

# Is the Drainage Act past it's Best Before Date?

Or

The Good, the Bad and the Ugly using the Drainage Act for Stormwater  
Management

# Drainage Act milestones

## Legislation

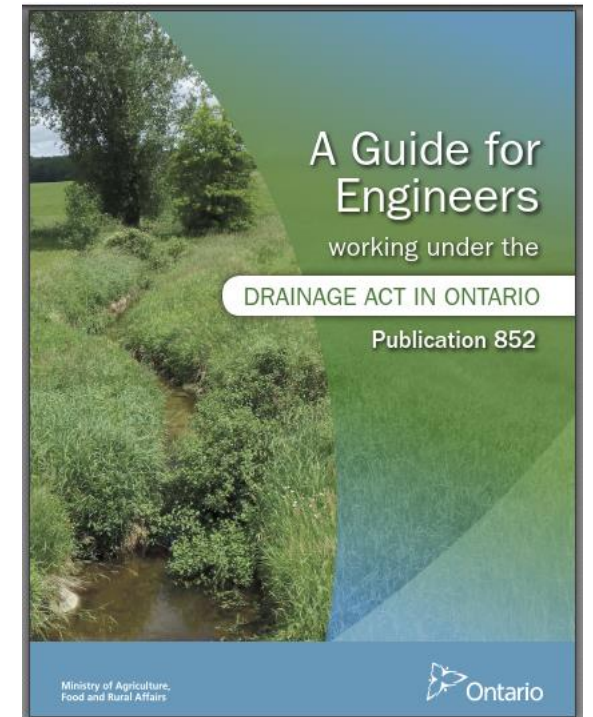
- 1835 – act to regulate line fences and watercourses (188 years)
- 1868 – 1882 + municipal councils
- 1882 – 1891 amended to improve and initiate drains.
- 1948 – 1962 appointed review of Tile Drainage Act, The Ditches and Watercourses Act
- **1974 – 1976 Report of the Select Committee of the Legislature on Land Drainage (52 years)**
- 1980 – Major update (43 years)
- **Drainage Act, R.S.O. 1990, c. D.17 (33 years)**

## Drainage Engineers in Ontario

- 1978 – PEO forms a committee to advocate for Drainage Engineers
- 2004 – PEO drops Drainage Committee
- 2006 – OSPE forms Drainage Committee
  
- Distributing the Cost\*, H.H. Todgham, P. Eng. , O.L.S., November 7, 1969
  
- A Guide for Engineers working under the Drainage Act in Ontario Publication 852, OMAFRA, 2018

# Outline

- How old is too old?
- What are the **good** parts of the Drainage Act?
  - Distribution of project costs
  - Extensive consultation process
- What's **ugly**?
  - Project timelines explicitly defined
  - Preliminary Design Study Report
  - Pump Station case study
- What's **bad**?
  - Extreme weather climate resiliency infrastructure upgrades
  - Drainage Act Preliminary Design Report





# Good

What is the meaning of the The Good, the Bad and The Ugly?

All are capable of the **best and worst of humanity** and often ride a fine line of moral **ambiguity**.

# Formal project pathway

## PART A – APPLICATION OF THE DRAINAGE ACT REQUIREMENTS

## INTRODUCTION

Petition drain procedure under the Drainage Act, 1990 (Section 4)

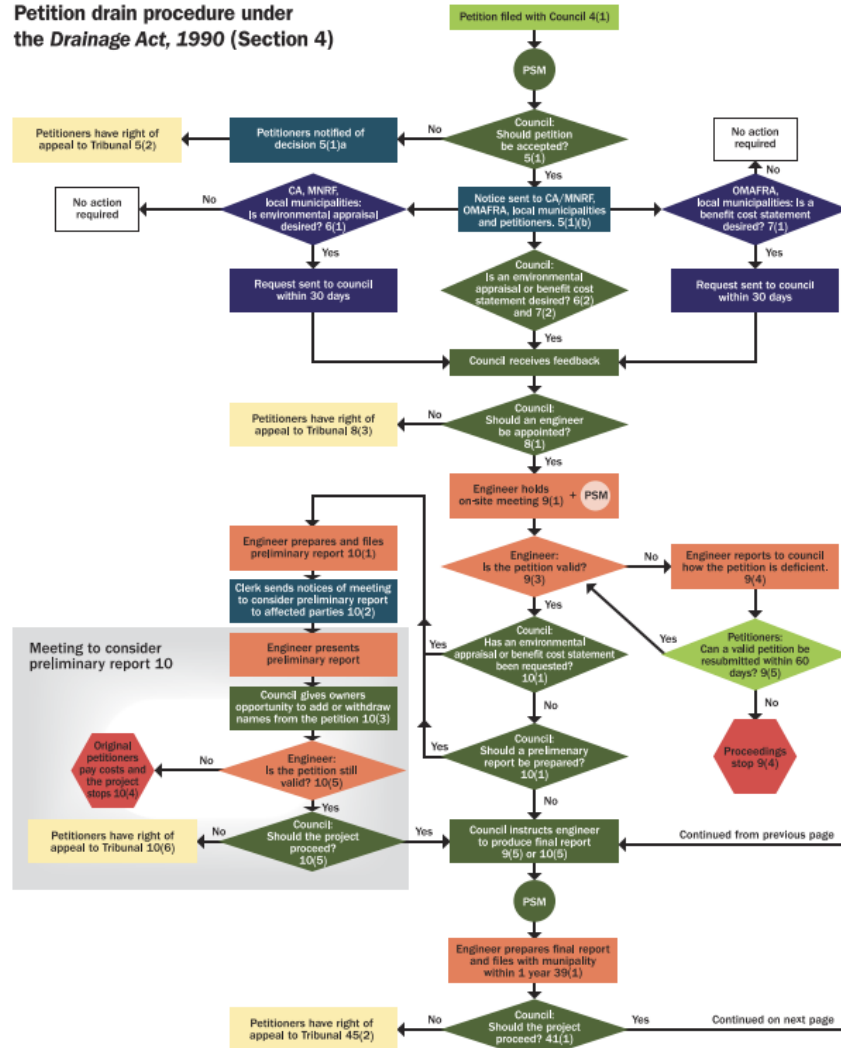


Figure A1-2. Drainage Act, 1990 process, responsibilities and requirements under Section 4.

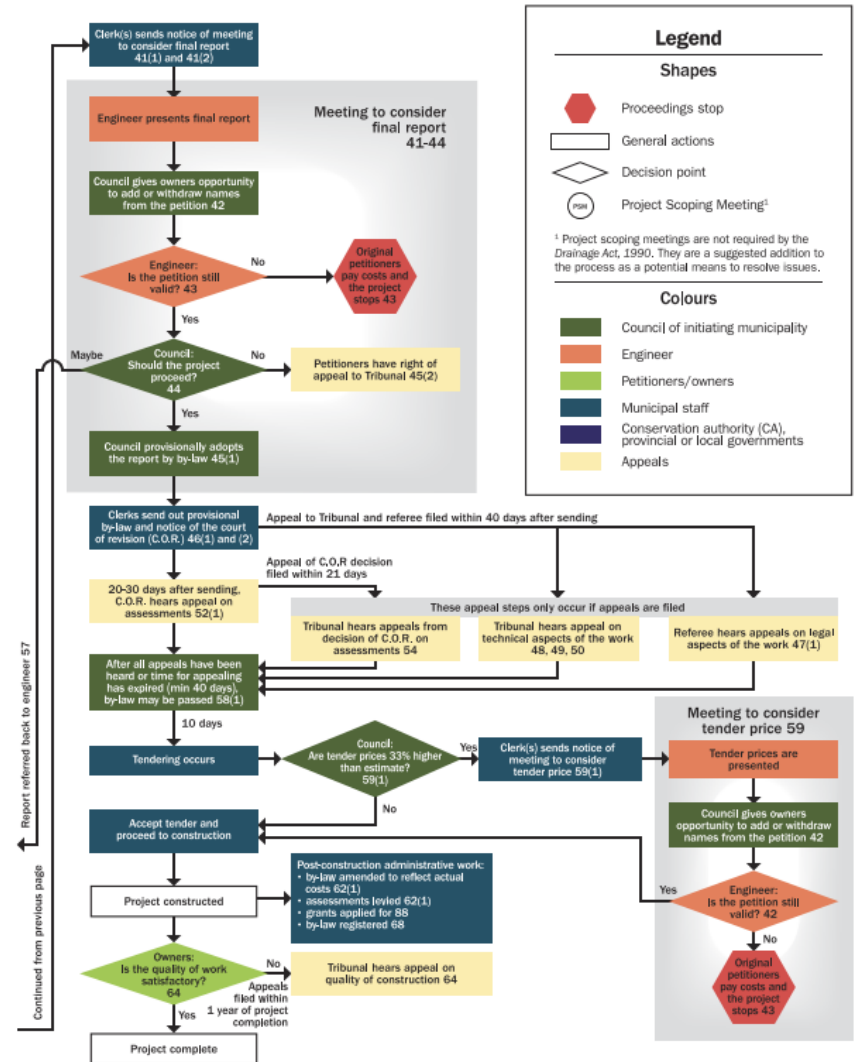


Figure A1-2. Drainage Act, 1990 process, responsibilities and requirements under Section 4.

**Legend**

**Shapes**

- Red hexagon: Proceedings stop
- White rectangle: General actions
- Green diamond: Decision point
- Circle with PSM: Project Scoping Meeting<sup>1</sup>

<sup>1</sup> Project scoping meetings are not required by the Drainage Act, 1990. They are a suggested addition to the process as a potential means to resolve issues.

**Colours**

- Green: Council of initiating municipality
- Orange: Engineer
- Light green: Petitioners/owners
- Blue: Municipal staff
- Dark blue: Conservation authority (CA), provincial or local governments
- Yellow: Appeals

# Public Consultations

PART A – APPLICATION OF THE DRAINAGE ACT REQUIREMENTS

Petition drain procedure under the Drainage Act, 1990 (Section 4)

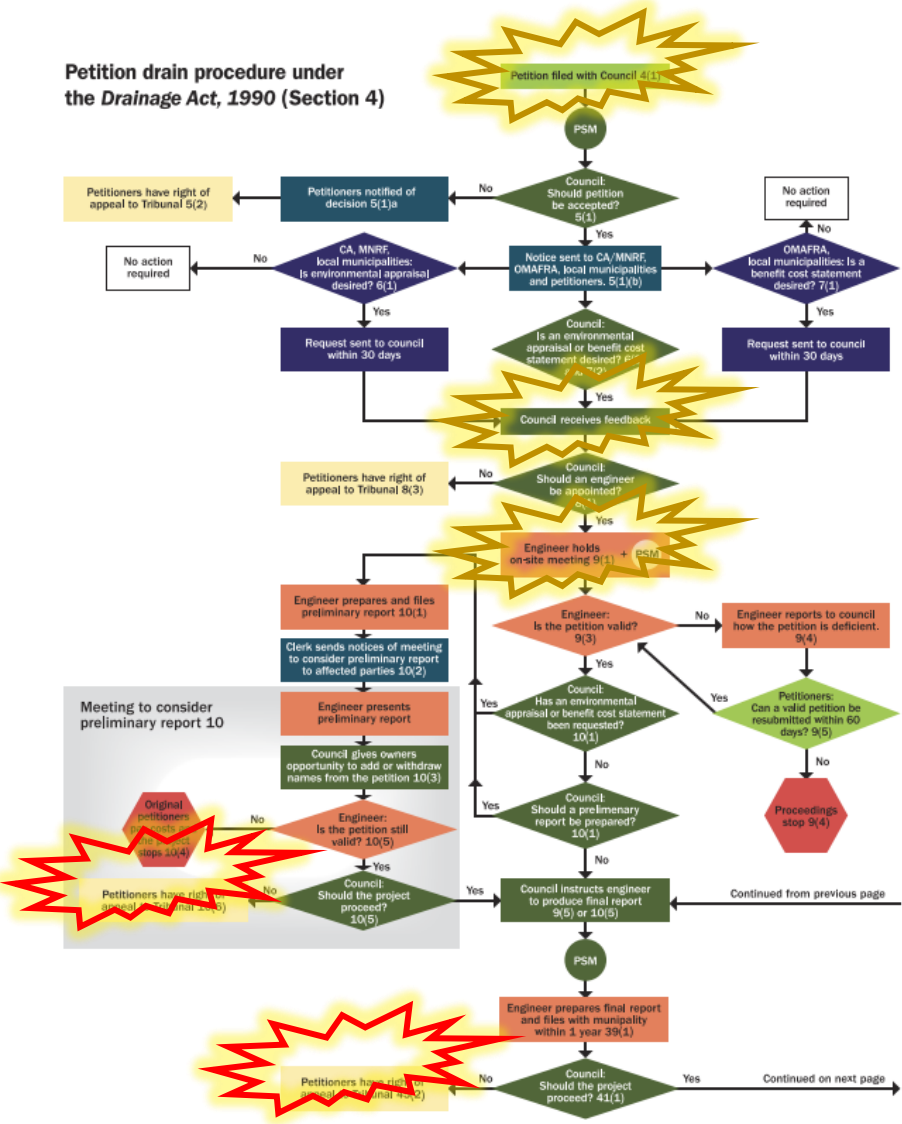


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INTRODUCTION

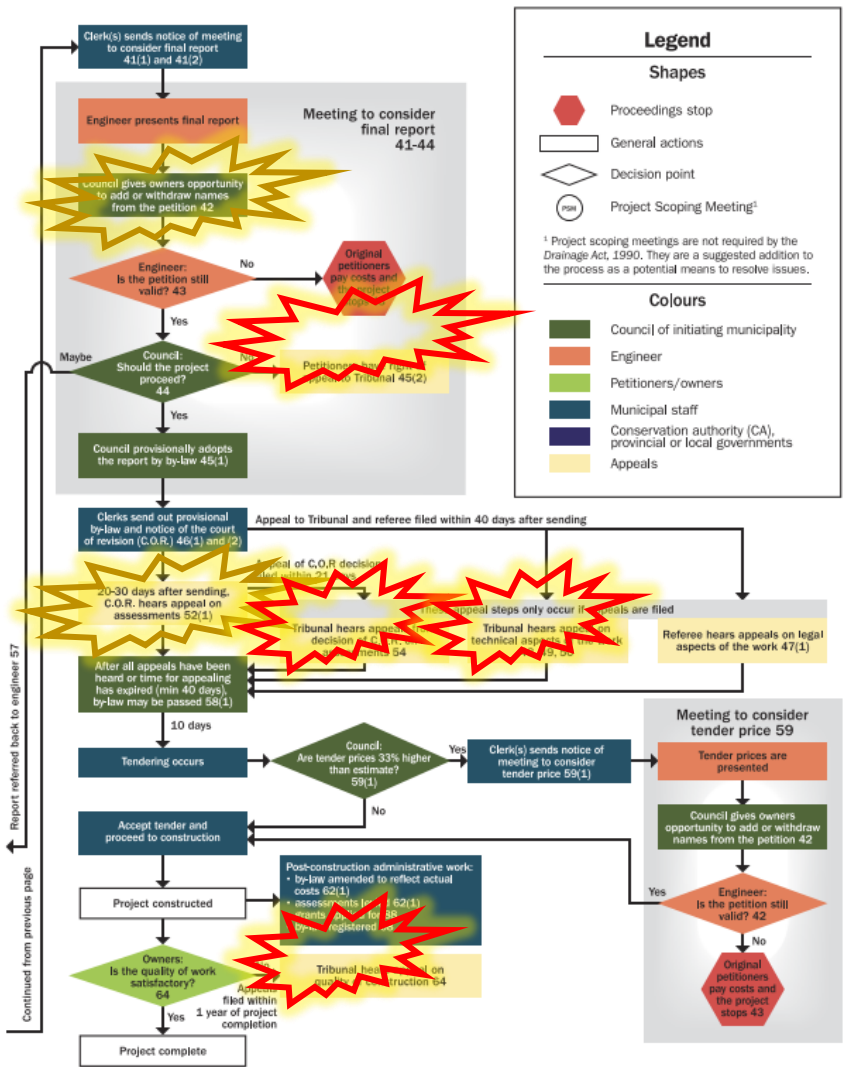


Figure A1-2. Drainage Act, 1990 process, responsibilities and requirements under Section 4.



# What the Drainage Act delivers

- Landowner (user) funded stormwater management projects.
  - Municipality pays their share.
- Process-driven project review and endorsement.
  - Clearly documented and has applied for 50+ years.
- Public engagement and provincial board appeals.
  - Participants in the watershed have direct process opportunities to appeal on specific grounds for \$0 cost to them (mostly).
- Technical, timing and administrative requirements to meet the Act.
  - Notices on stages of completion.
- Options on implementation.
  - Depends on the Drainage Engineer



# Bad

Angel Eyes.

a ruthless, confident, borderline-sadistic mercenary who takes pleasure in killing and **always finishes a job for which he is paid**, usually tracking and assassination.



# Preliminary Study Report

PART A – APPLICATION OF THE DRAINAGE ACT REQUIREMENTS

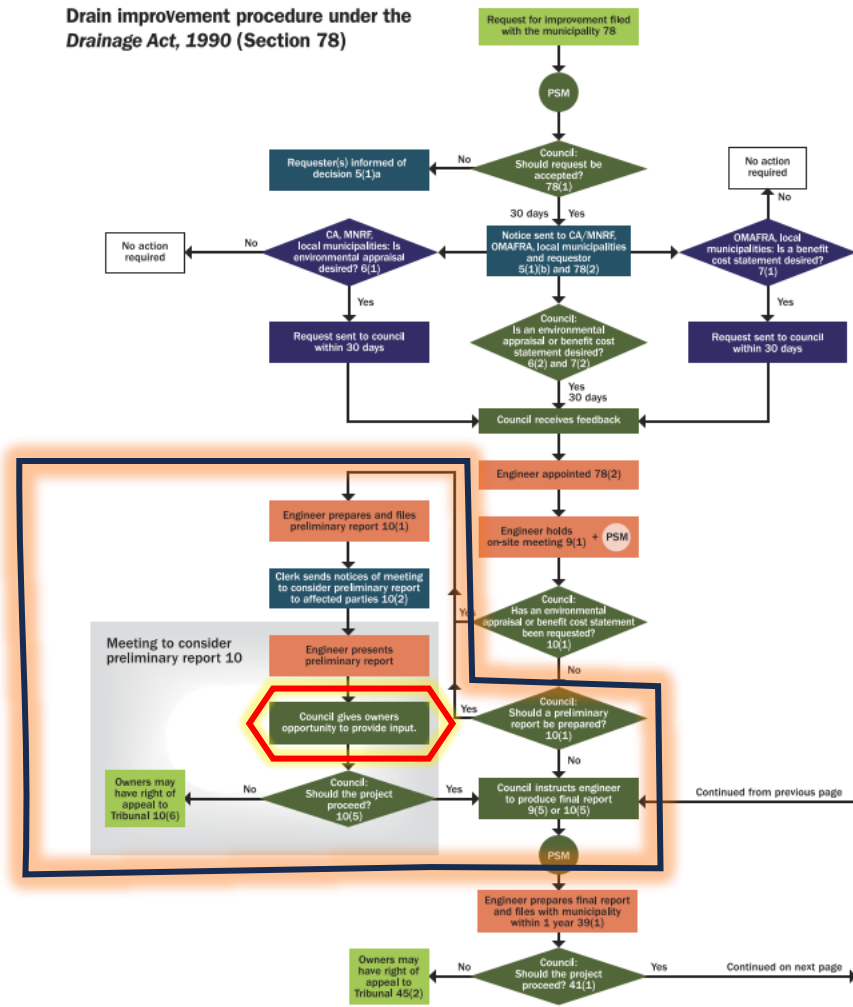


Figure A1-3. Drainage Act, 1990 process, responsibilities and requirements under Section 78.

INTRODUCTION

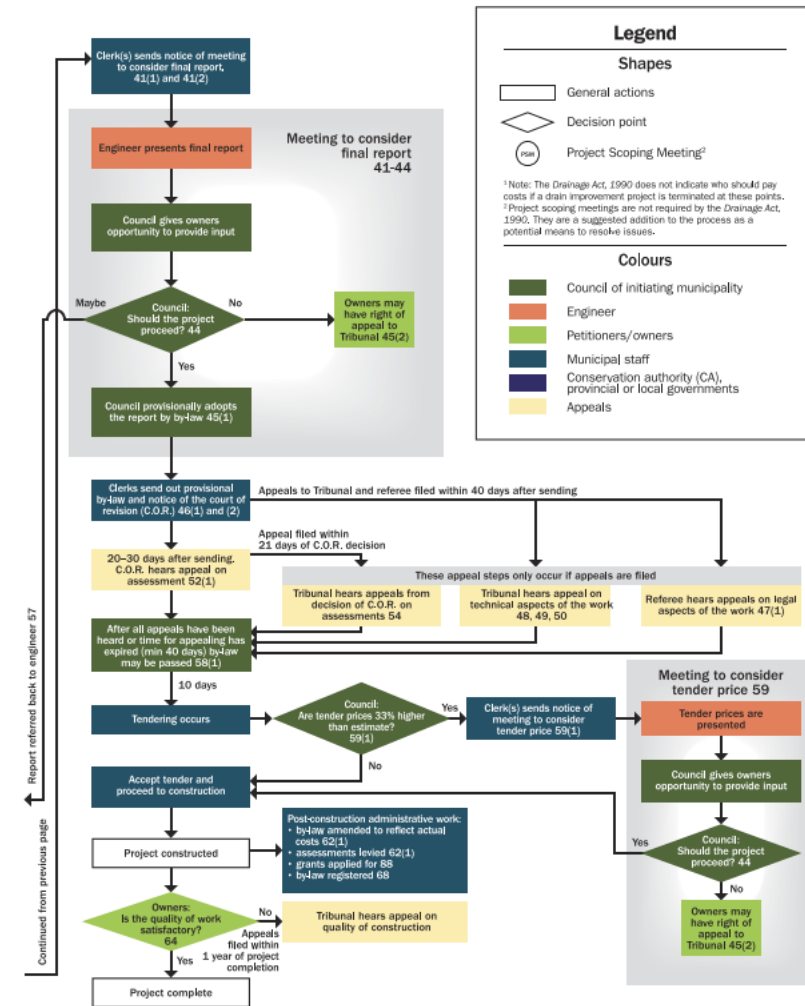


Figure A1-3. Drainage Act, 1990 process, responsibilities and requirements under Section 78.

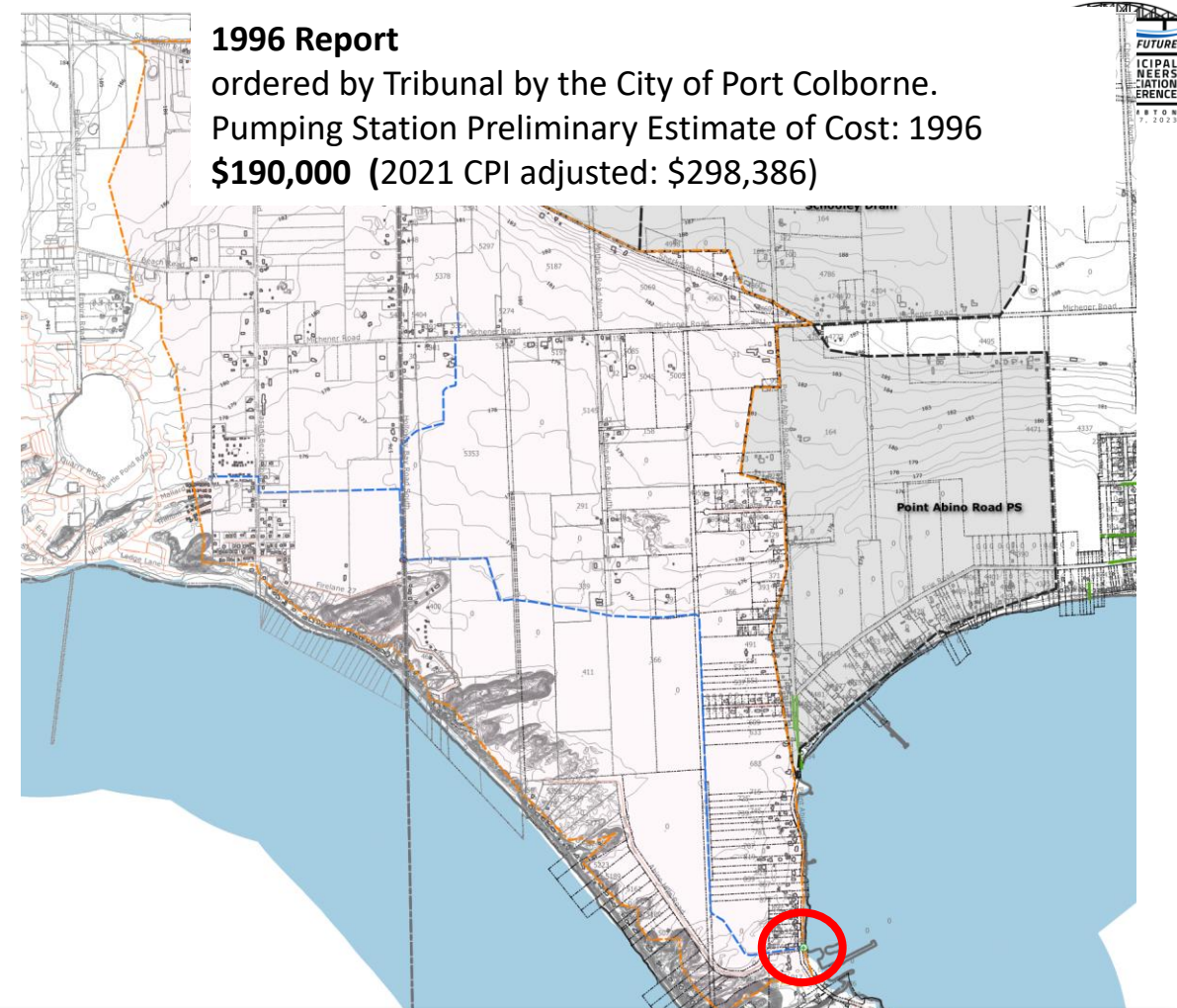
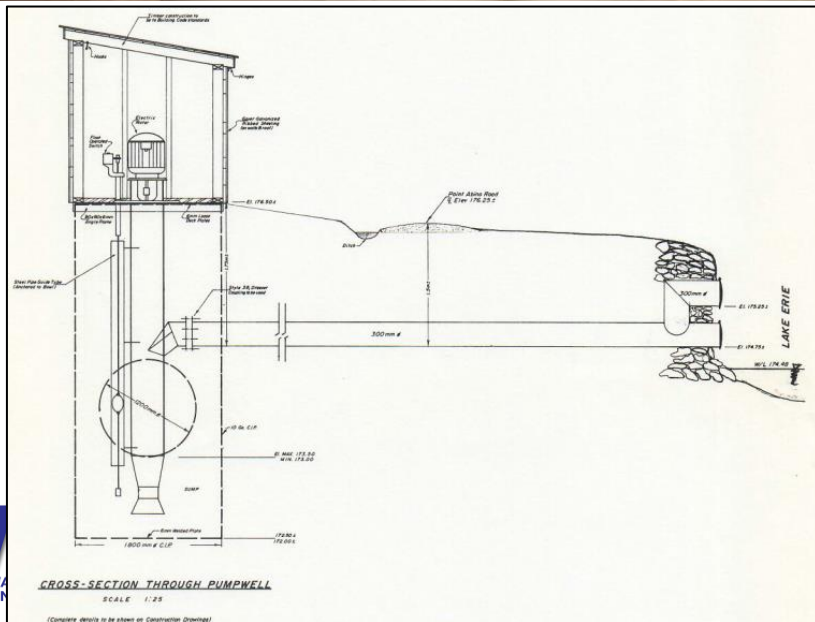
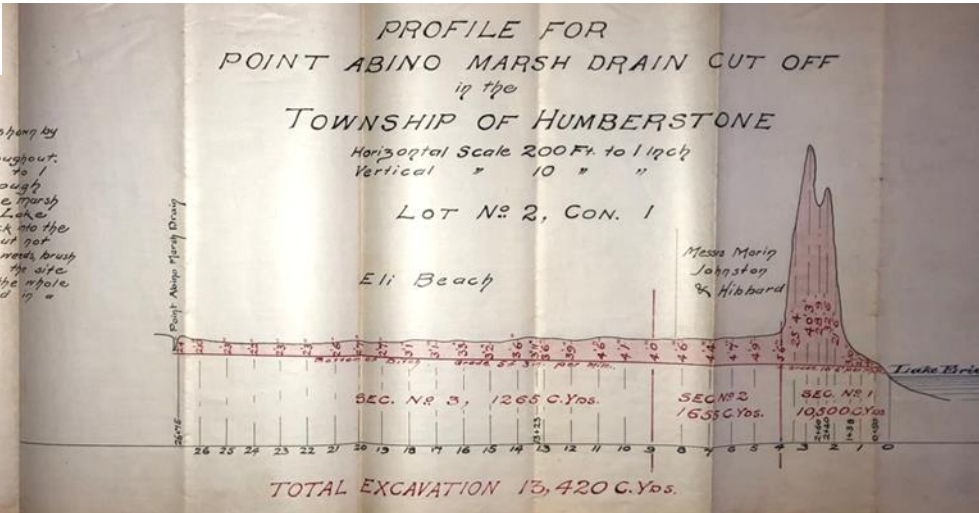
# Case Study

## Point Abino Drain

1901

*Specification  
Cut the ditch to the depth shown by the grade line on the profile. Bottom to be 5 Feet wide throughout. Side slopes to be 1 1/2 horizontal to 1 vertical. Excavation through sand fill to be spread in the marsh or on the beach, or into the Lake. Leaving it where it will not run back into the ditch. Leave berms throughout not less than 4 feet wide. All mud, brush and stumps to be removed from the site and berms of the ditch and the whole work throughout to be completed in a first class manner.*

*Geo Ross  
Engineer  
Welland, May 7, 1901.*



**HEARING: July 22, 1998**

**DATE OF DECISION: July 28, 1998**

**FILE NUMBER: 1998-28**

An application to the Ontario Drainage Tribunal by the City of Port Colborne requesting the Tribunal issue an Order **rescinding** the September 15, 1987 order of the Tribunal directing the City of Port Colborne to install a low lift pumping station in the Town of Fort Erie on the Point Abino Drain.

# The problem

## Hydrogeological Assessment of Point Abino 2019 Flooding



Submitted To: The Fort Erie Flooding Task Force

Date: December 30, 2019

Prepared By: Eugene Florentino, PG, PMP  
Licensed Professional Geologist  
State of New York and Commonwealth of Pennsylvania  
Project Management Institute,  
Project Management Professional

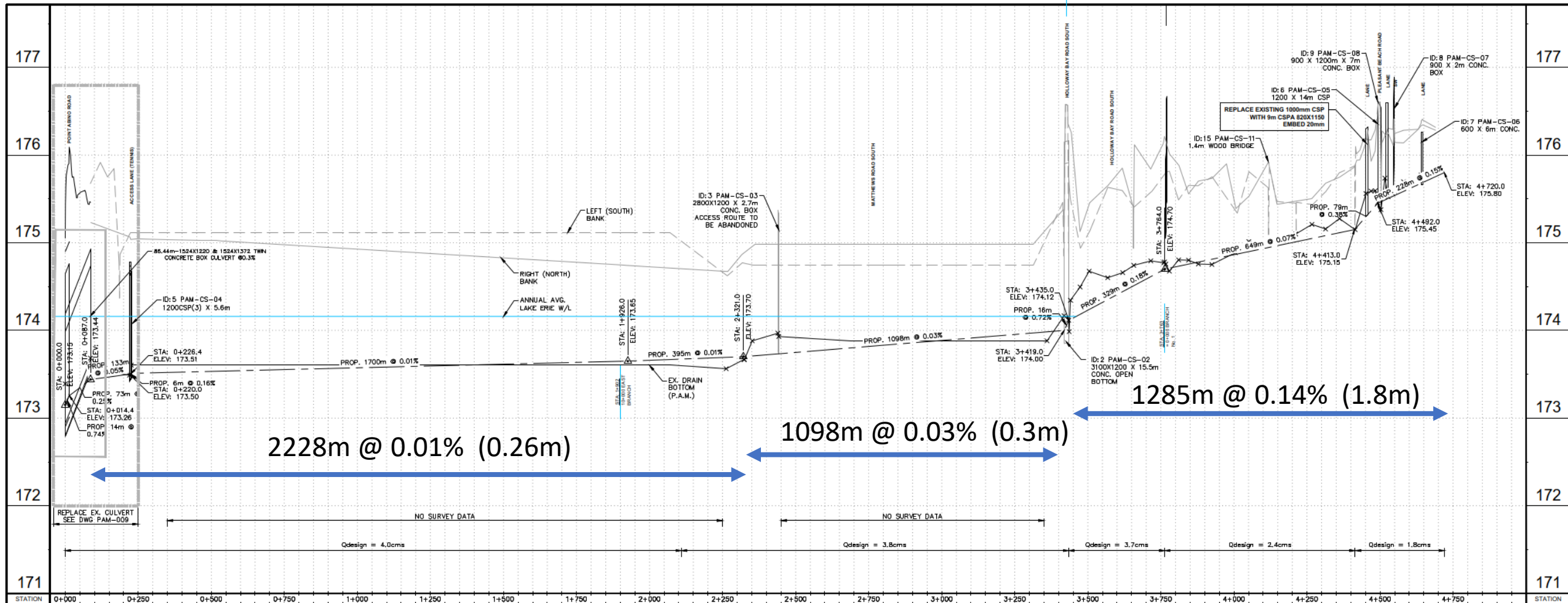
## Drainage Superintendent email

I have attached a Report from an American Engineer that the people down at Point Abino have had done. I finally receive permission from them to release this to you, hope it is of some use

# Original Name: Point Abino Marsh



# Point Abino Drain – 4.7 km 800Ha



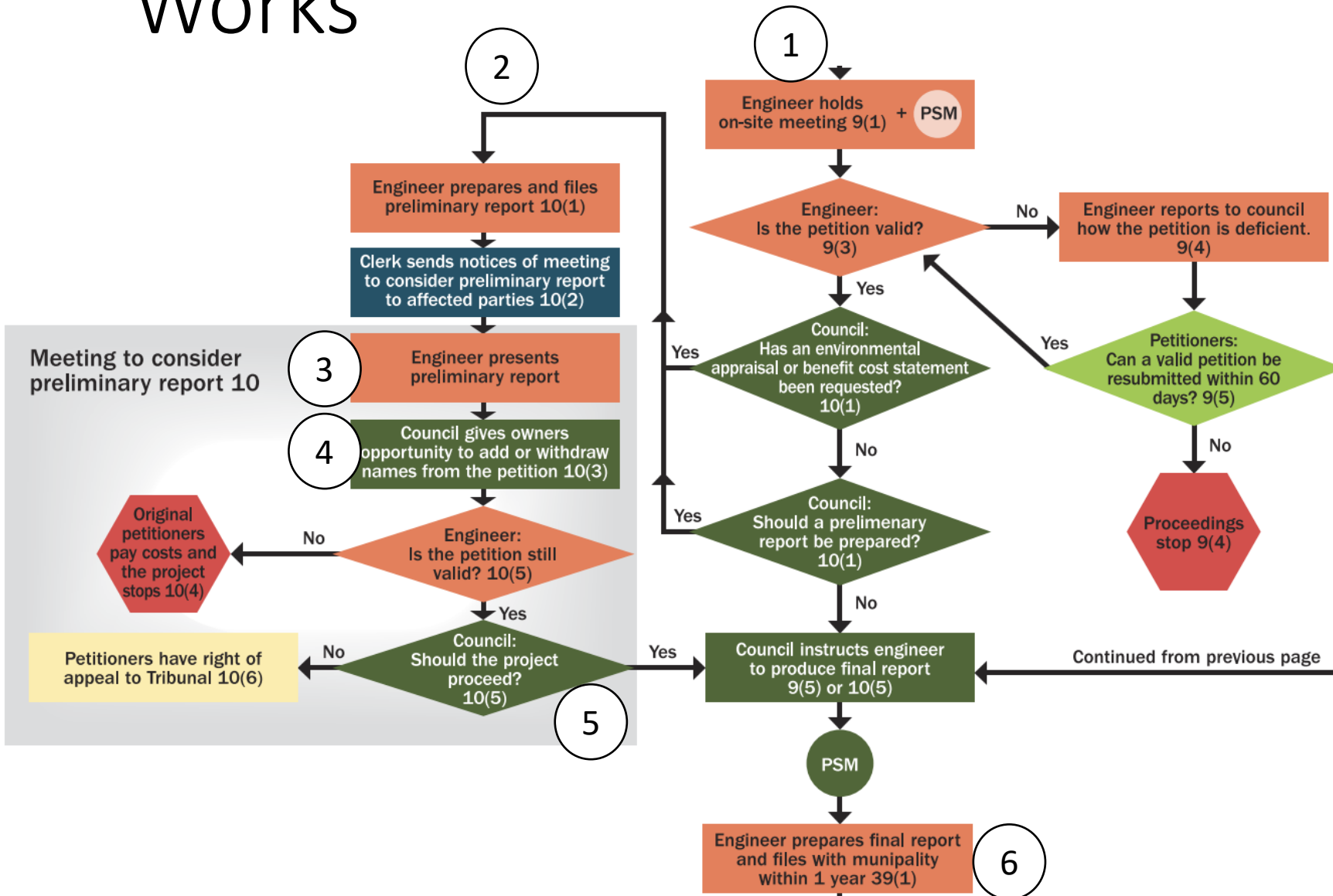
June, 2022



# Point Abino Outlet



# A pathway to Bad using Section 4 Petition for Works



#1 Site Meeting held, better to call it a Public Information Centre (PIC). Has to have a problem statement to be investigated. Like a pumping station.

#2 There is no petition to start the Preliminary Design Study Report.

#3. Engineer prepares a Preliminary Design Report and provides it for Council consideration.

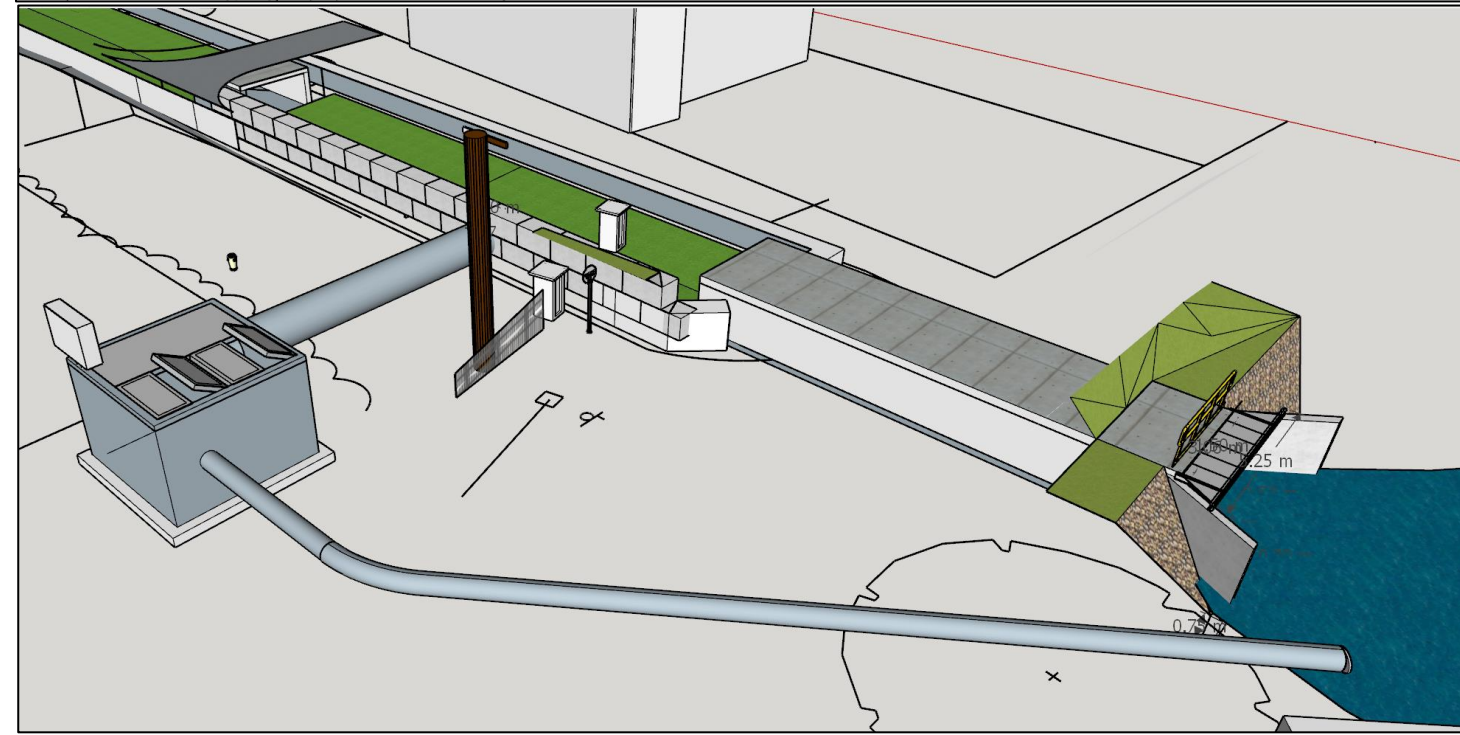
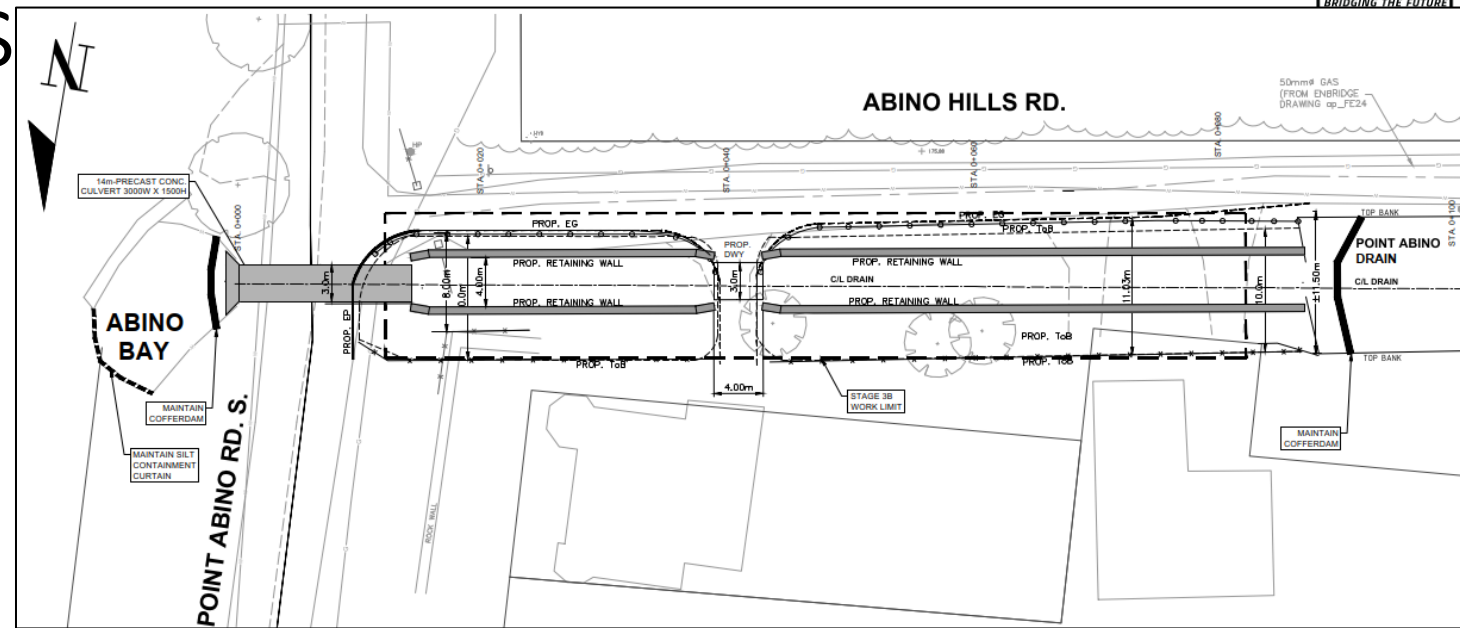
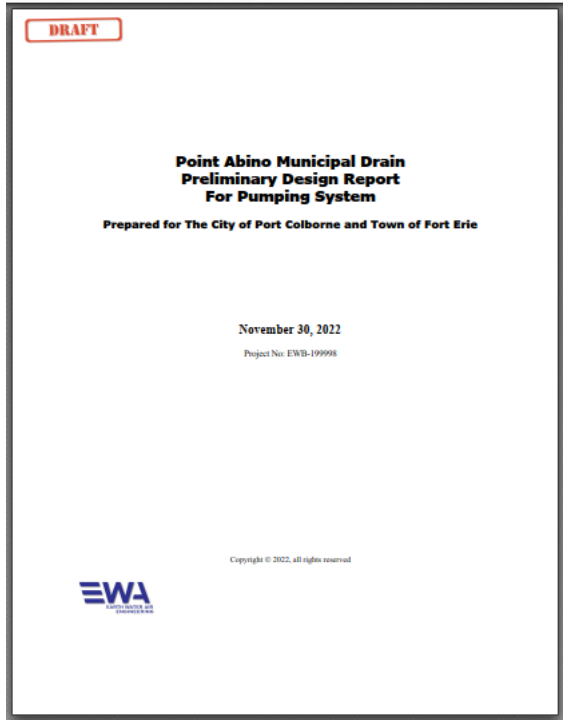
#4. Council gives owners opportunity to add names to the petition.

#5. Council: Should the project Proceed?

#6. If yes, Engineer prepares a full report.



50% of the landowners  
60% of land area



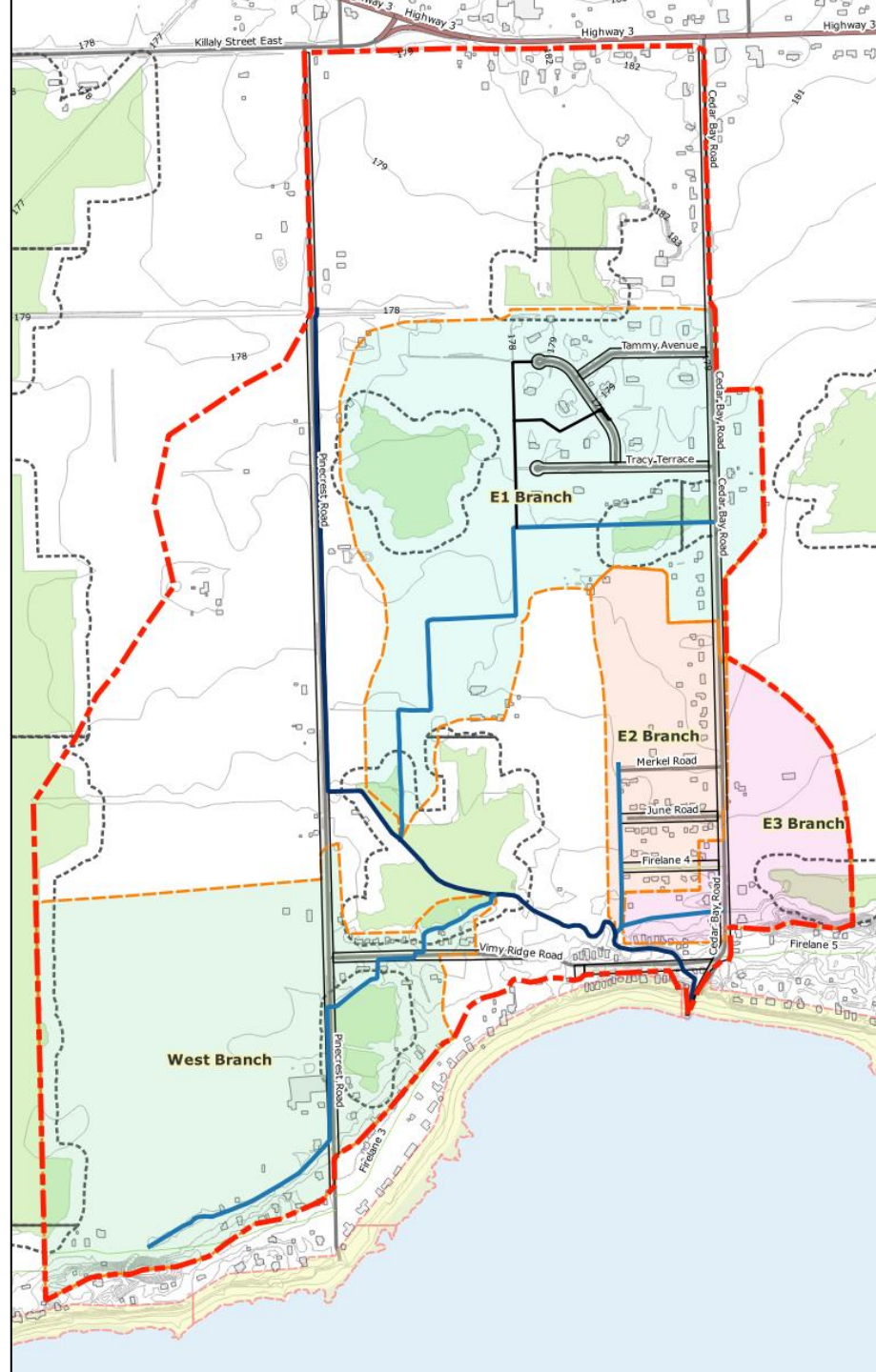
# Ugly



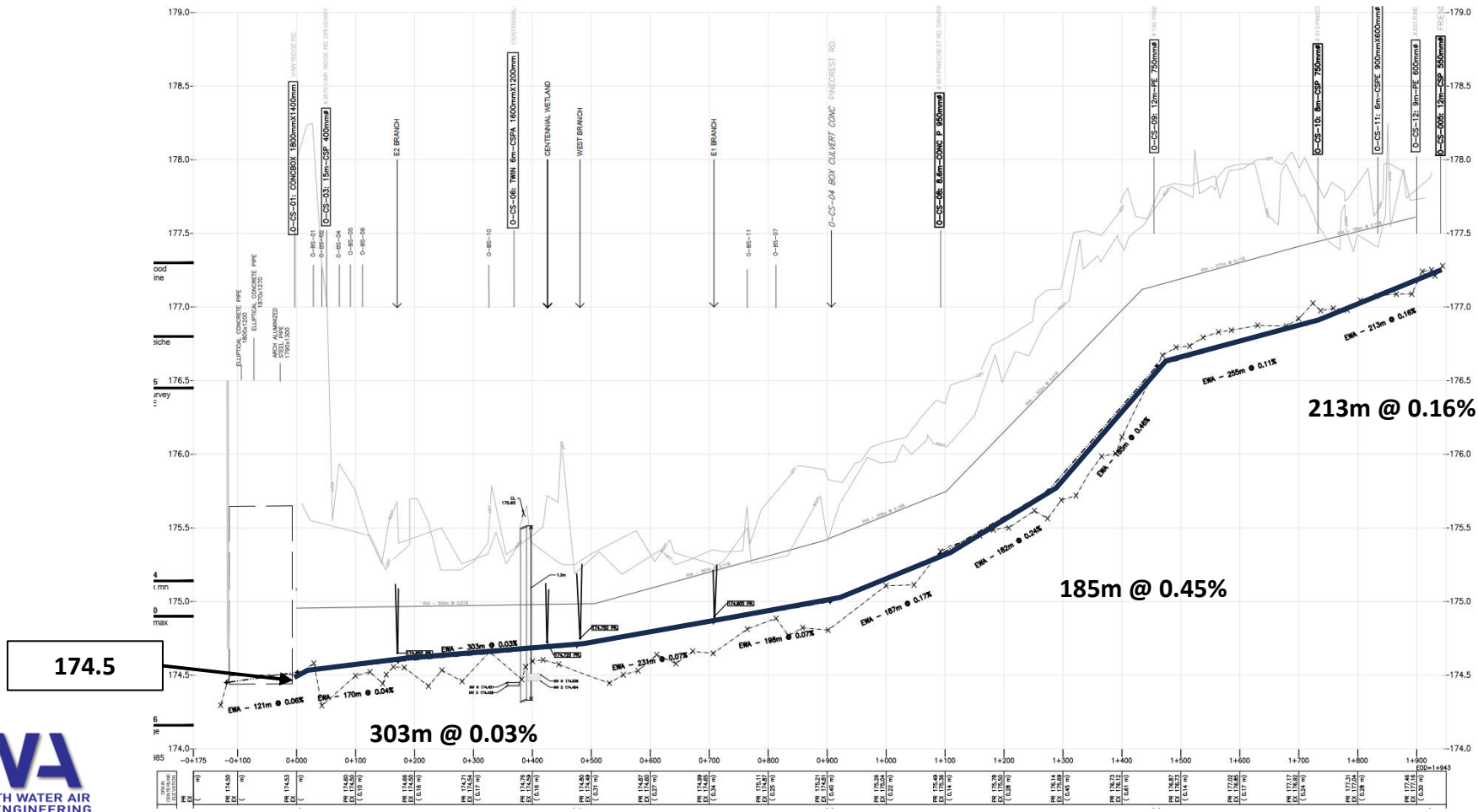
Tuco is considered the Ugly because he is the most morally conflicted character between the three. He is “ugly” on the inside because he is **in between good and evil**.

# Case Study: Oil Mill Creek Drain

- Existing Municipal with updated report using Section 78 from the previous report in 1979.
- Pump station from the 1960s not working for 15+ years.
- Historical flooding through the lower middle.

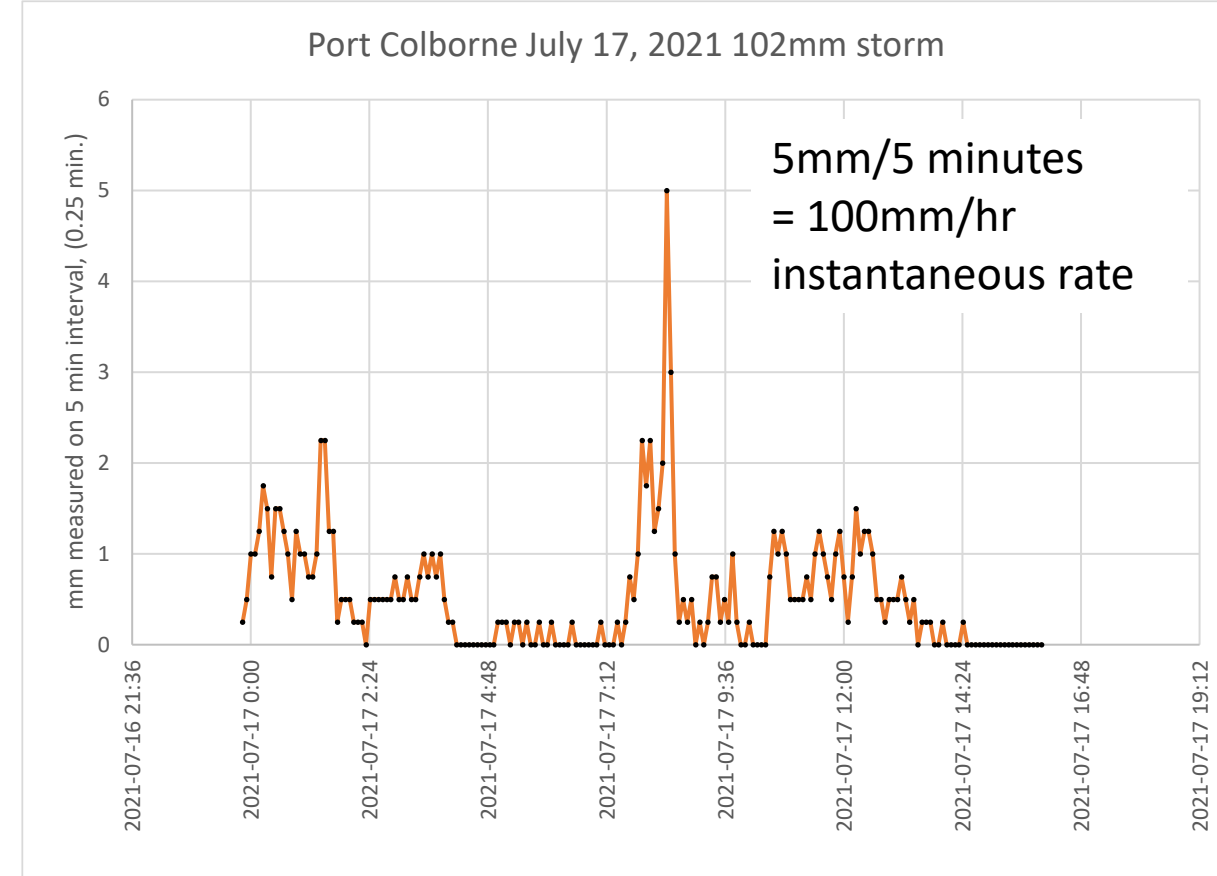


# Oil Mill Creek Drain – 3.2km 265Ha

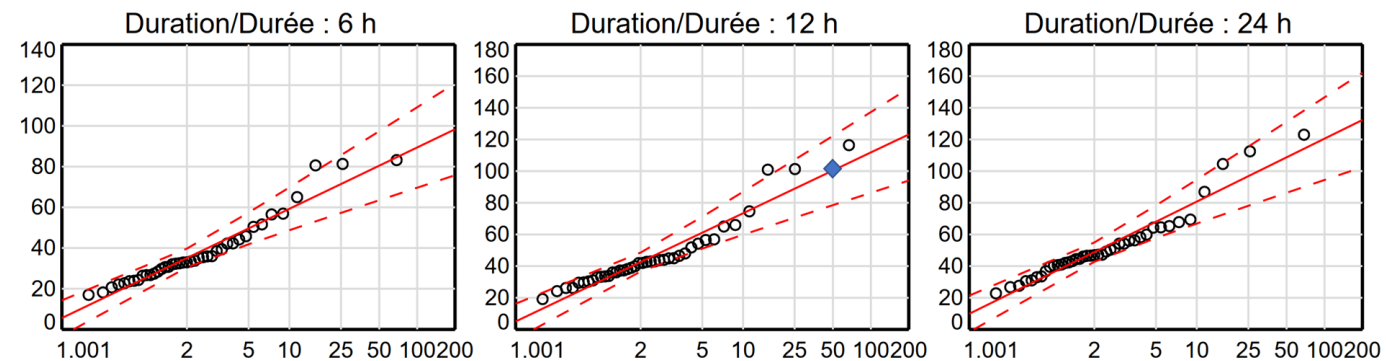


# Municipal Drain Standard Service Level

- Typical past agricultural standard, 1:2 year storm.
- Typical mixed residential areas, design target 1:5 year as per O.Reg 588/17 Table 3
  - % of property to 1:100 storm
  - % of Stormwater to 1:5 storm
- 5-year design storm with a total rainfall amount of 68.90mm
- 100-year design storm 121.1mm (unadjusted for climate change)



102mm over 14 hours on July 17, 2021



# Theory – Preliminary Design for Resilient Stormwater Infrastructure

## Advantages

- User pay system with grant programs.
- 50% approval rate required.
- Legislated private land access for drainage maintenance.
- Public participation.
- Options for design revisions to address issues.

## Disadvantages

- 50% owner approval is required.
- Water quality regulation was removed from the Drainage Act.
- Prescriptive pass/fail hurdles.
- Public participation and extensive appeals options.
- Non-binding petitions until final report adopted as bylaw.

# New ASCE 7-22 supplement on flood loads now available as free download

5/31/2023



3 MIN READ



SHARE

ASCE's most widely used standard has a [newly released supplement](#).

*ASCE/SEI 7-22: Minimum Design Loads and Associated Criteria for Buildings and Other Structures* has been updated with [new flood load provisions](#) that protect against 500-year flood events – a significant improvement over the 100-year flood hazard referenced in the previous edition.

Supplement 2 of ASCE/SEI 7-22 is available as a [free download](#).

“ASCE continuously seeks to update its standards using the latest scientific and engineering knowledge, to assure the standards remain relevant to society’s needs and an appropriate basis for design and construction,” said Ronald Hamburger, P.E., S.E., F.SEI, senior principal with Simpson Gumpertz & Heger Inc., and chair of the ASCE 7-22 Committee.

“Proper implementation of the supplement to ASCE 7-22’s Chapter 5 is a dramatic change to the current standard but will help residents and businesses feel secure despite weather-driven challenges.”



## Inland Flood Protection Rule

The Inland Flood Protection rule has been adopted, effective July 17, 2023.

Courtesy Copy of the Rule Adoption

As New Jersey's residents face threats from the devastating impacts of extreme rainfall events, which are expected to continue to intensify in their frequency and severity, DEP must continue to protect public safety. The Inland Flood Protection Rule would ensure that areas at most significant risk are better defined and that new and reconstructed assets in these areas are designed and constructed using the best available climate-informed precipitation data. Using the best available data is critical to protecting New Jersey's assets, economy and, above all, our people from the catastrophic effects of worsening floods.

1. Flood mapping reflects prior flooding patterns
2. Does not reflect changes due to climate change



## History of Federal Flood Mapping Programs

1976 - 1996



**FDRP**

Flood Damage  
Reduction Program

2015 - 2022



**NDMP**

National Disaster  
Mitigation Program

2021 - 2028



**FHIMP**

Flood Hazard Identification  
and Mapping Program



Natural Resources  
Canada

Ressources naturelles  
Canada

Canada

# Drainage Conclusion

1. The Drainage Act is old, challenging to administer and includes aspects that are no longer relevant for municipalities seeking to implement stormwater systems across varying land use conditions.
2. The Drainage Act does not prescribe how the Engineer prepares reports implementing user-paid stormwater improvements. It does provide several methods for both benefit and liability assessments.
3. Preliminary Design Reports under the Drainage Act combined with Petition 4 requests for drainage solutions are an option to test community support for increased service levels on stormwater infrastructure.

# Thank you

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