

## **SUMMARY OF COMMENTS/RECOMMENDATIONS**

**PROPONENT:** Town of Shoal Lake  
**PROPOSAL NAME:** Proposed Diversion of Town of Shoal Lake  
Treated Lagoon Effluent  
**CLASS OF DEVELOPMENT:** 2  
**TYPE OF DEVELOPMENT:** Wastewater Treatment Lagoon  
**CLIENT FILE NO.:** 171.30

### **OVERVIEW:**

On May 16, 2000, the Department received an Environment Act Proposal (EAP) on behalf of the Town of Shoal Lake to alter the discharge route of the existing wastewater treatment lagoon.

Representatives of the Town of Shoal Lake prepared the Proposal and supporting documentation. The submitted material discussed the history of existing related operations, identified the need for an alternate discharge route option, presented information pertaining to the requirements of the Environment Act Proposal and provided preliminary design information regarding the proposed project.

The Department, on June 5, 2000, placed copies of the EAP report in the Public Registries located at 123 Main St. (Union Station); the Centennial Public Library and the Town of Shoal Lake Office and provided copies of the EAP report to the Canadian Environmental Assessment Agency, the Interdepartmental Planning Board and Technical Advisory Committee (TAC) members. As well, the Department placed a public notification of the EAP in the Shoal Lake Star on Saturday, June 10, 2000. The newspaper and TAC notification invited responses until July 5, 2000.

There were two public responses to the notification. One response was from the owner of the property that the lagoon effluent historically crosses during discharge requesting that this discharge option be disallowed. The second public response was from Ducks Unlimited Canada (DU) who have been managing the wetland area to which the lagoon effluent is proposed to be discharged. DU's concerns related primarily with the high levels of ammonical nitrogen and total phosphorus concentrations in the effluent.

There were several requests for additional information originating from TAC representatives. Many of the requests were satisfied in the proponent's response to the

first request for additional information. Some TAC representatives shared the concerns presented by DU.

Meetings were attended by representatives of DU, Manitoba Conservation, The Manitoba Water Services Board (MWSB), Prairie Farm Rehabilitation Administration (PFRA), Town of Shoal Lake, Shoal Lake Water Enhancement Corporation, and Upper Assiniboine River Conservation District on December 13, 2001 and December 11, 2002 to discuss the proposal and outstanding issues.

A description of the sequence of correspondence exchange and events that occurred during the EAP review is included in Appendix A of this Summary.

Issues that are relevant to the EAP and were most recently presented by the participating TAC representatives and DU that remain unresolved can be summarized as follows:

1. Only a limited number of marsh water and effluent quality data were used for the feasibility study of a constructed wetland;
2. Assessments of the assimilative capacity of Shorts Marsh with respect to ammonia and phosphorus are based only on one year of lagoon operation. Long term effects have not been assessed; and
3. The lack of information regarding volume and timing of the proposed continuous effluent discharge to the marsh and the potential impacts of allowing such discharge.

**COMMENTS FROM THE PUBLIC:**

<u>Name</u>	<u>Address</u>	<u>Date</u>	<u>Comment(s)</u>
Kokke, Paul Kokke, Agnes  Langford, Woody (Attorney-at-Law)	Shoal Lake  PO Box 131 Birtle, MB R0M 0C0  842-3930 w 842-3475 r 842-5159 f	00/06/26	- Woody Langford (Attorney-at-Law) presented information on behalf of the Kokkes; - The Kokkes own the land through which the current lagoon discharge route passes and have not provided permission for the Town to use the property for this purpose; - Claim their water well has a coliform count because of the lagoon operation; - Want to discontinue the Town's ability to discharge the lagoon via the ditch that traverses their property.
David Dobson Ducks Unlimited	Unit 2, 545 Conservation	00/10/27	- <i>DU's concern lies with the high levels of Ammonical Nitrogen and Total</i>

<u>Name</u>	<u>Address</u>	<u>Date</u>	<u>Comment(s)</u>
Canada	Drive Brandon, MB R7A 7L8		<p><i>Phosphorus. DU has suggested that the proposed diversion's Ammonical Nitrogen level range of 4.4 – 13.8 mg/l exceeds the recommended limit of 5 mg/l, and the Total Phosphorus level range of 2.7 – 4.55 mg/l far exceeds the recommended limit of less than 1 mg/l;</i></p> <ul style="list-style-type: none"> <li>- <i>Suggesting that the marsh will be adversely affected by the proposed diversion and the project could significantly contribute to the degradation of Shorts Marsh;</i></li> <li>- <i>Recommending that consideration should be given to the construction of a constructed wetland adjacent to the existing lagoon to promote the lowering of nutrient concentrations prior to discharge;</i></li> <li>- <i>Recommending that more effluent quality data be acquired and used to assess design requirements for the constructed wetland; and</i></li> <li>- <i>Offering DU's support by providing technical assistance in the design of a constructed wetland that will adequately treat the effluent.</i></li> </ul>
Larry Leavens, P. Eng. Wetlands Engineer Ducks Unlimited Canada	Box 1160 Stonewall, MB	03/06/13	<p><i>Through numerous correspondences the issues have become the following:</i></p> <ul style="list-style-type: none"> <li>- <i>Lack of information regarding the volume and timing of effluent to be treated;</i></li> <li>- <i>Incorrect design assumptions regarding the operation and available marsh treatment in Shorts Marsh;</i></li> <li>- <i>Concern over using a single years water quality sampling data as design;</i></li> <li>- <i>Detrimental effect of spring or fall discharges directly into Shorts Marsh; and</i></li> <li>- <i>Accuracy and validity of cost estimate (for constructed wetland).</i></li> </ul>

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

### **Highways (now Transportation and Government Services)**

- *The proposed work appears to be located primarily away from the provincial road system and is not likely to adversely impact our roadways. The proponent should contact Herb Mahood regarding the plans for the existing discharge culvert under PTH 21.*

### **Natural Resources (now Branch of Manitoba Conservation)**

- *If any surface water drainage is not entirely underground the town should apply for a Water Rights Licence. In addition, there is the need to secure downstream landowner approvals for both the discharge route and the impact to landowners from potential downstream outflows when the third cell is released to Short's Marsh.*

### **Historic Resources**

- *No concerns.*

### **Health**

- *Is there any risk of groundwater contamination in the event of flooding or surface runoff?*
- *Please monitor for groundwater contamination by regular sampling or nearby wells.*
- *Please ensure:*
  - *Prevention of pollutants or contaminated wastewaters from entering sewage disposal and municipal ditch systems;*
  - *Odor control and monitoring;*
  - *Gasoline and diesel regulations if applicable;*
  - *Effluent discharge as per the 1989 Environment Licence.*

### **Intergovernmental Affairs – Rural Development**

- *Our office has no land use concerns with this proposal as defined in the report. We assume from the report that the discharge pipe will run from the lagoon to Short Marsh. It appears that many of the landowners want this and it would be particularly important where it passed close by residences (eg. NW1/4 Sec.34-16-23).*

### **Environment – Operations Division (now Manitoba Conservation)**

- *Conditions for discharge routinely applied to wastewater treatment facilities should be included in the Licence for this development.*

**Environment – Water Quality/Terrestrial Quality Management (now Manitoba Water Stewardship)**

**Following Initial EAP Review**

- *The precise point at which the marsh drains into Wolf Creek should be indicated on the map in the Appendix;*
- *Is the marsh well vegetated with appropriate plant species to ensure that rapid uptake of nutrients from the effluent occurs?;*
- *Will the proponent be restricted to discharging effluent only during the period of plant growth in the marsh, or will the proponent be allowed to discharge any time from May 16 to October 31 as indicated in the licence for the present facility?;*
- *The increase in the marsh's volume, augmented by possible high rainfall amounts in the summer may result in significantly higher than normal flows toward the marsh outlet. Will the outlet of the marsh be constructed/reinforced in any way to better withstand any erosion or other damage that might result from this increase in outflow?;*
- *Further to the previous point, the proposal does not adequately address the issue of flooding of the marsh. Is there any possibility that flooding might occur due to high rainfall coupled with the effluent inflow? Is there any record of the marsh flooding in the past?;*
- *The proponent also wishes to retain the option of discharging the effluent to Shoal Lake as it is presently being done. Under what circumstances would this option be used?; and*
- *The proponent should consider establishing a program to monitor the efficacy of the marsh in refining the effluent. The Water Quality Management Section is willing to enter into discussions with the proponent regarding the design of the such a monitoring program.*

**Policy Coordination Branch**

- *If any surface water drainage is not entirely underground the town should apply for a Water Rights Licence. In addition, there is the need to secure downstream landowner approvals for both the discharge route and the impact to landowners from potential downstream outflows when the third cell is released into Shorts Marsh.*

**Canadian Environmental Assessment Agency**

- *Based on the responses to my survey, the application of the Canadian Environmental Assessment Act (the Act) with respect to this project will not likely be required. However, please note that Health Canada, Natural Resources Canada and Environment Canada would be able to offer specialist advice.*

### **Environmental Protection – Environment Canada**

- *The town proposes to discharge treated wastewater to Shorts Marsh (Tucker Lake) instead of Shoal Lake in order to reduce loading of nutrients to Shoal Lake. Although we support initiatives to reduce nutrient loading to the lake, there is a general lack of information for this particular proposal including an adequate assessment of environmental impacts of the project;*
- *Little or no information is presented on the characteristics of the marsh and the long term impacts of increasing its nutrient loading. These impacts could include changes or losses in wetland functions as a result of: increased vegetation growth (perhaps over the short to medium term), deposition of phosphorus in the sediments, increased algal blooms, changes in vegetation species, changes in biodiversity and decreased wetland productivity (over the longer term);*
- *The marsh apparently supports migratory birds, but no information is presented on the potential impacts to migratory birds, both short term and long term (i.e., as a result of possible changes in the marsh). We recommend that any construction in the vicinity of migratory bird habitat be scheduled to avoid the migratory bird nesting season;*
- *It is not clear from the report if fish are present in the marsh, or utilize it for spawning, and if so, what species may be present, and the environmental impacts of the project on the fishery (if present);*
- *Section 3.0 contains a brief description of alternatives considered, but the information is not clearly presented and the rationale for eliminating other alternatives is also not clear. We note that other alternatives, such as phosphorus removal prior to discharge, or use of a constructed wetland for treatment, do not appear to have been considered as alternatives; and*
- *We recommend that additional information be provided by the proponent as outlined above to ensure that all environmental impacts are duly considered and appropriate mitigation plans developed before the project proceeds. We also recommend that, if the project proceeds, monitoring studies should be done over an appropriate time period to confirm predicted impacts and/or allow for implementation of additional mitigation measures, as required.*

### **SUMMARY OF REQUESTS ARISING FROM INITIAL REVIEW**

The topics of input from the TAC and federal government representation were amalgamated into points of similar concern that are pertinent to the EAP review process. In a July 21, 2000 letter, additional information from the proponent was requested from the proponent as follows:

1. *The precise point at which the marsh drains into Wolf Creek should be indicated on the map in the Appendix;*

2. *Is the marsh well vegetated with appropriate plant species to ensure that rapid uptake of nutrients from the effluent occurs?;*
3. *The increase in the marsh's volume, augmented by possible high rainfall amounts in the summer may result in significantly higher than normal flows toward the marsh outlet. Will the outlet of the marsh be constructed/reinforced in any way to better withstand any erosion or other damage that might result from this increase in outflow?;*
4. *Is there any possibility that flooding might occur due to high rainfall coupled with the effluent inflow? Is there any record of the marsh flooding in the past?;*
5. *Under what circumstances would the Town require the ability to discharge the effluent to Shoal Lake? Note that the owner of the land over which the effluent from the lagoon flows upon discharge "do not want the Town to have the right to discharge the effluent across their property" (see copy of June 26, 2000 letter from B.A. (Woody) Langford attached). Approval of retaining the right to discharge across this property cannot be granted without legal agreement from the property owner;*
6. *Water Resources officials indicate that if any surface water drainage is not entirely underground, the Town should apply for a Water Rights Licence. The Manitoba Court of Appeal has interpreted The Water Rights Act (C.C.S.M., cW80) so as not to apply to drainage issues. However, the government has introduced an amendment to that Act to address this issue (Bill 15). As it stands, the proposed works may require a licence under The Water Rights Act once the amendment is passed;*
7. *There is a need to secure downstream landowner approvals that run with the land titles for; a) the discharge route; and b) the impact to landowners from potential downstream outflows when the third cell is released into Short's Marsh. The marsh could be raised by two inches, and if this is not entirely contained, downstream approval is required;*
8. *Is there any risk of groundwater contamination in the event of flooding or surface runoff?;*
9. *Little or no information is presented on the characteristics of the marsh and the long term impacts of increasing its nutrient loadings. These impacts could include changes or losses in wetland functions as a result of: increased phosphorous in the sediments, changes in biodiversity and decreased wetland productivity (over the longer term);*
10. *The marsh apparently supports migratory birds, but no information is presented on the potential impacts to migratory birds, both short term and long term (i.e., as a result of possible changes in the marsh. It is recommended that any*

*construction in the vicinity of migratory bird habitat be scheduled to avoid the migratory bird nesting season;*

11. *It is not clear from the report if fish are present in the marsh, or utilize it for spawning, and if so, what species may be present, and the environmental impacts of the project on the fishery (if present); and*
12. *Section 3.0 contains a brief description of alternatives considered, but the information is not clearly presented and the rationale for eliminating other alternatives is also not clear. It was noted that other alternatives, such as phosphorus removal prior to discharge, or use of a constructed wetland for treatment, do not appear to have been considered as alternatives.*

Responses From Proponent:

- Shorts Marsh does not drain into Wolf Creek. Wolf Creek enters the Oak River approximately two miles north of the Town of Shoal Lake on the west side of PTH 21;
- The marsh is well vegetated with a variety of cattails and sedges. Salt tolerant species currently in the marsh are adapted to survive with a sodium adsorption ration (SAR) of 8.6. The SAR of the treated effluent was determined to be 8.6 by Enviro-Test Laboratories on October 25/99;
- The 3<sup>rd</sup> cell of the Town lagoon contains 15.2 million Imperial gallons at capacity. Given the area of the marsh of approximately 320 acres, this would equate to an increase of 2 inches in the level of the marsh. However, the third cell would be released at a maximum discharge rate of 200 gallons/minute. This would be equivalent of raising the marsh level by 0.04 inches per day (1 mm/day). No further construction/reinforcement to the marsh outlet is anticipated;
- The drainage area of the marsh is approximately 4 square miles. Heavy summer precipitation events are expected to have much greater impact on the level of the marsh. The outlet was constructed by Ducks Unlimited and during the 17 year period in which spring water level recordings were taken, the marsh was able to fill and discharge water downstream only four years out of the 17. Anecdotal accounts from landowners on the southeast side of the marsh indicate that flooding has not been a concern in the past;
- The Town would still require the ability for emergency discharge to Shoal Lake, in the case of mechanical malfunction. Although the owner of the land over which the emergency discharge of effluent would run does not wish to continue to allow the practice, it is the Town's opinion that the owner should have been aware of this operating practice when the land was purchased, therefore historical precedence has been set. Due to the natural drainage of the entire area, there does not appear to be another suitable alternative for discharge, in an emergency situation;

- Conversation with Perry Stonehouse, Regional Water Manager, Manitoba Conservation indicates that given the hydrologic information provided, a Water Rights Licence is not required for this project;
- Adjacent land owners indicated that they did not have any objections to the outlined proposal. Original copies are on file with the Town of Shoal Lake. While these do not run with the title of the land, the Town of Shoal Lake requests that the acquisition of caveats be made conditional to the granting of the Licence;
- On 15 – 16 – 23W, there are four wells known to exist ranging from 49 to 110 feet deep. Throughout these, the wells are comprised of clays and Odanah shales. No wells are included in the Water Resources Branch database on 22 – 16 – 23W. Due to the thickness and nature of the glacial till in the area with little in the ways of shallow sands and gravels, impacts on groundwater quality are expected to be minimal. No abandoned wells are known to exist in the area;
- Shorts Marsh is a slightly brackish, semi permanent Class IV wetland, with a well established emergent fringe, and an extensive open water zone. The marsh vegetation is comprised of emergent and submergent species. Hardstem bulrush is the predominant emergent species in this wetland, but cattail and alkali bulrush are also present. The submergent vegetation consists of sag and flatstem pondweeds, water milfoil, coontail and bladderwort. Currently, there are approximately 100 head of cattle that directly use the marsh for the purposed of watering and an additional 400 head which have the potential to impact the marsh by pasturing with the drainage basin. The addition of any nutrients arising from the lagoon is expected to be minimal in comparison. It should be noted that while concentrations of nutrients are important, total loading is equally important;
- This wetland is important for waterfowl production as well as for staging and moulting habitat for migrating waterfowl, and other wildlife. Every effort will be made to avoid construction in the vicinity of migratory bird habitat during the migratory bird nesting season;
- Shorts Marsh, being a salt marsh is not considered to be prime fish habitat. The depth of the marsh is approximately 2 feet deep indicating the likelihood of fish survival to be minimal; and
- A number of alternatives were investigated prior to arriving with the proposal as submitted. This included holding ponds, artificial wetland creation, and diversion of the Oak River. These were rejected on the basis of cost and potential environmental concerns with the latter alternative. The current proposal was deemed to be most economically sound and have the least environmental impact. The current proposal was modified after a joint meeting between the R.M. of Shoal Lake and the Town Council to further minimize impact on associated cropland by extending the piping to the marsh. Other options such as phosphorus removal prior to discharge is economically unfeasible for a town with a population of 800. A constructed wetland was not further evaluated due to non-availability of land adjacent to the current lagoon.

**Environment-Water Quality/Terrestrial Quality Management (now Manitoba Water Stewardship)**

**Following Second EAP Review – August 23, 2001**

- *Some original comments have been addressed. However, it is important that the effluent should not compromise the ecology of the marsh system;*
- *Querying the assimilative capacity of the marsh;*
  - *how tolerant is the vegetation in the marsh to the increased salinity that will likely occur as a result of the effluent inflow?*
  - *what nutrient assimilation is possible?*
  - *what impacts on the Oak River are possible?*
- *Suggesting that some method of phosphorus reduction (as suggested by DU) could be incorporated to requirements regarding discharge to the marsh;*
- *Control of livestock to the marsh may be an option to assist in reducing nutrients being delivered to the marsh.*

**DISPOSITION OF COMMENTS FROM THE PUBLIC, TAC, CEAA REPRESENTATIVES**

The principle concerns of the TAC, CEAA representatives and DU regarding the proposed alteration, being the redirecting of effluent from the Town of Shoal Lake wastewater treatment lagoon, related to the May 16, 2000 Environment Act Proposal and subsequent responses to requests for additional information or discussion, are:

1. The assimilative capacity of the marsh with respect to ammonia and phosphorus;
2. The lack of information regarding volume and timing of the proposed continuous effluent discharge to the marsh and the potential impacts of allowing such discharge; and
3. The use of limited effluent quality data to assess potential impacts on the marsh and to arrive at the consultant's recommendation not to include a constructed wetland.

Some of the principle concerns of the public, TAC, CEAA representatives were adequately addressed in the proponent's June 29, 2001 letter. However, the most significant are incorporated to the requirements of the Licence.

Clauses 8 and 10 of the Licence, respectively, require that, prior to construction of the Development, the Licencee obtain all necessary provincial and federal permits and approvals for construction of the Development and easements for all land on which various components of the Development will be constructed and operated.

Clause 27 of the Licence limits the discharge period to between June 15<sup>th</sup> and November 1<sup>st</sup> of any year. Restricting lagoon effluent discharge until mid June will allow for reduction of effluent ammonia concentrations.

In response to the concerns of the public regarding the previous discharge route, the Licence does not permit effluent discharge to Shoal Lake at any time. Effluent discharge is only permissible to Shorts Marsh/Tuckers Lake via a forcemain connection that is to be constructed as a component of the Development.

Clauses 33 and 34 require that the Licencee monitor effluent to be discharged and the receiving surface body of water for a period of at least five years. The liquids shall be analyzed for phosphorus (total, total dissolved and inorganic), total Kjeldahl nitrogen, ammonia and nitrate-nitrite. The results of the analyses shall be reported to the Director in accordance with the requirements of Clause 3 c) of the Licence.

Clause 36 requires that the Licencee actively participate in any future watershed-based management study, plan and/or nutrient reduction program, approved by the Director, for Shoal Lake, Shorts Marsh/Tuckers Lake, Oak River and associated waterways and watersheds.

**PUBLIC HEARING:**

A public hearing has not been requested.

**SUMMARY:**

An Environment Act Licence, incorporating environmental responsibilities and requirements and which considers the concerns of the public, TAC, CEAA representatives has been prepared.

The Licence should be assigned to the Municipal, Industrial and Hazardous Waste Approvals Branch until the development has been constructed.

**PREPARED BY:**

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March 15, 2004

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**Appendix A**

**CORRESPONDENCE EXCHANGE SUMMARY:**

On July 17, 2000 Manitoba Conservation submitted responses from the public and TAC members to the appropriate Public Registries.

On July 21, 2000 Manitoba Conservation sent a letter to the Town requesting additional information in support of the EAP. The letter was developed based on comments and requests for additional information generated by the TAC.

In September, 2000 representatives of The Manitoba Water Services Board (MWSB), Ducks Unlimited Canada (DU) and possibly the Town met to discuss environmental concerns related to the EAP. Manitoba Conservation was not requested to participate. In November, 2000 Manitoba Conservation acquired a copy of an October 27, 2000 letter from DU to MWSB. The letter conveyed concerns of potential impacts of effluent on the proposed receiving body of water, Shorts Marsh. On February 13, 2001 Prairie Farm Rehabilitation Administration (PFRA) became involved in discussions and were provided copies of pertinent correspondence.

On June 29, 2001 the Town responded to the requests for additional information.

On July 31, 2001 the letter response was distributed to active TAC representatives as well as the Public Registries.

On August 3, 2001 Manitoba Conservation sent a letter to MWSB requesting an update regarding activities relative to DU's concerns with the EAP.

On August 23, 2001 the active TAC representatives responded with comments, citing concerns that there is a real possibility that the proposed alteration will affect the integrity of Shorts Marsh. The TAC representatives also suggested that more information regarding the assimilative capacity of Shorts Marsh would be required and that some method of phosphorus reduction prior to discharge may be necessary.

On December 13, 2001 representatives from DU, Manitoba Agriculture and Food, Manitoba Conservation, MWSB PFRA, Town of Shoal Lake and Rural Municipality of Shoal Lake Councils, Shoal Lake Water Enhancement Corporation, the Upper Assiniboine River Conservation District and the relevant landowner met to discuss issues relating to the proposal.

On January 23, 2002 the Town of Shoal Lake provided a letter to Manitoba Conservation conveying opinions regarding potential impacts of the proposed alteration.

On February 7, 2002 Manitoba Conservation responded to the Town with a letter indicating that concerns submitted by the TAC were not yet satisfactorily addressed. In that letter it was requested the Town present valid and specific scientific evidence that the impact on Shorts Marsh by the proposed alteration would be insignificant or by proposing a satisfactory alternative.

On December 11, 2002 representatives of the Environmental Approvals and Water Quality Management Branches of Manitoba Conservation attended a meeting with representatives of the Town and the Shoal Lake Water Enhancement Corporation. A draft of a Feasibility Study regarding a constructed wetland was discussed. On February 11, 2003 copies of the Feasibility Study (draft) were provided to Manitoba Conservation.

On February 13, 2003 copies of the Feasibility Study (draft) regarding a constructed wetland relative to the Town of Shoal Lake's wastewater management operations were distributed to the participating TAC representatives from Water Quality Management Branch for review and comment. On March 5, 2003 that Branch provided comments for consideration.

On February 21, 2003 DU provided their comments regarding the proposed constructed wetlands Feasibility Study to the Town of Shoal Lake. Manitoba Conservation was provided a copy these comments.

On April 10, 2003 Cochrane Engineering responded to the comments from DU. Manitoba Conservation was provided a copy of the response. On May 9, 2003 copies of the response were distributed to the participating TAC representatives from Water Quality Management Branch for review and comment. On May 21, 2003 that Branch provide comments for consideration.

In a June 13, 2003 letter to Manitoba Conservation, DU summarized their issues. The issues pertinent to the EAP are similar to those of the participating TAC representatives.

Issues that are relevant to the EAP and were most recently presented by the participating TAC representatives and DU that remain unresolved can be summarized as follows:

1. Only a limited number of marsh water and effluent quality data were used for the feasibility study of a constructed wetland;
2. Assessments of the assimilative capacity of Shorts Marsh with respect to ammonia and phosphorus are based only on one year of lagoon operation. Long term effects have not been assessed; and
3. The lack of information regarding volume and timing of the proposed continuous effluent discharge to the marsh and the potential impacts of allowing such discharge.