



FINDING OF NO SIGNIFICANT IMPACT
Approval of Facilities Plan
Dayton (Rhea County), Tennessee
Loan Nos. CW8 2021-453 and SRF 2021-454
November 1, 2021

The National Environmental Policy Act requires federally designated agencies to determine whether a proposed major agency action will significantly affect the environment. One such major action, defined by Section 511(c)(1) of the Clean Water Act, is the approval of a facilities plan prepared pursuant to Title VI of the Clean Water Act. In making this determination, the State Revolving Fund (SRF) Loan Program assumes that all facilities and actions recommended by the plan will be implemented. The state's analysis concludes that implementing the plan will not significantly affect the environment; accordingly, the SRF Loan Program is issuing this Finding of No Significant Impact (FNSI) for public review.

The City of Dayton has completed the facilities plan entitled "Dayton Wastewater Treatment Plant Improvements" dated April 2020. The facilities plan provides recommendations for improvements to the wastewater treatment system serving the City of Dayton. This project will consist of the construction of a sequencing batch reactor, headworks with fine screen and grit removal, a blower and chemical building, main sewage pumping station and effluent pump building with variable speed pumps, sludge facility, septic receiving station, and operations building; conversion of the existing aeration basins and final clarifiers to flow equalization tanks; and the demolition of the existing pump building, headworks, chlorine/blower building, effluent pumping station, chlorination building, drying beds, and laboratory. The Third Avenue Sewer Pumping Station will be demolished after the improvements of the wastewater treatment plant is complete. The total estimated project cost is \$23,380,000. A Clean Water State Revolving Fund (CWSRF) loan in the amount of \$20,614,550 has been requested for this project. This project will be funded with two loans. The first loan, CW8 2021-453, is for \$2,000,000 with \$500,000 of principal forgiveness that will not have to be repaid; and the second loan, SRF 2021-454, is for \$18,114,550. The remainder of the project cost will be funded by a \$2,765,450 Economic Development Administration Grant.

Attached is an Environmental Assessment containing detailed information supporting this proposed action. Comments supporting or disagreeing with this proposed action received within 30 days of the date of this FNSI will be evaluated before we make a final decision to proceed.

If you wish to comment or to challenge this FNSI, send your written comment(s) to:

Ms. Felicia D. Freeman, Environmental Manager
State Revolving Fund Loan Program
Tennessee Department of Environment and Conservation
William R. Snodgrass - Tennessee Tower
312 Rosa L. Parks Avenue, 12th Floor
Nashville, Tennessee 37243-1102

or call or e-mail (615) 879-0011 or felicia.d.freeman@tn.gov

ENVIRONMENTAL ASSESSMENT
Dayton (Rhea County), Tennessee
Loan Nos. CW8 2021-453 and SRF 2021-454
November 1, 2021

A. PROPOSED FACILITIES AND ACTIONS; FUNDING STATUS

The City of Dayton has completed the facilities plan entitled "Dayton Wastewater Treatment Plant Improvements" dated April 2020. The facilities plan provides recommendations for improvements to the wastewater treatment system serving the City of Dayton. This project will consist of the construction of a sequencing batch reactor (SBR), headworks with fine screen and grit removal, a blower and chemical building, main sewage pumping station (SPS) and effluent pump building with variable speed pumps, sludge facility, septic receiving station, and operations building; conversion of the existing aeration basins and final clarifiers to flow equalization tanks; and the demolition of the existing pump building, headworks, chlorine/blower building, effluent pumping station, chlorination building, drying beds, and laboratory. The Third Avenue SPS will be demolished after the improvements of the wastewater treatment plant (WWTP) is complete. The facilities planning area and project location are indicated on Figure Nos. 1 and 2 of this Environmental Assessment. Descriptions of the proposed facilities and actions included in this project are listed below:

TREATMENT FACILITIES

The proposed project will consist of expanding the existing WWTP from its current capacity of 2.67 MGD to 4.2 MGD. The WWTP expansion will include the addition of new headworks to pretreat the estimated wet-weather peak flows of 11 MGD. To assist with the processing of the peak flow, the improvements needed at the WWTP will include the construction of a new influent SPS with variable speed pumps that will replace the Third Avenue SPS which currently serves as the primary lift station for the WWTP. The WWTP's current biological treatment system which consist of a conventional activated sludge system will be replaced with a four-basin sequencing batch reactor system. Also, one of the two existing aeration basins would be converted to a chlorine contact chamber where disinfection will be accomplished using chlorine dosed in the form of sodium hypochlorite solution. The second of the existing aeration basins, and the two aerobic digesters would be converted to aerobic waste sludge storage tanks. Two existing final clarifiers will also be converted to effluent flow equalization basins. Additionally, the proposed chlorine contact chamber and effluent flow equalization basins will be configured to act as part of the wet well for a new effluent pumping station. This effluent pumping station will consist of two vertical turbine variable speed pumps and two constant speed pumps utilizing the existing 16-inch diameter effluent force main that will discharge the treated effluent to the Tennessee River.

FUNDING STATUS

The facilities described above comprise the scope of Loan Nos. CW8 2021-453 and SRF 2021-454 scheduled for funding in Fiscal Year 2022. The estimated project costs are summarized in the following tabulation:

<u>PROJECT CLASSIFICATIONS</u>	<u>COSTS (\$)</u>
Administrative & Legal	35,000
Planning Fees	20,000

Design Fees	940,000
Engineering Basic Fees	180,000
Other Engineering Fees	70,000
Resident Inspection	320,000
Construction	19,850,000
Contingencies	1,965,000
TOTAL	23,380,000
CWSRF CW8 2021-453 Loan	2,000,000
Principal Forgiveness (Will not have to be repaid)	500,000
SRF 2021-454 Loan	18,114,550
EDA Grant	2,765,450

The City of Dayton has applied for a \$20,614,550 Clean Water State Revolving Fund (CWSRF) loan. This project will be funded with two loans. The first loan, CW8 2021-453 is for \$2,000,000 with \$500,000 of principal forgiveness that will not have to be repaid; and the second loan, SRF 2021-454 is for \$18,114,550. The remainder of the project cost will be funded by a \$2,765,450 Economic Development Administration (EDA) Grant.

B. EXISTING ENVIRONMENT

The City of Dayton’s Planning Area is located in Rhea County in east Tennessee. A discussion of existing environmental features in the area includes the following:

SURFACE WATERS

Surface waters within the City of Dayton’s Planning Area include the Richland Creek and its tributaries (Little Richland Creek and Broyles Branch); and the Chickamauga Lake Reservoir on the Tennessee River. Designated uses for Richland Creek and Chickamauga Lake Reservoir are domestic water supply, industrial water supply, irrigation, recreation, livestock watering, and fish and aquatic life. Chickamauga Lake is the most significant lake or impoundment in the City of Dayton’s Planning Area. The Dayton Water Department supplies drinking water for its customers from a surface water intake on the Chickamauga Lake, upstream of the Dayton WWTP.

GROUNDWATER

The underlying geologic formation in the City of Dayton's Planning Area consists of extensively folded and faulted carbonate, sandstone, and shale of the Cambrian and Ordovician age underlying the Valley and Ridge Physiographic Province. The ground water comes from the Valley and Ridge aquifer (formerly the Cambrian-Ordovician Carbonate aquifer). The region is karst in nature and allows for excellent movement of ground water through the region.

SOILS

Soil occurring in City of Dayton’s Planning Area include the Urban land-Udorthents complex, Fullerton gravelly silt loam, and Cobstone-Shady-Urban land complex. These soils tend to be found on ridge crests or steep to moderate slopes and consist of well-drained to

moderately well-drained silty soils. The soils allow for very good hydraulic movement and are underlain by a limiting layer of bedrock that is located between 36 to 80 inches deep.

TOPOGRAPHY

The City of Dayton’s Planning Area lies within the Valley and Ridge Physiographic Province, an approximate 40-mile wide province characterized by a succession of folded and faulted ridges that are predominately calcareous Paleozoic-age rocks trending northeast to southwest. The planning area is characterized by gently rolling to hilly terrain with elevations between 680 and 1010 feet above mean sea level.

OTHER ENVIRONMENTAL FEATURES

No wild or scenic rivers or unique agricultural, scientific, cultural, ecological, or natural areas were identified in the City of Dayton’s Planning Area.

C. EXISTING WASTEWATER FACILITIES

The City of Dayton owns and operates a 2.67 MGD conventional activated sludge WWTP and collection system. The WWTP, originally constructed in 1973 and last upgraded in the 1989, consists of dual screw-type raw wastewater pumps, a mechanical bar screen, a 12-inch Parshall flume, a grit chamber, two aeration basins, two clarifiers, two aerobic sludge holding tanks, chlorine disinfection, and effluent pumping to the river. Class “B” biosolids generated by the digestion process are dewatered using gravity dewatering boxes and disposed of into a Tennessee Department of Environment and Conservation (TDEC) approved landfill in Rhea County. The Dayton WWTP discharges treated effluent at River Mile 503.3 of the Tennessee River.

The WWTP currently operates under the National Pollutant Discharge Elimination System (NPDES) Permit No. TN0020478 that includes the following parameters and effluent limitations:

<u>PARAMETER</u>	<u>EFFLUENT LIMITATIONS</u>
BOD ₅	30 milligrams per liter (mg/l)
Suspended Solids	30 mg/l
E. coli	126/100 colonies per milliliter
Dissolved Oxygen	2.0 mg/l instantaneous minimum
Chlorine Residual, Total	2.0 mg/l instantaneous maximum
Settleable Solids	1.0 daily maximum (milliliter/liter)
pH	6.0-9.0 (Standard Units)

A NPDES permit modification was issued on February 3, 2021, with the following parameters and effluent limitations that will apply after the construction of the proposed facilities:

<u>PARAMETER</u>	<u>EFFLUENT LIMITATIONS</u>
BOD ₅	19 mg/l
Suspended Solids	19 mg/l
E. coli	126/100 colonies per milliliter
Dissolved Oxygen	2.0 mg/l instantaneous minimum
Chlorine Residual, Total	2.0 mg/l instantaneous maximum
Settleable Solids	1.0 daily maximum (milliliter/liter)
pH	6.0-9.0 (Standard Units)

The collection system serving the City of Dayton consists of approximately 49 miles of 6-inch through 21-inch diameter gravity sewers lines; 2.75 miles of 6-inch through 21-inch diameter force main; and seven SPS with capacities ranging from 50 gallons per minute (gpm) to 1400 gpm. The collection system pipe materials include vitrified clay, reinforced concrete, polyvinyl chloride, cast iron, and ductile iron.

D. NEED FOR PROPOSED FACILITIES AND ACTIONS

As previously stated in Section C, the existing Dayton WWTP was originally constructed in 1973 and is reaching the end of its' useful life. The WWTP currently utilizes outdated technology which needs to be replaced with more efficient and effective processes. In 2018 and 2020, TDEC, Division of Water Resources (DWR) issued Notices of Violations (NOVs) to the Dayton WWTP for failure to meet their NPDES effluent limitations for BOD₅ and suspended solids, and for sanitary sewer overflows (SSOs) within the collection system. Flows at the WWTP have exceeded the design capacity during heavy rainfalls, resulting in the inability of the WWTP to produce a high-quality effluent. Damaged and undersized sewer lines in the vicinity of the Third Avenue SPS have resulted in excessive infiltration and inflow during wet-weather events leading to SSOs within the collection system. The City of Dayton and TDEC, DWR have negotiated the terms and conditions of a Consent Order for the City to develop and implement plans to eliminate the effluent standards violations within the WWTP and SSOs in the collection system. As a part of the measures being implemented, the Third Avenue SPS will be demolished and replaced by a new influent SPS and a 24-inch interceptor sewer that drains directly to the WWTP. And the Dayton WWTP will be expanded from 2.67 MGD to 4.2 MGD to be able to treat the additional flows. This project will be beneficial to the environment and public health by providing the required increase in treatment capacity to protect the water quality conditions of the receiving stream.

Existing and projected facility conditions are shown in the following table:

EXISTING AND PROJECTED FACILITY CONDITIONS

<u>POPULATION</u>	<u>EXISTING (2020)</u>	<u>PROJECTED (2040)</u>
City of Dayton	7,542	9,202
% Sewered	68.9 %	72.6 %
Planning Area Excluding City of Dayton	0	165
% Sewered	0%	100%
Total Planning Area	7,542	9,367
% Sewered	68.9%	73.1%

<u>DAYTON WWTP FLOWS (MGD)</u>	<u>EXISTING (2020)</u>	<u>PROJECTED (2040)</u>
Residential	1.061	1.652
Commercial/ Industrial	0.225	0.350
Infiltration/Inflow (during rainfall events)	0.800	0.710
TOTAL	2.086	2.712

E. ALTERNATIVES ANALYSIS

Several alternatives, including a "No-action" alternative, were evaluated for wastewater treatment and management in the April 2020 facilities plan. A summary discussion of the evaluation of each alternative for wastewater treatment and the selection of the recommended plan follows:

NO ACTION

The "No-action" approach was not a viable alternative. The Dayton WWTP was originally constructed in 1973 and is currently operating at its design flow capacity of 2.67 MGD. Additionally, the WWTP has received NOV's for violations of its effluent limits, therefore some action must be taken to protect the environment and public health and this alternative was rejected.

RENOVATION AND EXPANSION OF THE EXISTING WWTP

This alternative consists of the renovation and expansion of the existing WWTP from 2.67 MGD to 4.2 MGD, and continuing to use the conventional activated sludge process the WWTP currently utilizes. However, the existing site limitations would require the City to acquire additional land to expand the WWTP site. In addition, this alternative would require a time-consuming process to obtain environmental clearances and permits. Therefore, this was not the most cost-effective alternative and was rejected.

ADDITION OF OXIDATION DITCHES AND FINAL CLARIFIERS TO THE EXISTING WWTP

This alternative consists of the construction of two new oxidation ditches and two final clarifiers at the existing WWTP. This would make the WWTP capable of treating the increased flows conveyed to the WWTP after the demolition of the Third Avenue SPS. However, the

capital cost for this alternative would be higher than the capital cost for the construction of a SBR WWTP. This was not the most cost-effective alternative and was rejected.

CONSTRUCTION OF A NEW SBR WWTP TO REPLACE THE EXISTING WWTP

This alternative consists of the construction of a SBR, headworks with fine screen and grit removal, a blower and chemical building, main SPS and effluent pump building with variable speed pumps, sludge facility, septic receiving station, and operations building; conversion of the existing aeration basins and final clarifiers to flow equalization tanks; and the demolition of the existing pump building, headworks, chlorine/blower building, effluent pumping station, chlorination building, drying beds, and laboratory. This alternative is the most cost-effective alternative and is selected.

F. ENVIRONMENTAL CONSEQUENCES; MITIGATIVE MEASURES

The environmental benefits of this project will be the improvement of water quality conditions in the area, and the protection of the environment and public health.

During the construction phase, short-term environmental impacts due to noise, dust, mud, disruption of traffic, runoff of silt with rainfall, etc., are unavoidable. Minimization of these impacts will be required; however, many of these minimization measures will be temporary and only necessary during construction. Using the following measures to prevent erosion will minimize impacts on the environment:

1. Specifications will include temporary and permanent measures to be used for controlling erosion and sediment.
2. Soil or landscaping maintenance procedures will be included in the specifications.
3. The contractor will develop an Erosion Control Plan. It will contain a construction schedule for each temporary and permanent measure controlling erosion and sediment. It will include the location, type, and purpose for each measure and the times when temporary measures will be removed or replaced.

These measures, along with requiring the contractor to return the construction site to as-good-as or better-than its original condition, will prevent any adverse impacts due to erosion.

Discharges from the Dayton WWTP after construction will be in compliance with all Waste Load Allocations (WLAs) assigned in any relevant approved/established Total Maximum Daily Loads (TMDLs) that have been developed for this watershed. The proposed action will also comply with all relevant Phase I and/or Phase II stormwater regulations, including ensuring adequate sediment control and implementation of best management practices.

G. PUBLIC PARTICIPATION; SOURCES CONSULTED

A Public Meeting was held on December 21, 2020, at 6:00 p.m., local time. The selected plan for wastewater treatment and user charges were described to the public, and their input was received. This agency is not aware of any unresolved public objections that may have been voiced before or after the public meeting regarding this project.

The annual median household income for the City of Dayton is \$40,143. The current user rate for the typical residential user (5,000 gallons per month) will increase from \$56.45 to \$58.80 per month on July 1, 2021; to \$61.20 per month on July 1, 2022; to \$63.60 per month on July 1, 2023; and to \$66.05 per month on July 1, 2024. The total incremental annual cost for this project is \$115.20, which is approximately 0.29 percent of the current annual household median income.

Sources consulted about this project for information or concurrence were:

1. Tennessee Department of Agriculture
2. Tennessee Department of Economic and Community Development
3. TDEC, Division of Air Pollution Control
4. Tennessee Department of Transportation
5. Tennessee Historical Commission
6. TDEC, Division of Archaeology
7. Tennessee Geological Survey
8. TDEC, Division of Solid Waste Management
9. TDEC, DWR
10. Tennessee Wildlife Resources Agency
11. United States Army Corps of Engineers
12. United States Fish and Wildlife Service
13. City of Dayton
14. Rhea County
15. J.R. Wauford & Company, Consulting Engineers, Inc.