

# SMOKE TESTING THE VILLAGE OF OAKFIELD

Yvonne Tucker | Wastewater Trainer/ Technician



The end of April kicked off the smoke testing season for 2015 in the Village of Oakfield, which is located in Genesee County. The first day started with a little drizzle, but that did not deter our efforts. As each day passed, the weather improved. Finding locations that allow rainwater into the sanitary sewer is bound to lift your spirits, and this round of testing did not disappoint us.

The Village of Oakfield employs the services of Mountain Engineering to provide guidance and oversight of the Village's Strategic Management Plan. The plan consists of many components, not least of which, focus is directed toward the wastewater treatment plant. Improving plant operation and maintenance may be achieved in countless ways. Identifying sources of inflow and infiltration into the sanitary sewers provides the decision makers with the necessary evidence to dedicate the funds and create the budget items to address these issues. As inflow and infiltration is reduced, the hydraulic capacity of the wastewater treatment plant is improved and these activities benefit the Village taxpayers in many different ways. Reduced flow to the wastewater treatment plant reduces the overall cost to treat the wastewater. Less flow, less pumping, less electrical use/cost. Reduced flow to the wastewater treatment plant may also result in additional treatment capacity, which in turn will encourage local economic development. Economic development may result in increased tax revenue, employment opportunities, and further residential growth. FYI — Engineering Planning Grants are still available.

## DON'T FORGET 7/31/15 DEADLINE FOR THIS IMPORTANT GRANT APPLICATION

"New York State DEC/EFC Wastewater Infrastructure Engineering Planning Grant. The New York State Department of Environmental Conservation, in cooperation with the New York State Environmental Facilities Corporation, have made up to \$2 million available in 2015 for municipalities that need to construct or improve their municipal wastewater system. Grant funds can be used to pay for engineering and/or consultant fees for engineering and planning services for the production of an engineering report. Municipalities can apply for the funding through the Consolidated Funding Application (CFA). Individual grants will be up to \$100,000 and municipalities will have to

provide a 20% match. Successful applicants will be required to submit a complete engineering report within 9 months of their grant agreement being executed. The engineering report will be used when seeking financing through the CWSRF program or other financial means to further pursue the identified solution." Source: <http://www.dec.ny.gov/pubs/81196.html>

## WHAT IS I & I

I & I is the term used to describe inflow and infiltration of undesirable water entering the sanitary sewer system. Undesirable, because it is usually rainwater, or groundwater that does not need to be treated. Infiltration is defined as groundwater or seepage that enters the sanitary sewers through cracked or damaged pipes and manhole structures. Inflow is the leading cause of stormwater or wet weather sanitary sewer overflows, (SSO). Common sources of sewer inflow include:

- Roof Downspouts
- Abandoned Sewer Lines
- Cross Connected Storm Lines
- Cross Connected Sanitary Lines
- Yard / Foundation Drains
- Unconnected Sewer Lines
- Leaking Manholes
- Broken Laterals
- Cellar Drains
- Sump Pumps



Mark Wright, Mountain Engineering manhole cover with holes

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## WHAT IS SMOKE TESTING

The purpose of smoke testing is to find potential points of inflow and infiltration in the public portion of the sanitary sewer system that could lead to high flows during storms and snow melt events. Smoke testing can also help locate points of groundwater or surface water intrusion into the sewer and defective sewer connections that could allow sewer gases into a building or home.

## OAKFIELD FINDINGS

Prior to requesting the New York Rural Water Association assistance with smoke testing in the Village, a great deal of thought and planning went into identifying the most suspect areas of the collection system. During 2014, from spring to fall, the Village monitored flow throughout their collection system with the use of 11 area velocity meters with data logging capabilities. These units were provided by the Town of Batavia under a shared services agreement. The Planning Department in Genesee County provided GIS/GPS manhole location and numbering identification which is a service it provides to its municipalities. That information was then combined with an aerial image overlay to develop a collection system map with each of the numbered manholes, size of pipe, and distance from manhole to manhole.

From the flow monitoring results, several streets were earmarked for smoke testing and a few of those were targeted for video inspection. On the first day we found a catch basin releasing smoke that was located adjacent to a large greenhouse operation with thousands of square feet of asphalt and arched greenhouse structures. Historical knowledge of the location identified this area as a significant volume of stormwater runoff and periodic flooding.

In the picture at right you might have noticed the blue device that the Village of Oakfield owns for lifting manhole covers. It is called a Magswitch Manhole Cover Lifting System. It consists of one Magswitch Lifting Magnet and one Magswitch Mag Dolly. Using the Manhole Cover Lifting System was a cinch. I just had to get in on the fun.

A lot of cleanout issues were revealed; broken covers, no covers, and vented covers. These will be addressed with notification letters to the property owners. A couple of homeowners reported smoke entering their basements.



**L-R: Mark Wright, Mountain Engineering, Tom Mikolajczyk and Eric Carlsen Village of Oakfield**

This can sometimes happen when the house connection has separated, or cracked. Fortunately, Mark Wright from Mountain Engineering was onsite, assisting our efforts and was able to address the homeowners concerns immediately. We also found yard drains.

While we set up our equipment, Mr. Wright was also able to accomplish manhole inspections. A description of the manhole, the conditions observed, and



**Yvonne Tucker, NYRWA and Eric Carlsen, Village of Oakfield**



size and depth of invert were all recorded. It was an opportunity to look for issues with infiltration. The picture below shows a sand-like material washing down the wall of a manhole.

This is a great opportunity to say my thanks to Dave Laney, DPW Superintendent and to Tom Mikolajczyk and Eric Carlsen, as well as to Mark Wright, Mountain Engineering. If you are interested in learning more about the water, wastewater, and infrastructure services that Mountain Engineering can

provide be sure to check out their website at <http://www.mountainengineers.com>. More information on the MagSwitch Manhole Cover Lifter may be found at <http://magswitch.com.au/>. If you are interested in smoke testing in your system, contact the New York Rural Water Association for a smoke testing packet which provides the necessary information to get started. 💧💧



**Possible evidence of infiltration**