



CITY COUNCIL Agenda Item #19-101(e)

Date: March 27, 2019

Consent X Discussion _____

SUBJECT: Water System Improvements for radio communications at the water pump stations, software upgrades at the water treatment plant and the addition of two pressure transmitters.

SUBMITTING DEPARTMENT: Public Works

RECOMMENDED ACTION: Approve contract with LCS Controls, Inc. for work outlined in the attached proposal in the amount \$52,775.00 with an additional \$8,010.00 being billed to CVMC for radio upgrades at their facility.

STRATEGIC OUTCOME: Sustainable Infrastructure

EXPENDITURE REQUIRED: \$52,775.00

SOURCE OF FUNDS: FY 19 & FY 20 Water Treatment Fund Equipment Fund

LEGAL REQUIREMENTS: N/A

BACKGROUND INFORMATION: DPW provided an overview of the water system and water line breaks to City Council on February 13th along with a summary memo. This work follows the work discussed during that presentation. The cost of this work will be broken into two fiscal years, with the new pressure transmitters postponed until FY 20.

SUPPORTING DOCUMENTS: LCS Proposal

INTERESTED PARTIES: DPW, Water Rate Payers

CITY MANAGER'S APPROVAL:

A handwritten signature in black ink, appearing to read "W. Hoffman", written over the "CITY MANAGER'S APPROVAL:" text.

City of Montpelier, VT
Department of Public Works
39 Main Street, City Hall 05602

February 15, 2019

ATTN: Kurt Motyka, P.E.
RE: Water Department RTU Communications

Dear Mr. Motyka,

In accordance with our recent conversations, LCS Controls, Inc. is pleased to quote the following upgrades to your Water System RTU hardware and communication systems:

Radios

The radio hardware in use right now has become obsolete. While there are some number of spares still available, these radios will be 20 years old this year. There is no inexpensive replacement for the duplexing repeater at Town Hill and this site has become problematic. When it fails, the entire radio system drops offline. This hardware will not support an expected narrow-band order from the FCC.

We propose to replace all of the radios except those at Dicky Dam and Berlin Pond with new hardware that will support 6.25 kHz channel spacing, and does not require a duplexing repeater. These radios support Store and Forward protocol for more network flexibility and reliability.

We propose to replace all of the antennas except those at Dicky Dam and Berlin Pond with new hardware using higher gain Yagi antennas at all remote sites, and replacing the omni and its associated wire at Town Hill.

RTU Hardware

The PLC RTU hardware in use right now has become obsolete. The original PLCs are no longer available, do not support newer communication protocols, have only 1 communication channel, and are difficult to program.

We propose to replace the MicroLogix 1000 and 1500 PLCs except those at Dicky Dam and Berlin Pond with MicroLogix 1400s and appropriate I/O cards where needed. The 1400 has 3 communication ports (2 serial, 1 Ethernet), can be programmed on-line, and is a current product for Rockwell Automation. It is compatible with the new hardware at the BWTF.

The back-light on the Operator Interface terminal at Town Hill Pump Station has failed. This hardware is 24 years old. We propose to replace this with a color/touchscreen terminal. We will also replace the terminal at Terrace St. Pump Station for consistency.

Site by Site Scope of Work

BWTF- Replace Radio, RF and Serial Jumpers, Antenna

Terrace St. Tank- Replace Radio, PLC, RF and Serial Jumpers, Antenna

Town Hill Tank- Replace Radio, PLC, RF and Serial Jumpers, Antenna, and Wire

Site by Site Scope of Work (cont.)

Town Hill Pump Station- Replace Radio, PLC, I/O cards, RF and Serial Jumpers, Antenna, New Software, New Operator Interface Terminal
 CVMCC Tank- Replace Radio, PLC, RF and Serial Jumpers, Antenna
 Berlin Mall Valve Vault- Replace Radio, PLC, RF and Serial Jumpers, Antenna
 Terrace St. Pump Station- Replace Operator Interface Terminal

Our price for the above work is as follows:

Radio Hardware	\$11,760.00
Antenna Hardware	1,555.00
PLC Hardware	7,176.00
Operator Interface Terminals	3,640.00
Miscellaneous Hardware	674.00
Software development and modifications	2,050.00
Installation and testing	<u>4,550.00</u>
Total	\$31,405.00

The Break-out for the CVMC portion of this work is: \$8,010.00 for the Tank and Berlin Mall sites. City portion of the work would be \$23,395.00.

It should be possible to complete each station without significant interruption of service. All installation work will be coordinated with the BWTF Operators. The wiring drawings at each station will remain as-is. Catalog cuts and O&M materials for all new equipment will be provided. A functional test will be performed at each site following the replacement of hardware.

Water Main Break and High Flow mitigation and monitoring from 2/12/19 meeting

Hardware

New RTU with Pressure Transmitter for City Garage	\$ 8,480.00
New RTU with Pressure Transmitter for Gallison Hill Road	10,300.00
New VFD for 2 nd pump at Town Hill Booster Station	2,400.00*

* add \$480.00 for 2-year warrantee.

Hardware Installation (RTUs and VFD) (City is responsible for mechanical/piping installation of pressure transmitters)	5,600.00
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Software

Add Low Discharge Pressure Alarm with Dialout at Plant	2,600.00
Add High Flow Alarm with Dialout at Plant	
Add High and Low Tank Alarms with Dialout for all tanks	
Add Level Rate of Change Alarms with Dialout for all tanks	
Add Low Pressure Alarm with Dialout for all System Pressures	
Total	\$29,380.00

Functional Description for Finished Water Pumps:

After an adjustable time delay initially set at 30 minutes, on adjustable Low Discharge Pressure, adjustable High Flow, or adjustable Low Clearwell Alarms, change the Finished Water Pump speed control from Constant Discharge Pressure Mode to Variable Flow Mode with remote setpoint based on the sum of the Filter Effluent Flows minus an adjustable setpoint initially set at 100 GPM (e.g. if Filters are producing a combined 1,400GPM, Finished Water Pumps will send 1,300 GPM to City).

Functional Description for Town Hill and Terrace St. Pump Station Motor Operated Valves:

After an adjustable time delay, on High Rate of Change Alarms for their respective tanks, close Suction and Discharge Valves to preserve water in the Pressure Zones served by the pump stations.

All Flow/pressure limiting controls will have Operator enabled overrides.

Thank you for the opportunity to bid on this work and please feel free to contact us if you have any questions.

Sincerely,
LCS Controls, Inc.

Thomas R. Allen
President