

# LAKE MANITOBA LAKE ST. MARTIN

---

## OUTLET CHANNELS PROJECT

MANITOBA INFRASTRUCTURE

### Dust Control Plan

November 16, 2020

# TABLE OF CONTENTS

<b>DISCLAIMER</b> .....	<b>I</b>
<b>PREFACE</b> .....	<b>II</b>
<b>GLOSSARY OF TERMS AND ACRONYMS</b> .....	<b>IV</b>
<b>1.0 INTRODUCTION</b> .....	<b>1</b>
1.1 Objective .....	1
1.2 Applicable Legislation and Reference Documents .....	1
1.3 Scope .....	1
1.4 Monitoring .....	1
1.4.1 Construction .....	1
1.4.2 Operation .....	2
<b>2.0 SUBMISSION REQUIREMENTS</b> .....	<b>3</b>
<b>3.0 MATERIALS</b> .....	<b>4</b>
3.1 Construction Areas, Roadways and Parking Areas .....	4
3.1.1 Specification for Supply of Material .....	4
3.1.2 Chemical Requirements .....	4
3.2 Soil Stockpiles .....	4
<b>4.0 EQUIPMENT</b> .....	<b>6</b>
4.1 General .....	6
4.2 Equipment Used .....	6
<b>5.0 APPLICATION OF SUPPRESSANT FOR DUST CONTROL</b> .....	<b>7</b>
5.1 General Requirements .....	7

## List of Tables

Table 1: Chemical Specification

DRAFT

## DISCLAIMER

This document was developed to support the Lake Manitoba and Lake St. Martin Outlet Channel Environmental Management and Monitoring Program. This document has been prepared by Manitoba Infrastructure as a way to share information and have discussion with Indigenous Communities and Groups and the public. This document has been prepared using existing environmental and preliminary engineering information, professional judgement as well as information from previous and ongoing public and Indigenous engagement and consultation. The contents of this document are based on conditions and information existing at the time the document was prepared and do not take into account any subsequent changes. The information, data, recommendations, and conclusions in this report are subject to change as the information has been presented as draft and will not be considered complete until further engagement and consultation is complete. The plans may be further revised based on information and direction received from provincial and federal environmental regulators. This draft report be read as a whole, and sections or parts should not be read out of context.

## PREFACE

The Lake Manitoba and Lake St. Martin Permanent Outlet Channels Project (the “Project”) is proposed as a permanent flood control mitigation for Lake Manitoba and Lake St. Martin to alleviate flooding in the Lake St. Martin region of Manitoba. It will involve the construction and operation of two new diversion channels: the Lake Manitoba Outlet Channel (LMOC) will connect Lake Manitoba to Lake St. Martin and the Lake St. Martin Outlet Channel (LSMOC) will connect Lake St. Martin to Lake Winnipeg. Associated with these outlet channels are the development of bridges, control structures with power connections, a new realignment of PR 239, and other ancillary infrastructure.

Manitoba Infrastructure (MI) is the proponent for the proposed Project. After receipt of the required regulatory approvals, MI will develop, manage and operate the Project. This Dust Control Plan is one component of the overall Environmental Management Program (EMP) framework which describes the environmental management processes that will be followed during the construction and operation phases of the Project. The goal of the EMP is to ensure that the environmental protection measures committed to in the Environmental Impact Statement (EIS) and the requirements of the Environment Act Licence and Federal Decision Statement Conditions are undertaken in a timely and effective manner. This includes the verification that environmental commitments are executed, monitored, evaluated for effectiveness, and that information is reported back in a timely manner to the Project management team for adjustment if required.

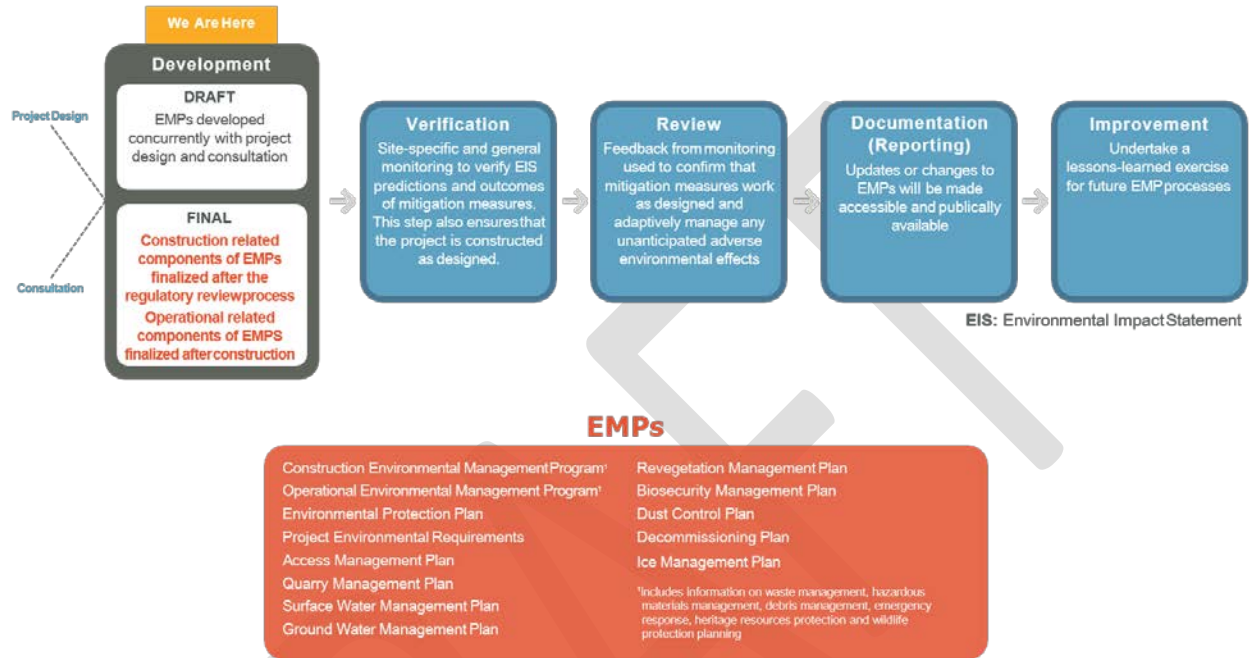
Manitoba Infrastructure remains committed to ongoing engagement and consultation with Indigenous groups and other stakeholders that are potentially impacted by the Project. Detailed EMP review discussions have been incorporated into community-specific consultation work plans and additional engagement opportunities will be provided prior to EMP finalization. Engagement opportunities include virtual open house events and EMP-specific questionnaires. EMP-specific questionnaires will be provided to Indigenous groups and stakeholders to obtain feedback and views on the draft plans, in addition to exploring opportunities for Indigenous participation in follow-up monitoring. Feedback and recommendations will be used to inform the completion of the plans.

The EMP provides the overarching framework for the Construction Environmental Management Program (CEMP) and an Operation Environmental Management Program (OEMP), which will be finalized as separate documents prior to Project construction and ideally operation, respectively. Their finalization will consider applicable conditions of the Environment Act Licence and associated approvals, any other pertinent findings through the design and regulatory review processes and key relevant outcomes of the ongoing Indigenous and public engagement and Consultation processes.

The purpose of the CEMP and OEMP is to guide how environmental issues will be addressed during construction and operation, respectively and how adverse effects of activities will be mitigated. The CEMP is supported by several specific or targeted management plans (e.g. surface water, groundwater, sediment, etc.), as shown in the Figure below, that will guide MI’s development of the Project’s contract documents and subsequently, the Contractor(s) activities, in constructing the Project in an environmentally responsible manner. The OEMP will likely include the same targeted plans developed to manage issues during construction, but prior to construction completion they would be revised and adapted to suit the specific needs during the operation phase.

# Environmental Management Program Process and Associated Environmental Management Plans

## Environmental Management Program (EMP) Process



**LAKE MANITOBA  
LAKE ST. MARTIN**  
OUTLET CHANNELS PROJECT

## GLOSSARY OF TERMS AND ACRONYMS

### Acronyms

CaCl <sub>2</sub>	Calcium Chloride
CEMP	Construction Environmental Management Program
EIS	Environmental Impact Statement
EMP	Environmental Management Program
LMOC	Lake Manitoba Outlet Channel
LSMOC	Lake St. Martin Outlet Channel
MgCl <sub>2</sub>	Magnesium Chloride
MI	Manitoba Infrastructure
OEMP	Operation Environmental Management Program
PR	Provincial Road
Project	The Lake Manitoba and Lake St. Martin Permanent Outlet Channels Project

## Glossary of Terms

**Calcium chloride:** Is an inorganic compound, a white coloured crystalline salt with the chemical formula  $\text{CaCl}_2$  that is a solid at room temperature, highly soluble in water and used as a dust suppressant

**Magnesium chloride:** Is an inorganic compound, a white coloured crystalline salt with the chemical formula  $\text{MgCl}_2$  that is a solid at room temperature, highly soluble in water and used as a dust suppressant

**Runoff:** The flow of a liquid off of a surface or out of an area

**Specific gravity:** Is the ratio of the density of a substance to the density of a given reference material. Specific gravity for solids and liquids is nearly always measured with respect to water at its densest; for gases, the reference is air at room temperature

**Suppressant (dust):** A substance which acts to suppress or restrain something (dust)

DRAFT



# 1.0 INTRODUCTION

## 1.1 Objective

The Dust Control Plan addresses the dust suppressant requirements for the Project construction and operation activities to adhere to Manitoba Infrastructure's (MI) dust control specifications. The plan describes the products to use and the methods of their application on Provincial Road (PR) 239, other access roads used and material stockpiles to minimize and mitigate effects from increased dust levels. Mitigation measures will be revised as required to meet specific site conditions.

## 1.2 Applicable Legislation and Reference Documents

Federal and provincial legislation and applicable reference documents will be followed by Contractors while controlling dust. Key reference documents are as follows:

- Lake Manitoba and Lake St. Martin Outlet Channels – Project Environmental Requirements, Section 2.6 Dust Suppression.
- Manitoba Transportation. January 2019. Specifications for the Approval, Supply and Application of Dust Control. Specification No. 1280.
- ASTM D 98 – Standard Specification for Calcium Chloride.
- ASTM D 1293 – Standard Test Methods for pH of Water.
- ASTM D 1429 – Standard Test Methods for Specific Gravity of Water and Brine.
- ASTM E 449 – Standard Test Methods for Analysis of Calcium Chloride.
- Pulp and Paper Association of Canada Standard H1 – Determination of Solids Content of Pulp and Paper Mill Effluents
- Standard Methods for the Examination of Water and Wastewater, 3120 – Metals by Plasma Emission Spectroscopy

## 1.3 Scope

This plan covers the requirements of dust suppressants and other mitigation measures and their application.

## 1.4 Monitoring

### 1.4.1 Construction

To determine when dust control needs to be applied the Contractor and Contract Administrator, or designated alternate, will be responsible for monitoring dust conditions on PR 239, access roads and all areas where construction activities will take place.

### 1.4.2 Operation

To determine when dust control needs to be applied MI or a designated representative will be responsible for monitoring dust conditions on PR 239, access roads and in areas associated with the Project operations and maintenance activities. MI's standard practices for application of dust control on PRs in the region will determine whether and where to apply dust suppressant on PR 239.

DRAFT

## 2.0 SUBMISSION REQUIREMENTS

The following will be submitted to Manitoba Infrastructure or a designated representative with a request to approve the dust suppressant:

- The name of the material.
- The name of the manufacturer or supplier.
- The manufacturer's guidelines and recommendations for application rates that meet or exceed the performance of calcium chloride (CaCl<sub>2</sub>) or magnesium chloride (MgCl<sub>2</sub>).

DRAFT

## 3.0 MATERIALS

### 3.1 Construction Areas, Roadways and Parking Areas

Only water or approved dust suppressants shall be used for dust control. The use of waste petroleum or petroleum by-products as dust suppressants is not allowed. The following chemicals may be specified:

- 38% Liquid Calcium/Magnesium Chloride (Ca/MgCl<sub>2</sub>)
- 35% Liquid Ca/MgCl<sub>2</sub>
- 34% Liquid Ca/MgCl<sub>2</sub>
- 30% Liquid Ca/MgCl<sub>2</sub>
- 77% Flake Ca/MgCl<sub>2</sub>
- 32.6% Liquid MgCl<sub>2</sub>
- 30.3% Liquid MgCl<sub>2</sub>
- 28% Liquid MgCl<sub>2</sub>
- Lignosulfonate-Solution (Liquid)
- Lignosulfonate – Solution & Carbohydrates (Liquid)

#### 3.1.1 Specification for Supply of Material

The chemicals shall comply with the requirements of Table 1.

#### 3.1.2 Chemical Requirements

Liquid Ca/MgCl<sub>2</sub> shall be composed of CaCl<sub>2</sub> or a combination of CaCl<sub>2</sub> and MgCl<sub>2</sub>. The quantity of chloride chemicals shall be calculated to achieve a strength equivalency of 77% pure flake CaCl<sub>2</sub>. Water used in the solution shall be free of contaminants that could adversely affect either field material performance or the environment.

### 3.2 Soil Stockpiles

Where appropriate, water or tarps will be utilized to prevent excess dust originating from soil stockpiles. Soil stockpiles are not expected to be significant sources of dust.

Table 1: Chemical Specification

Requirements	Chemical								Test Method <sup>(1)</sup>	
	Ca/MgCl <sub>2</sub> Liquid				Ca/MgCl <sub>2</sub> Flake	MgCl <sub>2</sub> Liquid				Lignosulfonate (Liquid)
Minimum Concentration Percentage (by mass) <sup>2</sup>	38%	35%	34%	30%	77%	32.6%	30.3%	28%		ICP-AES as described in “Standard Methods for the examination of Water and Wastewater” Sec. 3120, APHA-AWWA-WEF
Gradation (Percent Passing)					9.5 mm – 100% 4.75 mm – 80 to 100%					ASTM D98
Minimum Percentage of Total Solids (by mass)									27%	Canadian Pulp and Paper Association Standard Method H.1
Product Specific Gravity	1.38	1.35	1.35	1.30		1.30	1.28	1.125		ASTM D-1429
pH									3-8	ASTM D-1293
Equivalency %	88	98	100	118		88	100	108		

**Notes:**

1. All Test Methods refer to the current version.
2. Alkali Chloride determination, as required for Minimum Concentration analysis, is calculated by use of ASTM E449.

## 4.0 EQUIPMENT

### 4.1 General

Application equipment shall be capable of distributing the dust suppressant in a uniform manner at an application rate specified by the manufacturer or MI.

### 4.2 Equipment Used

Pressure distributors shall be propelled by a power unit capable of accurately maintaining any speed required for spraying and shall be provided with the following minimum equipment:

- A pump capable of developing a constant uniform pressure in the spray manifold to sustain the required application.
- A pressure gauge indicating the pressure within the spray bar graduated in increments of 15kPa or less and visible to the operator.
- A rear mounted spray bar having a cab-activated positive and instant shut off that can be set at variable heights parallel to the surface and to any spraying width from 1 to 3 m to spray any portion of the roadway surface, including the shoulders.
- The spray bar nozzles shall be:
  - All the same manufacture and size.
  - Clean and good working condition.
  - Designed and set to ensure uniform fan shaped spray without atomization.
- A strainer installed in the feed system to prevent clogging of the spray bar nozzles.
- A device or method that allows the operator to determine the volume remaining in the tank to an accuracy of 200 litres.
- Splash guards or other approved devices for shoulder spraying that shall permit spraying immediately adjacent to the roadway without over-spraying the road surface.
- A system (e.g. meter, GPS device, ground speed sensors, or calibration charts) that allows the operator to determine the rate of application with accuracy while spreading the dust suppressant.

The application rate per kilometer shall be confirmed by running 250 m test sections in the presence of the Contract Administrator and/or MI.

# 5.0 APPLICATION OF SUPPRESSANT FOR DUST CONTROL

## 5.1 General Requirements

Water should be applied on the surface of the road before applying the dust suppressant. Steps shall be taken as necessary to control dust resulting from operations or by traffic such that it does not:

- Affect traffic.
- Enter surface waters by ensuring that at 50 meters from a water crossing the machinery applying the dust suppressant only passes on the middle between two narrow lanes.
- Escape beyond the right-of-way to cause a nuisance to residents, businesses, or utilities by ensuring an overpass in the middle of two lanes, thus leaving a certain margin of area not covered by the dust suppressant on both sides of the road.

Dust suppressant shall be applied when the speed of winds does not exceed 15 to 20 km/h to make sure to avoid ponding, runoff, drifting, and tracking of the material beyond the area of application. Carefully monitor the application rate of all dust suppressants to ensure adequate coverage without pooling or runoff of products. The amount of dust suppressant applied should not exceed the minimum amount required to effectively suppress dust.

The suppressant application shall not proceed during periods of rain when the surface is in a saturated condition or on areas of ponded water or roads that are subject to flooding. The surface needs to be dry for the suppressants to be effective. Thus, when there is a high probability forecast for precipitation, only use water as a suppressant to prevent the loss of dust suppressant from the intended area of application. Areas receiving rainfall within 6 hours of application may require reapplication of the dust suppressant.