

DEPARTMENT OF ENVIRONMENTAL QUALITY
AIR QUALITY DIVISION
ACTIVITY REPORT: On-site Inspection

B159857377

FACILITY: FLINT WATER POLLUTION CONTROL FACILITY		SRN / ID: B1598
LOCATION: G-4652 BEECHER RD, FLINT		DISTRICT: Lansing
CITY: FLINT		COUNTY: GENESEE
CONTACT: Jeanette Best , Water Pollution Control Supervisor		ACTIVITY DATE: 03/19/2021
STAFF: Daniel McGeen	COMPLIANCE STATUS: Compliance	SOURCE CLASS: MINOR
SUBJECT: Unannounced, scheduled inspection of facility which was last inspected in 2020.		
RESOLVED COMPLAINTS:		

On 3/19/2021, the Michigan Department of Environment, Great Lakes, and Energy (EGLE), Air Quality Division (AQD) conducted an unannounced, scheduled inspection of Flint Water Pollution Control (WPC).

Environmental contacts:

- Jeanette Best, Water Pollution Control Supervisor; 810-766-7210; jbest@cityofflint.com
- Don Lewis, Operations Supervisor; 810-766-7210; dlewis@cityofflint.com
- Chad Antle, Owner; BioWorks Energy; chad.antle@bioworksenergy.com

Facility description:

Flint WPC is the wastewater treatment plant for all of the residences in Flint, as well as for numerous commercial and industrial facilities.

Emission units:

Emission unit* description	Michigan Air Pollution Control (MAPC) Rule	Federal regulations, if applicable	Compliance status
Original (north) internal combustion engine (ICE)	285(g)	40 CFR Part 60, Subpart JJJ	Compliance
Newer (south) ICE	285(2)(g)	40 CFR Part 60, Subpart JJJ	Compliance
Third (west) ICE	285(2)(g)	40 CFR Part 60, Subpart JJJ	Not yet operational
Flare for combusting digester gas	282(g)	NA	Compliance

Food depackaging process	285(2)(l)(vi)(B)	NA	Compliance
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* An *emission unit* is any part of a stationary source that emits or has the potential to emit an air contaminant.

Regulatory overview:

This facility is considered to be a true minor source, rather than a major source of air emissions. A *major source* has the potential to emit (PTE) of 100 tons per year (TPY) or more, of one of the criteria pollutants. *Criteria pollutants* are those for which a National Ambient Air Quality Standard exists, and include carbon monoxide (CO), nitrogen oxides (NOx), sulfur dioxide, volatile organic compounds (VOCs), lead, particulate matter smaller than 10 microns, and particulate matter smaller than 2.5 microns.

It is also considered a minor, or *area source*, for Hazardous Air Pollutants (HAPs), because it is not known to have a PTE of 10 TPY or more for a single HAP, nor to have a PTE of 25 TPY or more for combined HAPs.

The facility has no active permits to install (PTIs). The wastewater and sewage treatment equipment currently operating at the facility is considered to meet relevant exemption criteria from the requirement of Michigan Air Pollution Control Rule 201 to obtain a permit to install. The relevant exemptions are Rule 285(g) and Rule 285(2)(g) for the ICEs, and Rule 282(g) for the flare.

Voided permits to install for this facility:

Voided PTI No.	Process equipment	Date voided	Reason voided
228-73	2 sludge incinerators with six hearths, afterburner and scrubber control, and equipment upgrade control	PTI 228-73A subsequently was issued for these processes	12/17/2004
228-73A	4 six-hearth sludge incinerators, CO limit applied to avoid being subject to Title V of Clean Air Act Amendments	Incinerators taken out of service	4/14/2016
1011-80	Vaportek odor controller	Unknown*	6/9/1981

659-81	Quad odor control system for Zimpro system	Zimpro and incinerators shut down permanently	9/27/2016
660-81	Quad odor control vent system for Zimpro system	Zimpro and incinerators shut down permanently	9/27/2016

*Vaportek permit-related records were evidently sent to the State of Michigan Record Center some years ago, after the permit was voided in 1981. The records were eventually destroyed, according to the entry in the AQD Permit Cards database. The State of Michigan has a record retention schedule for management of records at the Record Center, which can ultimately include destruction.

The facility has two Internal Combustion Engine (ICE) generator which are subject to 40 CFR Part 60, Subpart JJJJ, *Standards for Performance for Stationary Spark Ignition Internal Combustion Engines*.

Fee status:

This facility is not considered fee-subject. Ordinarily, being subject to a New Source Performance Standard (NSPS) would make a facility be considered fee-subject, but where ICEs alone are the only reason a facility would be subject, AQD is not collecting fees.

This facility is not required to report to the Michigan Air Emissions Reporting System. AQD Operational Memorandum No. 13 requires reporting in MAERS if emissions thresholds have been exceeded, but Flint WPC is not known to have exceeded these thresholds.

Location:

The facility is located in a mixed residential and commercial area, on the south bank of the Flint River. To the immediate north and northwest are some residential areas. The closest single family house is about 1,100 feet from the north digester, as measured by me in Google Maps, and only a couple hundred feet from the perimeter of the Flint WPC site. To the immediate northeast are large cemeteries. To the immediate south are residential areas. To the immediate east is the Genesee County Drain Commission facility. The nearest apartments are about 1,600 feet to the southeast of the south digester. The apartment complex is backed up against the eastern perimeter of the site. To the immediate west is some undeveloped land, which is part of the Flint WPC site. To the southwest are some residences, including apartment buildings.

History:

Four sewage sludge incinerators operated at the site for decades. The last of these units to run ceased operations on 3/10/2016, due to new regulatory constraints. The permits were subsequently voided, as noted in the table of voided permits, above. By ceasing operations of the incinerators, the facility did not become subject to the regulatory requirements of 40 CFR Part 60, Subpart MMMM, *Emission Guidelines and Compliance Times for Existing Sewage Sludge Incineration Units*, which had regulatory requirements that would have begun on 3/30/2016.

Around May of 2011, Flint WPC installed a bio digester with a flare, through a Swedish company, BioWorks Energy. The digester and flare are owned by the City. The site initially installed one internal combustion engine (ICE) to produce electricity, using the gas from the digester as fuel. The

engine was purchased by BioWorks, who will maintain ownership yet operate the engine on the Flint WPC property. The engine is considered exempt under Rule 285(g), due to being less than 10 million Btu/hr rated heat input capacity. A second ICE was subsequently installed at the site, and is subject to Rule 285(2)(g), which replaced Rule 285(g) on 12/20/2016. The exemption criteria is the same as the earlier Rule 285(g).

Recent complaints:

The number of odor complaints at this facility since 2007 is as follows:

- 2008: 1
- 2015: 1
- 2016: 1
- 2017: 18
- 2018: 28
- 2019: 0
- 2020: 14
- 2021: 0, as of 3/19/2021, the date of today's inspection

Recent odor issues:

Following the May 2011 installation of the first bio digester onsite, there had only been occasional odor complaints, in 2015 and 2016. In 2017, however, a series of odor complaints began, peaking in 2018, which had a yearly total of 28 odor complaints. Following complaint investigations, AQD cited a violation of Rule 901(b) for excessive odors, in February 2018, and again in August 2018. Changes at the plant were made including installation of a two stage odor control scrubber to replace a smaller scrubber, and construction of a second (south) digester to complement the original (north) digester onsite. Odor complaints were absent between 12/6/2018 to 2/3/2020.

2020 was a busier year for complaints, with 14 received. AQD conducted 6 complaint investigations, as well as 4 odor evaluations when in the area, and an unannounced compliance inspection. No instances of noncompliance were found to have taken place. Please see plant file. .

Recent stack testing:

On 6/15/2016, stack testing of the older generator for NO_x, CO, and VOC was observed by AQD's Nathan Hude. Although the unit is considered exempt from needing a permit to install under Rule 285 (g), it is subject to 40 CFR Part 60, Subpart JJJJ, *Standards of Performance for Stationary Spark Ignition Internal Combustion Engines*. The testing was required by Section 60.4243(a)(2)(ii), which applies to non-certified spark ignition internal combustion engines greater than or equal to 100 horsepower (HP) and less than or equal to 500 HP. This was a one-time test.

Results indicated compliance for NO_x, CO, and VOC, as follows:

ENG-01, existing ICE, one-time stack test results from 6/15/2016:

Emission unit	NO _x ppm @ 15% O ₂	CO ppm @ 15% O ₂	VOC ppm @ 15% O ₂
ENG-01 (existing ICE)	119	143	2.8
Regulatory limit	150	610	80

Compliance?	Yes	Yes	Yes
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A fuel sample of the digester gas was taken the day before the testing, and the sulfur content of the gas was reported to be 50 ppm.

Stack testing for the newest ICE, ENG-02, was done on 4/12/2018. This was also a one-time test. I was unable to attend, but AQD's Regina Hines from the Detroit Field Office witnessed the test. Results indicated compliance for NOx, CO, and VOC, as follows:

ENG-02, newer ICE, one-time stack test results from 4/12/2018:

Emission unit	NOx ppm @ 15% O2	CO ppm @ 15% O2	VOC ppm @ 15% O2
ENG-02 (new ICE)	128.5	215.1	5.4
Regulatory limit	150	610	80
Compliance?	Yes	Yes	Yes

Safety attire required:

Safety glasses with side shields are suggested by AQD. Hearing protection is recommended by Flint WPC and by AQD, if going inside the building where the filter presses are used to dewater sludge.

Note: Due to the COVID-19 pandemic, I was wearing a disposable paper mask, pursuant to EGLE guidelines.

Offsite odor evaluation:

Prior to arrival, I checked for odors in the surrounding area; please see attached odor evaluation form, map, and 24-hour summary of weather data for today, 3/19/2021.

The odor evaluation began at 2:15 PM. Weather conditions were sunny and 47 degrees F, with winds out of the east at 15 miles per hour.

Summary of offsite odors detected, prior to arrival:

- 2:23 PM: Level 1 odor of solid waste detected in parking lot of Huntington Circle Apts. A solid waste dumpster with an open lid was believed to be the source.
- 2:24 PM: Level 2 auto exhaust odor was detected as I was about to exit the property of Huntington Circle Apts. A car with visible exhaust which had just gone by, westbound, on Beecher Rd. was believed to be the source.

The 0 to 5 odor scale used by AQD is as follows:

Level Description

- 0 Non-detect
- 1 Just barely detectable
- 2 Distinct and definite
- 3 Distinct and definite objectionable odor
- 4 Odor strong enough to cause a person attempt to avoid it completely
- 5 Odor so strong as to be overpowering and intolerable for any length of time

The odors described above were not associated with Flint WPC, and were from sources which are not regulated by AQD.

Arrival:

At this point during the COVID-19 pandemic, EGLE guidance to staff had been to pre-arrange inspections with regulated facilities, except where it is in the interest of protecting the public to not prearrange the visit. In this case, the inspection was conducted unannounced, which I felt was in the best interests of the public. EGLE guidance is also to wear a mask, when conducting any field work. I was wearing a disposable paper mask at this time.

I have been told that Flint WPC procedure is to have visitors call prior to entering the site, during the pandemic. I arrived by the administration building at 2:32 PM, then called Ms. Jeanette Best, Water Pollution Control Supervisor. She was in a meeting, but indicated tht she would find Mr. Brad Farrar, foreman, to accompany me during the inspection.

At 2:40 PM, I detected a level 1 odor which I believed to be from the primary tanks. I soon met with Mr. Farrar, who was also wearing a mask. He informed that roughly half of the entire plant was shut down, so that it could be rebuilt with grant funding, and that the remaining half of the plant is running twice as much, to compensate,).

Inspection:

Flint WPC is the wastewater treatment plant for all of the residences in Flint, as well as for numerous commercial and industrial facilities. Flint WPC is sized to treat 50 million gallons of waste water per day, but with the decrease in Flint's population in recent decades, the plant only treats about 15 million gallons per day, I have been told. I have also been told the average is around 22 million gallons per day. Storm water from rainfall is said to be a higher percentage of overall waste water flow because they have less sanitary waste water.

It is my understanding that on its own, the present mix of sludge that Flint WPC receives from residences, businesses, and industries would not be sufficient to produce enough digester gas to make the digester(s) economically viable. Therefore, Flint WPC adds substrates to the digester. These substrates are said to be more biologically active and have more energy value than the sludge.

AQD has been advised that substrates they accept include grease from restaurant grease traps, and also soy, milk waste water, and powdered milk. Pickle waste has also been added as a substrate. Substrates are often brought into the site by tanker trucks. In recent months, they have been receiving spoiled food and milk products from commercial businesses, storing them onsite, and adding them to the digestion process. I have been told that they conduct bench scale tests with new substrates to determine the potential effects on the digester.

My understanding of the digestion process works as follows: undigested sludge and substrates are put into the digester, which is an anaerobic environment. Naturally occurring bacteria (acetogens and acetogens) break the wastes down into volatile fatty acids (VFAs), and bacteria called methanogens then convert the VFAs into methane gas. Digested sludge goes to the digestate tank for storage, while digester gas goes to the two ICEs, and/or the flare. The digested sludge is sent to the

dewatering building to have a flocking agent added, and is run through filter belt presses, to remove water. The dewatered sludge is then sent to the loadout building, to be loaded into semi trailers, and taken offsite for disposal at a landfill.

My understanding is that methanogens in the digesters are naturally occurring bacteria, which feed on biological materials and produce methane gas. I have been advised that volatile fatty acid formation can lead to foul odors. Some of the odorous compounds which can be produced include sulfur compounds.

Note: the description of processes at the plant which follows is arranged to document various stages of the wastewater treatment process in succession, as I understand them, and does not reflect the chronological order in which I saw the processes at the plant today.

Primary tanks; Rule 285:

It is my understanding that in the primary tanks, incoming wastewater is kept, and solids settle out as sludge. These solids then go to the east sludge storage tank. I briefly detected a level 1 primary wastewater tank odor, shortly after my arrival by the administration building. The odor was not at all like sludge, and had a fresher kind of scent.

East sludge storage tank:

The east sludge storage tank is an existing tank with a geodisic dome. Sludge is pumped there, from the primary tanks, and stored. It is my understanding that substrates are added to the sludge in this tank by truck, and by adding waste food items to a nearby "pickle pit." Sludge can go to either the existing (north) digester, or the new (south) digester, for treatment.

There were no visible emissions from the east sludge storage tank. The current 2-stage odor scrubber replaced an earlier scrubber, which had been a 55 gallon drum filled with carbon. It is used as needed, I was told, and it was not in use right now. Because it is not subject to a permit to install, use of the scrubber is voluntary. .

I detected a fleeting odor of sludge, but it was not repeated, and I could not identify a source. It is my understanding that ferric chloride is added to the sludge storage tank, as needed, to reduce odors.

I have previously been told that once per week, a sample is taken from the east sludge tank, and it is checked for pH, volatile fatty acids (VFAs), alkalinity, total solids, and volatile solids.

Later during the inspection, a tanker truck was delivering substrates, and there was a level 2 odor of substrates in the immediate vicinity of the unloading area.

Existing (north) digester:

The existing digester was operating. There were no visible emissions. I have been informed that its capacity is over one million gallons. I've been informed in the past that this once had an internal floating roof (IFR), but that was replaced with a more fixed roof some years ago. The new roof has a limited range of movement, and a water seal. The roof has been painted black to absorb heat from the sun. There were no visible emissions coming from the north digester, and none would be expected.

Odors from sludge which has been digested are only about 1/10 of the odors from undigested sludge, I have been told in the past, and the volume of digested sludge is reduced about 30% from the undigested state.

Inside the digester building were odors that were very faint, at this time.

South digester (new unit):

The new, or south, digester is operating. The start up is said to have been around March 2019. It has a capacity of over one million gallons, I was told. It has an internal floating roof, which is expected to provide superior odor control compared with the roof of the existing (north) digester. The roof has been painted black to absorb heat from the sun. There were no visible emissions from the south digester, and none would be expected.

Walking around the digesters, I briefly detected a distinct and definite sour or sulfurous odor, when I was standing about a to the west of the south digester. The odor was brief, and I did not detect it from further away. Winds were out of the west, at this time.

Digestate tank:

The post-digester sludge goes into the digestate tank, and then to the filter press building for dewatering. The sludge contains non-organics or inorganics, at this point, as I understand it. The digestate tank has a soft dome on top, which expands as the amount of gas in the tank increases. There were no visible emissions from the digestate tank.

The digestate tank is situated near the pickle pit. The pickle pit had no visible emissions associated with it. It has two pumps, I was told, one for grinding substrates, and one for pumping it out. The substrates added here can include waste pickles or other vegetables, powdered milk, or cellulose.

Original (north) ICE generator; Rule 285(g); 40 CFR Part 60, Subpart JJJJ:

The original, or north, ICE generator was not running at the time of the inspection. It is considered to meet the criteria for the MAPC Rule 285(g) exemption pre-12/20/2016, for internal combustion engines with rated heat input capacity of less than 10 million Btu/hour. This is a six-cylinder unit, rated at 167 kilowatts (kW), and rated at less than 500 horsepower (hp). It is my understanding that both ICE generators are run if enough gas is available from the digesters.

New (south) ICE generator; Rule 285(2)(g); 40 CFR Part 60, Subpart JJJJ:

The south ICE generator was running, as of 3:15 PM. There were no visible emissions.

This unit is subject to the revised MAPC Rule 285(2)(g) permit exemption, which became effective on or after 12/20/2016. The exemption criteria is the same as for the prior version of the exemption, MAPC Rule 285(g). This unit is larger, being a twelve-cylinder engine, rated at 360 kW. It is still less than 10 million Btu/hour, qualifying for the exemption, It is rated at less than 500 hp.

For both generators, the applicable requirement under Subpart JJJJ is Section 60.4243,(a)(2), the relevant portions of which read as follows:

§60.4243 What are my compliance requirements if I am an owner or operator of a stationary SI internal combustion engine?

(a) If you are an owner or operator of a stationary SI internal combustion engine that is manufactured after July 1, 2008, and must comply with the emission standards specified in §60.4233(a) through (c), you must comply by purchasing an engine certified to the emission standards in §60.4231(a) through (c), as applicable, for the same engine class and maximum engine power. In addition, you must meet one of the requirements specified in (a)(1) and (2) of this section.

~~(1) If you operate and maintain the certified stationary SI internal combustion engine and control device according to the manufacturer's emission-related written instructions, you must keep records of conducted maintenance to demonstrate compliance, but no performance testing is required if you are an owner or operator. You must also meet the requirements as specified in 40 CFR part 1068, subparts A through D, as they apply to you. If you adjust engine settings according to and consistent with the manufacturer's instructions, your stationary SI internal combustion engine will not be considered out of compliance.~~

(2) If you do not operate and maintain the certified stationary SI internal combustion engine and control device according to the manufacturer's emission-related written instructions, your engine will be considered a non-

certified engine, and you must demonstrate compliance according to (a)(2)(i) through (iii) of this section, as appropriate.

~~(i) If you are an owner or operator of a stationary SI internal combustion engine less than 100 HP, you must keep a maintenance plan and records of conducted maintenance to demonstrate compliance and must, to the extent practicable, maintain and operate the engine in a manner consistent with good air pollution control practice for minimizing emissions, but no performance testing is required if you are an owner or operator.~~

(ii) If you are an owner or operator of a stationary SI internal combustion engine greater than or equal to 100 HP and less than or equal to 500 HP, you must keep a maintenance plan and records of conducted maintenance and must, to the extent practicable, maintain and operate the engine in a manner consistent with good air pollution control practice for minimizing emissions. In addition, you must conduct an initial performance test within 1 year of engine startup to demonstrate compliance.

~~(iii) If you are an owner or operator of a stationary SI internal combustion engine greater than 500 HP, you must keep a maintenance plan and records of conducted maintenance and must, to the extent practicable, maintain and operate the engine in a manner consistent with good air pollution control practice for minimizing emissions. In addition, you must conduct an initial performance test within 1 year of engine startup and conduct subsequent performance testing every 8,760 hours or 3 years, whichever comes first, thereafter to demonstrate compliance.~~

Third (west) ICE generator; Rule 285(2)(g):

There is a third ICE onsite now. I inquired about this, and Mr. Farrar advised that, to his knowledge, it is not yet running. It is expected to be subject to the same federal requirements as the first two ICEs, i.e. 40 CFR Part 60, Subpart JJJJ. Like them, it will have to undergo an initial, one-time compliance test. It is also expected to be subject to the MAPC Rule 285(2)(g) permit exemption for installation on or after 12/20/2016 of an ICE with less than 10 million Btu/hr heat input. This unit was first observed by AQD as it was in the process of installation on 10/2/2020, documented in a 10/2/2020 activity report.

Flare; Rule 282(g):

The flare was running at 3:20 PM, with no opacity. I requested and was granted permission to take photographs and video recordings of the flare, to share with EGLE's Environmental Services Division, who were working on a short educational *EGLE Classroom* video about flares. Please see Photo 001, attached. The view is looking towards the northwest.

The flare is used to burn excess methane, when there is more methane than can be burned in the generator(s). It was installed prior to the 12/20/2016 revisions to AQD permit exemptions, and is therefore subject to Rule 282(g), rather than the revised Rule 282(2)(g) which became effective on 12/20/2016. The exemption criteria remain unchanged, however, and are stated below:

(g) Sour gas-burning equipment, if the actual emission of sulfur dioxide does not exceed 1 pound per hour.

Based on previous computations using the flare size and capability, the sulfur content of the fuel would have to be less than 180 ppm to maintain compliance with this exemption (using a fuel flow of 33,930 ft³/hr), AQD's Nathan Hude has observed in the past. In 2016 a sample of the digester gas had a sulfur content of less than 50 ppm, within the acceptable range.

On 2/22/2022, while this inspection activity report was being written, I emailed Mr. Chad Antle, and requested hydrogen sulfide (H₂S) data on the digester gas going to the flare, if they had data from around the 3/19/2021 date of the inspection, or if not, if he could sample the gas for H₂S content. The data will be evaluated upon receipt.

Filter press building:

The filter press building houses the non-operational sewage sludge incinerators. Post-digester sludge is dewatered in the building, by the addition of polymer, as well as the use of belts and rollers

to squeeze out water. The material is then known as filter cake. The removed water is called filtrate, and goes back to the start of the plant.

I was informed that both dewatering lines were running. There were no visible emissions from the filter press building or its exhaust stacks. Inside the building there was a distinct and definite musty, sludge-like odor. I could not confirm any odors outside the building, however. Hearing protection should be worn, if one enters this building. It is my understanding that sensors inside the dewatering building monitor ammonia and hydrogen sulfide in the air, one for each of the two filter presses.

Also inside the former incinerator building is what used to be the area for the now removed Zimpro process. This is where they once operated their depackaging process. That process has been moved to a new, pole barn-like structure, south of the dewatering building.

Food depackaging process; MAPC Rule 285(l)(vi)(B):

The food depackaging is in a new, pole barn-like structure, referred to as the BioWorks building. This process opens packages of spoiled or otherwise unsaleable food, with a centrifuge-like mechanism. The food waste is from commercial businesses, and includes sour milk, creamer, pop, known outside Michigan as soda, and frozen packaged meals. Flint WPC uses these as substrates, to provide food for the bacteria in the digesters. The leftover packaging waste is baled for disposal. I was informed the unit runs 8 hours per day.

The depackager was running, at the moment. The depackager is towards the center of the room, while the feed hopper is at the east end of the room. A forklift was loading a number of boxes into the hopper, at this time.

An auger, or screw conveyor, takes the food packages from the hopper to the depackager or "opener". The opener is a drum with paddles. The slurry of waste food goes to a feed line, while the shredded food packaging goes into a bin, below. The feed line is routed to either the east sludge holding tank or to the south digester. I was unable to smell odors of food waste in the general, indoor environment, until I was 6-9 inches from the depackager. There, I was able to detect an odor of Fernch fries.

Fast food waste, including chicken nuggets, were stored inside the building, in containers. Outside the building were stored unopened boxes of barbecue sauce, and creamer.

Loadout building:

In the loadout building, the dewatered sludge, aka filter, cake is loaded into truck trailers in one of two cargo bays. It is then taken to a landfill, for disposal. There were no visible emissions from the truck loadout building. All the doors were closed. Inside the building, there was a level 3 odor of ammonia and H₂S. However, no odors were detectable outside the loadout building, as we walked around it.

I left the site at 3:37 PM.

Conclusion:

No instances of noncompliance were identified. The only odors detected offsite today were not associated with Flint WPC. AQD will respond to complaints, and conduct odor evaluations when in the area, as time and resources allow.



Image 1(001) : Flint WPC flare in use.

NAME David R. Smith

DATE 2/28/2022

SUPERVISOR BM

**ODOR SURVEY FORM**

Source Name: Flint Water Pollution Control				Inspector: McGeen, Daniel
Source Address: Flint, MI		G-4652 MI	Beecher 48532	Date: 3/19/2021 – Part 1 (Corresponds to Map 1)
Sky Conditions: Sunny			Temperature: 47 degrees F	
Wind Speed: 15 mph	Wind Direction: Out of the East		Source of Meteorological Data: Car thermometer	
Location (attach map, if available)	Time	Odor Scale (See below)	Characteristic (See below)	Comments (Observations that will aid in the determination of the source & properties of the odor.)
1. Linden & Pasadena Ave.	2:17 PM	0		
2. Linden & Flushing Rd.	2:18 PM	0		
3. Linden Rd.	2:20 PM	0		Passing by dewatering building.
4. Linden & Beecher Rd.	2:20 PM	0		
5. Beecher & Hillside Dr.	2:20 PM	0		
6. Hillside & Westerrace Dr.	2:21 PM	0		
7. Beecher & Hillside Dr.	2:22 PM	0		
8. Huntington Circle Apts.	2:23 PM	1	Solid waste odor	Solid waste dumpster was suspected source.
9. Huntington Circle Apts.	2:24 PM	2	Car exhaust odor	At exit to apartments, from a passing car on Beecher Rd.
10. Mill & Beecher Rds.	2:25 PM	0		
11. Mill & Flushing Rds.	2:26 PM	0		
12. Flushing Rd.	2:28 PM	0		
13. Linden & Flushing Rds.	2:29 PM	0		
<u>Odor Scale</u> 0 - Non-Detect 1 - Just barely detectable 2 - Distinct and definite odor 3 - Distinct and definite objectionable odor 4 - Odor strong enough to cause a person to attempt to avoid it completely 5 - Odor so strong as to be overpowering and intolerable for any length of time				<u>Odor characteristic examples:</u> Paint-like Musty, moldy Burnt, smoky Tar-like, asphalt Cut grass Citrus fruit

Map of offsite odors detected near Flint Water Pollution Control (WPC) on 3/19/2021, Part 1



Key to map:

Location	Findings
8.	Level 1 solid waste odor (dumpster odor)
9.	Level 2 car exhaust

The AQD 0 to 5 odor scale is as follows:

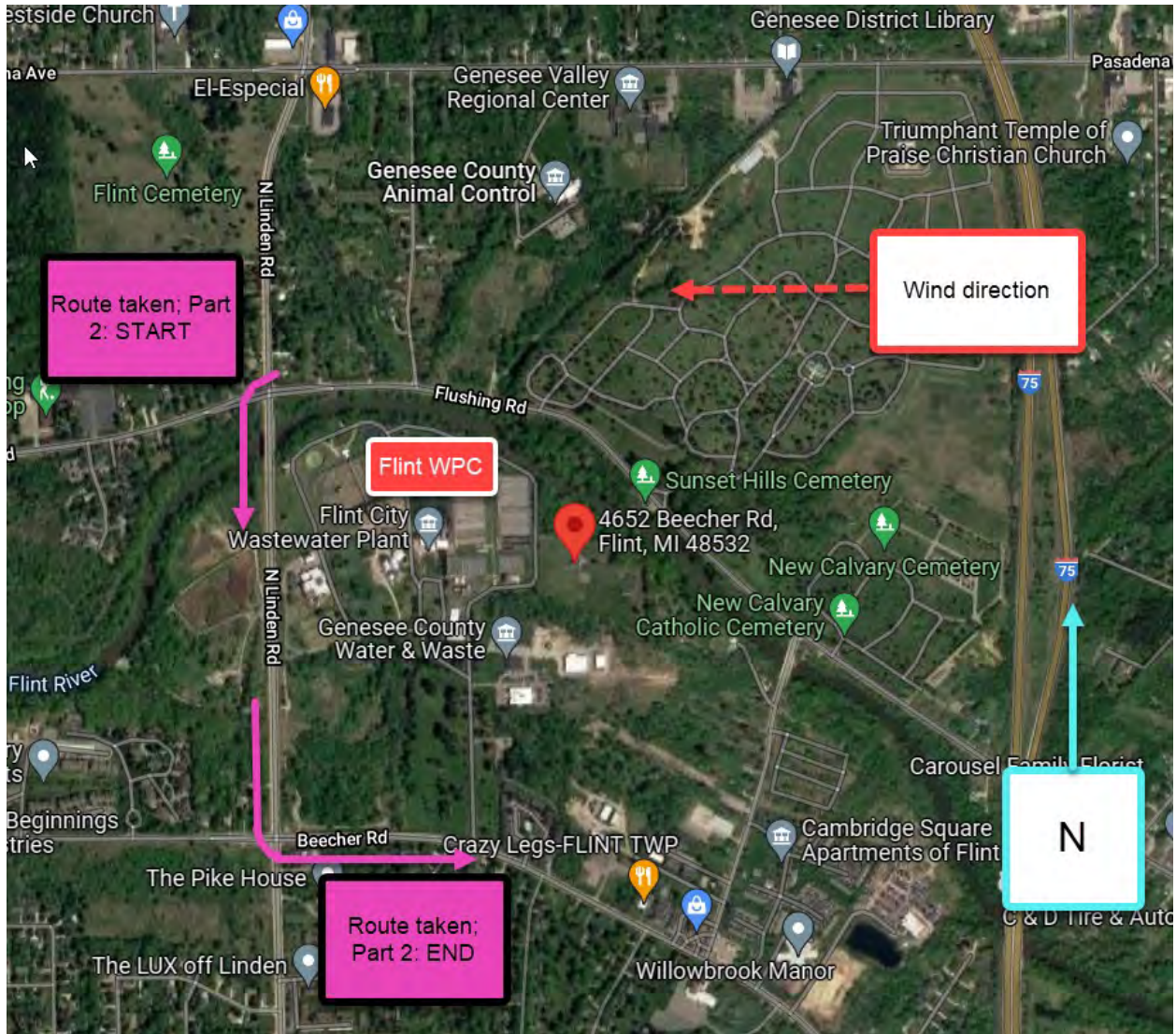
- 0 - Non-Detect
- 1 - Just barely detectable
- 2 - Distinct and definite odor

3 - Distinct and definite objectionable odor

4 - Odor strong enough to cause a person to attempt to avoid it completely

5 - Odor so strong as to be overpowering and intolerable for any length of time

Map of offsite odors detected near Flint Water Pollution Control (WPC) on 3/19/2021, Part 2



Key to map:

Location Findings

No odors were detected offsite.

The AQD 0 to 5 odor scale is as follows:

0 - Non-Detect

1 - Just barely detectable

2 - Distinct and definite odor

3 - Distinct and definite objectionable odor

4 - Odor strong enough to cause a person to attempt to avoid it completely

5 - Odor so strong as to be overpowering and intolerable for any length of time

Search Locations

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Recent Cities

Flint, MI (48504) (/weather/us/mi/flint/43.03,-83.74) Howell, MI (48843) (/weather/us/mi/howell/42.62,-83.95)

42.98 °N, 83.77 °W

Flint, MI Weather History

23° BISHOP INTERNATIONAL AIRPORT STATION (/DASHBOARD/PWS/KMISWART19?CM_VEN=LOCALWX_PWSDASH) | CHANGE

HISTORY (/HISTORY/DAILY/US/MI/FLINT/KFNT)

- [TODAY \(/WEATHER/KFNT\)](/WEATHER/KFNT)
- [HOURLY \(/HOURLY/KFNT\)](/HOURLY/KFNT)
- [10-DAY \(/FORECAST/KFNT\)](/FORECAST/KFNT)
- [CALENDAR \(/CALENDAR/US/MI/FLINT/KFNT\)](/CALENDAR/US/MI/FLINT/KFNT)
- [HISTORY \(/HISTORY/DAILY/US/MI/FLINT/KFNT\)](/HISTORY/DAILY/US/MI/FLINT/KFNT)
- [WUNDERMAP \(/WUNDERMAP?LAT=42.98&LON=-83.77\)](/WUNDERMAP?LAT=42.98&LON=-83.77)

Daily

Weekly

Monthly

(/history/daily/KFNT/date/2021/KFNT/date/2021/KFNT/date/2021-

2-23)

2-23)

2)

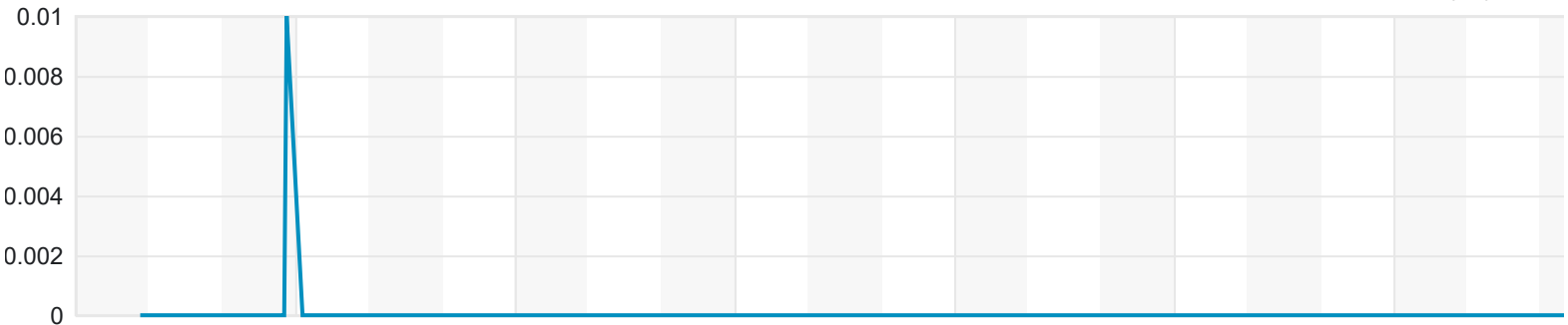
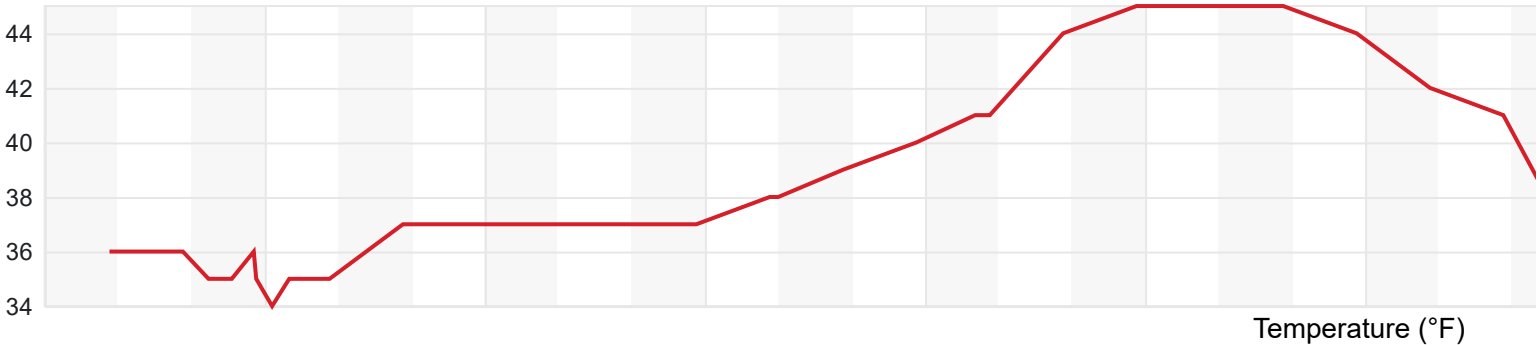
February

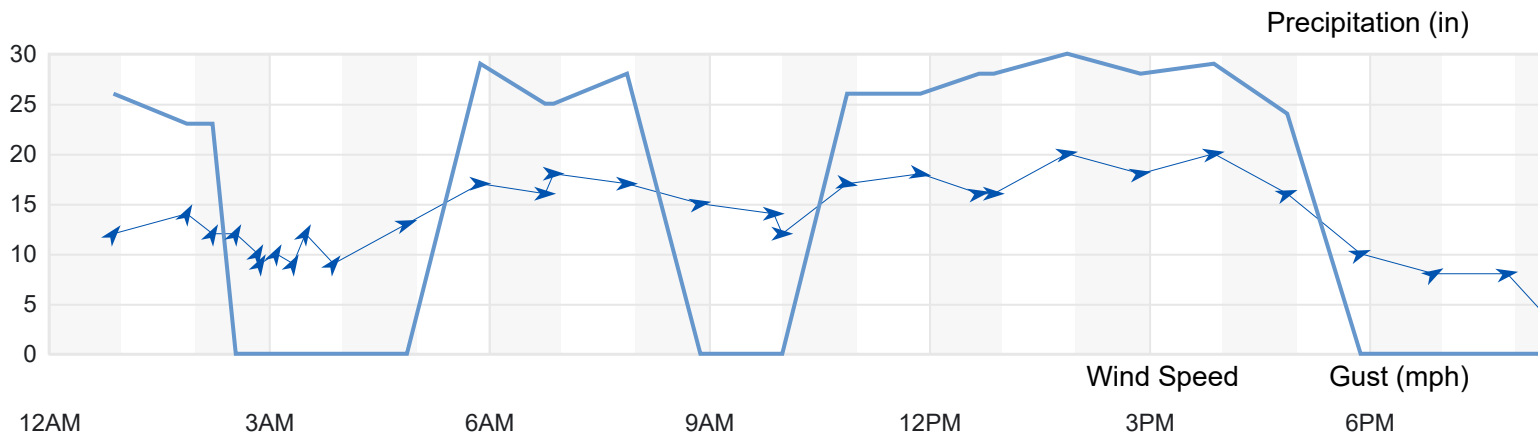
23

2021

View

12AM 3AM 6AM 9AM 12PM 3PM 6PM





Summary

Temperature (° F)	Actual	Historic Avg.	Record	▲
High Temp	45	35	63	
Low Temp	34	18.5	-17	
Day Average Temp	38.36	26.8	-	
Precipitation (Inches)	Actual	Historic Avg.	Record	▲
Precipitation (past 24 hours from 11:53:00)	0.02	5.60	-	
Dew Point (° F)	Actual	Historic Avg.	Record	▲
Dew Point	29.94	-	-	
High	31	-	-	
Low	27	-	-	
Average	29.94	-	-	
Wind (MPH)	Actual	Historic Avg.	Record	▲
Max Wind Speed	20	-	-	
Visibility	10	-	-	
Sea Level Pressure (Hg)	Actual	Historic Avg.	Record	▲
Sea Level Pressure	29.06	-	-	
Astronomy	Day Length	Rise	Set	▲

Temperature (° F)	Actual	Historic Avg.	Record	▲
Actual Time	10h 56m	7:21 AM	6:17 PM	
Civil Twilight		6:53 AM	6:46 PM	
Nautical Twilight		6:20 AM	7:19 PM	
Astronomical Twilight		5:47 AM	7:52 PM	
Moon: waxing gibbous		2:10 PM	5:13 AM	

Daily Observations

Time	Temperature	Dew Point	Humidity	Wind	Wind Speed	Wind Gust	Pressure	Precip.
12:53 AM	36 °F	28 °F	73 %	SW	12 mph	26 mph	28.73 in	0.0 in
1:53 AM	36 °F	30 °F	79 %	SSW	14 mph	23 mph	28.71 in	0.0 in
2:14 AM	35 °F	30 °F	82 %	SSW	12 mph	23 mph	28.69 in	0.0 in
2:33 AM	35 °F	31 °F	85 %	SSW	12 mph	0 mph	28.68 in	0.0 in
2:51 AM	36 °F	30 °F	81 %	SSW	10 mph	0 mph	28.67 in	0.0 in
2:53 AM	35 °F	31 °F	85 %	SSW	9 mph	0 mph	28.67 in	0.0 in
3:06 AM	34 °F	31 °F	89 %	SSW	10 mph	0 mph	28.66 in	0.0 in
3:20 AM	35 °F	31 °F	85 %	SSW	9 mph	0 mph	28.65 in	0.0 in
3:30 AM	35 °F	31 °F	85 %	SSW	12 mph	0 mph	28.64 in	0.0 in
3:53 AM	35 °F	31 °F	85 %	SW	9 mph	0 mph	28.63 in	0.0 in
4:53 AM	37 °F	31 °F	79 %	WSW	13 mph	0 mph	28.63 in	0.0 in
5:53 AM	37 °F	31 °F	79 %	W	17 mph	29 mph	28.65 in	0.0 in
6:46 AM	37 °F	31 °F	79 %	W	16 mph	25 mph	28.68 in	0.0 in
6:53 AM	37 °F	31 °F	79 %	W	18 mph	25 mph	28.68 in	0.0 in
7:53 AM	37 °F	31 °F	79 %	W	17 mph	28 mph	28.71 in	0.0 in
8:53 AM	37 °F	31 °F	79 %	W	15 mph	0 mph	28.75 in	0.0 in
9:53 AM	38 °F	31 °F	76 %	W	14 mph	0 mph	28.78 in	0.0 in
10:00 AM	38 °F	31 °F	76 %	W	12 mph	0 mph	28.78 in	0.0 in
10:53 AM	39 °F	31 °F	73 %	W	17 mph	26 mph	28.81 in	0.0 in
11:53 AM	40 °F	31 °F	70 %	W	18 mph	26 mph	28.84 in	0.0 in
12:41 PM	41 °F	31 °F	67 %	W	16 mph	28 mph	28.86 in	0.0 in

Time	Temperature	Dew Point	Humidity	Wind	Wind Speed	Wind Gust	Pressure	Precip.
12:53 PM	41 °F	31 °F	67 %	W	16 mph	28 mph	28.87 in	0.0 in
1:53 PM	44 °F	30 °F	58 %	W	20 mph	30 mph	28.88 in	0.0 in
2:53 PM	45 °F	29 °F	53 %	W	18 mph	28 mph	28.90 in	0.0 in
3:53 PM	45 °F	29 °F	53 %	W	20 mph	29 mph	28.91 in	0.0 in
4:53 PM	45 °F	29 °F	53 %	WSW	16 mph	24 mph	28.93 in	0.0 in
5:53 PM	44 °F	29 °F	55 %	WSW	10 mph	0 mph	28.96 in	0.0 in
6:53 PM	42 °F	29 °F	60 %	WSW	8 mph	0 mph	28.99 in	0.0 in
7:53 PM	41 °F	28 °F	60 %	W	8 mph	0 mph	29.01 in	0.0 in
8:53 PM	36 °F	27 °F	70 %	CALM	0 mph	0 mph	29.04 in	0.0 in
9:53 PM	36 °F	27 °F	70 %	S	5 mph	0 mph	29.06 in	0.0 in
10:53 PM	38 °F	27 °F	65 %	S	5 mph	0 mph	29.06 in	0.0 in
11:53 PM	39 °F	28 °F	65 %	S	6 mph	0 mph	29.05 in	0.0 in

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