

Agenda – Standing Policy Committee on Water and Waste, Riverbank Management and the Environment – November 22, 2018

REPORTS

Item No. 7 Discoloured Water Mitigation – Water Treatment Coagulant Switch

WINNIPEG PUBLIC SERVICE RECOMMENDATION:

That this report be received as information.

ADMINISTRATIVE REPORT

Title: DISCOLOURED WATER MITIGATION – WATER TREATMENT COAGULANT SWITCH

Critical Path: Standing Policy Committee on Water and Waste, Riverbank Management and the Environment

AUTHORIZATION

Author	Department Head	CFO	CAO
T. Shanks, M. Eng., P. Eng., Manager of Water Services	M. L. Geer, CPA, CA Director, Water and Waste Department	L. Pablo, Acting CFO	D. McNeil

EXECUTIVE SUMMARY

Discoloured water has proven to be aesthetically displeasing, a significant customer service issue and very frustrating for residents. It is expected that the most critical and final step to address this issue is the change in coagulant used at the Water Treatment Plant. This was recommended in the 2013 *Winnipeg Discoloured Water Investigation Report* (WDWIR) and will be completed in the fall of 2018. The 2013 WDWIR identified manganese content in the water supply as the cause of discoloured water.

The public service will start using ferric sulphate as coagulant which has a lower manganese content than the ferric chloride which has been used since the plant was commissioned in 2009.

A gradual and steady decline in discoloured water reports is expected following the switchover.

RECOMMENDATIONS

That this report be received as information.

REASON FOR THE REPORT

To provide the Standing Policy Committee on Water and Waste, Riverbank Management and the Environment an update on the status of activities to address discoloured water events within the City of Winnipeg.

IMPLICATIONS OF THE RECOMMENDATIONS

There are no implications arising from the recommendations of this report.

HISTORY/DISCUSSION

When the Water Treatment Plant (WTP) was brought online in December 2009, there was an increase in discoloured water calls. A consultant report in 2010 linked the increase to the historical buildup of mineral and organic material reacting with the higher quality of water from the new WTP and causing the discoloured water. The consultant's recommendations were implemented to minimize the amount of disturbances customers would experience until the water quality stabilized. Discoloured water reports subsequently decreased in 2011.

In 2012, there was another increase in discoloured water reports, which continued to increase significantly through 2013. The Water and Waste Department engaged a second consultant to help find a solution and they identified manganese levels as the cause of the increase in discoloured water incidences as disclosed in the *Winnipeg Discoloured Water Investigation Report*. Although manganese levels have risen over the years in Shoal Lake, the primary source of the increase in manganese is ferric chloride, used in one of the key treatment processes (coagulation) at the WTP. The materials used to manufacture ferric chloride contain manganese.

Discoloured water reports decreased by 46% in 2014 as a result of implementing recommendations from the consultant report to reduce manganese build up and to limit flow changes in the distribution system. Reports of discoloured water have declined less dramatically since 2014, and the system remains unacceptably sensitive to operational disturbances.

The final recommendation from the consultant's report is expected to have the highest impact on manganese content in the water supply. This recommendation is to replace the coagulant with a new product that contains significantly less manganese. Selection of a new coagulant required design and construction of a pilot plant facility at the WTP, followed by a consultant study to evaluate potential coagulants. Once ferric sulphate was identified as a potential replacement, it was piloted through all four seasonal water quality conditions to assess its performance and compatibility with other WTP processes. The evaluation is now complete and transition to the new coagulant will be completed before the end of 2018.

When the switch to the new coagulant is complete, manganese levels in the distribution system are expected to decrease. Once the distribution system adjusts to the change in the water chemistry from the new coagulant, it is expected there will be a return to pre-WTP frequency of discoloured water reports.

It is difficult to predict how long it will take to see a major reduction in discoloured water reports; however the expectation is that reports should decline in 2019 compared to prior years.

FINANCIAL IMPACT

Financial Impact Statement

Date: **November 6, 2018**

Project Name: **First Year of Program** **2018**
DISCOLOURED WATER MITIGATION – WATER TREATMENT COAGULANT SWITCH

	<u>2018</u>	<u>2019</u>	<u>2020</u>	<u>2021</u>	<u>2022</u>
Capital					
Capital Expenditures Required	\$ -	\$ -	\$ -	\$ -	\$ -
Less: Existing Budgeted Costs	-	-	-	-	-
Additional Capital Budget Required	<u>\$ -</u>	<u>\$ -</u>	<u>\$ -</u>	<u>\$ -</u>	<u>\$ -</u>
Funding Sources:					
Debt - Internal	\$ -	\$ -	\$ -	\$ -	\$ -
Debt - External	-	-	-	-	-
Grants (Enter Description Here)	-	-	-	-	-
Reserves, Equity, Surplus	-	-	-	-	-
Other - Enter Description Here	-	-	-	-	-
Total Funding	<u>\$ -</u>	<u>\$ -</u>	<u>\$ -</u>	<u>\$ -</u>	<u>\$ -</u>
Total Additional Capital Budget Required	<u>\$ -</u>				
Total Additional Debt Required	<u>\$ -</u>				
Current Expenditures/Revenues					
Direct Costs	\$ 1,376,000	\$ 1,824,000	\$ 1,915,000	\$ 2,010,000	\$ -
Less: Incremental Revenue/Recovery	-	-	-	-	-
Net Cost/(Benefit)	<u>\$ 1,376,000</u>	<u>\$ 1,824,000</u>	<u>\$ 1,915,000</u>	<u>\$ 2,010,000</u>	<u>\$ -</u>
Less: Existing Budget Amounts	1,376,000	1,824,000	1,915,000	2,010,000	-
Net Budget Adjustment Required	<u>\$ -</u>	<u>\$ -</u>	<u>\$ -</u>	<u>\$ -</u>	<u>\$ -</u>
Additional Comments: Funds are available in 2018 approved budget for the purchase of ferric chloride and transitioning to ferric sulphate. Years 2019-2021 proposed budgets include funding for the purchase of ferric sulphate. The additional amount added to the 2019-2021 budget with respect to the cost and quantity of ferric chloride compared to the cost and quantity of ferric sulphate is, on average, approximately \$413K per year. Account Number 443-201218-533020.					

"Original signed by L. Szkwarek, CPA, CGA"
 Lucy Szkwarek, CPA, CGA
 Manager Finance and Administration

CONSULTATION

This Report has been prepared in consultation with:

N/A

OURWINNIPEG POLICY ALIGNMENT

This report is in accordance with the OurWinnipeg policies through Initiative 03-3 of the Sustainable Water and Waste Direction Strategy: Ensure the quality and safety of our existing drinking water.

This report supports the City's continued commitment to providing safe drinking water to the residents of Winnipeg

SUBMITTED BY

Department: Water and Waste
Division: Water Services
Prepared by: Tim Shanks, M. Eng., P. Eng.
Date: November 6, 2018
File No.: W-764