THE CITY OF ASHEVILLE

Staff Report

Council Meeting Date: March 28, 2023

Subject: Acceptance of ARPA grant to fund pre-construction study (North Fork & Wm. DeBruhl Treatment Study and Plant Improvements)

Staff Resource(s): David Melton, Director of Water Resources and Leslie Carreiro, Assistant Director of Water Resources

Action Requested: Adoption of a resolution to accept funding for the pre-construction study titled: North Fork & Wm. DeBruhl Treatment Study and Plant Improvements

Background:

- The Water Resources Department submitted an application to NC-Department of Environmental Quality - Division of Water Infrastructure in the Spring of 2022 for funding of a pre-construction study.
- The City/department was awarded a $400,000 APRA grant to fund said study.
- Climate change has produced unusual effects on the quality of raw water available at both the Burnett and Bee Tree Reservoirs.
- Changes in raw water quality can happen quickly during significant weather events.
- The NC Public Water Supply has encouraged all direct filter treatment plants to investigate improvements that would help meet EPA and State Dept. of Environmental Quality rules and regulations.
- North Fork and Wm. DeBruhl are both direct filtration water treatment plants.
- Although a budget amendment in the amount of $400,000 to accept grant funding from the NC Department of Environmental Quality - Division of Water Infrastructure was approved on October 23, 2022, the requirements of the award state that the City Council needs to approve a resolution that specifically addresses the grant.

Vendor Outreach Efforts:

- n/a

Council Goal(s):

- Improve Core Services

Committee(s):

- n/a

Pro(s):

- Acceptance of the grant will provide a cost savings that can be used to accomplish other scheduled improvement projects.
- Study will provide guidance on further optimizing current techniques for the treatment process.
- Study will provide guidance documents to assist staff with real-time decision making when raw water quality is low.
- Study will investigate treatment alternatives and recommend two for further consideration and pilot-study.
- All data, recommendations, and guidance would assist the plants in complying with future State and EPA regulations.

Con(s):

- Without conducting this study the City / Water Resources risks having to temporarily close a treatment plant during significant low raw water quality.
- Limiting production due to significant low raw water quality may require unplanned mandatory water conservation measures for our customers.

Fiscal Impact:

- The cost of the study, estimated to be $407,695 will primarily be funded via a grant awarded by NCDEQ-Division of Water Infrastructure (utilizing state ARPA funds).
- Grant funding totals $400,000, and the remaining $7,695 has been identified within the current Water Resources capital budget.

Suggested Motion:

- Motion to adopt a resolution accepting the American Rescue Plan funded from the State Fiscal Recovery Fund for the North Fork & Wm. DeBruhl Treatment Study and Plant Improvements.

Attachment(s)

- NC Public Water Supply - April 14, 2023
- Resolution

ROY COOPER
Governor
ELIZABETH S. BISER
Secretary
RICHARD E. ROGERS, JR.
Director

NORTH CAROLINA
Environmental Quality

April 14, 2022

David Melton, Director of Water Resources
City of Asheville
PO Box 7148
Asheville, NC 28822

Re: City of Asheville
Conventional Treatment Recommendation
North Fork and William DeBruhl Water Treatment Plants
Buncombe County, NC0111010

Dear Mr. Melton,

The purpose of this letter is to recommend the addition of settling basins at the North Fork Water Treatment Plant and at the William DeBruhl Water Treatment Plant to provide an additional treatment barrier for the protection of public health. The multi-barrier approach to water treatment provides a series of barriers, which include source water protection, water treatment, distribution system integrity, water quality monitoring, and public information, to protect consumers from the risk of contamination and waterborne disease outbreak. Sedimentation basins provide an additional barrier of protection by removing additional particulates prior to filtration.

Our records indicate that the City of Asheville has a total design capacity of 43.5 million gallons per day (MGD). The City operates the following two direct filtration plants: the North Fork Water Treatment Plant (WTP) rated at 31 MGD, and the William DeBruhl WTP rated at 5 MGD. Fluctuating turbidity, color, and manganese concentrations in the raw water reservoirs for these two WTPs justify the need for these plants to be upgraded to conventional water treatment plants by adding settling basins.

The North Carolina *Rules Governing Public Water Systems* 15A Subchapter 18C Section .0712 states that water treatment plants which use direct filtration may be approved to treat high quality source water. Raw water turbidity concentrations should not exceed 5 NTU and color should not exceed 15 CU for water systems using direct filtration, and fluctuations in turbidity and color should not exceed 5 percent per hour. During Tropical Storm Fred in August 2021, the William DeBruhl WTP was not operated for thirty-five days due to the inability to treat water with higher than normal turbidity using direct filtration. The average daily raw water turbidity concentration at the William DeBruhl WTP ranged from 5.18 to 22 NTU between August 17, 2021, and September 5, 2021, and the average daily raw water turbidity remained below 5 NTU after September 5, 2021. The William DeBruhl WTP was offline during the time that the average raw water turbidity was greater than 5 NTU. The color at the North Fork WTP ranged from 12 to 91 CU between August 25, 2021, and August 30, 2021, during which time the water treatment plant remained in operation.

The average daily raw water turbidity was 5.6 NTU on August 17, 2021, and the average daily raw water turbidity remained below 5 NTU after this date. The North Fork WTP is not able to be taken offline because it provides the majority of the water for the water system.

After the Tropical Storm Fred, I toured the watershed and was struck by the destruction as noted by entrenched banks, log jams, and washed out bridges. The dead Hemlock trees and the rainfall intensity and duration significantly increased raw water turbidity in the North Fork Reservoir and the Bee Tree Reservoir. The effects of Tropical Storm Fred show that direct filtration alone may not provide adequate treatment at both water treatment plants during high intensity and duration rainfall events, which are occurring more frequently in the watershed.

Water quality issues caused by manganese would also be improved by adding sedimentation basins at both water treatment plants. The water system has received 3,069 water quality complaints in the past five years, and many of these complaints are associated with discolored water caused by manganese. Solid manganese is removed during filtration, but dissolved manganese is not filtered. The dissolved manganese is oxidized into solid manganese when disinfection is added, which settles in distribution mains and causes discolored water. Distribution system flushing is a common response to discolored water caused by manganese. Distribution system flushing in 2019 caused a fish kill and a Notice of Violation (see attached) was issued by the North Carolina Department of Environmental Quality, Division of Water Resources, Water Quality Section. The addition of sedimentation basins would allow for the flocculation and sedimentation processes to provide additional manganese removal that cannot occur in a direct filtration plant.

The recommendation for the addition of sedimentation basins at the two direct filtration plants will be included in the sanitary survey findings and in the sanitary survey letter written to the water system, which will be completed in the near future. Conventional plants get more log removal credit for Contact Time (CT) calculations, so another benefit of conventional water treatment will be an additional 0.5 log credit for Giardia removal. I understand that the City is seeking American Rescue Plan Act (ARPA) funding and that providing this letter ahead of time may be helpful in pursuing this funding.

Sincerely,

Kimberly Barnett

Kimberly Barnett, PE
Regional Engineer
Public Water Supply Section
Asheville Regional Office

cc: Central Files
ARO file
Leslie Carreiro, Assistant Director of Water Resources, City of Asheville
Bill Hart, Water Production Division Manager, City of Asheville
Nicole Hairston, Environmental Specialist II, Public Water Supply Section
Daniel Boss, Water Quality Section

Attachment: Notice of Violation Bee Tree Fish Kill September 13, 2019

RESOLUTION NO. 23-____

RESOLUTION ACCEPTING AMERICAN RESCUE PLAN FUNDS FOR A PRE-CONSTRUCTION STUDY FOR THE NORTH FORK & WM. DEBRUHL TREATMENT STUDY AND PLANT IMPROVEMENTS

WHEREAS, the American Rescue Plan (ARP) funded from the State Fiscal Recovery Fund was established in S.L. 2021-180 and S.L. 2022-74 to assist eligible units of government with meeting their water/wastewater infrastructure needs, and

WHEREAS, the North Carolina Department of Environmental Quality has offered American Rescue Plan (ARP) funding in the amount of $400,000 to perform work detailed in the submitted application, and

WHEREAS, the City of Asheville intends to perform said project in accordance with the agreed scope of work;

NOW, THEREFORE, BE IT RESOLVED BY THE CITY COUNCIL OF THE CITY OF ASHEVILLE THAT:

That the City of Asheville does hereby accept the American Rescue Plant Grant offer of $400,000.

That City of Asheville does hereby give assurance to the North Carolina Department of Environmental Quality that any Conditions or Assurances contained in the Award Offer will be adhered to.

That Debra Campbell, City Manager, and successors or designees, are hereby authorized and directed to furnish such information as the appropriate State agency may request in connection with this grant and its related public project; to make the assurances as contained above; and to execute such other documents as may be required by the Division of Water Infrastructure.

Read, approved, and adopted this 11th day of April, 2023

_____ _____

City Clerk Mayor

Approved as to form:

_____

City Attorney