

Council Report

Report Number: ENG2021-014 Meeting Date: June 15, 2021 Title: Low Volume Gravel Roads Description: Capital works request Author and Title: Michael Farquhar Supervisor Technical Services , Engineering and Corporate Assets Recommendation(s): That Report ENG2021-014, Low Volume Gravel Roads, be received;			
Title: Low Volume Gravel Roads Description: Capital works request Author and Title: Michael Farquhar Supervisor Technical Services, Engineering and Corporate Assets Recommendation(s): That Report ENG2021-014, Low Volume Gravel Roads, be received; Department Head:	Report Number:	ENG2021-014	
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Author and Title: Michael Farquhar Supervisor Technical Services , Engineering and Corporate Assets Recommendation(s): That Report ENG2021-014, Low Volume Gravel Roads, be received; Department Head:	Title:	Low Volume Gravel Roads	
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Chief Administrative Officer:_____

Background:

At the Special Council meeting on December 1,2020, Council adopted the following resolution:

CR2020-397 Moved By Councillor Elmslie Seconded By Councillor Yeo

That Staff be requested to provide a list of small low volume gravel roads, in consultation with Council, and report back to Council by the end of Q2, 2021 on the cost to hard-top the roads identified.

Carried

This report addresses that direction from Council. As part of the background information for this report, previous report information on this subject will be referenced to provide context for gravel road inventory size and costs associated with upgrading of gravel roads to a hard topped surface.

In the previous reports shown below, staff have brought forward this information based on the following Council resolutions.

At the Council Meeting of October 24, 2017, Council adopted the following resolution:

CR2017-933

RESOLVED THAT staff be directed to investigate costing and service implications of revising the traffic volume threshold to warrant hard-topping of gravel roads from an Annual Average Daily Traffic (AADT) level of 400 to an AADT of both 200 or 300 with a report back to Council by end of Q2 2018.

CARRIED

In accordance with this direction, staff brought forward Council Report EA2018-014, attached hereto as Appendix A, on June 19, 2018. The report outlines the cost implications of paving gravel road sections with AADT of 200 or more. The report determined the financial benefit, in the form of reduced operating costs, was outweighed by the increased capital cost associated with paving these gravel road sections.

At the Council Meeting of June 19, 2018, Council adopted the following resolutions:

CR2018-401

That Report EA2018-014, Implications of Lowering the Traffic Volume Threshold for the Paving of Gravel Roads, be received.

CARRIED

CR2018-402

That Report EA2018-014, Implications of Lowering the Traffic Volume
Threshold for the Paving of Gravel Roads, be referred back to staff to the 2019
budget for consideration and staff be directed to develop the criteria for hard surfacing
roads on a go forward basis and to include future possible funding options.

CARRIED

During the formation of the 2019 Tax-Supported Capital Budget, staff addressed this direction by reconsidering the criteria and funding options for upgrading gravel roads to a paved surface. Through this exercise, staff again reasoned to not lower the 400 AADT threshold given the findings of Report EA2018-014 and that the paving of gravel roads is not accommodated within the 5-Year Roads Capital Plan, the Asset Management Plan or the Long-Term Financial Plan. The adopted 2019 Tax-Supported Capital Budget did not have projects within it for upgrading of gravel roads.

Rationale:

Through the context of Council resolution **CR2020-397** this report will review low volume gravel roads in built up areas around towns, villages, hamlets and built up lakefront communities as well as gravel road segments provided by Public Works that are a maintenance draw issue, due to distance away from other gravel roads. This report will provide lengths of these road segments and costs for upgrading them to hard topped roads. It is the intent of this report to provide information on this subject to Council for discussion purposes. If there are any unintentional omissions, these can be identified and addressed based on any further direction by Council.

Within the City of Kawartha Lakes there is a gravel road inventory of approximately 895 kms of gravel road, as shown on Appendix B. Within that network there is approximately 63 kms of gravel roads consider to be in towns, villages, hamlets, or built

up lakefront communities as shown in Appendix C . These gravel road segments are reflected in Appendix D which breaks down the gravel road section into location, length. Estimated AADT volume (annual average daily traffic) and cost to upgrade to a hard topped road section. The estimated cost is based on an averaged per km cost to resurface these roads with a Hi-Float surface as well as preparation for this type of road surface. This total cost as estimated in appendix D is \$6,306,780.

Other Alternatives Considered:

At this time the information provided in this report is only done for discussion purposes for Council. Based on Council review of the information a refined review of individual road segments can be done.

Alignment to Strategic Priorities

This report aligns with the below strategic priorities of the City

1. Good Government

As this report responds back to Council with information to help make decisions on service levels on low volume roads.

Financial/Operation Impacts:

As stated this report is only to provide information for discussion based on the resolution in the background of the report , based on the discussion through this report with Council and any additional direction a further in depth analysis can be done on the financial impact but as stated in report ENG2018-014 as attached in appendix A , any upgrading of the gravel road network would have an effect on the City's capital budget forecasting and asset management plan

Consultations:

Public Works

Report ENG2021-014 Low Volume Gravel Roads Page 5 of 5

Attachments:









Appendix A Report Appendix B CKL Appendix C Appendix D Chart ENG2018-014.pdf Gravel Roads Map.p individual mapped I of Low volume grave

Department Head email:Jrojas@kawarthalakes.ca

Department Head: Juan Rojas Director of Engineering and Corporate Assets

The Corporation of the City of Kawartha Lakes Council Report

Report Number EA2018-014

Date:

June 19th, 2018

Background:

At the Council Meeting of October 24th, 2017, Council adopted the following resolution:

CR2017-933
Moved By Councillor Strangway
Seconded By Councillor Elmslie

RESOLVED THAT staff be directed to investigate costing and service implications of revising the traffic volume threshold to warrant hard-topping of gravel roads from an annual average daily traffic (AADT) level of 400 to an AADT of both 200 or 300 with a report back to Council by end of Q2 2018.

CARRIED

This report addresses that direction.

The implications of lowering the gravel-to-hardtop threshold of 400 AADT (measured in vehicles per day) was previously examined by staff in 2013 through Council report PW2013-015, attached hereto as Appendix A. Based on that examination and budgetary constraints, the report did not recommend lowering the threshold. Through CR2017-933, Council has directed staff to revisit this matter and bring forward the present report to Council.

Rationale:

According to the 2016 Roads Needs Study, the City has an inventory of approximately 895Km of assumed gravel road, of which an estimated 52Km have AADT of 200 or larger. The inventory of gravel roads making up this latter figure is summarized in Appendix B attached hereto. In terms of the service level categories underlying the 10-Year Gravel Resurfacing Plan, this inventory is distributed as follows:

- 1. 200 ≤ AADT < 300: 40.85Km
- 2. 300 ≤ AADT < 400: 9.20Km
- 3. 400 ≤ AADT: 1.76Km

Hereinafter, this inventory is referred to as "high-volume gravel roads". Due to general growth in traffic volume, the quantity of high-volume gravel roads has increased by about 4.0Km between 2011 and 2016. Also owing to such growth, about 1.76Km of gravel road now surpasses the 400 AADT warrant threshold for paving. Still, high-volume gravel roads represent less than 6% of the total of 895Km of gravel road assumed by the City.

For the purpose of this report, the term "paving" refers to the upgrading a gravel road to a hardtop surface through the application of surface treatment (aka tar and chip). As discussed at length in Report PW2013-015, a natural tradeoff exists respecting the paving of a gravel road. On the one hand paving provides for an enhanced service level and decreased operating costs, while on the other it entails increased lifecycle (capital + operating) costs primarily due to the relatively large upfront capital investment required.

While operational efficiencies arise from the paving of a gravel road, this benefit, at current lifecycle cost trends and service levels, is more than offset by the increased capital costs associated with surface treatment. This holds even in the case of high-volume gravel roads, which are on an enhanced gravel resurfacing cycle (5-8 years instead of the standard 10 years).

Hence, the increased service level conferred by paving a gravel road must be weighed against the associated increased lifecycle cost. At the centre of this report is the 400 AADT mark the City has fixed for the purpose of this weighing of benefits and costs. That is, a gravel road is considered a candidate for paving once its traffic volume reaches at least 400 AADT.

- m. v. v.	1	Capital	10 2 51 3irl 1 2	Oper	ating	avitatinatic	
Traffic Volume Range	Length (Km)	Gravel Resurfacing	Calcium Chloride	Grading	Winter Control	Other Maintenance	Total
200 ≤ AADT < 300	40.850	1,413,640	964,994	793,557	2,360,921	2,368,389	7,901,501
300 ≤ AADT < 400	9.201	447,135	217,356	178,742	531,777	533,459	1,908,469
400 ≤ AADT	1.758	90,675	41,529	34,152	101,605	101,926	369,886
Total	51.809	1,951,450	1,223,879	1,006,451	2,994,302	3,003,774	10,179,856

Traffic Volume Length (Km)		Capital		Ope			
	Double Surface Treatment	Single Surface Treatment	Pulverization	Winter Control	Other Maintenance	Total	
200 ≤ AADT < 300	40.850	3,952,374	902,454	306,494	2,360,921	2,157,764	9,680,008
300 ≤ AADT < 400	9.201	890,238	203,270	69,035	531,777	486,018	2,180,337
400 ≤ AADT	1.758	170,094	38,838	13,190	101,605	92,862	416,589
Total	51.809	5,012,706	1,144,562	388,719	2,994,302	2,736,643	12,276,933

Traffic Volume Range	Length (Km)	Capital	Operating	Total
200 ≤ AADT < 300	40.850	3,747,682	-1,969,175	1,778,507
300 ≤ AADT < 400	9.201	715,408	-443,540	271,868
400 ≤ AADT	1.758	131,448	-84,745	46,702
Total	51.809	4,594,538	-2,497,460	2,097,077

Based on current service levels, maintenance practices and various recent data (e.g. tender prices, Financial Information Return reports etc.), Tables 1-3 summarize lifecycle cost projections for high-volume gravel roads depending on whether they remain with a gravel surface or are paved. To provide for comparability between gravel and hardtop road surfaces, the tables align with the 15-year lifecycle expected of a hardtop road surface whereby paving is set to occur in 2019. For simplicity, cost figures in the tables are normalized to 2019 dollars, based on an assumed inflation rate of 2%/year, and have not been discounted to present value.

Double surface treatment of high-volume gravel roads is estimated to cost about \$5.0M if done in 2019. This does not include future capital costs associated with single surface treatment (a capital intervention typically in year 8 to maintain the 15-year lifecycle) and eventual pulverization of the hardtop road surface at the end of its lifecycle. Table 3 projects incremental lifecycle costs by cost type, indicating renewal and operation of high-volume gravel roads, if paved, would cost an estimated \$2.1M more over the 15-year horizon.

Other Alternatives Considered:

As staff is not recommending a change to the 400 AADT threshold, no alternatives to Council's receiving this report are being considered or proposed by staff at this time. Should Council nonetheless resolve to lower this threshold, staff suggests direction of the following form, where "X" stands for the new desired threshold, be added to the resolution of the present report:

"That proposed capital budgets identify for upgrade to a hardtop surface only those gravel roads for which the annual average daily traffic (AADT) is at least "X" vehicles per day; and

That updates to the 5-Year Roads Capital Plan, 10-Year Gravel Resurfacing Plan, Asset Management Plan and Long-Term Financial Plan reflect this enhanced level of service."

Financial/Operation Impacts:

Council's receiving this report has no financial impact. However, should Council elect to lower the 400 AADT threshold, the expected resulting financial impacts are those indicated by Tables 1-3 herein.

Relationship of Recommendation(s) To The 2016-2019 Strategic Plan:

N/A

Consultations:

Supervisor of Technical Services

Attachments:

Appendix A: Report PW2013-015



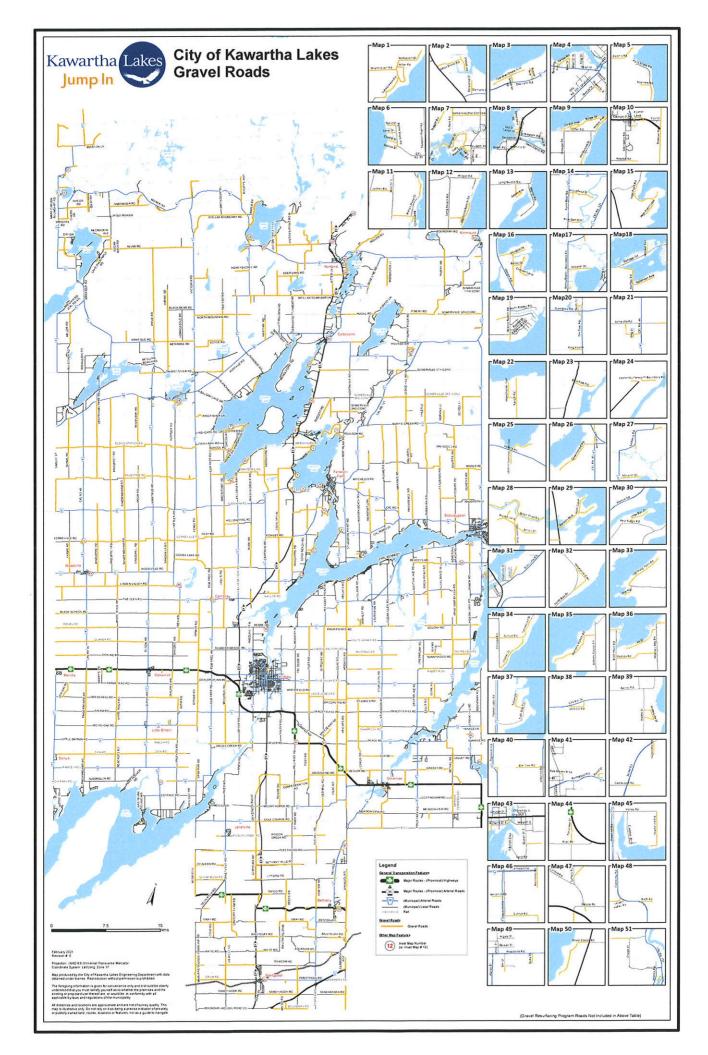
Appendix B: Inventory of High-Volume Gravel Roads



Department Head E-Mail: <u>jrojas@kawarthalakes.ca</u>

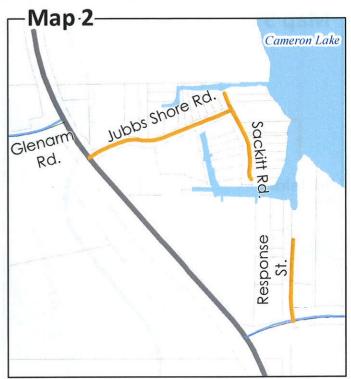
Department Head: Juan Rojas, Director of Engineering and Corporate

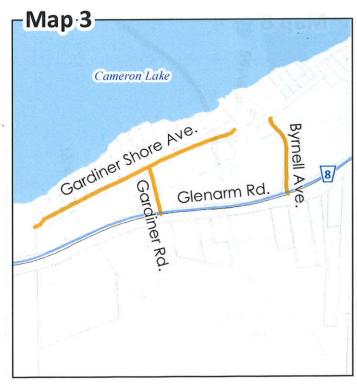
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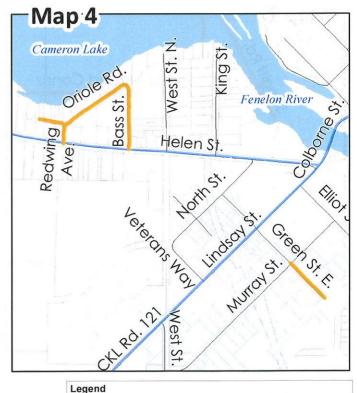












Major Routes - (Provincial) Highways

Major Routes - (Provincial) Arterial Roads

(Municipal) Arterial Roads

(Municipal) Local Roads

General Transporation Features

Gravel Roads

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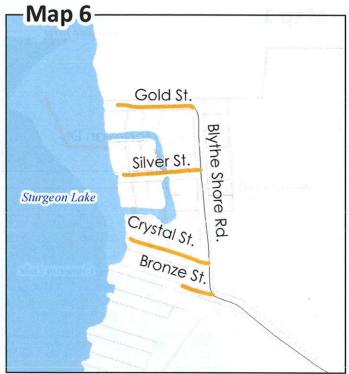
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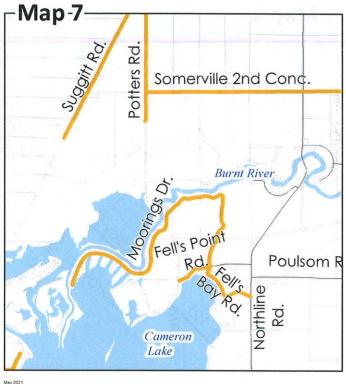
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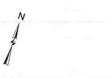








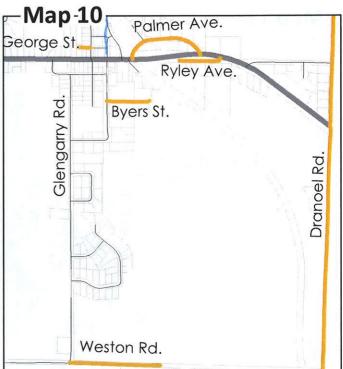
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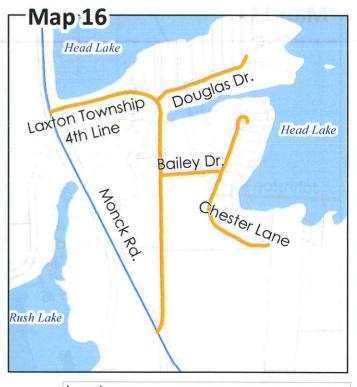












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(Individual maps derived from Gravel Roads map published February 2021)

 Legend

 General Transporalton Features
 Gravel Roads

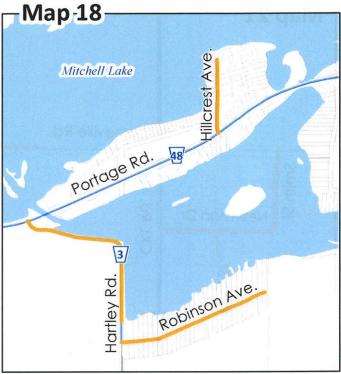
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 Gravel Roads

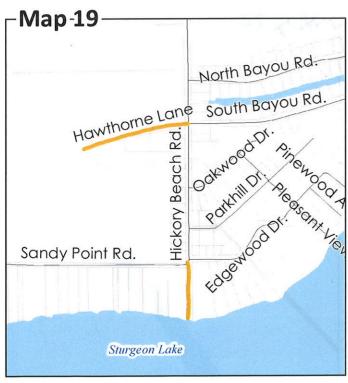
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 (Municipal) Arterial Roads
 Major Routes - (Municipal) Arterial Roads











May 2021 Revision #: 0

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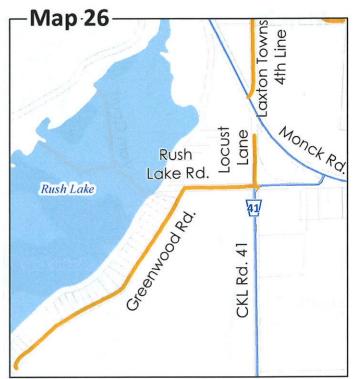
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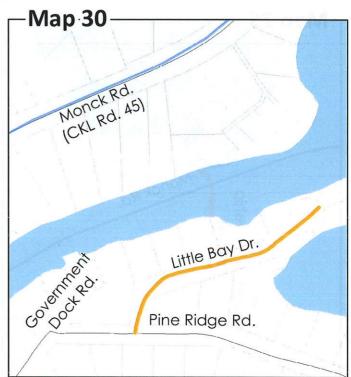
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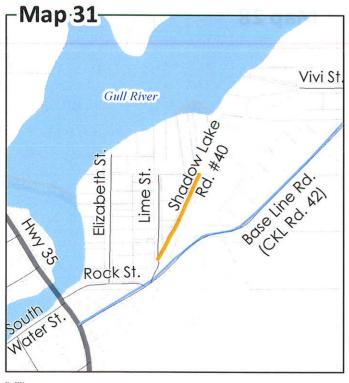
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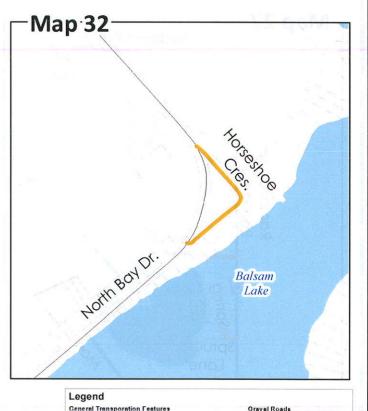












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(Municipal) Arterial Roads

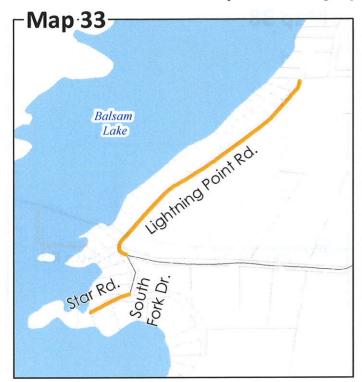
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Gravel Roads

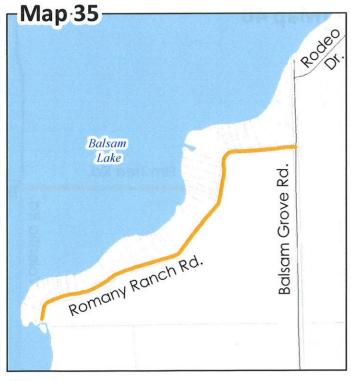
Gravel Roads

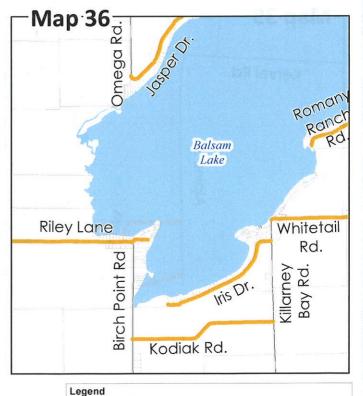












Major Routes - (Provincial) Highways

Major Routes - (Provincial) Arterial Roads

(Municipal) Arterial Roads

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Gravel Roads

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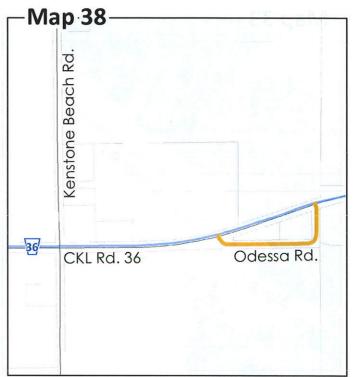
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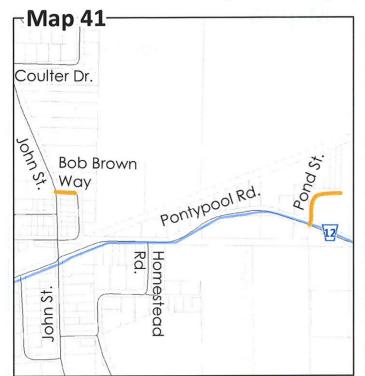
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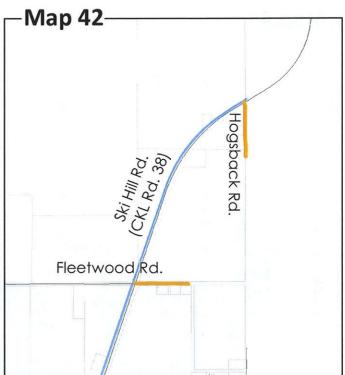
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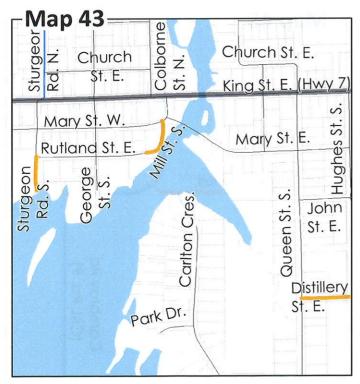


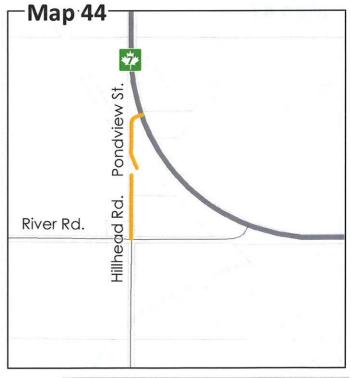












Major Routes - (Provincial) Highways

Major Routes - (Provincial) Arterial Roads

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General Transporation Features

Gravel Roads

Gravel Roads

May 2021 Revision # 0

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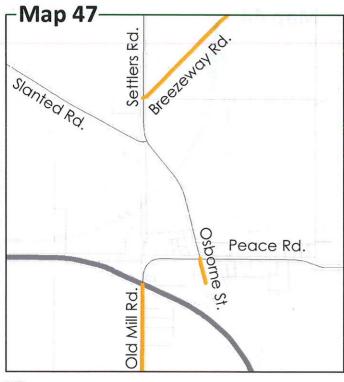


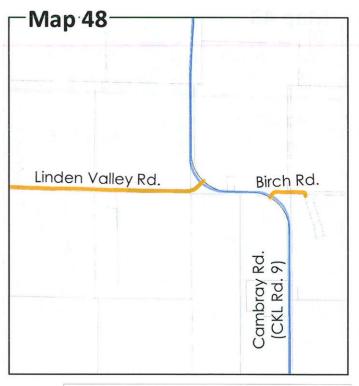
Individual maps derived from Gravel Roads









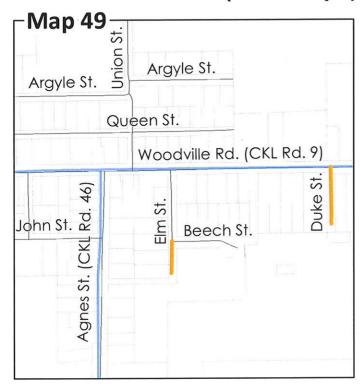


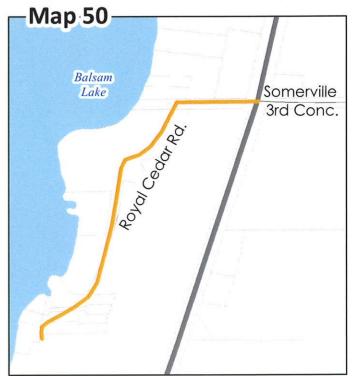
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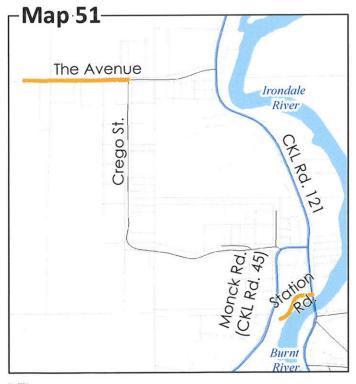
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(Individual maps derived from Gravel Roads

Legend			
General Trans	poration Features	Gravel Roads	
	Major Routes - (Provincial) Highways		Gravel Roads
_ 35	Major Routes - (Provincial) Arterial Roads		
	(Municipal) Arterial Roads		
	(Municipal) Local Roads		

Chart of low volume roads with costs for upgrading to a hardtop Road

Name of the second seco	FIGURE PLANTS OF THE				
Road Name	From	То	Length (km)	Adjusted AADT	Estimated Cost to upgrade to Hardtop
Amon Dr.	Chisholm Trail	East End	0.416	28	\$41,600.00
Bailey Dr.	Chester Lane	East End	0.201	28	\$20,100.00
Bailey Dr.	The state of the	Chester Lane	0.174	28	\$17,400.00
Bass St.	K.L. Rd. 8 (Fenelon/Verulam)	Oriole Rd.	0.201	44	\$20,100.00
Bayview Rd. (Fenelon)	Highway #35	South End	0.575	27	\$57,500.00
Belvedere Rd.	Bridge St.	North End	0.129	44	\$12,900.00
Benson Blvd. (Laxton)	Vern Court	East End	0.248	55	\$24,800.00
Benson Blvd. (Laxton)	Highway #35	Vern Court	0.378	55	\$37,800.00
Berry Lane	Ranch Rd. (Verulam)	Manchester Trail	0.084	33	\$8,400.00
Birch Lane (Dalton)	Brooks Lane (Dalton)	North End	0.171	11	\$17,100.00
Birch Rd. (Mariposa)	Cambray Rd.	East End	0.257	11	\$25,700.00
Boundary Rd. (Emily)	Yankee Line	South End	0.564	11	\$56,400.00
Breezeway Rd.	Settlers Rd.	East End	1.1	6	\$110,000.00
Bronze St.	Blythe Shore Rd.	West End	0.06	6	\$6,000.00
Brooks Lane (Dalton)	Chisholm Trail	Birch Lane (Dalton)	0.193	22	\$19,300.00
Brooks Lane (Dalton)	Birch Lane (Dalton)	West End	0.157	22	\$15,700.00
Byrnell Ave.	K.L. Rd. 8 (Fenelon/Verulam)	Grove Rd.	0.187	44	\$18,700.00
Cedar Ave. (Bexley)	West End	Bona Vista Dr.	0.213	33	\$21,300.00
Cedar Ave. (Bexley)	Bona Vista Dr.	Ridge Dr. (Bexley)	0.482	33	\$48,200.00
Chester Lane	Bailey Dr.	South End	0.33	22	\$33,000.00
Chisholm Trail	Brooks Lane (Dalton)	Black River Rd. (Dalton)	0.216	110	\$21,600.00
Chisholm Trail	Eldridge Lane	Amon Dr.	4.282	111	\$428,200.00

Coldstream Rd.	Bridge St.	West End	0.115	44	\$11,500.00
Coronation Dr.	Woodfield Dr. (Somerville)	South End	0.161	6	\$16,100.00
Crystal St.	Blythe Shore Rd.	West End	0.156	11	\$15,600.00
Daytonia Beach Rd.	Pleasure St.	North End	0.719	209	\$71,900.00
Daytonia Beach Rd.	Long Beach Rd.	Pleasure St.	0.456	209	\$45,600.00
Distillery St. E.	Queen St. S. (Omemee)	East End	0.278	11	\$27,800.00
Douglas Dr.	Laxton Township 4th Line	East End	0.301	33	\$30,100.00
Duke St. (Woodville)	King St. (Woodville)	South End	0.1	17	\$10,000.00
Dwinnell Lane	Sadowa Rd.	South End	0.227	17	\$22,700.00
Elliot Falls Rd.	Highway #35	East End	0.259	22	\$25,900.00
Elm St. (Woodville)	Beech St. (Woodville)	South End	0.057	78	\$5,700.00
Elm Tree Rd.	West End	Valentia Rd.	0.986	61	\$98,600.00
Fell's Bay Rd.	Northline Rd.	Fell's Point Rd.	0.77	33	\$77,000.00
Fell's Point Rd.	Moorings Dr.	West End	0.432	61	\$43,200.00
Fulton Dr.	Fall's Bay Rd.	North End	0.336	22	\$33,600.00
Fur Court	Woodfield Dr. (Somerville)	North End	0.083	11	\$8,300.00
Gardiner Rd. (Fenelon)	K.L. Rd. 8 (Fenelon/Verulam)	Gardiner Shore Ave. (Fenelon)	0.113	44	\$11,300.00
Gardiner Shore Ave. (Fenelon)	West End	Gardiner Rd. (Fenelon)	0.299	33	\$29,900.00
Gardiner Shore Ave. (Fenelon)	Gardiner Rd. (Fenelon)	East End	0.217	33	\$21,700.00
George St. (Manvers)	West End	Wilson St. (Manvers)	0.061	g 211 v	\$6,100.00
Glenvale Dr.	Pleasure St.	South End	0.211	22	\$21,100.00
Gold St.	Blythe Shore Rd.	West End	0.145	6	\$14,500.00
Green St. E.	Murray St. (Fenelon Falls)	East End	0.153	22	\$15,300.00

Greenwood Rd. (Laxton)	Rush Lake Rd.	South End	0.842	78	\$84,200.00
Hardwood St.	School Rd. (Fenelon)	0.3 Km North of School Rd. (Fenelon)	0.3	22	\$30,000.00
Hardwood St.	0.3 Km North of School Rd. (Fenelon)	1.2 Km South of Otter Rd. (Bexley/Fenelon)	0.352	22	\$35,200.00
Hartley Rd.	0.1 Km North of Robinson Ave.	Portage Rd.	0.807	232	\$80,700.00
Hawthorne Lane	Hickory Beach Rd.	West End	0.336	11	\$33,600.00
Heron St.	Jones Ave.	Jones Ave.	0.106	22	\$10,600.00
Hickory Beach Rd.	South End	Sandy Point Rd.	0.174	67	\$17,400.00
High Point Lane	High Point Rd.	South End	0.25	17	\$25,000.00
High Point Rd.	Shadow Lake Rd. # 3	High Point Lane	0.418	28	\$41,800.00
High Point Rd.	High Point Lane	North End	0.11	28	\$11,000.00
Hillcrest Ave.	Portage Rd.	North End	0.339	67	\$33,900.00
Hillhead Rd.	River Rd. (Manvers/Ops)	North End	0.2	17	\$20,000.00
Horseshoe Cres.	North Bay Dr.	North Bay Dr.	0.373	22	\$37,300.00
Iris Dr.	Killarney Bay Rd.	West End	1.2	33	\$120,000.00
Jasper Dr.	Omega Rd.	School Rd. (Fenelon)	1.334	44	\$133,400.00
Jenkins Rd.	K.L. Rd. 121 (Fenelon/Somerville/Verul am)	West St. S. (Fenelon/Fenelon Falls)	0.601	89	\$60,100.00
Jones Ave.	Heron St.	Heron St.	0.202	44	\$20,200.00
Jones Ave.	Long Beach Rd.	Heron St.	0.148	44	\$14,800.00
Jubbs Shore Rd.	Highway #35	Sackitt Rd.	0.346	44	\$34,600.00
King St. (Eldon)	Newman Dr. (Eldon)	South End	0.051	11	\$5,100.00
King's Lane (Fenelon)	Elm Tree Rd.	West End	0.393	22	\$39,300.00
Kodiak Rd.	Birch Point Rd (Fenelon)	Killarney Bay Rd.	1.356	72	\$135,600.00
Lakebreeze Rd. (Fenelon)	Wrenhaven Rd.	0.6 Km South of Wrenhaven Rd.	0.601	44	\$60,100.00