

## MEMORANDUM

**TO:** Board of Trustees

**THROUGH:** Steven J. Pinkerton  
General Manager

**THROUGH:** Joseph J. Pomroy, P.E.  
Director of Public Works

**FROM:** Bradley A. Johnson, P.E.  
Director of Asset Management

**SUBJECT:** Review, discuss, and possibly authorize an unbudgeted Capital Improvement Project in the Sewer division of the Utility Fund totaling \$235,072 and award a construction contract for the Water Resource Recovery Facility Low Pressure Air System Improvements Project – Fund: Utility; Division: Sewer; Vendor: Thomas Haen Company in the amount of \$149,890

**STRATEGIC PLAN:** Long Range Principle #5 – Assets and Infrastructure

**DATE:** June 2, 2017

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### **I. RECOMMENDATION**

That the Board of Trustees moves to:

1. Authorize an unbudgeted Capital Improvement Project in the Sewer Division of the Utility Fund totaling \$235,072.
2. Award a construction contract to Thomas Haen Company totaling \$149,800 for completion of the Water Resource Recovery Facility Low Pressure Air System Improvements Project.
3. Authorize Staff to execute the contract based on a review by General Counsel and Staff.

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## **II. DISTRICT STRATEGIC PLAN**

Long Range Principle #5 – Assets and Infrastructure – The District will practice perpetual asset renewal, replacement, and improvement to provide safe and superior long term utility services and recreation activities.

- The District will maintain, renew, expand, and enhance District infrastructure to meet the capacity needs and desires of the community for future generations.
- The District will maintain, procure, and construct District assets to ensure safe and accessible operations for the public and the District's workforce.

## **III. BACKGROUND**

The District's Water Resource Recovery Facility (WRRF) processes the raw sewage collected from Incline Village and Crystal Bay into treated wastewater effluent for disposal at the District's Wetlands Facility in the Carson Valley. Constructed in 1962 and upgraded multiple times since, the WRRF utilizes multiple processes and mechanical system to safely treat raw sewage to federal and state standards consistent with the requirements of the District's Nevada Department of Environmental Protection (NDEP) operating permit.

The aeration process at the WRRF supplies oxygen to facilitate the biological activity that converts the raw sewage into treated wastewater effluent. The WRRF has six 200,000 gallon aeration basins with two jet aeration clusters per basin. These clusters utilize low pressure air to mix and recirculate the wastewater and provide the necessary oxygen to the microorganisms. Motor actuated valves are utilized to help keep the correct balance of oxygen in the aeration basins at all times. Pressurized air is also utilized to provide mixing within the WRRF's sludge storage basins in order to keep the sludge suspended while it awaits processing via the WRRF solids handling system.

The low pressure air system, which supplies pressurized air to the WRRF, consists of three multistage centrifugal blowers with a common piping header that feeds the two WRRF processes described above. By having a common air supply feed two different aeration processes, each with unique pneumatic requirements, the WRRF can often struggle to supply adequate air to both processes simultaneously.

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This often results in periods of over and under oxygenation within the aeration basins depending on the liquid level within the sludge storage basins. This increases operating costs and can impact the quality of wastewater effluent generated at the WRRF.

The low pressure air system and associated three multistage centrifugal blowers, controls, and mechanical appurtenances was installed during the last major WRRF upgrade completed in 1992. The system is largely at the end of its useful operational life and the three blowers and controls are no longer supported by the manufacturer. The District has planned a multi-year aeration system improvements project within the Capital Improvement Program for a number of years to address the aging infrastructure and operational challenges associated with the system. This project, scheduled to begin pre-design in 2018, will conduct a comprehensive evaluation of the system's mechanical equipment, piping, controls, and structures; the aeration system pneumatics; current process performance and energy usage; as well as current industry best practices and technologies; and make recommendations for system improvements.

In late 2016, the District experienced an unexpected failure in one of the three multistage centrifugal blowers. The blower was removed and shipped to the manufacturer's authorized service facility for the region where it was determined the failure was catastrophic. Additionally, parts that may have allowed reconstruction and rebuilding of the blower are no longer available from the manufacturer. As the WRRF requires two of the three blowers operating in order to supply enough air to meet system demands during the summer months, this failure has left the District without any redundancy in the low pressure air system. This means a future blower failure or any blower downtime to complete equipment maintenance would leave the WRRF with inadequate air supply to meet treatment requirements.

In order to ensure any replacement equipment installed to address the loss of blower redundancy is not rendered obsolete by the planned aeration system improvements project, the District rapidly completed a small design study. This study evaluated low pressure air supply alternatives, selected and bid (consistent with the requirements of Nevada Revised Statutes Chapter 332) replacement equipment, designed the associated system improvements to allow installation, and was completed in a manner to facilitate and inform the planned larger aeration project.

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The proposed contract will install a District procured positive displacement blower and associated reduced voltage soft start as well as procure and install the necessary piping, mechanical, electrical, and control improvements. The blower and soft start were procured by the District directly, under General Manager’s authority, in order to accommodate 11 – 16 week lead times. Once completed, the project will provide the District’s WRRF with redundant air supply to both the sludge storage basins and the aeration basins. Additionally, the project will eliminate the operational issues associated with the common air supply by pneumatically separating the two systems via piping and valving improvements. These improvements will be completed all while maintaining adequate air supply to support continuous operations at the WRRF.

**IV. BID RESULTS**

Consistent with the requirements of Nevada Revised Statutes Chapter 338, the District solicited bids to complete this project and plan sets were sent to three interested bidders. Two bids were received and opened on May 25, 2017. The Engineer’s estimate for the work was \$75,000. The bid results are as follows:

<b>Contractor</b>	<b>Bid Amount</b>
Thomas Haen Company	\$149,800
Resource Development Company	\$159,600

The low responsive bidder is Thomas Haen Company. District Staff reviewed the bid, checked references, and recommends award of this project to Thomas Haen Company. If awarded, the project is scheduled to start immediately and be complete and ready for final payment within eleven weeks.

**V. FINANCIAL IMPACT AND BUDGET**

Due to the unanticipated nature of this work, this project is not included in the Capital Improvement Program Budget. The following table outlines the total estimated project budget required to complete the work.

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### Estimated Project Budget

Description	Amount
Construction Contract	\$149,800
Construction Contingency at 10%	\$15,000
Replacement Blower	\$31,400
Blower Motor Reduced Voltage Soft Start	\$18,872
District Staff Time	\$20,000
<b>Estimated Project Total</b>	<b>\$235,072</b>

The total estimated project budget to complete the proposed work is \$235,072 and, if approved, will come from the Utility Sewer Fund reserves where there is an adequate available projected unrestricted fund balance of \$13,895,876. (\$12,026,276 from the June 30, 2016 audit plus \$1,869,600 from the recently adopted budget projected results for June 30, 2017).

#### VI. ALTERNATIVES

None. The District must move forward with the improvements to the WRRF low pressure air system in order to ensure continuous and reliable wastewater treatment operations; avoid violating the District's NDEP operating permit and the resulting fines; as well as negatively impacting the environment.

#### VII. BUSINESS IMPACT

This item is not a "rule" within the meaning of Nevada Revised Statutes, Chapter 237, and does not require a Business Impact Statement.