Obtaining Approval for a Greenhouse Stormwater Management Facility

Ministry of the Environment and Climate Change (MOECC)
Environmental Approvals Access and Service Integration Branch

To Flowers Canada (Ontario)
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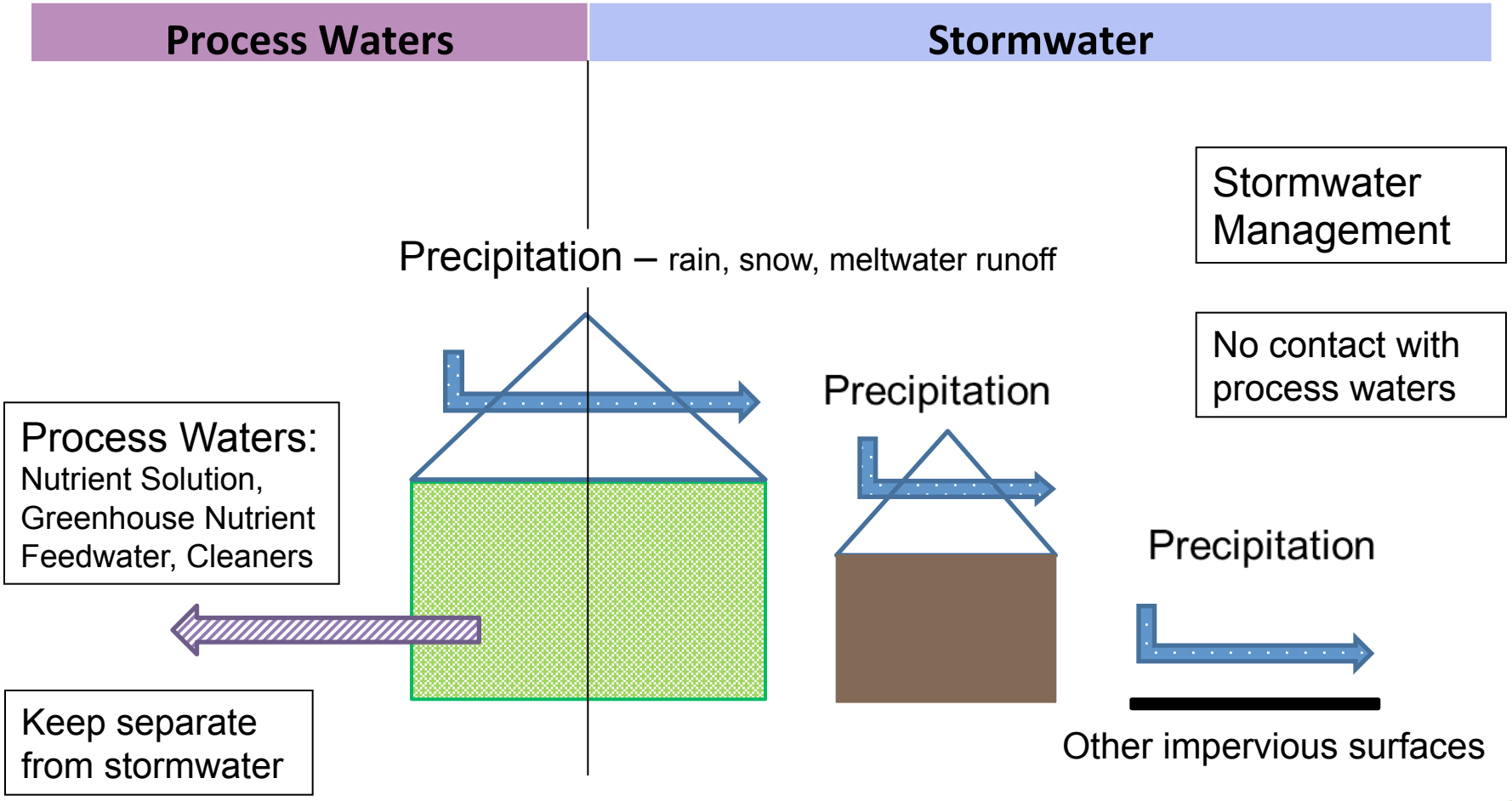
Objective

- Outline contents of draft "Guide: Obtaining Approval for a Greenhouse Stormwater Management Facility."
  - Information requirements by which greenhouse operations can apply for Environmental Compliance Approvals (ECAs) for stormwater.
  - If building permit received before December 31, 2011, - Group "A"
  - If building permit received after January 1, 2012 - Group "B".
- MOECC has adopted an approach which reduces the information requirements for an ECA approval while still being protective of the natural environment.
- Give sample of typical greenhouse stormwater ECA.
- Answer questions of proposed ECA information requirements.

Greenhouse Wastewaters



Ontario

Basic Application Requirements

- Cover letter – specifies Greenhouse Stormwater Management Facility and Group A or B (Appendix of Guide has sample).
- Abbreviated ECA Form (Appendix of Guide).
- Applicant Proof of Legal Name (Appendix of Guide).
- $2,200 fee payable to “Minister of Finance”.
- Municipal and Conservation Authority clearance.
- Any engineering reports submitted to the municipality and/or conservation authority.

Minimum Requirements for Greenhouse Operations

	Group A	Group B
Criteria	➢ Obtained building permit prior to December 31, 2011	➢ Obtained building permit after January 1, 2012

Minimum Requirements	• Project Description (existing stormwater management system)
	• Site Plan and Drawings showing the stormwater management system.
	• Engineering Opinion regarding the hydraulic functioning of the stormwater management facility.
	• Description of management of Nutrient Solution, Greenhouse Nutrient Feedwater, and other process water.
		• Project Description (existing or proposed)
		• Stormwater management design brief:
		  • Design Calculations for the storage volume and outlet flow rates.
		  • Site Plan and Engineering Drawings, all signed and stamped by a professional engineer.
		• Description of management of Nutrient Solution, Greenhouse Nutrient Feedwater and other process water.

Ontario

Municipal and Conservation Authority Clearance – Both Group A and B

- Clearance letter/e-mail from municipality shall state:
  - No concerns with the stormwater management at the site;
  - Zoning permits greenhouse use; and
  - No additional municipal approvals are necessary.
- Can take the form of a letter issued for a municipal approval – discharge to municipal drain, zoning by-law amendment, site plan or plan of subdivision.
- Clearance letter from Conservation Authority should specify:
  - No need for approval as operation is outside regulated area; OR
  - Authorizes operations stormwater management facility discharging to a watercourse; AND, if applicable;
  - Authorizes construction within flood plain.

Description of Existing Stormwater Management Facility/Project Description - Both

- Textual description of the major components of a stormwater management system, which may include:
  - Roof-top drainage systems
  - Stormwater ponds
  - Swales
  - Pipes
  - Pumps
  - Drainage area of the stormwater management facility.
- Provide critical dimensions of critical components:
  - Diameter of pipes; depth, area and storage volume of ponds; and discharge flow rate and direction.
- Describe the collection and movement of stormwater.

Detailed Project Description – Example

The project I am seeking approval for includes Stormwater Management Facilities (facilities) that drain a total impervious area of approximately 5.7 hectares located at XXX Road East, in the Town of ABC. The facilities consist of the following:

- roof water drainage pipe systems, and grassed swales along the south, east and north property lines, discharging roof-top runoff and other surface runoff into a stormwater detention pond;

- one (1) stormwater detention pond, having a storage volume of 627 cubic metres with a maximum water depth of 1.5 metres for the 100-year storm event, complete with a 300 millimetre diameter outlet pipe and an emergency spillway, discharging, with a maximum release rate of 184 litres per second for the 100-year storm event, into the existing roadside ditch along XXX Road East.

Site Plan and Drawings – Both Group A & B

- Set of plans and drawings showing the geographic location and layout of the greenhouse operation. Should include:
  - Boundary and location of the site with adequate geographic coordinates to accurately describe each;
  - Location on the site of buildings, structures, roads, utility corridors, paved areas, bermed areas, fencing etc.;
  - Location on site of all features related to stormwater conveyance and stormwater management; and
  - Municipal boundaries, if within the site. and
- Other key requirements: drawn to scale, indicate geographic north and display all units of measurement in metric units.

Site Plan and Drawings cont…

- Either on the site plan or additional drawings, need details of stormwater conveyance system + stormwater management facility.
- Stormwater Conveyance System - is all of the physical components to move stormwater from the impervious surfaces to its place of detention and ultimate discharge point. Includes:
  - Eaves troughs/gutters/downspouts (rooftop drainage pipe network);
  - Pipes (including outlet), swales, ditches, catch basins, orifices or gate valves (surface drainage system); and,
  - any pumps.
- Should demonstrate that the stormwater conveyance system <u>will only collect</u> precipitation and no process water (e.g., Nutrient Solution, Greenhouse Nutrient Feedwater, etc.)

Site Plans and Drawings cont…

- Stormwater Management Facility – any facility for the quality or quantify management of stormwater. Includes:
  - Stormwater management ponds, oil/grit separators, grassed swales.
- Dimensions features/components shall be provided.
- Group "A" greenhouses versus Group "B" greenhouses:
- For Group "A", drawings do not need to be engineering drawings - then an Engineering Opinion describing the hydraulic functioning of the facility is required.
- For Group "B", the site plan and drawings shall be signed and stamped by a professional engineer – "Engineering Drawings".

Engineer Opinion – Group A

- The Engineering Opinion describes how the present stormwater management system functions, incl. assessing if its components meet the current flow requirements.
- Includes a set of ten questions about the system which, if answered adequately, should provide adequate information for MOECC to review the application and, in most cases, issue an ECA – less than design brief required for Group B.
- If questions about adequacy of system arise to accommodate water flow, additional information may be required.

Design Calculations for Storage Volume/Outflow – Group B Only – Part of SWM Design Brief

- Identify total drainage area and % impervious surface.
- Summary of information about anticipated stormwater flows and the methodology for the calculations.
- Information about capacity of the receiving watercourse.
- Summary of applicable design criteria (provide source).
  - Level of treatment;
  - Maximum % imperviousness;
  - Minimum buffer strips.

Design Calculations for Storage Volume/Outflow cont…

- Design calculations for works – show facility will accommodate anticipated and 100-year/Regional storm flows.
- Identify storage volume of the stormwater detention facilities.
- Identify the eventual receiving watercourse.
- Identify the discharge volume and flow rate into the receiving watercourse.
- Describe maintenance/operation procedures for stormwater management facility including agreement with municipality.

Describe Management of Nutrient Solution, Greenhouse Nutrient Feedwater and Process Water– Group A and B

Greenhouse Nutrient Feedwater Regulation, O. Reg. 300/14 defines:

- *Nutrient Solution* as a solution of nutrients and water for growing plants;
- *Greenhouse Nutrient Feedwater (GNF)* as material that is generated when nutrient solution, other than a test solution, is removed from a closed circulation system at a greenhouse operation.

Description shall include:

- How Nutrient Solution and GNF are managed at the site.
- The source of water used to create the solution, e.g., municipal supply, well, water body; and,
- An estimate of the quantity of nutrient solution produced on a weekly basis, if available; otherwise monthly.

Management of Nutrient Solution, Greenhouse Nutrient Feedwater and Process Water– Group A and B

The GNF description needs to demonstrate:

- How the GNF is captured and conveyed to any onsite storage (ponds, tanks) if stored on-site;
- Whether the GNF is discharged or sent to disposal;
- Where the GNF it is sent for discharge or disposal, e.g.:
  - Land applied under the *Nutrient Management Act*,
  - Hauled by a licenced hauler to a wastewater treatment plant.

If any other type of wastewater produced, must document how these are processed on-site and/or discharged.

Sample of Terms and Conditions - General

- Owner to ensure an person authorized to carry out work on or operate the works is notified of the ECA.
- Notify ministry of any changes related to ownership.
- Approval ceases to apply to parts of works not constructed within 10 years.
- Under no circumstances shall any process wastewater be discharged into the stormwater management works.
- Works shall be inspected at least two times a year, and if necessary, cleaned and maintained to prevent excessive build-up of sediments, oil/grit and/or vegetation.

Sample of Terms and Conditions – Effluent Limits

- Works shall be operated so that following limits are met:

Effluent Limits	
Effluent Parameter	Concentration Limit Four (4) month Rolling Average** (milligrams per litre unless otherwise indicated)
Total Phosphorus	0.5
Nitrate Nitrogen	20
Potassium	25
Copper	0.02
Chloride	200
Sulphate	200
Zinc	0.10
pH of the effluent maintained between 6.5 to 10.0* (discrete event)	

- In addition, works shall be free of floating and settable solids, or oil etc. that creates visible film, sheen or foam.

Sample of Terms and Conditions – Monitoring

- Monthly, grab sample of effluent from the:
  - stormwater management system during a discharge event; or
  - stagnant storage facility in near the outlet when no discharge is occurring but is representative of system's water as a whole.
- Covers 14 different substances which provide the ministry with water quality analysis capability that cannot otherwise be achieved.
- If an anomaly occurs, assists in determining steps to rectify.
- After two consecutive years of satisfactory results, requirements may be modified by the Director of EAB.

Sample of Terms and Conditions - Triggers

- If 4-month rolling average of parameters listed in below table are exceeded, owner shall develop a contingency plan which:
  - Evaluates root cause for exceedance;
  - Recommends actions/measures to prevent future occurrences.

Trigger Concentration Values for Monitoring	
Trigger Parameter	Concentration Four (4) monthly rolling average (milligrams per litre)
Nitrate Nitrogen	15
Total Phosphorus	0.3
Potassium	20
Total Suspended Solid	30

- Shall be submitted to the Director of EAB for approval within 3 months.

Sample of Terms and Conditions - Reporting

- If any exceedance of any effluent limits, notify District Manager orally as soon as reasonably possible, and in writing with 7 days.
- Within 10 days of any occurrence of a reportable spill, bypass or loss of any polluting product into the natural environment, submit a report to the District Manager. Shall include:
  - Cause of spill/loss;
  - Clean-up and recovery measures used; and
  - Preventative measures to be used plus schedule of implementation.
- Prepare a performance report annually, by April 1, for the previous calendar year. To include:
  - Summary and interpretation of monitoring data;
  - Any operating problems encountered/corrective actions taken;
  - Summary of all spills/losses and complaints – steps taken to correct;
  - Summary of maintenance of works/effluent quality assurance steps.

Next Steps

- Draft Guide is available for pick-up today and will be available electronically through OGVG/FCO very soon.
- Guide to be posted on the Environmental Bill of Rights Registry as an information posting within 4 weeks.
- MOECC looks forward to working with operators to review and issue the necessary ECAs in a timely fashion:
  - Group A applications – target of approval within 2 - 3 months.
  - Group B applications – target of approval within 5 - 6 months.
- Target timeframes assume information meeting requirements stated in Guide is submitted.