

Santa Paula Water Recycling Facility

Public Private Partnership Overview



Santa Paula's Challenges

- City-operated wastewater treatment facility, built in 1939, required replacement
- Faced more than \$8 million dollars in compliance-related fines from the State
- Compliance deadline – December 15, 2010 – required a fast-track solution
- Challenges of financing the project capital cost
- Discharged effluent without reuse

PERC Water and Alinda Capital's Solution

- Guaranteed water quality and permit compliance
- Guaranteed to meet compliance deadlines
- 100% private funded
- 30 years of "certainty" for costs
- Produce recycled water for City reuse

Background

The City of Santa Paula is located in Ventura County, California, approximately 65 miles northwest of Los Angeles, and is situated in the rich agricultural Santa Clara River Valley. It is often referred to as the “Citrus Capital of the World.” The City covers an area of 4.6 square miles and its population is currently estimated at 29,182.

The City’s existing wastewater treatment facility was originally built in 1939, and had an average dry weather flow capacity of approximately 2.5 million gallons per day (MGD). The facility has reached the end of its useful service life and needs replacement. Additionally, the City was required to comply with the Waste Discharge Requirements of the Los Angeles Regional Water Quality Control Board and have a new Facility operating by December 15, 2010 or face more than \$8 million dollars in fines.



*Original Santa Paula Wastewater Treatment Facility
Originally built 1939*

Originally considering a Design/Bid/Build approach, the City sought an alternative solution when they realized this approach would not meet their tight timeline or budget requirements. In July 2007, the City Council approved a Design/Build/Operate/Finance (DBOF) method of procurement for a new Water Recycling Facility (Facility), and sought a single entity to finance, design, build, operate and maintain the new Facility as provided under California Government Code Section 5956-5956.10 (Code 5956).

The goals and objectives of the City were to implement a plan that:

1. provided for private financing and ownership of the new Facility
2. brought the City into and assured compliance with the Regional Board
3. improved efficiency and effectiveness of the City’s operations and maintenance
4. limited the economic exposure of citizens via long-term sewer rate stability

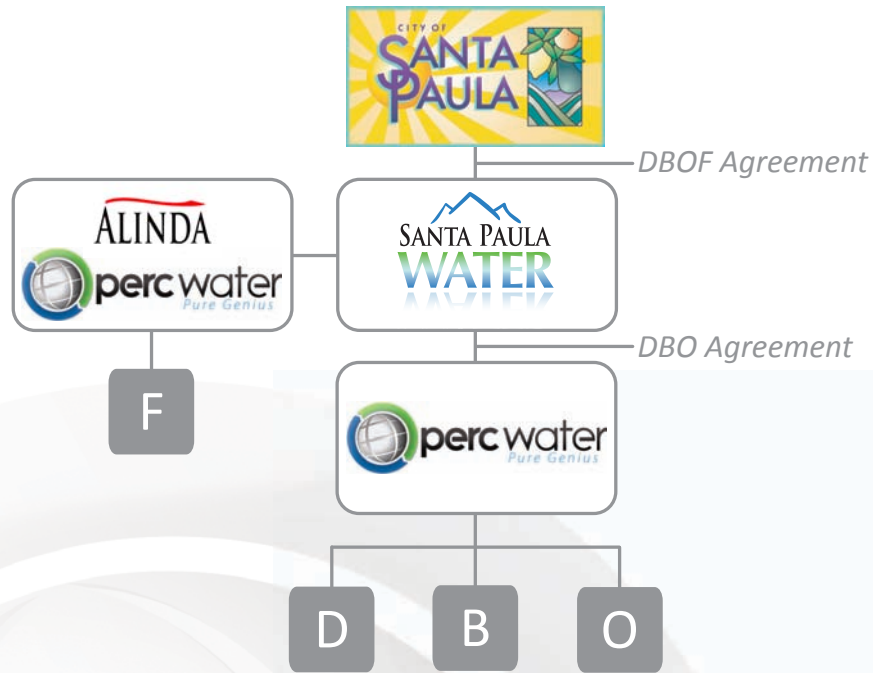
Following the RFQ and RFP selection process and after several months of negotiations with the two shortlisted DBOF firms, in May 2008 the City Council voted to award the DBOF contract to Santa Paula Water, LLC, a joint venture formed by PERC Water and Alinda Capital Partners. Alinda Capital Partners owns 90% of Santa Paula Water and PERC Water owns the remaining 10%. PERC Water entered into a Design/Build/Operate (DBO) contract with Santa Paula Water, LLC for a 30-year term.

PERC Water submitted a 30% design as part of its proposal, and following the award of the project in May 2008, immediately commenced the engineering of the Facility. Due to the fast-track approach of the project, PERC Water commenced construction prior to the completion of the engineering, beginning construction two months later. The combination of the innovative design and Design/Build delivery method allowed them the flexibility to start construction only two months into the design. The Facility began operations in May 2010, seven months earlier than the compliance date mandated by the Regional Board.

Project Structure

In accordance with Code 5956, Santa Paula Water, LLC entered into a Service Agreement to design, build, operate and finance the new Facility for the City over a 30-year concession, the longest such concession for wastewater treatment in the US. The 30-year term commenced on the date operations began.

The following chart depicts the structure of the DBOF Service Agreement and DBO Agreement:



The DBOF Service Agreement between Santa Paula Water LLC and the City includes:

- Guaranteed schedule to meet Regional Board's compliance date
- Guaranteed water quality to meet Regional Board's present effluent requirements
 - > Title 22 Unrestricted Reuse
 - > Class B Biosolids
- Guaranteed debt and equity financing for 30 years
 - > Including all risk on interest rates
 - > Including all risk on market financing terms
 - > Transfer ownership from Santa Paula Water to the City after 30 years at no cost to the City
- Energy/Power Risk and Responsibility
- Exit Standards upon transfer to the City
- Service Fees include:
 - > Capital Repayments based on agreed upon schedule
 - > Capital Replacements
 - > Fixed O&M Cost
 - > Variable O&M Cost
 - > Expansion from 3.4 MGD to 4.2 MGD (no additional capital cost)

PERC Water entered into an agreement with Santa Paula Water LLC to design, build and operate the new Facility for the 30-year term. They were required to design and build the Facility and commence operations by May 15, 2010. Upon completion of the construction, PERC Water began providing Total Asset Management of the Facility for the 30-year term.

The DBO Agreement between Santa Paula Water LLC and PERC Water includes:

- Guaranteed schedule to meet Regional Board's compliance date
- Guaranteed water quality to meet Regional Board's present effluent requirements
 - > Title 22 Unrestricted Reuse
 - > Class B Biosolids
- Fixed design/build cost
- Total Asset Management for 30 year term
 - > Fixed O&M cost
 - > Expansion from 3.4 MGD to 4.2 MGD (no additional capital cost)
 - > Capital Replacements responsibility
 - > Energy / Power risk and responsibility
 - > Exit Standards upon transfer to the City

Team Members

Santa Paula Water LLC is a joint venture entity owned by Alinda Capital Partners LLC and PERC Water. Alinda owns 90% of Santa Paula Water LLC and PERC Water owns the remaining 10%.

PERC Water Corporation is a water recycling company that designs, builds, operates and manages water recycling facilities throughout the United States. They have designed more than 55 facilities – 20 of which they have designed, built and operated. The company guarantees water of the highest quality and assumes the risks associated with water recycling. PERC Water is headquartered in Costa Mesa, CA. See www.percwater.com for more information.



Alinda Capital Partners is an independent investment firm that specializes in infrastructure investments that serve communities, governments and businesses. Alinda manages well over \$3 billion in its infrastructure fund, which has invested in gas and water utilities, wastewater treatment services, water tanks, municipal services, roads, bridges, tunnels, airports and rail service. The Fund's investors are predominantly pension funds for public sector employees. See www.alinda.com for more information.



Facility Design Overview

PERC Water's unique ASP® MBR design has numerous benefits and efficiencies that result in lower life cycle cost and more efficient and effective operations. Some of the unique design components include:

- Small footprint - The total tank area is 32,000 square feet (less than ¾ of an acre) resulting in 5 acres of freed-up land for alternate uses.
- Common wall construction – With a total volume of 7,000 cubic yards of concrete, this cost-sensitive design feature requires less yard piping/conduits and creates significant capital savings.
- No offensive odors or noise - The covered process tanks helps make this a neighbor-friendly facility.



Rendering of Santa Paula WRF covered process tanks

- Aesthetically pleasing operations buildings - The high grade Operations and Administrative Buildings are constructed above the process tanks and contain 12,000 square feet of buildings, including approximately 3,100 square feet of professional office space utilized by operators and administrative staff.
- State of the art process equipment - As a result of PERC Water's investment in energy saving technology, including Koch Puron® Membranes, they save up to 15 percent in wastewater treatment power consumption costs and received a significant grant from Southern California Edison.
- Thirteen acres of percolation ponds - There are three storage basins, each consisting of at least four acres at the floor surface, and the basins operate at a 50/50 wet/dry cycle, allowing half the basins to be accepting flow while the other half of the basins will be allowed to dry for maintenance.
- Levee protection for 100-year flood - The levee is 25 feet high, with 19 feet of the levee below grade and six feet of the levee above constructed grade.

The facility was designed to be built in two phases, allowing for an efficient expansion when additional capacity is required:

- Phase 1 / 3.4 MGD - Phase 1 is designed to treat and reclaim wastewater at a rated capacity of 3.4 MGD Average Dry Weather Flow (ADWF) serving a maximum 11,333 equivalent dwelling units (EDUs) based on 300 gallons per day per EDU, and a maximum population of 42,500 based on 80 gallons per day per capita. Phase 1 design loadings are 9,074 lbs Biochemical Oxygen Demand (BOD) and Total Suspended Solids (TSS), and 1,503 lbs Total Kjeldahl Nitrogen (TKN).
- Phase 2 / 4.2 MGD - Phase 1 and Phase 2 combined is designed to treat and reclaim wastewater at a minimum rated capacity of 4.2 MGD ADWF serving a maximum of 14,000 EDUs based on 300 gallons per day per EDU, and a maximum population of 52,500 based on 80 gallons per day per capita. Phase 1 and Phase 2 combined design loadings are 11,209 lbs BOD and TSS, and 1,856 lbs TKN.

Effluent is treated to a tertiary level meeting Title 22 requirements and present requirements of the Regional Board. The effluent is currently disposed in the percolation ponds located to the east of the new Facility, however the City is drafting an alternate use plan for the recycled water to reclaim and reuse it as an additional revenue stream for the City.

Basis of Design

PERC Water developed a design based on an MBR process that will be designed and built in two phases. The Facility tank structure was constructed for 4.2 MGD in the first phase and is fully contained utilizing common wall construction. It has dimensions of 160' by 200' for Phase 1 and Phase 2 – requiring approximately three-quarters of an acre – and is built mostly below existing grade. The majority of the tank structure is covered with a concrete slab combining a pre-cast plank system and cast-in-place topping.

Operations buildings containing process equipment, a laboratory, restrooms, workshop, break rooms and administrative offices are constructed above the tank structure, reducing land requirements. The Facility membrane cartridges are phased to meet the present requirements of the Regional Board and to coincide with flow capacity and development growth. The Facility has applicable noise and odor controls and is designed to blend with the surrounding community.



Rendering of Santa Paula Water Recycling Facility

Major treatment processes include the following:

- Influent Lift Station
- Screening and Head Works
- Flow Equalization Tanks
- Pre-Anoxic Zone
- Aerobic Zone
- Post-Anoxic Zone
- Membrane Separation Tank
- UV-Disinfection
- Effluent Storage
- Effluent Pump Station
- Percolation Ponds

The majority of the 1.2 million gallon Flow Equalization Tank is used for the biological and Membrane Separation processes as part of the fourth train in the Phase II Facility, whereas the remaining tank structure is used for Flow Equalization.

Solids Processes include Aerobic Digestion and Sludge Dewatering. All process areas are fully scrubbed with an Odor Control system.

Design and Construction

PERC Water began the engineering of the project on May 6, 2008 following completion and approval of the 30% design, which was submitted to the City as part of PERC Water's proposal, and on July 7, 2008, they commenced construction. Concurrent to the construction, construction drawings and documents were being prepared for future components of the construction work in a fast-track approach. Construction of the tank structures commenced in September 2008 and were completed in January 2009 when the pre-cast panels covering the tanks were installed. Construction of the project was completed in December 2009.

After completion of construction, PERC Water commenced electrical, mechanical, equipment installation, controls, programming, testing, commissioning and startup. On May 13, 2010, the Facility took full flow from the City, successfully terminating the use of the original facility.



September 2008



December 2008



June 2009

Awards and Recognition

PERC Water and Alinda were presented the Global Water Awards' 2009 "Water Deal of the Year" Award of Distinction for their contribution to the advancement of public-private partnerships in the international water sector specific to their contract to design, build, operate and finance the Santa Paula Water Recycling Facility. The award was given to them by Al Gore, former Vice President of the United States and Nobel laureate, at an awards banquet at the Zurich Marriott Hotel Monday, April 27, 2009 in Zurich, Switzerland. The prizes were awarded on the basis of votes cast by readers of Global Water Intelligence (GWI), one of the premier international news magazines for professionals in the water sector, and members of the International Private Water Association and the International Desalination Association.

GWI described the Santa Paula deal as a "ground-breaking transaction which can be emulated across the United States." As municipalities struggle to raise funds for infrastructure projects and reduce risk of environmental damage, public-private partnerships are becoming more appealing. The decision by the City of Santa Paula to use private sector funding, according to GWI, demonstrates a "bold new direction in the financing of US water infrastructure." PERC Water and Alinda's "elegant solution" removes the construction and operational risk from the City and has a lower risk profile than those utilizing tax-exempt financing.



Santa Paula Water Recycling Facility



Huber Screw Press



Membrane Separation Tanks



Influent Lift Station Tank



Aerial of Completed Facility