAL)	250	0				#DIV/0!
STORM - 2016-17 - City of Seattle Public Utilities, 1,500 codes (DIGITAL)	1,500	5		3	128	60.00%
STORM - 2016-17 - City of Seattle Public Utilities, 300 codes	300	20		3	16	15.00%
STORM - 2016-17 - City of Tacoma, 250 codes	250	30		1	1	3.33%
STORM - 2016-17 - City of Tacoma, 250 codes (DIGITAL)	250	0				#DIV/0!
STORM - 2016-17 - King County, 1,000 codes	1,000	900		44	347	4.89%
STORM - 2016-17 - King County, 1,000 codes (DIGITAL)	1,000	0				#DIV/0!
Totals	9,350	1,777		158	1,545	8.89%

Jurisdiction	Total Redemptions	BMP Redemptions								Total BMP
		NaturalYard	PetWaste	CarWash	NonToxic	CarLeak	CarRed			
Belleveue	1,186	13	11	7	7	0	5			43
Bellingham	191	0	0	1	0	2	0			3
Bothell	476	3	9	0	0	0	0			12
Des Moines	385	4	1	1	0	0	0			6
Duvall	836	2	31	0	0	0	0			33
Everett	82	3	1	1	0	0	1			6
Kirkland	305	0	0	0	4	0	1			5
Lynnwood	2,727	13	52	2	3	1	17			88
Mercer Island	1,212	13	19	7	8	0	5			52
Puyallup	18	0	1	1	0	0	0			2
Seattle (SPU)	27,819	723	428	34	92	1	311			1,589
Tacoma	483	12	12	7	1	0	4			36
King County	30,697	737	493	41	105	2	319			1,697

NOTE: These columns cannot be summed accurately, as doing so would double count redemptions in overlapping jurisdictions. For example, a redemption in Duvall is also a redemption for King County. Thus we have not summed them here. The summary tab lists an accurate (non-double counted) sum of all redemption activity for all jurisdictions.

<i>Inline Ads July-October</i>	<i>headline</i>	<i>start date</i>	<i>end date</i>	<i>total ad views</i>	<i>total ad taps</i>	<i>Tap %</i>
PSSH - Salmon Season Sept 2016	See salmon return!	9/23/2016	11/30/2016	13,661	126	0.92%
PSSH - Stormwater Turkey	Are you naughty or nice?	12/1/2015	11/30/2016	18,361	59	0.32%
PSSH Learn How To	Learn How-To Tips	4/1/2016	9/13/2016	5,021	13	0.26%
PSSH Mr Orca	WATCH OUT FOR MR. ORCA	4/1/2016	9/13/2016	5,066	10	0.20%
PSSH Splash Jackson	Splash Jackson in Action	4/1/2016	9/13/2016	5,132	22	0.43%
Puget Sound Starts Here - Compost	Puget Sound Starts Here	9/1/2015	11/30/2016	18,183	62	0.34%
Totals				65,424	292	0.45%

ECOT_oBER

GET YOUR FALL ON

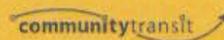
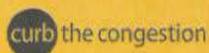
SATURDAY
OCTOBER 8
10^{AM} TO
1^{PM}

AT
CITY HALL
PLAZA
BOTHELL

Bring the family out for a fun day learning eco-friendly habits for healthier families and community.

Bike rodeo / Costume showcase (Bring or find gently-used costumes)
Trick-or-Treat ecology game / Community booths / Photo booth
Fun kids activities / Music / And more! / www.bothellwa.gov/Ecotober

City Hall Plaza | 18415 101st Ave NE, Bothell, WA





Help Celebrate

POLLUTION

PREVENTION

WEEK ▶ **SEPTEMBER 19-23, 2016**

This year we celebrate 26 years of pollution prevention efforts by joining in "National Pollution Prevention Week."

Each year the United States produces millions of tons of pollution and spends tens of billions of dollars dealing with it.

Residents, industry, and government have significant opportunities to reduce or prevent pollution at the source through cost-effective changes in daily habits, production, operation, and raw materials use.

We often don't realize the opportunities for reducing sources of pollution because existing regulations, and the industrial resources they require for compliance, focus on treatment and disposal rather than stopping pollution at its source.

Things you can do to reduce pollution at work:



Try safer chemicals
<http://bit.ly/2aNsSL2>



Report any outdoor spills right away
425-806-6750



Contact our business specialist for a **FREE** site visit

Find cost effective ways to reduce, manage, store, and dispose of waste safely.

CALL:

Tony Benson
tony.benson@bothellwa.gov
425-806-6795



Help Celebrate

POLLUTION

PREVENTION

WEEK ▶ **SEPTEMBER 19-23, 2016**

This year we celebrate 26 years of pollution prevention efforts by joining in "National Pollution Prevention Week."

Each year the United States produces millions of tons of pollution and spends tens of billions of dollars dealing with it.

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We often don't realize the opportunities for reducing sources of pollution because existing regulations, and the industrial resources they require for compliance, focus on treatment and disposal rather than stopping pollution at its source.

Things you can do to reduce pollution at home:



Take your car to a commercial car wash



Check your vehicle for leaks and get it fixed right away



Pick up your pet waste



Use little to no chemicals on your lawn and garden

**Puget Sound
Starts Here**


City of Bothell



Green Deals for Green Deeds!

Puget Sound Starts Here.org

\$15 value!

Chinook Book

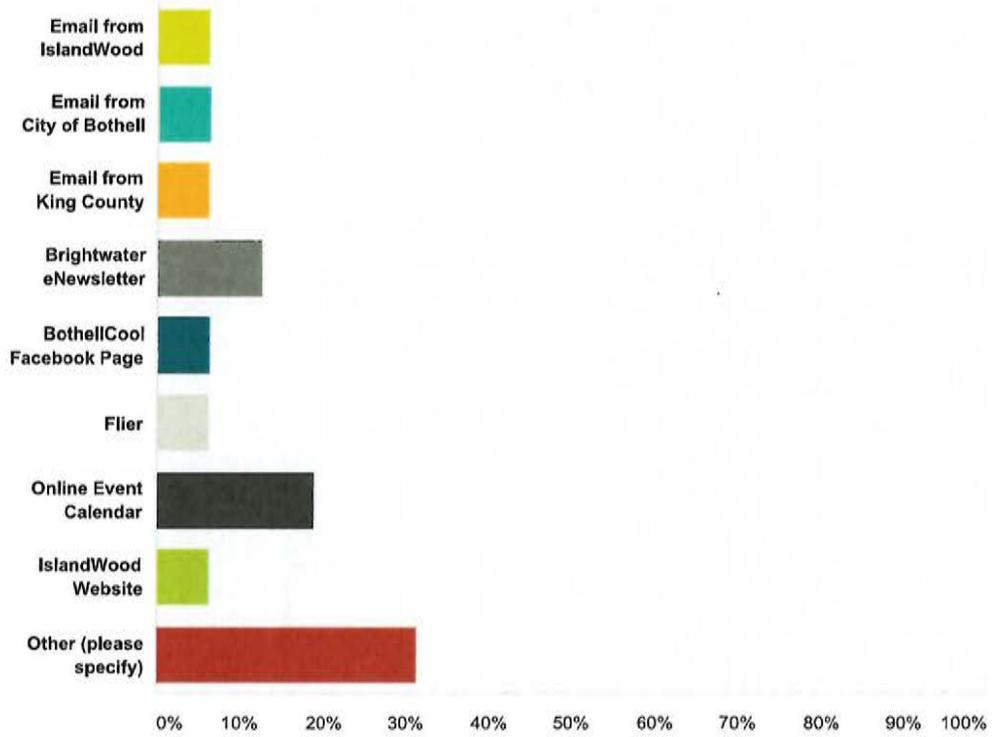
and many more!

The graphic features a stylized green tree icon and a background of a green field under a blue sky.



Q1 How did you hear about this event?

Answered: 16 Skipped: 0



Answer Choices	Responses
Email from IslandWood	6.25% 1
Email from City of Bothell	6.25% 1
Email from King County	6.25% 1
Brightwater eNewsletter	12.50% 2
BothellCool Facebook Page	6.25% 1
Flier	6.25% 1
Online Event Calendar	18.75% 3
IslandWood Website	6.25% 1
Other (please specify)	31.25% 5
Total	16

#	Other (please specify)	Date
1	eventbrite	3/26/2016 1:08 PM
2	Mother who got it from e-invite	3/26/2016 1:07 PM
3	TV	3/26/2016 12:49 PM
4	On TV	3/26/2016 12:49 PM

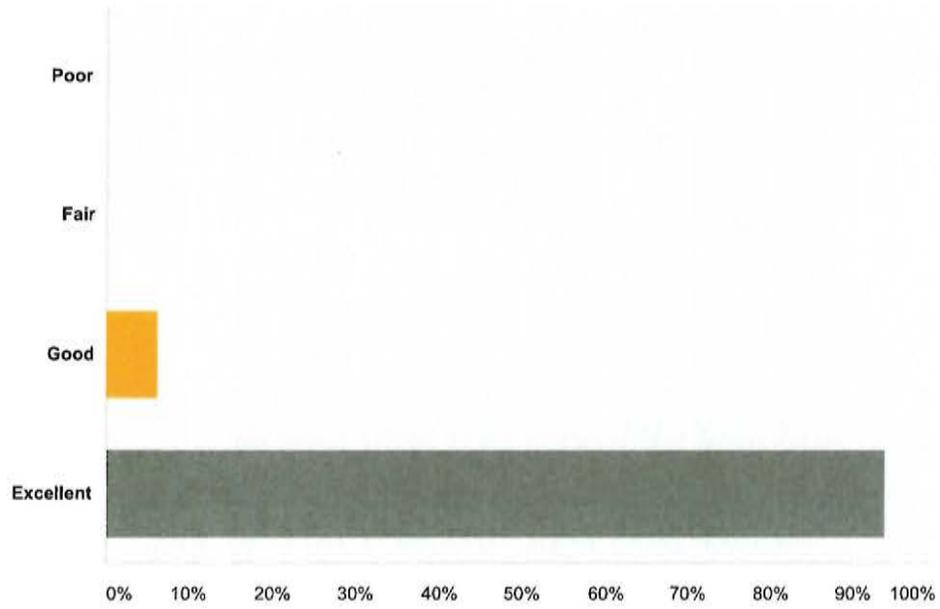
5

parentmap

3/26/2016 12:24 PM

Q2 How would you rank the overall quality of today's event?

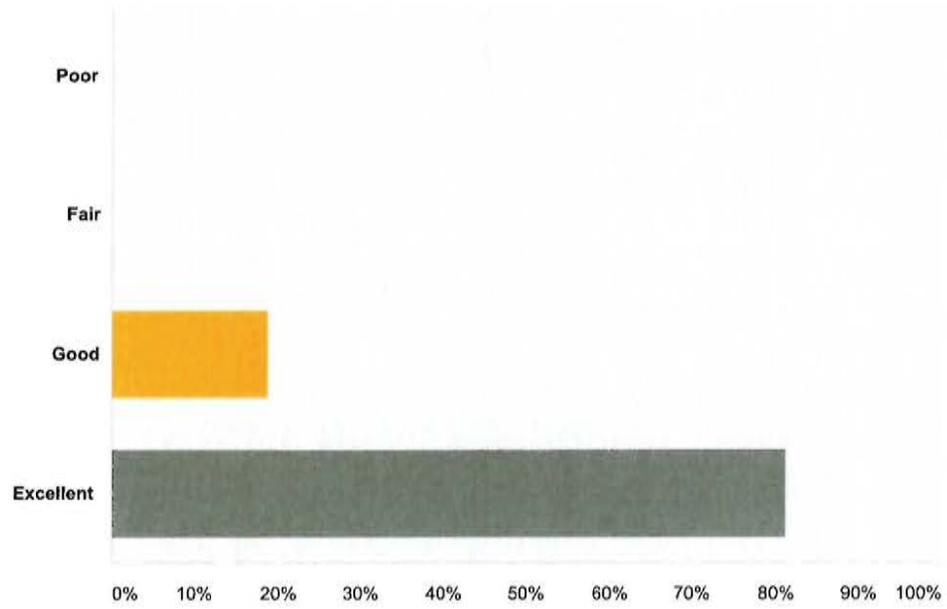
Answered: 16 Skipped: 0



Answer Choices	Responses	Count
Poor	0.00%	0
Fair	0.00%	0
Good	6.25%	1
Excellent	93.75%	15
Total		16

Q3 How would you rank the quality of the educators?

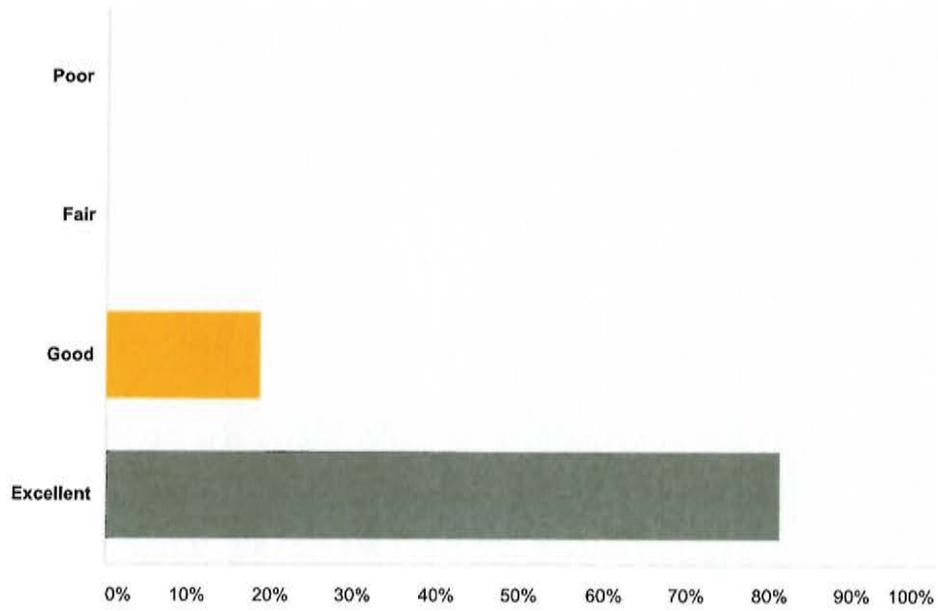
Answered: 16 Skipped: 0



Answer Choices	Responses	
Poor	0.00%	0
Fair	0.00%	0
Good	18.75%	3
Excellent	81.25%	13
Total		16

Q4 How would you rank your experience with program registration / logistics?

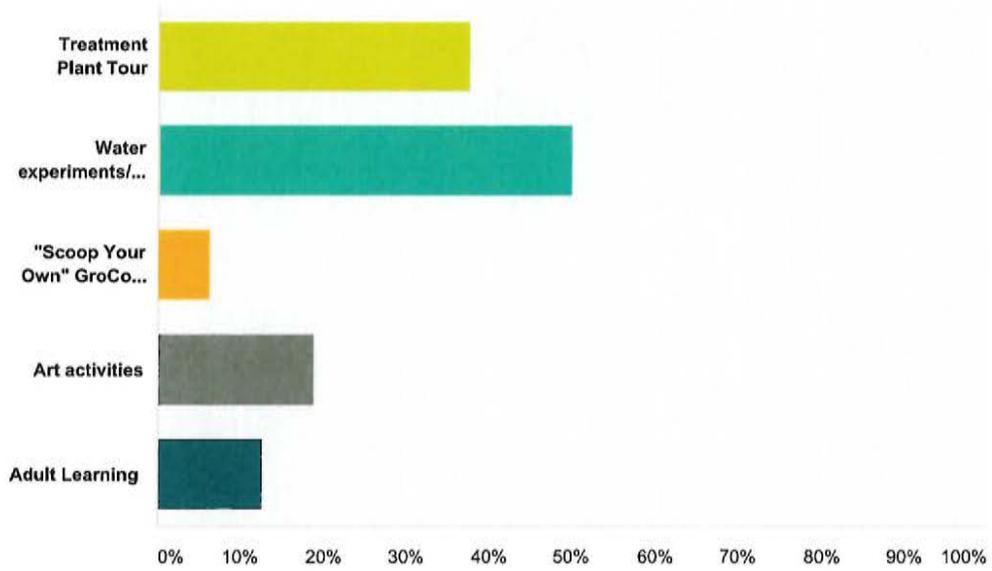
Answered: 16 Skipped: 0



Answer Choices	Responses	Count
Poor	0.00%	0
Fair	0.00%	0
Good	18.75%	3
Excellent	81.25%	13
Total		16

Q5 What did your child(ren) like most about this event?

Answered: 16 Skipped: 0

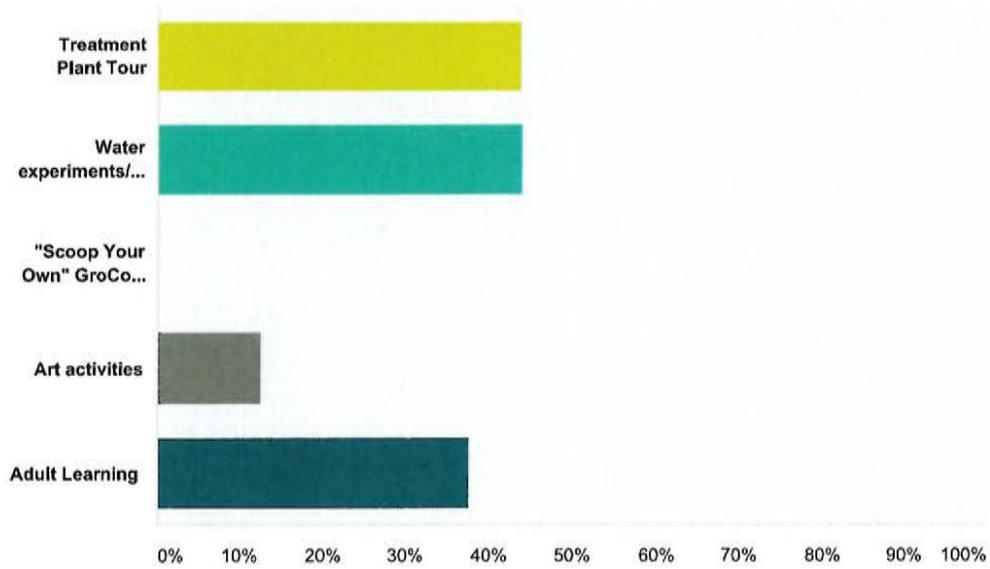


Answer Choices	Responses
Treatment Plant Tour	37.50% 6
Water experiments/activities	50.00% 8
"Scoop Your Own" GroCo compost	6.25% 1
Art activities	18.75% 3
Adult Learning	12.50% 2
Total Respondents: 16	

#	Other (please specify)	Date
1	The 'fair' table activites	3/26/2016 1:07 PM
2	no children	3/26/2016 12:51 PM
3	no kids	3/26/2016 12:49 PM
4	no kids	3/26/2016 12:49 PM
5	salmon dissection, science experiments	3/26/2016 12:03 PM

Q6 What did you like most about this event?

Answered: 16 Skipped: 0



Answer Choices	Responses
Treatment Plant Tour	43.75% 7
Water experiments/activities	43.75% 7
"Scoop Your Own" GroCo compost	0.00% 0
Art activities	12.50% 2
Adult Learning	37.50% 6
Total Respondents: 16	

#	Other (please specify)	Date
	There are no responses.	

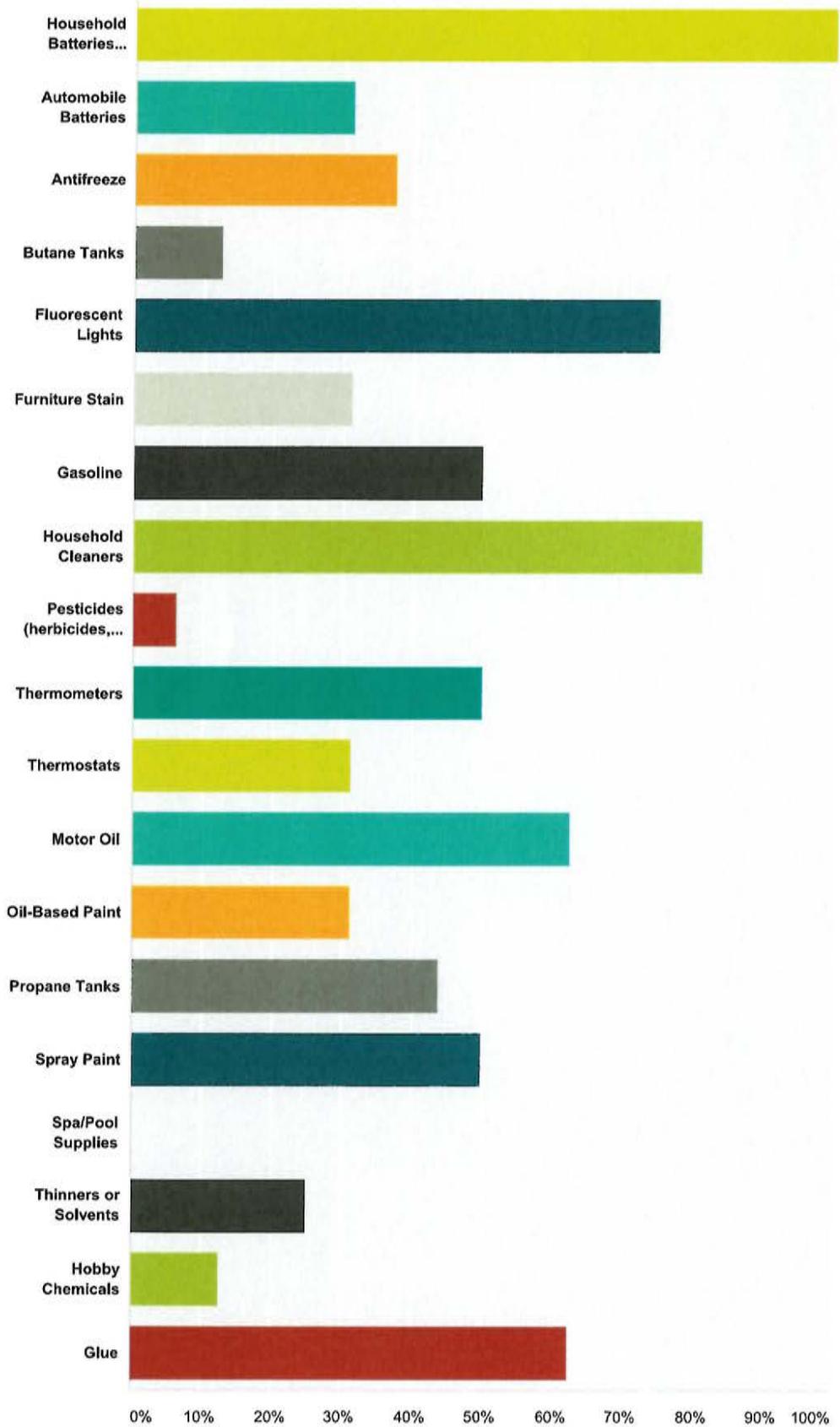
Q7 What about this event could be improved for next time?

Answered: 7 Skipped: 9

#	Responses	Date
1	more adult treatment plant tours	3/26/2016 12:49 PM
2	More adult tour times	3/26/2016 12:49 PM
3	It is put together so well.	3/26/2016 12:44 PM
4	nothing, I thought it was wonderful	3/26/2016 12:03 PM
5	even more experiments	3/26/2016 11:47 AM
6	Options for younger kids to see the tour	3/26/2016 11:28 AM
7	none	3/26/2016 11:24 AM

Q8 Which of the items listed below do you have in your home?

Answered: 16 Skipped: 0

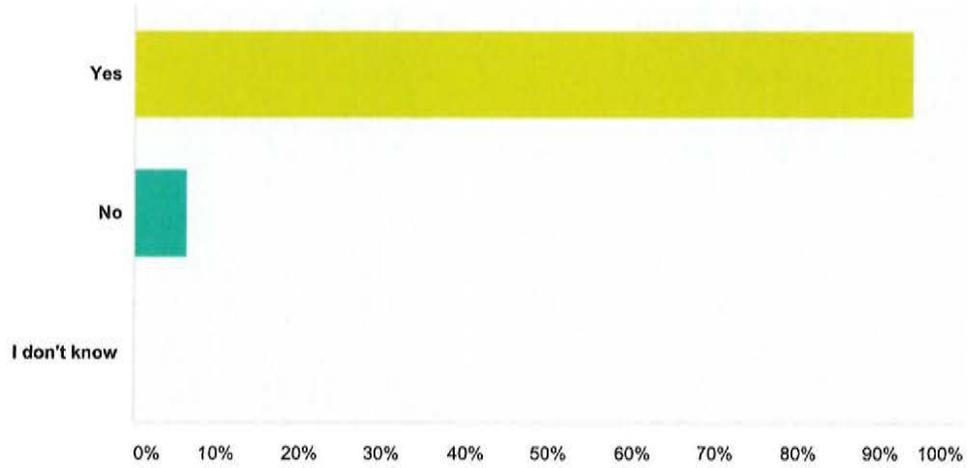


Answer Choices	Responses	
Household Batteries (alkaline)	100.00%	16
Automobile Batteries	31.25%	5
Antifreeze	37.50%	6
Butane Tanks	12.50%	2
Fluorescent Lights	75.00%	12
Furniture Stain	31.25%	5
Gasoline	50.00%	8
Household Cleaners	81.25%	13
Pesticides (herbicides, insecticides, fungicides, etc.)	6.25%	1
Thermometers	50.00%	8
Thermostats	31.25%	5
Motor Oil	62.50%	10
Oil-Based Paint	31.25%	5
Propane Tanks	43.75%	7
Spray Paint	50.00%	8
Spa/Pool Supplies	0.00%	0
Thinners or Solvents	25.00%	4
Hobby Chemicals	12.50%	2
Glue	62.50%	10
Total Respondents: 16		

#	Other (please specify)	Date
	There are no responses.	

Q9 Do you typically read and follow the guidelines on the package when using these items?

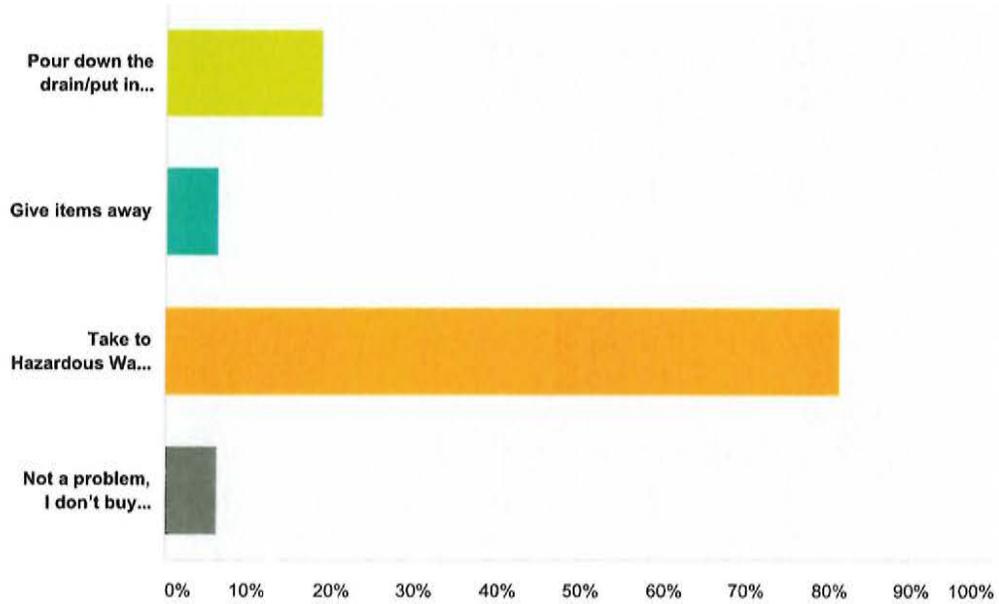
Answered: 16 Skipped: 0



Answer Choices	Responses	
Yes	93.75%	15
No	6.25%	1
I don't know	0.00%	0
Total		16

Q10 How do you typically dispose of these items?

Answered: 16 Skipped: 0

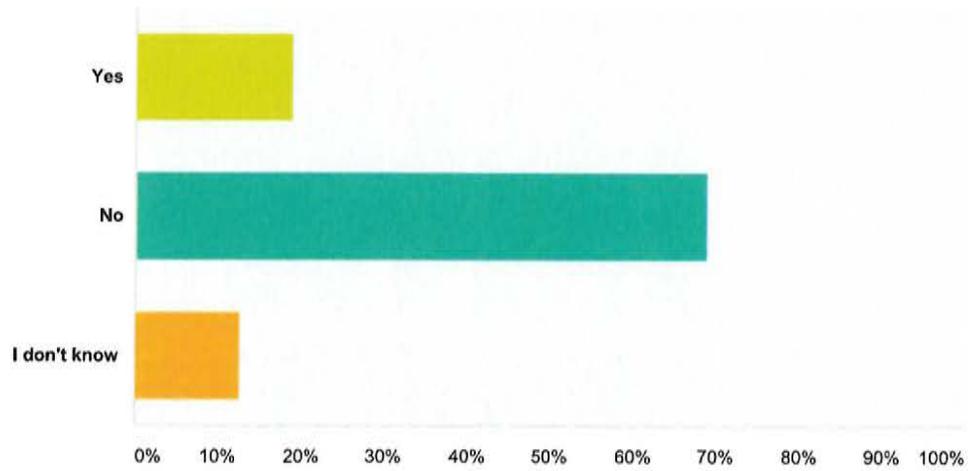


Answer Choices	Responses
Pour down the drain/put in the garbage	18.75% 3
Give items away	6.25% 1
Take to Hazardous Waste Facility	81.25% 13
Not a problem, I don't buy toxic chemicals	6.25% 1
Total Respondents: 16	

#	Other (please specify)	Date
	There are no responses.	

Q11 Do you typically apply chemical pesticides or fertilizers on your lawn or garden?

Answered: 16 Skipped: 0



Answer Choices	Responses	
Yes	18.75%	3
No	68.75%	11
I don't know	12.50%	2
Total		16

Q12 Even small changes can make a difference! If you're willing to make a change in your behavior based on what you've learned today, please tell us about it here:

Answered: 8 Skipped: 8

#	Responses	Date
1	more careful on what i use and dispose ;)	3/26/2016 1:08 PM
2	Use less water	3/26/2016 1:07 PM
3	pour less chemicals downs the drain	3/26/2016 12:49 PM
4	Don't put paper towels in toilet.	3/26/2016 12:49 PM
5	stop fertilizer usage	3/26/2016 12:24 PM
6	what i put down the drain	3/26/2016 12:03 PM
7	Reducing water usage	3/26/2016 11:28 AM
8	awareness of hazardas substances	3/26/2016 11:24 AM



Appendix C

GOT POOP?

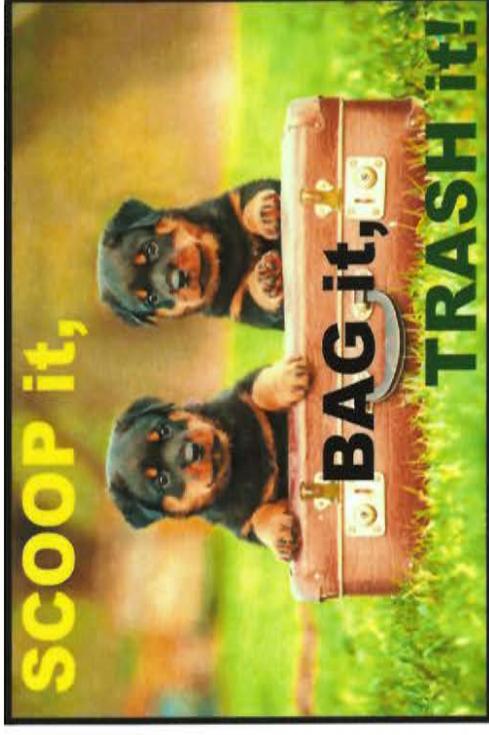
For the safety of everyone sharing this space, be sure to leash your dog and pick up after them.

IT'S THE LAW!

Leaving your pet waste on public or private property could land you a \$250 fine per violation.

(BMC 6.16.011 and 8.60.240)

This area is patrolled by City of Bothell's Animal Control Officer.



Questions? www.ci.bothell.wa.us



FOLLOW THE LAW!

For the safety of everyone sharing this space, be a responsible pet owner:

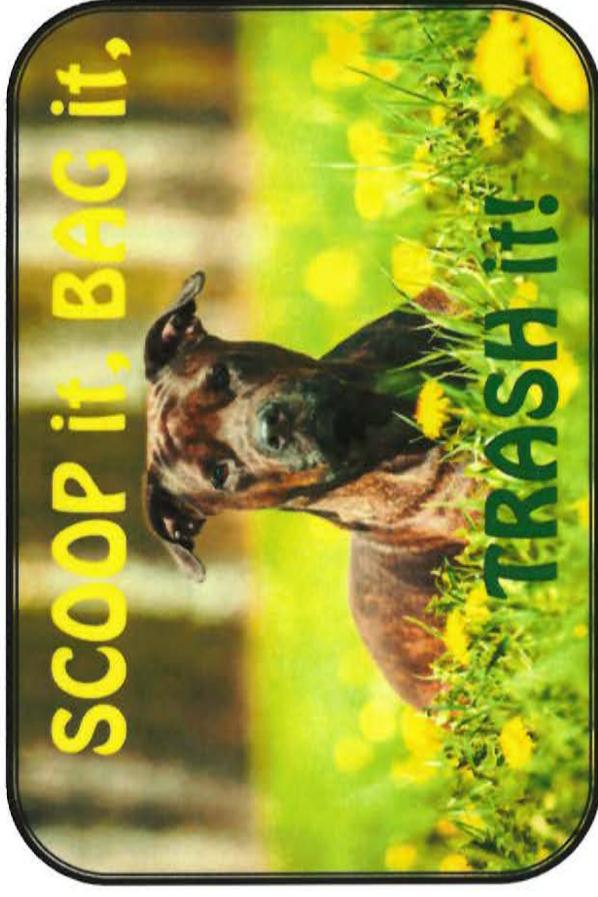
Leash your dog and pick up after them.



Did you Know?

You could be fined up to \$ 250 per violation for leaving your pet waste on public or private property. That's money that could be spent on dog treats!

(BMC 6.16.011 and 8.60.240)



Questions? www.ci.bothell.wa.us

IT'S THE LAW

For the safety of everyone sharing this space, be sure to

LEASH YOUR DOG

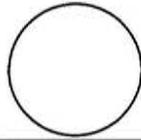
and

PICK UP AFTER THEM

Leaving your pet waste on public OR private property is against the law and subject to a \$250 fine per violation

(BMC 6.16.011 and 8.60.240)

This area is patrolled by City of Bothell's Animal Control Officer



Pet Waste Found in Your Area!

This is not a citation

Dog poop is more than just an icky nuisance, it's full of bacteria like Giardia and Ecoli that can make people sick.



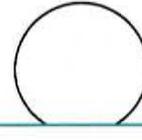
What's more, when it rains, the waste is washed into our storm drains and is carried into the nearest stream making the water unsafe to swim or play in.

DID YOU KNOW?

It's against the law! According to BMC 6.16.011 and 8.60.240, it is unlawful to leave your pet waste on public or private property. You can be fined up to \$250 per violation.

Do the Right Thing Scoop it, Bag it, Place it in the trash

Questions?
Animal Control Officer 425.486.1254
Surface Water (Janet Geer) 425.486.2768



Puget Sound Starts Here

Did you know?

City of Bothell storm drains do not connect to the sewer system. Anything that enters a storm drain flows directly to the nearest lake, stream, or wetland without treatment. This is why it's so important to keep all pollutants out of our storm water system.

The pollution comes from our every day activities and can only be prevented by changing our habits.



Here are some ways you can help:

- Don't use synthetic pesticides and fertilizers
- Use a commercial car wash
- Check your vehicle for leaks
- Properly dispose of pet waste
- Dispose of paint, solvents and household hazardous chemicals at proper facilities



City of Bothell



SCOOP it, BAG it, TRASH it

DOG POOP IS NOT FERTILIZER!!

For the safety of everyone sharing this space, be sure to leash your dog and pick up after them.

IT'S THE LAW!

Leaving your pet waste on public **or** private property could land you a \$250 fine per violation (BMC 6.16.011 and 8.60.240)

This area is patrolled by the City of Bothell's Animal Control Officer

Questions? www.ci.bothell.wa.us

More Than Just a Nuisance

Pet waste is more than just an icky nuisance. It's raw sewage that contains harmful germs and bacteria.

The bacteria can persist for weeks making lawns and streams unsafe for kids



SCOOP it, BAG it, TRASH it

Please **DO NOT** Feed the Ducks



FEEDING THEM CAUSES:

- Poor Nutrition
- Spread of Disease
- Unnatural Behavior
- Water Pollution
- Overcrowding
- Duckling Malnutrition
- Delayed Migration
- Habitat Degradation

WHAT DO THEY EAT NATURALLY?

- Worms
- Plant Matter
- Roots
- Dragonflies
- Crustaceans
- Aquatic Vegetation
- Moths
- Flies
- Beetles
- Seeds



City of Bothell™

Keep Wildlife Wild

To learn more, visit: www.ci.bothell.wa.us

6.16.011 Animal waste.

It shall be unlawful for any person to:

- A. Allow animal feces to accumulate in any open private area, run, pen, shelter, or yard where animals are harbored or fail to remove and properly dispose of animal feces from such areas at least once every 24 hours, unless such areas are subject to treatment with all reasonable best management practices, per BMC 18.04.260(D), so as to prevent polluted drainage waters from entering the surface or storm water system of the city.
- B. Fail to remove fecal matter deposited by an animal under his or her ownership or control on public property or the private property of another before leaving the immediate area where the fecal matter was deposited.
- C. Fail to have in his or her immediate possession an appropriately sized bag to be used for the removal of animal feces when accompanying an animal on public property or private property of another.

Provided, however, that subsection A of this section may be enforced only as a secondary action when an animal control or law enforcement officer is investigating another suspected civil or criminal violation related to the private property. (Ord. 2077 § 1, 2011).

8.60.240 Pets in park facilities.

- A. Dogs, pets or domestic animals are not permitted on any designated swimming beach, sports fields, picnic or play areas in any Bothell park or in any building unless specifically permitted by posting; provided, that this section shall not apply to the use of a trained animal by a disabled person.
- B. In permissible areas, dogs or other pets or domestic animals must be kept on a leash no greater than 15 feet in length, and under control at all times.
- C. Any person whose dog or other pet is in any Bothell park shall be responsible for the conduct of the animal and for removing feces deposited by such animal from the park area.
- D. No person shall allow his or her dog or other pet or domestic animal to bite or in any way molest or annoy park visitors. No person shall permit his or her dog or other pet or domestic animal to bark continuously or otherwise disturb the peace and tranquility of the park.
- E. Horses shall be permitted only in Bothell parks that are specifically designated and posted to permit such activity. Horses shall not be permitted in any designated swimming area, campground, or picnic area. No person shall allow a horse or other animal to stand unattended or insecurely tied. No person shall ride any horse or other animal in such a manner that endangers or would be likely to endanger persons or property. (Ord. 2094 § 1 (Exh. A), 2012; Ord. 2077 § 2, 2011; Ord. 1835 § 1, 2000; Ord. 1277 § 1, 1987).

Appendix D



water

EDUCATION

The [City of Bothell](#) offers several fun, hands-on classroom presentations to help our students explore the fascinating world of water. All activities are tailored to our region and are offered **FREE** of charge to our schools. An experienced educator from [Nature Vision, Inc.](#) will conduct each class.

[Nature Vision](#) is an award-winning environmental education non-profit organization serving over 65,000 students in our region annually. They foster appreciation and stewardship of our environment by educating and connecting community to the world around us.

programs OFFERED

Water Cycle Terrariums (K-3)

Learn the steps of the water cycle, and become a water droplet for an hour. Travel to all the places water goes to during the water cycle, including lakes, rivers, streams, mountains, the ocean, plants, animals and you! Understand simple ways to protect and care for water.

Water Cycle Round (4-6)

Students will review the stages of the water cycle and play the role of a water drop as it travels through the cycle. Discussion will include the function of watersheds and our local water supply and how to protect water.

Salmon Cycle (K-6)

Discover the connection between Pacific salmon, people, and the water we share. The salmon life cycle and what this keystone species requires from its ecosystem is discussed. Students will explore water quality issues and understand why healthy salmon habitat is good for Northwest ecosystems, and people too.

Watershed Ecosystems (K-6)

We all live in a watershed, and it is up to us to keep the water that flows through it clean and plentiful. This program introduces students to their own local watershed and to the plants and animals that share this important ecosystem. Students will also learn how a healthy environment cleans water naturally, and gain insight on the impact of humans on this system. Positive human actions on the combined natural-and human built environments are discussed.

Wetland Filters (2-6)

Wetlands are like the kidneys of the earth, filtering water as it circulates through the water cycle. Students will learn how wetlands perform this important function through hands-on activities.

Get Started!

FREE

To schedule a program, please [contact Nature Vision](#) at info@naturevision.org or call 425-836-2697



If you have any questions regarding programs or other services offered, please [contact your Surface Water Program Coordinator, Janet Geer](#) at 425-806-6796 janet.geer@bothellwa.gov

Additional Resources

[PugetSoundStartsHere.org](#)

Learn how you can help heal Puget Sound.

[KingCounty.gov/Salmon](#)

Find additional salmon information online.

[Drain Rangers Curriculum](#)

pugetsoundstartshere.org/drain-rangers



Watershed Dynamics (Enviroscape) (3-6)

Students will interact with a tabletop model of a typical community to learn how their everyday choices affect the water quality in our watershed. Alternative choices to prevent watershed contamination are discussed.

Water Supply (4-6)

Do you know where your drinking water comes from? Discover the path clean water takes from its local natural source to your faucet! Students will explore the human and natural factors that affect our water supply, and what actions they can take to keep this important natural resource pristine as our population grows.

Water Conservation (4-6)

Did you know that our area receives less rainfall in the summer months than Miami, Florida? Join us for an interactive lesson that will explore what our community can do to conserve our water indoors and outdoors. Students will learn why we need to save water and what every person can do to use water wisely to help keep more water in our local water bodies for wildlife and future generations.

Water Connection Field Trip (K-6)

Students will visit a local lake, wetland, or pond near their school and explore it with a naturalist. Students will observe plants and animals in this environment, examine and identify local freshwater invertebrates, and will learn about the health of our greater watershed systems. Older students may also participate in water quality tests for oxygen, pH, temperature and more.

Healthy Water, Healthy Soil (K-3)

Dig in to healthy soil and discover the living creatures that benefit the soil and plants all around us. Touch and feel the non-living parts of soil, and explore how healthy water keeps our soils in the Northwest healthy.

Healthy Water, Healthy Soil (4-6)

Dig in to healthy soil and discover the living network of decomposers that benefit the ecosystems around us. Explore how healthy water keeps our Northwest soils healthy and understand how humans can impact soil through our interactions with water.

Blue Teams (K-6)

You have the opportunity to create a youth-powered Blue Team to help care for one of our most precious natural resources -WATER! Blue Teams carry out a water quality action project that promotes watershed sustainability and stewardship in their community. Each team receives expert help from a Naturalist to help plan, prepare and execute their project.

GET STARTED!

To schedule programs or field trips, visit <http://www.naturevision.org/program-registration/>. Register online or print out the registration form and fax it in per the instructions.

Scheduling considerations: We are available to visit your school from 7:30 a.m. - 3:30 p.m. Please allow one hour for each elementary program, 45-50 minutes for each secondary program. Feel free to schedule programs back-to-back (10:00, 11:00, 12:00), but if possible please leave 10 -15 minutes in between. Pre-registration is required. If you have any questions about these programs please do not hesitate to email Nature Vision at info@naturevision.org, or call (425) 836-2697.

DRAIN RANGER CURRICULUM

The Pacific Education Institute with formal educators, cities, and nonprofits across the region worked to create an excellent stormwater curriculum with locally relevant videos, illustrations, and content. Please review the curriculum and complete the online form if you are interested in receiving free materials, training, or classroom assistance to implement these great lessons in your classroom: www.bothellwa.gov/DrainRangers



water

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programs OFFERED

Watershed Dynamics (Enviroscape) (7-12)

Students will interact with a tabletop model of a typical community to learn how their everyday choices affect the water quality in our watershed. Alternative choices to prevent watershed contamination are discussed.

Water Conservation (7-9)

Did you know that our area receives less rainfall in the summer months than Miami, Florida? Join us for an interactive lesson that will explore what our community can do to conserve our water indoors and outdoors. Students will learn why we need to save water and what every person can do to use water wisely to help keep more water in our local water bodies for wildlife and future generations.

Water Supply (7-9)

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Watershed Ecosystems (7-8)

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Salmon Cycle (7-12)

Discover the connection between Pacific salmon, people, and the water we share. The salmon life cycle and what this keystone species requires from its ecosystem is discussed. Students will explore water quality issues and understand why healthy salmon habitat is good for Northwest ecosystems, and people too.

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pugetsoundstartshere.org/drain-rangers



***Healthy Water, Healthy Soil (7-8)**

Through this hands-on lesson, students will gain an understanding of soil function and physical properties. Students will observe soil texture, structure, color, infiltration, test for key nutrients, and analyze soil pollution. Students will connect soil composition with the impact of our daily water choices on the natural environment.

***Healthy Water, Healthy Ecosystems (9-12)**

Experiment with soils from different watershed ecosystems in Washington, and develop an understanding of what each ecosystem needs to be healthy and sustainable. Conduct an analysis of plant needs and create a restoration plan that matches an appropriate soil within an ecosystem. Determine how soil pollution creates disruptions within these ecosystems. **Please note Healthy Water, Healthy Soil and Healthy Water, Healthy Ecosystems are two part programs for grades 7-12. Please allow for two 50 minute sessions or one block period for each program.*

Water Connection Field Trip (7-12)

Students will visit a local lake, wetland, or pond near their school and explore it with a naturalist. Students will observe plants and animals in this environment, examine and identify local freshwater invertebrates, and will learn about the health of our greater watershed systems. Older students may also participate in water quality tests for oxygen, pH, temperature and more.

Be the Solution (Grades 7-8)

Students will become familiar with their watershed by gaining awareness of current water issues and understanding what community members can do to help. They will apply their new understanding by interpreting real-world local data.

Be the Solution (Grades 9-12)

Students will use a detailed map of Bothell's subwatersheds to see firsthand how waterways are connected. They will also understand the human impacts on their watersheds. Students will interpret data collected in order to gain an understanding of local issues affecting waterways, and become familiar with best management practices that have a positive impact on the watershed ecosystem.

Be the Solution (Grades 11-12)

Students will become knowledgeable in the many issues facing Puget Sound's present health. They will understand the important role we all play in recovering Puget Sound by becoming familiar with what daily actions Bothell community members can take to create more positive impacts in our watersheds. As a class, students will make clear the many facets affecting Puget Sound by interpreting the most recent State of the Sound report.

Blue Teams (Grades 6-12)

You have the opportunity to create a youth-powered Blue Team to help care for one of our most precious natural resources -WATER! Blue Teams carry out a water quality action project that promotes watershed sustainability and stewardship in their community. Each team receives expert help from a Naturalist to help plan, prepare and execute their project.

GET STARTED!

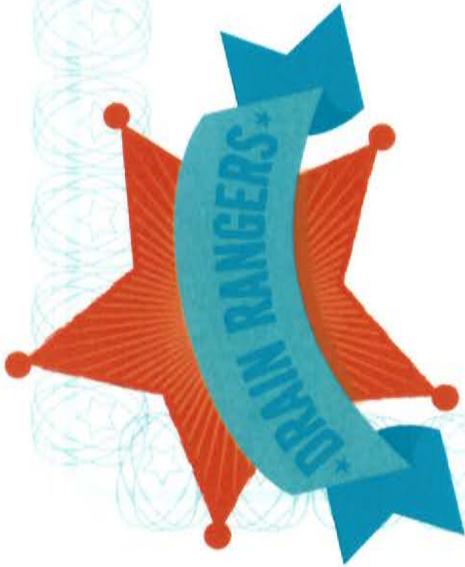
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The Drain Ranger Pledge

I will do my duty as a Drain Ranger to guard Puget Sound,
to protect all aquatic animals large and small,
to prevent pollution from going down storm drains
into lakes, streams, rivers, and Puget Sound.
I will explain to others that car wash soap, dog poop
and chemical fertilizers can end up in storm drains.
I will help my family and friends stop polluting by showing them
the Puget Sound Starts Here website to find a better way.
I promise this on my honor as a Drain Ranger.

This document certifies that

is an official

DRAIN RANGER

Protector of Puget Sound

Puget Sound
Starts Here

Chief Drain Ranger

Date

STORM DRAINS FLOW TO OUR WATERWAYS WITHOUT TREATMENT



The Washington State Department of Ecology estimates that each year millions of pounds of toxic pollutants flow into our streams, our lakes, our rivers, and then into Puget Sound.

Stormwater that runs off paved roads and driveways, rooftops, yards and other developed land is a major source of this pollution.

Our streams are in trouble. Puget Sound is in trouble. We are the solution, and we can do something about it.



We can leave a legacy of clean, healthy water for our kids by taking some simple steps:



Taking our car to a commercial car wash and fixing auto leaks



Scooping the poop, bagging it, and tossing it in the trash (not the yard waste bin.)



Using pesticides sparingly, if at all, and using compost instead of fertilizer.



Using nontoxic cleaners in and around your home when possible. Purchasing only what you need to minimize storage of toxic chemicals.

Learn more by going to :

**Puget Sound
Starts Here**

Presentations sponsored by the City of Bothell



City of Bothell



Howdy Drain Ranger,

Now that you've been deputized, we have an assignment for you and a trusty sidekick (adult in your home) to complete.

In this assignment, we will ask you to investigate potential sources of water pollution that can be found around your home.

1. Go to <http://www.ci.bothell.wa.us> and search for "drain rangers"
2. Complete all of the questions in the assignment listed on the page
3. Click "submit" when you are finished
4. Fill out the other side of this postcard and return it to your teacher.

I _____ (your name)

have completed and submitted the stormwater assignment listed at this address:

<http://www.ci.bothell.wa.us>

as part of our water educational presentation.

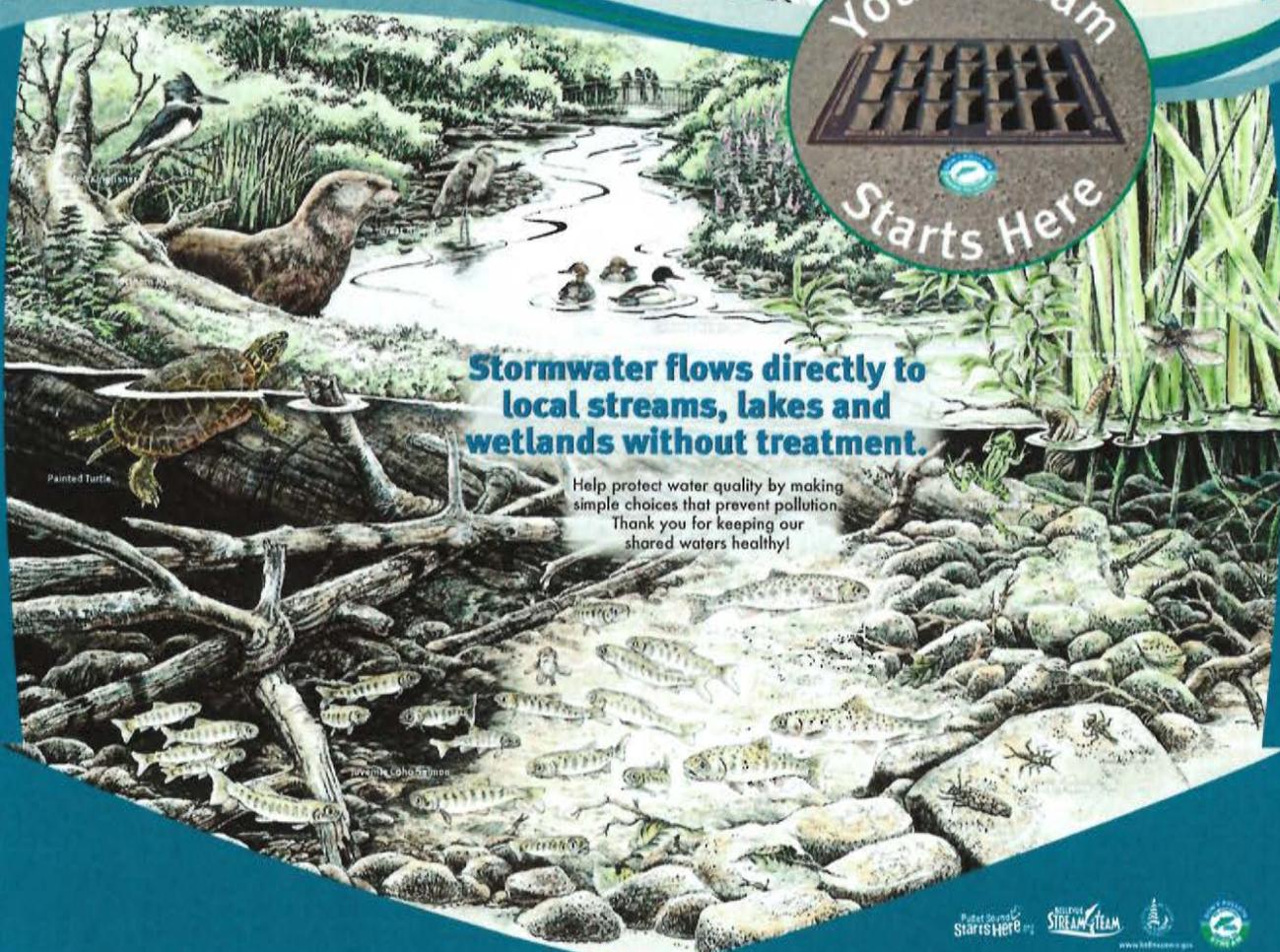
_____ (adult signature)

Prevent Pollution

Scoop the poop, bag it, and place it in the trash. Pet waste contains harmful microorganisms that can be transferred to humans.

Practice Natural Yard Care. Choose the right plants, build your soil, and water wisely to grow healthy plants and avoid using pesticides and fertilizers that can contaminate our streams and lakes.

Wash your car at a commercial car wash because they send the dirty water to the sewer for treatment. Soaps dissolve the protective mucous layer on fish and natural oils in the gills, making fish more susceptible to diseases. Even biodegradable soap pollutes water.



Stormwater flows directly to local streams, lakes and wetlands without treatment.

Help protect water quality by making simple choices that prevent pollution. Thank you for keeping our shared waters healthy!



Preliminary Evaluation Results for the City of Bothell Water Quality Education Programs 2016

Description and Purpose

The City of Bothell's Water Quality Education Program continues to educate students about pollution prevention, stormwater quality, and watershed ecosystem health. Students that participate in these workshops learn how natural water systems keep our water healthy, how human built water systems interact with these natural systems, and what we can all do to be good stewards of our watershed. This program is helping to create awareness and foster sustainable practices and behaviors in the City of Bothell.

This report presents the results from the seventh year of evaluating these programs as outlined in the Evaluation Methods and Procedures document presented at the January 2010 Review Team meeting and our scope of work.

Evaluation Goals and Methods

The evaluation was designed to measure:

Goal 1: Student Retention: To evaluate the retention of lessons in short-term and long-term student memory (short term immediately following the lessons, long term after 90 days).

- Method 1- select classroom surveys
- Method 2- follow-up surveys after 90 days when applicable
- Method 3- student letter analysis
- Method 4- select student responses to essay questions

Goal 2: Teacher Satisfaction: To evaluate how the program is received by teachers, i.e. are the workshops helping teachers meet state and local education standards and therefore desired by teachers as a teaching resource.

- Method 5- post workshop email survey

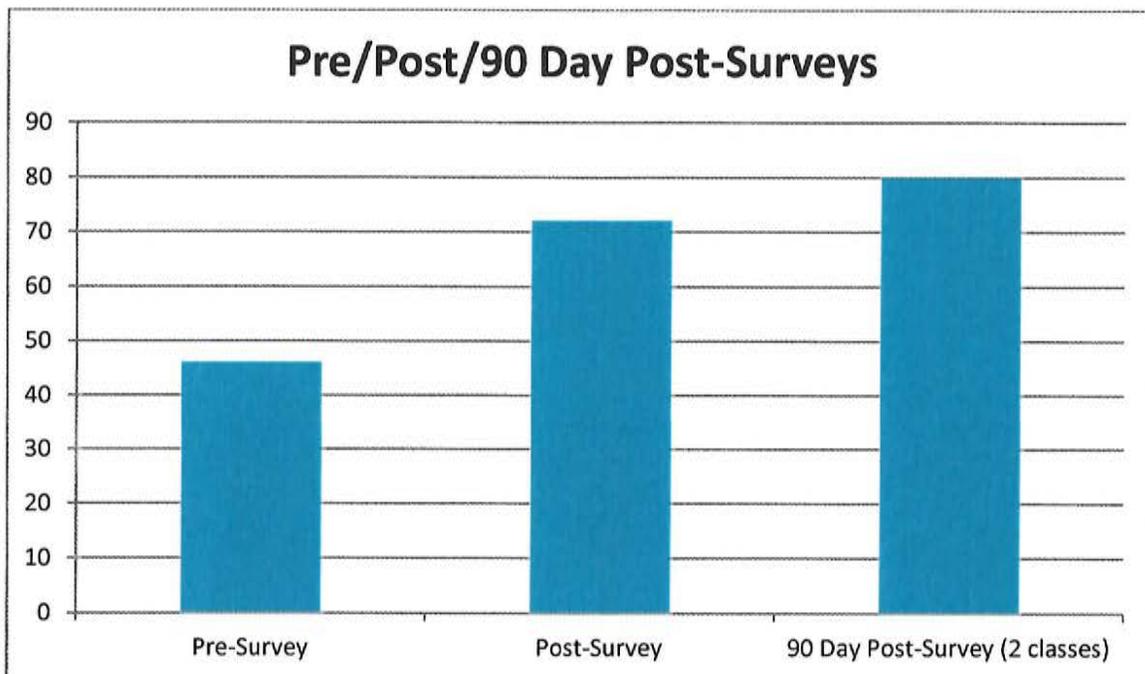
Goal 3: Agency Goals Met: To evaluate how we can more directly meet agency goals within NPDES permit and budget parameters.

- Method 6- classroom observations (done by City of Bothell, not included in this report)

Results

The 5 question classroom evaluation surveys given before and after each workshop show significant short-term retention of key facts by students at the elementary school level. Significant is defined as a 10 point or greater spread between pre and post-surveys. Twelve elementary level classes of students participated in the surveys so far. The survey results

showed that the 262 students who participated had an average score of 46% on the survey prior to the workshop (pre-survey). The 262 students that participated in the post-survey had an average score of 72% immediately following the workshop. The average long term retention score was 80% for the 44 students who took the follow up post-survey 90 days later. This indicates that the teacher who sent 90 day surveys in continued to utilize concepts from our lesson as part of curriculum. Some classes scored as low as 32% on the pre-survey and gained a full 28 points or more by the post-survey. We would have liked to receive more long term data, but teachers explained that they did not have time to complete the long term survey with their students due to testing going from March-early June this school year. No surveys were completed at the middle school level as none registered during the survey period.



91 letters were sent in during the survey period. Of these, 23 letters contained content, the other 68 letters were just meant as thank you letters. The 23 letters contained an average of 3 key concepts per student. Despite leaving prompts and postage paid envelopes at schools, and reminding teachers via email, more letters were not sent in. Teachers again indicated that they did not have time for letters due to prolonged testing periods in schools this spring.

Select student responses to questions

Further examination of specific survey questions yielded significant results as well. These results are presented below. For fill-in questions, results were compiled by the number of students that responded the same way. For example, if a student response to *How can we help keep water in our rivers, lakes, streams and the Puget Sound healthy?* is *Pick up after your dog* 10 students, that means that 10 students responded to this question in the same way in the class or combined classes. Many students list multiple options on fill-in questions. We only

compile the answers to the fill in questions on post-surveys, as pre-survey fill in questions have little to no information from students.

Water Cycle Surveys

- **Water Cycle- Hill- Westhill (2/11)**

Question #5: "List 5 or more ways you can help keep water healthy

- Less showers / 4 students
- Turn off sink / 10 students
- Water grass less / 2 students
- Don't use for recreation too much / 3 students
- Take shorter showers/ take 5 min showers / 9 students
- Use only what you need/ don't waste water / 9 students
- Less pollution / 5 students
- Don't litter/ 6 students
- Don't put chemicals in water / 2 students
- Pick up litter / 3 students

- **Water Cycle- VanDeusen- Shelton View (3/15)**

Question #5: "List 5 or more ways you can help keep water healthy

- Don't litter / 8 students
- Use what you need/ 12 students
- Ride bike/ walk / 6 students
- Check car for leak / 3 students
- Check faucet for leaks / 3 students
- Help clean up trash / 1 student
- Use car less / 5 students
- Don't litter near a storm drain / 2 students

- **Water Cycle- Clements- Shelton View (3/15)**

Question #5: "List 5 or more ways you can help keep water healthy

- Pick up dog poop / 17 students
- Pick up litter / 12 students
- Don't litter / 15 students
- Take shorter showers / 5 students
- Turn off tap / 7 students
- Pour extra water from bottles on grass / 5 students

- Don't let car leak oil / 1 student
- Keep trash in trash can / 1 student
- Don't use pesticides / 8 students
- Don't use too much fertilizer / 10 students
- Don't boat too much / 5 students
- Use fertilizer that doesn't harm the environment / 2 students
- Don't spill gasoline / 1 student
- Don't waste water / 6 students
- Use less water / 1 student
- Correctly dispose of chemicals / 3 students
- Keep faucet off while brushing teeth / 1 student

- **Water Cycle- 90-day Survey- Clements**

Question #5: "List 5 or more ways you can help keep water healthy"

- Don't get fertilizer in water / 5 students
- Don't use fertilizer / 2 students
- Use less fertilizer / 4 students
- Walk to school / 1 student
- Pick up after pets / 16 students
- Don't put chemicals in water / 1 student
- Don't be wasteful / 1 student
- Use cars less / 1 student
- Clean up trash / 2 students
- Dispose of medicine safely / 1 student
- Take shorter showers / 18 students
- Dispose of toxics properly / 1 student
- Take less boat trips / 1 student
- Don't dump household cleaners in yard / 3 students
- Use natural fertilizers / 2 students
- Turn off sink when not being used / 7 students
- Prevent oil spills / 1 student
- Don't waste water / 3 students
- Don't litter / 12 students
- Use cleaners that will not pollute / 3 students
- Wash your hands well, but keep it short / 1 student

- **Water Cycle Letters- Clements**

Students: 23

Total Points: 72

Average: 3 pts/student

- **Water Cycle- Anderson- Shelton View (3/15)**

Question #5: “List 5 or more ways you can help keep water healthy

- Don't litter / 10 students
- Pick up dog poop / 8 students
- Go to car wash / 10 students
- Ride your bike / 5 students
- Don't put chemicals on your car / 1 student
- Don't pollute the storm drains / 1 student
- Walk / 3 students
- Pick up litter / 3 students
- Turn off water while brushing your teeth / 2 students
- Don't drive your car as much / 4 students
- Plant plants near water / 6 students
- Make sure cars are not leaking / 1 student
- Use less water / 1 student
- Don't use harmful cleaning products / 1 student
- Don't through garbage in the water / 1 student
- Take shorter showers / 1 student
- Don't use harmful chemicals / 1 student
- Skateboard / 1 student
- Use only the amount of water that you need / 2 students
- Ride your scooter / 1 student
- Don't use vehicles that use a lot of gas / 1 student

- **Water Cycle- 90 Day Surveys- Anderson**

Question #5: “List 5 or more ways you can help keep water healthy

- Don't litter / 9 students
- Pick up dog poop / 5 students
- Go to car wash / 10 students
- Ride your bike / 1 student
- Don't pollute the storm drains / 7 students
- Pick up litter / 8 students
- Turn off water while brushing your teeth / 2 students
- Don't drive your car as much / 2 students
- Make sure cars are not leaking / 4 students
- Use less water / 4 students
- Don't use harmful cleaning products / 7 students
- Take shorter showers / 1 student
- Don't use vehicles that use a lot of gas / 1 student

Enviroscape Surveys

- **Enviroscape- Blades- Crystal Springs (4/25)**

Question #1: “Most pollution comes from”

Pre-Survey

#Students: 11/22

Percent: 50.0%

Post-Survey

Students: 19/22

Percent: 86.4%

Question #2: “The best way to deal with pet waste (like dog poop) is to:”

Pre-Survey

#Students: 6/22

Percent: 27.3%

Post-Survey

Students: 8/22

Percent: 36.4%

Question #3: “The best place to wash your car is a commercial car wash to prevent soapy water from entering storm drains”

Pre-Survey

#Students: 9/22

Percent: 40.9%

Post-Survey

Students: 17/22

Percent: 77.3%

Question #4: “Water that goes into a storm drain is cleaned before reaching the Puget Sound”

Pre-Survey

#Students: 6/22

Percent: 27.3%

Post-Survey

Students: 16/22

Percent: 72.7%

Question #5: “List 5 ways you can help keep water in our rivers, lakes, streams and Puget Sound healthy.”

- Pick up dog poop / 7 students
- Clean it up / 3 students
- Don't spill chemicals / 1 student
- Inform people / 1 student
- Compost / 1 student
- Use compost instead of fertilizer / 1 student
- Use healthier fertilizer / 1 student
- Use less fertilizer / 2 students
- Pick up litter / 2 students
- Use anything that is not a car / 1 student
- Plant more plants / 1 student
- Do not throw garbage / 1 student
- Use your scooter / 1 student
- Use your bike / 5 students
- Go to a commercial carwash / 1 student
- Walk / 2 students
- Drive less / 2 students
- Don't bury dog poop / 1 student
- Use the bus / 3 students
- Carpool / 1 student
- Don't litter / 12 students
- Don't cut down trees / 1 student
- Don't waste water on unnecessary things / 1 student

• **Enviroscape- Herholdt- Crystal Springs (4/25)**

Question #1: “Most pollution comes from”

Pre-Survey

#Students: 8/22

Percent: 36.4%

Post-Survey

Students: 9/22

Percent: 40.9%

Question #2: “The best way to deal with pet waste (like dog poop) is to:”

Pre-Survey

#Students: 9/22

Percent: 40.9%

Post-Survey

Students: 21/22

Percent: 95.5%

Question #3: “The best place to wash your car is a commercial car wash to prevent soapy water from entering storm drains”

Pre-Survey

#Students: 13/22

Percent: 59.1%

Post-Survey

Students: 19/22

Percent: 86.4%

Question #4: “Water that goes into a storm drain is cleaned before reaching the Puget Sound”

Pre-Survey

#Students: 9/22

Percent: 40.9%

Post-Survey

Students: 19/22

Percent: 86.4%

Question #5: “List 5 ways you can help keep water in our rivers, lakes, streams and Puget Sound healthy.”

- Don't bury the dog waste / 2 students
- Don't use too much bug killer / 1 student
- Don't use too much fertilizer / 6 students
- Use healthy fertilizer / 1 student
- Pick up dog poop / 8 students
- Throw dog poop in the trash / 2 students
- Don't use dog poop for fertilizer / 1 student
- Don't use bug killer / 1 student
- Don't waste water / 1 student
- Don't throw garbage / 2 students
- Pick up trash / 2 students
- Don't dump trash / 1 student
- Use cars less / 1 student
- Don't spill oil / 2 students
- Build beach cleanup teams / 1 student
- Put garbage into a garbage can / 1 student
- Don't litter / 5 students

- **Enviroscape- Martin- Crystal Springs (4/26)**
Question #1: “Most pollution comes from”

Pre-Survey

#Students: 8/23

Percent: 34.8%

Post-Survey

Students: 15/23

Percent: 65.2%

Question #2: “The best way to deal with pet waste (like dog poop) is to:”

Pre-Survey

#Students: 15/23

Percent: 65.2%

Post-Survey

Students: 15/23

Percent: 65.2%

Question #3: “The best place to wash your car is a commercial car wash to prevent soapy water from entering storm drains”

Pre-Survey

#Students: 12/23

Percent: 52.2%

Post-Survey

Students: 20/23

Percent: 87.0%

Question #4: “Water that goes into a storm drain is cleaned before reaching the Puget Sound”

Pre-Survey

#Students: 7/23

Percent: 30.4%

Post-Survey

Students: 16/23

Percent: 69.6%

Question #5: “List 5 ways you can help keep water in our rivers, lakes, streams and Puget Sound healthy.”

- Plant trees / 1 student

- Use organic fertilizer / 4 students
 - Don't use fertilizer / 2 students
 - Use public transportation / 3 students
 - Carpool / 2 students
 - Pick up dog poop / 5 students
 - Don't litter / 10 students
 - Don't put things down the storm drain / 1 student
 - Pick up litter / 1 student
 - Use bicycles / 2 students
 - Compost / 3 students
 - Walk / 1 student
 - Don't drive as much / 3 students
 - Use compost / 2 students
 - Go to a carwash / 3 students
 - Plant more plants / 1 student
- **Enviroscape- Voss- Crystal Springs (4/26)**
Question #1: "Most pollution comes from"

Pre-Survey

#Students: 13/23

Percent: 56.5%

Post-Survey

Students: 14/23

Percent: 60.9%

Question #2: "The best way to deal with pet waste (like dog poop) is to:"

Pre-Survey

#Students: 17/23

Percent: 73.9%

Post-Survey

Students: 20/23

Percent: 87.0%

Question #3: "The best place to wash your car is a commercial car wash to prevent soapy water from entering storm drains"

Pre-Survey

#Students: 19/23

Percent: 82.6%

Post-Survey

Students: 21/23

Percent: 91.3%

Question #4: “Water that goes into a storm drain is cleaned before reaching the Puget Sound”

Pre-Survey

#Students: 16/23

Percent: 69.6%

Post-Survey

Students: 20/23

Percent: 87.0%

Question #5: “List 5 ways you can help keep water in our rivers, lakes, streams and Puget Sound healthy.”

- Clean up garbage / 7 students
- Don't use weed killer / 1 student
- Clean up garbage around a lake / 1 student
- Don't litter / 12 students
- Keep trash away from storm drains / 4 students
- Don't use bug killer / 2 students
- Pick up after your dog / 14 students
- Use electric cars / 4 students
- Educate people / 1 student
- Sweep grass clippings off the street / 4 students
- Wash car at a car wash / 7 students
- Don't spill oil / 1 student
- Don't let soap down the storm drain / 2 students
- Walk instead of drive / 1 student
- Wash your car in the grass / 1 student
- Make sure nothing falls out of your car / 1 student

• **Enviroscape- Barham- Canyon Creek (5/10)**

Question #1: “Most pollution comes from”

Pre-Survey

#Students: 12/22

Percent: 54.6%

Post-Survey

Students: 17/22

Percent: 77.3%

Question #2: “The best way to deal with pet waste (like dog poop) is to:”

Pre-Survey

#Students: 14/22

Percent: 63.6%

Post-Survey

Students: 19/22

Percent: 86.4%

Question #3: “The best place to wash your car is a commercial car wash to prevent soapy water from entering storm drains”

Pre-Survey

#Students: 10/22

Percent: 45.5%

Post-Survey

Students: 15/22

Percent: 68.2%

Question #4: “Water that goes into a storm drain is cleaned before reaching the Puget Sound”

Pre-Survey

#Students: 6/22

Percent: 27.3%

Post-Survey

Students: 9/22

Percent: 41.0%

Question #5: “List 5 ways you can help keep water in our rivers, lakes, streams and Puget Sound healthy.”

- Don't leave the dog poop on the ground / 13 students
- Don't throw plastic bags in the ocean / 1 students
- Don't litter in the water / 2 students
- Use less/no fertilizer / 9 students
- Use natural fertilizer / 1 student
- Use cars less / 1 student
- Don't litter / 5 students
- Clean up beaches / 1 student
- Pull weeds / 2 students
- Compost / 1 student

- Keep things away from the storm drain / 1 student
- Use natural weed killers / 4 students
- Use compost instead of fertilizer / 2 students
- Less/no pesticides / 9 students
- Ride a bike instead of using a car / 8 students
- Don't use your car as much / 2 students
- Don't dump oil into the water / 4 students
- Pick up garbage / 12 students

Wetland Wildlife Surveys

- **Wetland Wildlife- Whitehill- Westhill (2/11)**

- **Question #4 “Wetlands help prevent flooding and filter water”**

Pre-Survey

#Students: 13/19

Percent: 68.4%

Post-Survey

Students: 16/19

Percent: 84.2%

- **Question #5 “List 3 or more ways you can help wetlands stay healthy”**

- Don't litter / 3 students
- Don't build on wetlands / 2 students
- Don't cut down the trees / 1 student
- Don't hunt the animals / 2 students
- Not disrespecting the habitat / 1 student
- Don't pollute / 1 student
- Keep out pollution /1 student

- **Wetland Wildlife- Farner- Canyon Creek (5/12)**

- **Question #4 “Wetlands help prevent flooding and filter water”**

Pre-Survey

#Students: 12/18

Percent: 66.7%

Post-Survey

Students: 18/18

Percent: 100%

- **Question #5 “List 3 or more ways you can help wetlands stay healthy”**

- Go to a carwash / 7 students
 - Don't litter / 12 students
 - Don't dig for treasure there / 1 student
 - Don't pick flowers or plants / 4 students
 - Leave wildlife alone / 3 students
 - Be gentle / 1 student
 - Pick up litter / 1 student
 - Don't play in wetlands / 2 students
 - Don't throw chemicals in it / 3 students
 - Don't waste water / 2 students
- **Wetland Wildlife- Burkett- Canyon Creek (5/12)**
 - Question #4 "Wetlands help prevent flooding and filter water"**

Pre-Survey

#Students: 10/21

Percent: 47.6%

Post-Survey

Students: 16/21

Percent: 76.2%

Question #5 "List 3 or more ways you can help wetlands stay healthy"

- Keep wetlands clean / 6 students
- Take a car to a carwash / 11 students
- Don't keep faucet on / 2 students
- Keep the water clean / 1 student
- Don't kill the animals / 1 student
- Don't litter / 1 student
- Don't dump oil / 2 students
- Don't leave dog poop / 7 students
- Take shorter showers / 3 students
- Use less water / 6 students
- Don't waste water / 2 students
- Take shorter showers / 2 students

Salmon Cycle Survey: This is data that came in after the new year, but applies the Dec 2015 evaluation report

Question #4: "Pollution that goes down the storm drain goes directly to the nearest lake, river or ocean and can harm salmon."

Pre-Survey

Students: 16/24
Percent: 66.6%

Post-Survey

Students: 18/24
Percent: 75%

Question #5: "List 2 things you can do to help protect the salmon in our area."

- Don't litter and pick up litter 6 students
- Don't pollute/litter storm drains 5 students
- Use commercial car washes 2 students
- Pick up after your pets 5 students

- **Salmon Cycles- 90 day- Anderson- Shelton View (10/13)**
Question #4: "Pollution that goes down the storm drain goes directly to the nearest lake, river or ocean and can harm salmon"

90 Day Survey

#Students: 19/23

Percent: 82.6%

Question #5: "List 2 things you can do to help protect the salmon in our area"

- I can pick up litter in water / 4 students
- Pick up litter / 7 students
- Don't litter / 7 students
- Don't put anything down the storm drain / 3 students
- Clean up pet waste / 3 students
- Don't disturb salmon eggs / 1 student
- Wash your car at a car wash / 5 students
- Don't wash your car with harmful chemicals / 1 student
- Don't wash your car next to a storm drain / 1 student
- Compost / 1 student
- Take a shorter shower / 1 student
- Don't waste water / 1 student
- Turn off the water while brushing teeth / 1 student

We had no Blue Teams in winter/spring of 2016 to report on.

Teacher Satisfaction Results 2016

These are both great programs and I would love to bring them into my classroom again next year.

-Ellie Whitehill, Westhill Elementary

Are there any improvements you would like to suggest? *No, it is a great program.*

Would you like to see these programs in your school next year? *Yes please!*

Also, we would like to hear any special stories or examples of how this program helped your students gain awareness, understanding, or appreciation of ecological concepts. *The kids in my class have referred to some of what they learned and have been able to make connections between just water to water and the environment.*

Would you encourage this sponsor to fund this program next year? *Yes, I would greatly encourage it! The kids and teachers love the activities and the instruction.*

-Shawna Hill, Westhill Elementary

Are there any improvements you would like to suggest? *No, the kids had a great time.*
Would you like to see these programs in your school next year? *Yes, it would be great to have it again next year.*

Would you encourage this sponsor to fund this program next year? *Yes, the kids were so engaged throughout the program.*

Thanks,

-Tammy Fassett, Crystal Springs Elementary

Background on wetlands and what makes a wetland was very clear. Artifacts were very engaging and effective in drawing interest.

I would add a series of guiding questions for each artifact that students have to answer to each other. Asking them to think about how it connects to a wetland is too broad for second graders. They could be written or ipads could be used.

Thanks

-Todd Parker, Crystal Springs Elementary

Are there any improvements you would like to suggest? *None! I think this is a great program!! It's well planned, has movement, and is interesting for students.*

Would you like to see these programs in your school next year? *Yes!!*

Also, we would like to hear any special stories or examples of how this program helped your students gain awareness, understanding, or appreciation of ecological concepts. *After the guest left the Salmon cycle sparked a long conversation about how we can preserve water in order to help things around us.*

Would you encourage this sponsor to fund this program next year? *Yes.*

Thank you,

-Heather Roy, Woodin Elementary

Great program and Rachel was very engaging. I'd recommend this program again next year for funding. Thank you!

-Lucy Masui, St. Brendan's Girl Scout Troup

Discussion

This seventh year of evaluating the City of Bothell Water Quality Education Programs has shown the programs to be effective in helping students learn about and understand stormwater quality, pollution prevention, how natural water systems work, and human interactions with these water systems. Additionally, students have learned best management practices to help keep our watershed healthy alongside their families and friends.

The short term retention of the key messages and concepts is on par with previous results. Students are showing an excellent points spread between pre and post surveys, indicating significant short term retention. We hope to be able to get in more 90 day data, but what we have shows significant long term retention of concepts.

Repetition of the key messages in schools each year is a more effective way to help students develop a desired culture of sustainability for our watershed. We believe this is a result of students taking classes with us year to year as they progress through grade levels, and schools getting more on-board with integration of environmental education. Students that participate in these classes as they progress through elementary and secondary education have a stronger knowledge base to begin with, so we can take them much further in their learning.

Appendix: Surveys

Water Cycle

- 1) Humans have easy access to less than 1% of the world's water supply. True
False
- 2) Water can be found in three different states of matter. True False
- 3) Water is a finite resource, which means...
 - a. There is an unlimited amount of water, because of the water cycle.
 - b. There is a limit to how much water we have and can use.
 - c. There is an infinite amount, because we can make more water.
- 4) Pollution doesn't affect water, because the water cycle keeps all water clean. True
False
- 5) List 3 or more ways you can help keep water healthy.

Enviroscape

- 1) Most of our water pollution comes from: a) Factories b) Individual people
- 2) The best way to deal with pet waste (like dog poop) is to:
 - a) Bury it
 - b) Pick it up in a plastic bag and throw it in the garbage
 - c) Put it in your garden to fertilize it
- 3) The best place to wash your car is a commercial car wash to prevent soapy water from entering storm drains. True False
- 4) Water that goes into a storm drain is cleaned before reaching Puget Sound. True False
- 5) List 5 ways you can help keep water in our rivers, lakes, streams and Puget Sound healthy:

Wetland Wildlife

- 1) Surface water must be present all year in an area to be a wetland habitat.
True False
- 2) Migrating birds use wetlands for rest stops while flying long distances. True False
- 3) All wetland must have the following three characteristics.

- a. Water, soil, and animals
- b. Water, soil, and plants
- c. Water, sun, and plants

- 4) Wetlands help prevent flooding and filter water. True False
- 5) List 3 or more ways you can help keep wetlands healthy.

Salmon Cycle Survey (data from 2015)

Circle or fill in the correct answer

- 1) Circle the life cycle of salmon:
 a) Egg, Alevin, Fry, Smolt, Adult, Spawner b) Egg, Fry, Adult c) Egg, Alevin, Fry, Adult
- 2) How many eggs does one female salmon spawn?
 1 10 100 500 2,000-4,000
- 3) Salmon are born in freshwater, spend most of their life in the ocean and return to the same freshwater to spawn. True False
- 4) Pollution that goes down the storm drain goes directly to the nearest lake, river or ocean and can harm salmon. True False
- 5) List 2 things you can do to help protect the salmon in our area.

Appendix E

Dumpster Maintenance Assessment Final Report

Prepared December 21, 2016

Background

Improper dumpster maintenance at local businesses can contribute to stormwater pollution which impacts local streams. The purpose of this assessment was to determine whether three business related dumpster maintenance best management practices (BMP's) are potentially contributing to storm water pollution in Bothell. This assessment will serve as a tool to help determine the water quality benefit of a city-wide business dumpster maintenance program.

Goals for this project include:

- Determine whether BMP #1-dumpster lid is closed after each use, is already being practiced with a majority of the target audience
- Determine whether BMP #2-dumpsters found leaking are repaired or replaced, is occurring between business owners/operators and the garbage hauling company
- Determine whether BMP #3-area around dumpster is clear of debris and staining, is being practiced with a majority of the target audience

The target audience for the outreach portion of this project is small quantity hazardous waste businesses which utilize products that can contribute to stormwater pollution (restaurants, auto repair, multi-family, etc.) within Bothell city limits.

Defined Program Elements

Outreach Materials

Three outreach materials are also being evaluated to learn whether information is being received and passed along to other staff/employees:

- BMP #1 - a sticker depicting the BMP for placement on the dumpster by the business
- BMP #2 - a card with the hauler contact information distributed to all target businesses
- BMP #3 - notification to business or property management.

ATTENTION: KEEP LID CLOSED

DUMPSTER LEAKING OR BROKEN LID?

Call Your Hauler:

Recology CleanScapes
844.990.1100

Waste Management
800.592.9995

City of Bothell Puget Sound Starts Here.org Bothell COOL Recology CleanScapes WASTE ZERO

Site Visits

The target number of commercial dumpster customers receiving the outreach was 95 in a one year period. Only commercial customers with dumpsters were tabulated (no small containers or trash compactors were included). Site visits were scheduled in accordance with procedures established through the LSC program with surface water assistance. Once site visits have been set, the LSC Specialist and Surface Water Coordinator conducted a pre-inspection and recorded current dumpster practices and the state of the dumpster. They then conducted their regular inspection and provided the described outreach materials along with verbally describing the desired BMP's. Any issues with a damaged or leaking dumpster were reported to the Special Projects Administrator and garbage hauler with a notice to correct per our contract.

The Surface Water Program Coordinator or Local Source Control Specialist followed up 15-30 days after each inspection and recorded whether the dumpster lid was closed, the sticker had been placed, and if necessary, whether the dumpster had been repaired or replaced.

Control

The control was 100 randomly selected commercial customers within Bothell that utilize dumpsters. The same initial observations of the three BMP's are conducted but contact with the business was not made.

Evaluation

In order to appropriately judge whether this project should be expanded and improved in the future, qualitative and quantitative assessments were conducted based on the outputs. The final evaluation contained information within three categories:

- 1) Qualitative before and after information was compared with the control and summarized to determine how well the program worked and how it can be adapted based on feedback.
- 2) A review of City code and hauling contract regarding dumpster placement, containment, and drainage was conducted to determine whether amendments should be made.
- 3) Research was conducted into other existing programs to see what lessons might be learned.

Initial Findings

Evaluation findings for 2015 are provided below in reference to the categories above:

- 1) Unobtrusive observation is the best way to currently assess behavior, so 102 control site inspections were conducted out of the 335 businesses with dumpsters from the hauler list and the BMP behavior findings were as follows:
 - BMP #1- 75% found with their lid closed
 - BMP #2- 98% found with properly functioning dumpsters
 - BMP #3- 90% found with garbage contained within the dumpster

95 experimental site visits with subsequent follow-up were conducted in June-November and the BMP findings were as follows:

- BMP #1- found 85% with lid closed during pre-inspection and 87% found during follow-up inspection
- BMP #2- 99% found with properly functioning dumpster during pre-inspection and 99% were found during follow-up inspection

- BMP #3- 94% found with garbage contained within dumpster during pre-inspection and 95% were found during follow-up inspection
 - Stickers were placed on 45% of the dumpsters during the follow-up inspection
- 2) Review of our waste hauler contract has found no placement, containment, or drainage requirements. It does, however, contain requirements for keeping containers in good repair with no leaks and has provisions to contain, clean, and report any known spills to our stormwater drainage system to the City spill hotline.

Review of our City code has found that a disposal provider is required. All container locations are required to be screened from view, stored onsite, and all containers shall be closed. An interview with our Lead Stormwater Drainage Review Engineer found they are unwilling to place any language that would place additional requirements to capture and drain all garbage areas to sewer, so we will continue to advocate for storm drains to be placed far outside of the defined dumpster area.

- 3) A work group consisting of 55 participants from 35 organizations was formed to share knowledge, resources, materials, and findings. The group consists of stormwater, solid waste, local source control, department of health, and FOG (fats, oils, and grease) professionals to determine the best way to address concerns without adding additional regulations for businesses.

Other Considerations

Several changes and considerations took place throughout the process that should be noted for future efforts:

- Day of the week mattered- observations are best conducted on the day prior to collection. This is when the garbage will be the most full and you will be able to observe BMP#3 more easily.
- Sticker- the sticker didn't seem to have much of an effect on whether the lid was open or closed. Further research will need to be conducted before deploying this as a prompt in the future.
- Delivery of message- discussing the need to keep lid closed and garbage contained due to birds and rodents seemed to resonate far more with business owners and managers.
- Hauler errors- several times it was noted that the dumpster lid was pinned in the enclosure behind the dumpster preventing the business owner from practicing BMP#1.
- Multiple users- several dumpsters were being used by multiple businesses (strip malls) so outreach is far more difficult.
- Multiple dumpsters- larger companies had several dumpsters on one account, but they were utilized by different staff from varying departments.
- Experimental grouping- if launching an outreach effort, be sure to conduct the unobtrusive observation first and then break the experimental group into active and inactive BMP users as the outreach motivators and barriers may be different.
- Timing- allow for adequate time if conducting experiment through LSC. It took far longer than anticipated to complete the experimental outreach.
- Partners- it is essential to have buy-in from the waste hauler, businesses, and other departments in order to have an effective outreach effort.

ATTENTION: KEEP LID CLOSED



City of Bothell™

Puget Sound
Starts HERE.org

Bothell/CO₂L

R
Recology
CleanScapes
WASTE ZERO

DUMPSTER LEAKING OR BROKEN LID?

Call Your Hauler:

Recology CleanScapes

844.990.1100

Waste Management

800.592.9995



City of Bothell™



Appendix F

It's **Salmon SEESon** again



See salmon—on your own or with help from naturalists—in the Lake Washington/Cedar/Sammamish and Green/Duwamish watersheds!



www.kingcounty.gov/salmon - click on salmon SEESon!



www.kingcounty.gov/salmon - click on Salmon SEEson!

It's SALMON SEASON again

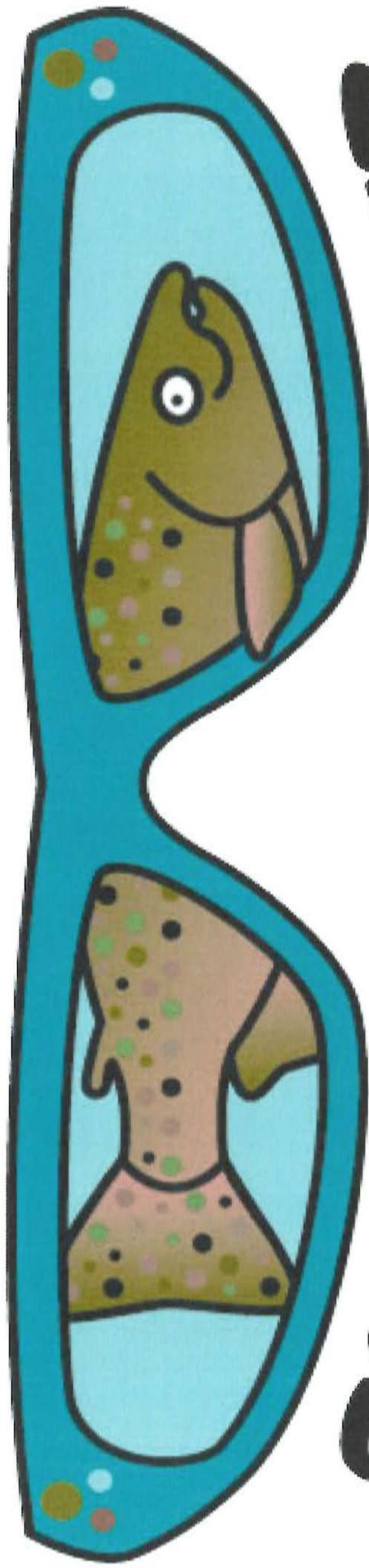


See salmon—on your own or with help from naturalists—in the Lake Washington/Cedar/Sammamish and Green/Duwamish watersheds!



Using water wisely helps people, salmon & wildlife!
 Visit www.savingwater.org to learn more.

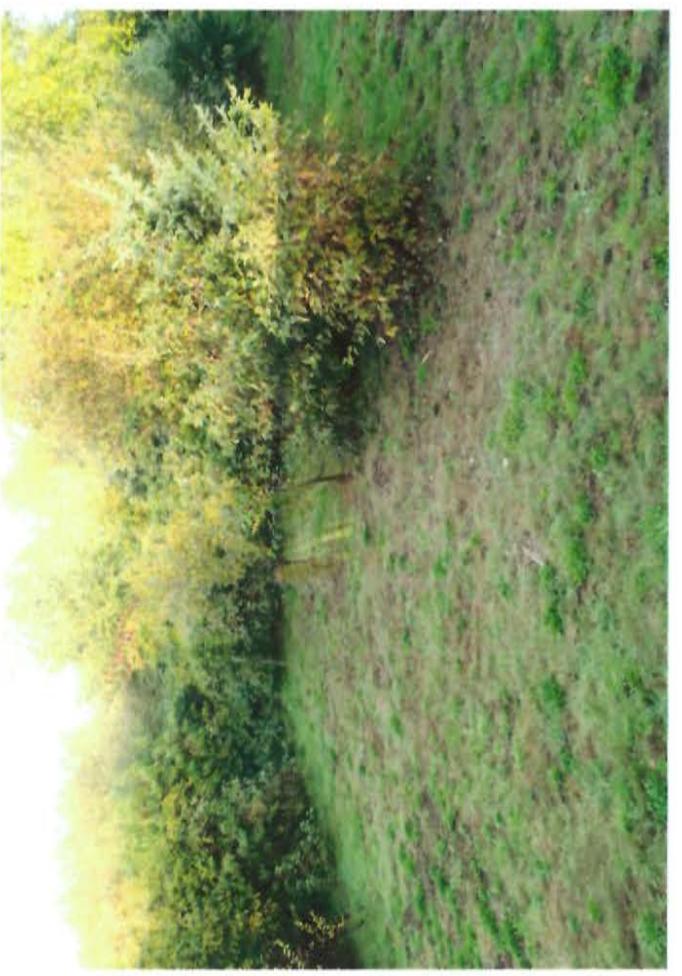
BE A



SALMON WATCHER







Appendix G

A product is hazardous if the label says: CAUTION-WARNING-DANGER-POISON

WHAT TO DO WITH

UNWANTED HOUSEHOLD HAZARDOUS PRODUCTS

All these products are hazardous and do not go in the garbage.
Empty containers may go in the garbage—except propane tanks.

YES TAKE THESE PRODUCTS TO A HOUSEHOLD HAZARDOUS WASTE SITE Limit: 50 gallons per customer per day; no container over 5 gallons	NO THESE PRODUCTS ARE NOT ACCEPTED CALL HOUSEHOLD HAZARDOUS LINE AT 206-296-4692 FOR DISPOSAL OPTIONS
Household Cleaners Lawn & Garden Products Oil-based Paints, Thinners & Stains No Latex Batteries: Household & Vehicle Limit: 5 car batteries Used & Unused Motor Oil Flammable Liquids Limit: up to 30 gallons of gasoline Road Flares	Ammunition Marine Flares Fireworks Explosives Latex Paint (Empty paint cans OK to toss in trash with lid off) Medical Sharps (needles) Asbestos-Containing Materials Televisions & Computer Monitors, Electronics
Hobby Supplies Antifreeze Solvents Propane, Butane Mercury-Containing Thermometers, Thermostats, Fluorescent Tubes and Bulbs (up to 10 tubes and bulbs)	CALL KING COUNTY SOLID WASTE AT 1-800-325-6165, EXT. 6-4466 CALL PUGET SOUND CLEAN AIR AGENCY AT 206-343-3800 CALL 1-800-RECYCLE OR GO TO www.1aheilsandnetwork.org

For more information call the Household Hazards Line Monday - Friday, 9 a.m. to 4:30 p.m., except holidays At 206-296-4692 or 1-888-TOXIC ED (869-4233). Interpreters available. Please be patient while we locate an interpreter. Or visit www.HazWasteHelp.org

There is no fee for hazardous waste disposal. It is paid for in your utility bills.

WHERE DO I BRING MY HAZARDOUS PRODUCTS?

If you live in King County you can use any of these facilities. Disposal service is paid for in your utility bills, use it!

<p>NORTH SEATTLE HOUSEHOLD HAZARDOUS WASTE FACILITY 12550 Stone Ave North, Seattle, WA 98133</p>	<p>FACTORIA HOUSEHOLD HAZARDOUS WASTE DROP-OFF SERVICE 13800 SE 32nd Street, Bellevue, WA 98005</p>
<p>SOUTH SEATTLE HOUSEHOLD HAZARDOUS WASTE FACILITY South Transfer Station's Gate 3 8105 Fifth Ave South, Seattle, WA 98108</p>	<p>WEEKLY AUBURN SUPERMALL HAZARDOUS WASTE DROP-OFF SERVICE At the NW corner off of SuperMall Way next to Sports Authority.</p>

Plan ahead! Please note when facilities are open. Call for holiday schedule.

SUN	MON	TUES	WED	THUR	FRI	SAT
NORTH SEATTLE: Open 9:30 a.m. - 4:30 p.m. FACTORIA: 9 a.m. - 5 p.m.		CLOSED		CLOSED		SOUTH SEATTLE: Open 9:30 a.m. - 4:30 p.m. FACTORIA: 9 a.m. - 5 p.m.
AUBURN WASTEMOBILE: www.kingcounty.gov/hhw/wastemobile.aspx Asst/Auburn		CLOSED		CLOSED		AUBURN SUPERMALL WASTEMOBILE: Open weekly Saturday and Sunday from 10:00 a.m. - 5:00 p.m.

For more info, about Wastemobile drop-off sites in other King County cities: www.kingcounty.gov/hhw/wastemobile.aspx or call 206-296-4692, 1-888-TOXIC ED

For more information call the Household Hazards Line Monday-Friday 9 a.m. to 4:30 p.m., except holidays at 206-296-4692 or 1-888-TOXIC ED. Interpreters available. Please be patient while we locate an interpreter. Or visit www.HazWasteHelp.org

For poison emergencies call: WASHINGTON POISON CENTER 1-800-222-1222

Household Hazardous Products: For information visit www.kingcounty.gov/solidwaste

Seattle Public Utilities Customer Service: 206-684-3000 www.seattle.gov/psu/services

Local Hazardous Waste Management Program in King County, Washington

Alternate formats available 206-296-4692 or TTY relay 711



**Free disposal of your
leftover toxic products!**

*It's easy . . . just drive in,
drop off and go.*

**Household Hazardous Waste
Drop-Off Station
3434 McDougall Avenue, Everett**

7:30 a.m. to 4 p.m.
Wednesday through Saturday
Free disposal | 425-388-3425 (TTY: 711)

*Businesses by appointment only. Fees apply.
Call 425-388-6050.*





What can I bring?

Drop off old or unused household chemicals. Look for CAUTION, POISON, WARNING, DANGER, CAUSTIC, COMBUSTIBLE, FLAMMABLE or CORROSIVE on the label, or for chemical symbols. Common products:



- Aerosol cans
- Antifreeze
- Automotive fluids
- Batteries
- Bleach
- Drain cleaner
- Fluorescent bulbs/tubes*
- Gasoline/diesel
- Herbicides
- Insecticides
- Oil-based paint, varnish and stain
- Paint thinner
- Propane tanks

For a full list, scan the code with your mobile device, or visit www.snoco.org and search "hazardous waste."



What not to bring

- Appliances
- Electronics*
- Explosives
- Latex-based paint
- Medical waste
- Medicine/drugs*
- Prescription medication*

*For electronic recycling information, visit www.ecyclewashington.org. For medicine disposal locations, www.takebackyourmeds.org. For fluorescent bulbs/tubes, visit www.lightrecyclewa.org

Appendix H



POLLUTION FOUND IN YOUR AREA!

This is not a citation.

This is to inform you that City of Bothell staff found the following pollutants in your area. Your storm system leads directly to this waterbody:

- Oil
- Antifreeze/transmission fluid
- Paint
- Solvent/degreaser
- Cooking grease
- Detergent
- Home Improvement Waste
(concrete, mortar, etc.)
- Pet waste
- Yard Waste
- Soap (car wash water)
- Trash
- Construction debris
- Pesticides/fertilizers
- Other _____

Remember, Nothing But Rain Down the Drain.

REPORT SPILLS: Reporting spills right away helps us to minimize the damage to people, pets and local streams. Please call us as soon as possible if you see or smell something in your storm drains.



**SPILL HOTLINE:
425.806.6750**

QUESTIONS? Contact our Surface
Water Staff at 425-806-6104

Placed by: Inspection/Operations

Puget Sound Starts Here.org



DID YOU KNOW? ←

City of Bothell storm drains do not connect to the sewer system. Anything that enters a storm drain flows directly to the nearest lake, stream, or wetland without treatment.

The pollution comes from our every day activities and can only be prevented by changing our habits.

Here are some ways you can help:

- Use compost instead of chemical fertilizers
- Use a commercial car wash
- Check your vehicle for leaks
- Dispose of paint, solvents and household hazardous chemicals at proper facilities
- Sweep driveways and sidewalks instead of hosing them down

More information: www.bothellwa.gov



City of Bothell™

SPILL RESPONSE PROCEDURES



City of Bothell

1



Make sure everyone is safe and the area is clear of people and traffic.

Call **9-1-1** if there are injuries or immediate danger.

2



425-806-6750
SPILL HOTLINE

Call the
City of Bothell
Spill Hotline.

3



Open your spill kit and wear personal protective equipment.

4



Stop the source and deploy spill kit materials to protect the storm drains.

5



A vendor may need to be called if the spill is significant. See "Spill Book" for vendor list.

6



Clean up used spill materials and dispose of properly. Double bag garbage if they're not over saturated. Some hazardous materials may require a waste vendor.

Post Incident: Debrief with staff about what worked well and what didn't. Complete record-keeping, inventory your kit, and purchase new spill kit materials.



City of Bothell



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**Call the
Spill Hotline
425-806-6750**





Whatever enters Bothell storm drains goes directly to the nearest lake, stream, or wetland without treatment

Nothing But Rain Down The Drain

REPORT SPILLS TO OUR **HOTLINE: 425-806-6750** 



Whatever enters Bothell storm drains goes directly to the nearest lake, stream, or wetland without treatment

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We Keep it Clean Using the 4Cs



Yes ✓

Cover

Cover outdoor work and storage areas



No ✗



Yes ✓

Capture

Capture fluids before they can reach the drain



No ✗



Yes ✓

Clean

Clean up spills before they reach the drain



No ✗



Yes ✓

Contain

Contain stored fluids to capture leaks



No ✗

Only Rain Down the Drain

No Oil • No Suds • No Paint • No Chemicals
Even small amounts can pollute our waterways

This project was funded by a grant provided by
Washington State Department of Ecology

OUR RESTAURANT KEEPS IT CLEAN

DUMPSTER

Properly dispose of garbage and sweep any debris around dumpster.



HOOD VENTS

Wash all hood vents in a combination sink, mop sink, or dishwasher.



MATS

Wash all kitchen floor mats indoors near a floor drain or utility sink.



WASH WATER

Dispose of all washwater in a utility sink or indoor floor drain.



City of Bothell

Only Rain Down the Storm Drain

NO grease, NO dirt, NO garbage, NO wash water!



Appendix I



Is that leak harming more than your car?

Get a **FREE oil leak inspection**
and a discount if you need repairs.

FixCarLeaks.org



DEPARTMENT OF
ECOLOGY
State of Washington

Program funded by a grant from the
Department of Ecology



Receive a FREE visual leak inspection and save up to

\$50 off
leak
repairs

find a participating shop at fixcarleaks.org

Leak repair discount of 10% off leak repairs, up to \$50 value from participating shops.
Expires 12/31/17 Code: PPO01



Receive a FREE visual leak inspection and save up to

\$50 off
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Appendix J



RAIN GARDEN CARE

A GUIDE FOR RESIDENTS AND COMMUNITY ORGANIZATIONS

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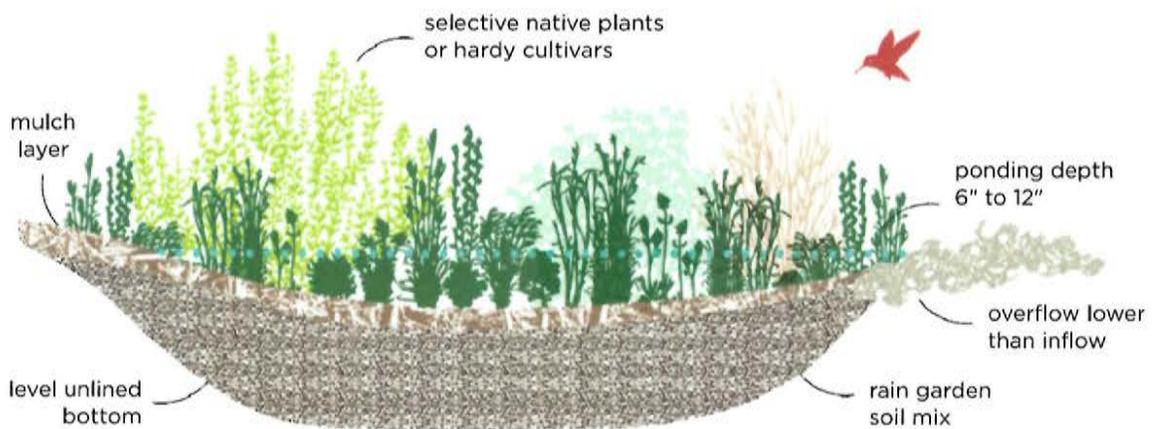


CONGRATULATIONS ON YOUR NEW RAIN GARDEN!

You have a beautiful and functional landscape where the soil, plants, and mulch partner to absorb and filter urban runoff, and keep it from harming our local waters.

Your hard-working landscape will need some care throughout the year, but your time commitment will still be less than what you spent on lawn care during the spring and summer months. This guide will show you the simple steps needed to keep your rain garden looking great and working well.

Your original rain garden design determines the ongoing rain garden care. A few mantras for design include, “right plant — right place,” and “an ounce of prevention is worth a pound of cure.” For a rain garden that means choosing plants that complement each other and your yard. Keep in mind that your original rain garden design can be changed over time, as you see how the plants grow.



Your rain garden is part of a growing network of “green infrastructure” that beautifies our communities and keeps polluted runoff out of our waterways. By building a rain garden you have created an alternative to costly expansions to sewer and stormwater pipe “gray infrastructure” systems.

HOW TO USE THIS GUIDE

This guide offers you timesaving tips, a “care calendar,” and guidance on how to get answers to your maintenance questions. It is organized around a few simple icons that organize tasks by the times they need to be done each year. The guide also contains a “Quick Start Guide” to help you get started.



WINTER



SPRING



SUMMER



FALL



OBSERVE



WEEDING



WATERING



MULCH



WATER
FLOW

CARE CALENDAR

The care calendar is found in the Quick Start Guide, and shows tasks that should be done on a monthly, quarterly or semi-annual basis. Homeowners can work by themselves or organize neighborhood work parties to help each other care for several rain gardens as a group. You will find tips and techniques for rain garden care, as well as important information such as how to get wood chip mulch or refreshments donated for your project work parties.

DON'T BE AFRAID TO ASK FOR HELP

Within each community, city, or county, there are several ways you can reach out for assistance if you run into questions or concerns about your rain garden. Look in the Resources section at the end of this handbook to find the Gardening Hotline, the Washington State University Extension Master Gardeners, and Stewardship Partners' 12,000 Rain Gardens resources page. Retail stores, local nurseries, and organizations such as Stewardship Partners and your county's Conservation District offer free classes and assistance to people who want to learn more about rain garden care. Over time, our combined efforts will help make rain gardens as common as

recycling, refillable beverage containers, or reusable shopping bags. Please give us feedback as you use this guide, and let us know what additional information you need or how we can improve this guide. Please contact: info@stewardshippartners.org



ORGANIZE YOUR RAIN GARDEN CARE

Tools you'll need:

- Shovel
- Clippers
- Weeding tool
- Wheelbarrow or rolling trash can
- Tarps



Some neighborhoods and communities are organizing local tool libraries, where residents join and can “check out” centrally stored tools for use. Several Seattle neighborhoods have very successful programs.

BEFORE AND AFTER PHOTOS

It's a great idea to take photos of your rain garden through the different seasons to see how it grows and changes over time. Imagine what a sense of accomplishment you'll feel after seeing a photo before you begin a weeding effort, and then another photo from the same angle once you are done. You'll be amazed what a big difference a little bit of time can make. Take a group photo if you had help — people love to celebrate their hard work!

MAKE IT A PARTY!

If you are part of a rain garden “cluster,” talk with your neighbors and organize a date together a couple times each year to tackle these rain garden care tasks as a group. Make a simple flyer and send out an email invitation. With two or more people you can each take on a specific task or each work in a different area of the rain garden. These strategies will make the work go much faster! If you want to go after grant funding for neighborhood-scale

projects, keep track of how many volunteers worked and for how long they worked for future reference.

If you are organizing a group of volunteers, it's nice to offer some refreshments to say "thank you" for their service. At the minimum, provide some water, but things like coffee, tea, doughnuts, fruit, or granola bars are crowd-pleasers. Rather than buying wasteful bottled water, use a pitcher and reusable cups. If you plan to offer adult refreshments, we would recommend keeping those in the fridge until garden work is coming to an end for the sake of productivity and safety.

HOW TO ASK FOR DONATIONS

Ask at your local grocery store if they can donate pastries, fruit or snack bars to your rain garden project volunteer work party. Most store managers are able to donate to community projects if they know volunteers are working for a cause. If they donate, be sure to send them a thank you note and include a photo of volunteers working — this will help build a relationship if you want to ask them for donations in the future.

Coffee is a big crowd-pleaser. Ask at your local coffee shop whether they can donate to your event in exchange for thanking them during the event or acknowledging them on event materials.

If you are organizing a big event and need gloves, tools or other materials, it's worth asking the manager of your local hardware store. Keep track of your donors so you can announce your supporters at the work party.

WHO TO ASK FOR MORE HELP

The References section of this guide is a list of organizations that can provide assistance if you have questions about identifying weeds, how to care for native plants, or about pests or plant disease. If you feel overwhelmed because you are not physically able to do the work of caring for your rain garden, reach out to local churches, service organizations, schools, Boy and Girl Scout troops or other neighborhood groups who might want to volunteer and learn about rain gardens in the process.

GRANT WRITING FOR LARGER PROJECTS

You may have bigger ideas and want to raise funds to build larger rain garden clusters in your neighborhood, improve drainage at a local park or school, or get other residential streets to "go green." There are many grant opportunities out there. Contact your local City, County, Conservation Districts, or other jurisdiction about grants available to community organizations.

WEEDING



Many weeds thrive wherever they grow and can even be pretty. Some weeds invade through underground roots or runners, and others by seeds spread by wind, water, birds and other animals. Invasive weeds overrun our parks, trails, lakes and waterways.

Rain gardens will still work even if they have weeds growing in them, but your rain garden plants will not grow as well because weeds will compete with or overshadow them. Rain gardens are also much more attractive without weeds.

In Western Washington, you will most likely see Dandelions, Himalayan Blackberry, Morning Glory (also known as Bindweed), grass from lawns, and Buttercup in your rain garden.



From left: Grass from lawns, Himalayan Blackberry, Dandelion, Morning Glory (Bindweed) and Buttercup

REMOVAL TECHNIQUES

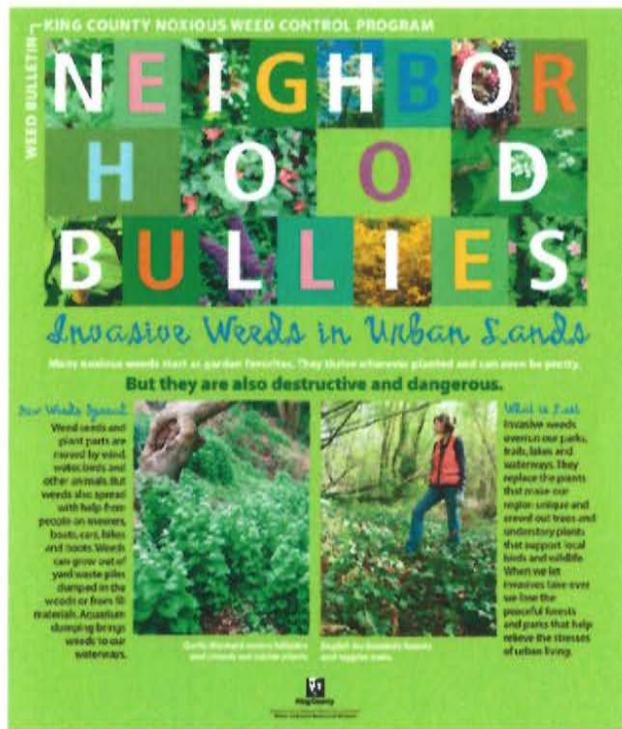
Weeds are easiest to dig out in the spring when the soil is moist and the weeds are small – though weeding is important throughout the year. Use a small shovel or trowel to dig around the roots. Make sure you get all the roots out, or else the weed can grow back. Try to remove the weed before it goes to seed. Work in one area at a time and move systematically around your rain garden. Once you have removed weeds in one area, go back through and “fluff” up the mulch, loosening and spreading it around to cover up any bare spots.

WHAT TO AVOID

Chemical fertilizers or pesticides: The soil in a rain garden provides the nutrients your plants need to thrive. Adding mulch every year will provide a barrier to keep weed seeds from reaching the soil and is a natural way to slow down weeds from taking root. Your rain garden will not need any fertilizer, moss killer, or pesticides such as Roundup™ or Sluggo™ or any other additives beyond the mulch layer applied once a year for the first few years. Chemicals end up in our waterways and cause harm to fish, wildlife and human health, defeating one of the greatest purposes of a rain garden.

Weed whackers/string trimmers: it’s far too easy to hurt your hard-working rain garden plants if you use a weed whacker. Weeding by hand is easier, quicker, and less likely to result in unhappy plants.

Compacting the soil: packing down the soil in your rain garden can make drainage more difficult, so tread lightly and rarely, especially in the bottom area!



Go to kingcounty.gov/weeds for photos and this guide

WEED	TOOL	REMOVAL TECHNIQUE
Grass from lawns	<ul style="list-style-type: none"> • Fork • Shovel 	Dig around and under the grass to loosen soil and get all the roots out
Himalayan Blackberry	<ul style="list-style-type: none"> • Pointed shovel • Clippers • Heavy gloves 	Clip off the long branches but leave enough stem to hold on to. Dig around and under the stem to get at the root system so you get the whole plant; blackberry can regrow from a tiny piece of root or stem.
Dandelion	<ul style="list-style-type: none"> • Dandelion Weeder • Hori Hori • Old flathead screwdriver • Kitchen knife 	<p>Dandelions have a long taproot at the center. They will regrow from any taproot that is left behind.</p> <p>Find the center of the weed (the location where the flowers come from) insert the tool in the soil, parallel to the taproot. Wiggle the tool to loosen the taproot. Remove the dandelion by gathering the weed in one hand and lightly pulling while prying up the taproot with your tool in the other. If the taproot is not yielding, continuing working around the taproot with your tool.</p>
Morning Glory aka Bindweed	<ul style="list-style-type: none"> • Dandelion Weeder • Hori Hori • Old flathead screwdriver • Kitchen knife 	<p>Bindweed grows on long runners both above and below ground. Above ground manually remove as much as you can without causing damage to your other plants. If the bindweed has wound itself so heavily and tightly in your plants that you can't remove it all, remove as much as you can with at least the bottom 12 inches from the base of the plant. The remaining above ground bindweed will die on the plant within a few days and will be easier to remove at that time.</p> <p>Underground runners Bindweed removal is more successful in moist soils. Grab the above ground runner, follow the stem to the ground and lightly pull the underground runner out with your hand or tool as needed. Bindweed will regrow from any part of a runner left behind.</p>
Buttercup	<ul style="list-style-type: none"> • Sharp trowel • Fork type tool • Dandelion Weeder • Hori Hori 	Dig out with your tool, removing all of the runners, and roots.

WATERING



During the first two years of your rain garden’s life the plants are just getting established and will need water during dry periods. Once the roots have spread out and down (after two years) you won’t need to water them as much or at all.

WATERING SCHEDULE

You want the top 6-12 inches of soil to be moist; you can check this by digging a small hole or poking your finger into the soil to the side of your plant. Ensuring that your mulch layer is at least 2-3 inches thick will also reduce the amount of watering needed as this helps keep the underlying soil cool and moist. If you use a regular hose or sprinkler, water about 1 inch every 3-4 days, or a week if the weather is cool. You can easily measure your watering by placing a small can or jar under your sprinkler, and checking it until it is 1 inch full.

If you prefer to use a regular schedule rather than checking the soils and watching the plants for signs of stress, then for the first two years, give the plants a thorough soaking twice a week from June through September.

Overwatering and light/infrequent watering should both be avoided because plants will



Watering the roots

not develop the healthy and deep root structure needed for drought resistance. If some of your plants seem to be constantly stressed and require too much watering, consider moving them to a shadier spot in the garden and replacing them with more sun/drought tolerant species.

Watering should be done in the early morning or later evening when there is no direct sunlight on the plants and when temperatures are cool to limit the amount of water lost to evaporation. Water the base of the plants, where the root systems are, rather than spraying water all over the plants' leaves.

WATERING TECHNIQUES

A soaker hose setup (or drip irrigation system) is a time, money and water-saving method that slowly trickles water to the rain garden — cover it with mulch to save even more water. It can be connected to an automatic timer so you won't forget. You can also use a shower type wand attachment for your garden hose to get water on the base of the plants gently, without bending over.

Some homeowners install a rain barrel or cistern to collect roof water from their home or garage, and then use this water for their rain gardens. For information about installing a soaker hose, or drip irrigation system,

please go to the “Success with Soaker Hoses” fact sheet at savingwater.org.

COSTS OF WATERING

In Seattle, for example, our drinking water costs about two cents a gallon during the summer (think about that the next time you buy single-use bottled water!). If you water your rain garden 1-2 times each week, you might see a slight rise in your water bill, but there are ways to reduce your water bill to offset this usage.

You get the biggest water savings in your home by installing efficient appliances (like newer toilets) and fixing leaks. Another way to save water and money is to reuse water from your home. For example, fill up a bucket in the tub while you wait for your shower to turn hot, or drain the children's pool into your rain garden once they are done playing. For many more money-saving tips on reducing water use at home, please visit; savingwater.org.



Soaker hoses

PLANT CARE



Natural plant care consists of planting the right plant in the right place, building and maintaining healthy soil, and using smart watering practices. If you hired a rain garden designer, ask them for your plant list and layout design, which will help you identify what's in your rain garden.

Some rain garden plants lose their leaves and go dormant in the fall. If this appears unattractive to you, it is fine to cut plant stems and flower heads off at the base from smaller perennials. Alternatively, you may wish to leave some stalks and seed heads to provide food for birds and winter interest. Stalks left standing in the fall can be cut down in the early spring as the new green growth emerges.

Keep in mind that your original rain garden design can be changed over time, as you see how the plants grow.



A well-maintained rain garden will reflect your style and taste

PRUNING SHRUBS AND TREES

After the first two years, your rain garden plants might need annual pruning or branch cutting to keep vigorous vegetation in control and away from roads and walkways. Pruning should be done in the early fall, so that plants have time to recover before freezing weather. If you don't want to prune regularly, consider plant choices that are smaller and more compact (ask your local nursery for suggestions). If a particular plant becomes too



aggressive in your rain garden, it is perfectly fine to replace it or remove it.

Selective pruning will help keep your plant looking tidy and less bulky. Some people find that pruning has a meditative, Zen-like quality to it; they enjoy coming home from work and getting out their clippers and gloves!

Take a step back and stare at your shrub. Remove all the dead branches at their base. Take out any branches that cross, rub over each other, or that grow the “wrong way.” Step back, stare again and see if it looks right to you and then go back in as needed to further shape it, and repeat.

GRASSES

As the grasses and rushes in the wet part of your rain garden grow, they will eventually fill the entire bottom area. This is a sign of a healthy rain garden. If you have a more natural gardening style, you can leave the dead vegetation in place to be used by wildlife (e.g. nesting material for birds). The dead leaves create a natural mulch layer that protects plants from cold temperatures and draughts. Other gardeners may choose to cut back their grasses and remove all dead vegetation in the fall to create a cleaner look. Both approaches are good and depend only on the gardener's own tastes.

KEEP THE WATER FLOWING



Inspect your garden regularly, and remove any built up soil, sand or gravel that is blocking the inlets or outlets, or mounds that prevent water flow through the rain gardens. A small spade works well. Dispose of sediments in your trashcan. Leaves and other debris can also block the inlets, which could cause backups or flooding. Cut back or remove any vegetation or grass that is growing into your inlets.

EROSION

Look for any exposed soil or erosion caused by fast or high volume water flows. To keep erosion to a minimum, add decorative rock (more than 2 inches in diameter) to protect the ground where water flows into the rain garden.

DEBRIS

Rain gardens should be regularly cleared of garbage or other debris that collect in them.



Remove leaves and other debris from rain garden inlets and outlets

SOILS AND MULCH



Bioretention soil is a mix of sand and compost that forms the basis of most rain gardens. Most likely you will never need to replace the bioretention soil. After 2-3 years, you can add a small amount of compost during the late spring or summer to the areas around the plants for extra nourishment.

MULCHING WITH WOOD CHIPS

Mulch is an important part of rain garden care. Wood chip mulch (not “beauty bark”) keeps the soil moist, allowing for easy infiltration of rainwater. Mulching also protects plants and reduces weed growth. Mulch also prevents soil from developing into a hardpan soil, a condition where the soil becomes cemented together and does not drain well.

When you mulch, you’ll spend less time weeding, less money and time watering, and grow a healthier, more attractive landscape. Don’t be afraid to install a thick layer of mulch initially — as much as 4 inches of wood chips. Be careful to sweep mulch away from tree trunks and plant stems — burying plants in mulch will cause them to rot.

Mulch your rain garden once a year for the first year or two. After a couple of years, it is

a good idea to check the mulch layer annually to make sure it is still providing good coverage over the whole garden. Fall, after a big weeding and when rain has thoroughly moistened the soil, is the best time to mulch. Mulching provides benefits all year-round, so don’t leave it out!

- **During the rainy season,** mulch protects the soil from erosion and losing nutrients that the rain can wash away. Mulch also helps to suppress the germination of annual weed seeds, including many that crop up during early spring.
- **The first flush of warm spring weather** gives a jump start to weeds; you’ll be glad your mulch is already in place! Mulch will also retain soil moisture and delay the need for supplemental watering. When you do begin watering, mulch will help reduce how



Mulch prevents weed growth and keeps soils moist

often you need to water. Mulch will keep plants' roots cooler as the weather heats up, benefitting plant health.

- **When plants are actively growing**, the gradual decomposition of mulch supplies the soil with organic matter and beneficial

microbes that enable plants to use soil nutrients.

- **Year-round beauty.** Mulch can help visually tie your garden together by providing a consistent texture to your beds.

WHAT ABOUT “BEAUTY BARK?”

Bark products are readily available and extensively used. Comprised of the bark from trees used in the wood products industry, there are several drawbacks to its use in rain gardens.

- Bark has water-repelling qualities. The finer the bark, the more it will repel water. Coarse bark mulch is a better choice if you decide to use this product.
- Bark is low in nutrients, unlike wood chips, which also incorporate leaf matter and other beneficial natural material.
- Bark uses up nitrogen in the same way that other wood products do, but offers little additional nutrient benefit to soil.
- Some bark products have dye added to them. In addition to raising concerns about how dye may affect the environment as it leaches, as it ages bark turns gray and ugly.

HOW TO GET MULCH DONATED

Many tree service companies or arborists offer to deliver wood chips to homeowners when they are done with a job. You are often put on a list and receive your pile when it comes available. The truck drivers will need an address and some guidance on where to exactly drop the pile on your property. Please

be sure to keep the pile off of your street or sidewalk. You may end up with more than you need, but wood chips work great even after they’ve “seasoned,” and some will even begin to develop healthy mushroom growth. One 10-cubic yard pile will last you more than a year, and can be shared with neighbors.



Volunteer party

TROUBLESHOOTING

Check to see if vegetation or debris is blocking the inlet. Often leaves collect in the inlets and form a barrier. Use a rake or flat shovel to remove material. Over time you may have to remove sediments that build up just inside the inlet areas; dispose of these sediments in your trashcan.

IF YOUR RAIN GARDEN IS NOT DRAINING WITHIN 48 HOURS

- Check for depressions or high points in the bottom of the garden. Rake back the mulch and then smooth out the rain garden bottom surface and then replace the top layer of mulch. Don't remove the plantings, but work around them.
- Soil and mulch may be compacted, so use a garden fork to loosen up lightly and be sure to be careful of the plants' roots.
- If ponding persists, divert water away from the inlet to the rain garden so it stops re-filling, and seek professional advice about how to improve the drainage.

IF SHRUBS BLOCK VISIBILITY NEAR DRIVEWAYS OR AT INTERSECTIONS

Prune vegetation to maintain visibility for safety. Keep shrubs below 2 feet near roadways and driveways.



Some rain gardens will pond like this during rain events, others will drain as fast as they fill

RESOURCES

Many of the tips and strategies outlined in this guide came from our partners and colleagues who have produced the following resources.

GENERAL INFORMATION ABOUT RAIN GARDENS

12,000 Rain Gardens for Puget Sound:

12000raingardens.org

The Rainwise rebate program: rainwise.seattle.gov

WSU Rain Garden Handbook for Western Washington:

raingarden.wsu.edu

PLANT CARE

Refer to the **Rain Garden Handbook for Western Washington Homeowners** guide for several plant list ideas for species that work well in rain gardens. raingarden.wsu.edu

The King Conservation District offers native plant sales and many other resources: kingcd.org or (425) 282-1900

Call the **Garden Hotline** at (206) 633-0224 or email a question from their website, gardenhotline.org

The **WSU Extension Master Gardeners** offers local plant clinics, or you can email your gardening questions. mastergardener.wsu.edu/program/county

Natural Yard Care: kingcounty.gov/naturalyardcare

If you have a concern about tree pruning in the planting strip, particularly if you think there may be a public safety hazard, please call the **City of Seattle Arborist:** (206) 684-TREE (8733)

PRUNING

PlantAmnesty offers a wonderful pruning guide that

shows how to prune different types of plants, such as cane growers (like Nootka rose or red twig Dogwood), mounds (like spireas or snowberry), or tree-likes (viburnum): plantamnesty.org

MULCH

Contact the **Pacific Northwest Chapter of the International Society of Arboriculture** to find a company to donate wood chips: pnwisa.org

Asplundh Tree Experts trims trees for Seattle City Light and Puget Sound Energy, and will add you to a wait-list for wood chips as they are available: (425) 483-9339

NATIVE PLANT AND WEED IDENTIFICATION

Center for Urban Horticulture:

depts.washington.edu/uwbg/visit/cuh.php

Plant Answer Line:

(206) UW-PLANT (897-5268) or email hortlib@uw.edu and attach a photo of a plant you want identified.

Washington Native Plant Society: wnps.org

NOXIOUS WEEDS

The **WSU Extension Master Gardener Program** offers assistance on noxious weed control: kingcountymg.org or (206) 685-5104

King County Noxious Weeds program:

kingcounty.gov/weeds

Washington State Noxious Weed Control Board:

nwcb.wa.gov

ACKNOWLEDGMENTS

Special thanks to Cari Simson of Urban Systems Design, WSU's Master Gardener Program, and Resource Media for their work on this guide. The guide was funded by a generous grant from the King Conservation District – City of Seattle Member Jurisdiction Program.



KCD
King Conservation District

12,000 
RAIN GARDENS
in Puget Sound

RAIN GARDEN CARE QUICK-START GUIDE

TOP 5 TASKS OF RAIN GARDEN CARE



Observe and enjoy! Watch your rain garden to see how it works. Do you notice any problems (such as weeds, bare patches of soil, erosion of soil, debris, or clogged inlets or outlets). How does your rain garden change over the course of the year?



Weed! Remove weeds to prevent them from taking over your rain garden.



Water! Water thoroughly but infrequently during the first two years to help plants establish deep root systems.



Mulch! Spread wood chip mulch (not “beauty bark”) on bare ground to hold water in the ground and prevent weeds from spreading.



Keep the Water flowing. Be sure to keep the water inlet and outlet clear from debris, litter and blockages so that water can move through the rain garden efficiently.

TOP 5 WEEDS CHECKLIST

Sometimes new gardeners are confused about what is a weed, and what is a rain garden plant. Here are the top 5 most common weeds likely to grow in your garden.



Grass



Himalayan Blackberry



Dandelion



Bindweed/Morning Glory



Buttercup

RAIN GARDEN CARE CALENDAR

CARE CALENDAR FOR REGULAR TASKS

These guidelines are for new to two-year old installations. After the second summer, your rain gardens will need less frequent care.

TIMING	TASK
Weekly 	<ul style="list-style-type: none"> Look at your rain garden as you come and go from your house and remove any debris (garbage, large branches, or other material). Look at how the water enters and leaves your rain garden, and make sure it can flow. Remove any debris, sediment or rocks from downspouts, rain chains and any pipes that bring water from your roof to the inlet. If you notice water pouring over your gutters on the roof, clean the gutters and check that the downspouts aren't clogged with leaves or other debris. How quickly does the rain garden drain? If the soils and plants are working, the standing water will be gone after 24-48 hours.
Late winter – February   	<ul style="list-style-type: none"> Remove emerging weeds, such as the top five weeds outlined in the full rain garden care guide. Add mulch to cover bare spots (2-3 inches thick).
Late spring – May    	<ul style="list-style-type: none"> Remove weeds before they go to seed. Add mulch if needed to cover bare spots (2-3 inches thick). If sand or dirt starts to mound in the bottom of the rain garden, remove it with a shovel and re-cover the area with mulch.
Summer – July-September  	<ul style="list-style-type: none"> For the first two years of your rain garden's life, water plants deeply but infrequently (every 3-7 days or as needed) during hot/dry spells, especially new trees.
Early fall – October    	<ul style="list-style-type: none"> Remove any emerging weeds. Mulch your entire garden 3 or 4 inches deep. Note any plants that have died and replace as needed. Check your gutters and downspouts and clear them of leaves and debris before the fall rain begins. Prune trees and large shrubs as desired. They will grow quickly in the spring so don't be afraid to cut them back to the shape you'd like them to be in summer time (this will become more important starting in the second and third years of a rain garden's life).
Winter – November-January   	<ul style="list-style-type: none"> Keep an eye on your rain garden's inlets and outlets to make sure the water is flowing well. Look for areas of erosion (such as gulleys or bare soil). If you find them, stabilize that part of your garden by adding decorative rock (more than 2 inches in diameter) to prevent further washouts.



FIELD GUIDE



MAINTAINING

Rain Gardens, Swales, and Stormwater Planters



Field Guide: Maintaining Rain Gardens, Swales and Stormwater Planters (2013)

This document is available on the Oregon State University Stormwater Solutions website.
<http://extension.oregonstate.edu/stormwater/sites/default/files/fieldguide.pdf>

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Take note! Throughout this document, the following symbol is used to highlight issues of special concern.



Why is Stormwater Management Important?

Before our region was developed, forests and open spaces absorbed rainwater. As we built cities and towns and added hard surfaces (impervious surfaces), the amount and rate of rainwater runoff (also known as stormwater) entering rivers and stormwater pipes increased significantly. That rainwater also picks up pollutants as it flows across impervious areas. If not properly managed, rainwater can carry pollutants to rivers, erode and flood river banks or overload the storm sewer system.

Sustainable stormwater facilities (i.e. Low Impact Development-LID) attempt to mimic the natural water cycle. They function to slow and reduce the amount of stormwater that enters rivers and pipes as well as filter pollutants to protect our infrastructure and watersheds. Many communities require developers to install stormwater facilities, like rain gardens, swales and planters. Further, they require property owners to follow an Operations and Maintenance Plan to ensure that stormwater facilities continue to work over time.

Types of Stormwater Facilities

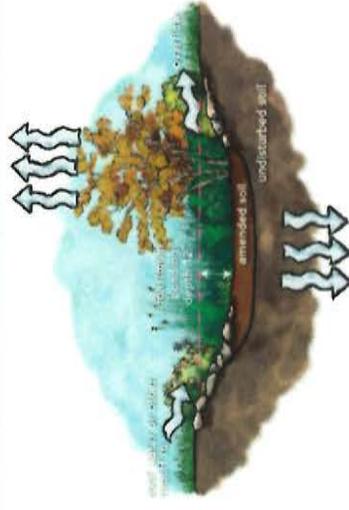
This field guide focuses on the three most common LID facilities used throughout the Portland metropolitan region. While maintenance guidance may apply to all types stormwater facilities, this manual specifically targets the following: rain gardens, swales, and stormwater planters.

Rain Gardens

A rain garden is a sunken, generally flat-bottomed garden bed that collects and treats stormwater runoff from impervious surfaces.



Sustainable stormwater facilities mimic the natural water cycle.



Cross-section of a typical rain garden.

Swales

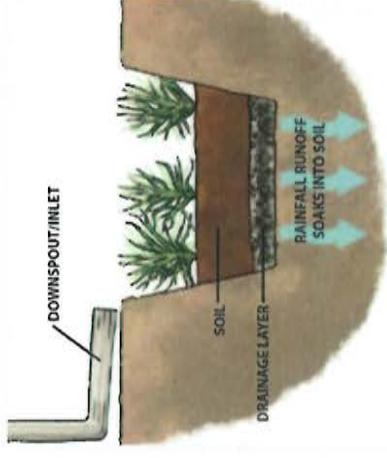
Swales are gently sloping depressions planted with dense vegetation or grass that treat stormwater runoff from impervious surfaces. As the runoff flows along the length of the swale, the vegetation slows and filters the water and allows it to soak into the soil. In areas where it is not advisable to have stormwater soak into the ground (poorly draining soils, steep slopes, limited space, contaminated soils, high groundwater levels, etc.) swales may include a liner that prevents water from soaking in. The runoff is then conveyed to a drywell, soakage trench or to the piped stormwater system. Swales can include check dams to help slow and detain the flow.



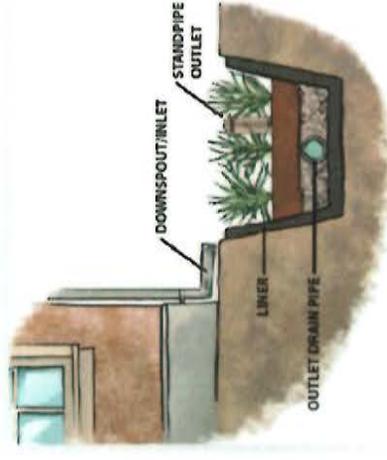
Overhead view of a swale

Stormwater planters

Planters are structures or containers that contain a layer of gravel, soil, and vegetation. Stormwater slowly soaks into the soil and then either makes its way into the ground below (infiltration planter) or into an underdrain system (flow through planter) that flows to the local stormwater pipes. Planters come in many sizes and shapes, and are made of stone, concrete, brick, plastic lumber, or wood. Careful consideration should be given before using infiltration planters in areas with poorly draining soils or in locations near structures such as buildings or streets.



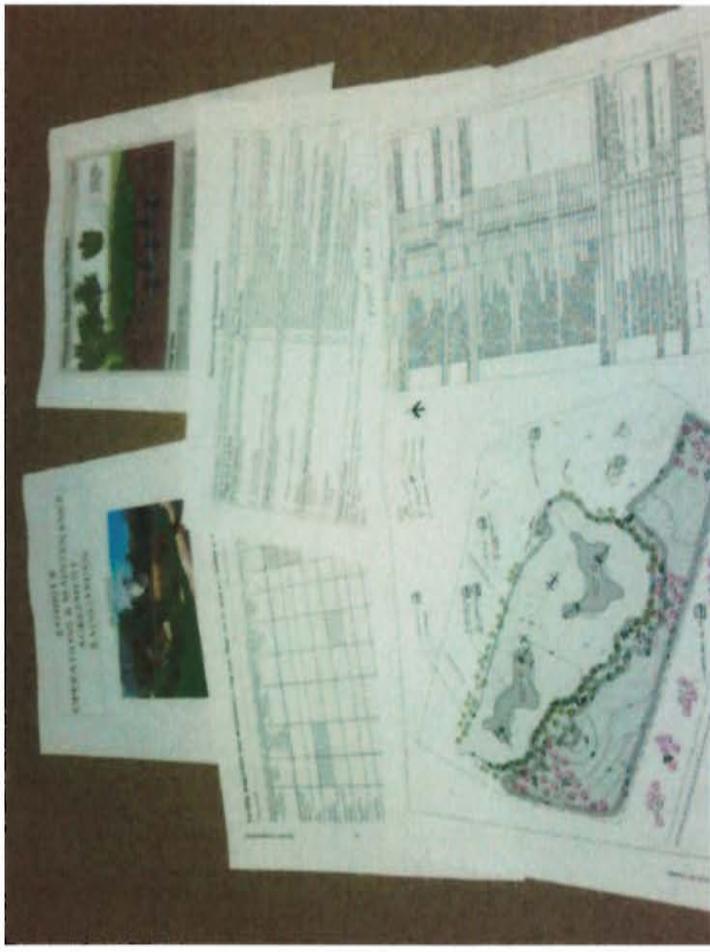
Infiltration planter



Flow through planter

Before going to the site

A little preparation before going to the site will ensure you have the information needed to properly maintain the facility. Review the operations and maintenance plan, the as-built or design report (locations of inlets/outlets, plantings, irrigation system, etc.), as well as past inspection and maintenance reports. Knowing what has occurred at the site in the past will help ensure you know what is likely to be needed when visiting the facility.



Consult design plans and maintenance manuals before heading out on a maintenance visit to the facility.

Safety Equipment

Always use the appropriate safety equipment when maintaining stormwater facilities.

- Boots/Protective footwear
- Eye protection
- Hearing protection

Cut resistant gloves



Always wear cut resistant gloves when working in facilities.

Safety vest



Wear a safety vest when working near traffic or in parking lots.

Hard hat



Wear a hard hat when cutting branches overhead.

Rake



Use a rake to gather leaves, trash, etc. from the facility.

First aid kit



A first aid kit should be available to workers in case they are injured on the job.

Grabber



Use a grabber rather than hands to pick up trash whenever possible.

Hazards

There are a number of safety hazards that can occur in and around stormwater facilities.

Trash

Be sure to use gloves and grabbers to remove dangerous trash (needles, animal carcasses, etc.) and dispose of safely.

Spills

Chemical spills could easily introduce pollutants into facilities and the piped stormwater system. Workers should always have a spill kit on hand in order to prevent any spills from reaching the facility, local water bodies, or stormwater inlets.

Spill kit



Contains:

- Kitty litter (absorbent material to soak up the spilled substance)
- Absorbent pad
- Gloves
- Instructions on how to clean up a spill and contact information for agencies that need to be alerted in the event of a spill

Contact the local jurisdiction spill control hotline for assistance with spills.

- In addition, contact the Oregon Emergency Response System 1-800-452-0311 to report spills.

Animals/Wildlife

Animals found in stormwater facilities can pose a hazard to maintenance workers. Use caution when working in and around a facility to reduce the likelihood of surprise encounters.

- Do not handle animals or wildlife.
- Call an animal control specialist to remove if they are negatively affecting the facility function or pose a hazard to workers.

Animals/wildlife



Bees, wasps, yellow jackets



- Do not use poisons or other toxic baits in a stormwater facility.
- Contact Vector Control in your area for assistance on eradicating pests and vectors of disease.
- Some wildlife species that may be found in a facility are protected in the state of Oregon. Contact Oregon Department of Fish and Wildlife to determine what species are protected by law.

See Appendix C for a list of resources for managing hazards in stormwater facilities.

Needles



Needles found in a facility could pose a serious health risk if workers are stabbed by a sharp object. Use grabbers and gloves to remove needles and dispose of them using methods approved for medical waste.

Dead animals



Use grabbers, gloves and other protective equipment when removing dead animal carcass.

- Double-bag the carcass before disposing it in an appropriate garbage facility.

Prevent spills



When re-fueling equipment in the field, to protect water quality and ensure worker safety, use the following procedures:

- Do not fuel the tank while engine is hot or running.
- Conduct fueling operations over drip pans or other hard surfaces.
- Keep away from storm drain inlets, the stormwater system, and waterways.
- Do not “top off” fuel tanks.
- Keep clean absorbent materials on hand for minor spills.
- Make sure portable fuel tanks are leak free and are secured during transit.

See Appendix C for a list of resources for managing hazards in stormwater facilities.



**To avoid injury,
use caution when
entering facilities
with steep slopes.**



Poisonous Plants

Danger! Use caution when removing these plants!

Always use protective gear (gloves, long sleeves, boots, eye protection, etc.) when removing poisonous plants from a facility to prevent plant material from touching the skin.

Poison oak (Toxicodendron Diversilobum)



Contact with poison oak or the oils from the plant can cause a painful rash.

- Use gloves and protective clothing when removing plants that can irritate the skin.
- All protective clothing should be washed or disposed of after use to prevent exposure to the toxic plant sap at a later time.

Poison hemlock (Conium maculatum L.)



Poison hemlock is toxic and can cause death if eaten! It also has photo toxins that make human skin ultra-sensitive to UV light.

- If you suspect someone has eaten poison hemlock, have them seek medical treatment immediately.
- Use gloves and protective clothing when removing the plant as it can irritate the skin.

Giant hogweed (Heracleum mantegazzianum)



Giant hogweed sap makes human skin ultra-sensitive to UV light. Large, watery, burn-like rashes appear 15-20 hours after contact. If skin is exposed to the plant or sap, cover the area and wash it as soon as possible.

Contact with the eyes can cause temporary and sometimes permanent blindness.

See Appendix C for a list of resources for managing hazards in stormwater facilities.

Inspections

All facilities need to be inspected and maintained seasonally to ensure they are functioning well and to determine what maintenance is needed. The local jurisdiction determines the frequency of required maintenance inspections, but you can always decide to inspect the facility on a more frequent basis.



Refer to the site O&M Plan or contact the local jurisdiction for maintenance activities and schedule specific to the site.

Make sure to document all inspections and maintenance activities in an inspection and maintenance log. The owner of the facility maintains the logs and copies may need to be submitted to the local jurisdiction.

Take Photos

Inspection documents should include photographs of the project site before and after completing maintenance activities. See Appendices for more information on:

- Appendix B: Sample inspection and maintenance log to track maintenance issues and the actions taken to remedy any problems.
- Appendix C: Resources on photo documentation.
- Appendix D: Contact information for jurisdictions in the Portland metropolitan area.

Maintenance Calendar

Stormwater facilities need maintenance throughout the year to do their job. Below is a calendar that offers general guidelines on the appropriate time of year to do each maintenance activity.

ACTIVITY	HOW OFTEN?	WHEN?	SPRING	SUMMER	FALL	WINTER	NOTES
INSPECTION	After every major storm (1 in. in 24 hrs)*	Any time of year					
Remove TRASH and debris (from the inlets and within the facility)	Monthly (and after every major storm; 1 in. in 24 hrs) (every visit)*	Any time of year					
Fix EROSION problems	After every major storm (1 in. in 24 hrs)*	Any time of year					
Remove accumulated SEDIMENT from the base of the facility	As needed (when sediment reaches 2-3 in. in depth, or once a year)*	Ideally in the dry season					
Remove SEDIMENT and debris (from the inlets)	Monthly (and after every major storm; 1 in. in 24 hrs) (every visit)*	Any time of year					

* Refer to the site O&M Plan or contact the local jurisdiction to determine the site maintenance activities and schedule.

Maintenance Calendar

Stormwater facilities need maintenance throughout the year to do their job. Below is a calendar that offers general guidelines on the appropriate time of year to do each maintenance activity.

ACTIVITY	HOW OFTEN?	WHEN?	SPRING	SUMMER	FALL	WINTER	NOTES
VEGETATION							
WATER plants	Water plants once a month or more until established (re-set irrigation schedule seasonally)*	Summer months					
Remove WEEDS	As needed	Spring, Summer and Fall					See Weeds Section (p. 18-20) and Appendix C for more information on weed management.
PLANT REPLACEMENT	As needed; inspect at a minimum, once per year*	Spring (March-May) or Fall (Oct-Nov)					Vegetation planted in the fall (rather than the spring) will have more time to establish before the dry season.
PRUNING							
Trees and Shrubs	As needed; inspect once per year*	Winter is ideal for pruning trees/shrubs.					See Pruning Section (p.23) for more information.

* Refer to the site O&M Plan or contact the local jurisdiction to determine the site maintenance activities and schedule.

Maintenance Calendar

Stormwater facilities need maintenance throughout the year to do their job. Below is a calendar that offers general guidelines on the appropriate time of year to do each maintenance activity.

ACTIVITY	HOW OFTEN?	WHEN?	SPRING	SUMMER	FALL	WINTER	NOTES
PRUNING							
Grasses and grass-like plants	As needed; inspect once per year*	Spring -to prepare for new growth Fall -if plants are blocking inlets/outlets					Prune as needed to keep inlets and outlets clear or for desired aesthetics. Most grass-like natives do not require pruning unless desired for aesthetics or when blocking inlets or outlets.
IRRIGATION SYSTEM							
Check for leaks, breaks in the system	As needed; at a minimum, once per year*	During the spring before the dry season begins					
Drain lines to prevent freeze/thaw damage	As needed; at a minimum, once per year*	Fall, before first freeze					
STRUCTURES							
Inspect and maintain STRUCTURES	As needed; at a minimum, once per year*	Fall, before rainy season begins					

* Refer to the site O&M Plan or contact the local jurisdiction to determine the site maintenance activities and schedule.

Trash and Debris

Trash and debris can prevent runoff from entering a facility and can add pollutants. Remove all trash and other items that should not be in the facility.



To ensure the safety of workers, use a rake or grabbers to remove debris and trash from the facility. Use puncture resistant gloves to remove trash only as a last resort.



Dispose of trash in an appropriate solid waste bin.



Dispose of vegetation in a yard debris bin or send to a composting facility.

Examples of trash and debris found in facilities



Wooden pallets



Grass clippings



Leaf litter

Erosion

Erosion often occurs in stormwater facilities when the vegetation is insufficient to hold the soil or if the structures in the facility have problems. Adding additional plants or repairing energy dissipaters (e.g. concrete basins, riprap, splash pads) and check dams are common fixes.

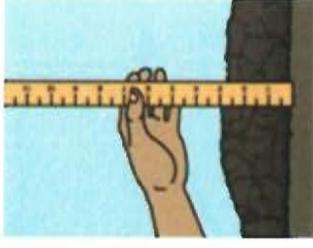
Examples:

Problem	Solution
<p>Channelization/erosion in the flow path or on side slopes</p> 	<p>Fill erosion channels with approved topsoil or soil mix and apply erosion control matting where appropriate. Add weed free mulch/yard debris compost on slopes of facility to prevent future erosion issues until plants fill in.*</p>  <p>* Not all jurisdictions allow the use of mulch in LID facilities. Check with the local jurisdiction before using mulch.</p> <p>* Contact local jurisdiction for possible solutions to erosion issues.</p>
<p>Erosion at inlet</p> 	

Sediment

Sediment buildup can prevent runoff from entering a facility or increase the amount of time it takes the water to soak into the soil. Most jurisdictions in our region require facilities to drain within 24- 48 hours. Regularly removing sediment that has accumulated in the facility will allow water to flow through it as designed. It will also keep sediment out of the piped stormwater system.

Examples:



Remove sediment from facility when it accumulates to a depth of 2-3 in. (or sooner)

Problem	Solution	Solution
<p>Inlet with basin full of sediment</p> 	<p>Removing debris and sediment from inlet of facility</p> 	<p>Inlet cleaned out</p> 
<p>Forebay full of sediment</p> 	<p>Sediment has been removed and forebay is now clean</p> 	

Examples:

<p>Problem</p> 	<p>Problem</p> <p>Sediment accumulated at bottom of facility.</p> 
---	--

Removing Sediment Manually

Step 1: Worker scraping sediment manually from the bottom of a swale.



Step 2: Put sediment in a bucket or wheel barrow and then dispose of it in an appropriate manner.



Step 3: Loosen the soil surface at the bottom of the swale with a rake.



In small facilities, remove sediment with a shovel. In larger facilities, machinery may be used to remove sediment, but always use caution to prevent compaction of the soil.



In general, sediment removal should occur during the dry season when it is not wet. But, in some instances, sediment that is removed from the bottom of a facility will be wet and needs to be dewatered before disposal. This prevents pollutants from dripping onto the hard surfaces nearby and entering the stormwater system and local water bodies. **DO NOT DRAIN WET SEDIMENT OUTSIDE THE FACILITY!**

For example:

The sediment has been scraped from the bottom of this facility and has been mounded in a pile in the inlet. Once the water has drained, the sediment can be removed and disposed of in an appropriate manner. To ensure compliance with erosion control laws, do not place sediment outside the facility to drain.



Sediment Disposal

- Sediment from stormwater facilities should be disposed of in garbage bins along with other solid waste/trash. Contact your solid waste hauler for guidance on the weight restrictions for garbage/solid waste bins.
- Sediment **MAY NOT** be added to yard debris bins.

Questions? Call the Oregon Department of Environmental Quality at 503-229-5263 or 800-452-4011 and ask for the Solid Waste duty officer.

Disposal

Do not dispose of sediment in yard debris bins. Sediment can be disposed of in garbage bins.



The recommendations on the handling and disposal of sediment are current as of the printing date of this document. Contact the local jurisdiction and the Oregon Department of Environmental Quality to determine if the regulations and guidance has changed.

See Appendix C for contacts and resources on the disposal of sediment.



Always visually inspect sediment before determining the appropriate disposal method. Note any onsite activities that may contaminate sediment (i.e., fueling, hazardous material storage/handling/disposal, auto maintenance). If sediment is off color, has an odor or sheen, have it tested to determine if it is hazardous. Contaminated sediment must be disposed of at a hazardous waste facility.

Vegetation

Watering Plants

As the plants in a stormwater facility establish (a two to three year period after planting), they will need watering during the summer dry season. In some cases a facility may need to be watered even after

the plants are established. Using native plants in stormwater facilities is encouraged to reduce the need for supplemental watering after plant establishment.



Water high exposure areas (surrounded by pavement, little shade, significant wind, etc.) through the summer, even after the plant establishment period. For example, this facility is surrounded by pavement and may need supplemental watering during the summer even after the plants are established.



Water vegetation when plants show signs of drought stress (drooping leaves, leaf drop, leaves brown and brittle). This facility has not been watered in months and some of the plants may not recover due to severe drought stress.

How much water is needed? How often to water?

Deep, infrequent watering that moistens the top 12-18 inch root zone is recommended to keep plant alive and healthy and to promote deep roots.

After 3-5 years, plants should be well-established, deep rooted and drought tolerant. Watering plants then becomes an infrequent task – only needed when plants begin show signs of stress.

For the first three years, deeply water plants once a month (or more) in hot, dry weather. Small plants may need more frequent watering in hot weather.

Watering Tip

Water in the morning or evening. Water evaporates during midday heat.

Common Weeds/Invasive Plants

Weeds and invasive plants can overtake desirable plants needed for stormwater filtering and absorption. It is critical to remove any weeds and invasive plants from the facility so they don't spread when the facility overflows into the stormwater system.

Mulch can be used to suppress weeds until the vegetation is established and fills the facility. (Check with the local jurisdiction to determine whether mulch may be used in LID facilities.)

Integrated Pest Management (IPM) is generally the preferred approach for managing weeds and invasive plants. IPM is an effective and environmentally sensitive approach to pest management. IPM

programs use current, comprehensive information on the life cycles of pests and their interaction with the environment. This information, in combination with available pest control methods, is used to manage pest damage by the most economical means, and with the least possible hazard to people, property, and the environment.



Removing weeds by hand

Common Weeds and Invasive Plants



Himalayan blackberry
(*Rubus armeniacus*)



Reed canary grass
(*Phalaris arundinacea*)



Scotch broom
(*Cytisus scoparius*)



Knotweed
(*Polygonum spp.*)

INSPECTION &
MAINTENANCE

Common Weeds and Invasive Plants



Canada thistle
(*Cirsium arvense*)



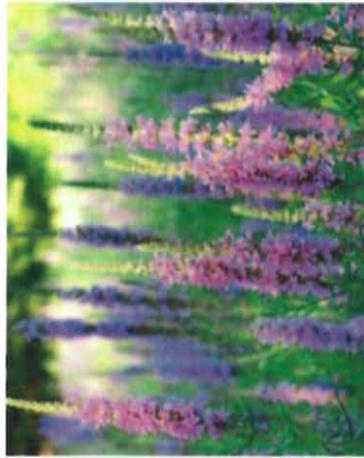
Red clover
(*Trifolium pratense*)



Garlic mustard
(*Alliaria petiolata*)



Yellow flag iris
(*Iris pseudacorus*)



Purple loosestrife
(*Lythrum salicaria*)



Nightshade
(*Solanum dulcamara*)



Hairy vetch
(*Vicia villosa*)



Poison hemlock
(*Conium maculatum L.*)



English ivy
(*Hedera helix*)



Morning glory
(*Convolvulus sepium*)



Bird's-foot trefoil
(*Lotus corniculatus L.*)

Removing weeds from stormwater facilities

1. Remove weeds by hand. Pull and dig out roots.
2. If this is not possible, contact the local jurisdiction and follow their recommendation for weed removal and control.
3. Remove all weeds and vegetative debris from the facility and dispose of properly. If weedy plant material is to be composted, send it to a high temperature/professional composting facility. This ensures weed seeds are destroyed.
4. Replace weeds with plants that are growing well in the facility. For more plant options, see the Plant Replacement Section for a list of plants that are known to grow well in stormwater facilities.

Because the use of herbicides can have negative impacts to water quality, it is important to use them only as necessary and with extreme caution. If using herbicides:

- Check with local jurisdiction on herbicide restrictions and application requirements.
- Always follow local Integrated Pest Management guidelines.
- Only use herbicides approved for aquatic use.
- Don't apply herbicides when there is standing water in a facility.
- Only apply herbicides during dry weather and ideally before the weeds have gone to seed.
- Don't apply herbicides below the high water mark.

See Appendix C for more resources on weeds, invasive plants and integrated pest management.

Plant Replacement

Facilities work best with dense vegetation to absorb and filter runoff. Most jurisdictions expect 75-90% plant coverage for established facilities. When additional plants are needed, consult the original planting plan for the facility (contact the facility owner or the local jurisdiction for the original plans). In addition, the local jurisdiction can offer plant suggestions. Make sure to select the right plant for the right moisture zone.

Examples:

Problem	Solution
<p>Dead plants in facility</p> 	<p>Install new plants to replace dead ones</p> 
<p>Animal Damage? Wrap saplings in 3 ft. diameter 14 gage steel wire cages fit snug to the ground.</p> 	

Moisture Zones (Top, Slope, Bottom)

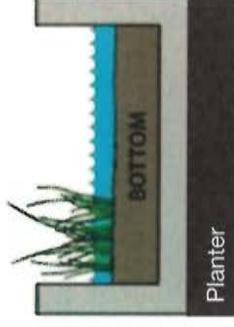
Always choose plants that can handle the moisture levels of the zone where it will be planted.

Bottom- Soil around roots may be saturated after every rain event.

Slope- Soil around roots may be moist and become saturated only during very large rain events.

Top- Soil around roots is generally not saturated.

The following is a list of plants that have proven to work well in rain gardens, swales and stormwater planters in the Portland metropolitan region (listed by moisture zone- Bottom, Slope, Top).



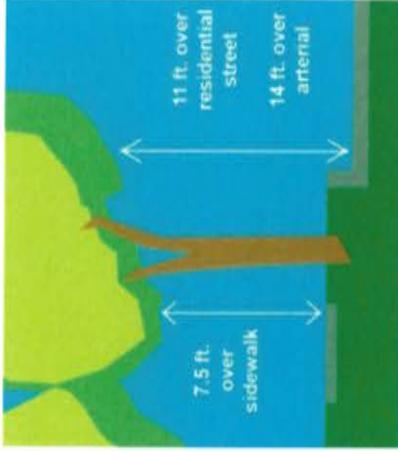
Bottom	Slope and Top	Top
Rushes / Grasses / Sedges	Ground Covers	Ground Covers
Spreading rush (Juncus patens)	Coastal strawberry (Fragaria chiloensis)	Kinnikinnick (Arctostaphylos uva-ursi)
Slough sedge (Carex obovata)	Shrubs	Shrubs
Slender rush (Juncus tenuis)	Dwarf redtwig dogwood (Cornus sericea Kelsy)(2 ft)	Common Snowberry (Symphoricarpos albus)(6 ft)
Tufted hairgrass (Deschampsia ceaspitosa)	Swamp rose (Rosa pisocarpa)(8 ft) **	Tall Oregon grape (Mahonia aquifolium)(5 ft)
	Douglas spiraea (Spiraea douglasii)(7 ft)	Red-flowering currant (Ribes sanguineum)(9 ft) *
	Tall shrubs	Small/Medium Trees
	Red twig dogwood (Cornus sericea)(20 by 25 ft) *	Bitter cherry (Prunus emarginata)(50 ft) *
*not suitable in height restricted areas	Pacific ninebark (Physocarpus capitatus)	Cascara (Rhamnus purshiana)(30 ft) *
**not suitable in space limited areas	(15 by 15 ft) *, **	Pacific crab apple (Malus fusca)(30 ft) *
		Vine maple (Acer circinatum)(15-20 ft) *

See Appendix C for additional Resources for Selecting Plants.

Pruning

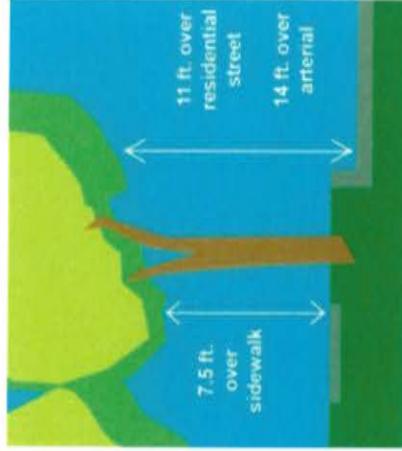
Prune vegetation as needed to ensure the facility functions well. Vegetation should not pose a safety hazard or block visibility within transportation corridors.

Examples:

Problem	Problem	Solution
<p>The grasses in the swale are flopping over and blocking the walkway. They need to be pruned.</p> 	<p>Plants pruned too severely</p> 	<p>Grasses pruned to 10 inches</p> 
<p>Vegetation clogging an inlet.</p> 	<p>Vegetation removed; the inlet is now open.</p> 	<p>To ensure safe passage for everyone, tree limbs must hang no lower than:</p> <ul style="list-style-type: none"> • 7 ½ feet above a sidewalk • 11 feet above residential streets • 14 feet above main arterial streets. <p>From: "Pruning and Care of Young and Mature Trees", Portland Parks and Recreation.</p> <p>See Appendix C for additional resources on Pruning.</p> 

Height Guidelines

Overgrown trees and shrubs can create safety problems by blocking views of traffic signs, pedestrians and other vehicles. Vegetation needs to be pruned to allow for clear sightlines.



To ensure safe passage for everyone, tree limbs must hang no lower than:

- 7 ½ feet above a sidewalk
- 11 feet above residential streets
- 14 feet above main arterial streets.

From: "Pruning and Care of Young and Mature Trees", Portland Parks and Recreation.

See Appendix C for additional resources on Pruning.

Irrigation System

If a facility has an irrigation system, maintaining it regularly will ensure it works correctly during the drought season when the plants may need to be watered. A well maintained irrigation system will support healthy plant development and reduce unnecessary water use.

General maintenance items on an irrigation system include:

- Inspect the system components for breaks, leaks and blockages and repair them as needed. It is best to do this while the system is running so leaks and other issues are easier to identify.
- Drain the irrigation lines in preparation for the winter season.
- Adjust the system to prevent overspray outside the facility.

Structures

Many of the structures in a facility can become damaged, vandalized, clogged or simply fail over time.

All need to be inspected regularly and maintained if there is a problem.

Examples of structural problems:

<p>Problem</p> <p>Not only is the street getting irrigated by this system, but the irrigation is running in the winter, a time when most landscapes in Oregon don't need irrigation.</p> 	
<p>Problem</p> <p>Elbow detached from stand pipe</p> 	<p>Solution</p> <p>Elbow re-attached to stand pipe</p> 
<p>Problem</p> <p>Liner not attached to wall of facility; downspout pipes not connected to one another</p> 	<p>Solution</p> <p>Liner attached to facility wall; splash block added to downspout to reduce erosion</p> 

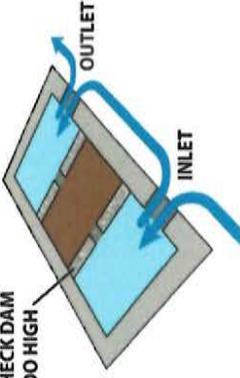
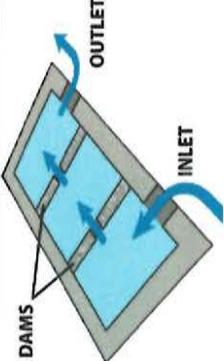


When maintaining a facility, always determine whether it has a liner. If it does, use extra caution to ensure the liner is not punctured during routine maintenance.

Examples of structural problems:

Problem	Solution	Problem	Solution
<p>Stand pipe cover missing</p> 	<p>Stand pipe with basket cover in place</p> 	<p>Overflow pipe placed too high; excess stormwater runoff will overflow outside the facility and could cause a public safety hazard.</p> 	<p>Overflow pipe at correct height (lower than the outlet) so stormwater can exit the facility safely through the goose neck outlet pipe.</p> 
<p>These check dams have fallen apart and no longer slow down the flow of stormwater in the facility. Rebuild to slow and spread the flow.</p> 	<p>Solution</p> 	<p>Solution</p> <p>This check dam is intact. It prevents erosion, improves filtration and allows water to soak into the ground.</p> 	<p>Solution</p> <p>This check dam is intact. It prevents erosion, improves filtration and allows water to soak into the ground.</p> 

Examples of structural problems (continued):

Problem	Solution
<p>A check dam that has not been properly installed can cause erosion problems in the facility.</p> <p>Problems:</p> <ul style="list-style-type: none"> • Check dam material (in this case soil and rock) has NOT been trenched into the swale. This can lead to erosion as the water finds its way around or under the check dam. • No notch in the center of the check dam to direct flow away from sides of the swale. 	<p>Properly installed check dam</p> <ul style="list-style-type: none"> • Check dam material (in this case soil and rock) has been trenched into the swale. • Notch in the center of the check dam directs water to overflow in the center of the check dam and not on the sides. <p>(Graphics are not to scale and are not intended to function as check dam specifications. See the facility design plans or contact the local jurisdiction for guidance on check dam installation requirements)</p> 
<p>In this facility, the first check dam has been built too high and is preventing water from entering the middle cell of the swale. Therefore, the facility is not able to manage all the runoff it was designed to treat.</p> 	<p>In this facility, all the check dams are built at the correct height so the water flows into each cell of the swale for treatment.</p> 

See Appendix A for a checklist of structural elements that need to be inspected and maintained in a facility.



All structural repairs need to be implemented by a qualified professional. Tasks that modify the function of the facility or that deviate from the approved plans may need to go through the plan review and permitting process with the local jurisdiction.

Appendix A: Inspection/Maintenance Checklist*

This checklist reflects the inspection and maintenance activities that are generally recommended for rain gardens, swales and stormwater planters.

Before visiting the site

- _____ Review the operations and maintenance plan.
- _____ Review the as-built or design report (locations of inlets/outlets, plantings, irrigation, etc.)
- _____ Review past inspection and maintenance reports (historical problems, previous observations, etc.)

Hazards

Spills

- _____ Record the nature and extent of any spills and the response if it has or could negatively affect stormwater.

Animals/Wildlife

- _____ Record any indication of rodents, mosquitoes, other insects or pests.
- _____ Fill holes and burrows in and around facility.
- _____ Contact animal control specialist to remove or trap animals if they are negatively affecting facility function.

Trash/Debris

- _____ Remove trash, debris and other items and dispose of appropriately.

Erosion

- _____ Fill erosion channels with approved topsoil or soil mix and stabilize using appropriate methods (erosion control matting, etc.). †
- _____ Install or repair energy dissipater at inlet if erosion is occurring there. †
- _____ Add/repair check dams (as appropriate). Re-construct check dams as needed to slow flows and spread stormwater across full surface of facility. †
- _____ In facilities where mulch is appropriate (e.g. exposed soils), add 2-4 inches mulch above high water mark to prevent erosion. (Check with local jurisdiction on the use of mulch in facilities)
- _____ Sweep catchment area to prevent sediment from entering facility (as appropriate).

Sediment

- _____ Remove sediment from the surface of the facility when it reaches 2-3 inches in depth.
- _____ Remove sediment from inlets (trench drains, curb cuts, area drains and pipes) so water is not prevented from entering facility.
- _____ Rake areas of bare soil after removing sediment.
- _____ Replace any plants that may have been removed during sediment removal. (see Vegetation section)

* Refer to the site O&M Plan or contact the local jurisdiction to determine the site inspection maintenance checklist required for the facility you are working on.

† Contact the local jurisdiction for possible solutions to erosion issues.

Vegetation

Watering

- _____ If the facility has an irrigation system, adjust the irrigation schedule for each season.
- _____ Inspect plantings during dry periods and look for signs of stress.
- _____ Water plants as needed.
- _____ Adjust irrigation system if there is evidence of overspray outside the facility.

Common Weeds and Invasive Plants

- _____ Remove weeds from the facility (In facilities with liners, this includes volunteer trees that seed themselves into the facility whose roots could damage the underground plumbing and liner).
- _____ To reduce future weeds, add 2-4 inches of mulch above the high water mark (Keeping mulch out of the wet zone prevents it from washing out of the facility and clogging outlets).

Plant Replacement

- _____ Note dead vegetation and determine the reason plant died (lack of water, wrong plant for location, disease, etc.).
- _____ Replace dead vegetation with plants appropriate for the moisture zone and solar exposure. To choose replacement vegetation, see the original planting plan, contact the local jurisdiction, or see the Plant Replacement Section of the Field Guide for plants that work well in LID stormwater facilities.

- _____ Add vegetation to cover large areas of exposed soil or in flow path to prevent erosion.
- _____ When adding new vegetation to the facility, spread 2-4 inches of mulch above the high water mark to reduce competition from weeds (To prevent mulch from washing out of the facility and clogging outlets, do not add mulch to the wet zone of the facility).
- _____ Protect vegetation if there is evidence of animal damage.

Pruning

- _____ Trim trees, shrubs and herbaceous plants as needed (follow height guidelines on p. 23 of the Field Guide).
- _____ Cut and remove grasses that are lying down (cut to a height of 10 inches).
- _____ Trim plants to clear inlets and outlets. Clear a 12 inch area at the inlet & outlet.
- _____ Remove pruned material and dispose of appropriately or compost outside the facility.

Irrigation System

- _____ Inspect the system components for breaks, leaks and blockages. Repair as needed.
- _____ Drain the lines in preparation for the winter season.

Structures

____ Note-document any structures that are damaged or broken.

Pipes and Under Drains

____ Clean out sediment from clogged pipes, trench drains, underdrains and outlets.

____ Replace outlet covers, as appropriate.

____ Attach screens on outlet stand pipes to prevent pests and debris from entering storm pipes.

____ Jet clean or rotary cut debris/roots from under drains so the pipes can drain and standing water is not present during dry weather.

Liners

____ Re-attach liners to planter walls to protect building foundations.

____ Repair and/or reposition downspout extensions and splash pads to direct stormwater away from building foundations.

____ Cover exposed liners with 2 to 4 inches of soil to prevent solar damage.

Check Dams

____ Replace pipes, as appropriate.

____ Repair check dams as needed.

- Check dams need to spread the flow of stormwater across the entire surface of the facility (or through the notch in the middle) to prevent erosion.
- Make sure the check dam is at the right height. A check dam that is too high can force water to flow back out of the facility.

Appendix B: Sample Inspection and Maintenance Log*

This maintenance log reflects the types of inspection and maintenance activities that are generally recommended for rain gardens, swales and stormwater planters.

Site name:			Crew (names):
Site address:			
	Date: (mm/dd/yy)		# of staff hours at the facility:
	Hours since last storm:		What did you do?
	What did you see?		
Safety Concerns			
Can you access the facility easily?			
Foreign/dangerous objects?			
Any spilled material/spill potential?			
Vandalism, undesirable activity?			
Evidence of the public entering facility?			
Trash			
Trash, debris, pet waste, etc.?			
Animals/Wildlife			
Any burrows or nests?			
Mosquito larvae?			
Animal droppings?			
Vegetation			
Overgrown vegetation?			

*Refer to the site O&M Plan or contact the local jurisdiction to determine the site inspection maintenance log required for the facility you are working on.

Vegetation	What did you see?	What did you do?
Dead plant count (Trees, shrubs, grasses, etc.)		
Large areas of bare soil?		
Weeds? What species? (see Weeds/Invasives section)		
How much of facility covered in weeds?		
Vegetation or debris obstructing inlets/outlets?		
Soil/Erosion		
Erosion, undercutting, scouring?		
Sediment		
How many inches of accumulated sediment?		
How much of the surface area is covered by sediment?		
Any unusual odors, colors, sheen on the soil?		
Is the facility flowing and draining as designed?		
Standing water? (Hours since last rainfall)		
Structures		
Inlet/Outlet (rusting, cracked, misaligned?)		
Pipes (clogged, damaged, etc.?)		
Any problems with other structures?(liner, curb, check dams, grates, fence, etc.)		
Other Observations		

Appendix C: Resources

Photo documentation

A good reference for choosing viewpoints and using photo documentation is *The Oregon Watershed Enhancement Board (OWEB) "Guide to Photo Point Monitoring,"* found at http://www.oregon.gov/OWEB/docs/pubs/PhotoPoint_Monitoring_Doc_July2007.pdf?ga=t.

Hazards

Toxic and Poisonous Plants

AMA Handbook of Poisonous and Injurious Plants (available for purchase online)

Animal and Wildlife

See the **Stormwater Facility Operations & Maintenance: Best Practices Manual**, <http://extension.oregonstate.edu/stormwater/sites/default/files/bestpracticesmanual.pdf> for more detailed information on managing animals and wildlife in a facility.

Resources for vector control and animal/wildlife issues			
	Organization:	Phone:	Website:
Bees/swarms	Oregon Beekeepers Association		http://www.orsba.org/htdocs/home.php
Coyotes and other urban wildlife	Portland Audubon Society	503-292-0304	http://audubonportland.org/wcc
Other wildlife	Clackamas office Oregon Department of Fish and Wildlife	971-673-6000	Clackamas ODFW office (use if east of Willamette River) http://www.dfw.state.or.us/
		503-621-3488	Sauvie Island ODFW office (use if west of Willamette River) http://www.dfw.state.or.us/
Vector Control	Clackamas County	503-655-8394	http://www.clackamas.us/vector/
	Multnomah County	503-988-3464	http://web.multco.us/health/pest-prevention-and-control/

Sediment

Sediment Disposal

Contact Metro or the Oregon Department of Environmental Quality on the disposal of sediment.

Metro Recycling and Solid Waste Hotline 503-234-3000

<http://www.oregonmetro.gov/index.cfm/go/index.cfm/go/by.web/id=571>

Oregon Department of Environmental Quality

Call 503-229-5263 or 800-452-4011 and ask for the Solid Waste duty officer.

Vegetation

Weeds, Invasive Plants and Integrated Pest Management

- For information on early detection and rapid response (EDRR) weeds and recommended treatment methods, see the Oregon Department of Agriculture EDRR website: <http://oregon.gov/ODA/PLANT/WEEDS/edrr.shtml>
- Weed management schedule, Clean Water Services IPM Plan, Appendix A <http://tinyurl.com/cesnydj>
- Grow Smart, Grow Safe: A Consumer Guide to Lawn and Garden Projects <http://www.lhwmp.org/home/gsgs/>

- Integrated Pest Management, State of Oregon or as approved by the local jurisdiction. <http://www.oregon.gov/ODA/PEST/ipm.shtml>
- OSU Extension. 2003 *Pacific Northwest's Least Wanted List: INVASIVE WEED IDENTIFICATION AND MANAGEMENT*. EC 1563.

- Clean Water Services, Non-Native Invaders, <http://www.cleanwaterservices.org/Residents/JoinTheCycle/InYourYard/Invasives/Invaders.aspx>

Selecting Plants

Portland Plant List, <http://www.portlandonline.com/bps/index.cfm?c=45131>

Portland Green Street Plant List:

<http://www.portlandonline.com/bes/index.cfm?c=47962&a=380500>

Clean Water Services Design & Construction Standards, Appendix A

<http://www.cleanwaterservices.org/PermitCenter/DesignAndConstruction/DandCTable.aspx>

Pruning

Pruning and Care of Young and Mature Trees, Portland Parks and Recreation <http://www.portlandonline.com/parks/index.cfm?a=179897&c=39712>

International Society Arboriculture Pruning Standards

http://www.treesaregood.com/treecare/pruning_mature.aspx

Appendix D: Jurisdiction Contacts

Maintenance requirements for LID facilities vary by jurisdiction. Be sure to contact the appropriate local government representative to determine what is required for the facility.

Jurisdiction	Department	Phone	Website
Clackamas County Water Environment Services	Development Services	503-742-4567	http://www.clackamas.us/wes/dreview.html
Fairview	Public Works	503-665-9320	http://fairviewregon.gov/index.aspx?NID=181
Clean Water Services (Washington County)	Service Delivery Planning Department	503-681-3600	http://cleanwaterservices.org/pwqf
Gladstone	Public Works	503-656-7957	http://www.ci.gladstone.or.us
Gresham	Watershed Division	503-618-2525	http://greshamoregon.gov/watershed/
Lake Oswego	Engineering/Public Works	503-635-0270	http://www.ci.oswego.or.us
Milwaukie	Public Works	503-786-7555	http://www.ci.milwaukie.or.us/
Oregon City	Public Works	503-657-0891	http://www.orcity.org
Portland	Environmental Services, Maintenance Inspection	503-823-7383	http://www.portlandonline.com/bes/index.cfm?c=45464&
Sandy	Public Works	503-668-5533	http://www.ci.sandy.or.us
Troutdale	Stormwater	503-674-3300	http://www.ci.troutdale.or.us
Wilsonville	Natural Resources	503-682-4960	http://www.ci.wilsonville.or.us
Wood Village	Public Works	503-489-6859	http://www.ci.wood-village.or.us

Appendix E: Photo Credits

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Abbreviations: EMSWCD - East Multnomah Soil and Water Conservation District. BES - Bureau of Environmental Services. CWS - Clean Water Services.

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