

# **Manitoba-Minnesota Transmission Project**

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## **Erosion and Sediment Control Plan**

**April 2019**

**Prepared by:**

**Licensing and Environmental Assessment Department**

**Manitoba Hydro**



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# Preface

Manitoba Hydro would like to acknowledge that this Project will be located in Treaty One Territory, the traditional territories of the Anishinabe, Cree, and Dakota people and the homeland of the Metis Nation.

This document presents the Erosion and Sediment Control Plan (ESCP; the Plan) for the construction of the Manitoba-Minnesota Transmission Project (the Project). It is intended to provide information and instruction to Contractors and Manitoba Hydro employees as well as information to regulators and members of the public. The Plan provides general considerations and guidance pertinent to erosion and sediment control during the development of the Project. More importantly it presents a Project-specific implementation plan and actions required to prevent and mitigate erosion and sedimentation as a result of construction of the Project. Inspection and compliance along with monitoring programs are described to confirm adherence to required actions including documentation and record-keeping. Environmental Management Practices guidance sheets are provided for the installation and maintenance of erosion and sedimentation control measures in the Appendices.

Manitoba Hydro employees and contractors are encouraged to contact the onsite Manitoba Hydro Environmental Inspector/Officer if they require information, clarification or support. Regulators and the Public are to direct any inquiries about this Plan to:

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List of Revisions

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## Definitions

Erosion - occurs when energy (wind or water) is applied to a soil surface causing the detachment, suspension and transfer of soil particles from a stable mass.

Sedimentation – The process whereby the energy of wind or water carrying soil particles is reduced down to the point that those suspended particles are allowed to settle out and be deposited, creating a build-up of sediment at that location.

Deleterious – The federal *Fisheries Act* defines it as “Any substance that, if added to water, would degrade or alter or form part of a process of degradation or alteration of the quality of that water so that it is rendered or is likely to be rendered deleterious to fish or fish habitat or to the use of by man of fish that frequent that water” (Canadian *Fisheries Act*).

# 1.0 Introduction

Consistent with its corporate Environmental Management Policy, Manitoba Hydro has committed within the Manitoba - Minnesota Transmission Project (the Project) Environmental Impact Statement (EIS) to developing an Erosion and Sediment Control Plan (ESCP) as part of a larger suite of mitigation measures to minimize potential negative environmental and socio-economic effects. This document outlines the procedures to be employed by contractors to mitigate the potential for erosion and sediment transport during the activities related to transmission project construction. With an advance review of the project locations and topography, the Contractor can identify areas at risk of erosion during the different construction activities.

This document identifies some of the common erosion and sediment control (ESC) materials and environmental management practices. This document also includes detailed design drawings that indicate correct installation methods for ESC materials to help ensure effectiveness and reduce maintenance.

Note that the methods presented here are not exhaustive and alternative methods may be proposed by the Contractor but would require approval from a Manitoba Hydro Environmental Officer prior to implementation.

Manitoba Hydro's Environmental Protection Program (EPP) provides the framework for the delivery, management and monitoring of environmental and socio-economic protection measures that satisfy corporate policies and commitments, regulatory requirements, environmental protection guidelines and best practices, and input during the Public Engagement Process (PEP) and First Nation and Metis Engagement Process (FNMEP). The Program describes how Manitoba Hydro is organized and functions to deliver timely, effective, and comprehensive solutions and mitigation measures to address potential environmental effects. This ESCP is a component of the EPP as illustrated in Figure 1.

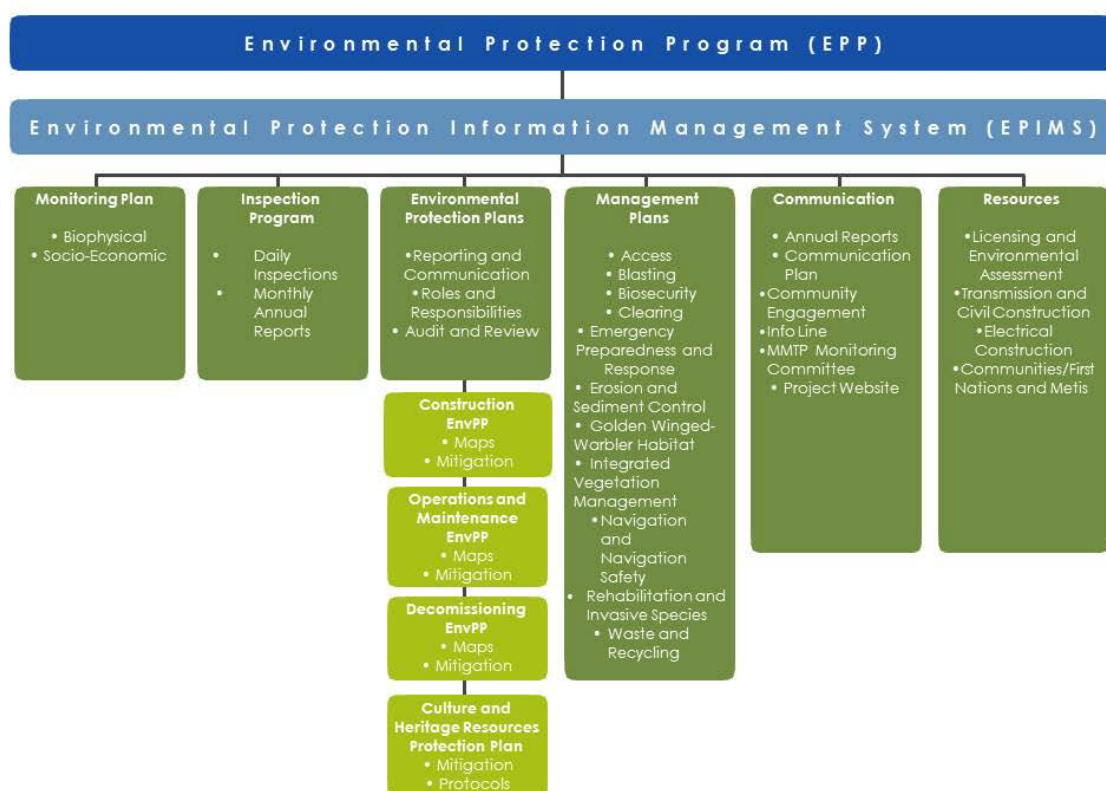


Figure 1: Transmission Environmental Protection Program

## 1.1 Commitment to environmental protection and indigenous engagement

Manitoba Hydro integrates environmentally responsible practices in all aspects of our business. Environmental protection can only be achieved with the involvement of Manitoba Hydro employees, consultants, contractors, Indigenous communities and organizations and the public at all stages of the Project from planning and design through construction and operational phases.

The use of an ESCP is a practical and direct implementation of Manitoba Hydro's environmental policy and its commitment to responsible environmental and social stewardship. It is a proactive approach to manage potential effects of access related to the construction of a new transmission line.

Manitoba Hydro is committed to seeking input on this draft plan from Indigenous communities and organizations through the MMTP Monitoring Committee and the project First Nations and Metis Engagement Process.

Below is a summary and evidence of Manitoba Hydro's consultation with potentially affected persons, organizations, Indigenous communities, and federal and provincial authorities regarding the Erosion and Sediment Control Management Plan. Any feedback or concerns that were raised, steps that Manitoba Hydro has taken or will take to address those concerns can be found in Appendix L.

Draft environmental protection and management plans, including Erosion and Sediment Control Plan, were uploaded to the Project website and a web page was created in October 2018, including a fillable comment form to provide feedback (Appendix L).

Indigenous communities and organizations, landowners, interested parties and the public were notified, in October 2018, that Manitoba Hydro was seeking feedback on these plans. This was done through the Project website, MMTP Monitoring Committee website, e-campaign, emails, and letters to landowners (Appendix L).

The construction environmental protection plan and associated management plans, including the Erosion and Sediment Control Plan have been discussed at two MMTP Monitoring Committee meetings and posted to the MMTP Monitoring Committee website. Paper copies of all draft plans were provided to community members at both meetings. The management plan website was shared with communities via email and the plan was also posted on the MMTP Monitoring Committee website (Appendix L).

Manitoba Hydro is committed to implementing this ESCP and requiring Contractors to follow the terms of this and other applicable plans within the Environmental Protection Program.

## **1.2 Purpose and objectives**

This Erosion and Sediment Control Plan is intended to be used as a reference document in the field, during construction activities to addresses sediment transport and erosion concerns while ensuring compliance with Manitoba Hydro's Construction Environmental Protection Plan requirements, industry best practices, and Provincial/Federal regulations and legislation. In order to effectively mitigate the potential effects of erosion and sedimentation due to construction activities, a variety of ESC measures are available for implementation. The appendix outlines standard erosion and sediment control techniques

along with a description of the situations where each technique may be employed and directions for correct implementation. Should a contractor wish to deviate from the control techniques or implementation described in this document they must first obtain approval from a Manitoba Hydro Environmental Officer.

The objectives of this erosion and sediment control plan are as follows:

- To establish a process prior to the start of construction that can be used to identify erosion prone sites and where necessary, implement, monitor and maintain erosion and sediment controls. This process will meet regulatory requirements, industry standards and best practices with regards to ESC during construction activities.
- To provide guidance on the correct implementation and installation of erosion and sediment control measures.

## **1.3 Background**

Construction activities associated with the Project will involve vegetation removal as well as disturbed soil/ground which may alter and increase water runoff in some areas. Excessive runoff has the potential to cause flooding as well as a rapid increase in natural erosion and sedimentation rates that, if left uncontrolled, can irreparably harm the environment and aquatic habitats.

Wind is not considered to be a major contributing factor to erosion on transmission construction projects due to the limited instances of exposed soil and the short term duration in which they are exposed. For this reason management practices controlling water erosion are the primary focus of this manual. While several of the water erosion control methods are also effective at reducing wind erosion, specific mitigations are addressed in the Erosion and Sediment Control Management Practices in Section 3.0.

## **1.4 Potential effects of erosion and sedimentation**

The importance of erosion and sedimentation control is primarily to reduce the potential impact that erosion has on watercourses such as creeks, streams, rivers and lakes etc. Soil consists of many components, the majority of which are organic material, sand, silt and clay. It is the silt and clay that are the most damaging to watercourses as they are comprised of small particles that can be carried for long distances while suspended in water. Small silt and clay particles can cloud the water making it difficult for fish to find food, and also block sunlight reaching aquatic plants. When small silt and clay particles



settle on the bottom they can smother fish and amphibian eggs. There is an added risk that eroded soil may carry hard metals, traces of petroleum product or other pollutants from land into a watercourse.

The effects of sedimentation in watercourses can be profound enough to be considered deleterious (harmful or damaging) to fish. Failure to prevent erosion and sedimentation of watercourses is considered a reportable offence under section 35 of the *Fisheries Act*.

## 1.5 Roles and responsibilities

This section outlines the major roles and responsibilities of those involved in the implementation of the Plan.

A summary of key roles and responsibilities is found in Table 1.

**Table 1: Key roles and responsibilities**

Role	Key responsibilities
Manitoba Hydro	<ul style="list-style-type: none"> <li>• Approves ESC planning, design, implementation, inspection, monitoring, maintenance, operation, and decommissioning.</li> <li>• May delegate this responsibility to other design and construction professionals to construct/implement, maintain and inspect/monitor for the duration of the undertaking.</li> <li>• Signs agreements, approvals, permits and Authorizations to which compliance is legally binding.</li> <li>• Ensures ESC measures are installed, maintained or restored by the contractor.</li> <li>• Appoints an Environmental Inspector/Officer or delegate to confirm that regulatory criteria are being met by the ESCP.</li> <li>• The Manitoba Hydro Environmental Inspector/Officer or delegate will inspect erosion and sediment control measures to confirm effectiveness.</li> </ul>
Construction Contractor	<ul style="list-style-type: none"> <li>• Will communicate erosion and sediment control information/training to all project staff and will ensure a copy of the Erosion and Sediment Control Plan is available at the project site.</li> <li>• Responsible for installation, maintenance and decommissioning of erosion and sediment control installations to ensure continued effectiveness.</li> <li>• Confirm with an MH Environmental Inspector\Officer that regulatory criteria are being met by the ESCP.</li> <li>• Respond and act promptly to resolve if any activities are identified as not in compliance with the ESCP or any regulatory requirements.</li> <li>• Responsible for sourcing ESC materials and maintaining a sufficient readily available</li> </ul>

**Table 1: Key roles and responsibilities**

Role	Key responsibilities
	<p>stockpile onsite.</p> <ul style="list-style-type: none"> <li>• Responsible for modifying and maintaining erosion and sediment control installations to ensure continued effectiveness through regular monitoring performed by their Environmental Representative.</li> <li>• Responsible to monitor and report to MH on ESC implementation effectiveness including any need for repair and maintenance.</li> <li>• Stabilize and re-vegetate disturbed areas as soon as practicable or where deemed necessary by Manitoba Hydro , rehabilitation is not to be deferred until construction is complete</li> </ul>

## 2.0 Regulatory context

Federal and Provincial Acts and regulations govern activities that have the potential to cause harm to the environment. This erosion and sediment control plan will provide the contractor with a required process to mitigate erosion and sedimentation to be in compliance with Provincial/Federal regulations and legislation. One of the most pertinent Acts involving construction activities and erosion and sedimentation is the federal *Fisheries Act*.

The *Fisheries Act* prohibits serious harm to fish which is defined in the Act as “the death of fish or any permanent alteration to, or destruction of, fish habitat.”

The purpose of the *Fisheries Act* is to protect the productivity of commercial, recreational and Aboriginal fisheries and it prohibits activities that deposit deleterious substances (damaging substances) of any type into water or that create conditions that allow deleterious substances to be deposited into water frequented by fish. Sediments are considered to have a deleterious effect on aquatic habitats.

Construction activities are required to take every precaution to prevent deposition of sediments into aquatic habitats and there is a duty to notify and take corrective action on any incidences of incidental deposition.

Manitoba Hydro staff and contractors must comply with all regulatory requirements relating to the construction of a project. Specific regulatory requirements for the Project may also be listed in regulatory work permits and/or Department of Fisheries and Oceans letters of advice/authorizations.

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## 3.0 Implementation

The intent of this section is to provide implementation instructions to the Contractor. The key steps to implementing the plan are (Figure 2):

- 1) Erosion risk identification
- 2) Planning
- 3) General mitigation measures for susceptible construction activities
- 4) Specific erosion control measures
- 5) Specific sediment control measures

The implementation of the Plan utilizes a step-wise process; however, these steps will be undertaken at various times throughout the pre-construction and construction phases of the Project. The plan is founded on a principle of adaptive management meaning if aspects of the plan are found to require modifications for improved effectiveness or if new information becomes available (e.g., more effective control actions, pest outbreaks in the Project area) the Plan and actions will be updated.

### 3.1 Erosion risk identification

There are a number of different methods to be conducted by the Contractor including desktop evaluation, pre-construction surveys, and onsite evaluations that will be used to identify areas that are at risk of erosion. Contractors are required to plan ahead and have an understanding of what mitigations will be necessary.

#### 3.1.1 Desktop evaluation

A desktop evaluation of aerial/satellite imagery as well available Geographical Information System (GIS) data will provide Contractors information on site conditions in the project right of way. Elevation or contour data of an area will help to identify the slope of elevation changes and drainage to determine where erosion risk may be higher. Soil information is also available to help understand where fine textured soil types are as they are at a higher risk from erosion.

### 3.1.2 On-site evaluation

The initial stage of construction involves clearing vegetation along a centerline down the middle of the transmission right of way. That initial clearing of the centerline allows access to areas prior to the remainder of clearing and construction activities. Ground surveys will be completed by the Contractor when access is available that could identify areas that are at a higher risk of erosion or ground disruption.

There are numerous distinct construction activities for the development of a transmission project some of which have a higher susceptibility to cause erosion and sedimentation. These include:

- Vegetation clearing
- Earthworks and stock piles
- Draining and Dewatering
- Watercourse crossing

### 3.1.3 Weather

The effects of wet weather during construction activities can have a significant impact on ground conditions and can change otherwise stable soils into soils that are affected by erosion and sedimentation. The effects of wet weather during construction activities can have a significant impact on ground conditions and can change otherwise stable soils into soils that are affected by erosion and sedimentation. Freeze thaw cycles during the spring can also expose stable soils to an unstable condition overnight and throughout the day.

## 3.2 Erosion and sediment control management strategy

The Contractor will implement an erosion and sediment control management strategy that will focus on pre-planning, scheduling and preventing erosion as a result of its construction activities. If erosion is not preventable, mitigation measures that prevent sedimentation will be implemented.

### 3.2.1 Pre-construction planning

In many cases the need for erosion and sediment control can be avoided by considering erosion mitigation during the planning stages of a project or prior to construction activities. For instance, access routes should be planned to avoid steep grades, unstable

soils and avoid close proximity to a watercourse or topography that could direct run-off to a watercourse. The Contractor must continuously review their planned construction activities and evaluate the need for ESC measures, while considering weather, soil conditions, identified environmentally sensitive sites within CEnvPP, and any newly disturbed areas for risk of erosion.

### **3.2.2 Scheduling**

The contractor, when developing schedules for construction activities that have the potential to cause erosion and sedimentation, must consider seasonal climate, identified environmentally sensitive sites within CEnvPP, and any newly disturbed areas.

Including erosion and sedimentation as a consideration in the scheduling of activities, is the first step in preventing effects to the environment. Through the use of scheduling, construction activities that are required in erosion prone areas such as adjacent to watercourses can be mitigated by timing those activities during frozen or dry soil conditions. Where possible, work should be scheduled so that construction activities that remove vegetation or disrupt the soil surface happen in short duration before erosion control measures can be installed so that the amount of time soil surface is exposed is minimized.

## **3.3 General mitigation measures**

General mitigation measures that are particular to preventing erosion and sedimentation during construction activities are found in the Construction Environmental Protection Plan, General mitigation tables:

- EI-3 Erosion protection and sediment control
- PC-1 Access roads and trails
- PC-2 Borrow pits and quarries
- PA-5 Draining
- PA-8 Grubbing
- PA-10 Stripping

### 3.4 Specific erosion control mitigation measures

Chosen erosion and sediment control measures should not be permanent in nature but designed with long term protection in mind (until re-vegetation takes place). Temporary ESC's are those that are in place during the construction phase, or a portion thereof, when exposed soils are vulnerable to erosion with nearby water courses at risk of sedimentation. Permanent solutions would only be considered under extraordinary circumstances and would require MH and regulatory approval.

Control of erosion and sedimentation is most efficient and cost effective when it can be recognized and prevented early. A basic understanding of the erosion and sedimentation processes will help with this early detection and application of mitigation measures and controls. Due to the varying conditions of the work site, the Contractor will be responsible for determining which protection measures should be installed in each work area in consultation with Manitoba Hydro. Table 2 below show examples of frequently employed erosion controls that are currently approved by MH for use by the Contractor(s).



**Table 2: Erosion Controls**

EROSION CONTROLS					
Method	Application		Location	Description	BMP
Vegetation retention and replacement	Flat Ground	Y	Any location with potential for exposed soil	Natural regeneration, seeding, planting, sodding	ID-EC_01
	Sloping Ground	Y			
	Stockpiles	Y			
	Ditches	Y			
Surface Cover	Flat Ground	Y	Any location of exposed soil, seeded or not	Organic- Weed free straw, mulch, natural fiber erosion control blankets. Inorganic- geotextile, sheeting, rock	ID-EC_02
	Sloping Ground	Y			
	Stockpiles	Y			
	Ditches	N			
Erosion Control Blankets	Flat Ground	Y	Exposed soil on flat or sloping ground, stockpiles and ditches	Variety of products manufactured into "blankets" placed tight to the ground in a matrix to cover soil and reduce surface erosion	ID-EC_03
	Sloping Ground	Y			
	Stockpiles	Y			
	Ditches	Y			
Impermeable Sheeting	Flat Ground	Y	Large areas of exposed soil, steep terrain, stockpiles	Impermeable sheeting (Polyethylene plastic, or tarps) prevents impact and saturation of soil from rainfall	ID-EC_04
	Sloping Ground	Y			
	Stockpiles	Y			
	Ditches	Y			
Organic Fiber Rolls (Wattles)	Flat Ground	N	Steep slopes, stepped terraces	Rolls of organic material (usually straw) that reduce erosion by reducing slope and the energy of overland flow	ID-EC_05
	Sloping Ground	Y			
	Stockpiles	N			
	Ditches	N			
Ditch Check Dams	Flat Ground	N	For use on drainage ditches or large diversions but not natural watercourses	Decreases the grade and water flow velocities	ID-EC_06
	Sloping Ground	N			
	Stockpiles	N			
	Ditches	Y			
Water Diversion	Flat Ground	N	Areas with large amount of exposed soil, worksite or stock pile	Diversion ditching or berms to direct overland flow around a worksite	ID-EC_07
	Sloping Ground	Y			
	Stockpiles	Y			
	Ditches	Y			
Matting	Flat Ground	Y	Flat ground at risk of erosion or	Diversion ditching or berms to direct overland flow around a worksite	ID-EC_08
	Sloping Ground	N			
	Stockpiles	N			
	Ditches	N			
Wind Erosion	Flat Ground	Y	Any location with exposed soil	Watering the surface, using impermeable sheeting (Polyethylene plastic, or tarps) or any surface cover	ID-EC_09
	Sloping Ground	Y			
	Stockpiles	Y			
	Ditches	Y			

### 3.5 Specific sediment control mitigation measures

It is important to understand that sedimentation controls themselves are only employed as a second line of defence. Sedimentation controls are designed to provide a place for water to slow down and allow the particles to be deposited that the primary erosion controls were unable to prevent. Sediment fencing does not "filter" the water but rather are meant to slow down the water and allow fine soil particles or other potentially deleterious materials to settle behind it. Even perfectly constructed sediment controls will not be sufficient if a construction site lacks adequate erosion controls. Sediment controls are most effective under low input flow conditions. Listed in Table 3 below are examples of frequently employed sediment controls that are currently approved by MH for use by the Contractor(s).

**Table 3: Sediment Controls**

SEDIMENT CONTROLS					
Method			Application	Description	BMP
Sediment fencing	Flat Ground	Y	Anywhere low flow runoff is a concern and retention of sediment	Geotextile fabric, buried at the bottom and suspended vertically by wooden stakes	ID-SC_01
	Sloping Ground	Y			
	Stockpiles	Y			
	Ditches	Y			
Sediment Retention Berm	Flat Ground	Y	Anywhere low flow runoff is a concern and retention of sediment	Constructed of rock, wood chips, compost, soil and topsoil or similar materials	ID-SC_02
	Sloping Ground	Y			
	Stockpiles	Y			
	Ditches	Y			

### 3.6 Education and training

Education and training form a critical component of the implementation plan. Manitoba Hydro and the contractor(s) each have responsibility to ensure personnel are appropriately trained to carry out their role in the prevention of erosion and sedimentation, and that proper documentation is being conducted throughout the Project. Manitoba Hydro has prepared Erosion and Sediment Control Environmental Practices found in appendices which guides the implementation of controls, for use by Project field staff.

Manitoba Hydro will hold a Contractor Environmental Pre-Construction Orientation meeting to review Project specifics and key environmental requirements with all of its Contractors at a supervisory level. A summary of this Plan, implementation requirements, roles and responsibilities, and Manitoba Hydro's expectations will be presented at that time.

Manitoba Hydro will also hold a separate pre-construction environmental meeting to provide the opportunity for Manitoba Hydro and Contractor environmental representatives to discuss Project specifics and environmental requirements in more depth.

It is a mandatory requirement that all contractor(s) provide Project-specific erosion and sedimentation control orientation training to all personnel involved in construction activities susceptible to erosion and sedimentation or involved in supervision of those personnel (i.e., project manager, supervisors) prior to starting work. This training will present the objectives of the plan, roles and responsibilities, erosion and sedimentation issues and prevention actions, and documentation requirements. A training attendance record must be maintained by the contractor(s) and submitted to Manitoba Hydro Environmental Inspector/Officer or delegate, for upload to the Environmental Protection Information Management System.

### 3.7 Monitoring and maintenance

Monitoring, inspection and adaptive management are necessary to ensure the effectiveness of the plan. It provides confirmation of proper implementation and effectiveness of erosion and sediment control measures. Monitoring will take place until the concern of erosion and sedimentation no longer exists. It is the duty of the Contractor to ensure that the erosion and sediment control measures are properly installed, well maintained and functioning as intended.

The effectiveness of the ESCP depends directly on the frequency of monitoring and what actions are taken to address any failures that may occur. A tracking document will be maintained by the Contractor's Environmental Representative indicating location, timing of construction activities and reason for implementation. This document will be submitted to Environmental Protection Information Management System (EPIMS) to ensure that all installed ESCP measures can be tracked for continued maintenance, monitoring and decommissioning\removal.

Components of monitoring, maintenance and decommissioning to be conducted by the Contractor will include:

- A monitoring schedule will be drawn up to include times, areas and individual(s) responsible for monitoring. (Will be included in the Contractor's environmental inspection reports submitted to MH).
- Inspect and assess effectiveness of ESC control structures regularly and after storms, and repair, replace or upgrade, as required. If shortcomings are identified, the contractor must take immediate action to restore their proper function.
- All employees are required to report any ineffective erosion and sedimentation control measures or those in need of repair.
- Sediment control measures may require accumulated sediment to be removed to function properly or to not overload the structure. It is important to remove sediment from the area completely and take it to landfill or relocated where it is no longer at risk of being washed into a watercourse.
- Any maintenance of ESC should be recorded and reported to MH to help identify failure prone sites or areas requiring reinforced measures.

- Weather forecasts should be monitored as weather events have the potential to play a part in erosion sedimentation risk during construction activities.
- During inactive construction periods, where the site is left alone for 30 days or longer monthly monitoring should be conducted.

### **3.7.1 ESCP removal**

The Contractor will stabilize sites as soon as feasible after construction activities causing surface disruptions are complete. The site will then be assessed and re-vegetated in accordance with the Rehabilitation and Invasive Species Management Plan. Temporary erosion and sediment control measures will remain intact and maintained until:

- The MH Environmental Inspector/Officer determine that there are no longer erosion and sedimentation concerns in an area, or
- Either natural vegetation is established and stable or permanent measures are established.

Although work may be conducted in the winter months, care must be taken to ensure that materials are not left to degrade the surrounding waterways when the spring thaw arrives. When sediment control systems are removed by the Contractor, accumulated sediment must be removed and taken to landfill or relocated where it is no longer at risk of being washed into a watercourse.

### **3.7.2 Environmental shutdown/ contingency measures**

The contractor has a responsibility to recognize and prevent working in adverse weather conditions that would increase erosion potential and overwhelm designed erosion and sediment control systems. Construction activities in areas with high erosion risk should be scheduled to take place during favourable weather conditions. Activities should be stopped in these areas when they have encountered periods of significant melt or prolonged precipitation and surface runoff cannot be sufficiently managed. Conditions that cannot be mitigated through contingency measures in areas of high erosion risk will require a shutdown of activities until conditions improve or there is modification of work practices.

Suitable work conditions will be established and agreed upon between the Contractor and Manitoba Hydro. Work modification or weather shut down to mitigate erosion and sedimentation may be considered if:

- During extended periods of adverse conditions (for rain is considered greater than 5 mm of rain in a 24 hour period)
- more than 50 mm of rain/5 cm of wet snow in the preceding 5 days; or
- the forecast calls for more than 50% certainty of 5 mm of rain/or 5 cm of wet snow in the next 24 hours
- If extreme wet weather conditions result if erosion is resulting in sedimentation of adjacent waterbodies due to compromised erosion control measures.

### **3.7.3 Environmental shutdown**

Should a weather shutdown be deemed necessary it will be communicated to the Contractor in writing through the MH Construction Supervisor. Once the shutdown is in place, the Contractor may propose Work Modifications to Manitoba Hydro that prevent further damage or employ mitigation measures. Once conditions improve or changes are approved by Manitoba Hydro the weather shut-down will be released by Manitoba Hydro. Some of the possible work modifications include: placement of matting, geotextile installation or change of work hours (working in the morning with frozen ground conditions).

### **3.7.4 Contingency measures**

Should an extreme weather event result in a breach of existing erosion and sediment controls and sediment laden water is able to flow and reach a watercourse the following contingency measures may be employed by the Contractor to mitigate the breach:

- Install additional sediment fencing, or construct a containment berm to create a containment area for runoff and prevent it flowing to watercourses and wetlands.
- Excavate a cross ditch or diversion berm to divert water away from watercourses and wetlands and into a vegetated area, sump or containment area.
- Place sandbags to raise the height of banks, preventing flooding of nearby areas or of run-off into watercourses.

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## 4.0 Environmental management practices

Below is a list of environmental management practices used for sediment and erosion control. An appendix is provided for each that provides the description, application, implementation and installation of each.

### 4.1 Erosion controls

- EC\_01 Vegetation Retention and Replacement
- EC\_02 Surface Cover
- EC\_03 Erosion Control Blankets
- EC\_04 Impermeable Sheeting
- EC\_05 Organic Fibre Rolls (Wattles)
- EC\_06 Ditch Check Dams
- EC\_07 Water Diversion
- EC\_08 Timber Matting
- EC\_09 Wind Erosion Control

### 4.2 Sediment controls

- SC\_01 Sediment Fencing
- SC\_02 Sediment Retention Berm

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## 5.0 References

Manitoba Stream Crossing Guidelines For The Protection of Fish and Fish Habitat (DFO and MNR 1996). Available at:

<https://www.gov.mb.ca/waterstewardship/fisheries/habitat/sguide.pdf>.

Minister of Justice. 1985. *Fisheries Act*. Available at: <http://laws-lois.justice.gc.ca/PDF/F-14.pdf>.

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## **Appendix A**

### **EC\_01 Vegetation Retention and Replacement**

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## Description

**Retention-** Retain as much vegetation as possible for as long as possible as it naturally reduces erosion potential. Vegetation reduces the energy of wind or water on the soil surface, lessening its impact. Vegetation also extends the amount of time water is in contact with the soil, allowing more time for absorption rather than it flowing across the surface. It also naturally reduces the sediment load of overland flow by reducing the energy of water and wind, providing an opportunity for soil particles to settle out.

**Replacement-** Areas disturbed by construction activities may have areas of exposed soil. Once assessed these areas will likely require seeding to aid natural re-vegetation (hydro-seeding, broadcast seeding, hand seeding, transplanting). Seeding of disturbed areas should be completed as soon as possible after construction activities or travel has stopped in each work area. Areas that have steeper slopes prone to producing sheet flow run off may require erosion control blankets to help stabilize the soil and protect seed while it establishes. See below for more information on seeding design best practice.

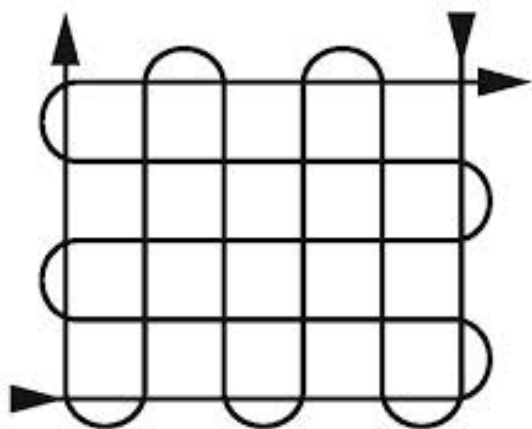
## Application

Flat Ground	Y	Any location with potential for exposed soil
Sloping Ground	Y	
Stockpiles	Y	
Ditches	Y	

### Implementation

**Seeding-** Several application methods are acceptable for seeding (Hand Broadcast, Hand-operated rotary seeders, cyclone seeders). Other methods such as drill seeding and Hydraulic seeding may be appropriate. Refer to the "REHABILITATION AND INVASIVE SPECIES MANAGEMENT PLAN for MANITOBA HYDRO TRANSMISSION PROJECTS" for direction on selecting the appropriate seed mix, seeding method and rates and other important considerations for an area. Please refer to installation diagram below for criss-cross seeding pattern used when seeding by hand.

### Installation



Criss-cross seeding pattern helps to ensure adequate and even distribution of seed.  
Diagram credit: <https://www.seedsuperstore.com/how-to-plant-new-lawn/>

### References

- REHABILITATION AND INVASIVE SPECIES MANAGEMENT PLAN for MANITOBA HYDRO TRANSMISSION PROJECTS March 2016

### Also See

- ID-EC\_02 Surface Cover
- ID-EC\_03 Erosion Control Blankets

# **Appendix B**

## **EC\_02 Surface Cover**

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Photo Credit: <https://www.todayshomeowner.com/benefits-of-spreading-straw-or-mulch-over-grass-seed/>

Description

The most effective long term erosion control is to establish vegetation, it is often necessary to protect the soil surface while this is occurring. Covering the soil surface controls erosion by buffering the impact rainfall which protects the surface and seeds until vegetation can establish. Biodegradable materials such as weed free straw (not hay), organic mulch can be used for cover on gentle slopes, where natural fibre erosion control blankets can be used on steeper slopes. Inorganic materials such as geotextile, impermeable sheeting can also be used temporarily but will have to be removed prior to re-vegetating.

Application

Flat Ground	Y	Any location with potential for exposed soil, seeded or not
Sloping Ground	Y	
Stockpiles	Y	
Ditches	N	

## Installation

**Straw:** Weed free straw bales can be broken up and spread over the surface to cover it until vegetation is established, or it can be blown on by machine. Weed free straw must be provided by a local source approved by an MH Environmental Officer. The depth of the spread straw is important to its function.

VOI Training Group's Erosion and Sediment Control Practitioner (ESCP) Participant's Manual provides the following recommended specification for spreading straw:

"If site **will be seeded** and straw is a temporary mulch to control soil erosion until a stabilizing vegetation develops:

- Place/apply straw evenly in a 20-40 mm thick layer.

Bulk application rate is 3300 to 4500kg/ha.

Straw should cover 80 to 90% of the soil surface.

If site **will not be seeded** and straw is a temporary mulch to control soil erosion:

- Place/apply straw evenly in a 40-60 mm thick layer.

Bulk application rate is 4500 to 6700kg/ha.

Straw should cover >90% of the soil surface."

**Wood chips:** Typically sourced through project mulching operations. While wood chips are resistant to movement and is good erosion protection, caution should be used as dense applications can inhibit subsequent vegetation establishment.

**Clearing debris:** Tree tops, branches and limbs from clearing operations in the area can be manually spread, covering and protecting the soil surface. This method has the additional benefit of potentially providing a seed source to aid in natural regeneration of vegetation.

## References

- REHABILITATION AND INVASIVE SPECIES MANAGEMENT PLAN for MANITOBA HYDRO TRANSMISSION PROJECTS March 2016
- VOI Training Group's Erosion and Sediment Control Practitioner (ESCP) Participant's Manual

## Also See

- ID-EC\_01\_VegRetention And Replacement
- ID-EC\_03\_Erosion Control Blankets
- ID-EC\_04\_Impermeable Sheeting

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## **Appendix C**

### **EC\_03 Erosion Control Blankets**

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## Description

Applied to flat or sloping ground, in drainage ditches (not fish bearing) or over stock piles to provide temporary erosion protection allowing permanent vegetation to be established. These products typically consist of a biodegradable material that is sandwiched between a netted material to form a “blanket” and supplied in rolls. These rolls are then installed tight to the ground in a matrix protecting the surface. Produced from a wide range of materials that are either biodegradable, photo-degradable, or designed for permanent long term use. On Manitoba Hydro projects only products that are %100 biodegradable will be accepted for use. Biodegradable products are considered to be temporary as they will naturally decompose and permanent vegetation will be able to establish through it.

## Application

Flat Ground	Y	Exposed soil on flat or sloping ground, stockpiles and ditches
Sloping Ground	Y	
Stockpiles	Y	
Ditches	Y	

## **Implementation**

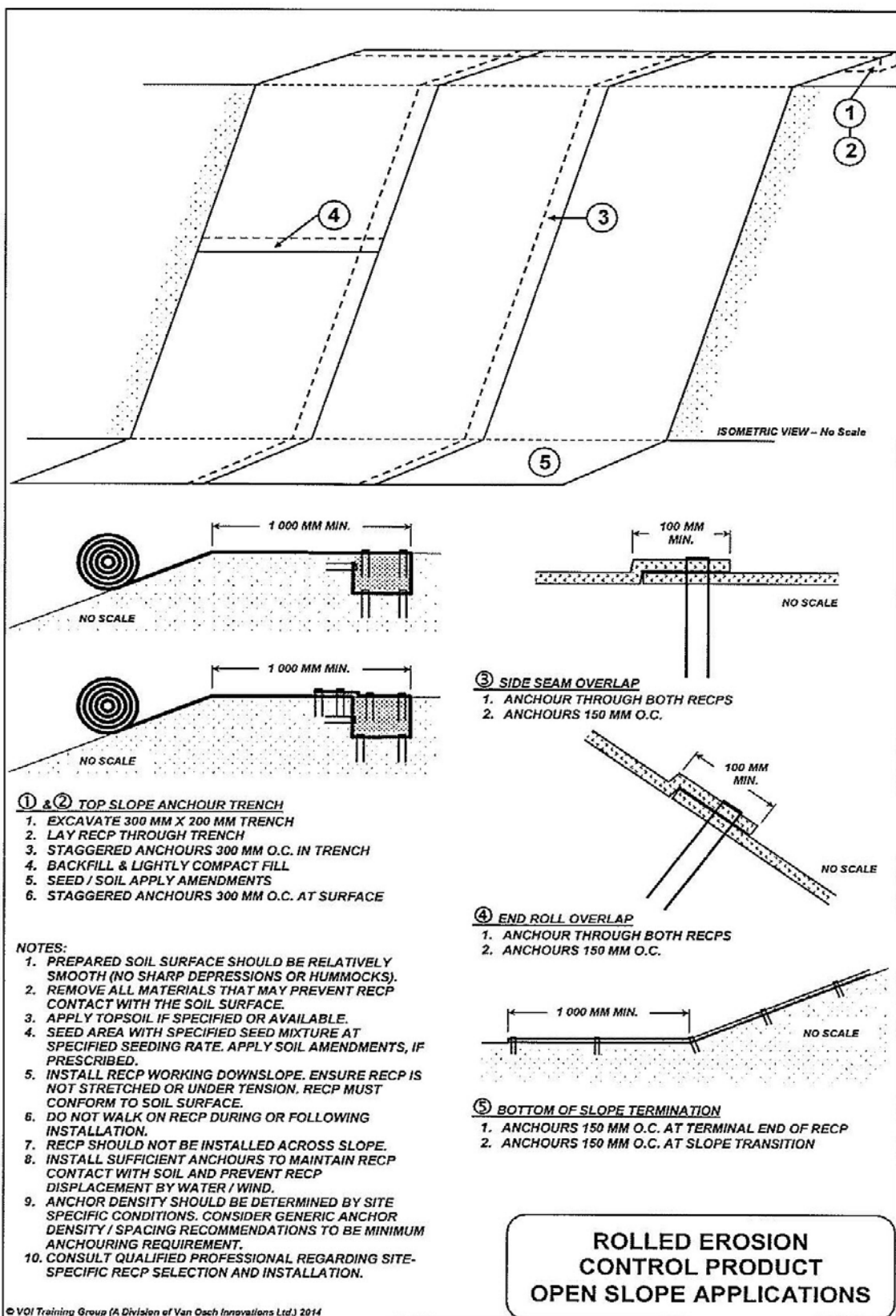
Has shown to be very effective at reducing surface soil erosion if installed correctly. Loose weave blankets should be used to allow for vegetation to regenerate through it while preventing wildlife becoming trapped or entrained in the netting. Can be used for erosion protection on a variety of locations, to protect stockpiles and used in conjunction with other erosion and sediment control products

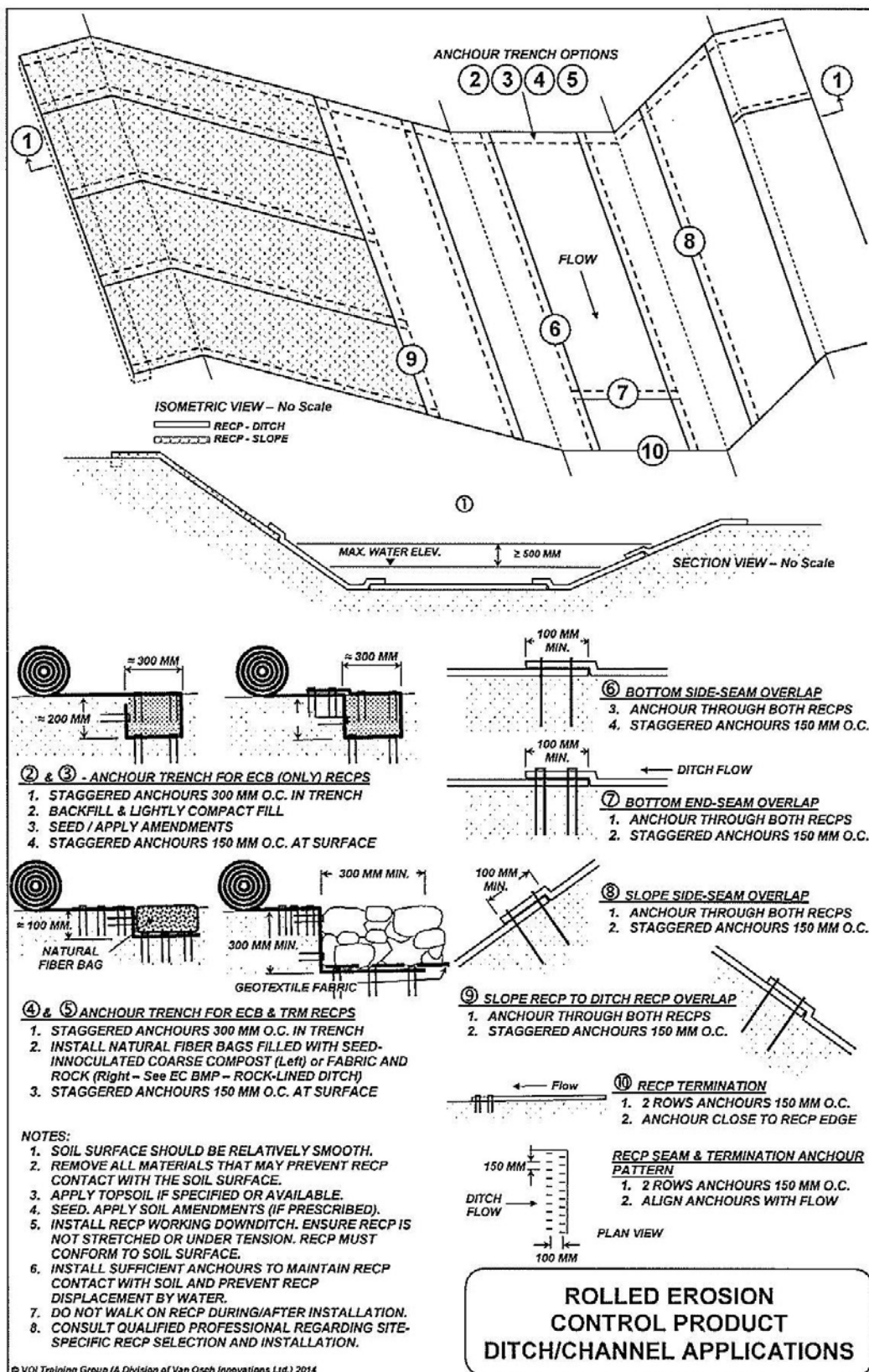
## **Installation**

Weight and peg erosion control blankets so that blankets are in full contact with ground; spaces and gaps under blankets will result in increased erosion rendering this measure ineffective.

The following installation instructions should be followed in the absence of manufacturer's installation instructions. VOI Training Group's Erosion and Sediment Control Practitioner (ESCP) Participant's Manual provides the following two diagrams provide recommended specification for installing Erosion control blankets:







### References

- VOI Training Group's Erosion and Sediment Control Practitioner (ESCP) Participant's Manual

### Also See

- ID-EC\_01\_Vegetation Retention And Replacement
- ID-EC\_02\_Surface Cover

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# **Appendix D**

## **EC\_04 Impermeable Sheeting**

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Photo Credit: VOI Training Group's Erosion and Sediment Control Practitioner (ESCP) Participant's Manual

## Description

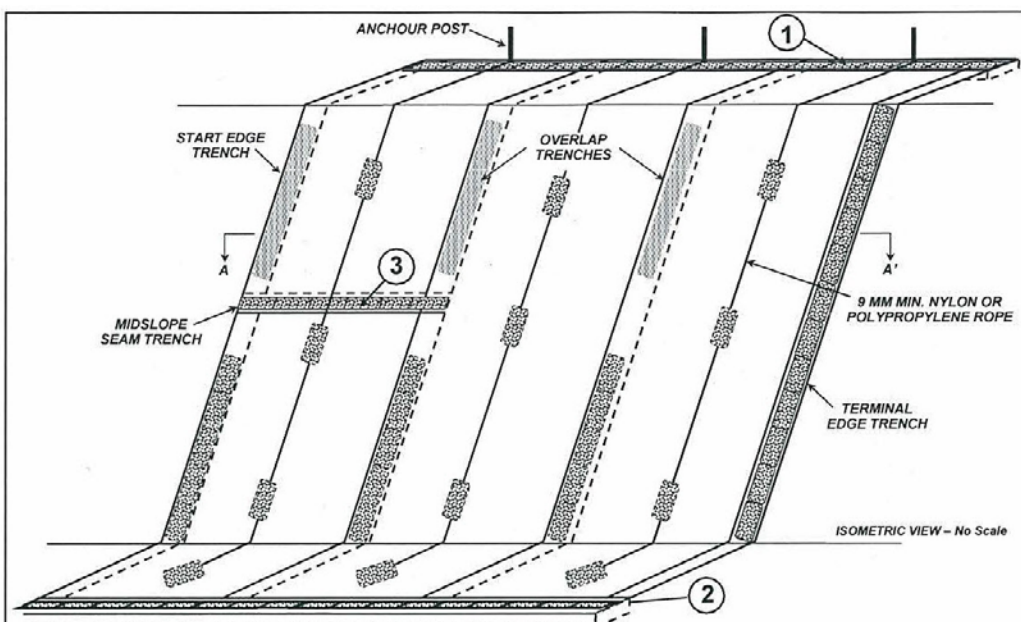
Impermeable sheeting can be used to cover erosion prone areas that require immediate and temporary short term protection, such as a stock pile or erodible soil prior to use or re-vegetation. Typically polyethylene (plastic) sheets or impermeable tarps which will later be removed and reused or recycled after use.

## Implementation

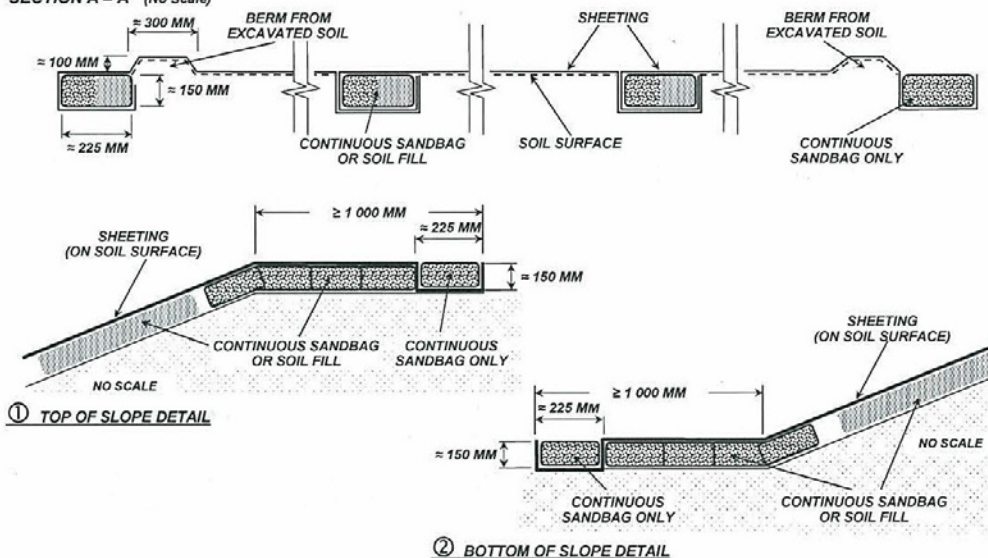
Used for short term protection from erosion, and can be applied in most applications. Caution has to be exercised when using this method as the downslope side of the impermeable sheeting can receive high velocity and concentrated flows resulting in erosion. Precautions may have to be taken to prevent undercutting or increased erosion at the downslope extent of the sheeting.

## Application

Flat Ground	Y	Large areas of exposed soil, steep terrain, stockpiles
Sloping Ground	Y	
Stockpiles	Y	
Ditches	Y	



SECTION A - A' (No Scale)



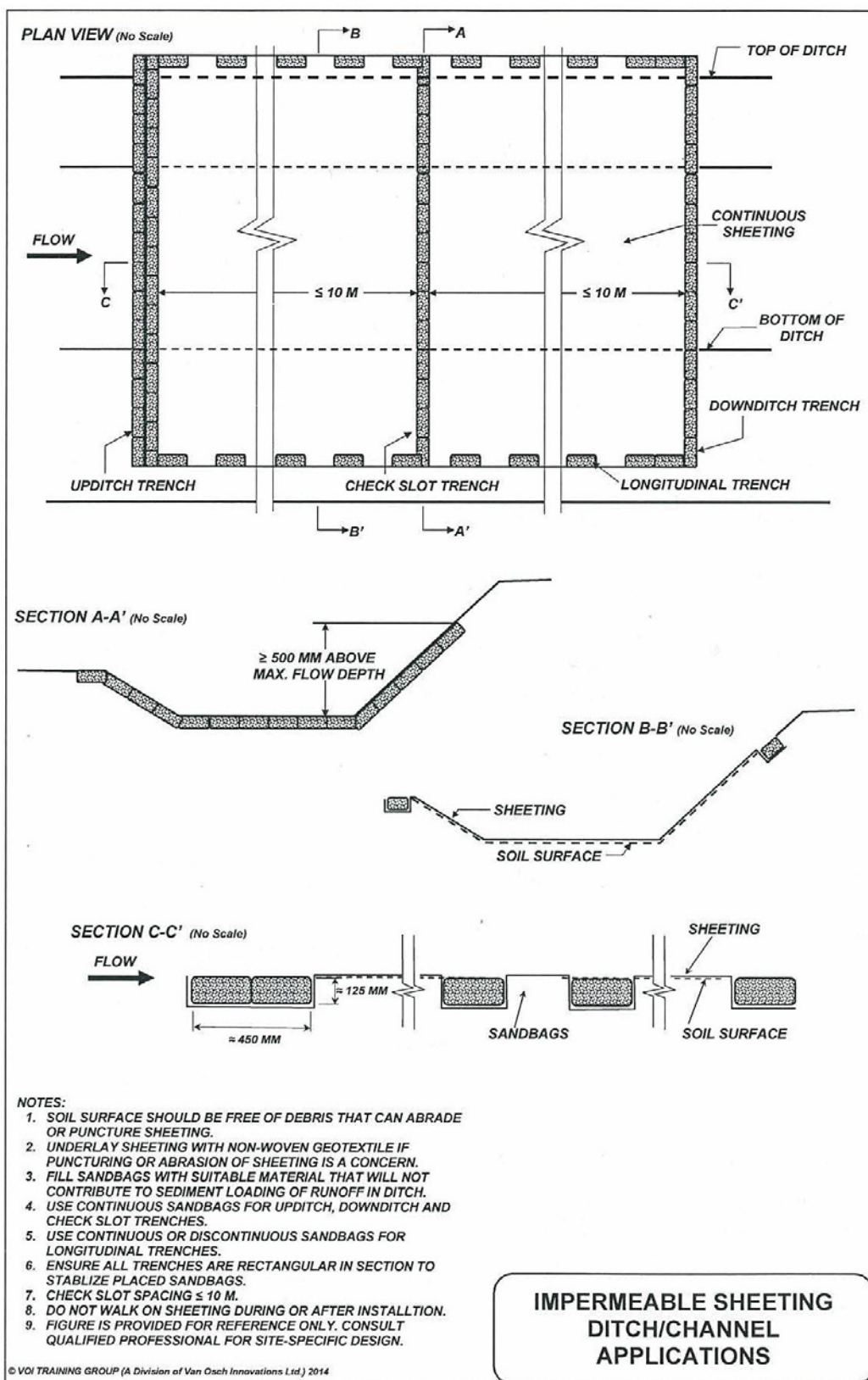
## NOTES:

1. SOIL SURFACE SHOULD BE FREE OF DEBRIS THAT CAN ABRASE OR PUNCTURE SHEETING.
2. USE CONTINUOUS SANDBAGS FOR TOP, BOTTOM, TERMINAL EDGE AND MIDSLOPE SEAM TRENCHES.
3. USE CONTINUOUS SANDBAGS FOR SLOPE TRENCHES IF BACKFILL SOIL WILL SLIDE DOWN TRENCH DURING BACKFILLING AND DISPLACE SHEETING.
4. BACKFILL OR PLACE SANDBAGS IN SLOPE TRENCHES STARTING FROM BOTTOM OF SLOPE.
5. DO NOT WALK ON SHEETING DURING OR AFTER INSTALLATION.
6. PLACE SUFFICIENT SURFACE WEIGHTS.
7. FIGURE IS PROVIDED FOR REFERENCE ONLY. CONSULT QUALIFIED PROFESSIONAL FOR SITE-SPECIFIC DESIGN.



## IMPERMEABLE SHEETING OPEN SLOPE APPLICATIONS





References

- VOI Training Group's Erosion and Sediment Control Practitioner (ESCP) Participant's Manual

Also See

- ID-EC\_02\_Surface Cover

## **Appendix E**

### **EC\_05 Organic Fibre Rolls (Wattles)**





Photo credit: <http://www.earth-savers.com/>

## Description

Organic fibres (straw, woodchips etc.) are encased in a photodegradable plastic net casing that form a tube or roll used for erosion control but sediment control as a secondary use. Installed perpendicularly across a slope it reduces erosion by shortening the slope length by providing grade breaks. They are also effective at slowing flow velocity of overland flow and retaining sediment that accumulates behind the roll instead of migrating down slope. These locations also help to retain seed and other organics that would otherwise be washed away.

## Implementation

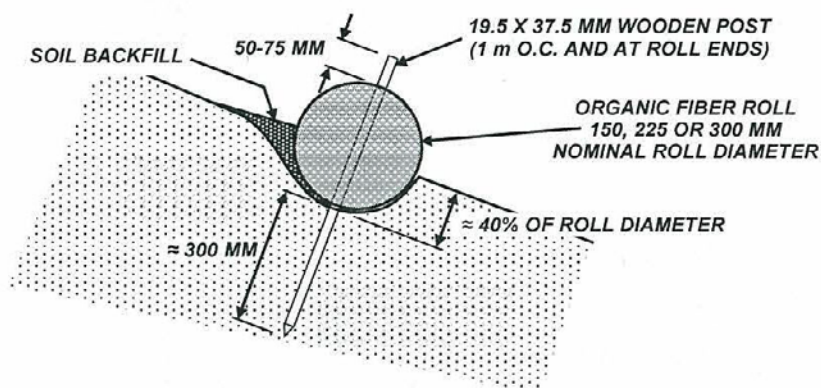
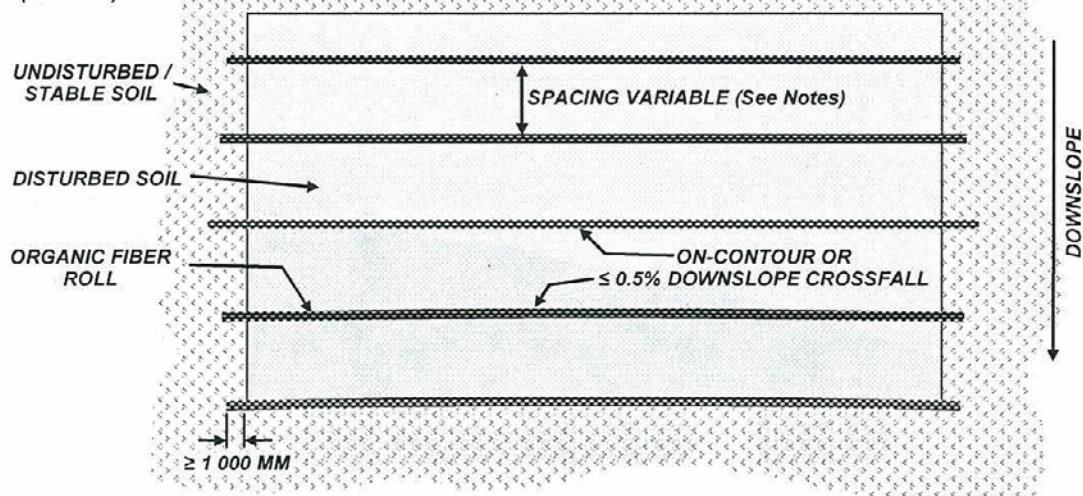
Organic fibre rolls are typically used on steep slopes where the surface has been disturbed and at a risk of erosion. Advantageous on steep slopes as they can be installed by hand in remote sites and can be combined with other methods such as erosion control blankets to optimize protection. Intended to be used temporarily until slope is re-vegetated. The rolls cannot be installed across ditches, swales or natural water flow paths.

## Application

Flat Ground	N	Steep slopes, stepped terraces
Sloping Ground	Y	
Stockpiles	N	
Ditches	N	

## Installation

### PLAN VIEW (No Scale)



#### NOTES:

1. NOMINAL POST LENGTH = ROLL DIAMETER + 350 MM.
2. ROLL SPACING VARIABLE:
  - 1H:1V @  $\approx 3\ \text{M}$
  - 2H:1V @  $\approx 6\ \text{M}$
  - 3H:1V @  $\approx 9\ \text{M}$
  - 4H:1V @  $\approx 12\ \text{M}$
  - DECREASE SPACING AND INCREASE ROLL DIAMETER FOR HIGHLY ERODIBLE SITES
3. PREPARE SOIL AND SEED IMMEDIATELY FOLLOWING FIBER ROLL INSTALLATION
4. FIGURE IS PROVIDED FOR REFERENCE ONLY. CONSULT QUALIFIED PROFESSIONAL FOR SITE-SPECIFIC DESIGN.

**ORGANIC FIBER  
ROLLS**

**References**

- VOI Training Group's Erosion and Sediment Control Practitioner (ESCP) Participant's Manual

**Also See**

- ID-EC\_01\_VegRetentionAndReplacement
- ID-EC\_03\_Erosion Control Blankets
- ID-EC\_04\_Impermeable Sheeting

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# **Appendix F**

## **EC\_06 Ditch Check Dams**

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Photo Credit: FP Innovations [https://fpinnovations.ca/media/presentations/Documents/Presentation-handbook-Gillies-Erosion\\_and\\_sediment\\_control.pdf](https://fpinnovations.ca/media/presentations/Documents/Presentation-handbook-Gillies-Erosion_and_sediment_control.pdf)Photo

## Description

Installed as a series of concave dams used in ditches (not fish bearing) natural swales, or overland flow paths that are carrying sediment. Used as a longer term solution to reduce erosion over the duration of onsite activities. By decreasing the grade of a ditch and decreasing flow velocities, this erosion control also has a secondary function in the capture and storage of larger sized sediments.

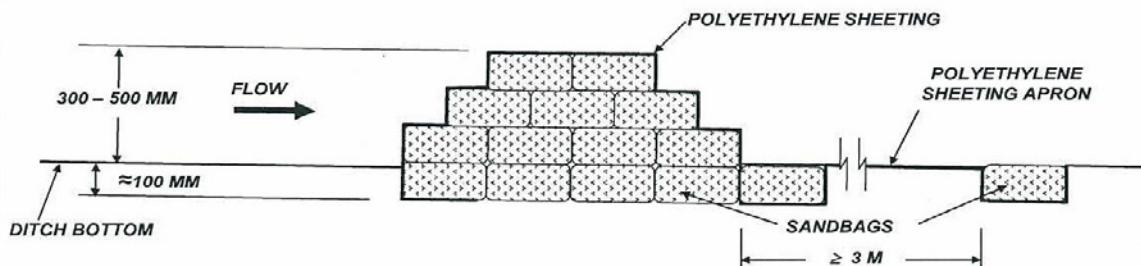
## Application

Flat Ground	N	For use on drainage ditches or large diversions but not natural watercourses
Sloping Ground	N	
Stockpiles	N	
Ditches	Y	

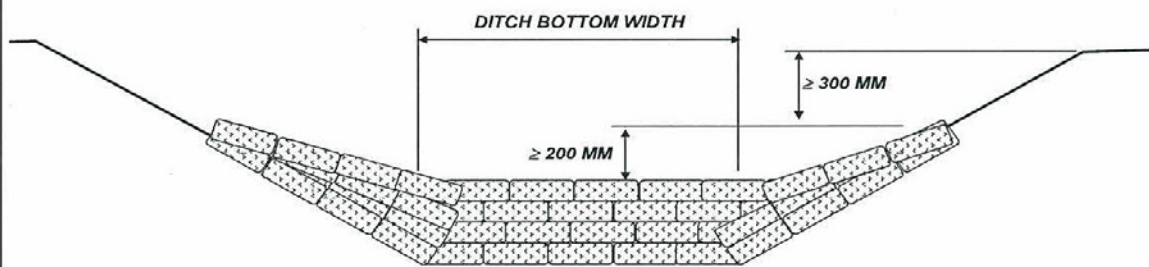
## Implementation

Ditch check dams are installed in a series , with steeper slopes requiring a closer spacing to maintain a reduction in the velocity of flowing water. Check dams are most effective where drainage area is relatively small, with low velocity flow and with a low gradient or slope angle. Typically installed in ditches where water flow is eroding and scouring a channel in finer textured soils. Attention to specifications is required for effective installation, poor installation can cause undercutting and increase erosion. Can be combined with other methods such as erosion control blankets.

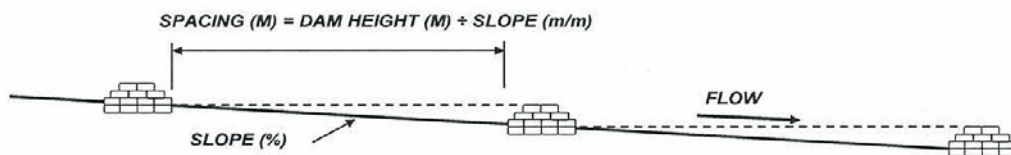
SECTION VIEW THROUGH DAM (No Scale)



SECTION VIEW ACROSS DITCH (No Scale)



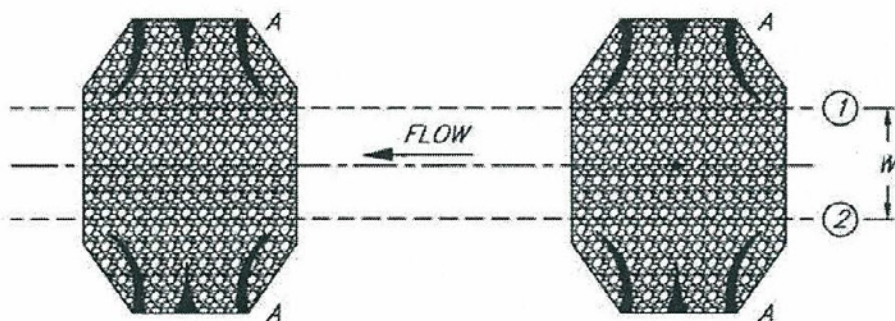
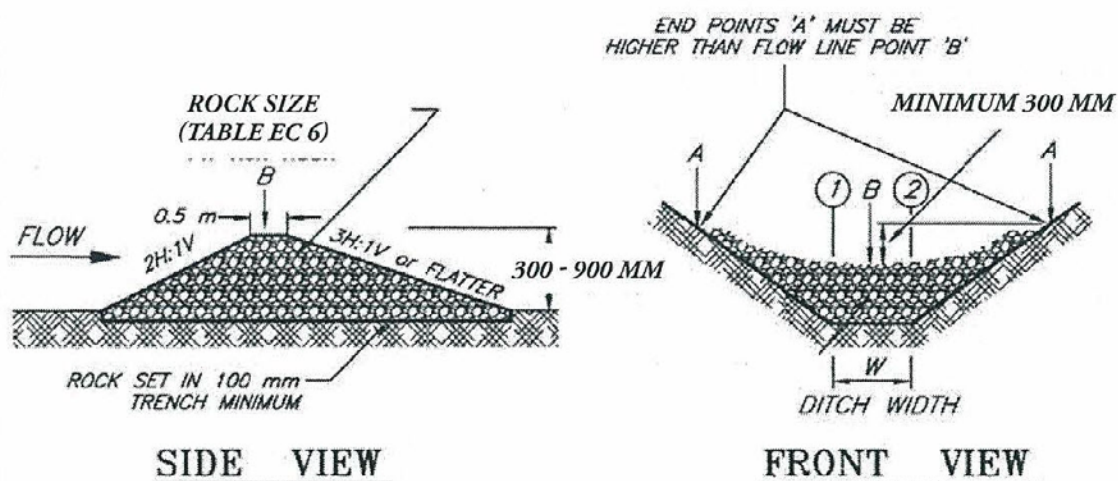
PROFILE VIEW AND TYPICAL SPACING FOR SANDBAG DAMS IN DITCH (No Scale)



**NOTES:**

1. EXCAVATE NOMINAL 100MM DEEP TRENCH FOR FULL DAM FOOTPRINT.
2. INCREASE/DECREASE WIDTH, HEIGHT AND CONFIGURATION OF CHECK DAM TO MEET MINIMUM AND MAXIMUM DAM HEIGHT REQUIREMENT. RESULTING STRUCTURE MUST BE HYDRAULICALLY STABLE.
3. WRAP DAMS WITH POLYETHYLENE SHEETING AND EXTEND 3 M DOWNDITCH (MIN.) OF DAMS. IF SHEETING IS NOT INSTALLED, ALTERNATIVE EROSION RESISTANT APRON MUST BE PLACED.
4. POLYETHYLENE SHEETING 6 MIL (MIN.) THICKNESS AND OF SUFFICIENT WIDTH TO COVER ENTIRE WIDTH OF DAM.
5. DITCH MUST HAVE SUFFICIENT DEPTH TO ENSURE ALL FLOW REMAINS WITHIN DITCH.
6. DITCH SLOPE  $\leq 5\%$ .
7. CONTRIBUTING DRAINAGE AREA  $\leq 2$  HA.
8. REMOVE ACCUMULATED SEDIMENT WHEN SEDIMENT DEPTH IS  $\leq \frac{1}{2}$  OF DAM HEIGHT.
9. FIGURE IS PROVIDED FOR REFERENCE ONLY. SITE SPECIFIC DESIGN SHOULD BE OBTAINED FROM QUALIFIED PROFESSIONAL.

**SANDBAG  
CHECK DAM**



1. NOTES:
2. FLOW VELOCITY  $\leq 1.5$  M/S.
3. DRAINAGE AREA  $\leq 4$  HA.
4. DITCH GRADIENT  $\leq 8\%$ .
5. EXTEND ROCK APRON MIN. 3 M DOWNDITCH OF EACH CHECK DAM.
6. FIGURE IS PROVIDED FOR REFERENCE ONLY. SITE SPECIFIC DESIGN SHOULD BE OBTAINED FROM QUALIFIED PROFESSIONAL.

**ROCK CHECK DAM**



The diagram illustrates the installation of a trench box. Key dimensions and components are labeled:

- Flow Direction:** Indicated by an arrow pointing right, labeled "FLOW".
- Trench Dimensions:**
  - Top width:  $\approx 460 \text{ MM}$
  - Bottom width:  $\approx 100 \text{ MM}$
  - Depth:  $150 \text{ MM}$
- Excavation and Anchoring:** A note states: "EXCAVATE CONTINUOUS TRENCH AND ANCHOUR POLYETHYLENE SHEETING WITH SANDBAGS".
- Box Dimensions:**
  - Width:  $\approx 360 \text{ MM}$
  - Height:  $\approx 360 \text{ MM}$
- Sheeting and Apron:** The trench box is lined with "POLYETHYLENE SHEETING APRON".
- Post:** A vertical "POST" is shown extending from the bottom of the trench box.
- Clearance:** A dimension of  $\geq 3 \text{ M}$  is shown for the distance between the trench box and the next structure.
- Bottom Clearance:** Two vertical dimensions of  $300 \text{ MM}$  are shown, indicating the clearance between the trench box and the ground.

Diagram illustrating the dimensions and post placement for a curved bale stack. The stack is composed of multiple layers of bales. The height of the stack is indicated as  $\geq 300 \text{ MM}$  and  $\geq 200 \text{ MM}$ . The width of the stack is indicated as  $\approx 920 \text{ MM}$ . The diagram shows two rows of posts: one row is omitted from the upper row of bales for clarity, and the other row is shown below the bales. The text specifies: "2 POSTS/BALE (POSTS OMITTED FROM UPPER ROW OF BALES FOR CLARITY)".

Diagram illustrating the spacing of stone pitching on a slope. The formula shown is:  $SPACING (M) = (BALE HEIGHT (M) - 0.15 M) \div SLOPE (M/M)$ . The diagram shows a slope with stone pitching (represented by rectangular blocks) and a dashed line indicating the spacing between them. The slope is labeled "SLOPE (M/M)" and the flow direction is indicated by an arrow labeled "FLOW".

1. ASSUMED BALE DIMENSIONS = 920 MM X 460 MM X 360 MM.
2. CONSTRUCT DAM ONE BALE HIGH (ONLY). MAXIMUM EFFECTIVE DAM HEIGHT IS 310 MM.
3. WRAP DAMS WITH POLYETHYLENE SHEETING AND EXTEND 3 M DOWNDITCH (MIN.) OF DAMS. IF SHEETING IS NOT INSTALLED, ALTERNATIVE EROSION RESISTANT APRON MUST BE PLACED.
4. POLYETHYLENE SHEETING 6 MIL (MIN.) THICKNESS AND OF SUFFICIENT WIDTH TO COVER ENTIRE WIDTH OF DAM.
5. ANCHOUR POSTS – 25 MM X 25 MM X 800 MM WOODEN STAKE, 19 MM X 800 MM REBAR, OR 800 MM STEEL T-BAR.
6. DITCH MUST HAVE SUFFICIENT DEPTH TO ENSURE ALL FLOW REMAINS WITHIN DITCH.
7. DITCH SLOPE  $\leq 5\%$ .
8. CONTRIBUTING DRAINAGE AREA  $\leq 2$  HA.
9. REMOVE ACCUMULATED SEDIMENT WHEN SEDIMENT DEPTH  $\leq 100$  MM.
10. FIGURE IS PROVIDED FOR REFERENCE ONLY. SITE SPECIFIC DESIGN SHOULD BE OBTAINED FROM QUALIFIED PROFESSIONAL.

VOI TRAINING GROUP (A Division of Van Osch Innovations Ltd.) 2014

### References

- VOI Training Group's Erosion and Sediment Control Practitioner (ESCP) Participant's Manual

### Also See

- ID-EC\_03\_Erosion Control Blankets
- ID-EC\_04\_Impermeable Sheeting

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# **Appendix G**

## **EC\_07 Water Diversion**



## Description

Constructed temporary drainage that is used to collect and direct sediment laden surface water run off away from water courses, water bodies and wetlands and to a desirable location for sediment control. Can be constructed around the perimeter of where work is occurring. Location of drainage should consider existing topography and utilize drainage patterns where possible.

## Application

Flat Ground	N	Areas with large amount of exposed soil, worksite or stock pile
Sloping Ground	Y	
Stockpiles	Y	
Ditches	Y	

## Implementation

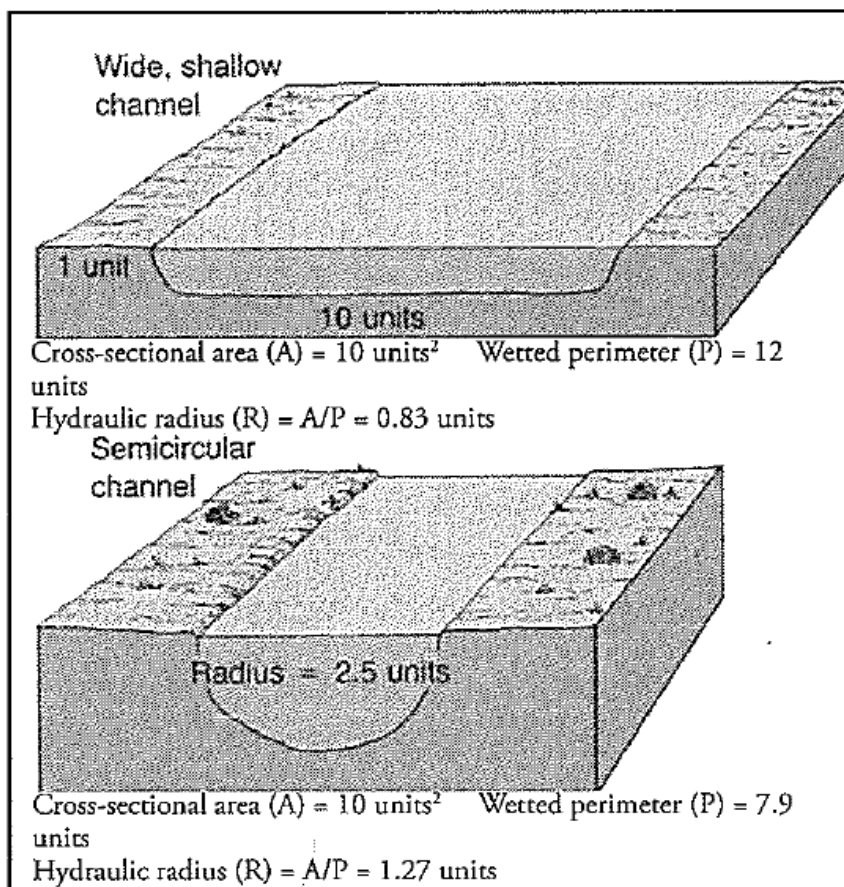
### Ditching-

Can be constructed around or through active construction sites. In order to prevent erosion in areas of fine soils, the ditch may need to be lined with either, or a combination of rock (armouring), polyurethane sheeting, or geotextile fabric. Should be combined with other methods such as retention or settling ponds. These catchment areas can be created with retention berms or sediment fabric.

### Berms-

Constructed using compacted lifts from soil or materials found on site, using heavy equipment. Must be inspected on a regular basis (or after rainfall) to identify any failure points that need repair. Berms must be stabilized after construction and should not be used as the primary erosion control measure, and should incorporate other erosion and sediment control methods to optimize performance.

## Installation

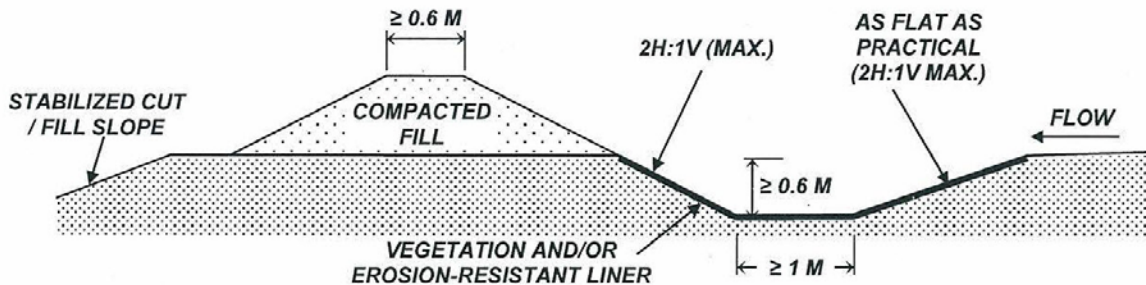


**Channel shape influences hydraulic radius and applied shear stress at the channel boundary. A channel shape that decreases hydraulic radius will have deeper flow and higher channel boundary applied shear stress. Channels that decrease hydraulic radius will have shallower flow and lower channel boundary applied shear stress (adapted from Tarbuck, E.J. and F.K. Lutgens. 1990. *The Earth*. 3rd ed. Columbus, Ohio: Merrill Publishing Company.**

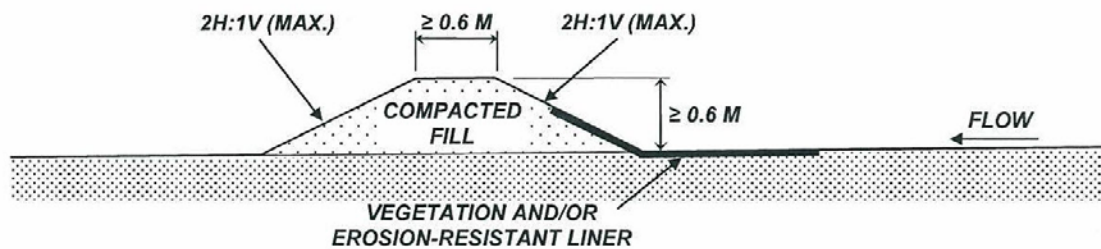
Channel design instructions diagram provided by: VOI Training Group's Erosion and Sediment Control Practitioner (ESCP) Participant's Manual



TYPICAL DIVERSION DITCH (No Scale)



TYPICAL DIVERSION BERM (No Scale)



## NOTES:

1. DIVERSION DITCH / BERM SHALL HAVE POSITIVE DRAINAGE TO A STABILIZED OUTLET.
2. GRADIENT ALONG DITCH / BERM  $\leq 0.5\%$  DOES NOT REQUIRE EROSION-RESISTANT LINER.
3. SEED ALL DISTURBED SOIL AND INSTALL AND MAINTAIN OTHER EROSION CONTROLS AS REQUIRED.
4. FOR CATCHMENT AREAS  $\leq 2 \text{ HA}$ .
5. FIGURE IS PROVIDED FOR REFERENCE ONLY. SITE-SPECIFIC DESIGN SHOULD BE OBTAINED FROM QUALIFIED PROFESSIONAL.

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## TEMPORARY DIVERSION DITCH AND BERM

## References

- VOI Training Group's Erosion and Sediment Control Practitioner (ESCP) Participant's Manual

## Also See

- ID-EC\_03\_Erosion Control Blankets
- ID-EC\_04\_Impermeable Sheeting
- ID-EC\_06\_Ditch Check Dams



# **Appendix H**

## **EC\_08 Timber Matting**

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## Description

Timber mats (Rig mats, swamp mats) are portable mats that are constructed of non-treated wood or plastic which are placed over an area in a network to create a work platform or structural roadway. Matting reduces ground pressure and compaction from heavy equipment by increasing the surface area. This allows for passage or work to take place over sensitive or unstable ground while protecting it and minimizing ground surface disruption. Matting minimizes the amount of compaction and rutting that takes place which can predispose to erosion.

## Implementation

Can be utilized in any area of concern such as in areas with thawing or unfrozen ground conditions, riparian areas and other environmentally sensitive sites. Can be used to prevent soil compaction, rutting and as a tool for biosecurity mitigation as it help to minimize ground surface disruption and soil contact.

## Application

Flat Ground	Y	Flat ground at risk of erosion due to sensitivities or weather conditions
Sloping Ground	N	
Stockpiles	N	
Ditches	N	

## Installation

- Verify that mats are clean and free of soil, debris and plant material when they arrive for use on site.
- Mats cannot be constructed of chemically treated wood products.
- In wetlands three mats is the maximum number that can be stacked and used in one location.
- Follow the biosecurity management plan for cleaning washing and disinfecting matting prior to moving it to a new project location.
- Matting should not impede or redirect natural drainage patterns or water courses.
- Mat removal will take place from the existing mat road, working in a backwards fashion (from work site to initial access point).
- When mat removal is complete all remaining matting debris will be cleaned, up and transported to an approved waste disposal facility
- When matting is removed any compaction of soils will have to be rehabilitated

## References

- VOI Training Group's Erosion and Sediment Control Practitioner (ESCP) Participant's Manual

## Also See

- ID-EC\_03\_Erosion Control Blankets

# **Appendix I**

## **EC\_09 Wind Erosion Control**

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## Description

Wind can be a mechanism of erosion, particularly for dry, finely textured soils with low organic content that is exposed by construction activities. Wind erosion can influence local air quality on the project site and be a source of sediment for water bodies. Areas of potential wind erosion are roads, stockpiles, exposed soil and helicopter landing pads.

## Mitigation Implementation

Wind erosion can be minimized by reducing the factors that cause it, by covering susceptible soils or reducing the amount and duration of exposure.

- The most common method of chemical free dust control approved by Manitoba Hydro is the periodic application of water to the surface.
- If stockpiles are retained for an extended period or during high wind events they can be wetted and or covered with impermeable sheeting.
- Longer term retention of stockpiles could also reduce erosion by packing them with equipment and or converting them to low profile berms.
- Erosion control blankets, impermeable sheeting, surface cover, as well as vegetation retention and replacement are effective ways to stabilize soil and prevent wind erosion in the majority of situations.

### Also See

- ID-EC\_04\_Impermeable Sheeting
- ID-EC\_03\_Erosion Control Blankets
- ID-EC\_01\_Vegetation Retention And Replacement
- ID-EC\_02\_Surface Cover

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# **Appendix J**

## **SC\_01 Sediment Fencing**

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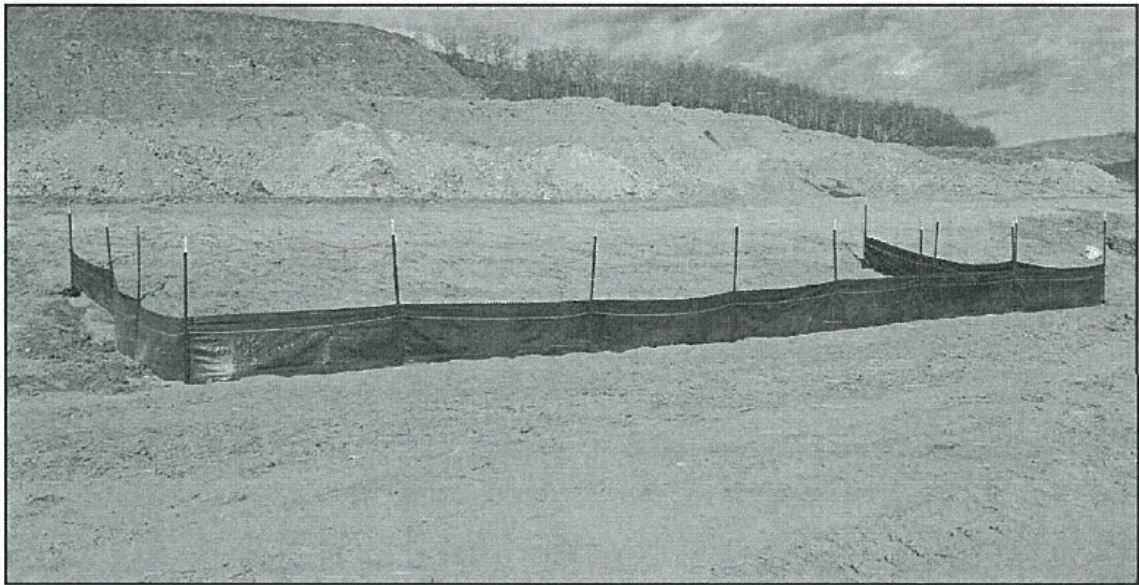


Photo Credit: VOI Training Group’s Erosion and Sediment Control Practitioner (ESCP) Participant’s Manual

Description

Permeable geotextile fabric installed vertically, supported by posts with the bottom of the fabric buried in a trench at the bottom. Designed to prevent transport of sediment off site. Sediment fencing is designed to be used as a sediment catch basin but not as a “filter” which is commonly thought. It acts as an above ground settling pond to provide an area of catchment where water can remain still and allow sediment to settle out. Sediment fencing requires frequent monitoring and maintenance to remain effective.

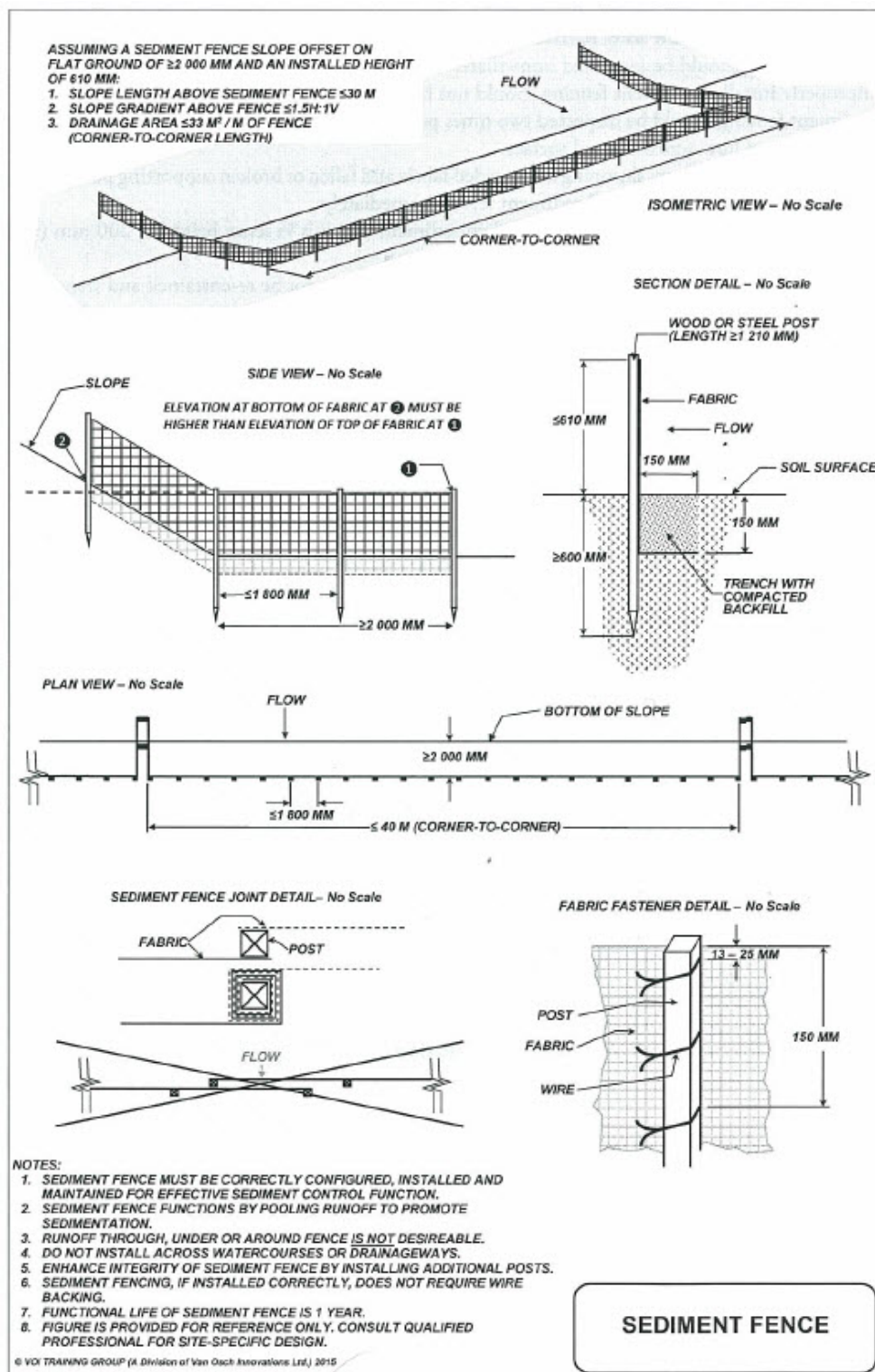
Implementation

Note that correct installation of this sediment control measure is crucial to its effectiveness and the level of maintenance it will require. Installed downslope from construction activities, and used with other control measures (such as straw wattles/roles, or sediment check dams). Should follow the contour of the slope with have sides going upslope making the shape of a “U” or a “smile” to trap water. Minimize the amount of joints if any in the fabric. Regular inspections of the fence should occur, especially after rain events.

Application

Flat Ground	Y	Anywhere low flow runoff is a concern and retention of sediment
Sloping Ground	Y	
Stockpiles	Y	
Ditches	Y	

## Installation



### References

- VOI Training Group's Erosion and Sediment Control Practitioner (ESCP) Participant's Manual

### Also See

- ID-EC\_07\_Water Diversion
- ID-SC\_02\_Sediment Retention Berm

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## **Appendix K**

### **SC\_02 Sediment Retention Berm**

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Description

Berms are constructed with heavy equipment using wood chips, soil or bulk material found on site. Purpose of retention berm is to force low volumes of overland flow to pool, allowing sediment to settle out of suspension. Must be inspected on a regular basis (or after rainfall) to identify any failure points that need repair. Berms should not be used as the primary erosion control measure, and should incorporate other erosion and sediment control methods to optimize performance.

Implementation

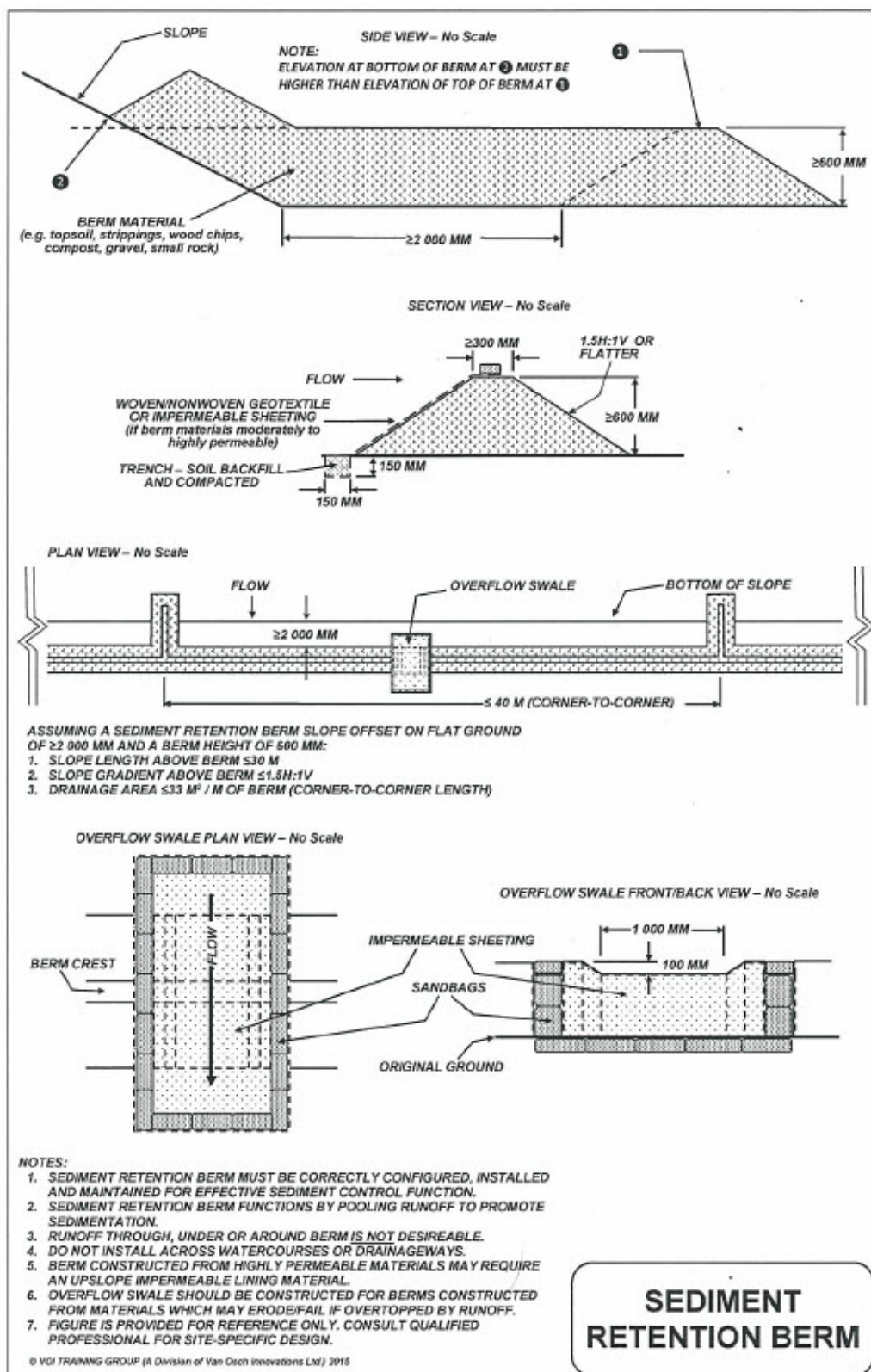
Located on the downslope of construction activities where a sediment pond or catch basin has been designed to contain site run off. Layout of the berm should follow the site contour and forming a “U” shape or a “smile” configuration with the ends going upslope. Do not install across a drainage ditch or watercourse.

Application

Flat Ground	Y	Anywhere low flow runoff is a concern and retention of sediment
Sloping Ground	Y	
Stockpiles	Y	
Ditches	Y	



## Installation



**SEDIMENT  
RETENTION BERM**



### References

- VOI Training Group's Erosion and Sediment Control Practitioner (ESCP) Participant's Manual

### Also See

- ID-EC\_04\_Impermeable Sheeting
- ID-EC\_07\_Water Diversions
- ID-SC\_01\_Sediment Fencing

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# **Appendix L**

## **Summary of Consultation**

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## Appendix L: Summary of consultation

### Introduction

Below is a summary and evidence of Manitoba Hydro's consultation with potentially affected persons, organizations, Indigenous communities, and federal and provincial authorities regarding the Erosion and Sediment Control Management Plan (the Plan), including any concerns that were raised, steps that Manitoba Hydro has taken or will take to address those concerns.

### Consultation

Draft environmental protection and management plans, including this Plan were uploaded to the Project website and a web page was created in October 2018, including a fillable comment form to provide feedback.

As Manitoba Hydro completed draft plans, Indigenous communities and organizations, landowners, interested parties and the public were notified. Input was sought between May of 2018 until present. Manitoba Hydro sought feedback on most plans in October of 2018. This was done through the Project website, MMTP Monitoring Committee website, e-campaign, emails, and letters to landowners.

The construction environmental protection plan and associated management plans, including this Plan, have been discussed at two MMTP Monitoring Committee meetings on May 17, 2018 and October 10, 2018. As noted above, the Project website was shared with communities via email and the Plan was also posted on the MMTP Monitoring Committee website.

### Concerns raised and steps taken to address concerns

Manitoba Hydro received feedback on this Plan from a MMTP Monitoring Committee Representative Dakota Tipi First Nation (Table 1), Peguis First Nation (Table 2) and a MMTP Monitoring Committee Representative from Peguis First Nation (Table 3).

Manitoba Hydro reviewed the feedback, updated the plan where appropriate including the list of revisions table and provided commenters with a table including their comments and Manitoba Hydro's responses. As a result of this no further feedback has been received from these communities/organizations with regard to this Plan.

**Table 1 Comments from a MMTP Monitoring Committee Representative from Dakota Tipi First Nation**

Section	Comments from Dakota Tipi First Nation	Manitoba Hydro response, steps taken and rationale
Overall	I reviewed the cultural and heritage resources protection plan, I'm very satisfied with hydro respect and transparent aspect to the plan, as well with the other 10 plans, Dakota Tipi first nation and myself look forward to a respectful positive outcome for all living spirits that will be involved in the construction of the MMTP project	Manitoba Hydro also looks forward to continuing to work with Dakota Tipi First Nation and thanks the Committee Representative for their review of the plans

**Table 2 Comments from Peguis First Nation**

Section	Comments sent via Peguis First Nation	Manitoba Hydro response, steps taken and rationale
Appendix C EC_03 Erosion Control Blankets	<p>On page 3 of Erosion Control Blankets the figure describes that anchor trenches are to be used when laying these blankets down. As well, "Prepared soil surface should be relatively smooth...". This indicates that areas to be covered will be levelled.</p> <p>Is there any plan in place to test these areas archaeologically? As many of these areas may be close to waterways, it stands to reason that the archaeological potential of these areas should be</p>	Manitoba Hydro and project Archaeologist are in the process of completing an HRIA in coordination with HRB to clear archaeologically, any identified cultural and heritage sensitive sites prior construction at that site.

Section	Comments sent via Peguis First Nation	Manitoba Hydro response, steps taken and rationale
	considered prior to this work.	
Appendix d ec_04 impermeable sheeting	<p>On page 2 and 3 of this section, excavation of several areas is required.</p> <p>Is there any plan in place to test these areas archaeologically? As many of these areas may be close to waterways, it stands to reason that the archaeological potential of these areas should be considered prior to this work.</p>	Manitoba Hydro and project Archaeologist are in the process of completing an HRIA in coordination with HRB to clear archaeologically, any identified cultural and heritage sensitive sites prior construction at that site.
Appendix f ec_06 ditch check dams	<p>On page 2 and 3 of this section, excavation of several areas is required.</p> <p>Is there any plan in place to test these areas archaeologically? As many of these areas may be close to waterways, it stands to reason that the archaeological potential of these areas should be considered prior to this work.</p>	Manitoba Hydro and project Archaeologist are in the process of completing an HRIA in coordination with HRB to clear archaeologically, any identified cultural and heritage sensitive sites prior construction at that site.
Appendix g ec_07 water diversion	<p>On page 3 and 4 of this section, excavation of several areas is required.</p> <p>Is there any plan in place to test these areas archaeologically? As many of these areas may be close to waterways, it stands to reason that the archaeological potential of these areas should be considered prior to this work.</p>	Manitoba Hydro and project Archaeologist are in the process of completing an HRIA in coordination with HRB to clear archaeologically, any identified cultural and heritage sensitive sites prior construction at that site.

**Table 2 Comments from a MMTP Monitoring Committee Representative from Peguis First Nation**

Section	MMTP Monitoring Committee representative comments from Peguis First Nation	Manitoba Hydro response, steps taken and rationale
Page 1 Introduction:	<p>Statement “Note that the methods presented here are not exhaustive and alternate methods may be proposed by the contractor but would require approval from a Manitoba Hydro Office prior to implementation”.</p> <p>Question: Alternative methods require approval from MBH officer but is there another approval party other than them? Cutting corners is a concern</p>	<p>Depending on the nature of the deviation, alternative methods may require approval from a Conservation Officer or Manitoba Sustainable Development.</p> <p>The MMTP Monitoring Committee will be hiring compliance environment monitors. Part of their duties will include monitoring measures taken to avoid erosion and the proper implementation of sediment control measures.</p>
Page 2 1.1 Commitment to Environmental Protection and Indigenous Engagement:	<p>Statement “The use of an ESCP is practical and direct implementation of Manitoba Hydro’s environmental policy and its commitment to responsible environmental and social stewardship”</p> <p>Question/Concern: How old is the environmental policy and how often is it updated?</p>	<p>Manitoba Hydro’s environmental policy was last revised on September 22, 2017. The environmental policy is reviewed annually.</p>
Page 3 1.2 Purpose and Objectives:	<p>Statement “Should a contractor wish to deviate from the control techniques or implementation described in this document, they must obtain approval from a MH Environmental Officer”.</p> <p>Question/Concern: Is the environmental</p>	<p>Depending on the nature of the deviation, alternative methods may require approval from a Conservation Officer or Manitoba Sustainable Development.</p>

















Section	MMTP Monitoring Committee representative comments from Peguis First Nation	Manitoba Hydro response, steps taken and rationale
	<p>officer the only one that gives approval or is there a second party outside of MBH that has to be notified/provides approval?</p>	
<p>Page 4 Role and Responsibilities</p>	<p>Question/Concern: Who oversees MBH and the abidance with anything legally binding?</p>	<p>Third party oversight will occur through a variety of mechanisms, including but not limited to the following parties:</p> <ul style="list-style-type: none"> <li>a) The Federal government through the Board, the federal Departments of Transport and Fisheries and Oceans and federal inspectors;</li> <li>b) The Provincial government through Manitoba Sustainable Development, other provincial departments and provincial inspectors;</li> <li>c) The International Organization for Standardization auditors who can review the results of Manitoba Hydro's Environmental Protection Program;</li> <li>d) Third party biosecurity and environmental monitoring specialists; and</li> <li>e) The MMTP Monitoring Committee and associated monitors hired by the Committee.</li> </ul>
<p>Page 6 3.0 Implementation</p>	<p>Statement "the key steps to implementing the plan are: 1. Erosion risk identification, 2. Planning, 3.</p>	<p>During the Clean Environment Commission Hearing Manitoba Hydro shared a project</p>

Section	MMTP Monitoring Committee representative comments from Peguis First Nation	Manitoba Hydro response, steps taken and rationale
:	<p>General mitigation measures for susceptible construction activities, 4. Specific erosion control measures, 5. Specific sediment control measures.</p> <p>Question/Concerns: Is there a historic search (i.e. last 200 years) regarding any land changes and alterations for the area affected?</p>	<p>conducted by Dr. Irene Hanuta where land cover change over time in southern Manitoba was reconstructed and illustrated since the 1870's Dominion Land Survey maps and historical records.</p>

Draft environmental protection and management plans, were uploaded to the Project website and a web page was created in October 2018. A recent screen shot of the Manitoba Hydro Project Website is below (Figure A).

## Environmental protection and management – draft plans

The draft plans are used as guides for contractors and field personnel during the construction of MMTP. They ensure environmental legislation requirements are met and the environment is protected.

-  [Clearing Management Plan \(Draft\)](#) (PDF, 882 KB)
-  [NEW Blasting Management Plan \(Draft\)](#) (PDF, 382 KB)
-  [Erosion and Sediment Control Plan \(Draft\)](#) (PDF, 8.8 MB)
-  [Golden Winged-Warbler Habitat Management Plan \(Draft\)](#) (PDF, 741 KB)
-  [Cultural and Heritage Resources Protection Plan \(Draft\)](#) (PDF, 5.8 MB)
-  [Navigation and Navigation Safety Plan \(Draft\)](#) (PDF, 5.5 MB)
-  [Waste and Recycling Management Plan \(Draft\)](#) (PDF, 3.2 MB)
-  [NEW Construction Emergency Response Plan \(Draft\)](#) (PDF, 1.2 MB)
  - [NEW Dorsey Converter Station Emergency Response Plan \(Draft\)](#) (PDF, 1.7 MB)
  - [NEW Glenboro Station Emergency Response Plan \(Draft\)](#) (PDF, 1.3 MB)
  - [NEW Riel Converter Station Emergency Response Plan \(Draft\)](#) (PDF, 3 MB)
-  [Rehabilitation and Invasive Species Management Plan \(Draft\)](#) (PDF, 7.3 MB)
-  [Biosecurity Management Plan \(Draft\)](#) (PDF, 2.2 MB)
-  [Construction Access Management Plan \(Draft\)](#) (PDF, 86.4 MB)
-  [Construction Environmental Protection Plan \(Draft\)](#) (PDF, 55.8 MB)
-  [Environmental Monitoring Plan \(Draft\)](#) (PDF, 2 MB)
-  [Integrated Vegetation Management Plan \(Draft\)](#) (PDF, 815 KB)

If you would like to provide us with your feedback on these draft plans, [complete and submit this form](#).

If you cannot view these documents or you need accessible formats, [contact us](#).

We will be adding new and updated plans as we incorporate feedback. Sign up to get notified of these changes:

Email

Figure A screen shot of Manitoba Hydro project page website

A fillable comment form to provide feedback was created in October 2018. A screen shot of the fillable comment sheet can be found below (Figure B).

## **Environmental protection and management – draft plans feedback**

First name

Last name

Address

Phone

Email

Do you represent an Indigenous community or organization?

☐

Yes

☐

No

Draft plan(s) you reviewed (select all that apply):

☐

Access Management|

- ☐ Biosecurity Management
- ☐ Clearing Management
- ☐ Construction Environmental Protection
- ☐ Cultural and Heritage Resources Protection
- ☐ Environmental Monitoring
- ☐ Erosion and Sediment Control
- ☐ Golden Winged-Warbler Habitat Management

For each plan you selected above, share your comments, concerns, and suggestions for how your concerns might be addressed.

**Submit**

Figure B Fillable comment form to provide feedback

Draft environmental protection and management plans were uploaded to the MMTP Monitoring Committee website in October 2018. A screen shot of the MMTP Monitoring Committee website is below (Figure C).

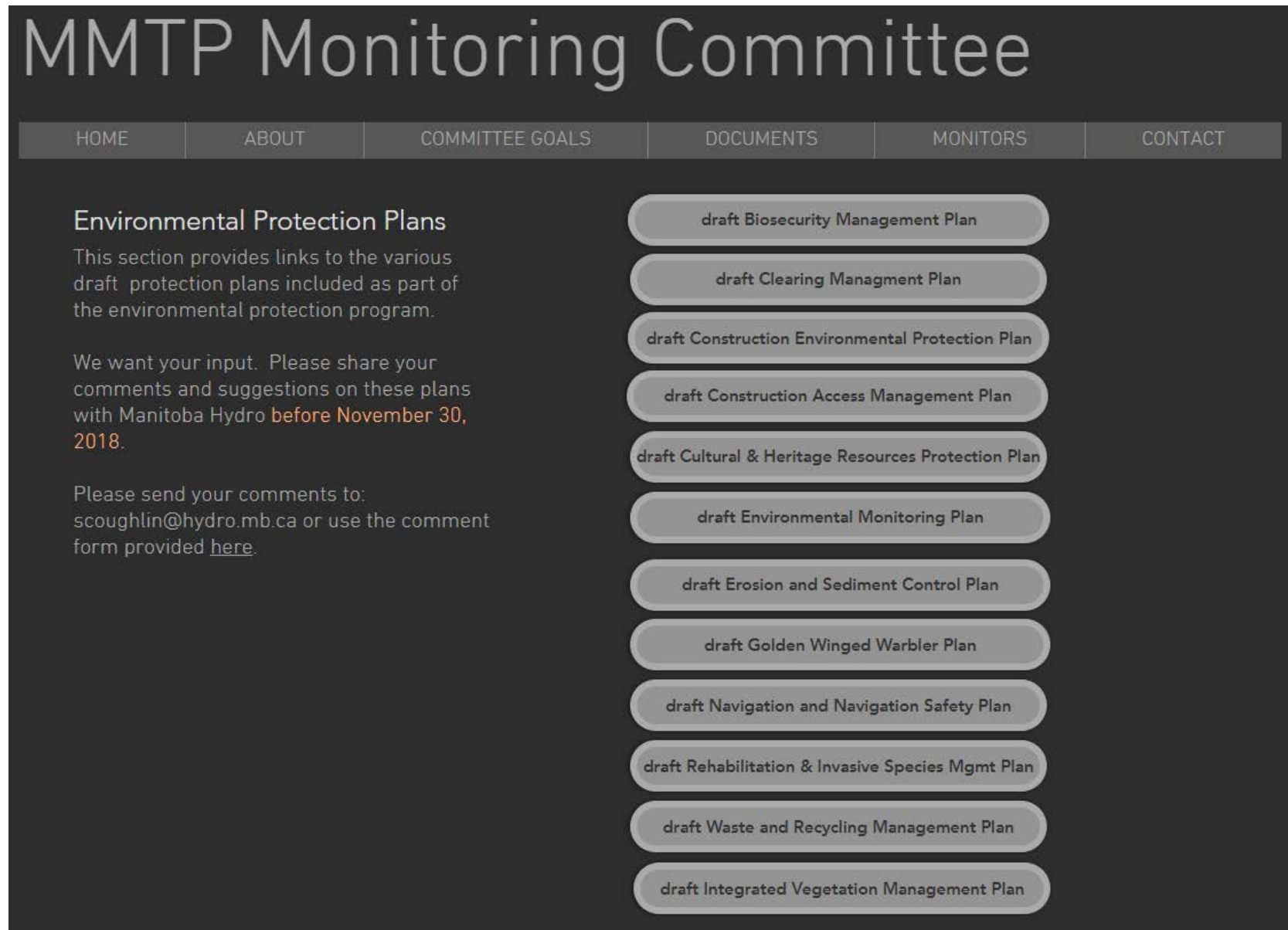


Figure C MMTP Monitoring Committee website screenshot

Below is a screen shot of the e-campaign that was sent to 825 recipients (Figure D.

The screenshot shows an email header with the Manitoba Hydro logo and the title "Manitoba-Minnesota Transmission Project update". The main body of the email is titled "Environmental protection and management – draft plans" and contains three paragraphs of text. The first paragraph states that feedback is being sought on draft plans for the MMTP, with a link to review them. The second paragraph invites recipients to share feedback by completing a form before November 30, 2018. The third paragraph mentions that new plans will be added to the website as feedback is incorporated, with a link to sign up for notifications. Below this is a "Contact us" section with a bulleted list of contact options: email, phone, and project website. At the bottom, there is a footer section with contact information, social media icons for Twitter, Facebook, LinkedIn, and YouTube, and a copyright notice.

**Manitoba Hydro** **Manitoba-Minnesota Transmission Project update**

**Environmental protection and management – draft plans**

We are looking for feedback on draft environmental protection and management plans for the Manitoba-Minnesota Transmission Project (MMTP). The [plans are available for your review](#).

We invite you to share your feedback on these draft plans. To do so, [complete and submit this form](#) before November 30, 2018.

We will be adding new and updated plans to the website as we incorporate feedback. [Sign up](#) to get notified of these changes.

**Contact us**

- Email the [Manitoba-Minnesota Transmission Project](#).
- Phone 204-360-7888 or toll-free 1-877-343-1631.
- Visit our [project website](#).

To ensure our email always reaches your inbox, add [info@mbhydromail.ca](mailto:info@mbhydromail.ca) to your address book. This email was intended for [mallain@quadrantgeomatics.com](mailto:mallain@quadrantgeomatics.com).  
[Unsubscribe](#) from this email.

Contact us at [customerservice@hydro.mb.ca](mailto:customerservice@hydro.mb.ca) or call toll-free at 1-888-624-9376.

Manitoba Hydro, 360 Portage Ave., Winnipeg, MB R3C 0G8  
204-480-5900 | [www.hydro.mb.ca](http://www.hydro.mb.ca)

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Available in accessible formats upon request.





   

Figure D e-campaign screenshot



Below is the content from the letter sent to landowners (Figure E).



---

2018 10 24

«Landowner»  
«Owner\_address»  
«City», MB «POSTAL\_CODE»

**Manitoba-Minnesota Transmission Project: Draft environmental protection and management plans**

«Landowner»,

As part of planning for the Manitoba-Minnesota Transmission Project (MMTP), Manitoba Hydro is seeking feedback on draft environmental protection and management plans. The following is a link to the document library that contains these plans: [https://www.hydro.mb.ca/projects/mb\\_mn\\_transmission/document\\_library.shtml](https://www.hydro.mb.ca/projects/mb_mn_transmission/document_library.shtml).

The information you have shared regarding your land through discussions with me, Manitoba Hydro property agents, or with our Environment Officer Evan Johansson, have and will inform the details of these plans.

We would like to hear your feedback regarding these plans in a manner that works best for you. The website has a link to a comment form for the plans. Please feel free to call me at «Liaison\_phone\_number» to share your feedback directly or to set up a site meeting with Evan Johansson please call 204-360-3731, if you have not had the opportunity to do so. We are accepting feedback until November 30, 2018.

We will be adding new and updated plans to the website as we incorporate feedback. I encourage you to visit the Project website ([www.hydro.mb.ca/mmtp](http://www.hydro.mb.ca/mmtp)) for more information or to sign up for project updates.

Please note that Manitoba Hydro will not be moving forward with construction until it has received regulatory approvals.

Yours truly,

«Liaison»

360 Portage Avenue (3) • Winnipeg Manitoba Canada • R3C 0G8  
Telephone / N° de téléphone : 1-877-343-1631  
MMTP@hydro.mb.ca

Figure E Content from the letter sent to landowners



Below is a screen shot of an email sent to the MMTP Monitoring Committee (Figure F).

**From:** Coughlin, Sarah  
**Sent:** Friday, October 19, 2018 5:31 PM  
**To:**

[REDACTED]  
[REDACTED]  
**Cc:** [REDACTED]  
[REDACTED]  
**Subject:** RE: MMTP Monitoring Committee Meeting October 10, 2018

Please find attached draft minutes for the October 10, 2018 MMTP Monitoring Meeting. Please submit any changes/comments by October 31, 2018 and mark your calendars for **November 14, 2018** - the next MMTP Monitoring Meeting at Dakota Tipi First Nation offices near Portage la Prairie, Manitoba. [REDACTED]

[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]

At the October 10, 2018 meeting the group was asked to provide comment on a series of draft environmental management and protection plans. Manitoba Hydro is seeking comments on these draft plans from MMTP Monitoring Committee members. Attached you'll find a short description of each to help determine if the plan is of interest to you. Each of these draft plans guides contractors and field personnel while constructing the Manitoba-Minnesota Transmission Project in a manner that meets environmental legislation requirements and protects the environment. We'd like to hear comments or concerns in a manner that works best for you. Please feel free to call me at (204)360-3016 to share your comments directly or to set up a meeting with us. You can also visit our project website at [where a comment form has been provided for the plans](https://www.hydro.mb.ca/projects/mb_mn_transmission/document_library.shtml). We are accepting comments until November 30, 2018. The draft plans are linked here:  
[https://www.hydro.mb.ca/projects/mb\\_mn\\_transmission/document\\_library.shtml](https://www.hydro.mb.ca/projects/mb_mn_transmission/document_library.shtml)

Thank you and I look forward to seeing you on November 14!

Sarah Coughlin  
Senior Environmental Specialist  
Licensing & Environmental Assessment  
Transmission, Manitoba Hydro  
360 Portage Ave, Winnipeg, MB  
w (204) 360-3016  
c (204) 918-9848  
[scoughlin@hydro.mb.ca](mailto:scoughlin@hydro.mb.ca)

Figure F Screen shot of an email sent to the MMTP Monitoring Committee

Below is a follow-up email sent to the MMTP Monitoring Committee (Figure G).

**From:** Coughlin, Sarah

**Sent:** Thursday, November 01, 2018 11:30 AM

**Cc:** MMTP

**Subject:** Manitoba Minnesota Transmission Project Draft Environmental Protection Plan Review

Good morning. As part of our ongoing engagement on the Manitoba Minnesota Transmission Project we would like to notify you that we have posted Draft Environmental Protection and Management Plans on the Project website ([https://www.hydro.mb.ca/projects/mb\\_mn\\_transmission/document\\_library.shtml](https://www.hydro.mb.ca/projects/mb_mn_transmission/document_library.shtml)) and are looking to gather feedback on these plans by November 30<sup>th</sup>.

Please note that notification that these plans have been posted is also being shared with landowners, participants of the MMTP Monitoring Committee, and those that have signed up for e-blast notifications so you may have already received this notice through another communication avenue.

Each of these draft plans, guides contractors and field personnel while constructing the Manitoba-Minnesota Transmission Project in a manner that meets environmental legislation requirements and protects the environment. It is noted below where the plan is new or updated since provided initially through the regulatory process:

- draft Environmental Monitoring Plan (updated)
- draft Construction Environmental Protection Plan (updated)
- draft Cultural and Heritage Resources Protection Plan (updated)
- draft Biosecurity Management Plan (new draft plan)
- draft Clearing Management Plan (new draft plan)
- draft Right-of-Way Habitat Management Plan for Managing Critical Golden-winged Warbler Habitat during Construction and Operation(no change)
- draft Erosion and Sediment Control Plan (new draft plan)
- draft Navigational Safety Plan Summary (new draft plan)
- draft Rehabilitation and Invasive Species Management Plan (updated)
- draft Waste and Recycling Management Plan (new draft plan)
- draft Access Management Plan (updated)

Feel free to contact me ((204)360-3016) should you have feedback you would like to provide, or you are welcome to make use of the comment forms that are available on the website as well.

We look forward to hearing your feedback or responding to questions about this notification.

Sarah Coughlin

Senior Environmental Specialist

Licensing & Environmental Assessment

Transmission, Manitoba Hydro

360 Portage Ave, Winnipeg, MB

w (204) 360-3016

c (204) 918-9848

[scoughlin@hydro.mb.ca](mailto:scoughlin@hydro.mb.ca)

**Figure G Follow-up email sent to the MMTP Monitoring Committee**

**Below is a screen shot of an email sent to interested parties (Figure H) and a list of the interested parties (Table 4)**

As part of our ongoing engagement on the Manitoba Minnesota Transmission Project we would like to notify you that we have posted Draft Environmental Protection and Management Plans on the Project website ([https://www.hydro.mb.ca/projects/mb\\_mn\\_transmission/document\\_library.shtml](https://www.hydro.mb.ca/projects/mb_mn_transmission/document_library.shtml)) and are looking to gather feedback on these plans by November 30<sup>th</sup>. You are receiving this email as you were a participant in the Clean Environment Commission Hearings and the National Energy Board hearing process for the Project.

(please note that notification that these plans have been posted is also being shared with landowners, participants of the MMTP Monitoring Committee, and those that have signed up for e-blast notifications so you may have already received this notice through another communication avenue)

Most of these draft plans were shared prior to, or during, the hearing processes. It is noted below where the plan is new since the hearing process, or updated since that time. Each of these draft plans, guides contractors and field personnel while constructing the Manitoba-Minnesota Transmission Project in a manner that meets environmental legislation requirements and protects the environment.

- draft Environmental Monitoring Plan (updated)
- draft Construction Environmental Protection Plan (updated)
- draft Cultural and Heritage Resources Protection Plan (updated)
- draft Biosecurity Management Plan (new draft plan)
- draft Clearing Management Plan (new draft plan)
- draft Right-of-Way Habitat Management Plan for Managing Critical Golden-winged Warbler Habitat during Construction and Operation(no change)
- draft Erosion and Sediment Control Plan (new draft plan)
- draft Navigational Safety Plan Summary (new draft plan)
- draft Rehabilitation and Invasive Species Management Plan (updated)
- draft Waste and Recycling Management Plan (new draft plan)
- draft Access Management Plan (updated)

Feel free to contact me (204-360-7677) or Sarah Coughlin (204-360-3016) should you have feedback you would like to provide, or you are welcome to make use of the comment forms that are available on the website as well.

We look forward to hearing your feedback.

Kind regards,

**Maggie Bratland**

**Figure H Sample email sent to interested parties**

**Table 4 Manitoba Hydro's list of interested parties for the Project includes the following organizations**

Interested parties list
Beausejour Community Planning Services
Beef Producers of Manitoba
Bird Atlas
Canadian Parks and Wilderness Society (CPAWS)
City of Steinbach
City of Winnipeg
Consumers Association of Canada
Cooks Creek Conservation District
Dairy Farmers of Manitoba
DOA Outfitters

**Interested parties list**

Ducks Unlimited
Forest Industry Association of Manitoba
Green Action Centre
HyLife, Land Manager
Integrated Resource Management Team (Eastern Region)
Keystone Agricultural Producers
La Salle Redboine Conservation District
Local Urban District of Richer, Committee Member-Chairperson
Macdonald-Ritchot Planning District
Manitoba Indigenous and Northern Relations
Manitoba Aerial Applicators
Manitoba Agriculture (Land Use)
Manitoba Agriculture (Agri-Resource Branch)
Manitoba Association of Cottage Owners
Manitoba Bass Anglers (MBA)
Manitoba Canoe & Kayak Centre - Winnipeg
Manitoba Chamber of Commerce
Manitoba Chicken Producers
Manitoba Climate Change and Air Quality
Manitoba Crown Lands
Manitoba Fly Fishing Association (MFFA)
Manitoba Forestry Association
Manitoba Groundwater Management
Manitoba Habitat Heritage Corporation
Manitoba Historic Resources Branch
Manitoba Infrastructure
Manitoba Infrastructure Highway Engineering
Manitoba Infrastructure Highway Regional Operations
Office of Fire Commissioner
Manitoba Lodges and Outfitters Association
Manitoba Paddling Association
Manitoba Parks and Regional Services - Parks and Protected Spaces
Manitoba Petroleum Branch
Manitoba Pork Council (Industry Services Co-ordinator
Manitoba Protected Areas Initiative
Manitoba Public Health
Manitoba Resource Development Division Growth, Enterprise and Trade
Manitoba Sustainable Development
Manitoba Sustainable Development (Aboriginal Relations)
Manitoba Sustainable Development (Office of Drinking Water)

**Interested parties list**

Manitoba Sustainable Development (Water Control Works and Drainage Licensing)

Manitoba Sustainable Development (Water Quality Management)

Manitoba Trails Association

Manitoba Trappers Association

Manitoba Sustainable Development (Fish and Wildlife)

Manitoba Water Use Licensing

Manitoba Woodlot Association

Maple Leaf Agri-Farms

Nature Conservancy of Canada

Organic Producers Association of Manitoba Co-Operatives Inc.

Paddle Manitoba

Portage la Prairie Community Planning Services

REDBOINE BOATING CLUB

Rural Municipality of Glenboro South - Cypress

Rural Municipality of Headingley

Rural Municipality of La Broquerie

Rural Municipality of McDonald

Rural Municipality of Piney

Rural Municipality of Ritchot

Rural Municipality of Rosser

Rural Municipality of Springfield

Rural Municipality of Ste. Anne

Rural Municipality of Stuartburn

Rural Municipality of Tache

Ruth Marr Consulting

Save the Seine

Seine-Rat River Conservation District

Sharp-Tails Plus Foundation

Sno-Man Inc

South East Snoriders

Southwood Golf & Country Club

St. Norbert Ward - Winnipeg

St. Vital Ward - Winnipeg

Steinbach Community Planning Services

Steinbach Game & Fish Gun Range Inc

Town of St. Pierre Jolys

Town of Ste. Anne

Trails Manitoba

TransCanada Pipelines Limited

Interested parties list
Travel Manitoba
Village of Glenboro
Wa Ni Ska Tan
Walleye Anglers Association of Manitoba (WAAM)
Wilderness Society
Winnipeg Rowing Club

Available in accessible formats upon request