



The State of New Hampshire
Department of Environmental Services



Robert R. Scott, Commissioner

Notice of Environmental Review Determination

The Winnepesaukee River Basin Program (WRBP) has applied for a Clean Water State Revolving Fund (CWSRF) loan through the State of New Hampshire Department of Environmental Services in accordance with provisions of Chapter Env-Wq 500 rules of the department.

As the proposed project constitutes only a minor project, where all work will take place in the existing wastewater treatment facility building, it has been determined by the Department that the proposed project qualifies for a Categorical Exclusion (CE).

Questions regarding this project can be directed to Sharon McMillan at (603) 934-4032 or at the mailing address below.

Please address any comments to the following locations:

Winnepesaukee River Basin Program
Sharon McMillan
PO Box 68
Franklin, NH 03235

and

Tracy Wood
NHDES
Wastewater Engineering Bureau
PO Box 95
Concord, NH 03302

The deadline for submitting comments is November 28th, 2020.



**ENVIRONMENTAL REVIEW
FOR CLEAN WATER SRF LOANS**
Water Division/Wastewater Engineering Bureau



RSA/Rule: Env-Wq 508

I. PROJECT APPLICANT

NH Dept. of Environmental Services
Winnepesaukee River Basin Program

ADDRESS

PO Box 68; 528 River St.
Franklin, NH 03235

PROJECT

WWTP Energy Efficiency Upgrades
Merrimack County

SRF PROJECT NUMBER

D2020-0723

II. INTRODUCTION

The Winnepesaukee River Basin Program has applied for a Clean Water State Revolving Fund (CWSRF) loan through the State of New Hampshire Department of Environmental Services in accordance with provisions of Chapter Env-Wq 500 rules of the department. These rules prescribe procedures for the application process concerning the CWSRF of the department. This document will discuss the requirements of Part Env-Wq 508 of these rules, the environmental review.

III. BACKGROUND

The NHDES, under its Winnepesaukee River Basin Program (WRBP), owns and operates the regional wastewater treatment plant (WWTP) in Franklin, NH that collects wastewater from 10 Lakes Region communities. The WRBP was established under the provisions of RSA 149-G (now RSA 485-A:45-54) adopted through the special legislative session of 1972. These small, primarily rural member communities pay all the expenses of operating, maintaining, and upgrading the WRBP infrastructure. The WRBP is operated by NHDES employees with member communities' interests represented by an advisory board. The result of this regional collection and treatment system is the elimination of sewage discharges into the Lakes Region's lakes and rivers and the protection and development of expanded recreational and economic assets in central New Hampshire.

Nearly sixty miles of interceptor sewers, fourteen pump stations, and the WWTP constitute the WRBP infrastructure. Many additional miles of municipally-owned and maintained sewers have been built which discharge into the state-owned system. The WWTP began operation in 1979 and many of the structural components and systems are over 40 years old. Energy audits of the WRBP facilities have been performed in 2008, 2016 and again in 2019. The latest energy audit identified additional measures that could be implemented to reduce electricity use and further optimize wastewater operations.

This audit's findings and recommendations are detailed in the following document:
WRBP Energy Evaluation Report, Process Energy Services, October 2019.

IV. PURPOSE AND NEED

There is a need to continue to invest in WRBP infrastructure improvements to meet increasing demands on the WWTP, to continue to meet more stringent state and federal permit requirements, and to reduce energy costs. Two energy conservation measures were recommended for implementation in the Energy Evaluation report: addition of a smaller aeration blower and replacement of two Return Activated Sludge pumps.

Based on the energy savings analyses performed during the energy evaluation, and by the electric utility for the additional lighting upgrades and retrofits, the completion of the project is anticipated to reduce electricity consumption by 307,700 kWh/year resulting in an expected reduction of over 420,000 lbs/year of CO₂, over 1000 lbs/year of sulfur dioxides and over 300 lbs/year of nitrous oxides. This project represents another significant step toward maintaining compliance with the Governor's Executive Orders 2005-4 and 2016-03 pertaining to energy reduction and efficiency goals.

V. ALTERNATIVES ANALYSIS

The proposed project is eligible for a Categorical Exclusion per 40 C.F.R. § 6.204 since all the equipment included in the project will be installed within the existing WWTP Operations building. There is no excavation or other ground disturbing activity or alteration of the buildings required during execution of this project.

VI. DETAILS of PROJECT

The recently completed energy audit supports upgrade of the aeration system to reduce electricity use and help optimize wastewater treatment operations. The anticipated scope of improvements includes:

- Installation of a new, appropriately sized (50 HP), high-efficiency turbo blower including mechanical and electrical subsystem retrofits, instrumentation, blower controls, and associated improvements to support the blower upgrade;
- Automatic operation of the new 5-blower system, including dissolved oxygen (DO) concentration control by connection and re-programming the plant's monitoring and control SCADA system;
- Installation of new blower stainless steel piping into the existing manifold;
- Harmonic filter to protect the blower controls;
- Re-programming the DO sensor and kW controls to most efficiently operate the existing four blowers in concert with the new blower;
- Replacement of two Return Activated Sludge (RAS) pumps with energy efficient models;
- Lighting upgrades.

Existing aeration blowers (two 100 HP blowers and two 150 HP blowers) are unable to be turned down sufficiently so, even when only one 100 HP blower is operating, it is often idling while still over-aerating the basins. This causes wastewater treatment operational issues while also wasting energy operating the oversized blower. It was recommended by operations staff and confirmed by the energy audit that installation of a fifth, smaller blower (50 HP) will improve both energy efficiency and wastewater process operations.

During the colder 9 months of the year one existing 100 HP aeration blower idles, providing more oxygen than is required, creating operational conditions that are detrimental to the overall effectiveness of biologic treatment process. The new 50 HP blower to be used during these 9 months will potentially reduce electrical power consumption by the aeration system by 40%, representing about a 12% further reduction in total power consumption by the WWTP while removing an estimated 142 tons in GHG emissions due to reduced electricity generation.

The WWTP currently has five 7.5 HP RAS pumps: two of these pumps are required to operate when secondary clarifier #1 is on-line, the two other pumps are required when secondary clarifier #2 is on line, and the fifth pump is able to recycle sludge from either clarifier as a back-up. The RAS pumps are intended to efficiently recycle sludge that contains the microorganisms critical to the biological treatment processes at the WWTP in order to maintain a healthy population of these microorganisms. However, due to the age and increasing inefficiency of the existing RAS pumps, two pumps were recommended for replacement in the energy audit. Two 10 HP RAS pumps, and associated electrical and control integration, will be installed. The remaining three pumps will be used as back-ups since the two new pumps will be sized so that only one pump is required for each clarifier.

As part of the overall project, additional lighting upgrades at the WWTP are also planned. By bundling the RAS pumps and additional lighting retrofits with the aeration blower retrofit, additional energy savings can be achieved. The estimated annual electricity savings for this bundled project is 307,700 kWh.

The total project cost for the proposed project is estimated to be \$400,000.

VII. ENVIRONMENTAL CONCERNS AND MITIGATION

The environmental concerns of the project are minimal. No adverse environmental impacts are anticipated from the project since all work will take place within the existing WWTP Operations Building. The following categories of impacts will illustrate the potential negative and positive effects anticipated from the project:

Air: Air impacts will be limited to some dust created inside the building during the electrical installation portion of the project. No long-term air impacts are anticipated; health and safety and environmental mitigation measures will be employed, if needed. Favorable air impacts are expected due to the reduction in greenhouse gasses from reduced electricity generation and consumption.

Noise: The noise from installation activities should be limited in duration and contained within the WWTP Operations Building. Noise impacts, if encountered, will be minimized by scheduling work and using appropriate PPE to reduce effects in the work areas. No long-term noise impacts are anticipated.

Surface Water, Groundwater, Wetlands, and Shoreland: There are no groundwater, surface water or wetlands/shoreland impacts from the project since all work is within the existing WWTP Operations Building.

Floodplain: The Operations Building is located outside the floodplain and all work will be inside that existing building.

Designated River: This project falls within the Designated River corridor of the Merrimack River. The UMLAC was notified of the project on 7/28/2020 for review and comment at their next meeting. The UMLAC responded with no comments and their support of the project via an email on 8/11/2020.

Plants & Wildlife: A Natural Heritage Bureau DataCheck was completed. No impacts on area plants or wildlife are anticipated.

Recreation and Historic: The Division of Historical Resources has reviewed the project. No impacts to recreational or historic areas are anticipated.

Social and Economic: The social and economic impacts from the project are expected to be favorable. The financial impact on the ratepayer may be reduced for this project through the use of the State Revolving Loan Fund as opposed to other funding sources. In addition to the low-interest loan and principal forgiveness being offered by the CWSRF, NHSaves (via Eversource) is providing a \$100,000 incentive to help offset total project costs. The implementation of this project will also result in reduced facility operations and maintenance costs (primarily from reduced power consumption and reduced mechanical maintenance requirements).

Whereas this project constitutes only a minor project where all work will take place inside the existing WWTP Operations Building, a Categorical Exclusion (CE) is proposed.

VIII. INTERGOVERNMENTAL REVIEW

Results from the Intergovernmental Review, coordinated by the New Hampshire Office of Strategic Initiatives, were received on August 27, 2020. The results summary indicates concurrence with the proposed project.

IX. PUBLIC REVIEW

The WRBP Advisory Board supported funding in the amount of \$400,000 for the WWTP Energy Efficiency Upgrades project on 8/20/2020.

A public notice will be published by the NH Department of Environmental Services and a ten-day public comment period will be held in accordance with the CWSRF rules.

NHDES-WRBP Franklin WWTP – Location of Work in Operations Building – Aerial Photo showing surrounding area and facility buildings (all circa 1979)



Project location is 43 deg 24' 48" N 71 deg 39' 7" W
988161.890 Easting 332875.492 Northing
Map 122 Lot 406-0

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