

## STAFF REPORT

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**Date:** October 26, 2022

**To:** Mayor and City Council

**Thru:** Doug Thornley, City Manager

**Subject:** Staff Report (For Possible Action): Approval of Consulting Agreement with Brown and Caldwell for the Truckee Meadows Water Reclamation Facility Fluidized Bed Reactor and Nitrification Pump Station Evaluation and Pre-Design services in the amount of \$1,205,437 with Reno's share being \$827,291.41. (Sewer Fund)

**From:** Matt Smith

**Department:** Utility Services

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### **Summary:**

Biological nutrient removal is a fundamental process for compliance with the discharge permit at the Truckee Meadows Water Reclamation Facility (TMWRF). The denitrification process at TMWRF uses fluidized bed reactors (FBRs) to remove nitrogen using biological wastewater treatment. A request for qualifications (RFQ) was issued to identify qualified consultants to perform an evaluation and pre-design services for FBR process improvements and future expansion alternatives at TMWRF. Brown and Caldwell (BC) was selected as the qualified consultant for this project. Staff recommends Council approve the Agreement for Evaluation and Pre-Design Services with BC as described in the attached scope of work in an amount not to exceed \$1,205,437 (Reno's share being \$827,291.41 from the Sewer Fund).

### **Alignment with Strategic Plan:**

Fiscal Sustainability

Infrastructure, Climate Change, and Environmental Sustainability

### **Previous Council Action:**

There is no recent Council action relevant to this item.

### **Background:**

Nitrogen must be removed to maintain compliance with the discharge permit at TMWRF.

Denitrification at TMWRF occurs when microorganism liberate nitrogen in the form of nitrogen gas from nitrite and nitrate in the water. TMWRF accomplishes denitrification through concrete

tanks that use pumps, sand, and methanol to foster an environment for microorganisms to thrive and multiply. These tanks are called fluidized bed reactors (FBRs).

The existing TMWRF FBRs were built in 1987 and have been improved since their construction; however, the capacity and redundancy of the process is inadequate. In 2020, BC completed a facility plan which identified the denitrifying FBR improvements project as a near-term priority. Site constraints and existing infrastructure make the expansion of the facility challenging. Additionally, fluidized bed reactors are not commonly used in municipal wastewater treatment. Analyzing this treatment process requires research, evaluation, and testing to understand the current system's limitations, process capacity, and available alternative technology.

As part of the TMWRF Capital Improvement Program (CIP), "Risk Ranking" and paired comparison of infrastructure identifies project priorities, condition, and risk of failure. Expansion and process improvement projects were analyzed separate to rehabilitation, repair, and replacement projects. This project is critical to maintaining the industry standard of operational redundancy with the FBR process at TMWRF. This project is included in this Fiscal Year's CIP as approved by the TMWRF Joint Coordinating Committee and the respective City Councils of Reno and Sparks through the budget process.

#### **Discussion:**

Based on the 2020 TMWRF facility plan and the current flows to TMWRF in relation to the calculated process capacity of the FBRs, staff recommends evaluation and pre-design services to improve and expand the capacity of the denitrifying FBRs at TMWRF. This agreement will provide safety planning, site evaluation, pilot testing, geotechnical investigations, structural analysis, process modeling, preparation of technical reports, 30% design drawings for the improvements, and preliminary construction cost estimates.

#### **Financial Implications:**

The City of Reno will administer the agreement and will be reimbursed for a portion of the costs by the City of Sparks through the current cost sharing agreement for TMWRF operations and maintenance. The City of Reno and the City of Sparks share the cost of this project as follows: 68.63% for Reno and 31.37% for Sparks, as shown in Table 1. Costs for the City of Reno are budgeted in the Sewer Fund. The project is included in the TMWRF Capital Improvement Plan approved by the TMWRF Joint Coordinating Committee (JCC).

**Table 1 – Cost Sharing Between Reno and Sparks**

<b>Total Cost of Agreement</b>	<b>Reno Share</b>	<b>Sparks Share</b>
\$1,205,437	\$827,291.41	\$378,145.59
<b>Percentages</b>	68.63%	31.37%

**Legal Implications:**

The parties are bound by the terms of the agreement as prepared by the Office of the City Attorney.

**Recommendation:**

Staff recommends Council approval of the Consulting Agreement with Brown and Caldwell for the Truckee Meadows Water Reclamation Facility Fluidized Bed Reactor and Nitrification Pump Station Evaluation and Pre-Design services in the amount of \$1,205,437 with Reno's share being \$827,291.41 (Sewer Fund) and authorize the Mayor to sign.

**Proposed Motion:**

I move to approve staff recommendation.

**Attachments:**

Area & Vicinity Map for TMWRF Fluidized Bed Reactor Evaluation and Pre-Design Project  
Agreement with BC TMWRF Fluidized Bed Reactor Evaluation and Pre-Design Project