



# WATER SYSTEM EMERGENCY UPGRADES



**TOWN OF  
BOTWOOD**

Department of Transportation and Infrastructure  
Hon. Elvis Loveless , Minister



## Town of Botwood – Water System Emergency Upgraded

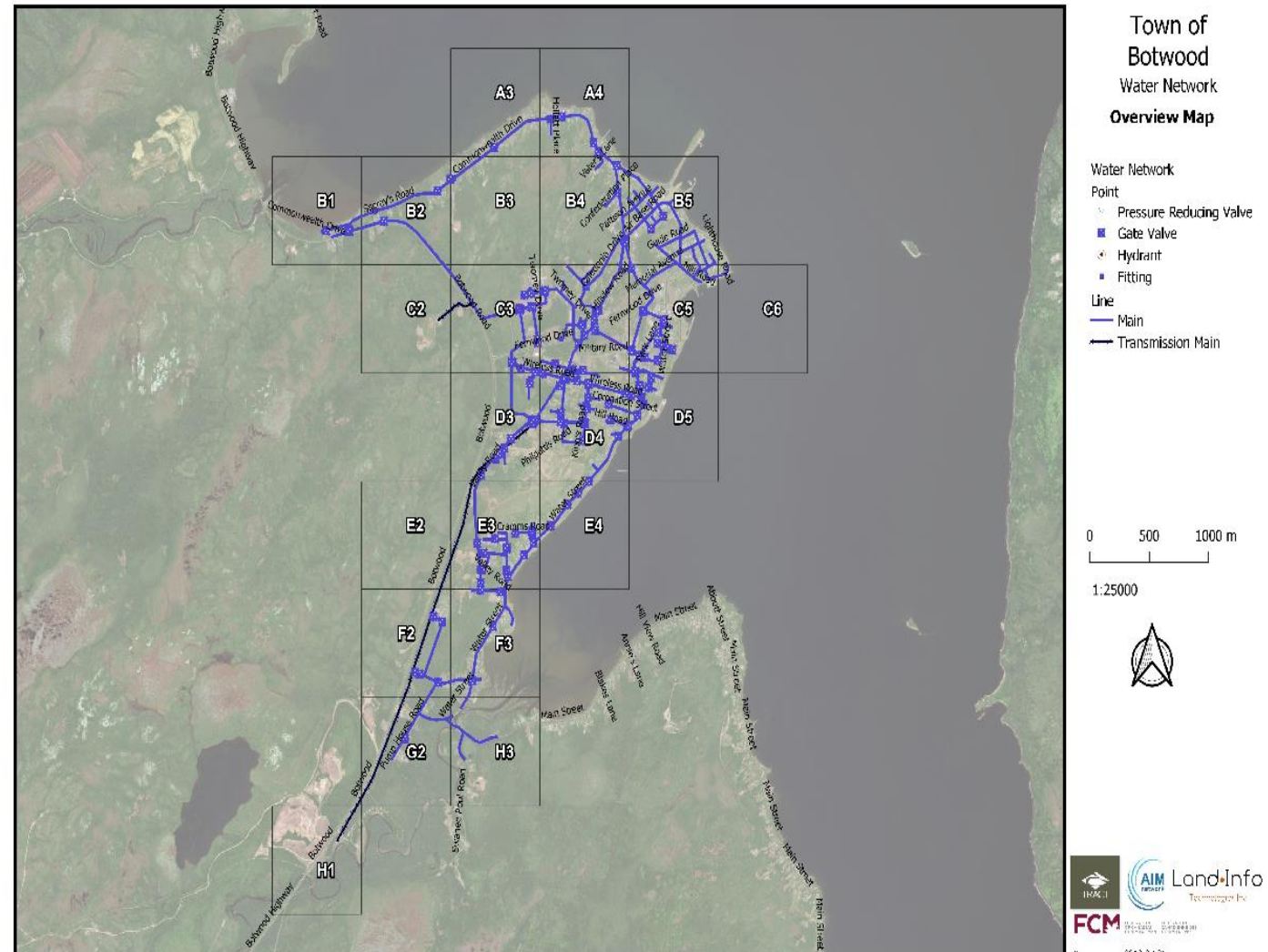
### **Tony Sceviour P.Tech (Owner of TBS Consulting Inc.)**

- 40+ years of experience in automation and control
- Offering Project Management, automation and control as well as troubleshooting and testing services.
- Servicing heavy industry, commercial and municipalities
- Some of my clients:
  - Exploits Regional Water Supply
  - Rio Tinto IOC
  - Town of Botwood
  - Cottles Island Lumber Company

# Town of Botwood – Water System Emergency Upgraded

## Background

- The regional distribution system delivers potable water to the Towns of Botwood, Peterview and Northern arm.
- The system was connected to the Exploits Regional Water Supply in 2009.
- The Town of Northern arm was connected to the system in 2014





## **Town of Botwood – Water System Emergency Upgraded**

### **The issue**

The demand on the system was at 2.95 ML/d (54 USGPM) with a system pressure of 160 PSI. The incoming line pressure was at 165 PSI. Essentially the system was working at maximum capacity.

The reservoir level could not be maintained and this past winter drastic measures had to be taken to keep water supplied to the Dr H. Twomey Health Care Centre, such as shutting water to the towns during the nights time hours to rebuild the reservoir, closing the Harry Ivany Arena to reduce the demand on the system.

On at least 6 occasions the health centre had to invoke their emergency plan, mobilizing water trucks as a standby in the event of total loss of water.

The distribution pressure at the Peters arm connection was unacceptable at a system pressure of greater than 140 PSI, on occasions pressure relief valves on tanks in this area would operate

The towns were not able to do any sort of effective flushing due to the lack of water.



## **Town of Botwood – Water System Emergency Upgraded**

### **The Analysis**

Extensive testing of the pressure and flow profiles of the various sections of the system was completed and pressure friction loss calculations completed.

The results indicated that the main transmission line from the main PRV station to the reservoir had an extremely high pressure loss due to friction. This main transmission line is a 10” cast iron line approximately 3.4 Km line installed in the 1930’s by the Canadian military.

Despite the age of the line, it was found that the line was structurally sound.

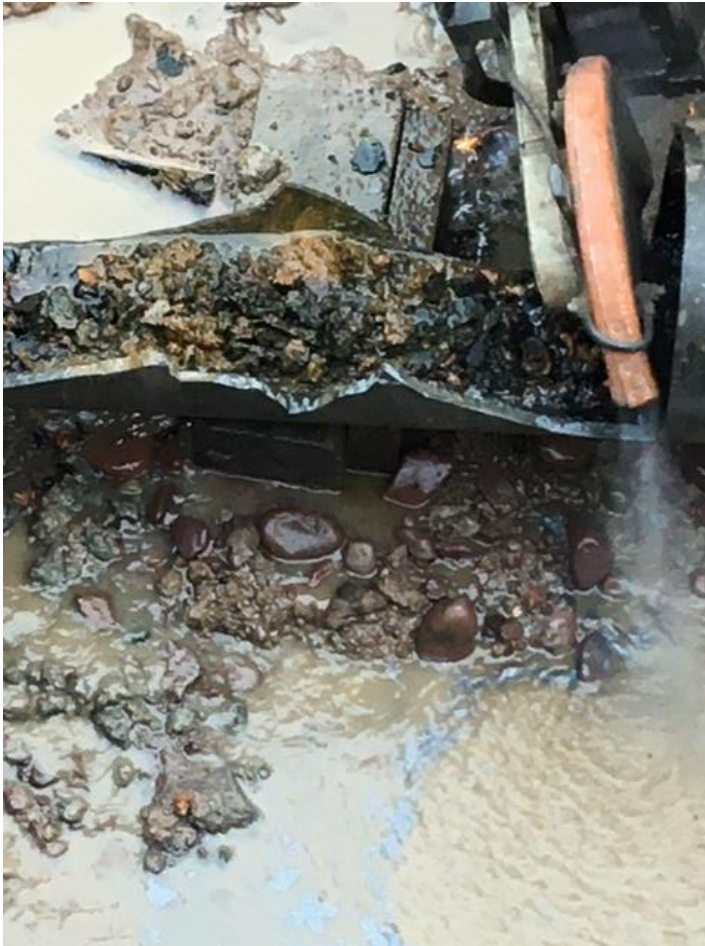
These findings were validated thru modeling of the system by DMG – Gander, use of Water Cad software.

The pressure testing and modeling of this section indicated the line had an effective diameter of 6” with serious restrictions on the first 1.5 Km.



## Town of Botwood – Water System Emergency Upgraded

Examples of the material buildup on the piping





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### Options explored:

- Replace the line, estimated cost \$3.2m
- Reline using a poly injection system, estimated cost \$3.0 m and difficult to maintain services while completing the project.
- Contract the one time pigging of the main line, estimated cost \$250K.

### Selected option:

- Install the infrastructure to enable the town employees to pig the line on a regular basis and to install PRV's and flow meters to allow troubleshooting and monitors of the system, project budget \$259K



## Town of Botwood – Water System Emergency Upgraded

### **Project scope:**

#### **Metering and control:**

1. Install a flow meter on the incoming line from ERWS to measure the flow into the distribution system.
2. Install a PRV station at the Peters Arm Connection to reduce the distribution pressure through Peterview and Water Street West.
3. Install a Flow Meter at the Peters Arm connection to meter the flow in the area and for troubleshooting purposes
4. Remove an old PRV station at the end of Pump House Road

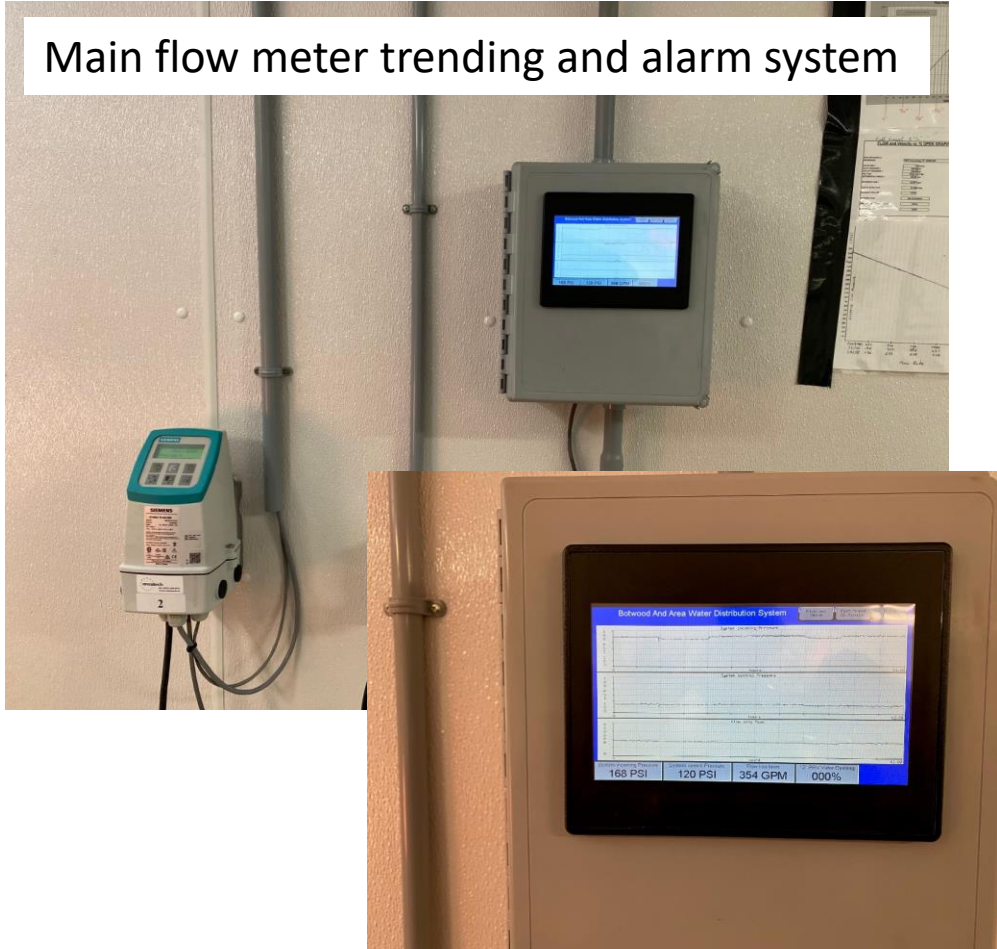
#### **Pigging system**

1. Installation of a pig launcher at the main PRV station.
2. Installation of a Pig retriever at the end of the 10” cast iron transmission main line.



## Town of Botwood – Water System Emergency Upgraded

Main flow meter trending and alarm system



Pig Launcher and Main Line Flow Meter





## Town of Botwood – Water System Emergency Upgraded

Peters Arm – PRV valve house and metering equipment



WATER SYSTEM EMERGENCY  
UPGRADES

Newfoundland  
Labrador

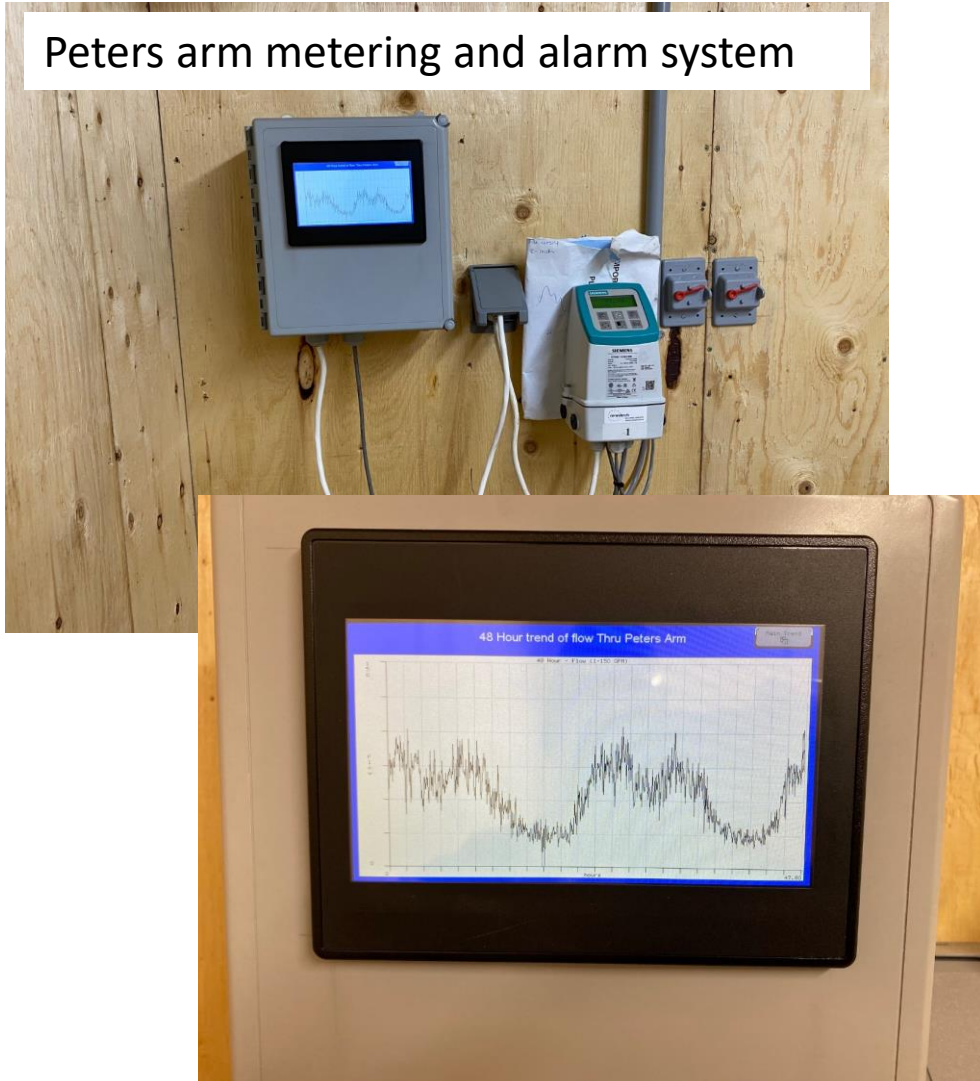
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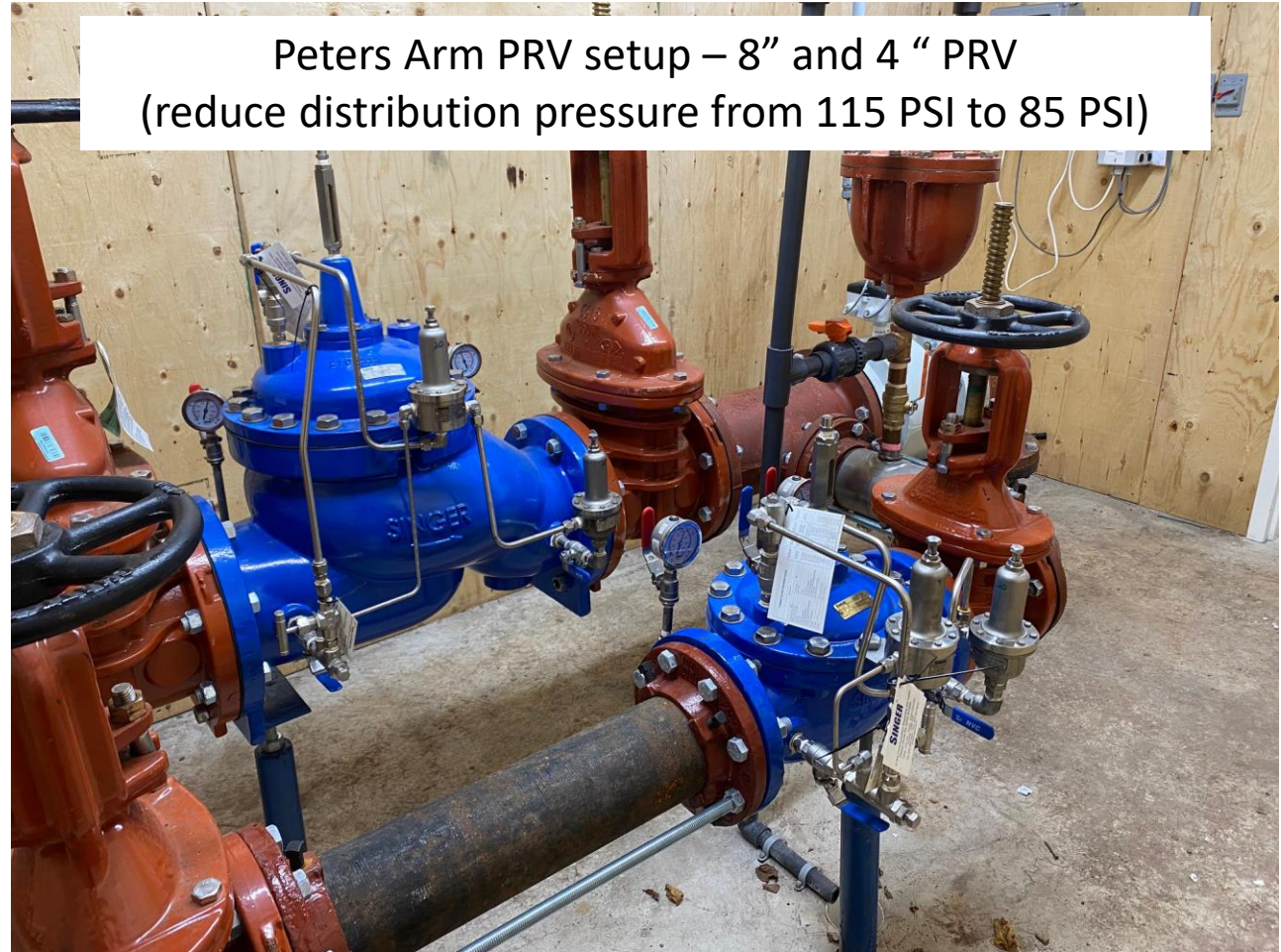


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Peters arm metering and alarm system



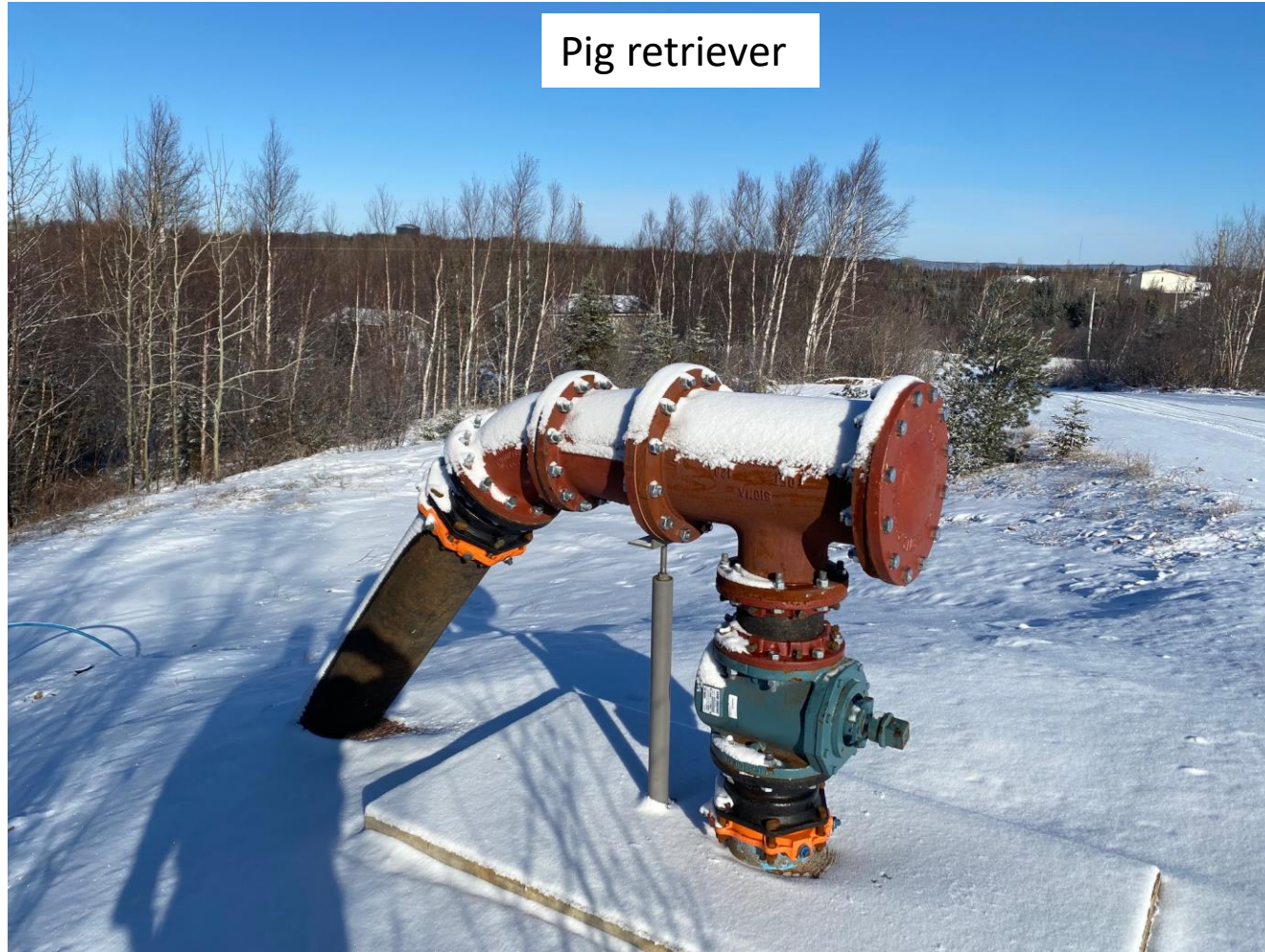
Peters Arm PRV setup – 8" and 4 " PRV  
(reduce distribution pressure from 115 PSI to 85 PSI)







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Pig retriever





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### Results:

- 3 long standing leaks identified and repaired.
- Main line has been cleaned to 8", sizing foam and cleaning pigs up to 8" have successfully been run through the system.

Note: The 10" pigs will be run during the spring flushing program. Unfortunately this fall it was too risky to run the 10" in the event of problems so this activity was delayed until this spring.

The reservoir is now controllable

The demand into the area is now 1.55 ML/d (285 USGPM) down from 2.94 ML/d (541 USGPM)

System pressure in Peters arm now controlled at 85 PSI

Overall system wide pressure reduced from 160 psi to 120 PSI.

System pressure at the Twomey Drive area now at 50 PSI



Consulting Inc.

## **Town of Botwood – Water System Emergency Upgraded**

# **Questions**