



2010 Currie Blvd., Brandon, Manitoba, Canada R7A 6Y9

T 204-726-6076 F 204-726-7196

June 27, 2014

Manitoba Conservation and Water Stewardship
Environmental Approvals
123 Main Street, Suite 160
Winnipeg, MB R3C 1A5

Attention: Ms. Tracey Braun, M.Sc., Director

Dear Ms. Braun:

**Re: RM of Headingley – Cartier Regional Water Cooperative Inc. EAL
Notification - Proposed Minor Alteration**

Please accept this letter, supporting information and \$500.00 fee as notification and approval request for a proposed minor alteration to Environment Act Licence 3077 according to Section 14 of *The Environment Act*.

Environment Act Licence 3077 was issued to the Cartier Regional Water Cooperative Inc. (CRWC) regarding the construction and operation of a regional water supply system with a water treatment plant (WTP) in the Rural Municipality of Headingley. Construction includes the WTP with two settling cells and an outfall to the Assiniboine River to discharge membrane concentrate. The installation of pressure pipeline and the construction of a pumphouse and reservoir will expand the CRWC distribution system into the RM of Rosser. Further expansion of the system will extend from the reservoir to the RM of West St. Paul, the Community of Stony Mountain and the Stony Mountain Institute. Supporting information is outlined as follows:

Description of the Physical Changes

The proposed operating capacity of the WTP in the RM of Headingley will change from 120 L/s to 150 L/s. The combined capacity of the current CRWC WTP at St. Eustache (60 L/s) and the new Headingley WTP (150 L/d) will increase the overall capacity to 210 L/s. The treatment process will consist of an integrated membrane system using ultrafiltration and reverse osmosis (RO) membranes.



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Two settling cells will store raw water drawn from the Assiniboine River prior to it entering the WTP. The expanded operating volume of Settling Cell No. 1 (south cell) is 73,700 m³ and Settling Cell No. 2 (north cell) is 61,400 m³ (see attached drawing). The cells provide retention time to allow solids to settle out reducing water turbidity and decreasing the potential for fouling of the treatment membranes. Aeration of the cells is proposed to reduce trihalomethane (THM) levels.

Concentrate generated as a by-product of the membrane treatment process will be discharged back to the Assiniboine River. Due to the increased operating capacity the existing outfall from the wastewater treatment plant that was originally planned to pipe the concentrate to the river is no longer suitable. A new outfall consisting of 600 mm HDPE DR11 pipeline will be directional drilled from the first manhole upstream to the river (see attached drawing).

Approximately 21 km of 450 mm pressure pipeline will be installed to distribute treated water from the Headingley WTP to a pumphouse and 7.5 ML reservoir located in the RM of Rosser. From the reservoir the CRWC distribution system will be further expanded to supply the RM of West St. Paul, the Community of Stony Mountain and the Stony Mountain Institution. The expansion will include the construction of approximately 6 km of 400 mm pipeline, 21 km of 300 mm pipeline and a pumphouse and reservoir at each location (see attached drawing).

Identification and Quantification of Substances

The membrane treatment process will remove dissolved minerals contained in the raw water supply forming a concentrate that will require disposal. Based on samples collected at the existing CRWC WTP, the projected Headingley WTP concentrations for calcium, magnesium, sodium and sulfate are shown in Table 1 (see attached). It is expected that at full production (20 hours/day), the Headingley WTP will produce approximately 4896 m³/day of membrane concentrate.

The CRWC received Water Rights Act Licence No. 2000-039 which permits a maximum raw water withdrawal of 190 L/s and 5982 dam³/year from the Assiniboine River. The CRWC diverts 2095 dam³ of water annually for the St. Eustache WTP while the new Headingley WTP will require 3565 dam³. The combined demand of 5610 dam³ for both plants is within the current WRL limit. An application has been submitted requesting that the allotted annual usage be divided between the two plants rather than request additional water. The remaining allotment of 372 dam³ will remain with the St. Eustache plant to allow for future expansion. The application also requests an increase in the instantaneous withdrawal rate from 190 L/s to 219 L/s.

Environmental Assessment

The proposed Headingley WTP will result in an increased dissolved mineral load being discharged to the Assiniboine River. Environment Canada hydrometric flow data on the Assiniboine River at Headingley from 2001 to 2011 shows an average monthly mean flow of 72.3 m³/s and a minimum flow of 4.8 m³/s during January 2004. The Headingley WTP will utilize the same treatment process as the existing CRWC

WTP at St. Eustache. Based on data collected at the St. Eustache WTP (attached) the projected composition of the concentrate for the Headingley RO membrane treatment unit is expected to have increased levels of calcium, magnesium, sodium, sulphate and total dissolved solids (TDS). At times of minimum flow the TDS concentration in the Assiniboine would increase by 1.2%, the magnesium by 0.8%, the calcium by 0.9%, the sodium by 1.2% and the sulphate concentration by 1.7%. At times of average flow these values are even less as indicated in Table 1. Therefore the increased membrane concentrate is not considered to have a significant adverse environmental impact due to dilution resulting from the higher flow rate of the Assiniboine River.

The environmental impact of the new outfall will be mitigated by directional drilling the pipeline so there will be no excavation of the riverbank. The drilling fluid will be mixed according to manufacturer's recommendations and be appropriate for anticipated soil conditions. Any additive used shall be chemically inert, biodegradable and non-toxic. No petroleum based or detergent additives will be permitted. The outfall construction will be done in the winter outside of the fish spawning period. The pipeline will be installed so that the end will be below the winter ice level. Riprap will be installed 600 mm thick at the pipe end so that the finished surface is flush with the river bottom. A turbidity curtain will be installed around the work area at the pipe end prior to construction. Any excess material will be removed and disposed of off-site.

The installation of the additional 27 km of pipeline will occur primarily within municipal right of ways or easements that are previously disturbed, regularly managed and comprised primarily of grasses. As the areas are already disturbed, they are unlikely to contain rare plant species, and the amount of vegetation disturbance is expected to be minimal. Operation, monitoring and maintenance activities will be restricted to designated and previously disturbed areas. Potential effects to vegetation are considered to be negligible.

Impacts to surface water and fisheries resulting from the pipeline expansion will be minimized by implementing practices to reduce soil and contaminate runoff as previously stated in the original EAP. In addition horizontal directional drilling will occur under all watercourses containing water.

Summary Statement

The increase in operational capacity of the proposed WTP in the RM of Headingley will result in negligible impacts to the environment. Higher volumes of concentrate produced will have a minimal effect on water quality in the Assiniboine River at the lowest recorded historical flow available and negligible effects during average flow conditions. The discharge composition is mainly dissolved minerals that already exist in the water source at lower concentrations and are not expected to impact the health of the river. Implementation of mitigation strategies for the construction of the outfall pipeline will minimize environmental impacts. The additional expansion of the CRWC pipeline distribution system is also expected to have a negligible impact to the environment.



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Designs and tender documents have been prepared by The Manitoba Water Services Board and therefore a prompt response is requested.

If you require further information, please contact the undersigned at (204) 726-6080 (office) or by email at dee.genaille@gov.mb.ca.

Sincerely,

Dee Genaille, M.Sc., P.Eng.
Project Engineer

c: Robert Poirier, Cartier Regional Water Cooperative inc.

Enc.

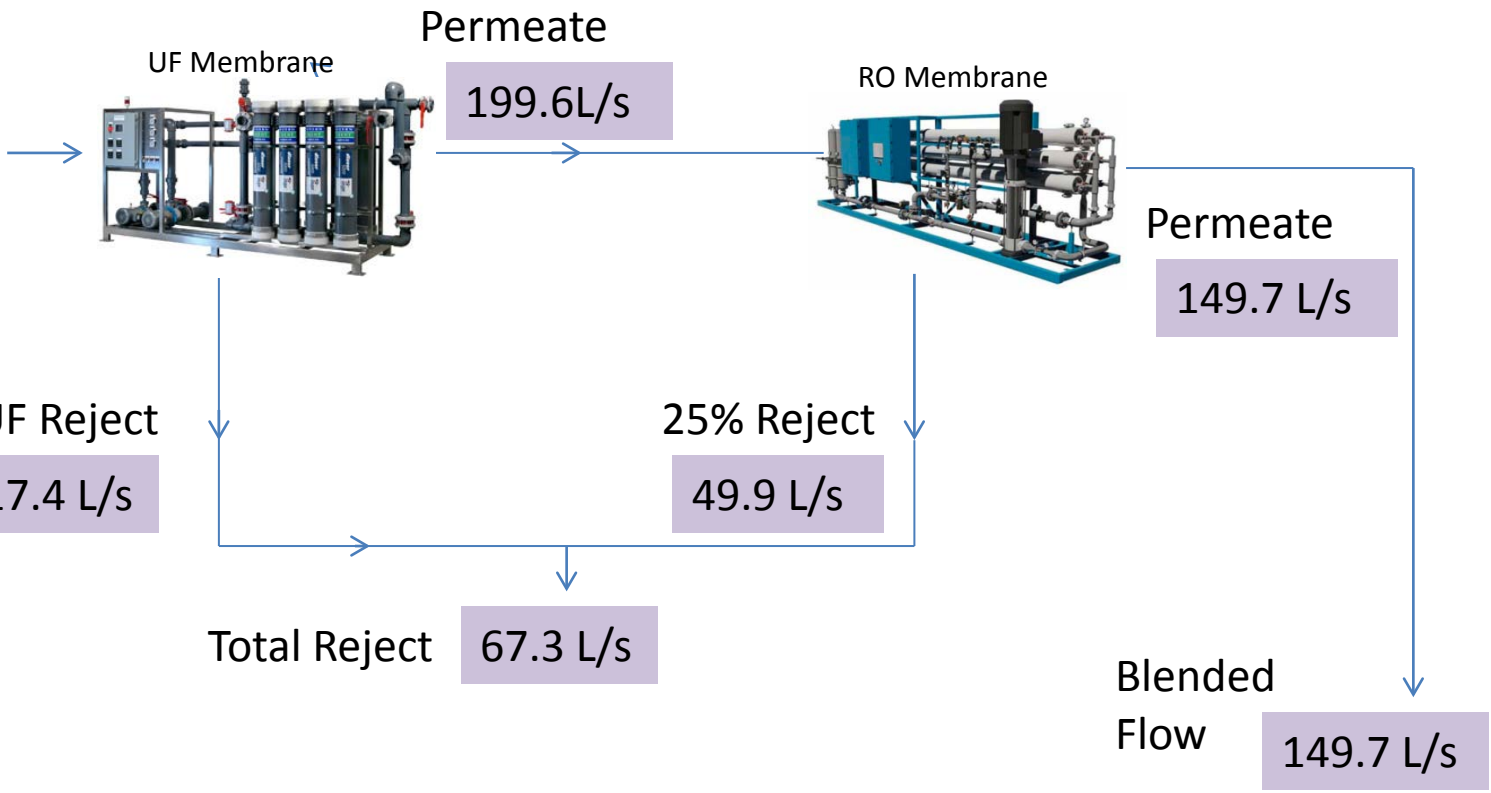


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HEADINGLEY WTP PROCESS FLOW DIAGRAM

Raw Water
217 L/s



Headingley WTP Proposed Treatment Process



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COMBINED FLOW CONCENTRATIONS

Table 1 – Projected Headingley WTP Combined Flow Concentrations

Parameter	Headingley WTP Combined Backwash and Concentrate	Assiniboine River	Combined Minimum Flow	Combined Average Flow
	(L/s)		(L/s)	(L/s)
Flow Rate	68		4810	72294
	(mg/L)	(mg/L)	(mg/L)	(mg/L)
Hardness	818	508	512	508
TDS	1340	709	718	710
Calcium	161	96	97	96
Magnesium	101	65	66	65
Sodium	97	52	53	52
Sulphate	611	279	284	279



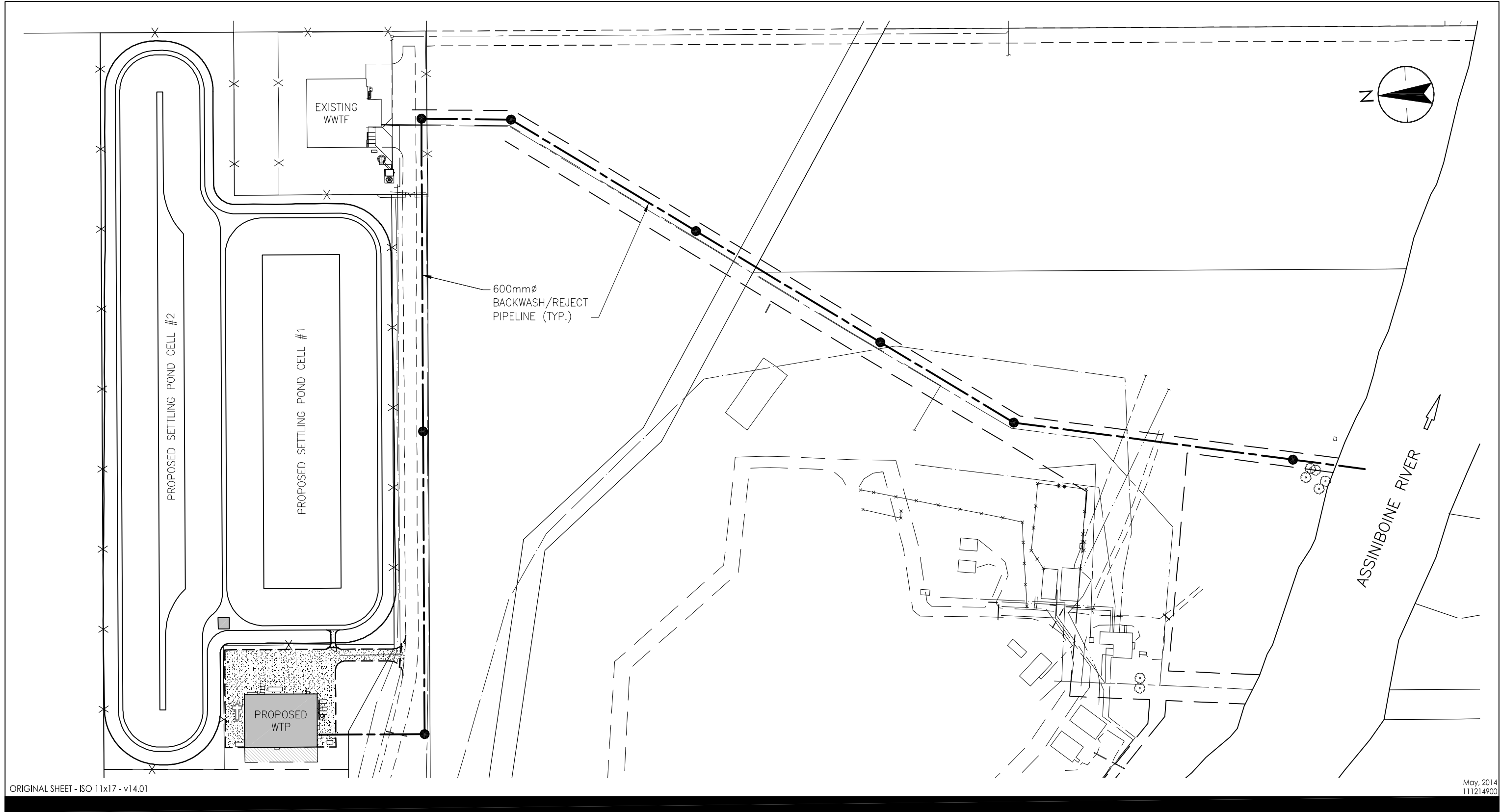
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HEADINGLEY WTP OUTFALL

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2014/05/16 12:24 PM By: Annmeter, Wes



ORIGINAL SHEET - ISO 11x17 - v14.01

May, 2014
11214900



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Client/Project
MWSB/CARTIER REGIONAL WATER COOPERATIVE
HEADINGLEY WATER TREATMENT PLANT
AND ASSOCIATED WORKS

Figure No.
SK-1

Title
OVERALL SITE PLAN



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CRWC DISTRIBUTION SYSTEM EXPANSION



NO.	DESCRIPTION	BY	DATE

SURVEYED	BOOK NUMBER
DRAWN	
DESIGNED	
CHECKED	
REVIEWED	

PROVINCE OF MANITOBA	
THE MANITOBA WATER SERVICES BOARD	
MANITOBA MUNICIPAL GOVERNMENT	
SUBMITTED	APPROVED
CHIEF ENGINEER	GENERAL MANAGER
DATE	DATE

PROPOSED CENTREPORT REGIONAL SUPPLY SYSTEM				
SCALE	DATE	PROJECT NUMBER	REVISION	SHEET
AS SHOWN	04-04-14			1 OF 1