

TESI – Lake Royale (Wastewater)

Facility Information:

Wastewater System: NPDES# NC0042510

Franklin County, NC

~6 Service connections

Assets: Extended Aeration Treatment Plant: Single-Train Aeration, Duplex Clarifiers, and Tertiary sand filter, Chlorination and Dechlorination for disinfection

Collection System: 8-inch mains, 2 lift stations

Description of need:

The Lake Royale wastewater treatment system is an extended aeration treatment facility handling flows from 6 community properties owned by the lake Royale Homeowners association. The customers consist of a community center and several “comfort stations.” Each customer has a septic tank and grinder pump which convey waste to the collection system. Additionally, there are two larger lift stations that are in poor condition and in need of rehabilitation. There are currently 5 damaged air release valves in the collection system that should also be repaired. In its history, the plant regularly struggled to comply with BOD and ammonia limits. ECHO (Enforcement and Compliance History Online, EPA) also notes that the facility has failed to submit DMR test results since July of 2020. ECHO also shows 15 informal and 10 formal enforcement actions in the last 5 years. The facility appears to be in a state of at least partial disrepair and will require significant reinvestment to bring into consistent compliance. Additionally, the compliance history and missing DMR data indicates shortcomings in operations practices that must be improved upon takeover.

Proposed Improvements:

To ensure the longevity and performance of the TESI Lake Royale wastewater system, Red Bird Water Utility Operating Company plans to make improvements to the system. Remote monitoring will be installed to ensure that operations can effectively respond to abnormal operating conditions and ensure proper operations. At the plant, repairs and damaged equipment will be repaired or replaced as practical. Collection system improvements are also required to ensure that the lift stations, which These improvements will ensure the system can provide safe and reliable service to customers and will bring the facility into a maintainable condition in compliance with environmental regulation moving forward. Red Bird is exploring alternatives including pumping and hauling from the lift stations or the plant itself to reduce the level of capital required and potentially eliminate the discharge. The relatively low use of these community locations may make it more practical and affordable to approach this way, though it would result in significantly higher operational costs.

PRELIMINARY OPINION OF PROBABLE COST					
Central States Water Resources, Inc. (Red Bird)					
Lake Royale Wastewater System Franklin County, North Carolina June 2021					
ITEM	DESCRIPTION	QUAN.	UNIT	UNIT PRICE	TOTAL
Wastewater Collection System					
Lift Station #1					
1	Replace Simplex Pumps with Duplex Pumps and Related Appurtenances (i.e. controls, valves, piping, etc.)	1	LS	\$100,000	\$100,000
2	Install Transfer Switch for Portable Generator Use	1	LS	\$7,100	\$7,100
3	Portable Generator	1	LS	\$36,600	\$36,600
4	Install Telemetry System	1	LS	\$20,000	\$20,000
5	Rehabilitate Wet Well	1	LS	\$20,000	\$20,000
Lift Station #9					
1	Demolish Existing Wet Well, Pump, Piping, and Valves	1	LS	\$8,000	\$8,000
2	Install New Simplex Pump and Related Appurtenances (i.e. valves, piping, wet well, etc.)	1	LS	\$25,000	\$25,000
3	Demolish Existing Holding Tank and Reroute Piping to New Wet Well	1	LS	\$5,000	\$5,000
Force Mains					
1	Replace Air Release Valves	5	EA	\$7,500	\$37,500
CONSTRUCTION SUBTOTAL (Wastewater Collection System)					\$259,200
Wastewater Treatment Facilities					
1	Rehabilitate Two Aeration Chambers and Replace Piping/Diffusers	1	LS	\$30,000	\$30,000
2	Rehabilitate Two Settling Tanks	1	LS	\$25,000	\$25,000
3	Rehabilitate Digester and Replace Piping/Diffusers	1	LS	\$15,000	\$15,000
4	Replace Sand Media in Tertiary Filters	1	LS	\$12,000	\$12,000
5	Replace and Reroute Plant Piping	1	LS	\$15,000	\$15,000
6	100 CFM Blowers, Motors and Control Panel	2	EA	\$25,000	\$50,000
7	Install New Permanent Backup Generator and Automatic Transfer Switch	1	LS	\$51,700	\$51,700
CONSTRUCTION SUBTOTAL (Wastewater Treatment Facilities)					\$198,700
CONSTRUCTION SUBTOTAL (Wastewater Total)					\$457,900

TESI – Lake Royale (Purchased Water)

Facility Information:

Water System: PSWID# NC0235108

Franklin County, NC

~1888 Service connections

Assets: 200,000-Gallon Elevated Storage Tank, Distribution System, Isolation Valves, Flushing Hydrants

Description of need:

The Lake Royale drinking water distribution system is a public drinking water system serving 1,888 connections in Franklin County. The water system consists of an elevated 200,000-Gallon storage tank, a distribution system with 1,951 ¾ inch water mains and approximately 70 miles of 2-10 inch water mains, flushing hydrants, and isolation valves. The storage tank is filled via interconnection with the Franklin County water system via a booster pump station owned and operated by Franklin County. The tank site is appropriately fenced and secured. The tank is filled via a 10" water main and the outflow from the tank is via an 8" main. The tank was purchased used in 1968 and was most recently inspected in March. The tank is in poor condition overall with rust on much of the structure. The recent inspection noted base cone and man door, pedestal and riser, ladders and safety devices, tank shell, bottom and roof, manways/hatches, roof vent and screens, overflow pipe with flapper valve and screen, exterior coating system, interior coating system, interior ladders, ladder for interior riser, riser extensions into tank are in poor condition; the concrete and grout, anchor bolts, and riser base are in fair condition; and the foundation, braces to heaters and overflows are in good condition. Should the tank remain in service significant repairs and reinvestment are needed. Evaluation must be performed to determine if it is economically responsible to rehabilitate the tank, or if the system should evaluate alternative storage solutions or operation directly from the connection to the Franklin County Water system (which would require commitment to provide adequate storage from Franklin County).

Proposed Improvements:

Several alternatives are being considered in the renovation of this water system. Should Franklin County be unable or unwilling to provide verification that they have adequate storage to support the Lake Royale connections, the system will still be required to maintain its own storage. This could be accomplished by rehabilitating the existing tank, abandoning the existing tank in place or demolishing the existing tank and installing new ground storage or hydropneumatic storage, assessing the distribution system capacity as storage and installing storage to meet the requirements. If Franklin County will provide verification that they have adequate stored water for the Lake Royale customers, the tank will be removed from service and either abandoned in place or demolished, and the Franklin County booster station will be evaluated to determine if the Lake Royale system will require an additional booster station or hydropneumatic storage tank to maintain continuous pressure in the distribution system.

PRELIMINARY OPINION OF PROBABLE COST
Central States Water Resources, Inc.
Lake Royale Water System
Franklin County, North Carolina
June 2021

ITEM	DESCRIPTION	QUAN.	UNIT	UNIT PRICE	TOTAL
Water Production System					
1	Demolish Existing Elevated Storage Tank	1	LS	\$55,000	\$55,000
2	Tank Rehab to Include Recoating and Tank Repairs	1	LS	\$400,000	\$400,000
3	Install New Booster Pump Station with Backup Generator	1	LS	\$180,000	\$180,000
4	Install 200,000 Gallon Ground Level Storage Tank	1	LS	\$400,000	\$400,000
WATER CONSTRUCTION SCENARIO SUBTOTALS					
A	Rehab Tank Only				\$400,000
B	Demo Tank, No BPS Needed, Capacity from County				\$55,000
C	Demo Tank, No BPS Needed, New Ground Storage Tank				\$455,000
D	Demo Tank, New BPS, Capacity from County				\$235,000
E	Demo Tank, New BPS, New Ground Storage Tank				\$635,000