Experience Summary

Mr. Crites, Brown and Caldwell's Natural Systems Service Leader, has conducted numerous evaluations and designs of natural systems and constructed wetlands for water quality improvement and water reuse. He has managed a wide variety of projects including facility plans for wastewater treatment and biosolids management, constructed wetlands for pond upgrades, a recycled water assessment of groundwater impacts from emerging pollutants and a pilot groundwater recharge program. He is the author textbooks including Natural Wastewater Treatment Systems, Small and Decentralized Wastewater Management Systems, Natural Systems for Waste Management and Treatment, and Land Treatment of Municipal and Industrial Wastes. He was responsible for the planning and design of the award-winning Demonstration Constructed Wetlands for Sacramento Regional County Sanitation District. Ron was the recipient of the 2009 Water Environment Federation (WEF) Camp Medal for Applied Research in recognition of his 40-plus years of invaluable contributions in the areas of applied research, planning and designs employing green and sustainable technologies. His work has advanced the understanding and applications of land treatment, constructed wetlands and small-scale ecological treatment and reuse.

He has extensive experience in reuse and disposal of numerous types of industrial wastes including projects for vegetable and fruit processing, winery, brewery, meat processing and chemical wastewater. His expertise is in studies, designs, monitoring and operations advice for pretreatment, land application and reuse.

Assignment

Education

Engineer's Degree, Sanitary Engineering, Stanford University, 1970

M.S., Sanitary Engineering, Stanford University, 1968

B.S., Civil Engineering, California State University, Chico, 1967

Registration

Professional Civil Engineer No. 21532, California, 1972

Professional Engineer No. 13506, Oregon, 1987

Professional Engineer No. 7795, Hawaii, 1993

Experience

43 years (44 in Aug 2012)

Joined Firm

1997

Awards

2009 WEF Thomas R. Camp Medal for Basic Research Contributions to Wastewater

Relevant Expertise

- *Wetlands evaluation and design*
- *Wastewater reclamation and reuse*
- *Alternative wastewater and sludge treatment technologies*
- *Land application*
- *Regional Water Quality Control Board permitting*
- *Industrial wastewater*
- *Contributed to manuals of practice on constructed wetlands, natural systems, nutrient control, and land*

Constructed Wetlands

Natural Wastewater Treatment, City of Vernonia, Oregon

Technical Leader. Ron developed and refined an alternative to conventional treatment and disposal for this 0.4 mgd municipal wastewater discharge. The natural system option consists of a settling pond, a vegetated vertical flow constructed wetland and an intermittent sand filter to achieve Class A water quality.

EPA Focused Feasibility Study Review and Analysis, Los Angeles City Water and Power, California

Technical Leader. The purpose of this task is to provide an independent review and analysis of the EPA's November 2008 Focused Feasibility Study (FFS) for the North Hollywood Operable Unit (NHOU) in San Fernando Valley Area 1 Superfund Site. This FFS provides the EPA's proposed second interim remedy to remediate the impacts of the Honeywell and South Burbank Airport contamination plumes on LADWP's Rinaldi-Toluca, North Hollywood West and Whitnall Well Fields. Ron prepared an analysis of the use of constructed wetlands for brine management and for denitrification of high nitrate groundwater. (20340; Sept 2012 est; $2.6M)

Wetlands Design, W & H Pacific, City of Cle Elum, Washington

Project Manager. Ron conducted a feasibility study and design of a five-acre constructed wetlands for the interim upgrading of a secondary treatment system utilizing treatment ponds. He assessed the ability of the two ponds followed by a constructed wetland to meet 85 percent removal of BOD and TSS for the maximum month with a flow of 1.45 mgd. He prepared a planting plan for fall planting of bulrush. The wetlands have a synthetic liner and strategic open water areas to promote effluent dissolved oxygen and minimize effluent ammonia. The project included an operation and maintenance manual and startup operations advice. (1999; Construction 2000)

Wetlands Evaluation, City of Stockton, California
Project Manager. Ron provided technical assistance and wetlands evaluation for the 133-acre constructed wetlands for the City of Stockton. Technical issues included mitigation of mosquito propagation, improvement to the hydraulic capacity and vegetation management.

Echo Park Lake Wetlands Planning, City of Los Angeles, California
Technical Advisor. As part of the planning to improve water quality and mitigate stormwater impacts, Ron assisted in the planning for new constructed wetlands to reduce the nutrients in and being discharged to Echo Park Lake in Los Angeles. He provided advice on the design of the constructed wetlands for nutrient removal.

Republic Lake Area Wetlands System, Republic Services, Minnesota
Role. Ron is the technical reviewer for the vertical flow wetlands system for treatment of landfill leachate. The project involves the treatment of landfill leachate for ammonia and total nitrogen removal prior to discharge to the local sewers. (139833; July 2011 est; $94K}

Subsurface Wetlands Review, City of Springwater, New York
Technical Reviewer. Ron reviewed and provided recommendations for improved treatment performance to a subsurface flow constructed wetlands in upstate New York. Lack of oxygen transfer into the biologically active zone in the wetlands was found to be the major operational issue.

Vista Grande Stormwater Wetlands Evaluation, City of San Francisco, California
Technical Advisor. Ron provided technical review of conceptual alternatives for treatment and reuse of stormwater from the Vista Grande canal to restore water levels in Lake Merced.

Demonstration Wetlands, City of Salinas, California
Technical Leader. Ron developed the conceptual plan to convert failing percolation beds into constructed wetlands for polishing of aerated pond effluent from the Salinas Industrial Wastewater system.

Wetlands Feasibility Study, DCP Midstream, Hobbs, New Mexico
Technical Advisor. Ron provided technical guidance in a feasibility study of using a constructed wetland for management of a reverse osmosis (RO) reject stream. A variety of salt tolerant wetland plants were recommended.

Iowa and Minnesota Wetlands Manual, MSA Professional Services
Technical Reviewer. Ron provided review comments to the Guidance Manuals for constructed wetlands for both the State of Iowa and the State of Minnesota.

North Shore Wastewater Alternatives Study, City and County of Honolulu, Hawaii
Technical Leader. Ron advises the Honolulu team on the use of small and decentralized wastewater treatment. The North Shore of Oahu is served by decentralized wastewater systems. A public outreach program was conducted to determine the resident's interest in alternative technologies, which ranged from cluster systems to small constructed wetlands.

Treatment Wetlands, Broome County, New York
Technical Leader. The landfill leachate from Broome County's Landfill was considered for wetlands treatment. Ron conducted an evaluation of available leachate characterization data to identify leachate constituents that would be of significance with respect to likely discharge limits and wetlands treatment.

Bridlewood Winery Wetlands, Santa Ynez, California
Project Manager. A combination of treatment ponds and subsurface flow constructed wetlands was found to be cost-effective compared to a membrane bioreactor. Ron provided a review of the basis of design and the expected capital costs for the pond-wetlands system. He also managed the 60 percent design for aerated ponds and constructed wetlands treatment.

Constructed Wetlands Planning Analysis, Lacey, Olympia, Tumwater, Thurston County Wastewater Partnership (LOTT), Washington
Project Manager. Ron was responsible for the preparation of planning estimates of field area and costs for constructed wetlands to achieve secondary and tertiary effluent for 0.5, 1.0, 2.0 and 5.0 mgd flows. He

provided design and construction reviews for the polishing constructed wetlands at Martin Way. (1998; Construction 2004)

Wastewater Facilities Plan, City of Coburg, Oregon

Project Engineer. Ron evaluated a combination of an advanced facultative pond followed by a constructed wetland for treatment of municipal wastewater. The combined AFP/wetland was cost-effective compared to conventional biological treatment alternatives at the 0.38 mgd design flow. In predesign vertical flow constructed wetlands were inserted between the ponds and the FWS wetlands to improve nitrification and reduce the overall footprint.

Natural Reclamation System Evaluation and Progress Review, City of Salem, Oregon

Project Engineer. Ron prepared a report on the performance of four natural treatment systems being piloted by the City of Salem. He evaluated the operations and treatment performance of the overland flow, vertical flow wetlands, FWS wetlands and habitat wetlands. All four processes were evaluated for loading rate, application and drying cycle and removal of ammonia, phosphorus, solids, metals and organics. Temperature reductions were measured through all four processes.

Gresham Boeing Stormwater Wetlands Project, City of Gresham, Oregon

Technical Reviewer. Ron reviewed the concept of stormwater detention and treatment and the design of improvements for the wet ponds and constructed wetlands.

Redmond Stormwater Treatment, City of Redmond, Oregon

Technical Reviewer. Ron provided two alternatives for treatment of stormwater from a biosolids storage pad including intermittent sand filters and Reed beds.

Constructed Wetlands, Sacramento Regional County Sanitation District, California

Project Manager. Ron led the team that conducted the study and design of a one-mgd demonstration project for wastewater treatment using a 15-acre free water surface constructed wetlands including heavy metal removal modeling. Operations consulting included vegetation management, performance evaluations and mosquito management. Sampling included soils, groundwater, vegetation and profiles of water quality through the wetlands.

Wetlands Feasibility Study, Orange County, Bolsa Chica Channel, California

Project Manager. Ron prepared a feasibility study comparing the costs and treatment levels of free water surface wetlands to subsurface flow constructed wetlands. Urban runoff in the Orange County California channel is the source water for the treatment wetlands. Trace metals and pathogens were the constituents of concern for treatment of the urban runoff in Bolsa Chica Channel.

Stormwater Wetlands Planning, Wilora Lake, City of Charlotte, North Carolina

Technical Consultant. Ron conducted a site visit and prepared calculations for a stormwater treatment system involving a pond and constructed wetland. A 136-acre water shed in a residential area of Charlotte contributes urban stormwater to a shallow pond known as Wilora Lake. The project involved implementing best management practices for stormwater management and converting the pond into a constructed wetland.

Stormwater Wetlands Design, Flying J, Oak Grove, Kentucky

Technical Consultant. Ron supervised the design of a stormwater wetland to treat runoff from a truck stop. The wetland was designed to accept flow from a detention pond and discharge effluent to groundwater.

Analysis of Ponds and Wetlands in Facilities Plan, Earth Tech inc., Saipan, Northern Mariana Islands

Project Reviewer. Ron provided a review of a facilities plan for the Kagman area of Saipan with regard to treatment ponds and wetlands. Areas needed for aerated ponds, free water surface constructed wetlands and recirculating gravel filters were calculated and the technical report for the consultant was reviewed and edited.

Wastewater Master Plan, City of Petaluma, California

Project Engineer. Ron performed pond/constructed wetlands alternatives analysis as part of the wastewater master plan. He conducted an analysis of the use of oxidation ponds followed by constructed wetlands to achieve advanced secondary treatment prior to filtration and water reuse. The recommended alternative

includes advanced facultative ponds for primary treatment, oxidation ponds for secondary treatment and constructed wetlands for algae and metals removal from 6.7 mgd of municipal wastewater.

Wetlands Evaluation, City of Modesto, California
Project Manager. Ron evaluated the use of constructed wetlands to polish secondary effluent, reduce suspended solids in storage pond effluent, reduce metals concentrations and reuse effluent. A 150-acre site was evaluated and found to have the capacity to treat 10 mgd.

Ammonia Removal Using Constructed Wetlands, City of Los Angeles, California
Project Manager. Ron evaluated the costs and land area required for ammonia nitrogen removal using free water surface constructed wetlands. Reclamation plants caused eight-mgd and 20-mgd secondary effluents.

Lake Calavera Constructed Wetlands Evaluation, Carlsbad Municipal Water District, California
Project Manager. Ron prepared a report and exhibit map of a potential constructed wetlands that would remove nutrients from recycled water prior to storage in Lake Calavera. The report identified approximately 20 acres of potential area to treat one mgd of recycled water and to provide habitat enhancement, recreational and educational benefits. In follow-up work, Ron proposed constructed wetlands to treat stormwater runoff.

Wastewater Master Plan, City of Lodi, California
Task Manager. Ron analyzed options for wastewater treatment and reuse using constructed wetlands for a flow of 8.5 mgd. He evaluated a 130-acre wetland for nitrate and metals removal.

Constructed Wetlands Design Manual, U.S. EPA
Project Manager. Ron prepared portions of the 1996 Process Design Manual on Constructed Wetlands. He reviewed the entire manual and provided sections on Costs, Duckweed Systems and the Subsurface Flow Wetlands Case Study - ERG, Cambridge, Massachusetts.

Constructed Wetlands Feasibility Evaluation, City of Chico, California
Project Manager. Ron managed a feasibility study of nitrification and metals removal from secondary effluent for nine mgd using constructed wetlands and nitrifying rock filters.

Stormwater Wetlands Analysis, Confidential Client, Lynn, Massachusetts
Technical Advisor. Ron was responsible for the evaluation of the feasibility of constructed wetlands to treat stormwater from an industrial site for residual oil removal.

Wetlands Treatment of Leachate, Carter County Landfill, Elizabethton, Tennessee
Technical Advisor. Ron evaluated and designed a pre-treatment system to remove ammonia from landfill leachate. This project included initial testing and design services for ammonia pre-treatment at a municipal solid waste landfill near Johnson City, TN. The project consisted of treatability testing of the leachate followed by the design of a constructed vertical flow wetlands pre-treatment system to meet ammonia discharge limits. This project represents an innovative approach using constructed wetlands for ammonia removal from landfill leachate and involved multiple areas of expertise including solid waste, wastewater treatment and wetlands specialists.

Wetlands Treatment, City and County of Honolulu, Hawaii
Project Manager. Ron was the project manager for 50+ acre treatment and reuse wetlands including three alternative site evaluations in an EIS for Wahiawa, Oahu. Ron evaluated nitrogen and phosphorus removal for combined six mgd of wastewater from the City and Schofield Barracks.

Everglades Protection, South Florida Water Management District, Florida
Project Manager. Ron prepared a detailed review and evaluation of the conceptual design of the 35,000-acre constructed wetlands for phosphorus removal from agricultural runoff.

Constructed Wetlands Feasibility Evaluation, Napa Sanitation District, California
Project Manager. Ron was the project manager for a feasibility study comparing activated sludge treatment to combined pond/constructed wetlands alternatives for eight and 12 mgd of municipal wastewater.

Constructed Wetlands Feasibility Evaluation, City of Florence, Oregon
Technical Advisor. Ron was responsible for the evaluation of an alternative involving facultative ponds and constructed wetlands compared to activated sludge for a flow of 1.9 mgd.

Technology Evaluation, Living Technologies, Inc., Burlington, Vermont
Project Manager. Ron conducted cost comparisons of conventional technologies to the Living Machine technology and provided advice on permitting of the Living Machine for the Sonoma Brewery wastewater system.

U.S. EPA Technology Assessment, U.S. Environmental Protection Agency, Washington D.C.
Project Manager. Ron participated in an EPA-sponsored workshop in February 1996 in Phoenix, Arizona on the current state of technology for free water surface wetlands. He reviewed and edited the Technology Assessment Report.

Paradise Habitat Wetlands Design, Town of Paradise, California
Project Manager. Ron was responsible for the preliminary design of a 20-acre free water surface habitat wetlands for reuse of 0.9 mgd of tertiary effluent.

Constructed Wetlands Design, City of Mesquite, Nevada
Project Manager. Ron was the project manager for the design and construction services of a 0.6 mgd constructed wetlands with subsurface flow, a 0.8 mgd overland flow system and a rapid infiltration system.

Mesquite Facilities Plan, Clark County Sanitation District, Nevada
Project Manager. Ron supervised the preparation of a facilities plan that recommended an interim wastewater plan consisting of a 0.6 mgd constructed wetlands and, over the long term, the addition of 0.8 mgd of overland flow followed by rapid infiltration.

Wetlands Consultation, PG&E Properties, Davis, California
Project Manager. Ron provided advice and review of planning and design documents for the City of Davis' 400-acre habitat wetlands to be supplied with reclaimed water.

Wastewater Study, Town of Robbins, California
Project Manager. Ron supervised the study of alternatives for wastewater collection, treatment and disposal of domestic wastewater from the unsewered community of 65 homes with a constructed free water surface wetlands as the recommended alternative.

Wastewater Study, Paradise West, Paradise, California
Project Manager. Ron prepared a feasibility study of 0.06 mgd of septic tank effluent from a septic tank effluent pumping (STEP) system for treatment and reuse using subsurface flow constructed wetlands for treatment and golf course irrigation for effluent reuse.

Solar Aquatic System Evaluation, Ecological Engineering Associates, Harwich, Massachusetts
Project Manager. Ron prepared a technology evaluation report for septage treatment for an innovative system that combines solar aquatic treatment with constructed wetlands.

Hayward Marsh Ammonia Removal Study, Union Sanitary District, Hayward, California
Project Manager. Ron participated in the evaluation of alternatives for ammonia removal from three mgd of effluent from the Union Sanitary District that is applied to the Hayward marsh for effluent reuse.

Constructed Wetlands and Aquatic Plant Systems Design Manual, U.S. Environmental Protection Agency, Cincinnati, Ohio
Project Manager. Ron supervised preparation of the 1988 Design Manual for EPA on Constructed Wetlands and Aquatic Plant Systems for Municipal Wastewater Treatment.

Pelican Bay Project, California Department of Corrections, Del Norte County, California
Project Manager. Ron supervised preparation of a technical report and the design of land treatment by rapid infiltration and a constructed wetlands in Del Norte County for 0.75 mgd of wastewater.

U.S. Environmental Protection Agency Natural Systems Workshop, Qingdao, China
Project Manager. Ron prepared and conducted a workshop on constructed wetlands and aquatic treatment systems for Chinese engineers hosted by the Beijing Municipal Research Institute in June 1990.

Molokai Onsite Constructed Wetlands, Puu O Hoku Ranch, Molokai, Hawaii.
Project Manager. Ron designed an onsite constructed wetlands to treat and reuse septic tank effluent from a conference center. He added new septic tanks for kitchen wastewater pretreatment. Reuse consists of micro-jet irrigation of trees.

Petaluma Natural Systems, City of Petaluma, California
Project Manager. Ron directed an aquatic treatment system demonstration project comparing wastewater treatment in ponds containing three aquatic plant species.

Wastewater Recycling and Reuse

Satellite Recycled Water System Analysis, City of San Jose, California
Technical Leader. As part of a master plan for the San Jose/Santa Clara Wastewater Treatment Plant, Ron led an evaluation of the feasibility of developing a satellite scalping plant that would withdraw wastewater from the collection system, process the wastewater to obtain Title 22 tertiary disinfected recycled water and return solids and used wastewater to the collection system. Costs for 1, 5 and 10 mgd MBR facilities were estimated.

Water Recycling and Reuse, Treasure Island, San Francisco, California
Technical Adviser. Ron is providing advice on the use of recycled water for the redevelopment of Treasure Island. Reuse opportunities include toilet flushing, landscape irrigation, water supply for community gardens and maintenance of water levels in the stormwater wetlands system.

Recycled Water Irrigation, Honolulu Board of Water Supply, Oahu, Hawaii
Technical Director. Ron prepared literature review, research plan and field investigation for using recycled water for irrigation above a potable aquifer in central Oahu. He conducted public outreach and field demonstration studies. The field study involved lysimeters to sample vadose zone water beneath 12 field plots irrigated either with recycled water or control water. The study concluded that the soil will remove the organic constituents in recycled water to the level where they are statistically equal to the control groundwater.

Recycled Water Preliminary Design, Yokohl Ranch, Tulare County, California
Technical Adviser. Ron provided technical review of a development on 36,000 acres east of Exeter, California that involves three new golf courses and 10,000 residential units. Recycled water from the development will receive tertiary treatment and reuse for landscape irrigation. Storage during the wet weather months will be required for the wettest year in 100.

Olowalu Water Recycling Evaluation, Olowalu Town, LLC, Maui, Hawaii
Technical Adviser. Ron prepared an evaluation of water recycling technologies for a flow of 0.5 mgd. Decentralized options included recirculating gravel filters, biotextile filters and vertical flow wetlands. Centralized options included membrane bioreactors and vertical flow wetlands. Recycling options included landscape and greenbelt irrigation. Water resources included recycled water, groundwater and surface water, all of which were considered in integrated planning. Ron participated in a one week planning charrette conducted by DPZ.

Golf Course Study, Glenwild Golf Course, Park City, Utah
Technical Adviser. Ron evaluated the quality of secondary effluent and current irrigation water for the future irrigation of the golf course. The constituents of concern included sodium, total dissolved solids and alkalinity. He proposed a demonstration study to determine if irrigation with the effluent would have any adverse effects on the soils at the golf course.

Recycled Water Master Plan, City of Folsom, California
Technical Adviser. Ron prepared a technical memorandum on water recycling needs for the City of Folsom, who is committed to integrating recycled water into their future water supply for non-potable uses. This project involved evaluating the alternatives of obtaining recycled water from neighboring agencies or using a satellite

plant to reclaim wastewater for water recycling. Uses of recycled water include golf course irrigation, landscape irrigation and dual water supply systems.

Recycled Water Study, Rancho Victoria, El Dorado County, California

Project Manager. Ron prepared an analysis for a community wastewater collection system using septic tank effluent pumping followed by recirculating gravel filters, filtration and UV disinfection. Recycled water reuse would be for landscape irrigation. He compared MBRs, Advantex filters and recirculating gravel filters for secondary treatment of residential wastewater for 20 to 80 housing units. Cost estimates were conducted for 40 units using recirculating gravel filters.

Upcountry Effluent Reuse Study, East Bay Municipal Utility District and Amador Water Agency, Lake Camanche, California

Project Manager. Ron conducted a study of the wastewater treatment and water recycling options for three wastewater facilities at Lake Camanche. EBMUD facilities at Camanche South Shore and Camanche Area North Shore and Amador's Lake Camanche Village wastewater plant were analyzed for alternatives including spray irrigation, reuse wetlands and combinations of water reuse.

Kealakehe Reuse Study, County of Hawaii, Hawaii

Technical Advisor. Ron evaluated and predicted water demands for water reuse of R-1 water from the one-mgd Kealakehe Treatment Plant. He evaluated water quality and impacts on landscape from proposed irrigation.

Sacramento County 2020 Master Plan, Sacramento Regional County Sanitation District, California

Technical Reviewer. Ron provided review of the Water Recycling Technical Memorandum for the District including demand for landscape irrigation and constructed wetlands.

Reclamation Study, County of Sacramento, California

Project Manager. Ron was responsible for the investigation of the potential for reuse of 150 mgd of tertiary effluent from the Sacramento Regional County Sanitation District. Reuse options included agricultural and urban landscape irrigation, industrial reuse, groundwater recharge and wetlands applications.

Reclamation Design, Sacramento Regional County Sanitation District, California

Project Officer. Ron was responsible for the preliminary design of a five-mgd filtration plant for reclamation of municipal wastewater for irrigation of urban landscape, parks, playgrounds and golf courses.

Alternative Wastewater Project, Blakeley Swartz, Chico, California

Project Manager. Ron prepared a report on alternative wastewater treatment for 1.3 mgd of septic tank effluent using constructed wetlands for treatment followed by disinfection and landscape irrigation and wetlands enhancement for reuse.

Expert Witness Services, Napa Sanitation District, California

Project Manager. Ron provided expert witness testimony on behalf of the District for potential health effects of sprinkler irrigation of oxidation pond effluent.

Reuse System Design, County of San Luis Obispo, California

Project Manager. Ron was responsible for the design of a wastewater reclamation and reuse system consisting of aerated lagoons, clarification, chlorination and golf course irrigation for 0.12 mgd on 56 acres.

Reuse Feasibility Report, SERRA, Laguna, California

Technical Advisor. Ron advised on a feasibility study and site selection for a 2.4-mgd water reclamation system at Dana Point.

Hayes Valley Facilities Plan, Confidential Client, Morgan Hill, California

Technical Advisor. Ron supervised the preparation of a facilities plan for a 4.3-mgd wastewater reclamation and reuse system for Morgan Hill and the preparation of an EIR.

Stonehurst Reuse Project, Security Owners Corporation, Martinez, California
Technical Advisor. Ron supervised the design of a STEP system and recirculating sand filter with ultraviolet disinfection for 14,000 gpd including subsurface drip irrigation of landscape. He prepared a monitoring program for reclaimed water and groundwater.

Lumberjack Reuse Project, Lumberjack, Redding, California
Project Manager. Ron supervised the design of an intermittent sand filter followed by disinfection, storage and landscape irrigation of reclaimed domestic wastewater.

Land Treatment

Soil Aquifer Treatment Evaluation, Teichert Inc., Truckee, California
Project Officer. Ron was responsible for the evaluation of technical options to mine below groundwater without impacting the Tahoe-Truckee Sanitation Agency's soil aquifer treatment (SAT) system. He provided technical basis for SAT system removal of nitrogen, phosphorus and fecal coliforms.

BOD Land Treatment Rate Study, California State University, Fresno Foundation, California
Project Officer. Ron provided consultation to the Water Institute of CSU Fresno on a biochemical oxygen demand (BOD) loading rate study. An EPA grant of $25,000 and $10,000 from SK Foods was used to fund an investigation of the different BOD loading rates surface irrigation of tomato process water. Ron used suction lysimeters to gather vadose water samples and compare percolate water from varying loading rates.

Land Treatment Technology Update, U.S. Environmental Protection Agency
Project Manager. Ron is the principal author of a process technology update issued in 2006, including slow rate, soil aquifer treatment and overland flow land treatment. Additional subjects included phytoremediation, phosphorus retention, biochemical oxygen demand loading rates and nitrogen removal with organic nitrogen applications.

Soil Aquifer Treatment, Honolulu Board of Water Supply, Oahu, Hawaii
Technical Director. Ron directed the development of a research plan to test the ability of soils in Central Oahu to remove trace organics and endocrine disrupters from recycled municipal effluent used for landscape irrigation. Research was conducted that tested water quality in the vadose zone beneath test plots and found that the control and recycled water plots were statistically equal for organic constituents of concern.

Evaluation of Sprinkler Irrigation, Dickson County, Tennessee
Technical Reviewer. Ron provided technical review for the Nashville office staff in conducting a site evaluation study of land treatment sites. Site selection factors were used to rank alternative sites for sprinkler irrigation of secondary effluent in Dickson County.

Land Treatment Evaluation, City of Modesto, California
Project Manager. The City of Modesto uses 2,500 acres of farmland for treatment and reuse of municipal and food processing wastewater. Ron evaluated different soil types for ability to treat higher BOD loads than the average of 150 lb/acre/day.

Land Treatment Facilities Plan, City of Lodi, California
Project Manager. Ron provided review and evaluation of land treatment expansion for the City of Lodi's facilities plan.

Overland Flow System Design, Town of Paradise, California
Project Manager. Ron supervised the preliminary design of 0.9 mgd overland flow system for treatment of primary effluent including ammonia removal.

Overland Flow System Design, City of Mesquite, Nevada
Project Manager. Ron managed the design of a 0.8 mgd overland flow system for treatment of aerated lagoon effluent followed by rapid infiltration land treatment.

Camp Pendleton Rapid Infiltration, U.S. Navy, Camp Pendleton, California
Technical Advisor. Ron supervised the concept study of developing 100 acres of new rapid infiltration basins for secondary effluent treatment and disposal.

Falmouth Rapid Infiltration, Town of Falmouth, Massachusetts
Technical Advisor. Ron reviewed the basis of design and construction of a 0.55 mgd rapid infiltration system using aerated lagoon effluent.

Modesto Irrigation Study, City of Modesto, California
Project Manager. Ron supervised Phase 1 and 2 studies and reports on increasing the allowable BOD loadings on the City's wastewater irrigation site.

Yarmouth Septage Treatment, Town of Yarmouth, Massachusetts
Project Manager. Ron consulted on a pilot project for land treatment using sprinkler irrigation of Reed canary grass for treated septage. He supervised the design of a linear spray irrigation system.

EPA Land Treatment Workshop, U.S. Environmental Protection Agency, Beijing, China
Project Manager. Ron prepared and conducted a workshop on rapid infiltration and overland flow for a group of Chinese engineers and scientists at the Beijing Municipal Research Institute in August 1986.

Vernon Forest Irrigation, City of Vernon, British Columbia
Project Manager. Ron studied the feasibility of converting an agricultural irrigation system using secondary effluent into a forest irrigation system.

Spray Irrigation Design, Exxon, Clinton, New Jersey
Technical Advisor. Ron supervised the design of a 50-acre sprinkler irrigation system for domestic and industrial wastewater treatment.

Land Treatment Design Manual, U.S. Environmental Protection Agency
Project Manager. Ron served as principal author of the U.S. EPA Process Design Manual for Land Treatment of Municipal Wastewater published in October 1981. He also directed the work of six subcontractors on the manual.

Rapid Infiltration Design, Alberta Environment, Red Deer, Alberta
Project Manager. Ron participated in the preparation of the Rapid Infiltration Design Manual and reviewed concept plans for a rapid infiltration demonstration project.

Sprinkler Irrigation System, City of Petaluma, California
Project Manager. Ron supervised the design of a 550-acre sprinkler irrigation reclamation system using solid set and traveling gun sprinklers. Construction services, operating and maintenance manual preparation, and start-up advice were also provided.

Facilities Plan, City of Darlington, South Carolina
Project Manager. Ron developed a facilities plan and provided design advice for a 1.6-mgd rapid infiltration land treatment system.

Chino Basin Trace Organics, Chino Basin Municipal Water District, California
Project Manager. Ron conducted a literature survey of removal of trace organic compounds from municipal wastewater by rapid infiltration. The survey was the first phase of a pilot study of groundwater recharge.

EPA Rapid Infiltration Study, U.S. Environmental Protection Agency, Hollister, California
Project Manager. Ron assessed the long-term effects on soils and groundwater of applying domestic wastewater to the land using
rapid infiltration.

Salinas-Monterey Bay Study, U.S. Army Corps of Engineers, California
Project Engineer. Ron analyzed the technical feasibility of land application and reuse of 22 mgd of wastewater including site selection and evaluation.

Fort Meade Wastewater Project, U.S. Army Corps of Engineers, Maryland
Project Manager. Ron designed a 4.6-mgd land treatment system employing overland flow treatment followed by rapid infiltration.

EPA Report to Congress, U.S. Environmental Protection Agency, Washington D.C.
Project Manager. Ron prepared report to Congress on the beneficial use of wastewater and sludge.

Land Treatment Evaluation, County of Muskegon, Michigan
Project Manager. Ron assessed the phosphorus removal capacity of the slow rate land treatment system.

EPA Manual on Land Treatment, U.S. Environmental Protection Agency and U.S. Army Corps of Engineers, Washington D.C.
Project Manager. Ron prepared the 1977 Process Design Manual on Land Treatment of Municipal Wastewater.

EPA Cost Report, U.S. Environmental Protection Agency, Washington D.C.
Project Engineer. Ron prepared the original and updated versions of the EPA report on Costs of Land Treatment Systems.

Decentralized Wastewater Treatment

North Shore Wastewater Alternatives Study, City and County of Honolulu, Hawaii
Technical Leader. Ron presented an analysis of decentralized alternatives to the community-wide working group in Haleiwa, Hawaii. He prepared a report section on the use of Onsite Management Districts and served as the technical reviewer of the facilities planning report.

Cross Creek Malibu, Crossroads LLC, Malibu, California
Project Manager. Ron was the project manager for a decentralized wastewater study and design in the Town of Malibu. The development of a commercial site in Malibu consists of a Whole Foods Market, a restaurant and commercial shops. The wastewater will be collected by separating graywater from blackwater. The graywater will be treated through a septic tank followed by an Advantex biotextile filter and pressure-dosed leachfield. The blackwater will be treated in a membrane bioreactor followed by ultraviolet light disinfection and drip irrigation.

Wastewater System Design Recommendations and Plans Review, Shandon and Sunbeam Rest Stops, California Department of Transportation (Caltrans), San Luis Obispo and Imperial Counties, California
Technical Advisor. Two Caltrans rest-stops served by conventional decentralized wastewater systems are being upgraded using recirculating gravel filters followed by subsurface flow constructed wetlands. Ron conducted design reviews and provided comments on the wood-chip media used to support denitrification to achieve a low nitrate effluent. (2008; Construction anticipated 2009)

Decentralized Systems Barriers, Water Environment Research Foundation (WERF), National Study
Technical Adviser. Ron participated in a WERF study that issued a report on the barriers to the use of decentralized wastewater systems and the solutions to overcoming many of those barriers. Interviews, case studies and literature reviews are used to illustrate methods that have been used to overcome barriers to the use of decentralized wastewater systems.

Conversion of Onsite Systems, Hawaii Electric Company, Hilo, Hawaii
Technical Adviser. Ron provided a review of existing onsite systems for commercial establishments with flows exceeding those of single domestic systems. These larger flow systems are being required to be upgraded. Cesspools for Hawaii Electric are being upgraded to convert to septic tanks followed by effluent screens and either leachfields or drip irrigation systems.

Recycled Water Study, Rancho Victoria, El Dorado County, California
Project Manager. Ron prepared an analysis for a community wastewater collection system using septic tank effluent pumping followed by recirculating gravel filters, filtration and UV disinfection. He compared recycled

water reuse with the alternative of a community leachfield and evaluated the impact of California's AB 885 rules on the future rules for El Dorado County. Ron compared MBRs, Advantex filters and recirculating gravel filters for secondary treatment of residential wastewater for 20 to 80 housing units.

Kaloko Onsite Nitrogen Removal Analysis, Wilson Okamoto, Kona, Hawaii.

Project Manager. Ron prepared an analysis of the appropriate onsite pretreatment to remove 92 percent of the influent nitrogen from wastewater generated by employees at small commercial sites. Flows of 1,000 gpd to 5,000 gpd were analyzed and a combination of Advantex filters followed by subsurface constructed wetlands was selected.

Evaluation of Alternative Advanced Wastewater Treatment Systems, Malibu Trancas, Malibu, California

Project Manager. Ron compared the cost proposals and the advantages and disadvantages of two advanced treatment systems. The systems were a membrane bioreactor (MBR) with ultraviolet disinfection and an Advantex bioreactor with filtration and ultraviolet disinfection.

Upgrading of Onsite System, Amador County, California

Project Manager. Ron evaluated a residential unit with an intermittent sand filter and a pressure-dosed soil dispersal system for deficiencies in design and construction. A list of improvements was made to overcome County concerns about high groundwater.

Helms Housing Wastewater Treatment Improvements and Leachfield Design, Pacific Gas & Electric Company, Fresno, California

Project Manager. Ron assessed and made improvement recommendations for 0.01 mgd wastewater treatment and disposal system consisting of two septic tanks, three leachfields, a leachfield control building, four pumping wells and two monitoring wells. He identified the deficiencies of the current system and designed a raised-bed bottomless intermittent sand filter (ISF) system to treat the effluent and provide more than five feet of separation to high groundwater.

Molokai Onsite Constructed Wetlands, Puu O Hoku Ranch, Molokai, Hawaii.

Project Manager. Ron designed an onsite constructed wetlands to treat and reuse septic tank effluent from a conference center. He added new septic tanks for kitchen wastewater pretreatment. Reuse consists of micro-jet irrigation of trees.

Marble Valley Onsite Review, Coker Ewing, El Dorado County, California

Technical Advisor. Ron supervised review of development plans for onsite disposal of individual household wastewater from a proposed 380 residential units on a 2,300 acre development in El Dorado County for EIP Associates. Cumulative impacts of nitrogen loading were also evaluated.

Gauer Onsite Systems, Chevron, Healdsburg, California

Technical Advisor. Ron evaluated alternatives for 50 to 55 onsite systems on shallow, rocky soils including intermittent sand filters, mounds and pressure dosed shallow soil absorption systems.

Los Osos Onsite Evaluation, County of San Luis Obispo, Los Osos, California

Project Manager. Ron was responsible for the assessment of costs, performance and feasibility of various onsite treatment technologies for nitrogen removal including sand filters, ion exchange (zeolite), RUCK systems, constructed wetlands, mounds, evapotranspiration and septic tank, shallow drainfield systems.

Wastewater Facilities Design, Town of Paradise, California

Project Manager. Ron was the project manager for the preliminary design of facilities for collection, treatment and reuse of 1.8 mgd of municipal wastewater including development of the largest onsite wastewater management zone in California for 26,000 people.

Wastewater Treatment and Water Conservation Study, Tenaya Lodge, Fish Camp, California

Project Manager. Ron evaluated alternatives for water conservation and diversion of wastewater from the sequencing batch reactor to the onsite leachfield. Alternatives for expanding the leachfield were evaluated.

Sand Filter Design, Paradise Unified School District, Paradise, California
Project Manager. Ron designed a recirculating sand filter for treatment of septic tank effluent and a pressure distribution system for the treated effluent into two drainfields.

Onsite Manual, Nevada Division of Water Planning, Carson City, Nevada
Project Manager. Ron supervised preparation of an onsite wastewater treatment manual including alternative systems.

Wastewater Collection and Treatment

Gridley Water and Sewer Design, Butte County Housing Authority, California
Project Manager. The project involves improvements to the local water and sewer system for a rural farming housing authority in Butte County. The aging infrastructure needs to be replaced for the water supply and a new well developed that is free of manganese. Ron is managing permitting of the new well, the preliminary design report for waste and sewer improvements and construction cost estimates. (30116; Dec 2011 est; $190K)

Camanche Area North Shore Groundwater Impact Evaluation, East Bay Municipal Utility District, Oakland, California
Project Manager. Ron conducted an evaluation of the best practicable treatment and control (BPTC) methods to minimize groundwater degradation from a six-pond treatment system and a 5-acre sprinkler irrigation field. The evaluation identified the constituents of concern, the sources, impacts of treatment and potential methods of control.

San Francisco Sewer Master Plan, San Francisco Public Utilities Commission, San Francisco, California
Technical Leader. Ron prepared an analysis of the use of green technology as part of the master plan for wastewater treatment. Green technologies included constructed wetlands, biotextile filters, the Living Machine, tidal wetlands and recirculating gravel filters. Sustainable small-scale demonstration opportunities were identified for low impact development (LID) and constructed wetlands for combined sewer overflows (CSO).

Process Consulting, City of Santa Rosa, California
Project Manager. Ron managed the process review of an activated sludge system for Santa Rosa. The review includes operation of secondary clarifiers, biological nutrient removal in the anoxic zone of the activated sludge process and other operational issues. (SID 6372)

Aerated Ponds Evaluation, Sea Ranch, California
Technical Leader. Ron conducted an inspection and performance review of two aerated pond systems at Sea Ranch. The Central and Northern wastewater systems consist of aerated ponds, pressure media filters, storage ponds and sprinkler irrigation. The control of algae was an issue with both systems and recommendations were made to minimize algae in the pond effluents.

Technology Review, City of Dixon, California
Project Manager. Ron led a team that analyzed options for wastewater treatment and reuse using aerated ponds and infiltration basins for a flow of 2.0 mgd. The issues for the City of Dixon include minimizing salinity in the treated effluent, alternative methods of reducing total dissolved solids in the water supply, antidegradation analysis of groundwater and best practicable treatment and control. A public presentation was made to the City Council and the interested public.

Kealakehe Wastewater Treatment Study, County of Hawaii, Hawaii
Technical Advisor. The current aerated pond system at Kealakehe was evaluated for biological treatment capacity and the adequacy of the aeration system. Ron prepared a technical memorandum evaluating alternative technologies for liquid treatment and options for biosolids removal and management.

Algae Control in Napa Ponds, Napa Sanitation District, Napa, California
Technical Leader. Ron conducted an evaluation of methods to minimize algae in the effluent from the 4-pond treatment system. The evaluation of both constructed wetlands and floating covers was conducted at the 12 and 16 mgd flows and considered costs, reliability and impact on storage.

Honokaa Wastewater Feasibility Study, County of Hawaii, Hawaii
Technical Advisor. Ron led an evaluation of the existing 50,000 gal/d of flow in a two cell non-aerated pond system. The short-term solution was adding baffles to increase the effective number of cells to four and deepen the ponds followed by adding surface aerators to increase the treatment capacity to 200,000 gal/d. A floating cover was added to the last cell of the ponds to suppress algae growth.

Decentralized Analysis, University of California Merced, California
Technical Adviser. Ron conducted an analysis of cluster treatment and reuse systems versus collection and piping to the City of Merced for the University community housing project.

Screening of Feasible Technologies, San Francisco Public Utilities Commission, California
Project Manager. Ron conducted an analysis for the Bayside of San Francisco of alternative stormwater, wastewater, onsite and sludge technologies. He participated in the public information and involvement process.

Feasibility Study, City of Canyonville, Oregon
Technical Advisor. Ron prepared a report on the technical and economic feasibility of using a deep primary pond followed by a constructed wetlands for advanced secondary treatment with summertime irrigation and wintertime discharge for a flow of 0.7 mgd.

Community of Haliimaile Pond Assessment, Maui Pineapple Company, Maui, Hawaii
Project Manager. Ron conducted an evaluation of the performance of an aerobic treatment pond for municipal wastewater treatment. He prepared a report on the capacity of the pond system including upgrading and effluent disposal.

Spalding Tract Feasibility Study, Spalding Community Services District, California
Project Manager. Ron supervised the evaluation of alternatives for collection, treatment and reuse disposal for the unsewered community on the shores of Eagle Lake, California, including STEP, STEG and vacuum sewers. One recommended alternative was a STEP collection followed by evaporation ponds.

Preliminary Design, Town of Paradise, California
Project Manager. Ron supervised preliminary design of a combined STEP gravity collection system for 0.9 mgd of commercial and residential wastewater.

Sewer Feasibility Study, County of Amador, Fiddletown, California
Project Manager. Ron managed the feasibility study of sewering the community of Fiddletown in Amador County, California. A recommended alternative was a STEP collection system for 65 connections. The grant application was made to RECD.

Coalinga EIR, California Department of Corrections, Coalinga, California
Project Manager. Ron supervised the preparation of technical reports and EIR for a 0.8-mgd wastewater treatment using aerated ponds and irrigation system for the new Coalinga Prison.

East Stockton Project, County of San Joaquin, California
Project Manager. Ron prepared a documentation report on health hazards for the unsewered East Stockton, California, service area.

Lake of the Pines Treatment Facility Design, County of Nevada, California
Project Manager. Ron designed an upgrade for a wastewater treatment facility in Nevada County, California. Upgrade included seven acres of spray irrigation of trees and grassland, the addition of coagulation, flocculation and filtration facilities and effluent storage reservoirs for 0.6 mgd of municipal wastewater.

Groundwater Monitoring and Analysis

Groundwater and Surface Water Monitoring Report, East Bay Municipal Utilities District, California
Project Manager. BC is preparing monitoring reports based on field data and sample collection and laboratory analyses to maintain compliance with Regional Water Quality Control Board permits. Ron managed the three year program for the Lake Camanche and Pardee Reservoir facilities. In addition, Ron led the analysis of Best Practicable Treatment and Control for the Camanche Area North Shore ponds and sprinkler irrigation system. [11426; May 2012 est; $240K]

Dixon Quarterly Report, Campbell Soup Supply Co, LLC, Dixon, California
Project Manager. Ron managed the preparation of monthly, quarterly and annual reports to the Regional Water Board for the Dixon land application system monitoring and reporting program. The work included siting and developing three new monitoring wells, assessing the groundwater quality and developing statistical evaluations of the trends in water quality. (26876; Mar 2012 est; $155K)

Biosolids Management

Integrated Algal Bio-Reactor Design, Confidential Client, California
Task Leader. BC prepared plans, specs and cost estimates for 300-acre algae production pond system and harvesting system for a biofuels project. Ron prepared a preliminary design of solids dewatering and nutrient recovery from the algae after biofuels production. (26578; Feb 2011; $2M)

Biosolids Dewatering Evaluation, City of Santa Rosa, California
Project Manager. Ron managed the evaluation of the current dewatering system at the Laguna Subregional Plant. Centrifuge dewatering was compared to belt filter press dewatering based on reliability and performance prior to composting or land application.

Biosolids Master Plan, City of Santa Rosa, California
Project Manager. Ron prepared a biosolids management program review and update to the 1991 plan in 2002-2003. Improvements included anaerobic digestion enhancement, co-thickening of primary and waste activated sludge, centrifuge dewatering, agitated bin composting enhancements and removal of bottlenecks to more complete use of the land application system.

Biosolids Manual of Good Practice on Land Application, California Water Environment Association
Project Manager. Ron prepared two chapters for the state-wide biosolids land application manual of good practice.

Master Plan for Biosolids Management, Sacramento Regional County Sanitation District, California
Project Manager. Ron provided a biosolids management plan that stressed flexibility in reacting to changing regulations and market trends as the District considered options ranging from dedicated land application to agronomic reuse. A combination of lined dedicated land disposal and privatized biosolids reuse was selected.

Compost Marketing, City of Santa Rosa, California
Project Manager. Ron supervised the preparation of a compost marketing survey to determine the use of compost-type products.

Biosolids Land Application Program, City of Santa Rosa, California
Project Manager. Ron was responsible for the development of land application program for dewatered biosolids on 1,200 acres of agricultural land in Santa Rosa.

Biosolids Management Master Plan, City of San Diego, California
Project Manager. Ron prepared a biosolids master plan for the City of San Diego. Options studied for 108 tons/day of digested biosolids included composting, dedicated land disposal, landfill and agricultural land application.

Waste Discharge Report, City of San Diego, California
Project Manager. Ron was the project manager for the beneficial use of dried biosolids at rates of 95 to 133 tons/acre on a sod farm.

San Diego Compost Program, City of San Diego, California
Project Manager. Ron supervised preparation of compost marketing program in conjunction with the pilot 10 ton/day composting project.

Waste Discharge Report, Bio Gro, Antelope Valley, Los Angeles County, California
Project Manager. Ron prepared report of waste discharge for land application of municipal biosolids from Los Angeles, California.

Value Engineering and Planning

Value Engineering, City of Davis, California
Project Manager. Ron managed and participated in a 50-percent design for expanding the five-mgd advanced secondary treatment plant to 7.5 mgd was value engineered. The ponds, overland flow and Lemna system were critiqued and alternative distribution systems were proposed.

Value Planning, City of Pacifica, California
Project Manager. Ron was responsible for full value planning review of Facilities Plan and site selection for a four-mgd wastewater treatment and water reclamation system including water reuse for wetlands restoration.

Tennessee Technological University Research, U.S. Environmental Protection Agency, Cincinnati, Ohio
Project Manager. Ron managed value engineering of the constructed wetlands research project treating primary effluent in a subsurface flow constructed wetlands.

Harwich Solar Aquatic Septage Treatment, Ecological Engineering Associates, Marion, Massachusetts
Project Manager. Ron managed value engineering of a demonstration project treating 3,000 gpd of septage from the Town of Harwich, Massachusetts using an aerated aquatic treatment system followed by constructed wetlands.

Environmental Impact Reports

Hayes Valley Facilities Plan and Environmental Impact Report (EIR), Confidential client, Morgan Hill, California
Project Manager. Ron supervised the preparation of a facilities plan and EIR for a water reclamation system for a new development in Morgan Hill.

Lake of the Pines Environmental Impact Report (EIR), County of Nevada, California
Technical Advisor. Ron prepared an EIR for the wastewater treatment, reuse and surface water discharge for the community of Lake of the Pines in Nevada County, California.

Environmental Impact Reports (EIR), California Department of Corrections, Coalinga and Susanville, California
Technical Advisor. Ron supervised the preparation of an EIR for water quality and wastewater treatment and disposal for a new state prison in Coalinga and an expanded prison in Susanville, California.

Food Processing

Report of Waste Discharge, Saticoy Foods, Santa Paula, California
Project Manager. Ron managed the preparation of a report of waste discharge for the land application system treating pepper processing wastewater. The report justified the land application practice as meeting the antidegradation requirements with total dissolved solids being lower in concentration downgradient of the sprinkler application fields than in the upgradient (background) groundwater.

Lemoore Monitoring and Report, Olam Tomato Processors, California
Senior Reviewer. Ron is the Client Service Manager and senior reviewer for this 655 acre land application site. Ron provided advice on alternative sites for land application and permitted a 13-acre site for land application of biosolids from the aerated pond. (26879; Aug 2011 est; $167K)

Campbell Soup Septic/Leachfield, Campbell Soup Supply Co, LLC, Dixon, California
Project Manager. This is a Design-Build project to complete the design and construction of a septic/leachfield system. Ron managed the design of a new septic tank and pressure-dosed leachfield for 3,000 gpd of domestic wastewater. Solano County permits and approvals were acquired and decommissioning and closure plans were prepared for the Regional Water Board. (26723; July 2011 est; $68K)

Boswell Corcoran Advice, J.G. Boswell Company, Corcoran, California
Project Manager. Ron was retained by J.G. Boswell to review their new tomato processing cannery WDRs. The actual flows have exceeded the design and permitted values. Ron advised Boswell on how to correct the situation and keep the system operational. (SID 9537)

Environmental Compliance, Patterson Vegetable Company, Patterson, California
Project Manager. Ron provided services related to water supply monitoring and wastewater system monitoring. Standard operating procedures were supplied for each of these areas. (SID 20085)

Well Abandonment, Harter Packing Co., Yuba City, California
Project Manager. Ron managed the well abandonment of eight monitoring wells around the former Harter Packing operation. A work plan was prepared for the County of Sutter and the Regional Board and the well abandonment process was completed with a summary report to the Regional Board.(SID 23550)

Manual of Good Practice for Land Application of Food Processing/Rinse Water, California League of Food Processors, Sacramento, California
Project Manager. Ron managed the development of a manual of good practice for land application of food processing/rinse water in 2007. He provided guidelines for design and monitoring of land application systems. He presented the new manual to food processors and regulators in a workshop.

Campbell Soup Dixon RWD, Campbell Soup Supply Company, Dixon, California
Project Manager. Ron managed the report of waste discharge to add a vegetable processing line to the tomato processing operation. The RWD expanded the land application area from 555 acres to 606 acres and the operating season from 90 to 140 days. Tailwater control over the surface irrigation system was improved to minimize storm runoff in the fall.

SK Lemoore RWD, SK Foods, Lemoore, California
Project Manager. Ron evaluated a new 2,600 land application site and obtained a permit for flows up to 4.5 mgd of tomato wastewater. Site evaluation included soil sampling analysis and interpretation, hydropunch sampling of groundwater and a network of monitoring wells.

SK Lemoore Ponds, SK Foods, Lemoore, California
Project Manager. Ron led the design of an emergency storage pond conversion to provide settling of grit from the tomato process water and equalization storage prior to pumping effluent to the land application site. Pretreatment for solids reduction improved the water quality in the processing.

Rio Pluma, Stapleton-Spence, Gridley, California
Project Manager. Process wastewater from the processing of prunes and other juices is treated in an aerated pond and discharged to the City of Gridley's sewer system. The aerated pond system produces an excess of suspended solids, so the solids are removed by flotation. Ron led an investigation of alternatives for beneficial use of the prune solids and biosolids from the aerated pond.

Del Monte Land Treatment, Del Monte, Kingsburg, California
Technical Leader. The Regional Water Board issued a notice of violation to the Kingsburg land application site for groundwater degradation. Ron directed a revised monitoring well network and developed a BOD loading rate study designed to evaluate sprinkler application at different BOD loading rates. A network of lysimeters

was designed along with oxygen monitoring over a two year period. The results showed positive dissolved oxygen in the soil profile, which validated the model.

Relocation of Land Application Facilities, Colusa County Canning Company, Williams, California.

Project Manager. Ron prepared a report of waste discharge for the treatment of 4.0 mgd of tomato canning wastewater on more than 800 acres of land. A monitoring well installation plan was prepared, accepted by Regional Board staff and implemented. A revised monitoring and reporting program was developed that covered monitoring of the quality of the effluent, soil and groundwater. A cropping and irrigation management plan was also prepared. New Waste Discharge Requirements were received and implemented in 2006.

Evaluation of Modesto's Land Application Ranch, Manufacturer's Council of the Central Valley (MCCV), Modesto, California

Project Manager. Ron managed an analysis of the existing loading rates, soil conditions and groundwater conditions for the 2,530-acre City of Modesto land application system. The system is used during the peak canning season for direct land application of 20 mgd of food processing flow from the largest five industrial dischargers in the City of Modesto. Optimization opportunities for the system were proposed including conversion to sprinkler irrigation from surface irrigation.

Report of Waste Discharge, Prima Bella, Tracy, California

Project Manager. Ron managed the evaluation of a fresh corn processor wastewater system with land application near Tracy, California. An aerated treatment pond was proposed along with a winter storage pond. A report of waste discharge was prepared along with a CEQA document to allow adoption of waste discharge requirements.

Advice on Land Application, Patterson Vegetable Company, Patterson, California

Project Manager. Ron evaluated the land application system operated by Patterson Vegetable Company to determine if the current land application area was adequate or excessive for treatment and reuse. The 2.5 mgd system operates with two aerated ponds in series, a rapid infiltration system, a dedicated sprinkler irrigation system and a flood irrigation system that uses a combination or process water and canal water for alfalfa irrigation.

Report of Waste Discharge, Confidential Client and Location

Project Manager. Ron proposed a 40-acre expansion to an existing sprinkler irrigation land application site to the Regional Board. A best practicable treatment and control analysis was conducted of the constituents of concern in the applied wastewater. Two new monitoring wells were approved by the Regional Board and installed.

Site Remediation and Closure Plan, Harter Packing Company, Yuba City, California.

Project Manager. Ron managed the evaluation of alternatives to determine the appropriate and cost-effective approach to closure of a land application site. The recommended approach included a combination of source control, capping, phytoremediation and groundwater attenuation. No offsite wells were required and one new upgradient well was recommended and implemented.

Pond Treatment Improvements and Waste Minimization, G.L. Mezzetta, American Canyon, California.

Project Manager. Ron led the team that evaluated an existing aerated pond system for treatment performance and excess effluent suspended solids. The problem of excess sludge accumulation was determined and a sludge removal project was implemented. Interim measures for improvement included recycle of pond effluent, a rental of a dissolved air flotation unit, and relocation of the surface aerators. A waste minimization review was conducted and water conservation measures were recommended along with improved dry solids removal and training of sanitation crews.

Report of Waste Discharge for Land Application Facilities, Culinary Farms, Suisun City, California.

Project Manager. Ron prepared a report of waste discharge for the management of 4,000 gpd of tomato processing wastewater on 1.5 acres of land. An operations plan was submitted to the Regional Board staff. A revised monitoring and reporting program was developed that covered only annual flow monitoring of the effluent.

Pretreatment Improvements for Tomato Processing Wastewater, Escalon Premier Brands, Escalon, California.
Technical Advisor. Ron prepared an evaluation for Escalon Premier Brands of their process wastewater system of aerated treatment ponds operated by the City of Escalon. Increased production has led to a need to reduce both suspended solids and BOD. A dissolved air flotation unit was designed and installed for the 2004 processing season. For the 2005 season a pure oxygen aeration system has been selected to enhance the aeration capacity of the primary treatment ponds.

Permitting and Engineering Reports, ConAgra Grocery Products, Oakdale, California
Project Manager. Ron prepared a report of waste discharge and negotiated a new waste discharge permit for 1,200 acres of pasture land receiving 5.3 mgd of process/rinse water from the processing of tomatoes and beans. Engineering reports included certification of tailwater system improvements, long term storage, salinity control plan and annual monitoring.

Evaluation of Monitoring and Management System, Campbell Soup Supply, Dixon, California
Project Manager. Ron prepared an assessment of the existing permit, monitoring system and management plan for land application of 3.5 mgd of tomato processing wastewater on 550 acres. He updated the groundwater monitoring results for 2004 and 2005.

Report of Waste Discharge, Salad Cosmo, Dixon, California
Project Manager. Ron evaluated the existing permit, responded to a Notice of Violation and prepared a new report of waste discharge for a bean sprout operation.

Groundwater Quality Data Evaluation, Del Monte Foods, Woodland, California
Project Officer. Ron produced groundwater quality evaluation report required by the Regional Water Quality Control Board (RWQCB) to assess possible impact from Del Monte land application and to assist the RWQCB in writing waste discharge requirements (WDRs) for the next tenant of the land (currently owned by the City).

Audit of Land Application System Operation and Monitoring, Frito-Lay Inc., Bakersfield, California
Project Manager. Ron prepared and audit of the 17 year old sprinkler irrigation system used to treat potato and corn chip processing wastewater. The center-pivot system and the existing wastewater, soil, lysimeter and groundwater monitoring system was evaluated.

Process Water Land Application System Upgrade, Del Monte Foods, Plover, Wisconsin
Technical Reviewer. Ron fulfilled requirements for permit for the upgrade of an existing sprinkler land application system. The system treats plant wastewater through pivot sprinkler systems. The permit was complicated by wellhead protection ordinances for the Village of Plover and County of Portage.

BOD Loading Rate Research, SK Foods, Lemoore, California
Project Officer. Ron planned and evaluated a loading rate study comparing irrigation water with applied tomato process/rinse water. Percolate quality from suction lysimeters were compared for FDS and general minerals.

Pretreatment Technologies Assessment, Del Monte Foods, Walnut Creek, California
Project Manager. Ron prepared a report on available technologies pertinent to food processing wastewater. He described pretreatment technologies such as physical screening, biological oxidation, digestion and membrane processes and discussed each technology's relevance to food processing wastewater.

Evaluation of Nitrogen Loading Limits, Tri Valley Growers, Modesto, California
Project Manager. Ron managed the preparation of a report on the potential increase of the nitrogen loading limitation for a land application system. The project included analyses of historical loading rates, groundwater monitoring data, soils data and crop yields and nitrogen uptake.

Permitting of New Land Application Site, SK Foods, Lemoore, California
Project Manager. Ron managed the preparation of a report of waste discharge and CEQA initial study to allow permitting by the Regional Board of a 300-acre land application site. The project included an analysis of the BOD loading using an oxygen diffusion model.

Salt Impact Evaluation, Manufacturer's Council of Central Valley, Modesto, California
Project Manager. Ron managed the evaluation of the impact of fixed dissolved solids from five food processors on the land application of process/rinse water at the City of Modesto's 2,500-acre site.

Evaluation of BOD Loading Rates, Confidential Client, Southern California
Project Manager. Ron managed the evaluation of the BOD loading rates from a high-strength process/rinse water land application system using sprinkler irrigation making use of an oxygen diffusion and soil re-aeration model.

Irrigation System Design, ConAgra Grocery Products Company, Oakdale, California
Project Manager. Ron managed the design of facilities to expand irrigation up to 200 acres for tomato wastewater. The facilities included a pipeline, tailwater collection system and pond and pump stations. Permits were obtained from the County and the Regional Water Quality Control Board.

Land Application TDS Limits, Harter Packing, Yuba City, California
Project Manager. Ron managed the preparation of a sampling plan and analysis of wastewater and background groundwater quality to determine an acceptable level for TDS or IDS in the applied process/rinse water for 2.2 mgd of tomato and peach processing.

Capacity Evaluation, Frito-Lay, Inc., Robersonville, North Carolina and Fayetteville, Tennessee
Project Manager. Ron managed capacity studies for two land application facilities including loading rates, crop recommendations and storage volumes.

Waste Discharge Evaluation, Atwater Canning Company, Atwater, California
Project Manager. Ron managed the preparation of a report of waste discharge and operations manual for a land application system treating a combination of tomato and beans/hominy wastewater.

Irrigation System Design, Frito-Lay, Inc., Bakersfield, California
Project Manager. Ron managed the design of seven center pivot irrigation units for 1.3 mgd of potato and snack food processing wastewater. The project included permitting of 310 acres of irrigation area, construction management for pump station, pipeline and center pivot installation and installation of six suction lysimeters for soil-water monitoring.

Waste Minimization Study, Campbell Soup Company, Sacramento, California
Project Manager. Ron managed the waste minimization study of the tomato processing and soup manufacturing facility. Potential reductions in flow, BOD and suspended solids of 25 percent and more were recommended.

Land Application Force Main Design, ConAgra Grocery Products Company, Oakdale, California
Project Manager. Ron managed the preliminary design of a three-mile, 18-inch force main to deliver five mgd of tomato wastewater to a land application site.

Reuse Alternatives Analysis, Maui Pineapple Company, Ltd., Kahului, Maui, Hawaii
Project Manager. Ron investigated alternatives for treatment and reuse of 0.6 mgd of process and cooling waters from a pineapple cannery with selection and permitting of a reclamation reuse system involving drip irrigation of 500 acres of sugar cane.

Land Application Evaluation, American Home Food Products, Vacaville, California
Project Manager. Ron performed study of wastewater characteristics, pretreatment technologies and land application operations to improve the land application and efficiency and avoid nuisance conditions in the 240-acre site.

Land Application Evaluation, Tri-Valley Growers, Modesto, California
Project Manager. Ron evaluated the impacts on groundwater from the long-term application of tomato and other fruit processing wastewater. Monitoring well data, soil samples, soil-water samples and wastewater quality data were evaluated for the 96-acre site.

Irrigation System Evaluation, Saticoy Foods, Santa Paula, California
Project Manager. Ron supervised the evaluation of a sprinkler irrigation site and compared the results to the existing sprinkler irrigation of pepper processing wastewater. He prepared a work plan for a groundwater monitoring program.

Pretreatment Alternatives Evaluation, Del Monte Corporation, San Jose, California
Project Manager. Ron supervised the study of pretreatment alternatives that included anaerobic and aerobic treatment of 0.9 mgd of high strength fruit cocktail processing wastewater.

Treatment System Design, Harter Pik'd Rite, Yuba City, California
Project Manager. Ron supervised the study and design of internally fed rotating fine screen and dissolved air flotation system for treatment of 1.6 mgd of tomato and peach processing wastewater and improvements to land application.

Treatment Alternatives Evaluation, Basic Vegetable Products, King City, California
Project Manager. Ron studied the options for treatment improvement, pH and odor control for 2.4 mgd of onion and garlic wastewater.

pH Control, American Home Food Products, Vacaville, California
Project Manager. Ron investigated options for pH control and oil and grease reduction for a 0.8-mgd kitchen wastewater from processing chili and tomato products.

Environmental Assessment, ConAgra Grocery Products Company, Davis and Oakdale, California
Project Manager. Ron prepared an environmental assessment for two tomato canneries including water, wastewater, solid waste, noise and air quality.

Site Evaluation, Frito-Lay, Inc., Bakersfield, California
Project Manager. Ron analyzed potential land application sites for suitability to treat one mgd of potato processing wastewater. He assisted in permit acquisition and environmental impact assessment for the selected site.

Waste Discharge Study, Rogers Foods, Livingston, California
Project Manager. Ron supervised the preparation of a report of waste discharge and operating plan for land application of 0.9 mgd of onion and garlic processing wastewater.

Pretreatment Evaluation, Pacific Coast Producers, Santa Cruz, California
Project Manager. Ron provided operational advice and a report on the pretreatment of pear processing wastewater.

Irrigation System Study and Design, Quality Assured Packing, Stockton, California
Project Manager. Ron prepared an operations report and supervised improvements in the sprinkler irrigation system for tomato processing wastewater.

Planning Assistance, Morning Star Company, Volta, California
Project Manager. Ron provided advice on land application and cooling ponds for a new tomato processing plant.

Design Review, Campbell Soup Company, Modesto, California
Project Manager. Ron provided advice and design review for an activated carbon water treatment system for process water.

Treatment Evaluation, Laura Scudder, Tracy, California
Project Manager. Ron supervised preparation of a report on wastewater characteristics, identified areas of excess waste generation and recommended improvements for corn and potato processing wastewater.

Irrigation System Evaluation, Gilroy Canning Company, Gilroy, California
Project Manager. Ron prepared a report on operational improvements and cost savings for the sprinkler irrigation system.

Treatment and Disposal System Design, Hilltop Cold Storage, Watsonville, California
Project Manager. Ron prepared a report of waste discharge and supervised design of facilities for strawberry and fruit processing treatment and disposal by land application. He provided advice on expansion of facilities to irrigate adjacent land. He provided cost estimates and design for filtration followed by sprinkler irrigation of artichokes.

Lagoon and Irrigation System Evaluation, J.R. Wood, Inc., Atwater, California
Project Engineer. Ron prepared a report on upgrading an aerated lagoon and wastewater irrigation system for a 0.4 mgd flow from processing of fruit and vegetables.

Feasibility Study, Frito-Lay, Inc., Summertown, Tennessee
Project Engineer. Ron conducted a feasibility study of proposed overland flow treatment of wastewater from potato and corn chip operations.

Technical Review, California Canners and Growers, Thornton and Merced, California
Project Engineer. Ron reviewed two operating wastewater land application projects, recommending modifications in operation, soils monitoring and soil amendments.

Feasibility Study, California Canners and Growers, Merced, California
Project Engineer. Ron prepared a report on the feasibility of land application of 4.0 mgd of peach processing wastewater and supervised the design of the land application system.

Irrigation System Design, Contadina Foods, Inc., Hanford, California
Project Engineer. Ron designed a 1.5-mgd irrigation system for a tomato cannery and prepared a report on the environmental impacts of wastewater and waste solids application to the land.

Wineries

Due Diligence, Confidential Client, Snell & Wilmer, San Luis Obispo, California
Project Manager. Ron assisted in the analysis of a winery's wastewater system for capacity, performance and expandability. (SID 8990)

Chamisal Vineyards Wastewater System Evaluation, San Luis Obispo, California
Project Manager. Ron evaluated the design of a vertical flow constructed wetlands for its current capacity to treat winery wastewater. Recommendations were made to add a septic tank for improved solids pretreatment, improve the system screening, and monitor the biological treatment performance of the vertical flow wetlands.

Engineering Feasibility Study, Louis Martini Winery, St. Helena, California
Project Manager. Ron prepared an analysis of the existing and needed aeration capacity for an aerated pond at the former Louis Martini winery. The analysis included upgrade to the rapid infiltration system and the stormwater disposal system.

Wine Stillage Guideline Update, Wine Institute, San Francisco, California
Project Manager. Ron revised guidelines for the land application of winery stillage wastewater. He documented current practices, including hydraulic and BOD loading rates, nitrogen removal through denitrification and crop uptake and pH attenuation. He summarized impacts on groundwater quality and made recommendations to reduce impacts, collect more detailed data on groundwater and soil and isolate high TDS sidestreams for treatment or reuse.

Franzia Winery Environmental Assessment, The Wine Group, Ripon, California
Project Manager. Ron prepared a report of waste discharge and an initial environmental study for winery wastewater including a network of groundwater monitoring wells.

Land Application Evaluation, The Wine Group, Tulare, California
Project Manager. Ron evaluated an existing land application system designed for stillage disposal and permitted the site for winery wastewater without stillage.

Land Application Management Plans, Major San Joaquin Valley Winery, Fresno, California
Project Manager. Ron prepared the management plans for the land application of winery and winery stillage wastewater.

Land Application Improvements, Golden State Vintners, Cutler, California
Project Manager. Ron supervised the preparation of a report on land application improvements for winery wastewater, including groundwater monitoring wells.

Stillage Report, Southern Ethanol Corporation, Barstow, Florida
Project Manager. Ron prepared a report on the proposed design and nitrogen loading rates for an ethanol stillage land application system.

Operations Review and Monitoring Program, Bronco Winery, Ceres, California
Project Manager. Ron prepared monitoring program and provided operations advice for winery wastewater treatment and disposal. He prepared reports of waste discharge for two expansions of the land application system including groundwater monitoring wells.

Improvements Plan, Turner Winery, Lodi, California
Project Manager. Ron prepared a technical plan for improvements in the winery wastewater treatment and disposal system.

Ion Exchange Study, Wine Institute, San Francisco, California
Project Manager. Ron prepared a report from a statewide study on winery ion-exchange wastewater characterization, treatment in soil-column studies and effects of land application on groundwater quality.

Rapid Infiltration System, Napa Valley Cooperative Winery, St. Helena, California
Project Engineer. Ron was responsible for study and design of rapid infiltration system for winery wastewater.

Stillage Study, Wine Institute, San Joaquin Valley, California
Project Manager. Ron prepared guidelines for land application of winery stillage. He developed a monitoring program for the San Joaquin Valley to determine effects on soils and groundwater of land application of winery stillage wastewater and prepared a state-of-the-art report on design and operation of stillage land application systems. The guidelines were adopted as part of the Basin Plan by the Fresno Regional Board.

Pretreatment Facilities Design, The Monterey Vineyard, Gonzales, California
Project Manager. Ron supervised preparation of a report and preliminary design of pretreatment facilities for a land application system using a screened winery wastewater.

Dairies

Report of Waste Discharge, Hilmar Cheese Company, Hilmar, California
Peer Reviewer. Ron conducted a peer review for another consultant on a beneficial use analysis of the groundwater near the effluent land application areas. The report of waste discharge was prepared for an additional 600 acres of crop land receiving treated effluent.

Waste Minimization Study, Crystal Cream and Butter Company, Sacramento, California
Project Manager. Ron prepared a waste minimization study for a milk, cottage cheese and ice cream processing plant.

pH Control, Knudsen, Visalia, California
Technical Advisor. Ron supervised preparation of feasibility report and final design of a pH control system for dairy wastewater.

Land Application Design, Hilmar Cheese, Hilmar, California
Project Manager. Ron designed three expansions and the original 20-acre land application system to treat cheese processing wastewater. The 1995 expansion of 76 acres resulting in a capacity of 0.6 mgd was permitted and designed. Groundwater monitoring wells were designed and a comprehensive groundwater quality evaluation was conducted.

Facilities Planning, Crystal Cream and Butter Company, Sacramento, California
Project Manager. Ron supervised the report preparation and environmental planning for a new processing plant site including water supply and wastewater treatment.

Alternatives Analysis, F&A Dairy of California, Newman, California
Project Manager. Ron studied alternatives for pretreatment and land application for cheese plant wastewater.

Livestock Runoff

Runoff Evaluation, Foster Poultry Farms, Delhi, California
Project Manager. Ron conducted an evaluation of the potential runoff volumes of stormwater from the poultry rearing farms in Merced and Stanislaus counties. The containment volumes for various frequencies of wet winters were calculated for the farm locations. Recent regulations on runoff containment and separation of runoff from poultry waste storage areas were cited.

Runoff Treatment and Disposal, Foster Poultry Farms, Ellenwood, California
Project Manager. Ron prepared an analysis and preliminary design of runoff treatment and disposal for hatchery site stormwater.

Meat Processing

Boiler Blowdown, Foster Farms, Livingston, California
Project Officer. Ron evaluated options for treatment and disposal of boiler blowdown water at various Foster Farms locations.

Treatment Evaluation, Foster Farms, Livingston, California
Project Manager. Ron managed the evaluation of BOD and ammonia removal from the three mgd of chicken processing wastewater through the

Treatment Evaluation, Foster Farms, Merced, California
Project Manager. Ron managed the preparation of water balance, wastewater treatment concept and analysis of environmental effects of land treatment and reuse of 0.3 mgd rendering plant effluent.

Facilities Improvement, Victor Fine Foods, Lodi, California
Project Manager. Ron supervised studies and designs of improvements to the wastewater treatment and disposal facilities for 0.1 mgd of meat processing wastewater including biological treatment, filtration and deep-well injection.

Chemical

Land Application Review, Pfizer Corporation, Mexico
Technical Advisor. Ron supervised the review and analysis of a land application system for treatment and disposal of shampoo product wastewater.

Environmental Assessment, Vandenberg Air Force Base, Lompoc, California
Project Manager. Ron prepared an environmental assessment for industrial wastewater discharges including heavy metals and toxic compounds discharged to the Lompoc Wastewater Treatment Plant.

Breweries

Land Application Design, Anheuser-Busch, Inc., Houston, Texas
Project Engineer. Ron supervised the design of a land application system for brewery high-strength liquid nutrient material, featuring self-propelled linear irrigators and 264 acres of turf grass.

Pilot Studies, Anheuser-Busch, Inc., Fairfield, California and Houston, Texas
Project Engineer. Ron conducted pilot studies to determine design criteria for full scale land treatment systems to manage spent grain liquor from beer brewing for two breweries.

Manuals of Practice

Nutrient Control, WEF
Design of Municipal Wastewater Treatment Plants, WEF
Natural Systems for Wastewater Treatment, WEF
Land Treatment of Municipal Wastewater, EPA
Constructed Wetlands and Aquatic Plant Systems for Municipal Wastewater Treatment, EPA

Memberships

American Society of Agronomy
American Water Works Association
California Water Environment Association
Water Environment Federation
WateReuse Association
Central Valley Clean Water Association

Publications/Presentations

A separate list of publications is available.

Selected Publications and Presentations

1. "Land Treatment of Cannery Wastes," Journal of the Water Pollution Control Federation, April 1979.
2. "Land Application of Winery Stillage Wastes," Industrial Wastes Magazine, January/February 1981.
3. "Land Treatment and Reuse of Food Processing Waste," Water Pollution Control Federation (now Water Environment Federation) Conference, October 1982.
4. "Site Characteristics," chapter in "Irrigation with Reclaimed Municipal Wastewater - A Guidance Manual," California State Water Resources Control Board, July 1984.
5. "Wastewater Reuse by Golf Course Irrigation in California," Water Reuse Symposium III, San Diego, California, August 1984.
6. "Land Use of Wastewater and Sludge," Environmental Science and Technology, May 1984.
7. "Handbook of Land Treatment Systems for Industrial and Municipal Wastes," co-author of textbook, Noyes Data, 1984.
8. "Crop Irrigation with Strawberry Processing Washwater," presented at the Conference on Environmental and Energy Engineering in the Food Processing Industry, XV, Santa Barbara, March 1985.
9. "Technology and Costs of Wastewater Application to Forest Systems," Forest Land Applications Symposium, Seattle, Washington, June 1985.
10. "Land Application Systems for Municipal Sludge," BioCycle, May/June 1985.
11. "Nitrogen Removal in Rapid Infiltration Systems," Journal of Environmental Engineering, ASCE, December 1985.
12. "Land Application of Sludge in San Diego," Journal WPCF, August 1987.
13. "Aquatic Treatment Systems for Wastewater Management," ASCE, July 1988.
14. "Spray Irrigation of Treated Septage on Reed Canary Grass," Journal WPCF, March 1989.
15. "Natural Systems for Wastewater Treatment," WPCF Manual of Practice, 1990.
16. "The Cost of Water Reclamation in California," California Water Environment Association, April 1990.
17. "Wastewater Reuse Experience in Northern California," AWRA, September 1990.
18. "Groundwater Impacts from Land Application of Food Processing Wastewater - Case Studies," proceedings of the ASAE National Conference, Chicago, December 1990.
19. "Odor Management for Land Application of Food Processing Wastewater," proceedings of the ASAE National Conference, Chicago, December 1990.
20. "Deep Well Injection of High Salinity Food Processing Wastewater," proceedings of the 18th Annual CWPCA Industrial and Hazardous Waste Conference, Sacramento, February 1991.
21. "Constructed Wetlands at Mesquite, Nevada," ASCE, July 1991.
22. "Evolution of Tertiary Treatment Requirements in California," Water Environment and Technology, February 1992.
23. "Design Criteria and Practice for Constructed Wetlands," proceedings of the International Specialist Conference on Constructed Wetlands, Sydney, Australia, December 1992.
24. "Biosolids Utilization by Land Application in Santa Rosa, California," proceedings AWWA/WEF Conference, Phoenix, Arizona, December 1993.
25. "Wetlands Put to the Test," Water Environment and Technology, January 1994.
26. "Land Application of Pineapple Process Water for Reuse," presented at the Hawaii Water Pollution Control Association Annual Conference, February 1994.
27. "Beneficial Reuse of Biosolids on Oat Hay," BioCycle, May 1994.
28. "Natural Systems for Wastewater Treatment," U.S. EPA National Technology Transfer Workshop, June 1994.
29. "Natural Systems for Waste Management and Treatment," co-author of textbook, McGraw-Hill, 1988, 2nd Edition in 1995.
30. "Removal of Metals and Ammonia in Constructed Wetlands," presented at the Water Environment Federation 68th Annual Conference, Miami, Florida, October 1995.
31. "Wastewater Filtration Alternatives in California: Past History, Current Performance, and Future Trends," Water Reuse Conference, AWWA/WEF, San Diego, California, February 1996.
32. "Two Birds with One Wetland: Constructed Wetlands for Treatment and Habitat," presented at the Water Environment Federation Annual Conference, Dallas, Texas, October 1996.
33. "Constructed Wetlands in the United States: An Engineering Perspective Based on Experience, Observations, and Performance at the Sacramento Demonstration Wetlands," International Conference on Ecological Engineering, Beijing, China, October 1996.
34. "Reclamation and Reuse Using Constructed Wetlands," presented at the PNPCA Conference, Seattle, 1997.

35. "Small and Decentralized Wastewater Management Systems," principal author with George Tchobanoglous, co-author. McGraw-Hill, 1998.
36. "Water Reuse by Drip Irrigation of Pineapple Process Water," Hawaii Water Environment Association Conference, February 1998.
37. "Decentralized Wastewater Systems: The Future of Water Recycling," California Water Environment Association Conference, Oakland, California, April 1998.
38. "Indirect Water Reuse by Groundwater Recharge," Hawaii Reuse Conference, September 1998.
39. "Costs of Constructed Wetland Systems," WEFTEC, Orlando, Florida, October 1998.
40. "Constructed Wetlands Remove Algae," Hawaii Water Environment Association Conference, March 1999.
41. "Land Treatment Systems for Municipal and Industrial Wastes." McGraw-Hill, 2000.
42. "Converting Ponds into Constructed Wetlands," presented at the California Water Environment Association Annual Conference, Sacramento, California, April 2000.
43. "Design of Constructed Wetlands—Lessons Learned," presented at the Conference on the Role of Wetlands in Watershed Management—Lessons Learned, Humboldt State University, Arcata, California, May 18, 2000.
44. "Trace Organics Removal by Soil Aquifer Treatment," presented at the Hawaii Water Environment Association Conference, Honolulu, Hawaii, June 7, 2000.
45. "Soil Aquifer Treatment of Municipal Wastewater," WEFTEC 2000, Anaheim, California, October 2000.
46. "Impacts of Salt Content of Food Processing Wastewater Land Application," WEFTEC 2000, Anaheim, California, October 2000.
47. "Applying Treated Wastewater to the Land," BioCycle, April 2001.
48. "Rational Method for the Design of Organic Loading Rates in a Land Application System," WEFTEC 2001, Atlanta, Georgia, October 2001.
49. "BOD Loading Impact on Land Application Percolate Quality", WEFTEC 2002, Chicago, Illinois, October 2002.
50. "Performance of Constructed Wetlands at Cle Elum, Washington", WEFTEC 2002, Chicago, Illinois, October 2002.
51. "Evaluation of Percolate Quality from Recycled Water Irrigation in Central Oahu," WateReuse Symposium, San Antonio, Texas, September 2003.
52. "Assessment of Recycled Water Irrigation in Central Oahu", WEFTEC 2003, Los Angeles, California, October 2003.
53. "EPA Land Treatment Manual Update" WEFTEC 2003, Los Angeles, California, October 2003.
54. "Upcountry Effluent Reuse – Percolation versus Irrigation," WEFTEC 2003, Los Angeles, California, October 2003.
55. "Agricultural Reuse of Food Processing Rinse Water" Proceedings of AWWA/WEF Water Sources Conference, Austin, Texas, January 2004.
56. "Santa Rosa Fine Tunes Its Flexible Biosolids Program" Proceedings of the WEF Conference on Residuals and Biosolids Management, Salt Lake City, Utah, February 2004.
57. "Removal of N-Nitrosodimethylamine and Estradiol through Recycled Water Irrigation", Proceedings of the 19th WateReuse Symposium, Phoenix, Arizona, September 2004.
58. "Mosquitoes and Mercury: Constructed Wetlands Issues in California", Proceedings of the WateReuse Association Conference, San Diego, California, February 2005.
59. "Results of Assessment of Recycled Water Irrigation in Central Oahu", Presented at the 2005 Annual AWWA Conference, San Francisco, California, June 2005.
60. "Water Reuse and Groundwater Protection in Central Oahu" Proceedings of WEFTEC 2005, Washington, D.C. November 2005.
61. "Constructed Wetlands for Landfill Leachate Treatment" Southwest Hydrology. January 2006.
62. "Recycled Water Impacts on Turf and Groundwater" Presented at the Annual CWEA Conference, Sacramento, California. April 2006.
63. "Recycling in the Tropics" Water Environment & Technology, May 2006.
64. "Incidental Runoff Control and Operational Strategies for Water Recycling" WateReuse Symposium, September 2006.
65. "Integrated Planning for Wastewater Treatment and Recycling for a Small Community Development" WEFTEC 2006. October 2006.
66. "Golf Course Irrigation with Recycled Water: Challenges and Opportunities" Hawaii Reuse Conference, November 2006.
67. "Decentralized Treatment and Distributed Reuse in Rural Communities" WEFTEC 2007, October 2007.
68. "Sustainable Land Application of Food Processing Wastewater" Proceedings of the 2007 National Conference on Agriculture and the Environment, November 2007.

69. "Design and Management Practices to Minimize Algae in Recycled Water Storage Reservoirs" CWEA Conference, April 2008.
70. "Integrating Beneficial Uses" Water Environment & Technology, August 2008.
71. "Constructed Wetlands Provide Water Reuse" WateReuse Symposium, September 2008.
72. "Water Recycling in Small Communities" WEFTEC 2008, October 2008.
73. "Good Things from Small Packages" Water Environment & Technology, March 2009.
74. "Soil as a Treatment Medium" CWEA Natural Systems Seminar. May 2009.
75. "Fate of BOD and Nitrogen in Land Application of Food Processing Wastewater" ASABE National Conference, June 2009.
76. "Soil Aquifer Treatment for Microconstituent Removal" WateReuse Symposium, September 2009.
77. "Ponds Provide Sustainable Treatment for Honoka'a" WEFTEC 2009, October 2009.
78. "Ponds Provide Sustainable Treatment for Honoka`a" Hawaii Water Environment Association Conference, Honolulu, Hawaii, March 2010.
79. "Regulatory Drivers and Impacts on Opportunities for Water Reuse in Small Rural Areas of the Central Valley of California" Proceedings of WateReuse Symposium, WateReuse Association, Washington, D.C. September 2010.
80. "Vernonia Natural Wastewater Treatment and Water Reuse" Proceedings of WEFTEC, New Orleans, Louisiana, October 2010.
81. "National Regulatory Trends in Water Reuse" Hawaii Water Reuse Conference, HWWA/HWEA, Maui, Hawaii, November 2010.
82. "Microconstituent Removal through Wetlands and Soil Aquifer Treatment" Proceeding of the California WateReuse Conference, Dana Point, California, March 2011.
83. "Constructed Wetlands for Landfill Leachate Treatment" Waste Expo 2011, Dallas, Texas, May 2011.