



Oregon Association of Clean Water Agencies (ACWA) Application for Wastewater CEUs for a two-day webinar workshop (May 11 and 12, 2022) entitled:

2022 ACWA Stormwater Summit

Wastewater CEUs requested: A total of 6 hours of instruction--0.6 CEUs—is requested for the main two-day workshop. CEUs are requested for the pre-Summit Stormwater 101 Session for those who attend. This session is 1 hour, so 0.1 CEUs are requested. Attendees to all sessions over the two days would be eligible for a maximum of 0.7 CEUs.

This document includes the information required to demonstrate eligibility for wastewater and/or general CEUs, including: 1) the educational need for the program provided; 2) the learning outcome for attendees; 3) a program including a description of the course content and importance to stormwater/wastewater/water quality professionals; 4) the qualifications of the instructors; 5) the time schedule; and 6) the method of tracking on-line attendance for the duration of the workshops.

Educational Need and Learning Goals:

The ACWA Stormwater Summit is convened annually to update stormwater management and other water quality/wastewater management professionals across the state on current issues and trends impacting their work to protect Oregon's surface water quality. The goal of this workshop is to increase the knowledge and understanding of wastewater and stormwater managers, engineers and operations professionals regarding water quality regulations, water quality challenges, and technologies and operational controls for managing and improving stormwater quality and adapting stormwater management systems and practices to emerging issues of concern.

The course emphasizes science-based information on stormwater pollutants and the effectiveness of stormwater management practices and facilities intended to improve water quality. It also focuses on regulatory compliance pathways and innovation in best management practices centered on low impact, green infrastructure, as well as best management practices to meet pollution reduction objectives. The course also educates attendees regarding emergent issues and challenges that must be addressed through adaptive management, such as climate change impacts and water quality impacts associated with unhoused populations.

A variety of research scientists, technical experts and experienced practitioners are included in the program as speakers/instructors. The workshop will be convened over two consecutive days as described in the expanded program/course outline below.

Method of Tracking Attendance for CEU Certification:

ACWA is conducting the workshop series on the Zoom webinar platform. All attendees will be required to register, and the registration information will include their name, agency, address, and certification number. Each attendee will enter the workshop by clicking on a link sent via email following registration. The host (ACWA) will manually let each attendee into the Zoom on-line sessions and record their attendance. The duration of attendance (in minutes) will be tracked and recorded for each participant and reported by ACWA with the roster.

Course Outline (Program), Instructor Information and Time Schedule:

2022 ACWA Stormwater Summit—Day 1:

Pre-Summit Workshop; 9:15 am to 10:15 am: Stormwater 101 (Optional—0.1 FTE requested)

Krista Reininga, P.E., Brown and Caldwell

The “Stormwater 101” Pre-Summit Workshop is intended to introduce new stormwater professionals and permittees to the basics of stormwater quality and quantity management, the regulatory framework, best management practices, evolving permit requirements and implementation strategies, and resources. This session provides important background for professionals that are new to stormwater and other water quality management programs and is a good refresher for people who have worked in the field but have not kept their knowledge current.

Krista Reininga, P.E., is a water resources engineer at Brown and Caldwell with nearly 30 years of experience. She is currently focused on assisting municipal jurisdictions with regulatory compliance related to their stormwater programs. She is experienced in NPDES permitting, TMDL planning, multiple objective stormwater master planning, stormwater quality monitoring, stormwater and water quality data evaluations, pollutant source identification, hydrologic/hydraulic modeling, and the development of municipal stormwater quality standards for new development. Reininga earned a B.S. degree in Civil Engineering from Michigan State University and a M.S. degree in Environmental Science from Indiana University.

Wednesday, May 11, 2022; 10:30 am to 2:00 pm; with a 30-minute lunch break scheduled at noon.

10:30 am	Welcome ACWA Stormwater and Groundwater Committee Co-Chairs
10:40 am	Water and the Tribal Landscape: Yesterday, Today, and Tomorrow Michael Karnosh, Timber Resource Program Manager, Confederated Tribes of the Grand Ronde Since time immemorial, water has been an integral and irreplaceable element of the homelands of the Confederated Tribes of Grand Ronde. Beyond its obvious life-sustaining role, Tribal home waters have served as grocery store, highway, school, library, meeting hall, and church for millennia. This presentation from a Grand Ronde Tribal Natural Resources employee will explore some of the reasons why clear, cool, free-flowing water is such a highly valued resource of the

	<p>Tribe’s homelands. It is important for municipal water quality program managers and professionals to develop an understanding of tribal perspectives and interests in water quality protection and how indigenous communities desire and expect to work cooperatively to solve water quality challenges.</p> <p>Mr. Karnosh has worked in the Natural Resources Department for the Confederated Tribes of the Grand Ronde communities since 1996 in various capacities. He has served as the Timber Resources Program Manager for the Tribes since January 2021 where he focuses on sustainable environmental management and timber harvesting on the Tribe’s forestlands. Karnosh has a law degree with a certificate in environmental and natural resources law from Lewis and Clark University in Portland, Oregon and a B.S. degree in Forest Resources from the University of Idaho, Moscow, Idaho.</p>
<p>11:05 am</p>	<p>Now That we Have Determined 6PPD-Quinone is Killing Coho, What’s Next?” Edward Kolodziej, Ph.D., Associate Professor, University of Washington</p> <p>In the U.S. Pacific Northwest, one species of salmon, (coho salmon, <i>Oncorhynchus kisutch</i>), annually exhibit previously unexplained acute mortality upon stormwater exposure when adult salmon migrate to near-urban creeks to spawn. By investigating this phenomenon with a portfolio of techniques based upon liquid chromatography-high resolution mass spectrometry, we identified the transformation product “6PPD-quinone” of the globally ubiquitous tire rubber antioxidant 6PPD as the primary causal toxicant for coho salmon mortality. Mass spectrometry analysis of representative roadway runoff and stormwater-impacted creeks of the U.S. West Coast indicated widespread occurrence of 6PPD-quinone at toxic concentrations in both fall and spring storms. These results reveal unanticipated risks of tire rubber antioxidants to an aquatic species and imply toxicological relevance for environmentally dissipated tire rubber residues. Additional characterization and treatment of roadway runoff and evaluation of its adverse effects on water quality and sensitive aquatic species are likely merited.</p> <p>Dr. Kolodziej holds a joint appointment across Tacoma (67%) and Seattle (33%) campuses of the University of Washington. Since September 2014 he has served as Associate Professor of Interdisciplinary Arts and Sciences (UW Tacoma) and as Associate Professor in the Department of Civil and Environmental Engineering (UW Seattle). He is also a Principal Investigator for the Center for Urban Waters Research. Dr. Kolodziej’ expertise includes the occurrence, fate and transport of organic contaminants in natural and engineered systems, characterization of storm water and non-point source pollution, toxicity identification and evaluation, source apportionment, water reuse, optimization of engineered treatment systems, mitigation of contaminants in urban and agricultural runoff, transformations and retained bioactivity of emerging contaminants, high resolution mass spectrometry, environmental analytical chemistry, innovative and transformative technologies for water quality improvement and ecosystem health.</p> <p>Dr. Kolodziej has a Ph.D. and a M.S. degree in Environmental Engineering from the University of California at Berkeley. He has a B.S. degree with honors in chemical engineering from Johns Hopkins University.</p>
<p>12:00 pm—Lunch Break</p>	
<p>12:30 pm</p>	<p>Paving the Way for Permeable Pavements: the Latest in Materials and Performance Anand Jayakaran, Ph.D., Professor, Washington State University, Puyallup, WA.</p>

	<p>Permeable pavements (PPs) are a valuable tool in mitigating stormwater runoff by allowing stormwater to infiltrate pavement surfaces through a network of voids in the pavement's wearing layer. Previous research has shown that particulate pollutants are filtered as stormwater travels to the parent soils below through the pavement profile. One major challenge with PPs is their diminished strength compared with traditional impervious pavements. As a result, PPs are limited to use in low traffic volume conditions like parking lots, arterial roads, and sidewalks. A partnership between WSU and Boeing is addressing this issue by incorporating cured carbon fiber composite material (CCFCM) recycled from Boeing airplane wing scraps. Experimental porous concrete and permeable asphalt pavement cells were installed with and without CCFCM at the Industrial Engineering Design and Arts (IDEA) High School in Tacoma, WA. The pavements were constructed to capture stormwater that infiltrated the surface layers and were instrumented to monitor and sample pavement effluent. Our results show that the addition of CCFCM increased the mechanical and tensile strength of the pavements, potentially making them more suitable for higher traffic applications. In addition, our results show that these amended PPs performed just as well as PPs without amendments, removing common stormwater pollutants, including sediments, nutrients, metals, and organic contaminants.</p> <p>Dr. Jayakaran is currently an engineering professor at Washington State University at Puyallup, WA., and serves as an adjunct professor at Clemson University, Clemson, SC. He extensive expertise related to stormwater includes significant research efforts on urban stormwater pollutant characterization, control, and treatment. He has extensive background in studying pervious pavements, including stormwater pollutant remediation impacts, and inflow and outflow characteristics.</p> <p>Dr. Jayakaran holds a Ph.D. (Ag. and Bioengineering) and a M.S. degree (Civil Engineering) from Ohio State University, Columbus, Ohio. He received his B.S. degree in Civil Engineering from Bangalore University, India.</p>
1:15 pm	<p>Modeling the Effects of Climate Change on the Hydrologic Function of Bioretention and Permeable Pavement: Implications for Design and Maintenance Ryan Winston, Ph.D., Assistant Professor, Ohio State University</p> <p>Quantifying the expected impacts of climate change on stormwater infrastructure is crucial to building resilience into urban drainage systems. Two bioretention and three permeable pavement hydrology data sets collected in Northeast Ohio were used to calibrate the continuous simulation model DRAINMOD. Precipitation and temperature data were derived from dynamically downscaled climate predictions for the mid-21st century (2055-2059) under two climate scenarios (RCP 4.5 and RCP 8.5). These were input into calibrated DRAINMOD models to assess changes in the bioretention and permeable pavement water balance (drainage, overflow, exfiltration, and evapotranspiration) compared to current climate conditions (2001-2004). Results suggest current bioretention designs may need modest to major modifications and permeable pavements needed only marginal changes to be resilient to climate change. Proper design, installation, and long-term maintenance are perhaps just as important in stormwater control measure functionality as planning for climate change. However, similar analyses should be conducted in other regions where predicted changes to precipitation patterns may be more pronounced. Dr. Winston will discuss the findings of this modeling and its applicability to Oregon.</p>

	<p>Ryan Winston is an Assistant Professor in the Departments of Food, Agricultural, and Biological Engineering and Civil, Environmental, and Geodetic Engineering and a Core Faculty of the Sustainability Institute at Ohio State University. Ryan leads the Ohio State University Stormwater Management Program, which provides stormwater and stream management services and technical assistance related to urban water to federal and state agencies, local governments, and watershed groups. This group conducts applied research at the practice, site and small watershed scale to help understand the cost, benefits and ecosystem services provided by stormwater controls. Ryan has led more than 50 projects focused on urban/suburban stormwater monitoring and subsequent development and/or calibration of models based on these data. Ryan has particular interest in applying lessons learned in field-based research projects to inform design of new stormwater controls.</p> <p>Winston earned his M.S. and PhD in Biological and Agricultural Engineering from North Carolina State University.</p>
1:55 pm	Wrap-Up
2:00 pm	Adjourn until 10:30 am Thursday, May 12th

2022 ACWA Stormwater Summit Day 2:

Thursday, May 12, 2022; 10:30 am to 2:00 pm; with a 30-minute lunch break scheduled at noon.

10:30 am	<p>Welcome ACWA Stormwater and Groundwater Committee Co-Chairs</p>
10:40 am	<p>News from NACWA—National Issues, Trends, and Opportunities for Stormwater Utilities Emily Rimmel, Director of Regulatory Affairs, National Association of Clean Water Agencies</p> <p>Emily Rimmel will provide an update on EPA actions and other developments at the national level that will impact municipal stormwater permits and programs in Oregon. She will touch on the impacts of new EPA rules on Waters of the United States (WOTUS), as well as the current status and opportunities related to increased federal stormwater infrastructure funding, recent federal legislative progress, and more.</p> <p>Emily Rimmel leads NACWA’s regulatory efforts and support members nationwide on a suite of issues from water quality to PFAS to stormwater. She is also an Adjunct Instructor at the University of Oklahoma, teaching classes on environmental law and water resources advocacy. Rimmel has an aquatic ecology background and a law degree from Vermont Law School. She has M.S. and B.S. degrees in Zoology from the University of Oklahoma, Norman, Ok.</p>
11:00 am	<p>DEQ Water Quality Programs: What’s Ahead for Stormwater Management Jennifer Wigal, Administrator, DEQ Water Quality Division</p> <p>Jennifer Wigal will provide an update on the Division’s Water Quality programs’ priorities, objectives and expectations for meeting DEQ’s clean water objectives, with an emphasis on DEQ’s Stormwater Programs. It is important for stormwater management professionals to understand the regulatory drivers and mandates DEQ is delegated to implement, including the impacts of updated Total Maximum Daily Loads, water quality standards and litigation results. Wigal will discuss the status and plans for updating general and individual stormwater-related</p>

	<p>permits, and what local jurisdictions can expect to see emerge from DEQ as priorities for the Stormwater program.</p> <p>Jennifer Wigal was recently appointed to serves as Administrator for the DEQ Water Quality Division. Prior to this appointment, she served as Deputy Administrator since April of 2018, and as the Water Quality Program Manager before that. Ms. Wigal is responsible for administration of all DEQ Water Quality Programs, including Water Quality Permitting, Water Quality Standards, and Water Quality/Watershed Assessments. Prior to coming to DEQ in 2008, Jennifer built her expertise in water quality programs through various positions at U.S. EPA Headquarters during her 10 years there. Jennifer holds a M.S. degree in Environmental Engineering from Johns Hopkins University and a B.S. degree in Civil Engineering from Washington State University.</p>
<p>11:25 am</p>	<p>Evolving your maintenance approach in response to an expanding green infrastructure inventory Karen Bromley, Environmental Specialist, City of Gresham</p> <p>The installation of vegetated stormwater facilities, also known as green stormwater infrastructure, has been increasing over the past two decades within the City of Gresham. Vegetated stormwater facilities provide many benefits to the management of stormwater runoff, however ongoing vegetation maintenance for these facilities requires dedicated funding and labor. This presentation will cover how the City of Gresham has adapted and evolved levels of service needed to keep up with the maintenance required at vegetated stormwater facilities as the number of assets continually increases.</p> <p>Karen Bromley is an Environmental Specialist with the Water Resources Division at the City of Gresham. Karen currently oversees maintenance requirements for Gresham’s publicly maintained green stormwater infrastructure. During Karen’s time with the City, the number of green stormwater assets has grown rapidly resulting in a need to develop and expand a program that can keep up with providing the level of service that balances the function and aesthetics needed to maintain healthy green stormwater facilities for Gresham communities and residents. Bromley has a M.S. in Natural Resources and a B.S. in Natural Resources Planning and Interpretation from Humboldt State University, Arcata, CA.</p>
<p>12:00 pm—Lunch Break</p>	
<p>12:30 pm</p>	<p>Pollutants in Stormwater and their Fate and Transport in the Subsurface: What We Have Learned from Over 15 Years on the Cutting Edge Matt Kohlbecker, RG, Supervising Hydrogeologist, GSI Water Solutions</p> <p>In 2005, the Department of Environmental Quality (DEQ) issued a permit to the City of Portland for its approximately 9,000 UICs. Portland’s permit was the first of its kind in the nation. Since 2005, DEQ has issued UIC permits to about 40 other municipalities and businesses. The UIC permit holders have spent the past decade and a half on the cutting edge of UIC regulation in the United States, collecting thousands of stormwater quality samples, conducting in-depth evaluations of emerging pollutants, and modeling the fate and transport of pollutants in the subsurface. The purpose of this presentation is to provide an overview of the “take home” messages from these efforts, and to look forward to what the future of UIC regulation in Oregon may be.</p> <p>Matt rejoined GSI in early 2017 after 3 years at the Oregon Department of Environmental Quality (DEQ). He is an experienced hydrogeologist with a background in water resources and DEQ</p>

	<p>infiltration regulations. He supports GSI’s groundwater and stormwater projects. At DEQ, Matt focused on regulation of underground injection control (UIC) devices, also known as drywells, which dispose of stormwater by infiltrating it into the subsurface. He also provided technical expertise for complicated stormwater problems for other DEQ programs. Matt has a deep understanding of state and federal regulations, contaminant fate and transport modeling, subsurface hydrogeology in the Portland area, aquifer storage and recovery (ASR), and water well design and installation.</p> <p>Mr. Kohlbecker holds a M.S. in Hydrogeology from the University of Nevada at Reno, NV. and a B.S. degree in geology from Denison University in Ohio. He is a registered geologist in the state of Oregon.</p>
1:15 pm	<p>PFAS and Phthalates in Stormwater: Toxics reduction strategies Kevin Masterson, Sr. Environmental Consultant, Stony Creek Consulting</p> <p>PFAS and phthalates are two emerging classes of toxic chemicals increasingly detected in surface water. This presentation will summarize what is known about these chemicals in stormwater and approaches to reduce their discharges to surface or groundwater, with an emphasis on pollutant source reduction. Pursuing proactive solutions to emerging water toxics can minimize the burden on municipal stormwater programs from potential future regulations.</p> <p>Kevin Masterson is an environmental professional with over 34 years of experience developing, implementing, and evaluating pollution management and reduction programs for public agencies. He has extensive knowledge and experience in applying federal, state, and local environmental laws and policies. Masterson currently works as a Sr. Environmental Consultant and is assisting the Oregon Association of Clean Water Agencies (ACWA) in tracking research and regulations related to high priority toxins of concern, and developing strategic proactive toxics reduction strategies. Prior to his work with Stony Creek Consulting and ACWA, Masterson worked for the Oregon Department of Environmental Quality as the Statewide Toxics Coordinator (2006—2021) and in various other position for the Department since 1994. Masterson holds a B.S. degree Economics and a M.S. degree in Urban and Regional Planning from the University of Oregon, Eugene, OR.</p>
1:55 pm	Wrap-Up
2:00 pm	Adjourn