



Tuesday, October 17th, 2017
1:00 pm to 5:00 pm

Reed College
Performing Arts Building – Room 320
Parking Available in the West Lot

[Map](#)

Program of Events

- 1:00 pm Introduction: Daniel Newberry, Johnson Creek Watershed Council
- 1:10 pm Session 1 – Upper Watershed Restoration
Moderator: Noelwah Netusil, Reed College
Julie DiLeone, East Multnomah Soil & Water Conservation District
- Headwaters Farm Fish Passage
Chuck Lobdell, Johnson Creek Watershed Council
 - North Fork Johnson Creek Springwater Culvert Replacement
David Gorman, Ecological Engineering LLC
 - Brigman Creek Dam Removals
Scott Eden, Clackamas Soil & Water Conservation District
 - J. Frank Schmidt & Son Nursery Irrigation Diversion Project
- Session 1 Q & A
- 2:15 pm Session 2 – Water Quality & Quantity
Moderator: Bruce Newton, Johnson Creek Watershed Council
Jennifer Morace, U.S. Geological Survey
- NAWQA Sites in Johnson Creek Watershed
Nicole Ledbetter, Portland State University
 - Groundwater Levels in Johnson Creek
Adam Stonewall, U.S. Geological Survey
 - Crystal Springs Temperature Study
Paul Seidel, Oregon Dept. of Environmental Quality
 - Soil & Water Testing Near Precision Castparts Facility on Harney Road
- Session 2 Q & A
- 3:23 pm Break & Poster Session
- 3:48 pm Session 3 – Habitat
Moderator: Torrey Lindbo, City of Gresham
Mary Bushman, Portland Bureau of Environmental Services
- Wetland Inventory on Public Lands, Johnson Creek Watershed
Ryan Jacobsen, Oregon Dept. of Fish & Wildlife
 - Salmon, Steelhead, and Lamprey Monitoring in Johnson Creek Watershed
Mike Wallace, City of Gresham
 - Beaver Activity Monitoring
Laura Guderyahn, Portland Parks & Recreation
 - Amphibians in the Johnson Creek Watershed
- Session 3 Q & A
- 4:56 pm End of Symposium

Speaker Abstracts & Biographies

Julie DiLeone, East Multnomah Soil & Water Conservation District

Title: Culvert Replacements on the North Fork

Abstract: During the summer of 2016, the East Multnomah Soil and Water Conservation District replaced 3 culverts in the North Fork of Johnson Creek on a property the District owns called Headwaters Farm. We will cover project planning, implementation, and lessons learned.

Bio: Julie DiLeone has been with East Multnomah Soil and Water Conservation District since 2001, working with rural landowners to protect natural resources. She has expertise in erosion prevention, invasive weed control, and riparian re-vegetation. Prior to joining the district Julie worked as a researcher with both the USDA and Oregon State University focusing on wine grapes, berries, hops, wheat, tree fruits, and nursery crops. During college, she worked at a nursery, coordinating their integrated pest management program and assisting with propagation, plant maintenance, harvest, and sales.

Chuck Lobdell, Restoration Manager, Johnson Creek Watershed Council

Title: North Fork Johnson Creek Fish Passage Restoration

Abstract: The North Fork of Johnson Creek was historically accessible to anadromous salmonids, and still has potential as good spawning and rearing habitat for salmonids and other native fish species. Like other tributaries in upper Johnson Creek, the North Fork's key features for salmonid habitat are forested riparian areas for much of its length and cold water refugia. Anadromous fish passage was blocked at seven culverts on the North Fork of Johnson Creek as recently as 2016. This series of partial and complete barriers has reduced fish species diversity in the North Fork. Fish surveys of upper Johnson Creek watershed in 2011 found only two native species in the North Fork (dace and sculpin), while salmonids were absent. In 2013, Multnomah County completed a fish passage assessment for all County-owned culverts on fish bearing streams within the County. Working with our partners, we began a focused effort to eliminate the seven passage barriers in 2016. Most recently, we replaced the lowermost passage barrier underneath the Springwater Trail. This project is part of a larger effort to restore fish passage to the North Fork by eliminating seven fish barriers in the two miles of fish-bearing reaches of the North Fork.

Bio: Chuck is a professional fish and wildlife biologist with 21 years of aquatic habitat restoration experience in the Pacific Northwest. Most of his professional career has been focused on restoring wetlands and estuarine habitats, including showcase projects like Smith and Bybee Lakes and Bandon Marsh National Wildlife Refuge. His new role with JCWC focuses on fish passage and stream restoration, as well as stormwater projects. Chuck earned both his bachelors and master's degrees from the University of Idaho.

David Gorman, PE. Ecological Engineering LLC

Title: Brigman Creek Dam Removals

Abstract: Metro acquired a residential property at the confluence of Johnson and Brigman Creeks in the southwest quadrant of the intersection of SE 252nd Avenue and SE Telford Rd. just south of Gresham, Oregon with the intent to restore and stabilize the ecological values of the site. Mr. Gorman served as the lead engineer and project manager, providing the site assessment, wetland delineation, determination of opportunities and constraints, hydrologic modeling of the Brigman Creek basin, oversight of the hydraulic modeling, restoration design, negotiations with the regulatory agencies, preparation of plans and specifications, project management, floodplain no-rise certification, and construction oversight (ongoing). Plans and specifications were prepared to remove several dams on Brigman Creek to provide fish passage, restore instream habitat for native fish, expand riparian wetlands, add large wood instream for fish cover and structure, reconnect the floodplain, and add amphibian breeding habitat. Construction on Brigman Creek was completed during the summer of 2017, including the removal of three dams and one bridge,

installation of two large wood structures, placement of five large wood floodplain pieces for habitat, and the instream placement of woody slash and several pieces of large wood salvaged from onsite during construction.

Bio: David Gorman is a water resource and ecological restoration engineer with 31 years of experience in the planning, design, permitting, and implementation of water resource and aquatic ecosystem restoration projects throughout the Pacific Northwest. He is an expert at understanding and reconciling the conflicting interests of development projects and natural resources on a wide range of scale, with an emphasis on optimizing the benefits to both the natural and developed environment. He is the owner and principal of the consulting firm of Ecological Engineering. Mr. Gorman is a registered professional civil and environmental engineer in Oregon and Washington.

Scott Eden, Conservation Specialist, Clackamas Soil & Water Conservation District

Title: J. Frank Schmidt & Son Nursery Irrigation Conversion Project

Abstract: J. Frank Schmidt Nursery irrigated their 68 acres Hood Acres farm with high pressure impact sprinklers, and the occasional use of a big gun traveler. This system caused soil compaction and irrigation-induced erosion especially on the 17 acres of Highly Erodible Land that requires additional management and conservation practices to avoid soil loss when under cultivation. In addition, water use was high, an estimated 170 acre-feet annually, due to losses from uneven pressure distribution and vaporization in the system. To address these issues, a drip tape irrigation system was installed, delivering the needed amount of water to the root zone uniformly at low pressure. Efficiency is up to 95%. Both irrigation-induced soil compaction and erosion were eliminated. Irrigation Water Management (IWM), using soil sensors to provide data on the soil moisture detected in the crop root zone allows growers to schedule applications according to crop water need and losses. Water saved annually is estimated to be between 30 % and 75 %, depending on the level of management invested. IWM can improve crop yields while reducing energy use. An automated controller and Variable Frequency Drive (VFD) on the pump reduces labor and provides even pressure to multiple irrigation blocks simultaneously.

Bio: Scott Eden is an experienced biologist with an undergraduate degree in Biology from Oregon State University. For over 20 years he has concentrated on providing technical assistance to farmers and conservation professionals in the Willamette Valley helping them conserve soil and water resources. His early years of collecting of fish and wildlife data across the Pacific Northwest, has provided him with knowledge that is helpful to recognize, protect, and enhance important habitats for wildlife. Currently Eden is a Conservation Specialist for Clackamas Soil and Water Conservation District (SWCD); however, he has many years of service in the Mid-Willamette valley.

Jennifer Morace, U.S. Geological Survey

Title: Urban Waters, Contaminants, and Ecology – Sorting the Puzzle Pieces

Abstract: As part of the USGS National Water-Quality Assessment Program (NAWQA), we sampled stream quality in small wadeable streams across the Pacific Northwest in the spring of 2015. The goal of the Pacific Northwest Stream Quality Assessment (PNSQA) was to assess the quality of streams in the region by characterizing multiple water-quality factors that are stressors to aquatic life and the relation of these stressors to ecological conditions, with the highest priority on the effects of urban runoff. Findings will provide communities and policy makers with information on which human and environmental factors are the most critical in controlling stream quality and, thus, provide insights about possible approaches to protect or improve stream quality. An overview of the project and its many special studies will be presented as well as a discussion of preliminary results, focusing on those sites in the Johnson Creek Watershed.

Bio: Jennifer Morace is a Hydrologist at the U.S. Geological Survey. Her work includes the evaluation of water-quality conditions in the Willamette and Columbia River Basins, particularly focused on

contaminants. Understanding the transport and ecological fate of contaminants and the role that we, as a society, play in protecting water quality are of particular interest to her.

Nicole Ledbetter, Portland State University

Title: Investigation of Groundwater Level Increases within the Johnson Creek Watershed

Abstract: Johnson Creek is an urban watershed 54 mi² in Portland, Oregon. Johnson Creek flows westward from near Boring to Milwaukie where it enters the Willamette River. The northwest section that lies within City of Portland is largely impervious surfaces where storm runoff is managed by underground injection control due to increased percolation of the Missoula flood deposits that lie beneath. Groundwater levels in some of the monitoring wells in the basin have been rising in recent years, despite a lack of trend in precipitation. Water level records from 18 groundwater wells were examined, most of the wells display a rise in water levels beginning in 2006. Possible causes of the rises investigated were UIC installation and restoration projects within Johnson Creek. Secondary, findings of a suggested hydraulic wave within monitoring wells was looked at more closely. The results of this report will improve the understanding of the watershed hydrology and therefore be useful to ecological restoration efforts and storm water runoff management.

Bio: Nicole Ledbetter recently received her MS degree in Geo-Hydrology from Portland State University. She holds a BS in geology from the University of Oregon. Her immediate career goal is to work as a hydrogeologist for a consulting firm.

Adam Stonewall, U.S. Geological Survey

Title: Development of a CE-QUAL-W2 temperature model for Crystal Springs Lake, Portland, Oregon

Abstract: During summer 2014, lake level, streamflow, and water temperature in and around Crystal Springs Lake in Portland, Oregon, were measured by the U.S. Geological Survey and the City of Portland Bureau of Environmental Services. To better understand temperature contributions of this system, the U.S. Geological Survey developed two-dimensional hydrodynamic water temperature models of Crystal Springs Lake and the Golf Pond. Model simulations were run with lower water surface elevations in Crystal Springs Lake and increased shading to assess the relative effect the lake and pond characteristics have on water temperature. The models estimated that lower lake elevations would result in cooler water downstream of the Golf Pond and shorter residence times in the lake. Increased shading to the lake would also provide substantial cooling. Most management scenarios resulted in a decrease in 7-day average of daily maximum values by about 2.0–4.7 °F (1.1–2.6 °C) for outflow from Crystal Springs Lake during the period of interest. Outflows from the Golf Pond showed a net temperature reduction of 0.5–2.7 °F (0.3–1.5 °C) compared to measured values in 2014 because of solar heating and downstream warming in the Golf Pond resulting from mixing with inflow from Reed Lake.

Bio: Adam Stonewall graduated from the University of Arizona with a B.S. in hydrology, and from the University of British Columbia with a M.S. in forest hydrology. He's been working for the USGS since 2001. Adam's work is primarily focused on flood frequency analysis, hydrologic and hydraulic modeling, and water-quality modeling.

Paul Seidel, Oregon Dept. of Environmental Quality

Title: Trace Metals in Soil and Sediment in the Lower Johnson Creek Watershed

Abstract: Oregon Department of Environmental Quality (DEQ) and PCC Structural, Inc. (PCC), have performed soil and sediment sampling in the Lower Johnson Creek Watershed in the vicinity of the PCC Structural, Large Parts Campus (LPC). The work was performed under a voluntary agreement between PCC and DEQ. The purpose of the sampling was to assess concentrations of trace metals in area soil and sediment. Soil sampling effectively characterized soil metals and identified locations that contained several metals elevated above background concentrations. Sediment sampling identified a segment of

Johnson Creek to have been impacted by some of the same metals and by polychlorinated biphenyls (PCBs). Results from traditional discrete samples were variable. A stormwater treatment system was installed upgradient of a Johnson Creek outfall in 2016, and additional sampling is planned for the fall of 2017 to definitively characterize current conditions.

Bio: Mr. Seidel is currently the acting manager for one of two sections within the Northwest Region Cleanup Program at the Oregon Department of Environmental Quality (DEQ). Mr. Seidel works with project managers in the program to investigate and remediate contaminated properties throughout DEQ's Northwest Region, which includes the Portland metro area, ensuring compliance with State requirements and protection of the public. Mr. Seidel's professional interests are varied, and include sampling and interpretation of analytical chemistry results in soils and sediment, assessment of risk, and investigating sources of environmental contaminants.

Mary Bushman, City of Portland Bureau of Environmental Services

Title: Wetland Inventory on Public Lands, Johnson Creek Watershed

Abstract: BES recognizes a complex system of stormwater infrastructure that includes pipes, roadside ditches, culverts, green streets, ecoroofs, surface streams and rivers. BES is also working on a project to incorporate additional natural features into our understanding of a more holistic stormwater system. Wetlands are a key element of this intricate and complex network. BES is conducting a wetland inventory update for the City of Portland that will improve our understanding of the location, condition and role of wetlands as a critical part of the stormwater system. The effort will include thousands of acres of natural areas, open space, commercial and industrial areas that convey, absorb, and filter stormwater. With this inventory, the city hopes to make progress along a number of planning and regulatory fronts. The inventory will collect comprehensive information about the location, quantity, and the quality of wetlands within the city's urban services area. The inventory project will be based on a scientifically sound and function-based methodology to support the city's regulatory and programmatic interest in wetlands and natural stormwater infrastructure.

Bio: Mary Bushman works for the City of Portland, Bureau of Environmental Services, Science Integration Division. Mary has a BS in Environmental Science from Portland State University, and an MS in Plant Systematics from Oregon State. Mary has spent decades of her life exploring various habitats in the Pacific Northwest. Her favorites are mountain tops and alpine meadows, oak woodlands, wildflower prairies, lakes, and of course wetlands. Currently, Mary is leading the effort to produce the first ever comprehensive citywide inventory of wetland habitats for Portland. Today she will present the results of that project in the Johnson Creek watershed.

Ryan Jacobsen, Oregon Dept. of Fish & Wildlife

Title: Salmon, Steelhead, and Lamprey Monitoring in the Johnson Creek Watershed.

Abstract: The Johnson Creek watershed is a predominantly urban basin with some rural residential and agricultural activity in its upper portion. From 2002 to present, the Oregon Department of Fish and Wildlife has conducted randomly selected spawning ground surveys for Coho salmon in Oregon tributaries of the Lower Columbia River. This effort has resulted in an average of 2 surveys being conducted annually in the Johnson Creek watershed as part of the Clackamas population monitoring. From 2012 to present, ODFW and the Johnson Creek watershed council have been coordinating on spawning ground surveys within the Johnson Creek watershed to provide a higher resolution for anadromous salmonid detection while encouraging community involvement at the same time. On average, Johnson Creek volunteer surveyors conducted 5 sites yearly. During this time, a total of 16 salmon were observed and 7 carcasses were recovered on both volunteer and ODFW surveys combined. This heightened level of survey effort has resulted in the enhanced ability to detect fish in a watershed that has a low level of fish density, and challenging survey conditions. As a result of this effort, information about the distribution, timing and habitat use of Coho in the Johnson Creek system has been greatly improved, with further seasons of work

likely to provide new insights into patterns of salmon use within Johnson Creek and other urban streams within the Portland metropolitan area.

Bio: Graduated in 2006 with a Bachelor's of Science from Oregon State University. Works with the Oregon Department of Fish and Wildlife on the Oregon Adult Salmonid Inventory and Sampling Project. Assistant Project leader for Lower Columbia Coho and Steelhead surveys. Has worked for the past 11 years with the ODFW Corvallis Research Lab with various projects including the Willamette Spring Chinook, Aquatic Inventories, OASIS, and Great Basin Redband Trout.

Mike Wallace, Natural Resource Ecologist, City of Gresham Dept. of Environmental Services

Title: Beaver Activity Monitoring

Abstract: In September of 2016 and 2017, the City of Gresham's Natural Resources Program (NRP) AmeriCorps volunteers, under the guidance of and in cooperation with Johnson Creek Watershed Council (JCWC), conducted a beaver activity survey to catalog activity within the 4-mile stretch of Johnson Creek that runs through Gresham's jurisdictional boundaries. The objective was to gather beaver data within the Johnson Creek Watershed to be utilized in-house, as well as shared with stakeholders and curious watershed residents. In 2016, 19 active and inactive beaver dams were recorded, as well as evidence of how beavers use the creek and banks. In 2017, a total of 23 active and inactive dams were recorded. These findings were overlaid with the City's 2005 and 2015 Riparian Vegetation Biodiversity Survey conducted by the NRP AmeriCorps staff and ODFW (1999) stream data to determine if there was a correlation of stream type and riparian health. In general, the two years of data did not show a correlated preference of habitat type or condition, but did show a strong correlation to buffer size and reduced human activity. The data set found two dense clusters of beaver dams within the City, both in areas with 200-foot plus buffers and limited human presence. It seems beaver, like many of us, like a little privacy at home. The NRP plans to continue the beaver survey annually (under the guidance of JCWC), to track beaver activity over time and to enhance our understanding of the City's watershed health and biodiversity, and to inform our management of riparian lands.

Bio: Mr. Wallace is currently the City of Gresham Natural Resource Ecologist. In this position Mr. Wallace, amongst various other roles, manages the implementation of the Natural Resource Masterplan, which guides the restoration of the City's natural resources. Prior to working for Gresham, Mr. Wallace spent 15 years in various environmental scientist positions in the public and private sector, with career focus on wetland ecology and restoration. Mr. Wallace in his personal time enjoys hanging outdoors with his family, sipping a good microbrew at various Portland establishments, and attending live sporting events.

Laura Guderyahn, Natural Area Ecologist, Portland Parks & Recreation

Title: Amphibians in the Johnson Creek Watershed.

Abstract: Since 2007, the cities of Portland and Gresham have partnered with hundreds of volunteers to document the amphibian species that live in the Johnson Creek watershed. Surveys for pond breeding, stream breeding, and terrestrial amphibians have found an incredible amount of diversity in and around our urban core; at least 10 different species so far! Surveys have also shown that these amphibians are living in a variety of habitats including remnant natural wetlands, man-made stormwater ponds, and restored forests. Many restoration projects geared towards providing healthy wetland, stream and upland habitats are being implemented and volunteers continue to assist with surveys and restoration projects. A focus on wildlife corridors and helping species move safely between patches of healthy habitat is becoming more and more important. Projects dedicated to determining what level of connectivity is needed for amphibians will help shape the future of amphibian conservation in our region.

Bio: Originally from Chicago, Laura Guderyahn moved to Portland in 2006 to serve as an AmeriCorps member for the City of Gresham. After spending 8 years as Gresham's Watershed Restoration Coordinator, conducting wildlife surveys and implementing restoration projects, Laura became a Natural Area Ecologist for the City of Portland's Land Stewardship Division. In this position, she manages natural

resource projects in a variety of habitats throughout Portland Parks and Recreation natural areas. She collaborates with technicians, planners, scientists, engineers, permit authorities, contractors, community volunteers and non-profit organizations to develop and implement natural resource management strategies and solutions. Laura has a BA in Biology from Augustana College in Illinois and a Master's degree in Conservation from Ball State University in Indiana.

Moderators

Session 1: Upper Watershed Restoration

Moderator: Noelwah R. Netusil is the Stanley H. Cohn Professor of Economics at Reed College. Her research focuses on quantifying the effects of environmental amenities and disamenities. Current research projects include the effect of being in a FEMA floodplain on property values and the co-benefits of green infrastructure. Dr. Netusil serves on the Independent Economic Analysis Board of the Northwest Power and Conservation Council, the Urban Ecosystem Research Consortium (UERC) steering committee, and on the board of Mercy Corps Northwest. She is an Associate Editor for *Landscape and Urban Planning* and is on the editorial board of *Land Economics*.

Session 2: Water Quality & Quantity

Moderator: Bruce Newton is a Director at the Johnson Creek Watershed Council. Now retired, Bruce was the Director of the West National Technology Support Center of the Natural Resources Conservation Service – an agency of the US Dept. of Agriculture. Prior to moving to Oregon, Bruce worked at the US Environmental Protection Agency in Washington, DC, where he developed and managed national water quality programs.

Session 3: Habitat

Moderator: Torrey Lindbo is the Water Sciences Program Manager at the City of Gresham. He has been involved with stormwater and watershed management in Gresham for the past decade. He moved into management 3 years ago, which he claims is the easiest gig ever, since he is fortunate enough to “manage” an incredible group of intelligent, motivated, and effective scientists working on natural resources and stormwater management. Prior to his current role in public service, he spent 11 years running the Student Watershed Research Project, a watershed monitoring and education program at Portland State University. In addition to spending a lot of time studying Johnson Creek over the past 21 years, Torrey has also served on the JCWC board, where he was a jurisdictional rep for 7 years, including 3 years as secretary. For the past 5 years, he has chaired the Johnson Creek Interjurisdictional Committee – the IJC, which a collaborative group consisting of science staff from the 5 cities, 2 counties, SWCDs, watershed council, Metro, DEQ, ODA, USGS, and others on occasion.

Conference Organizer:

Daniel Newberry is the Executive Director of the Johnson Creek Watershed Council. He has also served as Executive Director of both the Siskiyou Field Institute and the Applegate River Watershed Council, both in Southern Oregon. He has also managed his own environmental and non-profit consulting company. Prior to that, he worked as a hydrologist for the Mt. Hood National Forest and the Hoopa Valley Tribe. He holds a B.A. in Physics from Middlebury College and a Masters of Forest Science from the Yale School of Forestry and Environmental Studies. He was a software engineer in private industry for eight years prior to entering the environmental field.