



SAMPLE MEMBRANE PROJECTS

Project Name	Project Description	Type	Plant Capacity (MGD)	Plant Capacity (M ³ /D)	Client	City/ County, State	Country
Reverse Osmosis Water Treatment Plant System	Project included Iron and Manganese filters as pretreatment followed by Brackish Water Reverse Osmosis units and associated equipment, high service pumping station, hydro-pneumatic tank, and chemical feed systems.	BWRO	0.2	757	The Currituck Club	Kitty Hawk, North Carolina	U.S.A.
Gaza	Prepared a total water management report and evaluated Brackish Water Reverse Osmosis treatment as an option using bench scale testing. Under a later contract, prepared design documents for the USAID funded RO plant including pre-treatment, pumping and support facilities.	BWRO	0.1	378.5	Gaza Industrial Estate	Gaza	Palestine
Wastewater Reclamation and Reuse Facility Membrane Plant Expansion and Improvements	Brackish Water Reverse Osmosis of wastewater treatment plant effluent for water reuse at a textile industry. Project included RO units, feed pumps, chemical systems, degasification unit, associated piping and instrumentation control. After many years of successful operation, the textile factory moved to Mexico and the RO plant operation was discontinued and sold.	BWRO	4.0	15,140	City of Harlingen Waterworks System	Harlingen, Texas	U.S.A.
Glendale Independent Well Upgrade	Nanofiltration plant was designed based on recommendations of the limited pilot study for removal of TCE and Radium from drinking water. Project included a two stage NF for Radium removal and air stripping for TCE, as well as controls, instrumentation and a mobile trailer-mount Clean-In-Place system.	NF	1.0	3,785	Anne Arundel County	Glendale, Maryland	U.S.A.
Temporary Water Emergency Response Plan Project	Design and construction services for an emergency membrane packaged plant to be completed in 30 days . Project included design, permitting, procurement, installation and testing of the plant for the City's Water Emergency Response Plan. Project was completed in 24 days!	MF/UF	1.0	3,785	City of Frederick	Frederick, Maryland	U.S.A.
Desalination Facility	Process Consultant for the potential remediation of the failed Seawater Desalination Plant . Project included several months of piloting, study, conceptual designs and remediation technique identification utilizing submerged Ultrafiltration .	SWRO	25.0	94,625	Tampa Bay Desal	Hillsborough County, Florida	U.S.A.
Reverse Osmosis Facility Design-Build Project	WATEK was the design arm of a design/build firm for a Brackish Water Reverse Osmosis desalination facility to upgrade an existing conventional water plant. In addition to the RO units, the project included a new well, pretreatment equipment, chemical feed system, and water storage tank.	BWRO	2.0	7,570	Town of Jupiter Island	Jupiter Island, Florida	U.S.A.
Arsenic Reduction Project - North Reverse Osmosis Plant	Upgraded an existing Brackish Water Reverse Osmosis plant with multiple arsenic adsorption units and designed for future treatment of bypass water for removal of Iron and Arsenic .	IX	5.0	18,925	County of Dare, North Carolina	Dare County, North Carolina	U.S.A.
Procurement of Membrane System and Associated Process Equipment at Well No. 4	Nanofiltration membrane system designed for Hardness reduction and softening. Project included pretreatment system, chemical feed, clearwell, distribution pumps and raw water feed pumping system.	NF	1.0	3,785	Ephrata Area Joint Authority	Ephrata, Pennsylvania	U.S.A.

Seawater Desalting, Algiers-Hamma	Seawater Membrane Desalination Plant Design, which included providing independent technical audit, process selection validity and constructability review of the plant to one of the design/build team members.	SWRO	53.0	200,605	Algerian Energy Corporation	Hamma	Algeria
Chapel Point Woods Reverse Osmosis Water Treatment Plant	Reverse Osmosis system for removing Polonium from the drinking water. Project included the study and design of an RO plant including chemical feed system.	RO	0.1	378.5	Charles County, Maryland	Chapel Point, Maryland	U.S.A.
James City Service Authority Five Forks Water Treatment Facility	Brackish Water Reverse Osmosis desalination facility. This award winning project included creative blending of two groundwater sources to minimize post treatment and silica fouling. The project included four RO skids, degasification, chemical systems.	BWRO	5.0	18,925	James City Service Authority	James City County, Virginia	U.S.A.
Shuaibah III Expansion Seawater RO Desalination Project	Double pass Seawater Reverse Osmosis plant with pretreatment system. Project included providing O&M manual, commissioning and testing procedures and training documents for Doosan as the Engineering Procurement Construction (EPC) contractor.	SWRO	36.0	136,260	Doosan	Shuaibah	Saudi Arabia
30 MGD Seawater Reverse Osmosis Facility	WATEK was the design arm of a large design/build project consisting of Single pass Seawater Reverse Osmosis desalination, with dual stage sand filtration for pretreatment plus twin sea intake, pump station, chemical storage and feed system as well as PLC automation for the Water and Power Authority.	SWRO	25.0	94,625	Pal Technology	Dubai	United Arab Emirates
Ghana SWRO Plant	Seawater Reverse Osmosis Desalination Plant, which included providing O&M manual, commissioning and testing procedures and training documents for Doosan as the Engineering Procurement Construction (EPC) contractor.	SWRO	5.0	18,925	Doosan	Ghana	Ghana
Membrane Magnum	Membrane consultant for review of the Mega magnum Brackish and Seawater Reverse Osmosis packaged plants by Koch Membrane. The scope included review of mechanical layout, membrane array design, hydraulic considerations, instrumentation, suitability of material and equipment and corrosion considerations.	RO	0.5	1,892.5	Koch Membrane Systems	Wilmington, Massachusetts	U.S.A.
Ashdod Desalination Project	Double pass Seawater Reverse Osmosis membrane desalination plant, which included the preparation of preliminary design documents, assisting in bidding and the price proposal for this Build Operate Transfer (BOT) project.	BW/SWRO	73.0	276,305	Global Environmental Solutions Ltd. (GES)	Ashdod	Israel
Water Treatment Plant Improvements	Consultant for evaluation of converting a 50 MGD conventional sand filtration plant to an 85 MGD membrane filtration plant with submerged Microfiltration or Ultrafiltration technologies and without any major structural expansion.	MF	85.0	321,725	Saginaw Water Works	Saginaw, Michigan	U.S.A.
Cranberry Run Water Treatment Plant Upgrade	Microfiltration membrane treatment system replaced an aging conventional water treatment process after comprehensive evaluation of six alternatives and pilot testing for the Cranberry Water Treatment Facility.	UF	3.0	11,355	City of Westminster	Westminster, Maryland	U.S.A.
Sorek Desalination Project	Double pass Seawater Reverse Osmosis desalination plant, which included the preparation of the preliminary design documents, assisting in bidding and the price proposal for this Build Operate Transfer (BOT) project.	BW/SWRO	108.0	408,780	Global Environmental Solutions Ltd. (GES)	Sorek	Israel

Reverse Osmosis Membrane Treatment Plant Upgrades and Modifications	Membrane consultant for evaluation and study of an existing Reverse Osmosis plant, including site investigations, identifying deficiencies and making recommendations for improvements and upgrades at the U.S. Navy site.	RO	0.3	1,059.8	Navy/Milcon Bahrain	Manama	Bahrain
50,000 Cubic Meter Per Day (Half Second Pass) Prototype Seawater Desalination Vessel	Consultant for the study and design of multiple vessel-based Seawater Reverse Osmosis desalination plants (with various capacities), process components (membrane filtration, pretreatment, double-pass RO system, on-board power and chemical generation). The first project will be in Malaysia for oil and gas production.	SWRO	5.0	18,925	Water Standard	Indian Ocean	Malaysia
Town of Bedford Water Filtration Plant & Connection to the Delaware Aqueduct at Shaft #13	Membrane consultant for review of the design and bid documents for a Microfiltration facility with raw water intake from the Delaware aqueduct.	MF	2.0	7,570	Town of Bedford	Bedford, New York	U.S.A.
Eastern Correctional Institution Water Treatment Plant Upgrade	Replaced an existing old/outdated Brackish Water Reverse Osmosis plant with three new RO skids, PLC controls, new wells, chemical feed system, CIP system and SCADA at the Eastern Correctional Institute (ECI) Water Plant.	BWRO	1.5	5,677.5	Maryland Environmental Service	Somerset County, Maryland	U.S.A.
South Church Street Water Treatment Facility	Reverse Osmosis (selected after evaluation of Nanofiltration, Electro-Dialysis Reversal and RO) for Fluoride removal. Project included RO equipment, pretreatment process and instrumentation control.	BWRO	2.0	7,570	Town of Smithfield	Smithfield, Virginia	U.S.A.
Rio Rancho	Reverse Osmosis for removal of Total Dissolved Solids and Arsenic for Well #2.	RO	1.2	4,542.0	NCS, Inc.	Rio Rancho, New Mexico	U.S.A.
Water Treatment Facility	Ultrafiltration of groundwater under the influence of surface water plus Ion Exchange for reduction of Nitrates .	UF	1.0	3,785	Northwestern Lancaster County Authority (NWLCA)	Lancaster, Pennsylvania	U.S.A.
Gesell	Membrane consultant for evaluation of Microfiltration system as an option to meet Enhanced Surface Water Treatment Rule.	MF	0.4	1,514	City of Westminster/ARRO	Gesell, Maryland	U.S.A.
Anne Arundel County Membrane Treatment Study	Project included water quality analysis and computer modeling to compare Reverse Osmosis, Electro-Dialysis Reversal and Ion Exchange to determine the most feasible technology in three facilities to reduce naturally occurring Radium levels from drinking water source.	NF	1.0	3,785	Anne Arundel County	Anne Arundel County, Maryland	U.S.A.
Crownsville Hospital	Water Treatment Plant study and design completed in 45 days to meet State mandated deadline. Project included addition of a polishing treatment to remove Radium. Reverse Osmosis, Electro-Dialysis Reversal , and Ion Exchange systems were compared in detail.	IX	1.0	3,785	Maryland Environmental Service	Crownsville, Maryland	U.S.A.
Rocky Gap Water Treatment Plant	Project includes design and construction services for a new Ultrafiltration water facility. Responsible for design and construction services for the entire facility including building, chemical feed system, UF skids, GAC post polishing, clearwell, pumping and 2300' of water main within the park.	UF	0.3	1,135.5	Maryland Environmental Service	Rocky Gap, Maryland	U.S.A.

Rocky Gap Wastewater Treatment Plant Upgrade	Currently working on a Membrane Bio-Reactor wastewater treatment plant with UV disinfection. Project includes design and construction services for upgrading the existing facility.	MBR	0.3	1,135.5	Maryland Environmental Service	Rocky Gap, Maryland	U.S.A.
Reverse Osmosis Computer Cost Estimating Model	Membrane consultant for calculations and preparation of computer projection software to estimate capital and O&M costs for a new Nano-technology Seawater Reverse Osmosis element.	SWRO	5.0	18,925	NanoH2O	El Segundo, California	U.S.A.
The People's Moss Landing Water Desal Project	Desalination membrane water treatment consultant for a potential Seawater Reverse Osmosis desalination plant at Moss Landing. The conceptual report includes evaluation of three intake alternatives with comprehensive pretreatment (two stage media filtration and/or Ultrafiltration), partial two pass Reverse Osmosis desalination, post treatment and 17 miles of 36" pipeline.	SWRO	12.0	45,420	People's Moss Landing Desal	Monterey, California	U.S.A.
Wadi Ma'in, Zara & Mujib Water Desalination Treatment Facility	Study and life cycle cost analysis for a two pass Reverse Osmosis integrated membrane desalination system consisting of Microfiltration followed by RO. This was a USAID funded project.	MF/RO	40.0	151,400	US Filter	Amman	Jordan
Skyco Nanofiltration Project Preliminary Design	Nanofiltration membrane to replace an Ion Exchange treatment plant of shallow groundwater for removal of Hardness and disinfection byproducts (DBP) . Project includes process building, chemical feed system and storage.	NF	6.0	22,710	RosTek Associates, Inc.	Skyco, North Carolina	U.S.A.
Water Supply Project Water Treatment Plant	Membrane consultant for testing three membrane filtration systems (Pall, Siemens and Norit) and preparing final report with life cycle cost estimates. Currently assisting the prime engineer for design and installation of the selected Pall Microfiltration system.	MF	6.0	22,710	City of Ithaca	Ithaca, New York	U.S.A.
The Pennsylvania State University Water Treatment Plant	Assisted with the study and conceptual plans and is currently providing design of the membrane facility for an integrated membrane plant consisting of Microfiltration followed by Nanofiltration for softening and Emerging Contaminant removal.	MF/NF	6.2	23,467	Pennsylvania State University	State College, Pennsylvania	U.S.A.
Pittsburgh Water and Sewer Authority	Responsible for evaluation and design of the Microfiltration plant. Prepared test protocol and review of pilot results provided by 6 leading membrane manufacturers as well as the membrane plant layout and conceptual design.	MF	20.0	75,700	Pittsburgh Water and Sewer Authority	Pittsburgh, Pennsylvania	U.S.A.
Southern Maryland Pre-Release Unit Wastewater Treatment Plant Upgrade	Upgraded the Southern Maryland Pre-Release Unit wastewater treatment plant with a new Membrane Bio-Reactor facility with EQ tank, screens and UV system.	MBR	0.05	189.3	Maryland Environmental Service	Charles County, Maryland	U.S.A.
Fahrney Keedy Water Treatment Plant	The design of the Water Treatment Plant included two Microfiltration membrane skids, cleaning and chemical feed systems, raw water tank, mixing, various piping, and new PLC based controls.	MF	0.1	378.5	Maryland Environmental Service	Boonsboro, Maryland	U.S.A.
Mount Joy Borough Authority East End Well Membrane Filtration Facility	Project includes evaluation and design for the Microfiltration and Nanofiltration treatment system to develop a water supply well for long-term future demands and to design a treatment facility for the East End Well.	MF/NF	1.0	3,785.0	Mount Joy Borough Authority (MJBA)	Mount Joy, Pennsylvania	U.S.A.

Walnut Grove Water Plant	Assisting with design of a new Microfiltration plant	MF	2.5	9,462.5	Jefferson Utilities, Inc.	Charles Town, West Virginia	U.S.A.
52 MGD (Ultimate 105 MGD) Seawater Desalination Plant	Assist with Reverse Osmosis desalination calculations, projections as well as plant layout and energy recovery system designs.	RO	52.0	196,820	AECOM	Chennai, India	India
County of Isle of Wight Reverse Osmosis System Evaluation	Evaluation of a 2008 Reverse Osmosis plant evaluation that is in violation of their concentrate discharge permit limit and is running at a low efficiency. Making recommendations for better control and optimization of the RO treatment process.	RO	0.1	378.5	Public Utilities of County of Isle of Wight	County of Isle of Wight, Virginia	U.S.A.
Cheltenham Youth Detention Center Wastewater Treatment Plant Upgrade	Designing a Membrane Bio-Reactor plant to replace the existing, outdated wastewater facility and preparing the facility for compliance with the more stringent nutrient discharge limits from the Maryland Department of the Environment. Project also includes providing a regional office with adequate laboratory and centralized training facilities.	MBR	0.2	757.0	Maryland Environmental Service	Cheltenham, Maryland	U.S.A.
Eastern Pre-Release Unit Wastewater Treatment Plant Upgrade	Replacing the existing, outdated wastewater treatment lagoon with a Membrane Bio-Reactor facility to address pending and future NPDES permit requirements and potential infiltration of wastewater into the groundwater.	MBR	0.1	302.8	Maryland Environmental Service	Church Hill, Maryland	U.S.A.
Walkersville Water Treatment Plant	Assisting with design of an integrated Microfiltration and Reverse Osmosis system.	MF/RO	1.5	5,677.5	Town of Walkersville	Walkersville, Maryland	U.S.A.
Feasibility Study of Sulphate Removal for Pukaist Creek Water Treatment Facility	Performed feasibility study for an integrated Microfiltration and Reverse Osmosis plant and conducted field testing to determine the optimum sulphate removal technology for meeting four alternative sulphate removal goals for piloting.	MF/RO	1.1	4,163.5	Highland Valley Copper	Logan Lake, British Columbia	Canada
Feasibility Study of a BWRO Facility for Anheuser Busch	Membrane consultant for evaluation of an independent water supply. A comprehensive report was prepared with life cycle cost estimates for a Brackish Water Reverse Osmosis facility with wells, chemical feed systems, clean-in-place, support facility and buildings.	BWRO	2.5	9,462.5	Anheuser Busch Brewery	Williamsburg Brewery, Virginia	U.S.A.