Division of Water Resources / State Revolving Fund Loan Program
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FINDING OF NO SIGNIFICANT IMPACT
Approval of Facilities Plan
White House (Robertson and Sumner Counties), Tennessee
Loan No. SRF 2021-449

September 9, 2020

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 White House has completed the facilities plan entitled "Wastewater Treatment Plant-Master/Facilities Plan, March 2018". The facilities plan provides recommendations for upgrades to the wastewater treatment system serving the City of White House. This project includes expanding and upgrading the existing wastewater treatment plant by adding a new treatment train. The new treatment train will consist of a grit removal facility, a new 2.0 million gallon per day 5-stage Bardenpho oxidation ditch with biological phosphorous removal, a clarifier flow splitter, an additional clarifier, return activated sludge /waste activated sludge pump station improvements, ultraviolet disinfection, effluent filtration, a new outfall line and structure, electrical building with emergency power generation, and a Laboratory/Control Room building. The total estimated project cost is $17,635,542. A Clean Water State Revolving Fund loan in the amount of $12,448,000 has been requested for this project. The City will finance the remaining project costs with City funding.

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:

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State Revolving Fund Loan Program
Tennessee Department of Environment and Conservation
William R. Snodgrass - Tennessee Tower
312 Rosa L. Parks Avenue, 12th Floor
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ENVIRONMENTAL ASSESSMENT

White House (Robertson and Sumner Counties), Tennessee
Loan No. SRF 2021-449

September 9, 2020

A. PROPOSED FACILITIES AND ACTIONS; FUNDING STATUS

The City of White House has completed the facilities plan entitled "Wastewater Treatment Plant-Master / Facilities Plan, March 2018". The facilities plan provides recommendations for upgrades to the wastewater treatment system serving the City of White House. This project includes expanding and upgrading the existing wastewater treatment plant (WWTP) by adding a new treatment train. The new treatment train will consist of a grit removal facility, a new 2.0 million gallon per day (MGD) 5-stage Bardenpho oxidation ditch with biological phosphorous removal, a clarifier flow splitter, an additional clarifier, return activated sludge (RAS) /waste activated sludge (WAS) pump station improvements, ultraviolet (UV) disinfection, effluent filtration, a new outfall line and structure, electrical building with emergency power generation, and a Laboratory/Control Room building. The project location and facilities planning area are indicated on Figure Nos. 1 and 2. of this Environmental Assessment.

FUNDING STATUS

The facilities described above comprise the scope of Loan No. SRF 2021-449 scheduled for funding in fiscal year 2021. The estimated project costs are summarized in the following tabulation:

PROJECT CLASSIFICATIONS	COSTS ($)
Administrative & Legal	10,000
Land Costs & Appraisals	
Planning Fees	75,000
Design Fees	1,077,100
Engineering Basic Fees	327,040
Other Engineering Fees	103,260
Resident Inspection	300,000
Construction	15,147,074
Equipment	
Miscellaneous	
Contingencies	596,068
TOTAL	17,635,542
CWSRF Loan	12,448,000
Other Funds— City Funds	5,187,542

A Clean Water State Revolving Fund (CWSRF) loan in the amount of $12,448,000 has been requested for this project. The City will finance the remaining project costs with City funding.

B. EXISTING ENVIRONMENT

The City of White House's Planning Area is located in western Sumner County and eastern Robertson County in northern middle Tennessee. A discussion of existing environmental features in the area includes the following:

SURFACE WATERS

Surface waters within the planning area include the Empson Branch and Frey Branch tributaries of the South Fork of the Red River, which is a tributary of the Red River. The White House WWTP discharges to River Mile 2.2 of Frey Branch. Designated uses for Frey Branch include fish and aquatic life, recreation, irrigation, livestock watering and wildlife. Frey Branch is not supporting of fish and aquatic life and recreation at this location. Domestic water service for the planning area is provided by the White House Utility District which obtains raw water from a surface intake on the Cumberland River.

GROUNDWATER

The underlying geologic formations in the City of White House's Planning Area consist of the Paleozoic, of Mississipian age, and include the St. Louis and Warsaw limestones. The St. Louis formation is typically very fine to medium-grained, medium- to thick-bedded, fossiliferous limestone containing numerous chert nodules. The St. Louis formation is susceptible to sinkhole and solutional conduit formation. The underlying Warsaw Formation is typically highly jointed and fractured granular limestone with inter-bedded shale capped by a layer of calcareous limestone. The Warsaw Formation is also characterized by a high degree of solutional degradation. Groundwater in the planning area is generally not present as a continuous horizon but is found associated with solutionally widened cavities along bedding planes, joints, and fractures within the rock. Wells in the planning area range from 50 to more than 100 feet in depth and yield 3 to 10 gallons per minute. The quality of groundwater is good, with approximately 82 percent of the wells and springs yielding potable water.

SOILS

Soil associations occurring in White House's Planning Area include the Bewleyville-Baxter-Cookeville and Dickson-Mountview-Baxter Soil Associations. Soils in the Bewleyville-Baxter-Cookeville Association are characterized as underlying to moderately steep, well-drained, and deep with subsoil textures ranging from silty clay loam to cherty clay. Soils in the Dickson-Mountview-Baxter Soils Associations are characterized as well drained to moderately well drained and deep with subsoil textures ranging from silty surface soils to silty clay subsoils and are occasionally cherty. Soils depth in the planning area generally ranges from 15 to 20 feet.

TOPOGRAPHY

The City of White House's Planning Area is located in the Western Highland Rim Physiographic Province, which is dissected by numerous stream valleys and is characterized as rolling to hilly topography with slopes of 2 to 20 percent. Topographic relief ranges from 700 feet above mean sea level (MSL) in the northern tier of the planning area near Honey Run Creek to 850 feet above MSL southeast of White House.

OTHER ENVIRONMENTAL FEATURES

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

C. EXISTING WASTEWATER FACILITIES

The City of White House owns and operates a 1.4 MGD WWTP and wastewater collection system. The WWTP was originally constructed in 1982 and consisted of 2 aerated lagoons and a spray irrigation system. The facility was expanded in 1993 to include a Lemna Lagoon Treatment System, UV disinfection, and an outfall pipeline to Frey Branch with a cascade aerator. The latest expansion of the WWTP occurred in 2002 that consisted of converting the two original lagoons into an equalization (EQ) basin and a biosolids storage lagoon. This expansion also included the addition of a headworks structure with a flow splitter to divert the influent flow to either the new treatment process or to the EQ basin. In 2016, additional facilities was added to include influent screens, an oxidation ditch, two 50-foot diameter secondary clarifiers, return activated sludge (RAS) and waste activated sludge (WAS) pumping station, UV disinfection, and a new effluent outfall with cascade aeration.

Wastewater flows from the City's collection system enters the WWTP at the headworks. The headworks consist of influent screening with an influent splitter to redistribute excess flow to the EQ basin during peak capacity flows. After leaving the headworks, wastewater flows to the oxidation ditch which provides aeration and mixing for biological treatment of organic material. The oxidation ditch is an oval unit with a 3-ring configuration. Two twin 50-foot diameter clarifiers succeed the oxidation ditch, where wastewater enters at the center behind a stilling baffle and travels down and outward toward effluent weirs located along the edge of the tanks. The RAS/WAS pumping station is located adjacent to the clarifiers and provides return activated sludge, waste activated sludge and scum pumping. The City currently disinfects with peracitic acid due to recurring problems with the UV disinfection system. Effluent flows through a 20-inch ductile iron pipe and over a cascade aerator into Frey Branch. The WWTP is currently permitted to treat up to 1.4 million gallons of wastewater daily. The facility is permitted to discharge 1.1 MGD to Frey Branch and 300,000 MGD is permitted to be spray irrigated onto land adjacent to the WWTP facility.

The WWTP currently operates under the National Pollutant Discharge Elimination System (NPDES) Permit No. TN0059404 that includes the following parameters and effluent limitations:

PARAMETER	EFFLUENT LIMITATIONS
$CBOD_5$	10 milligrams per liter (mg/l)
Suspended Solids	30 mg/l
Fecal Coliform	126/100 colonies per milliliter
Dissolved Oxygen	6.0 instantaneous minimum
Ammonia as N (May 1-October 31)	0.77 mg/l
Ammonia as N (Nov. 1-April 30)	1.55 mg/l
Settleable Solids	1.0 daily maximum (milliliter/liter)
pH	6.0-9.0 (Standard Units)
Total Nitrogen	33,104 lb/yr
Total Phosphorus	2,207 lb/yr
Peracetic acid	0.38 mg/l

The White House WWTP is also authorized to spray irrigate treated municipal wastewater to 48.5 acres of farmland on the WWTP property that includes the following parameters and effluent limitations:

PARAMETER	EFFLUENT LIMITATIONS
BOD_5	45 mg/l
Suspended Solids	100 mg/l
Fecal Coliform	941/100 colonies per milliliter

The City's collection system consists of 10 major lift stations and 2 vacuum pumping stations. These pumping and lift stations transmit wastewater to the WWTP via four large diameter force mains known as the Northern, Southern, Western, and Union Road. The City has approximately 36,000 LF of 8-inch and 12-inch diameter gravity sewer where the wastewater flows to one of the major pumping stations. The gravity sewer system serves approximately 1,000 customers. A vacuum collection system was installed in 1984 and 1985 serving approximately 1,200 customers and consists of 3-inch thru 10-inch diameter poly-vinyl chloride sewer line installed in a stair-step manner to convey wastewater to two vacuum pumping stations. The wastewater is then pumped from the vacuum pumping station to the WWTP. The City also has approximately 3,000 customers equipped with low pressure sewer pumps. The low pressure collection system connects to either the vacuum system or the gravity collection system to transport its collected wastewater to a vacuum pumping station that will ultimately be treated at the WWTP.

D. NEED FOR PROPOSED FACILITIES AND ACTIONS

The WWTP is currently not in compliance with its NPDES discharge permit and has incurred violations in 2015 through 2020. For the period from March 2018 through February 2020, there were 7 nitrogen violations, 17 phosphorus violations, and 5 chronic ceriodaphnia violations. A Notice of Violation was issued on May 30, 2017 which indicated permit violations for pH, total suspended solids, total suspended solids % removal, total nitrogen, ammonia as nitrogen, E. coli, CBOD, and CBOD removal for the period from September 2015 through March 2017. Additionally, a Director's Order (WPC 20-0032) was issued on July 15, 2020 requiring the City to upgrade the existing WWTP to eliminate nitrogen, phosphorus, and chronic ceriodaphnia discharge permit violations. The oxidation ditch does not have adequate capacity, controls or equipment necessary to meet nitrogen and phosphorus limits. The UV disinfection system would continue to have problems leading to increased costs and effluent permit violations. The White House WWTP discharges to Frey Branch. The stream is currently listed as impaired due to nutrient pollution from wastewater discharge. The WWTP was not designed to remove nitrogen or phosphorus. The proposed 5-stage Bardenpho oxidation along with other proposed upgrades will enable the WWTP to comply with discharge limitations and be capable of treating the additional flow expected from future growth.

Furthermore, the City of White House's estimated population is projected to continue growing due to planned residential and commercial developments. The current average daily and peak flows are 0.827 MGD and 1.083 MGD. The average wastewater flow estimated from planned developments exceeds 500,000 GPD, which when combined with other future developments over the next 20 years will cause existing wastewater flows to exceed the 1.4 MGD capacity of the WWTP as indicated in the Table below.

EXISTING AND PROJECTED FACILITY CONDITIONS

POPULATION	EXISTING (2020)	PROJECTED (2040)
City of White House	13,332	25,275
% Sewered	99	100
Planning Area Excluding the City of White House	3,452	6,468
% Sewered	95	100
Total Planning Area	16,784	31,743
% Sewered	98	100

WWTP FLOWS (MGD)	EXISTING (2020)	PROJECTED (2040)
Domestic/Commercial	0.820	1.690
Industrial	0.007	0.014
Infiltration/Inflow (during rainfall events)[1]	0.098	0.166
TOTAL	0.925	1.870

The following parameters and effluent limitations will become effective at the WWTP's current discharge location, River Mile 2.2 of Frey Branch, once the upgraded 2.0 MGD WWTP initiates operation:

PARAMETER	EFFLUENT LIMITATIONS
$CBOD_5$	6.5 mg/l
Suspended Solids	19.4 mg/l
Fecal Coliform	126/100 colonies per milliliter
Dissolved Oxygen	6.0 instantaneous minimum
Ammonia as N (May 1-October 31)	0.5 mg/l
Ammonia as N (Nov. 1-April 30)	1.0 mg/l
Settleable Solids	1.0 daily maximum (milliliter/liter)
pH	6.0-9.0
Total Nitrogen	33,104 lb/yr
Total Phosphorus	2,207 lb/yr
Peracetic acid	0.38 mg/l

The White House WWTP will continue to be authorized to spray irrigate treated municipal wastewater onto farmland adjacent to the WWTP property that will include the parameters and effluent limitations listed above in Section C.

[1] The design flows do not include excessive infiltration and inflow.

E. ALTERNATIVES ANALYSIS

Several alternatives, including a "No-action" alternative, were evaluated for wastewater treatment in the March 2018 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 WWTP would continue to have problems meeting permit limits. The oxidation ditch does not have adequate capacity, controls or equipment necessary to meet nitrogen and phosphorus limits. The UV disinfection system would continue to have problems leading to increased costs and effluent permit violations. NPDES permit limits have been issued that must be met in order to maintain or improve surface water conditions. These parameters cannot be met by the facilities as they now exist. Therefore, some action must be taken to protect the environment and public health, and this alternative was rejected.

UPGRADE AND EXPAND EXISTING WWTP WITH A NEW 1 MGD OXIDATION DITCH

This alternative would involve upgrading and expanding the existing WWTP with biological nutrient removal. Components of this alternative would include a new anaerobic basin for biological phosphorus removal; modifications to the existing oxidation ditch to allow for nitrification/denitrification; a new 1 MGD 2-stage oxidation ditch, junction box, and clarifier flow splitter; a new secondary clarifier; expansion and improvements to the RAS/WAS pump station; a new UV disinfection system; disc effluent filters; a new control building; and electrical and instrumentation improvements. This alternative would provide increased treatment capacity in the biological treatment process and provide a redundant treatment train in case one of the oxidation ditches needs to be taken out of service for repair. However, this alternative will not allow the WWTP to be able to meet the new nitrogen discharge limit, and therefore was rejected.

UPGRADE AND EXPAND EXISTING WWTP WITH A NEW 2 MGD 3-STAGE OXIDATION DITCH

This alternative would involve upgrading and expanding the existing WWTP with biological nutrient removal. Components of this alternative would include a larger 3-stage oxidation ditch, clarifier flow splitter; a new secondary clarifier; expansion and improvements to the RAS/WAS pump station; a new UV disinfection system; disc effluent filters; a new control building; and electrical and instrumentation improvements. This alternative would provide increased treatment capacity in the biological treatment process and eliminate the need for a new separate anaerobic basin. However, this alternative will not allow the WWTP to meet the new nitrogen discharge limit and was rejected.

UPGRADE AND EXPAND EXISTING WWTP WITH A NEW 2 MGD 5-STAGE BARDENPHO OXIDATION DITCH

This alternative would involve upgrading and expanding the existing WWTP with biological nutrient removal and eliminates the need for a new separate anaerobic basin. Components of this alternative would include a new 2.0 MGD 5-stage Bardenpho oxidation ditch, a clarifier flow splitter; a new secondary clarifier; expansion and improvements to the RAS/WAS pump station; a new UV disinfection system; disc effluent filters; a new control building; and electrical and instrumentation improvements. This alternative would provide increased treatment capacity in the

biological treatment process and provide adequate treatment to avoid effluent permit violations. Therefore, this alternative is selected.

SLUDGE TREATMENT/DISPOSAL

Biosolids will continue to be stored in the existing WAS lagoon. The lagoon has been used as storage for 20 years without requiring dredging and will provide adequate space for generated biosolids to be deposited for a minimum of 10 additional years.

F. ENVIRONMENTAL CONSEQUENCES; MITIGATIVE MEASURES

The environmental benefits of this project will be an elimination of permit violations and the improvement of water quality conditions in Frey Branch. The WWTP will achieve compliance with discharge limits, resulting in pathogen reduction and protection of 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.

Future discharges from the upgraded/modified WWTP 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.

The state's Historic Preservation Officer has reviewed the project and has determined that the project will not impact known significant cultural resources.

No prime or unique agricultural lands or wetlands were identified and therefore will not be adversely affected. No endangered species of flora or fauna were identified within the proposed construction corridor. Effects on flora and fauna will be confined and temporary.

G. PUBLIC PARTICIPATION; SOURCES CONSULTED

A Public Meeting was held on August 19, 2020, at 6:00 p.m., local time. The selected plan for wastewater collection and 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.

At the projected time of the initiation of the loan repayment, sewer rates for the typical commercial/residential user (5,000 gallons per month) will be $60.14. The existing user charges are projected to be sufficient to repay the SRF loan. Therefore, no incremental increase in user charges will be required.

Sources consulted about this project for information or concurrence were:

1. Tennessee Department of Agriculture
2. Tennessee Department of Economic and Community Development (ECD)
3. Tennessee Department of Environment and Conservation (TDEC), Division of Air Pollution Control (DAPC)
4. Tennessee Department of Transportation (TDOT)
5. Tennessee Historical Commission
6. TDEC, Division of Archaeology (DA)
7. Tennessee Geological Survey
8. TDEC, Division of Solid Waste Management (DSWM)
9. TDEC, Division of Water Resources (DWR)
10. Tennessee Wildlife Resources Agency (TWRA)
11. United States Army Corps of Engineers (USACE)
12. United States Fish and Wildlife Service (USF&W)
13. City of White House
14. Robertson and Sumner Counties
15. Jacobs Engineering, Nashville, TN