Managing a Paperless CCC Program Using Cloud Computing

Tom Engelsma   City of Wyoming, MI  Environmental Services

City of Wyoming, MI

• 14th largest city in MI, 25 miles from Lake MI
• Lake MI water plant has capacity of 125 MGD
• 2,200 Commercial facilities, 72,000 residents
• Supply 220,000 homes, domestic & UGS use

Environmental Services Department

• CCC group merged with IPP group in 2009
• Perform combined IPP and CC Inspections
• May include WQ and storm water visits

Environmental Services Inspectors

• Complete CCC Specialist course from USC
• CCC Program Manager certification at UF TREEO
• Hold MDEQ water distribution S license

Cross Connection Control Program

• Started CCC program in 1972, updated in 2016
• ES inspectors perform all CC surveys
• Manage device testing done by contractors
• 10% of facilities containment, 90% isolation

Challenging Times for Municipalities

• Costs increasing, limited operating funds
• Continue current service levels
• Remain compliant with regulations
• Our workforce is shrinking
Recent IBM Study Results

Many Organizations:
• Have inefficient processes
• Struggle to locate information
• Lack the necessary expertise & training

The Future for our Municipalities

• We need to work smarter, become more efficient for the challenges facing us.
• We must utilize productivity tools to survive: technology is a tool we can use.

Evolving Technology

• Everyone uses some type of technology
• Technology is always changing
• Utilizing cost effective technology

Why a Paperless CCCP

• Environment, cut printing and mailing costs
• Eliminate physical file storage needs
• Simplify “big” data searching, access anywhere
• Reduce data entry, staff reduction savings

Why Web Based Software

• No upfront software cost, subscription based
• Nothing to install, data maintained off site
• Utilize a range of mobile devices
• Changes the public perception of you

Paperless Device Test Submittal

• Online submission, no forms to print
• Tester completes the device data entry
• Online form provides data validation
• Testers receive electronic confirmation
Tester and Test Gauge Certification

- Email reminders sent to the contractors
- Require current tester certification
- Require annual test gauge certification
- Cannot submit data when certifications expire

Gauge Accuracy Certification Example

Login Credentials Email

Query to Create Test Notifications List
Cross Connection Department – Cleanwater Plant
Telephone (810) 261-3508
230 W. Huron Ave. S.E. Wyoming, Michigan 49418
Web: www.wyomingmi.gov
email: crossconnections@wyomingmi.gov

August 04, 2016
Joe Brown
Test Facility
1234 MAIN STREET
WYOMING, MI 49418

Dear Joe Brown:

The City of Wyoming is responsible for protecting the public water supply from contamination by preventing back-flow and back-siphonage. To achieve this, it is imperative that:

1. Approved back-flow preventer assemblies are installed at all points where water may be exposed to potential contamination.
2. All installed back-flow preventer assemblies are tested (by a State of MI certified tester) upon installation and annually thereafter in order to ensure that these assemblies are fully operable.

We have identified your facility: Test Facility, located at 1234 MAIN STREET in WYOMING, as having back-flow prevention device(s) installed but currently 1-month of the annual testing as stated above (see attached list). The location code for your facility is EO надо, your contractor will need to submit the test results.

Submit, Review, and Approve Option

Log into Web Portal

Results From Tests Due Query

Internal or Contractor Submittal

Submit, Review, and Approve Option

Log into Web Portal
Test Form - Facility and Assembly Information

Test Form Validation

Test Form - Entering Test Values

Incomplete Test Form
Test Data Certification and Signature

Company Name: City of Wyoming

Test Data Completion:
- Inspected by:
- Date of Test:
- Phone:
- Test Signature:
- Certification Number:

The above is certified to be true as of the date of testing.

Service Restored:
- Yes
- No

Device Testing Cycle Completed
- The system updates next test due date for all devices
- Reports: failed, removed, repaired, and passed devices
- Simplifies the testing portion of your CCC program

Final Test Data Submittal

Facility Name: Test Facility 1234 MAIN STREET, WYOMING, MI, 48938 - Applicant - On-supply to fire protection

Test Facility: 1234 MAIN STREET, WYOMING, MI, 49418
Backflow - On-supply to fire protection (Annual)

This submission has been received without any reported deficiencies.

Assembly test details

Using Cloud Computing for Surveys
- Use mobile device, data entry done at visit
- No Wi-Fi, Download data to device
- Capture signatures and photos in the field
Close out Deficiencies

Performing Surveys

- Utilize uniforms, pictured ID, proper PPE
- Attitude, try to be a partner not a regulator
- Professional and fair treatment of customers

Preparing For Onsite Surveys

- Generate a list of facilities due for a survey
- Schedule if necessary to prevent interruptions
- Have the proper tools for your survey

Arriving At Our Manufacturing Facility

- Introduce yourself to the facility contact
- Explain the purpose of survey/inspection
- Open software, displays previous survey items
Survey/Inspection

- Typically start at water service/meter
- Verify meter(s), containment?

Fire Protection System
- Verify FP and backflow device
- Verify if any FP antifreeze loops exist

Underground Sprinkling System
- Typically Pressure vacuum breakers – ASSE 1020
- PVB height – 12” above any sprinkling heads
- RPZ required for height issues or if chemicals are added

Create a Non-compliance for UGS

Enter Requirements

1. Required to raise current PVB on the Underground Sprinkling System to a minimum of 12” higher than any existing sprinkling heads
2. Option 2 is to install an Reduced Pressure Principle Backflow Preventer that conforms to ASSE 1013 on the supply to the UGS
3. Capture photo to attach to survey record
Trace/Follow Piping in Facility
- Starting at the meter follow water lines
- Identify each fixture on the water lines

Pre-Wash System for Paint Lines
- How are the tanks filled, air gap or a BF device installed
- Chemicals are used, high hazard, RPZ ASSE 1013

Water jet Machine
- Verify, some are self contained, BF protection?
- Generates high pressure, requires RPZ ASSE 1013

Hi-Lo Battery Fill
- How are the batteries filled with water
- Requires an approved BF device (not auto-shutoff)

Non-compliance For the Battery Fill
- Required to install a Reduced Pressure Principle Backflow Preventer that conforms to ASSE 1013 on the supply to the battery fill unit
- Or install a Pressure Vacuum Breaker that conforms to ASSE 1020 on the supply to the battery fill device.

Water Softeners and RO Systems
- Water softener drain must be air-gapped
- RO system require RPZ, ASSE 1013
Cooling Tower

Testing Lab
• Small lab with testing equipment
• Protected by an RPZ, ASSE 1013

Soap Dispenser Connection

ASSE 1055 Soap Dispenser With a Built-in Air-gap

Wasting Tee – Pressure Bleed Device

Non-compliance For Soap Dispenser
• Required to remove existing hose Y fitting and install a wasting tee (pressure bleed device) on the vacuum breaker equipped faucet supplying the soap dispenser. See your soap vendor for this device.
• 2nd Option is to run a separate water supply to the soap dispenser
Break Room

Soda carbonator requires vented dual check
ASSE 1022 (Ex. Watts SD-3)

Kitchen Area

Air-gap or an ASSE 1022 (Watts SD-3)

Restrooms

• Urinal/Toilet flush valves - ASSE 1037
• Tank toilets anti-siphon float valves - ASSE 1002
• Sinks can be used to illustrate an air-gap

Completing Our Survey

• Attach any photos of survey items
• Close out (complete) survey, signature?
• System creates a PDF of the survey
• History and deficiencies can be viewed

Inspector Information

Comments:

Date of Survey: 10/18/2016

Urinal/ Toilet flush valves - ASSE 1037
Tank toilets anti-siphon float valves - ASSE 1002
Sinks can be used to illustrate an air-gap

Contact signature

PDF Copy of Survey
Photos Captured During Survey Display On PDF Also

### Recommendations

- Trace and label all piping
- Connect cooling tower to the water only meter
- Recycle water jet waste water
- Add process water line, eliminate devices
- Work on the partnership concept

### Existing Violations

<table>
<thead>
<tr>
<th>Date</th>
<th>Severity</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>8/12/2014</td>
<td>Non-Critical</td>
<td>Fixture: Underground Sprinkling System&lt;br&gt;Required to re-install the existing PPR on the Underground Sprinkling System to maintain a 6&quot; height above the sprinkling heads in the berm area. The 2nd option is to install an Reduced Pressure Principle Backflow Preventer that conforms to ASSE 1013 on the supply to the UGR.</td>
</tr>
<tr>
<td>8/11/2014</td>
<td>Non-Critical</td>
<td>Fixture: Battery Fill&lt;br&gt;Required to install a Pressure Vacuum Breaker that conforms to ASSE 1020 or a split-Resistant Vacuum Breaker that conforms to ASSE 1036 on the supply to the battery fill device.</td>
</tr>
<tr>
<td>8/11/2014</td>
<td>Non-Critical</td>
<td>Fixture: Soap Dispenser&lt;br&gt;Required to remove existing hood Y fitting and install a wasting tee (sidekick device) on the vacuum breaker equipped heater supplying the soap dispenser. No shut-offs are allowed downstream from an Atmospheric Pressure Vacuum Breaker. See your soap vendor for this device.</td>
</tr>
</tbody>
</table>

Finish Up Your Visit

- Review completed survey with your contact
- Go over any violations and a timeframe for the corrections to be completed
- Offer options, answer any questions

Recap: Using Cloud Computing Software

- Utilize any mobile device with a web browser
- Photos or signatures can be attached to the survey
- All aspects of the survey or testing can be completed in the field by the inspector
- Paperless, email notifications and online test forms
Cons of web-based software

• You need Internet access to use the software
• Data is stored off-site, lose some control over data
• You rely on a vendor to safeguard your data files

Pros of web-based software

• No upfront or maintenance fees, subscription based
• Reduced hardware costs, able to use mobile devices
• No software or updates to install, less data entry
• Better perception of your organization, you are moving forward with available technology

In Review lessons Learned

• Keep it simple, minimize the amount of data you need to move via the internet
• Make the web test results submission simple, flow changed during the development
• Number of registered contractors increased, minimal learning curve

Thank You