Village of Waskada

INCORPORATED 1949

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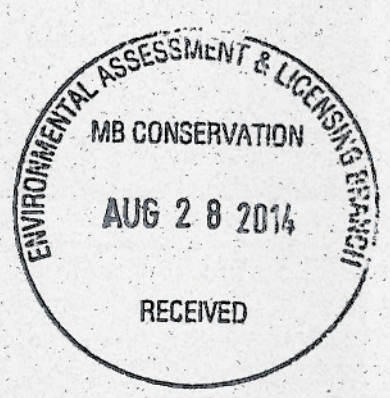

August 25, 2014

Environmental Approvals Branch
Conservation and Water Stewardship
160 – 123 Main Street (Box 80)
Winnipeg MB R3C 1A5

Attention: Tracey Braun, Director

Dear Tracey:

Re: Waskada Lagoon.

On behalf of the Village of Waskada, please find enclosed a completed Environmental Act Proposal Form and subsequent applications for the classification process of our existing lagoon.

I trust that all the necessary forms and fees are attached and completed to your satisfaction. Please do not hesitate to contact the undersigned if any additional information is needed or missing. Thank you in advance for your consideration of our request. We look forward to hearing from you.

Yours truly,

Diane Woodworth, CAO
Village of Waskada

Encl.

Environment Act Proposal Form

Manitoba
Conservation and Water Stewardship

Name of the development: Village of Waskada - Waskada Lagoon Licencing		
Type of development per Classes of Development Regulation (Manitoba Regulation 164/88): Wastewater Treatment Lagoon		
Legal name of the applicant: Village of Waskada		
Mailing address of the applicant: Box 40		
Contact Person: Diane Woodworth, CAO		
City: Waskada	Province: MB	Postal Code: R0M 1L0
Phone Number: 204 673 2401	Fax: 204 673 2663	email: waskadan@mymts.n
Location of the development:		
Contact Person: Diane Woodworth, CAO		
Street Address:		
Legal Description: N 1/2 6-2-25		
City/Town: Waskada	Province: MB	Postal Code: R0M 1L0
Phone Number: 204 673 2401	Fax: 204 673 2663	email: waskadan@mymts.r
Name of proponent contact person for purposes of the environmental assessment: Diane Woodworth, CAO		
Phone: 204 673 2401 Fax: 204 673 2663	Mailing address: Box 40, Waskada, MB R0M 2E0	
Email address: waskadan@mymts.net		
Webpage address:		
Date: August 25, 2014	Signature of proponent, or corporate principal of corporate proponent: D Woodworth Printed name: Diane Woodworth	

A complete **Environment Act Proposal (EAP)** consists of the following components:

- **Cover letter**
- **Environment Act Proposal Form**
- **Reports/plans supporting the EAP** (see "Information Bulletin - Environment Act Proposal Report Guidelines" for required information and number of copies)
- **Application fee** (Cheque, payable to Minister of Finance, for the appropriate fee)

Per Environment Act Fees Regulation (Manitoba Regulation 168/96):	
Class 1 Developments	$1,000
Class 2 Developments	$7,500
Class 3 Developments:	
Transportation and Transmission Lines	$10,000
Water Developments	$60,000
Energy and Mining	$120,000

Submit the complete EAP to:

Director
Environmental Approvals Branch
Manitoba Conservation and Water Stewardship
Suite 160, 123 Main Street
Winnipeg, Manitoba R3C 1A5

For more information:
Phone: (204) 945-8321
Fax: (204) 945-5229
http://www.gov.mb.ca/conservation/eal

Environment Act Proposal -- Village of Waskada Wastewater Treatment Lagoon

Summary

The Village of Waskada's wastewater treatment lagoon (the facility) was constructed in 1966 under Provincial Sanitary Control Commission Licence No. 124. Although the facility has performed satisfactorily since construction, this licence is now invalid. This Environment Act Proposal has been prepared in support of an application for a new licence for the facility under The Environment Act.

The Village of Waskada has a stable population of 183, and is serviced with a gravity wastewater collection system constructed at the same time as the lagoon. There is no provision at the lagoon for truck hauled wastewater. It is proposed to construct a truck dumping facility at the lagoon to accommodate truck hauled sanitary wastewater from nearby oil drilling sites. Loading calculations in the Proposal are provided to demonstrate that the facility has the capacity to accept a limited volume of this wastewater.

Other than the truck dumping facility, no changes are proposed to the configuration or operation of the facility. As detailed in the Proposal, the facility meets current requirements for facultative lagoons except with respect to the winter storage period. While the facility can accommodate a 196 day winter storage period (November 1 to May 15), it cannot accommodate a 230 day winter storage period (November 1 to June 15).

Background

The Village population in the 2011 census was 183, slightly less than the 2006 population of 199. The population has been relatively unchanged since 2001, and is about one half of the 1986 population of 349. The population decline has left the facility with surplus capacity in comparison with its mid 1960s design. The Village has no significant industrial or commercial wastewater generation, and the only institutional wastewater generation is from the community school, which has a student population of approximately 100, of which an estimated 80 are non-resident in the Village.

The provincial government has mandated that sanitary wastewater from oil industry activities should be treated in the municipalities in which it originates. Waskada is located within the Rural Municipality of Brenda, and will be amalgamating with Brenda in 2015. There are three other wastewater treatment facilities in Brenda, in Goodlands, Medora and Napinka. Although all are currently licensed under the Environment Act, all of these facilities are smaller than the Waskada facility, and the Medora and Napinka facilities are less centrally located for oilfield activity. It is anticipated that Waskada will be the preferred location within Brenda for sanitary oilfield wastewater once suitable truck dumping facilities are provided.

Hydraulic Loading

Daily wastewater generation in the Village is estimated to be 250 litres per day per person. (Water use is estimated to be 175 litres per day per person.) The resident population is 183 people. The non-resident school population is estimated to be 80, and non-resident students are estimated to generate 1/3 of the wastewater of a resident for the portion of the school year within the lagoon's storage period, which is 196 days from November 1 to May 15. Therefore, current hydraulic loading for the storage period is 9,767 cubic metres (m^3).

Assuming a future resident population of 200 generating 250 litres per person per day, a stable school population with non-resident students generating 83 litres per person per day, and one 5000 litre load of truck hauled wastewater daily during the 196 day storage period, the total future wastewater volume for the storage period would be 11,300 m^3.

Organic Loading

It is estimated that per person daily organic loading is 0.077 kg/person/day of five-day biochemical oxygen demand (BOD_5). Using the above current population, the current daily organic loading is 16.2 kg/day.

All truck hauled wastewater would be from holding tanks rather than septic tanks, and so would have the same organic strength as the Village wastewater. As a result, estimated future organic loading based on the above future population and truck hauled wastewater would be 19 kg/day.

Lagoon Capacity

Engineering drawings of the facility are not available. The location of the facility in N 6-2-25W in relation to the Village is shown in Figure 1. The distance between the facility and the nearest residence is over 400 metres. The dimensions of the facility were measured in 2014, and are provided in Figure 2. The primary cell has an area at a depth of 1.5 m of 7,832 m^2, or 0.78 ha. The corresponding organic capacity at a loading rate of 56 kg/ha/day is 43.9 kg/day. This capacity is 270 % of the capacity required for existing conditions, and 234 % of the capacity required for projected future organic loading.

With respect to hydraulic loading, the capacity of the facility is determined by the live storage volume of the secondary cell plus one half of the storage volume of the primary cell. The secondary cell live storage volume (from a depth of 0.3 m to a depth of 1.5 m) is 5,552 m^3. The primary cell storage volume at a depth of 1.5 m is 10,614 m^3, so the available storage capacity is 10,859 m^3.

This capacity is 111 % of the required capacity for existing conditions and a 196 day storage period, and is 96 % of the capacity required for projected future hydraulic loading and a 196 day storage period. Therefore, the facility will not accommodate a winter storage period of 230 days (November 1 – June 15).

Measures to monitor and reduce hydraulic loading to meet future requirements without an expansion of the facility are discussed later in this proposal.

Lagoon Liner

Hydraulic conductivity testing was conducted on the facility's clay liner in the summer of 2014. Under the direction of Environmental Approvals Branch staff, six test holes were drilled through the liner on July 14. All holes indicated a uniform clay liner in good condition with a thickness in excess of 1.0 m. Two Shelby tube samples were obtained and one was selected for hydraulic conductivity testing.

The testing report is provided in Appendix 1, indicating that the hydraulic conductivity of the liner material is 2.1×10^{-8} cm/sec. This is less than the required minimum conductivity of 1×10^{-7} cm/sec. The liner therefore meets present day requirements with respect to thickness and conductivity.

Sludge Accumulation

A sludge accumulation was mapped in the primary cell of the facility prior to 2014. The accumulation is centered on the forcemain inlet from the Village, and is visible when the primary cell of the facility is drawn down. In view of the large storage volume available in the primary cell in comparison to the secondary cell, it has been decided to level the sludge within the cell. This will be undertaken with a trackhoe or dredge from the dykes when the cell is drawn down, and additional leveling will be undertaken by waterjetting from the dykes if necessary. This should delay the need for sludge removal for 10 – 20 years. As a further measure to reduce sludge volume, a trial application of a commercial sludge reduction compound was conducted in the summer of 2014. Results of this application have not yet been determined.

Truck Dumping Facility and Access Road

As the facility does not have a truck dumping facility or all weather road access, it is proposed to construct an access road to the south side of the primary cell along the existing access trail, and to construct a dumping facility and truck turnaround pad near the middle of the south dyke of the primary cell. This location avoids close proximity to the existing forcemain inlet and the intercell pipe.

Discharge Route

The facility discharges to Waskada Creek as shown in Figure 3. Waskada Creek is a tributary of the Souris River, which is located approximately 20 km by channel distance downstream of the facility. As shown in Figure 4, most of the Creek between Waskada and the Souris River has a Habitat Classification of A in the drainage classification system used by Fisheries and Oceans Canada in the agricultural portion of Manitoba[1]. Therefore, the creek has complex habitat that supports commercial, recreational, Aboriginal or species at risk species of fish.

Operation

The facility will continue to be operated as a standard facultative lagoon. Under normal operation, the intercell pipe will remain open, allowing levels in the primary and secondary cells to equalize. To prepare for a discharge, the intercell pipe is closed two weeks before sampling occurs. Samples are taken from the isolated secondary cell and sent to an accredited laboratory for analysis of regulated parameters, including five–day carbonaceous biochemical oxygen demand ($CBOD_5$), total suspended solids, fecal coliform levels, unionized ammonia, and total phosphorus. If test results indicate that these levels are within regulated limits, the secondary cell is discharged over a two week period. A higher rate of discharge may be used (shortening the discharge period) if the level in the primary cell approaches a depth of 1.5 m.

Once the discharge is completed, the intercell pipe is opened, levels between the two cells are equalized, and the procedure is repeated if needed to provide additional primary cell storage capacity. Two discharges are normally sufficient, one shortly after May 15, and the other just before November 1. It is important to reduce the volume of wastewater in the facility to a minimum before the winter storage period (November 1 - May 15).

Maintenance

Maintenance of the facility is based on monthly inspections of cell levels, dyke conditions and evidence of seepage or leakage around the perimeter of the facility. Burrowing animals are removed by trapping or shooting, and holes and areas of subsidence are repaired. Valves on the forcemain, intercell pipe and outlet pipe are exercised periodically to prevent sticking. Vegetation on all dykes is mowed periodically during the summer to facilitate inspections and any required maintenance activities.

Decommissioning

No decommissioning plans have been prepared for the facility, as it is intended to operate indefinitely. A detailed decommissioning plan would be provided in conjunction with a proposal for a replacement facility if the need arises in the future.

Environmental Description

The surrounding land use on the south, west and north sides of the facility is agricultural, with annual cropping. The land use east of the facility is primarily urban, with a cropped buffer between the facility and community. The topography of the immediate area is flat, with mild undulations occurring at a distance more than one kilometer from the facility. The main topographic feature of the area is the Souris River Valley, which is located approximately 10 km west of the facility.

Wildlife present in the area includes the usual species present in agricultural areas of southwest Manitoba, including migratory birds, small mammals such as rabbits, skunks and mice, larger mammals such as deer, foxes and coyotes, and reptiles and amphibians. Due to the long settlement history of the area and the land use, it is believed that there are no rare or

endangered plant or animal species present in the vicinity of the facility. In any case, the only land use change proposed is the conversion of the short existing access trail to an all weather road. This access trail is presently regularly mowed grass adjacent to a cultivated field.

Waskada Creek flows intermittently, with peak flows during the spring runoff period and smaller peaks following heavy precipitation events. Flows are commonly negligible during the summer and fall lagoon discharge periods. There are no known users of the creek for water supply purposes downstream of the facility. Although cattle may use the creek to access water, the intermittent nature of the creek requires that alternate water supplies such as dugouts and municipally supplied water are also available. There are no other licenced wastewater treatment facilities discharging into Waskada Creek.

There are no known heritage resources in the vicinity of the facility. As all facility land and surrounding agricultural land has been previously disturbed, the presence of heritage resources is not anticipated.

Environmental Effects

The environmental effects of the facility are confined to effects on Waskada Creek. The facility does not affect surrounding land or terrestrial habitat and odour concerns are rare or non-existent due to the low organic loading rate in comparison to the organic treatment capacity of the primary cell. Effects on the Creek include a small nutrient loading and a potential for ammonia effects on fish during the spring discharge period, since this discharge may begin before ammonia has volatilized.

Mitigation of Environmental Effects

The continued operation of the facility without expansion is sensitive to the hydraulic loading. While current loading can be accommodated, projected future loading slightly exceeds the hydraulic capacity of the facility. Therefore, a water conservation program will be initiated to reduce per capita water use and wastewater generation, and sources of extraneous flows into the wastewater collection system will be identified and reduced. The water conservation program will focus on public information regarding the savings to be realized with respect to water supply costs and wastewater treatment costs, and it will encourage the use of low water use fixtures and appliances. The extraneous flow reduction initiative will focus on the reduction of street flows into manholes, and the elimination of yard and weeping tile drainage into the wastewater collection system.

If these measures fail to provide significant additional hydraulic storage for the lagoon, further consideration will be given to the removal of sludge from the primary cell. This activity would require the filing of a separate Environment Act Proposal.

If monitoring indicates that ammonia levels in the effluent are problematic, levels can be reduced by delaying the spring effluent discharge as long as possible beyond May 15, taking advantage of any additional gains in hydraulic capacity obtained through water conservation measures and extraneous flow reduction. Consideration could also be given to limited secondary

cell aeration using temporary aeration equipment to volatilize ammonia prior to the discharge of effluent.

Monitoring

In addition to regular monthly monitoring of the condition of the facility, careful monitoring will be undertaken to verify the loading on the facility, conditions during the discharge of effluent, and progress on reducing hydraulic loading.

Monthly monitoring will include a visual inspection of the facility with respect to the liquid level of the cells and the condition of the dykes, valves, fence, truck dumping facility and access road.

Loading on the facility will be monitored by comparing water consumption volumes with wastewater volumes on a monthly basis to determine extraneous flow rates. Wastewater volumes will be determined from lift station pumping records and measured changes in lagoon volumes.

Before discharging effluent, samples from the isolated secondary cell will be obtained and compared to licence specifications. Additional monitoring for ammonia and phosphorus is proposed at the effluent discharge point and at accessible locations downstream on Waskada Creek to determine the effect of the effluent discharge on the creek. This monitoring is proposed for each discharge event for a two year period to determine if additional mitigation measures are needed to reduce the effects of the discharges.

Facility Classification

Facility classification forms for wastewater collection facilities and wastewater treatment facilities have been completed as required under the Water and Wastewater Facility Operators Regulation and are attached.

Reference

1. Milani, D.W. 2013. Fish community and fish habitat inventory of streams and constructed drains throughout agricultural areas of Manitoba (2002-2006). Can. Data Rep. Fish. Aquat. Sci. 1247: xvi + 6,153 p.

Figure 1 – Waskada Wastewater Treatment Lagoon Location Plan

Figure 2 – Configuration and Dimensions

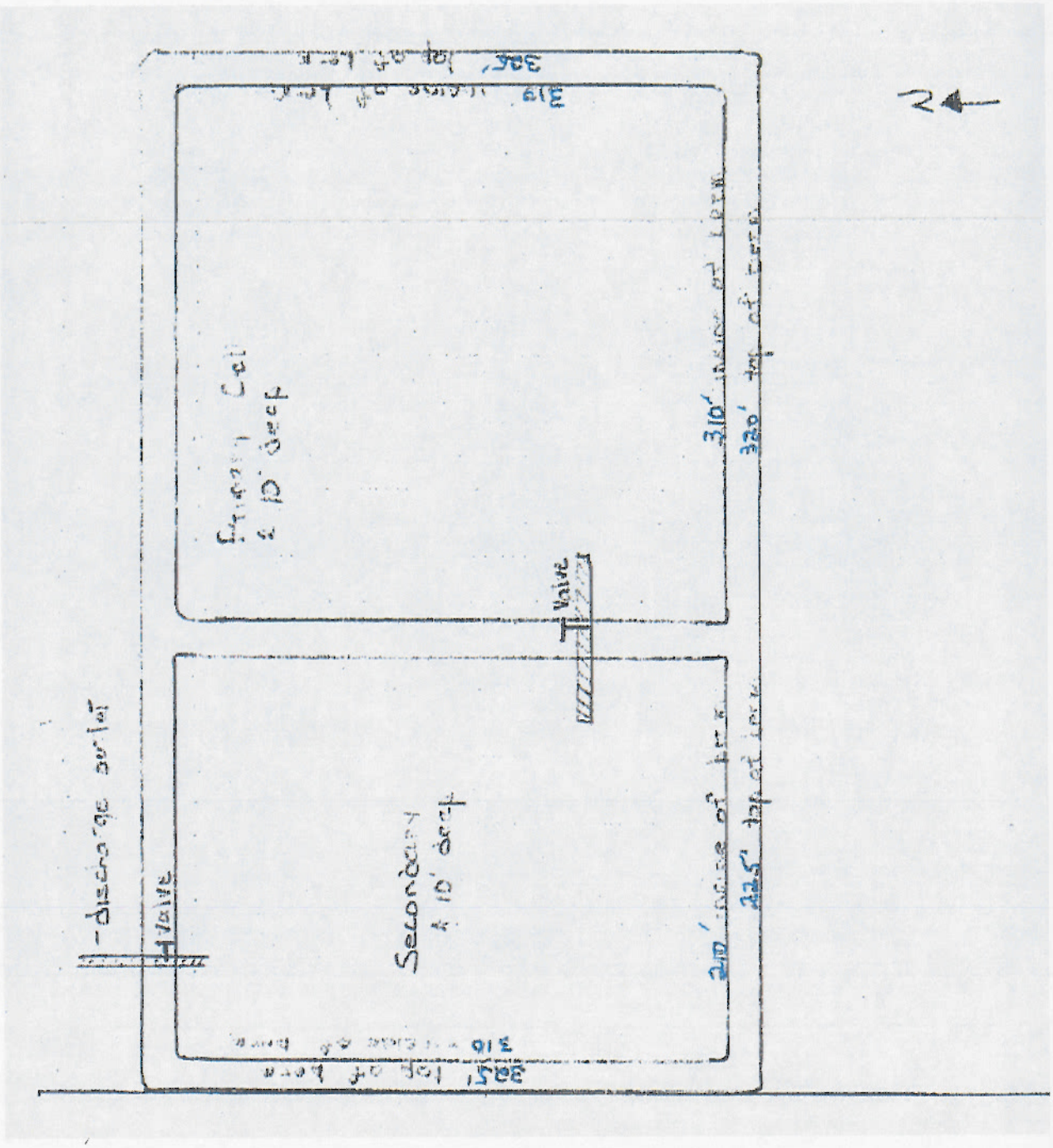

Figure 3 – Effluent Discharge Route

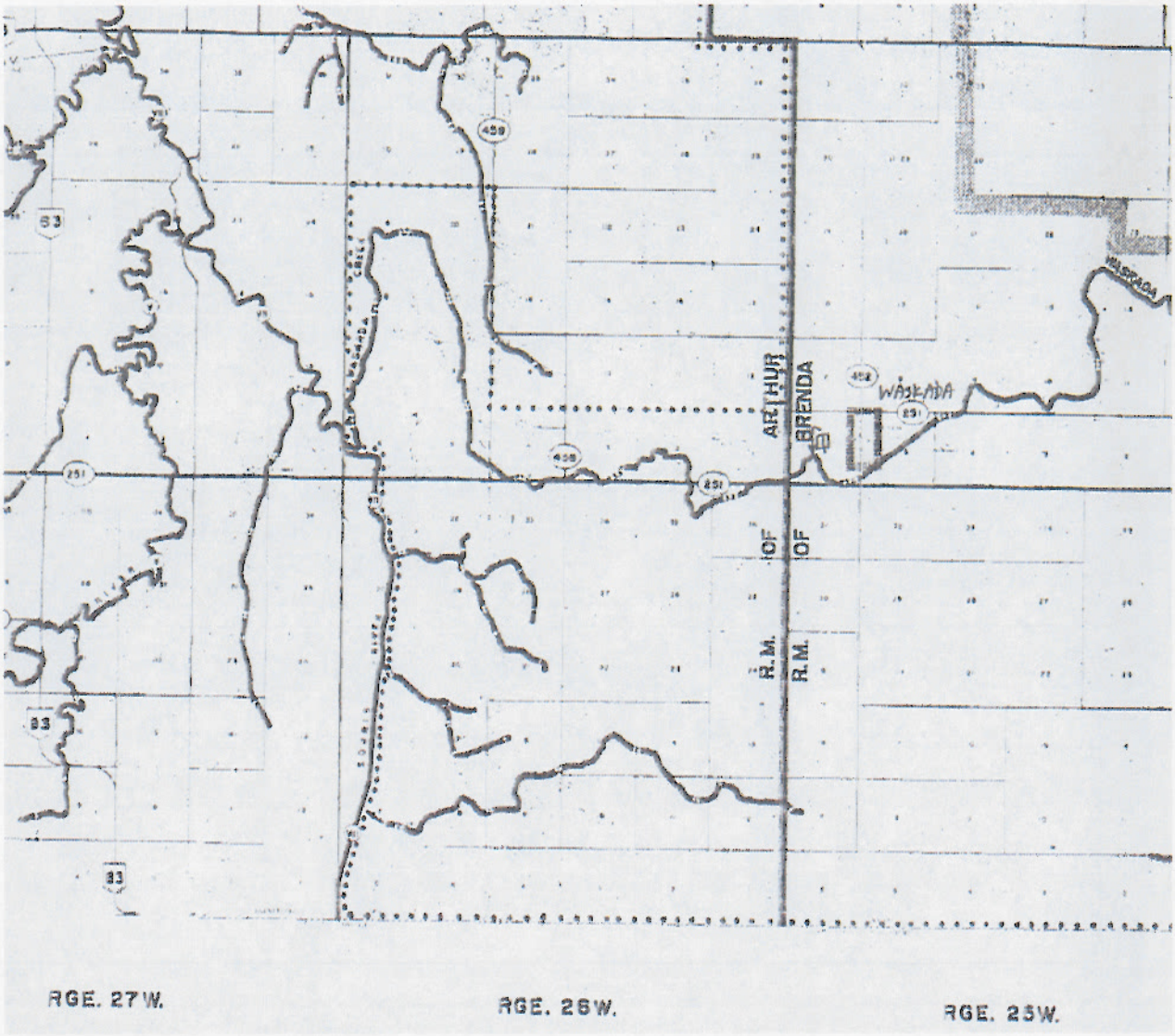

Figure 4 – Waskada Creek Fish Habitat Classification