

**FINDING OF NO SIGNIFICANT IMPACT
AND ENVIRONMENTAL ASSESSMENT**

WINSTON-SALEM FORSYTH CITY/COUNTY UTILITIES COMMISSION

**MUDDY CREEK CONSOLIDATED PUMP STATION AND
COLLECTION SYSTEM IMPROVEMENTS**

**RESPONSIBLE AGENCY: NORTH CAROLINA DEPARTMENT OF ENVIRONMENT
AND NATURAL RESOURCES**

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FINDING OF NO SIGNIFICANT IMPACT

Article I, Chapter 113A of the North Carolina General Statutes requires an action to be subject to the requirements of the North Carolina Environmental Policy Act (NCEPA) if it involves the expenditure of public funds and if a potential impact is anticipated to the environment. The project has been evaluated for compliance with the NCEPA and is determined to be a major agency action, which will affect the environment.

Project Applicant: Winston-Salem/Forsyth County City/County Utilities Commission, North Carolina

Project Description: The project will include construction of the Muddy Creek Consolidated Influent Pump Station, Muddy Creek force main, improvements to the South Fork interceptor, and an expansion of the Kerners Mill Pump Station force main. The Muddy Creek Pump Station will have a capacity of 126 million gallons per day (mgd) and will include new preliminary treatment and influent pumping capabilities. It will be located on the existing Muddy Creek Wastewater Treatment Plant (WWTP) site and will transfer screened and dewatered wastewater flow to the Archie Elledge WWTP via the proposed 30-inch Muddy Creek force main. The project will also include equalization day tanks, storm equalization basins, transfer pumps, and miscellaneous appurtenances at the Muddy Creek WWTP site. Proposed improvements to the South Fork interceptor will address critical areas by replacement of some segments and a parallel interceptor for other segments. The proposed interceptor will range from 18-inch to 30-inch diameter pipe. The project will also expand the Kerners Mill Pump Station to a firm capacity of 12.6 mgd and total capacity of 15.7 mgd with all pumps running, a 24-inch force main parallel to the existing force main, and a 1,600 linear foot expansion of the existing force main. Clean Water SRF funds will be used for improvements at the Muddy Creek Consolidated Influent Pump Station and the Muddy Creek WWTP site.

Project Number: CS370399-08

Project Cost: \$112,021,454

Clean Water State \$50,000,000

Revolving Loan Fund:

Local Funds: \$62,021,454

The review process indicated that significant adverse environmental impacts should not occur if mitigative measures are implemented, and an environmental impact statement will not be required. The decision was based on information in the Engineering Report and reviews by governmental agencies. The attached Environmental Assessment supports this action and outlines mitigative measures that must be followed. This Finding of No Significant Impact

(FONSI) completes the environmental review record, which is available for inspection at the State Clearinghouse.

No administrative action will be taken on the proposed project for at least 30 days after notification that the FONSI has been published in the North Carolina Environmental Bulletin.

Sincerely,

A handwritten signature in black ink, appearing to read 'K. Colson', with a long horizontal flourish extending to the right.

Kim H. Colson, Acting Director
Division of Water Infrastructure

ENVIRONMENTAL ASSESSMENT

A. Proposed Facilities and Actions

The proposed project will include construction of the Muddy Creek Consolidated Influent Pump Station located at the Muddy Creek Wastewater Treatment Plant (WWTP), Muddy Creek Pump Station force main, improvements to the South Fork interceptor, and an expansion of the Kerners Mill Pump Station force main.

The Muddy Creek Pump Station will have a capacity of 126 million gallons per day (mgd) and will include new preliminary treatment and influent pumping capabilities. It will be located on the existing Muddy Creek WWTP site and will transfer screened and degritted wastewater flow to the Archie Elledge WWTP via the proposed 30-inch diameter and 4.6 mile long Muddy Creek Pump Station force main. The project will also include equalization day tanks, storm equalization basins, transfer pumps, odor control system, and miscellaneous appurtenances at the Muddy Creek WWTP site.

Proposed improvements to the South Fork interceptor will address critical sewer by replacement of some segments and a parallel interceptor for other segments. The proposed interceptor improvements will include approximately 24,290 linear feet (l.f.) of 60-inch sewer; 6,600 l.f. of 42-inch sewer; 14,100 l.f. of 36-inch sewer; 9,100 l.f. of 30-inch sewer; 820 l.f. of 24-inch sewer; 1,770 l.f. of 21-inch sewer; 1580 l.f. of 18-inch sewer; and 1,500 l.f. of 15-inch sewer.

The project will also expand the Kerners Mill Pump Station to a firm capacity of 12.6 mgd and total capacity of 15.7 mgd with all pumps running, a 24-inch force main parallel to the existing force main, and a 1,600 l.f. expansion of the existing force main.

Funding Status: The estimated total cost for the project is \$112,021,454. The City/County Utilities Commission (CCUC) is applying for a Clean Water State Revolving Fund (CWSRF) loan of \$50,000,000. The CWSRF loan will be used for installation of mechanical bar screens and grit removal systems, influent pumps, equalization tanks, flow meters, transfer pumps, transfer force main, forcemain flow meter, odor control system, and all the related appurtenances. The remaining \$62,021,454 of the project will be funded by local bonds.

B. Existing Environment

Topography and Soils. Forsyth County is located in the Piedmont Physiographical Province. The Muddy Creek Pump Station site slopes from approximately 692 feet to 688 feet above mean sea level. Elevations in the Muddy Creek force main corridor range from 680 feet to 720 feet above mean sea level. Elevations in the South Fork interceptor corridor range from 690 feet to 826 feet above mean sea level. The Kerners Mill Pump Station site elevations range from 855 feet to 822 feet above mean sea level. The elevations in the Kerners Mill force main corridor range from 825 feet to 950 feet above mean sea level. Portions of the South Fork interceptor are located in a designated Special Flood Hazard Area. Soils in the area include the following

associations: Chewacla-Wedhadkee-Congaree, which are somewhat poorly drained and poorly drained loamy surface layer with well-drained loamy subsoil; Pacolet-Cecil, which are located in uplands and have a well-drained loamy surface layer and clay subsoil; Madison-Pacolet, which have well-drained loamy surface layer and clayey subsoil; Wedowee-Louisburg with have a loamy surface layer and clayey subsoil or sandy surface and subsoil; and Wilkes-Enon associations, which have a well-drained loamy surface layer and clayey subsoil.

Surface Water. The project area is located primarily in the Lower Yadkin River Headwaters Sub-Basin (HUC 03040101). There are numerous streams in the project area with classifications of B, C, WS-III, and WS-IV. Primary water quality concerns are associated with densely populated areas with large amounts of impervious areas.

Water Supply. Drinking water is provided by the CCUC, which operates three water treatment plants that draw water from the Yadkin River and Salem Lake for distribution in the project area.

C. Existing Wastewater Facilities

The CCUC wastewater service included three sewersheds: the Muddy Creek basin, Archie Elledge basin, and South Fork basin. The system includes the Muddy Creek WWTP, Archie Elledge WWTP, over 50 pump stations, and approximately 1,790 miles of sanitary sewer ranging from two inches to 66 inches in diameter. The Muddy Creek WWTP was originally built in 1986 and was expanded in 1997 from a capacity of 15 mgd to 21 mgd. This WWTP discharges primarily to the Yadkin River and has a second wet-weather discharge into Muddy Creek. The facility is in adequate working condition except for the preliminary treatment facilities, which has exceeded its useful life. The Archie Elledge WWTP was originally built in 1956 and has undergone numerous upgrades to the current permitted capacity of 30 mgd. The facility is in good condition. The South Fork Pump Station was commissioned in 2006 and has a firm capacity of 11 mgd and total capacity of 14.4 mgd. It pumps approximately six to seven mgd to the Archie Elledge WWTP and one to two mgd to the Muddy Creek WWTP. The station has significant operational issues including pump failures and odor complaints. The Kerners Mill Pump Station was commissioned in 1981 and has a firm capacity of 5.7 mgd and total capacity of 7.3 mgd. It is in good operating condition.

D. Need for Proposed Facilities and Actions

The CCUC's wastewater master planning process has identified critical needs in the South Fork basin collection system to meet anticipated demand and avoid sanitary sewer overflows (SSOs). The existing infrastructure is not sized to handle peak wet weather flow, and the treatment capacity of the Muddy Creek WWTP is not available to both the South Fork and Muddy Creek basins. The proposed project will address SSOs in the South Fork and Muddy Creek basins and will allow for transfer of wet weather flows for distribution between the two WWTPs as needed.

E. Alternatives Analysis

Two alternatives analyses were conducted. The first addressed the South Fork and Muddy Creek wastewater infrastructure expansion alternatives, and the second addressed the Kerners Mill Pump Station expansion. Each analysis is discussed below.

South Fork and Muddy Creek Alternatives

No-Action Alternative: The No-Action Alternative would mean continuing to rely on existing sewer infrastructure. The Muddy Creek WWTP does not have capacity to treat projected future flows in the Muddy Creek and South Fork sewersheds. The growing need for wastewater treatment would require package plants or septic tanks, and SSOs would be a significant concern. This alternative was rejected because it does not meet the project needs.

Expand South Fork Lift Station to Transfer Flow to Archie Elledge WWTP: The South Fork Lift Station was designed to be expandable from 14.4 mgd to 15 mgd. The site is adjacent to two schools, thus limiting the potential for additional expansion. To prevent flow violations, this alternative would still require a transfer pump station at Muddy Creek to transfer flow to the Archie Elledge WWTP. This alternative was rejected because it does not meet the project needs.

Construct a New Abbotts Creek Pump Station and WWTP: This alternative would construct a new WWTP to treat flows from the upper South Fork basin and would discharge to Abbotts Creek, which is a WS-III stream and is impaired for fish community bioclassification. This alternative could have significant water quality impacts. Furthermore, it would not alleviate the projected excess flow to Muddy Creek WWTP. This alternative was rejected because it does not meet the project needs.

Construct a New Yadkin River WWTP in Davie or Davidson Counties: This alternative would construct a new WWTP south of the Muddy Creek WWTP discharging to the Yadkin River. This alternative would require inter-county agreements that the Davie and Davidson Counties are reluctant to make at this time, and it would require having the new WWTP operational by 2021 to meet anticipated flows. The alternative would also have environmental impacts associated with converting agricultural land to a developed use. Based on the environmental impacts and difficulties with getting a plant constructed and operational within the necessary timeframe, this alternative was rejected.

New Consolidated Pump Station to Transfer Flow from Muddy Creek WWTP to the Archie Elledge WWTP: This alternative make improvements at the existing Muddy Creek WWTP including a pump station to transfer flow to Archie Elledge WWTP, equalization tanks for wet weather flow, and a force main from Muddy Creek WWTP to Archie Elledge WWTP. Improvements to critical areas of the South Fork interceptor would be included with this alternative. The majority of the project would occur on land already used for wastewater operations, and environmental impacts will be minimal. This alternative is preferred because it satisfies the need for the project with minimal environmental impacts.

Kerners Mill Pump Station Expansion Alternatives.

No-Action Alternative: This alternative would make no improvements to the Kerners Mill Pump Station or the related force main infrastructure. The pump station does not have adequate capacity to meet anticipated needs and would lead to SSOs. This alternative was rejected because it does not meet the project needs.

Add Two Submersible Pumps and Extend Existing Force Main: This alternative would increase capacity of the existing pump station by adding two new pumps to increase the capacity to 11.6 mgd and extending the force main approximately 1,600 l.f. This alternative would meet capacity needs through 2016 but not through the full planning period of 2021. The alternative was rejected because it does not meet the project needs.

Add Two Submersible Pumps and a 16-inch Parallel Force Main and Extend Existing Force Main: This alternative would add two submersible pumps and reconfigure the wet wells, add a 16-inch parallel force main, and add a 1,600 l.f. extension to the force main. This project would meet the project needs and has similar environmental impact as the preferred alternative, but operating and maintenance costs would be significantly higher.

Add One Submersible Pump and a 24-inch Parallel Force Main and Extend the Existing Force Main: This alternative would add one submersible pump to reconfigured wet wells, add a 24-inch force main, and add a 1,600 l.f. extension to the existing force main for a firm capacity of 12.6 mgd. This is the preferred alternative because it meets the project needs with minimal environmental impacts and has lower costs than similar alternatives.

F. Environmental Consequences and Mitigative Measures

Topography and Soils: Impacts to soil and topography will be related primarily to construction and will not be significant. Impacts will be minimized by restoring disturbed areas to original grade after construction and by implementing a North Carolina Department of Environment and Natural Resources (NCDENR)-approved and County-approved Erosion and Sedimentation control plan and other provisions of the Sedimentation and Pollution Control Act of 1973. The South Fork Interceptor portion of the project will impact a designated SFHA. Approximately 26 acres within the SFHA will be disturbed during construction, but all topography will be returned to original grade upon completion of construction. Construction in the SNHA will include ten stream crossings, all open cut and eight of which will require a culvert design with a riprap or amorflex apron. Approximately 66 manholes with 6-foot or 8-foot diameters will be installed within this area. A Floodplain Development Permit will be obtained in accordance with the Forsyth County Floodplain Ordinance. A no-rise flood study will be conducted and, if required, a Conditional Letter of Map Revision will be obtained. Utilities will be protected as required by the floodplain ordinance including raising manholes above flood elevation.

Land Use: Minimal changes or impacts to land use are expected because the project will occur in areas that already developed for wastewater infrastructure or within or adjacent to existing utility corridors except for one portion of the South Fork force main corridor.

Wetlands: Construction activities may have minor, temporary impacts to wetlands. Impacts will be minimized by narrowing construction corridors in wetland areas and implementing BMPs. Construction will be in accordance with a NCDENR-approved and County-approved Erosion and Sedimentation Control Plan and other provisions of the Sedimentation Pollution Control Act of 1973 to minimize impacts from erosion and sedimentation. The U.S. Army Corps of Engineers was consulted and did not object to the project (July 10, 2013, Action ID No. SAW 2013-01274).

Important Farmlands: Direct impacts to important farmlands will be minimal. The pump stations are not located on agricultural lands. Portions of the sewer corridors traverse prime farmland currently in agricultural use. These areas may have minor, temporary impacts during construction, but there will be no loss of farmland acreage as a result of the project.

Public Lands and Scenic, Recreational, and State Natural Areas: Impacts to public lands or scenic, recreational, or state natural areas will be minimal and temporary during construction activities. Impacts to two bike paths that cross the pipeline corridors will be minimized by utilizing trenchless technologies in those areas.

Cultural Resources: In a memorandum dated July 29, 2013 (No. ER 13-1382), the North Carolina State Historic Preservation Office (SHPO) stated that no historic resources would be impacted by the proposed project.

Air Quality: Temporary impacts to air quality, including particulates and vehicle exhaust emissions, will result from construction activities. Proper vehicle maintenance, wetting of exposed soil, and prompt soil stabilization will minimize these impacts. A new emergency generator will have minimal impact.

Noise Levels: There will be a temporary increase in noise related to construction equipment. Construction activities will be limited to 6:00 am to 7:00 pm Monday through Friday to the extent practicable. Noise impacts from emergency generators and the new pump station will be negligible.

Water Resources: Negative operational impacts to water resources are not anticipated. There is the potential for temporary impacts due to erosion and sedimentation during construction. To minimize such impacts, all construction will be in accordance with a NCDENR-approved and County-approved Erosion and Sedimentation Control Plan and other provisions of the Sedimentation Pollution Control Act of 1973. Best Management Practices (BMPs) will be implemented to minimize impacts from stormwater.

Forest Resources: The project will require clearing of approximately two acres of forested land adjacent to existing maintained corridors for pipe installation. Approximately 1.3 acres will be allowed to transition naturally back to mature forest.

Shellfish or Fish and Their Habitats: Impacts to shellfish, fish, and their habitats are not expected to be significant. Construction impacts will be minimized through adherence to a

NCDENR-approved and County-approved Erosion and Sedimentation Control Plan and other provisions of the Sedimentation Pollution Control Act of 1973.

Wildlife and Natural Vegetation: Impacts to wildlife and natural vegetation will be temporary due to construction activities. As requested by North Carolina Wildlife Resources Commission (September 27, 2013), the contractor will conduct a survey for the bog turtle prior to commencing construction activities to prevent impacts to the protected species.

Introduction of Toxic Substances: Introduction of toxic substances from construction activities is possible from vehicle fluids. Such impacts will be minimized by proper vehicle maintenance and proper collection of and disposal of fluids.

The U.S. Fish and Wildlife Service reviewed the proposed project and concluded that the requirements of Section 7(a)(2) of the Endangered Species Act have been fulfilled (July 23, 2013, Log No. 4-2-13-312). The North Carolina Wildlife Resources Commission, Natural Heritage Program, and DWR Winston-Salem Regional Office, and U.S. Army Corps of Engineers concur with the proposed project. The North Carolina Department of Cultural Resources is not aware of any properties of architectural, historical, or archaeological significance that would be affected by the project.

G. Public Participation, Sources Consulted

A public meeting was held on September 21, 2013 including an informational presentation about the meeting. There were no objections to the project. The current user charge for a typical customer is \$38.71 per month for 5,000 gallons for sewer and water. The proposed project is expected to cause an increase of \$8.04 per month for a total of \$46.75.

Sources consulted about this project for information or concurrence included

- 1) City of Winston-Salem
- 2) Forsyth County
- 3) North Carolina Department of Environment and Natural Resources
 - Wildlife Resources Commission
 - DWR Winston-Salem Regional Office
 - Division of Air Quality
 - Division of Environmental Health
 - Division of Water Resources Public Water Supply Section
 - Division of Forest Resources
 - Office of Legislative and Intergovernmental Affairs
- 4) North Carolina Department of Cultural Resources
- 5) North Carolina State Clearinghouse
- 6) U.S. Fish and Wildlife Service
- 7) U.S. Army Corps of Engineers