GLWA
Great Lakes Water Authority

Memorandum

To: The Operations and Resources Committee of the GLWA Board of Directors

From: Navid Mehran, P.E., Chief Operating Officer, Wastewater Operating Services

CC: Suzanne R. Coffey, P.E., CEO and Bill Wolfson, Deputy CEO

Date: September 20, 2024

RE: CIP 211007, WRRF Pump Station 2 Bar Rack and Grit Improvements

As requested during the September 11th, 2024, meeting of the Operations and Resources Committee, the project team has prepared a list of comparable wastewater treatment facilities also utilizing the selected stirred vortex technology for grit removal.

The GLWA Water Resource Recovery facility is the largest facility in North America and third in the world making direct correlation of comparable facilities difficult. The project team leveraged modular design for this project, enabling construction of units that have been successfully installed in other facilities.

Sample Wastewater Facilities using Stirred Vortex Grit Removal

Facility	Location	Millions of Gallons / Day	
		Average	Peak
Plant No. 2	Huntington Beach, CA	150	317
Belmont AWT[1]	**Indianapolis, IN**	**120**	**300**
Mill Creek WWTP	Cincinnati, OH	130	430
Southerly WWTP	Columbus, OH	114	330
Nut Island Headworks	Quincy, MA	110	400
Morris Forman WWTP - East	Louisville, KY	90	350
Henrico County WRF	Richmond, VA	75	225
Mauldin Road WWTP	Greenville, SC	70	160
Bay Park STP	East Rockaway, NY	70	240
Jackson Pike WWTP	Columbus, OH	68	150

Facility	Location	Millions of Gallons / Day	
		Average	Peak
South WWTP[1]	**Baton Rouge, LA**	**65**	**200**
Metropolitan WWTP	Columbia, SC	60	150
Bell's Lane Facility[1]	**Louisville, KY**	**N/A**	**160**

1. During design, the project team consulted with these facilities regarding operation, maintenance, and best practices of their existing Stirred Vortex equipment.

Pump Station 2 currently uses an aerated grit system. This is an older, less efficient grit-removal technology and is commonly used in large, older wastewater facilities like GLWA's Water Resource Recovery Facility.

Pump Station 2 will be the largest facility on this list to employ stirred vortex technology, but the chosen equipment has a strong track record of successful operation. The system achieves its capacity through eight parallel vortex tanks, each with a capacity of 100 million gallons per day (mgd). Vortex tanks of this size and design have demonstrated effectiveness and reliability at existing facilities. For example, the Bellmont Advanced Wastewater Treatment Plant in Indianapolis has operated three similar 100 mgd vortex tanks since 2012, and the Bells Lane Wet Weather Facility in Louisville, Kentucky, began using two 100 mgd vortex tanks in 2019. Both facilities shared positive reviews of the operability and maintainability of these systems with the GLWA design team. The modular tank design enables GLWA to meet the capacity requirements for grit removal at Pump Station 2 with equipment that has a proven history of performance in municipal applications.