

LAKE ARROWHEAD COMMUNITY SERVICES DISTRICT

M E M O R A N D U M

DATE: APRIL 23, 2019

TO: BOARD OF DIRECTORS
Lake Arrowhead Community Services District

FROM: 
MATT BROOKS, Operations Manager


CATHERINE CERRI, General Manager

SUBJECT: CONSIDER AWARDING A PROFESSIONAL SERVICES CONTRACT WITH DUDEK FOR PILOT TESTING SUPPORT FOR THE AMMONIA REMOVAL DEMONSTRATION AT THE GRASS VALLEY WASTEWATER TREATMENT PLANT

A. RECOMMENDATION

It is recommended that the Board of Directors:

1. Award a Professional Services Contract with Dudek to move forward with providing pilot testing support for the Microvi MNE nitrification reactor at the Grass Valley Wastewater Treatment Plant (GVWWTP), as outlined in their proposal dated March 13, 2019, at a cost Not-to-Exceed \$21,915 for time and materials.
2. Authorize the General Manager to execute the contract.

B. REASON FOR RECOMMENDATION

In September 2018, Dudek made the District aware of a new technology supplied by WesTech called "Microvi". Since the technology is new, Dudek is cautiously optimistic that if this product does what it claims it can do, then it may be a part of the solution for our nitrification issues at the GVWWTP. Dudek has facilitated a meeting and several discussions between the District and WesTech to this point, and it has been recommended to evaluate this technology further by way of a small-scale pilot test.

Dudek is familiar with the District's treatment processes, influent and effluent wastewater quality, and the stringent parameters set forth in the Waste Discharge Requirements in which the District must comply with; specifically the requirements set forth for Total Nitrogen. Dudek has already captured and reviewed most of the GVWWTP data as part of the 2018 Process Evaluation work, and will share this data with Westech/Microvi. Dudek will provide coordination and guidance support to the District during the pilot testing, review the pilot system layout, sampling protocols and procedures, and collect and analyze data provided by Microvi and the District. Then, Dudek will prepare and provide a concise Pilot Test Report describing the operation of the pilot system, parameters of the pilot test, summary of the results, and discussion of the applicability of the Microvi technology at the GVWWTP.

C. BACKGROUND INFORMATION

Dudek completed a process evaluation and data gap analysis for the GVWWTP (Phase 1 of a multi-phase Wastewater system improvement plan) in July 2018. The project evaluated individual unit processes at the plant for hydraulic capacity and capacity to perform its intended treatment. The analysis found that the trickling filters at the GVWWTP are a critical bottleneck for BOD removal and nitrification.

D. FISCAL INFORMATION

This analysis is a budgeted item and will be funded by the "GVWWTP Efficiency Upgrades" line item in the Budget under the Wastewater Capital Improvement Plan at a cost Not-to-Exceed \$21,915 for time and materials.

E. ENVIRONMENTAL IMPACT

This analysis does not qualify as a project under CEQA.

F. ATTACHMENTS

- Dudek Proposal March 13, 2019

DUDEK

12000 E. Harvard Ave. Suite 200
Denver, CO 80231
Tel: 303.750.0800
www.dudek.com

March 13, 2019

Catherine Cerri
Lake Arrowhead Community Services District
27307 CA-189
Blue Jay, CA 92317

Subject: *Proposal for Pilot Testing Support of the Microvi System*

Dear Ms Cerri:

Dudek is pleased to submit this proposal to Lake Arrowhead Community Services District (District) for pilot testing support for the Microvi biological nitrification system. This proposal presents our understanding and proposed scope of work. We look forward to working with the District on this important project.

PROJECT UNDERSTANDING

Dudek completed a process evaluation and data gap analysis for the Grass Valley WWTP (Phase 1 of a multi-phase Wastewater system improvement plan) in July 2018. The project evaluated individual unit processes at the plant for hydraulic capacity and capacity to perform its intended treatment. The analysis found that the trickling filters at the Grass Valley WWTP are a critical bottleneck for BOD removal and nitrification.

The nature of trickling filter design is such that they are resilient to rapid swings in hydraulic loading rates, however, they are not resilient to rapid swings in organic loading rates. The Lake Arrowhead community sees a rapid influx of people into the service area during and around holiday weekends, which results in these rapid organic loading increases to the treatment plant. Currently, the District attempts to manage these loads by storing flow in the Willow Creek ponds, operating all primary clarifiers in service, and maximizing trickling filter recirculation pumping during these times.

Despite these efforts, the District still has trouble meeting their effluent total nitrogen discharge limits during these times. The Microvi MNE Nitrification reactor was identified as a potential application to improve nitrification reliability and reduce effluent total nitrogen concentrations. The Microvi MNE technology is a new product and has not yet been widely installed and tested in wastewater plant applications, and therefore pilot testing is recommended to determine performance expectations, size a full-scale unit, and determine if a full-scale application is feasible and cost-effective.

The District has agreed in principle to pilot a roughly 60 gallon Microvi-MNE nitrification reactor to collect data and determine full-scale feasibility. Dudek's process engineering expertise and understanding of the plant provides the District assistance in determining pilot testing criteria and data collection, analysis of the data, and determining feasibility and size requirements for a full-scale application.

SCOPE OF WORK

Dudek will complete the following scope of work:

1. Pilot Test Protocol Review and Revisions: Microvi will develop the pilot test protocol to determine the efficacy of the nitrification technology. Dudek will review Microvi's proposed protocol, request outstanding information, and provide comments to Microvi and the District to improve the pilot study. Dudek has already captured and reviewed most of the Grass Valley WWTP data as part of the 2018 Process Evaluation work and will share that data with Microvi.
2. Pilot Testing Support: Dudek will provide coordination and guidance support to the District during pilot testing. Support will include one site visit, coordination with Microvi and the District, review of pilot equipment layout, sampling capturing protocols and procedures, review of operation, and project updates to District staff and management.
3. Test Results Review and Analysis: Dudek will collect and analyze data provided by Microvi and the District from the pilot test. Data will be converted to figures and tables that are useful to District staff and management as decision-making tools.
4. Pilot Test Report Preparation: Dudek will prepare a concise Pilot Test Report describing the operation of the pilot system, parameters of the pilot test, summary of the results, and discussion of the applicability of Microvi technology at the Grass Valley WWTP. Microvi will provide review of the Pilot Test Report. A draft report will be provided to the District in electronic format for comment and review. Dudek will address District comments and submit to the District a final Pilot Test Report in electronic format.

PROJECT TEAM

Our team is comprised of the following key individuals, supported by a wide array of additional staff resources. Resumes are available upon request.

- Michael Metts, PEPrincipal In Charge
- Greg Guillen, PhD, PEProject Manager / Process Specialist
- Phil Giori, PEProject Engineer
- Wyatt TroxelTechnical Advisor / Operations Specialist

SCHEDULE

In order to properly test the Microvi-MNE process technology and capabilities, we recommend scheduling the pilot testing during a peak holiday weekend. The ideal holiday for the testing is the July 4th holiday, which

Ms Catherine Cerri

Subject: *Proposal for Pilot Testing Support of the Microvi System*

lands on a Thursday The pilot testing must occur during the weekend before, week of July 4th, and weekend after July 4th, at a minimum. The recommended schedule is summarized below:

Phase 1: Pilot Test Protocol Development	2 weeks (6/3 – 6/14)
Phase 2: Pilot Testing.....	8 weeks (6/17 – 8/16)
Phase 3: Pilot Test Data Analysis.....	2 weeks (8/19 – 8/30)
Phase 4: Pilot Report Preparation	3 weeks (9/2 – 9/20)
Total Project Duration.....	15 weeks

FEE

Our proposed fee estimate is included as an attachment to the proposal located in Appendix A.

CLOSING

We look forward to working with the District to provide the services described herein. Mike Metts will serve as the Principal in Charge for this contract and is fully able to execute a contract with the City. If you have any questions or wish to discuss our proposal, please contact me at 760 479.4123 or gguillen@dudek.com.

Respectfully Submitted,



Greg Guillen, PhD, PE
DUDEK

APPENDIX A

Fee Estimate

Lake Arrowhead Community Services District
 Support Services for Microvi Pilot Test
 DUDEK FEE ESTIMATE
 3/13/2019

	<i>Project Team Role: Team Member:</i>	Labor Hours and Rates				TOTAL HOURS	DUDEK LABOR COST	ODC's	TOTAL FEE
		PIC	Project Manager	Project Engineer	Admin				
		M. Metts	G. Guillen	P. Gior	M. Kinney				
	<i>Billable Rate:</i>	\$245	\$205	\$185	\$115				
Task 100 - Pilot Test Protocol Review									
101	Review of Microvi test protocol	1	8	4		13	\$ 2,625		\$ 2,625
	Subtotal Task 100	1	8	4		13	\$ 2,625	\$ -	\$ 2,625
Task 200 - Pilot Testing Support									
201	1 site visits / meeting days		8			8	\$ 1,640	\$ 300	\$ 1,940
202	Coordination with Microvi and District		12	8		20	\$ 3,940		\$ 3,940
	Subtotal Task 200		20	8		28	\$ 5,580	\$ 300	\$ 5,880
Task 300 - Pilot Test Results Analysis									
301	Data analysis		12	16		28	\$ 5,420		\$ 5,420
	Subtotal Task 300		12	16		28	\$ 5,420	\$ -	\$ 5,420
Task 400 - Pilot Test Report Preparation									
401	Prepare Draft Pilot Test Report	1	16	8	1	26	\$ 5,120		\$ 5,120
403	Final Pilot Test Report	1	4		1	6	\$ 1,180		\$ 1,180
	Subtotal Task 400	2	20	8	2	32	\$ 6,300	\$ -	\$ 6,300
Task 900 - Project Management									
901	Project Management		6		4	10	\$ 1,690		\$ 1,690
	Subtotal Task 900		6		4	10	\$ 1,690	\$ -	\$ 1,690
Total Hours and Fee		3	66	36	8	111	\$ 21,615	\$ 300	\$ 21,915

DUDEK