

## **SUMMARY OF COMMENTS/RECOMMENDATIONS**

**PROPONENT:** Midwest Food Products Inc.  
**PROPOSAL NAME:** Midwest Food Products Inc. – Industrial Water Supply

**CLASS OF DEVELOPMENT:** Two  
**TYPE OF DEVELOPMENT:** Water Development and Control –  
**CLIENT FILE NO.:** 4427.00

### **OVERVIEW:**

The Proposal was received on March 26, 1999. It was dated April 16 1999. (An Environment Act Proposal Form was not initially included with the Proposal.) The advertisement of the proposal was as follows:

“A Proposal has been filed by Midwest Food Products Inc. for a water supply system for the company’s Carberry potato processing plant. The system would consist of a series of existing wells around the plant site in Section 20-10-14, and two new wells which were installed in the fall of 1997 in SW 23-10-14W. It is proposed that approximately two thirds of the present total annual water requirement of 2,600 cubic decametres (2,100 acre-feet) would be supplied by the wells near the plant, and the remainder would be supplied from the new wells. Additional supplies required for possible future expansion would mainly be obtained from the wells near the plant. Although wastewater issues at the plant will be addressed in detail in a future Environment Act Proposal, the present Proposal discusses water and wastewater management issues as they relate to the water balance for the three sub-basins of the Assiniboine Delta Aquifer which are impacted by the operation of the plant.”

The Proposal was advertised in the Carberry News Express on Tuesday, April 27, 1999. It was placed in the Main, Centennial, Eco-Network and Western Manitoba Regional Library (Brandon) registries and in the office of the R. M. of North Cypress. It was distributed to TAC members on April 21, 1999. The closing date for comments was May 25, 1999.

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

**Cypress Planning District** - The Board recognizes that the Proponent requires a large volume of water to meet current and future processing needs. The company has been using large volumes of water for approximately 40 years. During this time, many changes have taken place in the food processing industry and the requirements for wastewater management for this type of industry. The Board has concerns in regards to the company meeting all current environmental requirements regarding wastewater storage and management. The Board is supportive of the company in its efforts to move into a long

term sustainable water and wastewater management plan. This should be implemented through conditions of a Water Rights Licence and an Environment Act Licence.

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The Board is concerned with current wastewater management and the storage lagoon. A storage problem has evolved because of increased water use at the plant with very little increase in wastewater storage capacity or mitigation efforts. Wastewater management and containment have been more of a crisis management process. The Board would like to support the company in its efforts to provide for the immediate and longer term processing requirements but has concerns with past wastewater management practices. Options in the Proposal need to become requirements or conditions as they relate to the need for quality water and the disposal of wastewater. It is strongly suggested that the monitoring efforts discussed in the Proposal be made an ongoing requirement, both for water quality and for wastewater quality and volumes. The company should be required to demonstrate that there is a balance between process water and stored and reused wastewater on an annual basis. Backup plans should be developed by the company in case the proposed operation does not achieve process water quality requirements and wastewater management needs.

Disposition:

Most of these suggestions can be addressed as licence conditions. In particular, the relationship between water and wastewater volumes and monitoring requirements can be addressed.

**R.M. of North Cypress** - The R.M. has agreed to support the Proposal. It is requested that the following concerns be included in an environmental licence wherever possible.

1. Trenching plans and approvals should be in place by June 30, 1999. The trench disposal system should be operational by August 15, 1999. This would allow at least ten weeks of testing before freezeup.
2. Metering and monitoring should be conducted on all wells, as there is discrepancies in what is being reported.
3. The company must be forced / encouraged to recycle more plant water to reduce wastewater flows.
4. A 10, 15 and 20 year plan for lagoon reduction should be implemented with supervision by the province.
5. Monitoring of lagoon effluent should be conducted by Environment. Is the Department aware of how the present effluent is treated? How is it handled? Do they have a "real" treatment plant?
6. The company must provide better documentation and tracking of the lagoon.
7. Meetings with all stakeholders must be arranged at least twice yearly. Stakeholders would include the company, the province, the municipality, adjacent landowners and possibly plant union and employee representatives.
8. The R.M. is concerned that the proposed infiltration trench will only handle the increased volume of wastewater allocated by this application, and that the existing lagoon will be allowed to grow.

Over the last 35 years, the company and its predecessors has done as it pleased with water and wastewater. The lagoon has evolved from a sandy, boggy depression in the ground to an environmental nightmare. The province and the municipality must take a leading role

in having the company clean the problem up. A new plant would not be allowed to discharge wastewater in this manner. We must encourage and enforce when necessary better waste management practices by the company.

Disposition:

These concerns can be addressed as licence conditions.

**Town of Carberry** - The company has been neglectful in its responsibilities in relation to its wastewater lagoon. More water from the lagoon should be recycled before any new wells are approved. It is important that water be protected for future generations and some action should be taken by the company to assist in this process.

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Disposition:

The current Proposal provides a superior solution to the plant's water supply requirements than the recycling solution proposed by the Town. The company's Proposal allows considerable flexibility in sourcing plant water, which would be crucial if unfavorable monitoring results were reported. Complete reliance on the recycling option in the absence of any operating or monitoring data would be imprudent.

**George B. Calvert** - Our usual road to Carberry has been closed, apparently due to wastewater from the potato plant. Abundant high quality water and a lack of stones were two reasons why our family came to North Cypress over 100 years ago. Use of the valuable water resource is one way to go. Abuse is something else. We should be able to determine the difference. I have doubts about the judgement of some "experts".

**Ferg Whyte** - Live on NW 3-10-14W and lease 200 acres on 9-10-14W. Wastewater from the plant has become more and more of a concern. Fences have had to be moved to keep cattle out of the stagnant water that keeps coming into the pasture. Road access to town continues to be threatened by rising water in spite of the municipality spending tax dollars to build it up. We have had to put on extra miles taking a different route to town this spring. It seems when cattle or hog farmers increase their numbers, there are stringent environmental rules that they must abide by. These same rules should apply to industry. The company is using huge amounts of fresh water and does not seem too concerned about its waste. The future might be too late to address wastewater issues.

**John McNeily** - Live at SW 29-10-14W, immediately north of the plant. Before moving here, the well was redug to a considerably greater depth due to water withdrawals for the plant. Primary concern is with the plant's wastewater. It clearly does not get a lot of treatment – we dread days when the wind is from the south. Surely wastewater treatment would provide them with much of the water needed for their operations. They could to some extent close the system and realize considerable water savings while at the same time reducing their impact on the surrounding land and air. The material taken from the waste is almost certainly usable as soil conditioning in the area for a gain all around.

**Ben Orr** - The water use of the plant located two miles north of our farm has contributed to the surface water level rising to the point where it is flooding my fields on NE 6-10-14W. The water use at the plant has also lowered the level of groundwater to a point where the company has replaced a shallow well with a deep well on my parents' farm north of the plant on 29-10-14W. The water quality has been jeopardized by pollutants introduced by the plant and the farming practices of potato growers (heavy fertilization, intense irrigation and applications of fungicides and herbicides.) The air quality is a reflection of the stench created by the plant, which has had a negative impact on the environment in the area. The Minister and the Department would be wise to advise the company to manage the resources of water, air and land with a lot more concern given to conservation of resources. The company has generally done what it intended to do in the first place, without much concern for its neighbours. The company should follow the saying "take some and be thankful", and not "take lots, there is a tankful."

**John, Donna and Randy Watterson** - Why would approval be required when the company was allowed in 1997 to dig the first two wells without authorization? More

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wells should not be allowed when a recycling plant would be a more environmentally sound alternative. Countless families' livelihoods are being compromised by the extreme misuse of the millions of gallons of water that are being discharged daily which are causing extreme flooding in low lying locales. We are among the most severely affected. Whole potatoes and waste potatoes are being discharged into the lagoon, which should be utilized as cattle feed. The health and welfare of future generations must be ensured by the purification of water supply to avoid widespread flooding. Enforcement of mandatory air quality guidelines should also occur.

**Don and Joan McLaren** - As resident owners of  $\frac{3}{4}$  of 18-10-14W, we cannot see the feasibility of the company installing more water wells when they are unable to dispose of the wastewater and terrible odour of their present system. Does the Department of Environment have no control over a situation such as now exists and has for a number of years? Could a water treatment plant not be put in to recycle the wastewater and reuse it and thereby eliminate the need for more wells?

**James and Doreen Dickson** - The company has been an asset to Carberry and the surrounding area and it is hoped that it remains in the district. However, the following existing problems should be dealt with: The wastewater should be purified and recycled, the odour problem should be stopped, and the flooding of surrounding tenants' land must be stopped. Meetings between the company, Manitoba Environment, Water Resources, the council and farmers experiencing flooding should be held in the very near future.

**Larry Elmhirst** - Some of my farmland (N 16-10-14W and N  $\frac{1}{2}$  of NE 17-10-14W) borders on land used by the company for wastewater disposal. For years, excess wastewater has been flooding my farmland and for years I have complained to the company and its predecessors. Although some compensation has been made, the

company has continuously promised to control the flooding, which instead has increased. Any increase in the company's usage of water is going to further exacerbate an already major problem for neighbouring farmers. Accordingly, I object to the proposed expansion of the water supply until the company has initiated an effective wastewater management scheme that will ensure agricultural land is not flooded.

Disposition of Public Comments:

Most of the concerns identified involve wastewater issues. The remaining concerns generally involve the relationship between water use and wastewater production. The present Proposal partially addresses wastewater quantity management, and a future anticipated Proposal will address wastewater quality issues and the remaining quantity issues. With respect to the present Proposal, the proposed action would reduce flooding and groundwater level problems adjacent to the existing lagoon. The proposal also involves a form of recycling. On the basis of the monitoring carried out prior to the preparation of the Proposal, it appears that the Proposal would safely allow for the recycling of good quality treated wastewater to the plant. An extensive monitoring program would be needed to ensure that environmental and processing plant water quality needs are met.

Almost all of the public comments can be addressed through the licensing of the Proposal and a monitoring program which would be specified in the licence.

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**COMMENTS FROM THE TECHNICAL ADVISORY COMMITTEE:**

**Manitoba Environment - Water Quality Management** - The submission provides a good overview of the water quality and water quantity issues. However, it does not set out a specific action plan to address the wastewater issues. A number of options are proposed, however additional information is required to assess which of the options are most viable from an environmental quality perspective.

Expansion of the lagoon may serve to eliminate some of the seepage issues. However the leaching from this new facility would need to be quantified.

I have some reservations with the trenching option. This option should only be considered if it can be demonstrated that there will be no impact on groundwater quality. The Department has not supported aquifer recharge proposals due to the concern over contamination of previously uncontaminated water. Recharge through the lagoon or through trenches should only be done if contamination plumes do not develop. The Midwest data demonstrates that over irrigation/infiltration can lead to nitrate accumulation. It is unclear as to the extent of nitrate leaching that may occur through the trenching option. It is recognized the widescale irrigation of potatoes is not a feasible

option at this time, however, irrigation of other crops may be viable once the sanitary waste has been removed from the process waste.

It is obvious that regular monitoring is essential to understand and document contaminant movement into the aquifer. An independent hydrogeologist should assess the proposal to determine a groundwater monitoring strategy for Midwest that would fully assess the impacts of the trenching option. All efforts should be taken to ensure the elevated nitrate levels are contained through best management practices, which may include pumping.

Disposition:

Additional information has been requested concerning the Proponent's preferred course of action involving aquifer recharge through trenches. This information will also include additional detail respecting water quality monitoring.

**Manitoba Environment – Terrestrial Quality Management** - Since the concentration of some substances are elevated in the wastewater, and the wastewater in the lagoon is recharging the aquifer, it would appear to be only a matter of time until the concentrations of these substances become elevated in the groundwater. The consultant should have provided an assessment of potential long-term impacts to the groundwater quality.

If the excessive irrigation of land with the wastewater is increasing the concentration of nitrogen in the groundwater, would it not also occur from the recharge seepage from the lagoon? If that is in fact happening, increasing the size of the lagoon and cleaning the sludge from the bottom of the existing lagoon would cause more wastewater to enter the aquifer which would exacerbate the nitrogen loading. Similarly, increasing the height of the dykes, to increase the head and the rate of water movement down into the aquifer, could theoretically negatively impact the water quality of the aquifer. It is positive to see that measures have been taken to reduce the impacts of groundwater drawdown on the wetland that is the headwaters of a tributary of Pine Creek. The results of the ongoing monitoring of water levels in the wetland area will be provided to Manitoba Environment for review and there should be opportunity for participation in future decisions regarding pumping rates.

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Disposition:

With respect to the concentration of substances in the groundwater, the Proposal is based on monitoring which has been underway for less than one year. It is intended that the monitoring program will be continued and that alternative actions will be undertaken as necessary based on future monitoring results. This would apply in particular to nitrogen concentrations. Increasing the size of the lagoon is now not the primary option for addressing the hydraulic overloading of the existing lagoon. Rather, it is proposed to withdraw naturally filtered effluent from nearby wells installed for this purpose and allow this filtered effluent to infiltrate closer to the plant. The removal of sludge from the bottom of the existing lagoon must be addressed in a separate Environment Act Proposal which addresses all related wastewater quality issues. A licence condition can require that all monitoring

results and their associated analysis can be provided to all interested departments. Future decisions regarding pumping rates will be made by Environment and Natural Resources as regulators of the Development. Licences issued by both departments would specify allowable pumping rates and methods of operation.

**Historic Resources Branch** - No concerns.

**Mines Branch** - No concerns.

**Medical Officer of Health – Marquette Regional Health Authority** - Elevated nitrates in a nearby domestic well indicate possible impact by a nitrate plume from lagoon wastewater over-irrigation on the west side of the lagoon. Please minimize the risk of surface or groundwater contamination in the area. Mention is made of research into direct irrigation of potato crops with lagoon effluent. Please refer to previous memos from the Environmental Medical Officer of Health to Environment Department staff on this subject. The impact of lagoon effluent on groundwater and domestic wells should continue to be monitored on a long-term basis in the target area.

Disposition:

With respect to the prevention of contamination of surface or groundwater, the Proposal is intended to minimize this possibility, and monitoring is planned to ensure that adverse impacts do not occur. The direct irrigation of potato crops with plant effluent is not part of the current proposal.

**Natural Resources** - Should any wildlife deaths occur in the vicinity of the lagoon, DNR regional staff should be notified so that samples can be obtained for further analysis. A water rights licence will be issued for this project subject to conditions including those listed in the May 25, 1999 letter from the Director of Water Resources to Midwest Food Products Inc.

Disposition:

The concern respecting wildlife deaths can be addressed as a licence condition.

**Canadian Environmental Assessment Agency** - Application of the Canadian Environmental Assessment Act with respect to this project will not be required.

Environment Canada and Natural Resources Canada would be able to provide specialist advice in accordance with Section 12(3) of the Act. (Note: No federal departments indicated an interest in participating in the provincial review of the project.)

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**ADDITIONAL INFORMATION:**

Since little information on the preferred option of pumping from wells near the lagoon and allowing infiltration in a trench near the plant was provided in the Proposal, details of this system were requested by telephone on June 3, 1999 from the Proponent's consultant.

In early July, 1999, the Proponent installed five relief wells on the south and west sides of the lagoon, along with a recharge trench near the plant and a pipeline between the relief wells and the recharge trench. Information on this system was requested by e-mail on July 30, 1999. Draft information was received from the Proponent's consultant on August 5, 1999. Further information regarding the construction and trial operation of the relief/recharge system was requested in a letter to the Proponent's consultant dated December 22, 1999.

Wetness problems on agricultural land south of the lagoon emerged as an issue in the early spring of 2000. The Proponent examined the causes of the wetness problem and proposed three additional relief wells in the affected areas. A letter was sent to the Proponent on April 17, 2000 requesting that an alteration to the original Proposal be filed and outlining information requirements for an updated report on the project.

The requested report was received on May 30, 2000. It was distributed to interested TAC members on June 2, 2000, and to public registry locations. A letter advising of the availability of the report for review was sent to interested members of the public on June 6, 2000. Comments on the report were requested from all reviewers by July 3, 2000.

#### **PUBLIC COMMENTS ON ADDITIONAL INFORMATION:**

**Jean Orr** - Concerned about the effect Midwest Foods water use has had on five owned land parcels. Two parcels are affected by water overflow. The third parcel is affected by deep wells on plant property, which have created a drawdown which impacts on crop production. The company installed a deep well two years ago to provide water for the house. The fourth parcel is between the plant's two wellfields. The fifth parcel is crossed by a tributary to Pine Creek which has been lowered considerably by pumping from the east wellfield. On behalf of Ben Orr, also concerned about flooding problems on two additional parcels – these are veritable lakes since last year and the areas are not merely suffering from “a rise in the water table.” Monitoring of the water table at the various test wells should be done by parties not actively involved in irrigation or the plant. Monitoring records should be carefully safeguarded, as former records have disappeared or been destroyed. If the latest solution to plant problems is to pipe water to the Watterson property, this will serve to exacerbate the water problem for our properties.

#### **Disposition:**

The proposed relief well and recharge trench system is intended to address the both the wetness problems and the drawdown problems which are identified. Monitoring and record keeping would be the responsibility of the proponent, and regular reporting of results would be required.

**Ben Orr** - Objecting to the ongoing misuse of the province's natural resource, the water, and the dangerous manipulation of the aquifer. Midwest Foods' water use made an undesirable impact on my farmland. The runoff from their waste disposal area has seeped south and west, causing the land there to be saturated and flooded. As a result, production and real estate value on the land has been lost. My family has put up with the impact of living beside a large processing plant for over 30 years. We have always given the benefit of the doubt for the consideration of the economic health of the community, and hoped that a balance could be maintained. As of today the balance is heavily in favour of the big business venture in the area. Losses can be verified by the municipal councillor, who suggested that I might ask to have my land assessment value lowered to compensate for the water damage on my property. Why should the municipality compensate me for damages caused by Midwest Foods? If the owners of Midwest Foods continue to deny their responsibility for water damage created by their wastewater disposal method, the government has no alternative but to deny them access to any more water licences.

My problem is not caused by natural events. The flooding has come about in direct relationship with Midwest Foods' expansion. The trench dug to expose the aquifer invites all sorts of calamities in the future. Will short term gain be allowed to cause long term pain?

Disposition:

The Proposal addresses the flooding and wetness issues for neighbouring farmland. The May, 2000 supplementary report estimates that the plant has increased natural wetness problems in the area by 25-30%.

**John McNeily** - The document is clear that the present level of use is 1100 IGPM. Appendix A gives a series of uncommented daily readings which (charitably) I take to be daily readings from a USgal meter, which average just under 2,000,000 USgpd. If it were an IGPD reading, it would be way out of line. Characteristically, despite the title, there is only the draw reading, and not a thing about wastewater management. The creative hydraulics by which the plant claims to be only a small contributive cause of the flooding is of course prevarication. The document lacks any commitment to reduce the amount of water the processing uses. Some improvements are claimed without verification, and no undertaking is made (other than verbal at the meeting) to work towards any form of economy or reuse of the water. I would also have liked more reassurance about the intended air quality. The post-treatment plant proposed may be the answer for that, but we shall just have to wait optimistically. I do not wish to slow the proposed remediation measures which Midwest seems committed to. However, when the measures are in place, they should be given some time to prove their effectiveness before permission is given for an 80% increase in use. There has been mention of doing some pumping of the surface water off towards Epinette Creek. Without some more and different information than we have so far been presented, I can't see how this would be a good idea. At the very least it would set a precedent for Midwest's masking their misuse by dispersing the surface water which has the least likelihood of potability and the greatest potential for contamination.

Disposition:

With the exception of the air concern, these concerns can be addressed through licence conditions.

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**John, Donna and Randy Watterson** - Many points still need to be carefully examined before proceeding. Much of the flooding that is occurring is due to the present lagoon. The report admits that 25-30% of this water is seeping from the inefficient lagoon storage which is not doing the job for which it was intended. If the water has risen 1 meter since 1999 from the recharge trench, are the wells working as designed? Midwest must be forced to construct a proper raw sewage treatment facility instead of releasing the effluent into the lagoon. Equipment necessary for the trapping of whole potatoes and peelings has been at the plant since last fall, but for some reason has not been hooked up. Why? Obviously the lagoon is not the appropriate choice for all this water to be discharged into since it overflowed its banks in early 1999. We feel that pumping water from the affected properties to the south would in the short term solve some of the problems, but what is going to happen when the plant doubles – how is this going to affect the aquifer and water levels if these wells don't do the job? Lower nitrate levels have been tabulated in the lower regions of the aquifer thus confirming that the sands have filtered the nitrates from the upper level of the aquifer. In conclusion, we are concerned because lack of concrete confirmation in the KGS report as to whether these proposals are workable and if they will follow through within a reasonable amount of time. We must, if we are to have a clear conscience, ensure the health and welfare of future generations by recycling the water which has been so carelessly consumed for over 38 years and protect others from future flooding. Improper handling of water and air quality should be further studied and stricter standards should be enforced as to proper installations of organic waste collection equipment.

Disposition:

Most of these concerns can be addressed as licence conditions. Timelines can be established to provide for actions over an appropriate period. Monitoring can be specified to ensure that the system works as predicted.

**COMMENTS FROM THE TECHNICAL ADVISORY COMMITTEE:**

**Manitoba Conservation – Park-West Region** - The current system of wastewater disposal by evaporation and infiltration is unacceptable as contaminants are directly introduced into the local aquifer. Dilution rather than treatment essentially is controlling the groundwater plumes. It would be more appropriate to treat this water by irrigation onto local cropland. Increased water requirements will result in an increase in effluent. Improving the water quality of the effluent through a wastewater treatment plant is essential for long term sustainability. Therefore, any water rights licence should include the condition for construction of a wastewater treatment plant in the near future. Treatment by dilution should only be a short term solution.

Over irrigation is unacceptable as contaminants will leach into the groundwater. Future disposal of effluent by irrigation should only be conducted with treated wastewater at irrigation rates required by the crop. Irrigation on alfalfa has proven effective in removing salts. Further salinity removal by irrigation should be achieved by irrigation on greater crop acreage and not by increased irrigation rates.

An extensive groundwater monitoring program should be developed that would include a schedule of sampling for the water quality of the effluent, recharge trenches, recharge

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wells, lagoon, and monitoring wells. In addition, groundwater elevations must be monitored along with a water balance of all water use and recharge for the plant site, east well field, and the south wet area. In addition, monitoring should be conducted on local domestic wells.

The existing lagoon storage volume should not be increased to facilitate additional effluent. The primary purpose of a wastewater lagoon should be for treatment. In this case the lagoon would act as a tertiary treatment as wastewater would be treated initially in the plant and secondary treatment would occur with a wastewater treatment plant. It would be more appropriate to reintroduce treated water into the aquifer by means of recharge trenches.

The proposal suggests several options for the treatment of domestic sewage. As indicated by the proposal, a septic system is likely the best alternative. The licence should require the facility to continue to improve on water conservation and water treatment through new and innovative technologies.

Disposition:

All of these comments can be addressed as licence conditions.

**Manitoba Conservation – Water/Terrestrial Quality Management** - The report states that a build-up in salinity in the process water is anticipated and that off-site discharge of this saline water may be necessary. This is a concern from both a terrestrial and a water quality perspective. The proponents should provide more details about this aspect of their water management plan. When do they anticipate having to start off-site discharges and what will be the chemical composition of the discharge water? Where will they discharge to and what will be the environmental impacts on the soil/vegetation, groundwater, and surface water in the off-site discharge locations? The proposal indicates that water is continually seeping eastward from the lagoon into an adjacent wetland area. The proposal fails to mention that there is also a culvert located on the east side of the lagoon that allows direct flow of wastewater from the lagoon to the wetland, as observed during a site visit in March, 2000. While it appears that a significant amount of material is filtered out of the seepage water as it moves eastward to the wetland area, it is highly likely that the same cannot be said for water that exits the lagoon via the culvert.

The proposal mentions that the recharge trench system will require regular maintenance to counter plugging of the trench bottom by iron deposition and fine grained sand, but gives no details as to the removal and disposal of this material. Planting vegetation (eg. forbs and grasses, shelter belt trees or bushes, etc.) might help to reduce the amount of wind and water erosion that occurs in the vicinity of the recharge trench area(s). Will the lagoon be able to handle the increased effluent flow that will result from the proposed processing plant expansion, or will the lagoon require expansion and upgrading? The proposal indicates that options for the management of process wastewater and sanitary wastewater flows are currently being assessed. Will these components of the water management plan be dealt with in separate, forthcoming proposals/reports?

Disposition:

These comments can be addressed as licence conditions. Most of these conditions would limit or prevent water and wastewater management practices from occurring

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until suitable study had occurred and approval was provided. In particular, the surface disposal of plant effluent should be prohibited. Additional information on items such as the maintenance of the recharge trenches and vegetation adjacent to the trenches is needed as part of an operational plan for the trenches.

**Manitoba Conservation – Terrestrial Quality Management** (Received 13 07 00) - As outlined in the review request, the document was reviewed from the perspective of assessing the company's proposed measures to address flooding around the existing lagoon and water supply adjacent to the plant. Following are some specific comments regarding the document review:

- The previous work indicates water quality concerns from wells P6, P7, P8 located south of the lagoon. These wells demonstrate elevated electrical conductivities and total dissolved solids mainly related to very high alkalinity and related harness forming minerals (and iron). As such, the wells were not connected to the pumping – recharge trench due to concerns with potential scale formation if this water quality was introduced into the plant. The report further states that the observed water quality may be the result of leachate impact from the lagoon and possible stratification of water quality within the aquifer due to salinity-density effects. **The proponent needs to further investigate and clarify the reasons for the apparent anomalous water quality from wells P6, P7, P8.**
- If a leachate plume is present in the area south of the lagoon, installing the proposed pumping wells further down gradient to the south will enhance the offsite migration of the leachate plume in the absence of any hydraulic control at the lagoon perimeter. **The offsite pumping wells should not be considered until the water quality concerns are addressed.**

- As stated in the report, the wetness problems south of the lagoon may be entirely related to natural conditions, even with inputs from the Midwest Lagoon. The proposed pumping wells will help to mitigate the impacts from the high water levels but it is unclear as to the absolute effectiveness of the system given the dominance of natural variations in water levels. As such the proposed system may have little effect if wet conditions prevail for an extended period of time. In addition the effects of the pumping wells may not be noticeable for a few years as ground water conditions react quite slowly in the aquifer.
- The documented water quality within the lagoon is problematic in terms of the bacteriological components. The coliform and fecal coliform counts are significantly elevated as noted on multiple sampling events. Given the amount of septic waste that was previously directed to the lagoon these levels should not be expected. **The proponent should further investigate the water quality within the lagoon with specific emphasis on the bacteriological components; ecoli. should also be added to the analysis suite.**
- The report proposes that the management of the plant sanitary wastewater flows could be handled through a somewhat larger domestic septic system based on percolation rates observed from the recharge trench system. This would still be a large septic field installation given the stated flowrate of 30 cubic metres per day and would require a detailed design to manage these flows.

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Disposition:

Comments respecting the water quality in the unused relief wells south of the lagoon and the potential movement of a leachate plume from the lagoon can be addressed through licence conditions requiring monitoring and analysis. As it is anticipated that the operation of the entire water supply system will be reviewed in conjunction with a wastewater management proposal, it is preferable not to delay the implementation of relief pumping south of the lagoon in the short term. Monitoring of coliforms would be a part of any approved groundwater and lagoon monitoring program which could be required through licence conditions. Further consideration of a septic field for the disposal of treated sanitary wastewater will be provided in the wastewater proposal. (17 07 00)

**Manitoba Conservation – Groundwater Management Section (1)** - While I am open to new approaches the scheme to manage the Midwest Plant long term and expanded water supply outlined in this report gives rise to concerns about the long term quality of the Plant water supply, the potential for aggravating the potato disease situation and that there will be little relief of the groundwater levels and quality concerns under adjacent private land.

A significant report deficiency is that no details are provided about the groundwater level model that is used to predict future groundwater flow systems.

Similarly the postulation is made that the water supply for the Plant using the present site well field and trench has been shown to be reliable. The time frame of the available monitoring is too short for this conclusion. There is no discussion of the groundwater times of travel to individual pumping wells both near the lagoon and adjacent to the trench under the new hydraulic regimes.

No attempt at groundwater chemical modeling under the various new hydraulic situations has been made.

The actual plumes of the observed groundwater contamination have not been delineated. The occurrence of nitrate in the down gradient farm wells is blamed on the farms but no attempt has been made to examine the situation, for example by use of nitrogen isotopes.

There is no discussion of the potential for spreading potato diseases by using the recirculated wastewater for irrigation. I have the impression that this could be a very serious matter.

The report is much too optimistic with respect to future water quality in the wells sucking fluid through the lagoon walls and bottom. Only in the case of the pumping wells near the southwest corner of the lagoon has the travel time been sufficient to theoretically allow lagoon fluid flowing under the new groundwater gradients to reach the pumping wells. Several years of monitoring will be required to assess the long-term effects of drawing wastewater relatively vigorously through the lagoon sludge.

There is no discussion of the organic chemical effects of chlorinating the plant site pumping well water supply containing multi-recirculations of wastewater both in the short and long term.

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In order to determine what is actually happening within the aquifer adjacent to the lagoon and the recharge trench observation wells at various locations and different depths should be constructed across the flow system. For example deeper wells can often show no contamination while shallow wells are completely filled with contaminated water.

The inference is made that the recirculation of wastewater has gone on for thirty years. This is not really true. The waste rates have only been about 30% of the current rates and only about 25% of that was returning to the plant well field. Also the flow gradients were much smaller and the some 4000 foot return flow distance allowed considerable distance for filtration and time for attenuation and dilution. It is probable that the return water plume has only reached the plant site well field in the last few years. The other 75% of the seepage water used to move easterly into the southern end of Pine Creek or southerly into the Eppinnette Creek basin. The new dewatering arrangement will ensure that nearly

all of the wastewater is recirculated promptly and that the filtration, attenuation and dilution effects approach zero.

While the dewatering wells proposed for the sites south of the lagoon will be at greater distances which will allow more dilution of the sewage the report indicates they will have little impact on the high groundwater levels under the private land around the south side of the lagoon. Therefore the high water table situation is likely to continue in these areas.

Until it is shown over a period of years that the waste water recirculation will not harm the plant water supply or the aquifer system the proposal to distribute water sucked through the lagoon walls to trenches three miles east should not be allowed. It would be imprudent to start spreading recirculated potato processing sewage water hither and thither in an aquifer dedicated to potato irrigation.

I suggest that this water supply arrangement only be permitted on interim basis, say for another four years (usually it takes about five years for groundwater systems to come to equilibrium with significant new impacts). During that time very careful monitoring of all facets including the lagoon bottom regime.

#### *Asides*

What effect will allowing this type of wastewater arrangement have on the management of livestock and anthropic waste fluid lagoons?

What effect will this approach, if it becomes known, have on the purchasers of the potato chips? The total operation must be worth about \$175 million a year to the Provincial economy. (Received 18 07 00)

#### Disposition:

Most of these comments can be addressed through licence conditions requiring monitoring. The proposal does not involve the use of effluent for potato irrigation. With respect to groundwater travel times and the movement of contaminants with groundwater, the proposed system will serve to limit the movement of contaminants by reducing the flow of potentially contaminated groundwater away from the proponent's property. With respect to the approval of an additional recharge trench adjacent to the east wellfield, approval for this component will not be provided until additional information on the component is submitted.

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**Manitoba Conservation – Groundwater Management Section (2)** - (Comments on Section 5.5 – Water Quality Assessment)

### **5.5.1 Wastewater and Lagoon**

#### Wastewater

p.20/21 – *The report states the elevated total and fecal coliforms levels are difficult to define in terms of sources ...* Very high total and fecal coliform concentrations are found in the wastewater and lagoon samples. The high concentrations of fecal coliform bacteria is not known. This is something that should be addressed – where is the fecal coliform coming from. I would also suggest testing for e-coli bacteria.

#### Wet Area East of Lagoon

p.21 – *The report states that in the wet area east of the lagoon, water quality is similar to the lagoon for inorganic parameters but at much lower concentrations for organic parameters.* This indicates there is no attenuation of the inorganics, rather they are migrating directly from the lagoon into the surrounding sands. On the otherhand, some type of processes/attenuation is removing the organics at this time. I wonder how effective these processes will continue over time.

p.22 – *The report states that ammonia is lower in the wet area east of the lagoon.* But low concentrations of nitrate are present in the wet area east of the lagoon. Nitrification of the ammonia may be occurring. The samples collected in the wet area east of the lagoon also have total and fecal coliform bacteria.

### **5.2.2 Groundwater Quality West of the Lagoon**

#### Monitoring Wells

p.22 – *The report states chloride was elevated in monitors surrounding the lagoon and indicated the monitors were in the active groundwater flow zone.* Besides the monitors surrounding the lagoon, chloride also appears to be elevated at MW6 which is located about 800 m west of the lagoon and MW8 which is located about 500 m north of the lagoon. These monitors are located in the irrigation fields. The chloride results indicate contamination of these areas may be fairly extensive. The actual extent of the contamination plume is not defined.

p.22 – The nested well pairs, MW4, MW5 and MW17, were not sampled for bacteria and all of the major ions in 1999. This information is necessary to assess the temporal changes in water quality around the lagoon.

p.23 – *The report states that nitrate values in 1999 were below detection south of the lagoon in MW17A (shallow zone) but elevated at MW17B (medium zone).* The results contained in Table 4 indicate the opposite of this statement, nitrates are elevated at MW17A and below detection at MW17B.

### Lagoon Perimeter Pumping Wells

p.23 – *The report states that elevated levels of nitrate are present in the pumping wells (P1 to P5), which are located in the irrigation fields.* Water is being recirculated from the pumping wells to the recharge trench. The recharge area currently has low nitrate concentrations, but nitrate in this area can be expected to increase with time as water is pumped from P1 to P5 into the recharge trench.

Based on estimates by KGS, the estimated travel time of lagoon recycle from the lagoon to the plant site wells located at 20-10-14W was in the order of 15 years (p. 37, Final Report - March, 1999). The lagoon recycle time from the lagoon to the new lagoon perimeter pumping wells will be much less, and the potential for water of poorer quality is much greater.

p.24 – *As stated in the report, two of the wells (P3 and P5) contain low concentrations of total coliforms. P3 also has fecal coliform.* These wells should be monitored closely to see if the bacteria increases over time. Any bacteria in the water will be pumped to the recharge trench, currently the recharge trench has a low concentration of total coliform and no fecal coliform.

### **5.5.3 Groundwater Quality and Quantity South of the Lagoon**

#### Groundwater Quality

p.24 – I wonder why MW16, located about 1.7 km south of lagoon, was not sampled. This well is located about 500 m northwest of the nearest private well in the area.

p.24 – *As stated in the report, with the recharge trench now in operation, groundwater flows eastward end up to a lesser degree, discharging into the wet area east of the lagoon, although there is a continuous down gradient minor flow to the east.* According to the groundwater contours shown on Figure 3, groundwater flow from the recharge trench does not move towards the wet area east of the lagoon.

p.24 – *As stated in the report, groundwater gradients indicate that the main flow from the lagoon is to the south.* According to the groundwater contours shown on Figure 3, groundwater flow is outwards in all directions from the lagoon, not just to the south. To the west, there is also a capture zone around the new pumping wells (P1 to P5). Flows to the north are also influenced by the recharge trench.

p.25 – *As stated in the report, elevated electrical conductivity and nitrate values at the Waterson residence (SE8-10-14W) indicates that local water sources can be significant to local well quality and that this trend has been shown to be quite extensive provincially by recent Manitoba Conservation rural water quality evaluations.* It's well known that water quality can be impacted by local farming practices, but to imply that because recent rural water quality evaluations by Manitoba Conservation has shown this to occur, is hardly proof enough to imply that this is the cause of the water quality problems at the Waterson residence. This must be determined by a site specific evaluation/investigation.

Also, I'm curious to know where KGS's reference is for their statement, as results from the Manitoba Rural Groundwater Quality Initiative have not yet been published.

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### **5.5.5 Midwest Well Water Quality**

#### **Plant Process Water**

p. 27 – The 1996 data for the plant process water is not included on Table 5.

#### **Plant Water Quality Requirements**

p.28 – *As stated in the report, under the present pumping scheme and under steady-state conditions, it is estimated that in approximately 2 to 3 years, approximately half of the water pumped at the plant will be supplied from the recharge trench. Nitrate concentrations in the plant water are expected to remain well below the CCME guideline even if concentrations in the recharge trench rise above the guideline criteria of 10 mg/L.* Nitrate concentrations in P1 to P5 currently range from 1.62 to 12.9. Based on the shorter travel times from the recharge trench to the plant wells and the higher nitrate concentrations being pumped into the trench, I would think there should be a concern that nitrate may become elevated over time.

### **5.5.6 Water Quality Contingency Plan**

p. 28 – In addition to the current tabular format, all monitoring data collected over the course of a year should be presented as water quality plots for all parameters monitored. The plots will enable water quality trends to be more readily evaluated.

### **GENERAL COMMENTS**

- The MAC (Maximum Acceptable Concentration) for coliforms in drinking water is 0 organisms detectable per 100 ml, not 10 as presented in Tables 4 and 5.
- There were some higher total coliform concentrations recorded in some of the monitoring wells in 1998 (Table 4), namely: MW8 (93 CFU/100 mL), MW13 (2,300 CFU/100 mL), MW15A (430 CFU/100 mL) and MW17B (230 CFU/100 mL). Of these wells, only MW17B had fecal coliform (3 CFU/100 mL). None of the wells were not re-sampled for bacteria in 1999.
- The report acknowledges that a nitrate plume has been defined to exist below the irrigation fields west of the lagoon due mainly to the over-irrigation of these lands (p.30). Wells in these areas (MW6 and MW8) indicate the field areas have been impacted by nitrate, but the actual spatial extent of the nitrate plume has not been defined. The perimeter wells P1 to P5 have been installed to mitigate the plume (p.23 and p.30). Nitrate concentrations at wells P1 to P5 and in the recharge trench have

decreased in value from 1998 to 1999 (Table 5) but the concentrations at wells MW6 and MW8 (Table 4) located in the irrigation fields have actually shown an increase in nitrate concentration from 1998 to 1999.

- The extent of contamination to the south is not well defined. Additional monitors, including nested pairs (p.32), are planned to assess groundwater quality to the south prior to the addition of three proposed wells (Figure 6) on or near the Waterson Farm to deal with the local wetness concerns.

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It would be interesting to determine the water quality at well MW16 which is located about 1.7 km south of lagoon and about 500 m northwest of the nearest private well in the area south of the lagoon.

- *The report states that if immediate control of the plume south of the lagoon becomes necessary, disposal options could be to pump the wells and use the effluent for irrigation on adjacent fields (p.32).* If this is done, over-irrigation of these areas will likely result in nitrate contamination as has occurred in the existing irrigation fields west of the lagoon.
- As discussed on p.34 and p.40 (item 23), if a second groundwater recharge trench is constructed near the east well field (SW23-10-14W), then a groundwater monitoring system should be designed and installed to monitor any potential groundwater impacts in the area of the new trench.
- P.41 (item 28) mentions a proposed long-term monitoring program - has a program already been developed and if so, has it been reviewed. (Received 18 07 00)

Disposition:

Most of these comments can be addressed through licence conditions requiring monitoring. TAC input will be solicited in the design and approval of a monitoring plan for the project.

**Medical Officer of Health – Marquette Regional Health Authority** - The impact of lagoon effluent on groundwater and domestic wells should continue to be monitored on a periodic basis in the target area.

Disposition:

This comment can be addressed through licence conditions for a monitoring program.

**PUBLIC HEARING:**

No requests for a public hearing were made by members of the public commenting on the Proposal. Accordingly, a public hearing is not recommended.

**RECOMMENDATION:**

All concerns which have been identified have been addressed through the additional information provided, or can be addressed through licence conditions. A number of proposed licence conditions require additional studies. Due to the longstanding interconnection between water supply and wastewater disposal at the plant, it is crucial that a comprehensive wastewater management proposal be filed by the proponent within a reasonable period of time. The wastewater management proposal must provide for improvements in the existing situation and provide for a potential expansion of plant capacity. Adjustments or alterations to a water supply licence can be considered as appropriate if future changes to the wastewater management system change the plant's water supply situation.

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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 administration of the Licence be retained by Environmental Approvals until a wastewater management proposal has been received, assessed and licenced. Environmental Approvals should administer the licence in consultation with the Park-West Region and the Water Licencing Section of the Water Resources Branch.

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