EXHIBIT 22

Prysby, Mike (DEQ)

From: Crooks, Jennifer <crooks.jennifer@epa.gov>
Sent: Thursday, October 23, 2014 4:04 PM
To: janburgess52@comcast.net
Cc: Poy, Thomas; Howard, Donna; Prysby, Mike (DEQ); Busch, Stephen (DEQ); Porter, Andrea
Subject: Flint, Michigan Citizen complaint - Drinking water quality and Chloride levels

Dear Ms. Burgess: You stated below that GM is not using the treated Flint water anymore because of higher chloride levels, which is correct. If you read thru the article link that you sent me or the links below, the Michigan Dept of Environmental Quality (MDEQ) clarified that the higher chloride levels are most likely coming from the City's treatment of the Flint River water with Ferric Chloride, which acts as a coagulant to help remove suspended and dissolved solids and contaminants. A chloride is a salt compound resulting from the combination of the gas chlorine and a metal. As EPA explains (see: http://water.epa.gov/drink/contaminants/secondarystandards.cfm), chlorides cause corrosion.

The Secondary Maximum Contaminant Levels (SMCL) listed in the Federal regulations at 40 CFR 143.3, are levels of contaminants that represent reasonable goals for drinking water quality, and are not enforceable by the State or the Federal governments. The SMCL for chloride is 250 milligrams per liter (mg/L). The MDEQ reports that the chloride levels in the Flint drinking water are approx. 50-60 mg/L which are acceptable levels, based on the SMCL of 250 mg/L. However, it appears General Motors requires a source of water with chloride levels below 20 mg/L.

Chlorine reacts with water to create different species of compounds that serve as disinfectants and acts to oxidize viruses/bacteria, so chlorine is not the same as chloride.

http://www.mlive.com/news/flint/index.ssf/2014/10/gms_decision_to_stop_using_fli.html

http://www.mlive.com/news/flint/index.ssf/2014/10/general_motors_wont_use_flint.html

Secondly, your email refers to the poor quality of the Flint drinking water. The source of drinking water for the City of Flint was changed from Detroit (which comes from Lake Huron) to the Flint River at the end of April this year. The Flint River raw water is a different quality than the Lake Huron raw water; and requires additional treatment to ensure an acceptable quality drinking water. The MDEQ has been working closely with the Operator-in-Charge at the Flint Water Treatment plant to ensure a palatable drinking water is provided to the citizens of Flint. Please note that the use of Flint River water as a source for your drinking water is an interim source; the City of Flint plans to connect to the Karegnondi Water Authority pipeline which will draw water from Lake Huron, in 2016.

The MDEQ is aware of the multiple complaints from citizens and is working closely with the Flint Water Department to ensure the distribution system and the water treatment processes work more efficiently and more effectively. For further information, you can contact Mike Prysby at:

Mike Prysby, District Engineer
Michigan Department of Environmental Quality
Office of Drinking Water and Municipal Assistance, Lansing District Office
P.O. Box 30242
Lansing, Michigan 48909-7742

(517) 290-8817
prysbym@michigan.gov

The most likely cause of the brown water (iron deposits and sediments from the very old cast iron pipes that make up the distribution system in Flint), is incorrect use of fire hydrants by demolition contractors in the area during this time. The fire hydrants are turned on for the contractors to use, and since the water is under pressure, the fast flow of the water scours the insides of the pipes, causing sediment and rust to become free floating. The City conducts this type of cleaning of the pipes in a regulated/controlled process, and requires at least ten minutes for all the sediment to be flushed out of the water main. However, the contractors do not always let the water flush for ten minutes, thus sediment remains in the water main. The City's flushing of the water mains should alleviate the sediment and brown water issues. You can contact the Flint Water Service Center to request that your lines be fully flushed.

Telephone numbers for you to call if you have further concerns:
Flint Water Service Center deals with problems in the distribution system: 810-766-7202
Water Treatment Plant deals with the actual treatment of the water prior to its pumping into the distribution system: 810-787-6537

If you have additional questions, please contact me at (312) 886-0244 or crooks.jennifer@epa.gov.

Jennifer Kurtz Crooks
Michigan Program Manager
Ground Water and Drinking Water Branch
United States Environmental Protection Agency, Region 5
77 West Jackson Blvd, WG-15J
Chicago, Illinois 60604
312.886.0244
crooks.jennifer@epa.gov

From: howard.donna@epa.gov [mailto:howard.donna@epa.gov]
Sent: Wednesday, October 15, 2014 11:46 AM
To: Poy, Thomas
Subject: FWD: (SDWA - FY15-122649-3715-CV) Referred to Region - Michigan

10/15/2014

SUBJECT: FWD: (SDWA - FY15-122649-3715-CV) Referred to Region - Michigan
FROM: howard.donna@epa.gov
TO: poy.thomas@epa.gov
CC:

-----Original Message-----

10/14/2014 9:07 AM

HQ LEAD NUMBER: FY15-122649-3715-CV

SUBJECT: Referred to Region - Michigan

FROM: janburgess52@comcast.net

TO:

Name: Jan Burgess

Address: 720 Commonwealth Ave

City: Flint

State: Michigan

Zip: 48503

Phone: 810-235-6530

Alleged Violator's Name: City of Flint

Alleged Violator's Address: 1101 S. Saginaw St.

Alleged Violator's City: Flint

Alleged Violator's State: Michigan

Alleged Violator's Zip: 48502

Tip or Complaint: Earlier this year, the City of Flint, MI changed its water supply from the City of Detroit [Lake Huron] to the Flint River. This river has a very long history of pollution. Since this change, our drinking water has tripled in cost and the quality varies daily. Some days it smells like an over-chlorinated swimming pool; other days, like pond scum. It often is brown in color and frequently has visible particles floating in it. We've been under several boil water advisories due to e-coli contamination. Just this morning our local paper reports that General Motors Engine plant has shut off Flint River water to the plant due to the over-chlorination and the fears that the water will cause corrosion. http://www.mlive.com/news/flint/index.ssf/2014/10/general_motors_wont_use_flint.html#cmpid=nsltr_stryheadline. People in Flint have had to resort to buying bottled water or having purification systems installed in their homes. Some residents have even had private wells dug. The water is not safe to drink, cook or wash dishes with, or even give to pets. We worry every time we shower. The City of Flint is still very economically depressed and most citizens cannot afford to do anything other than use the river water. Many of them have NO water at all due to the extremely high water bills. There is reasonable suspicion that reports have been falsified. Some residents have had water tested privately and the results are not even close to those reported by the City. Calls to the City and State have resulted in no action whatsoever.

Violation Still Occurring? Yes

State DEP/DEQ/DEM Notified? No

EXHIBIT 23

Prysby, Mike (DEQ)

From: Crooks, Jennifer <crooks.jennifer@epa.gov>
Sent: Tuesday, October 14, 2014 3:16 PM
To: Busch, Stephen (DEQ); Prysby, Mike (DEQ)
Subject: RE: Controlled Correspondence RE: Flint drinking water

Question—I was just talking with Tom Poy about this woman's complaint. He was wondering—has Flint changed their flushing routine? If the illegal use of the hydrants by contractors is what is stirring up the debris in the pipes/iron, how come this is now being complained about? Was this a problem when Flint was using Detroit water?
Jennifer

From: Busch, Stephen (DEQ) [mailto:BUSCHS@michigan.gov]
Sent: Tuesday, October 14, 2014 1:00 PM
To: Crooks, Jennifer; Prysby, Mike (DEQ)
Subject: RE: Controlled Correspondence RE: Flint drinking water

Jennifer,

I have forwarded the address and complaint information to the City to confirm if they received any complaint and what follow up may have occurred.

I am not aware of any additional TC positive samples since the BWA at the beginning of September. In addition this address does not appear to be included in the BWA area from August or September.

I await any info from the City on flushing. You may want to ask whether there has been any building work (blight removal) in the area, as contractors have been problematic with hydrant use.

Stephen Busch, P.E.
Lansing and Jackson District Supervisor
Office of Drinking Water and Municipal Assistance
MDEQ
517-643-2314

From: Crooks, Jennifer [mailto:crooks.jennifer@epa.gov]
Sent: Tuesday, October 14, 2014 1:38 PM
To: Prysby, Mike (DEQ); Busch, Stephen (DEQ)
Subject: Controlled Correspondence RE: Flint drinking water
Importance: High

Hi, Mike. Yep, another complaint about our favorite water supply ☺

Citizen lives at 324 West Jackson Avenue, Flint, 48505

She states, "Water quality is bad since switching to Flint River. My water stinks like sewage at times. I have developed a cough and rash, brown sediment in sink basins and kitchen sink stays backed up. I have written City Hall Water Dept and Council President for help, but no response."

I think the pos bacti/boil water advisory was in Sept, so can I say that bactis in the past few weeks have met State/Fed'l health standards? How's the TTHMs right now? Any other health standards close to being exceeded?

What do you attribute the sewer smell, and the brown sediment to? Has her area been flushed recently?

I will include the phone numbers of the Water Service Center and the Water Treatment plant that you gave me last time we spoke about Flint.

Can I include your phone number as a contact as well?

Thank you!

Jennifer

EXHIBIT 24

From: Crooks, Jennifer [mailto:crooks.jennifer@epa.gov]
Sent: Thursday, February 26, 2015 10:53 AM

To: Busch, Stephen (DEQ); Prysby, Mike (DEQ)
Cc: Poy, Thomas; Deltoral, Miguel
Subject: HIGH LEAD: FLINT Water testing Results

Hi, Steve and Mike. Thanks for talking with me yesterday, Steve, about the most recent TTHM results. We'll look forward to receiving them whenever you get them back from the lab.

However, the main purpose of my email is to alert you to the high lead levels reported to a citizen yesterday by Flint Water Dept. I have been discussing the water situation with LeeAnn Walters since January, and she has been talking with Mike Glasgow at the plant about the black sediment in her water. (HUGE KUDOs to MIKE!!) He did test it to find that the iron levels were greater than his test would go; GT 3.3. But, because the iron levels were so high, he suggested testing for lead and copper. WOW!!!! Did he find the LEAD! **104 ppb.** She has 2 children under the age of 3… Big worries here.

So, Steve, this goes back to what you and I were talking about yesterday. That the different chemistry water is leaching out contaminants from the insides of the biofilms inside the pipes. I think Lead is a good indication that other contaminants are also present in the tap water, that obviously were not present in the compliance samples taken at the plant. VOC/SOC and inorganics/metals would be good samples to start with to take at the tap. And since Ms. Walters' drinking water is showing the high lead levels, her tap water would be a good place to start, I think.

We also talked about Dr. Joan Rose from Michigan State being on the Flint Tech Advisory Committee—you also mentioned that someone from the Dept of Community Health was on the Committee. I'm thinking that Dr. Rose would want to dive further into this, since there's actual evidence that the water is leaching contaminants from the biofilms; or Dept of Community Health would want to get involved and look at this from an epidemiological perspective. (She and her family are also exhibiting the rashes when exposed to the water, and her daughter's hair is falling out in clumps.)

Maybe MSU could authorize the payment of the analyses for these samples? Or Dept of Community Health?

The citizen's name is:
LeeAnn Walters
212 Browning Ave
Flint, MI 48507
616-212-6233
Lwalters313@gmail.com

Jennifer

EXHIBIT 25

Visit Al Jazeera English

(/)

ENVIRONMENT (/TOPICS/TOPIC/CATEGORIES/ENVIRONMENT.HTML)

Flint, Mich., residents find state water control hard to swallow

Health problems are rampant but locals say the city's oversight by a state emergency manager leaves them without options

April 3, 2015 5:00AM ET

by **Laura Gottesdiener (/profiles/g/laura-gottesdiener.html)** - @Gottesdiener (http://www.twi

Share Tweet

In this Feb. 3, 2015, photo, Lemott Thomas carries free water being distributed at the Lincoln Park United Methodist Church in Flint, Michigan. Since the financially struggling city broke away from the Detroit water system last year, residents have been unhappy with the smell, taste and appearance of water from the city's river as they await the completion of a pipe to Lake Huron. They also have raised health concerns. Paul Sancya / AP

FLINT, Mich. — First, Ida Nappier's hair started falling out.

The nearly lifelong resident of Flint started noticing clumps of hair tangled in her comb or stranded on her pillowcase last fall, about six months after the city switched from buying water from Detroit's system, which draws from Lake Huron, and began sourcing water from the Flint River.

Nappier, known to most as Jackie, always had thick hair, which she wore long during her childhood in Jackson, Mississippi, and later shoulder-length and feathered, Farrah Fawcett–style, during her years raising children and grandchildren in Flint. But suddenly she was losing her hair — and she was far from the only one. Across this shrinking Rust Belt city, residents' hair and eyelashes began falling out. One woman confessed that she cried every time she cleaned the thick strands out of her shower drain.

At Nappier's home, she and other family members continued to get sick, even though they heeded the series of boil-water advisories the city issued over the summer after E. coli and other bacteria were detected in the water system. Her daughter Glenda Colton returned to Flint from Ohio in the fall and promptly broke out in a rash across her neck and chest. In December and early January, Nappier's grandchildren started vomiting and having diarrhea, she said, and they complained that their skin was itchy after showering. One day she ran a bath, and the water was the color of tea. The whole family switched to using bottled water for drinking, cooking and sometimes even bathing.

In January she and the rest of the city's nearly 100,000 residents received a letter explaining that water testing revealed high levels of trihalomethanes, a group of chemicals known as THMs. Byproducts of the chlorination process, THMs have been linked to (http://water.epa.gov/drink/contaminants/basicinformation/disinfectionbyproducts.cfm) increased rates of cancer, kidney and liver failure and adverse birth outcomes. It later emerged that the city knew since the previous May (http://cityofflint.com/wp-content/uploads/TTHM-Level-Chart-_-2014.pdf) that the THM levels were high — in some places, twice the maximum allowed by the Environmental Protection Agency.

A few weeks later, Nappier returned home from the senior center where she volunteers and ate a bowl of beef vegetable soup her daughter had mistakenly prepared with tap water. By the next morning, she felt sick. Then she had to repeatedly leave church services to use the bathroom. A few days later, she was so dehydrated from constant diarrhea that she asked to be taken to the Hurley Medical Center.

Tony Palladeno Jr. holds up a bottle of boiled water from his

"I got to the hospital room," she recalled, "and the doctor walked in and said, 'Ms. Nappier, have you been drinking the Flint water?'"

The city of Flint sits about an hour's drive from the banks of Lake Huron — one of the Great Lakes, which surround the state and

homes's faucets, which has black particles floating in it, in March 5. Joshua Lott / The New York Times / Redux

account for 20 percent of the world's freshwater. Yet Flint is embroiled in a contentious water war over the cost and quality of its drinking supply.

Almost immediately after the switch to Flint River water last April, residents began posting photos online of tea-colored and sometimes pee-colored tap water. Shortly afterward, the water's high levels of bacteria, which are linked to conditions such as nausea and diarrhea, forced the city to announce a series of boil-water advisories. The city tried to eliminate the bacteria by treating the water with more chlorine, which in turn created the THM problem.

In the fall the local General Motors plant stopped (http://www.mlive.com/news/flint/index.ssf/2014/10/general_motors_wont_use_flint.html) using the river water out of fear that the chemicals would corrode car engines. After the January letter about THMs, trust in the water quality evaporated. Schools, government buildings and the children's museum blocked access (http://www.mlive.com/news/flint/index.ssf/2015/02/childrens_museum_shuts_off_fou.html) to or posted warning signs above water fountains. Head Start began distributing bottled water to its preschool students. Meanwhile, residents continued to receive astronomical monthly water and sewer bills — Flint's rates are about eight times the national average (http://www.mlive.com/news/flint/index.ssf/2015/03/flint_water_committee_meets_bu.html) — for water that many deemed undrinkable.

After the latest round of water testing in March, which showed decreased levels of THMs, the mayor and the state-appointed emergency manager insisted that the water is now safe to drink and that the switch to the Flint River is saving the city $12 million annually. But many residents aren't convinced. On March 23, after months of protests, the City Council voted 7-1 on a resolution to do "all things necessary (http://www.mlive.com/news/flint/index.ssf/2015/03/flint_council_votes_to_do_all.html)" to stop sourcing from the Flint River.

Yet just below the surface of this controversy lies not only a network of aging water and sewage pipes, but also the troubling state of the local democracy, which has disintegrated under Michigan's Public Act 436, known as the "emergency manager" law. Like a handful of other economically troubled Michigan cities, Flint is governed by a state-appointed emergency financial manager. He has unprecedented authority to, for example, single-handedly decide where the city's water supply comes from or ignore City Council

resolutions. In response to the vote, Flint's emergency manager, Jerry Ambrose, called (http://www.mlive.com/news/flint/index.ssf/2015/03/flint_emergency_manager_calls.html#incar the decision "incomprehensible" and indicated that the Flint River would remain the city's source.

"This is a prime example of what dictatorship looks like," said Nayyirah Shariff, a member of the Flint Democracy Defense League who has been helping to organize residents in response to the water crisis.

"'They would break out in prickly hives … It was so bad that these people were just itching their skin right off of their bodies.'"

— Deanna Phelps
nurse at a rehabilitation center in Flint

Deanna Phelps began noticing her patients' rashes last year, shortly after the Flint River switch. A nurse in a rehabilitation center across the street from one of the city's two main hospitals, Phelps treats postsurgery patients, many of whom are elderly and are in for extended stays.

Ten-year-old Flint resident Alexis Robert marches with her family on Global Water Day. "I get rashes sometimes," she said. Laura Gottesdiener

"First they start itching a little bit, and then they would say something's crawling on them," she recalled. "They would break out in prickly hives … It was so bad that these people were just itching their skin right off of their bodies."

The center's doctors and nurses tried everything, she said, but nothing seemed to stop the rashes. First came the creams, which didn't work. Next were trips to dermatologists, which resulted in new creams. These didn't work either. Patients began complaining to family members, who alerted the Michigan Department of Human Services that there might be some type of scabies outbreak at the center. The state called to investigate. But Phelps and her coworkers had already tried scabies treatments, to no avail.

"That's when we finally figured out that it's probably related to the water," she said.

For many across Flint, the skin irritation has been the most immediate and undeniable health effect. The stories abound: The young girl who was so covered in measles-like hives that she had to go to the emergency room. The elderly woman whose surgery had to be postponed because her rashes were so acute. The postshower rubbing of alcohol across one's skin to soothe the fiery itch. At a storytelling event a few weeks ago, resident Sondra Ellison said her autistic son began developing bloodshot eyes and rashes from baths last summer. "He's nonverbal," she said, "so he can't say, 'Mommy, the water is burning me.'"

During a contentious public meeting at a city library in late March, a woman named Jackie Hill rose to her feet, turned her back to the panel of officials and lifted her fitted blouse, revealing a rash of dark black splotches.

After the January notice about the THMs, the center and the nearby hospital temporarily switched to providing all patients with bottled water — but the switch didn't last long. Phelps doesn't drink or cook with the water, and she wishes she didn't have to give it to her patients.

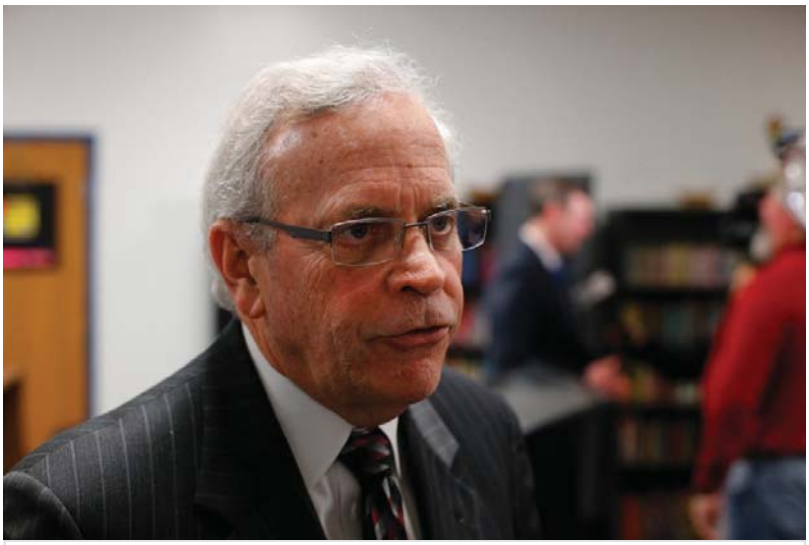
"But basically I have nothing else to use," she said. "It humiliates me because I know more than they do, and I wouldn't drink it myself, so why would I give it to somebody else? It makes me feel humiliated, because it could harm them. Water is supposed to be good for you."

"'I went down to the City Council and said that it's hard to treat river water and that there could be a [THM] issue, but no one listened.'"

— Arthur Woodson
Flint resident

THMs aren't the only contaminant that has been detected in high levels in Flint's drinking supply in the last year. Other residents have tested their water to find dangerous concentrations of lead and copper. Last summer and fall brought bacteria, including E. coli.

The most recent water test recorded THM levels below the threshold designated as unsafe by the EPA. However, residents quickly point out, these chemicals tend to fluctuate by season, and levels often spike in summer months. A recent report (http://cityofflint.com/wp-content/uploads/Veolia-REPORT-Flint-Water-Quality-20150312.pdf) by the water giant Veolia, which was commissioned by the city for $40,000 (http://www.mlive.com/news/flint/index.ssf/2015/02/flint_water_consultant_team_ch.html), recommended that Flint spend $3 million upgrading the treatment plant, retraining workers and installing a $1.5 million carbon filter. The filter would reduce the amount of chlorine needed to treat the river water, thereby decreasing THM levels.



Flint emergency manager Jerry Ambrose speaks after a news conference in Flint, Tuesday, Feb. 3, 2015.
Paul Sancya / AP

Flint Mayor Dayne Walling has said (http://www.minbcnews.com/news/story.aspx?id=1180102#.VRwvs5PF9vo) that installing the carbon filter "probably isn't necessary" because the city plans to switch to sourcing water from Lake Huron sometime in 2016, once a new pipeline is completed.

But many residents, including Arthur Woodson, a former nuclear, biological and chemical specialist for the U.S. Army, are uneasy about waiting that long. On the day of the City Council vote to move away from using Flint River water, Woodson spent the entire afternoon calling various government agencies, trying to get answers on everything from whether there has been an increase in miscarriages in the area to how long before the federal government could go in and take control of the situation.

“This is what I do all day,” he joked after he was unceremoniously disconnected by the Centers for Disease Control and Prevention’s automated information line.

An advocate for veterans attempting to navigate the Veterans Affairs system, Woodson first learned about THMs three years ago when he was helping a nearby resident process his claims. The man, who now has leukemia and other autoimmune diseases, had been stationed at the North Carolina military base Camp Lejeune, where for years he and his fellow soldiers were exposed to THMs and other toxic chemicals — including PCEs, TCEs and benzene — in the water.

As he was working on the case, he heard from a water treatment plant worker that the city was looking to switch to drawing from the Flint River.

“I went down to the City Council and said that it’s hard to treat river water and that there could be a [THM] issue, but no one listened,” Woodson recounted as he hunched over his telephone, on hold with the EPA.

He finally reached an official, whom he began peppering with questions about the agency’s compliance process and exactly how much trouble the city was in. (Short answer: Flint’s water is not considered in compliance with EPA standards, but it’s not far enough out of compliance to allow for federal intervention.)

Finally Woodson circled back to one of the most common questions raised around the whole water fiasco: Can’t Flint just go back to Detroit’s system, at least until the pipeline is built, to allow the city to draw from Lake Huron?

The official sighed. “A lot of us want it to go back to Detroit water,” she said.

“ For many of the city’s low-income residents, the water

bills are so expensive, it's impossible to buy additional water. ”

Contamination in Flint's water system is only part of the city's water woes. The other issue is its financial cost to the city and its residents.

To justify the switch to the Flint River, emergency manager Jerry Ambrose regularly cites (http://www.mlive.com/news/flint/index.ssf/2015/03/flint_emergency_manager_says_3.html) the high cost of buying water from Detroit. But if the city is saving $12 million a year, that windfall hasn't been passed along to the city's residents. The average household water bill is $140 a month (http://www.mlive.com/news/flint/index.ssf/2014/06/post_386.html), according to a 2014 analysis by The Flint Journal. The steadily rising costs have been the subject of an ongoing lawsuit (http://www.mlive.com/news/flint/index.ssf/2012/05/lawsuit_filed_against_flint_by.html) since 2012.

For many of the city's low-income residents, the water bills are so expensive, it's impossible to buy additional water. In February, resident Jean Pugh was hospitalized for two nights for dizziness, headaches, diarrhea and nausea, which she believes was caused by tap water. But her $683-a-month fixed income barely covers the rent and utility bills. She lives alone, yet her monthly water and sewage bill is $70 to $80 — on top of a gas and electric bill that can run as high as $300.

Sometimes she receives store-bought jugs from a friend or from her church, Antioch Missionary Baptist, where each week one of the deacons warns the congregation not to drink the city water.

“He says it every Sunday, but what am I going to do?” Pugh asked. “It's easy to say, ‘Stay away!’ But I'm thirsty.”

She disappeared to the kitchen and then re-emerged with a glass. “Last night I boiled this water, because I knew I had only three bottles left.”

At Ida Nappier's house, the combined costs of store-bought and city water have pushed her in the direction of a different sort of financial precipice: tax foreclosure.

Sitting on her living room couch, overlooking her worn front yard, she rifled through a stack of water bills ($201 in February and $175 in March, despite not using tap water to drink or cook), payment receipts, the occasional shutoff warning and, finally, the property tax notices. “I used my tax money to pay my water bill,” she said.

Meanwhile, on the municipal level, the reality of life under financial management continues to impede residents’ attempts to end their city’s reliance on the Flint River water.

As Woodson learned, EPA protocol requires that a state first attempt to resolve a local contamination issue before the agency will intervene.

But as he found himself explaining to the EPA official on the telephone, the state is already involved. “We’re under emergency manager, and in order for us to go to Flint River water, Gov. [Rick] Snyder had to give the approval,” Woodson said.

“Oh, did he?” the official asked, sounding perplexed. “But didn’t the municipality ask to do that?”

“No, no,” Woodson responded. “The residents and City Council and the mayor had no say-so in this.”

SHARE THIS: http://alj.am/1Ish99T

RECOMMENDED

Palestinian detainee on hunger strike reaches 89 days
(http://www.aljazeera.com/news/2016/03/palestinian-detainee-on-hunger-strike-reaches-89-days.html)

Let’s not talk politics’: China builds Middle East ties through business
(http://www.aljazeera.com/news/2016/03/let-s-not-talk-politics-china-builds-middle-east-business-politics.html)

How Republican are You? This short quiz will show you.
(http://www.businessinsider.com/2016-2016-presidential-quiz?utm_source=outbrain&utm_medium=cpc&utm_

EXHIBIT 26

CITY OF FLINT
OFFICE OF EMERGENCY MANAGER
DARNELL EARLEY
ICMA-CM, MPA

Jason Lorenz
Public Information Officer
(810) 237-2039
jlorenz@cityofflint.com

For Immediate Release

City of Flint Boil Water Advisory Still in Effect for Area Affected by Discovery of Abnormal Water Sample

Flint, Michigan – August 18, 2014 – The City of Flint's Utilities Department has received word today from the Department of Environmental Quality that the boil water advisory issued for a small portion of the city is still in effect although additional testing has shown no signs of E-coli or fecal coliform bacteria in the water. Testing over the last 48 hours has shown that the water tests negative for the presence of fecal coliform bacteria and E-coli, but an abnormal test result triggered the advisory. It is believed that a sampling error is to blame for the abnormal test; however, as a precaution, the advisory will remain in effect until the next citywide sampling has been completed. The next round of routine testing will take place on Tuesday, August 19, 2014 with the possibility that the advisory could be lifted as early as Wednesday, August 20, 2014.

Testing of the drinking water is a part of the routine process for ensuring the quality and safety of the system which happens weekly at nine different sites around the city. Drinking water contamination due to E-coli or coliform bacteria is very rare due to the fact that the bacteria cannot survive in the water for very long. The colder temperature

–CONTINUE–

City Hall
1101 S. Saginaw Street - Flint, Michigan 48502
810-766-7346 FAX: 810-766-7218 www.cityofflint.com

CITY OF FLINT
OFFICE OF EMERGENCY MANAGER
DARNELL EARLEY
ICMA-CM, MPA

of water in the system coupled with the regular blending of chlorine into the water makes for a hostile environment for these kinds of bacteria. The Flint Water Treatment Plant works diligently to provide water of the highest quality to everyone in the city.

–END–

City Hall
1101 S. Saginaw Street - Flint, Michigan 48502
810-766-7346 FAX: 810-766-7218 www.cityofflint.com

EXHIBIT 27

STATE OF MICHIGAN
DEPARTMENT OF ENVIRONMENTAL QUALITY
LANSING DISTRICT OFFICE

RICK SNYDER
GOVERNOR

DAN WYANT
DIRECTOR

December 16, 2014

Mr. Brent Wright, Operation Supervisor
City Of Flint - DPW
Flint Water Plant
4500 North Dort Highway
Flint, MI 48505

WSSN: 02310

Dear Mr. Wright:

SUBJECT: Violation Notice – Maximum Contaminant Level for Total Trihalomethanes
Operational Evaluation – Total Trihalomethanes
4th Quarter 2014 Monitoring Period

The Department of Environmental Quality (DEQ), Office of Drinking Water and Municipal Assistance (ODWMA), records show that the City of Flint is in violation of the Safe Drinking Water Act,1976 PA 399, as amended (Act 399); R 325.10610, *Maximum contaminant levels* (MCL) *for disinfection byproducts*, of the 1979 Administrative Code.

In accordance with R.325.10610, *MCLs for disinfection byproducts*, of the 1979 Administrative Code, the MCL for disinfection byproduct total trihalomethanes (TTHM) is 0.080 milligrams per liter (mg/L) as a Locational Running Annual Average (LRAA) at each monitoring location. As listed in the table below, our records show that the City of Flint's highest TTHM locational running annual average (LRAA), based on the last three quarters, ending November 30, 2014, is 0.099 mg/l which exceeds the standard, and that two of the eight sample site locations exceed the standard of 0.080 mg/L.

Further, in accordance with R325.10719l, *Disinfection byproducts: operational evaluation levels*, of the 1979 Administrative Code, when an operational evaluation level (OEL) at a monitoring location for TTHM exceeds 0.080 mg/L, a supply shall conduct an operational evaluation and submit a written report of the evaluation to the department not later than 90 days after being notified of the analytical result that causes the supply to exceed the operational evaluation level. As listed in the table below, our records show that TTHM operational evaluation levels for the City of Flint exceed 0.080 mg/L at four of the City's eight sample site locations.

TTHM Results (mg/L)					
	5/21/14	8/21/14	11/20/14	LRAA	OEL
DBP1 McDonalds 3719 Davison	**0.162**	**0.145**	0.059	**0.092**	**0.106**
DBP2 Liquor Palace 3302 S. Dort Highway	**0.112**	**0.127**	0.033	0.068	0.076
DBP3 North Flint Auto 6204 N. Saginaw St.	**0.097**	**0.118**	0.041	0.064	0.074
DBP4 University Market 2501 Flushing Road	**0.106**	**0.196**	**0.094**	**0.099**	**0.122**
DBP5 Taco Bell 3606 Corunna Road	0.079	**0.181**	0.034	0.074	**0.082**
DBP6 Rite-Aid Pharmacy 5018 Clio Road	**0.088**	**0.144**	0.054	0.072	**0.085**
DBP7 Salem Housing 3216 MLK Boulevard	**0.082**	**0.112**	0.050	0.061	0.074
DBP8 BP Gas Station 822 S. Dort Highway	0.075	**0.112**	0.036	0.056	0.065

Our investigation consisted of a review of ODWMA files for laboratory reports received for compliance monitoring. Our investigation is considered complete. This violation began on December 1, 2014, and will continue until TTHM LRAA is below the MCL at all sample sites.

We acknowledge and appreciate the city's cooperation with our recommendation to preemptively conduct an Operational Evaluation following the City's second quarterly round of monitoring in August. That Operational Evaluation report has identified possible causes and corrective measures for the elevated TTHM levels which we encourage the City continue implementing. These modifications have likely contributed in part to the reduction in TTHM levels reported in the most recent quarter, and suggest the City may be able to achieve compliance with the TTHM standard.

Our office is continuing to review the Operational Evaluation report that was submitted on December 1, 2014, and will provide the City and their consultant comments as needed to help address this MCL violation.

Water systems that exceed the OEL must complete and submit an Operational Evaluation in accordance with Administrative Rule 719l (R325.10719l) within 90 days of being notified of the violation. **An updated Operational Evaluation report, which incorporates the most recent sample results, must now be completed and received by our office by no later than March 1, 2015**.

If you have any other factual information you would like us to consider regarding the violation identified in this Violation Notice (VN), please provide them in a written response by January 16, 2015.

Administrative rule R 325.10403 of Act 399 requires that suppliers provide public notice (PN) as soon as practical, but no later than thirty (30) days after the supplier learns of this type of violation, by mail or direct delivery **and** by any other means reasonably calculated to reach customers not normally reached by mail. Enclosed is a sample PN

which contains the minimum required language. The City is encouraged to include additional information regarding its response to this violation. **Please notify your consumers by January 10, 2015, and send us a signed and dated copy of the notice that you issued within ten (10) days of distributing the public notice.** This violation must also be included in your 2014 Consumer Confidence Report (CCR), due by July 1, 2015. The PN must be repeated every quarter until you no longer exceed the TTHM standard. Failure to issue a PN for this violation will result in a fine of at least $1,000 per event, with a maximum of $5,000 per violation.

We anticipate and appreciate your continued cooperation in resolving this matter. If you have any questions regarding this VN, please contact us at the numbers below.

Sincerely,

Michael F. Prysby, P.E., District Engineer
Lansing District Office
Office of Drinking Water & Municipal Assistance
517-290-8817

Adam Rosenthal, EQA
Lansing District Office
Office of Drinking Water & Municipal Assistance
517-284-6644

mfp/ar/jlr
Enclosure

cc: Mr. Darnell Early, Emergency Manager, City of Flint
Mr. Daughtry Johnson, City of Flint
Mr. Howard Croft, City of Flint
Mr. Robert Bincsik, City of Flint
Ms. Jennifer Crooks, U.S. Environmental Protection Agency, Region 5
Genesee County Health Department
Ms. Liane Shekter Smith, P.E., DEQ
Mr. Richard Benzie, P.E., DEQ
Mr. Stephen Busch, P.E., DEQ

IMPORTANT INFORMATION ABOUT YOUR DRINKING WATER

City of Flint Did Not Meet Treatment Requirements

Our water system recently violated a drinking water standard. Although this incident was not an emergency, as our customers, you have a right to know what happened and what we are doing to correct this situation.

We routinely monitor for the presence of drinking water contaminants. Samples were collected for total trihalomethanes (TTHM) analysis from eight locations on a quarterly basis (May 21, August 21, and November 20 of 2014). The average of the results at **ANY** of the eight locations must not exceed the maximum contaminant level (MCL) for TTHMs, otherwise our water system exceeds the Maximum Contaminant Level (MCL). The standard for TTHMs is 80 µg/L. The location reporting the highest TTHM level was 99 ug/L; thus, our water system exceeds the TTHM MCL.

What should I do?

- There is nothing you need to do unless you have a severely compromised immune system, have an infant, or are elderly. These people may be at increased risk and should seek advice about drinking water from their health care providers.
- You do not need to boil your water or take other corrective actions. If a situation arises where the water is no longer safe to drink, you will be notified within 24 hours.

What does this mean?

This is not an emergency. If it had been an emergency, you would have been notified within 24 hours.

People who drink water containing trihalomethanes in excess of the MCL over many years may experience problems with their liver, kidneys, or central nervous system, and may have an increased risk of getting cancer.

What is being done?

We are currently working on solutions to correct the problem. We anticipate resolving the problem by 2015.

For more information, please contact Mr. Brent Wright at 517-787-6537 or the Flint Water Plant at 4500 North Dort Highway, Flint, MI 48505.

Please share this information with all the other people who drink this water, especially those who may not have received this notice directly (for example, people in apartments, nursing homes, schools, and businesses). You can do this by posting this notice in a public place or distributing copies by hand or mail.

This notice is being sent to you by the City of Flint.

CERTIFICATION: WSSN: 02310

I certify that this water supply has fully complied with the public notification requirements in the Michigan Safe Drinking Water Act, 1976 PA 399, as amended, and the administrative rules.

Signature	Title	Date Distributed

Reminder to water supplier: This notice / certification must be sent to the DEQ.

EXHIBIT 28

2310

MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY
OFFICE OF DRINKING WATER AND MUNICIPAL ASSISTANCE

LEAD AND COPPER REPORT AND CONSUMER NOTICE OF LEAD RESULT CERTIFICATE FOR COMMUNITY WATER SUPPLY

Issued under authority of 1976 PA 399, MCL 325.1001 *et al.*, and Administrative Rules, as amended.
Failure to submit this information is a violation of Act 399 and may subject the water supply to enforcement penalties.

Administrative Rule R 325.10710d requires water supplies to report lead and copper monitoring information within 10 days after the end of the monitoring period. This form may be used to meet this requirement. Submit the information to the appropriate Department of Environmental Quality (DEQ) district office. For district office addresses, visit www.michigan.gov/deq and click on Locations.

1. Water Supply Name: City of Flint
2. County: Genesee 3. WSSN: **2310**
4. Population: 5. Monitoring Period: From: 7/1/2014 To: 12/31/2014
6. Minimum # of Samples Required: 100 7. # of Samples Taken: 100
8. Name of Certified Laboratory: MDEQ Drinking Water Laboratory

9. SAMPLE CRITERIA:

Yes	No	Explain No responses in Comments block.	
☐	☒	a. Are the same sampling points used as in the previous monitoring period?	
☐	☒	b. Are all samples from Tier 1 sites?	For more information see *Instructions* paragraph 11, subparagraph "Sample Category."
☒	☐	c. Are all samples from Tier 1, 2, or 3 sites giving Tier 1 priority?	
☒	☐	d. If no Tier 1, 2, or 3 sites are available, do all sites have plumbing materials commonly found at other locations in the system?	
☒	☐	e. Is the minimum number of lead service line samples taken (when applicable)?	

Comments: The increased number of samples required has led to many new sample sites.

10. NAME:

Name: Michael Glasgow

Title: Assistant Water Plant Supervisor Phone: (810)787-6537 Date: 2/27/15

EQP 5942 (Rev. 06/2012)

11. TAP SAMPLING DATA: (Use additional sheets as needed)

Water Supply Name/County City of Flint / Genesee WSSN 2310

RESULTS:

Sample Location	Sample Date	Sample Category[1]	Service Lines[2]	Bldg Plumb-ing[2]	Lead (ppb)	Copper (ppb)	Lab #
2205 Flushing Rd.	11/19/14	1	L		N.D.	110	
3814 Whitter Ave.	11/20/14	1	L		2	N.D.	
3521 Bennett Ave	11/21/14	1	L		2	N.D.	
1914 Penbrook Ln	11/20/14	1	L		N.D.	N.D.	
305 Allendale Pl.	11/24/14	1	L		2	130	
518 Frost St.	12/1/14	1	L		1	N.D	
3120 Norwood Dr.	12/2/14	1	L		N.D.	N.D.	
1901 Crestbrook Ln.	11/25/14	1	L		N.D.	70	
3727 Maryland Ave.	12/3/14	1	L		1	N.D.	
1220 Beard St.	12/2/14	1	L		10	60	
3718 Dolphaine Ln	12/3/14	1	L		N.D.	N.D.	
2213 Flushing Rd	12/3/2014	1	L		1	100	
721 East St.	12/10/14	1	L		9	120	
1125 Barrie Ave	12/5/14	1	L		4	N.D.	
1505 Woodlawn Park Dr.	12/6/2014	1	L		5	N.D.	
2622 Windmere	12/7/14	1	L		5	N.D.	
3517 Bennett	12/10/14	1	L		3	N.D.	
927 Kensington Ave.	12/5/14	1	L		N.D.	110	
1109 Kensington Ave.	12/4/14	1	L		N.D.	N.D.	
1901 Montclair Ave.	12/5/14	1	L		4	60	

[1] Sample Category: Enter a number 1 through 6 to designate the category of tap sample site. For more information see *Instructions* paragraph 11, subparagraph "Sample Category."
[2] Materials used for service line and building plumbing: Enter C = copper; G = galvanized; L = lead; or P = plastic.

TO BE DETERMINED BY DEQ

	90th percentile	Ave	Max	# > AL
Pb				
Cu				

11. TAP SAMPLING DATA: (Use additional sheets as needed)

Water Supply Name/County City of Flint / Genesee WSSN 2310

RESULTS:

Sample Location	Sample Date	Sample Category[1]	Service Lines[2]	Bldg Plumb-ing[2]	Lead (ppb)	Copper (ppb)	Lab #
1809 Lynbrook	12/4/14	1	L		2	N.D.	
1130 Simcoe Ave.	12/5/14	1	L		2	50	
413 Burroughs Ave	12/4/14	1	L		N.D.	N.D.	
2079 Zimmerman	12/8/14	1	L		4	N.D.	
2615 Westwood Pkwy	12/6/14	1	L		2	280	
2441 Norbert	12/8/14	1	L		8	60	
711 Kensington Ave.	12/9/14	1	L		3	N.D.	
2015 Gold Ave.	12/4/14	1	L		2	N.D.	
618 S. Meade St.	12/8/14	1	L		2	N.D.	
2802 Westwood Pkwy.	12/5/14	1	L		1	110	
860 Schafer St.	12/8/14	1	L		N.D.	70	
1021 S. Franklin Ave.	12/5/14	1	L		4	N.D.	
1616 Durand St.	12/5/14	1	L		N.D.	200	
928 Durand	12/7/14	1	L		N.D.	N.D.	
2730 Westwood Pkwy	12/4/14	1	L		23	290	
1543 Kearsley Park Blvd.	12/4/14	1	L		1	N.D.	
2920 Parkside Dr.	12/5/14	1	L		10	220	
2721 Westwood Pkwy	12/5/14	1	L		2	110	
1002 Durand St.	12/4/14	1	L		2	110	
2560 Thomas St.	12/4/14	1	L		N.D.	N.D.	

[1] Sample Category: Enter a number 1 through 6 to designate the category of tap sample site. For more information see *Instructions* paragraph 11, subparagraph "Sample Category."
[2] Materials used for service line and building plumbing: Enter C = copper; G = galvanized; L = lead; or P = plastic.

TO BE DETERMINED BY DEQ

	90th percentile	Ave	Max	# > AL
Pb				
Cu				

11. TAP SAMPLING DATA: (Use additional sheets as needed)

Water Supply Name/County City of Flint / Genesee WSSN 2310

RESULTS:

Sample Location	Sample Date	Sample Category[1]	Service Lines[2]	Bldg Plumb-ing[2]	Lead (ppb)	Copper (ppb)	Lab #
815 Bradley Ave.	12/7/14	1	L		5	270	
4013 Brownell Blvd.	12/8/14	1	L		2	80	
2418 Gold Ave.	12/10/14	1	L		N.D.	N.D.	
626 Commomwealth Ave	12/5/14	1	L		3	N.D.	
920 Stocker St.	12/9/14	1	L		N.D.	N.D.	
430 Westcombe Ave.	12/9/14	1	L		2	N.D.	
1623 Neome Dr.	12/5/14	1	L		7	70	
3802 Gorey Ave.	12/8/14	1	L		1	50	
1720 Davison Rd.	12/4/14	1	L		2	130	
2110 Mountain Ave.	12/8/14	1	L		5	60	
2006 Clement St.	12/3/14	1	L		3	N.D.	
2028 Corunna Rd.	12/7/14	1	L		N.D.	N.D.	
2829 Yale St.	12/10/14	1	L		N.D.	N.D.	
1914 W. Home Ave.	12/15/14	1	L		4	N.D.	
2920 N. Dexter St.	12/15/14	1	L		N.D.	70	
2810 Kellar Ave.	12/15/14	1	L		N.D.	N.D.	
3245 Montana Ave.	12/15/14	1	L		4	N.D.	
3623 Norwood Dr.	12/15/14	1	L		1	N.D.	
2801 Reynolds	12/8/14	1	L		2	N.D.	
3510 Brandon St.	12/10/14	1	L		5	80	

[1] Sample Category: Enter a number 1 through 6 to designate the category of tap sample site. For more information see *Instructions* paragraph 11, subparagraph "Sample Category."
[2] Materials used for service line and building plumbing: Enter C = copper; G = galvanized; L = lead; or P = plastic.

TO BE DETERMINED BY DEQ

	90th percentile	Ave	Max	# > AL
Pb				
Cu				

11. TAP SAMPLING DATA: (Use additional sheets as needed)

Water Supply Name/County City of Flint / Genesee WSSN 2310

RESULTS:

Sample Location	Sample Date	Sample Category[1]	Service Lines[2]	Bldg Plumb-ing[2]	Lead (ppb)	Copper (ppb)	Lab #
2117 Stanford Ave.	12/11/14	1	L		3	N.D.	
5806 Leslie Dr.	12/12/14	1	L		N.D.	N.D.	
1809 W. Home Ave.	12/11/14	1	L		1	N.D.	
1414 Stone St.	12/12/14	1	L		2	N.D.	
2006 Aitken Ave.	12/16/14	1	L		N.D.	N.D.	
3131 Wolcott	12/17/14	1	L		N.D.	N.D.	
983 Gainey Ave.	12/17/14	1	L		N.D.	100	
2806 Norbert St.	12/18/14	1	L		N.D.	N.D.	
912 Crawford St.	12/15/14	1	L		1	110	
4024 Sterling	12/16/14	1	L		1	N.D.	
3737 Worchester Dr.	12/16/14	1	L		N.D.	140	
1100 Stockton St.	12/16/14	1	L		6	N.D.	
1725 Lincoln Ave.	12/21/14	1	L		2	N.D.	
3139 Colorado	12/16/14	1	L		N.D.	N.D.	
1401 Gainey Ave.	12/20/14	1	L		4	N.D.	
2730 Coventry Ct.	12/19/14	1	L		N.D.	N.D.	
709 Frost St.	12/19/14	1	L		N.D.	N.D.	
2307 Radcliffe	12/20/14	1	L		37	80	
224 E. Court St.	12/15/14	1	L		4	N.D.	
3440 Rangeley	12/13/14	1	L		N.D.	N.D.	

[1] Sample Category: Enter a number 1 through 6 to designate the category of tap sample site. For more information see *Instructions* paragraph 11, subparagraph "Sample Category."
[2] Materials used for service line and building plumbing: Enter C = copper; G = galvanized; L = lead; or P = plastic.

TO BE DETERMINED BY DEQ

	90th percentile	Ave	Max	# > AL
Pb				
Cu				

11. TAP SAMPLING DATA: (Use additional sheets as needed)

Water Supply Name/County City of Flint / Genesee WSSN 2310

RESULTS:

Sample Location	Sample Date	Sample Category[1]	Service Lines[2]	Bldg Plumb-ing[2]	Lead (ppb)	Copper (ppb)	Lab #
3808 Brownell Blvd.	12/16/14	1	L		N.D.	90	
1006 Kensington	12/19/14	1	L		2	N.D.	
2517 Delaware Ave.	12/18/14	1	L		5	200	
1810 W. Hobson Ave.	12/21/14	1	L		N.D.	N.D.	
5805 Leslie Dr.	12/21/14	1	L		2	N.D.	
1721 Chelsea Circle	12/22/14	1	L		N.D.	N.D.	
912 Waldman Ave.	12/23/14	1	L		N.D.	N.D.	
3082 Lanning Dr.	12/24/14	1	L		N.D.	N.D.	
25151 Chicago Blvd.	12/26/14	1	L		6	N.D.	
742 Lincoln Ave.	12/26/14	1	L		3	N.D.	
1805 Ramsay Blvd.	12/27/14	1	L		4	N.D.	
1910 Ramsay Blvd.	12/20/14	1	L		N.D.	N.D.	
3009 Montana Ave.	12/29/14	1	L		1	N.D.	
1223 Campbell St.	12/30/14	1	L		1	N.D.	
3821 Delaware	12/27/14	1	L		N.D.	N.D.	
1651 Woodlawn Pk Blvd.	12/29/14	1	L		N.D.	N.D.	
1911 Corry St.	12/30/14	1	L		4	N.D.	
3507 Dearborn Ave.	12/20/14	1	L		6	N.D.	
3829 Ivanhoe Ave.	12/29/14	1	L		N.D.	N.D.	
1559 Cherolet Ave.	12/30/14	1	L		9	N.D.	

[1] Sample Category: Enter a number 1 through 6 to designate the category of tap sample site. For more information see *Instructions* paragraph 11, subparagraph "Sample Category."
[2] Materials used for service line and building plumbing: Enter C = copper; G = galvanized; L = lead; or P = plastic.

TO BE DETERMINED BY DEQ

	90th percentile	Ave	Max	# > AL
Pb	6.0			2
Cu	110			0

Consumer Notice of Lead & Copper Results in Drinking Water

Water Supply Name: City of Flint

County: Genesee WSSN: 2310

Sample Location 2205 Flushing Rd. Date Sampled: 11/19/2014

Thank you for participating in the lead and copper monitoring of drinking water. The levels of lead and copper found at your location are in the table below.

Key to Table	Contaminant	AL	MCLG	Your Result
Action Level (AL): The concentration of a contaminant which, if exceeded, triggers treatment or other requirements that a water system must follow. **Maximum Contaminant Level Goal (MCLG):** The level of a contaminant in drinking water which there is no known or expected risk to health. MCLG's allow for a margin of safety. **ppb:** parts per billion or micrograms per liter.	Lead (ppb)	15	0	Not Detected
	Copper (ppb)	1300	1300	110

Lead can cause serious health problem if too much enters your body from drinking water or other sources. It can cause damage to the brain and kidneys, and it can interfere with the production of red blood cells that carry oxygen to all parts of your body. The greatest risk of lead exposure is to infants, young children, and pregnant women. Scientists have linked the effects on the brain with lower IQ in children. Adults with kidney problems and high blood pressure can be affected by low levels of lead more than healthy adults. Lead is stored in the bones, and can be released later in life. During pregnancy, the child receives lead from the mother's bones, which may affect brain development.

To reduce exposure to lead in drinking water:

- Run your water to flush out lead. Run the water until it becomes cold.
- Use cold water for cooking and preparing baby formula. Do not cook with or drink water from the hot tap; lead dissolves more easily in hot water.
- Do not boil water to remove lead. Boiling water will not reduce lead levels.
- Look for an alternative sources or treatment of water. If your lead result is above 15 ppb, you may want to consider purchasing bottled water or a water filter. Read the package to be sure the filter is approved to reduce lead or contact NSF International at 800-NSF-8010, or www.nsf.org for information on performance standards for water filters.
- Identify if your plumbing fixtures contain lead. New faucets, fittings, and valves, may contain up to 8 percent lead including those advertised as lead-free" and may contribute lead to drinking water. Consumers should be aware of this when choosing fixtures and take appropriate precautions.

Although the primary sources of lead exposure for most children are deteriorating lead-based paint, lead-contaminated dust, and lead contaminated soil, the U.S. EPA estimates that 10 to 20 percent of human exposure to lead may come from drinking water.

For more information, contact us at: City of Flint Water Plant (810)787-6537.

For more information on reducing lead exposure around your home ant the health effects of lead, visit the U.S. EPA's Web site at www.epa.gov/lead, call the National Lead Information Center at 800-424-LEAD, or contact your health care provider.

EXHIBIT 29

MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY
OFFICE OF DRINKING WATER AND MUNICIPAL ASSISTANCE

LEAD AND COPPER REPORT AND CONSUMER NOTICE OF LEAD RESULT CERTIFICATE FOR COMMUNITY WATER SUPPLY

Issued under authority of 1976 PA 399, MCL 325.1001 *et al.*, and Administrative Rules, as amended.
Failure to submit this information is a violation of Act 399 and may subject the water supply to enforcement penalties.

Administrative Rule R 325.10710d requires water supplies to report lead and copper monitoring information within 10 days after the end of the monitoring period. This form may be used to meet this requirement. Submit the information to the appropriate Department of Environmental Quality (DEQ) district office. For district office addresses, visit www.michigan.gov/deq and click on Locations.

1. Water Supply Name: City of Flint Water Plant
2 County: Genesee 3. WSSN: **2310**
4. Population: 99,763 5. Monitoring Period: From: 1/1/15 To: 6/30/15
6. Minimum # of Samples Required: 60 7. # of Samples Taken: 69
8. Name of Certified Laboratory: DEQ Drinking Water Laboratory

9. SAMPLE CRITERIA:

Yes	No	Explain No responses in Comments block.	
☐	☒	a. Are the same sampling points used as in the previous monitoring period?	
☐	☒	b. Are all samples from Tier 1 sites?	For more information see *Instructions* paragraph 11, subparagraph "Sample Category."
☒	☐	c. Are all samples from Tier 1, 2, or 3 sites giving Tier 1 priority?	
☒	☐	d. If no Tier 1, 2, or 3 sites are available, do all sites have plumbing materials commonly found at other locations in the system?	
☒	☐	e. Is the minimum number of lead service line samples taken (when applicable)?	

Comments: Revised report after conference call with DEQ staff. Two samples were removed from list for not meeting sample criteria, and due to population the number of samples required was reduced to 60.

10. NAME:

Name: Michael Glasgow

Title: Utilites Administrator Phone: 810-766-7135 Date: 8/20/2015

EQP 5942 (Rev. 06/2012)

11. TAP SAMPLING DATA: (Use additional sheets as needed)

Water Supply Name/County City of Flint Water Plant WSSN 2310

RESULTS:

Sample Location	Sample Date	Sample Category[1]	Service Lines[2]	Bldg Plumb-ing[2]	Lead (ppb)	Copper (ppb)	Lab #
2205 Flusing Rd	2/15/15	1	L	C,P	N.D.	0.13	54663
1809 Stevenson St.	2/10/15	1	L	P	10	N.D.	54956
4202 Custer Ave.	3/4/15	1	L	C,P	6	0.27	56223
401 E. Newall St.	3/2/15	1	L	P	5	N.D.	56225
215 Browning Ave.	3/21/15	1	L	C,P	N.D.	0.16	56226
2615 Trumbull Ave.	2/27/15	1	L	C,P	3	N.D.	56227
201 Browning Ave.	3/5/15	1	L	P	N.D.	N.D.	56228
1224 Decker St.	3/17/15	1	L	C,P	13	0.10	57728
1220 Decker St.	3/17/15	1	L	P	4	N.D.	57730
1379 Washington Ave.	3/19/15	1	L	P	8	N.D.	57731
1383 Washington Ave.	3/19/15	1	L	C,P	6	0.17	57734
1372 Washington Ave.	3/19/15	1	L	C,P	2	0.14	57733
1367 Washington Ave.	3/17/15	1	L	P	1	N.D.	57735
1701 Marquettte Dr.	3/14/15	1	L	C,P	1	0.19	57736
778 Bundy Ave.	3/24/15	1	L	P	N.D.	N.D.	58413
3714 Beecher Rd.	3/24/15	1	L	C	2	0.52	58414
1016 Ingleside Ave.	4/9/15	1	L	C,P	7	0.07	59749
1818 Rock Creek Ln.	4/6/15	1	L	C,P	3	0.11	59750
3010 Cheyenne St.	4/3/15	1	L	C,P	5	0.10	59751
2606 Mountain Ave.	4/15/2015	1	L	P	N.D.	N.D.	60546

[1] Sample Category: Enter a number 1 through 6 to designate the category of tap sample site. For more information see *Instructions* paragraph 11, subparagraph "Sample Category."
[2] Materials used for service line and building plumbing: Enter C = copper; G = galvanized; L = lead; or P = plastic.

TO BE DETERMINED BY DEQ

	90th percentile	Ave	Max	# > AL
Pb				
Cu				

11. TAP SAMPLING DATA: (Use additional sheets as needed)

Water Supply Name/County City of Flint Water Plant WSSN 2310

RESULTS:

Sample Location	Sample Date	Sample Category[1]	Service Lines[2]	Bldg Plumb-ing[2]	Lead (ppb)	Copper (ppb)	Lab #
2020 Crooked Ln.	4/24/15	1	L	C,P	5	0.10	61845
310 E. Moore St.	4/22/15	1	L	P	5	N.D.	61846
631 Alvord Ave.	5/6/15	1	L	P	42	N.D.	63410
216 Browning Ave.	5/7/15	1	L	C,P	22	0.31	63411
3714 Beecher Rd.	5/14/15	1	L	C,P	8	0.15	64283
912 Lexington Ave.	5/15/15	1	L	P	6	N.D.	64285
349 Robbie Ln.	5/31/15	1	L	P	2	N.D.	67428
353 Robbie Ln.	5/30/15	1	L	C,P	5	0.11	67427
341 Robbie Ln.	5/31/15	1	L	C,P	3	0.05	67426
328 Robbie Ln.	5/30/15	1	L	C,P	2	0.09	67425
357 Robbie Ln.	5/31/15	1	L	C	3	0.20	67424
344 Robbie Ln.	5/31/15	1	L	C,P	4	0.11	67423
1807 Oren Ave.	6/8/15	1	L	P	21	N.D.	68023
421 Lyon St.	6/14/15	1	L	C,P	7	0.14	68788
1528 Delaware Ave.	6/12/15	1	L	P	3	N.D.	68789
3811 Brentwood Dr.	6/14/15	1	L	P	42	N.D.	68790
1615 S. Franklin Ave.	6/14/15	1	L	P	N.D.	N.D.	68791
853 E. 7th St.	6/12/15	1	L	C,P	7	0.07	68792
1150 Woodside Dr.	6/14/15	1	L	P	29	N.D.	68793
547 Copeman Blvd.	6/15/14	1	L	P	18	N.D.	68794

[1] Sample Category: Enter a number 1 through 6 to designate the category of tap sample site. For more information see *Instructions* paragraph 11, subparagraph "Sample Category."
[2] Materials used for service line and building plumbing: Enter C = copper; G = galvanized; L = lead; or P = plastic.

TO BE DETERMINED BY DEQ

	90th percentile	Ave	Max	# > AL
Pb				
Cu				

11. TAP SAMPLING DATA: (Use additional sheets as needed)

Water Supply Name/County City of Flint Water Plant WSSN 2310

RESULTS:

Sample Location	Sample Date	Sample Category[1]	Service Lines[2]	Bldg Plumb-ing[2]	Lead (ppb)	Copper (ppb)	Lab #
2114 Flushing Rd.	6/30/15	1	L	P	5	0.05	71170
709 Frost St.	6/30/15	1	L	P	2	N.D.	72033
920 Stocker Ave.	6/21/15	1	L	P	1	N.D.	69622
742 Lincoln Ave.	6/19/15	1	L	P	2	N.D.	69623
3517 Bennett Ave.	6/24/15	1	L	C,P	3	0.06	69624
1730 Overhill Dr.	6/22/15	1	L	C,P	1	0.08	69625
2117 Stanford Ave.	6/23/15	1	L	C,P	5	0.08	69626
2432 Beta Ln.	6/21/15	1	L	P	N.D.	N.D.	69627
2023 Miller Rd.	6/21/15	1	L	C,P	3	0.06	69628
721 East St. Apt #2	6/25/15	4	L	C,P	10	0.16	70222
3814 Whitter	6/25/15	1	L	P	2	N.D.	70223
3120 Norwood	6/24/15	1	L	P	5	N.D.	70224
2122 Pierce St.	6/21/15	1	L	P	2	N.D.	70225
3521 Bennett Ave.	6/25/15	1	L	P	3	N.D.	70226
1602 Raspberry Ln.	6/24/15	1	L	P	N.D.	N.D.	70227
1809 Lynbrook	6/26/15	1	L	P	3	N.D.	70228
2112 Sherff	6/24/15	1	L	C,P	9	0.06	70229
1205 Blanchard Ave.	6/24/15	1	L	C,P	11	0.05	70230
860 Schafer St.	6/26/15	1	L	C,P	N.D.	0.06	70231
2110 Flushing Rd.	6/30/15	1	L	C	N.D.	0.10	71158

[1] Sample Category: Enter a number 1 through 6 to designate the category of tap sample site. For more information see *Instructions* paragraph 11, subparagraph "Sample Category."
[2] Materials used for service line and building plumbing: Enter C = copper; G = galvanized; L = lead; or P = plastic.

TO BE DETERMINED BY DEQ

	90th percentile	Ave	Max	# > AL
Pb				
Cu				

-24

11. TAP SAMPLING DATA: (Use additional sheets as needed)

Water Supply Name/County City of Flint Water Plant WSSN 2310

RESULTS:

Sample Location	Sample Date	Sample Category[1]	Service Lines[2]	Bldg Plumb-ing[2]	Lead (ppb)	Copper (ppb)	Lab #
2300 Flushing Rd.	6/29/15	1	L	C	3	0.28	71159
2130 Flushing Rd.	6/28/15	1	L	C,P	6	0.05	71160
2202 Flushing Rd.	6/29/15	1	L	C,P	2	0.06	71162
2429 Flushing Rd.	6/30/15	1	L	C,P	N.D.	0.06	71163
4013 Brownell Blvd.	6/29/15	1	L	C,P	2	0.08	71165
2414 Flushing Rd.	6/30/15	1	L	P	N.D.	N.D.	71166
1914 Penbrook Ln	6/29/15	1	L	P	2	N.D.	71167
3901 Leedra St.	6/26/15	1	L	P	N.D.	N.D.	71168
3142 McClure	6/26/15	1	L	P	3	N.D.	71169

[1] Sample Category: Enter a number 1 through 6 to designate the category of tap sample site. For more information see *Instructions* paragraph 11, subparagraph "Sample Category."
[2] Materials used for service line and building plumbing: Enter C = copper; G = galvanized; L = lead; or P = plastic.

TO BE DETERMINED BY DEQ

	90th percentile	Ave	Max	# > AL
Pb				
Cu				

EXHIBIT 30

Drinking Water Lead & Copper Sampling Instructions

Dear Resident:

Thank you for helping to monitor for lead and copper in your drinking water. It is important that you follow these instructions so that we may collect an accurate measurement of the lead and copper in your drinking water. This sample is supposed to represent the water you would typically drink and the faucet from where you would drink the water. Call your water supply if you have any questions.

1. Select a faucet in the KITCHEN or BATHROOM that is commonly used for drinking. DO NOT sample from a laundry sink or a hose spigot as these samples cannot be used by your utility.

2. Flush the COLD water for at least 5 minutes. Let the water sit for at least 6 hours **before** you plan to collect the sample. If you have a single handle faucet, turn it to the COLD side. DO NOT use this faucet again until it is sampled.

3. Wait at least 6 hours before collecting your sample but we do not recommend sampling if the faucet has sat idle for more than 12 hours.

4. Fill the sample bottle to the neck with the "first draw" of COLD water from the faucet that you flushed at least 6 hours previous.

5. Please answer the following questions:

a) Did you flush the water for at least 5 minutes and let it sit unused for 6 hours before you filled the bottle? ☐ Yes ☐ No

b) What date and time did you **flush the faucet**? Date _____ Time _____ P.M.

c) What date and time did you **fill the bottle**? Date _____ Time _____ A.M.

d) Did you fill the bottle from the same faucet that was flushed 6 hours before? ☐ Yes ☐ No
If NO, please explain: _____

e) Which faucet did you use to fill the bottle? ☐ Kitchen ☐ Main Bathroom ☐ Other
If OTHER, please describe: _____

f) Is this faucet connected to a home treatment device such as a water softener, a reverse osmosis unit, an iron removal device OR is any kind of additive used in the home? ☐ Yes ☐ No
If YES, please describe: _____

Your Printed Name _____

Your Address _____

_____

Your Signature _____

6. Attach this form to the bottle and leave it outside your front door for pick-up.

If you have any questions call:

Water Supply: _____

Manager or Water Operator: _____

Phone: _____

Or contact:

Michigan Department of Natural Resources & Environment

DNRE contact: _____

Phone: _____

Thanks again for your help. Information on this year's lead and copper monitoring will be printed in the *Consumer Confidence Report* that will be made available to you by July 1 of next year. We will send you the results within 30 days of receiving them. Contact your utility if you have any questions.

EXHIBIT 31

Michigar

Flint Council votes to do 'all things necessary' to end use of Flint River

By **Ron Fonger | rfonger1@mlive.com**
on March 23, 2015 at 8:10 PM, updated March 23, 2015 at 8:11 PM

FLINT, MI -- The City Council has voted to "do all things necessary" to reconnect Flint to the Detroit Water and Sewerage Department.

But it was unclear what effect -- if any -- that action will have with a state-appointed emergency manager still at the helm of the city.

Council voted for the resolution from Councilman Eric Mays, 7-1, Monday, March 23.

The decision flies in the face of what emergency manager Jerry Ambrose has said, and Mayor Dayne Walling has also not advocated for purchasing Lake Huron water from Detroit again.

Neither Ambrose nor Walling were at the council meeting when members approved the DWSD reconnection motion. Council President Josh Freeman voted against the motion, and Councilwoman Jackie Poplar was not at the meeting.

Mays said the motion could trigger a special meeting with Ambrose, Walling, DWSD and the state to form a more detailed plan to make reconnection to Detroit a reality.

"People in the community asked me to make this motion," Mays said. "Residents have suffered too long."

FLINT WATER

Flint water crisis could mean two dozen layoffs if state fails to pay $1.1M

State unveils big plans for Flint recovery after water crisis

Plan to loan workers $15K for Flint houses so crazy it just might work

Flint lead lines may not be only problem for water, officials say

Lead testing held for dogs in Flint water crisis at downtown church

All Stories

Flint's long-term plans involve connection to the Karegnondi Water Authority pipeline that's under construction, but that project won't be completed until 2016.

The city has used the Flint River since April after decades of purchasing already-treated water from Detroit.

Since that switch, residents have increasingly complained about water quality and there have been several boil water advisories in the city because of bacteria concerns in pockets of the city.

Although city water met all health and safety standards in January and February testing, the city remains in violation of the Safe Drinking Water Act because of the level of total trihalomethanes in treated Flint River water since the switch from DWSD.

Ambrose has said the cost of water in Flint would likely rise 30 percent or more if the city returned to buying it from the city of Detroit for one year.

Walling has said he doesn't believe a return to buying water from Detroit should be part of the city's future.

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EXHIBIT 32

Emergency Manager Statement on Water: Spending Extra $12 Million on Detroit Water "Incomprehensible" When Flint Water Just as Safe

Posted by: Jason Lorenz

24 MAR

0 Share

At the City Council meeting held on Monday, March 23, 2015, Flint City Council made a motion to "do all things necessary" to return to using water purchased from Detroit and discontinue use of the Flint River as a water source. The following statement from Emergency Manager Gerald Ambrose addresses that point:

"Flint water today is safe by all EPA and MDEQ standards and the City is working daily to improve its quality. Users also pay some of the highest rates in the state because of the decreased numbers of users and the age of the system.

"It is incomprehensible to me that 7 members of the Flint City Council would want to send more than $12 million a year to the system serving southeast Michigan, even if Flint rate payers could afford it. Water from Detroit is no safer than water from Flint.

"If $12 million annually were available for discretionary use, it would be far better spent reducing rates paid by Flint customers and/or modernizing the City's system."

-Gerald Ambrose,

Flint Emergency Manager

March 3rd EM Letter to Treasury Regarding Water

Recent Posts

- Mayor Weaver Turns to Trusted Local Doctor for Advice on Bathing in Flint March 14, 2016
- Mayor Weaver Urges Republican Leaders to Support Funding for Flint's Recovery March 14, 2016
- Mayor Weaver's Next Town Hall Meeting set for March 17th March 14, 2016
- Mayor Weaver Thanks President Obama for Newly Appointed Staff Member March 11, 2016
- Mayor Karen Weaver Announces Suspension on Utility Billing March 9, 2016
- Flint Receives TechHire Designation from the White House March 9, 2016
- Mayor Karen Weaver Launches Flint WaterWorks with Chelsea Clinton March 7, 2016
- Mayor Weaver's Fast Start Project Officially Underway with Removal of First Lead Pipe March 4, 2016

ABOUT THE AUTHOR:

Jason Lorenz is the Public Information Officer for the City of Flint as well as a proud Flint resident.

NEED DIRECTIONS?

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- Public Safety
- Public Works

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Community Home

EXHIBIT 33

Lead testing results for water sampled by residents

FLINT HAS A VERY SERIOUS LEAD IN WATER PROBLEM

Note: Lead (Pb) data for all 271 residents sampled is now online (http://flintwaterstudy.org/2015/12/complete-dataset-lead-results-in-tap-water-for-271-flint-samples/).

We analyzed all samples shipped to Virginia Tech from Flint to date. Flint residents returned an **astonishing 84%** of the sample kits we sent out (252 out of 300 samples). We thank our partners Water You Fighting For, Concerned Pastors for Social Action, ACLU of Michigan, Democracy Defense League and Flint residents for their dedicated efforts in maximizing sample kits being distributed, collected and returned to us in record time.

We will continue to analyze water samples as they are returned. However, mathematically, even if the remaining 48 samples returned have non-detectable lead, our conclusion will not change — **FLINT HAS A VERY SERIOUS LEAD IN WATER PROBLEM**.

Forty percent (40.1%) of the first draw samples are over 5 parts per billion (ppb). That is, 101 out of 252 water samples from Flint homes had first draw lead more than 5 ppb. Even more worrisome, given that we could not target "worst case" homes with lead plumbing that are required for EPA sampling, **Flint's 90%'ile lead value is 25 ppb in our survey. This is over the EPA allowed level of 15 ppb that is applied to high risk homes.** This is a serious concern indeed. **Several samples exceeded 100 ppb, and one sample collected after 45 seconds of flushing exceeded 1000 ppb.**

We now advise Flint consumers to heed EPA information that advises consumers on how to avoid adverse health effects from exposure to excessive lead in drinking water. (http://water.epa.gov/drink/info/lead/lead1.cfm)The main concern is related to water used for drinking or cooking. With the exception of one home that we sampled which had astronomical levels of lead (http://flintwaterstudy.org/2015/08/hazardous-waste-levels-of-lead-found-in-a-flint-households-water/), the levels of lead detected in Flint were safe for bathing, showering, toilet flushing and watering lawns/gardens.

Until further notice, **we recommend that Flint tap water only be used for cooking or drinking if one of the following steps are implemented:**

- Treat Flint tap water with a filter certified to remove lead (look for certification by the National Sanitation Foundation (NSF) that it removed lead on the label), or
- Flush your lines continuously at the kitchen tap, for 5 minutes at a high flow rate (i.e. open your faucet all the way), to clean most of the lead out of your pipes and the lead service line, before collecting a volume of water for cooking or drinking. Please note that the water needs to be flushed 5 minutes every time before you collect water for cooking or drinking. For convenience, you can store water in the refrigerator in containers, to reduce the need to wait for potable water each time you need it.

We do not issue this warning lightly, and note that our concern is based on several lines of evidence. First, scientifically, we ***predicted*** based on past research that the Flint River water chemistry would create a serious lead in water problem (http://flintwaterstudy.org/2015/08/why-is-it-possible-that-flint-river-water-cannot-be-treated-to-meet-federal-standards/). Second, ***we confirmed the very high corrosivity of the Flint River water for lead in our laboratory testing*** (http://flintwaterstudy.org/2015/09/flint-rivers-water-is-very-corrosive-to-lead-and-causing-lead-contamination-in-homes/) ***at Virginia Tech***. Third, for some reason that no one has yet explained to us, ***the Flint River water was introduced (http://www.mlive.com/news/flint/index.ssf/2013/07/city_readying_water_plant_to_t.html)***

into the pipe distribution system without any measures (or even a plan) to reduce its corrosivity. We are therefore very perplexed by recent MDEQ assertions that the situation in Flint is normal (http://michiganradio.org/post/team-testing-flint-water-lead-sample-sample#stream/0). Finally, we have the results of our survey of 252 homes conducted with the assistance of Flint consumers. Because of the very serious and permanent health damage that arises from lead exposure, we feel that this problem **requires immediate public health warnings and intervention– we provide that for Flint consumers in this report.**

Another mystery that must be examined very carefully in the days and weeks ahead: **How is it possible, that Flint "passed" the official EPA Lead and Copper Rule sampling overseen by MDEQ?** In our experience, following the EPA site selection criteria targeting homes with the highest risk for lead, the MDEQ sampling should have found much worse results than our sampling. Instead, MDEQ is asserting that the lead levels in Flint are much lower. Hence, we call on the U.S. EPA and others, to conduct a detailed audit of the 2014 and 2015 LCR sampling round overseen by MDEQ in Flint, to determine if it was conducted consistent with requirements of the law.

From Our sampling of 252 homes demonstrates a high lead in water risk: Flint should be failing to meet the EPA Lead and Copper Rule (http://flintwaterstudy.org/2015/09/our-sampling-of-252-homes-demonstrates-a-high-lead-in-water-risk-flint-should-be-failing-to-meet-the-epa-lead-and-copper-rule/)

The chemistry of Flint River water is a type known to be highly corrosive (http://flintwaterstudy.org/2015/09/flint-rivers-water-is-very-corrosive-to-lead-and-causing-lead-contamination-in-homes/) to lead plumbing as well as iron pipe (http://flintwaterstudy.org/2015/08/why-is-it-possible-that-flint-river-water-cannot-be-treated-to-meet-federal-standards/). Thus, when it was reported to Flint residents, that their water is meeting the EPA Lead and Copper Rule and is safe to drink (https://www.cityofflint.com/wp-content/uploads/CCR-2014.pdf), as scientists we were a little surprised. Because it is always possible that the current scientific understanding of lead corrosion is wrong, in the next few weeks we will be conducting several tests of Flint River water, to try and verify that Flint's water is actually safe to drink.

Our efforts will include:

- an audit of the sampling done by the city in 2014 and 2015, to see if there were obvious problems or irregularities with the sampling plan
- resampling some homes sampled by the city, to see if their requirement to pre-flush the water 5 minutes the night before sampling, or using bottles with tiny openings@, is "missing" lead problems that are normally present
- conducting laboratory testing to compare lead corrosion in Flint water versus Detroit water (http://flintwaterstudy.org/2015/08/why-is-it-possible-that-flint-river-water-cannot-be-treated-to-meet-federal-standards/)
- work with Flint citizen scientists to sample at least 75 homes for lead in water (involves sending out 300 lead kits (http://flintwaterstudy.org/2015/08/300-lead-testing-kits-dispatched-to-flint-from-virginia-tech/))

This report describes the results of lead sampling in Flint homes to date:

Before conducting this survey, we set a criteria to indicate whether there was a serious problem with lead in Flint water. Because we do not have records as to what Flint homes have lead pipe, we cannot test the "worst case" homes in Flint for lead, as is required for testing by the EPA Lead and Copper rule. According to EPA, if the "worst case" homes are tested and more than 10% are over 15 ppb lead, the city exceeds the Federal standards for lead in water. For our sampling, which is of random houses in the city and not the worst case homes, if more than 10% of samples are over 5 ppb lead, we believe it indicates that the city has a very serious problem with lead in water. It is also important to remember, that there is no safe level of lead in water (http://water.epa.gov/drink/contaminants/basicinformation/lead.cfm).

Of the **252** first draw# samples collected by Flint residents and analyzed at VT, **40.1% were over 5 ppb**, which suggests a serious lead in water problem according to our experience and criteria**.** Forty two samples (16.7% of the 252 samples collected) also exceeded 15 ppb lead action limit, suggesting a very serious lead in water problem. **That is, the Flint Citizen Science study to date, is finding results worse than the EPA standard which is applied to sampling "worst case" homes.** The highest lead sampled in first draw so far was 158 ppb, and the highest sample after 45-seconds of flushing was 1,051 ppb. **The 90th percentile lead level is currently 25.2 ppb, which is over the EPA standard applied to homes with "worst case" lead plumbing, and in a range where water consumption has caused lead poisoning in children and led to adverse pregnancy outcomes.** Needless to say, these data are very worrisome, especially considering that our survey did not target "worst case" lead plumbing systems as is required for EPA sampling.

We are committed to informing residents on Flint water as soon as our data becomes available, and are also calling them . **WE URGE CITIZENS TO CONTINUE COLLECTING SAMPLES**, because we can draw stronger conclusions only when we have a higher number of them (samples). We also want to try and help Flint residents understand a) what wards of the city tend to have the most serious problems by mapping our results geographically across the city, and b) the types of plumbing systems that have the most serious lead problems.

Summary

Sample kits created at Virginia Tech = 300

Sample kits collected by *Water You Fighting For?* to date = 277

Sample kits mailed back to and received by VT to date = 252

Sample kits analyzed for lead to date = 252

Our goal for kit return to VT by mail = 75 kits

% of returned kits goal met = 336%

Threshold set to indicate problems with lead are not widespread: < 10% of samples over 5 ppb*

% of samples to date currently over 5 ppb = **40.1%**, which is greater than our 10% criteria

90th percentile Lead = 25.2 ppb, which is over the 15 ppb EPA standard in samples analyzed to date

**If 10% of Flint samples in our survey are over 5 ppb, we believe that it indicates that Flint has a serious lead in water problem because our sampling event does not target "worst case" homes in the city. Sampling for EPA compliance requires that 50% of homes sampled have lead pipe and the other 50% have lead solder. We could not determine pipe material because we do not have access to city records.*

—-

Analysis: Dr. Jeffrey Parks, Anurag Mantha

Additional Help: Maggie Carolan, Christina Devine, Pan Ji, Rebekah Martin, William Rhoads, Siddhartha Roy, Min Tang, Alison Vick, Ni Zhu

Partners: ACLU of Michigan, Concerned Pastors for Social Action, Democracy Defense League, Water You Fighting For

Credits: Dr. Marc Edwards, Siddhartha Roy, William Rhoads

Footnotes:

@Pre-flushing water for any amount of time prior to testing, and use of bottles with tiny necks during sampling increases the risk of missing actual lead problems that might be occurring in the water. A stagnation time of at least six hours is, therefore, recommended where water has not been used in a home at all.

Sampling is conducted by collecting the first 1L of water from the tap at normal flow (dubbed "first draw") to identify any lead accumulation in the water. Subsequent samples are taken after 45 seconds and 2 minutes at the same flow rate to test whether water from the distribution system contains lead as well, and if flushing prior to use can lower the likelihood of exposure.

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Updates from Lee-Anne Walters (http://flintwaterstudy.org/category/updates-from-lee-anne-walters/)

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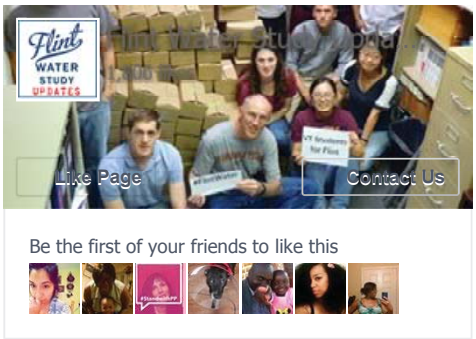

FUNDRAISING CAMPAIGN TO BUY LEAD FILTERS FOR FLINT RESIDENTS

We thank the **68** generous contributors who helped raise **$4,345** through our **SafeWater4Flint** fundraising campaign.The funds have been donated to the United Way of Genesee County (http://www.unitedwaygenesee.org/civicrm/contribute/transact?reset=1&id=5) who are spearheading filter distribution in Flint. You can donate directly to United Way on their donation page here (http://www.unitedwaygenesee.org/civicrm/contribute/transact?reset=1&id=5).

INFORMING FLINT RESIDENTS ABOUT LEAD IN THEIR WATER

All Flint residents who returned their lead kits will receive their results via regular mail. You will also receive this document on how to interpret your lead results (http://flintwaterstudy.org/wp-content/uploads/2015/08/interpretation.pdf). For the **277** lead kits analyzed so far, we have finished calling residents who had considerably high lead in their water.

FLINTWATERINFO.COM

FLINT WATER INFO.COM (http://www.flintwaterinfo.com/)

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@flintwaterstudy

Snyder unveils new Flint action plan detne.ws/1ReSqJT via @detroitnews

Snyder unveils new Flint action plan
Gov. Rick Snyder on Monday unveiled a new 75-point action plan to address the Flint water crisis
detroitnews.com

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EXHIBIT 34

PEDIATRIC LEAD EXPOSURE IN FLINT, MI: CONCERNS FROM THE MEDICAL COMMUNITY

THANK YOU'S

Introducing Makayla*

- 12 month old girl (DOB 8/15/2014) presented last week for her 1 year old check up. No concerns.
- Lives with single mom and 2 older siblings in west side (48504). Formula from WIC; powder mixed with warm tap water.
- Physical exam and development are normal. Makayla receives her 1 year old vaccines and routine lead and hemoglobin screening.
- *A couple days later, lead level comes back as 6 ug/dL.*

*Hypothetical scenario

Blood lead level of 6 ug/dL….

- Blood lead levels (BLL) above 5 ug/dL are considered elevated blood lead levels (EBL)
- Just a few years ago (2012), 10 ug/dL was cutoff
- Increasing evidence shows NO safe blood lead level
- Disproportionately impacts low income children
- Primary prevention is most important
  - Prevents exposure before it occurs!

Primary Prevention

- "Because no measurable level of blood lead is known to be without deleterious effects, and because once engendered, the effects appear to be irreversible in the absence of any other interventions, public health, environmental and housing policies should encourage PREVENTION of all exposure to lead."

"Low Level Lead Exposure Harms Children: A Renewed Call for Primary Prevention." 2012 CDC Advisory Committee on Childhood Lead Poisoning Prevention.

What will happen to Makayla?

- Vast evidence supports increased likelihood of:
  - Decrease in IQ
    - An increase in BLL from 1 to 4 ug/dL, drops mean IQ -3.7 points
  - Small change in mean IQ, shifts entire population IQ distribution
    - Reduces high achievers IQs (>130) and increases kids with low IQs (<70)
    - Implications for early intervention, special education services, employment, incarceration, life achievement, etc

Lanphear BP et al., Low-level environmental lead exposure and children's intellectual function: an international pooled analysis. Environ Health Perspect, 2005. 113:894-9.
Fewtrell LJ, Pruss-Ustun A, Landrigan P, and Ayuso-Mateos JL, Estimating the global burden of disease of mild mental retardation and cardiovascular diseases from environmental lead exposure. Environmental Research, 2004. 94:120-33.

Behavioral Burden

- Increased likelihood of :
  - ADHD behaviors
  - Delinquent behaviors and arrests
  - Total arrests and increased rates of arrests involving violent offenses
  - Other health effects: hematologic, cardiovascular, immunologic, endocrine, etc

Wright, JP, KN Dietrich, MD Ris, et al. 2008. Association of prenatal and childhood blood lead concentrations with criminal arrests in early adulthood. *PLoS Med* 5(5): e101
Chen, A, B Cai, KN Dietrich, et al. 2007. Lead exposure, IQ, and behavior in urban 5-7 year-olds: Does lead affect behavior only by lowering IQ? *Pediatrics* 119(3): e650-e658.
Needleman, HL, C McFarland, RB Ness, et al. 2002. Bone lead levels in adjudicated delinquents: A case control study. *Neurotoxicology and Teratology* 24(6):711-717.

The Cost

- "For childhood lead poisoning, $5.9 million in medical care costs, as well as an additional **$50.9 billion** (sensitivity analysis: $44.8–$60.6 billion) per year in lost economic productivity resulting from reduced cognitive potential from preventable childhood lead exposure."

- "The present value of Michigan's economic losses attributable to lead exposure in the 2009 cohort of 5 year-olds ranges from $3.19 (using U.S. blood lead levels) to **$4.85 billion** (using Michigan blood lead levels) per year in loss of future lifetime earnings."

Leonardo Trasande and Yinghua Liu. Reducing The Staggering Costs Of Environmental Disease In Children, Estimated At $76.6 Billion In 2008. *Health Affairs*, 30, no.5 (2011):863-870

The Price of Pollution: Cost Estimates of Environment-Related Childhood Diseases in Michigan. 2010 Report by Michigan Network of Children's Environmental Health

Lead in Water

- Increasing as source of lead because of success in controlling other sources.
- Increasing due to aging water infrastructures, change in water sources, disinfectant uses, etc
- Lots of variability in water lead levels depending on internal and external pipes, use of water, temperature, etc

- Disproportionally impacts developmentally-vulnerable formula-fed infants and pregnant mothers
  - Formula preparation

Triantafyllidou, S., Gallagher. D. and Edwards, M. Assessing risk with increasingly stringent public health goals: the case of water lead and blood lead in children. Journal of Water and Health. doi: 10.2166/wh.2013.067 58-68 (2014).
Edwards, M. Fetal Death and Reduced Birth Rates Associated with Exposure to Lead-Contaminated Drinking Water. Env. Sci. and Tech. 2013 DOI: 10.1021/es4034952

Role of the Pediatrician

- Prevention of everything to optimize children's health
- Lead screening as recommended by CDC and AAP at 1 and 2 years of age
- Inquiry and advocacy

RESEARCH FINDINGS

Results of Pediatric Blood Lead Levels

- **Methods**
  - Data from all blood lead levels processed at Hurley Medical Center
  - HMC Institutional Review Board (IRB) approved
  - All children under 5 years of age
  - Zip codes 48501-48507
  - Two periods of comparison:
    - PRE-SWITCH: January 1, 2013 – September 15, 2013
      - **WATER SWITCH APRIL 2014**
    - POST-SWITCH: January 1, 2015 – September 15, 2015

Results of Pediatric Blood Lead Levels

- **Methods**
  - Analyzed % Elevated Blood Lead (EBL)
    - EBL = Blood lead Levels > 5 g/dL
  - EBL analysis conducted based on scientific literature (most notably DC lead in water exposure)

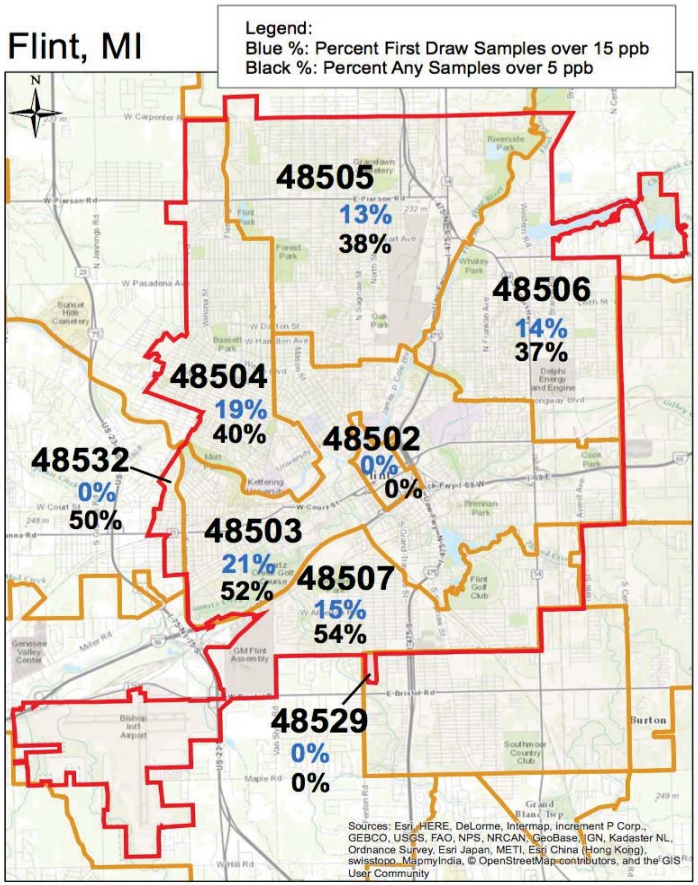
Blood Lead Level Analysis

- Large sample size
  - N= 1746 for Flint children (pre n=906, post n=840)
  - N= 1670 for non-Flint children (pre n=943, post n=727)

Flint results for children 5 years and under:

- PRE-SWITCH % EBL: **2.1%** **(consistent with MDHHS data 2.2)**
- POST-SWITCH % EBL: **4.0%**
- **$p < 0.05$; STATISTICALLY SIGNIFICANT CHANGE**

Zip Codes With High Water Lead



- Focus on zip codes (48503 and 48504) with high water lead levels
- Total n=742, pre n=394, post n=348

Results:

- PRE-SWITCH % EBL: **2.5%**
- POST-SWITCH % EBL: **6.3%**
- **$p < 0.05$; STATISTICALLY SIGNIFICANT CHANGE**

What was rest of county doing?

- Analysis of same time periods for Genesee County children who live outside of City of Flint zips codes (non 48501-48507)
  - N=1670 for non-Flint children (pre n=943, post n=727)

Non-Flint results for children 5 years and under:

- PRE-SWITCH % EBL: **0.6%**
- POST-SWITCH % EBL: **1.0%**
- **p = 0.637; NO STATISTICAL CHANGE**

Blood Lead Level Analysis

- % EBL all children less than 5 years of age

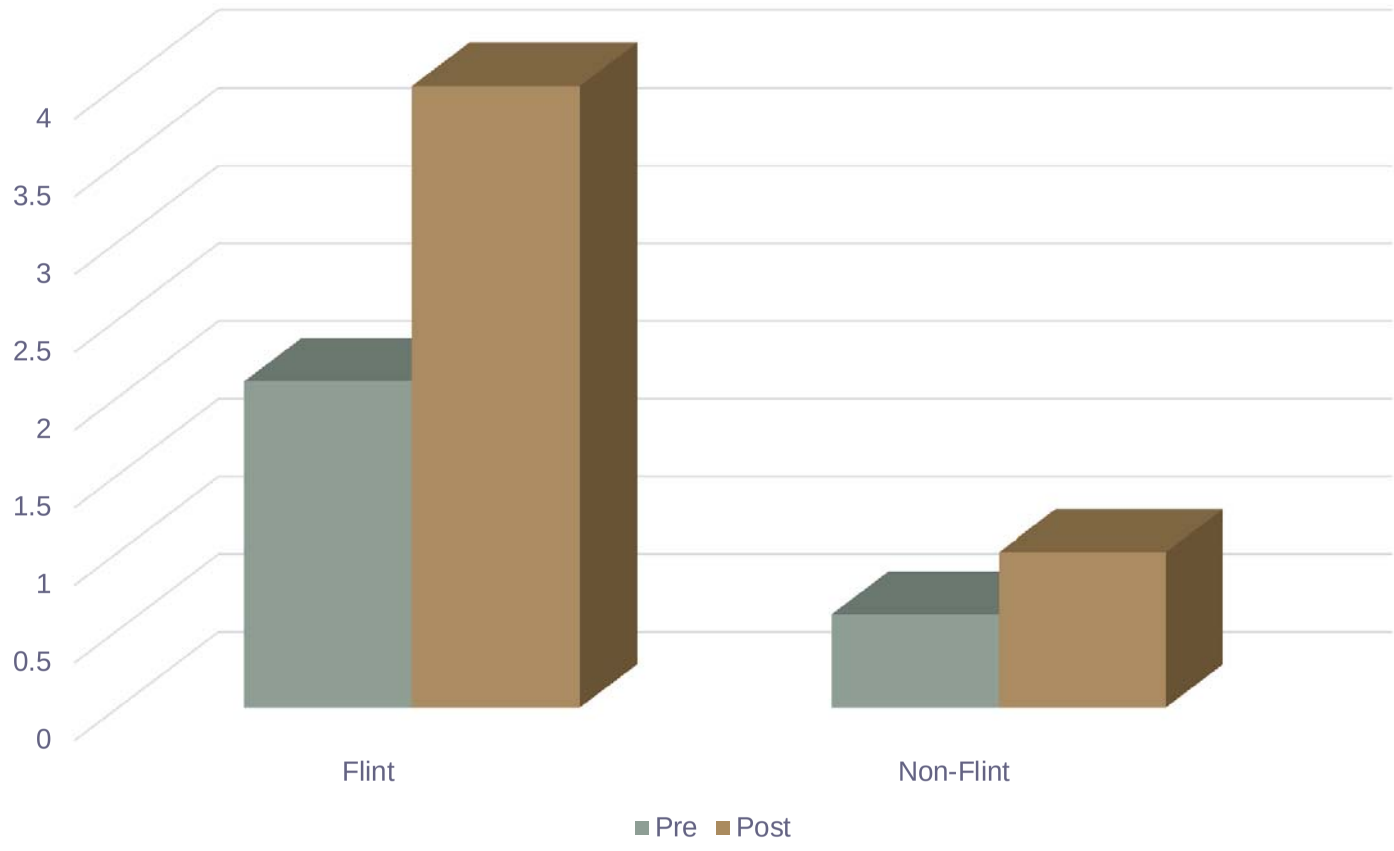
	ALL FLINT (n=1746)	HIGH-water lead FLINT (n=742)	REST OF FLINT (n=1004)	NON-FLINT (n=1670)
PRE-SWITCH	2.1%	2.5%	1.8%	0.6%
POST-SWITCH	4.0%	6.3%	2.4%	1.0%

Blood Lead Level Analysis – 15 month

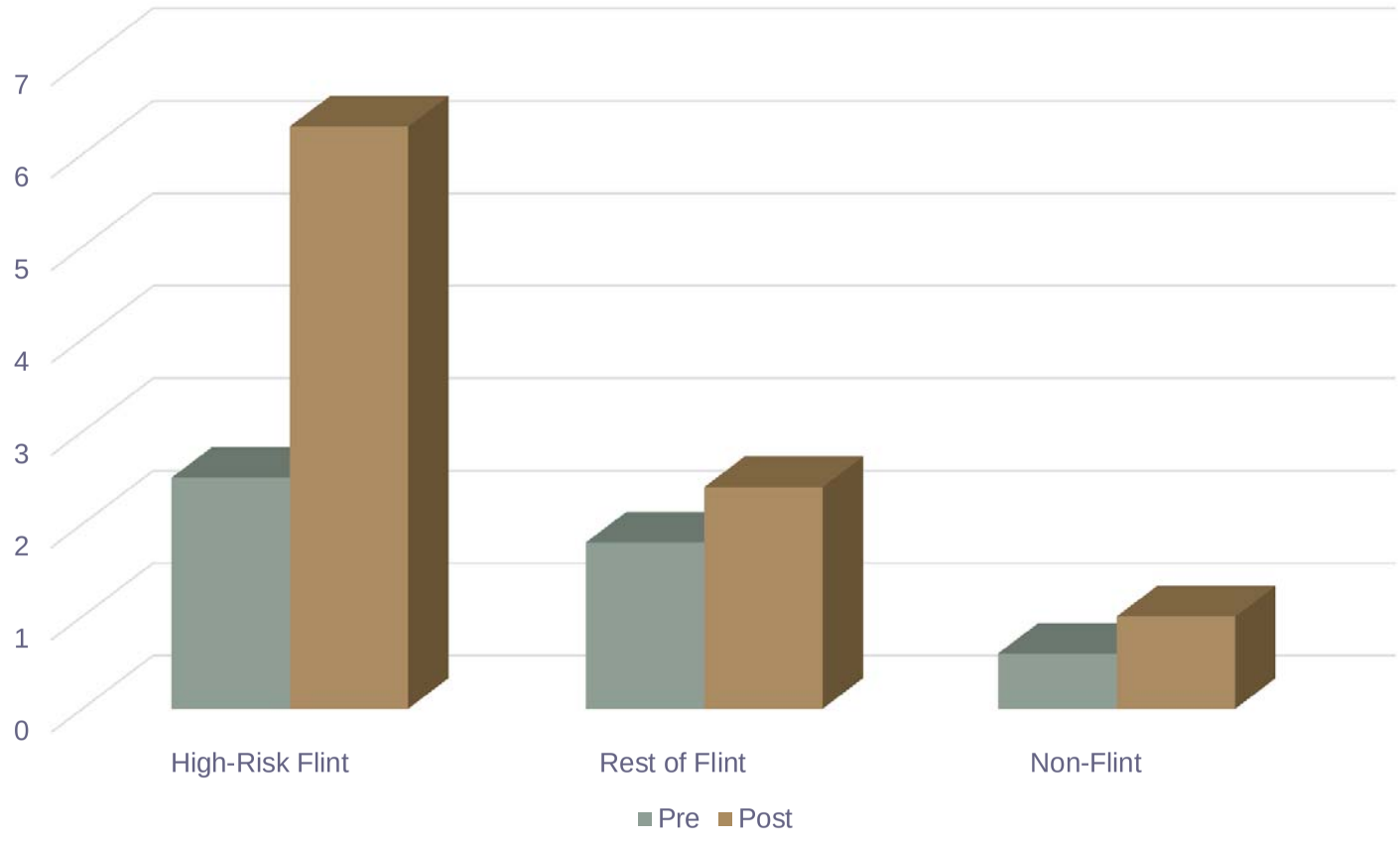
- % EBL children 15 months or less
  - Total Flint n=619, pre n=295, post n=324 (smaller sample size)
  - Total Non-Flint n=816, pre n=443, post n=376

	ALL FLINT (n=619)	HIGH-water lead (n=269)	REST OF FLINT (n=350)	NON-FLINT (n=816)
PRE-SWITCH	1.0%	1.5%	0.6%	0.5%
POST-SWITCH	2.5%	4.4%	1.1%	0.5%

Graphical Summary
Change in % EBL Flint vs Non-Flint



Graphical Summary
Change in % EBL by area



Conclusions from BLL analysis

- Based on our research, % of children with EBL in Flint has increased
  - Most striking increase in zip codes with highest water lead levels
  - Also saw an increase in kids less than 15 months, sample small
- Results underestimate risk:
  - Infants not screened for lead
  - BLL may have peaked before being measured
  - Water usage has dropped

Recommendations

- AAP and CDC recommendation of primary prevention
- Limit further exposure
  - Encourage breast feeding
  - No tap water for high risk groups: infants on formula & pregnant mothers
  - Distribution of lead clearing NSF-approved filters
  - Public education regarding precautions (flushing, cold water, etc)
  - Connect to Lake Huron water source
- Support city's health advisory and health department's public education efforts

And Makayla…

- Asymptomatic now
- But what will her future hold and an entire generation of Flint children if we don't err on the side of safety?

EXHIBIT 35

Elevated Blood Lead Levels in Children Associated With the Flint Drinking Water Crisis: A Spatial Analysis of Risk and Public Health Response

Mona Hanna-Attisha, MD, MPH, Jenny LaChance, MS, Richard Casey Sadler, PhD, and Allison Champney Schnepp, MD

Objectives. We analyzed differences in pediatric elevated blood lead level incidence before and after Flint, Michigan, introduced a more corrosive water source into an aging water system without adequate corrosion control.

Methods. We reviewed blood lead levels for children younger than 5 years before (2013) and after (2015) water source change in Greater Flint, Michigan. We assessed the percentage of elevated blood lead levels in both time periods, and identified geographical locations through spatial analysis.

Results. Incidence of elevated blood lead levels increased from 2.4% to 4.9% ($P < .05$) after water source change, and neighborhoods with the highest water lead levels experienced a 6.6% increase. No significant change was seen outside the city. Geospatial analysis identified disadvantaged neighborhoods as having the greatest elevated blood lead level increases and informed response prioritization during the now-declared public health emergency.

Conclusions. The percentage of children with elevated blood lead levels increased after water source change, particularly in socioeconomically disadvantaged neighborhoods. Water is a growing source of childhood lead exposure because of aging infrastructure. (*Am J Public Health.* Published online ahead of print December 21, 2015: e1–e8. doi:10.2105/AJPH.2015.303003)

In April 2014, the postindustrial city of Flint, Michigan, under state-appointed emergency management, changed its water supply from Detroit-supplied Lake Huron water to the Flint River as a temporary measure, awaiting a new pipeline to Lake Huron in 2016. Intended to save money, the change in source water severed a half-century relationship with the Detroit Water and Sewage Department. Shortly after the switch to Flint River water, residents voiced concerns regarding water color, taste, and odor, and various health complaints including skin rashes.[1] Bacteria, including *Escherichia coli*, were detected in the distribution system, resulting in Safe Drinking Water Act violations.[2] Additional disinfection to control bacteria spurred formation of disinfection byproducts including total trihalomethanes, resulting in Safe Drinking Water Act violations for trihalomethane levels.[2]

Water from the Detroit Water and Sewage Department had very low corrosivity for lead as indicated by low chloride, low chloride-to-sulfate mass ratio, and presence of an orthophosphate corrosion inhibitor.[3,4] By contrast, Flint River water had high chloride, high chloride-to-sulfate mass ratio, and no corrosion inhibitor.[5] Switching from Detroit's Lake Huron to Flint River water created a perfect storm for lead leaching into drinking water.[6] The aging Flint water distribution system contains a high percentage of lead pipes and lead plumbing, with estimates of lead service lines ranging from 10% to 80%.[7] Researchers from Virginia Tech University reported increases in water lead levels (WLLs),[5] but changes in blood lead levels (BLLs) were unknown.

Lead is a potent neurotoxin, and childhood lead poisoning has an impact on many developmental and biological processes, most notably intelligence, behavior, and overall life achievement.[8] With estimated societal costs in the billions,[9–11] lead poisoning has a disproportionate impact on low-income and minority children.[12] When one considers the irreversible, life-altering, costly, and disparate impact of lead exposure, primary prevention is necessary to eliminate exposure.[13]

Historically, the industrial revolution's introduction of lead into a host of products has contributed to a long-running and largely silent pediatric epidemic.[14] With lead now removed from gasoline and paint, the incidence of childhood lead poisoning has decreased.[15] However, lead contamination of drinking water may be increasing because of lead-containing water infrastructures, changes in water sources, and changes in water treatment including disinfectant.[16–18] A soluble metal, lead leaches into drinking water via lead-based plumbing or lead particles that detach from degrading plumbing components. ("Plumbing" is derived from the Latin word for lead,

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Correspondence should be sent to Mona Hanna-Attisha, MD, MPH, FAAP, Hurley Medical Center, Pediatrics 3W, One Hurley Plaza, Flint, MI 48503 (e-mail: mhanna1@hurleymc.com). Reprints can be ordered at http://www.ajph.org by clicking the "Reprints" link.

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doi: 10.2105/AJPH.2015.303003

"plumbum.") Lead was restricted in plumbing material in 1986, but older homes and neighborhoods may still contain lead service lines, lead connections, lead solder, or other lead-based plumbing materials. Lead solubility and particulate release is highly variable and depends on many factors including water softness, temperature, and acidity.[19–21] The US Environmental Protection Agency (EPA) regulates lead in public water supplies under the Safe Drinking Water Act Lead and Copper Rule, which requires action when lead levels reach 15 parts per billion (ppb).

Lead in drinking water is different from lead from other sources, as it disproportionately affects developmentally vulnerable children and pregnant mothers. Children can absorb 40% to 50% of an oral dose of water-soluble lead compared with 3% to 10% for adults.[22] In a dose–response relationship for children aged 1 to 5 years, for every 1-ppb increase in water lead, blood lead increases 35%.[23] The greatest risk of lead in water may be to infants on reconstituted formula. Among infants drinking formula made from tap water at 10 ppb, about 25% would experience a BLL above the Centers for Disease Control and Prevention (CDC) elevated blood lead level (EBLL) of 5 micrograms per deciliter (μg/dL).[24] Tap water may account for more than 85% of total lead exposure among infants consuming reconstituted formula.[25] A known abortifacient, lead has also been implicated in increased fetal deaths and reduced birth weights.[26]

As recommended by the CDC and supported by the American Academy of Pediatrics, blood lead screening is routine for high-risk populations and for children insured by Medicaid at age 1 and 2 years.[27] The CDC-recommended screening ages are based on child development (increased oral–motor behavior), which places a child most at risk for house-based lead exposure (e.g., peeling paint, soil, dust). State and national blood lead–screening programs, however, do not adequately capture the risk of lead in water because infants are at greatest risk.

Armed with reports of elevated WLLs and recognizing the lifelong consequences of lead exposure, our research team sought to analyze blood lead data before (pre) and after (post) the water source switch with a geographic information system (GIS) to determine lead exposure risk and prioritize responses. This research has immediate public policy, public health, environmental, and socioeconomic implications.

This research includes Flint, Michigan, and surrounding municipalities in Genesee County (Greater Flint). Greater Flint is a postindustrial region of nearly 500 000 people struggling from years of disinvestment by the automobile industry and associated manufacturing activities: the region has lost 77% of its manufacturing employment and 41% of employment overall since 1980.[28] National and local data sources demonstrate dismal indicators for children, especially within Flint city limits.[29–32] Greater Flint ranks toward the bottom of the state in rates of childhood poverty (42% in Flint vs 16.2% in Michigan and 14.8% in the United States), unemployment, violent crime, illicit drug use, domestic violence, preterm births, infant mortality, and overall health outcomes (81st out of 82 Michigan counties).

Greater Flint's struggles have been amplified by a history of racial discrimination, whereby exclusionary housing practices were common.[33,34] Such attitudes toward integration later precipitated White flight and emboldened home-rule governance,[35,36] causing a massive decline in tax revenue for the city. The declining industrial and residential tax bases strained the city's ability to provide basic services and reversed the public health fortunes of the city and suburbs.[37] Severely reduced city population densities reduced water demand in the distribution system, exacerbating problems with lead corrosion.

METHODS

This retrospective study includes all children younger than 5 years who had a BLL processed through the Hurley Medical Center's laboratory, which runs BLLs for most Genesee County children. The pre time period (before the water source change) was January 1, 2013, to September 15, 2013, and the post time period (after the water source change) was January 1, 2015, to September 15, 2015. The primary study group comprised children living within the city of Flint (n = 1473; pre = 736; post = 737) who received water from the city water system. Children living outside the city where the water source was unchanged served as a comparison group (n = 2202; pre = 1210; post = 992).

After institutional review board approval and Health Insurance Portability and Accountability Act waiver, we drew data from the Epic electronic medical record system including BLL, medical record number, date of birth, date of blood draw, full address, sex, and race. For each child, only the highest BLL was maintained in the data set. We coded timing (pre or post) of the BLL on the basis of the date of blood draw. We calculated age at time of blood draw.

We geocoded the data set with a dual-range address locator, and manually confirmed accuracy of geocoded addresses. We conducted a series of spatial joins to assign participant records to Greater Flint municipalities and Flint wards (including those with high WLL), enabling the calculation of the number and percentage of children with EBLLs in each geographic region for both time periods. The reference value for EBLL was 5 μg/dL or greater. We identified Flint wards with high WLLs with water lead sampling maps.[38] Wards 5, 6, and 7 had the highest WLLs; in each ward, more than 25% of samples had a WLL higher than 15 ppb. We theorized that children living in this combination of wards would have the highest incidence of EBLLs (referred to as "high WLL Flint"; the remainder of Flint was referred to as "lower WLL Flint").

We derived overall neighborhood-level socioeconomic disadvantage from census block group variables intended to measure material and social deprivation. We calculated these scores from an unweighted z score sum of rates of lone parenthood, poverty, low educational attainment, and unemployment (adapted from Pampalon et al.[39]; used previously in Flint by Sadler et al.[40]), and assigned these to each child on the basis of home address. Positive values denote higher disadvantage, and negative values denote lower disadvantage. Table 1 highlights the overall socioeconomic disadvantage score comparison by time period and area.

We created spatial references for EBLL risk and a predictive surface for BLL by using GIS, providing the ability to see otherwise invisible spatial–temporal patterns in environmental exposure.[17] Because of the need to

TABLE 1—Demographic Comparison of the Time Periods Before (Pre) and After (Post) Water Source Change From Detroit-Supplied Lake Huron Water to the Flint River, by Area: Flint, MI, 2013 and 2015

	Outside Flint		All Flint		High WLL Flint		Lower WLL Flint	
Characteristic	Pre	Post	Pre	Post	Pre	Post	Pre	Post
Gender, %								
Male	51.6	49.5	48.6	52.9	47.6	54.4	49.1	52.3
Female	48.4	50.5	51.4	47.1	52.4	45.6	50.9	47.7
Race/ethnicity, %								
African American	24.3	24.5	69.4	70.6	74.9	78.8	67.0	66.9
Other categories	75.7	75.5	30.6	29.4	25.1	21.2	33.0	33.1
Age, y, mean	1.89	1.83	2.09	2.06	2.06	2.02	2.11	2.07
Overall socioeconomic disadvantage score	−0.83	−0.98	2.94	2.88	2.18	2.39	3.28	3.10

Note. WLL = water lead level. No statistically significant differences were found in any pre–post value within any of the 4 geographical areas.

understand spatial variations and geographically target resources, we also ran ordinary Kriging with a spherical semivariogram model on the entire data set for Greater Flint, allowing interpolation of associated BLL risks with lead in water. Previous methods for evaluating spatial variation in lead levels have ranged from multivariable analyses at the individual level[41] to interpolation methods such as inverse distance weighting[42] and Kriging.[43] Given our assumption that lead risk is spatially correlated in Greater Flint because of the age and condition of pipes, interpolation methods are appropriate for building a preliminary risk surface. Both inverse distance weighting and Kriging derive such surfaces by calculating values at unmeasured locations based on weighting nearby measured values more strongly than distant values.[44] Whereas inverse distance weighting is a deterministic procedure and relies on predetermined mathematical formulae, Kriging has the added sophistication of using geostatistical models that consider spatial autocorrelation, thereby improving accuracy of prediction surfaces (ArcGIS Desktop version 10.3, Environmental Systems Research Institute, Redlands, CA). As well, Kriging can be run with relatively few input points: adequate ranges fall between 30 and 100 total points, although Kriging has been conducted with just 7.[44]

Our city of Flint sample included 736 children in the pre period and 737 children in the post period, which amounts to a density of approximately 22 points per square mile. Kriging has become an increasingly common method for measuring variations in soil lead, and is given more in-depth treatment elsewhere.[45] To examine change in proportion of children with EBLL from the pre to post time periods, we used χ^2 analysis with continuity correction for each area (outside Flint, all Flint, high WLL Flint, and lower WLL Flint). In addition, we examined differences in overall socioeconomic disadvantage scores from the pre to post time periods by using the independent *t* test. Finally, we used both χ^2 analysis with continuity correction and 1-way ANOVA to assess demographic differences by area. We used post hoc least significant difference analysis following statistically significant 1-way ANOVAs.

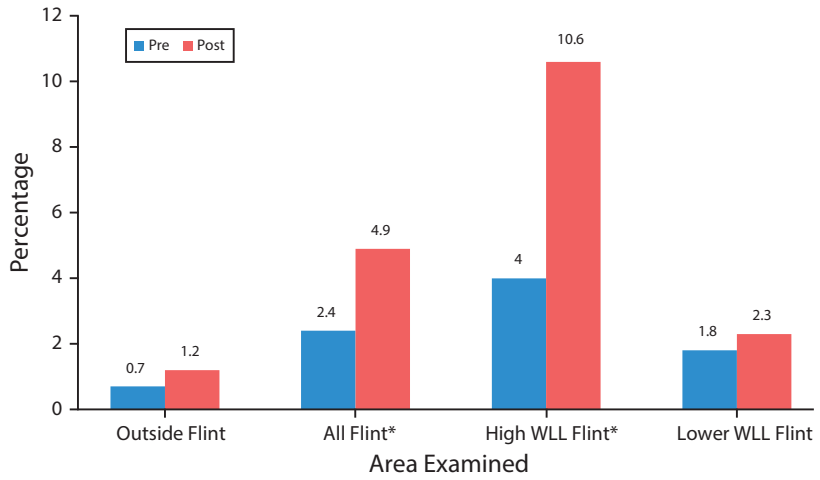
RESULTS

We uncovered a statistically significant increase in the proportion of Flint children with EBLL from the pre period to the proportion of Flint children in the post period. In the pre period, 2.4% of children in Flint had an EBLL; in the post period, 4.9% of children had an EBLL ($P < .05$). By comparison, outside of Flint water, the change in EBLL was not statistically significant (0.7% to 1.2%; $P > .05$). In high WLL Flint, EBLL increased from 4.0% to 10.6% ($P < .05$). Figure 1 shows the EBLL percentage change per area.

Results of the GIS analyses show significant clustering of EBLLs within the Flint city limits. According to ordinary Kriging, Figure 2 shows a predicted surface based on observations of actual child BLL geocoded to home address to visualize BLL variation over space (measured in μg/dL). The darkest shades of red represent the highest risk for EBLL based on existing observations. Outside Flint, the entire county falls entirely within the lowest half of the range (in shades of blue); the only locations where predicted BLL is greater than 1.75 μg/dL is within Flint city limits.

Within Figure 2, each ward is also labeled according to the percentage of water samples that exceeded 15 ppb. The areas with the highest WLLs strongly coincide with the areas with the highest predicted BLLs. In addition, the high percentage of EBLL in wards 5, 6, and 7 also correspond with the high WLLs in wards 5, 6, and 7 (the labels in Figure 2). Table 2 shows ward-specific WLLs, pre period and post period EBLL percentages, and predicted BLL and predicted change in BLL from Kriging.

Areas experiencing the highest predicted BLL in the post period (Figure 2) are generally also areas with greatest change in predicted BLL (measured in μg/dL) when compared with the pre period (Table 2; Figure A, available as a supplement to the online version of this article at http://www.ajph.org). Figure A quantifies this rate of change with a green to red scale: large increases are shown in increasingly darker shades of red, whereas large decreases are shown in increasingly darker shades of green. These once again match with city wards that experienced greater rates of EBLL percentage increase (Figure 1, Table 2). In wards 5 and 6 (which experienced a predicted 0.51 and 0.27 μg/dL increase, respectively), the EBLL percentage more than tripled. In ward 5, the EBLL percentage increased from 4.9% to 15.7% ($P < .05$). The area of intersection between wards 3, 4, and 5 (in the east side of the city) also appeared high in the Kriging analysis of Figure 2, and with a different unit of aggregation this neighborhood would also exhibit a significant increase in EBLL percentage. Ward 7 had high pre period and post period EBLL percentage levels above 5% (with a particularly high rate in the western portion of the ward). Citywide,



Note. WLL = water lead level.
*$P < .05$.

FIGURE 1—Comparison of Elevated Blood Lead Level Percentage, Before (Pre) and After (Post) Water Source Change From Detroit-Supplied Lake Huron Water to the Flint River: Flint, MI, 2013 and 2015

4 wards (1, 4, 7, and 9) experienced decreases in predicted BLL, 3 wards (2, 5, and 6) experienced large increases, and 2 wards (3 and 8) remained largely the same (Figure A).

Overall, statistically significant differences exist between the areas examined (outside Flint, high WLL Flint, and lower WLL Flint) in all demographic characteristics except sex. The overall percentage of African American children is 24.4% outside Flint, compared with 76.8% in high WLL Flint and 67.0% in lower WLL Flint ($P < .001$). Children outside Flint were younger (mean = 1.86 years [SD = 1.10]) than high WLL Flint (mean = 2.04 years [SD = 1.02]) and lower WLL Flint (mean = 2.09 years [SD = 1.07]; $P < .001$). Differences in overall socioeconomic disadvantage scores are likewise significant ($P < .001$). Post hoc least significant difference analysis shows statistically significant differences for overall socioeconomic disadvantage between outside Flint and high WLL Flint ($P < .001$), between outside Flint and lower WLL Flint ($P < .001$), and between high WLL Flint and lower WLL Flint ($P < .001$).

DISCUSSION

Our findings reveal a striking increase in the percentage of Flint children with EBLL when we considered identical seasons before and after the water source switch, with no statistically significant increase in EBLL outside Flint. The spatial and statistical analyses highlight the greatest EBLL increase within certain wards of Flint, which correspond to the areas of elevated WLLs.

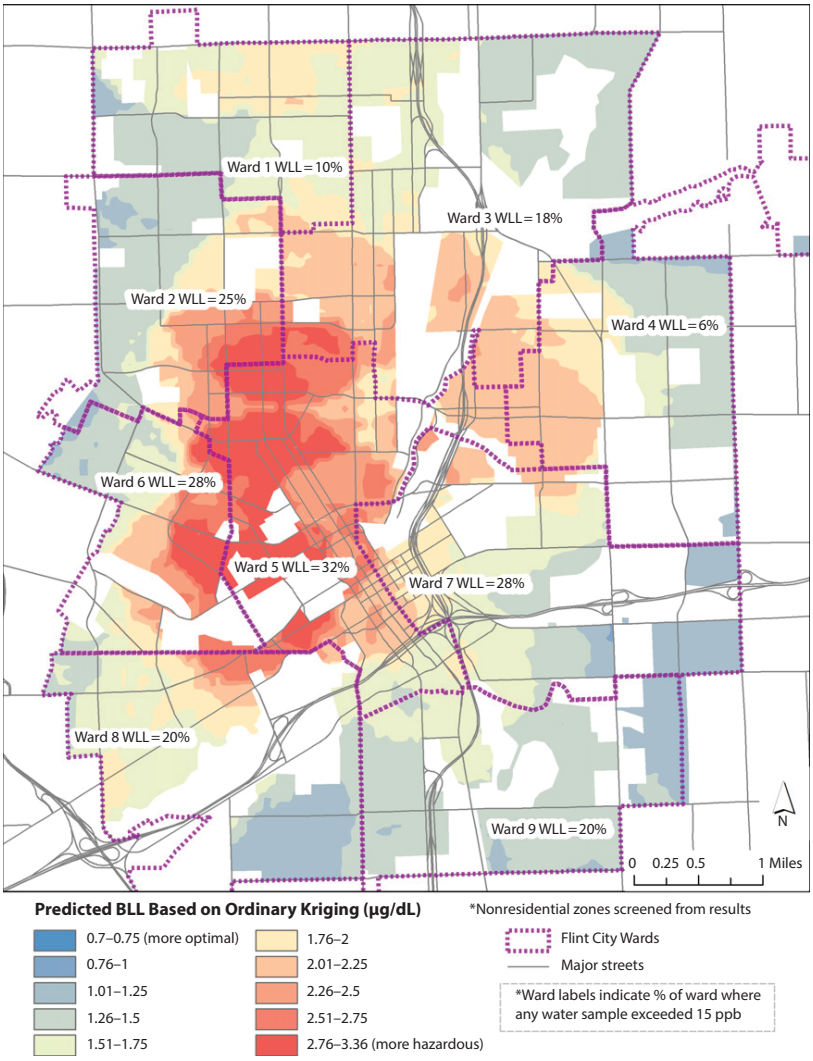
A review of alternative sources of lead exposure reveals no other potential environmental confounders during the same time period. Demolition projects by the Genesee County Land Bank Authority (Heidi Phaneuf, written communication, October 29, 2015) showed no spatial relationship to the areas of increased EBLL rates. As well, no known new lead-producing factories nor changes in indoor lead remediation programs were implemented during the study period. Although Flint has a significant automobile history, the historical location of potentially lead-using manufacturing (e.g., battery plants, paint and pigment storage, production plants) do not align with current exposures.

Because there was no known alternative source for increased lead exposure during this time period, the geospatial WLL results, the innate corrosive properties of Flint River water, and, most importantly, the lack of corrosion control, our findings strongly implicate the water source change as the probable cause for the dramatic increase in EBLL percentage.

As in many urban areas with high levels of socioeconomic disadvantage and minority populations,[46] we found a preexisting disparity in lead poisoning. In our pre water source switch data, the EBLL percentage in Flint was 2.4% compared with 0.7% outside Flint. This disparity widened with a post water source switch Flint EBLL of 4.8%, with no change in socioeconomic or demographic variables (Table 1). Flint children already suffer from risk factors that innately increase their lead exposure: poor nutrition, concentrated poverty, and older housing stock. With limited protective measures, such as low rates of breastfeeding,[47,48] and scarce resources for water alternatives, lead in water further exacerbates preexisting risk factors. Increased lead-poisoning rates have profound implications for the life course potential of an entire cohort of Flint children already rattled with toxic stress contributors (e.g., poverty, violence, unemployment, food insecurity). This is particularly troublesome in light of recent findings of the epigenetic effects of lead exposure on one's grandchildren.[49]

The Kriging analysis showed the highest predicted BLLs within the city along a wide swath north and west of downtown. This area has seen significant demographic change, an increase in poverty, and an increase in vacant properties, especially over the past 25 years (Richard Sadler, written communication, October 5, 2015). Higher BLLs were also predicted northeast of downtown and in other older neighborhoods where poverty and vacancy rates have been high for many decades. Significantly, the biggest changes in predicted BLL since 2013 were also found in these impoverished neighborhoods; more stable neighborhoods in the far north and south of the city may have experienced improved predicted BLLs because of prevention efforts taken by the more-often middle-class residents in response to the water source change. Of considerable interest is that the areas shown as having the best public health indices by Board and Dunsmore in Figure 2 of their 1948 article[37] are virtually identical to the areas with the worst lead levels today.

After our preliminary zip code–based findings (pre to post water source switch



Note. BLL = blood lead level; WLL = water lead level.

FIGURE 2—Predicted Surface of Child Blood Lead Level and Ward-Specific Elevated Water Lead Level After (Post) Water Source Change From Detroit-Supplied Lake Huron Water to the Flint River: Flint, MI, 2015

EBLL = 2.1% to 4.0%; $P < .05$) were shared at a press conference,[50] the City of Flint and the Genesee County Health Department released health advisories,[51] and the county health department subsequently declared a public health emergency.[52] Shortly after, the State of Michigan released an action plan with short- and long-term solutions focusing on additional sampling, filter distribution, and corrosion control.[53] One week later, Michigan's governor revealed WLLs in 3 schools to be in the toxic range with 1 school showing a water lead level of 101 ppb, almost 7 times the level that requires remediation.[54] A $12 million plan to reconnect to Detroit's water source was announced.[54]

We undertook our current spatial analytic approach to overcome limitations of zip code boundaries and to develop a more thorough understanding of specific areas in Flint where EBLL risk is more severe (post office addresses often do not align with municipal boundaries in Michigan, and one third of Flint mailing addresses are not in the city of Flint). This spatial analysis is valuable for understanding subneighborhood patterns in EBLL risk because aggregation by zip code or ward minimizes the richness of spatial variation and creates artificial barriers that may obscure hot spots (as in the confluence of wards 3, 4, and 5).

Such use of spatial analysis for estimating lead exposure risk has been used to target blood lead–screening programs. In our case, in addition to identifying areas of risk, spatial analysis helps guide municipal and nongovernmental relief efforts aimed at identifying vulnerable populations in specific neighborhoods for priority distribution of resources (e.g., bottled water, filters, premixed formula).

Limitations

Our research contains a few limitations. First, we may have underestimated water-based lead exposure. Our sample included all children younger than 5 years with blood lead screening, although the greatest risk from lead in water is in utero and during infancy when lead screening is not done. If lead screening were recommended at a younger age (e.g., 6 or 9 months) for children who live in homes with potential lead piping or lead service lines, more children with EBLL from water could be identified, although state and national comparison rates would be lacking. Second, lead screening is not completed for all children. It is mandated by Medicaid and CDC-recommended for other high-risk groups; such data may be skewed toward higher-risk children and thus overestimate EBLL, especially in non–high-risk areas. Third, the underserved population of Flint has significant housing instability: lead levels may reflect previous environmental exposure, and exposure often cannot be adequately estimated on the basis of current residence alone.[55]

Fourth, although large, our sample does not reflect all lead screening from Flint. We estimate that our data capture approximately 60% to 70% of the Michigan Childhood Lead Poisoning Prevention Program data for Flint. Annual data released from this program further support our findings, revealing an annual decrease in EBLL percentage from May to April 2010 to 2011 until the same period in 2013 to 2014 (4.1%,

TABLE 2—Ward-Based Comparison of Observed and Predicted Water Lead Level Percentages, Before (Pre) and After (Post) Water Source Change From Detroit-Supplied Lake Huron Water to the Flint River: Flint, MI, 2013 and 2015

Ward	WLL % > 15 ppb	Pre EBLL%	Post EBLL%	Predicted Post BLL[a]	Change in Predicted BLL From Pre to Post, µg/dL
1	10	0.0	2.8	1.4	−0.10
2	25	0.0	1.4	0.7	0.19
3	18	1.0	4.5	2.9	0.05
4	6	3.1	1.7	2.4	−0.15
5[b]	32	4.9	15.7	10.3	0.51
6[b]	28	2.2	9.3	5.5	0.27
7[b]	28	5.4	5.9	5.7	-0.26
8	20	2.7	1.4	2.0	0.01
9	20	3.4	1.6	2.5	−0.43

Note. BLL = blood lead level; EBLL = elevated blood lead level; WLL = water lead level.
[a]Ordinary Kriging geostatistical analysis.
[b]Indicates wards defined as high WLL risk in this study.

3.3%, 2.7%, 2.2%, respectively[56]; Robert L. Scott, e-mail correspondence, September 25, 2015). Following the water switch in April 2014, the 4-year declining trend (as seen nationally) reversed with an annual EBLL of 3.0%.

We found consistent results (with control for age and methodology) when we analyzed Michigan Childhood Lead Poisoning Prevention Program data for both high WLL Flint (EBLL percentage increased: 6.6% to 9.6%) and outside Flint (EBLL percentage remained virtually unchanged: 2.2% to 2.3%). Our institution-processed laboratory blood lead tests, however, had an even greater proportion of children with EBLLs versus state data in the post period. This may reflect that the BLLs processed at Hurley Medical Center, the region's only safety-net public hospital, represent a patient population most at risk with limited resources to afford tap water alternatives.

Conclusions and Future Research

Future research directions include conducting more detailed geospatial analyses of lead service-line locations with locations of elevated BLLs and WLLs; repeating identical spatial and statistical analyses in the same time period in 2016 reflecting changes associated with the health advisory and return to Lake Huron source water; analyzing feeding type (breastfed or reconstituted formula) for children with EBLLs; analyzing cord blood lead of Flint newborns compared with non-Flint newborns; and conducting water lead testing from homes of children with EBLLs.

A once celebrated cost-cutting move for an economically distressed city, the water source change has now wrought untold economic, population health, and geopolitical burdens. With unchecked lead exposure for more than 18 months, it is fortunate that the duration was not longer (as was the case in Washington, DC,'s lead-in-water issue).[16] Even so, the Flint drinking water crisis is a dramatic failure of primary prevention. The legal safeguards and regulating bodies designed to protect vulnerable populations from preventable lead exposure failed.

The Lead and Copper Rule requires water utilities to notify the state of a water source or treatment change recognizing that such changes can unintentionally have an impact on the system's corrosion control.[57] Although a review is required before implementing changes, the scope of risk assessment is not specified and is subject to misinterpretation. In response to the Flint drinking water crisis, the EPA recently released a memo reiterating and clarifying the need for states to conduct corrosion control reviews before implementing changes.[58] This recommendation is especially relevant for communities with aging infrastructures, usurped city governance, and minimal water utility capacity; in such situations, there is an increased need for state and federal expertise and oversight to support decisions that protect population health.

Through vigilant public health efforts, lead exposure has fallen dramatically over the past 30 years.[13] With the increasing recognition that no identifiable BLL is safe and without deleterious and irreversible health outcomes,[13] *Healthy People 2020* identified the elimination of EBLLs and underlying disparities in lead exposure as a goal.[59] Regrettably, our research reveals that the potentially increasing threat of lead in drinking water may dampen the significant strides in childhood lead-prevention efforts. As our aging water infrastructures continue to decay, and as communities across the nation struggle with finances and water supply sources, the situation in Flint, Michigan, may be a harbinger for future safe drinking-water challenges. Ironically, even when one is surrounded by the Great Lakes, safe drinking water is not a guarantee. AJPH

CONTRIBUTORS

M. Hanna-Attisha originated the study, developed methods, interpreted analysis, and contributed to the writing of the article. J. LaChance and R. Casey Sadler assisted with the development of the methods, analyzed results, interpreted the findings, and contributed to the writing of the article. A. Champney Schnepp assisted with the interpretation of the findings and contributed to the writing of the article.

ACKNOWLEDGMENTS

We would like to thank Marc Edwards, PhD, and Elin Betanzo, MS, for their expert assistance with understanding the historical and scientific background of lead in water.

HUMAN PARTICIPANT PROTECTION

This study was reviewed and approved by Hurley Medical Center institutional review board.

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EXHIBIT 36

Dayne Walling
Mayor

Natasha L. Henderson
City Administrator

Jason Lorenz
Public Information Officer
Office: (810) 237-2039
Cell: (810) 875-2576
jlorenz@cityofflint.com

For Immediate Release

City of Flint Issues Lead Advisory

Flint, Michigan – September 25, 2015 – The City of Flint is issuing a Lead Advisory for residents to be aware of lead levels in drinking water after hearing concerns from the medical community. While the City is in full compliance with the Federal Safe Drinking Water Act, this information is being shared as part of a public awareness campaign to ensure that everyone takes note that no level of lead is considered safe.

The Genesee County Health Department has issued a fact sheet regarding lead precautions for residents. The fact sheet can be found on their website at www.gchd.us. Here are a few of the suggestions the Health Department recommends:

- Flush your cold-water pipes by running the water for approximately 5 minutes
- Use only water from the cold-water tap for drinking, cooking, and especially for making baby formula.
- Install a water filter that is NSF-certified for lead removal.

Lead contamination can leach into water from a home's lead water service lines, lead solder, and leaded plumbing materials including fixtures, faucets, and fittings. Older service lines with pipes and fixtures installed before 1986 can sometimes be more susceptible to lead issues due to materials used in the home such as lead based paint and lead pipes.

This message is meant as a precaution to residents and does not mean that all homes in the City will experience the same issue. Residents with concerns about lead service lines

Dayne Walling
Mayor

Natasha L. Henderson
City Administrator

and lead in home plumbing fixtures are encouraged to contact the City's Utilities Division to schedule a free water testing by calling the Water Treatment Plant at 810-787-6537 and pressing #1 after prompted or by emailing flintwater@cityofflint.com.

The City of Flint is working proactively along with the County Health Department, the Michigan Department of Environmental Quality, and the U.S. Environmental Protection Agency to improve the water system throughout the City. An accelerated plan to add a corrosion control agent to our water within 30 to 60 days with expedited approval from the Michigan Department of Environmental Quality is already underway. This will reduce corrosion which can cause lead in old pipes to leach into the water.

This plan is in addition to Mayor Walling's letter requesting $30 Million in water infrastructure assistance funding from the State of Michigan. $10 Million of that request would be for the replacement of lead service lines in households to ensure that lead no longer presents a danger to the drinking water of our residents. As the letter states, "It is the City's position that the abatement of lead through the removal of lead containing pipes and fixtures in homes is the best long term solution to keeping our residents' water safe."

Mayor Walling further stated: "I am extremely concerned about the risks around lead with Flint's children and I will be working tirelessly to ensure the water is safe and all of our families have the information they need. I also will continue to pursue funding for infrastructure improvements and a comprehensive healthy homes initiative that addresses lead in paint and pipes. We have to get the lead out of our community to eliminate the threat of childhood lead poisoning."

The City of Flint continues working proactively with the County Health Department, the Michigan Department of Environmental Quality, and the U.S. Environmental Protection Agency to improve the water system throughout the City. The City remains committed to working with all of our partners in the Water Technical Advisory Committee to address all

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Dayne Walling
Mayor

Natasha L. Henderson
City Administrator

issues of public health and quality concerns that face the community. Updates on progress made in addressing this issue will be made during regular public meetings including City Council and other scheduled meetings. Information on this and all related matters will continue to be posted on the City of Flint's website, cityofflint.com.

–END–

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EXHIBIT 37

Genesee County Board of Commissioners

1101 BEACH STREET, ROOM 312 FLINT, MICHIGAN 48502

TELEPHONE: (810) 257-3020
FAX: (810) 257-3008

-COMMISSIONERS-

BRYANT NOLDEN
DISTRICT 1

BRENDA CLACK
DISTRICT 2

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DISTRICT 3

JOHN NORTHRUP
DISTRICT 4

MARK YOUNG
DISTRICT 5

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MICHAEL LYNCH
DISTRICT 7

TED HENRY
DISTRICT 8

PEGGE ADAMS
DISTRICT 9

October 1, 2015

Public Health Emergency Declaration for People Using the Flint City Water Supply with the Flint River as the Source

The County is issuing an Emergency Advisory recommending that people not drink the water coming from the City of Flint using the Flint River as the water source unless:

> It has been tested to assure it does not contain elevated levels of lead.
>
> It is being filtered through a National Sanitation Foundation (NSF) approved filter certified to remove lead that meets ANSI standard 53.

Findings reported in the Detroit Free Press September 30, 2015 indicate that Governor Snyder has publically acknowledged that Flint's water supply "appears" to have problems. Snyder has conceded that "it appears that (water) lead levels could be higher or have increased," and that there are "probably things that weren't fully understood when the switch was made." This is in direct contrast to previous reports from the State that downplayed the severity of the situation and conflicted with local data released by researchers at Hurley Medical Center.

Young children are most vulnerable to leads effects, because prior to age six, their brain and central nervous system are still forming and easily susceptible to damage. For an adult to suffer significant health effects, exposure to lead would have to be sustained and more intense. Most adults who are affected by lead have been exposed in an occupational setting, such as working as a house painter or in a battery recycling plant.

Pregnant women are at special risk because the lead they absorb crosses the placenta and enters the fetus.

It's important to remember that there is no known safe level of lead in a human body, Experts now use a reference level of 5 micrograms per deciliter to identify children with blood lead levels that are much higher than most children's levels. This new level is based on the U.S. population of children ages 1-5 years who are in the highest 2.5% of children when tested for lead in their blood.

Lead in water can contribute to a child's blood lead level. The Michigan Department of Environmental Quality, who regulates municipal water supplies, has assured us that the water leaving the Flint Water Plant meets all Federal and State requirements. The City of Flint has a documented problem with lead in its drinking water due to service and household lines that may contain lead or lead solder which can leach lead because of the corrosivity of the water since changing to the Flint River as the source supply. Generally, those who are most vulnerable

to leads health effects from exposure to unfiltered tap water are the very youngest children. For this reason, if you are not sure about the lead content in your tap water, it's best to either use a filter that has been found to be effective for reducing or eliminating lead, or to use bottled water instead. Water filters should be National Sanitation Foundation (NSF) certified to remove lead and meet ANSI standard 53. If these options are not available to you, then it's best to let the water run for at least five minutes before using it for either drinking or cooking purposes. Always use cold water instead of hot water for drinking and cooking.

It's especially important to avoid using untested or unfiltered tap water for mixing infant formula unless you can assure your water is lead free.

When leaded gasoline was in widespread use in this country, the lead came out the tail pipe and was deposited in yards near the roads. That lead may still be in those yards. In addition, lead paint continues to be a major source of childhood lead poisoning and can be found in homes built before 1978 when lead paint was banned in the U.S. and may be a hazard inside and outside the home especially where paint is worn or flaking.

There are many other potential sources of lead exposure, including:

- "Home remedies" and cosmetics imported from other countries
- Tamarind or chili-based candies from Mexico
- Stained glass windows
- Fishing sinkers
- Firing ranges
- Old, deteriorated mini-blinds
- Bean pots and painted ceramics
- Crystal decanters
- Lead crystal glassware

Since no safe level has been identified it is in everyone's interest to reduce exposure to lead as much as possible. Recommendations on ways to reduce lead exposure can be found on the Genesee County Health Department website www.gchd.us and Center for Disease Control and Prevention website: http://www.cdc.gov/nceh/lead/tips.htm .

Recent data provided by Hurley researchers has indicated a significant increase in blood lead levels in children after the switch to Flint River water. The County Health Officer has requested that MDHHS provide specific data to support their claim that state data is more comprehensive and does not show a significant increase. To date the state has failed to provide the requested data by the September 30, 2015 deadline in our previous request to the state.

COUNTY OF GENESEE

BY: _____ Date: 10-1-15

Jamie W. Curtis, Chairperson
Board of Commissioners

BY: _____ Date: 10-1-15

Brenda Clack, Chairperson
Human Services Committee
Board of Commissioners

BY: _____ Date: 10-1-15

Bryant W. Nolden, Vice Chairperson
Board of Commissioners

GENESEE COUNTY HEALTH DEPARTMENT

BY: Mark Valacak Date: 10-1-15

Mark Valacak, M.P.H.
Health Officer

EXHIBIT 38

RESOLUTION NO.: CA/00 2015 150872

PRESENTED: 10-12-15

ADOPTED: RTAB 10-14-15

RESOLUTION AUTHORIZING A BUDGET AMENDMENT TO INCREASE THE WATER AND SEWER BUDGET BY $12,000,000.00 AND TO ALLOW FOR EXPENDITURES FROM THOSE FUNDS TO FACILITATE THE SWITCH BACK TO THE DWSD WATER SUPPLY

BY THE CITY ADMINISTRATOR:

Due to the serious health threat facing the residents of the City of Flint, the Administration has been diligently working toward a feasible and speedy resolution to the City's water crisis; and

Through the commitment of $6 million from the State of Michigan and $4 million from the C.S. Mott Foundation, a total of $10 million in contributions have been pledged to assist the City with the cost of purchasing water from the Detroit Water and Sewerage Department and its successor, the Great Lakes Water Authority, until the City is able to receive water from the Karegnondi Water Authority (KWA).

The City Administrator and the Mayor have agreed to the acceptance of these funds. At this time, the KWA reports that construction is on schedule to be completed by June 30, 2016. The City estimates that the total cost to purchase water through DWSD will be $12 million for 9 months. The balance of $2 million not covered by the generous pledges of State and Local resources is the responsibility of the City.

A budget amendment is necessary to reflect both an increase in revenues for the receipt of $10 million in assistance and $2 million of budgeted Use of Fund Balance and an increase in expenditures of $12 million for the purchase of DWSD water supply.

IT IS RESOLVED that the Finance Department is authorized to process a budget amendment to the appropriate Water and Sewer funds to facilitate the switch back to the Detroit water system as soon as practicable. Specific revenue and expenditure line items will be provided by the Chief Financial Officer.

APPROVED AS TO FORM:

for

Peter M. Bade, City Attorney

FOR THE CITY OF FLINT:

Natasha L. Henderson, City Administrator

APPROVED AS TO FINANCE:

Jody N. Lundquist, Chief Financial Officer

APPROVED BY THE FLINT CITY COUNCIL:

PRESENTED TO CITY COUNCIL: 10/12/2015

ADOPTED BY CITY COUNCIL: 10/12/2015

ADOPTED BY THE RECEIVERSHIP TRANSITION ADVISORY BOARD OCTOBER 14, 2015

EXHIBIT 39

150875

RESOLUTION NO.: CA101 2015

PRESENTED: 10-12-15

ADOPTED: RTAB 10-14-15

RESOLUTION AUTHORIZING THE CITY ADMINISTRATOR TO TAKE NECESSARY ACTION TO CONVERT TO THE DETROIT WATER SYSTEM

BY THE CITY ADMINISTRATOR:

In order to promote the health, safety and welfare of this community, it is in the best interests of the City of Flint for the Detroit Water and Sewer Department (DWSD) to supply the City with treated water pending completion of the Karegnondi Water Authority; and

In order for DWSD to supply the City with water, it will be necessary to utilize pipe owned by the Genesee County Drain Commission (GCDC); and

The City, DWSD and GCDC are actively negotiating the terms of the necessary agreements to ensure this transition occurs as soon as possible; and

IT IS RESOLVED that the City Administrator is hereby authorized to enter into agreements with DWSD and GCDC for conversion to the Detroit Water System.

APPROVED AS TO FORM:

Peter M. Bade, City Attorney

Jody N. Lundquist, Chief Financial Officer

FOR THE CITY OF FLINT:

Natasha L. Henderson, City Administrator

ADOPTED BY THE RECEIVERSHIP TRANSITION ADVISORY BOARD OCTOBER 14, 2015

APPROVED BY CITY COUNCIL:

PRESENTED TO CITY COUNCIL: 10/12/2015

ADOPTED BY CITY COUNCIL: 10/12/2015