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Stormwater Management Facility Sediment Maintenance Guideline – 2015 Update

Tim Van Seters and Kristina Delidjakova

TRIECA

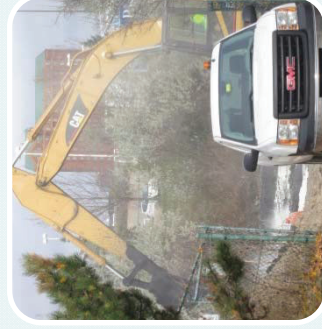
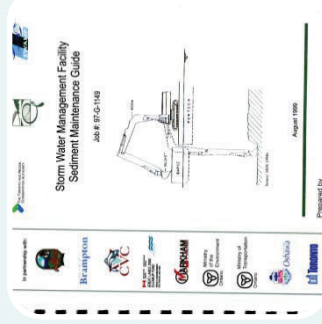
March 26, 2015



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Why Update the 1999 Guide?



Previous guide was published more than 15 years ago, and includes outdated guidelines and regulations.

Since 1999, the science has advanced significantly and a number of new practices have become more widespread

As ponds age, sediment accumulates, and water quality performance declines precipitously

There are over 1000 ponds in the GTA alone, a significant number of which are past due for cleaning

Sediment disposal guidelines need to be revisited to assess potential beneficial re-use options





Key Topics Addressed in the Guide

- ✓ A re-examination of current legislation, regulations, guidelines, and approval processes, including consideration of beneficial re-use options
- ✓ Key pond design considerations that will ease future maintenance
- ✓ Standard methods for measuring sediment accumulation depths, forecasting sediment removal and sampling sediments
- ✓ New approaches to dredging and treating sediment to facilitate offsite hauling
- ✓ Updated cleanout costs across a range of scenarios, and
- ✓ Case study examples of successes, challenges and costs associated with pond dredging operations in different contexts



Next Up....

- Ralph Toner, Manager, Habitat Restoration, TRCA
 - Shares his practical experience cleaning out and restoring ponds to functional treatment systems
- Francine Kelly-Hooper, Senior Soil Scientist, CH2M Hill
 - Presents pond sediment chemistry data and discusses the ins and outs of how and when this sediment may be beneficially re-used
- Janet Bobechko, Certified Environmental Law Specialist, Blaney McMurtry LLP
 - Discusses ambiguities in current excess soil legislation and provides recommendations on how to navigate the maze of guidelines and regulations.



Practical Guidance on How to Clean Ponds Effectively

Restoration & Infrastructure
March 26, 2015



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RESTORATION PROJECTS



SWMP Maintenance Partnership

Year	Stormwater Management Pond	Watershed	Drainage Area
2013	Sisters of St. Joseph	Don	18.28 ha
	Lansing	Highland	16.11 ha
	Centennial	Highland	457 ha
2014	Wendigo	Humber	129 ha
	Upper & Lower Spring Creek	Sewershed	248 ha
2015	Lower Duck	Sewershed	n/a
	L'Amoreaux	Highland	420 ha



SWMP Clean-out Phases

Phase 1: Prioritization

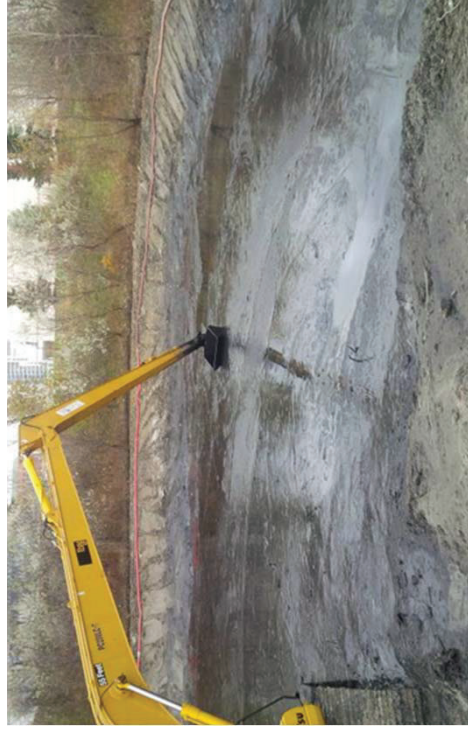
- Preliminary Monitoring and Assessment
- Priority Site Selection

Phase 2: Stormwater Pond Maintenance and Clean-out Plan

- Detailed Survey and Sediment Investigation
- Clean-out Options and Retro-fit Assessment
- Detailed Costing and Implementation Phasing
- Approvals

Phase 3: Implementation

- Public Consultation
- Implementation Scheduling,
- Project Completion Reporting
- Survey and Monitoring

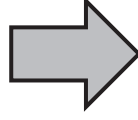




Phase 2: SWMP Maintenance and Clean-out Plan

The site clean-out plans were developed based on real sight conditions.

Activity	Purpose
Pond design and plan	Establish volume capacity, baseline, CofA
Site research	Historic context; MNR SAR screening
Site visit	Determine site access routes, infrastructure
Topographic survey	Site characterization and current condition
Bathymetric survey	Determine sediment quantity and location
Sediment quality testing	Determine sediment disposal option



Maintenance and Clean-out Plan

Approvals for SWMP Clean-Outs

Federal:

- Department of Fisheries and Ocean (Fish Habitat)

Provincial:

- Ministry of Natural Resources
- Species at Risk
- Wildlife Collection Permits

TRCA:

- Water resource engineer review
- Planning ecology
- Planning and development

Minister of the Environment:

- Sediment quality guidelines
- Certificate of Analysis(CofA)
- Environmental Compliance Approval (ECA)

City of Toronto:

- Tree Bylaw
- Ravines and Natural Features



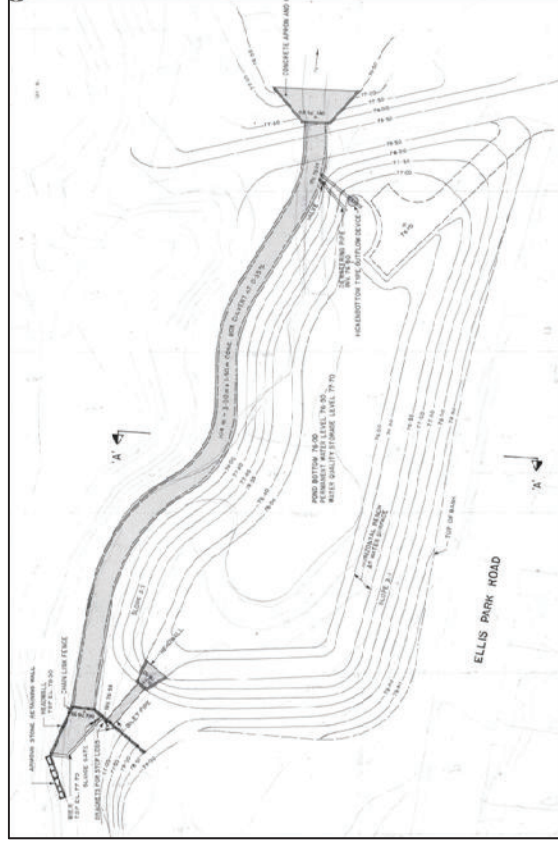
Non-tradition use of Traditional Equipment





Bypass/Dewatering

Infrastructure present to bypass/dewater





Bypass/Dewatering

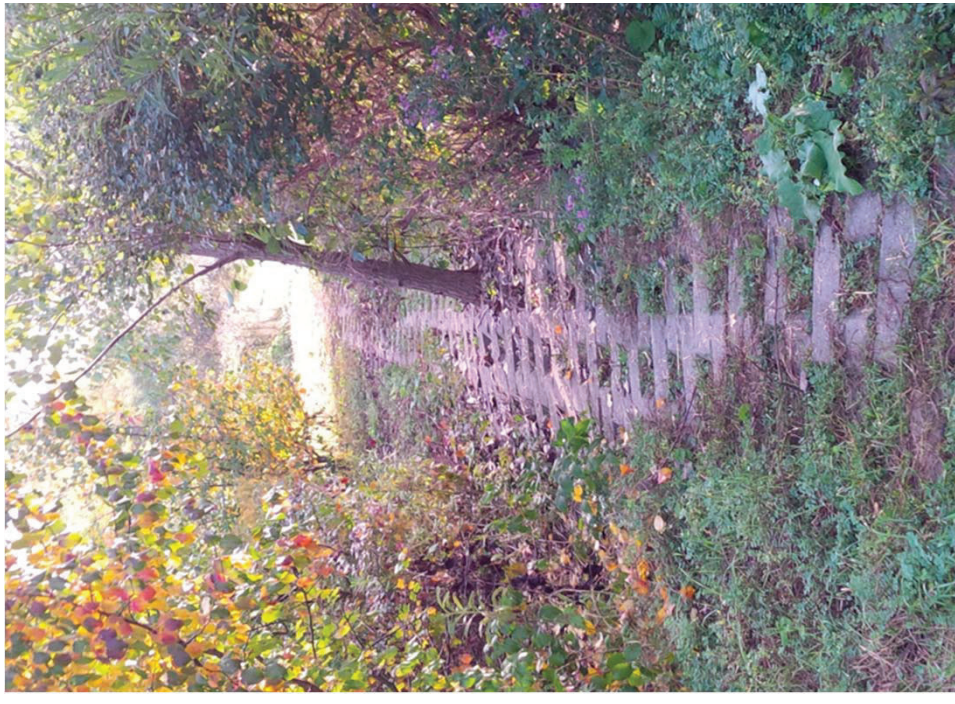
- Constructed bypass in or adjacent to SWMP
- Sump pit and pumps





Infrastructure and Access Maintenance

- Maintenance of drains and valves
- Clogged drains, jammed valves
- Overgrown access road



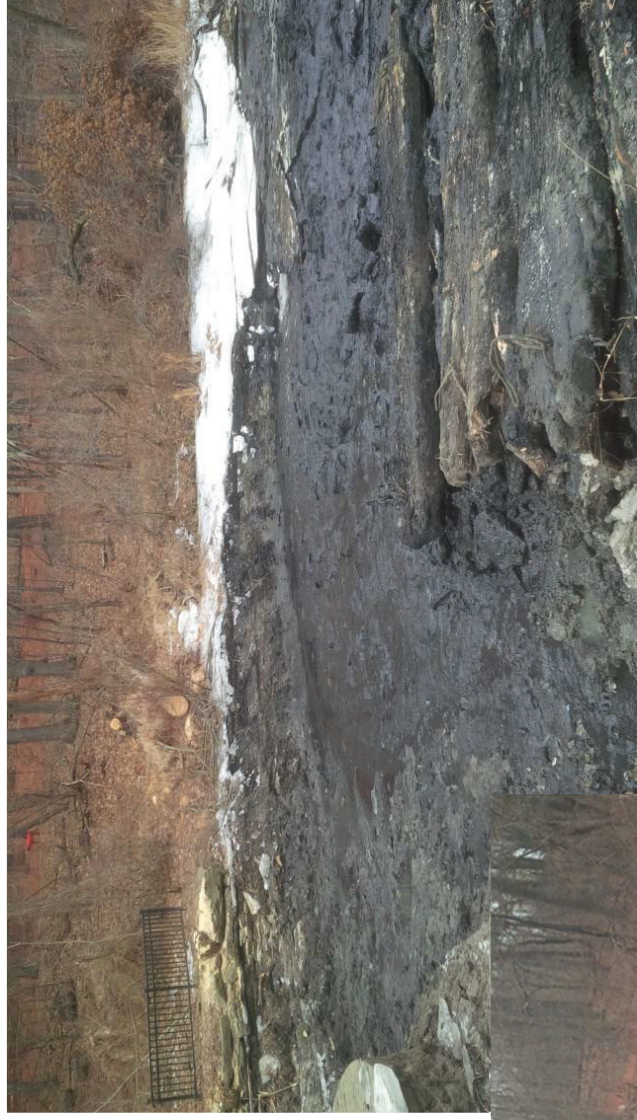


Good Access / Access Creation





Video: Dredgeate Consistency



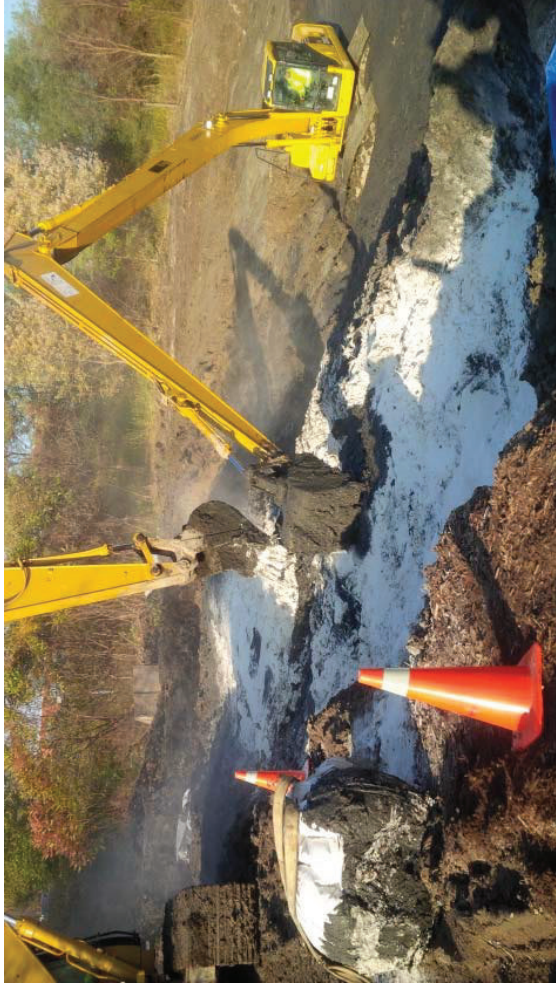


Polymer: Liquisorb 2000

- Bentonite clay based mineral powder with food grade polymer
- Used for the solidification and stabilization of high aqueous materials.

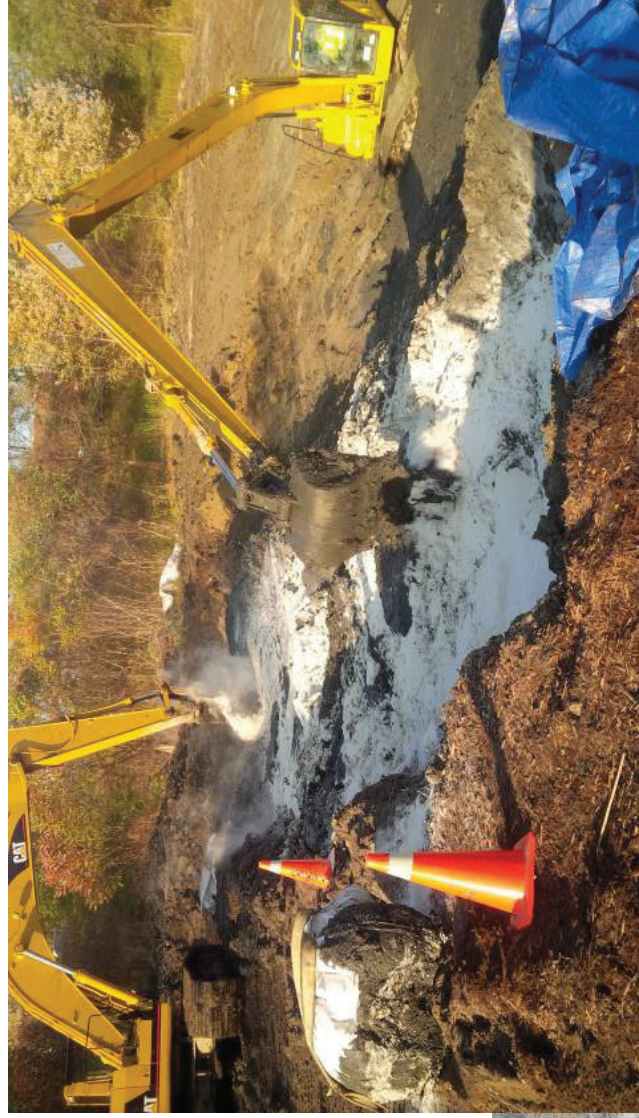
Benefits:

- Solidify materials to meet slump requirements
- Sets in up to 24-72 hours





Video: Polymer Mixing





Video: Material conditions





Video: Loading Trucks





Lessons Learned

- Sediment quantity and quality is critical
- There is no “Magic Wand” or Single approach
- Dewatering and water management essential
- Data Management, Design Drawings, As-Built
- Infrastructure and access maintenance
- Dredgate dewatering, consolidation



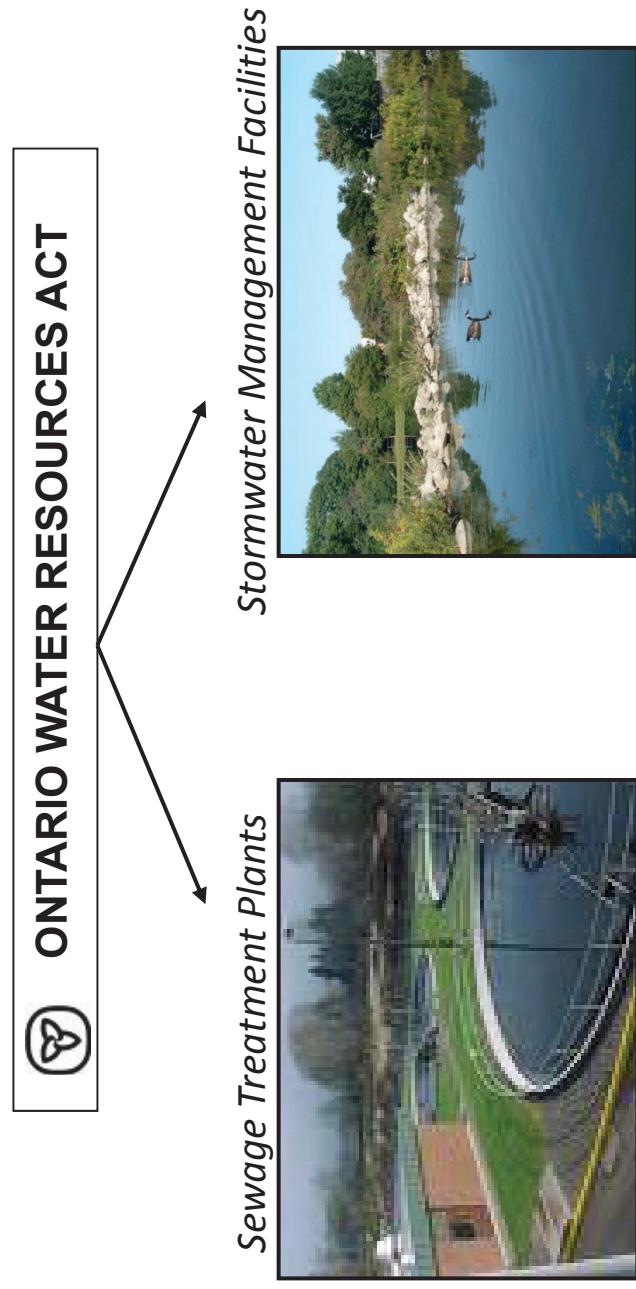
Stormwater Management Pond Sediment Quality

Disposal vs Beneficial Use Evaluations



Presented by Francine Kelly-Hooper, PhD

Ontario Legislation

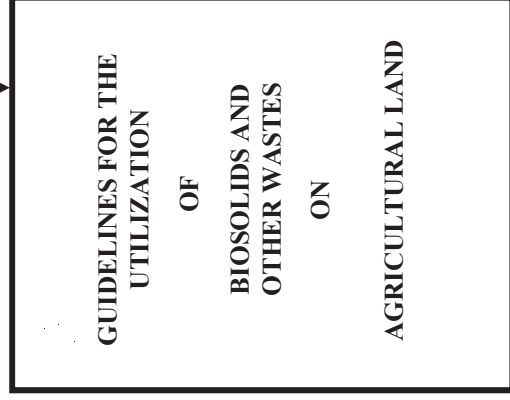


Construction and/or retrofits of STPs and SWMFs require a Certificate of Approval for "Sewage Works" from the MOE under Section 53 of the Ontario Water

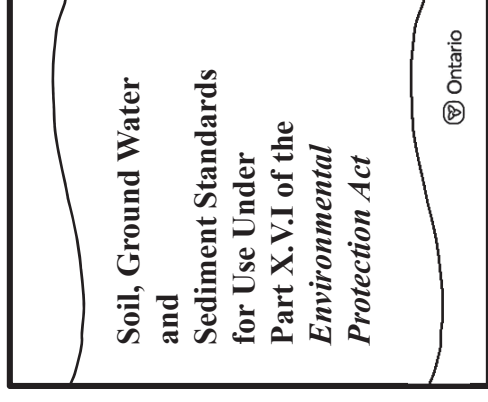
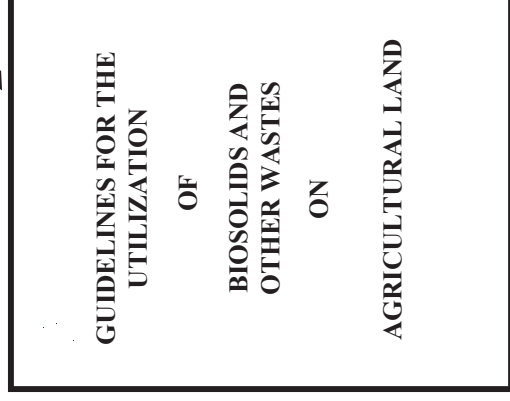
STP Biosolids and SWMF Sediment Utilization/Disposal Approvals



Biosolids
Utilization



SWM Sediment
Utilization or Disposal?



Typical Ontario SWM Sediment Disposal

Question #1: Does the sediment pass O. Reg. 153/04 Table 1 (background) soil standards?

Sediment quality analysis of 61 SWM ponds determined that all ponds exceeded the

Table 1 PHC standards and most ponds exceeded the PAH standards

↓
NO
↓

Question #2: Does the sediment pass O. Reg. 153/04 Table 2 (toxicity) soil standards and is there sufficient space for on-site spreading of the sediment?

YES

Spread on-site at
no extra cost to
municipality

NO

Conduct O. Reg. 347 leachate test to determine if
sediment must be sent to a municipal or hazardous
waste landfill facility. Represents significant financial
losses due to landfill tipping fees.

STP Biosolids Use versus SWMF Sediment Disposal

Sewage Sludge



Soil Amendments



SWM Pond



Landfill Disposal



The State of Wisconsin has a Dedicated SWMF Sediment Beneficial Use Certification program

Management of Accumulated Sediment from Storm Structures Publication WA 1375, Rev. 2009

Beneficial Use Options Include:

- Soil & compost amendments for landscaping and crop production
- Mine reclamation
- Geotechnical fill

Certification evaluations include:

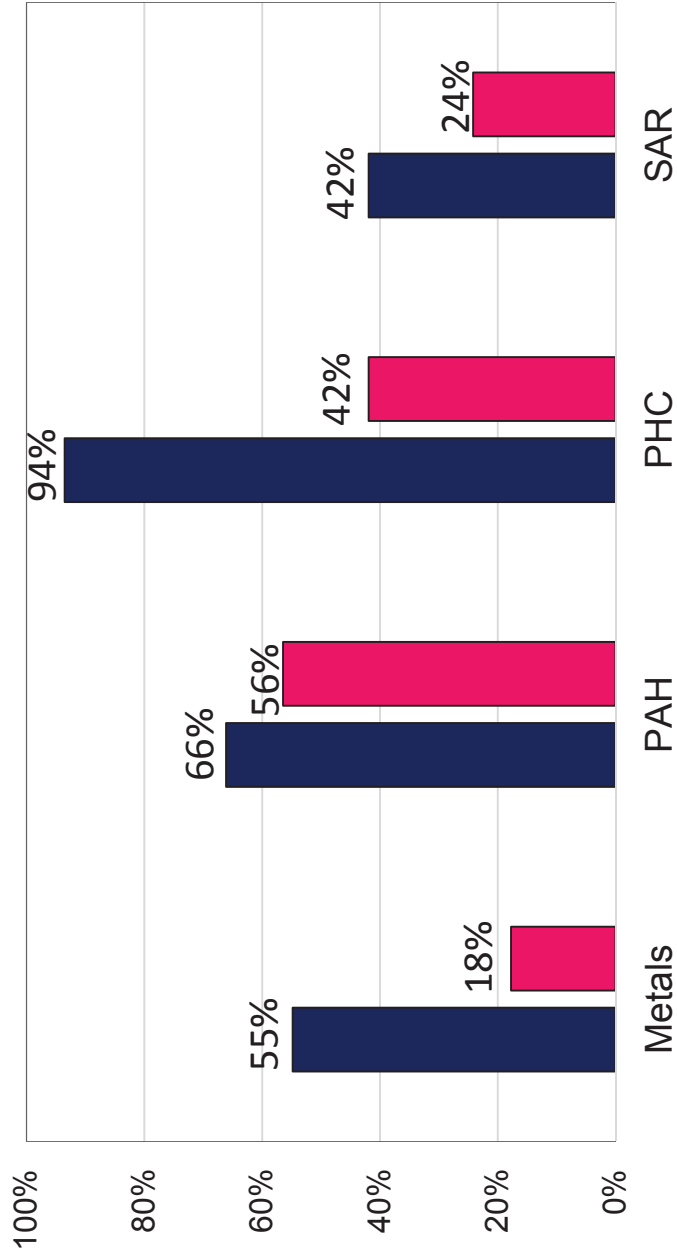
- “Ceiling” levels for toxic substances
- Minimum nutrient requirements

61 SWM Pond Sediment Quality Field Survey



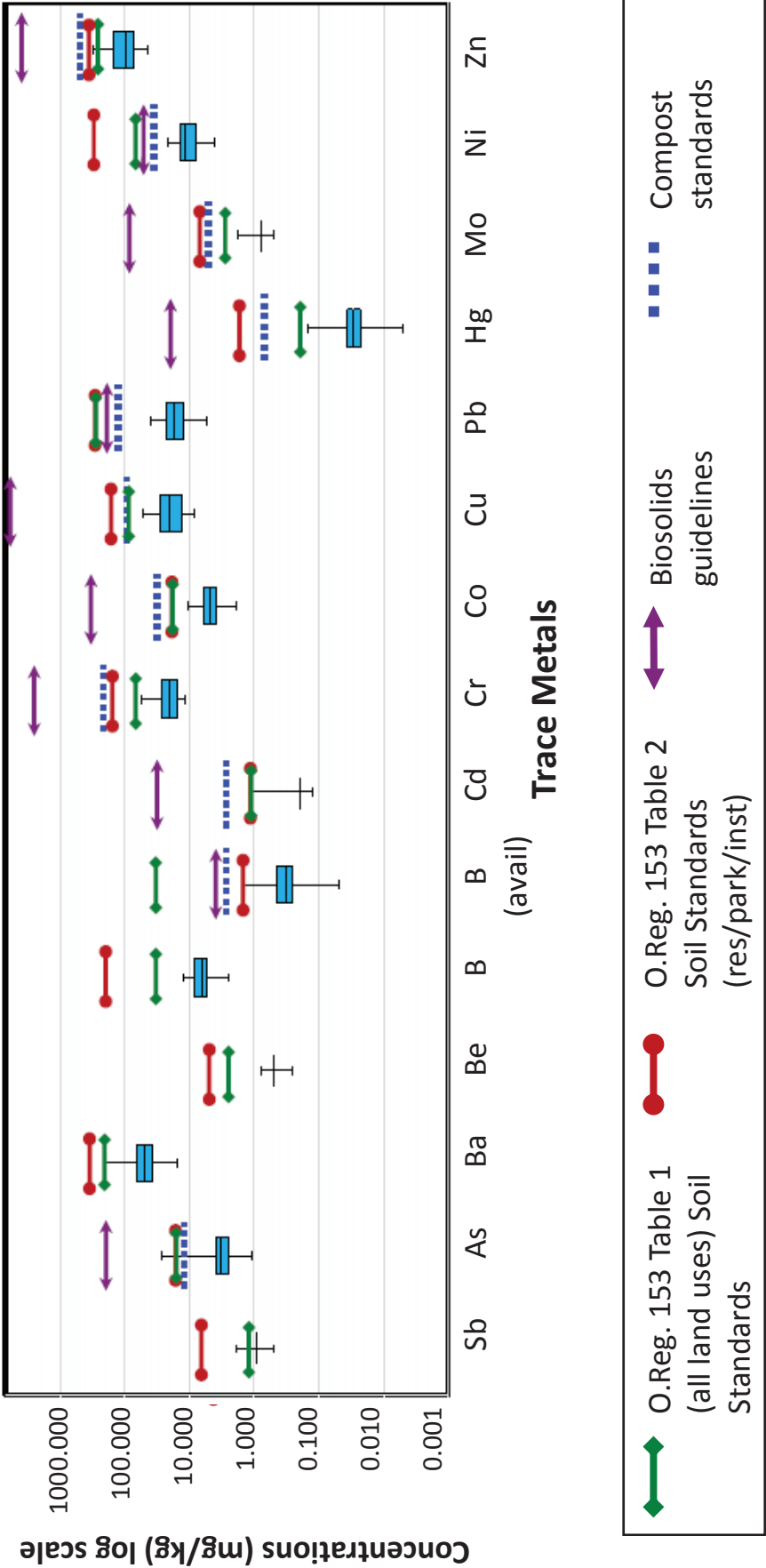
- Included 61 residential SWM ponds and wetlands
- Samples were analyzed for the following:
 - metals
 - PHCs
 - PAHs
 - SAR
 - TOC
 - pH
 - available nutrients
 - grain size

Percentage of 61 SWM Ponds That Exceeded O. Reg. 153 Table 1 and/or Table 2 Soil Standards



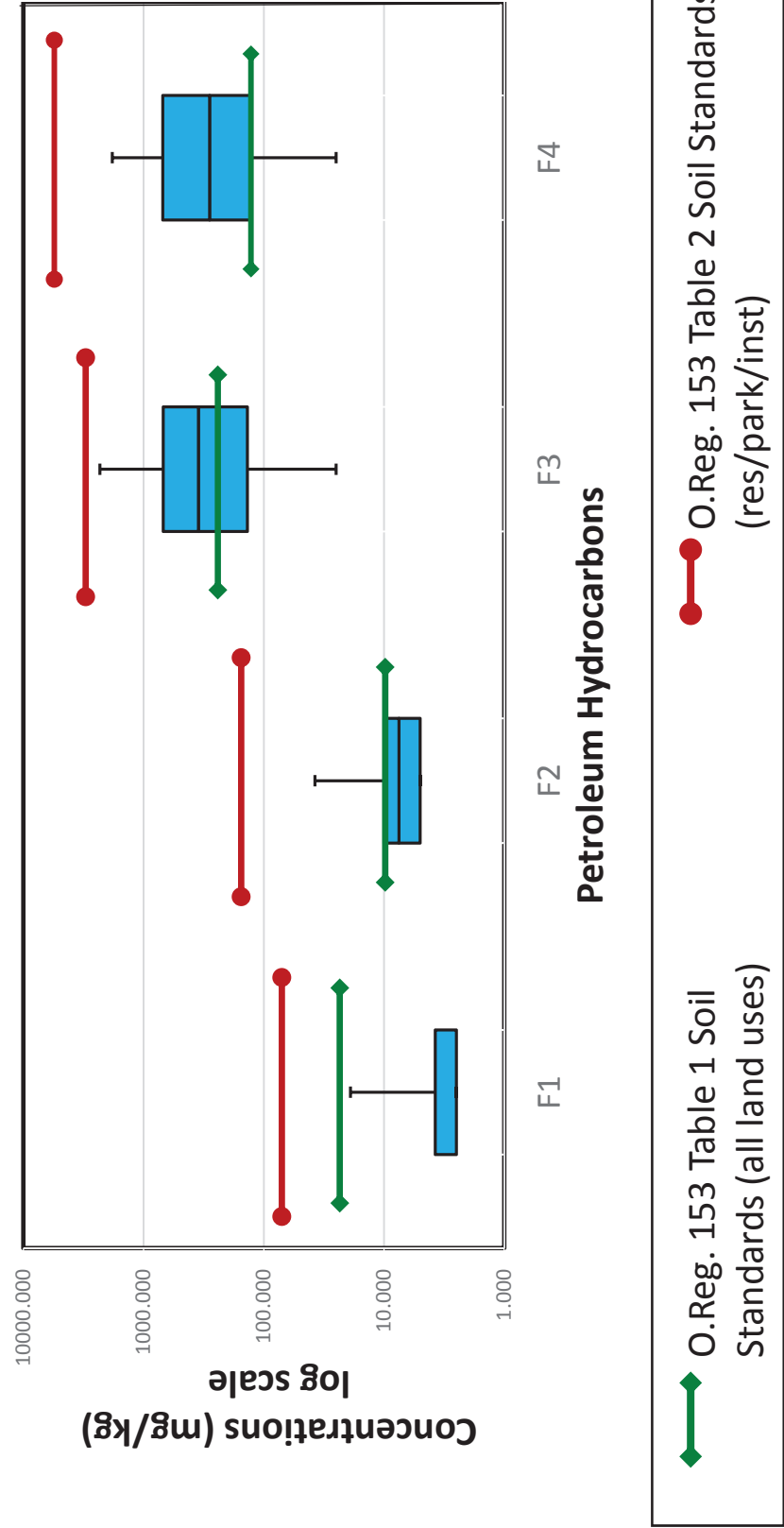
■ Number of ponds that exceeded Table 1 (all land uses) standards
■ Number of ponds that exceeded Table 2 (res/park/inst) standards

No samples exceeded the biosolids metal guidelines. Only 1 sample slightly exceeded the compost arsenic criteria. Most samples were less than the O. Reg. 153 Table 1 and Table 2 soil standards

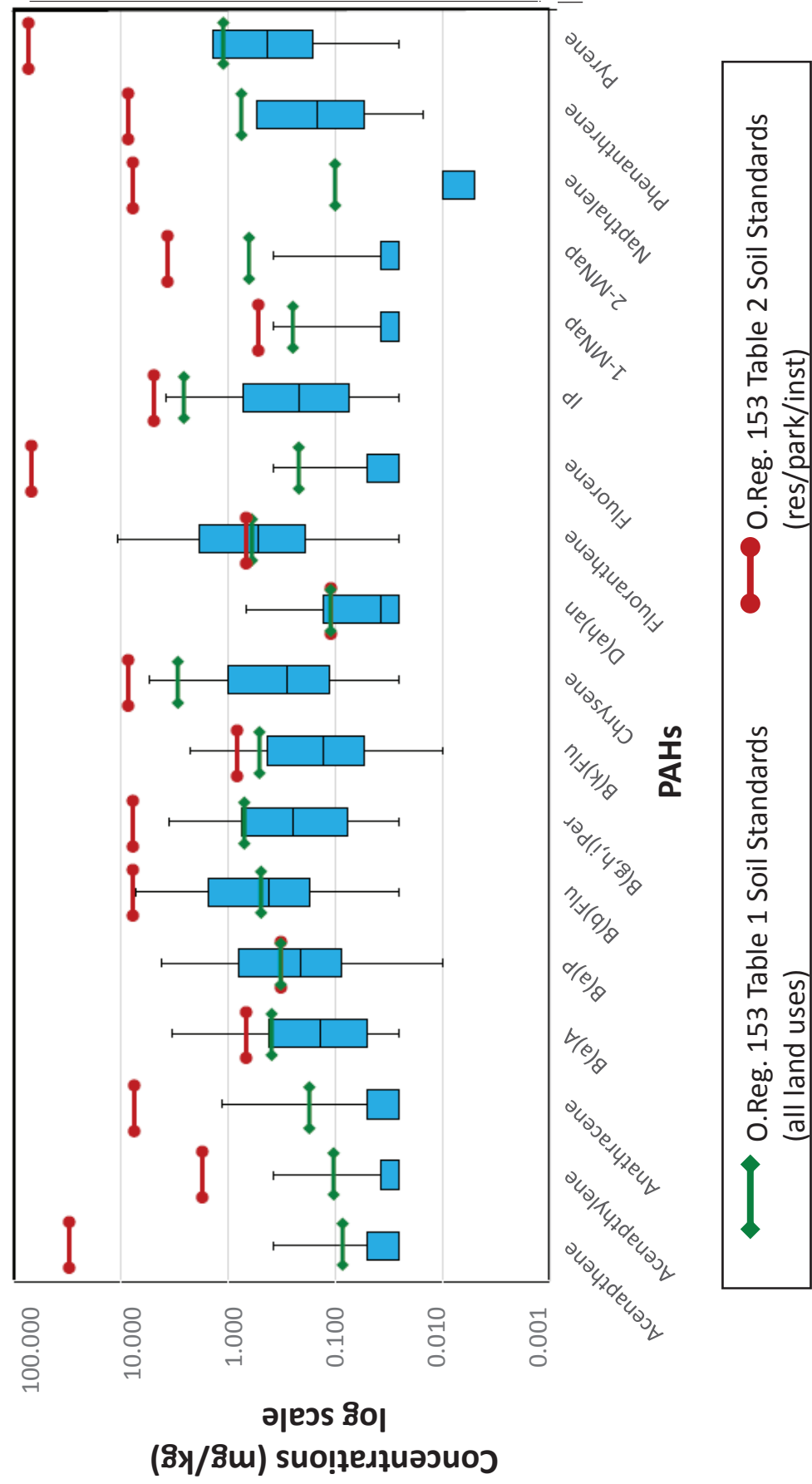


Comparison of Petroleum Hydrocarbon Concentrations to O. Reg. 153

Table 1, Table 2 Soil Standards



Comparison of PAH Concentrations to O. Reg. 153 Table 1, Table 2 Soil



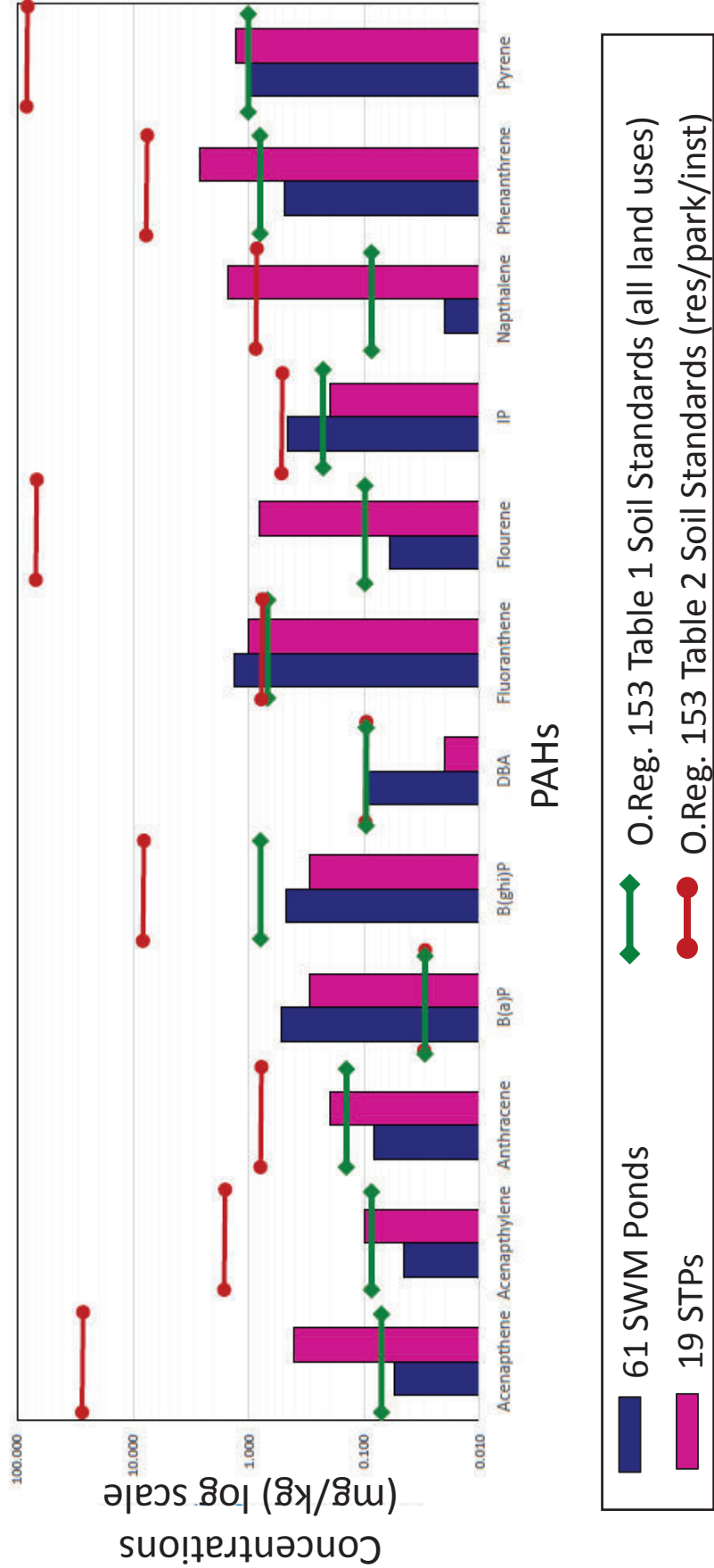
2010 Water Environment Association of Ontario Biosolids Study



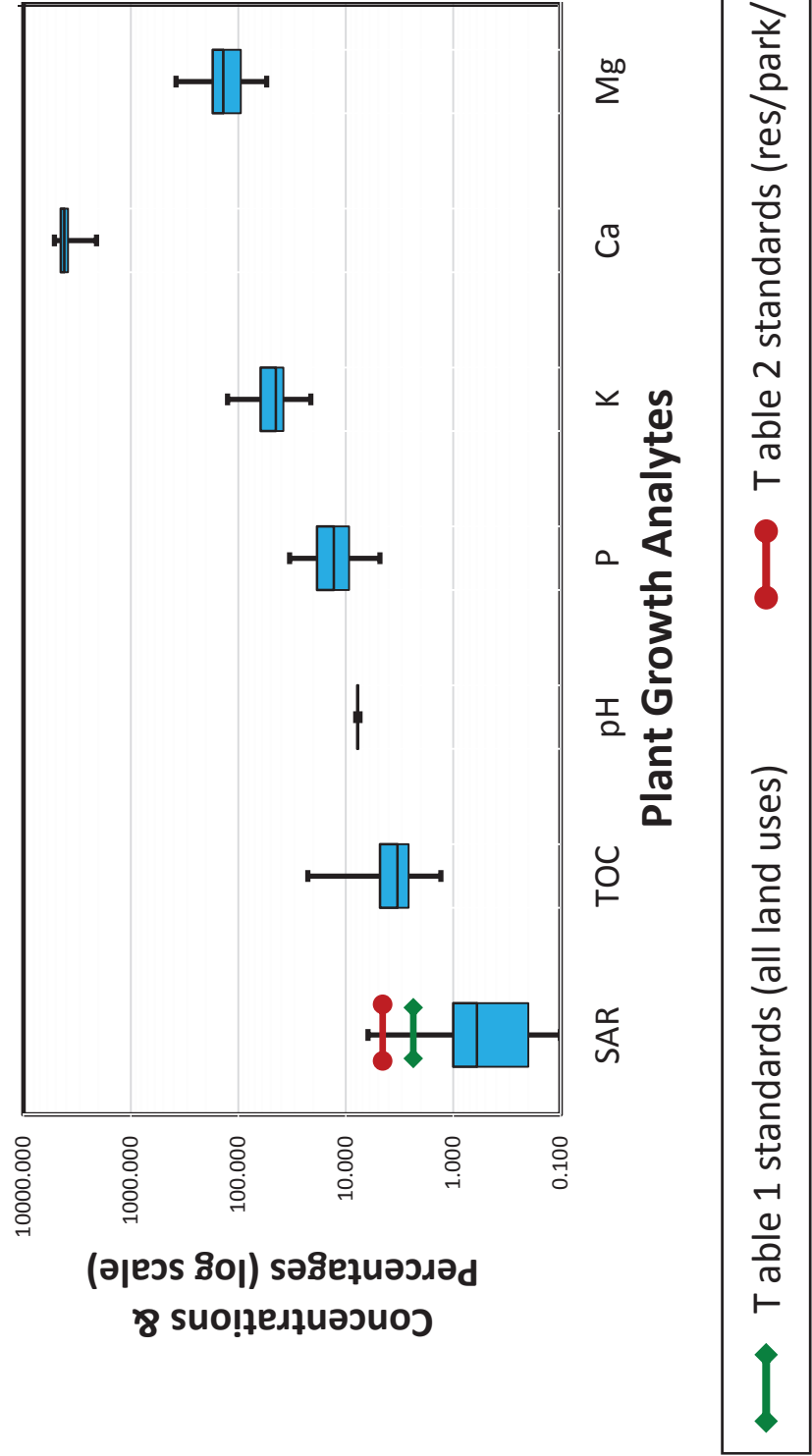
- PAH levels in 16 Canadian sludges were lower or equal to levels observed in the 36 SWMF sediments

“Thus, evidence in this current review and the WEAO (2001) report are in agreement and indicate that PAHs, and particularly benzo(a)pyrene in land applied sewage sludges do not present significant human or environmental health risks. As a result, it is recommended that the contaminants remain as Group I contaminants.” pg 128 (no additional PAH studies are recommended)

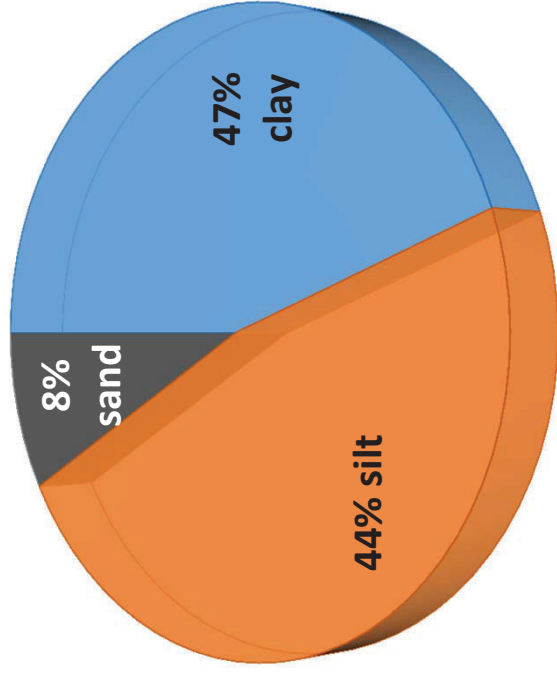
Average PAH Concentrations in SWM Sediments and Sludge
Collected from 19 Municipal Sewage Treatment Plants



Comparison of Average Plant Growth Analytes to O. Reg. 153 Table 1, Table 2 Soil Standards and AgTest Recommended Topsoil Values



Average Grain Size Distributions



OMAFRA Recommended Topsoil Grain Size Distributions

- 20%-75% sand (low)
- 5%-50% silt (adequate)
- 5%-30% clay (high)



PAH and SAR Land Use Considerations

PAHs in coal tar pavement sealants are 1000X higher than alternative sealants (e.g. asphalt, latex, epoxy, etc.)



Road salt in spring melt produces the highest SAR levels. Summer and fall sediment samples are far less likely to exceed O.Reg. 153 soil standards

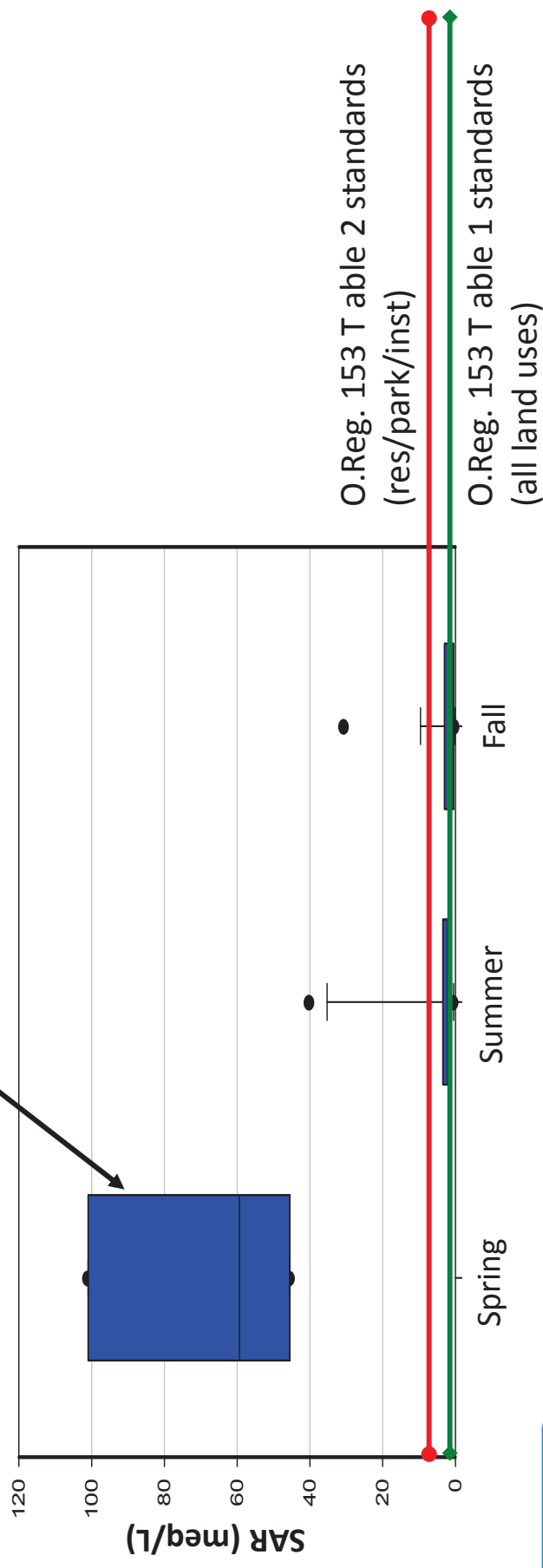




SWM Pond Sediment **SAR** Levels According to Sampling Season

170 sediment samples collected from 61 Residential SWM Ponds

All 97 spring sediment samples were at least 10X higher than the O.Reg. Table 2 soil standard



Examples of Beneficial Uses vs Waste Disposal

Urban Parklands



Tree Nurseries/Plantations



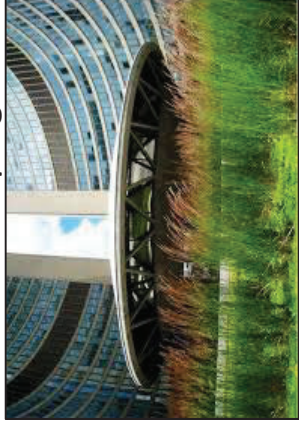
Non-hazardous Waste Disposal



Compost
Ammendments



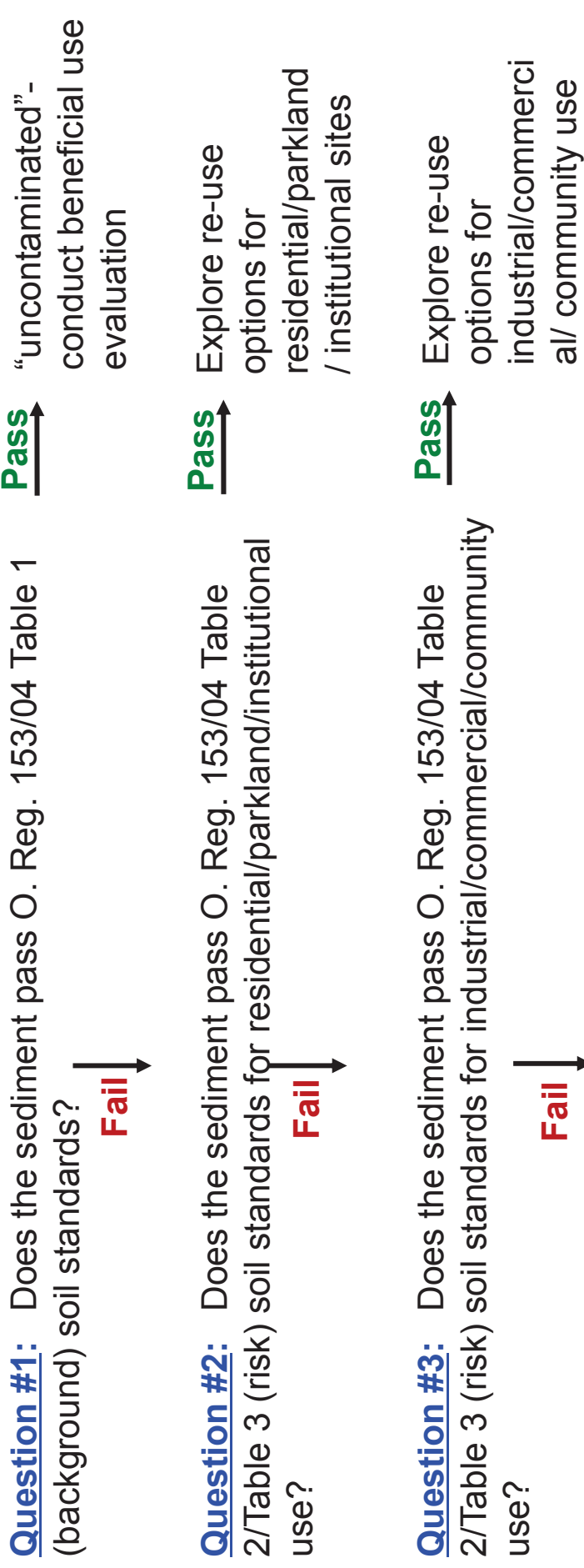
Commercial/Industrial
Landscaping



Hazardous Waste
Disposal



Risk Management Approach



Conduct O. Reg. 347 leachate test to determine if sediment must be sent to a municipal or hazardous waste landfill facility. Represents significant financial losses due to landfill tipping fees.

Risk Management Approach

Question #1: Does the sediment pass O. Reg. 153/04 Table 1 (background) soil standards?
Fail ↓ **Pass** → “uncontaminated” - conduct beneficial use evaluation

Question #2: Does the sediment pass O. Reg. 153/04 Table 2/Table 3 (risk) soil standards?
Fail ↓ **Pass** → Explore re-use options for residential use

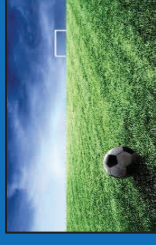
- Application of “contaminated” sediments could create difficulties with future re-zoning to more restrictive land uses. (eg. Commercial to residential)

Question #3: Does the sediment pass O. Reg. 153/04 Table 2/Table 3 (risk) soil standards for industrial/community use?
Fail ↓ **Pass** → Explore re-use options for industrial/community use

Conduct O. Reg. 347 leachate test to determine if sediment must be sent to a municipal or hazardous waste landfill facility. Represents significant financial losses due to landfill tipping fees.

Risk Management Case Study #1

Beneficial use on residential/parkland/institutional lands



Case Study: Data exceeds Table 1 for Fluoranthene, but meets Table 2.

Options: Explore beneficial use options for Table 2 residential/parkland/institutional)

Analyte	O.Reg. 153 Standards		Pond Sample Stations		
	Table 1	Tables 2 & 3	Inlet	Centre	Outlet
	(all land uses)	res/park/instit			
Fluoranthene	0.56	0.69	0.65	0.67	0.59



Risk Management Case Study #2

Beneficial use on industrial/commercial/community lands

Case Study: Fluoranthene exceeds Table 1 and Table 2&3 residential/parkland/institutional, but meets Table 2 industrial/commercial/community land use standards

Options: Explore beneficial use options for Table 2 industrial/commercial/community land uses

Analyte	O.Reg. 153 Standards			Pond Sample Stations		
	Table 1	Tables 2&3		Inlet	Centre	Outlet
	(all land uses)	res/park/instit	ind/com/commu			
Fluoranthene	0.56	0.69	9.6	3.29	4.69	6.98



Risk Management Case Study #3

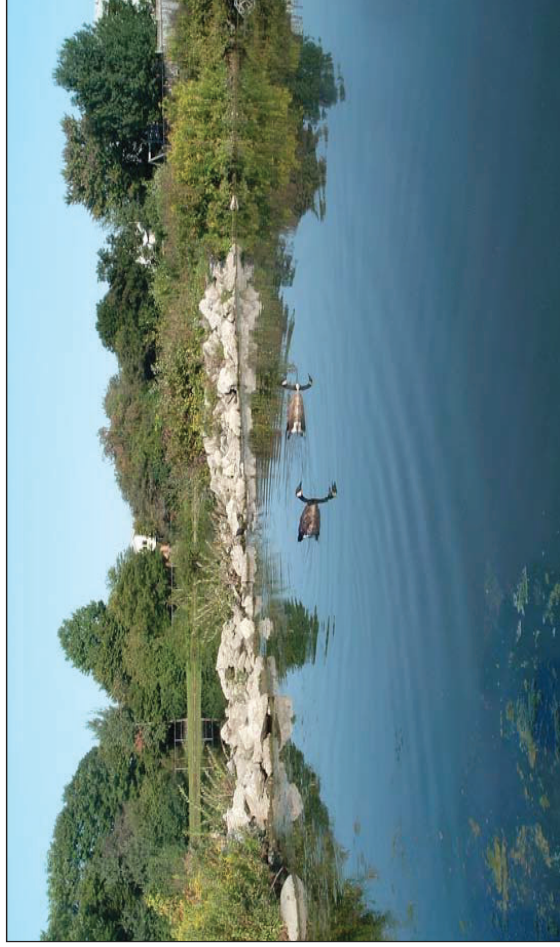
Landfill Disposal

Case Study: Fluoranthene exceeds Table 1 and Table 2&3 industrial/commercial/community soil standards

Options: Submit samples for O.Reg. 347 leachate test to determine if sediment should be disposed at a non-hazardous or hazardous waste facility

Analyte	O.Reg. 153 Standards		Pond Sample Stations		
	Table 1 (all land uses)	Tables 2&3 res/park/instit ind/com/commu	Inlet	Centre	Outlet
Fluoranthene	0.56	0.69	12	16	11

Thank you



Francine.kellyhooper@ch2m.com

Stormwater Management Facilities:

Municipal Liability and Sediment Disposal

March 26, 2015



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Primary Objectives

1. To enhance legal knowledge of municipal managers regarding obligations and liabilities associated with maintenance practices of Stormwater Management Facilities (SWMF). This will highlight the need for municipalities to allocate proper financial resources to ensure that legal obligations can be met.
2. To generate discussions regarding the need for a new SWMF sediment disposal versus beneficial use regulatory approval process.

Major Issues

1. What are the legal obligations and liabilities of municipalities with respect to SWMF?

Answers:

1. Municipality must inspect, maintain, remove and dispose of sediment if, pursuant to *Ontario Water Resources Act (OWRA)*
 - required by Environmental Compliance Approval (ECA); or
 - ordered by MOECC Director (no \$ limits on costs to perform)
2. Municipality bears costs if it fails to maintain, repair, and remove sediment, pursuant to orders of MOECC Director or Ontario Municipal Board (OMB)
3. Possible liability in negligence if municipality fails to maintain or repair SWMF, and property damage ensues

Major Issues

2. What are the disposal & utilization options, once sediment has been removed from SWMF?

- Landfill?
- On-site disposal?
- Beneficial uses?
 - topsoil spreading? compost?

Answer: There is no 100% correct answer for disposal

No clear legislation or guidelines

- Unclear removal/maintenance obligations (unless defined in ECAs or ordered by Director)
- Sediment Standards in Tables 1, 8, 9 - *Ontario Regulation 153/04*

Agenda: Municipal Obligations and Liabilities

1. **Municipal liability: common law torts**
 - general principles: negligence
 - case studies
2. **Relevant Legislation**
 - section 1- application of OWRA to SWMF
3. **Environmental Compliance Approvals (ECAs)**
 - OWRA- sections 1 and 53
 - terms and conditions, critiques, samples
4. **Legislation: municipal obligations and liabilities**
 - OWRA- sections 1, 57, 61, 62
5. **Penalties for Non-Compliance with ECAs**
 - OWRA- sections 107, 108

Agenda: Sediment Disposal & Utilization

1. Classification of sediments
 - *Ontario Regulation 347- Waste Management*
 - Leachate criteria- Schedule 4
 - *Ontario Regulation 153/04 - Table Standards*
2. Disposal & utilization options
 - potential framework and options
 - Ministry of Environment and Climate Change (MOECC) Guidelines
 - industry practices
3. Legislative change
 - comments and suggestions
 - legal and practical conclusions
 - closing comments

Municipal Liability: Negligence

Common law tort liability: SWMF

- No positive obligation on municipalities to provide drainage or drainage facilities for surface water

Potential liability for municipalities when:

- Decisions made to implement stormwater management programs in future (but have not been implemented); OR
- Implement measures that impact stormwater, causing harm
- No case law to date on SWM ponds

Municipal Negligence: Caselaw

Negligent maintenance of sewage system

Oosthoek v Thunder Bay (City), 1994, Ont. C.A.

- Basements of 200 residents flooded during storm- sewage backup
- City liable- failure to update and maintain old sewage system to reduce total volume of water handled
- City aware for almost 20 years of overflow problems
- City passed by-law to change system but never enforced- act of negligence

Municipal Negligence: Caselaw

Negligent maintenance of SWM system

2013 class action against City of Thunder Bay

- Residents' homes flooded during May 2012 rainstorm
- Flooding allegedly caused by shutdown of water treatment plant
 - lack of routine maintenance performed
 - improper operations on day of storm
- Action still in progress

Application of OWRA to SWMF

SWMF= “sewage works” under section 1(1) OWRA

- “sewage” includes drainage, storm water, commercial wastes, industrial wastes, and anything else specified by regulations.
- “sewage works” means any works for the collection, transmission, treatment and disposal of sewage or any part of such works, but does not include plumbing to which the *Building Code Act, 1992* applies.

OWRA: ECAs for SWMF Operations

Conditions for operating sewage works

- **Section 53(1):** A person or municipality must follow the conditions of the ECA when constructing, operating, using, repairing, or replacing new or existing **sewage works**
- Cannot operate or do anything to the sewage work other than the manner specified in the ECA

OWRA: General Terms and Conditions of ECAs

- Create inspection, maintenance, repair obligations for municipalities
- Operation and performance criteria
- Required monitoring and recording of water quality
- Reporting incidents to MOECC
- Prevention measures and actions re: accidental spills
- Penalties for non-compliance under OWRA- s. 107(3) and 108

OWRA: Critiques of ECAs

- Perception- lack of monitoring and enforcement of ECAs by MOECC
- Most ECAs don't have expiry dates → requirements may not meet current environmental standards
- Inconsistent review of ECA applications
- Old ECAs do not always require ongoing management or review
- Combined sewers pre-date requirements for ECAs and therefore are poorly regulated

ECA Sample Wording: SWM Pond

Vague inspection and maintenance obligations for municipality

- “The Owner shall undertake an inspection of the condition of the stormwater management system, **at least once a year**, and undertake any necessary cleaning and maintenance to **prevent the excessive buildup of sediment**”
- ECA issued in 2002

ECA Sample Wording: SWM Pond

Vague language: inspection reviews by MOECC

- “The owner shall maintain a logbook to record the results of these inspections and any cleaning and maintenance operations undertaken and shall **keep the logbook at the site for inspection by the Ministry**”
- ECA issued in 2002

ECA Sample Wording: SWM Pond

Vague construction, operating obligations for municipality

- “The Owner shall make all necessary investigations, take all necessary steps and obtain all necessary approvals so as to ensure that the physical structure, siting and operations of the stormwater works **do not constitute a safety or health hazard to the general public.**”
- ECA issued in 2002

ECA Sample Wording: SWM Pond

Vague maintenance obligations for municipality

- “The Owner shall ensure that **sediment and excessive decaying vegetation are removed** from the above noted stormwater management system at such a frequency as to **prevent the excessive buildup and potential overflow** of sediment and/or decaying vegetation into the receiving watercourse”
- ECA issued in 2002

OWRA: ECA Sample Wording

ECA wording for SWM pond from 2012: vague municipal obligations

- “The Owner shall inspect the Works at least once a year and, if necessary, clean and maintain the Works to prevent the excessive build-up of sediments, oil and grit, and/or vegetation”

OWRA: Municipal Maintenance Obligations

Sewage works to be kept in repair

- **Section 61:** MOECC Director can direct municipality to maintain, repair, and operate sewage works in specific ways

OWRA: Director's Orders & Enforcement

Municipalities must follow instructions from MOECC Director

Section 62(1):

- Director can **order municipality**, in written report, to create, maintain, operate, repair, alter, or replace sewage works
- Director can make orders if they are **necessary in the public interest**
- Municipality must immediately do everything in its power to implement the orders in the Director's report

OWRA: Municipal Non-Compliance

Director can order Ontario Clean Water Agency to implement report if municipality does not

Section 62(2):

- If municipality fails to do everything in its power to implement Director's report on sewage work, Director can direct Ontario Clean Water Agency to implement it (**if first approved by Ontario Municipal Board**)
- Municipality must then pay for all costs incurred to inspect, repair, replace (as the case may be) the sewage work(s)

OWRA: Municipality Bears Expenses

Recovery of expenses from municipality

Section 62(3)

- MOECC Minister or Ontario Clean Water Agency can recover expenses from municipality for implementing report on sewage work(s)
- Must bring action in court to recover expenses and legal fees

OWRA: Complaints about SWMF

Complaints by community members, municipal managers

- can launch complaints with MOECC regarding failure of municipality to maintain, inspect, repair, or replace sewage works

Ontario Municipal Board (OMB) to hear complaints

- **Section 57:** OMB can hear complaints by any person that municipality is causing property damage by failing to comply with legal obligations on sewage works under any legislation, regulation, direction or order, or has caused damage through improper actions.

OWRA: Complaints

Complaints by community members, municipal managers

- **Section 57 (continued):** applies where municipality has control over, or is maintaining, constructing or operating sewage work in manner that may have caused property damage
- OMB then has power to make any order, monetary award, or finding that it considers appropriate

OWRA: Penalties

Offence: failure to comply with ECA obligations

- **Section 107(3):** Every person and [every municipality] that contravenes a term or condition of a licence, permit or **approval** made under this Act is **guilty of an offence**

OWRA: Penalties

Penalties: failure to comply with ECA obligations

Section 108 (1): Every individual convicted of an offence under this Act, is liable:

1. to pay not more than \$50,000 for first conviction; or
2. to pay not more than \$100,000, or one year imprisonment (or both) for subsequent convictions

OWRA: Penalties

Penalties: failure to comply with ECA obligations

Section 108(2): Every corporation convicted of an offence (other than an offence under s. 109) is liable,

1. to pay a fine of not more than \$250,000 on a first conviction, for each day offence occurs/continues
2. to pay a fine of not more \$500,000 on each subsequent conviction, for each day offence occurs/continues

Take Away: Municipal Obligations

- Municipalities must inspect, maintain, repair, and remove sediment from SWMF, pursuant to ECAs (s. 53 of OWSRA)
- Extent of responsibilities depends on language in ECAs

Take Away: Enforcement of ECAs

- Director's directions and orders under s. 61, 62 of OWRA if municipal non-compliance with ECAs
- Unclear how strictly MOECC will utilize enforcement powers to issue orders for non-compliance with ECAs
- Offences for ECA violations and penalties up to \$500,000

Take Away: Municipal Liability

Common law liability in negligence where actual or contemplated actions by municipalities regarding SWMF facilities

No case law on SWMF and *statutory* liability

- If municipality fails to adequately maintain and repair SWMF through sediment removal and disposal, it may bear the costs pursuant to s.57, 62(2) of OWRA
- Applies in two major situations:
 1. Order made by OMB after community member complaint regarding property damage from improper maintenance/repair of SWMF (s. 57)
 2. Director orders municipality or Ontario Clean Water Agency in written report to maintain or repair SWMF (s. 62(2))

Issue 2: Sediment Disposal & Utilization Options

Sediment Removal from Pond



On-Site Topsoil Spreading



Organic Compost



Framework: Disposal and Utilization Options

- Disposal and utilization options in this presentation are premised on basis that the following issues have already been fully considered:
 1. Location of SWMF
 2. Type of SWMF → wetland? wet pond?
 3. Grading of existing land surrounding SWMF
 4. Surrounding ecosystem and aquatic wildlife near SWMF, including species at risk assessment
 5. Type of surrounding land use (agricultural, residential, commercial, parkland, etc.)
 6. If SWMF located on lands classified as “floodplains” under *Conservation Authorities Act*
 7. All relevant laws, regulations, by-laws and MOECC guidance documents on the above points, and on any additional issues, have been fully reviewed

General Sediment Classification Options

- Inert fill
- Non-hazardous (not leachate toxic waste)
- Hazardous waste

Sediment Classification?

Inert Fill

- Defined by *Ontario Regulation 347*
 - “inert fill” means **earth** or rock fill or waste of a similar nature that contains **no putrescible materials** or **soluble or decomposable** chemical substance
- If **Sediment= Inert Fill**→ Section 3(1) of Reg. 347 exempts sediment from management, treatment, disposal obligations
- Sediment also exempt from removal and restoration orders under Part V of *Environmental Protection Act*.

Sediment Classification?

Leachate Toxic Waste

- Defined by *Ontario Regulation 347*
 - “leachate toxic waste” means a waste producing leachate containing any of the contaminants equal to or exceeding those listed in Schedule 4, based on the Toxicity Characteristic Leaching Procedure Test

Sediment Classification?

Table Standards

- Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the *Environmental Protection Act, MOECC, 2011*
- Sediment Standards in *Ontario Regulation 153/04* (Records of Site Condition)
 - Tables 1, 8, 9
 - Table 1- Full Depth Background Site Condition Standards
 - Table 8- Generic Site Condition Standards for Use within 30 metres of a Water Body in a Potable Groundwater Condition
 - Table 9- Generic Site Condition Standards for Use within 30 metres of a Water Body in a Non-Potable Groundwater Condition
 - Disposal concerns when sediment exceeds Table 1 standards

Initial Conclusions: Sediment Classification

No Clear Legal Guidance on Sediment Classification

What are Options Going Forward?

- Review guidance documents from MOECC
- Review U.S. policies and classification systems

Disposal Options: Practices

According to MOECC's "Stormwater Management Planning and Design Manual, 2003"

If sediment = inert fill + not leachate toxic waste

- On-site disposal if two conditions met
 1. sufficient space for on-site spreading
 2. site not regulated by *Conservation Authorities Act* (ie. not Floodplain) or other relevant legislation/regulations or by-laws

Disposal Options: Practices

According to MOECC's "Stormwater Management Planning and Design Manual, 2003"

If sediment = not inert fill + not leachate toxic waste

- landfill disposal
- re-filling, re-grading at development sites
 - commercial sites and quarries (depending on Table Standards)
- sold for re-use at commercial fill sites

If sediment= hazardous waste

- disposal at hazardous waste facility

Guidelines from MOECC: Sediment Uses

- “Stormwater Management Planning and Design Manual, MOECC, 2003”
- “Evaluating Construction Activities Impacting on Water Resources, Part III A, Handbook for Dredging and Dredged Material Disposal in Ontario- Legislation, Policies, Sediment, Classification and Disposal Options”, MOECC, published 1991, revised 1994, updated 2011
- “Evaluating Construction Activities Impacting on Water Resources, Part III B, Handbook for Dredging and Dredged Material Disposal in Ontario - Dredging Transport and Monitoring”, MOECC, published 1991, revised 1994, updated 2011

Guidelines from MOECC: Sediment Uses

- “Best Management Practices: Management of Excess Soil, MOECC”, 2014 (“BMP”)**
- MOECC encourages beneficial uses for excess soil when:
 - compliance with legislation
 - no potential to cause “adverse effects” within meaning of the *EPA*; AND
 - do not impair water quality under the *OWRA*
 - The BMP does not:
 - Set concentration limits for any substances
 - Does not provide guidance on sediment

Current Disposal Practices: Informal Survey of Waste Management Companies

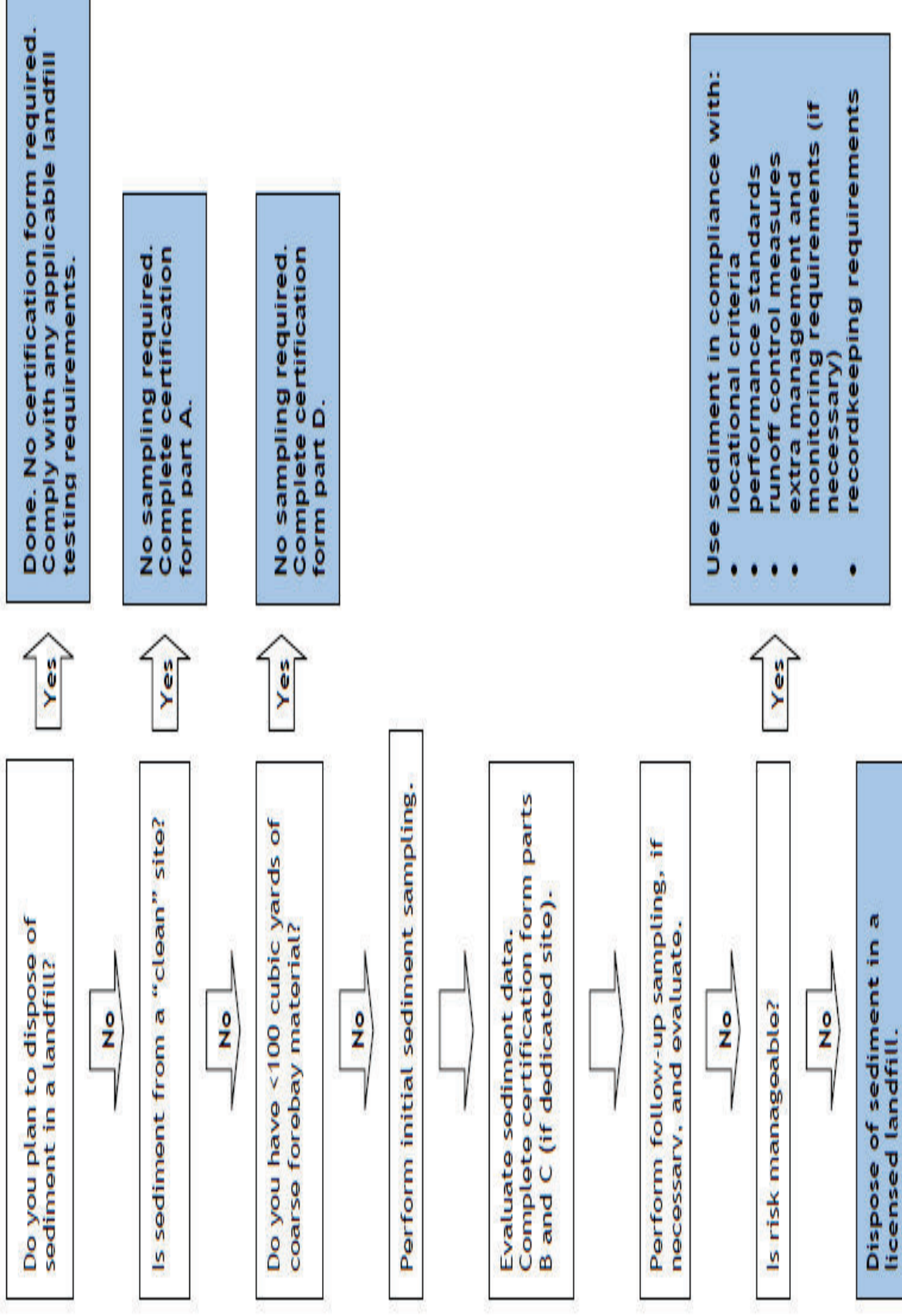
1. If sediment > Table 1 Standards, not exceeding Table 2 Standards → on-site disposal unless insufficient space
2. If sediment > Table 2 Standards, not exceeding Table 3 Standards → on-site disposal where site zoned as Table 3, unless insufficient space
3. If sediment = Table 3 Standards → on-site disposal if zoned as Table 3, otherwise landfill disposal

Current Disposal Practices: Informal Survey of Waste Management Companies

- **Qualification:** on-site disposal may be disallowed if grading of land disturbed
- **Practical Point:** usually insufficient space for on-site disposal, off-site disposal at quarries possible
 - Off site disposal possible depending on sample results

Sediment Use/Disposal Options from Wisconsin, United States

Accumulated Sediment Disposal/Use Flow Chart



Sediment Disposal: Legislative Change

Comments and Suggestions

- Create sediment classification system in legislation and regulations
- Develop guidelines for beneficial uses of sediment
 - Location of SWMF
 - If SWMF= pond → type of ponds → wetland or wet pond
 - Surrounding ecosystem, aquatic wildlife
 - Type of surrounding land use (agricultural, residential, parkland....)

Sediment Disposal: Conclusions

Legal conclusion (Default conservative position)

- Sediment = inert fill and inert fill = Table 1 standards → any non-landfill disposal options possible (subject to local regulatory requirements)
- If sediment > Table 1 Standards (O. Reg 153/04) → landfill disposal required

Practical Conclusion

- If sediment < Table 3 Standards → landfill disposal not necessarily required → beneficial uses possible
- Does BMP for excess soil have any influence?

Closing Comments

- Municipalities & conservation authorities require additional resources to better understand obligations, opportunities and potential liabilities associated with SWMF
- Knowledge will better inform financial obligations, timing and also mitigate risk and liability
- Greater legal clarification is required to provide certainty for a broader range of sediment disposal options

Thank you!
**If you have any questions,
or would like more
information, please
contact:**

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