



ARMAND RUBY

Armand has over 30 years of experience as an environmental scientist, specializing in water quality issues. Armand's professional strengths include all aspects of water quality monitoring, water quality data analysis, quality assurance/quality control, and working group facilitation. He has particular expertise in development and implementation of TMDLs, stormwater monitoring and management, surface water and sediment quality monitoring, bioassessment, and water quality impacts analysis. Armand is known for developing innovative analytical approaches to water quality problems.

SUMMARY OF EXPERIENCE/QUALIFICATIONS:

- ◆ A reputation for effective facilitation, skillful problem-solving, strong analytical abilities, and production of high quality work products.
- ◆ Excellent oral and written communications skills; extensive writing, editing, and public speaking experience - for both technical and non-technical audiences.
- ◆ Extensive experience with both professional and volunteer working groups.
- ◆ In-depth knowledge of federal and state water quality regulations.
- ◆ A diverse range of experience in various environmental disciplines.

Primary Areas of Technical Expertise:

- Surface Water and Sediment Quality Assessment/Monitoring
- Stormwater Monitoring, Data Analysis and Management
- Watershed Analysis, Assessment, and Management
- Development and Analysis of TMDLs
- Stakeholder Group and Project Facilitation
- Aquatic Bioassessment and Data Analysis/Reporting
- Pesticide-Caused Toxicity and Related Water Quality Impacts
- Regulatory Analysis; Compliance/Permitting Assistance
- Atmospheric Deposition of Pollutants
- Environmental Impact Assessment

Armand is active in community service, serving on non-profit boards and in various volunteer roles, most recently as a member of the Coastal Watershed Council Board of Directors. Serving in a statewide capacity, Armand is currently:

- Chair of the Science and Monitoring Subcommittee for the California Stormwater Quality Association (CASQA)
- a member of the California Water Quality Monitoring Council (per SB 1070), representing municipal stormwater agencies

Current/Recent Representative Consulting Projects

- **Rainbow Creek TMDL Monitoring Plan TAC.** Facilitating the technical advisory committee (TAC) for re-design of the Rainbow Creek Surface Water Monitoring Plan (San Diego County). TAC members include local, regional, and state agencies and organizations. The goal is to produce a plan to fulfill surface water monitoring requirements of the Rainbow Creek Nitrogen and Phosphorous TMDL, using a question-driven approach. The plan is being developed collaboratively, with the TAC serving as the stakeholder group. Responsible for planning and facilitating the TAC meetings, as well as writing the re-designed monitoring plan.
- **Lake San Marcos Nutrient Workplan.** Facilitated the Lake San Marcos Working Group, a stakeholder group comprised of local landowner associations, municipal agencies, San Diego County, and Caltrans, working to address the CWA 303(d) listing for nutrient impairment of Lake San Marcos, in cooperation with the San Diego Regional Water Quality Control Board. Organized and led Working Group meetings, produced meeting materials, and negotiated solutions on issues regarding project approach and content of the Workplan. Under an extremely tight deadline, prepared the Lake San Marcos Nutrient Workplan, which was submitted to the Water Board as part of a Cleanup and Abatement Fund Application.
- **Riverside County Stormwater Program TRE.** Assisted in analysis of data and evaluation of mitigation options for development of a Toxicity Reduction Evaluation (TRE), as subcontractor to Mactec. The TRE is necessary to address the effects of pyrethroid pesticides, identified as toxicants in Riverside County surface waters.
- **Pesticides and Toxicity Regulatory Assistance, California Stormwater Quality Association (CASQA).** Provide ongoing consulting support for CASQA's Pesticides Subcommittee and Regulatory Subcommittee in review and analysis of regulatory issues involving urban-use pesticides and state of California toxicity policies. Represent CASQA in meetings with state agencies and USEPA. Participated in CA Department of Pesticide Regulation's Pyrethroids Re-Evaluation Stakeholders Meetings (PRSM) process.
- **Caltrans Stormwater Program, Construction Site Monitoring Guidance.** Senior advisor and co-principal author of Guidance Manual for Construction Site Monitoring, as subcontractor to URS (Caltrans Contract 43A0255). The Guidance Manual is responsive to 2009 statewide Construction General Permit (CGP) for stormwater discharges, and includes comprehensive guidance for planning and implementing a Construction Site Monitoring Program (CSMP).
- **Contra Costa Clean Water Program (CCCWP).** Consult on stormwater and related water quality issues, especially regarding pesticides, toxicity, and bioassessment, under subcontract to Brown and Caldwell. Contribute to regulatory review and analysis of regulations, and assist with implementation of the monitoring provisions of the Municipal Regional Stormwater Permit (MRP). Annually since 2007, analyze the county-wide BMI monitoring data and prepare the annual *Summary of Benthic Macroinvertebrate Bioassessment Results* reports; presented the results at the statewide 2008 CABW Conference.
- **Alameda County Clean Water Program (ACCWP).** Consult on water quality monitoring and related issues, under subcontract to Applied Marine Sciences. Contribute to regulatory review and analysis of regulations, and assist with implementation of the monitoring provisions of the Municipal Regional Stormwater Permit (MRP), especially relating to QAPPs and SOPs.

- **Quarry Lake Water Quality Study, Los Altos Hills.** Conducted water quality investigation of San Francisco Peninsula lake occupying site of former rock quarry, to assess suitability of lake water for potential back-up drinking water use. Designed and conducted intensive, seasonally-based lake monitoring program. Performed data analysis, including assessments of spatial and temporal variation in lake quality, as well as conformance with drinking water quality regulations.
- **Green Gardener Neighborhood Leader Pilot Project.** As subconsultant to Ecology Action, provided water quality expertise to assess benefits of measures intended to reduce residential runoff and pollutant loadings from representative sites. Developed a Landscape Assessment Tool to provide for consistent pre-project and post-project assessments, and applied this Tool to the three pilot locations. Also developed a Program Evaluation Plan to facilitate comprehensive assessment of the functions and outcomes of the overall program.
- **Pyrethroids Data Compilation, California Stormwater Quality Association.** Performed comprehensive research and investigation of all available information on the presence and effects of pyrethroid pesticides in urban waterways in the state of California for CASQA's Pesticides Subcommittee. Compiled and organized results, describing widespread impacts, and presented at CASQA's 2008 Annual Conference, and at other regional and international conferences.
- **Caltrans Stormwater Program, North Coastal Contract 43A0208.** Senior advisor on stormwater services consulting contract, as subcontractor to Mactec. Responsible for reviewing guidance documents, sampling and analysis plans, and study reports for various projects including the San Francisco-Oakland Bay Bridge Water Quality Management Plan, Cache Creek Mercury TMDL Study, Clear Lake Nutrient TMDL Study, Stevens Creek (Santa Clara County) Study, Roadside Vegetated Treatment System (RVTS) study, Open/Gap-Graded Asphalt (Porous Pavement) Study, Long Term Discharge Characterization Study, and revision of the Caltrans Stormwater Monitoring Protocols Guidance Manuals.
- **Coordinator, Diazinon/Toxicity Work Group, Clean Estuary Partnership (CEP), San Francisco Bay/Estuary.** Coordinated/facilitated the CEP's Diazinon/Toxicity Work Group, supporting implementation of the Water Quality Attainment Strategy for the Diazinon and Pesticide-Related Toxicity in Bay Area Urban Creeks TMDL. Work Group participation included SF Bay Regional Water Quality Control Board staff, Bay Area stormwater management agencies (BASMAA), Bay Area wastewater treatment agencies, and environmental group representation. Developed regional urban creeks monitoring plan and oversaw implementation in 2005. Analyzed creek monitoring data, including water and sediment chemistry and toxicity test results, and produced comprehensive report.
- **Yolo Bypass Watershed Planning Project.** Senior technical advisor for CalFed -funded project to develop a water quality management plan for the Yolo Bypass. Organized, facilitated and coordinated stakeholder advisory group (SAG) for the project. SAG members included a broad range of local, regional, state, and federal agencies and organizations.
- **Review and Analysis of LTMAP Data, San Francisquito Creek Watershed.** Compiled, organized and analyzed all water quality data produced by the Long Term Monitoring and Assessment Plan from four creeks within the San Francisquito Creek watershed from 2001-2006, presented analysis and interpretation of results and recommended modifications to the program.

- **Regulatory Assistance, County of Sacramento Stormwater Program.** Provide technical assistance on stormwater runoff and other water quality issues, including detention basin sediment monitoring and management. Analyze regulatory requirements, and prepare comments for County on TMDLs and other regulatory issues, with particular emphasis on pesticide TMDLs issued by the Central Valley Regional Water Quality Control Board. Represent County in meetings and negotiations with regulatory agencies.
- **Identification of Pollutants of Concern (POCs), San Bernardino County Stormwater Program.** Evaluated all available stormwater discharge and receiving water quality monitoring data, applicable regulations, local CWA Section 303(d) listings, and other factors related to the potential impacts of stormwater discharge constituents, and derived prioritized list of POCs.
- **Discharge Characterization Project, Sacramento Stormwater Program.** Performed statistical characterization of discharges, including development of regression equations relating runoff quality to hydrological factors, coupled with continuous simulation modeling to produce an updated assessment of mass loadings from urban runoff discharges. Results are separated by wet and dry weather, urban drainage area, and major receiving water destination.
- **Review and Analysis of Corporation Yard Stormwater Monitoring Program, City of Folsom.** Compiled, organized and assessed all water quality data produced to date by the Corp Yard stormwater monitoring program, and provided recommendations for improvement of runoff quality and the monitoring protocols.

Representative Projects with Larry Walker Associates

Prior to founding ARC, Armand worked for Larry Walker Associates, starting as a Senior Scientist in 1992 and ending as a Vice President in 2004. During that time, Armand managed a wide range of projects throughout California. Examples include:

- **Caltrans Stormwater Program, Stormwater Monitoring Guidance Manual.** Managed production of the comprehensive *Guidance Manual: Stormwater Monitoring Protocols* (Caltrans CTSW-RT-03-105.51.42), covering stormwater quality, sediment quality, toxicity, and gross solids (trash) monitoring. Includes Data Reporting Protocols for Caltrans stormwater quality monitoring projects.
- **Caltrans Stormwater Program, Data Analysis and Management.** Oversaw development of the statewide Caltrans Stormwater Quality Database, including associated graphical user interface and related data analysis tools. Managed production of the statewide *Discharge Characterization Study Report* (Caltrans CTSW-RT-03-065.51.42), as well as other statistical and data analysis projects, incl. *Annual Data Summary*, *Three Year Action Plan* and other reports.
- **Yolo Bypass Watershed Planning Project.** Managed CalFed grant-funded project to develop a comprehensive plan for water quality management in the Yolo Bypass. Developed, facilitated and coordinated stakeholder advisory group (SAG). Oversaw design and implementation of watershed-wide monitoring program and QAPP, including monitoring for water and sediment chemistry and toxicity. Developed list of Pollutants of Concern with the SAG.
- **San Francisquito Creek Long Term Monitoring and Assessment Plan.** Co-author of a comprehensive plan to monitor and assess the physical, hydrological, chemical, biological and social attributes of the SF Creek watershed.

- **Programmatic Review, Orange County Stormwater Monitoring Program.** Performed a comprehensive quality assurance/quality control review of the Orange County NPDES permit monitoring program. Assessed data collection methods, including monitoring locations, field methods, laboratory analytical methods, and QA/QC practices, and compared current practices with standard practices for MS4s and NPDES permit requirements.
- **Ventura County-wide Stormwater Quality Management Program.** Served in key consultant role for development of county-wide NPDES monitoring program and associated data analysis and data management strategy. Performed review and analysis of monitoring data, and led Permittee working group in development of Constituent of Concern (COC) Identification program.
- **Calleguas Creek Watershed TMDL Development.** Oversaw consultant Technical Tools team, responsible for water quality modeling, data management, and development of graphical user interface for the water quality model.
- **Calleguas Creek Characterization Study.** Managed planning and implementation for Surface Water Element of coordinated watershed monitoring program, involving water quality measurements of receiving waters and point and non-point source discharges, toxicity testing, and bioassessment.
- **Stormwater Mass Loading Analysis and Modeling, San Bernardino County.** Managed development and application of empirical model of pollutant loadings from urban runoff based on land uses within San Bernardino County.
- **Fresno-Clovis Storm Water Quality Monitoring Program.** Managed multi-year project involving monitoring of receiving waters, urban runoff, and detention basin effectiveness. Directed data analysis projects involving comprehensive evaluations of detention basin pollutant removal effectiveness, and in-depth assessments of San Joaquin River spatial and temporal variability.
- **Sacramento NPDES Stormwater Permit Monitoring Program.** Managed multi-faceted urban runoff monitoring program and special studies. Developed constituent of concern (COC) identification and reduction programs, as well as statistically-based data analysis methods for discharge characterization and program effectiveness assessment. Analyzed detention basin pollutant removal effectiveness and oversaw comparative assessment of structural controls.
- **NPDES Stormwater Permit Applications, Part 2:** Cities of Bakersfield, Oxnard and Stockton, and County of Ventura. Designed monitoring programs to characterize urban runoff in compliance with federal stormwater regulations.
- **Demonstration of Gasoline Fueling Station Best Management Practices,** County of Sacramento. Oversaw design and implementation of monitoring program to characterize gasoline station runoff, identification of BMPs to reduce runoff pollutant loadings, and assessment of pollutant removal effectiveness.

EDUCATION:

Master of Science, Zoology (Ecology), 1986, University of Connecticut, Storrs, CT
Master's Thesis: *The Effects of Acid and Aluminum on Rainbow Trout Embryos.*

Bachelor of Arts, Biology (Ecology Concentration), 1977, Cornell University, Ithaca, NY