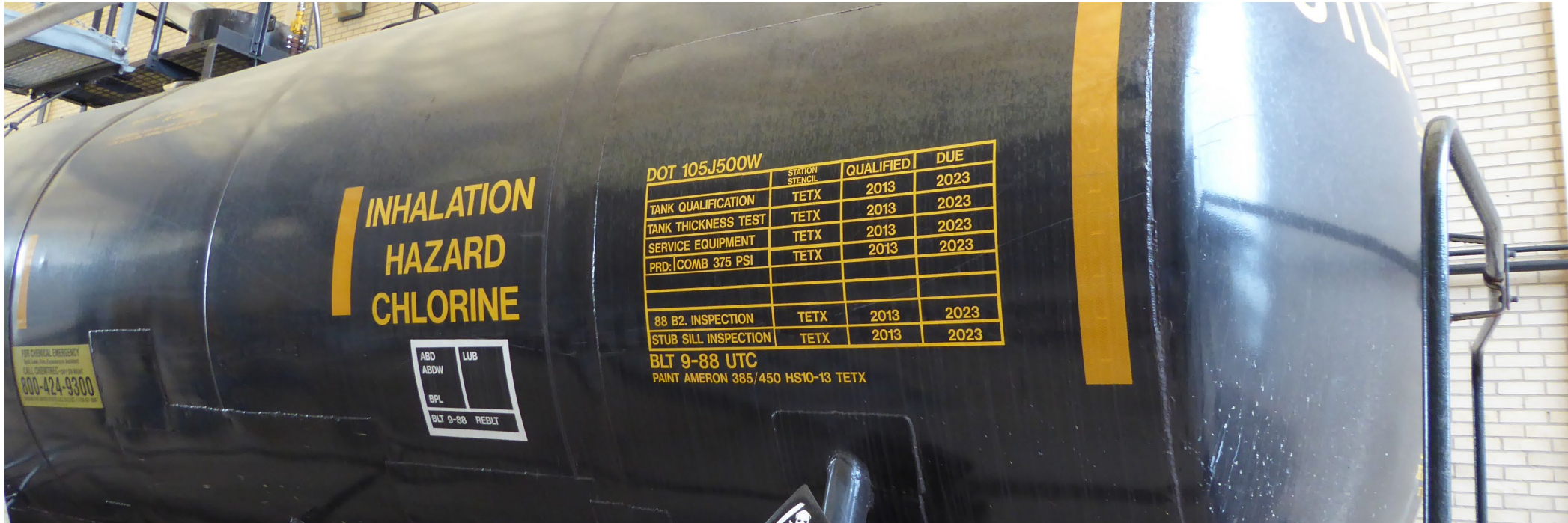


O.N. Stevens Water Treatment Plant Chlorine System Improvements



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Director Water Systems and Support Services
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Background

O.N. Stevens Water Treatment Plant (ONSWTP) currently uses a chlorine gas system for water disinfection. Disinfection is critical to provide safe drinking water.

- The chlorine gas system was originally installed 44 years ago in 1981
 - While the system is compliant under the law, it would not meet current regulatory requirements if built to the same criteria today
- Chlorine gas is supplied to ONSWTP by 90-ton rail car
 - Chlorine gas creates safety concerns for the community and City staff
 - Operational challenges exist due to dependency on and reliability of the rail cars



Project Scope

Due to criticality of chlorine in the water treatment process, safety concerns, and regulatory challenges associated with the use of chlorine gas, this project will replace the existing chlorine gas system at ONSWTP with an operationally safe and more reliable onsite hypochlorite generation (OSG) system.

- Existing chlorine dioxide generator system that uses chlorine gas will be replaced with a new three-chemical system that uses sodium hypochlorite, sodium chlorite, and hydrochloric acid
- Construction phase of the project will be under one contract with a general contractor and include two phases
 - Phase 1: Completion of bulk hypochlorite storage and feed equipment
 - Phase 2: Completion of the OSG building with sodium hypochlorite generators and ancillary equipment
- Existing railcar facility, chlorine gas evaporation and feed equipment, 1-ton chlorine container storage area and associated piping will be demolished



Austin, Texas site visit

Operational Considerations

Completion of this project is critical to the overall reliability and resiliency strategic plan developed by Corpus Christi Water (CCW) for ONSWTP. This project will also address the health and safety risks associated with chlorine gas exposure for the surrounding community and City staff.

The strategic plan for ONSWTP includes the projects below:

Project	Status	Estimated Project Completion Date
Pre-sedimentation Dredging	Construction	2028
Raw Water and Chemical Improvement Projects	Construction	2027
Filtration System Hydraulic Improvements	Construction	2026
Chlorine System Improvements	Pending Council Approval	2029
Flocculator and Basin Improvements	Design	2027
Solids Handling	Design	2029

Samples of OSG Installations

Site	State	Lb-Cl ₂ /day	System Replaced
Miami-Dade South District WWTP	FL	21,000	Chlorine Gas
Crescent Water Treatment Plant in Louisville	KY	9,000	Chlorine Gas
Taylor Water Treatment Plant in Lewisville	TX	6,000	Pepcon
Mansfield Bud Ervin Water Treatment Plant	TX	6,000	
Vista Water Treatment Plant in Escondido	CA	6,000	Chlorine Gas
Chandler Water Treatment Plant	AZ	6,000	
Meramec Water Treatment Plant	MO	5,550	Chlorine Gas
Austin Water Treatment Plant #4	TX	4,500	New Plant
Blackman Water Treatment Plant in Springfield	MO	4,500	Chlorine Gas
K. Thomas Hutchinson WTP	TN	4,000	New Plant
Waxahachie R. W. Sokoll Water Treatment Plant	TX	3,000	
San Antonio Naco Pump Station	TX	2,400	Chlorine Gas

Cost Considerations

- If project does not progress, a new capital project would have to be developed to include design engineering and construction of required chlorine gas infrastructure upgrades
 - Estimated construction cost for these upgrades to the existing chlorine gas system are currently estimated at \$42,500,000
 - Additional costs to this total would be design and professional service fees
- Request for qualifications, design contract award, and design of this project is estimated to take 2+ years

Present Worth Summary

Parameter	Alternative 1 – Chlorine Gas ¹	Alternative 2 – OSG ²	Alternative 3 – Bulk Hypochlorite ¹
Capital Cost	\$42.5M ³	\$101.1M	\$46.6M ³
Yearly Operations and Maintenance Cost	\$237K	\$405K	\$88K
Annual Chemical Cost	\$1.99M (chlorine) \$1.66M (caustic)	\$406K (power) \$1.14M (salt)	\$3.55M
20-year Present Worth	\$189.6M	\$145M	\$170.7M

Bid Summary

Contractor	Base Bid 1	Alternate 1	Base Bid 1 + Alternate 1
Reytec Construction	\$100,111,505.00	\$522,495.00	\$100,634,000.00
Engineer's Opinion of Probable Construction Cost	\$107,260,000.00	(included in OPCC)	\$107,260,000.00

Reytec Construction has successfully worked on other large water infrastructure projects for the City of Corpus Christi and other municipalities.

Fiscal Impact

- The fiscal impact for Corpus Christi Water in FY25 is \$52,250,000.00 for the construction contract with funding available from the Water Capital Fund
- Remaining funds will be incurred in FY26, FY27 and FY28 in an amount of \$48,384,000.00
- The short-range Capital Improvement Plan (CIP) construction budget for this project was set at \$80,250,000, resulting in a budget shortfall of \$20,384,000.00
- Budgetary adjustments will be made as part of the annual capital budget process for FY 2026, FY 2027, and FY 2028 to reflect new contract costs

Project Timeline

2022 - 2024	2025	2025 - 2029
March - December	Feb – July	August - January
Design	Bid/Award	Construction

Project schedule reflects City Council award in July 2025 with anticipated construction completion by January 2029.

Staff Recommendation

Staff recommends awarding construction contract to Reytec Construction Resources, Inc. of Houston, Texas for the ONSWTP Chlorine System Improvements project in the amount of \$100,634,000.00 for Total Base Bid plus selected Alternate 1. The construction duration is planned for 42 months from issuance of the Notice to Proceed to begin construction in August 2025.

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Thank you!

