

**City of Port Colborne
Council Meeting Addendum**

Date: July 26, 2021
Time: 6:30 pm
Location: Council Chambers, 3rd Floor, City Hall
66 Charlotte Street, Port Colborne

Pages

7. Staff Reports

7.1. Port Colborne Municipal Drain Meeting to Consider, 2021-211

*a.	Delegation from Paul Marsh, P. Eng., EWA Engineering Inc.	1
*b.	Delegation material from George and Sandra Beaulieu, residents	43
*c.	Delegation material from Jack S. Hellinga, resident	44
*d.	Delegation material from Kyle Saulnier, Ontario Ministry of Transportation	51
*e.	Delegation material from David and Janet Henderson, residents	52
*f.	Delegation material from Betty Konc, resident	53

Port Colborne Drain

Meeting to Consider

July 26, 2021

City of Port Colborne



EWA Engineering Inc.

647.400.2824

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Agenda

- Port Colborne Drain History
 - Drain Name
 - Drains re-aligned or abandoned by report for quarry expansion.
 - Past work
- Design Basis
 - Drainage Needs
 - Petition 4 request for outlet by Road Authority
 - Design Storm & Hydrology and Hydraulics
- Cost Estimate
- Assessment



Port Colborne Drain Background

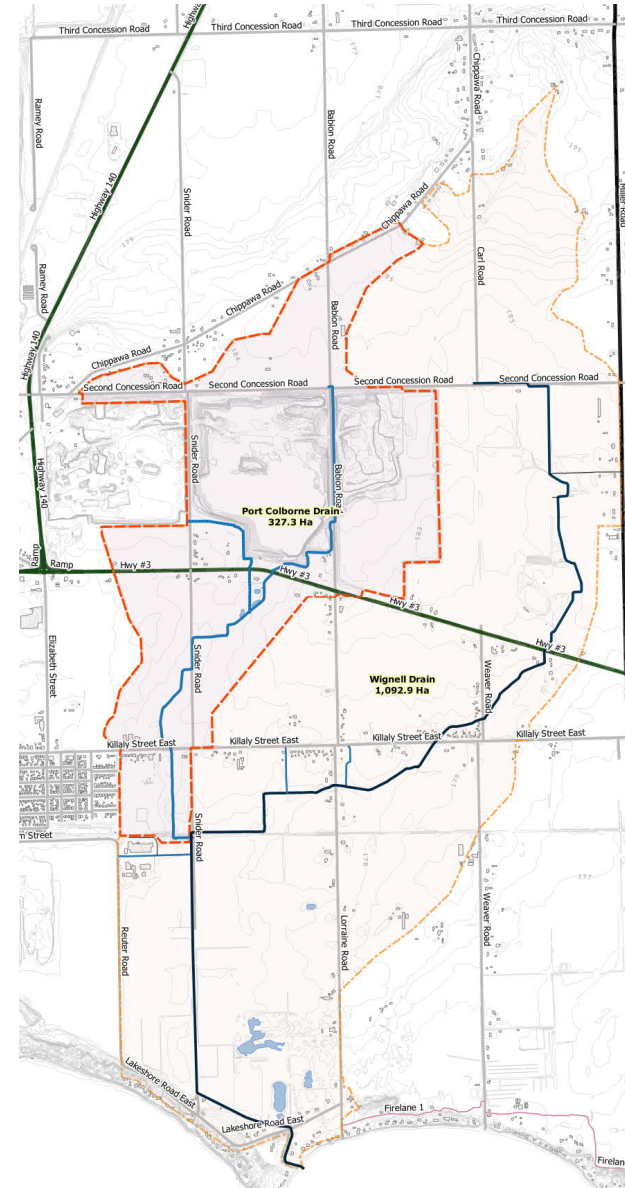


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Port Colborne Drain

Formerly W1 & W2

- Drain dates from 1880s. Outlet abandoned by report in 1911 when the drain name was changed to Wignell.
- Based on adjusted boundaries, the drain has a catchment area of 327.3 Ha
 - Quarry berms have defined portions of the catchment.
- Wignell Drain is the Port Colborne Drain outlet and has had a 0% (zero) grade to the lake since 1973 CJ Clarke Report. Bylaw 255/73 includes Wignell pumping station.
- Proposed alignment is shown.



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Port Colborne Drain

- 1934 Image



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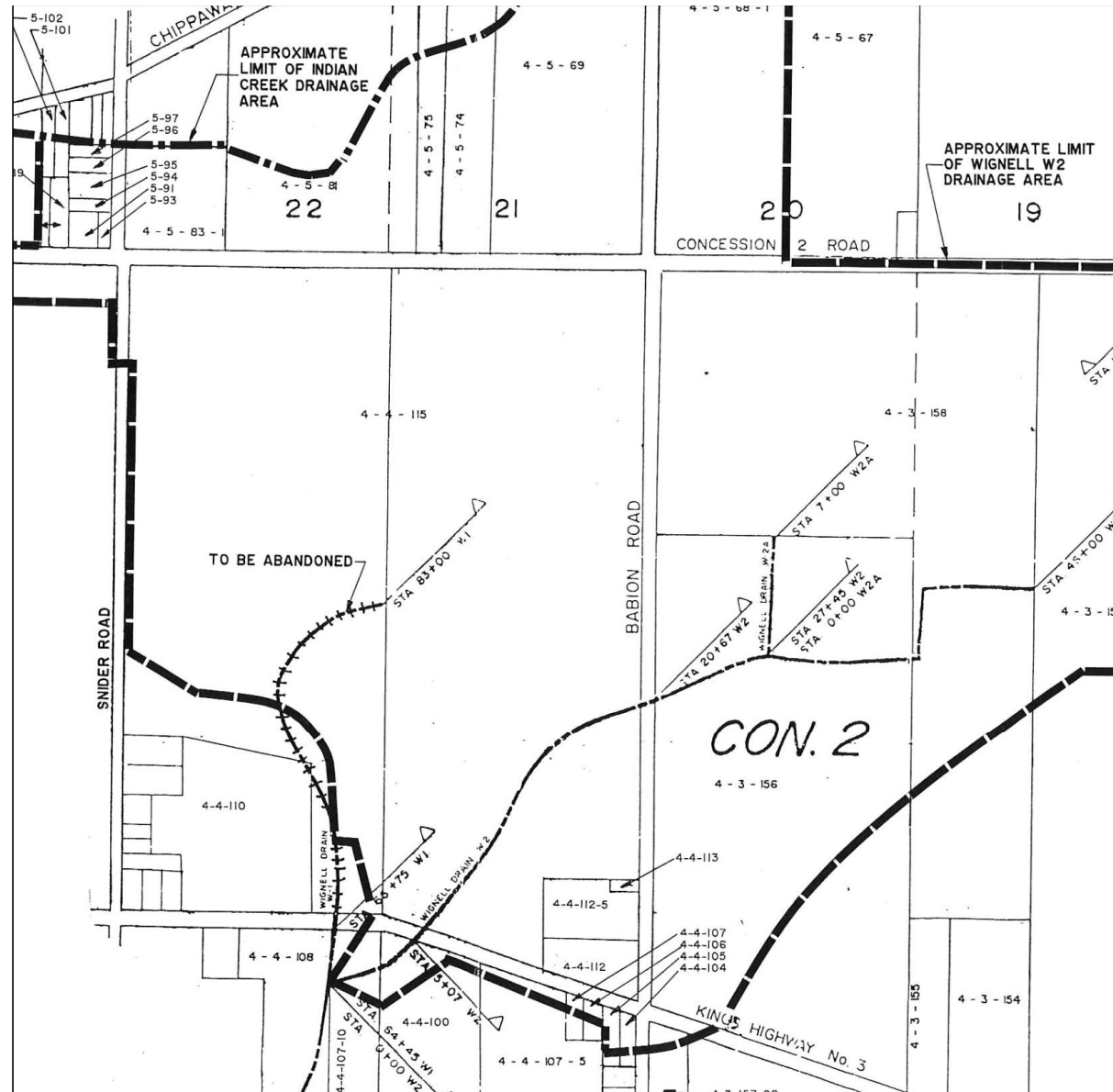
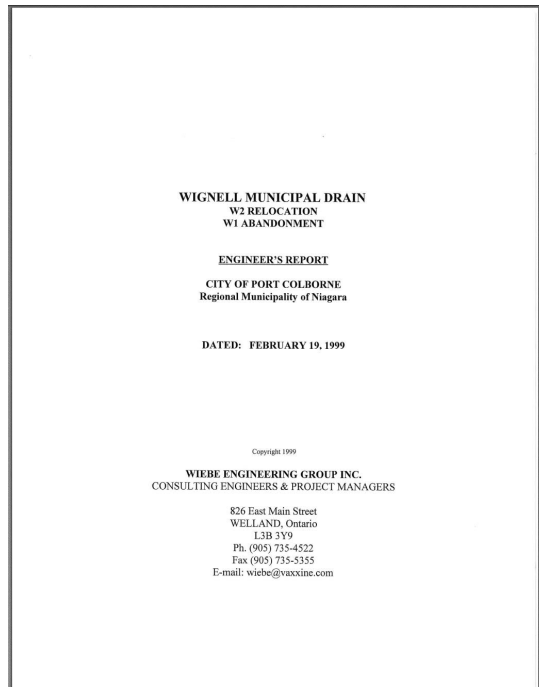


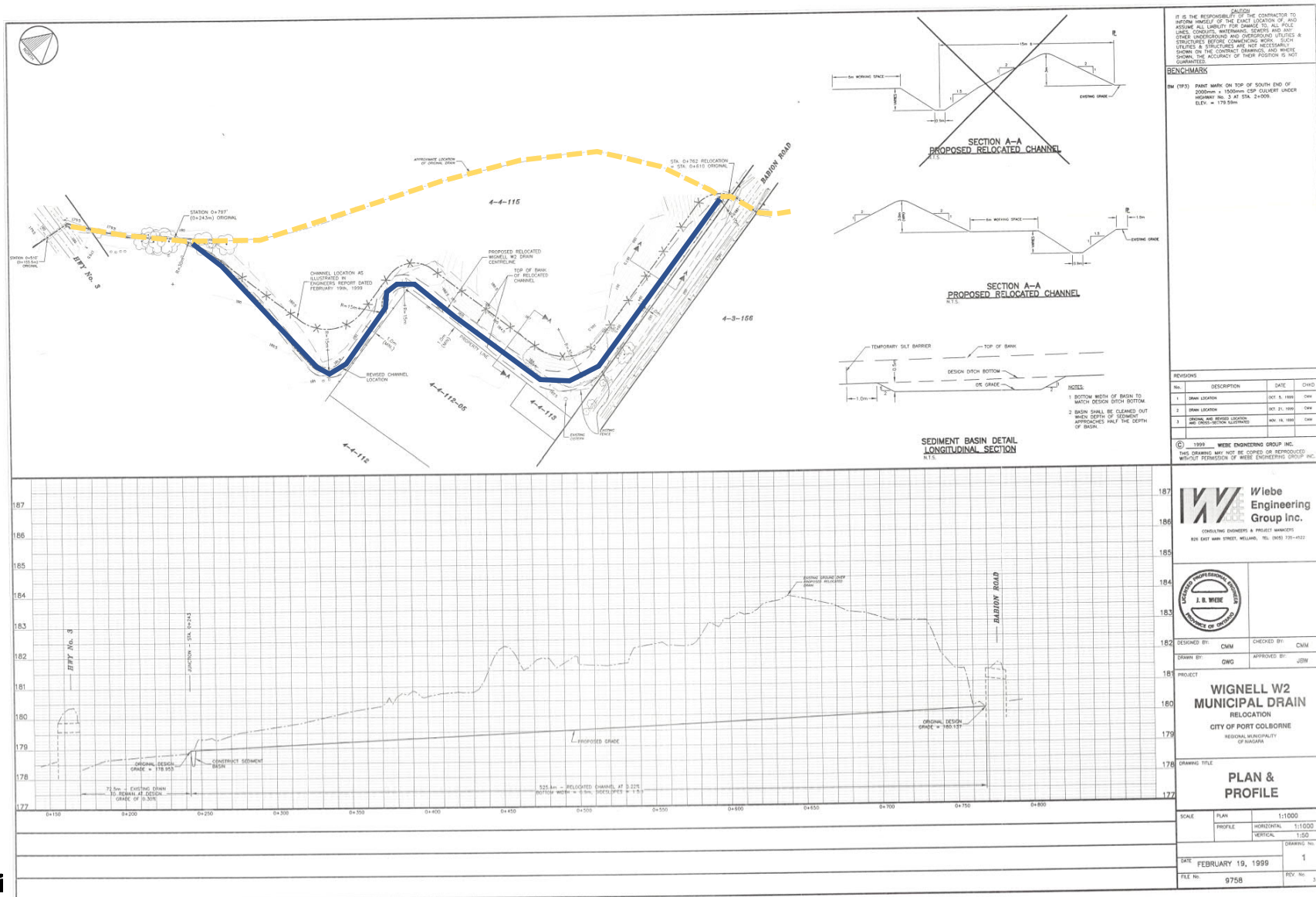
- Existing Municipal Drain
- Historic Municipal Drain

Wignell Drain (Historic Drain Through PC Quarry)



1999 W1 Abandonment W2 Re-alignment





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ww

2013



K. SMART ASSOCIATES LIMITED
CONSULTING ENGINEERS AND PLANNERS

85 MCINTYRE DRIVE
KITCHENER, ONTARIO N2R 1H6

TELEPHONE (519) 748-1199
FAX (519) 748-6100

January 11, 2013

File No. 10-262

WIGNELL MICHENER DRAIN SECTION 6S REPORT City of Port Colborne

BACKGROUND

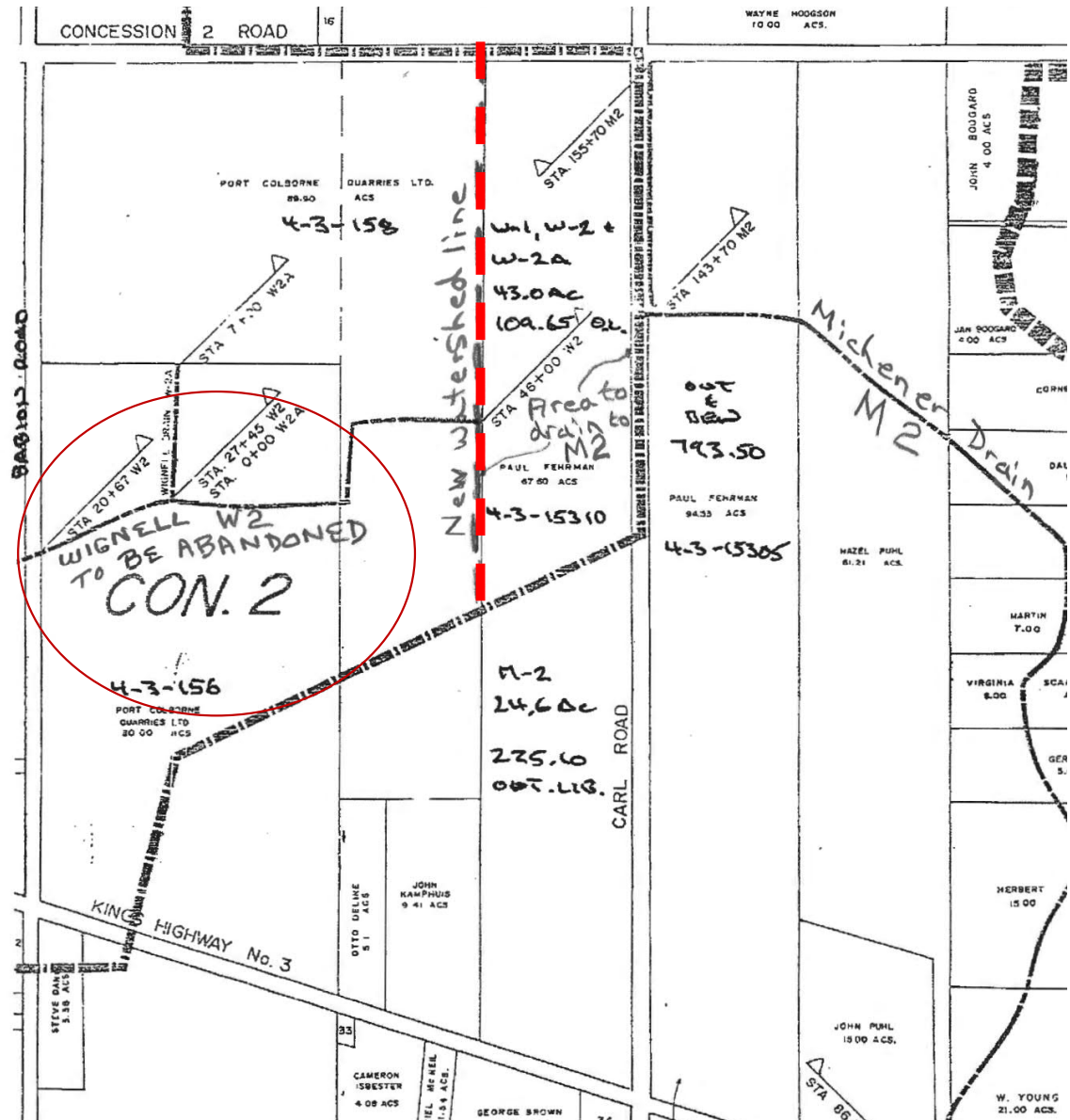
Port Colborne Quarries Ltd have submitted a request to the City of Port Colborne to have the Wignell Drain W2 and W2A abandoned of status under the Drainage Act on their properties (Roll Number 4-3-156 and 158) in Lot 20 and part of Lot 19, Concession 2 (Humberstone) which is east of Babion Road between Highway 3 and Concession 2 Road.

The northeast portion of Lot 19, Concession 2 (Roll Number 4-3-153-10) owned by Paul Fehrman on the west side of Carl Road is currently defined to be within the upper watershed of the Wignell Drain W2 and has a direct outlet into the Wignell Drain W2 on the west boundary of the parcel. Port Colborne Quarries Ltd have indicated that they have an agreement with Paul Fehrman to construct a drain on the Fehrman property that would provide outlet for the property into the Michener Drain M2 at Carl Road.

The City of Port Colborne has requested K. Smart Associates Ltd to prepare a report under Section 65(4) of the Drainage Act to address the disconnection of the northeast part of Lot 19, Concession 2 from the Wignell Drain W2 and under Section 65(3) to address the subsequent connection of the northeast part of Lot 19, Concession 2 to the Michener Drain M2 at Carl Road.

DRAINAGE HISTORY

The current report applicable to the majority of the Wignell Michener Drain is found in City of Port Colborne Bylaw 773/89/78 adopted on February 26, 1979. The Bylaw adopted a report prepared by D. Ingram P.Eng., R.V. Anderson Associates Limited dated July 28, 1978.



Past Work

2016 Costs to be allocated as part of this report.



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Drain re-alignment





Design



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Drainage Studies

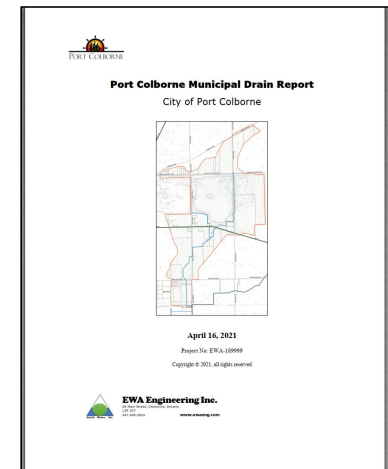
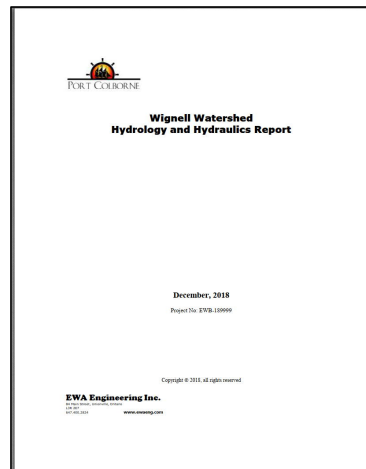
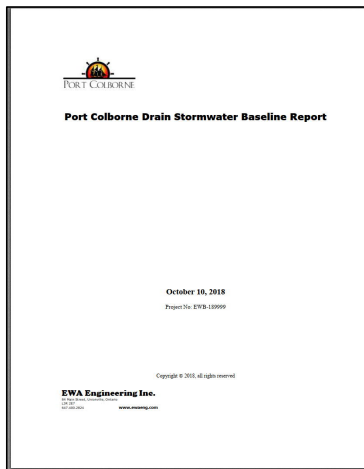
Stormwater Baseline Report
October 10, 2018



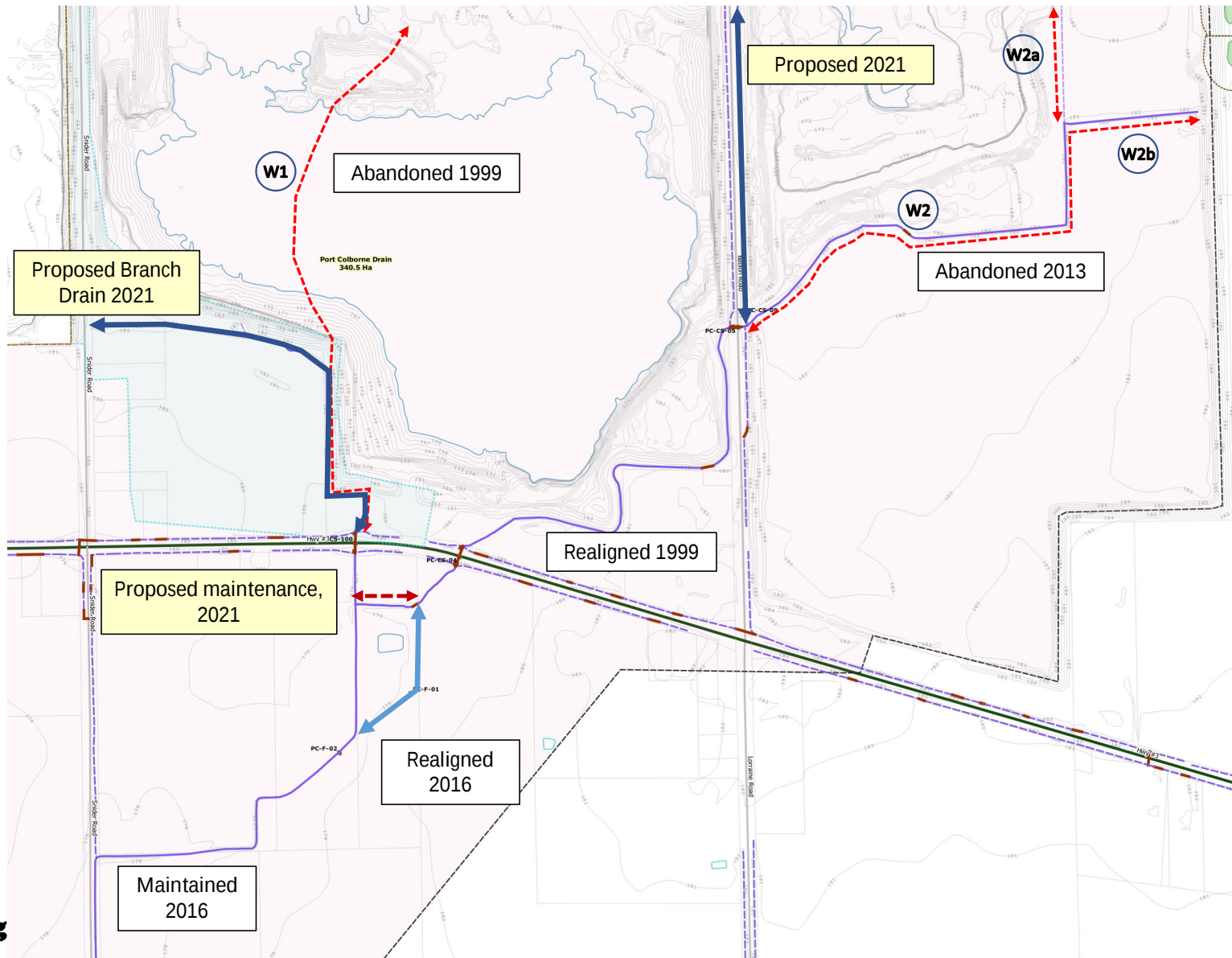
Wignell Hydrology and
Hydraulics Report
December 7, 2018
Updated December 17, 2020



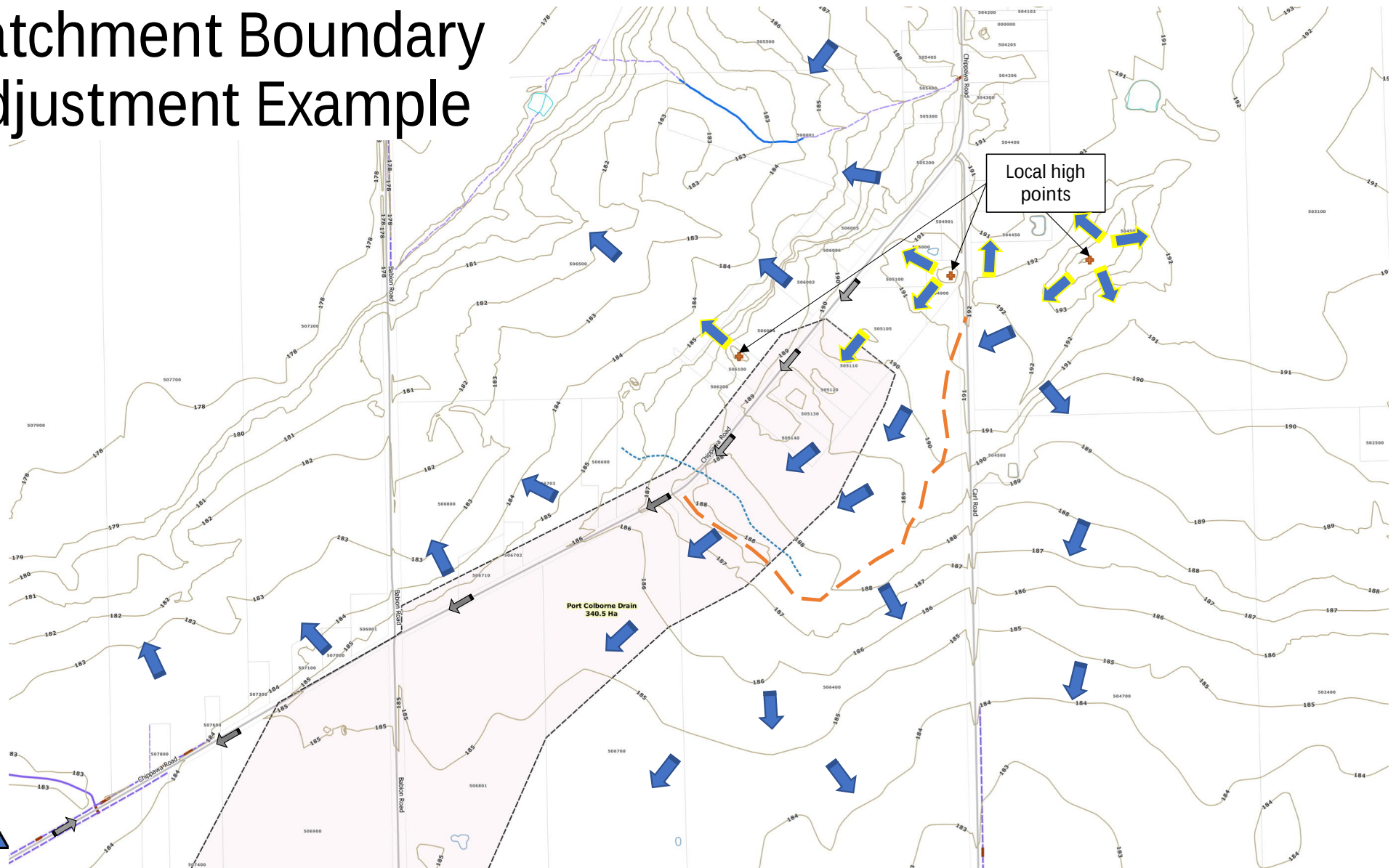
Port Colborne Municipal Drain Report
April 16, 2021



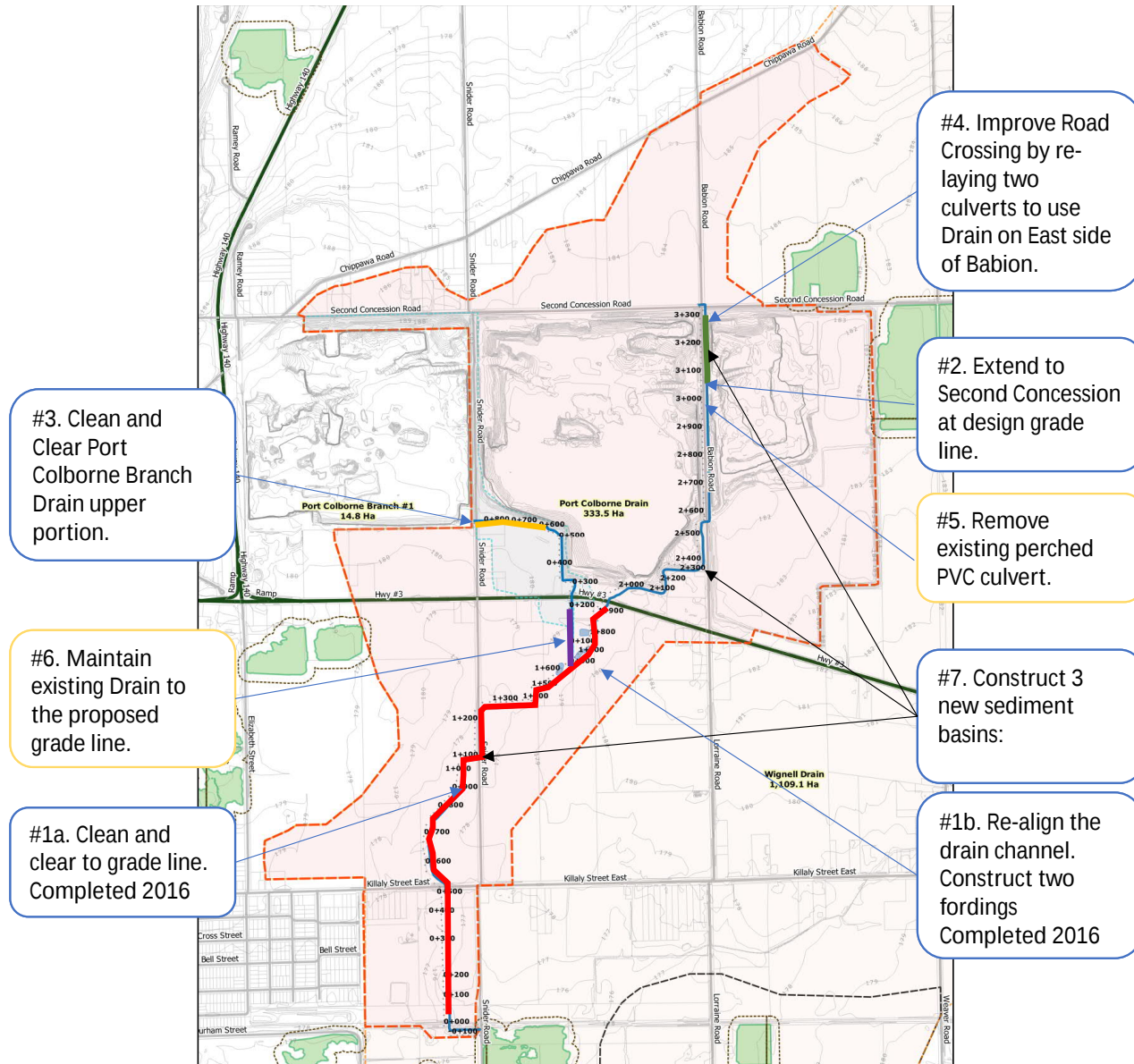
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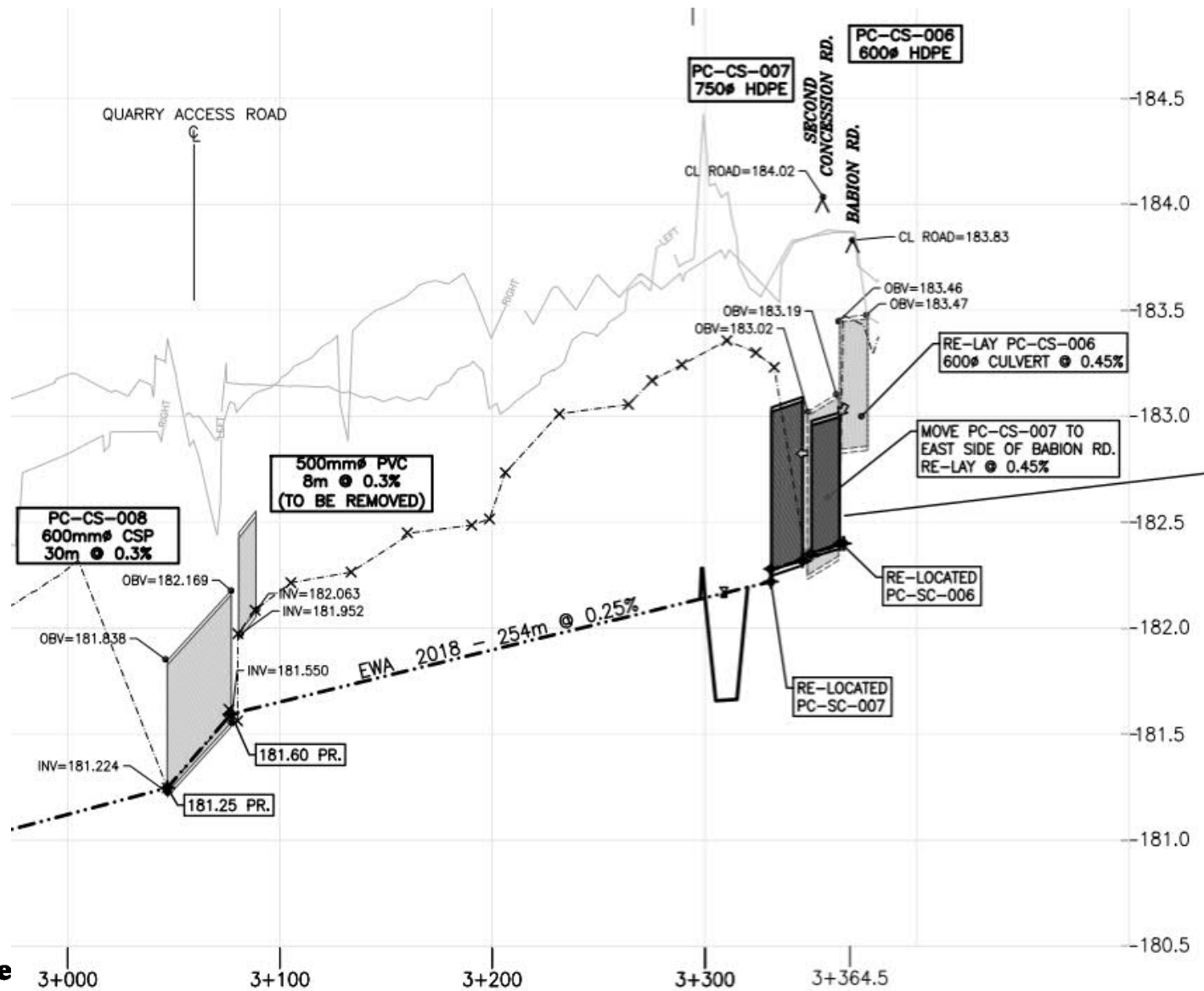
Catchment Boundary Adjustment Example



Proposed Work

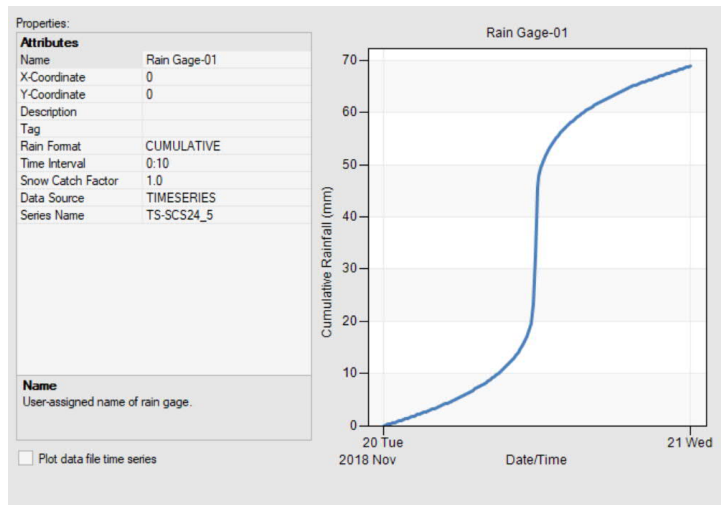


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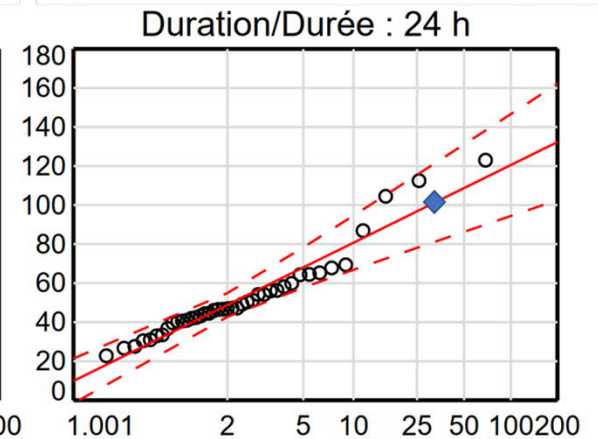
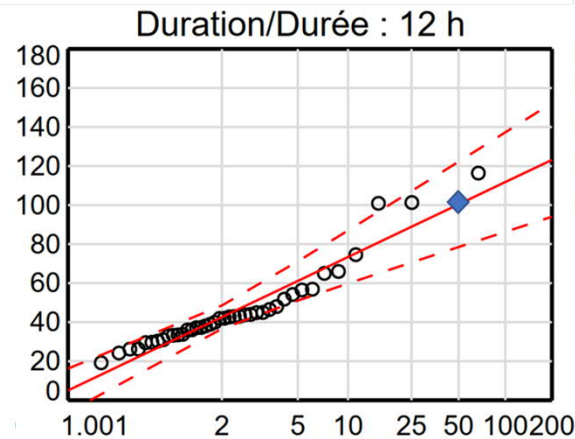
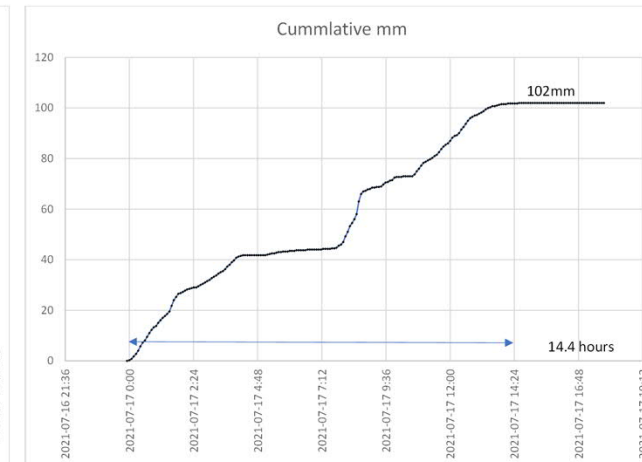
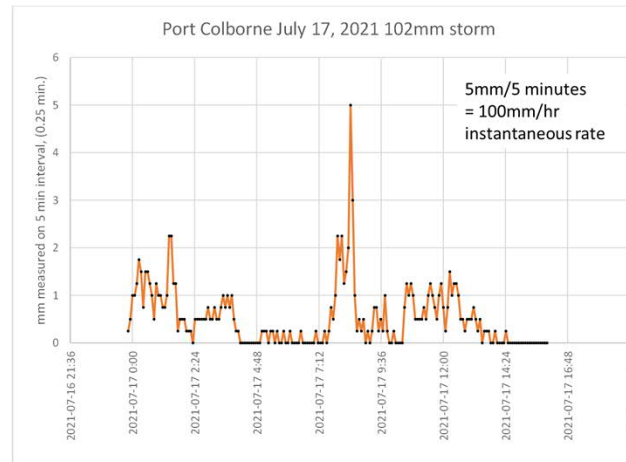
Design Storm



Design Storm	Probability return period	Volume, mm
SCS Type – 24 hour	1:2	49.8
	1:5	68.9
	1:10	81.5
	1:25	97.5
	1:50	109.3
	1:100	121.1
Chicago – 1 hour	1:5	48.2

A gauge operated by Michigan Sugar at the Mud Creek Club where the Snye outlets to Lake St. Clair recorded 9.44" in just 2 hours... Truly unbelievable.
Thanks, Jordan G.

Actual Storm

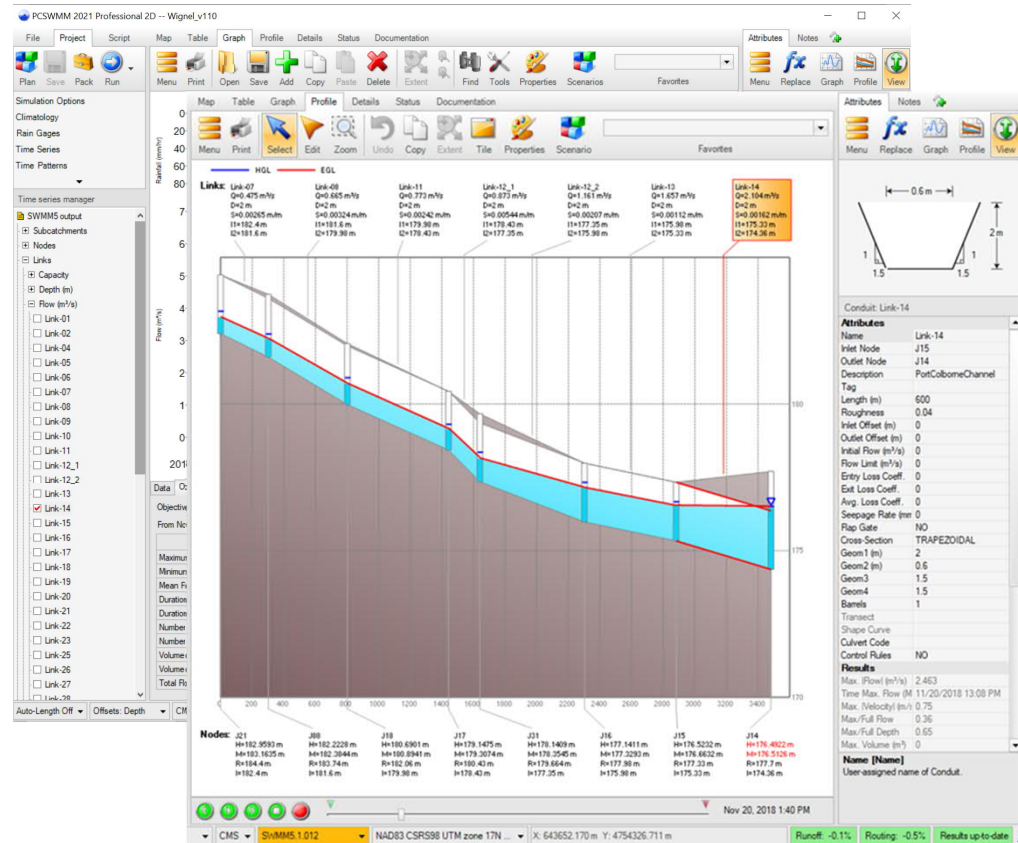
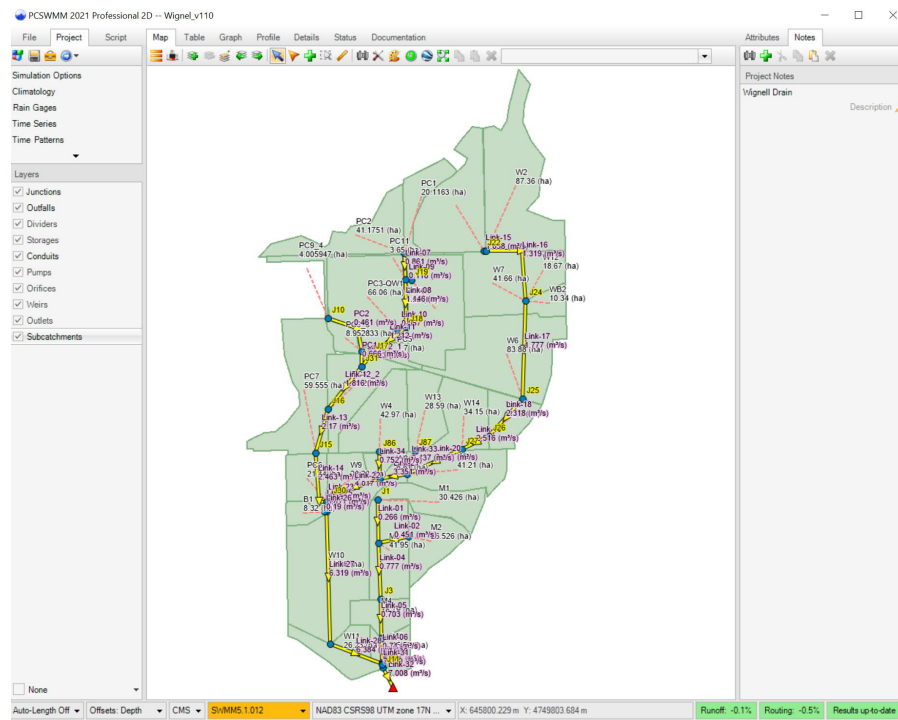


riod/Période de retour (years/années)

2021/03/26

Canada

Design Methodology – SWMM Model



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Runoff – Soil Conservation Service (SCS) Curve Number (CN) method

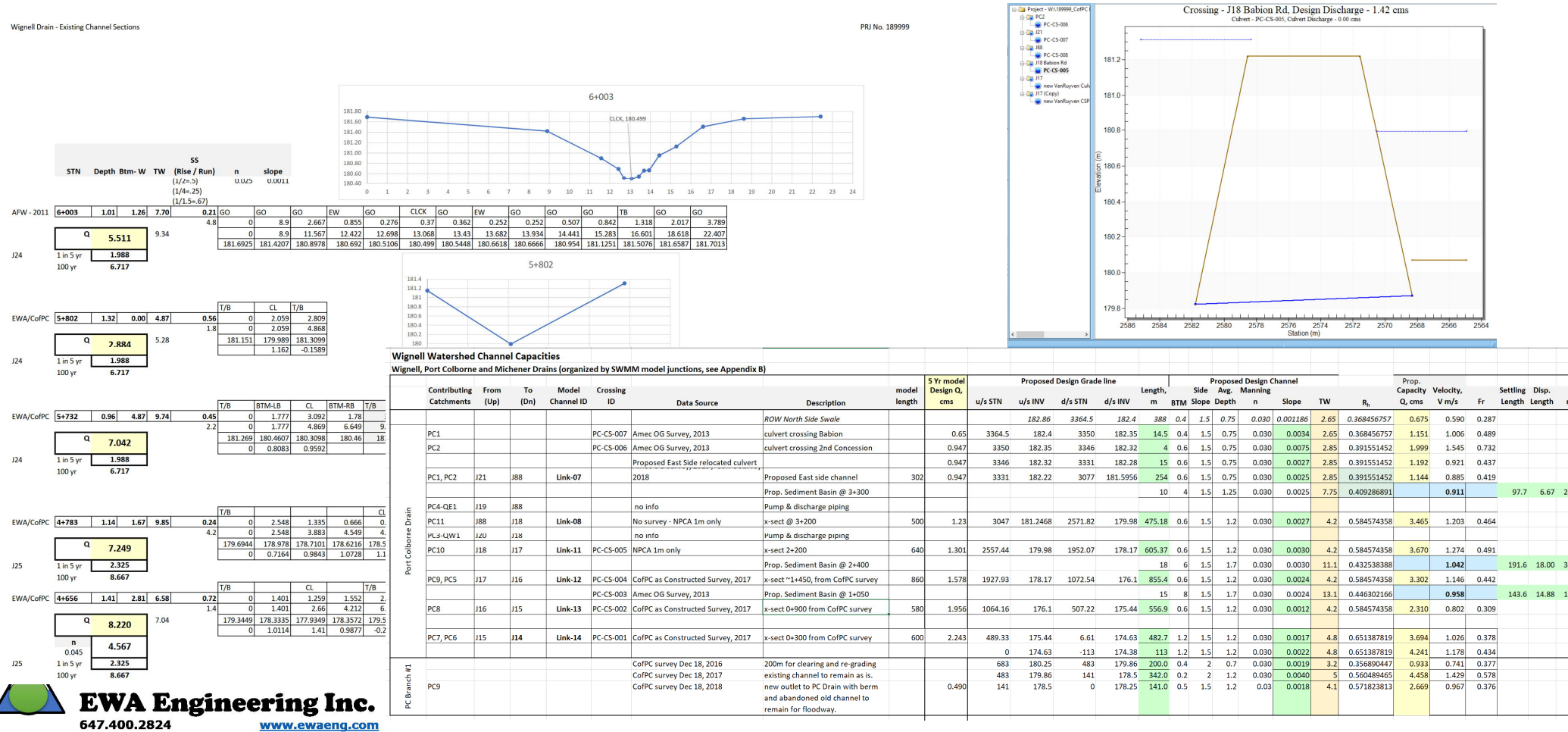
1	id	Area	Imp_type
2		0.3608	RPavement
3		0.3029	RPavement
4	24	0.2375	RPavement
5		0.1919	RPavement
6	4	0.158	RPavement
7		0.1024	PGravel
8	25	0.061	Ppavement
9		0.0584	RPavement
10		0.0463	roof
11		0.0462	roof
12	18	0.0437	roof
13		0.0419	roof
14	22	0.0273	roof
15		0.0257	Ppavement
16	6	0.0247	roof
17	15	0.0241	roof
18	9	0.0241	roof
19	13	0.023	roof
20	20	0.0223	roof
21	11	0.0222	roof
22	12	0.0217	roof
23		0.0216	Ppavement
24	1	0.0207	roof
25	19	0.0202	roof
26	2	0.02	roof
27		0.02	Ppavement
28	21	0.0191	roof
29	17	0.0179	roof
30	16	0.017	roof
31	23	0.0169	roof
32	3	0.0158	roof
33	10	0.0156	roof
34	14	0.0138	roof
35		0.0135	roof
36		0.013	roof
37		0.0109	roof
38		0.0102	roof
39	7	0.0096	roof
40	5	0.0092	roof
41		0.0077	roof
42		0.0064	roof
43		0.0057	roof
44	8	0.0048	roof
45		2.1757	
46			



Land Use Description on Input Screen	Description and Curve Numbers from TR-55		Curve Number for Hydrologic Soil Group			
	Cover Description					
	Cover Type and Hydrologic Condition	% Impervious Areas	A	B	C	D
Agricultural	Row Crops - Straight Rows + Crop Residue Cover-Good Condition ⁽¹⁾		64	75	82	85
Commercial	Urban Districts: Commercial and Business	85	89	92	94	95
Forest	Woods ⁽²⁾ - Good Condition		30	55	70	77
Grass/Pasture	Pasture, Grassland, or Range ⁽³⁾ - Good Condition		39	61	74	80
High Density Residential	Residential districts by average lot size: 1/8 acre or less	65	77	85	90	92
Industrial	Urban district: Industrial	72	81	88	91	93
Low Density Residential	Residential districts by average lot size: 1/2 acre lot	25	54	70	80	85
Open Spaces	Open Space (lawns, parks, golf courses, cemeteries, etc.) ⁽⁴⁾ Fair Condition (grass cover 50% to 70%)		49	69	79	84
Parking and Paved Spaces	Impervious areas: Paved parking lots, roofs, driveways, etc. (excluding right-of-way)	100	98	98	98	98
Residential 1/8 acre	Residential districts by average lot size: 1/8 acre or less	65	77	85	90	92
Residential 1/4 acre	Residential districts by average lot size: 1/4 acre	38	61	75	83	87
Residential 1/3 acre	Residential districts by average lot size: 1/3 acre	30	57	72	81	86
Residential 1/2 acre	Residential districts by average lot size: 1/2 acre	25	54	70	80	85

* Runoff Method characterizes each catchment but is not a prediction of exact runoff.

Drain hydraulic performance, (3 calculations)



Cost Estimate



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Cost Estimate of Construction

- Clear Vegetation and Re-grade to Design Grade Line
- Most work is to already established grade based on Amec Survey 2013.
 - Significant excavated quantities are not expected and distribution (spreading) on the banks adjacent to the channel is planned.
- Drain Re-alignment re-used excavated material to replace original channel.
 - Or spread on adjacent banks as planned for Babion Rd extension.
- Environmental Protection
 - Cost of SAR legislative compliance is difficult to predict.
 - Budget is for Mitigation Plan by Contractor only.



Estimate Project Costs

- Composed of the following:

Estimated Cost of Construction			
	Port Colborne Drain	\$33,332.00	
	Port Colborne General Construction Costs	\$8,278.52	
	Port Colborne Contingency	\$12,458.10	
	Total - Estimated Cost of Construction		\$54,068.62
Previous Construction			
	Port Colborne Channel Maintenance by Rankin Construction - 2+580 to 3+045	\$26,050.00	
	Port Colborne Channel Re-Alignment - 1+660 to 1+860	\$9,442.50	
	Port Colborne Channel Re-Grading and Clearing - 0+010 to 1+500	\$15,300.00	
	Fording #1; ARN = 410710 - 1+740 to 1+750	\$710.00	
	Fording #2; ARN = 410800 - 1+630 to 1+640	\$710.00	
	Total - Previous Construction		\$52,212.50
Administration			
	Engineering	\$167,486.89	
	Administration Cost Allocations	\$10,723.47	
		\$178,210.37	
Administration Costs allocated per Drain area			
	Port Colborne Branch Drain #1	\$8,052.75	
	Port Colborne Drain	\$170,157.61	
	Total - Administration Port Colborne Drain		\$170,157.61
Drain Allowances			
	Port Colborne Drain	\$939.00	
			\$939.00
	Forecasted Total Drain Costs		\$277,377.74

*

* Excludes NPCA grant awarded for drain construction \$ 11,520.50.



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Engineering and Administration

- Engineering Costs:
 - Wiebe (Byron Wiebe) • \$30,131.30
 - AMEC (Paul Smeltzer) • \$20,060.94
 - EWA Engineering (Paul Marsh) • \$99,811.50
 - CofPC CAD • \$13,983.16
- Administration Costs:
 - Debenture Interest • \$8,911.40
 - Debenture Fee • \$1,812.07



Assessment Principles

Allowances

- All land has the same valuation; \$ 22,000 per hectare (\$10,000 /acre)
- Land Taken for Drainage (Section 29)
 - Drain Top Width (Design)
- Land for Work Zones (Section 29)
 - Value is apportioned based on frequency of maintenance. (1 every 20 years)
- Damages (Section 30)
 - Only paid on crop damages or commercial impacts
 - No payment with restoration
 - No payment on trees removed for drainage. 2 trees for 1 replacement program to enhance tree canopy.



Assessment Principles – Conversion

Allowances – cont.

- Section 31 – compensate owners for private drains incorporated into a municipal drain.
 - Branch Drains that are providing an outlet for Right of Way and upland drainage.
 - Private Drains to remain not included for compensation.
 - Valuation is based on construction cost to create today.
 - Value is adjusted to reflect drain condition and any improvements that are required.



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Assessment Principles – 2

Benefits

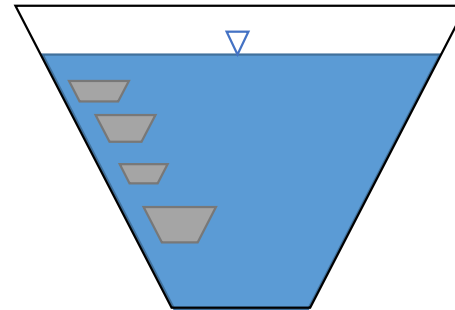
- Section 22 – Land improvement, Abutting Benefit
 - Benefit of open channel vs closed conduit
- Section 23 – Outlet Liability, Outlet Benefit
 - Method of assessment is based on Equivalent Area Runoff Factor, (QRF) using basics of the Rational Method for proportional assessment.
 - Adjusted for Stormwater Management Features (SWMF)
- Section 24 – Special Benefit
 - 50% of culvert cost of construction
- Section 26 – Roads, Utilities
 - Assessment for contribution to drainage costs.



Section 23 assessment

- Property #1:
 - 25 Ha
 - Predominately Clay soil, Farm, C=30
- Property #2
 - 0.22 Ha
 - Residential, C=25
- Property #3
 - 22.2 Ha
 - Unused Farm, C=30

- Peak Flow is apportioned to each contributing property.

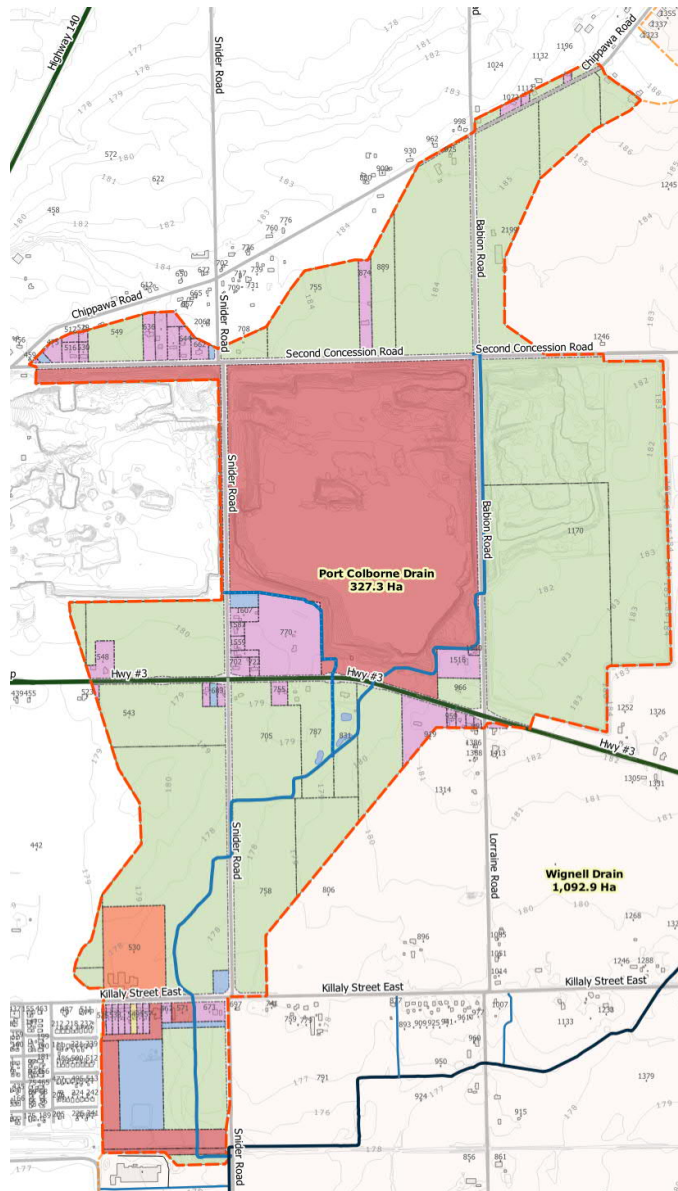


- $QRF = A \text{ (ha)} * C * I \text{ (mm)}$
- $QRF \text{ Ratio} = QRF \text{ P\#1} / QRF \text{ Total}$



✓ ☒ **PC Drain Xroll_rev4 copy**

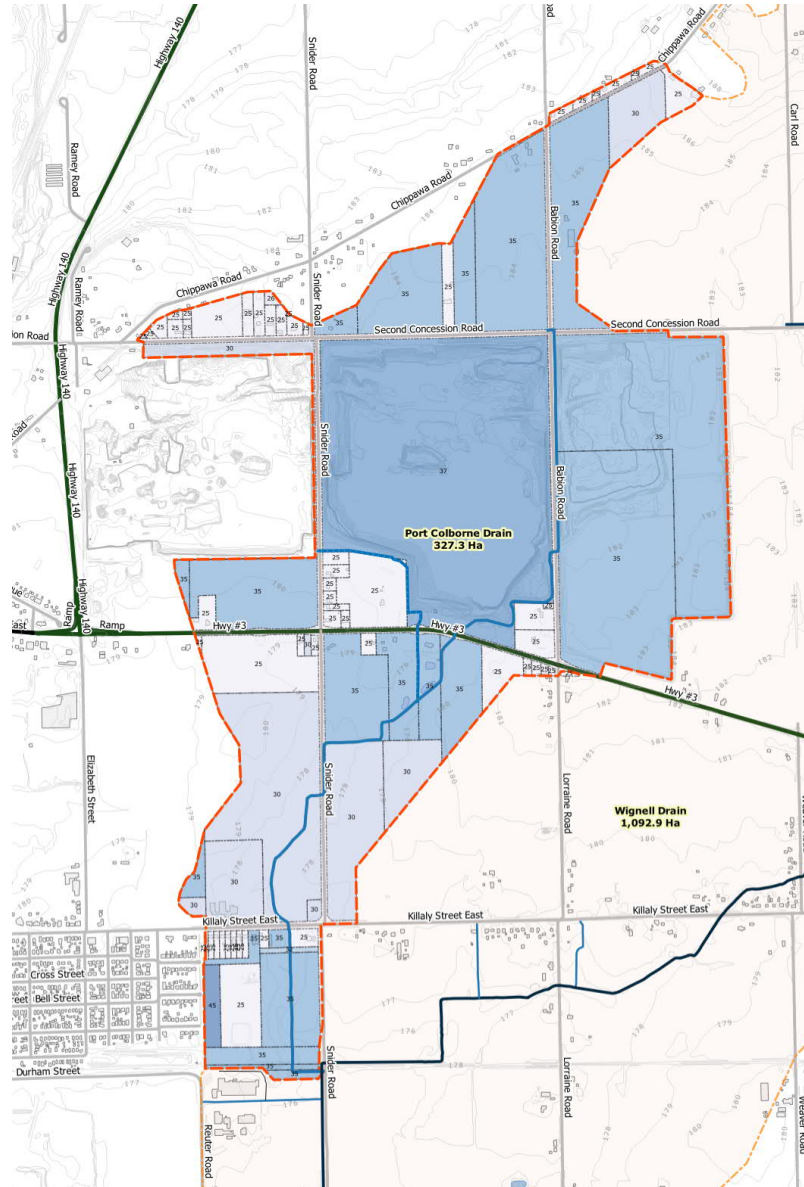
- ☒ **COMMERCIAL**
- ☒ **FARM**
- ☒ **INDUSTRIAL**
- ☒ **INSTITUTIONAL**
- ☒ **LAND**
- ☒ **RESIDENTIAL**
- ☒ **LAND**



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☒ **PC_Drain_Xroll_rev4 copy**

- ☒ 25
- ☒ 26
- ☒ 30
- ☒ 32
- ☒ 35
- ☒ 37
- ☒ 45
- ☒ 



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QRF ratio is used to allocate cost

- Consider a single property with a $C = 35$

35	1.78	0.0023	\$521.36
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- And compare with the same property with a $C = 33$

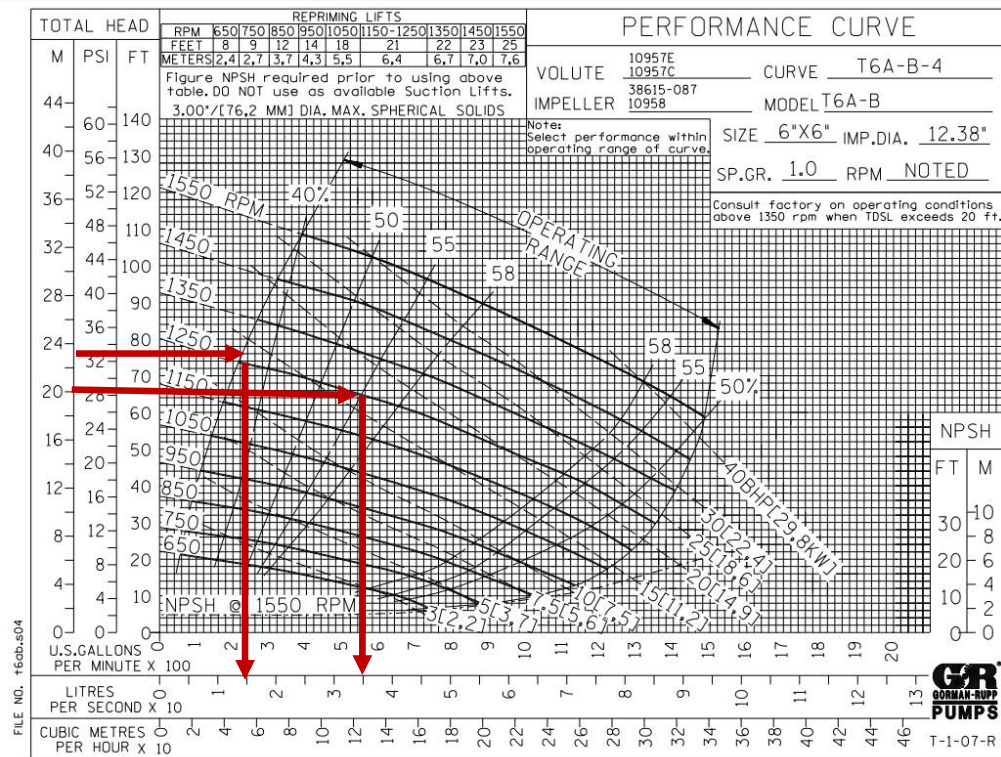
33	1.68	0.0022	\$491.63
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- Results in a decrease of individual assessment of \$29.73 and an increase in all other assessments.

\$29.73

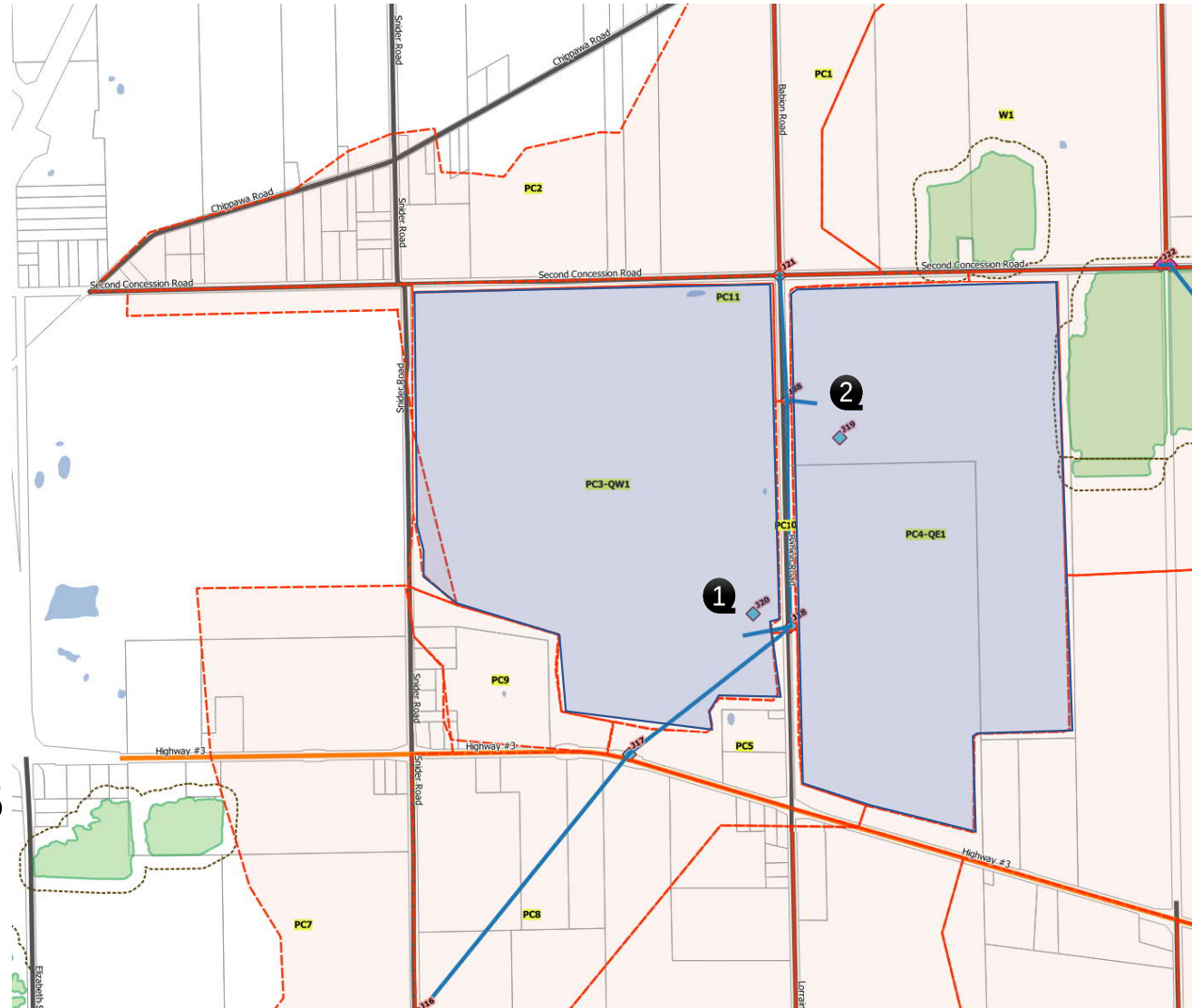
5.7%





Quarry Section 23 Assessment

- West Quarry property
ARN 411500
 - QRF = 176.62 cms
 - PS#1 Pump rate 15 to 35 l/s (estimated)
- East Quarry 2 properties
ARN 315600 & 315800
 - QRF 70.48 & 80.17 = 150.65
 - Similar to PS#2



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Thank you

Questions?

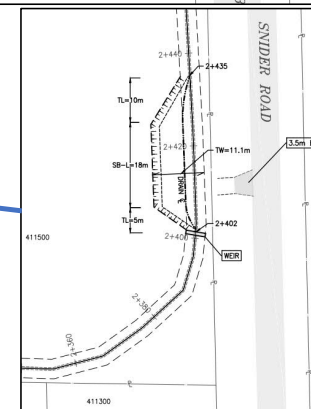
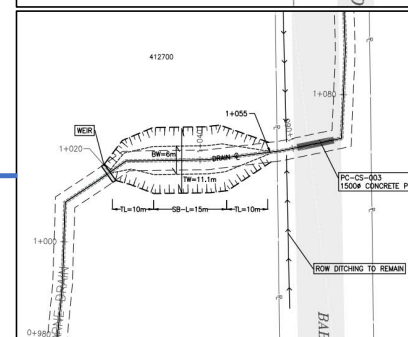
East side looking
southeast from Babion
Rd – Sept. 2018



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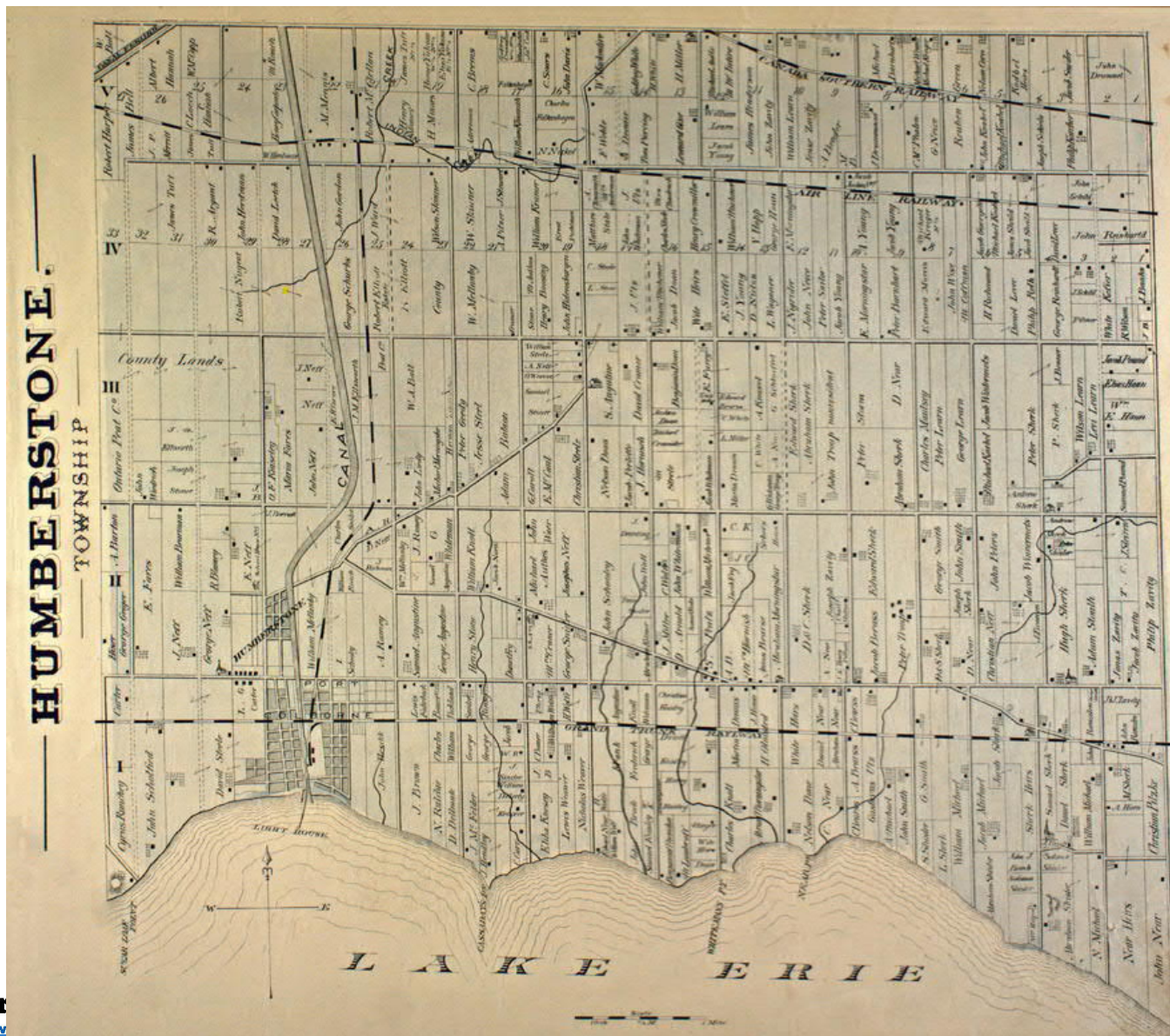
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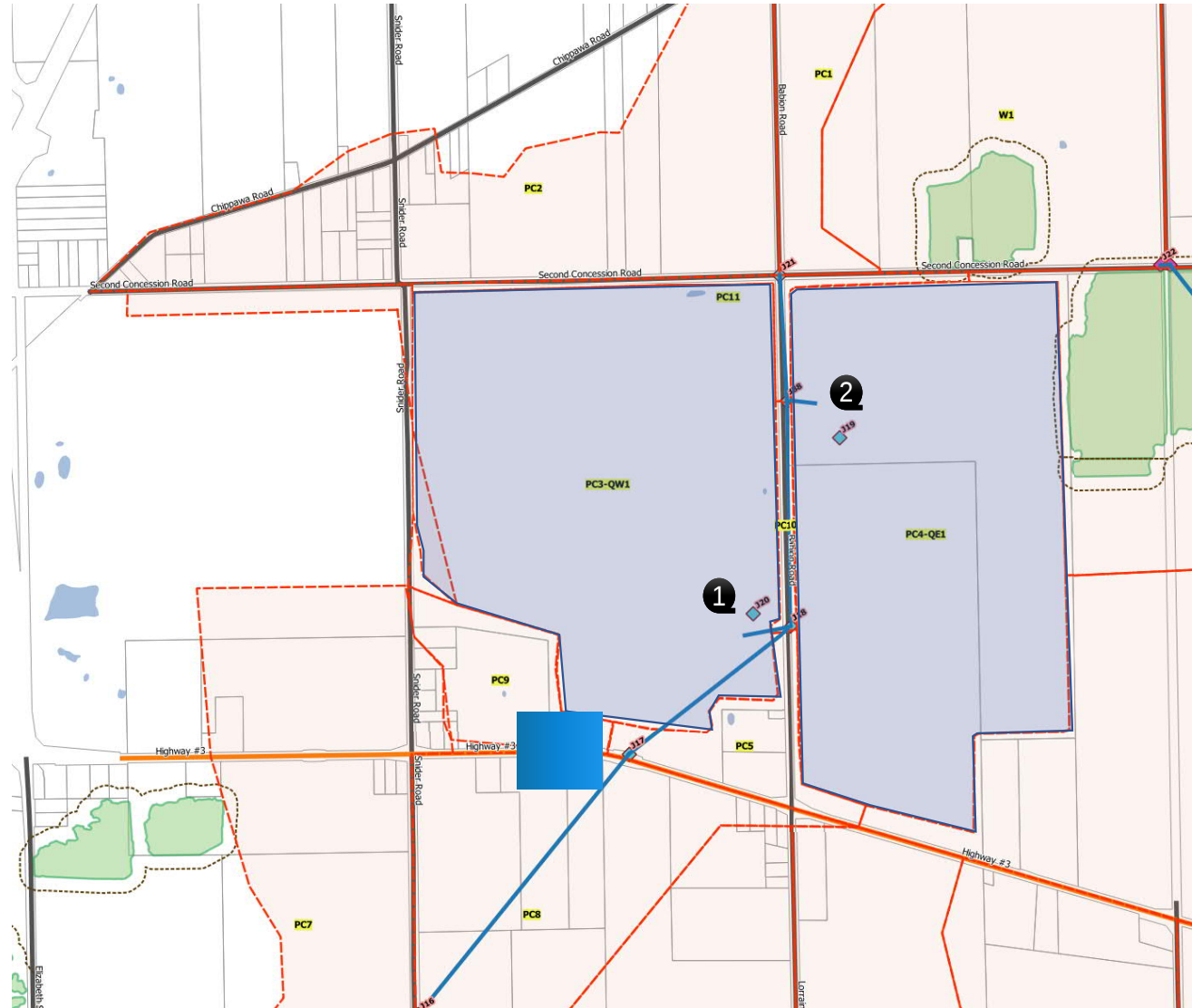
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Wignell Watershed Model

Quarry Pump #1

Quarry Pump #2



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The Rational Method

The Rational method is one of the earlier developed methods of calculating peak flows. In spite of the availability of advanced computational techniques, it remains a valid approach to peak flow estimation for small drainage areas. The application of this method should be limited to watersheds less than 100 hectares in size.

Some applications of the Rational Method include:

- determination of peak flows to size channels, sewers, ditches and culverts;
- preliminary design estimation for drainage systems;
- flow estimation to design erosion and sediment control devices.

The method is expressed as follows:

$$Q = 0.0028 * C * i * A \quad (8.19)$$

where:

- Q = peak runoff rate, m³/s
- C = weighted runoff coefficient for the catchment area (Design Chart 1.07)
- i = rainfall intensity, mm/h
- A = drainage area, ha

Assumptions inherent in the Rational method are:

- the peak rate of runoff, Q, is determined by using an average rainfall intensity, i, over the entire watershed with a time duration equal to the watershed time of concentration, t_c.
- the peak rate of runoff is assumed to have a return period equal to that of the intensity-duration-frequency curve;
- the rainfall intensity, i, remains constant for the computed time of concentration, t_c, and is uniform across the drainage area;
- the runoff coefficient, C, does not vary over the duration of the storm.

A computer model of the Rational Method has been developed by MTO, *MTO Rational Drainage Model*, to assist in the application of the method.



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G & S Beaulieu
644 Second Concession Rd
Port Colborne, ON
L3K 5V5

July 26, 2021

City of Port Colborne Mayor, Council Members and Staff

I am writing in regards to the Proposed Repair and Improvements on the Port Colborne Municipal Drain.

In reading the report it appears that this work is required mainly due to expansion of Port Colborne Quarries. Plus, if nothing is done, it appears that the only property that would be affected is the Port Colborne Quarry. Now, I am under the understanding that if any landowner does anything to change or alter the drainage, on their property, that they are required to repair or replace said drainage, according to MNR standards, at their own expense. I am wondering why the City is on the hook for this work and expense. If the PC Quarry needs/wants these changes to the current drainage on their properties, for their expansion, they should be paying for it themselves not the taxpayers of Port Colborne. It looks to me as it's their cost of doing business, not the taxpayer's responsibility. It appears to us that the "improvements" are to benefit the PC Quarry, and it also appears that Rankin Construction (the owners of which own the Quarry) would also be doing the work, thus a win win for the Rankin's. The City pays for the Quarry's drainage problem, while reaping all the Reward/Benefits/Profits.

Secondly, Port Colborne Quarry purchased this property with the understanding that Pits 1 and 2 (and eventually Pits 3 and 4) be allowed to become passive lakes once they depleted the aggregate from them. This should have been done decades ago. Would the passive lakes solve this drainage problem? Would these proposed improvements even be necessary then? Would a major Hotel chain be interested in building/operating a Hotel at the corner of HWY 3 and HWY 140 then? A passive lake would be a greater incentive than a dusty, smelly, and noisy used up quarry for them.

I truly believe that the Taxpayers of the City would prefer these funds be allocated to other projects, say to starting repairs on the water mains in town instead of paying for Rankin to make more profits at our expense.

Sincerely,

George & Sandra Beaulieu

.....

Response to Port Colborne Municipal Drain Report
Report to Council PWD 2021-148, June 14, 2021
EWA Project # EWA-189999 Dated April 16, 2021

Our property, by previous drainage reports, is designated as part of the watershed to the original Wignell Drain West Branch W1 (Roll # 271104000411000). This is shown in the referenced Report PDW 2021-148, Figure 7, and shows the original Municipal Drain did not extend to Snider Road.

When this Report suggests the renaming of the Wignell Drain Branches W1 and W2, to Port Colborne Drain, they are using a name which is still in use to identify a different Municipal Drain. The original Port Colborne Drain extends north about the middle of Lot 23, Concession 2, branching from the Wignell Branch Drain, from Killaly Street to Hwy #3, and crosses Hwy #3 from the south side to the north side between Elizabeth Street and Snider Road. This drain receives water from the area on both sides of Snider Road north of Hwy #3, and the field north of Hwy #3 on Lot 23, Concession 2. See Figure 1 below. In this response, I will use the original Drain names.

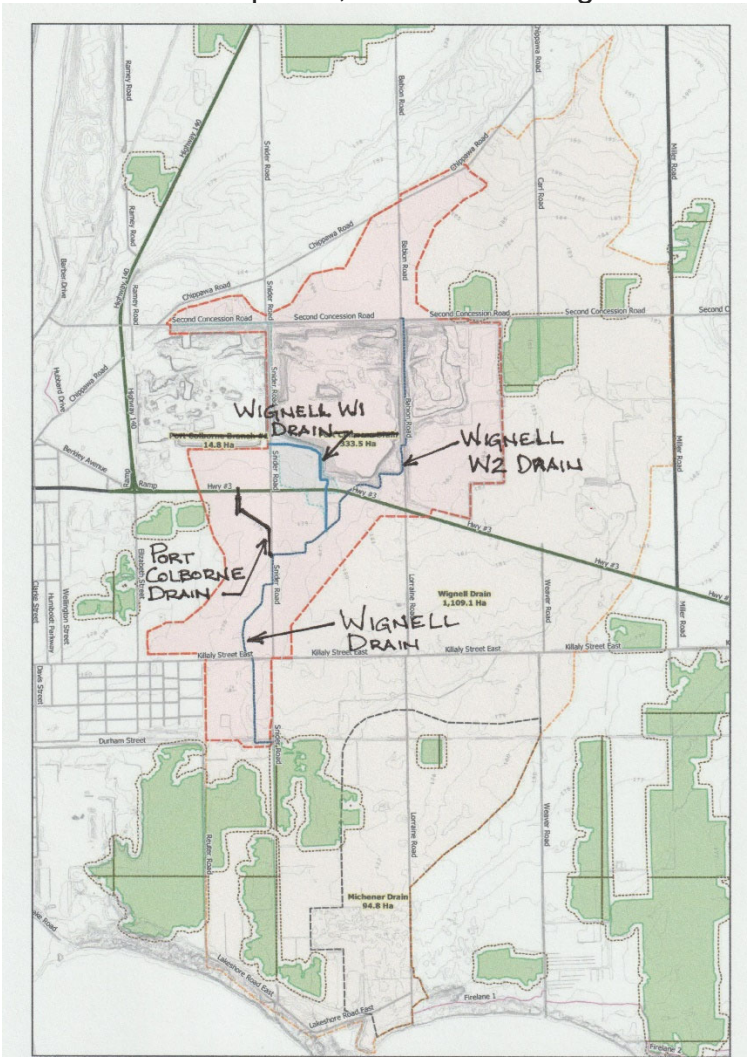


Figure 1 from Engineer's Report, with original Drain names

The direction of surface water flow was quite evident in the recent heavy rainfall event of July 17, 2021, which was greater than a 5-year rainfall event, which is the basis of design for Municipal drains. A 5-year return rainfall event is based on 68.9 mm in 24 hours, and the recorded rainfall on July 17, 2021 was in excess of 110 mm in 24 hours. Photos below, of the roadside drainage, show the water flowing south on the east side of Snider Road, and then under Snider Road from the east side to the west side at Hwy #3 and ponding on the north side of the culvert under Hwy #3 to the Port Colborne Drain approximately 200m west of Snider Road. The water then flows through a culvert from the north side to the south side into the original Port Colborne Drain. It should be emphasized that the slope of Snider Road from the end of the improved Road about 250 m north of Hwy #3, to the intersection at Hwy #3, is approximately 2.0 m.



North Side of Hwy #3, west of Snider Road, at culvert crossing to Port Colborne Drain



South Side of Hwy #3, water exiting culvert, flowing south into Port Colborne Drain

The Subject Report suggests re-activating a Municipal Drain branch W1, which was abandoned in 1999. It has been indicated that this was petitioned by the City of Port Colborne. This “ditch” was constructed to provide drainage for the back slopes of the Port Colborne Quarry berms, and is at the high point of the drainage area. Photos below show that the only water evident on the Snider Road ROW during the extreme rain event of July 17, 2021, was ponding because of poor surface grading.



Frontage of last house on Snider Road north of Hwy #3, during peak of rainfall event of July 17, 2021, facing north



Facing south, frontage of 3rd and 4th houses on east side of Snider Road, north of Hwy #3 on July 17, 2021, with water flowing south



End of improved road and start of unopened clay road Snider Road north of Hwy #3, facing north

The water accumulation for the intensity of the July 17, 2021 rainfall event is minimal, and is the result of poor surface grading and not due to an inadequate outlet. There is no need for an outlet for drainage from the unopened clay road, and particularly not at the high point of the drainage area. The water is currently being adequately conveyed by the existing roadside ditches to an existing Municipal Drain named the Port Colborne Drain. Some minor maintenance of the driveway culverts and removal of phragmites in the east roadside ditch of Snider Road will meet the requirements for a 5-year storm conveyance.

For the Wignell W1 Drain, there is at least one property missing on the assessment schedule. This is the third house north of Hwy #3. In my opinion, the overall watershed area should be equal to the total of the individual properties. The current direction of flow also indicates most of the area of the properties on Snider Road should be assessed to the original Port Colborne Drain.

The subject Report also suggests extending the W2 branch along the east side of Babion Road. This branch was abandoned in 2013 because it was necessary to be removed to accommodate Port Colborne Quarries quarrying in Pit 3. A field investigation of this area will show that there is an adequate roadside ditch on the west side of Babion Road. When this west ditch was created, it also involved some rock removal. The west roadside was recently mechanically brushed to remove the vegetation. This reveals a ditch in good condition the entire length to Second Concession Road. It also has adequate culverts under Second Concession Road and Babion Road and they were working well during the rainfall event of July 17, 2021.



Culvert on west side of Babion Road at Quarry haul road showing culvert capable of carrying intense rainfall.



Northwest intersection of Second Concession and Babion Road, indicating culverts capable of conveying intense rainfall.

The subject Report includes a table of runoff Coefficients, Table 7 Land Use and C Factors. There are various coefficient tables in use for specific areas and design purposes, and Table 7 is applicable for rural drainage. However, this table has been mis-applied for the actual use of many of the properties in the watershed. For example, a small rural residential property of less than 0.2 Ha has been considered to have a lower runoff coefficient than a farm hay field or pasture. In our case, the property is primarily woodlot, and grass equivalent to a flat golf course. Below is a Table from another source, for various soils indicating a decrease in runoff coefficients as residential lot sizes increase.

Slope :	Runoff Coefficient, C					
	Soil Group A			Soil Group B		
	< 2%	2-6%	> 6%	< 2%	2-6%	> 6%
Forest	0.08	0.11	0.14	0.10	0.14	0.18
Meadow	0.14	0.22	0.30	0.20	0.28	0.37
Pasture	0.15	0.25	0.37	0.23	0.34	0.45
Farmland	0.14	0.18	0.22	0.16	0.21	0.28
Res. 1 acre	0.22	0.26	0.29	0.24	0.28	0.34
Res. 1/2 acre	0.25	0.29	0.32	0.28	0.32	0.36
Res. 1/3 acre	0.28	0.32	0.35	0.30	0.35	0.39
Res. 1/4 acre	0.30	0.34	0.37	0.33	0.37	0.42
Res. 1/8 acre	0.33	0.37	0.40	0.35	0.39	0.44
Industrial	0.85	0.85	0.86	0.85	0.86	0.86
Commercial	0.88	0.88	0.89	0.89	0.89	0.89
Streets: ROW	0.76	0.77	0.79	0.80	0.82	0.84
Parking	0.95	0.96	0.97	0.95	0.96	0.97
Disturbed Area	0.65	0.67	0.69	0.66	0.68	0.70

Rational Method Runoff Coefficients - Part I

Slope :	Runoff Coefficient, C					
	Soil Group C			Soil Group D		
	< 2%	2-6%	> 6%	< 2%	2-6%	> 6%
Forest	0.12	0.16	0.20	0.15	0.20	0.25
Meadow	0.26	0.35	0.44	0.30	0.40	0.50
Pasture	0.30	0.42	0.52	0.37	0.50	0.62
Farmland	0.20	0.25	0.34	0.24	0.29	0.41
Res. 1 acre	0.28	0.32	0.40	0.31	0.35	0.46
Res. 1/2 acre	0.31	0.35	0.42	0.34	0.38	0.46
Res. 1/3 acre	0.33	0.38	0.45	0.36	0.40	0.50
Res. 1/4 acre	0.36	0.40	0.47	0.38	0.42	0.52
Res. 1/8 acre	0.38	0.42	0.49	0.41	0.45	0.54
Industrial	0.86	0.86	0.87	0.86	0.86	0.88
Commercial	0.89	0.89	0.90	0.89	0.89	0.90
Streets: ROW	0.84	0.85	0.89	0.89	0.91	0.95
Parking	0.95	0.96	0.97	0.95	0.96	0.97
Disturbed Area	0.68	0.70	0.72	0.69	0.72	0.75

Rational Method Runoff Coefficients - Part II

The descriptive characteristics of the four SCS soil groups are summarized in the following list:

- Group A: Deep sand; deep loess; aggregated soils
- Group B: Shallow loess; sandy loam
- Group C: Clay loams; shallow sandy loam; soils low in organic content; soils usually high in clay
- Group D: Soils that swell significantly when wet; heavy plastic clays; certain saline soils

Although it can be argued that quarries that pump their pits have a reduced rate of runoff, they maintain that pumping rate for a much greater time. Where a farm field absorbs a significant volume of rainfall at the beginning of a rainfall event, a limestone quarry absorbs nearly no water, and in fact pumps infiltrated water from the surrounding area as well, which can extend more than a kilometer from the quarry. There is a benefit to a quarry to have an adjacent Municipal Drain, as well as the liability for the drain since they contribute runoff and groundwater to the drain. PCQ has a Permit to Take Water for Pit 2 and Pit 3, which exceeds 18,000,000 litres per day in total. Both Pit 2 and Pit 3 are pumped to the Wignell W2 Drain. The pump from Pit 3 has pumped continuously from July 17 to July 23, 2021, which is when this response is being submitted. Pumping will probably continue much longer.

There is an assessment table for the W1 Branch Drain, which assigns all the costs for the W1 branch drain maintenance to the tributary properties, commencing at the point of intersection with the “main” drain. However, the costs of the W2 Branch Drain upstream of the intersection of W1 and W2 are shared with all the properties upstream of the intersection, including the W1 properties. The properties tributary to the W2 Branch Drain above the intersection do not share in the cost of W1 Branch Drain. A fair assessment will consist of costs to the tributary properties based on each reach of the drain from branch intersections to branch intersections. In this case, the Port Colborne Drain also contributes to the Wignell Drain. Maintenance of the Wignell Drain downstream of the intersections to the outlet should be assessed to all the properties contributing runoff.

There is also an assigned cost for previous works upstream of the W2 Branch on the east side of Babion Road from the culvert crossing Babion Road from Sta. 2+580 to Sta. 3+045 which was abandoned in 2013. This work was conducted by Rankin Construction for cleaning out a ditch through the quarry property, at a cost of +/- \$26,000. That cost is included as a cost to be assessed to the watershed property owners. The reason it needed to be cleaned was to provide a channel of the Pit 3 pump discharge, and the cleaning was required due to sloughing of their berms. Further, this was not part of the Municipal Drain when it was maintained, as W2 east of Babion Road was abandoned in 2013.

This Engineer’s Report does not reflect the actual flow of surface runoff. In my opinion, much of this proposed work under the drainage act is unnecessary, as evidenced by the lack of flooding or ponding during a rainfall event significantly higher than the 5-year design storm for Municipal Drains. This report suggests work to address a problem that does not exist.

It should be pointed out that a Public Meeting was convened for the Wignell Drain, but there was not, to my knowledge, a public meeting to present the proposals for the “Port Colborne Drain” to the contributory watershed property owners, and no other notification of this was provided. I understand that this is a requirement under the Drainage Act, R.S.O. 1990.

The City of Port Colborne, including property owners outside the drainage areas, will be responsible for costs on City road allowances. In my opinion, based on the above, this Drainage Report under the Drainage Act, in the Meeting to Consider, should be rejected, or alternatively as minimum, be redirected/referred back to the Engineer for major revisions.

If there are any questions regarding the above, I am willing to address Council to clarify my comments.

Respectfully submitted,

Jack S Hellinga

From: Saulnier, Kyle (MTO)
Sent: July 23, 2021 3:18 PM
To: Alana VanderVeen <Alana.VanderVeen@portcolborne.ca>
Cc: Weng, Xin (MTO) <[REDACTED]>; Asif, Shahbaz (MTO) <[REDACTED]>; Hussain, Kashif (MTO) <[REDACTED]>; Gagan.Sandhu@portcolborne.ca; amber.lapointe@portcolborne.ca
Subject: Port Colborne Drainage Report

Hi Alana,

Further to my below email, Highway 3 is MTO's corridor. Paul Marsh was hired by the City to complete a drainage study which modified the ministry's drainage system. From the protection of the travelling public safety perspective, the ministry provided comments on the draft report which was sent to us on December 17, 2020, upon which we had a meeting on December 17, 2020 and January 19th, 2021 to discuss. During the January 19th, 2021 meeting, the MTO had identified a number of concerns which were needed to be addressed in order to accept the Port Colborne Municipal Drain report. Since that time, the MTO has not been contacted and the Ministry's concerns have not been addressed after the meeting with Paul and the Town. Additionally, the final report was not presented to MTO before the Town proceeded with the Council presentation. We were only made aware of it when I contacted Paul yesterday, and had no knowledge of the Council meeting prior to this. We're requesting the Council that the Ministry's concerns are to be addressed before this report is approved. Otherwise, the Ministry shall reserve the right to appeal in the drainage tribunal.

Thank you,

Kyle Saulnier, P. Eng.

Project Engineer
Ministry of Transportation Ontario
Planning & Design – Central Region
Phone: [REDACTED]
Email: [REDACTED]

Response to Port Colborne Municipal Drain Report
Report to Council PWD 2021-148, June 14, 2021
EWA Project # EWA-189999 Dated April 16, 2021

Our property is identified CON 3 PT LOT 20 (Roll # 271104000506801)

Our property is 16.18 hectares (40 acres) and is comprised primarily of hay fields and pasture, with farm buildings and residence in the centre. The property has a slight slope from north to south with any run-off going to the road ditch on the north side of Second Concession east of Babion Rd. which is blocked from the Wignell drain in 2008 when the city constructed the ditching on the west side of Babion Rd. between Chippawa Rd. and Second Concession.

Prior to 2008 the east side of Babion Rd. between Chippawa Rd. and Second Concession Rd. had no ditches, only a swale. These ditches were created to correct the erroneous installation of a culvert across Chippawa Rd. to divert runn-off from the north side of Chippawa Rd. therefore flooding my north hay field. Prior to this those properties drained north.

There are a number discrepancies in this report, and I have a specific concern about the assigned Runoff Factor 'C' for the various properties.

- The runoff factors, 'C', are estimates of what percentage of a certain period of rainfall does not get absorbed and leaves the site. When examining the 'C' assigned for rural use properties as compared to rural residential properties, the factors used in this drainage report are not justifiable. For example, a small residential lot with a residence and possibly a garage, on a sloped lot, has a lower runoff factor (0.25) than a much larger lot with comparable building coverage (0.35). It is more evident when comparing much larger rural properties with similar building coverage, or land that is in agricultural production.

The runoff factors for these types of properties are reversed, and for very large lots with similar building coverage, it should be reflective of the ratio of building coverage to the overall property area. Relatively flat agricultural crop lands should be the lowest, at 0.20 - 0.25. In Urban areas on small lots with municipal services the common 'C' is 0.40 - 0.50, and in rural areas with slightly larger lots on septic systems this should be slightly lower. On large rural properties (over 2 ha) it should be somewhere between the above examples, closer to the lower end. For high runoff, such as roads, the 'C' used is 0.85, which is appropriate. But I question the runoff factor for quarry pits. Un-rehabilitated quarry floors should be equivalent to parking lots, which should be higher than road allowances, closer to 0.90 - 0.95.

There is an argument that the rainfall runoff in quarries is slower, as it needs to be pumped. However, as a responsibility for the quantity of water directed to the drain, it is nearly 100% of the rainfall that is discharged from the pumps. A 5-year storm rate may become a 2-year pumped rate.

There is also a proportion of the area groundwater that infiltrates into the quarries that needs to be pumped to the drain, and is done so on an intermittent basis even when there is no precipitation. There is no special assessment for this use of the drains.

This engineering report requires closer scrutiny, and possibly a peer review. At a minimum, it requires another public meeting, and preferably the meeting should be delayed until it can be conducted in person to be attended by persons that are fully vaccinated.

David & Janet Henderson
2199 Babion Rd.
Port Colborne, ON. L3K 5V5

[REDACTED]
[REDACTED]

From: Betty Konc <[REDACTED]>
Sent: July 23, 2021 3:59 PM
To: Alana VanderVeen <Alana.VanderVeen@portcolborne.ca>; [REDACTED]
Cc: Harry Wells <harry.wells@portcolborne.ca>; Angie Desmarais
<angie.desmarais@portcolborne.ca>; Mark Bagu <mark.bagu@portcolborne.ca>; Gary
Bruno <gary.bruno@portcolborne.ca>; Mayor <mayor@portcolborne.ca>; Eric
Beauregard <eric.beauregard@portcolborne.ca>; Frank Danch
<frank.danch@portcolborne.ca>; Donna Kalailieff <donna.kalailieff@portcolborne.ca>;
Ron Bodner <ron.bodner@portcolborne.ca>; Amber LaPointe
<Amber.LaPointe@portcolborne.ca>
Subject: Port Colborne drain report

CAUTION: This email originated from outside your organization. Exercise caution when opening attachments or clicking links, especially from unknown senders.

Good afternoon,

I am a property owner that will be impacted by the above mentioned report. After having a fairly robust tutorial from a retired engineer that has dealt with these types of drainage reports I must say i am not impressed with the lack of understanding of runoff coefficients in this report.

I have to wonder if the author of this report understands the runoff coefficient numbers for water draining into a drain from residential properties and from an industrial site located in the same general area? Why on earth is an industrial entity paying LESS than a residential property?

The other issue I have is the idea that we need to resurrect a drain that was abandoned in 1999, seemingly for the benefit of one property, namely PCQ. Not only that but the report is suggesting that we have 2 drains named Port Colborne drain 1&2, isn't that going to be and potentially a huge FUBAR of magnificent proportions down the road? If PCQ needs to rejink one of our drains for their purposes only, they should be the ones paying, NOT those properties that would then be on the new drain. PCQ is the one that is needing these drains and because of the almost daily dewatering is this entity that is doing the most damage to these drains. Hence the need for PCQ to be paying for the maintenance of said drains.

When is the city going to stop catering to Mr Rankin?

This report needs to go back to the author so he can learn how runoff coefficients really work and how they apply to our properties and he then needs to pay attention to the photos submitted by another resident during our most recent heavy rain event, clearly showing the drains are currently working properly. So in other words this report is suggesting work that doesn't need to happen because the drains we already have are working as they should, as is evidenced by the photos submitted by another resident.

Betty Konc
831 Hwy #3 E
Port Colborne
L3K 5V3