

## PROGRESS REPORT

To: Village of Kronenwetter, Utility Committee

From: Robert J. Roth, PE

Re: Lift Station Assessment & Sewer Capacity Study

Date: July 26, 2023

The Village of Kronenwetter commissioned a Lift Station Assessment & Sewer Capacity Study in January/February 2023. Roth Professional Solutions (RPS) was awarded that work on March 7, 2023. The contract was later executed on March 14, 2023.

RPS coordinated with B&M Technical Services, whom the Village has worked extensively with in the past on its lift stations. Several of the Lift Station pumps have been provided by B&M. RPS initially met with Mark Mackey and Dan Hekrdle as a kick-off on April 4, 2023.

The Lift Stations were inspected by the above-referenced team on April 25, 2023. This formed the basis of the operation and condition assessment of the Village's eleven (11) lift stations. Attached with this memo are the eleven (11) lift station field evaluation reports. The evaluation of each station included a visual inspection as well as discussion on operation and maintenance. This identified key issues with each station, summarized in the table on the following page.

Issues of high or immediate importance are further summarized as follows:

- LS #3 High Maintenance Issues
- LS #6 Add-a-Phase Conversion System Replacement (Electrical)
- LS #7 Gas Issues
- LS #8 Electrical Issues, Pump Issues, Likely Capacity Issues
- LS #11 Vortexing, Debris Accumulation
- Long Term Need for 277-480V 3-Phase Power Wherever Possible
- Original Pumps in LS #5, 6, & 10

Lift Station Condition Assessment Summary – General Categories										
Lift Sta	Site Cond.	Structure Condition	Electrical	Valve Vault	Wet-Well	Generator	Controls	Pumps	Valves	Other
1	OK	Duplex Submersible IVV, Good	OK, but Prefer 480V 3Ph	OK	OK	Onsite	OK	25 HP, 625 GPM Shinmaywa OK	OK	High Importance, Main LS
2	OK	Duplex Submersible IVV Deep but OK	Ok, Needs 480V 3Ph	Clogged Drain, But OK Overall	OK	Portable	Upgrade	25 HP, 275 HP, Shinmaywa OK	OK	High Importance, Collector LS
3	OK	USEMCO Vacuum Prime LS Refurbished 2016	208V 3Ph Ok	Some Minor Issues but OK	OK	Portable	OK	3 HP, 80 GPM, Fairbanks Morse Centrifical	OK	Faulty Primer Valve, Doesn't Stay Primed, Maintenance Intensive
9	Ok	Duplex Submersible IVV, OK	208V 3Ph w/ VFD OK	OK	OK	Portable	OK	3.7 HP, 140 GPM, Barnes, Ebarra	OK	4" Pump Discharge Piping to 6" FM OK
10	Too Close to Road, Salt Issues	Submersible IVV, Concrete Condition Issues Throughout	OK with 1Ph Power, But Prefer 3Ph Power for Future	OK	OK	Portable	OK	2.8 HP, 80 GPM, Barnes	OK	Significant Importance for Future Areas, Currently Moderate Importance
4	OK	Duplex Submersible IVV, OK	208V 3 Ph, OK but Prefer 480V 3Ph	OK	OK	Portable	Older Panel, Painted but OK	10 HP, 175 GPM Shinmaywa	No Iso Valve	High Importance, Collector LS
5	OK	Duplex Submersible IVV, OK	208V 3 Ph, OK	OK	OK	Portable	Older Panel, Painted but OK	10 HP, 280 GPM Barnes	OK	Moderate Importance
6	OK	Duplex Submersible IVV, OK	Add-A-Phase Conversion System NG	OK	OK Some 3" Influent Pipe Corrosion	Portable	OK	15 HP, 155 GPM Barnes	OK	Moderate Importance Address Electric & Panel Issue
7	OK	Duplex Submersible IVV, Gas Issues Require Conc. Protection	208V 3 Ph, OK	OK	Gas Issues Require Concrete Treatment	Onsite	OK	15 HP 550 GPM Shinmaywa	OK	High Importance, Main LS, Gas Issues
8	OK	Duplex Submersible IVV, Deep But OK	Phase Faults, Power Loss Issues, Overheating Need 480V 3Ph, Panel Refurbish	Deep Some Water But OK	Likely Undersized	Portable	Adjustment Required	Shinmaywa 5 HP OK, Ebarra 5 HP Not Working, Replaced with 10HP Shinmaywa	OK	High Importance, Collector LS, Likely LS Capacity Issues, Possible FM Issues
11	Ok	Duplex Submersible IVV, OK	240V, 1Ph w/ VFD & Phase Conversion System	OK	Some Vortexing Excessive Debris Issues	Portable	OK	5 HP, 100 GPM, Barnes Chopper	OK	Traditionally has had Clogging Issues



The Lift Stations are also part of the Sewer Capacity Study, for the determination of basin size and flow capacity for both existing and future conditions. If a particular lift station requires maintenance now, and also requires for replacement or upsizing via the capacity study, then the planning of operation & maintenance costs versus capital costs can commence with all the information at hand.

Within the Sewer Capacity Study, other items to be studied include the following:

- Limiting Factors of Existing Sewer Infrastructure (interceptors, lift stations)
- Capacity Estimation of Existing Sewer Infrastructure
- Required Upgrades for Existing Conditions
- Sewer Serviceability of Future Planning Areas
- Impact on Existing Sewer Infrastructure from New Development

Together, a comprehensive look at the sewer infrastructure will be completed with active recommendations for immediate and future planning periods. The most immediate recommendations are for operation and maintenance items, such as electrical upgrades, pump replacements or concrete/structure maintenance.

We have recently obtained pump cut sheets, usage data, and as-built plan records from Village Staff and we have begun the process of evaluating that information. So far we have determined, unfortunately, that it is not feasible to eliminate Lift Station #3. This is based on a review of the as-built maps, depths, and relative distances. The lift station will remain a source of high maintenance given its configuration. Since this station was refurbished in 2016, we will likely not be recommending it for immediate replacement. However, we will still look at flow capacity and overall future development potential and if this station would require upsizing. If so, we would recommend it be refurbished to a duplex submersible with an above-ground valve vault where the existing wetwell can be retained and utilized.

Currently, we are focusing on Lift Station #8 which includes flow from Lift Station #11. We are starting our analysis with a look at wastewater flow and pumping records. We believe this station is undersized, including its 4" forcemain discharge, and will only be further undersized with its service of the TID 2 area in the future near Beranek and Maple Ridge Roads. If this station requires improvements and capital costs, perhaps it can be included within the TID 2 expenditures. We will continue to evaluate and make recommendations therefrom.

As for timing, we will be trying to catch up to the original schedule to continue efforts in supplying recommendations and costs for budgeting purposes in September, 2023.

**\*\*\*\* END OF PROGRESS REPORT \*\*\*\***

