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ENVIRONMENTAL ENGINEER

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ENVIRONMENTAL ENGINEER

Cover photo: Kay Bailey Hutchison Desalination Facilities. Courtesy of CDM, Superior Achievement Award Winner for the 2008 E3 Competition.

BY WILLIAM P. DEE, P.E., BCEE

WHAT WE DO IS IMPORTANT

As we think about our environmental engineering careers, we can often be overwhelmed by the details and demands of our jobs, our companies and the people and influences that affect what we do every day.

I AM OFTEN AMAZED AT THE HEADLINES THAT SCREAM OUT AT US FROM TELEVISION AND THE PRINT MEDIA ON AN ALMOST DAILY BASIS. I am referring to the financial deals and scandals that have become so commonplace in today's world...ENRON, WorldCom, the sub prime mortgage crisis, and the list goes on. Many smart people have dedicated their lives to creating personal wealth built on a house of cards that often comes tumbling down around them and hurting many innocent people in the process. As this new generation of workers enters the workforce, we need to have a dialogue with them about what is truly important in life and how they can make a true, meaningful and positive difference in the world.

When I talk to engineering graduates who are just entering the workforce, I like to spend time talking not only about the history of my firm, but also about the importance of the choices they are making at this point in their lives. With the issues of sustainability and climate change driving our focus and resources, it has become an even more compelling discussion than ever before. Several years ago, my wife and I took a trip to Africa to view wildlife in their natural habitat. Although we found it to be a beautiful and fascinating trip, it brought home to me the intricacies of ecological balance in the natural environment. There, without the complications and intrusion of massive construction, was our environment in all of its natural splendor. Animals and humans relying on the land, water, and themselves to live and survive based on the natural cycles of nature. I had a better appreciation and renewed perspective on the importance of my work and career.

As we think about our environmental engineering careers, we can often be overwhelmed by the details and demands of our jobs, our companies and the people and influences that affect what we do every day. It is important that we step back and reflect on how important our profession truly is in the world today. We ensure that communities receive high quality water to drink; that our rivers, streams, and other water bodies are suitable for recreation and our other needs; that the air we breathe is safe; and that the land we live on will remain fertile and productive. If we are successful in our mission, we are protecting the environment, not only for ourselves, but for generations to come.

This importance and relevance of what we do needs to be conveyed to future generations of potential engineers in a very compelling way. The United States is falling behind the rest of the world in producing enough engineers in sufficient numbers to address the challenges facing us in a truly global environment. Our schools need to overhaul their approach to teaching STEM courses. Our guidance counselors need to understand the importance of this technological and engineering challenge we face and help direct more children toward engineering as a profession. As members of the Academy, we need to take an active part in helping direct the future of our profession by talking to young students about the vibrancy and importance of a career in environmental engineering. I encourage you to become part of the Academy's K-12 Committee which is developing programs for us to be more active in our schools in advancing the importance of environmental engineering. Our message to students is that, as environmental engineers, we help create a better world, and that is job satisfaction that is hard to beat.

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AAEE EDUCATIONAL WORKSHOPS

AAEE has received approval from two of its Sponsoring Organizations to present educational workshops on Climate Change and its Impact on Water and Wastewater Utilities. Climate Change will affect nearly all areas of environmental engineering, and engineers of all backgrounds can benefit from these workshop presentations. Dates and locations are:

June 10, 2008
Technical Session – AWWA National Conference ACE '08
Atlanta

June 22, 2008
Pre-Conference Workshop – WEF Sustainability 2008 Specialty Conference
Washington DC area (Gaylord National on the Potomac)

October 18, 2008
Joint Pre-Conference Workshop – WEFTEC '08
Chicago

These workshops are part of AAEE's strategic plan. One of the plan's goals is to provide professional development opportunities on topics of broad interest to environmental engineers while providing greater visibility to AAEE activities through working with the Academy's Sponsoring Organizations.

Watch for registration information on the AWWA and WEF websites as well as the AAEE website. Support AAEE and earn your PDH's by attending these Climate Change events!

APPLICATIONS ARE CLOSED FOR 2008

The BCEE/BCEEM application drive for 2008 closed on March 31st. AAEE received 100 applications by the deadline – down 15 from last year.

The AAEE office will begin scheduling exams in May. The exam period will run through September and the successful exam candidates will be reviewed and certified by the Board at the Annual Board of Trustees coming this November.

2009 OFFICE ELECTIONS

Ballots are enclosed in the centerfold for Board Certified Environmental Engineers, Board Certified Environmental Engineering Members, and Members who are eligible to vote.

President-Elect
Cecil Lue-Hing, Ph.D., P.E., BCEE

Vice President
Matthew Dominy, P.E., BCEE
Brian P. Flynn, P.E., BCEE

Trustee-at-Large
Christian Davies-Venn, Ph.D., P.E., BCEE
H. Lanier Hickman, Jr., P.E., BCEE
Otis J. Sproul, Ph.D., P.E., BCEE
Sandra L. Tripp, P.E., BCEE

Full profiles of each candidate can be found on pages 8-10. Ballots are inserted in the centerfold (page 18-A) are due by June 30, 2008.

This column is provided for all members who wish to comment on the opinions of the Editor, to respond to the President's message, or to present your views on any matter of interest to the Academy or the Environmental Engineering Profession. The right to edit your letter is reserved and all letters will be identified. If you wish to present an "Op-Ed" feature, please make advance arrangements with the Editor. Views and opinions expressed in this section are those of the author and not those of the Academy.

ENVIRONMENTAL ENGINEERS IN GOVERNMENT — WHY HAVE THEY LEFT?

Poverty Crowding and Filth

Appallingly dirty and filthy conditions in British urban areas in the middle 19th century were caused by crowding, human and domestic wastes dumped into narrow urban streets.

Edwin Chadwick and later Charles Dickens drew attention to these problems and pointed out that the poor were dying at a younger age than the better-off and that filth and disease were in some way related.

In the U.S. Chadwick's work attracted the attention of Lemuel Shattuck, a Boston Bookseller with a statistical bent. He found that life expectancy in crowded U.S. urban centers had fallen (for example in Boston from 27.4 years to 21.4 years). He was elected to the Massachusetts Legislature. The Governor appointed him to a Sanitary Commission which, in 1850, reported on sanitary conditions and recommended the establishment of State and local Boards of Health to deal with town planning, sewerage, water supply and a broad range of other public health issues.

Sanitary Engineers and Clean Drinking Water

Charles A. Emerson, the first Chief Engineer of the Pennsylvania Department of Health reported to work in the newly formed Pennsylvania Department of Health in 1905[1].

The Drinking Water Program came first. Environmental engineers during the first six decades of the 20th century broke the links between water-borne illness and death. This nearly doubled the life-span of Americans from 49 to 70 years by the 1960's. This was paralleled by the control of pollution beginning in the 1930 and continues today, but at a much slower pace. Environmental Engineering research and education provided the basis for these successful efforts by state and federal environmental engineers: Wolman with Chlorination, Phelps taught us how to model streams and Thoman applied those techniques to estuaries.

Environmental Engineers Broaden the Scope of the Programs

In the field of public policy, environmental engineers in the federal government during the 50's and 60's teamed up with political leaders to shape the laws, programs and political institutions essential to environmental clean-up of drinking water, water and air pollution control, radiation protection, occupational health, and solid and hazardous wastes. Federal (U.S. Public Health Service Environmental engineers who lead these efforts included Hollis, Atkins, Schwob, Dworsky, Gilbertson, Weaver, and many others).

They were supported by the colleagues in State government who cleaned up water pollution from the metabolism of cities and industries- Klassen of Illinois, Metzler in New York, Poole in Indiana, Lee in Florida, Waring in Ohio and the many others in their states as well as Berry in Ontario.

The Conference of State Sanitary Engineers and its partner the Great Lakes and Upper Mississippi Basin Board of Sanitary Engineers developed Standards for Wastewater facilities (Ten State Standards) and their work led to the establishment of this Academy. Standards for engineering facilities' to treat wastes and waters were important to make sure that they would work and not waste public dollars.

The Congress Saw the Need for More Environmental Engineers

My first job when I reported for duty as Junior Assistant Sanitary Engineer Officer in the Environmental Program of the U.S. Public Health Service in Washington in 1950 was to make a nationwide study of sanitary engineering graduates.

Congress wanted to know whether there were enough sanitary engineers in the country to implement the then new 1948 Federal Water Pollution Control Act. Presidents cared and the Congress cared. As a result federal and state funds became available to provide graduate training to promising young engineers and scientists. Today such programs even though urgently needed are still on the books but not funded.

The Government programs I have described were accompanied by similar expansion of environmental efforts in industry, consulting, research, education as well as technical and professional organizations. While environmental engineers played a leadership role, they were always part of a team that included chemists, biologists, hydrogeologists, meteorologists, planners, modelers, attorneys and other professionals.

Environmental Scientists and Attorneys Play a Crucial Role

Scientists are always part of the team because of their skill to analyze and describe problems. Attorneys are important because they help to daft, interpret and enforce laws. Engineers are essential to the success of environmental programs because they are trained and experienced in setting ambient standards and linking them to engineering facilities designed and operated to attain those standards.

1 Harry P. Letton the first federal Sanitary (Environmental) Engineer reported to work in the U.S, Public Health Service's Drinking Water Program in 1913 - eight years later.

❖ *Continued on 32* ❖

BRYAN D. COLLINS, P.E., BCEE, has been certified in a second specialty, Air Pollution Control. Mr. Collins, Energy & Transportation Branch Manager of the Mississippi Department of Environmental Quality, was first certified in 2003 in Water Supply and Wastewater Engineering.

TAPAS K. DAS, PH.D., P.E., BCEE, received the Development Organization for Sustainable Transformation (DOST) Professor S. K. Sharma Medal and CHEMCON Distinguished Speaker Award for 2007 for his contributions to chemical engineering. The presentation was made at the Indian Chemical Engineering Congress held in Kolkata (formerly Calcultta), India. Additionally, he presented his lecture, "Environmental Sustainability: Key Roles of Chemical Engineers". Dr. Tapas has been certified in Air Pollution Control since 2002.

PAUL L. FREEDMAN, P.E., BCEE, was elected 2007 - 2008 Vice President of the Water Environmental Federation. Mr. Freedman, founder and President of LimnoTech, has been certified in Water Supply and Wastewater Engineering since 1989.

THOMAS G. SPREHE, P.E., BCEE, has been certified in a second specialty, Solid Waste Management. Mr. Sprehe, Senior Vice President of KCI Technologies, Inc., was first certified in 2004 in Water Supply and Wastewater Engineering.

C. HUGH THOMPSON, P.E., BCEE, has been certified in a second specialty, Industrial Hygiene. Mr. Thompson, President of HTA Science & Engineering, Inc., was first certified in 1994 in Hazardous Waste Management.

IN MEMORIAM

NEAL T. CALTON, P.E., BCEE, of Missouri passed away on April 5, 2008. Mr. Calton was Vice President of Engineering at Sunbelt Environmental Services. He had been certified in General Environmental Engineering since 1990.

LEONARD B. DWORSKY, P.E., BCEE, of New York passed away on March 28, 2008 at the age of 93. Mr. Dworsky was Professor Emeritus of Civil and Engineering Engineering at Cornell University. He had been certified in Sanitary Engineering since 1958.

Ballots are provided in the center fold (page 18-A) for those who are eligible to vote (Board Certified Environmental Engineers, Board Certified Environmental Engineering Members, and Members).

OFFICER NOMINEES FOR 2009

The Academy's Nominating Committee is chaired by Stephen R. Kellogg. It's members include Alan H. Vicory, Jr., Timothy G. Shea, Robert P. Gardner, Jeffrey H. Greenfield, Gerard W. Higgins, Robert C. Williams. The committee recommends the following slate of candidates:

President Elect	Cecil Lue-Hing, Ph.D., P.E., BCEE
Vice President	Matthew Dominy, P.E., BCEE Brian P. Flynn, P.E., BCEE
Trustee-at-Large	Christian Davies-Venn, Ph.D., P.E., BCEE H. Lanier Hickman, Jr., P.E., BCEE Otis J. Sproul, Ph.D., P.E., BCEE Sandra L. Tripp, P.E., BCEE

PRESIDENT-ELECT

CECIL LUE-HING is the former Director of Research and Development of the Metropolitan Water Reclamation District of Greater Chicago (District), a position he occupied between 1971 and 1999. He currently operates as a private practitioner environmental consultant as President of Cecil Lue-Hing, and Associates Inc., a sole proprietorship Chicago-based Illinois Corporation. Prior to Chicago, he was a Vice President of Ryckman, Edgerley, Tomlinson and Associates, an environmental consulting firm in St. Louis, Missouri. Cecil has earned degrees from Marquette, Case Western Reserve, and Washington University in St. Louis, in Civil, and Environmental & Sanitary Engineering. His career in private practice, government, and applied research has given him the opportunity to experience and appreciate the varied interests and challenges of the profession.

Cecil has made many notable contributions to wastewater technology including two patents, by his scores of publications in the professional journals, eight books on a wide range of subjects in environmental engineering/science, and has given freely of his time to the cause of professional development through volunteer service to AAEE- Board of Trustees, Chair Eminence and Planning Committees; ASCE- Past President EWRI, Past Chair Environmental Engineering EXCOM; WEF- Past Chair Board of Editorial Review; IWA- Past Secretary Treasurer of USANC; AMSA-Past President, Past Chair Biosolids Management Committee; and USEPA- former member SAB Environmental Engineering Committee. His awards include AAEE-Kappe Lecturer 2003, G. Maskew Fair Award 2001; ASCE-Natl. Govt. Civil Engineer of the Year 1996, Simon Freese Award and Lecturer 1992; WEF-Chas. Emerson Medal 1996, and AMSA- Environmental Award 1999 and 1998, President's Award 1992.

Cecil is an Honorary Member of ASCE, was certified a Diplomate by the Academy in 1982, and was elected a Member of the National Academy of Engineering in 2000.

As Vice President of AAEE, Cecil will be committed to strengthening the Academy's position as the nation's premier certifying body for Environmental Engineers while extending its influence to better embrace and keep pace with the changing culture, demographics, and engineering/science demands of the profession.

VICE PRESIDENT

A native of Long Island, New York, MATTHEW DOMINY received his B. S. in Civil Engineering in 1969 from Bucknell University. Upon graduation, was commissioned into the Army Corps of Engineers, and served for ten years, until 1980. His service included tours in Vietnam, Germany, Graduate School at the University of Florida, and three years in Washington, DC.

Upon leaving the Army, Mr. Dominy worked for a subsidiary of the American Can Company in South San Francisco, California, managing a metal recycling plant which converted tin-plate scrap into detinned steel, and refined, pure tin. The plant was closed in 1983, and Mr. Dominy began working in the public works field, both in the public and private sectors. That service included 2 years as Public Works Director for Salisbury Township, PA, 8 years at the City of Torrington, CT, during which time he was recognized by the American Public Works Association as one of the Top Ten Public Works Directors in North America, and 2 1/2 years at Alachua County Florida. The common thread through all of these positions was the management of solid waste operations, from the perspective of collection, recycling, reuse, and disposal. From 1991-1996, Mr. Dominy also served on the Board of Directors of the Connecticut Resource Recovery Authority, which was responsible for solid waste management for most of the state of Connecticut.

Mr. Dominy is currently a Vice president with HNTB Corporation in Washington, DC, where he is assisting the District of Columbia with rebuilding the South Capitol and 11th Street bridges across the Anacostia River, as part of the implementation of the Anacostia Waterfront Initiative.

Mr. Dominy has been a Diplomate since 1996, serving as the APWA Trustee from 1999-2002, and as the Academy Treasurer from 2002 until 2005. Mr. Dominy was awarded the Stanley E. Kappe Award by the Academy in 2007.

BRIAN P. FLYNN, P.E., BCEE, is an environmental/chemical engineer with 37 years of environmental engineering and business experience. He holds 3 P.E. licenses (Texas, Louisiana, and Delaware) and earned an MS in environmental/chemical engineering at UConn in an EPA sponsored program. He is a nationally recognized expert in wastewater treatment, solid and hazardous wastes, and the management and operating practices of environmental consultants.

A Diplomate since 1981, Mr. Flynn is very active in the Academy. He currently

serves as the Academy's Assistant Treasurer, Chairs the User Outreach Committee and has led the effort to develop a 5 year strategic plan for the Academy. He has also developed a Financial Management course for the Academy and published "*Profit Fundamentals*" through the Academy's publishing arm. As a contributing editor of *Environmental Engineer*, he has also written a number of management articles for the Academy. He also the 2008 recipient of the Stanley E. Kappe award for service to his profession.

Mr. Flynn worked for the DuPont Company for eight years and then became a Founding Partner of the ERM Group, working as a consultant for 30 years. He is currently a member of the Board of Directors of ERM-New England.

During Mr. Flynn's 38 year career, he has led the development and operation of two groundbreaking technical achievements: the world's first and largest PACT wastewater treatment plant, and an innovative hazardous waste perched bed land treatment facility at a major refiner. His wastewater experience includes NPDES permitting, expert witness testimony, design and operations of municipal and industrial wastewater treatment plants, and lab and pilot scale treatability studies. Hazardous waste activities include RCRA permitting, design of landfills, innovative use of statistics to analyze environmental data, and numerous ground water contamination studies. His clients include refiners, chemical plants, steel mills, Department of the Army, and DOE's Los Alamos and WIPP sites.

Mr. Flynn has taught project and financial management training seminars worldwide and has provided management consulting to poorly functioning firms. He is the author of over two dozen papers and recently wrote the book "*Profit Fundamentals*".

His extensive background in the technologies of our profession, his long involvement with Academy matters and personal management of complex organizations are ideally suited to the current needs of the Academy.

TRUSTEE-AT-LARGE

CHRISTIAN DAVIES-VENN has 32 years experience in environmental engineering. He received his B.S in Civil Engineering from the University of Sierra Leone and M.S. and Ph.D. degrees in Environmental Engineering from the University of Cincinnati and the University of Arkansas, respectively. He is a registered professional engineer in Maryland, Virginia, District of Columbia, Michigan, Tennessee, and Florida.

He started his professional career in Freetown, Sierra Leone with Techsult Consulting Engineers where he advanced from project engineer to technical manager and partner. He managed various international development projects in Sierra Leone, Nigeria, the Gambia, and Liberia, funded by the Agency for International Development, the World Bank, the European Economic Community, and the African Development Bank. After completing his graduate studies, he joined the Fairfax, Virginia office of Parsons as a senior project manager. In 1994, he joined PEER Consultants, an environmental and civil engineering consulting firm in Rockville, Maryland, where he held the positions of senior program manager and director of water and wastewater engineering and is currently a vice president. He has managed, directed, and served as principal-in-charge for numerous projects in the areas of water and wastewater infrastructure planning and design, wastewater collection and treatment, and residuals treatment and management. He has authored and co-authored several technical papers and made presentations at national conferences on a wide range of environmental engineering topics.

Dr. Davies-Venn was certified as a Diplomate of the Academy in 1996. In 2005, he was appointed Assistant Treasurer and the following year as Treasurer and Chair of the Finance Committee. He has also served on several committees including Chair of the Ad Hoc Working Group sub-committee on Examination Eligibility, the Ad Hoc Working Group on membership classifications and requirements for certification and re-certification, and currently on the Strategic Planning Committee. He serves regularly as Examiner or Chief Examiner on the Academy's Examination and Peer Review Panel for examination of prospective candidates. Since 2005 he has served as the Academy's representative to the Council of Engineering and Scientific Specialty Boards (CESB). In this capacity, he has served on the CESB's Accreditation and Admissions Committee and the Nominating Committee, and currently serves on the Executive Committee and as Chair of the Committee of Professional Engineer Specialty Certification. He is committed to continuing his active involvement with and support of the Academy in carrying out its strategic mission.

H. LANIER (LANNY) HICKMAN, JR., BCEE holds a BS in Civil Engineering from the University of Oklahoma and an MS in Sanitary Engineering from the University of Michigan.

His many years of services includes 2 years engaged in Civil Engineering work in the petroleum industry, 40 years of Environmental Engineering work, 6 years engaged in water pollution control (stream quality studies) and 34 years in solid waste management.

From 1966 until 1978, Mr. Hickman served in the federal government in the USPHS and then USEPA Office of Solid Waste. His final position was Director of Operations (COO). Mr. Hickman's principal responsibilities included direction of technical programs, budget development and control, legislation and regional office operations. He retired USPHS Commissioned Officer in 1978 from USEPA.

From 1978 until 1996, Mr. Hickan served as the Executive Director/CEO of the Solid Waste Association of North America (SWANA). During his leadership, SWANA from 900 to 7,000 members and established SWANA as a major voice in the regulation of solid waste management, training, education and certification of solid waste management professionals. He retired from SWANA in 1996.

Since retiring, he has served in a number of solid waste management consulting engagements with the World Bank. Mr. Hickman has written three solid waste management reference/text books on solid waste management – *Principles of Integrated Solid Waste Management*, *Complete Handbook on Solid Waste Collection and Transfer*, and *American Alchemy (A History of Solid Waste Management in the United States)*. He has published over

400 papers, articles and reports on solid waste management. Currently, Mr. Hickman is a member of the Advisory Board of the MSW Management Journal and is active in Democratic Party of Worcester County, MD, serving as the Chair of the county party.

Mr. Hickman has been a member of the Academy since 1975 where he has served 2 terms on the Academy Board of Trustees, the Solid Waste Committee, now on the Admissions Committee and currently is chair of the Bylaws, Policies and Procedures Committee. He is also the 2005 Recipient of the Academy Stanley E. Kappe Award.

OTIS J. SPROUL is Dean and Professor Emeritus at the University of New Hampshire. He served as the Dean of the College and Physical Sciences at UNH from 1982 to his retirement from the university in 1995. His earlier academic experience was as Chair and Professor in the Department of Civil Engineering at The Ohio State University and as Professor in the civil engineering department at the University of Maine in Orono. Otis served as Visiting Professor at the Budapest University of Economic Sciences during the Fall 1996 semester. He is currently a private environmental consultant in Durham, NH. Otis has the BSCE and MS in sanitary engineering degrees from the University of Maine and the D. Sc. from Washington University in St. Louis.

Otis and his students have made substantial research and engineering contributions on the inactivation and removal of viruses, parasites and bacteria from water and wastewater. These contributions delineated the roles and mechanisms of disinfection, chemical and physical treatment processes in the inactivation and physical removal of these agents, as well as similar processes that affect these agents after their discharge to the natural environment. These and other contributions in industrial waste treatment and in education have been reported in 100 journal and proceedings papers, reports and book chapters.

Otis's service to AAEE includes his current service as one of the Academy's two Commissioners on the Engineering Accreditation Commission of ABET, Inc. and as a State Representative for NH. He has served as an ABET Program Evaluator for civil engineering and environmental engineering programs for the past 20 years. Otis was one of several who established the International Ozone Association and served as a founding director of the IOA and subsequently as a member of its North American Executive Committee. He also, with one other member, proposed to the American Society for Engineering Education that it establish a Division of Environmental Engineering, secured its formation in 1968 and subsequently served the division in various leadership roles. He also served as Associate Editor and Editor of the Journal of the Sanitary Engineering Division of ASCE.

Otis' awards include ASCE's Rudolph Hering Award, the Lichtenstein Memorial Award from the College of Engineering at The Ohio State University and an Alumni Achievement Award from Washington University in St. Louis.

SANDRA L. TRIPP has more than 25 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, DC area in 1982 with Boyle Engineering Corporation. She moved to North Carolina in the 1990s and joined CDM, where she served numerous municipal clients and led a myriad of assignments from planning through design and construction. Sandy recently joined Kimley-Horn and Associates, Inc. and continues to serve her municipal clients while also playing an active role in the training and development of project managers. 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. She has served on the boards of the American Academy of Environmental Engineers (AAEE) and the North Carolina American Water Works Association – Water Environment Association (NC AWWA-WEA). An active member of the AAEE since 1993, she has served as an Academy Trustee, Chair of the Membership Committee, and member of various ad hoc committees. Sandy has served as the Academy's North Carolina State Representative for the last 10 years, and she currently is Chair of the Admissions Committee.

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. A

Ballots are provided in the center fold (page 18-A) for those who are eligible to vote (Board Certified Environmental Engineers, Board Certified Environmental Engineering Members, and Members).

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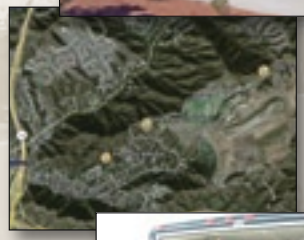
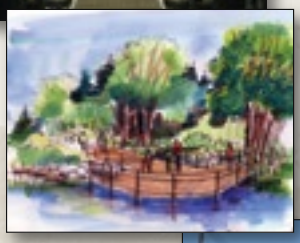
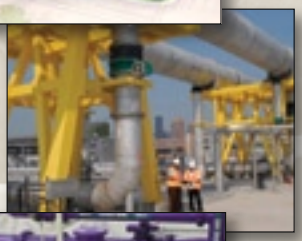
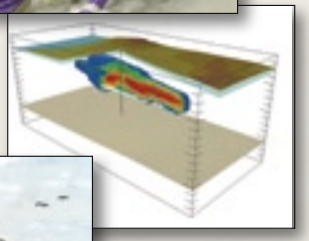
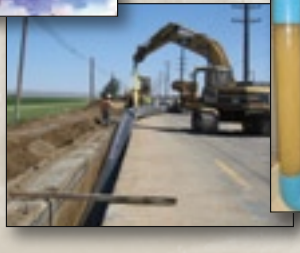
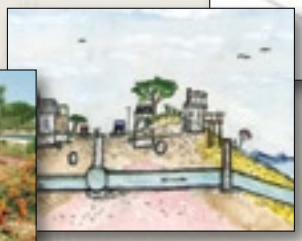












THE EXCELLENCE IN ENVIRONMENTAL ENGINEERING® competition of the American Academy of Environmental Engineers exists to identify and reward the best of today's environmental engineering. Its criteria define what it takes to be the best in environmental engineering practice: a holistic environmental perspective, innovation, proven performance and customer satisfaction, and contribution to an improved quality of life and economic efficiency.

The competition, begun in 1989, is organized around the normal phases of development and implementation of environmental management projects and programs: research, planning, design, and operations and management. This year's entrants to the competition displayed a wide range of projects from innovative designs in waste treatment plants to new water treatment technologies to a one-of-a-kind Superfund site cleanup. At the same time, we see that today's engineers are more and more becoming significantly integrated in a team/project approach, allowing for greater flexibility and efficiency in project management. The application of new technologies combined with experienced environmental engineering practices make these projects the award winners they are.

Those chosen for prizes in 2008 by an independent panel of distinguished experts, addressed the broad range of modern challenges inherent in providing life-nurturing services for humans and protection of the environment. They are but a small percentage of the many projects involving environmental engineers around the world. Nevertheless, their innovations and performance illustrate the essential role of environmental engineers in providing a healthy planet. These award winners testify to the genius of humankind and best exemplify the Excellence in Environmental Engineering® criteria.

2008 Excellence in Environmental Engineering®

SUPERIOR ACHIEVEMENT AWARD

Kay Bailey Hutchison Desalination Facilities

EL PASO, TEXAS

ENTRANT: CDM
ENGINEER-IN-CHARGE: Paul J. Gorder, P.E., BCEE

The Kay Bailey Hutchison Desalination Facilities project is an $87 million, state-of-the-art project that is named after United States Senator Kay Bailey Hutchison. The team of Camp Dresser & McKee and Moreno Cardenas, Inc. served as the primary consultants and designed the 27.5-million-gallon-per-day project, which was jointly implemented by the El Paso Water Utilities and Fort Bliss U.S. Army base.

This project, North America's largest inland desalination project, uses reverse osmosis membranes to treat the high salinity groundwater, taps brackish groundwater beneath the desert floor, converting it into a new and sustainable drinking water supply for the city of El Paso and Fort Bliss.

Constructed for $2.07 per gallon per day of RO skid capacity, the project will deliver water for considerably less than other options that have been evaluated by EPWU, such as indirect potable reuse of reclaimed water or importing supplies from remote areas in western Texas.

The project's benefits extend beyond water treatment. The region's new long-term water supply served as a key factor in the Army's decision to increase personnel and operations at Fort Bliss under the Base Realignment and Closure Process. Because Fort Bliss heavily influences the local economy, base expansion was "a true turning point" for the city, according to Senator Hutchison, supporting continued economic development for a bright future.

This flagship project demonstrates a holistic water supply approach, integrating fresh groundwater, brackish groundwater, and surface water to maximize limited supplies. The project will preserve fresh water resources and improve the quality of life for this growing desert community, as well as serve as a model and center of learning for other communities that are looking for sustainable options to meet their long-term water needs.

TOP LEFT
The process building layout was designed to incorporate southwestern architecture and materials, make maximum use of natural light, and accommodate visitors inside and out. A landscape courtyard separates the building from the adjacent learning center.

TOP RIGHT
A proven technology for coastal desalination, reverse osmosis (RO) membranes were uniquely applied for this inland application and refined through onsite pilot testing.

BOTTOM RIGHT
The 27.5-million-gallon-per-day (mgd) Kay Bailey Hutchison desalination facilities project—named after the senior U.S. senator from Texas—uses advanced technologies to tap brackish groundwater for a new and sustainable drinking water supply for El Paso and Fort Bliss.

2008 Excellence in Environmental Engineering®

RESEARCH GRAND PRIZE

Glendale Demonstration-Scale Evaluation of Chlorite Ion to Control Nitrification in a Distribution System and Reservoirs

GLENDALE, CALIFORNIA

ENTRANT: Malcolm Pirnie, Inc.
ENGINEER-IN-CHARGE: Michael J. Mcguire, Ph.D., P.E., BCEE

Glendale Water and Power, which services 200,000 people of the City of Glendale, faces a problem that plagues approximately 30 percent of water utilities in the United States – nitrification

Nitrification is the microbial process in which ammonia is oxidized to nitrite and potentially to nitrate. It's adverse effects on drinking water includes loss of total chlorine residual, release of free ammonia, increase in nitrite and nitrate concentrations, decrease in pH, increase in corrosion rates, and increase in microbiological activity.

The City of Glendale, in a collaborative effort with Malcolm Pirnie, conducted a demonstration-scale study to determine the effectiveness of chlorite ion for nitrification control by directly feeding sodium chlorite to a selected area of the Glendale distribution system – first full-scale nitrification control study in California feeding sodium chlorite as the source of chlorite ion. Previous studies were conducted at pilot scale in a simulated distribution system. With upcoming deadlines in compliance schedules of the Stage 2 D/DBP Rule, more water utilities are likely to switch to chloramines as their secondary disinfectant. Therefore study results will provide these utilities with significant, valuable information confirming chlorite's effectiveness in preventing nitrification in vulnerable systems.

TOP LEFT
In August 2006, Malcolm Pirnie began a demonstration-scale study with the City of Glendale, California to determine the effectiveness of chlorite ion in controlling nitrification in Glendale's drinking water system. Photo 1 shows a satellite image of the demonstration study location of Glendale's distribution system, including three reservoirs serving the area.

TOP RIGHT
This study was the first full-scale nitrification control study with direct feed of sodium chlorite coupled with intense monitoring and control procedures. Photo 6 depicts the sodium chlorite feed system, which included a carrier water dilution system to enable full mixing of sodium chlorite into the water flow to the 968 Reservoir.

BOTTOM RIGHT
During the demonstration study, the Glenoaks distribution system area was isolated from the rest of Glendale's system to enable each of the reservoirs to solely receive water containing chlorite ion. Photo 2 depicts Glendale operations staff preparing for the demonstration study by opening the valve to connect the 968 Reservoir to the Glenoaks distribution system.

Study findings were shared with nearly 80 interested drinking water decision-makers at an open house in Glendale last week, establishing a benchmark for cutting-edge research in new nitrification control strategies for other utilities to follow Glendale has established a benchmark for cutting-edge research in new nitrification control strategies for other water utilities to follow. Based on the results of this investigation Glendale is considering the application of sodium chlorite to their entire system. City leaders recognize that providing Glendale's residents with a dependable supply of safe, affordable drinking water is a key to the community's viability.

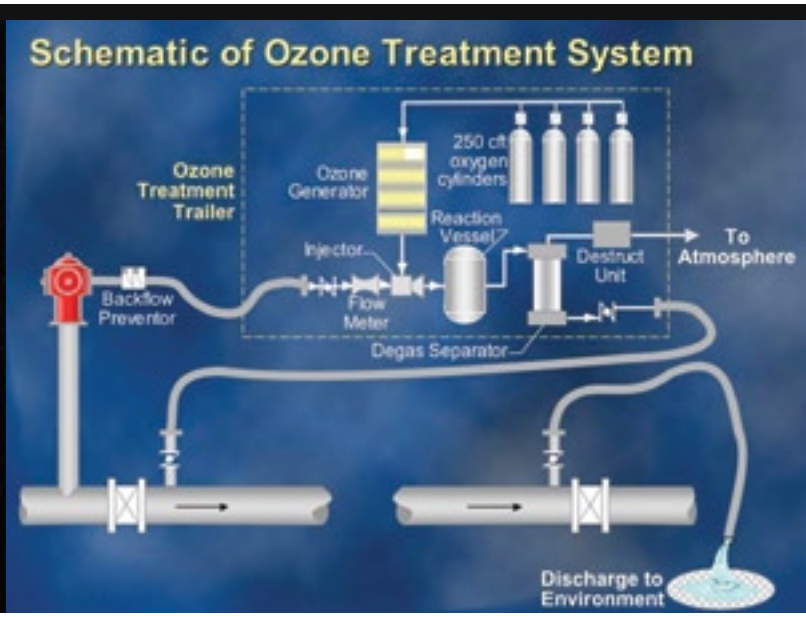
2008 Excellence in Environmental Engineering®

RESEARCH HONOR AWARD

Ozone Disinfection of Water Mains Research

DENVER, COLORADO

ENTRANT: CDM
ENGINEER-IN-CHARGE: Christoper Schulz, P.E., BCEE



In search of a green alternative to disinfecting water mains after installation, Denver Water and CDM collaborated on a three-year study researching the use of ozone as a disinfectant. The industry standard of using a chlorine-based disinfectant has proven to be time consuming, expensive, and potentially harmful to the environmental as chlorination often requires onsite preparation of hazardous chemicals or transport of chlorine gas cylinders. Additionally, chlorinated water must also be dechlorinated before it is discharged to prevent harm to the environment and aquatic life.

The complex research project involved three stages: laboratory, pipe-loop testing, and full-scale field trials. The study proved that ozone is very efficient when combined with an innovative high-pressure spray wash pre-cleaning system, which targets the bacteria attached to pipe walls. Ozone is completely safe for the environment, converting into oxygen within 1 hour. It requires 50 percent of the labor needed for the equivalent chlorine method, resulting in reduced operating costs for pipeline disinfection. Ozone disinfection also saves time, taking 20 to 30 minutes, while chlorine-based disinfection takes 24 hours and requires an additional step, 24-hour dechlorination.

Based on the research results, Denver Water has incorporated a trailer-mounted high-pressure pre-wash and ozone disinfection system into their standard distribution system disinfection processes. Several other utilities are now looking to implement these green technologies. And, while no federal regulations currently exist for the disinfection of water mains, trends focusing on water quality in the distribution system indicate that it is only a matter of time. CDM is working with the American Water Works Association and the U.S. Environmental Protection Agency to establish ozone disinfection of water mains as a best practice.

TOP LEFT
Schematic: Process flow schematic detailing Denver Water's trailer-mounted ozone disinfection system.

TOP RIGHT
Clean pipeline: The interior of this pipeline has been cleaned with the high-pressure spray wash. It is now ready for ozone disinfection.

BOTTOM RIGHT
Ozone disinfection system: The ozone used for disinfection is generated onsite by this trailer-mounted electrical ozone generation system. The inlet and outlet fire hose connections are located at opposite sides of the trailer floor.

2008 Excellence in Environmental Engineering®

PLANNING GRAND PRIZE

Granular Activated Carbon Master Planning Project

BIRMINGHAM, ALABAMA

ENTRANT: Malcolm Pirnie, Inc.
ENGINEER-IN-CHARGE: Jason T. Carter, P.E.

The Water Works and Sewer Board of the City of Birmingham (BWWSB) operates four drinking water treatment facilities with a combined capacity of 188 million gallons per day and serving approximately 750,000 consumers. With limited funds available for capital improvements and system growth, BWWSB needed an affordable approach for complying with the upcoming federal Stage 2 Rule mandating removal of disinfection byproducts (DBP) in drinking water. Malcolm Pirnie was retained to develop a new and cost-effective strategy by identifying an application of granular activated carbon and free chlorine to achieve this goal. In addition to allowing BWWSB to meet upcoming regulatory deadlines, it could potentially save the utility $35 million in construction costs.

Although GAC has been used in filters for many years, none of the facilities surveyed in the study used biologically active GAC for organics removal and regulatory compliance without the use of ozone. Malcolm Pirnie's GAC pilot study, comparing GAC biofilters (without ozone) and traditional dual media filters, proved their viability for achieving regulatory compliance with both low filtered water organics and effluent turbidity.

This study included performance benchmarking, a review of planned capital improvements, a nation-wide survey of water utilities using GAC, best technology short-listing, a year-long pilot scale evaluation of alternatives, an evaluation of construction and operational costs, and a recommendation for implementation. It also found that with limited modifications to planned filter upgrades, the GAC biofilters could be incorporated into the existing treatment plants for relatively little capital cost. Few operational changes would be necessary to manage the GAC biofilters, resulting in little additional operator training. Given the growing demand on water utilities to replace aging buried infrastructure, supply water to growing populations, and limit water rate increases, the application of these results to utilities across the country has gained national interest.

TOP LEFT
The Carson Filter Plant is slated as the first plant to incorporate GAC filter design criteria into rehabilitation efforts.

TOP RIGHT
Filter gallery at the BWWSB Putnam Station Treatment Plant.

BOTTOM RIGHT
Photo shows technician visually inspecting filter media condition during the pilot-scale studies. After a year long evaluation, results indicated that an innovative hybrid technology — GAC biofilters without ozone — was a viable approach under typical conventional filter operational conditions.

2008 Excellence in Environmental Engineering®

PLANNING HONOR AWARD

Creating and Restoring Wetlands for River Temperature Reduction

ALBANY, OREGON

ENTRANT: CH2M Hill
ENGINEER-IN-CHARGE: Mark F. Madison, P.E.

The City of Albany plans to improve the water quality of the Willamette River by creating an integrated wetland treatment system. Assisted by CH2M Hill, the City of Albany developed this innovative approach in partnership with the City of Millersburg, Weyerhaeuser and Wah Chang Teledyne. Using natural treatment processes, the project will create and restore wetlands along the river and enhance wildlife habitat while reducing the temperature of wastewater treatment effluent discharging to the watershed. This project is expected to provide greater overall environmental benefits than traditional approaches as well as addressing Willamette River total maximum daily loads for temperature and other water quality issues.

On the basis of a screening of potential technologies and alternatives, which included a preliminary cost comparison of individual wetland treatment systems with an integrated wetland treatment system, an integrated wetland treatment system was identified as the alternative with the greatest promise.

Temperature reduction was evaluated using the Heat Source model. The model was used to predict effluent temperatures from the constructed wetland complexes. The excess thermal loads predicted from wetland effluent temperatures were evaluated against waste load allocations for thermal load to determine whether the wetlands could maintain effluent temperatures so that the resulting thermal loads are within permit requirements.

The constructed wetlands were found to be effective in reducing the temperature of wastewater effluent. Emergent wetland vegetation provides shading of the water surface to minimize solar heating while radiant heat loss and evaporative cooling help to dissipate energy.

Water balance, water quality treatment, potential water law issues, initial water quality monitoring results for the oxbow lakes, outfall site, and diffuser concepts were all also evaluated as part of the project.

TOP LEFT
Phase 1 integrated wetland system layout.

TOP RIGHT
The riparian habitat and wetlands adjacent to oxbow lakes and the Willamette River will be restored.

RIGHT
Thee view today of First Oxbow Lake, where flow and water quality is expected to be enhanced with the integrated Wetlands Program.

BOTTOM RIGHT
Planned public overlook of integrated wetland along the Water Trail.

2008 Excellence in Environmental Engineering®

PLANNING HONOR AWARD

York River Treatment Plant Expansion Phase I

SEAFORD, VIRGINIA

ENTRANT: Malcolm Pirnie, Inc., and Hampton Roads Sanitation District
ENGINEER-IN-CHARGE: James P. Noonan, P.E., BCEE

The Hampton Roads Sanitation District (HRSD) faced an aggressive regulatory schedule and a complex technical challenge. First, to upgrade the York River Treatment Plant by 2011 to meet "limit of technology" nutrient reduction goals established for tributaries of the Chesapeake Bay by the Virginia Department of Environmental Quality. The second, to double the capacity of the York River Plant from 15 to 30 mgd by 2016 to meet the wastewater treatment needs on the Lower Virginia Peninsula.

Additionally, HRSD needed to provide on-site biosolids disposal facilities in accordance with their District-wide biosolids management plan. Options considered for the York River Treatment Plant included building either an incinerator, dry-pelletizing facility, or composting facility.

Enlisting Malcolm Pirnie, Inc. as their consultant, HRSD developed an innovative solution – a step-feed BNR process for nitrification and partial denitrification, chemical addition for phosphorus removal, denitrification filters to provide "limit of technology" nutrient removal, and a biosolids processing facility in a beneficial, cost-effective, environmentally sound and publicly acceptable manner.

The biosolids processing facility successfully addresses biosolids management issues by converting about 50,000 pounds per day of biosolids into a product already marketed by HRSD as a beneficial soil conditioner and plant food supplement under the Nutri-Green® label.

The York River Plant expansion will sustain economic development on the Lower Virginia Peninsula over the next 20 years while protecting water quality in the York River and Chesapeake Bay for future generations. State-of-the-art odor control facilities will result in no off-site objectionable odors. Construction of the project is being phased over an eight year period to reduce the financial impact on the rate payers by spreading the project cost over several years.

TOP LEFT
State-of-the-art odor control facilities will ensure that there are no off-site objectionable odors.

TOP RIGHT
Rendering of the upgraded and expanded plant site layout showing plan to preserve forested areas and avoid impacts to sensitive Chesapeake Bay resource protection areas.

BOTTOM RIGHT
Aerial photo of York River Treatment Plant site shows forested buffer that was important to maintain during plant nutrient upgrade and capacity expansion.

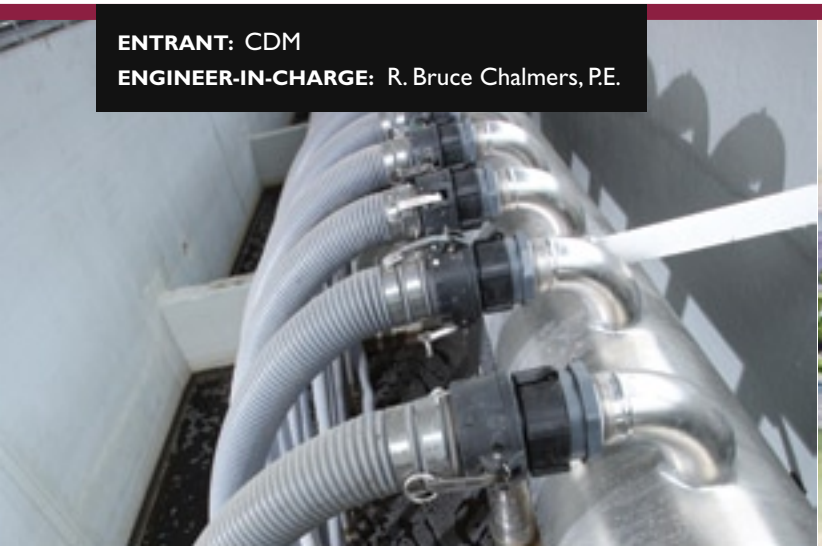
2008 Excellence in Environmental Engineering®

DESIGN GRAND PRIZE

Orange County Groundwater Replenishment System

FOUNTAIN VALLEY, CALIFORNIA

ENTRANT: CDM
ENGINEER-IN-CHARGE: R. Bruce Chalmers, P.E.



Facing extensive droughts and continued population growth, the Orange County Water District (OCWD) and the Orange County Sanitation District (OCSD) implemented an innovative solution for providing safe drinking water to the citizens and business in Orange County. This 70 mgd, $480 project was designed by CDM.

OCWD hired CDM to design a solution that minimized the impact of extended area droughts and met the increased demand for potable water. The GWR System is expanded to 130-mgd and treats effluent with a multi-barrier approach – microfiltration for pretreatment, reverse osmosis for purification, and ultraviolet light for disinfection – removing bacteria, emerging contaminants, chemicals, and viruses. Following treatment, the purified water is injected into an underground seawater barrier or percolated into aquifers before becoming part of the drinking water supply for the county's residents. Taking advantage of a water source that was formerly discharged into the ocean helps protect the environment and maximizes a readily-available supply.

As part of the project, CDM also designed supporting chemical systems, onsite buildings, an electrical substation, three water pumping stations, more than 13 miles of pipeline to transport the water to recharge basins, 3 miles of barrier pipelines, and 16 injection wells on eight different sites. CDM performed groundwater modeling to determine the optimum placement of injection wells used to prevent seawater intrusion. In addition, the firm provided bidding support and construction services – preparing seven major construction contracts on time and on budget – operations and maintenance services, operator training, and assisted in facility startup.

This pioneering advanced water purification facility helps drought-proof Orange County while providing safe, potable water to a growing population in an environmentally friend and energy efficient way.

TOP LEFT
The stainless steel air manifold connects to each MF membrane module with a flexible hose. During the MF backwash operation, air is forced through holes in the bottom of the membrane modules, gently agitating or "scouring" the surface of the membranes to remove debris.

TOP RIGHT
Orange County Water District's new $480 Groundwater Replenishment (GWR) System, which will provide indirect reuse potable water from treated effluent to more than 144,000 households in Orange County, California.

BOTTOM RIGHT
During the final phases of disinfection, UV light combines with hydrogen peroxide to create an advanced oxidation reaction that breaks down any organic compounds.

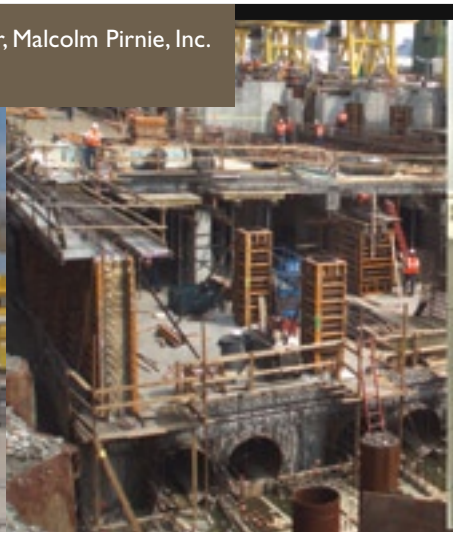
2008 Excellence in Environmental Engineering®

DESIGN HONOR AWARD

Newtown Creek Water Pollution Control Plant Upgrade/Contract 25

BROOKLYN, NEW YORK

ENTRANT: Joint Venture of Greeley and Hansen, Hazen and Sawyer, Malcolm Pirnie, Inc.
ENGINEER-IN-CHARGE: Steve Gyory, P.E.



With the completion of the $660 million Contract 35, part of the $3.5 billion "mega" upgrade of the Newtown Creek Water Pollution Control Plant, the New York City Department of Environmental Protection has complied with federal deadlines on its single largest project to date. Under a Consent Order to meet USEPA secondary treatment standards at the 310 mgd capacity Newtown Creek Plant, new treatment and conveyance facilities are being built. The joint venture design team of Greeley and Hansen, Hazen and Sawyer and Malcolm Pirnie are responsible for Contract 35, which includes phased construction of the new North Battery and reconstruction of the north half of the Central Battery.

The challenge of completing construction and placing the new Batteries into operation in less than 40 months to meet the Consent Order, while maintaining continuous operation and treatment performance of the existing Batteries, required creative planning strategies and extensive teamwork between design, construction, and operations teams. With expansion capabilities limited, Malcolm Pirnie's state-of-the-art in-house Hydraulic Profile model simulated the complicated interactions between new and existing facilities, enabling the team to develop, test and modify, and redirect loading and flow to balance startup of new tanks with others taken off line.

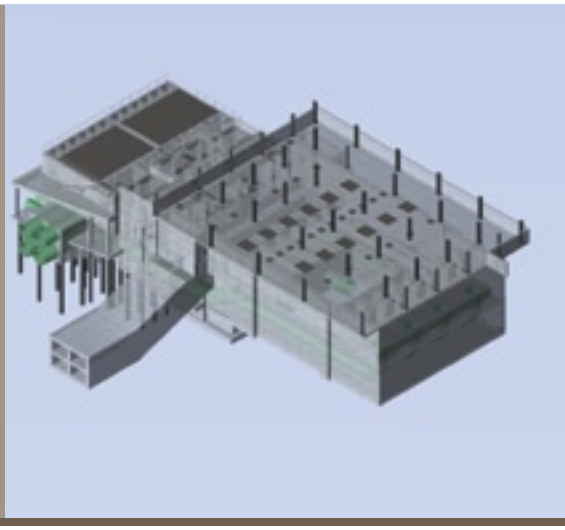
Design services were provided on-site during construction by design engineers who reviewed drawings and submittals, made design changes, and prioritized design response to pending issues. With the timely startup of the North Battery, the engineers were able to confirm the effectiveness of an enhanced "Track 3" process, developed to produce secondary treatment without building new primary treatment tanks. This will ultimately save $600-800 million in tankage not constructed, and preserve space for future facilities.

To accommodate shortened delivery times, the engineering team developed new Construction Services Information Systems that support team collaborated and provided timely access to critical project information.

TOP LEFT
Engineers view the process air and odor control piping for the new North and Central Battery aeration tanks.

TOP RIGHT
To convey flow to the plant from Manhattan, a new control gate (inset photo) was constructed around operating piping, which was then "wet-tapped" using a unique 8-ft-dia core drill bit, engineered specifically for the job.

BOTTOM RIGHT
Malcolm Pirnie's hydraulic proflile model helped overcome flow splitting issues such as balancing loading and flow for new tanks started up with others taken off line. This is a CADD rendering of a complicated flow diversion changer for Brooklyn Queens flows to the new flow spliter box.



2008 Excellence in Environmental Engineering®

DESIGN HONOR AWARD

Redwood City Recycled Water Program

REDWOOD CITY, CALIFORNIA

ENTRANT: Kennedy/Jenks Consultants
ENGINEER-IN-CHARGE: David D. Kennedy, P.E., BCEE

Like California and other arid western states, the water supply in Redwood City is critically important. Redwood City decided that the most sustainable way to meet the city's current and future water supply needs was to increase conservation efforts and implement a recycled water program.

It took the Redwood City seven years to take the water recycling program from pilot project to city-wide delivery system. In that time, the city dealt with public opposition, joint-ownership by two public agencies, and difficult design issues to solve the city's water supply problems. During the approval process, a group of residents from Redwood Shores objected to "mandatory use" of recycled water in residential areas, parks, and schools and launched a campaign to stop the use of recycled water. The City Council revised its mandatory use ordinance and formed a community task force comprised of community residents, who were for and against the project study, to study the issues. The Task Force met for a year, gathering recommendations for achieving the Redwood City's water supply goals and meeting the concerns of the community.

Kennedy/Jenks Consultants was the prime consultant that led the construction of treatment, disinfection, storage, pumping, and pipeline facilities and the on-site retrofit of customer irrigation systems. Additionally, Kennedy/Jenks were able to convey the complex water qualities to both the City Council and the community.

The project included innovative design features such as construction of the water reclamation facility 20-feet below ground in bay mud. To improve filtration at the Water Reclamation Facility, Kennedy/Jenks replaced the existing media with large-scale moni-media to significantly increase filter run times. Another innovative feature was the design of a pipeline that passed through a national wildlife refuge and wetland, a major highway, and a built-up industrial area.

TOP RIGHT
One pipeline segment passed through a national wildlife refuge and wetland and a major highway to a highly developed industrial area.

BOTTOM RIGHT
The recycled water pump station was designed with enough capacity to handle the City's current and future needs.

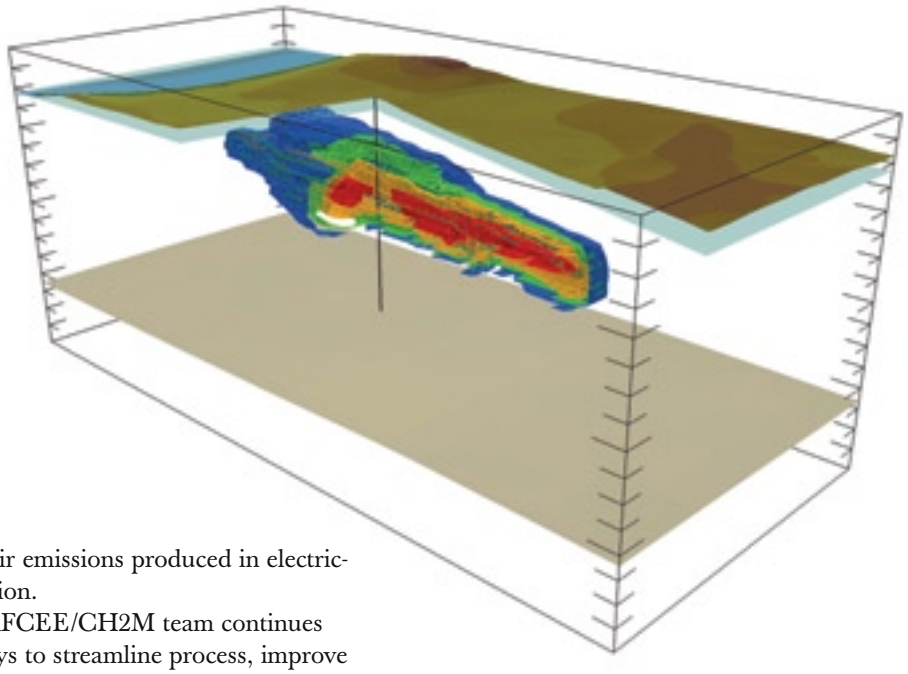
2008 Excellence in Environmental Engineering®

OPERATIONS/MANAGEMENT GRAND PRIZE

SPEIM/LTM/O&M Program at MMR

OTIS ANG, MASSACHUSETTS

ENTRANT: AFCEE and CH2M Hill
ENGINEER-IN-CHARGE: Patricia de Groot, PG, LSP



At the 22,000-acre Massachusetts Military Reservation, the team of Massachusetts Military Reservation for the Air Force Center for Engineering and the Environment (AFCEE) and CH2M Hill operates and manages 8 major groundwater extraction, treatment and re-injection/infiltration/discharge systems, treating 16 million gallons of contaminated water daily. In addition to its environmental restoration objectives, the team stresses continuous, program-wide optimization, minimizing taxpayer costs while enhancing cleanup efficiency.

This Superfund site is located within the boundaries of three towns and boarders on a fourth with a sole source aquifer that provides drinking water for 200,000 permanent and 500,000 seasonal residents of Cape Code. Multiple plumes, containing an estimated 20 billion gallons of contaminated groundwater, extend outward from their source. Thousands of monitoring wells and complicated models are used to predict the fate and transport of the contamination and measure the effectiveness of the treatment systems.

The energy costs to operate the 100 extraction and re-injection wells and eight groundwater treatment plants to treat the over 16 million gallons of VOC-contaminated water per day through forty five 20,000 pound GAC units utilized for cleanup exceeds $1 million annually. The AFCEE/CH2M Hill team designed a wind turbine generator to utilize Cape Cod winds to reduce the project's energy footprint. This generator will provide green, sustainable energy that will reduce the systems' energy consumption up to 25 percent in addition to eliminating over 6.7 million pounds of CO_2 annually and reducing other air emissions produced in electricity generation.

The AFCEE/CH2M team continues to seek ways to streamline process, improve quality, and reduce costs. Optimization initiates over the last two years have saved AFCEE approximately $1 million to $4 to day. The team takes an aggressive approach to LTM optimization, negotiating reduced sampling and hydraulic frequency monitoring and increase on-site lab capabilities for drinking water methods.

TOP RIGHT
TCE: The AFCEE/CH2M HILL team studies its plume models to evaluate and predict plume migration and evaluate options for optimizing pumping strategies to reduce cleanup timeframes and minimize operational costs. This model depicts TCE plume migration.

BOTTOM RIGHT
MMR Cranberry/Wet Sampling: Owners of commercial cranberry bogs in the area of three plumes were concerned about detectable levels of the VOCs in surface water samples from cranberry bog ditches. Testing conducted in 2006 using a unique protocol previously developed in coordination with regulatory stakeholders demonstrated that the crops are not impacted and continue to be suitable for market.

2008 Excellence in Environmental Engineering®

OPERATIONS/MANAGEMENT HONOR AWARD

Making Water Work – Reclaiming Water and Land to Produce Viable Agriculture in the Antelope Valley

PALMDALE, CALIFORNIA

ENTRANT: Sanitation Districts of Los Angeles County
ENGINEER-IN-CHARGE: Stephen R. Maguin, P.E., BCEE

Containing no river or ocean outlet, Palmdale faced a complex challenge regarding its wastewater. The Palmdale Water Reclamation Plant (PWRP) had traditionally practiced land disposal of its 8 million gallons per day of effluent produced oxidation ponds. Due to the nitrogen impacts on shallow groundwater reservoirs in this area, this practice was no longer acceptable.

The Sanitation Districts of Los Angeles County (District) was tasked with providing an innovative and cost-effective solution that promoted sustainability through the use of local resources in the community, integrated protection of local water resources with reduced energy usage, and provided flexibility for future growth. The District developed a plan to maximize agricultural reuse of its water in the short term, while developing the infrastructure to provide high-quality recycled water in the long term.

The principal benefit of the program was to bring the facility into regulatory compliance while accommodating ongoing growth in the community. The use of recycled water for growing hay also improved the local water supply by supplanting the use of groundwater for this purpose elsewhere in the valley. Irrigation of perennial crops with recycled water on previously fallowed farmland resulted in the creation of wildlife habitat and greatly reduced fugitive dust. The benefits to the local farmers who have partnered with the District on this program include savings in energy costs of 95% over pumping groundwater and 99% over importing surface water for irrigation of crops. This energy savings represents a green house gas production decrease of approximately 20,000 tons per year of carbon dioxide over alternative water supply. The 12,000 tons of valuable crops produced as part of the program contribute to the success of the valley's farming community by providing jobs and fulfilling a growing market demand at local dairies.

TOP LEFT
Detailed acccounting of Nitrogen removal is facilitated by moisture sampling probe.

TOP RIGHT
Reclaimed water pipeline construction.

BOTTOM RIGHT
On-site weather station provides real-time estimate of crop water used.

2008 Excellence in Environmental Engineering®

UNIVERSITY RESEARCH GRAND PRIZE

Value-Added Products from Dry-Grind Corn Milling Stillage by Fungal Processing

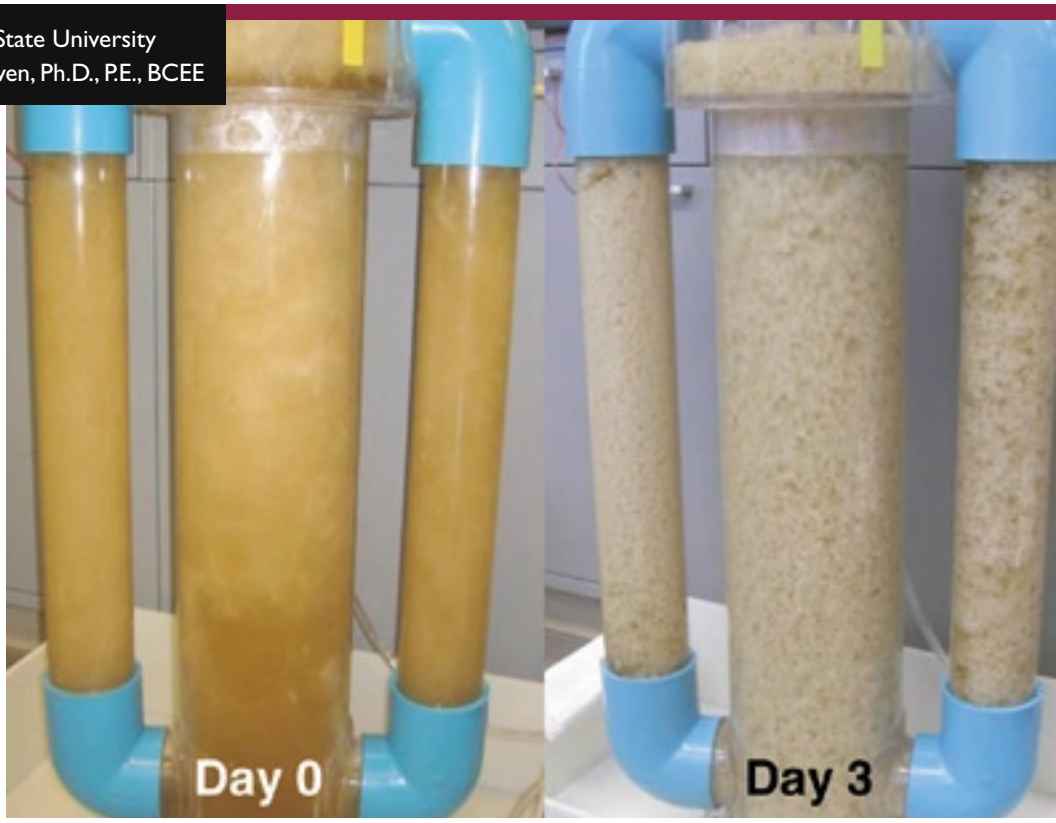
AMES, IOWA

ENTRANT: Fungal Research Group – Iowa State University
ENGINEER-IN-CHARGE: J. (Hans) van Leeuwen, Ph.D., P.E., BCEE

Researchers at Iowa State University have come up with a novel way to make corn-to-ethanol plants more efficient. Corn ethanol plants in the US currently produce 8 billion gallons of ethanol per year while consuming about 35 billion gallons of water. Using a fungal cultivation process, these researchers have found a way to address all of these shortcomings.

Stillage from fermentation, followed by distillation, contains fiber, yeasts, and dissolved organics in water, measured as total chemical oxygen demand (COD) of nearly 100 g/L. Most solids are removed by centrifugation and dried to distillers dried grain (DDG). The centrate, thin stillage is partially recycled directly to the fermentation process, but limited to 50% to prevent build-up of total and dissolved solids. The remaining thin stillage is currently concentrated by flash evaporation and blended with DDG, producing DDG with solubles (DDGS). DDGS is used for livestock feed, but is low in essential amino acids, which limits its usage, particularly for hogs and chickens. Fortunately, thin stillage contains biodegradable organic compounds, sufficient micronutrients, at pH 4.5, which makes thin stillage an ideal fungal cultivation feedstock.

A fungal treatment process for thin stillage allows for energy savings by avoiding stillage evaporation, recovery of protein-rich fungal biomass, and potential for water recycling of treated effluent. Solids separation and removal of organic materials are important for recycling the effluent as process water. This research investigated the cultivation of the food-grade fungus Rhizopus microsporus on thin stillage and the potential for water recycling.



Energy savings from eliminating stillage evaporation could save $800 million/year nationwide and reduce water consumption by 10 billion gallons per year. The potential revenue from high-quality livestock feed production is expected to be worth another $400 million/year while leading to healthier meat products. This process (Fungal) is being patented.

TOP RIGHT
Pilot-scale airlift reactor with external recycling: Pilot-scale airlift fungal cultivation of the soluble-thin stillage fraction (24 L) with 0.8 L air/L thin stillage/min on the day of spore inoculation (day 0). Note the recycle in external tubes to promote oxygen transfer and fungal pellet formation and recovery. Fungal pellets filled the reactor by day 3. The reactors were designed by van Leeuwen and custom built.

BOTTOM RIGHT
Bench-top reactor: Airlift bench-top reactor with draft-tube design and aseptic addition of 4.5 L thin stillage. Reactor built in our labs by members of our team.

2008 Excellence in Environmental Engineering®

SMALL PROJECT GRAND PRIZE

Reuse for Industrial, Agriculture, and Landscaping (RIAL)

AMMAN, JORDAN

ENTRANT: CDM
ENGINEER-IN-CHARGE: Mehran Meserlian

Jordan receives an average annual rainfall of less than 8 inches and with desert covering more than 75 percent of its area, this fast-growing, arid nation's demand for water exceed it's supply by 150 billion gallons in 2005.

The Reuse for Industry, Agriculture, and Landscaping (RIAL) project, funded by the U.S. Agency for International Development (USAID) and implemented by CDM, aims to meet Jordan's water use challenges and provide models for reuse application that can be replicated throughout Jordan.

Addressing the needs of agricultural, industrial, and municipal uses, the project advances Jordan toward its goal of 100-percent reuse of its wastewater through practical projects and educational programs. The project sets examples that can be easily duplicated–and that provide immediate benefits–such as millions of dollars in cost savings for businesses, increased crop yields for farmers, and new parks for citizens' enjoyment.

CDM developed precedent-setting water reclamation projects that address agricultural development, industrial applications, and urban landscaping, delivering an effective, integrated approach that provides water reuse models nationwide. Additionally, CDM implemented various water and money-saving measures at five industrial facilities: a petroleum refinery, mining site, clothing factory, dairy, and beverage plant. Planned future improvements include a centralized industrial wastewater treatment plant that will reduce energy consumption, conserve water, and recycle 300,000 gallons of wastewater per day.

Reclaimed water is a critical component to ensuring sustainable water resources for Jordan. Located in the heart of the Middle East, this progressive, fast-growing nation is one of the ten most water-deprived countries in the world. Despite its advantages, water scarcity threatens the public health of citizens, prevents economic development, and limits future possibilities. The successful implementation of the 3-year RIAL project ensures sustainable water reuse practices will continue to grow and benefit the citizens of Jordan.

TOP LEFT
With an annual rainfall of less than 8 inches per year and desert covering more than 75 percent of its area, Jordan's demand for water is projected to exceed supply by 53 billion gallons per year by 2020.

TOP RIGHT
The purple pipes in this view of urban landscaping on "Environment Street" in Amman are a standard sign of reclaimed water use.

BOTTOM RIGHT
RIAL team members conducted a public education campaign featuring a newly-created cartoon character, Tartoush (the Arabic word for "Splash"), who is decorated on backpacks, pens, jigsaw puzzles, coloring books, and other items to remind schoolchildren to "keep our water clean."

2008 Excellence in Environmental Engineering®

SMALL PROJECT HONOR AWARD

South Bethany Tidal Pump

SOUTH BETHANY, DELAWARE

ENTRANT: KCI Technologies, Inc.
ENGINEER-IN-CHARGE: Timothy Wolfe, P.E., DEE

South Bethany is planning to flush its polluted inland canals with seawater using a pump system powered by a 100-percent renewable energy – the tides. The team of Oceaneering International Inc. and KCI Technologies Inc. evaluated the feasibility and developed preliminary designs for the innovative tidal pump, which will move water from the polluted dead-end canals to the Atlantic Ocean and return clean seawater through a network of underground pipes.

Poor water circulation and flushing, sediment accumulation, low oxygen levels, excessive nutrients, and pollution have led to declining shellfish communities, pungent and harmful algae blooms, and fish kills.

Based on a concept developed by former councilman and retired engineer, Lloyd Hughes, the team explored possible scenarios for alignment, configuration, materials and construction methods to define the operability of a tidal pump. Effective hydraulic analysis posed a crucial design challenge because the average tidal difference between the canals and the ocean is only two feet, causing the system to operate at extremely low velocities. To deliver the required circulation through the pipes, each component had to be optimized for flow performance by reducing friction wherever possible. Site conditions and environmental factors such as wave force, scour, ocean depth, storm and wave frequency, and marine growth were closely considered and modeled.

The tidal pump will utilize almost two miles of underground pipes with two ocean outfalls located 30 feet below sea level. Since the tidal heights of both bodies of water work in opposition, water will alternately flow back and forth without the use of man-made energy. Once constructed, residents could see improvements in water quality in as little as a month. The tidal pump will fully circulate the water in the canals every 30 days.

TOP
The first of its kind, the tidal pump system will utilize almost two miles of underground piping, two ocean outfalls located 30 feet below sea level, and an innovative diffuser system configured to dissipate velocity during the exchange.

BOTTOM RIGHT
Engineers explored alignments, configurations, materials and construction methods to further define the tidal pump concept, its potential cost and implementation schedule. The team proposed a fully-closed system, similar to a low pressure water distribution system. To improve flow integrity and reduce head loss, pipes will remain full at all times, while the tidal head provides the pressure to move ocean and canal water through the system.

Previous Superior Achievement and Grand Prize Winners of the Excellence in Environmental Engineering Competition

SUPERIOR ACHIEVEMENT

2007 PROJECT: 1st "Glass" Biosolids Vitrification Facility
ENTRANT: Donohue & Associates, Inc.
LOCATION: Zion, Illinois

2006 PROJECT: Rocky Flats Environmental Technology Site
ENTRANT: Kaiser-Hill Company, LLC
LOCATION: Broomfield, Colorado

2005 PROJECT: Johnston Atoll Closure
ENTRANT: CH2M Hill
LOCATION: South Pacific

2004 PROJECT: Gilbert and Mosley Project
ENTRANT: CDM
LOCATION: Wichita, Kansas

2004 PROJECT: First Major Biosolids Facility in USA to Achieve Pathogen-Free Standards
ENTRANT: City of Los Angeles, Department of Public Works, Bureaus of Engineering, Sanitation, and Contract Administration
LOCATION: Playa del Ray, California

2003 PROJECT: Capital Hill Anthrax Response
ENTRANT: CDM
LOCATION: Washington, DC

2002 PROJECT: Rouge River National Wet Weather Demonstration Project
ENTRANT: Camp Dresser & McKee Inc.
LOCATION: Wayne County, Michigan

2001 PROJECT: Ngau Tam Mei Water Treatment Works
ENTRANT: Camp Dresser & McKee Inc.
LOCATION: Kwai Fong, Hong Kong

2000 PROJECT: Hyperion Wastewater Quality Improvement Program
ENTRANT: DMJM/Black & Veatch
LOCATION: Los Angeles, California

1999 PROJECT: Hopewell Treatment Plant Process Enhancement and Enrichment (TPPEE) Project
ENTRANT: Malcolm Pirnie, Inc.
LOCATION: Hopewell, Virginia

1998 PROJECT: Complex-Wide Environmental Management Integration
ENTRANT: Idaho National Engineering and Environmental Laboratory
LOCATION: Idaho Falls, Idaho

1997 PROJECT: City of Chandler Industrial Process Water Treatment Facility
ENTRANT: Black & Veatch
LOCATION: Chandler, Arizona

1996 PROJECT: Harborside International Golf Center
ENTRANT: Illinois International Port District
LOCATION: Chicago, Illinois

1995 PROJECT: Oceanside Water Pollution Control Plant
ENTRANT: CH2M Hill
LOCATION: San Francisco, California

GRAND PRIZE-RESEARCH

2007 PROJECT: Columbus Biosolids Flow-Through Thermophilic Treatment (CBFT) Advanced Demonstration Preliminary Design Project
ENTRANT: Brown and Caldwell
LOCATION: Columbus, Georgia

2006 PROJECT: Carlsbad Seawater Desalination Demonstration Facility
ENTRANT: Poseidon Resources Corporation
LOCATION: Carlsbad, California

2005 PROJECT: Evaluation of Ozone and Ultraviolet Light
ENTRANT: Black & Veatch Corp.
LOCATION: Clinton, Massachusetts

2004 PROJECT: Getting the "N" Out – Integrating Side-Stream Treatment for Nitrogen Removal
ENTRANT: Sanitation Districts of Los Angeles County
LOCATION: Los Angeles County, California

2003 PROJECT: Enhancing Environmental Engineering Science to Benefit Public Health: Integrating Hydraulic Network Modeling, Spatial Analysis, and Genetic Algorithms with Epidemiologic Studies
ENTRANT: Agency for Toxic Substances and Disease Registry (ATSDR), Multimedia Environmental Simulations Laboratory at Georgia Tech, Atlanta, Georgia
LOCATION: Dover Township (Toms River), Ocean County, New Jersey

2002 PROJECT: Critical Evaluation of Field Measurement Technologies for Total Petroleum Hydrocarbons in Soil
ENTRANT: Tetra Tech EM Inc.
LOCATION: Chicago, Illinois

2001 PROJECT: Development of a Natural Attenuation Test Kit
ENTRANT: Camp Dresser & McKee Inc.
LOCATION: Bellevue, Washington

2000 PROJECT: Development of Red Water Control Strategies
ENTRANT: Black & Veatch Corporation
LOCATION: Boston, Massachusetts

1999 PROJECT: Produced Water Reclamation Project
ENTRANT: Kennedy/Jenks Consultants
LOCATION: Newhall, California

1997 PROJECT: Bioaugmentation Pilot Study: New Microbe Degrades Chlorinated Solvents
ENTRANT: Camp Dresser & McKee Inc.
LOCATION: Wichita, Kansas

1996 PROJECT: Field Evaluation of High-Voltage Electron Beam Technology
ENTRANT: PRC Environmental Management, Inc.
LOCATION: Chicago, Illinois

1995 PROJECT: Pneumatic Conveyance Pilot Testing
ENTRANT: Black & Veatch
LOCATION: Portland, Oregon

1993 PROJECT: Metropolitan's Oxidation Demonstration PROJECT
ENTRANT: David W. Ferguson/Jill T. Grammith
LOCATION: LaVerne, California

1990 PROJECT: Orange County Biological Nutrient Removal Research Study
ENTRANT: Camp Dresser & McKee
LOCATION: Orlando, Florida

1989 PROJECT: High Sulfur Test Center
ENTRANT: Electric Power Research Institute
LOCATION: Barker, New York

GRAND PRIZE-PLANNING

2007 PROJECT: Los Angeles Integrated Resources Plan
ENTRANT: CDM and CH2M Hill
LOCATION: Los Angeles, California

2006 PROJECT: Enhanced Nutrient Removal for the Patapsco Wastewater
ENTRANT: JMT/KCI Joint Venture
LOCATION: Baltimore, Maryland

2005 PROJECT: Integrated Planning for Station 6 Groundwater Management
ENTRANT: Malcolm Pirnie, Inc.
LOCATION: South Jamaica, Queens, New York

2004 PROJECT: System-Wide Sewer Model of Cincinnati and Hamilton County
ENTRANT: CDM
LOCATION: Cincinnati, Ohio

2003 PROJECT: Tri-City Water Pollution Control Plant Site Master Plan
ENTRANT: Clackamas County Water Environmental Services & CH2M Hill
LOCATION: Oregon City, Oregon

2002 PROJECT: On Track to Solving the Solid Waste Disposal Dilemma
ENTRANT: Sanitation Districts of Los Angeles County
LOCATION: Whittier, California

2001 PROJECT: Columbia Charrette: Superfund Strategy
ENTRANT: Malcolm Pirnie, Inc.
LOCATION: Columbia, Mississippi

2000 PROJECT: Tucson Water Planning Project
ENTRANT: Malcolm Pirnie, Inc.
LOCATION: White Plains, New York

1999 PROJECT: Forth Worth HRCP
ENTRANT: Camp Dresser & McKee Inc.
LOCATION: Arlington, Texas

1998 PROJECT: Eastside Reservoir Project
ENTRANT: Metropolitan Water District of Southern California
LOCATION: Los Angeles, California

1997 PROJECT: North Coast Super-aqueduct Conceptual/Facility Plan
ENTRANT: Vincenty, Heres y Lauria with Malcolm Pirnie, Inc.
LOCATION: San Juan, Puerto Rico

1996 PROJECT: Gilbert-Mosley Bioremediation Cleanup
ENTRANT: Camp Dresser & McKee Inc.
LOCATION: Wichita, Kansas

1995 PROJECT: MWRA Combined Sewer Overflow Control Program
ENTRANT: Metcalf & Eddy
LOCATION: Boston, Massachusetts

1993 PROJECT: Los Angeles Advanced Planning Report
ENTRANT: The City of Los Angeles and James M. Montgomery/CH2M Hill Joint Venture
LOCATION: Los Angeles, California

1992 PROJECT: Marathon Battery Superfund Cleanup
ENTRANT: Malcolm Pirnie, Inc.
LOCATION: Cold Spring, New York

1990 PROJECT: Orange County Air Toxics and Health Risk Assessment
ENTRANT: Malcolm Pirnie, Inc.
LOCATION: Fountain Valley, California

1989 PROJECT: Sidestream Elevated Pool Aeration (SEPA)
ENTRANT: Metropolitan Water Reclamation District
LOCATION: Chicago, Illinois

GRAND PRIZE-DESIGN

2007 PROJECT: F. Wayne Hill Water Resources Center (FWH WRC)
ENTRANT: Jordan, Jones and Goulding, Inc., CH2M Hill, Inc. and Precision Planning, Inc.
LOCATION: Buford, Georgia

2006 PROJECT: ASA Advanced Wastewater Treatment Facility Upgrade
ENTRANT: CH2M Hill
LOCATION: Alexandria, Virginia

2005 PROJECT: Denver Water Recycling Plant
ENTRANT: CH2M Hill and Boyle Engineering
LOCATION: Commerce City, Colorado

2004 PROJECT: Integrated Water Transmission & Treatment Project
ENTRANT: MWH/CH2M Hill
LOCATION: Clark County, Nevada

2003 PROJECT: Tampa Bay Regional Surface Water Treatment Facility
ENTRANT: CDM
LOCATION: Tampa, Florida

2002 PROJECT: The Tolt DBO Project
ENTRANT: Camp Dresser & McKee Inc.
LOCATION: Duvall, Washington

2001 PROJECT: Scottsdale Water Campus
ENTRANT: Black & Veatch Inc.
LOCATION: Scottsdale, Arizona

2000 PROJECT: South Bay Ocean Outfall (SBOO)
ENTRANT: Parsons Engineering Science, Inc.
LOCATION: La Jolla, California

1999 PROJECT: Brooks Landfill Air Sparging Project
ENTRANT: Camp Dresser & McKee Inc.
LOCATION: Wichita, Kansas

1998 PROJECT: Combined Sewer Treatment-Riverfront Enhancement
ENTRANT: Jordan, Jones & Goulding, Inc.
LOCATION: Columbus, Georgia

1997 PROJECT: Norfolk 48-Inch Raw Water Transmission Main
ENTRANT: Gannett Fleming, Inc.
LOCATION: Norfolk, Virginia

1996 PROJECT: Grand Chute Menasha West Wastewater Treatment Facility Upgrade
ENTRANT: McMahon Associates, Inc.
LOCATION: Neenah, Wisconsin

1995 PROJECT: Tucson International Airport Area Groundwater Remediation Project (TARP)
ENTRANT: Malcolm Pirnie, Inc.
LOCATION: Tucson, Arizona

1994 PROJECT: 27th Avenue Solid Waste Management Facility
ENTRANT: Black & Veatch
LOCATION: Phoenix, Arizona

1993 PROJECT: Cincinnati GAC Water Treatment Plant
ENTRANT: Malcolm Pirnie, Inc.
LOCATION: Cincinnati, Ohio

1992 PROJECT: Virginia Initiative Plant
ENTRANT: CH2M Hill
LOCATION: Norfolk, Virginia

1991 PROJECT: Klein Water Treatment Facility
ENTRANT: Black & Veatch
LOCATION: Commerce City, Colorado

1990 PROJECT: Oakland Chinatown in Situ Bioremediation Project
ENTRANT: Harding Lawson Associates
LOCATION: Oakland, California

1989 PROJECT: Southerly Wastewater Treatment Center
ENTRANT: Malcolm Pirnie, Inc.
LOCATION: Cuyahoga Heights, Ohio

GRAND PRIZE-OPERATIONS/MANAGEMENT

2007 PROJECT: Route 5 Transfer Station
ENTRANT: Delaware Solid Waste Authority
LOCATION: Harbeson, Delaware

2006 PROJECT: The Power of Innovation - Antelope Valley Green Energy Program
ENTRANT: Sanitation Districts of LA County
LOCATION: Los Angeles, California

2005 PROJECT: Environmental Health Project II
ENTRANT: CDM
LOCATION: Worldwide

2004 PROJECT: DCWASA Operations & Maintenance Training and Certification Program
ENTRANT: CDM
LOCATION: Washington, D.C.

2003 PROJECT: Savoonga Water and Wastewater Project
ENTRANT: Alaska Native Tribal Health Consortium
LOCATION: Savoonga, Alaska

2002 PROJECT: Environmental and Occupational Health Surveillance and Assessment of the Pentagon
ENTRANT: US Army Center for Health Promotion and Preventitive Medicine
LOCATION: Washington, DC

2001 PROJECT: Energy Resource Management
ENTRANT: Sanitation Districts of Los Angeles County
LOCATION: Whittier, California

2000 PROJECT: Hillview Reservoir Sediment Cleaning Program
ENTRANT: Malcolm Pirnie, Inc.
LOCATION: White Plains, New York

1999 PROJECT: Innovative and Diverse Biosolids Management
ENTRANT: Sanitation Districts of Los Angelos County
LOCATION: Whittier, California

1998 PROJECT: Montgomery County Resource Recovery Facility
ENTRANT: Montgomery County Maryland/ Northeast Maryland Waste Disposal Authority
LOCATION: Dickerson, Maryland

1997 PROJECT: Scovill Brass Demolition/ Remediation
ENTRANT: Langan Engineering and Environmental Services, Inc.
LOCATION: Waterbury, Connecticut

1996 PROJECT: Minergy Corporation Lightweight Aggregate Facility
ENTRANT: Minergy Corporation (Subsidiary Wisconsin Energy Corporation)
LOCATION: Milwaukee, Wisconsin

1995 PROJECT: After the Shock
ENTRANT: Sanitation Districts of Los Angeles County
LOCATION: Los Angeles County, California

1992 PROJECT: Hyperion Treatment Plant Interim Improvement Program
ENTRANT: City of Los Angeles/Department of Public Works/Bureau of Sanitation
LOCATION: Playa Del Rey, California

1991 PROJECT: Commerce Refuse-to-Energy Facility
ENTRANT: County Sanitation Districts of Los Angeles County
LOCATION: Commerce, California

1990 PROJECT: Water for a Dry Land
ENTRANT: County Sanitation Districts of Los Angeles County
LOCATION: Whittier, California

1989 PROJECT: Regional Sludge Management Program
ENTRANT: Pima County Wastewater Management Department
LOCATION: Tucson, Arizona

2008
EDWARD J. CLEARY AWARD RECIPIENT

Jeanette A. Brown, P.E., BCEE

Jeanette Brown received her undergraduate degree from the University of Maryland and masters in Environmental Engineering from Manhattan College. She is Executive Director of the Stamford Water Pollution Control Authority and is responsible for operation and maintenance and all capital projects associated with the wastewater treatment and collection system. She is also responsible for stormwater management and is project manager for two river restoration projects. In addition, she is project manager for an innovative waste to energy research project funded in part by the Department of Energy. She is also an adjunct professor of Environmental Engineering at Manhattan College where she teaches wastewater treatment plant design.

She is Past-President of the American Academy of Environmental Engineers and is the 2008 Kappe Lecturer. She is on the Board of Trustees of the Water Environment Federation, vice-chair of the Technical Practice Committee and has been a principal contributing author on several manuals of practice. She is immediate Past-president of the Environment and Water Resources Institute of ASCE and is currently chair of the National Water and Energy Policy Committee of ASCE. She has published and presented numerous technical papers of the subject of residuals management and nutrient removal.

2008
GORDON MASKEW FAIR AWARD RECIPIENT

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

Tim received a BS degree in civil engineering from Loyola Marymount University (LMU) in 1967 and MS and PhD degrees in environmental engineering from Stanford University in 1971. Upon graduation from Stanford, Dr. Haug joined the LMU faculty as Assistant Professor of Civil Engineering and Environmental Sciences. He retains his association with LMU as Adjunct Professor, specializing in applied microbiology for environmental engineers and scientists.

Tim has authored over 120 publications on a variety of environmental subjects. He is author of the books *Compost Engineering – Principles and Practice* (1980) and *The Practical Handbook of Compost Engineering* (1993). He has served on the Editorial Board for *BioCycle, Journal of Composting and Recycling* since 1988 and on the Water Environment Federation's Editorial Advisory Board for the Biosolids Technical Bulletin. He is the 2008 recipient of the U.S. Composting Council's Rufus Chaney Award for research excellence and service to the composting industry. He became a Diplomate of the American Academy of Environmental Engineering in 2001.

Dr. Haug is currently Deputy City Engineer with the Bureau of Engineering, City of Los Angeles. He oversees 250 people who deliver the City's Wastewater Capital Improvement Program. In this role, he has worked with teams of people who stopped ocean discharge and implemented beneficial use of biosolids in the 1980's, expanded the wastewater system to full biological treatment in the 1990's, and implemented thermophilic digestion and pasteurization to achieve exceptional quality status for the City's biosolids in the early 2000's. Today, these teams are rebuilding the secondary sewer system and major outfall sewers, enhancing water reuse by microfiltration and reverse osmosis treatment, and retrofitting the City's reclamation plants for nutrient removal. In 2000 and 2004, Bureau projects won the American Academy of Environmental Engineers award for Superior Achievement and Excellence in Environmental Engineering.

2008
STANLEY E. KAPPE AWARD RECIPIENT
Brian P. Flynn, P.E., BCEE

Brian Flynn received his BS degree in Chemical Engineering from the Newark College of Engineering and earned an MS in environmental/chemical engineering at the University of Connecticut. He is a nationally recognized expert in wastewater treatment, solid and hazardous wastes, and the management and operating practices of environmental consultants. Mr. Flynn worked for the DuPont Company for eight years and then became a Founding Partner of the ERM Group, working as a consultant for 30 years. He is currently a member of the Board of Directors of ERM-New England.

Mr. Flynn currently serves as the Academy's Assistant Treasurer, Chairs the User Outreach Committee and has led the effort to develop a 5 year strategic plan for the Academy. As a contributing editor of Environmental Engineer, he has also written a number of management articles for the Academy.

Mr. Flynn worked for the DuPont Company for eight years and then became a Founding Partner of the ERM Group, working as a consultant for 30 years. He is currently a member of the Board of Directors of ERM-New England.

Mr. Flynn has led the development and operation of two groundbreaking technical achievements: the world's first and largest PACT wastewater treatment plant, and an innovative hazardous waste perched bed land treatment facility at a major refiner. His wastewater experience includes NPDES permitting, expert witness testimony, design and operations of municipal and industrial wastewater treatment plants, and lab and pilot scale treatability studies. Hazardous waste activities include RCRA permitting, design of landfills, innovative use of statistics to analyze environmental data, and numerous ground water contamination studies. His clients include refiners, chemical plants, steel mills, Department of the Army, and DOE's Los Alamos and WIPP sites.

He has taught project and financial management training seminars has provided management consulting to poorly-functioning firms. He is also the author AAEE-published *Profit Fundamentals*.

2008
HONORARY BOARD CERTIFIED ENVIRONMENTAL ENGINEER

A. "Sek" Sekarajasekaran, KMN, DIC, FIEM, MICE, MASCE, MIWES, PEng, CEng, MACEM

Sekarajasekaran's public sector career began in 1951 with the Public Works Department. His commitment to public health improvements through water supply and sanitary engineering projects saw him being entrusted with the responsibility of heading the then newly-formed public health engineering division within the Ministry of Health in 1965. He was directly responsible for establishing and implementing various environmental health and environmental engineering programs, including the National Rural Water Supply and Sanitation Program and the National Drinking Water Quality Surveillance Program.

He was appointed as Secretary of the Committee responsible for drafting the Environmental Quality Act (1974), the Drainage and Sanitary Plumbing By-laws (1978), the Palm Oil Effluent Regulations (1977), the Amendment to the Waters Enactment (1964) and the Sewerage Services Act (1994). He prepared the National Paper on the status of Environment in Malaysia for the UN conference on the Human Environment in Stockholm, June 1972, helped formulate the National Environmental Policy in Malaysia, prepared the Cabinet paper to establish the Division of Environment (later upgraded to the Ministry of Science, Technology and Environment), and served on the National Environmental Quality Council.

He directed the planning and implementation of Hospital Engineering Services and the Radiation Protection Services, the latter encompassing licensing and monitoring of radiation protection programs in Government and Private Hospitals and Medical Clinics in Malaysia, and was a contributor to the Amendment to the Radioactive Substances Act (1968) and Regulations for the Licensing Monitoring and Implementation of Radiation Protection Service.

After his retirement in 1983, he established an environmental engineering consultancy specializing in water supply, wastewater and drainage engineering and in the conduct of environmental assessment and environmental resource management and served as Consultant to the World Health Organization, Asian Development Bank, the World Bank and the Republic of China. A

LETTERS TO THE EDITOR

continued from page 6

Leadership has shifted from professional engineers to political appointees and prescriptive regulations.

During the 1980's Environmental Engineers who led State and federal environmental began to be replaced by people (often attorneys) whose political connections trumped professional environmental qualifications. As a result environmental cleanup in the U.S. slowed and leadership in environmental engineering and science shifted to other countries. During that same period the emphasis of environmental programs in government shifted from science and engineering to regulations and paperwork

This space will not allow me to address the complex list of causes of the problems I have identified. The important message is Abel Wolman's: "an engineer can do for a dollar what any fool can do for two". I present only a short list of some of our failures to follow that motto:

Our failure to address the engineering side of these problems imposes a huge cost on the Nation

1) The investments in water and waste water should be managed as assets – that means timely preventive maintenance saves public dollars but we are not doing that;
2) we are not addressing the links between transportation, land-and water use;
3) the Chesapeake Bay and the Great Lakes, are not getting cleaner;
4) protection against flood, droughts and storms is diminishing;
5) we are failing to address diminishing water availability in the West and have failed to resolving a fundamental water conflict in the South;
6) we have failed to address the loss of wetlands;
7) we are not addressing the mounting infrastructure, environmental and energy and global warming issues caused by sprawl;
8) our laws regarding the environment, toxics land and water use are fragmented, obsolete and often counterproductive.

In summary in the first eighty years of the last century environmental engineers in government played a major role in lengthening and improving the lives of Americans; but the pace has slowed and the price is rising. I do not want to suggest that the loss of Environmental Engineering leadership is the only cause of this problem; but it is a very important part of the story and it is in the Nation's interest to address it.

Walter A. Lyon, P.E., BCEE
Mechanicsburg, PA

GRAND PRIZE-SMALL PROJECTS

2007 PROJECT: Milwaukee Metropolitan Sewer District Study of High-Rate Treatment of Wet-Weather Flows
ENTRANT: CH2M Hill
LOCATION: Milwaukee, Wisconsin

2006 PROJECT: Triple Espresso of Oxygen: Super-Saturated Water Knocks Out Toluene Plume
ENTRANT: Leggette, Brashears & Graham, Inc.
LOCATION: Evart, Michigan

2005 PROJECT: Lake Bard Hypolimnion Oxygenation
ENTRANT: Kennedy/Jenks Consultants
LOCATION: Thousand Oaks, California

2004 PROJECT: Royal Caribbean Environmental Management System and Environmental Officer Training
ENTRANT: CDM
LOCATION: Miami, Florida

2003 PROJECT: Riverbend Landfill Drip Irrigation Leachate Reuse System
ENTRANT: CH2M Hill
LOCATION: McMinnville, Oregon

2002 PROJECT: East Bremerton CSO Facility
ENTRANT: Camp Dresser & McKee Inc.
LOCATION: Bremerton, Washington

2001 PROJECT: North Highlands/Hamilton Park Storm Sewer
ENTRANT: Bonar Group
LOCATION: Fort Wayne, Indiana

2000 PROJECT: Aqueduct Repair and Rehabilitation
ENTRANT: Camp Dresser & McKee Inc.
LOCATION: Cambridge, Massachusetts

1999 PROJECT: New Technology Returns Property to Productive Use
ENTRANT: DaimlerChrysler Corporation; Leggette, Brashears & Graham, Inc.
LOCATION: Hartland, Wisconsin

1999 PROJECT: Southcentral Regional Office Building
ENTRANT: Pennsylvania Department of Environmental Protection
LOCATION: Harrisburg, Pennsylvania

1998 PROJECT: Sturgeon Bay Utilities Biosolids Management Facility Improvements
ENTRANT: McMahon Associates, Inc.
LOCATION: Sturgeon Bay, Wisconsin

1997 PROJECT: Salt Lake Valley Drinking Water Source Protection
ENTRANT: CH2M Hill
LOCATION: Salt Lake City, Utah

1996 PROJECT: Burnt Cedar Water Disinfection Plant
ENTRANT: Kennedy/Jenks Consultants
LOCATION: Incline Village, Nevada

1995 PROJECT: City of San Diego South Metro Interceptor Repair PROJECT
ENTRANT: Malcolm Pirnie, Inc.
LOCATION: San Diego, California

1993 PROJECT: Yampa River Diversion Structure
ENTRANT: City of Craig
LOCATION: Craig, Colorado

1991 PROJECT: Artel Superfund Site Methyl Mercaptan Transfer
ENTRANT: ERM-Midwest, Inc.
LOCATION: Nitro, West Virginia

GRAND PRIZE-UNIVERSITY RESEARCH

2007 PROJECT: Purification of Alcohol with Ozonation and Activated Carbon
ENTRANT: Iowa State University
LOCATION: Ames, Iowa

2004 PROJECT: Treatment of Arsenic-Contaminated Water Using Akageneite Adsorption
ENTRANT: WERC: A Consortium for Environmental Education and Technology Development
LOCATION: Las Cruces, New Mexico

2002 PROJECT: Treatment of Subsurface Contaminants Using Zero-Valent Iron
ENTRANT: University of Central Florida
LOCATION: Orlando, Florida

2001 PROJECT: Arsenic Speciation Test Kit: A New Method for Separating Aqueous Arsenic in the Field
ENTRANT: WERC: A Consortium for Environmental Education & Technology Development
LOCATION: Socorro, New Mexico

1998 PROJECT: Carbon Manufactured from Pecan Shells by Novel Techniques
ENTRANT: Waste-Management Education & Research Consortium
LOCATION: Las Cruces, New Mexico

The AAEE Career Center

With its focus on companies and professionals in the field of Environmental Engineering, the AAEE Career Center offers its members -- and the industry at large -- an easy-to-use and highly targeted resource for online employment connections.

Both members and non-members can use AAEE Career Center to reach qualified candidates. For only $250 for a 30-day listing, employers can post jobs online, search for qualified candidates based on specific job criteria, and create an online resume agent to email qualified candidates daily.

For job seekers, the AAEE Career Center is a free service that provides access to employers and jobs in the field of environmental engineering. In addition to posting their resumes, job seekers can browse and view available jobs based on their criteria and save those jobs for later review if they choose. Job seekers can also create a search agent to provide email notifications of jobs that match their criteria.

http://careers. aaee.net

Put Your Academy Pride on Display

THE SHIRT

NOW AVAILABLE!
White, 100% cotton with the Academy logo prominently displayed in navy blue. Slightly dropped sleeves, deep armholes, extra give across the shoulders, and a straight bottom hem gives this comfortable shirt its classic golf style.

Machine washable. Available in Small, Medium, Large, X-Large, and XX-Large.

$25.00

THE PIN

$25.00

In Gold Plate.
A textured background dramatizes the lustrous polish of the letters and banding. Jewelry quality.

$10.00

In Cloisonné.
Gold-colored metal letters and banding surround a field of dark blue, fired enamel.

THE CERTIFICATE

Laminated Shown, $65.00
(Also available unmounted, $40.00)

Lost or misplaced your certificate? Want to have one on display at both your home and office? Your certificate displays your name, area of specialty certification, and date of certification. Certificates can be laminated on a solid wood base with a burl wood tone finish.

Call Academy Headquarters to order your Pride Package