

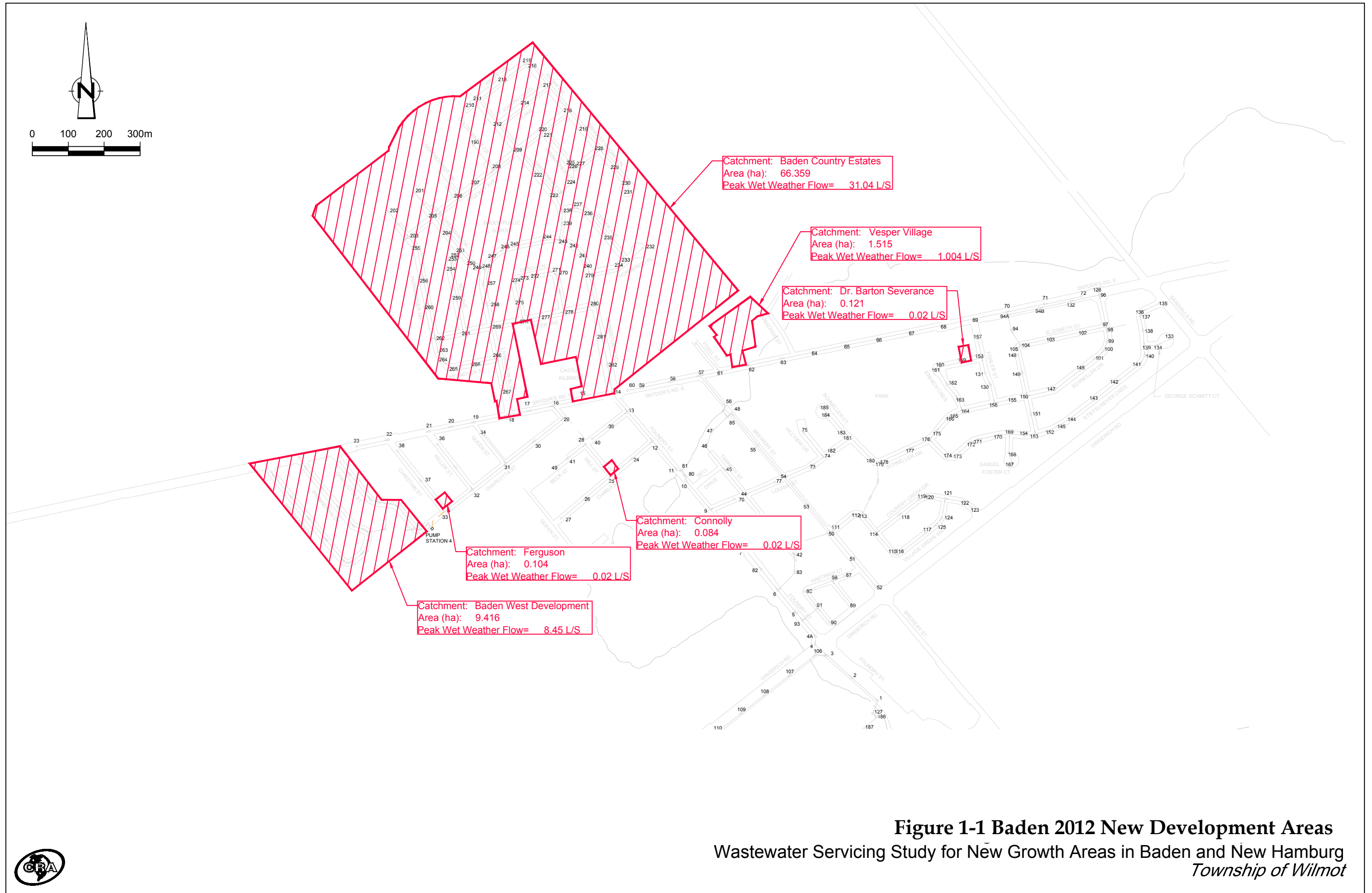
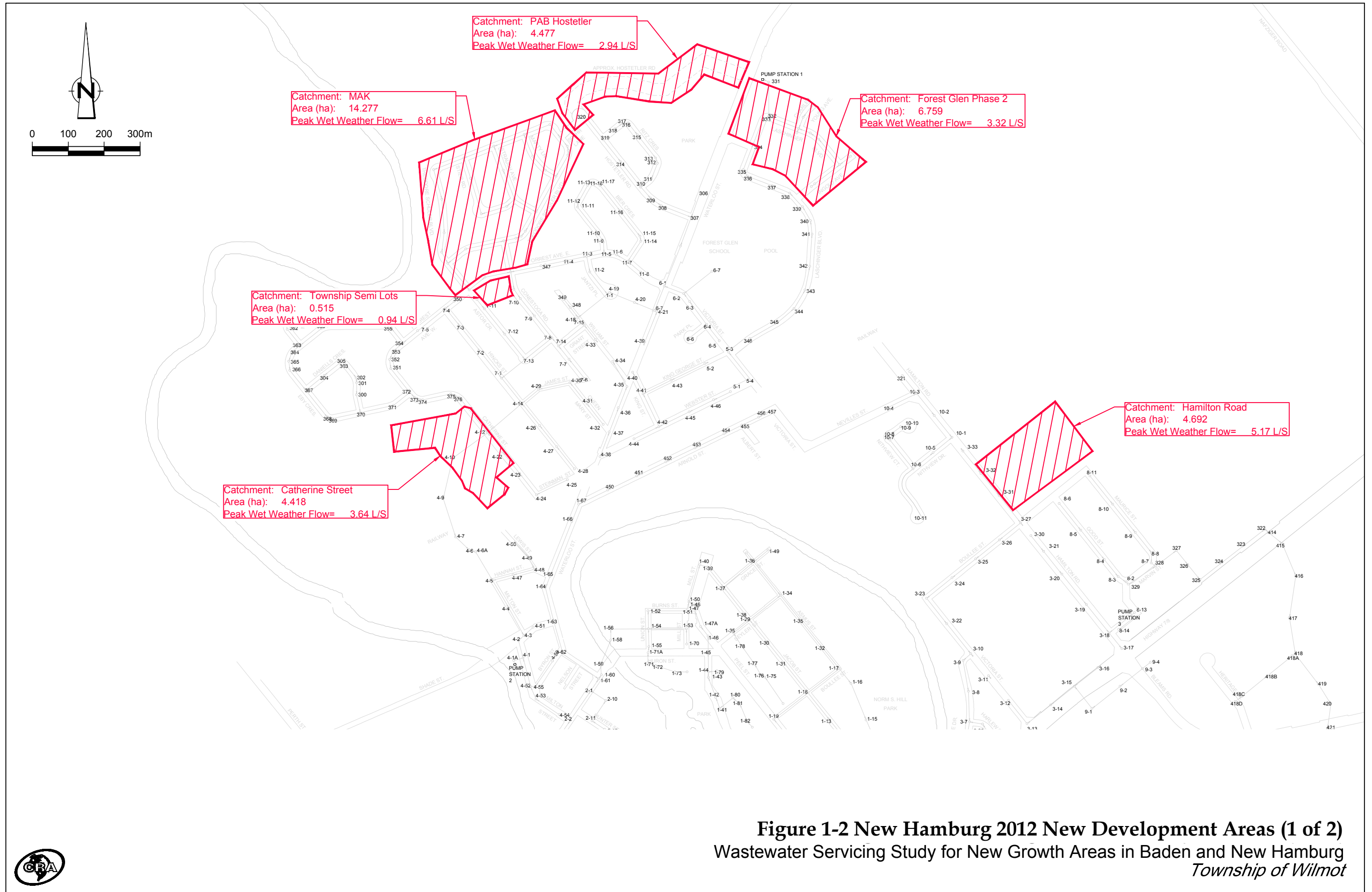


Figure 1-1 Baden 2012 New Development Areas
Wastewater Servicing Study for New Growth Areas in Baden and New Hamburg
Township of Wilmot





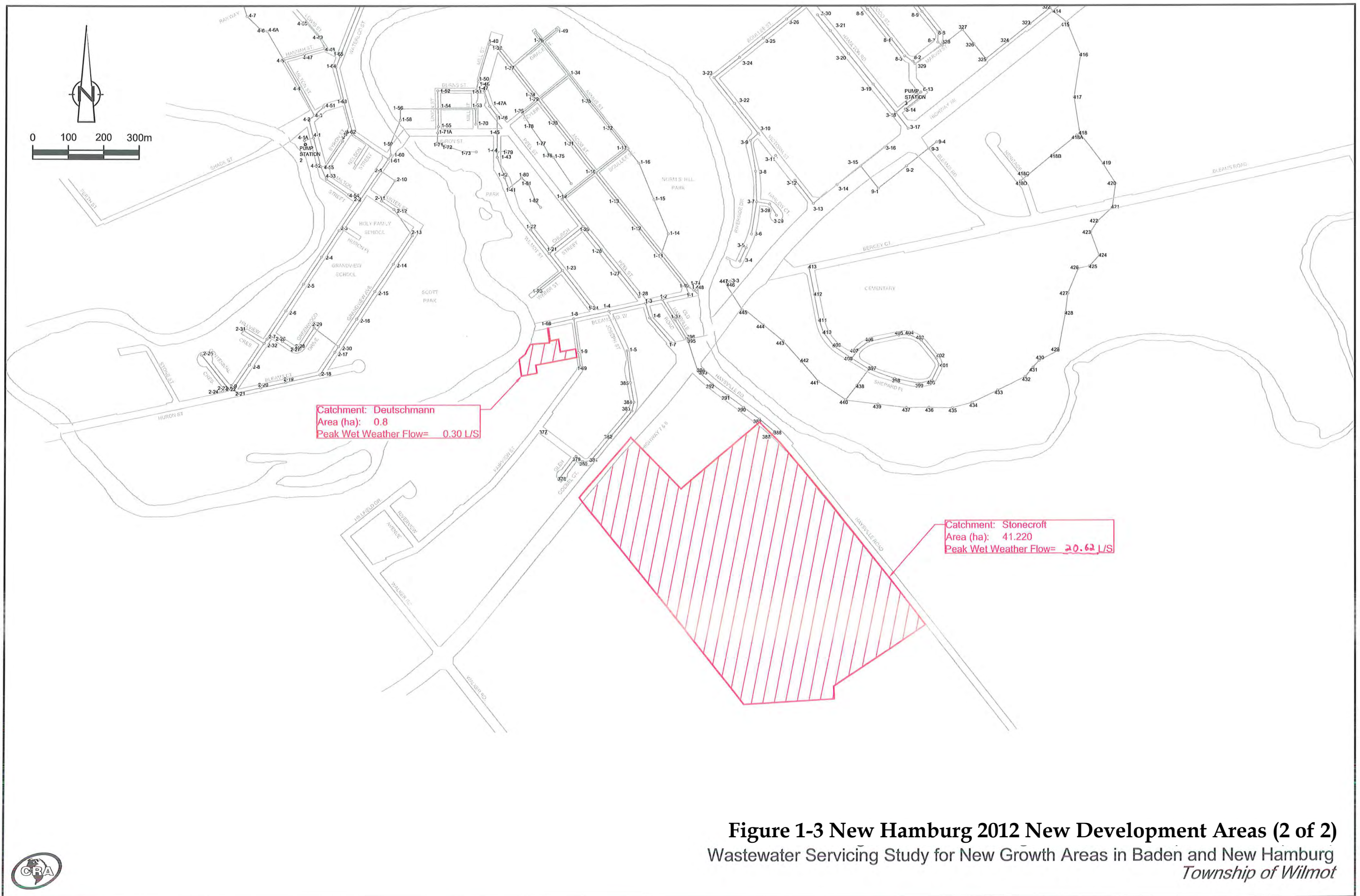


Figure 1-3 New Hamburg 2012 New Development Areas (2 of 2)
Wastewater Servicing Study for New Growth Areas in Baden and New Hamburg
Township of Wilmot



HGL

Links

2
Q=0.031 m³/s
L=83.4 m
D=0.3 m
S=0.003 m/m

C-16
Q=0.051 m³/s
L=172.82 m
D=0.25 m
S=0.0066 m/m

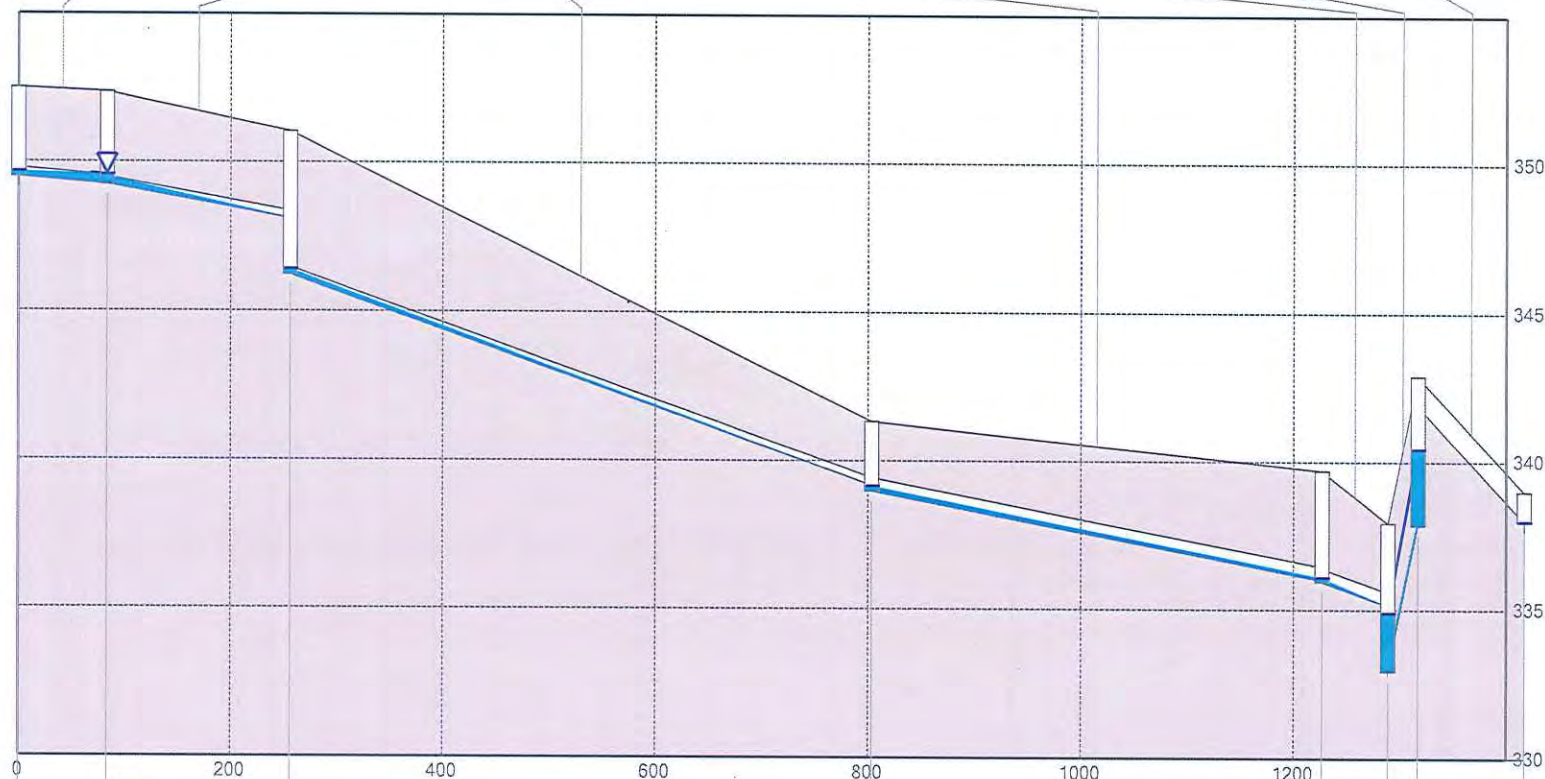
C-17
Q=0.055 m³/s
L=547.28 m
D=0.25 m
S=0.0129 m/m

C-20
Q=0.074 m³/s
L=423.3 m
D=0.45 m
S=0.00704 m/m

1
Q=0.074 m³/s
L=61.97 m
D=0.45 m
S=0.0129 m/m

P0511
Q=0.047 m³/s

BADEN_PS_OVERFLOW
Q=0 m³/s
L=100 m
D=1 m
S=0.0389 m/m



282
M=349.656 m
R=352.49 m
l=349.49 m
07/11/2008 11:15AM

14
M=349.563 m
R=352.357 m
l=349.24 m
07/11/2008 12:00PM

12
M=346.393 m
R=351.028 m
l=346.22 m
07/11/2008 12:00PM

6
M=339.152 m
R=341.319 m
l=338.98 m
07/11/2008 12:00PM

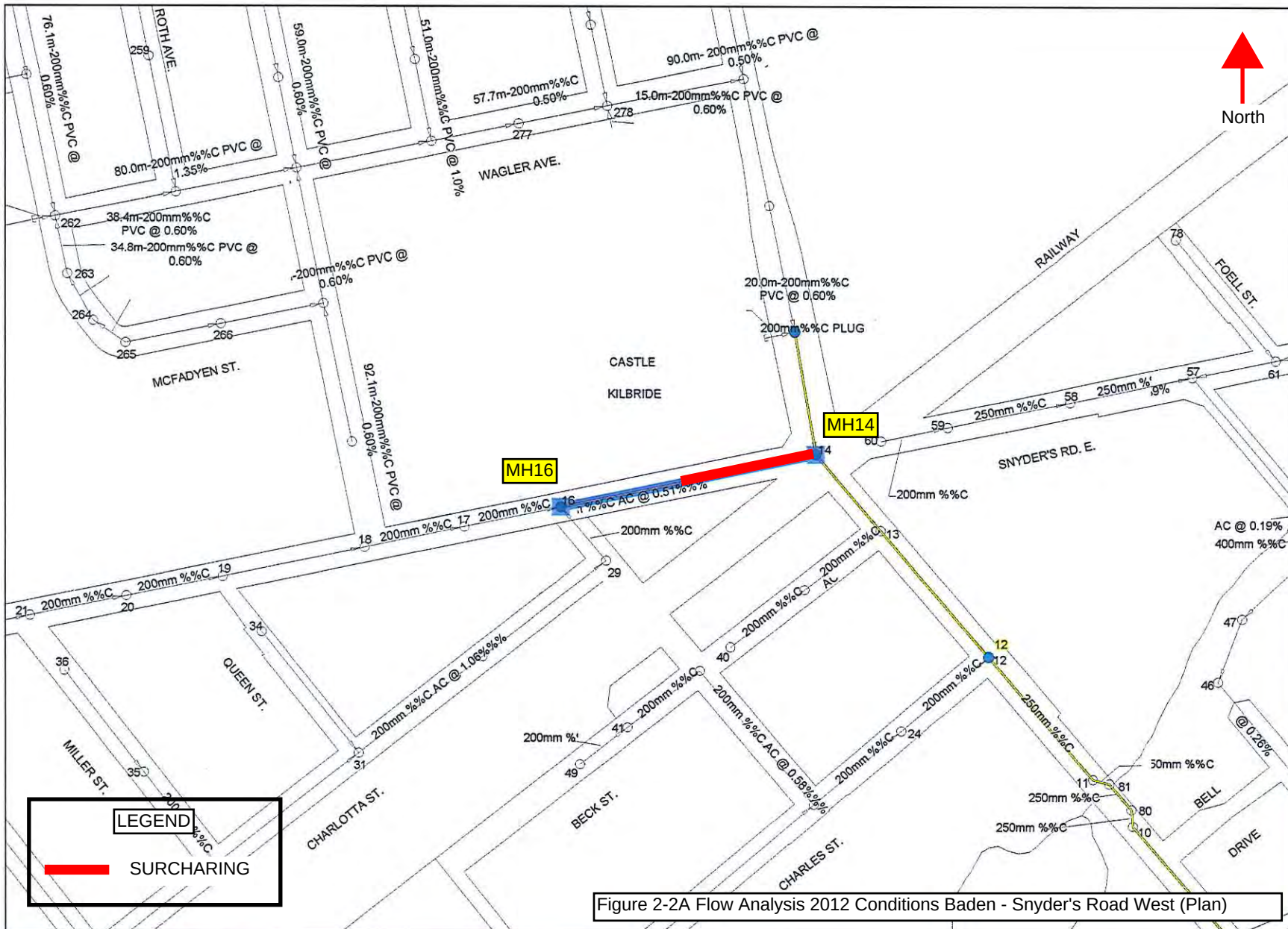
1
M=336.097 m
R=339.697 m
l=335.95 m
07/11/2008 12:00PM

BADEN_PS_WW
M=334.892 m
R=337.944 m
l=332.944 m
07/11/2008 05:45PM

BADEN_PS_EQB
M=340.426 m
R=342.89 m
l=337.871 m
07/11/2008 06:00PM

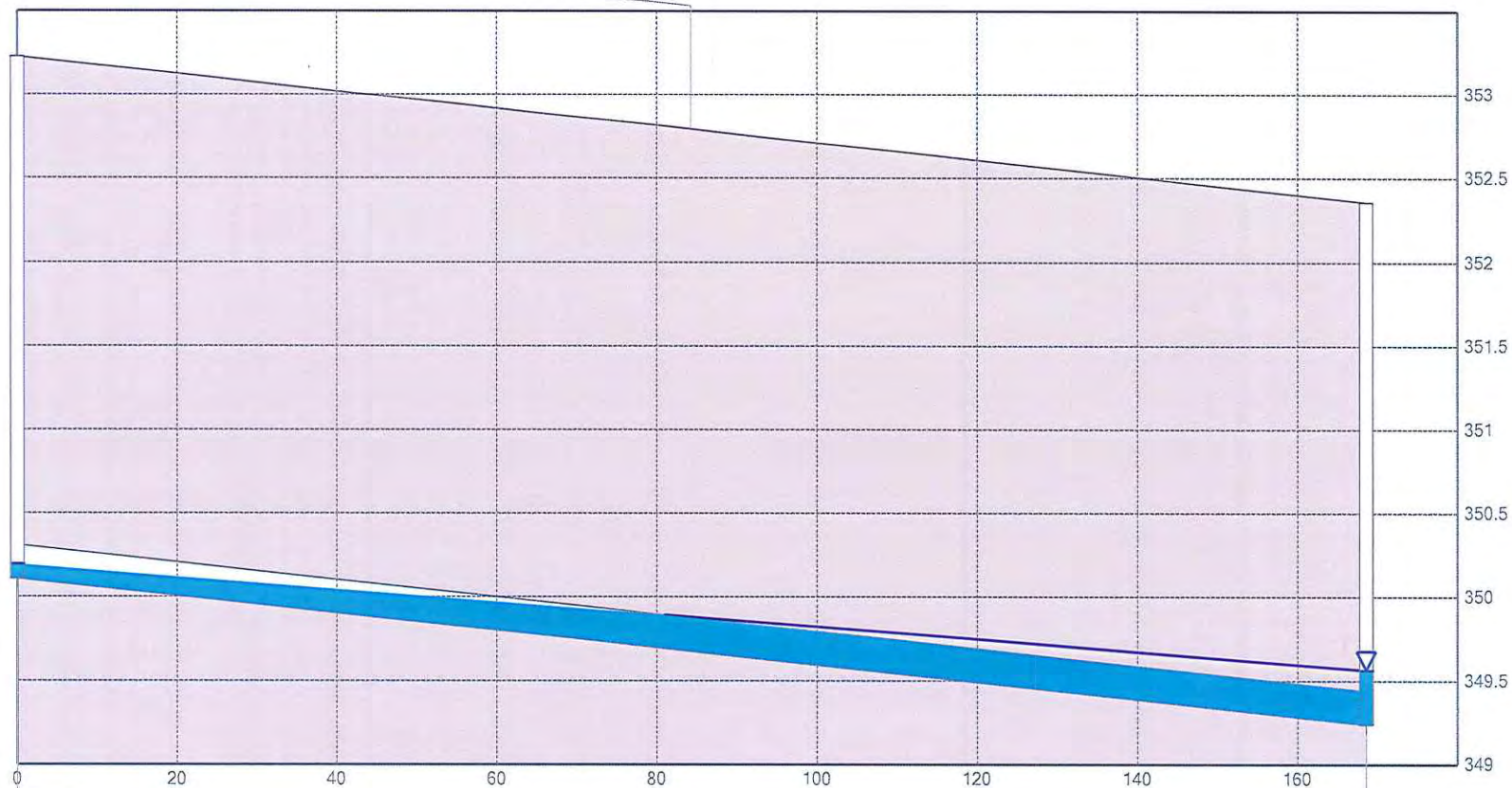
BADEN_OVERFLOW
M=338 m
R=338 m
l=338 m
12/01/2007 12:15AM

Figure 2-1B Flow Analysis 2012 Conditions Baden - Foundry Street (Profile)



— HGL

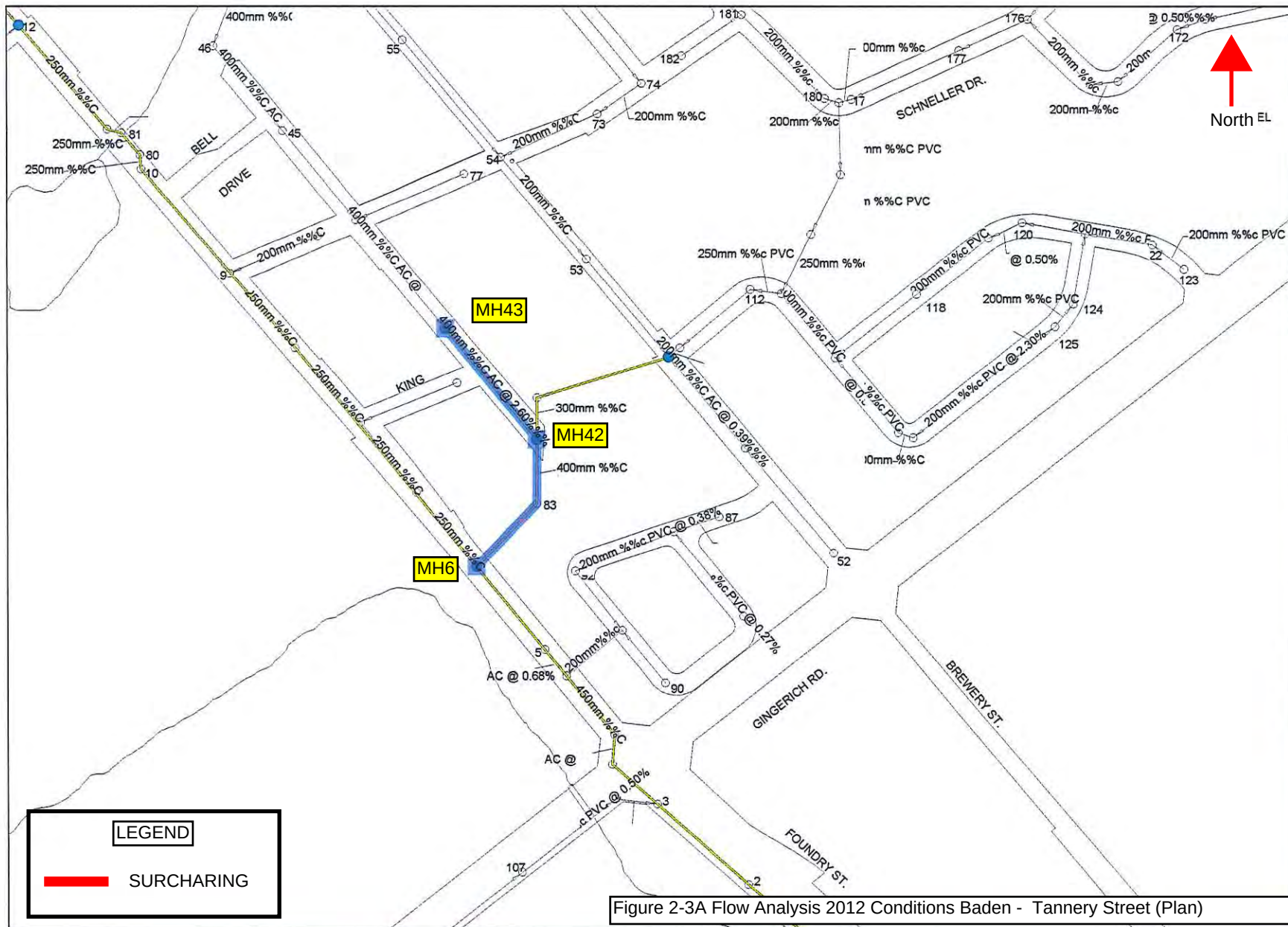
Conduit 15
Flow = 0.009 m³/s
Length = 168.58 m
Depth = 0.2 m
Slope = 0.00515 m/m



16
Max. CWSEL = 350.192 m
Rim Elev. = 353.225 m
Invert Elev. = 350.108 m
07/11/2008 12:15PM

14
Max. CWSEL = 349.563 m
Rim Elev. = 352.357 m
Invert Elev. = 349.24 m

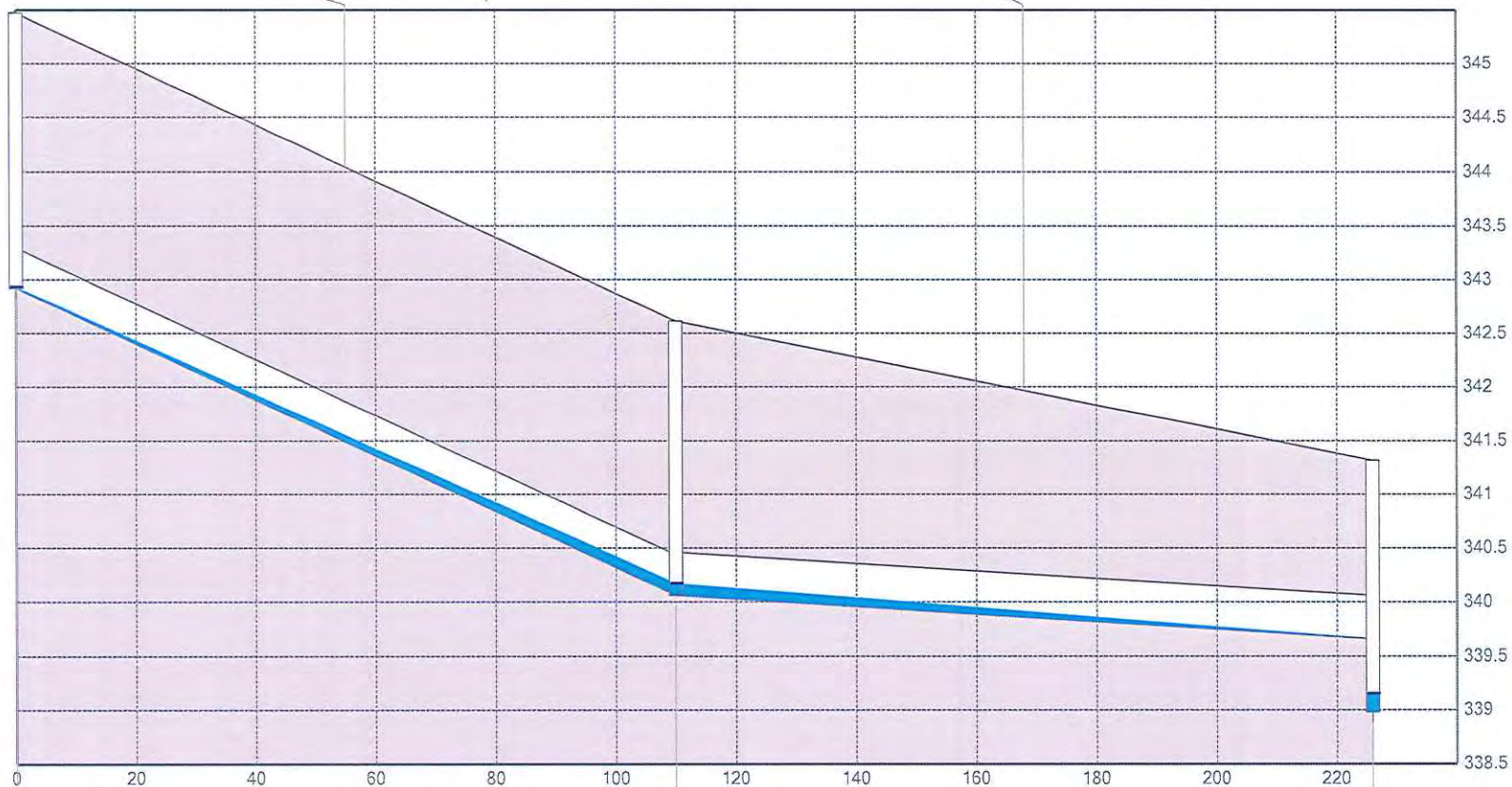
Figure 2-2B Flow Analysis 2012 Conditions Baden - Snyder's Road West (Profile)



— HGL

Conduit 14
Flow = $0.001 \text{ m}^3/\text{s}$
Length = 109.95 m
Depth = 0.375 m
Slope = 0.026 m/m

Conduit C-19
Flow = $0.019 \text{ m}^3/\text{s}$
Length = 116 m
Depth = 0.4 m
Slope = 0.00345 m/m



43

Max. CWSEL = 342.933 m
Rim Elev. = 345.474 m
Invert Elev. = 342.92 m
07/11/2008 11:15AM

42

Max. CWSEL = 340.171 m
Rim Elev. = 342.614 m
Invert Elev. = 340.06 m
07/11/2008 11:20AM

6

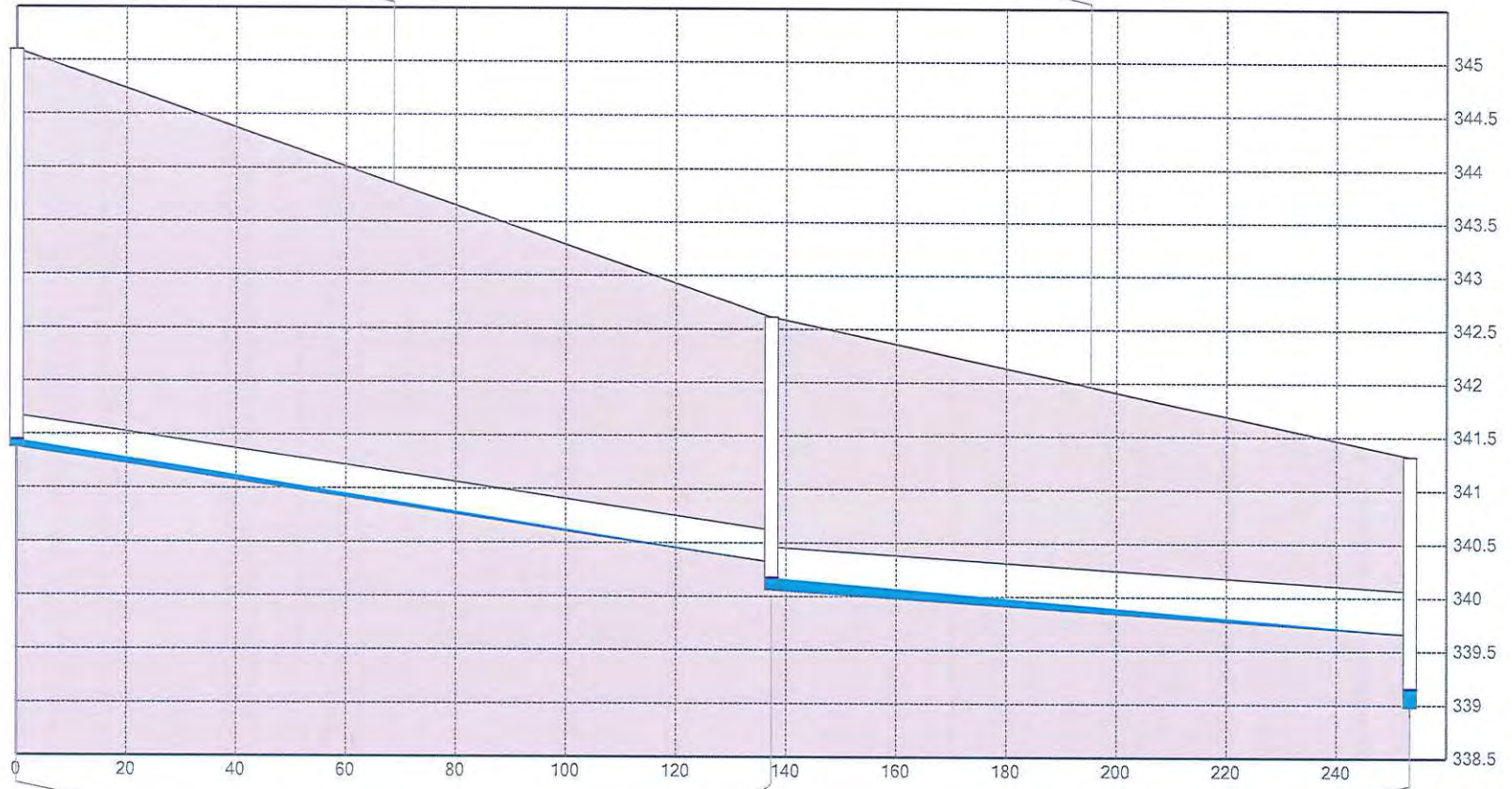
Max. CWSEL = 339.152 m
Rim Elev. = 341.319 m
Invert Elev. = 338.98 m
07/11/2008 12:00PM

Figure 2-3B Flow Analysis 2012 Conditions Baden - Tannery Street (Profile)

— HGL

Conduit C-18
Flow = 0.009 m³/s
Length = 137.34 m
Depth = 0.3 m
Slope = 0.00772 m/m

Conduit C-19
Flow = 0.019 m³/s
Length = 116 m
Depth = 0.4 m
Slope = 0.00345 m/m

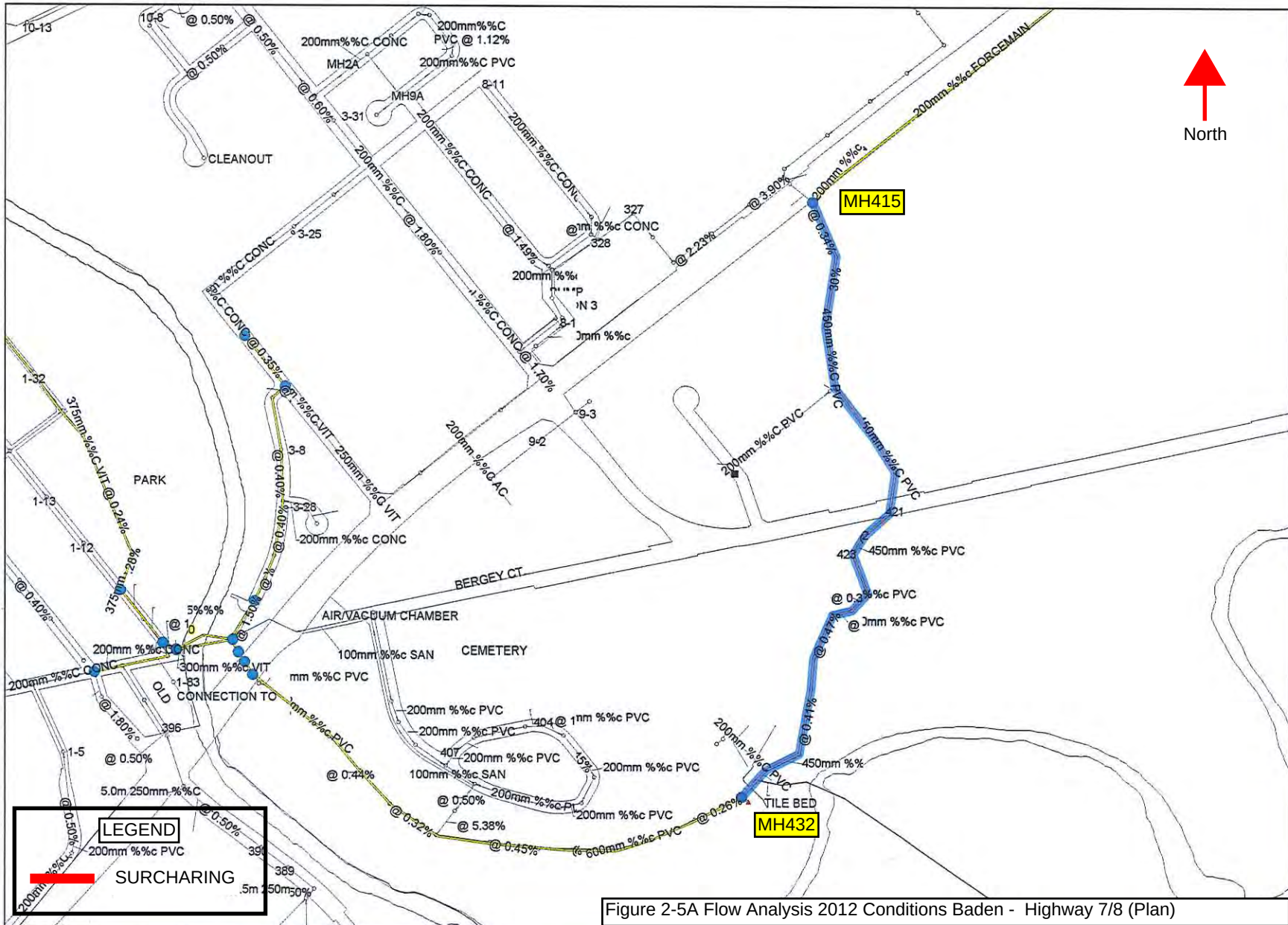


50
Max. CWSEL = 341.444 m
Rim Elev. = 345.099 m
Invert Elev. = 341.38 m
07/11/2008 12:15PM

42
Max. CWSEL = 340.171 m
Rim Elev. = 342.614 m
Invert Elev. = 340.06 m

6
Max. CWSEL = 339.152 m
Rim Elev. = 341.319 m
Invert Elev. = 338.98 m

Figure 2-4B Flow Analysis 2012 Conditions Baden - Village Green Way (Profile)



— HGL

Conduit C-22
Flow = $0.026 \text{ m}^3/\text{s}$
Length = 1148.94 m
Depth = 0.45 m
Slope = 0.00442 m/m

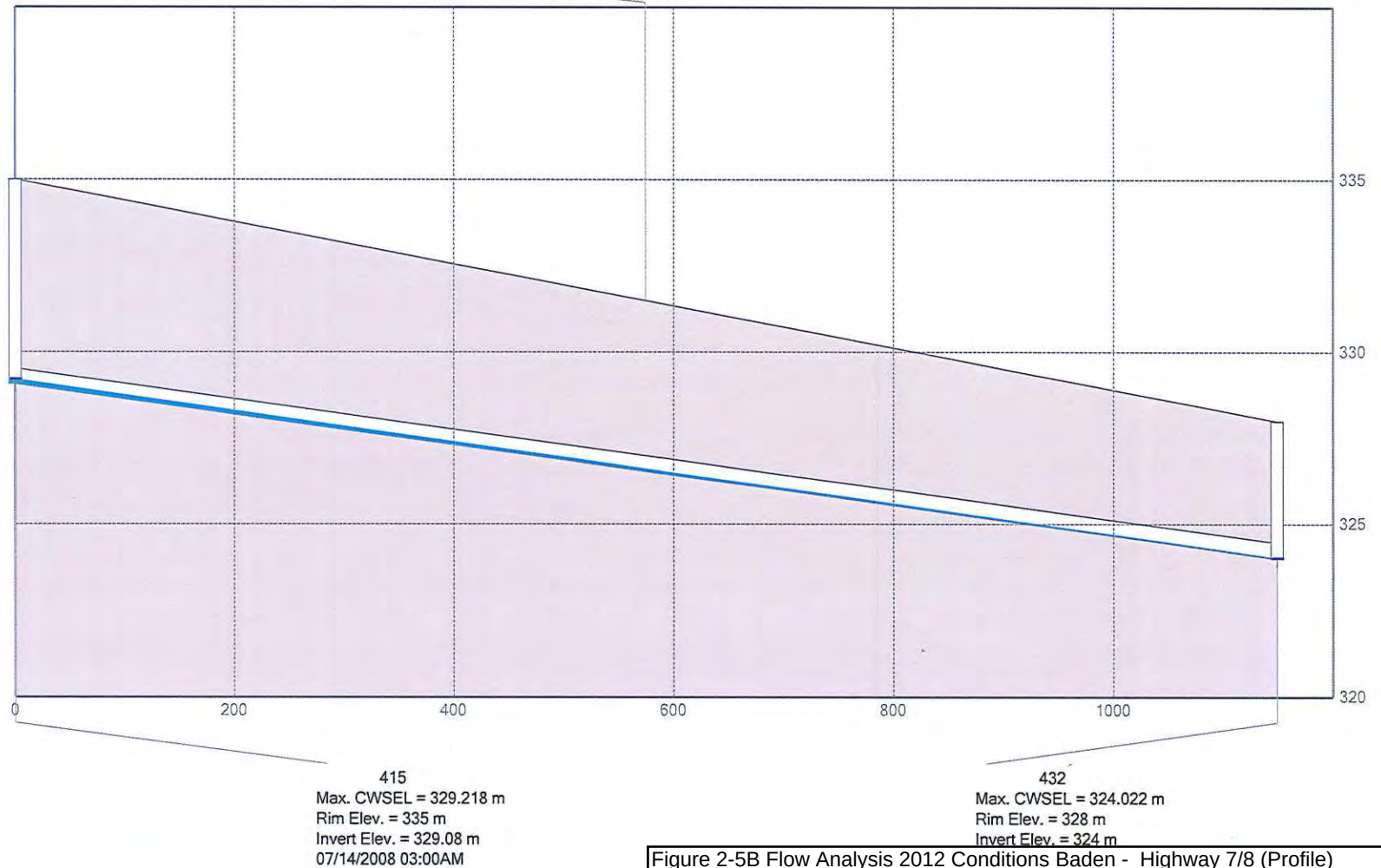


Figure 2-5B Flow Analysis 2012 Conditions Baden - Highway 7/8 (Profile)

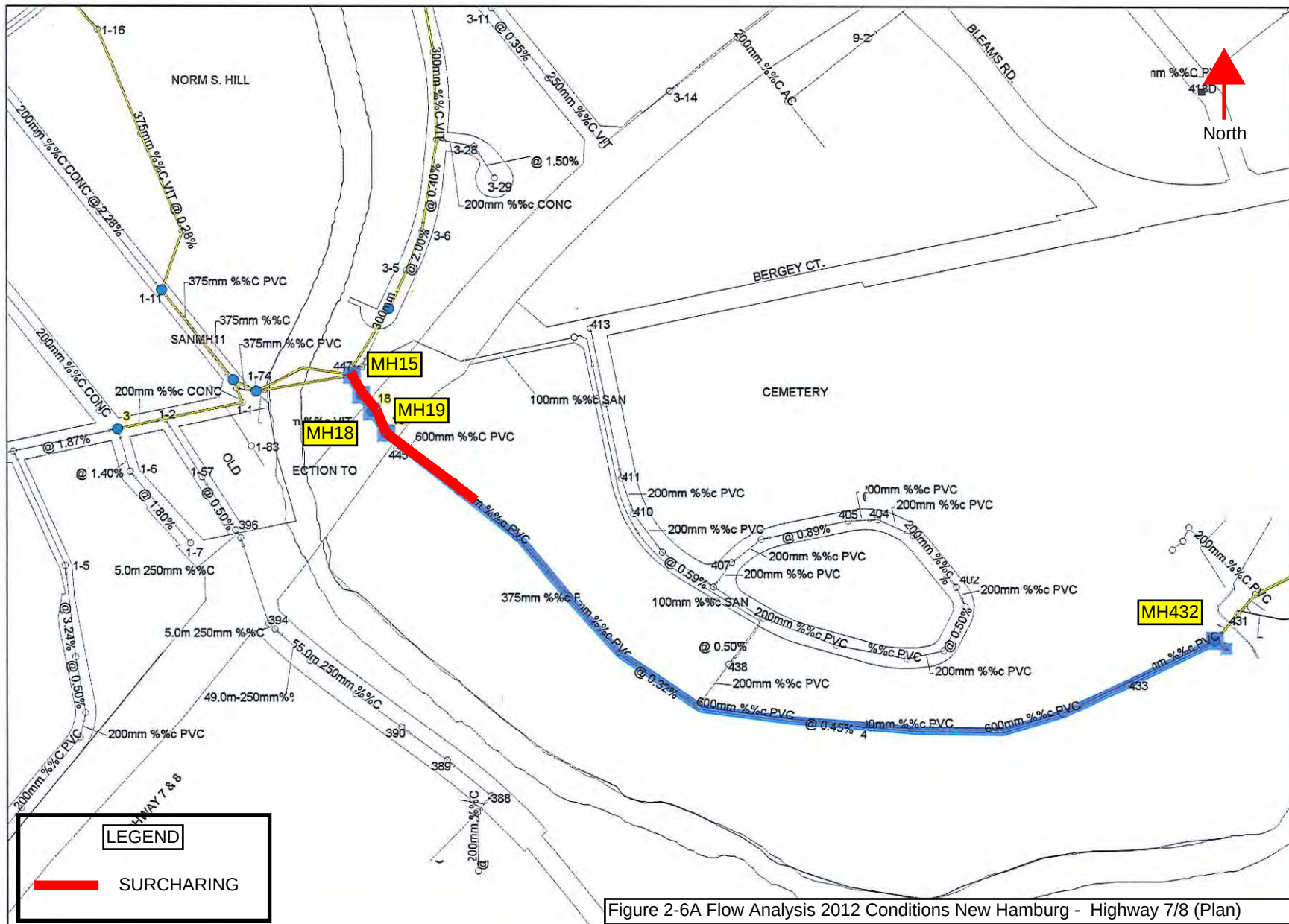


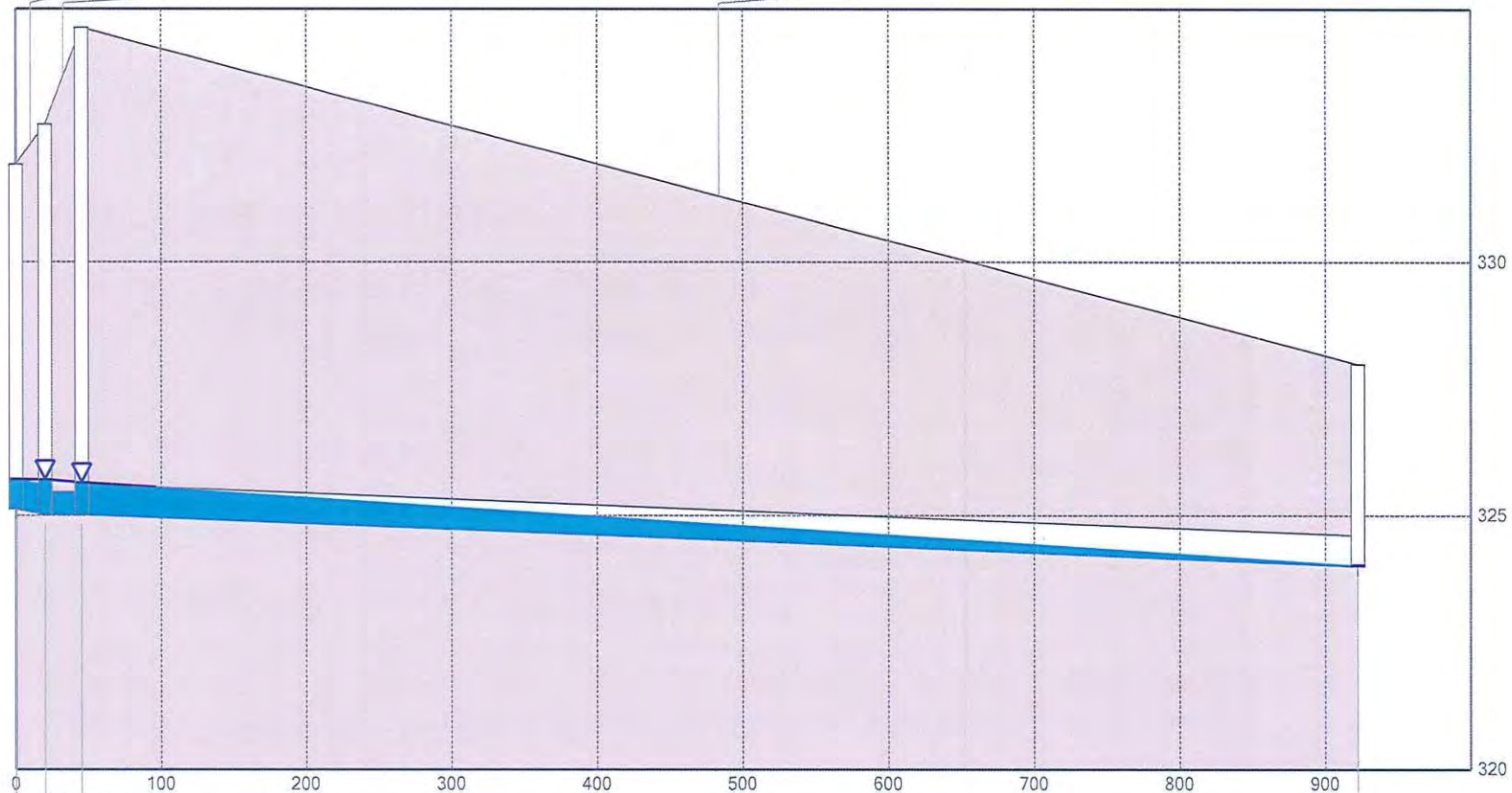
Figure 2-6A Flow Analysis 2012 Conditions New Hamburg - Highway 7/8 (Plan)

— HGL

Conduit 17
Flow = 0.137 m³/s
Length = 20 m
Depth = 0.6 m
Slope = 0.0055 m/m

Conduit 18
Flow = 0.137 m³/s
Length = 25.2 m
Depth = 0.45 m
Slope = 0 m/m

Conduit 19
Flow = 0.137 m³/s
Length = 877.04 m
Depth = 0.6 m
Slope = 0.00116 m/m



15
Max. CWSEL = 325.718 m
Rim Elev. = 331.928 m
Invert Elev. = 325.128 m
07/11/2008 11:00AM

18
Max. CWSEL = 325.709 m
Rim Elev. = 332.718 m
Invert Elev. = 325.018 m
07/11/2008 11:00AM

19
Max. CWSEL = 325.65 m
Rim Elev. = 334.618 m
Invert Elev. = 325.018 m

432
Max. CWSEL = 324.022 m
Rim Elev. = 328 m
Invert Elev. = 324 m

Figure 2-6B Flow Analysis 2012 Conditions New Hamburg - Highway 7/8 (Profile)

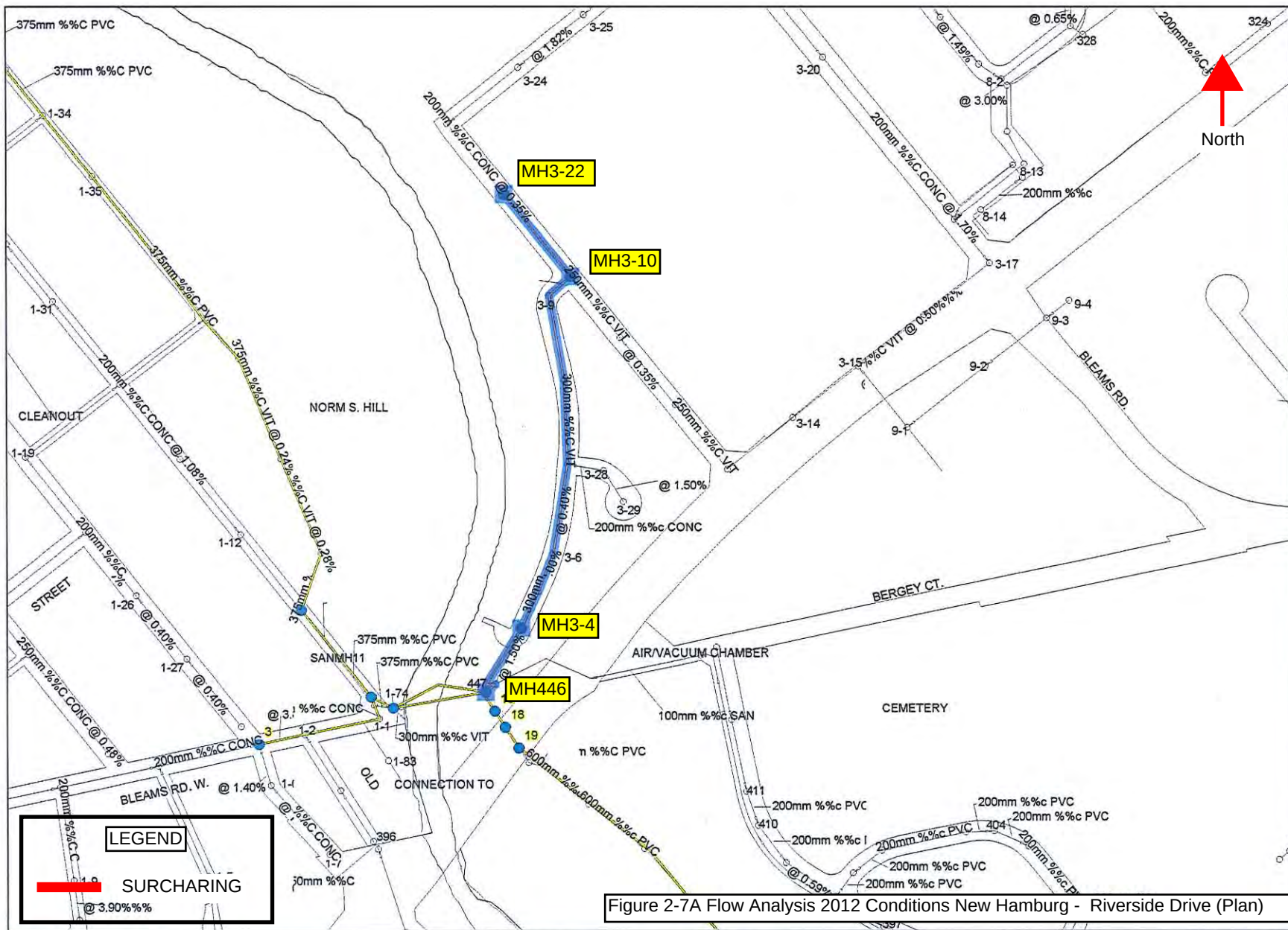


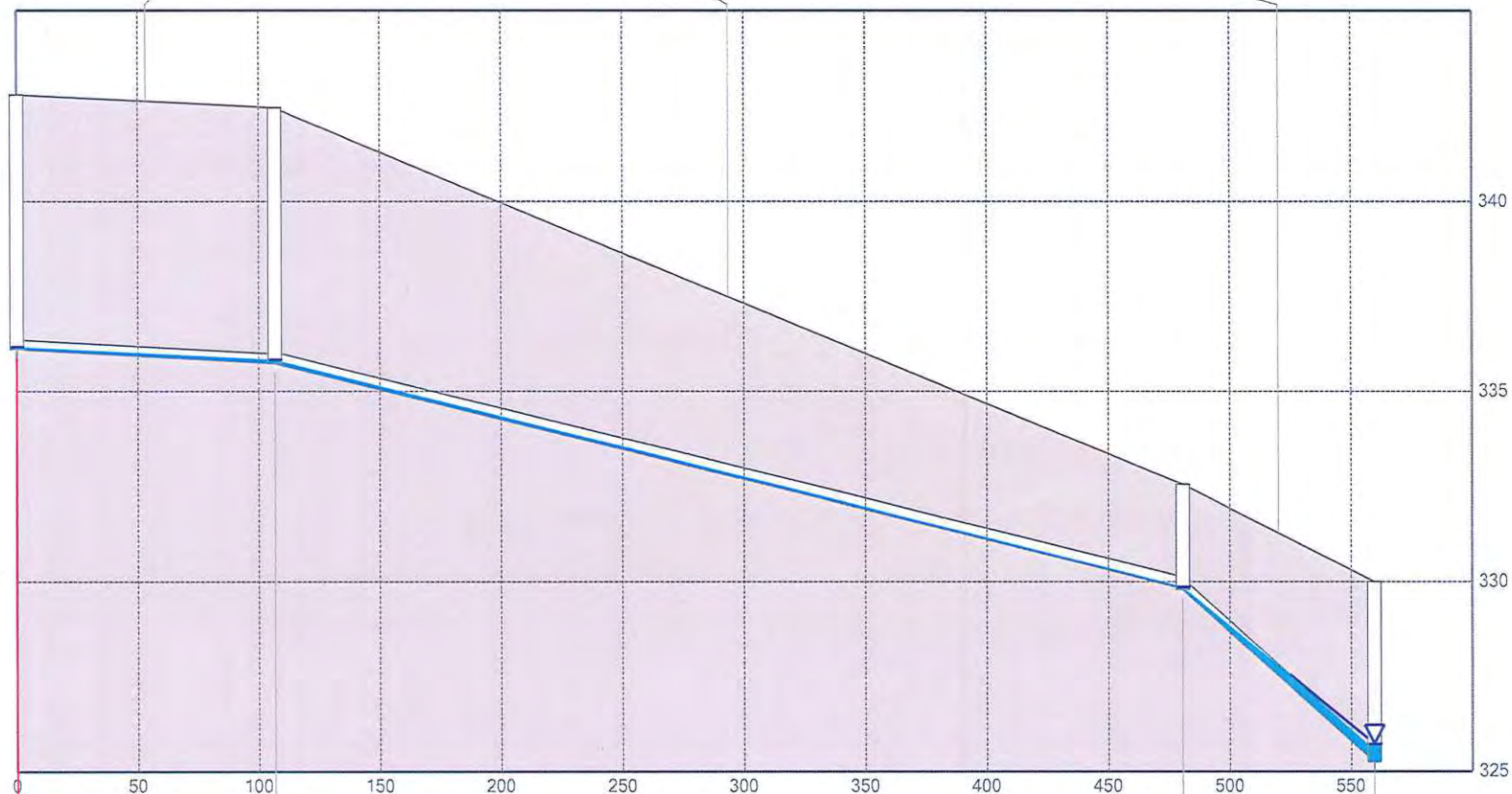
Figure 2-7A Flow Analysis 2012 Conditions New Hamburg - Riverside Drive (Plan)

— HGL

Conduit 6
Flow = 0.005 m³/s
Length = 106.6 m
Depth = 0.25 m
Slope = 0.0035 m/m

Conduit C-13
Flow = 0.026 m³/s
Length = 374 m
Depth = 0.3 m
Slope = 0.0158 m/m

Conduit C-14
Flow = 0.026 m³/s
Length = 78.95 m
Depth = 0.3 m
Slope = 0.0575 m/m



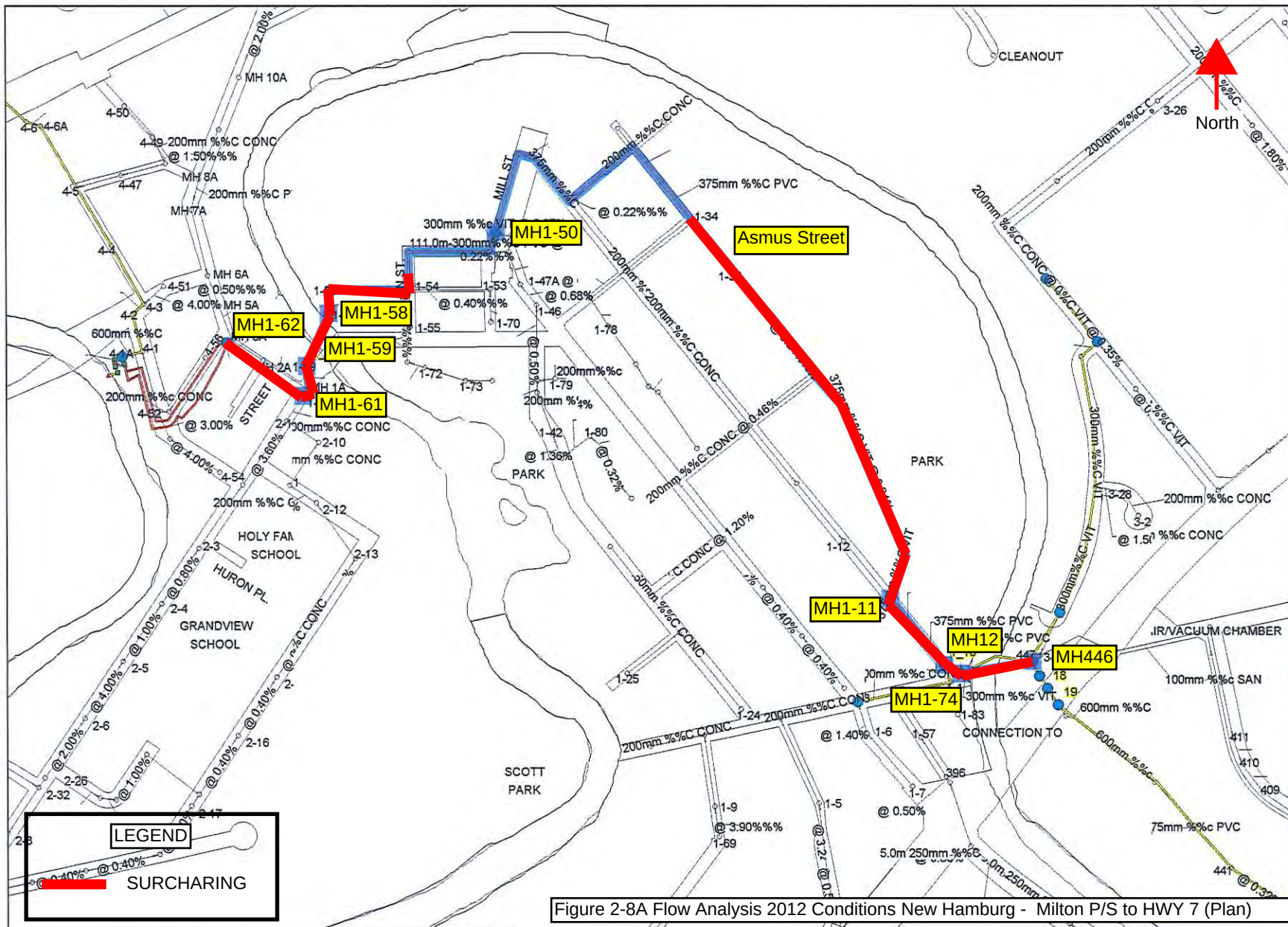
3-22
Max. CWSEL = 336.164 m
Rim Elev. = 342.803 m
Invert Elev. = 336.103 m
07/11/2008 12:15PM

3_10
Max. CWSEL = 335.824 m
Rim Elev. = 342.44 m
Invert Elev. = 335.73 m
07/11/2008 08:30AM

3_4
Max. CWSEL = 329.858 m
Rim Elev. = 332.54 m
Invert Elev. = 329.79 m

446
Max. CWSEL = 325.724 m
Rim Elev. = 330 m
Invert Elev. = 325.25 m

Figure 2-7B Flow Analysis 2012 Conditions New Hamburg - Riverside Drive (Profile)



Links

C-6 Q=0.056 m³/s L=121.11 m D=0.3 m S=0.0234 m/m	C-7 Q=0.064 m³/s L=41.87 m D=0.3 m S=0.00693 m/m	C-8 Q=0.064 m³/s L=74.75 m D=0.2 m S=0.0274 m/m	C-9 Q=0.064 m³/s L=318.95 m D=0.3 m S=0.00389 m/m	C-10 Q=0.063 m³/s L=1019.33 m D=0.375 m S=0.00278 m/m	C-26 Q=0.086 m³/s L=112 m D=0.375 m S=0.00295 m/m	C-11 Q=0.115 m³/s L=25.05 m D=0.375 m S=0.00559 m/m	C-12 Q=0.033 m³/s L=94.63 m D=0.25 m S=0 m/m
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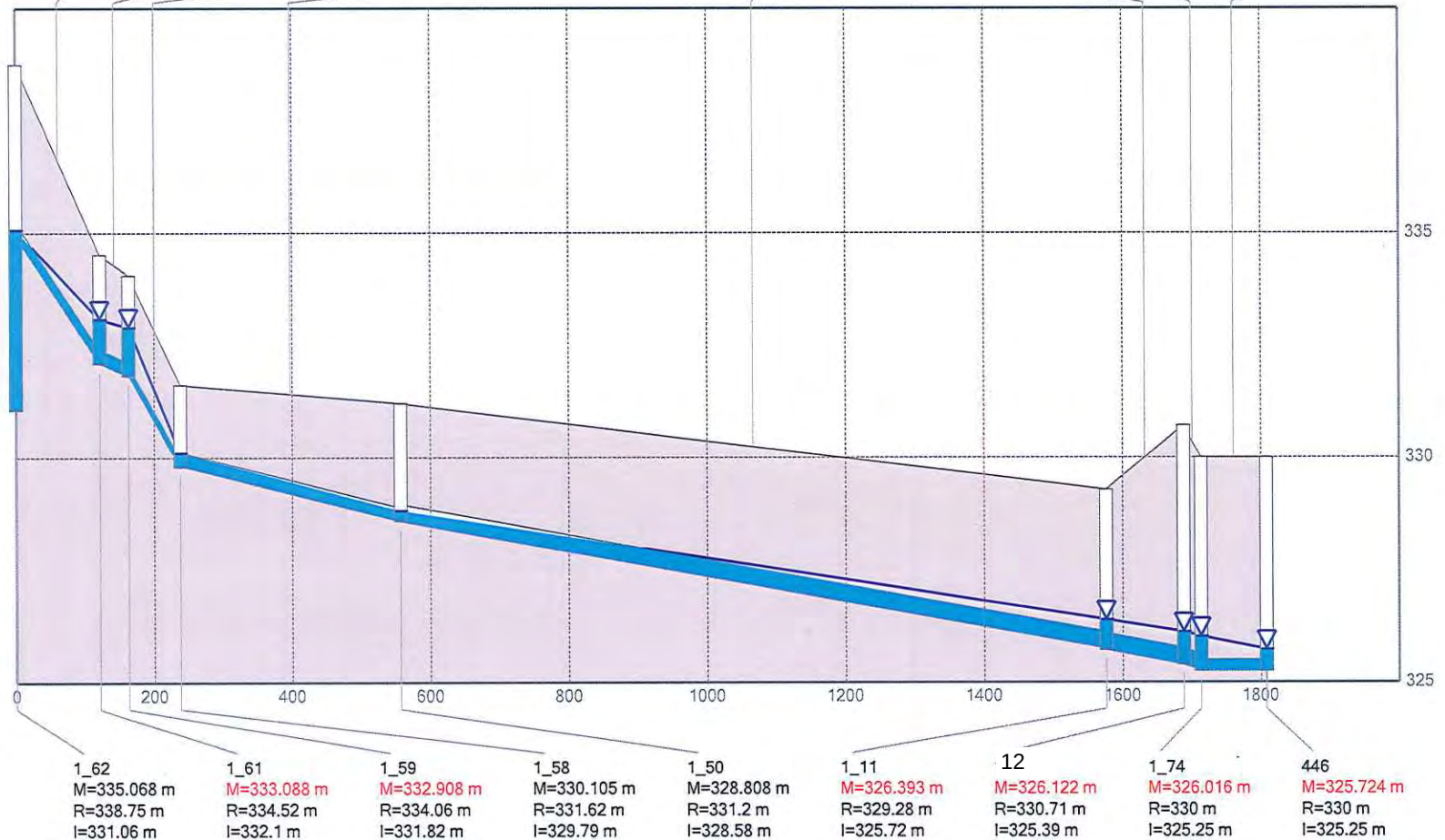
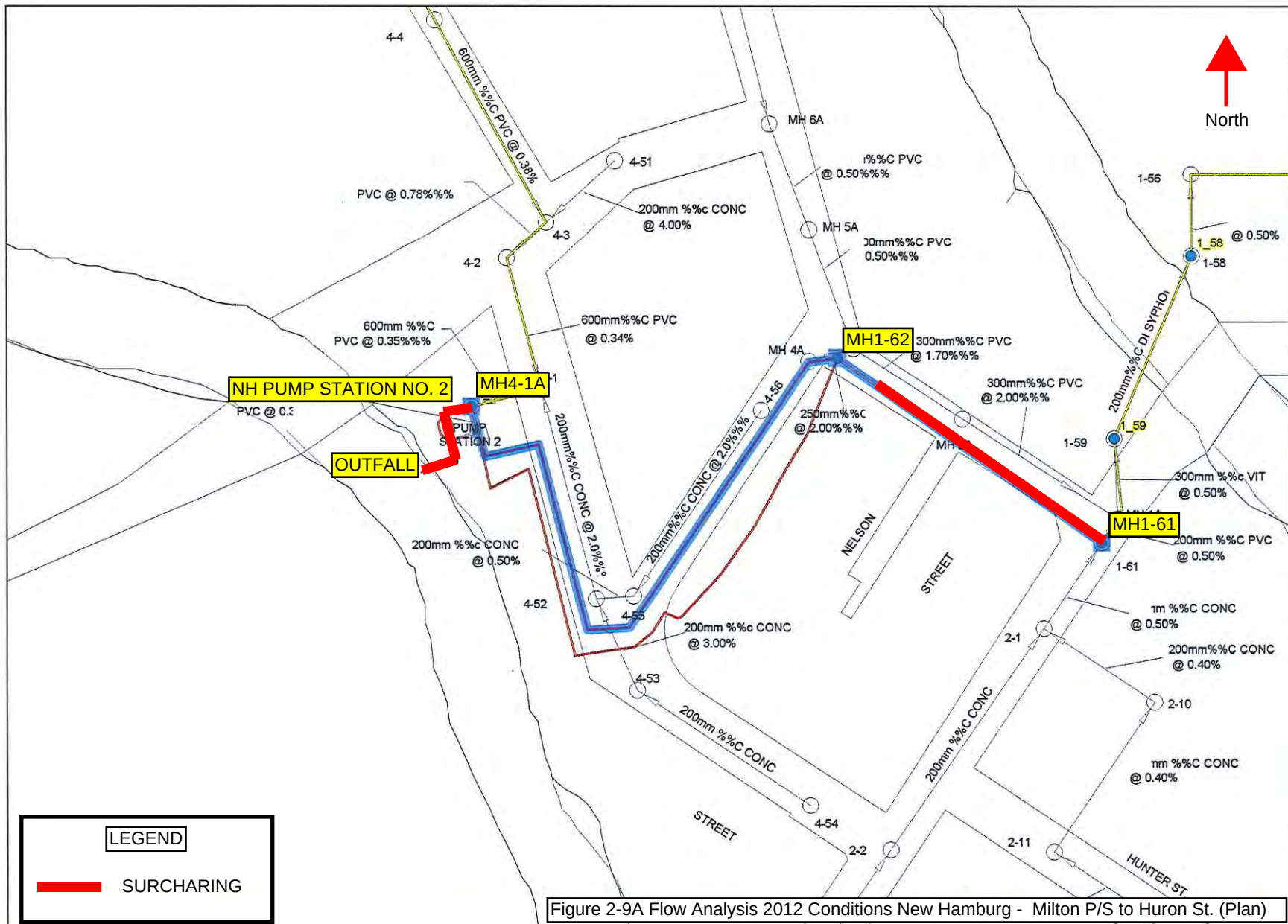


Figure 2-8B Flow Analysis 2012 Conditions New Hamburg - Milton P/S to HWY 7 (Profile)

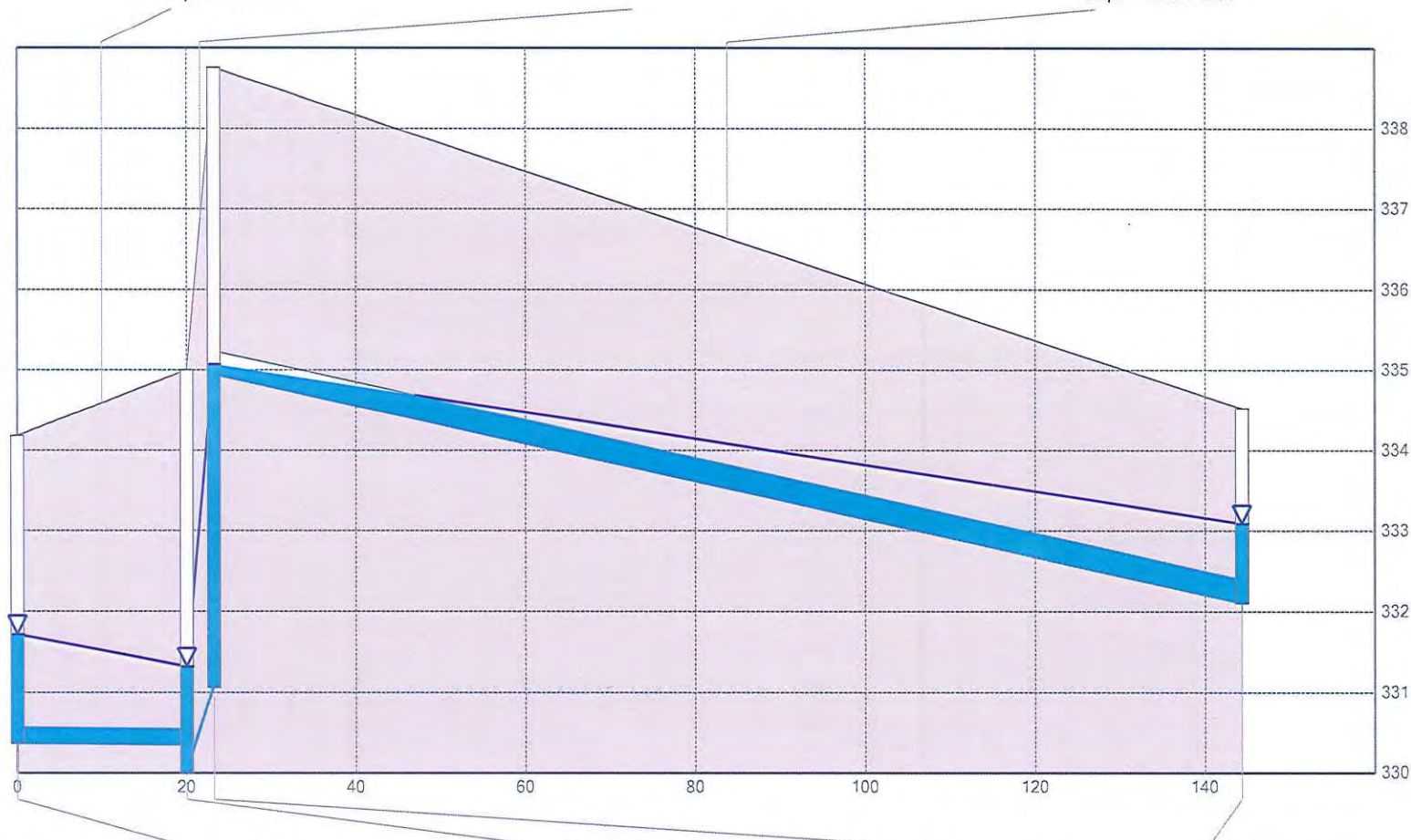


— HGL

Conduit C-5
Flow = $0.05 \text{ m}^3/\text{s}$
Length = 20 m
Depth = 0.2 m
Slope = 0.001 m/m

Pump NH_PS2_P1
Flow = $0.034 \text{ m}^3/\text{s}$

Conduit C-6
Flow = $0.056 \text{ m}^3/\text{s}$
Length = 121.11 m
Depth = 0.3 m
Slope = 0.0234 m/m



4_1A
Max. CWSEL = 331.717 m
Rim Elev. = 334.18 m
Invert Elev. = 330.37 m
07/11/2008 10:15AM

Storage NH_PS2_WW
Max. CWSEL = 331.319 m
Rim Elev. = 335 m
Invert Elev. = 330 m
07/11/2008 09:15AM

1_62
Max. CWSEL = 335.068 m
Rim Elev. = 338.75 m
Invert Elev. = 331.06 m

1_61
Max. CWSEL = 333.088 m
Rim Elev. = 334.52 m
Invert Elev. = 332.1 m

Figure 2-9B Flow Analysis 2012 Conditions New Hamburg - Milton P/S to Huron St. (Profile)

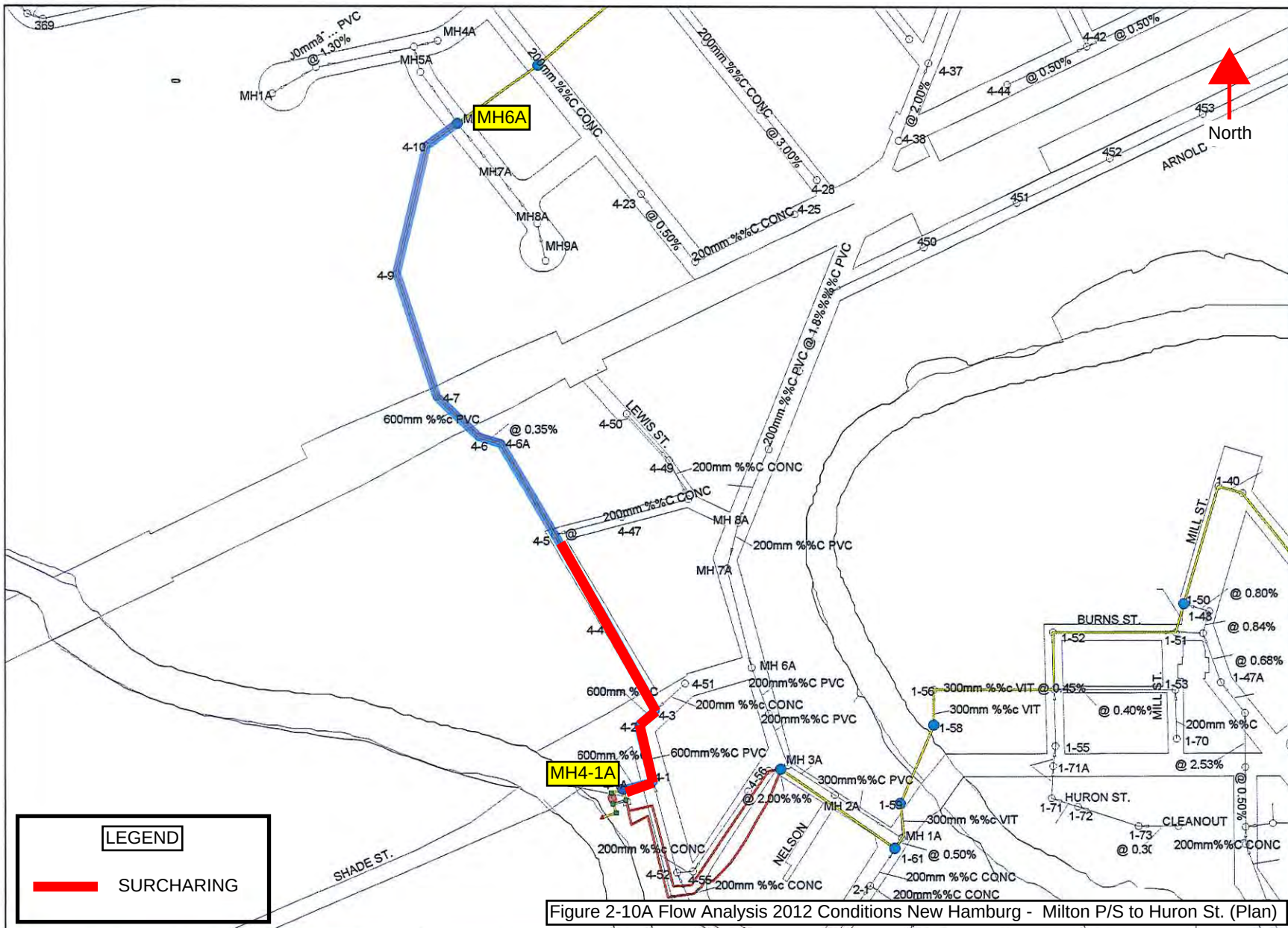
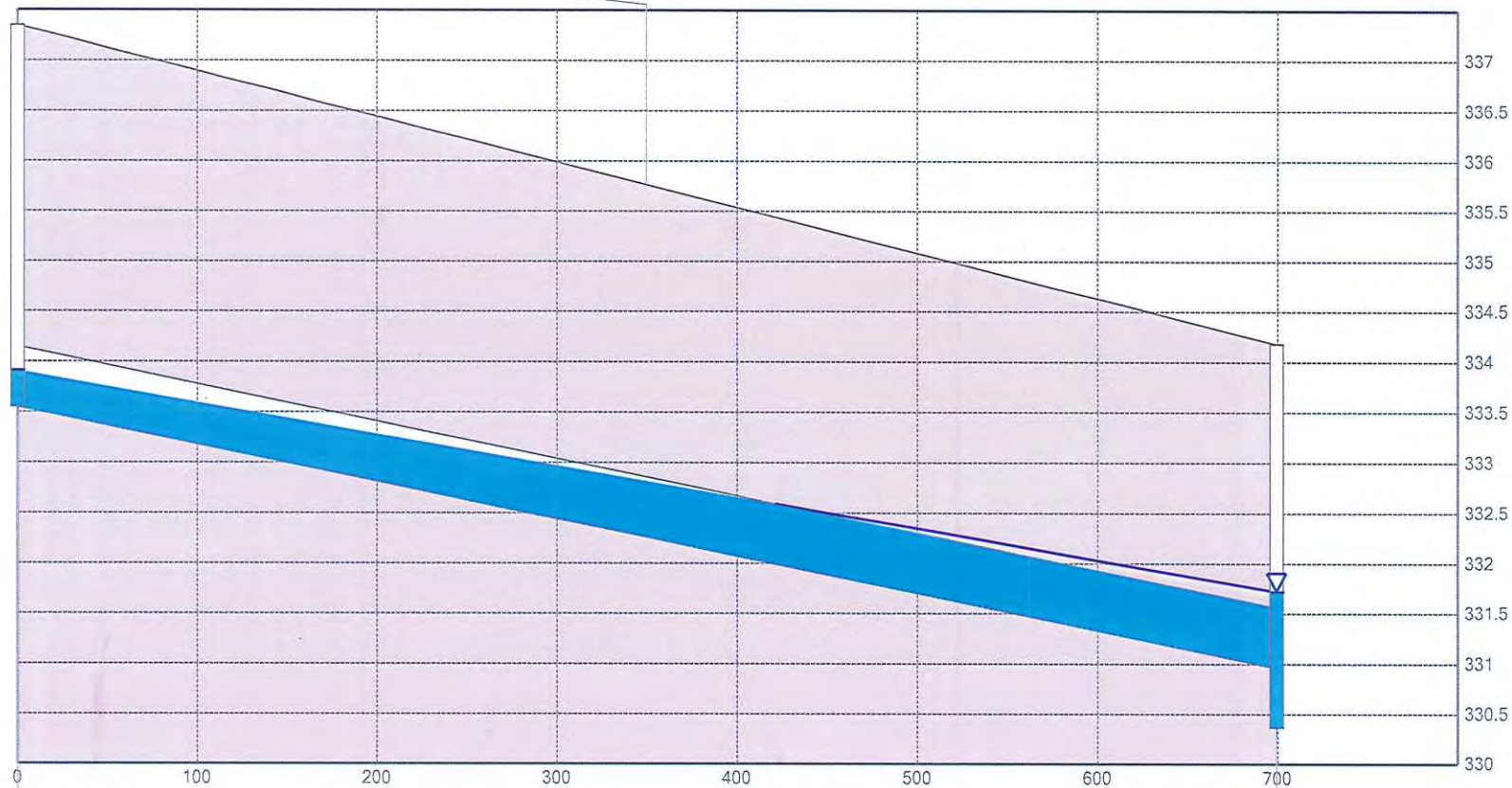


Figure 2-10A Flow Analysis 2012 Conditions New Hamburg - Milton P/S to Huron St. (Plan)

— HGL

Conduit C-4_2
Flow = 0.249 m³/s
Length = 699.31 m
Depth = 0.6 m
Slope = 0.00371 m/m



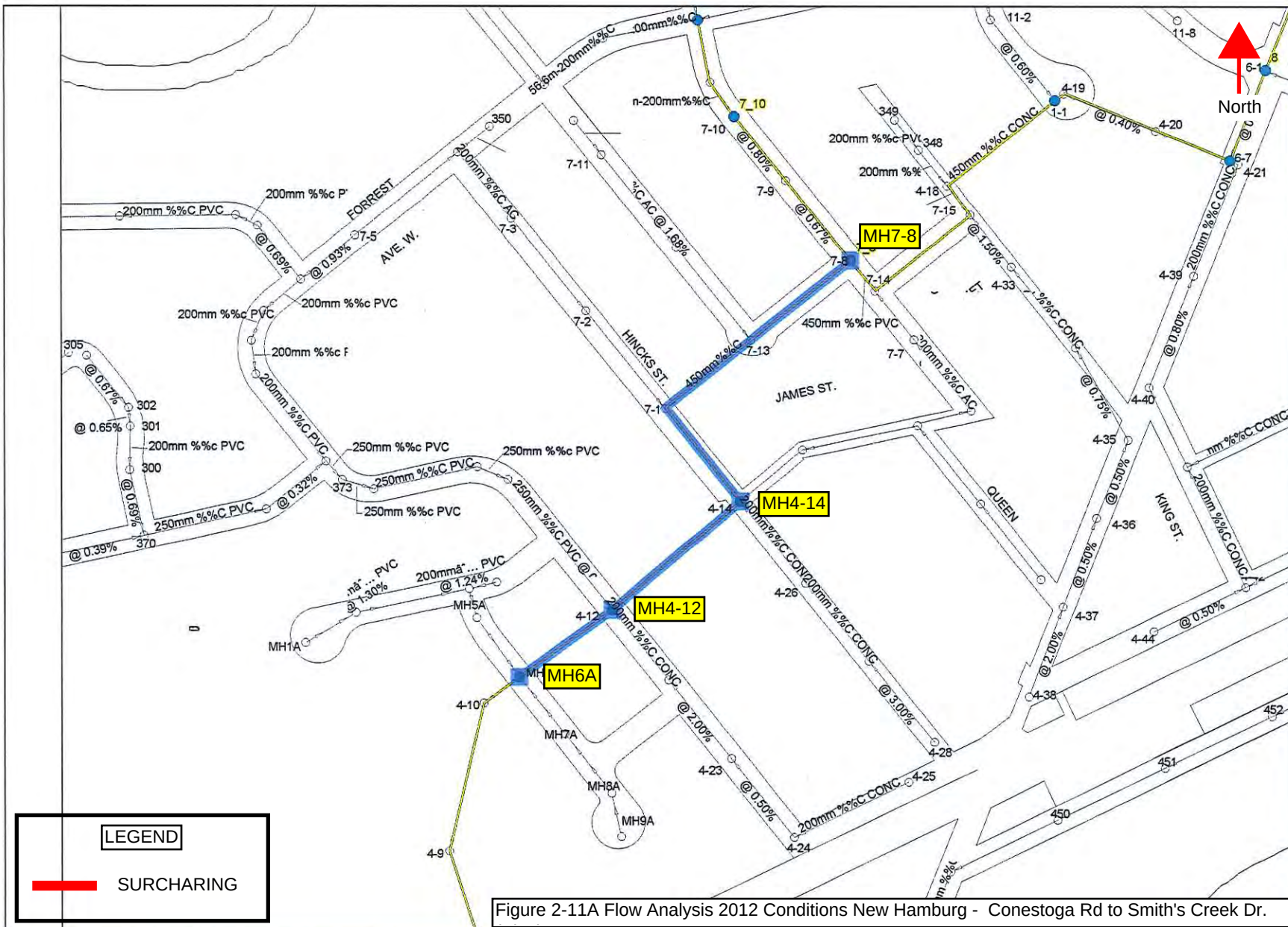
6A

Max. CWSEL = 333.909 m
Rim Elev. = 337.351 m
Invert Elev. = 333.551 m
07/11/2008 12:00PM

4_1A

Max. CWSEL = 331.717 m
Rim Elev. = 334.18 m
Invert Elev. = 330.37 m

Figure 2-10B Flow Analysis 2012 Conditions New Hamburg - Milton P/S to Huron St. (Profile)



— HGL

Conduit C-25
Flow = 0.025 m³/s
Length = 269.86 m
Depth = 0.45 m
Slope = 0.00522 m/m

Conduit C-3
Flow = 0.244 m³/s
Length = 126.91 m
Depth = 0.6 m
Slope = 0.00473 m/m

Conduit C-4_1
Flow = 0.246 m³/s
Length = 86.76 m
Depth = 0.6 m
Slope = 0.0031 m/m

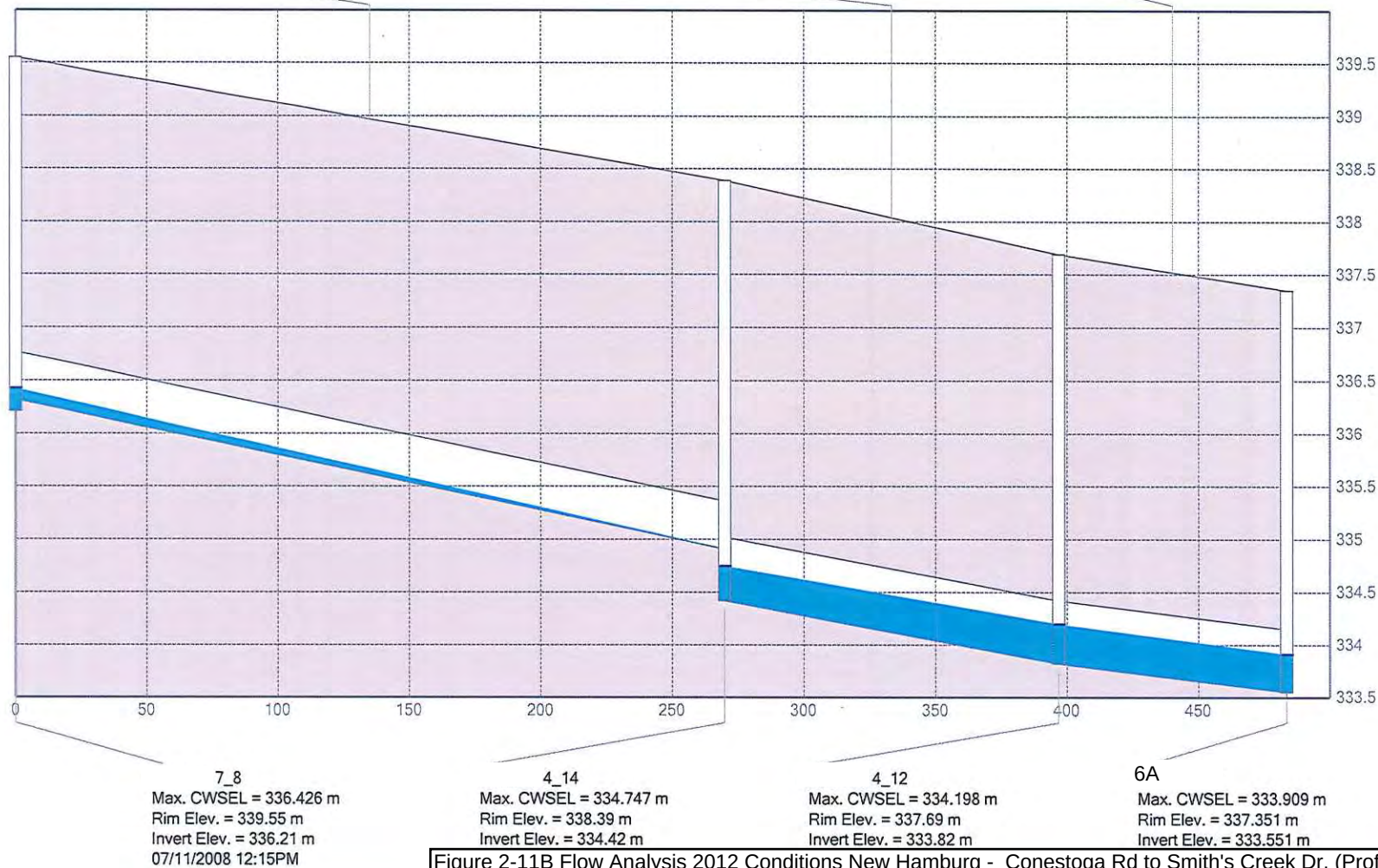
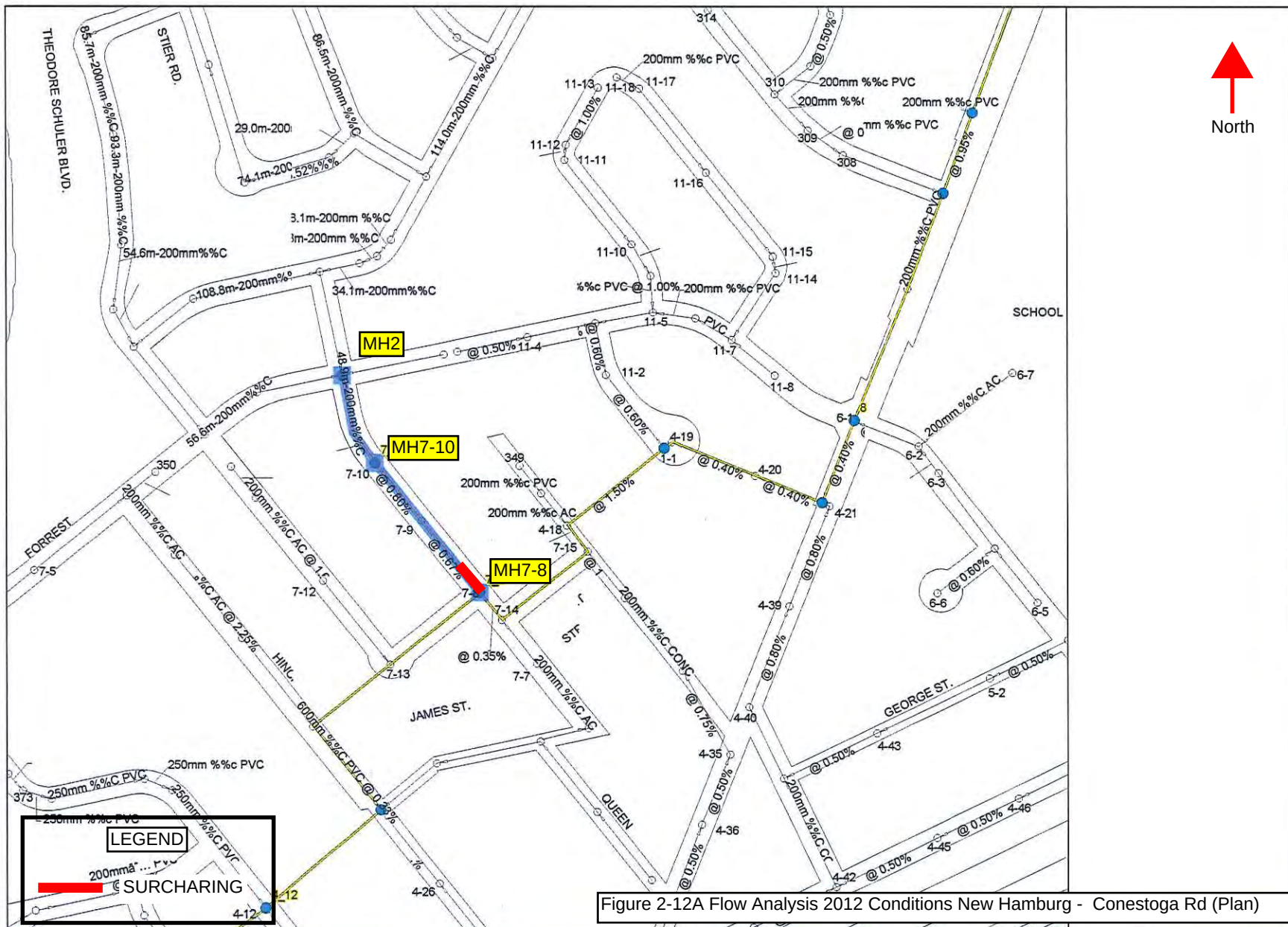


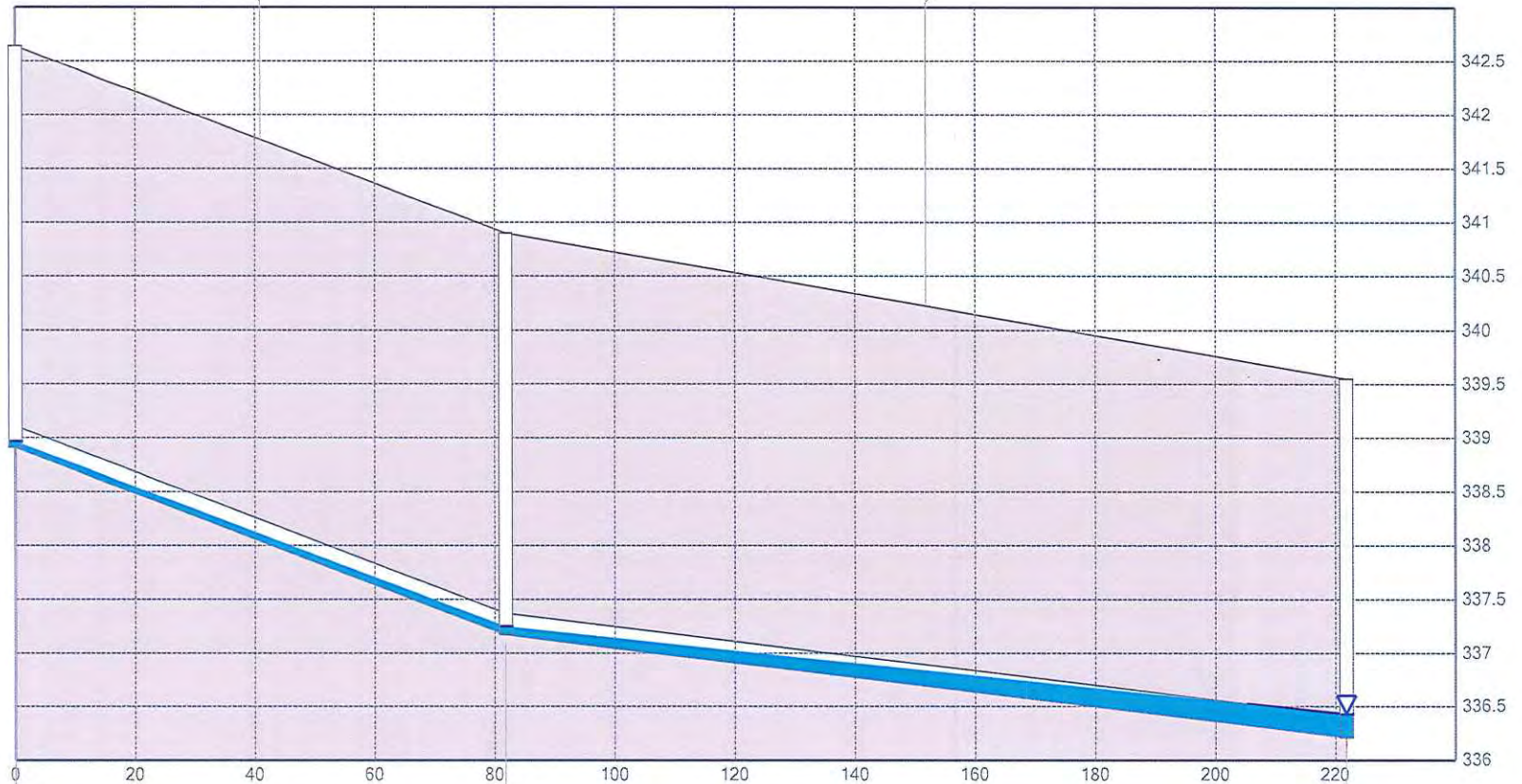
Figure 2-11B Flow Analysis 2012 Conditions New Hamburg - Conestoga Rd to Smith's Creek Dr. (Profile)



— HGL

Conduit 4
Flow = 0.008 m³/s
Length = 81.8 m
Depth = 0.2 m
Slope = 0.0213 m/m

Conduit C-2
Flow = 0.008 m³/s
Length = 140 m
Depth = 0.2 m
Slope = 0.00686 m/m

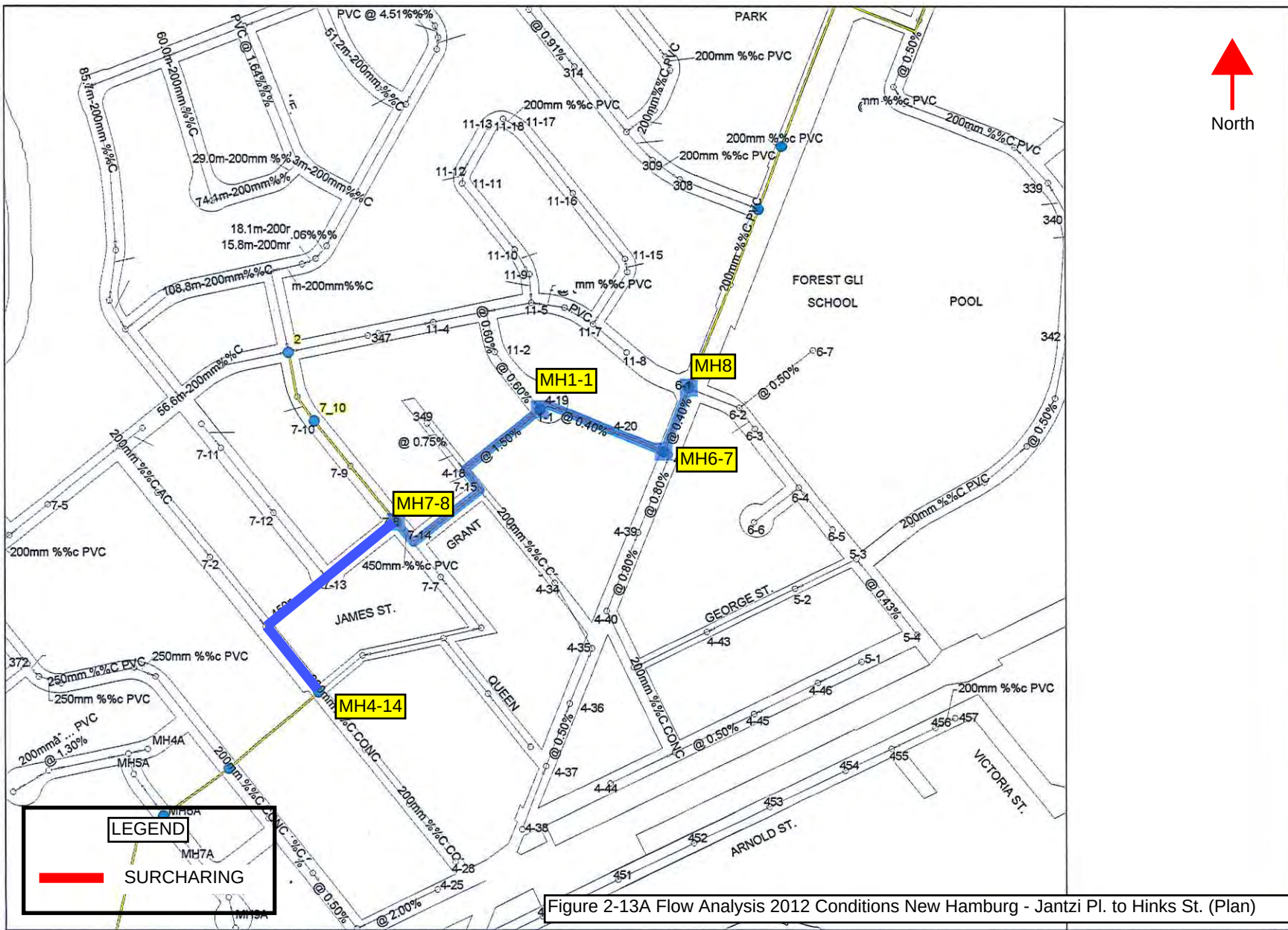


2
Max. CWSEL = 338.966 m
Rim Elev. = 342.64 m
Invert Elev. = 338.91 m
07/11/2008 12:15PM

7_10
Max. CWSEL = 337.245 m
Rim Elev. = 340.9 m
Invert Elev. = 337.17 m

7_8
Max. CWSEL = 336.426 m
Rim Elev. = 339.55 m
Invert Elev. = 336.21 m

Figure 2-12B Flow Analysis 2012 Conditions New Hamburg - Conestoga Rd (Profile)



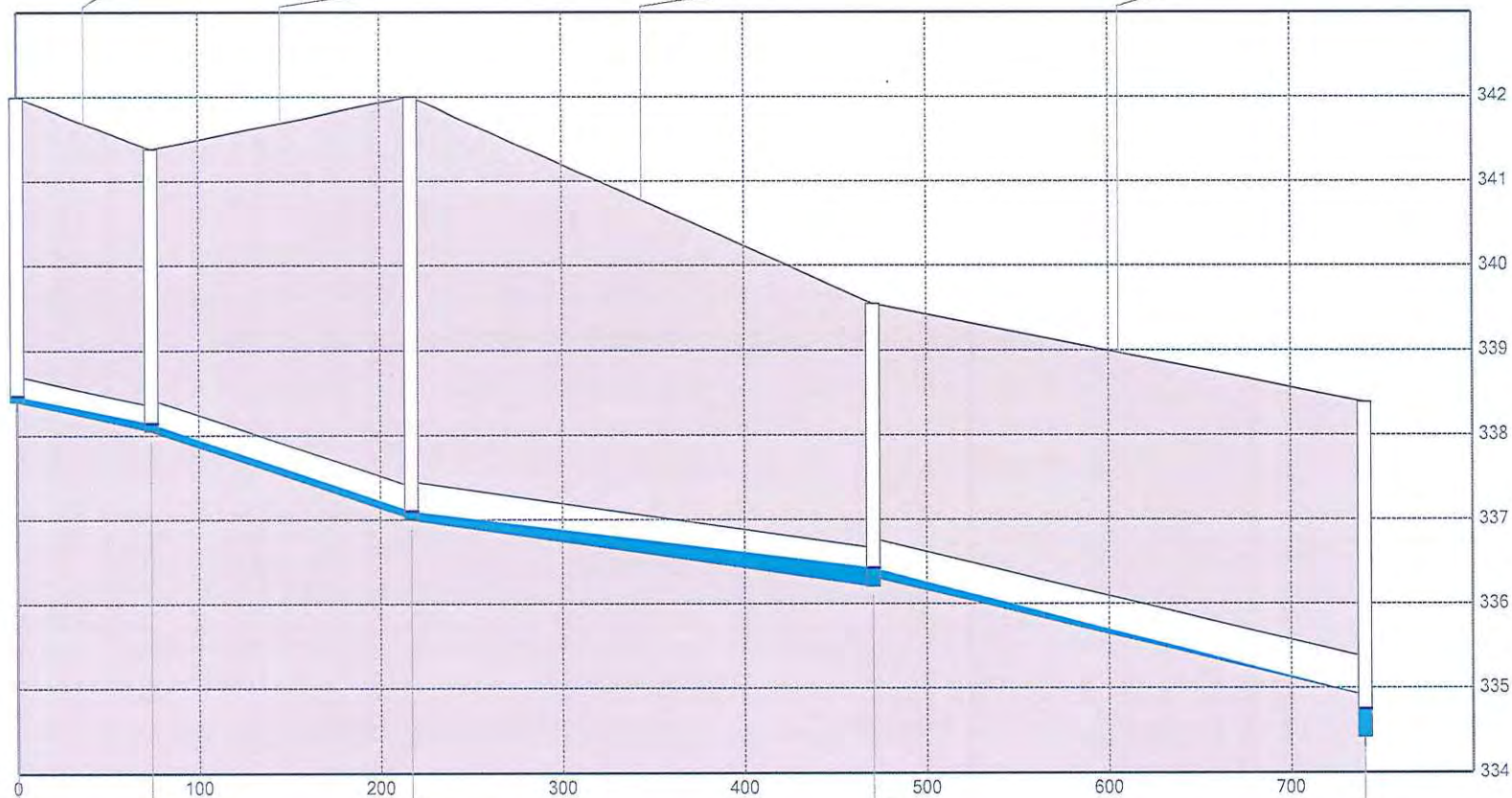
HGL

Conduit 10
Flow = 0.007 m³/s
Length = 73.85 m
Depth = 0.3 m
Slope = 0.00474 m/m

Conduit C-24
Flow = 0.018 m³/s
Length = 143.11 m
Depth = 0.375 m
Slope = 0.0072 m/m

Conduit C-1
Flow = 0.018 m³/s
Length = 253.64 m
Depth = 0.45 m
Slope = 0.00311 m/m

Conduit C-25
Flow = 0.025 m³/s
Length = 269.86 m
Depth = 0.45 m
Slope = 0.00522 m/m



8
Max. CWSEL = 338.466 m
Rim Elev. = 341.99 m
Invert Elev. = 338.4 m
07/11/2008 02:00PM

6_7
Max. CWSEL = 338.137 m
Rim Elev. = 341.38 m
Invert Elev. = 338.05 m
07/11/2008 11:00AM

11_1
Max. CWSEL = 337.101 m
Rim Elev. = 342 m
Invert Elev. = 337 m

7_8
Max. CWSEL = 336.426 m
Rim Elev. = 339.55 m
Invert Elev. = 336.21 m

4_14
Max. CWSEL = 334.747 m
Rim Elev. = 338.39 m
Invert Elev. = 334.42 m

Figure 2-13B Flow Analysis 2012 Conditions New Hamburg - Jantzi Pl. to Hinks St. (Profile)

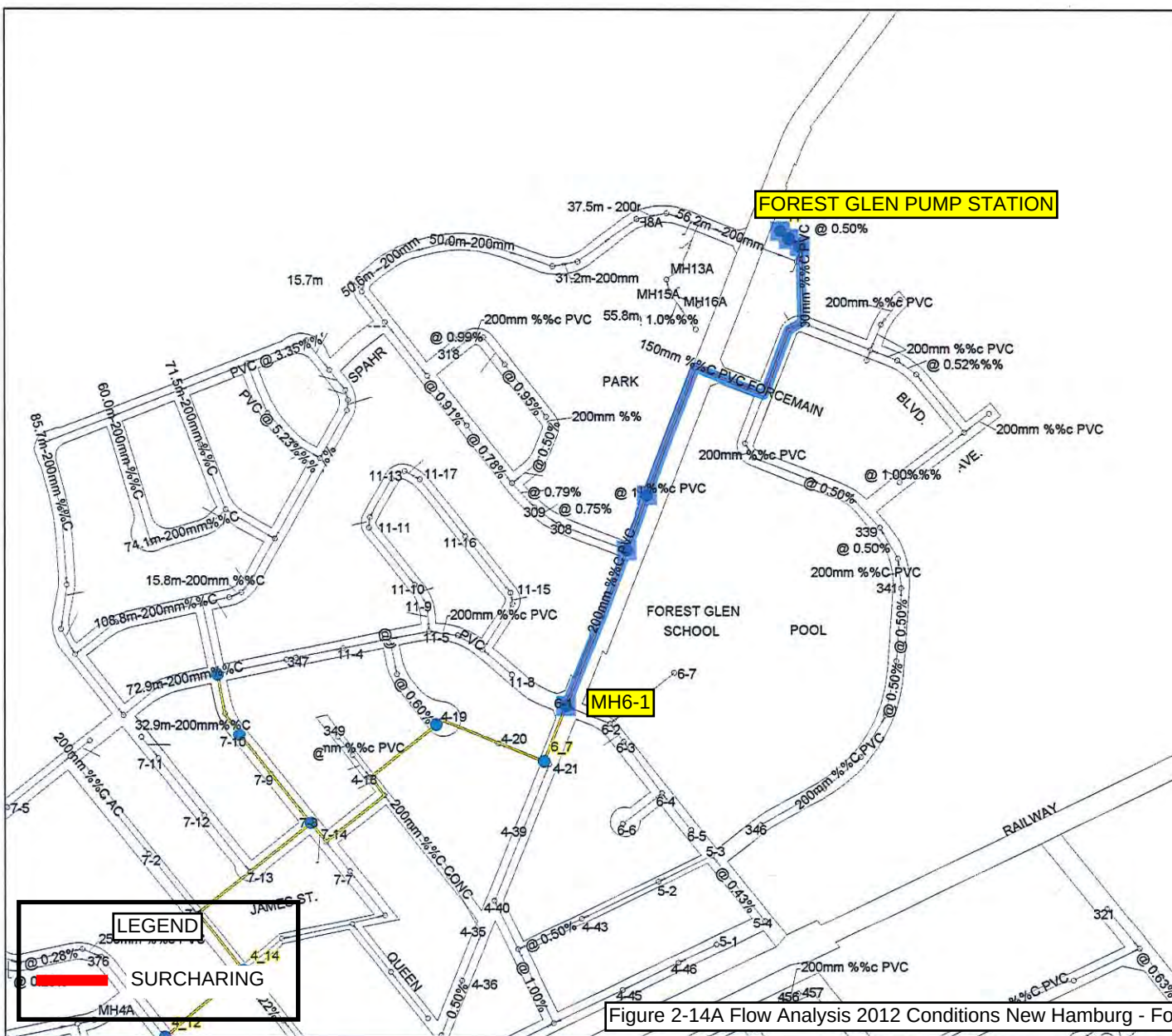


Figure 2-14A Flow Analysis 2012 Conditions New Hamburg - Forest Glen P/S (Plan)

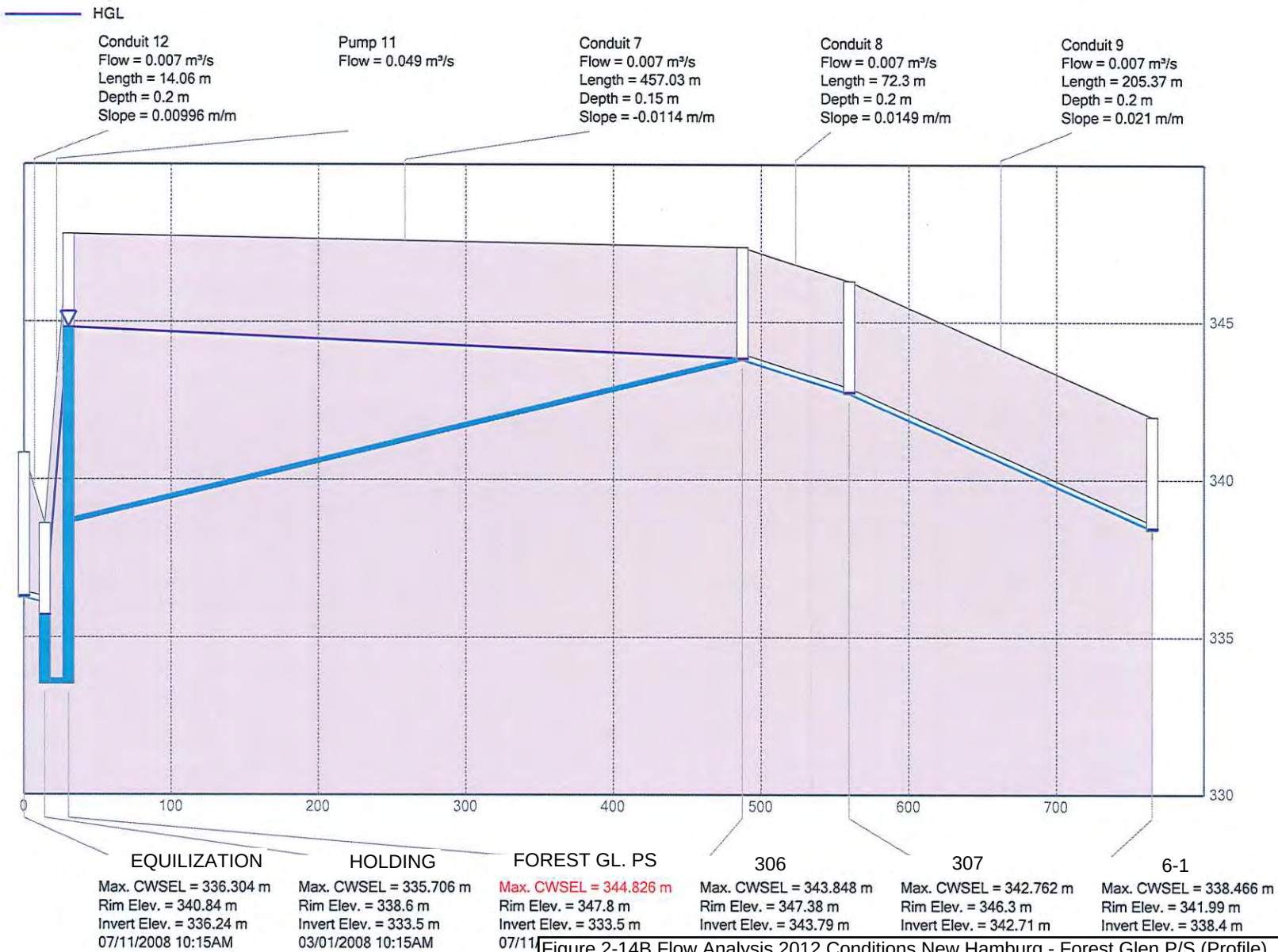


Figure 2-14B Flow Analysis 2012 Conditions New Hamburg - Forest Glen P/S (Profile)

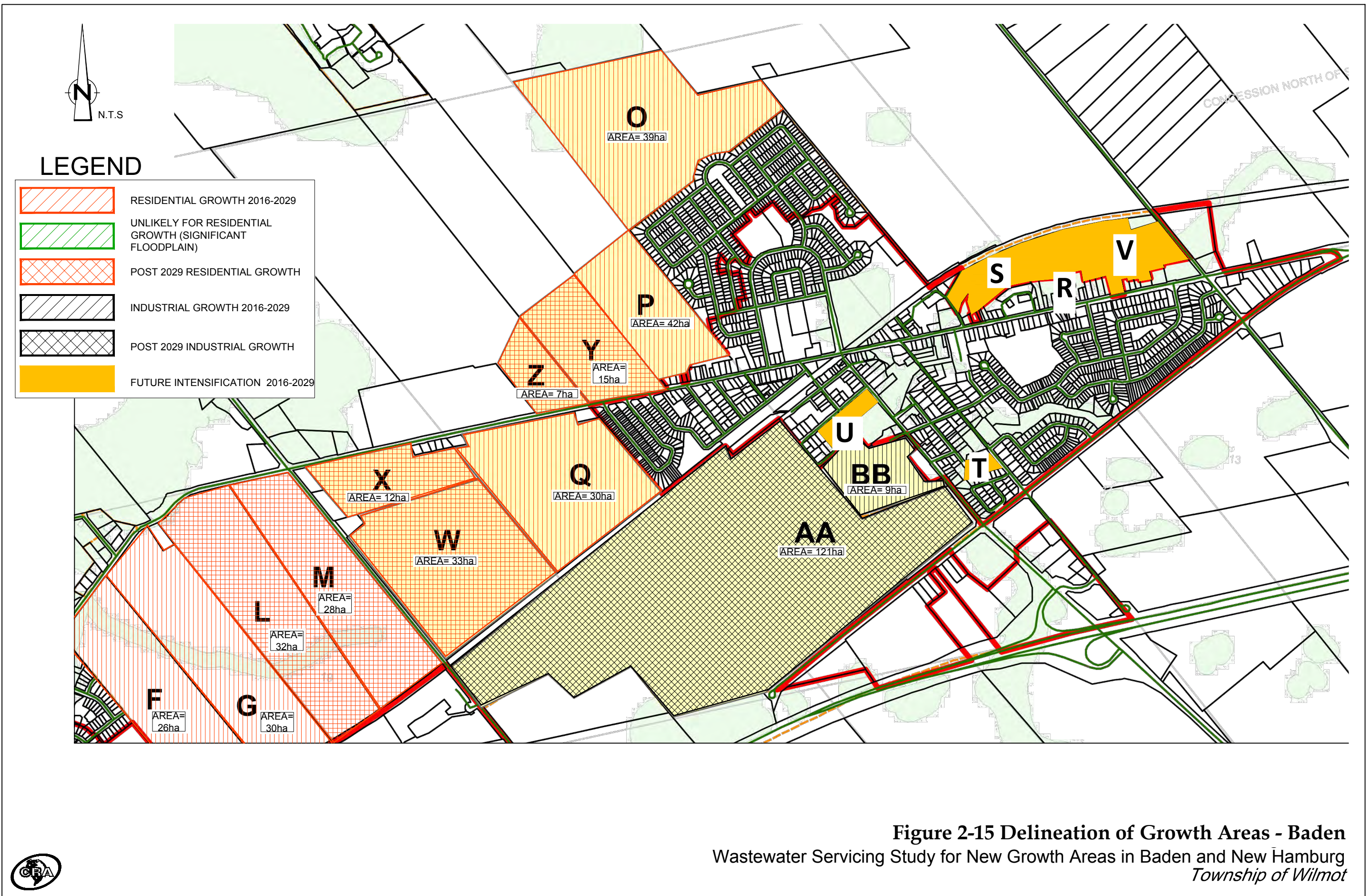


Figure 2-15 Delineation of Growth Areas - Baden
 Wastewater Servicing Study for New Growth Areas in Baden and New Hamburg
Township of Wilmot



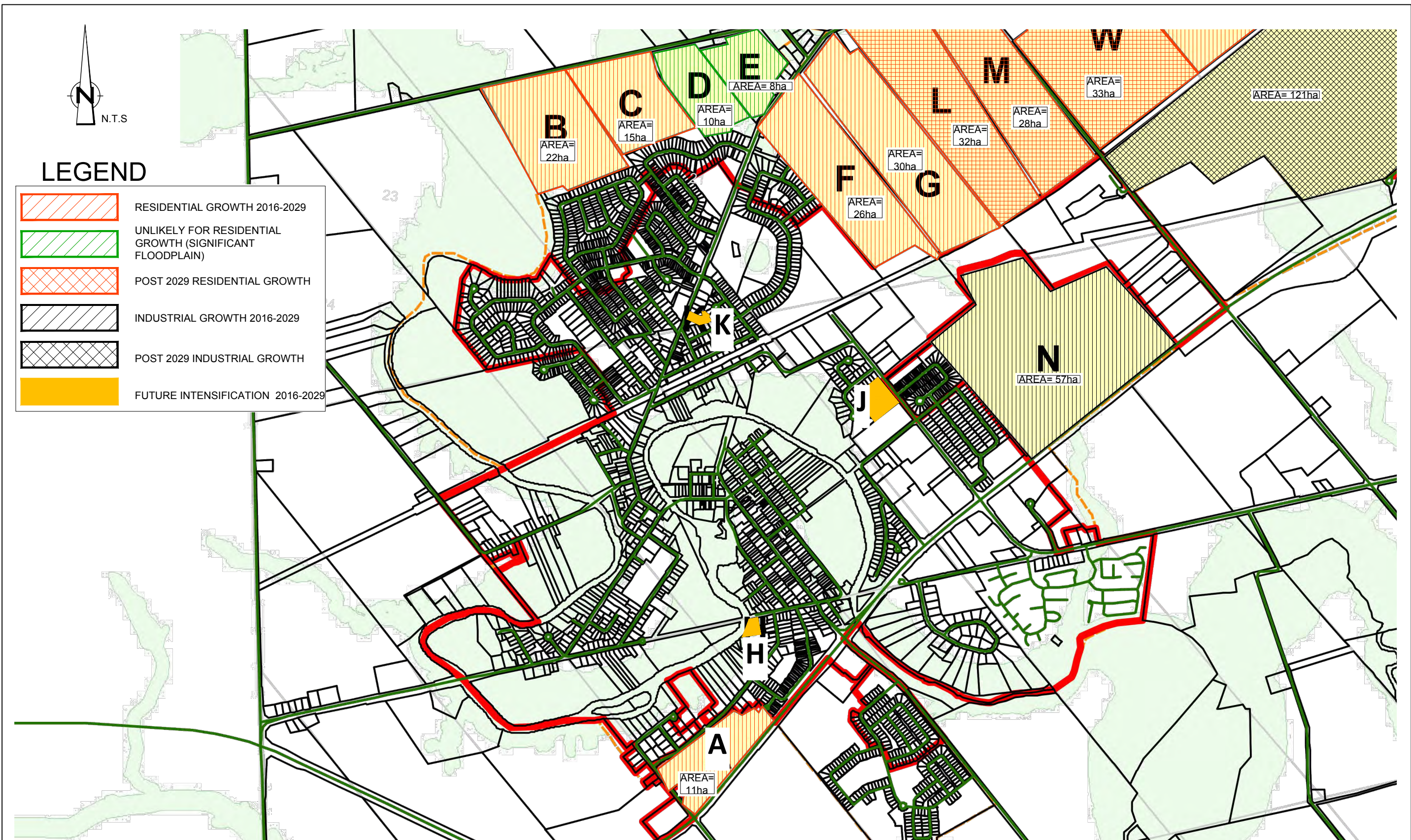


Figure 2-16 Delineation of Growth Areas - New Hamburg
 Wastewater Servicing Study for New Growth Areas in Baden and New Hamburg
Township of Wilmot



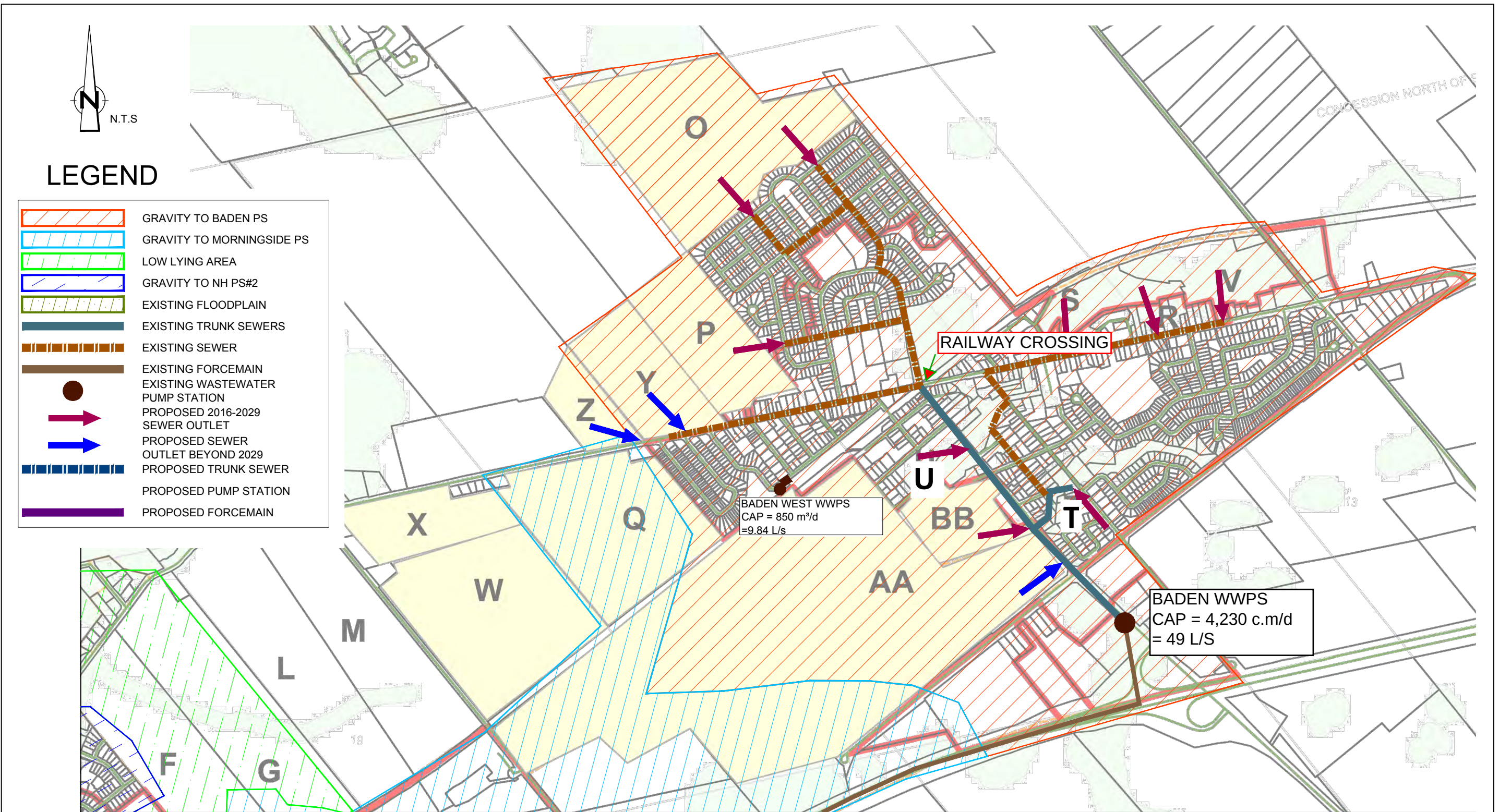
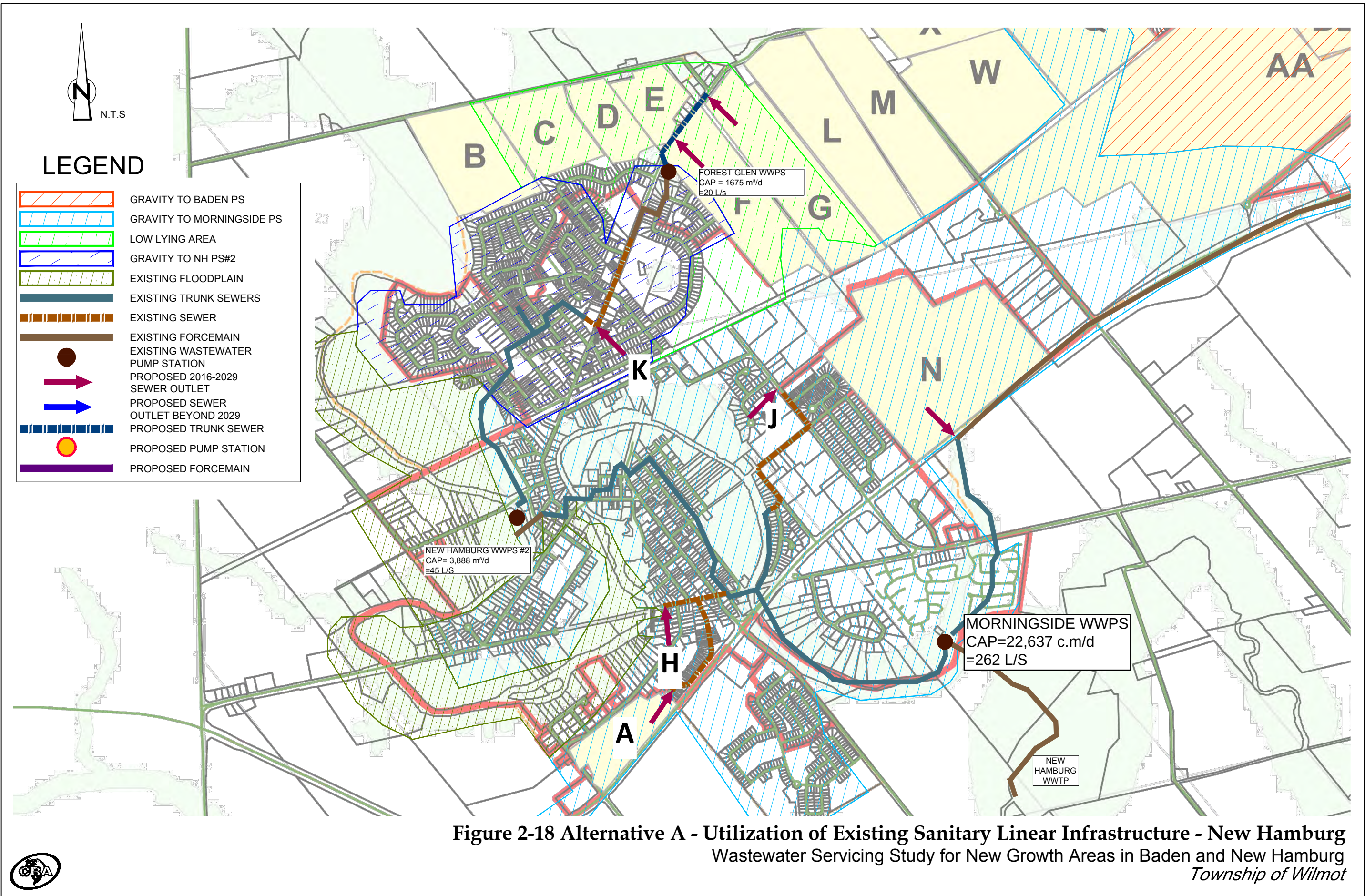


Figure 2-17 Alternative A - Utilization of Existing Sanitary Linear Infrastructure - Baden
Wastewater Servicing Study for New Growth Areas in Baden and New Hamburg
Township of Wilmot





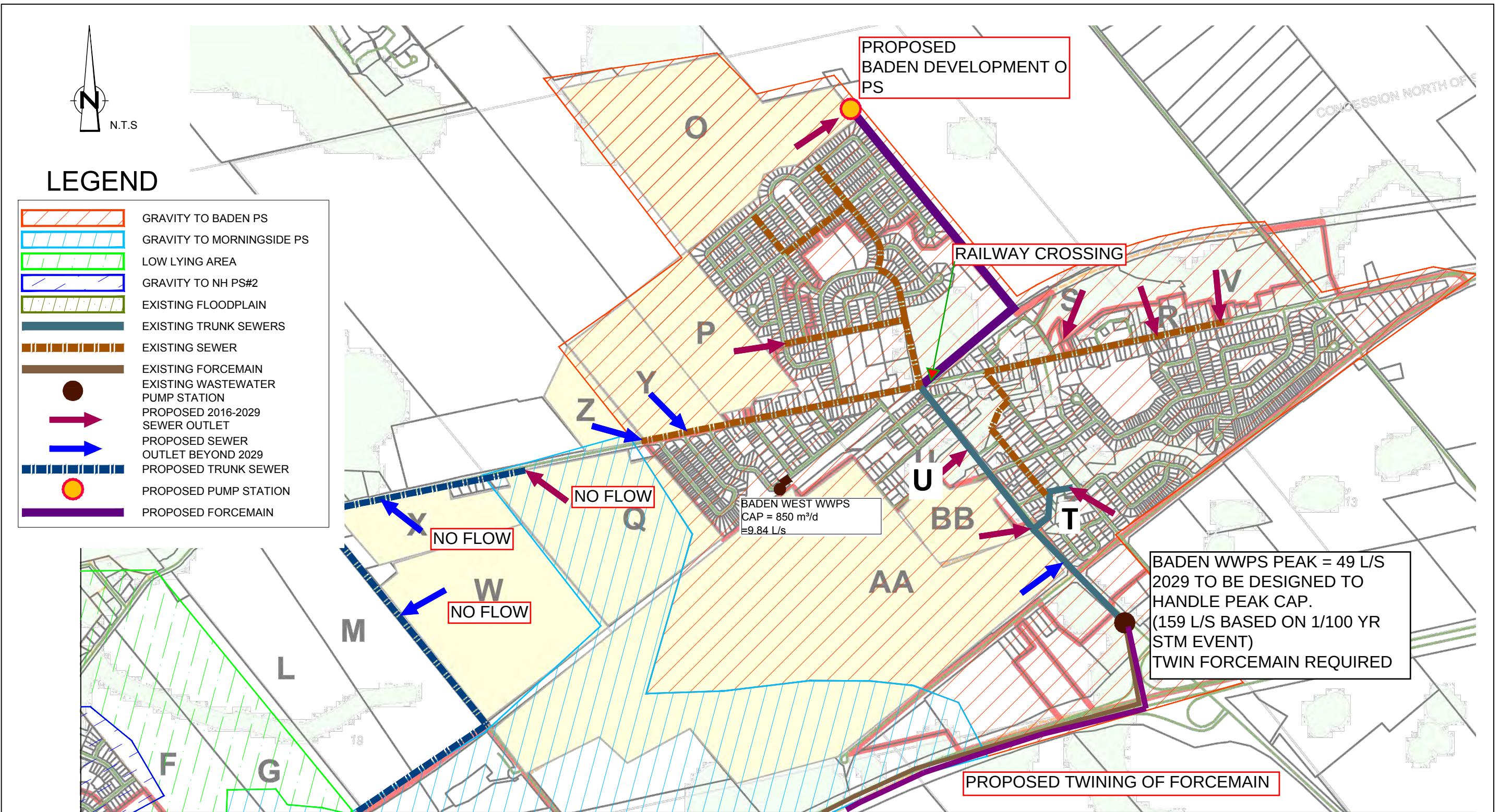


Figure 2-19 Alternative B - Proposed Sanitary Linear Infrastructure and Pump Stations - Baden
Wastewater Servicing Study for New Growth Areas in Baden and New Hamburg
Township of Wilmot



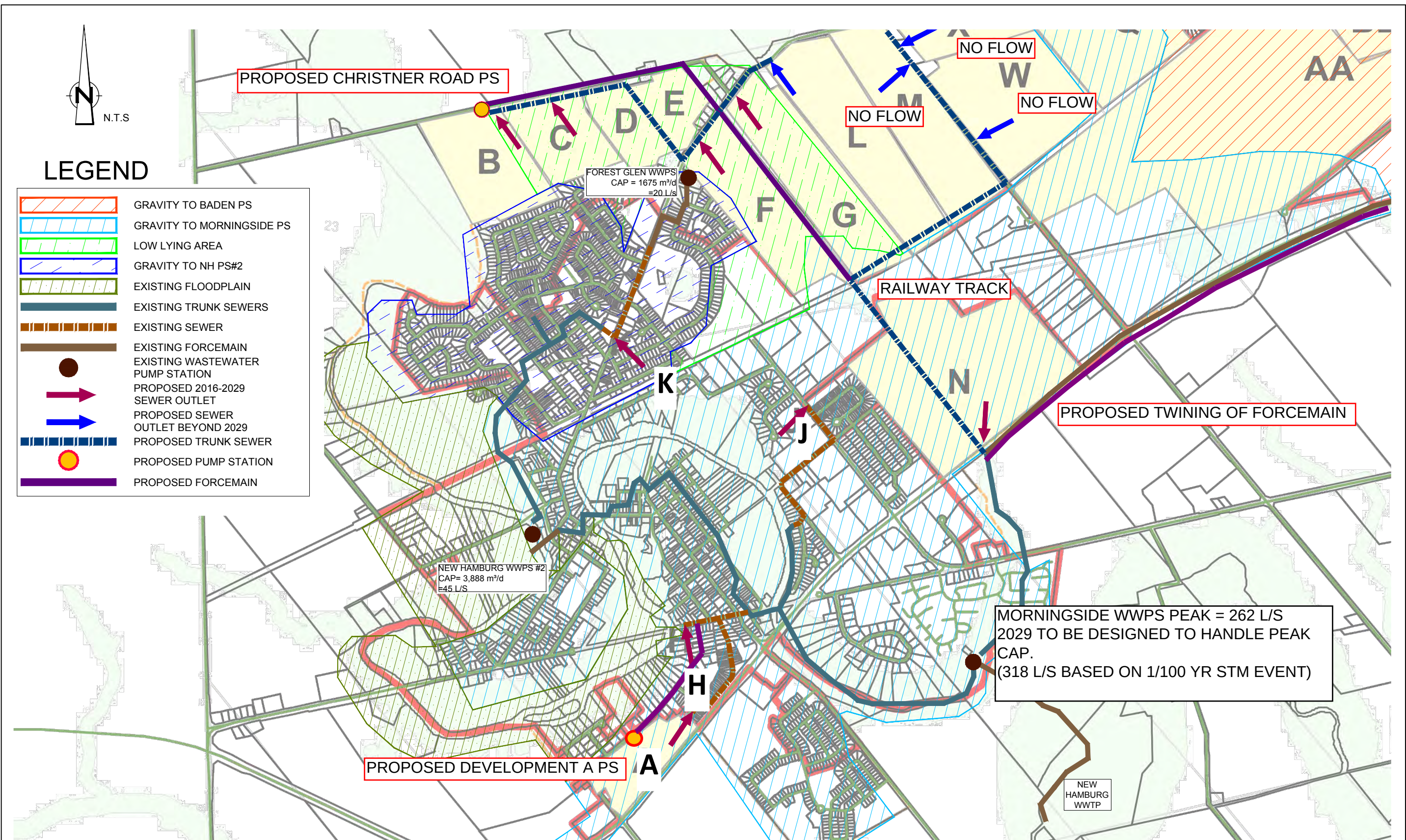
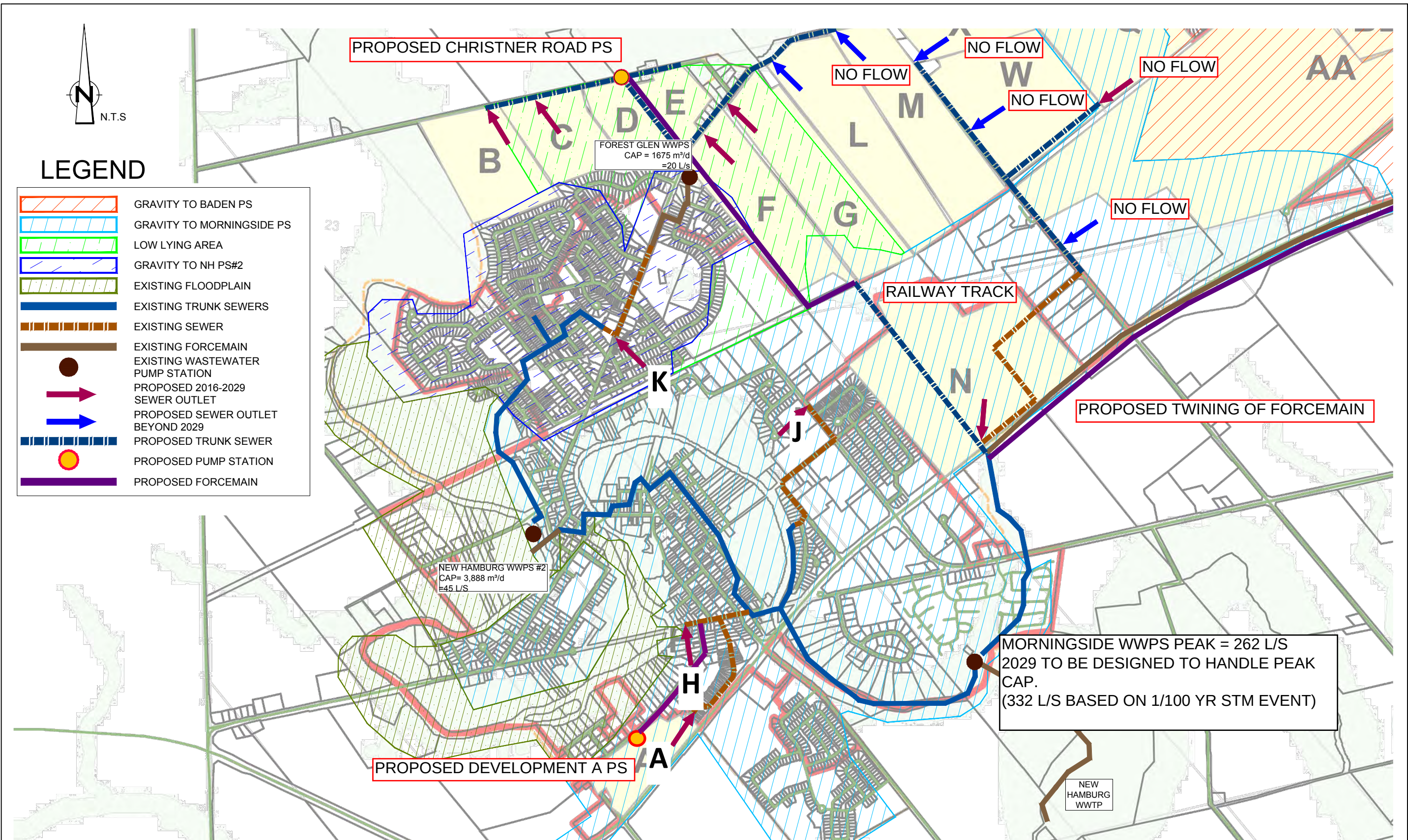


Figure 2-20 Alternative B - Proposed Sanitary Linear Infrastructure and Pump Stations - New Hamburg
Wastewater Servicing Study for New Growth Areas in Baden and New Hamburg
Township of Wilmot



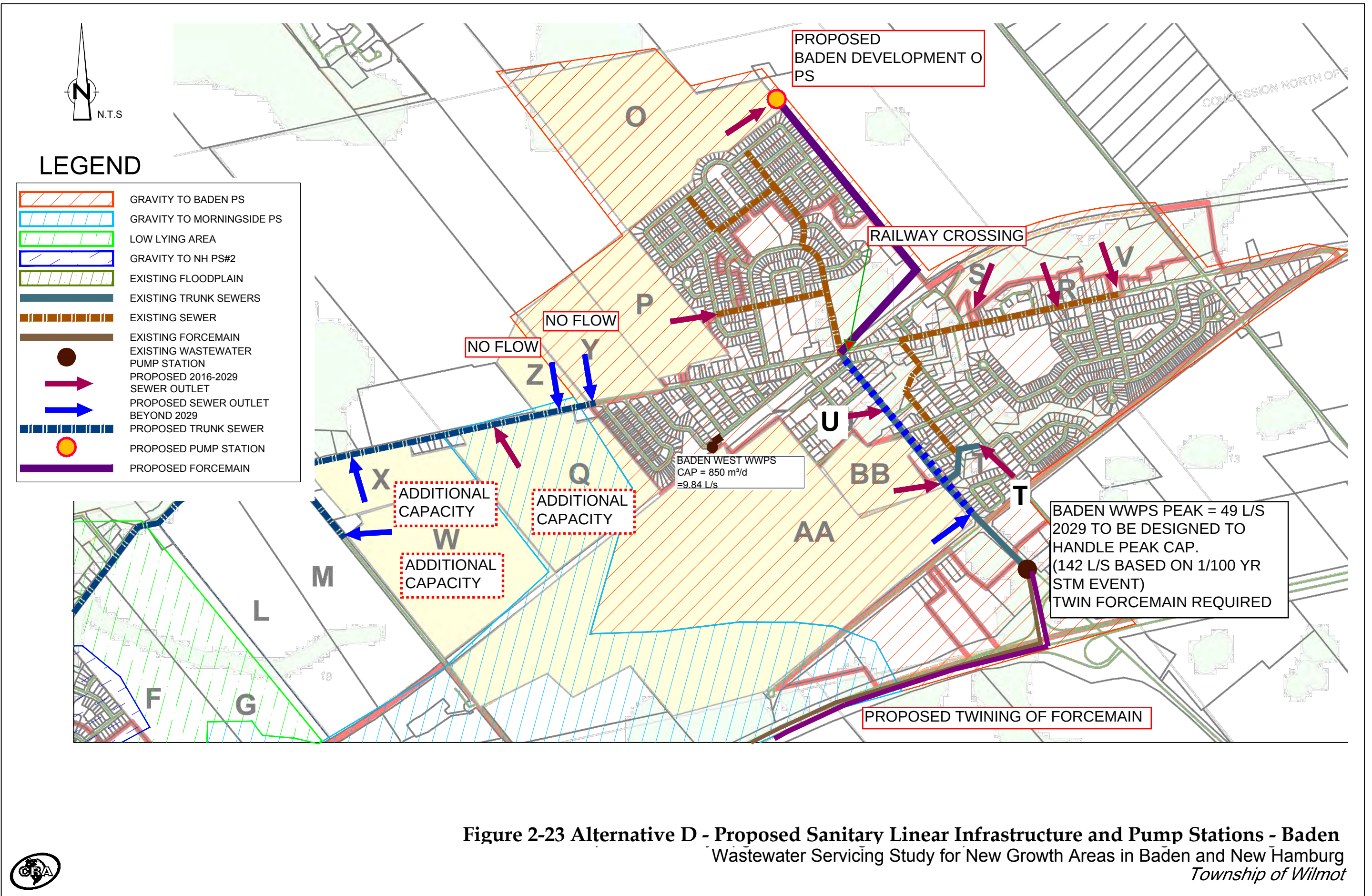
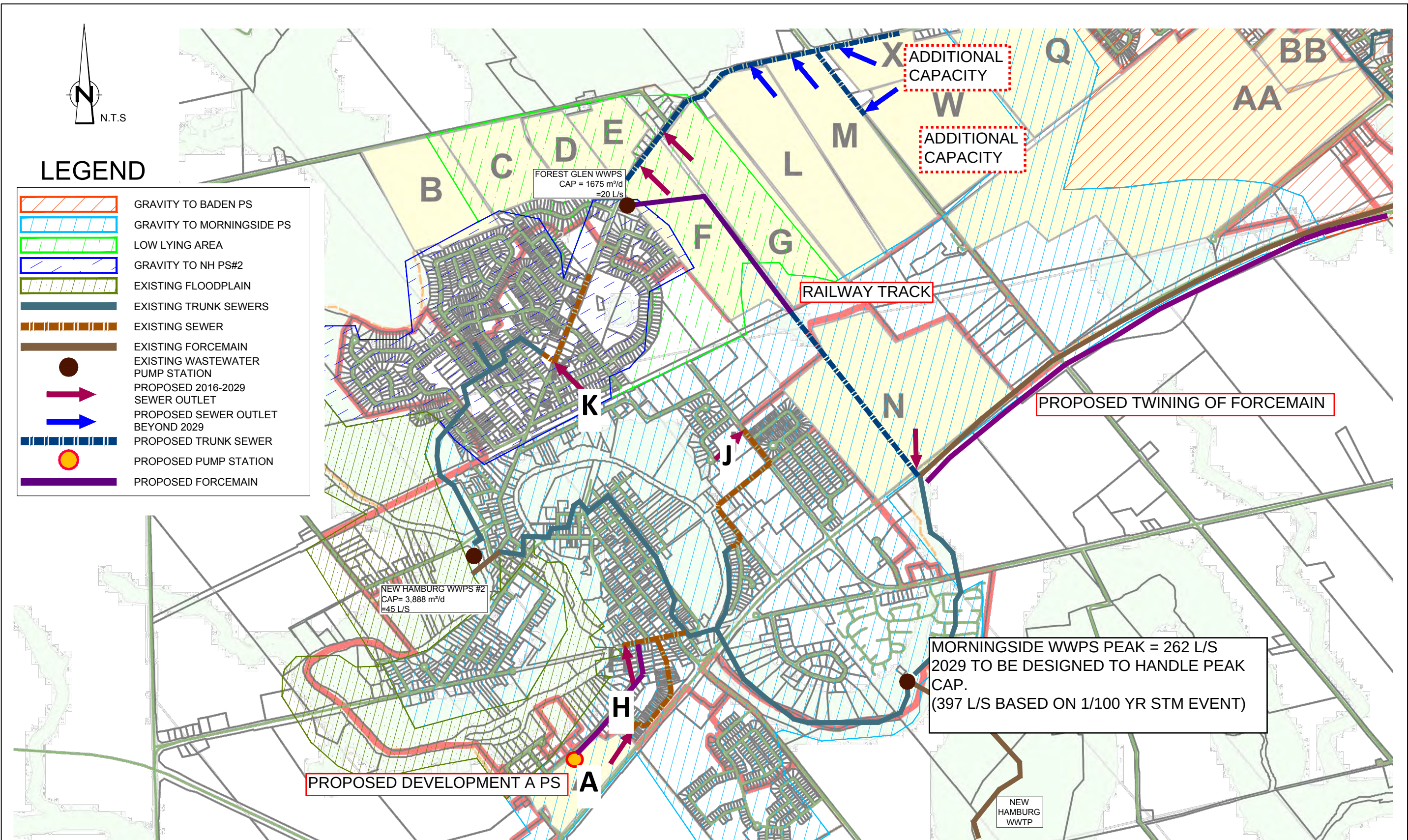


Figure 2-23 Alternative D - Proposed Sanitary Linear Infrastructure and Pump Stations - Baden
Wastewater Servicing Study for New Growth Areas in Baden and New Hamburg
Township of Wilmot





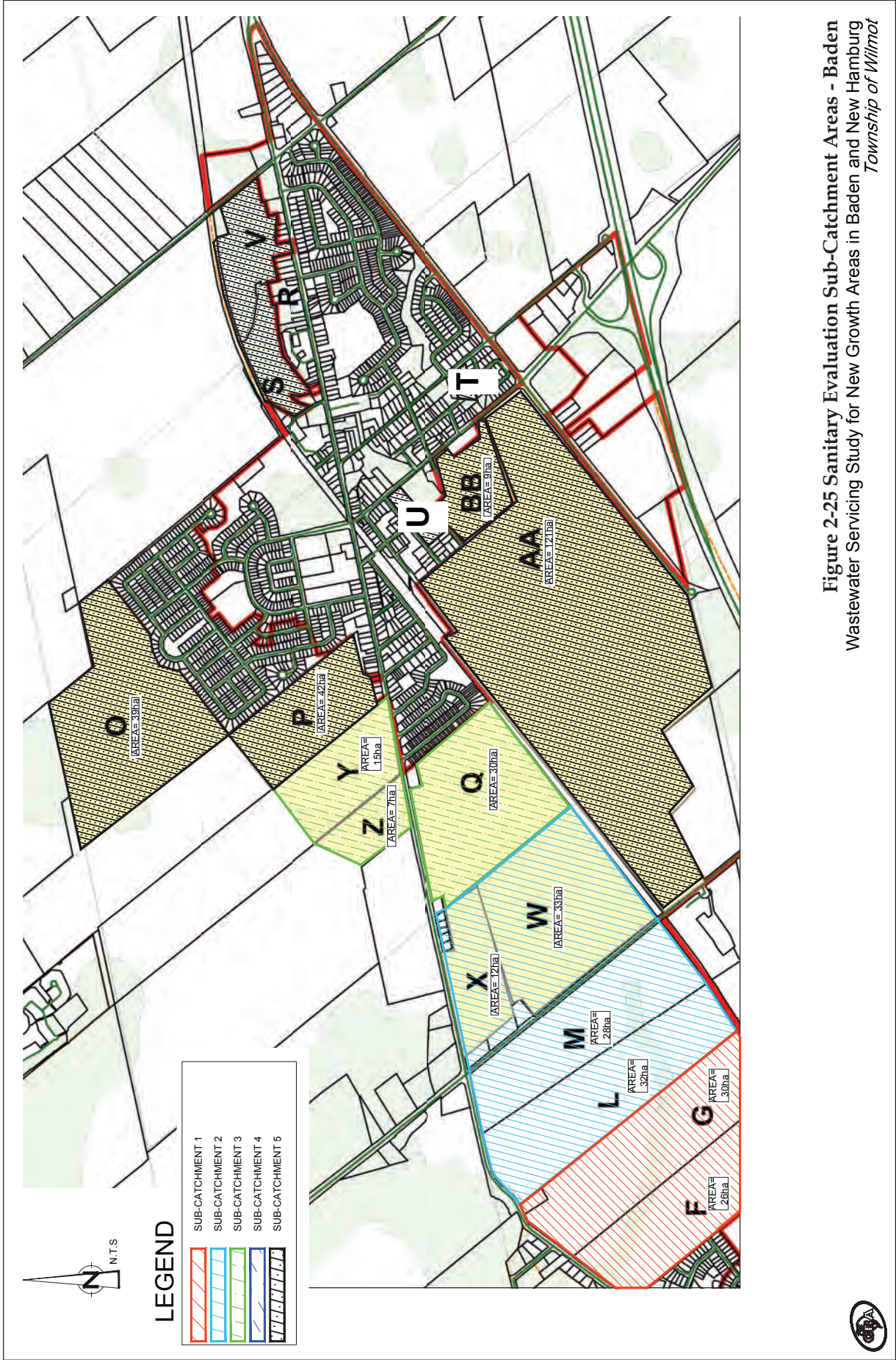


Figure 2-25 Sanitary Evaluation Sub-Catchment Areas - Baden
Wastewater Servicing Study for New Growth Areas in Baden and New Hamburg
Township of Wilmot



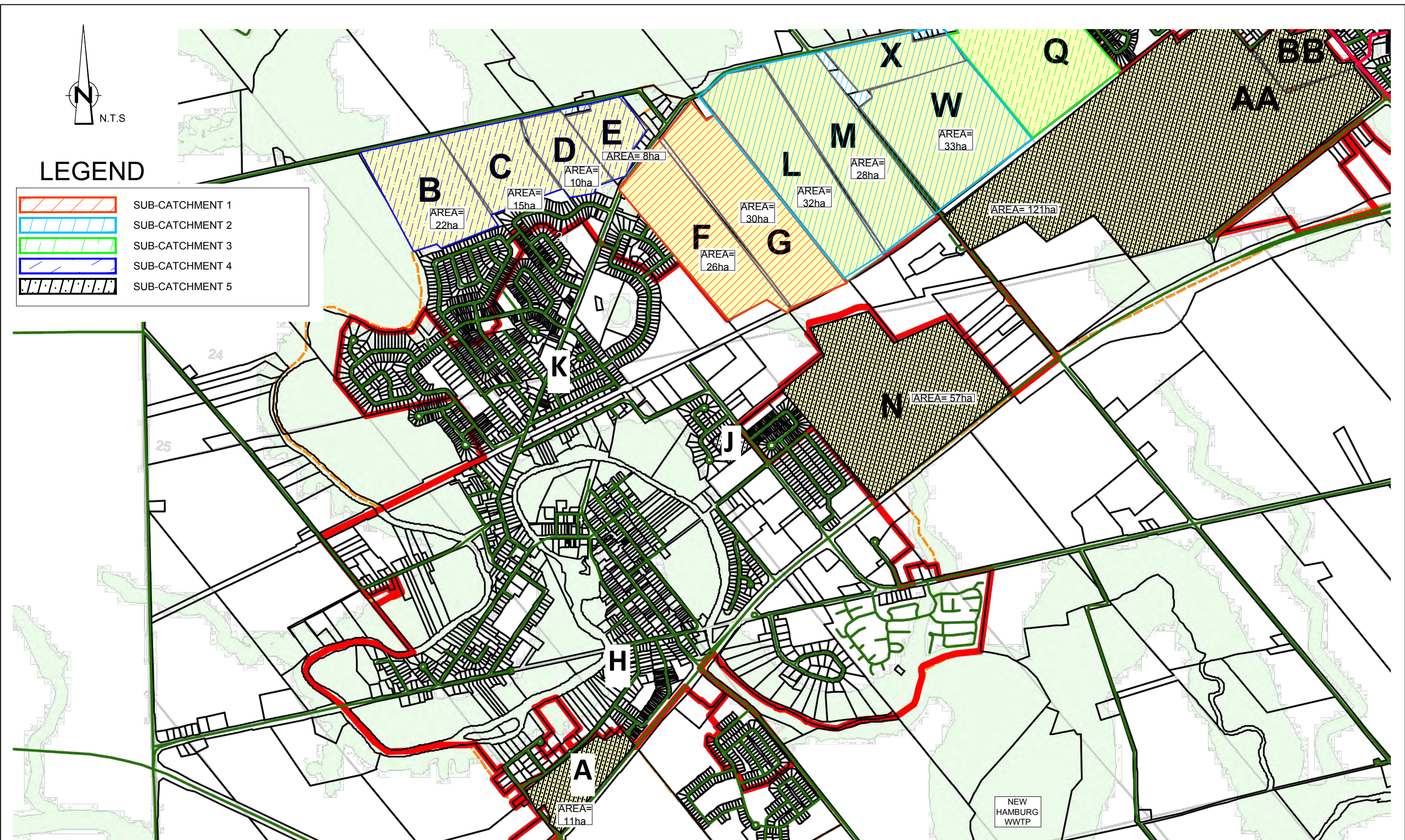


Figure 2-26 Sanitary Evaluation Sub-Catchment Areas - New Hamburg
 Wastewater Servicing Study for New Growth Areas in Baden and New Hamburg
Township of Wilmot



**Wastewater Servicing Study for New Growth Areas
Baden and New Hamburg**

SAMPLE Evaluation Matrix for Sanitary Servicing Alternatives

Evaluation Criteria	Alternative A Sub-Catchments (1 to 5) Grading Scale (0 to 5)	Alternative B Sub-Catchments (1 to 5) Grading Scale (0 to 5)	Alternative C Sub-Catchments (1 to 5) Grading Scale (0 to 5)	Alternative D Sub-Catchments (1 to 5) Grading Scale (0 to 5)	Highest Sub-Catchment Score
1) Hydraulic Compatibility Weighted Factor 10%	1. Scale x 10% = Product	1.	1.	1.	
	2.	2.	2.	2.	
	3.	3.	3.	3.	
	4.	4.	4.	4.	
	5.	5.	5.	5.	
2) Development Timing Weighted Factor 5%	1. Scale x 5% = Product	1.	1.	1.	
	2.	2.	2.	2.	
	3.	3.	3.	3.	
	4.	4.	4.	4.	
	5.	5.	5.	5.	
3) Public/Environmental Disturbance Weighted Factor 20%	1. Scale x 20% = Product	1.	1.	1.	
	2.	2.	2.	2.	
	3.	3.	3.	3.	
	4.	4.	4.	4.	
	5.	5.	5.	5.	
4) Indicative Cost Estimate Weighted Factor 65%	1. Scale x 65% = Product	1.	1.	1.	
	2.	2.	2.	2.	
	3.	3.	3.	3.	
	4.	4.	4.	4.	
	5.	5.	5.	5.	
RESULTING CATCHMENT TOTALS FOR ALTERNATIVE	A Total 1. = 1)1.+2)1.+3)1.+4)1.	B Total 1. = 1)1.+2)1.+3)1.+4)1.	C Total 1. = 1)1.+2)1.+3)1.+4)1.	D Total 1. = 1)1.+2)1.+3)1.+4)1.	S. CAT 1-ALT C
	A Total 2. = 1)2.+2)2.+3)2.+4)2.	B Total 2. = 1)2.+2)2.+3)2.+4)2.	C Total 2. = 1)2.+2)2.+3)2.+4)2.	D Total 2. = 1)2.+2)2.+3)2.+4)2.	S. CAT 2-ALT B
	A Total 3. = 1)3.+2)3.+3)3.+4)3.	B Total 3. = 1)3.+2)3.+3)3.+4)3.	C Total 3. = 1)3.+2)3.+3)3.+4)3.	D Total 3. = 1)3.+2)3.+3)3.+4)3.	S. CAT 3-ALT A
	A Total 4. = 1)4.+2)4.+3)4.+4)4.	B Total 4. = 1)4.+2)4.+3)4.+4)4.	C Total 4. = 1)4.+2)4.+3)4.+4)4.	D Total 4. = 1)4.+2)4.+3)4.+4)4.	S. CAT 4-ALT D
	A Total 5. = 1)5.+2)5.+3)5.+4)5.	B Total 5. = 1)5.+2)5.+3)5.+4)5.	C Total 5. = 1)5.+2)5.+3)5.+4)5.	D Total 5. = 1)5.+2)5.+3)5.+4)5.	S. CAT 5-ALT C

Therefore by selecting the highest totals under each Sub-Catchment, the Optimum (SAMPLE) Sanitary Sewer Alternative would include Alternative C solution for Sub Catchment 1, Alternative B for Sub-Catchment 2, Alternative A for Sub-Catchment 3, Alternative D for Sub-Catchment 4 and Alternative C to service Sub-Catchment 5