

## **SUMMARY OF COMMENTS/RECOMMENDATIONS**

**PROPONENT:** Wuskwatim Power Limited Partnership,  
**PROPOSAL NAME:** Wuskwatim Generation Station Water  
Treatment System  
**CLASS OF DEVELOPMENT:** One  
**TYPE OF DEVELOPMENT:** Waste Disposal - Water Treatment Plants  
(Wastewater)  
**CLIENT FILE NO.:** 5494.00

### **OVERVIEW:**

The Proposal was received on October 12, 2010. It was dated October 1, 2010. The advertisement of the proposal was as follows:

“A Proposal has been filed by AECOM Canada Ltd on behalf of Manitoba Hydro for the disposal of wastewater from a new water treatment plant proposed for the Wuskwatim Generating Station. The plant would obtain water from the Burntwood River and treat it using pre-coagulation, membrane filtration, UV treatment and residual chlorine disinfection. Wastewater from the cleaning process and debris from the membranes will be discharged to an oil/water separator where it is combined with cooling water from compressors and pumps before it is discharged back into the Burntwood River.”

The Proposal was advertised in the Thompson Citizen on November 10, 2010 and in the Thompson Nickel Belt News on November 8, 2010. It was placed in the Main, Eco-Network, Millennium Public Library (Winnipeg), Thompson Public Library and MKO public registries. The Proposal was distributed to TAC members on December 2, 2010. The closing date for comments from members of the public and TAC members was January 11, 2011.

### **COMMENTS FROM THE PUBLIC:**

No public comments were received.

### **COMMENTS FROM THE TECHNICAL ADVISORY COMMITTEE:**

#### **Canadian Environmental Assessment Agency**

- Based on the responses to the survey, the application of the *Canadian Environmental Assessment Act* by a federal authority may be required for this project. I can confirm that the project information was shared with the

Department of Fisheries and Oceans Canada (DFO), the Department of Indian and Northern Affairs, Transport Canada (TC), and Environment Canada (EC) as part of the federal coordination process.

- EC has determined that is not a responsible authority for this project. However, it has noted the following concerns:
  - The proponent did not indicate how the wastewater or backwash from the water treatment will be treated or disposed off rather than just direct it to the floor drain to the discharge to the tailrace.
  - The proponent should be aware that any cleaning process wastewater or cooling water discharged into a body of water frequented by fish should be non deleterious.

Disposition: Comments were forwarded to the proponent for further information (see 'Request for Additional Information' section of this summary).. Manitoba Conservation will continue to work cooperatively with federal agencies on this project.

### **Manitoba Water Stewardship**

- There was no indication that the existing intake was screened according to the Department of Fisheries and Oceans Canada's Screening Guidelines. Given the Burntwood is a fish bearing water the intake needs to be screened.
- It would have been helpful to have an estimate of total raw water requirement and what percentage this relates to in terms of Burntwood River flow. While it is likely a very small proportion this component should be part of the environmental assessment.
- The proponent must employ methods to avoid or minimize sedimentation and erosion of the Burntwood River or other local watercourses during the construction phase of the water treatment plant.
- All sewage generated on site must be disposed of in an approved wastewater treatment system approved by Manitoba Conservation. Sewage or grey water cannot be directed to surface waters, wetlands, or bogs.
- The proponent indicates in Section 4.7.2.1 that backflushing of the system will be required for membrane cleaning. This backflush will contain debris from the membranes and cleaning process water. The proponent needs to provide more information on the frequency of backflushing, list the contaminants, including chlorine, that will comprise the backflush water, and whether or not the backflush water will be stored in a pond or holding facility. The illustrations are not clear on some of these points.

- Depending on the information that can be provided by the proponent, water quality testing of the backflush water before discharge to the Burntwood River may be required.
- Manitoba Water Stewardship does not object to this proposal, at this time.
- The Manitoba Department of Water Stewardship is mandated to ensure the sustainable development of Manitoba's water resources. Manitoba Water Stewardship is committed to the goals of: protecting aquatic ecosystem health; ensuring drinking water is safe and clean for human health; managing water-related risks for human security; and stewarding the societal and economic values of our waterways, lakes and wetlands; for the best water for all life and lasting prosperity. Manitoba Water Stewardship achieves these goals, in part, through administering legislation, including *The Water Protection Act*, *The Water Rights Act*, and *The Water Power Act*.
- The proponent needs to be informed of the following for information purposes:
  - *The Water Rights Act* requires a person to obtain a valid licence to control water or construct, establish or maintain any "water control works." "Water control works" are defined as any dyke, dam, surface or subsurface drain, drainage, improved natural waterway, canal, tunnel, bridge, culvert borehole or contrivance for carrying or conducting water, that temporarily or permanently alters or may alter the flow or level of water, including but not limited to water in a water body, by any means, including drainage, OR changes or may change the location or direction of flow of water, including but not limited to water in a water body, by any means, including drainage. If a proposal advocates any of the aforementioned activities, a person is required to submit an application for a Water Rights Licence to Construct Water Control Works. A person may contact the following Water Resource Officer to obtain an application and/or obtain information.
    - A contact person is Mr. Geoff Reimer C.E.T., Senior Water Resource Officer, Water Control Works and Drainage Licensing, Manitoba Water Stewardship, Box 4558, Stonewall, Manitoba R0C 2Z0, telephone: (204) 467-4450, email: geoff.reimer@gov.mb.ca.

Disposition: Comments were forwarded to the proponent for further information (see 'Request for Additional Information' section of this summary).

## **Manitoba Local Government – Community Planning Services Branch**

- The project is located in Unorganized Territory approximately 48 km southwest of the City of Thompson. We note that the First Nations Community of Nelson House is located approximately 37 km northwest of the project site. The project appears to have no direct impact on the programs or legislation administered by Manitoba Local Government. We have no concerns from a community planning perspective.

Disposition: Comments were forwarded to the proponent for information.

### **ADDITIONAL INFORMATION:**

EAL Branch contacted the proponent with questions from TAC members and the public concerning the project on January 14, 2011. A submittal in response to comments, dated March 9, 2011, was received on March 14, 2011 and included the following responses:

1. *Please provide an estimate of total raw water requirement and what percentage this relates to in terms of Burntwood River flow. While it is likely a very small proportion this component should be part of the environmental assessment.*

The proposed water treatment plant will withdraw raw water at a maximum expected hourly rate of 225 L/hour (0.06 L/sec). The flow of the Burntwood River at Taskinigup Falls is approximately 340000ft<sup>3</sup>/sec (962772 L/sec). Therefore, the WTP will withdraw 6x10<sup>-6</sup>% of the Burntwood River's flow while it is operating.

2. *The proponent indicates in Section 4.7.2.1 that backflushing of the system will be required for membrane cleaning. This backflush will contain debris from the membranes and cleaning process water. Please provide more information on the frequency of backflushing, list the contaminants, including chlorine, that will comprise the backflush water, and whether or not the backflush water will be stored in a pond or holding facility. The illustrations are not clear on some of these points. Depending on the information that can be provided by the proponent, water quality testing of the backflush water before discharge to the Burntwood River may be required.*

The microfiltration membranes will be backwashed every 15 to 30 minutes using treated water from a tank that contains filtered water, but no chlorine. The backwash water will contain any solids captured on the membranes from the Burntwood River (raw) water supply.

The microfiltration membranes will be cleaned at a maximum of once per day during the Enhanced Flux Maintenance (EFM) process. During the process, sodium hypochlorite solution will be added to the water in the system, warmed to 38 degrees and circulated through the membranes to remove debris, such as slime, algae and microorganisms that accumulate over time and pose a potential health risk, the

cleaning process water will contain solids captured from the raw water and chlorine at a concentration of 200mg/L.

The entire system will be “cleaned in place” every one to three months to remove scaling caused by solids from the raw water supply that build up on the filters over time. This will involve flushing a solution of 2% citric acid, followed by 0.4% solution of sodium hydroxide to remove the scale from the treatment components. A 3mg/L sodium hypochlorite solution will be added at the end to sanitize the water treatment system from built up organic slime, algae and microorganisms, which present a health risk.

Chlorine from the EFM procedure will be diluted to about 0.01 mg/L in the oil/water separator system. The chlorine levels from the wastewater generated from the “Clean in Place” will be diluted to 0.0005 mg/L within the oil/water separator system. All of chlorine in the oil/water separator will be consumed (no longer present as “free” chlorine).

Backwash water will not be stored in a pond or holding facility. Backwash and cleaning process water will be discharged to the drain network in the generating station, combine with other plant process water in an oil/water separator and be highly diluted (1:20000) before it is discharged to the tailrace.

3. *The proponent stated that “the proposed system would direct the cleaning process wastewater to a floor drain which is connected to the generating station’s network of floor drains. In addition to wastewater from the WTP, cooling water from compressors and pumps also enter this network of drains. All drains enter the station oil water separator, where all of the wastewater combines before being discharged to the tailrace.” Please provide additional information on the treatment and disposal of wastewater or backwash. Please include in your response a discussion of the potential impact of cooling water (elevated temperature) on the Burntwood River.*

Backwash and cleaning process water will be combined with other water from the station pass through an oil/water separator and be sent into the tailrace. The other water that it will mix with will be mostly comprised of river water used to cool the generators. It is estimated the maximum water temperature upon exit of the station will be 30 degrees Celsius. The maximum rate of discharge from the station will be about .003% of the flow of the river. Based on the amount of flow entering the river relative to its size and the fact that water in the tailrace is mixing vigorously at the point of entry, there will be no impact from this discharge on the Burntwood River.

4. *DFO notes that the existing water intake referred to is likely one of the two intakes authorized by DFO to date. DFO Authorization No. MB-01-0595-1 was provided for the construction camp water intake. DFO Authorization No. MB-01-0595-5 was provided for the concrete batch plant water intake. DFO would appreciate knowing which intake is being referred to. If another intake is being referred to DFO may need to conduct another review of the proposal.*

Water that passes into the intakes will serve a number of different processes during plant operation, including water for cooling the generators and fire protection, as well

as raw water for the drinking water treatment plant. The intakes are built directly into the wall of the generating station. There are three, identical intakes that feed a common pipe network in the generating station. There is one intake in each of the three passages where water moves through the station to the generator/turbine units. The three intakes allow water to be drawn into the station for plant operations at all times. This is important in the event that one or two turbines have to be taken out of service for maintenance.

Manitoba Hydro confirms the intakes are neither of the two authorized intakes referred to by DFO above. Both of the authorized intakes are required during construction of the station and will be decommissioned at the end of construction, after the water treatment plant serving the generating station comes on-line.

5. *Further, it would be good for the Proponent to confirm that the water intake being referred to would be properly screened. DFO advises proponents contemplating water taking to ensure that water pump intakes are designed and operated in a manner that prevents water body disturbance and fish mortality. Guidelines to determine the appropriate design for intake screens may be obtained from DFO.*

Manitoba Hydro would like to note that DFO guidelines are not intended for application to hydroelectric designs. The three water intakes are recessed into the wall of the generating station in the middle of each of the main passages that allow water to pass through the station/turbines. The three intakes are the main passages that allow water to pass through the station/turbines. The three intakes are comprised of a steel-screened, 770mm diameter pipe that feeds a common water pipe network in the station, as described previously. Each intake will be screened according to standard design practices for hydroelectric stations.

Given their location in the middle of the passage to the generators/turbines, the intakes are located in an area of high velocity (1.8 m/s), turbulent water, which passes quickly through the station. Manitoba Hydro is confident there is no risk of fish becoming impinged on or entrained through the water intake screens, as there will be no opportunity for fish to linger at this location. Any fish passing near the intake screens will be carried quickly downstream should they move into the station.

6. *The Proponent should also clarify that the operation and maintenance of the existing water intake referred to would comply with the conditions of any Fisheries Act authorization provided to date.*

The Fisheries Act Authorization to operate Wuskwatim Generating Station, of which these water intakes are part, is pending. Once issued by the Department of Fisheries and Oceans, Manitoba Hydro agrees to comply with it.

### **PUBLIC HEARING:**

As no public requests for a hearing were filed, a public hearing is not recommended.

**RECOMMENDATION:**

It is recommended that the Development be licensed under The Environment Act subject to the limits, terms and conditions as described on the attached Draft Environment Act Licence. It is further recommended that enforcement of the Licence be assigned to the Northeast Region.

**PREPARED BY:**

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April 14, 2011  
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