Environment and Climate Change
Environmental Stewardship Division
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February 7, 2025
Client File No.: 1071.10
Our File No.: S-972, S-1146, EMS
020-17-08-11-00
020-17-08-11-0N

Attention: Agnes Wittmann, Director

RE: QUARTERLY PROGRESS REPORT FOR NEWPCC UPGRADES
OCTOBER 1 – DECEMBER 31, 2024

This report summarizes progress on the North End Sewage Treatment Plant (NEWPCC) Upgrades, operating under Environmental Act Licence No. 2684 RRR, from October 1 to December 31, 2024.

1. INTERIM CHEMICAL PHOSPHOROUS REMOVAL FACILITIES

Update on items from last report:

- Ferric dosing into the secondary clarifiers remains constant at 200 litres per day which is 11% of the consultant's recommended maximum dose for this location based on Biowin modelling.
- On November 18, 2024, additional dosing into the waste activated sludge (WAS) lines started at 192 litres per day. This is 4.2% of the recommended maximum dose for this location.
- On December 11, 2024, dosing into the WAS line was increased to 250 litres per day or 5.5% of the recommended dose.
- On December 17, 2024, dosing in the secondary clarifiers and into the WAS line was temporarily stopped for three days in all locations to allow the contractor to repair a chemical leak in the transfer piping.
- The estimated phosphorous concentrations throughout various stages of the NEWPCC upgrades are provided in Table 2 in the Appendix.
    - Figure 1 in the Appendix provides a historic 30-day rolling average total phosphorus effluent levels from August 21, 2021 to December 31, 2024.
    - As a result of high phosphorous loads in the raw sewage, the average final effluent phosphorous level over the past three-month period (October - December 2024) is 4.22 mg/L. These elevated levels may be caused by biological phosphorous release from the South End Sewage Treatment Plant sludge that is treated at NEWPCC.

Next steps:

- Dosing rates and locations will be adjusted and impacts on the NEWPCC facility will be monitored over the next year.
    - A higher dosing rate into the WAS line will be considered in January.

Schedule update:

- The current project schedule is provided in Table 1 in the Appendix.

2. HEADWORKS FACILITIES

An overall site plan for the headworks project is provided in Figure 2 in the Appendix.

Update on items from last report:

Issued for Construction (IFC) Design submission packages have been submitted by Red River Solutions (RRS) and are under review. 90% design submittal packages are complete.

- Tunnels and Chambers:
  - Raw Sewage Pump Station Chamber:
    - Installation of suction pipes, wet well slide gates, underground drainage piping, floor traps, and associated supports is complete. Placement of concrete for interior structures continues; multiple pours to occur over several months.
  - H1 Junction Chamber:
    - Concrete base slab construction is complete. By-pass gate fabrication is ongoing. Construction of the concrete liner is ongoing; multiple pours to occur over several months.
- Grit Building: Installation of air vapor barrier is complete. Installation of exterior cladding, grit piping supports, and process and electrical is ongoing.
- Fine Screening Area: Installation of roofing membrane on level 3 is complete, and level 2 is ongoing. Installation of cable trays, rainwater piping, air vapor barrier, perforated screens, and other accessories in the channels is ongoing.
- Solids Handling and Mechanical Rooms: Installation of monorail beams and erection of equipment platforms is complete. Installation of process piping, rainwater piping, and mechanical room equipment is ongoing.
- Y4 Gallery Connection: Installation of the glycol lines and concrete repairs are ongoing.
- Main Control Building: Installation of framing, waterproofing membrane, insulation, drywall for exterior walls, and cable trays is complete. Installation of exterior cladding, rainwater piping, conduit and cables, and roofing work is ongoing.
- Standby Generator Building: Installation of cable tray supports in electrical room is complete. Generator assembly, mechanical piping, and installation of miscellaneous electrical is ongoing.
- Overflow Piping: Installation of overflow piping is complete. Manhole construction and connection to existing overflow remains outstanding.

Other works progressed:

- Modification of the existing Grit Area to accommodate the future tie-in of the new Headworks Facility has been delayed due to weather and planned maintenance activities. The Project Team is looking at options to mitigate the delay. At this time, the delay is not anticipated to impact the overall project schedule.

Next steps:

- Raw Sewage Pumping Station: Installation of discharge piping and supports, completion of channel fingers and erection of building structure.
- Grit Removal Building: Installation of flushing water piping and supports, cabling and junction boxes.
- Fine Screening Area: Installation of exterior cladding, lighting, and conduit.
- Solids Handling and Mechanical Rooms: Installation of exterior wall cladding and interior drywall for electrical rooms.
- H1 Junction Chamber: Installation of slide gates inside temporary by-pass chambers, initiation of by-pass of Northwest Interceptor and tunneling from H1 to Y5 chamber.
- Odour control system: Installation of concrete sump and construction of concrete walls.

Schedule update:

- The re-baselined schedule that incorporated the schedule extension has been reviewed and indicates the new Headworks facility will be operational by March 31, 2026. However, decommissioning will not be completed until Q2 2026. The project team is evaluating the contractual impacts of this.
- The current project schedule is provided in Table 3 in the Appendix.

3. BIOSOLIDS FACILITIES

Update on items from last report:

- The Development Partner has commenced work on the Start-Up Phase and is working towards Stage Gate #1. The Start-Up Phase includes activities such as chartering, preparing work plans, and setting up templates and procedures to be used in the Preliminary Design Phase, which is anticipated to begin in Q1 2025.
- NEWPCC Piping Installation, Soil Remediation, and Site Compound Development construction tender was awarded to J-Con Civil Ltd. in October 2024 and work has commenced on site.
- Preliminary design continued for the land drainage sewer (LDS).
- The Manitoba Historic Resources Branch (HRB) completed its assessment of the area where the LDS construction will occur. HRB has assessed the potential to impact heritage resources as low and has no concerns with the proposed project. A Heritage Resource Protection Plan has been developed and will be issued with the upcoming construction tender in the event heritage resources are encountered.

Next steps:

- The preliminary design report for the LDS is anticipated in January 2025. The subsurface railway crossing application will be submitted to CP Rail following finalization of the LDS preliminary design.
- Work will continue on the NEWPCC Piping Installation, Soil Remediation, and Site Compound Development tender. Construction is anticipated to be complete by Q4 2025.

Schedule Update:

- The current project schedule is provided in Table 4 in the Appendix. The table has been updated to include milestones for Stage Gates 1-3 for the Development Phase Agreement.

4. NUTRIENT REMOVAL FACILITIES

Update on items from last report:

- The following items have been completed:
  - Enhanced preliminary design (EPD)
  - Revised class 3 cost estimate
  - A third-party cost and integrated risk, cost, and schedule analysis
  - Preliminary market sounding
  - Review of the geotechnical site investigation
- A project delivery model assessment has been completed and is under review.

Other works progressed:

- A revised project budget has been established and the associated budget request is proceeding to Council in February 2025.

Next steps:

- Complete the project delivery model assessment in Q1 2025.
- Commence the procurement phase.

Schedule Update:

- The current project schedule is provided in Table 5 in the Appendix.

5. NEWPCC UPGRADE PLAN UPDATE

Report to be issued to Manitoba Environment and Climate Change in Q1 2025. It will include results from the schedule acceleration and partial compliance alternatives review for the Nutrient Removal Facility as well as information about interim effluent flows and loading.

Should you have any questions, please contact me at 204-986-5210 or by email at cwiebe@winnipeg.ca.

Sincerely,

[redacted]

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

ATTACHMENTS: Figures and Tables

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Table 1: Interim Chemical Phosphorous Removal Facilities - Project Milestones

Task Description	% Complete			Original Targeted Completion Date	Revised Targeted Completion Date	Actual Completion Dates
	Oct	Nov	Dec			
Consultant RFP Award	100%			Sep 30, 2021		Sep 28, 2021
Preliminary Design	100%			Feb 3, 2022	Mar 31, 2022	Feb 2, 2022
Detailed Design	100%			May 18, 2022	Jun 30, 2022	May 18, 2022
Construction Tender Award	100%			Jul 15, 2022		Sep 22, 2022
Substantial Completion	100%			Jun 30, 2023	Jul 2, 2024	Jul 2, 2024
Total Completion				Sep 30, 2023	Aug 28, 2024	Aug 28, 2024
Full-Scale Testing and Implementation				Dec 31, 2024	Aug 28, 2025	

Table 2: Estimated Phosphorous Concentrations through NEWPCC Upgrade Stages

Stage	Period	Estimated Total Phosphorous Concentration in NEWPCC Final Effluent [1]	Monitoring Data: Total Phosphorous (NEWPCC Final Effluent)
Stage 1: Phosphorous reduction with existing infrastructure	Until Aug 2021	Approximately 4.0 to 4.5 mg/L on average	3.6 mg/L (Average from 2017 – 2021)
Stage 2: Maximized phosphorous reduction through optimization with existing infrastructure	Aug 2021 to June 24, 2024	Approximately 3.5 mg/L on average	2.5 mg/L (Average from 2022 to June 24, 2024)
Stage 3: Phosphorous reduction with Interim Chemical Phosphorous Facilities	June 25, 2024 to Dec 2030	Approximately 2.5 to 3.0 mg/L on average [2]	2.85 mg/L[4]
Stage 4: Phosphorous reduction with commissioned Biosolids Facilities	Jan 2031 to Jan 2032	1 mg/L to Jan 2032 [3]	
Stage 5: Ongoing phosphorous reduction with commissioned Nutrient Removal Facilities	TBD	1 mg/L	

[1] Based on the 'NEWPCC Interim Phosphorous Removal and Detail Review and Bench Scale Testing Report, December 2020
[2] Phosphorous levels may increase as City growth consumes sludge processing capacity
[3] Phosphorous levels may increase after January 2032 dependent on sludge loading levels (assuming maximum sludge generating scenario)
[4] Average final effluent phosphorous level for June 25, 2024 to December 31, 2024

The modelled data is a conservative estimate of total phosphorous concentrations. The model was developed based on historical wastewater loadings and factored in the projected impacts of upgrades at SEWPCC. Actual results are dependent on many variables, such as:

- the overall health and performance of the treatment bacteria
- the performance of various processes
- wet weather flow
- changes in development
- industrial activity (especially high strength industry)
- ongoing capital improvements

Phosphorous concentrations in the final effluent are reported in the NEWPCC's monthly compliance reports and can be found online at winnipeg.ca/wwcompliance.

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Figure 1: 30-Day Rolling Average Total Phosphorous in the NEWPCC Final Effluent from August 1, 2021 to December 31, 2024

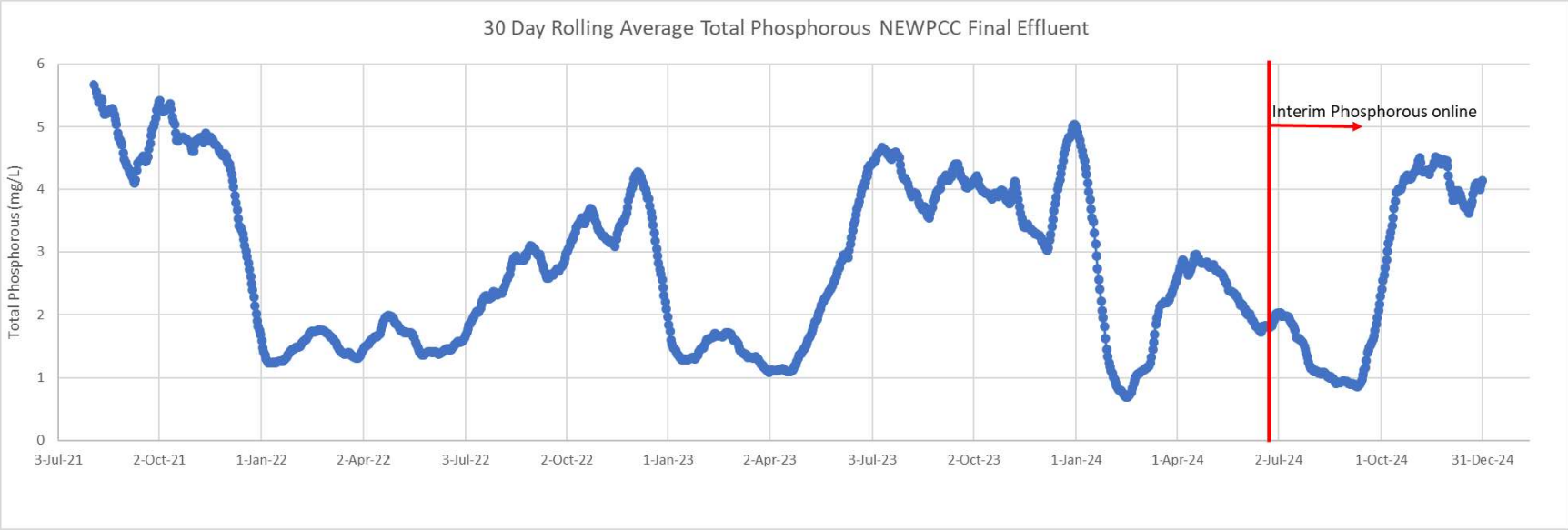

Figure 2: Headworks Facilities – Site Plan

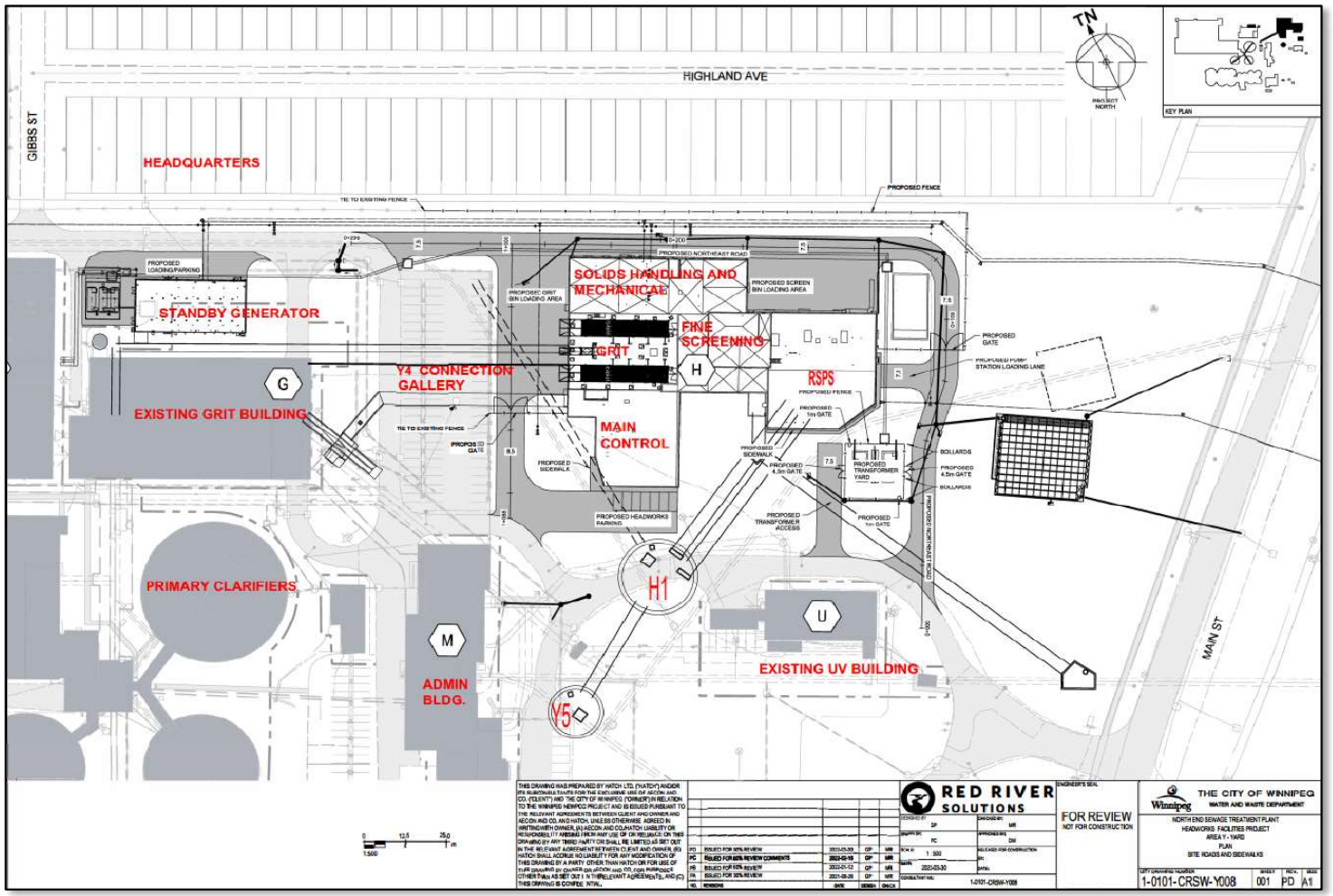

Table 3: Headworks Facilities – Project Milestones

Task Description	% Complete**			Original Targeted Completion Date	Revised Targeted Completion Date	Actual Completion Dates
	Oct	Nov	Dec			
Procurement and Contract Award	100%			Jun 30, 2021		Jun 11, 2021
DB Mobilization Complete	100%			Dec 31, 2021		Dec 15, 2021
30% Design	100%			Dec 14, 2021		Dec 14, 2021
60% Design	100%			Sep 30, 2022		May 22, 2024
90% Design	100%			Jan 23, 2023	Nov 30, 2024	Oct 29, 2024
IFC Design	95%	97%	97%	Apr 17, 2023	~~Nov 30, 2024~~ Jan 30, 2025	
Driven Piles (All Areas)	100%			Aug 19, 2022		Mar 14, 2023
Secant Piles (H2, H1, Y5)	100%			Sep 29, 2022		Jan 13, 2023
Microtunneling (H1 to H2 and H1 to Y5)	65%	65%	65%	Dec 20, 2022	Feb 28, 2025	
Generator Building, Structural and External Finishes	88%	88%	88%	Mar 14, 2023	May 30, 2025	
Standby Generators, Install	100%			Aug 3, 2023		Oct 30, 2022
Raw Sewage Pumping Station (H2), Concrete	87%	89%	91%	Aug 7, 2023	May 30, 2025	
H1 Chamber	30%	50%	65%	Sep 5, 2023	Aug 28, 2026	

Table 3: Headworks Facilities – Project Milestones continued…

Task Description	% Complete**			Original Targeted Completion Date	Revised Targeted Completion Date	Actual Completion Dates
	Oct	Nov	Dec			
Standby Generator Facility and Fuel Storage System	82%	85%	86%	Sep 15, 2023	May 30, 2025	
Grit Removal System, Install	100%			Sep 18, 2023	Jul 31, 2024	Jul 19, 2024
Y5 Chamber	25%	25%	27%	Dec 7, 2023	Aug 28, 2026	
Raw Sewage Pumps, Install	90%	100%		Jan 23, 2024	Nov 25, 2024	Oct 23, 2024
Fine Screens, Install	16%	20%	30%	Mar 26, 2024	Jan 17, 2025	
Headworks Building, Structural and External Finishes	22%	25%	28%	Jun 7, 2024	Jun 30, 2025	
Odour Control System, Install	3%	3%	5%	Jul 8, 2024	Aug 29, 2025	
Civil Works and Landscaping	0%	0%	0%	Jul 26, 2024	Aug 28, 2026	
Headworks Building, Complete	24%	27%	30%	Nov 5, 2024	Mar 31, 2026	
Commissioning	0%	0%	0%	Mar 31, 2025	Mar 31, 2026	
Decommissioning – Original Equipment	0%	0%	0%	May 14, 2025	Aug 28, 2026	
Substantial Completion*	0%	0%	0%	Jun 30, 2025	Mar 31, 2026	

*This is the only milestone that is contractual and cannot slide without penalty
**Data source: Red River Solution's Monthly Report

Table 4: Biosolids Facilities – Project Milestones

Task Description	% Complete			Original Targeted Completion Date	Revised Targeted Completion Date	Actual Completion Dates
	Oct	Nov	Dec			
Updated Preliminary Design and Procurement Strategy	100%			Dec 31, 2021	Apr 1, 2022	Apr 14, 2022 Council Approved Jul 21, 2022
Post RFP Step 1 (Following Council Approval for a PDB procurement strategy)	100%			Jul 13, 2023		Jul 14, 2023
Shortlist Proponents	100%			Sep 30, 2023	Dec 4, 2023	Dec 1, 2023
Post RFP Step 2	100%			Oct 31, 2023	Dec 4, 2023	Dec 11, 2023
Contract Award of Development Phase Agreement (DPA)	100%			Jun 30, 2024	Sept 27, 2024	Sept 23, 2024
DPA Stage Gate 1 – Start-Up Period	33%	50%	67%	Feb 6, 2025		
DPA Stage Gate 2 – Preliminary Period	0%			Sep 12, 2025		
DPA Stage Gate 3 – Intermediate Period	0%			Apr 20, 2026		
Contract Award of Design Build Agreement	0%			TBD		
Substantial Completion				TBD following DBA – by Dec 31, 2030		

Table 5: Nutrient Removal Facilities – Project Milestones

Task Description	% Complete			Original Targeted Completion Date	Revised Targeted Completion Date	Actual Completion Dates
	Oct	Nov	Dec			
Nutrient Removal Technology Selection	100%			Oct 19, 2023		Oct 12, 2023
Updated EPD	100%			Jun 30, 2024	Oct 18, 2024	Oct 21, 2024
Revised Class 3 Cost Estimate	95%	100%		Sep 30, 2024	Nov 15, 2024	Nov 12, 2024
Procurement and Contract Award	0%			TBD		
Substantial Completion				TBD		