From: Clayton, Stacie (GOV)
Sent: Friday, March 06, 2015 10:27 AM
To: Muchmore, Dennis (GOV); Clement, Elizabeth (GOV); Murray, David (GOV)
Cc: Hollins, Harvey (GOV)
Subject: FW: Tap Filters

You all were not included on the original email and Harvey wanted to make sure you had this information.

Stacie

Begin forwarded message:

> **From:** "Wurfel, Brad (DEQ)" <WurfelB@michigan.gov>
> **Date:** March 5, 2015 at 4:26:25 PM EST
> **To:** "Hollins, Harvey (GOV)" <hollinsh@michigan.gov>, "Wyant, Dan (DEQ)" <WyantD@michigan.gov>, "Agen, Jarrod (GOV)" <AgenJ@michigan.gov>
> **Cc:** "Baird, Richard (GOV)" <bairdr@michigan.gov>, "Wurfel, Sara (GOV)" <Wurfels@michigan.gov>
> **Subject: FW: Tap Filters**
>
> Harvey,
> Since group call Tuesday I have been working out how the filter idea might take shape.
>
> To reiterate some key points so we're all clear:
>
> 1. DEQ does not inspect individuals' homes in a situation like this. It's the city's system, their operators handle all complaints and maintenance. In fact, our folks alerted me that the city's got union rules in place forbidding any contractor from touching the system.
> 2. DEQ's role is limited to ensuring the plant is operating to state standards and the water it produces meets potability standards. The aesthetic issues drawing concern from residents – color, odor, taste – stem from a variety of things. Age of the system and prolonged lack of upkeep is the leading factor. But in some areas, another contributing factor is changes in water flow – source used to come from the south, now comes from the north, so some pipes are flowing in reverse, stirring up whatever was settled for a long time. In some sections, large pipes that historically served large communities are now serving a much smaller customer base, contributing to water stagnating in the system. In some areas, household connections are old and worn, so two neighbors may be having dramatically different experiences. My point is, the challenge takes many forms and there's no single solution that will bring sweeping change. The two consultants hired by the city have, as I understand it, both reinforced this idea in their assessments, so that's good.
>
> 3. The fix for this will be years in the making, truly. Even if full funding were available, 'big dig' projects can't all happen at once. The city needs to get an assessment of its infrastructure so it can prioritize its needs, and I understand they're working on that. In the near term, maintenance this spring / summer –

things like cleaning the pipes in key sections and flushing the system via the hydrants -- could offer some short term results. I know nobody wants to just wait for spring, but that is something important to keep in mind.

4. In the meantime, the group discussed possibly making home water filters available somehow. The National Safety Foundation is a Michigan company, headquartered and founded in Ann Arbor, that develops standards for all kinds of infrastructure. They're a globally recognized source for standard setting. A look at their site reveals there are myriad filtration options on the market and within each type (faucet mounted, whole house line filters, etc) there are filters that focus on different aspects of purification.

   If this idea begins to get legs, I'd suggest testing some different models on the local water at the customer level to see if they work. I'd also suggest the idea be focused on tap-mounted models to promote clean, appealing drinking water. And I'd suggest this program could be funded in whole or in part by the state, but would need to be administered by the city (reinforcing the fact that they own, operate and service the system). I've got some information on filter models below.

   Two more considerations: One, while the state has provided residents in some communities with bottled water in the past, it always has to do with their water being somehow contaminated -- as in, some kind of chemical plume that impaired local drinking water sources. This would be the first time the state took steps to deal with what is an aesthetic issue on a system where the water is meeting state drinking water standards.

Water filter info:
ANSI NSF Standard 42 Covers bacteriostasis, taste and odor (associated only with chlorine removal), and other aesthetic conditions
http://standards.nsf.org/apps/group_public/download.php/19895/NSF_42-11%20-%20watermarked.pdf

ANSI NSF Standard 53 Covers health effects removal
http://standards.nsf.org/apps/group_public/download.php/19896/NSF_53-11a%20-%20watermarked.pdf

It is important to note that the filters are not required to meet all aspects of the standard, only the portions they want to make claims for. So product information for each filter must be reviewed to determine its applicability.

Most of these point of use filters are basic activated carbon filters that simply remove taste and odor specifically associated with chlorine, not other things like iron, manganese, hydrogen sulfide, etc. that can also impact taste and odor as well as color.

It is important to recognize that taste and odor is generally an individual preference and such standards have for the most part not been developed because groups of individuals may still consider taste and odor issues to exist even after levels for such a standard have been met.

Other considerations are that the test water for such filters attempting to meet the standard uses hardness levels of 170 mg/L or less. Flint's water at times may be above this level, which could then impact filter performance and longevity.

Most of these filters are designed to be replaced after 100 gallons or less of use, a period of about 3 months for most households. In addition the tests allow for initial pressure drops of up to 15 psi. This may limit use in households that already rely on minimum pressure within their household plumbing.

Regarding the health effects standards, as the Flint water system already meets such requirements, with the exception of the current TTHM locational running annual average, there is little point to the use of these filters for such a purpose.

To the point you'd asked about the other day, while Flint and Detroit are leading examples of unmaintained infrastructure, Flint is not alone by any means.

This recent infrastructure report card
http://www.infrastructurereportcard.org/michigan/michigan-overview/
Lists Michigan with a $13.8 Billion need over the next 20 years.

http://www.infrastructurereportcard.org/a/#p/state-facts/michigan

Here's a link to the 2009 Report Card for Michigan Infrastructure
http://www.michiganreportcard.com/

From the report:

"A significant portion of the state's primary distribution system is nearing 100 years old. CWS are facing a significant challenge to maintain the vast network of aging, underground infrastructure. Within the city of Detroit alone, approximately 80% of its distribution piping was installed prior to 1940, which is not unusual for CWS in Michigan."

"The age of the majority of the state's distribution system is the primary contributor to normal decay and failure. In many cases, pipe life has far exceeded useful service life. Much of the older water systems consist of undersized mains constructed of materials such as unlined cast iron pipe. Minor fluctuations in system flows or pressure may cause red water complaints and even result in pipe failure. All CWS should have routine flushing and valve maintenance programs; however many are hesitant due to the time and cost."

"Under the Stage 2 Disinfection Byproducts Rule, all CWS that disinfect are required to provide increased trihalomethane (THHM) and haloacetic acid (HAA5) monitoring due to the potential byproducts of chlorine reactions within the pipe system. Corrosion, scale, solid suspension on the interior sidewall of pipe, in addition to the age and condition of the system will require diligent rehabilitation investment to maintain system integrity."

"While better materials and advanced technology is available to replace the aging distribution system, resources remain scarce when compared with the magnitude of the rehabilitation task at hand. Too often, distribution system replacement costs are underfunded and the first item to be slashed when budget problems arise. Overall, distribution system maintenance is reactionary in much of the older systems. Since the majority of the antiquated system will require removal and replacement beyond the

CWS funding resources for systematic upgrade, a reactionary rehabilitation program is inevitable and must be funded accordingly."

Call or email me if you need anything further.
b

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PPI