



Greenhouse Compliance Strategy Outreach Session

Ministry of the Environment and Climate Change

June 13, 2016

Purpose

- Greenhouse Compliance Strategy
- Lake Erie Nutrient Reduction
- Watershed Monitoring Results
- Greenhouse Inspections Update
- Options for Compliance
- Next Steps

Ontario Greenhouse Environmental Strategy (OGES)



- Partnership between government and greenhouse sector associations initiated in 2010 and includes senior officials and technical representatives from:
 - The Ontario Greenhouse Alliance (TOGA)
 - Ontario Greenhouse Vegetable Growers (OGVG)
 - Flowers Canada Ontario (FCO)
 - Ontario Ministry of Agriculture, Food and Rural Affairs (OMAFRA)
 - Ministry of the Environment and Climate Change (MOECC)
- Partnership vision and goals:

“Achieve the vision for Ontario greenhouse sector to be recognized as a leader in environmental performance, innovation and compliance.”

Greenhouse Compliance Strategy

- There are three key areas within the greenhouse sector that cause environmental concern:
 1. Wastewater
 2. Pesticides
 3. Water taking
- Of these areas, the wastewater issue is the most pressing problem to address.
- The ministry created a toolkit, including a number of fact sheets and guidance documents designed to help growers put an abatement plan in place, which includes information on available options to manage environmental impacts and achieve compliance.
- In 2014, MOECC initiated a new three-year action plan (to be complete by March 31, 2017) which includes:
 - proactive inspections of 250 greenhouse vegetable growers
 - additional monitoring of surface water
 - additional monitoring of greenhouse discharges
 - continued outreach
 - use of mandatory compliance approaches including compliance orders, investigations, and charges, where warranted

Lake Erie Nutrient Reduction

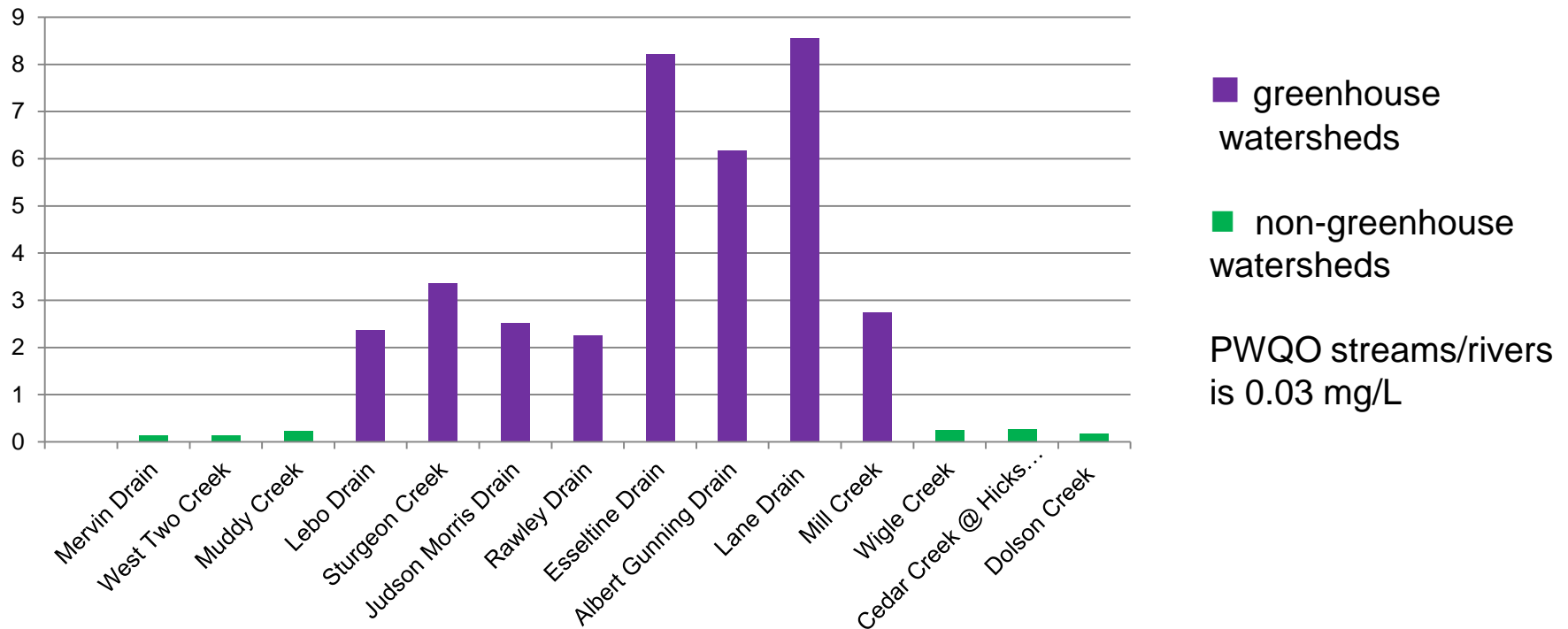
Lake Erie Nutrients Targets

- MOECC in partnership with OMAFRA and the federal government are developing a Domestic Action Plan to reduce nutrients by up to 40% within the Lake Erie basin. The plan is scheduled to be finalized by 2018.
- Within the Canadian Lake Erie basin two areas have been identified as priorities in order to achieve the 40% nutrient reduction. These two areas are the Thames River watershed and the Leamington tributaries, in which numerous greenhouse facilities exist.
- Western Basin of Lake Erie Collaborative Agreement signed on June 13, 2015, agreement signed by Michigan and Ohio Governors and Premier of Ontario. Phosphorus loading from 2008 is the baseline.
- Through an adaptive management process, work to achieve a recommended 40% reduction in the amount of total and dissolved reactive phosphorus entering Lake Erie's Western Basin by the year 2025 with an aspirational interim goal of a 20% reduction by 2020.
- Nutrient reduction is planned for Lake Ontario and the other Great Lakes.

Watershed Monitoring Results

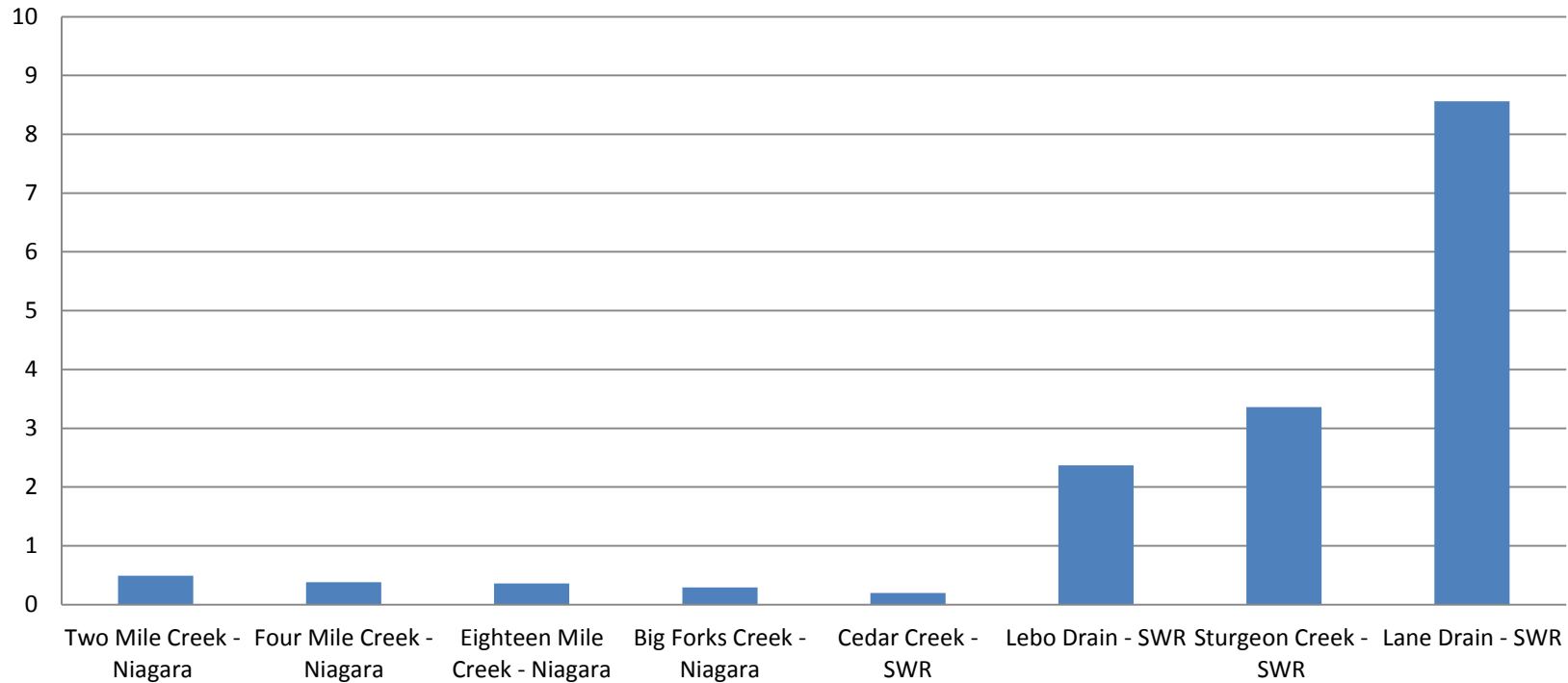
Leamington Area Watershed Phosphorus Levels

2014/15 data (KLN Study) – Leamington Area Watershed Phosphorus Concentrations (mg/L)



Windsor and Niagara Nutrients to Local Watersheds

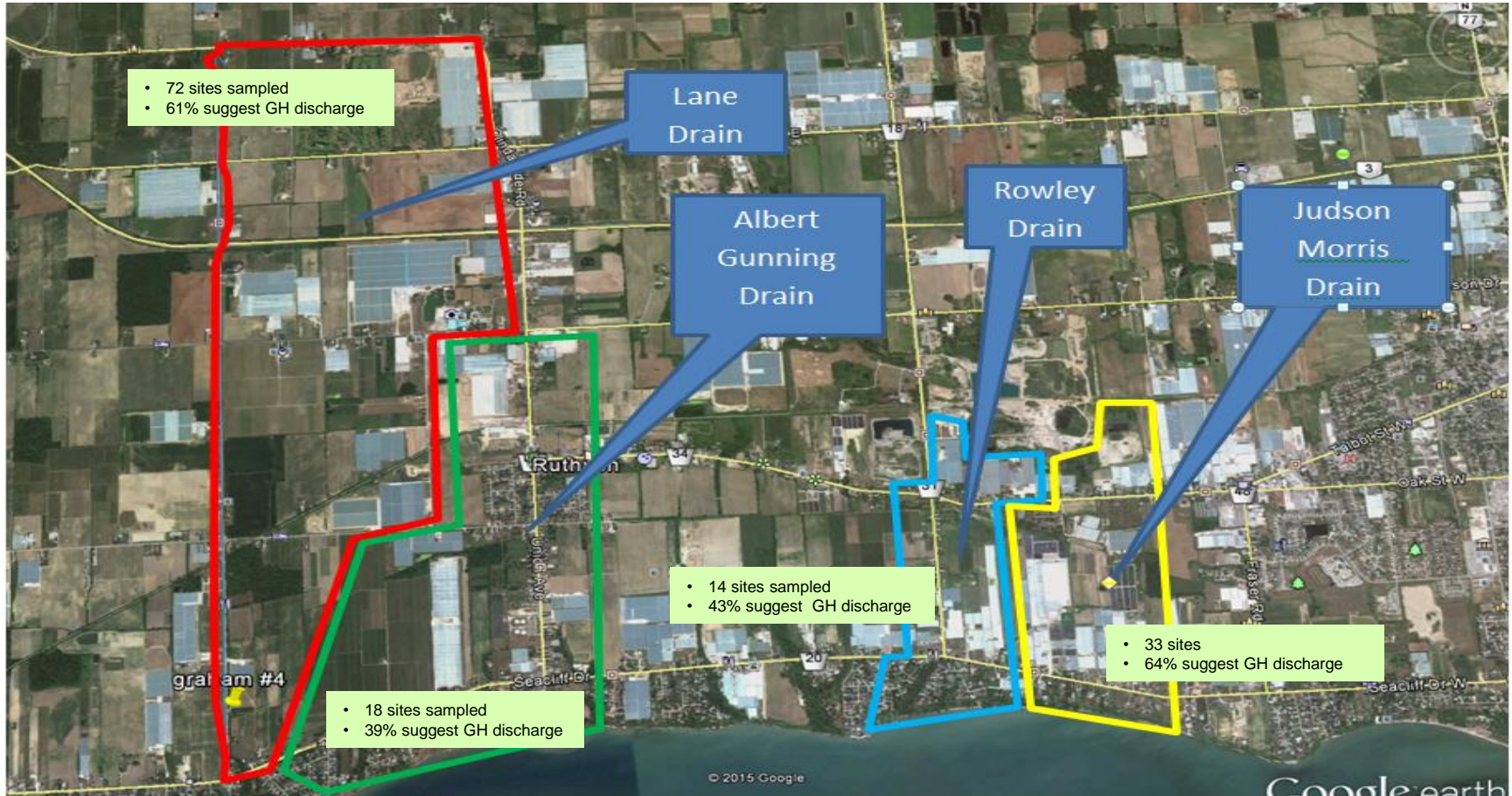
Total Phosphorus (mg/L)



- Concentrations of phosphorus in Niagara watersheds downstream of greenhouses is about the same as Cedar Creek (SWR) a non-greenhouse watershed.

Leamington Area Watersheds

Selected for Sampling in 2015



- 4 sampling events over the summer at 137 sampled sites (all discharge pipes we could find with flow at time of sampling).
- 57% of sites suggest greenhouse nutrient discharge, i.e., at least one sample exceeding 1.0 mg/L P.
- PWQO for Total Phosphorus is 0.03 mg/L and 90% of the samples exceeded this concentration.

Greenhouse Inspections Update

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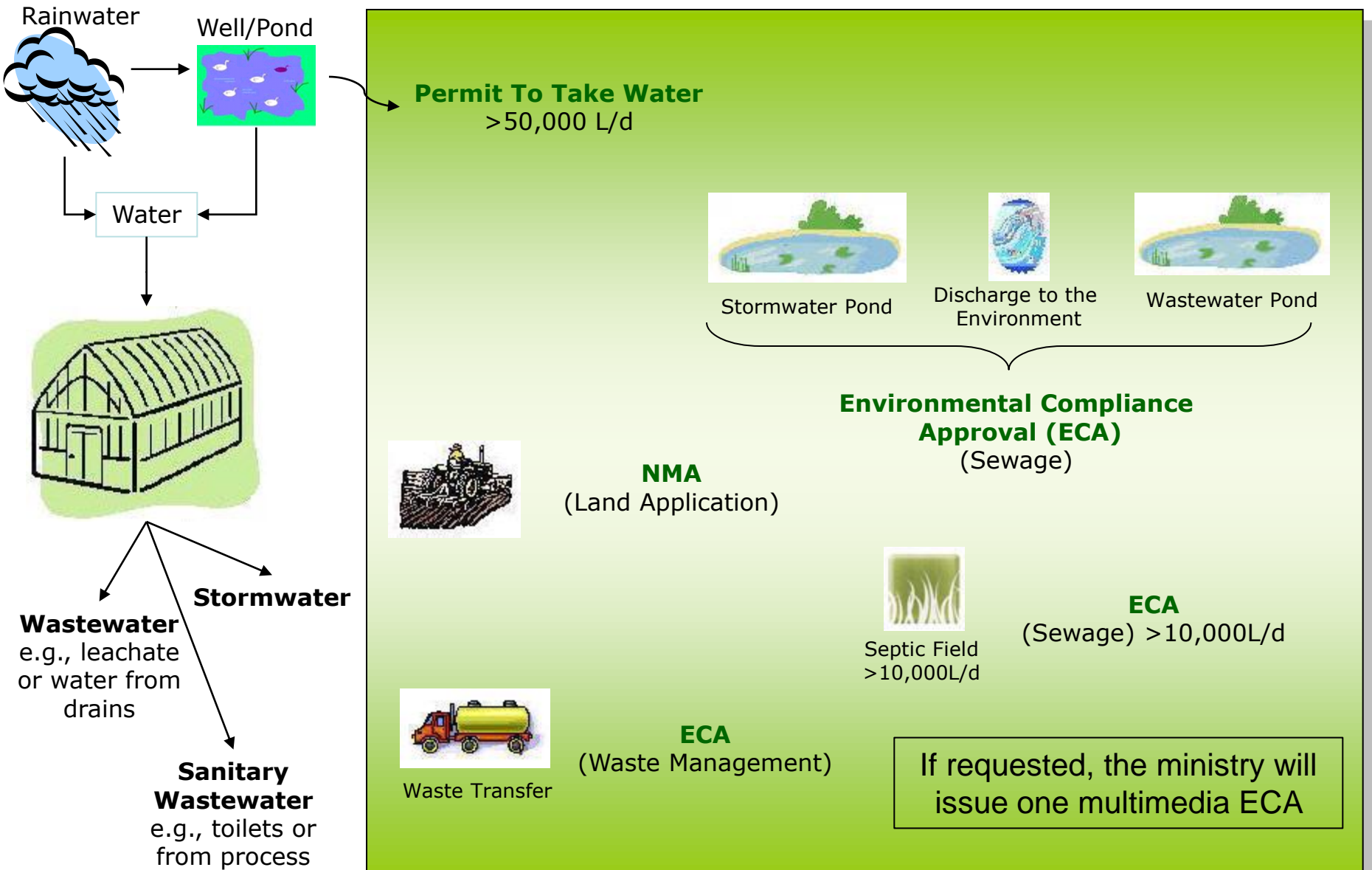
- Since 2010, in the Windsor area, 218 greenhouses have been inspected and in the Niagara area, 55 inspections were completed.
- About 112 abatement plans have been prepared since 2010 outlining actions greenhouse growers are taking to comply with environmental requirements.
 - 42 abatement plans are for flower growers in the Niagara area
 - 70 abatement plans are for vegetable growers in the Leamington area
- Inspections have identified significant incidence of non-compliance with MOECC wastewater management requirements (process water and stormwater).
- Other non-compliance identified:
 - Pesticides – mostly improper storage and signage
 - Permit to Take Water – not having required permit or not monitoring water taking
 - Wells – maintenance and abandonment issues
- 13 matters under investigation.

Greenhouse Inspections Update

- 44% of facilities implemented improvements to reduce nutrient use within the last five years.
 - improvements include: implementing a recycling system; purchasing better quality fertilizer; frequent monitoring and adjustment of fertilizer program; adopting a new irrigation method; improving water use efficiency; and, using precision fertigation
 - most common improvement was purchasing better quality fertilizer
- 45% of facilities use one or more types of on site treatment of fertilizer solution to improve recycling capability.
- Uptake of the information package and tool kit provided in January 2015 was low. Operators report that they either did not receive or did not read the emailed package.
- Many greenhouse growers, primarily larger, newer operations, have said that they are now recycling all their nutrient feedwater, others have identified that they are continuing to discharge, a number suggest they plan on using the GNF regulation but as a contingency.

Options for Compliance

Discharges and Approvals Required



Options for Compliance

- Grower needs to confirm action.
- MOECC will confirm/obtain plan from greenhouse operator on how they will manage nutrient rich wastewater, within reasonable timeframe, through:
 1. Reuse of fertilizer internally
 - will also require plan to manage feedwater that can no longer be re-used
 2. Application on land under Greenhouse Nutrient Feedwater Regulation
 3. Application on land under Environmental Compliance Approval (ECA)
 4. Treatment and discharge using a sewage works under ECA
 5. Disposal off-site by approved waste hauler
 6. Discharge to sanitary sewer
 7. Discharge to approved sub-surface sewage treatment system
 8. Separating process and storm water and applying for a stormwater ECA

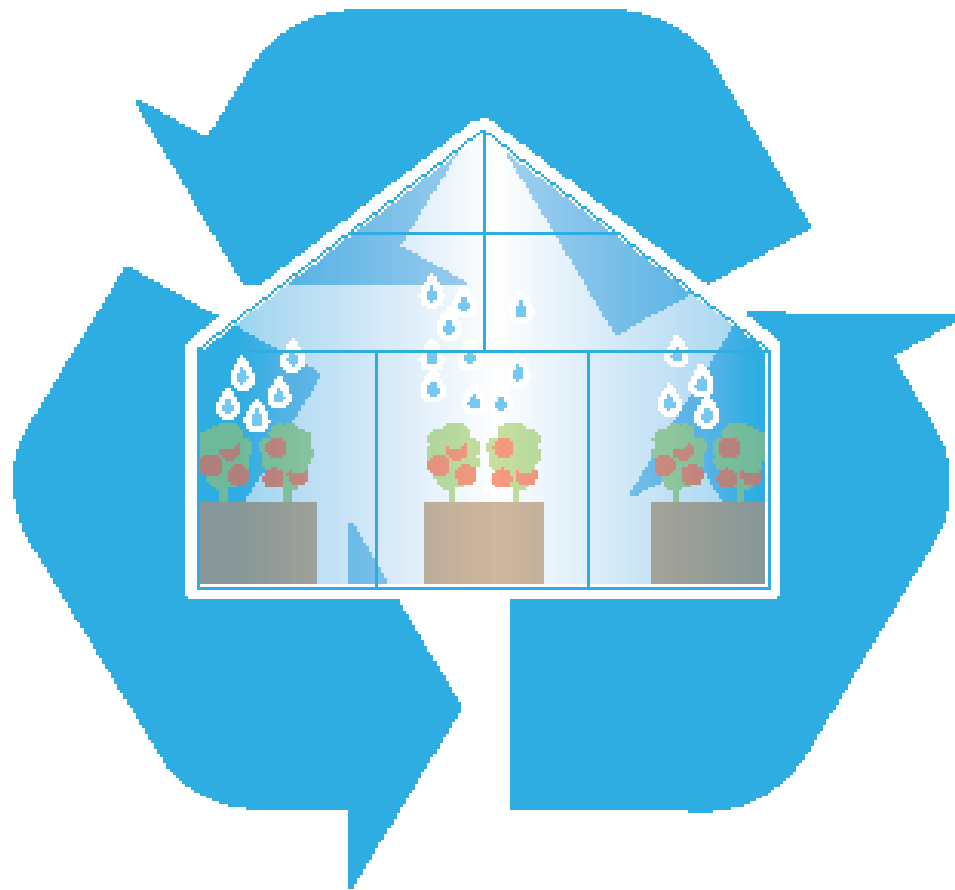
Options for Compliance

- Ministry will be monitoring and conducting follow-up inspections of greenhouse operations to confirm progress towards environmental improvement.
- Collection of samples from greenhouse wastewater and/or stormwater discharges, and area watercourses to verify actions taken and demonstrate water quality improvement.

Next Steps

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- You must stop discharging wastewater into the natural environment without the appropriate provincial approvals.
- You must take action to implement solutions to manage your nutrients in each greenhouse.
- You must apply for any necessary provincial approvals for discharging into the natural environment within the Leamington Tributaries and Thames River Watershed by March 31, 2017. Obtaining an approval will include an assessment of your processes and set appropriate limits to protect the environment.
- OGVG, FCO, OMAFRA, and MOECC staff are available to assist you in meeting the above timeframe.



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