

# The Bridge

## Testing the Waters: The WaterWorks Program and STEM Outreach in CEE

This August, seven high school students and three teachers descended on More Hall for two weeklong interactive workshops on water science education and research, as part of a new National Science Foundation-sponsored program called WaterWorks. The program was conceived by principal investigator and CEE assistant professor Mike Dodd as a means of connecting with high school

science teachers and students interested in environmental sciences and engineering, and introducing them to the important field of water quality engineering. A primary goal is to improve UW and CEE outreach to high school students with a passion for science, engineering, and the environment, and to spark their interest in pursuing careers in STEM (Science, Technology, Engineering and Math) disciplines.

WaterWorks combines classroom instruction, hands-on laboratories and field trips illustrating how science, technology, engineering and math principles are linked to engineering practice, and also introduces participants to cutting-edge research being undertaken in CEE. For example, they see advanced treatment processes being developed to better eliminate pathogenic microorganisms present in water supplies, and learn how water and healthcare disinfection practices can help prevent the spread of antibiotic resistant "superbugs."

*Continues on page 9.*



*Assistant Professor Mike Dodd and high school students on site at the regulating basin of the Tolt drinking water treatment facility. Shown left to right: Mike Dodd, Alexander Eriksson, Natalie Quek, Kristian Sweeney, Ariadna Norberg, Andrew Barton and Marina Tretton.*

## Annual Wenk Lecture Highlights Sustainable Business Practices



*Kevin Hagen  
Photo courtesy Greenbiz.com*

On November 7, students, alumni, and faculty listened to sustainable business strategist Kevin Hagen deliver the annual Edward Wenk, Jr. Endowed Lectureship in Technology and Public Policy. In his presentation, "Good News, We have to Redesign Everything," Hagen explained how sustainable business thinking is driving innovation and positively impacting companies by supporting economic, environmental and social values. He demonstrated how businesses can make the shift in thinking with practices that support the bottom line.

The Edward Wenk, Jr. Endowed Lectureship brings distinguished practitioners of civil and environmental engineering to campus to address how engineering affects public policy. Dr. Wenk was an emeritus professor in CEE and former science policy advisor to the U.S. Congress and three presidents. Through his gift, funding from his estate, and the support of his widow, Betty Wagner, we continue to share Dr. Wenk's legacy with students and the academic community. ■

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## Message from the Chair

Greg Miller

It's always an exciting time of year on campus as new students arrive, and continuing students return. In CEE, in particular, we now have students entering the program as incoming freshman (we call them Direct Freshman Admits, or DFAs); as students beginning their sophomore year (Early Admits); as juniors both from the University of Washington and community colleges (the standard departmental admission point since the late '70s); and as beginning graduate students, both M.S.C.E. and Ph.D. All together this adds up to about 300 new undergraduate and graduate students coming onboard. We have a variety of orientation and welcome sessions prior to the beginning of the quarter to help everyone get off to a strong start. It's a nice complement to the June graduation ceremonies and celebrations — all part of the academic circle of life.

The broadening of undergraduate admission pathways I've described is something that has been implemented across the College of Engineering to help recruit and retain students in their first two years of study. For example, for students considering attending the UW while being recruited by other schools, being admitted directly into a department can make our programs more attractive than if prospective students must wait to see if they will be admitted to their chosen program two years down the road. It's definitely an improvement for students; and this kind of early access is another part of the drive to increase overall access, consistent with strategic efforts to grow our program.

Related to growth, in its extended session this past summer, the Washington State Legislature allocated an additional \$3.2 million per year to the UW College of Engineering to support increased degree capacity (CEE's entire state and tuition-supported budget is about \$5 million/year.) The increase represents an important first step toward reinvestment in engineering education.

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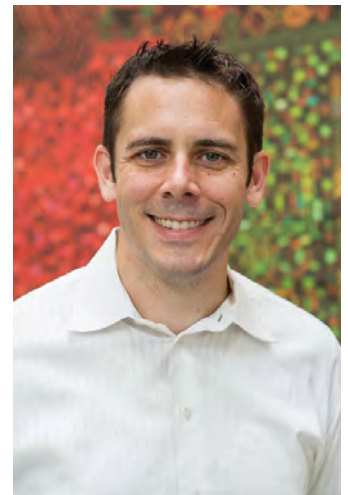
## Faculty Welcomes Engineering Systems PhD from MIT

Don MacKenzie joined the department as assistant professor this fall after earning his doctorate in Engineering Systems from the Massachusetts Institute of Technology (MIT).

Dr. MacKenzie's research focuses on the interactions of emerging transportation technologies and public policies, and their effects on energy consumption. He is currently working in three related areas: (1) modeling the charging decisions of electric vehicle drivers, and implications for electric grid loads and generation emissions, (2) assessing prospective energy efficiency and travel demand implications of vehicle automation, and (3) evaluating the effects of services such as car-sharing and online shopping on total travel demand.

Dr. MacKenzie's research focuses on the interactions of emerging transportation technologies and public policies, and their effects on energy consumption.

Previously, Dr. MacKenzie conducted clean vehicle research and advocacy efforts for the Union of Concerned Scientists in Washington, D.C., and worked as a researcher on biofuel technologies at a startup in Vancouver, Canada. He holds a master's degree in Technology & Policy from MIT and Bachelor of Applied Science in Chemical & Biological Engineering (Environmental Option) from the University of British Columbia. ■



Assistant Professor Don MacKenzie

## Awards & Accolades 2012–2013

### Faculty Honors

#### **Stensel Receives Frederick George Pohland Medal**

Dr. David Stensel, professor of environmental engineering was awarded the Frederick George Pohland Medal by the Association of Environmental Engineering and Science Professors (AEESP) and the American Academy of Environmental Engineers and Scientists (AAEES). This award honors an individual who has made sustained and outstanding efforts to bridge environmental engineering research, education and practice. Dr. Frederick G. Pohland (1931-2004) was professor at the Georgia Institute of Technology, and professor and Edward R. Weidlein Chair of Environmental Engineering at the University of Pittsburgh. Pohland's research led to fundamental advances in anaerobic processes.

#### **Stensel Elected to Washington State Academy of Sciences**

Dr. David Stensel, professor of environmental engineering, was recently elected to the Washington State Academy of Sciences. The academy provides expert scientific and engineering analysis for policy makers, and works to increase the role and visibility of science in the state. The new members, selected based on their achievements, were inducted during the academy's sixth annual meeting in Seattle bringing the academy's total membership to 206.

#### **Neumann Receives DOE Early Career Research Award**

Dr. Rebecca Neumann, assistant professor of environmental engineering was selected by The Office of Science of the U.S. Department of Energy (DOE), for the 2013 Early Career Program award for her proposal titled "Methane Oxidation in the Rhizosphere of Wetland Plants." The award recognizes the development of individual research programs by outstanding scientists early in their careers, and sparks research in the disciplines supported by the DOE Office of Science.

#### **Eberhard, Stanton, Haraldsson Receive 2013**

##### **Charles C. Zollman Award**

CEE faculty members Marc O. Eberhard, and John F. Stanton, professors of structural engineering, and Olafur S. Haraldsson, M.S. '11, received the Precast/Prestressed Concrete Institute Charles C. Zollman award. This award recognizes a paper they co-authored, "Accelerated Bridge Construction in Washington State: From Research to Practice," published in the PCI Journal (Fall 2013). The paper was cited as "worthy of special commendation for its merit as a contribution in advancing the state-of-the-art of precast and prestressed concrete." The work will also be translated to appear in the Japanese Concrete Institute Concrete Journal.

#### **Mark Hallenbeck Receives Lifetime Achievement Award**

Mark Hallenbeck, Director of the Washington State Transportation Center (TRAC) at the University of Washington and Associate Director of PacTrans, was recently honored by the Washington State section of the Institute of Transportation Engineers (ITE) with its 2013 Lifetime Achievement Award. ITE President Jim Ellison presented the award and thanked Hallenbeck for his contributions to improving transportation in the region.

### Student Honors

#### **Chris Frans Awarded 2013 Ronald and Mary Nece Fellowship**

Doctoral student Chris D. Frans, M.S. '11, was awarded the 2013 Ronald and Mary Nece Fellowship, which offers financial support to UW graduate students studying water engineering. Frans is studying the role of climate change on glacier-fed streams in North and South America. His early work focused on the joint role of climate and land use change in the Upper Mississippi River basin.

#### **CEE Graduate Jenna Forsyth Receives First Place MWH/AEESP MS Thesis Award**

Jenna Forsyth, M.S. '12, has received the first place MWH/AEESP MS Thesis award for her work on "Optimization of Aqueous Chlorine Photochemistry for Enhanced Inactivation of Chlorine-resistant Microorganisms" under advisor Michael Dodd, assistant professor of environmental engineering. This annual award recognizes the two most outstanding M.S. theses contributing to the advancement of environmental science and engineering.

#### **CEE Graduate Students Named 2013 Community of Innovators Awardees**

Mohammad Malakoutian, Ph.D. '12, received the Student Innovator: Teaching Award. Mark Raleigh, M.S. '09, Ph.D. '13, received the Dean's Award. The Community of Innovators Award acknowledges the extraordinary efforts of the college's teaching and research assistants, staff, and faculty members.

#### **Greenroads Recognized by President Obama's "Champions of Change" Program**

Greenroads was honored by the White House Champions of Change Program for Transportation Technology Solutions for its unique rating system designed to certify sustainable roadway and transportation projects. Representing the Greenroads team at the ceremony were Steve Muench, associate professor of construction engineering and Greenroads treasurer; Jeralee Anderson, M.S. '08, Ph.D. '12, executive director; Craig Weiland, M.S. '08, project engineer; and Freeman Anthony, lead technician. Champions of Change highlights the stories of people and organizations across the country who are building an 'America to Last' with projects that benefit their communities.

#### **CEE student Kevin Tsuchida Awarded Bonderman Travel Fellowship**

Kevin Tsuchida, an undergraduate in the UW Honors Program, was awarded a highly selective Bonderman Travel Fellowship. The fellowship, established in 1995, aims to expose students to the intrinsic, often life-changing benefits of international travel. Fellows embark on solo journeys of eight months or longer that take them to at least two regions and six countries across the globe. ■

## Reducing Nitrogen and Pathogen Loading to Puget Sound Waters

Excess nitrogen loading can lead to nuisance algal blooms and fish kills, and often contaminates groundwater drinking water supplies. On-site water treatment systems (OWTS) can be a major source of excess nitrogen and pathogens in environmental systems. Currently several regions of Puget Sound suffer from excessive algal production, and resultant low dissolved oxygen (DO) concentrations. Shoreline shellfish contamination from human and animal waste sources is also a very widespread problem in this region.

CEE professors David Stensel and Michael Brett, with collaborators John Eliasson and Lynn Schneider of the Washington Department of Health, are leading research to develop non-proprietary technologies for nitrogen removal from OWTS discharges. Three technologies were tested, and one in particular achieved both excellent nitrogen removal (> 90%), as well as superlative fecal bacteria removal (> 99.9%).

Conventional OWTS consisting of a septic tank, followed by a drainage field for further treatment and disposal, have a limited ability to remove nitrogen. Depending on the location, OWTS discharges can affect water quality leading to unacceptable nitrate levels in drinking water sources and eutrophication (over-enrichment of water by nutrients) in surface waters. Eutrophication often leads to lowered DO concentration levels detrimental to fish survival. Although marine circulation is the primary source of nitrogen in Puget Sound, chronically low DO in some areas suggests that nitrogen loading should be reduced wherever possible. Because residential on-site sewage systems are a major source of nitrogen in some areas, OWTS that go beyond the traditional septic tank-drainage field in removal are needed.

A number of system designs have been put forward for nitrogen removal in OWTS, but many have been unreliable, difficult to maintain and operate, reliant on chemical additives and costly. Residential OWTS for nitrogen removal that

| Parameter          | Vegetated RGF | Enhanced RGF | RGF + Woodchip |
|--------------------|---------------|--------------|----------------|
| Influent TN        | 49            | 49           | 49             |
| Effluent TN        | 15.0          | 8.6          | 4.0            |
| Percent TN removal | 69%           | 82%          | 92%            |
| Effluent NH3-N     | 4.1           | 6.8          | 0.5            |
| Effluent NOx-N     | 9.5           | 0.6          | 2.4            |
| Effluent Org-N     | 1.5           | 1.2          | 1.1            |

Table 1. Average performance from 12-month testing program of passives onsite nitrogen removal systems (from 12-Month Avg. of 49 mg/L). All concentrations are mg Nitrogen/L.; the project's main treatment objective was to produce an effluent TN concentration below 20 mg/L, Washington State technology-based standard for onsite nitrogen removal

are simple, have minimal mechanical equipment, and do not require daily chemical dosing are needed. The team focused on meeting these requirements in developing non-proprietary technologies. Professor Brett explained, "Most nitrogen removal technologies come with some sticker-shock just to pay for the designer's ability to harness their understanding of nitrogen biogeochemistry." Emphasizing non-proprietary design means that anyone may use the technology free of charge.

Cost-effective nitrogen removal in OWTS requires engineered treatment processes that use biological methods for nitrogen removal. Biological nitrogen removal combines an aerobic biological nitrification step in which ammonia is oxidized to nitrate by autotrophic bacteria; and an anaerobic biological denitrification step in which nitrate is reduced to nitrogen gas by heterotrophic bacteria. The team predicted that OWTS biological removal could be improved with the addition of a woodchip bed.

Three passive nitrogen removal systems were tested using a recirculating gravel filter (RGF) for nitrification, installed and operated over 14 months at the City of Snoqualmie, WA Water Reclamation Facility (WRF). Of these approaches "One was clearly the winner and that is the technology that the Washington Department of Health is most likely to recommend," said Brett. "The next step in this technology development is actual field trials." Currently, the Hood Canal Salmon Enhancement Group, based in Belfair Washington, has plans to construct four OWTS in the Hood Canal basin to test these technologies with installation scheduled for spring 2014.

Special credit goes to Crystal Grinnell and Stephany Wei who carried out these research projects as part of their graduate studies at UW. Their MSc theses describing this research are available upon request. ■

Noctiluca zooplankton bloom courtesy Washington State Department of Ecology



"Algal blooms are a natural part of aquatic ecosystem function, and are in most cases beneficial because they serve as the basis for aquatic food web production. However, excess nutrients may cause nuisance algal blooms severe enough to deplete deep water oxygen faster than it can be replenished by natural mixing and circulation, resulting in hypoxia and even fish kills—frequently referred to as 'dead zones.' As land use intensifies and the climate warms, the extent of coastal dead zones seems to be increasing."

—Professor Michael Brett

## Region's Infrastructure the Hot Topic in COE Lecture Series

Every fall, the College of Engineering hosts a public lecture series in partnership with the UW Alumni Association. This year's series held in October and November focused on the State's transportation infrastructure. CEE chair and professor Greg Miller, '80, joined former State Secretary of Transportation Paula Hammond to kick off the series with "Failing Grades to Future Systems." His talk focused on how the region's current infrastructure was conceived and built, and examined needed policy, funding, and innovation moving forward. Professor John Stanton's second lecture in the series examined lessons learned in bridge engineering and the major technological breakthroughs that have led to dramatic shifts in design and construction. On November 14, Matthew Preedy, '92, deputy program administrator of the Alaskan Way Viaduct Replacement Program, Washington State Department of Transportation, discusses the new State Route 99 corridor through Seattle.

This lecture series is free, but registration is required. Register at [UWalum.com/engineering](http://UWalum.com/engineering) or call (206) 543-0540. ■



Photo courtesy of WSDOT.

*Bertha, the world's largest tunneling machine, began digging the SR 99 tunnel beneath downtown Seattle this summer, and is slated to complete tunneling in late 2014.*

## PhD Alum Aids Faculty and Honors Professor Dale Carlson



Kirk Willard

When you ask Emeritus Professor Dale Carlson what he remembers most about former student Kirk Willard, Ph.D., '69, he says, "Kirk was always helping someone." While a student in CEE, he spent tireless hours tutoring kids in math and science and encouraging them to explore engineering.

Willard continues to help, and recently established the Dale A. Carlson Endowed Faculty Support Fund in Civil and Environmental Engineering in honor of his Ph.D. advisor and favorite professor. The fund is designed to help the department employ guest lecturers and visiting faculty to enrich instruction in a cost-effective way. Students and faculty alike will benefit by having experts from industry and leaders in the profession in CEE share their expertise. In addition to the endowment, Willard provided funds to support outreach to community college students and members of industry, enabling them to attend lectures, access lectures online, and tap into other instruction resources.

When asked what inspired his generous gifts, Willard suggested that in order to gain control of rising university

costs and retain high-impact faculty, CEE should consider using additional lecturers and qualified members of industry to allow more in-class teaching of fundamentals. He went on to praise his mentor, saying that Dale's talent for carefully listening to student issues backed by relevant suggestions and support "became a hallmark appreciated by scores of students." Professor Carlson's patient teaching, assistance and insightful challenges were

While a student in CEE, Kirk spent tireless hours tutoring kids in math and science and encouraging them to explore engineering.

extended to the many graduate students he supervised. "I can think of no one who better exemplifies teaching with clarity and outside-of-class support than Dale," said Willard.

If you would like to join Willard in honoring Professor Carlson, and support instruction in the department, please consider making a gift to the Dale A. Carlson Faculty Support Fund. Please contact Megan Ingram at (206) 685-1378 or [mkingram@uw.edu](mailto:mkingram@uw.edu). ■

## 2012-2013 CEE Annual Report

### Building for Growth

With demand for civil and environmental engineers in Washington State and across the nation continuing to grow, UW CEE must be a leader in producing more engineers. We have an obligation to not only make our degree programs available to **more students**, but to ensure we also deliver the **highest quality education**. After all, these are the students who will address the infrastructure and quality-of-life issues of our future.

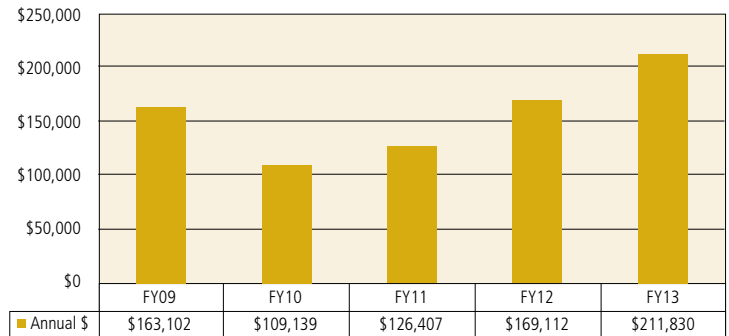
As in all endeavors of import, partnerships beyond the norm are imperative to drive change. To this end, the department has set out to increase our outreach to the community in order to inspire more investment and a deeper understanding of the impact those investments make.

In this, our inaugural Annual Report of contributions, we aim to illustrate the great work we're accomplishing together to benefit the future of civil and environmental engineering.

### Results: 2012-13 Giving Overview

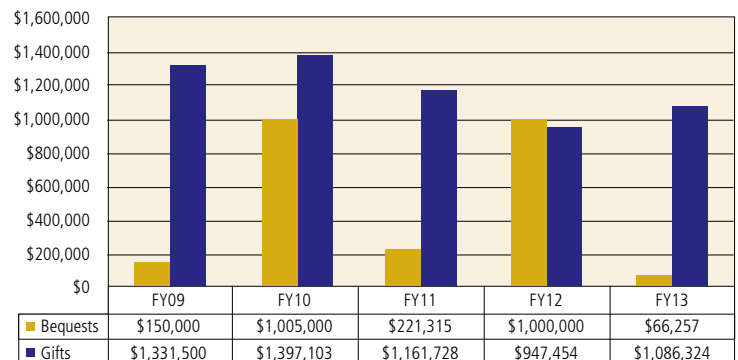
In Fiscal Year 2013 (July 1, 2012 – June 30, 2013) CEE saw a continuing trend of increasing alumni

Annual Giving to CEE, FY09 - FY13



Includes all gifts under \$25,000 to CEE directed to both operating and endowed funds. The majority of annual gifts are directed to the CEE Strategic Support Fund, which benefits a wide range of needs within the department used at the discretion of the chair.

Overall Giving to CEE, FY09 - FY13



Gifts = Gifts of all size, private grants, pledges and matching gifts. Bequests = Realized bequest gifts from donors' estates. Since bequest gifts are difficult to predict, it is beneficial to look at fundraising results without them included. Our current five-year total giving average is more than \$400k above where it was prior to the launch of the last campaign (ending FY08).

### CEE 2012-2013 DONOR ROLL

Civil & Environmental Engineering is grateful for the many alumni, friends and organizations who demonstrate their commitment to engineering education through financial support. The following list recognizes all donations made to the department in the last fiscal year (July 1, 2012 - June 30, 2013). Accumulative giving to the department and gifts made to other departments are not listed. If you have questions about your giving history, please contact Katie Bunten, 206.616.8310 or frish@uw.edu.

### DONORS (\$1-\$999)

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Kathleen Jones & Donald Perovich  
Aaron Kam  
Carl Kassebaum & Corliss Perdaems  
Kris Kauffman  
Kenneth & Renee Kaufman

# 14.7%

CEE Alumni Giving to the UW

# 6.1%

CEE Alumni Giving to Engineering

# 3.3%

CEE Alumni Giving to CEE

or less) continued to rise, in terms of dollars and donors. CEE Alumni involvement in giving to the department remained at 3.3-percent.

## Impact: Highlights of Private Support

There are many ways private support impacts the department. From scholarship endowments to special

and community investment. Total giving was up in FY13 at \$1.08M and the overall number of donors to the department grew from 418 to 468. Annual giving to the department (gifts of \$25,000

event assistance, our donors support everything we do. Here are some highlights of how your gifts made a difference in the 2012-13 academic year:

### More Hall renovations

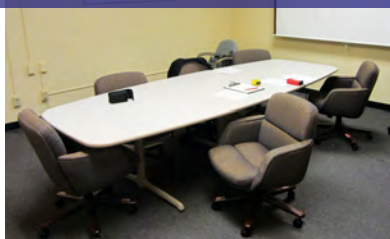
Thanks in part to private support, the department was able to make much-needed improvements to More Hall. Common gathering space, a conference room and classrooms were improved; 5 spaces in total. New flooring, updated wiring and multifunctional furniture make spaces more flexible and better able to serve the evolving needs of faculty and students. A newly minted student lounge on the second floor of More Hall provides a quiet collaboration and study space.

### Support for student competitions

More than \$45,000 came to the department last year from individuals and industry partners to help

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More Hall before renovations



More Hall after renovations



## DONORS (\$1-\$999)

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Ming-Jiun & Shu-Shen Wu  
John & Karen Yearsley  
Jeffrey & Holly Zahler

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support our ASCE Steel Bridge and Concrete Canoe teams. Thanks to the tremendous support from the community, CEE's turn at hosting the AISC/ASCE National Steel Bridge Competition was a resounding success and showcased our department.

### Access fund established

Last fall, CEE received a generous gift from Bill, '68, M.S.C.E. '71 and Donna, M.P.H. '91 Dehn, to establish the Undergraduate Education Access Fund in Civil & Environmental Engineering. This endowed fund supports access for students who are the first in their families to attend college, further enabling growth of the next generation of engineers.



### Opportunity: CEE Strategic Support Challenge

Last spring, CEE announced a matching gift challenge to encourage new and upgraded support for the CEE Strategic Support Fund. Matching monies are still available and offer a great opportunity to invest in the department's success and leverage your gift for greater impact.

### Matching Gifts to Meet Needs

Gifts to the CEE Strategic Support Fund help the department meet the growing need for qualified engineers by increasing access to CEE degrees. Gifts to this fund provide supplemental scholarship and fellowship resources; enhance and expand classroom and lab space; assist in the development of curriculum models that give students streamlined access to required coursework; and support recruitment of excellent faculty to serve our growing, top-notch student body.

### Challenge Details

Matching funds are available for any first-time gift or three-year pledged gift of \$500 or more.

| Gift Type                       | Your Gift | Match Provides |
|---------------------------------|-----------|----------------|
| New gift of \$500+              | \$1       | \$1            |
| Three-year pledge of \$500/yr+* | \$1       | \$2            |

\*Match made only in year one of pledge.

If you would like to participate in the CEE Strategic Support Challenge, please contact Katie Bunten, Assistant Director of Advancement, at (206) 616-8310 or [frisb@uw.edu](mailto:frisb@uw.edu). Or visit <http://www.ce.washington.edu/alumni/challenge.html> for more details and to make a gift online. ■

### DEAN'S CLUB (\$1,000-\$1,999)

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## Testing the Waters *(continued from page 1)*

Teachers taking part in the first workshop spent the week learning about methods of water analysis and treatment, and developing a classroom instructional unit in collaboration with Dr. Dodd, Dr. Jim Borgford-Parnell (Assistant Director of the UW Center for Engineering, Learning and Teaching), and CEE graduate student Peiran Zhou. The resulting instructional unit — designed for use in high school science classrooms — explores basic physical, chemical and biological principles through lectures and labs, and emphasizes how these principles apply to local and global water supply and treatment challenges.

With the help of students participating in the second week of the program, components of the instructional unit were then successfully pilot-tested. Through these and a variety of lab exercises, the students learned how water and wastewater treatment processes help to protect the environment and public health. Students also enjoyed a practical tour of Seattle's Tolt drinking water facility and King County's Brightwater wastewater facility. Apart from a great learning experience, the 11th and 12th graders mingled with students, faculty, and staff on campus, meeting those who may soon become their mentors.

Dodd views the summer's workshops as a big success. "WaterWorks is off to a great start," Dodd said. "We've been able to achieve all of the goals we set for this first year and have had a lot of fun in the process." Thanks to support from the NSF, the program is slated to continue for at least four more years. Dodd is looking even further ahead. "Considering the potential benefits for everyone involved, I am hoping that, with sufficient financial support, WaterWorks and programs like it will become a fixture of CEE outreach efforts for many years into the future."

The WaterWorks instructional unit — "Water, water everywhere, but is it safe to drink?" is available at the program website (<http://faculty.washington.edu/doddm/Personal/WaterWorks.html>). ■



*King County employee Kristin Covey explains to students how dried, processed wastewater biosolids can be used as a soil amendment or fertilizer in agriculture.*

## Message from the Chair *(continued from page 2)*

We consider it just the first step because about two-thirds of these new funds were designated for the Department of Computer Science and Engineering; the remainder was spread among the nine other engineering departments. We must continue to generate increased support beyond computer science, and that will be one of the ongoing tasks for the coming year.

While it is no secret that our region is a hotbed of high tech, aerospace, and biotechnology activities, it also turns out to be a nationally prominent location for civil and environmental engineering. According to the U.S. Bureau of Labor and Statistics, the Seattle-Bellevue-Everett metropolitan area has the fifth-highest employment of civil engineers in the U.S. in absolute numbers, and as a percentage of working population we rank second, just behind Oakland. Combined with the increasingly recognized importance of infrastructure, regionally and nationally, we definitely can make a strong case for additional future reinvestment in CEE and the UW.

Welcoming our new set of incoming students (and new faculty), the College of Engineering has a new Dean,

Dr. Michael Bragg from the University of Illinois. He started his official UW duties July 15 and is still getting his feet on the ground (no small task considering his background is in aeronautical engineering). I have already had a number of opportunities to work with him, and I am confident the general upswing that UW Engineering and CEE have experienced in recent years will continue under his watch. According to many of the common rankings, the University of Illinois, where Dean Bragg served as interim dean, is the #1 engineering program in the U.S. So he certainly has the right perspective on leading excellence.

Each autumn brings a fresh sense of excitement and anticipation for students and faculty alike, and this year the outlook is particularly positive. We will be continuing to expand alumni activities in the coming year, as well, and we hope you will join in. We still have our work cut out for us in regards to providing increased access, but the financial erosion of the past several years has finally been halted. Let the rebuilding proceed! ■



## Lessons in the Eternal City

Imagine learning engineering crouched over, walking through a 2,000-year-old aqueduct tunnel cut into the side of a cliff. The engineering is all right here: tunneling, concrete, hydraulics. Illuminated by flashlight it becomes palpable and unforgettable. This is the essence of Engineering Rome, a first-time study abroad program led by Associate Professor Steve Muench. Seventeen UW students joined Muench in Rome for the course this September. Based out of the UW Rome Center, it is one of only two engineering-focused study abroad opportunities offered by the UW (Engineering Jordan is the other).

The course draws students from civil, electrical, industrial, physics, statistics, and pre-engineering; the only

prerequisite is interest in engineering. The Eternal City easily fulfills expectations with engineering feats from ancient Roman Aqueducts to Baroque basilicas, to modern subways and sustainable life in a massive modern city.

"We spent time with some engineering basics and got a feel for both ancient and

modern Roman engineering and how the two practices often collide" says Muench. Students

went behind the scenes at the Colosseum to the underground hypogeum. During a trip to Ostia Antica, they learned about solar energy in ancient Rome and discovered the original radiant heat floors of Roman baths on a tour led by Tom Rankin (an American expat). A local group called Roma Sotterranea (literally Subterranean Rome) arranged the aqueduct excursion and a trip inside a 1,000-year-old underground tuff mine.

Of course Rome offers much more than engineering. Think of ordering your cappuccino in Italian, a hands-on professional cooking class and dancing with the owner of a Naples restaurant, or cheering on AS Roma in a soccer match. Inevitably, studying abroad is about much more than the subject at hand. It provides great perspective — a chance to see the world through a broader lens — which is something that we can all benefit from. "Bella Roma!"

To learn more about Engineering Rome 2013 and view student projects visit <http://engineeringrome.wikispaces.com> ■



*Cooking Italian. From Left to Right: Sarah Jeric, Darcy Ackers, Ai-Vy Nguyen.*



*Engineering Rome 2013 class in the shadow of the Colosseum.*

## CEE Concrete Canoe in National Competition

Last year, the UW Concrete Canoe team won the Pacific Northwest Regional Conference competition. Then they were off to the National Concrete Canoe Competition held at the University of Illinois.

The three-day event, hosted by the American Society of Civil Engineers took place in June. During the first day canoes were judged on aesthetics, cross-section, stand and display. The second day was reserved for presentations. Each team came before a panel of judges to defend their work and answer questions. Races were held on day three. The competition consists of five races: women's endurance, men's endurance, women's sprint, men's sprint, and co-ed.

Day three was the high point for student Fabia Fu racing in fine form with the "team cheering, great sportsmanship from all the schools, and the pure spirit of competi-

tion." Fu also learned a great deal talking with the other teams, seeing their creative solutions and listening to the many passionate presentations. Her verdict? "Overall, the National Concrete Canoe Competition was amazing. While we placed 16th out of 23, we learned so much from simply being there," she said, "It is one of those things I would do again in a heartbeat." ■



*2013 Concrete Canoe Team in national competition at the University of Illinois.*

## Engineering Jordan Gains Momentum

In only its second year, CEE's study abroad program, Engineering Jordan, has caught the attention of both students and outside supporters. Enrollment in the program increased from 8 to 11 in 2013; attracting students from many disciplines. This year, five CEE students were joined by others from chemical, electrical and industrial systems engineering and environmental sciences.

The program also received a boost from the local office of Brown and Caldwell Consultants. The company funded a partial student scholarship. CEE student Miriam Hacker, who received the scholarship expressed her gratitude:

"This experience was truly incredible," says Miriam.



Engineering Jordan students and faculty in front of the Water Authority of Jordan, Environmental Labs. A total of 17 students from the UW and Jordan University of Science & Technology participated in the program; an increase over last year — more than half were women.

"Having the generous support of sponsors not only helped me personally, but it also demonstrated the importance of investing in this experience. I was given the opportunity to gain a global perspective on environmental engineering and its use in society and I know it will benefit me and my career goals. The University of Washington has an amazing civil and environmental program. This study abroad program demonstrates the department's ability to extend that excellence outside the boundaries of Seattle."

Another trip to the region is currently planned for summer 2014. If you would like more information on Engineering Jordan, or are interested in sponsoring a student, contact program director, Heidi Gough at [hgough@uw.edu](mailto:hgough@uw.edu) or (206) 221-0791. ■

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—CEE student Miriam Hacker



From Left to Right: Brown and Caldwell's Tom Chapman, M.S.C.E. '05, Professor Heidi Gough, scholarship recipient Miriam Hacker, and course TA Nate Janega, M.S.C.E. '13. [Photo taken at the department's annual Spring Mixer in June 2013.]

## 50 Years in the Making: Class of 1963 Comes Home

For the first time in the department's history, alumni celebrating their 50th reunion were invited back to campus to be honored during the CEE graduation ceremony. Four members of the class of 1963 returned: Bob Betcher, Andrejs Birnbaums, Gene Grieve, and Terry Hartman. The celebrants and their spouses attended a pre-ceremony luncheon with Professors Joe Mahoney and Steve Burges and were presented with stoles of gratitude by department chair Greg Miller. The Class of 1963 then joined the Class of 2013 in the procession and graduation celebration where they heard from graduation speaker, Susan Betcher, '90. It was a memorable day for all graduates, past and present. ■



Left to right: Jan Grieve, Gene Grieve, '63, Nancy Betcher, Robert Betcher, '63, Susan Betcher, '90, Greg Miller, '90, Andrejs Birnbaums, '63, Vija Birnbaums, Terry Hartman, '63 and Carol Hartman.

**CLASS OF 1964! Save the date for your 50th Reunion: Sunday, June 15, 2014**

More Hall 201, Box 352700 Seattle, WA 98195-2700

RETURN SERVICE REQUESTED

### The Bridge

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# The Bridge

## UW Host to 2013 Student Steel Bridge Nationals



UW engineering students welcomed student teams from universities across the U.S., Canada and Mexico for the two-day competition last spring. The National Student Steel Bridge Competition (NSSBC)

was jointly organized by the American Institute of Steel Construction (AISC), the American Society of Civil Engineers (ASCE) and UW CEE. The main competition took place at the Alaska Airlines Arena on Saturday, June 1. And the UW team had a great time hosting students all over campus, from hanging out in Red Square to a joint BBQ and tug-of-war contest at Grieg Garden.

Team member Kellen Brumbaugh said of her experience: "This competition is an excellent experience for civil engineering students looking to enhance their engineering skills outside of the classroom. Students are given

minimal advice from faculty and are challenged to collaborate with each other. They work throughout the school year in phases to design, fabricate, construct and test their projects. The design phase involves getting ideas down on paper and structural analysis. Once design is approved, students get the green light to begin fabrication in their structural labs. Construction testing is the final phase in preparation for the competition. Each project is judged on construction speed, lightness, stiffness, construction economy, and structural efficiency."

In 2013 the University of Washington placed 28th in a field of 49 at Nationals and the UW bridge team is already hard at work to improve its standing. Students are looking forward to seeing everyone back at NSSBC in Akron next May. Associate Professor Jeffrey Berman is the 2014 team faculty advisor. For information, or to get involved as a sponsor or volunteer, email [uwsteelbridge@gmail.com](mailto:uwsteelbridge@gmail.com). ■



Steel Bridge teams tug-of-war at Grieg Garden.



2013 Steel Bridge team at the national competition.