

SUMMARY OF COMMENTS/RECOMMENDATIONS

PROPONENT: The City of Brandon
PROPOSAL NAME: Maple Leaf Meats Hog Processing Facility
Wastewater Treatment Facility
CLASS OF DEVELOPMENT: Class 2
TYPE OF DEVELOPMENT: Wastewater Treatment Facility
CLIENT FILE NO.: 4307.0

OVERVIEW:

An Environment Act Proposal, dated July 29, 1998, was submitted to the Department on August 5, 1998, by Maple Leaf Meats Inc. and the City of Brandon as joint proponents on the project. The main Environment Act Proposal was supplemented with:

- a "Maple Leaf Meats Wastewater Treatment Facility Pre-Design Report" dated July, 1998, and prepared by Reid Crowther & Partners Ltd., being Appendix 3 of the Proposal; and
- an "Assessment of the Effects of the Maple Leaf Wastewater Treatment Facility Effluent on the Assiniboine River" dated June, 1998, and prepared by Reid Crowther & Partners Ltd. and North/South Consultants Inc., in consultation with Trillium Engineering and Hydrographics Inc., being Appendix 10 of the Proposal.

Subsequent to the submission of the Proposal, it was agreed between Maple Leaf Meats Inc. and the City of Brandon that the City of Brandon would be the sole proponent of the Proposal.

The proponent proposes to construct and operate a wastewater treatment facility (WWTF) dedicated to treating the liquid sanitary and process wastewater streams generated by a 1-shift operation of the hog processing facility currently being constructed by Maple Leaf Meats. Also, the proposal is to use the 1-shift operation of the hog processing plant and the WWTF, in conjunction with monitoring the receiving waterway, to better define the additional design requirements needed to protect the Assiniboine River under a future 2-shift operation of the hog processing plant

The proponent requests that a stage 1 construction and start-up licence be granted pursuant to Sections 13(1) and 11(1) of The Environment Act to authorize the proposed construction and start-up activities. The proponent envisions a 2.5 month start-up time period to address possible mechanical failures at the hog processing plant and the WWTF. After that, a commissioning phase of one year is proposed to bring the WWTF up to its optimum operating mode, during which licence requirements are requested to be less restrictive than those as may be required for the operational phase which would follow the commissioning phase.

The Proposal was advertised in the Brandon Sun and the Portage Daily on Saturday, August 8, 1998, as well as in the Portage Herald on August 11, 1998. Copies of the Proposal were placed in Public Registries at: the Environment Library (Main) in

Winnipeg; the Centennial Public Library in Winnipeg; the Western Manitoba Regional Library in Brandon; and the Portage Plains Regional Library in Portage la Prairie. The closing date for the receipt of public comments was specified as September 7, 1998. The public response deadline date was later extended by the Director to September 18, 1998.

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Copies of the Proposal were also sent to the applicable members of the interdepartmental Technical Advisory Committee (TAC) for their review and comment by no later than September 7, 1998. The TAC's response deadline date was as well extended by the Director to September 18, 1998, for those TAC members who required the additional time.

COMMENTS FROM THE PUBLIC:

As of September 18, 1998, a total of eleven (11) submissions were filed by the public in response to the advertised proposal. These submissions came from:

- D. P. Abbe (including a petition signed by 50 persons)
- J. Elves;
- Janet Demkey;
- Earl Dyck;
- Paula Mallea;
- H. N. Paton, Associate Professor, Department of Botany, Brandon University;
- David Kattenburg for the Westman Community Action Coalition;
- Ron Dalmyn of The Organization, a Provincial Coalition for responsible resource management;
- Mayor Glen Carlson of the City of Portage la Prairie;
- Ronald Schmalcel on behalf of the Dakota Tipi First Nation Reserve; and
- Lofchick, Jones & Associates on behalf of the Long Plain First Nation.

Generally, the issues raised related to matters of licencing process, technical concerns, environmental concerns, social concerns and calls for a public hearing.

Licencing Process Concerns

- Full Environmental Impact Statement should be completed before construction is allowed to proceed.
- The staged licence process does not conform with the principals of sustainable development.
- How will the loading from Maple Leaf be controlled?
- If it is determined in three years that we still don't have enough information to predict river impact, will licensing for a second shift be rubber-stamped?
- Will this licence be enforced?

Technical Concerns

- The Proposal is unclear whether the wastewater treatment plant has the capacity for a 6 work days per week.
- The Proposal is unclear how the wastewater treatment plant capacity will be increases to switch from one shift at the hog processing plant of two shifts.
- Design figures have changed, there is no assurance that wastewater specifications will not change once a licence for the treatment plant has been issued.
- Definitive details have to be submitted on how the waste will actually be generated before a licence is issued. The complete wastewater specifications, (the size and the maximum amount to be treated) must be put down in writing before a licence is issued.
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- Is there an agreed limit to the amount of waste Maple Leaf will create to be treated by the treatment plant?
- The treatment plant should be capable of removing phosphorous.
- How will the sludge be handled?
- Carousal system is no longer being proposed.
- How will the City of Brandon's lagoons be operated?

Environmental Concerns

- The WASP model used to assess river impacts poorly predict changes in response in levels of oxygen, chlorophyll and ammonia to theoretical inputs.
- Brandon must first resolve the municipal waste water treatment and Ayerst Organics loading effects on the river before any further development can be allowed.
- Discharge limits should be based on the receiving stream not the performance of the treatment facility.
- Without agreement now on how the second shift will be handled there is no assurance that it will be properly handled.
- The Proposal does not address the impacts on the Dakota Tipi First Nation uses of the Assiniboine River for recreational purposes and fishing for personal consumption.
- The Proposal does not include any study of the potential environmental impact of untreated or semi-treated sludge being accidentally discharged from the holding facilities on the site.
- The EIA for Simplot quoted different 7Q10 values, which are correct?
- Cumulative effects are not fully covered.
- Don't need a model to tell that adding more P to an eutrophic river will lead to more eutrofication. Should limit total P to 1-2 mg/L.
- What is the cumulative impact of the City of Brandon storm sewers?

Socio-Economic Concerns

- What will the cost be to Brandon citizens?
- Who will pay for the river monitoring and modelling required to develop greater certainty?

- Who will pay to upgrade the plant when Maple Leaf decides to turn up the throttle?

Calls for a Public Hearing

Including the persons who signed a petition, fifty-nine persons requested that a public hearing to be held.

The City of Portage la Prairie, which on September 18, 1998 had conditionally requested that a public hearing be held, withdrew that request in a follow-up letter dated October 1, 1998.

The Long Plain First Nation offered no position as yet on the issue of a public hearing, but rather requested more time to acquire and review a copy of a study conducted by the City of Portage la Prairie into the effects of the Brandon Wastewater Treatment Facility prior to determining their ultimate position.

Disposition

All the submissions were acknowledged, and copies of all the comments were provided to the proponent on September 28, 1998, and were placed in the public registries on

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October 6, 1998. The proponent's faxed responses were received on October 8, 1998, and copies of these responses were forwarded to the public registries, with copies of the relevant responses directed to the individual authors of the comments.

COMMENTS FROM THE TECHNICAL ADVISORY COMMITTEE:

Historical Resources commented that, because Quaternary Consultants Limited determined that intact and significant heritage resources are not present at the site of the proposed construction of the wastewater treatment plant, they recommend that construction can proceed. They do support, however, the mitigative measures proposed in the course of construction, being to stop construction if any heritage resources or human remains are uncovered, and to contact the police if human remains are uncovered.

Natural Resources commented:

- The water quality impact predictions derived from the WASP model are difficult to assess since no explanation or information is provided on the workings of this model;
- It is unclear why only records for the period 1974 to 1994 were used, why water quality data sets from other years weren't used, and whether the data on flows and water quality is based on averages or single data points.
- Consideration should be given to gathering more field data on water quality parameters and to undertake further computer model runs using additional data sets to calibrate the model.

- Based on the assessment report, the wastewater treatment facility should include some means to remove nutrients from the waste stream, or that a constructed wetland be built on the plant's property to reduce nutrients in the wastewater before it is released to the river.
- The determination of insignificant impacts to fish from un-ionized ammonia may be arbitrary if despite no mortalities it might, over many years, cause significant changes in fish populations.
- The impact of warm water injections of high nitrogen, phosphorus and other chemical concentrations on wildlife has not been discussed.
- The structure of the lagoons should be such as to be able to withstand an upward hydraulic force due to the water table rising as much as a metre during major Assiniboine River floods.
- Consideration should be given to installing a system of drains between the two liners that would lead to effluent collection sumps.
- Leakage observation/pumping wells should be established in the sewage treatment area.

Disposition

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Manitoba Health commented:

- Because the WWTF is to be located in a designated groundwater pollution hazard area:
 - i) all storage designs must incorporate adequate liners whether they be lined earthen anaerobic basin or reinforced concrete construction for the aerobic basin and clarifiers; and
 - ii) all storage designs, as well as the open pipe discharge system to the river, should incorporate monitoring wells or sump collection pumps to detect seepage.
- Although the site is said not to be in a flood-plain area, it is prudent to provide for 100-year flood levels by including banks and levies in the design.
- It is necessary that total nitrogen and total phosphorus reductions be incorporated into the design to mitigate potential water quality problems.
- Baseline monitoring of the Assiniboine River immediately upstream of Portage la Prairie and ongoing monitoring during Maple Leaf Meats' operation is necessary in order to detect any adverse effects on domestic water use to Portage la Prairie and other area drinking water users.
- The proposed Sludge Management Plan will need careful review to protect this groundwater sensitive area.

- An inventory of chemicals used in the treatment process should be established and maintained.
- An Emergency Response Plan should be developed.
- Because of adverse effects to domestic water use and recreational use with a 2-shift operation, a single-shift operation should be initiated and a 3-year monitoring program instituted before a 2-shift operation is begun. Design criteria should be modified to mitigate against the adverse effects of a 2-shift operation.

Disposition

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Environmental Operations (Park-West Region) recommended:

- The effluent from the plant be monitored and the data reported monthly to Manitoba Environment.
- Maximum hydraulic and organic loading limits on the influent to the wastewater treatment facility be applied to encourage water conservation and to discourage any unnecessary flushing of solid wastes into the sewer.
- Monitoring wells be installed around the facility and sampled annually for indications of groundwater contamination.
- For purposes of practical enforcement, bacteriological limits be applied to each individual sample rather than the proposed monthly geometric mean.
- Limits on total suspended solids should be applicable at a point upstream of the UV disinfection stage.
- Any spills occurring during the construction and start-up phase should be reported as per Manitoba Regulation 439/87.

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Water Quality Management commented:

- They agree that further studies need to be undertaken prior to the addition of a second shift at the Maple Leaf Meats hog processing plant.
- A number of minor technical inconsistencies, typographical errors and additional uncertainties have been identified and would be communicated to the proponents, although they would not alter the conclusions reached regarding impacts to the Assiniboine River from discharges from a 1-shift operation, but need to be remedied prior to a 2-shift operation.

- Prior to the issuance of a licence, the proponents should:
 - a) provide details on the final discharge configuration at the Assiniboine River, and if it differs from that presently envisioned, undertake additional modelling studies to identify impacts associated with potentially overlapping mixing zones; and
 - b) provide details of proposed alterations to the discharge sequence from the existing City of Brandon wastewater treatment lagoons and to identify how such alterations may affect the findings of the present Environmental Assessment.
- Additional matters that should be required of the proponents through the Licence are:
 - a) to provide a detailed study plan to Manitoba Environment to remedy the data and information gaps;
 - b) to provide further details of a groundwater quality monitoring plan, being developed by Maple Leaf Meats, so as to ensure that information will be generated to assess the long-term integrity of the liner proposed for the anaerobic basin; and
 - c) to identify all sources of phosphorus within the facility that would contribute to the projected discharge of 32 mg/L, and to reduce all major internal sources of phosphorus in cases where these may be added through the use of phosphorus-containing detergents.

Disposition

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Canadian Environmental Assessment Agency commented that application of the Canadian Environmental Assessment Act with respect to this project will not be required:

Environment Canada provided comments on the Proposal under Principal 6 of the Canada-Manitoba Agreement for Environmental Assessment Harmonization. Their assessment is quite detailed and extensive. They commented that the proposed treatment process train and design capacities could be potentially well suited for the treatment of effluent from the Maple Leaf Meats hog processing plant during the initial 1-shift production scenario, however various questions, concerns and considerations should be addressed prior to finalization of process selection, specifically:

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Process Design

- The proposed secondary treatment process train is not designed for phosphorus or total nitrogen removal, however it would be possible to upgrade the WWTF to achieve a consistently higher degree of nutrient removal if deemed necessary.

- To properly assess the proposed treatment processes, as well as other possible technologies, it would be worthwhile to know the expected nominal daily hydraulic loading rates as well as peak loading rates on an hourly basis.
- The questionable concept of utilizing the anaerobic basin for waste activated sludge (WAS) storage and thickening could result in difficulties caused by the liberation of nutrients through biosolids decomposition as well as the possibility of excessive solids losses to the aerobic post-treatment stage.
- More emphasis needs to be placed on the strong influence of process temperature on specific methanogenic activity, and the consequences of reduced temperatures on the extent of treatment and applicable process loading rates.
- An important consideration regarding the anaerobic treatment stage is the possible negative effects of the reduced degree of mixing between the process biomass and the effluent upon the volumetric loading capacity and treatment efficiency.
- The design aeration capacity of 6925 kg of oxygen per day in the carousel process may not be able to satisfy the overall effluent oxygen demand if the practice of WAS storage in the anaerobic basin is implemented.
- If consistent or more complete denitrification becomes a requirement for the WWTF, then the carousel-type activated sludge process may not be the most appropriate process design.

WWTP Upgrade

- Limited details are provided on the specific design loadings and process configurations for the eventual WWTF upgrade for the 2-shift operation of the hog processing plant.
- The implications and possible effects of modified effluent characteristics on the proposed upgraded process should be addressed.
- No information is given on the capacity of an expanded anaerobic process.
- No information is given regarding the future aerobic post-treatment stage expansion, other than the outline of a parallel activated sludge process stage. The overall aeration capacity would have to be increased to accommodate the increased carbonaceous BOD and ammonia loadings.
- Some preliminary information should be provided on possible total nitrogen and phosphorus control techniques for this process expansion.

Miscellaneous Questions and Comments Concerning the WWTF

- Why is a nitrate discharge concentration target indicated in the Reid Crowther pre-design report, yet none is specified in the Proposal report?
- What will be the chemical form will the 32 mg/L of total phosphorus in the pre-treated process waters? This information is important in determining the most appropriate phosphorus removal technique(s).
- Any new chemicals and new candidate effluent streams to be directed to the WWTF should be subjected to bioassay testing to detect any potential inhibitory effects.
- The definition for TKN in the Proposal report should not include nitrite or nitrate nitrogen.
- What will be the expected range of COD and BOD removal efficiencies in the anaerobic treatment stage? Does the implied 78% COD removal correspond to wintertime or more favourable summertime temperature conditions?

- Provision may have to be made for alkalinity addition into the anaerobic stage for pH control due to large amounts of CO₂ generated by the anaerobic process.
- Additional details should be provided on the biogas handling system. Scrubbing may be required for removal of hydrogen sulphide.
- Will there be a provision for measuring sludge content within the anaerobic lagoon?
- A rough estimation of should be provided of the nutrient release and additional contaminant loading that would result from the decomposition of WAS in the anaerobic basin.
- In the determination of a required solids retention time (SRT) value in the aerobic post-treatment stage, was the incorporation of anoxic zones in the full-scale carousel process taken into account?
- The design aeration capacity of the carousel process was based on a process temperature of 25°C. Using the maximum anticipated temperature of 33°C would have been more appropriate owing to the corresponding lower oxygen transfer efficiency that would necessitate a higher design aeration capacity.
- Where in the carousel process aeration basin will the on-line D.O. measurements be made on which the control of the aeration rate will be based?
- In the prediction of heat losses from the post-treatment process, a discrepancy between a flow rate of 4,160 m³/d used to represent a 5-day 1-shift slaughter schedule and a 3,714m³/d flow rate reported in Table 5.1 of the Proposal report would overestimate the calculated process temperature.
- Sensitive nitrifying microorganisms could be adversely affected if pH control in the aerobic post-treatment system is achieved by periodic manual adjustments.
- What range of denitrification efficiencies and corresponding final treated effluent nitrate concentrations can be expected?
- Will there be a potential for odour releases by introducing the anaerobic process effluent into the anoxic zone of the carousel process? Also, if an inter-stage DAF clarification stage is installed in the future, will there be odour release potential owing to the characteristic short HRT's? Off gases may have to be collected and treated for odour control.

River Modelling Study

- The model does not seem to have been subjected to sensitivity analysis. Knowing the sensitivity of the model is important, particularly given the lack of data and large number of assumptions being made.
- The assessment assumes that 5.0 mg/L minimum oxygen concentration threshold is protective of the environment. This was not the case for the Northern River Basin Study, as 6.5 mg/L was recommended as the lower trigger threshold.
- Further data on winter and summer low dissolved oxygen levels in the water column and substrate, and their effects on biota, are needed.

Disposition

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PUBLIC HEARING:

On October 7, 1998, the Director informed all the parties who had requested a public hearing on the Proposal that he had decided not to recommend to the Minister that he cause the Clean Environment Commission to hold a public hearing, for the following reasons:

- 1) Although some information was not initially available, all the design information for the wastewater treatment facility for a one shift operation has been available through the public registries and was presented at public meetings in September, 1998.
- 2) Although specific river impacts are uncertain due to insufficient river information, a public hearing will not resolve this issue. Considerable time is required to conduct the necessary monitoring and analysis.
- 3) The City of Brandon will be required to monitor the river to determine specific impacts and to take appropriate mitigation as required.
- 4) The application of The Canadian Environmental Assessment Act is not required with respect to this proposal.
- 5) The staged licensing process is allowed pursuant to The Manitoba Environment Act.
- 6) Consideration for approval of only a one shift operation will be given at this time.
- 7) The public meetings conducted by the City of Brandon to share and discuss information on the Maple Leaf Meats project will continue.

RECOMMENDATION:

A draft Stage 1 construction Licence is enclosed for the Director's consideration. It is recommended that the Licence, if approved, be assigned to the Park-West Region for surveillance and monitoring, ongoing compliance evaluation and enforcement responsibilities.

This Stage 1 Licence, if approved, should be followed up in the future with a stage 2 start-up and commissioning licence after all the public and TAC concerns have been satisfactorily responded to by the proponents, followed in turn with a stage 3 operating licence.

PREPARED BY:

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October 15, 1998

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