

Burnt Bridge Creek Partnership

Public Education and Outreach Workgroup

Meeting Summary – May 6, 2021



Please complete this [Doodle Poll](#) to find a time for the next Burnt Bridge Creek Partnership Meeting.

Background

The Burnt Bridge Creek Partnership kicked off in February 2021 to develop a TMDL Alternative Restoration Plan for the Burnt Bridge Creek watershed, which is also known as a “Water Cleanup Plan.” After the kickoff meeting, the City of Vancouver established implementation workgroups for different priorities in the watershed. The workgroups include Sewer Connection and Septic Systems, Urban Forestry and Greenways, Stormwater and Capital Improvements, Operations and Maintenance, and Public Education and Outreach.

Public Education and Outreach Workgroup

The Burnt Bridge Creek Public Education and Outreach Workgroup met on May 6, 2021, from 10:30 a.m. – 12:00 p.m. The purpose of this workgroup was to provide input on priorities for public education and outreach in Burnt Bridge Creek to support development of the *Burnt Bridge Creek Water Cleanup Plan*. The objective of the first workgroup meeting was to review priority locations for water quality improvement from the [Burnt Bridge Creek Source Assessment](#), and to begin outlining implementation priorities using the [Public Education and Outreach Worksheet](#).

Discussion topics included urban forestry, stormwater, lawn care and fertilizer use, private stormwater facilities, dog waste pickup, tree planting and backyard habitat, agriculture, sewer connection, and septic systems. Target audiences and methods for public education and outreach were also discussed. The [agenda](#) and [presentation](#) from the workgroup meeting is available online.

Next steps

The next full Burnt Bridge Creek Partnership will be held in July 2021. The purpose of this meeting will be to review what was discussed at each of the Burnt Bridge Creek workgroups and to present draft priorities for implementation.

Please complete this [Doodle Poll](#) to find a time for the next Burnt Bridge Creek Partnership meeting.

Land use and land ownership

The Burnt Bridge Creek watershed is located in the City of Vancouver. The City of Vancouver is the primary jurisdiction in the watershed, and Clark County has some jurisdiction in northern portions of the watershed, mostly in Cold Creek. The Washington Department of Transportation (WSDOT) also has jurisdiction on state roads, which includes interstate 5 (I-5), Interstate 205 (I-205), and State Road 500 (SR 500). Only 11 percent of the land in Burnt Bridge Creek is publicly owned. Vancouver is the largest public landowner, owning 44 percent of the total public land. Clark County owns 10 percent of public land, and WSDOT owns 3 percent. The primary land use in the watershed is residential, with approximately 44 percent of the total watershed consisting of residential land uses. In total, approximately 89 percent of the watershed is privately owned.

The watershed can be divided into three parts, which includes the lower, middle, and upper watershed. The lower watershed is located between river miles 0 and 5. The lower watershed is 45 percent residential, 29 percent roads, and 7 percent commercial, manufacturing, and mining land uses. Vancouver, Clark County, and WSDOT have shared stormwater jurisdiction in the lower watershed. The middle watershed includes river miles 5 to 10. The middle watershed is 45 percent residential, 24 percent roads, and 15 percent commercial, manufacturing and mining. Most of the stormwater jurisdiction is the City of Vancouver, but there is some Clark County and WSDOT jurisdiction. The upper watershed is river miles 10 to 13. The upper watershed is 43 percent residential, 21 percent roads, and 11 percent commercial, manufacturing, and mining. City of Vancouver and Clark County share stormwater jurisdiction in the upper watershed.

NPDES Permits

Western Washington Municipal Stormwater Permit

The Western Washington Municipal Stormwater Permit requires local governments to manage and control stormwater runoff so that it does not pollute downstream waters. In the Burnt Bridge Creek watershed, there are three municipal stormwater permittees. Clark County has a Phase 1 stormwater permit, which regulates discharges in the most highly populated areas of the state. The City of Vancouver has a Phase 2 permit, which is implemented in jurisdictions with over 10,000 residents. The Washington Department of Transportation also implements the municipal stormwater permit on state roads.

Stormwater program elements include stormwater planning, mapping and documentation, illicit discharge detection and elimination, operations and maintenance, runoff and flow controls for development, source control for existing development, structural stormwater controls, and public education and outreach.

Approximately 70 percent or 13,030 acres of the Burnt Bridge Creek watershed is covered by the City of Vancouver's the Municipal Stormwater Permit (MS4 Permit). In addition to the MS4 permit, there are two Industrial NPDES Individual Permits, and eleven Industrial Stormwater General Permits in the watershed. At the time of the Source Assessment, there were approximately 90 construction stormwater general permits in the watershed.

Water quality priorities

The Burnt Bridge Creek Watershed is on the Washington State's Polluted Waters List (303d list) for bacteria, dissolved oxygen, temperature, and pH impairments. The following is a summary of impairments from the *Burnt Bridge Creek Source Assessment*. A full [summary of water quality impairments](#) from the *Burnt Bridge Creek Source Assessment* is available online.

Bacteria

Peterson Channel, Cold Creek, and Burton Channel are the top priorities for bacteria reduction, as well as river miles (RM) 8.4, 2.6, and 1.6. All of these areas have bacteria geometric means over 200 cfu/100ml during the dry season. This is almost double the state water quality standard for fecal coliform at the time of this study, which was a geometric mean of 100 cfu/100ml. All of these locations need bacteria reductions of over 75 percent to meet water quality standards.

The second priority is all areas that need bacteria reductions of over 75 percent in the wet or dry seasons to meet water quality standards. These include Peterson Channel in the wet and dry seasons, Burton Channel in the wet season, Cold Creek and river mile 8.4 in the dry season, and river miles 7, 4.3, 3.4, 2.6, and 1.6 in the wet season.

The third priority are all areas that have geometric means over 100 cfu/100ml. These include river miles 10.4, 8, 5.9, 5.2, and 3.4.

Overall, the middle and lower watershed are the highest priorities for bacteria reduction. The presence of dry season bacteria can indicate a direct source of bacteria from an illicit discharge or illicit connection, a sewer pipe that needs maintenance or repair, a failing septic system, or direct access of livestock or pets to the river. The presence of wet season bacteria may indicate that stormwater runoff is facilitating the movement of bacteria into surface water. Wet season bacteria may also indicate challenges with infiltration and inflow in the sewer system.

Temperature and Dissolved Oxygen

In the Burnt Bridge Creek Watershed, river mile (RM) 0 had the highest maximum water temperatures recorded in the *Source Assessment*, with 92 percent of days exceeding water quality criteria for temperature. The temperature water quality standard for the Burnt Bridge Creek watershed is 17.5 degrees Celsius to support salmonid spawning, rearing, and migration. In addition to RM 0, river miles (RM) 5.9 and 7.0 in the middle watershed had the most number of days above criteria, with RM 7 not meeting temperature standards 230 days out of the year, and RM 5.9 not meeting standards for 222 days. Sites with the most noncompliant days for dissolved oxygen are located in the upper watershed from RM 9.5 to 11.4, and in the middle watershed at river miles 7.0 and 5.9.

Increasing tree canopy in riparian areas provides important shade, which helps cool down Burnt Bridge Creek and its tributaries, by reducing the amount of sunlight that can warm up the river. Reducing warm water temperatures may also help improve dissolved oxygen levels in the watershed, as warm water can cause decreased dissolved oxygen. Increasing urban tree canopy in upland areas throughout the watershed also has the potential to help manage stormwater runoff and promote groundwater infiltration, to restore streamflow to the creek.

Shade deficit analysis

A shade deficit of the mainstem of Burnt Bridge Creek was completed in the *Burnt Bridge Creek Source Assessment* to identify priority locations for tree planting projects. Overall, the upper watershed located between RM 10 to 13 had the highest average shade deficits in the watershed, followed by the middle watershed located between RM 5 to 10. The following table summarizes results from the shade deficit analysis. More information is included in the *Burnt Bridge Creek Source Assessment* and in the meeting summary for the Urban Forestry and Greenways workgroup.

Table 1. Average shade deficits in Burnt Bridge Creek watershed.

Portion of Watershed	Average shade deficit
Upper watershed: RM 10-13	62 percent
Middle watershed: RM 5-10	39 percent
Lower watershed: RM0-5	27 percent

A shade deficit analysis was not completed for the Burnt Bridge Creek tributaries, which include Cold Creek, Peterson Channel, and Burton Channel. Completing a survey and analysis of these tributaries will be important to support future restoration.

pH

Overall, most sites in the Burnt Bridge Creek watershed met standards for pH. River mile 0 had the most noncompliant days. Rivers miles 8.8, 8, 5.2, and Peterson Channel met criteria for pH. The minimum and maximum pH values measured were located in Burton Channel. In areas where the watershed is not meeting pH standards, Vancouver should prioritize implementation of construction stormwater inspections and erosion control BMPs to areas with pH exceedances. Additionally, efforts to reduce pollutant loading from stormwater and to increase riparian vegetation can also positively impact pH.

Vancouver Watershed Health Assessment

In addition to Ecology's water quality assessment, the City of Vancouver contracted with Herrera Environmental Consultants to complete the [Vancouver Watershed Health Assessment in February 2019](#). This report confirmed that the most significant water quality decline from 2004-2007 and from 2011-2017 is located at river miles 8.4, 7.0, and 5.9, and at the confluence of Peterson Channel with Burnt Bridge Creek. This data is consistent with Ecology's *Source Assessment*, and confirms that the middle watershed is a top priority for implementation. Generally, pH has increased at all sites measured.

Notes from workgroup meeting on May 6, 2021

Ecology hosted the first Public Education and Outreach workgroup meeting on May 6, 2021. Rich McConaghy, Jessica George, Charles Ray, Loretta Callahan, Kris Olinger, Nikki Guillot, and Annette Griffy attended the workgroup meeting on behalf of the City of Vancouver. Devan Rostorfer and Molly Gleason represented the Department of Ecology. The following are notes from the meeting.

Background

The City of Vancouver has established strong public education and outreach programs to raise awareness, inspire behavior change, and promote stewardship for the environment and water quality. To implement water quality education and outreach activities, Vancouver has partnerships with Friends of Trees, Columbia Springs, Watershed Alliance of Southwest Washington, Lower Columbia Estuary Partnership, Clark Conservation District, schools, neighborhoods, church groups, and businesses. They also work with the Clark County Nature Network, the Washington Service Corps, AmeriCorps, and the master gardener program.

Urban forestry

One of Vancouver's focus areas for education and outreach efforts is urban forestry. The audience for urban forestry outreach is everyone in the City of Vancouver, with a focus on property owners that want to remove or plant trees, and volunteers. Normally, Vancouver engages thousands of volunteers each year through the Urban Forestry Program. The goal of engaging volunteers is to build community stewardship, as most of the trees in Vancouver are located on private property, and most of the opportunity to restore and plant trees is on private property. Vancouver hosts an annual awards ceremony to recognize volunteers and partners in the community.

All of the urban forestry education and outreach work is established in a 2-year work plan, and yearly activities are summarized in an annual report. Vancouver collects urban forestry performance measures to measure effectiveness of education efforts and to determine if education and outreach efforts are resulting in behavior change in the community.

Urban Forestry education during Covid-19

Over the last year, education and outreach activities were greatly impacted by Covid-19. During this time, the urban forestry education and outreach team has focused on maintaining, updating, and promoting technical information related to urban forestry management. The program focused on updating its website and developing more online materials and [educational videos](#). The urban forestry program also publishes a monthly newsletter and seasonally appropriate articles, as well as periodic news releases.

Urban Forestry outreach methods

In addition to web content and social media, other outreach materials include brochures, flyers, and posters, which are available in multiple language. These printed resources help promote the urban forestry program and provide technical assistance. Additionally, the program hosts and promotes multiple events throughout the year including Arbor Day and Arbor Month, as well as the Old Apple Tree Festival, and the Heritage Tree Program. Other events include pop-up arboretums with signage to educate the public about trees, heritage tree tours, and biking and walking tours of trees. The program also hosts events about tree care and lawn maintenance.

Tree talk workshops are hosted to educate the public on a wide array of topics including punning, planting, and how to use chainsaws.

The City hosts an annual neighborhood tree stewards training, and recruits neighborhood stewards to serve as urban forestry liaisons between the community and the City. AmeriCorps members and seasonal interns are hired each year to help with education and outreach efforts. Vancouver also has an active Urban Forestry Commission of appointed members of the public who provide input on Vancouver's urban forestry program. This commission has assisted in providing key volunteers, sharing ideas, and developing videos and content for social media

Vancouver Water Resources Education Center and Partnership

Vancouver also has the Water Resources Education Center, which has been open since 1996. This Center hosts K-12 field trips, workshops and special events focused on water quality education. The Center has been closed since 2020 due to Covid-19, and intends to reopen on January 1, 2022. During the closure, staff focused on improving web materials, developing videos, and creating social media content.

Historically, the Center hosted a number of volunteer events including beach and greenway cleanups. They also conducted outreach along the Burnt Bridge Creek Greenway, and hosted streamside chats to learn about macroinvertebrate health. The Center also hosts the annual Columbia River Festival, which is an opportunity for the greater Vancouver community to celebrate the region's water resources.

Student Watershed Monitoring Network

The Water Resources Education Center also facilitates the student watershed monitoring network, in partnership with Clark County. The student watershed monitoring network works with schools to provide water quality curriculum, and to complete student watershed monitoring. Normally, students gather to present on their projects, but a virtual essay contest is being considered to conclude the program in 2021. Fortunately, this program was able to continue through Covid-19. The data collected by the student watershed monitoring network is collected and managed using FieldScope, which allows students to share data. The Lower Columbia Fish Enhancement Group and Clark County support the FieldScope program, and Vancouver is always interested in new partnerships to help support and advance FieldScope.

Partnerships and collaboration

The Water Resources Education Center collaborates with Watershed Alliance of Southwest Washington, and provides funding to the organization to complete stewardship, outreach, and to host film events. They also collaborate with Columbia Springs to host summer camps and salmon in the classroom. Coordination with Clark County Public Health is also underway to provide education and outreach on toxic reduction, solid waste, and litter management. Staff from the Water Resources Education Center are coordinating with solid waste on the new, "Talkin' Trash" program, which is managed by Share of Vancouver. This program employs houseless individuals to complete community litter cleanup. This program is coordinated in partnership with Vancouver's Homeless Assistance Response Team (HART). Progress related to this program is published in the solid waste management program's annual report.

The Water Resources Education Center published a monthly newsletter highlighting events and activities. They also publish an annual report summarizing all of the work completed by the Water Resources Education Center.

Stormwater education and outreach

Stormwater education and outreach has been challenging over the last year, as many of the programs and grants were focused on in-person, direct contact, and providing technical assistance, which has been challenging during covid-19. However, even with challenges, many outreach efforts were implemented to educate the public on stormwater since 2020.

Pollution prevention education

One of the focus areas for stormwater outreach has been implementing pollution prevention education, focusing specifically on small quantity waste generators. Vancouver completes waste audits and provides technical assistance focused on pollution prevention and resource control. The City has also been working on a safe pest control program for multi-family properties, in partnership with Clark County Green Neighbors, Washington State University Extension, Clark Public Utilities, and Energy Trust. Vancouver is planning to have a webinar series on pollution prevention at home, in collaboration with Clark Conservation District.

Additionally, Vancouver has a source control grant, which is focusing on construction site pollution prevention. Vancouver is collaborating with the Washington Stormwater Center, American Society of Civil Engineers, and the Southwest Washington Contractors Association to implement the education. Pollution prevention outreach is also being completed to the Vancouver's Farmer's Market and to food trucks. Vancouver is working with the city's Parks special events team on spill response education at the farmer's market and is putting educational material in the farmer's market handbook. The goal is to develop a centralized spill kits for Esther Short Park and Columbia Tech to help manage spills associated with events and food truck.

Wash Right Campaign

Recently, a new Wash Right campaign was developed through an Environmental Protection Agency grant, focused on power washing, disinfectants, and car washing. The focus for the grant is downtown Vancouver, and the storm drains connected to the Columbia River.

Poop Smart – pet waste and septic systems

For pet waste management, Vancouver relies on the Canines for Clean Water program to educate pet owners on proper practices for pet waste disposal. The Canines for Clean Water Program is implemented by Clark County.

For septic related education, Vancouver has quarterly meetings with Clark County Public Health to coordinate and share information. Vancouver relies on CCPH to implement all septic related education and outreach to promote septic inspections, maintenance, and sewer connection.

Septic education and pet waste education are components of the new Poop Smart Clark pollution identification and correction program. In the future, Vancouver may benefit from collaborating with Poop Smart Clark for education efforts related to pet waste and septic systems, and for agriculture and manure management.

Developing messages for urban property owners

One challenge Vancouver has faced is that historically the city has collaborated with Clark County on education and outreach; however, some of the messaging for rural Clark County residents may not resonate with urban property owners in the City of Vancouver. Additionally, as people move to Vancouver, new residents may not recognize the connection between city

and county programs, and Vancouver residents may not identify with countywide organizations. Developing education and outreach programs that resonate with urban landowners will be important for long-term success.

Diversity, equity and inclusion

The city has completed significant work to integrate equity into its programs. The first step was to focus on accessibility of documents and providing language translation services. The current stormwater permit requires Vancouver to implement community-based-social-marketing (CBSM) practices to utilize demographic data to understand the diversity of residents, and ensure education efforts are reaching all audiences living in the watershed. CBSM also encourages strong surveying work before and after implementation to assess behavior change and effectiveness of education. Vancouver has been working on its CBSM and DEI efforts, and is currently developing a city-level equity map to help inform education and outreach efforts. Vancouver is still working to develop more opportunities to engage non-English speakers. The City is also working to develop relationships with community development organizations to help facilitate targeted, culturally appropriate, outreach and education.

One challenge is that some of the middle portions of the watershed, which also have the most challenges with water quality, have some of the greatest challenges with equity. There are concerns that overburdened communities may have more challenges with maintaining tree plantings on their properties or with connecting to sewer, or maintaining septic systems. Determining how to work with these community members and provide technical and financial support will be essential to long-term success. Additionally, in areas that have more rental properties, it is continually difficult to increase participation in environmental programs. It is also challenging to encourage rental property owners to invest in environmental activities and sustainable lawn care practices. Many rental owners are only interested in lawn care and stormwater practices that require minimal maintenance.

Sewer connection and septic systems

As of now, the main way that Vancouver and CCPH educates and promotes sewer connection in Burnt Bridge Creek is during the sale of a home if a bank or the County requires it, or if a septic owner requests a permit for septic repair. Since CCPH has primary jurisdiction over septic systems, Vancouver relies on CCPH to conduct outreach to septic system owners for inspection and maintenance compliance through mailers, workshops, or other educational methods.

CCPH septic outreach

Historically, CCPH has sent past due operations and maintenance notification letters to septic owners, and has collaborated with WSU Extension to host workshops that teach septic owners how to care for their systems. CCPH is also working with the new Poop Smart Clark Pollution Identification and Correction program to develop a new inspection and maintenance rebate program to provide financial assistance to septic owners. Implementing this program in Burnt Bridge Creek, may help increase outreach, technical, and financial assistance to septic owners. Identifying septic system age and condition, and any systems that are past due for inspections and maintenance may be a good first step for prioritizing septic system outreach and education. Developing new partnerships and programs for proactive septic outreach is one of the main water quality needs in the watershed.

Sewer Connection and Incentive Program

Historically, outreach within the Sewer Connection Incentive Program (SCIP) has been completed to support sewer development projects, when a new sewer line is being constructed. Normally, the SCIP program will have meetings with property owners at the beginning of a project. At this meeting, Vancouver will often invite CCPH to participate to provide information on septic system maintenance and repair, while Vancouver makes homeowners aware of the opportunity to connect to sewer.

Vancouver's long-term goal is to encourage more people to connect to sewer. However, there is no additional outreach happening within the SCIP program, except for the initial project meetings when sewers are being installed. When conducting outreach to promote sewer connection, it is essential to have accurate pricing information for different homes across the watershed. It is possible that individual neighborhoods had multiple SCIP projects, and there could be different costs to connect within the same neighborhood.

Further messaging related to sewer connection and septic systems should encourage homeowners to connect to sewer and to provide information on financing. However, if septic owners cannot connect to sewer, or choose not to, education to residents should focus on continuing to inspect and maintain their systems in accordance with local requirements implemented by CCPH.

Challenges

Working with Homeowners Associations (HOAs)

While Vancouver has had success implementing educational programs, private landowner outreach and technical assistance remains a challenge, as well as outreach to homeowners associations (HOAs). Working with HOA's to encourage private facility maintenance is difficult, and receiving a response from HOAs does not always happen. Clark Conservation District has started to collaborate with Vancouver to complete more outreach to HOAs, however, there are still challenges with reaching HOA facility owners and getting participation. Overall, it has been easier to reach businesses and multi-family properties, and Vancouver is hoping to coordinate with HOA's earlier, once homes are constructed and occupied, to increase effectiveness and responsiveness to education and outreach. Opportunities to educate HOA's about pesticides and fertilizers may also help with the City's pollution prevention efforts. Additionally, working with landscaping businesses and retailers that sell lawn care products may help increase uptake of sustainable lawn care activities.

Watershed approach

Finally, increasing education activities, which focus on taking a watershed approach to improving water quality, rather than just focusing on the riparian area, may be helpful in the watershed. Increasing education and outreach about the connection between catch basins in neighborhoods and downstream water quality in Burnt Bridge Creek may be helpful. One opportunity may be to increase stormwater stenciling on catch basins and increasing labeling and signage in neighborhoods to help Vancouver residents learn what they can do to protect clean water, and how individual actions on private property are connected to the creek.

Development pressure, limited resources, and willing landowners

The City of Vancouver and areas of the Burnt Bridge Creek watershed are experiencing significant development pressure. In the 2011 Tree Canopy Assessment it was determined that Burnt Bridge creek lost approximately 381 acres of tree canopy due to private development activity. With increased development, there are also challenges with limited budget, staff, and resources within Vancouver's Urban Forestry program for education and outreach and other technical assistance activities. Private landowner willingness to plant new trees, maintain existing trees and landscapes, and reduce pesticides and fertilizer use remains a challenge.

DRAFT Implementation Actions

Based on the discussion at the May 2021 workgroup, the following implementation actions are recommended for Public Education and Outreach in Burnt Bridge Creek to improve water quality. These implementation actions are draft, and may be edited and refined as Ecology and Vancouver continue to discuss water quality priorities.

The long-term goal is to inspire behavior change, while achieving a mutual understanding and shared responsibility of how individual and collective actions can lead to better water quality in the Burnt Bridge Creek watershed. This can be achieved by raising general awareness, creating stewardship opportunities, and effecting behavior change to improve water quality

Table 2. DRAFT Implementation Actions for Public Education and Outreach in Burnt Bridge Creek.

ED1	Target Audiences
ED1.1	<p>Prioritize outreach and education to homeowners with septic systems on properties adjacent to Burnt Bridge Creek and its tributaries. Septic system owners in within 200 feet of where there are known bacteria issues are a priority for outreach. Priority areas for bacteria reduction are Peterson Channel, Cold Creek, and Burton Channel are the top priorities for bacteria reduction, as well as river miles (RM) 8.4, 2.6, and 1.6 for having dry season bacteria exceedances over 200 cfu/100ml.</p>
ED1.2	<p>Prioritize outreach and education to public and private landowners with riparian properties adjacent to the highest shade deficits on Burnt Bridge Creek mainstem and tributaries. River miles 0, 5.9, and 7 had the highest water temperatures and the most number of days not meeting water quality criteria.</p> <p>The following river miles have shade deficits over 30 percent</p> <ul style="list-style-type: none">• RM12-13 = 87%• RM 7-8 = 83%• RM11-12 = 73%• RM 8-9 = 44%• RM 0-1 = 43%• RM 4-5 = 36%• RM 6-7 = 35%• RM 1-2 = 31%
ED1.3	<p>Prioritize stormwater source control education and outreach efforts to the following locations.</p> <ul style="list-style-type: none">• Peterson Channel, Cold Creek, and Burton Channel are the top priorities for bacteria reduction, as well as river miles (RM) 8.4, 2.6, and 1.6 for having dry season bacteria exceedances over 200 cfu/100ml.• Locations that need bacteria reductions over 75 percent to meet water quality standards. These include Peterson Channel in the wet and dry

	<p>seasons, Burton Channel in the wet season, Cold Creek and river mile 8.4 in the dry season, and river miles 7, 4.3, 3.4, 2.6, and 1.6 in the wet season.</p> <ul style="list-style-type: none"> • Locations with the most noncompliant days for dissolved oxygen are located in the upper watershed from RM 9.5 to 11.4, and in the middle watershed at river miles 7.0 and 5.9. • River mile 0 had the most noncompliant days for pH. The minimum and maximum pH values measured were located in Burton Channel.
ED1.4	Implement public education and outreach activities in neighborhoods including single-family and multi-family residential properties, schools, businesses, and churches, located in areas contributing to water quality impairments in Burnt Bridge Creek.
ED2	Urban Forestry and Greenways
ED2.1	Achieve system potential tree height and overhang potential in the watershed in all areas feasible. This is a tree height of 41 meters or approximately 135 feet with an overhang potential of 4.1 meters or 13.5 feet. Achieve 50-foot buffer widths on all of Burnt Bridge Creek riparian areas.
ED2.2	Achieve the 28 percent tree canopy target established by Vancouver’s Urban Forestry Program, working towards an 85 percent system potential vegetation target in the Burnt Bridge Creek watershed.
ED2.3	Increase the total percentage of forested landcover in the Burnt Bridge Creek riparian areas, which is currently 45 percent.
ED2.4	Prioritize outreach to private landowners in riparian areas to promote tree planting projects through Project Restore. Prioritize outreach to private landowners in upland areas through Friends of Trees.
ED2.5	Prioritize urban forestry outreach to the upper watershed, upstream of river mile 8 for future property acquisition or the implementation of conservation easements for riparian restoration.
ED2.6	Work with private landowners with wetlands between river miles 10 to 13 to encourage wetland protection, restoration, and enhancement; as well as opportunities to reconnect floodplain, promote groundwater recharge, and plant riparian buffers to lower stream temperatures.
ED2.7	Increase tree canopy on private property, which makes up 89 percent of the watershed. Provide technical and financial assistance to landowners to plant and maintain trees.
ED2.8	Partner with schools to develop new education programs on the benefits of trees, including developing new environmental stewardship and hands on volunteer opportunities for tree planting.
ED2.9	Collaborate with Vancouver’s Parks and Recreation Nature Patches program to reduce turf and increase native plantings on city parcels.
ED2.10	Increase tree canopy on all property types including businesses, single-family, multi-family, faith based, schools, and commercial properties. Track implement progress over time.
ED2.11	Maintain, update, and develop promotional and technical information about Vancouver’s Urban Forestry Program. This includes completing a two-year workplan, an annual report, maintaining the website, monthly newsletter, articles for community newsletters, periodic media releases, brochures, flyers, posters, and videos. Provide educational resources in multiple languages.

ED2.12	Host events and festivals to promote the benefits of trees and recognize individuals in the community for forestry stewardship and advocacy. Tree focused events include Arbor Day and Arbor Month, the Old Apple Tree Festival, Annual special awards to recognize dedicated volunteers and community partners, pop-up arboretums, Heritage tree Tours (self-guided, bike, and walk) and other community events.
ED2.13	Plant urban tree canopy in upland areas, which includes Vancouver Parks. Priority parks for urban forestry implementation include David Douglas; West Minnehaha; Bagley; The Downs; Centerpointe; Oakbrook, Burton Ridge; St Helens; Evergreen Park; Sam Brown; and Orchards.
ED2.14	Provide education and outreach to private developers and contractors and contractor best practices for tree preservation, and how to incorporate trees into development projects. Where possible, educate developers on how to maximize landscaped areas and root zone areas, and reduce imperviousness in development projects. Educate private developers on opportunities to co-locate vegetation and stormwater requirements, and how to reduce parking spaces, and building setbacks to maximize green space.
ED2.15	Continue to implement Backyard Habitat Program in the Burnt Bridge Creek watershed.
ED2.16	Complete maintenance of planted areas in Burnt Bridge Creek watershed, working towards a tree survival rate of 85 percent. Continue to provide technical and financial assistance to private landowners to maintain plantings, and to treat and manage invasive species in riparian areas.
ED3	Stormwater
ED3.1	Collaborate with Clark County and the Washington Department of Transportation, and the Stormwater Partners for Southwest Washington, to develop and implement stormwater education activities in the Burnt Bridge Creek watershed.
ED3.2	Increase the number of dog waste facilities in the Burnt Bridge Creek watershed. Utilize Canines for Clean Water education for public education and outreach. Establish relationships with business that provide pet waste removal services to foster new programs to remove dog waste from watersheds. Partnerships with local veterinarians, groomers, pet boarding, shelters, pet stores, and dog licensing should also be explored to educate on water quality.
ED3.3	Prioritize stormwater source control outreach for bacteria and nutrient pollution to areas with known water quality problems. This includes the middle and lower watershed for bacteria pollution, and the middle and upper watershed for dissolved oxygen impairments. Provide source control education and outreach focused on BMPs to reduce bacteria pollution from pets and livestock, and from septic systems, and increase education on best practices for fertilizer application and lawn care to improve dissolved oxygen levels.
ED3.4	Prioritize pollution prevention education that focuses on bacteria and nutrient reduction practices for pet waste, livestock, lawn care, and humans.
ED3.5	Identify potential sources of agricultural pollution in the Burnt Bridge Creek watershed. Complete windshield survey to confirm agricultural sources. Collaborate with local agricultural assistance organizations such as Clark Conservation District, WSU Extension, or USDA NRCS to develop a local livestock or manure management ordinance. Provide outreach and technical assistance to agricultural landowners related to best management practices for manure management and

	livestock. Collaborate with the new Poop Smart Clark program to provide technical and financial assistance to agricultural landowners.
ED3.6	Continue to implement the new Wash Right Campaign, Pollution Prevention at Home, and construction site pollution prevention programs in the Burnt Bridge Creek watershed. Continue to develop spill response education, outreach, and resources for Vancouver's Special Events team, including resources for Vancouver's Farmers market.
ED3.7	Continue to develop education and outreach programs for Homeowners Associations (HOAs) focused on private stormwater facility maintenance, and best practices for pesticide and fertilizer application, and other pollution prevention activities. When possible, coordinate with HOA's earlier in the process once homes are constructed and occupied, to increase effectiveness and responsiveness to education and outreach.
ED3.8	Increase stormwater stenciling on catch basins and increase labeling and signage in neighborhoods to help Vancouver residents learn what they can do to protect clean water, and how individual actions on private property and at the neighborhood level are connected to the creek.
ED3.9	Educate the public on IDDE, source control, and how to submit an ERTS complaint if they observe a pollution issue.
ED3.10	Provide required education to contractors and plumbers on proper installation of stormwater and wastewater infrastructure, to prevent challenges with cross connections. Many contractors working in Vancouver area are used to working in Portland's sewer system, which is a combined system. Vancouver has a separate stormwater and sewer system, therefore downspouts and drains need to be connected to stormwater pipes, and sanitary pipes must be connected to sewer. Collaborate with the Southwest Washington Contractor's association to develop and implement education.
ED4	Sewer Connection and Septic Systems
ED4.1	Collaborate with Clark County Public Health and Clark Regional Wastewater District to develop and implement new outreach materials for septic systems and sewer connection.
ED4.2	Commit to hosting an annual Well and Septic workshop in the Burnt Bridge Creek watershed in partnership with Clark County Public Health, Washington State University Extension, and other Poop Smart Partners.
ED4.3	Complete septic system records assessment. Identify septic system age and condition, and any systems that are past due for inspections and maintenance as a first step for prioritizing septic system outreach and education. Prioritize septic systems in closest proximity to known water quality issues for initial outreach.
ED4.4	Complete outreach to septic system owners that have not connected to sewer who are located in priority drainages for water quality. Septic owners located in neighborhoods near Peterson, Burton, and Cold Creeks, and river miles 8.4, 2.6, and 1.6 are priorities for implementation.
ED4.5	Develop financial assistance programs for homeowners who want to connect to sewer. These may include applying for a grant to help landowners connect to sewer, implementing a rebate or cost-share program, or developing other tax incentives to encourage homeowners to connect to sewer.
ED4.6	Develop public education and outreach tools to educate septic owners about the opportunity to connect to sewer, as well as financing options.

ED4.7	Complete analysis to understand how much sewer connection would cost for different SCIP projects to provide accurate education and outreach messaging to septic owners.
ED4.8	Provide education on the lifecycle costs of connecting to sewer versus inspecting, maintaining, and replacing a septic system.
ED4.9	Increase education and outreach related to best practices to dispose fats, oils, and grease in order to help maintain Vancouver's sewer system and prevent sewer clogging. Prioritize outreach to restaurants and other food service businesses in critical sewerage areas.
ED4.10	Develop an education and outreach campaign to raise awareness about how flushable wipes negatively impact sewer systems.
ED5	Other
ED5.1	Complete demographic analysis of neighborhoods in the Burnt Bridge Creek watershed using Environmental Protection Agency's EJ Screen, the Department of Health's Health Disparities mapping tool, and Vancouver's Equity Map to identify the community demographics of priority areas for water quality. Develop culturally appropriate educational materials, and provide language translation services for non-English community members. Collaborate with community development organizations to reach underserved community members.
ED5.2	Partner with Friends of Trees, Columbia Springs, Watershed Alliance of Southwest Washington, Lower Columbia Estuary Partnership, Clark Conservation District, schools, neighborhoods, church groups, businesses, Clark County Nature Network, the Washington Service Corps, AmeriCorps, and the master gardener program for outreach purposes.
ED5.3	Continue to develop new educational content for social media, including educational videos.
ED5.4	Provide education on best practices for fertilizer application for tree care and lawn maintenance. Prioritize education and outreach to areas with dissolved oxygen impairments.
ED5.5	Continue to implement the new Talkin' Trash program, which employ houseless individuals to complete community litter clean up. Consider opportunities to prioritize implementation in areas on the greenway where there have been impacts to riparian vegetation. Explore opportunities to incorporate sanitation education into the program, including developing new RV pump out programs to manage sanitary waste from unhoused populations.
ED5.6	Continue to operate the Vancouver Water Resource Education Center and the student watershed-monitoring network to educate K-12 students on water quality.
ED5.7	Develop new signage to educate residents and visitors in the watershed on what they can do to protect water quality. Implement signage on the Greenway, in parks, and at road stream crossings and on bike paths and trails.
ED5.8	Develop technical and financial assistance resources to help support implementation of water quality best management practices and maintenance in overburdened communities. Ensure education and outreach materials are accessible and translated into non-English languages.
ED5.9	Engage individuals, neighborhood associations, schools, community groups, and other organizations to build and support stewardship of urban natural resources. Complete this engagement through workshops and presentations, online educational activities, neighborhood tree stewards training, TreeTalk Workshops,

	and hosting AmeriCorps members and seasonal interns to support outreach and educational program.
ED5.10	Work with and engage thousands of volunteers throughout the year.
ED5.11	When feasible, collect performance measure data to understand individual change in knowledge and behavior change, and collect data on trees planting and volunteer demographics.
ED5.12	Conduct outreach and education to landowners completing unauthorized water withdrawals off Burnt Bridge Creek. Develop water conservation education and encourage lawn care practices that help promote infiltration and streamflow restoration to Burnt Bridge Creek.
ED5.13	Where necessary, conduct outreach to landowners that have implemented riprap or bank armoring without a permit. Provide education on how to restore natural shorelines and the benefits to water quality.
ED5.14	Conduct outreach to landowners that have installed manmade ponds or impoundments on Burnt Bridge Creek and how these alterations can impact temperature, flow, and eutrophication in the creek. Provide technical assistance to remove impoundments.
ED5.15	Collaborate with the Royal Oakes Golf Course to identify conservation, restoration, and tree planting opportunities on their property. Provide education on structural and operational BMPs to reduce pollutant loading to Burnt Bridge Creek including best practices for lawn care and fertilizer application.
ED5.16	Complete outreach to private landowners with erosion issues on private property and identify opportunities for streambank stabilization and riparian restoration.

DRAFT Milestones, targets, and timelines for public education and outreach

Note: Milestones and targets will be developed in collaboration with Vancouver’s public education and outreach staff later.

Table 3. DRAFT Milestones, targets, and timelines for public education and outreach in Burnt Bridge Creek.

Milestones and targets	Target Date
TBD	TBD
TBD	TBD
TBD	TBD
TBD	TBD
Complete a formal effectiveness monitoring study at priority areas for water quality after implementation occurs to measure how implementation has impacted water quality.	2031

DRAFT Criteria to measure progress

Table 4. Draft criteria to measure progress on public education and outreach in Burnt Bridge Creek.

Criteria to measure progress	Reporting timeline
<i>Urban Forestry</i>	
Urban tree canopy change over time	Annual
Parent of land in riparian areas that is trees	Annual
Number of landowners participating in Friends of Trees programs	Annual
Number of landowners participating in Project Restore	Annual
Number of landowners enrolled in Backyard Habitat program	Annual
<i>Stormwater</i>	
Number of outreach events on stormwater source control and pollution prevention	Annual
Number of outreach events focused on private stormwater facilities and homeowners associations	Annual
Number of dog waste facilities and enrollment of Vancouver residents in Canines for Clean Water program or Poop Smart Clark	Annual
<i>Septic and sewer connection</i>	
Number of septic systems in compliance with inspection requirements	Annual
Number of septic system in compliance with maintenance requirements	Annual
Number of homes connected to sewer	Annual
Number of landowners receiving financing through SCIP program	Annual
Dollars spent on septic and sewer financial assistance	Annual
<i>Other</i>	
Number of volunteers engaged, or number of volunteer hours	Annual
Number of public presentations provided	Annual
Number of environmental events or festivals held	Annual
Change in knowledge of residents participating in workshops and events	Annual
Change in behavior of residents participating in workshops and events	Annual
Number of non-English speakers engaged in Vancouver's programs	Annual
Number of relationships or events hosted with community development organizations	Annual
Number of materials translated to different languages	Annual
Number of mailers sent to private landowners	Annual
Number of landowners that received technical assistance site visits	Annual
Number of landowners implementing BMPs recommended at technical assistance site visits	Annual
Dollars spent on financial assistance	Annual
Number of landowners enrolled in Poop Smart Clark program	Annual
Number of people engaged in Talkin' Trash program and pounds or bags of litter removed	Annual

DRAFT Funding and partnerships for implementation

Table 5. Draft funding and partnerships for implementation.

Funding Sources	Water Quality Combined Funding Program, City of Vancouver's Stormwater Utility, Washington State Grants, Business sponsorships
Implementation Partners	<p>Internal Partners: Urban Forestry Commission, Parks and Rec, Public Works, Community Development, City Manager's Office.</p> <p>External Partners: Friends of Trees, Watershed Alliance of Southwest Washington, Lower Columbia Estuary Partnership, Clark Conservation District, Clark County Public Health, Schools, Neighborhoods, Columbia Springs, Clark County Nature Network, WSC, Master Gardeners, Backyard Habitat, Naturally Beautiful Backyards, Audubon Society, Columbia Land Trust</p>

Timeline for Burnt Bridge Creek Water Cleanup Plan

Table 6. Timeline for Burnt Bridge Creek Water Cleanup Plan.

COMPLETE
<ul style="list-style-type: none"> • October 2020: <i>Burnt Bridge Creek Source Assessment</i> published. • February 2021: Burnt Bridge Creek Partnership kicked off. • March 2021: Implementation workgroups assigned <ul style="list-style-type: none"> • Stormwater and capital improvements • Operations and maintenance • Urban forestry and greenways • Sewer connection and septic systems • Public education and outreach • Other TBD: SEH America, local water use, and monitoring • April-May 2021: Implementation workgroups. • June 2021: Submit completed worksheets to Ecology.
NEXT STEPS
<ul style="list-style-type: none"> • July 2021: Full Burnt Bridge Creek Partnership meeting. • Summer 2021: External partnership meeting – Lower Columbia Estuary Partnership, Watershed Alliance of Southwest Washington, Washington Department of Transportation, DOT, Clark County Clean Water Division, Clark County Public Health, Clark Conservation District, Lower Columbia Fish Recovery Board, Clark Regional Wastewater District, Washington Department of Fish and Wildlife, Environmental Protection Agency. • Fall 2021: Public Webinar.

- **January 2022:** Internal Draft (City of Vancouver, Ecology, and Environmental Protection Agency).
- **Spring 2022:** External Draft *Burnt Bridge Creek Water Cleanup Plan*.
- **Summer 2022:** Publish *Burnt Bridge Creek Water Cleanup Plan*.

DRAFT