ENVIRONMENTAL ENGINEER & SCIENTIST

Volume 49, Number 2
Spring 2013

2013 Superior Achievement in Environmental Engineering and Science Award Winner,

Gwin, Dobson & Foreman, Inc. and
Bassett Engineering

American Academy of Environmental Engineers and Scientists

American Public Works Association Now Offers its Members

Free Educational Programs for Engineers

The **APWA Members' Library** offers hundreds of programs in:

Sustainability

Water and Sewers

Solid Waste

Emergency Management – Preparedness and Recovery

Construction Management

Transportation

Grounds and Urban Forestry

Leadership and Management

...and more!

These 1-2 hour programs are available, at no extra charge, to members of APWA and most are eligible for CEU (or PDH) credit.

Learn more about the APWA Members' Library at www.apwa.net/MembersLibrary/About.

Join APWA today for access to this library and other member benefits!
Just $85*USD for first-time members.
That's half the regular price of individual membership ($169 USD).

www.apwa.net

*Chapter dues, where applicable, will be in addition to the special offer fee.

ISSN 2325-842X

Quarterly Periodical of
The American Academy of Environmental Engineers and Scientists®

Environmental Engineer and Scientist is published quarterly by the American Academy of Environmental Engineers and Scientists®. Address all communications on editorial, business and other matters to:

Editor-in-Chief,
Environmental Engineer and Scientist®
American Academy of Environmental Engineers and Scientists®
130 Holiday Court, Suite 100
Annapolis, Maryland 21401
410-266-3311

ENVIRONMENTAL ENGINEER & SCIENTIST

Volume 49, Number 2 Spring 2013

News and Features

Departments

AMERICAN ACADEMY OF ENVIRONMENTAL ENGINEERS & SCIENTISTS®

POSTMASTER: Send Address Change Form 3579 to American Academy of Environmental Engineers and Scientists, 130 Holiday Court, Suite 100, Annapolis, MD 21401.

POSTAL INFORMATION: Environmental Engineer and Scientist (ISSN 2325-842X) is mailed as third class matter from Annapolis, MD.

SUBSCRIPTIONS: Member dues are applied in part, as a subscription to Environmental Engineer and Scientist; additional subscriptions, sold only to those not eligible for AAEES membership, are $20 ($50 outside North America); single copies are $10.

CONTRIBUTIONS: Contributions in the form of news releases, manuscripts and photographs will be considered. Write for manuscript submission specifications. Every reasonable care is taken with contributions, but the Academy is not responsible for damage or loss.

PRESIDENT'S PAGE

Pasquale S. Canzano, P.E., BCEE
psc@dswa.com

AAEES' Excellence in Environmental Engineering and Science

As this issue rolls off the press, the Academy will be holding its Annual Excellence in Environmental Engineering and Science (E3S) Awards Conference and Luncheon in Washington, D.C. For those of you who have ever attended this premier event, you are fully aware of the prestige that comes with receiving one of the Academy's awards. So, for all of our environmental engineering and science colleagues who may not even be aware of the Academy's awards, this message is for you.

The Academy recognizes excellence in environmental engineering and science over a full spectrum of achievements. Individual awards are made to those in academia including educators and students, private and public practice, and research. The awards consider technical expertise, professional conduct, and ethics in addition to personal accomplishment. There are eight individual awards and three project awards administered directly by the Academy or in cooperation with its sponsoring organizations. Many of the awards have been established in honor of environmental engineers who have distinguished themselves through exemplary achievements throughout their careers and recognized for their expertise by their peers.

Briefly, the awards are as follows:

- **The Edward J. Cleary Award** — for expertise in professional practice, administrative excellence, and public service. Environmental engineers and scientists are eligible for this award.
- **The Gordon Maskew Fair Award** — for achievements in the practice of environmental engineering and significant contributions to the quality of the world's environment. Only environmental engineers are eligible for this award.
- **The Honorary Member Award** — for environmental engineers and scientists who have attained a position of Eminence in the environmental and/or human health protection field.
- **The Stanley E. Kappe Award** — for exhibiting outstanding leadership skills within the Academy's Board of Trustees and promoting greater recognition of the Academy and environmental engineering excellence.
- **W. Wesley Eckenfelder Industrial Waste Management Medal** *sponsored by Veolia Water and supported through the Environmental Engineering and Science Foundation* — distributed to the Grand Prize winner of the Industrial Waste Practice award.
- **The Environmental Communications Award** — offered in cooperation with the International Water Association and the PIA to recognize outstanding environmental communication efforts in the public and private sectors. The Academy began offering this award in 2012.

In addition to the individual awards listed above, the Academy, through its Environmental Engineering and Science Foundation and co-sponsored by AEESP, offers the following three awards focusing predominantly on students:

- **The W. Wesley Eckenfelder Graduate Research Award** — to an outstanding graduate environmental engineering or science student pursuing a Masters or Doctorate degree in research, which contributes to industrial wastewater management. The award includes a $1500 cash award and eligible travel expenses.
- **The W. Brewster Snow Award** — to an outstanding engineering student pursuing or completing a Master's degree in environmental engineering.
- **The Excellence in Environmental Engineering Education Award** — granted to an educator who has made a significant contribution to the profession in the area of educating practitioners. The award is administered jointly by AAEES and AEESP and includes a cash award of $1000 in addition to eligible travel expenses.
- **The Frederick G. Pohland Award** — for contributions bridging environmental engineering research, education, and practice to recipients in academia includes a $1000 cash award and eligible travel expenses.

All but the Pohland Award are presented at the AAEES Annual awards luncheon. The Pohland Award is presented at AEESP's Annual Meeting during WEFTEC.

Last, but certainly not least, are the prestigious **Excellence in Environmental Engineering and Science Awards** for national and international projects. These highly competitive awards are determined by an independent panel of distinguished experts through rigorous review and evaluation. The Honor and Grand Prize Awards cover all phases of project implementation. However, the jewel in the crown is the Superior Achievement for Excellence in Environmental Engineering and Science Award, which is presented to the overall best entry in the annual competition.

Hopefully, I have whetted your interest and curiosity to obtain more details regarding the Academy's awards and your eligibility to enter the competition next year. Please visit our website at www.aaees.org or contact the Academy's headquarters at 410-266-3311 for more information. While you're at it, explore the requirements for becoming a Board Certified Environmental Engineer or Scientist and the benefits of being a member of the American Academy of Environmental Engineers and Scientists. As always, I welcome feedback from our members at PSC@DSWA.com.

The Academy recognizes excellence in environmental engineering and science over a full spectrum of achievements.

While the nation reinvests in its infrastructure...

Are you reinvesting in the infrastructure of your organization?

Hiring the right people is key to your success. Bringing in qualified Environmental Engineering and Environmental Science candidates will strengthen your organization and provide you with the talent you need. Visit the AAEES Career Center today to find that perfect fit.

The American Academy of Environmental Engineers and Scientists can help move along your candidate search. By posting a job on the AAEES Career Center, you will get unparalleled exposure within the engineering and scientific communities. As a part of the Engineering & Science Career Network, AAEES ensures that your job posting will be seen by thousands of qualified candidates relevant to your industry. And with access to all resumes posted to the network, you can widen your reach to find the right candidate today!

When it comes to making career connections in the Environmental Engineering and Environmental Science industries, more and more job seekers are turning to the AAEES Career Center to find their next position. Where better to post a job and search for qualified candidates? Visit the AAEES Career Center to post your Environmental Engineering and Environmental Science jobs today!

The ESCN is a strategic industry alliance formed by AAEES and other top trade and professional associations that serve companies searching for engineering and science professionals.

AMERICAN ACADEMY OF ENVIRONMENTAL ENGINEERS & SCIENTISTS

ENGINEERING & SCIENCE CAREER NETWORK

careers.aaees.org

EXECUTIVE DIRECTOR'S PAGE

Joseph S. Cavarretta, CAE
jcavarretta@aaees.org

The Elephant in the Room

In an ideal world, professionals adopt and practice according to the ethical values and standards instilled through education and professional organizations. In reality, ideals are continuously challenged by political and economic obstacles.

Qualifications Based Selection — the Brooks Act, is the perfect example: Everyone talks about QBS, but how many conscientiously apply its principles to procurement? Some agencies live by QBS. On the other hand, I always hear several individuals at trade shows refer wistfully to QBS. They would love to embrace it, but economic and political realities all too often have a CSO effect on procurement. Is anyone listening?

The American Society of Civil Engineers recently issued its annual Report Card on the state of infrastructure in our Great Nation. We all know the score: D+. We are relying on infrastructure that was built decades ago. That attests to the QUALITY of what was built — maybe even overbuilt at that time, but still standing today — if not tottering. Ladies and gentlemen, what an optimal investment in America our forbears made and what a return on investment. Even without a comparative analysis of past and present costs, it must have taken a lot of backbone to approve those projects. What drove those decisions? Our manufacturing base? War? Politics? The Great Depression? Have the key engines that once demanded a superb infrastructure disappeared from our economy? Who should pay? Shouldn't infrastructure be considered an asset instead of an expense? Would a federal capital outlay flood down to beleaguered families? I don't propose to know the answers, but solid infrastructure that meets demand is precisely what drove our nation to become world leader. Our Great Nation's infrastructure — environmentally sustainable — needs to be the shining example. The cost of devolving to substandard conditions is infinitely greater than the investment in modern improvement. The future of America, its public health, and its economy is at stake. Leadership is responsible to make this happen, but the real "push" must come from the engines of market-driven demand.

For those in the environmental engineering profession who design, build, and manage infrastructure and operations — agencies and firms alike — QBS guides the nation toward public health and excellence in environmental engineering. It is both an ideal and a law. It can serve as one giant step toward improving the overall infrastructure of the nation. It should be embraced, advocated, and demanded at all levels. It should not be the elephant in the room (If you're interested in joining the Academy's QBS initiative, email me at jcavarretta@aaees.org.)

Join the Academy's Mentoring Initiative

QBS education is imperative for young professionals and recent graduates seeking jobs.

The Academy is developing a mentoring program for graduating students and young professionals. An interesting discussion on the Water Environment Federation's LinkedIn site initiated by Barry G. Walkenshaw, P.E., BCEE, Water/Wastewater/Stormwater Project Manager, has become the "mother" of all ethical, operational, and, philosophical discussions of project management and related decision-making. The discussion is titled "Engineering arrogance. Is it a result of an attitude that only engineers really understand all aspects of the problems they are hired to solve?" I highly recommend you read it.

The discussion raised a lot of questions in my mind about our mentoring program's goals and objectives. Many of us are aware of the dynamics in situations where a complicated number of human and economic factors are in play (i.e., procurement). Barry's discussion indicates to me that any mentoring program has the potential to instill the good, the bad, and the ugly. When the "new kids on the block" graduating students and young professionals go forth, they will be hungry for jobs; seeking sage advice, and looking to bond with professionals. A "wink wink" from a long standing professional may color their future decision making or their perception of a profession that they altruistically chose to pursue. Of course students and young professionals have to answer to themselves and their beliefs; they should know right from wrong, and everyone needs to find their ethical balance in life. Should the Academy's mentoring program incorporate ethics into its design? If so, how will we do that? Email me your suggestions and interest in the mentoring program at jcavarretta@aaees.org.

The future of America, its public health, and its economy is at stake. Leadership is responsible to make this happen, but the real "push" must come from the engines of market-driven demand.

2014 NOTICE OF NOMINEES FOR BOARD OF TRUSTEES

The Academy's Nominating Committee is chaired by Past President Michael W. Selna. Its members include Brian P. Flynn, Jeffrey H. Greenfield, Cecil Lue-Hing, James Mihelcic, and Kristin Morico. The following candidates have been recommended for 2014.

President-Elect

James F. Stahl, P.E., BCEE

Vice President Candidates

Howard B. LaFever, P.E., BCEE

Roger Tim Haug, Ph.D., P.E., BCEE

Trustee-at-Large Candidates

David A. Chin, Ph.D., P.E., BCEE

Jeffrey H. Greenfield Ph.D., P.E., BCEE

Sandra L. Tripp, P.E., BCEE

Wendy A. Wert, P.E., BCEE

President-Elect

James F. Stahl, P.E., BCEE, is a Vice President for MWH Americas where he has served as a managerial and technical advisor for industrial and municipal clients throughout the United States. Prior to joining MWH, he was a member of the engineering staff of the Sanitation Districts of Los Angeles County for 38 years, retiring as the Districts Chief Engineer and General Manager in 2007. The Districts provide wastewater treatment and solid waste management needs for approximately five million people and 1400 major industries. At the Agency, he served in various technical and managerial assignments involving wastewater research, operations, treatment plant design and solid waste. At MWH, Mr. Stahl has been an advisor to municipal and industrial clients across the United States in formulating strategies for cost effective and environmentally responsible wastewater infrastructure. Throughout his 45+ year environmental engineering career, he has been actively involved in the planning, implementation, and operation of a vast array of sustainable, innovative environmental engineering projects and programs. These have included design of air and oxygen activated sludge systems, comprehensive odor control technologies, diverse biosolids handling and recycling elements, water reclamation and reuse systems, biogas energy and alternative fuel plants, state-of-the-art materials recovery facilities and landfills, and unique public education programs.

Mr. Stahl holds a B.S. in Civil Engineering from Loyola Marymount University, an M.S. in Environmental Engineering from Stanford University, and a California P.E. license. He has served on the Program Committee and various technical committees of the Water Environment Federation; is past Chairman of the Board of Directors of the Water Environment Research Foundation; past President of the California Association of Sanitation Agencies, and a member of the National Academy of Engineering. He has been a BCEE of the American Academy of Environmental Engineers and Scientists since 1982, currently serves on the Academy's Board of Trustees and is a recipient of the Academy's Edward J. Cleary and Gordon Maskew Fair Awards.

Vice President

Howard B. LaFever, P.E., BCEE, is currently a Principal at GHD Inc. (f/k/a Stearns & Wheler, LLC) a global (6,500 staff) engineering, architectural, and environmental consulting company working out of the Cazenovia, NY, office. He has served the company for 40 years with a specialty in wastewater, solid waste, and pipeline infrastructure. His recent emphasis has been in the area of sustainability. Mr. LaFever earned a B.S. in Civil Engineering from Clarkson University in 1968 and an M.S. in Sanitary Engineering from Cornell University in 1973. He became a BCEE in 1982 in the Water Supply and Wastewater Engineering specialty and recently received certification in the Environmental Sustainability specialty from AAEES.

Mr. LaFever has been a strong supporter, advocate, and champion of the Academy at his company by incorporating AAEES certification as part of the professional development track for young professionals. He served on the Academy's Board of Trustees for six years representing the American Public Works Association (APWA) and is currently serving in his fourth year as Treasurer and Chairman of the Finance Committee. He previously served on the Finance, Audit, Membership, Awards, and Executive Committees.

Mr. LaFever has recently been Chairman for the newly formed Institute for Sustainable Infrastructure (ISI) formed by ASCE, ACEC, and APWA and served on the APWA Center for Sustainability. He strongly believes that the Academy can play a vital role in the education, training, and certification of professionals leading the way to sustainable solutions to rebuild our aged infrastructure.

He strongly supports the importance of certification and enhancing the range of the environmental profession. He will work hard through strong leadership to strengthen the growth in membership,

implement the strategic plan, and gain more involvement from the younger members and students.

Mr. LaFever thanks the nominating committee for the nomination, and if elected, he promises to continue and expand on the efforts of the great leadership of the recent Academy Presidents.

Roger Tim Haug, Ph.D., P.E., BCEE, is currently Emeritus Professor of Civil and Environmental Engineering at Loyola Marymount University, Los Angeles, CA. He teaches courses in environmental microbiology and guest lectures on environmental sustainability. Dr. Haug has more than 15 years of experience as a consulting engineer in the private sector. Following that, he served for 25 years in public service with recent retirement in 2010 as Deputy City Engineer and Wastewater Program Manager for the Bureau of Engineering, City of Los Angeles.

Dr. Haug has authored more than 120 publications on the technical aspects of wastewater treatment, biosolids processing, and the management of large capital improvement programs. He is author of the books *Compost Engineering – Principles and Practice* (1980) and *The Practical Handbook of Compost Engineering* (1993). Twice during his tenure as Deputy City Engineer, the City's wastewater program won the Academy's Superior Achievement Award. He was recipient of the 2008 Gordon Maskew Fair Award from the Academy and the 2008 Rufus Chaney Award from the U.S. Composting Council. He was a Trustee-at-Large for the Academy from 2009 to 2013, and he is a life member of ASCE.

Dr. Haug promotes the value of the Academy's board certification for engineers in both professional practice and academia. He also strongly supported opening the Academy to environmental scientists to increase the Academy's philosophy and reach within the environmental industry.

Trustee-at-Large

David A. Chin, Ph.D., P.E., BCEE, is currently a Professor of Environmental Engineering at the University of Miami and is Chairman of the AAEES Education Committee. Dr. Chin served as Chairman of the Department of Civil, Architectural, and Environmental Engineering at the University of Miami for 13 years. He is the author of two major environmental engineering textbooks: *Water-Quality Engineering in Natural Systems*, published by John Wiley and Sons, and *Water-Resources Engineering*, published by Prentice-Hall.

Dr. Chin actively contributes to the improvement of environmental engineering education in the United States by serving as an ABET program evaluator for both AAEES and ASCE, and he has served in this capacity for more than a decade. Dr. Chin also performs a significant amount of public service, primarily as one of five members of the Environmental Quality Control Board (EQCB) of Miami-Dade County, Florida, and is responsible for reviewing applications for variances and waivers of Miami-Dade environmental regulations.

Dr. Chin's research interests are in the areas of terrestrial fate and transport of bacteria, quantification of TMDLs to account for uncertainty, ground-water remediation, and environmental hydrology. His technical contributions to these fields are published regularly in professional journals.

Dr. Chin is a past recipient of the prestigious Collingwood Award by ASCE, and has received both the Outstanding Teacher Award and Outstanding Research Award at the University of Miami. Dr. Chin's postgraduate academic training was received at Georgia Tech (Ph.D.) and Caltech (M.S.).

Jeffrey H. Greenfield, Ph.D., P.E., BCEE, is currently a Senior Engineer at the South Florida Water Management District, West Palm Beach, Florida, a regional governmental agency that oversees water resources of the southern half of the state, including 16 counties from Orlando to the Florida Keys and serving nearly 8 million residents. He has 20 years of consulting experience and 15 years of Civil and Environmental teaching experience, both full time and part-time, at Florida International University.

Dr. Greenfield earned a B.S. in Biology in 1977, an M.S. in 1982, and Ph.D. in 1985, both in Civil Engineering (Environmental Engineering Program) from the University of Pittsburgh. He became a Board Certified Environmental Engineer in 1999 and holds two specialty certifications including Water Supply and Wastewater Engineering and Environmental Sustainability.

He became an active member of the AAEES Water Supply and Wastewater Committee in 2000 and by 2005 he was appointed as Chair, where he still holds this position today. He continues to serve on the Academy's Awards and Nominating Committees. In addition to volunteering as an ABET program evaluator for both engineering and engineering technology since 2007, Dr. Greenfield was recently nominated by the Academy for a position as an ABET engineering technology accreditation commissioner. His most recent Academy activities include Chair of the BCES Surface Water Resources exam work group and a member of the Tau Chi Alpha committee. Dr. Greenfield is also an active recruiter of new members to become board certified and recently videotaped a testimonial in support of board certification.

Dr. Greenfield has focused a considerable amount of time contributing to the advancement of the future of engineering by serving on committees with NSPE, ASCE, NCEES, and the Florida Engineering Society.

Sandra L. Tripp, P.E., BCEE, has more than 30 years of experience in municipal water and wastewater engineering, dealing with all aspects of treatment, conveyance, and protection. She earned her bachelor's and master's degrees in civil and environmental engineering from Michigan State University. Sandy's career in consulting engineering began in the Washington, D.C., area in 1982, with Boyle Engineering Corporation. She moved to North Carolina in the 1990s and joined CDM Smith, where she served numerous municipal clients and led myriad assignments, from planning to design and construction. In 2008, Sandy joined GHD, Inc., a 6,500-person global environmental

engineering firm, and recently relocated to Massachusetts. Sandy continues to serve her municipal clients while also playing an active role in the training and development of more junior engineers. A registered engineer in several states, Sandy has published many professional papers at both the state and national levels.

In addition to her duties as a consulting engineer, Sandy has contributed substantially to both national and state professional organizations. Sandy has been an active member of the American Academy of Environmental Engineers and Scientists (AAEES) since joining AAEES in 1993. She currently serves as chair of the Admissions Committee in which she became active shortly after joining AAEES. She is a past-chair of the Membership Committee, past-chair of the Seminars & Workshops Committee, and currently serves on the Membership and Eminence committees. She served as North Carolina's State Representative for 12 years on several Academy ad-hoc committees. A past Trustee-at-Large on the Academy's Board of Trustees, she was the recipient of the 2010 Stanley E. Kappe Award for demonstrating extraordinary and outstanding service to the objectives of the Academy.

Sandy is also active in both AWWA and WEF and served on the board of the North Carolina American Water Works Association – Water Environment Association (NC AWWA-WEA). In 2003, Sandy received an Outstanding Service Award from the North Carolina section of AWWA-WEA. Her activities have included serving as NC AWWA-WEA's Board Secretary, Chair of the Seminars and Workshops Committee, and Chair of the Water Reuse Committee.

Wendy Wert, P.E., BCEE, is an Environmental Engineer with the Sanitation Districts of Los Angeles County, where she contributes process treatment expertise to wastewater facilities planning. Ms. Wert works on the agency's award-winning programs that rely on public participation to integrate water supply, water reuse, water conservation and stormwater management into sustainable operations. The annual budget for the agency is approximately $800 million for wastewater management and about $370 million for solid waste management. Ms. Wert also drafts budgets, policies, and procedures.

She is a registered civil engineer in California. Ms. Wert received a B.S. degree in Environmental Engineering and an M.S. degree in Water Resources Engineering both from the University of Central Florida. She has more than 15 years of experience in design, modeling, and upgrading.

Ms. Wert contributes technical papers to numerous publications including: Water Practice, U. S. Department of Commerce National Technical Information Service, Environmental and Water Resources Institute (EWRI), International Association of Hydraulic Engineering and Research (IAHR), WEFTEC Conference Proceedings, *CWEA Bulletin*, *Environmental Engineer and Scientist*, *BioCycle*, and the *Los Angeles Times*. She also represents the agency on several boards and committees.

She currently serves on three AAEES committees (Seminars and Workshops, Membership Development and Outreach, Tau Chi Alpha) and one work group (Website). Under her leadership, the committees organized the first AAEES webinar and multiple revenue generating events. As an officer in other organizations, she promotes the Academy by giving AAEES presentations at conferences and writing articles recapping AAEES events in professional association journals.

MEMBER NEWS

On the Move

William P. Dee, P.E., BCEE, will be retiring from his post at Malcolm Pirnie, the Water Division of ARCADIS, at the end of May 2013. Mr. Dee currently serves as Global Business Line Director for Water. He has been with the firm for more than four decades. The majority of that time was spent at the White Plains, New York, location where he eventually served as President and CEO.

Bill Dee has been a Board Certified Environmental Engineer in Water Supply and Wastewater Engineering since 1988. He is the 2008 AAEES Past President and the 2001 Stanley E. Kappe Award recipient. He served on the Academy's Excellence in Environmental Engineering and Science (E3) Committee and played a breakthrough role in elevating E3's international recognition by establishing a partnership with the International Water Association's Project Innovation Awards.

Michael J. MacPhee, Ph.D., BCEEM, assumed the role of Water Division President for ARCADIS. He originally joined Malcolm Pirnie in 2002, serving most recently as the ARCADIS Water Division's Client Development Director.

Dr. MacPhee has been a Board Certified Environmental Engineering Member in Water Supply and Wastewater Engineering since 2009.

In Memoriam

Wayne Franklin Echelberger, Jr., Ph.D., P.E., BCEE, 78, of Tampa, Florida, died suddenly and unexpectedly in Indianapolis, Indiana, on Saturday, January 19, 2013. He was born in Pierre, South Dakota, on October 23, 1934.

Dr. Echelberger had a long and productive academic career as a Professor of Civil and Environmental Engineering. He held academic positions at the University of Michigan (1964-65), University of Notre Dame (1965-73), Indiana University (1973-83), University of Texas-El Paso (1983-89) and the University of South Florida (1989-99), the last two serving as Professor & Department Chairman. After his retirement from the University of South Florida in 1999, he continued to be engaged in academic activities as a Professor Emeritus.

Dr. Echelberger was involved in many different engineering activities giving freely of his time, energy, and expertise to a number of worthy causes both at the national and international level. He worked with both governments and industry finding new strategies from improving air and water quality and managing solid and hazardous waste. He was a past member of the Technology Accreditation Commission, Accreditation Board for Engineering and Technology. He also served on the boards of many prestigious engineering organizations.

Dr. Echelberger served in several capacities with the American Academy of Environmental Engineers and Scientists. He had been a Board Certified Environmental Engineer in Water Supply and Wastewater Engineering since 1985 and was a member of the Body of Knowledge Work Group; a founder of AAEES's Campaign 4000, a three-year program to invest in the improvement of AAEES's infrastructure, technology, and membership benefits and services; and the 2006 Stanley E. Kappe Award recipient. He was also heavily involved with organizing several AAEES workshops and seminars.

Other honors and awards include: being named Engineer of the Year several times by various organizations; a Paul Harris Fellow by the Rotary International Foundation; was honored by Triangle Fraternity as a Man of the Century; and the Water Environment Federation's Harrison Prescott Eddy Medal for noteworthy research. He received the Distinguished Alumni Award in 2003 from South Dakota School of Mines and Technology and in 2010, was awarded the Guy E. March Medal the highest award given by the University to one of its graduates. An honor particularly dear to Wayne's heart was having a scholarship named in his honor at the South Dakota School of Mines and Technology. This scholarship includes a testament to his life as follows "As a teacher and mentor, he helped launch the careers of promising engineers while emphasizing the importance of balance between professional responsibilities and family life. Lessons on life about ethics and balance that Dr. Echelberger imparted to his sons carried over into lessons in the classroom. He taught his engineering students the value of giving back through community service and active involvement in professional organizations."

He was a member of Temple Terrace Presbyterian Church, Tampa Rotary Club, American Society of Civil Engineers, National Society of Professional Engineers, American Public Works Association, American Water Works Association, American Association for the Advancement of Science, Association of Environmental Engineering and Science Professors, Water Environment Federation, American Society of Engineering Education, Florida Engineering Society, Florida Water Environment Association, Sigma Xi, Chi Epsilon, and Triangle Fraternity.

Dr. Echelberger continued his engagement with academic activities as a Professor Emeritus following his 1999 retirement from the University of South Florida. At the time of his death, he was in Indianapolis continuing his service with the Triangle Fraternity Education Foundation and also was with family and friends attending a cheerleading competition which included his granddaughter. Events like these were focal points in Wayne's life during retirement and cherished by those able to share these experiences with him.

Jeffrey K. Kracht, P.E., BCEE, 70, passed away on October 28, 2012, surrounded by his family. "Jeffe" was born in Detroit, Michigan, November 10th, 1941. He had a kind, loving heart and was an adoring husband, father, and grandfather. Happiness to Jeff took the form of family gatherings, BBQs, golf, summer on the beaches of San Diego, landscaping, enjoying his children and grandchildren, and keeping current with scientific discoveries.

Jeff graduated Arizona State University, obtaining a Master's in Civil and Environmental Engineering in 1966. Throughout his career, he earned numerous titles, honors, and accolades. He was a registered Professional Engineer in Arizona, New Mexico, Nevada, California, and Michigan. His belief in the civilizing power of science, clean water, and the protection of the environment was always on display, both professionally and in his own marvelous back yard, which he spent years perfecting, to the perpetual delight of everyone who experienced it.

Mr. Kracht was a Life Member and had been a Board Certified Environmental Engineer in Water Supply and Wastewater Engineering since 1987.

ACADEMY NEWS

New Resource www.watertoolbox.us

The Federal Support Toolbox is a dynamic, evolving and comprehensive "one-stop-shop" water-resources data portal with direct links to valuable databases, innovative programs and initiatives, and state-of-the-art models and tools. This website also serves as a leading-edge resource for sharing ideas and water resources needs, best management practices, collaborations and partnerships and more for the water resources community in the U.S. and internationally.

2013 Membership Drive

The deadline for submitting applications for Board Certification for the 2013 cycle was March 31. Applications will be reviewed in April and regional examinations are expected to begin in June. Examination dates will be posted on the AAEES website as they become available.

Officer Elections

The ballots for electing the 2014 Officers and Trustees are in the mail. Ballots are due June 15, 2015.

New Member Benefit PDH Online

The American Academy of Environmental Engineers and Scientists is partnering with PDH Online to provide members with professional development hour education. All AAEES certification holders and members who use the code AAEE25 receive a 25 percent discount from any of PDH Online's 2,000+ courses, including live webinars. Members can search courses and sign up at www.pdhonline.org or www.pdhcenter.com.

PDH Online is among the leading online course providers and underscores that it is an approved sponsor by many state licensing boards for professional engineers. More than 100 of its courses have been developed by BCEEs. AAEES has designated PDH Online as its Preferred PDH Provider to help AAEES colleagues meet their bi-annual PDH requirements.

2013 Annual Directories

The 2013 edition of *Who's Who in Environmental Engineering and Science* and the *Environmental Engineering and Science Selection and Career Guide* will be mailed by late May for those who requested the print versions. The Digital Editions will be available in early May.

New AAEES Shirt Available!

The superb feel of interlock knit and the subtle glow of jacquard knit shadow stripes make this the best quality shirt ever offered by AAEES, and is suitable for business casual events. These easy care polos are 58/42 cotton/poly, flat knit collar, 3 button placket and open hem sleeves. They are available in small to XXL sizes for both men and women.

Order yours today from the AAEES Center.

2013 AAEES HONOREES

Following are profiles of the distinguished individuals who will be presented awards at the 2013 Excellence in Environmental Engineering and Science Awards Luncheon and Conference

Also to be presented, but not included in this issue of Environmental Engineer & Scientist, are:

- **Lisa Jackson**
  Honorary Member
- **First Annual University Student Team Project Award**

Additional information will be available in the Summer issue.

AAEES congratulates the recipients of the 2013 AAEES Awards.

Honorary Member

Chair Nancy Sutley

Nancy Sutley is the Chair of the White House Council on Environmental Quality (CEQ). In her role as Chair, she serves as the principal environmental policy adviser to the President. The Council on Environmental Quality coordinates Federal environmental efforts and works closely with agencies and other White House offices in the development of environmental policies and initiatives. In addition, CEQ oversees Federal agency implementation of the environmental impact assessment process and oversees the Office of the Federal Environmental Executive, which works to promote sustainable environmental stewardship throughout the Federal Government.

Prior to her appointment, Sutley was the Deputy Mayor for Energy and Environment for the city of Los Angeles, California. She represented Los Angeles on the Board of Directors for the Metropolitan Water District of Southern California and served on the California State Water Resources Control Board from 2003-2005. Sutley also worked for California Governor Gray Davis as Energy Advisor, managing state and federal regulations, legislative affairs, finances and press relations. She served as Deputy Secretary for policy and intergovernmental relations in the California EPA from 1999-2003. She advised on water and air pollution policy, and established budget and legislative priorities. During the administration of President William J. Clinton, Sutley worked for the EPA as a Senior Policy Advisor to the Regional Administrator in San Francisco and special assistant to the Administrator in Washington, D.C. Sutley received her Bachelors degree from Cornell University and her Masters in Public Policy from Harvard University.

Honorary Member

Bruce E. Rittmann, Ph.D.

Dr. Bruce Rittmann, is the director of the Swette Center for Environmental Biotechnology at the Biodesign Institute at Arizona State University and Regents' Professor in the School of Sustainable Engineering and Built Environment. He joined ASU in January 2005.

Dr. Rittmann earned his bachelor's and master's degrees in civil engineering from Washington University and his doctorate in environmental engineering at Stanford University.

Dr. Rittmann has been named a Distinguished Member of the American Society of Civil Engineers, a Fellow of the International Water Association and the American Association for the Advancement of Science, an ASU Regents' Professor, and a member of the National Academy of Engineering. He has also won the Arizona BioIndustry Association Award for Research Excellence, American Society of Civil Engineers Simon W. Freese and Huber Awards, and the National Water Research Institute's Clarke Prize for Outstanding Achievement in Water Science and Technology.

An international leader in managing microbial communities, Dr. Rittmann's work is leading to new ways to clean up pollution, treat water and wastewater, capture renewable energy, and improve human health. He holds five patents on the technology, which is being commercialized by APTwater, Inc. Dr. Rittmann is at the lead of Arizona State University teams using two innovative approaches to renewable bioenergy: using anaerobic microbes to convert biomass to useful energy forms, such as methane, hydrogen, or electricity; and using photosynthetic bacteria that can capture sunlight to produce new biomass that can be turned into liquid fuels, like diesel or jet fuel.

According to Institute for Scientific Information, Dr. Rittmann is one of the world's most highly cited researchers. He has published over 500 peer-reviewed papers. His textbook, *Environmental Biotechnology: Principles and Applications*, is used by universities around the world to educate students about the ways in which microorganisms can be used to improve environmental quality.

Gordon Maskew Fair Award

Alonzo W. Lawrence, Ph.D., P.E., BCEE

Dr. Alonzo Lawrence's 53 year career in environmental engineering and management includes corporate level environmental and occupational health management, consulting engineering, university teaching and research, and military environmental engineering. He was a sanitary engineer officer in the U. S. Army Medical Service Corps, Assistant Professor of environmental engineering at Drexel University, and Associate Professor of environmental engineering at Cornell University.

In 1976, Dr. Lawrence joined the Koppers Company, where he was Corporate Vice President of Environmental Resources and Occupational Health; Vice President of Science and Technology; and Vice President and General Manager of Koppers Chemical Systems Sector.

Dr. Lawrence was general manager of the Pittsburgh office of Hart Environmental Management Corporation during 1990. He was a principal and general manager of the Pittsburgh region of RETEC during which he managed a five-year research program for the Gas Research Institute (GRI) on the management and treatment of natural gas and coal bed methane produced waters.

Dr. Lawrence is also a Certified Financial Planner (CFP) and was a senior financial consultant with PNC Investments, a division of PNC Financial Services Corporation. He is currently a senior consultant with Corporate Environmental Solutions, LLC, specializing in wastewater treatment and general environmental management.

Dr. Lawrence has published more than 50 technical papers and reports on various aspects of environmental engineering and management with special emphasis and expertise in the design and control of biological wastewater treatment processes and systems. He holds the following academic degrees: B.S., Sanitary Engineering, Rutgers University (1959); M.S., Sanitary Engineering, MIT (1960); and Ph.D., Civil and Environmental Engineering, Stanford University (1967). He is AAEES Board Certified in Water Supply and Wastewater Engineering.

Stanley E. Kappe Award

Richard W. Corneille, P.E., BCEE, PMP

Richard Corneille has been the AAEES Southern California Representative for the past 20 years. During this period, he has organized and overseen certification interviews and tests for more than 450 BCEE candidates. He has a B.S. in Civil Engineering from the University of Vermont and an M.S. in Sanitary Engineering from Northeastern University. Mr. Corneille has more than 40 years of professional experience in water and wastewater projects.

He started his professional career in 1970, working for Metcalf & Eddy in Boston. He worked overseas for M&E in Saudi Arabia for three years and then relocated to Southern California with the firm in 1978. He left M&E in 1986, and worked for the City of Redlands as utilities director responsible for the City's water and wastewater facilities from 1986 to 1989. He returned to the private sector to CDM Smith and was a vice president and project manager in Southern California. He has managed several major projects for CDM Smith including the design of the Groundwater Replenishment System for Orange County Water District and Orange County Sanitation District, which is the largest indirect potable reuse treatment system in the world. This project won the ACEC National Project of the Year in 2009 and the E3 Design Grand Prize in 2008. Mr. Corneille retired from CDM Smith in January 2013, and is currently a consultant to the company.

In addition to AAEES, he has been active, serving as President of the SB-Riverside Branch of ASCE, and Water Resource Division Chair of the Cal-Nevada Section of AWWA. He is a life member of WEF and ASCE.

Currently he serves as an elected Board Member for the San Bernardino Valley Water Conservation District. He has been on the Board for seven years and is currently the Board President.

Edward J. Cleary Award

Alan H. Vicory, Jr., P.E., BCEE

Alan Vicory is a Principal in Stantec's Cincinnati, Ohio, office where he is leading regulatory interface, watershed planning and water quality initiatives throughout the Southeast region of the U.S. Recognized as a national and international leader on water quality and water resource management issues, Mr. Vicory has extensive experience in these specialized areas, cultivated during his nearly 30 years of work in the industry. For more than 24 years, he served as the Executive Director and Chief Engineer of ORSANCO, an eight-state agency established to control and abate water pollution in the Ohio Basin and for which Edward J. Cleary served as its first Director. Under Mr. Vicory's leadership beginning in 1987, ORSANCO transitioned to a highly proactive agency with enhanced program capacity and one engaged and influential in national policy development through strong relationships with US Environmental Protection Agency and Congress.

Vicory has served as President of the American Academy of Environmental Engineers and Scientists, the Association of State and Interstate Water Pollution Control Administrators, and Chairman of the Water Environment Research Foundation. Mr. Vicory is currently Chairman of the Environmental Engineering and Science Foundation as well as the USA National Committee of the International Water Association. He also serves as Chairman of "Confluence," Water Technology Innovation Cluster, based in Cincinnati, Ohio. Since its establishment in January 2011, Vicory has helped guided Confluence's rapid development as an important organizational and economic development asset to the Ohio-Kentucky-Indiana Region with global reach.

Excellence in Environmental Engineering Education Award

John T. Novak, Ph.D., P.E., BCEE

John Novak is the Nick Prillaman Professor of Civil and Environmental Engineering at Virginia Tech where he has been a faculty member for the past 31 years. Prior to that, he was a faculty member for 12 years at the University of Missouri, Columbia.

Dr. Novak has conducted research in sludge management, wastewater treatment, solid waste management, and soil and groundwater remediation. He has received four awards for papers he has published during his career. In 2007, he received the Simon W. Freeze Award from the American Society of Civil Engineers for his contribution to "advancing the understanding of sludge dewatering processes and improving biosolids management". In 2011, he received the Frederick G. Pohland Award from the Association of Environmental Engineering and Science Professors and the American Academy of Environmental Engineers and Scientists, and, in 2013, he received the Ralph Furhman Medal from the Water Environment Federation for "Outstanding Water Quality Academic-Practice Collaboration."

He is the author of more than 300 papers in journals and conference proceedings and has served as the major advisor to more than 180 graduate students. Dr. Novak also served six years as a member of the Research Council of the Water Environment Research Foundation, the last three as Chair. His B.S. and M.S. degrees are from the University of Missouri, Columbia, and his Ph.D. is from the University of Washington.

W. Brewster Snow Award

Dustin Bales

Dustin Bales was awarded an M.S. degree in Environmental Engineering from the University of South Florida (USF) in December, 2012. He is also part of the Peace Corps Master's International Program at USF and began his training and two years of engineering Peace Corps service in Uganda in April, where he will implement water and sanitation engineering projects. His graduate advisors were Dr. Maya Trotz (Associate Professor, Civil & Environmental Engineering, University of South Florida) and Dr. Dawn Lei (Water Quality Assurance Officer, Water Department, City of Tampa).

For the past two years while completing his graduate degree requirements, Mr. Bales worked at the David L. Tippin Water Treatment Facility that serves the City of Tampa and surrounding areas. There, he was able complete pilot-scale biofiltration and bromate control research studies that will reduce chlorine demand and bromate levels while resulting in annual savings of $1 million. He presented a paper on his research titled "Bench Scale Evaluation of Chlorine Ammonia Process for Bromate Control During Ozonation" that was awarded the Best Paper Award at the Fall 2013 conference of the Florida Chapter of the American Water Works Association.

Mr. Bales has a B.S. in Chemical Engineering from the University of Missouri Science & Technology and has passed the FE examination in Missouri. As an undergraduate student, he served as president of his university's Engineers Without Borders – USA student chapter and was leader on a project to supply safe drinking water to a rural community in the Honduras. He has also served as a mentor to the student chapter of EWB-USA at the University of South Florida. After graduation, Mr. Bales plans to remain in engineering practice as a developing world water/sanitation/hygiene (WASH) engineer working for USAID or at a nongovernmental organization (i.e., Oxfam, CARE, or Action Against Hunger). Alternatively, he may return to the U.S. and seek employment with a utility or engineering consulting firm with specialization in water or wastewater treatment. A

2013 ENVIRONMENTAL COMMUNICATIONS AWARDS

Communicating with the public at large and other constituents can be a complex and challenging issue. Communication and marketing plans must be designed to address the objectives and strategies of the campaign to reach target audiences.

With this in mind, in cooperation with the International Water Association and the PIA Awards, AAEES offered a new area of competition for 2012, the Environmental Communications Award.

The criteria that an independent panel of judges uses to assess the entries include:

- Future value to the water engineering profession,
- Creativity and clarity in portraying and communicating the messages,
- Effectiveness in delivery and achieving desired outcome, and
- Integrated Design Approach – Narrative and visual elements work together to achieve the communication objectives.

Two winners were selected for the 2013 Environmental Communications Awards: one Grand Prize winner and one Honor Award.

AAEES would like to thank the following individuals who served as judges for the 2013 Environmental Communications Awards:

Judy Berkun, Marketing Manager ARCADIS
Ina Cunningham, Marketing Manager, CH2M Hill
Marlene Hobel, Vice President, Corporate Communications, CDM Smith
Paul D. Koch, P.E., BCEE, Private Engineering Consultant

Grand Prize

ENTRANT: Atlanta BeltLine
PERSON IN CHARGE: Howard Lalli

The Atlanta BeltLine Project

The Atlanta BeltLine redevelopment project was born more than a decade ago as a grass roots movement inspired by a vision. The integrated, multi-dimensional communications and engagement strategy implemented over the past five to six years in particular has cultivated, expanded, and diversified that movement.

Today, tens of thousands of passionate grass roots advocates; thousands of business, civic, philanthropic, political, community, regulatory and other leaders; and hundreds of private and public donors and funders have opted into regular communication and engagement with the Atlanta BeltLine.

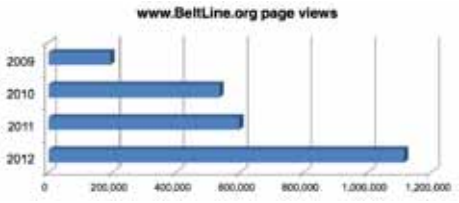
The Atlanta BeltLine is America's largest, most ambitious, multifaceted redevelopment project. Ask an Atlantan about the Atlanta BeltLine, and they're likely at some point in describing it, to hold their hands in front of them to form a circle – or to draw a circle in the air. This physical gesture evoking the Atlanta BeltLine brand mark represents the project's 22-mile circumference around the city's urban core – a historic railroad corridor that is being transformed into a combination of streetcar-style, neighborhood-friendly transit, 33 miles of multi-use trails, a linear arboretum, and 1,300 new and renewed acres of park space. Some of the project's funding is dedicated to affordable housing, and the Atlanta BeltLine's implementation also includes brownfield reclamation and historic preservation. The 45 individual tiles that comprise the mosaic in the Atlanta BeltLine logo mark represent the Atlanta neighborhoods touched and reconnected by the project. The net result of the Atlanta BeltLine's implementation – which already includes nearly six miles of permanent trails, nearly 100 acres of new and renewed parks, and funding committed towards 120 new affordable housing units – will include quantifiable economic development and measurably healthier lives.

The city legislation that set the implementation of the project in motion included specific requirements for engaging the public in the process of planning the Atlanta BeltLine. This Community Engagement Framework consists of five components: a Tax Allocation District Advisory Committee and Affordable Housing Board; a community representative on the Atlanta BeltLine Inc., Board of Directors; a community engagement advocate on staff; formal community reporting; and the creation of a structure or framework in which to engage the community in the Atlanta BeltLine planning area, known as "Study Groups." More than 5,000 people have since been engaged in planning the project via direct outreach to neighborhood organizations and participation in more than 225 public meetings.

Even with more robust public engagement requirements than most redevelopment projects in the country, the organizations leading and supporting its

implementation – Atlanta BeltLine, Inc. and the Atlanta BeltLine Partnership – recognized the overarching challenge of maintaining broad and deep support for the Atlanta BeltLine through inevitable political, economic, and social cycles. They acknowledged a broad range of audiences – from political, business, civic, philanthropic and community leaders to neighbors of the project, residents of Atlanta, and the broader public across the region and state. The shared, continually evolving communications and engagement strategy is ever mindful of always working to grow the number of advocates across this spectrum that opt into Atlanta BeltLine communications and programs.

Content is at the center of the Atlanta BeltLine Communications and Engagement Strategy, leveraging a range of channels and programs. Content includes words, photographs, renderings, maps, video, presentations, and tour narration. The communications channel at the heart of the strategy is the project website, www.beltline.org, launched in 2007 and re-launched in 2013. Everything in the strategy aims to drive visitors to the website – and from there to learn more about, engage with, support and volunteer on behalf of the Atlanta BeltLine. Each day, www.beltline.org receives thousands of page views. From 2009 to 2010, page views doubled to exceed half a million. As the powerful web presence grew from 2011 to 2013, page views doubled again, topping out at over 1.1 million. In 2009, a record-setting day was just under 30,000 page views. Now, a record-setting day is almost 170,000.



Occasional emails to update Atlanta BeltLine fans have since evolved into a robust weekly e-newsletter to 15,000 subscribers. To reach supporters in person and those who may not be connected digitally, we developed a quarterly printed newsletter in July 2008; print runs are now 5,000 every three months.

With the rise of social media, the strategy now encompasses Twitter, with 9,000 followers, and Facebook, with 16,000 total fans across three fan pages. The Atlanta BeltLine's YouTube channel hosts 153 videos with close to 80,000 views.

Traditional media engagement has also been important in raising awareness of the Atlanta BeltLine – including proactively and regularly cultivating print and broadcast reporter relationships on the local, regional, state and national levels. Dating back to 2004, the Atlanta BeltLine generated 2,357 news articles. This nearly doubled between 2011 and 2012 with 802 articles the latter year.

One of the earliest and most successful engagement programs – above and beyond the formal public engagement in planning for the project – was Atlanta BeltLine Tours. Almost 15,000 people to date have taken a three-hour bus tour around the Atlanta BeltLine. Atlantans also learn about the Atlanta BeltLine from a corps of nearly 2,000 volunteers informing their fellow residents about the project via volunteer programs that include a speakers bureau, an information booth at community festivals and other events, and neighborhood canvassing. Additionally, more than 50 organizations beautify the Atlanta BeltLine via the Adopt the Atlanta BeltLine program and hundreds more residents participate in the annual Atlanta BeltLine Earth Day service project. Even more ambitiously, recent years have seen: Atlanta BeltLine, Inc.'s launch of the annual Art on the Atlanta BeltLine temporary public art exhibit drawing thousands of visitors to the project corridor; and the Atlanta BeltLine Partnership's launch of the Atlanta BeltLine Running Series and Run Club. These two programs now have their own dedicated followings with stand-alone Facebook pages with more than 3,000 followers combined.

The Atlanta BeltLine Inc./Atlanta BeltLine Partnership communications and engagement team's strategy to cultivate Atlanta BeltLine support will continue to evolve.

Honor Award

ENTRANT: Orange County Water District
PERSON IN CHARGE: Michael Markus

OCWD & OCSD's Joint Project: The Groundwater Replenishment System (GWRS)

The Orange County Water District (OCWD) and the Orange County Sanitation District (OCSD) have partnered on innovative projects for nearly 40 years. In 1976 Water Factory 21 came on-line and in January of 2008 the GWRS took its place. WF-21 was a water recycling facility that was the first in the world to use reverse osmosis to purify wastewater used to protect the groundwater basin from seawater intrusion. WF-21 helped pave the way for the GWRS.

In 1997, OCWD and OCSD signed a cooperative agreement to develop the largest advanced water purification facility of its kind, the GWRS. The project takes highly treated wastewater that would have been discharged into the Pacific Ocean and purifies it using a three-step advanced purification process. The 70 million gallons of water per day (MGD) it produces exceeds state and federal drinking water standards and protects the basin from seawater intrusion, while also providing enough drinking water for 600,000 residents in OCWD's service area.

The Challenge and Goal:

From the project's onset, the OCWD and OCSD Boards recognized public relations would be imperative to the success of the GWRS. They had to overcome the negative public perception of recycling wastewater to drinking water, often referred to as "toilet-to-tap." Similar water treatment projects in Los Angeles and San Diego were defeated because of this issue. The WateReuse and International Water Associations identified public acceptance as the biggest hurdle to implementing water recycling projects.

Because of the negative and misinformed public perception of purifying wastewater to drinking water, the agencies decided the "clean water" agency, OCWD, would manage and be the face of an aggressive outreach campaign that sought to earn and maintain support for an unprecedented water recycling project. This support would translate into water reliability for the region, the protection of a significant public investment and the creation of a model project that could be replicated world-wide. The GWRS outreach campaign is recognized as the main reason for public acceptance of the project.

Campaigns' Target Audiences, Objectives and Strategies:

An aggressive, creative and proactive public outreach program was established and implemented to secure support for the project from the following audiences: local, state and federal elected officials; business and civic leaders; health experts; environmental advocates; regulatory agencies; media and the general public. The campaigns primary objectives were:

1) achieve no organized opposition to the project,
2) secure positive media impressions,
3) be prepared to address significant opposition,
4) educate audiences to overcome the negative perception of recycling wastewater, "toilet-to-tap,"
5) start the outreach campaign nearly 10 years prior to the project's start-up and continue it throughout the project's life to maintain support for future expansions, and
6) create a positive perception of recycling wastewater to increase support of indirect and direct potable reuse.

The many strategies listed below were designed to achieve the outreach campaign's objectives. Since a change or influence in opinion was desired, the list is extensive.

- Administer presentations through OCWD's Speakers Bureau
- Form relationships with media, pitch stories, write op-eds and engage in social media
- Give briefings to elected officials and track term limits to continue to keep new officials engaged
- Form a project steering committee and a sub-committee on public information and education
- Establish an independent panel to provide validation of GWRS' technology and processes
- Form a committee of respected community opinion leaders and experts that serve as project spokespeople (stakeholders want to hear from people they know and trust)
- Generate a supporter list and secure commitments in writing and on video
- Talk about success of WF-21 and OCWD's water quality record
- Be transparent
- Administer surveys
- Create a project website and collateral
- Engage in multi-cultural outreach
- Host meetings and events for stakeholders
- Administer tours of the pilot and final facility and offer water tastings (tasting and seeing is believing)
- Update and maintain a crisis management plan
- Perform project construction outreach
- Maintain communication with supporters and keep them informed
- Engage staff in case and research studies to further the advancement of water reuse

The success of the campaign was demonstrated by achieving no organized opposition to date. Thousands of media impressions were secured, including The New York Times and National Geographic, and more than 600 letters of support including those from every city council and chamber of commerce in OCWD's service area were obtained. Without such strong support from policymakers, the project may not have moved forward, nor would OCWD have been able to secure $92 million in state, federal and local grants to help fund the project. The Governor and Senator Dianne Feinstein were also critical project supporters. In fact, Sen. Feinstein hosted a water briefing on OCWD's campus for a 500-person audience.

Future Value

The outreach campaign for GWRS and the project's successful operation revolutionized how consumers look at wastewater-as another resource they should take care of and reuse. OCWD is paving the way for others to gain public acceptance of this environmentally friendly and safe water supply. It has opened the door for other elected officials to initiate water recycling projects in their communities with greater assurance that they will have public support and not be a political risk. But more importantly, communities have an effective and safe alternative to creating new water in which they can control and rely upon.

Maintaining support for the GWRS is critical, so OCWD continues its outreach. This led the way for the Initial Expansion of the GWRS, which will be completed in early 2015 and will produce an additional 30 MGD. The science and technology exist to support these projects however, public perception continues to be a barrier in many communities worldwide. In Southern California alone 1.3 billion gallons of water is lost to the ocean every day; this is a valuable resource that must be utilized. Having a model project and outreach campaign is imperative to expand the number of GWRS-like projects.

UPCOMING EVENTS

May 14, 2013

AAEES 4th Annual Workshop (with TChs, PDhs, and CEUs); Disaster Management Workshop: Managing and Minimizing Superstorm Effects on Municipal Utilities and the Public Health; includes breakfast and/or lunch at NJWEA's 98th Annual Conference May 13-17, Atlantic City, NJ. For registration or exhibitor information, visit www.njwea.org.

May 15, 2013

AAEES 5th Annual Breakfast at 98th NJWEA Annual Conference. Lessons Learned for Utility Disaster Preparedness - Hurricanes Katrina, Rita, Isaac and Sandy, Adam Faschan, Ph.D., P.E., Associate, CDM Smith Inc., and Chris Munson, P.E., CDM Smith Inc.; 7:00-8:00 am: Register at www.njwea.org.

June 12, 2013

AAEES/AIDIS/AWWA Luncheon featuring keynote speaker Brian Good, Deputy Manager of Organizational Improvement, Denver Water, from 11:30 am to 1:00 pm. Topic: "Lean Methodology," at the AWWA ACE13 Conference, June 9-13, Denver.

June 25 28, 2013

AWMA/AEESP/AAEES Joint Breakfast at A&WMA 106th Annual Conference and Exhibition at the Hyatt Regency Chicago, Chicago, IL. To register, go to http://ace2013.awma.org/.

August, 27, 2013

AAEES/APWA Breakfast at the APWA Congress, August 25-28, McCormick Place, Chicago, IL, starting at 7:00 a.m. To register, go to http://www.apwa.net/Congress

September 1, 2013

Committee and Sponsoring organization reports are Due

October 7, 2013

AAEES/AIDIS/WEF Breakfast at WEFTEC 2013, October 5-9, 2013, McCormick Place, Chicago, IL. To register, go to http://www.weftec.org/howtoregister/.

December 31, 2013

2013 Specialty Certification renewal Deadline

February 1, 2014

Entry deadline for the Excellence in Environmental Engineering and Science Competition

March 1, 2014

Entry deadline for the Environmental Communications Awards

March 31, 2014

Application deadline for Board Certification

For the full AAEES Events Calendar, go to http://www.aaees.org/aaeescalendar.php

SOLVAY

On the horizon…
The new MATS rule mandates compliance in two short years!

The Mercury and Air Toxics Standards, or MATS rule, mandates reduction of stack emissions such as HCl, HF and Hg in coal-fired power plants in just two short years. With compliance deadlines on the horizon, now is the time to plan a strategy to ensure your power plant's system satisfies the upcoming regulations.

What does this mean to your coal-fired power plant? Bluntly put, it means changing fuels, or that some air pollution control system must be in place in a very short time to eliminate these HAPs. It means the need for straightforward information that SOLVAir Solutions can provide on a system's reduction effectiveness and cost-effectiveness.

When EPA regulations compliance is inescapable, SOLVAir Solutions can help. We have the expert knowledge of DSI systems and the effective products to help you meet the newest emissions limitations. Call us today at 800.765.8292 or go to www.solvair.us for more details.

SOLVAir®
SOLUTIONS

Solvay Chemicals, Inc.
1.800.SOLVAY C (800.765.8292)
www.solvair.us


SOLVAY
asking more from chemistry®

Excellence in Environmental Engineering & Science

The Excellence in Environmental Engineering & Science® Awards recognize and promote quality in environmental engineering and science. The Academy encourages entries from all areas of environmental engineering and science practice, such as odors and air pollution control, air quality management, industrial hygiene, radiation protection, solid waste management, resource recovery, waste minimization, hazardous waste management, toxic materials control, water supply, wastewater treatment, residuals and biosolids, nutrients, renewable energy, microconstituents/trace organics and field and lab instrumentation.

The competition is open to all individuals, companies, or organizations, regardless of affiliation with the Academy.

Entries and awards are made in each of nine separate categories.

Research – Research of a basic or applied nature that advances the state of the art of environmental engineering or science including research leading to new or improved environmental engineering or science equipment (process, control, instrumentation, environmental testing, etc.)

Planning – Planning related to an environmental control project, system or environmental management facilities or activities.

Design – Design of pollution control or other environmental facilities including projects delivered by alternate methods, such as, design-build or design-build-operate.

Operations/Management – Operations or Management of pollution control or other environmental facilities, a pollution prevention program, or environmental regulatory programs (federal, state or local).

University Research – Research of a basic or applied nature that advances the state of the art of environmental engineering or science conducted by a university under the direction of a full-time faculty member. This category differs from the Research category in that a person other than one involved directly with the work can "nominate" another for the award and provide the entry materials, which must be supplied.

Small Projects – Any Research, Planning, Design, or Operations/Management work related to a potential or actual capital expenditure of $5 million or less or an operation or management activity with an annual budget of $500,000 or less.

Small Firms – Any Research, Planning, Design, Operations/Management or Small Project conducted by a small firm. A small firm is defined as one that has annual gross revenue of $5,000,000 or less.

Environmental Sustainability – Environmental Sustainability is the supporting of the quality of life while living within the carrying capacity of all systems. A long term balance of environmental stewardship, economic development, and social well being must be achieved. Research, Planning, Design, or Operations/Management including renewable resources timely regenerated, timely substitute replacement of nonrenewable resources, harmful substances absorbed timely or made harmless.

Industrial Waste Practice Award – The Industrial Waste Practice recognizes outstanding projects that incorporate innovative management and technological approaches to industrial water and waste management issues at pilot or full scale, in the following areas: Treatment of water for industrial uses; Management, including reclamation of industrial liquid, solid, toxic and hazardous wastes and integrated waste management and industrial process modifications to achieve waste minimization and pollution prevention objectives; Management of air emissions; Remediation of groundwater and riverine, lake, estuarine, and marine water resources contaminated by industrial activities; Brownfields/Greenfields restoration; and Management of radioactive waste materials.

Honor Awards are presented to other deserving entries, as determined by competition rules, in each category. Grand Prizes are awarded in each category. The Superior Achievement for Excellence in Environmental Engineering and Science Award is presented to the overall best entry.

An independent panel of judges assesses each entry with respect to the following criteria:

1. Demonstration of a comprehensive, integrated approach that considers all environmental media, i.e., air, water, and land.
2. Quality as evidenced by the degree of user satisfaction and proven performance.
3. Originality and innovation, representing the application of new knowledge, a new application of existing knowledge, or an innovative mix of existing knowledge.
4. The complexity of the problem or situation addressed.
5. The extent to which the project contributes to or offers the prospect of contributing to social and economic advancement.

AAEES thanks the following for their time and expertise in serving as judges for the 2013 E3 Competition:

Timothy Berry
David Cavender
William Celenza
Majid Chaudhry
James Condon
Thomas Gillogly
Paul Gremillion
Doug Kobrick
James Law
Charles Licht
Colin McKenna
Webster Owen
Dennis Papa
Beth Petrillo
Momo Savovic
Norbert Schmidtke
James Sheetz
Milind Wable
Marc Walch
Thomas Wilson

Superior Achievement Award

ENTRANT: Gwin, Dobson & Foreman, Inc., and Bassett Engineering
ENGINEER IN CHARGE: Mark Glenn, P.E., BCEE
LOCATION: Altoona, Pennsylvania

Altoona Westerly WWTP Biological Nutrient Removal Upgrade & Expansion

1

2

The $30 million Altoona Water Authority Westerly Wastewater Treatment Facility BNR Upgrade and Expansion was designed by the team of Gwin, Dobson & Foreman, Inc., which performed all engineering, design, and construction management related work, and Bassett Engineering, which provided BNR process design modeling and consultation. This project was undertaken to achieve compliance with the Chesapeake Bay nutrient control initiative and is among the first in Pennsylvania to fully integrate nutrient removal with high pollutant loads from a combined sewer system.

This 235-mile network of sanitary and combined sewers discharge to two wastewater treatment plants: the Westerly plant, which was recently upgraded for Biological Nutrient Removal (BNR) technology and expanded to handle more flow, and the Easterly plant, which is currently undergoing similar construction.

Existing tanks were modified and converted to bio-reactors, minimizing land disturbance; and energy efficiency was emphasized to reduce power consumption. A hydraulic design using gravity flow eliminated the need for costly pumping.

Plant capacity was doubled by use of an innovative step-feed process to minimize untreated wet weather discharges. Finally, the plant was upgraded to biologically remove nutrients without the need for chemical addition. The production of waste solids has been reduced accordingly. The plant has the flexibility of using any of five BNR processes. The fact that the plant is far surpassing nutrient standards with less energy and at a lower operating cost is a testimony to the effectiveness of the planning and design.

One hundred thousand pounds of nutrients in excess of permit standards were removed during the first year of operation, generating $215,000 of revenues in the PA nutrient credit market. With the Westerly plant's 60 MGD capacity, untreated, wet-weather bypasses were virtually eliminated while achieving optimal nutrient removal and realizing an annual $75,000 reduction in operating costs through less chemical and power consumption.

Technically, few plants can achieve nutrient removal under high combined sewer flow conditions. An innovative step-feed system solves this by effectively treating flow 10 times in excess of normal conditions while still maintaining nutrient levels. The design team successfully met all schedule goals by designing a phased construction plan to achieve early compliance, particularly challenging since the plant was to remain fully operational during construction.

The BNR process is more sustainable and relies on natural biological removal processes to reduce nutrients than expensive chemical addition systems. Savings in chemicals, power and sludge disposal are significant. Prudent financing enabled Altoona to maintain affordable rates. Finally, this project has a built-in reserve capacity to support future economic development in the Interstate 99 corridor. Altoona will be ready with one of the best wastewater treatment systems in Pennsylvania.

1. In this aerial photo taken during construction, the following main treatment units of the AWA Westerly Treatment Plant are shown: 1) Headworks building, 2) Primary Equalization Tanks, 3) Secondary Equalization Tanks 4) BNR Reactors, 5) Final Clarifiers, 6) UV Units, 7) Aerobic Digesters, 7) Sludge Holding Tank, 8) Control/ Sludge Handling Building. Raw wastewater enters the headworks building and then to BNR reactors. Effluent from the reactors flows to the clarifiers and then to UV units for disinfection. Settled sludge from the clarifiers is aerobically digested in the digesters (9) and dewatered using a centrifuge. Dewatered biosolids are stored in an open building (10) for farmland application.
2. The above photo shows Reactor No.'s 3 & 4. Two of the seven zones can operate as either oxic or anoxic zones. This design feature, along with other operational features, provides ample flexibility so that the reactors can be operated in different operational modes. For instance to move from MLE mode to 4-stage Bardenpho mode, the operator stops airflow and starts a submersible mixer in the last aerobic zone. Switch zones are also provided in several zones for operational mode flexibility.

Research Grand Prize

ENTRANT: DC Water and Hampton Roads Sanitation District (HRSD)
ENGINEER IN CHARGE: Sudhir Murthy, Ph.D., P.E., BCEE
LOCATION: Washington, DC

Unlocking the Mysteries of Mainstream Deammonification A Paradigm Shift in the Wastewater Industry

The District of Columbia Water and Sewer Authority (DC Water) and Hampton Roads Sanitation District (HRSD) have successfully completed an extensive engineering and applied research program to identify and develop novel treatment concepts and cutting edge technologies with the goal of implementing a truly sustainable and affordable nutrient removal wastewater treatment plant.

Led jointly by Dr. Sudhir Murthy (DC Water) and Dr. Charles Bott (HRSD), the team, which included scientists, researchers, and engineering practitioners from Columbia University, ARA Consult, Strass WWTP in Austria, AECOM, and HDR, executed a well organized and coordinated three-step approach beginning with bench and lab scale work, moving to pilot scale for verification of concept, and finally full scale demonstration and validation.

While nutrient removal from wastewater is recognized as a critical mission for the protection of the environment and receiving waters, most notably the Chesapeake Bay, it is not without its challenges from the perspective of increased energy, chemical, space, and cost demands, all of which contribute to increased carbon footprint and greenhouse gas emissions.

Those issues were of paramount concern to both agencies as they embarked on the implementation of Enhanced Nutrient Removal (ENR) projects at several of the largest plants in the Chesapeake Bay. Against the odds and conventional wisdom, DC Water and HRSD had a vision of overcoming the challenges and set themselves the goal of achieving stringent wastewater treatment standards, while also moving toward energy neutrality, reducing chemicals and greenhouse gas emissions, and controlling costs for the ratepayers. In short, it was a vision of an environmentally, economically, and socially sustainable enhanced nutrient removal plant; a vision that the wastewater industry strives toward but has not achieved, until now.

The successful full-scale demonstration of mainstream deammonification had never before been achieved at any location in the world, and this accomplishment changes the fundamental foundations upon which the concepts of wastewater treatment were developed. The original activated sludge process discovered in 1913, is fundamentally an energy intensive aerobic process (in the presence of oxygen) that adds energy (in the form of oxygen) to oxidize the inherent energy in the wastewater (in the form of organic carbon and nutrients which are traditionally considered to be pollutants). The discovery of mainstream deammonification 100 years later is built on the foundation of anaerobic treatment (in the absence of oxygen). The foundation of this process rests on the concept of using novel bacteria that can operate under low energy anaerobic conditions and recovering the inherent energy, and indeed other resources such as phosphorus etc., from the wastewater. This is a fundamental paradigm shift for the wastewater industry and finally unlocks the door for a more sustainable, energy neutral or even energy positive resource recovery future for the advanced wastewater treatment community.

This project represents a watershed for the engineering community as it overcame the critical scientific and engineering barriers and provides a practical and robust technical road map by which wastewater treatment plants can move toward energy neutrality and sustainable nutrient removal while controlling costs for their rate payers.

1. Aerial photo of the Blue Plains Advanced Wastewater Treatment Plant
   - Largest advanced wastewater treatment plant in the world
     - 391 mgd AAF / 1,076 mgd Peak
   - 8 time winner of NACWA Gold Peak Performance Award
   - $4 Billion Upgrade Program Underway for;
     - Enhanced Nutrient Removal TN < 3mg/l, TP < 0.18 mg/l
     - Wet Weather Flow Management & CSOs reduction
     - Biosolids Upgrade to Class A & energy recovery
2. Aerial photo of the HRSD Chesapeake-Elizabeth Wastewater Treatment Plant
   - 24 MGD design capacity – operating at 15 – 20 MGD
   - Chesapeake Bay TMDL 2021 3.4 million lb/Y – Upgrade full plant

Research Honor Award

ENTRANT: CDM Smith
ENGINEER IN CHARGE: Lawrence Davidson, P.E., BCEE
LOCATION: San Francisco, California

Multi-Component Technology for Effective DNAPL Cleanup

CDM Smith conducted innovative research and development work to remediate sections of the former Hunter's Point Naval Shipyard in San Francisco. The project was done in collaboration with the Naval Facilities Southwest Division (NAVFAC). Other project participants included TerraTherm Frac RiteTM Environmental LTD. The project enabled a property transfer to the city in 2013 that will revitalize the area.

The Hunters Point Naval Shipyard, located along San Francisco's southeast waterfront, was closed and abandoned in 1982. The area was declared a Superfund site in 1989, and placed under the Navy Base Realignment and Closure Program in 1991 for remediation and release to the city for redevelopment. Years of industrial use had left behind a combination of hazardous compounds chlorinated ethenes, ethanes and benzenes as dense non-aqueous liquids (DNAPLs) contaminating soil and groundwater. Due to the site's proximity to the bay and the city's residents, the DNAPLs posed unacceptable risk that threatened the long-awaited transfer of an adjacent property to the city of San Francisco for redevelopment.

Hunter's Point Naval Shipyard (HPNS) is divided into 11 parcels, each slated for transfer to the city of San Francisco for redevelopment. The need to clean up chlorinated solvent dense non-aqueous phase liquid (DNAPL) contamination at Building 134, along the boundary between Parcels B and C, threatened to stall the transfer of Parcel B.

CDM Smith worked with NAVFAC to identify design elements that maximized synergies between in situ thermal remediation and in situ bioremediation. The innovative approach provided cost-effective, successful cleanup within an aggressive 18-month timeframe, ultimately allowing the city's long-awaited redevelopment plans to move forward.

Planning Honor Award

ENTRANT: Greeley and Hansen
ENGINEER IN CHARGE: Federico Maisch, P.E., BCEE
LOCATION: Lynchburg, Virginia

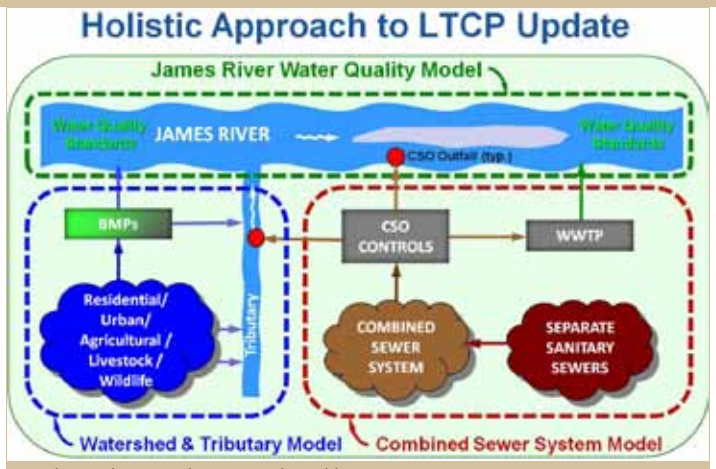
Holistic CSO Long-Term Control Plan Update

Greeley and Hansen served as program manager and leader of a holistic re-envisioning of the Long-Term-Control Plan (LTCP) in order to update the existing combined sewer overflow (CSOs) for the City of Lynchburg, Virginia.

During the past 20 years, Lynchburg has spent more than $230 million in its effort to eliminate CSOs and faces an investment of at least an additional $280 million over the next 30 years with the existing CSO LTCP.

Implementation of Greeley and Hansen's updated plan will reduce more than 50 percent of the current annual overflow volume and will enable Lynchburg to complete its CSO program in half the time originally expected and save the city more than $200 million.

Greeley and Hansen's plan includes comprehensive analyses of wet weather issues, compliance with Total Maximum Daily Loads (TMDLs), and wide-ranging control options to reduce CSO more quickly and less expensively than recommended by the existing



Greeley and Hansen has assisted Lynchburg to re-vision its LTCP using an innovative holistic approach that addresses not only CSO but other pollutant sources to achieve compliance with water-quality standards throughout the watershed. Comprehensive computer models were developed to simulate and analyze pollutants and their impacts on the water quality in the James River and its tributaries.

plan. The process included identifying pollutant sources within the watershed and their contribution level, conducting field investigations to determine specific areas of combined sewers, and utilizing complex computer modeling.

Planning Grand Prize

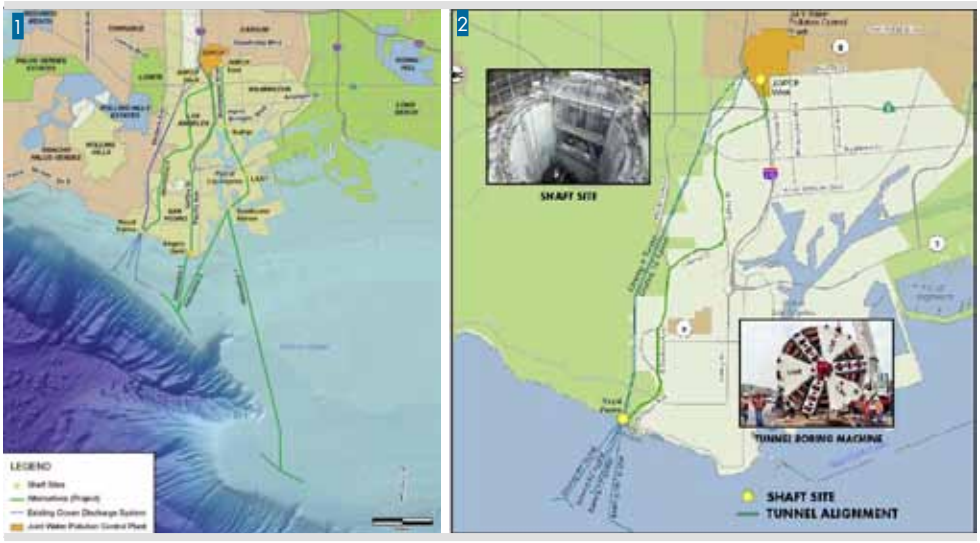
ENTRANT: Sanitation Districts of Los Angeles County
ENGINEER IN CHARGE: Grace Robinson Chan, P.E., BCEE
LOCATION: Whittier, California

Clearwater Program Beyond Tunnel Vision

The Clearwater Program is a comprehensive planning effort undertaken by the Sanitation Districts of Los Angeles County (Sanitation Districts). The Sanitation Districts operate the Joint Outfall System (JOS), a regional wastewater management system serving the wastewater needs for nearly 5 million people in 73 cities and unincorporated areas of Los Angeles County. The Clearwater Program includes an evaluation of infrastructure needs and will serve as a guide to the management of the JOS in a cost-effective and environmentally sound manner through the year 2050.

One particular area of concern emerged during the planning process. Two onshore tunnels convey treated effluent from the main treatment facility, known as the Joint Water Pollution Control Plant (JWPCP), to the ocean outfalls. The tunnels were constructed in 1937 and 1958, across an active fault and have not been inspected for more than 50 years due to their overall length, limited access, and continuous flow. In January 1995, two major storm events inundated the JOS. The resulting peak wet-weather flows nearly exceeded the capacity of the JWPCP ocean discharge system. Therefore, it was necessary to evaluate the construction of a new or modified ocean discharge system to provide peak storm flow capacity and allow for the dewatering, inspection, and repair of the two existing tunnels.

A comprehensive planning process systematically evaluated options for tunnel alignments, shaft sites, and diffuser locations. The Sanitation Districts evaluated 50 preliminary alternatives. These were reduced to 4 feasible alternatives for project-level environmental assessment in the Environmental Impact Report/Environmental Impact Statement. The Sanitation Districts utilized multi-criteria decision support software to analyze the tradeoffs between environmental impacts, public input, operational considerations, constructability, long-term uncertainty, and cost-effectiveness. Environmental constraints were considered early in the process and weighted heavily to ensure that the final four feasible alternatives would have minimal impacts.



In addition, the impacts of other Clearwater Program recommendations were assessed at a programmatic level to assure that decisions made regarding the ocean discharge system did not result in unintended environmental consequences in other parts of the JOS.

The public outreach effort was extensive and unprecedented in order to ensure that communities were engaged early in the planning process before any decisions were made. Since 2006, more than 500 outreach meetings were held with public officials, community leaders, civic and community groups, businesses, environmental organizations, news media, and agencies. The Districts conducted four public workshops, five public scoping meetings, and three public hearings, all of which were advertised in local newspapers. The public outreach effort was supplemented with newsletters, an informational video, a telephone hotline, and a dedicated website (www.Clearwater-Program.org). This approach facilitated the exchange of ideas between the Districts and stakeholders and generated a project mailing list of more than 4,000 interested parties.

Preliminary engineering was seamlessly integrated into the entire planning process and had a profound impact on the recommended project. In addition, much effort went into assessing the condition of the existing seafloor ocean outfalls by performing visual inspections and collecting core samples from the concrete pipes and cast iron joints for laboratory analysis. It was determined that the three largest outfalls have a remaining useful life of more than 50 years. A hydraulic analysis of the existing ocean discharge system concluded that the capacity limitation was due to one of the two tunnels, not the outfalls. Therefore, the need for a new ocean outfall was eliminated, and the recommended project became a new onshore tunnel that would tie into the existing ocean outfalls at the manifold structure. Ultimately, the Clearwater Program's highly complex, innovative, and integrated approach to planning resulted in a recommended project that avoided the significant environmental impacts associated with aging infrastructure and a growing population. The lack of public opposition to the recommended project attests to the overall quality of this successful planning effort and the value of extensive public outreach.

1. Final Four Alternatives. Options for tunnel alignments, shaft sites, and diffuser locations were systematically evaluated. Three of the four final alternatives required construction of a new ocean outfall, and estimated costs ranged from $550 million to $1.36 billion.
2. Recommended Project. Alternative 4 is the recommended project because it is the lowest cost, safest to construct, and least environmentally damaging when compared to other alternatives. The new onshore tunnel will be 18 feet in diameter, nearly 7 miles long, and range in depth from 70 to 450 feet below ground. The hydraulic capacity of the new system will accommodate the peak flows during storm conditions through the year 2050.

Design Honor Award

ENTRANT: Black & Veatch Corporation
ENGINEER IN CHARGE: James H. Clark, P.E.
LOCATION: Fountain Valley, California

Secondary Activated Sludge Facility 2 at Plant No. 1 (OCSD P1-102)

Black and Veatch designed the Orange County Sanitation District (OCSD)'s Secondary Activated Sludge Facility at Plant No. 1 (Project P1-102). The 60-million MGD secondary activated sludge facility enables the district to meet consent decree requirements and increasingly stringent discharge standards and provides high quality secondary effluent to the award-winning Groundwater Replenishment System (GWRS), a joint effort of OCSD and Orange County Water District.

The facility incorporates biological nutrient removal and automated features that result in a higher quality effluent produced with fewer resources and reduced operating costs. The design also provides flexibility to accommodate several unique operating modes. A phased approach and construction packaging and sequencing allowed the existing facilities to remain in operation at all times.

Delivered ahead of schedule and under budget, P1-102 is the cornerstone project of OCSD's $2.2 billion capital improvements program. The project produces water quality that exceeds design guidelines. With cleaner discharges to the Pacific Ocean, OCSD is contributing to a healthier and more sustainable coastal environment and the upgrade also allows the OCWD to better capitalize on its investment in the GRWS and undertake expansion of its Advanced Water Purification Facility (AWPF). With the P1-102 in operation and the AWPF expansion underway, the GRWS will provide enough water for 850,000 people.

With numerous operational efficiencies in place at the P1-102 facility, secondary effluent discharged to the Pacific Ocean is reduced by 100 mgd, which eliminates higher volumes chemicals needed. When discharge to the ocean is required, a higher quality effluent is discharged, resulting in improved environmental stewardship of the Pacific Ocean and Southern California coast.

Design Honor Award

ENTRANT: Geosyntec Consultants
ENGINEER IN CHARGE: Thomas Ramsey, P.E., BCEE
LOCATION: Wilmington, Delaware

Cherry Island Landfill Vertical Expansion Project

The Delaware Solid Waste Authority (DSWA) retained Geosyntec Consultants to overcome and resolve constructability issues to extend the life of the Cherry Island Landfill, which is constructed over an area that was partly reclaimed from the Delaware River in the early 1900s, having been used for many years as a dredged material disposal site. As a result, the subsurface characteristics consist of unconsolidated, very soft, low permeability and extremely compressible materials.

Because of the location of the site at the confluence of two major rivers (the Delaware and the Christina), the only option available to create additional capacity was to expand vertically. Geosyntec successfully design and constructed an 8,000-ft long, 70-ft high mechanically stabilized earth (MSE) berm over extremely soft, compressible river-dredge material.

Geosyntec's design approach involved a foundation improvement technique using prefabricated vertical drains combined with the MSE berm, which plays a dual role of compressing and consolidating foundation soils while providing new disposal space. Geosyntec's design also included replacement of a number of systems designed to monitor and protect groundwater and air quality.

Aerial With Liner: The size and scale of the project is seen from this aerial photo taken during liner installation.

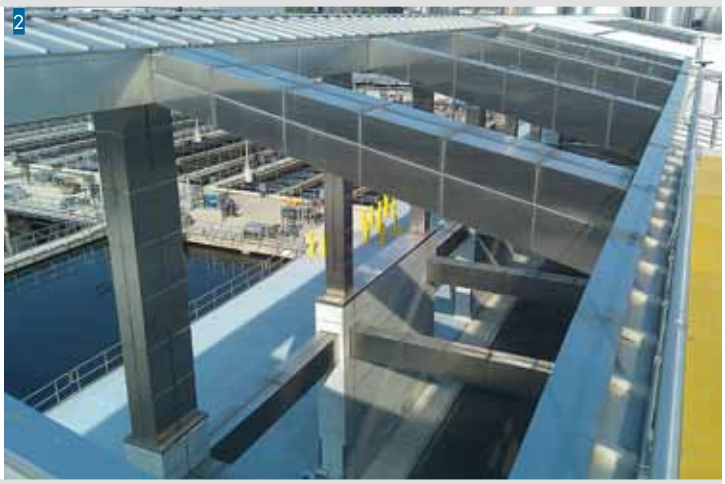
Geosyntec's MSE berm is one of the highest reinforced structures over soft soils built in the United States. The expansion will provide 20 years of additional solid waste disposal life for DSWA and represents a savings of more than $159 million when compared to a preliminary design based on more traditional foundation improvement techniques.

Design Grand Prize

ENTRANT: Greeley and Hansen
ENGINEER IN CHARGE: Cliff Pomerantz, P.E.
LOCATION: Corona, New York

Newtown Creek South Battery Upgrade


1


2

New York City's space-constrained Newtown Creek Water Pollution Control Plant (WPCP) site presented major challenges in achieving secondary treatment standards within consent order mandated upgrade milestones to avoid incurring potential fines for missing completion deadlines. The $700 million project involved completing the third and final battery of the Newtown Creek WPCP upgrade, a complicated project made even more difficult by the requirement to perform the upgrade within the site's physical "footprint", while maintaining the existing plant operations in full service.

The completion of the NC-47 South Battery Upgrade project at New York City's Newtown Creek Water Pollution Control Plant (WPCP) has enabled the New York City Department of Environmental Protection (NYCDEP) to achieve its overall goals for secondary treatment of wastewater almost two years ahead of schedule. In addition, the upgrade project successfully met state consent order mandated milestones three months before the scheduled deadline, without incurring any fines for missing milestone completion target dates.

The Tri-Venture engineering team of Greeley and Hansen, Hazen and Sawyer, and Malcolm Pirnie (the Water Division of Arcadis) worked closely with the NYCDEP and construction contractors to apply a combination of cost-cutting and space-saving solutions, innovative design and construction techniques, and a new groundbreaking method of wastewater treatment to meet secondary treatment requirements at far lower cost than using conventional treatment.

By making maximum use of existing Newtown Creek structures and foundations, including constructing a new control building using the existing foundation, the Tri-Venture team effectively cut costs and met all scheduled milestones. The team surmounted the challenges of the site's severe space restrictions by developing "Track 3", a unique and highly unconventional wastewater treatment process that eliminate the use of large primary tanks, while still achieving full secondary treatment standards.

As part of the upgrade project, existing grit, aeration, and sedimentation tanks were converted to a new configuration supporting the Track 3 process, which cut overall construction costs and time by using the same physical space as the existing tankage. The plant remained in operation throughout construction, which was completed without causing significant community disruptions. The Track 3 process also increased the plant's storm-water treatment capacity, enabling treatment of a peak 700 MGD during wet weather, more than double the dry-weather flow.

Sustainable design features incorporated in the upgrade project have significantly reduced odor emissions by covering the processing tanks, and have minimized energy costs through the use of high-efficiency motors and lighting.

Using the new Track 3 design concept for the secondary treatment process enabled the Newtown Creek WPCP to achieve a higher level of pollutant removal (90%) than required, which has improved water quality of the East River and has enhanced recreational activities along the river, including the nature walk at the perimeter of the plant, for area residents to enjoy.


3

1. The compact and space-constrained Newtown Creek Water Pollution Control Plant (WPCP) site presented major challenges in achieving secondary treatment standards within consent order mandated upgrade milestones. These challenges were addressed through the development of the "Track 3" process, a unique and unconventional design that eliminated the use of large primary tanks while still meeting required treatment standards.
2. The South Control Building materials reflect the community's desire for a clean, modern and durable presence in the neighborhood.
3. Using the new Track 3 design concept for the secondary treatment process enabled the Newtown Creek WPCP to achieve a higher level of pollutant removal (90%) than required, which has improved the water quality of the East River and has enhanced recreational activities, including the nature walk at the perimeter of the plant, for area residents to enjoy.

Operations Management Grand Prize

ENTRANT: ARCADIS

ENGINEER IN CHARGE: John Nocera, P.E., BCEE

LOCATION: Independence, Missouri

HaulPass® Automated Debris Management System

After a powerful E5 tornado in 2011 that destroyed or damaged three quarters of the City of Joplin, clearing the way for cleanup operations was an urgent mission. The U.S. Army Corps of Engineers (USACE) was tasked to clear away tons of tornado debris as part of the disaster recovery process. The traditional method of tracking thousands of truckloads of tornado debris from point-of-origin to disposal using hand-logging would have been slow, inefficient, and susceptible to fraud. The USACE hired Rostan Solutions, a Division of ARCADIS, to deploy their unique Automated Debris Management System, HaulPass®, to fast-track this critical process.

HaulPass®, a proven, hand-held automated debris management system (ADMS) uses smart card technology, secure servers, and a GIS-supported, web-enabled interface to track debris loads accurately in near real time that follow strict FEMA and USACE guidelines. Within 24 hours of notice to proceed, Rostan recruited and trained local field personnel who began deploying the system. Five dump sites, all equipped with HaulPass® technology, received 7,027 truckloads of debris totaling over 84,000 tons; trucks were issued an encrypted HaulPass® smart card containing all relevant certification data -equipment, vehicles, weight and/or volume, and a photo -enabling each truckload of debris to be tracked according to Federal guidelines. All vital information for each load was aggregated into a master database accessible via the Internet. Using GPS-enabled hand-held computers, staff recorded data electronically and printed receipts wirelessly using Bluetooth-enabled belt printers.

Rostan also helped the USACE to document private property debris removal (PPDR) in the field. Instead of taking photos with digital cameras, and taking manual notes of conditions, Rostan and USACE staff used hand-held computers capable of taking multiple photos, capturing notes, and geo-tagging each property, synchronized to the HaulPass® database. Nearly 1,400 PPDR records were input, eliminating labor-intensive daily photo/data reconciliation. The system also allowed role-based access to data for all stakeholders, including contractors and subcontractors, FEMA, State and local emergency management personnel.

By accurately and rapidly tracking each truckload of tornado debris from point-of-origin to final disposal, HaulPass® cut the time and costs of debris removal, minimizing disagreements with contractors – and ultimately speeding up FEMA reimbursement so Joplin residents could begin the real work of rebuilding and recovery.

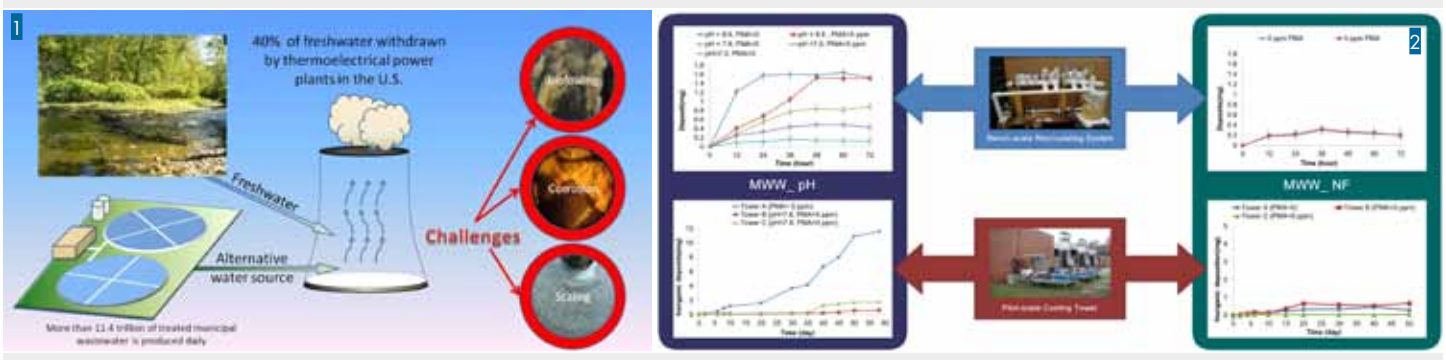
The HaulPass® system meets Federal government guidelines as acceptable technology for debris removal documentation in the FEMA 325 Debris Management Guide.

1. In May of 2011, a devastating E5 tornado hit the Joplin area, destroying or damaging nearly three-quarters of the city.
2. Rostan's HaulPass® trailer. The accuracy and timeliness of HaulPass® data eliminated disagreements with contractors, ultimately speeding up FEMA reimbursement. With debris removed, Joplin area residents could begin the real work of rebuilding and recovery.
3. To streamline this process, the USACE turned to Rostan Solutions, a subsidiary of ARCADIS, to deploy HaulPass®, its unique proven automated debris management system. Within 24 hours of notice to proceed, field personnel were locally recruited, trained and deployed.

University Research Grand Prize

ENTRANT: Carnegie Mellon University and University of Pittsburgh
ENGINEER IN CHARGE: David A. Dzombak, Ph.D., P.E., BCEE
LOCATION: Pennsylvania

Use of the Treated Municipal Wastewater as Power Plant Cooling System Makeup Water: Tertiary Treatment versus Expanded Chemical Regimen for Recirculating Water Quality Management



Carnegie Mellon University's David A. Dzombak along with Radisav D. Vidic of the University of Pittsburgh are developing an integrated approach for use of municipal wastewater for cooling systems in electric power plants.

Every day, water-cooled thermoelectric power plants in the United States withdraw from 60 billion to 170 billion gallons of fresh water from rivers, lakes, streams, and aquifers, and consume from 2.8 billion to 5.9 billion gallons of that water. Freshwater withdrawals for cooling in thermoelectric power production account for about 40 percent of all withdrawals, essentially the same amount as withdrawn for agricultural irrigation, as documented by the U.S. Geological Survey.


3

"Sustained droughts nationwide underscore the critical need to think about using treated municipal wastewater for use in cooling in electric power generation," says Dzombak, the Walter J. Blenko, Sr. University Professor of Civil and Environmental Engineering and director of the Steinbrenner Institute for Environmental Education and Research at CMU.

"We need a great deal of water for electric power production, to condense steam in the power plant steam cycle. Air cooling is possible but is more costly and less efficient. Water will continue to be the preferred coolant for new thermoelectric power plants," according to Vidic, the William Kepler Whiteford Professor and Chair of Civil and Environmental Engineering at the University of Pittsburgh.

The CMU-Pitt research shows that treated municipal wastewater is a common and widely available alternative source of cooling water for thermoelectric power plants across the U.S. However, the biodegradable organic matter, ammonia-nitrogen, carbonate and phosphates in the treated wastewater pose challenges including fouling and corrosion issues. The Carnegie Mellon and University of Pittsburgh researchers investigated how to address these challenges.

The researchers note that the results of their work show the need to evaluate the growing competition among the energy industry, farmers, and residents for scarce water supplies. "Our research shows that alternative sources of water are needed for new power production in regions without new sources of available freshwater," said Dzombak.

"Our research will not only help promote the use of properly treated municipal waste water at cooling plants, but also help contribute to economic development."

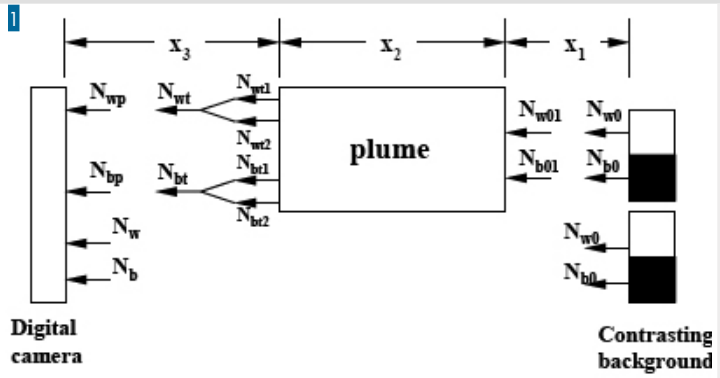
1. The overall objectives of the project were (1) to provide a comprehensive analysis of the water quality control problem in a recirculating cooling system employing treated municipal wastewater as makeup water, and (2) to determine optimal approaches for tertiary treatment considering both direct economic costs and environmental impacts of alternative water treatment/management approaches in an integrated manner.
2. Excessive nutrients and organic carbon in the feed water would lead to significant biofouling of the system in the absence of proper disinfectant dosing. Sampling coupons collected in the field were analyzed for attached biological growth while recirculating water was cultured for the presence of planktonic microorganisms. In addition to heterotrophic organisms, the presence of Legionella in both planktonic and sessile growth was monitored throughout the pilot-scale tests.
3. We are very grateful to Franklin Township Municipal Sanitary Authority (FTMSA) in Murrysville, PA for hosting this project.

University Research Grand Prize

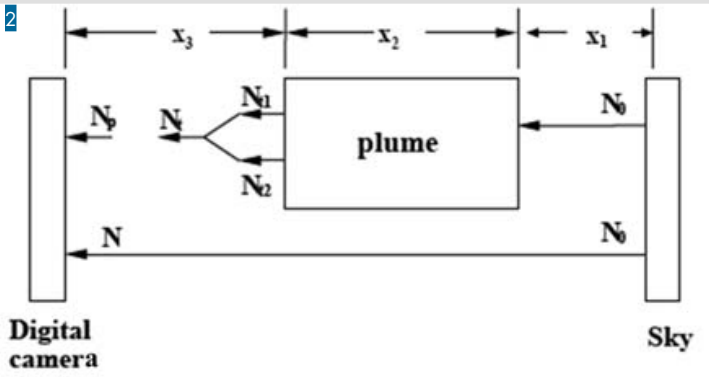
ENTRANT: University of Illinois/ERDC-CERL
ENGINEER IN CHARGE: Mark J. Rood, Ph.D., BCEEM and Byung J. Kim, Ph.D.
LOCATION: Urbana, Illinois

Determining Atmospheric Plum Opacity Using Low-Cost Digital Still Cameras

1



2



Professor Mark J. Rood, of University of Illinois at Urbana-Champaign (UIUC), with his research group, and Adjunct Professor Byung J. Kim ERDC-CERL has successfully developed and implemented the digital optical method (DOM) that measures plume opacity with the use of lowcost "point and shoot" digital cameras and smartphone cameras.

Plume opacity is defined as the percentage of light that is attenuated by a plume and can serve as a pollution indicator from industrial operations. The only USEPA-approved method that has been used in practice to measure ambient plume opacity since the mid-1970s is Method 9. Such method measures plume opacity with human observers. DOM was developed as an alternative to Method 9 because DOM saves the cost of human observer training, increases measurement objectivity compared to measurements by human observers, and provides an archival digital record describing the plume's opacity, the plume and its surrounding environment, time of day, and location where the digital images were captured. This new technology does not generate solid waste and does not pollute the air or water since is uses digital imaging and wireless technology. DOM has been successfully implemented with pictures under a wide range of environmental conditions and during daytime and nighttime. This method has been referenced by ASTM as the basis for ASTM Standard Method D7520-09. This ASTM method was the basis for USEPA to develop Alternative Method ALT-082, on February 15, 2013, to determine plume opacities with digital cameras as an alternative to Method 9 that uses human perception to determine plume opacity. USEPA has estimated a cost savings of at least $200M/yr with the implementation of ALT-082. DOM also addresses the challenge of measuring plume opacity under various background settings by using digital technology, which eliminates human subjectivity, and enables development of archival records for subsequent analysis. DOM increases the efficiency of plume opacity measurements due to data analysis through smart phone applications, while also recording location and time when the digital images were captured and it uses wireless communication to transfer and store the images. Therefore, DOM has a favorable prospect in the field of low-cost readily deployable remote sensing technology to monitor plume emissions in the ambient environment.

3

1. Schematic describing first-principles of DOM's contrast model
2. Schematic describing first-principles of DOM's transmission model
3. Field setup that tests the abilities of smartphone cameras and automatic cameras in measuring plume opacity.

University Research Honor Award

ENTRANT: Illinois Institute of Technology
ENGINEER IN CHARGE: Krishna Pagilla, Ph.D., P.E., BCEE, Benjamin Stark, Ph.D., Marina Arnaldos, Ph.D., Stephanie Kunkel, MS
LOCATION: Fountain Valley, California

Improving Energy Sustainability of Wastewater Treatment by Low DO Nitrification Process

Researchers at the Illinois Institute of Technology (IIT) have developed a biological process to treat wastewater using a novel technology based on bacterial hemoglobin. The work which is a culmination of more than 15 years of research by Professor Krishna Pagilla, Ph.D., P.E., BCEE, of Environmental Engineering, Professor Benjamin Stark, Ph.D., of Biology along with their graduate students at IIT, Marina Arnaldos, Ph.D., and Stephanie Kunkel, has found a way to make bacteria into "bacterial sherpas." This allows wastewater treatment at low dissolved oxygen concentrations, thereby reducing the energy needs of wastewater treatment which comprises about 3 percent of the energy used in the United States.

The researchers are excited to implement this novel process at full scale wastewater treatment plants. Their research solves the complex problems of high rate biological wastewater treatment which suffers from lack of sufficient oxygen. Their process significantly improves the overall sustainability of wastewater treatment plants by lowering energy requirements, reducing carbon footprint, and providing excellent performance in reducing nitrogen pollution of our water resources.

Krishna Pagilla, Ph.D., P.E., BCEE, is a Professor of Environmental Engineering at the Illinois Institute of Technology and is a licensed engineer in California and Illinois. He has more than 20 years of experience in teaching and research and has published extensively including 75 peer reviewed journal papers and over 100 other papers/reports. The work was conducted at the Illinois Institute of Technology under the supervision of Professor Pagilla by his Ph.D student Marina Arnaldos, and was in collaboration with Professor Benjamin Stark of Biology Program and his Ph.D. Candidate Stephanie Kunkel. The research submitted for E3 award is a part of larger efforts by the researchers to develop low energy/high rate bioprocesses for wastewater treatment, and is based on expertise gained over 15 years of research on strategies to improve bacteria for bioremediation.

The work is novel and is of practical relevance for the water field.

Small Projects Honor Award

ENTRANT: CH2M Hill, New York
ENGINEER IN CHARGE: Matthew J. Marko, P.E., BCEE
LOCATION: Syracuse, New York

Onondaga County Save the Rain Water Street Gateway

The Water Street Gateway project, the first commercial green street project in heart of Syracuse, New York, has been completed. This collaborative effort between the Onondaga County Save the Rain program and the City of Syracuse is located between Montgomery and S. State streets in the 300 block of Water Street.

Onondaga County's Save the Rain program was introduced in November 2009, as the first federal consent order to include the use of green infrastructure to meet stormwater capture requirements. The new plan incorporates a comprehensive green infrastructure (GI) approach to supplement gray facilities planning.

The project includes several storm water capture features; streetscape tree detail with enhanced street plantings in the right-of-way; installation of porous pavers in parking lanes; installation of infiltration trenches and planters; and landscaping features throughout the footprint of the block. These measures have yielded an annual storm water reduction of approximately 1 million gallons.

Coordination of the project required participation between multiple County and City departments. The streetscape design

incorporates several additional benefits including improved pedestrian traffic; traffic calming measures; multi-modal transportation access; defined parking delineation; and aesthetic improvements. This sustainable approach simultaneously helps reduce the impacts of pollutants to our local waterways, while transforming the culture of the corridor.

Small Projects Grand Prize

ENTRANT: CMA Engineers, Inc.
ENGINEER IN CHARGE: Jeffrey S. Murray, P.E.
LOCATION: Bethlehem, New Hampshire

Landfill Based Geothermal Heating System


1


2

The first of its kind Landfill Based Geothermal Heating System was installed at the North Country Environmental Services (NCES) Landfill in Bethlehem, Pennsylvania. CMA Engineers, led by Project Manager, Jeffrey Murray, was responsible for the development of the project concept and managing the design and construction of the system for NCES. Kevin Roy, general manager for the owner, North Country Environmental Services, played a vital role by first asking whether waste heat can be captured from within the landfill and then selling the idea of the project to his company and funding the work. Mr. Murray received significant design support from James Petersen, P.E., of Petersen Engineering, who had developed designs for conventional geothermal systems, but never utilized landfill waste as the base heat source.

The system was installed in October 2011, and will be providing an alternative source of heat for the facility maintenance garage and future roadway snow melt system. The geothermal system will eliminate the burning of 2,900 gallons of oil and associated emission of 20 tons of greenhouse gas per year. The system utilizes a series of small diameter plastic pipe installed in loops to form a heat exchanger atop the new geomembrane liners system beneath the landfill waste to capture the heat generated by the decomposition of organic materials in the waste mass.

The system is significantly easier to install and more efficient than conventional geothermal systems that rely on a heat pump to extract heat energy from soil or groundwater at temperatures near 50°F, because the decomposing wastes generates temperatures upwards of 110°F. The project aims to demonstrate that the facility can utilize the warm water from the heat exchanger directly without the need for a heat pump. Temperatures of up to 90°F have already been measured in the collection system, with waste materials having been deposited in the new landfill cell just over 14 months ago.

Jeffrey Murray, P.E., the project manager with CMA Engineers stated that "receipt of this excellence award is a testament to the project's innovation, the fast track process in which it was successfully completed, and the potential for application on a large scale to supplement or replace fossil fuel heating systems for public and private facilities in close proximity to landfill facilities." Mr. Murray hopes that the development of this project will lead to public and private partnerships with the solid waste facilities for beneficial use of the virtually "free" heat from the landfill waste in conjunction with using the methane rich landfill gas for heat and power generation.


3

1. Completed Southern Branch of GCHX on Western and Southwest Corner of Berm Liner System
2. Completed Installation of Select Sand Atop the Southern Slope and GCHX
3. Initial Waste Filling Operation in Newly Constructed Cell Over GCHX on October 19, 2011

Small Projects Grand Prize

ENTRANT: Green and Sustainable Services, LLC
ENGINEER IN CHARGE: Thomas L. Smith, Ph.D., P.E., BCEE
LOCATION: Baltimore, Maryland

Baltimore County Public Schools Water Treatment Program

Baltimore County Public Schools (BCPS) is pleased to announce that several of its elementary, middle, and high school facilities have fulfilled sustainability objectives with the help of Chem-Aqua® and Green and Sustainable Services (GSS). The Chem-Aqua/GSS team has converted the water treatment programs for the heating and/or cooling systems in 68 of BCPS' properties from a traditional liquid program to the HandiChem Solid Water Treatment System. The innovative HandiChem System provides the proven results of a high-performance liquid program, but in a form that enables comprehensive environmental benefits, including reduced chemical handling, decreased environmental discharge and landfill waste, and lower greenhouse gas emissions.

Considering the differences in water quality, heating/cooling system design, operating conditions, and maintenance practices, obtaining good results from a water treatment program is a complex task. At BCPS, the Chem-Aqua/GSS team has used the HandiChem System to offer an integrated approach to conservation objectives by delivering advanced technology that reduces water and energy use without producing adverse impacts on other environmental components (including the land and air). Using the HandiChem System has allowed BCPS to significantly reduce the amount of water and energy required to operate their heating and cooling water systems. Further more, the HandiChem System has also lead to economic advancements, including an overall reduction in operating costs.

With the HandiChem System liquid chemicals are replaced with HandiPak® solid concentrates, which are manufactured using an advanced process that eliminates the use of hazardous sodium hydroxide required to make most liquid products. This reduces the handling and discharge of potentially hazardous chemicals associated with liquid water treatment programs. The solid concentrates are packaged in recyclable containers that are much lighter than the equivalent amount of liquid chemical. This subsequently reduces product shipping/handling costs and decreases fuel and greenhouse gas emissions associated with product delivery.

At the 68 BCPS facilities using the HandiChem System, solid chemistry is applied directly from the container to provide a less hazardous means of dispensing than with traditional liquid chemicals. The solid concentrates are dissolved as needed into a small plastic reservoir using a simple and reliable HandiFeed™ Mixing Board. Only a small amount of dilute chemical solution is generated at a time, which greatly reduces splash and spill concerns as well as containment requirements. The HandiChem System has also helped BCPS maintain neater and cleaner mechanical rooms, thus decreasing hazards for their employees.

The HandiChem Solid Water Treatment System is innovative technology that provides an environmentally sustainable solution for preventing water related problems in HVAC Systems and insuring safe, reliable, and efficient operation. With the HandiChem System, BCPS has fulfilled sustainability objectives including conserving water, reducing wastewater, increasing energy efficiency, decreasing equipment downtime and minimizing maintenance needs, and lowering overall operating costs. BCPS acknowledges that, with the HandiChem System, Chem-Aqua/GSS has provided a quality water treatment program that is financially sound, technically advanced, and environmentally responsible.

1. Chem-Aqua® and Green and Sustainable Services (GSS) implemented the HandiChem™ Solid Water Treatment System at Baltimore County Public Schools (BCPS) to improve environmental sustainability and reduce safety concerns. The Chem-Aqua, GSS, and BCPS team includes, from left to right: Rick Koch, BCPS Facilities Inspector II; Glenn Patrick, BCPS Senior Operations Supervisor; Tom Smith, GSS CTO; Chris Hill, Chem-Aqua Sales Engineer; Charlotte Smith, GSS CEO; Paul Wingerd, BCPS Supervisor; Kevin Hild, Chem-Aqua District Manager (MD and Washington DC).
2. The HandiChem System is comprised of HandiPak® Solid Concentrate (in a one-gallon recyclable plastic bottle) that is dissolved as needed into a small plastic reservoir using a reliable HandiFeed™ Mixing Board. The HandiChem System is an innovative water treatment solution for cooling towers, closed systems, and steam boilers that provides the proven results of a high-performance liquid treatment program, but is easier to use and more environmentally responsible.

Small Firms Grand Prize

ENTRANT: AquaWorks DBO, Inc.
ENGINEER IN CHARGE: Adam Sommers, P.E.
LOCATION: Conifer, Colorado

Mountain Water & Sanitation District Radionuclide Mitigation Project


1


2

The Mountain Water & Sanitation District provides potable water and wastewater service to approximately 900 people. The District was issued an Enforcement Order from the Colorado Department of Public Health and Environment requiring them to take corrective actions to remove uranium and the associated gross alpha activity from the potable water they supply to their ratepayers. AquaWorks DBO was hired to design a facility to protect against the hazardous of exposure and to develop a hazardous waste management strategy. Finding a solution was imperative because the status quo of distributing potable water with radionuclides to the public, recapturing it in the sewage collection system, and then discharging it back into the environment was unacceptable to all of the stakeholders.

Developing a solution was complex for the District. Not only did the District have Colorado's highest concentration of uranium present in the drinking water, but also the project had to be affordable on a per capita basis, and safe materials handling strategy had to be developed for disposal of uranium residual removed from the potable water and accumulated on site.

The ion exchange system featuring an ion-selective material for retaining uranium in medial-filled canisters was selected. This approach was the most desirable because of the waste-handling options. The ion selective media is completely contained in 15 canisters. Once the media is loaded to a determined level, the District contracts with a licensed operator to transport the canisters containing the media and the uranium retained in it to a hazardous waste facility, where it is safely disposed. The ion exchange process, unlike many of the others evaluated, does not create liquid waste that will be discharged to the collection system, the wastewater plant, and ultimately back into the environment. The project was the very first implementation of a project using this media in Colorado. It was the only cost-effective approach that permitted safe disposal of the accumulated uranium.

The District was able to qualify for the EPA Green Project Reserve program. The project cost was $600,000, far less than originally budgeted, lowering taxes and assessments. Further, AquaWorks DBO included innovative environmental features that allowed the District to qualify for the EPA Green Project Reserve program. This enabled the District to obtain a loan at a 0 percent interest rate.


3

1. Before: The antiquated pressure boosting system.
2. After: The new booster system used to maintain the pressure of the treated water.
3. The finished building and treated water storage tank.

Small Firms Honor Award

ENTRANT: American Engineering Consultants, Inc.
ENGINEER IN CHARGE: William H. Bingham, Jr., P.E.
LOCATION: Cayce, South Carolina

City of Cayce 25.0 MGD Regional WWTP

The City of Cayce Regional Wastewater Treatment Plant was placed in service in October 2013. American Engineering Consultants, Inc. (AEC) designed the facility and oversaw its construction. The new 25 MGD facility is capable of serving up to 80,000 homes and business as well as half a million people and replaces the City of Cayce's existing 9.5 MGD plant located on the same site on the banks of the Congaree River. The site is adjacent to a public boat landing and nature trail, as well as the historical Congaree Creek Heritage Preserve. The facility was purposely designed by AEC to blend into its surrounding environment while ensuring the resources of this cultural and historical area were preserved.

AEC's design features the largest biological nutrient removal process in the Midlands of South Carolina which is capable of removing nitrogen and phosphorus from the influent wastewater. The design also utilizes an advanced membrane digestion system that is the largest of its kind in the world, representing an innovative, sustainable and unique approach to solids handling by eliminating the use of chemicals and producing reuse quality water. A sophisticated control and monitoring system allows the plant's operators to supervise treatment processes and equipment spread over 30 acres from a central location on the site. AEC's approach has resulted in a design that will provide quality, long-term wastewater treatment to the region, all at a cost twenty percent below its budget and 15 percent below the "per gallon" cost of typical treatment plants.

Aerial photograph of the completed City of Cayce Regional Wastewater Treatment Plant. This photograph shows the expansiveness of the facility as well as its proximity to the Congaree River and surrounding natural areas.

Environmental Sustainability Honor Award

ENTRANT: HRSD
ENGINEER IN CHARGE: Charles Bott, Ph.D., P.E., BCEE
LOCATION: Seaford, Virginia

HRSD York River Treatment Plant DEMON® Sidestream Deammonification Process Implementation

HRSD, a regional wastewater treatment utility that serves 17 localities in southeastern Virginia, and World Water Works, Inc. (WWW), which specializes in developing and providing highly efficient treatment solutions, formed a public-private partnership resulting in the first operating implementation of the DEMON® sidestream deammonification process in North America. The process provides more sustainable nitrogen removal for HRSD with a $200,000/year reduction in operating costs.

In 2002, HRSD launched, at this facility, Virginia's first municipal water reuse project, which required the construction of a sequencing batch reactor (SBR). The initiative ended when an adjacent refinery, the only reclaimed water customer, closed. During recent plant upgrades, the SBR and equalization tanks installed to support the reuse project were retrofitted to serve for centrate equalization and full nitrification. The DEMON® installation required less than four months because only minor piping needed to be done, which made the project more affordable and sustainable.

The DEMON® process was started in October 2013, by mixing 5,000 gallons of the imported anammox biomass with plant effluent. After some minor modifications to the equalization tank were made in November/December 2013, the process achieved operating objectives for ammonia loading and total nitrogen removal in early January 2013.

HRSD's York River Treatment Plant, located in Seaford, VA, is the site of the first operating full-scale installation of any form of anammox sidestream treatment in North America.

Environmental Sustainability Grand Prize

ENTRANT: CH2M Hill
ENGINEER IN CHARGE: Elizabeth Hill, P.E.
LOCATION: Belfair, Washington

Belfair Wastewater and Water Reclamation Facilities

1

2

Hood Canal is protected and the Belfair community is thriving, thanks to the efforts of the Belfair Community, Mason County, and CH2M HILL. In 2006, Hood Canal experienced widespread fish kills because of excessive nutrient loading (partly from septic tanks). When the need for a public sewer became evident, new septic tanks were no longer allowed in some areas, resulting in slowed economic growth in Belfair. Beginning in 2007, Mason County and CH2M HILL worked together to develop a total water management solution that protects Hood Canal and provides the backbone for economic growth in Belfair.

So far, approximately 200 septic tanks have been eliminated in Belfair near Hood Canal as customers connect to the sewer. Mason County will continue to take septic systems offline in the Urban Growth Area as the public sewer expands. The new sewer system treats wastewater to standards suitable for reuse in forest irrigation and nonpotable uses (such as flushing toilets). With this new system in place, planned growth can continue, allowing the Belfair community to thrive. The Urban Growth Area also protects Hood Canal and benefits the Belfair community by centralizing growth. This preserves the natural environment around Hood Canal.

3

In addition to water reuse, the project included sustainable design elements such as green stormwater infrastructure, LEED Silver design, energy-efficient wastewater treatment equipment, and zero discharge. The treated reuse water irrigates nearby forests. Reuse of water for nonpotable sources in the long run will conserve existing potable water, which lessens demand for established water supplies and reduces environmental stress on Hood Canal and local salmon runs.

CH2M HILL also designed a large in-line storage pipe to protect a critical wetland from sanitary sewer overflows.

CH2M HILL worked alongside the County to develop an innovative, phased, and aggressive schedule that allowed the County to gain grants and forgiven loans. Developing and implementing a successful funding and project delivery strategy was critical in setting up a new, sustainable utility while managing the rates.

Mason County, the Community of Belfair, and CH2M HILL worked closely with the public to gain their support. Customers received financial incentives and low-interest loans if they connected before January 2012. Public input also helped shape the design. Good neighbor elements included odor control, noise control, rain gardens, architectural treatments, color schemes, attractive fencing, and a wooden entry canopy.

By protecting Hood Canal's water quality, protecting the land and resources, and providing infrastructure for economic development, the Belfair project will benefit the community for years to come.

1. To prevent urban sprawl, the Belfair community was designated as an Urban Growth Area. Over 200 septic systems were taken offline and sewer service is now provided by a sustainable utility. Removing the septic systems will reduce nutrient loading to Hood Canal.
2. Close coordination between Mason County operations staff and CH2M HILL designers resulted in integrated environmental protection. High energy efficient blowers, used to aerate the basin, reduce the facility's carbon footprint and protect air quality.
3. Sustainable design supports the natural environment and economic growth. Environmental protection supports the economy by preserving Hood Canal for shellfish and tourist industries. Wastewater treatment and treated water supply support future economic development.

Industrial Waste Practice Grand Prize and W. Wesley Eckenfelder Industrial Waste Management Medal

ENTRANT: CDM Smith

ENGINEER IN CHARGE: Jeffrey A. Mills, P.E., BCEE

LOCATION: Florence, South Carolina

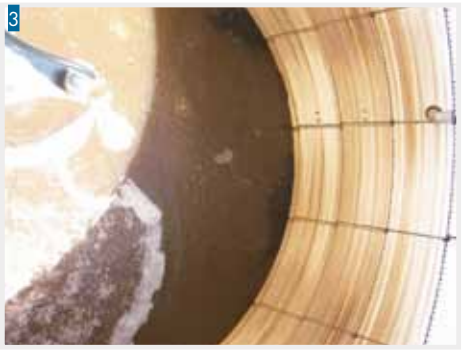
Florence Recycling Center Stormwater and Wastewater Treatment Facility

CDM Smith provided fast-track design-build services for the implementation of a stormwater and industrial process wastewater treatment system at Johnson Controls Inc.'s (JCI) new lead-acid battery recycling center in Florence, South Carolina. The integrated treatment system employs modern environmental controls to protect the public and the environment, allow for water reuse, reduce dependence on municipal supplies, and advance JCI's recycling mission.

The state-of-the-art, environmentally friendly facility treats process wastewater, generated by the recycling center, with chemical pretreatment, clarification and sand filtration to meet permit limits for safe discharge to the city sewer system. A portion of the treated effluent is reused in production, with excess discharged to the publicly owned treatment works.

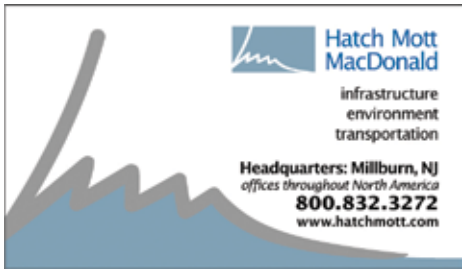
To protect the scenic Great Pee Dee River, JCI made a commitment that no stormwater will be discharged from the facility. The new stormwater treatment system—built to contain a 100-year storm event—meets this unique zero discharge requirement by collecting stormwater from factory roofs, scrubber pads and pavement and holding it in a 2.3-million-gallon high density polyethylene-lined impoundment. Impounded water is treated for potential lead contamination with sand filtration and then reused as scrubber make-up water, which surpasses existing groundwater quality, displaces groundwater withdrawals and reduces spray nozzle maintenance.

CDM Smith successfully addressed several project challenges, including a very aggressive schedule, complex site hydrology, treatment of variable wastewater, and a strict budget. CDM Smith's fast-track delivery for the entire system, including the treatment building, allowed it to be completed within 10 months and before startup of the recycling center. This goal was achieved despite the late start of the recycling center and additional scope changes, which were the result of the project team's identification of required technical elements not included in the original scope. CDM Smith also provided startup services, operator training, an operations & maintenance manual, and continues to provide supervising operators.



1. To protect the scenic Great Pee Dee River, JCI made a commitment that no stormwater will be discharged from the facility. The new stormwater treatment system built to contain a 100-year storm event meets this unique zero discharge requirement by collecting stormwater from factory roofs, scrubber pads and pavement and holding it in a lined impoundment for treatment and reuse.
2. Design-build delivery allowed the treatment facility to be installed and online within 10 months prior to the recycling center's startup. This achievement included additional technical elements, not included in the original scope, that were successfully rolled into the design to meet the aggressive construction schedule.
3. The treatment facility has been in compliance since the center's startup, even surpassing performance requirements when it successfully treated unexpected influent parameters during testing and commissioning.

PROFESSIONAL CARDS



This space could be yours.

Claim it NOW!

Professional Services Card is a service for employers of Board Certified Environmental Engineers, Board Certified Environmental Engineering Members, Board Certified Environmental Scientists, and AAEES Members only. Rates start at only $140 annually.
Call 410-266-3311 to take advantage of this exclusive offer.

Reach Our Advertisers

Company/Organization	Page	Telephone	Website
Alaimo Group Consulting Engineers	39	609-267-8310	www.alaimogroup.com
Carollo Engineers	39	800-523-5822	www.carollo.com
CDM Smith	39	617-452-6000	cdmsmith.com
Freese and Nichols	39	214-217-2200	www.freese.com
H2M	39	631-756-8000	www.h2m.com
Hatch Mott MacDonald	39	800-832-3272	www.hatchmott.com
Solvay Chemicals	20-21	800-765-8292	www.solvair.us

Please Support Our Advertisers. It's Good Business!

Be Recognized Among the Best Environmental Engineers and Scientists In the World

The American Academy of Environmental Engineers and Scientists identifies highly skilled environmental engineers and environmental scientists for the benefit of the public. These unique professionals are readily recognized through Academy credentials: Board Certified Environmental Engineer–BCEE (P.E. licensed), Board Certified Environmental Engineering Member–BCEEM (no P.E.), and Board Certified Environmental Scientist–BCES.

Those with a degree in environmental engineering (or related engineering degree), at least 8 years of experience, and a P.E. license may qualify to take written and oral specialty examinations to obtain the BCEE credential. Those with a degree in environmental science (or related science degree) and at least 8 years of experience may qualify to take written and oral specialty examinations to obtain the BCES credential. Those with 20 years of experience in environmental engineering (unlicensed) and a 10-year record of exemplary senior leadership may qualify to obtain the BCEEM.

Federal, state, and local agencies, educational institutions, and consulting firms recognize those holding Academy credentials as trustworthy, ethical experts with a strong commitment to ensure the public health, safety, and welfare to enable humankind to co-exist in harmony with nature.

The application process is simple: Candidates go to www.aaees.org, create a free account in the AAEES Center, and purchase the appropriate application package: Board Certification for Environmental Engineers (P.E. licensed) or Board Certification for Environmental Scientists.

AMERICAN ACADEMY
OF ENVIRONMENTAL ENGINEERS & SCIENTISTS®
130 Holiday Court, Suite 100
Annapolis, MD 21401
410.266.3311
Fax: 410.266.7653
http://www.aaees.org

Environmental Engineering Specialties
Air Pollution Control • Environmental Sustainability • General Environmental Engineering • Hazardous Waste Management • Industrial Hygiene • Radiation Protection • Solid Waste Management • Water Supply and Wastewater

Environmental Science Specialties
Air Resources • Environmental Biology • Environmental Chemistry • Environmental Microbiology • Environmental Toxicology • Groundwater and the Subsurface Environment • Surface Water Resources • Sustainability Science