



PRESIDENT'S NOTES By Dustin Atchison, WA-AWRA Section President

Happy New Year!! As we kick off an exciting 2013, I want to spend some time reflecting on the outstanding contributions and accomplishments by our Section. This begins with a hearty thank you to our outgoing president Scott Kindred. Scott's leadership, vision and drive were instrumental in assuring we stayed on a path toward some ambitious undertakings. I also would like to thank the members of our board who have poured a lot of enthusiasm and energy into our efforts. Finally, a special thanks to outgoing board members Beth Peterson (a past president), Colleen Rust and Kristina Westbrook as they move on to new priorities, new surroundings and founding related water resources organizations.

In addition to our normal activities including hosting dinner meetings, publishing newsletters, recognizing leaders in water resources management and mentoring student groups, a few key highlights of the past year include:

- Launched our new website www.waawra.org which serves as an enhanced forum for communicating with our membership.
- Held the 2012 AWRA Washington State Conference on the Columbia River, Basin and Treaty.
- Extended free registration to dinner meetings for students.
- Initiated a new partnership program to engage with organizations and similar NGOs to enhance our services to our membership and share knowledge across the broader water resources community.

Our new board members are representative of what this organization is about. We are excited to welcome Brian Walsh (Department of Ecology), Jason McCormick (Washington Water Trust) and Allison MacEwan (Shannon & Wilson) to bring their unique expertise and vision to the board.

If there is one word that sums up my goals for 2013 it is "community". WA-AWRA operates as a water resources community where we have the opportunity to consistently engage in sharing knowledge, common interest and building better networks. To accomplish this, we will continue to build on the initiatives begun last year, such as increasing the use of the website to bring our members together, build our partnerships, continue to deliver dinner meetings, conferences and newsletter content that share valuable content and more importantly interaction with other water resources professionals. We continue to invite all of our members to contribute:

- Write a newsletter article to highlight an important issue or accomplishment
- Suggest a speaker for or present at an upcoming Dinner Meeting or State Conference

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SAVE THE DATES! DINNER MEETINGS:

- January 29th** – Current Issues in Emergency Management with a Focus on Superstorm Sandy, UW Waterfront Activities Center
- February 26th** – Global Sanitation and Water Supply, Pyramid Ale House, Seattle

- Join a committee (see our website for a description of our committees)
- Attend a board meeting, held the first Monday of every month
- Attend our student mixers and meetings, whether to build your own network or mentor and recruit new professionals.

This edition of the newsletter provides two exciting technical articles: King County describes their flood management plan updates, and in our other article, Ann Root and others highlight the 2012 National AWRA award winning Yakima River Basin Integrated Basin Integrated Water Resources Management Plan. These represent a part of the broad cross section of topics that we cover in water resources. In this edition, please also note the announcement for the student mixer, these are always particularly engaging meetings that are enriched by the attendance of our broader community.

We are also excited to announce our February dinner meeting where we will highlight the water resources work being done abroad by Water1st, Living Earth and the Gates Foundations. Their work highlights not only what important issues there are in water resources in other countries but also how our local community can support and learn from those efforts.

YAKIMA RIVER BASIN INTEGRATED WATER RESOURCE MANAGEMENT PLAN

By Ann Root, Senior Planner, ESA, Member of the Yakima Integrated Plan Consultant Team

At AWRA's national conference in November 2012, the association's first ever award for Integrated Water Resources Management (IWRM) was presented to the Yakima River Basin Water Enhancement Project Workgroup for development of the Yakima River Basin Integrated Water Resource Management Plan (Integrated Plan). The Integrated Plan is a comprehensive, adaptive approach to water resources and ecosystem restoration improvements in the Yakima River basin. The Integrated Plan was developed through a collaborative approach initiated by the Bureau of Reclamation (Reclamation) and Department of Ecology (Ecology) working with a Workgroup consisting of the Yakama Nation, federal and state agencies, basin irrigation districts, local governments, and other stakeholders.

This article presents a brief summary of the issues that led to development of the Integrated Plan, the plan development process, and components of the plan. It also describes the ongoing implementation of early action items through existing authorities and funding.

Background

The Yakima River basin is home to one of Reclamation's oldest and most productive irrigation projects. Reclamation's five major reservoirs support agricultural production and a food processing industry valued at \$1.8 and \$2.3 billion annually, respectively. Crops grown are generally high value including apple and other orchard crops, wine grapes, hops, and vegetables. The basin has also historically supported large runs of anadromous salmonids and resident fish.

Existing water resources infrastructure, programs, and policies have not been capable of consistently meeting water demands for fish and wildlife habitat, dry year irrigation, or municipal water supply. Climate change predictions indicate that crop and municipal water demands will increase and the basin will experience decreased snowpack and spring and summer runoff as well as increased frequency of drought conditions. Fish will be affected by decreased flows, increased air and water temperature, and changes in timing of streamflows affecting migration.

Surface water in the basin is over appropriated resulting in inadequate supplies for irrigation supply and instream flows. Reclamation's reservoirs have a storage capacity of 1 million acre-feet while irrigation delivery allocations total 1.7 million acre-feet. In good water years with substantial snowpack to slow runoff, the reservoirs can meet those demands; however, during dry years, deliveries are reduced to irrigators with junior water rights. In drought years such as those experienced in 1992-1994, 2001 and 2005, some irrigation districts received as little as 37 percent of their allotted water. Droughts and low water supplies have caused economic hardships for the basin and crop losses, especially of perennial crops such as orchards.

Reduced fish populations in the basin have been caused by fish passage obstructions, including those at major reservoirs, degraded riparian habitat, and altered streamflows

caused by irrigation operations. Salmon and steelhead runs have declined from estimates of 800,000 fish in the 1880s to average runs of 15,000 to 20,000 in the last 10 to 15 years. Steelhead and bull trout are listed as threatened under the Endangered Species Act. Native sockeye and summer Chinook have been extirpated from the basin although the Yakama Nation started reintroducing sockeye to Cle Elum Reservoir in 2009. Native coho were also extirpated, but have been reestablished.

Population and residential development, including resort and second-home development, have increased in the Yakima basin in the last two decades. Because surface water rights are fully appropriated, acquiring year-round water rights for growing municipalities and housing development is difficult. Many housing developments rely on groundwater wells for domestic water supplies. Because groundwater and surface water are interconnected in the Yakima basin, groundwater pumping can diminish streamflows, affect senior surface water rights, and reduce water available for legally required instream flows (see the "USGS Yakima River Basin Study," Fall 2012 WA-AWRA Newsletter).

Development of the Integrated Plan

The Integrated Plan comes after over 30 years of studies and proposals to improve water supply and fish habitat in the Yakima basin. Key programs that preceded development of the Integrated Plan include:

- The Yakima River Basin Water Enhancement Project (YRBWEP) Phase 1 (1979) focused on installing fish screens and ladders in the basin.
- YRBWEP Phase II (1994) focused on agricultural conservation and improvements to streamflows.
- Reclamation's congressionally authorized Yakima River Basin Water Storage Feasibility Study EIS (2008), which evaluated options for additional water storage in the basin with an emphasis on storage of Columbia River water in a potential off-channel Black Rock Reservoir. Reclamation's Final EIS concluded that none of the storage facilities met federal criteria for an economically and environmentally justified water project and recommended the No Action Alternative as the Preferred Alternative (2009).
- Ecology's Supplemental EIS (2009), which was developed in response to comments from fisheries and irrigation managers on the Storage Study EIS that additional alternatives and an integrated approach were needed to resolve water problems. This document evaluated both storage and non-storage options for the basin and developed the Integrated Water Resource Management Alternative.

Following completion of their separate environmental analyses, Reclamation and Ecology decided to continue the process of evaluating options to improve water resources in the Yakima basin under the YRBWEP process. In June 2009, the two agencies initiated the YRBWEP Workgroup to help develop a proposal for an Integrated Water Resource Management Plan.

The Workgroup used Ecology's Integrated Water Resource Management Alternative as the basis of the Integrated Plan. The Workgroup refined the proposal and identified specific projects using the following key principles:

- Improve outcomes for both society and the environment;
- Combine a range of solutions;
- Evaluate joint outcomes;
- Consider change and uncertainty; and
- Build in adaptability.

The Workgroup established subcommittees to refine water needs in the basin including those for irrigation and municipal uses as well as instream flows. One subcommittee was tasked with developing a habitat/watershed restoration plan that incorporated stream and floodplain habitat enhancement. Another subcommittee developed a proposal for protecting key lands that support watershed and habitat functions. To support the Workgroup efforts, Reclamation and Ecology conducted engineering analyses, identified potential barriers and risks, and developed preliminary costs and economic impacts of proposed projects. Reclamation conducted hydrologic modeling of proposed storage and flow projections, incorporating accepted climate change projections.

The Workgroup unanimously approved the Integrated Plan in March 2011. Reclamation and Ecology prepared a programmatic environmental assessment of the Integrated Plan, releasing the Final EIS in March 2012.

Integrated Plan Projects and Program

The Integrated Plan is composed of seven elements, each of which includes recommended projects to meet the objective of implementing a comprehensive program of water resource and habitat improvements to meet existing and forecast needs. The seven elements and proposed projects are:

- Reservoir Fish Passage
 - Passage at all five major reservoirs and improved passage at Clear Lake Dam
- Surface Storage
 - Wymer Dam—construct a new 163,000-acre-foot off-channel storage at Lmuma Creek
 - Lake Kachess Reservoir—provide access to 200,000 acre-feet of inactive storage pool
 - Bumping Lake Reservoir—replace existing dam to add 165,000 acre-feet of storage
- Groundwater Storage
 - Pilot studies to evaluate using surface water during periods of high runoff to recharge aquifers for later withdrawal and support base flows in streams
- Enhanced Conservation
 - Agricultural conservation—over and above existing program
 - Municipal and domestic conservation—develop new program
- Market Reallocation
 - Near-term effort—build on existing water bank programs and remove barriers to water markets
 - Long-term effort—focus on water transfers between irrigation districts and voluntary fallowing of lands within irrigation districts to lease water outside districts during drought years

- Structural and Operational Changes
 - Keechelus-to-Kachess tunnel or pipeline
 - Kittitas Reclamation District canal improvements
 - Reduced power diversions at Roza and Chandler dams
 - Wapatox canal improvements
 - Raise Cle Elum Reservoir by 3 feet
- Habitat/Watershed Protection and Enhancement
 - Acquire property for habitat protection in the Teanaway basin, Yakima Canyon, and Little Naches River headwaters
 - Consider protective designations on public lands and waters
 - Habitat enhancement on mainstem floodplains and tributaries.

The Integrated Plan is an adaptive program. Current information indicates that the proposed projects are feasible and will meet the goals of the plan. If projects are determined to be infeasible or projected conditions change, the Workgroup will evaluate the Integrated Plan and make adjustments as needed including identifying substitute projects.

Benefits of the Integrated Plan

The Integrated Plan is projected to benefit water supply, fish, and ecological resources. Drought-year water supplies will improve, junior water rights will be more secure, and streamflow conditions will improve. Fish passage will provide access to headwaters streams for anadromous fish and improve the viability of bull trout. Habitat enhancements will lead to increased populations of Chinook, coho, steelhead, and sockeye salmon. The Integrated Plan will increase operational flexibility to manage flows and adapt to climate change for both irrigation and fish. Water storage projects not only provide water to fulfill irrigation goals, but also provide water to meet instream flow needs for fish. Enhanced conservation, market reallocation, and structural and operational changes will also benefit both out-of-stream and instream needs.

Moving Forward

The Integrated Plan is actively moving forward. The Workgroup's Implementation Committee and various subcommittees are meeting with congressional and federal agency representatives and have gained broad support for the plan. Federal and state funding is being requested. Property acquisition for habitat protection is moving forward and proposals for environmental designations are being refined. Project-level technical and environmental analyses are being developed for "early action" projects for which Reclamation and Ecology have existing authorities.

Although it will take many years to fully implement the Integrated Plan, it is encountering initial success. That success is due to four main factors. The plan:

- Addresses interconnected resources;
- Solves multiple problems that single-purpose projects cannot;
- Provides for adaptation in the face of change and uncertainty; and
- Draws support from diverse stakeholders and agencies.

Additional information on the Workgroup and Integrated Plan is available at: <http://www.usbr.gov/pn/programs/yrbwep/index.html>.

KING COUNTY FLOOD MANAGEMENT PLAN UPDATE

By: River and Floodplain Management staff, King County
Department of Natural Resources and Parks

How has King County worked to reduce flood risk over the years?

For more than 50 years, King County has worked to minimize flood risks and reduce the likelihood of flood-related losses to citizens, property and infrastructure.

King County's commitment to flood risk reduction has minimized flood damage and loss while improving protection of rivers and floodplains that feature resources like trails, open space, salmon habitat and farmlands. King County's maintenance responsibilities are significant, with 500 levees and revetments along 120 miles of river and 620 acres of property to maintain. These facilities reduce flood risks to tens of thousands of people, billions of dollars in infrastructure, and major transportation corridors.

In 2005, the Federal Emergency Management Agency (FEMA) awarded King County the highest rating of any county in the nation for floodplain management through its Community Rating System (CRS). This rating recognized the County's progressive regulations and comprehensive approach to river and floodplain management and brought a 40 percent reduction in flood insurance premiums for residents of unincorporated King County.

Despite these efforts, funding constraints have often impacted the maintenance, repair, and retrofitting of hundreds of aging flood protection infrastructure that help ensure public safety and regional economic viability.

What is the King County Flood Hazard Management Plan?

The 2006 King County Flood Hazard Management Plan is part of the county's Comprehensive Plan; it identifies flooding and channel migration hazards, assesses the vulnerability of people and property to those hazards, establishes policy direction for floodplain management, and identifies much-needed fixes to the County's aging sys-



tem of levees and revetments. The goals of the Plan are to reduce flood and channel migration risks while avoiding adverse environmental impacts and reducing long-term floodplain management costs.

In 2007 the Metropolitan King County Council established the King County Flood Control District (District), an independent special purpose district. With an inter-jurisdictional approach, the District's mission is to protect public health and safety, regional economic centers, public and private properties and transportation corridors. State law authorized the King County Council to be the District's governing body, called the Board of Supervisors

What has been done to address King County flood risks since the 2006 plan?

To reduce flood risk to people and property and to make room for levee setbacks and future restoration projects, King County acquired numerous frequently flooded properties. Since 2008, 300 acres have been acquired from willing landowners, and 300 residents have been relocated to safer housing. Homes and barns have been elevated in flood-prone areas.

Crews around the county perform emergency repairs following large flood events, and King County partners with other jurisdictions on flood issues, as in the 2009 response to damage to the Howard Hanson Dam on the Green River. Since 2007, 64 levee repair projects have been completed countywide, including critical levee repairs to protect public infrastructure and businesses in the Lower Green River Valley.

Riverbank restoration has been completed in many locations, replacing invasive plants with native vegetation, and installing large wood to improve habitat and stabilize riverbanks. Setback levees have been constructed to improve flood conveyance and reconnect floodplains with rivers.

King County has continued its coordination with other jurisdictions on flood preparedness outreach to communities, and communicated with landowners about flood and channel migration hazards and risks around the County's watersheds.

King County has completed feasibility studies and analyses to support the development of levee setbacks and other large projects. Acting as a Cooperating Technical Partner, King County has worked with the Federal Emergency Management Agency to conduct flood insurance rate map studies and to prepare updated maps, (*continued on p. 5*)



Snoqualmie Valley flooding, December 2010. Photo credit: King County

2013 SPONSORSHIP OPPORTUNITIES By Scott Kindred, Past President

Now is the time to consider sponsoring the Washington Section of AWRA to receive the full annual benefit of your sponsorship. In addition to the traditional benefits associated with the annual state conference, we now offer benefits throughout the entire year, including free memberships and recognition of your company at dinner meetings, in emails and newsletters, and on the website. Further details are available on our website.

By becoming a conference sponsor, you will earn the recognition and gratitude of water resource professionals throughout our state. We also encourage our corporate sponsors to consider other opportunities for their voice to be heard by writing articles for the newsletter or presenting at one of our dinner meetings or the state conference. We welcome your feedback to make our events as interactive and valuable as possible for our members. If you have any questions or need additional information, please contact Scott Kindred (skindred@aspectconsulting.com).

THANKYOU TO OUR 2012 SPONSORS!



(King County Flood Management Plan Update continued from p. 4)

including new coastal hazard maps. King County is also revising channel migration zone mapping techniques based on the best available science and updating or completing channel migration zone maps. Technical studies have also been completed regarding river recreational use, large wood location and placement, and sediment management.

Since 2008, King County flood risk reduction efforts have been bolstered by 37 grants from FEMA, the U.S. Army Corps of Engineers (Corps), the State of Washington, the King Conservation District, and Conservation Futures. King County has also received \$49.5 million in external grant funds for flood risk reduction.

Why is King County updating its flood management plan?

While King County is required to update its flood plan every five years to maintain its high CRS and residential flood insurance discounts, the update will also:

- Review the plan’s goals, objectives and guiding principles.
- Include new information about flood and channel migration hazards and flood projects and address new findings about risks, vulnerabilities and economic impacts.
- Consider key issues that have emerged since 2006, including coastal and urban flooding, equity and social justice, levee certification and FEMA accreditation, and the use of large wood as part of levees and revetments.

What is King County’s vision for the updated plan?

Updating the King County Flood Hazard Management Plan provides King County an opportunity to improve our

planning and response to flood events by incorporating new data and new approaches to flood risk reduction. In 2013, we know that reducing flood risk is most effectively achieved by working with natural river and flood processes and paying heed to changing climate conditions. We also know that experts project continued population growth in the Northwest. King County staff, together with our regional partners, will continue to work hard to reduce flood risks to people and property while protecting natural systems and habitat.



Cedar River bank stabilization, flood risk reduction project that uses boulders, large wood and rock ballasting to trap sediment, scour pools, create fish refuge, and establish riparian shade and cover. Photo Credit: King County.

For more information about King County River and Floodplain Management or the Flood Hazard Management Plan update, go to: www.kingcounty.gov/floodservices, call 206-296-8001 or email wlrivers@kingcounty.gov.

REVIEW OF OCTOBER DINNER MEETING: NEW WATER RIGHTS AND MITIGATION STRATEGIES FOR THE CITIES OF LACEY, OLYMPIA & YELM

Talk By: Mike Gallagher, Washington State Department of Ecology

Review By: Tyson Carlson, WA-AWRA Section Board Member & Stephen Thomas, WA-AWRA Section Treasurer

For our October Dinner Meeting, we were pleased to have Mike Gallagher, Section Manager of the Water Resources Program at the Southwest Regional Office of Washington State's Department of Ecology (Ecology) as our keynote presenter for the evening. The presentation described how the cities of Lacey, Olympia, and Yelm partnered together - including exceptionally high level of stakeholder cooperation and joint development of a groundwater flow model - to pursue new water rights in the region.

In his presentation, Mike described the strategy developed by the cities of Lacey, Olympia, and Yelm to mitigate for potential hydrologic impacts from permitting of new groundwater source drinking water supplies to meet long-term municipal demand. Lacey and Yelm submitted applications to Ecology to withdraw totals of 7,392 acre-feet/year (afy) and 942 afy of new groundwater respectively from new deep wells. Olympia applied to change 29,209 afy from their existing McAllister and Abbott Springs facilities to a newly-developed upland well field.

Mike highlighted the precedent-setting level of coordination between numerous stakeholders that occurred in development of the comprehensive water rights mitigation plan to be implemented in three phases as each new source is developed. Regional project stakeholders included the three cities, along with local Indian Tribes, Washington Dept. of Fish and Wildlife, and residents of both the Deschutes and Nisqually River Basins. A key technical component of the coordinated effort was the development and application of a detailed numerical groundwater flow model of the northern Thurston County area. The model incorporates the downstream parts of the Nisqually and Deschutes river basins. The model was originally developed by Olympia in 2000 for their sole use to design and assess the impacts from their planned well-field in the lower Nisqually and McAllister Creek basin areas. The cities later jointly modified the model to enable Lacey and Yelm to quantitatively evaluate their planned groundwater pumping in the lower Deschutes river basin and the Yelm sub-basin. As well as predicting the individual city hydrologic impacts, the model also predicted cumulative groundwater pumping impacts.

The predictive modeling results formed the basis for development of the mitigation actions to offset potential impacts. The cities' proposed joint mitigation programs for Woodland Creek, Deschutes River, and McAllister Creek basins; individual mitigation measures were proposed by each city to offset well-specific impacts. Mitigation measures included both in-kind (direct replenishment of flow) and out-of-kind (e.g. riparian protection, habitat improvements) elements. Specific mitigation proposals:

Woodland Creek Basin: Regional in-kind mitigation will include groundwater recharge via infiltration of Class A reclaimed water produced at LOTT's Martin Way Reclaimed Water Plant (up to 0.9MGD). Out-of-kind mitigation will include acquiring property and/or conservation

easements along Woodland Creek to increase undeveloped protected land along the creek.

McAllister Creek Basin: Regional mitigation in McAllister Creek will occur when Olympia transfers current surface water withdrawal of up to 21,969 afy from McAllister Springs to the new McAllister Wellfield. The change will result in a net flow increase to the headwaters of McAllister Creek by between 6.7 to 18.7 cfs.

Lower Nisqually River: FERC specified minimum in-stream flows will not be affected, and are set by regulation of Alder Dam by Tacoma Power. The Nisqually Chinook Recovery Plan states that flow in the lower Nisqually mainstem is not a limiting factor to recovery. In the Yelm Creek sub-basin, Yelm will increase discharge indirectly to the creek by increasing their groundwater recharge at their Cochrane Park reclaimed water facility and will coordinate with the Nisqually Tribe on additional specific out-of-kind mitigation projects.

Lower Deschutes River: Impacts will be offset through joint regional mitigation measures, which will include in-kind and out-of-kind elements. During the river's closed period (Apr 15 to Nov 1), the cities will partially mitigate impacts by acquiring and retiring consumptive irrigation water rights. The proposed out-of-kind mitigation will offset impacts during the non-irrigation season, and will include land acquisition and habitat restoration. The cities have jointly purchased approximately 200 acres of the Smith Farm located in the upper Deschutes river basin, and have also identified several riparian and habitat projects that will be completed including: channel improvements, reestablishment of wetlands, installation of a crib-wall to prevent erosion, and planting of riparian buffers.

When the entire mitigation package is considered, the net ecological benefit to the two river basins is significant, even though mitigation does not offset all year-round impacts. However, after weighting the potential benefits and harms to the public interest, Ecology invoked a determination of Overriding Consideration of Public Interest (OCPI) per RCW 90.54.020(3)(a) in processing the applications.

To date, Ecology approved and issued permits for all six of Lacey's new water right applications and the three Olympia change applications. Yelm's new water application is currently under appeal to the Pollution Controls Hearing Board. More information is available on Ecology's website at: <http://www.ecy.wa.gov/programs/wr/swro/olyyelmilacey.html>

Continuing the Chapter's goal of reaching out across the state, we held the meeting at the Harmon Brewing Company's The Hub in Tacoma. The meeting was attended by numerous professionals in the public and private sector, including UW students who took full advantage of AWRA-WA's commitment to offer free dinner meetings to all students, made possible by the continued support of our corporate sponsors.

REVIEW OF DECEMBER DINNER MEETING: NATURAL STORMWATER MANAGEMENT SALMON HABITAT RESTORATION AND RE-FORESTATION FOR KING COUNTY'S BRIGHTWATER SYSTEM

**Talk By: Michael Popiwny, LEED, AP. Capital Project Manager, King County Wastewater Treatment Division;
Review By: Steven Hughes, AWRA-WA Section Board Member**



December's dinner meeting at Pyramid Alehouse was a great start into the holiday season. A diverse and lively group of attendees networked over beers renewing friendships and meeting new people. We then settled into dinner and an engaging presentation by Michael Popiwny, the Capital Project Manager for King County Wastewater Treatment Division, Department of Natural Resources and Parks. He oversaw the system wide architectural and landscape architectural design and construction, development of the associated art program, the development, design and construction of the mitigation program and directed the LEEDs sustainable design approach for the Brightwater system. Michael presented the issues faced in addressing stormwater management, habitat restoration, salmon recovery and the innovative approaches used to build the Brightwater Facility with the environment in mind.

Michael opened with a general overview of the Brightwater System, including the benefits of the project and its elements. Brightwater, which is located in Snohomish County north of Woodinville, opened in September 2011. The facility is located on 114 acres of property and has 13 miles of conveyance pipeline. Prior to the development, 2/3rds of the property had been occupied by an auto wrecking yard. The new waste water treatment plant addresses projected population growth in the area until about 2040, at which time further expansion is planned.

Michael discussed elements of project success. A solid problem-need statement was essential for the project; why the region needed the project, projected area growth, the need to protect the environment, and community relations and engagement of supporters with education outreach. Early in the project planning process outreach sessions engaged the community working with teachers on environmental education, and spending time out in the community helping them understand the benefits of the facility.

The main focus of Michael's talk was a 43-acre salmon habitat and reforestation project completed on the northern portion of the site (the North 40). Prior to building the treatment facility there were 11 creeks flowing through an auto yard and gravel car lots. Creating a balanced site was a key focus of restoring salmon habitat in the North 40. The innovative approach used in staging the restoration and recycling of on-site material resulted in 1,300 feet of restored stream corridor, 350 feet of new stream channel, and creation of 29,000 square feet of pond habitat. Stormwater now flows through a meandering stream habi-

tat into several treatment ponds and associated wetlands which feed into Little Bear Creek. Salmon are now returning to the streams and ponds.

Michael talked about the restoration efforts and reuse of site materials including use of more than 200 trees and root wads from the site and Route 9 construction and recycling of 15 cubic yards of compost material found on the site during excavation and grading. During site construction second growth old forest was spray irrigated to save millions of dollars in expensive stormwater treatment and provide better water quality discharge into Little Bear Creek. Open fields in the North 40 were allowed to establish for 2 years before planting of more than 22,000 native plants. There will be 10 years of monitoring as environmental system recovers. Ongoing community outreach included community plantings to get buy in and support. Michael mentioned that kids still call today and ask if they can see the trees they planted. Constructed ponds provide additional community benefit with reduced home flooding south of the North 40 while accessible open space and trails provide the public with access to see and enjoy the benefits of stream and habitat restoration on the site.

The south end of the site is another area where excavated site soils were retained and used to create geometric landforms to improve views of the facility. Michael talked how this approach in site design saved and estimated 925,000 truck miles and 37,000 truck trips if material had been removed for the site. EPA did a case study on the green construction aspects of the project and calculated the savings to be \$4 million with keeping cut fill on site.

To continue with community outreach, facility design included a regional environmental education and community center, highlighting the stormwater treatment and management system. The center has a LEEDs platinum status and uses reclaimed hot waste water to heat the floors. At the center there are two student learning labs kids use to learn about waste water treatment and the water cycle. Michael mentioned that three to 5 bus loads of kids per week visit the center participating in water quality testing and walking from station to station on forest ecology walks.

Final thoughts - Be ready to use adaptive management and negotiate with agencies to meet multiple goals on sustainable design.

Learn more about the treatment plant site online at: <http://www.kingcounty.gov/environment/brightwater-center.aspx>.

NOTES FROM 2012 AWRA NATIONAL CONFERENCE IN JACKSONVILLE

By Felix Kristanovich, WA-AWRA Section Board Member

I had the privilege of attending the AWRA National four-day Conference. The conference started with a presidential reception Sunday before the conference, where Ken Reid introduced me to the new AWRA president Carol Collier. I also chatted with Michael Campagna about organization of the AWRA conference in Portland in 2014. The conference stretched over four days in Hyatt Regency Hotel on Jacksonville riverfront. The highlights of the Conference included an enlightening dinner at the River City Brewing Company restaurant - the dinner was on the outside terrace overlooking water fountains and the river, with a live band playing all evening. We were transported to the restaurant by water taxi. Weather in Jacksonville was mild and comfortable, with temperature ranging from upper 60s to lower 80s.

Significant (and probably the best) parts of the Conference were devoted to the USGS detailed presentations on their National Hydrologic Model and Eco-Hydrology (eight sessions). There was an engaging panel discussion on linkages between stewardship and Integrated Water Resources Management (IWRM) where panel members described their experience in implementation of the IWRM in Florida, Eastern US and Western Coast. The IWRM application were further addressed in two separate sessions, one of which included the Yakima River Basin Integrated Water Resources Management Plan, the winner of the AWRA's 2012 IWRM award. Several other sessions discussed some pertinent Florida issues, such as restoration strategies for increasingly depleted Florida springs and for Floridian aquifer system, St. John's River Water Supply Impact Study, Florida's homeowner water conservation, nutrient management, social marketing, and restoration of Everglades. There were also continuously good sessions on ecosystems, water quality, wetlands, climate

change, surface water, and a prominent panel discussion on water pollutant trading, and the US Army Corps of Engineers (Corps) presentation on "WaterToolbox", a federal support toolbox for IWRM, created by the Corps for information sharing, collaboration and partnerships, technology transfer and capacity building.

The conference was well attended despite reduced participation from some of the government attendees. The conference was extremely well organized, with 60 sessions, 200 papers, and 45 interesting posters. The only conference flop was a noted absence of the keynote speaker in the very opening session; however, a substitute speaker was quickly found. It was really easy to socialize at many designated session breaks, the River City Brewing dinner, and an engaging conference lunch-on during the third day of the conference. Mr. Peter Black, a reputable hydrologist, promoted and signed copies of his latest book *Water Drops*, a combination of essays of his Public Radio Broadcasts on all aspects of water.



UW AWRA STUDENT ACTIVITIES

Christina Curtis, Student Chapter Member Liaison to Professional Chapter

The AWRA University of Washington Student Chapter held its fall kickoff meeting on Oct. 4th, 2012. The meeting attracted graduate and undergraduate students from a range of schools and departments, including the Department of Civil and Environmental Engineering, the Evans School of Public Affairs, the School of Environmental and Forest Resources, and the School of Oceanography.

The 2012-2013 AWRA student chapter officers include:

- President: Josh Finley. Josh is currently pursuing an MSCE in environmental engineering from the Department of Civil and Environmental Engineering.
- Secretary: Maria Sandercock. Maria is pursuing master's degrees from the School of Environmental and Forest Sciences and Department of Urban Planning.
- Treasurer: Ashley Mihle. Ashley is pursuing a master's degree from Evans School of Public Affairs, School of Environmental and Forest Sciences.
- Publicity: Brian Henn. Brian is a Ph.D. student in the Department of Civil and Environmental Engineering.

- Liaison to Professional Chapter: Christina Curtis. Christina is pursuing a master's degree in environmental engineering from the department of Civil and Environmental Engineering.
- Webmaster: Mark Raleigh. Mark is pursuing a doctorate in the Department of Civil and Environmental Engineering.

The chapter hosted a screening of the documentary **Sound and Vision** on November 29th, 2012, with 11 students attending. The chapter is planning on hosting a documentary screening each quarter; future features include **Last Call at the Oasis and Frontline's Poisoned Waters**. Other future events include the annual student-professional mixer, infrastructure site visits, volunteer field days and a snowshoeing trip in February.

More information of the UW Chapter of the American Water Resources Association is located on our website: <http://students.washington.edu/awra>.

2012 – 2013 FELLOWSHIP AWARDS ANNOUNCED

Stan Miller, AWRA-WA Section Board Member

At their regularly scheduled meeting on December 4, 2012, the board of the Washington State Section of the American Water Resources Association finalized the selection of the 2012 -2013 Student Fellowship Award winners. This year both winners are students at the University of Washington and are members of the AWRA Student Chapter.

Susan E. Dickerson-Lange is working toward a PhD degree studying the dissertation topic: "Investigating the effect of forest characteristics on snowpack accumulation and ablation in mountain watersheds."

Katrina J. Mendrey is pursuing a MS degree following two areas of study. Both projects concern using organic materials as soil amendments to improve soil and water quality.

The first project considers ways of optimizing bioswale soil mixes used in green infrastructure systems designed for managing urban stormwater. Using locally available resources Mendrey hopes to develop a replicable soil mix that will maximize pollutant removal and hydraulic conductivity while limiting nutrient losses thus improving water quality and reducing runoff. The design of this study is centered on finding a ratio of P to Fe and Al oxides in soil

mixes which can serve as a protocol for preventing P losses in bioswales and hence eutrophication in freshwater downstream. This is a multi-faceted project which she hopes to enhance with a long-term demonstration garden pending appropriate resources.

The second project looks at metal uptake by Douglas-firs treated with biosolids and metals salts.

Both students are slated to provide summaries of their work for the March issue of this newsletter.

This year's winners were chosen from a slate of seven applicants. Five applications were received from the University of Washington and one each from Central Washington University and Eastern Washington University.

With completion of this year's fellowship selection, applications are now being accepted for the 2013 – 2014 fellowship. Students enrolled in a graduate program in water resources at a Washington College or University are invited to submit an application for the fellowship. The closing date for applications for the 2013 – 2014 academic year will be at the end of October 2013. Further information on the Fellowship and application materials are available on the State Chapter website.

JANUARY 29TH DINNER MEETING: *CURRENT ISSUES IN EMERGENCY MANAGEMENT WITH A FOCUS ON SUPERSTORM SANDY, UW AWRA STUDENT MIXER*

Featuring Mr. Bob Freitag, CFM, Senior Instructor and Director of the Institute for Hazards Mitigation Planning and Research at the University of Washington

Come support our student chapter on January 29, 2013 and get to know up and coming professionals in our field as well as other members of the WA-AWRA. The Student Mixer will include a social hour with drinks and hors d'oeuvres followed by presentation by **Bob Freitag** on Emergency Management with a Focus on Superstorm Sandy. I hope you can join us!

ABSTRACT: Bob will be discussing current issues in emergency management focusing on Superstorm Sandy and the aftermath from the storm. Important issues in emergency management that he will address include:

- Climate change and emergency management
- What does resiliency mean to practitioners
- What does recovery mean
- Water and our Constitution
- Religion and emergency management or faith-based planning

LOCATION:

Univ. of Washington Waterfront Activities Center, Seattle;
<http://www.washington.edu/ima/wac/>

More information and registration information is available on our student chapter website:

<http://students.washington.edu/awra/>

REGISTRATION: Social hour begins at 6:00 PM. Dinner will be at 6:30 PM followed by the presentation at 7:30 PM. The Student Mixer is free for WA-AWRA Members and students. If not a member of WA-AWRA, please consider joining! The WA-AWRA membership renewal form may be found at: www.wa-awra.org.

SPEAKER BIO:

Bob Freitag is Director of the Institute for Hazards Mitigation Planning and Research, and Affiliate Faculty at the Univ. of Washington (UW). The Institute promotes hazards mitigation principles through courses, student intern opportunities and research. He is coauthor of "Floodplain Management: a new approach for a new era" (Island Press 2009). Bob was past Director of the Cascadia Region Earthquake Workgroup (CREW). Before coming to the University, he had a 25-year career with the Federal Emergency Management Agency (FEMA) serving as Federal Coordinating Officer (FCO); Public Assistance, Mitigation and Education Officer. Prior to FEMA he was employed by several private architectural and engineering consultant firms in Hawaii and Australia, and taught science as a Peace Corps Volunteer in the Philippines. Freitag received his Master of Urban Planning degree from the UW.



WA-AWRA FEBRUARY 26TH DINNER MEETING: GLOBAL SANITATION AND WATER SUPPLY: LINKING AID, TECHNOLOGY AND LESSONS LEARNED TO DELIVER DECENTRALIZED SOLUTIONS THAT WORK INTERNATIONAL COMMUNITIES AND IN THE UNITED STATES

Featuring: Pam Elardo, President, Living Earth Institute; Kirk Anderson, Director of International Programs, Water 1st International and Carl Hensman, Ph.D, Program Officer – Water, Sanitation & Hygiene, Bill and Melinda Gates Foundation.

Please join us at Pyramid Alehouse as we invite local non-profit organizations that deliver aid globally in water supply and sanitation to a panel discussion. While the Washington Section of AWRA typically addresses local water resources issues, we acknowledge the great work being done abroad and are excited to provide our membership with an opportunity to learn about accomplishments and get involved beyond the border of our state. Our guests will share their missions, current work, challenges and solutions being developed to bring clean water to international communities. The discussion will also touch on the innovations being developed for international aid that can inform improved management in the U.S.

Living Earth Institute

The Living Earth Institute (LEI) is a Seattle-based non-profit 501(3)(c) organization founded in 1999 to aid international communities in developing sustainable water resources. Our primary focus is the development of water supply and sanitation projects; however, through experience, we know that in order to make these projects sustainable, we must take a holistic approach. This means that we work with the community to implement income generation training, micro-lending programs, literacy classes, hygiene education, and other programs to meet community-defined needs.

Water 1st International

Water 1st International is a Seattle based non-profit with the mission of helping the world's poorest meet their most basic need: safe water. We work with poor communities to implement water supply, sanitation (toilets), and hygiene education projects. Since 2005, we have raised over \$7.5 million which has funded 726 projects serving 82,105 people. We hope 2013 is the year we reach the 100,000 beneficiaries mark!

Bill & Melinda Gates Foundation

Guided by the belief that every life has equal value, the Bill & Melinda Gates Foundation works to help all people lead healthy, productive lives. In developing countries, it focuses on improving people's health and giving them the chance to lift themselves out of hunger and extreme poverty. In the United States, it seeks to ensure that all people—especially those with the fewest resources—have access to the opportunities they need to succeed in school and life. Based in Seattle, Washington, the foundation is led by CEO Jeff Raikes and Co-chair William H. Gates Sr., under the direction of Bill and Melinda Gates and Warren Buffett. In 2011, the Water, Sanitation & Hygiene program initiated the Reinvent the Toilet Challenge to bring sustainable sanitation solutions to the 2.5 billion people worldwide who don't have access to safe, affordable sanitation.

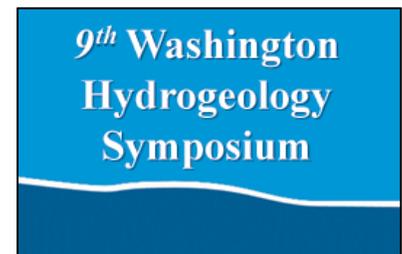
REGISTRATION: Please pay online at www.waawra.org or by check (payable to AWRA-WA Section) with your Name, Organization, Phone, Address and Email to: AWRA-WA, PO Box 2102, Seattle, WA 98111. Students FREE with sponsorship (limited quantity available). Inquiries? Contact Dustin Atchison, dustin.atchison@ch2m.com.

ANNOUNCEMENTS: 9TH WASHINGTON HYDROGEOLOGY SYMPOSIUM, APRIL 23-25, 2013, TACOMA, WA

The 9th Washington Hydrogeology Symposium will be held April 23–25, 2013, at the Hotel Murano in Tacoma, Washington. Visit the symposium website for details: www.wahgs.org. The distinguished group of Keynote Speakers highlighting the 2013 Symposium include:

- Dr. Steve Silliman– 2011 National Ground Water Association Darcy Lecturer
- Dr. Jeff McDonnell– 2011 Geological Society of America Birdsall-Dreiss Lecturer
- Dr. Susan Hubbard– 2010 Geological Society of America Birdsall-Dreiss Lecturer

This regional conference offers the opportunity to learn about best practices, enhance your knowledge of current research and connect with other professional hydrogeologists, geologists, and hydrologists from throughout the Pacific Northwest.



AWRA Events

The Washington Section of AWRA holds regular dinner meetings, including a social hour, dinner, and a speaker.

State Events – <http://waawra.org/>

January 29th Dinner Meeting – Current Issues in Emergency Management with a Focus on Superstorm Sandy, Student Mixer, UW Waterfront Activities Center, Seattle

February 26th Dinner Meeting – Global Sanitation and Water Supply: Linking Aid, Technology and Lessons Learned to Deliver Decentralized Solutions that Work International Communities and in the United States, Pyramid Alehouse, Seattle

March Dinner Meeting – To Be Determined

National Events – www.awra.org

March 25-27, 2013, Agricultural Hydrology and Water Quality II, AWRA Spring Specialty Conference, St. Louis, MO

June 24-25, 2013, Environmental Flows: a professional forum on the latest issues concerning the research, policy, and application of establishing environmental flows AWRA Summer Specialty Conference, Hartford, CT

June 27-28, 2013, Healthy Forests = Healthy Waters: How valuable are forests--whether in the city, country, or wilderness-to the management of water resources? AWRA Summer Specialty Conference, Hartford, CT

November 4-7, 2013 AWRA National Annual Conference, Portland, OR

Other Water Resources Events

USGS Tacoma Water Science Seminars:

<http://wa.water.usgs.gov/seminar/seminar.html>

Feb. 4-8, 2013 12th Annual River Restoration Northwest Stream Restoration Symposium. Skamania Lodge, WA: www.rrnw.org/

March 7, 2013, Stormwater Conference: Managing Stormwater in the Northwest, Tacoma, WA: www.nebc.org

April 6, 2013 Water for People 18th Annual Water for Life Reception, Mercer Island Community Center, WA: <http://www.pnws-awwa.org/>

April 23–25, 2013, Washington State Hydrogeology Symposium Conference in Tacoma: www.wahgs.org.

April 30, 2013, UW Water Symposium, Husky Union Building, University of Washington, Seattle. Hosted by Center for Urban Waters: www.urbanwaters.org/

May 3-5, 2013, NWGS 25-year Anniversary Symposium, The Pathway Ahead for Northwest Geosciences at the University of Washington: nwgs.org

Links To Other Local Water Resources Related Associations

Center for Environmental Law and Policy: <http://www.celp.org/>

Northwest Environmental Business Council: <http://nebc.org>

River Restoration Northwest <http://www.rrnw.org/>

Society of Inland Northwest Environmental Scientists
<http://www.spokanesines.org/>

Seattle ASCE Water Resources:
http://seattleasce.org/committees/water_resources.html

Washington Water Research Center: www.swwrc.wsu.edu/conferences.asp

Washington Hydrologic Society <http://wahydro.org>

Washington Water Trust: <http://washingtonwatertrust.org>

The Water Report: <http://thewaterreport.com/>

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The Board of AWRA-WA seeks to provide through this newsletter a full range of views on water resource issues. Opinions expressed in this newsletter do not necessarily reflect the views of individual Board members, the section membership, or their employers.

2013 MEMBERSHIP / CHANGE OF ADDRESS FORM

(⌂ please circle, as appropriate ↗)

Annual membership in the state chapter costs \$35.

Name _____ Position _____ Affiliation _____

Street Address _____ City _____ State _____ Zip _____

Phone (_____) _____ Fax (_____) _____ E-mail _____ @ _____

Please indicate if you prefer to receive your newsletter electronically.

Check if you would like to be actively involved on a committee. You will be contacted by a board member.

2013 Membership Dues: \$35.00.

Preferred Method: Pay via Paypal on our website: <http://waawra.org/>

For Checks: please make payable to **AWRA Washington Section**.

Mail to: American Water Resources Assoc. WA. Section
P.O. Box 2102
Seattle, WA 98111-2102

The American Water Resources Association is a scientific and educational non-profit organization established to encourage and foster interdisciplinary communication among persons of diverse backgrounds working on any aspect of water resources disciplines. Individuals interested in water resources are encouraged to participate in the activities of the Washington Section.

Special Thanks to Associated Earth Sciences, Inc. for word processing support on this newsletter.

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