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June 28, 2023

Halifax Water
450 Cowie Hill Rd
Halifax, NS B3P 2V3

**Re: Mainland Common Development – Downstream Sanitary Sewer Review**

Our client is proposing to develop the existing Mainland Commons Site in the Clayton Park West area of the Halifax Regional Municipality. The proposed development consists of approximately 43 hectares (ha) of land comprised of 1.33 ha of commercial space and 2,750 apartment units for a total population increase of 6,301 people. SDMM has reviewed the existing sanitary sewer capacity analysis for the wastewater systems immediately downstream of the development and the following report outlines our findings.

To calculate the sanitary sewer flows generated from the proposed development and to estimate the existing downstream sanitary flows, SDMM utilized section 4.2 of the Halifax Water Design and Construction Specifications (2023). Additionally, SDMM obtained the following information:

- The latest HRM GIS sewer record data for the Clayton Park West and Fairview areas.
- HRM sewer record drawings for Regency Park Drive, Washmill Lake Drive, Bently Drive, Saltzburg Place, Ramsbrook Court, Rosedale Avenue and Willett Street.
- Development Agreements for the multi-unit buildings on Regency Park Drive for unit counts.
- Proposed unit counts and commercial floor areas for the Mainland Common development.

The proposed Regency Park Drive section will contain a high point which divides the sanitary flows from the development into two routes. The north route will connect to the existing 250mm sanitary main on Regency Park Drive, which connects to MH11188 at the intersection of Regency Park & Lacewood Drive. This was the termination point for the Regency Park route as shown in Figure 1 of the appendix. The portion of the development to be added to this route will consist of 602 residential units for a total population increase of 1,355 people. The south route will connect to the existing 250mm sanitary main on Washmill Lake Road, which runs through Mount Royale, crosses Northwest Arm Drive, and runs through Fairview. The termination point for this route is at MH8004, on Willett Street at the Convoy Avenue, as

shown in Figure 2 of the appendix. This section of the development will consist of 2,148 residential units and 1.33 ha of commercial space, for a total population increase of 4,946 people.

Existing pipe capacities were calculated using Manning's Equation for each reach of downstream sewer, utilizing pipe characteristics provided by Halifax Water GIS. A summary of existing capacities is presented in Tables 1a and 2a of the appendix.

Estimated wastewater flows were calculated based on the hydraulic formula outlined in section 4.2.2 of the HW Design and Construction Spec (2023). A summary of variables and densities used are presented below:

- Average Dry Weather Flow — 300 L/person/day (HW, 2023)
- Multi-Unit Residential — 2.25 people/unit (HW, 2023)
- Commercial (Flow Equivalent) — 85 people/ha (Atlantic Canadian Wastewater Guidelines Manual, 2022)
- Inflow/Infiltration — 24 $m^3$/ha/day (HW, 2023)
- Safety Factor — 1.25 (HW, 2023)
- Design Flow Equation — $\frac{[1.25 \times (a+M)]+(b \times area)}{86.4}$ (HW, 2023)

Comparisons between the estimated flows and existing pipe capacities indicate that the downstream sewer systems have sufficient capacity to accommodate wastewater flows generated by the proposed development. Based on the proposed flow splitting shown in Figures 1 & 2 of the appendix, all pipes analyzed where found to be under their maximum capacity. Calculations for the pipe reaches reviewed can be found in Tables 1b and 2b of the appendix.

The following is a summary of the final reaches of downstream pipes reviewed prior to and after development:

| | Pipe | Location | Pipe Description | Peak Sanitary Flow | Pipe Capacity | Percent Capacity (%) |
|---|---|---|---|---|---|---|
| Existing | MHPS1-MH11188 | Regency Park Drive | 250mm PVC @ 1.34% | 0.021 $m^3$/s | 0.089 $m^3$/s | 23% |
| | MH11422-MH8004 | Willett Street | 600mm Concrete @ 0.28% | 0.134 $m^3$/s | 0.327 $m^3$/s | 41% |
| Post-Development | MHPS1-MH11188 | Regency Park Drive | 250mm PVC @ 1.34% | 0.041 $m^3$/s | 0.089 $m^3$/s | 46% |
| | MH11422-MH8004 | Willett Street | 600mm Concrete @ 0.28% | 0.197 $m^3$/s | 0.327 $m^3$/s | 60% |

For any additional discussion regarding the above, please contact the undersigned.

Regards,

**Servant, Dunbrack, McKenzie & MacDonald Ltd.**

Original Signed

Ray Landry
Project Engineer
*Z:\SDMM\37000-37999\37800\37810\Design\Sanitary\37810 - Downstream Analysis Review.docx*

# APPENDIX

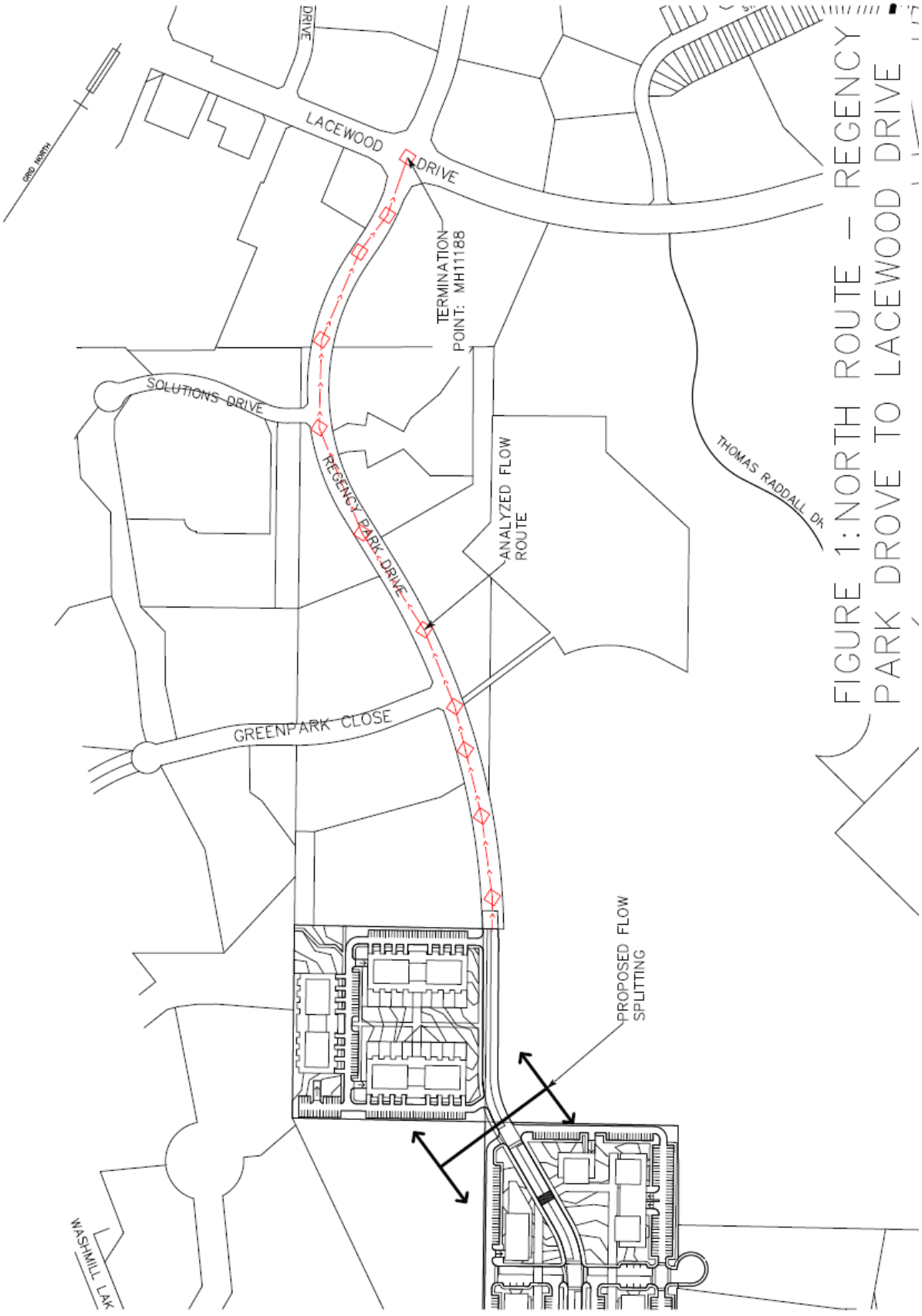
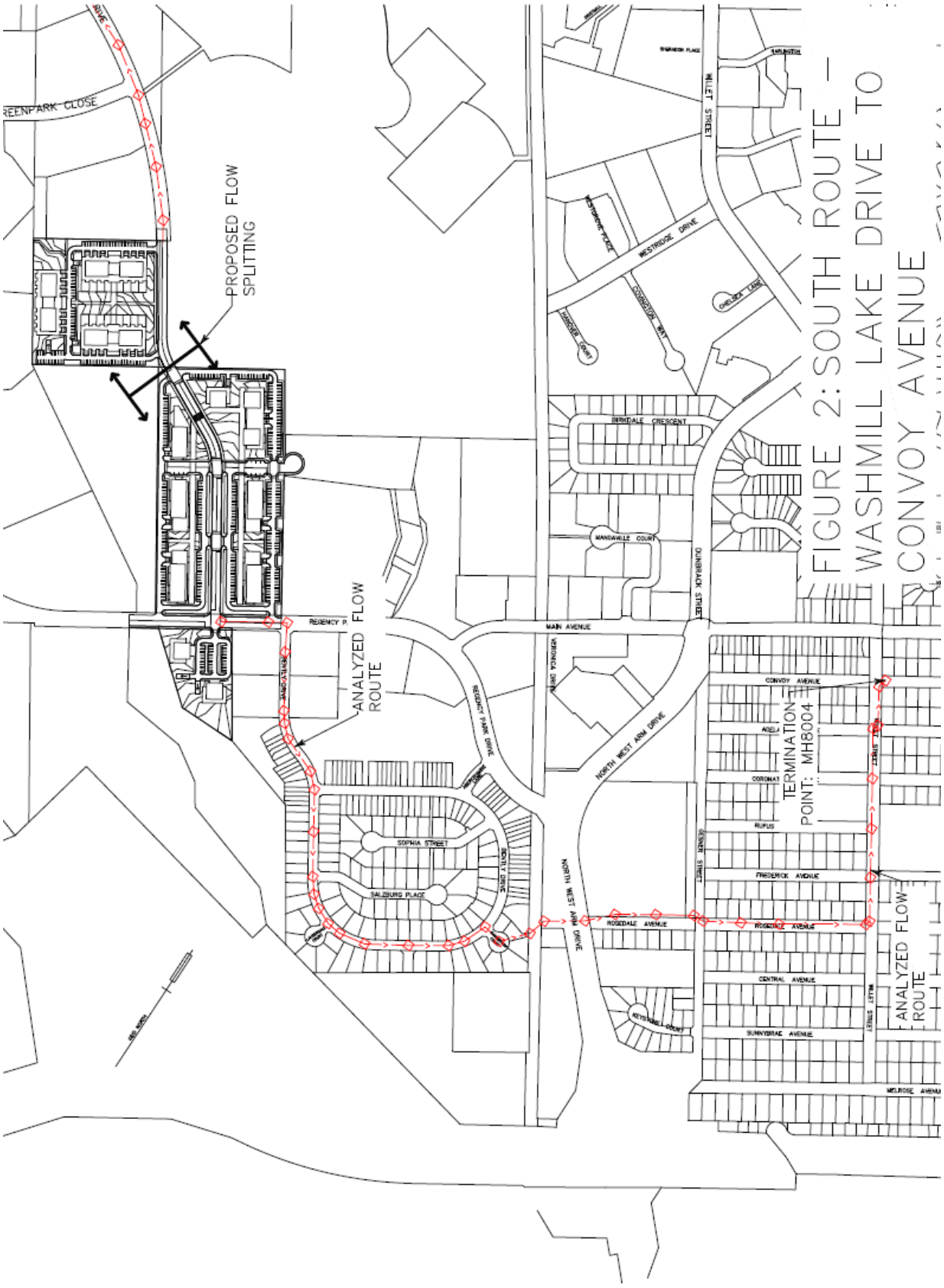



FIGURE 1: NORTH ROUTE – REGENCY PARK DROVE TO LACEWOOD DRIVE


PROPOSED FLOW SPLITTING
ANALYZED FLOW ROUTE
TERMINATION POINT: MH5004
ANALYZED FLOW ROUTE
MAIN AVENUE
NORTH WEST ARM DRIVE
CONVOY AVENUE
ROSEDALE AVENUE
CENTRAL AVENUE
SUNNYDRAE AVENUE
MELROSE AVENUE
FREDERICK AVENUE
SOPHIA STREET
SALZBURG PLACE
MANDAVILLE COURT
BIRKDALE CRESCENT
WESTRIDGE DRIVE
MILLET STREET
DUNSRACK STREET
REGENCY PARK DRIVE
FIGURE 2: SOUTH ROUTE – WASHMILL LAKE DRIVE TO CONVOY AVENUE

## Table 1a: Regency Park to Lacewood Existing Flows & Pipe Capacities

| | | | | | | | Design Flow Calculation | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | Average daily Domestic Flow (a) = | 0.3 | $m^3$/cap*d | Infiltration Allowance = | 24 | $m^3$/ha/day | | | | |
| | | | | | | | Per Drainage Area | | | | | | | Comparison | | | |
| | START MH | END MH | DIA (mm) | TYPE | Slope (%) | Manning's Capacity ($Q_C$) ($m^3$/s) | People | Total Persons | P, Peo/1000 | Harmon Peaking Factor (M) | Area (ha) | Infiltration Allow. b ($m^3$/day) | Q(d), Peak Dry Flow ($m^3$/s) | Mannings Capacity ($Q_c$)($m^3$/s) | Peak Dry Flow ($m^3$/s) | Check | Sewer Shed Areas |
| Regency Park Drive | MHRS10 | MHRS9 | 250 | PVC | 3.30 | 0.140 | 0 | 0 | 0.00 | 4.500 | 0.20 | 4.7112 | 0.0001 | 0.140 | 0.000 | Ok | A |
| | MHRS9 | MHRS8 | 250 | PVC | 2.67 | 0.126 | 326 | 326 | 0.33 | 4.063 | 0.36 | 8.5560 | 0.0059 | 0.126 | 0.006 | Ok | B |
| | MHRS8 | MHRS7 | 250 | PVC | 3.57 | 0.146 | 0 | 326 | 0.33 | 4.063 | 0.47 | 11.1696 | 0.0059 | 0.146 | 0.006 | Ok | C |
| | MHRS7 | MHRS6 | 250 | PVC | 0.90 | 0.073 | 225 | 551 | 0.55 | 3.952 | 0.66 | 15.7920 | 0.0096 | 0.073 | 0.010 | Ok | D |
| | MHRS6 | MHRS5 | 250 | PVC | 1.60 | 0.098 | 180 | 731 | 0.73 | 3.884 | 0.92 | 22.1616 | 0.0126 | 0.098 | 0.013 | Ok | E |
| | MHRS5 | MHRS4 | 250 | PVC | 5.60 | 0.183 | 338 | 1069 | 1.07 | 3.781 | 1.19 | 28.5744 | 0.0179 | 0.183 | 0.018 | Ok | F |
| | MHRS4 | MHRS3 | 250 | PVC | 3.78 | 0.150 | 0 | 1069 | 1.07 | 3.781 | 1.40 | 33.5088 | 0.0179 | 0.150 | 0.018 | Ok | G |
| | MHRS3 | MHRS2 | 250 | PVC | 4.25 | 0.159 | 0 | 1069 | 1.07 | 3.781 | 1.64 | 39.3864 | 0.0180 | 0.159 | 0.018 | Ok | H |
| | MHRS2 | MHPS1 | 250 | PVC | 2.71 | 0.127 | 169 | 1238 | 1.24 | 3.738 | 1.75 | 41.9160 | 0.0206 | 0.127 | 0.021 | Ok | I |
| | MHPS1 | MH11188 | 250 | PVC | 1.34 | 0.089 | 0 | 1238 | 1.24 | 3.738 | 1.91 | 45.7704 | 0.0206 | 0.089 | 0.021 | Ok | J |

## Table 1b: Regency Park Drive to Lacewood Drive (Including Mainland Common Development)

| | | | | | | | Design Flow Calculation | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | Average daily Domestic Flow (a) = | 0.3 | $m^3$/cap*d | Infiltration Allowance = | 24 | $m^3$/ha/day | | | | | |
| | | | | | | | Per Drainage Area | | | | | | | Comparison | | | |
| | START MH | END MH | DIA (mm) | TYPE | Slope (%) | Manning's Capacity (m3/s) | People | Total Persons | P, Peo/1000 | Harmong Peaking Factor (M) | Area (ha) | Infiltration Allow. b ($m^3$/day) | Q(d), Peak Dry Flow ($m^3$/s) | Q(d), Peak Dry Flow ($m^3$/s) | Capacity ($m^3$/s) | Peak Dry Flow ($m^3$/s) | Check | Sewer Shed Areas |
| Regency Park Drive | Development | | | | | | 1355 | 1355 | 1.36 | 3.711 | 4.705 | 107.2800 | 0.0231 | | - | 0.023 | - | |
| | MHRS10 | MHRS9 | 250 | PVC | 3.30 | 0.140 | 0 | 1355 | 1.36 | 3.711 | 4.705 | 111.9912 | 0.0231 | | 0.140 | 0.023 | Ok | A |
| | MHRS9 | MHRS8 | 250 | PVC | 2.67 | 0.126 | 326 | 1681 | 1.68 | 3.643 | 4.507 | 115.8360 | 0.0279 | | 0.126 | 0.028 | Ok | B |
| | MHRS8 | MHRS7 | 250 | PVC | 3.57 | 0.146 | 0 | 1681 | 1.68 | 3.643 | 4.507 | 118.4496 | 0.0280 | 11860 | 0.146 | 0.028 | Ok | C |
| | MHRS7 | MHRS6 | 250 | PVC | 0.90 | 0.073 | 225 | 1906 | 1.91 | 3.602 | 4.395 | 123.0720 | 0.0312 | 12123 | 0.073 | 0.031 | Ok | D |
| | MHRS6 | MHRS5 | 250 | PVC | 1.60 | 0.098 | 180 | 2086 | 2.09 | 3.571 | 4.316 | 129.4416 | 0.0338 | 5660 | 0.098 | 0.034 | Ok | E |
| | MHRS5 | MHRS4 | 250 | PVC | 5.60 | 0.183 | 338 | 2424 | 2.42 | 3.519 | 4.188 | 135.8544 | 0.0386 | 1187 | 0.183 | 0.039 | Ok | F |
| | MHRS4 | MHRS3 | 250 | PVC | 3.78 | 0.150 | 0 | 2424 | 2.42 | 3.519 | 4.188 | 140.7888 | 0.0387 | 2544 | 0.150 | 0.039 | Ok | G |
| | MHRS3 | MHRS2 | 250 | PVC | 4.25 | 0.159 | 0 | 2424 | 2.42 | 3.519 | 4.188 | 146.6664 | 0.0387 | 657 | 0.159 | 0.039 | Ok | H |
| | MHRS2 | MHPS1 | 250 | PVC | 2.71 | 0.127 | 169 | 2593 | 2.59 | 3.495 | 4.132 | 149.1960 | 0.0411 | 6107 | 0.127 | 0.041 | Ok | I |
| | MHPS1 | MH11188 | 250 | PVC | 1.34 | 0.089 | 0 | 2593 | 2.59 | 3.495 | 4.132 | 153.0504 | 0.0411 | 5643 | 0.089 | 0.041 | Ok | J |

## Table 2a: Washmill Lake Drive to Convoy Avenue Existing Flows & Pipe Capacities

| | | | | | | | Design Flow Calculation | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | Average daily Domestic Flow (a) = | 0.3 | $m^3$/cap*d | Infiltration Allowance= | 24 | $m^3$/ha/day | | | | | |
| | | | | | | | Per Drainage Area | | | | | | | Comparison | | | |
| | START MH | END MH | DIA (mm) | TYPE | Slope (%) | Mannings Capacity Qc ($m^3$/s) | People | Total Persons | P, Peo/1000 | Harmon Peaking factor (M) | Area (ha) | Infiltration Allow. b ($m^3$/day) | Q(d), Peak Dry Flow ($m^3$/s) | Mannings Capacity ($m^3$/s) | Peak Dry Flow ($m^3$/s) | Check | Sewer Shed Areas |
| Washmill Lake Drive | MHRPSO2 | MRSMH-1B | 250 | PVC | 1.35 | 0.090 | 0 | 0 | 0.00 | 4.500 | 0.12 | 2.8713 | 0.0000 | 0.090 | 0.000 | Ok | A |
| | MRSMH-1B | MRSMH-1A | 250 | PVC | 1.78 | 0.103 | 225 | 225 | 0.23 | 4.129 | 0.17 | 3.9849 | 0.0041 | 0.103 | 0.004 | Ok | B |
| MOUNT ROYALE | MRSMH-1A | MRSMH-2 | 250 | PVC | 1.70 | 0.101 | 0 | 225 | 0.23 | 4.129 | 0.24 | 5.8089 | 0.0041 | 0.101 | 0.004 | Ok | C |
| | MRSMH-2 | MRSMH-3 | 250 | PVC | 5.14 | 0.175 | 225 | 450 | 0.45 | 3.997 | 0.39 | 9.3609 | 0.0079 | 0.175 | 0.008 | Ok | D |
| | MRSMH-3 | MRSMH-4 | 250 | PVC | 5.42 | 0.180 | 450 | 900 | 0.90 | 3.829 | 0.42 | 10.0913 | 0.0151 | 0.180 | 0.015 | Ok | E |
| | MRSMH-4 | MRSMH-5 | 250 | PVC | 5.74 | 0.185 | 30 | 930 | 0.93 | 3.820 | 0.46 | 11.0705 | 0.0156 | 0.185 | 0.016 | Ok | F |
| | MRSMH-5 | MRSMH-6 | 250 | PVC | 4.99 | 0.173 | 7 | 937 | 0.94 | 3.818 | 0.56 | 13.4877 | 0.0157 | 0.173 | 0.016 | Ok | G |
| | MRSMH-6 | MRSMH-7 | 250 | PVC | 3.11 | 0.136 | 23 | 960 | 0.96 | 3.811 | 0.61 | 14.6099 | 0.0161 | 0.136 | 0.016 | Ok | H |
| | MRSMH-7 | MRSMH-8 | 250 | PVC | 5.41 | 0.180 | 3 | 964 | 0.96 | 3.810 | 0.72 | 17.1635 | 0.0161 | 0.180 | 0.016 | Ok | I |
| | MRSMH-8 | MRSMH-9 | 250 | PVC | 4.87 | 0.171 | 37 | 1001 | 1.00 | 3.800 | 0.83 | 19.9182 | 0.0167 | 0.171 | 0.017 | Ok | J |
| | MRSMH-9 | MRSMH-10 | 250 | PVC | 1.43 | 0.092 | 27 | 1027 | 1.03 | 3.792 | 0.88 | 21.0013 | 0.0172 | 0.092 | 0.017 | Ok | K |
| | MRSMH-10 | MRSMH-11 | 250 | PVC | 1.25 | 0.086 | 10 | 1037 | 1.04 | 3.790 | 0.91 | 21.9229 | 0.0173 | 0.086 | 0.017 | Ok | L |
| | MRSMH-11 | MRSMH-12 | 250 | PVC | 1.92 | 0.107 | 3 | 1041 | 1.04 | 3.789 | 0.96 | 23.0365 | 0.0174 | 0.107 | 0.017 | Ok | M |
| | MRSMH-12 | MRSMH-13 | 250 | PVC | 1.99 | 0.109 | 20 | 1061 | 1.06 | 3.783 | 1.00 | 23.9457 | 0.0177 | 0.109 | 0.018 | Ok | N |
| | MRSMH-13 | MRSMH-14 | 250 | PVC | 1.70 | 0.101 | 3 | 1064 | 1.06 | 3.782 | 1.07 | 25.5969 | 0.0178 | 0.101 | 0.018 | Ok | O |
| | MRSMH-14 | MRSMH-15 | 250 | PVC | 3.96 | 0.154 | 13 | 1078 | 1.08 | 3.779 | 1.18 | 28.2657 | 0.0180 | 0.154 | 0.018 | Ok | P |
| | MRSMH-15 | MRSMH-16 | 250 | PVC | 6.14 | 0.192 | 23 | 1101 | 1.10 | 3.773 | 1.28 | 30.6849 | 0.0184 | 0.192 | 0.018 | Ok | Q |
| | MRSMH-16 | MRSMH-17 | 250 | PVC | 5.05 | 0.174 | 17 | 1118 | 1.12 | 3.768 | 1.32 | 31.7025 | 0.0186 | 0.174 | 0.019 | Ok | R |
| | MRSMH-17 | MRSMH-36 | 250 | PVC | 5.56 | 0.182 | 10 | 1128 | 1.13 | 3.766 | 1.39 | 33.2409 | 0.0188 | 0.182 | 0.019 | Ok | Q |
| | MRSMH-36 | MRSMH-37 | 450 | PVC | 3.36 | 0.523 | 1280 | 2408 | 2.41 | 3.522 | 4.20 | 100.8609 | 0.0380 | 0.523 | 0.038 | Ok | T |
| | MRSMH-37 | MH-S20 | 450 | PVC | 3.79 | 0.555 | 7 | 2415 | 2.41 | 3.521 | 4.28 | 102.7809 | 0.0381 | 0.555 | 0.038 | Ok | U |
| | Bayers Lake Park & Washmill Lake Drive Flows Added → | | | | | | 4359 | 4359 | 4.36 | 3.300 | 27.32 | 655.6800 | 0.0700 | | 0.070 | | |
| Rosedale Avenue | MH10091 | MH10094 | 525 | CONC | 0.91 | 0.410 | 0 | 10 | 0.01 | 4.414 | 0.15 | 3.6031 | 0.1083 | 0.410 | 0.108 | Ok | V |
| | MH10094 | MH11032 | 525 | CONC | 6.92 | 1.131 | 0 | 10 | 0.01 | 4.414 | 0.23 | 5.6378 | 0.1084 | 1.131 | 0.108 | Ok | W |
| | MH11032 | MH11035 | 525 | CONC | 3.91 | 0.851 | 0 | 10 | 0.01 | 4.414 | 0.36 | 8.7187 | 0.1084 | 0.851 | 0.108 | Ok | X |
| | MH11035 | MH11036 | 525 | CONC | 0.93 | 0.415 | 0 | 10 | 0.01 | 4.414 | 0.49 | 11.6450 | 0.1084 | 0.415 | 0.108 | Ok | Y |
| | MH11036 | MH11403 | 525 | CONC | 1.13 | 0.458 | 500 | 510 | 0.51 | 3.970 | 0.52 | 12.3733 | 0.1170 | 0.458 | 0.117 | Ok | Z |
| | MH11403 | MH11413 | 525 | CONC | 1.83 | 0.581 | 10.05 | 520 | 0.52 | 3.965 | 0.63 | 15.0021 | 0.1172 | 0.581 | 0.117 | Ok | AA |
| | MH11413 | MH11405 | 525 | CONC | 2.59 | 0.693 | 36.85 | 557 | 0.56 | 3.950 | 0.75 | 18.0052 | 0.1179 | 0.693 | 0.118 | Ok | BB |
| | MH11405 | MH11408 | 525 | CONC | 0.71 | 0.363 | 0 | 557 | 0.56 | 3.950 | 1.03 | 24.7529 | 0.1179 | 0.363 | 0.118 | Ok | CC |
| | MH11408 | MH11409 | 600 | CONC | 0.21 | 0.281 | 0 | 557 | 0.56 | 3.950 | 1.05 | 25.2361 | 0.1179 | 0.281 | 0.118 | Ok | DD |
| Willett Street | MH11409 | MH11412 | 600 | CONC | 0.41 | 0.393 | 0 | 557 | 0.56 | 3.950 | 1.19 | 28.5392 | 0.1180 | 0.393 | 0.118 | Ok | EE |
| | MH11412 | MH7982 | 600 | CONC | 0.38 | 0.377 | 77.05 | 634 | 0.63 | 3.919 | 1.86 | 44.7474 | 0.1194 | 0.377 | 0.119 | Ok | FF |
| | MH7982 | MH7982 | 600 | CONC | 0.47 | 0.420 | 380.3 | 1014 | 1.01 | 3.796 | 2.54 | 60.8974 | 0.1255 | 0.420 | 0.126 | Ok | GG |
| | MH11415 | MH11418 | 600 | CONC | 0.43 | 0.405 | 400 | 1414 | 1.41 | 3.698 | 3.23 | 77.6238 | 0.1317 | 0.405 | 0.132 | Ok | HH |
| | MH11418 | MH11419 | 600 | CONC | 0.15 | 0.235 | 147.4 | 1562 | 1.56 | 3.667 | 3.75 | 90.0628 | 0.1340 | 0.235 | 0.134 | Ok | II |
| | MH11419 | MH11422 | 600 | CONC | 0.48 | 0.425 | 0 | 1562 | 1.56 | 3.667 | 3.87 | 92.9880 | 0.1340 | 0.425 | 0.134 | Ok | JJ |
| | MH11422 | MH8004 | 600 | CONC | 0.28 | 0.327 | 0 | 1562 | 1.56 | 3.667 | 3.92 | 94.1064 | 0.1340 | 0.327 | 0.134 | Ok | KK |

## Table 2b: Washmill Lake Drive to Convoy Avenue Proposed Flows & Pipe Capacities

**Design Flow Calculation**

Average Daily Domestic Flow (a) = 0.3 $m^3$/cap*d | Infiltration Allowance= 24 $m^3$/ha/day

| | START MH | END MH | DIA (mm) | TYPE | Slope (%) | Qc ($m^3$/s) | Velocity (m/s) | Per Drainage Area: People | Total Persons | P, Peo/1000 | Harmon Peaking factor (M) | Area (ha) | Infiltration Allow. b ($m^3$/day) | Q(d), Peak Dry Flow ($m^3$/s) | Comparison: Capacity ($m^3$/s) | Peak Dry Flow ($m^3$/s) | Check | Sewer Shed Area |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Washmill Lake Drive | Development | | | | | | | 4946 | 4946 | 4.946 | 3.249 | 9.55 | 229.2000 | 0.0724 | - | 0.072 | - | |
| | MHRPSO2 | MRSMH-1B | 250 | PVC | 1.35 | 0.090 | 1.83 | 0 | 4946 | 4.946 | 3.249 | 9.67 | 232.0713 | 0.0724 | 0.090 | 0.072 | Ok | A |
| | MRSMH-1B | MRSMH-1A | 250 | PVC | 1.78 | 0.103 | 2.10 | 225 | 5171 | 5.171 | 3.231 | 9.72 | 233.1849 | 0.0752 | 0.103 | 0.075 | Ok | B |
| MOUNT ROYALE | MRSMH-1A | MRSMH-2 | 250 | PVC | 1.70 | 0.101 | 2.05 | 0 | 5171 | 5.171 | 3.231 | 9.79 | 235.0089 | 0.0752 | 0.101 | 0.075 | Ok | C |
| | MRSMH-2 | MRSMH-3 | 250 | PVC | 5.14 | 0.175 | 3.57 | 225 | 5396 | 5.396 | 3.214 | 9.94 | 238.5609 | 0.0780 | 0.175 | 0.078 | Ok | D |
| | MRSMH-3 | MRSMH-4 | 250 | PVC | 5.42 | 0.180 | 3.67 | 450 | 5846 | 5.846 | 3.181 | 9.97 | 239.2913 | 0.0835 | 0.180 | 0.083 | Ok | E |
| | MRSMH-4 | MRSMH-5 | 250 | PVC | 5.74 | 0.185 | 3.77 | 30 | 5876 | 5.876 | 3.179 | 10.01 | 240.2705 | 0.0839 | 0.185 | 0.084 | Ok | F |
| | MRSMH-5 | MRSMH-6 | 250 | PVC | 4.99 | 0.173 | 3.52 | 7 | 5883 | 5.883 | 3.179 | 10.11 | 242.6877 | 0.0840 | 0.173 | 0.084 | Ok | G |
| | MRSMH-6 | MRSMH-7 | 250 | PVC | 3.11 | 0.136 | 2.78 | 23 | 5906 | 5.906 | 3.177 | 10.16 | 243.8099 | 0.0843 | 0.136 | 0.084 | Ok | H |
| | MRSMH-7 | MRSMH-8 | 250 | PVC | 5.41 | 0.180 | 3.66 | 3 | 5910 | 5.910 | 3.177 | 10.27 | 246.3635 | 0.0843 | 0.180 | 0.084 | Ok | I |
| | MRSMH-8 | MRSMH-9 | 250 | PVC | 4.87 | 0.171 | 3.48 | 37 | 5947 | 5.947 | 3.174 | 10.38 | 249.1182 | 0.0848 | 0.171 | 0.085 | Ok | J |
| | MRSMH-9 | MRSMH-10 | 250 | PVC | 1.43 | 0.092 | 1.88 | 27 | 5973 | 5.973 | 3.173 | 10.43 | 250.2013 | 0.0851 | 0.092 | 0.085 | Ok | K |
| | MRSMH-10 | MRSMH-11 | 250 | PVC | 1.25 | 0.086 | 1.76 | 10 | 5983 | 5.983 | 3.172 | 10.46 | 251.1229 | 0.0853 | 0.086 | 0.085 | Ok | L |
| | MRSMH-11 | MRSMH-12 | 250 | PVC | 1.92 | 0.107 | 2.18 | 3 | 5987 | 5.987 | 3.172 | 10.51 | 252.2365 | 0.0853 | 0.107 | 0.085 | Ok | M |
| | MRSMH-12 | MRSMH-13 | 250 | PVC | 1.99 | 0.109 | 2.22 | 20 | 6007 | 6.007 | 3.170 | 10.55 | 253.1457 | 0.0856 | 0.109 | 0.086 | Ok | N |
| | MRSMH-13 | MRSMH-14 | 250 | PVC | 1.70 | 0.101 | 2.05 | 3 | 6010 | 6.010 | 3.170 | 10.62 | 254.7969 | 0.0856 | 0.101 | 0.086 | Ok | O |
| | MRSMH-14 | MRSMH-15 | 250 | PVC | 3.96 | 0.154 | 3.13 | 13 | 6024 | 6.024 | 3.169 | 10.73 | 257.4657 | 0.0858 | 0.154 | 0.086 | Ok | P |
| | MRSMH-15 | MRSMH-16 | 250 | PVC | 6.14 | 0.192 | 3.90 | 23 | 6047 | 6.047 | 3.167 | 10.83 | 259.8849 | 0.0861 | 0.192 | 0.086 | Ok | Q |
| | MRSMH-16 | MRSMH-17 | 250 | PVC | 5.05 | 0.174 | 3.54 | 17 | 6064 | 6.064 | 3.166 | 10.87 | 260.9025 | 0.0864 | 0.174 | 0.086 | Ok | R |
| | MRSMH-17 | MRSMH-36 | 250 | PVC | 5.56 | 0.182 | 3.71 | 10 | 6074 | 6.074 | 3.166 | 10.94 | 262.4409 | 0.0865 | 0.182 | 0.086 | Ok | Q |
| | MRSMH-36 | MRSMH-37 | 450 | PVC | 3.36 | 0.523 | 3.29 | 1280 | 7354 | 7.354 | 3.086 | 13.75 | 330.0609 | 0.1023 | 0.523 | 0.102 | Ok | T |
| | MRSMH-37 | MH-S20 | 450 | PVC | 3.79 | 0.555 | 3.49 | 7 | 7361 | 7.361 | 3.085 | 13.83 | 331.9809 | 0.1024 | 0.555 | 0.102 | Ok | U |
| | Bayers Lake Park & Washmill Lake Drive Flows Added → | | | | | | | 4359 | 4359 | 4.359 | 3.300 | 27.32 | 655.6800 | 0.0700 | | 0.070 | | |
| Rosedale Avenue | MH10091 | MH10094 | 525 | CONC | 0.91 | 0.410 | 1.89 | 0 | 10 | 0.010 | 4.414 | 0.15 | 3.6031 | 0.1727 | 0.410 | 0.173 | Ok | V |
| | MH10094 | MH11032 | 525 | CONC | 6.92 | 1.131 | 5.22 | 0 | 10 | 0.010 | 4.414 | 0.23 | 5.6378 | 0.1727 | 1.131 | 0.173 | Ok | W |
| | MH11032 | MH11035 | 525 | CONC | 3.91 | 0.851 | 3.93 | 0 | 10 | 0.010 | 4.414 | 0.36 | 8.7187 | 0.1727 | 0.851 | 0.173 | Ok | X |
| | MH11035 | MH11036 | 525 | CONC | 0.93 | 0.415 | 1.92 | 0 | 10 | 0.010 | 4.414 | 0.49 | 11.6450 | 0.1728 | 0.415 | 0.173 | Ok | Y |
| | MH11036 | MH11403 | 525 | CONC | 1.13 | 0.458 | 2.12 | 500 | 510 | 0.510 | 3.970 | 0.52 | 12.3733 | 0.1814 | 0.458 | 0.181 | Ok | Z |
| | MH11403 | MH11413 | 525 | CONC | 1.83 | 0.581 | 2.69 | 10 | 520 | 0.520 | 3.965 | 0.63 | 15.0021 | 0.1816 | 0.581 | 0.182 | Ok | AA |
| | MH11413 | MH11405 | 525 | CONC | 2.59 | 0.693 | 3.20 | 37 | 557 | 0.557 | 3.950 | 0.75 | 18.0052 | 0.1822 | 0.693 | 0.182 | Ok | BB |
| | MH11405 | MH11408 | 525 | CONC | 0.71 | 0.363 | 1.68 | 0 | 557 | 0.557 | 3.950 | 1.03 | 24.7529 | 0.1823 | 0.363 | 0.182 | Ok | CC |
| | MH11408 | MH11409 | 600 | CONC | 0.21 | 0.281 | 0.99 | 0 | 557 | 0.557 | 3.950 | 1.05 | 25.2361 | 0.1823 | 0.281 | 0.182 | Ok | DD |
| Willett Street | MH11409 | MH11412 | 600 | CONC | 0.41 | 0.393 | 1.39 | 0 | 557 | 0.557 | 3.950 | 1.19 | 28.5392 | 0.1823 | 0.393 | 0.182 | Ok | EE |
| | MH11412 | MH7982 | 600 | CONC | 0.38 | 0.377 | 1.33 | 77 | 634 | 0.634 | 3.919 | 1.86 | 44.7474 | 0.1837 | 0.377 | 0.184 | Ok | FF |
| | MH7982 | MH7982 | 600 | CONC | 0.47 | 0.420 | 1.49 | 380 | 1014 | 1.014 | 3.796 | 2.54 | 60.8974 | 0.1898 | 0.420 | 0.190 | Ok | GG |
| | MH11415 | MH11418 | 600 | CONC | 0.43 | 0.405 | 1.43 | 302 | 1316 | 1.316 | 3.720 | 3.23 | 77.6238 | 0.1946 | 0.405 | 0.195 | Ok | HH |
| | MH11418 | MH11419 | 600 | CONC | 0.15 | 0.235 | 0.83 | 147 | 1464 | 1.464 | 3.687 | 3.75 | 90.0628 | 0.1969 | 0.235 | 0.197 | Ok | II |
| | MH11419 | MH11422 | 600 | CONC | 0.48 | 0.425 | 1.50 | 0 | 1464 | 1.464 | 3.687 | 3.87 | 92.9880 | 0.1969 | 0.425 | 0.197 | Ok | JJ |
| | MH11422 | MH8004 | 600 | CONC | 0.28 | 0.327 | 1.16 | 0 | 1464 | 1.464 | 3.687 | 3.92 | 94.1064 | 0.1969 | 0.327 | 0.197 | Ok | KK |

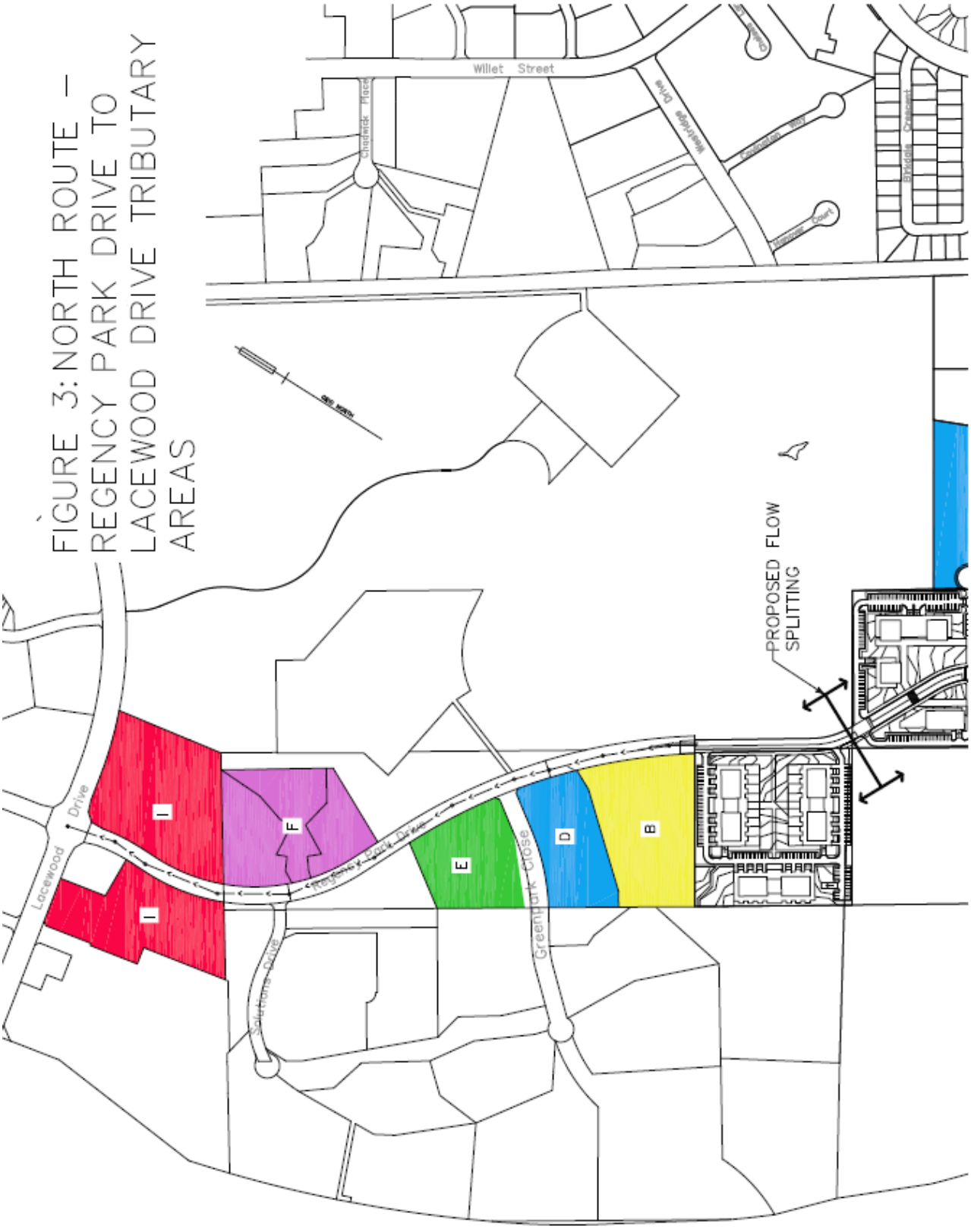



FIGURE 3: NORTH ROUTE – REGENCY PARK DRIVE TO LACEWOOD DRIVE TRIBUTARY AREAS


FIGURE 4: SOUTH ROUTE –
WASHMILL LAKE DR TO CONVOY AVE
TRIBUTARY AREAS
PROPOSED FLOW SPLITTING
BAYERS LAKE PARK &
WASHMILL LAKE DR
FLOWS
CONVOY AVENUE
Willet Street
Geisner Street
Rufus Street
Northwest Arm Drive
Gelzer Hill Road
Mandeville Court
Rhodaire Crescent
Westridge
GRID NORTH