



United States Department of Agriculture
Rural Development
Arizona State Office

DATE: October 25, 2018

SUBJECT: Executive Project Summary
Tri-City Regional Sanitary District (TRSD)

BACKGROUND

The District was formed in 2011, by merging the Cobre Valley Sanitary District (formed in 1968) with the Pinal Sanitary District. The District does not currently provide service to any customers within their service area. The PER for Phase I required extensive coordination/meetings with RD, in part due to the size/complexity and develop a phasing plan and also to consider the feasibility of a regional solution, since two neighboring communities have wastewater facilities with available capacity. The applicant first developed a PER in 2011, as prepared by AMEC Engineering, which proposed a collection system serving the entire District with wastewater treatment provided by the Town of Miami. In 2012, the District solicited Engineers for services by issuing a Request for Qualifications, and selected PACE.

DESCRIPTION

The District is located in central Arizona within unincorporated areas of Gila County between the Town of Miami and the City of Globe. The District has been pursuing a comprehensive collection and treatment system to serve the un-sewered developed portions within the District's service area. Both the Town of Miami and City of Globe currently provide sewer service to some areas within the District boundaries. Service to these areas remains unaffected by the Phase I improvements.

The Phase I project area is currently served by a variety of on-site cesspools and septic systems. Most areas are served by individual on-site systems, while others are served by community systems with a combination of one or more septic tanks and leach fields, primarily the area known as Bechtel Tract. The Bechtel tract is a 40-home neighborhood that uses a community septic tank and leach field that dates from the 1940's. Most of the on-site treatment systems are problematic in Phase I project area because the residential lots are small, and the systems are either failing or near the end of their useful life. When the septic systems fail, the lots typically have no room for expansion, or are served by cesspools, without room for expansion of a conventional septic system. The PER consists of selecting the best alternative for the installation of a wastewater collection and treatment system within the Phase I project area.

HEALTH OR SANITARY DOCUMENTATION

The condition of the existing on-site wastewater treatment systems is documented in the PER. According to Gila County, approximately 90% of on-site systems have failed, with 25 notices of violations for sewage and greywater. Continuation of present methods of wastewater treatment in the Phase I area (without the proposed improvements) could have significant long term adverse impacts. No-action would most likely result in predictable adverse environmental effects which are thoroughly documented in the PER.

ALTERNATIVES CONSIDERED

The following alternatives were considered and evaluated in the PER:

1. Alternative 1: No Action
2. Alternative 2 (To Miami): Wastewater collection system; Treatment at the existing Miami Water Reclamation Facility (WRF)
3. Alternative 3 (To TRSD): Wastewater collection system; Treatment at the proposed District Water Reclamation Facility (WRF)

Due to the layout of the community, the collection system is very similar between each alternative, with the exception being the force main alignment from the pump station, with Alternative 2 alignment discharging to Miami's existing WRF, while Alternative 3 discharges to the proposed TRSD WRF. The PER evaluated Alternatives 2 and 3 in detail, including capital, life cycle cost, and non-monetary factors and makes a recommendation based on the evaluations.

Within Alternative 3, four treatment alternatives were evaluated, with membrane bioreactor (MBR) as the recommended treatment option, based on lowest capital cost and comparable O&M costs. In addition to treatment, five discharge/outfall options were also considered within Alternative 3, with discharge to Russell Gulch as the recommended discharge/outfall location.

Original Life Cycle Present Worth Analysis Comparison

Item	Alternative 2 To Miami	Alternative 3 To TRSD
Capital Cost	\$ 25,447,683	\$ 27,477,776
Annual O&M (Present Worth)	\$ 9,356,000	\$ 7,818,000
Annual SLA (Present Worth)	\$ 488,000	\$ 798,000
Salvage Value (Present Worth)	\$ 7,900,000	\$ 8,529,000
Present Worth Cost	\$ 27,391,683	\$ 27,564,776

REVISED LIFE CYCLE (used in final underwriting) – PRESENT WORTH SUMMARY

Item	Alternative 2	Alternative 3
Capital Cost	\$ 25,448,000	\$ 27,479,000
Annual O&M (Present Worth)	\$ 9,863,000	\$ 7,030,000
Annual SLA (Present Worth)	\$ 275,000	\$ 569,000
Salvage Value (Present Worth)	\$ 7,899,000	\$ 8,529,000
Total	\$ 27,687,000	\$ 26,549,000

More Expensive

Least Expensive

Subsequent to the completion of the PER, supplemental information was prepared to address consideration to connect to Globe, evaluating alternatives to gravity sewers, population growth estimates, floodplain considerations, and treatment alternatives. PACE documented this in their May 4, 2018 letter.

During the process of underwriting and review by National Office and state staff the lifecycle costs were updated (inserted above) and subsequently submitted as an addendum to the PER.

PROPOSED IMPROVEMENTS

Alternative 3 (Wastewater collection system; Treatment at the proposed TRSD WRF) is the recommended alternative. The recommended alternative was selected based on a present worth cost analysis and a matrix rating system. The project will connect existing un-sewered developed portions within the District's Phase I service area

Alternative 3 Summary: This project consists of 58,000+/- linear feet (LF) of gravity sewer lines, 7,500+/- LF of force main, approximately 145 new manholes, 856 new services connections, and a new 0.25 MGD MBR WRF. Major treatment processes include: Headworks, Secondary Treatment (MBR), Filtration, Disinfection and Bio Solids Processing and Disposal. Proposed improvements to residential systems, generally include removal/disconnect of existing septic/cesspool systems and connections from residential properties to the collection system.

RD uses Equivalent Dwelling Units (EDU) to identify system capacity and also compare rates to similar systems. An EDU is the level of service in gallons per day for an average residential dwelling. Other users, such as commercial and industrial are assigned values of EDU based on their expected level of service. For example, the PER shows that commercial parcels are based on 7.5 EDUs/acre.

The scope of the project includes collection system improvements that will provide sewer service to 1,034 EDUs, with capacity for additional 340 EDUs in the future (approximately 30% growth over 20 years), for a total of 1,374 EDUs. The 340 additional EDUs are vacant properties, with 210 EDUs having frontage along the proposed improvements such that they can be assessed and therefore contribute to the proposed improvements, resulting a 1,244 EDUs for assessments (1,034 + 210). In addition, these 210 EDUs can be charged 50% of O&M costs as an availability fee, resulting in 1,139 EDUs for O&M (1,034 + 50%*210).

However, the total EDU count for Phase 1 of 1,374 was reduced to 1,244 due to 130 vacant parcels that do not have frontage and will therefore not be assessed or connected. Therefore to summarize, the **EDU's for O&M payment is 1,139** (1,244 – 105 = 1,139), while the **EDU's for debt service is 1,244**. Refer to Section 6.7.2 of the PER for a detailed summary of the EDUs.

PROJECT COST & FINANCING

TRSD Phase I Proposed Project Cost Estimate

Description	Phase I WRF Engineers Opinion of	Collection System	Water Reclamation System	Residential Service Connections
Total Construction Costs	\$18,138,000	\$10,150,000	\$3,012,000	\$4,976,000
Total Non-Construction Cost	\$ 6,305,000	\$4,690,000	\$873,000	\$742,000
Total Construction & Non-Construction Cost	\$27,478,000	\$16,539,000	\$4,389,000	\$6,550,000
Financing & Interest	\$752,000	\$414,000	\$128,000	\$211,000
Total Cost	\$28,230,000	\$16,953,000	\$4,517,000	\$6,761,000

As part of USDA underwriting for the project, the impact of debt and operating costs were considered against EDU's as a common denominator to other similar systems. The average EDU sewer rate of several similar communities was \$45.11/mo but the most applicable was the Town of Miami at \$61/mo. The funding scenario for TRSD utilized assessments equal to loan payments, while monthly service fees would pay for O&M costs. USDA underwriting determined an assessment rate of \$32.36/mo and O&M of \$29.28 for a total EDU cost of \$61.64/mo. This resulted in the following funding summary:

Loan	\$12,000,000	(40 years @ 2.375%)
Grant	\$16,128,000	
Total Funding	\$28,128,000	

The debt and grant structure for any project (and possible phases) is based on a several factors for each community to ensure their rates are appropriate and similar to neighboring and similar systems. In this case TRSD's combined debt service and operational rates equate closely to those of Miami's, resulting in the approved debt and grant funding of approximately 42% loan and 58% grant. Furthermore, the current WEP program goals minimizes the amount of grant funding whenever possible and staff were adamantly successful to secure the level of funding TRSD received.

Conclusion

In reviewing all aspects of the project and Preliminary Engineering Report, the following conclusions were reached:

- 1) RD Engineering staff reviewed and commented on the project throughout the development of the PER to provide assurance of a modest, effective and

affordable treatment solution. The project subsequently was reviewed again by National engineering and environmental staff prior to final concurrence by National program officials.

- 2) The difference in estimated project costs equated to less than 8% (\$2,030,093). However, when considering Life Cycle costs (as required by USDA PER requirements) the differences between alternatives were negligible (less than 0.7%). **The revised Life Cycle costs which were an outcome of the underwriting process reflect a positive savings of over \$1,138,000 in favor of the selected Alternative 3.**
- 3) Aside from the collection system which would remain constant between alternatives, the primary differences in cost are paying Miami for capacity fees and the required additional lift station (Alternative 2) versus similar lift station and a new/separate treatment plant (Alternative 3).
- 4) Initial collection designs were updated to eliminate overlap and right of way intrusion, where practicable.
- 5) The ultimate financial impact to users would remain essentially the same between each alternative, as once a debt capacity per EDU was established grant funding was utilized to maintain a similar rate. This standard methodology would be used regardless of the PER alternatives chosen.
- 6) Grant and loan funding for each phase as requested by TRSD will be evaluated on the same basis as this initial phase. The debt will be approved or disapproved by the residents. However, if the residents decline to approve the debt through the proposed assessments then the funding will be de-obligated without a resolution to the failing septic/cesspool systems. The assessments are the only viable mechanism for the TRSD residents to levy the debt repayment. This is applicable whether TRSD or Miami operated the treatment facility.
- 7) The project includes Colonia grant funding to install the residential service lines, connect to the homes and abandon the septic/cesspools, which creates further savings to the residential users.
- 8) The ability to address other options for regionalization such as shared administration and operating costs can still be evaluated by all service providers during the design stages of this project.