

Education

M.B.A., UCLA Anderson

M.S., Civil Engineering,
University of California Los
Angeles

B.S., Civil and Environmental
Engineering, University of
California Davis

Professional Registrations

Professional Engineer - Civil,
California, No. C63004

Professional Affiliations

American Water Works
Association, Member

American Public Works
Association, Member

American Society of Civil
Engineers, Member

Association of California Water
Agencies, Committee Member

Publications

*Supply from the Sea: Exploring
Ocean Desalination.* Journal
AWWA, February 2005, 97:2

The Business of Water.
Contributing Author for *Supply
from the Sea: Exploring Ocean
Desalination.* AWWA. March,
2008.

Professional Experience

Mr. Szytel has more than ten years of experience in civil and environmental engineering specializing in water, wastewater and recycled water systems. His experience includes water and wastewater treatment facility evaluation, optimization and design, pilot studies, water and wastewater master planning, integrated resource planning, infrastructure planning and design, project and program management, capital improvement planning, management consulting, and construction services.

Water

California American Water, Parkway Small Main / Backyard Main Replacement Program, Sacramento, CA. Design and construction services for the replacement of over 40,000 LF of existing small diameter water distribution mains located in backyard easements with new 8, 12 and 16-inch water distribution lines in the public right-of-way, including more than 850 customer services that were switched over to the new distribution lines. Responsible for customer services design, permitting and agency coordination, and technical review.

California American Water, Suburban-Rosemont Supply and Distribution System Improvement Project, Sacramento, CA. California American Water's Program Manager for the development, planning, permitting design and construction of the Suburban-Rosemont Supply and Distribution System Improvement Project. Tasks performed included: water supply planning and economic analysis, project budgeting, scheduling and capital planning; technical oversight of hydraulic modeling to confirm the phased improvements; oversight and review of feasibility studies and Basis of Design Reports; coordination of permitting, land acquisition and entitlements for the pump station and pipeline; life-cycle cost analysis of project alternatives; oversight and review of design documents; contract administration; and construction management.

California American Water, Greenback Lane Water Main Replacement, Sacramento, CA. California American Water's Project Manager for the construction of the Greenback Lane Water Main Replacement project. Responsible for contract administration and construction management for this new 8-inch ductile iron pipeline. Negotiated change orders, supervised field observation, and acted as liaison with the City of Citrus Heights. Responsible for budgeting, scheduling and capital planning activities; the project was completed on-schedule and under budget.

California American Water, Monterey-Seaside Phase 1 Aquifer Storage and Recovery (ASR) System Basis of Design Report, Sacramento, CA. Prepared a Basis of Design Report for the Phase 1 ASR project which included improvements to the Segunda Pump Station, construction of a new 30-inch ASR pipeline, and installation of new pressure regulating stations in the Seaside area.

California American Water, Cook Riolo Tank and Booster Station, Sacramento, CA. California American Water's Project Manager for the development, planning, permitting and design of the Cook Riolo Tank and Booster Station project. Prepared alternative analysis to compare steel, reinforced concrete and prestressed concrete construction for this partially buried 1.5 million gallon reservoir. Supervised and performed technical review during design including value engineering that reduced the estimated project cost by over \$0.5 million. Responsible for budgeting, scheduling and capital planning activities.

California American Water, Walerga Rd. Tank, Booster Station and Pipeline, Sacramento, CA. California American Water's Project Manager for the development, planning, permitting and design of the 2.5 million gallon Walerga Tank, 3,500 gpm Walerga booster station and 16-inch Walerga pipeline. Negotiated access and pipeline easements with adjacent landowner, and coordinated the design of the pipeline that will connect the new tank and pump station to the existing West Placer distribution system at Dry Creek. Supervised and performed technical review during design including value engineering that reduced the estimated project cost by over \$0.5 million. Responsible for budgeting, scheduling and capital planning activities.

Victorville Water District, Reservoir Improvements Project, Victorville, CA. Project Manager for the planning, permitting, design, bidding and construction of seismic and operational improvements to 17 of the District's above-grade welded steel water storage reservoirs. Provided design, construction management and inspection services to deliver the project under budget. Work included the installation of flexible seismic joints, new isolation valves and 24VDC electric motor actuators, tank shell reinforcing, site piping improvements, and interior re-coating.

Yucaipa Valley Water District, Yucaipa Valley Regional Water Filtration Facility Design and Construction, Yucaipa, CA. Design Manager. Completed design and bidding assistance for new 12 mgd microfiltration and nanofiltration facility. Design included influent flow control, microfiltration using Pall membranes, nanofiltration and blending facilities for DBP precursor removal, dissolved air floatation treatment for MF backwash, disinfection using sodium hypochlorite, 7-million gallon prestressed concrete reservoir for finished water storage, 1000 feet of 48" diameter finished water piping including 600' of 66-inch jack-and-bore tunnel, security features, and slope protection for the adjacent flood control channel. Microfiltration system operates on gravity head and does not require pumping, and building incorporates craftsman style architectural elements. Treated MF backwash water is re-used in the District's non-potable water system.

West Basin Municipal Water District, Ocean Desalination Siting and Integration Study, Irvine, CA. Project Manager. Planned the implementation of a new 25 mgd ocean desalination plant near El Segundo, CA. Services included alternative site evaluation, hydraulic integration and blending analyses, water quality evaluation and analysis, preliminary feasibility planning of treatment and distribution facilities and integration with MWD's regional distribution systems, cost modeling of the proposed improvements, and CEQA compliance support services.

City of San Diego, Preliminary Process Evaluation and Optimization Analysis, Otay Filtration Plant, San Diego, CA. Project Engineer. Conducted an evaluation of the City of San Diego's Otay Filtration Plant to develop alternatives to improve process performance. The evaluation included analysis of water quality data, chemical usage and dosing points, current operational practices, unit process hydraulics and performance, and operational costs. Preliminary findings led to the development of improvement alternatives for further consideration by the City. Developed a pilot testing strategy to evaluate alternatives for sedimentation basin improvements in addition to THM reduction, and overall process optimization. Pilot study results identified potential process improvement alternatives such as high rate ballasted flocculation and dissolved air floatation, filter modifications to increase filter loading rate, disinfection system improvements, and several additional strategies for optimizing the process performance using the existing infrastructure including backwash stream recycle options and filter to waste.

Baldy Mesa Water District, Water Supply Plan, Victorville, CA. Water Treatment, QA/QC. Worked with the Baldy Mesa Water District to create a Water Supply Plan to secure current and future drinking water supplies. Defined water quantity and quality objectives through 2025, evaluated groundwater treatment strategies, evaluated surface water supply alternatives and treatment strategies, developed alternative water storage strategies with Mojave Water Agency, developed a recommended combination of strategies, developed a plan for funding and project delivery, and prepared a final report.

Victor Valley Water District, Arsenic Pilot Study at Well 31. Project Manager. Conducted a pilot study at Victor Valley Water District's Well 31 to evaluate and test three coagulation and filtration treatment alternatives for removing naturally occurring arsenic from the District's groundwater supply.

Victor Valley Water District, Arsenic Pilot Testing at Well 29. Project Manager. Conducted a pilot study at Well 29 to assess the performance characteristics of iron-based adsorptive media for arsenic removal from drinking water.

Victor Valley Water District, Arsenic Rule Compliance On-Call Consulting. Project Manager. Contracted with Victor Valley Water District to provide on-call consultant services for groundwater treatment, regulatory review, technology evaluation, system implementation, and long term planning.

Victor Valley Water District, Prop 13 Grant Services. Project Manager. Provided services to assist VVWD obtain grants for their arsenic removal facilities through Proposition 13.

Apple Valley Ranchos Water Company, Arsenic Pilot Testing, Apple Valley, CA. Project Manager. Conducted a pilot study program to assess the performance characteristics of iron-based adsorptive media and co-precipitation followed by pressure filtration for arsenic removal from the groundwater of two wells in the Company's potable water system. The study included testing at two well sites, preliminary wellhead treatment system design, budget level cost estimation, and life cycle cost analysis.

Victor Valley Water District - Aquifer Storage & Recovery Facilities Design and Construction Engineering Services, Victorville, CA. Project Manager. Performed design and construction services for a new 2150 gpm booster pumping station and disinfection system for the Victor Valley Water District's aquifer storage and recovery (ASR) system. Booster pumping station included vertical turbine can pumps and hydropneumatic surge control system. Chemical feed facilities included sodium hypochlorite generation, ammonia storage and feed, and PLC based control system with radio telemetry interface to the District's SCADA system.

California American Water, California American Water - Ambler Park and Luzern Wells Arsenic Removal Pilot Testing, Monterey, CA. Technical Advisor, QA/QC. Provided comprehensive Arsenic Removal Pilot Testing Study, the first step in complying with the new 10 g/L arsenic standard. The main emphasis of this Study was to identify, evaluate, and recommend the most efficient and appropriate treatment method for reducing arsenic levels in the identified Ambler Park and Luzern wells. The primary treatment processes that were considered to remove arsenic from CAWC's water included coagulation/filtration and iron-based media adsorption.

City of San Diego, San Diego Water Division Bid to Goal and ISO 14001 EMS, San Diego, CA. Assistant Project Manager. Assisted the San Diego Water Department to be the first utility in the United States to integrate the Bid to Goal (BTG) management tool with the ISO 14001 EMS framework of continual improvement using the "plan, do, check, and act" approach. Unique and distinct advantages will be achieved by applying the results-oriented BTG program with a continual-improvement ISO 14001-management system, such as cost savings in providing water to the citizens and improved performance.

San Diego County Water Authority, Mission Trails Flow Regulatory Structure II Design, San Diego, CA. QA/QC. The Mission Trails Flow Regulatory Structure II (FRS II) Project is a critical component of the San Diego County Water Authority's Regional Water Facilities Master Plan to meet untreated water demands south of the Miramar Vent. The Mission Trails FRS II is planned to be in the vicinity of the treated water FRS in Mission Trails Regional Park and is expected to include two independent storage bays approximately 9 million gallons each, inlet valve structure, outlet vaults, a connection to the new Pipelines 3 and 4 from the tunnel, and an access and control building. Provided project management and QA/QC during design.

Placer County Water Agency, Chemical Feed Facility Design, Foothill Water Treatment Plant Expansion, CA. Project Engineer. Designed chemical storage and feed facility for 60 mgd expansion of the Foothill Water Treatment Plant. Facility included all components necessary to feed polymer, potassium permanganate, powdered activated carbon, and sodium hypochlorite to support a new 60 mgd ballasted flocculation/sedimentation process.

Placer County Water Agency, Water Storage Tank and Valve Station Design, Sunset Water Treatment Plant, Placer County, CA. Project Engineer. Designed a 10-MG pre-stressed concrete water storage tank and valve station for Placer County Water Agency's Sunset Water Treatment Plant. Environmentally friendly site design included a combination altitude/pressure reducing valve station to link and control three (3) separate pressure zones, tank visibility screening using a combination of earth and landscaping, and overflow conveyance channel. Existing utilities were rerouted to accommodate new construction and facilities were located to limit environmental impact and tree removal. The complete water storage and conveyance system was designed to efficiently maintain maximum reliability, operational flexibility, and storage capacity given existing site and hydraulic constraints.

City of Fresno, Filter Backwash, Pump Station, and Water Storage Clearwell Design, Fresno, CA. Project Engineer. Designed filter backwash equalization basin, wash water pump station, and a partially buried, 1.5-mg concrete clearwell for a new 30-MGD surface water treatment plant for the City of Fresno. The wash water facilities were designed to accommodate ultimate plant capacity in addition to filter-to-waste equalization. Clearwell overflow was routed above grade to reduce construction costs, and tank was sited to provide maximum hydraulic efficiency and flexibility. Future design will incorporate three additional storage reservoirs that will operate in conjunction with the existing tank.

Fluoridation System Design, City of Yuba City, CA. Project Engineer. Designed a fluoridation system that included bulk chemical storage/containment, chemical feed piping and pumping, and monitoring/control for an existing 40 mgd water treatment plant.

Semitropic Water Storage District, Stored Water Recovery Unit Arsenic Removal Water Treatment Facility Preliminary Evaluation, Bakersfield, CA. Project Manager. The proposed Stored Water Recovery Unit will provide a pump-in capacity of 160 mgd to the California Aqueduct during periods of low flow. Performed technology screening, evaluation, testing, and preliminary design for the proposed 160 mgd arsenic removal treatment facility.

U.S. EPA Guidance Document, Membrane Systems. Project Engineer. Primary author for a U.S. EPA guidance document to present estimates of the construction, operation, and maintenance costs associated with submerged membrane treatment systems. Following an in-depth review of current research, application, and technology development, preliminary design criteria were developed for two predominant submerged membrane configurations. These criteria were applied to develop process layouts for the purpose of cost estimation. Layouts and cost estimates were developed for complete submerged membrane treatment plants ranging in size from 1 to 200 MGD total capacity. In addition to presenting these cost estimates, the document outlined the general application of submerged membranes for municipal drinking water treatment.

U.S. EPA Guidance Document, Granular Activated Carbon Systems. Project Engineer. Co-author for a U.S. EPA Guidance document to present estimates of the construction, operation, and maintenance costs associated with granular activated carbon water treatment. The project included assessing the economy of granular activated carbon (GAC) treatment with overall capacity varying between 0.1 and 200 MGD. The study addressed varying contactor configurations to develop representative costs through the development of detailed computer cost models that were verified with data from existing facilities.

U.S. EPA Guidance Document, Ozonation and Biologically Active Filtration. Project Engineer. Co-author for a U.S. EPA Guidance document to present estimates of the construction, operation and maintenance costs associated with drinking water ozonation and biologically active filtration. Developed a cost model to predict construction, operation, and maintenance costs for ozonation systems varying in treatment capacity between 0.1 and 200 MGD. Multiple configurations were considered for ozone generation and contacting and separate cost models were developed for each system. All developed costs were verified and calibrated using existing ozonation facilities currently in operation.

Citizens Utilities Company, Booster Station Construction Management, CA. Project Engineer. Provided construction management services for a new 6,000-gpm A-Parkway booster station for Citizens Utilities Company. The booster station promotes conjunctive use by allowing the Company to augment its groundwater supply with purchased water from the City of Sacramento.

Water System Master Plan, Citizens Utilities Company, CA. Project Engineer. Prepared a water system master plan for Citizens Utilities of California's Parkway system including system research and inventory, system mapping, hydraulic model development in H2ONet, population projections, and comprehensive capital improvement plan. Rapid decline in the water table underlying Parkway led to the recommendation of increased conjunctive use of surface water and associated infrastructure improvements.

Water Storage Tank Design and Construction Management, Citizens Utilities Company, CA. Project Engineer. Assisted in the design and construction management of two 1-mg water storage tanks for Citizens Utilities Company. Performed hydraulic modeling for tank performance, and conducted onsite construction inspection.

Wastewater and Recycled Water

Irvine Ranch Water District, IRWD Wastewater Treatment Facilities Expansion Master Plan, Irvine, CA. Project Engineer. Prepared a Master Plan to develop and implement proposed improvements to the Irvine Ranch Water District's Michelson Water Reclamation and the Los Alisos Water Reclamation Plants to accommodate growth in IRWD's service area through 2025. Analysis included evaluation of historical flows and loads, conveyance infrastructure and improvement alternatives, recycled water use alternatives, and improvements to preliminary, primary, secondary, and tertiary treatment facilities as well as in-plant and high service pumping stations.

City of Las Vegas Water Pollution Control Facility, Facility Plan Update, Las Vegas, NV. Project Engineer. Preparing Facility Plan update for the 91 mgd Water Pollution Control Facility. Alternatives being considered are Enhanced Biological Phosphorous Removal, Biological Nutrient Removal, and high-pressure membrane systems for nutrient and TDS removal.

Los Angeles County Sanitation District, Pomona Water Reclamation Plant Nitrification-Denitrification (NDN) Upgrades, Pomona, CA. Project Engineer. Provided preliminary and final design of NDN facilities using the Modified Ludzack-Ettinger (MLE) process. Biological process modeling was performed using BioWin. Improvements designed for activated sludge process included enhanced aeration systems, flow control, return activated sludge (RAS) pumping station and conveyance system, filter backwash pumping, conveyance, and equalization systems, and disinfection systems.

Los Angeles County Sanitation District, San Jose Creek Water Reclamation Plant NDN Upgrades, Los Angeles, CA. Project Engineer. Provided engineering design services to the County Sanitation Districts of Los Angeles County (LACSD) for preparation of a preliminary design report and final design documents to retrofit the 100 mgd San Jose Creek (SJC) WRP to achieve nitrification and denitrification. Responsible for RAS and WAS pumping, basin baffling, and ammonia storage and feed systems.

West Basin Municipal Water District, El Segundo Water Reclamation Plant Phase IV Expansion Design-Build, El Segundo, CA. Technical Advisor. Expansion of West Basin Municipal Water District's Water Recycling Plant in El Segundo, CA. The new facilities will increase the capacity of barrier water to 12.5 mgd and increase the capacity of Title 22 water to 40 mgd. The Barrier Water Treatment system includes cartridge filters, chemical addition, microfiltration, reverse osmosis, ultra violet irradiation, and product water pumping. The expansion of the Title 22 Treatment System includes conversion of an existing clarifier and existing filters, an additional 5 million gallon product storage tank and pump station, and modifications to the chemical disinfection system. New chemical facilities include a lime saturator hydrogen peroxide feed system. Project also includes upgrades of existing solids handling system including addition of new high rate clarifier for backwash water treatment, and upgrade of the existing equalization basins and plate-and-frame presses. The existing electrical supply, instrumentation and control system will also be upgraded.

WPCF Expansion BNR System Design, City of Las Vegas, NV. Project Engineer. Designed a 30 mgd biological nutrient removal (BNR) system for the City of Las Vegas, Nevada, including flow splitting, biological treatment systems including aeration and sludge processing, secondary clarification including RAS and WAS pumping stations, chemical storage and feed facilities, and emergency overflow facilities, and low service filter influent pumping. Improvements expanded the plant capacity to 91 mgd.

WPCF Trickling Filters Rehabilitation Design, City of Las Vegas, NV. Project Engineer. Designed rehabilitation of four trickling filters center columns for the City of Las Vegas' 66-MGD water pollution control facility. Rehabilitation included the replacement of existing filter mechanisms and repair of the concrete support structures. Dome covers were added for odor control.

Process Improvements Design, Oakdale WWTP, Oakdale, CA. Project Engineer. Designed process improvements for the Oakdale Wastewater Treatment Plant in Oakdale. Improvements included a new 12 MGD headworks facility, sludge storage tank modifications, a new 12,000 scfm blower building, new fine bubble diffuser aeration equipment, new paved sludge drying beds with decant pump station, and a new RAS/WAS pumping station. The headworks facility included a fine screen, vortex grit removal system, and flow split upstream of the aeration basins. To improve treatment performance and increase plant capacity, additional fine bubble diffuser assemblies were added to the existing aeration basins and the air header system was redesigned. To meet increased air demand, a new blower building with positive displacement blowers was added. A new high capacity RAS/WAS pumping station was added to improve clarifier performance and limit solids carryover. The existing sludge holding tank was retrofitted with a coarse bubble mixing system to maintain aerobic and well mixed conditions. Paved drying beds and decant pumping station were added for sludge drying.

Desert Water Agency, Palm Springs Wastewater Treatment Plant Environmental Site Assessment, Palm Springs, CA. Project Engineer. Conducted an audit of the Desert Water Agency's Palm Springs Wastewater Treatment Plant facility. Provided an assessment and record of known and potential environmental compliance issues, evaluated regulatory compliance status and recommended modifications to achieve regulatory compliance with current and foreseeable future rules and regulations, and assured compliance with the Department of Environmental Health and City Fire Department requirements.

Irvine Ranch Water District, IRWD Aeration and Sedimentation Basin Optimization, Irvine, CA. Project Engineer. Designed aeration system improvements including a new 500 HP Turbplex premium efficiency blower, air piping, and electrical/instrumentation improvements. Conducted detailed field analyses of the secondary clarifiers, then designed improvements and evaluated their performance by running a simulation model and performing dye testing. By adding a new influent baffle and relocating launders, the project increased the treatment capacity from 13 to 17 mgd.

Preliminary Wastewater Infrastructure Plan Development and Construction Cost Estimate, Near Merced, CA. Project Engineer. Developed a preliminary wastewater infrastructure plan and construction cost estimate for the proposed University Community near Merced, California. Based on proposed demographics and preliminary community layout, the collection system was designed and alternatives were developed and evaluated for wastewater treatment. Treatment alternatives included onsite treatment with effluent used for irrigation reuse, groundwater recharge, or habitat restoration and offsite regional treatment.

WWTP Facilities and Site Improvements Construction Coordination Services, City of Visalia, CA. Project Engineer. Provided construction coordination services for new facilities and site improvements for the City of Visalia, California, 55-MGD wastewater treatment plant. The headworks facility includes septage receiving and pretreatment, parshall flume flow measurement, climber type bar screens, and a full capacity influent pumping station using five dry pit submersible pumps. The chlorine feed and storage facility includes storage for twenty-two one-ton chlorine gas cylinders, leak detection and alarms, evaporation and feed equipment, and a chlorine gas scrubber.

Aliso Water Management Agency, Aeration System Retrofit, Coastal Wstewater Treatment Plant. Project Engineer. Prepared predesign and final design for an aeration system retrofit of the Aliso Water Management Agency's 7 MGD Coastal WWTP. The project replaced the surface aerators in the existing basins with a fine bubble diffused aeration system. Key components included process air balancing, blower sizing, configuration and control, hydraulic balancing, and incorporation with existing unit processes.

City of Corona, Joy Sewage Lift Station Replacement Design, Corona, CA. Project Engineer. Designed the replacement of the Joy Sewer Lift Station. The new lift station is approximately the same location as the previous dry well, which minimized design and construction costs associated with realignment of the old influent sewers. The site was then enclosed by a new block retaining wall and a wrought iron fence. Utilities were relocated during construction, which included cable television, street lighting, traffic signals, water, and telephone service.

City of San Clemente, Linda Lane and La Rambla Wastewater Pump Stations, San Clemente, CA. Staff Engineer. Designed replacements of the Linda Lane and La Rambla Sewage Pump Stations located adjacent to City of San Clemente beach at the base of coastal bluffs. The new pump stations are equipped with VFD controlled dry-pit submersible pumps and standby generators in a new above/below grade building with attached wet wells. Above grade facilities were designed to complement the Spanish influenced architecture of the area.

Professional Endeavors

Water Systems Consulting, Inc.
December 2007 to present

Peterson, Brustad and Pivetti, Inc.
December 2005 to November 2007

HDR Engineering, Inc.
1998 – 2005

Citizens Utilities
1997 - 1998