

Water Management and Structures

Pasquia Land Settlement

Operating Guidelines

For

Pumping Runoff

The Pasquia Pumping Committee

March 8, 2018

PASQUIA LAND SETTLEMENT

Agricultural drainage within the Pasquia Land Settlement is removed primarily by pumps. Five pump stations, Pasquia/Carrot River dikes and a dam on the Pasquia River are employed for managing surface runoff in the development area which is subdivided into Polders as shown on the attached settlement plan. This outlines the operating procedures for removing surface runoff within the agricultural area with the existing infrastructure.

Polder I Area

The Polder I area is subdivided into two basins and is drained by two pump stations; one at Mile 18 and one at Mile 14. At Mile 18 when the water elevation in the delivery Drain 'P' is at elevation 258.02 m (846.50 ft.) and rising, pumping of water can begin with careful monitoring to ensure that the rate of water delivery to the pump pit is greater than the pumping rate. Dedicated monitoring and pumping will occur when elevation 258.56 m (848.29 ft.) is achieved and impending rising water levels are imminent or forecasted. (Minimum water elevation in the pump pit shall be 258.02 m (846.50 ft.) for the maximum pumping rate.

At Mile 14, when the water level in the delivery Drain 'O' just upstream of the pump station is at elevation 258.15 m (847.26 ft.) and rising, pumping can begin with careful monitoring that the water elevation beside the pump is not below elevation 258.15 m (847.26 ft.). Dedicated monitoring and pumping will occur when elevation 258.61 m (848.46 ft.) is achieved and impending rising water levels are imminent or forecasted. (Minimum water elevation in the pump pit shall be 258.15 m (847.26 ft.) for the maximum pumping rate.

Note: In the upper reaches of Drain 'P' and Drain 'O', water can flow to the pump station at Mile 18 or the pump station at Mile 14.

Polder II Area

The area comprising Polder II is drained by two pump stations, one at Mile 9, and one adjacent to the Knapp Dam on the Pasquia River. The pump station beside the Knapp Dam is referred to as the Town Pump Station. At Mile 9, pumping can begin with one pump when the water level in the delivery drain B-1 is at elevation 257.49 m (844.77 ft.). Two pumps can be employed when the water level in drain B-1 is 258.32 m (847.50 ft.) or higher. Dedicated monitoring and pumping will occur when elevation 258.09 m (846.75 ft.) is achieved and impending rising water levels are imminent or forecasted. Careful monitoring of the water level in the pump pit is required ensuring the water level in pump the pit is at or above 257.49 m (844.77 ft.).

The Town Pump Station, adjacent to Knapp Dam, has two pumps dedicated to the easterly portion of Polder II. Z-Drain conveys surface runoff to this pump station. Pumping operations can begin when the water level in Z-Drain reaches 256.95 m (843.00 ft.) using one pump and two pumps if sufficient water is delivered by Z-Drain. The objective is to maintain the water level at the junction of Z-Drain and Q-Drain below 258.10 m (846.78 ft.). Dedicated monitoring and pumping will occur when elevation 257.95 m (846.29 ft.) is achieved and impending rising water levels are imminent or forecasted. Monitoring of the water level in the pump pit is necessary to ensure the water level is at or above 256.95 m (843.00 ft.). The Z drain pumps shall be dedicated to their maximum potential to pump runoff from Polder 2.

The Town Pump Station also houses the pumps for pumping Pasquia River water into the Saskatchewan River during periods that gravity flow from the Pasquia River is precluded. One or two pumps will be operated when the water level upstream of the Young's Point culverts is higher than 260.35 m (854.17 ft.) and including if Victor Jory pumps are operating. Two pumps are dedicated to the Pasquia River along with a provision to supplement the pumping capacity by diverting Pasquia River waters to the Polder II (Z-Drain) pumps when the Z-Drain pumps are not required for agricultural runoff removal from

Polder II. Dedicated monitoring and pumping will occur when elevation 260.35 m (854.17 ft.) upstream of Young's Point is achieved or when impending rising water levels are imminent or forecasted.

Polder III East and Polder III West

The Polder III East and West areas are drained by the Victor Jory pump station.

Water is held back in the Polder III West area by a gated structure (Big Lake Control Structure) at the westerly side of Polder III East. Pumping at the Victor Jory station is affected by downstream water level conditions on the Pasquia River. Pumping at the Victor Jory station may be influenced by the operation of the Knapp Dam gated culverts, the Pasquia River - Z-Drain centre gate position, and the operation of the Pasquia River pumps in the Town Pump station.

Town Pump Station - Normal Operation

The 2 Z pumps at the Town Pump Station are dedicated to pump Polder II water and may only be used to pump Pasquia River water when not needed for Polder II. "**Not needed**" is when the water level at the junction of the Z-Drain and Q-Drain is below elevation 258.10 m (846.78 ft.). Operating range for upstream water level on the Z-Drain is 256.95m (843.00ft) to 258.10 m (846.78 ft.). The goal is to keep the water level at the junction of the Z-Drain and Q-Drain below elevation 258.10 m (846.78 ft.).

Town Pump Station-Pasquia River Relief Operation

Pumps dedicated to pumping Polder II runoff will be employed to assist pumping of Pasquia River water under the following conditions.

1. Town Pump Station is "**not needed**" for agricultural drainage in Polder II, and
2. Knapp Dam gravity flow gates are closed.

3. The Z-Drain pumps would be operated to supplement pumping from the Pasquia River when the water level elevation upstream of the culverts at of Young's Point is above 260.35 m (854.17 ft.).

The procedure to employ the pumps dedicated to Polder 11 shall be as follows:

1. Open The Pasquia River - Z-Drain centre gate to permit Pasquia River water to flow to the Z-Drain pumps. The water level in the pump pit must be at 257.25 m (844.00 ft.) or higher. The goal is to keep the water level in the Pasquia River upstream of the Young's Point culvert below elevation 260.35 m (854.17 ft.). To achieve this goal of maintaining the water level upstream of Young's Point below elevation 260.35 m (854.17 ft.), Regional Operations shall endeavour to have storage available in the Pasquia River by releasing water out of the river throughout the year. Timing of water releases or pumping will need to be made locally by Regional Operations in response to prevailing weather conditions.

The Pasquia River - Z-Drain Centre Gate

The centre gate in the Town Station shall be closed unless the following conditions prevail:

1. Town Pump Station is in Pasquia River relief operation mode, or
2. Saskatchewan and Pasquia river levels are low enough to permit gravity flow from Z-Drain.

Knapp Dam - Normal Operation

The culvert gates in the dam shall be open if gravity flow will occur from the Pasquia River to the Saskatchewan River. The culvert gates shall be closed if flow is from the Saskatchewan River into the Pasquia River.

Should water levels in the Pasquia River continue to rise above 260.35 m (854.17 ft.) Young's Point under gravity flow, the Main pump house may be operated to assist in stabilizing Pasquia River levels.

Victor Jory Pump Station – Normal Operation (unrestricted)

Water pumping at the Victor Jory pump station would occur when the following prevails:

1. Knapp Dam is open or closed, and
2. Pasquia River water level upstream of Young's Point Culvert is below 260.35 m (854.17 ft.).

When the water level upstream of Young's Point Culvert is above 260.35 m (854.17 ft) pumping will be allowed at Victor Jory Pump station as long as the quantity pumped by the Victor Jory Pump station into the Young's Point area does not exceed the quantity being removed out of the Young's Point area by the Town Pump Station or the Knapp dam gravity outlet.

3. The pump activation levels for the Jory pumps be as follows: first pump be started when the drain level at the pump station reaches 257.95, and the second pump be started when the drain level at the pump station reaches 258.25. The goal is to keep the water level in Pasquia Lake Drain below 257.95 m (846.29 ft.).

Big Lake Control Structure Normal Operations

The gated culverts at the Big Lake control structure may be opened to release water when the following prevails:

1. Big Lake water level is above 259.50 m (851.37 ft.).
2. Conditions governing the operation of the Victor Jory Pump Station as outlined on Page 6 are satisfied.
3. Outflows from Big Lake must be regulated to maintain a level below 258.55 m (848.26 ft.) downstream of the Donfield crossing during the growing season.
4. The Big Lake control structure shall be operated at the discretion of Regional Water Operations in consultation with the Pasquia Pumping Committee.

Polder IV

Surface runoff in Polder IV occurs via existing small municipal gravity drains into the upper end of the Pasquia River. There is no pump station facility in this polder.

Knapp Dam

Regional Operations, at their discretion, shall take advantage of gravity flow opportunities (one gate open) through the Knapp Dam from the late fall to early spring period. Stored water in the Pasquia River should be released by gravity through the Knapp Dam in the spring and fall periods when and if water level elevations on the Saskatchewan River and the Pasquia River are conducive to such flow. Water discharges during the fall and spring periods from the Pasquia River may be supplemented with pumping if levels exceed 260.35 m or if gravity flow is precluded. Safety and advisory postings would be necessary under such circumstances to advise the public of potential risks. The goal is have available the maximum amount of available water storage in the Pasquia River throughout the year

Approved by:



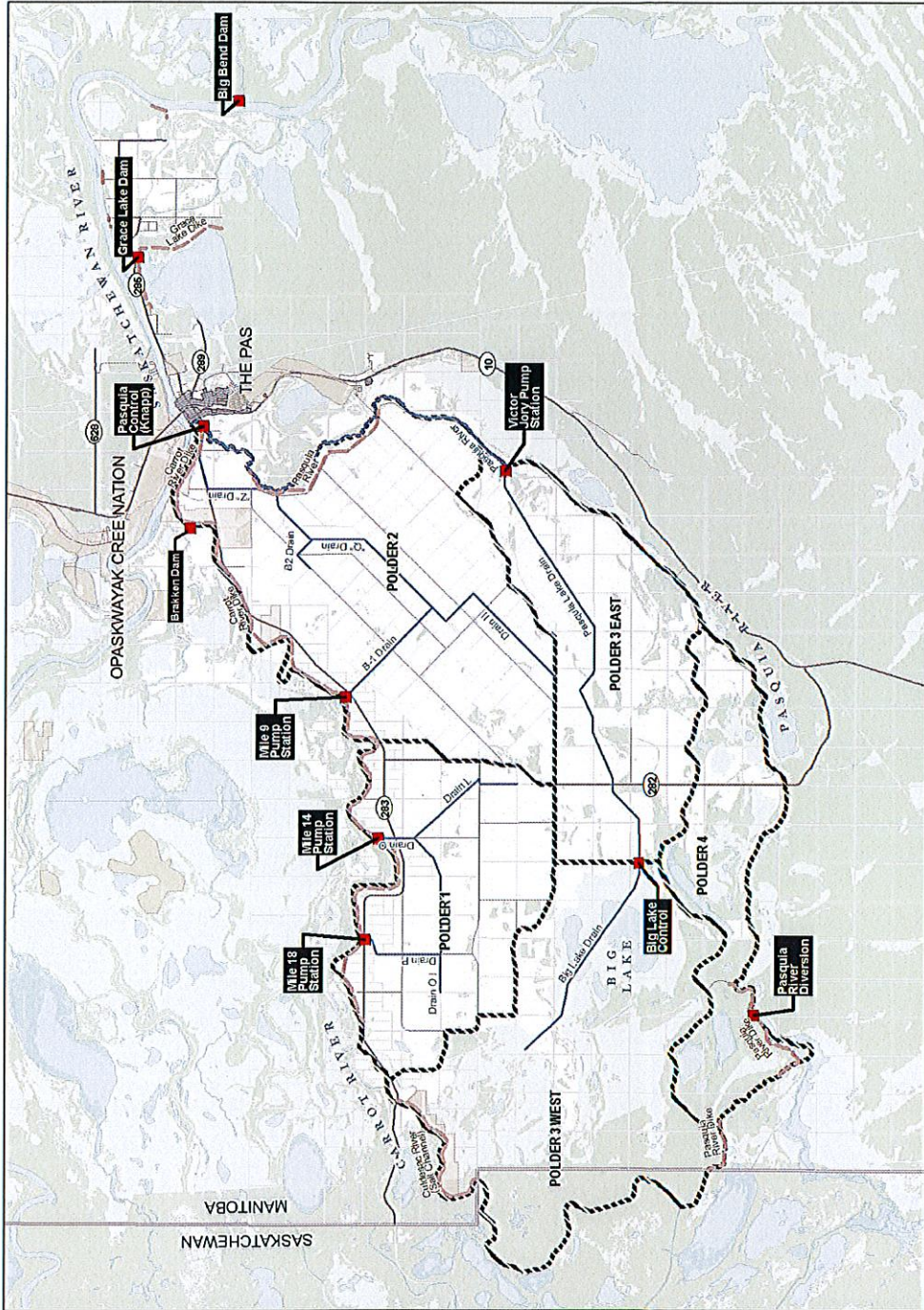
Ron R. Schuler
Minister of Infrastructure

May 8, 2018

Date

Pasquia Settlement Water Control Infrastructure

- Legend**
- Control Structures
 - Provincial Waterway Dikes
 - Provincial Waterways
 - Polders
 - First Nations Lands
 - Local Road
 - PR/PTH



Map produced by Manitoba Infrastructure,
Branch of the Ministry of Infrastructure,
Horizontal Datum: NAD83
Vertical Datum: CGVD08

