



STATEMENT OF QUALIFICATIONS

PROTEUS Consulting is a boutique professional services consulting firm for the Water sector, specializing in engineering and management consulting. We are dedicated to harnessing the synergy between Energy, Information, Finance, and Communication domains to enhance the Water world. With versatile and high quality solutions, we facilitate the transformation of business-as-usual to a high-energy and productive environment. We are known for our creativity and problem-solving skills, and our clients appreciate the individual attention this small, flexible firm is able to provide.

The Water Industry is at the threshold of a radical transformation. We help our clients undergo that change systematically by removing barriers and releasing the pressure, while enhancing the metamorphosis through a cross-discipline flow of innovative ideas and strategies. Two themes run in the core of everything we do – **Optimization** and **Collaboration**. We believe that every resource, material and human, should be managed at the best efficiency point, not overused and not underutilized. In the future as we see it, there is no place for competition, the world can only grow and be sustainable if we cooperate and work towards a vision bigger than ourselves.

PROTEUS Consulting is a minority and woman-owned, small disadvantaged business. (DBE, SWBE, SDBE, WMBE, ELBE, EBE, Small Business (Micro), EDWOSB, WOSB)

ENGINEERING AND MANAGEMENT CONSULTING SERVICES

Our success stems from our ability to quickly and effectively understand the unique physical, cultural, and economic opportunities of each assignment. We specialize in building creative solutions that honor each project's distinct features and are committed to integrating design, engineering, and community in a manner that creates value and conserves resources – human and material capital.

WATER+ENGINEERING

- Traditional Engineering
 - Research and Reports – research advanced and innovative technologies and deliver an analytical report highlighting applicability, cost-benefit analysis, and constructability review
 - Alternatives Development and Evaluation
 - Preliminary Design
 - Project Implementation Plans
 - Instrumentation and SCADA Design
 - Construction Plans, Specifications, and Estimates
 - Budget and Schedule Management
- Bid Phase Assistance
- Shop Drawing Submittal Review
- Field Engineering, Construction Inspection
- Training for Engineering, Operations, and Maintenance staff
- Commissioning Assistance
- Asset Management
 - Integration of Capital Planning, Asset Data and Work Management, Customer Service, Supply Chain Management, and Analytics and Information Delivery
 - Definition of Service Levels and Key Performance Indicators

- Asset Hierarchy, Inventory and Data Collection, Validation, and Management
- Asset Condition and Risk Assessment
- CIP Development and Funding Options
- Maintenance Evaluation and Optimization
- Business Process Development and Training
- ISO 55000/SIMPLE Frameworks and Gap Analysis
- As-Is and To-Be Process Analysis, Blueprints for implementation
- Value Management Approach
- Regulatory Compliance
 - Local Limits Studies
 - NPDES / WDR Permit Applications
 - Title 22 Engineering Reports
 - Water Recycling Permit Applications
 - Groundwater Recharge Permits
 - State and Federal Regulatory Approvals
 - California DPH Regulatory Approvals
 - Permit Management Plans
 - Regulatory Compliance Reports, Annual Reports
 - Pretreatment Program Assessment and Development
 - Pollutant Control Programs
 - Waste Minimization Studies/Programs
- Design-Build Services
 - Owner's Representative for clients interested in setting up DB contracts per industry standards
 - Engineering lead for contractor-led DB teams furnishing design for all disciplines
 - Consultant for design firms to develop the DB program by creating a customized Project Delivery Model
 - Assist DB consortiums to set up compatible project teams – Design, Procurement, Document Control, Quality, Construction, Commissioning, and Handover

WATER+INNOVATION

- Mentoring for Start-ups
- R&D Program / Technology Assessments

- Institutional Innovation Programs
- Business Development
- Strategic Planning
- Product Design
- Process Engineering
- System Review and Optimization
- Mechanical Engineering
- Pilot / Beta-Testing
- Commissioning
- Innovation Cluster Development
- Partnerships and Collaboration Platforms

WATER+ENERGY

- Energy Negotiations
- Level I, II, and III Energy Audits
- Renewable Energy Options
- Live Energy Tracking and Monitoring
- Pumping / Process Optimization
- Dynamic Real-time Energy Optimization
- Management of Energy Contracts
- New Revenue Generation Models
- Energy Strategic Plans and Implementation

WATER+INFORMATION DESIGN

- Technology Management Plans
- Technology Master Plan
- Data Visualization
- Analytics and Forecasting
- Diagnostics and Predictive Strategy
- Business Intelligence
- Dashboards
- Operations and Maintenance Optimization
- Procedures and Process Mapping
- Decision Capture / Knowledge Management
- Field Application Software
- Mobile Apps
- Information Management Consulting / System Selection

WATER+COMMUNICATIONS

- Print, Web, and Strategy Materials
- Public Engagement with innovative methods
- Project Facilitation
- Stakeholder Collaboration
- Community Relations
- Event Planning and Management

- Education and Training
- Art, Music, Theatre, and Film projects
- Video Production and Podcasts
- Social Media Strategy
- Media Engagement
- Game Development

WATER+FINANCE

- Risk Analysis and Scenario Planning
- Funding Analysis
- Grant Consultation, Grant Match
- Grant and Loan Applications and Reporting

- Resources: USEPA, USDA, California I-Bank, CDBG, ISRF, DWR, CDPH, Cal WRCB, USBR, DOD, DOE, NASA, DOS, SDG&E, CPUC, CAISO, CEC, private equity funding, angel investor groups, venture capital funds, etc.
- Financial Analysis, Return on Assets
- Venture Capital/Private Equity Funding
- Water Markets, Water Exchanges
- Setting up Renewable Energy Credits, Water Conservation Credits, Carbon Market and Credits
- Intellectual Property Rights Options / Licensing

MUNICIPAL PROJECTS PORTFOLIO

CITY OF SAN DIEGO

AS-NEEDED ENGINEERING SERVICES (CONTRACTS H166753 AND H166754) 2016-2019.

PROTEUS Consulting is on the teams (Kleinfelder and Carollo Engineers) selected for the two \$5 million contracts. The City of San Diego Public Utilities Department has a need for professional engineering consultant services on an as-needed basis to support the existing and future water, wastewater, and recycled water facilities. This contract includes the design water, sewer, and recycled water systems; review and/or perform specific hydraulic analysis; provide value engineering services as a third party review of proposed water, wastewater, and recycled water projects; perform condition assessment of water, wastewater, and recycled water facilities including: raw, recycled, and potable water transmission pipelines, trunk sewers, force mains, pump stations and treatment facilities; provide expertise in water and wastewater treatment process and pilot study design and implementation; civil engineering, cost estimating, technical writing, Business Case Evaluations, O&M training to City Operations staff; and facilitate learning processes of Public Utilities engineering staff by training them how to resolve similar problems related to specific task orders to permanently improve organizational effectiveness of Public Utilities' engineers.

As a part of this contract, PROTEUS Consulting has worked on two Task Orders on the Carollo Engineers contract:

- **WATER SYSTEM OPERATIONS (WSO) STANDARD OPERATING PROCEDURES (SOPs)** – PROTEUS Consulting is currently developing for the City of San Diego SOPs for Pump stations, Pressure regulating stations, Reservoirs/Standpipes, and Altitude Valves. The City of San Diego maintains and operates more than 3,300 miles of water lines, about 50 water pump stations, over 90 pressure zones, and more than 32 standpipes, and concrete and steel reservoirs. The City is currently in the process of updating their existing preventive maintenance procedures, and at a later date, these SOPs will be included in the City's flagship IAMSanDiego initiative.

- **STORMWATER RECOVERY FEASIBILITY STUDY** – PROTEUS Consulting performed an initial regulatory requirements overview that identified local, state, and federal regulatory agencies that will have an interest in the City's stormwater recovery efforts. Existing regulations that have an impact on project implementation success, such as unauthorized discharges or storm water diversions, were identified and; the team provided guidance for how the potential stormwater recovery projects may be implemented in a comprehensive technical memorandum.

Based on the work performed, the City is currently negotiating an extension of this task order to include sampling of storm water along the river catch basins in Mission Valley, which may include the development of a comprehensive planning and sampling program.

DESIGN OF NORTH CITY PURE WATER FACILITY.

PROTEUS Consulting has teamed with Carollo Engineers to design the 34mgd North City Pure Water Facility. Once built in 2021, this facility will use advanced water purification technology to treat recycled water into safe and reliable water for reservoir augmentation. This project is a part of the City's greater Pure Water Program which aims to reduce the City's dependence on imported water, increase use of recycled water that is currently produced at the water reclamation facility, reduce the flows to the Point Loma Wastewater Treatment Plant, and develop drought-proof local source of water for San Diego. The project involves the design development and production of construction level documents that include, but is not limited to, engineering tasks necessary to refine and optimize the existing 30% design into final construction plans, alternative evaluations, layout and utilization of equipment and materials, operational health and safety, and quality control. PROTEUS Consulting staff is embedded in the design team providing valuable day-to-day engineering services. PROTEUS Consulting is also performing quality control reviews of all design deliverables for this project.

BUSINESS CONSULTANT SERVICES FOR CITY'S ENTERPRISE ASSET MANAGEMENT SYSTEM.

PROTEUS Consulting has teamed with Arcadis to help document existing business practices and systems associated with the City's current Asset Management efforts, and provide guidance to the City about the best practices and methods for moving from these legacy Asset Management practices and systems to a new, integrated Enterprise Asset Management system, (IAMSanDiego), being developed as part of the City's SAP (Systems, Applications & Products in Data Processing) work environment. The project required a thorough engagement with the City's workforce to create a

detailed documentation of "as is" conditions and to work with City staff (including Public Utilities, Public Works, Transportation, Stormwater, Facilities, and Information Technology; consisting of over 10,000 employees) to develop an equally comprehensive understanding of



impediments, hurdles and opportunities for smooth transition to the “to be” state for the City’s preferred SAP EAM system. This project started in December 2015 and throughout 2016, all-encompassing business process maps were developed for the City. The entire project will take five years for full implementation, during which the team will be regularly monitoring the efficacy of assimilation of the SAP EAM system into the City’s daily operations and providing feedback to the implementation team and the City leadership.

2017 AND 2018 CITY, COUNTY, AND PORT OF SAN DIEGO CONSULTANT ROTATION LIST FOR WATER/WASTEWATER/STORM WATER ENGINEERING FACILITIES AND PUMP STATIONS.

The City of San Diego, County of San Diego, and Unified Port District, has retained PROTEUS Consulting to provide highly qualified architectural, engineering, and related professional services on an as-needed basis on water, wastewater, stormwater facilities and pump station planning and design. Fees for small projects can range up to a maximum of \$250,000 for each assignment and the firm will be on the rotation list for a term of two years.

CONSULTING SERVICES FOR OPERATIONS OPTIMIZATION.

Proteus Consulting was a valued team member for the Operations Optimization project led by CH2M. The scope of the project included a thorough review and evaluation of City of San Diego’s Public Utilities Department’s (PUD) existing facilities, operations and business processes to determine where improvements in operational efficiencies and/or cost savings or revenue improvement can be made in the areas of energy utilization, water production and distribution, chemical usage, data utilization, wastewater sludge processing and disposal, operator staffing, and warehouse practices and procedures.

As a part of this project, PROTEUS Consulting professionals reviewed 16 critical municipal system lift stations, four large wastewater pump stations, and 20 water pump stations. For all these stations, asset condition reports were generated along with opportunities for operational optimization to save costs and improve efficiency. Technical memoranda were created for capital improvements at these facilities, along with creation of project descriptions, costs, and recommendation of construction. Additionally, all the water and wastewater treatment plants were also reviewed on similar topics and detailed recommendations generated with project descriptions, costs, and prioritization. Apart from this, PROTEUS Consulting did a detailed review of all technology used at the PUD for data capture, analysis and utilization for operations and business. A detailed memorandum was created so that the PUD can progressively make a transition to better state in ease of data collection and utilization.



AS-NEEDED PLANNING CONSULTANT.

PROTEUS Consulting has teamed with the Dyett & Bhatia team to provide support for water, wastewater, and recycled water programming and other planning activities. PROTEUS Consulting is currently working on Mission Valley Community Plan under this contract. The first task order is to prepare the existing conditions Program Environmental Impact Report section for Public Utilities/Infrastructure. The section will describe the physical setting that include existing and planned water infrastructure, water sources and supply, and demand; existing wastewater facilities, infrastructure, capacity, and demand; existing stormwater infrastructure and capacity; and existing solid waste facilities, capacity, and usage. The regulatory setting section of the report will discuss any applicable NPDES permits.

AS-NEEDED ENGINEERING SERVICES 2015-2018.

PROTEUS Consulting teamed with Kleinfelder for a three-year \$5 million contract to provide as-needed engineering services to the City of San Diego. The scope of work included: design of water, sewer, and recycled water systems; review and/or perform specific hydraulic analysis; provide value engineering services as a third party review of proposed water, wastewater, and recycled water projects; perform condition assessment



of water, wastewater, and recycled water pipelines including raw, recycled and potable water transmission pipelines, trunk sewers and force mains; and provide expert support services in environmental compliance including permitting, and grants.

As a part of this contract, PROTEUS Consulting assisted with North City Recycled Water Reclamation Plant (NCWRP) Tertiary Filter Capacity Evaluation and Pathogen Study. The main study objectives were: (1) securing the approval for the existing tertiary filters at 45 MGD capacity; (2) securing at least 2-log Cryptosporidium removal through the NCWRP; (3) securing at least 1-log Cryptosporidium removal through the NCWRP filters; and (4) documenting water quality, trace organic constituent concentrations and pathogen removal performance through the NCWRP at an SRT of 7.5 days.

AS-NEEDED ENGINEERING SERVICES FOR ASBESTOS CEMENT WATER MAIN REPLACEMENT PROGRAM MASTER PLAN.

PROTEUS Consulting had teamed with the Arcadis/Pirnie team to provide Permitting/Safety Procedures services including the preparation of work plans from a safety/OSHA perspective. Through this project the City developed a system-wide Asbestos Cement (AC) pipeline replacement program master plan. The scope of services for this \$2 million contract included assessment of over 2,100 miles of AC water mains with varying diameters.

Updated 4/16/2018

AS-NEEDED ENGINEERING SERVICES 2012-2015.

PROTEUS Consulting teamed with Brown & Caldwell for a three-year \$5 million contract to provide as-needed engineering services to the City of San Diego. The scope of work for PROTEUS Consulting included Commercial, Industrial & Institutional (CII) Water Conservation Surveys/Audits, where comprehensive water audits were performed for City's CII customers to assist them in evaluating their onsite water use and to develop a water efficiency program to optimize water usage and savings by identifying potential water reduction alternatives. The existing Business Water-Wise program was reconfigured and enhanced, which included the development of business processes within the City. CII customers signed up with the City, and then were forwarded to PROTEUS Consulting to perform detailed water-use surveys, which included the study of domestic water systems, food equipment, medical and dental equipment, HVAC systems including cooling towers, heat exchangers, chilled and hot water closed loops, central plants, boilers, RO units, water softeners, autoclaves and sterilizers, chemical water treatment programs, and in-facility recycled water plants. As a result of the audits, there was predicted water savings up to 48% in some facilities.

CITY OF CARLSBAD**CIP PROJECT MANAGEMENT SERVICES.**

PROTEUS Consulting is assisting the City of Carlsbad on Capital Improvement Projects (CIP) management services for 2017 - 2019, extendable to future years. The following tasks have been identified:

- **OPERATIONS AND CIP CONTRACT IMPLEMENTATION AND MANAGEMENT** - The City of Carlsbad Public Works has few miscellaneous asset reviews and update projects lined up that needs further detail development to be included in the City's active CIP program. PROTEUS Consulting is working with the Utilities Division's O&M and Engineering staff to identify the specific needs for capital projects. This task involves a series of meetings with personnel at various levels in the organization to get a thorough understanding of the specific requirements and to confirm project concepts and conditions in the field. Information is collected from various sources (e.g. records, field reviews), and reviewed against the existing list of projects. New projects are added if necessary. The existing detailed project descriptions (background, description, justification, and delivery method) are being validated and new descriptions are created for new projects. A preliminary estimate of project cost is developed for each identified project. Subsequently, meetings are held with City staff to identify the best project implementation strategy as well as project priority to match the City's budget allocations. Some projects may require additional engineering that will be performed through the City's existing As-Needed contracts. Other projects may be requirements for studies, updates, or other professional services (e.g. facility condition assessment), which will be addressed by other procurement methods. PROTEUS Consulting is preparing and maintaining the schedule of projects, the descriptions, and assisting in implementation of the projects. As a part of this task, PROTEUS Consulting prepared the

biddable rehabilitation plans for Batiquitos Lift Station and Knots Lane Lift Station. For 2018 - 2019, there are few other projects identified that require contract assistance and development.

- **INTERZONAL FLOW METERING** – Carlsbad Municipal Water District (CMWD, District) prides itself in the provision of safe water quality and continuous, on-demand supply to its more than 86,000 customers in its service area. While the District is relentless in the effort to provide quality and quantity of water service, the focus on precise delineation of water system accounting may not always be in the forefront of operations and management. With water resources being increasingly stressed due to climate change and growing populations, and with impending strict conservation regulations, by employing improved methods of water auditing and loss control, CMWD has the potential to reduce the treated water that is lost to leakage or other means. Water Loss Control is an emerging field of practice in the water sector, and water loss audits are now becoming permanent requirement. Senate Bill 1420 (updated in 2014) established that urban water suppliers submit a report that quantifies water system losses with their urban water management plans. Subsequently, California Senate Bill 555, passed in October 2015, required all urban retail water suppliers in the state to submit a completed and validated water loss audit annually to the California Department of Water Resources (DWR) beginning October 2017. As a result of the SB555, DWR is in the process of establishing validated water loss audit requirements for the submittal of annual validated water loss audits. With this increased focus on water loss accounting in the sector, CMWD has been interested to not only meet the annual state reporting mandates, but also investigate tools and methods within its day-to-day operations that may help evaluate and accurately measure water loss on a regular basis. The expectation is that accurate data collection and analysis might help identify and isolate leaks or other system losses and help resolve the issues in time and save money for the district, which in turn can be applied to other projects.

In 2017, PROTEUS Consulting prepared a technical memorandum to delineate a high-level review of current practices at CMWD with respect to water loss control and recommended a path forward for meeting the upcoming regulatory requirements, and having an efficient operating system. This written plan included definitive and measurable goals for optimizing system performance and ensuring efficient water use, with timelines for implementation. The intention was to set up a measurement system in the coming years that ensures that the water distribution is operating at optimal efficiency or is on track to do so.

In 2018-2019, this project shall be implemented.

- **FRONT END DOCUMENTS REVIEW** - PROTEUS Consulting is reviewing of the City's existing Front End documents for both Design-Bid-Build and Design-Build projects and providing recommendations for changes.
- **TECHNICAL SPECIFICATIONS REVIEW** – In 2018 – 2019, PROTEUS Consulting will be reviewing and updating the City's standard specifications as it relates to technical issues. This will include coordination with all departments that currently utilize the standard specifications, collecting their opinions and requirements, consolidating and updating the specifications.

CITY OF OCEANSIDE

CONDITION ASSESSMENT AND ACCESS IMPROVEMENTS PROJECT

PROTEUS Consulting has teamed with Infrastructure Engineering Corporation to provide quality assurance and quality control services for the Condition Assessment and Access Improvements for the Mesa Garrison 24-inch Gravity Line - Mission Avenue Lift Station Force Main, the 24-inch Land Outfall and the 42-inch Force Main - Gravity Line. These pipelines operate under both gravity and pressurized conditions and potentially under different configurations and are critical for City's operations. Two major pipelines are in the raw sewage collection system and one critical land outfall pipeline that conveys disinfected secondary effluent from the San Luis Rey WWTP to the Ocean Outfall vault. All three pipelines generally follow the same alignment and are close together which is both helpful for diversions, bypassing, etc. but also problematic for the constructability of access points for both the inspections and permanent facilities. The scope of work consists of physically locating and exposing each of the three pipelines along the entire alignments. Thereafter, this project includes the planning, and design for both temporary and permanent access points for inspection, performing condition assessment evaluation (both internal and external), and recommending repairs or possible replacement based on the information gathered. The intent of this project is to (1) Identify any immediate defects and stabilize the three pipelines, (2) Prevent further corrosion and deterioration and/or add additional useful life to sections of the pipeline(s) if possible, and (3) Allow the City a way to monitor the pipelines and continually reprioritize the CIP based on future inspections.

PROTEUS Consulting's scope for this project includes development of a Project Quality Plan, review of the Temporary and Permanent Access Plans, Permitting Plan and all Permitting Applications, Condition Assessment and Analysis Report, and Capital Improvement Plans. This is important because there are five separate teams working on this project, including a construction contractor. Furthermore, portions of the project may need environmental documentation and approvals. All deliverables require expert scrutiny and also be properly coordinated to ensure smooth project delivery.

ROBERT A. WEESE FILTRATION PLANT CHEMICAL SYSTEMS UPGRADE – DESIGN BUILD PROGRAM MANAGEMENT SERVICES

The City of Oceanside purchases imported raw water from the San Diego County Water Authority (SDCWA) and treats it at this 25 mgd facility. Treatment consists of rapid mix, flocculation, direct filtration, and



disinfection processes. PROTEUS Consulting was hired to act as the project manager for the upgrade of the chemical systems at the plant, which includes the design and construction of seven new chemical systems: Aluminum sulfate, Aqueous ammonia, Sodium hydroxide, Sodium hypochlorite, Sulfuric acid, Anionic (on nonionic) polymer, and Cationic polymer. The existing chemical systems will be demolished and the new systems will be connected to the SCADA for full automation.

In 2016 - 2017, PROTEUS Consulting prepared a detailed Design-Build package for the system, which included revision of the City's Front-end documents, Project Criteria highlighting the specific City requirements and design criteria, and specifications. A detailed design build package was prepared for the City which included a Request for Qualifications for pre-qualification of prospective design-build teams, followed by a detailed Request for Proposals for selected teams. Proprietary meetings were held with the proposing teams to clarify requirements. The bids were evaluated, and a team selected among four design build teams.

For 2017 - 2018, PROTEUS Consulting has been retained for bidding and construction phase project management services. PROTEUS Consulting is now helping the City manage the design of the chemical upgrades, followed by the construction phase activities. Of particular interest to the City is a 28-day performance testing period and quality assurance throughout the design-build process.

ON-CALL CAPITAL IMPROVEMENT PROJECTS (CIP) DESIGN AND PROJECT MANAGEMENT (PM) SERVICES, FY2016–FY2017.

PROTEUS Consulting was awarded a consulting services contract for CIP design and PM services starting December 2015. The scope included the management of CIP projects from inception through design and during construction. Work performed on this contract included:

- **MISSION BASIN GROUNDWATER PURIFICATION FACILITY CHEMICAL SYSTEMS UPGRADE** – The desalting treatment facility provides 15% of the city's water supply, and uses reverse osmosis (RO) to treat local brackish groundwater extracted from the Mission Basin. While the RO treatment process reduces salt concentrations in the groundwater; additional treatment removes iron and manganese. The Facility was put into service in 1992 was later expanded to its current capacity of 6.4 mgd in 2002. PROTEUS Consulting studied the efficacy and design of the various chemical systems (hydrochloric acid, ammonia, sodium hypochlorite, antiscalant, peroxide) to upgrade them to meet the requirements of current operations and regulations. Subsequently, the replacement plans and specifications for ammonia were prepared, and PROTEUS Consulting performed the bid-phase services.
- **LIFT STATION FLOWMETER REPLACEMENT PROJECT** – The City of Oceanside was interested in standardizing the flowmeters at various wastewater facilities (lift stations and treatment plant) to ensure the proper measurement and collection of flow data. For this project, 14 sites were identified for flowmeter replacement or for new flowmeters. PROTEUS Consulting designed the upgrades. The project involved field reconnaissance and data gathering, design of flow meter replacement/ new meter installation, bid documents, and bidding assistance/ construction phase design services.

- **REVISION OF STANDARD DETAILS** - PROTEUS Consulting drafted revision of City's Standard Details with respect to Water, Wastewater, and Recycled Water.

AS-NEEDED ENGINEERING SERVICES, FY2014 – FY2015.

PROTEUS Consulting led two large water conservation projects for the City of Oceanside under an As-Needed Engineering Services contract. Scope of work involved the administration of these projects, including securing rebates for all the improvements, development of bid documents and construction oversight.

- **TURF REPLACEMENT** - PROTEUS Consulting performed a thorough review of all City properties for grass (turf/ lawn) and other water intensive features and developed a program (planning, design, and construction) for conversion of certain grass lawn areas to either synthetic turf or to drought tolerant plants. Fifteen properties were reviewed in details with site visits (photos and measurements), and then two bid packages were created for turf replacement with approximately 22,000 square feet of turf. On behalf of the City of Oceanside, applications were also made for the Metropolitan Water District (MWD) SoCal WaterSmart rebates. The City decided to replace the turf with synthetic turf. If the replacement was with water-wise plants, these areas could have also qualified for additional rebates from the San Diego County Water Authority. Bid and construction phase services for the project were also provided.
- **FIXTURES REPLACEMENT** - PROTEUS Consulting reviewed the City's 46 properties, including community centers, pools, City offices, fire stations, libraries, water and wastewater facilities, senior homes, police stations and jails, and parks. A comprehensive and detailed list of existing fixtures at each property, along with anticipated usage was created. Thereafter calculations were developed for the water savings and cost of projects for replacing all the fixtures (toilets, urinals, faucets, and showers), along with the return on investment with existing rebate programs. The estimated savings was approximately 2.5 million gallons a year, with a project cost of only \$105,000. The City is currently replacing all the fixtures (toilets, urinals, showers, and faucets) with high efficiency alternates.



ON-CALL WATER AND WASTEWATER ENGINEERING SERVICES, FY2012 – FY2013.

PROTEUS Consulting was awarded the water and wastewater engineering on-call professional services contract by the City of Oceanside with the scope of work for design of water, sewer, and recycled water systems including hydraulic analysis, design and development of plans, specifications

and cost estimates, as well as on-call permitting and grant writing services. The tasks performed under this contract were:

- **HAYMAR AVENUE DISCHARGE TECHNICAL REPORT AND RESPONSE** - PROTEUS Consulting assisted the City of Oceanside in preparing a formal response to Investigative Order No. R9-2011-0035 issued by the California Regional Water Quality Control Board, San Diego Region, to the City of Oceanside. The response letter and accompanying 1,200+ page Technical Report furnished all the requested information on the nature, circumstances, extent, and impacts related to the discharge of untreated sewage to Buena Vista Creek, Buena Vista Lagoon and the Pacific Ocean from a 15-inch gravity sewer line near North Haymar Drive from December 23 – 28, 2010. This discharge occurred when an existing 50+ year old VCP pipeline failed during a heavy storm event. While relocation plans for this critical pipeline was ready for implementation for over four years, the project was unfortunately held up in the permitting process.
- **WATERSMART SYSTEM OPTIMIZATION REVIEW GRANT** - PROTEUS Consulting prepared a comprehensive grant package on behalf of the City of Oceanside for the WaterSMART System Optimization Review Grant. Under this grant up to \$300,000 was available for water districts, tribal water authorities, state agencies, and other organizations with water or power delivery authority located in the Western United States to perform an assessment of the potential for water management improvements in a river basin, system, or district and generate a report identifying specific improvements to increase efficiency, including a plan of action for implementing the recommendations. The City of Oceanside proposed to conduct a Comprehensive Water Audit, Design a 5-year City-wide Loss Accounting and Reduction Program, and Implement the program to demonstrate measureable decrease in water loss for the City.
- **NOAA FY2013 COMMUNITY-BASED MARINE DEBRIS REMOVAL GRANT** - PROTEUS Consulting submitted a grant application package on behalf of the City of Oceanside for the NOAA Marine Debris Program. Through this solicitation every year NOAA identifies marine debris removal projects, strengthens the development and implementation of habitat restoration through community-based marine debris removal, and fosters awareness of the effects of marine debris to further the conservation of living marine resource habitats, as well as contribute to the understanding of debris types and impacts.
- **BOATING INFRASTRUCTURE GRANT** - PROTEUS Consulting submitted a grant application package on behalf of the City of Oceanside for the Boating Infrastructure Grant. Under this grant, the City applied for \$495,000 to build new restroom facilities at the Oceanside Harbor.
- **PUBLIC ACCESS GRANT, CALIFORNIA WILDLIFE CONSERVATION BOARD** - PROTEUS Consulting prepared a grant application package on behalf of the City of Oceanside for the Public Access Grant, California Wildlife Conservation Board. The City applied for \$300,000 toward the design and construction of a restroom for the harbor and marina.
- **DEPARTMENT OF BOATING AND WATERWAYS FUNDING APPLICATION** - PROTEUS Consulting prepared a funding application package on behalf of the City of Oceanside. The City applied for

\$300,000 toward the planning, permitting, design and construction of a boater's restroom at the harbor.

COACHELLA VALLEY WATER DISTRICT (CVWD)

COMPREHENSIVE WATER AUDITS FOR FOCUS CUSTOMERS.

PROTEUS Consulting was selected by CVWD in 2016 to perform water conservation audit services for chosen top 20 Tier 5 customers that have been exceeding their water budgets. In 2015, due to the severe drought, CVWD had been mandated by the State of California to reduce overall water consumption by 36% compared to the 2013 water use baseline. Despite extensive effort by CVWD staff to encourage water conservation throughout the service area, CVWD missed the 2015 State mandated goal and was fined for non-compliance. To avoid additional restrictions and fines, CVWD instituted this project to encourage increased water conservation. Water audits are being performed at the customer sites that target water conservation measures, including but not limited to, detailed irrigation system review and modification, study of domestic water systems: fixtures, food equipment, medical and dental equipment, HVAC systems including cooling towers, heat exchangers, chilled and hot water closed loops, central plants, boilers, RO units, water softeners, autoclaves and sterilizers, chemical water treatment programs, and in-facility recycled water plants; and recommended changes. Audit reports are being created for each site with recommended conservation measures and projects, including rebates available and return-on-investment/payback calculations. These reports have been found to inspire the customers to undertake measures to actively reduce water consumption. Several large customers were audited as a part of this project, including, 35 acres of home owners association landscaping, the largest shopping mall in the Valley, commercial waste recycling facility, gas stations and convenience store/restaurant, car and truck sales centers, private gated residential golf community and clubhouse, etc. Water savings identified ranged from 20% to 64% at the sites audited. Started in 2016, the contract has been renewed and doubled for 2017 to perform additional water audits for the district's customers.



CITY OF TWENTY-NINE PALMS

WASTEWATER TREATMENT PLANT FEASIBILITY STUDY.

PROTEUS Consulting was selected (with Stetson Engineers) by the City of Twenty-nine Palms to develop a comprehensive wastewater treatment plant feasibility study. At this time the City does not have any collection system or treatment plant. The entire City is built on septic system and the underlying groundwater reserves are currently under salt and nutrient stress. The City intends to build a robust wastewater system and also connect the existing Federal Marine Corps Base to the

City's facility. The proposed project is to plan for the City a program to make this possible. The scope of work includes detailed discussions with the Marine Corps Base reach an agreement for a potential joint solution for wastewater treatment and conveyance. A memorandum of understanding will be developed. Thereafter, a detailed feasibility study will be conducted that includes review of all existing data such as preliminary geotechnical, topographical, land ownership, project operation, existing facilities, regulatory permit requirements, effluent discharge limitations, and biosolids disposal, etc. Concept layouts will be created. Following that, in-depth analysis will be performed to develop comprehensive and defensible capital (construction) costs as well as operations and maintenance (O&M) costs. Different process alternatives will be evaluated, including the possibility of Title 22 Recycled water to be produced to serve the Base, which is already piped for such water. The intent of this analysis is to help the City identify and select a preferred treatment alternative that will suit the needs at present, as well as serve as a template for future growth. It is understood that the costs developed from this analysis may be used by the City for applications for project funding through Federal and State grant and other funding programs. This analysis may also serve as the basis of initial permitting discussions with the regulatory agencies.

ENCINA WASTEWATER AUTHORITY (EWA), CARLSBAD, CA

GREENHOUSE GAS INVENTORY AND ENERGY TRACKING, FY2017 AND FY2018

For FY2017, PROTEUS Consulting continued the work on Greenhouse gas reporting to the Climate Registry for 2016 for EWA's operations. This includes Scope 1, Scope 2 and biogenic source calculations. On behalf of EWA, PROTEUS Consulting is also working with the US Department of Energy Better Plants Program to report the yearly updates on energy reduction. EWA achieved over 25% energy intensity reduction and received an award from the DOE in September, 2017. For FY 2018, EWA has renewed the contract with PROTEUS Consulting for greenhouse gas inventory and energy tracking.

LOCAL ENERGY RELIABILITY R&D, FY 2016.

For FY2016, PROTEUS Consulting was engaged in the following scope of work: (1) Greenhouse gas reporting to the Climate Registry for 2015, and plan for future verification and program development. (2) EPA Green Power Partnership Reporting. (3) US Department of Energy Better Plants Program: identify the volumetric reduction of total energy consumption to meet the minimum program goal of 25% reduction in 10 years. Also present alternative approaches to achieve the reduction goal while not impacting EWA's reliability or diminish the permit compliance effectiveness of ocean, air, and biosolids activities. (4) Alternative Fuel Program (AFP) Assessment: measure the O&M impacts of the AFP, recommend alternative investments to mitigate identified impacts, evaluate actual financial performance compared to planning forecast. (5) Determine whether EWPCF has achieved "energy independence" as defined in EWA's 2011 Energy & Emissions Strategic Plan. (6) SDG&E Demand Charge Impacts: review the cost of purchased electricity versus self-production, identify the "gap" between EWPCF demand and generation capability (while maintaining existing permits), and then propose alternative solutions to close the EWPCF "demand-generation gap" for future development.

(7) As-needed review of analysis of new technologies through WERF and WEF that can be of use to EWA in the future.

WATER+INNOVATION PROGRAM FY2012 - FY2015.

PROTEUS Consulting built the Water+Innovation Program at EWA, with contract renewal every year. The scope included: (1) Cost of Resource Production/ Financial Models, including value chain analysis and development of implementation plans for solids, effluent, energy, and biogas; (2) Media, branding, and public relations consulting; (3) Energy collaboration/ negotiations with SDG&E, (4) 2014 and 2015 GHG Footprint on Climate Registry; (5) Design and management of a unique R&D Program that evaluates, facilitates and plans the implementation of new innovative technologies at EWA, (6) Regional CleanTech collaboration; (7) Development of an energy efficiency tracking and reporting system that measure and report the efficacy of the energy efficiency measures implemented and monitor the progress for the long-term; (8) Comprehensive funding research to secure funding from traditional and non-traditional resources; (9) As-needed support for strategic programs; and (10) Long term reliability planning towards energy independence.



TECHNOLOGY MASTERPLAN.

PROTEUS Consulting teamed with Westin, Inc. to develop the Technology Master Plan for EWA. The goal was to assess EWA's strategic requirements for information and control systems now and into the future and to formulate a roadmap for implementing the technologies that address those requirements. This plan has enabled EWA to determine how to leverage existing and new information systems through systems and business process integration – including the use of new technologies for consolidating, trending and distributing information. The technology roadmap outlined the business case for improvements in the technology sector for EWA and enables them to achieve their mission to be an environmental leader, and provide sustainable and fiscally responsible wastewater services to the communities it serves while maximizing the use of alternative and renewable resources.

RISK ASSESSMENT AND SCENARIO PLANNING.

PROTEUS Consulting was invited by EWA to participate in a series of risk assessment workshops to enable long-range scenario planning for EWA. This exercise was aimed to prepare EWA for emerging

risks; test the organization's long-term strategy and resilience; expand and enrich the planning discussion; create a successful implementation plan; understand and apply change management and motivation principles; apply attention to detail in the risk matrix/risk register; maintain the quality and rigor of the risk assessment process to select the best policy option, implement multiple risk assessments; and resolve contradictory stakeholder agendas.

OLIVENHAIN MUNICIPAL WATER DISTRICT

MT. ISRAEL PIPELINE REPLACEMENT.

PROTEUS Consulting completed a project with OMWD for the replacement of approximately 1,400 lineal feet of 8-inch potable water pipeline and appurtenances on Mt. Israel Road. The key elements of this project included locating the main in the County road and right-of-way, easement analysis, design of pipeline in rock, traffic issues, and community assurance.

RANCHO LA CIMA/ALISO CANYON PIPELINE RELOCATION.

PROTEUS Consulting completed the design for the relocation of an 8-inch PVC water pipeline at the intersection of Aliso Canyon Road and Rancho La Cima for OMWD. This relocation was necessary due to a conflict with the proposed new 60-inch County storm water pipeline along Aliso Canyon Road. The intent of this project was to lower the current water main to clear the proposed storm drain.

CITY OF DEL MAR

PROTEUS Consulting has been selected by the City of Del Mar to perform as needed water and wastewater engineering and management consulting services. The first task order for this program is to assist the City to identify the source of high dissolved solids within the sewer system. The City intends to send the wastewater flow to a small treatment plant in the future, and high dissolved solids will be detrimental to the treatment plant biology. While the City has an active sewer condition assessment and replacement program, this research will help the City prioritize the upgrades.

RINCON DEL DIABLO MWD

CROSS CONNECTION CONTROL REGULATIONS UPDATE.

PROTEUS Consulting reviewed and updated the cross-control regulations for Rincon del Diablo Municipal Water District. This included a clear definition of the scope of work performed by the District, by developers, and by homeowners.

CITY OF ESCONDIDO

INFLUENT METERING VAULT, HALE AVENUE RESOURCE RECOVERY FACILITY.

PROTEUS Consulting designed a new influent metering vault, where the treatment plant receives wastewater flows from the City of San Diego. There was an 18-inch magmeter on a closed pipe in place for decades; however the change in influent flows upstream necessitated the design of an open channel flow measurement structure, using a metering manhole with a Palmer Powlus flume.

This design included changes in odor control, pipeline, and devices in and around the new flow measurement structure.

INFLUENT LIFT STATION, HALE AVENUE RESOURCE RECOVERY FACILITY.

PROTEUS Consulting was the engineering partner for the TC Construction Design-Build project with the following scope of work at the influent structure of HARRF: (1) Construction of a bypass channel, weir wall and install multi-rake screen; (2) Structural improvements to the existing pump station building and underground structure; and (3) Construction of an electrical conduit routing.

UNIVERSITY OF CALIFORNIA, SAN DIEGO

STORMWATER PUMP STATION AT NIMITZ MARINE FACILITY.

During this design-build project, a new pier was being constructed at Scripps Institution of Oceanography (SIO) Nimitz Marine Facility (MARFAC). The University of California, San Diego (UCSD), urgently required the design of a stormwater pump station to replace a proposed



20,500 gallons underground stormwater retention basin along with the relocation of a proposed hydrodynamic separator. PROTEUS Consulting completed the design (civil, mechanical, structural, and electrical) in the short time of four weeks to meet the aggressive construction schedule. PROTEUS Consulting also provided on-call assistance to UCSD to obtain a temporary permit from the City of San Diego for this project and other planning activities.

DEVELOPER PROJECT

SEWER PUMP STATION DESIGN FOR LOT 7, TRACT 4805.

PROTEUS Consulting teamed with Sol Engineering to design a packaged sewer pump station to handle the wastewater from a large luxury house situated on the side of a hill and deliver the wastewater along the slope to a manhole situated approximately 500 feet higher. The design involved preparation of plans and specifications and approval by the County.

SAN DIEGO COUNTY WATER AUTHORITY

SCOOP MANUAL.

PROTEUS Consulting developed a comprehensive Small Contractor Outreach and Opportunities Program (SCOOP) Manual, identifying all major tasks performed by the department and delineating the interdepartmental relationships and tasks. The key tasks in this project included: development of an organization matrix for the SCOOP department, including job descriptions, roles and responsibilities; interviews with staff and identifying major and minor tasks performed by the

department; documenting tasks performed by SCOOP and ancillary staff on a daily, weekly, monthly, quarterly, yearly, and emergency/as-needed; map inter- and intra-department processes and procedures; identifying and document links with other staff across SDCWA; and incorporating the current Intern manual into an Intern Guide. The deliverable was an organized manual for operations of the SCOOP program.

METROPOLITAN WATER DISTRICT

AQUADx, CII WATER EFFICIENCY AUDIT SOFTWARE.

PROTEUS Consulting developed a Commercial, Industrial and Institutional (CII) Water Audit Mobile Application and Web-based Database (www.aquadx.com). This water audit software was aimed for the CII water audit arena by making water and energy conservation very easy to implement, measure, document, and verify, and result in significant cost savings to water users. The web-based data interface and handheld mobile audit application enables audits to be performed in less time, collect similar data



= SMART SOLUTIONS FOR WATER CONSERVATION,
BECAUSE CONSERVATION IS A BUSINESS STRATEGY

from each CII facility to enable comparisons and contrast, and allow the water agencies to track the data to see trends among businesses. The CII customer receives a structured report, tailored to specific issues at each customer site, including information on available rebates. The database can be mined to design targeted rebate programs in the future. There are also provisions for monitoring and verification of data to demonstrate efficacy of conservation programs. Metropolitan Water District has given PROTEUS Consulting a grant of \$50,000 to develop this application under the Innovative Conservation Program. Because of its innovation potential, AquaDx has also won a place at the University of California at San Diego's Rady School of Business's StartR Program for mentoring and business development. (<http://rady.ucsd.edu/ciid/startr/>)

FEDERAL PROJECTS PORTFOLIO

MARINE CORPS AIR GROUND COMBAT CENTER AT 29 PALMS, CA

WASTEWATER TREATMENT PLANT OPTIMIZATION.

PROTEUS Consulting teamed with Potomac Hudson Engineering (PHE) / Michael Baker Corporation during 2013 - 2014 to optimize the wastewater treatment plant at the Marine Corps Air Ground Combat Center at 29 Palms, CA. The Combat Center operates a 2.5 million gallon per day Wastewater Treatment Plant (WWTP) that treats both domestic and industrial wastewater. In addition to protecting human health and a fragile desert environment, the WWTP produces reclaimed wastewater that is used for landscape irrigation aboard the Combat Center. The WWTP is

a mission-critical facility whose continued operation is essential to the long-term function of the Combat Center as the Marine Corps' only desert training facility. Given the DOD budget climate, it was highly unlikely that funding for replacement of the WWTP will be available in the foreseeable future. Therefore, it was essential that the WWTP be operated and maintained in a manner that maximizes its lifespan ensuring reclaimed water is available and utilized efficiently. PROTEUS Consulting performed a detailed study to optimize the operations at the plant including operations, water use, and energy.

The purpose of this study is to evaluate the current operation of the plant and recommend options for the future. The scope of this project included the following: (1) Review and assess the WWTP design and operations with a focus on energy, water conservation, and operational efficiency. (2) Investigate, assess, and evaluate the following four options: (a) Maintain current operation with improvements to standard operating procedures and operation and maintenance of systems and equipment,



focusing on upgrade cost and payback, water savings, energy savings, and operational improvements. (b) Construct some type of packaged treatment facility, thereby eliminating the pond systems, focusing on upgrade cost and payback, water savings, energy savings, operational improvements, and regulatory (maintaining some of the current permit requirements). (c) Construction of a new WWTP at an alternate location, focusing on construction cost and payback, water savings, energy savings, operational improvements, and regulatory while maintaining some of the current permit requirements. (d) Assessing costs and feasibility of privatization, including cost and payback, water savings, energy savings, operational improvements, meeting the Combat Center mission, regulatory (base oversight/enforcement and permit held by contract or base).

WASTEWATER TREATMENT PLANT OPERATIONS PLANNING

Based on the success of the operations optimization project in 2013 - 2014, the Combat Center rehired PROTEUS Consulting (as a subconsultant to Potomac Hudson Engineering (PHE) / Michael Baker Corporation) to perform the following two tasks:

- **WASTE DISCHARGE REQUIREMENTS (WDR) REVISION** – New application for a revision of the current 2012 WDR to reflect optimized operations. The scope included Form 200 application, Engineering Report and all associated documents, and meetings with the Regional Board.
- **OPERATIONS AND MAINTENANCE (O&M) MANUAL** – Preparation of a new O&M to ensure the efficient operation and maintenance of the facility. This included detailed system-level O&M information, physical descriptions, functional descriptions, troubleshooting guides, preventive maintenance (procedures and schedules), corrective maintenance (repair requirements), parts

lists, operation and maintenance related significant drawings, and daily, weekly, monthly, and annual work plan.

AQUIFER STUDY AND PRELIMINARY DESIGN

PROTEUS Consulting teamed with Rore Inc. to conduct a hydrogeological/aquifer study and engineering feasibility study for potable water supply at the Marine Corps Air Ground Combat Center at 29 Palms, CA. The project included a detailed review of the aquifer and groundwater well field design, demarcation of the aquifer boundaries and water quality profile, followed by preliminary design of water storage, blending facility/treatment, and water delivery infrastructure. PROTEUS Consulting evaluated feasible blending alternatives from varied groundwater sources to meet potable water quality objectives. This involved the conceptual design of water storage tanks, including number, size, and location, mechanical blending process configurations, and treatment options.

SERE CAMP, SAN DIEGO, CA

WASTEWATER TREATMENT ALTERNATIVE STUDY

PROTEUS Consulting teamed with Thomas/Wright, Inc. to conduct a preliminary engineering study for the wastewater treatment options at the Survival, Evasion, Resistance, and Escape (SERE) training facility at the U.S. Navy's Training Site in Warner Springs, CA located in the Cleveland National Forest. It is in a remote area near the community of Warner Springs in the northeastern San Diego County, at an elevation of about 3,200 feet. The Camp consists of a headquarters area with an administrative building, several staff barracks building, a wastewater treatment plant, and a training compound. All west coast Navy/Marine Corps personnel who risk capture during wartime (e.g. aviators) undergo SERE training at this facility. The Warner Springs SERE Facility covers 6,100 acres and trains over 1,500 students each year.



The project included a detailed review of the existing treatment plant, followed by preliminary design of proposed new facilities/ upgrades. PROTEUS Consulting evaluated feasible alternatives to ensure that the new plant will consistently meet the NPDES permit.

INNOVATION PROJECTS AND CONSULTING

DYNAMIC ENERGY OPTIMIZATION FOR NYC DEP WASTEWATER PLANTS, NY.

PROTEUS Consulting was contracted by Viridity Energy to assist New York City Department of Environmental Protection (NYC DEP) to enable process and energy optimization at 14 wastewater treatment facilities that treat 1.3 billion gallons a day of wastewater in the five boroughs of the great city. This involved a feasibility evaluation of the use of energy resources at the treatment plants and develops a management algorithm to optimally schedule energy management a day-ahead and real-time energy markets.

OPERATIONS AND ENERGY OPTIMIZATION FOR POTABLE WATER AND RECYCLED WATER SYSTEMS.

PROTEUS Consulting is developing a robust real-time energy optimizer to meet a distinct set of water quality operating rules in the water system. The system will generate an optimized pump schedule that changes every quarter hour. As telemetry data from water reservoirs levels and pump flows are received from the Supervisory Control and Data Acquisition System (SCADA) every 10 minutes, the program will take account of daily zonal demand variations, available supply capacity, system constraints, and real-time power cost information to generate schedule for each pump every quarter-hour. By this model, the inherent flexibility in the water system is identified on a real-time basis and then potentially bid on the energy market to yield revenue for the Water Districts.

SMART-OPS, OPERATIONS OPTIMIZATION FOR WASTEWATER TREATMENT PLANTS.

Treatment plant operations are typically timed and phased based on discrete measurements or strategies. PROTEUS Consulting is working on software that will lay the foundation to develop a comprehensive, dynamic, real-time, whole-business strategy for wastewater plant operations and control. The software portfolio will consist of a suite of sustainability-focused solutions that honor the wastewater industry's specific needs and are committed to integrating operations, management, and environment in a manner that conserves and optimizes resources – human and material capital. The solution will encompass analytics, optimization, and visualization. A phased approach is offered for the implementation instead of a comprehensive solution since it allows the client to adopt a module when required and at a pace that is suited for the agency. The software solution has the following goals: Meet effluent and emissions permits, maximize biogas production, and optimize aeration, solids quality to market needs, chemical usage, digestion, and energy use.

TECHNICAL AND BUSINESS DEVELOPMENT, ARBSOURCE, AZ.

PROTEUS Consulting provided process engineering, mechanical engineering, pilot plant design, testing protocol development and services, business development consulting, strategic planning, training, project commissioning and system review and optimization services to ARBSource, a new CleanTech company. The patent-pending ARBCell is a unique, scalable environmental biotechnology to manage wastewater treatment more efficiently for the food and beverage processing industry and beyond.

ADVISORY BOARD MEMBER, EMPEREAL ENERGY SERVICES, WORLDWIDE.

CEO of PROTEUS Consulting is on the Advisory Board for Empereal Energy Services, a solutions company providing renewable energy and desalinated water with offices in US, Middle East, India, and Singapore. Empereal has been deeply involved in the research and development, design and fabrication, and testing of solar thermal systems employing Linear Fresnel Reflector (LFR) concepts since 2008. Empereal delivers complete solutions: design, build and operation of renewable energy and desalination plants in rapidly growing economies. Their patented technologies and world-class plant design enable them to generate green energy in a clean, responsible, and cost-effective manner.

STRATEGIC BUSINESS DEVELOPMENT, VIRIDITY ENERGY, PA.

PROTEUS Consulting provided strategic business development services to Viridity Energy as it entered the water industry. Viridity Energy devises revenue generating solutions that give large energy users customized decision-making tools to align operations with load management strategies. With their Vpower™ Software, Viridity Energy works within client operations to identify the optimal demand management strategy for the client's energy resources. Viridity Energy also delivers microgrid management solutions to help communities meet their energy needs in a smarter, less expensive, and more sustainable way.

PRODUCT AND BUSINESS DEVELOPMENT, ECOLAYERS, CA.

PROTEUS Consulting provided product development and business development services to EcoLayers. EcoLayers is a web-based software platform for integrated management, permitting, compliance, and stewardship for water. This program is deployment-ready and can be configured to meet the unique needs of each customer be it Regulatory Agencies, Water Agencies/Districts, Permittees, Wastewater Agencies, Municipalities, Infrastructure Developers, Environmental Consultants, and Stewardship Organizations.

ABOUT THE CEO**SOMA BHADRA, PE**

Soma is known in the sector as an outstanding innovative and result-driven leader focused on achieving exceptional outcomes in environments that demand continuous improvement. She has a verifiable track record in increasing performance by creating a positive working environment and guiding project teams to deliver value. Soma thrives on opportunities to inspire people, optimize processes, and incorporate smart technology.

Soma has lived and worked in India, Australia, Singapore, and US (New York, California, North Carolina) and has a broad and unique perspective about the water related issues and solutions from around the globe. With decades of experience in effective design, construction, and operation of water, wastewater, ultra-pure, and recycled water treatment plants and conveyance systems, Soma has extensive experience in managing creative teams over multiple continents to deliver large multi-



STATEMENT OF QUALIFICATIONS

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Phone: +1 858 353 2805

faceted projects across a range of disciplines; she has been lauded for generating outstanding results.

She is adept in formulating, prioritizing, and implementing initiatives that cut costs, lower risk exposure, and provide a competitive edge to ensure long-term success. She brings to the table strong opinions and perspectives supported by lateral, insightful and strategic rationale. Her passion is contagious. With her well-honed aesthetic appreciation and inspiring leadership style, she helps her team to push the boundaries of what they thought was possible.

Soma has a BE in Civil Engineering and a MS, in Environmental Engineering, and is a registered Civil Engineer in California. She also holds Water Distribution Operator (D2) and Water Treatment Operator (T3) certification.

POSITIONS HELD BY CEO

- **California Water Environment Association**, various positions
- **CleaTech San Diego SDREIN**, Mentor
- **CONNECT Springboard**, Domain Expert
- **CleanTech Open**, Mentor to Water, Wastewater, Recycled Water, and Waste-to-Energy Teams
- **FLOW, Caltech**, Mentor for Water related innovation
- **World's Best Technology Innovation Marketplace (WBT)**, Mentor for Water related innovation
- **Water For People San Diego**, various positions
- **University of Irvine, Civil and Environmental Engineering Department Affiliates**, Steering Committee

BUSINESS INFORMATION

City of San Diego Business License:	FSC:	4601, 4620, 4630, 7030, 7435
B2011015683	SIC:	1623, 1629, 1781, 4941, 4952,
City of Oceanside Business License: BL-1255536		4953, 4959, 4971, 4619, 7389,
City of Carlsbad Business License: BLOS00825-04-2017		8299, 8711, 8712, 8741, 8742,
		8744, 8748
Structure: S Corporation	NIGP:	91820, 91831, 91832, 91835,
Established: October, 2010		91838, 91842, 91843, 91846,
ORCA/DUNS: 831677229		91875, 91887, 91888, 91890,
EIN: 90-0614930		91897, 92517, 92524, 92528,
NAICS: 541330, 541340, 541490,		92533, 92535, 92538, 92544,
541611, 541618, 541620,		92555, 92567, 92570, 92583,
541690, 541990, 611430,		92587, 92596, 92597, 95816,
221310, 221320		95826, 96110, 96156, 96161,
PSC: AD24, AD26, AH34, AH35		96896

Updated 4/16/2018

CERTIFICATIONS

- *Emerging Local Business Enterprise (ELBE)* – City of San Diego (#12PC0555)
- *Disadvantaged Business Enterprise (DBE)* – California Unified Certification Program (CUCP) (#43567)
- *Woman and Minority Owned Business Enterprise (WMBE)* – California Public Utilities Commission (CPUC) (VON 10100168)
- *State Minority Business Enterprise/State Women Business Enterprise (SMBE/SWBE)* – California Department of Transportation (#43567)
- *Small Business (Micro)* – California Department of General Services (#1754660)
- *Small Business Enterprise* – Port of Long Beach, San Diego County Water Authority (#103011)
- *Architecture and Engineering (A & E) Bench Certification* - San Diego Association of Governments (SANDAG)
- *Construction Management (CM) Bench Certification* - San Diego Association of Governments (SANDAG)
- *Emerging Business Enterprise (EBE)* – Office of Small Business & Disabled Veteran Business Enterprise Services, City of Los Angeles
- *Women-Owned Small Businesses (WOSB) and Economically Disadvantaged Women Owned Small Business (EDWOSB)* - Small Business Administration (Self certified)
- *Small Disadvantaged Business* – Small Business Administration (Self certified)
- *Minority Owned* – Small Business Administration (Self certified)
- *Woman Owned* – Small Business Administration (Self certified)