The Flint Water Crisis, C Do and LeeAnne Walters

Overview

After being almost universally ignored by the media for a year and eight months, The Flint Water Crisis and the fight for safe water lead by Flint citizen LeeAnne Walters made national headlines in January 2016. LeeAnne's home in Flint is referred to as Ground Zero of the Flint Water Crisis. Her home's water repeatedly tested far above the level of toxic waste. When city, state and federal officials failed to help LeeAnne and her fellow Flint residents, LeeAnne partnered with Virginia Tech Water Expert Marc Edwards to lead a citizen-testing of the city's water supply that provided the scientific proof that exposed the Crisis to the world. To better understand the history of events and the impact that the Crisis has had on the city of Flint and its residents we urge you to watch the videos below.

Videos

Exposing the Truth - ABC 12 May, 2016

LeeAnne Walters testimony for the United States Congressional Hearing

LeeAnne Walters testimony for Michigan State Legislature

The Flint Water Advisory Task Force appointed by Governor Rick Snyder's Executive Summary from Final Report issued March 21, 2016

"The Flint water crisis is a story of government failure, intransigence, unpreparedness, delay, inaction, and environmental injustice. The Michigan Department of Environmental Quality (MDEQ) failed in its fundamental responsibility to effectively enforce drinking water regulations. The Michigan Department of Health and Human Services (MDHHS) failed to adequately and promptly act to protect public health. Both agencies, but principally the MDEQ, stubbornly worked to discredit and dismiss others' attempts to bring the issues of unsafe water, lead contamination, and increased cases of Legionellosis (Legionnaires' disease) to light. With the City of Flint under emergency management, the Flint Water Department rushed unprepared into fulltime operation of the Flint Water Treatment Plant, drawing water from a highly corrosive source without the use of corrosion control. Though MDEQ was delegated primacy (authority to enforce federal law), the United States Environmental Protection Agency (EPA) delayed

enforcement of the Safe Drinking Water Act (SDWA) and Lead and Copper Rule (LCR), thereby prolonging the calamity. Neither the Governor nor the Governor's office took steps to reverse poor decisions by MDEQ and state-appointed emergency managers until October 2015, in spite of mounting problems and suggestions to do so by senior staff members in the Governor's office, in part because of continued reassurances from MDEQ that the water was safe. The significant consequences of these failures for Flint will be long-lasting. They have deeply affected Flint's public health, its economic future, 1 and residents' trust in government. The Flint water crisis occurred when state-appointed emergency managers replaced local representative decision-making in Flint, removing the checks and balances and public accountability that come with public decision-making. Emergency managers made key decisions that contributed to the crisis, from the use of the Flint River to delays in reconnecting to DWSD once water quality problems were encountered. Given the demographics of Flint, the implications for environmental injustice cannot be ignored or dismissed. The Flint water crisis is also a story, however, of something that did work: the critical role played by engaged Flint citizens, by individuals both inside and outside of government who had the expertise and willingness to question and challenge government leadership, and by members of a free press who used the tools that enable investigative journalism. Without their courage and persistence, this crisis likely never would have been brought to light and mitigation efforts never begun."

News 4

"In November of 2014, my 14-year-old ended up getting sick and he was out of school for almost a month. As he was sick, at the tail end of him being sick, that's when our water started coming through brown. So, we quit drinking it," [said] Walters... Walters said she had a gut feeling that something was seriously wrong and she contacted the city... so, "they came in, they started testing," Walters said. When the tests showed elevated lead levels, Walters said she reached out to the Michigan Department of Environmental Quality. In February 2015, after her concerns weren't addressed by the MDEQ, she contacted the Environmental Protection Agency.

"At that point, I got hooked up with Miguel Del Toral from the EPA and began talking with him about the lead, and we were talking to him and he actually seemed to care what I was saying," Walters said. Meanwhile, her family continued to experience medial problems. The worst was in one of her younger sons, Gavin. "He was almost 4. He wasn't gaining any weight. He was experiencing hair loss, he was experiencing lethargy," Walters said. A doctor determined Gavin had elevated levels of lead in his blood, even months after Walters had her family stop drinking the tap water. "[What was] frustrating was knowing your child was poisoned, and three days later your mayor, who knew, going on TV drinking the water and telling us the water was safe," Walter said. Our of her frustration, she made contact with professor Marc Edwards, an expert in water quality at Virginia Tech University.

C Do

Real people helping real people in crisis caused by environmental injustices.
We see and then we do with transparency.

Eight of the architects of the Flint Water Resistance, LeeAnne Walters, Arthur Woodson, Tonya Williams, Keri Webber, Tracy Hacker, Jessica Owens, Tim Grey and Jessica Lewis formed the non-profit "C Do" (aka Community Development Organization of Flint) to respond to the tremendous healthcare, infrastructure, education and economic impact that the Flint Water Crisis has had and is having on their community. The founders of C Do, alongside other Flint residents, were each instrumental in uncovering the Flint Water Crisis and are now transferring their efforts into Flint's recovery. The purpose of C Do will be to provide response to the events commonly known as the Flint Water Crisis. C Do is a citizen-created and citizen-managed organization that 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 of the community. With the assistance of an international advisory and support group, the citizens will provide these services while maintaining transparent distribution of funds and a forum for community response. C Do will also answer the vital need of citizen oversight of other recovery efforts based on the core belief that full transparency of these efforts is the only way to rebuild the trust of the Flint Community.

Detroit Free Press

[LeeAnne Walters] who faced scorn as she tried to expose dangerous levels of lead in the water in Flint now is part of a nonprofit started to help area residents.

LeeAnne Walters said Monday the Community Development Organization, also known as C Do, will focus on "helping real people in crisis" amid "environmental injustices." The Flint Journal reports organizers hope to raise $1 million for their efforts.

The announcement came two years to the date that Flint switched to treating water from the Flint River while awaiting completion of a new regional pipeline.

VIRGINIA TECH magazine
spring 2016

Fantastic Four
Meet Virginia Tech's first quadruplets

Class of 2047
Envisioning the university of the future

"Take Big Swings"
Entrepreneur empowers online publishers

"THEY DID NOTHING TO DESERVE THIS."

Fighting for Flint: A Virginia Tech team exposes lead poisoning

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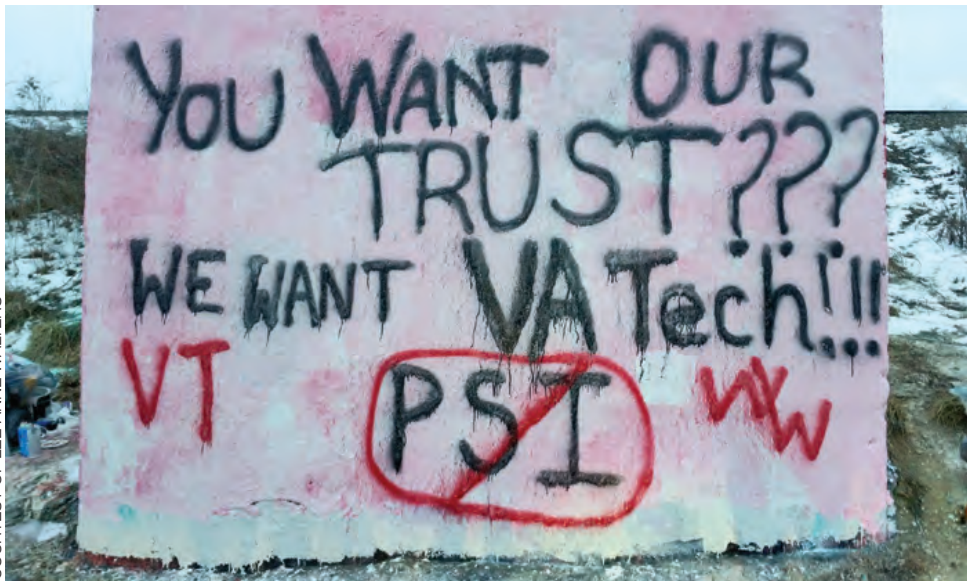
On the cover and at right: Gavin Walters, with his mother Lee-Anne, holds a bottle of water taken from his home in Flint, Michigan—water that gave him lead poisoning. Photo by Logan Wallace.



Eroding trust: (Above) Ph.D. student Anurag Mantha, a key member of the Virginia Tech team that brought national attention to the crisis in Flint, Michigan, meets with a Flint resident during a spring break visit in March. (Left) On the city's decades-old unofficial community message board known as The Rock, one resident expressed disdain for PSI, a business the city hired to test the water, and its trust in Virginia Tech. See the full story on page 40.

“THEY DID NOTHING TO DESERVE THIS.”

water, clouded by the rusting of iron main pipes, taken from Lee-Anne Walters’ home

FIGHTING FOR FLINT

A Virginia Tech team exposes lead poisoning

by MASON ADAMS and JESSE TUEL
photos by LOGAN WALLACE
photo at left by JIM STROUP

In January, Lee-Anne Walters picked up two bottles of filthy, yellow water and turned to her twins, Gavin and Garrett, in a Durham Hall laboratory on Virginia Tech's campus.

"Let's see if you guys remember this," she said, holding up the bottles. "Do you remember what this is? What is that?"

"THAT'S THE YUCKY WATER,"

Gavin replied.

The boys understood. And their mother understood all too well.

In late 2014 at her home in Flint, Michigan, Walters was at a breaking point. The tap water was giving the twins persistent rashes. Her eyelashes had begun to fall out, as had her older daughter's hair, and her older son suffered from abdominal pain. City testing found high levels of lead in her home's water, but she couldn't get further help from city and Michigan Department of Environmental Quality (MDEQ) officials.

An Environmental Protection Agency (EPA) official referred Walters to a scientist whose reputation for protecting the public preceded him: Marc Edwards, the Charles Lunsford Professor of Civil and Environmental Engineering at Virginia Tech.

By then, Walters, out of necessity, was fast becoming a citizen-scientist and advocate for Flint residents. In an April 2015 phone call, Edwards taught Walters how to properly collect water samples from her faucets.

Of the 30 samples Edwards tested in his lab at Virginia Tech, the lowest lead level was 300 parts per billion (ppb). The average was 2,000 ppb, and the highest was more than 13,000 ppb.

The level regarded as actionable by the EPA? 15 ppb.

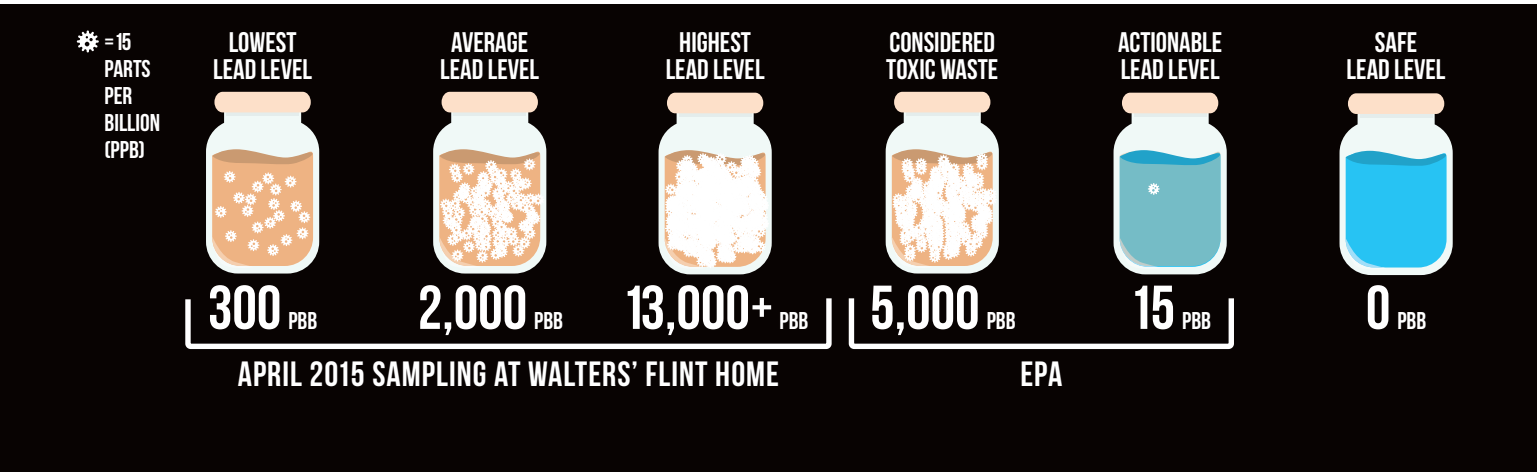
The level regarded as safe? Zero ppb.

"That was a sleepless night," Edwards said. "We got [the testing] done within 24 hours. We didn't believe it. We ran the samples again the next day. Unfortunately, the results were correct. It was the worst lead in water I'd seen in 25-plus years, and I'd seen a lot."

The world now knows what happened next: Edwards and a team of student researchers determined that Flint faced widespread elevated levels of lead and dangerous Legionella bacteria; united a coalition of Flint residents and others; and helped to expose a citywide health crisis that should serve as a warning for all communities facing crumbling infrastructure.

"THE MOST POWERFUL FORCE IN THE UNIVERSE"

In late January, Walters and her family traveled to Blacksburg, where she received a heroism award during a presentation by Tech's Flint Water Study research team. In opening remarks, Provost Thanassis Rikakis called the work a stellar example



For Flint: (Clockwise from left) Lee-Anne Walters with twins Garrett and Gavin in a Virginia Tech lab; a presentation on the Flint crisis hits home for Ph.D. student William Rhoads; and Professor Marc Edwards and Ph.D student Siddhartha Roy speak on campus. The Flint project, said Roy, "changed who we are as human beings."

of a contemporary land-grant university solving problems in a real-world context, with Flint as the classroom.

More than 500 people filled the Quillen Family Auditorium and two overflow rooms at Goodwin Hall, and 1,900 others watched a livestream broadcast to hear from the Hokies who had merged their academic skills with the spirit of *Ut Prosim* (That I May Serve) to champion and safeguard the health of Flint residents—affectionately known as "Flintstones"—and expose governmental malpractice.

That evening, student researchers described how they had detected high lead levels, the presence of dangerous microbes, and the lack of proper corrosion control in Flint water. Some fought back tears as they described their interactions with both frightened residents and skeptical bureaucrats who had openly questioned the Tech team's methods and reputation and denied the existence of a problem even after the team had announced its results.

"For 18 months, 100,000 residents were exposed to toxic water," said Siddhartha Roy, a civil engineering Ph.D. student. "They did nothing to deserve this. Nine thousand kids were potentially exposed."

Lead poisoning causes irreversible damage: learning disabilities and mental impairment, along with a variety of physical symptoms, including abdominal pains, fatigue, headaches, loss of developmental skills, and more. In Flint, the poisoning was widespread: In some zip codes in summer 2015, 1 in 10 children had elevated blood lead levels.

Speaking in the Quillen auditorium, Roy described a call he had received from a woman who was in tears because she had given her children and grandchildren tap water. "She told me she poisoned her kids," Roy said. "It wasn't her fault. But a mother's heart could never accept that. She thanked all of us for what we did. This is why we spent the last six months of our life pulling all-nighters, pulling weekends together, because we cared. And it changed who we are as human beings."

Edwards, the driving force behind the Virginia Tech effort, turned the credit back toward Flint residents—specifically Lee-Anne Walters.

"I tell my students if they learn one thing from their class, it's that the most powerful force in the universe is a mother worried about the health of her child," Edwards told the crowd. "If you threaten that, Mama will come and mess you up, even if you're a powerful government agency."

TIMELINE

APRIL 2014

When the city begins using Flint River water instead of Detroit water, complaints surface immediately. Later, the city issues advisories to **boil water because of high levels of bacteria**.

OCTOBER 2014

General Motors' Flint plant says that **chloride levels are causing corrosion** in engine blocks.

JANUARY 2015

Flint notifies residents that the city is in violation of the Safe Drinking Water Act due to the presence of **trihalomethanes, which cause liver, kidney, and central nervous system problems**, as well as an increased risk of cancer.

FEBRUARY 2015

A city test at **Lee-Anne Walters' home reveals lead levels of 104 parts per billion** (ppb). Another city test reveals 397 ppb.

APRIL 2015

Tech's Marc Edwards **tests 30 samples from Walters' home**. The highest, above 13,000 ppb, well surpasses the 5,000 ppb the EPA considers toxic waste.

JUNE 2015

The EPA's Miguel Del Toral **releases a memo outlining the lead levels, the timeline, and the laws** (i.e., corrosion control) the city wasn't following.

JULY 2015

The team hypothesizes that the river water (above) might allow for the spread of the bacteria causing **Legionnaires' disease**. In fact, **nine residents died from the disease after the water switch**.

CORROSIVE LESSONS

Like many of the industrial cities in the Rust Belt, Flint has struggled, its population falling from about 200,000 in 1960 to 100,000 today, with about 40 percent of its residents living below the poverty line. These economic pressures point to a unique trait in Michigan governance—emergency managers—that played a role in the water crisis.

When a school district, city, town, or county is in severe financial stress, the state can appoint an emergency manager with power to overrule local elected officials, said Curt Guyette, a reporter for the Michigan American Civil Liberties Union, who has written extensively about the situation in Flint. During the Flint crisis, the emergency manager position changed hands, introducing even more volatility to an already difficult dynamic.

In March 2013, the Flint City Council opted to stop buying water from Detroit and to join a regional water authority that would draw water from Lake Huron and send it to Flint by pipeline. While the pipeline was under construction, a process that continues today, the emergency manager decided that Flint should use the Flint River as its water source. As soon as the switch was made in April 2014, residents began complaining about the smell, taste, and color of their new water. Protesters soon packed city hall with bottles of discolored, cloudy water.

In a June 2015 memo, Miguel Del Toral, the regulations manager in the EPA's groundwater and drinking water branch, who referred Walters to Edwards, released a memo based on Edwards' testing of Walters' 30 samples, outlining the astronomical levels of lead, the timeline of events, and the laws (i.e., corrosion control) the city wasn't following. An EPA official above Del Toral tried to bury the memo, and state officials downplayed the results.

Edwards, unfortunately, recognized what could be happening. More than a decade ago, the Washington, D.C., water utility had invalidated samples that pointed to rising lead levels and had issued a report claiming the water met federal standards, while the Centers for Disease Control claimed the water was safe and that no D.C. residents had been harmed. Edwards, dubbed "The Plumbing Professor" by Time magazine in 2004, spent years fighting the agencies—with his own money and

AUGUST 2015

Tech distributes 300 lead-testing kits to residents. Samples average 158 ppb. In two zip codes, one in five homes shows elevated levels. **The team launches flintwaterstudy.org to provide information to residents and track the team's efforts.** On Aug. 17-19, several team members make their **first trip to Flint to collect samples**. Later, they announce their findings: The especially corrosive river water, combined with water utility officials' failure to incorporate federal corrosion controls, had caused lead to leach from old pipes and to poison city residents. **Flint and Michigan Department of Environmental Quality officials dismiss the findings**.

SEPTEMBER 2015

The team notifies residents of testing results and provides guidance; organizes a crowdfunding campaign to buy water filters; and files Freedom of Information Act requests to reconstruct how various government agencies had mismanaged the crisis. **The National Science Foundation awards Tech a Rapid Response Research (RAPID) grant**. On Sept. 14-16, on a **second trip to Flint**, Edwards and Siddhartha Roy **issue a public health advisory and implore residents not to drink unfiltered water**. Meanwhile, pediatrician Mona Hanna-Attisha, of Flint's Hurley Medical Center, holds a press conference on her study that found elevated lead levels in infants and children.

TIM GALLOWAY

OCTOBER 2015

County and city officials **declare public health emergencies**. Michigan Gov. Rick Snyder announces $1 million for water filters, along with testing at schools, expansion of testing for individuals, and expediting treatment of Flint water to control pipe corrosion. In a **third trip to Flint** on Oct. 14-16, in response to Flint's decision to switch back to Detroit water, several team members speed north to **sample hospitals** and other **large buildings before the change**.

DECEMBER 2015

On the **fourth trip to Flint**, on Dec. 2-5, Edwards and Anurag Mantha speak at events, grant interviews, and meet with elementary school children. The Flint mayor declares a state of emergency, leading to county and state declarations and, in January, a federal declaration that opens the door for federal aid.

JANUARY 2016

Snyder names Edwards to the Flint Water Interagency Coordinating Committee, formed to find a long-term strategy to address the crisis.

FEBRUARY 2016

Edwards and Walters testify before the U.S. House Oversight and Government Reform Committee. The **team wins an $80,000 EPA grant** for new testing.

MARCH 2016

On the **fifth trip to Flint**, a number of students spend spring break volunteering in the city. **Edwards testifies at a second hearing on Capitol Hill**.

reputation on the line—in order to protect D.C. residents.

In other cities, too—Durham and Greenville, North Carolina; New Orleans; and more—Edwards has uncovered lead in the water and fought for the public. "It's the same movie," Edwards said. "It's the same ending. It's the fifth time I've seen it, so it's a little sad."

LEARNING FROM EXPERIENCE

The lessons of D.C. formed the core of a graduate-level course, Engineering Ethics and the Public, taught each fall in Blacksburg by Edwards and Yanna Lambrinidou, an adjunct assistant professor in the Department of Science and Technology Studies in Tech's National Capital Region, who collaborated with Edwards on the D.C. crisis. Taught since 2010, the course has had a powerful influence on the Flint team's students, and Flint has influenced the course: The crisis served as a case study in the fall 2015 semester. Of primary importance in the curriculum is the first, fundamental canon in the National Society of Professional Engineers' code of ethics: to hold paramount the safety, health, and welfare of the public. In recent years, however, and perhaps with increasing frequency, Edwards said, scientists and engineers avoid engagement by claiming that they only play an objective, numbers-based role.

"There's a role that scientists and engineers need to play and that society expects them to play, which is to act and react when they see wrongdoing," Lambrinidou said. "Through inaction, you're enabling the biggest or most powerful and oftentimes the most dangerous and harmful fish in the pool to win. You're taking an active part in reinforcing existing infrastructures and existing imbalances and injustice by staying silent."

Lambrinidou said that in both Washington, D.C., and Flint, residents and citizen-activists were the first to sound alarms about problems with the water. "It was ordinary people, non-experts, parents who discovered their children had elevated blood lead levels and called begging to have their service lines replaced," Lambrinidou said. "We end up as a society and culture [creating] these narratives where we almost invariably place expert knowledge above the knowledge of ordinary people. Ignoring those [ordinary] voices is very, very risky."

THE FLINT WATER STUDY TEAM

All in for Flint: In late January, the Walters family gathered with some of Tech's Flint Water Study team for a potluck dinner at Professor Edwards' home. When the team mobilized—going "all in for Flint," as Edwards said—the students found themselves fighting alongside citizen-activists for the safety of the city's residents.

NAMES

Ⓐ Owen Strom: **25, 32, 34, 36**
Ⓑ Maggie Carolan: **10, 24, 33, 36, 46**
Ⓒ William Rhoads: **5, 8, 32, 34, 36, 38, 39**
Ⓓ Robert Bielitz: **14**
Ⓔ Siddhartha Roy: **7, 8, 20, 29, 31, 32, 34, 35, 38, 43**
Ⓕ Ni "Joyce" Zhu: **8, 31, 32, 36, 38, 44**
Ⓖ Taylor Bradley: **26**
Ⓗ Fei Wang: **6, 32, 34**
Ⓘ Victoria Nystrom: **9, 22, 32, 34, 38**
Ⓙ Laurel Strom: **9, 32, 34, 36, 38**
Ⓚ Emily Garner: **8, 32, 36, 38, 39**
Ⓛ Pan Ji: **8, 32, 36, 38**
Ⓜ Gavin Walters: **50**
Ⓝ Christina Devine: **8, 15, 32, 37**
Ⓞ Anurag Mantha: **8, 32, 35, 38, 40, 45, 46**
Ⓟ David "Otto" Schwake: **6, 36, 42, 44, 46**
Ⓠ Donnie Martin: **49**
Ⓡ Ailene Edwards: **48**
Ⓢ Jui-ling Edwards: **47**
Ⓣ Kaylie Walters: **50**
Ⓤ Dongjuan Dai: **6, 28**
Ⓥ Min Tang: **8, 21, 31, 32, 36, 38, 41, 42, 44**
Ⓦ Kristine Mapili: **11, 34**
Ⓧ Marc Edwards: **1, 42, 43, 45**
Ⓨ Dennis Walters: **50**
Ⓩ Garrett Walters: **50**
Ⓐⓐ Lee-Anne Walters: **51**
Ⓑⓑ Rebekah Martin: **8, 31, 32, 36, 38, 41, 42**

NOT PICTURED

Amy Pruden: **2, 4**
Joseph Falkinham III: **3, 4**
Brandi Clark: **5, 6, 16**
Sheldon Masters: **6, 17, 28**
Jeffrey Parks: **6, 18, 29, 30, 32, 35**
Kelsey Pieper: **6, 19, 32**
Jake Metch: **8, 32, 36**
Colin Richards: **9, 32, 34, 42**
Catherine Grey: **9, 23, 33, 35, 46**
Kim Hughes: **13, 32, 34, 36**
Rebecca Jones: **12, 32, 34**
Alison Vick: **11, 32, 34**
Maddie Brouse: **11, 33, 35, 36, 46**
Matthew Dowdle: **11, 33, 35, 46**
Sara Chergaoui: **11, 27, 33, 35, 46**

A FIRST FOR WATER

Margaret "Maggie" Carolan (right) is one of the first students to pursue Tech's new bachelor's degree in water—water: resources, policy, and management—a cross-disciplinary major that incorporates water science, policy, law, economics, management, and social science. Twenty-one students already have enrolled in the major, first offered in fall 2015.

Carolan, a sophomore who is also majoring in geography, has received the Alumni Presidential Scholarship, along with two scholarships established by Jeff Rudd (philosophy, biology '83): the Virginia Tech Sustainable Water Undergraduate Research Fund and the Virginia Tech Sustainable Water Scholarship.

"Water is one of the most important fields of the 21st century," said Rudd. "The field offers a vast range of opportunities for work and study, such as establishing policies and engineering processes to conserve and recycle water, researching supply and consumption to assess the cost of water, and crafting strategies to help resolve stakeholder conflicts about ownership and use of water. The degree bridges the gaps between science and policy and theory and practice—and Virginia Tech is leading the way."

ROLES

1 Team's faculty leader; Charles P. Lunsford Professor of Civil and Environmental Engineering, College of Engineering; and principal investigator, National Science Foundation (NSF) Rapid Response Research (RAPID) grant
2 College of Engineering professor and Graduate School associate dean and director of interdisciplinary graduate education
3 Professor of biological sciences, College of Science
4 Co-principal investigator, NSF RAPID grant
5 Helped with NSF grant proposal
6 Research scientist
7 Team's student leader. Launched flintwaterstudy.org; raised about $100,000 to support the team in Flint and for future work; and prepared a mini-documentary on the team's response, designed to attract young students to environmental engineering
8 Ph.D. student, civil engineering
9 Master's degree student, civil engineering
10 Undergraduate double major in geography and water: resources, policy, and management
11 Undergraduate, civil engineering
12 Undergraduate, environmental science
13 Biochemistry, biology '15
14 Undergraduate, general engineering
15 Engineering science and mechanics '14
16 M.S. environmental engineering '12, Ph.D. civil engineering '15
17 M.S. civil engineering '11, Ph.D. '15
18 M.S. environmental engineering '01, Ph.D. civil engineering '05
19 M.S. civil engineering '11, Ph.D. biological systems engineering '15
20 M.S. environmental engineering '15
21 M.S. environmental engineering '13
22 Biological systems engineering '15
23 Civil engineering '15
24 Research assistant
25 Master's degree student, public health, Virginia-Maryland College of Veterinary Medicine
26 Civil engineering graduate student at Howard University, joining Edwards' team in fall 2016 and pursuing a master's in environmental engineering
27 Exchange student
28 Helped plan response to crisis
29 Prepared sampling video for residents
30 Oversaw assembly, distribution, return, and pre-analysis prep of lead test kits and coordinated various sampling efforts
31 Conducted sampling in Flint
32 Assembled, processed, and analyzed lead testing kits
33 Distributed and collected lead test kits
34 Prepped test kits for analysis
35 Communicated with residents about testing
36 Assembled, processed, and analyzed microbial testing kits
37 Compared the corrosiveness of Flint water to Detroit's and, via webcam, demonstrated the tests for Flint elementary school students who replicated the experiments
38 Freedom of Information Act requests and analyses
39 Tuition remission in support of studies
40 Handled logistics, managed data, raised money to distribute filters, oversaw social media outreach and correspondence
41 Compared Virginia Tech data to Michigan Department of Environmental Quality data
42 First trip to Flint
43 Second trip to Flint
44 Third trip to Flint
45 Fourth trip to Flint
46 Fifth trip to Flint (spring break)
47 Marc Edwards' wife
48 Marc Edwards' daughter
49 Rebekah Martin's husband
50 Lee-Anne Walters' family
51 Citizen-scientist

TIM GALLOWAY

By listening to and collaborating with local experts and mobilizing to address the complex problem on-site, the Tech research team perfectly embodies the powerful model for problem-solving that few institutions, apart from the contemporary land-grant university, have offered. In fact, water as an area of excellence is an emerging priority for Virginia Tech.

In a May 2015 speech on academic freedom that Edwards delivered just before analyzing Walters' water samples, the professor quoted Abraham Lincoln, who established the land-grant university system by signing the Morrill Act: The "system is being built on behalf of the people, who have invested in these public universities their hopes, their support, and their confidence." Added Edwards, "The 21st century will surely provide us with many opportunities to prove ourselves worthy of the people, their hope, and confidence… but only if we can find the courage and strength to act on our convictions."

BORN HEROES

In September and October 2015, Virginia Tech team members poured themselves into the Flint effort, pushing forward on multiple fronts. One game-changer, they said, was when Mona Hanna-Attisha, a pediatrician at Flint's Hurley Medical Center, announced her findings. With access to citywide blood testing data and the Virginia Tech testing results posted online, Hanna-Attisha identified an increased incidence of elevated lead levels in infants and children. And the children whose blood displayed the worst increases in lead lived in neighborhoods that matched the areas where the highest levels of lead had been detected by Tech's August sampling of 300 sites.

Hanna-Attisha's findings underscored the direct impact on the health of children, whose developing bodies are especially susceptible to the dangers of lead, and accelerated the public health response: Genesee County and Flint officials declared public health emergencies, while Michigan Gov. Snyder announced $1 million in state funding for water filters in Flint (24,000 were handed out), along with immediate testing at city schools, expansion of lead testing for individuals, and expediting treatment of Flint water

Game-changers: (Opposite page, lower right) If not for these four—Flint's Lee-Anne Walters, the EPA's Miguel Del Toral, pediatrician Mona Hanna-Attisha, and Virginia Tech's Marc Edwards—the massive amounts of lead in Flint water might still be undisclosed. (Top right) Edwards presented Walters with a necklace holding a ring he cut from a lead pipe that came from the home of a child needlessly exposed to high lead in water by agencies in Washington, D.C.

to control pipe corrosion. Snyder soon announced a multimillion-dollar plan for reconnecting Flint to Detroit water.

Guyette called the Flint situation the most meaningful project of his journalism career. "It's kind of a double-edged sword in some ways. At the root of this is a tragedy: kids needlessly lead-poisoned. That is the dark shadow hanging over all of this. But on the other hand, Marc, the students at Virginia Tech, the grassroots activists in Flint, me with my reporting—what we did do was stop [the tragedy] from going forward."

The Tech team found themselves positioned to tackle a tremendously complex situation that stretched across traditional academic boundaries. Schwake said the team's involvement went far beyond the basics. "It's not just engineering. It's not just the water industry. It's not just public help. It's also very much socioeconomic and political. The whole situation came about because of a lack of funds and decisions by government agencies. There's also the social justice factor: that Flint is a very poor city with a lot of minorities and [did not have] the best water quality to begin with."

Underlying all of those factors is the human element. At a supper in Flint, civil engineering Ph.D. student Rebekah Martin asked a pair of activists about their motivation. "They said, 'This is our home,'" Martin recalled. "'We're not going to let our families be walked over and not heard when they're being poisoned.'" The sentiment points back to the first canon of civil engineering—to protect the public. "As engineers," Martin said, "a lot of times we sit in offices and design things. Or you may have some formula that goes into treating water or designing a system to treat water, but you don't talk to the people who drink that water or who will be affected by what you're designing. It's important to get out there and listen to people."

"Our beacon": (Above) Named to Fortune magazine's World's Greatest Leaders List, Professor Marc Edwards stands above the Flint River. When the highly corrosive water, combined with a lack of corrosion control, started to poison Flint residents with lead, Edwards and a Virginia Tech team came to the residents' aid. Other communities may face similar crises. Said Edwards, "As long as lead pipes are there, it's a time bomb waiting to go off." (At right) Tech students gave Edwards a lighthouse award for, as Ni "Joyce" Zhu said, his "brilliance, joy, compassion, and humanity." He was "our lighthouse and our beacon into our future."

Edwards said Flint was a perfect example of how science failed at first, and science-based advocacy worked—and worked quickly. But because he has seen history repeat itself, he is realistic and cautious. "We are capable of learning something, but I'll believe it when I see it. … As long as lead pipes are there [in cities across the country], it's a time bomb waiting to go off."

In the Engineering Ethics and the Public course, Edwards and Lambrinidou help students understand who they want to be when—not if—they face an ethical dilemma. And as Edwards told the Goodwin Hall crowd, society must set its priorities to repair crumbling infrastructure, and individuals must display the courage to stand up and take action.

Said Edwards, "I maintain that people are born heroic."

Heroism can surface anywhere—in Flint residents or in a Blacksburg classroom.

"You don't have to run for president. You don't have to be a Nobel laureate," Ph.D. student Pan Ji said during the Goodwin Hall presentation. "You can just be a normal person fighting for a just cause."

In depth:

For more on the Flint story and Marc Edwards—including the professor's 2013 TEDxVirginiaTech talk, "Heroic by nature, cowardly by convenience"—visit vtmag.vt.edu and vt.edu/flintwater and use the hashtag #VTFlintWater. For more on how the university approaches complex societal problems within its areas of excellence, such as water, visit beyondboundaries.vt.edu.

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*** FOR IMMEDIATE RELEASE ***

FLINT CITIZENS ANNOUNCE

C Do

A NON-PROFIT DEDICATED TO THE

RECOVERY FROM THE FLINT WATER CRISIS

Real people helping real people in crisis caused by environmental injustices.
We see and then we do with transparency.

FLINT, MI – Today eight of the architects of the Flint Water Resistance, LeeAnne Walters, Arthur Woodson, Tonya Williams, Keri Webber, Tracy Hacker, Jessica Owens, Tim Grey and Jessica Lewis announced they are forming a non-profit "C Do" (aka Community Development Organization of Flint) to respond to the tremendous healthcare, infrastructure, education and economic impact that the Flint Water Crisis has had and is having on their community.

The founders of C Do, alongside other Flint residents, were each instrumental in uncovering the Flint Water Crisis and are now transferring their efforts into Flint's recovery.

The purpose of C Do will be to provide response to the events commonly known as the Flint Water Crisis. C Do is a citizen-created and citizen-managed organization that 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 of the community. With the assistance of an international advisory and support group, the citizens will provide these services while maintaining transparent distribution of funds and a forum for community response. C Do will also answer the vital need of citizen oversight of other recovery efforts based on the core belief that full transparency of these efforts is the only way to rebuild the trust of the Flint Community.

Initial programs that were announced today include:

Peer to Peer Family Assistance Email Hotline:
Flint residents can email information@cdoflint.org with any question or concerns regarding the Flint Water Crisis and recovery. All emails will be answered within 72 hours to ensure that all residents are informed about the resources available to the citizens of Flint.

Water Distribution:
C Do will begin distribution of donated water to citizens.

Oversight:
C Do will document and publish the work proposed and done in Flint by other organizations with the aim to encourage transparency by all organizations and individuals working on the recovery.

Fundraising Campaign:
C Do is launching a nationwide fundraising campaign to directly benefit victims of the Flint Water Crisis that will include providing direct assistance for healthcare, residential repairs, and other services. C Do is committed to transparent disclosure of the use of all fund raised.

Walters, Woodson, Williams, Webber, Hacker, Owens, Grey and Lewis all serve on C Do's Board of Trustees. Walters serves as president, Woodson as vice president, Williams as secretary and Webber as treasurer. The advisory board is under formation but includes Virginia Tech's Dr. Marc Edwards, a nationally renowned expert on municipal water quality and leader of the Flint Water Study that worked with Flint residents to provide scientific proof of lead in Flint's water.

In the coming weeks, will launch behavioral health services support for all residents not covered under the federal Medicare Expansion Plan. Additionally, C Do will add a phone hotline and a website (www.cdoflint.org) that will provide vital information and resources for residents as well as detailed documentation of all spending of the organization. Future programs will be developed alongside C Do's advisory board based on the needs of Flint residents and families.

C Do's filing for 501-3C tax exemption by the Internal Revenue Service is underway, during the filing process C Do will begin accepting donations via fiscal sponsorship.

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