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Flint, Michigan: Lethal Water

2017

Between December 2011 and April 2015, the city of Flint, Michigan, was in legal “receivership,” a state of financial emergency that is usually a last-ditch attempt to avoid total bankruptcy. Over approximately 65 years, Flint had gone from automotive manufacturing powerhouse second only to Detroit in the 1950s,¹ to a city with high levels of poverty and unemployment. Starting in the 1960s, Flint began losing residents to better opportunities elsewhere. Over the period of 55 years, 100,000 citizens fled. By 2015, only 99,000 citizens were still living in Flint.² Like its neighbor, Detroit, located about 70 miles to the southeast, Flint’s fortunes had dwindled with the decline of the American automobile industry. By 2015, approximately 57 percent of Flint citizens were Black or African American; 41 percent lived in poverty, and the median household Flint income was \$24,000; nearly one in five of citizens had a disability, and as of 2014, 14 percent had no health insurance.³ In 2015, Flint was rated the third most dangerous city in the United States for violent crime and sexual assault.⁴ By some estimates, the city’s unemployment rate in 2016 was more than twice the national average.⁵

Dollars, Cents, and Water

During Flint’s 2011-2015 fiscal crisis, the city’s finances were directed by Emergency Managers (EMs) appointed by Michigan Governor, Rick Snyder, who took office on January 1, 2011. Under the interim governance of these EMs, Flint city officials decided to slash costs by changing the source of the city’s municipal water. For decades, Flint’s water had been piped from Lake Huron through the Detroit Water and Sewerage Department. The Karegnondi Water Authority (KWA) of Genesee County, where Flint is located, was in the process of planning a new water system separate from the Detroit system. In March 2013, Ed Kurtz, one of the four EMs to serve between 2011 and 2015, signed an agreement for Flint to switch over to the KWA system when it was ready. Construction on the new water system, however, would not be complete until 2016 at the earliest. Meanwhile, the Detroit water department raised Flint’s water payment rates to a level that would cost the city an additional \$10 million over the interim two years—funds not readily available in the near-bankrupt city budget. In June, Kurtz—in an unprecedented move for Flint’s local water supply—signed an order for an engineering contract that would return to operation Flint’s own water treatment plant—not used since 1967,⁶ using water from the Flint River “as a primary drinking source for approximately two years and then converting to KWA delivered lake water when available.”⁷

This decision was made despite the known fact that, for decades, the Flint River had served “as the local industry’s sewage collection system.”⁸ Early in the fiscal crisis—in 2012—officials went on record to recommend against using the Flint River for city water.⁹ In September 2013, a new Emergency

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Manager—Michael Brown—approved an order for a contract between Flint, Genesee County, and the KWA. In October 2013, Brown was replaced by yet another Emergency Manager, a longtime state employee, Darnell Earley. Earley had served Flint in the early 2000s as both city administrator and interim mayor. During this time Earley was not a local resident, living almost 90 miles away in Lansing, yet he still earned \$180,000 annually as Flint's city manager.¹⁰

The city of Flint continued to use the Detroit water system until April 25, 2014. On that day, city officials—including Earley and then-Mayor, Dayne Walling, celebrated a public switch of the valve that controlled the city's water source, switching it from Lake Huron water, treated through Detroit, to water from the Flint River.

No Cause for Celebration

Immediately residents complained. Complainants noted changes in water's color, smell, and taste. In August 2014, the water tested positive for *E. coli*, a bacterium commonly associated with food poisoning; *E. coli* causes serious debilitating intestinal illness and can also cause kidney disease. Officials told citizens to boil water; complaints about the odor and discoloration continued.¹¹

To try and address these concerns, the city added chlorine treatment, at levels so high that residents complained of not only worse odor but also burning symptoms in any contact with the water. Soon officials noted that high chlorine levels were causing unsafe production of a chlorine byproduct, trihalomethane; another warning was issued.¹²

Meanwhile, in Flint's General Motors plant—historically one of Flint's largest employers—workers alerted the company that the water was also corroding engine parts. Once this complaint reached Governor Snyder's office, the governor, it was said, “quietly spent \$440,000 to hook GM back up to the Lake Huron water”¹³ through connections in Flint Township, an adjacent municipality that had not gone with the city of Flint in the switch.

“There is No Need to Worry”

By January 2015 the city's mayor, Dayne Walling, was continuing to insist that Flint's water was safe,¹⁴ despite increasingly vocal complaints from residents. The concern was so great that officials in the Detroit water treatment system offered to reconnect Flint to its water at no cost. Earley turned down this offer for reasons that remain unclear.¹⁵ A few weeks later, Snyder re-appointed Earley to a new position, as Emergency Manager for the Detroit Public Schools; Gerald Ambrose took Earley's place in Flint. Ambrose, determined to balance the books and fix Flint's finances, also rejected an attempt to switch back to Lake Huron water, calling a city council vote for this change in March 2015 “incomprehensible.”¹⁶

Throughout these months, Flint's concerned citizens began to flock to city hall and city council meetings in repeated but futile attempts to persuade the city governance to recognize and admit that a problem existed with the water that needed urgent attention and action.

One of these citizens was LeeAnn Walters. Walters had moved to Flint in June 2011 with her husband, a Navy Reserve officer, and their four children. When they bought their house, it was missing all of its interior plumbing; the Walters had the plumbing restored with a renovation that used safety-compliant PVC plastic pipes and filters. Soon after the city switched to the Flint River water, Walters and her children began to suffer from inexplicable skin rashes and hair loss even before December 2014, when the water coming out of their faucets turned consistently brown. In February 2015, Flint's Utilities Administrator, Mike Glasgow, visited Walters' home in response to her complaints about the discolored

water. It was Glasgow who first identified elevated lead levels in her water and immediately warned the family to stop using it.¹⁷ Periodic retesting confirmed increasingly elevated lead levels.

Lead ingestion of any kind and at any level poses a health risk; the ideal lead level in water is zero parts per billion (ppb). In the United States today, any level over 15 ppb is considered a serious problem. Walters' water measured 104 ppb on Glasgow's first visit. It eventually skyrocketed on subsequent testing to over 13,000 ppb, nearly three times the level considered to be toxic waste. Lead itself is invisible in water; the discoloration was caused by other substances such as iron and copper that were leaching into the water due to corrosion of the old pipes throughout the city's water system.

Demanding to be Heard

Walters immediately took action to learn exactly what her family was experiencing and what all the measurements meant for Flint's water and public health. She contacted the U.S. Environmental Protection Agency (EPA) and spoke with Miguel Del Toral, the Regulations Manager for the ground water and drinking water branch. With Walters' information, Del Toral soon identified that the Flint River water plant failed to include corrosion control treatment. Corrosion control is a standard part of water treatment, and helps to coat water pipes with substances that prevent old lead, iron, and copper pipes from leaching their metals into the water; corrosion control was standard protocol in the Detroit water treatment system. The corrosive (and untreated) nature of the Flint River water had stripped the pipes of its protective coatings and pulled toxins into the water that the city's citizens were using for drinking and bathing.

Del Toral—who one EPA official would later call a “hero”¹⁸—chose to go public with the information. He wrote an interim report citing Walters' data and test results, and allowed it to “leak” to the press when it became obvious that top officials at Michigan's Department of Environmental Quality (MDEQ) were failing to take citizens' concerns seriously. “Where these problems exist, I will not ignore them,” he would write later.¹⁹ “I understand that this is not a comfortable situation, but the State is complicit in this and the public has a right to know what they are doing because it is their children that are being harmed,” Del Toral wrote. “At a MINIMUM [emphasis in original text], the city should be warning residents about the high lead, not hiding it telling them there is no lead in the water.”²⁰ While Del Toral's superiors attempted to “silence” him, calling him a “rogue employee,”²¹ the publicity of his report continued to advance public concerns in Flint. Even so, top officials persisted in their claims that the water was safe, and Flint citizens felt they were still not taken seriously in concerns they expressed with officials at a meeting in August 2015.

It was immediately following this meeting that LeeAnn Walters decided to get in touch with Marc Edwards, a water supply safety and engineering professor at Virginia Tech. Edwards was considered a world expert on water corrosion and water safety. He had been awarded a MacArthur “genius” grant in 2007 for his research and work that forced national attention on elevated lead levels in the Washington, D.C., municipal water supply, attention that resulted in intervention to fix the problems.²² After talking with Walters on the phone, Edwards took immediate action. On his own time and at his own expense, he and four graduate students, armed with a large supply of lead test kits, drove to Flint and began asking residents for water samples. Forty percent of the first 252 kits they got back (out of 300 initially distributed; the numbers tested would eventually total more than 800) came back with lead levels over 5 ppb; while the EPA allows 15 ppb in high-risk homes, any level of lead in water is considered a health risk, and many samples were far above this threshold.²³ Edwards' team concurred that “Flint has a very serious lead in water problem.”²⁴ Edwards also became a public spokesperson to both citizens and public officials in Flint, adding his voice to those who warned the city to do something quickly, and not drink or use the Flint River water. Edwards and his researchers would later charge that the MDEQ had even

gone so far as to fail to test the “worst case scenario” homes as federal law mandated. The result, it was charged, “skewed the outcome of its tests to produce favorable results.”²⁵

Effects of Lead Poisoning: Long-lasting and Irreversible

The most serious risk of lead poisoning is its effect on children. Lead poisoning affects behavioral, growth, and learning abilities, and its effects on young children are lifelong and irreversible. While nothing can remove lead from the body once it is present, healthy fresh foods rich in calcium, iron, and vitamin C are believed to play a limited but positive role in reducing the body’s absorption of lead.²⁶ But for many of Flint’s children even this protection was missing due to poverty and lack of accessible grocery stores stocked with fresh fruits and vegetables.^a LeeAnn Walters knew that it was not just her own two youngest children who faced lifelong consequences after they tested positive for high lead levels. The crisis meant that every child in Flint was now at risk.

Despite the public outcry, some low-income Flint residents remained unaware of the risks. Among them were members of the city’s small Latino community, many of whom were undocumented immigrants and unable to read English. According to one civic activist for this community, “relatives of these families from Mexico and other countries were calling asking what was going on, and in some cases that’s how people found out about it.” After many Latinos shied away from the free bottled water distributions across the city—fearful staff at such distributions would ask for identification—local religious groups began an effort to distribute free water to all, without requiring identification or proof of Flint residency.²⁷

To understand the effects, one local pediatrician, Dr. Mona Hanna-Attisha, head of the Pediatric Residency Program at Hurley Medical Center in Flint, decided to measure blood lead levels in Children’s Clinic patients and compare them to available Flint records prior to the Flint River water transition. Results demonstrated that the percentage of children with high lead levels had nearly doubled since the switch. In September 2015, Hanna-Attisha and other worried medical colleagues held a press conference to announce their findings and concerns, demanding that the city return to Lake Huron water in order to protect public health. While city officials initially dismissed her comments, calling them “unfortunate,”²⁸ this press conference marked a point of transition. On October 16, 2015, Flint’s city officials made the switch back to the Detroit water treatment system.

A Return to Lake Huron’s Water, and Yet...

While Flint residents once again had access to a safe and properly treated water supply, the return to Lake Huron did not solve many of the problems that contributed to Flint’s water crisis. The switch did not reverse the effects of lead poisoning and other related toxicities that residents suffered as a result of their exposure to Flint River water. It did not fix urban violence inherent in the dominant poverty or improve home property values. It did not address the widespread lack of public confidence in the governance system nor lingering distrust about any water flowing from their pipes, nor did it fill the

^a Flint was a “food desert,” a community that lacks access to a full-scale, reasonably priced, well-stocked grocery store. Instead Flint residents—like many others who live in poor communities—had to rely for food on local corner stores, which were often expensive and lacked fresh vegetables and fruits. For more on food deserts, see R. Walker et al. Disparities and Access to Healthy Food in the United States: A Review of Food Deserts Literature. *Health and Place* 2010; 16:876-884. DOI: 10.1016/j.healthplace.2010.04.013. <http://www.sciencedirect.com/science/article/pii/S1353829210000584>.

health insurance gap that prevented many of Flint's families and young children from easy access to necessary medical care.

One of the many challenges Flint still faced at the end of 2015 was the city's utilities infrastructure. There remained, for example, the simple structural question of how to remove and replace the affected pipes. Many of Flint's water pipes were more than a hundred years old. To remove ancient iron and lead-lined pipes, city workers first needed to know where they were and how to access them. The city's government records of water pipes was stored in the form of disorganized card files and fraying paper records.²⁹ Moreover, Flint's dwindling population left the city with an insufficient tax base to maintain the system, let alone upgrade it.

During the late fall and winter of 2015-2016, many officials implicated in the crisis stepped down or were fired, but Governor Rick Snyder stayed in office and remained actively engaged in addressing the storm of media controversy. As part of Snyder's efforts to address public perception and action on the problems, he appointed a Flint Water Interagency Coordinating Committee.³⁰ Among those he appointed as committee members, Snyder included both Edwards and Hanna-Attisha as "subject matter experts," in addition to the new Flint Mayor, Karen Weaver, and other county and city representatives. Snyder's office also commissioned a Flint Water Advisory Task Force report, released in March 2016.³¹ The report admitted that the crisis was due to "government failure, intransigency, unpreparedness, delay, inaction, and environmental injustice."³² It lay the blame, however, on the Michigan Department of Environmental Quality (MDEQ), together with the Michigan Department of Health and Human Services, and not on the governor himself. The report admitted inaction by the governor's office, explaining that this inaction was due to the "continued reassurances from MDEQ that the water was safe."³³ As part of Snyder's responses in the face of widespread lack of confidence for his decisions during the crisis, he announced in mid-April 2016 that he would drink Flint water for 30 days, in an effort to "alleviate some of the skepticism and mistrust."³⁴ His staff collected a few gallons of water from a nearby home in Flint for Snyder to carry and drink at work and home even as he also warned pregnant women and children ages 5 and under to continue to drink bottled water.³⁵

Snyder's response illustrates the local nature of both environmental problems as well as efforts at resolution in such crises. While the federal Environmental Protection Agency can act based on legislation mandating safe water (the Safe Drinking Water Act), it is the responsibility of individual states to enforce the Act and make decisions based on any evidence of its violation.³⁶

Snyder's efforts at swaying public opinion to his favor were not entirely successful. On November 16, 2015, lawyers announced a class action suit on behalf of Flint residents against the city and state officials, including both Snyder and the MDEQ Director, Dan Wymont. A federal judge in Detroit dismissed the suit in April 2016.³⁷

Legal wrangles continued. In April 2016, many Flint citizens expressed satisfaction at the Michigan Attorney General's announcement of felony charges against three government officials involved in the crisis: Flint's laboratory and water quality supervisor, Mike Glasgow; Michigan Department of Environmental Quality official Mike Prysby, and Lansing district coordinator for the MDEQ's Office of Drinking Water and Municipal Assistance, Stephen Busch.³⁸ Reflecting on the news, one Flint citizen, retired Flint school teacher Nadine Roberts, noted, "Clean water is a human right that definitely a lot of people violated in Flint, for greed."³⁹ In mid-June 2016, Michigan's Attorney General announced a lawsuit against two private-sector companies, one based in Houston, Texas, the other a subsidiary of an international corporation based in France. Hired to ensure Flint's water safety, the failure of both consultant reports to identify obvious problems made them, the attorney general charged, "complicit in the series of events that caused lead to leach from pipes and poison children."⁴⁰

Meanwhile, citizen action groups in Flint continue to band together to provide emergency resources to their neighbors, including faith groups such as the Michigan Muslim Community Council⁴¹ and the Flint Grassroots Initiative,⁴² supporting residents who remain in the community with donated time, money, goods, information, and even a few new grocery stores.⁴³

What is the Next Chapter in Flint's Story?

The Walters family moved to Virginia in October 2015. It was “to get us out of Flint,” says LeeAnn Walters, of her husband’s choice to return to active duty with the United States Navy, “Because of what it was doing and the health concerns and the fact that we weren’t being listened to with our child being poisoned.”⁴⁴ Yet Walters remained part of citizen action group efforts to address the long-term consequences of the water crisis in Flint. She was among the cofounders of the Community Development Organization of Flint (“C Do”⁴⁵), which “addresses the city of Flint, Michigan’s infrastructure, healthcare, educational, family assistance, and economic development needs that have resulted from the Flint Water Crisis and the long-term economic and civic challenges.”⁴⁶ Many residents who left Flint remain suspicious of the water supplies in other cities. Indeed, Flint’s lead crisis has resulted in heightened attention to both safe water and the risks of lead pipes in urban infrastructure across the country.⁴⁷

On June 23, 2016, the U.S. Environmental Protection Agency (EPA) announced that filtered water in Flint was now officially safe to drink, even for pregnant women, nursing mothers, and children. But Mayor Karen Weaver readily admits that the situation is far from solved. “While it’s good to know we can safely drink filtered water,” she added, “this is not the ultimate solution to the problem in Flint. We still need new infrastructure, replacing the lead-tainted pipes in the city remains my top priority.”⁴⁸

Flint eventually received \$27 million to replace thousands of corroded water pipes, but as of November 2016 fewer than 200 pipes had been fixed.⁴⁹ Laura Sullivan, a professor at Kettering University who has worked on clean water projects around the world, expressed frustration with Flint’s lack of progress. During a previous interview with National Public Radio (NPR) in January 2016, Sullivan had optimistically thought that the spotlight on Flint would cause the situation to improve rapidly. However in a follow-up interview ten months later in September 2016 she ruefully noted,

“It [Flint] ought to be just a one-time, oh, my gosh, people weren’t paying attention and they were reckless, and now we figured it out and now we fixed it. But unfortunately, it feels more and more like a system in parts of the world where the government is corrupt, and there are too many hands that are involved that don’t involve the people who are actually living in poverty. And the people who are living in poverty aren’t empowered to be part of the solution.”⁵⁰

Indeed in November 2016, two years after the city’s water switch, residents without properly working filters still did not have access to safe water in their homes. A federal district court judge ruled that the city had to begin to provide and deliver at least 96 half-liter bottles weekly to each Flint resident until the city found a permanent solution. Flint fought against the suit, maintaining that city water distribution centers provided clean water to residents in need. However the judge found otherwise, citing obstacles such as language, old age, cognitive barriers, a lack of necessary tools, and challenges transporting water from the distribution centers to their homes. The ruling was effective immediately.⁵¹

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This website was created and maintained by the research team from Virginia Tech. It includes relevant data and information about: fundraising and grants; stories from Flint residents; Flint River corrosivity experiments, citizen testing, and resources on lead in water/blood lead; opportunistic pathogens, including Legionella, bacteria, chlorine, and TTHMs; FOIA emails, investigations, reports, and the Water Study Analyses (MDEQ, EPA, MDHHS, City of Flint, and Michigan Governor's Office); information on the study group's Flint trips and work with school kids; data, talks, podcasts, LCR analyses, and presentations; stories about goodwill efforts on behalf of Flint; and lawsuits, petitions, letters, press releases, and other announcements. The Flint Water Study team also maintains a Facebook page, and has posted nearly 3000 tweets to date on their Twitter site, <https://twitter.com/flintwaterstudy>. A transparent summary of the estimated costs involved in this largely-volunteer effort is listed at <https://www.gofundme.com/flintstudyvt>.

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