WATER ENVIRONMENT ASSOCIATION OF TEXAS

PILLARS OF THE PROFESSION

...recognizing a longtime member of WEAT or WEF who has demonstrated meaningful and substantial contributions toward the improvement of the water environment via a distinguished career in the wastewater treatment or water quality industry.

Patricia M. Cleveland

Patty Cleveland, the Trinity River Authority of Texas Northern Region Assistant Manager, is a 36-year veteran and a steadfast leader in the water and wastewater industry. She is a long-time participant and supporter of the Water Environment Federation, the Water Environment Association of Texas and the American Water Works Association.

Cleveland has fulfilled many leadership roles in WEF and WEAT, including serving as president of WEAT. She is also a past president of the Texas Association of Clean Water Agencies.

She repeatedly has earned recognition for her achievements, including eight WEAT Service Awards, the WEF Arthur Sidney Bedell Award, the Quarter Century Operators Club and the National Association of Clean Water Agencies Presidents Award for outstanding service and committee involvement.

Under Cleveland's guidance, TRA's northern region wastewater facilities have earned numerous awards for operations excellence. In addition, TRA's nationally recognized Operations Challenge team has won the Division I National Championship four times, and, with her encouragement, many of TRA's operations staff have earned multiple WEAT and WEF awards.

WATER ENVIRONMENT ASSOCIATION OF TEXAS

LIFETIME ACHIEVEMENT AWARD

...presented to an individual who has demonstrated continual and tireless contributions toward the improvement of the water environment throughout a long and distinguished career in the wastewater treatment industry and in WEAT/WEF.

W. Walter Chiang, P.E.

Wen-Jo "Walter" Chiang was born on August 24, 1943, in China. His family relocated to Hong Kong in 1951 and later to Taiwan. In 1967, he received his Bachelor of Science in Civil Engineering from Chung Yuan Christian University in Taiwan. He came to Texas in 1968 where he was an Engineering Research Assistant at the University of Texas at Austin from 1968 to 1971 under Dr. Gloyna, Dr. Malina, and Dr. Eckenfelder. He received his Master's degree in Environmental Engineering in 1970 from the University of Texas at Austin. In 1974, he received his certification requirements to become a Professional Engineer in the State of Texas. Formerly an adjunct faculty member of the Civil Engineering Department at the University of Texas at Arlington (1976 to 1991) teaching and mentoring over 300 students, Walter still serves on both UT and UTA's Civil Engineering Advisory Board and frequently teaches water and wastewater treatment short courses.

Walter Chiang was employed by URS (formerly Forrest and Cotton, Inc.) from 1971 to 1976 as a civil/environmental engineer and then later as a project engineer. From 1976 to 1980, he was employed as a Project Manager for Dow Chemicals (formerly Hydroscience, Inc.) where he was part of the team that developed the Hydroqual Model.

On October 1, 1980, with only $1,000.00, Walter Chiang started his own firm, Chiang and Associates, Inc., in Arlington, Texas. In August 1986, he moved his company to the Dallas area where it is known today as CP&Y, Inc. Under Mr. Chiang's leadership, CP&Y has earned a reputation for performing high quality engineering and planning work. The firm has offices in Dallas, McKinney, Fort Worth, Austin, Houston, San Antonio, Oklahoma City, and Richmond. Under his leadership, CP&Y has become one of the fastest growing engineering firms in the Southwestern United States. The firm has evolved from an environmental services company to a multidiscipline engineering firm engaged in a full spectrum of projects from infrastructure development to mass transit, aviation and transportation, in addition to environmental engineering.

Walter Chiang has more than forty years of design and project management experience in both environmental and civil engineering projects. Walter's long, distinguished engineering career has focused on water quality and treatment technologies, and he is highly regarded for his expertise in treatment processes and operations. Mr. Chiang specializes in water quality assessments, process design, treatability studies, pilot plant studies, and alternative treatment technologies for water and wastewater treatment. He has been in charge of many projects throughout Texas, other parts of the United States, and internationally in China, Hong Kong, Taiwan, Mongolia, India, Philippines, Puerto Rico, Venezuela and Mexico.

Walter Chiang is highly regarded in the community and professional circles for his knowledge and expertise in water and wastewater treatment processes and operations. He is a member of AWWA, WEF, and was the original Chair of the Municipal Wastewater Treatment Committee for the Water Environment Association of Texas, in which is he now an active committee member. Texas Water has named the WEAT Operations challenge competition the Walter Chiang Maintenance Event in recognition of his continued support of operations and maintenance staff at the plant level. Mr. Chiang founded CP&Y on his strong understanding and relationship with the plant operations and maintenance staff. He built a foundation for the firm with his plant piloting projects, while working closely with plant staff to identify solutions to challenges occurring in the field.

In addition, Walter Chiang has also conducted lectures and authored/coauthored numerous technical papers and books in the Water, Wastewater, and Solid Waste areas. In 2009, Walter was inducted to the University of Texas' Civil, Architectural and Environmental Engineering Academy of Distinguished Alumni and is also recognized as a Distinguished Alumni at CY University in Taiwan.

Walter has also impacted the Dallas/Fort Worth Metroplex through his involvement in many business and civic organizations. Walter is a member of the Dallas Regional Chamber of Commerce Board of Directors and sits on the DRC Water Board. He is also a member of the Fort Worth Chamber of Commerce Board of Directors and serves on the International Development Board. As a member of Dallas Chinese Bible Church with his wife of 40 years, Walter is actively involved as a member of the Development Board.

WEAT/WEF Involvement

- Chair of the Municipal Wastewater Treatment Committee
- Sponsor of the Walter Chiang Maintenance Event for Operations Challenge
- Serves on the AWWA Algae Technology Committee

Professional Accomplishments

- University of Texas Civil, Architectural and Environmental Engineering Academy of Distinguished Alumni
- Tianjin Academy of Environmental Sciences Technical Consultant
- ***Invited Lectures***
    - Special lectures for UTA short courses on water and wastewater design subjects.
    - Guest speaker at the Vanderbilt University on topics of water system simulation and optimization by hydraulic modeling. 2001 and 2003.
    - Wastewater Collection System Simulation Modeling Training classes in Shanghai, 2002.
    - Modern Water Treatment Technologies lecture tours with Dr. Susumu Kawamura in Tiajin and Beijing, China, 2000.
    - Industrial Wastewater Treatment of Activated Sludge Process lecture tour with Dr. Wesley Eckenfelder in Beijing, Shanghai, Tianjin, Hong Kong, and Korea, 1994, 1997 and 1998.
    - Principal participant in Special Lecture Series of Hong Kong University with Dr. Syed Qasim for water and wastewater treatment plant design in 1993, 1995, 1997, 1999, and 2002.
    - Participant in Training Courses for Taiwan Environmental Protection Administration's Waste Management Group, 1994, 1996, and 1999.
    - Principal participant in Training Grant to conduct Short Courses for U.S. Environmental Protection Agency, Region VI, July 1981.
    - Principal participant of short courses on "Activated Sludge Treatment Process: Reaction Kinetics, Process Variation and Facility Design and Control" offered by the Department of Civil Engineering and the Office of Continuing Education, The University of Texas at Arlington (March and May 1976).
    - Modern Water Treatment Technology Asian tour with Dr. Susumu Kawamura.
- ***Books***
    - Coauthor of book with Dr. Syed Qasim, <u>Sanitary Landfill Leachate, Generation Control and Treatment</u>, Technomic Publishing Company, Inc., 1994.
    - Translated into Chinese and editor of the book, <u>Industrial Wastewater Treatment of Activated Sludge Process</u>, Technomic Publishing Company, Inc., author Wesley Eckenfeler, 1997.
- ***Technical Papers***
    - "Physical-Chemical Treatment Design," The Conference of Application of New Concepts of Physical-Chemical Wastewater Treatment, Pergamon Press, Inc., 1972.

- "Comparative Studies of Biological Treatment and Chemical-Physical Treatment", presented at Texas Water Pollution Control Association, 13th Annual Conference, 1974.
- "The Design of Aeration Systems in an Energy Efficient Manner", presented at Energy Optimization of Water and Wastewater Conference, US Department of Energy, 1979.
- "Advantages and Disadvantages to Pretreatment of Industrial Discharges", presented at the Texas Water Pollution Control Association Annual Conference, 1980.
- "The Optimum Design of Aeration System", presented at the Texas Section ASCE Meeting, 1980.
- "Overland Flow Land Treatment Kinetics", presented at the Texas Section ASCE Meeting, 1981.
- "Treatment and Recycle Wastewater from Filter Backwash", presented at the Texas Water Pollution Control Association Conference, 1989.
- "Biological Treatment to Remove Phosphorus and Nitrogen", Purdue Conference, 1990.
- "Retrofit Treatment Plant for Nutrients Removal", Water World Conference, New Delhi, India, 1998.
- "Water Treatment Pilot Plant Design", Journal of Texas Water, 1991.
- "Trends in Disinfection By-Product Regulations from a Treatment Plant Process Viewpoint", presented at the International Conference on Water and Wastewater, Beijing, 194.
- "Water Treatment Plant Filter Ripening Strategies", ICEWW Conference, Beijing, China, 1994.
- "Treatability of Aircraft Deicing Fluids in Activated Sludge Process," presented at the Texas Water '97, the Water Environment Association of Texas (WEAT), and the Texas Section of American Water Works Association (TAWWA) Joint Annual Conference, Arlington, Texas, April 6-9, 1997
- "Retrofitting Conventional Activated Sludge Plant for Biological Nutrient Removal," presented at Texas Water '98, the Water Environment Association of Texas, and the Texas Section of AWWA Joint Annual Conference, Galveston, Texas, April 5-8, 1998.
- "Development of Hydraulic Simulation Modeling for the Shanghai Sewerage Project," Proceedings of the 76th Water Environment Federation (WEF) Annual Technical Exhibition and Conference (WEFTEC 2003), Los Angeles, California, October 11-15, 2003.
- "Dynamic Simulation of Pump Station Operation Using a Real-Time Control Hydraulic Model," Proceeds of the Water Environment Federation (WEF) and Central States Water Environment Association of Texas (CSWEA) Joint Collection Systems 2004 Conference, Milwaukee, Wisconsin, August 8-11, 2004.

Professional Affiliations:

- Water Environment Association of Texas (WEAT)
- American Water Works Association (AWWA)
- Water Environment Federation (WEF)
- Water Pollution Control Federation

WATER ENVIRONMENT FEDERATION

Arthur Sidney Bedell Award

...recognizing individuals who have made outstanding contributions to the water environment profession and to the Federation and its Member Associations.

Ronald Dale Carlson, P.E.

Ron Carlson is the plant Engineer for the City of Fort Worth Village Creek Water Reclamation Facility and is in charge of the Technical Services section. The plant is permitted to treat 166 MGD of sewage by conventional activated sludge and anaerobic digestion. He has worked for the City of Fort Worth Water Department since May of 1983, with most of this time spent at Village Creek

Prior to earning his B.S. in Chemical Engineering from Lamar University in 1980, Ron had already gotten in on the ground floor of the developing interest in the environment in 1974 by earning the first 2 year Associate of Science degree in Environmental Technology awarded by Dallas County Community College. Prior to transferring to Lamar, Ron attended the University of Houston where he participated in the Co-Op work program with Champion Paper in Pasadena. Ron's first job after graduation was with Alcoa in Point Comfort Texas, but after a year or two of hurricanes and giant mosquitoes, he decided to move back to Dallas/Fort Worth and accepted a job at Village Creek.

When he started at Village Creek, Ron had to learn how to back up process data onto punched paper tape. Fortunately, he already knew how to key-punch cards in Fortran. Ron served as Secretary, Vice-President and President of the Fort Worth section of the Texas Water Utilities Association (TWUA) and was recognized as Secretary of the Year for one of his terms in that office. He was a contributing author to the chapter on "Sludge Handling and Disposal" in the 6th edition of the TWUA Manual of Wastewater Treatment. Ron attended several "Short Schools" where he became interested in teaching. He pursued that interest by signing up as an operator training instructor for courses including Math, Wastewater Treatment, Advanced Wastewater Treatment, and Anaerobic Digestion using material from the WPCF and TEEX training manuals.

The interest in conferences and teaching led to a conference in Monterrey Mexico called ExpoAgua being organized by the Mexican Water Society (SMAAC), WEAT's sister Association in Mexico. One of the presentations described a design-build-operate project for a 115 MGD treatment plant. The design-build portion presented no unusual problems, but the" operate" element was unique in that Monterrey did not have a pool of certified operators. In fact, most of the people with any knowledge of wastewater treatment were senior engineers. At the break, Ron sought out the presenter, and discussions led to a teaching opportunity, the establishment of an Operator School in 1999 and eventually to a national certification program in Mexico. Ron was presented the Jack Huppert Award by SMAAC for fostering international cooperation. Ron continued to attend and contribute to ExpoAgua, including presentations on various topics in Spanish.

Since joining WEF (formally WPCF) in 1986, Ron has actively volunteered in a number of capacities. In addition to maintaining contacts and serving as a resource for colleagues in Mexico, Ron assisted with the Stockholm Junior Water Prize competition in 2002 and 2003, represented WEAT/WEF as a resource for wastewater treatment knowledge during visits to Fort Worth by officials from Bandung Indonesia, was a judge for the Science Fairs in Fort Worth and Dallas, and served on the Awards Committee and the Scholarship Committee.

Ron is a member of Tau Beta Pi and the 5-S club, holds an A wastewater and a B water license in Texas, and has been a Professional Engineer in Texas since 1986.

WATER ENVIRONMENT ASSOCIATION OF TEXAS

RECRUITMENT AWARD

...recognizing a member of WEAT for his outstanding recruitment effort.

Jeff Sober

Jeff Sober has worked in the Water/Wastewater field for the last 12 years beginning as an apprentice for Environmental Training, Inc., an operations consulting firm. Jeff specialized in plant assessments to identify areas of O&M improvement throughout the US. He trained under a Double A water/wastewater operator and received first hand knowledge of process control of wastewater plants.

Jeff graduated from Texas A&M University with a Bachelor's and Master's degrees in Civil Engineering. He joined Carollo Engineers in Dallas and works primarily on wastewater treatment plant projects with a focus on solids processing and handling. Jeff's professional experience includes master planning, design, construction management, condition assessment, and project management.

Jeff has been an active member of Water Environment Association of Texas (WEAT) since 2005. In 2007, Jeff accepted a position on the WEF Student and Young Professionals Committee. In 2008, he accepted a position on the WEF Membership Committee and the role of Co-Chair of the NTS Young Professionals (YP) Committee. As the Committee Co-Chair, he encouraged involvement of YPs in various WEAT activities, arranged YP plant tours, organized YP networking and social outings, and generated YP attendance levels that were the highest in the last five years.

In 2008, Jeff joined the WEAT Operations Challenge Committee. He was responsible for handling the behind the scenes logistics for the Operations Challenge program. During this time he also served as a WEF Operations Challenge National Competition Collection Systems Event Judge. In 2010, Jeff took over the Committee Chair role for the WEAT Operations Challenge Committee, a year-round responsibility. Since taking a lead roll in the Texas Operations Challenge program, the event has seen the highest level of donations and sponsorships to date.

Jeff currently serves as the Chair of the NTS Seminar Committee and in 2011 completed the organization of the successful February Seminar. Jeff also serves as the Chair of the NTS Fundraising Committee; in this capacity, he developed and organized the March 2010, 2011, and 2012 Sporting Clays Tournaments. The events were extremely successful, with over 100 WEAT participants shooting clays and raising funds for the North Texas Section scholarships and Water For People.

Jeff is involved in the WEAT North East Texas Section (NETS). He accepted a position on their Seminar Committee and helped organize their technical seminar in 2010. Jeff developed a new sponsorship approach with multi-level categories of sponsors. This new sponsorship structure led to NETS' most profitable seminar to date.

Jeff's other WEAT volunteer activities include science fair judging, leading a cook-off team at the annual NTS Cook-off event, and participating in NTS fund-raising events for Water For People. Jeff Sober was the recipient of WEAT's Emerging Leader Award in 2011. WEAT would like to thank Jeff for all of his dedication to our Ops Challenge teams, innovative fundraising ideas, and recruitment efforts.

WATER ENVIRONMENT ASSOCIATION OF TEXAS

EMERGING LEADER AWARD

...presented to a young member of WEAT who has provided outstanding service in support of the Association in the form of committee involvement, recruiting, volunteer time, event participation, or other contributions.

Erin Flanagan, P.E.

Erin Flanagan is a 2001 graduate of Texas Tech University receiving both a Bachelor of Science and Master in Environmental Engineering. Erin is a Professional Engineer in the State of Texas. She currently works as a water/wastewater treatment engineer and project manager with Freese and Nichols. She has over ten years of experience in the evaluation, design and management of a variety of wastewater and water treatment facility projects. Her experience includes project management and lead design roles on disinfection, reuse, and treatment evaluations, with associated design services and construction management. Her previous design work includes large wastewater designs at the Dallas Water Utilities' and the Trinity River Authority's regional wastewater plants in North Texas.

Erin is an advocate for WEAT and has been a WEF member for several years. She currently serves as President of the North Texas Section of WEAT facilitating dinner programs, annual seminars, continuing education, and other events to help raise funds for the North Texas Section's scholarship program. She is a long-time supporter of the operations challenge, serving for several years, including this year, as an event judge for the pump maintenance event. She has even competed on a judge's demonstration team in this event. She also currently holds the title of Fastest Saw Cut – Ladies Division, in the yearly competition here at Texas Water.

Throughout her career, Erin has remained a devoted wife to her husband Bob, and mother to their two daughters Kelly and Allison.

WATER ENVIRONMENT ASSOCIATION OF TEXAS

EXEMPLARY EMPLOYER AWARD

...recognizing Texas employers that support and facilitate employee involvement and activities within the Water Environment Association of Texas and the Water Environment Federation.

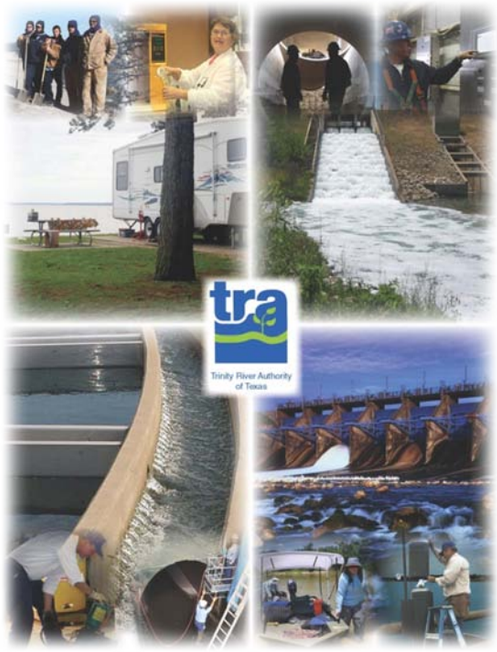
Trinity River Authority of Texas

Throughout its history, the Trinity River Authority of Texas has actively encouraged its employees to contribute thousands of hours to fulfill leadership, technical and creative roles within the Water Environment Federation, the Water Environment Association of Texas and the North Texas section.

Staff members have served in officer positions, as committee chairs, and as program leaders at the national, state and local levels.

They have shared technical knowledge with WEAT members one-on-one, on subcommittees, in presentations and in facility tours - and TRA personnel have helped the organizations document, publicize and communicate activities.

In addition, TRA employees have promoted wastewater treatment excellence through their involvement in the Operations Challenge competition - both as team members and through their leadership in developing the program into a nationally recognized powerhouse.



WATER ENVIRONMENT FEDERATION

WILLIAM D. HATFIELD AWARD

...recognizing an operator of wastewater treatment plants for outstanding performance and professionalism.

Gary LaGassey

Mr. Gary LaGassey has been employed with the City of Fort Worth Water Department since 1979. For over thirty-two years Gary has made his life at the Village Creek Water Reclamation Facility (VCWRF). Thirty-two years ago Village Creek was a small 96 MGD activated sludge plant. Mr. Lagassey grew into his profession along with the facility to where it is today. At 166 MGD, it is one of the largest and technically advanced water reclamation facilities in the state. His experience, dedication and leadership as an operator have played a critical role in Village Creek being recognized as a leader in wastewater treatment. This recognition has come in the form of numerous awards including several EPA's Large Plant O&M Excellence awards and the NACWA Platinum Award for 21 consecutive years of permit compliance.

Gary began his career in wastewater treatment as a high school student working part time at a treatment plant in Haltom City. In1979, just a year out of high school, he was hired by the Fort Worth Water Department as an operator trainee at Village Creek and has worked in all areas of the plant as an Operator I, II and III until being promoted to Operations Supervisor in 1989 and to Assistant Water Systems Superintendent in 2009. Mr. LaGassey has continued to grow and develop with Village Creek and has been an enthusiastic supporter of the high school student intern program.

Gary is always willing to teach and train others and has completed countless hours of training during his career. He has held a TCEQ Class "A" Wastewater License since 2000. In 1998 he became a TEEX certified instructor, and has taught numerous classes for TEEX and at the North Central Texas Regional School. He has authored two manuals used for training personnel in operating the activated sludge process at Village Creek and conducted plant tours.

Gary distinguishes himself by being a conscientious and diligent operator who will come to the plant anytime, day or night, including weekends. He takes exceptional pride during periods of heavy rainfall to insure the High Rate Clarifier is operational and the plant continues to process within permit limits. He possesses excellent troubleshooting skills that gained him the reputation of being an effective investigator of problems at the plant, "he knows the plant better than anybody". He is also very successful managing challenging situations in operations to ensure compliance in the midst of emergencies and multiple construction projects.

Gary understands that his most important job is to train his replacement, and his value is in the continued success of the organization and the facility. He is always eager to share his knowledge encouraging other operators to upgrade their licenses. His dedicated service is also demonstrated by his commitment to establish and write Standard Operating Procedures currently in use at the plant, and continues to update current procedures as an ongoing project.

Gary is a long-time member of the Water Environment Federation and the Water Environment Association of Texas and he especially enjoys attending Texas Water and WEFTEC conferences. He helped organizing the Texas Water Conference in Fort Worth 2011. He participated in the Operator Challenge program as a member of the Fort Worth Cowtown Hustlers for over five years. He was serving as captain of the team when the Hustlers won the WEF Division 2 championship in 2000.

Gary is happily married to Ramona for 14 years and has a son named Travis. He likes living in Alvarado and dreams of building a house on his beautiful lot. He is an avid NASCAR fan and likes bowling and drawing. He recently took on a new hobby of shooting sporting clays, which has proven to be a new challenge him.

WATER ENVIRONMENT FEDERATION

LABORATORY ANALYST EXCELLENCE AWARD

... **recognizing individuals for outstanding performance, professionalism and contributions to the water quality analysis profession.**

Karen Fetters

Karen Fetters is the Wet Chemistry Supervisor for The North Texas Municipal Water District. Karen has a degree in Food Processing Technology from Arkansas Valley Institute and a Bachelor of Science degree in Environmental Science from University of the Ozarks. Ms. Fetters is a member of WEAT and is an active member of the Texas Water Utilities Association North Texas Laboratory Analyst Section.

Ms. Fetters has over 20 years experience in the laboratory environment. She began analyzing wastewater samples when she was with Tyson Foods River Valley in Scranton, Arkansas. Karen continued her analytical career when she joined the North Texas Municipal Water District as a Senior Laboratory Technician in 2007. Her strong analytical skills, people skills and previous management experience were quickly recognized and she was promoted to Supervisor of the Wet Chemistry section in 2009.

As the supervisor for the Wet Chemistry section, Karen is responsible for reviewing the data generated in her section, supervising a staff of seven analysts, and notifying laboratory upper management of any issues in her area. In 2008, she earned her Class B Wastewater license. She knows that having a greater understanding of the wastewater treatment process provides her with the background information to understand the reasons for performing a particular test on a sample, the importance of the data in complying with State and Federal Regulations and how the sample results are influenced by the wastewater treatment process. Karen continues to pursue training in drinking water and wastewater operations, laboratory techniques and hazardous waste management. Additionally, Karen actively supports training of her staff and future scientists including high school and college students.

Karen has three grown children and four grandchildren who reside in Arkansas.

WATER ENVIRONMENT ASSOCIATION OF TEXAS

OUTSTANDING OPERATOR OF THE YEAR AWARD

...presented to an operator and member of WEAT who has provided dedication, years of faithful service, and professionalism at their facility.

Mark A. Evers

Mr. Mark Evers is a graduate of Crowder College Waste Water Technician program where he obtained his first wastewater operator's license. He joined the City of Dallas Southside Wastewater Treatment Plant staff in 1983 as a plant operator. Since the start of his career at the Southside Plant, Mark has held numerous positions and always performs his duties tirelessly and with outstanding professionalism.

In 1991, Mark earned a Texas Class "A" Wastewater Operators' License. At this time he was one of a few operators with a Texas Class "A" license. Mark is always looking for opportunities to continue to improve his professional knowledge through classes and professional seminars.

Since 1995 Mark has served as the Chief Operator and Assistant Manager of Operations at Southside Plant. Mark is responsible for managing all day-to-day activities of Southside's 110 MGD treatment process and 168 dry-tons per day solids processing and disposal operations. Under his watch, Southside has recorded no permit violations and continues to operate, for the last twenty consecutive years, without a permit violation. His leadership has contributed to Southside getting numerous awards, including: EPA Biosolids Management Award, WEAT Ronald B. Sieger Biosolids Management Award, EPA Operations & Maintenance Excellence Awards, WEAT Municipal Wastewater Treatment Plant of The Year Category 3, and NACSA Platinum awards for three consecutive terms.

Mark continues to work very hard at maintaining good relationships with the neighboring community for which his efforts have been highly appreciated. His commitment to the betterment of the environment is unquestionable and exemplary.

WATER ENVIRONMENT ASSOCIATION OF TEXAS

ALAN H. PLUMMER ENVIRONMENTAL SUSTAINABILITY AWARD

...recognizing individuals who have made outstanding contributions in the field of environmental sustainability practices within the State of Texas.

Webster Mangham

Webster Mangham is a Planning and Environmental Management Assistant at the Trinity River Authority of Texas. He joined TRA in 2005 as a Water Quality Technician and advanced to his current position in 2006.

His main duties include study design, coordination, and execution of river field studies, GIS analysis and database management, and report writing for TRA's Planning and Environmental Management Division. He also oversees field-related equipment and assists in the administration of the Texas Clean Rivers Program. Mangham has presented technical papers at numerous conferences and is a recognized expert in water quality in the Trinity River Basin.

Prior to joining TRA, Mangham served as a Sergeant in the United States Marine Corps. He holds a BA in Communication from the University of Central Oklahoma and a master's degree in Applied Geography from the University of North Texas.

WATER ENVIRONMENT ASSOCIATION OF TEXAS

Ronald B. Sieger Biosolids Management Award

...presented to a WEAT member, an engineering firm, a specific project, a municipality, or a specific municipal or industrial facility that has made significant accomplishments in the field of biosolids technology and management practices within the boundaries of the State of Texas.

Trinity River Authority of Texas
Ten Mile Creek Regional Wastewater System

TRA operates the Ten Mile Creek Regional Wastewater System which services the contracting parties of Cedar Hill, DeSoto, Duncanville, Lancaster, and Ferris. Initially designed in 1969 with a capacity of 6.78 MGD, the wastewater treatment plant has been upgraded on several occasions to accommodate rapid population growth in the surrounding areas. The first of these improvements was completed in 1986 and is referred to as the Phase I expansion, which increased TMCRWS' rated capacity to 11.5 MGD. Phase II construction enlarged the capacity to 20 MGD in 1988, and in 1989, Phase III rehabilitated portions of the original plant and added one aeration basin. In 2004, TRA received an approval from the Texas Commission on Environmental Quality (TCEQ) for an uprating of the plant capacity from 20 MGD to 24 MGD. The plant serves approximately 130,000 people in southern Dallas County including Duncanville, Cedar Hill, DeSoto, Lancaster, and Ferris, and has a discharge permit of 10 mg/l CBOD, 3 mg/l ammonia, and 6 mg/l DO.

Six years ago, the Trinity River Authority of Texas undertook a comprehensive overhaul of the biosolids program for its Ten Mile Creek Regional Wastewater System. TRA chose innovative solutions that provide cost savings for customers, along with sound environmental stewardship.

The Biosolids Program evolved from the planning to remedy three significant issues facing the solids train at TMCRWS:

• The approaching recurrence of the sludge surface disposal units cleanout, a difficult and costly step needed to periodically replenish sludge storage capacity

• Inadequate co-thickening of the WAS and primary sludge

• Operational issues at the anaerobic digesters

Since its inception in 1969, TMCRWS had used on-site disposal of waste biosolids. However, as the storage capacity was filled, periodic cleaning was required to maintain storage capacity, since continued disposal unit expansion was not feasible. A previous cleanout had been expensive, involving the removal of the sludge material from the disposal units, dewatering the material in temporary facilities on site, loading the material into trucks, and hauling to a landfill for disposal. To avoid further recurrence of this expense and to eliminate the disposal units as a source of odors, the master plan analyzed options for a new way to process biosolids for disposal. The chosen option, based upon a 20-year life-cycle analysis, was a new solids dewatering facility (SDF) utilizing centrifuges. Waste biosolids from the plant could be routed through the new SDF and then readily loaded into trucks or dumpsters for transportation to a landfill.

Another issue facing the plant was inadequate co-thickening of WAS and primary solids. Conducted in two gravity thickeners, the co-thickening process was not always effective, leading to large SRTs and high solids blankets. The master plan looked at changing the co-thickening process by including GBTs in the new SDF for exclusively thickening WAS, leaving primary sludge alone to be thickened in the existing gravity thickeners, improving the thickening effectiveness of both. This new arrangement had the additional benefit of extending the life of the gravity thickeners.

This conversion of the solids thickening system accomplished by the SDF also provided benefits to the liquid treatment train. The new WAS storage tank (part of the SDF) and the thickening of only primary sludge in the

gravity thickeners allow for greater flexibility of managing sludge blankets in the primary and final clarifiers for maximizing clarifier performance and reducing odors generated from those units. Biosolids are now fully contained throughout the train in equipment, pipes, and tanks.

Regarding the third issue, TMCRWS had for some time experienced operational issues with the plant's anaerobic digesters. Constant foaming problems led to numerous O&M headaches, and inconsistent heating compromised the effectiveness of the digestion process and produced variances in gas production. The master plan developed a strategy to refurbish the digester complex, replacing aged equipment and providing improvements in the digester roofs and heating to end the O&M issues and improve digestion performance. The refurbished digesters would also maximize gas production, which may provide opportunities for beneficial use. The plan included reusing the existing tankage, saving money. With the advent of the SDF, the digesters could be taken offline for the refurbishment construction, saving money and lessening impact on plant operations. The cost of refurbishment will be worth it: life cycle analyses show that the cost will pay off in 11 years, due mainly to the solids volume reduction the digestion process would accomplish, leading to cost reductions in hauling and disposal.

The first step in the Biosolids Program was design and construction of a new mechanical solids dewatering building. The dewatering/thickening complex is a two-story, approximately 12,000-sq-ft building designed for flexibility. The facility includes several cost-saving features for operational flexibility and contingency, such as a redundant screw conveyor that keeps the facility operational if one is down, two loadout bays with mechanized dumpster-veyors that easily allow full loading of each dumpster, and a personnel catwalk to provide ease and high visibility for operational observation rounds. Storage is ample enough to limit SDF operation to 8-5, Monday through Friday.

As part of the co-thickening issue solution, WAS is pumped to a 40-foot diameter, 21- foot SWD aerated WAS Tank (left). Gravity-thickened PS, as well as the thickened WAS, is pumped to a 65-foot-diameter, 22-foot SWD jet-mixed and aerated blend tank. The bio-trickling filter (foreground) provides economical odor control on foul air from the blend tank and the centrifuge vents. It is also more environmentally friendly than chemical odor control units.

WAS is thickened by two 2.0-meter GBT units, which allows the existing gravity thickeners to thicken primary sludge only. Feed solids come in at approximately 0.5% on average, and are thickened to about 4.3%. Each GBT has a throughput capacity of 600 gpm.

Three 135- to 200-gpm centrifuges dewater the blended sludge. Space has been provided for a fourth unit. A 20-year period life cycle analysis, supported by pilot testing results, showed centrifuges to be the most cost-effective dewatering option for the SDF. Additionally, centrifuges keep the odors and corrosive gases contained, allowing for odor control treatment.

Support facilities include multiple PC pumps, jet motive pumps, blowers, hoppers, polymer blending and feed systems, overhead cranes, control room, office/storage, process lab, etc. Innovative approaches to these support facilities include large hoppers for capturing thickened WAS from the GBTs for pumping by the centrifuge feed pumps, affording weight control of those pumps and complete containment of the TWAS; VFD-controlled blowers for efficiently coping with varying tank levels; and a state-of-the-art polymer system that is computer-controlled and affords the flexibility of multiple concentrations and feed points. To maximize operational efficiency and minimize costs, most piping is contained on a level between the two floors, so it is out of the way of everyday operations. A scissor lift (included in the project) provides access when needed.

The construction cost was $14.5 million and the program has been operational since the summer of 2010. Recent performance data have indicated averaging at least 25% cake. The facility has been averaging approximately 37 tons/ day of dewatered solids, using about 11.9 lbs/ton of polymer. TRA operates the facility to first maximize the percent solids in the cake produced from the centrifuges, and secondly to minimize the polymer used. Some analytical tools have been developed to assist with achieving these goals, and a cost-benefit analysis is conducted annually to determine the most economical solids percentage to produce.

The Biosolids Program also afforded improvements to the TMCRWS liquid treatment train. With the SDF eliminating the need for the sludge disposal units, the Master Plan also considered possible alternate uses of these facilities. The disposal units represented a large footprint on the plant site and included existing levees. The Master Plan developed a plan for conversion of the disposal units to wet weather storage.

It was determined that approximately 21.5 million gallons could be obtained from the converted disposal units at a significantly reduced price as compared to building wet weather storage from scratch. Additionally, the

storage flow conveyance into and out of the storage basin was configured to be by gravity, meaning the storage could be utilized even in a power outage, reducing the chance of SSOs.

The TMCRWS Biosolids Program has converted solids disposal practice with the new SDF and provided needed improvements to solids thickening, improving liquid train performance and reducing odors. Additionally, the program allows for the economical conversion of existing infrastructure to wet weather storage, helping to minimize CSOs. The conversion was accomplished by an innovative method of removing the biosolids from the storage lagoon and land applying in nearby fields. Future improvements will repeat this success with conversion of a second lagoon to wet weather storage and refurbishing the existing anaerobic digesters.

Benefits include tremendous cost savings on everything from transportation and disposal of sludge to construction and daily operations and maintenance. The wet weather basin will also protect the environment by preventing sanitary sewer overflows. Future plans include improvements to further decrease maintenance expenses and produce fuel to offset energy costs for the anaerobic digester heating process.