



ANGIE A. BERA

Project Manager

Academic Background

Bachelor of Science, Biology, University of California, San Diego, 1998

Specialized Professional Competence

Ms. Bera has 10 years of extensive practical experience working with communities and utilities to improve wastewater and stormwater management and reduce pollutants. She has developed an in house water quality laboratory to analyze fecal indicator bacteria, nutrients, and a variety of chemical parameters. Ms. Bera managed Santa Monica Baykeeper's Beachkeeper Volunteer Water Quality Monitoring Program for over five years. The program educates residents about the impact of urban runoff that directly affects all waterways of Los Angeles County and enables them to take a hands-on approach to help solve the problem. She was successful in creating partnerships with other government agencies and municipalities, working with volunteers from the community. Ms. Bera gained extensive knowledge in water quality monitoring and education, was actively involved in Los Angeles region Total Maximum Daily Loads (TMDLs) regulations aimed at pollution reduction, and has experience with large project management.

Representative Professional Experience

Project Manager, SWC, 2009-present

Monroe, Dade, Broward and Lee County offices, FL

Ms. Bera is responsible for project management, technical data collection and analysis for water, wastewater and stormwater studies associated with local government, utility and private sector facilities. She also coordinates and implements public information programs as well as volunteer data collection and monitoring efforts.

➤ **Everglades City Utility Master Plan, Collier County, FL**

Served as project manager of data collection regarding City water, wastewater and stormwater systems, including existing physical plant, permits, and compliance history; conducted field visit and took photos; compiled thorough compendium of findings with extensive summary tables; organized and listed all reference documents; prepared database of all agency, City and County staff coordinated with during study and their contact information.

Independent Consultant/Water Quality, 2006-2009

City of Avalon/Catalina Island, California

➤ **Avalon Harbor Water Quality Research and Education, City of Avalon, CA**

Researched water quality issues in Avalon Bay through existing projects, compiling Assembly Bill 411(AB411) data, and literature research. Developed multimedia campaign to educate local residents and tourists about water quality in Avalon Bay by creating informational and educational materials about the warning sign system and water quality in Bay. Campaign included rack cards, interpretive signs for beaches, information for City's website, and creating and populating customized database to house AB411 data from last eight years.

➤ **Avalon Bay Water Quality Improvement Project, City of Avalon, CA**

Co-wrote and submitted proposal for City of Avalon for State of California, Clean Beaches Initiative (CBI) Grant Program Proposition 50 grant. State Water Resources Control Board recommended Avalon Bay Water Quality Improvement Project for CBI Proposition 50 Recommended Project List. City of Avalon was awarded \$1.4 million from State as result of proposal. Project is combination of long-term and short-term mitigation efforts to reduce high fecal indicator bacteria (FIB) concentrations found in ankle-depth waters of Avalon Bay. Over long term, City will eliminate all sources of sewage to shallow groundwater through improvements of sewer infrastructure, specifically laterals located in residential parcels. In short term, project will characterize and remediate sewage contamination of shallow groundwater underlying Avalon and focus on reducing FIB concentrations in ankle-depth waters by improving mixing.

➤ **Antimicrobial In-house Testing and Laboratory Development, Hydrophix, Riverside, CA**

Worked with Hydrophix and parent company AbTech Industries to create in situ tests for AbTech's Smart Sponge® Plus. This product has unique molecular structure and is based on innovative polymer technologies; combining intra-filter antimicrobial technology that ruptures cell membranes—preventing potentially harmful microorganisms from functioning, developing, or reproducing. Developed laboratory specifically designed to analyze performance of product. Created sampling design for multiple experiments that varied in flow rate, volume, bacteria and media concentration.



➤ **Aquarius, Hydrophix, Riverside, CA**

Created sampling plan and administered all field and laboratory testing protocols used in storm water treatment systems for one of world's largest retail companies on 88-acre site in Riverside, California. Facility is owned and operated by Tesco PLC, a UK-based food manufacturer and is located on western portion of former March Air Force Base. Storm Water Antimicrobial Treatment (SWAT) is treatment train system designed to remove bacteria and hydrocarbons from stormwater runoff. Designed sampling protocol to test effectiveness of AbTech's Smart Sponge Plus® media which is designed to destroy bacteria such as, *E.coli*, enterococcus and fecal coliforms, on contact. Oversaw seven sampling events and processed over 1000 samples for fecal indicator bacteria and various other parameters.

➤ **Citywide Stormwater BMP Treatment Train Project, Hydrophix, City of Culver City, CA**

Assembled team and developed a proposal for City of Culver City's Citywide Stormwater BMP Treatment Train project, which aimed at integrating both structural and non-structural Best Management Practice (BMPs) to help meet adopted TMDLs requirements for trash in Ballona Creek. Various components of project included full capture catch basin inserts, rain gardens, roof downspout disconnect/cisterns, low flow water brooms, and multimedia public education. While each component of project aimed at producing independent results, a more significant reduction in target pollutants can be achieved by implementing well-researched and creatively implemented BMP "train" that also incorporates public awareness, education, and behavior change in community. Hydrophix won project, but unfortunately it was put on hold because of City of Culver City's absence of matching funds.

Beachkeeper Program Director/Staff Biologist, 2001-2006

Santa Monica Baykeeper/Los Angeles, California

Made significant contributions to citizen monitoring arena in region by showing that volunteer monitoring groups can successfully complete large-scale monitoring projects while meeting strict QA/QC requirements. Served as resource for other volunteer monitoring groups in region and often helped them to develop proper sampling methods and quality assurance project plans for their programs. Managed all grant writing and reporting for Beachkeeper program and was responsible for obtaining program's largest grant to date. She successfully increased program's budget from \$38,000 to over \$100,000 and brought in over \$110,000 worth of in-kind donations and corporate sponsorships. She served as chair of monitoring subcommittee of Ballona Creek Watershed Task Force, working with local stakeholders on creeks' water quality issues and served on Santa Monica Bay Restoration Commission's Technical Advisory Committee. In 2003, she received an award for Water Quality Stewardship from Los Angeles Regional Water Quality Control Board.

➤ **Beachkeeper Program Snapshot Water Sampling Events, Los Angeles, CA**

Mapped location and obtained GPS coordinates of over 700 storm drains and discharge points along Santa Monica Bay, from Malaga Cove to County line, and along Ballona Creek, including many that were never previously recorded, and this information will be used by Los Angeles Regional Water Quality Control Board during Santa Monica Bay Beaches Bacteria TMDL process. Served as primary author of first Beachkeeper Storm Drain monitoring report, "A Snapshot of the Bay," which included data used by federal, State, and local government agencies. Coordinated 15 Baywide Snapshot Water Sampling events (dry and wet weather) with over 3000 drain observations made, and over 1,500 water samples tested for parameters including Total Coliform, *E. coli*, Enterococcus, heavy metals, pH, total dissolved solids, and salinity. Managed in-house laboratory where all water samples were analyzed and preserved for future analysis, including strengthening infrastructure and quality control procedures for field and laboratory components of program. Managed over 50 volunteers trained to accurately conduct visual observations and obtain water samples from over 500 drains and discharges in Santa Monica Bay. Developed unique training method that not only teaches volunteers about field and sampling methods, but it also empowers them with Clean Water Act knowledge and how their collective data helps to change water regulations in region. Helped to create and populate customized Access database for program. Successful in obtaining consistent funding for program, with funding sources ranging from small foundation funding to large government grants.

➤ **Monitoring Subcommittee Chair and Task Force Member, Ballona Creek Watershed Task Force, Los Angeles, CA**

Active stakeholder in the Ballona Creek Watershed Task Force (BCWTF), which was formed to develop watershed management plan to help improve water quality and restore habitat in Ballona Creek Watershed. Served as monitoring subcommittee chair and spearheaded many monitoring efforts in creek and collection of water quality monitoring information from all stakeholders. Played integral role in development of community-based monitoring chapter in Ballona Creek Watershed Management Plan and in writing proposal to obtain



grant for full time watershed coordinator. As result, Baykeeper was awarded monitoring portion of grant and associated funding. Conducted regular meetings with BCWTF monitoring subcommittee and began to create website/database to house all projects, studies, and data collection efforts that have taken place in Ballona Creek watershed. This website/database would serve as searchable tool for task force. Started development of comprehensive monitoring plan and quality assurance project plan for upcoming community-based monitoring efforts.

➤ **Water Quality Monitoring and Education Coordinator, Ballona Creek Water Quality Improvement Project, City of Culver City, CA**

Santa Monica Baykeeper was subcontracted by City of Culver City to monitor large storm drain near Overland Avenue in Ballona Creek. City of Culver City was awarded grant to install CDS unit to control pollutants from entering Creek. Was involved since beginning and was responsible for all monitoring and education efforts on site. Coordinated weekly monitoring for over three years to track levels of specific pollutants that flow from this drain and their impacts to creek. Monitoring was conducted before and after installation of device and additional monitoring was conducted to help determine effectiveness. CDS unit was installed in November 2004, and is first device of its kind to be installed near Ballona Creek. Spearheaded collaborative effort with Southern California Coastal Water Research Project (SCCWRP) and CDS Technologies to conduct thorough effectiveness study. Collaboration of resources helped to obtain additional water quality, flow, sediment, and toxicity data. Successfully developed scientific method-based curriculum with teachers at Culver City Middle School to conduct water quality monitoring field experiments and teaching program about Ballona Creek for 400 seventh graders. Teachers were impressed by program and raised enough money to have Baykeeper return to teach for second year.

➤ **BMP Research and Monitoring Coordinator, Paradise Cove, Malibu, CA**

Planned and implemented installation and coordination of weekly monitoring on structural BMP device in City of Malibu. Ramirez Creek runs through portion of Malibu Creek Watershed and empties in front of Paradise Cove property. For years, Beachkeeper volunteers have monitored creek and it has consistently shown bacteria levels that significantly exceed state health standards. Many families visit this beach throughout year and children consistently play in and nearby. Owners of property and local restaurant worked with Ms. Bera and Beachkeeper program over several months to find solution to problem. After thorough research, monitoring throughout property and investigation, bacteria-reducing device was installed. Clear Creek Systems Inc. device uses UV system to treat and reduce bacteria levels as water flows through system. Beachkeeper volunteers and staff monitor creek and effectiveness of system on weekly basis and have seen dramatic drop in bacteria levels. Educational signs are displayed on site about device and weekly results are posted so beachgoers are aware of bacteria levels. Project serves as example for many of upcoming BMPs in Los Angeles region. Malibu area is unique because dry weather diversion for end-of-pipe treatment cannot be implemented. Los Angeles County Department of Public Works installed similar device in Marie Canyon based on pilot project in Paradise Cove. Also worked with City of Malibu to apply for additional state funding to upgrade current device in Paradise Cove to handle dry and winter dry flows and to have upgrades installed to easily divert treated water for future reuse on property.

➤ **Field and Volunteer Coordinator, Ballona Creek Dry Weather Snapshot Sampling Events, Southern California Coastal Water Research Project, Los Angeles Regional Water Quality Board, City of Los Angeles, Los Angeles County Department of Public Works, CA**

Successfully coordinated and completed three dry weather snapshot sampling events in Ballona Creek, and worked in collaboration with Los Angeles Regional Water Quality Control Board, City of Los Angeles, Los Angeles County, Southern California Coastal Water Research Project, and Ballona Creek Watershed Task Force. Goal of snapshot events was to sample all flowing drains and to conduct in-stream sampling throughout Creek within a few hours time. The near simultaneous snapshot of discharges and in-stream water quality provided critical information needed for constructing water quality model which was used to calculate total maximum daily load and to develop various scenarios for allocating pollutant loads among dischargers. Coordinated many logistics involved in effort, including recruiting and training volunteers; equipping each volunteer team with maps; and providing pictures and description of drains, access information, and monitoring kits for field. She also processed samples and arranged for delivery within hold times. Ms. Bera and the Santa Monica Baykeeper were recognized by California EPA Department of Toxic Substance Control for this effort and she was asked to serve on Technical Advisory Committee (TAC) for project that looked at implementing Coliform TMDLs for Santa Monica Bay beaches using standard methods and rapid indicator detection technologies. One watershed of interest for this study was Ballona Creek. Planned and implemented coordination of one of three Ballona Creek dry weather samplings to accommodate additional



samples to be collected for this study. Results and manuscript was accepted for publication in Applied and Environmental Microbiology, with Ms. Bera as co-author.

- **Los Angeles Region Coordinator, California Coastwide Snapshot Day 2003, California State Water Resources Control Board, Los Angeles, CA**
Through Santa Monica Baykeeper, coordinated Los Angeles County citizen water quality monitoring groups for inaugural California Coastwide Snapshot Day 2003. Event was designed to increase public awareness about issues that affect watersheds that drain into coastal and adjacent waterways and was important step toward comprehensive data collection and coordination of all monitoring groups along coast. Supervised over 80 trained volunteers from 13 different organizations and monitored over 100 sites for water quality parameters including indicator bacteria, pH, turbidity, nutrients and conductivity. Successfully used momentum of event to conduct first of three dry weather snapshots in Ballona Creek to show importance of volunteer monitoring efforts and influence on regional water regulations.
- **Los Angeles Region Shoreline and Surf zone Sampling Coordinator, Southern California Coastal Water Research Project, Los Angeles, CA**
As part of Southern California Bight 2003 Study of ocean and bay waters between Point Conception and Baja California, Mexico, a series of region wide sampling events took place in fall and winter (2003/2004) to answer questions on water quality and stormwater flows at beaches next to large drainages or creeks. Participating organizations included local health departments, City water/wastewater agencies, environmental groups, and private and academic researchers. One aspect of study was to compare water quality at shoreline (where routine testing is performed in 4 -12" depth water) to water quality at wave impact zone where most recreate. The goal was to understand if these routine shoreline sample results are actually representative of water quality where people recreate. Ms. Bera provided valuable input in microbiology study and was responsible for mobilizing volunteers to assist with surf zone sample collection to provide bacteria fate and transport data from coastal rivers to shoreline and further offshore. She also had significant input on surf zone monitoring and safety protocols for volunteers.
- **Environmental Stakeholder and Representative in TMDL compliance monitoring plan and implementation plan development, Santa Monica Baykeeper, Los Angeles Regional Water Quality Control Board, Los Angeles, CA**
Data collected by Beachkeeper program contributed to development of TMDLs in Los Angeles region. Assisted responsible agencies and jurisdictions as they developed coordinated shoreline monitoring plan to determine ongoing compliance with Santa Monica Bay Beaches Bacteria TMDL. As a result of her efforts and Beachkeeper program's extensive dataset, Regional Water Board include statement in compliance monitoring plan that requires agencies to use Beachkeeper program data for future work on this TMDL. Was also active in Ballona Creek and Marina Del Rey TMDL development and played integral role in helping to shape monitoring and implementation plans for these TMDLs. Was instrumental in obtaining grant for Beachkeeper program to fund Baykeeper's involvement in these TMDLs and many other TMDLs being developed in Los Angeles region.

Publications and Presentations

- Noble T., Rachel, J.F. Griffith, A.D. Blackwood, J.A. Fuhrman, J.B. Gregory, X. Hernandez, X. Liang, A. Bera, K. Schiff, *Multi-Tiered Approach Using Quantitative Polymerase Chain Reaction For Tracking Sources of Fecal Pollution to Santa Monica Bay, California*, Southern California Coastal Water Research Project, Westminster, CA. 2005.
- Bera, Angie, *Volunteer Monitoring Helps Identify Problems and Improve Cleanup*, The Clean Water Act, Owner's Manual 2nd Edition, River Network, 2005.
- Bera, A., Dates, G., *Data to Information*, Proceedings, River Rally Conference, Wintergreen, VA, May, 2004.
- Bera, Angie, *Los Angeles County Executive Summary*, California Coastwide Snapshot Day 2003, Sacramento, CA.
- Bera, A, Craig, M., *Keeping Pollution at Bay*, Volunteer Monitor Newsletter Success Stories, Summer, 2002.
- Bera, Angie, *Snapshot of the Bay, Beachkeeper Storm Drain Report*, Santa Monica Baykeeper, Marina del Rey, CA, 2001.



Awards/Organizations/Certifications

California Regional Water Quality Control Board, Los Angeles Region, 2003 H. David Nahai Awards, Water Quality Stewardship.

Catalina Island Women's Forum, Corresponding Secretary and Board Member

Avalon Beautiful, Former President and Member

Team in Training, The Leukemia and Lymphoma Society, 2002 Olympic Distance Triathlon Participant, 2005 Olympic Distance Triathlon Participant and Mentor

Open Water, Advanced and Research Certified SCUBA Diver from University of California, Los Angeles

United States Coast Guard Auxiliary Courses, Boating Skills and Seamanship, Coastal Navigation

