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Meeting Date: December 5, 2019
File No.:



To: Chair and Members
Lambton Area Water Supply System Joint Board of Management

From: Clinton Harper
General Manager

Subject: WTP Reservoir Leak

Recommendation

It is recommended that the Board approve \$50,000 to clean the WTP Reservoir and complete a "Reservoir Condition Assessment".

Background:

The WTP Reservoir is located under the berm just north of the WTP. The reservoir holds approx. 67,000m³ of potable water and consists of two equal-baffled cells in series. The WTP reservoir was constructed during the original plant construction in 1971.

In 1979, a major concrete deficiency was identified in the east cell. At the base of the exterior wall near the northeast corner, considerable erosion of the concrete joint just above the footing was identified. The erosion had exposed the reinforcing steel to the chlorinated water. Repairs were fully completed in 1985.

In 1991, an effort was made to clean out and re-seal, inside and out, the vertical concrete control joints along the south and west edge of the reservoir. The work included the first three control joint east of the southwest corner, and the first two control joints north of the southwest corner. The information does not indicate the reason the work was undertaken but it can be assumed that this work either pre-emptive measure or a response to a possible leak, or leak in the area of the re-seal.

In 2003, a major capital project was undertaken that involved installing 24' high concrete baffle walls throughout the reservoir. At that time, OCWA staff completed a full inspection of the interior structure. The inspection did not identify an issue with how the 1985 or 1991 work was holding up. The inspection during the baffle install did reveal an issue with how the flag pole was installed over the north west corner. The flag pole issue was corrected as part of the 2003 baffle install project.

Prior to treated water leaving the WTP, a certain amount of chlorine contact time (CT) is required by the Ministry of Environment Conservation and Parks (MECP). Chlorine is

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added after filtration and then the treated water travels through the baffled system at a controlled rate to achieve CT.

Comments:

The OCWA Operator noticed water on the surface of the rear service roadway between the treatment plant and the reservoir during standard rounds the week of October 28th. Water appeared to be coming from a concrete joint on the south reservoir wall.

Water Operators in Distribution use specialized testing equipment to identify watermain breaks in the field. Testing of the water on the roadway indicated the presence of chlorine at a level similar to what is usually observed at a watermain break. A reservoir leak was assumed and appeared to be coming from the first control joint east of the southwest corner of the structure. (one of the control joints cleaned and re-sealed during the 1991 project)

The following week, divers entered the reservoir over two days and completed a preliminary internal inspection of the area adjacent to the exterior leak. The dive inspection confirmed the water found on the roadway originated from the reservoir and the leaks location in the structure wall. The preliminary internal inspection report and video were provided to GM Blueplan Engineering and a workplan was requested to complete a reservoir condition assessment. GM Blueplan is an Engineering Consultant familiar with reservoir repairs of similar type.

Consultation:

This Report was prepared in consultation with OCWA Operational Staff.

Financial Implications:

It is important that the leak be corrected as soon as possible. The first step is to drain the reservoir completely, gently clean the surfaces, and allow the Engineer physical access to complete a structural assessment. Draining and cleaning the reservoir will require special approval by the MECP and is expected to cost \$35,000. Once cleaned, the area can be inspected and condition assessed. A complete inspection, that includes the entire reservoir, is estimated at \$15,000. With the inspection complete, a project to address the issue can be developed. A project recommendation with full costing estimate will be brought before the Board at a future date for its consideration.

This report was prepared by Clinton Harper, LAWSS General Manager

Attachment(s): none