

MARTINSVILLE CITY COUNCIL AGENDA
Council Chambers, 55 West Church St.

CALLED WORKSESSION

THURSDAY, NOVEMBER 20, 2014
12:00 NOON TO 2PM

1. Hear a report regarding the recently-completed engineering study of the 6.2 mile section of sanitary sewer interceptor line that extends generally along the Smith River to the City's Wastewater Treatment Plant.
2. Hear a report regarding possible upgrades to the City's utility metering system.

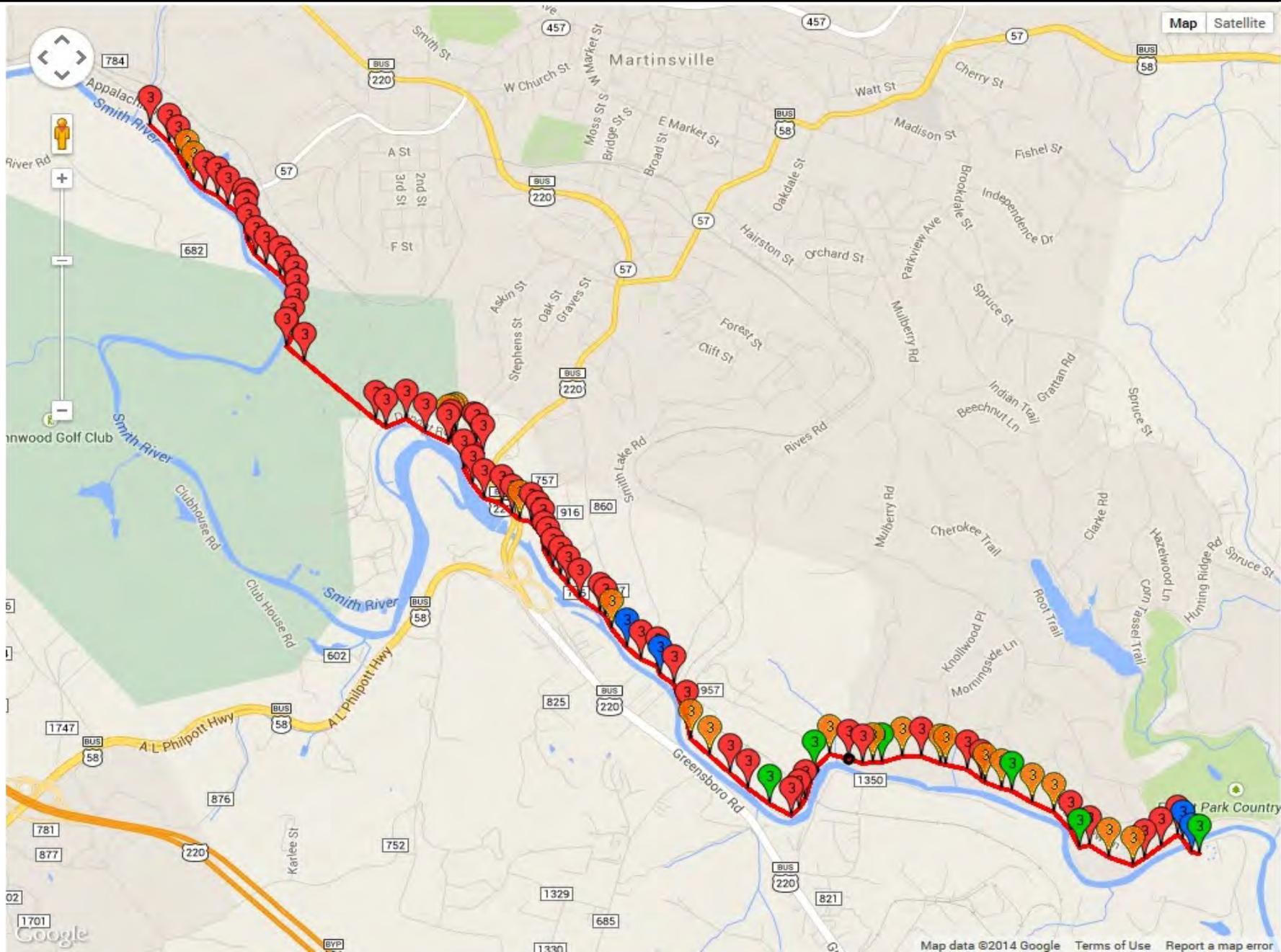
Smith River Intercept Investigation

Investigation Results and Path Forward.

Thursday, November 20, 2014

Background

- ❑ The Smith River Intercept Starts at Koehler and ends at the Wastewater Treatment Plant, spans 6.2 miles.
- ❑ All sewage from the City except the Mulberry Intercept travels through it. County waste comes from closed Koehler plant and north side.
- ❑ 4.2 miles Corrugated Metal(CMP) with asphalt liner. The remainder is Reinforced Concrete(RCP)
- ❑ Constructed in early '60s.
- ❑ Has a lifespan of 35 to 50 years.

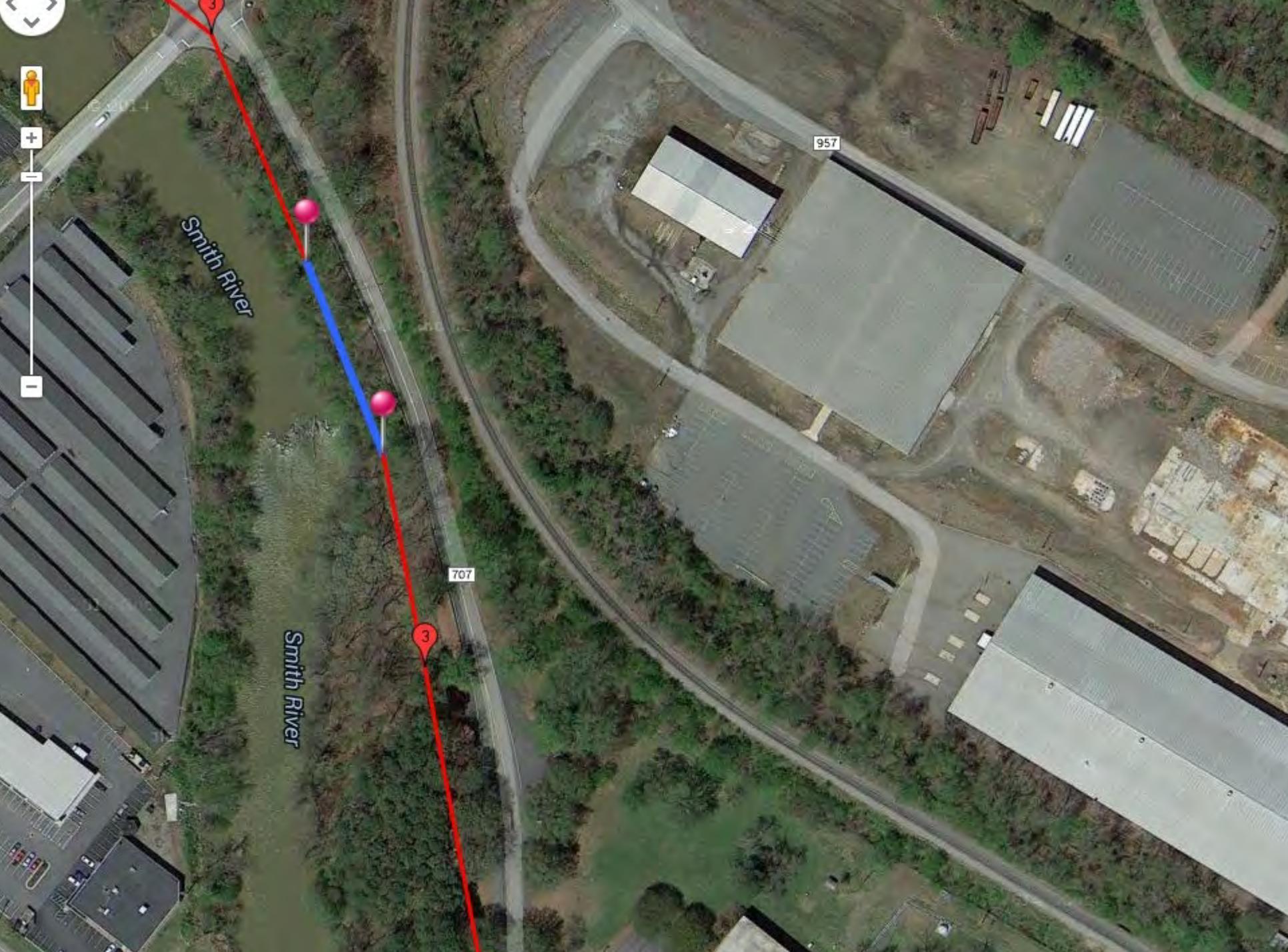


City contracted with Dewberry to oversee the investigation

- ❑ RedZone Robotics was contracted to do the field investigation.
- ❑ Camera equipment with Ultrasonic and Infrared detection.
- ❑ Investigation started in June and ended in July.
- ❑ The results of the investigation indicate repair work is needed.
- ❑ Suggested repairs are in two phases; immediate, and others scheduled over multiple years.

Immediate Need -Section of CMP Between Walker Road and Smith River

- Approximately 200 feet of 42 inch CM pipe that has significant collapse. (80% +/-)
- Location presents significant challenges.
- The slope supports the only road in and out of the old Bassett Walker Plant.
- Has large gas main under the road.
- The railroad is supported by the same slope.



Smith River

Smith River

957

707



1

Challenges

- ❑ Very limited access to the section.
- ❑ Need to investigate geotechnical structure of surrounding property.
- ❑ Bypass/pump-around during project.
- ❑ Need to stabilize the slope during repairs.
- ❑ Install pipe liner from manhole 43 to manhole 43.5 while line access is available.
- ❑ Leave bank in stabilized condition.

Additional Sections of Partial Collapse





The Path Forward

- Categorize/prioritize needed repairs
- Investigate funding options for short term and long term repairs.
- Request authorization at upcoming Council meeting to proceed with the initial phase of the project.

City of Martinsville

Meter Replacement and Self-funding Projects

Thursday, November 20, 2014

What is AMI/AMR

- **AMI - Automated Metering Infrastructure**
 - is an architecture for automated, two way communication between a smart utility meter and a central database for utility billing, trouble shooting and data analysis. Communication can be continuous.
- **AMR – Automated Meter Reading**
 - is a an automated one way communication from a utility meter to a central database for utility billing and status reporting. Communicate is interval-based.

Water Meter Replacement was the driving factor for AMR/AMI



- Meter replacement is recommended every 15 to 20 years.
- Majority of City's meters are well over 20 years.
- Meter accuracy degrades over time – typically will get slower as they age.

Options Investigated

- With changing technology, staff investigated the latest metering techniques and equipment.
- Automated metering is now in a mature state and is the industry standard.
- Collection is either fixed based or drive-by systems and usually accomplished by radio communication, telephone or network system
- Staff visited Iredell Water Corp. in Late July 2011 and observed their data collection process.
- Visited Danville Utilities

Benefits of AMI over AMR

- Data is continuous and easily accessible.
- City can monitor electrical quality at meter.
- Water leaks can be detected for the customer almost immediately.
- Current readings can be accessed quickly without truck rolls

Overview of Possible System

- When the meters are replaced they will be equipped with a radio transmitter.
- Different systems have different means of gathering the data.
- Fixed-based (AMI) systems are becoming less expensive.

Water Meter

Signal Booster



- 3G® FixedLinx™ Booster**
- Collects and wirelessly transmits meter data from one or two 3G meters
 - Powerful 1+ mile broadcast range
 - ConnectionFree™ design installs in minutes — no wires, no programming

Central Receiver



- 3G® FixedLinx™ Repeater**
- Collects data from all wireless boosters within a 3+ square mile area
 - Transmits data via wired or wireless

Flexible Backbone Connectivity

- Use a variety of wired and wireless technologies for maximum flexibility
- Secure 802.11 Wireless Point-to-Point Transmission
 - GPRS, CDMA, WiMAX, Cable, DSL, Fiber Optic

Data Processing Computer



Data Control: 3G® FixedLinx™ Concentrator

- PC based meter data management
- Integrates meter data with MasterLinx™ Enterprise Management System

MasterLinx™ Enterprise Management System

- Complete meter and utility data management
- Easy-to-use, intuitive interface
- Data organized with charts, tables and graphs
- State-of-the-art data center hosting eliminates IT hassles
- Utility hosted options available
- Rapidly scalable to address growth

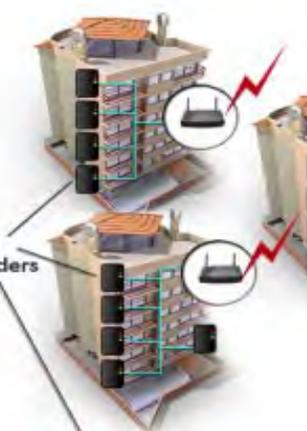
Water Use Data Viewed on Secure Web Site



Data transmitted from a neighborhood of radio-read water meters



PLC based Meter readers



PLC to GPRS gateway

Internet

Server



Process Followed . . .

- City has budgeted for meter replacement for a number of years, but delaying project pending review of options
- Conducted a test of approx. 100 sample meters and found accuracy at approximately 95%.
- Concluded improved accuracy would generate revenue that could be used to fund meter replacement project

Energy Savings Companies

- Considered structuring an AMI/AMR project with a participating ESCO as a self funding process.
- This is a widely-used option and ESCO's have numerous AMI/AMR deployments
- City issued "Back of the Envelope" invitations to 5 companies. Received proposals, conducted interviews.
- Currently working with Johnson Controls

Johnson Controls

Proposal includes:

- ◆ Evaluate AMI cost for installation and maintenance
- ◆ Evaluate Street Lights (LED lighting)
- ◆ Evaluate Sludge Dewatering & Disposal Options

Johnson Control Cont.

- ◆ Projects will be structured as self-funding – savings pays for project.
- ◆ Cost of investment-grade audit for evaluation is \$175,000. If self-funding project cannot be developed, City has no cost obligation for audit.
- ◆ If City accepts the project, the audit cost is rolled into overall project cost.

Next Steps . . .

- Opportunity to review information, clarify, ask questions
- At upcoming Council meeting, request will be made to authorize execution of agreement to proceed, identifying funding for audit (expected to take 6 months +/-)
- Upon completion of audit, staff will review findings and determine an appropriate project scope.

Next Steps cont. . .

- Presentation made to Council, along with recommendation for project scope and implementation.
- Arrange project financing (bond issuance)
- Project savings finances debt service.
- Project implementation
- Measure & Verify, report results.