



# Highland Sewer and Water Authority

## PRESSURE TESTING POSITION PAPER

adopted March 18, 2014

The Highland Sewer & Water Authority (HSWA) requires pressure testing of sanitary sewer service laterals for all new construction and at the time of any real estate transfer. Additionally, as our system is upgraded, property owners may be required to pressure test their laterals as a result of a system upgrade, on-going or planned, in their area. The purpose of pressure testing is to ensure that the service lateral is sealed properly and will not allow any flow into or out of the lateral itself.

The sanitary system, which includes individual property laterals, is installed as a public health benefit to carry human wastes and other pollutants away from your home. The pipes are sized to carry the amount of water typically used in a home for bathing, cleaning, cooking, and toilet use. This system is different from a stormwater system which is designed and sized to carry rainwater runoff, spring water, stormwater, or snow melt. Additionally, flow carried by a sanitary system is considered “polluted” water and is treated prior to discharge into the environment. Flow carried by a stormwater system is considered “clean” water and is not treated prior to discharge into the environment. Flow from the two systems is not intended to and should not combine.

As the sanitary system ages, openings develop that allow “clean” water into the sanitary system which was not designed to carry the additional flow. This is a situation classified as Infiltration and Inflow, more commonly known as I&I. Infiltration is the slow, mostly accidental, draining of clean water via pipeline cracks, small holes, leaking joints, and such. Inflow is the more direct type of connection, such as downspouts, sump-pumps, driveway drains, area drains, foundation drains, and such. I&I causes the combined sanitary and storm water to overflow the pipe’s capacity and flood basements, overflow manholes, and discharge “polluted” water into the streets and streams causing a health hazard for the community.

Following are some facts and figures related to pressure testing and I&I.

- HSWA has a vast amount of first-hand experience and expertise in the operation of a sanitary sewer system and the problems caused by I&I. We have operated the sanitary sewer system since 1962.
- HSWA has been under a PaDEP imposed Corrective Action Plan and Schedule since 1988 which requires us to remove storm water runoff from the system on a given schedule.
- Smoke and Dye testing to determine the integrity of our system was tried in the late 1970’s and early 1980’s. However, there was no noticeable reduction in stormwater flows or flooding as a result of I&I.
- We have conducted extensive, real-world test cases (Hostetler Road Area and the Euclid Avenue Area) where we tried to curtail excess flows, basement flooding, and manhole overflows by replacing our system but not requiring pressure tests for individual properties. Instead we installed view ports in an attempt to catch violators. This detection method proved unsuccessful.
- In neighborhoods built in to the 1970’s and prior, studies have found that 65% +/- of the homes contribute I&I.
- While it is true that 65%, or more, of properties in neighborhoods dating up to the early 1970’s can be expected to be I&I violators, it does not mean 65% of our entire customer base. Generally, homes built from the late 1970’s to the early 1980’s have a good chance of passing. The oldest home’s full plumbing system to pass, to date, was installed in 1984. The oldest building’s “building sewer” to pass was installed in 1973.

- Since June of 2008, pressure testing has been required at the time of an existing customer's home sale. This has resulted in 654 homes, at transfer, passing a pressure test.
- Peak storm conditions of the magnitude that cause basement flooding and manhole overflows are relatively short in duration; usually less than one hour. Pipeline flow peaks drop off rapidly; typically one to two hours after the peak. Time-wise, it is not feasible to visually inspect all homeowner view ports, nor has that practice proven effective. Additionally, inspection by closed circuit television (CCTV) is eliminated due to the same time constraints. Following is an example.

*A customer wants "proof" that you saw I&I in their sewer lateral. As such, we have decided to videotape their pipeline with a CCTV pipeline camera. Logistically, this is at best a 15-30 minute operation. Assuming it would take 20 minutes, a man/crew could perform three observations in one hour. If you time it perfectly, are already mobilized, and in the field when the storm peak hits, you may have a three to four hour window for optimum observation results. Assuming four hours at three locations per hour, we would be able to view 12 homes/customers per I&I event. Using HSWA's three CCTVs triples that to 36 homes per I&I event. There are currently 2,106 untested HSWA customers flowing to the Dornick Point Treatment Plant. Therefore, we would need 58.5 I&I event days to document those 2,106 customers. In a typical year, we experience two to three I&I events. (Once we went almost three years without an I&I event.) Accordingly, we would need 19.5 years to observe and document the untested properties. This does not account for the fact that we also have 1,509 untested properties flowing to the Windber Area Authority's Treatment Plant.*

- Pipeline materials and construction techniques have advanced greatly since the 1960's.
- Pressure testing has long been required in the Local and State Building/Plumbing Code.
- While some people claim, in theory, that a home can fail a pressure test and not be contributing I&I, we have never witnessed a real world example. Conversely, we can show hundreds of cases where a property HAS passed a pressure test and is NOT contributing I&I.
- There are several local examples of municipal sewer systems (Forest Hills Municipal Authority, Dale Borough, East Conemaugh, Pegasus) that required pressure testing and now are not plagued with I&I issues, There is no example of a municipal sewer system that has required smoke or dye testing and has reduced flows to manageable levels.

Our years of experience, as well as the trial and tribulations we have experienced in gaining our expertise has proven to us that the pressure testing (of below-slab and buried pipelines) method is the only reliable method for reducing I&I to acceptable levels, and thereby preventing continued basement flooding and system overflows that could potentially cause health hazards.

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