

SUMMARY OF COMMENTS/RECOMMENDATIONS

PROPONENT: Rural Municipality of Riverside – Ninette
PROPOSAL NAME: Wastewater Treatment Lagoon
CLASS OF DEVELOPMENT: 2
TYPE OF DEVELOPMENT: Wastewater Treatment Lagoon
CLIENT FILE NO.: 5387.00

OVERVIEW:

On December 3, 2007, the Department received an Environment Act Proposal (EAP) from the Rural Municipality of Riverside for the construction and operation of a new wastewater treatment lagoon in NE 19-5-16WPM in the Rural Municipality of Strathcona to service the Community of Ninette, rural residents of the Rural Municipalities of Riverside and Strathcona, and various camps, cottages and resorts in the area. An existing wastewater treatment lagoon that currently services the Community and area and that is located in the same section was proposed to be retained for emergency secondary storage. Treated wastewater from the new wastewater treatment lagoon will be discharged to Grass Lake between June 15th and November 1st of any year.

After waiting for land use agreements to proceed, the Department, on February 13, 2009, placed copies of the EAP report in the Public Registries located at 123 Main St. (Union Station), the Millennium Public Library, the Lakeland Regional Library, and the Manitoba Eco-Network and provided copies of the EAP report to the Canadian Environmental Assessment Agency (CEAA) and Technical Advisory Committee (TAC) members. As well, the Department placed public notifications of the EAP in the Killarney Guide on Friday, February 20, 2009, the Brandon Sun on Saturday, February 21, 2009 and the Baldur Glenboro Gazette News on Tuesday, February 24, 2009. The newspaper and TAC notifications invited responses until March 16, 2009.

On March 20, 2009 and April 16, 2009 Manitoba Conservation forwarded requests for additional information from the TAC and federal components to the proponent. Copies of the TAC and federal correspondence and request letters were sent to the Public Registries. The proponent's June 2, 2009 response to the requests was then provided to the participating TAC and federal components for review and comment on June 5, 2009.

A matter worthy of note resulting from the EAP review is that required repairs and upgrades to the existing wastewater treatment lagoon were determined to be uneconomical to include in the overall project and therefore that lagoon will be decommissioned once the new lagoon is commissioned.

It is still possible that Fisheries and Oceans Canada will have comments or requests for additional information as they have not provided a final response to CEAA. There were no other comments or requests for additional information.

COMMENTS FROM THE PUBLIC:

There were no comments from the public.

COMMENTS FROM THE TECHNICAL ADVISORY COMMITTEE:

Environmental Operations Branch – Conservation

- *No concerns.*

Environmental Services Branch – Conservation

April 2, 2009

- *We recommend confirming that the RM is permitted to use the crown land before any construction license is provided.*
- *The consideration of the new CCME guideline for BOD₅ of <25 mg/L in the effluent is recommended.*
- *The EAP does not indicate any anticipated effluent concentration for TSS.*
- *The sources of the following assumptions used for sizing the lagoon are not clear.*
 - *The water consumption considered (40 l/c/d for seasonal and 60 l/c/d for permanent residents).*
 - *The rate of occupancy considered per sites and the average number of people per cottage.*
 - *The reason for having inconsistent BOD concentration for various wastewater sources.*
- *Are there any plans for nutrient reduction to be incorporated into the design at this stage?*
- *The proposal indicates compaction to 95% Standard Proctor Density for the dykes, this should also be applicable to the floor of the lagoon.*
- *The design does not show any Monitoring Well installation.*
- *Plans for remediation of existing lagoon if the RM wishes to keep in use (even if for emergency).*
- *The drawing does not show the following details.*
 - *Installation of the forced main line from the existing to the proposed lagoon.*
 - *The size of the splash pad.*
 - *Fence installation.*
 - *Wick drain (bedding material, pipe specification etc)*
- *Sand layer or geotextile layer under PVC should be mandatory.*
- *The interior berm top elevation should be slightly lower than the exterior top elevation.*

- *The rip rap referenced in the document to prevent erosion from wave action is not shown on the design drawing.*

Proponent Responses – June 2, 2009:

- From correspondence with a contact in the Regional Operations Division – Western Region, the WMA use permit and the crown land lease have been approved;
- We would expect that the effluent from the new Ninette lagoon would meet 25 mg-BOD₅/L, however the implementation of the CCME guideline should occur after full acceptance and adoption by Manitoba Conservation.
- An estimate of the maximum anticipated concentration of Total Suspended Solids (TSS) in lagoon effluent, based on the treatment of a typical domestic wastewater and on published information and knowledge is < 30 mg/L, however it may be exceeded at times due to the presence of algae.
- Based on discussions with septage haulers both for this project and others, the water consumption and occupancy rates equate to the actual wastewater amounts hauled to lagoons. For holding tanks this amounts to 2.4 times per year for seasonal residences and approximately once per month for permanent residences. The costs associated with hauling wastewater and the nature of the people residing in the cottages throughout the year corresponds with the numbers used. The BOD concentrations vary with the type of storage or conveyance system.

Typically, those on a piped system will use the most water and therefore the strength of their wastewater will be the lowest. Those on holding tanks will operate with a more conservative water consumption and their wastewater will be of a higher strength than those with a piped system. Since septic systems expel the liquids and maintain the solids and are stored for long periods of time, the strength of this wastewater is by far the greatest.

- Any nutrient mitigation will be carried out as required by Manitoba Conservation. We are still waiting for the public consultation stage of the proposal to implement the phosphorus limitation of 1 mg/L. Implementation of this limitation prior to its full adaptation is premature.
- The full details as would appear in the tender documents and specifications are not included as part of the Environment Act Proposal. Comment 6 has been noted.
- Groundwater monitoring will be performed as required by Manitoba Conservation.
- It is understood that if the existing lagoon does not meet current Manitoba Conservation lagoon guidelines it cannot be utilized for management of extreme infiltration flows. Therefore the existing lagoon will be decommissioned, once the new lagoon is brought into operation.
- To date, the level of detail provided in the Environment Act Proposal drawings has been sufficient. This level of detail requested is provided when the project is tendered.

- As the EAP notes, beginning on page 31, “Once the earthwork foundation and dykes are prepared, it may be necessary if the prepared liner foundation contains sharp rock fragments to install a non-woven geotextile or a sand layer beneath the liner.” After the liner foundation is prepared, the surface will be reviewed by the liner installer and the Engineer to make the decision concerning any underlay or other materials required.
- Please consult with Environmental Assessment & Licensing Branch regarding Comment #11.
- (As in #9) To date, the level of detail provided in the Environment Act Proposal drawings has been sufficient. This level of detail requested is provided when the project is tendered.

Disposition:

- Limits, terms and conditions of Environment Act Licences respecting wastewater treatment lagoons present operating criteria regarding hydraulic and organic loads, odours, containment and quality of treated wastewater that are conventional for lagoons in Manitoba.
- The draft Environment Act Licence contains a Clause requiring that the Licencee submit to the Director for approval, within three months of the date of this Licence, a groundwater investigation and monitoring plan for the site of the Development to monitor for liner integrity.
- Clauses 30 and 31 of the draft Environment Act Licence require that the Licencee monitor effluent being discharged during each discharge campaign and water from Grass Lake for a period of at least five years. The liquids shall be analyzed for total Kjeldahl nitrogen, nitrate-nitrite nitrogen, ammonia nitrogen, total dissolved phosphorus, total particulate phosphorus, total inorganic phosphorus, pH, temperature, and total suspended solids. Effluent samples shall be obtained at the beginning, middle and end of each discharge period. Samples of surface water from Grass Lake shall be obtained in spring (prior to effluent discharge), during each discharge period, and in late August. The results of the analyses shall be reported to the Director in accordance with the requirements of Clause 3 c) of the Licence. Manitoba Water Stewardship already monitors Pelican Lake.
- The draft Environment Act Licence contains a Clause that requires that the Licencee discharge the wastewater treatment lagoon at a rate that optimizes the opportunity for nutrients in the effluent to be assimilated in the bog area of the discharge route prior to reaching the main body of Grass Lake while not challenging the normal operation of the wastewater treatment lagoon.
- The draft Environment Act Licence contains a Clause that requires that the Licencee actively participate in any future watershed based management study, plan/or nutrient reduction program approved by the Director, for Grass Lake and Pelican Lake and associated waterways and watersheds.

Historic Resources Branch – Conservation

- *No concerns.*

Parks and Natural Areas Branch – Conservation

- *Parks and Natural Areas Branch has reviewed the proposal pursuant to the Environment Act for the RM of Riverside – Community of Ninette wastewater treatment lagoon. While the Branch itself does not have any comments I would like to point out that the proposed location for this lagoon is within a protected portion of the Pembina Valley Wildlife Management Area. Wildlife and Ecosystem Protection Branch will likely have comments regarding the location of this proposed lagoon, and while Protected Areas Initiative does not review Environment Act proposals (just draft licenses) they have been made aware of the location of this proposed lagoon within the protected portion of the Pembina Valley Wildlife Management Area.*

Proponent Responses – June 2, 2009:

- All general comments are noted.

Sustainable Resource & Policy Management Branch – Conservation

- *No concerns.*

Infrastructure and Transportation

- *No concerns.*

Science, Technology, Energy and Mines

- *No concerns.*

Water Stewardship

March 18, 2009

- *The Water Rights Act indicates that no person shall control water or construct, establish or maintain any “water control works” unless he or she holds a valid licence to do so. “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, an application for a Water Rights Licence to Construct*

Water Control Works is required. Application forms are available from any office of Manitoba Water Stewardship.

- *The proponent needs to be informed that if the proposal in question advocates any construction activities, erosion and sediment control measures should be implemented until all of the sites have stabilized.*
- *The Department can not comment on the need for groundwater monitoring as there is insufficient detail in the report to indicate potential seepage receptors should partial failure of the liner occur at some point. The consultant has also presented a significant amount of information that is not particularly applicable to the new site being proposed and has provided attachments but not interpreted the information in these attachments. This is not a sufficiently detailed site investigation for either geotechnical or hydrogeological evaluation or planning.*
 - *The Department strongly recommends that additional evaluation of the site is necessary before an Environment Act Licence is approved and/or issued.*
- *Given the fishery and recreational values of Pelican Lake, the Department of Fisheries and Oceans Canada has requested the proponents to install a barred culvert in the discharge channel to minimize potential for fish stranding.*
- *As the proponent has pointed out, the new proposed lagoon site will continue to be situated on Crown land designated as a wildlife management area. Therefore, this development proposal should be designed to adequately mitigate loss of habitat resulting from this development.*
- *The proponent has reported that the lagoon is currently operating at 108% capacity, and a significant increase in load is expected. However, discharge rarely occurs due to significant leakage that exists with the current facility. The proponent reports that the discharge route to Grass Lake will be maintained. The proponent has made no reference to the impact of nutrient loading to Pelican Lake. As stated in the proposal, this would bring nutrient rich effluent not only to Grass Lake, but also to Pelican Lake via the channel connecting the two lakes. Pelican Lake is a highly eutrophic water body which experiences dense blooms of blue-green algae. There have been historic reports of cattle death from consuming toxic blue green algae, and beach posting due to dense algal blooms. In addition, Pelican Lake is a popular recreational destination with beaches and cottage properties (many still under development) dotting the shoreline. In addition, Pelican Lake supports several resorts and camps. It is unclear how many cottages, camps and other facilities use Pelican Lake as a drinking water supply. Consequently, the proponent should take action to reduce the nutrient loading from this lagoon to the adjacent lakes. Alternate discharge routes with trickle discharge, or effluent irrigation should be investigated by the proponent. Also the option of isolating the proposed discharge bay of Grass Lake for the purpose of tertiary treatment, should be investigated. The proponent indicates that the discharge route is located in a bog, and that additional ditching will be done to direct the effluent to the lake. It would be preferential to slowly and diffusely discharge effluent through bog, rather than channelling the*

nutrient rich effluent directly to the lake. Clearly, the proponent has not addressed nutrient loading concerns to Pelican Lake.

- *The proponent stated, “the existing lagoon will remain for emergency infiltration situations.” If the existing facility does not meet current permeability standards, using the old facility does not seem feasible.*
- *The Department strongly recommends for an Environment Act Licence to require a nutrient mitigation plan that reduces nutrient contributions from this facility to Pelican Lake.*
 - *Furthermore, the Minister of Manitoba Water Stewardship has adopted the Lake Winnipeg Stewardship Board’s recommendation that all small wastewater treatment facilities, including municipal lagoons, should meet a phosphorus limit of 1.0 mg/L. The proposed phosphorus limit of 1.0 mg/L is consistent with efforts underway across Manitoba and in upstream jurisdictions to reduce nutrient loads to Lake Winnipeg and its watershed. It is desirable to recycle these nutrients on land, rather than releasing effluent directly to waterways. In the Lake Winnipeg Stewardship Board’s December 2006 report to the Minister of Water Stewardship, the Board provides several strategies on how nutrient reduction could be achieved for small wastewater treatment facilities (see recommendations 14-20).*

Proponent Responses – June 2, 2009:

- Activities involved in the construction of the lagoon project are not expected to trigger an application for a Water Rights Licence to Construct Water Control Works. To date, domestic sewerage systems including wastewater treatment lagoons have not been considered to be water control works as defined by The Water Rights Act.

The Contractor shall be required to implement appropriate sediment and erosion control measures where deemed necessary. All disturbed areas are generally reseeded at the end of the project. Any areas noted to be prone to erosion are typically armoured with rip rap.

Adequate treatment, containment, storage capacity and successful testing of the wastewater are all essential components of mitigating any groundwater impacts contributable to a lagoon. These aforementioned components are included in the engineering design and the Manitoba Conservation licensing of a lagoon. Therefore no impact to the local groundwater system in the area is anticipated from a properly designed and constructed lagoon. Groundwater monitoring can be implemented to confirm the groundwater condition, and will be performed as required by Manitoba Conservation.

Fisheries and Oceans Canada was consulted in the drafting of the Environment Act Proposal as detailed in Section 6.6 and in Appendix D.

Land impact is discussed in Section 6.2 of the Environment Act Proposal. The new lagoon is to be located in a Wildlife Management Area (WMA) in exchange for land

adjacent to a WMA in another location.

Based on organic loading, the new Ninette lagoon has been designed to service an equivalent population of approximately 650 people. Based on Manitoba Conservation Report 2002-04 “A Preliminary Estimate of Total Nitrogen and Total Phosphorus Loading to Streams in Manitoba, Canada” the following assumptions were incorporated to approximate the nutrient loading from the expanded lagoon facility:

- Influent TP = 3.38 g/c/d, with a removal efficiency of 65.5%
- Influent TN = 10 g/c/d, with a removal efficiency of 10%

Therefore, the future population serviced by the new lagoon will add 277 kg/yr of TP and 2,135 kg/yr of TN.

These quantities represent 2027 (year) nutrient loads in the effluent at the end of pipe in the lagoon secondary cell. The flow into the discharge ditch, or alternatively the bog area (if the discharge is routed through this area) will reduce most of the concentrations of the parameters in the effluent.

These nutrient levels can be compared to the loading to Lake Winnipeg from the three main tributaries and atmospheric deposition from Manitoba Conservation Report 2002-04 “A Preliminary Estimate of Total Nitrogen and Total Phosphorus Loading to Streams in Manitoba, Canada”. TP loading from the Ninette facility equates to $(277 / 5,838,000 =) 0.0047\%$ and TN loading equates to $(2,135 / 63,207,000 =) 0.0034\%$ of the total mean load to Lake Winnipeg. This comparison shows the impact from the proposed development to be minor in terms of the total nutrient loading to Lake Winnipeg.

Trickle discharge may be an appropriate implementation for some lagoon facilities with long segments of ditching before reaching a more substantial watercourse. However, in this case, the ditch leading to Grass Lake is approximately 400 metres in length. As suggested, it may be a beneficial option to route the treated effluent through the low-lying bog area west of the proposed lagoon and provide an outlet to Grass Lake, if one does not currently exist. However, the land agreement between the R.M. and Crown Lands does not include this adjacent area and cannot be used without re-entering this lengthy process.

It is now proposed that the treated effluent be routed through the bog area on the south side of the existing lagoon access road, which should be acceptable in the terms of the land agreement. Rather than extending the ditch up to the edge of Grass Lake (as originally proposed), the ditch will now be constructed up to the 400 mm diameter culvert (complete with fish barrier). Upon exiting the culvert, the lagoon effluent will flow naturally through a bog area that slopes toward Grass Lake. If this change is implemented then trickle discharge becomes a justifiable method of discharge.

Implementing trickle discharge may cause the primary cell to temporarily exceed a depth of 1.5 metres while waiting for the completion of the lengthened discharge process. If trickle discharge is mandated, this temporary condition will preferably be permitted by the Licence or, as an alternative, an accelerated discharge should be

permitted under these circumstances.

It is understood that if the existing lagoon does not meet current Manitoba Conservation lagoon guidelines it cannot be utilized for management of extreme infiltration flows. Therefore the existing lagoon will be decommissioned, once the new lagoon is brought into operation.

Any nutrient mitigation will be carried out as required by Manitoba Conservation. We are still waiting for the public consultation stage of the proposal to implement the phosphorus limitation of 1 mg/L. Implementation of this limitation prior to its full adaptation is premature.

All general comments are noted.

Disposition:

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- The draft Environment Act Licence contains a Clause that requires that the Licencee discharge the wastewater treatment lagoon at a rate that optimizes the opportunity for nutrients in the effluent to be assimilated in the bog area of the discharge route prior to reaching the main body of Grass Lake while not challenging the normal operation of the wastewater treatment lagoon.
- The draft Environment Act Licence contains a Clauses that require that the Licencee actively participate in any future watershed based management study, plan/or nutrient reduction program approved by the Director, for Grass Lake and Pelican Lake and associated waterways and watersheds.

COMMENTS FROM FEDERAL REPRESENTATION:

Canadian Environmental Assessment Agency for Western Economic Diversification

March 20, 2009

- *Thank you for this opportunity to review and comment on the proposed construction of the Ninette Wastewater Treatment Lagoon. I am submitting the following on behalf of Western Economic Diversification, a potential project funder through the Municipal Rural Infrastructure Fund (MRIF). As you will note, my questions and comments are directed to the proponent or their project consultant and are listed below:*
- *What are the plans for groundwater monitoring to determine the effectiveness of the 30 mil PVC liner system in the primary and secondary cells?*
- *What will be the process for sludge removal, dewatering, and disposal during operation of the new lagoon?*
- *The existing lagoon is proposed to be used as emergency secondary storage. With the current seepage issues at the existing lagoon site what mitigations measures will be implemented to reduce or eliminate seepage if used under emergency conditions? Will an environmental emergency contingency plan be developed for implementation in the event that the existing lagoon is required for use in an emergency situation? Will the existing lagoon undergo periodic inspections/monitoring and maintenance to ensure its reliability for emergency use?*
- *The proposed plan is to abandon the existing lagoon access road located within a Wildlife Management Area (WMA). Has any consideration been given to restoring the access road to pre-existing condition to enhance habitat in the WMA?*

Proponent Responses – June 2, 2009:

- From past experience, lagoons that are constructed in sensitive groundwater areas have required groundwater monitoring by Manitoba Conservation. Given that the area is in a groundwater pollution hazard area, Manitoba Conservation will likely require groundwater monitoring. It should be noted that Manitoba Conservation verifies the effectiveness of the liner system by providing quality assurance of the liner seams. Also, Manitoba Conservation checks the liner installation, prior to covering the liner with granular material (as mentioned in Section 5.2.3 of the Environment Act Proposal).

Further, adequate treatment, containment, storage capacity and successful testing of the wastewater are all essential components of mitigating any groundwater impacts contributable to a lagoon. These aforementioned components are included in the engineering design and the Manitoba Conservation licensing of a lagoon. Therefore no impact to the local groundwater system in the area is anticipated from a properly

designed and constructed lagoon.

Sludge may be removed from the cells by one of two methods to be determined during the preparation of the tender documents:

■ Construction of a temporary polyethylene lined area to facilitate the placement of geotextile tube(s). The sludge from the cell(s) shall be pumped into the tube(s) and allowed to dewater. After it is believed that the process has sufficiently dewatered the sludge, their suitability for use in the new lagoon lined area or hauling offsite shall first be confirmed. After the end use of the sludge has been determined and approval has been given, the geotextile tubes will be cut open and the sludge removed.

■ Use of earthmoving construction equipment to remove the sludge after the cell(s) have been dewatered. The sludge shall be placed on the lined interior dyke slopes of the completed lined cells or depending on quantity hauled to the nearest licensed solid waste disposal ground.

In both cases, the water from the wet sludge will be directed into the primary and/or secondary cell of the facility. In the first sludge removal method the water collects in the lined area and is periodically pumped into the primary/secondary cell. In the second sludge removal method, the water runs down the interior slopes and is contained in the cell.

It is understood that if the existing lagoon does not meet current Manitoba Conservation lagoon guidelines it cannot be utilized for management of extreme infiltration flows. Therefore the existing lagoon will be decommissioned, once the new lagoon is brought into operation.

The existing lagoon access road is essentially a grassed path and restoration is likely unnecessary.

In Consultation with Transport Canada and Fisheries and Oceans Canada, it is now proposed that the treated effluent be routed through the bog area on the south side of the existing lagoon access road. Rather than extending the ditch up to the edge of Grass Lake (as originally proposed), the ditch will now be constructed up to the 400 mm diameter culvert (complete with fish barrier). Upon exiting the culvert, the lagoon effluent will flow naturally through a bog area that slopes toward Grass Lake. Therefore, no in water construction will occur and the navigability of Grass Lake will not be affected, as potentially was the case in the original design.

All general comments are noted.

June 18, 2009

- *As you are aware the Prairie Regional Office of the Canadian Environmental Assessment Agency (the Agency) is assisting Western Economic Diversification (WD) with its environmental assessment responsibilities. The Agency on behalf of WD, believes our questions and comments have been adequately addressed in the consultant's June 2, 2009 response.*

As noted in your correspondence, the consultant provided additional information to Transport Canada (TC) for its review. TC as recently notified the Agency that it no longer has environmental assessment responsibilities under the Canadian Environmental Assessment Act.

Please also note that the Agency will need to verify whether or not Fisheries and Oceans Canada has received sufficient information for its environmental review.

PUBLIC HEARING:

A public hearing was not requested.

RECOMMENDATION:

Issue an Environment Act Licence in accordance with the attached draft. The Licence should be assigned to the Environmental Assessment and Licensing Branch until all construction related testing and reporting has been completed and the facility is fully commissioned in accordance with the Licence.

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June 29, 2009

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