From: Busch, Stephen (DEQ)
Sent: Tuesday, May 26, 2015 12:42 PM
To: Prysby, Mike (DEQ)
Subject: RE: McLaren letter
Attachments: McClaren Visit Ltr - May 2015-revised.doc

See attached revisions.

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

From: Prysby, Mike (DEQ)
Sent: Tuesday, May 26, 2015 10:10 AM
To: Busch, Stephen (DEQ)
Subject: McLaren letter

Steve,

Attached is a draft letter to McLaren Flint concerning the chemical feed system for your review and comment.

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

May 25, 2015

Mr. Russell Hudson, Director of Engineering Services
McLaren Flint
401 South Ballenger Highway
Flint, MI 48532

Dear Mr. Hudson:

SUBJECT: McLaren Flint – Potable Water System – Supplemental Treatment

This letter confirms my meeting on April 29, 2015, with you and other representatives of McLaren Flint. Mr. Stephen Busch from our office was also present. The purpose of the meeting was to discuss risk management for McLaren's potable water plumbing system and to provide guidance towards achieving a more comprehensive risk management program. A tour of the hospital water system included a sodium hypochlorite chemical feed system installed at a confluence of water service lines into the building. Our examination of this chemical feed system discovered that it was not constructed in accordance with the Recommended Standards for Water Works and requirements of the Michigan Safe Drinking Water Act, and must be modified as follows to ensure proper operation and protection of public health.

- Currently the chlorine feed pump operates at a constant feed rate, adjusted manually, while the water supply booster pumps vary flow using variable frequency drives to maintain a constant water pressure. This does not allow for a uniform chemical dosage concentration, and can lead to both under and overfeeding of the chemical as well as disinfectant byproduct formation. To address this situation, a flow pacing chemical feed pump must be installed. This type of pump will automatically adjust the chemical feed rate based on the flow rate of the water supply pumps to provide a consistent dosage concentration. This will also allow chlorine disinfectant to be fed at all times.

- Operation of a chemical treatment system requires routine observation. However, the current configuration does not allow dosage determinations to be made. This is necessary to identify changes in chlorine demand. To accomplish this, a scale must be provided that allows for the amount of sodium hypochlorite solution by weight from the drum to be measured and recorded on a daily basis. A scale with digital readout is recommended. The volume of water used over the same time must also be determined and recorded in order to calculate the dosage of chlorine using the following calculation.

  Chlorine Dosage (mg/L) = $\frac{HypochloriteSolution(lbs) \times 0.125}{Water(gallons) \times 8.34 \times 10^{-6}}$

- Samples for chlorine residual measurement are being taken at various locations within the hospital using a Hach Model CN-66 test kit. This kit uses a color comparator disc for basic measurement, which can cause readings to vary depending on light conditions and operator vision. A test kit that provides digital