

Co-Digestion with Food Waste Organics— The Next Step Towards Net-Zero Operation at GLSD

by Cheri Cousens, Executive Director, GLSD, Richard Weare, Capital Projects Manager, GLSD, Benjamin Mosher, Associate, CDM Smith, and Michael Walsh, Vice President, CDM Smith

The Greater Lawrence Sanitary District owns and operates a 52 mgd (197 ML/day) secondary wastewater treatment facility that serves a population of about 200,000 in five Massachusetts and New Hampshire communities. As was typical of 1970s-era facilities, the original Greater Lawrence Sanitary District (GLSD) facility design was based on the premise that sludge is a by-product from the liquid treatment process with no value and that the goal of sludge management is to provide for reliable disposal of this by-product. Over the nearly 40 years since the GLSD facility began operating, industry trends have steadily moved toward more sustainable approaches to biosolids management, with emphasis on biosolids beneficial use rather than sludge disposal. Furthermore, creative applications of innovative technologies are now capable of achieving sustainable results and improving energy recovery and efficiency. The District continues

to be a leader in this trend to more sustainable wastewater plant operations.

Focus on Organics

Like many states, the Commonwealth of Massachusetts has recently implemented a ban on the disposal of Source Separated Organic (SSO) food waste by incineration or landfill disposal. This new regulation resulted from a Solid Waste Master Plan completed by the MassDEP in 2010. Statewide goals identified in the Solid Waste Master Plan included, among other items, developing the infrastructure to support an organics diversion process by developing 250,000–300,000 tons (225,000–275,000 metric tons) per year of processing capacity.

GLSD Moves Toward Co-Digestion and Net-Zero Operation

The District operates one of the few anaerobic digestion facilities in New England, with digester gas used as the primary fuel for a thermal

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President's Report

by Brian A. Morgan, Esq., Legal Counsel, CDM Smith Inc.



For twenty-three years, BSCES has hosted an annual model bridge competition. This event is organized by the Public Awareness & Outreach Committee and took place on February 4th. As president, I served as a judge for the competition. This competition serves the important role of introducing middle and high school students to the world of engineering. During the months leading up to the competition, BSCES assigns mentor role models to the participating schools

to assist the students to gain a better understanding of engineering principles and future career opportunities. I was very impressed by the bridges that were built this year. Over fifty model bridges were load tested and the bridge that held the most weight (over 90 pounds) was built by a group of students from Lynn Vocational and Technical High School. I would like to thank Public Awareness & Outreach Committee members and all the mentors that worked with the students to ensure that this program was a great learning experience.

UPCOMING EVENTS

T&DI Boston Chapter Ice Skating
February 23, 2017

BSCES Professional Engineer Refresher Course
February 28 – April 21, 2017

ASCE and BSCES Sponsored Seminar
March 9–10, 2017

105th Annual Student Night
March 28, 2017

SEI Boston Chapter Site Tour
April 7, 2017

2017 John R. Freeman Lecture
April 13, 2017

BSCES Program Committee Sponsored NHI Training
April 24–28, 2017

[Further Details Inside](#)



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I am excited to report that BSCES continues to set the bar high within ASCE! BSCES' Younger Member Group recently received the 2017 Eastern Region Younger Member Council Award for Outstanding Younger Member Group Project for their 2015 Holiday Meal Drive. This award was given in recognition of the contributions that the Younger Member Group made to impact the local community. The award was presented at the 2017 Regions 1, 2, 4, and 5 Multi-Region Leadership Conference on Saturday, January 21st, where Younger

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Co-Digestion with Food Waste Organics

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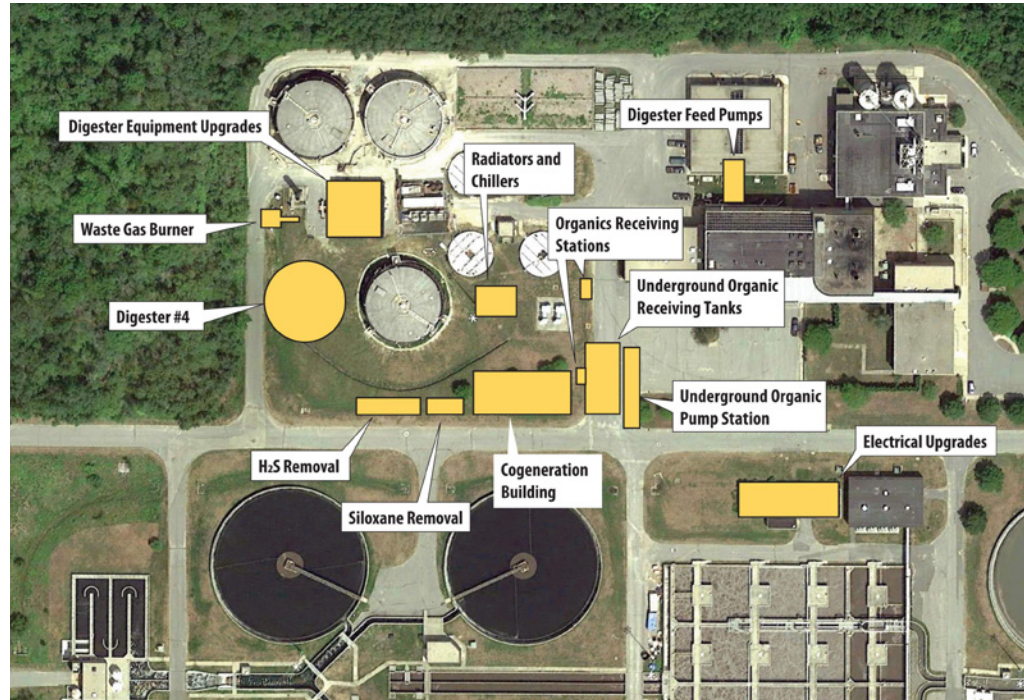


Figure 1. GLSD Organics to Energy project improvements

biosolids drying operation as well as for building and process heat. The District hopes to eventually achieve a net-zero energy goal for their wastewater treatment facility, and recognized that the recent ban on the disposal of SSO material in landfills provides an opportunity to further that goal. Specifically, the District recognized that these food waste organics can be used as supplemental digester feed to increase biogas generation at their anaerobic digestion facility, thereby increasing the generation of clean energy.

In June 2013, the District completed an Organics to Energy Feasibility Study that evaluated the efficacy of (1) expanding the existing digestion system to allow co-digestion of biosolids and food organics; and (2) adding a new biogas fired co-generation system, thereby providing a regional solution for organic waste disposal and producing renewable energy (both heat and power) for use at the facility. The study found that the installation of a fourth anaerobic digester at the facility and utilization of the excess capacity for co-digestion of food waste would improve the resiliency and reduce operating costs of the GLSD facility, and substantially reduce the District's reliance on utility-supplied power.

The Project

As identified in the feasibility study, the major infrastructure upgrades, required to allow for



Figure 2. Rendering of New Facility (Biogas Treatment Skids (left); CHP Building (right))

the receipt and co-digestion of organic food waste at the GLSD facility, include new organic waste receiving tanks, a new fourth anaerobic digester, biogas conveyance upgrades, a new biogas treatment system (hydrogen sulfide, moisture and siloxane), and a new Combined Heat and Power (CHP) system. Figures 1 and 2 show the general location of the proposed infrastructure and a rendering of the new CHP facility, respectively.

With the addition of the new infrastructure, GLSD will be able to accept SSO material for co-digestion and produce additional biogas. Biogas will continue to be used as the primary fuel for the thermal drying process and to provide digester and building heat, but the increase in

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It's Time to Make Water Infrastructure Investment a Priority

by Representative Carolyn Dykema (D-Holliston)

"When the well is dry, we know the worth of water," said statesman and founding father Benjamin Franklin.

In the wake of the extreme drought across Massachusetts this summer, Franklin's words ring truer than ever. With many cities and towns facing severe water restrictions and some forced to seek alternative water supplies, residents and communities are beginning to pay more attention to what it takes to ensure access to clean water.

This is good news, especially for those who have been concerned for some time about the state of our water infrastructure.

Largely unseen to the public, our Massachusetts cities and towns maintain over 125,000 miles of sewer pipes and 100 municipal wastewater treatment plants, in addition to thousands of drinking water wells and over 200 surface water supplies. These systems are essential to the public's access to water, yet for decades we have failed to adequately maintain them, according to 2012 findings of the state Water Infrastructure Finance Commission and a more recent report issued by state Auditor Suzanne Bump.

Not only are we lagging behind in maintenance of existing infrastructure, there are new water-related challenges that must be addressed: preparation for climate resiliency, mitigation of pollutants in storm water runoff, and compliance with increasingly stringent public health standards for lead and other contaminants.

While water infrastructure is too often "out of sight, out of mind," its effects are felt throughout our daily lives in terms of safe drinking water, fire suppression, environmental sustainability, and recreation. And there is also a growing appreciation for the role of water infrastructure

in our local and state economies. Countless jobs in the Commonwealth are directly linked to the quality and availability of water including biotechnology, agriculture, and tourism. In fact, a 2014 report by the Collins Center at UMass Boston on the impact of water infrastructure investment on the economy found that "Water and sewer systems have a much larger effect on state output than highways and other public capital stock."

All of these needs demand the public's attention and require an increased level of investment at a time when there are many statewide needs that are placing demands on limited budgets. But there is a strong case to be made for water infrastructure investment and it's our challenge and opportunity to make that case.

In 2012, after the release of the Water Infrastructure Finance Commission report, stakeholders from across the state including the Boston Society of Civil Engineers, Massachusetts Water Works Association, American Council of Engineering Companies of MA, Massachusetts Municipal Association, environmental groups, and others successfully advocated for the passage of legislation to free up additional resources for water, encourage green and innovative engineering solutions, and provide incentives for better management and planning by municipalities.

The same advocacy model can be used to address the challenges we face today.

While there is little debate about the merits of and need for new investment, real progress will require a strong and vocal statewide coalition to build public and legislative support. The engineering community, as experts, will have an important role in this effort.

The good news is that the public is likely to be receptive. A 2010 ITT Corporation survey of American voters found that 95% valued water over any other service they received and would pay more to protect access to it. Previous legislative efforts will be helpful because they have will help assure the public that new funding will be invested as efficiently as possible.

With the January 20 deadline for filing new state legislation having just passed, there will be ample opportunities to take action in the coming months. There are numerous bills filed relative to water infrastructure and each will have a public hearing on Beacon Hill, giving anyone with an interest in water an opportunity to be heard. For those who can't attend hearings, testimony can be submitted in writing. Every resident of the Commonwealth has a state Senator and Representative and I encourage you to tell them personally why these investments are important.

As we work to advance the important conversation about the need for additional water infrastructure investments, I'd like to close with the words of actress Lily Tomlin:

"I always wondered why someone didn't do something about that. Then I realized that I am somebody."

It's critical that each of us make our voices heard. Together we can help protect our precious, life sustaining water resources for our children and beyond.

Representative Carolyn Dykema (D-Holliston) was the House co-chair of the legislative Water Infrastructure Finance Commission and has served on the Joint Committee on the Environment, Natural Resources and Agriculture since 2009. [Click here for more information on the Water Infrastructure Finance Commission and a copy of the final report.](#)



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Slow and Steady Wins the Race: How Wareham Fire District is Implementing an Asset Management Program for their Water System

by Cris Perez, Asset Management Technical Leader, Kleinfelder

The Wareham Fire District is a public water supplier of over 580 million gallons of water annually to over 20,000 customers in the Town of Wareham. The District began its Asset Management Program in 2005, by hiring Kleinfelder to develop their GIS and adopting VUEWorks as their water system asset management software. The motivation for the District was to enhance their effectiveness, continue serving their customers with good quality of water and embrace and promote environmentally sound practices. The District wanted to ensure that their investments in the system were optimal and that the 170 miles of pipe, 20 facilities and thousands of valves, hydrants and water meters were managed efficiently.

In the beginning, all records were paper based, and the efforts conducted in the early years focused on developing a solid asset register, which was tracked in GIS. The document-linking capability of the system, which allowed the user to quickly retrieve file such as tie cards or record drawings over the web from the mapping interface, proved to be a high-return-on-investment feature that saved the District staff time and effort on their daily operations.

From 2006 until 2016 the District allocated funds yearly to keep steadily building their asset management program. With an annual budget of about \$50,000, the District could cover software fees and keep improving the system with customized tools and incorporating additional asset classes. During that period, together the District and Kleinfelder implemented a work order management system, GASB34 reporting tools and a risk framework. The program also kept up-to-date with technological changes such as moving from shapefiles to ArcSDE and ArcGIS Server and implementing the use of tablets for field editing and managing work orders as a part of District staff daily routine.

In 2016 the District applied for the MassDEP Water Infrastructure Assessment and Planning (WIAAP) Grant (Round 2) which awarded \$40,000 to municipalities invested in asset management, to help them with their capital planning and project prioritization efforts. The District was to use the grant money (plus their 33% match) to put together an asset management and fiscal sustainability plan, develop their levels of service, continue with the VUEWorks system

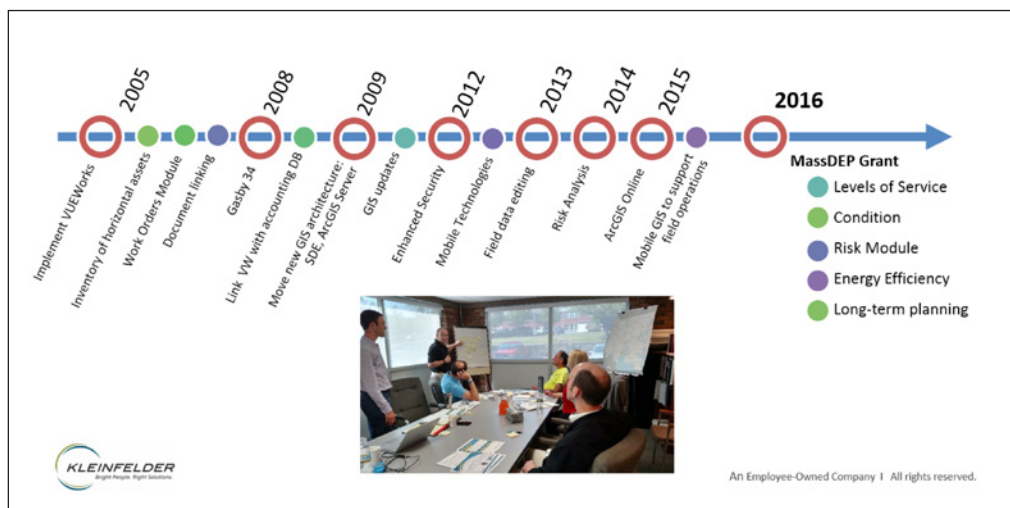


Figure 1. Timeline of The District's Asset Management Implementation. Red Circles Mark Yearly Milestones.

set-up, and conduct training for their staff. The District was awarded the grant, and worked with Kleinfelder, successfully completing the project by the end of August of 2016. Right around that time, MassDEP released the RFP for Round 3 of the WIAAP Grant.

The first grant had given The District the means to make a significant leap forward with their asset management efforts. By August of 2016, the team was very excited about the results and outcomes of the project, and felt energized to keep moving along the asset management path, which as we know, can be data intensive and technically challenging. The team felt that the momentum gained during the project should be invested well, and applied the lessons learned and insights gained in 2016 in the application for Round 3 of the WIAAP Grant. This time the focus was to develop the software for the water system facilities, and bring the work order management system to the next level. Re-designing the work order module will allow the District to accurately assess their levels of service and regulatory compliance

goals on a regular basis, in addition to enhance their daily workflows. MassDEP again awarded the District a \$40,000 grant, which was matched with \$25,000 from the District to complete the project. The project will start in February of 2017.

Infrastructure, particularly water and wastewater systems, is complex, composed of thousands of assets, and subject to many regulations and customer expectations. Implementing an asset management system for these types of assets, in a way that works well with an organization's culture and resources, is not easy and it takes time. The Wareham Fire District has embraced and succeeded in their asset management implementation with a tight budget, but with persistence and consistency since 2005. Like the steady stream of water that over time shapes the rock, the District's proactive approach of constant, steady investment, paired with taking advantage of great opportunities such as the two MassDEP grants, makes the Wareham Fire District an example for many communities to follow.

Younger Member Group Needs Volunteers

Monday, May 1, 2017

New England Center and Home for Veterans

17 Center Street, Boston, MA

The BSCES Younger Member Group will be volunteering at the New England Center and Home for Veterans on Monday, May 1st, 2017. We will provide a team of 5-7 volunteers to serve dinner to nearly 400 veterans. If you would like to participate, please email bscesymg@gmail.com.

Delivering Stormwater Solutions within Limited Area to Protect Local Wetlands

by Gina Carolan, COO & Director of Marketing, Cultec, Inc.

The Preserve at Canton project, a 65-acre housing development, centrally located between Boston and Providence in Canton, Massachusetts was recently completed. The Preserve at Canton is a community of 28 homes surrounded by the shadows of Great Blue Hill with views of Balance Rock historic site, and was frequently visited by Paul Revere, giving it a touch of New England history. The homes have been under construction since 2014, and were finished in fall 2016.

In its early stages, the project was designed as a conventional subdivision of 28 lots, about one-acre each, with detention ponds to hold stormwater runoff. However, as the project progressed forward from its conceptual phase, it became apparent that in order to comply with the Town of Canton's subdivision rules and regulations and stormwater regulations, the project team needed to consider a "cluster" layout of the subdivision and modify the stormwater management system. As a solution, a residential development plan was proposed that would allow for smaller lots with less frontage configured in a cluster design. Under this proposed plan, only 25 of the 65 total acres would be developed, leaving the remaining 40 acres as undeveloped open space. Additionally, the site is surrounded on three sides by wetlands, for which providing protection became a chief concern of the project.

In order to protect these wetlands, the project team at Civil Environmental Consultants, LLC of Peabody sought to minimize stormwater runoff. Holding the stormwater in detention basins and releasing it slowly was not an option, as the runoff volume was still a potential flooding concern. Taking these variables into consideration, it became clear that, rather than a detention system, an infiltration system would be the best choice. The soil on site supported an infiltration system, and local regulations allowed this type of system to be used in this application.

The project engineer considered various stormwater systems and manufacturers and decided on



One of five CULTEC infiltration systems installed at The Preserve at Canton subdivision.

CULTEC stormwater chambers based on experience and reliability. Because it works well in small areas, CULTEC's Recharger® 330XLHD™ was chosen for this application. In order to accurately model the proposed stormwater system, the project engineer used HydroCAD® software specifically designed for modeling CULTEC chamber infiltration systems. Ultimately, the proposed system consisted of 346 CULTEC Recharger 330XLHD units in a network of five basins within an area totaling just over a 1/3 of an acre for the entire 25-acres of developed land. The infiltration systems were installed on separate lots in between houses to give future residents a larger lawn area. The installation of the system resulted in a reduction of runoff rate and volume to minimize discharges into the surrounding wetlands.

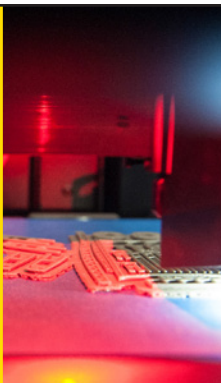
The stormwater chamber installation was completed in June 2016 without any issues and accepted by the local and state reviewing agencies. The CULTEC chambers, which were supplied by Billerica Winwater Works of

Billerica, MA, gave the project team the flexibility necessary to work around the surrounding wetlands while still accommodating the smaller lot sizes.

CULTEC, Inc., manufacturer of the Contactor® and Recharger® plastic septic and stormwater chambers, is a family-owned and operated company with experience in the drainage industry dating back to the 1950's. Introducing its Contactor and Recharger chambers to the industry in 1986, CULTEC helped begin a revolution toward using plastic construction products. Since then, several product developments and strategic alliances have made CULTEC a cutting-edge R&D-based manufacturer. The company currently offers the largest variety of chamber sizes ranging from 8.5" – 48" high to fit almost any installation requirement. CULTEC's products meet traffic wheel load criteria and are manufactured at facilities with strict quality control. For more information call 203/775-4416 or visit www.cultec.com.

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A Step in the Right Direction: Governor Baker Issues Executive Order for Integrated Climate Change Strategy in Massachusetts—CAMP Legislation Still Needed Though

by Peter A. Richardson, PE, CFM, LEED AP, ENV SP, Vice President, Green International Affiliates, Inc.

This past September, Governor Baker issued *Executive Order No. 569 (EO 569), Establishing an Integrated Climate Change Strategy for the Commonwealth*. The executive order is based on the following Administration's findings:

- Climate change and extreme weather events present a serious threat to the environment, residents, communities, public safety, property, and the Commonwealth's economy.
- The Global Warming Solutions Act (GWSA) calls for certain steps to reduce greenhouse gas (GHG) emissions limits and prepare for the impacts of climate change for 2020 and 2050, but no interim limits for 2030 and 2040.
- The Commonwealth can provide leadership by reducing its own emissions from state operations, planning and preparing for impending climate change, and enhancing the resiliency.
- The transportation sector continues to be a significant contributor to GHG emissions and is the only sector identified in the GWSA with a volumetric increase in GHG emissions.
- The generation and consumption of energy continues to be a significant contributor to GHG emissions in the Commonwealth, and there is significant potential for reducing emissions through continued diversification of our energy supply and adoption of a comprehensive energy plan.
- State agencies and authorities, as well as cities and towns, must prepare for the impacts of climate change by assessing vulnerability and adopting strategies to increase the adaptive capacity and resiliency of infrastructure and other assets.
- The Executive Office of Public Safety and Security and its constituent agencies, including the Massachusetts Emergency Management Agency, have deep institutional expertise in preparing for, responding to, and mitigating damage from natural hazards.
- Only through an integrated strategy bringing together all parts of state and local government will Massachusetts be able to address these threats effectively.

EO 569 contains five Sections intended to address the above referenced findings. The contents of each Section are briefly summarized below.

Section 1. The Secretary of Energy and Environmental Affairs will: Continue to reduce GHG emissions to adapt to the impacts of climate change by developing interim GHG limits for 2030 and 2040; Lead by example and make new, additional reductions in GHG emissions from Government operations; Work with other agencies throughout New England to develop regional policies to reduce GHG emissions from the transportation sector; Continue to lead on reform of regional wholesale electric energy and capacity markets relative to clean energy mandates; Publish a comprehensive energy plan with reasonable projections of the Commonwealth's energy demands and ensure that efforts to meet GHG emissions limits are consistent with efforts to prepare for and adapt to the impacts of climate change and extreme weather events.

Section 2. The Department of Environmental Protection (DEP) shall promulgate final regulations to ensure that the Commonwealth meets the 2020 statewide emissions limit mandated in the GWSA by: Establishing an internet portal through which interested parties may propose regulatory approaches for the DEP's consideration; Revising the GWSA requirements for the Massachusetts Department of Transportation to establish declining annual aggregate emissions limits; Considering limits on emissions from natural gas distribution systems, new emission permits, the transportation sector, and gas insulated switchgear; And publishing regulations for public comment.

Section 3. The Secretary of Energy and Environmental Affairs and the Secretary of Public Safety shall coordinate efforts across the Commonwealth to strengthen the resilience of communities, prepare for the impacts of climate change, and to prepare for and mitigate damage from extreme weather events by publishing: A Climate Adaptation Plan that includes a statewide adaptation strategy; Guidance and strategies for state agencies and authorities, municipalities and regional planning agencies to proactively address these impacts through adaptation and resiliency measures; Clear goals, expected outcomes, and a path to achieving results; Approaches for the Commonwealth to lead by example to increase the resiliency of Government operations; Policies and strategies

for ensuring that adaptation and resiliency efforts complement efforts to reduce GHG emissions and contribute towards meeting the emission limits in the GWSA; And strategies that conserve and sustainably use the Commonwealth's natural resources. Other requirements of Section 3 include establishing a framework for each Executive Office to assess its vulnerability to climate change and extreme weather events, to identify adaptation options for its agencies' assets, to establish a framework for each City and Town in the Commonwealth to assess local vulnerability to climate change and extreme weather events (and identify adaptation options for its assets), to provide technical assistance to Cities and Towns to complete vulnerability assessments/adaptation strategies, and to implement the Climate Adaptation Plan upon with updates at least every five years.

Section 4. The Secretary of each Executive Office shall designate a Secretariat's Climate Change Coordinator to serve as the Secretariat's point person regarding climate change mitigation, adaptation and resiliency efforts who will: Assist in the development and implementation of the Climate Adaptation Plan; Assess the vulnerability to climate change and extreme weather events for the Coordinator's Executive Office and for each agency within the Coordinator's Executive Office and identify adaptation options for the assets of such Executive Office and agencies; And incorporate results from vulnerability assessments into existing policies and plans for the Executive Office and its agencies.

Section 5. The Executive Order is to be reviewed no later than December 31, 2019, and every five years thereafter.

As has been reported in previous issues of *BSCESNews*, BSCES has been an active member of the MA Climate Change Adaptation Coalition and last year provided important technical input to the state legislature relative to Senate Bill 2121—*An Act Establishing a Comprehensive Adaptation Management Plan (CAMP) in Response to Climate Change*, filed by Senator Marc Pacheco. The Senate Bill never made it out of committee last year for a vote so the Governor, recognizing the urgency and importance of the matter, issued EO 569.

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President's Report

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Member Group Chair Alyson Stuer, Alfred Benesch & Company, attended and received the award. For the 2015 Holiday Meal Drive, the Younger Member Group successfully raised over \$2,000 for the Greater Boston Food Bank. I would like to thank Jessica Yarmarkovich, Nitsch Engineering, for completing the nomination for this project.

I would like to thank all of our Society and Program Sponsors, whose financial support helps

enable BSCES and its committees, institute chapters and technical groups to host the numerous networking and professional development events that are planned for this year.

The theme of this month's newsletter is Water Infrastructure and I urge you learn more about the Environmental & Water Resources Institute Boston Chapter, which is chaired by Ronald Burns of Arcadia Technology, Inc. This issue of *BSCESNews* contains an article written by Ron

(see page 10). I am very appreciative of CDM Smith Inc., which is a BSCES Society Sponsor. Please be sure to read CDM Smith's page 1 article titled "Co-Digestion with Food Waste Organics—The Next Step Towards Net-Zero Operation at GLSD," which was written by Cheri Cousens and Richard Wear from the Greater Lawrence Sanitary District and Benjamin Mosher and Michael Walsh from CDM Smith.

Co-Digestion with Food Waste Organics

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digester gas will now also support a new 3 MW combined heat and power (CHP) system.

The construction of this project commenced in April 2016 and all aspects of the upgraded facility are scheduled to be operational during the second quarter of 2018. Figure 3 and Figure 4 show the new facilities under construction as of early 2017. Simultaneous with the construction, a co-digestion pilot program was developed and implemented during 2016 and 2017. The purpose of this program was to assess the impact of SSO co-digestion on biogas production, downstream dewatering and thermal drying operations and dewatering centrate quality changes on secondary wastewater treatment.

The Benefits

The Organics to Energy Project being undertaken by the District represents a major step from a traditional mission of wastewater treatment and disposal to one of recycle and reuse, resulting in more sustainable wastewater treatment operations. This innovative project will convert biosolids and food waste products

to an important clean energy source that will, to a large degree, meet the energy needs of the GLSD facility (current projected power cost savings of up to \$2 million dollars per year). This net economic benefit to the District and its member communities will likely increase over time as the cost of traditional energy sources continues to increase and the industry moves to renewable energy sources.

Additional benefits of the project include reduced stress on the already overburdened electrical grid in the northeast, greater facility resiliency and operational flexibility, and the ability to provide a sustainable regional outlet for diverted SSO materials in the Commonwealth. In these and other ways, the Organics to Energy Project can serve as a model for the wastewater industry as treatment plants develop a more sustainable environmental footprint and find new ways to recover the nutrient and energy value of wastewater to the benefit of the environment and rate payers.



Figure 3. Combined Heat and Power Building and Organic Waste Receiving Tanks Under Construction



Figure 4. Anaerobic Digester No. 4 Under Construction

Integrated Climate Change Strategy

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EO 569 is a very positive step towards a more resilient and sustainable Commonwealth and responds to many of the concerns BSCES and the coalition have raised; however, the executive order is still just a policy instrument and is not law. The coalition applauds Governor Baker for this important first step and will continue to work towards permanent legislation that insures our commonwealth's built and natural environments are sustainable, resilient and adaptable to climate change and extreme

weather. It is anticipated that the CAMP bill will be refiled this year. For BSCES's part, we will continue to work at the grass roots level to ensure ASCE policy statement 360 is being implemented in Massachusetts, especially in regards to infrastructure resiliency.

Lastly, EO 569, and any subsequent CAMP legislation that becomes law in the future, are not the final solution by themselves. EO 569 and future CAMP legislation call for adaptation plans to be developed. The real work for the

engineering community will be to review these plans when they are released for public comment in order to make sure that they are truly sustainable (i.e. they allow for a built environment that is economically, environmentally and socially sustainable, as well as resilient) and that the provisions of the plans are clearly communicated to the public and then implemented. In other word, we need to make sure we are not just "doing our projects right, but that we are doing the right projects!"

Engineering and Evolving Science Prove Keys to Great Dam's Removal

by Jacob San Antonio, PE, Managing Director – Environmental Resources, VHB and Paul Vlasich, PE, Town Engineer, Exeter, New Hampshire

For more than 350 years, a dam has stood at the same location along New Hampshire's Exeter River, playing an important role in the local water supply, contributing to the Town of Exeter's historic district, and creating an impoundment valued for its recreational opportunities. The most recent of these structures, the Great Dam constructed in the early 1900s, was a 136-ft. long by 16-ft. high reinforced concrete run-of-river dam consisting of a spillway; a fish ladder including a small, lower-dam structure; a low-level outlet; and a penstock. In 2000, however, the New Hampshire Department of Environmental Services (NHDES) Dam Bureau notified the Town of numerous safety problems with the structure—most notably its inability to hydraulically pass a 50-year storm event. The result was a 16-year journey leading to the dam's decommissioning—a project that proved to be one of the largest and most complex dam removal projects in New Hampshire history.

Years of Debate

The Great Dam presented the Town of Exeter with a range of problems for years: its 1960s-installed fish ladder was inefficient at allowing upstream fish passage; low levels of dissolved oxygen provided poor habitat for aquatic life; maintenance costs were high; and it contributed to widespread flooding in area. These issues prompted the Town to undertake years of scientific and engineering study, including seven studies exploring options to repair, replace, or remove the dam. One of the most debated issues was how to deal with the impact of dam removal on the Town's water supply—a concern further complicated by the community's growing population.

When water supply concerns were eventually alleviated by a \$6.3 million well reactivation and groundwater treatment plant project, interest in removing the Great Dam was renewed. Working



Great Dam impoundment prior to dam removal (photo by VHB)



Natural channel, post dam removal (photo by VHB)

as the Town's consultant on the *Great Dam Removal Feasibility and Impact Study*, published in 2013, VHB comprehensively explored the decommissioning of the dam, including river geomorphic response; river bottom adjustments to allow fish migrations; floodwater climate change comparisons; and impacts to structures, private property, and recreation.

Finally, in March 2014—almost 14 years after the NHDES issued its Letter of Deficiency, and following many public informational meetings to debate dam removal alternatives—the Town voted to allocate \$1.8 million to remove the Great Dam and restore the Exeter River in its place. Again, VHB was retained to work with the community, seeing the project through design, permitting, and construction.

A Complex Project

All dam removal projects are complex. This was particularly true for the Great Dam. The dam's highly noticeable downtown location, coupled with the fact that it was one of the most visible projects in New Hampshire's Seacoast region for years, generated abundant press coverage and public input. As a result, the community remained highly interested in each aspect of the project, and effectively dealing with a range of engineering challenges became all the more important.

Many of these key challenges revolved around the location of the Great Dam. The dam was positioned in a historic district. It was also at the head of tide, and in a watershed position

continued on page 9

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Great Dam

continued from page 8

considered critical by fisheries and agencies. There were also two bridges immediately upstream and downstream of the dam, directly adjacent to a number of concrete, masonry, and stone walls. Furthermore, the dam still played an important role in the community's water supply. As a result, VHB's approach to design and permitting had to minimize impacts to historic properties, including privately owned walls and foundations; ecological resources; and the Town's upstream surface water supply intake. It also had to ensure the integrity of the two nearby bridges; allow for potential river geomorphic response; and account for hydraulic effects, including the possible impacts of a changing climate. Furthermore, complex abutter requests during the permitting process prompted VHB to modify the design and receive a rule waiver to maintain the proposed project schedule.

One of the most challenging components of the project was optimizing the restored riverbed channel slope, cross-section, and planform to allow for fish passage, while minimizing water supply impacts and ensuring stream bank stability. When the Great Dam was constructed, the river bed had been re-graded and likely a historic falls location, resulting in a steep river section that proved a barrier to fish passage. VHB could not simply remove the dam; doing so would leave behind a vertical barrier that would continue to prevent upstream fish passage in most situations. To contend with this problem, the VHB team relied on the highly specialized and constantly evolving technical field of fish passage design, which merges engineering with fish behavior and swim mechanics.

In order to develop the design, VHB created detailed existing and proposed conditions hydraulic models using HEC-RAS in an


integrated GIS/CAD. The channel grading and proposed conditions hydraulic model were updated iteratively to verify that proposed design would meet all design criteria, including a detailed fish passage design evaluation. The VHB team also compiled technical data on cruising, sustained, and darting speeds for the river's primary fish species, then used HEC-RAS to model water velocities through the project reach during the migration period. These results were then entered into an unpublished survivorship model provided by the US Fish and Wildlife Service Fish Passage Team, which then allowed VHB to evaluate and refine the design further.

The design was constrained by the need to maintain a minimum bed elevation at the top of the restoration reach so that water levels at the Town's upstream water supply intake would remain at a level allowing continued withdrawal.

VHB achieved these dual goals by designing the proposed channel to include a sinuous thalweg with two pools and a riffle section, with no abrupt vertical discontinuities between upstream and downstream limits of work.

Reaping Benefits

Constructed in summer 2016, the Great Dam removal project returned 21 river miles to a free-flowing condition, including 8 miles along the main stem of the Exeter River. The dam's removal also eliminated future maintenance costs, while reducing the depth and severity of flooding in almost 1,000 acres in the Town of Exeter. By effectively combining engineering and evolving science, and by effectively balancing the needs of abutters and an engaged public, VHB and the Town of Exeter were able to make a positive impact on the human-natural system for generations to come.



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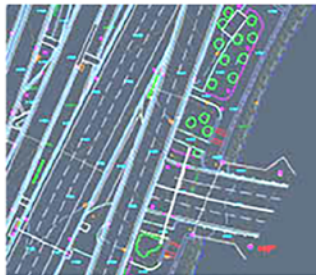

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Featured Group

ASCE EWRI Boston Chapter Update

by Ronald Burns, PE, Principal Engineer ARCADIA Technology, Inc. and Chair, EWRI Boston Chapter

The Boston Chapter of the ASCE Environmental Water Resource Institute (EWRI) continues to work hard to help fulfill the mission of the EWRI institute to “provide for the technical, educational, and professional needs of its members, and to serve the public in the use, conservation, and protection of natural resources and in the enhancement of human well-being.” Annually the chapter organizes and sponsors events that include a series of lectures and dinner events on current subjects of interest to our members (click here for more information). We also manage the Jonathan B. Golden Scholarship given biennially to an environmental engineering graduate student. In addition to these activities, EWRI Boston Chapter also works on sponsoring workshops, tours and networking/social activities.

For the 2016–2017 year, EWRI Boston Chapter has hosted two events to date

September 27, 2016: EWRI and COPRI Boston Chapters co-sponsored a presentation on *Climate Resilience in Boston and Beyond* by J. Kachmar and J. North of The Nature Conservancy. They presented numerous examples of nature-based solutions to climate change impacts such as storm surge and sea level rise. The talk was very well received by the 45 attendees. CDM Smith generously provided their conference facility for the dinner presentation.

December 5, 2016: EWRI Boston Chapter and the BSCES Committee on Sustainability jointly sponsored a tour of the Fraunhofer Center’s Living Laboratory on Sustainability. R&D organization, a subsidiary of Fraunhofer Gesellschaft, Europe’s largest contract R&D organization. The Boston center was born out of a 2013 energy-retrofit of a 100-year-old



EWRI Boston Chapter members listening to Dr. Roth explain Fraunhofer’s research on PV panels.

building, the Lab leverages cutting-edge design concepts and historic architecture alongside in-house research facilities, including a pilot solar module fabrication line, dedicated thermal testing laboratory, and extensive characterization/environmental testing resources.

These events highlight one of the Boston Chapter’s goals to collaborate more with other institute chapters and committees. These collaborations have been great in a number of ways, including sharing the load of organizing and sponsoring the events, expanding our ideas on subjects for the events and the chance to network and learn from engineers in different disciplines.

Upcoming events we are planning include:

April 13, 2017: The annual John R. Freeman Fund Lecture on water resources. This year’s speaker will be Dr. Scavia from the University of Michigan who will speak on Cyano bacteria blooms in the Great Lakes.

Date to be determined: The biennial Karl R. Kennison Fund Lecture on hydraulics

In addition, we are accepting applications for the biennial Jon Golden scholarship. Members of the review committee in years past have all been impressed by the quality and dedication of the engineering student applicants. Reviewing their accomplishments has helped me re-affirm that the future of our profession is in good hands. The applications are due by April 4, 2017. The award recipient will be announced in June 2017. See the announcement and insert in this newsletter for more information.

The EWRI Boston Chapter is always looking for members to participate and help us deliver the best events and activities for our members. We meet monthly either by conference call or in person. Please contact me at rburns@arcadia-tec.com for the schedule of the next meeting and how to become involved.



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BSCES YMG Takes Home Outstanding Younger Member Group Project at ERYMC

by Alyson Stuer PE, Project Engineer, at Alfred Benesch & Company and Chair, BSCES Younger Member Group

Recently I had the honor to represent BSCES Younger Member Group (YMG) at the ASCE Eastern Region Younger Member Council (ERYMC) as part of the Multi-Regional Leadership Conference (MRLC) hosted in Newark, New Jersey. The conference is hosted to provide an opportunity for participation across regions and levels of membership including the section leaders, national leaders, younger members, and students. Our section was represented by several members. Students from UMass Lowell, Wentworth, and Northeastern were represented as well as a practitioner advisor from Merrimack College. Attendees learned about leadership and soft skills, attended technical talks, and networked with others from across the eastern United States.

The awards banquet was held at the Liberty Science Center and included a sneak peak of Dream Big: Engineering Our World, a giant-screen film about engineering, and the presentation of the awards. The BSCES YMG is proud to announce that we were awarded with the 2017 ERYMC Outstanding Younger Member Group Project in recognition of our efforts with the Annual Holiday Meal Drive. This is awarded for a Younger Member Group project that had a favorable and measurable impact on the community. Over the past several years we have been able to help provide for those who are less



Pictured from left to right BSCES Younger Member Rich Matson, BSCES YMG Chair Alyson Stuer, ASCE President Elect Kristina Swallow, BSCES Senior Vice President Richard Maher, and BSCES President-Elect Malek Al-Khatib with the 2017 ERYMC Outstanding Younger Member Group Project Award.

fortunate by way of our Holiday Meal Drive, in partnership with the Greater Boston Food Bank. In the past three years YMG has contributed over \$5,000 to the Greater Boston Food Bank, which provided more than 750 nutritious thanksgiving

meals. The efforts have been led by YMG Treasurer Anthony Richardson, who has made it one of our most successful community projects. We hope you will continue to support this cause and contribute during the November 2017 Holiday Meal Drive!

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BSCES Member Profile: Robert Schreiber, PE, BCEE, D.WRE

by Bonnie Ashworth, Quincy, MA

Congratulations to Robert Schreiber, who was named the 2016 Citizen Engineer by BSCES at the 168th awards dinner November 14. Candidates are nominated by their peers and the criteria for consideration are: outstanding public involvement in local or national legislation, education, non-profit volunteer organizations, community activities, or similar activities improving the image of ASCE, BSCES, and the civil engineering profession. Bob Schreiber aced the test with a life of dedication and service over his long career. He reflected that, "it was particularly gratifying to be recognized by BSCES, the oldest engineering association in the United States, and one with which CDM Smith water professionals have been involved since the firm's founding."

He received the award for his: "tireless advocacy for a national groundwater monitoring network as ASCE'S alternate representative to the Federal Advisory Committee on Water Information and co-chair of its subcommittee on Groundwater." Commenting on development of a data portal and establishment of the national groundwater monitoring network, Bob noted: "The most satisfying aspect of these efforts is that groundwater professionals from all sectors have worked together successfully—including all levels of government, the private sector, and academics. And the web portal developed by the USGS represents a significant step forward for efficient delivery of groundwater data. The efforts of many volunteers have produced a network that will eventually fill important data gaps and provide the basis for significantly improved tracking of groundwater 'health' on a nationwide basis." Bob has written three articles focused on groundwater for the BSCESNews (April 2012, April 2013, and May 2013), that provide insight into his career-long passion for solving problems associated with groundwater, and the need for civil engineers to get involved in government affairs.

His professional activities reflect his dedication to service, inspired by the example of his close relatives, as well as by John F. Kennedy exhorting Americans to, "ask not what your country can do for you, ask what you can do for your country," in his inaugural address. In particular, Bob tries to encourage others to get involved in government affairs, by setting an example and also through recruiting others to participate.

Bob's interest in water and environmental issues dates to his high school years in New Jersey. He said he was inspired by the first Earth Day in 1970; he was a cofounder and first president of a citizens' group

working for the cleanup of the Passaic River and involved in efforts to raise awareness of environmental problems. His college years were spent at MIT, where he earned a BS in civil engineering and was a member of both the Engineering Honor Society, Tau Beta Pi, and the Civil Engineering Honor Society, Chi Epsilon. He earned his MSCE at MIT in hydrology and water resources, with a project and thesis as part of a U.N. Development Programme-funded project aimed at defusing conflict over water between Yugoslavia and Greece. He has PE licenses in MA, ME, NJ, and FL, and is a Board Certified Environmental Engineer (BCEE) of AAEE and a Diplomate of Water Resource Engineering (D.WRE) of AAWRE/ASCE.

He began working at CDM Smith in 1976 and today is vice president, providing technical leadership in groundwater-related subjects. More specifically, that means conducting or overseeing water resource modeling for water supply management and protection projects, hazardous waste site remediation, sustainability of water resources, management of solid waste and treated wastewater, and the inter-relationships between water and energy management initiatives.

Regarding government affairs, Bob has held positions as ASCE representative and then alternate representative to the federal Advisory Committee on Water Information (ACWI). He was a co-founder and non-federal co-chair of ACWI's subcommittee on groundwater (SOGW), and a member of task forces for the design of National Ocean/Estuarine Monitoring Network and for advising the Assistant Secretary of the Interior about funding priorities for USGS's data collection work, and he has presented at Congressional informational sessions and paid visits to Congressional offices and regulatory agencies.

He has also been active in various capacities with the National Groundwater Association (NGWA), the American Groundwater Trust (AGWT), and the New England Water Works Association (NEWWA). Bob has chaired and co-chaired committees, served on task forces, on editorial boards, boards of directors, and program committees for conferences, been an invited panelist (National Academy of Science), and cotaught a graduate level course. For the BSCES, he chaired the computer technical group, was on two structural lecture series committees, and he was a member of the freeman fund committee, for which he was a liaison to the BSCES board.

When asked for his thoughts on how outside interests may have helped professionally, Bob listed several plusses. These include contact network enhancement, getting information quickly, hearing



Bob Schreiber is the 2016 BSCES Citizen Engineer.

the latest developments in the profession, and having access to experts, all of benefit to clients, colleagues, and his personal technical advancement. There's also positive recognition by clients, regulators, and colleagues in consulting and academia, and fostering of an improved business climate.

The 2016 Citizen Engineer award is Bob's latest recognition. Within the last few years, he was honored for technical leadership with an Outstanding Project Award from NGWA; he was selected as Man of the Year of the MIT chapter of Theta Delta Chi National Fraternity, and he received a Volunteer of the Year award from the MIT Alumni Independent Living Group organization.

Underscoring all of this, Bob observed that: "CDM Smith continues its corporate, very strong commitment to outreach and service to others, as well as balancing work and family life. This has been a mainstay of my various volunteer efforts." His family includes his wife, Janet, his high school sweetheart, and two grown sons, Matthew and Michael, who live in the area. His father was an engineer who inspired him to enter the field, serving as a role model by his participating in the church and community, and he was honored as the "2008 Volunteer of the Year" in Chatham NJ. Bob also credits his wife and her parents for inspiring his volunteer activities by their examples.

Bob loves wordplay, and thus noted that BSCE could stand for "Bob Schreiber, Civil Engineer." But now we could say that it also stands for "Bob Schreiber, Citizen Engineer." It's a well-deserved recognition for a successful career and life of service.

Recent News and Updates

\$7,500 SGH Scholarship Applications Deadline is March 17, 2017

Applications for the 2017 Simpson Gumpertz & Heger Scholarship are now being accepted. All undergraduate civil engineering majors who are: 1) members of an ASCE Student Chapter or Club in Massachusetts; 2) have completed a minimum of 2.5 years of a four-year program (or equivalent portion of a five year part-time program); and 3) expect to complete their undergraduate degree in May 2017 or later are eligible to apply for this \$7,500 scholarship. Applications are due by 5:00 PM on Friday, March 17, 2017. [Please click here](#) or see the insert at the end of this newsletter if you are interested in applying.

\$5,000 Jonathan B. Golden Fund Scholarship Applications Deadline is April 4, 2017

The BSCES Environmental & Water Resources Institute is accepting applications for the 2017 Jonathan B. Golden Scholarship. Applicants must be enrolled in a graduate Environmental Engineering program (or related field) during the fall 2016 semester and be committed to continuing in full-time graduate study through at least the spring 2017 semester. The scholarship award amount is \$5,000. Scholarship applications are due by Tuesday, April 4, 2017. [Please click here](#) or see the insert at the end of this newsletter for more information.

2017 Bertram Berger Young Engineer Award Nominations Deadline is April 14, 2017

This is a reminder that the BSCES Transportation & Development Institute Boston Chapter is accepting nominations for the 2017 Bertram Berger Young Engineer Award through Friday, April 14, 2017. [Please click here](#) or see the insert at the end of this month's newsletter for award eligibility guidelines and nomination submission instructions.

BSCES is Accepting Nominations for the "Sustainability in Civil Engineering Award"

The purpose of the Sustainability in Civil Engineering Award is to recognize civil engineering infrastructure projects that embody the principles of sustainability espoused by the BSCES Committee on Sustainability, ASCE, and the Institute for Sustainable Infrastructure (ISI). Such projects prominently and creatively incorporate the five sustainability indicators of quality of life, leadership, resource allocation, natural world, and climate risk. To be eligible, a project must demonstrate adherence to the principles of economic, social, and

environmental sustainability as identified by ASCE/ISI criteria for sustainable infrastructure. The project must have been designed by a team of civil engineers based in Massachusetts, and must have been constructed within the last five years. For more information regarding submission guidelines and evaluation criteria for this award, please see the insert at the end of this newsletter or download the [BSCES Sustainability Award Form](#) from our website.

BSCES Welcomes its New Members

The BSCES Board of Government is pleased to welcome the following new members who joined BSCES during the month of January, 2017:

Affiliates

Paul Maloney, Federal Highway Administration
Will Schaetzke, Weston & Sampson
Marianna Zak, EIT, Boston, MA

Associates

Brett Decker, EIT, STV, Inc.
Bradley Huizinga, EIT, Schnabel Foundation Company
Stephen Leonardo, EIT, Groton, MA
Anthony Longabard, FM Global
Maris Mann-Stadt, EIT, Haley & Aldrich
Steven McLaughlin, Gannett-Fleming
Matthew J. Nichols, EIT, O'Reilly, Talbot & Okun Associates Inc.
Leah Rochwarg, Esq., Seyfarth Shaw LLP
Colin J. Smith, EIT, Shrewsbury, MA

Members

Chris Chaffee, PE, AECOM
Erin V. Joyce, PE, Joyce Consulting Group, PC
David M. Leone, PE, GZA GeoEnvironmental, Inc.
Armando Plata, Medford, MA
Thomas Ryder, PE, Town of Needham

Students

Ghaya Alhunaidi, Boston, MA
Alaa Al-Sammari, University of Massachusetts Amherst
Ahmad Al Zubair, Northeastern University
Madeline C. Augustine, Northeastern University
Connor Bailey, Northeastern University
Jeffrey Botelho, Jr., University of Massachusetts Amherst
Brianna R. Burgess, Esq., Wentworth Institute of Technology
Adam R. Byberg, Northeastern University
Rachel M. Ceskavich, Northeastern University
Qinxin Chen, Northeastern University
Adam Collins, Worcester Polytechnic Institute
Graham Doherty, Northeastern University
Brady Doyle, Wentworth Institute of Technology

Faisal Farhat, Northeastern University
Amairani L. Garcia, EIT, Chelsea, MA
Andrew J. Giarusso, University of Massachusetts Amherst
Anthony J. Hanley, Tufts University
Donato C. Hernandez, Cambridge, MA
Heba Khashoggi, Northeastern University
Eric Landry, Northeastern University
Swinderjit S. Litt, Lowell, MA
Alison Lunny, Northeastern University
Shengmin Luo, University of Massachusetts Amherst
Jose M. Maria, Northeastern University
Rihabe N. Oulal, Wentworth Institute of Technology
Shawlenee A. Peart, Boston, MA
Jing Peng, University of Massachusetts Amherst
Nam H. Pham, Northeastern University
Arash Pirouzi, University of Massachusetts Amherst
Arthur C. Potter, IV, University of Massachusetts Amherst
Teja Pulla, Northeastern University
Andry Rezende, University of Massachusetts Lowell
Julia G. Ring, Worcester Polytechnic Institute
Cami Smachetti, Wentworth Institute of Technology
Isabella Steiner, Northeastern University
Matthew Stevens, University of Vermont
Griffin S. Tarmy, Purdue University
Alexandra Teniuch, Northeastern University
Semanur Unes, Brighton, MA
Jianan Yan, Northeastern University

Public Hearings for the Ninth Edition of the State Building Code

The Department of Public Safety (DPS) has received approval to convene public hearings to elicit testimony on a proposed new Ninth Edition of the State Building Code (780 CMR). The new code will be based on amended versions of the 2015 codes as published by the International Code Council (ICC). The first hearing is scheduled for 10:00 AM on March 7, 2017 at the [Saltonstall Building](#), 100 Cambridge Street, Rooms 2B, C, and D in Boston, MA. The second hearing will take place at 10:00 AM on March 14, 2017 at [Springfield Technical Community College](#), First Floor Auditorium, Building 2, One Armory Square in Springfield, MA. During the hearings, members of the Board of Building Regulations and Standards will allow testimony on any portion of the referenced codes and amendments. More information about the 2015 international codes and proposed Massachusetts amendments may be viewed on the [DPS website](#).

Upcoming Events

For more information and to register for events, please visit www.bsces.org

To register online for an event at the BSCES member rate you must login using your BSCES assigned username and password.

If you do not know your BSCES member login information, call 617/227-5551.

T&DI Boston Chapter Ice Skating

Thursday, February 23, 2017

Community Ice Skate at Kendall Square
300 Athenaeum Street, Cambridge, MA

6:00 PM – 7:00 PM Ice Skating

7:00 PM – 8:00 PM Social at the
Commonwealth Market and Restaurant

T&DI Boston Chapter Ice Skating

Join the Transportation & Development Institute Boston Chapter for a night on the ice! We will skate for about an hour and then we will warm up at The Commonwealth Market and Restaurant located at 11 Broad Canal Way, Cambridge, MA.

Please see the Insert at the end of this month's newsletter for further details.

BSCES Program Committee Sponsored Training

**Tuesdays and Thursdays,
February 28 – April 21, 2017**

Tufts University
200 College Street, Medford, MA

7:30PM – 9:30 PM (except for the initial session
which runs from 7:30 PM – 10:00 PM)

Spring 2017 BSCES Professional Engineer Refresher Course

Are you or is someone you know taking the PE exam? This course will feature 12 sessions covering all aspects of the Professional Engineer State Exam. Taught by leading authorities in their fields, session topics include exam review, geotechnical, hydraulics, hydrology, engineering economics, wastewater, highway design, water supply, construction management, structures and transportation.

Please see the Insert at the end of this month's newsletter for further details.

ASCE and BSCES Sponsored Seminar

Thursday – Friday, March 9 – 10, 2017

Hyatt Place Boston Braintree
50 Forbes Road, Braintree, MA 02184-2602

8:00 AM – 5:00 PM

Project Management for Civil Engineers: Planning, Scheduling and Control

*Nghi M. Nguyen, PhD, PE, PMP, President,
NDV Project Management Services Inc*

In today's competitive global economy, virtually all organizations are project-based. Whether they are governmental, industrial or commercial ones, these organizations supply products or services intended to satisfy the needs and requirements of their clients by applying the principles and methodologies of project management to implement their projects. Consequently, this seminar is designed to provide participants with the project management knowledge and skills associated with the planning, scheduling and controlling of all activities that must be done to meet project objectives and their benefits in effectively and efficiently managing projects that they can apply immediately in their project environment.

[Click here](#) to register for this event online.

Mark Your Calendar!

Thursday, April 27, 2017

28th Annual Francis M. Keiville Dinner

Courtyard Boston Downtown
275 Tremont Street, Boston, MA

*See future BSCES emails for more information
about this event sponsored by the Construction
Institute Boston Chapter.*

105th Annual Student Night

Tuesday, March 28, 2017

Wentworth Institute of Technology
Watson Auditorium
550 Huntington Avenue, Boston, MA

5:00 PM Social/Registration

6:30 PM Dinner; 7:30 PM Presentation

Results from a Living Building: The Bullitt Center

*Ron Rochon, FAIA, Partner, Miller Hull Partnership
Justin Stenkamp, PE, LEED AP, Associate, PAE
Consulting Engineers*

The Bullitt Center in Seattle, WA was designed to be the world's greenest commercial building, achieving status as a net-zero energy Living Building. Ron Rochon of Miller Hull, the building's architect, and Justin Stenkamp of PAE, the building's MEP engineer, will discuss the experience of working in a Living Building, lessons learned from the design and operation, and the building's performance relative to expectations. Their talk will provide a rare holistic view of building design from initial design decisions, through construction issues and changes, to final occupancy, as well as a summary of several innovative and sustainable engineering solutions used in the building.

Please see the Insert at the end of this month's newsletter for further details.

SEI Boston Chapter Site Tour

Thursday, April 13, 2017

Oldcastle Precast
41 Almeida Road, Rehoboth, MA

9:00 AM – 12:00 PM

Oldcastle Precast Concrete Plant Tour

Oldcastle Precast will be hosting a tour of their production facility in Rehoboth, MA. For anyone who is interested in learning about

[continued on page 15](#)

2016–2017 BSCES Program Sponsors

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Upcoming Events *(continued from page 14)*

precast and prestressed concrete production, this event is for you! Oldcastle staff will provide a brief presentation on the production of precast and prestressed concrete, followed by a tour of their production facilities.

Please see the Insert at the end of this month's newsletter for further details.

2017 John R. Freeman Lecture

Thursday, April 13, 2017

Massachusetts Institute of Technology
Tang Center (Building E51)

70 Memorial Drive, Cambridge, MA

6:00 PM Reception; 7:00 PM Lecture

Lake Erie's Death, Resurrection, Re-Death, and the Role of Models in Guiding a Re-Resurrection

Don Scavia, PhD, Professor and Director of the Graham Environmental Sustainability Institute, University of Michigan

During the 1960s and 1970s, increased phosphorus inputs caused significant water quality degradation in Lake Erie. The lake responded to subsequent load reductions, but since the mid-1990s, cyanobacteria blooms and hypoxia have returned with a vengeance. Drawing on a suite of model studies, Prof. Don Scavia will explore why this has happened, and what strategies are necessary to re-resurrect Lake Erie.

Please see the Insert at the end of this month's newsletter for further details.

BSCES Program Committee Sponsored NHI Training

Monday – Friday, April 24 – 28, 2017

Hilton Garden Inn Worcester

35 Major Taylor Boulevard, Worcester, MA

8:00 AM – 4:30 PM

FHWA-NHI-130110 Tunnel Safety Inspection

This five-day course is highly interactive and builds upon participants' prior knowledge of tunnel and/or bridge inspection. The course covers the entire breadth of knowledge necessary to manage or execute a successful tunnel inspection based on the National Tunnel Inspection Standards (NTIS), Tunnel Operations, Maintenance, Inspection and Evaluation (TOMIE) Manual and Specifications for the National Tunnel Inventory (SNTI). During the course, the instructor will lead participants through a series of case studies and a virtual tunnel inspection. Please note that to take this course, participants must show that they have passed one of the following pre-requisite courses: FHWA-NHI-130054, Engineering Concepts for Bridge Inspectors; FHWA-NHI-130101, Introduction to Safety Inspection of In-Service Bridges; or FHWA-NHI-130101A, Prerequisite Assessment for Safety Inspection of In-Service Bridges.

Please see the Insert at the end of this month's newsletter for further details.

Save the Date!

Wednesday, May 24, 2017

2017 Bertram Berger Seminar

Multimodal Transportation in Today's Modern Society

Omni Parker House

60 School Street, Boston, MA

Please see the Insert at the end of this month's newsletter and future emails for further details about this Transportation & Development Institute Boston Chapter event.

Mark Your Calendar!

Thursday, May 25, 2017

**BSCES Program Committee Training
Floodplain Management 101**

Aldrich Center at TEC

One Walnut Street, Boston, MA

1:00 – 5:00 PM

Topics include:

- Introduction to FEMA Flood Maps
- The National Flood Insurance Program
- Floodplain Construction—Riverine
- Floodplain Construction—Coastal

See future BSCES emails for more information about this event.

Classifieds

Stantec

Stantec is seeking a **Civil Engineer** with 8–12 years' experience with land development projects to our growing team in Boston, MA! Typical project will involve a civil engineer, landscape architecture staff, and the coordination of

internal and external sub-consultants. Typical duties include oversight, coordination, and participation in the preparation of engineering drawings, calculations, reports and permit applications for land development projects. This

is a great opportunity to grow in a fast-paced, dynamic environment with a growing company! Please visit www.stantec.com/careers for more information or to apply!



TETRA TECH

Tetra Tech is seeking a **CIVIL ENGINEER**
with 5+ years of experience to join our Marlborough, MA office

This position will support our Global Services Division and work on site development for facility and infrastructure projects worldwide. Our work environment requires thinking outside of the box to develop design and construction solutions globally that adapt to local project specific conditions. An EIT or PE is preferred. Previous military experience is a plus!

For more information and to apply, please click here or visit
www.tetrattech.com/careers and reference job code 12700000140



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Ice Skating with T&DI Boston Chapter

Thursday, February 23, 2017

Community Ice Skate at Kendall Square

300 Athenaeum Street, Cambridge, MA 02142

6:00 PM – 7:00 PM Ice Skating

7:00 PM – 8:00 PM Social at the Commonwealth Market and Restaurant

Join us for a night on the ice! We will skate for about an hour and then we will warm up at The Commonwealth Market and Restaurant located at 11 Broad Canal Way, Cambridge, MA.

For additional information, go to <http://bit.ly/TDI-Ice-Skating>.

Admission: \$5

Admission with Skate Rental: \$13

Please RSVP to TDI.BSCES@gmail.com.



Professional Engineer Refresher Course Spring 2017 Schedule

The BSCES Professional Engineer Refresher Course consists of twelve classes covering both the breadth and depth portions of the five Civil Professional Engineer Exams. Course lectures will be held at Tufts University in Medford, MA (tentative). All lectures are presently scheduled for Tuesday and Thursday evenings from 7:30-9:30 PM except for the initial session which runs from 7:30-10:00 PM. Due to changes in instructor availability it may be necessary to schedule make-up sessions on prearranged "Open" dates, which include Tuesday, March 14 & April 18, and Thursday, March 30 & April 20.

Class	Day	Date	Time	Subject	Instructor	Email
1	Tuesday	02-28	7:30–10:00 PM	Geotechnical & Exam Review	Jim Lambrechts	lambrechtsj@wit.edu
2	Thursday	03-02	7:30–9:30 PM	Geotechnical	Jim Lambrechts	lambrechtsj@wit.edu
3	Tuesday	03-07	7:30–9:30 PM	Engineering Economics	Cristina Cosma	cosmac@wit.edu
4	Thursday	03-09	7:30–9:30 PM	Construction Management	Cristina Cosma	cosmac@wit.edu
5	Tuesday	03-14	7:30–9:30 PM	Open		
6	Thursday	03-16	7:30–9:30 PM	Water Supply	Bruce Jacobs	bjacobs@enviroinsite.com
7	Tuesday	03-21	7:30–9:30 PM	Wastewater	Annalisa Onnis-Hayden	aonnis@coe.neu.edu
8	Thursday	03-23	7:30–9:30 PM	Highway Design	Peter Reed	preed@bscgroup.com
9	Tuesday	03-28	7:30–9:30 PM	Hydraulics	R. Edward Beighley	r.beighly@neu.edu
10	Thursday	03-30	7:30–9:30 PM	Open		
11	Tuesday	04-04	7:30–9:30 PM	Hydrology	R. Edward Beighley	r.beighly@neu.edu
12	Thursday	04-06	7:30–9:30 PM	Structures	Brian Brenner	brian.brenner@stantec.com
13	Tuesday	04-11	7:30–9:30 PM	Structures	Brian Brenner	brian.brenner@stantec.com
14	Thursday	04-13	7:30–9:30 PM	Transportation	Rick Bryant	richard.bryant@stantec.com
15	Tuesday	04-18	7:30–9:30 PM	Open		
16	Thursday	04-20	7:30–9:30 PM	Open		
17	Friday	04-21	8:00 AM–5:00 PM	State Exam		

Registration deadline is Tuesday, February 21, 2017. [Click here](#) to register for this program and pay by credit card online. BSCES members have been assigned a username and password which they must use to register online at the member rate. Call 617/227-5551 if you do not know your username or password. You may also register by completing and returning this registration form and including payment by check (made payable to BSCES) or credit card. Mail your completed registration and payment to: BSCES, The Engineering Center, One Walnut Street, Boston, MA 02108-3616. Email or fax your registration to bscesreg@engineers.org or 617/227-6783, respectively. If you register in this manner and are paying by check, you must also mail a copy of this form with your payment. **No phone reservations will be accepted.** Registrations canceled after February 21, 2017 will be charged the full program registration fee. For more information, call 617/227-5551.

Registration Fees: (Please check the box to the left of the appropriate per person registration fee below):

☐ TBD BSCES Member Rate ☐ TBD Non-Member Rate ☐ TBD Quantity Discount Rate*

Name: _____ Day Phone/Fax: _____

Organization: _____ Address: _____

City: _____ State: _____ Zip Code: _____

Email Address: _____

Please bill my: (Check one) ☐ Visa ☐ MasterCard ☐ American Express

Name On Credit Card: _____

Credit Card Number: _____ Expiration Date: _____

Credit Card Billing Address: _____

Signature: _____

* Individuals are eligible to register at the Quantity Discount Rate when five or more individuals from the same organization are paid registrants for this Professional Engineer Refresher Course. If this is the case, please list below the names and email addresses of the other individuals from that organization who are attending this course. Complete and attach an additional registration form if more than five individuals from the same organization are registering.

Course attendees may visit [The Power to Pass](http://ThePowerToPass.com) website to order copies of *Civil Engineering Reference Manual for the PE Exam* and *Practice Problems for the Civil Engineering PE Exam: A Companion to the Civil Engineering Reference Manual*. Send an email to bsces@engineers.org requesting the promotional code that will enable you to receive a 15% discount on the cost of these and other PPI-published materials.



February 2017

Announcement of the 2017 \$7,500 Simpson Gumpertz & Heger Scholarship

To Prospective Applicants:

The principals of Simpson Gumpertz & Heger Inc. (SGH) have established the Simpson Gumpertz & Heger Scholarship with the Boston Society of Civil Engineers Section/American Society of Civil Engineers (BSCES) to encourage undergraduate college students who strive for excellence and who aspire to a career in civil engineering. It has been our experience as a firm and as individuals that the field of civil engineering provides technically challenging assignments while offering an opportunity to make a significant contribution to society.

SGH supports the civil engineering profession and wishes to encourage gifted students in the pursuit of their careers. We welcome your participation in this scholarship opportunity.

What is the Simpson Gumpertz & Heger Scholarship?

SGH established this scholarship with BSCES in 1997 to encourage students in the pursuit of civil engineering as a profession. In 2017, the scholarship amount will be \$7,500 in the form of a check presented to the scholarship winner.

Who may apply?

All undergraduate-level civil engineering majors who are members of an ASCE Student Chapter or Club in Massachusetts, who have completed a minimum of two-and-one-half years of a four-year program (current juniors, or equivalent in a five-year or part-time program), and who expect to complete their undergraduate degree in May 2017 or later are eligible to apply for this scholarship.

Review of the Application

Applications will be judged with equal weight given to three categories: professional presentation in the letter of introduction and resume, quality of ideas expressed and clarity of communication demonstrated in the one-page essay, and capabilities reflected in college/university transcript(s).

A three-person committee consisting of two representatives of BSCES and one Principal of SGH will judge applications. Decisions of the committee will be final. Leading candidates may be asked to meet with members of the review committee. BSCES reserves the option of publishing applicants' essays in *BSCES News* and/or *Civil Engineering Practice*.

Presentation of the Award

The recipient of the scholarship will be announced at the 2017 BSCES Student Night the evening of Tuesday, 28 March 2017, at Wentworth Institute of Technology. The award recipient will be notified in advance of the meeting and will be invited to attend Student Night as a guest of SGH.

Simpson Gumpertz & Heger Scholarship 2017 APPLICATION REQUIREMENTS

How to apply

Students interested in applying for the Simpson Gumpertz & Heger Scholarship are asked to submit the following:

- A one-page letter introducing the applicant and summarizing their qualifications.
- A resume demonstrating the applicant's academic record, professional employment (in engineering or related fields), other employment, professional activities (membership and participation in professional organizations such as ASCE, SWE, EWB, etc.), and personal items of interest.
- A one-page essay demonstrating the applicant's writing ability and expressing original thought. The topic for the 2017 essay is the following:

President Trump has stated that he plans to make a \$1 trillion investment in US infrastructure. Such a pronouncement is a familiar theme of newly elected presidents, yet the 2013 ASCE Report Card assigned US infrastructure an overall grade of D+, and estimated, at that time, \$3.6 trillion in investment would be needed by 2020 to bring US infrastructure up to modern standards. The ASCE definition of infrastructure includes aviation, energy, transit, dams, inland waterways, urban runoff, drinking water, wastewater, roads, and dams.

Identify a specific piece or segment of infrastructure from your everyday life that you feel needs to be part of the next \$1 trillion investment in infrastructure. Improvements can be as large as a re-imagined transportation system, as "concrete" as a bridge replacement, or small as adding bicycle storage at a public transportation stop to improve utilization. Propose an improvement scheme and develop an argument to convince the public why this improvement is needed.

- Official college and/or university transcript(s).

Send hard copy applications to:

Simpson Gumpertz & Heger Scholarship Committee
Boston Society of Civil Engineers Section/ASCE
The Engineering Center
One Walnut Street
Boston, MA 02108-3616

For more information, please contact:

Robert W. Keene
Simpson Gumpertz & Heger Inc.
781-907-9000 or rwkeene@sgh.com

Applications can be submitted by hard copy to the address above or e-mailed (PDF format) to Robert Keene at rwkeene@sgh.com with the subject "SGH Scholarship". Applications must be received by 5:00 p.m. on Friday, 17 March 2017. If submitting electronically, a hard copy application may be required at a later date. Applications will not be returned.



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Results from a Living Building: The Bullitt Center

Ron Rochon, FAIA

Partner, Miller Hull Partnership

Justin Stenkamp, PE, LEED AP

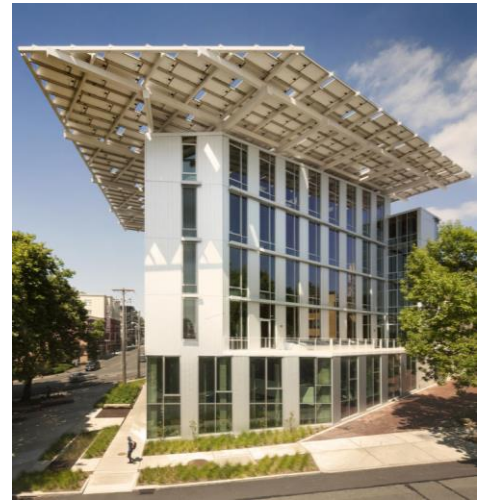
Associate, PAE Consulting Engineers

Tuesday, March 28, 2017

Wentworth Institute of Technology

Watson Auditorium, 550 Huntington Ave, Boston, MA 02115

5:30 PM Social/Registration; 6:30 PM Dinner; 7:30 PM Presentation



The Bullitt Center in Seattle, WA was designed to be the world's greenest commercial building, achieving status as a net-zero energy Living Building. Ron Rochon of Miller Hull, the building's architect, and Justin Stenkamp of PAE, the building's MEP engineer, will discuss the experience of working in a Living Building, lessons learned from the design and operation, and the building's performance relative to expectations. Their talk will provide a rare holistic view of building design from initial design decisions, through construction issues and changes, to final occupancy, as well as a summary of several innovative and sustainable engineering solutions used in the building.

Registration Deadline: Tuesday, March 21, 2017

\$15 Student Members & Senior Members (65+)

\$35 BSCES Members & Public Sector Non-Members

\$30 Public Sector Members; \$45 Non-Members

Information/Registration:

Register to attend this meeting and pay by credit card online at bit.ly/YMGStudentNight. To register online for an event at the BSCES member rate you must login using your BSCES assigned username and password. If you do not know your BSCES member login information call 617/227-5551. You can also register for this event by mail or email. To do so, download and complete a [BSCES Event Registration Form](#) and follow the submission instructions. Cancellations received after March 21, 2017 and no-shows will be billed.



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YOUNGER MEMBER GROUP

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105th Annual BSCES Student Night

Tuesday, March 28, 2017

Watson Auditorium, 550 Huntington Ave, Boston, MA 02115

5:30 PM – 9:00 PM

Watson Auditorium (marked in red) is located off Parker St. Parking is available in the Parker Street Lot (marked in yellow). Public transit is recommended. The nearest T stop is the Museum of Fine Arts (green line, E branch), which is a 5 minute walk from the auditorium. The Ruggles stop (orange line) is a 5-10 minute walking distance. The 47 bus stops at the intersection of Ruggles and Huntington, which is also a 5 minute walk from the auditorium.



**Sponsored by the BSCES Student Affairs Committee,
WIT ASCE Student Chapter, and
Simpson Gumpertz & Heger Inc.**



Student Affairs Committee



WENTWORTH
Institute of Technology

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Engineering of Structures
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2017 Jonathan B. Golden Scholarship Application

2017 Scholarship Amount: \$5,000

To Prospective Applicants:

The Jonathan B. Golden Scholarship Fund was established in 2002 through donations to honor the memory of Jon Golden, a dedicated wastewater engineer who significantly contributed to the environmental engineering profession. The scholarship is for a graduate student who is pursuing a career in environmental engineering.

Who May Apply?

Full-time Graduate Students enrolled in an accredited Environmental Engineering degree program or related field with a graduation date of Spring 2017 or later.

How To Apply:

Submit the following:

- Introduction letter.
- Official copy of college transcript.
- Enrollment verification letter from the registrar.
- One page biography/resume including GPA and class standing from undergraduate study and graduate study (if available).
- Two letters of recommendation - at least one from a college professor.
- One page essay (500 words maximum) discussing why you are pursuing a career related to environmental engineering and who or what most influenced your decision to pursue a career in environmental engineering.

Transmit Applications To:

Jonathan B. Golden Scholarship
BSCES Environmental & Water Resources Institute
One Walnut Street, Boston, MA 02108-3616

Electronic applications may be submitted to rburns@arcadia-tec.com.

Application Deadline: Tuesday, April 4, 2017

Review of Applications:

Applications will be reviewed by volunteer members of the Environmental & Water Resources Institute Boston Chapter and Mr. Golden's widow, Ms. Carol Fusaro. The award recipient will be announced in early June of 2017.



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Oldcastle Precast Concrete Plant Tour

Friday, April 7, 2017

Oldcastle Precast, 41 Almeida Rd, Rehoboth, MA 02769

9:00 AM – 12:00 PM

Oldcastle Precast will be hosting a tour of their production facility in Rehoboth, MA. For anyone who is interested in learning about precast and prestressed concrete production, this event is for you! Oldcastle staff will provide a brief presentation on the production of precast and prestressed concrete, followed by a tour of their production facilities. Coffee and muffins will be provided, compliments of the Northeast Chapter of the Precast / Prestressed Concrete Institute (PCINE).

- Safety gear is required - sturdy construction boots are highly recommended! Please bring your own safety glasses, safety vest, and hard hat if you have your own – however these items can be provided for those without.

Oldcastle Precast is a leading precast concrete producer with over 50 locations nationwide. They produce precast and prestressed concrete products for civil applications, buildings, bridges, and more.

Registration Deadline: Monday, April 3, 2017

Registration Fee: FREE! Attendance is limited to 30 persons.

Information/Registration:

Register to attend this event online at bit.ly/SEITour4717. You can also register for this event by mail or email. To do so, download and complete a [BSCES Event Registration Form](#) and follow the submission instructions.

2017 John R. Freeman Lecture
**Lake Erie's Death, Resurrection, Re-Death, and the Role
of Models in Guiding a Re-Resurrection**

Don Scavia, PhD

Professor & Director, Graham Environ. Sustainability Inst., U. Michigan

Thursday, April 13, 2017

Reception 6:00 PM; Lecture 7:00 PM

**Massachusetts Institute of Technology
Tang Center (Building E51)
70 Memorial Drive, Cambridge, MA 02139
[View Map](#)**

Abstract:

Reducing phosphorus (P) loading is a key management tool for controlling Lake Erie eutrophication. During the 1960s and 1970s, increased phosphorus inputs degraded water quality, stimulated algal blooms, and reduced central basin hypolimnetic oxygen to levels that eliminated thermal habitat vital to cold-water organisms and contributed to the extirpation of important benthic macro invertebrate prey species. In response to load reductions initiated in 1972 under the US/Canada Great Lakes Water Quality Agreement (GLWQA), Lake Erie responded quickly with reduced phytoplankton biomass and bottom-water hypoxia. However, since the mid-1990s, cyanobacteria blooms and hypoxia returned to conditions of the 1970s. In response, a renegotiated GLWQA required the governments to revise P load targets once again.

Using multiple models, we recommended new loading targets to avoid severe cyanobacteria blooms and reduce hypoxia, and those recommendations guided the new binational agreement of an additional 40% P load reduction. Subsequently, we assembled five additional modeling groups to assess load reduction strategies for the agriculturally-dominated Maumee River watershed, the single largest P contributor to Lake Erie toxic algal blooms. While several potential pathways are available to achieve the new target loads, results show that any successful pathway will require significant large-scale implementation of multiple practices.

This is a FREE event funded by the BSCES John R. Freeman Fund as outreach to students and young professionals interested in careers in water resources engineering. All are welcome. To register online [click here](#), or you may register at the door.



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FHWA-NHI-130110 Tunnel Safety Inspection

Monday, April 24, 2017 – Friday, April 28, 2017

Hilton Garden Inn Worcester, 35 Major Taylor Boulevard, Worcester, MA
Monday through Friday, 8:00AM – 4:30PM

This five-day course is highly interactive and builds upon participants' prior knowledge of tunnel and/or bridge inspection. The course covers the entire breadth of knowledge necessary to manage or execute a successful tunnel inspection based on the National Tunnel Inspection Standards (NTIS), Tunnel Operations, Maintenance, Inspection and Evaluation (TOMIE) Manual and Specifications for the National Tunnel Inventory (SNTI). During the course, the instructor will lead participants through a series of case studies, concluding with a virtual tunnel inspection that takes place in a computer-simulated, 3D environment.

Please note: To take this course, participants must show that they have passed one of the following pre-requisite courses: FHWA-NHI-130054, *Engineering Concepts for Bridge Inspectors*; FHWA-NHI-130055, *Safety Inspection of In-service Bridges*, FHWA-NHI-130101, *Introduction to Safety Inspection of In-Service Bridges*; or FHWA-NHI-130101A, *Prerequisite Assessment for Safety Inspection of In-Service Bridges*. A FHWA/NHI certification of completion with the participant name on it will be required to be presented to BSCES preferably at time of registration or no later than Friday, February 17, 2017. Please forward your prerequisite certificate in the form of a PDF document to [bsces@engineers.org](mailto:bscs@engineers.org). Please visit the NHI website at www.nhi.fhwa.dot.gov or contact them at 703/235-0500 for additional information on the prerequisite course requirements.

Registration Deadline: Friday, March 17, 2017

Registration Fees: \$2,100 Members, \$2,500 Non-Members

Registration fee includes course materials, continental breakfast, breaks, and lunch.

Information/Registration:

Attendance for this program is limited to 30 participants. Individuals who attempt to register after the course is closed will be added to a waiting list.

Reservations will be accepted on a first-come first-serve paid reservation basis. Payment must be received with registration to secure a slot. Register to attend this course and pay by credit card online at <http://bit.ly/NHITunnelSafety-42417>. To register online for an event at the BSCES member rate you must login using your BSCES assigned username and password. If you do not know your login information, call 617/227-5551. You can also register for this event by mail or email. To do so, download and complete a [BSCES Event Registration Form](#) and follow the submission instructions. Cancellations or no shows after March 17, 2017 will be billed, including those that do so due to failure to take one of the prerequisite courses.



2017 SUSTAINABILITY IN CIVIL ENGINEERING AWARD

Call for Entries

The purpose of the Sustainability in Civil Engineering Award is to recognize civil engineering infrastructure projects that embody the principles of sustainability espoused by the BSCES Committee on Sustainability, ASCE, and the Institute for Sustainable Infrastructure (ISI). Such projects prominently and creatively incorporate the five sustainability indicators of quality of life, leadership, resource allocation, natural world, and climate risk.

In 2017, awards will be offered in two categories differentiating project scale.

Eligibility

To be eligible, a project must demonstrate adherence to the principles of economic, social and environmental sustainability as identified by ASCE/ISI criteria for sustainable infrastructure. **The project must have been designed by a team of civil engineers based in Massachusetts, and must have been constructed within the last five years.**

Rules for Submission

1. Entries for the award must include:
 - A completed Entry Form ([BSCES Sustainability Award Form](#))
 - A printout of the Envision™ project assessment scoring table from the ISI website completed by an Envision Sustainable Professional (ENV SP).
2. **Entries must be submitted no later than May 1, 2017.** The winner will be announced at the BSCES Annual Awards Dinner event in the Fall of 2017. Entries may be submitted electronically to relkasaby@engineers.org.

2016 BSCES Sustainability in Civil Engineering Award Winner

The 2016 award was presented to the Massachusetts Port Authority for its **Logan International Airport Consolidated Rental Car Facility (ConRAC)** project. After three years of construction, the \$310M ConRAC successfully opened in September 2013, consolidating all nine rental-car companies (RACs) from the 49-acre Southwest Service Area (SSA) site into one location offering unprecedented technologies and neighborhood conveniences. Features include:

- Reduced shuttle bus congestion and air-emissions by 50%
- Pedestrian/bicycle accommodations
- Extensive landscaped buffer at the neighboring communities
- Enhanced ConRAC employee access to mass transit
- Innovative structural design minimized material quantities
- Planning/collaboration with stakeholders to minimize disruptions
- Provided a new community center (Noddle Island Community Room)





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Save the Date!

2017 Bertram Berger Seminar Multimodal Transportation in Today's Modern Society

Wednesday, May 24, 2017

Omni Parker House, 60 School Street, Boston, MA

1:30 PM – 7:30 PM

1:30 PM Registration; 1:50 PM Opening Remarks; 2:00 PM Panel Discussion; 5:00 PM Social
6:00 PM Dinner, Bertram Berger Tribute, Keynote Address, and Awards.

More information will follow as the event date approaches.

Young Engineer of the Year Award

Call for Nominations

The BSCES Transportation and Development Institute Boston Chapter is now accepting nominations for the **2017 Bertram Berger Young Engineer Award**. The annual Bertram Berger Young Engineer Award serves to recognize an outstanding younger member of the Boston Society of Civil Engineers for his or her professional achievements and service to the community. The successful candidate should (1) be less than 35 years old on May 1, 2017, (2) have attained exemplary professional achievements as a young engineer, (3) demonstrate leadership in the practice of civil engineering with emphasis on transportation, (4) enhance the stature of civil engineers within the community, (5) be active with professional organizations such as BSCES or similar, and (6) be a registered, or soon-to-be registered, professional engineer.

In addition to recognition within the engineering community, the award winner will receive a **\$2,500 stipend** to be used for continuing education and/or professional development. The award winner will be notified by the end of April, 2017 and will be presented with the award at the upcoming annual BSCES Bertram Berger Seminar and Dinner.

To nominate an individual for the 2017 Bertram Berger Young Engineer Award, please submit an up to two (2) page narrative statement describing how the nominee meets the above described criteria. Nominations will be accepted until 5:00 p.m. on **Friday, April 14, 2017** and should be submitted via mail or email to:

Mr. Kurt Jelinek, P.E., Nobis Engineering, Inc., 585 Middlesex Street, Lowell, MA 01851
Email: kjlinek@nobiseng.com, Phone: 978/683-0891.



Supported by the staff of The Engineering Center Education Trust

Volunteer Opportunities Spring 2017

Mini-Future City at Derby Academy: Wednesday, February 22, 2017

Overview: BSCES is visiting Derby Academy to judge their 13 Future City teams

Location: Derby Academy, Hingham, MA

Time: 6:00pm to 9:00pm

Looking for: Engineering volunteers to be judges (model judges and presentation judges). Judges can be any engineer or engineering college student. No previous judging experience needed. Presentation and model judges will be placed in conference rooms where student teams will present their cities and judges will use rubrics to provide scores. Please email me if you are interested in attending, Olivia Richards oliviaannerichards@gmail.com.

Boston Public Schools Science Fair STEM Expo: Saturday, March 4, 2017

Overview: Citywide 71st Science Fair invites STEM groups to an open expo with students

Location: Northeastern University

Time: 10:00am – 12:00pm and 1:30pm – 3:00pm

Looking for: Engineering volunteers to help represent civil engineers at the BSCES Expo table. During the Science Fair, the high school students attend an open STEM expo where groups like BSCES showcase what STEM means to them. We will have a couple of bridge building activities and be talking to students about the importance of civil engineering, what we do, and how it can be a career opportunity for students. Please email me if you are interested in attending, Olivia Richards oliviaannerichards@gmail.com.

Girl Scouts 5th Annual STEM Conference: Sunday, March 12, 2017

Overview: Girl Scouts Open Expo at their conference of STEM activities

Location: Sheraton Hotel, Framingham, MA

Time: 3:00pm – 5:00pm

Looking for: Engineering volunteers to help represent civil engineers at the BSCES Expo table. During the Open Expo, girls visit tables representing different aspects of STEM. We will be showcasing aspects of civil engineering and talking to girls and their parents about our industry and careers. Please email me if you are interested in attending, Olivia Richards oliviaannerichards@gmail.com.

Girls STEM Summit by Jr Tech: Sunday, April 2, 2017

Overview: Girls from all over the state attend this Summit on careers in STEM

Location: Regis College, Weston, MA

Time: 12:30pm – 2:00pm

Looking for: Engineering volunteers to help represent civil engineers at the BSCES Expo table. Girls visit tables representing different aspects of STEM and ask us what our careers are like in civil engineering. They are interested in hearing about what we do at our jobs, what we do in college, and how we decided on civil engineering. We will be showcasing aspects of civil engineering and talking to girls about the industry. Please email me if you are interested in attending, Olivia Richards oliviaannerichards@gmail.com.

Wellesley STEM Expo: Saturday, April 8, 2017

Overview: Open Expo with exhibits, workshops, and speakers

Location: Wellesley High School, Wellesley, MA

Time: 10:00am – 2:00pm

Looking for: Engineering volunteers to help represent civil engineers at the BSCES Expo table. Families in the area attend this open expo showcasing STEM to kids of all ages. We will be doing a couple of bridge building activities and possibly showcase our shake-table. It is a day of fun science and engineering! Please email me if you are interested in attending, Olivia Richards oliviaannerichards@gmail.com.

11th Annual Cambridge Science Festival: Saturday, April 15, 2017

Time: 12:00pm - 4:00pm

Overview: Every spring, BSCES attends the Cambridge Science Festival. The founding collaborators are MIT, Harvard University, the City of Cambridge and the Museum of Science. BSCES is invited to attend the More information at www.cambridgesciencefestival.org/Home.aspx

Location: Cambridge Rindge & Latin Field House, Cambridge Public Library, Broadway and Ellery Street, Cambridge

Looking for: BSCES will have a booth at the Science Carnival and Robot Zoo Event, which is an expo-style event with almost 100 booths providing hands on activities and demonstrations for the public. It is the largest and most publicized exposition that the BSCES Outreach Group attends. We need volunteers to help with activities relating to bridge building, block towers, etc. All volunteers are welcome – engineers and engineering students. Please contact Olivia Richards (oliviaannerichards@gmail.com) if you are interested!