



July 14, 2022

Client File No.: 1071.0
Our File Nos.: S-1146, EMS
020-17-08-11-00
020-17-08-11-0N

Environment, Climate and Parks
Environmental Stewardship Division
Environmental Approvals Branch
1007 Century Street
Winnipeg, MB R3H 0W4

Attention: James Capotosto, Director

**RE: INTERIM PHOSPHOROUS REMOVAL QUARTERLY REPORT FOR APRIL, MAY, JUNE
2022**

The City of Winnipeg (City) is submitting a Quarterly Report for the periods of April, May, June (second Quarter) of 2022 in accordance with the conditional approval of the Notice of Alteration for the North End Sewage Treatment Plant (NEWPCC). Table 2 shows the schedule for the Interim Phosphorous Removal Project.

April

In April KGS continued in its design for the Interim Phosphorous Removal Facility. The 90% design was completed and submitted to the City for their review and comment. There were also discussions about costs and the impacts that recent market conditions (e.g. inflation, supply availability, lead times for key items etc.) would have on the project and its costs.

May

In May the design for the Interim Phosphorous Facility was finalized. A Class 1 cost estimate using the most current market conditions was developed. Tender documents were drafted and prepared for posting on the City's procurement website. In discussion with the industry, contractors also advised that due to uncertainty in the market conditions their bid prices could not be guaranteed for the typical award period.

June

The revised Class 1 cost estimate for Interim Phosphorous Removal resulted in a total project cost estimate of \$17M (including construction, consulting, contingencies etc.). This is an additional \$6.5M above the class 3 estimate of \$10.5M. The City requested a budget amendment at the June 28, 2022 Standing Policy Committee of Water and Waste, Riverbank Management and the Environment meeting; the committee concurred with the Public Service recommendation. The report still requires Executive Policy Committee (July 13, 2022) and Council (July 21, 2022) concurrence.

Due to the urgency of this project, the City posted a tender for Interim Phosphorous Removal on June 13, 2022. The tender will close in late July with award subject to approved City funding. If

sufficient budget is not approved, the department will determine next steps which may include modifying scope, re-tendering, and/or awarding in phases as funds become available.

The estimated phosphorous concentrations throughout the various phases of the NEWPCC Upgrade remains the same as the previous quarterly report, shown in Table 1.

Table 1. Estimated phosphorous concentrations through various phases of the NEWPCC Upgrade

Phase	Period	Estimated total phosphorous concentration in NEWPCC Final Effluent	
Stage 1: Phosphorous reduction with existing infrastructure	Until August 2021	Approximately 4.0 to 4.5 mg/L on average	
Stage 2: Maximized phosphorous reduction through optimization with existing infrastructure	August 2021 to July 2023	Approximately 3.5 mg/L on average	
Stage 3: Interim phosphorous reduction through additional infrastructure as approved on May 28, 2021	August 2023 to December 2030	Approximately 2.5 to 3.0 mg/L on average (phosphorous levels may increase as City growth consumes sludge processing capacity)	
Stage 4: Enhanced interim phosphorous reduction to as low as the 1.0 mg/L effluent phosphorous limit upon commissioning of the biosolids facility	January 2031 to January 2032	1 mg/L – beyond January 2032, 1 mg/L is dependant on the sludge loading levels. This assumes the maximum sludge generating scenario.	
Stage 5: Ongoing phosphorous removal meeting the 1.0 mg/L effluent phosphorous limit upon commissioning of the biological nutrient removal facility	Dependent on constructability review and funding for NEWPCC Nutrient Removal Facility	1 mg/L	

Phosphorous concentrations in the final effluent are reported in the NEWPCC’s monthly compliance reports and can be found online: <https://winnipeg.ca/waterandwaste/sewage/compliance.stm>.



Table 2. Schedule for Interim Phosphorous Removal

Deliverable	Description	Contractual Dates	% Previously Reported in Q1 2022	% Currently Complete (End of Q2 2022)	Originally Projected Date	Revised or Completed Date	Work Remaining
Consultant RFP	Draft, review, post for tender	N/A	100%	100%	July 2021	July 31, 2021	Complete
	Evaluation, Admin Report, Approvals, Award	N/A	100%	100%	September 30, 2021	September 28, 2021	Complete
Preliminary Design (PD)	PD plus reviews and approval by WWD	February 3, 2022	100%	100%	March 31, 2022	February 2, 2022	Complete
Detailed Design (DD)	DD plus reviews and approval by WWD	May 18, 2022	60%	100%	June 30, 2022	May 18, 2022	Complete
Construction Tender	Draft, review, post for tender	May 26	0%	100%	June 30, 2022	June 13, 2022	Complete
	Tender posting period	May 26, 2022 to June 23, 2022	0%	50%	June 30, 2022	June 13, 2022 to July 22, 2022	Tender close and evaluation
	Award Recommendation, Admin Report, Approvals, Award	July 15, 2022	0%	0%	June 30, 2022	August 12, 2022	
Construction and Commissioning	Substantial Performance	July 20, 2023	0%	0%	June 30, 2023		
	Total Performance	August 31, 2023	0%	0%	September 30, 2023		
	Warranty Period	August 31, 2024	0%	0%	December 31, 2024		
Full Scale Testing and Implementation	Process review, dosing estimates, trouble shooting, optimization	August 31, 2024	0%	0%	December 31, 2024		
Closeout	Certificate of Acceptance	September 2, 2024	0%	0%	December 31, 2024		



Phosphorous Optimization

The NEWPCC Operators have maximized ferric dosing to the sequencing batch reactors (SBRs) and digesters based on the existing ferric chloride pumping capacity. The average SBR effluent phosphorous load for Q2 2022 is 21.5 kg/day which corresponds with an average effluent concentration of 9.6 mg/L.

Opportunities for further phosphorous removal will be tested once construction of the Interim Phosphorus Removal Facility has been completed. The current pumping rates for ferric chloride will continue, with removal rates varying depending on environmental conditions (e.g. hydrogen sulphide levels in the digesters). The SBRs have been performing better than intended in their original design and below the licence limit of 119 kg/d specified in Clause 27 of the NEWPCC Licence No. 2684RRR.

Should you have any questions on this report, please contact Michelle Paetkau at 204-986-4904 or by email at mpaetkau@winnipeg.ca.

Sincerely,

Cynthia D. Wiebe P. Eng., CAMP
Manager of Engineering Services

Attachment

MP/dr

c: Siobhan Burland Ross, M. Eng., P. Eng., Manitoba Conservation and Climate (email)
Yvonne Hawryliuk, MSc, Manitoba Conservation and Climate (email)
T. W. Shanks, M. Eng., P. Eng., Water and Waste Department (email)
M. Paetkau, P. Eng., Water and Waste Department (email)
C. Carrol; P. Eng., Water and Waste Department (email)
R. Grosselle, Water and Waste Department (email)
C. Javra, P. Eng., Water and Waste Department (email)