



**Title:** Real-time Sensor Network Project Update

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**Purpose:**

At the October 8, 2020 Board Meeting, staff will provide a presentation highlighting the progress made over the last eight months, what work remains, and how the data is being used now and how it will be used in the future.

**Background:**

In 2019, in partnership with Hennepin County Emergency Management (HCEM), District staff began mapping out a real-time sensor network (RESNET) that would provide District staff, engaged members of the public, and partner agencies with real-time water levels and flow conditions at a granular resolution across the watershed. In January, 2020, staff received Board authorization to purchase the equipment required for implementation.

**Summary:**

The implementation was broken out into three distinct phases, which include infrastructure installation, equipment installation, and data processing development. Below is a brief summary of each phase, and the work accomplished to date.

Infrastructure Installation:

The first step in the process was installing infrastructure at each location, which consists of secure housing for the monitoring equipment. Staff prioritized obtaining installation permits and installing physical infrastructure along Minnehaha Creek so the infrastructure would be ready to house HCEM's portion of the equipment. Currently 14 of the 17 stations have infrastructure in place. Installation of the remaining three sites will be completed by spring of 2021, which includes installing one site this fall and two next year due to bridge reconstruction and further equipment testing.

Equipment Installation:

With infrastructure in place, sampling equipment can be programmed and deployed. Two issues out of our control have caused a delay in getting most equipment deployed and operational. A majority of the equipment intended for the Minnehaha Creek subwatershed will be purchased by HCEM through a FEMA grant. The grant has been approved by the State of Minnesota, but has yet to be approved by FEMA. We expect this funding will become available in 2021. Additionally, a COVID-19 related delay in production of a critical communication device has prevented staff from installing eight additional sites. Using the available equipment the District has received, staff installed equipment at six sites, which are now fully operational.

Data Processing and Sharing:

Among the six operating sites, a variety of equipment and station types exist, which has allowed staff to fully build and test the data processing framework. Data collected by the sensors is now automatically transmitted to the office, formatted, and uploaded to R&M's database, which removes the need for staff to manually enter or edit any data. Since this process has been fully built and implemented by staff, it can be easily replicated and applied to new stations as more equipment is installed next year.

A major component to accomplishing a goal of the sensor network was to have access and utilize the data in real-time. Recent IT investments in R&M's database allows the data to be seamlessly linked to internal and external dashboards and support real-time data analysis. Staff have developed a RESNET dashboard that will be shown during the presentation.

Building the data pipeline framework from start to finish and creating a visual dashboard has given staff institutional knowledge of our IT systems and removes the need to employ consultants for future changes, additions, and testing out new and improved dashboards.