

Water and Wastewater Design

- Water Filter Plant
- Wastewater Treatment Plant
- Trunk Sewer and Lateral Sewer System
- Water Distribution
- Potable Water Storage Tanks
- Potable Water Pump Station
- Sanitary Sewer Pump Station



POTABLE WATER



Cerrillos Potable Water
Pump Station



Cerrillos Potable Water
Pump Station

Water and Waste Water Design

New Water Intake at Cerrillos Dam, Disinfection System, Pump Station and Forced Main

Service: 2.0 MGD of potable water for Ponce aqueduct system

CMA: The project consists of the design of a new water intake at Cerrillos Dam, including the disinfection system, pump station, and forced main to provide 2 MGD of potable water for the city of Ponce.

Location: Ponce, Puerto Rico

Construction Cost: \$3,735,160

Status: In service since 2006

Owner: Puerto Rico Aqueduct and Sewer Authority (PRASA)

POTABLE WATER



Carraizo Emergency Backup Power System

Water and Waste Water Design

Emergency Backup Power at Carraizo Dam

Service: Designed the Power Backup System consisting of five 1500 Kva each emergency generators servicing the Carraizo Dam.

CMA: This system will allow full operation of the raw water pumps and the dam sluice gates during power outages.

Location: San Juan Metropolitan Area

Construction Cost: \$16,000,000

Status: In service since 2006

Owner: Puerto Rico Aqueduct and Sewer Authority (PRASA)



WATER SUPPLY, TRANSMISSION AND DISTRIBUTION SYSTEMS



Water and Waste Water Design

Juana Diaz –Coamo Water Transmission Line

Service: Potable Water Network, Installation of 2.3 Km. of 30-inch diameter pipeline

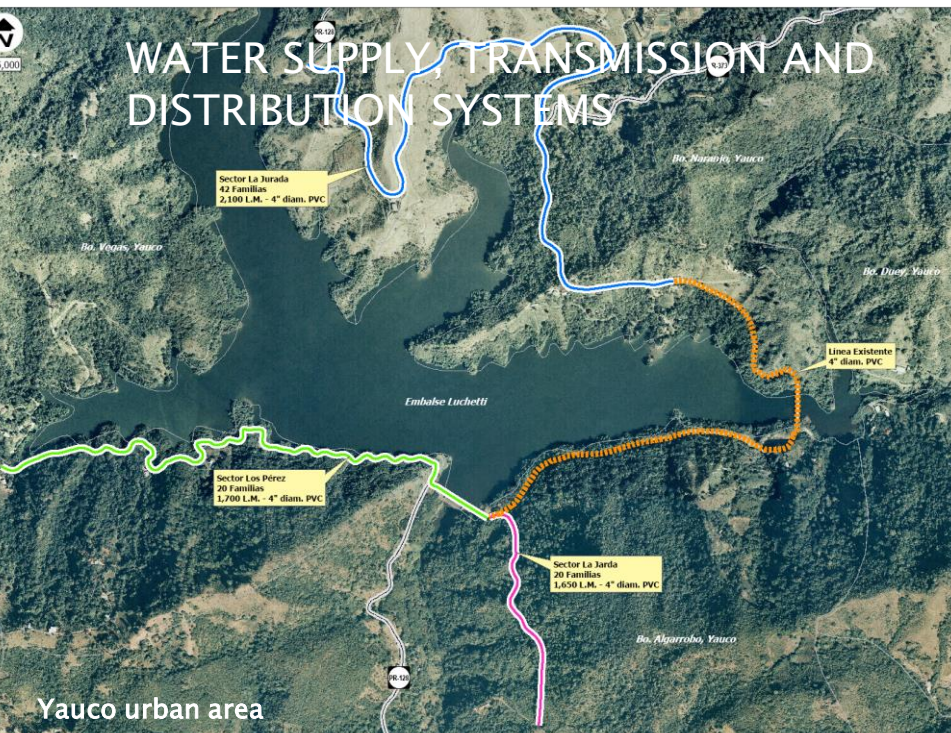
CMA: Preconstruction phase providing design reviews, permitting logistics, bid documents preparation, field services including on-site inspection and project management, initially under AFI, and completed under PMC team with BV Puerto Rico

Location: Juana Diaz and Coamo

Construction Cost: \$14,017,025

Status: In service since 2013

Owner: Puerto Rico Aqueduct and Sewer Authority (PRASA)



Water and Waste Water Design

Improvements to the Yauco Distribution System

Service: Potable Water Network, Three Storage Tanks (3.0, 2.0 and 0.10 MG) 6,8,14,16,20,24 inch of diameter distribution lines, 2 pump stations and a raw water transmission line

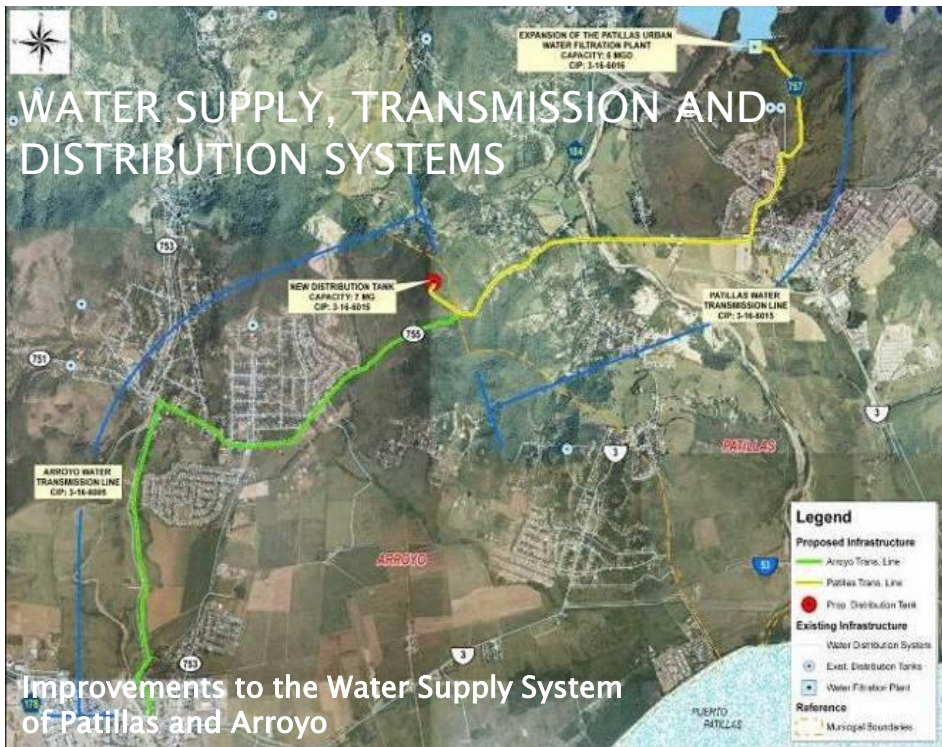
CMA: Preconstruction phase providing design reviews, permitting logistics, bid documents preparation, bid process support ,field services including technical support and project management under PMC team with BV Puerto Rico.

Location: Yauco, Puerto Rico

Construction Cost: \$12,769,000

Status: In service since 2010

Owner: Puerto Rico Aqueduct and Sewer Authority (PRASA)



Water and Waste Water Design

Patillas Water Transmission Line

Service: Potable Water Transmission,
Installation of 4.5 Km. of 30-inch diameter
pipeline

CMA: Preconstruction phase providing
design services, permitting logistics, bid
documents preparation, field services
including services during construction and
project management under PMC team
with BV Puerto Rico

Location: Patillas and Arroyo Puerto Rico

Construction Cost: \$10,846,074

Status: In service since 2010

Owner: Puerto Rico Aqueduct and Sewer
Authority (PRASA)



WWTP Guanica

Guánica Wastewater Treatment Plant Expansion

Service: Construction of a new 1.25 MGD Biological Nutrient Removal Wastewater Treatment Plant expansion in the municipality of Guánica.

CMA: The project included permitting, design, and construction management and inspection Design services.

Location: Guánica, Puerto Rico



WWTP Guanica

Status: In service since 2013

Owner: Puerto Rico Aqueduct & Sewer Authority (PRASA)

Sewerage Collection for Ensenada and Guaypao Communities Gúánica, Puerto Rico

Service: Domestic Sewage

Components: Construction of the Ensenada sanitary pump station to receive the sewage from the Ensenada, Salinas –Providencia, Playa Santa, and Guaypao communities at Playa Santa, Gúánica

- Installation of 8, 15, and 18 inch PVC gravity trunk sewer that runs in common trench with the 14 inch diameter force line.

- Installation of the 14 inch diameter PVC force main, from the Ensenada pump station to the Guánica wastewater treatment plant

- Connection from the Ensenada force main to the existing Guánica wastewater treatment plant

CMA: Preconstruction phase providing design reviews, permitting logistics, bid documents preparation, field services including on-site inspection and project management under PMC team with BV Puerto Rico.

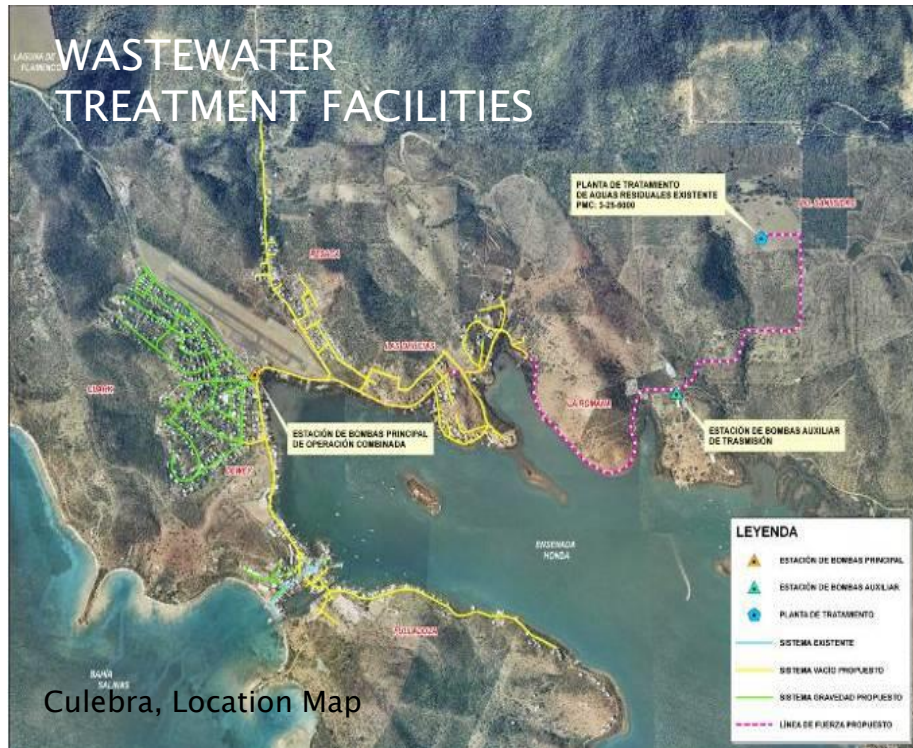


Location: Guánica, Puerto Rico

Construction Cost: \$10,519,900

Status: In service since 2013

Owner: Puerto Rico Aqueduct and Sewer Authority



Culebra, Location Map



Water and Waste Water Design

Sanitary Sewer System, WWTP and Combined Vacuum Gravity Culebra, Puerto Rico

Service: Municipal Wastewater

Process: A new 0.20 MGD biological nutrients removal activated sludge treatment plant and a new sanitary sewer combined vacuum gravity system.

CMA: Preconstruction phase providing design services, permitting logistics, bid documents preparation and support, field services including technical support and project management.

Location: Culebra, Puerto Rico

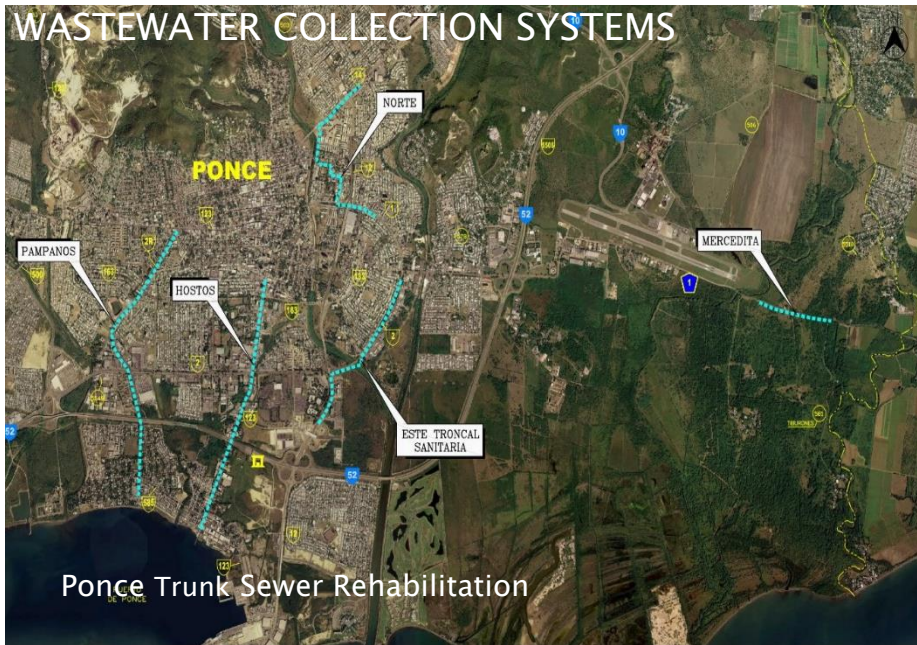
Status: WWTP completed

Collection System: Combined Vacuum Gravity under Construction.

Owner: Puerto Rico Water and Sewer Authority

People Benefited: 2000

WASTEWATER COLLECTION SYSTEMS



Water and Waste Water Design

Ponce Trunk Sewer Rehabilitation

Service: Municipal Wastewater

Components: 19 kilometers trunk sewer

CMA: Existing conditions evaluation report, preparation of bid documents and construction support.

Location: Ponce, Puerto Rico

Construction Cost: \$40,000,000

Status: Under Construction; expected completion date late 2017

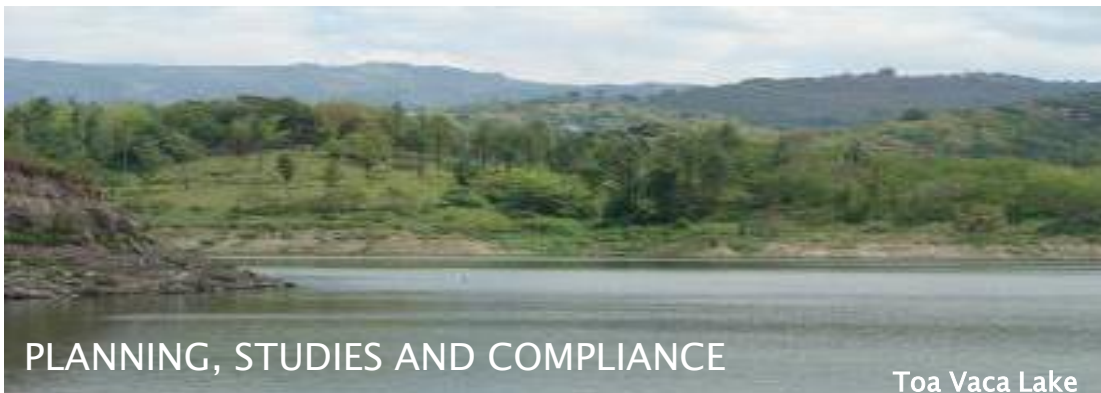
Owner: Puerto Rico and Sewer Authority (PRASA)

Before



After





Environmental Engineering

- Ponce Area Master Plan Water and Wastewater Systems
- 2007 South Region Drinking Water Infrastructure Needs Survey and Assessment Report (DWINSA) for the EPA
- Identification of New Raw Water Sources for Toa Vaca Lake
- Design of Consent Decree Projects for the South Region to Comply with EPA Requirements
- South Region Water Treatment Plants NPDES Compliance Evaluation as per DOH Requirements
- O & M Manuals for Water and Wastewater Pump Stations

PLANNING, STUDIES AND COMPLIANCE

Toa Vaca Lake

PLANNING, STUDIES AND COMPLIANCE ACTIVITIES

Environmental Engineering

Consent Decree Projects South Region

Service: Municipal Wastewater

Capacity: 0.50 to 2.0 MGD WWTP's

Type: Phosphorus Removal and
Dechlorination systems as required by
the Consent Decree between PRASA
and EPA.

CMA: Preconstruction phase providing
design and bid documents preparation
After completion of these projects full
compliance with Consent Decree
requirements was achieved.

Location: Yauco, Guayanilla, Adjuntas,
Santa Isabel, Patillas and Peñuelas

Status: In operation

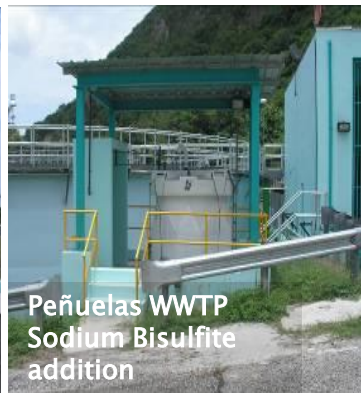
Owner: PRASA



Santa Isabel WWTP – Site



**Santa Isabel WWTP
Sodium Bisulfite addition**



**Peñuelas WWTP
Sodium Bisulfite
addition**



**Guayanilla WWTP phosphorus
removal polymer addition**



Water Treatment Plants

NPDES Compliance Capability Evaluation South Region

Service: PRASA Water Treatment Plants' Evaluation

CMA: Evaluated and recommended improvements to the sludge treatment systems and other NPDES compliance issues on 33 water treatments plants located on the South Region as DOH and EPA requested.

Location: PRASA South Region

Status: The report is being used by PRASA in the on going negotiations with DOH/EPA.

Owner: Puerto Rico Aqueduct and Sewer Authority and Sewer Authority (PRASA)

Other CMA Capabilities

- Architecture
- Civil Engineering
- Transportation
- Structural Engineering
- Mechanical Engineering
- Environmental Engineering
- Electrical Engineering
- Permitting
- Project & Construction Management





Civil Engineering

- Site Master Planning & Design
- Infrastructure Master Planning & Design
- Hydrologic & Hydraulic Studies
- River/Stream Corridor Improvements
- Flood Control Structures
- Storm Water management
- Erosion & Sedimentation Control
- Scour Analysis
- Existing Infrastructure Analysis
- Marina Master Plan and Design
- Pump Stations
- Soil Rehabilitation