

Rennaker, Joanne (DEQ)

From: Joan Rose <rosejo@msu.edu>
Sent: Thursday, October 29, 2015 8:54 AM
To: Howard Croft; Amy Hovey; Andy Leavitt; Anthony Chubb; Brent Wright; Darren Lytle; Dayne Walling; donna. cole; Dykema, Linda D. (DHHS); Wells, Eden (DHHS); edwardsm; Krisztian, George (DEQ); Gerald (Jed) Natzke; James Henry; Jamie Gaskin; Jason Lorenz; jmikewright; JoAnne Herman; John O'Brien; Kevin J. Keane; Kirk Smith; larry.koehler@mcc.edu; Laura Sullivan; Lawrence Reynolds; Lawrence Reynolds; Michael Glasgow; Schock, Michael; Michael Wright; Mike Lane; Prysby, Mike (DEQ); MVALACAK@gchd.us; Natasha Henderson; Norb Birchmeier; Pete Levine; Robert Bincsik; Russell Hudson; Samir Matta; Sean Kammer; Shawn Patrick McElmurry; Busch, Stephen (DEQ); Thompson, Sheryl D. (DHHS); Warren Green
Subject: Re: NOTICE_November Meeting Adjustment

Howard.
 I will be able to be there.

Joan

Joan B. Rose
 Homer Nowlin Chair in Water Research
 Dept of Fisheries and Wildlife
 480 Wilson Road
 Natural Resources Building, Room 13
 Michigan State University
 East Lansing, MI 48824
rosejo@msu.edu
 Phone: 517.432-4412

<http://www.fw.msu.edu/~rosejo/>
<http://camra.msu.edu/>
<http://cws.msu.edu/>

On 10/28/2015 11:54 PM, Howard Croft wrote:

Technical Advisory Team,

We have a request to reschedule the next meeting for **Monday November 9th at 2:00 pm**. This would allow our EPA representatives their best opportunity to be present at the meeting and I believe that would be a significant benefit to the team especially considering the technical nature of the next meeting.

I know this is short notice but please check your schedules to see if you can attend and plan for this final adjustment. We will still hold the meeting at Flint City Hall at 2:00 pm in the same location as the last meeting and I will have an agenda ready as part of next weeks update.

I will also check on the link to our test map and will make sure that it is working on Thursday.

Thank you,

--

Howard Croft

Public Works Director

City of Flint

1101 S. Saginaw Street

Flint, MI 48502

PH# 810.766.7135 Ext.2043

hcroft@cityofflint.com

Rennaker, Joanne (DEQ)

From: Howard Croft <hcroft@cityofflint.com>
Sent: Wednesday, October 28, 2015 11:54 PM
To: Amy Hovey; Andy Leavitt; Anthony Chubb; Brent Wright; Darren Lytle; Dayne Walling; donna. cole; Dykema, Linda D. (DHHS); Wells, Eden (DHHS); edwardsm; Krisztian, George (DEQ); Gerald (Jed) Natzke; Howard Croft; James Henry; Jamie Gaskin; Jason Lorenz; jmikewright; JoAnne Herman; John O'Brien; Kevin J. Keane; Kirk Smith; larry.koehler@mcc.edu; Laura Sullivan; Lawrence Reynolds; Lawrence Reynolds; Michael Glasgow; Schock, Michael; Michael Wright; Mike Lane; Prysby, Mike (DEQ); MVALACAK@gchd.us; Natasha Henderson; Norb Birchmeier; Pete Levine; Robert Bincsik; rosejo@msu.edu; Russell Hudson; Samir Matta; Sean Kammer; Shawn Patrick McElmurry; Busch, Stephen (DEQ); Thompson, Sheryl D. (DHHS); Warren Green
Subject: NOTICE_November Meeting Adjustment

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Thank you,

--

Howard Croft
 Public Works Director
 City of Flint
 1101 S. Saginaw Street
 Flint, MI 48502
 PH# 810.766.7135 Ext.2043
hcroft@cityofflint.com

Rennaker, Joanne (DEQ)

From: Laura Sullivan <dr.laura2@gmail.com>
Sent: Wednesday, October 28, 2015 11:32 PM
To: Howard Croft
Cc: Amy Hovey; Andy Leavitt; Anthony Chubb; Brent Wright; Darren Lytle; Dayne Walling; donna. cole; Dykema, Linda D. (DHHS); Wells, Eden (DHHS); edwardsm; Krisztian, George (DEQ); Gerald (Jed) Natzke; James Henry; Jamie Gaskin; Jason Lorenz; jmikewright; JoAnne Herman; John O'Brien; Kevin J. Keane; Kirk Smith; larry.koehler@mcc.edu; Lawrence Reynolds; Lawrence Reynolds; Michael Glasgow; Schock, Michael; Michael Wright; Mike Lane; Prysby, Mike (DEQ); MVALACAK@gchd.us; Natasha Henderson; Norb Birchmeier; Pete Levine; Robert Bincsik; rosejo@msu.edu; Russell Hudson; Samir Matta; Sean Kammer; Busch, Stephen (DEQ); Thompson, Sheryl D. (DHHS); Warren Green; Shawn McElmurry
Subject: Re: TAC Team Update 10_28_15

Howard,

The link you'd provided for the map of lead test results is no longer working.
 Could you provide the updated link?

This is the link you had sent:

<http://flint.maps.arcgis.com/home/webmap/viewer.html?webmap=786d8418d42341f4ab6bc894ec24bbfc>

Thank you,

Laura Sullivan

On Wednesday, October 28, 2015, Howard Croft <hcroft@cityofflint.com> wrote:
 Team,

The next Technical Advisory Meeting is set for **Wednesday November 18th 2:00 pm** at Flint City Hall. The previous date being considered was Veterans Day and we encountered several conflicts. There will be a call in number available and I will send an agenda prior to the meeting.

There is a significant amount of new information included in this weekly report and I expect that trend to continue as we move forward. Several of the items mentioned such as the specific dosing level of phosphate will become targets of discussion at this next meeting in order to thoroughly evaluate the pros and cons and to help with public information.

The testing map continues to have information added as it becomes available and on the weekly report we have inserted a data table that will be updated regularly as well. Please let me know if anyone is interested in additional data being reported.

Please be prepared to give input on the potential of a December meeting which would have to be December 9th or December 16th.

Thank you,

--

Howard Croft

Public Works Director

City of Flint

1101 S. Saginaw Street

Flint, MI 48502

PH# 810.766.7135 Ext.2043

hcroft@cityofflint.com

--
Laura L. Sullivan, Ph. D.

3101 Hawthorne Drive

Flint, Michigan 48503

dr.laura2@gmail.com

Human(kind). Be both.

Rennaker, Joanne (DEQ)

From: Shekter Smith, Liane (DEQ)
Sent: Wednesday, October 28, 2015 5:38 PM
To: Krisztian, George (DEQ)
Cc: Thelen, Mary Beth (DEQ); Shaler, Karen (DEQ); Sygo, Jim (DEQ); Devereaux, Tracy Jo (DEQ); Benzie, Richard (DEQ); Busch, Stephen (DEQ); Prysby, Mike (DEQ)
Subject: DRAFT DELIBERATIVE. Daily Update

Action Step 6: Meeting(s) with school staff/management.

Discussed with the EPA taskforce concerning monitoring results at Freeland Elementary. A report that summarizes the results of the samples collected from the school for the lead analysis has been drafted.

Action Step 8: Review corrosion control treatment plan and get any EPA comments.

Staff discussed the items needed for the corrosion control treatment plan. An outline of a Corrosion Treatment Operation letter has been prepared. The letter will be finalized and sent to the city. Water quality parameter monitoring and laboratory certification was also discussed with the EPA taskforce.

Action Step 9: Review construction permit application/issue permit for phosphate equipment.

Completed review and verified NSF Standard 60 conformance, proper dosage and feed pump sizing. The Act 399 permit for the installation of the phosphate feed equipment was issued today.

Action Step 16: Confirm plumbing assessment and sampling is scheduled for Brownell K-2 STEM Academy and Eisenhower Elementary.

Coordinated with the DEQ laboratory to create and produce the "Request for Water Analysis Forms" and the bottle order needed for sampling at Brownell K-2 STEM Academy and Eisenhower Elementary this weekend.

Rennaker, Joanne (DEQ)

From: Prysby, Mike (DEQ)
Sent: Wednesday, October 28, 2015 5:02 PM
To: Shekter Smith, Liane (DEQ)
Subject: Action Steps - update

Liane,

Below is a summary of the Action Steps completed today by Steve and myself:

Action Step 6: Meeting(s) with school staff/management:

Discussed with the EPA taskforce concerning monitoring results at Freeland Elementary. A report that summarizes the results of the samples collected from the school for the lead analysis has been drafted.

Action Step 8: Review corrosion control treatment plan and get any EPA comments:

Steve, Adam, and I discussed the items needed for the corrosion control treatment plan. An outline of a Corrosion Treatment Operation letter has been prepared. The letter will be finalized and sent to the city. Water quality parameter monitoring and laboratory certification was also discussed with the EPA taskforce.

Action Step 9: Review construction permit application/issue permit for PO4 equipment

Completed review and verified NSF Standard 60 conformance, proper dosage and feed pump sizing. The Act 399 permit for the installation of the PO4 feed equipment was issued today.

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

Rennaker, Joanne (DEQ)

From: Howard Croft <hcroft@cityofflint.com>
Sent: Wednesday, October 28, 2015 3:28 PM
To: Amy Hovey; Andy Leavitt; Anthony Chubb; Brent Wright; Darren Lytle; Dayne Walling; donna. cole; Dykema, Linda D. (DHHS); Wells, Eden (DHHS); edwardsm; Krisztian, George (DEQ); Gerald (Jed) Natzke; Howard Croft; James Henry; Jamie Gaskin; Jason Lorenz; jmikewright; JoAnne Herman; John O'Brien; Kevin J. Keane; Kirk Smith; larry.koehler@mcc.edu; Laura Sullivan; Lawrence Reynolds; Lawrence Reynolds; Michael Glasgow; Schock, Michael; Michael Wright; Mike Lane; Prysby, Mike (DEQ); MVALACAK@gchd.us; Natasha Henderson; Norb Birchmeier; Pete Levine; Robert Bincsik; rosejo@msu.edu; Russell Hudson; Samir Matta; Sean Kammer; Busch, Stephen (DEQ); Thompson, Sheryl D. (DHHS); Warren Green; Shawn McElmurry
Subject: TAC Team Update 10_28_15
Attachments: TAC Weekly Update 10_28_15.pdf

Team,

The next Technical Advisory Meeting is set for **Wednesday November 18th 2:00 pm** at Flint City Hall. The previous date being considered was Veterans Day and we encountered several conflicts. There will be a call in number available and I will send an agenda prior to the meeting.

There is a significant amount of new information included in this weekly report and I expect that trend to continue as we move forward. Several of the items mentioned such as the specific dosing level of phosphate will become targets of discussion at this next meeting in order to thoroughly evaluate the pros and cons and to help with public information.

The testing map continues to have information added as it becomes available and on the weekly report we have inserted a data table that will be updated regularly as well. Please let me know if anyone is interested in additional data being reported.

Please be prepared to give input on the potential of a December meeting which would have to be December 9th or December 16th.

Thank you,

Howard Croft
 Public Works Director
 City of Flint
 1101 S. Saginaw Street
 Flint, MI 48502
 PH# 810.766.7135 Ext.2043
hcroft@cityofflint.com



City of Flint Technical Advisory Committee - Weekly Report

October 28th, 2015

Last meeting: 10-7-2015

Next meeting: 11-18-2015, 2:00 pm

I. Overview –

Please note that we have set the date for the next meeting at Wednesday November 18th 2:00 pm at Flint City Hall (there will be a call in number). The previous date proposed is Veterans Day and there were several conflicts.

II. New Items this week

Technical Advisory Committee Addition

I have added Professor Shawn McElmurry, An Associate Professor at Wayne State University in the Dept. of Civil and Environmental Engineering to the TAC team. Professor McElmurry contacted me a few weeks ago and visited the Water Plant and took several samples from the Flint River and the distribution system.

Professor McElmurry's team has submitted a proposal to the National Institute of Environmental Health Sciences (NIEHS) for funding to evaluate how changes in the drinking water system are impacting water quality. Their project has the following goals:

- Define exposure within Flint's drinking water system using a combined sampling and modeling approach.
- Quantify how the concentrations of DBPs and Pb change over time within the water distribution system.
- Apply a high-throughput bioassay to evaluate toxicity of complex chemical mixtures (focused on DBPs).
- Communicate results to water utility operators, government officials (city, state, and federal), public health agencies and residents using principles of risk communication through a variety of channels including social media.

Given their goals and their proximity to Flint, I believe that adding Professor McElmurry to the Technical Advisory Team will bring added evaluation and data to our cause.

III. Ongoing Items of concern or in process

A. Detroit Water

Water from Detroit is now flowing through all of the transition mains and should be present at most taps throughout the City. We are flushing hydrants in a manner to help circulate water within the system, individual usage patterns will dictate water being at every household and business. We will be testing hardness and phosphate levels over the next several days across the city to verify the presence of Detroit water.

B. Service Lines

I want to clarify where we are regarding the service line data. The 45,000+ cards are only one aspect of the information and represent the original data. As work has occurred over the last several decades, the Service Center has built a second, partial set of cards with updated information. Both sets of cards are kept as permanent records with accurate data. We also have maps which were last updated in 1984 with additional information. Finishing what the City started has involved stitching together three sets of data and then putting that into a database.

U of M Flint has taken ownership of the project and they have measured how much labor it will take to complete the task. Professor Kaufman is working pro bono but has just submitted a proposal to the City for the labor required in order to complete the task. The proposal will be turned around ASAP for them to complete the work.

C. Corrosion Control

On October 19th 2015 our engineering consultant submitted a design package to the DEQ with recommended phosphate dosing. After EPA review, the comments were just returned and today LAN is discussing with DEQ when to expect final approval and permitting. There are questions regarding the elevated dose of phosphate that we will bring to the next Technical Advisory meeting for discussion. The questions will be largely around the pros and cons of the specified dose level and the public communication and expectations that should accompany the implementation.

Issue	Description	Action Item	Owner
Corrosion Control	To help recoat the piping	The final design has been sent to MDEQ for peritting.	LAN
Surge Protection	Main breaks are down.	Leak detection will continue for the next few months.	City Staff
KWA - Prep	Design and installation of final improvements needed	Internal November 5th meeting scheduled to discuss specifics. See item IV.	LAN/City
KWA - Transfer Station	Buffer for water supply from KWA	Internal November 5th meeting scheduled to discuss specifics. See item IV.	LAN
Hydraulic Model	Filling with data	Need to verify broken valve locations for model to be accurate.	LAN/City
SCADA Upgrades	Used to develop automation within the system.	First phase went in in FY15 second and final phase due to be installed prior to KWA's arrival.	City Staff

IV. **Needs for treating and using water from KWA**

The City is meeting with the engineering consultants on Thursday November 5th in order to build a project timeline of all items needed to be prepared for water delivery from KWA. The following items will be discussed:

- A. Design and construction of transfer station to Dort Reservoir (while in use).
 - Needed to buffer the volume of water that KWA is capable of delivering prior to their reservoir tank being activated.
- B. KWA access to the plant.
 - The current design calls for use of the pipe that was empty and is now in use. An alternate plan needs to be discussed and vetted.
- C. Alum feed system
 - Needed for coagulant change to raw water and to reduce chloride.

V. **Testing Data**

We will continue to update this data table weekly, if there is something that is missing or additional data that is requested please let me know and we will attempt to add it to the table.

Date	Flow (MGD)	pH (S.U.)	Total Hardness (mg/L)	Total Alkalinity (mg/L)	Non-carbonate Hardness (mg/L)	Chloride (mg/L)	Calcium (mg/L)	Magnesium (mg/L)	Total Phosphate (mg/L)
Range GLWA	12 - 19	7.3 - 7.6	98 - 102	70 - 76	26 - 32	11 - 13	26 - 32	3.9 - 6.3	1.0 - 1.2
10/26/2015	12	7.36	102	74	28	11	30.5	6.3	1.14

Rennaker, Joanne (DEQ)

From: Shekter Smith, Liane (DEQ)
Sent: Tuesday, October 27, 2015 5:30 PM
To: Krisztian, George (DEQ)
Cc: Thelen, Mary Beth (DEQ); Shaler, Karen (DEQ); Sygo, Jim (DEQ); Devereaux, Tracy Jo (DEQ); Busch, Stephen (DEQ); Benzie, Richard (DEQ); Prysby, Mike (DEQ)
Subject: DRAFT DELIBERATIVE. Daily update

Action Step 7: Meet with DHHS and discuss all lead education material for schools
 &

Action Step 14: Develop childcare facility guidance or review DHHS related materials

DEQ met with DHHS staff to review and further develop guidance and incorporate drinking water exposure information. Guidance is being provided by DHHS specific to the County emergency order and separate guidance for statewide use will also be developed.

Action Step 9: Review construction permit application and issue construction permit for phosphate equipment.

Lansing District office received updated dosage, pump specifications and cut-sheets for phosphate product late Tuesday. A quick glance at the submittal shows most of the requested information has been provided except for NSF 60 certification and max dose. Staff will cross reference the NSF website to verify proper certification and maximum dose. If acceptable, staff will proceed with issuance of the Act 399 permit, otherwise, the consultant will need to provide us with the NSF Standard 60 certification and maximum dose information.

Action Step 12: Contact city of Flint for Service Line Record status update and obtain a copy of the records to date.

Staff were only able to cross reference 46 of the 326 historical lead and copper monitoring sampling sites with the service line index card information, 10,895 records.

Preliminary follow-up review of sampling event at Freeman Elementary:

DEQ and DLARA staff met and reviewed outlet/tap materials to correlate with sample results. Contacted Jim Henry, Genesee County Health Department to confirm location of screening samples. Draft write up to be completed by DEQ staff on 10/28.

Liane J. Shekter Smith, P.E.
 Assistant to Chief Deputy Director Jim Sygo
 Michigan Department of Environmental Quality
 517-284-6543

Rennaker, Joanne (DEQ)

From: Prysby, Mike (DEQ)
Sent: Tuesday, October 27, 2015 4:57 PM
To: Shekter Smith, Liane (DEQ)
Cc: Busch, Stephen (DEQ)
Subject: Preliminary and Deliberative: Action Steps Update

Liane,

Below is an update on the Action Steps assigned to me:

Action Step 20: Review permit appl. And issue permit for PO4 equipment:

Received updated dosage, pump specs and cut-sheets for PO4 product at COB today. A quick glance at the submittal shows most of the requested information has been provided except for NSF 60 certification and max dose. I will cross reference the NSF website tomorrow morning to verify proper certification and max dose. If this checks out, I will proceed with issuance of the Act 399 permit, otherwise, the consultant will need to provide us with the NSF Standard 60 certification and max dose info.

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

Rennaker, Joanne (DEQ)

From: Busch, Stephen (DEQ)
Sent: Tuesday, October 27, 2015 4:55 PM
To: Shekter Smith, Liane (DEQ)
Cc: Prysby, Mike (DEQ); Benzie, Richard (DEQ)
Subject: Preliminary and Deliberative - Daily Updates 10/27

Action Step 12: Contact city of Flint for Service Line Record status update and obtain a copy of the records to date. Staff were only able to cross reference 46 of the 326 historical lead and copper monitoring with the service line index card information, 10,895 records.

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Action Step 14: Develop childcare facility guidance or review DHHS related materials

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? Action Step 6: Meeting(s) with school staff/management

DEQ and DLARA staff met and reviewed outlet/tap materials to correlate with sample results. Contacted Jim Henry, Genesee County Health Dept. to confirm location of screening samples. Draft write up to be completed by DEQ staff on 10/28.

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

Rennaker, Joanne (DEQ)

From: Prysby, Mike (DEQ)
Sent: Tuesday, October 27, 2015 4:22 PM
To: Michael Glasgow
Subject: RE: September 2013 Test Run Data

Michael,

There are gaps in the filter effluent turbidity and bacteriological information on the Sept 2013 test run report. Can you fill in these gaps?

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

From: Michael Glasgow [<mailto:mglasgow@cityofflint.com>]
Sent: Tuesday, October 27, 2015 1:14 PM
To: Prysby, Mike (DEQ)
Subject: September 2013 Test Run Data

Mike,

Here is what I have found for the September 2013 Test Run Data. I had to compile some of the bacteria and ozone residual results to add. That's what took me a little while. Let me know if there is anything else you need.

--
Mike Glasgow
Utilities Administrator
City of Flint
1101 S. Saginaw St.
Flint, MI 48502
(810)766-7135 ext. 2602

Rennaker, Joanne (DEQ)

From: Matta, Samir <SFMatta@lan-inc.com>
Sent: Tuesday, October 27, 2015 4:12 PM
To: Prysby, Mike (DEQ)
Cc: Brent Wright (bwright@cityofflint.com); Mike Glasgow (MGlasgow@CityofFlint.com)
Subject: FW: Flint WTP PH2 SEG4 - Corrosion Control
Attachments: LMI Series C Pumps.pdf; NSFPhosAcidSpecs.pdf; PhosAcidSafetyDataSheet.pdf; Flint Phosphate Calculations - Revision 4.pdf

Hi Mike,

I have included the updated calculations, Proposed Pump Cut Sheet as well as the MSDS and the fact sheet for the chemical to be used.

Please let me know if this satisfy your needs to issue the permit.

Thanks.

Samir F. Matta, PE
Team Leader



**Lockwood, Andrews
& Newnam, Inc.**
A LEO A DALY COMPANY

1311 South Linden Road, Suite B • Flint, MI 48532
2121 University Park Dr, Suite 100 • Okemos, MI 48864-6901
D 517.819.2367 C 517.819.2367
www.lan-inc.com • sfmatta@lan-inc.com

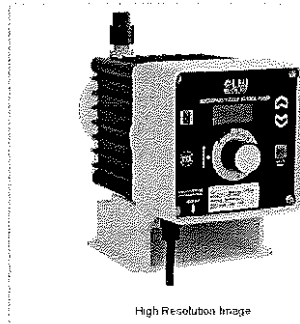
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Series C Chemical Metering Pumps

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 Totally encapsulated electronics for protection against moisture and corrosive conditions
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 Advanced control options for simplified system integration (pulse multiply/divide, 4-20 mA, remote on/off)
 *UL, *CUL, NSF 50, NSF 61, *CE Certifications

Control Codes:

1 – Dual Manual Control (speed and stroke length)
 7 – Pulse Input / Dual Manual Control
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Output Codes with standard liquid end	
Max Capacity:	Max Pressure:
*CX0 – 1.3 GPH (4.9 l/h)	300 psi (20.7 Bar)
*CX1 – 2.5 GPH (9.5 l/h)	150 psi (10.3 Bar)
*CX2 – 4.0 GPH (15.1 l/h)	100 psi (6.9 Bar)
*CX3 – 8.0 GPH (30.3 l/h)	60 psi (4.1 Bar)
*CX4 – 20 GPH (75.7 l/h)	25 psi (1.7 Bar)
C76 – 4.0 GPH (15.1 l/h)	175 psi (12.1 Bar)
C77 – 10.0 GPH (38.0 l/h)	80 psi (5.5 Bar)
C78 – 25 GPH (95.0 l/h)	30 psi (2.07 Bar)

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WL Performance
Products LP

PRODUCT DATA SHEET

PRODUCT: Phosphoric Acid, 75%

NSF

GRADE: Technical

CODE: 750

GENERAL DESCRIPTION: Clear colorless liquid with no foreign odor

FORMULA: H_3PO_4

MOLECULAR WEIGHT: 98.0

CAS NO.: 7664-38-2

DATE EFFECTIVE: November 5, 2005

CHARACTERISTICS

SPECIFICATION LIMITS

Specific Gravity @ 25°/15.5°C

1.574 Minimum

Equivalent H_3PO_4 , %

75.0 Minimum

Equivalent P_2O_5 , %

54.3 Minimum

Color, APHA

20 Maximum

NOTE: Specification Limits are subject to change from time to time. Please contact us for current data sheet.

Plant Location: Carondelet (St. Louis), MO; Carteret, NJ; Lawrence, KS
 Packaging: 3000 gal. tank truck; 14,000 gal. tank cars.
 15 gal.(200 lb.) & 55 gal. (700 lb.) plastic drums (nonreturnable)
 Labeling Requirements: Product Label and DOT CORROSIVE label required by law.
 Shipping Classification: 1. Single package of 5000 lbs. or more:
 Phosphoric Acid
 CORROSIVE MATERIAL, UN 1805, RQ
 STCC4930248
 2. Single package of less than 5000 lbs.:
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Distributed By: PVS NOLWOOD CHEMICALS, INC. 10900 Harper Avenue Detroit, MI. 48213 (313) 925-0300	
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Handling Precautions:

NOT FOR FOOD OR DRUG USE. CORROSIVE TO MILD STEEL. DANGER! CAUSES BURNS TO EYES AND SKIN. Avoid contact with eyes, skin, and clothing. Avoid breathing vapor or mist. Keep container closed. Use with adequate ventilation. Wash thoroughly after handling.

FIRST AID: If in eyes or on skin, immediately flush with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Call a physician. Wash clothing before reuse.

IN CASE OF SPILL OR LEAK: Contain spill or leak to prevent discharge to environment. Emptied container retains vapor and product residue. Observe all labeled safeguards until container is cleaned, reconditioned or destroyed.

This Product Data Sheet is subject to the terms and conditions on the reverse side hereof.

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PHOSPHORIC ACID , 75%; TECHNICAL GRADE

Key Properties:

- Phosphoric acid is relatively non-volatile and stable at elevated temperatures; it is a much milder acid than sulfuric, nitric, or hydrochloric acids.
- Heavy, viscous liquid, 13.1 to 13.2 lbs./gal.
- Remains liquid at very low temperatures; Freezing point, -18°C (0.5°F)
- Shelf-life --- 24 months

Applications:

- Bonding agent for refractory materials
- Industrial and institutional cleaning and sanitizing products
- Liquid fertilizers
- Aluminum bright-dipping
- Metal treating and phosphatizing
- Flameproofing agent
- Catalyst in chemical processes
- Effluent treatment
- Animal feed supplement
- Potable Water Treatment: ICL Performance Products LP Phosphoric Acid, 75%, conforms to the requirements of ANSI / NSF Standard 60; used for corrosion and scale control.
Maximum Use Level = 13 mg/L.

FOR MORE COMPLETE INFORMATION ON PROPERTIES AND SAFE HANDLING OF THIS MATERIAL, SEE THE ICL PERFORMANCE PRODUCTS LP MATERIAL SAFETY DATA SHEET (MSDS).

NOTICE: Although the information and recommendations set forth herein (hereinafter "Information") are presented in good faith and believed to be correct as of the date hereof, ICL Performance Products LP makes no representations or warranties as to the completeness or accuracy thereof. Information is supplied upon the condition that the persons receiving same will make their own determination as to its suitability for their purposes prior to use. In no event will ICL Performance Products LP be responsible for damages of any nature whatsoever resulting from the use of or reliance upon Information or the product to which Information refers. Nothing contained herein is to be construed as a recommendation to use any product, process, equipment or formulation in conflict with any patent, and ICL Performance Products LP makes no representation or warranty, express or implied, that the use thereof will not infringe any patent. The data set forth herein are based on samples tested and are not guaranteed for all samples or applications. Such data are intended as guides and do not reflect product specifications for any particular product. NO REPRESENTATIONS OR WARRANTIES, EITHER EXPRESS OR IMPLIED, OR MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE OR OF ANY OTHER NATURE ARE MADE HEREUNDER WITH RESPECT TO INFORMATION OR THE PRODUCT TO WHICH INFORMATION REFERS.

ICL PERFORMANCE PRODUCTS LP © November, 2005

Corporate Offices:

622 Emerson Road
Suite 500
St. Louis, Missouri 63141
314-983-7500

For order assistance, please call our Customer Service Department Toll Free: 1-800-244-6169



Where needs take us

Safety Data Sheet


RESPONSIBLE CARE®
 OUR COMMITMENT TO SUSTAINABILITY

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Identification

Product Name: PHOSPHORIC ACID (35% - 95%)
 Reference Number: AST10046
 Date: May 19, 2015
 Synonyms: Emulsi-Phos®; LuminEtch™, LuminEtch™ Ultra, PurEtch®; monophosphoric acid; orthophosphoric acid;

Distributed by: PVS NOLWOOD CHEMICALS, INC. 10900 Harper Avenue Detroit, MI 48213 (313) 926-0350	
PVS ITEM #	PVS SDS #
Multi	0484
CONTROLLED DOCUMENT IF STAMPED IN RED	

Use of the substance or preparation

Phosphates and fertilizers, acid cleaners, aluminum brighteners and metal phosphatizing, leather tanning, varnish, synthetic rubber, and water treatment. Food grade is used as an acidulate for cola drinks, yeast nutrient, etc. NSF International certifies phosphoric acid under Standard 60 as an acceptable drinking water treatment chemical.

Company/Undertaking Identification

ICL PERFORMANCE PRODUCTS LP
 622 Emerson Road - Suite 500
 St. Louis, Missouri 63141

Emergency telephone: In USA call CHEMTREC: 1 800 424 9300

Outside the USA, including ships at sea, call CHEMTREC's international and maritime telephone number (collect calls accepted): +1 (703) 527-3887.

In Canada call CANUTEC: 1 613 996 6666

General Information: +1 800 244 6169 (Worldwide)

2. HAZARDS IDENTIFICATION

GHS


Danger

GHS05

Skin Corr. 1A H314 Causes severe skin burns and eye damage.
 Eye Dam. 1 H318 Causes serious eye damage.

P260 Do not breathe dust/fume/gas/mist/vapours/spray.
 P280 Wear protective gloves/protective clothing/eye protection/face protection.
 P303+P361+P353 IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.

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P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P304+P340 IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.

P301+P330+P331 IF SWALLOWED: rinse mouth. Do NOT induce vomiting.

3. COMPOSITION/INFORMATION ON INGREDIENTS**Composition**

<u>Substance</u>	<u>CAS No.</u>	<u>%w/w</u>	<u>EINECS No.</u>
Phosphoric Acid	7664-38-2	35 - 95	231-633-2
Water	7732-18-5	5 - 65	231-791-2

4. FIRST AID MEASURES**General**

This material is an acid; treatment is symptomatic and supportive. Phosphoric acid has irritating effects to mucous membranes.

Eye contact

Immediately flush with plenty of water for at least 15 minutes. If easy to do, remove any contact lenses. Get medical attention. If irritation persists, contact an ophthalmologist.

Skin contact

May cause skin irritation. Wash effected area with plenty of soap and water. Get medical attention.

Inhalation

Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen.

Ingestion

IF SWALLOWED, do NOT induce vomiting. Give victim 2-4 glasses of water to drink. Get medical attention. Contact a Poison Control Center. NEVER GIVE ANYTHING BY MOUTH TO AN UNCONSCIOUS PERSON.

5. FIRE FIGHTING MEASURES**Extinguishing media**

Not combustible. No special requirements.

Unsuitable extinguishing media

Non-combustible. No special requirements.

Exposure hazard

Not combustible. May give off toxic fumes (oxides of phosphorus) in a fire. May react with metals to liberate hydrogen, a flammable gas.

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Protective equipment

Firefighters should wear self-contained breathing apparatus & personal protective clothing (PPE).

6. ACCIDENTAL RELEASE MEASURES**Personal precautions**

Avoid unnecessary exposure and remove all material from eyes, skin and clothing. Do not ingest or inhale mists of phosphoric acid.

Environmental precautions

Small quantities: Avoid discharge into the environment

Large quantities: May cause pollution. Avoid discharge into the environment. Note methods for cleaning up in the next section.

Methods for cleaning up

Contain large spills with dikes and transfer the material to appropriate containers for reclamation or disposal. Absorb remaining material or small spills with an inert material and then place in a chemical waste container. Neutralize washings with a base such as soda ash or lime. Flush residual spill area with large amounts of water.

Refer to Section 13 for disposal information and Sections 14 and 15 for reportable quantity information.

7. HANDLING AND STORAGE**Handling**

Do not get in eyes, on skin, or on clothing.
Avoid breathing mist or vapor.
Do not taste or swallow.

Keep container closed.
Use only with adequate ventilation.
Wash thoroughly after handling.

Engineering measures

Provide natural or mechanical ventilation to minimize exposure. The use of local mechanical exhaust ventilation is preferred at sources of air contamination such as open process equipment. Consult National Fire Protection Association (NFPA) Standard 91 for design of exhaust systems.

Transfer product from drums to process in closed system (hermetically) and if not possible use effective local exhaust ventilation. Empty drums as thoroughly as possible to facilitate disposal.

For bulk transfer, purge lines with nitrogen to remove residual liquid before disconnect. When unloading bulk vehicles, personnel should wear chemical goggles and rubber or neoprene gloves. All fittings should be properly secured prior to energizing unloading system. Care should be taken to avoid acid contact when disconnecting lines/hoses after unloading.

For bulk storage type 316L stainless is recommended. Glass, polyethylene and FRP (depending on resin used) are satisfactory, steel, aluminum and type 304 stainless are not recommended because of rapid or potential corrosion. Vessels should be vented and operated at ambient conditions. Maintenance heat (hot water preferred) may be used to prevent freezing. Dike area around storage tank with sufficient volume to hold entire tank contents.

Storage

Store in plastic, rubber-lined, or 316L stainless steel tanks designed for Phosphoric Acid. Store drums away from heat and out of direct sunlight. Store in a well-ventilated dry area away from alkalis and most metals. Store above freezing point. Contact with reactive metals, i.e. mild steel and aluminum may generate hydrogen that may form an explosive mixture in storage vessels.

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For tank inspection, follow manufacturer's recommended safety guidelines (ex. temperature, etc.). In addition, corrosion data for phosphoric acid (ex. Handbook of Corrosion Engineering, McGraw-Hill, 2000) must be followed to match the storage container of choice (ex. stainless, rubber lined, etc.).

8. EXPOSURE CONTROLS/PERSONAL PROTECTION**Occupational Exposure Limits**

<u>State</u>	<u>Standard</u>	<u>Limit</u>
Australia	Occupation Exposure Limit	1 mg/m ³ 8-hr. TWA, 3 mg/m ³ STEL
Austria	Occupation Exposure Limit	MAK 1 mg/m ³ 8-hr
Belgium	Occupation Exposure Limit	1 mg/m ³ 8-hr. TWA, 3 mg/m ³ STEL
Denmark	Occupation Exposure Limit	1 mg/m ³ 8-hr. TWA
Finland	Occupation Exposure Limit	1 mg/m ³ 8-hr. TWA, 3 mg/m ³ STEL
France	Occupation Exposure Limit	VME 1 mg/m ³ VLE 3 mg/m ³
Japan	Occupation Exposure Limit	1 mg/m ³ 8-hr.
United Kingdom	Occupation Exposure Limit	2 mg/m ³ STEL
United States	Occupation Exposure Limit	1 mg/m ³ 8-hr. TWA, 3 mg/m ³ STEL

Respiratory protection

Avoid breathing vapor or mist. Use NIOSH/MSHA approved respiratory protection equipment (full face piece recommended) when airborne exposure limits are exceeded (see below). If used, full-face piece replaces the need for face shield and/or chemical goggles. Refer to U.S. OSHA regulations 29 CFR 1910.134 or European Standard EN 149.

Hand/Skin protection

Wear impervious protective gloves and clothing to prevent contact to skin. Wash immediately if skin is contaminated. Remove contaminated clothing promptly and launder before reuse. Clean personal protective equipment before reuse. Provide a safety shower at any location where skin contact can occur. Wash thoroughly after handling.

Eye protection

Wear chemical goggles, a face shield, and if necessary, a full face respirator when conditions warrant or exceed the Occupation Exposure Limit. Refer to U.S. OSHA regulations 29 CFR 1910.133 or European Standard EN 166.

Components referred to herein may be regulated by specific Canadian provincial legislation. Please refer to exposure limits legislated for the province in which the substance will be used.

9. PHYSICAL AND CHEMICAL PROPERTIES

- a) Appearance: Clear, colorless, syrupy liquid
- b) Odor: None
- c) Odor threshold: Undetermined.
- d) pH: (as a 1% solution @ 25 °C) 75%:1.6; 80%:1.6; 85%: 1.6; 95%:1.7
- e) Melting point/freezing point: Freezing point °C: 75%:-17.5; 80%:4.6; 85%: 21.1;95%:24.7
- f) Initial boiling point and boiling range: (°C) 75%:135; 80%:144; 85%:154; 95%:202
- g) Flash point: Undetermined
- h) Evaporation rate: Undetermined.
- i) Flammability (solid, gas) : Undetermined.
- j) Upper/lower flammability or explosive limits: Undetermined.
- k) Vapor pressure: (100% acid): 0.0285 mm Hg @ 20 °C
- l) Vapor density: Undetermined.
- m) Relative density: @ 25/15.5 °C: 75%:1.575; 80%:1.633; 85%:1.692; 95%: 1.808
- n) Solubility(ies) : Complete
- o) Partition coefficient: n-octanol/water: Undetermined.

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- p) Auto-ignition temperature: Undetermined.
 q) Decomposition temperature: Undetermined.
 r) Viscosity: @ 25 °C 75%:12; 80%:17; 85%:23; 95%:55

Chemical Formula:



	<u>75%</u>	<u>80%</u>	<u>85%</u>	<u>95%</u>
% Equivalent H_3PO_4 :	75.1	80.35	85.5	95.0
Kg/l @ 25 °C	1.57	1.64	1.69	1.81
lb/gallon @ 25 °C	13.17	13.66	14.15	15 - 15.2

NOTE: These physical data are typical values based on material tested but may vary from sample to sample. Typical values should not be construed as a guaranteed analysis of any specific lot or as specifications for the product.

10. STABILITY AND REACTIVITY

Product is stable under normal conditions of storage and handling.

Conditions to avoid

Incompatible materials

Materials to avoid

Avoid contact with metals (such as mild steel and aluminum), which may liberate flammable hydrogen gas that can produce an explosion in confined vessels. Avoid contact with materials such as sulfides and sulfites, which could release toxic gases. Be cautious in mixing with strong bases because high heat of reaction can generate steam.

Hazardous decomposition

Phosphorus oxides may form when heated to decomposition.

11. TOXICOLOGICAL INFORMATION

Data from ICL Performance Products LP single-dose (acute) animal studies with this material are given below:

Phosphoric Acid 75%

Oral - rat LD₅₀: 4,400 mg/kg; slightly toxic
 Dermal - rabbit LD₅₀: > 3,160 mg/kg; slightly toxic
 Eye Irritation - rabbit (24-hr. exp): corrosive
 Skin Irritation - rabbit (24-hr. exp): corrosive
 DOT Skin Corrosion - rabbit (4-hr. exp): non-corrosive

Phosphoric Acid 80%

Oral - rat LD₅₀: 4,200 mg/kg; slightly toxic
 Dermal - rabbit LD₅₀: > 3,160 mg/kg; slightly toxic
 Eye Irritation - rabbit (24-hr. exp): corrosive
 Skin Irritation - rabbit (24-hr. exp): corrosive
 DOT Skin Corrosion - rabbit (4-hr. exp): non-corrosive

Phosphoric Acid 85%

Oral - rat LD₅₀: 3,500 mg/kg; slightly toxic
 Dermal - rabbit LD₅₀: > 1,260 mg/kg; slightly toxic
 Eye Irritation - rabbit (24-hr. exp): corrosive
 Skin Irritation - rabbit (24-hr. exp): corrosive
 DOT Skin Corrosion - rabbit (4-hr. exp): corrosive

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The results of single exposure tests indicate that these concentrations of Phosphoric Acid are slightly toxic orally and no more than slightly toxic after skin application. Following a 24-hour exposure, irreversible eye and skin damage occurred at all tested concentrations of Phosphoric Acid.

Phosphoric Acid has produced no genetic changes in standard tests using bacterial cells.

Additional Information

This material is severely corrosive to steel based on DOT, 49 CFR criteria.

Phosphoric Acid has a low vapor pressure at room temperature and is not expected to present a significant inhalation hazard under ambient conditions. Phosphoric Acid can, however, be irritating to the respiratory tract if inhaled as a mist or if the material is vaporized. The American Conference of Governmental Industrial Hygienists (ACGIH) has established a Threshold Limit Value (TLV) for Phosphoric Acid. For further information on this material, please refer to the current edition of the Documentation of The Threshold Limit Values and Biological Exposure Indices.

12. ECOLOGICAL INFORMATION**Environmental toxicity**

Phosphoric acid is practically nontoxic to one species of freshwater fish. No toxicity data was located for other freshwater species, algae, or Daphnia magna in a search of the available scientific literature.

The following data have been classified using the criteria adopted by the European Economic Community (EEC) for aquatic organism toxicity.

96-hr. LC₅₀ Mosquitofish: 138 mg/L, practically nontoxic

Environmental Fate

No specific biodegradation test data was located in a search of the available scientific literature. It was reported in the literature that while acidity of this material may be reduced readily in natural waters, the phosphate may persist indefinitely.

13. DISPOSAL CONSIDERATIONS

This material when discarded is a hazardous waste as defined by the U.S. Resource Conservation and Recovery Act (RCRA), 40 CFR 261.22, due to its characteristic of corrosivity, EPA hazardous waste number D002. Best Demonstrated Available Treatment (BDAT) as defined by RCRA for D002 characteristic wastes is DEACTIVATION plus meet 40 CFR 268.48 (Universal Treatment Standards) for non-CWA/non-CWA equivalent/non-Class I SDWA systems. Dispose of in accordance with local, state and federal regulations. Consult your attorney or appropriate regulatory officials for information on such disposal.

14. TRANSPORT INFORMATION

The data provided in this section is for information only. Please apply the appropriate regulations to properly classify your shipment for transportation.

Road/Rail, Sea and Air

IMDG/UN	UN 1805, Phosphoric acid, solution, 8, III
ICAO/IATA	UN 1805, Phosphoric acid, solution, 8, III
RID/ADR	UN 1805, Phosphoric acid, solution, 8, III
Canadian TDG	UN 1805, Phosphoric acid, solution, 8, III *
US DOT	UN 1805, Phosphoric acid, solution, 8, III *

*Reportable Quantity/ Reportable Limit (RQ/RL):

Canadian: Regulated limit (RL) for packages greater than or equal to 230 kg

U.S. DOT: Reportable quantity (RQ) for packages greater than or equal to 5,000 lb

ICL Performance Products LP Safety Data Sheet

Material: Phosphoric Acid (35%-95%)

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15. REGULATORY INFORMATION**Chemical Inventory**

USA TSCA	Listed	Australia	Listed
Canada DSL	Listed	Korea	Listed
EC	Listed	Philippines	Listed
Japan	Listed	China	Listed

Additional information

WHMIS Classification: D2 (B) - Materials Causing Other Toxic Effects
E - Corrosive Material

SARA Hazard Notification

Hazard Categories Under Title III Rules (40 CFR 370): Immediate
Section 302 Extremely Hazardous Substances: Not Applicable
Section 313 Toxic Chemical(s): Not Applicable

CERCLA Reportable Quantity: 5,000 lbs. of phosphoric acid

Release of 5,000 lbs. or more of this product into the environment in a 24-hour period requires notification to the U.S. National Response Center (800-424-8802 or 202-426-2675). Since local, state, and federal laws vary; consult your attorney or appropriate regulatory officials for information relating to spill reporting.

FDA: Food grades of phosphoric acid are sanctioned as Generally Recognized as Safe (GRAS) by the U.S. Food and Drug Administration and is codified in 21 CFR 182.1073.

This product has been classified in accordance with the hazard criteria of the Canadian Controlled Products Regulation and the MSDS contains all the information required by the Canadian Controlled Products Regulation.

Refer to Section 11 for OSHA/HPA Hazardous Chemical(s) and Section 13 for RCRA classification.

16. OTHER INFORMATION

	<u>Health</u>	<u>Fire</u>	<u>Reactivity</u>	<u>Additional Information</u>
Suggested NFPA Rating	3	0	0	
Suggested HMIS Rating	3	0	0	H H = Splash goggles, gloves (nitrile rubber recommended), synthetic apron, dust & vapor respirator

Reason for revision: Revised section 1 and 9. Supersedes MSDS dated: May 2, 2013
Responsible Care ® is a registered trademark of the American Chemistry Council.

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AST10046.4090

Flint Phosphate Calculations

Chemical will be 75% NSF certified Phosphoric acid

75% acid has a density of 13.17 #/gal. (5,974 g/gal) 13.17×453.5923

Of this 75% is Phosphoric acid (H_3PO_4) = 4,480 g H_3PO_4 /gal $5,974 \times 0.75$

Molecular weight of H_3PO_4 is 97.9913 g/mole

Moles H_3PO_4 / gal = 45.72 $4,480/97.9913$

Moles H_3PO_4 = Moles Orthophosphate (PO_4^{3-}) = Moles Phosphorus (P)

Species	Molecular Wt.	Moles / gal	g/gal
H_3PO_4	97.9913	45.72	4,480
PO_4^{3-}	94.9676	45.72	4341.92
P	30.97	45.72	1407.72

Proposed Operating Parameters

Assumptions per DEQ:

- City of Detroit residual is 0.39 mg/l as P
- MDEQ wants Flint to maintain a residual of approximately 1.0 mg/l as P
- Feed pump capacity should be sized for a max dose of 2.0 mg/l as P

	Plant Flow	Dosage as PO_4^{3-} *	Dosage as P
Maximum	25 MGD	6.13 mg/l	2.0 mg/l
Average	16 MGD	3.07 mg/l	1.0 mg/l
Minimum	8 MGD	1.53 mg/l	0.5 mg/l

*Equivalent dosage to P dosage

Feed Rate Calculations

Maximum feed rate (Max Flow $\times$ Max Dosage)

$$25 \text{ MGD} \times 3782 \text{ g/gal H}_2\text{O} \times 2.0 \text{ ppm} / 1,408 \text{ g/gal} = 134.30 \text{ gpd Phosphoric Acid}$$

Average feed rate (Avg Flow $\times$ Avg Dosage)

$$16 \text{ MGD} \times 3782 \text{ g/gal H}_2\text{O} \times (1.0 \text{ ppm} - 0.39 \text{ ppm}) / 1,408 \text{ g/gal} = 26.21 \text{ gpd Phosphoric Acid}$$

Minimum feed rate (Min Flow $\times$ Min Dosage)

$$8 \text{ MGD} \times 3782 \text{ g/gal H}_2\text{O} \times (1.0 \text{ ppm} - 0.39 \text{ ppm}) / 1,408 \text{ g/gal} = 13.10 \text{ gpd Phosphoric Acid}$$

Storage Requirements

30 days supply at average flow and dosage = $26.21 \text{ gpd} \times 30 \text{ days} = 786 \text{ gal}$.

Assuming the use of 275 gal semi-bulk totes, 3 totes required (recommend 2 in service, 1 spare)

Rennaker, Joanne (DEQ)

From: Michael Glasgow <mglasgow@cityofflint.com>
Sent: Tuesday, October 27, 2015 1:14 PM
To: Prysby, Mike (DEQ)
Subject: September 2013 Test Run Data
Attachments: September 2013 State Report .xls

Mike,

Here is what I have found for the September 2013 Test Run Data. I had to compile some of the bacteria and ozone residual results to add. That's what took me a little while. Let me know if there is anything else you need.

--

Mike Glasgow
Utilities Administrator
City of Flint
1101 S. Saginaw St.
Flint, MI 48502
(810)766-7135 ext. 2602



Daily Flow & Ozone Parameters WSSN 2310

September 2013

D A T E	Daily Flow (MGD)	O ₃ Dosage (lbs/day)	Ozone residuals (mg/L)												Sodium Bisulfite (mg/L)
			Contact Chamber #1				Contact Chamber # 2				Contact Chamber # 3				
			# of Samples	Start (avg. mg/L)	Middle (avg. mg/L)	End (avg. mg/L)	# of Samples	Start (avg. mg/L)	Middle (avg. mg/L)	End (avg. mg/L)	# of Samples	Start (avg. mg/L)	Middle (avg. mg/L)	End (avg. mg/L)	
1															
2															
3															
4															
5															
6															
7															
8															
9															
10															
11															
12															
13															
14															
15															
16	3.5		1	0.00	0.00	0.00									
17	10.6		8	0.30	0.06	0.00									
18	10.6		7	0.46	0.07	0.00									
19	10.7		11	0.37	0.01	0.00									
20	10.7		12	0.44	0.00	0.00									
21	10.7		12	0.49	0.00	0.00									
22	10.7		12	0.86	0.00	0.00									
23	10.7		4	0.78	0.00	0.01									
24	3.5		1	0.88	0.00	0.00									
25	10.7		16	1.14	0.00	0.00									
26	10.6		12	0.92	0.05	0.02									
27	10.6		16	1.20	0.02	0.01									
28	5.5		8	0.99	0.03	0.00									
29															
30															
AVG	9.2	#####	9	0.68	0.02	0.00									
MAX	10.7	0	16	1.20	0.07	0.02									
MIN	3.5	0	1	0.00	0.00	0.00									
Total	119.1														



Coagulation & Flocculation Parameters

WSSN 2310

September 2013

D A T E	Ferric Chloride as FeCl ₃ mg/l	Ferric Chloride as Fe 3+ mg/l	Turbidity, NTU units											
			Raw			Plate Settler Effluent			Filter Influent			Filter Effluent		
			# of Samples	Avg.	Max	# of Samples	Avg.	Max	# of Samples	Avg.	Max	# of Samples	Avg.	Max
1														
2														
3														
4														
5														
6														
7														
8														
9														
10														
11														
12														
13														
14														
15														
16	39.8	13.7	4	10.5	11.0	6	1.05	2.32	4	15.6	19.1			
17	39.0	13.4	6	11.1	13.2	12	0.45	0.49	12					
18	39.6	13.6	6	10.9	12.6	12	0.43	0.54	12	0.62	0.99			
19	39.3	13.5	6	10.2	11.4	12	0.39	0.48	12	0.34	0.44	8	0.08	0.09
20	39.8	13.7	6	9.3	9.5	12	0.37	0.51	12	0.37	0.59	36		
21	39.6	13.6	6	11.8	16.4	12	0.33	0.37	12	0.44	0.69			
22	43.1	14.8	6	10.7	11.9	12	0.29	0.31	12	0.89	1.43			
23	47.4	16.3	6	10.7	11.7	12	0.35	0.43	12	1.64	5.91			
24	47.1	16.2	2	10.1	10.2	4	0.35	0.35	4	3.01	3.20			
25	47.4	16.3	6	10.3	11.1	11	0.39	0.49	11	6.77	21.20			
26	47.8	16.4	6	10.5	12.6	12	0.32	0.36	12	1.25	1.62			
27	47.7	16.4	6	11.4	12.6	11	0.34	0.42	12	0.89	1.63			
28	47.7	16.4	2	10.6	11.1	6	0.31	0.35	6	0.64	0.88			
29														
30														
AVG	43.5	14.9	5	10.6	11.9	10	0.41	0.57	10	2.70	4.81	22	0.08	0.09
MAX	47.8	16.4	6	11.8	16.4	12	1.05	2.32	12	15.6	21.2	36	0.08	0.09
MIN	39.0	13.4	2	9.3	9.5	4	0.29	0.31	4	0.34	0.44	8	0.08	0.09

n/a = Filters not in service



Flouridation & Chlorination WSSN 2310

September 2013

DATE	Fluoride Applied F- mg/l	Fluoride Analyses mg/l			Chlorine prior to filtration (mg/L OCl-)	Lime dosage (lbs/day)	Polymer Dosage (mg/L)		Softening Clairifier pH		CO ₂ Feed Rate (lbs/hr)			
		Raw	Filter Eff.	Dist										
1														
2														
3														
4														
5														
6														
7														
8														
9														
10														
11														
12														
13														
14														
15														
16		0.20				900								
17		0.21				900								
18		0.19				900								
19		0.21				833								
20		0.17	0.20			800								
21		0.18				800								
22		0.22				800								
23		0.20				746								
24		0.21				600								
25		0.21				854								
26		0.21				800								
27		0.22	0.19			800								
28		0.20	0.17			800								
29														
30														
AVG		0.20	0.18		#DIV/0!	810	####	####	####	####	####	####	####	####
MAX		0.22	0.20		0.0	900	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
MIN		0.17	0.17		0.0	600	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

n/a = Filters not in service



Chemical Analyses WSSN 2310

September 2013

DATE	pH		Total Hard as CaCO ₃ mg/l		Total Alk as CaCO ₃ mg/l		NonCarbonate Hardness as CaCO ₃ mg/l		Calcium Ca ²⁺ mg/l		Magnesium Mg ²⁺ mg/l		Nitrate as NO ₃ - mg/l		Chloride as Cl- mg/l	
	Raw	Filter Eff.	Raw	Filter Eff.	Raw	Filter Eff.	Raw	Filter Eff.	Raw	Filter Eff.	Raw	Filter Eff.	Raw	Filter Eff.	Raw	Filter Eff.
1							0	0								
2							0	0								
3							0	0								
4							0	0								
5							0	0								
6							0	0								
7							0	0								
8							0	0								
9							0	0								
10							0	0								
11							0	0								
12							0	0								
13							0	0								
14							0	0								
15							0	0								
16	8.25		254		212		42	0	79.4		13.6				47	
17	8.28		254		212		42	0	80.2		13.1				46	
18	8.31		276		206		70	0	64.9		27.7				50	
19	8.39		252		210		42	0	72.1		17.5				40	
20	8.54	8.86	254	160	218	84	36	76	78.6	52.9	14.6	6.8			46	67
21	8.36		252		204		48	0	83.4		10.7				48	
22	8.24		240		212		28	0	62.5		20.4				51	
23	8.27		256		214		42	0	80.2		13.6				48	
24	8.48		260		214		46	0	78.6		15.6				44	
25	8.44		256		212		44	0	89.8		7.8				54	
26	8.39		252		222		30	0	73.7		16.5				47	
27	8.30	8.94	242	158	212	84	30	74	77.0	59.3	12.2	2.4			58	83
28	8.28	8.29	254	150	212	76	42	74	75.4	56.1	16.0	2.4			61	85
29							0	0								
30							0	0								
AVG	8.35	8.70	254	160	212	81	15	3	76.6	52.9	15.3	3.9			49	78
MAX	8.54	8.94	276	160	222	84	70	76	89.8	52.9	27.7	6.8			61	85
MIN	8.24	8.29	240	160	204	76	0	0	62.5	52.9	7.8	2.4			40	67

n/a = Filters not in service



Bacteriological & Physical Parameters

September 2013

D A T E	Total Coliform						Standard Plate Count		Temperature (Celcius)		Color		Odor	
	Raw	Post O3	Plate Settler Eff.	Filter Inf.	Filter Eff.	Lab Tap	Raw	Filter Eff.	Raw	Tap	Raw	Tap	Raw	Tap
1														
2														
3														
4														
5														
6														
7														
8														
9														
10														
11														
12														
13														
14														
15														
16														
17	7568	378	411	5			>14,760							
18	7308	900	816	1			3420							
19	4764	492	2420	17	50		2820							
20	3700	1042	> 2420	280	206		2740	> 738						
21	10950	2134	> 2420	40			2480							
22	39726	590	> 2420	77			2920							
23	3316	168	48392	10344			3020							
24	3978	3106	48392	1414										
25	2224	816	> 2420	> 2420			3420							
26	2038	1042	> 2420	3			2640							
27	2500	1226	> 2420	1	84		7440	> 738						
28	1560	2900	n/a	1			1940							
29														
30														
AVG	*All coliform results are most probable number maximum daily results. HPC & filter HPC counts are daily maximums. (NO filter samples were positive for <i>E. coli</i>)								* Raw	####				
MAX										0.0				
MIN										0.0				

n/a = Filters not in service

Rennaker, Joanne (DEQ)

From: Prysby, Mike (DEQ)
Sent: Tuesday, October 27, 2015 8:51 AM
To: Green, Warren (jwgreen@lan-inc.com)
Subject: FW: Flint WTP PH2 SEG4 - Corrosion Control

Warren,

Below is our communication to EPA concerning the phosphate dosage following their initial comments. EPA concurs with the PO₄ dosage based upon the incoming concentration to Flint.

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

From: Busch, Stephen (DEQ)
Sent: Thursday, October 22, 2015 12:58 PM
To: Schock, Michael; Lytle, Darren
Cc: Kempic, Jeffrey; Prysby, Mike (DEQ); kaplan.robert@epa.gov; Krisztian, George (DEQ); Sygo, Jim (DEQ)
Subject: RE: Flint WTP PH2 SEG4 - Corrosion Control

This will summarize our phone conversation of 10/19 and provide clarification regarding the previous comments.

The City of Flint converted back to purchasing of Detroit Water and Sewerage Department water on Friday October 16, 2015. No indications of upset in the distribution system have been reported to date.

Detroit Water and Sewerage Department (DWSD) has confirmed the use of Innophos "Phosphoric Acid 75% Technical" product which is NSF Standard 60 certified with a maximum allowable feed rate of 13 mg/L as product.

The City of Flint will need to supply a similar phosphoric acid product, NSF Standard 60 approved with allowable maximum dosage.

DWSD supplied water is currently dosed at 0.39 mg/L as P (1.2 mg/L as PO₄) slightly above DWSD's OCCT requirement to dose a minimum of 0.9 mg/L as PO₄ and have a minimum plant tap residual of 0.8 mg/L as PO₄. DWSD plant tap residuals have been shown to consistently be at 0.39 mg/L as P (1.2 mg/L as PO₄). In addition water supply entering Flint has been tested and so far shown to contain approximately 0.39 mg/L as P (1.2 mg/L as PO₄) as well.

To achieve pipe passivation Flint will boost orthophosphate dosage to establish a minimum distribution residual of 1.0 mg/L as P (3.1 mg/L as PO₄). The chemical feed system will be sized to achieve a dose up to 2.0 mg/L as P (6.1 mg/L as PO₄) in case orthophosphate loss is observed.

The City's engineering consultant will need to evaluate KWA water in conjunction with the City of Flint treatment plant processes to determine any necessary adjustments in optimized corrosion control treatment prior to initiating service to customers. Full scale testing may not be feasible.

Stephen Busch, P.E.

MDEQ Lansing District Coordinator
Office of Drinking Water and Municipal Assistance
Lansing and Jackson District Supervisor
517-643-2314
buschs@michigan.gov

From: Lytle, Darren [<mailto:Lytle.Darren@epa.gov>]
Sent: Monday, October 19, 2015 12:05 PM
To: Prysby, Mike (DEQ)
Cc: Schock, Michael; Kempic, Jeffrey; Busch, Stephen (DEQ)
Subject: RE: Flint WTP PH2 SEG4 - Corrosion Control

Mike,

Thank-you for giving us the opportunity to review the city of Flint's corrosion control plan.

We believe it is necessary that Flint boosts orthophosphate dosage. Given that the distribution system has not received orthophosphate in over a year, we expect that orthophosphate will need to be boosted to 1) meet the demand of the distribution system, 2) reach the service lines and other lead-containing components in premise plumbing, and 3) accelerate lead reduction at the consumer's taps. Orthophosphate should preferably be added in the same form as the Detroit source which is phosphoric acid from our understanding. This is the proposed case here, however, a simple test should be performed to make sure that the pH is not impacted in a significant way at the desired target dose.

We have not been able to obtain comprehensive water quality data for the finished water characteristics of the Detroit water that will be fed to Flint, to assess ranges of major chemical characteristic fluctuations. However, based upon the email trail, Detroit water entering the Flint system appears to only contain around 0.4 PO₄/L. This concentration range is entirely too low compared to that needed in studies presented and published in the last 20+ years that have focused on lead released directly from lead pipes, and the solubility of the most likely lead orthophosphate pipes scales. We also strongly feel that targeted dose of 0.8 mg PO₄/L is also too low, for the very same reason. We would be glad to share with you numerous standard corrosion control and treatment reference works, best practices guides and published results from US and international lead corrosion control field and pilot studies. Secondly, the basis for that target (other communities using Lake Huron source use the same dose) is not scientifically derived nor does it consider water quality and the current state of Flint's distribution system. We have reviewed the original Detroit corrosion study and have seen some of the LCR monitoring data, and besides the fact that it did not directly pertain to this water source, few dosages were tested in the cited 1994 pipe loop study, and the higher dosage than the one implemented in the field currently was more effective. Based on the limited amount of data on the quality of Detroit water, what we know about the history of Detroit corrosion control, we think an orthophosphate residual of 3 to 4 mg PO₄/L should be the minimum starting test target residual for pipe passivation. It is likely that, at least initially a higher dosage will be necessary to reach the far ends of the distribution system and sufficiently reduce lead solubility and release from all lead sources. To allow flexibility, we feel the design of the chemical feed and storage systems should be able to consistently deliver a maximum dose of 5 to 6 mg PO₄/L, if substantial orthophosphate loss is observed, if the starting dose is set for the desired residual level of 3 to 4 mg/L as PO₄. We suggest that jar tests be performed in advance of orthophosphate addition to Detroit water to evaluate the impact of orthophosphate dose on turbidity that could result from interactions between orthophosphate and background Detroit water quality parameters (e.g., aluminum, calcium, etc.).

We want to stress that immediately shifting to Detroit water and adding orthophosphate will not necessarily translate to immediate improvements. Furthermore, this is a change, albeit a return to past conditions. Nonetheless, a period of system upset should be anticipated. The need for a communication strategy and a distribution system plan are critical.

Darren and Mike

Darren A. Lytle, Ph.D., P.E.
 Branch Chief (Acting)
 U.S. Environmental Protection Agency
 26 West Martin Luther King Dr.
 Cincinnati, Ohio 45268
 Phone: (513) 569-7432
 Fax: (513) 487-2543
 email: lytle.darren@epa.gov

From: Prysby, Mike (DEQ) [<mailto:PRYSBYM@michigan.gov>]
Sent: Friday, October 16, 2015 1:32 PM
To: Lytle, Darren <Lytle.Darren@epa.gov>; Schock, Michael <Schock.Michael@epa.gov>
Cc: Busch, Stephen (DEQ) <BUSCHS@michigan.gov>
Subject: FW: Flint WTP PH2 SEG4 - Corrosion Control

Darren, Michael

We have received Flint's corrosion control proposal from their consultant. If you have comments, please provide them to me by Monday morning.

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

From: Matta, Samir [<mailto:SFMatta@lan-inc.com>]
Sent: Friday, October 16, 2015 12:02 AM
To: Prysby, Mike (DEQ)
Subject: Flint WTP PH2 SEG4 - Corrosion Control

Hi Mike,

Please see attached plans for the Corrosion Control Plan for the City of Flint. I will have the official submittal package to you tomorrow afternoon after I get Brent or Mike's signature on the permit application. I will call you when I get back in Lansing to drop the package. Is three sets of full size plans adequate? Would you like some half size plans? Let me know.

Basis of Design

Given that Flint will require lead and copper corrosion control and given that Detroit utilizes orthophosphate for their corrosion control methodology, and that Flint will be receiving Detroit water for the immediate future, orthophosphate is the appropriate corrosion control methodology for Flint. A dosage of 0.8 mg/l as PO₄ has been recommended for the Detroit water. Numerous utilities utilizing Lake Michigan water have a target dosage of 0.9 mg/l as PO₄. Therefore, a target dosage in the range of 0.8 to 0.9 mg/l appears appropriate.

It is expected that, at least initially, there will be a significant PO₄ demand in the system. This will require a significantly higher dosage until this demand is satisfied and the target residual can be maintained. We are therefore designing for capability of a maximum dosage of 1.5 mg/l.

The arriving Detroit water will likely have some residual PO₄ when it arrives at Flint. It has been reported that this residual will be approximately 0.4 mg/l. The system must therefore be capable of a minimum dosage of 0.4 mg/l.

Based upon the usage of 75% Phosphoric Acid and a flow range of 4 MGD to 25 MGD, with an average day of 16 MGD, the expected feed rate will be 1.35 to 32 gpd. Average Phosphoric Acid feed is expected to be 10.8 gpd, requiring 30 days storage of 325 gal.

Orthophosphate will need to be applied at two locations. Detroit water will enter the Flint system at Control Station CS2, and supplementary phosphate will be applied there. However, on occasion some incoming water may need to be diverted to the Dort Reservoir, bypassing CS2. This water would then be introduced to the system through High Service Pump Station PS4 and phosphate would be introduced at this location.

Please let me know if the information is adequate or you require additional information.

Thanks.

Samir F. Matta, PE

Team Leader



**Lockwood, Andrews
& Newnam, Inc.**

A LEO A DALY COMPANY

1311 South Linden Road, Suite B • Flint, MI 48532

2121 University Park Dr, Suite 100 • Okemos, MI 48864-6901

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Rennaker, Joanne (DEQ)

From: Krisztian, George (DEQ)
Sent: Monday, October 26, 2015 5:28 PM
To: Shekter Smith, Liane (DEQ); Busch, Stephen (DEQ); Prysby, Mike (DEQ); Graham, Lois (DEQ); Devereaux, Tracy Jo (DEQ); Edgerton, Shelly (LARA); Dykema, Linda D. (DHHS)
Cc: Wyant, Dan (DEQ); Sygo, Jim (DEQ); Shaler, Karen (DEQ); Thelen, Mary Beth (DEQ); Wurfel, Brad (DEQ)
Subject: Draft Data and Preliminary Observations and Opinions for Freeman Elementary
Attachments: Freeman Elementary.xlsx
Importance: High

I have attached the data for the sampling that was done at Freeman Elementary. These are Preliminary Results that have NOT gone through the entire data validation process. I do not expect any changes but I want to provide that clarification at the very beginning.

Shelly and Linda please take a look as I would like to discuss the data at tomorrow's conference call.

Each sampling point has four samples (P1, P2, F01, F02)

P1= 1st Preliminary Draw of 125 mls of water

P2= 2nd Preliminary Draw of 125 mls of water

F01= 3rd Sample in the series. This sample was taken after a 30 second flush after P2

F02= 4th sample in the series. This sample was taken after a 2 minute flush after F01.

In general one would expect P1 samples to have the highest values and F02 samples to have the lowest values and overall this held very true.

We can discuss further tomorrow.

George

George L. Krisztian
 Flint Action Plan Coordinator
 Laboratory Director
 Michigan Department of Environmental Quality
 Desk ph (517) 284-6719
 Cell ph (517) 420-5897

SAMPNO	ACODE	ANALYTE	RESULT	Sample_Description
LF88751	PB	Lead	0.010	CF022 RM 12
LF88752	PB	Lead	0.003	CF022 RM 12
LF88753	PB	Lead	0.001	CF022 RM 12
LF88754	PB	Lead	0.001	CF022 RM 12
LF88755	PB	Lead	0.004	CF021 RM 12
LF88756	PB	Lead	0.007	CF021 RM 12
LF88757	PB	Lead	0.000	CF021 12
LF88758	PB	Lead	0.000	CF021 RM 12
LF88759	PB	Lead	0.009	CF009 RM 5
LF88760	PB	Lead	0.002	CF009 RM 5
LF88761	PB	Lead	0.002	CF009 RM 5
LF88762	PB	Lead	0.001	CF009 RM 5
LF88763	PB	Lead		CF015 RM 11
LF88764	PB	Lead		CF015 RM 11
LF88765	PB	Lead	0.014	CF015 RM 11
LF88766	PB	Lead	0.011	CF015 RM 11
LF88767	PB	Lead	0.003	CF016 RM 11
LF88768	PB	Lead	0.003	CF016 RM 11
LF88769	PB	Lead	0.005	CF016 RM 11
LF88770	PB	Lead	0.004	CF016 RM 11
LF88771	PB	Lead	0.009	CF027 RM 21
LF88772	PB	Lead	0.007	CF027 RM 21
LF88773	PB	Lead	0.000	CF027 RM 21
LF88774	PB	Lead	0.000	CF027 RM 21
LF88775	PB	Lead	0.012	CF010 RM 6
LF88776	PB	Lead	0.004	CF010 RM 6
LF88777	PB	Lead	0.002	CF010 RM 6
LF88778	PB	Lead	0.000	CF010 RM 6
LF88779	PB	Lead	0.009	CF028 RM 21
LF88780	PB	Lead	0.002	CF028 RM 21
LF88781	PB	Lead	0.001	CF028 RM #21
LF88782	PB	Lead	0.001	CF028 RM #21
LF88783	PB	Lead		CF024 RM #19
LF88784	PB	Lead	0.003	CF024 RM #19
LF88785	PB	Lead	0.004	CF024 RM #19
LF88786	PB	Lead	0.003	CF024 RM #19
LF88787	PB	Lead	0.005	KC003 COMMUNITY ROOM
LF88788	PB	Lead	0.002	KC003 COMMUNITY ROOM
LF88789	PB	Lead	0.000	KC003 COMMUNITY ROOM
LF88790	PB	Lead	0.000	KC003 COMMUNITY SCHOOL
LF88791	PB	Lead	0.009	CF023 RM #19
LF88792	PB	Lead	0.009	CF023 RM #19
LF88793	PB	Lead	0.001	CF023 RM #19
LF88794	PB	Lead	0.000	CF023 RM #19
LF88795	PB	Lead	0.015	DW002 HALLWAY
LF88796	PB	Lead	0.006	DW002 HALLWAY
LF88797	PB	Lead	0.004	DW002 HALLWAY
LF88798	PB	Lead	0.001	DW002 HALLWAY
LF88799	PB	Lead	0.002	CF012 RM #9
LF88800	PB	Lead	0.004	CF012 RM #9
LF88801	PB	Lead	0.002	CF012 RM #9
LF88802	PB	Lead	0.000	CF012 RM #9
LF88803	PB	Lead		DW001 HALLWAY
LF88804	PB	Lead	0.006	DW001 HALLWAY

LF88805	PB	Lead	0.004	DW001 HALLWAY
LF88806	PB	Lead	0.001	DW001 HALLWAY
LF88807	PB	Lead	0.014	CF018 RM#15
LF88808	PB	Lead	0.005	CF018 RM#15
LF88809	PB	Lead	0.002	CF018 RM#15
LF88810	PB	Lead	0.002	CF018 RM#15
LF88811	PB	Lead	0.010	CF017 RM#15
LF88812	PB	Lead	0.014	CF01 RM#15
LF88813	PB	Lead	0.002	CF017 RM#15
LF88814	PB	Lead	0.002	CF017 RM#15
LF88815	PB	Lead		CF029 DHS OFFICE
LF88816	PB	Lead	0.012	CF029 DHS OFFICE
LF88817	PB	Lead	0.002	CF029 DHS OFFICE
LF88818	PB	Lead	0.000	CF029 DHF OFFICE
LF88819	PB	Lead	0.013	CF008 RM#4
LF88820	PB	Lead	0.006	CF008 RM#4
LF88821	PB	Lead	0.001	CF008 RM#4
LF88822	PB	Lead	0.000	CF008 RM#4
LF88823	PB	Lead	0.007	CF007 RM#3
LF88824	PB	Lead	0.006	CF007 RM #3
LF88825	PB	Lead	0.003	CF007 RM#3
LF88826	PB	Lead	0.002	CF007 RM#3
LF88827	PB	Lead		CF014 ROOM #10
LF88828	PB	Lead	0.007	CF014- ROOM #10
LF88829	PB	Lead	0.004	CF014-ROOM #10
LF88830	PB	Lead	0.003	CF014-ROOM #10
LF88831	PB	Lead		CF026 ROOM #14
LF88832	PB	Lead		CF026 ROOM #14
LF88833	PB	Lead		CF026 ROOM #14
LF88834	PB	Lead	0.004	CF026 ROOM #14
LF88835	PB	Lead	0.005	CF019 ROOM #17
LF88836	PB	Lead	0.003	CF019 ROOM #17
LF88837	PB	Lead	0.001	CF019 ROOM #17
LF88838	PB	Lead	0.000	CF019 ROOM #17
LF88839	PB	Lead	0.000	CF025 ROOM 14
LF88840	PB	Lead	0.003	CF015 ROOM #14
LF88841	PB	Lead	0.003	CF025 ROOM #14
LF88842	PB	Lead	0.002	CF025 ROOM #14
LF88843	PB	Lead	0.009	CF013 ROOM #10
LF88844	PB	Lead		CF013- ROOM #10
LF88845	PB	Lead	0.003	CF013 ROOM #10
LF88846	PB	Lead	0.003	CF013 ROOM #10
LF88847	PB	Lead	0.013	CF020 ROOM #17
LF88848	PB	Lead	0.004	CF020 ROOM #7
LF88849	PB	Lead	0.005	CF020 ROOM #17
LF88850	PB	Lead	0.003	CF020 ROOM #17
LF88851	PB	Lead		CF006 ROOM#2
LF88852	PB	Lead	0.003	CF006 ROOM #2
LF88853	PB	Lead	0.001	CF006 ROOM #2
LF88854	PB	Lead	0.001	CF006 ROOM #2
LF88855	PB	Lead	0.002	CF011 ROOM #7
LF88856	PB	Lead	0.000	CF011 ROOM #7
LF88857	PB	Lead	0.002	CF011 ROOM #7
LF88858	PB	Lead	0.000	CF011 ROOM #7
LF88859	PB	Lead		CF031 RAINBOW PRE K

LF88860	PB	Lead	0.003	CF031 RAINBOW PREK
LF88861	PB	Lead	0.002	CF031 RAINBOW PREK
LF88862	PB	Lead	0.000	CF031 RAINBOW PRE K
LF88863	PB	Lead	0.010	CF030 RAINBOW PRE K
LF88864	PB	Lead	0.003	CF030 RAINBOW PRE K
LF88865	PB	Lead	0.007	CF030 RAINBOW PRE K
LF88866	PB	Lead	0.000	CF030 RAINBOW PRE K
LF88867	PB	Lead	0.012	CF004 ROOM #7
LF88868	PB	Lead	0.007	CF004 ROOM #1
LF88869	PB	Lead	0.004	CF004 ROOM #1
LF88870	PB	Lead	0.002	CF004 ROOM #1
LF88871	PB	Lead	0.005	DW005 ROOM #1
LF88872	PB	Lead	0.003	DW005 ROOM #1
LF88873	PB	Lead	0.003	DW005 ROOM #1
LF88874	PB	Lead	0.002	DW001 ROOM #1

[illegible]

P2
F01
F02
P1
P2
F01
F02
P1
P2
F01
F02
P1
P2
F01
F02

Rennaker, Joanne (DEQ)

From: Shekter Smith, Liane (DEQ)
Sent: Monday, October 26, 2015 5:19 PM
To: Krisztian, George (DEQ); Shaler, Karen (DEQ)
Cc: Thelen, Mary Beth (DEQ); Sygo, Jim (DEQ); Benzie, Richard (DEQ); Busch, Stephen (DEQ); Prysby, Mike (DEQ); Devereaux, Tracy Jo (DEQ)
Subject: DRAFT DELIBERATIVE. Daily update 10/26.

Action Step 7: Meet with DHHS and discuss all lead education material for schools.

Confirmed meeting tomorrow (10/27) with DHHS to discuss.

Action Step 9: Review Construction Permit Application and issue permit for phosphate equipment.

Mike Prysby discussed with the city of Flint's consultant remaining items that are needed for issuance of Michigan's Safe Drinking Water Act (Act 399) construction permit. Staff anticipate receiving these items tomorrow.

Action Step 12: Contact city of Flint for Service Line Record status update and obtain a copy of the records to date.

Staff obtained approximately 10,895 records from the City's GIS system regarding service line index cards and extracted into a table format for additional data review. Data review has been initiated by Lansing District staff.

Action Step 16: Confirm plumbing assessment and sampling is scheduled for Brownell K-2 STEM Academy and Eisenhower Elementary.

DLARA and DEQ staff tentatively plan to conduct plumbing assessments at Brownell K-2 STEM Academy and Eisenhower Elementary on Friday 10/30. DLARA staff will contact Flint school facility administrator to confirm date and approximate times.

Rennaker, Joanne (DEQ)

From: Busch, Stephen (DEQ)
Sent: Monday, October 26, 2015 5:04 PM
To: Shekter Smith, Liane (DEQ)
Cc: Prysby, Mike (DEQ); Benzie, Richard (DEQ)
Subject: Preliminary and deliberative - Daily update 10/26

Numbering is based on the draft list.

12. Contact city of Flint for Service Line Record status update and obtain a copy of the records to date
Obtained approximately 10,895 records from City's GIS system regarding service line index cards and extracted into a table format for additional data review. Data review has been initiated by Lansing District staff.

16. Confirm plumbing assessment and sampling is scheduled for Brownell K-2 STEM Academy and Eisenhower Elementary.
DLARA and DEQ staff tentatively plan to conduct plumbing assessments at Brownell K-2 STEM Academy and Eisenhower Elementary on Friday 10/30. DLARA staff will contact Flint school facility administrator to confirm date and approximate times.

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

Rennaker, Joanne (DEQ)

From: Prysby, Mike (DEQ)
Sent: Monday, October 26, 2015 4:39 PM
To: Shekter Smith, Liane (DEQ)
Subject: Action Steps

Liane,

Below is an update of the Action Steps assigned to me:

Action Step 20: Review Construction Permit Application and issue permit for PO4 equip:

Discussed with consultant remaining items (Cut-sheet for PO4 compound and confirmation of proper pump size) that are needed for issuance of 399 permit. Anticipate on receiving these items tomorrow.

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

Rennaker, Joanne (DEQ)

From: Brent Wright <bwright@cityofflint.com>
Sent: Monday, October 26, 2015 3:48 PM
To: Prysby, Mike (DEQ)
Subject: 9/2013 Test Run
Attachments: September 2013 State Report .xls

Per our phone conversation please see attached

--
Brent Wright
Water Plant Supervisor
City of Flint
4500 N. Dort Hwy.
Flint, MI. 48505
Ph: 810.787.6537 ext. 3510
Fx: 810.787.3710



Daily Flow & Ozone Parameters WSSN 2310

September 2013

D A T E	Daily Flow (MGD)	O ₃ Dosage (lbs/day)	Ozone residuals (mg/L)												Sodium Bisulfite (mg/L)
			Contact Chamber #1				Contact Chamber # 2				Contact Chamber # 3				
			# of Samples	Start (avg mg/L)	Middle (avg. mg/L)	End (avg. mg/L)	# of Samples	Start (avg mg/L)	Middle (avg. mg/L)	End (avg. mg/L)	# of Samples	Start (avg mg/L)	Middle (avg. mg/L)	End (avg. mg/L)	
1															
2															
3															
4															
5															
6															
7															
8															
9															
10															
11															
12															
13															
14															
15															
16	3.5														
17	10.6														
18	10.6														
19	10.7														
20	10.7														
21	10.7														
22	10.7														
23	10.7														
24	3.5														
25	10.7														
26	10.6														
27	10.6														
28	5.5														
29															
30															
AVG	9.2	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####				
MAX	10.7	0	0	0.00	0.00	0.00	0	0.00	0.00	0.00	0.00				
MIN	3.5	0	0	0.00	0.00	0.00	0	0.00	0.00	0.00	0.00				
Total	119.1														



Coagulation & Flocculation Parameters

WSSN 2310

September 2013

DATE	Ferric Chloride as FeCl ₃ mg/l	Ferric Chloride as Fe 3+ mg/l	Turbidity, NTU units											
			Raw			Plate Settler Effluent			Filter Influent			Filter Effluent		
			# of Samples	Avg.	Max	# of Samples	Avg.	Max	# of Samples	Avg.	Max	# of Samples	Avg.	Max
1														
2														
3														
4														
5														
6														
7														
8														
9														
10														
11														
12														
13														
14														
15														
16	39.8	13.7	4	10.5	11.0	6	1.05	2.32	4	15.6	19.1			
17	39.0	13.4	6	11.1	13.2	12	0.45	0.49	12					
18	39.6	13.6	6	10.9	12.6	12	0.43	0.54	12	0.62	0.99			
19	39.3	13.5	6	10.2	11.4	12	0.39	0.48	12	0.34	0.44			
20	39.8	13.7	6	9.3	9.5	12	0.37	0.51	12	0.37	0.59			
21	39.6	13.6	6	11.8	16.4	12	0.33	0.37	12	0.44	0.69			
22	43.1	14.8	6	10.7	11.9	12	0.29	0.31	12	0.89	1.43			
23	47.4	16.3	6	10.7	11.7	12	0.35	0.43	12	1.64	5.91			
24	47.1	16.2	2	10.1	10.2	4	0.35	0.35	4	3.01	3.20			
25	47.4	16.3	6	10.3	11.1	11	0.39	0.49	11	6.77	21.20			
26	47.8	16.4	6	10.5	12.6	12	0.32	0.36	12	1.25	1.62			
27	47.7	16.4	6	11.4	12.6	11	0.34	0.42	12	0.89	1.63			
28	47.7	16.4	2	10.6	11.1	6	0.31	0.35	6	0.64	0.88			
29														
30														
AVG	43.5	14.9	5	10.6	11.9	10	0.41	0.57	10	2.70	4.81	#####	####	#####
MAX	47.8	16.4	6	11.8	16.4	12	1.05	2.32	12	15.6	21.2	0	0.00	0.00
MIN	39.0	13.4	2	9.3	9.5	4	0.29	0.31	4	0.34	0.44	0	0.00	0.00

n/a = Filters not in service



Flouridation & Chlorination WSSN 2310

September 2013

DATE	Fluoride Applied F- mg/l	Fluoride Analyses mg/l			Chlorine prior to filtration (mg/L OCl ₂)	Lime dosage (lbs/day)	Polymer Dosage (mg/L)		Softening Clairifier pH		CO ₂ Feed Rate (lbs/hr)			
		Raw	Filter Eff.	Dist										
1														
2														
3														
4														
5														
6														
7														
8														
9														
10														
11														
12														
13														
14														
15														
16		0.20				900								
17		0.21				900								
18		0.19				900								
19		0.21				833								
20		0.17	0.20			800								
21		0.18				800								
22		0.22				800								
23		0.20				746								
24		0.21				600								
25		0.21				854								
26		0.21				800								
27		0.22	0.19			800								
28		0.20	0.17			800								
29														
30														
AVG		0.20	0.18		#DIV/0!	810	####	####	####	####	####	####	####	####
MAX		0.22	0.20		0.0	900	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
MIN		0.17	0.17		0.0	600	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

n/a = Filters not in service



Chemical Analyses WSSN 2310

September 2013

D A T E	pH		Total Hard as CaCO ₃ mg/l		Total Alk as CaCO ₃ mg/l		NonCarbonate Hardness as CaCO ₃ mg/l		Calcium Ca ²⁺ mg/l		Magnesium Mg ²⁺ mg/l		Nitrate as NO ₃ - mg/l		Chloride as Cl - mg/l	
	Raw	Filter Eff.	Raw	Filter Eff.	Raw	Filter Eff.	Raw	Filter Eff.	Raw	Filter Eff.	Raw	Filter Eff.	Raw	Filter Eff.	Raw	Filter Eff.
1							0	0								
2							0	0								
3							0	0								
4							0	0								
5							0	0								
6							0	0								
7							0	0								
8							0	0								
9							0	0								
10							0	0								
11							0	0								
12							0	0								
13							0	0								
14							0	0								
15							0	0								
16	8.25		254		212		42	0	79.4		13.6				47	
17	8.28		254		212		42	0	80.2		13.1				46	
18	8.31		276		206		70	0	64.9		27.7				50	
19	8.39		252		210		42	0	72.1		17.5				40	
20	8.54	8.86	254	160	218	84	36	76	78.6	52.9	14.6	6.8			46	67
21	8.36		252		204		48	0	83.4		10.7				48	
22	8.24		240		212		28	0	62.5		20.4				51	
23	8.27		256		214		42	0	80.2		13.6				48	
24	8.48		260		214		46	0	78.6		15.6				44	
25	8.44		256		212		44	0	89.8		7.8				54	
26	8.39		252		222		30	0	73.7		16.5				47	
27	8.30	8.94	242	158	212	84	30	74	77.0	59.3	12.2	2.4			58	83
28	8.28	8.29	254	150	212	76	42	74	75.4	56.1	16.0	2.4			61	85
29							0	0								
30							0	0								
AVG	8.35	8.70	254	160	212	81	15	3	76.6	52.9	15.3	3.9			49	78
MAX	8.54	8.94	276	160	222	84	70	76	89.8	52.9	27.7	6.8			61	85
MIN	8.24	8.29	240	160	204	76	0	0	62.5	52.9	7.8	2.4			40	67

n/a = Filters not in service



Bacteriological & Physical Parameters

September 2013

DATE	Total Coliform							Standard Plate Count		Temperature (Celcius)		Color		Odor	
	Raw	Post O3	Plate Settler Eff.	Filter Inf.	Filter Eff.	Lab Tap		Raw	Filter Eff.	Raw	Tap	Raw	Tap	Raw	Tap
1															
2															
3															
4															
5															
6															
7															
8															
9															
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23															
24															
25															
26															
27															
28															
29															
30															
AVG	* Raw and post-ozone coliform are most probable number maximum daily results.									####					
MAX	* Raw HPC & filter HPC counts are daily maximums.									0.0					
MIN	* 6/0 = # of Samples collected/ # of positive samples (NO samples were positive for <i>E. coli</i>)									0.0					

n/a = Filters not in service

Rennaker, Joanne (DEQ)

From: Shekter Smith, Liane (DEQ)
Sent: Monday, October 26, 2015 2:33 PM
To: Shaler, Karen (DEQ); Sygo, Jim (DEQ); Krisztian, George (DEQ)
Cc: Busch, Stephen (DEQ); Prysby, Mike (DEQ); Benzie, Richard (DEQ)
Subject: Draft Action Plan steps
Attachments: 2015-10-26 DRAFT Action Steps Week of October 26-30.docx

DRAFT Attached.

I deleted items I believe should not be included (either done or moved to AAR).

I did not change the status summary column (perhaps I should have just erased what was in there, but I wasn't sure that was going to be helpful or not). I believe the status reflects the last updates provided on Friday, as today's updates are still being drafted.

City of Flint Water Action Steps for Week of October 26-30

Step No.	Action Step	Involved Parties	DEQ Point(s) of Contact	Status
1.	Conduct After Action Plan	DEQ	George Krisztian	Initial meeting held 10/22/15
2.	Introduce legislative changes to Part 54 of NREPA – Drinking Water Revolving Loan Fund	DEQ, Treasury, and EPA	Maggie Pallone George Krisztian Sonya Butler	Draft language submitted to Maggie Pallone for review
3.	After Action Review Panel	DEQ	Madhu Anderson George Krisztian Karen Tommasulo	Panel created and press release issued on 10/21/15
4.	Staff hiring plan	DEQ	Jim Sygo Maggie Pallone George Krisztian	
5.	Finalize fiscal year 2017 budget request	DEQ	Maggie Pallone George Krisztian	
6.	Meeting(s) with school staff/management	DEQ	Jim Sygo Steve Busch Pat Cook Mike Prysby	A meeting with the 10 remaining schools is tentatively scheduled for the week of 10/26/15
7.	Meet with DHHS and discuss all lead education material for schools	DEQ and DHHS	Jim Sygo Steve Busch Pat Cook Mike Prysby	DEQ has contacted DHHS to schedule a meeting
8.	Review corrosion control treatment plan and get any EPA comments	DEQ and EPA	Jim Sygo Steve Busch Pat Cook Mike Prysby	Summary of Flint's corrosion control plan submitted to EPA
9.	Review construction permit application and issue construction permit for phosphate equipment	DEQ	Jim Sygo Steve Busch Pat Cook	Additional discussions are in progress with city of Flint

Step No.	Action Step	Involved Parties	DEQ Point(s) of Contact	Status
			Mike Prysby	
10.	Review Standby Operation of Flint Water Treatment Plant with city of Flint	DEQ and Flint	Jim Sygo Steve Busch Pat Cook Mike Prysby	Comments by DEQ to city of Flint have been provided
11.	Work with Karegnondi Water Authority (KWA) and other agencies to address bottleneck issues. Check weekly for status update.	DEQ and KWA	Jim Sygo Steve Busch Pat Cook Mike Prysby	Issues regarding soil erosion controls during construction are being addressed
12.	Contact city of Flint for Service Line Record status update and obtain a copy of the records to date	DEQ and Flint	Jim Sygo Steve Busch Pat Cook Mike Prysby	
13.	Provide DHHS with any available cross-reference information	DEQ and DHHS	Jim Sygo Steve Busch Pat Cook Mike Prysby	
14.	Develop childcare facility guidance or review DHHS related materials	DEQ and DHHS	Jim Sygo Steve Busch Pat Cook Mike Prysby	DEQ has contacted DHHS to schedule a meeting
15.	Create a generic school sampling guidance document for statewide distribution. Target audience: schools served by municipal water.	DEQ and LARA	Jim Sygo Steve Busch Richard Benzie	
16.	Confirm plumbing assessment and sampling is scheduled for Brownell K-2 STEM Academy and Eisenhower Elementary.	DEQ and LARA	Jim Sygo Steve Busch Mike Prysby	

Rennaker, Joanne (DEQ)

From: Matta, Samir <SFMatta@lan-inc.com>
Sent: Monday, October 26, 2015 10:43 AM
To: Prysby, Mike (DEQ)
Subject: City of Flint Corrosion System Review.

Hi Mike,

I have been asked whether the MDEQ/EPA is going to have a formal response/review comments to what is needed for us to obtain the permit. I mentioned that based on our discussion that if we provide the information below, we will be able to get the permit issued.

- City of Detroit residual is around 0.4 to 0.5 mg/L as PO4
- MDEQ wants Flint to maintain a residual of approximately 1.0 mg/L as PO4
- Feed pump capacity should be sized to address a max dose of 2.0 mg/L as PO4
- Cut sheets and MSDS from the City's supplier

Please let me know if you require anything else and/or if a formal response will be forthcoming.

Thanks.

Samir F. Matta, PE
Senior Project Manager



**Lockwood, Andrews
& Newnam, Inc.**
A LEO A DALY COMPANY

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T 517.203.5437 D 517.203.5437

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Rennaker, Joanne (DEQ)

From: Sygo, Jim (DEQ)
Sent: Saturday, October 24, 2015 3:01 PM
To: Shekter Smith, Liane (DEQ); Busch, Stephen (DEQ); Prysby, Mike (DEQ)
Cc: Shaler, Karen (DEQ); Krisztian, George (DEQ)
Subject: Fwd: One further comment

Please review and let's discuss next week.

Sent from my iPhone

Begin forwarded message:

From: "Kaplan, Robert" <kaplan.robert@epa.gov>
Date: October 24, 2015 at 8:58:12 AM EDT
To: Jim Sygo <SygoJ@michigan.gov>
Subject: One further comment

Jim, I'm sorry that we have a straggler. This morning I received one last comment. I ordinary would say "too late" but this comment reflects deep knowledge of the Flint system (esp. the residence at issue). Pls let me know if there are any issues. Again, sorry for the late and unconsolidated comment.

Bob

1) Has anyone evaluated where the water quality parameter monitoring is being conducted by Flint? If not, we might want to do that to make sure that the sites selected are representative of the water quality throughout the city. My concern is that the chlorine residual range reported by the City in their October 2015 water quality report is given as 0.2 – 4.0(<https://www.cityofflint.com/public-works/utilitieswater/water-treatment-plant/>). However, we know that in at least one area of the city, even after flushing the tap for 8 hours, there was no detectable chlorine residual. Repeated tests over 18 days (last one was September 3) show the same. These measurements were done after the replacement of the old service line, so the chlorine is not getting to this area (<http://flintwaterstudy.org/information-for-flint-residents/chlorine-monitoring-in-flint-resident-ms-leeanne-walters-home/>)

2) The recommendations in the final report on the sampling we did in Flint are linked to the corrosion control treatment. The lead concentrations in the scale/sediment are orders of magnitude higher than what we typically see in drinking water samples, so I think from a risk perspective, we need to better understand the composition and stability of the scales within the pipes to assess the stability of the scales and inform the treatment. Although the release of scale/sediment is not unique to Flint, the dislodging of scale/sediment would pose the greatest risk to residents by far. Our final report will be posted in the near future so should we include the assessment sampling in our comments on corrosion control (see below)?

Recommendations

As indicated by the results from the Walters' home and previous EPA work, the presence of lead pipes over many years has likely resulted in the accumulation of lead in the scales within non-lead pipes downstream of the lead pipe and physical disturbances to the leaded or non-leaded portions of the service lines have the potential to release large amounts of scale and sediment that could pose an immediate and acute health hazard to the residents. Consequently, even with corrosion control treatment in place in the future, physical disturbances will be capable of dislodging the high lead-bearing scale and sediment from non-lead pipes as well as lead pipes, as was the case in the earlier EPA study.

Obtaining information on the lead reservoirs in the scales within the lead and non-leaded portions of intact service lines is essential for determining the potential risk to residents from lead-bearing scale released as lead lines are replaced as well as the risk that may remain following removal of the lead lines, where the non-leaded portions of service lines are left in place.

As the Walters' service line was very long compared to the length of most typical service lines, it is important to assess the potential risk posed by the scale reservoirs in more typical lengths of service lines by extracting both the leaded and non-leaded portions of service lines which have not been physically disturbed. The service lines chosen for extraction and analysis should be representative of the materials commonly used downstream of the lead pipe (e.g., galvanized iron, copper, plastic). Extraction/handling procedures should be developed by EPA to ensure that damage to the scales from the excavation, extraction and delivery of the service line segments is minimized. Sequential sampling should also be conducted on a representative group of homes with common plumbing materials (e.g., galvanized iron, copper, plastic) to determine the extent to which the lead from the service line has seeded the interior plumbing in homes.

It is also critically important to develop and incorporate ongoing training and public education on the potential for high lead release from the scales as a result of any future physical disturbances to service lines and mitigative actions that residents can take to lower their exposure risk. The training and educational material should be assessed for clarity, meaningfulness, and accessibility by a group of residents and health experts to ensure the effectiveness of the communications.

At a minimum, immediate training and public education on the potential risks posed by physical disturbances to service lines should be developed by communications experts and provided to residents, community groups, elected officials, health departments, pediatricians and gynecologists, water and non-water utilities (gas, electric, cable, etc.), plumbing organizations and contractors. Residents should be notified of scheduled work by water and non-water utilities and informed of the potential risk of increased lead levels due to these disturbances.

Sent from my iPhone

Rennaker, Joanne (DEQ)

From: Shekter Smith, Liane (DEQ)
Sent: Friday, October 23, 2015 5:31 PM
To: Krisztian, George (DEQ)
Cc: Sygo, Jim (DEQ); Thelen, Mary Beth (DEQ); Shaler, Karen (DEQ); Busch, Stephen (DEQ); Prysby, Mike (DEQ); Devereaux, Tracy Jo (DEQ)
Subject: DRAFT DELIBERATIVE. Daily update

Action Step 11: Finalize sampling protocol:

Sampling protocol was revised to address comments received on 10/22 from EPA Task Force.

Action Step 15: ODWMA staff observe a DLARA plumbing assessment:

Staff assisted DLARA in conducting a plumbing assessment at the Freeman Elementary School. Actions were taken to prepare for sampling to be conducted on Saturday.

Action Step 18: Review Act 399 Permit application and issue permit for phosphate Equip:

The information requested by the DEQ was not received from Flint's consultant today; thus permit was not issued. Discussed with WTP operator Brent Wright and Michael Glasgow (Utilities Supt). Brent confirmed that he needs to provide some of the information regarding the PO4 product to the consultant.

Action Step 19: Review stand-by operation of Flint WTP:

Discussed with Michael Glasgow and Brent Wright the need for quarterly test runs and monthly operation reporting details while the plant is in stand-by mode. Also included the need to report phosphate dosages and phosphate residuals (plant tap and distribution) in the monthly operation report.

Action Step 22: Work with KWA to address bottleneck issues:

John O'Brien (Genesee Co. Drain Comm.'s office) contacted me in response to yesterday's e-mail. Lapeer Co. Road Comm. has placed a stop work order on Contract S-400S; however, the Drain Commissioner's Office contends that the road comm. has no authority to issue a stop work order; thus work is continuing. I stressed the importance to John of the need to keep the project moving forward and to confirm that the contractor is following proper soil erosion measures and other local guidelines that may apply.

Action Step 23: Verify Flint distribution operations under DWSD service:

Based on discussion with Michael Glasgow and Brent Wright, there have not been major distribution system issues or upsets since the switch back to DWSD. Utility operators were flushing and winterizing hydrants this week and flushing from the water treatment plant to the outside reaches of the distribution system. Phosphate residuals are also being measured twice per week at the city's bacteria monitoring sites.

Liane J. Shekter Smith, P.E.
 Assistant to Chief Deputy Director Jim Sygo
 Michigan Department of Environmental Quality
 517-284-6543

Rennaker, Joanne (DEQ)

From: Sygo, Jim (DEQ)
Sent: Friday, October 23, 2015 5:17 PM
To: Busch, Stephen (DEQ); Prysby, Mike (DEQ); Cook, Pat (DEQ); Shekter Smith, Liane (DEQ)
Subject: FW: Flint WTP PH2 SEG4 - Corrosion Control

This is Bob Kaplan's latest note. Let me know if you have any concerns with the highlighted additions.

From: Kaplan, Robert [mailto:kaplan.robert@epa.gov]
Sent: Friday, October 23, 2015 4:23 PM
To: Sygo, Jim (DEQ)
Subject: RE: Flint WTP PH2 SEG4 - Corrosion Control

Jim –

We are very close. I checked with the Task Force on the plan you sent to us incorporating EPA's comments. See annotations below. There are several changes (in red italics) that EPA feels need to be incorporated into the text to reflect our earlier comments (from Mike and Darren) and the subsequent call. Additionally, there is a recommendation at the end that was discussed but not incorporated into the writeup you sent which we also feel should be incorporated.

Please feel free to get back with me if you have any questions. We appreciate the opportunity to provide input and your willingness to address our comments.

- Bob

This will summarize our phone conversation of 10/19 and provide clarification regarding the previous comments.

The City of Flint converted back to purchasing of Detroit Water and Sewerage Department water on Friday October 16, 2015. No indications of upset in the distribution system have been reported to date.

Detroit Water and Sewerage Department (DWSD) has confirmed the use of Innophos "Phosphoric Acid 75% Technical" product which is NSF Standard 60 certified with a maximum allowable feed rate of 13 mg/L as product.

The City of Flint will need to supply a similar phosphoric acid product, NSF Standard 60 approved with allowable maximum dosage.

DWSD supplied water is currently dosed at 0.39 mg/L as P (1.2 mg/L as PO₄) slightly above DWSD's OCCT requirement to dose a minimum of 0.9 mg/L as PO₄ and have a minimum plant tap residual of 0.8 mg/L as PO₄. DWSD plant tap residuals have been shown to consistently be at 0.39 mg/L as P (1.2 mg/L as PO₄). In addition water supply entering Flint has been tested and so far shown to contain approximately 0.39 mg/L as P (1.2 mg/L as PO₄) as well. *Flint will need to test to ensure that pH is not significantly affected at the PO₄ target dosage.*

To achieve pipe passivation Flint will boost orthophosphate dosage to establish a minimum distribution residual of 1.0 mg/L as P (3.1 mg/L as PO₄). The chemical feed system will be sized to achieve a dose up to 2.0 mg/L as P (6.1 mg/L as PO₄) in case orthophosphate loss is observed.

Flint will continue Water Quality Parameter Monitoring in accordance with the LCR at the same 25 distribution locations used under the Flint River. In addition 10 of these locations also serve as total coliform monitoring sites, including

disinfectant residual, and Flint will be told to, for the purpose of assessing water stability, conduct water quality parameter monitoring for pH, alkalinity, orthophosphate, along with turbidity and iron sampling will be at these 10 locations on a weekly basis as suggested. This will also ensure that a minimum recommended pH levels are being maintained throughout the system.

EPA ORD staff will provide instructions to the City of Flint for creating test loops to help confirm effectiveness of the corrosion control treatment. This data will help in rebuilding public trust.

The County Health Department and MI Department of Health and Human Services will be conducting blood lead level testing of children in Flint. Children with elevated blood lead levels will be offered exposure assessments of their homes. These assessments should include the contribution of lead from service line and interior plumbing sources. Such diagnostic testing should help further substantiate the effectiveness of corrosion control treatment. Procedures recommended by EPA should be shared with the Michigan Department of Health and Human Services.

The University of Michigan in Ann Arbor had previously expressed interest in assisting the City of Flint. Both the Department of Civil and Environmental Engineering, and School of Public Health should be contacted to determine if that interest still exists with potential to assist in both test loop construction and monitoring, and exposure assessment monitoring in homes. Any water analysis should occur at a certified laboratory.

The City will be required to complete a 6 month round of lead and copper compliance monitoring in the January – June 2016 period. The City continues to offer all residents a first draw lead sample collection and analysis. Any additional staggered monitoring suggestions should be brought before the City's Technical Advisory Committee.

Criteria for deeming the treatment optimized must be established as the LCR only requires compliance with the lead and copper Action Levels once this determination has been made.

The City of Flint is continuing to digitize service line index card records into a Geographic Information System to confirm the location of lead service lines. EPA can provide additional information to the City regarding a sampling procedure to verify lead service line sites.

The City's engineering consultant will need to evaluate KWA water in conjunction with the City of Flint treatment plant processes to determine any necessary adjustments in optimized corrosion control treatment prior to initiating service to customers. Full scale testing may not be feasible.

Lastly, we discussed additional lead drinking water monitoring Flint should do to better assess lead exposure, determine effectiveness of water source change and corrosion control, and identify lead sources. That discussion does not appear to be captured here.

Robert Kaplan
Deputy Regional Administrator
U.S. EPA Region 5
Phone: (312) 886-1499
Cell: (312) 515-9827
Fax: (312) 692-2075

From: Sygo, Jim (DEQ) [mailto:SygoJ@michigan.gov]
Sent: Friday, October 23, 2015 11:39 AM
To: Kaplan, Robert <kaplan.robert@epa.gov>
Subject: RE: Flint WTP PH2 SEG4 - Corrosion Control

Sounds Good.

Met with the Mayor today and he seems to be under the impression that the City Administrator is on this task force as well. I told him I would check but this was intended to make sure that the state and EPA are taking consistent technical positions. Let me know if I'm wrong about that.

From: Kaplan, Robert [<mailto:kaplan.robert@epa.gov>]
Sent: Friday, October 23, 2015 10:37 AM
To: Sygo, Jim (DEQ)
Subject: RE: Flint WTP PH2 SEG4 - Corrosion Control

Jim,

Thanks for the note. There does appear to be agreement. I will confirm that with the Task Force team members today just to make certain we haven't missed anything.

This is good news. I'm glad we're moving quickly, and working together. The Task Force will discuss the "test loops" and make sure we have agreement on the protocol.

I'm setting up a call for next week to discuss this weekend's school sampling effort.

- Bob

Robert Kaplan
 Deputy Regional Administrator
 U.S. EPA Region 5
 Phone: (312) 886-1499
 Cell: (312) 515-9827
 Fax: (312) 692-2075

From: Sygo, Jim (DEQ) [<mailto:SygoJ@michigan.gov>]
Sent: Thursday, October 22, 2015 4:39 PM
To: Kaplan, Robert <kaplan.robert@epa.gov>
Subject: FW: Flint WTP PH2 SEG4 - Corrosion Control

Bob,

There appears to be agreement on the optimization of corrosion control for the City of Flint. This is the note provided to me by staff after a discussion with members of your task force.

From: Busch, Stephen (DEQ)
Sent: Thursday, October 22, 2015 12:58 PM
To: Schock, Michael; Lytle, Darren
Cc: Kempic, Jeffrey; Prysby, Mike (DEQ); kaplan.robert@epa.gov; Krisztian, George (DEQ); Sygo, Jim (DEQ)
Subject: RE: Flint WTP PH2 SEG4 - Corrosion Control

This will summarize our phone conversation of 10/19 and provide clarification regarding the previous comments.

The City of Flint converted back to purchasing of Detroit Water and Sewerage Department water on Friday October 16, 2015. No indications of upset in the distribution system have been reported to date.

Detroit Water and Sewerage Department (DWSD) has confirmed the use of Innophos "Phosphoric Acid 75% Technical" product which is NSF Standard 60 certified with a maximum allowable feed rate of 13 mg/L as product.

The City of Flint will need to supply a similar phosphoric acid product, NSF Standard 60 approved with allowable maximum dosage.

DWSD supplied water is currently dosed at 0.39 mg/L as P (1.2 mg/L as PO₄) slightly above DWSD's OCCT requirement to dose a minimum of 0.9 mg/L as PO₄ and have a minimum plant tap residual of 0.8 mg/L as PO₄. DWSD plant tap residuals have been shown to consistently be at 0.39 mg/L as P (1.2 mg/L as PO₄). In addition water supply entering Flint has been tested and so far shown to contain approximately 0.39 mg/L as P (1.2 mg/L as PO₄) as well.

To achieve pipe passivation Flint will boost orthophosphate dosage to establish a minimum distribution residual of 1.0 mg/L as P (3.1 mg/L as PO₄). The chemical feed system will be sized to achieve a dose up to 2.0 mg/L as P (6.1 mg/L as PO₄) in case orthophosphate loss is observed.

Flint will continue Water Quality Parameter Monitoring in accordance with the LCR at the same 25 distribution locations used under the Flint River. In addition 10 of these locations also serve as total coliform monitoring sites, including disinfectant residual, and Flint will be told to, for the purpose of assessing water stability, conduct water quality parameter monitoring along with turbidity and iron sampling will be at these 10 locations on a weekly basis as suggested. This will also ensure that a minimum recommended pH levels are being maintained throughout the system.

EPA ORD staff will provide instructions to the City of Flint for creating test loops to help confirm effectiveness of the corrosion control treatment. This data will help in rebuilding public trust.

The County Health Department and MI Department of Health and Human Services will be conducting blood lead level testing of children in Flint. Children with elevated blood lead levels will be offered exposure assessments of their homes. These assessments should include the contribution of lead from service line and interior plumbing sources. Such diagnostic testing should help further substantiate the effectiveness of corrosion control treatment. Procedures recommended by EPA should be shared with the Michigan Department of Health and Human Services.

The University of Michigan in Ann Arbor had previously expressed interest in assisting the City of Flint. Both the Department of Civil and Environmental Engineering, and School of Public Health should be contacted to determine if that interest still exists with potential to assist in both test loop construction and monitoring, and exposure assessment monitoring in homes. Any water analysis should occur at a certified laboratory.

The City will be required to complete a 6 month round of lead and copper compliance monitoring in the January – June 2016 period. The City continues to offer all residents a first draw lead sample collection and analysis. Any additional staggered monitoring suggestions should be brought before the City's Technical Advisory Committee.

Criteria for deeming the treatment optimized must be established as the LCR only requires compliance with the lead and copper Action Levels once this determination has been made.

The City of Flint is continuing to digitize service line index card records into a Geographic Information System to confirm the location of lead service lines. EPA can provide additional information to the City regarding a sampling procedure to verify lead service line sites.

The City's engineering consultant will need to evaluate KWA water in conjunction with the City of Flint treatment plant processes to determine any necessary adjustments in optimized corrosion control treatment prior to initiating service to customers. Full scale testing may not be feasible.

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

From: Lytle, Darren [<mailto:Lytle.Darren@epa.gov>]
Sent: Monday, October 19, 2015 12:05 PM
To: Prysby, Mike (DEQ)
Cc: Schock, Michael; Kempic, Jeffrey; Busch, Stephen (DEQ)
Subject: RE: Flint WTP PH2 SEG4 - Corrosion Control

Mike,

Thank-you for giving us the opportunity to review the city of Flint's corrosion control plan.

We believe it is necessary that Flint boosts orthophosphate dosage. Given that the distribution system has not received orthophosphate in over a year, we expect that orthophosphate will need to be boosted to 1) meet the demand of the distribution system, 2) reach the service lines and other lead-containing components in premise plumbing, and 3) accelerate lead reduction at the consumer's taps. Orthophosphate should preferably be added in the same form as the Detroit source which is phosphoric acid from our understanding. This is the proposed case here, however, a simple test should be performed to make sure that the pH is not impacted in a significant way at the desired target dose.

We have not been able to obtain comprehensive water quality data for the finished water characteristics of the Detroit water that will be fed to Flint, to assess ranges of major chemical characteristic fluctuations. However, based upon the email trail, Detroit water entering the Flint system appears to only contain around 0.4 PO₄/L. This concentration range is entirely too low compared to that needed in studies presented and published in the last 20+ years that have focused on lead released directly from lead pipes, and the solubility of the most likely lead orthophosphate pipes scales. We also strongly feel that targeted dose of 0.8 mg PO₄/L is also too low, for the very same reason. We would be glad to share with you numerous standard corrosion control and treatment reference works, best practices guides and published results from US and international lead corrosion control field and pilot studies. Secondly, the basis for that target (other communities using Lake Huron source use the same dose) is not scientifically derived nor does it consider water quality and the current state of Flint's distribution system. We have reviewed the original Detroit corrosion study and have seen some of the LCR monitoring data, and besides the fact that it did not directly pertain to this water source, few dosages were tested in the cited 1994 pipe loop study, and the higher dosage than the one implemented in the field currently was more effective. Based on the limited amount of data on the quality of Detroit water, what we know about the history of Detroit corrosion control, we think an orthophosphate residual of 3 to 4 mg PO₄/L should be the minimum starting test target residual for pipe passivation. It is likely that, at least initially a higher dosage will be necessary to reach the far ends of the distribution system and sufficiently reduce lead solubility and release from all lead sources. To allow flexibility, we feel the design of the chemical feed and storage systems should be able to consistently deliver a maximum dose of 5 to 6 mg PO₄/L, if substantial orthophosphate loss is observed, if the starting dose is set for the desired residual level of 3 to 4 mg/L as PO₄. We suggest that jar tests be performed in advance of orthophosphate addition to Detroit water to evaluate the impact of

orthophosphate dose on turbidity that could result from interactions between orthophosphate and background Detroit water quality parameters (e.g., aluminum, calcium, etc.).

We want to stress that immediately shifting to Detroit water and adding orthophosphate will not necessarily translate to immediate improvements. Furthermore, this is a change, albeit a return to past conditions. Nonetheless, a period of system upset should be anticipated. The need for a communication strategy and a distribution system plan are critical.

Lastly, we see no mention of a water quality monitoring program. Two programs need to be put in place immediately (before return to Detroit water) to 1) identify lead sources, 2) assess treatment effectiveness against lead release from all of the simultaneously operating mechanisms (solubility, particulate release, galvanic corrosion), and 3) assess orthophosphate levels and stability of water quality in the distribution system.

There are multiple sources of lead in the Flint distribution system to the consumers' taps, such as: pipes; leaded brass; leaded solder; accumulations on old galvanized steel pipes; possibly accumulated on copper or some plastic pipes. It is critical that the fate of orthophosphate in the distribution system is understood, and how effective it is against each type of lead source, so dosing adjustment can be properly made. For this purpose, we recommend that a number of residences throughout Flint that meet the following plumbing criteria, be identified for an assessment of the contribution lead from the different potential service line and interior plumbing sources, through detailed mapping of plumbing materials, lengths, sizes, and location and type of inline devices and faucets using profile sampling. For confidence in interpretation, probably at least 5 sites from each of the configurations will be necessary. The configurations we would estimate to be most important (but should be changed or added to if local construction practice indicates it's necessary): Lead service line, galvanized steel interior plumbing; lead service line, copper with leaded solder joints; lead service line, plastic interior plumbing. It is also possible that interior plumbing may differ from the material used for the customer-side service line segment. We would be glad to discuss the specifics of this sampling effort. For the purpose of assessing stability of water quality in the distribution system and to inform on orthophosphate residual adjustment, we suggest that 8 to 10 locations in the distribution system be selected to measure pH, alkalinity, orthophosphate, turbidity and iron on a weekly basis. These could be collected from TCR sampling locations, or other readily-accessible buildings, should be located at a distribution of locations in the distribution system and should be collected after a flush sufficiently long to assure that "fresh" distribution system water is being measured. Research has shown that over time, orthophosphate can reduce disinfectant demand associated with corroding metallic distribution system materials. These measurements need to be performed in the field and can simply be done with a portable HACH test kit or spectrophotometer.

A lead sampling plan needs to be in place to assess the effectiveness of water change and treatment boost. LCR monitoring sites with confirmed lead service lines can be in the sampling pool. Sampling should consist of a 1 liter first draw sample (LCR sample without 5 minute pre-flush), followed by an additional flushed sample or two depending on profile sample results which is intended to capture major lead source(s). The specific details of this effort need to be worked out by the technical committee as soon as possible. We would gladly work with Flint on establishing a water sampling program to identify and verify lead service line sites. The plan and initial sampling effort should be performed before the switch so that one baseline sample set is collected.

Lastly, our strength does not fall under full-scale pump and chemical feed delivery systems. We would only say that the systems need to be scaled-up in size to accommodate our suggested dosing needs. Also, there is some discussion about diverting water to the Dort reservoir and an associated orthophosphate feed system. We are not familiar with the reservoir but are wondering if it is an open reservoir?

Of course this is a lot of information to share and we would gladly be available to discuss the technical and scientific basis for our suggestions.

Let us know if you have any questions and thanks again,

Darren and Mike

Darren A. Lytle, Ph.D., P.E.
Branch Chief (Acting)
U.S. Environmental Protection Agency
26 West Martin Luther King Dr.
Cincinnati, Ohio 45268
Phone: (513) 569-7432
Fax: (513) 487-2543
email: lytle.darren@epa.gov

From: Prysby, Mike (DEQ) [<mailto:PRYSBYM@michigan.gov>]
Sent: Friday, October 16, 2015 1:32 PM
To: Lytle, Darren <Lytle.Darren@epa.gov>; Schock, Michael <Schock.Michael@epa.gov>
Cc: Busch, Stephen (DEQ) <BUSCHS@michigan.gov>
Subject: FW: Flint WTP PH2 SEG4 - Corrosion Control

Darren, Michael

We have received Flint's corrosion control proposal from their consultant. If you have comments, please provide them to me by Monday morning.

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

From: Matta, Samir [<mailto:SFMatta@lan-inc.com>]
Sent: Friday, October 16, 2015 12:02 AM
To: Prysby, Mike (DEQ)
Subject: Flint WTP PH2 SEG4 - Corrosion Control

Hi Mike,

Please see attached plans for the Corrosion Control Plan for the City of Flint. I will have the official submittal package to you tomorrow afternoon after I get Brent or Mike's signature on the permit application. I will call you when I get back in Lansing to drop the package. Is three sets of full size plans adequate? Would you like some half size plans? Let me know.

Basis of Design

Given that Flint will require lead and copper corrosion control and given that Detroit utilizes orthophosphate for their corrosion control methodology, and that Flint will be receiving Detroit water for the immediate future, orthophosphate is the appropriate corrosion control methodology for Flint. A

dosage of 0.8 mg/l as PO_4 has been recommended for the Detroit water. Numerous utilities utilizing Lake Michigan water have a target dosage of 0.9 mg/l as PO_4 . Therefore, a target dosage in the range of 0.8 to 0.9 mg/l appears appropriate.

It is expected that, at least initially, there will be a significant PO_4 demand in the system. This will require a significantly higher dosage until this demand is satisfied and the target residual can be maintained. We are therefore designing for capability of a maximum dosage of 1.5 mg/l. The arriving Detroit water will likely have some residual PO_4 when it arrives at Flint. It has been reported that this residual will be approximately 0.4 mg/l. The system must therefore be capable of a minimum dosage of 0.4 mg/l.

Based upon the usage of 75% Phosphoric Acid and a flow range of 4 MGD to 25 MGD, with an average day of 16 MGD, the expected feed rate will be 1.35 to 32 gpd. Average Phosphoric Acid feed is expected to be 10.8 gpd, requiring 30 days storage of 325 gal.

Orthophosphate will need to be applied at two locations. Detroit water will enter the Flint system at Control Station CS2, and supplementary phosphate will be applied there. However, on occasion some incoming water may need to be diverted to the Dort Reservoir, bypassing CS2. This water would then be introduced to the system through High Service Pump Station PS4 and phosphate would be introduced at this location.

Please let me know if the information is adequate or you require additional information.

Thanks.

Samir F. Matta, PE
Team Leader



**Lockwood, Andrews
& Newnam, Inc.**
A LEO A DALY COMPANY

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Rennaker, Joanne (DEQ)

From: Prysby, Mike (DEQ)
Sent: Friday, October 23, 2015 4:33 PM
To: Shekter Smith, Liane (DEQ)
Subject: Preliminary and Deliberative: Action Steps update

Liane,

Below is an update of the Action Steps...

Action Step 19: Review corrosion control plan...EPA comments:

No Action today

Action Step 20: Review Act 399 Permit application and issue permit for PO4 Equip:

The information requested by the DEQ was not received from Flint's consultant today; thus permit was not issued. Discussed w. WTP operator Brent Wright and Michael Glasgow (Utilities Supt). Brent confirmed that he needs to provide some of the information regarding the PO4 product to the consultant.

Action Step 21: Review stand-by operation of Flint WTP:

Discussed with Michael Glasgow and Brent Wright the need for quarterly test runs and monthly operation reporting details. Also included the need to report PO4 dosages and PO4 residuals (Ptap/distro) in the MOR.

Action Step 24: Work with KWA to address bottleneck issues:

John O'Brien (Genesee Co. Drain Comm.) contacted me in response yesterday's e-mail. Lapeer Co. Road Comm. has placed a stop work order on Contract S-4005; however; the Drain Commissioner's Office contends that the road comm. has no authority to issue a stop work order; thus work is continuing. I stressed the importance to John of the need to keep the project moving forward and to confirm that the contractor is following proper soil erosion measures and other local guidelines that may apply.

Action Step 25: Verify Flint distribution operations under DWSD service:

Based on discussion with Michael Glasgow and Brent Wright, there have not been major distribution system issues or upsets since the switch back to DWSD. Utility operators were

flushing and winterizing hydrants this week and flushing from the WTP to the outside reaches of the distribution system. PO4 residuals are also being measured 2/wk at the city's TC monitoring sites. Concentrations are around 1.0 mg/l (as product) at most locations and approximately 0.5 mg/l at several of the farthest points.

Michael Prysby, P.E.

District Engineer

Office of Drinking Water and Municipal Assistance

517 290-8817

Rennaker, Joanne (DEQ)

From: Shekter Smith, Liane (DEQ)
Sent: Thursday, October 22, 2015 5:39 PM
To: Krisztian, George (DEQ)
Cc: Sygo, Jim (DEQ); Shaler, Karen (DEQ); Thelen, Mary Beth (DEQ); Busch, Stephen (DEQ); Prysby, Mike (DEQ); Devereaux, Tracy Jo (DEQ)
Subject: DRAFT DELIBERATIVE. Daily Update
Attachments: Monitoring Schedule 4th Qtr - 2015.pdf

Action Step 11: Finalize sampling protocol:

Participated on a conference call with EPA Task Force to discuss proposed sampling protocol and the comments received from EPA. Agreed to reconvene a call next week to discuss how the pilot sampling efforts goes, what went well, what might need to be adjusted, etc.

Action Step 19: Corrosion Control Treatment plan:

A summary of our discussion with EPA regarding Flint's corrosion control plan was provided to Darren Lytle and Michael Schock of EPA. The summary included confirmation of the actual phosphate dosage from the Detroit Lake Huron WTP. Steve's summary to EPA is included in the thread below.

Action Step 20: Act 399 permit for phosphate feed system:

Proper dosages are now confirmed based on incoming P04 residual at Flint. A product cut-sheet to confirm NSF approval and max dose is to be provided shortly. The consultant will also confirm proper sizing of the feed pumps. Anticipate receiving this info tomorrow which will facilitate issuance of the Act 399 permit.

Action Step 22: Provide Flint with an updated monitoring schedule:

An updated monitoring schedule is completed and signed. The schedule will be mailed to the city tomorrow. A copy of the updated monitoring schedule is attached.

Action Step No. 24: Work with KWA to address bottleneck issues:

An electronic communication was sent to Genesee County (John O'Brien) informing him of our concern over improper soil erosion control measures at the pipeline jobsite and what corrective measures were being taken to avoid a potential halt of construction by the Lapeer County Road Comm. Genesee County has not responded thus far.

Liane J. Shekter Smith, P.E.
 Assistant to Chief Deputy Director Jim Sygo
 Michigan Department of Environmental Quality
 517-284-6543



RICK SNYDER
GOVERNOR

STATE OF MICHIGAN
DEPARTMENT OF ENVIRONMENTAL QUALITY
LANSING DISTRICT OFFICE



DAN WYANT
DIRECTOR

October 22, 2015

Mr. Brent Wright
City Of Flint – D.P.W
Flint Water Plant
4500 North Dort Highway
Flint, Michigan 48505

WSSN: 02310

Dear Mr. Wright:

SUBJECT: Revised Drinking Water Monitoring Schedule – 2015
Monthly Operation Reports
Siting Plans and Record Keeping

Monitoring Schedule:

Enclosed is your revised Drinking Water Monitoring Schedule for remainder of calendar year 2015 outlining the minimum requirements for your public water supply. Your schedule has been revised based on the City's change in source of its drinking water from the treatment of the Flint River utilizing the City's Water Treatment Plant to the Great Lakes Water Authority/Detroit Water and Sewerage Department. Collect samples early in the monitoring period of the year indicated on the schedule. If you use a private laboratory you are required to report the results to us within the first ten days of the month following the month that you received the results. To receive credit for monitoring, the "**WSSN**" (water supply serial number), the "**Site Code**," and "**County**" must appear on the sample result. Bottles will NOT be mailed automatically. If you use the Department of Environmental Quality Laboratory, you can order bottles by calling 517-335-8184. Be certain of the United States Environmental Protection Agency sampling and analysis method requirements for hold times.

Monthly Operation Report (MOR) Requirements:

The City shall submit MORs as required under Administrative Rule 1502 (R325.11502). Please note required coliform bacteria monitoring results and associated chlorine residual monitoring shall be submitted to the department within the first 10 days following the end of the required monthly monitoring period. In addition, monthly operation reports shall be submitted to the department during the month following the month for which the monthly operation report was prepared.

Mr. Brent Wright

2

October 22, 2015

Disinfection By-Product Sample Siting Plans:

The City of Flint shall continue routine standard monitoring of disinfection by-products, according to your Disinfection & Disinfectants By-Product (DDBP) plan which identifies 8 sites for routine quarterly monitoring.

Lead and Copper Monitoring Requirements and Site Sample Pool

Please note distribution system monitoring for water quality parameters (WQPs) continues at the expanded set of 25 sites per quarter. Lead and copper monitoring in accordance with the requirements of Administrative Rule 710a (R325.10710a) is being required for the 6 month period between January 1, 2016 and June 30, 2016. The City must ensure its sample site pool is large enough to collect the number of lead and copper tap samples required. All sites from which first draw samples are collected shall be selected from the pool of targeted sampling sites.

The City shall also conduct additional operational monitoring to demonstrate the effectiveness of corrosion control treatment.

Record Keeping:

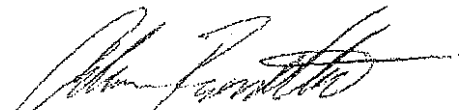
The City shall maintain all monitoring records in accordance with all applicable requirements under the Administrative Rules including Rule 720a (R325.10720a), Rule 1506 (R325.11506), and Rule 1507 (R325.11507).

The Michigan Safe Drinking Water Act requires certain reports to be submitted to this office each year. Please remember that cross connection reports and annual pumpage reports are due by March 31, and the **Consumer Confidence Report** is due by July 1.

Also enclosed is the document "2015 Monitoring and Reporting Requirements." This provides additional details about monitoring and reporting requirements. If you have any questions, please contact us using the information below.



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



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

Enclosure

cc/encl: Mr. Robert Bisnick, City Of Flint
Genesee County Health Department

2015 Monitoring Schedule

FLINT, CITY OF
WSSN: 02310

Collect samples early in the monitoring period. This schedule reflects your expected routine monitoring and is subject to change. To receive credit for monitoring, include the **WSSN, Site Code, and County** on your request for analysis form. Collect Bacteriological and Automated Partial Chemistry samples close to the shipping time and send overnight delivery. Send all sample results to your Department of Environmental Quality (DEQ) district office unless you use the DEQ laboratory. Test codes, sample units, and costs are listed to help you complete the DEQ laboratory form. Prices are subject to change without notice. The DEQ laboratory is closed on state holidays.

Location: Distribution System

Sample Type	Collect Samples According to the ...	# Samples/Frequency	Collect	Site Code	Fee	Unit Number	Test Code
Bacteriological – coliforms	TCR Sampling Site Plan	100/Monthly	Monthly	DIST	\$16.00	30	BPTC
Chlorine Residual	DBP Monitoring Plan	If serving chlorinated water, measure the residual disinfectant level at the same point and at the same time as the bacteriological sample and report the average to the DEQ.					
Total Trihalomethanes	DBP Monitoring Plan	8/3 months	During February, May, August and November 2015	See DBP Monitoring Plan	\$65.00	36VO	CXTM
Haloacetic Acids		8/3 months	During February, May, August and November 2015	See DBP Monitoring Plan	\$130.00	36HA	CXHA
Water Quality Parameters	Representative Sites	25/Quarterly	Quarterly	DIST	Various	Various	Various
Lead Copper for Corrosion Control	Lead and Copper Sampling Pool	60/6 months	Between 1/1 and 6/30/2016	DIST	\$26.00	36CC	CCUB

Community Water Supply 2015 Monitoring and Reporting Requirements

Please Monitor Early: Collect samples early in the monitoring period (month, quarter, year) of the year indicated on the schedule. Bacteriological and partial chemistry samples should be collected close to the shipping time and sent overnight delivery to assure sample holding times are not exceeded (30 and 48 hour hold times respectively). We also recommend avoiding mailing bacteriological samples immediately preceding or following a holiday because samples tend to exceed the 30 hour hold time. When this occurs, a repeat sample must be collected as soon as possible upon notification.

If you use a private laboratory please report the results to us within the first ten days of the month following the month that you received the results. A list of certified laboratories is available on request. If samples are not collected as indicated on your monitoring schedule, you will incur a monitoring violation and possibly a fine. For information on the fines policy, visit <http://michigan.gov/deqwater>. Click on Drinking Water, Community Water Supply, and Administrative Fines (under Laws and Rules).

To receive credit for monitoring, you must include the "**WSSN**" (water supply serial number), the "**Site Code**," and the "**County**" when you submit samples for analysis. Site codes are listed on your monitoring schedule.

Special Instructions If You Use The DEQ Laboratory: Bottles will NOT be mailed automatically. To order bottles, call the DEQ Laboratory at 517-335-8184 or download the form EQP 2301 *Requisition for Water Sample Units* from www.michigan.gov/deq. Click on Key Topics, Laboratory Services, Drinking Water, Obtaining The Necessary Sampling Units, and 'test list'. Please note that the DEQ laboratory is closed on most state holidays. The DEQ laboratory prices are subject to change without notice.

Special Instructions For Automated Partial Chemistry, VOC and TTHM Samples: These sample bottles must be cooled and preserved during shipment to the laboratory. If you use the DEQ laboratory, you will receive the ice pack, acid dropper (if necessary) and small cooler when you request the bottles. Samples must be preserved correctly to be used for compliance purposes. To avoid resampling follow instructions contained with the sample bottle. If you would like more information, contact the DEQ lab, at 517-335-8184, or contact this office.

Cyanide: Previously, supplies that chlorinated the water were waived from monitoring for cyanide. The U.S. EPA now requires all supplies to sample the entry point for cyanide.

UCMR3 Monitoring: You may have monitoring requirements in 2015 under the third Unregulated Contaminant Monitoring Rule (UCMR3). The U.S. EPA will contact you directly if your water supply is required to monitor in 2015. A list of laboratories certified to analyze the samples collected for UCMR3 is available at <http://water.epa.gov/lawsregs/rulesregs/sdwa/ucmr/ucmr3/upload/lablist.pdf>. Contact the U.S. EPA with questions.

Reminder if Lead and Copper Monitoring Due This Year: Provide individual lead tap results to people who receive water from sites that you sampled, even if lead was not detected, within 30 days of learning the results. Send us a certification that you met all the delivery requirements along with a sample copy of the customer notice within 3 months after the end of the monitoring period. Water supplies that failed to distribute the Consumer Notice of Lead Results must include the following statement in their CCR, "During the year, we failed to provide lead results to persons served at the sites that were tested as required by the Lead and Copper Rule." To download the *Lead and Copper Report and Consumer Notice of Lead Result Certificate* in Microsoft Word or PDF format, visit www.michigan.gov/deqwater. Click on Drinking Water, Community Water Supply, and Reporting Forms (under Manuals, Forms & Brochures).

Annual Reports: These reports are due to this office each year.

- The **Cross Connection Report**, due by March 31, describes the status of your local cross connection control program. Manufactured housing communities are exempt from this requirements until 2016.

Each year, water supplies must submit this report, even if a formal program has not been implemented. If cross connections do not exist in your water system, indicate so on the report. Download the Cross Connection Report form from <http://michigan.gov/deqwater>. Click on Drinking Water, Community Water Supply, Reporting Forms (under Manuals, Forms & Brochures). Instructions are included with the form.

- The **Annual Pumpage/Usage Report**, due by March 31, is required of water supplies that do not submit monthly operation reports.

This summary of water pumpage and water use must be submitted by each water supply that does not submit a monthly operation report. To manage our natural resources, pumpage data are compiled to determine water use demands in Michigan. Download the Annual Pumpage/Usage Report form from <http://michigan.gov/deqwater>. Click on Drinking Water, Community Water Supply, Reporting Forms (under Manuals, Forms & Brochures). Please be sure to indicate the appropriate units on the report (e.g. million gallons or gallons).

- The **Consumer Confidence Report**, due by July 1 to your customers, to your local health department and to this office, describes the quality of the water and characterizes the risks, if any, from exposure to contaminants detected..

Electronic delivery methods may be used to distribute the CCR to bill-paying customers, provided the method is direct. A paper copy must be delivered to bill-paying customers who request it or known to be unable to receive the CCR electronically. For more information on e-delivery, visit www.michigan.gov/deqwater. Click on Drinking Water, Community Water Supply, Consumer Confidence Report Rule (under Laws and Rules).

Rennaker, Joanne (DEQ)

From: Prysby, Mike (DEQ)
Sent: Thursday, October 22, 2015 5:33 PM
To: Shekter Smith, Liane (DEQ)
Subject: Preliminary and Deliberative: Action Steps Update
Attachments: Monitoring Schedule 4th Qtr - 2015.pdf

Liane,

Below is a summary of the Action Steps worked on today by Steve Busch and myself.

Action Step 19: Corrosion Control Treatment plan:

A summary of our discussion with EPA regarding Flint's corrosion control plan was provided to Darren Lytle and Michael Schock of EPA. The summary included confirmation of the actual phosphate dosage from the Detroit Lake Huron WTP. Steve's summary to EPA is included in the thread below.

Action Step 20: Act 399 permit for phosphate feed system:

Proper dosages are now confirmed based on incoming P04 residual at Flint. A product cut-sheet to confirm NSF approval and max dose is to be provided shortly. The consultant will also confirm proper sizing of the feed pumps. Anticipate receiving this info tomorrow which will facilitate issuance of the Act 399 permit.

Action Step 22: Provide Flint with an updated monitoring schedule:

An updated monitoring schedule is completed and signed. The schedule will be mailed to the city tomorrow. A copy of the updated monitoring schedule is attached.

Action Step No. 24: Work with KWA to address bottleneck issues:

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Michael Prysby, P.E.

District Engineer
Office of Drinking Water and Municipal Assistance
517 290-8817

From: Busch, Stephen (DEQ)
Sent: Thursday, October 22, 2015 12:58 PM
To: Schock, Michael; Lytle, Darren
Cc: Kempic, Jeffrey; Prysby, Mike (DEQ); kaplan.robert@epa.gov; Krisztian, George (DEQ); Sygo, Jim (DEQ)
Subject: RE: Flint WTP PH2 SEG4 - Corrosion Control

This will summarize our phone conversation of 10/19 and provide clarification regarding the previous comments.

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

From: Lytle, Darren [<mailto:Lytle.Darren@epa.gov>]
Sent: Monday, October 19, 2015 12:05 PM
To: Prysby, Mike (DEQ)
Cc: Schock, Michael; Kempic, Jeffrey; Busch, Stephen (DEQ)
Subject: RE: Flint WTP PH2 SEG4 - Corrosion Control

Mike,

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We believe it is necessary that Flint boosts orthophosphate dosage. Given that the distribution system has not received orthophosphate in over a year, we expect that orthophosphate will need to be boosted to 1) meet the demand of the distribution system, 2) reach the service lines and other lead-containing components in premise plumbing, and 3) accelerate lead reduction at the consumer's taps. Orthophosphate should preferably be added in the same form as the Detroit source which is phosphoric acid from our understanding. This is the proposed case here, however, a simple test should be performed to make sure that the pH is not impacted in a significant way at the desired target dose.

We have not been able to obtain comprehensive water quality data for the finished water characteristics of the Detroit water that will be fed to Flint, to assess ranges of major chemical characteristic fluctuations. However, based upon the email trail, Detroit water entering the Flint system appears to only contain around 0.4 PO₄/L. This concentration range is entirely too low compared to that needed in studies presented and published in the last 20+ years that have focused on lead released directly from lead pipes, and the solubility of the most likely lead orthophosphate pipes scales. We also strongly feel that targeted dose of 0.8 mg PO₄/L is also too low, for the very same reason. We would be glad to share with you numerous standard corrosion control and treatment reference works, best practices guides and published results from US and international lead corrosion control field and pilot studies. Secondly, the basis for that target (other communities using Lake Huron source use the same dose) is not scientifically derived nor does it consider water quality and the current state of Flint's distribution system. We have reviewed the original Detroit corrosion study and have seen some of the LCR monitoring data, and besides the fact that it did not directly pertain to this water source, few dosages were tested in the cited 1994 pipe loop study, and the higher dosage than the one implemented in the field currently was more effective. Based on the limited amount of data on the quality of Detroit water, what we know about the

history of Detroit corrosion control, we think an orthophosphate residual of 3 to 4 mg PO₄/L should be the minimum starting test target residual for pipe passivation. It is likely that, at least initially a higher dosage will be necessary to reach the far ends of the distribution system and sufficiently reduce lead solubility and release from all lead sources. To allow flexibility, we feel the design of the chemical feed and storage systems should be able to consistently deliver a maximum dose of 5 to 6 mg PO₄/L, if substantial orthophosphate loss is observed, if the starting dose is set for the desired residual level of 3 to 4 mg/L as PO₄. We suggest that jar tests be performed in advance of orthophosphate addition to Detroit water to evaluate the impact of orthophosphate dose on turbidity that could result from interactions between orthophosphate and background Detroit water quality parameters (e.g., aluminum, calcium, etc.).

We want to stress that immediately shifting to Detroit water and adding orthophosphate will not necessarily translate to immediate improvements. Furthermore, this is a change, albeit a return to past conditions. Nonetheless, a period of system upset should be anticipated. The need for a communication strategy and a distribution system plan are critical.

Lastly, we see no mention of a water quality monitoring program. Two programs need to be put in place immediately (before return to Detroit water) to 1) identify lead sources, 2) assess treatment effectiveness against lead release from all of the simultaneously operating mechanisms (solubility, particulate release, galvanic corrosion), and 3) assess orthophosphate levels and stability of water quality in the distribution system.

There are multiple sources of lead in the Flint distribution system to the consumers' taps, such as: pipes; leaded brass; leaded solder; accumulations on old galvanized steel pipes; possibly accumulated on copper or some plastic pipes. It is critical that the fate of orthophosphate in the distribution system is understood, and how effective it is against each type of lead source, so dosing adjustment can be properly made. For this purpose, we recommend that a number of residences throughout Flint that meet the following plumbing criteria, be identified for an assessment of the contribution lead from the different potential service line and interior plumbing sources, through detailed mapping of plumbing materials, lengths, sizes, and location and type of inline devices and faucets using profile sampling. For confidence in interpretation, probably at least 5 sites from each of the configurations will be necessary. The configurations we would estimate to be most important (but should be changed or added to if local construction practice indicates it's necessary): Lead service line, galvanized steel interior plumbing; lead service line, copper with leaded solder joints; lead service line, plastic interior plumbing. It is also possible that interior plumbing may differ from the material used for the customer-side service line segment. We would be glad to discuss the specifics of this sampling effort.

For the purpose of assessing stability of water quality in the distribution system and to inform on orthophosphate residual adjustment, we suggest that 8 to 10 locations in the distribution system be selected to measure pH, alkalinity, orthophosphate, turbidity and iron on a weekly basis. These could be collected from TCR sampling locations, or other readily-accessible buildings, should be located at a distribution of locations in the distribution system and should be collected after a flush sufficiently long to assure that "fresh" distribution system water is being measured. Research has shown that over time, orthophosphate can reduce disinfectant demand associated with corroding metallic distribution system materials. These measurements need to be performed in the field and can simply be done with a portable HACH test kit or spectrophotometer.

A lead sampling plan needs to be in place to access the effectiveness of water change and treatment boost. LCR monitoring sites with confirmed lead service lines can be in the sampling pool. Sampling should consist of a 1 liter first draw sample (LCR sample without 5 minute pre-flush), followed by an additional flushed sample or two depending on profile sample results which is intended to capture major lead source(s). The specific details of this effort need to be worked out by the technical committee as soon as possible. We would gladly work with Flint on establishing a water sampling program to identify and verify lead service line sites. The plan and initial sampling effort should be performed before the switch so that one baseline sample set is collected.

Lastly, our strength does not fall under full-scale pump and chemical feed delivery systems. We would only say that the systems need to be scaled-up in size to accommodate our suggested dosing needs. Also, there is some discussion about diverting water to the Dort reservoir and an associated orthophosphate feed system. We are not familiar with the reservoir but are wondering if it is an open reservoir?

Of course this is a lot of information to share and we would gladly be available to discuss the technical and scientific basis for our suggestions.

Let us know if you have any questions and thanks again,

Darren and Mike

Darren A. Lytle, Ph.D., P.E.
Branch Chief (Acting)
U.S. Environmental Protection Agency
26 West Martin Luther King Dr.
Cincinnati, Ohio 45268
Phone: (513) 569-7432
Fax: (513) 487-2543
email: lytle.darren@epa.gov

From: Prysby, Mike (DEQ) [<mailto:PRYSBYM@michigan.gov>]
Sent: Friday, October 16, 2015 1:32 PM
To: Lytle, Darren <Lytle.Darren@epa.gov>; Schock, Michael <Schock.Michael@epa.gov>
Cc: Busch, Stephen (DEQ) <BUSCHS@michigan.gov>
Subject: FW: Flint WTP PH2 SEG4 - Corrosion Control

Darren, Michael

We have received Flint's corrosion control proposal from their consultant. If you have comments, please provide them to me by Monday morning.

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

From: Matta, Samir [<mailto:SFMatta@lan-inc.com>]
Sent: Friday, October 16, 2015 12:02 AM
To: Prysby, Mike (DEQ)
Subject: Flint WTP PH2 SEG4 - Corrosion Control

Hi Mike,

Please see attached plans for the Corrosion Control Plan for the City of Flint. I will have the official submittal package to you tomorrow afternoon after I get Brent or Mike's signature on the permit application. I will call you when I get back in Lansing to drop the package. Is three sets of full size plans adequate? Would you like some half size plans? Let me know.

Basis of Design

Given that Flint will require lead and copper corrosion control and given that Detroit utilizes orthophosphate for their corrosion control methodology, and that Flint will be receiving Detroit water for the immediate future, orthophosphate is the appropriate corrosion control methodology for Flint. A dosage of 0.8 mg/l as PO₄ has been recommended for the

Detroit water. Numerous utilities utilizing Lake Michigan water have a target dosage of 0.9 mg/l as PO₄. Therefore, a target dosage in the range of 0.8 to 0.9 mg/l appears appropriate.

It is expected that, at least initially, there will be a significant PO₄ demand in the system. This will require a significantly higher dosage until this demand is satisfied and the target residual can be maintained. We are therefore designing for capability of a maximum dosage of 1.5 mg/l.

The arriving Detroit water will likely have some residual PO₄ when it arrives at Flint. It has been reported that this residual will be approximately 0.4 mg/l. The system must therefore be capable of a minimum dosage of 0.4 mg/l.

Based upon the usage of 75% Phosphoric Acid and a flow range of 4 MGD to 25 MGD, with an average day of 16 MGD, the expected feed rate will be 1.35 to 32 gpd. Average Phosphoric Acid feed is expected to be 10.8 gpd, requiring 30 days storage of 325 gal.

Orthophosphate will need to be applied at two locations. Detroit water will enter the Flint system at Control Station CS2, and supplementary phosphate will be applied there. However, on occasion some incoming water may need to be diverted to the Dort Reservoir, bypassing CS2. This water would then be introduced to the system through High Service Pump Station PS4 and phosphate would be introduced at this location.

Please let me know if the information is adequate or you require additional information.

Thanks.

Samir F. Matta, PE

Team Leader



**Lockwood, Andrews
& Newnam, Inc.**

A LEO A DALY COMPANY

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RICK SNYDER
GOVERNOR

STATE OF MICHIGAN
DEPARTMENT OF ENVIRONMENTAL QUALITY
LANSING DISTRICT OFFICE



DAN WYANT
DIRECTOR

October 22, 2015

Mr. Brent Wright
City Of Flint – D.P.W
Flint Water Plant
4500 North Dort Highway
Flint, Michigan 48505

WSSN: 02310

Dear Mr. Wright:

SUBJECT: Revised Drinking Water Monitoring Schedule – 2015
Monthly Operation Reports
Siting Plans and Record Keeping

Monitoring Schedule:

Enclosed is your revised Drinking Water Monitoring Schedule for remainder of calendar year 2015 outlining the minimum requirements for your public water supply. Your schedule has been revised based on the City's change in source of its drinking water from the treatment of the Flint River utilizing the City's Water Treatment Plant to the Great Lakes Water Authority/Detroit Water and Sewerage Department. Collect samples early in the monitoring period of the year indicated on the schedule. If you use a private laboratory you are required to report the results to us within the first ten days of the month following the month that you received the results. To receive credit for monitoring, the "**WSSN**" (water supply serial number), the "**Site Code**," and "**County**" must appear on the sample result. Bottles will NOT be mailed automatically. If you use the Department of Environmental Quality Laboratory, you can order bottles by calling 517-335-8184. Be certain of the United States Environmental Protection Agency sampling and analysis method requirements for hold times.

Monthly Operation Report (MOR) Requirements:

The City shall submit MORs as required under Administrative Rule 1502 (R325.11502). Please note required coliform bacteria monitoring results and associated chlorine residual monitoring shall be submitted to the department within the first 10 days following the end of the required monthly monitoring period. In addition, monthly operation reports shall be submitted to the department during the month following the month for which the monthly operation report was prepared.

Mr. Brent Wright

2

October 22, 2015

Disinfection By-Product Sample Siting Plans:

The City of Flint shall continue routine standard monitoring of disinfection by-products, according to your Disinfection & Disinfectants By-Product (DDBP) plan which identifies 8 sites for routine quarterly monitoring.

Lead and Copper Monitoring Requirements and Site Sample Pool

Please note distribution system monitoring for water quality parameters (WQPs) continues at the expanded set of 25 sites per quarter. Lead and copper monitoring in accordance with the requirements of Administrative Rule 710a (R325.10710a) is being required for the 6 month period between January 1, 2016 and June 30, 2016. The City must ensure its sample site pool is large enough to collect the number of lead and copper tap samples required. All sites from which first draw samples are collected shall be selected from the pool of targeted sampling sites.

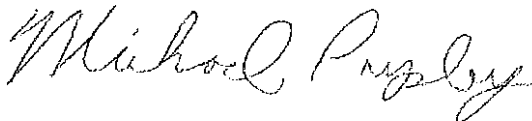
The City shall also conduct additional operational monitoring to demonstrate the effectiveness of corrosion control treatment.

Record Keeping:

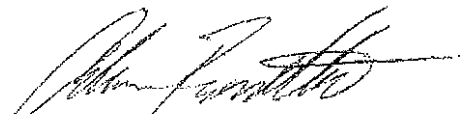
The City shall maintain all monitoring records in accordance with all applicable requirements under the Administrative Rules including Rule 720a (R325.10720a), Rule 1506 (R325.11506), and Rule 1507 (R325.11507).

The Michigan Safe Drinking Water Act requires certain reports to be submitted to this office each year. Please remember that cross connection reports and annual pumpage reports are due by March 31, and the **Consumer Confidence Report** is due by July 1.

Also enclosed is the document "2015 Monitoring and Reporting Requirements." This provides additional details about monitoring and reporting requirements. If you have any questions, please contact us using the information below.



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



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

Enclosure

cc/encl: Mr. Robert Bisnick, City Of Flint
Genesee County Health Department

2015 Monitoring Schedule

FLINT, CITY OF
WSSN: 02310

Collect samples early in the monitoring period. This schedule reflects your expected routine monitoring and is subject to change. To receive credit for monitoring, include the **WSSN**, **Site Code**, and **County** on your request for analysis form. Collect Bacteriological and Automated Partial Chemistry samples close to the shipping time and send overnight delivery. Send all sample results to your Department of Environmental Quality (DEQ) district office unless you use the DEQ laboratory. Test codes, sample units, and costs are listed to help you complete the DEQ laboratory form. Prices are subject to change without notice. The DEQ laboratory is closed on state holidays.

Location: Distribution System

Sample Type	Collect Samples According to the ...	# Samples/ Frequency	Collect	Site Code	Fee	Unit Number	Test Code
Bacteriological – coliforms	TCR Sampling Site Plan	100/Monthly	Monthly	DIST	\$16.00	30	BPTC
Chlorine Residual	DBP Monitoring Plan	If serving chlorinated water, measure the residual disinfectant level at the same point and at the same time as the bacteriological sample and report the average to the DEQ.					
Total Trihalomethanes	DBP Monitoring Plan	8/3 months	During February, May, August and November 2015	See DBP Monitoring Plan	\$65.00	36VO	CXTM
Haloacetic Acids		8/3 months	During February, May, August and November 2015	See DBP Monitoring Plan	\$130.00	36HA	CXHA
Water Quality Parameters	Representative Sites	25/Quarterly	Quarterly	DIST	Various	Various	Various
Lead Copper for Corrosion Control	Lead and Copper Sampling Pool	60/6 months	Between 1/1 and 6/30/2016	DIST	\$26.00	36CC	CCUB

Community Water Supply 2015 Monitoring and Reporting Requirements

Please Monitor Early: Collect samples early in the monitoring period (month, quarter, year) of the year indicated on the schedule. Bacteriological and partial chemistry samples should be collected close to the shipping time and sent overnight delivery to assure sample holding times are not exceeded (30 and 48 hour hold times respectively). We also recommend avoiding mailing bacteriological samples immediately preceding or following a holiday because samples tend to exceed the 30 hour hold time. When this occurs, a repeat sample must be collected as soon as possible upon notification.

If you use a private laboratory please report the results to us within the first ten days of the month following the month that you received the results. A list of certified laboratories is available on request. If samples are not collected as indicated on your monitoring schedule, you will incur a monitoring violation and possibly a fine. For information on the fines policy, visit <http://michigan.gov/deqwater>. Click on Drinking Water, Community Water Supply, and Administrative Fines (under Laws and Rules).

To receive credit for monitoring, you must include the "**WSSN**" (water supply serial number), the "**Site Code**," and the "**County**" when you submit samples for analysis. Site codes are listed on your monitoring schedule.

Special Instructions If You Use The DEQ Laboratory: Bottles will NOT be mailed automatically. To order bottles, call the DEQ Laboratory at 517-335-8184 or download the form EQP 2301 *Requisition for Water Sample Units* from www.michigan.gov/deq. Click on Key Topics, Laboratory Services, Drinking Water, Obtaining The Necessary Sampling Units, and 'test list'. Please note that the DEQ laboratory is closed on most state holidays. The DEQ laboratory prices are subject to change without notice.

Special Instructions For Automated Partial Chemistry, VOC and TTHM Samples: These sample bottles must be cooled and preserved during shipment to the laboratory. If you use the DEQ laboratory, you will receive the ice pack, acid dropper (if necessary) and small cooler when you request the bottles. Samples must be preserved correctly to be used for compliance purposes. To avoid resampling follow instructions contained with the sample bottle. If you would like more information, contact the DEQ lab, at 517-335-8184, or contact this office.

Cyanide: Previously, supplies that chlorinated the water were waived from monitoring for cyanide. The U.S. EPA now requires all supplies to sample the entry point for cyanide.

UCMR3 Monitoring: You may have monitoring requirements in 2015 under the third Unregulated Contaminant Monitoring Rule (UCMR3). The U.S. EPA will contact you directly if your water supply is required to monitor in 2015. A list of laboratories certified to analyze the samples collected for UCMR3 is available at <http://water.epa.gov/lawsregs/rulesregs/sdwa/ucmr/ucmr3/upload/lablist.pdf>. Contact the U.S. EPA with questions.

Reminder if Lead and Copper Monitoring Due This Year: Provide individual lead tap results to people who receive water from sites that you sampled, even if lead was not detected, within 30 days of learning the results. Send us a certification that you met all the delivery requirements along with a sample copy of the customer notice within 3 months after the end of the monitoring period. Water supplies that failed to distribute the Consumer Notice of Lead Results must include the following statement in their CCR, "During the year, we failed to provide lead results to persons served at the sites that were tested as required by the Lead and Copper Rule." To download the *Lead and Copper Report and Consumer Notice of Lead Result Certificate* in Microsoft Word or PDF format, visit www.michigan.gov/deqwater. Click on Drinking Water, Community Water Supply, and Reporting Forms (under Manuals, Forms & Brochures).

Annual Reports: These reports are due to this office each year.

- **The Cross Connection Report**, due by March 31, describes the status of your local cross connection control program. Manufactured housing communities are exempt from this requirements until 2016.

Each year, water supplies must submit this report, even if a formal program has not been implemented. If cross connections do not exist in your water system, indicate so on the report. Download the Cross Connection Report form from <http://michigan.gov/deqwater>. Click on Drinking Water, Community Water Supply, Reporting Forms (under Manuals, Forms & Brochures). Instructions are included with the form.

- **The Annual Pumpage/Usage Report**, due by March 31, is required of water supplies that do not submit monthly operation reports.

This summary of water pumpage and water use must be submitted by each water supply that does not submit a monthly operation report. To manage our natural resources, pumpage data are compiled to determine water use demands in Michigan. Download the Annual Pumpage/Usage Report form from <http://michigan.gov/deqwater>. Click on Drinking Water, Community Water Supply, Reporting Forms (under Manuals, Forms & Brochures). Please be sure to indicate the appropriate units on the report (e.g. million gallons or gallons).

- **The Consumer Confidence Report**, due by July 1 to your customers, to your local health department and to this office, describes the quality of the water and characterizes the risks, if any, from exposure to contaminants detected..

Electronic delivery methods may be used to distribute the CCR to bill-paying customers, provided the method is direct. A paper copy must be delivered to bill-paying customers who request it or known to be unable to receive the CCR electronically. For more information on e-delivery, visit www.michigan.gov/deqwater. Click on Drinking Water, Community Water Supply, Consumer Confidence Report Rule (under Laws and Rules).

Rennaker, Joanne (DEQ)

From: Busch, Stephen (DEQ)
Sent: Thursday, October 22, 2015 12:58 PM
To: Schock, Michael; Lytle, Darren
Cc: Kempic, Jeffrey; Prysby, Mike (DEQ); kaplan.robert@epa.gov; Krisztian, George (DEQ); Sygo, Jim (DEQ)
Subject: RE: Flint WTP PH2 SEG4 - Corrosion Control

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

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Sent: Monday, October 19, 2015 12:05 PM
To: Prysby, Mike (DEQ)
Cc: Schock, Michael; Kempic, Jeffrey; Busch, Stephen (DEQ)
Subject: RE: Flint WTP PH2 SEG4 - Corrosion Control

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We believe it is necessary that Flint boosts orthophosphate dosage. Given that the distribution system has not received orthophosphate in over a year, we expect that orthophosphate will need to be boosted to 1) meet the demand of the distribution system, 2) reach the service lines and other lead-containing components in premise plumbing, and 3) accelerate lead reduction at the consumer's taps. Orthophosphate should preferably be added in the same form as the Detroit source which is phosphoric acid from our understanding. This is the proposed case here, however, a simple test should be performed to make sure that the pH is not impacted in a significant way at the desired target dose.

We have not been able to obtain comprehensive water quality data for the finished water characteristics of the Detroit water that will be fed to Flint, to assess ranges of major chemical characteristic fluctuations. However, based upon the email trail, Detroit water entering the Flint system appears to only contain around 0.4 PO₄/L. This concentration range is entirely too low compared to that needed in studies presented and published in the last 20+ years that have focused on lead released directly from lead pipes, and the solubility of the most likely lead orthophosphate pipes scales. We also strongly feel that targeted dose of 0.8 mg PO₄/L is also too low, for the very same reason. We would be glad to share with you numerous standard corrosion control and treatment reference works, best practices guides and published results from US and international lead corrosion control field and pilot studies. Secondly, the basis for that target (other communities using Lake Huron source use the same dose) is not scientifically derived nor does it consider water quality and the current state of Flint's distribution system. We have reviewed the original Detroit corrosion study and have seen some of the LCR monitoring data, and besides the fact that it did not directly pertain to this water source, few dosages were tested in the cited 1994 pipe loop study, and the higher dosage than the one implemented in the field currently was more effective. Based on the limited amount of data on the quality of Detroit water, what we know about the

history of Detroit corrosion control, we think an orthophosphate residual of 3 to 4 mg PO₄/L should be the minimum starting test target residual for pipe passivation. It is likely that, at least initially a higher dosage will be necessary to reach the far ends of the distribution system and sufficiently reduce lead solubility and release from all lead sources. To allow flexibility, we feel the design of the chemical feed and storage systems should be able to consistently deliver a maximum dose of 5 to 6 mg PO₄/L, if substantial orthophosphate loss is observed, if the starting dose is set for the desired residual level of 3 to 4 mg/L as PO₄. We suggest that jar tests be performed in advance of orthophosphate addition to Detroit water to evaluate the impact of orthophosphate dose on turbidity that could result from interactions between orthophosphate and background Detroit water quality parameters (e.g., aluminum, calcium, etc.).

We want to stress that immediately shifting to Detroit water and adding orthophosphate will not necessarily translate to immediate improvements. Furthermore, this is a change, albeit a return to past conditions. Nonetheless, a period of system upset should be anticipated. The need for a communication strategy and a distribution system plan are critical.

Lastly, we see no mention of a water quality monitoring program. Two programs need to be put in place immediately (before return to Detroit water) to 1) identify lead sources, 2) assess treatment effectiveness against lead release from all of the simultaneously operating mechanisms (solubility, particulate release, galvanic corrosion), and 3) assess orthophosphate levels and stability of water quality in the distribution system.

There are multiple sources of lead in the Flint distribution system to the consumers' taps, such as: pipes; leaded brass; leaded solder; accumulations on old galvanized steel pipes; possibly accumulated on copper or some plastic pipes. It is critical that the fate of orthophosphate in the distribution system is understood, and how effective it is against each type of lead source, so dosing adjustment can be properly made. For this purpose, we recommend that a number of residences throughout Flint that meet the following plumbing criteria, be identified for an assessment of the contribution lead from the different potential service line and interior plumbing sources, through detailed mapping of plumbing materials, lengths, sizes, and location and type of inline devices and faucets using profile sampling. For confidence in interpretation, probably at least 5 sites from each of the configurations will be necessary. The configurations we would estimate to be most important (but should be changed or added to if local construction practice indicates it's necessary): Lead service line, galvanized steel interior plumbing; lead service line, copper with leaded solder joints; lead service line, plastic interior plumbing. It is also possible that interior plumbing may differ from the material used for the customer-side service line segment. We would be glad to discuss the specifics of this sampling effort.

For the purpose of assessing stability of water quality in the distribution system and to inform on orthophosphate residual adjustment, we suggest that 8 to 10 locations in the distribution system be selected to measure pH, alkalinity, orthophosphate, turbidity and iron on a weekly basis. These could be collected from TCR sampling locations, or other readily-accessible buildings, should be located at a distribution of locations in the distribution system and should be collected after a flush sufficiently long to assure that "fresh" distribution system water is being measured. Research has shown that over time, orthophosphate can reduce disinfectant demand associated with corroding metallic distribution system materials. These measurements need to be performed in the field and can simply be done with a portable HACH test kit or spectrophotometer.

A lead sampling plan needs to be in place to access the effectiveness of water change and treatment boost. LCR monitoring sites with confirmed lead service lines can be in the sampling pool. Sampling should consist of a 1 liter first draw sample (LCR sample without 5 minute pre-flush), followed by an additional flushed sample or two depending on profile sample results which is intended to capture major lead source(s). The specific details of this effort need to be worked out by the technical committee as soon as possible. We would gladly work with Flint on establishing a water sampling program to identify and verify lead service line sites. The plan and initial sampling effort should be performed before the switch so that one baseline sample set is collected.

Lastly, our strength does not fall under full-scale pump and chemical feed delivery systems. We would only say that the systems need to be scaled-up in size to accommodate our suggested dosing needs. Also, there is some discussion about diverting water to the Dort reservoir and an associated orthophosphate feed system. We are not familiar with the reservoir but are wondering if it is an open reservoir?

Of course this is a lot of information to share and we would gladly be available to discuss the technical and scientific basis for our suggestions.

Let us know if you have any questions and thanks again,

Darren and Mike

Darren A. Lytle, Ph.D., P.E.
Branch Chief (Acting)
U.S. Environmental Protection Agency
26 West Martin Luther King Dr.
Cincinnati, Ohio 45268
Phone: (513) 569-7432
Fax: (513) 487-2543
email: lytle.darren@epa.gov

From: Prysby, Mike (DEQ) [<mailto:PRYSBYM@michigan.gov>]
Sent: Friday, October 16, 2015 1:32 PM
To: Lytle, Darren <Lytle.Darren@epa.gov>; Schock, Michael <Schock.Michael@epa.gov>
Cc: Busch, Stephen (DEQ) <BUSCHS@michigan.gov>
Subject: FW: Flint WTP PH2 SEG4 - Corrosion Control

Darren, Michael

We have received Flint's corrosion control proposal from their consultant. If you have comments, please provide them to me by Monday morning.

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

From: Matta, Samir [<mailto:SFMatta@lan-inc.com>]
Sent: Friday, October 16, 2015 12:02 AM
To: Prysby, Mike (DEQ)
Subject: Flint WTP PH2 SEG4 - Corrosion Control

Hi Mike,

Please see attached plans for the Corrosion Control Plan for the City of Flint. I will have the official submittal package to you tomorrow afternoon after I get Brent or Mike's signature on the permit application. I will call you when I get back in Lansing to drop the package. Is three sets of full size plans adequate? Would you like some half size plans? Let me know.

Basis of Design

Given that Flint will require lead and copper corrosion control and given that Detroit utilizes orthophosphate for their corrosion control methodology, and that Flint will be receiving Detroit water for the immediate future, orthophosphate is the appropriate corrosion control methodology for Flint. A dosage of 0.8 mg/l as PO₄ has been recommended for the

Detroit water. Numerous utilities utilizing Lake Michigan water have a target dosage of 0.9 mg/l as PO₄. Therefore, a target dosage in the range of 0.8 to 0.9 mg/l appears appropriate.

It is expected that, at least initially, there will be a significant PO₄ demand in the system. This will require a significantly higher dosage until this demand is satisfied and the target residual can be maintained. We are therefore designing for capability of a maximum dosage of 1.5 mg/l.

The arriving Detroit water will likely have some residual PO₄ when it arrives at Flint. It has been reported that this residual will be approximately 0.4 mg/l. The system must therefore be capable of a minimum dosage of 0.4 mg/l.

Based upon the usage of 75% Phosphoric Acid and a flow range of 4 MGD to 25 MGD, with an average day of 16 MGD, the expected feed rate will be 1.35 to 32 gpd. Average Phosphoric Acid feed is expected to be 10.8 gpd, requiring 30 days storage of 325 gal.

Orthophosphate will need to be applied at two locations. Detroit water will enter the Flint system at Control Station CS2, and supplementary phosphate will be applied there. However, on occasion some incoming water may need to be diverted to the Dort Reservoir, bypassing CS2. This water would then be introduced to the system through High Service Pump Station PS4 and phosphate would be introduced at this location.

Please let me know if the information is adequate or you require additional information.

Thanks.

Samir F. Matta, PE

Team Leader



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www.lan-inc.com • sfmatta@lan-inc.com

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Rennaker, Joanne (DEQ)

From: Prysby, Mike (DEQ)
Sent: Thursday, October 22, 2015 9:38 AM
To: Busch, Stephen (DEQ)
Subject: Preliminary and Deliberative: FW: Preliminary and Deliberative: RE: Flint Nail Test

Steve,

The city has also confirmed that the phosphate residual coming in is measured as product (PO₄)⁻³. I will follow-up with Samir, confirm receipt of the phosphate compound cut-sheet (NSF and max dose info) and proper sizing of the chemical feed pumps prior to issuing the Act 399 permit.

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

From: Brent Wright [mailto:bwright@cityofflint.com]
Sent: Thursday, October 22, 2015 8:18 AM
To: Prysby, Mike (DEQ)
Cc: Samir Matta; Michael Glasgow
Subject: Re: Preliminary and Deliberative: RE: Flint Nail Test

It is being measured as (PO₄)⁻³.

On Oct 22, 2015 8:00 AM, "Prysby, Mike (DEQ)" <PRYSBYM@michigan.gov> wrote:

Samir, Brent

Is the phosphate concentration 1.24 mg/l being measured as (PO₄)⁻³ or as P ?

Michael Prysby, P.E.

District Engineer

Office of Drinking Water and Municipal Assistance

517 290-8817

From: Matta, Samir [mailto:SFMatta@lan-inc.com]
Sent: Wednesday, October 21, 2015 10:34 PM
To: Prysby, Mike (DEQ)
Subject: FW: Flint Nail Test

Hi Mike,

Please see below from Brent as we discussed.

Thanks.

Samir F. Matta, PE

Team Leader



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& Newnam, Inc.**
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From: Brent Wright [mailto:bwright@cityofflint.com]
Sent: Wednesday, October 21, 2015 11:35 AM
To: Green, Warren
Cc: Matta, Samir; Howard Croft (hcroft@cityofflint.com); Lawrence, Charles; Hansen, Jeff; mglasgow@cityofflint.com; Nakashima, Jeremy
Subject: Re: Flint Nail Test

I have sent an email to Mary Semegen (head of DWSD water quality) regarding the feed rate coming from the Burtchville plant. I will inform you of her response upon receiving it.

From: Brent Wright [<mailto:bwright@cityofflint.com>]
Sent: Wednesday, October 21, 2015 7:51 AM
To: Green, Warren
Cc: Lawrence, Charles; Hansen, Jeff; Matta, Samir; mglasgow@cityofflint.com; Nakashima, Jeremy
Subject: Re: Flint Nail Test

On another note we are seeing a 1.24ppm of phosphate from DWSD. I was under the understanding they were only feeding a .5ppm. Any thoughts on what we should be feeding.

Thanks

On Wed, Oct 21, 2015 at 8:47 AM, Brent Wright <bwright@cityofflint.com> wrote:

Agree I see no difference.

On Wed, Oct 21, 2015 at 8:29 AM, Green, Warren <jwgreen@lan-inc.com> wrote:

Agree

J. Warren Green

On Oct 20, 2015, at 11:40 PM, Lawrence, Charles <cflawrence@lan-inc.com> wrote:

I don't know what the rest of you guys think, but looks like no difference between DWSD and Flint to me.

From: Hansen, Jeff
Sent: Tuesday, October 20, 2015 3:29 PM
To: Green, Warren
Cc: Matta, Samir; Brent Wright (bwright@cityofflint.com); 'mglasgow@cityofflint.com'; Lawrence, Charles; Nakashima, Jeremy
Subject: Flint Nail Test

After 1 week....

Jeffrey R. Hansen, PE

Project Manager

<image001.gif>

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Sent: Thursday, October 22, 2015 8:18 AM
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Subject: Re: Preliminary and Deliberative: RE: Flint Nail Test

It is being measured as (PO4)-3.

On Oct 22, 2015 8:00 AM, "Prysby, Mike (DEQ)" <PRYSBYM@michigan.gov> wrote:

Samir, Brent

Is the phosphate concentration 1.24 mg/l being measured as (PO4) -3 or as P ?

Michael Prysby, P.E.

District Engineer

Office of Drinking Water and Municipal Assistance

517 290-8817

From: Matta, Samir [<mailto:SFMatta@lan-inc.com>]
Sent: Wednesday, October 21, 2015 10:34 PM
To: Prysby, Mike (DEQ)
Subject: FW: Flint Nail Test

Hi Mike,

Please see below from Brent as we discussed.

Thanks.

Samir F. Matta, PE

Team Leader



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After 1 week....

Jeffrey R. Hansen, PE

Project Manager

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Rennaker, Joanne (DEQ)

From: Prysby, Mike (DEQ)
Sent: Thursday, October 22, 2015 8:00 AM
To: Matta, Samir; 'bwright@cityofflint.com'
Subject: Preliminary and Deliberative: RE: Flint Nail Test

Samir, Brent

Is the phosphate concentration 1.24 mg/l being measured as (PO4) -3 or as P ?

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

From: Matta, Samir [<mailto:SFMatta@lan-inc.com>]
Sent: Wednesday, October 21, 2015 10:34 PM
To: Prysby, Mike (DEQ)
Subject: FW: Flint Nail Test

Hi Mike,

Please see below from Brent as we discussed.

Thanks.

Samir F. Matta, PE
 Team Leader



**Lockwood, Andrews
& Newnam, Inc.**
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Cc: Lawrence, Charles; Hansen, Jeff; Matta, Samir; mglasgow@cityofflint.com; Nakashima, Jeremy

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To: Green, Warren

Cc: Matta, Samir; Brent Wright (bwright@cityofflint.com); 'mglasgow@cityofflint.com'; Lawrence, Charles; Nakashima, Jeremy

Subject: Flint Nail Test

After 1 week....

Jeffrey R. Hansen, PE

Project Manager

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Rennaker, Joanne (DEQ)

From: Prysby, Mike (DEQ)
Sent: Thursday, October 22, 2015 7:56 AM
To: Matta, Samir
Subject: Preliminary and Deliberative: RE: Phosphoric Acid Feed.

Samir,

As we discussed, we will need to know if the residual was measured as product or as available (P).

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

From: Matta, Samir [<mailto:SFMatta@lan-inc.com>]
Sent: Wednesday, October 21, 2015 10:30 PM
To: Prysby, Mike (DEQ)
Subject: FW: Phosphoric Acid Feed.

Hi Mike,

Please see the response from Mary, DWSD.

Thanks.

Samir F. Matta, PE
 Team Leader



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& Newnam, Inc.**
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From: Brent Wright [<mailto:bwright@cityofflint.com>]
Sent: Wednesday, October 21, 2015 12:44 PM
To: Green, Warren; Matta, Samir; Hansen, Jeff; Nakashima, Jeremy
Subject: Fwd: Phosphoric Acid Feed.

----- Forwarded message -----

From: Brent Wright <bwright@cityofflint.com>
Date: Wed, Oct 21, 2015 at 12:33 PM
Subject: Re: Phosphoric Acid Feed.
To: Mary Lynn Semegen <semegen@dwsd.org>

Thank you Mary.

On Oct 21, 2015 12:28 PM, "Mary Lynn Semegen" <semegen@dwsd.org> wrote:
The lake Huron plant tap residual ortho-phosphate is 1.0-1.2 ppm.

Sincerely,

Mary Lynn Semegen, Manager
Water Quality Division
Detroit Water and Sewerage Department
Water Works Park Plant
Room 208
10100 E. Jefferson
Detroit, Michigan 48214
Phone: 313 926-8102
FAX: 313 842-6418
semegen@dwsd.org

City of Detroit
Mike Duggan, Mayor

On 10/21/2015 11:27 AM, Brent Wright wrote:
Mary

Do you know the feed in ppm that is coming from the Burtchville plant? We were under the impression the plant was only feeding a maintenance level of .4 to .5ppm. Our lab analysis show this to be higher.

Thank you

--
Brent Wright
Water Plant Supervisor
City of Flint
4500 N. Dort Hwy.
Flint, MI. 48505
Ph: 810.787.6537 ext. 3510
Fx: 810.787.3710

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Samir F. Matta, PE
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After 1 week....

Jeffrey R. Hansen, PE

Project Manager

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Samir F. Matta, PE
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From: Brent Wright [<mailto:bwright@cityofflint.com>]
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 Room 208
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 FAX: 313 842-6418

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Fx: 810.787.3710

--
Brent Wright
Water Plant Supervisor
City of Flint
4500 N. Dort Hwy.
Flint, MI. 48505
Ph: 810.787.6537 ext. 3510
Fx: 810.787.3710

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Rennaker, Joanne (DEQ)

From: Sheila Bailey-Waddell <sheila.bw@hotmail.com>
Sent: Wednesday, October 21, 2015 8:41 PM
To: Prysby, Mike (DEQ)
Subject: FW: Ticket #23002-490657 Response Sent

Mike,

It has come to my attention and that of the public that federal laws were not adhered to in water quality testing. I am reasonably certain that complaints have been submitted to your office. It is my contention that they were intentionally ignored in the style of the communications, below. I shouldn't have to test my own water.

Thank you,
 Sheila

Sent from my MetroPCS Android device

----- Original message-----

From: Prysby, Mike (DEQ)
Date: Fri, Oct 2, 2015 10:04 AM
To: sheila.bw@hotmail.com;
Cc: Busch, Stephen (DEQ); Benzie, Richard (DEQ);
Subject: RE: Ticket #23002-490657 Response Sent
 Sheila,

I am responding to your e-mail to address your concerns with lead Flint's drinking water. The drinking water treated at the Water Treatment Plant (WTP) and distributed to Flint residents meets all applicable drinking water standards and has not detected the presence of lead in any plant tap samples (water that leaves the WTP). Although the drinking water standards are being met, and compliance with the Action Level for lead is being achieved (90% of selected sites sampled throughout the city are at or below the 15 parts per billion Action Level for lead in accordance to EPA's monitoring requirements), there is no safe level for lead in drinking water. Compliance with the lead Action Level; however, does not mean that under certain conditions that some residents may have water within their domestic plumbing system that has leached lead from either a lead service line or lead solder.

The only way to know if you are being exposed to a higher concentration of lead at your residency is to have a sample collected from your residency and analyzed for lead at a certified laboratory. It is our understanding that the city of Flint is working with their customers on lead sampling requests without charge. You will need contact the city to arrange for the sampling.

If lead is present in the water at your home or if there is uncertainty, our advice is to minimize stagnation of the water prior to consumption by running your faucet for several minutes to clear out the stagnated water from your plumbing and service line.

Below is a link that provide additional information regarding lead in drinking water.

<http://water.epa.gov/drink/contaminants/basicinformation/lead.cfm>

If you have any further concerns regarding lead in your drinking water or on any other water related matter, please don't hesitate to contact me.

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

From: Sheila Bailey-Waddell [mailto:sheila.bw@hotmail.com]
Sent: Wednesday, September 30, 2015 8:43 PM
To: Hill, Charles (DEQ); Selden, Barry (DEQ); Smith, Laura (DEQ); Prysby, Mike (DEQ)
Subject: RE: Ticket #23002-490657 Response Sent

Hello,

Have you not heard that the water quality in Michigan is detrimental to its residents? It is filled with lead; killing our children and the elderly who are most vulnerable. What is the EPA doing about this? Even the hospitals are forced to order distilled water for patients (in/out). I want expeditious answers.

Thank you,
Sheila

From: sheila.bw@hotmail.com
To: hillc@michigan.gov; seldenb@michigan.gov; smithl16@michigan.gov
Subject: FW: Ticket #23002-490657 Response Sent
Date: Thu, 7 May 2015 17:16:50 -0400

From: sheila.bw@hotmail.com
To: safewater_support@supportportal.com; bartholi@msu.edu; info@cityofflint.com; senator@stabenow.senate.gov; bennettc4@michigan.gov
Subject: RE: Ticket #23002-490657 Response Sent
Date: Thu, 7 May 2015 16:41:38 -0400
Hello,

It is unfortunate that you don't track local drinking water information. So in essence your tracking efforts are limited to the auspices of NRCS Water Division only for the conservation of farming and other natural (non-human) resources. What if, by chance, the local water source is not being accurate in their reporting of safe drinking water and source supply?

Thank you,
Sheila

<http://mi.water.usgs.gov/pubs/MISC/RTSMI-0121/pdf/WTO222b.pdf>

From: safewater_support@supportportal.com

To: sheila.bw@hotmail.com

Date: Thu, 20 Feb 2014 08:25:04 -0500

Subject: Ticket #23002-490657 Response Sent

The Safe Drinking Water Hotline has responded to your question(s).

Hello,

Thank you for contacting the Safe Drinking Water Hotline. You had some concerns regarding your local water quality. Please review the information included below:

The Safe Drinking Water Hotline does not track local drinking water information. The best source of specific information about your drinking water is your water supplier. Water suppliers that serve the same people year-round are required to send their customers an annual water quality report called a Consumer Confidence Report (CCR). The CCR describes any contaminants that have been detected in your drinking water, how these detection levels compare to health-based national drinking water standards, and the source of your drinking water. To obtain a copy of your CCR, you may search online at <http://cfpub.epa.gov/safewater/ccr/index.cfm>. If your water system's report is not online, you should contact your local water provider to obtain a copy of this report. To find the telephone number for your local water provider, please check your water utility bill, your local phone book, or search online at <http://cfpub.epa.gov/safewater/ccr/index.cfm>.

If your city has a population in excess of 100,000, they are obligated to publish the reports online. Many local governments have sites where reports can be posted, even if a system itself does not have a site. EPA will make links from its Web site (<http://water.epa.gov/drink/index.cfm>) to all the reports of which it is aware (Preparing Your Drinking Water Consumer Confidence Report: Revised Guidance for Community Water Suppliers), EPA816-R-05-002).

If your city has not made the 2012 report available, please contact your state water program. They are the regulatory and enforcement agency for all public water systems in your state. The state water program should help you find the data. You can find contact information to your state by following the link below:

<http://water.epa.gov/drink/local/index.cfm>. <http://cfpub.epa.gov/safewater/ccr/index.cfm>.

EPA's Safe Drinking Water Hotline answers questions about the regulations and programs developed in response to the Safe Drinking Water Act. The Safe Drinking Water Hotline provides information, including access to publications, on EPA's drinking water standards, source water protection, and underground injection wells. The Hotline also provides referrals to state public water supply supervision programs, state underground injection control programs, and state laboratory certification programs.

If you have additional questions, you may contact the Safe Drinking Water Hotline at the following number:
(800) 426-4791 -- Toll Free

For more information, please visit EPA's Office of Ground Water and Drinking Water Internet web site:

<http://water.epa.gov/drink/index.cfm>.

Thank you for your interest in safe drinking water.

Ticket Information:

Ticket #: 23002-490657

Date Created: 2/19/2014 02:18 PM EST

Subject: Water Quality Assessment

Question: I live in Flint Michigan. What I have learned is Michigan appears to have 2012 and 2014 reports but neither are being reported by EPA. On this side of reporting for this data, we have no information as to the status of the 2012 or 2014 data. There are automotive plants in my area and the water quality is suspected to be less than satisfactory for residents.

To update or check the status of this Ticket:Go to: <http://safewater.supportportal.com/link/portal/23002/23015/Ticket/490657>

Log in, and you will be automatically taken to the Ticket page.

Rennaker, Joanne (DEQ)

From: Shekter Smith, Liane (DEQ)
Sent: Wednesday, October 21, 2015 5:19 PM
To: Krisztian, George (DEQ)
Cc: Sygo, Jim (DEQ); Shaler, Karen (DEQ); Busch, Stephen (DEQ); Prysby, Mike (DEQ); Thelen, Mary Beth (DEQ); Devereaux, Tracy Jo (DEQ)
Subject: Daily update

Action Item 11. Finalize sampling protocol.

- Comments received from EPA Task Force. Continuing to finalize protocol.

Action Item 12. Confirm school sampling logistics.

- Sampling team for first effort at Freeman Elementary School has been assembled and is prepared to sample on Saturday.

Action Item 19. Review corrosion control treatment plan and get any EPA comments.

- Responding to EPA task force on corrosion control proposal comments and clarifying information. Staff are following up on questions raised during the conference call on Tuesday.

Action Item 22. Provide city of Flint updated monitoring schedule based on Detroit Water and Sewerage Department (DWSD)/Great Lakes Water Authority (GLWA) service.

- Monitoring Schedule letter expected to be mailed tomorrow 10/22. The monitoring schedule addresses change back to a customer supply of GLWA. A final copy will be attached to tomorrow's update.

Rennaker, Joanne (DEQ)

From: Sygo, Jim (DEQ)
Sent: Wednesday, October 21, 2015 12:57 PM
To: Busch, Stephen (DEQ); Prysby, Mike (DEQ)
Subject: FW: Flint Task Force comments -- MDEQ Draft Sampling Document
Attachments: EPA Comments on MDEQ Draft Sampling 10-21-15 (FTF 15-1).pdf

FYI

From: Kaplan, Robert [<mailto:kaplan.robert@epa.gov>]
Sent: Wednesday, October 21, 2015 12:47 PM
To: Sygo, Jim (DEQ)
Subject: Flint Task Force comments -- MDEQ Draft Sampling Document

Hello Jim,

As we discussed, attached please find the EPA Flint Task Force comments on the MDEQ Draft Sampling Document.

- Bob

Flint Safe Drinking Water Task Force (FTF 15-1)

Flint Safe Drinking Water Task Force Comments on MDEQ Draft Protocol for Collecting Water Samples at Schools for Lead Analysis

EPA received the latest draft of MDEQ's "Protocol for Collecting Water Samples at Schools for Lead Analysis" for comment from Liane Shekter-Smith on October 19, 2015. Below are comments from EPA's Flint Safe Drinking Water Task Force.

General

There is an understandable urgency to assess the situation in schools, but an equally important consideration should be the ability to assess whether progress is being made over time as treatment is introduced and monitored. It is critically important that everyone understand how to collect samples from the different types of outlets, how to interpret the sample results (i.e., what the results mean and what they don't mean) and how to effectively communicate the results to the public.

Additionally, there is always confusion over what threshold lead levels should be used and what the numerical sampling results mean. It is very important that everyone involved in the sampling and communication have proper training so that accurate information is provided to the public from the beginning. EPA's recommendation is that training be provided by ORD as soon as possible to the health department and others that are involved before the school sampling begins. It would also be good to provide the same entities an overview on corrosion and corrosion control so that the objectives of the sampling and capabilities/limitations of the treatment are properly understood by all.

Sampling protocol

The proposed end-point sampling is useful and can provide information on whether end-point devices should be replaced. Relying solely on the proposed sampling to evaluate the safety of the water in the plumbing overall is not possible. It is essential to have proper baseline data from throughout the school plumbing, not just the endpoints, to assess the risk as well as the progress of treatment. The best sampling protocol for that would be sequential sampling conducted at 2 or 3 locations in each school. The sequential sampling results would enable an ongoing assessment of the effectiveness of treatment throughout the plumbing network over time. This type of an assessment is not possible to do with single samples. Certainty is very important at this stage.

Timing of Sample Collection

If the purpose of the sampling is to identify the sources of lead in the plumbing system and also to identify potential exposure, the timing of the sample collection is important. Do the schools have a program to flush all drinking water consumption taps and coolers and bubblers on the first day back in school after weekends, vacations, etc.? If they do not, the sampling will miss the worst potential exposure for the first few kids drinking the water.

The proposed timing in the protocol indicates that samples should not be collected followed an extended stagnation, such as a weekend. This limitation is more appropriate for samples collected from residences as this does not reflect normal household use. MDEQ should consider collecting samples on different days of the week to get an idea of the conditions throughout the

Flint Safe Drinking Water Task Force (FTF 15-1)

week. Samples from one or some of the locations taken on Monday mornings would represent the 'worst-case' lead levels found under normal conditions that the children would be exposed to as the water routinely stagnates in the plumbing each weekend that school is in session. Collecting samples during this time would provide more consistent 'worst-case' data under normal usage for evaluating the effectiveness of remedial efforts. Samples could then be taken on a Wednesday and on a Friday under different water use conditions.

On-Site Assessment

The protocol should state that the assessment should record any model number of faucets, valves, etc. that are accessible to inspection, with digital photos included, if possible. Some might be behind walls, but others may be just under sinks, bubblers, etc. This is important in identifying and interpreting the 125 mL samples. If potential brass devices are seen that would not be captured in the 125 mL sample, they should be noted, or an option added to include a 2nd sequential sample for the first draw, if appropriate.

The On-site Assessment should also identify if there is any water treatment being done in the building, i.e., POU or POE.

The second bullet under Step 1 asks about buildings built after 1986 and whether lead-free plumbing and solder was used. Keep in mind that the definition of lead-free was revised in 1996 and again in 2011. Most, if not all, 1986 brass/bronze plumbing fittings and fixtures would fail to meet the current lead-free requirements.

Under Step 5 – Prior to Sample Collection, there is a recommendation to flush the taps the afternoon prior to sampling because drinking water has not been consumed from them for several weeks. This seems to be equated with no use, which may apply to the water coolers and bubblers if shut off, but may not apply to kitchen taps (dish/pot cleaning) and bathroom taps (hand washing). Also, the instruction to school personnel should specify how many minutes to run the tap the day before sampling rather than "several minutes".

Sampling Volumes

Two sequential small volume samples at the beginning is preferable, just to have a better idea of the detail of multiple sources of lead in the proximity of the outlet. It sometimes would save a trip back to collect more samples if there is a high hit in the one sample. If you do the 125 mL only, the identification of plumbing fittings and fixtures in the On-site Assessment will help identify potential sources of lead in the case of a high hit.

Rennaker, Joanne (DEQ)

From: Busch, Stephen (DEQ)
Sent: Tuesday, October 20, 2015 4:44 PM
To: Krisztian, George (DEQ)
Cc: Shekter Smith, Liane (DEQ); Thelen, Mary Beth (DEQ); Sygo, Jim (DEQ); Shaler, Karen (DEQ); Prysby, Mike (DEQ); Cook, Pat (DEQ); Benzie, Richard (DEQ); Devereaux, Tracy Jo (DEQ)
Subject: DRAFT DELIBERATIVE - Daily update 10/20

Week of October 19-23 action step updates

1. Moved to be completed following after action review
10. Covered under item 13, no longer need letter.
13. Tentatively plan to meet with 10 other Flint Public schools week of 10/26.
14. Remove. Part of action step No. 1
15. Contacted DHHS to schedule meeting.
16. To be completed 10/23.
17. Lab has already integrated necessary form information
19. Conference call held with EPA specialists to discuss comments.
28. Contacted DHHS to schedule meeting.

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

Rennaker, Joanne (DEQ)

From: Prysby, Mike (DEQ)
Sent: Tuesday, October 20, 2015 4:06 PM
To: Krisztian, George (DEQ)
Cc: Sygo, Jim (DEQ); Busch, Stephen (DEQ)
Subject: Preliminary and Deliberative: Action Steps Update

George,

Below is an update of the Action Steps assigned to me for the week of October 19th, 2015.

Action Steps No. 19 and 20 – Review corrosion control treatment plan and get any EPA comments (step 19) and Review construction permit application and issue construction permit for phosphate equipment (step 20):

The corrosion control treatment plan (CCTP) and permit application was received late last Friday and were reviewed. Our review comments were provided to Flint's consultant (LAN). The CCTP was forwarded to EPA last Friday and their comments were received yesterday. A conference call was held this morning between our staff and Daren Lytle and Michael Schock of EPA to discuss the main comments (EPA's and DEQ's) to confirm that both agencies concur with the design and proposed corrosion control dosages. We are currently preparing a revised set of comments, based on our discussion with EPA. The revised comments will be sent to EPA to confirm concurrence before sending to LAN. An Act 399 permit will be issued to the city of Flint to install CCT following receipt of revised plans, specs, and – as needed – permit application that addresses the revised review comments.

Action Step No. 21 – Review Stand-by Operation of Flint WTP with the city of Flint:

No updates. Action will be taken on this step tomorrow and, as needed, through the remainder of the week.

Action Step No. 24 - Work with KWA and other agencies to address bottleneck issues:

No updates. Action may include discussing our concern with MDOT regarding the "no construction traffic" currently being imposed on N-S secondary roads and issuance of the spring weight restrictions by the Lapeer County Road Commission. We will need to see what steps MDOT may consider taking in working with the road commission to ease these restrictions that could otherwise cause delay in completing installation of the KWA pipeline. An appropriate MDOT contact will need to be provided to initiate this step.

| Action Step No. 25 - Verify city of Flint distribution operations under DWSD/GLWA service:

No updates. Action will be taken to verify this step tomorrow and, as needed, through the remainder of the week.

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

Rennaker, Joanne (DEQ)

From: Prysby, Mike (DEQ)
Sent: Tuesday, October 20, 2015 2:31 PM
To: Busch, Stephen (DEQ)
Subject: Preliminary and Deliberative: FW: Flint Corrosion Control Plans and MDEQ Preliminary Comments.pdf
Attachments: Flint Phosphate Calculations.pdf; MDEQ Preliminary Comments with replies (2).pdf; IBC tote scale with containment.pdf

Samir's response to our comments...

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

From: Matta, Samir [<mailto:SFMatta@lan-inc.com>]
Sent: Monday, October 19, 2015 3:11 PM
To: Prysby, Mike (DEQ)
Subject: Flint Corrosion Control Plans and MDEQ Preliminary Comments.pdf

Hi Mike,

Please see attached for your file and use. Let me know if the information satisfy your needs and whether you have additional information that you would like us to have answered.

Thanks.

Samir F. Matta, PE
 Team Leader



**Lockwood, Andrews
& Newnam, Inc.**
 A LEO A DALY COMPANY

1311 South Linden Road, Suite B • Flint, MI 48532
 2121 University Park Dr, Suite 100 • Okemos, MI 48864-6901
 D 517.819.2367 C 517.819.2367
www.lan-inc.com • sfmatta@lan-inc.com

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Flint Phosphate Calculations

Chemical will be 75% NSF certified Phosphoric acid

75% acid has a density of 13.17 #/gal. (5,974 g/gal) 13.17×453.5923

Of this 75% is Phosphoric acid (H_3PO_4) = 4,480 g H_3PO_4 /gal $5,974 \times 0.75$

Molecular weight of H_3PO_4 is 97.9913 g/mole

Moles H_3PO_4 / gal = 45.72 $4,480/97.9913$

Moles H_3PO_4 = Moles Orthophosphate (PO_4^{-3}) = Moles Phosphorus (P)

Species	Molecular Wt.	Moles / gal	g/gal
H_3PO_4	97.9913	45.72	4,480
PO_4^{-3}	94.9676	45.72	4341.92
P	30.97	45.72	1407.72

Proposed Operating Parameters

	Plant Flow	Dosage as PO_4^{-3}	Dosage as P*
Maximum	25 MGD	1.5 mg/l	0.47 mg/l
Average	16 MGD	0.8 mg/l	0.25 mg/l
Minimum	4 MGD	0.4 mg/l	0.13 mg/l

*Equivalent dosage to PO_4^{-3} dosage

Feed Rate Calculations

Maximum feed rate (Max Flow $\times$ Max Dosage)

$$25 \text{ MGD} \times 3782 \text{ g/gal H}_2\text{O} \times 1.5 \text{ ppm} / 4,341.92 \text{ g/gal} = 32.66 \text{ gpd Phosphoric Acid}$$

Average feed rate (Avg Flow $\times$ Avg Dosage)

$$16 \text{ MGD} \times 3782 \text{ g/gal H}_2\text{O} \times 0.8 \text{ ppm} / 4,341.92 \text{ g/gal} = 11.15 \text{ gpd Phosphoric Acid}$$

Minimum feed rate (Min Flow $\times$ Min Dosage)

$$4 \text{ MGD} \times 3782 \text{ g/gal H}_2\text{O} \times 0.4 \text{ ppm} / 4,341.92 \text{ g/gal} = 1.39 \text{ gpd Phosphoric Acid}$$

**Flint WTP Improvements
Corrosion Control Proposal
MDEQ Comments
October 16, 2015**

1. **The compound being referenced is 75% Phosphoric Acid. We are assuming this is the orthophosphate compound. What is the % available orthophosphate as phosphate (P)?** See attached calculations.
2. **What is the density of the phosphate compound in lbs/gal?** 13.17 lb/gal @ 25°C
3. **Water from Detroit is approx. 0.3 – 0.4 mg/l of orthophosphate as phosphate (P). We will concur with the proposal to add sufficient orthophosphate in order to maintain a 0.5 – 1.0 mg/l as P in the distribution system.** This is the intent of the system. Dosage will be adjusted based upon measured results in the distribution system.
4. **The orthophosphate compound needs to be an NSF Standard 60 approved product.** The specification that will be used for purchase requires NSF certification.
5. **How will the phosphate dosage be measured? Weigh scale or scada? If scales are to be used, this needs to be included in the proposal.** We will add IBC tote scales with secondary containment. The drawings will be modified to show this; see attached manufacturer's information.
6. **What is the purpose of the boosted water supply that mixes with the phosphate compound?** The boosted water supply is intended to provide sufficient injected volume to ensure complete mixing.

IBC TOTE SCALE

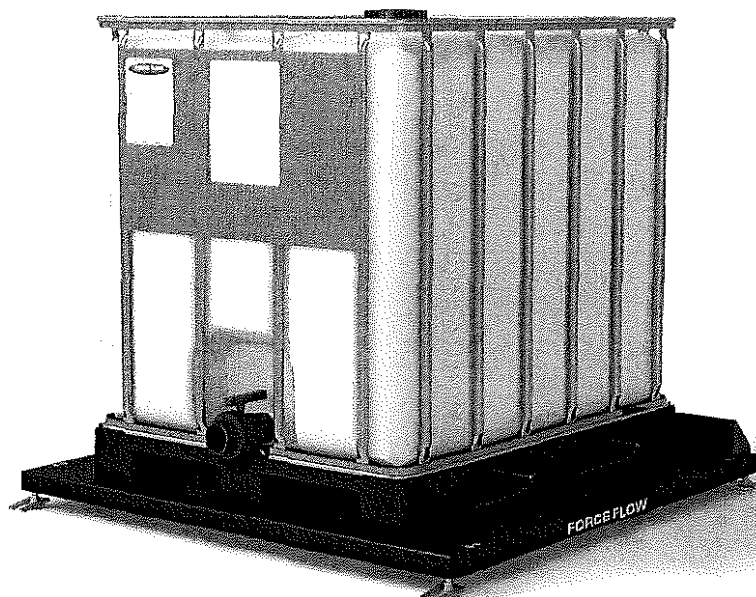
FOR CHEMICAL IBC TOTES

Safely track
chemical usage
and tank levels

Warn of dangerous
over and under-
feed conditions

Prevent system
from running
empty

4-20mA remote
monitoring reduces
operator exposure
to chemicals



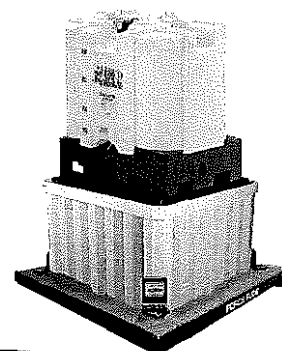
NO FINGER POINTING.
NO FINE PRINT.



Strict federal and state reporting requirements have created a need for water and wastewater plant operators to easily and accurately track chemical feed rates and usages. The IBC Tote Scale gives you this information along with the assurance that your chemical supply will not unexpectedly run out.

The heavy duty steel platform is protected with our advanced 80 mil thick TUF-COAT™ Environmental Armor. Tuf-Coat is highly resistant to chemicals, abrasion, impact and ultraviolet light degradation making the IBC Tote Scale ideal for even the harshest environments. Options include 316 stainless steel and MaxSense™ high accuracy models.

The IBC Tote Scale utilizes weighing technology to create a highly reliable, non-contacting chemical monitoring system that avoids problems other sensor technologies face caused by irregular tank shapes, corrosive chemical fumes, fluctuating temperatures and changes in specific gravity.



FORCE FLOW

IBC TOTE SCALE

MODELS AND ORDERING INFORMATION

IBC Tote Scales do not include weight indicating instrument. Select from the following: Wizard 4000® Advanced Digital Display (Bulletin 518), the SOLO® G2 Digital Weight Display (Bulletin 516), the SOLO XT® Hydraulic Digital Display (Bulletin 514), the Century Hydraulic dial (Bulletin 519) or Hypo Track® (Bulletin 517). Please order indicator separately.

ELECTRONIC - Single Load Cell Platform (Includes platform with backstop and electronic load cell with 20 ft. cable. Lengths up to 100 ft. available; request when ordering.)

MODEL	MATERIAL	X	Y	Z	H	ACCURACY
54-DR××TB	TUF-COAT® STEEL	54"	54"	58"	3.25"	1/4 of 1% FS
54-DR××TBS	316 STAINLESS STEEL	54"	54"	58"	3.25"	1/4 of 1% FS
60-DR××TB	TUF-COAT® STEEL	60"	60"	64"	3.25"	1/4 of 1% FS
60-DR××TBS	316 STAINLESS STEEL	60"	60"	64"	3.25"	1/4 of 1% FS



WIZARD 4000®



SOLO® G2



HYPO TRAK®



ELECTRONIC - Hi Accuracy 4-Load Cell Platform (Includes platform and {4} electronic load cells with 20 ft. of cable. Lengths up to 100 ft. available; request at time of purchase. Backstop not included or necessary on these models but available upon special request.)

MODEL	MATERIAL	X	Y	Z	H	ACCURACY
54-DR××TB-HA4	TUF-COAT® STEEL	54"	54"	N/A	3.25"	1/10 of 1% FS
54-DR××TBS-HA4	316 STAINLESS STEEL	54"	54"	N/A	3.25"	1/10 of 1% FS
60-DR××TB-HA4	TUF-COAT® STEEL	60"	60"	N/A	3.25"	1/10 of 1% FS
60-DR××TBS-HA4	316 STAINLESS STEEL	60"	60"	N/A	3.25"	1/10 of 1% FS



WIZARD 4000®



SOLO® G2



HYPO TRAK®



HYDRAULIC - Single Load Cell Platform (Includes platform with backstop, and hydraulic load cell with 12 ft. Hose and quick connect. Hose/tubing lengths up to 100 ft. available to allow remote mounting of indicator; request at time of purchase.)

MODEL	MATERIAL	X	Y	Z	H	ACCURACY
54-HY××TB	TUF-COAT® STEEL	54"	54"	58"	3.25"	1/2 of 1% FS
54-HY××TBS	316 STAINLESS STEEL	54"	54"	58"	3.25"	1/2 of 1% FS
60-HY××TB	TUF-COAT® STEEL	60"	60"	64"	3.25"	1/2 of 1% FS
60-HY××TBS	316 STAINLESS STEEL	60"	60"	64"	3.25"	1/2 of 1% FS



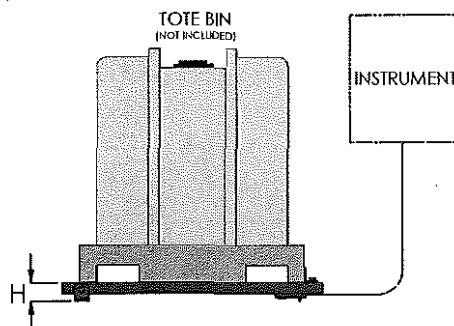
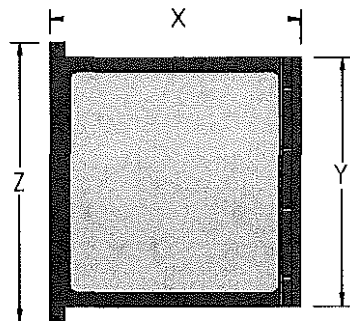
CENTURY®



SOLO XT®



×× = CAPACITY: 1000 lbs = "10", 2000 lbs = "20", 3000 lbs = "30", 4000 lbs = "40", 5000 lbs = "50"



SPECIFYING GUIDELINES:

- For maximum accuracy, size scale capacity to match the gross weight (chemical plus tote tare weight).
- Tote size should not exceed platform size.
- Supply connections must be flexible and preferably connected to tote over pivoted side of platform.

Please visit www.forceflow.com for drawings, engineered specifications and manuals.

FORCE FLOW

MODEL NUMBERS (for Load Cell & Platform)

60-DR30TC-HA4 (3,000 Lbs.) 60" x 60" x 3.25"
 60-DR40TC-HA4 (4,000 Lbs.) 60" x 60" x 3.25"
 60-DR50TC-HA4 (5,000 Lbs.) 60" x 60" x 3.25"
 60-DR60TC-HA4 (6,000 Lbs.) 60" x 60" x 3.25"

For Stainless Steel platform, as "S" after "TC", i.e. 60-DR30TCS-HA4.
 For other capacities and platform sizes, consult factory.

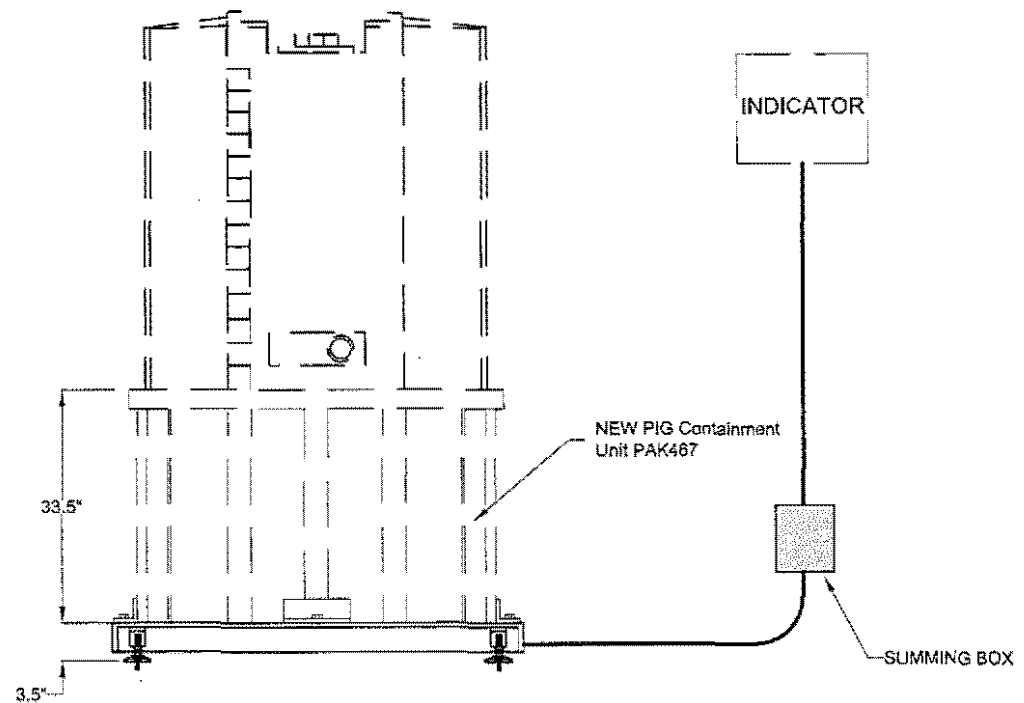
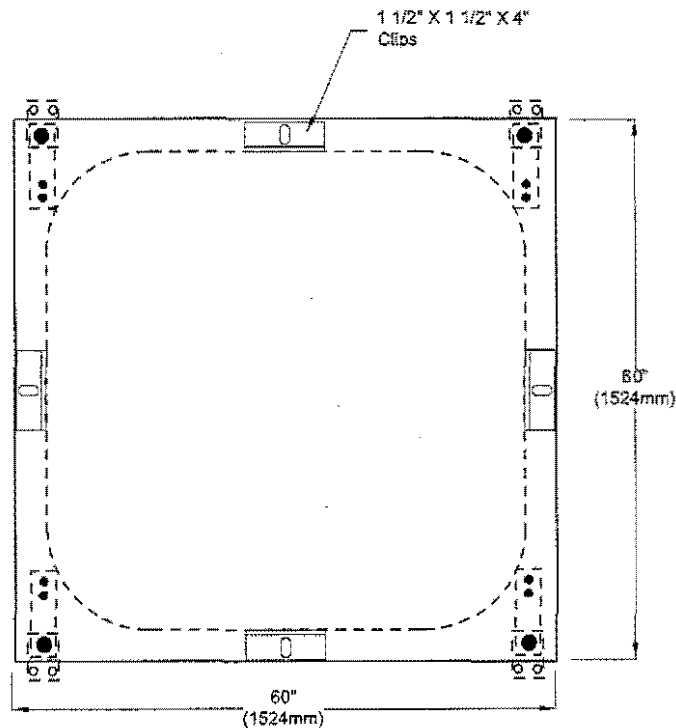
MODEL NUMBER (for SOLO 1000 Indicator)

SR-1000-1 1-Channel SOLO 1000 Indicator
 SR-1000-2 2-Channel SOLO 1000 Indicator

MODEL NUMBER (Containment Unit)

PAK467 400 gal. NEW PIG Poly IBC Containment Unit

_____ Scale Model Number
 _____ Pounds or Kilogram Indication
 _____ Feet of Cable (20' Standard)
 _____ Tote Skid Size
 400 _____ Containment Size (Gallons)

**INSTALLATION NOTE:**

We recommend using a forklift to load/unload totes.
 If a pallet jack is to be used, scale platform must be pit mounted so deck is flush with floor surface.
 Surface mounting with use of inclined load ramps are NOT RECOMMENDED.

FORCE FLOW

2430 Stanwell Dr, Concord, Ca 94520 USA
 1-800-893-6723 US & Canada, Fax: 925-686-6713
 WWW.forceflow.com / Info@forceflow.com

F:\EMAIL\SUBMITTAL FOR\Drawings\01401 HA Tote Bin Scale BP Containment.dwg

HI-ACCURACY ELECTRONIC
 60" TOTE BIN SCALE
 CONTAINMENT

Drawn by: KBV

Date: 1/23/09

Revised: 4/13/10

Scale:

Drawing Number

31431

---NOT SUPPLIED BY FORCE FLOW---
For use with Force Flow Scale Model 60-DR100TCH44



New Pig

Your partner for a clean
and safe workplace.

1-800-HOT-HOGS® (468-4647)

Product Data Sheet

Item Number: PAK467

Item Name: PIG® Poly IBC Containment Unit

Load Capacity UDL:

- 12000 lbs./each (5443.2 kg/each)

Sump Capacity:

- 400 gal./each (1514 L/each)

Options Available:

Item #	Size	Color	Misc. Features	Amount	Length	Width	Height	Depth	Int. Dia.	Ext. Dia.	Weight	Qty/Pallet
PAK467	—	—	—	1 each	58" (147.3cm)	58" (147.3cm)	33.5" (85.1cm)	—	—	—	415lbs. (188.2kg)	1

Color: White/Black

Description:

Polyethylene containment unit used to help meet containment regulations when storing IBCs.

Application:

Used to help meet containment regulations when storing IBCs of 400 gallons or less containing materials compatible with polyethylene. IBCs can be stacked two high.

Product Features:

Super-strong Containment Unit helps you comply with regulations and store IBC tanks safely. Capture leaks, drips and spills to keep floors dry and workers safe.

- Heavy-duty construction permits double-stacking of IBCs to save space
- Solid anti-slip deck holds a variety of IBC sizes; if tank has feet or pegs, be sure to use proper support pads or plates
- Positioning pegs in pedestals keep deck from shifting
- Polyethylene construction resists UV rays, rust, corrosion and most chemicals
- Translucent white sidewalls allow easy visual inspection
- Arrives ready to use with no assembly required

Composition:

- Sump - Polyethylene
- Grates - Injection Molded Polyethylene

This product helps you comply with:

Regulatory Citation	Summary
40 CFR 264.175	Hazardous waste containment systems must be free of structural cracks or gaps, be designed to keep spilled liquids from remaining in contact with the container, prevent run-on and "have sufficient capacity to contain 10% of the volume of the containers, or the volume of the largest container, whichever is greater."

Additional Specifications:

- Dimensions (Grate): 52" L x 52" W

Disclaimers:

- **Flammables Notice:** If using this product with flammable liquids, please consider the regulations that apply to storage and handling of flammable liquids and the safety of this application, specifically flammable vapors, static discharge and heat sources. For further assistance, please call Technical Services.

PDS generated: Jul 14, 2008

One Pork Avenue, Tipton, PA 16684-0304 • 1-800-HOT-HOGS® (468-4647)
Fax: 1-800-621-PIGS® (621-7447) • Email: hothogs@newpig.com • Web: newpig.com

© 2009 New Pig Corporation. All rights reserved.

Rennaker, Joanne (DEQ)

From: Prysby, Mike (DEQ)
Sent: Tuesday, October 20, 2015 2:29 PM
To: Busch, Stephen (DEQ)
Subject: Deliberative and Preliminary: FW: Flint WTP PH2 SEG4 - Corrosion Control

Steve,

My e-mail to EPA and their acknowledgement of receipt.

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

From: Lytle, Darren [<mailto:Lytle.Darren@epa.gov>]
Sent: Friday, October 16, 2015 2:28 PM
To: Prysby, Mike (DEQ); Schock, Michael
Cc: Busch, Stephen (DEQ)
Subject: RE: Flint WTP PH2 SEG4 - Corrosion Control

Mike,

Will do.

Thanks much for sending to us.

Darren

Darren A. Lytle, Ph.D., P.E.
 Branch Chief (Acting)
 U.S. Environmental Protection Agency
 26 West Martin Luther King Dr.
 Cincinnati, Ohio 45268
 Phone: (513) 569-7432
 Fax: (513) 487-2543
 email: lytle.darren@epa.gov

From: Prysby, Mike (DEQ) [<mailto:PRYSBYM@michigan.gov>]
Sent: Friday, October 16, 2015 1:32 PM
To: Lytle, Darren <Lytle.Darren@epa.gov>; Schock, Michael <Schock.Michael@epa.gov>
Cc: Busch, Stephen (DEQ) <BUSCHS@michigan.gov>
Subject: FW: Flint WTP PH2 SEG4 - Corrosion Control

Darren, Michael

We have received Flint's corrosion control proposal from their consultant. If you have comments, please provide them to me by Monday morning.

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

From: Matta, Samir [<mailto:SFMatta@lan-inc.com>]
Sent: Friday, October 16, 2015 12:02 AM
To: Prysby, Mike (DEQ)
Subject: Flint WTP PH2 SEG4 - Corrosion Control

Hi Mike,

Please see attached plans for the Corrosion Control Plan for the City of Flint. I will have the official submittal package to you tomorrow afternoon after I get Brent or Mike's signature on the permit application. I will call you when I get back in Lansing to drop the package. Is three sets of full size plans adequate? Would you like some half size plans? Let me know.

Basis of Design

Given that Flint will require lead and copper corrosion control and given that Detroit utilizes orthophosphate for their corrosion control methodology, and that Flint will be receiving Detroit water for the immediate future, orthophosphate is the appropriate corrosion control methodology for Flint. A dosage of 0.8 mg/l as PO_4 has been recommended for the Detroit water. Numerous utilities utilizing Lake Michigan water have a target dosage of 0.9 mg/l as PO_4 . Therefore, a target dosage in the range of 0.8 to 0.9 mg/l appears appropriate.

It is expected that, at least initially, there will be a significant PO_4 demand in the system. This will require a significantly higher dosage until this demand is satisfied and the target residual can be maintained. We are therefore designing for capability of a maximum dosage of 1.5 mg/l.

The arriving Detroit water will likely have some residual PO_4 when it arrives at Flint. It has been reported that this residual will be approximately 0.4 mg/l. The system must therefore be capable of a minimum dosage of 0.4 mg/l.

Based upon the usage of 75% Phosphoric Acid and a flow range of 4 MGD to 25 MGD, with an average day of 16 MGD, the expected feed rate will be 1.35 to 32 gpd. Average Phosphoric Acid feed is expected to be 10.8 gpd, requiring 30 days storage of 325 gal.

Orthophosphate will need to be applied at two locations. Detroit water will enter the Flint system at Control Station CS2, and supplementary phosphate will be applied there. However, on occasion some incoming water may need to be diverted to the Dort Reservoir, bypassing CS2. This water would then be introduced to the system through High Service Pump Station PS4 and phosphate would be introduced at this location.

Please let me know if the information is adequate or you require additional information.

Thanks.

Samir F. Matta, PE
Team Leader



**Lockwood, Andrews
& Newnam, Inc.**
A LEO A DALY COMPANY

1311 South Linden Road, Suite B • Flint, MI 48532
2121 University Park Dr, Suite 100 • Okemos, MI 48864-6901
D 517.819.2367 C 517.819.2367
www.lan-inc.com • sfmatta@lan-inc.com

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Rennaker, Joanne (DEQ)

From: Cook, Pat (DEQ)
Sent: Tuesday, October 20, 2015 1:46 PM
To: Prysby, Mike (DEQ); Busch, Stephen (DEQ)
Subject: RE: Safety data sheet for Phosphoric Acid

Stephane Johnson verified that this same phosphoric acid is also used at the Lake Huron and Water Works Park WTPs.

pat

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

From: Cook, Pat (DEQ)
Sent: Tuesday, October 20, 2015 11:57 AM
To: Prysby, Mike (DEQ); Busch, Stephen (DEQ)
Subject: FW: Safety data sheet for Phosphoric Acid

Info regarding DWSD's CC chemical. They use an Innophos "Phosphoric Acid 75% Technical" product which is an NSF Standard 60 certified. Max feed rate is 13 mg/l as product.

pat

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

From: Johnson, Stephanie (DEQ)
Sent: Tuesday, October 20, 2015 11:34 AM
To: Cook, Pat (DEQ)
Cc: Donaldson, Kristina (DEQ)
Subject: FW: Safety data sheet for Phosphoric Acid

Hi Pat,

Here's information on DWSD's corrosion control program. I've verified this at the Northeast plant, Springwells and Southwest so far. Let me know if you need anything else.

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

From: Annie Philip [<mailto:aphilip@dwsd.org>]
Sent: Tuesday, October 20, 2015 8:32 AM
To: Johnson, Stephanie (DEQ)
Cc: jacob
Subject: Safety data sheet for Phosphoric Acid

Hi Stephanie,

DWSD uses Phosphoric Acid 75% (Orthophosphoric Acid) at a dosage of 1ppm for corrosion control. The supplier is PVS Nolwood Chemicals, Inc. Please see attached safety Data Sheet for Phosphoric acid.

Thank you

Annie C Philip
Operations Team Leader

Northeast Water Treatment Plant
11000 East Eight Mile Rd.
Detroit, MI. 48205
(313)-245-1605 (office)

(313)-999-3401 (cell)
aphilip@dwsd.org
City of Detroit
Mike Duggan, Mayor

----- Forwarded Message -----

From: "Detroit Water & Sewerage Dept" <NE-CHMLAB-HP575@dwsd.org>
To: aphilip@dwsd.org
Sent: Tuesday, October 20, 2015 8:22:38 AM
Subject: Safety data sheet for Phosphoric Acid

Please open the attached document. This document was digitally sent to you using an HP Digital Sending device.

Rennaker, Joanne (DEQ)

From: Prysby, Mike (DEQ)
Sent: Tuesday, October 20, 2015 12:30 PM
To: Cook, Pat (DEQ)
Subject: RE: Safety data sheet for Phosphoric Acid

Thanks Pat,

Steve and I are preparing our punch list of which the product name, max dosage, and NSP approval are being asked....

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

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

From: Cook, Pat (DEQ)
 Sent: Tuesday, October 20, 2015 11:57 AM
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From: Annie Philip [<mailto:aphilip@dwdsd.org>]
 Sent: Tuesday, October 20, 2015 8:32 AM
 To: Johnson, Stephanie (DEQ)
 Cc: jacob
 Subject: Safety data sheet for Phosphoric Acid

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Thank you

Annie C Philip
Operations Team Leader

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Sent: Tuesday, October 20, 2015 11:57 AM
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Subject: FW: Safety data sheet for Phosphoric Acid
Attachments: Document.pdf

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Sent: Tuesday, October 20, 2015 8:22:38 AM
Subject: Safety data sheet for Phosphoric Acid

Please open the attached document. This document was digitally sent to you using an HP Digital Sending device.

Safety Data Sheet



Section 1: Identification of the Substance/Mixture and of the Company/Undertaking

1.1 Product identifier

Product Name	• Phosphoric Acid 75% Technical
Synonyms	• Orthophosphoric Acid
CAS Number	• 7664-38-2
SDS Number/Grade	• 3b
EC Number	• 231-633-2
EU Index Number	• 015-011-00-6
REACH Registration Number	• 01-2119485924-24-0037

1.2 Relevant identified uses of the substance or mixture and uses advised against

Relevant identified use(s)	• Polymerization of propylene; alkylating catalyst. Control of bacteria growth in selected processed foods. Flocculation agent for clarification of sugar juices after liming process. Various other uses in food products. Chemical – Strengthening or fortifying weak phosphoric acid solutions. Polymerization of propylene; alkylating catalyst

1.3 Details of the supplier of the safety data sheet

Manufacturer	• Innophos 259 Prospect Plains Rd. Bldg A Cranbury, NJ 08512-3706 United States
Telephone (Technical)	• 609-495-2495
Responsible Party - EU	• LSR Associates Ltd Woolley Road Alconbury, Cambridgeshire PE28 4HS United Kingdom info@lsr-associates.com
Telephone (General)	• +44 (0) 1954 212132

Distributed By: PVS NOLWOOD CHEMICALS, INC. 10900 Harper Avenue Detroit, MI. 48213 (313) 925-0300	
PVS ITEM #	PVS SDS #
Multi	0486

CONTROLLED DOCUMENT
IF STAMPED IN RED

1.4 Emergency telephone number

Manufacturer	• 800-424-9300 - Chemtrec - within USA and Canada
Manufacturer	• +1 703-527-3887 - Chemtrec - outside USA and Canada (collect calls accepted)
Manufacturer	• 615-386-7816 - Innophos Emergency Communication Team (ECT)

Section 2: Hazards Identification

EU/EEC

According to Regulation (EC) No 1272/2008 (CLP)/REACH 1907/2006 [amended by 453/2010]
According to EU Directive 67/548/EEC (DSD) or 1999/45/EC (DPD)

2.1 Classification of the substance or mixture

- CLP
- Corrosive to Metals 1 - H290
 - Skin Corrosion 1B - H314
- DSD/DPD
- Corrosive (C)
 - R34

2.2 Label Elements

CLP

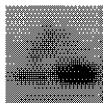
DANGER

- Hazard statements**
- H290 - May be corrosive to metals
 - H314 - Causes severe skin burns and eye damage.

Precautionary statements

- Prevention**
- P234 - Keep only in original container.
 - P260 - Do not breathe mist/vapours/spray.
 - P264 - Wash thoroughly after handling.
 - P280 - Wear protective gloves/protective clothing/eye protection/face protection.
- Response**
- P390 - Absorb spillage to prevent material damage.
 - P303+P361+P353 - IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
 - P301+P330+P331 - IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
 - P363 - Wash contaminated clothing before reuse.
 - P304+P340 - IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
 - P310 - Immediately call a POISON CENTER or doctor/physician.
 - P321 - Specific treatment (see supplemental first aid instructions on this label).
 - P305+P351+P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
- Storage/Disposal**
- P406 - Store in corrosive resistant/ container with a resistant inner liner.
 - P405 - Store locked up.
 - P501 - Dispose of content and/or container in accordance with local, regional, national, and/or international regulations.

DSD/DPD



- Risk phrases**
- R34 - Causes burns.
- Safety phrases**
- S36 - Wear suitable protective clothing.
 - S37 - Wear suitable gloves.
 - S39 - Wear eye/face protection.
 - S45 - In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

2.3 Other Hazards

- CLP
- According to Regulation (EC) No. 1272/2008 (CLP) this material is considered hazardous.
- DSD/DPD
- This product is considered dangerous according to the European Directive 67/548/EEC.

United States (US)

According to OSHA 29 CFR 1910.1200 HCS

2.1 Classification of the substance or mixture

PHOS ACID 75% TECHNICAL

OSHA HCS 2012

- Corrosive to Metals 1 - H290
Skin Corrosion 1B - H314

2.2 Label elements

OSHA HCS 2012

DANGER

- Hazard statements** • May be corrosive to metals - H290
Causes severe skin burns and eye damage. - H314

Precautionary statements

- Prevention** • Keep only in original container. - P234
Do not breathe mist/vapours/spray. - P260
Wash thoroughly after handling. - P264
Wear protective gloves/protective clothing/eye protection/face protection. - P280
- Response** • Absorb spillage to prevent material damage. - P390
IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower. - P303+P361+P353
IF SWALLOWED: Rinse mouth. Do NOT induce vomiting. - P301+P330+P331
Wash contaminated clothing before reuse. - P363
IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. - P304+P340
Immediately call a POISON CENTER or doctor/physician. - P310
Specific treatment, see supplemental first aid information. - P321
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. - P305+P351+P338
- Storage/Disposal** • Store in corrosive resistant/ container with a resistant inner liner. - P406
Store locked up. - P405
Dispose of content and/or container in accordance with local, regional, national, and/or international regulations. - P501

2.3 Other hazards

OSHA HCS 2012

- Under United States Regulations (29 CFR 1910.1200 - Hazard Communication Standard), this product is considered hazardous.

Canada

According to WHMIS

2.1 Classification of the substance or mixture

WHMIS

- Corrosive - E

2.2 Label elements

WHMIS



- Corrosive - E

2.3 Other hazards

WHMIS

- In Canada, the product mentioned above is considered hazardous under the Workplace Hazardous Materials Information System (WHMIS).

Section 3 - Composition/Information on Ingredients

3.1 Substances

Composition					
Chemical Name	Identifiers	%	LD50/LC50	Classifications According to Regulation/Directive	Comments
Phosphoric acid	CAS:7664-38-2 EC Number:231-633-2	36% TO 95%	Ingestion/Oral-Rat LD50 • 1.25 g/kg Inhalation-Rat LC50 • 25.5 mg/m ³	EU DSD/DPD: Annex I: C; R34 EU CLP: Annex VI: Skin Corr. 1B, H314, Corr. to Metals 1, H290 OSHA HCS 2012: Skin Corr. 1B, H314, Corr. to Metals 1, H290	NDA

3.2 Mixtures

- Material does not meet the criteria of a mixture in accordance with Regulation (EC) No 1272/2008.

Section 4 - First Aid Measures

4.1 Description of first aid measures

Inhalation

- Administer oxygen if breathing is difficult. Do not use mouth-to-mouth method if victim inhaled the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device. Give artificial respiration if victim is not breathing. Move victim to fresh air.

Skin

- For minor skin contact, avoid spreading material on unaffected skin. In case of contact with substance, immediately flush skin with running water for at least 20 minutes. Wash skin with soap and water. Remove and isolate contaminated clothing and shoes. Wash contaminated clothing before reuse.

Eye

- In case of contact with substance, immediately flush eyes with running water for at least 15 minutes. Seek immediate medical attention, preferably with an ophthalmologist. If the physician is not immediately available, eye irrigation should be continued for an additional 15 minutes. If it is necessary to transport the patient to a physician and the eye needs to be bandaged, use a dry sterile cloth pad and cover both eyes.

Ingestion

- If swallowed give 2-3 glasses of water if victim is conscious and alert. Do not give anything by mouth to an unconscious person. Do NOT induce vomiting. Obtain medical attention immediately if ingested. Do not use mouth-to-mouth method if victim ingested the substance. Do not leave victim unattended. To prevent aspiration of swallowed product, lay victim on side with head lower than waist. Persons attending the victim should avoid direct contact with heavily contaminated clothing and vomitus. Wear impervious gloves while decontaminating skin and hair.

4.2 Most important symptoms and effects, both acute and delayed

- Refer to Section 11 - Toxicological Information.

4.3 Indication of any immediate medical attention and special treatment needed

Notes to Physician

- All treatments should be based on observed signs and symptoms of distress in the patient. Consideration should be given to the possibility that overexposure to materials other than this product may have occurred.

4.4 Other information

- Call 911 or emergency medical service. Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.

Section 5 - Firefighting Measures

5.1 Extinguishing media

Suitable Extinguishing Media • Not combustible. Use extinguishing media suitable for surrounding fire.

Unsuitable Extinguishing Media • None known.

5.2 Special hazards arising from the substance or mixture

Unusual Fire and Explosion Hazards • Not combustible.
Under fire conditions, toxic, corrosive fumes are emitted.

Hazardous Combustion Products • Non-combustible, substance itself does not burn but may decompose upon heating to produce corrosive and/or toxic fumes.
Oxides of phosphorus.

5.3 Advice for firefighters

- Wear positive pressure self-contained breathing apparatus (SCBA).
Wear chemical protective clothing that is specifically recommended by the manufacturer. It may provide little or no thermal protection.
Structural firefighters' protective clothing provides limited protection in fire situations ONLY; it is not effective in spill situations where direct contact with the substance is possible.
Keep unauthorized personnel away.
Evacuate residents who are downwind of fire.
Dike area to prevent runoff and contamination of water sources. Dispose of fire control water later.
Persons who may have been exposed to contaminated smoke should be immediately examined by a physician and checked for symptoms of poisoning. The symptoms should not be mistaken for heat exhaustion or smoke inhalation.

Section 6 - Accidental Release Measures

6.1 Personal precautions, protective equipment and emergency procedures

Personal Precautions • Ventilate enclosed areas. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing.

Emergency Procedures • Keep unauthorized personnel away. Dike spill using absorbent or impervious materials such as earth, sand or clay. Dike or retain dilution water or water from firefighting for later disposal.

6.2 Environmental precautions

- Prevent entry into waterways, sewers, basements or confined areas. Runoff from fire control or dilution water may cause pollution.

6.3 Methods and material for containment and cleaning up

Containment/Clean-up Measures • Exercise caution during neutralization as considerable heat may be generated. Neutralize spill area with soda ash, sodium bicarbonate or lime. Flush neutralized spill with copious amounts of water.

6.4 Reference to other sections

- Refer to Section 8 - Exposure Controls/Personal Protection and Section 13 - Disposal Considerations.

Section 7 - Handling and Storage

7.1 Precautions for safe handling

Handling • Do not get on skin or in eyes. Avoid breathing vapors and mists. Do not ingest. Handle and open container with care. Use only with adequate ventilation. Use caution when combining with water; DO NOT add water to corrosive liquid, ALWAYS add corrosive liquid to water while stirring to prevent release of heat, steam and fumes. This product reacts violently with bases liberating heat and causing spattering.

7.2 Conditions for safe storage, including any incompatibilities

Storage

- Store in a dry, well-ventilated place. Store locked up. Keep away from incompatible materials. Ventilate enclosed areas.

7.3 Specific end use(s)

- Refer to Section 1.2 - Relevant identified uses.

Section 8 - Exposure Controls/Personal Protection

8.1 Control parameters

Exposure Limits/Guidelines						
	Result	ACGIH	Argentina	Australia	Austria	Belgium
Phosphoric acid (7664-38-2)	STELs	3 mg/m3 STEL	3 mg/m3 STEL [CMP-CPT]	3 mg/m3 STEL	2 mg/m3 STEL [KZW] (4 X 15 min)	2 mg/m3 STEL
	TWAs	1 mg/m3 TWA	1 mg/m3 TWA [CMP]	1 mg/m3 TWA	Not established	1 mg/m3 TWA
	MAKs	Not established	Not established	Not established	1 mg/m3 TWA [TMW]	Not established
Exposure Limits/Guidelines (Con't.)						
	Result	China	Czech Republic	Denmark	Egypt	Finland
Phosphoric acid (7664-38-2)	STELs	3 mg/m3 STEL	Not established	Not established	3 mg/m3 STEL	2 mg/m3 STEL
	TWAs	1 mg/m3 TWA	1 mg/m3 TWA	1 mg/m3 TWA	Not established	1 mg/m3 TWA
	Cellings	Not established	2 mg/m3 Ceiling	Not established	Not established	Not established
Exposure Limits/Guidelines (Con't.)						
	Result	France	Germany DFG	Germany TRGS	Greece	Hong Kong
Phosphoric acid (7664-38-2)	STELs	0.5 ppm STEL [VLCT] (Indicative limit); 2 mg/m3 STEL [VLCT] (indicative limit)	Not established	Not established	3 mg/m3 STEL	3 mg/m3 STEL
	TWAs	0.2 ppm TWA [VME] (Indicative limit); 1 mg/m3 TWA [VME] (Indicative limit)	Not established	2 mg/m3 TWA AGW (The risk of damage to the embryo or fetus can be excluded when AGW and BGW values are observed, inhalable fraction, exposure factor 2)	1 mg/m3 TWA	Not established
	Cellings	Not established	4 mg/m3 Peak (inhalable fraction)	Not established	Not established	Not established
	MAKs	Not established	2 mg/m3 TWA MAK (inhalable fraction)	Not established	Not established	Not established
Exposure Limits/Guidelines (Con't.)						
	Result	Hungary	India	Indonesia	Ireland	Israel
Phosphoric acid (7664-38-2)	TWAs	1 mg/m3 TWA [AK]	1 mg/m3 TWA	1 mg/m3 TWA	1 mg/m3 TWA	1 mg/m3 TWA
	STELs	2 mg/m3 STEL [CK]	3 mg/m3 STEL	Not established	2 mg/m3 STEL	3 mg/m3 STEL
Exposure Limits/Guidelines (Con't.)						
	Result	Italy	Japan	Korea	Malaysia	Mexico
Phosphoric acid	TWAs	1 mg/m3 TWA	1 mg/m3 OEL	1 mg/m3 TWA (Serial No. 459)	1 mg/m3 TWA	1 mg/m3 TWA LMPE- PPT

PHOS ACID 75% TECHNICAL

(7664-38-2)	STELs	2 mg/m3 STEL	Not established	3 mg/m3 STEL (Serial No. 465)	Not established	3 mg/m3 STEL [LMPE-CT]
Exposure Limits/Guidelines (Con't.)						
	Result	Netherlands	New Zealand	NIOSH	Norway	OSHA
Phosphoric acid (7664-38-2)	TWAs	1 mg/m3 TWA	1 mg/m3 TWA	1 mg/m3 TWA	1 mg/m3 TWA	1 mg/m3 TWA
	STELs	2 mg/m3 STEL	Not established	3 mg/m3 STEL	Not established	Not established
Exposure Limits/Guidelines (Con't.)						
	Result	Philippines	Poland	Portugal	Singapore	South Africa
Phosphoric acid (7664-38-2)	STELs	Not established	2 mg/m3 STEL [NDSCh]	3 mg/m3 STEL [VLE-CD]	3 mg/m3 STEL	3 mg/m3 STEL
	TWAs	1 mg/m3 TWA	1 mg/m3 TWA [NDS]	1 mg/m3 TWA [VLE-MP]	1 mg/m3 PEL	1 mg/m3 TWA
Exposure Limits/Guidelines (Con't.)						
	Result	Spain	Sweden	Switzerland	Taiwan	United Kingdom
Phosphoric acid (7664-38-2)	MAKs	Not established	Not established	1 mg/m3 TWA [MAK]	Not established	Not established
	STELs	2 mg/m3 STEL [VLA-EC]	3 mg/m3 STV	2 mg/m3 STEL [KZW] (4 X 15)	Not established	2 mg/m3 STEL
	TWAs	1 mg/m3 TWA [VLA-ED] (indicative limit value; it is prohibited the partial or complete commercialization or use of this substance as a phytosanitary or biocide compound)	1 mg/m3 LLV	Not established	1 mg/m3 TWA	1 mg/m3 TWA
Exposure Limits/Guidelines (Con't.)						
		Result	Venezuela			
Phosphoric acid (7664-38-2)		STELs	3 mg/m3 STEL [LEB]			
		TWAs	1 mg/m3 TWA [CAP]			

8.2 Exposure controls

Engineering Measures/Controls

- Good general ventilation should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level.

Personal Protective Equipment

Respiratory

- Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are exceeded or symptoms are experienced.

Eye/Face

- Wear face shield and eye protection. An emergency eye wash must be readily accessible to the work area. Ensure safety shower is available near all areas of bulk storage, delivery and use.

Hands

- Wear protective gloves selected with regard to both durability as well as permeation resistance.

Skin/Body

- Wear protective clothing

General Industrial Hygiene Considerations

- Do not get in eyes or on skin or clothing. Wash thoroughly with soap and water after handling and before eating, drinking, or using tobacco. Handle in accordance with good industrial hygiene and safety practice.

Environmental Exposure Controls

- Follow best practice for site management and disposal of waste.

Key to abbreviations

PHOS ACID 75% TECHNICAL

ACGIH = American Conference of Governmental Industrial Hygiene

MAK = Maximale Arbeitsplatz Konzentration is the maximum permissible concentration

MSHA = Mine Safety and Health Administration

NIOSH = National Institute of Occupational Safety and Health

OEL = Occupational Exposure Limit(s)

OSHA = Occupational Safety and Health Administration

PEL = Permissible Exposure Level determined by the Occupational Safety and Health Administration (OSHA)

STEL = Short Term Exposure Limits are based on 15-minute exposures

STEV = Short Term Exposure Value

NAB = Threshold Values (Indonesia)

TWAEV = Time-Weighted Average Exposure Value

TWA = Time-Weighted Averages are based on 8h/day, 40h/week exposures

Section 9 - Physical and Chemical Properties

9.1 Information on Physical and Chemical Properties

Material Description			
Physical Form	Liquid	Appearance/Description	Colorless viscous liquid with no odor.
Color	Colorless	Odor	Odorless
Odor Threshold	Data lacking		
General Properties			
Boiling Point	100 to 200 C(212 to 392 F)	Melting Point	Refer to Product data sheet for specific information.
Decomposition Temperature	Data lacking	pH	< 1
Specific Gravity/Relative Density	1.22 to 1.81 Water=1 @ 25 C(77 F)	Water Solubility	Miscible
Viscosity	Data lacking	Explosive Properties	Not relevant.
Oxidizing Properties:	Not relevant.		
Volatility			
Vapor Pressure	< 2 mmHg (torr) @ 20 C(68 F)	Vapor Density	Data lacking
Evaporation Rate	Data lacking		
Flammability			
Flash Point	Not relevant	UEL	Not relevant
LEL	Not relevant	Autoignition	Not relevant
Flammability (solid, gas)	Not relevant.		
Environmental			
Octanol/Water Partition coefficient	Data lacking		

9.2 Other Information

- No additional physical and chemical parameters noted.

Section 10: Stability and Reactivity

10.1 Reactivity

- No dangerous reaction known under conditions of normal use.

10.2 Chemical stability

- Stable

10.3 Possibility of hazardous reactions

- Hazardous polymerization will not occur.

10.4 Conditions to avoid

- Incompatible materials.

10.5 Incompatible materials

- Strong oxidizing agents, strong reducing agents, bases and certain metals

10.6 Hazardous decomposition products

- Oxides of phosphorus.

Section 11 - Toxicological Information

11.1 Information on toxicological effects

Other Material Information • This material is an acid. The primary effects and toxicity of this material are due to its corrosive nature.

	CAS	
PHOS ACID 75% TECHNICAL	7664-38-2	Acute Toxicity: Ingestion/Oral-Rat LD50 • 1530 mg/kg • Comments: Data for phosphoric acid; Skin-Rabbit LD50 • 2740 mg/kg; Irritation: Eye-Rabbit • 119 mg/kg • Severe irritation, irreversible, burns (corrosive) • Comments: Data for phosphoric acid; Skin-Rabbit • 595 mg/kg 24 Hour(s) • Severe irritation, irreversible, burns (corrosive)

GHS Properties	Classification
Acute toxicity	EU/CLP • Acute Toxicity - Dermal - Data lacking; Acute Toxicity - Inhalation - Data lacking; Acute Toxicity - Oral - Data lacking OSHA HCS 2012 • Acute Toxicity - Dermal - Inconclusive data; Acute Toxicity - Inhalation - Inconclusive data; Acute Toxicity - Oral - Data lacking
Aspiration Hazard	EU/CLP • Data lacking OSHA HCS 2012 • Not relevant
Carcinogenicity	EU/CLP • Classification criteria not met OSHA HCS 2012 • Classification criteria not met
Germ Cell Mutagenicity	EU/CLP • Classification criteria not met OSHA HCS 2012 • Classification criteria not met
Skin corrosion/Irritation	EU/CLP • Skin Corrosion 1B OSHA HCS 2012 • Skin Corrosion 1B
Skin sensitization	EU/CLP • Data lacking OSHA HCS 2012 • Data lacking
STOT-RE	EU/CLP • Data lacking OSHA HCS 2012 • Data lacking
STOT-SE	EU/CLP • Data lacking OSHA HCS 2012 • Data lacking
Toxicity for Reproduction	EU/CLP • Classification criteria not met OSHA HCS 2012 • Classification criteria not met
Respiratory sensitization	EU/CLP • Data lacking OSHA HCS 2012 • Data lacking
Serious eye damage/Irritation	EU/CLP • Data lacking OSHA HCS 2012 • Classification criteria not met

Route(s) of entry/exposure • Inhalation, Skin, Eye, Ingestion

Potential Health Effects

Inhalation

Acute (Immediate) • Under normal conditions of use, no health effects are expected.

PHOS ACID 75% TECHNICAL

Chronic (Delayed)

- Repeated or prolonged exposure to corrosive fumes may cause bronchial irritation with chronic cough.

Skin**Acute (Immediate)**

- Causes severe skin burns and eye damage.

Chronic (Delayed)

- Repeated or prolonged exposure to corrosive materials will cause dermatitis.

Eye**Acute (Immediate)**

- Corrosive. Can cause permanent damage to the cornea, blindness.

Chronic (Delayed)

- Repeated or prolonged exposure to corrosive materials or fumes may cause conjunctivitis.

Ingestion**Acute (Immediate)**

- Causes corrosion, burns to mouth and esophagus, abdominal pain, chest pain, nausea, vomiting, diarrhea, seizures. Aspiration of the swallowed or vomited product can cause severe pulmonary complications.

Chronic (Delayed)

- Repeated or prolonged exposure to corrosive materials or fumes may cause gastrointestinal disturbances.

Carcinogenic Effects

- This product does not contain any ingredient designated by IARC, NTP, ACGIH or OSHA as probable or suspected human carcinogens.

Key to abbreviations

LD = Lethal Dose

TC = Toxic Concentration

Section 12 - Ecological Information**12.1 Toxicity**

PHOS ACID 75% TECHNICAL			7664-38-2		
Dosage	Species	Duration	Results	Exposure Conditions	Comments
138 mg/L	Fish: Mosquitofish	96 Hour(s)	LC50	NDA	NDA

12.2 Persistence and degradability

- No data found for product.

12.3 Bioaccumulative potential

- No data found for product.

12.4 Mobility in Soil

- No data found for product.

12.5 Results of PBT and vPvB assessment

- PBT and vPvB assessment has not been carried out.

12.6 Other adverse effects**Ecological Fate**

- No data found for product.

12.7 Other Information

- No specific biodegradation test data located. While acidity of this material is readily reduced in natural waters, the resulting phosphate may persist indefinitely or incorporate into biological systems.

Section 13 - Disposal Considerations**13.1 Waste treatment methods**

Preparation Date: 14/October/2014

Revision Date: 14/October/2014

PHOS ACID 75% TECHNICAL

Product waste

- Dispose of content and/or container in accordance with local, regional, national, and/or international regulations. This material is considered an EPA hazardous waste. EPA "RCRA" Hazardous Waste Code: "C" Corrosive.

Packaging waste

- Dispose of content and/or container in accordance with local, regional, national, and/or international regulations.

Section 14 - Transport Information

	14.1 UN number	14.2 UN proper shipping name	14.3 Transport hazard class(es)	14.4 Packing group	14.5 Environmental hazards
DOT	UN1805	Phosphoric acid solution	NDA	III	NDA
TDG	UN1805	PHOSPHORIC ACID, LIQUID	NDA	III	NDA
IMO/IMDG	UN1805	PHOSPHORIC ACID SOLUTION	NDA	III	NDA
IATA/ICAO	UN1805	Phosphoric Acid, Solution	NDA	III	NDA

14.6 Special precautions for user

- None known.

14.7 Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

- Not relevant.

14.8 Other information

- The listed Transportation Classification does not address regulatory variations due to changes in package size, mode of shipment or other regulatory descriptors.
- DOT • Phosphoric acid has a reportable quantity of 5000 lbs (2270 kg) as listed in Appendix A to 49 CFR 172.101.

Section 15 - Regulatory Information**15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture****SARA Hazard Classifications** • Acute

Inventory						
Component	CAS	Canada DSL	Canada NDSL	China	EU EINECS	EU ELNICS
Phosphoric acid	7664-38-2	Yes	No	Yes	Yes	No

Inventory (Con't)				
Component	CAS	New Zealand	Philippines PICCS	TSCA
Phosphoric acid	7664-38-2	Yes	Yes	Yes

Canada**Labor****Canada - List of Prohibited and Restricted Cosmetic Ingredients (The Cosmetic Ingredient Hotlist)**

- Phosphoric acid 7664-38-2 Not Listed

Canada - WHMIS - Classifications of Substances

- Phosphoric acid 7664-38-2 E (including ≤85%)

Canada - WHMIS - Ingredient Disclosure List

- Phosphoric acid 7664-38-2 1 %

PHOS ACID 75% TECHNICAL

Environment**Canada - 2004 NPRI (National Pollutant Release Inventory)**

• Phosphoric acid	7664-38-2	Not Listed

Canada - 2005 NPRI (National Pollutant Release Inventory)

• Phosphoric acid	7664-38-2	Not Listed

Canada - CEPA - Greenhouse Gases Subject to Mandatory Reporting

• Phosphoric acid	7664-38-2	Not Listed

Canada - CEPA - Priority Substances List

• Phosphoric acid	7664-38-2	Not Listed

Canada - DWQ (Drinking Water Quality) - IMACs

• Phosphoric acid	7664-38-2	Not Listed

Other**Canada - Accelerated Reduction/Elimination of Toxics (ARET)**

• Phosphoric acid	7664-38-2	Not Listed

Canada New Brunswick**Environment****Canada - New Brunswick - Ozone Depleting Substances - Schedule A**

• Phosphoric acid	7664-38-2	Not Listed

Canada - New Brunswick - Ozone Depleting Substances - Schedule B

• Phosphoric acid	7664-38-2	Not Listed

Germany**Environment****Germany - TA Luft - Types and Classes**

• Phosphoric acid	7664-38-2	Not Listed

Germany - Water Classification (VwVwS) - Annex 1

• Phosphoric acid	7664-38-2	Not Listed

Germany - Water Classification (VwVwS) - Annex 2 - Water Hazard Classes

• Phosphoric acid	7664-38-2	ID Number 392, hazard class 1 - low hazard to waters

Germany - Water Classification (VwVwS) - Annex 3

• Phosphoric acid	7664-38-2	Not Listed

Philippines**Other****Philippines - Priority Chemical List**

• Phosphoric acid	7664-38-2	Not Listed

Singapore**Other****Singapore - Corrosive and Explosive Substances - Corrosive Substances**

• Phosphoric acid	7664-38-2	Not Listed

PHOS ACID 75% TECHNICAL

Thailand

Environment

Thailand - Quantities of Chemicals

• Phosphoric acid	7664-38-2	1 mg/m3 Quantities of Chemicals

Thailand - Water Quality Criteria - Maximum Concentration Allowance

• Phosphoric acid	7664-38-2	Not Listed

United States

Labor

U.S. - OSHA - Process Safety Management - Highly Hazardous Chemicals

• Phosphoric acid	7664-38-2	Not Listed

U.S. - OSHA - Specifically Regulated Chemicals

• Phosphoric acid	7664-38-2	Not Listed

Environment

U.S. - CAA (Clean Air Act) - 1990 Hazardous Air Pollutants

• Phosphoric acid	7664-38-2	Not Listed

U.S. - CAA (Clean Air Act) - Class II Ozone Depletors

• Phosphoric acid	7664-38-2	Not Listed

U.S. - CERCLA/SARA - Hazardous Substances and their Reportable Quantities

• Phosphoric acid	7664-38-2	5000 lb final RQ; 2270 kg final RQ

U.S. - CERCLA/SARA - Radionuclides and Their Reportable Quantities

• Phosphoric acid	7664-38-2	Not Listed

U.S. - CERCLA/SARA - Section 302 Extremely Hazardous Substances EPCRA RQs

• Phosphoric acid	7664-38-2	Not Listed

U.S. - CERCLA/SARA - Section 302 Extremely Hazardous Substances TPQs

• Phosphoric acid	7664-38-2	Not Listed

U.S. - CERCLA/SARA - Section 313 - Emission Reporting

• Phosphoric acid	7664-38-2	Not Listed

U.S. - CERCLA/SARA - Section 313 - PBT Chemical Listing

• Phosphoric acid	7664-38-2	Not Listed

Other

U.S. - FDA - Direct Food Additives

• Phosphoric acid	7664-38-2	Not Listed

U.S. - FDA - Food Additives Generally Recognized as Safe (GRAS)

• Phosphoric acid	7664-38-2	21 CFR 182.1073

U.S. - FDA - Total Food Additives List Sourced from EAFUS

133.123, 133.124, 133.129,
133.169, 133.173, 133.178,

PHOS ACID 75% TECHNICAL

• Phosphoric acid	7664-38-2	133.179, 163.110, 163.111, 163.112, 175.300, 177.2260, 178.1010, 178.3520, 182.1073, 73.275, 73.85
U.S. - USDA - National Organic Program - Substances Allowed as Ingredients in or on Organic Processed Products		
• Phosphoric acid	7664-38-2	(cleaning of food-contact surfaces and equipment only)

United States - California**Environment****U.S. - California - Proposition 65 - Carcinogens List**

• Phosphoric acid	7664-38-2	Not Listed

U.S. - California - Proposition 65 - Developmental Toxicity

• Phosphoric acid	7664-38-2	Not Listed

U.S. - California - Proposition 65 - Maximum Allowable Dose Levels (MADL)

• Phosphoric acid	7664-38-2	Not Listed

U.S. - California - Proposition 65 - No Significant Risk Levels (NSRL)

• Phosphoric acid	7664-38-2	Not Listed

U.S. - California - Proposition 65 - Reproductive Toxicity - Female

• Phosphoric acid	7664-38-2	Not Listed

U.S. - California - Proposition 65 - Reproductive Toxicity - Male

• Phosphoric acid	7664-38-2	Not Listed

15.2 Chemical Safety Assessment

- No Chemical Safety Assessment has been carried out.

Section 16 - Other Information**Last Revision Date**

- 14/October/2014

Preparation Date

- 14/October/2014

Disclaimer/Statement of Liability

- The information herein is given in good faith but no warranty, expressed or implied, is made.

Key to abbreviations

NDA = No Data Available

Rennaker, Joanne (DEQ)

From: Shekter Smith, Liane (DEQ)
Sent: Tuesday, October 20, 2015 8:24 AM
To: Krisztian, George (DEQ)
Cc: Sygo, Jim (DEQ); Cook, Pat (DEQ); Prysby, Mike (DEQ); Busch, Stephen (DEQ); Thelen, Mary Beth (DEQ); Shaler, Karen (DEQ); Devereaux, Tracy Jo (DEQ)
Subject: RE: Governor's Update

Our compiled list:

Item 3. – estimate the number of samples. Done. (100 per school).

Item 5. – legislative changes to Part 54 – draft language provided to Maggie on 10/15.

Item 10. – e-mail sent to Director of Shared Services requesting the three target/pilot elementary schools gather preliminary data and provide support for plumbing assessment by LARA staff.

Item 11. – revised draft sampling protocol shared with LARA, DHHS, EPA and GCHD. 10/19.

Item 16. - Scheduled for Wed. 10/21.

Item 19. – EPA comments received on 10/19 regarding Flint's corrosion control treatment plan. Call scheduled between DEQ and EPA scheduled for 10/20 to discuss.

Itemj 23. - Connection with DWSD was completed on Friday 10/16.

From: Krisztian, George (DEQ)
Sent: Monday, October 19, 2015 5:10 PM
To: Cook, Pat (DEQ); Prysby, Mike (DEQ); Busch, Stephen (DEQ)
Cc: Sygo, Jim (DEQ); Shekter Smith, Liane (DEQ)
Subject: Governor's Update
Importance: High

Please submit your action item update for Monday (10/19/15). Please do this first thing Tuesday morning when you get in if you have not already done it.

Thank you
 George

George L. Krisztian
 Flint Action Plan Coordinator
 Laboratory Director
 Michigan Department of Environmental Quality
 Desk ph (517) 284-6719
 Cell ph (517) 204-0381

Rennaker, Joanne (DEQ)

From: Busch, Stephen (DEQ)
Sent: Tuesday, October 20, 2015 8:20 AM
To: Krisztian, George (DEQ); Cook, Pat (DEQ); Prysby, Mike (DEQ)
Cc: Sygo, Jim (DEQ); Shekter Smith, Liane (DEQ)
Subject: RE: Governor's Update

Update from 10/19.

11. Comments being taken on draft protocol.

16. Scheduled for Wed. 10/21.

19. Received EPA comments. Call with EPA scheduled for 10/20.

23. was completed on Friday 10/16.

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

From: Krisztian, George (DEQ)
Sent: Monday, October 19, 2015 5:10 PM
To: Cook, Pat (DEQ); Prysby, Mike (DEQ); Busch, Stephen (DEQ)
Cc: Sygo, Jim (DEQ); Shekter Smith, Liane (DEQ)
Subject: Governor's Update
Importance: High

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Subject: Governor's Update
Importance: High

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Thank you
 George

George L. Krisztian
 Flint Action Plan Coordinator
 Laboratory Director
 Michigan Department of Environmental Quality
 Desk ph (517) 284-6719
 Cell ph (517) 204-0381

Rennaker, Joanne (DEQ)

From: Prysby, Mike (DEQ)
Sent: Monday, October 19, 2015 7:38 PM
To: Shekter Smith, Liane (DEQ)
Cc: Busch, Stephen (DEQ)
Subject: Preliminary and Deliberative: Reconditioning the 72-inch pipeline

George,

The flush water from the pipeline (3.5 mgal) was sent to the Dort Reservoir. Flint WTP staff will hold the highly chlorinated water till it is dechlorinated w. Thiosulfate and can be discharged to the storm sewer. Another potential option is to pump the water out via trash pumps and temporary above ground piping to the sanitary sewer. I will follow up regarding the status of this; however, it does not affect the city's ability to provide water from Detroit to their customers.

Sent from my iPhone

On Oct 19, 2015, at 5:18 PM, Shekter Smith, Liane (DEQ) <SHEKTERL@michigan.gov> wrote:

Mike – I'm not seeing a follow-up e-mail to George on this. Could you please respond? Thanks.

From: Krisztian, George (DEQ)
Sent: Thursday, October 15, 2015 10:38 AM
To: Prysby, Mike (DEQ)
Cc: Sygo, Jim (DEQ); Shekter Smith, Liane (DEQ)
Subject: RE: Recommissioning the 72-inch transmission main
 Mike,
 How is the flush water being disposed? Do we have an answer to that?
 George
 George L. Krisztian
 Flint Action Plan Coordinator
 Laboratory Director
 Michigan Department of Environmental Quality
 Desk ph (517) 284-6719
 Cell ph (517) 204-0381

From: Prysby, Mike (DEQ)
Sent: Thursday, October 15, 2015 10:31 AM
To: Howard Croft (hcroft@cityofflint.com); Michael Glasgow; 'bwright@cityofflint.com'; Tim Davidek (T_DAVIDEK@gcdcwws.com); jfobrien@gcdcwws.com; "mhorgan@gcdcwws.com".GWIA.SOM-GWIA01; Krisztian, George (DEQ); Shekter Smith, Liane (DEQ); Busch, Stephen (DEQ); Benzie, Richard (DEQ); Rosenthal, Adam (DEQ)
Subject: Recommissioning the 72-inch transmission main
 Based upon discussions with Genesee County and the city of Flint, the portion of the 72-inch transmission main (pipeline) that was taken out of service, while the Flint Water Treatment Plant (WTP) treated water from the Flint River, was flushed and disinfected in accordance to AWWA Standard C651-14. Two sets of samples were collected from two locations 16 hours apart for total coliform analysis. The city of Flint and Genesee County has informed the DEQ that both sets of samples are Non-Detect for

total coliform. Based upon the disinfection procedure and the absence of total coliform from both sets of samples, the un-used portion of the pipeline may be placed into service.

Michael Prysby, P.E.

District Engineer

Office of Drinking Water and Municipal Assistance

517 290-8817

Rennaker, Joanne (DEQ)

From: Howard Croft <hcroft@cityofflint.com>
Sent: Monday, October 19, 2015 7:06 PM
To: Amy Hovey; Andy Leavitt; Anthony Chubb; Brent Wright; Darren Lytle; Dayne Walling; donna. cole; Dykema, Linda D. (DHHS); Wells, Eden (DHHS); edwardsm; Krisztian, George (DEQ); Gerald (Jed) Natzke; Howard Croft; James Henry; Jamie Gaskin; Jason Lorenz; jmikewright; JoAnne Herman; John O'Brien; Kevin J. Keane; Kirk Smith; larry.koehler@mcc.edu; Laura Sullivan; Lawrence Reynolds; Lawrence Reynolds; Michael Glasgow; Schock, Michael; Michael Wright; Mike Lane; Prysby, Mike (DEQ); MVALACAK@gchd.us; Natasha Henderson; Norb Birchmeier; Pete Levine; Robert Bincsik; rosejo@msu.edu; Russell Hudson; Samir Matta; Sean Kammer; Busch, Stephen (DEQ); Thompson, Sheryl D. (DHHS); Warren Green
Subject: Quarterly Report Review
Attachments: 3rd Quarter CoF Water Quality Report (2).pdf

All,

I am circulating a final version of our first quarterly water report that is ready to go to the printer. We modified it due to the fact that the switch has occurred in order to reflect a more timely report.

Please feel free to take a final look and return any comments as we can still make adjustments if needed. We decided to direct residents to the website to review the timeline and keep the focus on the most recent quarterly news.

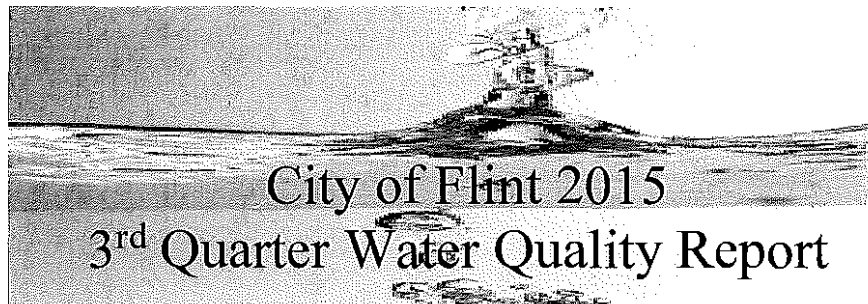
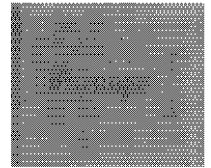
After a final review we intend to release this to the City Council at the next DPW Committee meeting which is this Wednesday. That version will also go to the printer.

Thank you,

--

Howard Croft
 Public Works Director
 City of Flint
 1101 S. Saginaw Street
 Flint, MI 48502
 PH# 810.766.7135 Ext.2043
hcroft@cityofflint.com

Customer Service Center
City Hall
1101 S. Saginaw St.
Flint, MI 48501



The Quarterly Water Quality Report provides important information about your drinking water. This report includes information about the water source, current drinking water issues, lead information, water filters, 3rd quarter work accomplished, and a water timeline of events. The City of Flint Department of Utilities is dedicated to providing quality drinking water to the residents of the community. The Flint Water Plant operates and maintains a certified drinking water laboratory to assure compliance with all state and federal regulations, and is committed to prompt and thorough notification to the consumers if there is any reason for concern about the quality of the drinking water. Information about your drinking water is available on the City of Flint web page at www.cityofflint.com or by calling the City of Flint Water Plant at (810) 787-6537. The Safe Drinking Water Hotline at (800) 426-4791 is a resource for health related questions and water quality issues. General drinking water information can also be found on the U.S. Environmental Protection Agency (EPA) web site at www.epa.gov/safewater/.

Water Source

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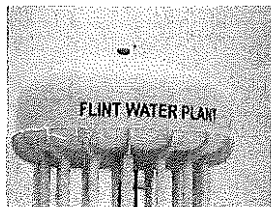
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In order to make the transition possible, the City contributed \$2 Million dollars, the Mott Foundation contributed \$4 Million dollars, and the State of Michigan contributed \$ 6 Million dollars.

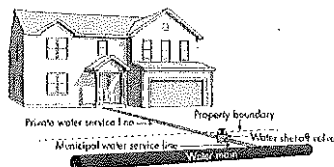
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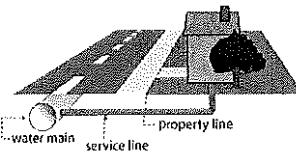
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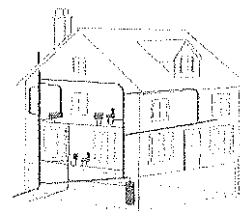
No lead in water
leaving the
Treatment Plant.



Little or no lead in
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transmission mains.



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Temporary issues to be aware of when Changing Water Sources

Changing water sources back to Detroit will not fully eliminate the lead concerns. The potential for lead to leach off of certain water service lines or household plumbing will continue to exist regardless of the water source. The City is committed to increased testing, better communication, and developing a lead service line map to identify all of the City owned lead service lines.

As the city changes water sources you can expect the following:

- It could take up to three weeks for the switch in water source to reach all taps in the City.
- Over the next several weeks, we will be winterizing our hydrants which will result in discoloration of the water but will also help accelerate the water flowing through the system.
- Lead will continue to leach off of certain service lines and household plumbing.
- Main breaks could result as a change in source water occurs.
- Water could have discoloration or cloudiness, if this happens, run your faucet until the water clears, if this lasts longer than 20 minutes please report it to our water service center at (810)-766-7202.

Water Timeline

A timeline of events, beginning with signing the KWA contract leading up to the current status of switching back to our previous source of water is available on the City website and can be found by visiting the “water” page located under “residents”. Please email flintwater@cityofflint.com with your questions or to request a water test or, call the Water Plant at (810)-787-6537.

3rd Quarter Events

July

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August

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- Leak Detection on all 600 miles of the distribution system has started and is over halfway complete. Several dozen leaks have been identified and repairs continue as more leaks are found. This has decreased the amount of water loss existing in the system.
- Construction of a load out facility at our wastewater plant is on target for completion by November and will allow the City to eliminate the use of the incinerator resulting in significant annual savings.
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Request a tour of the Plant.

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Inquiries related to wastewater treatment.

Inquiries related to converting methane gas into energy.

Customer Service – (810)-766-7015

Questions about your water & sewer bill.

Water Filters – 211

Questions about water filters.

2015 3rd Quarter Regulated Detected Contaminants – Flint River as Source

Inorganic & Organic Chemicals, Metals, and Pesticides – Monitored at treatment plant						
Regulated Contaminant	Unit of Measure	MCLG	MCL	Highest Level Detected	Range of Detection	Violation
Inorganic Chemicals						
Fluoride	mg/L	4	4	0.84	0.64 – 0.84	No
Nitrate	mg/L	10	10	N.D.	N/A	No
Metals						
Barium	mg/L	2	2	0.02	N/A	No

More than 100 other chemicals were monitored from July through September that were not detected.

The various classification groups of these chemicals include metals, carbamates, herbicides, pesticides, organics, and radiologicals.

Total Organic Carbon, TOC - Monitored at treatment plant			
Regulated Contaminant	Required Monthly % Removal	Minimum Monthly % Removal	Monthly % Removal Ranges
Total Organic Carbon	50	60	60 - 87

Turbidity - Monitored at treatment plant		
Highest Single Measurement (Cannot exceed 1NTU)	Lowest Monthly % of Samples Meeting Turbidity Limit (0.3 NTU in 95% of samples)	Violation
0.18	100 %	No

Disinfectant Residuals – Monitored in the distribution system						
Regulated Contaminant	Unit of Measure	MCLG	MCL	Highest Level Detected	Range of Detection	Violation
Total Chlorine Residual	mg/L	4.0	4.0	4.0	0.2 – 4.0	No

Microbiological Contaminants - Monitored in the distribution system				
Regulated Contaminant	MCLG	MCL	Highest Number detected (in 1 month)	Violation
Total Coliform bacteria	0	The presence of coliform bacteria in > 5% of monthly samples	1	No
<i>E. coli</i> Bacteria	0	0	0	No

Lead & Copper – Monitored from consumers tap					
Regulated Contaminant	Unit of Measure	MCLG	Action Level AL	Number of samples over AL	Total # of Samples Tested from January - September
Lead	ug/L	0	15	16	189
Copper	mg/L	1.3	1.3	0	189

Disinfection By-Products - Monitored in the distribution system and from treatment plant						
Regulated Contaminant	Unit of Measure	MCLG	MCL	Highest Level Detected	Range of Detection	Violation
Total Trihalomethanes (TTHM)	ug/L	n/a	80	90.3	42.6 – 90.3	N/A*
Haloacetic Acids (HAA)	ug/L	n/a	60	15.0	2.0 – 15.0	N/A*
Bromate	ug/L	10	10	N.D.	N/A	N/A*

*Violation based on locational running annual average for TTHM & HAA5, violation for bromate based on yearly average.

Key to the Detected Contaminant Tables		
Symbol	Abbreviation for	Definition/Explanation
>	Greater than	
AL	Action Level	The concentration of a contaminant, which, if exceeded, triggers treatment or other requirements which a water system must follow.
HAA5	Haloacetic Acids	HAA5 is the total of bromoacetic, chloroacetic, dibromoacetic, dichloroacetic, and trichloroacetic acids. Compliance is based on the total.
LRAA	Locational Running Annual Average	
MCL	Maximum Contaminant Level	The highest level of a contaminant that is allowed in water. MCLs are set as close to the MCLG's as feasible using the best available treatment technology.
MCLG	Maximum Contaminant Level Goal	The level of contaminant in drinking water below which there is no known or expected risk to health.
mg/L	Milligrams per Liter	A milligram = 1/1000 gram 1 milligram per liter is equal to 1ppm
MRDL	Maximum Residual Disinfectant Level	The highest level of disinfectant allowed in drinking water. There is convincing evidence that addition of a disinfectant is necessary for control of microbial contaminants.
MRDLG	Maximum Residual Disinfectant Level Goal	The level of a drinking water disinfectant below which there is no known or expected risk to health. MRDLG's do not reflect the benefits of the use of disinfectants to control microbial contaminants.
n/a	Not Applicable	
ND	Not Detected	
NTU	Nephelometric Turbidity Units	Measures the cloudiness of water.
pCi/L	Picocuries per Liter	A measure of radioactivity. Picocurie (pCi) means the quantity of radioactive material producing 2.22 nuclear transformations per minute.
ppb	Parts Per Billion (one in one billion)	The ppb is equivalent to micrograms per liter. A microgram = 1/1000 milligram.
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TT	Treatment Technique	A required process intended to reduce the level of a contaminant in drinking water.
TTHM	Total Trihalomethanes	Total Trihalomethanes is the sum of chloroform, bromodichloromethane, dibromochloromethane and bromoform. Compliance is based on total.
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Rennaker, Joanne (DEQ)

From: Howard Croft <hcroft@cityofflint.com>
Sent: Monday, October 19, 2015 7:06 PM
To: Amy Hovey; Andy Leavitt; Anthony Chubb; Brent Wright; Darren Lytle; Dayne Walling; donna. cole; Dykema, Linda D. (DHHS); Wells, Eden (DHHS); edwardsm; Krisztian, George (DEQ); Gerald (Jed) Natzke; Howard Croft; James Henry; Jamie Gaskin; Jason Lorenz; jmikewright; JoAnne Herman; John O'Brien; Kevin J. Keane; Kirk Smith; larry.koehler@mcc.edu; Laura Sullivan; Lawrence Reynolds; Lawrence Reynolds; Michael Glasgow; Schock, Michael; Michael Wright; Mike Lane; Prysby, Mike (DEQ); MVALACAK@gchd.us; Natasha Henderson; Norb Birchmeier; Pete Levine; Robert Bincsik; rosejo@msu.edu; Russell Hudson; Samir Matta; Sean Kammer; Busch, Stephen (DEQ); Thompson, Sheryl D. (DHHS); Warren Green
Subject: Quarterly Report Review
Attachments: 3rd Quarter CoF Water Quality Report (2).pdf

All,

I am circulating a final version of our first quarterly water report that is ready to go to the printer. We modified it due to the fact that the switch has occurred in order to reflect a more timely report.

Please feel free to take a final look and return any comments as we can still make adjustments if needed. We decided to direct residents to the website to review the timeline and keep the focus on the most recent quarterly news.

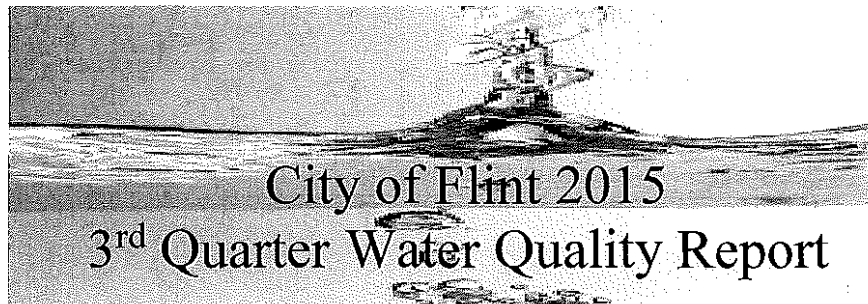
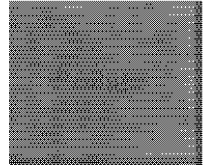
After a final review we intend to release this to the City Council at the next DPW Committee meeting which is this Wednesday. That version will also go to the printer.

Thank you,

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Howard Croft
 Public Works Director
 City of Flint
 1101 S. Saginaw Street
 Flint, MI 48502
 PH# 810.766.7135 Ext.2043
hcroft@cityofflint.com

Customer Service Center
City Hall
1101 S. Saginaw St.
Flint, MI 48501



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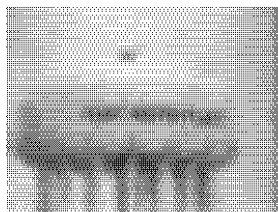
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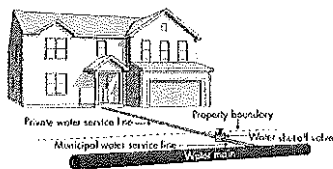
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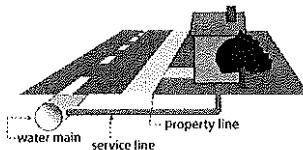
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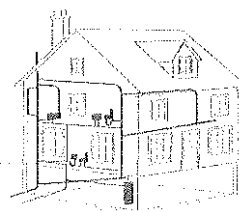
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Questions about water filters.

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Total Chlorine Residual	mg/L	4.0	4.0	4.0	0.2 – 4.0	No

Microbiological Contaminants - Monitored in the distribution system				
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*Violation based on locational running annual average for TTHM & HAA5, violation for bromate based on yearly average.

Key to the Detected Contaminant Tables		
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Rennaker, Joanne (DEQ)

From: Howard Croft <hcroft@cityofflint.com>
Sent: Monday, October 19, 2015 6:59 PM
To: Amy Hovey; Andy Leavitt; Anthony Chubb; Brent Wright; Darren Lytle; Dayne Walling; donna. cole; Dykema, Linda D. (DHHS); Wells, Eden (DHHS); edwardsm; Krisztian, George (DEQ); Gerald (Jed) Natzke; Howard Croft; James Henry; Jamie Gaskin; Jason Lorenz; jmikewright; JoAnne Herman; John O'Brien; Kevin J. Keane; Kirk Smith; larry.koehler@mcc.edu; Laura Sullivan; Lawrence Reynolds; Lawrence Reynolds; Michael Glasgow; Schock, Michael; Michael Wright; Mike Lane; Prysby, Mike (DEQ); MVALACAK@gchd.us; Natasha Henderson; Norb Birchmeier; Pete Levine; Robert Bincsik; rosejo@msu.edu; Russell Hudson; Samir Matta; Sean Kammer; Busch, Stephen (DEQ); Thompson, Sheryl D. (DHHS); Warren Green
Subject: TAC Update 10_19_15
Attachments: TAC Update 10_19_15.pdf; Monthly Report March_2013_DWSD Water.pdf; Monthly Report September_2015_Filnt River.pdf

All,

Here is the weekly update for the Technical Advisory Team.

Please note that we are tentatively scheduling the next meeting for Wednesday November 11th at City Hall at 2:00. I will look for feedback from everyone on their ability to make it, there will be a call in number available with better reception.

We are open for input on this report, I expect to have a regular data format available by next week. In this report I have included the last Monthly report that we sent to the state while previously on DWSD water (March 2014) and the last Monthly report we sent while on the river (September 2015).

I have tried to make sure that everyone is included on this email list, if there is an omission please let me know.

Thank you,

--

Howard Croft
 Public Works Director
 City of Flint
 1101 S. Saginaw Street
 Flint, MI 48502
 PH# 810.766.7135 Ext.2043
hcroft@cityofflint.com



City of Flint Technical Advisory Committee - Weekly Report

October 19, 2015

Last meeting: 10-7-15

Next meeting: 11-11-15, 2:00 pm (tentative)

I. Overview –

Water from Detroit is now flowing into the Flint system. The final valve was actuated last Friday at approximately 5:00 pm and as of Monday morning we are drawing 15 – 16 Mgd from Detroit. The transition was seamless and without incident, the operational team did a tremendous job in executing the plan in such a short timeframe.

- Please note that we are tentatively scheduling the next Technical Advisory Meeting to be held at City Hall on Wednesday November 11th 2015 at 2:00. Please RSVP, there will be a call in number available.

II. New Issues this week

A. Task Groups

1. **Technical Advisory Committee** – Continuance of weekly reports and development of a format to report test data.
2. **Task Force** – Working in conjunction with the DEQ on additional protocols.
3. **Corrosion Control** – Final design has been submitted to the DEQ.
4. **Staffing** – Evaluation of personnel needed to run the Plant under current conditions without compromising the need for qualified operators in less than a year.

B. Public Education

- Working to finalize additional communication means and materials.

III. Ongoing Issues of concern or in process

Issue	Description	Action Item	Owner
Corrosion Control	To help rebuild bio-film	LAN has sent the final design to MDEQ for approval. Copies are included as part of this report.	LAN
Transfer Station	Buffer for water supply from KWA	Engineers are starting design and identifying the lead time items.	LAN
Surge Protection	Water hammer and transient events causing main breaks	Waiting for final results of leak detection	City Staff
Prep for KWA	Design and installation of final improvements needed	See Item IV	LAN/City
High water loss	Current avg. usage is ~15.5 Mgd	Replacing meters, performing leak detection, pursuing theft to narrow down cause	City Staff
Bray Rd. Lime sludge removal	Remediation of site required by consent decree	Will not be needed when using Detroit water but consent decree is still in effect.	City Staff
Hydraulic Model	Filling with data	Need to verify broken valve locations for model to be accurate.	LAN/City
SCADA Upgrades	Used to develop automation within the system.	First phases went in in FY15 second and final phase due to be installed prior to KWA's arrival.	City Staff

IV. Needs for treating and using water from KWA

- A. Design and construction of transfer station to Dort Reservoir
 - Needed to buffer the volume of water that KWA is capable of delivering prior to their reservoir tank being activated (most significant item & longest lead time).
- B. Raw water line to pump station #4
 - Needed to connect into existing 72" for raw water to reach the Plant.
- C. Phosphoric acid feed system
 - Needed for corrosion control.
- D. Alum feed system
 - Needed for coagulant change to raw water and to reduce chloride.

** I will eventually put this information into a chart format in order to better track the progress of each item.*

V. Accomplishments

- A. We continue with the leak detection by "echologics" that was a \$900,000 spend on a Distressed City Grant from Treasury. To date there have been over four dozen leaks detected that range from minor (1.5 gpm) to moderate (3.4 gpm).

VI. Testing Data

- A. In this update I have included the last monthly operating report that was sent to DEQ when using water from DWSD (March 2013) and the last monthly report when using water from the Flint River (September 2015).
- B. We will be developing a format that allows for weekly data to be included in this report within the next few days.
- C. I have included a link to our map series that shows the results of the lead testing that we have been doing and a link to the map showing the service lines. Both maps will be regularly updated.

WSSN: 2310

Date	Million Gallons Treated	Ozone Dosage (mg/L)	Ferric as Fe3+ mg/L	Lime Dosage (mg/L)	PW-340 Cationic Polymer Dosage (mg/L)	P-142PWG Anionic Polymer Dosage (mg/L)	Turbidity, Units				
							Raw			Plate Settler	Applied
							Number of Samples	Avg.	Max.	Effluent Avg.	Applied Avg.
1	18.2	5.6	12.8	161.5	5.2	0.75	6	7.0	7.8	5.15	1.41
2	17.6	5.6	14.0	175.0	4.8	0.79	6	9.7	24.1	5.46	1.61
3	17.5	6.3	13.4	170.3	4.8	0.73	6	7.7	8.6	5.54	1.46
4	17.2	6.2	14.9	174.7	5.1	0.76	6	10.6	12.0	5.32	1.34
5	15.9	5.1	18.1	158.2	5.6	0.85	6	13.4	22.3	5.34	1.31
6	15.7	5.7	18.3	157.7	5.7	0.86	6	12.3	21.8	6.40	1.37
7	15.1	4.5	19.2	161.1	5.9	0.87	6	10.1	12.4	6.25	1.45
8	14.5	2.9	18.4	172.4	6.3	0.92	6	15.6	23.0	6.55	1.45
9	14.5	2.9	17.9	167.3	6.3	0.93	6	14.3	24.5	6.65	1.42
10	14.4	2.8	18.8	165.6	6.3	0.94	6	13.9	22.4	6.08	1.43
11	14.3	2.7	18.5	160.2	6.5	0.88	6	10.9	12.6	6.54	1.37
12	14.2	2.7	17.5	156.9	6.5	0.85	6	12.0	18.8	6.78	1.80
13	14.2	2.6	16.3	158.7	6.6	0.85	6	11.0	11.3	7.03	1.40
14	14.1	2.6	17.1	154.7	6.6	0.83	6	10.4	12.6	6.78	1.40
15	14.2	2.7	17.9	157.3	6.7	0.77	6	23.6	38.9	6.93	1.34
16	14.2	3.3	16.9	175.9	6.6	0.81	6	16.1	32.2	9.76	1.32
17	14.2	3.3	19.5	167.1	6.6	0.77	6	12.5	22.8	6.10	1.50
18	14.7	3.8	20.6	164.6	6.4	0.71	6	8.9	11.3	7.43	1.29
19	14.8	2.8	20.7	161.3	6.5	0.71	6	8.2	11.1	7.32	1.2
20	14.6	3.2	21.1	139.9	6.5	0.63	6	8.9	13.0	7.72	1.04
21	14.9	4.0	17.7	139.6	6.3	0.67	6	8.7	11.1	7.94	1.71
22	14.9	4.0	18.5	152.0	6.3	0.87	6	7.0	8.2	7.52	1.28
23	14.9	4.0	17.9	174.2	6.4	0.86	6	8.3	11.5	8.11	1.22
24	15.2	5.0	18.0	161.6	6.2	0.76	6	6.8	9.4	8.13	1.30
25	15.3	5.0	17.8	174.0	5.7	0.86	6	14.2	21.2	7.68	1.29
26	15.2	5.0	17.7	142.7	5.7	0.84	6	15.6	27.7	7.46	2.88
27	15.2	5.0	17.6	156.7	5.7	0.87	6	10.0	11.2	7.28	1.02
28	15.4	4.9	17.0	149.0	5.7	0.80	6	12.1	19.1	7.38	1.24
29	15.6	4.9	16.9	153.7	5.7	0.80	6	14.4	20.7	6.82	1.10
30	15.9	4.7	16.9	169.7	5.6	0.81	6	13.3	19.9	7.72	1.38

[illegible]

Filter turbidity

City of Flint Water Treatment Plant

September 2015

Page 3

WSSN: 2310

Date	Turbidity, Units												
	Confluence Point. No.1 (N) North						Confluence Point. No.2 (S) South						Point of Entry
	Number of Samples	Avg.	Max	No. of 4 Hr. Compliance periods	No. of 4 Hr. Compliance periods >0.3 NTU	No. of Samples >0.3 NTU	Number of Samples	Avg.	Max	No. of 4 Hr. Compliance periods	No. of 4 Hr. Compliance periods >0.3 NTU	No. of Samples >0.3 NTU	Plant Tap NTU
1	6	0.11	0.13	6	0	0	6	0.11	0.11	6	0	0	0.10
2	6	0.11	0.13	6	0	0	6	0.11	0.13	6	0	0	0.10
3	6	0.10	0.14	6	0	0	6	0.10	0.10	6	0	0	0.09
4	6	0.11	0.13	6	0	0	6	0.10	0.11	6	0	0	0.10
5	6	0.10	0.12	6	0	0	6	0.11	0.12	6	0	0	0.09
6	6	0.10	0.10	6	0	0	6	0.10	0.10	6	0	0	0.10
7	6	0.11	0.12	6	0	0	6	0.10	0.11	6	0	0	0.09
8	6	0.10	0.13	6	0	0	6	0.09	0.10	6	0	0	0.09
9	6	0.10	0.11	6	0	0	6	0.10	0.10	6	0	0	0.09
10	6	0.10	0.12	6	0	0	6	0.09	0.10	6	0	0	0.09
11	6	0.10	0.11	6	0	0	6	0.11	0.12	6	0	0	0.09
12	6	0.12	0.16	6	0	0	6	0.11	0.12	6	0	0	0.10
13	6	0.12	0.12	6	0	0	6	0.11	0.12	6	0	0	0.10
14	6	0.11	0.14	6	0	0	6	0.11	0.14	6	0	0	0.10
15	6	0.11	0.12	6	0	0	6	0.11	0.12	6	0	0	0.10
16	6	0.10	0.12	6	0	0	6	0.10	0.11	6	0	0	0.09
17	6	0.10	0.11	6	0	0	6	0.09	0.11	6	0	0	0.09
18	6	0.09	0.11	6	0	0	6	0.09	0.10	6	0	0	0.09
19	5	0.08	0.09	5	0	0	5	0.07	0.08	5	0	0	0.08
20	6	0.08	0.10	6	0	0	6	0.08	0.09	6	0	0	0.08
21	6	0.09	0.09	6	0	0	6	0.09	0.14	6	0	0	0.08
22	6	0.10	0.12	6	0	0	6	0.10	0.12	6	0	0	0.09
23	6	0.09	0.10	6	0	0	6	0.09	0.10	6	0	0	0.09
24	6	0.09	0.11	6	0	0	6	0.08	0.10	6	0	0	0.08
25	6	0.10	0.10	6	0	0	5	0.09	0.10	5	0	0	0.09
26	6	0.10	0.12	6	0	0	6	0.10	0.14	6	0	0	0.09
27	6	0.09	0.09	6	0	0	6	0.09	0.10	6	0	0	0.09
28	6	0.09	0.10	6	0	0	6	0.09	0.10	6	0	0	0.08
29	6	0.10	0.11	6	0	0	6	0.09	0.10	6	0	0	0.09
30	6	0.09	0.09	6	0	0	6	0.09	0.10	6	0	0	0.08
Avg.	6	0.10	0.11	6	0	0	6	0.10	0.11	6	0	0	
Max.	6	0.12	0.16	6	0	0	6	0.11	0.14	6	0	0	0.10
Min.	5	0.08	0.09	5	0	0	5	0.07	0.08	5	0	0	

Rennaker, Joanne (DEQ)

From: Shekter Smith, Liane (DEQ)
Sent: Monday, October 19, 2015 5:18 PM
To: Prysby, Mike (DEQ); Busch, Stephen (DEQ)
Subject: FW: Recommissioning the 72-inch transmission main

Mike – I'm not seeing a follow-up e-mail to George on this. Could you please respond? Thanks.

From: Krisztian, George (DEQ)
Sent: Thursday, October 15, 2015 10:38 AM
To: Prysby, Mike (DEQ)
Cc: Sygo, Jim (DEQ); Shekter Smith, Liane (DEQ)
Subject: RE: Recommissioning the 72-inch transmission main

Mike,

How is the flush water being disposed? Do we have an answer to that?

George

George L. Krisztian
 Flint Action Plan Coordinator
 Laboratory Director
 Michigan Department of Environmental Quality
 Desk ph (517) 284-6719
 Cell ph (517) 204-0381

From: Prysby, Mike (DEQ)
Sent: Thursday, October 15, 2015 10:31 AM
To: Howard Croft (hcroft@cityofflint.com); Michael Glasgow; 'bwright@cityofflint.com'; Tim Davidek (T_DAVIDEK@gcdcwws.com); jfobrien@gcdcwws.com; "mhorgan@gcdcwws.com".GWIA.SOM-GWIA01; Krisztian, George (DEQ); Shekter Smith, Liane (DEQ); Busch, Stephen (DEQ); Benzie, Richard (DEQ); Rosenthal, Adam (DEQ)
Subject: Recommissioning the 72-inch transmission main

Based upon discussions with Genesee County and the city of Flint, the portion of the 72-inch transmission main (pipeline) that was taken out of service, while the Flint Water Treatment Plant (WTP) treated water from the Flint River, was flushed and disinfected in accordance to AWWA Standard C651-14. Two sets of samples were collected from two locations 16 hours apart for total coliform analysis. The city of Flint and Genesee County has informed the DEQ that both sets of samples are Non-Detect for total coliform. Based upon the disinfection procedure and the absence of total coliform from both sets of samples, the un-used portion of the pipeline may be placed into service.

Michael Prysby, P.E.

District Engineer
Office of Drinking Water and Municipal Assistance
517 290-8817

Rennaker, Joanne (DEQ)

From: Krisztian, George (DEQ)
Sent: Monday, October 19, 2015 5:14 PM
To: Busch, Stephen (DEQ); Cook, Pat (DEQ); Prysby, Mike (DEQ); Pallone, Maggie (DEQ)
Cc: Sygo, Jim (DEQ); Shekter Smith, Liane (DEQ)
Subject: Action Items table for the week of October 19th
Attachments: 2015-10-19 Action Steps Week of October 19-23.pdf
Importance: High

Attached are the action steps for this week.

George

George L. Krisztian
Flint Action Plan Coordinator
Laboratory Director
Michigan Department of Environmental Quality
Desk ph (517) 284-6719
Cell ph (517) 204-0381

City of Flint Water Action Steps for Week of October 19-23

Step No.	Action Step	Involved Parties	DEQ Point(s) of Contact	Status
1.	Update 2004 letter to EPA	DEQ	Dana DeBruyn	
2.	Schedule Flint Water Treatment Plant tour	DEQ and Flint	George Krisztian	To be scheduled for week of 10/19/15; waiting on confirmation from Flint
3.	Figure out number of samples from schools and child care facilities	DEQ	Jim Sygo Pat Cook Steve Busch	
4.	Conduct After Action Plan	DEQ	George Krisztian	Initial meeting to be scheduled for week of 10/19/15
5.	Introduce legislative changes to Part 54 of NREPA – Drinking Water Revolving Loan Fund	DEQ, Treasury, and EPA	Maggie Pallone George Krisztian Sonya Butler	
6.	After Action Review Panel	DEQ	Madhu Anderson George Krisztian Karen Tommasulo	
7.	Staff hiring plan	DEQ	Jim Sygo Maggie Pallone George Krisztian	
8.	\$1 million for DEQ Laboratory billing code	DEQ	Maggie Pallone George Krisztian	
9.	Finalize fiscal year 2017 budget request	DEQ	Maggie Pallone George Krisztian	

Step No.	Action Step	Involved Parties	DEQ Point(s) of Contact	Status
10.	Develop letter to schools	DEQ	Jim Sygo Steve Busch Pat Cook Mike Prysby	
11.	Finalize sampling protocol	DEQ	Jim Sygo Steve Busch Pat Cook Mike Prysby	
12.	Confirm school sampling logistics	DEQ	Jim Sygo Steve Busch Pat Cook Mike Prysby	
13.	Meeting(s) with school staff/management	DEQ	Jim Sygo Steve Busch Pat Cook Mike Prysby	
14.	Complete Non-Transient Non-Community Water Supply letter	DEQ	Jim Sygo Steve Busch Pat Cook Mike Prysby	
15.	Meet with DHHS and discuss all lead education material for schools	DEQ and DHHS	Jim Sygo Steve Busch Pat Cook Mike Prysby	
16.	ODWMA staff observe a DLARA plumbing assessment	DEQ and DLARA	Jim Sygo Steve Busch Pat Cook Mike Prysby	

Step No.	Action Step	Involved Parties	DEQ Point(s) of Contact	Status
17.	Develop sample form and chain of custody document	DEQ	Jim Sygo Steve Busch Pat Cook Mike Prysby	
18.	Provide Director Wyant with revised Part 54 language	DEQ	Jim Sygo Steve Busch Pat Cook Mike Prysby	
19.	Review corrosion control treatment plan and get any EPA comments	DEQ and EPA	Jim Sygo Steve Busch Pat Cook Mike Prysby	
20.	Review construction permit application and issue construction permit for phosphate equipment	DEQ	Jim Sygo Steve Busch Pat Cook Mike Prysby	
21.	Review Standby Operation of Flint Water Treatment Plant with city of Flint	DEQ and Flint	Jim Sygo Steve Busch Pat Cook Mike Prysby	
22.	Provide city of Flint updated monitoring schedule based on Detroit Water and Sewerage Department (DWSD)/Great Lakes Water Authority (GLWA) service	DEQ and Flint	Jim Sygo Steve Busch Pat Cook Mike Prysby	
23.	Contact city of Flint and Genesee County daily for DWSD connection status updates	DEQ, Flint, and Genesee County	Jim Sygo Steve Busch Pat Cook Mike Prysby	

Step No.	Action Step	Involved Parties	DEQ Point(s) of Contact	Status
24.	Work with Karegnondi Water Authority (KWA) and other agencies to address bottleneck issues	DEQ and KWA	Jim Sygo Steve Busch Pat Cook Mike Prysby	
25.	Verify city of Flint distribution operations under DWSD/GLWA service	DEQ	Jim Sygo Steve Busch Pat Cook Mike Prysby	
26.	Contact city of Flint for Service Line Record status update and obtain a copy of the records to date	DEQ and Flint	Jim Sygo Steve Busch Pat Cook Mike Prysby	
27.	Provide DHHS with any available cross-reference information	DEQ and DHHS	Jim Sygo Steve Busch Pat Cook Mike Prysby	
28.	Develop childcare facility guidance or review DHHS related materials	DEQ and DHHS	Jim Sygo Steve Busch Pat Cook Mike Prysby	

Rennaker, Joanne (DEQ)

From: Krisztian, George (DEQ)
Sent: Monday, October 19, 2015 4:23 PM
To: Sygo, Jim (DEQ); Wurfel, Brad (DEQ); Pallone, Maggie (DEQ); Tommasulo, Karen (DEQ)
Cc: Wyant, Dan (DEQ); Shekter Smith, Liane (DEQ); Thelen, Mary Beth (DEQ); Shaler, Karen (DEQ); Prysby, Mike (DEQ); Busch, Stephen (DEQ); Cook, Pat (DEQ)
Subject: Follow up conversation with Howard Croft

I checked in with Howard from the City of Flint today to find out how the transition to Detroit water was going. He indicated that Flint switched over in a controlled manner so as to minimize disruptions in the infrastructure. He said that the transition went very smoothly and that Flint is on Detroit water 100%.

Howard also indicated that they would be doing testing throughout the distribution system and they would be focusing on hardness levels to determine the extent to which the Detroit water had made it through the system. He anticipated that it would be a full week before there was a complete turnover of the source water.

George

George L. Krisztian
Flint Action Plan Coordinator
Laboratory Director
Michigan Department of Environmental Quality
Desk ph (517) 284-6719
Cell ph (517) 204-0381

Rennaker, Joanne (DEQ)

From: Wyant, Dan (DEQ)
Sent: Monday, October 19, 2015 3:59 PM
Subject: Information on the City of Flint's Drinking Water and Announcement of Interim Chief for ODWMA - Message from Director Dan Wyant

Dear Colleagues:

I know you have all heard a lot lately about the drinking water situation in Flint, and I want to update you on recent developments.

Today, I released a statement announcing Chief Deputy Director Jim Sygo will immediately assume the role of interim chief of the Office of Drinking Water and Municipal Assistance.

As details of the situation have emerged, it has become apparent staff made a mistake while working with the city of Flint. Simply stated, staff employed a federal protocol they believed was appropriate, and it was not. However, I am convinced our program staff believed they were doing their job correctly, and simply did not have the experience with the particular issue of corrosion control in cities of more than 50,000 people.

Today's actions were the result of a long process. In the spring of 2013, the city of Flint announced it would leave the Detroit Water and Sewerage Department (DWSD) in favor of joining the Karegnondi Water Authority, which is constructing a pipeline to bring drinking water from Lake Huron. In the meantime, the city used the Flint River, treated at the Flint Water Treatment Plant, as its full-time drinking water source.

Since then, the system experienced a number of problems, including most recently, elevated lead levels in some homes and schools. To address public health, the Governor led a charge to bring \$6 million in state funds, plus an additional \$2 million from the city and \$4 million from the C.S. Mott Foundation, to fund the city's reconnection with DWSD.

This was a huge first step in fixing the problem. However, while the switch back to Detroit water carried numerous public health benefits, lead in drinking water is largely a function of outdated local infrastructure. For a long-term fix, we are looking at several options to help the city update its infrastructure and remove all lead service lines.

To ensure safe drinking water in the short-term, the state is providing water filters to every resident in the city of Flint. Many local partners, including the United Way, are also stepping up to ensure the city's schools have bottled water available for children as we design a thorough protocol to test all schools.

I know this is a stressful time for many of you, and I appreciate your dedication and hard work. This is a good time to reflect, as a staff, on our purpose as an agency. Our mission is to protect public health and the environment. Whatever the particular protocol or statute you help to implement or uphold, that is our core reason for being. Keep that at the forefront of your mind.

I am proud to lead a staff of such knowledgeable, committed individuals. Thanks, as always, for the work you do.

Sincerely,

Dan Wyant
Director

Rennaker, Joanne (DEQ)

From: Matta, Samir <SFMatta@lan-inc.com>
Sent: Monday, October 19, 2015 3:11 PM
To: Prysby, Mike (DEQ)
Subject: Flint Corrosion Control Plans and MDEQ Preliminary Comments.pdf
Attachments: Flint Phosphate Calculations.pdf; MDEQ Preliminary Comments with replies (2).pdf; IBC tote scale with containment.pdf

Hi Mike,

Please see attached for your file and use. Let me know if the information satisfy your needs and whether you have additional information that you would like us to have answered.

Thanks.

Samir F. Matta, PE
Team Leader



**Lockwood, Andrews
& Newnam, Inc.**
A LEO A DALY COMPANY

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2121 University Park Dr, Suite 100 • Okemos, MI 48864-6901

D 517.819.2367 C 517.819.2367

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Flint Phosphate Calculations

Chemical will be 75% NSF certified Phosphoric acid

75% acid has a density of 13.17 #/gal. (5,974 g/gal) 13.17×453.5923

Of this 75% is Phosphoric acid (H_3PO_4) = 4,480 g H_3PO_4 /gal $5,974 \times 0.75$

Molecular weight of H_3PO_4 is 97.9913 g/mole

Moles H_3PO_4 / gal = 45.72 $4,480/97.9913$

Moles H_3PO_4 = Moles Orthophosphate (PO_4^{-3}) = Moles Phosphorus (P)

Species	Molecular Wt.	Moles / gal	g/gal
H_3PO_4	97.9913	45.72	4,480
PO_4^{-3}	94.9676	45.72	4341.92
P	30.97	45.72	1407.72

Proposed Operating Parameters

	Plant Flow	Dosage as PO_4^{-3}	Dosage as P*
Maximum	25 MGD	1.5 mg/l	0.47 mg/l
Average	16 MGD	0.8 mg/l	0.25 mg/l
Minimum	4 MGD	0.4 mg/l	0.13 mg/l

*Equivalent dosage to PO_4^{-3} dosage

Feed Rate Calculations

Maximum feed rate (Max Flow $\times$ Max Dosage)

$$25 \text{ MGD} \times 3782 \text{ g/gal H}_2\text{O} \times 1.5 \text{ ppm} / 4,341.92 \text{ g/gal} = 32.66 \text{ gpd Phosphoric Acid}$$

Average feed rate (Avg Flow $\times$ Avg Dosage)

$$16 \text{ MGD} \times 3782 \text{ g/gal H}_2\text{O} \times 0.8 \text{ ppm} / 4,341.92 \text{ g/gal} = 11.15 \text{ gpd Phosphoric Acid}$$

Minimum feed rate (Min Flow $\times$ Min Dosage)

$$4 \text{ MGD} \times 3782 \text{ g/gal H}_2\text{O} \times 0.4 \text{ ppm} / 4,341.92 \text{ g/gal} = 1.39 \text{ gpd Phosphoric Acid}$$

**Flint WTP Improvements
Corrosion Control Proposal
MDEQ Comments
October 16, 2015**

1. **The compound being referenced is 75% Phosphoric Acid. We are assuming this is the orthophosphate compound. What is the % available orthophosphate as phosphate (P)?** See attached calculations.
2. **What is the density of the phosphate compound in lbs/gal?** 13.17 lb/gal @ 25°C
3. **Water from Detroit is approx. 0.3 – 0.4 mg/l of orthophosphate as phosphate (P). We will concur with the proposal to add sufficient orthophosphate in order to maintain a 0.5 – 1.0 mg/l as P in the distribution system.** This is the intent of the system. Dosage will be adjusted based upon measured results in the distribution system.
4. **The orthophosphate compound needs to be an NSF Standard 60 approved product.** The specification that will be used for purchase requires NSF certification.
5. **How will the phosphate dosage be measured? Weigh scale or scada? If scales are to be used, this needs to be included in the proposal.** We will add IBC tote scales with secondary containment. The drawings will be modified to show this; see attached manufacturer's information.
6. **What is the purpose of the boosted water supply that mixes with the phosphate compound?** The boosted water supply is intended to provide sufficient injected volume to ensure complete mixing.

IBC TOTE SCALE

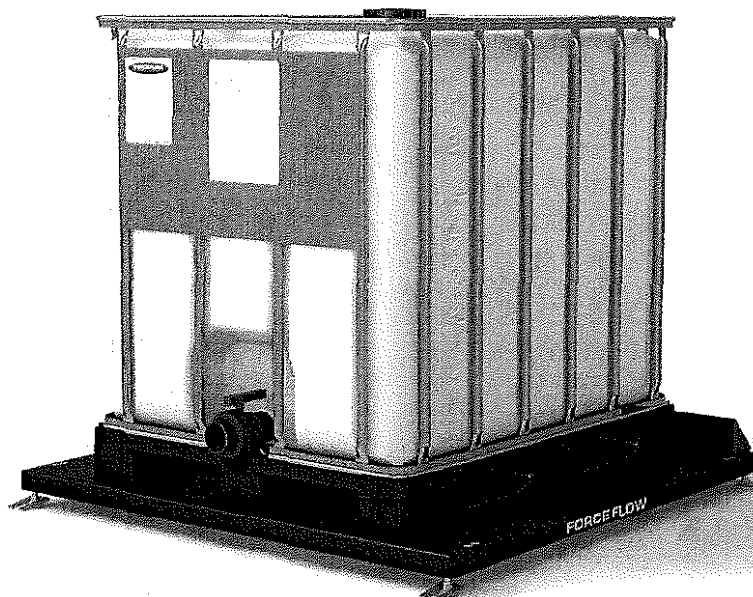
FOR CHEMICAL IBC TOTES

Safely track
chemical usage
and tank levels

Warn of dangerous
over and under-
feed conditions

Prevent system
from running
empty

4-20mA remote
monitoring reduces
operator exposure
to chemicals



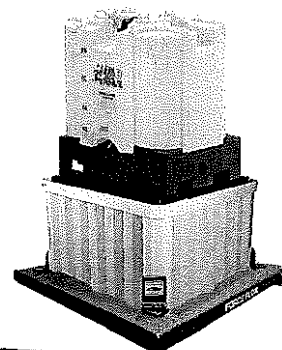
NO FINGER POINTING.
NO FINE PRINT.



Strict federal and state reporting requirements have created a need for water and wastewater plant operators to easily and accurately track chemical feed rates and usages. The IBC Tote Scale gives you this information along with the assurance that your chemical supply will not unexpectedly run out.

The heavy duty steel platform is protected with our advanced 80 mil thick TUF-COAT™ Environmental Armor. Tuf-Coat is highly resistant to chemicals, abrasion, impact and ultraviolet light degradation making the IBC Tote Scale ideal for even the harshest environments. Options include 316 stainless steel and MaxSense™ high accuracy models.

The IBC Tote Scale utilizes weighing technology to create a highly reliable, non-contacting chemical monitoring system that avoids problems other sensor technologies face caused by irregular tank shapes, corrosive chemical fumes, fluctuating temperatures and changes in specific gravity.



FORCE FLOW

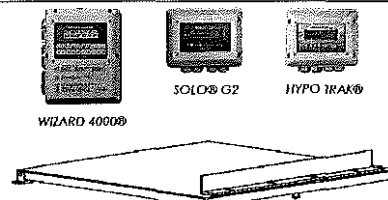
IBC TOTE SCALE

MODELS AND ORDERING INFORMATION

IBC Tote Scales do not include weight indicating instrument. Select from the following: Wizard 4000® Advanced Digital Display (Bulletin 518), the SOLO® G2 Digital Weight Display (Bulletin 516), the SOLO XT® Hydraulic Digital Display (Bulletin 514), the Century Hydraulic dial (Bulletin 519) or Hypo Track® (Bulletin 517). Please order indicator separately.

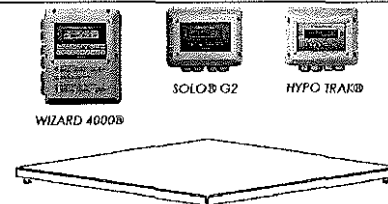
ELECTRONIC - Single Load Cell Platform (Includes platform with backstop and electronic load cell with 20 ft. cable. Lengths up to 100 ft. available; request when ordering.)

MODEL	MATERIAL	X	Y	Z	H	ACCURACY
54-DR××TB	TUF-COAT® STEEL	54"	54"	58"	3.25"	1/4 of 1% FS
54-DR××TBS	316 STAINLESS STEEL	54"	54"	58"	3.25"	1/4 of 1% FS
60-DR××TB	TUF-COAT® STEEL	60"	60"	64"	3.25"	1/4 of 1% FS
60-DR××TBS	316 STAINLESS STEEL	60"	60"	64"	3.25"	1/4 of 1% FS



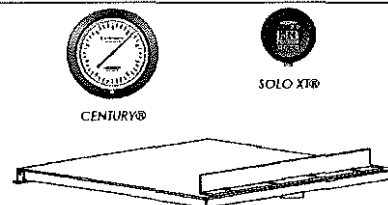
ELECTRONIC - Hi Accuracy 4-Load Cell Platform (Includes platform and (4) electronic load cells with 20 ft. of cable. Lengths up to 100 ft. available; request at time of purchase. Backstop not included or necessary on these models but available upon special request.)

MODEL	MATERIAL	X	Y	Z	H	ACCURACY
54-DR××TB-HA4	TUF-COAT® STEEL	54"	54"	N/A	3.25"	1/10 of 1% FS
54-DR××TBS-HA4	316 STAINLESS STEEL	54"	54"	N/A	3.25"	1/10 of 1% FS
60-DR××TB-HA4	TUF-COAT® STEEL	60"	60"	N/A	3.25"	1/10 of 1% FS
60-DR××TBS-HA4	316 STAINLESS STEEL	60"	60"	N/A	3.25"	1/10 of 1% FS

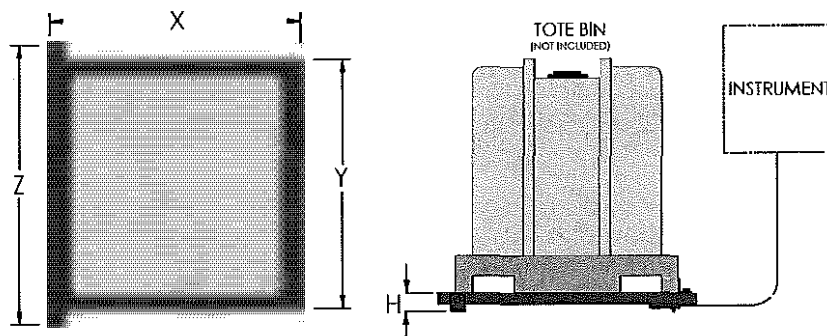


HYDRAULIC - Single Load Cell Platform (Includes platform with backstop, and hydraulic load cell with 12 ft. Hose and quick connect. Hose/tubing lengths up to 100 ft. available to allow remote mounting of indicator; request at time of purchase.)

MODEL	MATERIAL	X	Y	Z	H	ACCURACY
54-HY××TB	TUF-COAT® STEEL	54"	54"	58"	3.25"	1/2 of 1% FS
54-HY××TBS	316 STAINLESS STEEL	54"	54"	58"	3.25"	1/2 of 1% FS
60-HY××TB	TUF-COAT® STEEL	60"	60"	64"	3.25"	1/2 of 1% FS
60-HY××TBS	316 STAINLESS STEEL	60"	60"	64"	3.25"	1/2 of 1% FS



×× = CAPACITY: 1000 lbs = "10", 2000 lbs = "20", 3000 lbs = "30", 4000 lbs = "40", 5000 lbs = "50"



SPECIFYING GUIDELINES:

- For maximum accuracy, size scale capacity to match the gross weight (chemical plus tote tare weight).
- Tote size should not exceed platform size.
- Supply connections must be flexible and preferably connected to tote over pivoted side of platform.

Please visit www.forceflow.com for drawings, engineered specifications and manuals.

FORCE FLOW

MODEL NUMBERS (for Load Cell & Platform)

60-DR30TC-HA4 (3,000 Lbs.) 60" x 60" x 3.25"
 60-DR40TC-HA4 (4,000 Lbs.) 60" x 60" x 3.25"
 60-DR50TC-HA4 (5,000 Lbs.) 60" x 60" x 3.25"
 60-DR60TC-HA4 (6,000 Lbs.) 60" x 60" x 3.25"

For Stainless Steel platform, as "S" after "TC", i.e. 60-DR30TCS-HA4.
 For other capacities and platform sizes, consult factory.

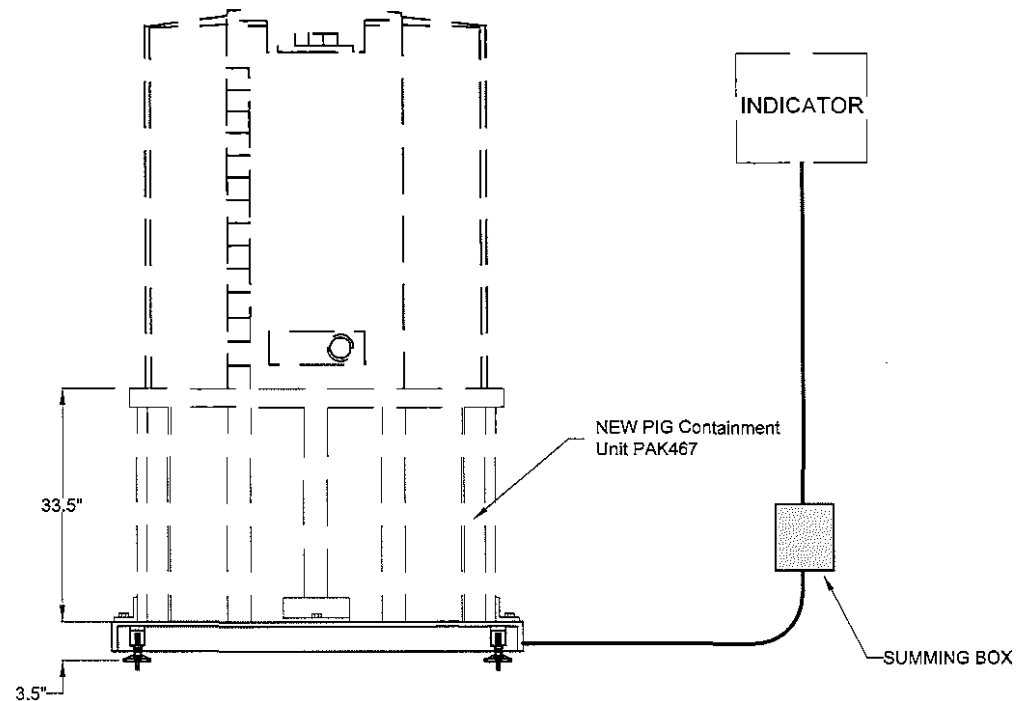
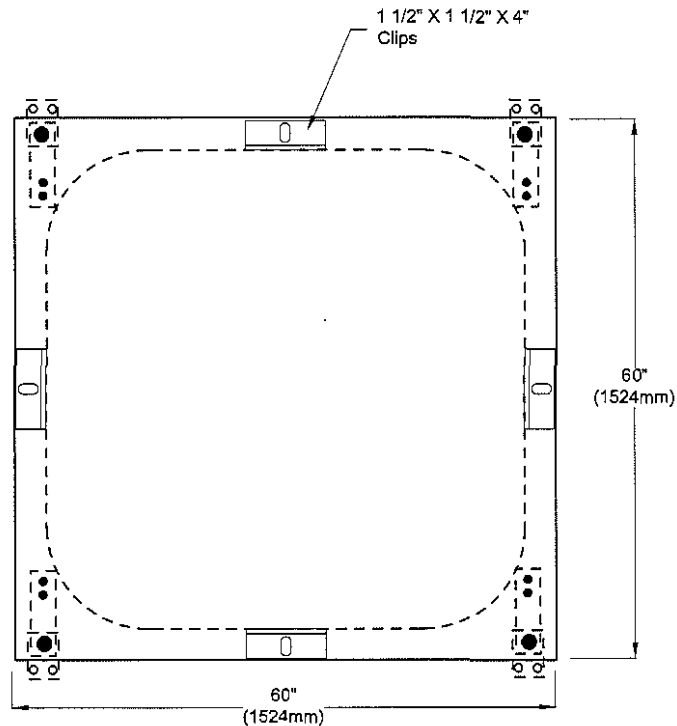
MODEL NUMBER (for SOLO 1000 Indicator)

SR-1000-1 1-Channel SOLO 1000 Indicator
 SR-1000-2 2-Channel SOLO 1000 Indicator

MODEL NUMBER (Containment Unit)

PAK467 400 gal. NEW PIG Poly IBC Containment Unit

_____ Scale Model Number
 _____ Pounds or Kilogram Indication
 _____ Feet of Cable (20' Standard)
 _____ Tote Skid Size
 400 _____ Containment Size (Gallons)

**INSTALLATION NOTE:**

We recommend using a forklift to load/unload totes.
 If a pallet jack is to be used, scale platform must be pit mounted so deck is flush with floor surface.
 Surface mounting with use of inclined load ramps are NOT RECOMMENDED.



2430 Stanwell Dr, Concord, Ca 94520 USA
 1-800-893-6723 US & Canada, Fax: 925-686-6713
 WWW.forceflow.com / Info@forceflow.com

FS_EMAIL_SUBMITTAL FORMS\Autocad Drawings\31431 HA Tote Bin Scale 60 Containment.dwg

HI-ACCURACY ELECTRONIC
 60" TOTE BIN SCALE
 CONTAINMENT

Drawn by: KBV

Date: 1/23/09

Revised: 4/13/10

Scale:

Drawing Number

31431

---NOT SUPPLIED BY FORCE FLOW---
For use with Force Flow Scale Model 60-DR100TCH44



New Pig

Your partner for a clean
and safe workplace.

1-800-HOT-HOGS® (468-4647)

Product Data Sheet

Item Number: PAK467

Item Name: PIG® Poly IBC Containment Unit

Load Capacity UDL:

- 12000 lbs./each (5443.2 kg/each)

Sump Capacity:

- 400 gal./each (1514 L/each)

Options Available:

Item #	Size	Color	Misc. Features	Amount	Length	Width	Height	Depth	Int. Dia.	Ext. Dia.	Weight	Qty/Pallet
PAK467	—	—	—	1 each	58" (147.3cm)	58" (147.3cm)	33.5" (85.1cm)	—	—	—	415lbs. (188.2kg)	1

Color: White/Black

Description:

Polyethylene containment unit used to help meet containment regulations when storing IBCs.

Application:

Used to help meet containment regulations when storing IBCs of 400 gallons or less containing materials compatible with polyethylene. IBCs can be stacked two high.

Product Features:

Super-strong Containment Unit helps you comply with regulations and store IBC tanks safely. Capture leaks, drips and spills to keep floors dry and workers safe.

- Heavy-duty construction permits double-stacking of IBCs to save space
- Solid anti-slip deck holds a variety of IBC sizes; if tank has feet or pegs, be sure to use proper support pads or plates
- Positioning pegs in pedestals keep deck from shifting
- Polyethylene construction resists UV rays, rust, corrosion and most chemicals
- Translucent white sidewalls allow easy visual inspection
- Arrives ready to use with no assembly required

Composition:

- Sump - Polyethylene
- Grates - Injection Molded Polyethylene

This product helps you comply with:

Regulatory Citation	Summary
40 CFR 264.175	Hazardous waste containment systems must be free of structural cracks or gaps, be designed to keep spilled liquids from remaining in contact with the container, prevent run-on and "have sufficient capacity to contain 10% of the volume of the containers, or the volume of the largest container, whichever is greater."

Additional Specifications:

- Dimensions (Grate): 52" L x 52" W

Disclaimers:

- **Flammables Notice:** If using this product with flammable liquids, please consider the regulations that apply to storage and handling of flammable liquids and the safety of this application, specifically flammable vapors, static discharge and heat sources. For further assistance, please call Technical Services.

PDS generated: Jul 14, 2008

One Pork Avenue, Tipton, PA 16684-0304 • 1-800-HOT-HOGS® (468-4647)
Fax: 1-800-621-PIGS® (621-7447) • Email: hothogs@newpig.com • Web: newpig.com

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Rennaker, Joanne (DEQ)

From: Prysby, Mike (DEQ)
Sent: Monday, October 19, 2015 1:16 PM
To: Krisztian, George (DEQ)
Cc: Busch, Stephen (DEQ)
Subject: Deliberative and Preliminary: FW: Flint WTP PH2 SEG4 - Corrosion Control

George,

I am forwarding you EPA's comments regarding Flint's corrosion control proposal. They are suggesting a significantly higher dosage and a residential testing program to gain a better understanding on the effectiveness of the orthophosphate against corrosion of lead. Further assistance will likely be needed regarding this corrosion control proposal. Steve and I will be available to discuss this issue with you later this afternoon.

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

From: Lytle, Darren [mailto:Lytle.Darren@epa.gov]
Sent: Monday, October 19, 2015 12:05 PM
To: Prysby, Mike (DEQ)
Cc: Schock, Michael; Kempic, Jeffrey; Busch, Stephen (DEQ)
Subject: RE: Flint WTP PH2 SEG4 - Corrosion Control

Mike,

Thank-you for giving us the opportunity to review the city of Flint's corrosion control plan.

We believe it is necessary that Flint boosts orthophosphate dosage. Given that the distribution system has not received orthophosphate in over a year, we expect that orthophosphate will need to be boosted to 1) meet the demand of the distribution system, 2) reach the service lines and other lead-containing components in premise plumbing, and 3) accelerate lead reduction at the consumer's taps. Orthophosphate should preferably be added in the same form as the Detroit source which is phosphoric acid from our understanding. This is the proposed case here, however, a simple test should be performed to make sure that the pH is not impacted in a significant way at the desired target dose.

We have not been able to obtain comprehensive water quality data for the finished water characteristics of the Detroit water that will be fed to Flint, to assess ranges of major chemical characteristic fluctuations. However, based upon the email trail, Detroit water entering the Flint system appears to only contain around 0.4 PO₄/L. This concentration range is entirely too low compared to that needed in studies presented and published in the last 20+ years that have focused on lead released directly from lead pipes, and the solubility of the most likely lead orthophosphate pipes scales. We also strongly feel that targeted dose of 0.8 mg PO₄/L is also too low, for the very same reason. We would be glad to share with you numerous standard corrosion control and treatment reference works, best practices guides and published results from US and international lead corrosion control field and pilot studies. Secondly, the basis for that target (other communities using Lake Huron source use the same dose) is not scientifically derived nor does it consider water quality

and the current state of Flint's distribution system. We have reviewed the original Detroit corrosion study and have seen some of the LCR monitoring data, and besides the fact that it did not directly pertain to this water source, few dosages were tested in the cited 1994 pipe loop study, and the higher dosage than the one implemented in the field currently was more effective. Based on the limited amount of data on the quality of Detroit water, what we know about the history of Detroit corrosion control, we think an orthophosphate residual of 3 to 4 mg PO₄/L should be the minimum starting test target residual for pipe passivation. It is likely that, at least initially a higher dosage will be necessary to reach the far ends of the distribution system and sufficiently reduce lead solubility and release from all lead sources. To allow flexibility, we feel the design of the chemical feed and storage systems should be able to consistently deliver a maximum dose of 5 to 6 mg PO₄/L, if substantial orthophosphate loss is observed, if the starting dose is set for the desired residual level of 3 to 4 mg/L as PO₄. We suggest that jar tests be performed in advance of orthophosphate addition to Detroit water to evaluate the impact of orthophosphate dose on turbidity that could result from interactions between orthophosphate and background Detroit water quality parameters (e.g., aluminum, calcium, etc.).

We want to stress that immediately shifting to Detroit water and adding orthophosphate will not necessarily translate to immediate improvements. Furthermore, this is a change, albeit a return to past conditions. Nonetheless, a period of system upset should be anticipated. The need for a communication strategy and a distribution system plan are critical.

Lastly, we see no mention of a water quality monitoring program. Two programs need to be put in place immediately (before return to Detroit water) to 1) identify lead sources, 2) assess treatment effectiveness against lead release from all of the simultaneously operating mechanisms (solubility, particulate release, galvanic corrosion), and 3) assess orthophosphate levels and stability of water quality in the distribution system.

There are multiple sources of lead in the Flint distribution system to the consumers' taps, such as: pipes; leaded brass; leaded solder; accumulations on old galvanized steel pipes; possibly accumulated on copper or some plastic pipes. It is critical that the fate of orthophosphate in the distribution system is understood, and how effective it is against each type of lead source, so dosing adjustment can be properly made. For this purpose, we recommend that a number of residences throughout Flint that meet the following plumbing criteria, be identified for an assessment of the contribution lead from the different potential service line and interior plumbing sources, through detailed mapping of plumbing materials, lengths, sizes, and location and type of inline devices and faucets using profile sampling. For confidence in interpretation, probably at least 5 sites from each of the configurations will be necessary. The configurations we would estimate to be most important (but should be changed or added to if local construction practice indicates it's necessary): Lead service line, galvanized steel interior plumbing; lead service line, copper with leaded solder joints; lead service line, plastic interior plumbing. It is also possible that interior plumbing may differ from the material used for the customer-side service line segment. We would be glad to discuss the specifics of this sampling effort.

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A lead sampling plan needs to be in place to assess the effectiveness of water change and treatment boost. LCR monitoring sites with confirmed lead service lines can be in the sampling pool. Sampling should consist of a 1 liter first draw sample (LCR sample without 5 minute pre-flush), followed by an additional flushed sample or two depending on profile sample results which is intended to capture major lead source(s). The specific details of this effort need to be worked out by the technical committee as soon as possible. We would gladly work with Flint on establishing a water sampling program to identify and verify lead service line sites. The plan and initial sampling effort should be performed before the switch so that one baseline sample set is collected.

Lastly, our strength does not fall under full-scale pump and chemical feed delivery systems. We would only say that the systems need to be scaled-up in size to accommodate our suggested dosing needs. Also, there is some discussion about diverting water to the Dort reservoir and an associated orthophosphate feed system. We are not familiar with the reservoir but are wondering if it is an open reservoir?

Of course this is a lot of information to share and we would gladly be available to discuss the technical and scientific basis for our suggestions.

Let us know if you have any questions and thanks again,

Darren and Mike

Darren A. Lytle, Ph.D., P.E.
Branch Chief (Acting)
U.S. Environmental Protection Agency
26 West Martin Luther King Dr.
Cincinnati, Ohio 45268
Phone: (513) 569-7432
Fax: (513) 487-2543
email: lytle.darren@epa.gov

From: Prysby, Mike (DEQ) [<mailto:PRYSBYM@michigan.gov>]
Sent: Friday, October 16, 2015 1:32 PM
To: Lytle, Darren <Lytle.Darren@epa.gov>; Schock, Michael <Schock.Michael@epa.gov>
Cc: Busch, Stephen (DEQ) <BUSCHS@michigan.gov>
Subject: FW: Flint WTP PH2 SEG4 - Corrosion Control

Darren, Michael

We have received Flint's corrosion control proposal from their consultant. If you have comments, please provide them to me by Monday morning.

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

From: Matta, Samir [<mailto:SFMatta@lan-inc.com>]
Sent: Friday, October 16, 2015 12:02 AM
To: Prysby, Mike (DEQ)
Subject: Flint WTP PH2 SEG4 - Corrosion Control

Hi Mike,

Please see attached plans for the Corrosion Control Plan for the City of Flint. I will have the official submittal package to you tomorrow afternoon after I get Brent or Mike's signature on the permit application. I will call you when I get back in Lansing to drop the package. Are three sets of full size plans adequate? Would you like some half size plans? Let me know.

Basis of Design

Given that Flint will require lead and copper corrosion control and given that Detroit utilizes orthophosphate for their corrosion control methodology, and that Flint will be receiving Detroit water for the immediate future, orthophosphate is the appropriate corrosion control methodology for Flint. A dosage of 0.8 mg/l as PO_4 has been recommended for the Detroit water. Numerous utilities utilizing Lake Michigan water have a target dosage of 0.9 mg/l as PO_4 . Therefore, a target dosage in the range of 0.8 to 0.9 mg/l appears appropriate.

It is expected that, at least initially, there will be a significant PO_4 demand in the system. This will require a significantly higher dosage until this demand is satisfied and the target residual can be maintained. We are therefore designing for capability of a maximum dosage of 1.5 mg/l.

The arriving Detroit water will likely have some residual PO_4 when it arrives at Flint. It has been reported that this residual will be approximately 0.4 mg/l. The system must therefore be capable of a minimum dosage of 0.4 mg/l.

Based upon the usage of 75% Phosphoric Acid and a flow range of 4 MGD to 25 MGD, with an average day of 16 MGD, the expected feed rate will be 1.35 to 32 gpd. Average Phosphoric Acid feed is expected to be 10.8 gpd, requiring 30 days storage of 325 gal.

Orthophosphate will need to be applied at two locations. Detroit water will enter the Flint system at Control Station CS2, and supplementary phosphate will be applied there. However, on occasion some incoming water may need to be diverted to the Dort Reservoir, bypassing CS2. This water would then be introduced to the system through High Service Pump Station PS4 and phosphate would be introduced at this location.

Please let me know if the information is adequate or you require additional information.

Thanks.

Samir F. Matta, PE

Team Leader



**Lockwood, Andrews
& Newnam, Inc.**

A LEO A DALY COMPANY

1311 South Linden Road, Suite B • Flint, MI 48532

2121 University Park Dr, Suite 100 • Okemos, MI 48864-6901

D 517.819.2367 C 517.819.2367

www.lan-inc.com • sfmatta@lan-inc.com

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Rennaker, Joanne (DEQ)

From: Lytle, Darren <Lytle.Darren@epa.gov>
Sent: Monday, October 19, 2015 12:05 PM
To: Prysby, Mike (DEQ)
Cc: Schock, Michael; Kempic, Jeffrey; Busch, Stephen (DEQ)
Subject: RE: Flint WTP PH2 SEG4 - Corrosion Control

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Darren and Mike

Darren A. Lytle, Ph.D., P.E.
Branch Chief (Acting)
U.S. Environmental Protection Agency
26 West Martin Luther King Dr.
Cincinnati, Ohio 45268
Phone: (513) 569-7432
Fax: (513) 487-2543
email: lytle.darren@epa.gov

From: Prysby, Mike (DEQ) [mailto:PRYSBYM@michigan.gov]

Sent: Friday, October 16, 2015 1:32 PM

To: Lytle, Darren ; Schock, Michael
Cc: Busch, Stephen (DEQ)
Subject: FW: Flint WTP PH2 SEG4 - Corrosion Control

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Sent: Friday, October 16, 2015 12:02 AM
To: Prysby, Mike (DEQ)
Subject: Flint WTP PH2 SEG4 - Corrosion Control

Hi Mike,

Please see attached plans for the Corrosion Control Plan for the City of Flint. I will have the official submittal package to you tomorrow afternoon after I get Brent or Mike's signature on the permit application. I will call you when I get back in Lansing to drop the package. Is three sets of full size plans adequate? Would you like some half size plans? Let me know.

Basis of Design

Given that Flint will require lead and copper corrosion control and given that Detroit utilizes orthophosphate for their corrosion control methodology, and that Flint will be receiving Detroit water for the immediate future, orthophosphate is the appropriate corrosion control methodology for Flint. A dosage of 0.8 mg/l as PO_4 has been recommended for the Detroit water. Numerous utilities utilizing Lake Michigan water have a target dosage of 0.9 mg/l as PO_4 . Therefore, a target dosage in the range of 0.8 to 0.9 mg/l appears appropriate.

It is expected that, at least initially, there will be a significant PO_4 demand in the system. This will require a significantly higher dosage until this demand is satisfied and the target residual can be maintained. We are therefore designing for capability of a maximum dosage of 1.5 mg/l.

The arriving Detroit water will likely have some residual PO_4 when it arrives at Flint. It has been reported that this residual will be approximately 0.4 mg/l. The system must therefore be capable of a minimum dosage of 0.4 mg/l.

Based upon the usage of 75% Phosphoric Acid and a flow range of 4 MGD to 25 MGD, with an average day of 16 MGD, the expected feed rate will be 1.35 to 32 gpd. Average Phosphoric Acid feed is expected to be 10.8 gpd, requiring 30 days storage of 325 gal.

Orthophosphate will need to be applied at two locations. Detroit water will enter the Flint system at Control Station CS2, and supplementary phosphate will be applied there. However, on occasion some incoming water may need to be diverted to the Dort Reservoir, bypassing CS2. This water would then be introduced to the system through High Service Pump Station PS4 and phosphate would be introduced at this location.

Please let me know if the information is adequate or you require additional information.

Thanks.

Samir F. Matta, PE
Team Leader



**Lockwood, Andrews
& Newnam, Inc.**

A LEO A DALY COMPANY

1311 South Linden Road, Suite B • Flint, MI 48532

2121 University Park Dr, Suite 100 • Okemos, MI 48864-6901

D 517.819.2367 C 517.819.2367

www.lan-inc.com • sfmatta@lan-inc.com

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Rennaker, Joanne (DEQ)

From: Lytle, Darren <Lytle.Darren@epa.gov>
Sent: Monday, October 19, 2015 8:46 AM
To: Prysby, Mike (DEQ); Schock, Michael
Cc: Busch, Stephen (DEQ)
Subject: RE: Flint WTP PH2 SEG4 - Corrosion Control

Mike-

Wrapping up our comments but I need to run to a meeting real quick. Will get them to you by 11 am. Thanks, Darren

Darren A. Lytle, Ph.D., P.E.
 Branch Chief (Acting)
 U.S. Environmental Protection Agency
 26 West Martin Luther King Dr.
 Cincinnati, Ohio 45268
 Phone: (513) 569-7432
 Fax: (513) 487-2543
 email: lytle.darren@epa.gov

From: Prysby, Mike (DEQ) [<mailto:PRYSBYM@michigan.gov>]
Sent: Friday, October 16, 2015 1:32 PM
To: Lytle, Darren ; Schock, Michael
Cc: Busch, Stephen (DEQ)
Subject: FW: Flint WTP PH2 SEG4 - Corrosion Control

Darren, Michael

We have received Flint's corrosion control proposal from their consultant. If you have comments, please provide them to me by Monday morning.

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

From: Matta, Samir [<mailto:SFMatta@lan-inc.com>]
Sent: Friday, October 16, 2015 12:02 AM
To: Prysby, Mike (DEQ)
Subject: Flint WTP PH2 SEG4 - Corrosion Control

Hi Mike,

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Please let me know if the information is adequate or you require additional information.

Thanks.

Samir F. Matta, PE
Team Leader



**Lockwood, Andrews
& Newnam, Inc.**
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1311 South Linden Road, Suite B • Flint, MI 48532

2121 University Park Dr, Suite 100 • Okemos, MI 48864-6901

D 517.819.2367 C 517.819.2367

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Rennaker, Joanne (DEQ)

From: Matta, Samir <SFMatta@lan-inc.com>
Sent: Monday, October 19, 2015 12:18 AM
To: Prysby, Mike (DEQ)
Subject: Flint WTP PH2 SEG4 - Corrosion Control
Attachments: Flint WTP PH2 S4 - Corrosion Control.pdf

Hi Mike,

Please see attached updated plans for the Corrosion Control Plan for the City of Flint. These plans matches the set of plans that was submitted to your office in hard copies on Friday. This submittal is somewhat modified from the set that was submitted to you on Thursday night/Friday morning.

We will address the questions you raised and respond on Monday.

Please let me know if there are other comments that needs our attention.

Thanks for your prompt and quick response to our submittal.

Samir F. Matta, PE
 Team Leader



**Lockwood, Andrews
& Newnam, Inc.**
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1311 South Linden Road, Suite B • Flint, MI 48532

2121 University Park Dr, Suite 100 • Okemos, MI 48864-6901

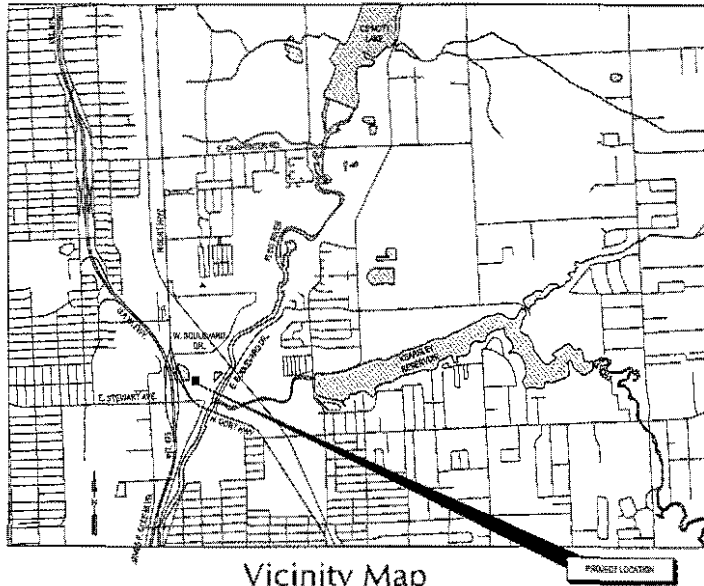
D 517.819.2367 C 517.819.2367

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City of Flint, MI
 Flint Water Treatment Plant
 Phase II, Segment IV - Corrosion Control
 4500 North Dort Highway, Flint, MI 48505



Vicinity Map

Jeremy N. Nakashima 10-16-2015
 Jeremy N. Nakashima, P.E. Date
 Michigan Licensed Professional Engineer
 No. 6201058535 Expires October 31, 2016



Issued for: Permitting
 Issue Date: October 16, 2015

LAN Lockwood, Andrews
 & Newnam, Inc.
 A LEO A DAY COMPANY
 PLANNING
 ENGINEERING
 PROGRAM MANAGEMENT

1311 South Linden Road, Suite B
 Flint, MI 48532
 Tel 810-820-2682 Fax 810-820-2703

INDEX OF SHEETS

SHEET NO.	SHEET TITLE
GENERAL	
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G-2	INDEX OF SHEETS, SITE OVERVIEW, AND GENERAL NOTES
G-3	SYMBOLS AND OBSERVATIONS
PROCESS	
D-1	CONTROL STATION 1 - PLAN
D-2	PUMP STATION 1 - PLAN
D-3	PUMP STATION 2 - PLAN
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D-6	PHOSPHATE FEED SYSTEM SCHEMATICS
D-7	PHOSPHATE FEED SYSTEM DETAILS AND BILL OF MATERIALS
ELECTRICAL	
E-1	ELECTRICAL SYMBOLS AND ABBREVIATIONS
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E-3	PUMP STATION 1 - ELECTRICAL PLAN
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E-5	PUMP STATION 3 - ELECTRICAL PLAN
E-6	PUMP STATION 4 - ELECTRICAL PLAN



Water Treatment Plant Site

(N.T.S.)

GENERAL NOTES

- CONTRACTOR SHALL BE RESPONSIBLE FOR LOCATING AND PROTECTING ALL EXISTING PUBLIC AND PRIVATE UTILITIES. UTILITY INFORMATION SHOWN ON PLANS IS NOT GUARANTEED TO BE ACCURATE OR COMPLETE. CONTRACTOR SHALL VERIFY THE LOCATION AND DEPTH OF ALL UTILITIES PRIOR TO CONSTRUCTION. CONTRACTOR SHALL BE RESPONSIBLE FOR ANY DAMAGE TO UTILITIES CAUSED BY CONSTRUCTION OPERATIONS.
- NOTIFICATION OF UTILITIES: CONTRACTOR SHALL NOTIFY ALL UTILITY COMPANIES AT LEAST FORTY EIGHT (48) HOURS PRIOR TO COMMENCEMENT OF CONSTRUCTION.
- THE CONTRACTOR SHALL OBTAIN EACH UTILITY COMPANY AND THE CITY AT LEAST FIVE (5) BUSINESS DAYS PRIOR NOTICE OF PROPOSED UTILITY SHUTDOWNS. CONTRACTOR SHALL NOT OPERATE ON ANY VALVES OR SHUTDOWNS ANY UTILITIES, ONLY THE UTILITY OWNERS AND THE CITY SHALL OPERATE VALVES AND SHUTDOWNS UTILITIES. CONTRACTOR SHALL PROVIDE THE CITY WITH COPIES OF UTILITY OWNERS' WRITTEN APPROVAL OF PROPOSED SHUTDOWNS.
- CONTRACTOR SHALL ASSUME COMPLETE RESPONSIBILITY FOR JOB SITE CONDITIONS DURING CONSTRUCTION OF THIS PROJECT, AND FOR THE SAFETY OF ALL PERSONS AND/OR PROPERTY ON SITE.
- THE SAFE AND ORDERLY PASSAGE OF PEDESTRIAN AND VEHICULAR TRAFFIC SHALL BE PROVIDED WHERE OPERATIONS ABOUT PUBLIC THOROUGHFARES AND ADJACENT PROPERTY.
- NO ROADS OR ENTRANCES SHALL BE BLOCKED BY CONSTRUCTION. CONSTRUCTION DEBRIS OR EQUIPMENT FOR AN EXTENDED PERIOD OF TIME WITHOUT PRIOR APPROVAL FROM THE CITY OF BENT. ALL ROADWAYS SHALL BE OPEN TO TRAFFIC AT THE CONCLUSION OF EACH WORK DAY WITH PROPER TRAFFIC SIGNS AND BARRICADES ERECTED FOR SAFETY, UNLESS NOTED OR APPROVED OTHERWISE.
- CONTRACTOR SHALL COMPLY WITH ALL APPLICABLE REGULATIONS AND REQUIREMENTS.
- ALL PROPERTY MARKERS AND REFERENCE MARKERS SHALL BE CAREFULLY PRESERVED DURING CONSTRUCTION UNTIL THEIR LOCATION HAS BEEN WITNESSED OR OTHERWISE TIED IN BY AN AUTHORIZED AGENT OR SURVEYOR.
- INDIVIDUAL COSTS ALL ITEMS SHOWN ON THE PLANS OR IN THE SPECIFICATIONS OR THAT WHICH CAN BE INFERRED AS REQUIRED FOR THE WORK, BUT DO NOT APPEAR IN THE SUMMARY OF QUANTITIES OR SCHEDULES, SHALL BE CONSIDERED INCIDENTAL TO THE COST OF THIS PROJECT.
- CONTRACTOR SHALL HAVE RESPONSIBILITY FOR THE PROTECTION OF EXISTING UTILITIES, PIPES, AND ROADS. BEFORE CONSTRUCTION, CONTRACTOR SHALL VERIFY THE LOCATION AND DEPTH OF ALL UTILITIES. CONTRACTOR SHALL BE RESPONSIBLE FOR THE INSTALLATION AND MAINTENANCE OF ADEQUATE SIGNAGE AND WARNING DEVICES TO INFORM AND PROTECT THE PUBLIC.
- PROTECTING CONCRETE: CONTRACTOR SHALL PROTECT ALL NEW CONCRETE WORK FROM BEING MARKED, DEFACED, OR DAMAGED ON ITS SURFACE BY PASSERS BY, REPLACING ANY CONCRETE WORK SO MARKED SHALL BE AT THE CONTRACTOR'S EXPENSE.
- ALL EXISTING FACILITIES SHALL BE KEPT IN SERVICE DURING CONSTRUCTION, EXCEPT WHERE PERMISSION IS OTHERWISE GRANTED BY THE CITY.
- CONTRACTOR SHALL BE RESPONSIBLE FOR THE MEANS, METHODS, PROCEDURES, TECHNIQUES, AND SEQUENCE OF CONSTRUCTION INCLUDING SAFETY ON THE JOB SITE, WITHOUT THE PROFESSIONAL ACTIVITIES OF THE ENGINEER NOR THE PRESENCE OF THE ENGINEER AT THE CONSTRUCTION SITE SHALL RELIEVE THE CONTRACTOR OF HIS OBLIGATIONS, DUTIES, AND RESPONSIBILITIES, INCLUDING ANY HEALTH AND SAFETY PRECAUTIONS REQUIRED BY ANY REGULATORY AGENCIES.
- CONTRACTOR SHALL PLACE, GRADE, AND MAINTAIN CRUSHED STONE RAMP AS NEEDED TO PROVIDE SAFE PEDESTRIAN WALKWAYS WHERE ASHPIT CHANGES IN GRADE OCCUR AT ALL TIMES DURING THE CONSTRUCTION PROJECT, AS DIRECTED BY THE CITY'S REPRESENTATIVE.
- CONTRACTOR SHALL PROVIDE EROSION PROTECTION UNTIL FINAL SURFACE RESTORATION.
- SEVERAL CONSTRUCTION ITEMS FOR THIS PROJECT INVOLVE MODIFICATIONS TO EXISTING FACILITIES, ELEVATIONS, DIMENSIONS, DETAILS, ETC. HAVE BEEN SHOWN BASED UPON THE BEST AVAILABLE INFORMATION. CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS, COORDINATES, AND ELEVATIONS BEFORE PROCEEDING WITH THE WORK, AND SHALL NOTIFY THE OWNER'S REPRESENTATIVE OF ANY DISCREPANCIES IMMEDIATELY. CONTRACTOR SHALL MAKE ADJUSTMENTS NECESSARY TO COMPLETE THE WORK AT NO ADDITIONAL COST TO THE CITY.
- PAVING TO REMAIN SHALL BE PROTECTED FROM DAMAGE, IF DAMAGED, PAVING SHALL BE REPLACED PROMPTLY AT NO ADDITIONAL COST TO THE CITY.
- ALL DISTURBED GRADES SHALL BE HYDROMULCHED.
- ALL EXCAVATIONS AND TRENCHES SHALL COMPLY WITH SPECIFICATION SECTION 02050 - TRENCH SAFETY SYSTEM, AND OSHA REQUIREMENTS FOR EXCAVATIONS CONTAINED IN 29 CFR PART 1926, SUBPART F.
- THE CONTRACTOR SHALL BE CAUTIOUS IN EXCAVATING OR EXCAVATING NEAR ANY AND ALL EXISTING TRENCHES, WHICH ARE NOT REQUIRED TO BE REMOVED, ANY DAMAGE TO THESE EXISTING TRENCHES CAUSED BY THE CONTRACTOR'S OPERATIONS SHALL BE REPAIRED TO THE SATISFACTION OF THE CITY AT THE CONTRACTOR'S EXPENSE.
- BURNING OR INCINERATION OF RUBBISH IS NOT ALLOWED ON SITE.
- DISPOSAL OF MATERIALS: REFER TO REQUIREMENTS IN SPECIFICATION ITEM 02050 - WASTE MATERIAL DISPOSAL. NOTIFY ENGINEER IMMEDIATELY IF CONTAMINATED SOILS OR GROUNDWATER ARE ENCOUNTERED. DISPOSAL OF SOILS AND GROUNDWATER SHALL BE IN ACCORDANCE WITH LOCAL, STATE AND FEDERAL REQUIREMENTS. REFER TO REQUIREMENTS IN SPECIFICATION ITEMS: WASTE MATERIAL, HANDLING AND DISPOSAL.

Flint WTP
Phase II, Segment IV
Corrosion Control
Flint, MI 48905



Lockwood, Andrew & Hannum, Inc.
Professional Engineers
2000 N. 10th Street
Flint, MI 48905
1717 South Linden Road, Suite B
Flint, MI 48905
Tel: (810) 222-2882 Fax: (810) 222-2703

KEY PLAN

REVISIONS

NO.	DESCRIPTION	DATE

FILE LOG

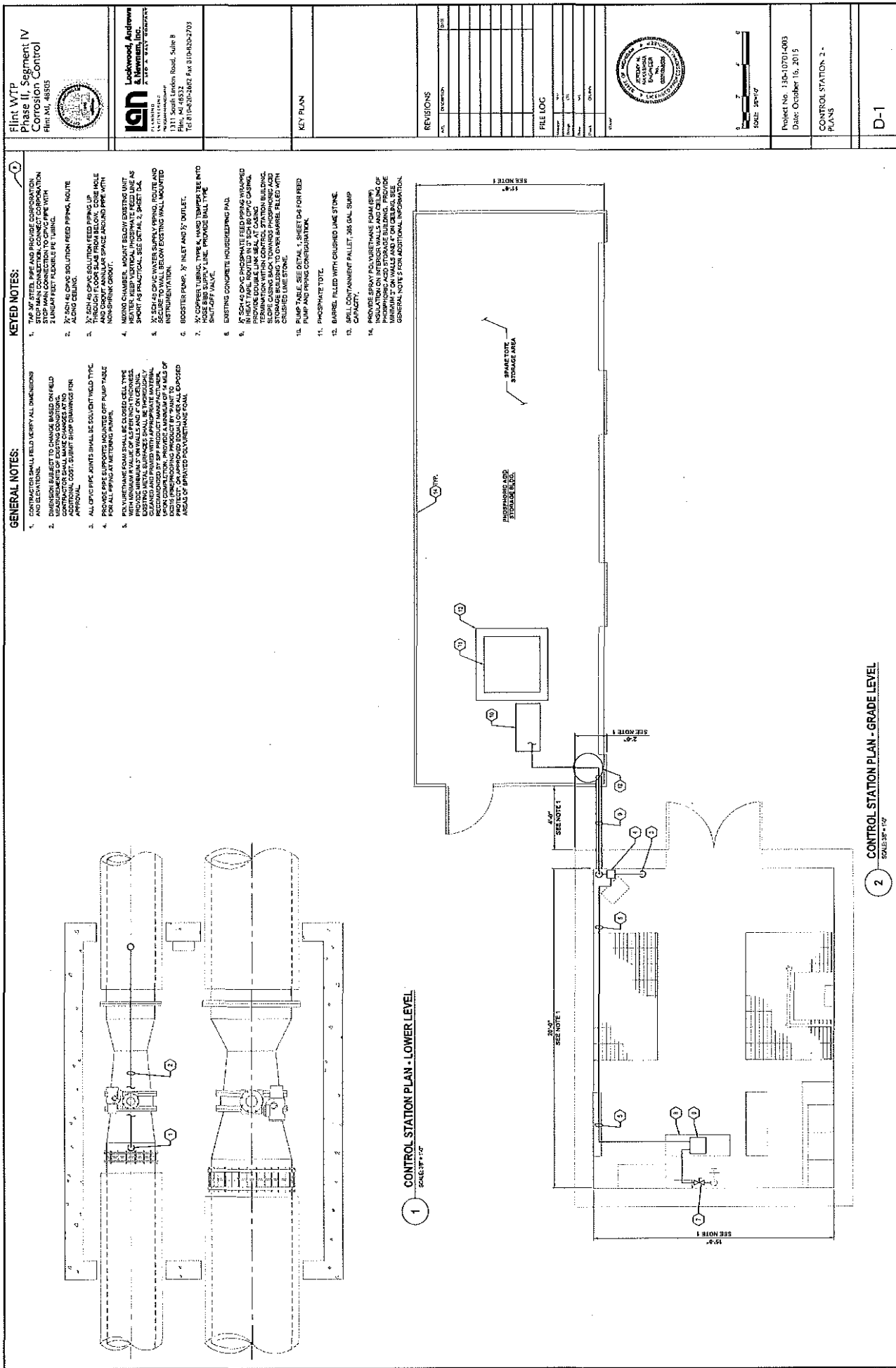
Author	Check	Date

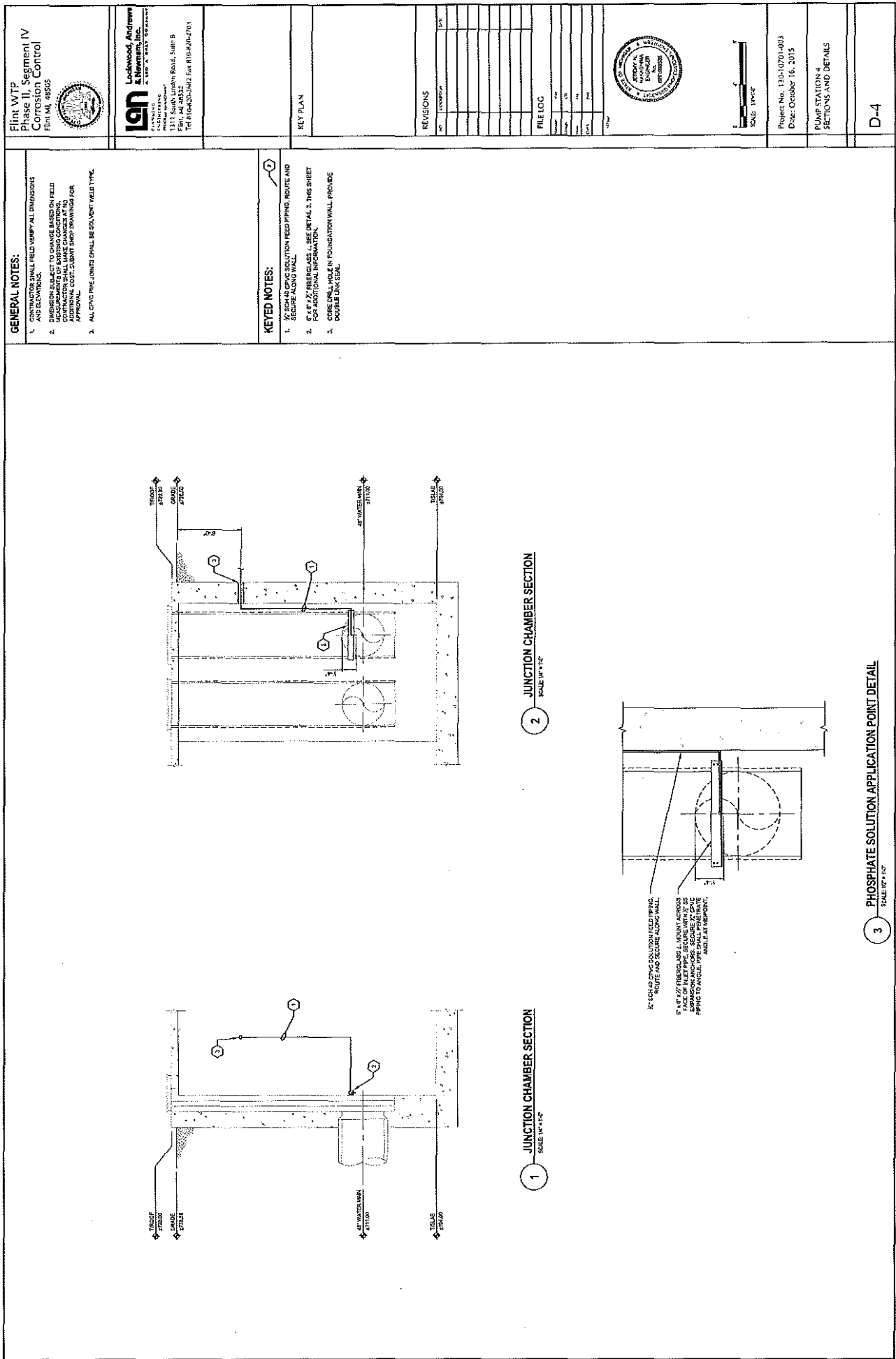


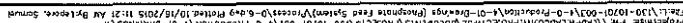
Project No. 1301-0701-003
Date: October 16, 2015

INDEX OF SHEETS, SITE OVERVIEW
AND GENERAL NOTES

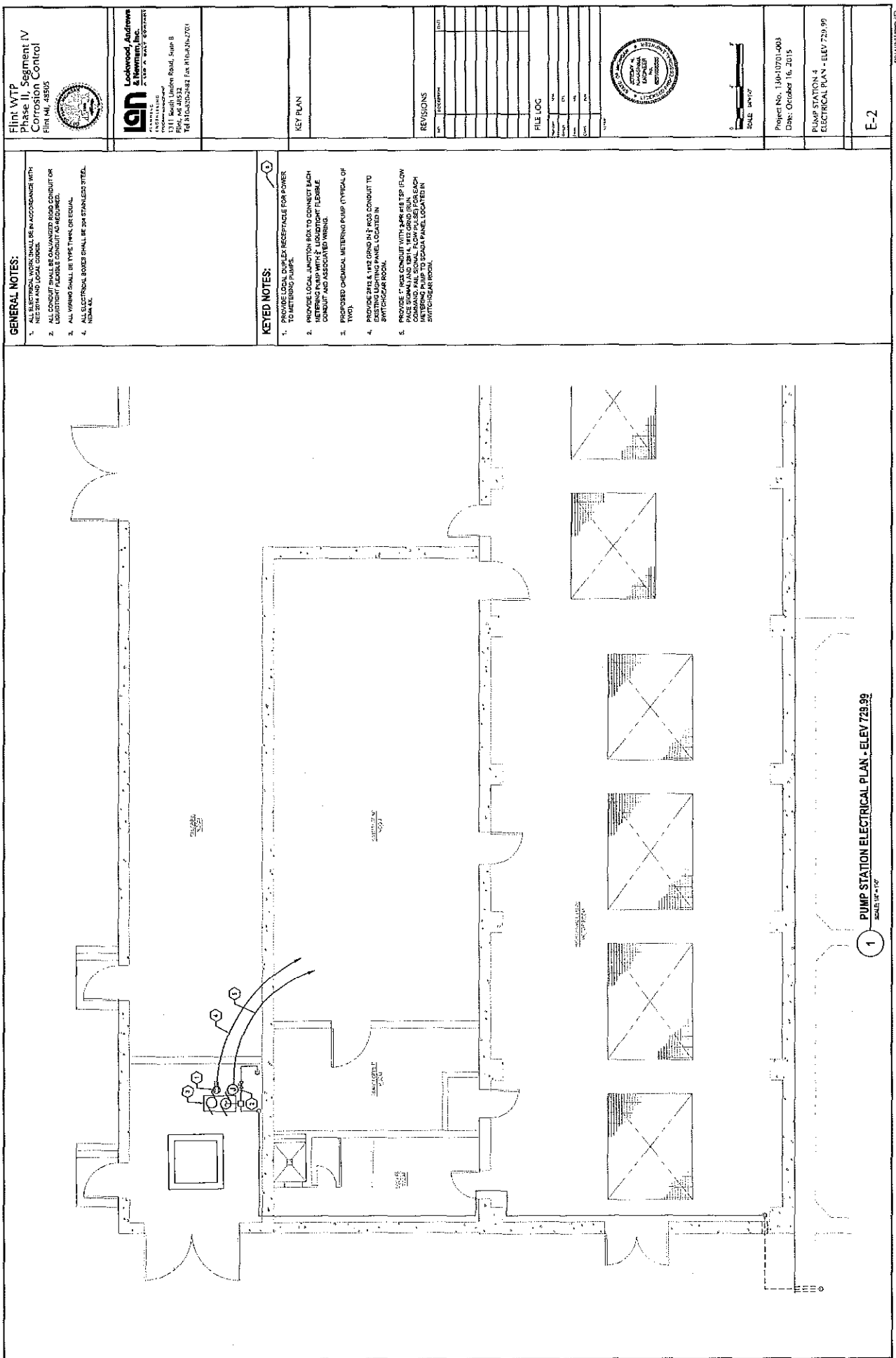
G-2







[illegible]



Rennaker, Joanne (DEQ)

From: Krisztian, George (DEQ)
Sent: Saturday, October 17, 2015 2:50 PM
To: Shaler, Karen (DEQ)
Cc: Thelen, Mary Beth (DEQ); Sygo, Jim (DEQ); Busch, Stephen (DEQ); Prysby, Mike (DEQ); Devereaux, Tracy Jo (DEQ); Shekter Smith, Liane (DEQ); Tommasulo, Karen (DEQ)
Subject: RE: Preliminary and Deliberative: Not Subject to FOIA: Action Steps - Update

Karen,

Please see the e-mail below with edits by for inclusion in Monday's Governor's report.

George L. Krisztian
 Flint Action Plan Coordinator
 Laboratory Director
 Michigan Department of Environmental Quality
 Desk ph (517) 284-6719
 Cell ph (517) 204-0381

From: Shekter Smith, Liane (DEQ)
Sent: Friday, October 16, 2015 5:43 PM
To: Krisztian, George (DEQ)
Cc: Thelen, Mary Beth (DEQ); Shaler, Karen (DEQ); Sygo, Jim (DEQ); Busch, Stephen (DEQ); Prysby, Mike (DEQ); Devereaux, Tracy Jo (DEQ)
Subject: FW: Preliminary and Deliberative: Not Subject to FOIA: Action Steps - Update

Please see Mike's updates below.

Liane J. Shekter Smith, P.E., Chief
 Office of Drinking Water and Municipal Assistance
 Michigan Department of Environmental Quality
 517-284-6543

From: Prysby, Mike (DEQ)
Sent: Friday, October 16, 2015 4:06 PM
To: Shekter Smith, Liane (DEQ)
Cc: Busch, Stephen (DEQ)
Subject: Preliminary and Deliberative: Not Subject to FOIA: Action Steps - Update

Liane,

Below is an update of the Action Steps assigned to me.

Action Step 6 – Flint pipeline is ready has been placed into service. Water From the

Great Lakes Water Authority began flowing Friday afternoon October 16, 2015. (Karen, Please confirm that this is factual)

Action Step 18 - Contact KWA to identify any construction bottlenecks

No updates today – this Action Step will be carried over next week to continue working With KWA towards addressing the bottlenecks.

Action Step 19 – Expedite 399 Plan and Phosphate Plan

Corrosion control proposal received electronically from LAN this morning (without 399 application). Pat and I are reviewing the proposal and preparing comments. The proposal was forwarded to Darren Lytle and Michael Schock from EPA for their review with comments requested by Monday morning. Darren acknowledged receipt of the proposal. LAN is hand delivering a full sized set of the proposal along with a signed permit application later this afternoon.

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

Action Step 20

The City of Flint provide information during the initial coordination meeting that approximately 25% of the index card conversion has taken place. The card have been given to the University of Michigan Flint for entry into GIS. The City has indicated that this is a slow process and they are looking at ways to speed up the process. This is a manually intensive process and they lack the resources to accomplish the task faster.

Action Step 21

The City of Flint will provide a link to the GIS mapping and Howard Croft gave a short presentation on how the use the GIS mapping program.

Additional Actions

George Krisztian and Keren Tommasulo represented the DEQ in the initial weekly coordination meeting with the City of Flint. Present were representatives from DEQ, LARA, DHHS and the City of Flint. Each partner provided a brief synopsis of what their respective group had done the past week and there was discussion on action steps for the following week. Additional discussion included presenting a unified message, creation of a homeowners sampling instructions work group, and inclusion of the Genesee County Health Department for the weekly coordination meetings.

George Krisztian, Karen Tommasulo and Liane Shekter Smith represented the DEQ in a meeting with the Flint Superintendent, Bilal Tawwab. Also present were representatives from LARA, DHHS, Principals from the first three schools that are going through the plumbing

evaluation protocol as well as additional staff from the School District. The DEQ provided an overview of the protocol which includes a plumbing evaluation, subsequent sampling of all faucets and drinking fountains that are used for consumptive purposes, analysis of the samples, consolidation of the data and then review of the data from a health based exposure perspective. There was also discussion that the GCHD would be asked to conduct the sampling so that we ensure all aspects the data is of the highest possible quality. There was also discussion of the need to ensure that the superintendent's office receive the data along with comments on the data before the data is made public. It was agreed that all partners (DEQ, LARA, DHHS, the Superintendent, City of Flint and GCHD) would all be provided the data along with context before the data was released to the public. It was also agreed that there needed to be coordination with respect to who would be releasing the data to the public.

George Krisztian, Karen Tommasulo and Liane Shekter Smith met with James Henry at the Genesee County Health Department. The purpose of the meeting was to:

Invite GCHD to attend the weekly Coordination Meeting with the City of Flint

Ask if GCHD would be willing to take the samples for the school plumbing evaluations

Invite Mr. Henry to be part of the Home owner water sampling instructions work group.

The GCHD provided positive response on all three subjects but did indicate that they would need funding to assist with the sampling. GCHD was asked to submit a request to the DEQ so that question of funding could be addressed formally.

Rennaker, Joanne (DEQ)

From: Krisztian, George (DEQ)
Sent: Saturday, October 17, 2015 2:03 PM
To: Shaler, Karen (DEQ); Thelen, Mary Beth (DEQ)
Cc: Sygo, Jim (DEQ); Wyant, Dan (DEQ); Wurfel, Brad (DEQ); Pallone, Maggie (DEQ); Tommasulo, Karen (DEQ); Shekter Smith, Liane (DEQ); Busch, Stephen (DEQ); Cook, Pat (DEQ); Prysby, Mike (DEQ)
Subject: Action Steps for the week of October 19-23
Attachments: RE: Action Steps for the week of October 19th; RE: Action Steps for the week of October 19th
Importance: High

Karen,

Attached are 25 action steps for the week of October 19-23. Please create this as a new document using the template from last week's report. This will be part of the report to the Governor for Monday October 19, 2015.

Please carry forward the following from the October 12-16 report to the October 19-23 report Please make these items 1-5 on the new report.

Item #5
 Item #9
 Item #16
 Item #25
 Item #26

Fro Points of Contact use Liane, Steve, Pat and Mike for the items listed in Steve's e-mail. Use Maggie, George, Karen for the items listed in Maggie's e-mail

Use the original name for the items that are being carried over from last week.

Please contact Liane, Steve or Maggie for clarification on any of the new action items.

I will send you a separate e-mail for action step updates taken on Friday 10/16/15.

Thank you!
 George

George L. Krisztian
 Flint Action Plan Coordinator
 Laboratory Director
 Michigan Department of Environmental Quality
 Desk ph (517) 284-6719
 Cell ph (517) 204-0381

Rennaker, Joanne (DEQ)

From: Shekter Smith, Liane (DEQ)
Sent: Friday, October 16, 2015 5:43 PM
To: Krisztian, George (DEQ)
Cc: Thelen, Mary Beth (DEQ); Shaler, Karen (DEQ); Sygo, Jim (DEQ); Busch, Stephen (DEQ); Prysby, Mike (DEQ); Devereaux, Tracy Jo (DEQ)
Subject: FW: Preliminary and Deliberative: Not Subject to FOIA: Action Steps - Update

Please see Mike's updates below.

Liane J. Shekter Smith, P.E., Chief
 Office of Drinking Water and Municipal Assistance
 Michigan Department of Environmental Quality
 517-284-6543

From: Prysby, Mike (DEQ)
Sent: Friday, October 16, 2015 4:06 PM
To: Shekter Smith, Liane (DEQ)
Cc: Busch, Stephen (DEQ)
Subject: Preliminary and Deliberative: Not Subject to FOIA: Action Steps - Update

Liane,

Below is an update of the Action Steps assigned to me.

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Michael Prysby, P.E.

District Engineer
Office of Drinking Water and Municipal Assistance
517 290-8817

Rennaker, Joanne (DEQ)

From: Busch, Stephen (DEQ)
Sent: Friday, October 16, 2015 4:07 PM
To: Pallone, Maggie (DEQ); Krisztian, George (DEQ); Shekter Smith, Liane (DEQ); Cook, Pat (DEQ); Prysby, Mike (DEQ); Wurfel, Brad (DEQ); Tommasulo, Karen (DEQ)
Cc: Shaler, Karen (DEQ); Thelen, Mary Beth (DEQ); Wyant, Dan (DEQ); Sygo, Jim (DEQ)
Subject: RE: Action Steps for the week of October 19th
Attachments: ODWMA-ActionSteps-10-19-draft.docx

Attached are the draft ODWMA action steps for next week, pending Liane's review.

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

From: Pallone, Maggie (DEQ)
Sent: Friday, October 16, 2015 2:55 PM
To: Krisztian, George (DEQ); Shekter Smith, Liane (DEQ); Busch, Stephen (DEQ); Cook, Pat (DEQ); Prysby, Mike (DEQ); Wurfel, Brad (DEQ); Tommasulo, Karen (DEQ)
Cc: Shaler, Karen (DEQ); Thelen, Mary Beth (DEQ); Wyant, Dan (DEQ); Sygo, Jim (DEQ)
Subject: RE: Action Steps for the week of October 19th

Additional action items:

After Action Review panel
 Staff hiring plan
 \$1 million for lab billing code
 Introduce Part 54 legislative changes
 Finalize FY 17 budget request

Thanks George.

Maggie

From: Krisztian, George (DEQ)
Sent: Friday, October 16, 2015 8:50 AM
To: Shekter Smith, Liane (DEQ) <SHEKTERL@michigan.gov>; Busch, Stephen (DEQ) <BUSCHS@michigan.gov>; Cook, Pat (DEQ) <COOKP@michigan.gov>; Prysby, Mike (DEQ) <PRYSBYM@michigan.gov>; Wurfel, Brad (DEQ) <WurfelB@michigan.gov>; Pallone, Maggie (DEQ) <PalloneM@michigan.gov>; Tommasulo, Karen (DEQ) <TommasuloK@michigan.gov>
Cc: Shaler, Karen (DEQ) <SHALERK@michigan.gov>; Thelen, Mary Beth (DEQ) <THELENM2@michigan.gov>; Wyant, Dan (DEQ) <WyantD@michigan.gov>; Sygo, Jim (DEQ) <SygoJ@michigan.gov>

Subject: Action Steps for the week of October 19th

Importance: High

I need to have 25 additional action steps for the week of October 19th. I would like at least 15 steps from Liane's group and 10 from exec. Please submit your steps to the whole group by 4:00 PM today.

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Thank you!

George

George L. Krisztian
Flint Action Plan Coordinator
Laboratory Director
Michigan Department of Environmental Quality
Desk ph (517) 284-6719
Cell ph (517) 204-0381

PRELIMINARY AND DELIBERATIVE – NOT SUBJECT TO FOIA

Action Steps for week of 10/19/2015

1. Develop Letter to Schools
2. Finalize Sampling Protocol
3. Confirm school sampling logistics
4. Meeting(s) with school staff/management
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19. Provide DHHS with any available cross-reference information.
20. Develop childcare facility guidance or review DHHS related materials.

Rennaker, Joanne (DEQ)

From: Prysby, Mike (DEQ)
Sent: Friday, October 16, 2015 4:05 PM
To: Shekter Smith, Liane (DEQ)
Cc: Busch, Stephen (DEQ)
Subject: Preliminary and Deliberative: Not Subject to FOIA: Action Steps - Update

Liane,

Below is an update of the Action Steps assigned to me.

Action Step 6 – Flint pipeline is ready to be placed into service.

Action Step 18 - Contact KWA to identify any construction bottlenecks

No updates today – this Action Step will be carried over next week to continue working With KWA towards addressing the bottlenecks

Action Step 19 – Expedite 399 Plan and Phosphate Plan

Corrosion control proposal received electronically from LAN this morning (without 399 application). Pat and I are reviewing the proposal and preparing comments. The proposal was forwarded to Darren Lytle and Michael Schock from EPA for their review with comments requested by Monday morning. Darren acknowledged receipt of the proposal. LAN is hand delivering a full sized set of the proposal along with a signed permit application later this afternoon.

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

Rennaker, Joanne (DEQ)

From: Cook, Pat (DEQ)
Sent: Friday, October 16, 2015 2:58 PM
To: Prysby, Mike (DEQ)
Subject: RE: PRELIMINARY & DELIBERATIVE. NOT SUBJECT TO FOIA: FW: Flint WTP PH2 SEG4 - Corrosion Control

Hi Mike – I had a chance to review the Flint WTP Corrosion Control proposal. While I did not spend a lot of time reviewing the attached plans, I did read the entire Basis of Design (BOD) and offer the following comments.

Since Flint will be obtaining water from DWSD that already has orthophosphate (PO₄) in it as a corrosion control measure, it makes sense for Flint to use PO₄ as well.

The water from DWSD will have approximately 0.3 – 0.4 mg/l orthophosphate as phosphate (P) as it enters the Flint supply. The BOD states that Flint will add PO₄ at one of two locations near the Flint WTP to increase the PO₄ levels prior to entering the Flint distribution system. According to EPA's *Revised Guidance Manual for Selecting Lead and Copper Control Strategies* orthophosphate is an effective corrosion control method if a residual of at least 0.5 mg/l orthophosphate as phosphate (P) is maintained in the distribution system. A 1.0 mg/l as P residual is preferable. It also states that the pH should be in the 7.2 – 7.8 range. A brief review of DWSD's MOR's reveals that the average pH at the DWSD plant taps is in the 7.2 - 7.4 range. In addition, Genesee County's WQP data shows that the pH in their distribution system is usually over 7.2, so maintaining an adequate pH range for PO₄ application in Flint should not be an issue. However, Flint should monitor the pH regularly at the connection points to DWSD and in their distribution system piping network to ensure that pH stays in the appropriate ranges and adjust them if needed.

Therefore, I concur with their proposal to feed PO₄ as a corrosion control strategy under the assumption that they add enough PO₄ to maintain a 0.5 – 1.0 mg/l as P in the distribution system. Also, they need to tell us what NSF Standard 60 product they plan on using.

Hope this helps - pat

From: Prysby, Mike (DEQ)
Sent: Friday, October 16, 2015 8:07 AM
To: Cook, Pat (DEQ)
Subject: PRELIMINARY & DELIBERATIVE. NOT SUBJECT TO FOIA: FW: Flint WTP PH2 SEG4 - Corrosion Control

Pat,

Attached is Flint's corrosion control proposal (BOD & schematic). I was told this is priority #1 for review/comment/approval. I will be reviewing this today for comment and/or permit issuance along with issuing the GCDC WTP permit...If you have an opportunity to take a look at the proposal and add any comments, as needed, that would be helpful. I'm out today at 11:00am; however, I don't foresee that happening.

Michael Prysby, P.E.
 District Engineer
 Office of Drinking Water and Municipal Assistance

517 290-8817

From: Matta, Samir [<mailto:SFMatta@lan-inc.com>]
Sent: Friday, October 16, 2015 12:02 AM
To: Prysby, Mike (DEQ)
Subject: Flint WTP PH2 SEG4 - Corrosion Control

Hi Mike,

Please see attached plans for the Corrosion Control Plan for the City of Flint. I will have the official submittal package to you tomorrow afternoon after I get Brent or Mike's signature on the permit application. I will call you when I get back in Lansing to drop the package. Is three sets of full size plans adequate? Would you like some half size plans? Let me know.

Basis of Design

Given that Flint will require lead and copper corrosion control and given that Detroit utilizes orthophosphate for their corrosion control methodology, and that Flint will be receiving Detroit water for the immediate future, orthophosphate is the appropriate corrosion control methodology for Flint. A dosage of 0.8 mg/l as PO_4 has been recommended for the Detroit water. Numerous utilities utilizing Lake Michigan water have a target dosage of 0.9 mg/l as PO_4 . Therefore, a target dosage in the range of 0.8 to 0.9 mg/l appears appropriate.

It is expected that, at least initially, there will be a significant PO_4 demand in the system. This will require a significantly higher dosage until this demand is satisfied and the target residual can be maintained. We are therefore designing for capability of a maximum dosage of 1.5 mg/l.

The arriving Detroit water will likely have some residual PO_4 when it arrives at Flint. It has been reported that this residual will be approximately 0.4 mg/l. The system must therefore be capable of a minimum dosage of 0.4 mg/l.

Based upon the usage of 75% Phosphoric Acid and a flow range of 4 MGD to 25 MGD, with an average day of 16 MGD, the expected feed rate will be 1.35 to 32 gpd. Average Phosphoric Acid feed is expected to be 10.8 gpd, requiring 30 days storage of 325 gal.

Orthophosphate will need to be applied at two locations. Detroit water will enter the Flint system at Control Station CS2, and supplementary phosphate will be applied there. However, on occasion some incoming water may need to be diverted to the Dort Reservoir, bypassing CS2. This water would then be introduced to the system through High Service Pump Station PS4 and phosphate would be introduced at this location.

Please let me know if the information is adequate or you require additional information.

Thanks.

Samir F. Matta, PE
 Team Leader



**Lockwood, Andrews
& Newnam, Inc.**
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 2121 University Park Dr, Suite 100 • Okemos, MI 48864-6901
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Rennaker, Joanne (DEQ)

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Sent: Friday, October 16, 2015 2:55 PM
To: Krisztian, George (DEQ); Shekter Smith, Liane (DEQ); Busch, Stephen (DEQ); Cook, Pat (DEQ); Prysby, Mike (DEQ); Wurfel, Brad (DEQ); Tommasulo, Karen (DEQ)
Cc: Shaler, Karen (DEQ); Thelen, Mary Beth (DEQ); Wyant, Dan (DEQ); Sygo, Jim (DEQ)
Subject: RE: Action Steps for the week of October 19th

Additional action items:

After Action Review panel
 Staff hiring plan
 \$1 million for lab billing code
 Introduce Part 54 legislative changes
 Finalize FY 17 budget request

Thanks George.

Maggie

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Cc: Shaler, Karen (DEQ); Thelen, Mary Beth (DEQ); Wyant, Dan (DEQ); Sygo, Jim (DEQ)
Subject: RE: Action Steps for the week of October 19th
Attachments: ODWMA-ActionSteps-10-19-draft.docx

Attached are the draft ODWMA action steps for next week, pending Liane's review.

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

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Cc: Shaler, Karen (DEQ) <SHALERK@michigan.gov>; Thelen, Mary Beth (DEQ) <THELENM2@michigan.gov>; Wyant, Dan (DEQ) <WyantD@michigan.gov>; Sygo, Jim (DEQ) <SygoJ@michigan.gov>

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Rennaker, Joanne (DEQ)

From: Lytle, Darren <Lytle.Darren@epa.gov>
Sent: Friday, October 16, 2015 2:28 PM
To: Prysby, Mike (DEQ); Schock, Michael
Cc: Busch, Stephen (DEQ)
Subject: RE: Flint WTP PH2 SEG4 - Corrosion Control

Mike,

Will do.

Thanks much for sending to us.

Darren

Darren A. Lytle, Ph.D., P.E.
 Branch Chief (Acting)
 U.S. Environmental Protection Agency
 26 West Martin Luther King Dr.
 Cincinnati, Ohio 45268
 Phone: (513) 569-7432
 Fax: (513) 487-2543
 email: lytle.darren@epa.gov

From: Prysby, Mike (DEQ) [<mailto:PRYSBYM@michigan.gov>]
Sent: Friday, October 16, 2015 1:32 PM
To: Lytle, Darren ; Schock, Michael
Cc: Busch, Stephen (DEQ)
Subject: FW: Flint WTP PH2 SEG4 - Corrosion Control

Darren, Michael

We have received Flint's corrosion control proposal from their consultant. If you have comments, please provide them to me by Monday morning.

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

From: Matta, Samir [<mailto:SFMatta@lan-inc.com>]
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Samir F. Matta, PE

Team Leader



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& Newnam, Inc.**
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Cc: Busch, Stephen (DEQ)
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Darren

Darren A. Lytle, Ph.D., P.E.
Branch Chief (Acting)
U.S. Environmental Protection Agency
26 West Martin Luther King Dr.
Cincinnati, Ohio 45268
Phone: (513) 569-7432
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email: lytle.darren@epa.gov

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Sent: Friday, October 16, 2015 1:44 PM
To: Shekter Smith, Liane (DEQ)
Cc: Prysby, Mike (DEQ); Cook, Pat (DEQ); Rosenthal, Adam (DEQ)
Subject: Preliminary and Deliberative, Not Subject to FOIA - 10/19 ODWMA Action Steps - Draft
Attachments: ODWMA-ActionSteps-10-19-draft.docx

Liane,

See the attached draft list and provide and edits/comments. If you are not back by 4:00, I will get the list to George and the team. Thanks.

Stephen Busch, P.E.
MDEQ Lansing District Coordinator
Office of Drinking Water and Municipal Assistance
Lansing and Jackson District Supervisor
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buschs@michigan.gov

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Cc: Busch, Stephen (DEQ)
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Attachments: Flint WTP PH2 S4 - Corrosion Control.pdf

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Orthophosphate will need to be applied at two locations. Detroit water will enter the Flint system at Control Station CS2, and supplementary phosphate will be applied there. However, on occasion some incoming water may need to be diverted to the Dort Reservoir, bypassing CS2. This water would then be introduced to the system through High Service Pump Station PS4 and phosphate would be introduced at this location.

Please let me know if the information is adequate or you require additional information.

Thanks.

Samir F. Matta, PE
Team Leader



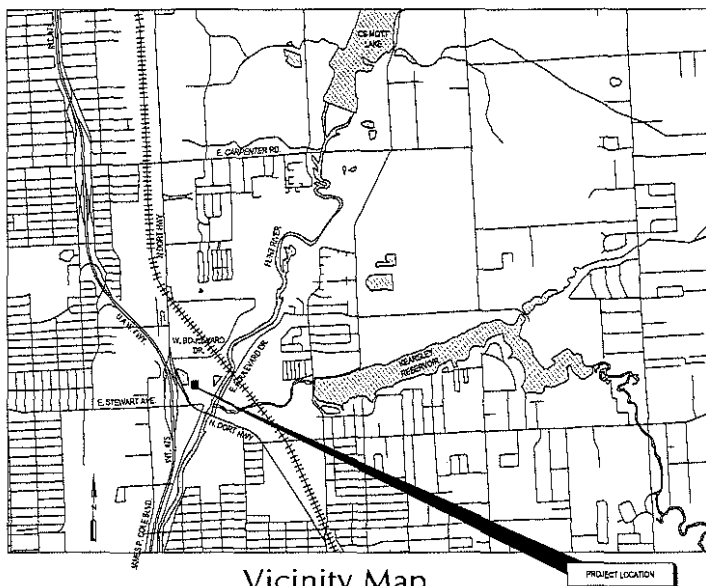
1311 South Linden Road, Suite B • Flint, MI 48532
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D 517.819.2367 C 517.819.2367
www.lan-inc.com • sfmatta@lan-inc.com

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City of Flint, MI Flint Water Treatment Plant Phase II, Segment IV - Corrosion Control

4500 North Dort Highway, Flint, MI 48505



Vicinity Map

Jeremy N. Nakashima

10-16-2015

Jeremy N. Nakashima, P.E. Date
Michigan Licensed Professional Engineer
No. 6201058535 Expires October 31, 2016



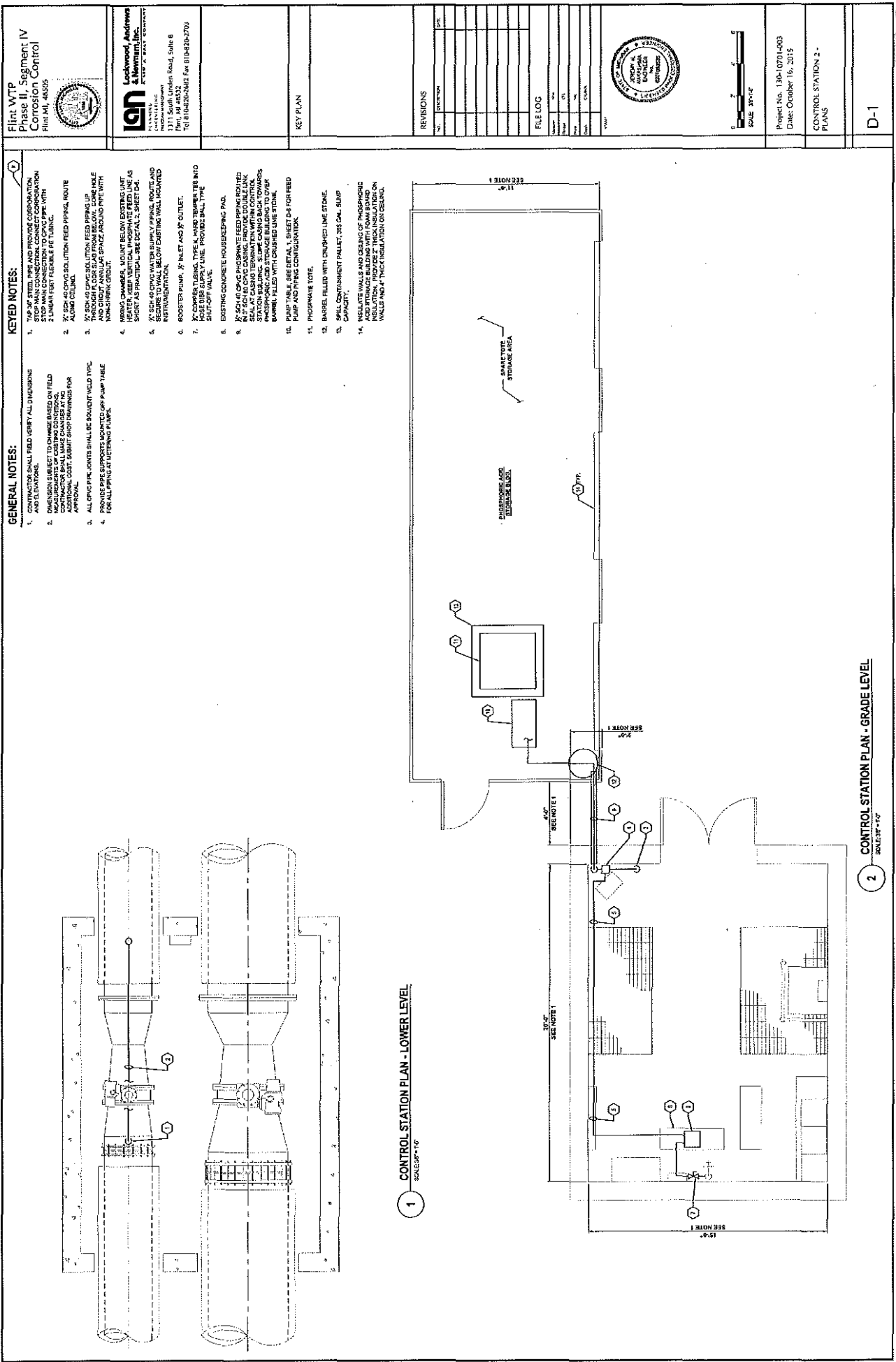
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Issue Date: October 16, 2015

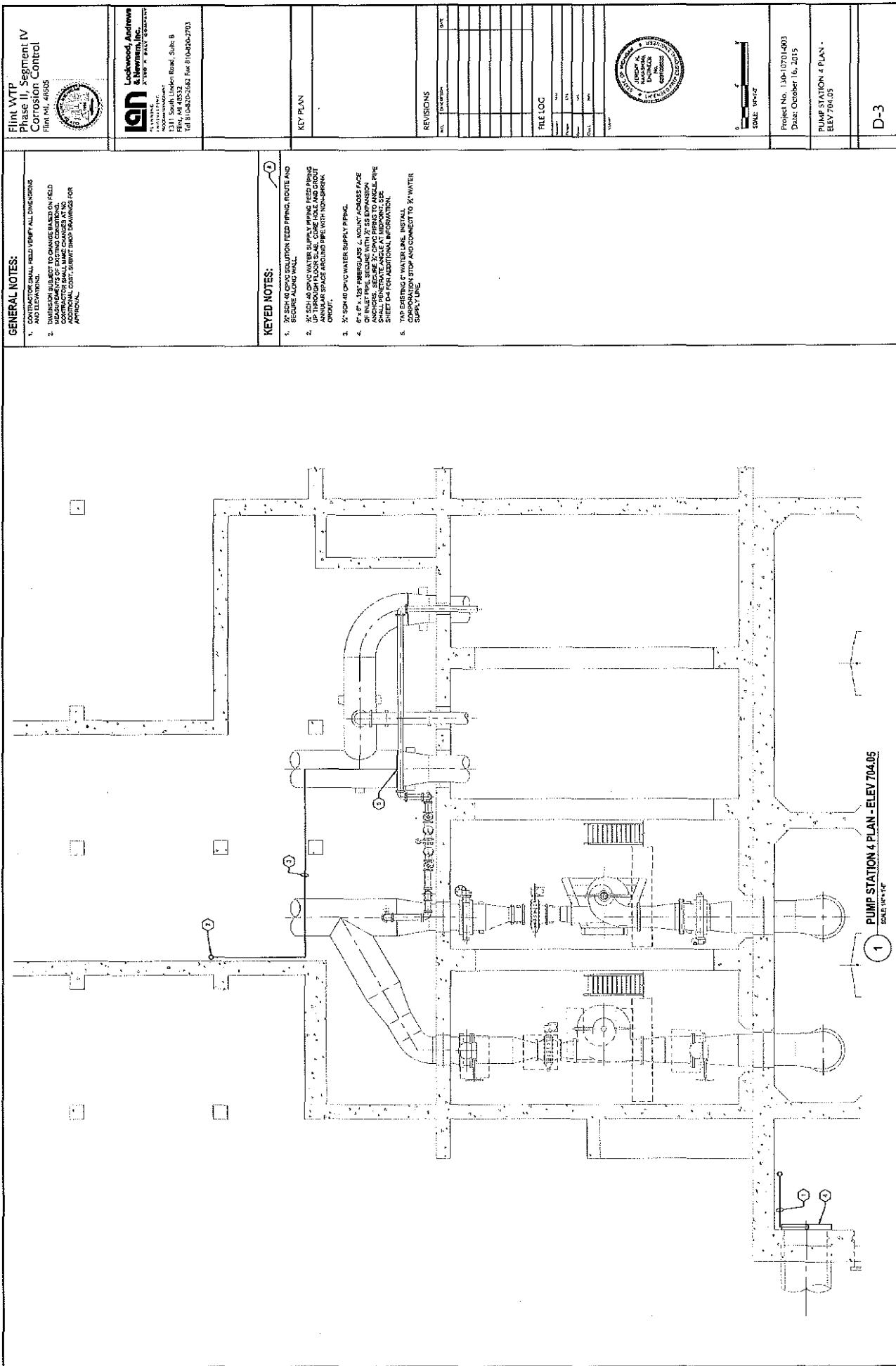


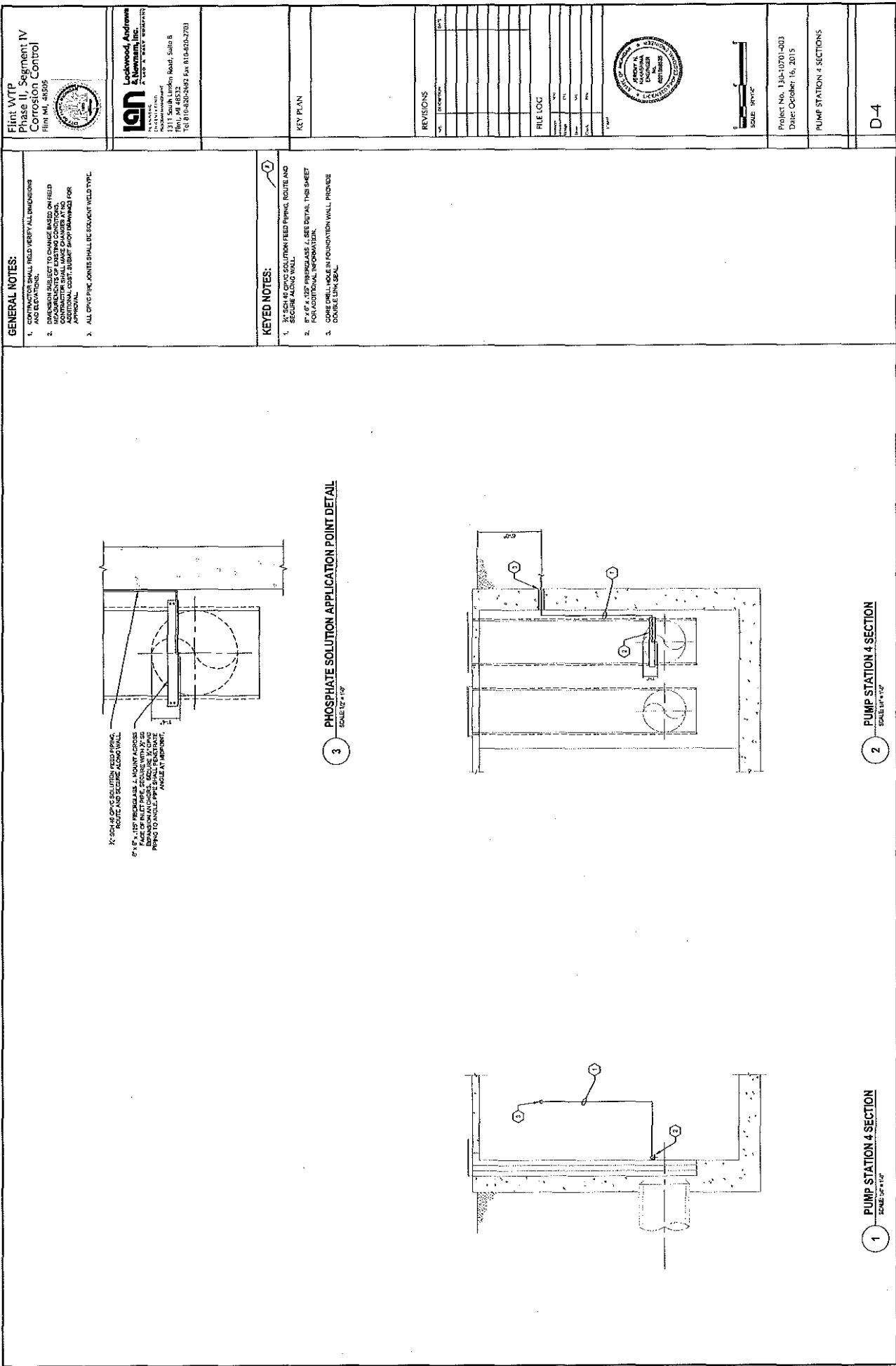
**Lockwood, Andrews
& Newnam, Inc.**
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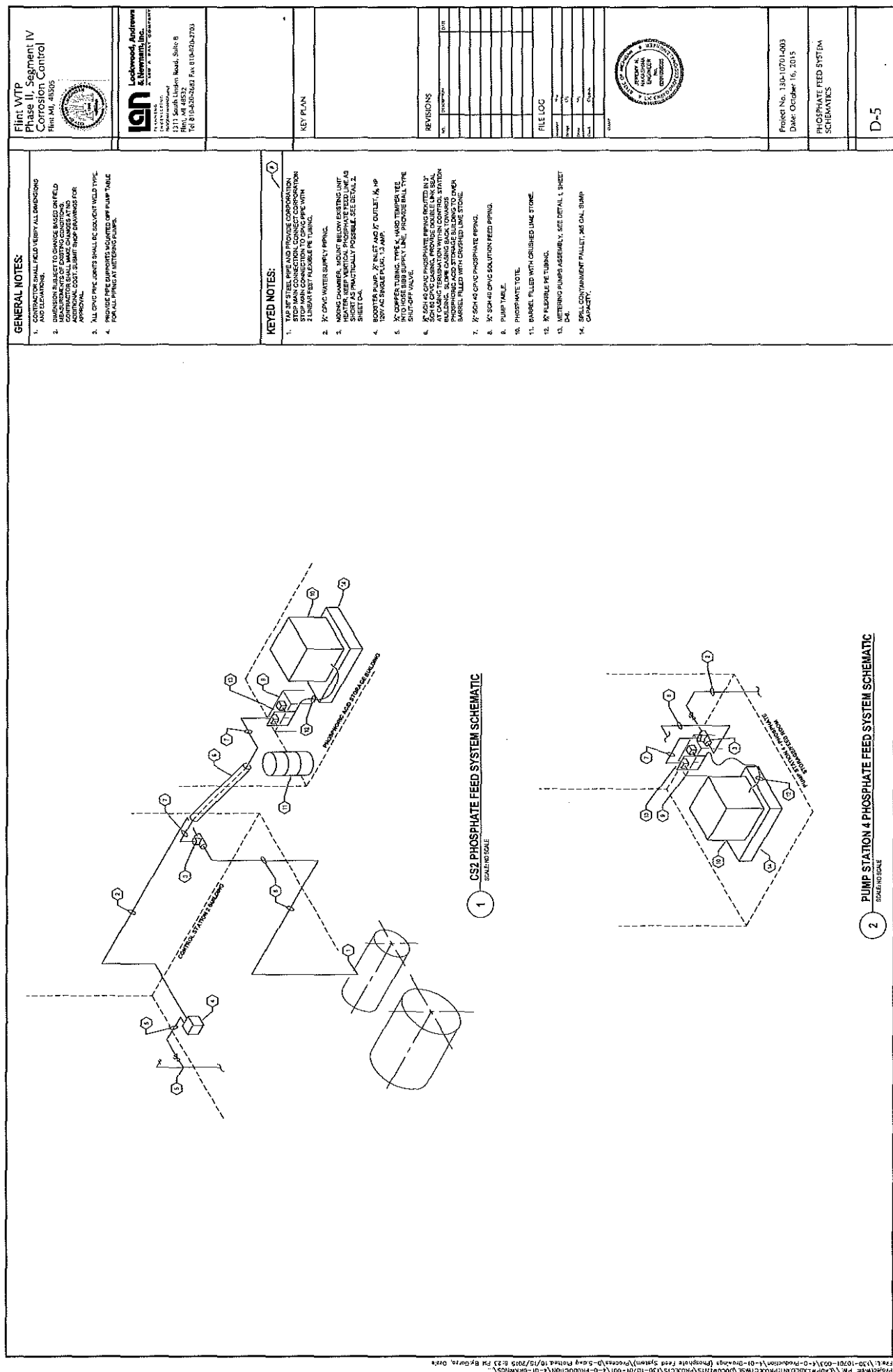
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ENGINEERING
PROGRAM MANAGEMENT

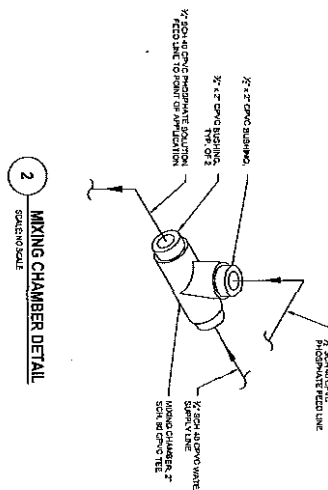
1311 South Linden Road, Suite B
Flint, MI 48532
Tel 810-820-2682 Fax 810-820-2703





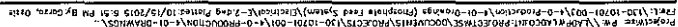




[illegible]

- ### GENERAL NOTES:
1. CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS AND ELEVATIONS.
 2. DIMENSION SUBJECT TO CHANGE BASED ON FIELD MEASUREMENTS OR EXISTING CONDITIONS. CONTRACTOR SHALL SUBMIT PROPOSED DIMENSIONS AND APPROXIMATE COST ESTIMATE PRIOR TO AWARD FOR APPROVAL.
 3. ALL SPW PIPE JOINTS SHALL BE SOLVEX WELD TYPED.
 4. PROPOSED PIPE SUPPORTS MOUNTED OFF PAVEMENT SHALL BE AT ALL PILING AT WITHDRAWN PAVEMENT.

[illegible]



Rennaker, Joanne (DEQ)

From: Shekter Smith, Liane (DEQ)
Sent: Friday, October 16, 2015 11:47 AM
To: Busch, Stephen (DEQ); Prysby, Mike (DEQ); Cook, Pat (DEQ); Rosenthal, Adam (DEQ)
Subject: FW: Urgent Request for Clarification: Letter to Lee-Anne Walters and justification for invalidating her samples.

From: Wyant, Dan (DEQ)
Sent: Thursday, October 15, 2015 1:27 PM
To: Krisztian, George (DEQ); Sygo, Jim (DEQ); Shekter Smith, Liane (DEQ)
Subject: Fwd: Urgent Request for Clarification: Letter to Lee-Anne Walters and justification for invalidating her samples.

Sent from my iPhone

Begin forwarded message:

From: Marc Edwards <edwardsm@vt.edu>
Date: October 15, 2015 at 10:44:08 AM EDT
To: <WyantD@michigan.gov>, <walters313@gmail.com>, Andrew Leavitt <Aleavitt@senate.michigan.gov>, Melissa Mays <indigrace@gmail.com>, "Dickinson, Jordan" <Jordan.Dickinson@mail.house.gov>
Subject: Urgent Request for Clarification: Letter to Lee-Anne Walters and justification for invalidating her samples.

Hi Dan,

Thank you for your help (if any) with the MDEQ FOIA. I received the documents last night. I was hoping you could help me with something ASAP.

One of the things creating distrust between Flint residents and MDEQ, is a long list of miscommunications and false statements by your employees. I want you to help us understand one of those miscommunications as soon as possible.

On August 4th your employee's Wurfel, Busch and Shekter Smith met with Melissa and Lee-Anne. According to Melissa and Lee-Anne, in a meeting with the governor's Chief of Staff, your employee's could not explain to them, why Lee-Anne's samples were invalidated (i.e., thrown out of the samples used to calculate the 90thile lead).

For your information, on the basis of records from the City, **Lee-Anne's home is the ONLY home in the 2015 sampling pool that is proven to have a lead pipe.** I have compared the sample sites that the city used to the database that Flint has put together, and of 11 samples in the database that the city claims had a lead pipe, ZERO actually had a lead pipe. Michigan and Federal law further states that if a sample is taken from a home with a lead pipe, even if it has a point of use device like a filter or softener, once that sample is collected it cannot be invalidated (see below). EPA R5 staff explicitly told your employee's in writing, that Lee-Anne's samples had to

be counted for compliance purposes. **Your employee's nonetheless, over R5's written instructions and the law, threw out the only Flint LCR samples known to be legitimate in the 2015 sampling round.** They also double counted Melissa's samples for LCR compliance purposes, even though her house does not have a lead pipe, and has no lead plumbing. So I hope you can see the "adding insult to injury" dimension of your employee's actions. The irony - using samples from the chief critics of MDEQ, to cheat on the LCR monitoring. Specifically, counting a lead free site twice (when it should not be counted at all), and throwing out three samples from the only home known to have lead pipe. We also now have data that shows every single sample we could check in the 2015 round, did not have a lead pipe at all.

Furthermore, according to Melissa and Lee-Anne, the Governor's chief of staff ordered your employee's, to as soon as possible, communicate to Lee-Anne why her samples were invalidated. According to Melissa and Lee-Anne, the governor's chief of staff further ordered your employees to "CC" him on that communication. The governor's chief of staff also apparently asked them to get Lee-Anne's address and phone number, so that they could be sure their communication got to her, and they refused, and insisted they had all of Leigh-Anne's information.

In the FOIA production, I was surprised to see that there is an e-mail to Lee-Anne dated August 25th. This is surprising because Lee-Anne never received that e-mail. Moreover, there is an apology to Lee-Anne that the e-mail is late, and furthermore, the chief of staff is not cc'd. Lee-Anne has looked in her spam and other files, and there is no evidence that this late e-mail ever reached her.

I am hoping you can get to the bottom of this, and see first of all 1) why the chief of staff was not cc'd as requested, 2) if this e-mail was actually sent, and produce some evidence that it was, and 3) try to understand why your employee's illegally invalidated Lee-Anne's samples over the objections of EPA and Lee-Anne. And I am hoping you can do this today. My understanding is that you are out and about trying to re-establish public trust in MDEQ, and this would be a good place to start.

Best Regards,

Marc Edwards

From your own web page.

c. Softeners and Other Point of Use (POU) and Point of Entry (POE) Devices:

Sampling sites with faucets that have POU or POE treatment devices, such as softeners, shall not be used as Tier 1, 2, or 3 sites unless insufficient Tiered sites are available. Field staff shall encourage water supplies to sample from a kitchen or bathroom tap that is not normally connected to the softener. If a sample of softened water is analyzed, then the water supply may consider returning to the same site to collect a sample of unsoftened water. Some residents may be able to bypass the softener at the tap. Both sample results (softened and unsoftened) will be used to calculate the 90th percentile. Sample results shall not be deemed improper on the basis that the water passed through a softener.

Rennaker, Joanne (DEQ)

From: Cook, Pat (DEQ)
Sent: Friday, October 16, 2015 10:02 AM
To: Busch, Stephen (DEQ); Prysby, Mike (DEQ)
Cc: Shekter Smith, Liane (DEQ)
Subject: RE: Action Steps for the week of October 19th

Mike – I'm currently reviewing Flint's CC plan and so far it looks good to me. I'll send my comments to you soon.

Steve and Mike – when Steve returns from his 10:00 HAB meeting, please come up to Liane's office so we can have a quick brainstorming session for our 15 additional Action Steps for next week.

pat

From: Shekter Smith, Liane (DEQ)
Sent: Friday, October 16, 2015 9:13 AM
To: Busch, Stephen (DEQ); Cook, Pat (DEQ); Prysby, Mike (DEQ); Rosenthal, Adam (DEQ); Benzie, Richard (DEQ); Butler, Sonya (DEQ)
Cc: Devereaux, Tracy Jo (DEQ)
Subject: FW: Action Steps for the week of October 19th
Importance: High

Need help on this one. You don't want me doing this alone ☺.

From: Krisztian, George (DEQ)
Sent: Friday, October 16, 2015 8:50 AM
To: Shekter Smith, Liane (DEQ); Busch, Stephen (DEQ); Cook, Pat (DEQ); Prysby, Mike (DEQ); Wurfel, Brad (DEQ); Pallone, Maggie (DEQ); Tommasulo, Karen (DEQ)
Cc: Shaler, Karen (DEQ); Thelen, Mary Beth (DEQ); Wyant, Dan (DEQ); Sygo, Jim (DEQ)
Subject: Action Steps for the week of October 19th
Importance: High

I need to have 25 additional action steps for the week of October 19th. I would like at least 15 steps from Liane's group and 10 from exec. Please submit your steps to the whole group by 4:00 PM today.

Given how tight everyone's schedule is we will try to do this electronically. If it works, then we will make this a weekly deadline. If it doesn't work then we will have weekly meetings.

Thank you!
 George

George L. Krisztian
 Flint Action Plan Coordinator
 Laboratory Director

Michigan Department of Environmental Quality
Desk ph (517) 284-6719
Cell ph (517) 204-0381

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George

George L. Krisztian
Flint Action Plan Coordinator
Laboratory Director
Michigan Department of Environmental Quality
Desk ph (517) 284-6719
Cell ph (517) 204-0381

Rennaker, Joanne (DEQ)

From: Matta, Samir <SFMatta@lan-inc.com>
Sent: Friday, October 16, 2015 12:02 AM
To: Prysby, Mike (DEQ)
Subject: Flint WTP PH2 SEG4 - Corrosion Control
Attachments: Flint WTP PH2 S4 - Corrosion Control.pdf

Hi Mike,

Please see attached plans for the Corrosion Control Plan for the City of Flint. I will have the official submittal package to you tomorrow afternoon after I get Brent or Mike's signature on the permit application. I will call you when I get back in Lansing to drop the package. Is three sets of full size plans adequate? Would you like some half size plans? Let me know.

Basis of Design

Given that Flint will require lead and copper corrosion control and given that Detroit utilizes orthophosphate for their corrosion control methodology, and that Flint will be receiving Detroit water for the immediate future, orthophosphate is the appropriate corrosion control methodology for Flint. A dosage of 0.8 mg/l as PO_4 has been recommended for the Detroit water. Numerous utilities utilizing Lake Michigan water have a target dosage of 0.9 mg/l as PO_4 . Therefore, a target dosage in the range of 0.8 to 0.9 mg/l appears appropriate.

It is expected that, at least initially, there will be a significant PO_4 demand in the system. This will require a significantly higher dosage until this demand is satisfied and the target residual can be maintained. We are therefore designing for capability of a maximum dosage of 1.5 mg/l.

The arriving Detroit water will likely have some residual PO_4 when it arrives at Flint. It has been reported that this residual will be approximately 0.4 mg/l. The system must therefore be capable of a minimum dosage of 0.4 mg/l.

Based upon the usage of 75% Phosphoric Acid and a flow range of 4 MGD to 25 MGD, with an average day of 16 MGD, the expected feed rate will be 1.35 to 32 gpd. Average Phosphoric Acid feed is expected to be 10.8 gpd, requiring 30 days storage of 325 gal.

Orthophosphate will need to be applied at two locations. Detroit water will enter the Flint system at Control Station CS2, and supplementary phosphate will be applied there. However, on occasion some incoming water may need to be diverted to the Dort Reservoir, bypassing CS2. This water would then be introduced to the system through High Service Pump Station PS4 and phosphate would be introduced at this location.

Please let me know if the information is adequate or you require additional information.

Thanks.

Samir F. Matta, PE
 Team Leader



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 D 517.819.2367 C 517.819.2367
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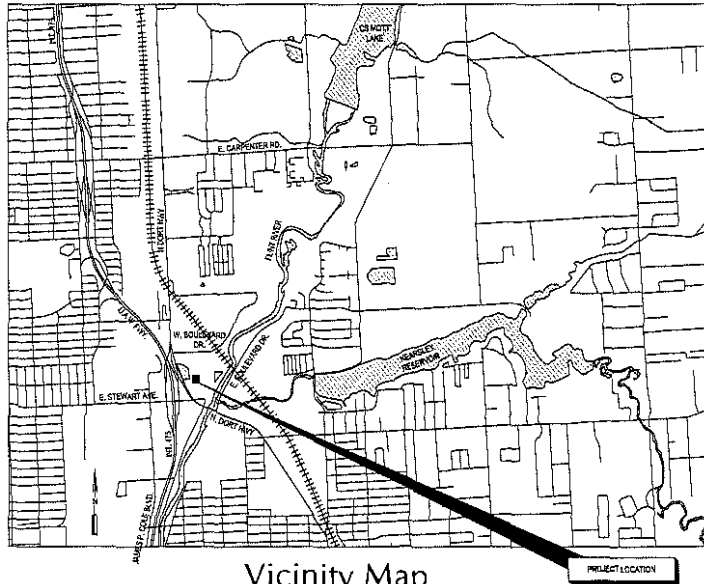


City of Flint, MI

Flint Water Treatment Plant

Phase II, Segment IV - Corrosion Control

4500 North Dort Highway, Flint, MI 48505



Vicinity Map

Jeremy N. Nakashima 10-16-2015
 Jeremy N. Nakashima, P.E. Date
 Michigan Licensed Professional Engineer
 No. 6201058535 Expires October 31, 2016



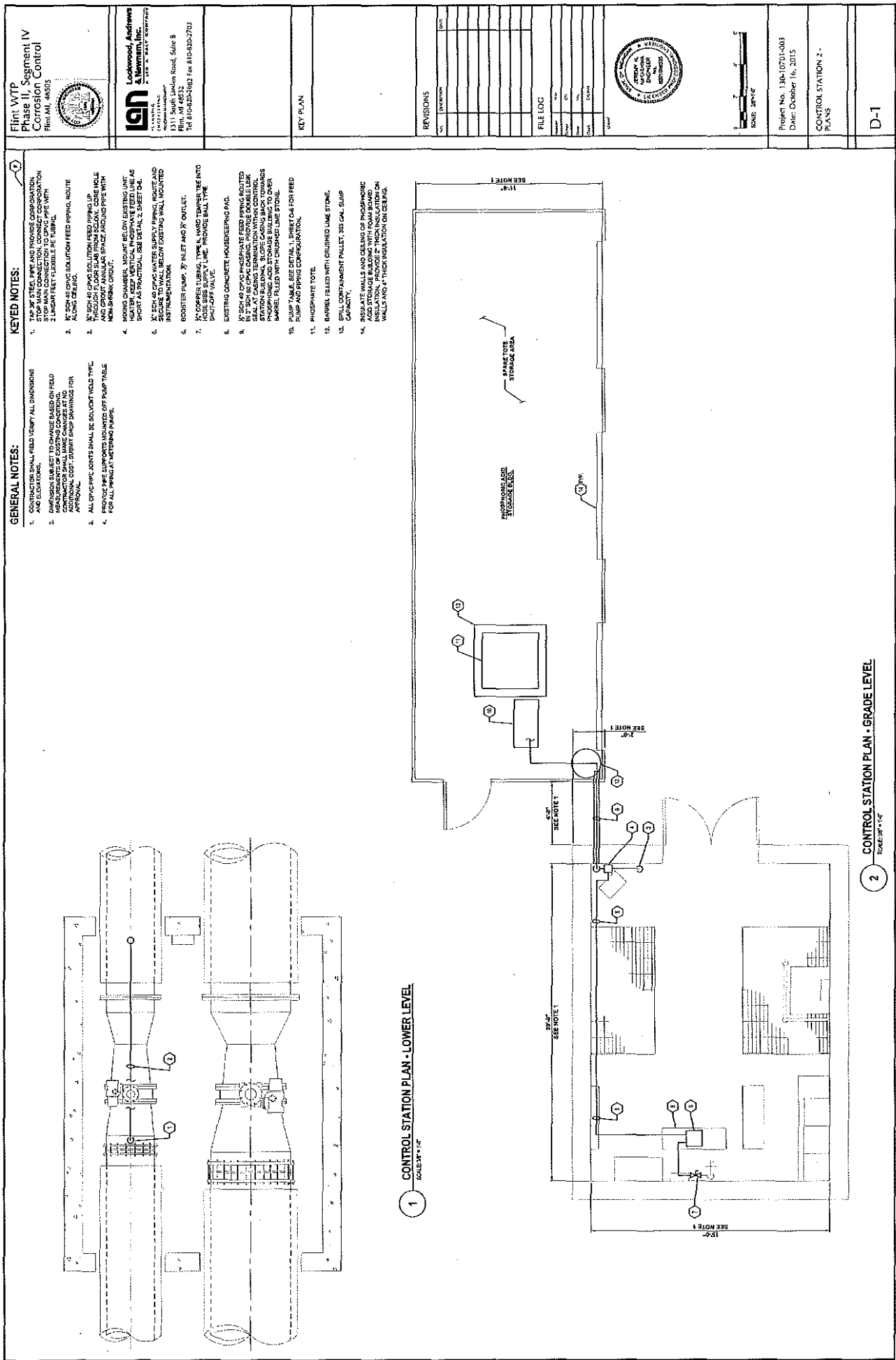
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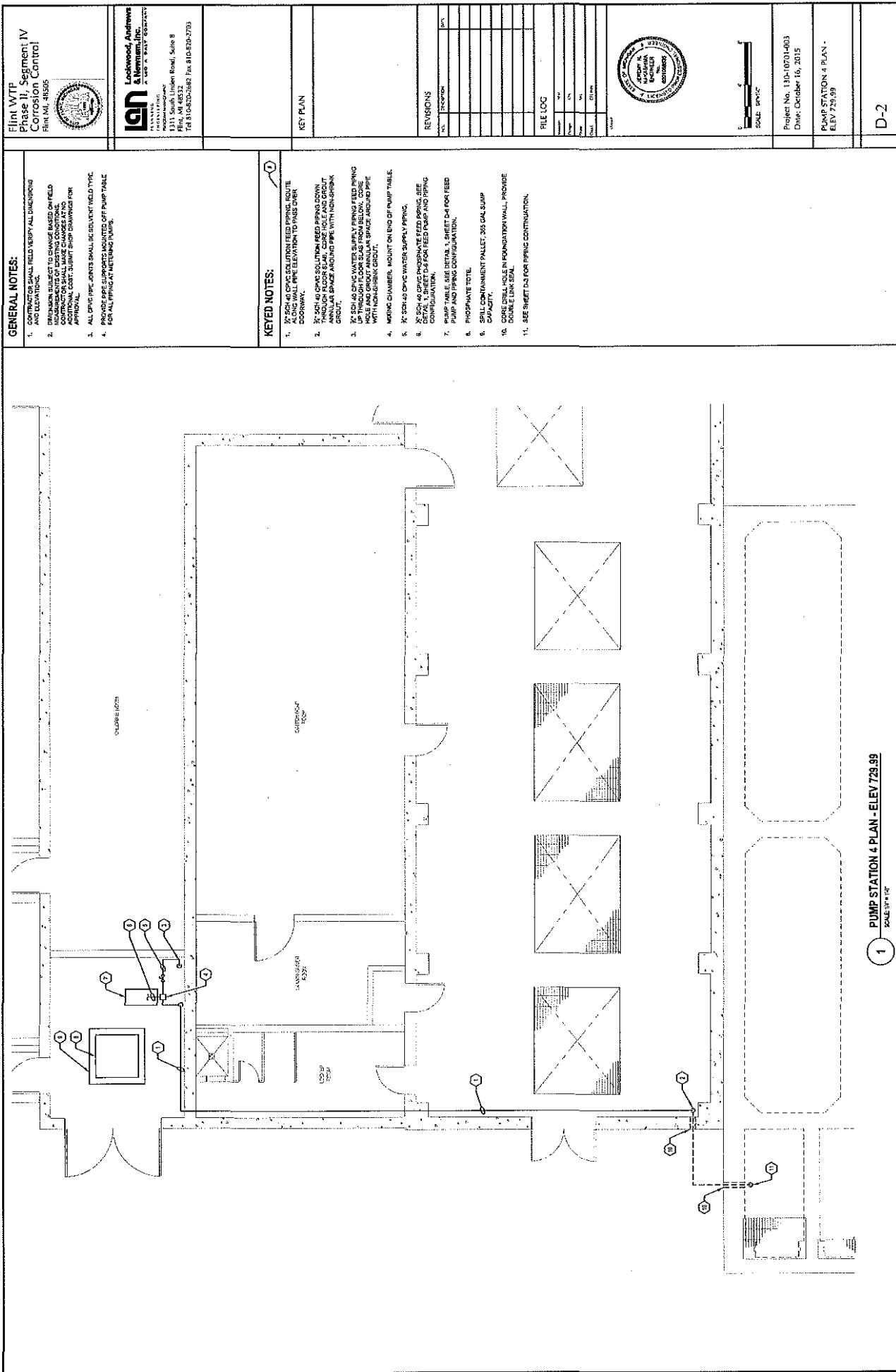
LAN Lockwood, Andrews
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 PLANNING
 ENGINEERING
 PROGRAM MANAGEMENT

1311 South Linden Road, Suite B
 Flint, MI 48532
 Tel 810-820-2682 Fax 810-820-2703

G-2

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[illegible]



Rennaker, Joanne (DEQ)

From: Marc Edwards <edwardsm@vt.edu>
Sent: Thursday, October 15, 2015 7:29 PM
To: 'Howard Croft'; 'Laura Sullivan'
Cc: 'Gerald (Jed) Natzke'; 'Andy Leavitt'; 'Amy Hovey'; 'Brent Wright'; 'Lytle, Darren'; 'Flint Mayor'; 'donna.cole'; Dykema, Linda D. (DHHS); Krisztian, George (DEQ); 'Henry, James'; 'James Gaskin'; 'Jason Lorenz'; 'jmikewright'; 'JoAnne Herman'; 'John O'Brien'; 'Kirk Smith'; larry.koehler@mcc.edu; 'Lawrence Reynolds'; 'Lawrence Reynolds'; 'Michael Glasgow'; 'Wright, Michael'; 'Lane, Mike'; Prysby, Mike (DEQ); 'Natasha Henderson'; 'Norb Birchmeier'; 'Pete Levine'; 'Robert Bincsik'; rosejo@msu.edu; 'Russell Hudson'; 'Samir Matta'; schock.michael@epa.gov; 'Sean Kammer'; Busch, Stephen (DEQ); 'Warren Green'; Wurfel, Brad (DEQ); 'Anthony Chubb'; 'Kevin Keane'
Subject: RE: 3rd Quarter Water Report

I have gotten a lot of questions about this., so figured I would answer in one e-mail.

The city is still using the MDEQ sampling approach. That method takes the EPA sampling method, and adds two modifications, both of which are technically legal, but "miss" lead in water that is normally present when people use it. I have been trying to get these modifications banned since 2007, because they give a false low measurement of lead in water risks on the day you sample. As a result, a city can be meeting the EPA rule, technically, and still have a huge problem with elevated blood lead in children.

The two modifications are:

- 1) **Using a sample bottle with a tiny opening.** This forces consumers to fill the bottles at a very low flow rate. The net effect of this, is that particulate Pb that would normally flow into a consumers water glass at a normal flow rate, stays on the pipe when you sample for lead. When a consumer fills a glass or collects water for drinking, the particles fall off.
- 2) **Pre-cleaning the pipes the night before sampling (aka. Pre-flush).** This basically remediates and sweeps the pipe clean of lead the night before sampling, so that the next morning when you sample, you get unusually low lead. The sampling protocol used by MDEQ requires a **5 minute pre-cleaning**.

When Virginia Tech sampled in Flint, we used the EPA protocol, without the modifications that miss lead in water problems.

I hope this explains the discrepancy. The MDEQ approach could give people a result for 0 ppb lead in water, and when they collect a sample for cooking or drinking it can be 100 ppb. I have seen it happen. **No one who is getting a low result using the MDEQ approach, should be told their water is safe to drink.** The result is meaningless. If it is high with the MDEQ approach, you have a very, very serious problem. MDEQ is also not the only primacy agency in the country using these methods that miss lead, so **I am not blaming anyone, I am just stating the facts.**

Miguel Del Toral of EPA warned MDEQ to stop using this method back in April-May in writing, because it would hide a lead problem if they existed, and they basically told him to mind his own business. I also asserted that Miguel was right, in the ACLU report in

June. <http://www.deadlinedetroit.com/articles/12697/scary-leaded-water-and-one-flint-family-s-toxic-nightmare#.ViA1Zn7nvlU>

Best Regards, Marc

Rennaker, Joanne (DEQ)

From: gdn2@aol.com
Sent: Thursday, October 15, 2015 1:19 PM
To: hcroft@cityofflint.com; dr.laura2@gmail.com
Cc: aleavitt@senatedems.org; edwardsm@vt.edu; Amy.Hovey@mail.house.gov; bwright@cityofflint.com; lytle.darren@epa.gov; dwalling@cityofflint.com; donna.cole@genesys.org; Dykema, Linda D. (DHHS); Krisztian, George (DEQ); jhenry@gchd.us; jgaskin@unitedwaygenesee.org; jlorenz@cityofflint.com; jmikewright@yahoo.com; jherman@genesys.org; jfobrien@gcdcwws.com; ksmith@flint.org; larry.koehler@mcc.edu; LawrenceR@mottchc.org; reynolds@mottchc.org; mglasgow@cityofflint.com; Wright.Michael@epa.gov; mjlane@umflint.edu; Prysby, Mike (DEQ); nhenderson@cityofflint.com; nbirchm1@hurleymc.com; plevine@gcms.org; rbincsik@cityofflint.com; rosejo@msu.edu; Russell.Hudson@mclaren.org; SFMatta@lan-inc.com; schock.michael@epa.gov; skammer@cityofflint.com; Busch, Stephen (DEQ); jwgreen@lan-inc.com; Wurfel, Brad (DEQ); achubb@cityofflint.com; KEVIN.KEANE@cmsenergy.com
Subject: Re: 3rd Quarter Water Report

Howard, the information is password protected.

Gerald Natzke

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

From: Howard Croft
To: Laura Sullivan
Cc: Gerald (Jed) Natzke ; Andy Leavitt ; Marc Edwards ; Amy Hovey ; Brent Wright ; Lytle, Darren ; Flint Mayor ; donna.cole ; dykemal ; Krisztian, George (DEQ) (DEQ) ; Henry, James ; James Gaskin ; Jason Lorenz ; jmikewright ; JoAnne Herman ; John O'Brien ; Kirk Smith ; larry.koehler ; Lawrence Reynolds ; Lawrence Reynolds ; Michael Glasgow ; Wright, Michael ; Lane, Mike ; Mike Prysby (DEQ) ; Natasha Henderson ; Norb Birchmeier ; Pete Levine ; Robert Bincsik ; rosejo ; Russell Hudson ; Samir Matta ; schock.michael ; Sean Kammer ; Busch, Stephen (DEQ) (DEQ) ; Warren Green ; Wurfel, Brad (DEQ) (DEQ) ; Anthony Chubb ; Kevin Keane
Sent: Thu, Oct 15, 2015 7:21 am
Subject: Re: 3rd Quarter Water Report

Laura,

Yes that is correct, I will have the lab convey the additional data regarding the 90th percentile. We are also testing at a rate of almost 20 people a day and we are GIS mapping all of the data as it comes in. For this group only, I am providing a link to our test data. You can click on each location to see the lab results. This is 2015 data only and we will be updating it continually.

<http://flint.maps.arcgis.com/home/webmap/viewer.html?webmap=786d8418d42341f4ab6bc894ec24bbfc>

The following is our current mapping of service lines, as you zoom in, you can click on each location and get the information, we are working with U of M Flint to complete this.

<http://flint.maps.arcgis.com/home/webmap/viewer.html?webmap=51d7a0319bac452bafd827ecfaef2016>

We are using the information here to try and test some of the clusters of lead service line areas. Please let me know if you cannot access this information.

On Tue, Oct 13, 2015 at 7:00 PM, Laura Sullivan <dr.laura2@gmail.com> wrote:
Howard,

Am I reading this correctly? Does this say that only 16 of 189 water test samples collected between January and September had lead levels exceeding 15 ppb?

What was the 90th percentile value?

Could you provide the committee with the sample collection date, lead level, and address for these 189 residences? If not that, then the zip codes and collection dates for each?

Laura Sullivan

On Monday, October 12, 2015, Howard Croft <hcroft@cityofflint.com> wrote:
All,

In addition to the text, here is the single page of data that will accompany the mailer.
We can add any specific information that is requested.

We will be tracking all of the Flint River testing data prior to the switch and it will be available to this group. We will work with Genesee County to obtain any water data that they have as well.

On Sun, Oct 11, 2015 at 5:57 PM, <gdn2@aol.com> wrote:

Hi Howard,

The thoughts that both Andy and Marc shared sound wise. I'm curious though as to whether the TAC could be privy to the actual results of the Flint City water testing prior to the switch and this years values? Also, it would seem prudent to obtain the present Detroit Water System testing if available as well?

Thank you,

Gerald Natzke DO

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

From: Andy Leavitt <aleavitt@senatedems.org>

To: Marc Edwards <edwardsm@vt.edu>; Howard Croft <hcroft@cityofflint.com>; Amy Hovey <Amy.Hovey@mail.house.gov>; Brent Wright <bwright@cityofflint.com>; Darren Lytle <lytle.darren@epa.gov>; Dayne Walling <dwalling@cityofflint.com>; donna.cole <donna.cole@genesys.org>; dykema <dykema@mich.gov>; George Krisztian (DEQ) <krisztian@michigan.gov>; Gerald (Jed) Natzke <gdn2@aol.com>; James Henry <jhenry@gchd.us>; Jamie Gaskin <jgaskin@unitedwaygenesee.org>; Jason Lorenz <jlorenz@cityofflint.com>; jmikewright <jmikewright@yahoo.com>; JoAnne Herman <jherman@genesys.org>; John O'Brien <jfobrien@gcdcwws.com>; Kirk Smith <ksmith@flint.org>; larry.koehler <larry.koehler@mcc.edu>; Laura Sullivan <dr.laura2@gmail.com>; Lawrence Reynolds <LawrenceR@mottchc.org>; Lawrence Reynolds <reynolds@mottchc.org>; Michael Glasgow <mglasgow@cityofflint.com>; Michael Wright <Wright.Michael@epa.gov>; Mike Lane <mjlane@umflint.edu>; Mike Prysby (DEQ) <prysbym@michigan.gov>; Natasha Henderson <nhenderson@cityofflint.com>; Norb Birchmeier <nbirchm1@hurleymc.com>; Pete Levine <plevine@gcms.org>; Robert Bincsik <rbincsik@cityofflint.com>; rosejo <rosejo@msu.edu>; Russell Hudson <Russell.Hudson@mclaren.org>; Samir Matta <SFMatta@lan-inc.com>; schock.michael <schock.michael@epa.gov>; Sean Kammer <skammer@cityofflint.com>; Stephen Busch (DEQ) <BUSCHS@michigan.gov>; Warren Green <jwgreen@lan-inc.com>; Wurfel, Brad (DEQ) (DEQ) <WurfelB@michigan.gov>; Anthony Chubb <achubb@cityofflint.com>; Kevin Keane <KEVIN.KEANE@cmsenergy.com>
Sent: Sat, Oct 10, 2015 12:09 pm
Subject: Re: 3rd Quarter Water Report

I would echo Marc's sentiment on the bold language agreeing with his points but I would also add that trust needs to be rebuilt and the public simply will not believe anything in the document if you start by telling them it still meets standards. They do not differentiate between regs and rules but they know the water does not meet the standard of the physician community.

I would also recommend opening with timeline of going back to Detroit and what steps people can take to mitigate lead issues. Preferably with an excerpt from a physician.

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Hi Howard,

I think it is universally acknowledged now, that 30 seconds to 2 minutes flushing are not adequate, and **all public education should say 5 minutes flushing.**

I also think that given results of our team sampling 277 homes, the high levels of lead MDEQ detected in the Flint schools (a 90%ile over 15 ppb..which is horrible because they are not tier 1 plumbing sites), and the problems in the official LCR sampling conducted in late 2014-2015, that the following statement (in bold) is not really helpful in getting the message out about the current health risks. The bold statement seems more like wishful thinking or a legal position, and detracts from the goal of telling the public about the known problems.

*After 16 months of treating water from the Flint River, the City became aware that the while **still meeting all Safe Drinking Water Standards**, the level of corrosiveness could result in more lead leaching from service lines and household plumbing.*

That is my input. I am available at 540 231-7236 or 540 320-8740, if anyone should have questions about this.

Best Regards,

Marc Edwards

From: Howard Croft [mailto:hcroft@cityofflint.com]

Sent: Saturday, October 10, 2015 8:33 AM

To: Amy Hovey; Andy Leavitt; Brent Wright; Darren Lytle; Dayne Walling; donna. cole; dykemal; edwardsm; George Krisztian (DEQ); Gerald (Jed) Natzke; Howard Croft; James Henry; Jamie Gaskin; Jason Lorenz; jmikewright; JoAnne Herman; John O'Brien; Kirk Smith; larry.koehler@mcc.edu; Laura Sullivan; Lawrence Reynolds; Lawrence Reynolds; Michael Glasgow; Michael Wright; Mike Lane; Mike Prysby (DEQ); Natasha Henderson; Norb Birchmeier; Pete Levine; Robert Bincsik; rosejo@msu.edu; Russell Hudson; Samir Matta; schock.michael@epa.gov; Sean Kammer; Stephen Busch (DEQ); Warren Green; Wurfel, Brad (DEQ); Anthony Chubb; Kevin Keane

Subject: 3rd Quarter Water Report

Team,

Included in this email is a copy of the first quarter water quality report that has been developed by the Utilities Division. Please take a look and offer any comments that you may have regarding content. There will be an additional one page insert containing three months test data inserted prior to distribution.

The purpose of the quarterly mailer is to increase communication, provide more transparency, and put more information into the hands of the public about what's occurring within the water system and with the infrastructure.

I will be putting together a separate weekly report for this Committee.

Thank you,

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Howard Croft

Public Works Director

City of Flint

1101 S. Saginaw Street

Flint, MI 48502

PH# 810.766.7135 Ext.2043

hcroft@cityofflint.com

--

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Laura L. Sullivan, Ph. D.
3101 Hawthorne Drive
Flint, Michigan 48503
dr.laura2@gmail.com

Human(kind). Be both.

--
Howard Croft
Public Works Director
City of Flint
1101 S. Saginaw Street
Flint, MI 48502
PH# 810.766.7135 Ext.2043
hcroft@cityofflint.com

Rennaker, Joanne (DEQ)

From: Shekter Smith, Liane (DEQ)
Sent: Thursday, October 15, 2015 5:47 PM
To: Krisztian, George (DEQ)
Cc: Thelen, Mary Beth (DEQ); Sygo, Jim (DEQ); Shaler, Karen (DEQ); Busch, Stephen (DEQ); Prysby, Mike (DEQ); Devereaux, Tracy Jo (DEQ)
Subject: FW: PRELIMINARY & DELIBERATIVE. NOT SUBJECT TO FOIA: Status of Action Steps

Please see Mike's updates below.

From: Prysby, Mike (DEQ)
Sent: Thursday, October 15, 2015 4:56 PM
To: Shekter Smith, Liane (DEQ)
Cc: Busch, Stephen (DEQ)
Subject: PRELIMINARY & DELIBERATIVE. NOT SUBJECT TO FOIA: Status of Action Steps

Liane,

Here is today's summary of the status of action steps assigned to me:

Action Step 6: Approve Flint plan for waterline:

The city of Flint and Genesee County received DEQ's approval to place the pipeline into service based on the absence of total coliform bacteria in the pipeline after 2 rounds of sampling.

Action Step 18: Contact KWA to identify any bottlenecks we need to remove:

Additional information was forwarded to me today from Chris Clamphitt concerning two Violation Notices issued by the Lapeer County Road Comm. within the past week against KWA regarding soil erosion, improper restoration, etc. in certain areas of construction. I will forward you the e-mail thread with attached Violation Notice in a separate e-mail. If not resolved, this latest development could cause further delay in KWA pipeline project.

Action Step 19: Expedite 399 plan and phosphate plan:

Nothing received from city or their consultant as of COB today. I will contact both parties tomorrow morning for a status update.

Michael Prysby, P.E.
 District Engineer

Office of Drinking Water and Municipal Assistance
517 290-8817

Rennaker, Joanne (DEQ)

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District Engineer
Office of Drinking Water and Municipal Assistance
517 290-8817

Rennaker, Joanne (DEQ)

From: Shekter Smith, Liane (DEQ)
Sent: Thursday, October 15, 2015 4:23 PM
To: Wurfel, Brad (DEQ)
Cc: Sygo, Jim (DEQ); Krisztian, George (DEQ); Busch, Stephen (DEQ); Prysby, Mike (DEQ)
Subject: More draft answers.... DRAFT DELIBERATIVE. NOT SUBJECT TO FOIA.

Before the switch –

1.b. The city of Flint hired consultants to evaluate the ability to treat water from the Flint River. Their consultants produced a report entitled "Analysis of the Flint River as a Permanent Water Supply for the City of Flint" dated July 2011. DEQ received a copy of this report in March 2013. DEQ staff did meet with city officials and their consultants during 2013 to discuss needed water treatment plant upgrades based on the report.

2. The city operated the water treatment plant as a backup/emergency plant for many years. During this time, the plant was operated in test mode quarterly to ensure that it would function in an emergency and to demonstrate that it could produce safe drinking water. During these test runs, raw water and treated water were sampled for many parameters. An evaluation for corrosion control, however, was not completed.

After the switch –

6. On August 23, 2015 Dr. Edwards informed DEQ staff that he was initiating a study of Flint water quality issues to complement the sampling that was conducted by the city under the Lead and Copper Rule. Dr. Edwards' study was performed after the notification by DEQ on August 17, 2015 to the City of Flint that the city is required to install corrosion control in accordance with the lead and copper rule requirements. The DEQ determination made following the regulatory protocol under the lead and copper rule and the study performed by Dr. Edwards reached similar conclusions.

Liane J. Shekter Smith, P.E., Chief
Office of Drinking Water and Municipal Assistance
Michigan Department of Environmental Quality
517-284-6543

Rennaker, Joanne (DEQ)

From: Howard Croft <hcroft@cityofflint.com>
Sent: Thursday, October 15, 2015 11:33 AM
To: Laura Sullivan
Cc: Gerald (Jed) Natzke; Andy Leavitt; Marc Edwards; Amy Hovey; Brent Wright; Lytle, Darren; Flint Mayor; donna.cole; Dykema, Linda D. (DHHS); Krisztian, George (DEQ); Henry, James; James Gaskin; Jason Lorenz; jmikewright; JoAnne Herman; John O'Brien; Kirk Smith; larry.koehler@mcc.edu; Lawrence Reynolds; Lawrence Reynolds; Michael Glasgow; Wright, Michael; Lane, Mike; Prysby, Mike (DEQ); Natasha Henderson; Norb Birchmeier; Pete Levine; Robert Bincsik; rosejo@msu.edu; Russell Hudson; Samir Matta; schock.michael@epa.gov; Sean Kammer; Busch, Stephen (DEQ); Warren Green; Wurfel, Brad (DEQ); Anthony Chubb; Kevin Keane
Subject: Re: 3rd Quarter Water Report

All,

Try using this link for the Service Line map, we had to reset the privileges.

<http://flint.maps.arcgis.com/home/webmap/viewer.html?webmap=544b515e633848f28d92050c1486591f>

On Thu, Oct 15, 2015 at 8:21 AM, Howard Croft <hcroft@cityofflint.com> wrote:
 Laura,

Yes that is correct, I will have the lab convey the additional data regarding the 90th percentile. We are also testing at a rate of almost 20 people a day and we are GIS mapping all of the data as it comes in. For this group only, I am providing a link to our test data. You can click on each location to see the lab results. This is 2015 data only and we will be updating it continually.

<http://flint.maps.arcgis.com/home/webmap/viewer.html?webmap=786d8418d42341f4ab6bc894ec24bbfc>

The following is our current mapping of service lines, as you zoom in, you can click on each location and get the information, we are working with U of M Flint to complete this.

<http://flint.maps.arcgis.com/home/webmap/viewer.html?webmap=51d7a0319bac452bafd827ecfaef2016>

We are using the information here to try and test some of the clusters of lead service line areas. Please let me know if you cannot access this information.

On Tue, Oct 13, 2015 at 7:00 PM, Laura Sullivan <dr.laura2@gmail.com> wrote:
 Howard,

Am I reading this correctly? Does this say that only 16 of 189 water test samples collected between January and September had lead levels exceeding 15 ppb?

What was the 90th percentile value?

Could you provide the committee with the sample collection date, lead level, and address for these 189 residences? If not that, then the zip codes and collection dates for each?

Laura Sullivan

On Monday, October 12, 2015, Howard Croft <hcroft@cityofflint.com> wrote:
All,

In addition to the text, here is the single page of data that will accompany the mailer.
We can add any specific information that is requested.

We will be tracking all of the Flint River testing data prior to the switch and it will be available to this group.
We will work with Genesee County to obtain any water data that they have as well.

On Sun, Oct 11, 2015 at 5:57 PM, <gdn2@aol.com> wrote:

Hi Howard,

The thoughts that both Andy and Marc shared sound wise. I'm curious though as to whether the TAC could be privy to the actual results of the Flint City water testing prior to the switch and this years values? Also, it would seem prudent to obtain the present Detroit Water System testing if available as well?

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--

Laura L. Sullivan, Ph. D.
3101 Hawthorne Drive
Flint, Michigan 48503
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| Human(kind). Be both.

--

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|

Rennaker, Joanne (DEQ)

From: Krisztian, George (DEQ)
Sent: Thursday, October 15, 2015 10:38 AM
To: Prysby, Mike (DEQ)
Cc: Sygo, Jim (DEQ); Shekter Smith, Liane (DEQ)
Subject: RE: Recommissioning the 72-inch transmission main

Mike,

How is the flush water being disposed? Do we have an answer to that?

George

George L. Krisztian
 Flint Action Plan Coordinator
 Laboratory Director
 Michigan Department of Environmental Quality
 Desk ph (517) 284-6719
 Cell ph (517) 204-0381

From: Prysby, Mike (DEQ)
Sent: Thursday, October 15, 2015 10:31 AM
To: Howard Croft (hcroft@cityofflint.com); Michael Glasgow; 'bwright@cityofflint.com'; Tim Davidek (T_DAVIDEK@gcdcwws.com); jfobrien@gcdcwws.com; "mhorgan@gcdcwws.com".GWIA.SOM-GWIA01; Krisztian, George (DEQ); Shekter Smith, Liane (DEQ); Busch, Stephen (DEQ); Benzie, Richard (DEQ); Rosenthal, Adam (DEQ)
Subject: Recommissioning the 72-inch transmission main

Based upon discussions with Genesee County and the city of Flint, the portion of the 72-inch transmission main (pipeline) that was taken out of service, while the Flint Water Treatment Plant (WTP) treated water from the Flint River, was flushed and disinfected in accordance to AWWA Standard C651-14. Two sets of samples were collected from two locations 16 hours apart for total coliform analysis. The city of Flint and Genesee County has informed the DEQ that both sets of samples are Non-Detect for total coliform. Based upon the disinfection procedure and the absence of total coliform from both sets of samples, the un-used portion of the pipeline may be placed into service.

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

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From: Prysby, Mike (DEQ)
Sent: Thursday, October 15, 2015 9:19 AM
To: Krisztian, George (DEQ)
Subject: Preliminary & Deliberative: Not Subject to FOIA: Flint visit

George,

I did not see my name on the attendee list for tomorrow's 10am meeting in Flint. I just wanted to confirm this. I will also need to confirm when you intend to visit the Water Treatment Plant as I should participate in that visit.

Sent from my iPhone

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From: Andy Leavitt <aleavitt@senatedems.org>

To: Marc Edwards <edwardsm@vt.edu>; Howard Croft <hcroft@cityofflint.com>; Amy Hovey <Amy.Hovey@mail.house.gov>; Brent Wright <bwright@cityofflint.com>; Darren Lytle <lytle.darren@epa.gov>; Dayne Walling <dwalling@cityofflint.com>; donna. cole <donna.cole@genesys.org>; dykemal <dykemal@mich.gov>; George Krisztian (DEQ) <krisztian@michigan.gov>; Gerald (Jed) Natzke <gdn2@aol.com>; James Henry <jhenry@gchd.us>; Jamie Gaskin <jgaskin@unitedwaygenesee.org>; Jason Lorenz <jlorenz@cityofflint.com>; jmikewright <jmikewright@yahoo.com>; JoAnne Herman <jherman@genesys.org>; John O'Brien <jfobrien@gcdcwss.com>; Kirk Smith <ksmith@flint.org>; larry.koehler <larry.koehler@mcc.edu>; Laura Sullivan <dr.laura2@gmail.com>; Lawrence Reynolds <LawrenceR@mottchc.org>; Lawrence Reynolds <reynolds@mottchc.org>; Michael Glasgow <mglasgow@cityofflint.com>; Michael Wright <Wright.Michael@epa.gov>; Mike Lane <mjlane@umflint.edu>; Mike Prysby (DEQ) <prysbym@michigan.gov>; Natasha Henderson <nhenderson@cityofflint.com>; Norb Birchmeier <nbirchm1@hurleymc.com>; Pete Levine <plevine@gcms.org>; Robert Bincsik <rbincsik@cityofflint.com>; rosejo <rosejo@msu.edu>; Russell Hudson <Russell.Hudson@mclaren.org>; Samir Matta <SFMatta@lan-inc.com>; schock.michael <schock.michael@epa.gov>; Sean Kammer <skammer@cityofflint.com>; Stephen Busch (DEQ) <BUSCHS@michigan.gov>; Warren Green <jwgreen@lan-inc.com>; Wurfel, Brad (DEQ) (DEQ) <WurfelB@michigan.gov>; Anthony Chubb <achubb@cityofflint.com>; Kevin Keane <KEVIN.KEANE@cmsenergy.com>
Sent: Sat, Oct 10, 2015 12:09 pm
Subject: Re: 3rd Quarter Water Report

I would echo Marc's sentiment on the bold language agreeing with his points but I would also add that trust needs to be rebuilt and the public simply will not believe anything in the document if you start by telling them it still meets standards. They do not differentiate between regs and rules but they know the water does not meet the standard of the physician community.

I would also recommend opening with timeline of going back to Detroit and what steps people can take to mitigate lead issues. Preferably with an excerpt from a physician.

The technical information matters for transparency but the trust gap is so wide that most people will be skeptical of all of it.
On Sat, Oct 10, 2015 at 11:48 AM Marc Edwards <edwardsm@vt.edu> wrote:

Hi Howard,

I think it is universally acknowledged now, that 30 seconds to 2 minutes flushing are not adequate, and **all public education should say 5 minutes flushing.**

I also think that given results of our team sampling 277 homes, the high levels of lead MDEQ detected in the Flint schools (a 90%ile over 15 ppb..which is horrible because they are not tier 1 plumbing sites), and the problems in the official LCR sampling conducted in late 2014-2015, that the following statement (in bold) is not really helpful in getting the

message out about the current health risks. The bold statement seems more like wishful thinking or a legal position, and detracts from the goal of telling the public about the known problems.

*After 16 months of treating water from the Flint River, the City became aware that the while **still meeting all Safe Drinking Water Standards**, the level of corrosiveness could result in more lead leaching from service lines and household plumbing.*

That is my input. I am available at 540 231-7236 or 540 320-8740, if anyone should have questions about this.

Best Regards,

Marc Edwards

From: Howard Croft [mailto:hcroft@cityofflint.com]

Sent: Saturday, October 10, 2015 8:33 AM

To: Amy Hovey; Andy Leavitt; Brent Wright; Darren Lytle; Dayne Walling; donna. cole; dykemal; edwardsm; George Krisztian (DEQ); Gerald (Jed) Natzke; Howard Croft; James Henry; Jamie Gaskin; Jason Lorenz; jmikewright; JoAnne Herman; John O'Brien; Kirk Smith; larry.koehler@mcc.edu; Laura Sullivan; Lawrence Reynolds; Lawrence Reynolds; Michael Glasgow; Michael Wright; Mike Lane; Mike Prysby (DEQ); Natasha Henderson; Norb Birchmeier; Pete Levine; Robert Bincsik; rosejo@msu.edu; Russell Hudson; Samir Matta; schock.michael@epa.gov; Sean Kammer; Stephen Busch (DEQ); Warren Green; Wurfel, Brad (DEQ); Anthony Chubb; Kevin Keane

Subject: 3rd Quarter Water Report

Team,

Included in this email is a copy of the first quarter water quality report that has been developed by the Utilities Division. Please take a look and offer any comments that you may have regarding content. There will be an additional one page insert containing three months test data inserted prior to distribution.

The purpose of the quarterly mailer is to increase communication, provide more transparency, and put more information into the hands of the public about what's occurring within the water system and with the infrastructure.

I will be putting together a separate weekly report for this Committee.

Thank you,

--
Howard Croft
 Public Works Director
 City of Flint
 1101 S. Saginaw Street
 Flint, MI 48502
 PH# 810.766.7135 Ext.2043
hcroft@cityofflint.com

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Howard Croft
 Public Works Director
 City of Flint
 1101 S. Saginaw Street
 Flint, MI 48502
 PH# 810.766.7135 Ext.2043
hcroft@cityofflint.com

--
 Laura L. Sullivan, Ph. D.
 3101 Hawthorne Drive

Flint, Michigan 48503
dr.laura2@gmail.com

Human(kind). Be both.

--

Howard Croft
Public Works Director
City of Flint
1101 S. Saginaw Street
Flint, MI 48502
PH# 810.766.7135 Ext.2043
hcroft@cityofflint.com

Rennaker, Joanne (DEQ)

From: Prysby, Mike (DEQ)
Sent: Thursday, October 15, 2015 8:01 AM
To: Brent Wright
Subject: Fwd: Center & Pierson Samples past

Brent,
 What is the result of the second sample at CS #3?

Sent from my iPhone

Begin forwarded message:

From: "Mark Horgan" <M_HORGAN@gcdcwws.com>
To: "Prysby, Mike (DEQ)" <PRYSBYM@michigan.gov>, "Brent Wright (bwright@cityofflint.com)" <bwright@cityofflint.com>
Cc: "Tim Davidek" <T_DAVIDEK@gcdcwws.com>
Subject: Center & Pierson Samples past

FYI,
 The both samples for the 72 at Center & Pierson Roads have passed. See attached from our lab.

Regards,
 Mark H. Horgan, P.E.
 Chief of Operation & Maintenance
 Genesee County Drain Commissioner's
 Division of Water & Waste Services Office
 G-4610 Beecher Road
 Flint, MI 48532
 810.732.7870 PHONE
 810.624.1901 CELL

From: Melissa Beckelic
 Sent: Thursday, October 15, 2015 7:31 AM
 To: Richard Bysko
 Cc: Mark Horgan
 Subject: results

Good morning,
 Here are the results for the second set of samples from 10-13-2015. Let me know if you need anything else and have a good day.

Melissa

Melissa Beckelic

Laboratory Supervisor
Anthony Ragnone Treatment Plant
Genesee County Water and Waste Services

Rennaker, Joanne (DEQ)

From: Mark Horgan <M_HORGAN@gcdcwws.com>
Sent: Thursday, October 15, 2015 7:56 AM
To: Prysby, Mike (DEQ); Brent Wright (bwright@cityofflint.com)
Cc: Tim Davidek
Subject: Center & Pierson Samples past
Attachments: Center and Pierson 10-13-2015 second set.doc

FYI,
The both samples for the 72 at Center & Pierson Roads have passed. See attached from our lab.

Regards,
Mark H. Horgan, P.E.
Chief of Operation & Maintenance
Genesee County Drain Commissioner's
Division of Water & Waste Services Office
G-4610 Beecher Road
Flint, MI 48532
810.732.7870 PHONE
810.624.1901 CELL

From: Melissa Beckelic
Sent: Thursday, October 15, 2015 7:31 AM
To: Richard Bysko
Cc: Mark Horgan
Subject: results

Good morning,
Here are the results for the second set of samples from 10-13-2015. Let me know if you need anything else and have a good day.

| Melissa

Melissa Beckelic
Laboratory Supervisor
Anthony Ragnone Treatment Plant
Genesee County Water and Waste Services

GENESEE COUNTY DRAIN COMMISSIONER'S OFFICE

-DIVISION OF-

WATER & WASTE SERVICES

G-4610 BEECHER ROAD · FLINT, MICHIGAN 48532-2617

PHONE (810) 732-7870 · FAX (810) 732-9773

JEFFREY WRIGHT
COMMISSIONER

October 15, 2015

Attn: Rich Bysko
CC: Mark Horgan

Re: Second set sample results from 10-13-2015.

The results for the water tests for total coliforms are as follow:

<u>Date</u>	<u>Location</u>	<u>Results</u>
10/13/2015	Center & Pierson Rd. fire hydrant	Negative
10/13/2015	Center & Pierson Rd. fire hydrant	Negative

If you have any questions call me at (810) 232-7662 ext 2226.

Sincerely,

Melissa Beckelic
Laboratory Supervisor
Genesee County Water and Waste Services

Rennaker, Joanne (DEQ)

From: Hyde, Tinka <hyde.tinka@epa.gov>
Sent: Tuesday, June 30, 2015 4:41 PM
To: Shekter Smith, Liane (DEQ)
Cc: Monosmith, Carrie (DEQ); Henry, Timothy; Poy, Thomas; Bair, Rita; Damato, Nicholas
Subject: Flint

Hi Liane – I'm following up on the voicemail I left for you earlier today. I'm also copying Carrie Monosmith as I did get a chance to chat with her. In advance of our call scheduled for 7/21/15, I wanted to provide you with an update related to water quality challenges in Flint. I understand that some discussion occurred on June 10th with Tom Poy and staff during the semi-annual call regarding MDEQ's implementation of the LCR rule and the status of Flint. The Region is concerned about the lead situation in Flint and suggested that additional ORD assistance could be provided to Flint's Advisory Committee. We understand that the city is finishing up its second set of 6-month initial monitoring and I have scheduled a call with you on July 21st so we can discuss the Flint situation in more detail.

As you know, my staff have been out to Flint to collect samples and data which we felt could uniquely inform the NDWAC process and ultimately better inform the LCR rulemaking. Tom Poy asked Miguel Del Toral to prepare a report summarizing the visits and findings. Last week Miguel completed a draft interim report and provided it to management. Once Miguel addresses our comments, we will provide you with a copy of that report. In most cases, an internal EPA memo would not be distributed outside the agency, but given his interaction with the homeowner for one of the sampling locations, Miguel has shared a copy of the draft interim report as a courtesy with this Flint resident. Based on Miguel's initial analysis, elevated lead levels were found at this residence. In addition, it appears that the source of the lead may be from outside the home (Note: plumbing in the home is largely plastic).

Please know that Region 5 management is still being briefed on the lead issues in Flint and we look forward to the opportunity to discuss the situation with you in more detail so we can better characterize what MDEQ is already doing in Flint and how public health protection can best be provided to the citizens of Flint. If you would like to discuss this in advance of our call, please feel free to contact myself, or Tim Henry (312-886-6107). Thanks

Tinka G. Hyde
Water Division Director
USEPA W-15J
77 W. Jackson Blvd
Chicago, IL 60604

Office: 312-886-9296
Cell: 312-735-9428

Rennaker, Joanne (DEQ)

From: Shekter Smith, Liane (DEQ)
Sent: Wednesday, October 14, 2015 5:29 PM
To: Krisztian, George (DEQ)
Cc: Thelen, Mary Beth (DEQ); Shaler, Karen (DEQ); Sygo, Jim (DEQ); Busch, Stephen (DEQ); Prysby, Mike (DEQ); Cook, Pat (DEQ); Benzie, Richard (DEQ); Devereaux, Tracy Jo (DEQ)
Subject: DRAFT DELIBERATIVE. NOT SUBJECT TO FOIA. Daily update 10/14

Action Step No. 2

E-mail sent to DLARA with draft sampling ID protocol.

E-mail drafted with request for schools to prepare documents/information ahead of DLARA visit and on-site assessment. Waiting for comments.

Action Step No. 6.

Pipeline flushed and first round of samples for bacteriological analysis collected yesterday (4am at mid-point, 7:30am at CS #3 – Flint WTP) were Non-Detect for total coliform.

The second round of samples were collected yesterday evening at mid-point (Genesee County) and late last night at CS #3 (Flint). Results will be available later this evening and read first thing tomorrow morning. If the second set is all clear, the pipeline will be ready to be placed into service (from a technical standpoint). The pipeline; however, will not be placed into service until Flint, Genesee County, and Detroit agree on and establish a service contract.

The Dort Reservoir will not be placed into service (this facility can be by-passed) until the city determines what to do with the 6 Mgal of water (chlorinated at approx. 100 ppm). What they thought was a connection to the sanitary sewer was discovered yesterday to be a connection to the storm sewer.

Action Step #18 Contact KWA regarding bottlenecks in expediting construction of pipeline.

No further updates since my e-mail sent to you earlier today

Action Step #19: Expedite 399 plan for corrosion control

No updates today

Liane J. Shekter Smith, P.E., Chief
 Office of Drinking Water and Municipal Assistance
 Michigan Department of Environmental Quality
 517-284-6543

Rennaker, Joanne (DEQ)

From: Shekter Smith, Liane (DEQ)
Sent: Wednesday, October 14, 2015 5:14 PM
To: Krisztian, George (DEQ)
Cc: Sygo, Jim (DEQ); Wyant, Dan (DEQ); Thelen, Mary Beth (DEQ); Shaler, Karen (DEQ); Busch, Stephen (DEQ); Prysby, Mike (DEQ); Rosenthal, Adam (DEQ)
Subject: RE: Preliminary and Deliberative not subject to FOIA: Information Request
Attachments: Flint

An additional related e-mail for consideration.

From: Shekter Smith, Liane (DEQ)
Sent: Wednesday, October 14, 2015 2:27 PM
To: Busch, Stephen (DEQ); Krisztian, George (DEQ); Rosenthal, Adam (DEQ); Prysby, Mike (DEQ)
Cc: Sygo, Jim (DEQ); Wyant, Dan (DEQ); Thelen, Mary Beth (DEQ); Shaler, Karen (DEQ)
Subject: RE: Preliminary and Deliberative not subject to FOIA: Information Request

Attached in the agenda received from EPA on 7/21/15 – it is related to the e-mail Steve included without a date.

The agenda for the 6/10 call is also attached.

I think seeing the agendas is helpful to understand EPA's perspective and inquiries at the time.

The third e-mail I've included is between Pat Cook and Miguel Deltoral, EPA. This e-mail includes Pat's explanation regarding our approach to managing the LCR (lead copper rule) in Flint.

From: Busch, Stephen (DEQ)
Sent: Wednesday, October 14, 2015 11:36 AM
To: Krisztian, George (DEQ); Shekter Smith, Liane (DEQ); Rosenthal, Adam (DEQ); Prysby, Mike (DEQ)
Cc: Sygo, Jim (DEQ); Wyant, Dan (DEQ); Thelen, Mary Beth (DEQ); Shaler, Karen (DEQ)
Subject: RE: Preliminary and Deliberative not subject to FOIA: Information Request

George,

Attached are emails with notes related to conference calls with EPA region V that I have and provide further discussion regarding Flint. Liane could still have additional material.

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

From: Krisztian, George (DEQ)
Sent: Wednesday, October 14, 2015 10:57 AM
To: Shekter Smith, Liane (DEQ); Busch, Stephen (DEQ); Rosenthal, Adam (DEQ); Prysby, Mike (DEQ)
Cc: Sygo, Jim (DEQ); Wyant, Dan (DEQ); Thelen, Mary Beth (DEQ); Shaler, Karen (DEQ)
Subject: Preliminary and Deliberative not subject to FOIA: Information Request
Importance: High

Liane,

As a follow-up to our conversation yesterday, I need a copy of the write up that EPA provided to your group for the conference call that was held after Steve's e-mail of February 27, 2015.

Thank you!
George

George L. Krisztian
Flint Action Plan Coordinator
Laboratory Director
Michigan Department of Environmental Quality
Desk ph (517) 284-6719
Cell ph (517) 204-0381

Rennaker, Joanne (DEQ)

From: Prysby, Mike (DEQ)
Sent: Wednesday, October 14, 2015 4:29 PM
To: Krisztian, George (DEQ)
Cc: Shekter Smith, Liane (DEQ); Busch, Stephen (DEQ)
Subject: DRAFT DELIBERATIVE. NOT SUBJECT TO FOIA. - Action Steps update

George,

Below is a status update on the Action Steps assigned to me:

Action Step No. 6. Approve Flint plan for re-use of pipeline

Pipeline flushed and first round of samples for bacteriological analysis collected yesterday (4am at mid-point, 7:30am at CS #3 – Flint WTP) were Non-Detect for total coliform. The second round of samples were collected yesterday evening at mid-point (Genesee County) and late last night at CS #3 (Flint). Results will be available later this evening and read first thing tomorrow morning. If the second set is all clear, the pipeline will be ready to be placed into service (from a technical standpoint). The pipeline; however, will not be placed into service until Flint, Genesee County, and Detroit agree on and establish a service contract.

The Dort Reservoir will not be placed into service (this facility can be by-passed) until the city determines what to do with the 6 Mgal of water (chlorinated at approx. 100 ppm). What they thought was a connection to the sanitary sewer was discovered yesterday to be a connection to the storm sewer.

Action Step #18 Contact KWA regarding bottlenecks in expediting construction of pipeline.

No further updates since my e-mail sent to you earlier today

Action Step #19: Expedite 399 plan for corrosion control

No updates today

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

Rennaker, Joanne (DEQ)

From: Shekter Smith, Liane (DEQ)
Sent: Wednesday, October 14, 2015 3:42 PM
To: Groetsch, Kory J. (DHHS); Dykema, Linda D. (DHHS)
Cc: Rosenthal, Adam (DEQ); Busch, Stephen (DEQ); Prysby, Mike (DEQ); Krisztian, George (DEQ); Devereaux, Tracy Jo (DEQ)
Subject: FW: Flint PbCu data DRAFT DELIBERATIVE. NOT SUBJECT TO FOIA.
Attachments: 2014 Flint PbCu.pdf; 2015 Flint PbCu.pdf; Flint 90th calculation 14-15.xlsx

Attached are the pdf/scanned forms that were submitted by the city (we do have the individual lab sheets, but didn't think those would be helpful) for the 2 six month rounds of monitoring conducted (July – December 2014 and January – June 2015). Also, Adam has provided the excel spreadsheet that he used to calculate the 90th percentile numbers for both rounds.

Ask if you have questions.

Liane

From: Rosenthal, Adam (DEQ)
Sent: Wednesday, October 14, 2015 3:34 PM
To: Shekter Smith, Liane (DEQ)
Subject: Flint PbCu data

The excel document is sorted low to high for each parameter and are independent of each other, ie. same row doesn't mean from the same site.

Adam Rosenthal, EQA
MDEQ – Office of Drinking Water and Municipal Assistance
Lansing District – Constitution Hall 1SW
PO Box 30242
Lansing, MI 48909
517-284-6644
fax: 517-241-3571

For MORs, Lab Results & Reporting Forms:
DEQ-DWMA-Lansing@michigan.gov

MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY
OFFICE OF DRINKING WATER AND MUNICIPAL ASSISTANCE
**LEAD AND COPPER REPORT AND
CONSUMER NOTICE OF LEAD RESULT
CERTIFICATE FOR COMMUNITY WATER SUPPLY**



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

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

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

9. SAMPLE CRITERIA:

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

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

10. NAME:

Name: Michael Glasgow

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

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

Water Supply Name/County City of Flint / GeneseeWSSN 2310

RESULTS:

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

¹ Sample Category: Enter a number 1 through 6 to designate the category of tap sample site. For more information, see *Instructions* paragraph 11, subparagraph "Sample Category."

² Materials used for service line and building plumbing: Enter C = copper; G = galvanized; L = lead; or P = plastic.

TO BE DETERMINED BY DEQ

	90 th percentile	Ave	Max	# > AL
Pb				
Cu				

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

Water Supply Name/County City of Flint / GeneseeWSSN 2310

RESULTS:

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

¹ Sample Category: Enter a number 1 through 6 to designate the category of tap sample site. For more information see *Instructions* paragraph 11, subparagraph "Sample Category."

² Materials used for service line and building plumbing: Enter C = copper; G = galvanized; L = lead; or P = plastic.

TO BE DETERMINED BY DEQ

	90 th percentile	Ave	Max	# > AL
Pb				
Cu				

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

Water Supply Name/County City of Flint / GeneseeWSSN 2310

RESULTS:

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

¹ Sample Category: Enter a number 1 through 6 to designate the category of tap sample site. For more information see *Instructions* paragraph 11, subparagraph "Sample Category."

² Materials used for service line and building plumbing: Enter C = copper; G = galvanized; L = lead; or P = plastic.

TO BE DETERMINED BY DEQ

	90 th percentile	Ave	Max	# > AL
Pb				
Cu				

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

Water Supply Name/County City of Flint / GeneseeWSSN 2310

RESULTS:

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

¹ Sample Category: Enter a number 1 through 6 to designate the category of tap sample site. For more information see *Instructions* paragraph 11, subparagraph "Sample Category."

² Materials used for service line and building plumbing: Enter C = copper; G = galvanized; L = lead; or P = plastic.

TO BE DETERMINED BY DEQ

	90 th percentile	Ave	Max	# > AL
Pb				
Cu				

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

Water Supply Name/County City of Flint / GeneseeWSSN 2310

RESULTS:

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

¹ Sample Category: Enter a number 1 through 6 to designate the category of tap sample site. For more information see *Instructions* paragraph 11, subparagraph "Sample Category."

² Materials used for service line and building plumbing: Enter C = copper; G = galvanized; L = lead; or P = plastic.

TO BE DETERMINED BY DEQ

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

Consumer Notice of Lead & Copper Results in Drinking Water

Water Supply Name: City of Flint

County: Genesee WSSN: 2310

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

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

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

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

To reduce exposure to lead in drinking water:

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

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

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

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

MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY
OFFICE OF DRINKING WATER AND MUNICIPAL ASSISTANCE
**LEAD AND COPPER REPORT AND
CONSUMER NOTICE OF LEAD RESULT
CERTIFICATE FOR COMMUNITY WATER SUPPLY**



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

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

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

9. SAMPLE CRITERIA:

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

For more information see Instructions paragraph 11, subparagraph "Sample Category."

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

10. NAME:

Name: Michael Glasgow
Title: Utilities Administrator Phone: 810-766-7135 Date: 8/20/2015

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

Water Supply Name/County City of Flint Water PlantWSSN 2310

RESULTS:

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

¹ Sample Category: Enter a number 1 through 6 to designate the category of tap sample site. For more information see *Instructions* paragraph 11, subparagraph "Sample Category."

² Materials used for service line and building plumbing: Enter C = copper; G = galvanized; L = lead; or P = plastic.

TO BE DETERMINED BY DEQ

	90 th percentile	Ave	Max	# > AL
Pb				
Cu				

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

Water Supply Name/County City of Flint Water PlantWSSN 2310

RESULTS:

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

¹ Sample Category: Enter a number 1 through 6 to designate the category of tap sample site. For more information see *Instructions* paragraph 11, subparagraph "Sample Category."

² Materials used for service line and building plumbing: Enter C = copper; G = galvanized; L = lead; or P = plastic.

TO BE DETERMINED BY DEQ

	90 th percentile	Ave	Max	# > AL
Pb				
Cu				

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

Water Supply Name/County City of Flint Water Plant

WSSN 2310

RESULTS:

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

¹ Sample Category: Enter a number 1 through 8 to designate the category of tap sample site. For more information see *Instructions* paragraph 11, subparagraph "Sample Category."

² Materials used for service line and building plumbing: Enter C = copper; G = galvanized; L = lead; or P = plastic.

TO BE DETERMINED BY DEQ

	90 th percentile	Ave	Max	# > AL
Pb				
Cu				

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

Water Supply Name/County City of Flint Water PlantWSSN 2310

RESULTS:

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

¹ Sample Category: Enter a number 1 through 6 to designate the category of tap sample site. For more information see *Instructions* paragraph 11, subparagraph "Sample Category."

² Materials used for service line and building plumbing: Enter C = copper; G = galvanized; L = lead; or P = plastic.

TO BE DETERMINED BY DEQ

	90 th percentile	Ave	Max	# > AL
Pb				
Cu				

Consumer Notice of Lead Result in Drinking Water

Water Supply Name:	City of Flint		
County:	Genesee	WSSN:	2310
Sample Location:	401 E. Newall St.	Date Sampled:	3/2/15

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

Key to Table	Contaminant	AL	MCLG	Your Result
Action Level (AL): The concentration of a contaminant which, if exceeded, triggers treatment or other requirements that a water system must follow. Maximum Contaminant Level Goal (MCLG): The level of a contaminant in drinking water below which there is no known or expected risk to health. MCLGs allow for a margin of safety. ppb: parts per billion or micrograms per liter.	Lead (ppb)	15	0	5
	Copper (ppb)	1300	1300	Not Detected

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

To reduce exposure to lead in drinking water:

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

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

For more information, contact us at: City of Flint Water Plant (810) 787-6537.
 For more information on reducing lead exposure around your home and the health effects of lead, visit the U.S. EPA's Web site at www.epa.gov/lead, call the National Lead Information Center at 800-424-LEAD, or contact your health care provider.

Certification: I certify that this public water supply has provided the consumer notice of lead result to persons served at each of the taps that was tested, either by mail or by another method approved by the DEQ, within 30 days of knowing the result. The Notice includes required content.	WSSN: <u>2310</u>
<u>Michael G. Flange</u> Signature	<u>UTILITIES ADMINISTRATOR</u> Title
	<u>3/17/15</u> Date Sent to Consumer

Reminder to water supplier: Complete this certification on only one (1) example copy of a notice sent to a consumer and submit it to the DEQ.

	Pb	Cu
1	0	0
2	0	0
3	0	0
4	0	0
5	0	0
6	0	0
7	0	0
8	0	0
9	0	0
10	0	0
11	0	0
12	0	0
13	0	0
14	1	0
15	1	0
16	1	0
17	1	0
18	2	0
19	2	0
20	2	0
21	2	0
22	2	0
23	2	0
24	2	0
25	2	0
26	2	0
27	2	0
28	2	0
29	3	0
30	3	0
31	3	0
32	3	0
33	3	0
34	3	50
35	3	50
36	3	50
37	3	50
38	3	60
39	3	60
40	4	60
41	4	60
42	5	60
43	5	60
44	5	70
45	5	70
46	5	80

02310 - Flint PbCu 1st 1/2 2015

47	5	80
48	5	80
49	5	90
50	6	100
51	6	100
52	6	100
53	6	100
54	7	110
55	7	110
56	7	110
57	8	130
58	8	140
59	9	140
60	10	150
61	10	160
62	11	160
63	13	170
64	18	190
65	21	200
66	22	270
67	29	280
68	42	310
69	42	520

90th = 62.1

90th	11.2	161 ppb
average	5.72	66.38
max	42	520
min	0	0
# > AL	6	0

Rennaker, Joanne (DEQ)

From: Reynolds, Lawrence <LawrenceR@mottchc.org>
Sent: Wednesday, October 14, 2015 3:28 PM
To: Schock, Michael; Henry, James; Howard Croft
Cc: Lane, Mike; Lytle, Darren; Andy Leavitt; Marc Edwards; Amy Hovey; Brent Wright; Dayne Walling; donna. cole; Dykema, Linda D. (DHHS); Krisztian, George (DEQ); Gerald (Jed) Natzke; Jamie Gaskin; Jason Lorenz; jmikewright; JoAnne Herman; John O'Brien; Kirk Smith; larry.koehler@mcc.edu; Laura Sullivan; Michael Glasgow; Wright, Michael; Prysby, Mike (DEQ); Natasha Henderson; Norb Birchmeier; Pete Levine; Robert Bincsik; rosejo@msu.edu; Russell Hudson; Samir Matta; Sean Kammer; Busch, Stephen (DEQ); Warren Green; Wurfel, Brad (DEQ); Anthony Chubb; Kevin Keane; Valacak, Mark
Subject: RE: 3rd Quarter Water Report

Thank you. I pass this on to our VP Operations

From: Schock, Michael [mailto:Schock.Michael@epa.gov]
Sent: Wednesday, October 14, 2015 2:42 PM
To: Henry, James; Howard Croft; Reynolds, Lawrence
Cc: Lane, Mike; Lytle, Darren; Andy Leavitt; Marc Edwards; Amy Hovey; Brent Wright; Dayne Walling; donna. cole; dykemal; George Krisztian (DEQ); Gerald (Jed) Natzke; Jamie Gaskin; Jason Lorenz; jmikewright; JoAnne Herman; John O'Brien; Kirk Smith; larry.koehler@mcc.edu; Laura Sullivan; Michael Glasgow; Wright, Michael; Mike Prysby (DEQ); Natasha Henderson; Norb Birchmeier; Pete Levine; Robert Bincsik; rosejo@msu.edu; Russell Hudson; Samir Matta; Sean Kammer; Stephen Busch (DEQ); Warren Green; Wurfel, Brad (DEQ); Anthony Chubb; Kevin Keane; Valacak, Mark
Subject: RE: 3rd Quarter Water Report

Hi, All;

I inquired of one of the national facility engineering managers for VA, with whom I've been working on some building corrosion issues in another state. Here is our input for two of the Health Center questions, which is more oriented towards how water quality (aside from specifically lead) will impact the operation of certain critical equipment. Studies would be suggested on the impact of the upcoming two water quality changes, as to how they would impact the operation of medical and other facilities. Local in-facility pretreatment of water for some uses may be necessary, whether or not it has any lead in it, to prevent scaling or attack on the instruments being washed/sterilized. Stainless steels and other metallic surfaces are not "inert." There are probably process water consultants available, perhaps through contacting the Water Quality Association, who could advise on instrument-specific water pretreatment needs.

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ORD, NRMRL, WSWRD, TTEB
26 West Martin Luther King Drive
Cincinnati, OH 45220

Phone: 513.569.7412

schock.michael@epa.gov

From: Henry, James [<mailto:jhenry@gchd.us>]

Sent: Wednesday, October 14, 2015 12:55 PM

To: Howard Croft; Reynolds, Lawrence

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Subject: RE: 3rd Quarter Water Report

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Thanks Jim

Jim Henry RS, MBA
 Environmental Health Supervisor
 Genesee County Health Department www.gchd.us
 630 S. Saginaw St., Suite 4
 Flint, MI 48502-1540
 Phone (810) 257-3618 Fax (810) 257-3125
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** * * * *

Michael Lane

Director, Environment, Health and Safety

The University of Michigan-Flint

810-766-6763

810-919-1709 cell

mjlane@umflint.edu

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Sent: Saturday, October 10, 2015 8:33 AM

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Subject: 3rd Quarter Water Report

Team,

Included in this email is a copy of the first quarter water quality report that has been developed by the Utilities Division. Please take a look and offer any comments that you may have regarding content. There will be an additional one page insert containing three months test data inserted prior to distribution.

The purpose of the quarterly mailer is to increase communication, provide more transparency, and put more information into the hands of the public about what's occurring within the water system and with the infrastructure.

I will be putting together a separate weekly report for this Committee.

Thank you,

--

Howard Croft

Public Works Director

City of Flint

1101 S. Saginaw Street

Flint, MI 48502

PH# 810.766.7135 Ext.2043

hcroft@cityofflint.com

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Rennaker, Joanne (DEQ)

From: Schock, Michael <Schock.Michael@epa.gov>
Sent: Wednesday, October 14, 2015 2:42 PM
To: Henry, James; Howard Croft; Reynolds, Lawrence
Cc: Lane, Mike; Lytle, Darren; Andy Leavitt; Marc Edwards; Amy Hovey; Brent Wright; Dayne Walling; donna. cole; Dykema, Linda D. (DHHS); Krisztian, George (DEQ); Gerald (Jed) Natzke; Jamie Gaskin; Jason Lorenz; jmikewright; JoAnne Herman; John O'Brien; Kirk Smith; larry.koehler@mcc.edu; Laura Sullivan; Michael Glasgow; Wright, Michael; Prysby, Mike (DEQ); Natasha Henderson; Norb Birchmeier; Pete Levine; Robert Bincsik; rosejo@msu.edu; Russell Hudson; Samir Matta; Sean Kammer; Busch, Stephen (DEQ); Warren Green; Wurfel, Brad (DEQ); Anthony Chubb; Kevin Keane; Valacak, Mark
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From: Howard Croft [mailto:hcroft@cityofflint.com]

Sent: Saturday, October 10, 2015 8:33 AM

To: Amy Hovey; Andy Leavitt; Brent Wright; Darren Lytle; Dayne Walling; donna. cole; dykema; edwardsm; George Krisztian (DEQ); Gerald (Jed) Natzke; Howard Croft; James Henry; Jamie Gaskin; Jason Lorenz; jmikewright; JoAnne Herman; John O'Brien; Kirk Smith; larry.koehler@mcc.edu; Laura Sullivan; Lawrence Reynolds; Lawrence Reynolds; Michael Glasgow; Michael Wright; Mike Lane; Mike Prysby (DEQ); Natasha Henderson; Norb Birchmeier; Pete Levine; Robert Bincsik; rosejo@msu.edu; Russell Hudson; Samir Matta; schock.michael@epa.gov; Sean Kammer; Stephen Busch (DEQ); Warren Green; Wurfel, Brad (DEQ); Anthony Chubb; Kevin Keane

Subject: 3rd Quarter Water Report

Team,

Included in this email is a copy of the first quarter water quality report that has been developed by the Utilities Division. Please take a look and offer any comments that you may have regarding content. There will be an additional one page insert containing three months test data inserted prior to distribution.

The purpose of the quarterly mailer is to increase communication, provide more transparency, and put more information into the hands of the public about what's occurring within the water system and with the infrastructure.

I will be putting together a separate weekly report for this Committee.

Thank you,

--

Howard Croft

Public Works Director

City of Flint

1101 S. Saginaw Street

Flint, MI 48502

PH# 810.766.7135 Ext.2043

hcroft@cityofflint.com

--
Howard Croft

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--
Howard Croft

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Flint, MI 48502

PH# 810.766.7135 Ext.2043

hcroft@cityofflint.com

Rennaker, Joanne (DEQ)

From: Shekter Smith, Liane (DEQ)
Sent: Wednesday, October 14, 2015 2:27 PM
To: Busch, Stephen (DEQ); Krisztian, George (DEQ); Rosenthal, Adam (DEQ); Prysby, Mike (DEQ)
Cc: Sygo, Jim (DEQ); Wyant, Dan (DEQ); Thelen, Mary Beth (DEQ); Shaler, Karen (DEQ)
Subject: RE: Preliminary and Deliberative not subject to FOIA: Information Request
Attachments: AGENDA for Today's Call on Flint; Agenda for MI Semi-Annual Call on Wed 6/10 at 10am EST; 9am CST; Fw: Flint Corrosion Control?

Attached in the agenda received from EPA on 7/21/15 – it is related to the e-mail Steve included without a date.

The agenda for the 6/10 call is also attached.

I think seeing the agendas is helpful to understand EPA's perspective and inquiries at the time.

The third e-mail I've included is between Pat Cook and Miguel Deltoral, EPA. This e-mail includes Pat's explanation regarding our approach to managing the LCR (lead copper rule) in Flint.

From: Busch, Stephen (DEQ)
Sent: Wednesday, October 14, 2015 11:36 AM
To: Krisztian, George (DEQ); Shekter Smith, Liane (DEQ); Rosenthal, Adam (DEQ); Prysby, Mike (DEQ)
Cc: Sygo, Jim (DEQ); Wyant, Dan (DEQ); Thelen, Mary Beth (DEQ); Shaler, Karen (DEQ)
Subject: RE: Preliminary and Deliberative not subject to FOIA: Information Request

George,

Attached are emails with notes related to conference calls with EPA region V that I have and provide further discussion regarding Flint. Liane could still have additional material.

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

From: Krisztian, George (DEQ)
Sent: Wednesday, October 14, 2015 10:57 AM
To: Shekter Smith, Liane (DEQ); Busch, Stephen (DEQ); Rosenthal, Adam (DEQ); Prysby, Mike (DEQ)
Cc: Sygo, Jim (DEQ); Wyant, Dan (DEQ); Thelen, Mary Beth (DEQ); Shaler, Karen (DEQ)
Subject: Preliminary and Deliberative not subject to FOIA: Information Request
Importance: High

Liane,

As a follow-up to our conversation yesterday, I need a copy of the write up that EPA provided to your group for the conference call that was held after Steve's e-mail of February 27, 2015.

Thank you!

George

George L. Krisztian
Flint Action Plan Coordinator
Laboratory Director
Michigan Department of Environmental Quality
Desk ph (517) 284-6719
Cell ph (517) 204-0381

Rennaker, Joanne (DEQ)

From: Busch, Stephen (DEQ)
Sent: Wednesday, October 14, 2015 11:36 AM
To: Krisztian, George (DEQ); Shekter Smith, Liane (DEQ); Rosenthal, Adam (DEQ); Prysby, Mike (DEQ)
Cc: Sygo, Jim (DEQ); Wyant, Dan (DEQ); Thelen, Mary Beth (DEQ); Shaler, Karen (DEQ)
Subject: RE: Preliminary and Deliberative not subject to FOIA: Information Request
Attachments: Final Notes from Michigan semi-annual call on 6/10; Final Notes from call Tuesday 8/31/15 with MI DEQ RE: Flint; FW: FOR REVIEW: MDEQ - Flint Call Notes

George,

Attached are emails with notes related to conference calls with EPA region V that I have and provide further discussion regarding Flint. Liane could still have additional material.

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

From: Krisztian, George (DEQ)
Sent: Wednesday, October 14, 2015 10:57 AM
To: Shekter Smith, Liane (DEQ); Busch, Stephen (DEQ); Rosenthal, Adam (DEQ); Prysby, Mike (DEQ)
Cc: Sygo, Jim (DEQ); Wyant, Dan (DEQ); Thelen, Mary Beth (DEQ); Shaler, Karen (DEQ)
Subject: Preliminary and Deliberative not subject to FOIA: Information Request
Importance: High

Liane,

As a follow-up to our conversation yesterday, I need a copy of the write up that EPA provided to your group for the conference call that was held after Steve's e-mail of February 27, 2015.

Thank you!
 George

George L. Krisztian
 Flint Action Plan Coordinator
 Laboratory Director
 Michigan Department of Environmental Quality
 Desk ph (517) 284-6719
 Cell ph (517) 204-0381

Rennaker, Joanne (DEQ)

From: Prysby, Mike (DEQ)
Sent: Wednesday, October 14, 2015 10:42 AM
To: Rosenthal, Adam (DEQ)
Subject: Preliminary & Deliberative, not subject to FOIA, FW: 3rd Quarter Water Report
Attachments: Quarterly CCR -Test Results.docx

Howard's summary of lead and copper (3rd quarter report) will likely cause more confusion

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

From: Howard Croft [mailto:hcroft@cityofflint.com]
Sent: Monday, October 12, 2015 8:39 AM
To: Gerald (Jed) Natzke
Cc: Andy Leavitt; Marc Edwards; Amy Hovey; Brent Wright; Lytle, Darren; Flint Mayor; donna.cole; Dykema, Linda D. (DHHS); Krisztian, George (DEQ); Henry, James; James Gaskin; Jason Lorenz; jmikewright; JoAnne Herman; John O'Brien; Kirk Smith; larry.koehler@mcc.edu; Laura Sullivan; Lawrence Reynolds; Lawrence Reynolds; Michael Glasgow; Wright, Michael; Lane, Mike; Prysby, Mike (DEQ); Natasha Henderson; Norb Birchmeier; Pete Levine; Robert Bincsik; rosejo@msu.edu; Russell Hudson; Samir Matta; schock.michael@epa.gov; Sean Kammer; Busch, Stephen (DEQ); Warren Green; Wurfel, Brad (DEQ); Anthony Chubb; Kevin Keane
Subject: Re: 3rd Quarter Water Report

All,

In addition to the text, here is the single page of data that will accompany the mailer.
 We can add any specific information that is requested.

We will be tracking all of the Flint River testing data prior to the switch and it will be available to this group.
 We will work with Genesee County to obtain any water data that they have as well.

On Sun, Oct 11, 2015 at 5:57 PM, <gdn2@aol.com> wrote:

Hi Howard,

The thoughts that both Andy and Marc shared sound wise. I'm curious though as to whether the TAC could be privy to the actual results of the Flint City water testing prior to the switch and this years values? Also, it would seem prudent to obtain the present Detroit Water System testing if available as well?

Thank you,
 Gerald Natzke DO

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

From: Andy Leavitt <aleavitt@senatedems.org>
 To: Marc Edwards <edwardsm@vt.edu>; Howard Croft <hcroft@cityofflint.com>; Amy Hovey <Amy.Hovey@mail.house.gov>; Brent Wright <bwright@cityofflint.com>; Darren Lytle <lytle.darren@epa.gov>; Dayne Walling <dwalling@cityofflint.com>; donna.cole <donna.cole@genesys.org>; dykemal <dykemal@mich.gov>; George Krisztian (DEQ) <krisztian@michigan.gov>; Gerald (Jed) Natzke <gdn2@aol.com>; James Henry <jhenry@gchd.us>;

Jamie Gaskin <jgaskin@unitedwaygenesee.org>; Jason Lorenz <jlorenz@cityofflint.com>; jmikewright <jmikewright@yahoo.com>; JoAnne Herman <jherman@genesys.org>; John O'Brien <jfobrien@gcdcwws.com>; Kirk Smith <ksmith@flint.org>; Larry Koehler <larry.koehler@mcc.edu>; Laura Sullivan <dr.laura2@gmail.com>; Lawrence Reynolds <LawrenceR@mottchc.org>; Lawrence Reynolds <reynolds@mottchc.org>; Michael Glasgow <mglasgow@cityofflint.com>; Michael Wright <Wright.Michael@epa.gov>; Mike Lane <mjlane@umflint.edu>; Mike Prysby (DEQ) <prysbym@michigan.gov>; Natasha Henderson <nhenderson@cityofflint.com>; Norb Birchmeier <nbirchm1@hurleymc.com>; Pete Levine <plevine@gcms.org>; Robert Bincsik <rbincsik@cityofflint.com>; rosejo <rosejo@msu.edu>; Russell Hudson <Russell.Hudson@mclaren.org>; Samir Matta <SFMatta@lan-inc.com>; schock.michael <schock.michael@epa.gov>; Sean Kammer <skammer@cityofflint.com>; Stephen Busch (DEQ) <BUSCHS@michigan.gov>; Warren Green <jwgreen@lan-inc.com>; Wurfel, Brad (DEQ) (DEQ) <WurfelB@michigan.gov>; Anthony Chubb <achubb@cityofflint.com>; Kevin Keane <KEVIN.KEANE@cmsenergy.com>
 Sent: Sat, Oct 10, 2015 12:09 pm
 Subject: Re: 3rd Quarter Water Report

I would echo Marc's sentiment on the bold language agreeing with his points but I would also add that trust needs to be rebuilt and the public simply will not believe anything in the document if you start by telling them it still meets standards. They do not differentiate between regs and rules but they know the water does not meet the standard of the physician community.

I would also recommend opening with timeline of going back to Detroit and what steps people can take to mitigate lead issues. Preferably with an excerpt from a physician.

The technical information matters for transparency but the trust gap is so wide that most people will be skeptical of all of it. On Sat, Oct 10, 2015 at 11:48 AM Marc Edwards <edwardsm@vt.edu> wrote:

Hi Howard,

I think it is universally acknowledged now, that 30 seconds to 2 minutes flushing are not adequate, and **all public education should say 5 minutes flushing.**

I also think that given results of our team sampling 277 homes, the high levels of lead MDEQ detected in the Flint schools (a 90'th over 15 ppb..which is horrible because they are not tier 1 plumbing sites), and the problems in the official LCR sampling conducted in late 2014-2015, that the following statement (in bold) is not really helpful in getting the message out about the current health risks. The bold statement seems more like wishful thinking or a legal position, and detracts from the goal of telling the public about the known problems.

*After 16 months of treating water from the Flint River, the City became aware that the while **still meeting all Safe Drinking Water Standards**, the level of corrosiveness could result in more lead leaching from service lines and household plumbing.*

That is my input. I am available at 540 231-7236 or 540 320-8740, if anyone should have questions about this.

Best Regards,
 Marc Edwards

From: Howard Croft [<mailto:hcroft@cityofflint.com>]

Sent: Saturday, October 10, 2015 8:33 AM

To: Amy Hovey; Andy Leavitt; Brent Wright; Darren Lytle; Dayne Walling; donna. cole; dykemal; edwardsm; George Krisztian (DEQ); Gerald (Jed) Natzke; Howard Croft; James Henry; Jamie Gaskin; Jason Lorenz; jmikewright; JoAnne Herman; John O'Brien; Kirk Smith; larry.koehler@mcc.edu; Laura Sullivan; Lawrence Reynolds; Lawrence Reynolds; Michael Glasgow; Michael Wright; Mike Lane; Mike Prysby (DEQ); Natasha Henderson; Norb Birchmeier; Pete Levine; Robert Bincsik; rosejo@msu.edu; Russell Hudson; Samir Matta; schock.michael@epa.gov; Sean Kammer; Stephen Busch (DEQ); Warren Green; Wurfel, Brad (DEQ); Anthony Chubb; Kevin Keane

Subject: 3rd Quarter Water Report

Team,

Included in this email is a copy of the first quarter water quality report that has been developed by the Utilities Division. Please take a look and offer any comments that you may have regarding content. There will be an additional one page insert containing three months test data inserted prior to distribution.

The purpose of the quarterly mailer is to increase communication, provide more transparency, and put more information into the hands of the public about what's occurring within the water system and with the infrastructure.

I will be putting together a separate weekly report for this Committee.

Thank you,

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Howard Croft
Public Works Director
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1101 S. Saginaw Street
Flint, MI 48502
PH# 810.766.7135 Ext.2043
hcroft@cityofflint.com

--

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hcroft@cityofflint.com

2015 3rd Quarter Regulated Detected Contaminants

Inorganic & Organic Chemicals, Metals, and Pesticides – Monitored at treatment plant						
Regulated Contaminant	Unit of Measure	MCLG	MCL	Highest Level Detected	Range of Detection	Violation
Inorganic Chemicals						
Fluoride	mg/L	4	4	0.84	0.64 – 0.84	No
Nitrate	mg/L	10	10	N.D.	N/A	No
Metals						
Barium	mg/L	2	2	0.02	N/A	No

More than 100 other chemicals were monitored from July through September that were not detected.

The various classification groups of these chemicals include metals, carbamates, herbicides, pesticides, organics, and radiologicals.

Total Organic Carbon, TOC - Monitored at treatment plant			
Regulated Contaminant	Required Monthly % Removal	Minimum Monthly % Removal	Monthly % Removal Ranges
Total Organic Carbon	50	60	60 - 87

Turbidity - Monitored at treatment plant		
Highest Single Measurement (Cannot exceed 1NTU)	Lowest Monthly % of Samples Meeting Turbidity Limit (0.3 NTU in 95% of samples)	Violation
0.18	100 %	No

Disinfectant Residuals – Monitored in the distribution system						
Regulated Contaminant	Unit of Measure	MCLG	MCL	Highest Level Detected	Range of Detection	Violation
Total Chlorine Residual	mg/L	4.0	4.0	4.0	0.2 – 4.0	No

Microbiological Contaminants - Monitored in the distribution system				
Regulated Contaminant	MCLG	MCL	Highest Number detected (in 1 month)	Violation
Total Coliform bacteria	0	The presence of coliform bacteria in > 5% of monthly samples	1	No
<i>E. coli</i> Bacteria	0	0	0	No

Lead & Copper – Monitored from consumers tap					
Regulated Contaminant	Unit of Measure	MCLG	Action Level AL	Number of samples over AL	Total # of Samples Tested from January - September
Lead	ug/L	0	15	16	189
Copper	mg/L	1.3	1.3	0	189

Disinfection By-Products - Monitored in the distribution system and from treatment plant						
Regulated Contaminant	Unit of Measure	MCLG	MCL	Highest Level Detected	Range of Detection	Violation
Total Trihalomethanes (TTHM)	ug/L	n/a	80	90.3	42.6 – 90.3	N/A*
Haloacetic Acids (HAA)	ug/L	n/a	60	15.0	2.0 – 15.0	N/A*
Bromate	ug/L	10	10	N.D.	N/A	N/A*

*Violation based on locational running annual average for TTHM & HAA5, violation for bromate based on yearly average.

Key to the Detected Contaminant Tables		
Symbol	Abbreviation for	Definition/Explanation
>	Greater than	
AL	Action Level	The concentration of a contaminant, which, if exceeded, triggers treatment or other requirements which a water system must follow.
HAA5	Haloacetic Acids	HAA5 is the total of bromoacetic, chloroacetic, dibromoacetic, dichloroacetic, and trichloroacetic acids. Compliance is based on the total.
LRAA	Locational Running Annual Average	
MCL	Maximum Contaminant Level	The highest level of a contaminant that is allowed in water. MCLs are set as close to the MCLG's as feasible using the best available treatment technology.
MCLG	Maximum Contaminant Level Goal	The level of contaminant in drinking water below which there is no known or expected risk to health.
mg/L	Milligrams per Liter	A milligram = 1/1000 gram 1 milligram per liter is equal to 1ppm
MRDL	Maximum Residual Disinfectant Level	The highest level of disinfectant allowed in drinking water. There is convincing evidence that addition of a disinfectant is necessary for control of microbial contaminants.
MRDLG	Maximum Residual Disinfectant Level Goal	The level of a drinking water disinfectant below which there is no known or expected risk to health. MRDLG's do not reflect the benefits of the use of disinfectants to control microbial contaminants.
n/a	Not Applicable	
ND	Not Detected	
NTU	Nephelometric Turbidity Units	Measures the cloudiness of water.
pCi/L	Picocuries per Liter	A measure of radioactivity. Picocurie (pCi) means the quantity of radioactive material producing 2.22 nuclear transformations per minute.
ppb	Parts Per Billion (one in one billion)	The ppb is equivalent to micrograms per liter. A microgram = 1/1000 milligram.
ppm	Parts Per Million (one in one million)	The ppm is equivalent to milligrams per liter. A milligram = 1/1000 gram.
RAA	Running Annual Average	
TT	Treatment Technique	A required process intended to reduce the level of a contaminant in drinking water.
TTHM	Total Trihalomethanes	Total Trihalomethanes is the sum of chloroform, bromodichloromethane, dibromochloromethane and bromoform. Compliance is based on total.
ug/L	Micrograms per Liter	A microgram = 1/1,000,000 gram 1 microgram per liter is equal to 1ppb

Rennaker, Joanne (DEQ)

From: Prysby, Mike (DEQ)
Sent: Wednesday, October 14, 2015 10:32 AM
To: Krisztian, George (DEQ)
Cc: Shekter Smith, Liane (DEQ)
Subject: FW: Preliminary & Deliberative, not subject to FOIA - Norway Lake Road widening for KWA
Attachments: 20151013Olson_DNR-Ltr.pdf

George,

Add this to Action Step No. 18

Mr. Chris Clampitt from WRD has made me aware of another potentially serious bottleneck concerning construction of the KWA pipeline. A "stop-work" order could be coming from the Lapeer County Road Commission soon - read in thread below....also, see Chris's discussion below and attachment.

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

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

From: Clampitt, Christopher (DEQ)
Sent: Wednesday, October 14, 2015 10:12 AM
To: Prysby, Mike (DEQ)
Cc: Vanderlaan, Mary (DEQ); Kammer, Stephanie (DEQ)
Subject: Preliminary & Deliberative, not subject to FOIA - Norway Lake Road widening for KWA

Mike,

As I mentioned, in August of 2014 I learned that the Lapeer County Road Commission (LCRC) had requested that the KWA widen Norway Lake Road through the Lapeer State Game Area (LSGA) after KWA installs the pipeline in the road. The attached letter from Larry Osborn (WadeTrim on behalf of the KWA) to Jennifer Olson (DNR) describes the request. There are at least two components of this work that could substantially slow progress in constructing the KWA line through the LSGA.

The first is that the state (DNR) apparently owns the land on which the added road width would be placed. Typically, these lands are purchased using federal dollars and the federal government seeks compensation if the lands are no longer used for fish and wildlife habitat. Also, the centerline of the road may not match the centerline of the ROW, which could further complicate matters, especially if the LCRC requires that the road be moved to match the ROW (or vice versa). The DNR's response to Mr. Osborn's letter will probably address these issues. However, as a point of reference, it took 10 months for the DNR to grant the KWA a permanent easement at another location on the route.

The second complication is that much of land beside Norway Lake Road through the LSGA is forested wetland that is protected under Part 303, Wetlands Protection, of the NREPA. As I advised KWA representatives in August of 2014, the expansion of the roadway into wetland will need to be addressed under a new permit application. Although there is a minor project (MP) category for limited wetland fills for transportation safety purposes, it is likely that the additional wetland fill in this case will exceed 0.1 acres or otherwise fail to meet the MP criteria. That means that the DEQ's Water

Resources Division (WRD) would have to prepare and issue a public notice, which opens a 20-day public comment period. The Lansing District WRD staff are currently backed up in our permit processing due to the roll-out of the MiWaters information/permit-management system on top of the normal heavy load of summer permit application. It is likely that we would need the full 120 days allowed for in statute to process this application. Further, if an affected party (say the LCRC) requested a public hearing on the permit application, we would be allowed an additional 60 days in which to hold a hearing and assess the public comments from the hearing and the 10-day post-hearing comment period. All of this assumes that the KWA doesn't require time to provide additional information after they submit their permit application. Additionally, and perhaps more importantly, it is likely that this permit application would require a (concurrent) federal review. The EPA has generally been submitting its comments near the end of their 90-day review period, which starts when they receive our Public Notice and thus, typically, corresponds with our 120th day. Also, it is likely that the KWA will have to mitigate (at 2:1) for all permanent wetland losses, which will, at a minimum, increase the cost of the project. It may also slow the process down as KWA will need to either purchase credits in a wetland mitigation bank or design and build its own mitigation wetland.

Let me know if you have any questions on this or need additional information/documents from me.

Thanks.

Chris

Christopher Clampitt
Lansing District
Water Resources Division
Michigan Department of Environmental Quality
525 W. Allegan Street
P.O. Box 30242
Lansing, MI 48909
Phone: 517-243-6956; FAX: 517-241-3571

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

From: Hansen, Ron B. [mailto:ronh@spicergroup.com]
Sent: Tuesday, October 13, 2015 5:09 PM
To: Clampitt, Christopher (DEQ) <CLAMPITTC@michigan.gov>
Cc: Miller, Warren T. <warrenm@spicergroup.com>
Subject: FW: KWA along Norway Lake Road

Chris,

We previously have advised all parties that modifications to wetland and stream permits should be anticipated should widening of Norway Lake Road be incorporated into the project scope. At this point, we have not been asked to prepare any permit modification requests or additional permit applications.

See update from Larry Osborne in email string below and copy of the letter sent to MDNR.

Ron
989-928-8021

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

From: Osborn, Larry [mailto:LOSBORN@WadeTrim.com]
Sent: Tuesday, October 13, 2015 3:14 PM

To: Hansen, Ron B. <ronh@spicergroup.com>
 Cc: 'Matt Raysin' <mraysin@gcdcwws.com>; Harrison, Tiffany <tharrison@wadetrim.com>; Kenyon, Jason <JKenyon@WadeTrim.com>
 Subject: RE: KWA along Norway Lake Road

Ron,

At this time nothing has changed as far as the road width or what was permitted. However, the Lapeer County Road Commission is requiring additional road widening and shoulders or they will issue a stop work order to the Contractor once he gets to M-24. We are exploring this requirement via the DNR since they have fee simple interest to the land over which the ROW easement runs, so essentially they own the land. Here is the letter I sent to Jennifer Olson today.

Any questions, give me a call.

Larry A. Osborn, PE, Professional Engineer
 555 S. Saginaw Street, Suite 201, Flint, Michigan 48502
 810.235.2555 direct | 810.516.6793 cell | 810.235.4975 fax

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

From: Hansen, Ron B. [mailto:ronh@spicergroup.com]
 Sent: Tuesday, October 13, 2015 1:51 PM
 To: Osborn, Larry; Kenyon, Jason; Harrison, Tiffany
 Subject: Fwd: KWA along Norway Lake Road

Please advise.

Ron
 989 928 8021

Begin forwarded message:

From: "Clampitt, Christopher (DEQ)" <CLAMPITTC@michigan.gov<mailto:CLAMPITTC@michigan.gov>>
 Date: October 13, 2015 at 1:20:53 PM EDT
 To: "Ronald B. Hansen (ronh@spicergroup.com<mailto:ronh@spicergroup.com>)"
 <ronh@spicergroup.com<mailto:ronh@spicergroup.com>>
 Subject: KWA along Norway Lake Road

Ron,

Has the scope of work, specifically the width of the road fill, along Norway Lake Road through the State Game Area been established? If so, will there be a change from what was originally permitted?

Thanks.

Chris

Christopher Clampitt
 Lansing District
 Water Resources Division
 Michigan Department of Environmental Quality

525 W. Allegan Street
P.O. Box 30242
Lansing, MI 48909
Phone: 517-243-6956; FAX: 517-241-3571

Please consider the environment before printing this message.

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555 South Saginaw Street
Suite 201
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810.235.2555 tel
810.235.4975 fax
www.wadetrिम.com

AECOM
G-3287 Beecher Road
Flint, MI 48532
810.732.6712 tel
810.732.6768 fax
www.aecom.com

October 13, 2015

DNR Wildlife Division
Rose Lake Field Office
8562 East Stoll Road
East Lansing, MI 48823

Attention: Ms. Jennifer Olson
Land Matters Biologist – SE & NLP Region

Re: KWA Water Supply System Improvements, Contract S.4006
State Game Area

Dear Ms. Olson:

The Lapeer County Road Commission (LCRC) is requiring the Karegnondi Water Authority (KWA) to add two (2) foot shoulders along with widening Norway Lake Road going through the State Game Area. The State/Department of Natural Resources (DNR) has fee simple interest to the land over which the ROW easement runs, which as I understand would make the State/DNR owners of the land. Obviously, there would be a need to remove a number of trees and brush to allow for this additional road widening and shoulders which would include impacting and elimination of wetlands in the property owned by the DNR. The existing roadway varies from 16 feet to 20 feet (no shoulders) and the new required roadway by the LCRC would be 22 feet (two 9-foot lanes with 2-foot shoulders). Further based on 3R design guidelines, approximately 10 feet each side of the designed roadway would need to be cleared. I am writing to inquire if the Department of Natural Resources (DNR) would agree to allow this additional widening of the road including the gravel shoulders which impacts wetlands and your property.

Please let me know if you will allow the additional roadway width to accommodate the LCRC requirement of KWA and if there are any specific requirements relating to the clearing.

Thank you for your consideration in this matter.

Sincerely,

Wade Trim, Inc.

 A handwritten signature in black ink, appearing to read 'Larry A. Osborn'.

Larry A. Osborn, PE

LAO:efd
GDC2045.04F-DO1
PW120151012Olson-DNR-Ltr

cc: Mr. Matt Raysin, PE, KWA
Mr. Dean Oparka, PE, Rowe
Ms. Tiffany Harrison, PE, Wade Trim

Rennaker, Joanne (DEQ)

From: Krisztian, George (DEQ)
Sent: Wednesday, October 14, 2015 7:57 AM
To: Shekter Smith, Liane (DEQ); Thelen, Mary Beth (DEQ); Shaler, Karen (DEQ)
Cc: Sygo, Jim (DEQ); Busch, Stephen (DEQ); Cook, Pat (DEQ); Benzie, Richard (DEQ); Prysby, Mike (DEQ); Devereaux, Tracy Jo (DEQ); Philip, Kris (DEQ); DeBruyn, Dana (DEQ); Wyant, Dan (DEQ); Wurfel, Brad (DEQ); Tommasulo, Karen (DEQ); Pallone, Maggie (DEQ)
Subject: RE: DRAFT DELIBERATIVE. NOT SUBJECT TO FOIA - daily update 10/13.

I have added some to the original list to bring things up to date for today's report to the Governor.

I think the full blown verbiage below can be used as a separate attachment and then the chart can be filled in with a very short description. I have included suggested descriptions for the chart in parentheses.

George L. Krisztian
 Flint Action Plan Coordinator
 Laboratory Director
 Michigan Department of Environmental Quality
 Desk ph (517) 284-6719
 Cell ph (517) 204-0381

From: Shekter Smith, Liane (DEQ)
Sent: Tuesday, October 13, 2015 5:12 PM
To: Krisztian, George (DEQ)
Cc: Thelen, Mary Beth (DEQ); Shaler, Karen (DEQ); Sygo, Jim (DEQ); Busch, Stephen (DEQ); Cook, Pat (DEQ); Benzie, Richard (DEQ); Prysby, Mike (DEQ); Devereaux, Tracy Jo (DEQ); Philip, Kris (DEQ); DeBruyn, Dana (DEQ)
Subject: DRAFT DELIBERATIVE. NOT SUBJECT TO FOIA - daily update 10/13.

Action Step 1. Preliminary list completed, circulated to HHS, and has been provided to DLARA to begin plumbing assessments. The list will remain active in case of additional schools requesting assessment/testing. (COMPLETE)

Action Step 2. See Item 1. DLARA to coordinate with Flint Schools on access for Plumbing Assessments. Tap coding identification from EPA guidance to be provided to DLARA. (DLARA Inspectors ready)

Action Step 3. Preliminary comments received by voice mail from EPA. Need to discuss directly. (Incorporating comments from partners)

Action Step 4. DEQ comments provided to MDARD and draft forwarded to DHHS for their comments. (Comments provided to MDARD)

Action Step 6. Approve Flint Plan for waterline (Disinfection Complete, waiting for test results and completion of system flushing)

The city and the county flushed the pipeline beginning yesterday, the first set of samples for total coliform analysis were collected around 2:30am. Genesee County will be collecting their second sample for bacteriological analysis between 6 and 8pm.

I suspect that it will take additional time to flush the Dort Reservoir before it is ready to be sampled and may set back the time that the pipeline is ready to be placed into operation (Thurs the soonest possible). The yard piping configuration at the WTP does allow for flexibility in operation and ability to take Dort out of service and maintain supply from Detroit; however, I have not been able to confirm that this is the way the city plans to proceed.

Action Step 7. E-mail sent to DHHS to determine if DEQ or DHHS will be lead and to determine how this effort will be coordinated with broader Pb education/outreach efforts.

Action Step 8. The City of Flint has been contacted and the initial meeting is tentatively scheduled for Friday October 16, 2015. (Meeting tentatively scheduled for 10/16/15)

Action Step 9. The City of Flint has been contacted and the tour of the WTP is tentatively scheduled to occur in conjunction with the initial meeting. Logistics may require postponement until the following week. (Meeting tentatively scheduled for 10/16/15).

Action Step 12. DHHS has been contacted and they have indicated as of 9:30 AM October 13, 2015 that there has been no formal request for an emergency declaration. (Complete, DHHS to notify DEQ if status changes)

Action Step 19. Expedite 399 plan and P04 plan

I contacted Samir Matta from LAN (Flint's consultant) for an update on the corrosion control plan and submittal of the Act 399 permit application. Flint operators, with the assistance of LAN, conducted bench tests using a corrosion inhibitor (orthophosphate) and are making comparisons for use with (treated water from Detroit vs. water treated from the Flint River). LAN is currently preparing plans and a design for installation of an orthophosphate feed system. LAN expects to submit the Act 399 permit application to the DEQ by no later than the end of this week. (Corrosion Control Optimization studies in process)

Action Step 18. Contact KWA to find out if there are any bottlenecks that need to be removed to expedite completion of the KWA pipeline.

(Further discussions with Lapeer County may need to take place)

I contacted John O'Brien (Genesee County Drain Commissioner's Office). The most significant bottleneck involves road restrictions currently being imposed by the Lapeer County Road Commission and include:

- All Lapeer County secondary north-south roads are tagged "no construction traffic" for this project except for primary roads (M-19, M-53, and M-24). This significantly increases distances that construction vehicles must travel (upwards of 15 to 20 miles) to accomplish a short jog either north or south.
- Weight restrictions in the spring will cause construction to slow or stop for one to two months. The county has indicated that St. Clair and Sanilac are not imposing the weight restrictions; however, Lapeer County will maintain their restrictions.

Rennaker, Joanne (DEQ)

From: Shekter Smith, Liane (DEQ)
Sent: Tuesday, October 13, 2015 5:12 PM
To: Krisztian, George (DEQ)
Cc: Thelen, Mary Beth (DEQ); Shaler, Karen (DEQ); Sygo, Jim (DEQ); Busch, Stephen (DEQ); Cook, Pat (DEQ); Benzie, Richard (DEQ); Prysby, Mike (DEQ); Devereaux, Tracy Jo (DEQ); Philip, Kris (DEQ); DeBruyn, Dana (DEQ)
Subject: DRAFT DELIBERATIVE. NOT SUBJECT TO FOIA - daily update 10/13.

Action Step 1. Preliminary list completed, circulated to HHS, and has been provided to DLARA to begin plumbing assessments. The list will remain active in case of additional schools requesting assessment/testing.

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Action Step 4. DEQ comments provided to MDARD and draft forwarded to DHHS for their comments.

Action Step 6. Approve Flint Plan for waterline

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Action Step 19. Expedite 399 plan and PO4 plan

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- Weight restrictions in the spring will cause construction to slow or stop for one to two months. The county has indicated that St. Clair and Sanilac are not imposing the weight restrictions; however, Lapeer County will maintain their restrictions.

Rennaker, Joanne (DEQ)

From: Busch, Stephen (DEQ)
Sent: Tuesday, October 13, 2015 9:44 AM
To: Krisztian, George (DEQ); Shekter Smith, Liane (DEQ); Cook, Pat (DEQ); Prysby, Mike (DEQ)
Cc: Sygo, Jim (DEQ)
Subject: RE: Preliminary and Deliberative, Not subject to FOIA: Information request for Draft report

George,

You should now have this information. If you need anything further, please let me know. Thanks.

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

From: Krisztian, George (DEQ)
Sent: Tuesday, October 13, 2015 7:56 AM
To: Shekter Smith, Liane (DEQ); Busch, Stephen (DEQ); Cook, Pat (DEQ); Prysby, Mike (DEQ)
Cc: Sygo, Jim (DEQ)
Subject: Preliminary and Deliberative, Not subject to FOIA: Information request for Draft report
Importance: High

I need some information rather quickly.

- 1) The first thing that I need is an explanation of why there were data points that were excluded from the Lead and Copper study for Flint. I also need to know the date(s) of the study(s) where data was excluded and what that data was. A copy of the report would be helpful. I believe I know the answer, I just need to formalize the answer.
- 2) I need a copy of Steve's memo indicating that "optimized" corrosion controls were in place. I understand the phrase "optimized" was an unfortunate word usage but apparently the memo contains that language and I need to be able to put that into context. If my understanding of the word choice in the memo is incorrect I still need a copy of the memo that is causing the buzz.

Please make these high priority items.

Thank you
 George

George L. Krisztian
 Flint Action Plan Coordinator
 Laboratory Director
 Michigan Department of Environmental Quality

Desk ph (517) 284-6719
Cell ph (517) 204-0381

Rennaker, Joanne (DEQ)

From: Krisztian, George (DEQ)
Sent: Tuesday, October 13, 2015 7:56 AM
To: Shekter Smith, Liane (DEQ); Busch, Stephen (DEQ); Cook, Pat (DEQ); Prysby, Mike (DEQ)
Cc: Sygo, Jim (DEQ)
Subject: Preliminary and Deliberative, Not subject to FOIA: Information request for Draft report

Importance: High

I need some information rather quickly.

- 1) The first thing that I need is an explanation of why there were data points that were excluded from the Lead and Copper study for Flint. I also need to know the date(s) of the study(s) where data was excluded and what that data was. A copy of the report would be helpful. I believe I know the answer, I just need to formalize the answer.
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Please make these high priority items.

Thank you
George

George L. Krisztian
Flint Action Plan Coordinator
Laboratory Director
Michigan Department of Environmental Quality
Desk ph (517) 284-6719
Cell ph (517) 204-0381

Rennaker, Joanne (DEQ)

From: Shekter Smith, Liane (DEQ)
Sent: Monday, October 12, 2015 5:43 PM
To: Krisztian, George (DEQ)
Cc: Thelen, Mary Beth (DEQ); Shaler, Karen (DEQ); Sygo, Jim (DEQ); Busch, Stephen (DEQ); Cook, Pat (DEQ); Benzie, Richard (DEQ); Prysby, Mike (DEQ); Devereaux, Tracy Jo (DEQ)
Subject: DRAFT DELIBERATIVE. NOT SUBJECT TO FOIA. Daily update 10/12.

Action Step #3 – preliminary comments on the sampling plan were received today from DHHS.

Action Step #5 – Noncommunity water supply staff provided updated numbers today to the 2004 letter to EPA.

Action Step #6 – Discussions occurred today with the City; disinfection of the transmission main continues. Bacteriological sampling is anticipated to begin Tuesday, 10/13, with a second set of samples to be collected on Wednesday. Assuming the sampling is all non-detect, the pipeline that will provide the city with water from Detroit could be placed into service by this Thursday (the soonest). Other non-regulatory actions may need to be undertaken or completed by the city.

Action Step #15 – Discussion today with MDARD representative regarding sampling for restaurants at their request. MDARD shared a draft of information/guidance that they have prepared to share with restaurants. DEQ will be providing guidance for how to get their water tested.

Liane J. Shekter Smith, P.E., Chief
Office of Drinking Water and Municipal Assistance
Michigan Department of Environmental Quality
517-284-6543

Rennaker, Joanne (DEQ)

From: Prysby, Mike (DEQ)
Sent: Friday, October 09, 2015 4:23 PM
To: Shekter Smith, Liane (DEQ)
Cc: Krisztian, George (DEQ); Thelen, Mary Beth (DEQ); Shaler, Karen (DEQ); Sygo, Jim (DEQ); Busch, Stephen (DEQ); Cook, Pat (DEQ); Benzie, Richard (DEQ); Devereaux, Tracy Jo (DEQ)
Subject: Re: Daily updates - DRAFT DELIBERATIVE - NOT SUBJECT TO FOIA

An acceptable procedure has been submitted and our concurrence has been conveyed.

Sent from my iPhone

On Oct 9, 2015, at 3:58 PM, Shekter Smith, Liane (DEQ) <SHEKTERL@michigan.gov> wrote:

Action Step #6 – Mike Prysby reported that Flint and Genesee County are coordinating their efforts to have the unused portion of the 72-inch transmission main (pipeline) available for service. An Act 399 permit does not apply here; however, he plans to offer the DEQ's concurrence with their proposed procedure – provided that it references adherence to AWWA's disinfection standard and the sampling protocol that was discussed. Mike spoke with the city and the county today to confirm that actions are underway.

Action Step #3 – Pat Cook drafted the sampling instructions and they are under review by DHHS, EPA and DEQ staff.

Action Step #1 – DEQ, DHHS, and city of Flint conference call today to discuss school prioritization.

From: Krisztian, George (DEQ)
Sent: Friday, October 09, 2015 7:07 AM
To: Shekter Smith, Liane (DEQ)
Cc: Thelen, Mary Beth (DEQ); Shaler, Karen (DEQ); Wyant, Dan (DEQ); Sygo, Jim (DEQ)
Subject: Daily updates
Importance: High

Hi Liane,

The Governor wants daily updates regarding the progress we are making on the Flint issue. Can you please provide me with a summary of the action steps that we have taken on a daily basis? The summary should not contain excessive detail, it should be something like:

- Steve Busch contacted Natasha Henderson at the City of Flint to get details on supplemental Phosphate Dosing
- Pat Cook/Mike P Analyzed Plans for flushing and pressure testing lines to make the switch back to GLWA
- Met with city of Flint officials to review actions to date and to create a list of next steps

The above examples are for illustrative purposes only

I need to have this summary each day no later than 4:30 PM. This is a hard deadline as we need to get the summary to the Governor by 5:00 PM. Please make sure that you copy Mary Beth and Karen.

Thank you!

George

Rennaker, Joanne (DEQ)

From: Shekter Smith, Liane (DEQ)
Sent: Friday, October 09, 2015 3:59 PM
To: Krisztian, George (DEQ)
Cc: Thelen, Mary Beth (DEQ); Shaler, Karen (DEQ); Sygo, Jim (DEQ); Busch, Stephen (DEQ); Cook, Pat (DEQ); Benzie, Richard (DEQ); Prysby, Mike (DEQ); Devereaux, Tracy Jo (DEQ)
Subject: RE: Daily updates - DRAFT DELIBERATIVE - NOT SUBJECT TO FOIA

Action Step #6 – Mike Prysby reported that Flint and Genesee County are coordinating their efforts to have the unused portion of the 72-inch transmission main (pipeline) available for service. An Act 399 permit does not apply here; however, he plans to offer the DEQ's concurrence with their proposed procedure – provided that it references adherence to AWWA's disinfection standard and the sampling protocol that was discussed. Mike spoke with the city and the county today to confirm that actions are underway.

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Sent: Friday, October 09, 2015 7:07 AM
To: Shekter Smith, Liane (DEQ)
Cc: Thelen, Mary Beth (DEQ); Shaler, Karen (DEQ); Wyant, Dan (DEQ); Sygo, Jim (DEQ)
Subject: Daily updates
Importance: High

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The above examples are for illustrative purposes only

I need to have this summary each day no later than 4:30 PM. This is a hard deadline as we need to get the summary to the Governor by 5:00 PM. Please make sure that you copy Mary Beth and Karen.

Thank you!
George

Rennaker, Joanne (DEQ)

From: Thelen, Mary Beth (DEQ)
Sent: Friday, September 25, 2015 11:05 AM
To: Prysby, Mike (DEQ)
Subject: RE: Consumer Notice (draft) - city of Flint

Thanks – I have sent on to Brad for approval (and to call you or Steve). I also left him a voice mail. Thanks.

Mary Beth

Mary Beth Thelen
 Management Assistant to Director Dan Wyant
 Department of Environmental Quality
 Constitution Hall, 6th Floor South
 Phone: 517-284-6712 or 284-6700 (new numbers)
 Fax: 517-241-7401
Thelenm2@michigan.gov

From: Prysby, Mike (DEQ)
Sent: Friday, September 25, 2015 11:03 AM
To: Thelen, Mary Beth (DEQ)
Subject: FW: Consumer Notice (draft) - city of Flint

Mary,

See note to Brad with attached draft public health advisory. Thanks

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

From: Prysby, Mike (DEQ)
Sent: Friday, September 25, 2015 8:30 AM
To: Wurfel, Brad (DEQ); Fields, Maggie (DEQ)
Cc: Benzie, Richard (DEQ); Busch, Stephen (DEQ)
Subject: Consumer Notice (draft) - city of Flint

Brad,

Mr. Howard Kroft from the city of Flint has prepared a draft Public Health Advisory regarding lead in drinking water that he intends to publish today. Mr. Kroft requested us to review the draft advisory and make any revisions as needed. Attached is a copy of the draft advisory along with our tracked changes. If there are any further edits you see fit, let me know. Also, I will be out of the office today after 11am. Thanks.

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

Rennaker, Joanne (DEQ)

From: Prysby, Mike (DEQ)
Sent: Friday, September 25, 2015 11:03 AM
To: Thelen, Mary Beth (DEQ)
Subject: FW: Consumer Notice (draft) - city of Flint
Attachments: DRAFT_Lead Advisory.docx

Mary,

See note to Brad with attached draft public health advisory. Thanks

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

From: Prysby, Mike (DEQ)
Sent: Friday, September 25, 2015 8:30 AM
To: Wurfel, Brad (DEQ); Fields, Maggie (DEQ)
Cc: Benzie, Richard (DEQ); Busch, Stephen (DEQ)
Subject: Consumer Notice (draft) - city of Flint

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

Consumer Awareness Notice Public Health Advisory Regarding Lead in Drinking Water

The City of Flint is issuing a Public Health Advisory for residents to be aware of lead levels in drinking water. While the City is ~~in full compliance with the Federal Safe Drinking Water Act~~ has not exceeded the lead Action Level (15 parts per billion), this advisory is being issued as part of a public information campaign to ensure that everyone takes note that no level of lead is considered safe.

Lead contamination can leach into water from a home's lead water service lines, lead solder, and leaded plumbing materials including fixtures, faucets, and fittings. Older service lines with pipes and fixtures installed before 1986 can sometimes be more susceptible to lead issues due to materials used in the home such as lead based paint and lead pipes. This message is meant as a precaution to residents and does not mean that all homes in the City will experience the same issue.

In an effort to minimize any potential risk, the City of Flint Public Works Department advises the public to take the following precautions:

- Flush water for at least five minutes prior to use.
- Only use cold water for cooking and drinking.
- Have your water tested (see information below).

For more specific questions about lead related issues please visit the Genesee County Health Department website at www.gchd.us . The City of Flint is working proactively along with the County Health Department, the Michigan Department of Environmental Quality, and the U.S. Environmental Protection Agency to improve the water system throughout the City. Activities include the city's plan to install corrosion control treatment at the Water Treatment Plant by January 2016.

The City's Utilities Division continues to offer free water testing by calling the Water Treatment Plant at 810-787-6537 and pressing #1 after prompted or by emailing flintwater@cityofflint.com.

Rennaker, Joanne (DEQ)

From: Wurfel, Brad (DEQ)
Sent: Friday, September 25, 2015 8:41 AM
To: Prysby, Mike (DEQ)
Cc: Benzie, Richard (DEQ); Busch, Stephen (DEQ); Pallone, Maggie (DEQ)
Subject: Re: Consumer Notice (draft) - city of Flint

Received. Thanks.

Sent from my iPhone

On Sep 25, 2015, at 8:29 AM, Prysby, Mike (DEQ) <PRYSBYM@michigan.gov> wrote:

Brad,

Mr. Howard Kroft from the city of Flint has prepared a draft Public Health Advisory regarding lead in drinking water that he intends to publish today. Mr. Kroft requested us to review the draft advisory and make any revisions as needed. Attached is a copy of the draft advisory along with our tracked changes. If there are any further edits you see fit, let me know. Also, I will be out of the office today after 11am. Thanks.

Michael Prysby, P.E.

District Engineer

Office of Drinking Water and Municipal Assistance

517 290-8817

Rennaker, Joanne (DEQ)

From: Prysby, Mike (DEQ)
Sent: Friday, September 25, 2015 8:40 AM
To: Pallone, Maggie (DEQ)
Subject: FW: Consumer Notice (draft) - city of Flint
Attachments: DRAFT_Lead Advisory.docx

Maggie

My original e-mail did not get sent to you due to typo when I was entering your name in the address box; thus, I am re-sending the message to you separately. If you do not receive the attachment, let me know. Thanks.

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

From: Prysby, Mike (DEQ)
Sent: Friday, September 25, 2015 8:30 AM
To: Wurfel, Brad (DEQ); Fields, Maggie (DEQ)
Cc: Benzie, Richard (DEQ); Busch, Stephen (DEQ)
Subject: Consumer Notice (draft) - city of Flint

Brad, Maggie

Mr. Howard Kroft from the city of Flint has prepared a draft Public Health Advisory regarding lead in drinking water that he intends to publish today. Mr. Kroft requested us to review the draft advisory and make any revisions as needed. Attached is a copy of the draft advisory along with our tracked changes. If there are any further edits you see fit, let me know. Also, I will be out of the office today after 11am. Thanks.

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

Consumer Awareness Notice Public Health Advisory Regarding Lead in Drinking Water

The City of Flint is issuing a Public Health Advisory for residents to be aware of lead levels in drinking water. While the City is in full compliance with the Federal Safe Drinking Water Act has not exceeded the lead Action Level (15 parts per billion), this advisory is being issued as part of a public information campaign to ensure that everyone takes note that no level of lead is considered safe.

Lead contamination can leach into water from a home's lead water service lines, lead solder, and leaded plumbing materials including fixtures, faucets, and fittings. Older service lines with pipes and fixtures installed before 1986 can sometimes be more susceptible to lead issues due to materials used in the home such as lead based paint and lead pipes. This message is meant as a precaution to residents and does not mean that all homes in the City will experience the same issue.

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- Have your water tested (see information below).

For more specific questions about lead related issues please visit the Genesee County Health Department website at www.gchd.us . The City of Flint is working proactively along with the County Health Department, the Michigan Department of Environmental Quality, and the U.S. Environmental Protection Agency to improve the water system throughout the City. Activities include the city's plan to install corrosion control treatment at the Water Treatment Plant by January 2016.

The City's Utilities Division continues to offer free water testing by calling the Water Treatment Plant at 810-787-6537 and pressing #1 after prompted or by emailing flintwater@cityofflint.com.

Rennaker, Joanne (DEQ)

From: Prysby, Mike (DEQ)
Sent: Friday, September 25, 2015 8:30 AM
To: Wurfel, Brad (DEQ); Fields, Maggie (DEQ)
Cc: Benzie, Richard (DEQ); Busch, Stephen (DEQ)
Subject: Consumer Notice (draft) - city of Flint
Attachments: DRAFT_Lead Advisory.docx

Brad,

Mr. Howard Kroft from the city of Flint has prepared a draft Public Health Advisory regarding lead in drinking water that he intends to publish today. Mr. Kroft requested us to review the draft advisory and make any revisions as needed. Attached is a copy of the draft advisory along with our tracked changes. If there are any further edits you see fit, let me know. Also, I will be out of the office today after 11am. Thanks.

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

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The City's Utilities Division continues to offer free water testing by calling the Water Treatment Plant at 810-787-6537 and pressing #1 after prompted or by emailing flintwater@cityofflint.com.

Rennaker, Joanne (DEQ)

From: Benzie, Richard (DEQ)
Sent: Thursday, September 24, 2015 5:51 PM
To: Prysby, Mike (DEQ); Busch, Stephen (DEQ)
Subject: RE: Flint draft lead advisory

Mike,

I like all of your edits with the possible exception of the last ones where your additional information makes it sound like the city has already initiated OCCT and then immediately following, you say they hope to have it installed by January. I would make it clear in one sentence that the city plans to install OCCT by January, 2016. In other words, one of the activities yet to be conducted is the installation of OCCT

Also, Steve and I discussed the heading of "Public Health Advisory." We would recommend they call it a Consumer Awareness Notice, as an advisory implies a regulatory aspect that really doesn't exist in this case.

Richard Benzie, P.E., Chief
 Field Operations Section
 Office of Drinking Water and Municipal Assistance, MDEQ
 517-284-6512

From: Prysby, Mike (DEQ)
Sent: Thursday, September 24, 2015 4:06 PM
To: Busch, Stephen (DEQ); Benzie, Richard (DEQ)
Subject: Flint draft lead advisory

Steve, Richard,

Although I've been in the field most of the day...I thought it was prudent to review Flint's Public Health Advisory (draft) regarding lead in drinking water, at the city's request. Attached is the draft advisory with my tracked revisions. Feel free to comment or make any further revisions as needed.

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

Rennaker, Joanne (DEQ)

From: Prysby, Mike (DEQ)
Sent: Thursday, September 24, 2015 4:06 PM
To: Busch, Stephen (DEQ); Benzie, Richard (DEQ)
Subject: Flint draft lead advisory
Attachments: DRAFT_Lead Advisory.docx

Steve, Richard,

Although I've been in the field most of the day...I thought it was prudent to review Flint's Public Health Advisory (draft) regarding lead in drinking water, at the city's request. Attached is the draft advisory with my tracked revisions. Feel free to comment or make any further revisions as needed.

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

Public Health Advisory Regarding Lead in Drinking Water

The City of Flint is issuing a Public Health Advisory for residents to be aware of lead levels in drinking water. While the City is in full compliance with the Federal Safe Drinking Water Act, has not exceeded the lead Action Level (15 parts per billion), this advisory is being issued as part of a public information campaign to ensure that everyone takes note that no level of lead is considered safe.

Lead contamination can leach into water from a home's lead water service lines, lead solder, and leaded plumbing materials including fixtures, faucets, and fittings. Older service lines with pipes and fixtures installed before 1986 can sometimes be more susceptible to lead issues due to materials used in the home such as lead based paint and lead pipes. This message is meant as a precaution to residents and does not mean that all homes in the City will experience the same issue.

In an effort to minimize any potential risk, the City of Flint Public Works Department advises the public to take the following precautions:

- Flush water for at least five minutes prior to use.
- Only use cold water for cooking and drinking.
- Have your water tested (see information below).

For more specific questions about lead related issues please visit the Genesee County Health Department website at www.gchd.us. The City of Flint is working proactively along with the County Health Department, the Michigan Department of Environmental Quality, and the U.S. Environmental Protection Agency to improve the water system throughout the City. Activities include instituting corrosion control treatment at the Water Treatment Plant to reduce corrosion of lead from lead service lines and leaded plumbing materials into the drinking water. We expect to have corrosion control treatment in place by January 2016.

The City's Utilities Division continues to offer free water testing by calling the Water Treatment Plant at 810-787-6537 and pressing #1 after prompted or by emailing flintwater@cityofflint.com.

DRAFT

Rennaker, Joanne (DEQ)

From: Howard Croft <hcroft@cityofflint.com>
Sent: Wednesday, September 23, 2015 4:26 PM
To: Henry, James
Cc: Prysby, Mike (DEQ); Busch, Stephen (DEQ); Natasha Henderson; Flint Mayor; Sean Kammer; Jason Lorenz
Subject: DRFAT_Advisory
Attachments: DRAFT_Lead Advisory.docx

Jim,

As a follow up to our earlier conversation, here is a brief advisory draft that we put together that still needs comments and information from the Health Dept and DEQ. I have just spoken to Mike Prysby of the DEQ and he will have their team review and make comments prior to adoption of a final version.

The GFHC group has requested the opportunity to see our final copy when it is ready, I have stamped this as a draft and will keep it that way until there is agreed upon content and the City Administrator has approved it.

Thank you,

--

Howard Croft
Public Works Director
City of Flint
1101 S. Saginaw Street
Flint, MI 48502
PH# 810.766.7135 Ext.2043
hcroft@cityofflint.com

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Rennaker, Joanne (DEQ)

From: Shekter Smith, Liane (DEQ)
Sent: Friday, September 04, 2015 9:58 AM
To: Benzie, Richard (DEQ); Busch, Stephen (DEQ); Prysby, Mike (DEQ)
Subject: RE: Draft Notes from call Tuesday with MI DEQ RE: Flint

One more change.

From: Shekter Smith, Liane (DEQ)
Sent: Friday, September 04, 2015 9:50 AM
To: Benzie, Richard (DEQ); Busch, Stephen (DEQ); Prysby, Mike (DEQ)
Subject: RE: Draft Notes from call Tuesday with MI DEQ RE: Flint

My suggested changes are shown below.

From: Crooks, Jennifer [<mailto:crooks.jennifer@epa.gov>]
Sent: Thursday, September 03, 2015 2:51 PM
To: Shekter Smith, Liane (DEQ); Benzie, Richard (DEQ); Busch, Stephen (DEQ); Prysby, Mike (DEQ)
Cc: Poy, Thomas; Porter, Andrea
Subject: Draft Notes from call Tuesday with MI DEQ RE: Flint
Importance: High

All—these are the notes I jotted down during our call this past Tuesday when we discussed Flint. Any edits?
 Jennifer

Date: August 31, 2015

Present: Liane Shekter Smith, Richard Benzie, Steve Busch, (2 other MDEQ staff?), Tom Poy, Andrea Porter, Janet Kuefler, Jennifer Crooks

STRATEGIC NEXT STEPS FOR FLINT TO ADDRESS LEAD CORROSION CONCERNS

Tom Poy discussed Marc Edwards' website, "Flint, MI Water Study Updates" (<https://flintwaterstudyupdates.wordpress.com/>). The discussion focused on the lead sampling and analytical results Marc Edwards' team posted to their website. Tom emphasized that EPA is not involved with Marc Edwards' work in Flint. Tom mentioned that the Edwards team's samples may not have been analyzed by a certified lab (which is only required for compliance samples) nor taken from sites that qualify as Tier 1 for LCR compliance sampling, but the results give further evidence that lead levels in Flint are trending upward. (The conclusion that there is an increasing trend of lead concentrations at consumer taps builds upon earlier compliance sampling taken by Flint in 2014 and 2015 that showed the 90th percentile of the 1st 6-month sampling period at 6ppb, then the 90th percentile of the 2nd 6-month sampling period at 11ppb.) Everyone agreed that Flint is in compliance with the Safe Drinking Water Act action level for lead. However, because the city's population exceeds 50,000 persons, they need to additionally optimize their treatment process to reduce lead levels further, if possible.

The "Flint, MI Water Study Updates" website is putting added pressure on MDEQ and EPA to ensure that Flint addresses their lack of optimized corrosion control treatment in an expedited manner in order to protect the residents from

exposure to high lead levels. Richard noted that there are numerous systems across the country that have installed corrosion control treatment, have optimized their corrosion control, but did not necessarily reduce their lead levels. We all acknowledged that this is true, but we all also acknowledged that implementing installation of corrosion control treatment in Flint is prudent to protect public health since there are approximately 15,000 lead service lines within the city.

Region 5 and MDEQ brainstormed on strategic next steps for Flint to address lead corrosion concerns. These steps included:

1. **Public Education for Flint Residents.** Liane has contacted the Department of Community Health to discuss developing a consumer lead education piece outlining the consumer's options to lower the lead in their drinking water. The Region was glad to hear of a plan to initiate Lead Public Education since this will provide the public immediate actions they can take. The educational material could include steps consumers can take to reduce their exposure to lead in drinking water (flushing their lines after long stagnation periods, using filters certified to remove lead, etc.) as well as longer term fixes to remove lead sources (for example, financing the cost to remove any part of a lead service line on the owner's property at the same time as Flint is replacing its portion of the lead service line).
2. **Gathering Information on Flint's Future Treatment Plans.** Steve Busch said Flint and their engineering consultants were meeting this week (Sept 1) to discuss conceptually the necessary optimized corrosion control treatment at Flint. Tom Poy shared EPA lead experts' (Mike Schock and Darren Lytle of EPA's Office of Research and Development in Cincinnati) caution against simply adding orthophosphate without first studying the water quality and existing distribution system conditions to ensure that any installed treatment has a good chance of working. EPA lead experts have research and field experience showing the complexity of optimizing corrosion control treatment when water quality is significantly changed, as is the case for Flint.
3. **Offering Flint Free Help from EPA Experts.** Steve Busch has already provided the names of EPA lead experts (Mike Schock and Darren Lytle) to Flint, as has Susan Hedman, R5 Administrator. MDEQ and Region 5 agree that, to successfully control lead corrosion in the distribution system, Flint needs to review this situation holistically, while also addressing the lead issue in an expedited manner.
4. **Laying Groundwork for MDEQ/EPA Collaboration with Flint.** If Flint accepts the offer of technical assistance for optimizing corrosion control, Tom Poy suggested that MDEQ and EPA lead experts (Mike Schock and Darren Lytle) form a partnership to provide such help. EPA experts are able to provide pipe scale analyses, as well as other laboratory support. Although Flint (using their consultant) bears the ultimate responsibility for designing and installing corrosion control, MDEQ and EPA experts are willing and able to provide advice throughout the process.

END

Jennifer

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The "Flint, MI Water Study Updates" website is putting added pressure on MDEQ and EPA to ensure that Flint addresses their lack of optimized corrosion control treatment in an expedited manner in order to protect the residents from exposure to high lead levels. Richard noted that there are numerous systems across the country that have installed corrosion control treatment, have optimized their corrosion control, but continue to have high lead levels. We all acknowledged that this is true, but we all also acknowledged that to delay installation of corrosion control treatment in Flint would likely cause even higher levels of lead over time as Flint's approximately 15,000 lead service lines are continuously in contact with corrosive water.

Region 5 and MDEQ brainstormed on strategic next steps for Flint to address lead corrosion concerns. These steps included:

1. **Public Education for Flint Residents.** Liane has contacted the Department of Community Health to discuss developing a consumer lead education piece outlining the consumer's responsibilities to lower the lead in their drinking water. The Region was glad to hear of a plan to initiate Lead Public Education since this will provide the public immediate actions they can take. The educational material could include steps consumers can take immediately to reduce their exposure to lead in drinking water (flushing their lines after long stagnation periods, using filters certified to remove lead, etc.) as well as longer term fixes to remove lead sources (for example,

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END

Jennifer

Rennaker, Joanne (DEQ)

From: Shekter Smith, Liane (DEQ)
Sent: Wednesday, September 02, 2015 1:38 PM
To: Busch, Stephen (DEQ); Benzie, Richard (DEQ); Prysby, Mike (DEQ)
Subject: RE: DRAFT Flint Journal response -- edit, add and subtract from this as you see fit. Need it asap. Thanks!

What neither of you have touched upon is Dr. Edwards claim that using the Flint River as a source the finished water from the treatment plant is 12 times more corrosive than water they used to receive from the city of Detroit. I'm not sure what we can say about this, but it does seem to be the elephant in the room. When we bring up 25 years of good lead sampling results, that seems to bolster the argument further. While we do mention the recent 6-month rounds of sampling, perhaps we need to emphasize this more.

From: Busch, Stephen (DEQ)
Sent: Wednesday, September 02, 2015 1:34 PM
To: Benzie, Richard (DEQ); Shekter Smith, Liane (DEQ); Prysby, Mike (DEQ)
Subject: RE: DRAFT Flint Journal response -- edit, add and subtract from this as you see fit. Need it asap. Thanks!

I had already started over lunch and am half way through.

First, we want to be very clear that the source of this lead is not from the City's source water or the treated water from the City's water treatment plant. Treated water from the plant continues to show no detectable level of lead according to state analysis. The Flint public water distribution system is not constructed of lead piping materials. However lead materials were used decades ago for service lines, and household plumbing, both of which are not part of the public water system. Property owners who have failed to replace such materials continue to expose themselves to at least some level of lead.

The DEQ regulates the impact of the City's water on leaching such metals to help limit this exposure. The City has continued to comply with the federal Action Level standard for lead since regulations became effective in 1991. The state's monitoring program, which uses certified laboratories and a standardized, federal testing protocol, looks specifically at the homes in communities most likely to experience lead problems.

While Dr. Edwards is well respected in this field, we are not aware of any certification for his university's research laboratory for metals analysis, and it does not appear he has disclosed this fact. It is also disappointing that he has not fully disclosed information regarding each of these test results. What instructions were provided to residents for collection the sample, plumbing conditions within the home, sample preservation, chain of custody documentation, etc. In many cases it appears samples were collected in a manner that is not consistent with Safe Drinking Water Act requirements. His finding of lead in and of itself is not surprising as the City has for decades documented that fact that over 15,000 customers have at least some lead materials.

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

From: Benzie, Richard (DEQ)
Sent: Wednesday, September 02, 2015 1:32 PM
To: Busch, Stephen (DEQ); Shekter Smith, Liane (DEQ); Prysby, Mike (DEQ)
Subject: RE: DRAFT Flint Journal response -- edit, add and subtract from this as you see fit. Need it asap. Thanks!

Here are my suggested edits in an attached word document. I thought we should probably just draft a single response so I am circulating it to you three before we reply to Brad.

From: Wurfel, Brad (DEQ)
Sent: Wednesday, September 02, 2015 12:12 PM
To: Busch, Stephen (DEQ); Shekter Smith, Liane (DEQ); Benzie, Richard (DEQ); Prysby, Mike (DEQ)
Subject: DRAFT Flint Journal response -- edit, add and subtract from this as you see fit. Need it asap. Thanks!

We are aware that Virginia Tech researchers are now testing water at various Flint homes for lead levels in their plumbing.

First, we want to be very clear that the lead issue in Flint, to the extent there is one, is not from the source water or the plant or even the transmission lines. The river has no detectable levels of lead in it, and treated water from the plant has not detectable levels of lead in it. The issue is how, whether, and to what extent the water is interacting with lead plumbing in people's homes.

It does not appear their research lab is certified, and we can't speak to the whatever sampling methods are being employed to achieve these results. The results reported so far fail to track with any of the lead sampling done by the DEQ for the past 25 years (since 1991), or the blood lead levels testing regularly conducted by the state department of community health. That said, we do appreciate that Virginia Tech's team is working on this issue because it brings the public spotlight on an important fact: if you have lead water pipes in your home, or a lead service connection to the city system, it is very likely you are ingesting some level of lead. That's just a fact, and in the City of Flint that fact affects 15,000 or more residences.

The state's monitoring program, which uses certified laboratories and a standardized, federal testing protocol, looks specifically at the homes in communities most likely to experience lead problems. Our results, obtained from two separate rounds of testing over the past year, concluded that the mean average of lead in Flint drinking water, meets state and federal safe drinking water standards.

That said, the state is pushing Flint to 'optimize' its water, which means addressing additives that can minimize the extent to which the water interacts with lead plumbing in homes. While statute allows several years for an operator actually undertake this process – Detroit took five years to complete its water optimization work – we are encouraging Flint water system operators to take these steps immediately and we are encouraged by the conversation so far.

Any resident who has concerns about lead in their drinking water should have their water tested and get professional consultation on how to address it. The leading cause of lead poisoning is known to be lead paint and, in some areas, environmental legacy hot spots where lead is present in soils.

However, I will say it again: when homes are fitted with lead plumbing pipes, homeowners should assume there is some varied level of interaction between water and pipes that means exposure.

From: Ronald Fonger [<mailto:RFONGER1@mlive.com>]
Sent: Wednesday, September 02, 2015 11:34 AM
To: Wurfel, Brad (DEQ)
Cc: Kristin Longley; Bryn Mickle
Subject: lead in flint water

Brad:
 I left a message with Mike Prysby on Tuesday, Sept. 1, but wanted to reach out to you also because of stories we are working on about the extent to which lead is becoming an issue in Flint drinking water.
 Today, Sept. 2, researchers at Virginia Tech posted the results on an experiment with Flint water online.

The report concludes that Flint River water leaches much more lead from plumbing than does Detroit.

"On average, Detroit water is 12 times (or 12X) less corrosive than the Flint River water currently in use ... This is creating a public health threat in some Flint homes that have lead pipe or lead solder," the report says.

An earlier post by the same researchers says that initial water tests show "a serious lead in water problem" in Flint, partly because Flint River water is so corrosive to pipes.

Given the state's role in oversight of the city's drinking water system through DEQ and its overall oversight by state emergency managers during the past several years, I wanted to make sure I'm reaching out to the right person to respond to this information.

Could you let me know who that is?

I expect to post the first story about the experiment today and expect the issue will be getting more attention as the VT study of 300 water test kits from Flint is completed.
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 MLive Media Group
 Reporter

mobile 810.347.9963
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MLive Media Group

Reporter

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MLive Media Group
Reporter

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We are aware that Virginia Tech researchers are now testing water at various Flint homes for lead levels in their plumbing.

First, we want to be very clear that the lead issue in Flint, to the extent there is one, is not from the source water or the treatment plant or even the transmission lines. The river has no detectable levels of lead in it, and treated water from the plant has not detectable levels of lead in it. The issue is how, whether, and to what extent the water is interacting with lead plumbing in people's homes.

It does not appear their ~~(instead of their, do we want to say "the Virginia Tech")~~ research lab is certified, and we can't speak to the ~~whatever~~ sampling methods are being employed to achieve these results. The results reported so far fail to track with ~~(match? mirror?)~~ any of the lead sampling ~~conducted by the city done by the DEQ~~ for the past 25 years (since 1991), or ~~with~~ the blood lead levels testing regularly conducted by the state department of community health. That said, we do appreciate that Virginia Tech's team is working on this issue because it brings the public spotlight on an important fact: if you have lead water pipes or plumbing fixtures containing lead in your home, or a lead service connection to the city system, it is very likely you are ingesting some level of lead. That's just a fact, and in the City of Flint, that fact affects 15,000 or more residences.

The state's compliance monitoring program, ~~which program requires the city to~~ uses certified laboratories and a standardized, federal testing ~~protocol, protocol that~~ looks specifically at the homes in communities most likely to experience lead problems. ~~The latest~~ Our results from Flint, obtained from two separate rounds of testing over the past year, ~~indicated~~ concluded that the ~~mean average of~~ lead in Flint drinking water, meets state and federal safe drinking water standards for lead.

That said, the state is pushing Flint to 'optimize' its water treatment, which means addressing additives that can minimize the extent to which the water interacts with lead plumbing in homes. While statute allows several years for a drinking water system ~~n-operator-actually~~ to actually undertake this process – Detroit took five years to complete its water optimization work – we are encouraging Flint water system operators to take these steps immediately and we are encouraged by the conversation so far.

Any resident who has concerns about lead in their drinking water should have their water tested at a certified laboratory and get professional consultation on how to address it. The leading cause of lead poisoning is known to be lead paint and, in some areas, environmental legacy hot spots where lead is present in soils. However, I will say it again: when homes are fitted with lead plumbing or plumbing fixtures containing lead pipes, homeowners should assume there is some varied level of interaction between water and pipes that results in lead means exposure.

Rennaker, Joanne (DEQ)

From: Hyde, Tinka <hyde.tinka@epa.gov>
Sent: Tuesday, July 21, 2015 9:07 AM
To: Shekter Smith, Liane (DEQ)
Cc: Poy, Thomas; Bair, Rita; Damato, Nicholas
Subject: AGENDA for Today's Call on Flint
Attachments: Agenda for MDEQ Call on Flint 7-21-15.docx

Hi Liane – In preparation for our call today we've prepared an agenda (attached) with some background and discussion points. Please let me know if you have other items you wish to discuss. Thanks

Tinka G. Hyde
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Briefing Paper for Call with MDEQ on July 21, 2015

MDEQ Implementation of LCR Rule and Flint Issues

Issue #1: Is there a public health concern regarding lead in Flint or other regulatory requirements?

- Under State policy ODWMA-399-027, the wholesale system is responsible for corrosion control treatment. Detroit, as the wholesale system, was providing this for Flint. When Flint changed to no longer be a consecutive system, and instead using the Flint River as its water source, it did not begin its own corrosion control program and is not currently practicing corrosion control treatment at the Water Treatment Plant.
- Prior to the change from being a consecutive public water system to the Detroit Water and Sewerage Department (DWSD) system and associated switch in source water, the City of Flint was conducting LCR sampling every three years. Due to the switch in water sources, the Michigan Department of Environmental Management (MDEQ) required the City of Flint to increase the number of monitoring sites from 50 to 100 sites for two consecutive rounds of monitoring (July through December 2014 and January through June 2015).
- The first round of samples after switch-over from DWSD (July 1, 2014 – Dec 31, 2014) had 90th percentiles of 6 ppb for Lead and 110 ppb for Copper.
- As of June 30, 2015, we believe MDEQ received all 100 sample results from the second round of monitoring and is incorporating citizen-requested sample results that meet the Tier 1 criteria.
- HQ confirmed, per the Water Supply Guidance #174 that citizen-requested sample results should be included in the 90th percentile calculations.
- We believe that the results of the two rounds of sampling will support an exceedance of 5 ug/l. This will result in the need for a corrosion control study, but not public education.
- Flint plans to switch to another source in 2016 making the corrosion control study timing complicated.
- Compliance with other regulatory requirements: Appears to be doing fine with Stage 2 DBP rule and re-characterizing the distribution system based on the new source of water, but not sure about LT2 compliance for first round monitoring for cryptosporidium. We'd want to ask if Flint had existing data on Crypto for the Flint River (they would be allowed to grandfather data for the 1st round of sampling). If not, they'd need to start sampling as soon as possible to get 1st round crypto results). If they did have old data, they'd still be expected to start a 2nd round of Crypto monitoring already (April 2015 – since Flint's population is still above 100,000).

Discussion Items:

- **Discuss most recent 2 rounds of 6-months monitoring results and 90th percentile calculations and inclusion of the citizen-requested samples.**
- **Based on results, what are the next steps?**
- **Set the stage for why we are concerned about lead levels – since Flint is not feeding phosphate and the lead, phosphate, and cadmium are tracking, the phosphate is likely coming off the pipes.**
- **Is there anything we should do now to reduce the exposure risk to lead?**
- **Discuss possibly accelerating a corrosion control study for Flint. However, this should be done with a comprehensive look at all rule requirements and treatment needs. EPA/ORD expert are available to assist.**
- **How is Flint doing with meeting all the other regulatory requirements? Are they meeting LT2 requirements for crypto monitoring?**

Criteria for large systems (serving >50,000 persons) to install/maintain corrosion control treatment:	Action Level (AL) Exceedance: If exceed Pb AL of 0.015 mg/L expressed as 90 th percentile level based on samples at tap:
If 90 th percentile tap lead value minus source water lead value greater than or equal to 0.005 mg/L	• Corrosion control treatment steps • Source water treatment steps • Public education • Lead service line replacement (if continue to exceed Pb AL after installing treatment)

Issue #2: Discuss optimal corrosion control requirements

- The federal regulations governing lead and copper in drinking water, which all States are required to adopt, require all large public water systems (those serving greater than 50,000 persons (Flint's population is 99,002 (2014)) to install and maintain optimal corrosion control. The federal citation (requirement) requiring optimal corrosion control treatment can be found at Title 40 Code of Federal Regulations (CFR), Subpart I, Section 141.80, paragraph (d), as follows:
 - "(d) Corrosion control treatment requirements.
 - (1) All water systems shall install and operate optimal corrosion control treatment as defined in 141.2.
 - (2) Any water system that complies with the applicable corrosion control treatment requirements specified by the State under 141.81 and 141.82 shall be deemed in compliance with the treatment requirement contained in paragraph (d)(1) of this section."
- Paragraph (1) above requires systems to have installed treatment unless they have low lead levels (defined in other parts of the rule), but based on the Flint's current 90th percentile lead level, they would not meet that criteria and must have optimal corrosion control in place. Title 40 CFR Section 141.2 defines optimal corrosion control treatment as follows:
 - "Optimal corrosion control treatment, for the purpose of subpart I of this part only, means the corrosion control treatment that minimizes the lead and copper concentrations at users' taps while insuring that the treatment does not cause the water system to violate any national primary drinking water regulations."
- HQ memorandum of January 10, 1992 titled, "Consecutive Systems Regulated under the National Primary Drinking Water Regulations for Lead and Copper" reinforces the position that "optimal corrosion control treatment is properly installed and maintained". Further, the LCR Short-term Revisions (2007) Preamble (starting on page 57788) states, "State notification and approval of long-term treatment changes is important because these changes could adversely impact optimal corrosion control. As EPA noted in the proposed rule, this approach allows the State to evaluate the change prior to implementation and, if needed, to design a monitoring program to ensure that optimal corrosion control is maintained after the change..... EPA will provide guidance to help systems identify source water changes (such as changing the mixture) that could impact optimal corrosion control."
- MDEQ's Policy also describes under 5.c. Change in Treatment or Addition of a New Source that "Field staff may require the water supply to conduct additional monitoring or take other actions to ensure that CCT (corrosion control treatment) remains optimized".

Discussion Items:

- MDEQ made decision that Flint would be treated as a "new system" rather than an existing system changing their source of water. Discuss EPA (Region & HQ) interpretation of regulations that systems need to "maintain" corrosion control.
- Are there any other communities that may leave the Detroit system for other sources like Lake Huron that would be viewed as new systems or should be doing something about now to collect needed information to maintain corrosion control?

Issue #3: Discuss Pre-flushing (as time allows)

- Lead compliance sampling procedures in the state of Michigan comply with Federal SDWA requirements which calls for a minimum of 6 hours during which there is no water used from the tap the sample is taken from. While pre-flushing may fall within a strict legal interpretation of the regulations, we believe that it goes against the intent of the monitoring protocol, since it changes the normal water use of the homeowner in the sample.
- Michigan is the only Region 5 State that requires pre-flushing.
- Attachment 1 provides a brief description of pre-flushing.

Pre-flushing

The issue of pre-flushing came up regarding compliance sampling protocol used in Washington DC and was addressed by Cynthia Dougherty/OGWDW(see below/attached docs) in a letter to a resident in DC. It was not addressed in the Grumbles memo as the pre-flushing was discovered after the Grumbles memo had been written. To date, it has not been addressed on a national basis but it is one of the issues being discussed as part of the LCR Long-term revisions.

"The purpose of the monitoring protocol is to determine if corrosion control is effective in reducing lead and copper leaching at times and locations where we would expect levels to be greatest under normal conditions. Therefore, we believe that homeowners collecting samples should use their water as they would normally, with the exception that the regulations require the water to stagnate for a minimum of six hours prior to collection of the sample."

"We do not understand why DC WASA believes it should be necessary to request flushing only in households participating in the sampling. While this may fall within a strict legal interpretation of the regulations, we believe that it goes against the intent of the monitoring protocol, since it changes the normal water use of the homeowner in the sample. We will discuss this matter with their water quality manager to determine if there is a rationale that we should consider as we evaluate this issue. We also want to make sure that you are aware that we are considering additional actions we can take to further reduce lead and copper in drinking water and will be holding a stakeholder meeting on October 14-15 to initiate the effort."

Rennaker, Joanne (DEQ)

From: Crooks, Jennifer <crooks.jennifer@epa.gov>
Sent: Wednesday, July 01, 2015 6:31 PM
To: Shekter Smith, Liane (DEQ); Benzie, Richard (DEQ); Philip, Kris (DEQ); Monosmith, Carrie (DEQ); DeBruyn, Dana (DEQ); Dettweiler, Dan (DEQ); Busch, Stephen (DEQ); Prysby, Mike (DEQ); Cook, Pat (DEQ); Holdwick, Kevin (DEQ)
Cc: Poy, Thomas; Bair, Rita; Damato, Nicholas; Shoven, Heather; Kuefler, Janet; Murphy, Thomas; Porter, Andrea; Deltoral, Miguel
Subject: Draft Notes from Michigan semi-annual call on 6/10

All—Below are my draft notes from our call last week, June 10, 2015. Thank you all for participating. I apologize for the delay in getting these out in draft to you all for review—I was hoping to get a couple of items ironed out that were fuzzy during our discussions, but hasn't happened yet. Several ACTION items below. So, please review to make sure I documented our discussion/agreements correctly, and feel free to edit as needed. I you could get back to me by July 13, that would be great. Thank you!

Jennifer

Attendees:

MDEQ: Liane Shekter-Smith, Richard Benzie, Carrie Monosmith, Kris Philip, Dan Dettweiler, Marjorie Rodriguez (Student), Kevin Holdwick, Mike Prysby, Dana DeBruyn, Steve Busch

EPA Region 5: Tom Poy, Rita Bair, Nick Damato, Janet Kuefler, Michele Palmer, Tom Murphy, Heather Shoven, Cary McElhinney, Andrea Porter, Miguel Deltoral, Mostafa Nouredin

Summary:

1.Changes in Lead Disinvestments and Commitments for FY 2016 ARDP—for discussion: Due to our extreme focus on lead in drinking water, this is the consensus here.

a. Consumer notification of tap results at NTNCWSs:

(Suggested wording) The NCWS program commits to full implementation of the lead consumer notification of tap results requirement, to begin in CY 2016. Region 5 will assist in a notification outreach effort in late FY 2015 to remaining 698 NTNCWSs that are not schools/daycares, to begin providing lead consumer notice in CY 2016. NCWS program commits to include information on providing lead consumer notice in the annual monitoring letter sent to all NTNCWSs for CY 2016.

STATE: The State found this change in the wording acceptable.

b. Collection of Lead samples at NTNCWSs during June – September 2016 timeframe

(Suggested wording) NCWS program commits to including information in the applicable NTNCWS annual monitoring letters of the requirement to collect their annual/triennial lead sample between June and September only, during CY 2016. The MDEQ NCWS program currently does not have the capability to easily track lead sampling compliance within this specific timeframe.

STATE: The State found this change in the wording acceptable.

c. Follow-up Actions for NTNCWSs that sample outside of June-September 2015 timeframe

(From 5/5/15 call notes w/EPA) MDEQ commits to providing Region 5 with all CY 2015 lead (and copper?) sample data for all NTNCWSs by March 2016 so that EPA can analyze how many PWSs monitored outside the June through October timeframe. EPA commits to follow-up with MDEQ to discuss follow-up actions.

STATE: The State agreed to providing EPA R5 the raw lead and copper data for all CY 2015 for all NTNCWSs. The WaterTrack database does have data, but it can't generate violations. MDEQ doesn't commit to enforcing against 2016 violators in FY 2016. The State said, it is planning on disinvesting in enforcing against these violators due to limited capability of WaterTrack; however, if the State's noncommunity data management capabilities improve during FY 2016, implementation of this disinvestment may become a reality. The State has not designated an alternate timeframe, or done system specific documentation as to why the system qualifies for a different timeframe.

d. Submittal of the lead and copper reporting form

(Suggested wording) MDEQ commits to requiring CWSs and NTNCWSs to submit the lead and copper reporting form via the annual monitoring letters to each system, tracking CWSs and NTNCWSs submittal of the lead and copper reporting form, and commits to issuing violations for failure to submit the lead and copper reporting form. The reporting form provides the address of the sample site, designates sampling site selection criteria, and explanation(s) for any changes in sampling sites.

STATE: Dan Dettweiler stated that the NCWS program was not in a position to do this for the NTNCWSs at this time. Tom Murphy asked how does WaterTrack handle/track high lead results? Tom M said there is a truncation issue on the sample location name field. Dan acknowledged that this problem has been identified, and the Department of Technology Management and Budget (DTMB) has been trying to fix this problem, but it is a challenging problem. Dan stated that sample sites for NTNCWSs are actually identified by LHDs during the sanitary survey and are documented in the sanitary survey. The LHDs check the pdf of the laboratory results that clearly states where the sample was taken, and calculates the 90th percentile. However, Dan stated that the requirement to send in the lead and copper reporting form is not currently in the LHD annual monitoring letter sent to each system. The NTNCWSs do not couple this form to the Lead Consumer Notice, as does the CWSs. Kris Philip pointed out that the LHDs select the sample sites, thus when they are calculating the 90th percentile, they are actually double checking the sites with the results.

From our discussion, the Region concluded that at this time, the LHDs are actively reviewing the lead and copper results and the sample locations when they calculate the 90th percentiles to ensure proper LCR monitoring is conducted by ALL NTNCWSs at the proper sample sites. After our call, I asked for verification of this statement, and Dan Dettweiler responded, "Just as with an exceeding value of an MCL, WaterTrack alerts the LHD when at least one sample for a water system exceeds the AL. A 90th percentile calculation is made only when an exceeding result alerts the LHD. For cases where there are no exceeding results, private lab samples are reviewed at the time LHDs hand-enter them into WaterTrack. State lab samples, which flow electronically via nightly downloads from the state lab database, are reviewed when pdfs of the analysis reports are, routinely, emailed by the state lab to LHDs. Beyond that, MDEQ's annual evaluation of the LHDs provides another opportunity for us to oversee the proper assigning and use of designated sampling locations."

ACTION: The Region will discuss Dan's response internally, and get back to the State with any issues/concerns.

Kris Philip said that the CWS program is requiring that the systems submit the form, but they are not enforcing whether or not the system submits the form. Often, the CWS will submit the Lead Consumer Notice and the Lead and Copper reporting form together. Kris said if 90%+ are already submitting the forms, then the State will agree to follow-up and

enforce this requirement. But, if less than that, will probably be too much of a burden. Kris said they may change the way DEQ is tracking in SDWIS during FY 2016. But, the Region said SDWIS-Prime probably won't be available until 2017 at the earliest.

ACTION: Kris Philip will research with the District Offices to determine the current submittal rate of the lead and copper reporting form from CWSs; and report back to the Region.

2. Enforcement Update with Heather

NTNCWSs under Bottled Water agreements due to Arsenic MCL violations:

Per discussions with Region 5 and the February 2014 EPA/OECA memo, MDEQ has closed the old Arsenic open-ended MCL violations; however, no further quarterly monitoring is being conducted at the (± 27) systems that are still under bottled water agreements. Thus, no more arsenic MCL violations will be reported for these systems and these systems will not become priority systems (ETT score of 11 or more) since only one arsenic MCL violation will be reported (5 points) even though they have a longstanding issue with arsenic noncompliance. The Region would like to discuss the pros and cons of placing these PWSs with arsenic MCL violations on quarterly monitoring as required under 40 CFR Section 141.23(c)(7); and brainstorm possible solutions.

Heather provided an update on how the State is doing in returning ETT systems to compliance; the State is doing very well in achieving its commitment for FY 2015. Heather said the Region is glad to see the State and LHD prioritization of implementation of the drinking water program and NTNCWS schools and daycares.

Referring to the NTNCWSs under BW agreements that are in violation of the Arsenic MCL, Heather said that since there are no more open-ended MCL violations in SDWIS, that no MCL violations can be reported to SDWIS unless there is monitoring to show the system is in non-compliance. Even though the LHD has indicated that these systems are drinking bottled water for public health protection, the use of bottled water cannot be a permanent solution to the fact that the system's drinking water at the tap continues to exceed the MCL for arsenic. Dan said there are 22 systems, where 8 are schools, that should be conducting quarterly monitoring. Dana said that letters have been sent (OR drafted?) to these 22 systems to require quarterly sampling for arsenic; these 22 systems are in 10 different counties so the message from the State is consistent. A secondary effect of this new requirement for the systems, may be that they transition to another water source or install treatment sooner.

The State voiced a concern that multiple quarterly violations could potentially affect the State's relationship with the LHDs financially. Genesee and Oakland Counties have quite a number of noncommunity water systems. Multiple quarterly violations could affect the Dept of Community Health's determination as to whether the LHDs are meeting their minimum program requirements; thus receive full funding for their work with the noncommunity systems for the drinking water program. The LHDs cannot have more than 20% of their systems with violations. The Region wonders how much funding would be cut from a LHD contract if it exceeds the 20% noncompliance level set in the contract?

3. Status of Flint

a. TTHM levels for May—Due to MDEQ district engineer June 10-RECEIVED; see link to results

<https://www.cityofflint.com/2015/06/01/may-water-testing-results-show-all-locations-are-within-acceptable-limits-for-tthm/>

All samples below the TTHM MCL; one site still has an LRAA above the MCL but decreased from 105 ppb in Feb to 93.5 ppb in May.

Mike Prysby said he is getting ready to issue the construction permit to the City of Flint to install a GAC filter in July, that will remove more TOC to further reduce the potential of developing TTHMs. Mike said he has already issued a construction permit for a transmission line within the City that will help reduce water age.

b. Lead in Flint

Our discussions with MDEQ indicate that no phosphates/corrosion control has been added to the system since April 2014 when the source of drinking water changed to the Flint River. We understand that the City is just finishing up its second set of 6-month initial monitoring for lead; where the results will probably warrant a Corrosion Control Study to be conducted. Since Flint has lead service lines, we understand some citizen-requested lead sampling is exceeding the Action Level, and the source of drinking water will be changing again in 2016, so to start a Corrosion Control Study now doesn't make sense. The idea to ask Flint to simply add phosphate may be premature; there are many other issues and factors that must be taken into account which would require a comprehensive look at the water quality and the system before any treatment recommendations can/should be made. Miguel is recommending MDEQ and EPA? approach Flint about formally requesting EPA's Office of Research and Development in Cincinnati support on the lead in Flint drinking water issue, and request that Mike Schock, ORD, and possibly Darren Lytle, ORD, to participate in Flint's drinking water advisory committee so that a comprehensive evaluation on how to proceed can be discussed.

Miguel provided a brief summary of the high lead results found at the residence of Ms. LEEANNE Walters in Flint. Miguel will follow up with a written summary of the work conducted, sample results, and conclusions.

Miguel believes that lead levels in Flint are being affected by the lack of Corrosion Control being conducted by the City, since the LCR requires 2 6-month initial monitoring for a new source. Steve Busch stated that in the Lead sampling pool, almost all of the lead sample sites are lead service lines, and the State is not seeing large increases in lead levels at the tap. Miguel suggested that EPA experts in Lead, Mike Schock; and in distribution systems, Darren Lytle, be added to the Flint drinking water advisory committee to assist the City/State in determining the best way to proceed to minimize lead in the City's drinking water during the interim use of the Flint River, and subsequent use of Lake Huron water.

Miguel said he will send Mike Schock and Darren Lytle's contact information to Steve and Mike. Steve pointed out that the City is following the LCR requirements, and completing the requirements in a timely manner. Miguel's point is that since the LCR was promulgated 20+ years ago, that research and different situations, like Washington D.C., have educated scientists, experts, and regulators that the existing requirements in the LCR may not be as protective as previously thought. Thus, he can only make recommendations as to how to revise sampling protocols. And Miguel acknowledges that it may be another year before these regulation changes are promulgated in the Long-Term Lead and Copper Rule. In December 2015, the NDWAC recommendation is expected.

The Region asked the State if the Flint River will be a permanent supplemental source of drinking water, once the City of Flint connects with the Karegdodi pipeline from Lake Huron. Mike Prysby said that the City is currently pumping 22MGD, but the City has 40-50 MG of storage. The City is currently working on reducing its unaccounted for water losses, and these water losses are dropping. The State, through the Governor's office, provided disadvantaged system funding, \$2M which includes \$900K for lead detection, and pipe inspection.

4. Update on WaterTrack to SDWIS-State: The migration of WaterTrack data to SDWIS-State was number 39 on the Dept of Technology Management and Budget's (DTMB) project list last year; this year it is

number 30. It doesn't appear this project has a high priority. Does the State have any new information on the progress of this project?

Dan said that the migration of WaterTrack data to SDWIS-State has moved to a priority of 26 with DTMB so far this year. But Dan said they are going to take this project out of the queue, since Ronda Page has returned to the drinking water program from DTMB. Ronda said she re-estimated DTMB's involvement in this project to be far less than originally thought, so there is no need for any program developers or the tech team. This project will only need the Data Team and the web designers only. Ronda said they can set-up on a new server and migrate the data from WaterTrack to SDWIS-State themselves; in-house. Kris Philip remembers migrating the CWS data to SDWIS-State, so she can be a resource for

this project. The parts that are needed to be completed by DTMB could be contracted out. Cary McElhinney said that there is a process of withholding PWSS grant funds and re-directing the funds to a HQ contract with SAIC. Richard Benzie said the process worked well last year when MI used PWSS funds to contract with a HQ contractor to conduct NEEDS survey training.

ACTION: Jen will follow up with State and Tribal Programs Branch about the process and timing of holding back funds from the PWSS grant for the purpose of contracting with SAIC.

5. Consequences of cutting the State drinking water program to a “minimal program”

Jennifer had a discussion with Richard Benzie regarding the possibility of the Michigan State Legislature looking to have just a minimal drinking water program, meaning only a program with activities that are required by the Federal SDWA. Jennifer ultimately discussed this internally with Tom Poy. The minimal program suggested would cut out Operator Certification, Capacity Development, Plan Review, Cross Connection Control, Source Water Protection, among other programs that are State required. Operator Certification and Capacity Development, while not required by the Federal regulations, do have financial strings attached. And Plan review/construction permits are required by the SRF program for a loan. Any recent communication with the State Legislature that they might proceed and make this possibility a reality?

Richard and Liane said there is no current threat from the State Legislature to cut the State-funded PWSS program activities. But there is a State-wide impetus to delete old programs and regulations, so this could lead to questioning the purpose of State-funded PWSS program activities. Richard is just being proactive in preparing a justification. Richard remembers a discussion many years ago about what constitutes a “comprehensive drinking water program”. Tom Poy and Jennifer commented in a previous communication with Richard that the EPA PWSS primacy program and the State-funded activities in the drinking water program were meant to complement each other. To support this statement, Jennifer sent Richard some PWSS Priority guidance from the 90’s, some preamble language from the 1976 SDWA found by our attorney, and language from Section 142 of the SDWA regulations from 1976 that might assist him in his justification.

6. EPA’s Resource Message at the LHD Workshop in April

From the 2014 analysis of Shared Goals 2013 data, which is compliance data, for noncommunity systems, there are increasing trends of nitrate M/R violations for both NTNCWSs and TNCWSs. We discussed this on the last semi-annual call. Analysis of the 2015 Shared Goals 2014 data (April 2015) shows an improvement—that of decreasing numbers of bacti/nitrate M/R violations.

However, in light of the upcoming implementation of RTRC in 2016, the question raised here in the Region is: Does the State have a plan with the LHDs as to what activities must be prioritized, and what will fall off the plate? Not all LHDs will need to disinvest based upon each LHD’s resources, but some poorly funded LHDs may have to disinvest in some activities/drop activities that have no risk to public health.

Carrie Monosmith said that she met with the RTRC workgroup, comprised of LHD Directors/sanitararians, last fall to identify activities that the state can disinvest in during the next several years as the LHDs begin implementation of RTRC. They could not identify any activity that could be dropped. The main thing that will help the LHDs save time is to get the electronic DWR (eDWR) going, or the CMD portal, which will drastically reduce the LHDs time in inputting laboratory data into WaterTrack/SDWIS-State. From there, they can develop electronic data forms (CROMEER compliant) that the systems can submit.

Thank you!

Jennifer

shekterl@michigan.gov; 'Richard Benzie' <benzier@michigan.gov>; 'kris philip' <philipk@michigan.gov>; 'Monosmith, Carrie (DNRE)' <MONOSMITHC@michigan.gov>; 'DeBruyn, Dana (DEQ)' <DebruynD@michigan.gov>; Dettweiler, Dan (DEQ) <DETTWEILERD@michigan.gov>; Poy, Thomas <poy.thomas@epa.gov>; Kuefler, Janet <kuefler.janet@epa.gov>; Damato, Nicholas <damato.nicholas@epa.gov>; Shoven, Heather <shoven.heather@epa.gov>; Murphy, Thomas <murphy.thomas@epa.gov>; Bair, Rita <bair.rita@epa.gov>; McElhinney, Cary <mcelhinney.cary@epa.gov>; Pniak, Edward <pniak.edward@epa.gov>; 'cookp@michigan.gov'; 'Prysby, Mike (DEQ)' <PRYSBYM@michigan.gov>; Busch, Stephen (DEQ) <BUSCHS@michigan.gov>

Rennaker, Joanne (DEQ)

From: Crooks, Jennifer <crooks.jennifer@epa.gov>
Sent: Monday, June 08, 2015 11:19 AM
To: Shekter Smith, Liane (DEQ); Benzie, Richard (DEQ); Philip, Kris (DEQ); Cook, Pat (DEQ); Busch, Stephen (DEQ); Prysby, Mike (DEQ); DeBruyn, Dana (DEQ); Monosmith, Carrie (DEQ); Dettweiler, Dan (DEQ)
Cc: Poy, Thomas; Bair, Rita; Damato, Nicholas; Shoven, Heather; Murphy, Thomas; Porter, Andrea; Deltoral, Miguel; Kuefler, Janet; McElhinney, Cary; Noureldin, Mostafa
Subject: Agenda for MI Semi-Annual Call on Wed 6/10 at 10am EST; 9am CST
Importance: High

Good morning! Below is the Agenda I came up with for our semi-annual call this Wed morning. Please let me know if you would like to add additional items for us to discuss. Please note that I have invited Steve Busch, Mike Prysby and Pat Cook to discuss item no. 3 regarding Flint.

Jennifer

Agenda Topics for Michigan Semi-Annual Call on Wednesday June 10, 9am CST

Call-in no: 877-226-9607

Code: 1896350612

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 - c. Follow-up Actions for NTNCWSs that sample outside of June-September 2015 timeframe
 (From 5/5/15 call notes w/EPA) MDEQ commits to providing Region 5 with all CY 2015 lead (and copper?) sample data for all NTNCWSs by March 2016 so that EPA can analyze how many PWSs monitored outside the June through October timeframe. EPA commits to follow-up with MDEQ to discuss follow-up actions.
 - d. Submittal of the lead and copper reporting form
 (Suggested wording) MDEQ commits to requiring CWSs and NTNCWSs to submit the lead and copper reporting form via the annual monitoring letters to each system, tracking CWSs and NTNCWSs submittal of the lead and copper reporting form, and commits to issuing violations for failure to submit the lead and copper reporting form. The reporting form provides the address of the sample site, designates sampling site selection criteria, and explanation(s) for any changes in sampling sites.

2. Enforcement Update with Heather

NTNCWSs under Bottled Water agreements due to Arsenic MCL violations:

Per discussions with Region 5 and the February 2014 EPA/OECA memo, MDEQ has closed the old Arsenic open-ended MCL violations; however, no further quarterly monitoring is being conducted at the (± 27) systems that are still under bottled water agreements. Thus, no more arsenic MCL violations will be reported for these systems and these systems will not become priority systems (ETT score of 11 or more) since only one arsenic MCL violation will be reported (5 points) even though they have a longstanding issue with arsenic noncompliance. The Region would like to discuss the pros and cons of placing these PWSs with arsenic MCL violations on quarterly monitoring as required under 40 CFR Section 141.23(c)(7); and brainstorm possible solutions.

3. Status of Flint

a. TTHM levels for May—Due to MDEQ district engineer June 10

b. Lead in Flint

Our discussions with MDEQ indicate that no phosphates/corrosion control has been added to the system since April 2014 when the source of drinking water changed to the Flint River. We understand that the City is just finishing up its second set of 6-month initial monitoring for lead; where the results will probably warrant a Corrosion Control Study to be conducted. Since Flint has lead service lines, we understand some citizen-requested lead sampling is exceeding the Action Level, and the source of drinking water will be changing again in 2016, so to start a Corrosion Control Study now doesn't make sense. The idea to ask Flint to simply add phosphate may be premature; there are many other issues and factors that must be taken into account which would require a comprehensive look at the water quality and the system before any treatment recommendations can/should be made. Miguel is recommending MDEQ and EPA approach Flint about formally requesting EPA's Office of Research and Development in Cincinnati support on the lead in Flint drinking water issue, and request that Mike Schock, ORD, and possibly Darren Lytle, ORD, to participate in Flint's drinking water advisory committee so that a comprehensive evaluation on how to proceed can be discussed.

4. Update on WaterTrack to SDWIS-State: The migration of WaterTrack data to SDWIS-State was number 39 on the Dept of Technology Management and Budget's (DTMB) project list last year; this year it is number 30. It doesn't appear this project has a high priority. Does the State have any new information on the progress of this project?

5. Consequences of cutting the State drinking water program to a "minimal program"

Jennifer had a discussion with Richard Benzie regarding the possibility of the Michigan State Legislature looking to have just a minimal drinking water program, meaning only a program with activities that are required by the Federal SDWA. Jennifer ultimately discussed this internally with Tom Poy. The minimal program suggested would cut out Operator Certification, Capacity Development, Plan Review, Cross Connection Control, Source Water Protection, among other programs that are State required. Operator Certification and Capacity Development, while not required by the Federal regulations, do have financial strings attached. And Plan review/construction permits are required by the SRF program for a loan. Any recent communication with the State Legislature that they might proceed and make this possibility a reality?

6. EPA's Resource Message at the LHD Workshop in April

From the 2014 analysis of Shared Goals 2013 data, which is compliance data, for noncommunity systems, there are increasing trends of nitrate M/R violations for both NTNCWSs and TNCWSs. We discussed this on the last semi-annual call. Analysis of the 2015 Shared Goals 2014 data (April 2015) shows an improvement—that of decreasing numbers of bacti/nitrate M/R violations.

However, in light of the upcoming implementation of RTCR in 2016, the question raised here in the Region is: Does the State have a plan with the LHDs as to what activities must be prioritized, and what will fall off the plate? Not all LHDs will need to disinvest based upon each LHD's resources, but some poorly funded LHDs may have to disinvest in some activities/drop activities that have no risk to public health.

Jennifer

Rennaker, Joanne (DEQ)

From: Wurfel, Brad (DEQ)
Sent: Friday, June 05, 2015 3:09 PM
To: Busch, Stephen (DEQ); Howes, Sarah (DEQ); Shekter Smith, Liane (DEQ)
Cc: Pallone, Maggie (DEQ); Benzie, Richard (DEQ); Prysby, Mike (DEQ); Rosenthal, Adam (DEQ)
Subject: RE: Draft Flint TTHM Violation Notice

Received. Thank you.
b

From: Busch, Stephen (DEQ)
Sent: Friday, June 05, 2015 2:46 PM
To: Wurfel, Brad (DEQ); Howes, Sarah (DEQ); Shekter Smith, Liane (DEQ)
Cc: Pallone, Maggie (DEQ); Benzie, Richard (DEQ); Prysby, Mike (DEQ); Rosenthal, Adam (DEQ)
Subject: Draft Flint TTHM Violation Notice

Attached is a draft violation notice to the City of Flint regarding the exceedance of the drinking water standard for total trihalomethanes (TTHM) based on the latest round of samples collected in May 2015.

As predicted, the levels from the latest round are all again below the 80 part per billion level, but the annual average calculation for 1 of the 8 sites remains above the maximum contaminant level standard. An evaluation report is not required based on these lower levels but is still being requested given August are when levels historically peak. If levels remain low enough in August the City has the potential to start complying with the standard as the high levels from last year get dropped from the calculation. We could also end up with compliance with the standard but individual results above the 80 part per billion level.

We plan to get the letter out on Tuesday June 9 so please provide any comments/concerns/questions by Monday. An electronic copy of the signed letter will be provided to Maggie/Sarah for forwarding to legislative members in the Flint area as was done with the previous violation notices.

Again, if you have any questions, please contact me directly.

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

Rennaker, Joanne (DEQ)

From: Busch, Stephen (DEQ)
Sent: Friday, June 05, 2015 2:46 PM
To: Wurfel, Brad (DEQ); Howes, Sarah (DEQ); Shekter Smith, Liane (DEQ)
Cc: Pallone, Maggie (DEQ); Benzie, Richard (DEQ); Prysby, Mike (DEQ); Rosenthal, Adam (DEQ)
Subject: Draft Flint TTHM Violation Notice
Attachments: Flint DBP MCL 2Q15.pdf

Attached is a draft violation notice to the City of Flint regarding the exceedance of the drinking water standard for total trihalomethanes (TTHM) based on the latest round of samples collected in May 2015.

As predicted, the levels from the latest round are all again below the 80 part per billion level, but the annual average calculation for 1 of the 8 sites remains above the maximum contaminant level standard. An evaluation report is not required based on these lower levels but is still being requested given August are when levels historically peak. If levels remain low enough in August the City has the potential to start complying with the standard as the high levels from last year get dropped from the calculation. We could also end up with compliance with the standard but individual results above the 80 part per billion level.

We plan to get the letter out on Tuesday June 9 so please provide any comments/concerns/questions by Monday. An electronic copy of the signed letter will be provided to Maggie/Sarah for forwarding to legislative members in the Flint area as was done with the previous violation notices.

Again, if you have any questions, please contact me directly.

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



RICK SNYDER
GOVERNOR

STATE OF MICHIGAN
DEPARTMENT OF ENVIRONMENTAL QUALITY
LANSING DISTRICT OFFICE



DAN WYANT
DIRECTOR

June 9, 2015

Mr. Brent Wright, Operations Supervisor
City Of Flint – Department of Public Works
Flint Water Plant
4500 North Dort Highway
Flint, Michigan 48505

WSSN: 02310

Dear Mr. Wright:

SUBJECT: Violation Notice (VN) – Maximum Contaminant Level for Total
Trihalomethanes (TTHM)
2nd Quarter 2015 Monitoring Period

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

In accordance with R 325.10610, *MCLs*, of the 1979 Administrative Code, the MCL for disinfection byproduct TTHM is 0.080 milligrams per liter (mg/L) as a Locational Running Annual Average (LRAA) at each monitoring location. As listed in the table below, our records show that the City's highest TTHM LRAA, based on the last four quarters, ending June 30, 2015, is 0.094 mg/L which exceeds the standard, and at this time only one of the eight sample site locations exceed the LRAA standard of 0.080 mg/L.

Our investigation consisted of a review of ODWMA files for laboratory reports received for compliance monitoring. Our investigation is considered complete. This violation began on June 1, 2015, and will continue until the TTHM LRAA is below the MCL at all sample sites.

Mr. Brent Wright

2

June 9, 2015

TTHM Results (mg/L)	8/21/14	11/20/14	2/17/15	5/18/15	LRAA	OEL
DBP1 McDonalds 3719 Davison	0.145	0.059	0.0162	0.0514	0.068	0.044
DBP2 Liquor Palace 3302 South Dort Highway	0.127	0.033	0.0168	0.0635	0.060	0.044
DBP3 North Flint Auto 6204 North Saginaw St.	0.118	0.041	0.0149	0.0452	0.055	0.037
DBP4 University Market 2501 Flushing Road	0.196	0.094	0.0245	0.0598	0.094	0.059
DBP5 Taco Bell 3606 Corunna Road	0.181	0.034	0.0151	0.0547	0.072	0.040
DBP6 Rite-Aid Pharmacy 5018 Clio Road	0.144	0.054	0.0192	0.0605	0.069	0.048
DBP7 Salem Housing 3216 MLK Boulevard	0.112	0.050	0.0285	0.0727	0.066	0.056
DBP8 BP Gas Station 822 South Dort Highway	0.112	0.036	0.0199	0.0461	0.054	0.037

We are encouraged by the results from the most recent round of compliance samples collected on May 18, 2015, which again show individual TTHM levels below 0.080 mg/L at all locations throughout the City's system. Operational Evaluation Reports from December 2014, February 2015, and May 2015, have identified possible causes and corrective measures for the previous elevated TTHM levels which we encourage the City to continue implementing. These modifications have likely contributed in part to the reduction in TTHM levels reported for the most recent quarter in comparison to levels in May 2014, and suggest the City may be able to achieve compliance with the TTHM standard at all sites by continuing these efforts.

Our office is currently reviewing the Operational Evaluation Report dated May 29, 2015, and will provide the City and their consultant with comments, as needed, to help address this MCL violation.

Further, the TTHM operational evaluation level (OEL) calculated in accordance with R 325.10719I, *Disinfection byproducts: operational evaluation levels*, of the 1979 Administrative Code, is now below the 0.080 mg/L operational evaluation trigger at all eight sample site locations. However, our office is requesting that an operational evaluation again be conducted incorporating the most recent sample results, given the increase in TTHM levels from February 2015 results, and that the next monitoring period of August has been identified as the City's peak month for TTHM levels. **Please provide our office with an updated Operational Evaluation Report by Monday, August 31, 2015.**

If you have any other factual information you would like us to consider regarding the violation identified in this VN, please provide them in a written response by June 23, 2015.

Mr. Brent Wright

3

March 5, 2015

Administrative rule R 325.10403 of Act 399 requires that suppliers provide public notice (PN) as soon as practical, but no later than thirty (30) days after the supplier learns of this type of violation, by mail or direct delivery **and** by any other means reasonably calculated to reach customers not normally reached by mail. Enclosed is a sample PN which contains the minimum required language. The City is encouraged to include additional information regarding its response efforts to this violation. **Please notify your consumers by July 1, 2015, and send us a signed and dated copy of the notice that you issued within ten (10) days of distributing the PN.** This violation must also be included in your 2015 Consumer Confidence Report, due by July 1, 2016. The PN must be repeated every quarter until you no longer exceed the TTHM standard. Failure to issue a PN for this violation will result in a fine of at least \$1,000 per event, with a maximum of \$5,000 per violation.

We anticipate and appreciate your continued cooperation in resolving this matter. If you have any questions regarding this VN, please contact us at the numbers below; at prysbym@michigan.gov; or rosenthala@michigan.gov; or at DEQ, P.O. Box 30242, Lansing, Michigan 48909-7742.

Sincerely,

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

Adam Rosenthal, Environmental Quality
Analyst
Lansing District Office
Office of Drinking Water and
Municipal Assistance
517-284-6644

Enclosure

cc: Ms. Jennifer Crooks, U.S. Environmental Protection Agency, Region 5
Mr. Robert Bincsik, City of Flint
Mr. Howard Croft, City of Flint
Mr. Michael Glasgow, City of Flint
Genesee County Health Department
Ms. Liane Shekter Smith, DEQ
Mr. Richard Benzie, DEQ
Mr. Stephen Busch, DEQ

IMPORTANT INFORMATION ABOUT YOUR DRINKING WATER

City of Flint Did Not Meet Treatment Requirements

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

We routinely monitor for the presence of drinking water contaminants. Samples were collected for total trihalomethanes (TTHM) analysis from eight locations on a quarterly basis (August 21, November 20 of 2014, and February 17 & May 18 of 2015). The average of the results at **ANY** of the eight locations must not exceed the maximum contaminant level (MCL) for TTHMs, otherwise our water system exceeds the MCL. The standard for TTHMs is 80 micro grams per liter (µg/L). The location reporting the highest TTHM level was 94 µg/L; thus, our water system exceeds the TTHM MCL.

What should I do?

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

What does this mean?

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

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

What is being done?

We are currently working on solutions to correct the problem. We anticipate resolving the problem in 2015. Our most recent individual sample results were all less than the 80 µg/L standard, however since compliance is calculated using a locational running annual average (LRAA) of the most recent four quarters, we are still out of compliance with the MCL at one of eight locations.

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

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

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

CERTIFICATION:

WSSN: 02310

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

Signature	Title	Date Distributed
Reminder to water supplier: This notice/certification must be sent to the Department of Environmental Quality.		

Rennaker, Joanne (DEQ)

From: Benzie, Richard (DEQ)
Sent: Saturday, May 02, 2015 10:35 AM
To: Shekter Smith, Liane (DEQ)
Subject: Fw: Flint Corrosion Control?

FYI

From: Cook, Pat (DEQ)
Sent: Friday, May 1, 2015 11:38 AM
To: Deltoral, Miguel
Cc: Porter, Andrea; Crooks, Jennifer; Poy, Thomas; Benzie, Richard (DEQ); Busch, Stephen (DEQ)
Subject: RE: Flint Corrosion Control?

Hi Miguel - sorry, I should have been more specific in my previous email. The rules you stated below allow large systems to be considered having optimal corrosion control if they have data from two consecutive 6 month monitoring periods that meet specific criteria. DEQ-ODWMA has not made a formal decision as to whether or not the City of Flint meets the exemption criteria or will be required to do a corrosion control study since Flint has only completed one round of 6 month monitoring. The City of Flint's second round of monitoring will be completed by June 30, 2015, and we will make a formal decision at that time. If my memory is correct, this is consistent with the process followed in the early 1990's for large systems when the Pb/Cu rule was first implemented. The Department waits until large systems complete both rounds of full scale, 6 month monitoring before making a decision about optimal corrosion control. If it is determined that Flint has to install corrosion control treatment, the rule allows up to 2 years to complete a study and 2 additional years to install the treatment unless we set a shorter time frame.

As Flint will be switching raw water sources in a just over one year from now, raw water quality will be completely different than what they currently use. Requiring a study at the current time will be of little to no value in the long term control of these chronic contaminants.

Finally, the City of Flint's sampling protocols for lead and copper monitoring comply will all current state and federal requirements. Any required modifications will be implemented at the time when such future regulatory requirements take effect.

Patrick Cook, P.E.
 Community Drinking Water Unit
 Office of Drinking Water & Municipal Assistance
 Michigan Department of Environmental Quality
 Phone: (517) 284-6514
cookp@michigan.gov

From: Deltoral, Miguel [<mailto:deltoral.miguel@epa.gov>]
Sent: Saturday, April 25, 2015 10:11 AM
To: Cook, Pat (DEQ)
Cc: Porter, Andrea; Crooks, Jennifer; Poy, Thomas
Subject: Re: Flint Corrosion Control?

Hi Pat,

I'll be heading out to MI for RTCR tomorrow and won't see email until next Tuesday, but I wanted to follow up on this because Flint has essentially not been using any corrosion control treatment since April 30, 2014 and they have LSLs. Given the very high lead levels found at one home and the pre-flushing happening at Flint, I'm worried that the whole town may have much higher lead levels than the compliance results indicated, since they are using pre-flushing ahead of their compliance sampling.

If the source water lead is non-detect (zero), then according to 141.89(a)(3) they should use zero for that source water value:

"All lead and copper levels measured between the PQL and MDL must be either reported as measured or they can be reported as one-half the PQL specified for lead and copper in paragraph (a)(1)(ii) of this section. All levels below the lead and copper MDLs must be reported as zero."

As far as the treatment determination, there are only two scenarios for a large system to be deemed to have optimized corrosion control without treatment and Flint does not appear to meet either:

The first is at 141.81(b)(3)

Any water system is deemed to have optimized corrosion control if it submits results of tap water monitoring conducted in accordance with § 141.86 and source water monitoring conducted in accordance with § 141.88 that demonstrates for two consecutive 6-month monitoring periods that the difference between the 90th percentile tap water lead level computed under § 141.80(c)(3), and the highest source water lead concentration is less than the Practical Quantitation Level for lead specified in § 141.89(a)(1)(ii).

If Flint's highest source water lead was zero, and their 90th percentile was 0.006, then Flint does not meet this criteria, because the difference must be LESS THAN the PQL (i.e., 0.004 or less). $0.006 - 0 = 0.006$.

The second is at 141.81(b)(3)(i):

Those systems whose highest source water lead level is below the Method Detection Limit may also be deemed to have optimized corrosion control under this paragraph if the 90th percentile tap water lead level is less than or equal to the Practical Quantitation Level for lead for two consecutive 6-month monitoring periods.

Although Flint's source water lead was non-detect (zero), the 90th percentile lead level is 0.006 which is above the PQL of 0.005, so Flint would not meet this criteria either.

Am I missing something?

Miguel A. Del Toral
Regulations Manager
U.S. EPA R5 GWDWB
77 West Jackson Blvd, (WG-15J)
Chicago, IL 60604
Phone: (312) 886-5253

From: Cook, Pat (DEQ) <COOKP@michigan.gov>
Sent: Friday, April 24, 2015 12:45 PM
To: Deltoral, Miguel
Subject: RE: Flint Corrosion Control?

Total Lead collected from the plant tap on 5/22/14 was zero.

pat

From: Deltoral, Miguel [<mailto:deltoral.miguel@epa.gov>]
Sent: Friday, April 24, 2015 11:59 AM
To: Cook, Pat (DEQ)
Cc: Poy, Thomas; Porter, Andrea
Subject: Re: Flint Corrosion Control?

What was the source water lead level?

Miguel A. Del Toral
 Regulations Manager
 U.S. EPA R5 GWDWB
 77 West Jackson Blvd, (WG-15J)
 Chicago, IL 60604
 Phone: (312) 886-5253

From: Cook, Pat (DEQ) <COOKP@michigan.gov>
Sent: Friday, April 24, 2015 10:43 AM
To: Deltoral, Miguel
Cc: Poy, Thomas; Porter, Andrea
Subject: RE: Flint Corrosion Control?

Hi Miguel - Flint is currently not practicing corrosion control treatment at the WTP. When they started treating water at their WTP last spring, we placed them on full chart (100 sites) Pb/Cu monitoring for two consecutive 6 month periods. WQ monitoring is also being conducted. The first round of samples after switch-over from DWSD (July 1, 2014 – Dec 31, 2014) had 90th percentiles of 6 ppb for Lead and 110 ppb for Copper. The second round of samples (Jan 1, 2015 – June 30, 2015) is underway with approximately 20 of the 100 sample site results in. The highest lead result out of the 20 received thus far is 13 ppb.

Based on the matrix of recommended corrosion control study components for Large PWS's for both Lead and Copper, there are no additional requirements for the City of Flint based on the levels of lead and copper in the current source water and the results of the lead and copper distribution monitoring. The only provision of the Lead & Copper Rule which classifies the existing treatment of large PWSs as optimized for corrosion control is when the difference between the 90% Pb-TAP and Pb-POE is less than the lead practical quantitative level (PQL) for each six-month period of the initial monitoring program. By definition, the PQL for lead is 0.005 mg/L; and the lead value for the source water used in this determination is the highest source water lead concentration. If this condition is met, then no study or testing is required. We believe this condition has been met for Flint. However, we will re-evaluate this after the 2nd round of 6 month sampling is completed.

If you have any further questions, please contact the Lansing District Supervisor, Steve Busch at (517) 643-2314 or at buschs@michigan.gov.

Have a good (and hopefully warm) weekend!

Patrick Cook, P.E.
 Community Drinking Water Unit
 Office of Drinking Water & Municipal Assistance
 Michigan Department of Environmental Quality
 Phone: (517) 284-6514
cookp@michigan.gov

From: Deltoral, Miguel [<mailto:deltoral.miguel@epa.gov>]
Sent: Thursday, April 23, 2015 12:33 PM
To: Cook, Pat (DEQ)
Cc: Poy, Thomas; Porter, Andrea
Subject: Flint Corrosion Control?

Hi Pat,

What's Flint doing now (post Detroit) for corrosion control treatment?

Miguel A. Del Toral
Regulations Manager
Ground Water and Drinking Water Branch
77 West Jackson Blvd (WG-15J)
Chicago, IL 60604
Phone: (312) 886-5253

Rennaker, Joanne (DEQ)

From: Cole, Donna <Donna.Cole@genesys.org>
Sent: Wednesday, March 18, 2015 3:01 PM
To: Howard Croft; Brent Wright; Daugherty Johnson; Dayne Walling; gdn2@aol.com; James Henry; jmikewright; Herman, JoAnne; John O'Brien; Kirk Smith; larry.koehler@mcc.edu; Laura Sullivan; Michael Glasgow; Mike Lane; Prysby, Mike (DEQ); Natasha Henderson; Norb Birchmeier; Pete Levine; rob.nicholas@veolia.com; Robert Nicholas; rosejo@msu.edu; Russell Hudson; Samir Matta; Warren Green
Subject: RE: TTHM Draft Letter
Attachments: Draft - accept changes- Flint Letter to Healthcare Providers_031815.docx

This message was sent securely using ZixCorp.

Greetings!

To review proposed changes within the attached word document: go to the review tab, go to show final markup pull down, select final.

Consolidated thoughts to individual paragraphs that were spread throughout the original letter.

Kindly review, revise or reject—as appropriate.

Best Regards,
 Donna Cole,
 Property Manager, Farbman Group
 Agent for GRMC
 810 606 5611
Donna.Cole@Genesys.org

From: Howard Croft [<mailto:hcroft@cityofflint.com>]
Sent: Monday, March 16, 2015 4:28 PM
To: Brent Wright; Daugherty Johnson; Dayne Walling; Cole, Donna; gdn2@aol.com; Howard Croft; James Henry; jmikewright; Herman, JoAnne; John O'Brien; Kirk Smith; larry.koehler@mcc.edu; Laura Sullivan; Michael Glasgow; Mike Lane; Mike Prysby (DEQ); Natasha Henderson; Norb Birchmeier; Pete Levine; rob.nicholas@veolia.com; Robert Nicholas; rosejo@msu.edu; Russell Hudson; Samir Matta; Warren Green
Subject: TTHM Draft Letter

Team,

We have received our notice from the DEQ and our next step is to have this group preview the letter that we intend to send to the public along with it. I have forwarded everyone a draft of the letter for any comments and I am also sending again all of the literature that was forwarded from Mr. Wright of the EPA and DR. Rose of MSU.

We expect to have an additional FAQ ready and out to this group on Tuesday and we anticipate the violation notice going out in the near future.

The citizens advisory group will meet again on this Thursday, we are currently looking to have another **Technical Advisory Committee** with this group in early April.

Thank you,

--

Howard Croft

Public Works Director

City of Flint

1101 S. Saginaw Street

Flint, MI 48502

PH# 810.766.7135 Ext.2043

hcroft@cityofflint.com

CONFIDENTIALITY NOTICE:

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This message was secured by ZixCorp^(R).

DRAFT Letter to Flint Healthcare Providers

Dear Resident:

The safety and quality of Flint's water has been in the news for months. We have worked hard to address these issues and have succeeded in bringing Flint's water within the state's safety guidelines on all measures, including TTHM (total trihalomethanes). TTHM is a byproduct of the water chlorination process. Excess TTHM levels triggered the initial letter to our customers earlier this year.

Even though Flint water now meets the drinking water standards and current TTHM levels are is testing significantly below the state's allowable contamination levels, we are required to send out another letter to residents because the annual quarterly testing average is not yet below the state's allowable average.

Flint tests for TTHM—a byproduct of the water chlorination process—at eight different sites in the city. When we began using the Flint River as a source in April of 2014, round of quarterly testing for TTHM was conducted in May. At that time, only two testing sites were below the allowable maximum; in August, every site was above the allowable maximum.

The City, with the help of LAN engineering, developed an Operation Evaluation Report (OER) which contained an action plan to address the issue. That plan was implemented with steps including: upgrading the ozone treatment process at the Water Treatment Plant (WTP), complete softening, increasing water main/hydrant flushing to decrease stagnation, small scale testing of treatment to identify areas of improvement, applying overall operational improvements to the WTP through operational changes and implementing water circulation modeling to the distribution system, through water circulation modeling.

The City of Flint tests water at eight different sites within the city. We began using the Flint River as a source in April, 2014. Our first round of quarterly testing for TTHM was conducted in May, 2014. By August, 2014, every site tested was above the allowable maximum. Even though Flint water now meets the drinking water standards and current TTHM levels are significantly below the state's allowable contamination levels, we are required to send out another letter to residents because the annual quarterly testing average is not yet below the state's allowable average. Because the public notice is based on a locational running annual average of quarterly results a notice was not required until November, at which time all but one testing location was below the allowable levels. The public notice is based on a locational running annual average of quarterly results, therefore the notice was not required until November, 2014. At that time, all but one of the testing locations was below the allowable levels. Our The most recent testing conducted in February 2015 showed all locations well below state allowable levels; however, the locational running annual average (based on the four most recent quarters—May 2014 – Feb. 2015) results in all but two locations being below the allowable level. (See the attached graph outlining our progress.)

We have taken many steps to continue to improve the safety and quality of Flint's water, including bringing in international urban water system consultants, Veolia North America, and establishing two advisory committees: a Citizens Advisory Committee, along with a Technical Advisory Committee made up of representatives from the University of Michigan, Michigan State University, Kettering University,

Comment [mw1]: What's complete mean here?
Might be misconstrued that it was a one time action.
Can that parenthetically be put below when describing operational changes?

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~~Mott Community College, Genesys, McLaren, and Hurley Hospitals along with local health officials including the Genesee Medical Society the Genesee County Public Health Department, the Michigan Department of Environmental Quality and the U.S. Environmental Protection Agency,~~

~~made up of representatives from the University of Michigan, Michigan State University, Kettering University, Mott Community College, Genesys, McLaren, and Hurley Hospitals along with local health officials including the Genesee Medical Society the Genesee County Public Health Department, the Michigan Department of Environmental Quality and the U.S. Environmental Protection Agency.~~

We have also established a hotline 810-787-6537 and a place for continuing updates on the city's website cityofflint.com and have encouraged residents who are concerned about their water to report it to us immediately so that we can make arrangements for on-site testing. Although we have been offering this for more than a month, to date only a few residents have requested on-site testing. All residents wishing to have their water tested can call the hotline number or send an email to flintwater@cityofflint.com.

Despite our progress, we are required by law to once again advise residents about what was an excess of TTHM in Flint's water system at the eight testing sights last year. The letter — a draft of which is enclosed for your information — includes legally required language recommending that residents who have (severely compromised immune systems, have an infant, or are elderly) should contact their physician. This is standard language from the U.S. EPA which is included in every water quality or water related report the City publishes, regardless of whether there are specific health or quality concerns, and is used by other municipalities nationwide. We failed to alert you in advance of our original letter we were required to send out earlier this year — and we don't want to make that mistake again. We have enclosed a fact sheet and a list of Frequently Asked Questions in an effort to help you respond to any inquiries you may get from patients.

We have taken many steps to continue to improve the safety and quality of Flint's water, including: Hiring Veolia North America, an international urban water system consultant firm, and establishing two advisory committees: a Citizens Advisory Committee, and a Technical Advisory Committee, which is made up of representatives from the University of Michigan, Michigan State University, Kettering University, Mott Community College, Genesys, McLaren, and Hurley Hospitals along with local health officials including the Genesee Medical Society the Genesee County Public Health Department, the Michigan Department of Environmental Quality and the U.S. Environmental Protection Agency. In addition, we have also established a hotline (810-787-6537) and a place for continuing updates on the city's website (www.cityofflint.com). The City of Flint encourages residents who have concerns about their water to report it immediately by either calling the hotline or emailing flintwater@cityofflint.com. Upon citizen's notice we will make arrangements for on-site testing.

We recognize that Flint's water system may still be challenged with *quality* issues such as discoloration or odor, but we assure you the safety of the water meets all state standards. You should also know that the City also publishes its monthly tests for a wide variety of water treatment components, including chloride levels, on its website at cityofflint.com/?page_id=5643.

We urge you to contact the City of Flint Water Treatment Plant  with any specific questions or concerns you may have on this issue. We will do our absolute best to get you the answers that you need.

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Comment [mw2]: I'd recommend that you NOT send that version of the TTHM Fact Sheet due to inaccuracies. I can provide a revised version of that tomorrow.

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Comment [mw3]: While I recognize the desire to emphasize Safe... Safety does not make sense here.

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Comment [CD4]: Include contact information if different from the hotline and website.

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Sincerely,

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DRAFT

Rennaker, Joanne (DEQ)

From: Prysby, Mike (DEQ)
Sent: Tuesday, March 17, 2015 4:26 PM
To: Howard Croft; Brent Wright; Daugherty Johnson; Dayne Walling; donna. cole; gdn2@aol.com; James Henry; jmikewright; JoAnne Herman; John O'Brien; Kirk Smith; larry.koehler@mcc.edu; Laura Sullivan; Michael Glasgow; Mike Lane; Natasha Henderson; Norb Birchmeier; Pete Levine; rob.nicholas@veolia.com; Robert Nicholas; rosejo@msu.edu; Russell Hudson; Samir Matta; Warren Green
Cc: Busch, Stephen (DEQ)
Subject: RE: TTHM Draft Letter
Attachments: Draft - Flint Letter to Healthcare Providers.docx

Howard,

I made a few changes to the draft letter...in red (see attached)....mainly to make a more clear distinction between the locational running annual average and the stand-alone quarter (February 2015) results and how it affects the number of sites in compliance. If you have any questions, feel free to call me.

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

From: Howard Croft [<mailto:hcroft@cityofflint.com>]
Sent: Monday, March 16, 2015 4:28 PM
To: Brent Wright; Daugherty Johnson; Dayne Walling; donna. cole; gdn2@aol.com; Howard Croft; James Henry; jmikewright; JoAnne Herman; John O'Brien; Kirk Smith; larry.koehler@mcc.edu; Laura Sullivan; Michael Glasgow; Mike Lane; Prysby, Mike (DEQ); Natasha Henderson; Norb Birchmeier; Pete Levine; rob.nicholas@veolia.com; Robert Nicholas; rosejo@msu.edu; Russell Hudson; Samir Matta; Warren Green
Subject: TTHM Draft Letter

Team,

We have received our notice from the DEQ and our next step is to have this group preview the letter that we intend to send to the public along with it. I have forwarded everyone a draft of the letter for any comments and I am also sending again all of the literature that was forwarded from Mr. Wright of the EPA and DR. Rose of MSU.

We expect to have an additional FAQ ready and out to this group on Tuesday and we anticipate the violation notice going out in the near future.

The citizens advisory group will meet again on this Thursday, we are currently looking to have another **Technical Advisory Committee** with this group in early April.

Thank you,

--

Howard Croft

Public Works Director

City of Flint

1101 S. Saginaw Street

Flint, MI 48502

PH# 810.766.7135 Ext.2043

hcroft@cityofflint.com

DRAFT Letter to Flint Healthcare Providers

The safety and quality of Flint's water has been in the news for months. We have worked hard to address these issues and have succeeded in bringing Flint's water within the state's safety guidelines on all measures, including TTHM (total trihalomethanes). Excess TTHM triggered the initial letter to our customers earlier this year.

Even though Flint water now meets the standards and is testing significantly below the state's allowable contamination levels, we are required to send out another letter to residents because the *annual* quarterly testing average is not yet below the state's allowable average.

Flint tests for TTHM – a byproduct of the water chlorination process – at eight different sites in the city. When we began using the Flint River as a source in April of 2014, our first round of quarterly testing for TTHM was conducted in May. At that time, only two testing sites were below the allowable maximum; in August, every site was above the allowable maximum.

The City, with the help of LAN engineering, developed an Operation Evaluation Report (OER) which contained an action plan to address the issue. That plan was implemented with steps including upgrading the ozone treatment process at the Water Treatment Plant (WTP), **complete softening**, increasing water main/hydrant flushing to decrease stagnation, small scale testing of treatment to identify areas of improvement, applying overall improvements to the WTP through operational changes and to the distribution system through water circulation modeling

Because the public notice is based on a **locational running** annual average of quarterly results a notice was not required until November, at which time all but one testing **location** was below the allowable levels. **Our most recent testing in February 2015 showed all locations well below state allowable levels; however, the locational running annual average (based on the four most recent quarters – May 2014 – Feb. 2015) results in all but two locations being below the allowable level.** (See the attached graph outlining our progress.)

We have taken many steps to continue to improve the safety and quality of Flint's water, including bringing in international urban water system consultants, Veolia North America, and establishing two advisory committees: a Citizens Advisory Committee, along with a Technical Advisory Committee made up of representatives from the University of Michigan, Michigan State University, Kettering University, Mott Community College, Genesys, McLaren, and Hurley Hospitals along with local health officials including the Genesee Medical Society the Genesee County Public Health Department, the Michigan Department of Environmental Quality and the U.S. Environmental Protection Agency.

We have also established a hotline 810-787-6537 and a place for continuing updates on the city's website cityofflint.com and have encouraged residents who are concerned about their water to report it to us immediately so that we can make arrangements for on-site testing. Although we have been offering this for more than a month, to date only a few residents have requested on-site testing. All residents wishing to have their water tested can call the hotline number or send an email to flintwater@cityofflint.com.

Despite our progress, we are required by law to once again advise residents about what *was* an excess of TTHM in Flint's water system at the eight testing sights last year. The letter – a draft of which is enclosed for your information – includes legally required language recommending that residents who have (severely compromised immune systems, have an infant, or are elderly) should contact their physician. This is standard language from the U.S. EPA which is included in every water quality or water related report the City publishes, regardless of whether there are specific health or quality concerns, and is used by other municipalities nationwide. We failed to alert you in advance of our original letter we were required to send out earlier this year – and we don't want to make that mistake again. We have enclosed a fact sheet and a list of Frequently Asked Questions in an effort to help you respond to any inquiries you may get from patients.

We recognize that Flint's water system may still be challenged with *quality* issues such as discoloration or odor but we assure you the *safety* of the water meets all state standards. You should also know that the City also publishes its monthly tests for a wide variety of water treatment components, including chloride levels, on its website at cityofflint.com/?page_id=5643.

We urge you to contact the City of Flint Water Treatment Plant with any specific questions or concerns you may have on this issue. We will do our absolute best to get you the answers you need.

Sincerely,

Rennaker, Joanne (DEQ)

From: Busch, Stephen (DEQ)
Sent: Monday, March 02, 2015 3:19 PM
To: Wurfel, Brad (DEQ); Howes, Sarah (DEQ); Shekter Smith, Liane (DEQ)
Cc: Datema, Maggie (DEQ); Benzie, Richard (DEQ); Prysby, Mike (DEQ); Rosenthal, Adam (DEQ)
Subject: Draft Flint TTHM Violation Notice for comment
Attachments: Flint DBP MCL 1Q15.doc
Importance: High

Attached is a draft violation notice to the City of Flint regarding the exceedance of the drinking water standard for total trihalomethanes (TTHM) based on the latest round of samples collected in February 2015.

As predicted, the levels from the latest round are all very low, but the annual average calculation for 2 sites remains above the maximum contaminant level standard.

We plan to get the letter out on Thursday so please provide any comments/concerns/questions by Wednesday 3/4. An electronic copy of the signed letter will be provided to Maggie/Sarah for forwarding to legislative members in the Flint area as was done with the last violation notice from December.

Again, if you have any questions, please contact me directly.

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



RICK SNYDER
GOVERNOR

STATE OF MICHIGAN
DEPARTMENT OF ENVIRONMENTAL QUALITY
LANSING DISTRICT OFFICE



DAN WYANT
DIRECTOR

March 5, 2015 - DRAFT

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

WSSN: 02310

Dear Mr. Wright:

SUBJECT: Violation Notice – Maximum Contaminant Level for Total Trihalomethanes
Operational Evaluation – Total Trihalomethanes
1st Quarter 2015 Monitoring Period

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

In accordance with R.325.10610, *MCLs for disinfection byproducts*, of the 1979 Administrative Code, the MCL for disinfection byproduct total trihalomethanes (TTHM) is 0.080 milligrams per liter (mg/L) as a Locational Running Annual Average (LRAA) at each monitoring location. As listed in the table below, our records show that the City of Flint's highest TTHM locational running annual average (LRAA), based on the last four quarters, ending February 28, 2015, is 0.105 mg/l which exceeds the standard, and that two of the eight sample site locations exceed the standard of 0.080 mg/L.

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

TTHM Results (mg/L)						
	5/21/14	8/21/14	11/20/14	2/17/15	LRAA	OEL
DBP1 McDonalds 3719 Davison	0.162	0.145	0.059	0.0162	0.096	0.059
DBP2 Liquor Palace 3302 S. Dort Highway	0.112	0.127	0.033	0.0168	0.072	0.049
DBP3 North Flint Auto 6204 N. Saginaw St.	0.097	0.118	0.041	0.0149	0.068	0.047
DBP4 University Market 2501 Flushing Road	0.106	0.196	0.094	0.0245	0.105	0.085
DBP5 Taco Bell 3606 Corunna Road	0.079	0.181	0.034	0.0151	0.078	0.063
DBP6 Rite-Aid Pharmacy 5018 Clio Road	0.088	0.144	0.054	0.0192	0.076	0.059
DBP7 Salem Housing 3216 MLK Boulevard	0.082	0.112	0.050	0.0285	0.068	0.055
DBP8 BP Gas Station 822 S. Dort Highway	0.075	0.112	0.036	0.0199	0.061	0.047

Our investigation consisted of a review of ODWMA files for laboratory reports received for compliance monitoring. Our investigation is considered complete. This violation began on March 1, 2015, and will continue until TTHM LRAA is below the MCL at all sample sites.

We are encouraged by the results from the most recent round of compliance samples collected on February 17, 2015, which now show individual TTHM levels at less than half of the 0.080 mg/L standard at all locations throughout the City's system. Operational Evaluation Reports from December 2014 and February 2015 have identified possible causes and corrective measures for the previous elevated TTHM levels which we encourage the City continue implementing. These modifications have likely contributed in part to the reduction in TTHM levels reported in the most recent quarter, and suggest the City may be able to achieve compliance with the TTHM standard at all sites by continuing these efforts.

Our office is currently reviewing the Operational Evaluation report dated February 27, 2015, and will provide the City and their consultant comments as needed to help address this MCL violation.

Water systems that exceed the OEL must complete and submit an Operational Evaluation in accordance with Administrative Rule 719I (R325.10719I) within 90 days of being notified of the violation. **An updated Operational Evaluation report, which incorporates the most recent sample results, must now be completed and received by our office by no later than Friday May 29, 2015.**

If you have any other factual information you would like us to consider regarding the violation identified in this Violation Notice (VN), please provide them in a written response by March 19, 2015.

Administrative rule R 325.10403 of Act 399 requires that suppliers provide public notice (PN) as soon as practical, but no later than thirty (30) days after the supplier learns of

this type of violation, by mail or direct delivery **and** by any other means reasonably calculated to reach customers not normally reached by mail. Enclosed is a sample PN which contains the minimum required language. The City is encouraged to include additional information regarding its response efforts to this violation. **Please notify your consumers by April 1, 2015, and send us a signed and dated copy of the notice that you issued within ten (10) days of distributing the public notice.** This violation must also be included in your 2015 Consumer Confidence Report (CCR), due by July 1, 2016. The PN must be repeated every quarter until you no longer exceed the TTHM standard. Failure to issue a PN for this violation will result in a fine of at least \$1,000 per event, with a maximum of \$5,000 per violation.

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

Sincerely,

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

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

mfp/ar/jlr
Enclosure

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

IMPORTANT INFORMATION ABOUT YOUR DRINKING WATER

City of Flint Did Not Meet Treatment Requirements

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

We routinely monitor for the presence of drinking water contaminants. Samples were collected for total trihalomethanes (TTHM) analysis from eight locations on a quarterly basis (May 21, August 21, November 20 of 2014 and February 17, 2015). The average of the results at **ANY** of the eight locations must not exceed the maximum contaminant level (MCL) for TTHMs, otherwise our water system exceeds the Maximum Contaminant Level (MCL). The standard for TTHMs is 80 µg/L. The location reporting the highest TTHM level was 105 ug/L; thus, our water system exceeds the TTHM MCL.

What should I do?

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

What does this mean?

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

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

What is being done?

We are currently working on solutions to correct the problem. We anticipate resolving the problem in 2015. Our most recent individual sample results were all less than half the 80 µg/L standard, however since compliance is calculated using a locational running annual average (LRAA) of the most recent 4 quarters, we are still out of compliance with the MCL at 2 of 8 locations.

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

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

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

CERTIFICATION:

WSSN: 02310

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

Signature

Title

Date Distributed

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

Rennaker, Joanne (DEQ)

From: Busch, Stephen (DEQ)
Sent: Wednesday, January 21, 2015 10:52 AM
To: Prysby, Mike (DEQ)
Subject: Draft Presentation
Attachments: FlintPublicMeeting-DEQ.pptx

See attached draft.

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

Community Water Supply

Information Regarding
Total Trihalomethane (TTHM)
Disinfection Byproducts

DEQ - Community Water Supply

- Regulatory Authority over Public Water Systems
- Michigan Safe Drinking Water Act
- 1400 Community Supplies in MI (like Flint)
- Lansing Jackson Districts – 300 in 13 counties
- Oversight through:
 - Inspection
 - Monitoring
 - Construction Permitting
 - Planning
- Partnership and Compliance Assistance

What are TTHM's

Trihalomethanes occur when natural organic matter in the water react with chlorine disinfectants.
(Byproduct of disinfection process)

4 Chemical Compounds made up of these elements:

- Carbon
- Hydrogen
- Bromine
- Chlorine

TTHM Standard

- Based on chronic exposure to low doses
- 80 parts per billion (0.080 ppm)
- Locational Running Annual Average (LRAA)
- Quarterly monitoring at each location
- Location and timing based on highest risk
- Running = over last 4 quarters, not calendar yr
- Total sum of 4 quarters not to exceed 320 ppb

Flint TTHM Results

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

Potential Health Effects Related to TTHM

- Federal Language
- Some people who drink water containing TTHM in excess of the MCL over many years could experience liver, kidney, or central nervous system problems and increased risk of cancer.

Health Effect Basis

- Toxicology Studies - Uncertainty in using results of high-dose studies in animals to estimate risk to humans from chronic exposure to low doses in drinking water
- Epidemiology – Findings are contradictory. No conclusion of causal link between exposure and health effects.
- EPA determined evidence supports a potential hazard concern and establishment of standard.
- Considered best course of action at this time to reduce potential risks.

TTHM Violation Requirements

- Water supply must take steps to reduce the amount of TTHM so that they are below the standard.
- Water supply must notify customers of the violation within 30 days of after learning of the violation.

Operational Evaluation

- System treatment practices
- System distribution practices
- Storage tank operations
- Excess storage capacity
- Distribution system flushing
- Source water quality
- Treatment changes
- TTHM contributions
- Steps to minimize future standard violations

Public Notification

- Designed to provide