

Email: [Email: Daniel Christodoss, PhD, PE](mailto:Daniel.Christodoss@cityofwaco.com) Mobile: (817) 894-1357

Dr. Christodoss has over 30 years of experience in the Civil-Environmental Engineering Profession starting with construction of a 30 MGD water treatment plant & 2-level master elevated storage tank in 1980, followed by technology development, pilot studies, design and construction of conventional and tertiary water and wastewater treatment and reuse plants, pipelines, pumps and lift stations with high flow, high surge protected pump systems, asset management, AMR-AMI & water loss reduction, drainage hotspot remediation, eco-sensitive environmental remediation, city engineering, preventive maintenance program management, waste to energy/biosolids and water reuse, water and wastewater plant optimization and stress testing for higher capacity evaluation, and grant consulting services for municipalities. His career highlights include four (4) Awards: (1) **National Pollution Engineering Award**, (2) **Texas Environmental Excellence Award**, (3) **Air Force Base Environmental Excellence Award** and the (4) **AWWA Award**. (1) His engineering and management during the eco-sensitive environmental remediation of the filled coal ash pond by his team at the Oak Ridge Y-12 plant resulted in the National Pollution Engineering Award to the US Department of Energy. (2) As the program manager in Waco from 2005 to 2007 during a budget crisis (due to high natural gas and electricity rates), when simultaneous industrial waste treatment challenges were encountered, he led a team of extremely skilled operators to make plant modifications to treat high BTU wastes from industries and FOG to minimize sewer clogs, produce methane to run the sludge to soil-conditioner bio-solids reuse plant, and cogenerate electricity to run the main WMARRS Regional WWTP plant. This waste reduction and biogas to energy and electricity team initiative resulted in the Texas State Environmental Excellence Award to the City of Waco for waste reduction, pollution prevention and environmental protection. (3) His team in San Antonio received the Air Force Base Excellence Award at Kelly Air Force Base for the Environmental RI/FS and Remediation team work. (4) AWWA award was granted for his work in water quality.

Professional Expertise

- ✓ Water, Wastewater and Storm-water Pilot Studies, Capacity Upgrading Studies, New and Upgrade Design, Construction, Master Planning, Operations, Management and Rehabilitation
- ✓ Preventive Maintenance Program Development and Implementation
- ✓ Asset Management and Long-Term Capital Improvement Planning
- ✓ AMR-AMI & Water Loss Control
- ✓ Waste to Energy/Bio-solids Reuse
- ✓ City Engineering and Eco Sensitive Design
- ✓ Grant Identification and Administration

Years of Experience

- ✓ 6 years with City of Galveston
- ✓ 12 years with other Firms
- ✓ 16 years with Local Govt.

Education

BS, MS, PhD Civil Engineering. 80, 86, 90

Municipal/Industrial/Public Works/Remediation/Transportation

- ★ **Grant Support to Cities and Authorities:** Assisted City of Azle and Trinity River Authority in applications (approximately \$25M combined) to the Texas Water Development Board for Water Treatment Plant Expansion and Wastewater Treatment Plant Upgrade Funding.
- ★ **West District and Upper Brays WWTP Service Areas Sewer and Odor Control Systems Master Plan, City of Houston (COH):** The Master Plan identified system deficiencies and future needs, providing prioritized recommendations for the best return for the investment. The plan involved condition assessments utilizing a prioritization matrix. This master plan is intended to provide guidance that will allow the COH to accommodate current and future system requirements in a planned and cost-effective fashion.
- ★ **Program Manager, Waco Water Utilities, Field Operations.** Operations and maintenance manager for about 900 miles of waterlines and 800 miles of sewer at Waco and Coordinator for the Environmental Management Systems (EMS) Program Initiative with TCEQ.
- ★ Responsible for managing construction/preventive maintenance of water distribution systems and wastewater treatment plants spanning 100 square miles of service area and serving 150,000 residents

- ★ Saved \$20 Million by doing a hydraulic-treatment stress test to retain the WMARSS wastewater treatment plant capacity at 37.8 mgd and eliminate downgrading to 31 mgd and made presentations to TCEQ
- ★ Stabilized operations budget during energy crisis (natural gas @ \$13/mmbtu) by waste to energy initiatives
- ★ Prepared plans to provide 24/7 water and sewer service for 150,000 population including line cleaning, Water/Sewer Mains and Lateral Repair/Replacement, sewer overflows prevention, valve exercise, and pipe leak prevention
- ★ Prepared Manhole/Lift Station Overflow (SSO) Reduction Plan to TCEQ
- ★ Supported the new Satellite WWTP Feasibility Study Project
- ★ **City Engineer, City of Temple (CIP, Development, and Building Inspection & Flood Plain Manager):** Directed public works activities, including the design, construction, and operation of roads, traffic engineering and road alignment feasibility studies, water/wastewater utilities, and City developments
- ★ Coordinated maintenance of road and drainage systems and traffic control functions with Director of Services
- ★ Served as the City Flood Control Engineer
- ★ Managed roads, drainage, water and sewer, and subdivision infrastructure projects in excess of \$100 M
- ★ Made presentations to City Council and Planning/Zoning Commission on Zoning, Plats and Construction
- ★ Managed all environmental activities associated with storm water permits; and recommended solutions
- ★ Supervised the Development, CIP and Building Permitting Divisions
- ★ **Southwest Water Company. Asset Management: Preventive Maintenance, Capital Project Planning (CAPEX) for Multiple Water and Wastewater Plants, Sewer Collection System Lift Stations and Water Distribution System Pump Stations:**
- ★ Conducted Water/Wastewater Plant GPS Asset Inventory & Condition Assessment with Condition/Criticality Ranking for Water Wells and Groundwater Treatment Plants, Surface Water Reverse Osmosis (RO) Plants, Conventional Surface Water Treatment Plants, Process pipelines, Distribution and Collection System, Activated Sludge WWTPs, Pumps Stations with Ground Storage Tanks and ASME Coded Pressure Tanks, Lift Stations, etc.
- ★ Prioritized Weighted Long Term Capital Improvement Project Program Planning for Multiple Assets
- ★ Programmed Asset Preventive Maintenance Schedules/Risk Reduction based on Asset Life, Condition and Criticality
- ★ Performed Pro-Active Maintenance and Rehabilitation/Replacement along with Long Term CAPEX and Risk Analysis to promote health and safety/longevity
- ★ Implemented Root Cause of Failure Analysis, Risk reduction measures, Hazard Identification Failure Modes & Effects Consequence/Criticality Analysis and designed well pumps and pump stations for electrical surge protection.
- ★ **Southwest Water Company. TCEQ Exception Requests and designs for combined chlorine chemical feed, sequestration of iron and manganese, and infiltration-inflow/Sanitary Sewer Evaluation Survey (SSES).** Designed a new LAS system to be used with chlorine feed system for chloramination of surface water. Designed polyphosphate sequestration system to address red water due to iron and manganese in groundwater. Provided a I&I compliance plan to TCEQ followed by a Sanitary Sewer Evaluation Survey (SSES) field study to identify sources of I&I.
- ★ **Southwest Water Company. WTP and WWTP Design Project Manager.** Oversaw consultant design of Capital Improvement Projects (CIP) for pump stations, WTP, WWTP and distribution lines in North, East and Houston-Galveston Area of Texas.
- ★ **Southwest Water Company. Sludge Dewatering Feasibility Study, Windermere WWTP.** Evaluated technologies and selected technology providing the best return on investment (ROI) at the lowest life-cycle cost.

- ★ **Southwest Water Company. Cherokee Shores WWTP.** Design and construction manager for the anoxic basin installed to promote energy efficiency and de-nitrification to attain compliance with effluent limits. Performed design change to include blower and air-line improvements.
- ★ **Southwest Water Company. Waterline Design.** Completed design of Ridgecrest Water Supply System Water Line Design and performed construction administration until project complete.
- ★ **Southwest Water Company AMR-AMI Design Engineer.** Transitioned Utility from Manual to Automatic Meter Reading and completed:
 - ★ Evaluation of Technologies
 - ★ Evaluation of available funding sources and supported project funding
 - ★ Business Plan
 - ★ Implementation of the optimal Automatic Meter Reading Technology for Utilities with RF frequency remote reading new water meters to maximize the Return on Investment (ROI).
 - ★ Supported Construction Administration
 - ★ Project was the fastest to be implemented in 108 water systems across Texas.
- ★ **Project Engineer, Southwest Water, Water Capacity Planning:** Planned for long-term capacity using population projections, economic outlook and historical trends to increase water system capacity to match future growth. Utilized peak and average flow graphical trend predictions to make future decisions on augmenting groundwater supplies vs. purchasing wholesale water.
- ★ **Project Engineer, Southwest Water, Water Loss Program:** Created a new water loss program by controlling real and apparent losses. Real Loss Control: Performed Cycle-stop valve installation and testing to quantify reduction in leaks through pressure equilibration. Apparent Loss Control: Utilized study identifying significant drop in efficiency for meters that registered over 1.7 million gallons and proposed replacement of meters with state of the art automatic meter reading and high accuracy rugged registers.
- ★ **Project Manager, Trinity River Authority, Huntsville Water Treatment Plant Upgrade Design with Nitrate Biofilter:** Prepared construction plans for expansion from 6 MGD to 12 MGD including the design of innovative 11 MGD GAC biological de-nitrification filters (typically used at WWTPs) for nitrate and taste and odor removal.
 - ★ Designed backwash pump station and 1.2 MG clear-well high service pump station for high volume high head surge with four 350 HP low energy 4 MGD (2,800 GPM each, total 11,200 GPM) vertical turbine pumps. Performed surge calculations to size and select surge suppressor valve and design pipeline for surge forces.
 - ★ Performed preliminary design of parallel 30 and 42 inch 10 mile long transmission main with booster pump.
 - ★ Designed the new innovative 11 MGD GAC biological de-nitrification filters for nitrate and taste and odor removal combined with conventional filtration (lifetime savings \$11 million). Completed an online pilot study at the plant, prepared a pilot study report and submitted a patent application for this innovative biological technology.
- ★ **Program Manager, WMARRS Regional WWTP, Capacity Retention/Future Upgrade, Waste to Energy Initiatives and Biosolides plus WWTP Effluent Reuse** Saved approximately \$20 Million by doing a stress test to retain the SCADA Controlled WMARRS wastewater treatment plant capacity at 37.8 mgd and eliminate downgrading to 31 mgd. Made presentations to TCEQ on the highlights of the stress test and received approval for maintaining the existing rating for the WWTP. Initiated and managed waste to energy initiatives for biogas to electricity, and biogas reuse for conversion of sludge to soil conditioner, plus receipt of high BTU waste from industries and FOG conversion to biogas in anaerobic digester. Bio-solids were thickened to high energy residuals using dissolved air flotation and sludge digested anaerobically to produce biogas for conversion to electricity. Teamed with Minute Maid, M&M Mars and many other industries in Waco to utilize their high BTU waste from the industrial wastewater treatment process to maximize the generation of biogas. The anaerobically treated waste was burnt in a process burner to convert it to a soil conditioner for marketing. The WWTP Effluent is currently reused at a power plant.

- ★ **Program Manager, Waco Water Utilities, Emergency Sinkhole Sewerline Replacement** Designed and constructed an emergency 36 inch sewer line adjacent to major gas, telephone and electrical lines over a major arterial road that collapsed in Waco due to a 400 x 800 ft sinkhole adjacent to Lake Waco. Completed the project with in-house utility staff. Some of these operators were transported by cranes and safety harnessed to the concrete bridge which was installed to span the sinkhole. The pipeline project was completed internally at 50% of the cost of contractor bids received
- ★ **Trinity River Authority Central WWTP Diamond Filters Design** Project Engineer for the high flow and small footprint diamond cloth filters to replace the existing sand filters. Features include higher solids loading per square foot of media (2.5 times the filtration area of sand filters), higher hydraulic loadings, reduced backwash water volume, and reduced footprint.
- ★ **Project Manager, City of Azle WWTP Pump Station Upgrade.** A preliminary design report (PDR) was prepared summarizing evaluation of the following three alternatives:
 - ★ Alt 1: Replacing existing triplex pumps to better match the existing system curve and adding a new booster pump station
 - ★ Alt 2: same as "1" except adding two - booster pump stations
 - ★ Alt 3: Replacing existing triplex pumps to better match the proposed pumping conditions; and constructing a new effluent flow equalization/storage basin at the Ash Creek WWTP, that will link to the existing effluent/storage basin, and will normalize peak discharge flows.
- ★ **Trihalomethane Removal in Storage Tanks** Designed innovative technology to implement removal of trihalomethanes in purchased surface water to attain compliance:
 - ★ Cost of implementation was \$0 since existing equipment configuration was used innovatively.
 - ★ System out of compliance attained TCEQ compliance with zero cost technology modifications
- ★ **Amarillo Wastewater Treatment Plant (WWTP) Master Plan:** Performed a preliminary conceptual feasibility study as part of a proposal for evaluating new satellite WWTP vs. upgrade of existing Hollywood Road and River Road WWTPs with reuse cooling water to the power plant.
- ★ **City of Azle Highway 199 Lift Station:** This lift station served an area which includes a large undeveloped section of land along State Highway 199 west of the lift station site. Performed hydraulic design of pumps and pipe and managed the lift station upgrade design project which included TXDOT coordination related to access road over highway bar ditch.
- ★ **Project Manager, Highway 199 Sewer line Crossing, Ash Creek Sewer line Relocation:** Design involved the replacement of an existing 8 inch aged sewer line with a new 12 inch line by methods other than open cut since the line crossed a busy highway. Performed hydraulic design to select optimum pipe and grade.
- ★ **Project Manager, Azle Water Treatment Plant Evaluation:** Identified possible causes for the high turbidity at the transfer station and recommended that the caustic feed be relocated to a zone of high mixing upstream of the transfer station.
- ★ **Tamilnadu Water Supply and Drainage Board New 30 MGD Water Treatment Plant:** Verified design and performed construction oversight/O&M for a 30 MGD water treatment plant and control building at an elevation of 2,500 ft to convey and provide drinking water to a metropolitan city in the valley (40 miles away).
 - ★ System included a surface water intake, spray nozzle aeration chamber, chemical house, clari-flocculator, filter house with shell roof, pump house/main control station, and clear water reservoir.
 - ★ Verified design and oversaw construction of control building for the 30 MGD water treatment plant.
 - ★ Performed field investigations for laying water supply mains and designed water/waste systems.
- ★ **Senior Project Engineer, Kelly/Brooks Air Force Base, Industrial Water Treatment and Environmental Remediation, Design-Build Projects:** Field engineer for optimization of the Unipure industrial heavy metals co-precipitation treatment plant; performed a comprehensive study of process parameters for enhancing treatment performance

and meeting NPDES limits. Published report summarizing operating guidelines for achieving maximum efficiency.

- ★ Performed a hydraulic design upgrade to the existing Groundwater Treatment Plant (GWTP) in a design-build process, and oversaw construction. Functioned as the general contractor for the project. Prepared electrical and controls concept with cost estimates for SCADA radio monitoring and control from 7 automated remote pump stations. Integrated 1,000 gpm industrial plant into a 500 gpm SCADA GWTP to reduce costs and utilize both infrastructures effectively. Performed hydraulic design and construction oversight of lift/pump station, recovery well pumps, silt traps, below ground piping, mechanical and instrumentation components. Evaluated Interim Stabilization Measures for Sites A, B and C contaminated with Heavy Metals from Plating Operations, Free Product, Chlorinated Solvents in soils and groundwater exceeding TCEQ limits.
 - ★ Resident Support Engineer at Brooks AFB for conducting engineering evaluations and system cost analysis and recommended, designed, and oversaw reengineering projects as required to ensure optimal operation.
 - ★ **Project Engineer, Southwest Water, Hydraulic Design/Filter Backwash Pump Design:** Prepared a hydraulic model of backwash systems at two water plants to evaluate piping upgrade and pump replacement options to meet the minimum backwash flow requirements established by TCEQ. Performed Hydraulic Design and Modeling to select optimum pipe and pump and oversaw construction. The new system was installed with a reduced pressure zone assembly (RPZA) for backflow prevention.
 - ★ **Project Engineer, Southwest Water, Sludge Dewatering Project:** Evaluated available technologies and performed sludge dewatering pilot study with Somat Process (small footprint, low maintenance) to dewater aerobically digested sludge and compost it for beneficial reuse. The technology provided 94% volume reduction.
 - ★ **Senior Feasibility Study Engineer, Jacobs Engineering, Oak Ridge Y12 Plant Remediation.**
 - Prepared feasibility studies, proposed plan, ROD, construction oversight and monitoring plan for 5-year CERCLA review.
 - National Pollution Engineering Award for Eco-sensitivity in Engineering. Provided support to DOE in public meetings.
 - Received commendations from DOE for escalation of milestones resulting in savings of over \$2M in overall costs leading to finalization of a Feasibility Study, Proposed Plan, ROD, Remedial Design, and Remediation 7 years ahead of the original schedule.
 - ★ **City Engineer/Manager City of Azle Flooding Hotspots**
 - ★ In lieu of doing a drainage master plan, the focus of this project was to:
 - Identify drainage solutions and prepare conceptual designs for 10 of the 25 flooding hot spots in the City of Azle
 - These 10 hot spots were flood prone areas ranging from businesses and residents to major streets that had to be closed frequently during rainstorms
 - Conceptual design plans were submitted
- Performed hydraulic and drainage analyses for different storm frequencies using Haestad-Bentley hydraulics and drainage software and sized-designed structures for flood control, drainage and erosion protection
- ★ **Program Manager, City of Waco Fog Program.** Evaluated a process by Bio-Diesel Industries in Denton where used oil was refined and converted to bio-diesel using biogas as a renewable energy source from the City's solid waste landfill. The process had applications to refinement and conversion of cooking oil Central Texas-wide to Bio-Diesel to reduce the dumping of used cooking oil into the sewer system and causing sewer clogs.
 - ★ **City Engineer, City of Azle, Central Parks Design:** Performed design and construction of the 30 acre park which included recreational facilities, gardens, bird blinds, landscaping, irrigation and lighting, and a drainage system and a detention pond.

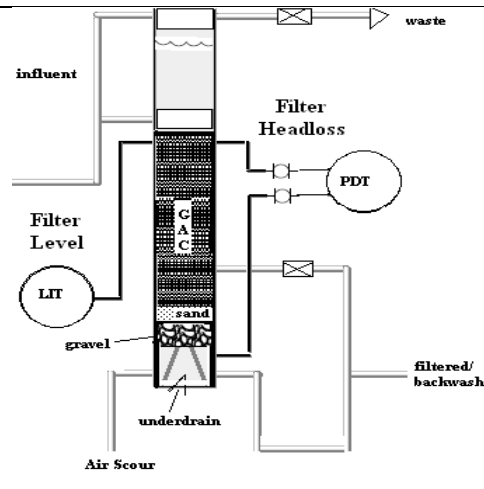
- ★ **Azle Development/Construction Plan Reviews:** Reviewed development and construction plans for conformity with City of Azle Ordinances and acceptable engineering practices so City budget can be dedicated towards expansions and improvements to accommodate growth rather than remediation of problem systems.
- ★ **Feasibility Study Engineering Group Leader, Jacobs Engineering:** Conducted weekly meetings for engineering staff and prepared presentations on emerging treatment technologies for contaminated soil, groundwater, and sediment.
- ★ **Project Engineer, Chanute AFB, IL:** Developed an environmental Cleanup Plan for the demobilization, closure and spill control and discharge plan for remediation of a landfill and a test site contaminated with metallic and organic contaminants.
- ★ **Task manager, Jacobs Engineering, for the K-25 Project:** Prepared a ROD for a classified, contaminated burial ground and performed engineering studies for in situ vitrification and chemical oxidation of a pit contaminated with volatile organics and radionuclides, plus remediation of PCB-contaminated ponds.
- ★ **Senior Engineer, Jacobs Engineering, for restoring contaminated auto salvage sites:** Prepared Engineering Evaluation/Cost Analysis and Specifications for Magnetometer Surveys to identify buried objects, Soil Sampling with Geoprobe Sampling Systems for site contaminated with PCBs, radiological constituents, organics and heavy metals including mercury.
- ★ **Senior Environmental Engineer, SAIC Project manager for an Engineering Evaluation/Cost Analysis-Environmental Assessment (EE/CA-EA) for Formerly Utilized Sites Remedial Action Program (FUSRAP).**
- ★ Prepared regulatory requirements package for Creek Environmental Impact Statements. Performed an environmental audit of the Paducah Gaseous Diffusion Plant (PGDP), Paducah, KY. Prepared Integrated Waste Management Plans for organic, nuclear and mixed wastes for the Y-12 inactive nuclear weapons production plant, K-25 inactive gaseous diffusion plant, X-10 active research facilities. At the RAD waste Burial Grounds at PGDP, prepared conceptual designs and analysis for remediation of the WAG 22 and received commendation from DOE site manager for the team's finding cost-effective ways for cleanup. Prepared conceptual designs for air strippers, ion exchange and activated carbon treatment units for the Portsmouth site groundwater corrective measures study (CMS)
- ★ **Civil Engineer, Bechtel Environmental:** Principal Investigator for development of an innovative technology in hazardous waste treatment & waste minimization including conceptual design of sewer and treatment systems to convey water (via railroad crossing) from blow-down, tank farm sinks, metal frame warehouse and a 2 story concrete block warehouse to a sanitary sewer after being treated in an activated carbon unit.
- ★ Performed hydraulic design of storm sewer system, sumps and catch basins based on the 25 year storm. Performed structural analysis of manholes for a FUSRAP project to prepare specifications for purchasing the appropriate manhole to accommodate site-specific requirements. Performed calculations for determining the bearing pressure, buoyancy, uplift force, AASHTO soil load on the manhole structure, bending stress, maximum moment and shear on manhole roof. Calculated the maximum slope angle based on angle of internal friction, and the cohesion "c" (for various factors of safety) for a low level radioactive waste storage pile covered with clean soil and riprap on the slope. Prepared conceptual design for a soil cover and riprap configuration for the FUSRAP project.
- ★ **City Engineer, City of Azle Denver Trails Road and Bridge Design:**
- ★ Evaluated three traffic reliever street alternatives across the floodway of Ash Creek to connect Highway 199, schools, hospitals and interior residential developments.
- ★ The selected alternative was the best configuration to relieve existing and future traffic conditions on several collector streets during peak hours.
- ★ Designed and managed the project which involves a 3,000 ft long road with a 900 ft bridge over the floodway of Ash Creek with piers driven into shale, and drainage (storm collection system comprised of inlets and flume combinations) and water-sewer improvements. Coordinated the Section 404 permit with the Corps of Engineers.

★ **Publications:**

- ★ Water Reuse Technologies for Industrial and Municipal Applications, 2013 9th Annual Practical "WATER Issues & Technologies" Short Course, Texas A&M Short Course, Dept. of Food Sciences, October 2013.
- ★ Tangential Flow Filtration (TFF) Membrane Applications, Texas A&M Short Course, Dept. of Food Sciences, April 2013.
- ★ "2011 Implementation of a High-Tech Automatic Meter Reading Application in Unprecedented Record Time at Diversified Texas Water Utilities", 15th Annual Energy, Utility and Environmental Conference, Phoenix, AZ (2012).
- ★ "Anoxic Selector Single Stage Nitrification Process", Texas Commission on Environmental Quality Annual Water Quality Training, Waco, TX, (2006).
- ★ "Wastewater: Heavy Metals Removal-Enhancing the Process-Part I & II", Environmental Technology Journal of Advanced Science & Engineering (1999).
- ★ "Remedial Action Alternatives for Containment of the Source and the Centroid of the Northwest Plume of Groundwater Contaminants Originating from the Paducah Gaseous Diffusion Plant in Kentucky", USA, 2nd International Symposium on Environmental Contamination, Budapest '94, Hungary.



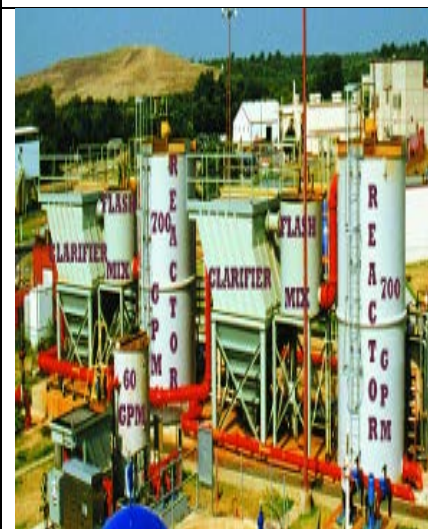
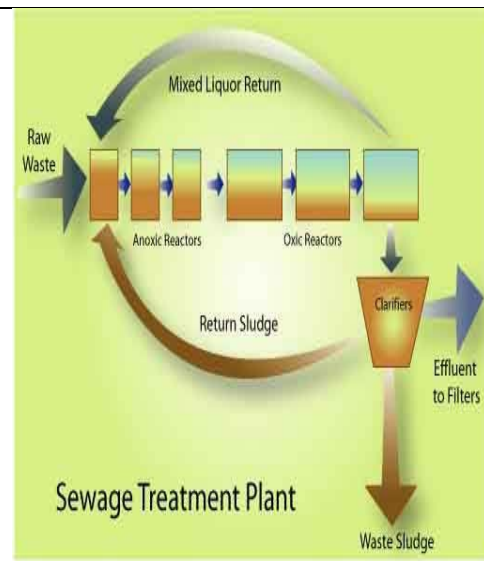
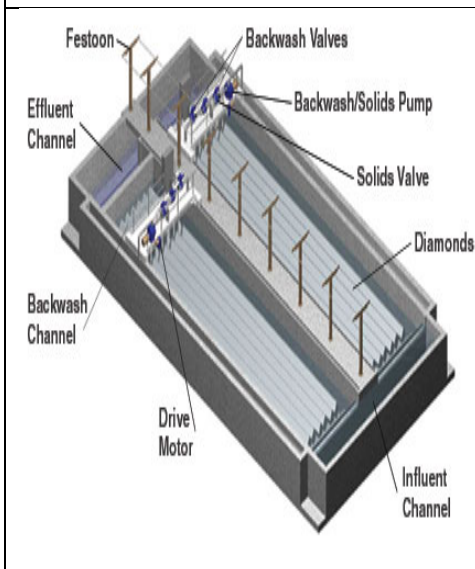
**Proj Mgr: Trinity River Authority
Huntsville Water Treatment Plant
Expansion**



**Proj Mgr: Carbon Biological Filter for
Nitrate Removal from Lake Livingston
Raw Water**



**Proj Engr: Kelly AFB Groundwater
Chlorinated Solvent UV/H2O2
Reactors Capacity Upgrade**



Proj. Engr: Kelly AFB Unipure Heavy

Engr: Trinity River Authority Same Footprint Expansion Central WWTP Diamond Filters



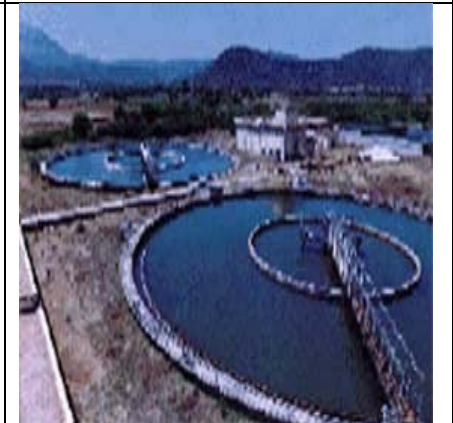
Prog Mgr: 36-inch Sewer Line Construction Over Sinkhole on major Street in Waco, with in-house crews at 50% low bid cost

Prog Mgr: WMARRS Wastewater Treatment Plant-Texas Environmental Excellence Award



Asset Mgr: Reverse Osmosis Plant Asset Management-Condition-Criticality Assessment-Long Term CIP Planning

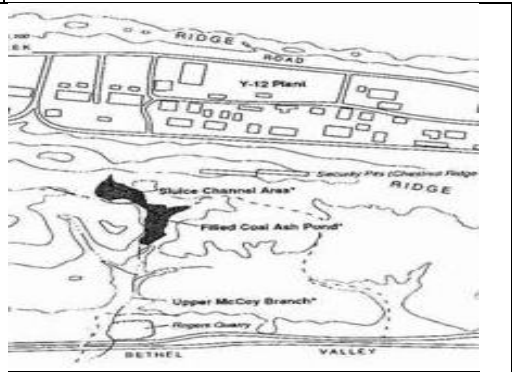
Metals Treatment Plant Construction/Treatment Optimization



Asst. Engr: 30 MGD Water Treatment Plant Design Verification/Construction



Design Report Mgr: for WWTP Pump Station Upgrade at the City of Azle



His project management efforts led to the National Pollution Engineering Award to USDOE for Eco-Sensitive Remediation at the Y-12 Plant Coal Ash Dam in Oak Ridge, TN

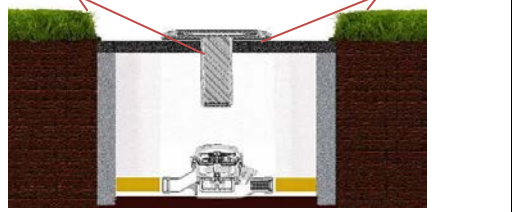


City Engineer/Mgr: Design included gardens, bird blinds, landscaping & irrigation, lighting, recreation facilities & ball fields, drainage system and a detention pond.



Proj Mgr: Implemented innovative technology for trihalomethane removal in purchased water to attain compliance

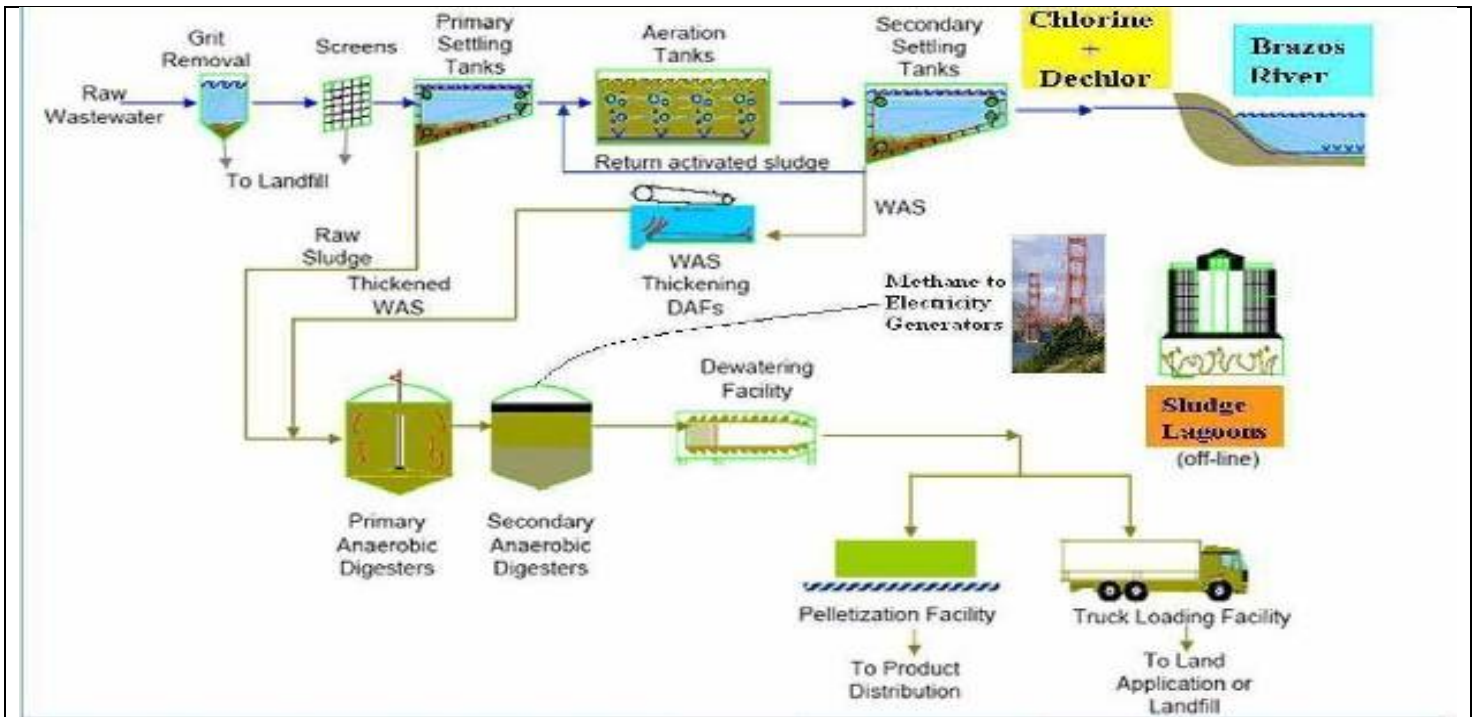
Radio Frequency RF Remote Driveby Read



Proj Mgr: Transitioned a 35,000 connection count Central, South, North, E Texas 108 diverse Utilities from Manual to Automatic Meter Reading



Design Manager: 3,000 ft long road 900 ft bridge over Ash Creek at City of Azle



His Program Management at City of Waco led to the Texas Environmental Excellence Award to the City for Methane to Energy, Industrial High BTU waste collection and treatment, Waste Reduction & Pollution Prevention

★ **Publications (Continued):**

- ★ "Turning Wastewater Treatment Sludge into Revenue by Bio-transformation (Alternative Bio-Fuel: Methane Generation, Optimization, Electricity Production, and Reuse)", Texas AWWA Conference Proceedings, Austin, TX, April 2006/Texas Public Works Association, Mesquite, TX (2006).
- ★ "Activated Sludge Plant Field/Model Capacity Evaluation", Texas AWWA Conference, Austin, TX (2006).
- ★ "Meeting O&M and Capital Investment Challenges in Wastewater Treatment", ASCE, Temple, TX (2006).
- ★ "Activated Sludge Plant Field Study", Texas Public Works Association Meeting, Mesquite, TX (2006).
- ★ "Streamlining Cleanup Decisions at Filled Coal Ash Pond", Proceedings for the Air and Waste Management National Conference, Nashville, TN (1996).
- ★ "Investigation of Manganese Sequestration by Silicates and Polyphosphates with Oxidants", Ph.D. Dissertation, Univ. of Tennessee, August, 1990.
- ★ "Silicate Effects on Iron Colloids in Sequestration", ASCE, National Conference on Environmental Engineering, Washington, DC, (1990).
- ★ "Sequestration of Iron in Groundwater by Polyphosphates", AWWA Annual Conference, Cincinnati, OH (1990).
- ★ "Sequestering Methods of Iron and Manganese Treatment", AWWA Research Foundation Project Report (1989).
- ★ "Fluoride Analysis and Treatment of High Fluoride-Bearing Water Sources", MS Thesis, Madras University (1985).
- ★ "Capping Options for Low-Level Radioactive Material Storage Pile", Waste Management Symposia '93.
- ★ "Tangential Flow Membrane Filtration (TFMF) Applications in Wastewater Reuse plus Brackish Groundwater and High Chloride Surface Water Treatment", March 2014 Membrane Technology Conference, AWWA-AMTA, Las Vegas, NV