

Date: May 30, 2014

File: 150.20

To: Tania Steele
Licensing Clerk
Environmental Approvals Branch
123 Main Street
Ste. 160 Union Station
Winnipeg, Mb R3C 1A5

From: Rob Boswick, P. Eng.
Environmental Engineer
Environmental Approvals Branch
123 Main Street
Ste. 160 Union Station
Winnipeg, Mb R3C 1A5

Subject: **L.G.D. of Pinawa – Wastewater Treatment Lagoon Expansion – EAP
Material to Public Registries**

Please distribute the attached material pertaining to the L.G.D. of Pinawa – Wastewater Treatment Lagoon Expansion Environment Act Proposal review to the appropriate Public Registries.

Attached are:

1. Six letters (1 page each) conveying WSP's May 20, 2014 letter to participating representatives of the Technical Advisory Committee, dated May 26, 2014; and
2. Letter (7 pages) from WSP Canada Inc. to Manitoba Conservation and Water Stewardship, dated May 20, 2014.

There are a total of **13 pages** attached to this memo.

Thank you,

Rob Boswick
Attachments

Manitoba



Conservation and Water Stewardship
Environmental Stewardship Division
Environmental Approvals Branch
123 Main Street, Suite 160, Winnipeg, Manitoba R3C 1A5
T 204 945-8321 F 204 945-5229
www.gov.mb.ca/conservation/eal

File: 150.20

May 26, 2014

Adara Kaita
Crown Land Programs and Policy Manager
Manitoba Conservation and Water Stewardship
Box 25 – 200 Saulteaux Crescent
Winnipeg, MB R3J 3W3

Dear Ms. Kaita:

Re: Local Government District of Pinawa – Wastewater Treatment Lagoon Expansion – Environment Act Proposal

The responses from the Technical Advisory Committee (TAC) that contained requests for additional information regarding the Environment Act Proposal (EAP) for the Local Government District of Pinawa wastewater treatment lagoon expansion were forwarded to the proponent. The proponent was asked to address and respond to the comments contained in the responses and to provide additional information for the environmental review that is continuing.

Attached you will find the proponent's consultant's May 20, 2014 letter responding to the comments and requests for additional information presented by the TAC. Please review the responses to determine if your comments and requests for additional information have been satisfactorily addressed.

Your comments, if any, are required not later than two weeks after the date of this letter. No response on your part will be assumed to indicate no concern.

If you have any questions, please contact me at 945-6030.

Yours truly,

Original Signed By

Robert Boswick, P. Eng.
Environmental Engineer

Attachment

- c. Jason Bunn, P. Eng., Environmental Engineer – WSP Canada Inc. (letter only)
Don Labossiere, Director – Environmental Compliance and Enforcement, Manitoba
Conservation and Water Stewardship
Public Registries



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May 26, 2014

Dan Roberts
Water Control Works and Drainage Licensing
Manitoba Conservation and Water Stewardship
Box 640, 201 Fourth Ave. S.
Swan River, MB R0L 1Z0

Dear Mr. Roberts:

Re: Local Government District of Pinawa – Wastewater Treatment Lagoon Expansion – Environment Act Proposal

The responses from the Technical Advisory Committee (TAC) that contained requests for additional information regarding the Environment Act Proposal (EAP) for the Local Government District of Pinawa wastewater treatment lagoon expansion were forwarded to the proponent. The proponent was asked to address and respond to the comments contained in the responses and to provide additional information for the environmental review that is continuing.

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May 26, 2014

Diane Oertel
Environmental Compliance and Enforcement
Manitoba Conservation and Water Stewardship
Box 4000
Lac du Bonnet, MB R0E 1A0

Dear Ms. Oertel:

Re: Local Government District of Pinawa – Wastewater Treatment Lagoon Expansion – Environment Act Proposal

The responses from the Technical Advisory Committee (TAC) that contained requests for additional information regarding the Environment Act Proposal (EAP) for the Local Government District of Pinawa wastewater treatment lagoon expansion were forwarded to the proponent. The proponent was asked to address and respond to the comments contained in the responses and to provide additional information for the environmental review that is continuing.

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Environmental Engineer

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May 26, 2014

Laureen Janusz
Fisheries Branch
Manitoba Conservation and Water Stewardship
Box 20, 200 Saulteaux Crescent
Winnipeg, MB R3J 3W3

Dear Ms. Janusz:

Re: Local Government District of Pinawa – Wastewater Treatment Lagoon Expansion – Environment Act Proposal

The responses from the Technical Advisory Committee (TAC) that contained requests for additional information regarding the Environment Act Proposal (EAP) for the Local Government District of Pinawa wastewater treatment lagoon expansion were forwarded to the proponent. The proponent was asked to address and respond to the comments contained in the responses and to provide additional information for the environmental review that is continuing.

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Environmental Engineer

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File: 150.20

May 26, 2014

Joy Kennedy
Water Science and Management Branch
Manitoba Conservation and Water Stewardship
Suite 160 – 123 Main Street
Winnipeg, MB R3C 1A5

Dear Ms. Kennedy:

Re: Local Government District of Pinawa – Wastewater Treatment Lagoon Expansion – Environment Act Proposal

The responses from the Technical Advisory Committee (TAC) that contained requests for additional information regarding the Environment Act Proposal (EAP) for the Local Government District of Pinawa wastewater treatment lagoon expansion were forwarded to the proponent. The proponent was asked to address and respond to the comments contained in the responses and to provide additional information for the environmental review that is continuing.

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File: 150.20

May 26, 2014

James Stibbard, P. Eng.
Office of Drinking Water
Manitoba Conservation and Water Stewardship
1007 Century Street
Winnipeg, MB R3H 0W4

Dear Mr. Stibbard:

Re: Local Government District of Pinawa – Wastewater Treatment Lagoon Expansion – Environment Act Proposal

The responses from the Technical Advisory Committee (TAC) that contained requests for additional information regarding the Environment Act Proposal (EAP) for the Local Government District of Pinawa wastewater treatment lagoon expansion were forwarded to the proponent. The proponent was asked to address and respond to the comments contained in the responses and to provide additional information for the environmental review that is continuing.

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Public Registries



May 20, 2014

Project No: 101-15463-01 (Old No. 10-023)

Robert Boswick, P.Eng.
Environmental Engineer
MANITOBA CONSERVATION AND WATER STEWARDSHIP
160-123 Main Street
Winnipeg, MB R3C 1A5

Dear Mr. Boswick:

**RE: LOCAL GOVERNMENT DISTRICT OF PINAWA -
WASTEWATER STABILIZATION POND EXPANSION -
ENVIRONMENT ACT PROPOSAL – FILE No: 150.30**

Thank you for providing us with the comments received during the initial review period for the Environment Act Proposal (EAP) regarding the expansion of the Local Government District (LGD) of Pinawa wastewater stabilization pond from the Technical Advisory Committee (TAC). This letter intends to address and respond to the comments and requests for additional information following submission of the EAP. Comments were received from the following branches and sections within Manitoba Conservation and Water Stewardship: Water Science and Management Branch, Water Control Works and Drainage Licensing Section, Crown Lands Programs and Policy Manager, Office of Drinking Water, Environmental Compliance and Enforcement Branch, and the Fisheries Branch.

- 1. Memorandum from Water Quality Management Section, Water Science and Management Branch – Manitoba Conservation and Water Stewardship, March 13, 2014.**

Although the *Manitoba Water Quality Standards, Objectives and Guidelines Regulation* makes an allowance for populations under 2,000 people, it is sometimes difficult to determine an equivalent population depending on the wastewater sources contributing to a wastewater facility. In this case, the combination of piped and truck-hauled wastewater from campgrounds, camp and other developments complicate the calculation of an equivalent population. From a treatment perspective, the *existing*

loading to the lagoon corresponds to an equivalent population of 1,573 people, if we base it on the assumption typically applied to piped wastewater only, i.e. the generation of 0.077 kg/BOD₅/person/day. Similarly, the *proposed* loading to the lagoon corresponds to an equivalent population of 2,566, based on the same assumption.

We are of the understanding that since the existing equivalent population is less than 2,000, the LGD of Pinawa has the option of implementing a demonstrated nutrient reduction strategy. In order to implement a *demonstrated* nutrient reduction strategy, it is necessary to conduct a pilot project for each potential site to determine if the conditions are conducive to reducing phosphorus by means other than with aluminum sulfate (alum). After receiving an Environment Act Licence, WSP on behalf of the LGD of Pinawa would be prepared to submit a sampling and monitoring plan to Manitoba Conservation and Water Stewardship outlining the details behind the 10-year plan.

The *Rural Municipality of Pinawa Information Bulletin 99-25 – Soils and Terrain* identifies the land according to the Canada Land Inventory Classes as "Organic", but it very closely borders Class 3 land to the north and west. Based on the presence of the existing lagoon and the soil profiles in the geotechnical report, conducted by a qualified geotechnical engineer, we are of the opinion that the site is suitable for the proposed development. If required, we are prepared to submit an application letter to the Director for approval to construct the proposed development under subsection 14(2) of the *Nutrient Management Regulation*.

Any party involved in a future watershed based management study, plan/or nutrient reduction program is welcome to contact the LGD of Pinawa.

2. E-mail from Water Control Works and Drainage Licensing Section – Manitoba Conservation and Water Stewardship, March 5, 2014.

An Application for Licence to Construct Water Control Works is scheduled to be submitted.

General comments noted.

3. E-mail from Crown Land Programs and Policy Manager – Manitoba Conservation and Water Stewardship, March 3, 2014.

The land purchase continues to move towards completion.

After inquiring further with Crown Land Programs and Policy Manager, we were directed to contact the Forestry Department once an Environment Act Licence is issued.

Drawing C02 included in Appendix D of the EAP submission does define the serpentine wetland discharge ditch to be 2,000 metres in length, with a slope of 0.01% and 5:1 side slopes. Detailed design will be completed prior to the project being tendered. At this point, we anticipate the ditch will be approximately 1.0 m in height from the ditch bottom

to ditch top with a 2.0 m bottom width. Based on our survey information, we expect the top of the ditch to be approximately 0.5 metres above the existing ground.

4. E-mail from Office of Drinking Water – Manitoba Conservation and Water Stewardship, September 10, 2013.

We have no issues with the recommendations proposed by the Office of Drinking Water.

5. Memorandum from Environmental Compliance and Enforcement – Manitoba Conservation and Water Stewardship, February 28, 2014, 2014.

With a trickle discharge through the serpentine wetland discharge ditch, the targeted phosphorus level is 1 mg/L upon the treated effluent exiting this ditch.

Since the existing lagoon facility has been operating in the current location for approximately 40 years, there are no plans to implement contingency measures to mitigate any downstream environmental impacts. Even though the facility will again be expanded, we believe that effluent quality improvements (i.e. nutrient reduction) will occur as it flows through the serpentine wetland ditch. We also understand that extensions to the compliance timelines will be considered where a plan is in place and steps are being taken to make improvements to the effluent. We see the sampling and monitoring plan briefly outlined in the Environment Act Proposal as worthy of an extension to the compliance timelines, regardless of the population serviced by the lagoon. If approved, we would submit a detailed sampling and monitoring plan after receiving an Environment Act Licence.

The need to harvest vegetation will be explored during the sampling and monitoring program. Access to the serpentine wetland ditch will be by travel on the top of the lagoon dykes and along the ditch tops, which are approximately 0.5 m above the existing ground.

We were not provided with any information on the need for dissolved oxygen testing and therefore are not in a position to comment, if comment is indeed required.

Based on revised information, Awanipark currently has 35 residences with holding tanks. Of these 35 residences, 17 are seasonal and 18 are permanent. This revision affects the organic and hydraulic contributions attributed to Awanipark as shown in Tables 4.2 and 4.4 of the Environment Act Proposal (EAP).

The information previously provided for Pioneer Bay and Relax Ridge Campgrounds has also been updated to reflect a change in the hydraulic loading during the storage provided. Previously considered to be negligible, we have now allowed for 15% of the wastewater generation from these sources to contribute to the loading during the storage period.

Tables 4.2 and Table 4.4 have been updated with the aforementioned revisions to Awanipark, Pioneer Bay and Relax Ridge. Changes are in ***bold italics***. The total organic loading for the *existing* and *proposed* columns in Table 4.2 (Updated) have increased by 0.60 kg-BOD₅/d. The total hydraulic loading for the *present* and *proposed* columns in Table 4.4 (Updated) have increased by 991 m³. The lagoon, as designed in the EAP, is capable of servicing this additional loading while remaining in compliance with the standard guidelines.

TABLE 4.2 (UPDATED): SUMMARY OF THE ORGANIC LOADING TO THE LGD OF PINAWA LAGOON

Wastewater Source	Type	Wastewater Strength	Existing (2013)	Proposed (2033)
			[kg-BOD ₅ /d]	[kg-BOD ₅ /d]
Town of Pinawa	Forcemain	0.077 kg-BOD ₅ /person	112.1	184.8
Pioneer Bay Campground	Forcemain	250 mg-BOD ₅ /L	1.8	1.8
Relax Ridge Campground	Holding tank	1.8 kg-BOD ₅ /t	3.5	3.5
Awanipark Development	<i>Holding tank</i>	<i>1.8 kg-BOD₅/t</i>	<i>4.3</i>	<i>4.3</i>
Tim Hortons Camp	Forcemain	250 mg-BOD ₅ /L	-	3.8
TOTAL			<i>121.7</i>	<i>198.2</i>

TABLE 4.4 (UPDATED): SUMMARY OF THE HYDRAULIC LOADING TO THE LGD OF PINAWA LAGOON DURING THE 227-DAY LAGOON STORAGE PERIOD

Wastewater Source	Type	Present (2013) [m ³]	Proposed (2033) [m ³]
Town of Pinawa – existing population	Forcemain	284,520	264,410
Town of Pinawa – new residences/condos		-	69,440
Town of Pinawa – PCH		-	3,178
Pioneer Bay Campground	Forcemain	<i>153</i>	<i>153</i>
Relax Ridge Campground	Holding tank	<i>65</i>	<i>65</i>
Awanipark Development	<i>Holding tank</i>	<i>787</i>	<i>787</i>
Tim Hortons Camp	Forcemain	-	3,405
TOTAL		<i>285,525</i>	<i>341,438</i>

We have records from the 2013-2014 storage period up to the end of April 2014. Thus far, the wastewater generation for the storage period, which includes infiltration, is approximately 659 litres per person per day (Lpcd).

Comparing this recent data with past years over the same months from 2009-10, 2010-11, 2011-12 and 2012-13 where the wastewater generation rates were 777, 1325, 1041 and 756 Lpcd, respectively, we see a decrease. Therefore, we continue to suggest that in light of the efforts made by the Town of Pinawa to reduce flows and their continuing work on storm sewer separation, a design wastewater generation rate of 800 Lpcd is prudent at this time.

Of note, the Town of Pinawa has most recently put out a request for proposals (RFP) for a storm water drainage study with one of the objectives being the determination of the amount of inter-connection between the storm water collection system and the sanitary waste water collection system.

The rock outcrops were not factored into the calculation of the existing storage capacity, but the proposed total lagoon storage volume exceeds what is required by (345,865 – 341,438 =) 4,427 cubic metres. The rocks noted in Secondary Cell North and West reduce the storage capacity by approximately 250 and 1,150 cubic metres, respectively.

We do not anticipate that the suspected boulder/bedrock encountered in testhole one (TH1) will reduce the storage capacity within Proposed Secondary Cell #3 due to its depth of discovery. If a boulder/bedrock was discovered that would significantly impact the storage of a secondary cell, methods would be employed during construction to minimize the effects.

There are three known rock outcrops in the existing Pinawa lagoon. Two outcrops are located in Secondary Cell West and one in Secondary Cell North. Even though there is lack of evidence to our knowledge that suggests that these cell liners are not intact, it would seemingly be difficult to prove that they are continuous. Therefore, if Manitoba Conservation and Water Stewardship is requesting that these rock outcrops be covered in some way to make certain that these liners are continuous, there will be significant financial implications to the LGD of Pinawa to accomplish this task. Further, if this work is to be written into a new Environment Act Licence, further discussions between all parties involved will be required to determine the timing deadlines.

It would seem that rock blasting would be required to remove some or all of the rock and depending on the most cost effective way to line the cells, it would involve covering the areas with suitable clay (1.0 metre thickness) or covering them with a synthetic liner. This type of work would require each of the secondary cells to be removed from operation and dried to an extent that the outcrops could be accessed by ground-travel equipment. We would suggest that covering these rock outcrops could only be done after the new cells are constructed because the additional storage they provided would be needed. We anticipate that this work may be done in a minimum span of two years,

subject to the weather conditions. However, commencement of this work will be more determined by the time needed for the LGD of Pinawa to budget and plan for this work to be done.

Sludge depth measurements were taken by WSP (formerly GENIVAR) in the summer of 2012 within the existing cells of the Pinawa Lagoon. Shown below are the sludge depth ranges for each existing cell:

Primary Cell:	0.10 – 0.30 m
Secondary Cell West:	0.15 – 0.30 m
Secondary Cell North:	0.15 – 0.20 m

These sludge depths are all within the dead storage depths and therefore do not impact the storage capacity of the lagoon.

Rip rap is proposed for the proposed secondary cells only.

All general comments noted.

6. E-mails from Fisheries Branch – Manitoba Conservation and Water Stewardship, September 10, 2013.

Information we have received from Manitoba Hydro regarding the Seven Sisters Dam just downstream of the Pinawa lagoon indicates that the reservoir is restricted to a maximum elevation of 274.2 m (ASL). The dykes of the existing lagoon and proposed lagoon are 277.0 m or above.

The Contractor will be required to employ methods to drain any construction area while trapping any sediment from being released from the site. Sediment capture will also be necessary until vegetation is established.

If reasonable effort has been made to reduce phosphorus within the timeframe of the sampling and monitoring program and the results prove unsuccessful, the lagoon would be subject to dosing with aluminum sulfate within the secondary cells to meet the 1 mg/L limit.

Since the existing lagoon facility has been operating in the current location for around 40 years, and efforts are being made to reduce nutrient loading with the expansion of the facility, there are no plans to implement measures to mitigate any downstream environmental impacts.

The Pinawa lagoon has been designed to receive wastewater from the Tim Hortons Camp. Approvals are already in place for this project (Environment Act Licence No. 2956 R, issued June 26, 2013).

All general comments noted.

Kind regards,

WSP Canada Inc.



Jason Bunn, P.Eng.
Environmental Engineer

cc: Ms. Jenny Petersen, Resident Administrator – LGD of Pinawa