CITY OF BURLINGTON

BURLINGTON MAJOR TRANSIT STATION AREAS (MTSA) AREA SPECIFIC PLANS FUNCTIONAL SERVICING REPORT

-APPLEBY GO MTSA
-BURLINGTON GO MTSA
-ALDERSHOT GO MTSA

JULY 18, 2023

CONFIDENTIAL

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REPORT (FINAL)
CONFIDENTIAL

PROJECT NO.: TPB178008S
DATE: JULY 18, 2023

WSP
3050 HARVESTER ROAD
BURLINGTON, ON L7N 3J1

T: 905-335-2353
WSP.COM

July 18, 2023

Confidential

City of Burlington
426 Brant Street
Burlington, ON L7R 3Z6

Attention: Karyn Poad, Senior Planner

Dear Madam:

Subject: Burlington MTSA
Area Specific Plans
Functional Servicing Report
-Appleby GO MTSA
-Burlington GO MTSA
-Aldershot GO MTSA

This revision of the Burlington MTSA Area Specific Plans Functional Servicing Report has been revised and is being resubmitted in response to comments received October 4, 2022.

Yours sincerely,

Roger LeBlanc, P.Eng.
Senior Municipal Engineer,
WSP E&I

RL/GC
Encl.
cc: Glenn Clements – Senior Associate Engineer - Civil
WSP ref.: TPB178008S

SIGNATURES

PREPARED BY

Roger LeBlanc, P.Eng.
Senior Municipal Engineer

APPROVED BY

Glenn Clements, P.Eng.
Senior Associate Engineer - Civil

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EXECUTIVE SUMMARY

This study discusses the approach to wastewater and water servicing by evaluating existing system capacity, evaluating water demand, and a discussion regarding the development of proposed wastewater collection and water distribution systems for three MTSAs (i.e. Appleby, Burlington, and Aldershot).

This report includes additional considerations including cost sharing opportunities for intensification areas, integration with Halton Region's Master Plan, and a discussion regarding the impacts of the overall Regional water and wastewater systems for the three subject MTSAs.

Both water and wastewater projected service expansions are evaluated for each MTSA based on existing conditions and projected densities.

The following table summarizes the estimated construction costs for each MTSA.

Appleby	Internal Sanitary Servicing	$8,083,530	$18,854,175
	Internal Water Servicing	$10,770,645	
Burlington	Internal Sanitary Servicing	$10,807,277	$16,427,277
	Internal Water Servicing	$5,620,000	
Aldershot	Internal Sanitary Servicing	$6,206,490	$21,554,918
	Internal Water Servicing	$15,348,428	

The main recommendations from this study are summarized below:

1	Advance modeling to determine required related Regional water and wastewater vertical infrastructure and confirm the necessity of upsizing current infrastructure to accommodate projected growth
2	Conduct Region-wide study focusing on a system-wide analysis to evaluate the impact of overall development to Regional infrastructure as this study limits its focus on local infrastructure
3	Conduct sensitivity testing of recent implementation of OPA to confirm any deviation from projected populations

1 INTRODUCTION

WSP (Formerly Wood Environment & Infrastructure Solutions) was retained by Brook McIlroy to prepare a water and wastewater servicing study for the Burlington Major Transit Station Areas (MTSAs). The MTSAs are four strategic intensification areas in the City of Burlington known as:

- Appleby Go Major Transit Station Area (Appleby Go MTSA),
- Burlington Go Major Transit Station Area (Burlington Go MTSA),
- Downtown Major Transit Station Area (Downtown MTSA), and
- Aldershot Go Major Transit Station Area (Aldershot Go MTSA).

The scope of this report and study involves the following:

- The Downtown MTSA servicing report was previously completed under separate cover on September 24, 2020. This report reviews the existing water and wastewater services accessible each of the remaining Burlington MTSAs (Appleby, Burlington, and Aldershot);
- Confirmation of the Capacity of the water and wastewater services accessible to each of the Burlington MTSAs, and
- Preparation of Water & Wastewater Servicing Concepts for each of the BMTSAs based on Halton's 2031 model with the most recent planned land uses and an updated planning horizon of 2051.

The servicing plans are prepared in accordance with the land use plans and proposed population distribution provided by Brook McIlroy. This study is part of the City's Area Specific Plans (ASPs) for each of the MTSAs and informs these ASPs regarding water and wastewater infrastructure capital needs.

The impact of simultaneous build-out of MTSAs has not been evaluated as part of this study. Each MTSA area was studied in isolation.

Figure 1-1 provides the location of the BMTSAs and the subject study areas. The MTSAs are located in South Burlington.

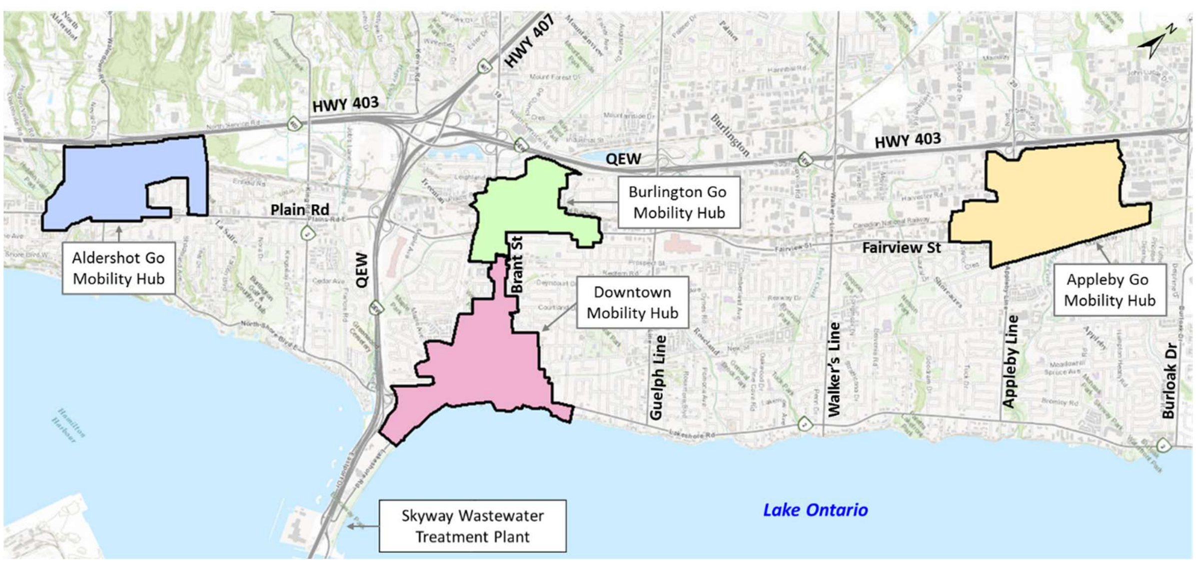

Figure 1-1. Study Areas

Water and Wastewater infrastructure in Burlington is owned, planned and managed by Halton Region. Halton Region's planning framework to service the growth is through its Master Plan which was last updated in 2011. Infrastructure planning in Halton has focused on a sustainable regionalized approach in which, growth in the Region is serviced by the Lake Based System. In this planning framework, trunk infrastructure for water wastewater infrastructure is designed and planned in the South (near Lake Ontario) and moves up Northward into branches into the primary growth areas in North Oakville, North Burlington, Milton and Halton Hills/Georgetown.

This study is part of the City's Area Specific Plans for each of the MTSAs and informs the Area Specific Plans in regard to water and wastewater infrastructure capital needs.

This report has been prepared in support of the City of Burlington MTSA Area Specific Plan, but ahead of next Region's Water and Wastewater Master Plan. As such, the cumulative impact of the Major Transit Station Areas on the wider water and wastewater system cannot be fulsomely reviewed or incorporated into this work. The recommendations and strategies outlined in this report will need to be reviewed and updated when the Master Plans are complete and more is understood about the future Regional strategies for Burlington (through Master Planning), the phasing of each Major Transit Station Areas and the implementation timing of the Region's capital program. Policies will be included in the Area Specific Plan to outline the future requirements to ensure consistency between City and Region planning work.

This study is part of the City's Area Specific Plans for each of the Major Transit Station Areas and informs the Area Specific Plans in regard to water and wastewater infrastructure capital needs. This report was originally prepared as part of the MTSAs Study in 2018 and since that time, changes have occurred with respect to the long-range planning time horizon, terminology and study area boundaries. The supporting technical studies for the MTSA Area Specific Plans have been completed using 2051 as a practical and long-term time frame as set out in the Terms of Reference for the project. Halton Region adopted ROPA 48 that established a Regional Urban Structure hierarchy of strategic growth areas through delineating and assigning density targets of the Urban Growth Centre and Major Transit Station Areas. The Region, through the Municipal Comprehensive Review to achieve conformity to Provincial Plans and policies will accommodate growth to 2051. Through the Minister of Municipal Affairs and Housing decision on ROPA 49, the Region is planning to accommodate growth to 2051 and will undergo an exercise to determine the growth distributions to the local municipalities. Following the completion of this Functional Servicing Report, additional sensitivity testing will be required, and the future phasing of infrastructure will be determined through other broader processes.

Provincial Bill 23, the More Homes Built Faster Act, 2022 makes substantial changes to existing provincial legislation and supporting regulations to land use planning in Ontario. One of which is the removal of land use planning responsibilities to a list of upper-tier municipalities including the Region of Halton. While at the time of drafting this report, this proposed change is not in effect and will be proclaimed by the Lieutenant Governor at a later date, the Region of Halton will continue to have a role in the planning, delivery and financing of water and wastewater infrastructure.

1.1 BACKGROUND INFORMATION

The analysis is based on Halton's latest water and wastewater hydraulic models provided by Halton Region in April 2022. This information along with existing contour mapping and existing wastewater collection and water distribution systems were used.

The planning and design of water and wastewater infrastructure followed recognized standards and planning documents including:

- Design Guidelines for Sewage Works, MOE, 2008;
- Design Guidelines for Drinking Water Systems, MOE, 2008;
- Region of Halton Water and Wastewater Facilities Design Manual, May 2021 (version 2);
- Region of Halton Water and Wastewater Linear Design Manual, April 2019 (version 4);

- Sustainable Halton Water and Wastewater Master Plan, 2011;
- Water and Wastewater Hydraulic Models provided by Halton Region in April 2022:
    - InfoWater Updated May 11, 2022, and
    - InfoSewer Updated May 11, 2022.

Land use planning input to the study was provided by Brook McIlroy:

- Appleby Go Mobility Hub Technical Memo to the City of Burlington, November 9, 2017;
- Burlington Go Mobility Hub Technical Memo to the City of Burlington, November 9, 2017;
- Aldershot Go Mobility Hub Technical Memo to the City of Burlington, November 9, 2017;
- Block by block density breakdown for Appleby GO and Aldershot GO MTSAs, and
- Downtown Burlington MTSA GFA Updated Technical Memo, February 2018.

In addition, the following sources were reviewed and/or used in this study:

- Downtown Mobility Hub Block Diagram – Council Workshop Document PB-68-17;
- GO Station Mobility Hubs Preferred Concepts: Aldershot GO, Burlington GO and Appleby GO Report PB-76-17 to the Planning and Development Committee;
- Watson's 2016-2031 Non-Residential Growth Forecast by Fiscal Impact Study Development Type from their April 20, 2017 City of Burlington Fiscal Impact Study.

Note that the development of planning concepts has been an iterative process and several iterations have been provided. Specifically, the following reports PB-67-18, PB-11-18, and PB-14-18 have recently been completed for the Downtown MTSA. While this report was prepared based on a previous plan provided in September 2017, the water and wastewater servicing concepts can accommodate a certain level of flux with respect to populations.

It is important to note that the Region's Planning model as provided for this report is the basis utilized for understanding the Region's existing and planned infrastructure. No calibration of the system, such as verification of sewer inverts, detailed design information, was conducted by WSP (Formerly Wood) for this study as Halton's planning model is understood to be calibrated.

1.2 APPROACH TO WASTEWATER SERVICING

1.2.1 EXISTING SYSTEM CAPACITY EVALUATION

The Region's hydraulic models currently only extend to the 2031 timeframe. The population and employment projections for the MTSAs (which extend beyond 2031) are overlaid within the MTSA geography such that local servicing can be evaluated at full build-out. However, the impact on the broader Regional system cannot be interpreted at this time.

An updated wastewater system model was initially provided by Halton Region in September 2017. The model provides the following information that is used to confirm the system's available capacity:

- Physical characteristics of the sewer systems from the Burlington MTSAs to the Skyway wastewater treatment plant, i.e. size, diameter, elevations and slopes of the sewer system;
- Baseline and projected demands on the wastewater collection system. Baseline and projected demands (for a 2051 scenario) are included, the flows include a wet weather flow contribution;
- Modelled performance of baseline and projected demands through the wastewater collection system;
- The projected demands are based on best planning estimates (BPEs), the link between BPEs and demands is not provided in the Halton Model and the BPEs were not available for this study.

The following steps were undertaken to evaluate the existing system wastewater capacity:

- Identify suitable connection points to the system, and evaluate suitable capacity at connection points;
- Confirm sewersheds characteristics at the sub-trunks levels – desktop study independent of existing model, and confirmation of existing model;
- Utilize Halton's water & wastewater model to verify downstream trunk conveyance capacities;
- Add the demands associated with each of the Burlington MTSAs to the Halton model to confirm the loads within the 2031 wet weather flow models.
- Wastewater infrastructure which services multiple MTSAs (e.g., wastewater treatment plants, wastewater pump stations, etc.) have not been evaluated as part of this study.

A more recent version of the wastewater system model was provided by Halton Region in April 2022 and the above outlined steps were undertaken again to confirm the system's available capacity.

1.2.2 WASTEWATER DEMAND EVALUATION

A meeting was held with Halton Region on December 18th, 2017 to confirm the intended use of the model for planning purposes. The following key points were highlighted by Halton Region at the meeting:

1. The wastewater model – 2031 wet weather flow scenario– has an allowance for inflow and infiltration for the subject lands in all 4 of the Burlington MTSAs, as such, there is no need to add wet weather flows to the model;

2. The model has an inherent peak factor algorithm that calculates the peak factor in pipes based on the cumulative average day demand and coverage population, as such, flow inputs from proposed developments need only be input as average day flows.

3. Halton's model has a population coverage-based demand generation which is applied to the modeling. The populations in the model are input into the coverage field in the model to generate demands.

The planning scenarios utilized in Halton's wastewater model have a steady-state flow generation approach. Actual flow dynamics in the system may vary due to the flow attenuation that occurs with the storage within the systems, and due to the variability associated with inflow & infiltration (I & I). The I & I component may vary with time – it may be reduced through the implementation of I & I reduction measures are implemented or increased as the system ages and new sources of inflow and infiltration develop. The steady-state approach to demand evaluation is a conservative approach that provides for a certain amount of variability within the system and allows for high-level planning of infrastructure development. This approach is suitable for the review of downstream capacities for this project. It should be noted that inflow infiltration, basement flooding, and overflow issues are not evaluated and understood through the steady state flow approach. This can be better understood with a flow generation model that is calibrated with actual up to date flow and rainfall data.

1.2.3 DEVELOPMENT OF PROPOSED WASTEWATER COLLECTION SYSTEM

A gravity collection system was identified with the following steps:

1. Development of sewersheds based on topography, and Block by Block densities supplied by Brook McIlroy[1];

2. Review existing sewers and provide gravity system that outlets to existing sewer system – all proposed roads are provided a gravity sewer outlet, and all existing and proposed sewers must meet Halton Region's design standards.

[1] For MTSAs where final Block by Block density was not supplied, it was assigned by WSP (Formerly Wood) based on the total population growth projected for the specific Mobility Hub

1.3 APPROACH TO WATER SERVICING

1.3.1 EXISTING SYSTEM CAPACITY EVALUATION

The Region's hydraulic models currently only extend to the 2031 timeframe. The population and employment projections for the MTSAs (which extend beyond 2031) are overlaid within the MTSA geography such that local servicing can be evaluated at full build-out. However, the impact on the broader Regional system cannot be interpreted at this time.

An updated water system model was provided by Halton Region in September 2017 and further in April 2022. The model provides the following information that is used to confirm the system's available capacity:

- Physical characteristics of the water distribution system pipe network, pipe sizes, pumps and pumping systems, pressure zones, and planned system improvements by development year;
- Baseline and projected demands on the water distribution system. The baseline demands are from last Master Plan Update and projected 2051 future growth;
- Modelled performance of baseline and projected demands through the water distribution system.
- The projected demands are based on best planning estimates (BPEs), the link between best population estimates and demands is not provided in the Halton Model and the BPEs were not available for this study.

The following steps were undertaken to evaluate the existing water system capacity:

- Identify the pressure zones that are most suitable to service the lands within each of the Burlington MTSAs;
- Verify the existing system performance in the Halton 2031 scenario i.e. pressures under average day, peak hourly, and max day + fire conditions – note that the available fire flow under max day conditions is the governing hydraulic indicator of network capacity to deliver fire flows – note also that there is no evaluation of existing water quality performance deficiencies- however the design approach involves the creation of looped watermains so as not to introduce any new water quality issues;
- Identify key system components that are planned between now and 2031 that affect the hydraulics in the pressure zones servicing the Burlington MTSAs.

Water infrastructure which services multiple MTSAs (e.g., water purification plants, booster pump stations, etc.) have not been evaluated as part of this study.

Existing and planned water infrastructure impacting the MTSAs (both internal and external to the hubs) will be reviewed based on the Region's capital program to 2031 (i.e. water purification plants, pumping stations, reservoirs, watermains and pressure districts)

1.3.2 WATER DEMAND EVALUATION

A meeting was held with Halton Region on December 18th, 2017 to confirm the intended use of the model for planning purposes. The following key points were highlighted by Halton Region at the meeting:

1. The model applies fixed Max Day and Peak hourly factors to the Average Day demand.

2. Average Day Demand is population based with 255 L/person-day applied to residential. In regard to other land uses, Halton suggests a number of unit rates for commercial, institutional, industrial land uses. The inputs for this project are in residential and employment populations, as such a blended rate of 225 L/person-day is applied for the employment populations.

Design water demands were also developed in part using the Town of Halton Hills design criteria outlined in the Sustainable Halton Water and Wastewater Master Plan. Updated design flows, as later directed by the Region are summarized in Table 1.1 below.

Table 1.1- Water Demand Design Criteria

Land Use Type	Water Average Day Demands
Residential	255 L/person/day
Industrial/Commercial/Institutional	225 L/employee/day

The design of both water and wastewater facilities follows recognized standards and Planning documents, including:

- Design Guidelines for Sewage Works, Ministry of Environment, Conservation and Parks (MECP) (2008);
- Design Guidelines for Drinking Water Systems, MECP (2008);
- Sustainable Halton Water & Wastewater Master Plan, Halton Region (2011);
- Water & Wastewater Facilities Design Manual, Halton Region (updated 2017), and
- Linear Design Criteria, Contract Specifications and Standard Drawings, Halton Region.

The expected water demand (average day demand, max day demand and fire flow) will be established for each MTSA based on future residential and employment population forecasts for the specific time horizons required of 2051. Availability of adequate supply and pressure for servicing the proposed developments at 2031 will be confirmed through hydraulic modelling. Water demand and population/employment estimates are established and differentiated for the 2051 time-horizon.

Table 1.2– Notable Water Capital Projects

Unique ID	Description	Included in the Model
5850	1050mm WM on Upper Middle Road from Burloak Drive to Appleby Line (Zone B2) - Construction	Yes
6368	100mm WM on Burloak Dr from the QEW to Upper Middle Road (Zone B2) - Construction	Yes
6372	Construction of Burloak WPP Phase 2 Expansion from 55 to 165 ML/d	Yes
7505	1050mm WM on Burloak Dr from Burloak Booster Pumping Station to the QEW - Construction	Yes
8153	600mm WM on Wyecroft Rd from Burloak Dr to the 900mm Wm on the SE corner of Third Line and QEW	Yes

1.3.3 DEVELOPMENT OF PROPOSED WATER DISTRIBUTION SYSTEM

The proposed water distribution system is laid out with the following main principals:

1. Provide a distribution main on every proposed road with a minimum size of 300 mm;

2. Avoid the introduction of new dead ends and provide loops for existing dead ends wherever possible;

3. Confirm water distribution hydraulics via modeling by reviewing the available fire flow as an indicator;

4. Consideration for a preferred operating pressure range that is narrower than the extremes allowed by the mandated range.

The rationale for this system is to provide a simple and practical approach that will provide the Region and the City of Burlington with a pipe network that does not limit fire flow capacity due to the looped 300 mm network, and that does not introduce water quality issues associated with dead end watermains.

1.4 ADDITIONAL CONSIDERATIONS

1.4.1 PLANNING HORIZON USED IN THIS STUDY

The Region's planning forecasts and associated hydraulic modeling extends only to 2031 and is based on the 2011 Water and Wastewater Master Plan and the 2011 Best Planning Estimates (BPE) for population growth in the Region. While the timeframe for full build-out of the Burlington MTSAs is currently unknown, it will extend beyond 2031 to 2051. For the purposes of this study, each MTSA is evaluated independently at full population build-out, with internal and external water and wastewater infrastructure matching the 2031 Regional hydraulic models but actually going out to 2051 projected populations. While it is clear that this scenario is not consistent with current planning, this study makes use of the information and tools available at this time. It is important to note that infrastructure planning will change over time with the completion of the Municipal Comprehensive Review, including on-going Regional Official Plan review and subsequent updates to the Regional Water and Wastewater Master Plan.

The timing for full build-out of Burlington MTSAs is reliant on many factors and difficult to predict. However, it is expected to be in excess of 50 years.

1.4.2 COST SHARING OPPORTUNITY FOR INTENSIFICATION AREAS

This report provides the overall servicing requirements for the planned intensification in each of the MTSAs with the goal of providing the City and the Region with the opportunity to coordinate the sharing of servicing costs on a group level basis, rather than on a developer individual basis. The City and the Region can determine a suitable form for ensuring that upgrades are financed and the cost is fairly shared by stakeholders such as developers, existing and future Burlington residents and business owners.

1.4.3 INTEGRATION WITH HALTON REGION'S MASTER PLAN

The Municipal Comprehensive Review, including on-going Regional Official Plan review, subsequent updates to the Regional Water and Wastewater Master Plan and other longer-term planning, in conjunction with Provincial Policies, will inform the development of the Burlington MTSAs and provide context for build-out. The recommendations in this report are meant to support the Master Plan directives while identifying constraints affecting the MTSAs, as well as opportunities for design improvements that can be implemented through the design and construction process.

1.4.4 IMPACTS TO THE OVERALL REGIONAL WATER AND WASTEWATER SYSTEM

It is understood that development and intensification within the MTSAs may impact the Regional water and wastewater system. In particular, the system-wide impacts are anticipated for the water conveyance, storage, pumping and treatment, as well as wastewater trunk mains, pumping and treatment. It is recognized that the impact of the MTSA intensification and development on the Regional scale needs to be evaluated, quantified and accounted for in a subsequent study.

It is also recognized that the trunks, pumping stations, storage reservoir and treatment plants have much broader service areas. As such, a Region-wide study such as a Master Servicing Plan, or another study focusing on the system-wide analysis is better suited to evaluate the impact of overall development to the Regional infrastructure than the current study, which focuses on local infrastructure.

The need for Regional based servicing requirements such as wastewater treatment plants, pumping stations or gravity sewers will require further analysis. This report considers linear infrastructure only. The recommendations and strategies determined through Master Planning will be used to update this study ahead of future development in accordance with Area Specific Plan policies to ensure consistency between Planning documents.

2 APPLEBY GO MTSA

2.1.1 STUDY AREA

The Appleby Go MTSA study area is centred on the Appleby GO Station. It is bounded by the Queen Elizabeth Way/Highway 403 to the north and the Centennial Bikeway corridor to the south. The area covers approximately 210 hectares (ha.) The site slopes from north-west to south-east and ranges in elevation from approximately 120 metres to 96 metres. The topography of the Hub lands is given in **Figure 2-1**.

Figure 2-1. Appleby GO MTSA - Topography Context

2.2 PLANNING CONTEXT

2.2.1 PROJECTED DENSITY

The Preferred Land Use Plan as per Brook McIlroy (Technical Memo of November 9, 2017, to the City of Burlington) is given in **Figure 2-2**. Density calculations for the hub are based on full build-out of the Preferred Land Use. The Appleby GO MTSA is projected to have capacity for 20,000 new people and 43,000 new jobs, or a total of 63,000 new people and jobs, and a gross density of 300 people and jobs per hectare at full build.

The MTSA land use Traffic Zone Allocations are considered more realistic numbers for this development and were carried through during this study and used for modeling purposes. The Appleby GO MTSA is projected to have an increase of 8471 new people, 18,176 new jobs, or a total of 26,647 new people and jobs, and a gross density of 127 new people and jobs per hectare.

The projected density calculations and block map for the Appleby GO MTSA are presented in **Appendix A**.

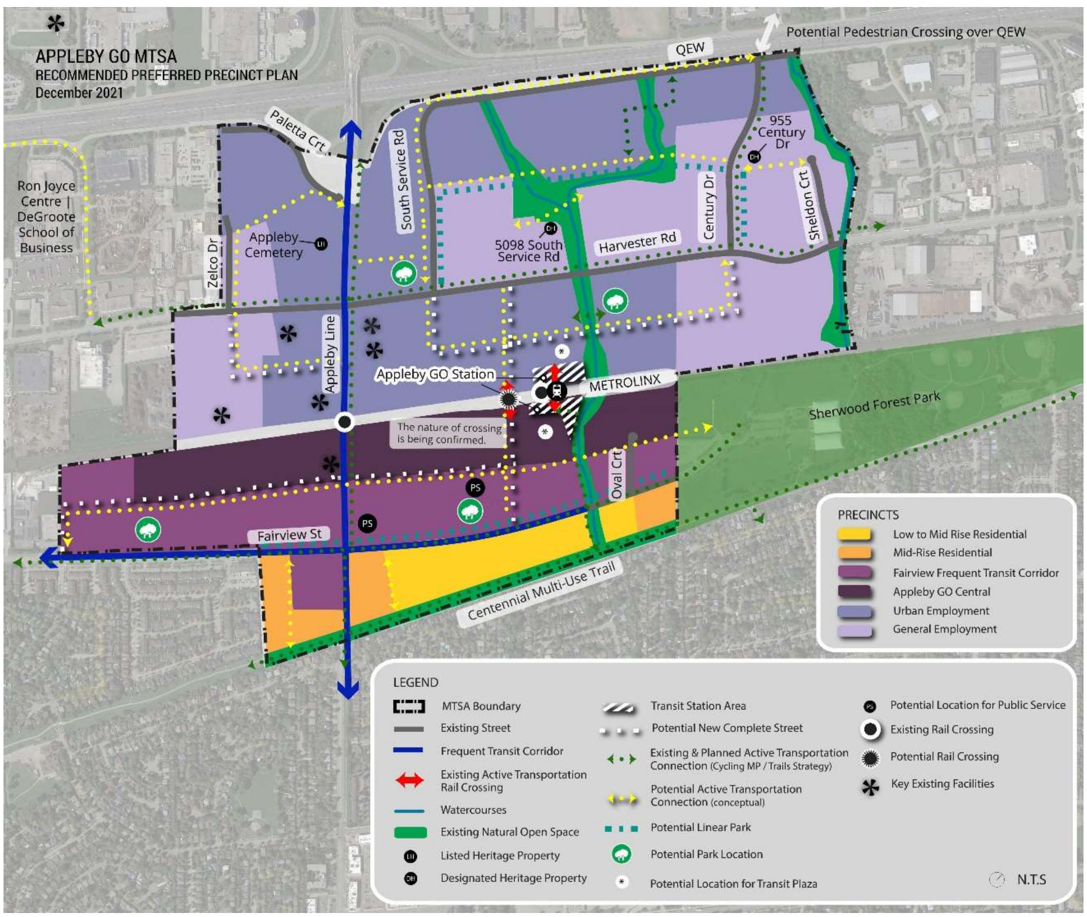

Figure 2-2. Appleby GO MTSA Preferred Concept

2.3 EXISTING CONDITIONS

The existing Appleby GO MTSA is largely comprised of existing employment uses north of the rail line including offices, manufacturing and industrial uses (see Figure 2-3). The area south of the rail line is characterized by low and mid-rise residential development south of Fairview Street as well as large employment lands along Fairview Street, some of which are vacant or undeveloped in the area around the Appleby and Fairview intersection. The area is well served by a major park (Sherwood Forest Park) and has direct access to the Centennial Multi-Use Pathway connecting the area directly to Downtown[2]. See

2.4 WASTEWATER SERVICING EVALUATION

2.4.1 EXISTING WASTEWATER SERVICES

The Appleby GO MTSA is situated near an existing 1200 mm trunk sanitary sewer that conveys flows for treatment in the Skyway Wastewater Treatment Plant as shown in **Figure 2-3.** This is a large capacity system that is designed to take on flows from most of the Skyway Wastewater Treatment Plant Service Area. This gravity trunk sewer starts at the south-west corner of the MTSA lands and will form the primary outlet to the collection system for proposed development in the Appleby GO MTSA.

Lands within the MTSA are to be serviced by gravity sewers connecting to 1200 mm trunk sanitary sewer. Future services required for intensification in the Appleby GO MTSA would include Local Sewer Conveyance Improvements, and capital contribution to the life-cycle component for the Halton wastewater collection and treatment system within the Skyway Wastewater Treatment Plant Sewershed.

Key Wastewater infrastructure components around the Appleby GO MTSA lands is described as follows:

1. **North East Burlington Trunk Sewer (NEBTS):** A 900 mm – 1050 mm sewer that runs from East to West through the subject lands. The sewer services an upstream external area of approximately 400 ha in Burlington and West Oakville. The upstream area is partially developed and includes a large greenfield area known as the Bronte Meadows development.
2. **Existing Local Sewers within subject lands:** There are two branch connections to the NEBTS that cover a portion of the subject lands
3. **The Skyway East Trunk Sewer (SETS):** This consists of the trunk sewer that runs East West through Burlington at to the Skyway Wastewater Treatment Plant.

Key external planned infrastructure upgrades include:

1. **New 2400 mm Sewer Inlet at Skyway WWTP**

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[2] Source: GO Station Mobility Hubs Preferred Concepts: Aldershot GO, Burlington GO and Appleby GO Report PB-76-17 to the Planning and Development Committee

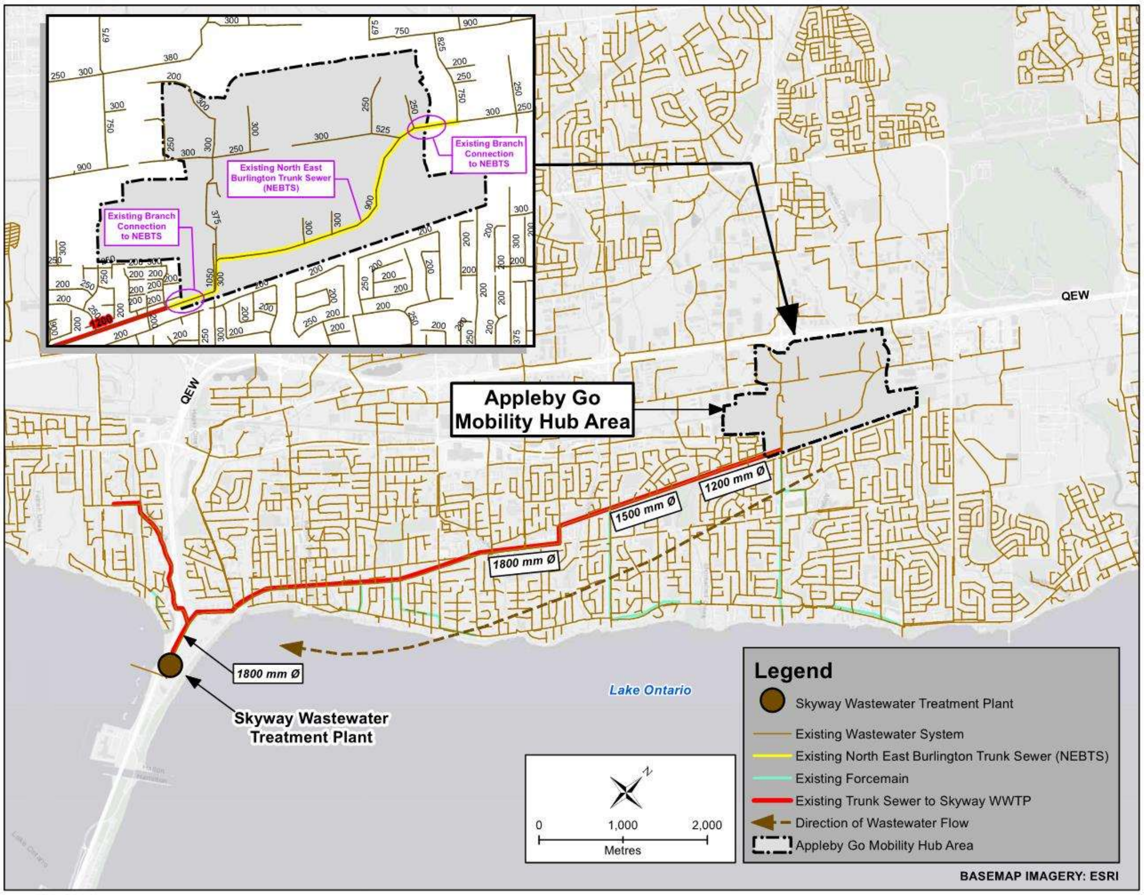


Figure 2-3. Existing Wastewater Services for Appleby GO MTSA

2.4.2 WASTEWATER SERVICES

Review of Existing and Planned Infrastructure

The following is a brief discussion and summary of existing and planned wastewater services for the Appleby GO MTSA.

Internal Services

A plan of services for the proposed MTSA is provided in **Figure 2-4**. This figure shows proposed main trunk sewer lines connecting to the available existing outlets to Halton's wastewater collection system. Profiles for the main lines are given in

Figure 2-5. Additional sewer lines were labelled as "secondary lines", profiles for these sewers are not given, they are included as part of the overall servicing plan. The proposed plan includes sewer service along all of the proposed roads in the MTSAs.

The proposed internal sewer layout also makes use of existing sewers within the existing roads, as such there are no proposed sewer upgrades within the existing road such as Appleby Line & Fairview Street. New Sewers are generally proposed in areas where there will be a change in land use or a new road. As such there is no restoration cost added to the sewer cost estimate as it is not expected that it will be built within an existing road. The new internal layout involves approximately 4,270 m of new sewers.

The development of the sanitary sewer trunks was conducted to maximize the use of available capacity within the existing sewers and follow the existing topography as much as possible. Due to limited capacity in the existing Appleby Road Sewers, Sewer Reach #3 was extended to the North portion of the subject lands (Sewershed areas A9 and A20).

External Services

Halton’s wastewater model 2031 scenario with the proposed updated population in the Appleby GO MTSA, confirms there is sufficient capacity in the existing connections downstream for conveyance to the Skyway Treatment Plant. Note that external capacity is reviewed by Halton Region as part of the Master Planning process and for the cumulative effect on major trunk systems such as the NEBTS, the SETS, and the Skyway WWTP. New developments that benefit from the existing capacity are assigned an overall development charge to pay for the life-cycle cost of the infrastructure.

Key External Planned Infrastructure Projects

Key external planned infrastructure upgrades indicated by Halton Region include:

1. ***New 2400 mm sewer inlet to Skyway WWTP parallel to QEW***

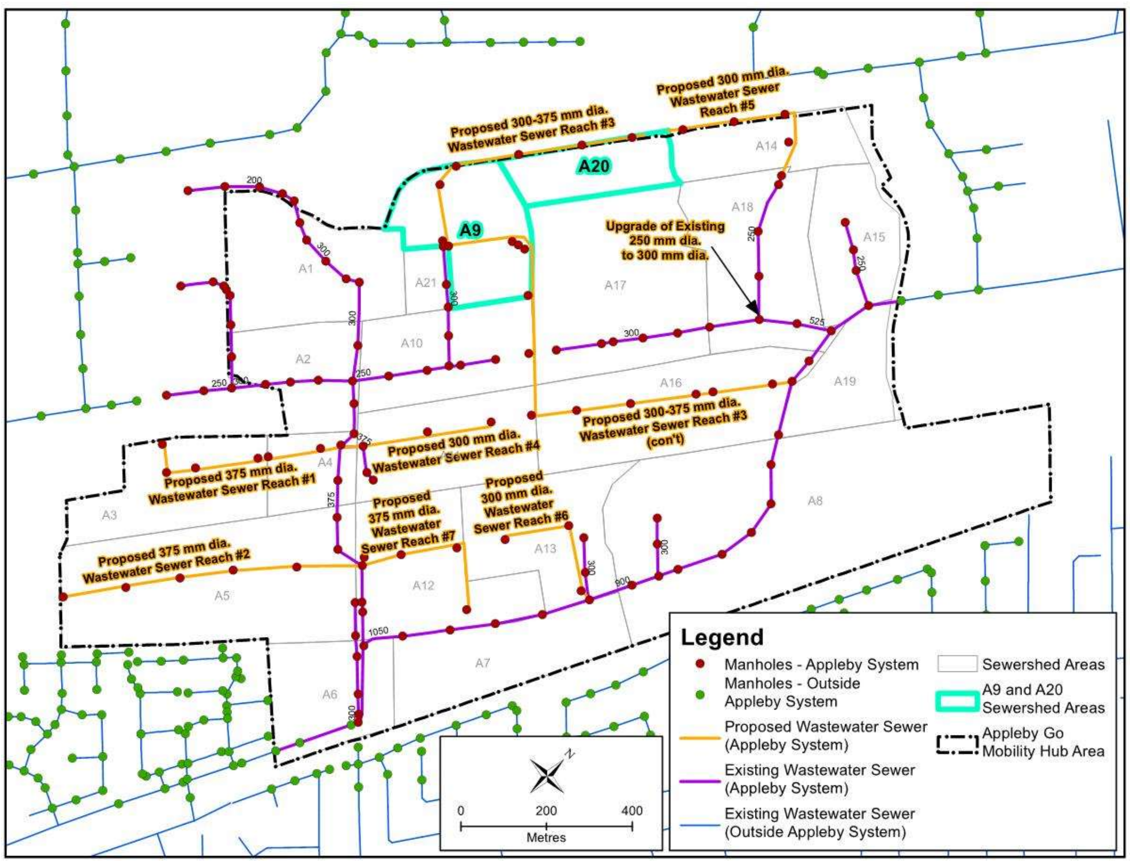


Figure 2-4. Appleby GO MTSAs Proposed Wastewater System

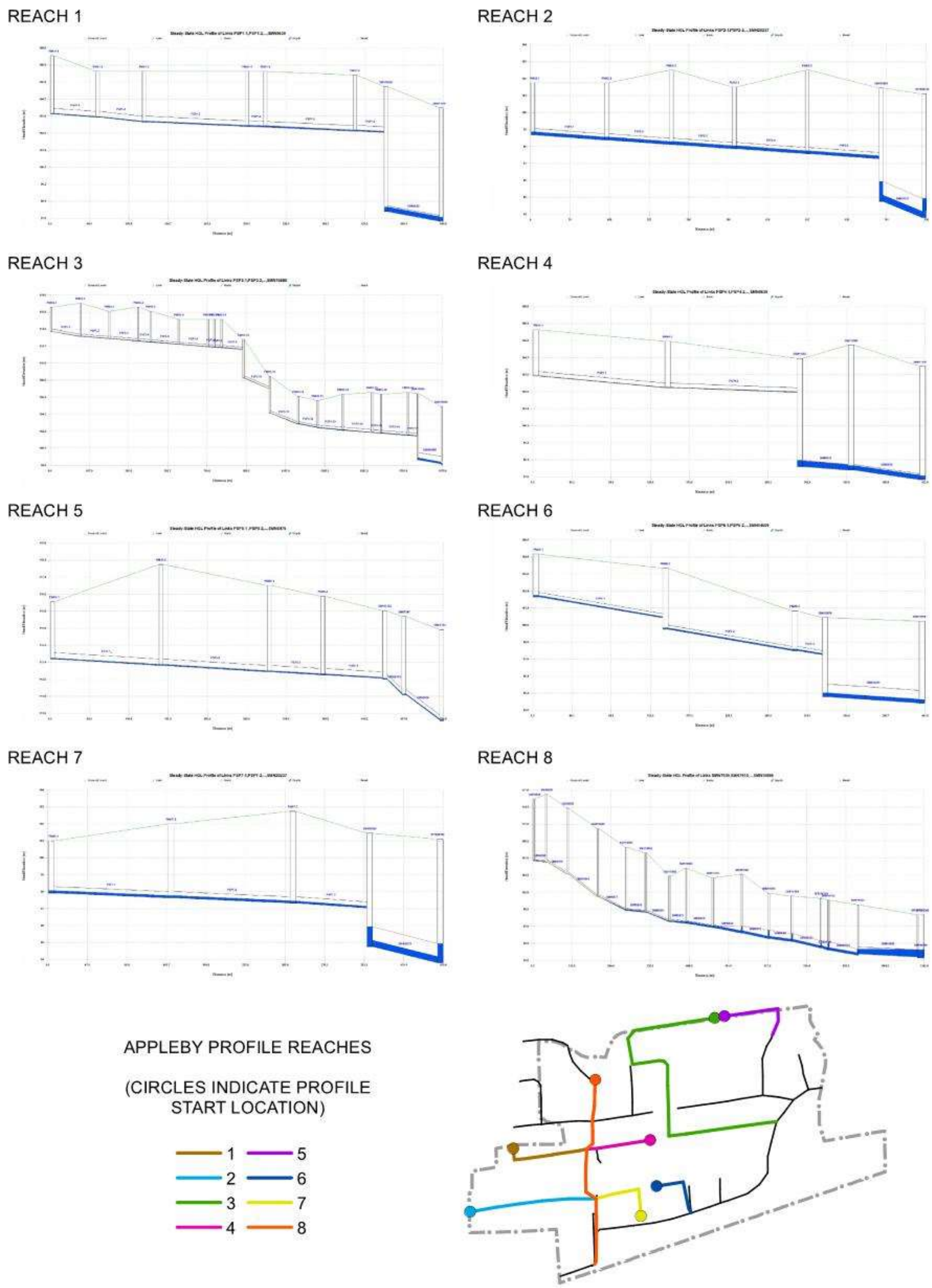


Figure 2-5. Appleby GO MTSA Sanitary Sewer Profiles

2.4.3 APPLEBY GO - WASTEWATER SERVICING DESIGN CRITERIA

The following table outlines the design requirements for the Appleby GO wastewater collection system.

Table 2-1. Design Criteria – Wastewater Collection System

Pipe Flow		
Coefficient of Roughness	n = 0.013	Halton Region
Minimum Flow Velocity	0.6 m/sec	Halton Region
Maximum Flow Velocity	3.0 m/sec	Halton Region
Infiltration		
Infiltration Allowance	0.286 l/sec/ha	Halton Region
Wastewater Generation Rate		
Residential	210 L/cap/day	
Employment	185 L/cap/day	

2.4.4 APPLEBY GO - WASTEWATER GENERATION

Wastewater generation rates have been calculated based on the preferred Land Use, utilizing Halton Region design criteria listed above.

Wastewater Loading and Infiltration/Inflow Generation

Infiltration and Inflow (I&I) = 0.286 Litres per hectare per second

Wastewater flow projection for the Appleby GO service area was estimated by applying these criteria to the total equivalent population and the area. The WW generation rates were calculated using 210 L/cap/day for residential and 185 L/cap/day for employment. These design inputs are outlined to Table 2-1. The Inflow and Infiltration amounts were factored in by applying the Modified Harmon Peaking Method which is built into and calculated through the hydraulic model. The following wastewater loading, and I&I generation rates were calculated for the Appleby GO MTSA.

Table 2-2. Appleby GO Loading and Generation

Parameter	Value
Average Daily Dry Weather Flow	59.5 L/s
Average Daily Wet Weather Flow	67.21 L/s
Total Peak Wastewater Flow Including I&I	212.78 L/s

Establish the expected sanitary flows (average dry weather flow, maximum wet weather flow (including I/I) for each MTSA based on future residential and employment population forecasts (specific time horizons required: 2031 and 2051). Confirm via hydraulic modeling that adequate capacity is available for servicing the proposed developments in 2031.

It is requested that wastewater generation rates and population/employment estimates are established and differentiated for both the 2031 time-horizon as well as for 2051.

2.4.5 APPLEBY GO - WASTEWATER MODELLING

The hydraulic wastewater model was updated using the Region's most up to date data for a 2031 time-horizon. No additional Regional based servicing constraints regarding wastewater treatment plants, pumping stations or gravity sewers are identified for the Appleby GO MTSA at this point. For the purpose of this report, only linear infrastructure has been considered to date. Further analysis is required to confirm vertical infrastructure needs. Expansion and upgrade requirements for the Appleby GO MTSA to accommodate projected residential and employment populations are identified in the following section.

Summary of Proposed Additional Wastewater Servicing

To accommodate the full build out scenario for the Appleby GO MTSA, the proposed additional wastewater infrastructure is summarized below:

Table 2-3. Appleby GO – Proposed Wastewater Infrastructure

Gravity Mains	Meters
250 mm	91
300 mm	2,106
375 mm	2,074

2.5 WATER SERVICING

2.5.1 EXISTING WATER SERVICES

The Appleby GO MTSA is mainly serviced by Burlington Pressure Zone B2 and partially in Pressure Zone B1 (south of Harvester) with existing services shown in **Figure 2-6**. The flows from the Burlington WPP and the Washburn Pump Station align wit the Region's Modelling data. The topography is such that some portions of the site can be serviced by either pressure zone with overlapping areas near Fairview Street. The preferred service ground elevation range for the pressure zones is given in **Table 2-4.**

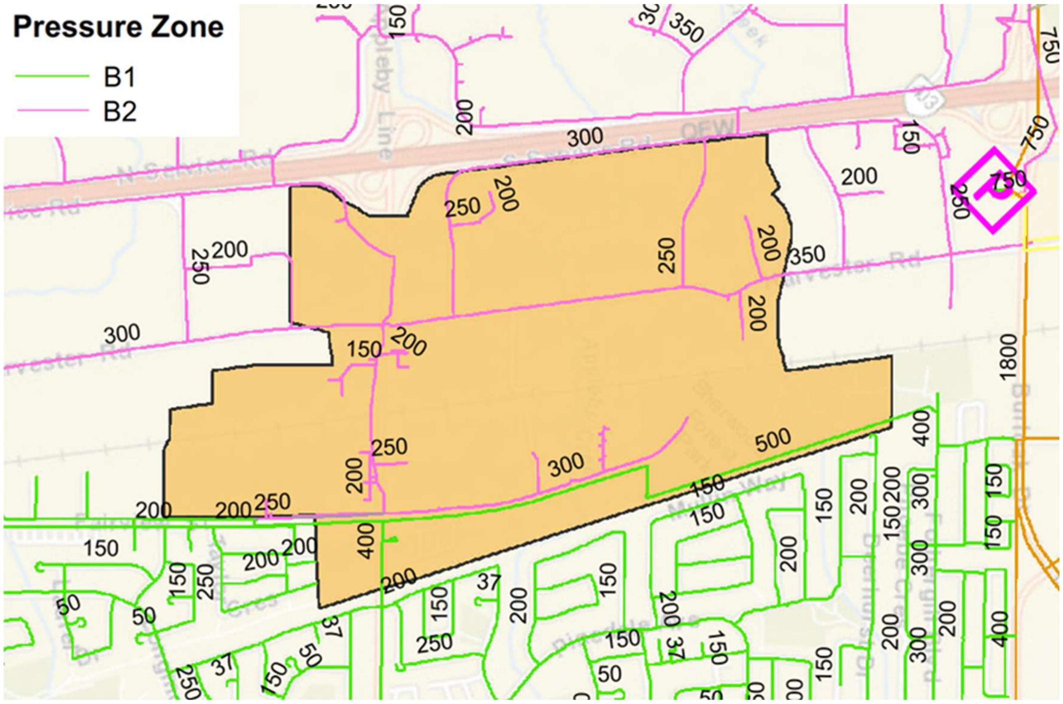


Figure 2-6. Existing Water Services at Appleby GO MTSA

Table 2-4. Appleby GO MTSA Pressure Zone Suitability

	Required (MOECC)	Preferred Range
Min Operating Pressure	28.0 m	35.0 m
Max Operating Pressure	50.0 m	56.0 m
Zone B2 Pressure Zone Characteristics		
Min Suitable Ground Service Elevation	**97.8 mASL**	**111.8 mASL**
Maximum Suitable Ground Service Elevation	**132.3 mASL**	**125.3 mASL**
Minimum HGL	160.3 mASL	
Max HGL	167.8 mASL	
Zone B1 Pressure Zone Characteristics		
Min Suitable Ground Service Elevation	**65.0 mASL**	**79.0 mASL**
Maximum Suitable Ground Service Elevation	**102.2 mASL**	**95.2 mASL**
Minimum HGL	130.2 mASL	
Max HGL	135.0 mASL	

<u>Key External Planned Infrastructure Projects</u>

Halton's Planning model indicates a number of planned infrastructure components that are to be in-service by 2031. Key Components were identified and Halton Region confirmed the status of the components as follows:

1. ***Zone 1 900 mm Feedermain from Guelph Line/Prospect Street to Washburn Reservoir.***
2. ***300 mm Watermain ON Fairview St.***

The 2031 modeling results for the Appleby MTSA includes these components in service.

2.5.2 PROPOSED WATER SERVICES

One possible servicing plan is given in **Figure 2-7**.

Given the existing topography and pipe configurations at the pressure zone boundary, consideration could be given to designating Fairview Street as the Pressure Zone boundary between Zone 1 and Zone 2. This would require the re-configuration of the existing mains and Pressure Reducing Valves (PRVs) along Fairview Street to the West of Appleby Line. A conceptual design is shown on the inset, subject to further review by the Region.

There are two pressure zones within the Appleby MTSA: Pressure Zone B1 and B2. Currently, Fairview Street generally marks the boundary between these two pressure zones within the Appleby MTSA, with Pressure Zone B2 being mostly north of this street and Pressure Zone B1 being south of it. However, there are some areas west of Appleby Line where Pressure Zone B1 extends north of Fairview Street and areas east of Appleby Line where Pressure Zone B2 extends south of Fairview Street.

Given the existing topography and pipe configurations within the Appleby MTSA, the boundaries between Pressure Zones B1 and B2 could be realigned to improve water pressures and flows. It is proposed to modify the current pressure zone boundaries within the Appleby MTSA so that the areas west of Appleby Line and north of Fairview Street be entirely converted to Pressure Zone B2, and the areas east of Appleby Line and South of Fairview Street be converted to Pressure Zone B1. Realigning the pressure zones' boundaries would require reconfiguring the pressure reducing valves (PRVs) along Fairview Street. The proposed alignment is shown in **Figure 2-7**. It must be noted that pressure zone realignment is outside the scope of this study. The decision to modify the current limits of these two zones is to be evaluated through the Region's Water and Wastewater Master Servicing Plan.

Review of Existing and Planned Infrastructure

The following is a brief discussion and summary of existing and planned water services for the Appleby GO MTSA.

Internal Services

A network of 300 mm watermains is proposed along all new road rights-of-way. It is proposed to extend the existing watermain on Fairview Street through an easement through Sherwood Forest Park and across the railway to complete a loop within Zone 2 and eliminate the existing dead end.

A total of 8,242 m of new watermain is proposed to service the Appleby GO MTSA.

External Services

Halton's model 2051 scenario with the proposed updated population in the Appleby GO MTSA, confirms there is sufficient capacity to meet the boundary conditions and support the demands as described below. Note that external capacity is reviewed by Halton Region as part of the Master Planning process and for the cumulative effect on major supply and transmission systems. New developments that benefit from the existing capacity are assigned an overall development charge to pay for the life-cycle cost of the infrastructure.

Confirmation of Capacity

The proposed system was modelled with the following elements:

- Halton's proposed, existing and upgraded infrastructure to 2031;
- The proposed updated population for the Appleby GO MTSA as well as the 2051 demands elsewhere in the Region;
- The proposed internal network as shown in **Figure 2-7**.

The model output for the available fire flow indicator is above 280 L/s for the subject lands as shown in **Figure 2-8**. This confirms the network is suitable to support the needs of a variety of building types.

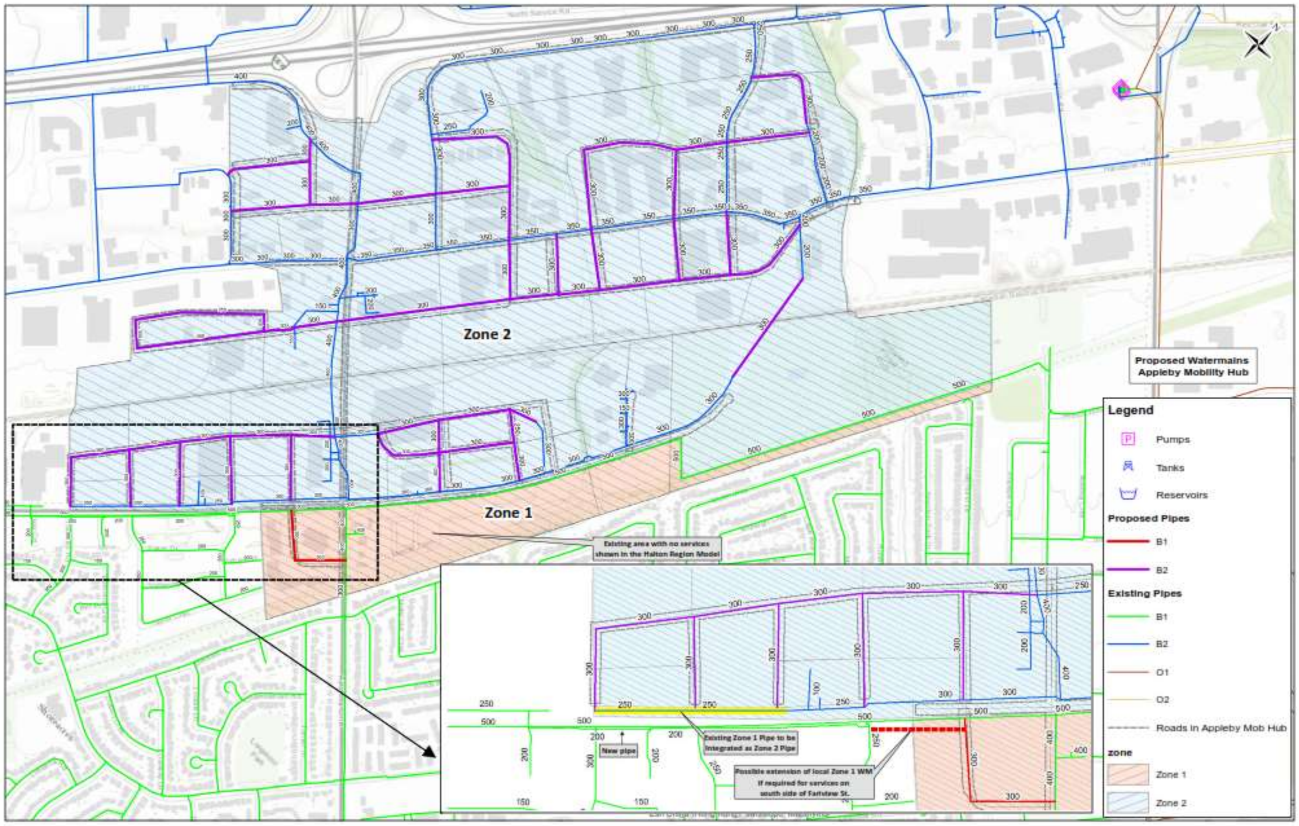


Figure 2-7. Proposed Water System - Appleby GO MTSA

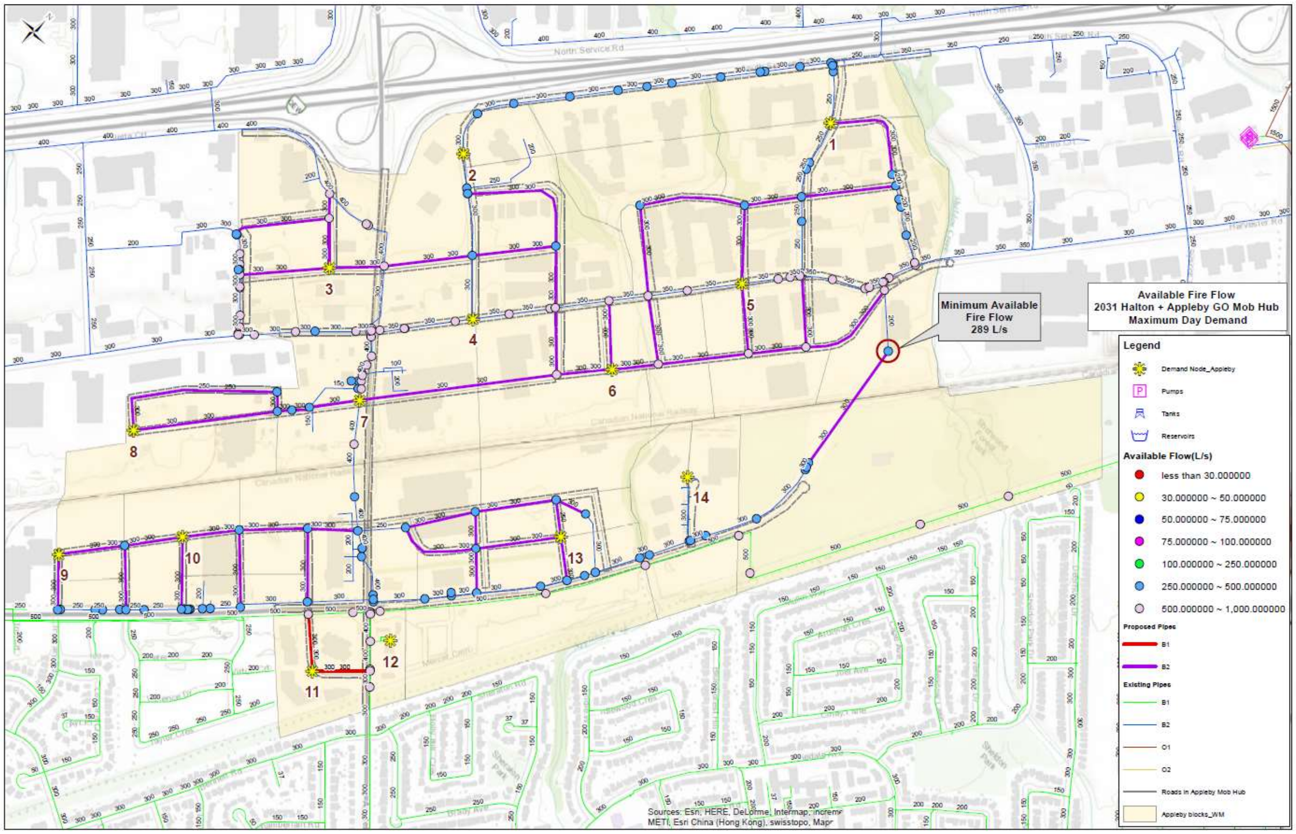


Figure 2-8. Appleby Go - Available Fire Flow – Proposed

2.5.3 APPLEBY GO – WATER DESIGN CRITERIA

Design water demands used to update the hydraulic modelling are outlined in the table below as per comments received which suggested using unit water usages rates for residential (255 L/p-d) and ICI (a single blended rate = 225 L/p-d). With these usage rates, the average demands (L/s) and Max Day Demand (MDD) were determined using a max day factor of 2.25 (Typically a maximum daily factor of 1.9 is used, however, based on the land use mix, a rate of 2.25 was used as the best-informed factor at the time that model was run. This slightly different factor should not influence any recommendation or outcome but can be corrected in the future if deemed necessary)

Table 2-5. Design Criteria – Water Demand

Land Use Type	Water Average Day Demands
Residential	255 L/person/day
Industrial/Commercial/Institutional (Blended)	225 L/employee/day

2.5.4 APPLEBY GO – WATER DEMAND

The following hydraulic modelling results confirm supply and pressure availability to service the proposed developments at 2031. The anticipated water demand (average day demand, max day demand and fire flow) for the projected growth in each MTSA was calculated based on 2051 residential and employment population forecasts from the MTSA land use Traffic Zone Allocation. The average day demand (ADD) projection was estimated by applying the above criteria to the total equivalent population and the area. The following factors were utilized to estimate the maximum day demand (MDD) and peak hour demand (PHD).

MDD 2.25
PHD 3.0

Applying these criteria to the residential and employment populations and adding the demands up, the ADD, MDD and PHD are:

Table 2-6. Appleby GO – New Development Water Demand Growth

Parameter	Value
Residential Population	8,471
Employment Population	18,176
Average Daily Demand (ADD)	72.3 L/s
Maximum Daily Demand (MDD)	162.8 L/s
Peak Hour Demand (PHD)	216.9 L/s

For water analysis, the future demands were distributed to Demand 7 for anticipated residential growth and Demand 9 for anticipated employment growth.

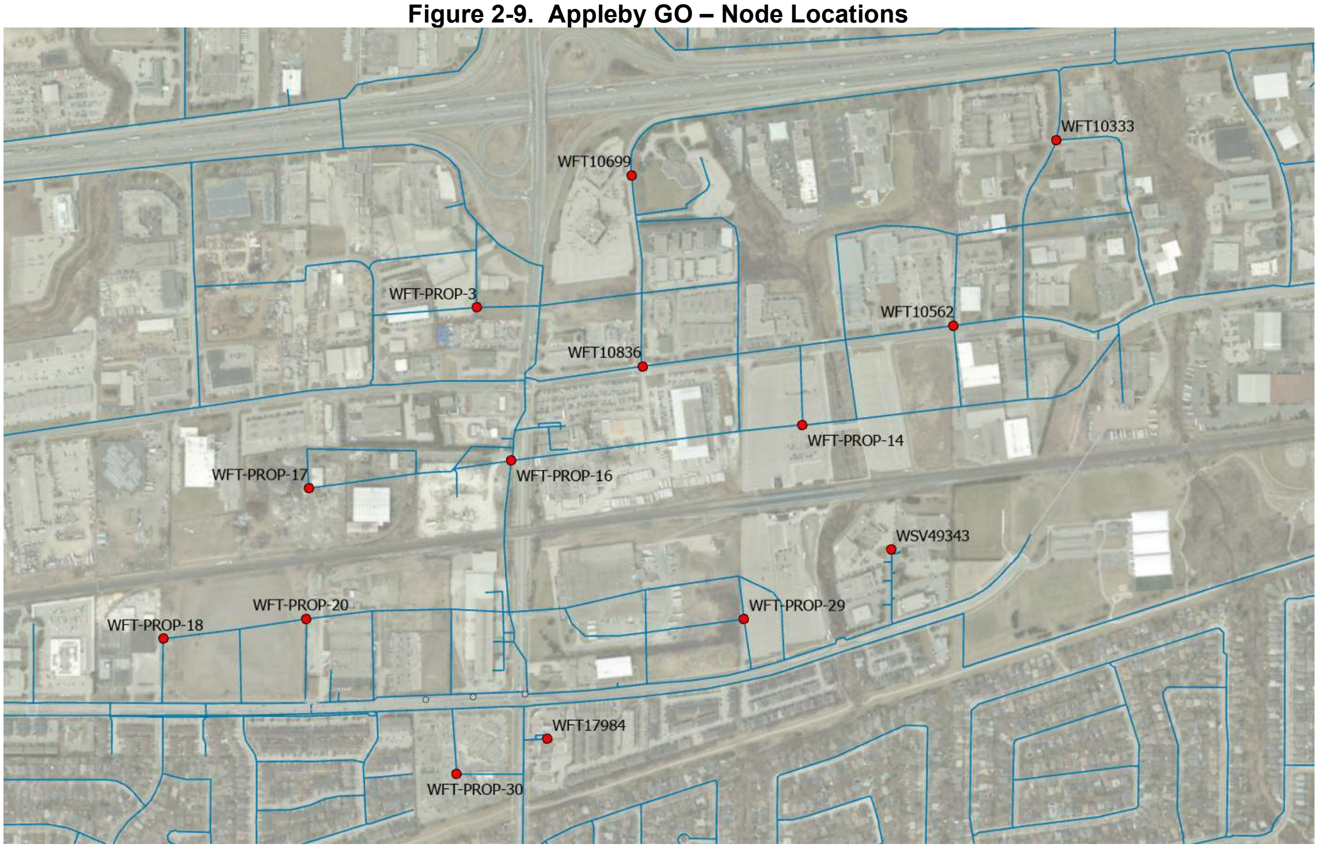
Table 2-7. Appleby GO – Modelling Results Under MDD

Junction ID	Demand (L/s)	Elevation (m)	Head (m)	Pressure (psi)
WFT-PROP-14	5.0	106.0	165.4	84.4
WFT-PROP-16	3.7	105.9	164.9	83.8
WFT-PROP-17	3.7	106.5	164.9	83.0
WFT-PROP-18	16.7	102.0	164.3	88.5
WFT-PROP-20	16.7	101.0	164.3	90.0
WFT-PROP-29	24.7	102.0	164.2	88.4
WFT-PROP-3	6.0	115.5	165.5	71.1
WFT-PROP-30	6.3	99.0	135.9	52.4
WFT10333	5.2	116.0	165.6	70.5
WFT10562	10.2	108.8	165.5	80.5
WFT10699	5.2	116.9	165.4	69.0
WFT10836	10.2	108.7	165.3	80.5
WFT17984	24.7	99.7	135.9	51.4
WSV49343	24.7	102.7	163.9	87.0

Table 2-8. Appleby GO – Modelling Fire Flow Results

ID	Total Demand (L/s)	Hydrant Available Flow (L/s)	Critical Pressure for Design Run (psi)
WFT-PROP-14	285.0	821.4	28.4
WFT-PROP-16	283.7	730.2	28.4
WFT-PROP-17	283.7	392.7	28.4
WFT-PROP-18	296.7	378.2	28.4
WFT-PROP-20	296.7	444.2	28.4
WFT-PROP-29	304.7	447.6	28.4
WFT-PROP-3	286.0	710.5	28.4
WFT-PROP-30	286.3	606.5	28.4
WFT10333	285.2	558.3	28.4
WFT10562	290.2	804.7	28.4
WFT10699	285.2	527.1	28.4
WFT10836	290.2	800.4	28.4
WFT17984	304.7	647.6	28.4

Figure 2-9. Appleby GO – Node Locations



2.5.5 APPLEBY GO - WATER MODELING RESULTS

The hydraulic water model was updated using the Region's most up to date data for a 2031 time-horizon. No additional Regional based servicing constraints regarding water purification plants, reservoirs, pump stations, or linear infrastructure were identified for the Aldershot GO MTSA. Expansion and upgrade requirements for the Aldershot GO MTSA to accommodate projected residential and employment populations are identified in the following section. The model output for the available fire flow indicator is 273.4 L/s to 821.4 for the subject lands as shown in **Figure 2.9**. This confirms the network is suitable to support the needs of a variety of building types. All tested nodes in the Appleby Go MTSA had sufficient fire flows of more than 250L/s available (see **Table 2-8**). The MDD+FF scenarios were completed with the residual pressure set as 28.4 psi and the available fire flows are expected to be higher than what have been presented in the report with the minimum residual pressure requirement of 20 psi. Although current results are adequate, it is suggested to re-run the model with the pressure set at 20 psi for even better results if deemed necessary.

2.6 SUMMARY AND COST ESTIMATE

The Appleby GO MTSA can be adequately serviced from Halton Region's Lake based system as per the plans described in Section 2.4.2 (Proposed Wastewater Services) and Section 2.5.2 (Proposed Water Services).

Preliminary Cost Estimates are provided for information purposes in **Table 2-**9 and **Table 2-10** and based on 2022 construction costs. Costs are provided for planning purposes only. Note that actual costs can vary considerably due to labour, materials, unknown design factors, ground conditions, staging.

The estimate represents an overall budget for transmission and collection servicing upgrades to provide an opportunity for collective cost sharing of servicing at the level of the MTSA or as an intensification fund levied from intensification developments within targeted areas in the City of Burlington.

External Servicing and Life-Cycle Costs associated with the Halton Lake Based Trunk wastewater collection & treatment, as well as the treated water supply, storage, transmission and pumping are not included in the estimates below.

No specific external services are identified for the Appleby GO MTSA.

The following estimated costs are based on the Regional Municipality of Halton 2022 Water/Wastewater Development Charges Update and include full road reconstruction.

Table 2-9. Cost Estimate – Appleby GO MTSA - Internal Sanitary Servicing[3]

Description	Unit	Quantity	Unit Cost	Extended Cost	Amount
Reach #1					**$416,700**
375 mm dia & 2.5-3 m deep Sanitary Sewer pipe in Proposed Roads	per meter	470	$810/m	$380,700	
1200 mm Sanitary Manhole 2.5m -3m deep	each	6	$6,000/each	$36,000	
Reach #2					**$607,000**
375 mm dia & 3.5-5 m deep Sanitary Sewer pipe in Proposed Roads	per meter	700	$810/m	$567,000	
1200 mm Sanitary Manhole 3.5-5 m deep	each	5	$8,000/each	$40,000	
Reach #3					**$1,526,500**
300 mm dia & 3-4.5 m deep Sanitary Sewer pipe in Proposed Roads	per meter	1,350	$760/m	$1,026,000	
375 mm dia & 3-5 m deep Sanitary Sewer pipe in Proposed Roads	per meter	450	$810/m	$364,500	
1200 mm Sanitary Manhole 3-5 m deep	each	17	$8,000/each	$136,000	
Reach #4					**$224,800**
300 mm dia & 2.5-3 m deep Sanitary Sewer pipe in Proposed Roads	per meter	280	$760/m	$212,800	
1200 mm Sanitary Manhole 2.5-3 m deep	each	2	$6,000/each	$12,000	
Reach #5					**$355,000**
300 mm dia & 2.5-4.5 m deep Sanitary Sewer pipe in Proposed Roads	per meter	425	$760/m	$323,000	
1200 mm Sanitary Manhole 2.5-4.5 m deep	each	4	$8,000/each	$32,000	
Reach #6					**$246,000**
300 mm dia & 2.5-3.5 m deep Sanitary Sewer pipe in Proposed Roads	per meter	300	$760/m	$228,000	
1200 mm Sanitary Manhole 2.5-3.5 m deep	each	3	$6,000/each	$18,000	
Reach #7					**$331,800**
375 mm dia & 3-6 m deep Sanitary Sewer pipe in Proposed Roads	per meter	380	$810/m	$307,800	
1200 mm Sanitary Manhole 3-6 m deep	each	3	$8,000/each	$24,000	
Secondary Sewer Servicing					**$2,280,000**
300 mm dia Sanitary Sewer pipe and 1200 mm Manholes@120m spacing	per meter	3,000	$760/m	$2,280,000	
Sub-Total Cost Estimate					**$5,987,800**
Contingency & Engineering Allowance 35%					$2,095,730
Total Cost Estimate (rounded)					**$8,083,530**

Table 2-10. Cost Estimate - Appleby GO MTSA - Internal Water Servicing[3]

Description	Unit	Quantity	Unit Cost	Extended Cost	Amount
New Watermains and their Connections					**$7,978,256**
300 mm dia. Watermains in Proposed Roads	per meter	8,242	$880/m	$7,252,960	
Allowance for connections, PRVs, etc.	L.S.	1		$725,296	
Sub-Total Cost Estimate					**$7,978,256**
Contingency & Engineering Allowance 35%					$2,792,389
Total Cost Estimate (rounded)					**$10,770,645**

[3] The cost of road reinstatement is included in the unit cost for planned work in existing roads. For planned work in proposed roads, the cost of new road construction is not included. The added cost of new full width road construction is estimated in the range of $5,200 to $5,900 per linear meter.

3 BURLINGTON GO MTSA

3.1 STUDY AREA

The Burlington GO MTSA study area is located in and around the existing Burlington GO station, and includes lands along major corridors including Brant Street from Plains Road to Prospect Street, Fairview Street from approximately 400 m to the West of Brant Street to Drury Lane, and Plains Road from Helena Street to Brenda Crescent. The area covers approximately 97 hectares (ha.) The site slopes from North to South. The studied area range in elevation approximately 110 m to approximately 91.5 m. The elevation contours are presented in **Figure 3-1**.

Figure 3-1. Burlington Go MTSA Topography Context

3.2 PLANNING CONTEXT

3.2.1 PROJECTED DENSITY

The Preferred Land Use Plan as per Brook McIlroy (Technical Memo of November 9, 2017, to the City of Burlington) is given in **Figure 2-2**. Density calculations for the hub are based on full build-out of the Preferred Land Use. The Burlington GO MTSA is projected to have capacity for 22,000 new people and 9500 new jobs, or a total of 31,500 people and jobs, and a gross density of 325 people and jobs per hectare at full build.

The MTSA land use Traffic Zone Allocations are considered more realistic numbers for this development and were carried through during this study and used for modeling purposes. The Burlington GO MTSA is projected to have an increase of 12,882 new people, 8354 new jobs, or a total of 21,317 new people and jobs, and a gross density of 220 new people and jobs per hectare.

The projected density calculations and block map for the Burlington GO MTSA are presented in **Appendix A**.

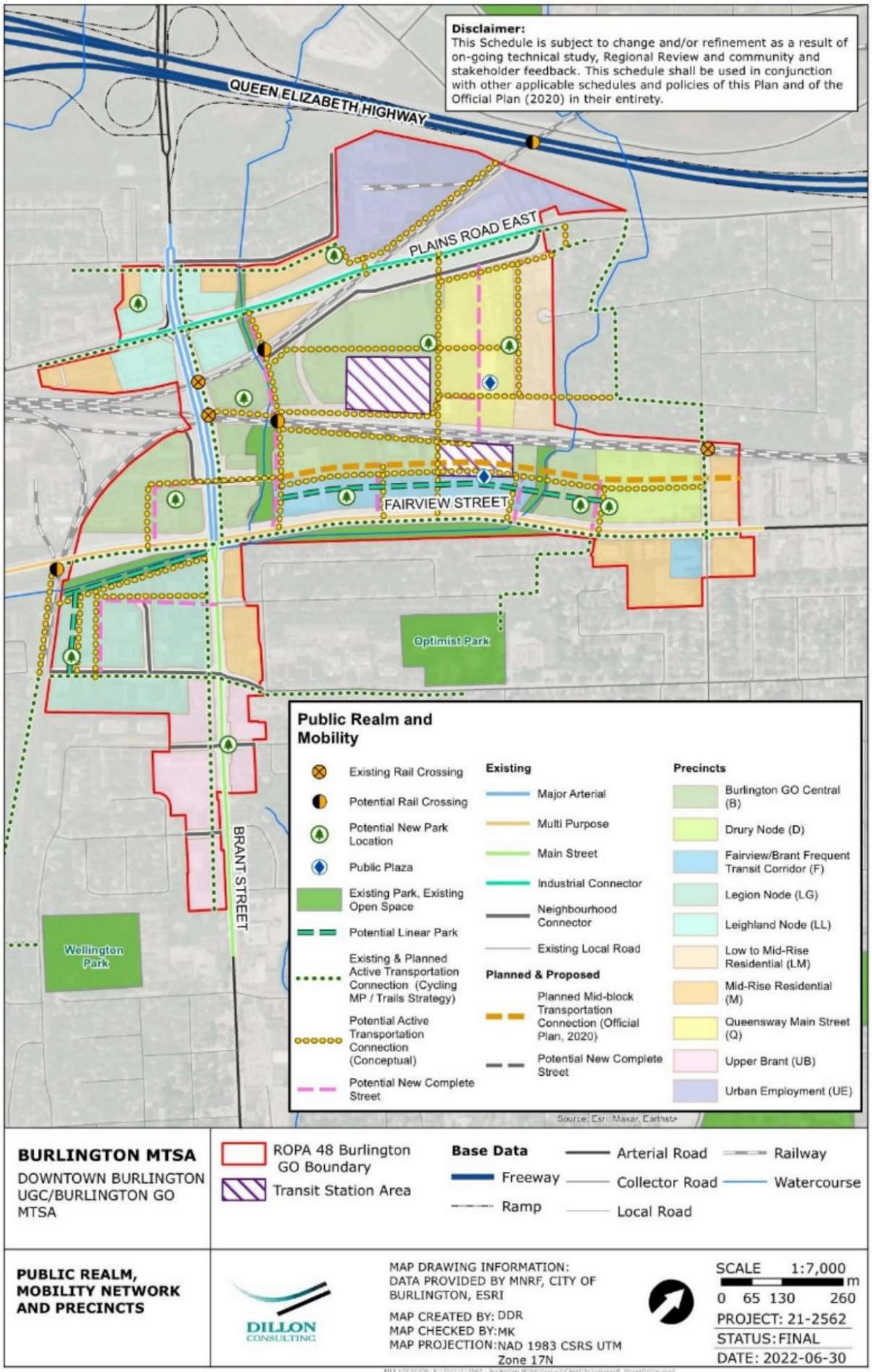


Figure3-2. Burlington Go MTSA Preferred Design Concept

3.3 EXISTING CONDITIONS

Existing land use within the future Burlington GO MTSA consists primarily of residential, commercial and industrial land uses as well as some park and open space uses.

3.4 WASTEWATER SERVICING EVALUATION

3.4.1 EXISTING WASTEWATER SERVICES

The Burlington GO MTSA is serviced by 3 major North South Trunk Sewer Systems that conveys flows for treatment in the Skyway Wastewater Treatment Plant via Skyway East Trunk Sewer (SETS) is in South Burlington. The SETS is a large capacity system that is designed to take on flows from most of the Skyway Wastewater Treatment Plant Service Area.

Lands within the MTSA are to be serviced by gravity sewers connecting to the 3 key North South Trunk Sewers.

Key existing wastewater infrastructure components around the Burlington GO MTSA lands are described as follows:

1. **Glendor - Plain –Maple Trunk Sewer:** A 750 mm – 825 mm sewer system that receives flows from the Northwest portion of the subject lands via a 450 mm – 525 mm sewer system along Leighland Road and connects to a 750 mm sewer along Glendor Road.
2. **Brant Street Trunk Sewer:** A 450 mm – 600 mm sewer system that runs along Brant Street and receives flows from the centre of the subject lands
3. **Drury Lane Trunk Sewer:** A 675 mm sewer system that runs along Drury Lane and is accessible to the subject lands in two locations.
4. **The Skyway East Trunk Sewer:** This consists of the trunk sewer that runs East West through Burlington at to the Skyway Wastewater Treatment Plant.

The existing sewer network is given in **Figure 3-3**.

Key external planned infrastructure upgrades include:

1. **New 2400 mm Sewer Inlet at Skyway WWTP**

Halton's model 2051 scenario identifies capacity deficiencies in the 3 trunk sewer systems that service the Hub lands. There are no identified capacity issues within the Skyway East Trunk Sewer. The sewers with existing capacity issues are shown in **Figure 3-4**. **Figure 3-5** shows the capacity deficiencies in the existing sewers with the demands associated with the proposed land use provided by Brook McIlroy.

Figure 3-3. Existing Wastewater Services Burlington Go MTSA

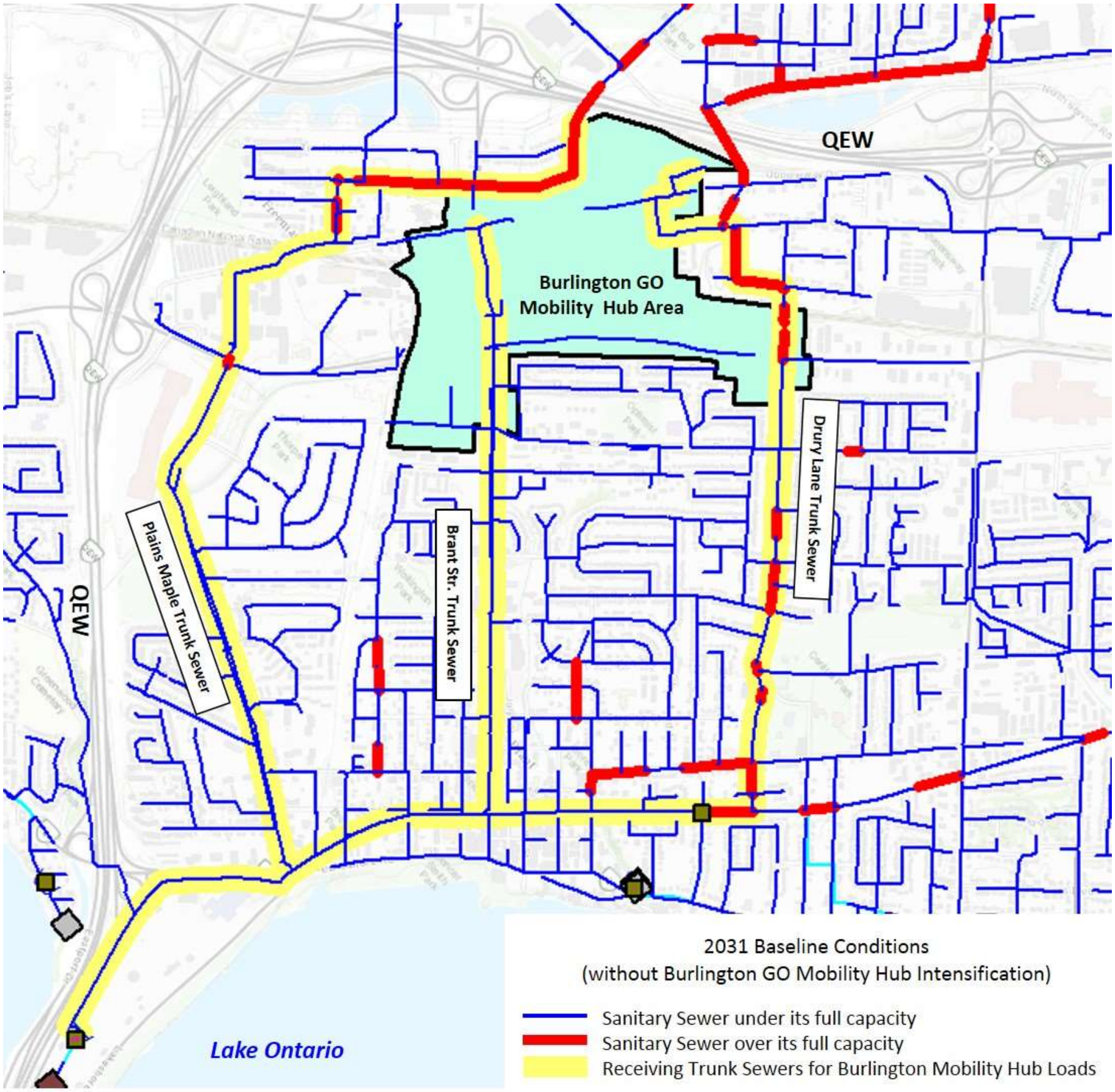


Figure 3-4. Existing Capacity Issues - Burlington GO MTSA

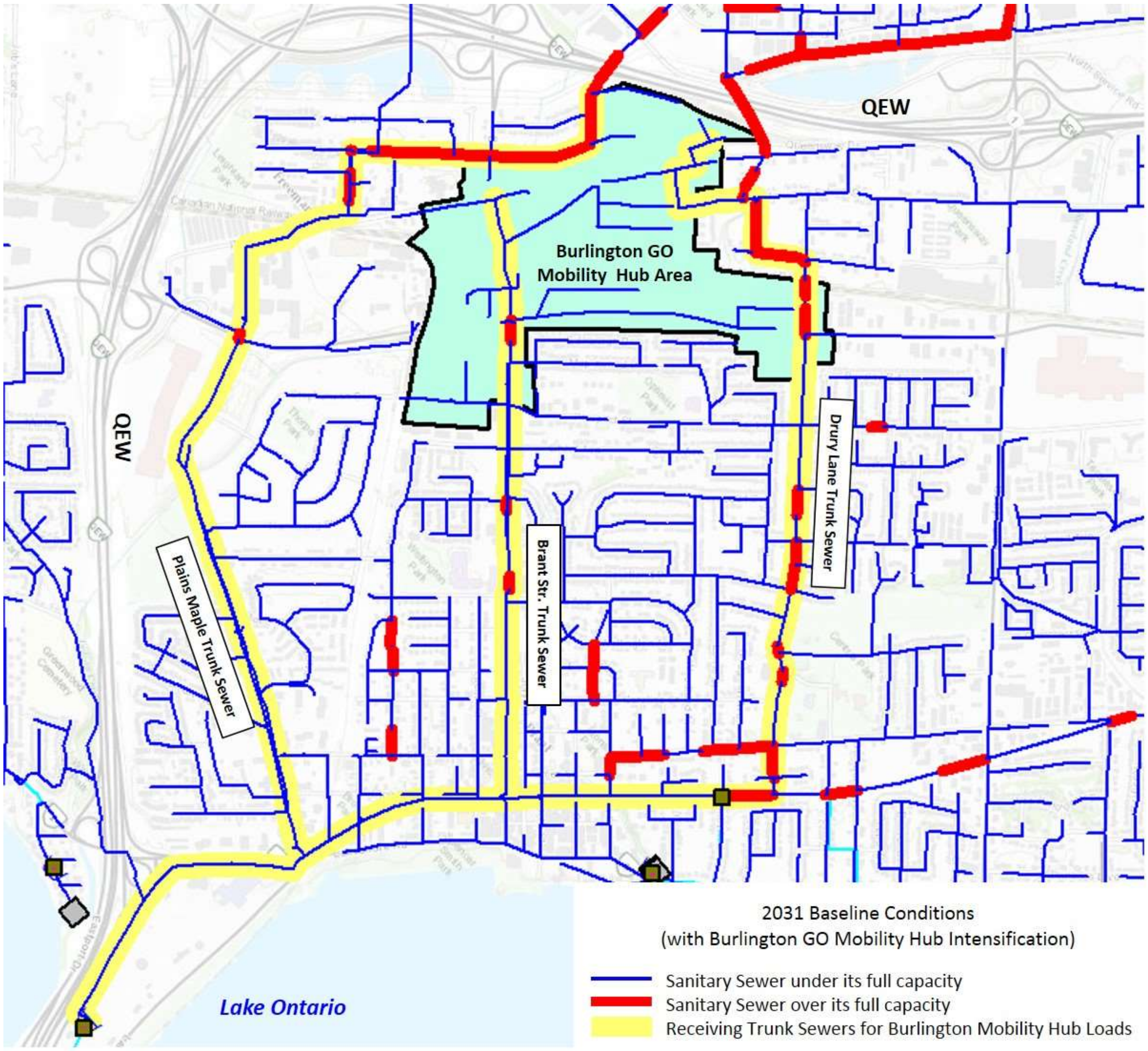


Figure 3-5. Capacity Issues in receiving sewer system with Burlington GO intensification

3.4.2 PROPOSED WASTEWATER SERVICES

The following is a brief discussion and summary of existing and planned wastewater services for the Burlington GO MTSA.

Internal Services

A plan of services for the proposed MTSA is provided in

Figure 3-6. This figure shows proposed main trunk sewer lines connecting to the available existing outlets to Halton's wastewater collection system. Profiles for the main lines are given in **Figure 3-7** and **Figure 3-8**. Additional sewer lines were labelled as "secondary lines", profiles for these sewers are not given, they are included as part of the overall servicing plan. The proposed plan includes sewer service along all the proposed roads in the MTSAs.

The proposed internal sewer layout also makes use of existing sewers within the existing roads. New Sewers are generally proposed in areas where there will be a change in land use or a new road. As such there is no restoration cost added to the sewer cost estimate as it is not expected that it will be built within an existing road. The new internal layout involves approximately 3,900 m of new sewers within the MTSA Lands.

Figure X-X Burlington GO Mobility Hub Proposed Wastewater System

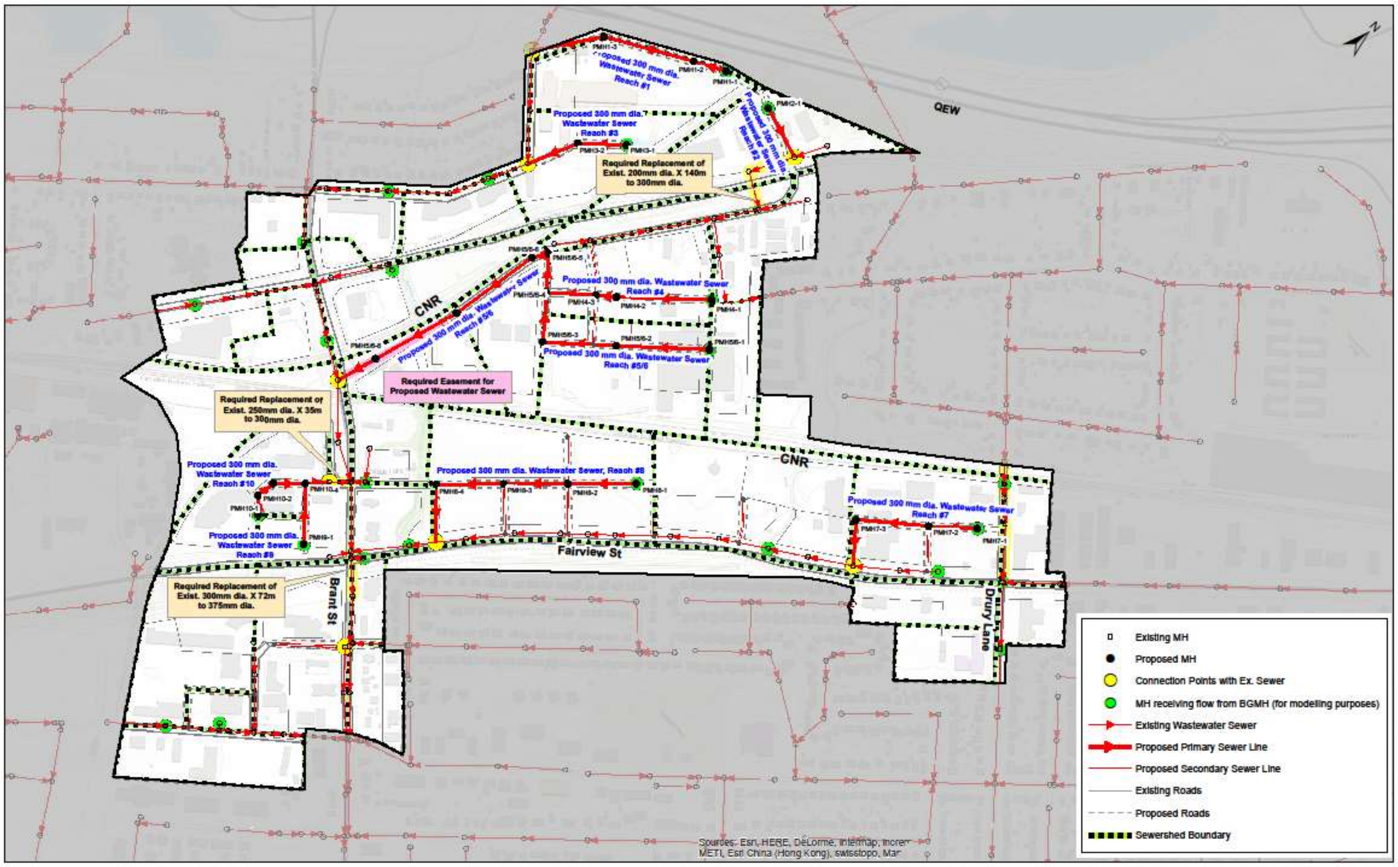


Figure 3-6 Burlington GO MTSA - Internal Sanitary Sewer Services

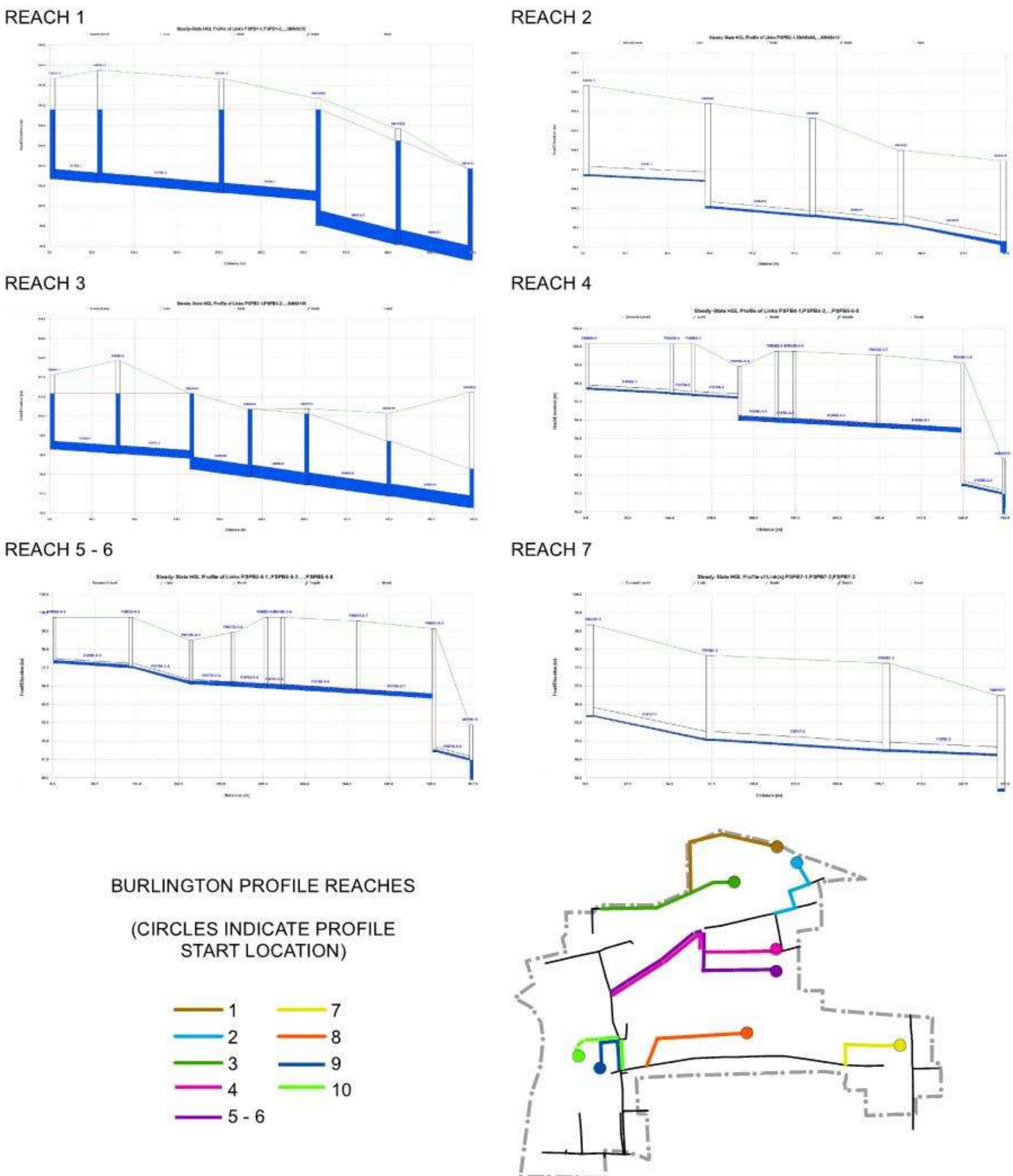
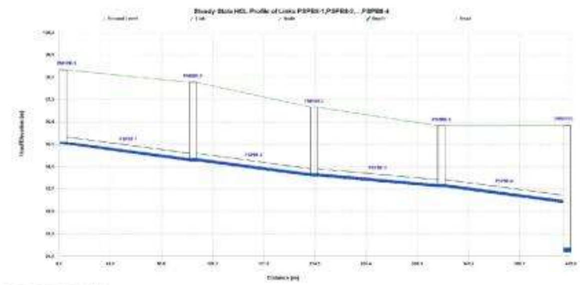
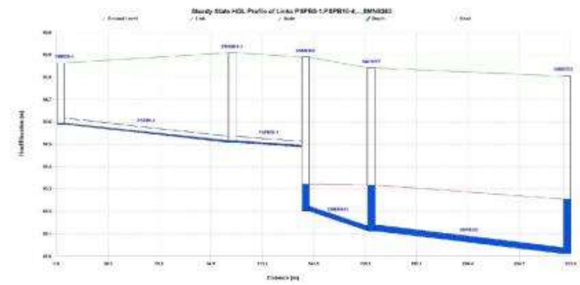


Figure 3-7 Burlington GO MTSA Internal Services - Sanitary Sewer Profiles

REACH 8



REACH 9



REACH 10

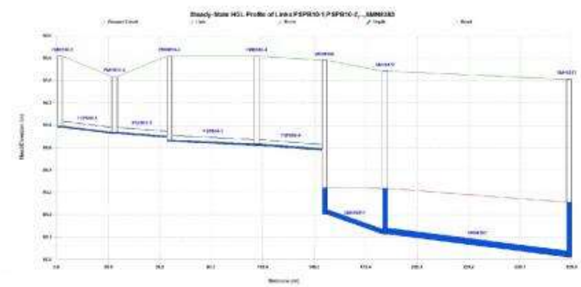


Figure 3-8 Burlington GO MTSA Internal Services - Sanitary Sewer Profiles

External Services

Halton's model 2031 scenario identifies capacity deficiencies in the 3 trunk sewer systems that service the Hub lands. The most significant issues are in the Plains Maple and the Drury Trunk Systems. Note that external capacity is reviewed by Halton Region as part of the Master Planning process and for the cumulative effect on major trunk systems. New developments that benefit from the existing capacity are typically assigned an overall development charge to pay for the life-cycle cost of the infrastructure.

The following baseline improvements have been proposed in this study to assist in understanding the scope of needs for the Burlington MTSAs. An overview of the proposed improvements is given in **Figure 3-9**. These upgrades are an initial concept that can be improved upon or refined by considering alternatives in a detailed design process:

Leighland Road Sewer Improvements: A replacement of the 450 mm/525 mm x 1.0 km sewer along Truman Street and Leighland Road with a higher capacity sewer (675 mm) AND a connection of the new sewer to the 750 mm sewer manhole near the intersection of Gabriel Place and Leighland Road. This configuration will eliminate the baseline capacity issues in the Plains Maple System shown in **Figure 3-5**.

Drury Lane Trunk Sewer Improvements: A replacement of the 2.0 km x 525mm/600/mm/675 mm sewer along Phyllis Street, Fassel Avenue, Orpha Street, across the railway and through Drury Lane. An upsizing of this sewer to 675mm for the portion upstream (North) of Prospect Street, and 750 mm for the portion downstream to Caroline Street, will eliminate the baseline capacity issues in the Plains Maple System shown in **Figure 3-5**. Note that alternate solutions could be considered to optimize the value of the investment as shown in **Figure 3-9**, the alternate approaches consider the replacement of a lower capacity sewer (200 mm) while maintaining the existing capacity in the 675 mm sewer on Drury Lane providing an opportunity for better value.

Key External Planned Infrastructure Projects:

1. ***New 2400 mm sewer inlet to Skyway WWTP parallel to QEW***

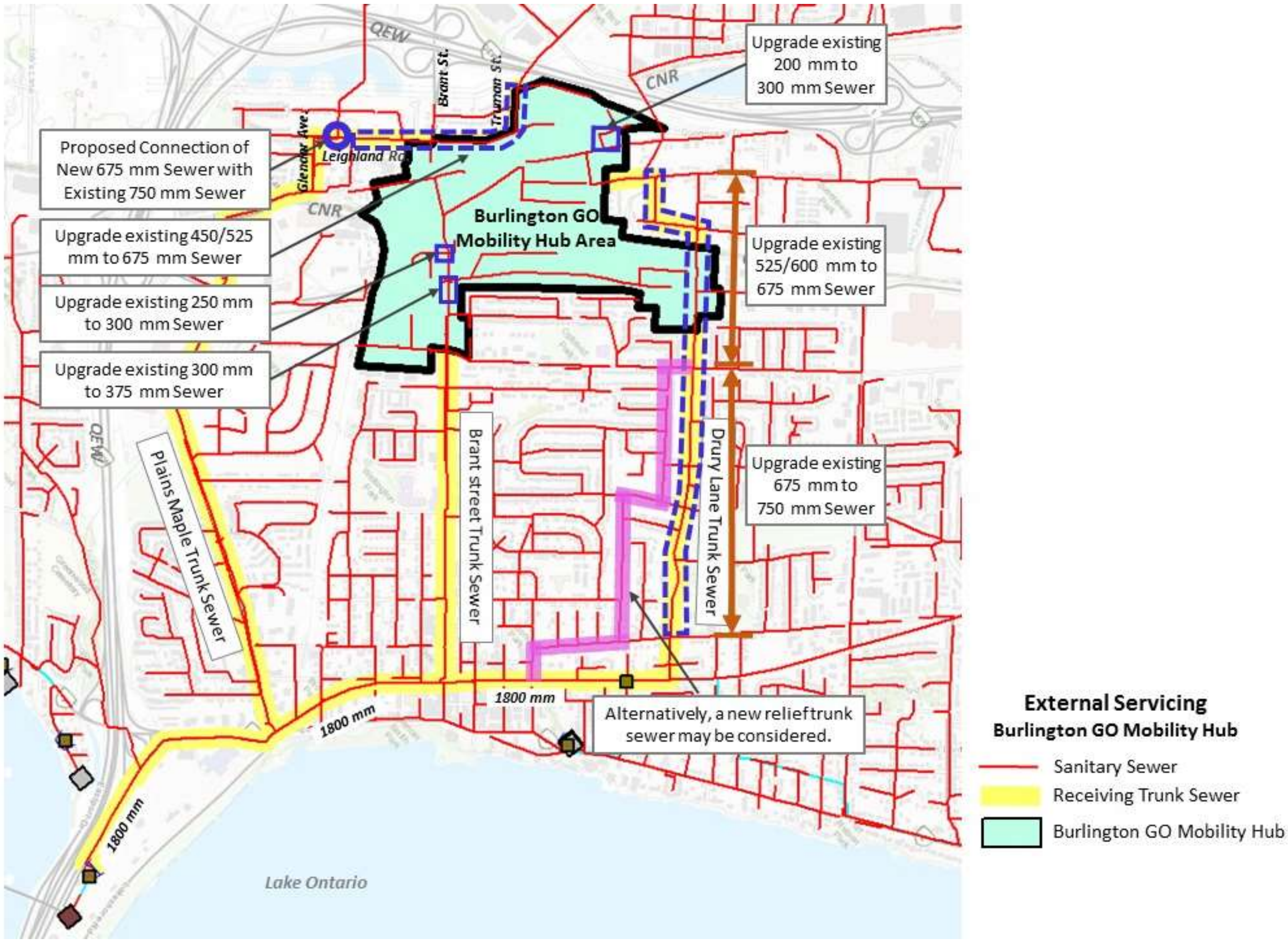


Figure 3-9. Proposed External Sewer Improvements - Burlington Go MTSAs

3.4.3 BURLINGTON GO - WASTEWATER SERVICING DESIGN CRITERIA

The following table outlines the design requirements for the Burlington GO wastewater collection system.

Table 3-1. Design Criteria – Wastewater Collection System

Pipe Flow		
Coefficient of Roughness	n = 0.013	Halton Region
Minimum Flow Velocity	0.6 m/sec	Halton Region
Maximum Flow Velocity	3.0 m/sec	Halton Region
Infiltration		
Infiltration Allowance	0.286 l/sec/ha	Halton Region
Wastewater Generation Rate		
Residential	210 L/cap/day	
Employment	185 L/cap/day	

3.4.4 BURLINGTON GO - WASTEWATER GENERATION

Wastewater generation rates have been calculated based on the preferred Land Use, utilizing Halton Region design criteria listed above.

Wastewater Loading and Infiltration/Inflow Generation

Infiltration and Inflow (I&I) = 0.286 Litres per hectare per second

Wastewater flow projection for the Burlington GO service area was estimated by applying these criteria to the total equivalent population and the area. The Inflow and Infiltration amounts were factored in by applying the Modified Harmon Peaking Method which is built into and calculated through the hydraulic model. The following wastewater loading and I&I generation rates were calculated for the Burlington GO MTSA.

Table 3-2. Burlington GO Loading and Generation

Parameter	Value
Average Daily Dry Weather Flow	49.42 L/s
Average Daily Wet Weather Flow	54.95 L/s
Total Peak Wastewater Flow Including I&I	188.68 L/s

Establish the expected sanitary flows (average dry weather flow, maximum wet weather flow (including I/I) for each MTSA based on future residential and employment population forecasts (specific time horizons required: 2031 and 2051). Confirm via hydraulic modeling that adequate capacity is available for servicing the proposed developments in 2031.
It is requested that wastewater generation rates and population/employment estimates are established and differentiated for both the 2031 time-horizon as well as for 2051.

3.4.5 BURLINGTON GO - WASTEWATER MODELLING

The hydraulic wastewater model was updated using the Region's most up to date data for a 2051 time-horizon. No additional Regional based servicing constraints regarding wastewater treatment plants, pumping stations or gravity sewers are identified for the Burlington GO MTSA at this point. For the purpose of this report, only linear infrastructure has been considered to date. Further analysis is required to confirm vertical infrastructure needs. Expansion and upgrade requirements for the Burlington GO MTSA to accommodate projected residential and employment populations are identified in the following section.

Summary of Proposed Additional Wastewater Servicing

To accommodate the full build out scenario for the Burlington GO MTSA, the proposed additional wastewater infrastructure is summarized below:

Table 3-3. Burlington GO – Proposed Wastewater Infrastructure

Gravity Mains	Meters
250 mm	35
300 mm	2,596

3.5 WATER SERVICING

3.5.1 EXISTING WATER SERVICES

The Burlington GO MTSA is serviced by Burlington Pressure Zones B1 with existing services shown in **Figure 3-10**. The flows from the Burlington WPP and the Washburn Pump Station align with the Region's modelling data.

The preferred service ground elevation range for the pressure zones is given in **Table 3-4**.

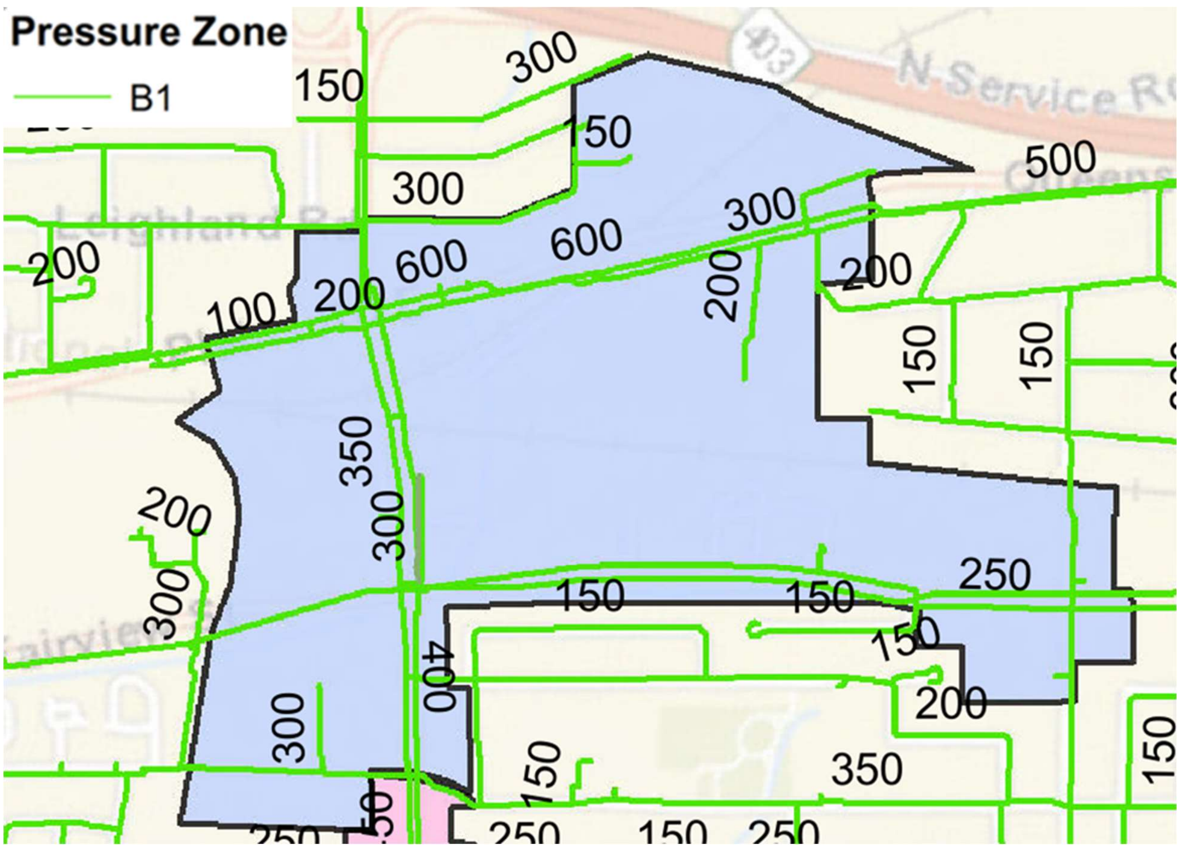


Figure 3-10. Existing Water Services at Burlington GO MTSA

Table 3-4. Burlington GO - MTSA Pressure Zone Suitability

	Required (MOECC)	Preferred (Halton Criteria)
Min Operating Pressure	28.0 m	35.0 m
Max Operating Pressure	50.0 m	56.0 m
Zone B1 Pressure Zone Characteristics		
Min Suitable Ground Service Elevation	**65.0 mASL**	**79.0 mASL**
Maximum Suitable Ground Service Elevation	**102.2 mASL**	**95.2 mASL**
Minimum HGL	130.2 mASL	
Max HGL	135.0 mASL	

Note that the ground elevations are suitable for service from Zone B1, however the lands in the North near the QEW are at the higher end and may experience lower than preferred pressure. This can be studied further as these lands develop, at this time it is planned for service from Zone B1.

Key External Planned Infrastructure Projects

Halton's Planning model indicates a number of planned infrastructure components that are to be in-service by 2031. Key Components were identified and Halton Region confirmed the status of the components as follows:

1. ***Zone 1 900 mm Feedermain from Guelph Line/Prospect Street to Washburn Reservoir.***
2. ***300mm WM on Brant St from Fairview St to 180 m northerly (BUR)***

The 2031 modeling results for the Burlington GO MTSA includes these components in service.

3.5.2 PROPOSED WATER SERVICES

The following is a brief discussion and summary of existing and planned water services for the Burlington GO MTSA.

Internal Services

A proposed servicing plan is given in **Figure 3-11**. A network of 300 mm watermains is proposed along all new road right-of-ways. A total of 4300 m of new watermain is proposed to service the Burlington Go MTSA.

External Services

Halton's water model 2031 scenario with the proposed build-out population in the Burlington MTSA, confirms there is sufficient capacity to meet the boundary conditions and support the demands as described below. Note that external capacity is reviewed by Halton Region as part of the Master Planning process and for the cumulative effect on major supply and transmission systems. New developments that benefit from the existing capacity are assigned an overall development charge to pay for the life-cycle cost of the infrastructure.

Confirmation of Capacity

The proposed system was modelled with the following elements:

- Halton's proposed, existing and upgraded infrastructure to 2031;
- The proposed updated population for the Burlington MTSA as well as the 2051 demands elsewhere in the Region;
- The proposed internal network as shown in **Figure 3-11**;

The model output for the available fire flow indicator is above 200 L/s for the subject lands as shown in **Figure 3-12**. This confirms the network is suitable to support the needs of a variety of building types.

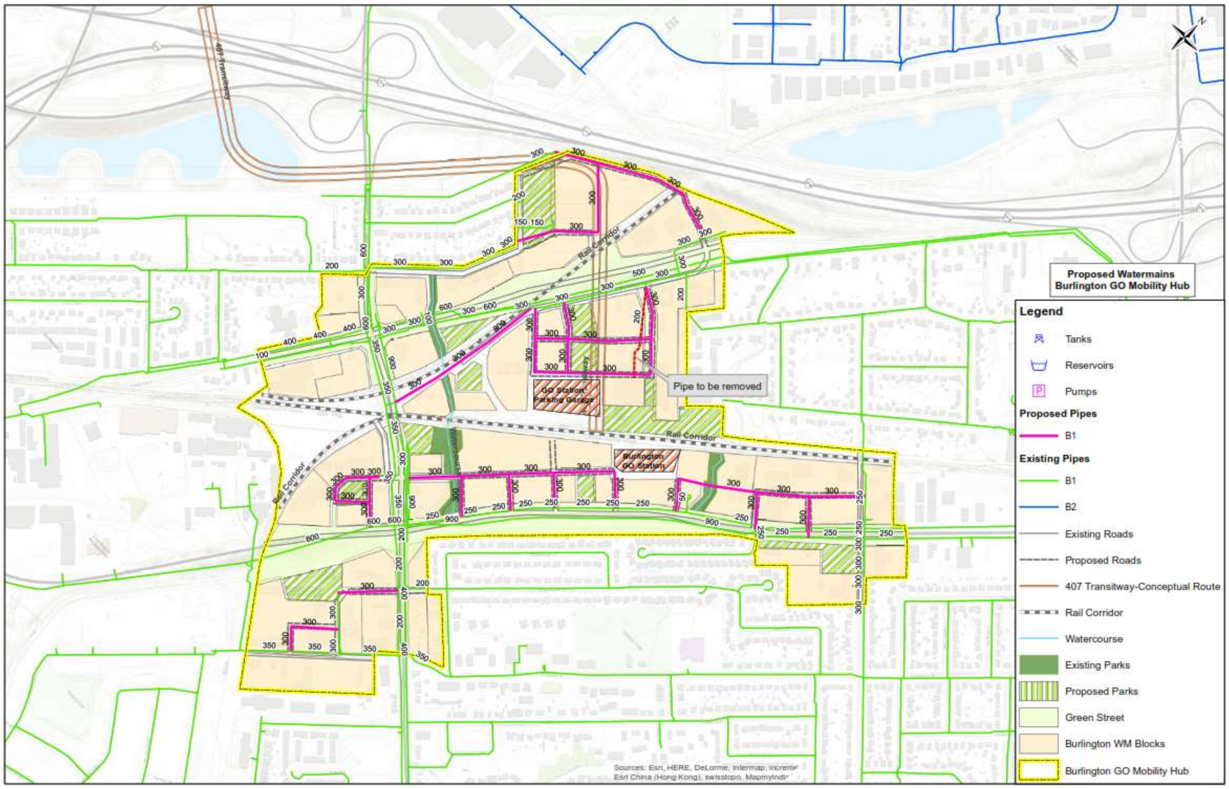


Figure 3-11. Burlington GO MTSA Proposed Water System

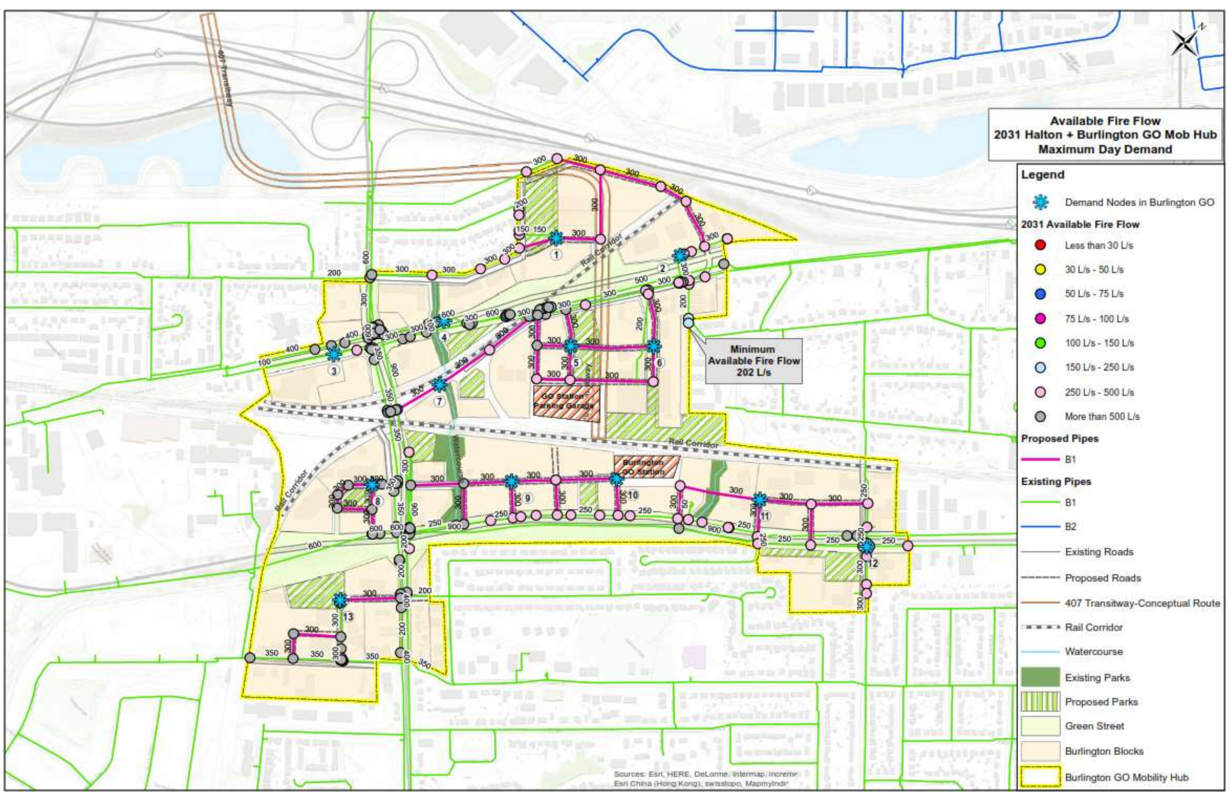


Figure 3-12. Burlington GO MTSA Available Fire Flow - Proposed

3.5.3 BURLINGTON GO – WATER DESIGN CRITERIA

Design water demands used to update the hydraulic modelling are outlined in the table below as per comments received which suggested using unit water usages rates for residential (255 L/p-d) and ICI (a single blended rate = 225 L/p-d). With these usage rates, the average demands (L/s) and Max Day Demand (MDD) were determined using a max day factor of 2.25 (Typically a maximum daily factor of 1.9 is used, however, based on the land use mix, a rate of 2.25 was used as the best-informed factor at the time that model was run. This slightly different factor should not influence any recommendation or outcome but can be corrected in the future if deemed necessary).

Table 3-5. Design Criteria – Water Demand

Land Use Type	Water Average Day Demands
Residential	255 L/person/day
Industrial/Commercial/Institutional (Blended)	225 L/employee/day

3.5.4 BURLINGTON GO – WATER DEMAND

The following hydraulic modelling results confirm supply and pressure availability to service the proposed developments at 2031. The anticipated water demand (average day demand, max day demand and fire flow) for the projected growth in each MTSA was calculated based on 2051 residential and employment population forecasts from the MTSA land use Traffic Zone Allocation. The average day demand (ADD) projection was estimated by applying the above criteria to the total equivalent population and the area. The following factors were utilized to estimate the maximum day demand (MDD) and peak hour demand (PHD).

MDD 2.25
PHD 3.0

Applying these criteria to the residential and employment populations and adding the demands up, the ADD, MDD and PHD are:

Table 3-6. Burlington GO – New Development Water Demand Growth

Parameter	Value
Residential Population	12,882
Employment Population	8,435
Average Daily Demand (ADD)	60.0 L/s
Maximum Daily Demand (MDD)	135.0 L/s
Peak Hour Demand (PHD)	180.0 L/s

For water analysis, the future demands were distributed to Demand 7 for anticipated residential growth and Demand 9 for anticipated employment growth.

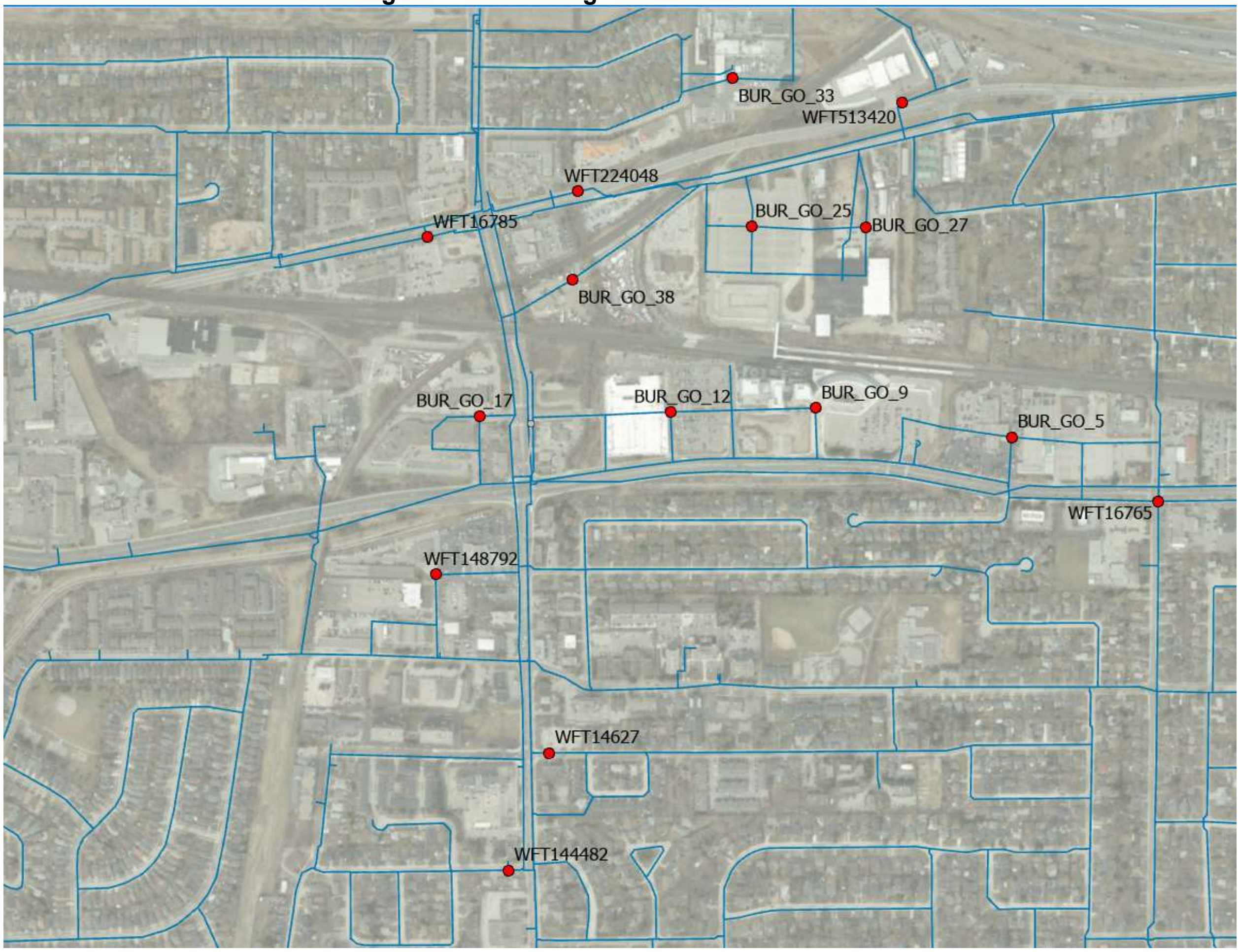
Table 3-7. Burlington GO – Modelling Results Under MDD

Junction ID	Demand (L/s)	Elevation (m)	Head (m)	Pressure (psi)
BUR_GO_12	11.7	99.0	134.9	51.1
BUR_GO_17	6.4	97.0	134.9	53.9
BUR_GO_25	11.7	100.5	134.9	49.0
BUR_GO_27	9.3	100.5	134.9	49.0
BUR_GO_33	2.4	103.0	135.0	45.4
BUR_GO_38	9.3	99.3	135.0	50.7
BUR_GO_5	9.3	97.0	135.0	54.0
BUR_GO_9	11.8	98.5	134.9	51.8
WFT144482	15.8	91.3	134.4	61.2
WFT14627	15.7	92	134.8	61
WFT148792	4.5	94.4	134.9	57.6
WFT16765	3.9	97.5	135	53.3
WFT16785	8	99.7	134.9	50
WFT224048	8	100.5	135	49.1
WFT513420	7.8	103.6	135	44.5

Table 3-8. Burlington GO – Modeling Results

ID	Total Demand (L/s)	Hydrant Available Flow (L/s)	Critical Pressure for Design Run (psi)
BUR_GO_12	291.7	464.1	28.4
BUR_GO_17	286.4	844.4	28.4
BUR_GO_25	291.7	535.6	28.4
BUR_GO_27	289.3	472.4	28.4
BUR_GO_33	282.4	346.4	28.4
BUR_GO_38	289.3	556.7	28.4
BUR_GO_5	289.3	419.6	28.4
BUR_GO_9	291.8	381.7	28.4
WFT144482	295.8	115.9	28.4
WFT14627	295.7	287.5	28.4
WFT148792	284.5	712.7	28.4
WFT16765	283.9	487.7	28.4
WFT16785	288	156	28.4
WFT224048	288	643.5	28.4
WFT513420	287.8	392.3	28.4

Figure 3-13. Burlington GO – Node Locations



3.5.5 BURLINGTON GO - WATER MODELING RESULTS

The hydraulic water model was updated using the Region's most up to date data for a 2031 time-horizon. No additional Regional based servicing constraints regarding water purification plants, reservoirs, pump stations, or linear infrastructure were identified for the Burlington GO MTSA. Expansion and upgrade requirements for the Burlington GO MTSA to accommodate projected residential and employment populations are identified in the following section. The model output for the available fire flow indicator is 116 L/s to 844 L/s for the subject lands as shown in **Figure 3-8**. Most of the junctions can deliver an available fire flow greater than 250 L/s and support the needs of a variety of building types, except for the junctions WFT16785 and WFT144482 with available fire flows of 116 L/s and 156 L/s. The MDD+FF scenarios were completed with the residual pressure set as 28.4 psi and the available fire flows are expected to be higher than what have been presented in the report with the minimum residual pressure requirement of 20 psi. Although current results are adequate, it is suggested to re-run the model with the pressure set at 20 psi for even better results if deemed necessary.

3.6 SUMMARY AND COST ESTIMATE

The Burlington GO MTSA can be adequately serviced from Halton Region's Lake based system as per the plans described in Section 3.4.2 (Proposed Wastewater Services) and Section 3.5.2 (Proposed Water Services).

Preliminary Cost Estimates are provided for information purposes and based on 2022 construction costs. Costs are provided for planning purposes only. Note that actual costs can vary considerably due to labour, materials, unknown design factors, ground conditions, staging.

The estimate represents an overall budget for transmission and collection servicing upgrades to provide an opportunity for collective cost sharing of servicing at the level of the MTSA or as an intensification fund levied from intensification developments within targeted areas in the City of Burlington.

External Servicing and Life-Cycle Costs associated with the Halton Lake Based Trunk Sanitary Collection and Treatment system, as well as the Treated Water Supply, Storage, Transmission and Pumping is not included in the estimates below.

Costs for wastewater treatment, as well as the treated water supply, storage, transmission and pumping are not included in the estimates below.

Servicing costs are summarized in **Table 3-9, Table 3-10 and Table 3-11**.

In regards to the external sanitary servicing, note that the base concepts shown herein may be refined through model calibration, flow monitoring demand studies and a more detailed review of alternative solutions.

Note that the external service improvements will benefit other users outside the Burlington Go Intensification Area and opportunities for cost sharing can be explored.

Note that there is available capacity within the Brant Street Sewer System and that areas directed to this sewer system are not dependent on the upgrades to the Drury and Leighland Road sewer Systems. Note that the proposed populations as shown in

Figure 3-6 can be serviced according to the Region's model.

An initial phase of development can proceed with the internal services within the sewer sheds draining to the Brant Street Sewer. The available capacity as provided in the Brant Street Sewer system can accommodate the proposed lands as shown in

Figure 3-6. The available capacity is based on information provided by Halton Region via the planning model. It is recommended that the available capacity in the Brant Street Sewer be validated by a review of existing buildings connections as well as flow monitoring and rainfall data.

It is further recommended that an integrated solution for Burlington GO and Downtown MTSA be considered for the Brant Street Sewer System.

The following estimated costs are based on the Regional Municipality of Halton 2022 Water/Wastewater Development Charges Update and include full road reconstruction.

Table 3-9. Cost Estimate - Burlington GO MTSA - Internal Sanitary Services[4]

Item	Description	Unit	Quantity	Unit Cost	Extended Cost	Amount
	Internal Servicing					
1.0	***Reach #1***					**$ 262,720**
1.1	300 mm, 2.7 - 3.5 m deep San Sewer in Proposed Road	meter	322	$760/m	$ 244,720	
1.2	1200 mm Sanitary Manhole 2.7m -3.5m deep	each	3	$6,000/each	$ 18,000	
2.0	***Reach #2***					**$ 73,640**
2.1	300 mm dia 2.5-3 m deep San Sewer in Proposed Road	meter	89	$760/m	$ 67,640	
2.2	1200 mm Sanitary Manhole 2.5-3 m deep	each	1	$6,000/each	$ 6,000	
3.0	***Reach #3***					**$ 137,400**
3.1	300 mm 2.5-3.5 m deep San Sewer in Proposed Road	meter	165	$760/m	$ 125,400	
3.3	1200 mm Sanitary Manhole 2.5 m deep	each	2	$6,000/each	$ 12,000	
4.0	***Reach #4***					**$ 220,160**
4.1	300 mm 2.7-3.1 m deep San Sewer pipe in Proposed Road	meter	266	$760/m	$ 202,160	
4.2	1200 mm Sanitary Manhole 2.7-3 m deep	each	3	$6,000/each	$ 18,000	
5.0	***Reach #5/6***					**$ 684,580**
5.1	300 mm 2.7-3.5 m deep San Sewer in Proposed Road	meter	738	$760/m	$ 560,880	
	300 mm 8.3 m deep San Sewer in Proposed Road	meter	70	$810/m	$ 57,700	
5.2	1200 mm Sanitary Manhole 2.5-4.5 m deep	each	7	$8,000/each	$ 56,000	
5.3	1200 mm Sanitary Manhole 7.8 m deep	each	1	$10,000/each	$ 10,000	
6.0	***Reach #7***					**$ 223,960**
6.1	300 mm 2.5-3.5 m deep San Sewer in Proposed Road	meter	271	$760/m	$ 205,960	
6.2	1200 mm Sanitary Manhole 2.5-3.5 m deep	each	3	$6,000/each	$ 18,000	
7.0	***Reach #8***					**$ 339,400**
7.1	300 mm 2.5-3.5 m deep San Sewer in Proposed Roads	meter	415	$760/m	$ 315,400	
7.2	1200 mm Sanitary Manhole2.5 -3.5 m deep	each	4	$6,000/each	$ 24,000	
8.0	***Reach #9***					**$ 79,720**
8.1	300 mm dia & 2.7-3 m deep Sanitary Sewer pipe in Proposed Roads	meter	97	$760/m	$ 73,720	
8.2	1200 mm Sanitary Manhole 3 m deep	each	1	$6,000/each	$ 6,000	
9.0	***Reach #10***					**$ 144,280**
9.1	300 mm 2.5-4.5 m deep San Sewer in Proposed Road	per meter	153	$760/m	$ 116,280	
9.2	1200 mm Sanitary Manhole 2.5-4.5 m deep	each	4	$7,000/each	$ 28,000	
10.0	***Secondary Sewer Servicing***					**$ 827,640**
10.1	300 mm San Sewer & 1200 mm Manholes@120m	meter	1,089	$760/m	$ 827,640	
11.0	***Upgrade/Replacement of Existing Sanitary Sewer (with Restoration, Traffic Control, etc.)***					**$ 144,240**
11.1	300 mm 3.5 m deep Sanitary Sewer in Existing Roads	per meter	174	$760/m	$ 132,240	
11.2	1200 mm Manholes (3 m deep)	each	2	$6,000/each	$ 12,000	
12.0	***Upgrade/Replacement of Exist. Sanitary Sewer (with Restoration, Traffic Control, etc.)***					**$ 84,150**
12.1	375 mm 8 m deep Sanitary Sewer pipe in Existing Roads	per meter	61	$1,150/m	$ 70,150	
12.2	1200 mm Manholes (7 m deep)	each	1	$14,000/each	$ 14,000	
	Sub-Total Cost Estimate					**$ 3,221,890**
	Contingency & Engineering Allowance 35%					$ 1,127,662
	Total Cost Estimate (rounded)					**$ 4,349,552**

[4] The cost of road reinstatement is included in the unit cost for planned work in existing roads. For planned work in proposed roads, the cost of new road construction is not included. The added cost of new full width road construction is estimated in the range of $5,200 to $5,900 per linear meter.

Table 3-10 Cost Estimate - Burlington GO MTSA - External Sanitary Services[5]

Item	Description	Unit	Quantity	Unit Cost	Extended Cost	Amount
1.0	***Upgrade/Replacement of Exist. Sanitary Sewer (with Restoration, Traffic Control, etc.) - Leighland Road Trunk Sewer Upgrades***					**$ 1,336,530**
1.1	675 mm dia & 2.5-3.5 m deep Sanitary Sewer pipe in Existing Roads	per meter	514	$1,490/m	$ 765,860	
1.2	675 mm dia & 4-4.5 m deep Sanitary Sewer pipe in Existing Roads	per meter	383	$1,490/m	$ 570,670	
2.0	***Upgrade/Replacement of Exist. Sanitary Sewer (with Restoration, Traffic Control, etc.) - Drury Road Trunk Sewer Upgrades***					**$ 6,668,860**
2.1	675 mm dia & 3.5- 4 m deep Sanitary Sewer pipe in Existing Roads	per meter	361	$1,490/m	$ 537,890	
2.2	675 mm dia & 4-4.5 m deep Sanitary Sewer pipe in Existing Roads	per meter	555	$1,490/m	$ 826,950	
2.3	675 mm dia & 4.5-5 m deep Sanitary Sewer pipe in Existing Roads using Trenchless Technology	per meter	80	$1,490/m	$ 119,200	
2.4	675 mm dia & 4-4.5 m deep Sanitary Sewer pipe in Existing Roads	per meter	583	$1,490/m	$ 868,670	
2.5	675 mm dia & 4-4.5 m deep Sanitary Sewer pipe in Existing Roads	per meter	363	$1,490/m	$ 540,870	
2.6	750 mm dia & 4-5 m deep Sanitary Sewer pipe in Existing Roads	per meter	1,151	$1,640/m	$ 1,887,640	
2.7	750 mm dia & 4-5 m deep Sanitary Sewer pipe in Existing Roads	per meter	791	$1,640/m	$ 1,297,240	
2.8	750 mm dia & 4-4.5 m deep Sanitary Sewer pipe in Existing Roads	per meter	360	$1,640/m	$ 590,400	
	Sub-Total Cost Estimate					**$ 8,005,390**
	Contingency & Engineering Allowance 35%					$ 2,801,887
	Total Cost Estimate (rounded)					**$ 10,807,277**

Table 3-11. Cost Estimate - Burlington GO MTSA - Internal Water Servicing[5]

Item	Description	Unit	Quantity	Unit Cost	Extended Cost	Amount
1.0	***New Watermains and their Connections***					**$ 4,162,400**
1.1	300 mm dia Watermains in Proposed Roads	per meter	4,300	$880/m	$3,784,00	
1.2	Allowance for connections, PRVs, etc.	L.S.	1		$ 378,400	
	Sub-Total Cost Estimate					**$ 4,162,400**
	Contingency & Engineering Allowance 35%					$ 1,456,840
	Total Cost Estimate (rounded)					**$ 5,620,000**

[5] The cost of road reinstatement is included in the unit cost for planned work in existing roads. For planned work in proposed roads, the cost of new road construction is not included. The added cost of new full width road construction is estimated in the range of $5,200 to $5,900 per linear meter.

4 ALDERSHOT GO MTSA

4.1 STUDY AREA

The Aldershot Go MTSA study area is bounded by Highway 403 to the northwest, Plains Road to the southeast, Daryl Drive to the southwest, and just northeast of Gallagher Road. The area covers approximately 127 hectares (ha.) The site slopes from North to South. The studied area range in elevation approximately 117 m to approximately 91 m. The elevation contours are presented in **Figure 4-1**.

Pressure zone boundaries are currently under review through the ongoing Regional Water and Wastewater Master Plan, including the B1A zone located within the Aldershot GO MTSA limits. If zone boundary limits are updated as part of the Master Plan, the water servicing strategy for Aldershot GO MTSA will need to be reviewed to ensure the servicing strategy proposed still serves the needs of the area. This may include reviewing: hydraulic modelling, locations of service connections, adding railway crossings, etc.

“The location of the two highway crossings proposed to support the Aldershot GO MTSA will be revisited through the ongoing Regional Water and Wastewater Master Plan. The number and location of highway crossings will ultimately depend on the requirements of the full Regional system. The strategy for Aldershot GO may need to be revisited after the completion of the Master Plan to review crossing locations and subsequent impacts to service.”

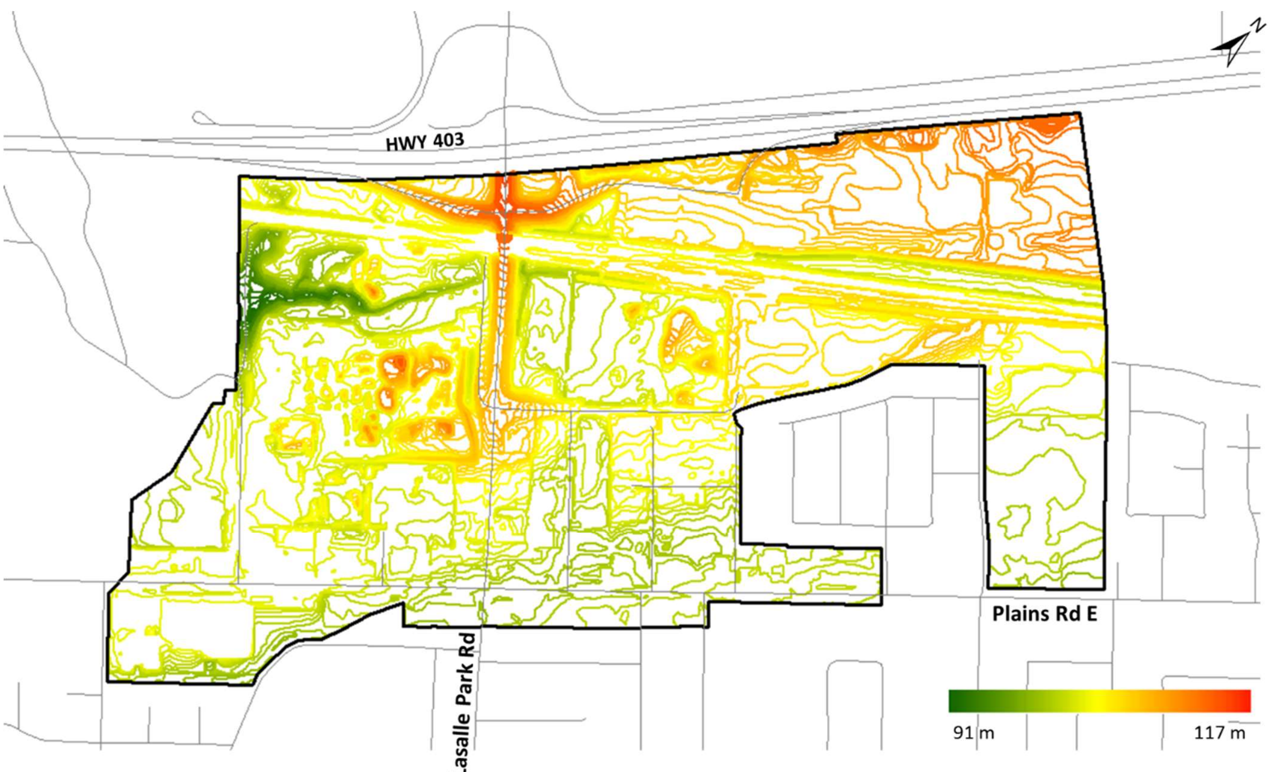


Figure 4-1. Aldershot GO Hub Topography Context

4.2 PLANNING CONTEXT

4.2.1 PROJECTED DENSITY

The Preferred Land Use Plan as per Brook McIlroy (Technical Memo of November 9, 2017, to the City of Burlington) is given in **Figure 2-2**. Density calculations for the hub are based on full build-out of the Preferred Land Use. The Aldershot GO MTSA is projected to have capacity for 27,200 new people and 11,600 new jobs, or a total of 38,800 people and jobs, and a gross density of 306 people and jobs per hectare at full build.

The MTSA land use Traffic Zone Allocations are considered more realistic numbers for this development and were carried through during this study and used for modeling purposes. The Aldershot GO MTSA is projected to have an increase of 14,603 new people, 2595 new jobs, or a total of 17,198 new people and jobs, and a gross density of 135 new people and jobs per hectare.

The projected density calculations and block map for the Aldershot GO MTSA are presented in **Appendix A**.

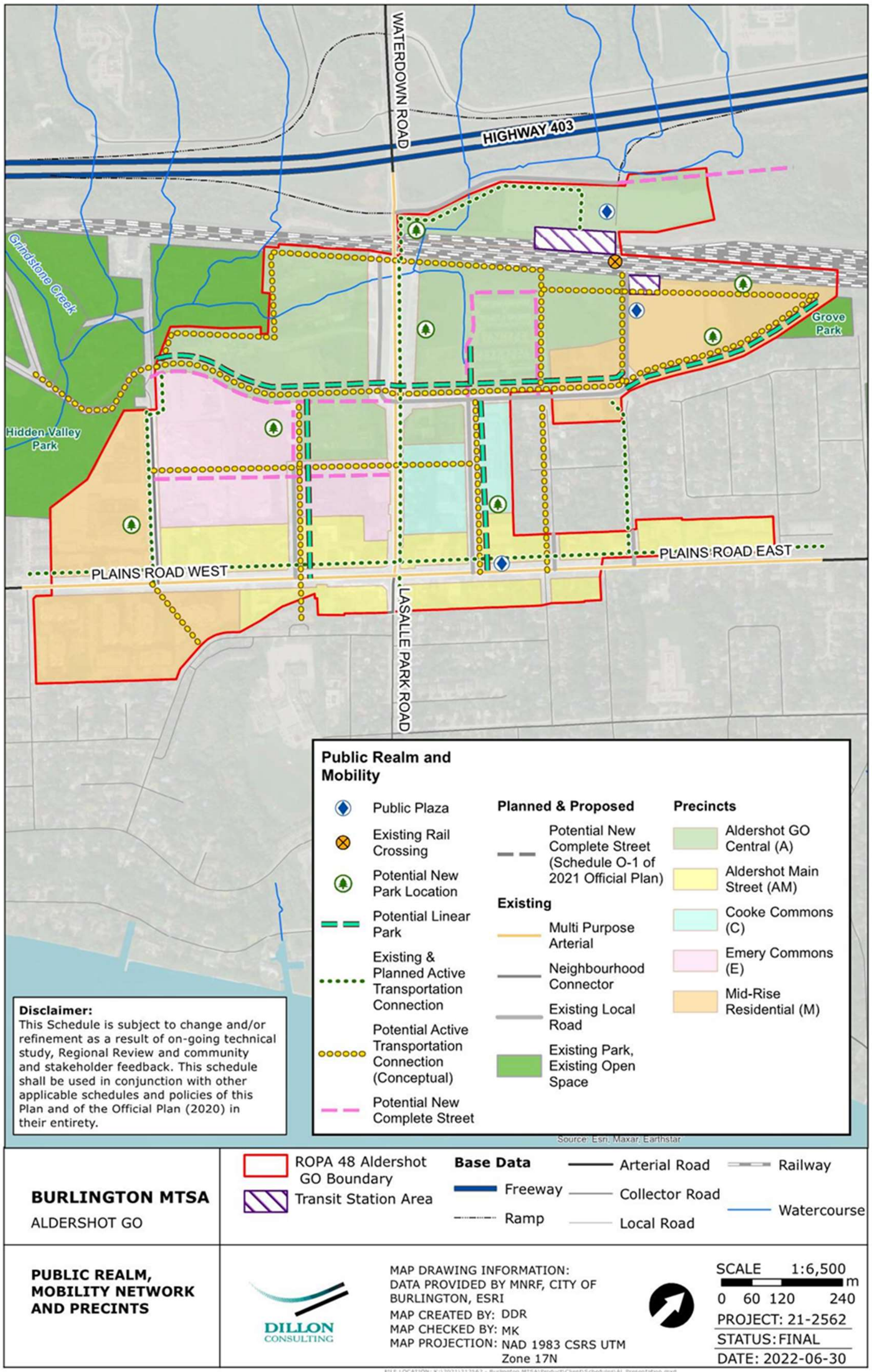

WATERDOWN ROAD
HIGHWAY 403
Grindstone Creek
Hidden Valley Park
Grove Park
PLAINS ROAD WEST
PLAINS ROAD EAST
LASALLE PARK ROAD
Public Realm and Mobility
Public Plaza
Existing Rail Crossing
Potential New Park Location
Potential Linear Park
Existing & Planned Active Transportation Connection
Potential Active Transportation Connection (Conceptual)
Potential New Complete Street
Planned & Proposed
Potential New Complete Street (Schedule O-1 of 2021 Official Plan)
Existing
Multi Purpose Arterial
Neighbourhood Connector
Existing Local Road
Existing Park, Existing Open Space
Precincts
Aldershot GO Central (A)
Aldershot Main Street (AM)
Cooke Commons (C)
Emery Commons (E)
Mid-Rise Residential (M)
Disclaimer:
This Schedule is subject to change and/or refinement as a result of on-going technical study, Regional Review and community and stakeholder feedback. This schedule shall be used in conjunction with other applicable schedules and policies of this Plan and of the Official Plan (2020) in their entirety.
Source: Esri, Maxar, Earthstar
BURLINGTON MTSA
ALDERSHOT GO
ROPA 48 Aldershot GO Boundary
Transit Station Area
Base Data
Freeway
Ramp
Arterial Road
Collector Road
Local Road
Railway
Watercourse
PUBLIC REALM, MOBILITY NETWORK AND PRECINTS
DILLON CONSULTING
MAP DRAWING INFORMATION:
DATA PROVIDED BY MNRF, CITY OF BURLINGTON, ESRI
MAP CREATED BY: DDR
MAP CHECKED BY: MK
MAP PROJECTION: NAD 1983 CSRS UTM Zone 17N
SCALE 1:6,500
0 60 120 240 m
PROJECT: 21-2562
STATUS: FINAL
DATE: 2022-06-30

Figure 4-2. Aldershot GO MTSA Preferred Design Concept

4.3 EXISTING CONDITIONS

Existing land use within the future Burlington GO MTSA consists primarily of residential, commercial and industrial land uses as well as some park and open space uses.

4.4 WASTEWATER SERVICING EVALUATION

4.4.1 EXISTING WASTEWATER SERVICES

The Aldershot Go MTSA is serviced by the Skyway West Trunk Sewer system, a 900 mm sewer which runs East towards the Skyway Wastewater Treatment Plant and is located to the South of the subject lands along Townsend Avenue. The subject lands drain towards the Skyway West Trunk Sewer via sub-trunk sewers along Lasalle Park Road (750 mm), Glenwood Avenue (450 mm), Shadeland Avenue (450 mm) and Enfield Road/Willowbrook Road (250 mm/450 mm). An overview of the existing sewers is given in **Figure 4-3**.

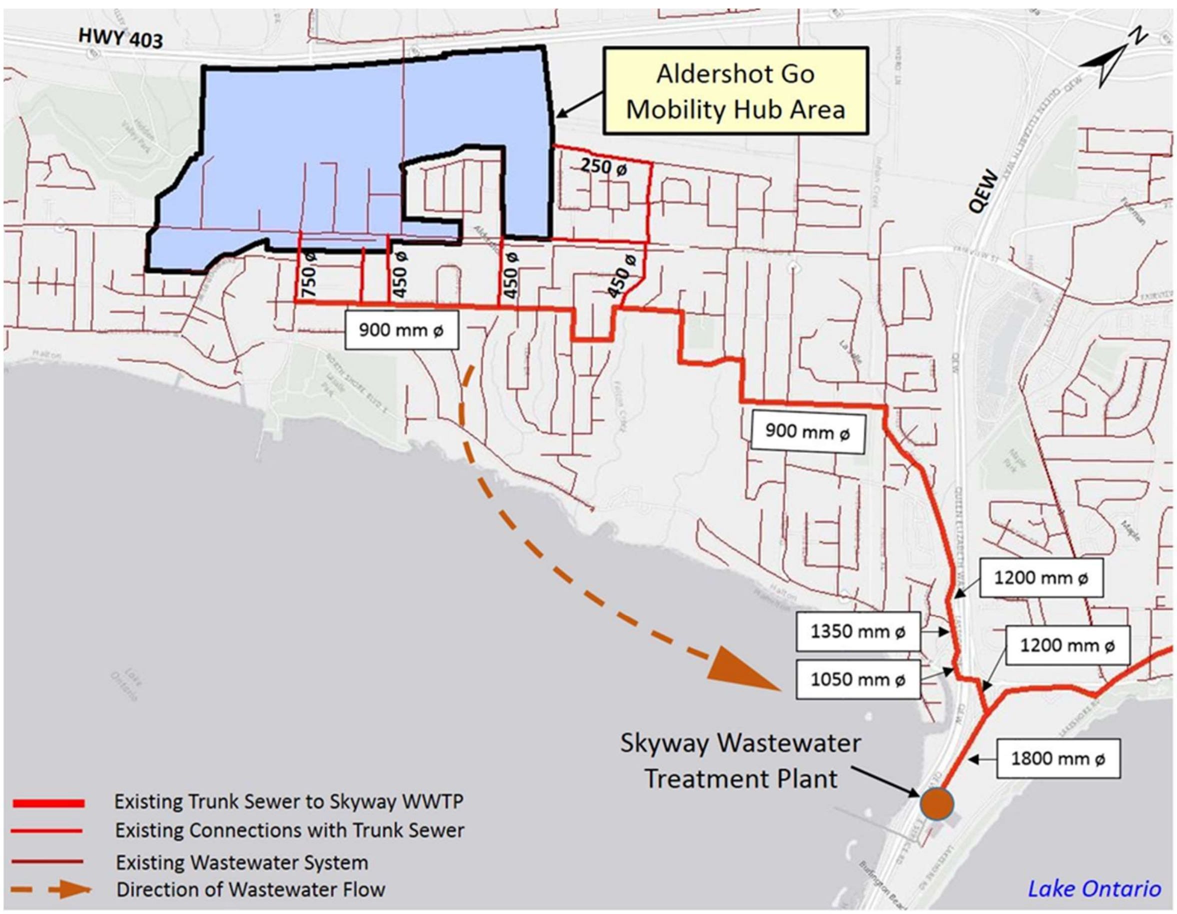


Figure 4-3. Existing Wastewater Services Aldershot Go MTSA

4.4.2 WASTEWATER SERVICES

Review of Existing and Planned Infrastructure

The following is a brief discussion and summary of existing and planned wastewater services for the Aldershot GO MTSA.

Internal Services

A plan of services for the proposed MTSA is provided in **Figure 4-4.** This figure shows proposed main trunk sewer lines connecting to the available existing outlets to Halton's wastewater collection system. Profiles for the main lines are given in **Figure 4-5**. Additional sewer lines were labelled as "secondary lines", profiles for these sewers are not given, they are included as part of the overall servicing plan. The proposed plan includes sewer service along all of the proposed roads in the MTSAs.

The proposed internal sewer layout also makes use of existing sewers within the existing roads. New Sewers are generally proposed in areas where there will be a change in land use or a new road. As such there is no restoration cost added to the sewer cost estimate as it is not expected that it will be built within an existing road. The new internal layout involves approximately 707 m of new sewers within the MTSA Lands.

External Services

Halton's model 2031 scenario with the proposed updated population in the Aldershot Go MTSA, confirms there is sufficient capacity in the existing connections downstream for conveyance to the Skyway Treatment Plant. Note that external capacity is reviewed by Halton Region as part of the Master Planning process and for the cumulative effect on major trunk systems such as the NEBTS, the SETS, and the Skyway WWTP. New developments that benefit from the existing capacity are assigned an overall development charge to pay for the life-cycle cost of the infrastructure.

Key external planned infrastructure upgrades indicated by Halton Region include:

1. ***New 2400 mm Sewer Inlet at Skyway WWTP***
2. ***300 mm WWM North Aldershot Servicing (BUR)***

3. ***Upsize WWM on Lasalle Park Road from Fairwood Pl to Lasalle WWPS (BUR)***

Figure X-X Aldershot GO Mobility Hub Proposed Wastewater System

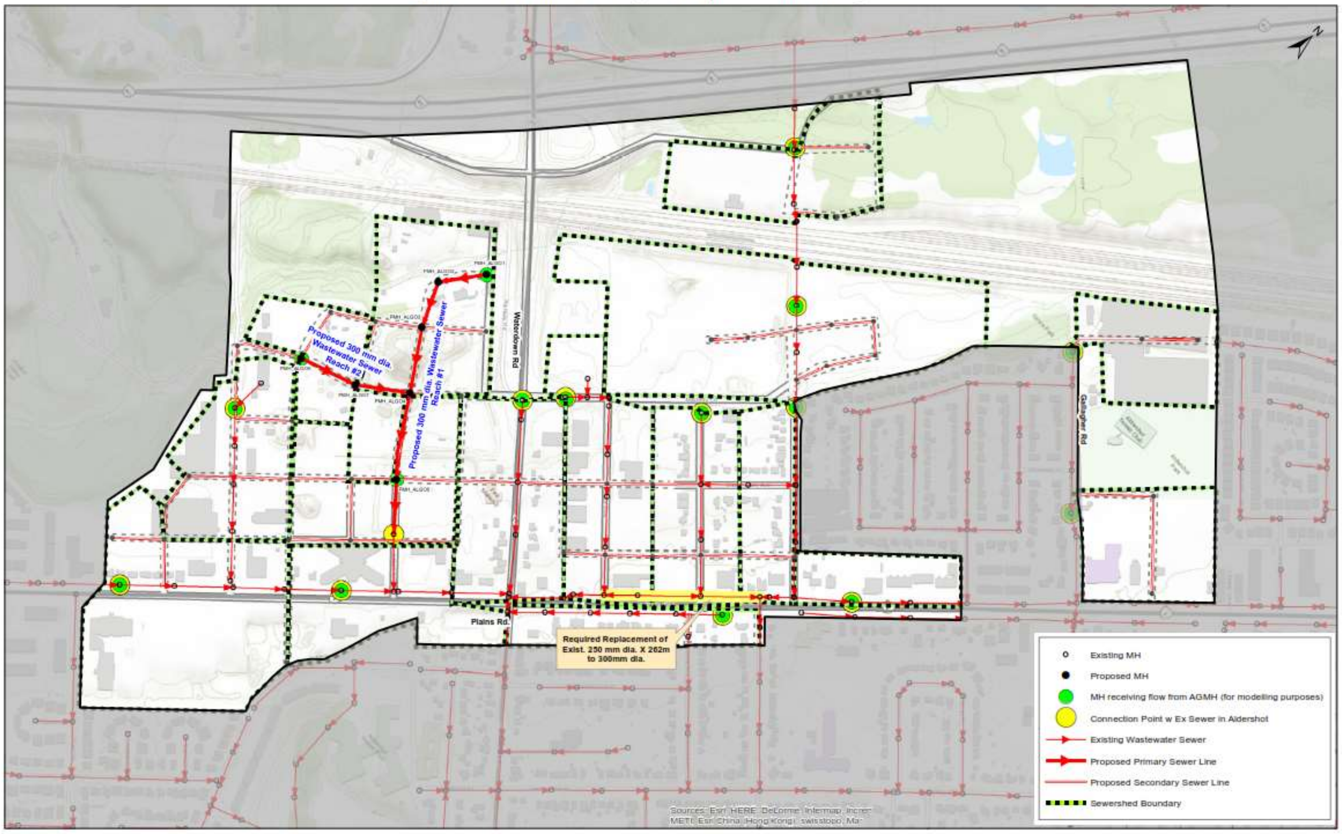
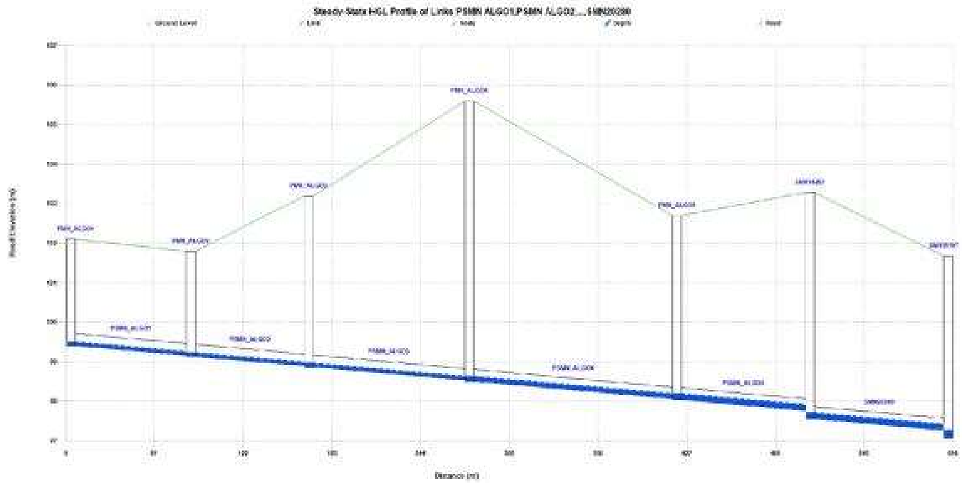
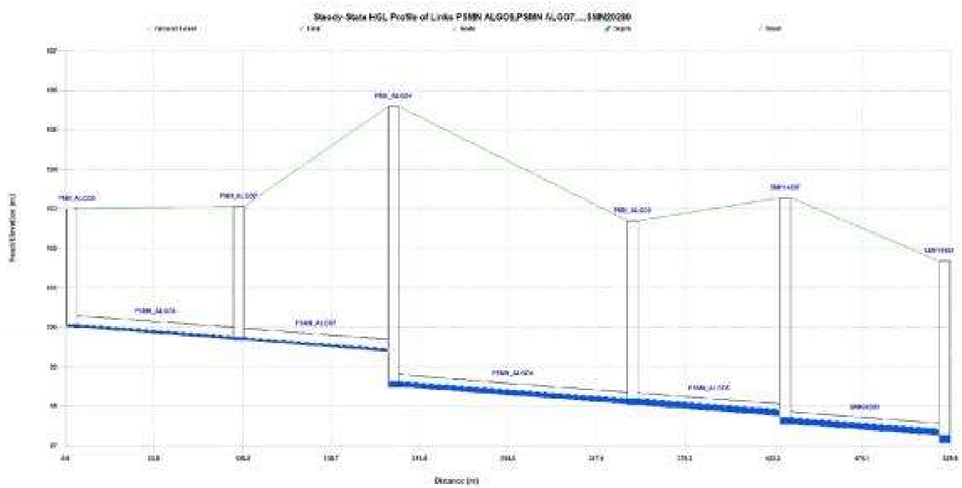


Figure 4-4. Aldershot Go MTSA - Internal Sanitary Sewer Services

REACH 1



REACH 2



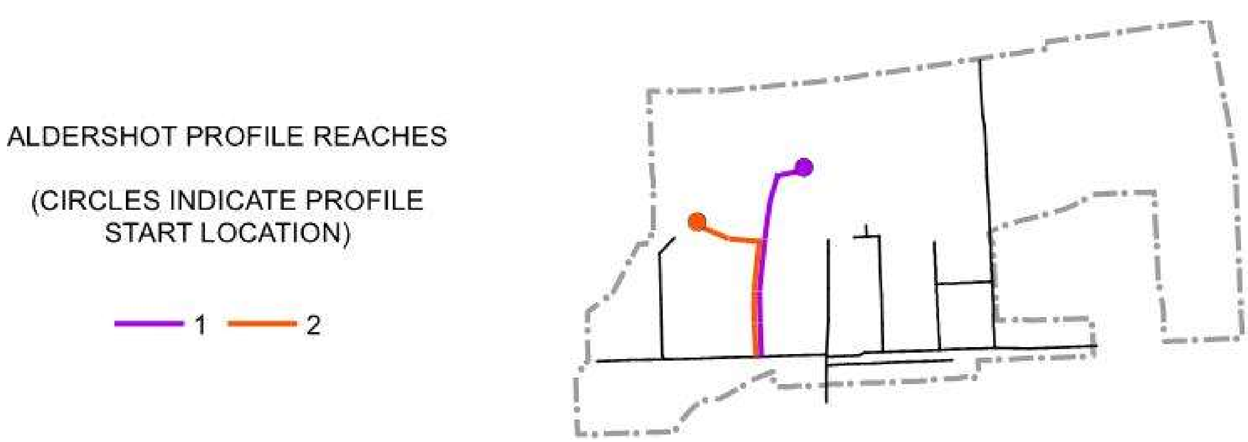


Figure 4-5. Aldershot Go MTSA Internal Services Sanitary Sewer Profiles

4.4.3 ALDERSHOT GO - WASTEWATER SERVICING DESIGN CRITERIA

The following table outlines the design requirements for the Appleby GO wastewater collection system.

Table 4-1. Design Criteria - Wastewater Collection System

Pipe Flow		
Coefficient of Roughness	n = 0.013	Halton Region
Minimum Flow Velocity	0.6 m/sec	Halton Region
Maximum Flow Velocity	3.0 m/sec	Halton Region
Infiltration		
Infiltration Allowance	0.286 l/sec/ha	Halton Region
Wastewater Generation Rate		
Residential	210 L/cap/day	
Employment	185 L/cap/day	

4.4.4 ALDERSHOT GO - WASTEWATER GENERATION

Wastewater generation rates have been calculated based on the preferred Land Use, utilizing Halton Region design criteria listed above.

Wastewater Loading and Infiltration/Inflow Generation

Infiltration and Inflow (I&I) = 0.286 Litres per hectare per second

Wastewater flow projection for the Aldershot GO service area was estimated by applying these criteria to the total equivalent population and the area. The Inflow and Infiltration amounts were factored in by applying the Modified Harmon Peaking Method which is built into and calculated through the hydraulic model. The following wastewater loading and I&I generation rates were calculated for the Aldershot GO MTSA.

Table 4-2. Aldershot GO Loading and Generation

Parameter	Value
Average Daily Dry Weather Flow	41.0 L/s
Average Daily Wet Weather Flow	44.38 L/s
Total Peak Wastewater Flow Including I&I	155.31 L/s

Establish the expected sanitary flows (average dry weather flow, maximum wet weather flow (including I/I) for each MTSA based on future residential and employment population forecasts (specific time horizons required: 2031 and 2051).

It is requested that wastewater generation rates and population/employment estimates are established and differentiated for both the 2031 time-horizon as well as for 2051.

The Region's forecasted wastewater flows contained in the model at the time of receipt were 7.75 L/s under Load 7 and 1.35 L/s under Load 9 for Aldershot GO MTSA. For this mandate, these loading values were scrubbed and the calculated growth projection by WSP were distributed in Load 7 for residential and Load 9 for employment in the model.

4.4.5 ALDERSHOT GO - WASTEWATER MODELLING

The hydraulic wastewater model was updated using the Region's most up to date data for a 2031 time-horizon. No additional Regional based servicing constraints regarding wastewater treatment plants, pumping stations or gravity sewers are identified for the Aldershot GO MTSA at this point. Further analysis is required to confirm vertical infrastructure needs. Expansion and upgrade requirements for the Aldershot GO MTSA to accommodate projected residential and employment populations are identified in the following section.

Summary of Proposed Additional Wastewater Servicing

To accommodate the full build out scenario for the Aldershot GO MTSA, the proposed additional wastewater infrastructure is summarized below:

Table 4-3. Aldershot GO – Proposed Wastewater Infrastructure

Gravity Mains	Meters
300 mm	707

4.5 WATER SERVICING

4.5.1 EXISTING WATER SERVICES

The Aldershot GO MTSA is serviced by Burlington Pressure Zones B1A and partially in Pressure Zone B2 with existing services shown in **Figure 4-6**. Zone B1A is a unique zone that is separate from Zone B1 and services Aldershot area. Zone B1A is about 5 m higher than Zone B1 and serviced by Kingsway Drive Booster Pumping Station with storage and pressure control provided by the Waterdown Reservoir. Halton's current planning direction is to provide service from the Halton Integrated Lake Based System.

The north part of Aldershot area is in Zone B2 which is relatively remote from the rest of Halton's Zone B2 at western end. This area is fed by a single pipe of 300mm/350mm/450 mm dia – 5 km long along the North Service Road from the 403/407/QEW interchange.

The preferred service ground elevation range for the pressure zones is given in **Table 4-4**.

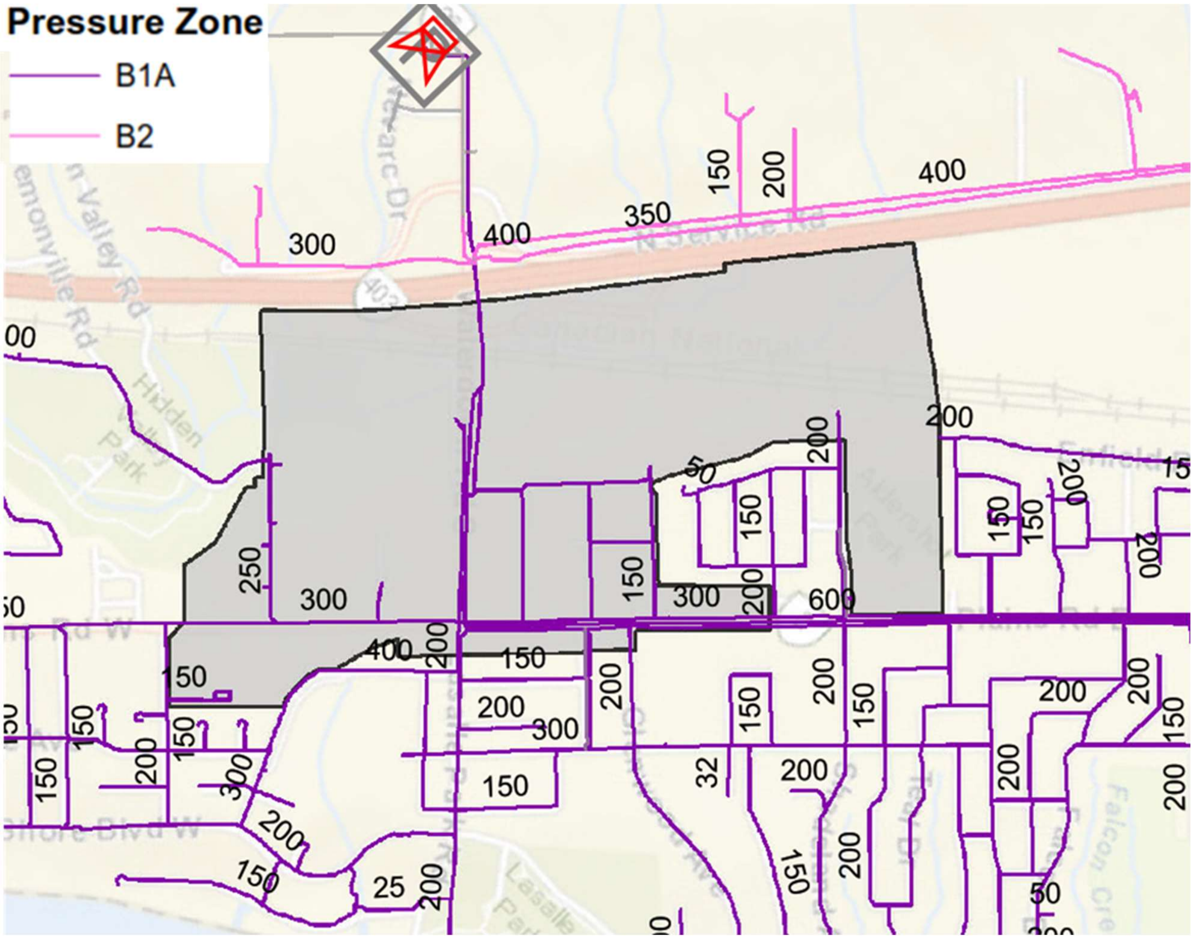


Figure 4-6. Existing Water Services at Aldershot GO MTSA

Table 4-4. Aldershot GO - MTSA Pressure Zone Suitability

	Required (MOECC)	Preferred
Min Operating Pressure	28.0 m	35.0 m
Max Operating Pressure	50.0 m	56.0 m
Zone B2 Pressure Zone Characteristics		
Min Suitable Ground Service Elevation	**97.8 mASL**	**111.8 mASL**
Maximum Suitable Ground Service Elevation	**132.3 mASL**	**125.3 mASL**
Minimum HGL	160.3 mASL	
Max HGL	167.8 mASL	
Zone B1A Pressure Zone Characteristics		
Min Suitable Ground Service Elevation	**70.2 mASL**	**84.2 mASL**
Maximum Suitable Ground Service Elevation	**107.2 mASL**	**100.2 mASL**
Minimum HGL	135.2 mASL	
Max HGL	140.0 mASL	

<u>Key External Planned Infrastructure Projects</u>

Halton's Planning model indicates a number of planned infrastructure components that are to be in-service by 2031. Key Components were identified and Halton Region confirmed the status of the components as follows:

1. ***Zone 2 - 400 mm pipe along North Service Rd. from East of Waterdown Rd N to King Rd.***
2. ***300mm WM on Birchwood Avenue from Plains Rd East southwards towards Fairwood Place East (BUR)***
3. ***300mm WM on Gallagher Rd from Plains Rd East to 160 m Northerly (BUR)***
4. ***7.5 ML storage expansion at Waterdown Reservoir (existing site) (Zone B1A) (BUR)***
5. ***300mm WM on Downsview Rd from Plains Rd East to Dowland Crescent (BUR)***

The 2031 modeling results for the Aldershot GO MTSA includes these components in service.

4.5.2 PROPOSED WATER SERVICES

In order to service the high ground North of the railway corridor it is recommended that the MTSA be serviced by the two pressure zones. It is proposed to designate the rail corridor as the Pressure Zone boundary between Zone B1A and Zone B2. A conceptual layout is a proposed servicing plan is given in **Figure 4-7**.

Internal Services
A network of 300 mm watermains is proposed along all new road right-of-ways. In north part of the lands, trenchless connection will be required to connect two of 400 mm watermain to Zone B2 existing watermains. Furthermore, it is recommended to upgrade some 150 mm and 200 mm distribution mains to 300 mm along Gallagher Road.

A total of approximately 8250 m of new watermain is proposed to service the Aldershot GO MTSA.

External Services
Halton's model 2031 scenario with the proposed updated population in the Burlington MTSA, confirms there is sufficient capacity to meet the boundary conditions and support the demands as described below. Note that external capacity is reviewed by Halton Region as part of the Master Planning process and for the cumulative effect on major supply and transmission systems. New developments that benefit from the existing capacity are assigned an overall development charge to pay for the life-cycle cost of the infrastructure.

Confirmation of Capacity
The proposed system was modelled with the following elements:

- Halton's proposed, existing and upgraded infrastructure to 2031;
- The proposed updated population for the Burlington MTSA as well as the 2051 demands elsewhere in the Region;
- The proposed internal network as shown in **Figure 4-7**;

The model output for the available fire flow indicator is above 150 L/s in Zone B2 and 190 L/s for the subject lands in Zone B1A as shown in **Figure 4-8**. This confirms the network is suitable to support the needs of a variety of building types.

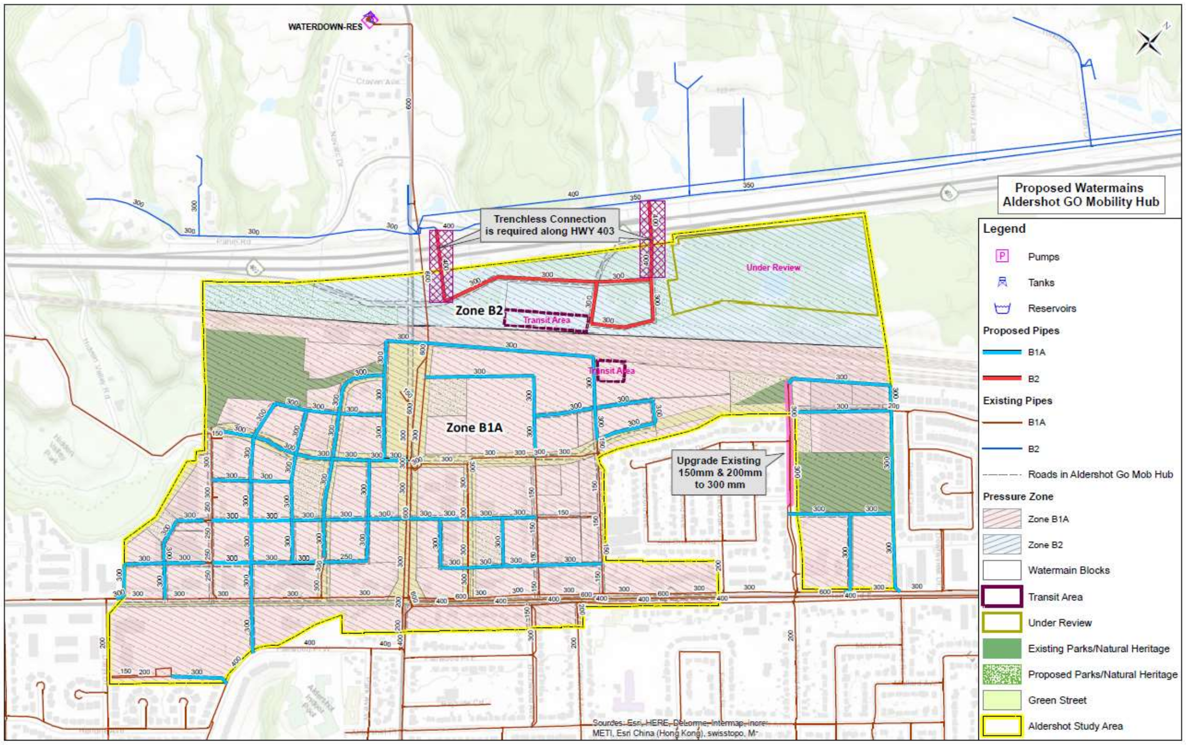


Figure 4-7. Proposed Water System - Aldershot GO MTSA

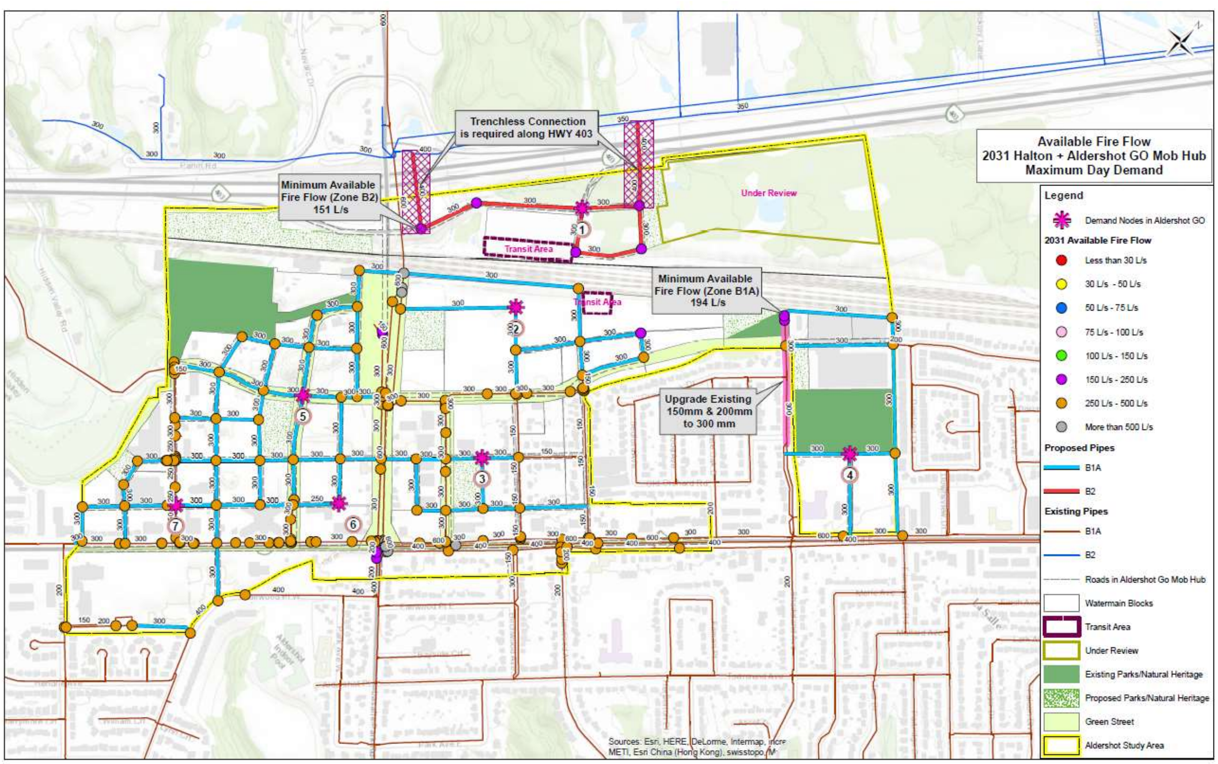


Figure 4-8. Aldershot GO - Available Fire Flow – Proposed

4.5.3 ALDERSHOT GO – WATER DESIGN CRITERIA

Design water demands used to update the hydraulic modelling are outlined in the table below as per comments received which suggested using unit water usages rates for residential (255 L/p-d) and ICI (a single blended rate = 225 L/p-d). With these usage rates, the average demands (L/s) and Max Day Demand (MDD) were determined using a max day factor of 2.25 (Typically a maximum daily factor of 1.9 is used, however, based on the land use mix, a rate of 2.25 was used as the best-informed factor at the time that model was run. This slightly different factor should not influence any recommendation or outcome but can be corrected in the future if deemed necessary).

Table 4-5. Design Criteria – Water Demand

Land Use Type	Water Average Day Demands
Residential	255 L/person/day
Industrial/Commercial/Institutional (Blended)	225 L/employee/day

4.5.4 ALDERSHOT GO - WATER DEMAND

The following hydraulic modelling results confirm supply and pressure availability to service the proposed developments in 2031. The anticipated water demand (average day demand, max day demand and fire flow) for the projected growth in each MTSA was calculated based on 2051 residential and employment population forecasts from the MTSA land use Traffic Zone Allocation. The average day demand (ADD) projection was estimated by applying the above criteria to the total equivalent population and the area. The following factors were utilized to estimate the maximum day demand (MDD) and peak hour demand (PHD).

MDD 2.25
PHD 3.0

Applying these criteria to the residential and employment populations and adding the demands up, the ADD, MDD and PHD are:

Table 4-6. Aldershot GO – New Development Water Demand Growth

Parameter	Value
Residential Population	14,603
Employment Population	2,595
Average Daily Demand (ADD)	49.9 L/s
Maximum Daily Demand (MDD)	112.2 L/s
Peak Hour Demand (PHD)	147.0 L/s

For water analysis, the future demands were distributed to Demand 7 for anticipated residential growth and Demand 9 for anticipated employment growth.

Table 4-7. Aldershot GO – Modelling Results Under MDD

Junction ID	Demand (L/s)	Elevation (m)	Head (m)	Pressure (psi)
ALD_GO_15	14.5	102.0	138.5	51.9
ALD_GO_21	15.3	103.0	138.5	50.5
ALD_GO_35	14.2	103.0	138.6	50.6
ALD_GO_50	37.5	103.0	138.6	50.6
ALD_GO_57	6.1	108.5	165.1	80.5
WFT15691	4.5	100.8	138.7	53.8
WFT20539	5.7	100.5	138.5	54.1
WFT63520	14.5	103.1	138.5	50.4

Table 4-8. Aldershot GO – Modelling Results

ID	Total Demand (L/s)	Hydrant Available Flow (L/s)	Critical Pressure for Design Run (psi)
ALD_GO_15	294.5	434.2	28.4
ALD_GO_21	295.3	419.8	28.4
ALD_GO_35	294.2	471.7	28.4
ALD_GO_50	317.5	416.7	28.4
ALD_GO_57	286.1	169.5	28.4
WFT15691	284.5	431.3	28.4
WFT20539	285.7	345	28.4
WFT63520	294.5	408.9	28.4

Figure 4-9. Aldershot GO – Node Locations

4.5.5 ALDERSHOT GO - WATER MODELING RESULTS

The hydraulic water model was updated using the Region's most up to date data for a 2031 time-horizon. No additional Regional based servicing constraints regarding water purification plants, reservoirs, pump stations, or linear infrastructure were identified for the Aldershot GO MTSA. Expansion and upgrade requirements for the Aldershot GO MTSA to accommodate projected residential and employment populations are identified in the following section. The model output for the available fire flow indicator is 170 L/s to 472 L/s for the subject lands as shown in Figure 4-8. Most of the junctions can deliver an available fire flow greater than 250 L/s and support the needs of a variety of building types, except for junction ALD_GO_57 with an available fire flow of 170 L/s. The MDD+FF scenarios were completed with the residual pressure set as 28.4 psi and the available fire flows are expected to be higher than what have been presented in the report with the minimum residual pressure requirement of 20 psi. Although current results are adequate, it is suggested to re-run the model with the pressure set at 20 psi for even better results if deemed necessary.

4.6 SUMMARY AND COST ESTIMATE

The Aldershot GO MTSA can be adequately serviced from Halton Region's Lake based system as per the plans described in Section 4.4.2 (Proposed Wastewater Services) and Section 4.5.2 (Proposed Water Services).

Preliminary Cost Estimates are provided for information purposes and based on 2022 construction costs. Costs are provided for planning purposes only. Note that actual costs can vary considerably due to labour, materials, unknown design factors, ground conditions, staging.

The estimate represents an overall budget for transmission and collection servicing upgrades to provide an opportunity for collective cost sharing of servicing at the level of the MTSA or as an intensification fund levied from intensification developments within targeted areas in the City of Burlington.

External Servicing and Life-Cycle Costs associated with the Halton Lake Based Trunk Sanitary Collection and Treatment system, as well as the Treated Water Supply, Storage, Transmission and Pumping is not included in the estimates below.

Servicing costs are summarized in **Table 4-9** and **Table 4-10**.

No specific external servicing costs are identified for water or wastewater services.

The following estimated costs are based on the Regional Municipality of Halton 2022 Water/Wastewater Development Charges Update and include full road reconstruction.

Table 4-9. Cost Estimate - Aldershot GO MTSA – Internal Sanitary Services[6]

Description	Unit	Quantity	Unit Cost	Extended Cost	Amount
Reach #1					**$471,640**
300 mm dia & 2.5-3.5 m deep Sanitary Sewer pipe in Proposed Roads	per meter	163	$760/m	$123,880	
300 mm dia & 5-6 m deep Sanitary Sewer pipe in Proposed Roads	per meter	352	$880/m	$309,760	
1200 mm Sanitary Manhole 3m deep	each	2	$6,000/each	$12,000	
1200 mm Sanitary Manhole 4.5m -5m deep	each	2	$8,000/each	$16,000	
1200 mm Sanitary Manhole 7-7.5m deep	each	1	$10,000/each	$10,000	
Reach #2					**$171,440**
300 mm dia & 3.5-5 m deep Sanitary Sewer pipe in Proposed Roads	per meter	194	$760/m	$147,440	
1200 mm Sanitary Manhole 3-4 m deep	each	3	$8,000/each	$24,000	
Upgrade/Replacement of Existing Sanitary Sewer (with Restoration, Traffic Control, etc)					**$215,120**
300 mm dia & 3-4 m deep Sanitary Sewer pipe in Existing Roads	per meter	262	$760/m	$199,120	
1200 mm Sanitary Manhole 3-4 m deep	each	2	$8,000/m	$16,000	
Secondary Sewer Servicing					**$3,739,200**
300 mm dia Sanitary Sewer pipe and 1200 mm Manholes@120m spacing	per meter	4,920	$760/m	$3,739,200	
Sub-Total Cost Estimate					**$4,597,400**
Contingency & Engineering Allowance 35%					$1,609,090
Total Cost Estimate (rounded)					**$6,206,490**

[6] The cost of road reinstatement is included in the unit cost for planned work in existing roads. For planned work in proposed roads, the cost of new road construction is not included. The added cost of new full width road construction is estimated in the range of $5,200 to $5,900 per linear meter.

Table 4-10. Cost Estimate - Aldershot GO MTSA – Internal Water Servicing[7]

Description	Unit	Quantit y	Unit Cost	Extended Cost	Amount
New Watermains and their Connections					**$11,113,806**
250 mm dia Watermains in Proposed Roads	per meter	105	$740/m	$77,700	
300 mm dia Watermains in Proposed Roads	per meter	7,777	$880/m	$6,843,760	
400 mm dia Watermains with Trenchless Construction	per meter	370	$8,600/m	$3,182,000	
Allowance for connections, PRVs, etc.	L.S.	1		$1,010,346	
Upgrade/Replacement of Existing Sanitary Sewer (with Restoration, Traffic Control, etc)					**$255,400**
Upgrade 150 mm Existing watermains to 300 mm	per meter	150	$880/m	$132,200	
Upgrade 200 mm Existing watermains to 300 mm	per meter	140	$880/m	$123,200	
Sub-Total Cost Estimate					**$11,369,206**
Contingency & Engineering Allowance 35%					$3,979,222
Total Cost Estimate (rounded)					**$15,348,428**

[7] The cost of road reinstatement is included in the unit cost for planned work in existing roads. For planned work in proposed roads, the cost of new road construction is not included. The added cost of new full width road construction is estimated in the range of $5,200 to $5,900 per linear meter.

5 CONCLUSION

This purpose of this report is to determine the functional water and wastewater linear servicing requirements for the Appleby, Aldershot, and Burlington MTSAs in the City of Burlington. Further analysis, including modeling would be required to determine Regional vertical related water and wastewater infrastructure.

It is understood that development and intensification within the MTSAs may have an impact on the Regional water and wastewater system. In particular, the system-wide impacts are anticipated for the water conveyance, storage, pumping and treatment, as well as wastewater trunk mains, pumping and treatment.

While it is recognized that the impact of the MTSA intensification and development on the Regional scale needs to be evaluated, quantified and accounted for, it is also recognized that the trunks, pumping stations, storage reservoir and treatment plants have much broader service areas. As such, a Region-wide study such as a Master Servicing Plan, or another study focusing on the system-wide analysis is better suited to evaluate the impact of overall development to the Regional infrastructure than the current study, which focuses on local infrastructure.

The information presented in the current report will be a useful resource for the completion of a subsequent study especially in relation to the Burlington MTSAs. Based on the model check conducted, no existing water or wastewater services will become obsolete or abandoned in the future.

For all three subject MTSAs, although current results are adequate, it is suggested to re-run the model for even better results if deemed necessary. It is recommended that the City can use to inform a policy that would enabling phasing and bridge the gap to when the future modeling work can be done to align with the Region’s Infrastructure Master Planning process.

We recommend additional modeling to confirm if the necessity of upsizing current infrastructure to accommodate the projected growth on a local basis first, then a broader analysis to confirm impact on Regional infrastructure.

Due to changes to the precinct plan through the implementation of OPA there may be deviation from the planned population and employment at a block-by-block level. Sensitivity testing may be necessary and direction for future phasing of infrastructure will be determined through other broader processes.

APPENDIX

A MODEL OUTPUT

Proposed Loading at WW nodes in Burlington Mobility Hubs

Aldersht GO Mobility Hub

	Description	Junction ID from Model	Loading	Population
SEWERSHED #1		MANHOLE: SMH19208	3.4 L/s	1611
SEWERSHED #2		MANHOLE: SMH13358	1.8 L/s	733
SEWERSHED #3		MANHOLE: SMH13382	3.9 L/s	1787
SEWERSHED #4		MANHOLE: SMH19212	11.7 L/s	5025
SEWERSHED #5		MANHOLE: SMH19214	3.2 L/s	1372
SEWERSHED #6		MANHOLE: SMH13368	2.0 L/s	926
SEWERSHED #7		MANHOLE: SMH13299	6.9 L/s	3022
SEWERSHED #8		MANHOLE: SMH14204	7.8 L/s	3728
SEWERSHED #9		MANHOLE: SMH13346	2.0 L/s	899
SEWERSHED #10		MANHOLE: SMH13269	7.7 L/s	3903
SEWERSHED #11	Aldershot GO New MH	MANHOLE: PMH_ALGO1	8.8 L/s	3989
SEWERSHED #12	Aldershot GO New MH	MANHOLE: PMH_ALGO5	7.6 L/s	3300
SEWERSHED #13		MANHOLE: SMH19202	4.5 L/s	2090
SEWERSHED #14	Aldershot GO New MH	MANHOLE: PMH_ALGO6	4.1 L/s	1822
SEWERSHED #15		MANHOLE: SMH13236	6.5 L/s	2776
SEWERSHED #16		MANHOLE: SMH19198	4.0 L/s	1792
		Subtotal =	**85.9 L/s**	**38774**

Burlington GO Mobility Hub

	Junction ID from Model	Loading	Coverage count
Brant Street Sewershed	PMHB10-1	2.4 L/s	1046
	PMHB4-1	5.2 L/s	2235
	PMHB5-6-1	5.3 L/s	2307
	PMHB7-1	3.3 L/s	1421
	PMHB8-1	4.7 L/s	2020
	PMHB9-1	1.5 L/s	665
	SMH9498	4.4 L/s	1933
	SFT367	1.1 L/s	478
	SMH9320	2.0 L/s	859
	SMH9311	4.3 L/s	1843
	SMH11520	0.0 L/s	0
	SMH9277	1.3 L/s	545
	SMH11522	1.7 L/s	715
	SMH11525	2.4 L/s	1066
	SMH9276	1.5 L/s	649
	SMH9236	3.0 L/s	1247
	SMH9231	0.0 L/s	0
	SMH9035	1.3 L/s	550
	SMH35548	0.7 L/s	294

	SMH9635	1.4 L/s	610
Drury Lane Sewershed	PMHB2-1	2.5 L/s	1341
	SMH19383	1.1 L/s	489
	SMH19384	1.1 L/s	489
	SMH57382	1.2 L/s	544
	SMH9226	0.0 L/s	0
	SMH9240	0.0 L/s	0
Leighland Road Sewershed	PMHB1-1	1.2 L/s	718
	PMHB3-1	2.5 L/s	1437
	SMH16805	0.0 L/s	0
	SMH8968	1.0 L/s	427
	SMH8986	1.5 L/s	628
	SMH9028	1.8 L/s	776
	Subtotal =	**61.4 L/s**	**27332**

	Average Flow	Population
Brant Street Sewershed	47.5 L/s	20,483
Drury Lane Sewershed	5.9 L/s	3,320
Leighland Road Sewershed	8.0 L/s	4,443
	61.4 L/s	**28246 (total pop)**
Subtotal =	**61.4 L/s**	**28250**

Burlington DT Mobility Hub

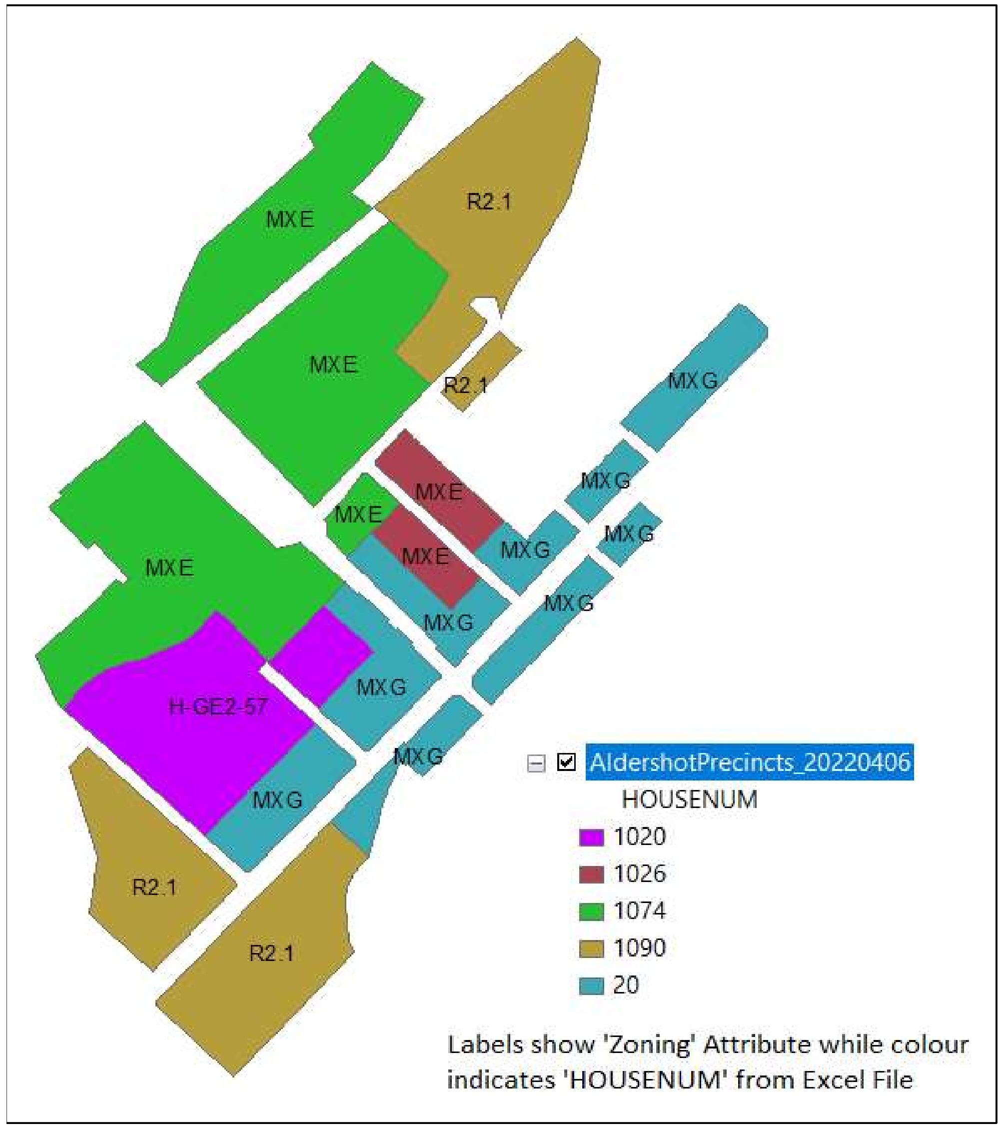
	Description	Junction ID from Model	Loading	Population
Node #1	Loading from DT hub	MANHOLE: SMH9384	3.8 L/s	1603
Node #2	Loading from DT hub	MANHOLE: SMH22951	3.8 L/s	1603
Node #3	Loading from DT hub	MANHOLE: SMH9627	3.8 L/s	1603
Node #4	Loading from DT hub	MANHOLE: SMH9740	3.8 L/s	1603
Node #5	Loading from DT hub	MANHOLE: SMH9820	3.8 L/s	1603
Node #6	Loading from DT hub	MANHOLE: SMH9976	3.8 L/s	1603
Node #7	Loading from DT hub	MANHOLE: SMH19374	3.8 L/s	1603
Node #8	Loading from DT hub	MANHOLE: SMH9849	3.8 L/s	1603
Node #9	Loading from DT hub	MANHOLE: SMH10035	3.8 L/s	1603
		Subtotal =	**34.0 L/s**	**14425**

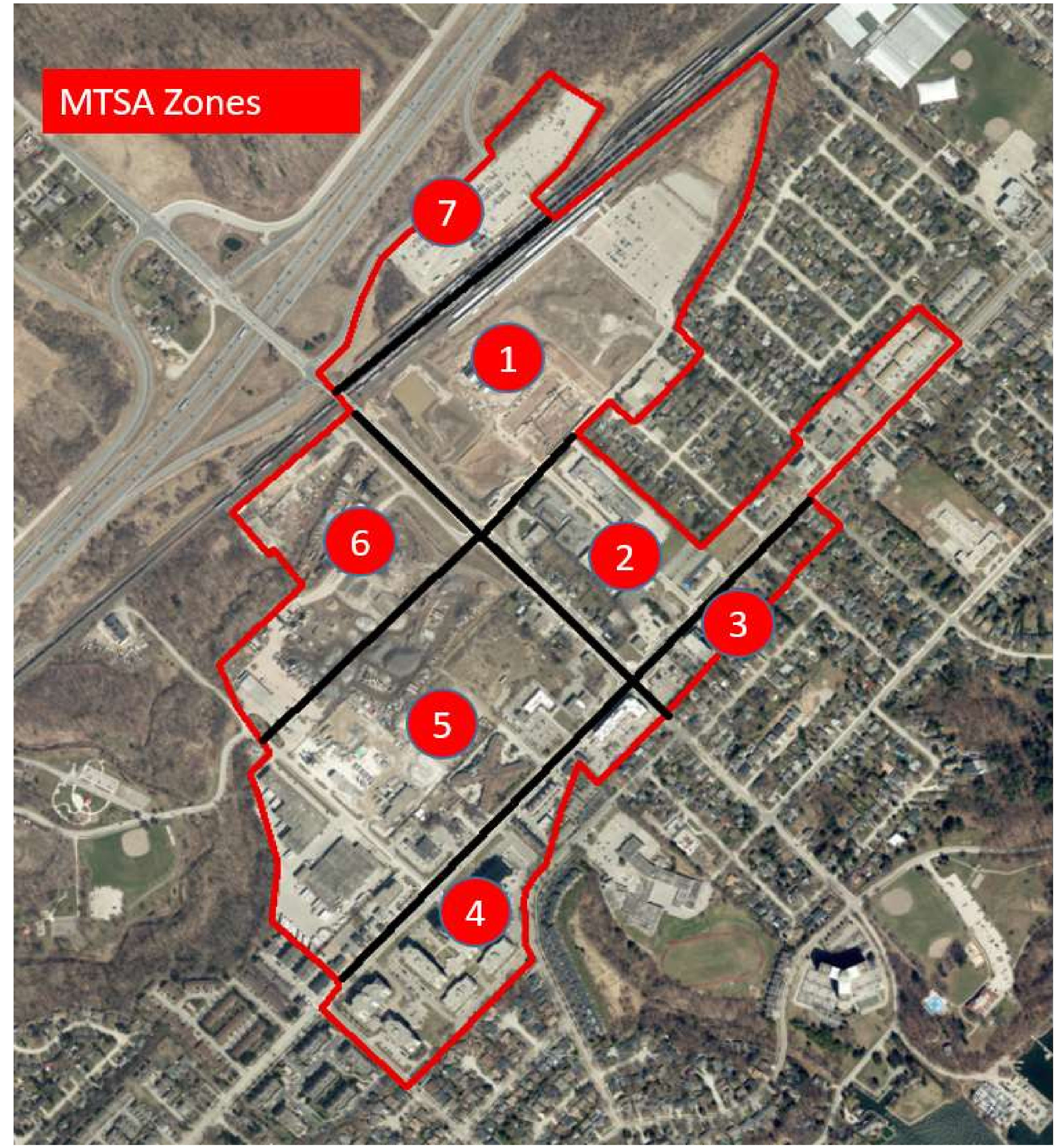
Appleby GO Mobility Hub

	Average Flow	Population
Sewershed A1	7.0 L/s	4081
Sewershed A2	3.9 L/s	2249
Sewershed A3	1.1 L/s	660
Sewershed A4	6.0 L/s	3494
Sewershed A5	20.8 L/s	8598
Sewershed A6	8.1 L/s	3389
Sewershed A7	2.8 L/s	1156
Sewershed A8	8.3 L/s	4581

Sewershed A9	4.8 L/s	2820
Sewershed A10	6.5 L/s	3771
Sewershed A11	10.5 L/s	6112
Sewershed A12	11.6 L/s	4805
Sewershed A13	8.3 L/s	4038
Sewershed A14	4.7 L/s	2759
Sewershed A15	0.9 L/s	518
Sewershed A16	5.4 L/s	3144
Sewershed A17	2.8 L/s	1637
Sewershed A18	1.7 L/s	986
Sewershed A19	0.5 L/s	312
Sewershed A20	3.3 L/s	1945
Sewershed A21	2.8 L/s	1663
Subtotal =	**121.7 L/s**	**62718**

GISID	PROPTYPE	HOUSENUM	STREET	STRTYPE	STRDIR	UNITTYPE	UNIT	ADDRESS	ROLL	ZONING	LEGALDESC
3348	10	20	Plains	Rd.	E			20 Plains Rd. E	2402010111108000000	MXG	CON BF PT 6
52617	10	1026	Cooke	Blvd.		Unit	1	1026 Cooke Blvd. Unit 1	2402010106074340000	MXE	HALT CONDO PLAN 416 LEVEL 1 UNIT 1
3060	10	1074	Cooke	Blvd.				1074 Cooke Blvd.	2402010106074150000	MXE	PLAN M507 LOT 2 SAVE AND EXCEPT RP 20R11122 PART 2
42568	10	1020	Emery	Ave.				1020 Emery Ave.	2402010106144210000	H-GE2-57	CON 1 EF PT LOT 7 RP 20R12569 PARTS 3,4,5,6 SAVE AND EXCEPT RP 20R12569 PARTS 5,6
2763	10	1090	St Matthew's	Ave.				1090 St Matthew's Ave.	2402010106095000000	R2.1	CON 1 EF PT LOT 6 PLAN 665 LOT 66





FRONTAGE	DEPTH	Shape_Leng	Shape_Area	Precincts	TotalAreaH	
30.48	54.86	5544.55683352000	137352.78281800000	Aldershot Main Street	13.51274961220	4068
		1072.87178185000	28180.76190030000	Cooke Commons	2.81807619003	849
		4910.78795605000	271535.98928800000	Aldershot GO Central	25.83189287180	7776
		1600.14662641000	88487.11600860000	Emery Commons	9.07267570019	2731
15.24	33.52	4019.95976689000	203426.64491100000	Mid-Rise Residential	20.19377720050	6079
						21503

Traffic Zone	Population	Employment
1	4,848	905
2	1,837	336
3	559	132.83
4	812	44
5	3,884	544
6	1,902	452
7	760.92	180.90
Sub-Total (Build-Out)	**14,603**	**2,595**

The following information was received from Zhongwei Shi (Brook McIlroy), on Nov 29/2017

APPLEBY			
MTSA ZONES			
ZONE 1			
	Number of People	ADD (L/s)	MDD (L/s)
Population (Residential)	4848	14.31	32.19
Employment	905	2.36	5.30
Total	5753	16.67	37.50
ZONE 2			
Population (Residential)	1837	5.42	12.20
Employment	336	0.88	1.97
Total	2173	6.30	14.17
ZONE 3			
Population (Residential)	559	1.65	3.71
Employment	133	0.35	0.78
Total	692	2.00	4.49
ZONE 4			
Population (Residential)	812	2.40	5.39
Employment	44	0.11	0.26
Total	856	2.51	5.65
ZONE 5			
Population (Residential)	3884	11.46	25.79
Employment	544	1.42	3.19
Total	4428	12.88	28.98
ZONE 6			
Population (Residential)	1902	5.61	12.63
Employment	452	1.18	2.65
Total	2354	6.79	15.28
ZONE 7			
Population (Residential)	761	2.25	5.05
Employment	181	0.47	1.06
Total	942	2.72	6.11
	17198	**49.9**	**112.2**
Total Residential Population	**14603**		97
Total Employment	**2595**		15
Total intensification	**17198**		

Flow Calculation

Res Flow= 255 L/cap/day

ICI Flow= 225 L/employee/day

MDD Peaking Factor = 2.25

		Contributing Zones	Junction ID from Model	**ADD**	**MDD**	Relocated?	New Junc ID	Old Junc ID
Node #1	Aldershot Dem Node 1	7	ALD GO 57	2.72 L/s	6.11 L/s	No		
Node #2	Aldershot Dem Node 2	1	ALD GO 50	16.67 L/s	37.50 L/s	No		
Node #3	Aldershot Dem Node 3	2	ALD GO 35	6.30 L/s	14.17 L/s	No		
Node #4	Aldershot Dem Node 4	3	WFT15691	2.00 L/s	4.49 L/s	Relocated - Not in use	WFT15691	ALD GO 46
Node #5	Aldershot Dem Node 5	6	ALD GO 21	6.79 L/s	15.28 L/s	Relocated - Not in use	ALD GO 21	ALD GO 8
Node #6	Aldershot Dem Node 6	5	ALD GO 15	6.44 L/s	14.49 L/s			
Node #7	Aldershot Dem Node 7	5	WFT63520	6.44 L/s	14.49 L/s			
Node #8 (New)	Aldershot Dem Node 8	4	WFT20539	2.51 L/s	5.65 L/s		WFT20539	
			subtotal	**49.9 L/s**	**112.2 L/s**			

Need to relocate some demand nodes

The following table is for presentation in the map

New Demand Nodes	Residential Population	Employment Population	Total Population
Node #1	761	181	942
Node #2	4848	905	5753
Node #3	1837	336	2173
Node #4	559	133	692
Node #5	1902	452	2354
Node #6	1942	272	2214
Node #7	1942	272	2214
Node #8 (New)	812	44	856
	14603	2595	

	ID (Char)	Demand 7	Demand 9		ID (Char)		
Node #1	ALD GO 57	**5.05**	**1.06**		ALD GO 15	12.90	1.59
Node #2	ALD GO 50	**32.19**	**5.30**		ALD GO 21	12.63	2.65
Node #3	ALD GO 35	**12.20**	**1.97**		ALD GO 35	12.20	1.97
Node #4	WFT15691	**3.71**	**0.78**		ALD GO 50	32.19	5.30
Node #5	ALD GO 21	**12.63**	**2.65**		ALD GO 57	5.05	1.06
Node #6	ALD GO 15	**12.90**	**1.59**		WFT15691	3.71	0.78
Node #7	WFT63520	**12.90**	**1.59**		WFT20539	5.39	0.26
Node #8 (New)	WFT20539	**5.39**	**0.26**		WFT63520	12.90	1.59
		97.0		15		**97.0**	**15.2**

* 2031MDD_ALDERSHOT_STRESS_TEST *

ID (Char)	Demand 1 (lps)	Pattern 1 (Char)	Demand 2 (lps)	Pattern 2 (Char)	Demand 3 (lps)	Pattern 3 (Char)	Demand 4 (lps)	Pattern 4 (Char)	Demand 5 (lps)	Pattern 5 (Char)	Demand 6 (lps)	Pattern 6 (Char)	Demand 7 (lps)	Pattern 7 (Char)	Demand 8 (lps)	Pattern 8 (Char)	Demand 9 (lps)	Pattern 9 (Char)	Demand 10 (lps)
ALD_GO_10																			
ALD_GO_11																			
ALD_GO_12																			
ALD_GO_13																			
ALD_GO_14																			
ALD_GO_15	0		0		0		0		23.3		0		0		0		0		0
ALD_GO_16																			
ALD_GO_17																			
ALD_GO_18																			
ALD_GO_19																			
ALD_GO_2																			
ALD_GO_20																			
ALD_GO_21																			
ALD_GO_22																			
ALD_GO_23																			
ALD_GO_24																			
ALD_GO_25																			
ALD_GO_26																			
ALD_GO_27																			
ALD_GO_28																			
ALD_GO_3																			
ALD_GO_31																			
ALD_GO_32																			
ALD_GO_33																			
ALD_GO_34																			
ALD_GO_35	0		0		0		0		49.4		0		0		0		0		0
ALD_GO_36																			
ALD_GO_37																			
ALD_GO_39																			
ALD_GO_4																			
ALD_GO_40																			
ALD_GO_41																			
ALD_GO_42																			
ALD_GO_43																			
ALD_GO_44																			
ALD_GO_5																			
ALD_GO_50	0		0		0		0		30.5		0		0		0		0		0
ALD_GO_51																			
ALD_GO_53																			
ALD_GO_54																			
ALD_GO_55																			
ALD_GO_57	0		0		0		0		7		0		0		0		0		0
ALD_GO_58																			
ALD_GO_6																			
ALD_GO_63																			
ALD_GO_7																			
ALD_GO_8	0		0		0		0		36.9		0		0		0		0		0
ALD_GO_9																			
WCV114867			0				0						0		0		0		0
WCV115574	0						0						0		0		0		0
WCV13794			0.1				0						0		0		0		0
WCV13878			0				0						0		0		0		0
WCV13879							0						0		0		0		0
WCV54589							0						0		0		0		0
WCV79577	0						0						0		0		0		0
WCV79578							0						0		0		0		0
WCV79583	0						0						0		0		0		0
WCV79584							0						0		0		0		0
WCV79585	0		0				0						0		0		0		0
WCV79587							0						0		0		0		0
WCV79588							0						0		0		0		0
WCV79589	0						0						0		0		0		0
WCV79599							0						0		0		0		0
WCV79613							0						0		0		0		0
WCV8112			0.1				0						0		0		0		0
WCV8182							0						0		0		0		0
WCV8195			0.6				0						0		0		0		0
WCV8196							0						0		0		0		0
WCV8197							0						0		0		0		0
WCV8198							0						0		0		0		0
WCV8203							0						0		0		0		0
WCV8204							0						0		0		0		0
WCV8205							0						0		0		0		0
WCV8206							0						0		0		0		0
WCV8224							0						0		0		0		0
WCV8311							0						0		0		0		0
WCV8312							0						0		0		0		0
WCV83442							0						0		0		0		0
WCV83443	0						0						0		0		0		0
WCV83865							0						0		0		0		0
WCV83866							0						0		0		0		0
WCV83867	0.6						0						0		0		0		0
WCV83868							0						0		0		0		0
WCV83875			0				0						0		0		0		0
WCV83884							0						0		0		0		0
WCV8808							0						0		0		0		0
WCV8809							0						0		0		0		0
WCV8810	0		0.1				0						0		0		0		0
WCV8811							0						0		0		0		0
WCV8812			0				0						0		0		0		0
WCV8813							0						0		0		0		0
WCV8814	0						0						0		0		0		0
WCV8815	0		0.1				0						0		0		0		0
WDV87066							0						0		0		0		0
WFT147464							0						0		0		0		0
WFT147467			0.4				0						0		0		0		0
WFT147468			0.4				0						0		0		0		0
WFT147474							0						0		0		0		0
WFT147475	0						0						0		0		0		0
WFT147476							0						0		0		0		0
WFT147481	0						0						0		0		0		0
WFT147482	0		0.4				0						0		0		0		0
WFT147488	0						0						0		0		0		0
WFT147489	0						0						0		0		0		0
WFT147490	0.6						0						0		0		0		0
WFT147491							0						0		0		0		0
WFT147492			0				0						0		0		0		0
WFT147494	1.1		0.1				0						0		0		0		0
WFT147495	1.1		0				0						0		0		0		0
WFT147497	0		0				0						0		0		0		0
WFT147498							0						0		0		0		0
WFT147719							0						0		0		0		0
WFT147721	0		0.4				0						0		0		0		0
WFT148559							0						0		0		0		0
WFT15623							0						0		0		0		0
WFT15634	0.1						0						0		0		0		0

* 2031MDD_ALDERSHOT_STRESS_TEST *

ID (Char)	Demand 1	Pattern 1 (	Demand 2	Pattern 2 (	Demand 3	Pattern 3 (	Demand 4	Pattern 4 (	Demand 5	Pattern 5 (	Demand 6	Pattern 6 (	Demand 7	Pattern 7 (	Demand 8	Pattern 8 (	Demand 9	Pattern 9 (	Demand 10 (lps)
ALD_GO_1	0		0		0		0		23.3		0		0		0		0		0
ALD_GO_21																			
ALD_GO_3	0		0		0		0		49.4		0		0		0		0		0
ALD_GO_5	0		0		0		0		30.5		0		0		0		0		0
ALD_GO_5	0		0		0		0		7		0		0		0		0		0
WFT15691	0						0						0		0		0		0
WFT20539							0						0		0		0		0
WFT63520	0		0		0		0		27.1		0		0		0		0		0

WFT15645		0.1		0			0	0	0	0
WFT15653				0			0	0.1	0	0
WFT15657				0			0	0	0	0
WFT15659	0	0		0			0	0	0	0
WFT15664		0.2		0			0	0	0	0
WFT15670				0			0	0	0	0
WFT15674				0			0	0	0	0
WFT15676		0		0			0	0	0	0
WFT15677	0			0			0	0	0	0
WFT15682				0			0	0	0	0
WFT15687		0		0			0	0	0	0
WFT15689		0		0			0	0	0	0
WFT15691	0			0			0	0	0	0
WFT15698		0.2		0			0	0	0	0
WFT15701				0			0	0	0	0
WFT15703				0			0	0	0	0
WFT15704				0			0	0	0	0
WFT15705	0	0		0			0	0	0	0
WFT15718	0			0			0	0	0	0
WFT15719		0.2		0			0	0	0	0
WFT15722		0.1		0			0	0	0	0
WFT15726		0		0			0	0	0	0
WFT15735	0.1	0.1		0			0	0	0	0
WFT15736		0.1		0			0	0	0	0
WFT15739	0	0.1		0			0	0	0	0
WFT15742		0		0			0	0	0	0
WFT15752				0			0	0	0	0
WFT15754				0			0	0	0	0
WFT15755				0			0	0	0	0
WFT15760				0			0	0	0	0
WFT15762				0			0	0	0	0
WFT15764				0			0	0	0	0
WFT15776				0			0	0	0	0
WFT15783		0.1		0			0	0	0	0
WFT15789		0		0			0	0	0	0
WFT15793				0			0	0	0	0
WFT15794				0			0	0	0	0
WFT15803				0			0	0	0	0
WFT15808	0.4	0		0			0	0	0	0
WFT15831	0			0			0	0	0	0
WFT15840	0.9			0			0	0	0	0
WFT162856				0			0	0	0	0
WFT16855				0			0	0	0	0
WFT18628				0			0	0	0	0
WFT18637				0			0	0	0	0
WFT18644				0						
WFT18645				0			0	0	0	0
WFT18649				0			0	0	0	0
WFT18650				0			0	0	0	0
WFT18651				0			0	0	0	0
WFT18656	0.5			0			0	0	0	0
WFT18657	0.1			0			0	0	0	0
WFT18658	0.1			0			0	0	0	0
WFT190323				0			0	0	0	0
WFT20511		0		0			0	0	0	0
WFT20522				0			0	0	0	0
WFT20539				0			0	0	0	0
WFT20542	0.1			0			0	0	0	0
WFT221074		0		0			0	0	0	0
WFT221077	0			0			0	0	0	0
WFT221129				0			0	0	0	0
WFT223278	0.9			0			0	0	0	0
WFT223289				0			0	0	0	0
WFT243840	0	0		0			0	0	0	0
WFT63510		0.1		0			0	0	0	0
WFT63511				0			0	0	0	0
WFT63517		0		0			0	0	0	0
WFT63518		0.6		0			0	0	0	0
WFT63520	0	0	0	0	27.1	0	0	0	0	0
WFT63521				0			0	0	0	0
WFT63522		1.6		0			0	0	0	0
WFT63523		1.6		0			0	0	0	0
WFT89272				0						
WFT89273	0	0		0			0	0	0	0
WFT89274		0		0			0	0	0	0
WFT89275	0			0			0	0	0	0
WFT89276				0			0	0	0	0
WFT89277				0			0	0	0	0
WFT89278				0			0	0	0	0
WFT89279		0.1		0			0	0	0	0
WFT89280	0	0		0			0	0	0	0
WFT89302		0		0			0	0	0	0
WFT89303	0	0		0			0	0	0	0
WFT89304	0			0						
WFT90406				0			0	0	0	0
WMN_ALD_GO_12										
WPV2643				0						
WPV2644				0			0	0	0	0
WPV635				0			0	0	0	0
WSV54584				0			0	0	0	0
WSV54585				0			0	0	0	0
WSV54588				0			0	0	0	0
WSV54590				0			0	0	0	0
WSV8225				0			0	0	0	0
WSV8226				0			0	0	0	0
WSV8227				0			0	0	0	0

ID	Demand (L/s)	Elevation (m)	Head (m)	Pressure (psi)
WFT15645	0.2	101.2	138.7	53.3
WFT15646	0.2	101.1	138.7	53.4
WFT15653	0.1	103.4	138.7	50.2
WFT15657	0	101.9	138.7	52.3
WFT15664	0.2	101.6	138.6	52.7
WFT15670	0	103.1	138.6	50.5
WFT15673	0.1	101.8	138.6	52.4
WFT15674	0	101.3	138.6	53.1
WFT15676	0	104.9	138.7	48
WFT15682	0	102.8	138.6	50.9
WFT15687	0.1	100.9	138.6	53.7
WFT15689	0	108.8	138.6	42.5
WFT15691	4.5	100.8	138.7	53.8
WFT15698	0.2	101.6	138.6	52.7
WFT15701	0	107.8	138.6	43.8
WFT15702	0.1	99	138.7	56.3
WFT15703	0	109.6	138.7	41.3
WFT15704	0	109.6	138.7	41.3
WFT15705	0.1	106.9	138.6	45.1
WFT15718	0.1	100.5	138.7	54.2
WFT15719	0.2	100.6	138.6	54
WFT15722	0.1	100.1	138.6	54.8
WFT15726	0	99.8	138.6	55.2
WFT15735	0.2	104	138.6	49.2
WFT15736	0.1	99.7	138.6	55.3
WFT15739	0.1	100.3	138.7	54.5
WFT15742	0	99.5	138.6	55.6
WFT15752	0	100.6	138.7	54.1
WFT15754	0	100.7	138.6	54
WFT15755	0	99.6	138.7	55.5
WFT15760	0	99.5	138.6	55.6
WFT15762	0	99.6	138.5	55.3
WFT15764	0	100.6	138.5	53.9
WFT15776	0	102.9	138.5	50.7
WFT15783	0.1	102.5	138.5	51.3
WFT15803	0	103.1	138.5	50.4
WFT15808	0.5	98.6	138.6	56.9
WFT15822	0.5	98.2	138.5	57.4
WFT15843	0	101.4	138.5	52.8
WFT16855	0	99.9	138.6	55.1
WFT18637	0	103.8	138.7	49.6
WFT18644	0	99.3	138.5	55.7
WFT18645	0	102.8	138.5	50.8
WFT20517	0	100.5	138.7	54.2
WFT20522	0	100.6	138.7	54
WFT63510	0.1	101.3	138.5	52.9
WFT63517	0	102.8	138.5	50.8
WFT63518	0.6	102.8	138.5	50.8
WFT63520	14.5	103.1	138.5	50.4
WFT63521	0	103.2	138.5	50.2
WFT63522	1.6	103.3	138.5	50
WFT63523	1.6	103.3	138.5	50
WCV8110	0	100.6	138.7	54.1
WCV8111	0	101.3	138.7	53.2
WCV8195	0.6	102.8	138.5	50.8
WCV8197	0	100.6	138.5	53.9
WCV8198	0	101.9	138.5	52.1
WCV8203	0	109.6	138.7	41.3
WCV8204	0	109.5	138.7	41.4
WCV8205	0	108.8	138.7	42.4
WCV8206	0	102.1	138.7	52
WCV8311	0	99.7	138.6	55.3
WCV8312	0	99.7	138.6	55.4
WCV8808	0	99.9	138.6	55.1
WCV8809	0	99.9	138.6	55.1
WCV8810	0.1	99.9	138.6	55.1
WCV8811	0	101.1	138.6	53.4
WCV8812	0	101.2	138.6	53.3
WCV8813	0	99.6	138.7	55.5
WCV8814	0	99.6	138.7	55.5
WCV8815	0.1	99.6	138.7	55.6

Demand junctions/nodes

ID	Demand (L/s)	Elevation (m)	Head (m)	Pressure (psi)
ALD_GO_50	37.5	103	138.6	50.6
ALD_GO_57	6.1	108.5	165.1	80.5
ALD_GO_15	14.5	102	138.5	51.9
ALD_GO_35	14.2	103	138.6	50.6
WFT63520	14.5	103.1	138.5	50.4
ALD_GO_21	15.3	103	138.5	50.5
WFT20539	5.7	100.5	138.5	54.1
WFT15691	4.5	100.8	138.7	53.8

PROPOSED PIPES

ID	From Node	To Node	Length (m)	Diameter (mm)	Roughness	Flow (ML/d)	Velocity (m/s)	Headloss (m)	HL/1000 (m/k-m)
ALD_GO_57	ALD_GO_55	ALD_GO_54	99.2	300	110	0.1	0	0	0
ALD_GO_59	ALD_GO_53	ALD_GO_57	101.4	300	110	0.1	0	0	0
ALD_GO_58	ALD_GO_54	ALD_GO_53	152.8	300	110	0.1	0	0	0
ALD_GO_56	ALD_GO_57	ALD_GO_55	130.9	300	110	-0.2	0	0	0
ALD_GO_55	ALD_GO_58	ALD_GO_57	241.6	300	110	0.3	0	0	0
WMN_ALD_GO_80	ALD_GO_58	ALD_GO_63	140	300	110	-0.3	0	0	0
WMN_ALD_GO_81	ALD_GO_63	WFT243851	175.8	400	110	-0.3	0	0	0
WMN_ALD_GO_79	ALD_GO_55	ALD_GO_62	192	400	110	-0.3	0	0	0
WMN_ALD_GO_62	WFT18628	ALD_GO_43	146.8	300	110	0	0	0	0
WMN_ALD_GO_63	ALD_GO_43	ALD_GO_42	55.9	300	110	0	0	0	0
WMN_ALD_GO_64	ALD_GO_42	ALD_GO_41	140.6	300	110	0	0	0	0
WMN_ALD_GO_66	ALD_GO_41	WFT18628	77.4	300	110	0.1	0	0	0
WMN_ALD_GO_78	ALD_GO_40	ALD_GO_50	97.5	300	110	1.7	0.3	0	0.4
WMN_ALD_GO_69	ALD_GO_44	ALD_GO_41	121.4	300	110	1	0.2	0	0.2
WMN_ALD_GO_68	WFT15653	ALD_GO_44	401.5	300	110	1	0.2	0.1	0.2
WMN_ALD_GO_65	ALD_GO_41	ALD_GO_40	148.3	300	110	0.9	0.2	0	0.1
ALD_GO_52	ALD_GO_50	ALD_GO_51	263.4	300	110	-1.6	0.3	0.1	0.4
WMN_ALD_GO_32	ALD_GO_30	ALD_GO_24	83.5	300	110	2.1	0.3	0.1	0.6
WMN_ALD_GO_33	ALD_GO_24	ALD_GO_25	95.3	300	110	0.8	0.1	0	0.1
WMN_ALD_GO_34	ALD_GO_25	ALD_GO_22	108.6	300	110	1.4	0.2	0	0.3
WMN_ALD_GO_43	ALD_GO_25	ALD_GO_26	110.4	300	110	-0.6	0.1	0	0.1
WMN_ALD_GO_41	ALD_GO_22	ALD_GO_8	110.1	300	110	1.2	0.2	0	0.2
WMN_ALD_GO_67	ALD_GO_40	WFT89272	99.3	300	110	-0.7	0.1	0	0.1
WMN_ALD_GO_35	ALD_GO_24	ALD_GO_23	95.8	300	110	1.3	0.2	0	0.3
WMN_ALD_GO_36	ALD_GO_23	ALD_GO_22	77.4	300	110	1.3	0.2	0	0.3
WMN_ALD_GO_40	ALD_GO_7	ALD_GO_21	109.4	300	110	0.1	0	0	0
WMN_ALD_GO_37	ALD_GO_22	ALD_GO_21	78.7	300	110	1.5	0.2	0	0.3
WMN_ALD_GO_38	ALD_GO_21	ALD_GO_20	76.9	300	110	0.2	0	0	0
WMN_ALD_GO_39	ALD_GO_20	ALD_GO_6	95.9	300	110	0.2	0	0	0
WMN_ALD_GO_25	WCV8197	ALD_GO_6	103.8	300	110	-0.5	0.1	0	0
WMN_ALD_GO_30	ALD_GO_6	ALD_GO_5	107	300	110	0.1	0	0	0
WMN_ALD_GO_26	ALD_GO_6	ALD_GO_7	110.5	300	110	-0.3	0	0	0
WMN_ALD_GO_20	ALD_GO_5	ALD_GO_9	97.8	300	110	-0.3	0.1	0	0
WMN_ALD_GO_4	ALD_GO_5	ALD_GO_4	95.8	300	110	-0.1	0	0	0

WCV13794	0.1	101.3	138.6	53
WCV13878	0	109.4	138.6	41.6
WCV13879	0	99.7	138.6	55.3
WFT89272	0	104.2	138.6	49
WFT90406	0	102.4	138.6	51.5
WFT89274	0.1	100.3	138.6	54.5
WFT89276	0	105.3	138.6	47.3
WFT89278	0	105.6	138.6	46.9
WFT89302	0	104.2	138.6	49
WFT89303	0	104.4	138.6	48.7
WFT89304	0	104.1	138.6	49.1
WCV79578	0	104.3	138.6	48.8
WCV79577	0	104.2	138.6	49
WCV79588	0	105.5	138.6	47.1
WCV79589	0	105.1	138.6	47.7
WCV79587	0	105	138.6	47.8
WCV79599	0	100.2	138.6	54.6
WCV79613	0	102.4	138.6	51.5
WSV54590	0	103.1	138.5	50.4
WFT18628	0	104.5	138.6	48.5
WFT89277	0	104.7	138.6	48.3
WFT147492	0.1	102.9	138.5	50.6
WFT147719	0	100	138.6	54.9
WFT147488	0.1	103	138.5	50.5
WFT147474	0	101.7	138.6	52.3
WFT147490	0.7	103	138.5	50.5
WFT147464	0	100	138.6	54.9
WFT147489	0.1	103	138.5	50.5
WFT147491	0	103	138.5	50.5
WFT147495	1.2	102.7	138.5	50.9
WFT147494	1.2	102.8	138.5	50.7
WFT147468	0.4	101.4	138.6	52.9
WFT147467	0.4	100.5	138.6	54.1
WFT148559	0	99.8	138.7	55.3
WFT147476	0	102.9	138.5	50.6
WFT162856	0	102	138.5	52
WFT147482	0.5	102.6	138.5	51.1
WFT147475	0	102.2	138.5	51.6
WFT147481	0	102.9	138.5	50.7
WFT147721	0.5	102.9	138.5	50.7
WFT221129	0	109.5	138.6	41.5
WFT221074	0.1	100.1	138.6	54.7
WFT190323	0	99.6	138.6	55.4
WPV635	0	101.7	138.7	52.6
WPV2643	0	109.7	138.7	41.2
WPV2644	0	109.5	138.6	41.5
WCV83865	0	103	138.5	50.5
WCV83866	0	103	138.5	50.5
WCV83867	0.7	102.7	138.5	50.9
WCV83884	0	99.8	138.7	55.3
WCV83442	0	102.1	138.5	51.8
WCV83443	0	102.9	138.5	50.7
WCV114867	0	102.9	138.6	50.7
WCV83875	0	100.1	138.6	54.7
WDV87066	0	99.8	138.7	55.2
WCV8222	0	101.2	138.5	53.1
WFT15831	0	100.7	138.5	53.7
WFT20539	5.7	100.5	138.5	54.1
WFT15789	0	102.7	138.5	51
WFT15793	0	102.8	138.5	50.8
WFT15794	0	102.9	138.5	50.6
WFT18650	0	102.9	138.5	50.6
WSV8225	0	102.8	138.5	50.8
WSV8226	0	102.9	138.5	50.6
ALD_GO_1	0	99.5	138.5	55.5
ALD_GO_2	0	103	138.5	50.5
ALD_GO_3	0	104	138.5	49.1
ALD_GO_4	0	103	138.5	50.5
ALD_GO_5	0	105	138.5	47.7
ALD_GO_6	0	103	138.5	50.5
ALD_GO_7	0	103.5	138.5	49.8
ALD_GO_8	36.9	103.5	138.5	49.8
ALD_GO_9	0	103	138.5	50.5

WMN_ALD_GO_21	ALD_GO_9	ALD_GO_10	93.2	300	110	-0.4	0.1	0	0
WMN_ALD_GO_45	ALD_GO_13	ALD_GO_14	141.4	300	110	0.5	0.1	0	0
WMN_ALD_GO_29	ALD_GO_8	ALD_GO_12	149.1	300	110	-0.6	0.1	0	0.1
WMN_ALD_GO_28	ALD_GO_7	ALD_GO_8	90.4	300	110	-0.3	0	0	0
WMN_ALD_GO_27	ALD_GO_7	ALD_GO_9	67.8	300	110	-0.1	0	0	0
WMN_ALD_GO_42	ALD_GO_8	ALD_GO_13	88.5	300	110	-1.7	0.3	0	0.4
WMN_ALD_GO_51	ALD_GO_26	WFT15704	55.4	300	110	-2.8	0.5	0.1	1.1
WMN_ALD_GO_44	ALD_GO_26	ALD_GO_13	36.4	300	110	2.2	0.4	0	0.7
WMN_ALD_GO_50	ALD_GO_14	ALD_GO_32	93.3	300	110	-2	0.3	0.1	0.6
WMN_ALD_GO_52	ALD_GO_32	ALD_GO_33	80.2	300	110	-0.5	0.1	0	0
WMN_ALD_GO_53	ALD_GO_33	ALD_GO_34	117.5	300	110	-0.3	0	0	0
WMN_ALD_GO_47	ALD_GO_14	ALD_GO_15	101.7	300	110	1.2	0.2	0	0.2
WMN_ALD_GO_46	ALD_GO_12	ALD_GO_14	107.7	300	110	-1.2	0.2	0	0.2
WMN_ALD_GO_23	WFT18645	ALD_GO_12	91.5	300	110	0.1	0	0	0
WMN_ALD_GO_49	ALD_GO_15	ALD_GO_31	104.7	250	110	0	0	0	0
WMN_ALD_GO_48	ALD_GO_11	ALD_GO_31	75	300	110	-0.7	0.1	0	0.1
WMN_ALD_GO_22	ALD_GO_10	ALD_GO_12	75.9	300	110	-0.7	0.1	0	0.1
WMN_ALD_GO_18	ALD_GO_10	ALD_GO_11	101.4	300	110	-0.2	0	0	0
WMN_ALD_GO_17	ALD_GO_4	ALD_GO_10	100	300	110	-0.5	0.1	0	0
WMN_ALD_GO_2	ALD_GO_2	ALD_GO_3	86.8	300	110	0.5	0.1	0	0
WMN_ALD_GO_19	ALD_GO_11	ALD_GO_3	100.3	300	110	0.5	0.1	0	0
WMN_ALD_GO_3	ALD_GO_3	ALD_GO_4	102.1	300	110	0.2	0	0	0
WMN_ALD_GO_15	WFT15793	ALD_GO_4	93.5	300	110	-0.6	0.1	0	0.1
WMN_ALD_GO_16	ALD_GO_28	ALD_GO_5	93.9	300	110	-0.5	0.1	0	0
WMN_ALD_GO_7	ALD_GO_17	ALD_GO_18	48.3	300	110	0.4	0.1	0	0
WMN_ALD_GO_6	ALD_GO_16	ALD_GO_17	62.8	300	110	0.4	0.1	0	0
WMN_ALD_GO_5	ALD_GO_16	WFT18650	65.4	300	110	-0.4	0.1	0	0
WMN_ALD_GO_13	ALD_GO_18	WMN_ALD_GO_12	86.3	300	110	0.1	0	0	0
WMN_ALD_GO_9	ALD_GO_18	ALD_GO_19	96.7	300	110	0.3	0.1	0	0
WMN_ALD_GO_8	ALD_GO_18	WFT63523	97.8	300	110	0	0	0	0
WMN_ALD_GO_14	WFT63520	ALD_GO_3	93.2	300	110	-0.9	0.1	0	0.1
WMN_ALD_GO_1	ALD_GO_2	ALD_GO_1	132	300	110	-0.8	0.1	0	0.1
WMN_ALD_GO_82	WFT20539	WFT15822	141.3	300	110	-0.7	0.1	0	0.1
WMN_ALD_GO_10	ALD_GO_19	ALD_GO_27	78.3	300	110	0.3	0.1	0	0
WMN_ALD_GO_11	WFT243840	ALD_GO_27	19.5	300	110	-0.3	0.1	0	0
WMN7099	WFT18645	ALD_GO_31	11.9	300	120	-0.1	0	0	0
WMN_ALD_GO_54	ALD_GO_34	WFT15726	66.2	300	110	-0.3	0	0	0
WMN_ALD_GO_55	ALD_GO_33	ALD_GO_37	67.6	300	110	-0.2	0	0	0
WMN_ALD_GO_57	WFT15726	ALD_GO_36	85.6	300	110	0.3	0	0	0
WMN_ALD_GO_60	ALD_GO_36	ALD_GO_38	84.1	300	110	-0.2	0	0	0
WMN_ALD_GO_61	ALD_GO_38	ALD_GO_39	154	300	110	-0.1	0	0	0
WMN_ALD_GO_59	ALD_GO_35	WFT15670	83.9	300	110	-0.2	0	0	0
WMN_ALD_GO_56	ALD_GO_37	ALD_GO_35	82.9	300	110	0.6	0.1	0	0.1
WMN_ALD_GO_31	WFT15653	ALD_GO_30	101.6	300	110	2.1	0.3	0.1	0.6

ALD_GO_10	0	104.5	138.5	48.4
ALD_GO_11	0	101.5	138.5	52.6
ALD_GO_12	0	103	138.5	50.5
ALD_GO_13	0	105	138.6	47.7
ALD_GO_14	0	103	138.6	50.6
ALD_GO_15	14.5	102	138.5	51.9
ALD_GO_16	0	102.3	138.5	51.6
ALD_GO_17	0	101.5	138.5	52.6
ALD_GO_18	0	102	138.5	51.9
ALD_GO_19	0	101	138.5	53.3
ALD_GO_20	0	102.7	138.5	50.9
ALD_GO_21	15.3	103	138.5	50.5
ALD_GO_22	0	103.5	138.6	49.8
ALD_GO_23	0	101.5	138.6	52.7
ALD_GO_24	0	102.5	138.6	51.3
ALD_GO_25	0	106	138.6	46.3
ALD_GO_26	0	108	138.6	43.5
ALD_GO_27	0	103.5	138.5	49.8
WMN_ALD_GO_12	0	102.7	138.5	50.9
ALD_GO_28	0	102.5	138.5	51.2
ALD_GO_30	0	102.5	138.7	51.4
ALD_GO_31	0	102.9	138.5	50.7
ALD_GO_32	0	104	138.6	49.2
ALD_GO_33	0	102	138.6	52.1
ALD_GO_34	0	101.2	138.6	53.1
ALD_GO_35	14.2	103	138.6	50.6
ALD_GO_36	0	100.5	138.6	54.2
ALD_GO_37	0	101.5	138.6	52.8
ALD_GO_38	0	101	138.6	53.5
ALD_GO_40	0	103.2	138.6	50.3
ALD_GO_41	0	107.5	138.6	44.3
ALD_GO_42	0	106.5	138.6	45.7
ALD_GO_43	0	106	138.6	46.4
ALD_GO_44	0	106.5	138.7	45.7
ALD_GO_50	37.5	103	138.6	50.6
ALD_GO_51	0	108.4	138.7	43
ALD_GO_53	0	107	165.1	82.6
ALD_GO_54	0	107.5	165.1	81.9
ALD_GO_55	0	108.5	165.1	80.5
ALD_GO_57	6.1	108.5	165.1	80.5
ALD_GO_58	0	108.5	165.1	80.5
ALD_GO_63	0	113.7	165.1	73.1
WFT89273	0.1	99.9	138.6	55.1
WCV8224	0	101.1	138.5	53.2
WFT18656	0.5	101.6	138.5	52.5
				41.20
				52.04
				82.60

ID	Total Demand (L/s)	Hydrant Available Flow (L/s)	Critical Node ID for Design Run	Critical Node Pressure at Available Flow (psi)	Critical Node Pressure at Fire Demand (psi)	Critical Pressure for Design Run (psi)	Hydrant Design Flow (L/s)	Hydrant Pressure at Design Flow (psi)
ALD_GO_15	294.5	434.2	ALD_GO_15	28.4	37.7	28.4	434.2	28.5
ALD_GO_21	295.3	419.8	ALD_GO_21	28.4	38.6	28.4	419.8	32.7
ALD_GO_35	294.2	471.7	ALD_GO_35	28.4	38.2	28.4	471.7	28.4
ALD_GO_50	317.5	416.7	ALD_GO_50	28.4	35.3	28.4	416.7	28.4
ALD_GO_57	286.1	169.5	ALD_GO_57	28.4	-65.8	28.4	169.5	28.4
WFT15691	284.5	431.3	WFT15691	28.4	41.4	28.4	436.2	28.4
WFT20539	285.7	345	WFT20539	28.4	34.3	28.4	345	28.4
WFT63520	294.5	408.9	WFT63520	28.4	38.2	28.4	408.9	32.7

APPLEBY		
MTSA ZONES		
ZONE 1		
	Number of People	ADD (L/s)
Population (Residential)	4848	11.78
Employment	905	1.94
Total	5753	13.72
ZONE 2		
Population (Residential)	1837	4.46
Employment	336	0.72
Total	2173	5.18
ZONE 3		
Population (Residential)	559	1.36
Employment	133	0.28
Total	692	1.64
ZONE 4		
Population (Residential)	812	1.97
Employment	44	0.09
Total	856	2.07
ZONE 5		
Population (Residential)	3884	9.44
Employment	544	1.16
Total	4428	10.61
ZONE 6		
Population (Residential)	1902	4.62
Employment	452	0.97
Total	2354	5.59
ZONE 7		
Population (Residential)	761	1.85
Employment	181	0.39
Total	942	2.24
	17198	**41.0**

Total Residential Population	**14603**
Total Employment	**2595**
Total intensification	**17198**

Flow Calculation

Res Flow= 210 L/cap/day

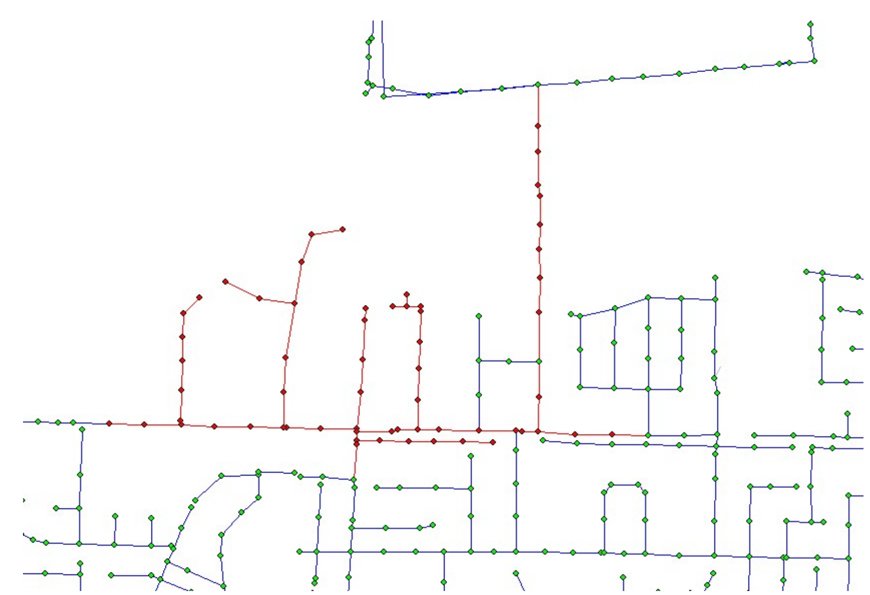
ICI Flow= 185 L/employee/day

Zone	Loading MH in Model	Area Split (%)	Avg Flow (L/s)	Pop	Avg Flow (L/s)	Pop	
ZONE 1	MANHOLE: SMH19212	1.00	11.78	4848.00	1.94	905.00	4861.72
ZONE 2	MANHOLE: SMH13368	0.14	0.63	257.53	0.10	47.10	1842.18
	MANHOLE: SMH14204	0.86	3.84	1579.47	0.62	288.90	
ZONE 3	MANHOLE: SMH13346	1.00	1.36	4848.00	0.28	133.00	4849.64
ZONE 4	MANHOLE: SMH19202	0.50	0.99	406.00	0.05	22.00	814.07
	MANHOLE: SMH19198	0.5	0.99	406.00	0.05	22.00	
ZONE 5	MANHOLE: SMH13269	0.20	1.85	760.30	0.23	106.49	3894.61
	MANHOLE: PMH_ALGO5	0.33	3.13	1285.83	0.39	180.10	
	MANHOLE: SMH19202	0.10	0.99	407.08	0.12	57.02	
	MANHOLE: SMH13236	0.28	2.63	1081.66	0.32	151.50	
	MANHOLE: SMH19198	0.09	0.85	349.12	0.10	48.90	
ZONE 6	MANHOLE: PMH_ALGO1	0.69	3.17	1305.64	0.66	310.28	1907.59
	MANHOLE: PMH_ALGO6	0.31	1.45	596.36	0.30	141.72	
ZONE 7	MANHOLE: SMH19208	1.00	1.85	761.00	0.39	181.00	763.24

	Avg Flow (L/s	Pop	ıvg Flow (L/s	Pop
MANHOLE: SMH19202	1.98	813.08	0.17	79.02
MANHOLE: SMH19198	1.84	755.12	0.15	70.90

ID (Char)	DIAMETER (Num)	RIM_ELEV (Num	HEADLOSS (Num)	LOAD1 (Num)	TYPE1 (Num)	PATTERN1 (Char	COVERAGE1 (Num)	LOAD2 (Num)	TYPE2 (Num)	PATTERN2 (Char	COVERAGE2 (Num	LOAD3 (Num)	TYPE3 (Num)	PATTERN3 (Char	COVERAGE3 (Num	LOAD4 (Num)	TYPE4 (Num)	PATTERN4 (Char	COVERAGE4 (Num)	LOAD5 (Num)	TYPE5 (Num)	PATTERN5 (Char	COVERAGE5 (Num)	LOAD6 (Num)	TYPE6 (Num)
SMH14201	1.2	104.007	0		2: Peakable Coverage			0.026059	2: Peakable Coverage		19	0.111	0: Unpeakable		0				0	0.004	2: Peakable Coverage		1.81	0	2: Peakable Coverage
PMH_ALGO2	1.2	101.8	0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable
PMH_ALGO3	1.2	103.2	0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable
PMH_ALGO4	1.2	105.6	0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable
SMH22948	1.2	101.056			2: Peakable Coverage			0.010513	2: Peakable Coverage		6	0.113	0: Unpeakable		0				0	0.004	2: Peakable Coverage		1.81	0	2: Peakable Coverage
SMH19737	1.2	99.476		0.03107	2: Peakable Coverage		13		2: Peakable Coverage			0.111	0: Unpeakable		0				0	0.002	2: Peakable Coverage		1	0	2: Peakable Coverage
PMH_ALGO7	1.2	103.06	0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable
SFT141818	1.2	104.05775	0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable
SFT406	1.2	102.979			2: Peakable Coverage			0.13738	2: Peakable Coverage		317	0.111	0: Unpeakable		0				0	0	2: Peakable Coverage		0	0.001	2: Peakable Coverage
SMH19736	1.2	99.612			2: Peakable Coverage				2: Peakable Coverage			0.111	0: Unpeakable		0				0	0.002	2: Peakable Coverage		1	0	2: Peakable Coverage
SMH13242	1.2	102.71			2: Peakable Coverage			0.020004	2: Peakable Coverage		208	0.111	0: Unpeakable		0				0	0	2: Peakable Coverage		0	0.001	2: Peakable Coverage
SMH13247	1.2	102.958			2: Peakable Coverage				2: Peakable Coverage			0.111	0: Unpeakable		0				0	0	2: Peakable Coverage		0	0.001	2: Peakable Coverage
SMH13251	1.2	103.125			2: Peakable Coverage				2: Peakable Coverage			0.111	0: Unpeakable		0				0	0	2: Peakable Coverage		0	0.001	2: Peakable Coverage
SMH19218	1.2	100.964		0.020343	2: Peakable Coverage		6	0.079582	2: Peakable Coverage		32	0.113	0: Unpeakable		0				0	0.004	2: Peakable Coverage		1.81	0	2: Peakable Coverage
SMH13272	1.2	109.033		0.018593	2: Peakable Coverage		13	0.02753	2: Peakable Coverage		21	0.111	0: Unpeakable		0				0	0.004	2: Peakable Coverage		1.81	0	2: Peakable Coverage
SMH13285	1.2	104.764		0.033429	2: Peakable Coverage		16	0.019271	2: Peakable Coverage		10	0.111	0: Unpeakable		0				0	0.004	2: Peakable Coverage		1.81	0	2: Peakable Coverage
SMH13294	1.2	103.221		0.022137	2: Peakable Coverage		10	0.017048	2: Peakable Coverage		20	0.111	0: Unpeakable		0				0	0.004	2: Peakable Coverage		1.81	0	2: Peakable Coverage
SMH13295	1.2	101.314	0		2: Peakable Coverage			0.14536	2: Peakable Coverage		105	0.111	0: Unpeakable		0				0	0.004	2: Peakable Coverage		1.81	0	2: Peakable Coverage
SMH13301	1.2	100.692	0		2: Peakable Coverage			0.019554	2: Peakable Coverage		30	0.111	0: Unpeakable		0				0	0.004	2: Peakable Coverage		1.81	0	2: Peakable Coverage
SMH13310	1.2	100.203	0		2: Peakable Coverage				2: Peakable Coverage			0.111	0: Unpeakable		0				0	0.004	2: Peakable Coverage		1.81	0	2: Peakable Coverage
SMH13313	1.2	99.539			2: Peakable Coverage			0.073842	2: Peakable Coverage		24	0.111	0: Unpeakable		0				0	0.003	2: Peakable Coverage		1.42	0	2: Peakable Coverage
SMH13314	1.2	99.73	0		2: Peakable Coverage			0.006608	2: Peakable Coverage		9	0.111	0: Unpeakable		0				0	0.004	2: Peakable Coverage		1.81	0	2: Peakable Coverage
SMH13317	1.2	99.633			2: Peakable Coverage			0.026341	2: Peakable Coverage		26	0.111	0: Unpeakable		0				0	0.004	2: Peakable Coverage		1.81	0	2: Peakable Coverage
SMH13319	1.2	99.774	0		2: Peakable Coverage				2: Peakable Coverage			0.111	0: Unpeakable		0				0	0.004	2: Peakable Coverage		1.81	0	2: Peakable Coverage
SMH13320	1.2	99.8		0.015804	2: Peakable Coverage		30	0.117599	2: Peakable Coverage		11	0.111	0: Unpeakable		0				0	0.003	2: Peakable Coverage		1.42	0	2: Peakable Coverage
SMH13327	1.2	99.976	0		2: Peakable Coverage			0.110106	2: Peakable Coverage		27	0.111	0: Unpeakable		0				0	0.004	2: Peakable Coverage		1.81	0	2: Peakable Coverage
SMH13331	1.2	100.012		0.014658	2: Peakable Coverage		10		2: Peakable Coverage			0.111	0: Unpeakable		0				0	0.003	2: Peakable Coverage		1.42	0	2: Peakable Coverage
SMH13337	1.2	100.337		0.016745	2: Peakable Coverage		13		2: Peakable Coverage			0.111	0: Unpeakable		0				0	0.003	2: Peakable Coverage		1.42	0	2: Peakable Coverage
SMH13339	1.2	100.303	0		2: Peakable Coverage				2: Peakable Coverage			0.111	0: Unpeakable		0				0	0.004	2: Peakable Coverage		1.81	0	2: Peakable Coverage
SMH19217	1.2	101.414			2: Peakable Coverage			0.091817	2: Peakable Coverage		40	0.113	0: Unpeakable		0				0	0.004	2: Peakable Coverage		1.81	0	2: Peakable Coverage
SMH19216	1.2	100.315		0.024307	2: Peakable Coverage		10	0.055896	2: Peakable Coverage		20	0.113	0: Unpeakable		0				0	-0.004	2: Peakable Coverage		0.01	0	2: Peakable Coverage
SMH23880	1.2	102.796			2: Peakable Coverage				2: Peakable Coverage			0.111	0: Unpeakable		0				0	0.003	2: Peakable Coverage		1.17	0	2: Peakable Coverage
SMH14202	1.2	104.536			2: Peakable Coverage				2: Peakable Coverage			0.111	0: Unpeakable		0				0	0	2: Peakable Coverage		0	0.001	2: Peakable Coverage
SMH14203	1.2	106.141			2: Peakable Coverage				2: Peakable Coverage			0.111	0: Unpeakable		0				0	0	2: Peakable Coverage		0	0.001	2: Peakable Coverage
SMH19214	1.2	105.012	0	0.098483	2: Peakable Coverage		45	0	2: Peakable Coverage		0	0.113	0: Unpeakable		0	0	0: Unpeakable		0	-0.004	2: Peakable Coverage		0.01	0	2: Peakable Coverage
SMH14287	1.2	103.286			2: Peakable Coverage			0.089577	2: Peakable Coverage		62	0.111	0: Unpeakable		0				0	0.003	2: Peakable Coverage		1.17	0	2: Peakable Coverage
SMH16996	1.2	101.172			2: Peakable Coverage			0.139212	2: Peakable Coverage		65	0	0: Unpeakable		0				0	0.004	2: Peakable Coverage		1.81	0	2: Peakable Coverage
SMH17967	1.2	101.633			2: Peakable Coverage			0.047121	2: Peakable Coverage		4	0.111	0: Unpeakable		0				0	0.003	2: Peakable Coverage		1.17	0	2: Peakable Coverage
SMH19197	1.2	101.677			2: Peakable Coverage				2: Peakable Coverage			0.111	0: Unpeakable		0				0	0.003	2: Peakable Coverage		1.17	0	2: Peakable Coverage
SMH19213	1.2	107.06		0.007544	2: Peakable Coverage		3		2: Peakable Coverage			0.113	0: Unpeakable		0				0	0	2: Peakable Coverage		0	0.001	2: Peakable Coverage
SMH19199	1.2	102.637			2: Peakable Coverage			0.050998	2: Peakable Coverage		19	0.111	0: Unpeakable		0				0	0.003	2: Peakable Coverage		1.17	0	2: Peakable Coverage
SMH19200	1.2	102.772			2: Peakable Coverage			0.039885	2: Peakable Coverage		49	0.111	0: Unpeakable		0				0	0.003	2: Peakable Coverage		1.17	0	2: Peakable Coverage
SMH19201	1.2	103.219			2: Peakable Coverage			0.026199	2: Peakable Coverage		10	0.111	0: Unpeakable		0				0	0.003	2: Peakable Coverage		1.17	0	2: Peakable Coverage
SMH19211	1.2	106.252			2: Peakable Coverage				2: Peakable Coverage			0.113	0: Unpeakable		0				0	0	2: Peakable Coverage		0	0.001	2: Peakable Coverage
SMH19203	1.2	100.877			2: Peakable Coverage			0.221817	2: Peakable Coverage		49	0.111	0: Unpeakable		0				0	0.003	2: Peakable Coverage		1.17	0	2: Peakable Coverage
SMH19204	1.2	100.034			2: Peakable Coverage				2: Peakable Coverage			0.111	0: Unpeakable		0				0	0.003	2: Peakable Coverage		1.17	0	2: Peakable Coverage
SMH19205	1.2	99.877			2: Peakable Coverage				2: Peakable Coverage			0.111	0: Unpeakable		0				0	0.003	2: Peakable Coverage		1.17	0	2: Peakable Coverage
SMH19207	1.2	108.553			2: Peakable Coverage				2: Peakable Coverage			0.113	0: Unpeakable		0				0	0	2: Peakable Coverage		0	0.02	2: Peakable Coverage
SMH19210	1.2	103.84			2: Peakable Coverage				2: Peakable Coverage			0.113	0: Unpeakable		0				0	0	2: Peakable Coverage		0	0.02	2: Peakable Coverage
SMH19209	1.2	106.595			2: Peakable Coverage				2: Peakable Coverage			0.113	0: Unpeakable		0				0	0	2: Peakable Coverage		0	0.02	2: Peakable Coverage
SMH13368	1.2	101.57	0	0	2: Peakable Coverage		0	0.000875	2: Peakable Coverage		26	0	0: Unpeakable		0	0	0: Unpeakable		0	0.004	2: Peakable Coverage		1.81	0	2: Peakable Coverage
SMH13346	1.2	100.793	0	0.000718	2: Peakable Coverage		3	0	2: Peakable Coverage		0	0.111	0: Unpeakable		0	0	0: Unpeakable		0	0.003	2: Peakable Coverage		1.42	0	2: Peakable Coverage
PMH_ALGO6	1.2	103	0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable
SMH19198	1.2	103.117	0	0.00569	2: Peakable Coverage		6	1.882555	2: Peakable Coverage		129	0.111	0: Unpeakable		0	0	0: Unpeakable		0	0.003	2: Peakable Coverage		1.17	0	2: Peakable Coverage
SMH19208	1.2	108.763	0	0	2: Peakable Coverage		0	0.000184	2: Peakable Coverage		115	0.113	0: Unpeakable		0	0	0: Unpeakable		0	0	2: Peakable Coverage		0	0.02	2: Peakable Coverage
SMH13269	1.2	109.644	0	0	2: Peakable Coverage		0	0	2: Peakable Coverage		0	0.111	0: Unpeakable		0	0	0: Unpeakable		0	0.004	2: Peakable Coverage		1.81	0	2: Peakable Coverage
SMH19202	1.2	102.862	0	0	2: Peakable Coverage		0	0.501723	2: Peakable Coverage		81	0.111	0: Unpeakable		0	0	0: Unpeakable		0	0.003	2: Peakable Coverage		1.17	0	2: Peakable Coverage
SMH13236	1.2	102.4	0	0	2: Peakable Coverage		0	0	2: Peakable Coverage		0	0.111	0: Unpeakable		0	0	0: Unpeakable		0	0	2: Peakable Coverage		0	0.001	2: Peakable Coverage
PMH_ALGO5	1.2	102.7	0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable
PMH_ALGO1	1.2	102.1	0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable
SMH14204	1.2	107.45	0	0	2: Peakable Coverage		0	0	2: Peakable Coverage		0	0.111	0: Unpeakable		0	0	0: Unpeakable		0	0.004	2: Peakable Coverage		1.81	0	2: Peakable Coverage
SMH19212	1.2	106.515	0	0	2: Peakable Coverage		0	0	2: Peakable Coverage		0	0.113	0: Unpeakable		0	0	0: Unpeakable		0	0	2: Peakable Coverage		0	0.001	2: Peakable Coverage

Notes
Table is for the current domain that includes all nodes and pipes within the service area



PATTERN6 (Char	COVERAGE6 (Num)	LOAD7 (Num)	TYPE7 (Num)	PATTERN7 (Char	COVERAGE7 (Num	LOAD8 (Num)	TYPE8 (Num)	PATTERN8 (Char	COVERAGE8 (Num)	LOAD9 (Num)	TYPE9 (Num)	PATTERN9 (Char)	COVERAGE9 (Num)	LOAD10 (Num)	TYPE10 (Num)	PATTERN10 (Char)	COVERAGE10 (Num)	SWS_AREA (Num)	SWS_RUNOFF (Num	SWS_SLOPE (Num)	SWS_LEN (Num)	HYETOGRAPH (Char)	HYDROGRAPH (Char
	0.11	0	0: Unpeakable		0	0			0	0			0	0			0						
	0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0	0	0		
	0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0	0	0		
	0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0	0	0		
	0.11	0	0: Unpeakable		0	0			0	0			0	0			0						
	0	0	0: Unpeakable		0	0			0	0			0	0			0						
	0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0	0	0		
	0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0	0	0		
	0.27	0	0: Unpeakable		0	0			0	0			0	0			0						
	0	0	0: Unpeakable		0	0			0	0			0	0			0						
	0.27	0	0: Unpeakable		0	0			0	0			0	0			0						
	0.27	0	0: Unpeakable		0	0			0	0			0	0			0						
	0.27	0	0: Unpeakable		0	0			0	0			0	0			0						
	0.11	0	0: Unpeakable		0	0			0	0			0	0			0						
	0.11	0	0: Unpeakable		0	0			0	0			0	0			0						
	0.11	0	0: Unpeakable		0	0			0	0			0	0			0						
	0.11	0	0: Unpeakable		0	0			0	0			0	0			0						
	0.11	0	0: Unpeakable		0	0			0	0			0	0			0						
	0.11	0	0: Unpeakable		0	0			0	0			0	0			0						
	0.11	0	0: Unpeakable		0	0			0	0			0	0			0						
	0.19	0	0: Unpeakable		0	0			0	0			0	0			0						
	0.11	0	0: Unpeakable		0	0			0	0			0	0			0						
	0.11	0	0: Unpeakable		0	0			0	0			0	0			0						
	0.11	0	0: Unpeakable		0	0			0	0			0	0			0						
	0.19	0	0: Unpeakable		0	0			0	0			0	0			0						
	0.11	0	0: Unpeakable		0	0			0	0			0	0			0						
	0.19	0	0: Unpeakable		0	0			0	0			0	0			0						
	0.19	0	0: Unpeakable		0	0			0	0			0	0			0						
	0.11	0	0: Unpeakable		0	0			0	0			0	0			0						
	0.11	0	0: Unpeakable		0	0			0	0			0	0			0						
	0	0	0: Unpeakable		0	0			0	0			0	0			0						
	0.13	0	0: Unpeakable		0	0			0	0			0	0			0						
	0.26	0	0: Unpeakable		0	0			0	0			0	0			0						
	0.26	0	0: Unpeakable		0	0			0	0			0	0			0						
	0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	2: Peakable Coverage		1,372.00	0	0	0	0		
	0.13	0	0: Unpeakable		0	0			0	0			0	0			0						
	0.11	0	0: Unpeakable		0	0			0	0			0	0			0						
	0.13	0	0: Unpeakable		0	0			0	0			0	0			0						
	0.13	0	0: Unpeakable		0	0			0	0			0	0			0						
	0.57	0	0: Unpeakable		0	0			0	0			0	0			0						
	0.13	0	0: Unpeakable		0	0			0	0			0	0			0						
	0.13	0	0: Unpeakable		0	0			0	0			0	0			0						
	0.13	0	0: Unpeakable		0	0			0	0			0	0			0						
	0.57	0	0: Unpeakable		0	0			0	0			0	0			0						
	0.13	0	0: Unpeakable		0	0			0	0			0	0			0						
	0.13	0	0: Unpeakable		0	0			0	0			0	0			0						
	0.13	0	0: Unpeakable		0	0			0	0			0	0			0						
	8.23	0	0: Unpeakable		0	0			0	0			0	0			0						
	8.23	0	0: Unpeakable		0	0			0	0			0	0			0						
	8.23	0	0: Unpeakable		0	0			0	0			0	0			0						
	0.11	0.63	2: Peakable Coverage		257.53	0	0: Unpeakable		0	0.1	2: Peakable Coverage		47.1	0	2: Peakable Coverage		926	0	0	0	0		
	0.19	1.36	2: Peakable Coverage		4,848.00	0	0: Unpeakable		0	0.28	2: Peakable Coverage		133	0	2: Peakable Coverage		899	0	0	0	0		
	0	1.45	2: Peakable Coverage		596.36	0	0: Unpeakable		0	0.3	2: Peakable Coverage		141.72	0	2: Peakable Coverage		1,822.00	0	0	0	0		
	0.13	1.84	2: Peakable Coverage		755.12	0	0: Unpeakable		0	0.15	2: Peakable Coverage		70.9	0	2: Peakable Coverage		1,792.00	0	0	0	0		
	8.23	1.85	2: Peakable Coverage		761	0	0: Unpeakable		0	0.39	2: Peakable Coverage		181	0	2: Peakable Coverage		1,611.00	0	0	0	0		
	0.11	1.85	2: Peakable Coverage		760.3	0	0: Unpeakable		0	0.23	2: Peakable Coverage		106.49	0	2: Peakable Coverage		3,903.00	0	0	0	0		
	0.13	1.98	2: Peakable Coverage		813.08	0	0: Unpeakable		0	0.17	2: Peakable Coverage		79.02	0	2: Peakable Coverage		2,090.00	0	0	0	0		
	0.27	2.63	2: Peakable Coverage		1,081.66	0	0: Unpeakable		0	0.32	2: Peakable Coverage		151.5	0	2: Peakable Coverage		2,776.00	0	0	0	0		
	0	3.13	2: Peakable Coverage		1,285.83	0	0: Unpeakable		0	0.39	2: Peakable Coverage		180.1	0	2: Peakable Coverage		3,300.00	0	0	0	0		
	0	3.17	2: Peakable Coverage		1,305.64	0	0: Unpeakable		0	0.66	2: Peakable Coverage		310.28	0	2: Peakable Coverage		3,989.00	0	0	0	0		
	0.11	3.84	2: Peakable Coverage		1,579.47	0	0: Unpeakable		0	0.62	2: Peakable Coverage		288.9	0	2: Peakable Coverage		3,728.00	0	0	0	0		
	0.57	11.78	2: Peakable Coverage		4,848.00	0	0: Unpeakable		0	1.94	2: Peakable Coverage		905	0	2: Peakable Coverage		5,025.00	0	0	0	0		
		35.51								5.55													
		41.06																					

SWS_PERIMP (Num)	SWS_PERV (Num)	SWS_IMPERV (Num)	SWS_INFIL1 (Num)	SWS_INFIL2 (Num)	SWS_DECAY (Num)	S_REGEN (N	S_TOC (Num)
0.75	0.01	0.01	3	0.1	0.001	0.0001	0
0.75	0.01	0.01	3	0.1	0.001	0.0001	0
0.75	0.01	0.01	3	0.1	0.001	0.0001	0
0.75	0.01	0.01	3	0.1	0.001	0.0001	0
0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0
0.75	0.01	0.01	3	0.1	0.001	0.0001	0
0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0
0.75	0.01	0.01	3	0.1	0.001	0.0001	0
0.75	0.01	0.01	3	0.1	0.001	0.0001	0
0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0

Below is table for all manholes in the domain (aka service area)

ID	Rim Elevation (m)	Base Flow (L/s)	Total Flow (L/s)	Storm Flow (L/s)	Grade (m)	Status	Hydraulic Jump	Surcharge Depth (m)	Unfilled Depth (m)
SMH19207	108.553	0.133	0.201447	0	105.486164	Not Full	No	-0.334836	3.066836
SMH19208	108.763	2.37318	8.661315	0	104.910964	Not Full	No	-0.338036	3.852036
SMH19209	106.595	0.133	0.201447	0	102.861658	Not Full	No	-0.359342	3.733342
SMH19210	103.84	0.133	0.201447	0	101.721682	Not Full	No	-0.319318	2.118318
SMH19211	106.252	0.114	0.117479	0	101.170515	Not Full	Yes	-0.287485	5.081485
SMH19212	106.515	13.833977	43.8549	0	100.980625	Not Full	No	-0.265375	5.534375
SMH19213	107.06	0.121544	0.151008	0	100.433831	Not Full	No	-0.254169	6.626169
SMH19214	105.012	0.207483	0.521517	0	99.772693	Not Full	No	-0.293307	5.239307
SMH16996	101.172	0.143212	0.614029	0	97.748465	Not Full	No	-0.199535	3.423535
SMH13368	101.57	0.734874	2.982893	0	98.089294	Not Full	No	-0.200706	3.480706
SMH19216	100.315	0.189203	0.444841	0	98.170075	Not Full	Yes	0.530075	2.144925
SMH19217	101.414	0.208817	0.527866	0	98.089294	Not Full	No	-0.790706	3.324706
SMH19218	100.964	0.216925	0.56338	0	96.545584	Not Full	No	-0.254416	4.418416
SMH22948	101.056	0.127513	0.17721	0	96.763362	Not Full	No	-0.266638	4.292638
SMH13269	109.644	2.194996	8.110655	0	103.410719	Not Full	No	-0.113281	6.233281
SMH13272	109.033	0.161123	0.328628	0	103.242074	Not Full	No	-0.148926	5.790926
SMH13285	104.764	0.1677	0.358207	0	99.908898	Not Full	No	-0.129102	4.855102
SMH13294	103.221	0.154185	0.29888	0	98.899968	Not Full	No	-0.145032	4.321032
SMH13295	101.314	0.26036	0.743633	0	97.779818	Not Full	Yes	-0.190182	3.534182
SMH13301	100.692	0.134554	0.213474	0	97.480284	Not Full	No	-0.189716	3.211716
SMH13310	100.203	0.115	0.128852	0	97.111584	Not Full	No	-0.188416	3.091416
SMH13313	99.539	0.187842	0.446479	0	96.508284	Not Full	No	-0.058716	3.030716
SMH13314	99.73	0.121608	0.157795	0	96.2199	Not Full	Yes	-0.1091	3.5101
SMH13317	99.633	0.141341	0.243284	0	96.463182	Not Full	No	-0.164818	3.169818
SMH13319	99.774	0.115	0.128852	0	96.745509	Not Full	No	-0.134491	3.028491
SMH13320	99.8	0.247403	0.701434	0	96.659548	Not Full	No	-0.178452	3.140452
SMH14201	104.007	0.141059	0.242603	0	101.349015	Not Full	No	-0.240985	2.657985
SMH14202	104.536	0.112	0.115486	0	101.906615	Not Full	No	-0.238385	2.629385
SMH14203	106.141	0.112	0.115486	0	103.410225	Not Full	No	-0.240775	2.730775
SMH14204	107.45	4.574992	16.218284	0	104.916409	Not Full	No	-0.240591	2.533591
SMH19204	100.034	0.114	0.124411	0	96.036401	Not Full	No	-0.529599	3.997599
SMH19205	99.877	0.114	0.124411	0	95.517789	Not Full	No	-0.504211	4.359211
SFT141818	104.05775	0	0	0	103.66	Not Full	No	-0.3	0.39775
PMH_ALGO5	102.7	3.519994	12.977339	0	98.194872	Not Full	No	-0.137128	4.505128
SMH13346	100.793	1.754715	5.446795	0	97.689716	Not Full	No	-0.163284	3.103284
SMH13339	100.303	0.115	0.128852	0	96.961081	Not Full	No	-0.272919	3.341919
SMH13327	99.976	0.225106	0.608219	0	96.961081	Not Full	No	-0.614919	3.014919
SMH13331	100.012	0.128658	0.188853	0	97.182848	Not Full	No	-0.182152	2.829152
SMH13337	100.337	0.130745	0.197838	0	97.567432	Not Full	No	-0.188568	2.769568
SMH19736	99.612	0.113	0.119945	0	95.276246	Not Full	No	-0.572754	4.335754
SMH19737	99.476	0.14407	0.256489	0	95.185619	Not Full	Yes	-0.529381	4.290381
SMH14287	103.286	0.203577	0.50844	0	97.713715	Not Full	No	-0.136285	5.572285
SMH17967	101.633	0.161121	0.333446	0	97.229555	Not Full	No	-0.485445	4.403445
SMH19197	101.677	0.114	0.124411	0	97.2607	Not Full	No	-0.4863	4.4163
SMH19203	100.877	0.335816	1.08095	0	96.875524	Not Full	No	-0.484476	4.001476
SFT406	102.979	0.24938	0.673926	0	99.736863	Not Full	No	-0.091137	3.242137
SMH13236	102.4	3.061995	11.145965	0	99.672401	Not Full	No	-0.160599	2.727599
PMH_ALGO4	105.6	0	0	0	98.625453	Not Full	No	-0.173547	6.974547
PMH_ALGO7	103.06	0	0	0	99.744437	Not Full	No	-0.227563	3.315563
SMH13242	102.71	0.132004	0.197989	0	99.352706	Not Full	No	-0.160294	3.357294
SMH13247	102.958	0.112	0.115485	0	99.039885	Not Full	No	-0.152115	3.918115
SMH13251	103.125	0.112	0.115485	0	98.746971	Not Full	No	-0.155029	4.378029
SMH19200	102.772	0.153885	0.296023	0	98.406639	Not Full	No	-0.520361	4.365361
SMH23880	102.796	0.114	0.124411	0	98.411279	Not Full	No	-0.138721	4.384721
SMH19201	103.219	0.140199	0.239764	0	98.079227	Not Full	No	-0.520773	5.139773
SMH19202	102.862	2.765718	10.218231	0	97.704332	Not Full	No	-0.511668	5.157668
PMH_ALGO3	103.2	0	0	0	98.966139	Not Full	No	-0.194861	4.233861
PMH_ALGO1	102.1	3.829994	14.002256	0	99.505194	Not Full	No	-0.194806	2.594806
PMH_ALGO2	101.8	0	0	0	99.233139	Not Full	No	-0.194861	2.566861
SMH19199	102.637	0.164998	0.34751	0	99.264549	Not Full	No	-0.212451	3.372451
SMH19198	103.117	3.992238	14.901351	0	99.648007	Not Full	Yes	-0.209993	3.468993
PMH_ALGO6	103	1.749997	6.792058	0	100.072437	Not Full	No	-0.227563	2.927563

For proposed manholes

ID	Rim Elevation (m)	Base Flow (L/s)	Total Flow (L/s)	Storm Flow (L/s)	Grade (m)	Status	Hydraulic Jump	Surcharge Depth (m)	Unfilled Depth (m)
SMH19208	108.763	2.37318	8.661315	0	104.910964	Not Full	No	-0.338036	3.852036
PMH_ALGO1	102.1	3.829994	14.002256	0	99.505194	Not Full	No	-0.194806	2.594806
SMH19212	106.515	13.833977	43.8549	0	100.980625	Not Full	No	-0.265375	5.534375
SMH14204	107.45	4.574992	16.218284	0	104.916409	Not Full	No	-0.240591	2.533591
SMH13269	109.644	2.194996	8.110655	0	103.410719	Not Full	No	-0.113281	6.233281
PMH_ALGO5	102.7	3.519994	12.977339	0	98.194872	Not Full	No	-0.137128	4.505128
SMH19202	102.862	2.765718	10.218231	0	97.704332	Not Full	No	-0.511668	5.157668
PMH_ALGO6	103	1.749997	6.792058	0	100.072437	Not Full	No	-0.227563	2.927563
SMH13236	102.4	3.061995	11.145965	0	99.672401	Not Full	No	-0.160599	2.727599
SMH19198	103.117	3.992238	14.901351	0	99.648007	Not Full	Yes	-0.209993	3.468993
SMH13346	100.793	1.754715	5.446795	0	97.689716	Not Full	No	-0.163284	3.103284
SMH13368	101.57	0.734874	2.982893	0	98.089294	Not Full	No	-0.200706	3.480706

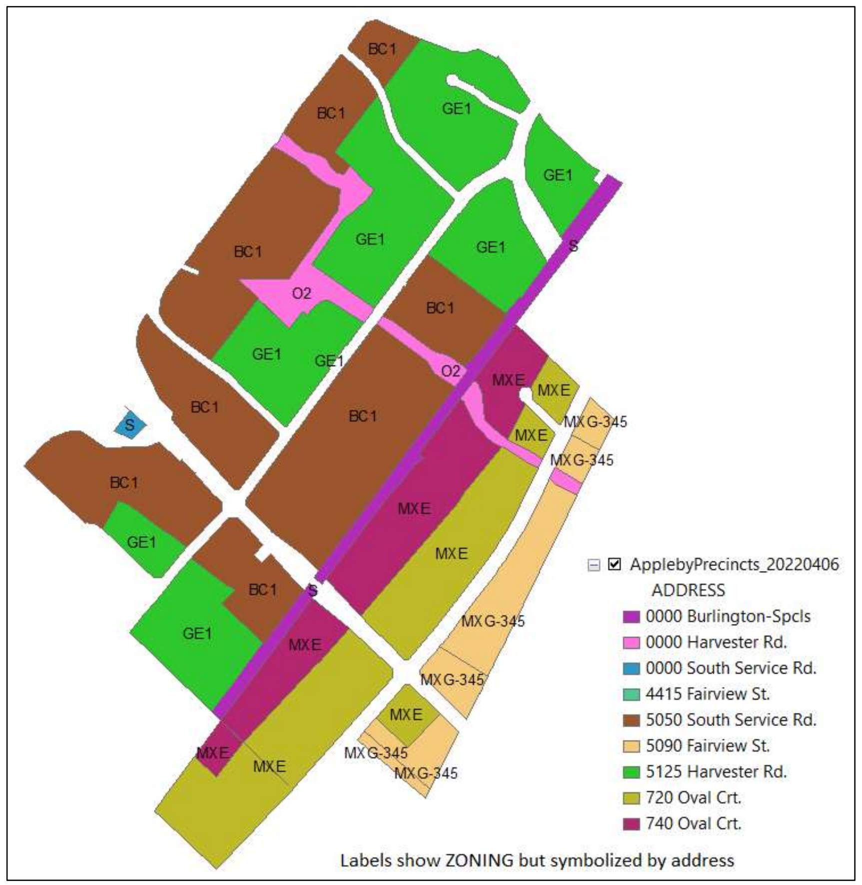
Results for all pipes in domain

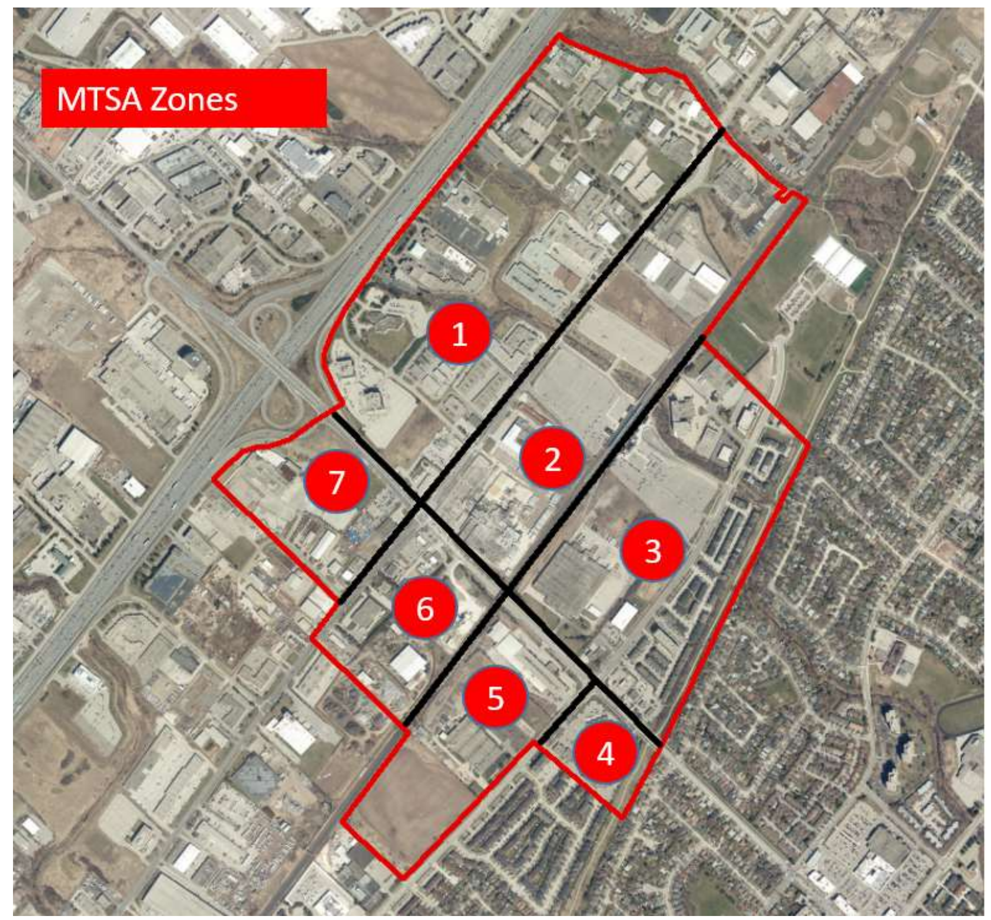
ID	From ID	To ID	Diameter (mm)	Length (m)	Slope	Total Flow (L/s)	Unpeakable Flow (L/s)	Peakable Flow (L/s)	Coverage Flow (L/s)	Infiltration Flow (L/s)	Storm Flow (L/s)	Flow Type	Velocity (m/s)	d/D	q/Q	Water Depth (m)	Critical Depth (m)	Froude Number	Full Flow (L/s)	Coverage Count	Backwater Adjustment	Adjusted Depth (m)	Adjusted Velocity (m/s)
SMN14735	SMH19213	SMH19214	450	91.831926	0.005467	82.96162	21.136901	0	20.821477	0	0	Free Surface	1.248799	0.435181	0.3925	0.195831	0.199211	1.033072	211.36692	9,667.19	No	0.195831	1.248799
SMN14736	SMH19212	SMH19213	450	78.370297	0.006737	82.826561	21.023901	0	20.812933	0	0	Free Surface	1.347836	0.410278	0.352977	0.184625	0.199041	1.154749	234.651439	9,663.62	No	0.184625	1.347836
SMN14737	SMH19210	SMH19211	450	77.16174	0.007167	44.497421	20.797902	0	7.090956	0	0	Free Surface	1.16008	0.290405	0.183862	0.130682	0.14412	1.208519	242.015715	3,909.48	Yes	0.131599	1.148854
SMN14738	SMH19211	SMH19212	450	64.524272	0.003131	44.613363	20.910901	0	7.091956	0	0	Free Surface	0.861765	0.361145	0.278913	0.162515	0.144314	0.79489	159.954379	3,910.05	Yes	0.16857	0.820135
SMN14739	SMH19209	SMH19210	450	29.245937	0.030432	44.323349	20.684902	0	7.070956	0	0	Free Surface	1.937049	0.201462	0.088877	0.090658	0.143829	2.455852	498.705595	3,901.25	No	0.090658	1.937049
SMN14740	SMH19208	SMH19209	450	90.542152	0.012955	44.149254	20.571902	0	7.050956	0	0	Free Surface	1.42947	0.24881	0.135681	0.111964	0.143536	1.619536	325.391053	3,893.02	No	0.111964	1.42947
SMN14741	SMH19207	SMH19208	450	69.487803	0.00816	37.054595	20.458902	0	4.790775	0	0	Free Surface	1.153058	0.25592	0.14349	0.115164	0.131127	1.286685	258.237463	2,827.79	No	0.115164	1.153058
SMN14742	SMH19206	SMH19207	450	110.89685	0.02267	36.877382	20.345902	0	4.770775	0	0	Free Surface	1.653959	0.197845	0.085675	0.08903	0.130803	2.117087	430.432483	2,819.56	No	0.08903	1.653959
SMN16918	SMH19214	SMH19215	450	131.208505	0.012522	83.31332	21.249901	0	20.91596	0	0	Free Surface	1.691205	0.348206	0.260432	0.156693	0.199652	1.592609	319.904092	9,712.20	Yes	0.218169	1.089792
SMN11476	SMH13368	SMH13381	250	95.524866	0.004407	3.532136	0	0	0.878086	0	0	Free Surface	0.498734	0.201859	0.089229	0.050465	0.046383	0.847452	39.584909	399.25	No	0.050465	0.498734
SMN14664	SMH13368	SMH16996	250	98.351411	0.003457	2.982893	0	0	0.734874	0	0	Free Surface	0.435573	0.197174	0.085083	0.049294	0.042558	0.749359	35.058714	332.44	No	0.049294	0.435573
SMN16920	SMH19217	SMH13368	250	96.633132	0.004967	0	0	0	0	0	0	Free Surface	0	0	0	0	0	0	42.024679	0	No	0	0
SMN14730	SMH19216	SMH19217	450	92.577194	0.004029	84.182759	21.5889	0	21.124278	0	0	Pressurized	1.119579	0.478607	0.463915	0.215373	0.200737	0.87386	181.461467	9,806.23	Yes	0.45	0.529309
SMN16916	SMH19215	SMH19216	450	95.331021	0.00622	83.871763	21.4759	0	21.048075	0	0	Free Surface	1.313284	0.422363	0.371983	0.190063	0.200349	1.105989	225.4718	9,776.22	Yes	0.45	0.527353
SMN24150	SMH19217	SMH22948	450	41.522948	0.007032	84.54075	21.701898	0	21.220093	0	0	Pressurized	1.376548	0.410095	0.352644	0.184543	0.201183	1.179658	239.733841	9,848.04	No	0.184543	1.376548
SMN14727	SMH13339	SMH19218	300	99.395333	0.002998	0.893566	0.443999	0	0.105207	0	0	Free Surface	0.282315	0.090271	0.016831	0.027081	0.022035	0.664191	53.091449	76.84	No	0.027081	0.282315
SMN24151	SMH22948	SMH19218	450	16.199193	0.007223	84.68947	21.814898	0	21.234606	0	0	Free Surface	1.390803	0.407471	0.348579	0.183362	0.201367	1.196384	242.956346	9,855.85	No	0.183362	1.390803
SMN11437	SMH13310	SMH13319	300	79.889811	0.003755	17.508204	0.776999	0	4.672965	0	0	Free Surface	0.73116	0.371948	0.294664	0.111584	0.100187	0.81219	59.4175	2,031.94	No	0.111584	0.73116
SMN12124	SMH13272	SMH13285	200	104.651804	0.031887	8.390788	0.222	0	2.134119	0	0	Free Surface	1.325837	0.255371	0.142883	0.051074	0.07716	2.221806	58.724811	904.41	Yes	0.052986	1.259081
SMN12125	SMH13285	SMH13294	200	88.391176	0.00965	8.700715	0.332999	0	2.190819	0	0	Free Surface	0.872602	0.354492	0.26932	0.070898	0.078629	1.220164	32.306279	932.22	No	0.070898	0.872602
SMN12126	SMH13295	SMH13301	300	70.094324	0.003852	17.21377	0.554999	0	4.645411	0	0	Free Surface	0.734557	0.366058	0.286046	0.109818	0.099311	0.823456	60.178298	1,998.32	No	0.109818	0.734557
SMN12127	SMH13301	SMH13310	300	85.343204	0.003867	17.384293	0.665999	0	4.668965	0	0	Free Surface	0.737584	0.367615	0.288327	0.110284	0.099819	0.824845	60.293701	2,030.13	No	0.110284	0.737584
SMN12331	SMH14201	SMH13295	300	81.723788	0.041114	16.649996	0.443999	0	4.496052	0	0	Free Surface	1.694028	0.196716	0.084687	0.059015	0.097615	2.663735	196.605128	1,891.51	No	0.059015	1.694028
SMN12370	SMH14202	SMH14201	300	13.802339	0.03369	16.447088	0.332999	0	4.465993	0	0	Free Surface	1.5733	0.205383	0.092414	0.061615	0.096998	2.418207	177.971138	1,870.70	No	0.061615	1.5733
SMN12371	SMH14203	SMH14202	300	36.058762	0.038992	16.332686	0.222	0	4.464993	0	0	Free Surface	1.65329	0.197418	0.085304	0.059225	0.096648	2.594799	191.463812	1,870.44	No	0.059225	1.65329
SMN14657	SMH13317	SMH13314	250	17.326509	0.015121	18.326215	1.109998	0	4.821412	0	0	Free Surface	1.241578	0.340729	0.249937	0.085182	0.108353	1.587968	73.323288	2,090.37	Yes	0.094541	1.077686
SMN14658	SMH13320	SMH13313	250	76.708824	0.003533	6.334045	0.443999	0	1.817521	0	0	Free Surface	0.54603	0.286194	0.17872	0.071548	0.062529	0.769295	35.441231	5,053.68	Yes	0.131416	0.242245
SMN14659	SMH13319	SMH13317	250	51.909454	0.004855	18.128738	0.998998	0	4.791071	0	0	Free Surface	0.817589	0.462036	0.436359	0.115509	0.107742	0.875034	41.545487	2,062.56	No	0.115509	0.817589
SMN14660	SMH13327	SMH13319	300	56.372275	0.00463	0.608219	0.111	0	0.114106	0	0	Free Surface	0.29238	0.067917	0.009219	0.020375	0.018156	0.795042	65.976142	28.809999	Yes	0.092795	0.032687
SMN14661	SMH13331	SMH13320	250	66.103581	0.003631	5.786713	0.332999	0	1.681118	0	0	Free Surface	0.537268	0.271393	0.161062	0.067848	0.059696	0.779189	35.928571	5,011.26	No	0.067848	0.537268
SMN14700	SMH19203	SMH19204	675	96.951848	0.003961	92.268855	18.09297	0	26.539107	0	0	Free Surface	1.112379	0.282257	0.173941	0.190524	0.186686	0.961029	530.459381	14,436.91	No	0.190524	1.112379
SMN14701	SMH19204	SMH19205	675	6.015046	0.013134	98.261723	18.647969	0	28.776111	0	0	Free Surface	1.73466	0.215408	0.101725	0.145401	0.192835	1.733154	965.958875	15,402.11	No	0.145401	1.73466
SMN14702	SMH13294	SMH19204	200	99.276099	0.027207	8.956004	0.443999	0	2.234004	0	0	Free Surface	1.27649	0.274841	0.165104	0.054968	0.079822	2.055615	54.244639	964.03	No	0.054968	1.27649
SMN14703	SMH13313	SMH19736	250	62.199611	0.000145	6.690234	0.554999	0	1.894363	0	0	Free Surface	0.166004	0.765137	0.932754	0.191284	0.06431	0.121519	7.172561	5,079.10	No	0.191284	0.166004
SMN14704	SMH19205	SMH19736	675	24.692233	0.008829	111.089318	19.979967	0	33.611131	0	0	Free Surface	1.561226	0.253021	0.140268	0.170789	0.205429	1.431232	791.977113	17,504.46	No	0.170789	1.561226
SMN14707	SMH13314	SMH19205	250	92.076364	0.002585	18.466583	1.220998	0	4.83202	0	0	Free Surface	0.647768	0.563599	0.609152	0.1409	0.108785	0.609816	30.315254	2,101.18	No	0.1409	0.647768
SMN19706	SMH13269	SMH13272	200	33.24154	0.004001	8.110655	0.111	0	2.083997	0	0	Free Surface	0.621046	0.433594	0.3899	0.086719	0.075809	0.772333	20.801859	868.6	No	0.086719	0.621046
SMN19756	SMH14204	SMH14203	300	37.022364	0.037977	16.218284	0.111	0	4.463993	0	0	Free Surface	1.63447	0.198029	0.085831	0.059409	0.096298	2.561088	188.955716	1,870.18	No	0.059409	1.63447
SMN40193	SFT141818	SMH14203	300	31.573477	0.005068	0	0	0	0	0	0	Free Surface	0	0	0	0	0	0	69.023699	0	No	0	0
PSMN_ALGO4	PMH_ALGO4	PMH_ALGO5	300	147.174845	0.003003	19.695637	0	0	5.579991	0	0	Free Surface	0.69576	0.421509	0.37066	0.126453	0.106488	0.718488	53.136603	2,354.00	Yes	0.132162	0.656421
PSMN_ALGO5	PMH_ALGO5	SMH14287	300	91.762514	0.003008	30.495661	0	0	9.099985	0	0	Free Surface	0.777948	0.542908	0.573478	0.162872	0.133703	0.685692	53.176694	3,819.93	No	0.162872	0.777948
SMN20270	SMH13346	SMH13337	250	77.691681	0.001249	5.446795	0.111	0	1.643715	0	0	Free Surface	0.360128	0.346863	0.258521	0.086716	0.057873	0.455989	21.069073	4,985.42	No	0.086716	0.360128
SMN14663	SMH13327	SMH13339	300	105.474776	0.002996	0	0	0	0	0	0	Free Surface	0	0	0	0	0	0	53.072394	0	Yes	-0.156919	0
SMN14662	SMH13337	SMH13331	250	77.131639	0.005069	5.619957	0.222	0	1.66346	0	0	Free Surface	0.600025	0.245728	0.132377	0.061432	0.058808	0.91819	42.454029	4,999.84	Yes	0.06464	0.558492
SMN14705	SMH19736	SMH19737	750	9.379214	0.006824	112.950381	20.645966	0	35.507494	0	0	Free Surface	1.415894	0.236328	0.122488	0.177246	0.201005	1.277373	922.131446	22,584.56	No	0.177246	1.415894
SMN14706	SMH19737	SMH19228	750	96.182123	0.00289	113.137784	20.756966	0	35.540564	0	0	Free Surface	1.043048	0.294159	0.188515	0.220619	0.201176	0.835766	600.152039	22,598.56	Yes	0.275953	0.767128
SMN14698	SMH19197	SMH17967	675	7.943358	0.004029	91.322515	17.87097	0	26.264169	0	0	Free Surface	1.115851	0.279556	0.170703	0.1887	0.185699	0.9691	534.979929	14,381.57	Yes	0.189128	1.11233
SMN14699	SMH17967	SMH19203	675	89.204544	0.00398	91.56955	17.98197	0	26.31429	0	0	Free Surface	1.111828	0.280823	0.172213	0.189555	0.185957	0.963228	531.722766	14,386.74	Yes	0.190039	1.107876
SMN16908	SMH19202	SMH19197	675	87.839166	0.003916	67.723384	17.648971	0	17.068608	0	0	Free Surface	1.013659	0.241974	0.128392	0.163332	0.15927	0.951837	527.472336	10,497.30	No	0.163332	1.013659
SMN20280	SMH14287	SMH19197	300	95.757338	0.003028	30.858642	0.111	0	9.192562	0	0	Free Surface	0.782186	0.545715	0.578315	0.163715	0.134532	0.687052	53.359581	3,883.10	No	0.163715	0.782186
SMN12121	SMH13236	SMH13242	250	63.857356	0.005011	11.557135	0.222	0	3.089375	0	0	Free Surface	0.733042	0.357605	0.2738	0.089401	0.085255	0.91226	42.210096	1,550.70	Yes	0.089554	0.731345
SMN19705	SFT406	SMH13236	125	60.01203	0.002	0.673926	0.111	0	0.13838	0	0	Free Surface	0.250915	0.270905	0.160491	0.033863	0.024112	0.515132	4.199152	317.27	Yes	0.061632	0.111809
PSMN_ALGO3	PMH_ALGO3	PMH_ALGO4	300	112.296497	0.003001	14.002256	0	0	3.829994	0	0	Free Surface	0.633921	0.350464	0.263613	0.105139	0.089262	0.728459	53.116725	1,615.92	No	0.105139	0.633921
PSMN_ALGO7	PMH_ALGO7	PMH_ALGO4	300	92.931065	0.003002	6.792058	0	0	1.749997	0	0	Free Surface	0.516223	0.241455	0.127844	0.072437	0.061579	0.727946	53.127709	738.08	No	0.072437	0.516223
SMN12122	SMH13242	SMH13247	250	64.188773	0.005001	11.618963	0.332999	0	3.110379	0	0	Free Surface	0.733559	0.358826	0.275548	0.089706	0.085491	0.911136	42.166718	1,758.97	Yes	0.093796	0.690593
SMN12123	SMH13247	SMH13251	250	78.643855	0.003688	11.733435	0.443999	0	3.111379	0	0	Free Surface	0.65849	0.391541	0.32405	0.097885	0.085927	0.777879	36.208741	1,759.24	No	0.097885	0.65849
SMN25213	SMH13251	SMH23880	250	83.722107	0.004204	11.847907	0.554999	0	3.112379	0	0	Free Surface	0.692479	0.379883	0.306439	0.094971	0.08636	0.832471	38.663225	1,759.51	Yes	0.103125	0.620209
SMN14655	SMH19200	SMH19201	675	86.134819	0.003854	60.239379	17.426971	0	14.38469	0	0	Free Surface	0.974253	0.229095	0.115116	0.154639	0.149999	0.942005	523.29217	9,511.86	Yes	0.156933	0.954118
SMN16905	SMH19199	SMH19200	380	98.506409	0.004873	51.074681	16.649972	0	11.226426	0	0	Free Surface	1.059758	0.440918	0.401743	0.167549	0.162831	0.946535	127.132764	7,701.01	No	0.167549	1.059758
SMN25214	SMH23880	SMH19200	250	11.46442	0.004187	11.969114	0.665999	0	3.115379	0	0	Free Surface	0.693406	0.382385	0.310221	0.095596	0.086817	0.830443	38.582591	1,760.68	Yes	0.132959	0.451115
SMN14656	SMH19201	SMH19202	675	95.374472	0.003921	60.430005	17.537971	0	14.413889	0	0	Free Surface	0.981043	0.228485	0.11449	0.154227	0.150242	0.949921	527.81812	9,523.03	No	0.154227	0.981043
PSMN_ALGO2	PMH_ALGO2	PMH_ALGO3	300	80.621951	0.003002	14.002256	0	0	3.829994	0	0	Free Surface	0.633921	0.350464	0.263583	0.105139	0.089262	0.728459	53.122741	1,615.92	No	0.105139	0.633921
PSMN_ALGO1	PMH_ALGO1	PMH_ALGO2	300	82.139959	0.002995	14.002256	0	0	3.829994	0	0	Free Surface	0.63347	0.350647	0.263881	0.105194	0.089262	0.727725	53.062751	1,615.92	No	0.105194	0.63347
SMN14637	SMH19198	SMH19199	380	91.92707	0.00458	50.8105	16.538973	0	11.172428	0	0	Free Surface	1.034352	0.447388	0.412254	0.170007	0.162391	0.915742	123.250433	7,680.84	Yes	0.188778	0.903429
PSMN_ALGO6	PMH_ALGO6	PMH_ALGO7	300	100.910823	0.003003	6.792058	0	0	1.749997	0	0	Free Surface	0.516223	0.241455	0.127835	0.072437	0.061579	0.727946	53.131477	738.08	No	0.072437	0.516223

Table below is for proposed pipe

ID	From ID	To ID	Diameter (mm)	Length (m)	Slope	Total Flow (L/s)	Unpeakable Flow (L/s)	Peakable Flow (L/s)	Coverage Flow (L/s)	Infiltration Flow (L/s)	Storm Flow (L/s)	Flow Type	Velocity (m/s)	d/D	q/Q	Water Depth (m)	Critical Depth (m)	Froude Number	Full Flow (L/s)	Coverage Count	Backwater Adjustment	Adjusted Depth (m)	Adjusted Velocity (m/s)
PSMN_ALGO1	PMH_ALGO1	PMH_ALGO2	300	82.139959	0.002995	14.002256	0	0	3.829994	0	0	Free Surface	0.63347	0.350647	0.263881	0.105194	0.089262	0.727725	53.062751	1,615.92	No	0.105194	0.63347
PSMN_ALGO2	PMH_ALGO2	PMH_ALGO3	300	80.621951	0.003002	14.002256	0	0	3.829994	0	0	Free Surface	0.633921	0.350464	0.263583	0.105139	0.089262	0.728459	53.122741	1,615.92	No	0.105139	0.633921
PSMN_ALGO3	PMH_ALGO3	PMH_ALGO4	300	112.296497	0.003001	14.002256	0	0	3.829994	0	0	Free Surface	0.633921	0.350464	0.263613	0.105139	0.089262	0.728459	53.116725	1,615.92	No	0.105139	0.633921
PSMN_ALGO7	PMH_ALGO7	PMH_ALGO4	300	92.931065	0.003002	6.792058	0	0	1.749997	0	0	Free Surface	0.516223	0.241455	0.127844	0.072437	0.061579	0.727946	53.127709	738.08	No	0.072437	0.516223
PSMN_ALGO6	PMH_ALGO6	PMH_ALGO7	300	100.910823	0.003003	6.792058	0	0	1.749997	0	0	Free Surface	0.516223	0.241455	0.127835	0.072437	0.061579	0.727946	53.131477	738.08	No	0.072437	0.516223
PSMN_ALGO4	PMH_ALGO4	PMH_ALGO5	300	147.174845	0.003003	19.695637	0	0	5.579991	0	0	Free Surface	0.69576	0.421509	0.37066	0.126453	0.106488	0.718488	53.136603	2,354.00	Yes	0.132162	0.656421
PSMN_ALGO5	PMH_ALGO5	SMH14287	300	91.762514	0.003008	30.495661	0	0	9.099985	0	0	Free Surface	0.777948	0.542908	0.573478	0.162872	0.133703	0.685692	53.176694	3,819.93	No	0.162872	0.777948

RSN	GISID	PROPTYPE	HOUSENUM	STREET	STRTYPE	STRDIR	UNITTYPE	UNIT	ADDRESS	ROLL	ZONING	LEGALDESC	FRONTAGE	DEPTH	Shape_Leng	Shape_Area	Precincts	TotalAreaH	
67024	40266	90	0	Harvester	Rd.				0000 Harvester Rd.	24020909090484000000	O2	CON 3 SDS PT LOT 4 RP 20R8361 PARTS 4,9,10			3327.36590829000	63448.05669910000	Existing Natural Open Space	6.34480566991	
66947	19501	10	5050	South Service	Rd.				5050 South Service Rd.	24020909090460000000	BC1	CON 3 SDS PT LOT 5 RP 20R5300 PART 2	153		8970.12908964999	533707.28268600000	Urban Employment	53.37072826860	16279
77943	19657	140	5125	Harvester	Rd.				5125 Harvester Rd.	24020909090480104813	GE1	HALT CONDO PLAN 212	0	0	8048.11188566000	405351.94021300000	General Employment	40.53519402130	12364
68003	20003	10	720	Oval	Crt.				720 Oval Crt.	24020909094040000000	MXE	PLAN M524 LOT 6			4781.39798120000	239450.52597900000	Fairview Frequent Transit Corridor	23.94505259790	7304
98017	63649	10	0	Burlington-Spcls					0000 Burlington-Spcls	24020808888881500000	S	RAILWAY (BRANT STREET TO BURLOAK DRIVE)	0	0	2639.93543394000	40109.70480770000		4.01097048077	
68001	19855	10	740	Oval	Crt.				740 Oval Crt.	24020909094020000000	MXE	PLAN M524 LOTS 4,5			3527.96979963000	152267.41174000000	Applyby GO Central	15.22674117400	4645
66943	44311	10	0	South Service	Rd.				0000 South Service Rd.	24020909090440000000	S	CON 3 SDS PT LOT 6			255.64313412000	3096.70395657000		0.30967039566	95
67356	14688	10	4415	Fairview	St.				4415 Fairview St.	24020909090640000000	H-MXC-414	PLAN 1496 PT BLK A RP 20R4212 PARTS 1,2,3			469.67355513400	36.27497398830		0.00362749740	2
98017	63649	10	0	Burlington-Spcls					0000 Burlington-Spcls	24020808888881500000	S	RAILWAY (BRANT STREET TO BURLOAK DRIVE)	0	0	878.11302544800	12061.14455270000		1.20611445527	
84842	54803	140	5090	Fairview	St.				5090 Fairview St.	24020909094950149599	MXG-345	HALT CONDO PLAN 435			2090.80905863000	64193.96031580000	Low to Mid-Rise Residential	10.62815222900	3242
84842	54803	140	5090	Fairview	St.				5090 Fairview St.	24020909094950149599	MXG-345	HALT CONDO PLAN 435			1591.26702261000	42087.56081560000	Mid-Rise Residential	10.62815222900	3242
																			47173





Traffic Zone	Population	Employment
1		3,535
2		2,544
3	5,351	6,563
4	670	320
5	2,449	2,935
6	-	1,254
7		1,027
Sub-Total (Build Out)	**8,471**	**18,176**

APPLEBY			
MTSA ZONES			
ZONE 1			
	Number of People	ADD (L/s)	MDD (L/s)
Population (Residential)	0	0.00	0.00
Employment	3535	9.21	20.71
Total	3535	9.21	20.71
ZONE 2			
Population (Residential)	0	0.00	0.00
Employment	2544	6.63	14.91
Total	2544	6.63	14.91
ZONE 3			
Population (Residential)	5351	15.79	35.53
Employment	6563	17.09	38.46
Total	11914	32.88	73.99
ZONE 4			
Population (Residential)	670	1.98	4.45
Employment	320	0.83	1.88
Total	990	2.81	6.32
ZONE 5			
Population (Residential)	2449	7.23	16.26
Employment	2935	7.64	17.20
Total	5384	14.87	33.46
ZONE 6			
Population (Residential)	0	0.00	0.00
Employment	1254	3.27	7.35
Total	1254	3.27	7.35
ZONE 7			
Population (Residential)	0	0.00	0.00
Employment	1027	2.67	6.02
Total	1027	2.67	6.02
	26648	**72.3**	**162.8**
Total Residential Population	**8470**		56.25
Total Employment	**18178**		106.51
Total intensification	**26648**		162.76

Flow Calculation

Res Flow= 255 L/cap/day

ICI Flow= 225 L/employee/day

MDD Peaking Factor = 2.25

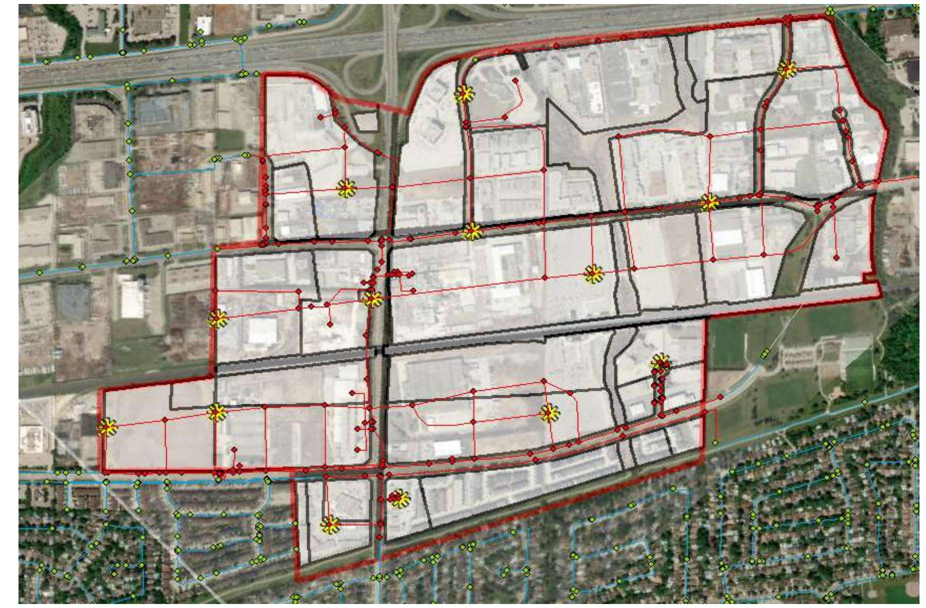
		Contributing Zones	Junction ID from Model	**ADD**	**MDD**
Node #1	Appleby Dem Node 1	1	WFT10333	2.30 L/s	5.18 L/s
Node #2	Appleby Dem Node 2	1	WFT10699	2.30 L/s	5.18 L/s
Node #3	Appleby Dem Node 3	7	WFT-PROP-3	2.67 L/s	6.02 L/s
Node #4	Appleby Dem Node 4	1, 2	WFT10836	4.51 L/s	10.15 L/s
Node #5	Appleby Dem Node 5	1, 2	WFT10562	4.51 L/s	10.15 L/s
Node #6	Appleby Dem Node 6	2	WFT-PROP-14	2.21 L/s	4.97 L/s
Node #7	Appleby Dem Node 7	6	WFT-PROP-16	1.63 L/s	3.67 L/s
Node #8	Appleby Dem Node 8	6	WFT-PROP-17	1.63 L/s	3.67 L/s
Node #9	Appleby Dem Node 9	5	WFT-PROP-18	7.44 L/s	16.73 L/s
Node #10	Appleby Dem Node 10	5	WFT-PROP-20	7.44 L/s	16.73 L/s
Node #11	Appleby Dem Node 11	4	WFT-PROP-30	2.81 L/s	6.32 L/s
Node #12	Appleby Dem Node 12	3	WFT17984	10.96 L/s	24.66 L/s
Node #13	Appleby Dem Node 13	3	WFT-PROP-29	10.96 L/s	24.66 L/s
Node #14	Appleby Dem Node 14	3	WSV49343	10.96 L/s	24.66 L/s
			subtotal	**72.3 L/s**	**162.8 L/s**

	ID (Char)	**Demand 7**	Demand 9
Node #6	WFT-PROP-14	0.00	4.97
Node #7	WFT-PROP-16	0.00	3.67
Node #8	WFT-PROP-17	0.00	3.67
Node #9	WFT-PROP-18	8.13	8.60
Node #10	WFT-PROP-20	8.13	8.60
Node #13	WFT-PROP-29	11.84	12.82
Node #3	WFT-PROP-3	0.00	6.02
Node #11	WFT-PROP-30	4.45	1.88
Node #1	WFT10333	0.00	5.18
Node #5	WFT10562	0.00	10.15
Node #2	WFT10699	0.00	5.18
Node #4	WFT10836	0.00	10.15
Node #12	WFT17984	11.84	12.82
Node #14	WSV49343	11.84	12.82
		56.25	**106.5**

The following table is for presentation in the map

New Demand Nodes	Residential Population	Employment Population	Total Population
Node #1	0	884	884
Node #2	0	884	884
Node #3	0	1027	1027
Node #4	0	1732	1732
Node #5	0	1732	1732
Node #6	0	848	848
Node #7	0	627	627
Node #8	0	627	627
Node #9	1225	1468	2692
Node #10	1225	1468	2692
Node #11	670	320	990
Node #12	1784	2188	3971
Node #13	1784	2188	3971
Node #14	1784	2188	3971
	8470	18178	26648
	56.24609375	106.5117188	

* 2031MDI	ID (Char)	Demand 1	Pattern 1 (	Demand 2	Pattern 2 (	Demand 3	Pattern 3 (	Demand 4	Pattern 4 (	Demand 5	Pattern 5 (	Demand 6	Pattern 6 (	Demand 7	Pattern 7 (	Demand 8	Pattern 8 (	Demand 9	Pattern 9 (	Demand 10 (lps)
	WCV117062			0				0						0		0		0		0
	WCV12465			0				0						0		0		0		0
	WCV12616							0						0		0		0		0
	WCV12617	0.1						0						0		0		0		0
	WCV12665							0						0		0		0		0
	WCV12666			0.2				0						0		0		0		0
	WCV12670							0						0		0		0		0
	WCV12671			0.2				0						0		0		0		0
	WCV12675	0.1						0						0		0		0		0
	WCV12676							0						0		0		0		0
	WCV12678							0						0		0		0		0
	WCV12679							0						0		0		0		0
	WCV12680							0						0		0		0		0
	WCV12681							0						0		0		0		0
	WCV12682			0				0						0		0		0		0
	WCV12683			0				0						0		0		0		0
	WCV12684							0						0		0		0		0
	WCV12685			0.4				0						0		0		0		0
	WCV12686	0		0.2				0						0		0		0		0
	WCV12687	0.1		0.1				0						0		0		0		0
	WCV12689			0				0						0		0		0		0
	WCV12740							0						0		0		0		0
	WCV12741							0						0		0		0		0
	WCV12743							0						0		0		0		0
	WCV12744							0						0		0		0		0
	WCV12745							0						0		0		0		0
	WCV12746							0						0		0		0		0
	WCV12749							0						0		0		0		0
	WCV13668			0.1				0						0		0		0		0
	WCV13865							0						0		0		0		0
	WCV13867							0						0		0		0		0
	WCV14084							0						0		0		0		0
	WCV14098							0						0		0		0		0
	WCV15897							0						0		0		0		0
	WCV200411			0				0						0		0		0		0
	WCV200811							0						0		0		0		0
	WCV4820							0						0		0		0		0
	WCV4824			0.4				0						0		0		0		0
	WCV4825							0						0		0		0		0
	WCV4826							0						0		0		0		0
	WCV4827							0						0		0		0		0
	WCV4828							0						0		0		0		0
	WCV4837							0						0		0		0		0
	WCV4838							0						0		0		0		0
	WCV4839							0						0		0		0		0
	WCV4840			0.2				0						0		0		0		0
	WCV4841			0				0						0		0		0		0
	WCV4842			0				0						0		0		0		0
	WCV4843							0						0		0		0		0
	WCV4844							0						0		0		0		0
	WCV4845							0						0		0		0		0
	WCV4846							0						0		0		0		0
	WCV4847							0						0		0		0		0
	WCV5021			0				0						0		0		0		0
	WCV5431			0.4				0						0		0		0		0
	WCV81206							0						0		0		0		0
	WCV81212							0						0		0		0		0
	WCV81269							0						0		0		0		0
	WFT-F-1069																			
	WFT-PROP-1																			
	WFT-PROP-10																			
	WFT-PROP-11																			
	WFT-PROP-12																			
	WFT-PROP-13																			
	WFT-PROP	16.1		0		0		0		0		0		0		0		0		0
	WFT-PROP-15																			
	WFT-PROP	49.7		0		0		0		0		0		0		0		0		0
	WFT-PROP	4		0		0		0		0		0		0		0		0		0
	WFT-PROP	10.2		0		0		0		0		0		0		0		0		0
	WFT-PROP-19																			
	WFT-PROP-2																			
	WFT-PROP	41.8		0		0		0		0		0		0		0		0		0
	WFT-PROP-21																			
	WFT-PROP-22																			
	WFT-PROP-23																			
	WFT-PROP-24																			
	WFT-PROP-25																			
	WFT-PROP-26																			
	WFT-PROP-28																			
	WFT-PROP	53.5		0		0		0		0		0		0		0		0		0
	WFT-PROP	20.8		0		0		0		0		0		0		0		0		0
	WFT-PROP	15.2		0		0		0		0		0		0		0		0		0
	WFT-PROP-31																			
	WFT-PROP-32																			
	WFT-PROP-35																			
	WFT-PROP-36																			
	WFT-PROP-37																			
	WFT-PROP-38																			
	WFT-PROP-5																			
	WFT-PROP-6																			
	WFT-PROP-7																			
	WFT-PROP-8																			
	WFT-PROP-9																			
	WFT10274							0						0		0		0		0
	WFT10280							0						0		0		0		0



* 2031MDD_APPLEBY_STRESS_TEST *

ID (Char)	Demand 1	Pattern 1 (	Demand 2	Pattern 2 (	Demand 3	Pattern 3 (	Demand 4	Pattern 4 (	Demand 5	Pattern 5 (	Demand 6	Pattern 6 (	Demand 7	Pattern 7 (	Demand 8	Pattern 8 (	Demand 9	Pattern 9 (	Demand 10 (lps)
WFT-PROP-14	16.1		0		0		0		0		0		0		0		0		0
WFT-PROP-16	49.7		0		0		0		0		0		0		0		0		0
WFT-PROP-17	4		0		0		0		0		0		0		0		0		0
WFT-PROP-18	10.2		0		0		0		0		0		0		0		0		0
WFT-PROP-20	41.8		0		0		0		0		0		0		0		0		0
WFT-PROP-29	53.5		0		0		0		0		0		0		0		0		0
WFT-PROP-3	20.8		0		0		0		0		0		0		0		0		0
WFT-PROP-30	15.2		0		0		0		0		0		0		0		0		0
WFT10333	22.8		0.1		0		0		0		0		0		0		0		0
WFT10562	19.6		0.1		0		0		0		0		0		0		0		0
WFT10699	51.5		0.1		0		0		0		0		0		0		0		0
WFT10836	34.1		0.2		0		0		0		0		0		0		0		0
WFT17984	0.1		0.1		16.4		0		0		0		0		0		0		0
WSV49343	23.6		0		0		0		0		0		0		0		0		0

WFT10285		0.1		0			0	0	0	0
WFT10286		0		0			0	0	0	0
WFT10305		0.2		0			0	0	0	0
WFT10333	22.8	0.1	0	0	0	0	0	0	0	0
WFT10339		0		0			0	0	0	0
WFT10345		0.2		0			0	0	0	0
WFT10364		0.1		0			0	0	0	0
WFT10367		0		0			0	0	0	0
WFT10375				0			0	0	0	0
WFT10383		0.6		0			0	0	0	0
WFT10388		0.1		0			0	0	0	0
WFT10395				0			0	0	0	0
WFT10421		0.6		0			0	0	0	0
WFT10435				0			0	0	0	0
WFT10444		0.1		0			0	0	0	0
WFT10448		0.4		0			0	0	0	0
WFT10449				0			0	0	0	0
WFT10451		0.2		0			0	0	0	0
WFT10472		0		0			0	0	0	0
WFT10495		0		0			0	0	0	0
WFT10502		0.2		0			0	0	0	0
WFT10506		0.1		0			0	0	0	0
WFT10511		0		0			0	0	0	0
WFT10556		0.2		0			0	0	0	0
WFT10562	19.6	0.1	0	0	0	0	0	0	0	0
WFT10619		0		0			0	0	0	0
WFT10622		0.1		0			0	0	0	0
WFT10693		0		0			0	0	0	0
WFT10699	51.5	0.1	0	0	0	0	0	0	0	0
WFT10720		0		0			0	0	0	0
WFT10724		0.3		0			0	0	0	0
WFT10743		0		0			0	0	0	0
WFT10750		0		0			0	0	0	0
WFT10777		0.5		0			0	0	0	0
WFT10790		0.1		0			0	0	0	0
WFT10804				0			0	0	0	0
WFT10810	0.1	0		0			0	0	0	0
WFT10833	0.1			0			0	0	0	0
WFT10836	34.1	0.2	0	0	0	0	0	0	0	0
WFT10851				0			0	0	0	0
WFT10853				0			0	0	0	0
WFT10858		0		0			0	0	0	0
WFT10860				0			0	0	0	0
WFT10888	0.1			0			0	0	0	0
WFT10921				0			0	0	0	0
WFT10938				0			0	0	0	0
WFT10944				0			0	0	0	0
WFT10957	0.2	0		0			0	0	0	0
WFT10965				0			0	0	0	0
WFT10967		0		0			0	0	0	0
WFT10972		28.3		0			0	0	0	0
WFT10978	0.2			0			0	0	0	0
WFT10981				0			0	0	0	0
WFT10990		0.2		0			0	0	0	0
WFT11005				0			0	0	0	0
WFT11016				0			0	0	0	0
WFT11032	0.3			0			0	0	0	0
WFT11036		0.1		0			0	0	0	0
WFT11105		0.5		0			0	0	0	0
WFT11130	0.4			0			0	0	0	0
WFT11134		0		0			0	0	0	0
WFT11205	0.1	0		0			0	0	0	0
WFT11234				0			0	0	0	0
WFT11244				0			0	0	0	0
WFT11247		0.3		0			0	0	0	0
WFT11289				0			0	0	0	0
WFT11296	0	0		0			0	0	0	0
WFT11305				0			0	0	0	0
WFT11315				0			0	0	0	0
WFT11339				0			0	0	0	0
WFT11341				0			0	0	0	0
WFT11349		0.5		0			0	0	0	0
WFT11387		0.5		0			0	0	0	0
WFT11505				0			0	0	0	0
WFT11517				0			0	0	0	0
WFT11529				0			0	0	0	0
WFT11549				0			0	0	0	0
WFT11557				0			0	0	0	0
WFT11578				0			0	0	0	0
WFT11582				0			0	0	0	0
WFT11610				0			0	0	0	0
WFT11669				0			0	0	0	0
WFT11708				0			0	0	0	0
WFT11756				0			0	0	0	0
WFT15208	0	0.2		0			0	0	0	0
WFT17889				0			0	0	0	0
WFT17894		0.1		0			0	0	0	0
WFT17912		0.4		0			0	0	0	0
WFT17928				0			0	0	0	0
WFT17940				0			0	0	0	0
WFT17941				0			0	0	0	0
WFT17944		28.3		0			0	0	0	0
WFT17950		0		0			0	0	0	0
WFT17956		0		0			0	0	0	0
WFT17965		0.2		0			0	0	0	0
WFT17966		0.3		0			0	0	0	0

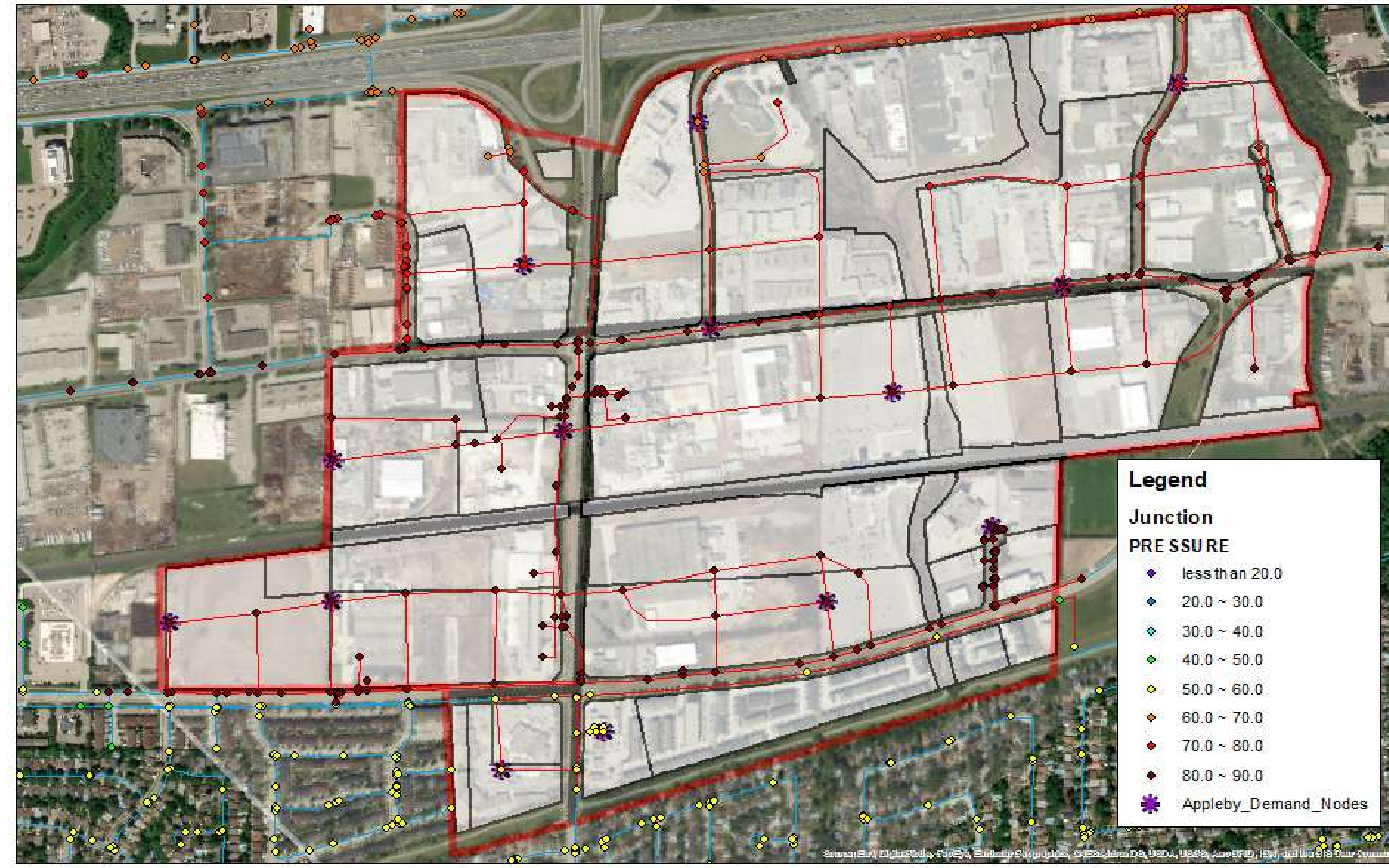
WFT17973		0.3		0			0	0	0	0
WFT17977				0			0	0	0	0
WFT17981				0			0	0	0	0
WFT17982	0	0.2		0			0	0	0	0
WFT17984	0.1	0.1	16.4	0	0	0	0	0	0	0
WFT17997		0.4		0			0	0	0	0
WFT18001				0			0	0	0	0
WFT187614		0		0			0	0	0	0
WFT19904		0		0			0	0	0	0
WFT19906				0			0	0	0	0
WFT19913				0			0	0	0	0
WFT19932				0			0	0	0	0
WFT19937				0			0	0	0	0
WFT19938				0			0	0	0	0
WFT19946		0		0			0	0	0	0
WFT19954		0		0			0	0	0	0
WFT19955				0			0	0	0	0
WFT19964				0			0	0	0	0
WFT19978				0			0	0	0	0
WFT20325	0	0.1		0			0	0	0	0
WFT222479		0		0			0	0	0	0
WFT22945				0			0	0	0	0
WFT246937				0			0	0	0	0
WFT246938		0		0			0	0	0	0
WFT246939				0			0	0	0	0
WFT24694	0.3	0		0			0	0	0	0
WFT256				0			0	0	0	0
WFT57570		0.1		0			0	0	0	0
WFT57571				0			0	0	0	0
WFT57572				0			0	0	0	0
WFT57573				0			0	0	0	0
WFT57574				0			0	0	0	0
WFT57575				0			0	0	0	0
WFT90256				0			0	0	0	0
WFT90257		0		0			0	0	0	0
WFT90258		0		0			0	0	0	0
WFT90259				0			0	0	0	0
WFT90260				0			0	0	0	0
WFT90261				0			0	0	0	0
WFT92249		0		0			0	0	0	0
WFT92250		1.6		0			0	0	0	0
WFT92254		0		0			0	0	0	0
WFT92263		0		0			0	0	0	0
WFT92266				0			0	0	0	0
WFT92406		0		0			0	0	0	0
WFT92636				0			0	0	0	0
WFT92637		1.6		0			0	0	0	0
WPV153				0			0	0	0	0
WSV224180		0		0			0	0	0	0
WSV49340				0			0	0	0	0
WSV49341		0.1		0			0	0	0	0
WSV49342				0			0	0	0	0
WSV49343	23.6	0	0	0	0	0	0	0	0	0
WSV49344				0			0	0	0	0
WSV49345				0			0	0	0	0
WSV49346				0			0	0	0	0
WSV49347				0			0	0	0	0
WSV49348				0			0	0	0	0
WSV49349		0		0			0	0	0	0
WSV49350				0			0	0	0	0
WSV49351				0			0	0	0	0
WSV49352				0			0	0	0	0
WSV49353				0			0	0	0	0
WSV82253				0			0	0	0	0

All junctions in service area

ID	Demand (L/s)	Elevation (m)	Head (m)	Pressure (psi)
WFT10699	5.2	116.9	165.4	69
WFT10720	0	116.2	165.4	69.9
WFT10724	0.4	116.1	165.4	70
WFT10777	0.5	115.3	165.4	71.1
WFT10836	10.2	108.7	165.3	80.5
WFT10851	0	114.8	165.5	72.1
WFT10853	0	117.7	165.6	68.1
WFT10858	0	117.1	165.6	69
WFT10860	0	108.4	165.3	80.8
WFT10921	0	108.1	165.2	81.1
WFT10967	0	108.3	165.2	80.9
WFT19932	0	116.1	165.4	70
WFT19946	0	115.2	165.5	71.5
WFT19955	0	108.1	165.2	81.1
WCV12670	0	108.6	165.2	80.5
WCV12679	0	107.1	163.9	80.7
WCV12680	0	107.2	163.9	80.6
WCV12681	0	106.9	163.7	80.6
WCV12684	0	107.2	164.1	80.9
WCV12676	0	108.4	165.1	80.6
WCV12671	0.2	106.3	165	83.3
WCV12682	0	107.4	164.9	81.7
WCV12683	0	107.2	164.9	82
WCV200811	0	108.7	165.2	80.3
WFT92249	0	113.1	165.5	74.5
WFT92406	0	113.9	165.5	73.3
WCV81212	0	113.7	165.5	73.7
WFT10938	0	108.8	165.2	80.1
WFT10944	0	108.7	165.1	80.3
WFT10965	0	107.8	165	81.3
WFT10972	28.3	106.8	163.5	80.6
WFT10981	0	107	163.9	80.8
WFT10990	0.2	107.4	164.9	81.7
WFT11005	0	107.3	164.9	81.8
WFT11016	0	107	164.9	82.2
WFT17928	0	117.5	165.6	68.4
WFT17940	0	106.6	163.5	80.9
WFT17941	0	106.4	163.9	81.7
WFT17944	28.3	106.1	163	81
WFT17950	0	107.6	164.9	81.5
WFT19964	0	107.5	164.9	81.6
WCV200411	0.1	108.2	165.3	81.2
WFT-PROP-1	0	115.8	165.6	70.8
WFT-PROP-2	0	116	165.5	70.4
WFT-PROP-3	6	115.5	165.5	71.1
WFT-PROP-5	0	111.5	165.4	76.7
WFT11036	0.2	108.3	165.4	81.1
WCV12666	0.2	111.2	165.5	77.2
WCV12689	0	109	165.5	80.4
WFT92636	0	109.5	165.5	79.6
WFT92637	1.7	109.5	165.5	79.6
WFT92250	1.7	113	165.5	74.6
WFT92254	0	112.8	165.5	74.9
WFT92263	0	114.8	165.5	72.2
WFT92266	0	114.8	165.5	72.2
WCV81206	0	109.3	165.5	80
WCV81269	0	114.2	165.5	73
WFT187614	0	113.4	165.5	74.2
WFT246938	0.1	108.7	165.5	80.7
WFT246939	0	108.9	165.5	80.5
WFT246937	0	109.2	165.5	80.1
WSV82253	0	114.3	165.5	72.9
WFT10367	0.1	109	165.6	80.5
WFT10375	0	118.2	166.7	69
WFT10388	0.1	115.4	165.5	71.2
WFT10395	0	116.8	165.6	69.4
WFT10421	0.6	107.6	165.6	82.4

Demand junctions/nodes

ID	Demand (L/s)	Elevation (m)	Head (m)	Pressure (psi)
WFT10836	10.2	108.7	165.3	80.5
WFT10699	5.2	116.9	165.4	69
WFT-PROP-3	6	115.5	165.5	71.1
WFT-PROP-14	5	106	165.4	84.4
WFT10562	10.2	108.8	165.5	80.5
WFT10333	5.2	116	165.6	70.5
WFT-PROP-16	3.7	105.9	164.9	83.8
WFT-PROP-17	3.7	106.5	164.9	83
WFT-PROP-29	24.7	102	164.2	88.4
WFT-PROP-30	6.3	99	135.9	52.4
WFT-PROP-20	16.7	101	164.3	90
WFT-PROP-18	16.7	102	164.3	88.5
WFT17984	24.7	99.7	135.9	51.4
WSV49343	24.7	102.7	163.9	87
	163			51.40
				77.18
				90.00



PROPOSED PIPES

ID	From Node	To Node	Length (m)	Diameter (mm)	Roughness	Flow (ML/d)	Flow (L/s)	Velocity (m/s)	Velocity (fps)	Headloss (r	HL/1000 (n	Status
WMN-PROP-P48	WFT-PROP-18	WFT-PROP-32	123.2	300	140	-0.4	-4.62963	0.1	0.33	0	0	Open
WMN-PROP-P30	WFT-PROP-18	WFT-PROP-19	147.7	300	140	-1	-11.5741	0.2	0.66	0	0.1	Open
WMN-PROP-P31	WFT-PROP-19	WFT-PROP-20	129.3	300	140	-0.9	-10.4167	0.2	0.66	0	0.1	Open
WMN-PROP-P32	WFT-PROP-20	WFT-PROP-21	126.2	300	140	-2	-23.1481	0.3	0.98	0	0.4	Open
WMN-PROP-P33	WFT-PROP-21	WFT-PROP-22	151.6	300	140	-1.7	-19.6759	0.3	0.98	0	0.3	Open
WMN-PROP-P34	WFT-PROP-22	WFT11134	110.9	300	140	-2.4	-27.7778	0.4	1.31	0.1	0.5	Open
WMN-PROP-P35	WFT-PROP-22	WFT-PROP-23	163	300	140	0.7	8.101852	0.1	0.33	0	0	Open
WMN-PROP-P36	WFT-PROP-21	WFT11505	170.8	300	140	-0.3	-3.47222	0.1	0.33	0	0	Open
WMN-PROP-P50	WFT-PROP-20	WFT-PROP-35	160.5	300	140	-0.4	-4.62963	0.1	0.33	0	0	Open
WMN-PROP-P49	WFT-PROP-19	WFT-F-1069	141.8	300	140	-0.1	-1.15741	0	0.00	0	0	Open
WMN-PROP-P47	WFT-PROP-31	WFT-PROP-30	125.2	300	140	1	11.57407	0.2	0.66	0	0.1	Open
WMN-PROP-P46	WFT-PROP-30	WFT203253	127.3	300	140	0.5	5.787037	0.1	0.33	0	0	Open
WMN-PROP-P37	WFT17956	WFT-PROP-24	158.3	300	140	1.2	13.88889	0.2	0.66	0	0.1	Open
WMN-PROP-P43	WFT-PROP-26	WFT-PROP-29	189.6	300	140	1.6	18.51852	0.3	0.98	0	0.3	Open
WMN-PROP-P38	WFT-PROP-24	WFT-PROP-25	180.3	300	140	1.5	17.36111	0.2	0.66	0	0.2	Open
WMN-PROP-P42	WFT17956	WFT-PROP-26	183.7	300	140	1.1	12.73148	0.2	0.66	0	0.1	Open
WMN-PROP-P44	WFT-PROP-25	WFT-PROP-29	83	250	110	0.5	5.787037	0.1	0.33	0	0.1	Open
WMN-PROP-P45	WFT-PROP-29	WFT-PROP-28	97.1	300	140	0	0	0	0.00	0	0	Open
WMN-PROP-P41	WFT-PROP-26	WFT11130	98.2	300	140	-0.8	-9.25926	0.1	0.33	0	0.1	Open
WMN-PROP-P39	WFT-PROP-25	WFT19954	72.7	300	140	1	11.57407	0.2	0.66	0	0.1	Open
WMN-PROP-P27	WFT-PROP-15	WFT-PROP-16	439.7	300	140	3.4	39.35185	0.6	1.97	0.4	1	Open
WMN-PROP-P20	WFT-PROP-15	WFT-PROP-14	121.7	300	140	-2.2	-25.463	0.4	1.31	0.1	0.4	Open
WMN-PROP-P21	WFT-PROP-14	WFT-PROP-13	104.4	300	140	-2.1	-24.3056	0.3	0.98	0	0.4	Open
WMN-PROP-P22	WFT-PROP-13	WFT-PROP-12	201.5	300	140	-1.7	-19.6759	0.3	0.98	0.1	0.3	Open
WMN-PROP-P23	WFT-PROP-12	WFT-PROP-11	127.7	300	140	-1.7	-19.6759	0.3	0.98	0	0.3	Open
WMN-PROP-P26	WFT-PROP-11	WCV13668	229.4	300	140	-1.3	-15.0463	0.2	0.66	0	0.2	Open
WMN-PROP-P9	WFT10724	WFT-PROP-6	300.5	300	140	0.6	6.944444	0.1	0.33	0	0	Open
WMN-PROP-P10	WFT-PROP-6	WCV12465	136.8	300	140	1.1	12.73148	0.2	0.66	0	0.1	Open
WMN-PROP-P17	WCV12465	WFT-PROP-15	147.8	300	140	1.2	13.88889	0.2	0.66	0	0.2	Open
WMN-PROP-P19	WFT10693	WFT-PROP-14	152.4	300	140	0.5	5.787037	0.1	0.33	0	0	Open

WFT10435	0	107.7	165.6	82.3
WFT10444	0.1	119.9	166.7	66.5
WFT10448	0.4	116.9	165.6	69.3
WFT10449	0	107.3	165.6	82.9
WFT10451	0.2	111.3	165.5	77.1
WFT10472	0.1	108	165.5	81.8
WFT10495	0.1	108.7	165.5	80.8
WFT10502	0.2	118	165.5	67.5
WFT10506	0.1	119.7	166.7	66.7
WFT10511	0.1	108.9	165.5	80.4
WFT10556	0.2	117.4	165.5	68.4
WFT10562	10.2	108.8	165.5	80.5
WFT10619	0	117.4	165.4	68.3
WFT10622	0.2	109.1	165.4	80.1
WFT10693	0	109.3	165.4	79.7
WFT10750	0.1	108.8	165.3	80.4
WFT10790	0.1	108.6	165.3	80.6
WCV5431	0.4	116.6	165.4	69.3
WFT17889	0	106.6	165.6	83.8
WFT19913	0	107.9	165.6	82
WCV13668	0.1	106.3	165.5	84.2
WCV4820	0	115.5	166.7	72.8
WCV4824	0.4	117.6	165.6	68.2
WCV4840	0.2	115.5	165.5	71.2
WCV4841	0	108.8	165.5	80.6
WCV4842	0	108.7	165.5	80.8
WCV4843	0	107	165.6	83.2
WCV4844	0	106.9	165.6	83.4
WCV4845	0	106.8	165.6	83.6
WCV4847	0	107.2	165.6	83
WCV12465	0	109.3	165.3	79.7
WFT90258	0.1	102.6	163.9	87.2
WSV49342	0	102.7	163.9	87
WSV49343	24.7	102.7	163.9	87
WFT222479	0.1	109	165.4	80.1
WCV117062	0	108.9	165.5	80.4
WFT17912	0.4	115.8	165.4	70.4
WFT-PROP-6	0	115	165.4	71.6
WFT-PROP-7	0	113	165.4	74.5
WFT-PROP-8	0	115	165.5	71.7
WFT-PROP-9	0	113.5	165.5	73.9
WFT-PROP-11	0	107	165.5	83.2
WFT-PROP-12	0	107	165.5	83.1
WFT-PROP-13	0	107	165.4	83
WFT-PROP-14	5	106	165.4	84.4
WFT-PROP-15	0	106	165.3	84.3
WFT10339	0.1	110.4	165.6	78.4
WFT10364	0.1	107.5	165.7	82.8
WFT10383	0.6	107.3	165.6	82.9
WFT19904	0.1	113.7	165.6	73.7
WFT19906	0	111.1	165.6	77.5
WCV4846	0	107.5	165.6	82.6
WCV5021	0.1	111.2	165.6	77.3
WFT-PROP-10	0	112.3	165.5	75.6
WFT10333	5.2	116	165.6	70.5
WFT10274	0	119.4	166.7	67.2
WFT10280	0	117.4	165.7	68.7
WFT10285	0.1	119	166.7	67.8
WFT10286	0	117.4	165.7	68.7
WFT10305	0.2	117.4	165.7	68.7
WFT10345	0.2	117	165.7	69.2
WCV4825	0	117.1	165.7	69.1
WCV4826	0	119.5	166.7	67
WCV4827	0	119.3	166.7	67.3
WCV4828	0	119.6	166.7	67
WCV4837	0	117.3	165.8	68.8
WCV4838	0	117.4	165.7	68.7
WCV4839	0	117.4	165.7	68.7
WFT17894	0.1	106.7	165.5	83.7

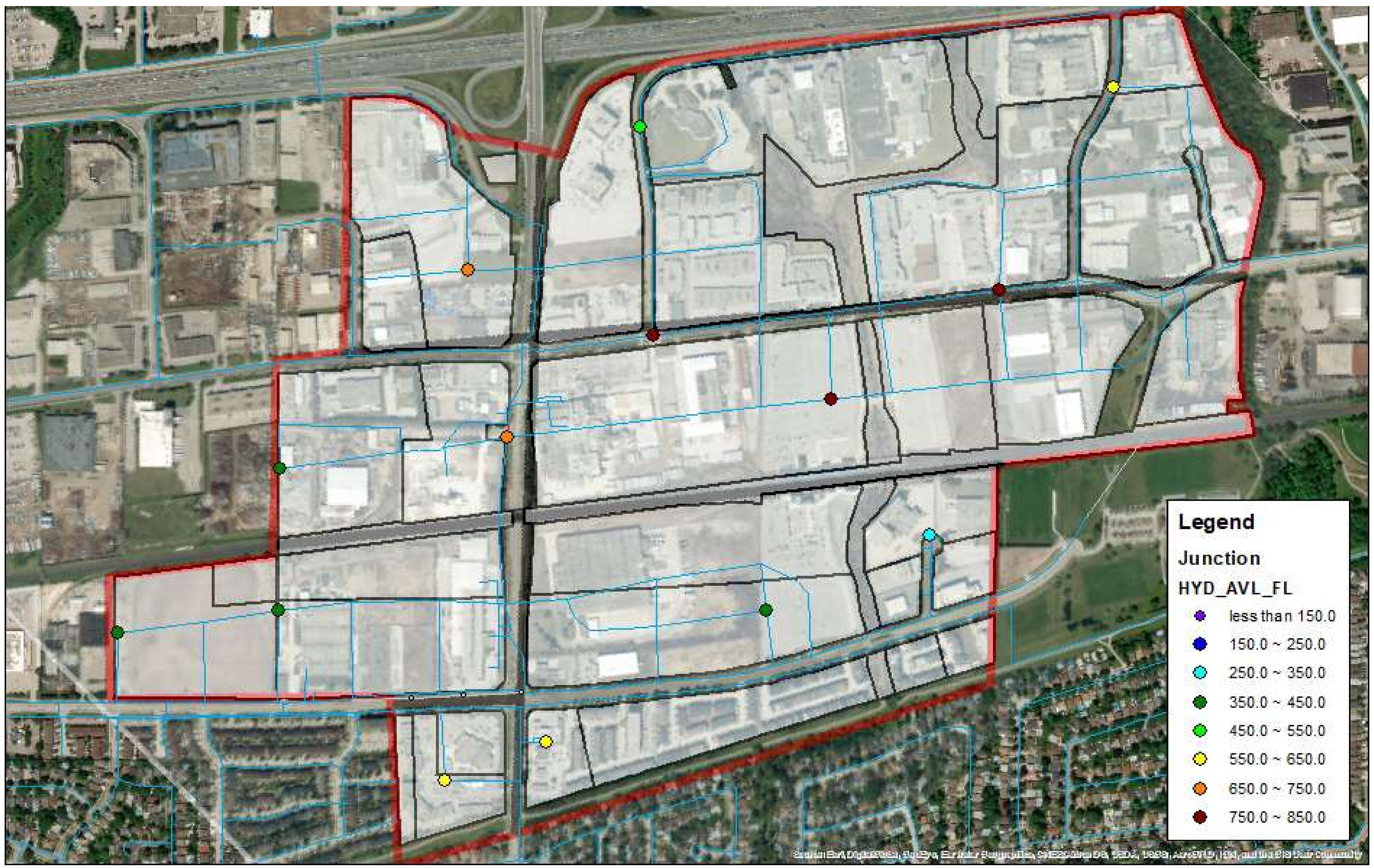
WMN-PROP-P18	WFT222479	WFT-PROP-13	153.4	300	140	0.4	4.62963	0.1	0.33	0	0	Open
WMN-PROP-P11	WFT222479	WFT-PROP-7	200.8	300	140	-1.2	-13.8889	0.2	0.66	0	0.1	Open
WMN-PROP-P12	WFT-PROP-7	WFT-PROP-8	235.3	300	140	-1.2	-13.8889	0.2	0.66	0	0.1	Open
WMN-PROP-P13	WFT-PROP-8	WFT10562	173.1	300	140	0.6	6.944444	0.1	0.33	0	0	Open
WMN-PROP-P24	WFT10562	WFT-PROP-12	157.6	300	140	-0.1	-1.15741	0	0.00	0	0	Open
WMN-PROP-P25	WFT10495	WFT-PROP-11	158.3	300	140	0.5	5.787037	0.1	0.33	0	0	Open
WMN-PROP-P14	WFT-PROP-8	WFT-PROP-9	127.2	300	140	-1.8	-20.8333	0.3	0.98	0	0.3	Open
WMN-PROP-P15	WFT-PROP-9	WFT-PROP-10	209.7	300	140	-1.2	-13.8889	0.2	0.66	0	0.1	Open
WMN-PROP-P16	WFT10333	WFT19904	238.7	300	140	0.6	6.944444	0.1	0.33	0	0	Open
WMN-PROP-P28	WFT-PROP-16	WFT11105	111.9	300	140	0.3	3.472222	0	0.00	0	0	Open
WMN2069	WFT11105	WFT17965	41.3	300	100	0.3	3.472222	0.1	0.33	0	0	Open
WMN-PROP-P54	WFT-PROP-38	WFT17965	32.4	300	110	-0.3	-3.47222	0.1	0.33	0	0	Open
WMN-F-1112	WFT-PROP-38	WFT-PROP-17	208	300	140	0.2	2.314815	0	0.00	0	0	Open
WMN-PROP-P52	WFT-PROP-37	WFT-PROP-36	208.6	250	110	0.1	1.157407	0	0.00	0	0	Open
WMN-PROP-P53	WFT-PROP-37	WFT-PROP-38	43.7	300	110	-0.1	-1.15741	0	0.00	0	0	Open
WMN-PROP-P51	WFT-PROP-36	WFT-PROP-17	75.3	300	140	0.1	1.157407	0	0.00	0	0	Open
WMN-PROP-P3	WFT-PROP-2	WFT-PROP-3	109.9	300	120	1.7	19.67593	0.3	0.98	0	0.4	Open
WMN-PROP-P4	WFT-PROP-3	WFT187614	199.8	300	120	-0.9	-10.4167	0.1	0.33	0	0.1	Open
WMN-PROP-P6	WFT-PROP-3	WFT-PROP-5	121.8	300	120	2.1	24.30556	0.3	0.98	0.1	0.5	Open
WMN-PROP-P2	WFT-PROP-2	WFT92263	213.6	300	120	0.3	3.472222	0.1	0.33	0	0	Open
WMN-PROP-P1	WFT-PROP-2	WFT-PROP-1	54	300	120	-2.1	-24.3056	0.3	0.98	0	0.5	Open
WMN-PROP-P7	WFT-PROP-5	WFT10777	196.5	300	140	2.1	24.30556	0.3	0.98	0.1	0.4	Open
WMN-PROP-P8	WFT10777	WFT-PROP-6	186.2	300	140	0.5	5.787037	0.1	0.33	0	0	Open
WMN-PROP-P40	WFT-PROP-24	WFT-PROP-26	81.6	300	140	-0.3	-3.47222	0	0.00	0	0	Open

WFT256	0	102.3	163.9	87.7
WFT10743	0	101.1	164	89.5
WFT10804	0	102	164	88.1
WFT10810	0.1	101.1	164	89.5
WFT10833	0.1	101.2	164	89.3
WFT10888	0.1	100	164.1	91
WFT19937	0	102.2	163.9	87.8
WFT19938	0	102.2	163.9	87.8
WFT57570	0.1	102.3	163.9	87.6
WFT57571	0	102.4	164	87.5
WFT57572	0	102.1	164	87.9
WFT57573	0	102.2	164	87.9
WFT57574	0	102.1	164	88
WFT57575	0	102.3	163.9	87.6
WCV12616	0	101.5	164	88.9
WCV12617	0.1	101.6	164	88.8
WCV12746	0	102.1	135.7	47.8
WFT90256	0	102.3	164	87.6
WFT90257	0	101.9	164	88.3
WFT90259	0	102.3	163.9	87.6
WFT90260	0	101.8	164	88.5
WFT90261	0	100.9	164	89.7
WSV49340	0	102.5	163.9	87.3
WSV49341	0.1	102.5	163.9	87.3
WSV49344	0	102.4	163.9	87.6
WSV49345	0	102.3	163.9	87.6
WSV49346	0	102.4	164	87.5
WSV49347	0	102.4	164	87.6
WSV49348	0	101.9	164	88.3
WSV49349	0	101.8	164	88.3
WSV49350	0	101.6	164	88.6
WSV49351	0	101.7	164	88.6
WSV49352	0	101.1	164	89.4
WSV49353	0	101.1	164	89.5
WFT10957	0.2	100.4	164.2	90.7
WFT10978	0.2	100.1	164.2	91.1
WFT11032	0.3	100	164.2	91.3
WFT19954	0	103.2	164.2	86.7
WCV12675	0.1	100.2	164.1	90.8
WCV12744	0	100.4	135.8	50.3
WCV12745	0	99.6	135.8	51.4
WFT-PROP-24	0	101	164.2	89.9
WFT-PROP-25	0	104	164.2	85.6
WFT-PROP-26	0	103	164.2	87
WFT-PROP-28	0	100	164.2	91.2
WFT-PROP-29	24.7	102	164.2	88.4
WFT11130	0.4	100.3	164.2	90.8
WFT11234	0	101.3	164.4	89.7
WFT11244	0	100.9	164.4	90.4
WFT11289	0	100.7	164.4	90.5
WFT11305	0	100.1	135.9	50.9
WFT11315	0	100.4	135.9	50.4
WFT11341	0	100.1	135.9	50.9
WFT11349	0.5	99.7	135.9	51.4
WFT11387	0.5	99	135.9	52.5
WFT11205	0.1	100.1	164.3	91.3
WFT11296	0.1	100.3	164.4	91.1
WFT19978	0	101.4	164.4	89.7
WCV12678	0	101.5	164.4	89.5
WCV12686	0.2	99.8	135.9	51.2
WCV12687	0.1	99.7	135.9	51.4
WFT246946	0.4	100.2	164.2	91
WCV13867	0	101.5	164.4	89.5
WCV12665	0	105.7	164.7	84
WCV13865	0	103.8	164.6	86.4
WCV12740	0	100.4	135.9	50.4
WCV12741	0	100.4	135.9	50.4
WCV12743	0	100.4	164.4	91
WFT152084	0.2	98.5	135.9	53.1

WFT203253	0.2	98.9	135.9	52.5
WSV224180	0	100.9	164.2	90.1
WFT11105	0.5	106.4	164.9	83.2
WFT11134	0	102	164.4	88.7
WFT11247	0.3	101.7	164.4	89.2
WFT11339	0	99.8	135.9	51.3
WFT17956	0	102.6	164.3	87.7
WFT17965	0.2	106.3	164.9	83.3
WFT17966	0.4	105.7	164.9	84.1
WFT17973	0.3	102.4	164.4	88.1
WFT17977	0	102.1	164.4	88.6
WFT17981	0	102.1	164.4	88.7
WFT17982	0.2	99.7	135.9	51.4
WFT17984	24.7	99.7	135.9	51.4
WFT-PROP-16	3.7	105.9	164.9	83.8
WFT-PROP-20	16.7	101	164.3	90
WFT-PROP-21	0	102	164.3	88.6
WFT-PROP-22	0	103	164.4	87.3
WFT-PROP-23	0	101	164.4	90.1
WFT-PROP-30	6.3	99	135.9	52.4
WFT-PROP-31	0	99.9	135.9	51.1
WFT-PROP-37	0	106.5	164.9	83
WFT-PROP-38	0	106.5	164.9	83
WFT-PROP-19	0	102	164.3	88.5
WFT11756	0	100.5	164.3	90.6
WFT-PROP-18	16.7	102	164.3	88.5
WFT-PROP-32	0	100.9	164.3	90.1
WFT11505	0	100.1	164.3	91.3
WFT11517	0	100.1	164.3	91.3
WFT11529	0	99.9	164.3	91.6
WFT11549	0	99.8	164.3	91.7
WCV12685	0.4	101	164.3	90
WFT17997	0.4	101.3	164.3	89.6
WFT18001	0	101.3	164.3	89.6
WFT11557	0	99.9	164.3	91.6
WFT11578	0	99.8	164.3	91.6
WFT11582	0	99.6	164.3	92
WCV12749	0	99.7	164.3	91.8
WCV14084	0	99.8	164.3	91.7
WCV14098	0	99.6	164.3	92
WPV153	0	99.6	164.3	91.9
WFT-PROP-35	0	100.5	164.3	90.7
WFT11669	0	100.2	164.3	91.1
WFT11610	0	100.1	164.3	91.2
WFT-F-1069	0	100.1	164.3	91.2
WFT11708	0	100.4	164.3	90.7
WFT22945	0	100.5	164.3	90.7
WCV15897	0	100.4	164.3	90.7
WFT-PROP-17	3.7	106.5	164.9	83
WFT-PROP-36	0	108.5	164.9	80.1
				47.80
				79.59
				92.00

ID	Total Demand (L/s)	Hydrant Available Flow (L/s)	Critical Node ID for Design Run	Critical Node Pressure at Available Flow (psi)	Critical Node Pressure at Fire Demand (psi)	Critical Pressure for Design Run (psi)	Hydrant Design Flow (L/s)	Hydrant Pressure at Design Flow (psi)
WFT-PROP-14	285	821.4	WFT10699	26.7	59.5	28.4	799.5	30.9
WFT-PROP-16	283.7	730.2	WFT-PROP-17	27.6	68.9	28.4	723.6	29.2
WFT-PROP-17	283.7	392.7	WFT-PROP-17	28.4	51	28.4	392.7	28.5
WFT-PROP-18	296.7	378.2	WFT-PROP-18	28.4	48.1	28.4	378.2	28.5
WFT-PROP-20	296.7	444.2	WFT-PROP-18	27.1	56.2	28.4	438.3	29.8
WFT-PROP-29	304.7	447.6	WFT-PROP-29	28.4	56.1	28.4	447.6	28.4
WFT-PROP-3	286	710.5	WFT-PROP-3	28.4	60.1	28.4	710.5	28.4
WFT-PROP-30	286.3	606.5	WFT-PROP-30	28.4	45.7	28.4	606.5	28.4
WFT10333	285.2	558.3	WFT10333	28.4	55.8	28.4	558.4	28.4
WFT10562	290.2	804.7	WFT10333	27.1	60.8	28.4	789.1	30.1
WFT10699	285.2	527.1	WFT10699	28.4	53.6	28.4	527.1	28.4
WFT10836	290.2	800.4	WFT10699	26.4	59.2	28.4	775.6	31
WFT17984	304.7	647.6	WFT17984	28.4	45.2	28.4	647.6	28.4
WSV49343	304.7	273.4	WSV49343	28.4	16.3	28.4	273.4	28.4

Lowest pressure is just under at available flow psi is 16.3 at 280 L/s



APPLEBY		
MTSA ZONES		
ZONE 1		
	Number of People	ADD (L/s)
Population (Residential)	0	0.00
Employment	3535	7.57
Total	3535	7.57
ZONE 2		
Population (Residential)	0	0.00
Employment	2544	5.45
Total	2544	5.45
ZONE 3		
Population (Residential)	5351	13.01
Employment	6563	14.05
Total	11914	27.06
ZONE 4		
Population (Residential)	670	1.63
Employment	320	0.69
Total	990	2.31
ZONE 5		
Population (Residential)	2449	5.95
Employment	2935	6.28
Total	5384	12.24
ZONE 6		
Population (Residential)	0	0.00
Employment	1254	2.69
Total	1254	2.69
ZONE 7		
Population (Residential)	0	0.00
Employment	1027	2.20
Total	1027	2.20
	26648	**59.5**
Total Residential Population	**8470**	
Total Employment	**18178**	
Total intensification	**26648**	

Flow Calculation

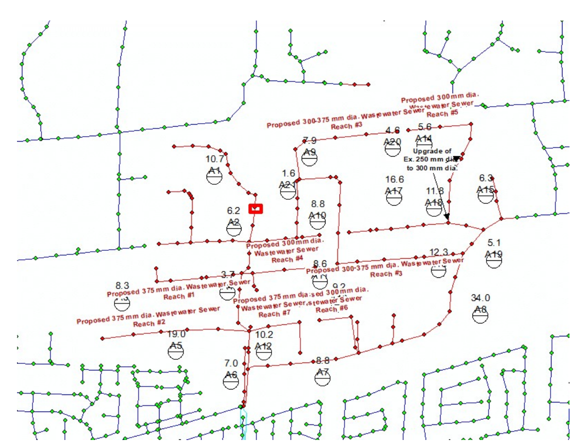
Res Flow= 210 L/cap/day — Put into model

ICI Flow= 185 L/employee/day

			Residential		**ICI**				
ZONE 1	Loading MH in Model	Area Split (%)	Avg Flow (L/s)	Pop	Avg Flow (L/s)	Pop			
	SMH8594	0.14	0.00	0.00	1.04	485.30		7.57	
	SMH8592	0.02	0.00	0.00	0.19	88.24			
	PMH3-4	0.14	0.00	0.00	1.04	485.30			
	PMH3-1	0.07	0.00	0.00	0.54	253.68			
	PMH5-1	0.09	0.00	0.00	0.66	308.83			
	SMH7349	0.10	0.00	0.00	0.74	347.43			
	SMH8600	0.26	0.00	0.00	1.96	915.46			
	SMH16352	0.18	0.00	0.00	1.39	650.75			
							3535.00		
ZONE 2	Loading MH in Model	Area Split (%)	Avg Flow (L/s)	Pop	Avg Flow (L/s)	Pop			
	PMH4-1	0.33	0.00	0.00	1.80	841.48		5.45	
	PMH3-12	0.47	0.00	0.00	2.58	1203.51			
	SMH19655	0.20	0.00	0.00	1.07	499.02			
ZONE 3	Loading MH in Model	Area Split (%)	Avg Flow (L/s)	Pop	Avg Flow (L/s)	Pop			
	SMH19670	0.25	3.25	1337.75	3.51	1640.75		5378.06	
	PMH7-1	0.25	3.25	1337.75	3.51	1640.75			
	PMH6-1	0.25	3.25	1337.75	3.51	1640.75			
	SMH19663	0.25	3.25	1337.75	3.51	1640.75	Move from node:		SMH19661
ZONE 4	Loading MH in Model	Area Split (%)	Avg Flow (L/s)	Pop	Avg Flow (L/s)	Pop			
	SMH11129	1.00	1.63	670.00	0.69	320.00		672.31	
ZONE 5	Loading MH in Model	Area Split (%)	Avg Flow (L/s)	Pop	Avg Flow (L/s)	Pop			
	PMH2-1	1.00	5.95	2449.00	6.28	2935.00		2461.24	
ZONE 6	Loading MH in Model	Area Split (%)	Avg Flow (L/s)	Pop	Avg Flow (L/s)	Pop			
	PMH1-1	0.50	0.00	0.00	1.34	627.00		2.69	
	PMH1-4	0.50	0.00	0.00	1.34	627.00			
ZONE 7	Loading MH in Model	Area Split (%)	Avg Flow (L/s)	Pop	Avg Flow (L/s)	Pop			
	SMH8586	0.63	0.00	0.00	1.39	650.23		2.20	
	SMH10861	0.37	0.00	0.00	0.81	376.77			

	0	0.19
	0	0.54
	0	0.66
	1.63	0.69
	0	0.74
	0	0.81
	0	1.04
	0	1.04
	0	1.07
	0	1.34
	0	1.34
	0	1.39
	0	1.39
	0	1.8
	0	1.96
	0	2.58
	3.25	3.51
	3.25	3.51
	3.25	3.51
	3.25	3.51
	5.95	6.28
59.48	20.58	38.9

ID (Char)	DIAMETER (Num)	RIM_ELEV (Num)	HEADLOSS (Num)	LOAD1 (Num)	TYPE1 (Num)	PATTERN1 (Char)	COVERAGE1 (Num)	LOAD2 (Num)	TYPE2 (Num)	PATTERN2 (Char)	COVERAGE2 (Num)	LOAD3 (Num)	TYPE3 (Num)	PATTERN3 (Char)	COVERAGE3 (Num)	LOAD4 (Num)	TYPE4 (Num)	PATTERN4 (Char)	COVERAGE4 (Num)	LOAD5 (Num)	TYPE5 (Num)	PATTERN5 (Char)	COVERAGE5 (Num)	LOAD6 (Num)	TYPE6 (Num)	PATTERN6 (Char)	COVERAGE6 (Num)	LOAD7 (Num)	TYPE7 (Num)	PATTERN7 (Char)	COVERAGE7 (Num)	LOAD8 (Num)	TYPE8 (Num)	PATTERN8 (Char)	COVERAGE8 (Num)	LOAD9 (Num)	TYPE9 (Num)
PMH1-1	1.2	107.5	0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	2: Peakable Coverage		0	0	0: Unpeakable		0	1.34	2: Peakable Coverage
SMH8602	1.2	102.337			2: Peakable Coverage			0.156269	2: Peakable Coverage		168	0.491	0: Unpeakable		0				0	0.009	2: Peakable Coverage		3.78	0.001	2: Peakable Coverage		0.29	0	0: Unpeakable		0	0			0	0	
SMH8601	1.2	108.888			2: Peakable Coverage			0.037332	2: Peakable Coverage		68	0.491	0: Unpeakable		0				0	0	2: Peakable Coverage		0	0	2: Peakable Coverage		0.11	0	0: Unpeakable		0	0			0	0	
PMH1-4	1.2	106.5	0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	2: Peakable Coverage		0	0	0: Unpeakable		0	1.34	2: Peakable Coverage
PMH1-5	1.2	106.5	0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable
SMH8600	1.2	109.318	0	0	2: Peakable Coverage		0	0.034127	2: Peakable Coverage		70	0.491	0: Unpeakable		0	0	0: Unpeakable		0	0	2: Peakable Coverage		0	0	2: Peakable Coverage		0.11	0	0: Unpeakable		0	0	0: Unpeakable		0	1.96	2: Peakable Coverage
SMH8599	1.2	108.606	0	0	2: Peakable Coverage		0	0.245363	2: Peakable Coverage		248	0.491	0: Unpeakable		0	0	0: Unpeakable		0	0	2: Peakable Coverage		0	0	2: Peakable Coverage		0.11	0	0: Unpeakable		0	0	0: Unpeakable		0	0	2: Peakable Coverage
SMH8598	1.2	108.749			2: Peakable Coverage				2: Peakable Coverage			0.491	0: Unpeakable		0				0	0	2: Peakable Coverage		0	0	2: Peakable Coverage		0.11	0	0: Unpeakable		0	0			0	0	
SMH8597	1.2	108.69			2: Peakable Coverage				2: Peakable Coverage			0.491	0: Unpeakable		0				0	0	2: Peakable Coverage		0	0	2: Peakable Coverage		0.11	0	0: Unpeakable		0	0			0	0	
SMH8596	1.2	108.328			2: Peakable Coverage				2: Peakable Coverage			0.491	0: Unpeakable		0				0	0	2: Peakable Coverage		0	0	2: Peakable Coverage		0.11	0	0: Unpeakable		0	0			0	0	
SMH8595	1.2	109.686	0	0	2: Peakable Coverage		0	0	2: Peakable Coverage		0	0.491	0: Unpeakable		0	0	0: Unpeakable		0	0	2: Peakable Coverage		0	0.002	2: Peakable Coverage		0.91	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable
PMH3-1	1.2	117.5	0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0.54	2: Peakable Coverage
SMH8594	1.2	110.956	0	0	2: Peakable Coverage		0	0.203068	2: Peakable Coverage		200	0.491	0: Unpeakable		0	0	0: Unpeakable		0	0	2: Peakable Coverage		0	0.002	2: Peakable Coverage		0.91	0	0: Unpeakable		0	0	0: Unpeakable		0	1.04	2: Peakable Coverage
SMH8593	1.2	113.742			2: Peakable Coverage			0.064568	2: Peakable Coverage		50	0.491	0: Unpeakable		0				0	0	2: Peakable Coverage		0	0.002	2: Peakable Coverage		0.91	0	0: Unpeakable		0	0			0	0	
PMH3-12	1.2	106.5	0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	2.58	0: Unpeakable
SMH8592	1.2	115.956	0	0	2: Peakable Coverage		0	1.097305	2: Peakable Coverage		696	0.491	0: Unpeakable		0	0	0: Unpeakable		0	0	2: Peakable Coverage		0	0.002	2: Peakable Coverage		0.91	0	0: Unpeakable		0	0	0: Unpeakable		0	0.19	2: Peakable Coverage
SMH8591	1.2	114.349	0	0	2: Peakable Coverage		0	0	2: Peakable Coverage		0	0.491	0: Unpeakable		0	0	0: Unpeakable		0	0	2: Peakable Coverage		0	0.002	2: Peakable Coverage		0.91	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable
SMH8590	1.2	116.384			2: Peakable Coverage				2: Peakable Coverage			0.491	0: Unpeakable		0				0	0	2: Peakable Coverage		0	0.002	2: Peakable Coverage		0.91	0	0: Unpeakable		0	0			0	0	
SMH8589	1.2	115.695			2: Peakable Coverage				2: Peakable Coverage			0.491	0: Unpeakable		0				0	0	2: Peakable Coverage		0	0.001	2: Peakable Coverage		0.27	0	0: Unpeakable		0	0			0	0	
SMH8588	1.2	116.626			2: Peakable Coverage			0.018183	2: Peakable Coverage		27	0.491	0: Unpeakable		0				0	0	2: Peakable Coverage		0	0.001	2: Peakable Coverage		0.27	0	0: Unpeakable		0	0			0	0	
SMH8587	1.2	117.156			2: Peakable Coverage				2: Peakable Coverage			0.491	0: Unpeakable		0				0	0	2: Peakable Coverage		0	0.001	2: Peakable Coverage		0.27	0	0: Unpeakable		0	0			0	0	
SMH8586	1.2	117.598	0	0	2: Peakable Coverage		0	0	2: Peakable Coverage		0	0.491	0: Unpeakable		0	0	0: Unpeakable		0	0	2: Peakable Coverage		0	0.001	2: Peakable Coverage		0.27	0	0: Unpeakable		0	0	0: Unpeakable		0	1.39	2: Peakable Coverage
PMH3-4	1.2	117.5	0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	1.04	2: Peakable Coverage
SMH8585	1.2	117.788			2: Peakable Coverage				2: Peakable Coverage			0.491	0: Unpeakable		0				0	0	2: Peakable Coverage		0	0.001	2: Peakable Coverage		0.27	0	0: Unpeakable		0	0			0	0	
SMH8584	1.2	117.892			2: Peakable Coverage				2: Peakable Coverage			0.491	0: Unpeakable		0				0	0	2: Peakable Coverage		0	0.001	2: Peakable Coverage		0.27	0	0: Unpeakable		0	0			0	0	
SMH8583	1.2	118.291			2: Peakable Coverage				2: Peakable Coverage			0.491	0: Unpeakable		0				0	0	2: Peakable Coverage		0	0.001	2: Peakable Coverage		0.27	0	0: Unpeakable		0	0			0	0	
SMH8581	1.2	118.676			2: Peakable Coverage				2: Peakable Coverage			0.491	0: Unpeakable		0				0	0	2: Peakable Coverage		0	0.001	2: Peakable Coverage		0.27	0	0: Unpeakable		0	0			0	0	
SMH7353	1.2	109.229			2: Peakable Coverage			0.682356	2: Peakable Coverage		91	0.491	0: Unpeakable		0				0	0	2: Peakable Coverage		0	0.001	2: Peakable Coverage		0.25	0	0: Unpeakable		0	0			0	0	
PMH4-1	1.2	106.5	0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	1.8	0: Unpeakable
SMH7352	1.2	107.774			2: Peakable Coverage			0.102154	2: Peakable Coverage		150	0.491	0: Unpeakable		0				0	0	2: Peakable Coverage		0	0.001	2: Peakable Coverage		0.25	0	0: Unpeakable		0	0			0	0	
PMH5-1	1.2	116.25	0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0.66	2: Peakable Coverage
SMH7351	1.2	110.444			2: Peakable Coverage			0.036494	2: Peakable Coverage		24	0.491	0: Unpeakable		0				0	0	2: Peakable Coverage		0	0.001	2: Peakable Coverage		0.25	0	0: Unpeakable		0	0			0	0	
SMH7350	1.2	108.579			2: Peakable Coverage			0.026126	2: Peakable Coverage		61	0.491	0: Unpeakable		0				0	0	2: Peakable Coverage		0	0.002	2: Peakable Coverage		0.91	0	0: Unpeakable		0	0			0	0	
SMH7349	1.2	113.284	0	0	2: Peakable Coverage		0	0.055089	2: Peakable Coverage		119	0.491	0: Unpeakable		0	0	0: Unpeakable		0	0	2: Peakable Coverage		0	0.001	2: Peakable Coverage		0.25	0	0: Unpeakable		0	0	0: Unpeakable		0	0.74	2: Peakable Coverage
SMH7348	1.2	108.64			2: Peakable Coverage			0.104421	2: Peakable Coverage		275	0.491	0: Unpeakable		0				0	0	2: Peakable Coverage		0	0	2: Peakable Coverage		0.11	0	0: Unpeakable		0	0			0	0	
SMH7347	1.2	110.272			2: Peakable Coverage			0.020101	2: Peakable Coverage		26	0.491	0: Unpeakable		0				0	0	2: Peakable Coverage		0	0.001	2: Peakable Coverage		0.25	0	0: Unpeakable		0	0			0	0	
SMH7346	1.2	108.842			2: Peakable Coverage			0.06921	2: Peakable Coverage		77	0.491	0: Unpeakable		0				0	0	2: Peakable Coverage		0	0	2: Peakable Coverage		0.11	0	0: Unpeakable		0	0			0	0	
SMH7345	1.2	113.869			2: Peakable Coverage			0.106408	2: Peakable Coverage		92	0.491	0: Unpeakable		0				0	0	2: Peakable Coverage		0	0.001	2: Peakable Coverage		0.25	0	0: Unpeakable		0	0			0	0	
SMH7344	1.2	109.094			2: Peakable Coverage			0.043236	2: Peakable Coverage		67	0.491	0: Unpeakable		0				0	0	2: Peakable Coverage		0	0	2: Peakable Coverage		0.11	0	0: Unpeakable		0	0			0	0	
SMH7342	1.2	114.934			2: Peakable Coverage			0.479888	2: Peakable Coverage		327	0.491	0: Unpeakable		0				0	0	2: Peakable Coverage		0	0.002	2: Peakable Coverage		0.91	0	0: Unpeakable		0	0			0	0	
SFT256750	1.2	101.092			2: Peakable Coverage				2: Peakable Coverage			0.491	0: Unpeakable		0				0	0.009	2: Peakable Coverage		3.78	0.001	2: Peakable Coverage		0.29	0	0: Unpeakable		0	0			0	0	
SFT327	1.2	104.302			2: Peakable Coverage				2: Peakable Coverage			0.491	0: Unpeakable		0				0	0	2: Peakable Coverage		0	0	2: Peakable Coverage		0.11	0	0: Unpeakable		0	0			0	0	
SMH10660	1.2	118.431			2: Peakable Coverage			0.064553	2: Peakable Coverage		34	0.491	0: Unpeakable		0				0	0	2: Peakable Coverage		0	0.001	2: Peakable Coverage		0.27	0	0: Unpeakable		0	0			0	0	
SMH10716	1.2	114.589			2: Peakable Coverage			0.05308	2: Peakable Coverage		204	0.491	0: Unpeakable		0				0	0	2: Peakable Coverage		0	0.001	2: Peakable Coverage		0.27	0	0: Unpeakable		0	0			0	0	
SMH10743	1.2	115.063			2: Peakable Coverage				2: Peakable Coverage			0.491	0: Unpeakable		0				0	0	2: Peakable Coverage		0	0.001	2: Peakable Coverage		0.27	0	0: Unpeakable		0	0			0	0	
SMH10777	1.2	114.707			2: Peakable Coverage			1.687306	2: Peakable Coverage		39	0.491	0: Unpeakable		0				0	0	2: Peakable Coverage		0	0.001	2: Peakable Coverage		0.27	0	0: Unpeakable		0	0			0	0	
SMH10795	1.2	108.74			2: Peakable Coverage			0.193494	2: Peakable Coverage		448	0.491	0: Unpeakable		0				0	0	2: Peakable Coverage		0	0.001	2: Peakable Coverage		0.51	0	0: Unpeakable		0	0			0	0	
SMH10799	1.2	113.904			2: Peakable Coverage			0.045793	2: Peakable Coverage		91	0.491	0: Unpeakable		0				0	0	2: Peakable Coverage		0	0.001	2: Peakable Coverage		0.27	0	0: Unpeakable		0	0			0	0	
SMH10821	1.2	111.327			2: Peakable Coverage				2: Peakable Coverage			0.491	0: Unpeakable		0				0	0	2: Peakable Coverage		0	0.001	2: Peakable Coverage		0.27	0	0: Unpeakable		0	0			0	0	
SMH10826	1.2	108.668			2: Peakable Coverage			0.043026	2: Peakable Coverage		88	0.491	0: Unpeakable		0				0	0	2: Peakable Coverage		0	0.001	2: Peakable Coverage		0.51	0	0: Unpeakable		0	0			0	0	
SMH10843	1.2	108.72			2: Peakable Coverage			0.072811	2: Peakable Coverage		60	0.491	0: Unpeakable		0				0	0	2: Peakable Coverage		0	0.001	2: Peakable Coverage		0.51	0	0: Unpeakable		0	0			0	0	
SMH10861	1.2	108.546	0	0	2: Peakable Coverage		0	0.168929	2: Peakable Coverage		23	0.491	0: Unpeakable		0	0	0: Unpeakable		0	0	2: Peakable Coverage		0	0.001	2: Peakable Coverage		0.27	0	0: Unpeakable		0	0	0: Unpeakable		0	0.81	2: Peakable Coverage
SMH10879	1.2	108.439			2: Peakable Coverage			0.038318	2: Peakable Coverage		98	0.491	0: Unpeakable		0				0	0	2: Peakable Coverage		0	0.001	2: Peakable Coverage		0.27	0	0: Unpeakable		0	0			0	0	
SMH10899	1.2	108.203			2: Peakable Coverage			0.199224	2: Peakable Coverage		37	0.491	0: Unpeakable		0				0	0	2: Peakable Coverage		0	0.001	2: Peakable Coverage		0.27	0	0: Unpeakable		0	0			0	0	
SMH10906	1.2	111.35			2: Peakable Coverage				2: Peakable Coverage			0.491	0: Unpeakable		0				0	0	2: Peakable Coverage		0	0.002	2: Peakable Coverage		0.91	0	0: Unpeakable		0	0			0	0	
SMH10935	1.2	108.61			2: Peakable Coverage				2: Peakable Coverage			0.491	0: Unpeakable		0				0	0	2: Peakable Coverage		0	0.001	2: Peakable Coverage		0.51	0	0: Unpeakable		0	0			0	0	
SMH10955	1.2	107.793			2: Peakable Coverage			0.007126	2: Peakable Coverage		42	0.491	0: Unpeakable		0				0	0	2: Peakable Coverage		0	0	2: Peakable Coverage		0.11	0	0: Unpeakable		0	0			0	0	
SMH10965	1.2	108.079			2: Peakable Coverage			0.178309	2: Peakable Coverage		49	0.491	0: Unpeakable		0				0	0	2: Peakable Coverage		0	0	2: Peakable Coverage		0.11	0	0: Unpeakable		0	0			0	0	
SMH10988	1.2	105.506			2: Peakable Coverage			0.356238	2: Peakable Coverage		111	0.491	0: Unpeakable		0				0	0	2: Peakable Coverage		0	0.001	2: Peakable Coverage		0.51	0	0: Unpeakable		0	0			0	0	
SMH10990	1.2	104.34			2: Peakable Coverage				2: Peakable Coverage			0.491	0: Unpeakable		0				0	0	2: Peakable Coverage		0	0	2: Peakable Coverage		0.11	0	0: Unpeakable		0	0			0	0	
SMH11003	1.2	104.645			2: Peakable Coverage			29.621903	2: Peakable Coverage		296	0.491	0: Unpeakable		0				0	0	2: Peakable Coverage		0	0	2: Peakable Coverage		0.11	0	0: Unpeakable		0	0			0	0	
SMH11007	1.2	104.125			2: Peakable Coverage				2: Peakable Coverage			0.491	0: Unpeakable		0				0	0	2: Peakable Coverage		0	0.001	2: Peakable Coverage		0.51	0	0: Unpeakable		0	0			0	0	
SMH11018	1.2	104.858			2: Peakable Coverage				2: Peakable Coverage			0.491	0: Unpeakable		0				0	0	2: Peakable Coverage		0	0	2: Peakable Coverage		0.11	0	0: Unpeakable		0	0			0	0	
SMH11028	1.2	104.624			2: Peakable Coverage				2: Peakable Coverage			0.491	0: Unpeakable		0				0	0	2: Peakable Coverage		0	0.002	2: Peakable Coverage		0.86	0	0: Unpeakable		0	0			0	0	
SMH11046	1.2	101.871			2: Peakable Coverage				2: Peakable Coverage			0.491	0: Unpeakable		0				0	0	2: Peakable Coverage		0	0.002	2: Peakable Coverage		0.86	0	0: Unpeakable		0	0			0	0	
SMH11061	1.2	101.265			2: Peakable Coverage				2: Peakable Coverage			0.491	0: Unpeakable		0				0	0.009	2: Peakable Coverage		3.78	0.001	2: Peakable Coverage		0.29	0	0: Unpeakable		0	0			0	0	
SMH11064	1.2	101.444			2: Peakable Coverage			0.248919	2: Peakable Coverage		151	0.491	0: Unpeakable		0				0	0.009	2: Peakable Coverage		3.78	0.001	2: Peakable Coverage		0.29	0	0: Unpeakable		0	0			0	0	
SMH11086	1.2	101.074			2: Peakable Coverage				2: Peakable Coverage			0.491	0: Unpeakable		0				0	0.009	2: Peakable Coverage		3.78	0.001	2: Peakable Coverage		0.29	0	0: Unpeakable		0	0			0	0	
SMH11102	1.2	100.83			2: Peakable Coverage				2: Peakable Coverage			0.491	0: Unpeakable		0				0	0.009	2: Peakable Coverage		3.78	0.001	2: Peakable Coverage		0.29	0	0: Unpeakable		0	0			0	0	
SMH11116	1.2	100.673			2: Peakable Coverage				2: Peakable Coverage			0.491	0: Unpeakable		0				0	0.009	2: Peakable Coverage		3.78	0.001	2: Peakable Coverage		0.29	0	0: Unpeakable		0	0			0	0	
SMH7341	1.2	115.545			2: Peakable Coverage				2: Peakable Coverage			0.491	0: Unpeakable		0				0	0	2: Peakable Coverage		0	0.002	2: Peakable Coverage		0.91	0	0: Unpeakable		0	0			0	0	
SMH11161	1.2	98.944	0	0	2: Peakable Coverage		0	0	2: Peakable Coverage		0	0.491	0: Unpeakable		0	0	0: Unpeakable		0	0.009	2: Peakable Coverage		3.78	0.001	2: Peakable Coverage		0.29	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable
SMH16352	1.2	115.825	0	0	2: Peakable Coverage		0	0.381771	2: Peakable Coverage		256	0.491	0: Unpeakable		0	0	0: Unpeakable		0	0	2: Peakable Coverage		0	0.001	2: Peakable Coverage		0.25	0	0: Unpeakable		0	0	0: Unpeakable		0	1.39	2: Peakable Coverage
SMH16594	1.2	103.674			2: Peakable Coverage			0.016059	2: Peakable Coverage		230	0.491	0: Unpeakable		0				0	0.009	2: Peakable Coverage		3.78	0.001	2: Peakable Coverage		0.29	0	0: Unpeakable		0	0			0	0	
SMH16595	1.2	101.565			2: Peakable Coverage				2: Peakable Coverage			0.491	0: Unpeakable		0				0	0.009	2: Peakable Coverage		3.78	0.001	2: Peakable Coverage		0.29	0	0: Unpeakable		0	0			0	0	
SMH17975	1.2	98.758			2: Peakable Coverage				2: Peakable Coverage			0.491	0: Unpeakable		0				0	0.009	2: Peakable Coverage		3.78	0.001	2: Peakable Coverage		0.29	0	0: Unpeakable		0	0			0	0	
SMH17976	1.2	100.275		0.130891	2: Peakable Coverage		86		2: Peakable Coverage			0.491	0: Unpeakable		0				0	0.009	2: Peakable Coverage		3.78	0.001	2: Peakable Coverage		0.29	0	0: Unpeakable		0	0			0	0	
SMH19651	1.2	98.7	0		2: Peakable Coverage				2: Peakable Coverage			0.491	0: Unpeakable		0				0	0.001	2: Peakable Coverage		0.55	0	2: Peakable Coverage		0.05	0	0: Unpeakable		0	0			0	0	
SMH19652	1.2	100.155		0.021952	2: Peakable Coverage		16	0.379981	2: Peakable Coverage		90	0.491	0: Unpeakable		0				0	0.009	2: Peakable Coverage		3.78	0.001	2: Peakable Coverage		0.29	0	0: Unpeakable		0	0			0	0	
SMH19653	1.2	100.417		0.199551	2: Peakable Coverage		147	0.020853	2: Peakable Coverage		22	0.491	0: Unpeakable		0				0	0.009	2: Peakable Coverage		3.78	0.001	2: Peakable Coverage		0.29	0	0: Unpeakable		0	0			0	0	
SMH19654	1.2	107.088			2: Peakable Coverage				2: Peakable Coverage			0.491	0: Unpeakable		0				0	0	2: Peakable Coverage		0	0.001	2: Peakable Coverage		0.25	0	0: Unpeakable		0	0			0	0	
SMH19655	1.2	107.626	0	0	2: Peakable Coverage		0	0	2: Peakable Coverage		0	0.491	0: Unpeakable		0	0	0: Unpeakable		0	0	2: Peakable Coverage		0	0.001	2: Peakable Coverage		0.25	0	0: Unpeakable		0	0	0: Unpeakable		0	1.07	2: Peakable Coverage
SMH19656	1.2	107.373			2: Peakable Coverage				2: Peakable Coverage			0.491	0: Unpeakable		0				0	0	2: Peakable Coverage		0	0	2: Peakable Coverage		0.11	0	0: Unpeakable		0	0			0	0	
SMH19659	1.2	106.843			2: Peakable Coverage				2: Peakable Coverage			0.491	0: Unpeakable		0				0	0	2: Peakable Coverage		0	0	2: Peakable Coverage		0.11	0	0: Unpeakable		0	0			0	0	
SMH19660	1.2	105.258			2: Peakable Coverage				2: Peakable Coverage			0.491	0: Unpeakable		0				0	0	2: Peakable Coverage		0	0	2: Peakable Coverage		0.11	0	0: Unpeakable		0	0			0	0	
SMH19661	1.2	104.251	0	0	2: Peakable Coverage		0	0	2: Peakable Coverage		0	0.491	0: Unpeakable		0	0	0: Unpeakable		0	0	2: Peakable Coverage		0	0	2: Peakable Coverage		0.13	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable
SMH19662	1.2	100.777			2: Peakable Coverage				2: Peakable Coverage			0.491	0: Unpeakable		0				0	0.009	2: Peakable Coverage		3.78	0.001	2: Peakable Coverage		0.29	0	0: Unpeakable		0	0			0	0	
SMH7324	1.2	122.883			2: Peakable Coverage			0.040401	2: Peakable Coverage		83	0.548	0: Unpeakable		0				0	0	2: Peakable Coverage		0	0.001	2: Peakable Coverage		0.24	0	0: Unpeakable		0	0			0	0	
SMH19664	1.2	102.867			2: Peakable Coverage				2: Peakable Coverage			0.491	0: Unpeakable		0				0	0	2: Peakable Coverage		0	0	2: Peakable Coverage		0.13	0	0: Unpeakable		0	0			0	0	
SMH19665	1.2	103.462			2: Peakable Coverage				2: Peakable Coverage			0.491	0: Unpeakable		0				0	0	2: Peakable Coverage		0	0	2: Peakable Coverage		0.13	0	0: Unpeakable		0	0			0	0	
SMH19666	1.2	100.076			2: Peakable Coverage				2: Peakable Coverage			0.491	0: Unpeakable		0				0	0.009	2: Peakable Coverage		3.78	0.001	2: Peakable Coverage		0.29	0	0: Unpeakable		0	0			0	0	
SMH19667	1.2	100.068		0.027523	2: Peakable Coverage		18	0.028384	2: Peakable Coverage		15	0.491	0: Unpeakable		0				0	0.009	2: Peakable Coverage		3.78	0.001	2: Peakable Coverage		0.29	0	0: Unpeakable		0	0			0	0	
SMH19668	1.2	100.399		0.415941	2: Peakable Coverage		259	0.019054	2: Peakable Coverage		38	0.491	0: Unpeakable		0				0	0.009	2: Peakable Coverage		3.78	0.001	2: Peakable Coverage		0.29	0	0: Unpeakable		0	0			0	0	
SMH19669	1.2	100.354		0.115322	2: Peakable Coverage		73	0.347913	2: Peakable Coverage		434	0.491	0: Unpeakable		0				0	0.009	2: Peakable Coverage		3.78	0.001	2: Peakable Coverage		0.29	0	0: Unpeakable		0	0			0	0	
SMH7321	1.2	122.709			2: Peakable Coverage			0.093221	2: Peakable Coverage		140	0.548	0: Unpeakable		0				0	0	2: Peakable Coverage		0	0.001	2: Peakable Coverage		0.24	0	0: Unpeakable		0	0			0	0	
SMH22952	1.2	114.829			2: Peakable Coverage				2: Peakable Coverage			0.491	0: Unpeakable		0				0	0	2: Peakable Coverage		0	0.001	2: Peakable Coverage		0.27	0	0: Unpeakable		0	0			0	0	
SMH22954	1.2	114.708			2: Peakable Coverage				2: Peakable Coverage			0.491	0: Unpeakable		0				0	0	2: Peakable Coverage		0	0.001	2: Peakable Coverage		0.27	0	0: Unpeakable		0	0			0	0	
SMH25559	1.2	108.884			2: Peakable Coverage				2: Peakable Coverage			0.491	0: Unpeakable		0				0	0	2: Peakable Coverage		0	0	2: Peakable Coverage		0.11	0	0: Unpeakable		0	0			0	0	
SMH8603	1.2	101.658			2: Peakable Coverage			0.014984	2: Peakable Coverage		30	0.491	0: Unpeakable		0				0	0.009	2: Peakable Coverage		3.78	0.001	2: Peakable Coverage		0.29	0	0: Unpeakable		0	0			0	0	
SMH11129	1.2	100.15	0	0	2: Peakable Coverage		0	0	2: Peakable Coverage		0	0.491	0: Unpeakable		0	0	0: Unpeakable		0	0.009	2: Peakable Coverage		3.78	0.001	2: Peakable Coverage		0.29	1.63	2: Peakable Coverage		670	0	0: Unpeakable		0	0.69	2: Peakable Coverage
SMH19663	1.2	101.816	0	0	2: Peakable Coverage		0	0	2: Peakable Coverage		0	0.491	0: Unpeakable		0	0	0: Unpeakable		0	0	2: Peakable Coverage		0	0	2: Peakable Coverage		0.13	3.25	2: Peakable Coverage		1,337.75	0	0: Unpeakable		0	3.51	2: Peakable Coverage
SMH19670	1.2	100.514	0	0.361835	2: Peakable Coverage		218	0	2: Peakable Coverage		0	0.491	0: Unpeakable		0	0	0: Unpeakable		0	0.009	2: Peakable Coverage		3.78	0.001	2: Peakable Coverage		0.29	3.25	2: Peakable Coverage		1,337.75	0	0: Unpeakable		0	3.51	2: Peakable Coverage
PMH6-1	1.2	105	0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	3.25	2: Peakable Coverage		1,337.75	0	0: Unpeakable		0	3.51	2: Peakable Coverage
PMH7-1	1.2	101	0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	3.25	2: Peakable Coverage		1,337.75	0	0: Unpeakable		0	3.51	2: Peakable Coverage
PMH2-1	1.2	101.75	0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	5.95	2: Peakable Coverage		2,449.00	0	0: Unpeakable		0	6.28	2: Peakable Coverage
PMH6-2	1.2	104																																			
PMH7-2	1.2	102																																			
PMH5-4	1.2	116.5																																			
PMH5-3	1.2	117																																			
PMH5-2	1.2	118																																			
PMH4-2	1.2	105.75																																			
PMH3-9	1.2	116																																			
PMH3-8	1.2	116																																			
PMH3-7	1.2	116																																			
PMH3-6	1.2	116																																			
PMH3-5	1.2	117																																			
PMH7-3	1.2	102.75																																			
PMH3-2	1.2	118																																			
PMH3-17	1.2	107																																			
PMH3-16	1.2	106.75																																			
PMH3-15	1.2	107																																			
PMH3-14	1.2	106.75																																			
PMH3-13	1.2	106																																			
PMH3-11	1.2	109																																			
PMH3-10	1.2	113.5																																			
PMH2-5	1.2	102.5																																			
PMH2-4	1.2	101.5																																			
PMH2-3	1.2	102.5																																			
PMH2-2	1.2	101.75																																			
PMH6-3	1.2	101																																			
PMH1-6	1.2	106.25																																			
PMH1-3	1.2	106.5																																			
PMH1-2	1.2	106.5																																			
PMH3-3	1.2	117																																			
				1.273015				37.903348				46.268				0												20.58				0				38.9	
																												59.48									



PATTERN9 (Char)	COVERAGE9 (Num)	LOAD10 (Num)	TYPE10 (Num)	PATTERN10 (Char)	COVERAGE10 (Num)	SWS_AREA (Num)	SWS_RUNOFF (Num)	SWS_SLOPE (Num)	SWS_LEN (Num)	HYETOGRAPH (Char)	HYDROGRAPH (Char)	SWS_PERIMP (Num)	SWS_PERV (Num)	SWS_IMPERV (Num)	SWS_INFIL1 (Num)	SWS_INFIL2 (Num)	SWS_DECAY (Num)	SWS_REGEN (Num)	SWS_TOC (Num)
	627	0			0	0	0	0	0			0.75	0.01	0.01	3	0.1	0.001	0.0001	0
	0	0			0														
	0	0			0														
	627	0			0	0	0	0	0			0.75	0.01	0.01	3	0.1	0.001	0.0001	0
	0	0			0	0	0	0	0			0.75	0.01	0.01	3	0.1	0.001	0.0001	0
	915.46	0			0	0	0	0	0			0	0	0	0	0	0	0	0
	0	0			0	0	0	0	0			0	0	0	0	0	0	0	0
	0	0			0														
	0	0			0														
	0	0			0														
	0	0			0	0	0	0	0			0	0	0	0	0	0	0	0
	253.68	0			0	0	0	0	0			0.75	0.01	0.01	3	0.1	0.001	0.0001	0
	485.3	0			0	0	0	0	0			0	0	0	0	0	0	0	0
	0	0			0														
	1,203.51	0			0	0	0	0	0			0.75	0.01	0.01	3	0.1	0.001	0.0001	0
	88.24	0			0	0	0	0	0			0	0	0	0	0	0	0	0
	0	0			0	0	0	0	0			0	0	0	0	0	0	0	0
	0	0			0														
	0	0			0														
	0	0			0														
	0	0			0														
	650.23	0			0	0	0	0	0			0	0	0	0	0	0	0	0
	485.3	0			0	0	0	0	0			0.75	0.01	0.01	3	0.1	0.001	0.0001	0
	0	0			0														
	0	0			0														
	0	0			0														
	0	0			0														
	0	0			0														
	841.48	0			0	0	0	0	0			0.75	0.01	0.01	3	0.1	0.001	0.0001	0
	0	0			0														
	308.83	0			0	0	0	0	0			0.75	0.01	0.01	3	0.1	0.001	0.0001	0
	0	0			0														
	0	0			0														
	347.43	0			0	0	0	0	0			0	0	0	0	0	0	0	0
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	650.75	0			0	0	0	0	0			0	0	0	0	0	0	0	0
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	499.02	0			0	0	0	0	0			0	0	0	0	0	0	0	0
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	320	0			0	0	0	0	0			0	0	0	0	0	0	0	0
	1,640.75	0			0	0	0	0	0			0	0	0	0	0	0	0	0
	1,640.75	0			0	0	0	0	0			0	0	0	0	0	0	0	0
	1,640.75	0			0	0	0	0	0			0.75	0.01	0.01	3	0.1	0.001	0.0001	0
	1,640.75	0			0	0	0	0	0			0.75	0.01	0.01	3	0.1	0.001	0.0001	0
	2,935.00	0			0	0	0	0	0			0.75	0.01	0.01	3	0.1	0.001	0.0001	0
					0							0.75	0.01	0.01	3	0.1	0.001	0.0001	
					0							0.75	0.01	0.01	3	0.1	0.001	0.0001	
					0							0.75	0.01	0.01	3	0.1	0.001	0.0001	
					0							0.75	0.01	0.01	3	0.1	0.001	0.0001	
					0							0.75	0.01	0.01	3	0.1	0.001	0.0001	
					0							0.75	0.01	0.01	3	0.1	0.001	0.0001	
					0							0.75	0.01	0.01	3	0.1	0.001	0.0001	
					0							0.75	0.01	0.01	3	0.1	0.001	0.0001	
					0							0.75	0.01	0.01	3	0.1	0.001	0.0001	
					0							0.75	0.01	0.01	3	0.1	0.001	0.0001	
					0							0.75	0.01	0.01	3	0.1	0.001	0.0001	
					0							0.75	0.01	0.01	3	0.1	0.001	0.0001	
					0							0.75	0.01	0.01	3	0.1	0.001	0.0001	
					0							0.75	0.01	0.01	3	0.1	0.001	0.0001	
					0							0.75	0.01	0.01	3	0.1	0.001	0.0001	
					0							0.75	0.01	0.01	3	0.1	0.001	0.0001	
					0							0.75	0.01	0.01	3	0.1	0.001	0.0001	
					0							0.75	0.01	0.01	3	0.1	0.001	0.0001	
					0							0.75	0.01	0.01	3	0.1	0.001	0.0001	
					0							0.75	0.01	0.01	3	0.1	0.001	0.0001	
					0							0.75	0.01	0.01	3	0.1	0.001	0.0001	
					0							0.75	0.01	0.01	3	0.1	0.001	0.0001	
					0							0.75	0.01	0.01	3	0.1	0.001	0.0001	
					0							0.75	0.01	0.01	3	0.1	0.001	0.0001	
					0							0.75	0.01	0.01	3	0.1	0.001	0.0001	
					0							0.75	0.01	0.01	3	0.1	0.001	0.0001	
					0							0.75	0.01	0.01	3	0.1	0.001	0.0001	
					0							0.75	0.01	0.01	3	0.1	0.001	0.0001	
					0							0.75	0.01	0.01	3	0.1	0.001	0.0001	
					0							0.75	0.01	0.01	3	0.1	0.001	0.0001	

Below is table for all manholes in the domain (aka service area)

ID	Rim Elevation (m)	Base Flow (L/s)	Total Flow (L/s)	Storm Flow (L/s)	Grade (m)	Status	Hydraulic Jump	Surcharge Depth (m)	Unfilled Depth (m)
SMH16352	115.825	2.263767	7.275262	0	112.656812	Not Full	No	-0.199188	3.168188
SMH25559	108.884	0.490999	0.490999	0	105.518967	Not Full	No	-0.231033	3.365033
SMH7321	122.709	0.64222	0.943762	0	120.444765	Not Full	No	-0.264235	2.264235
SMH7324	122.883	0.5894	0.724555	0	120.608335	Not Full	No	-0.274665	2.274665
SMH7341	115.545	0.492999	0.499947	0	111.923485	Not Full	No	-0.194515	3.621515
SMH7342	114.934	0.972886	2.448277	0	110.713935	Not Full	No	-0.188065	4.220065
SMH7344	109.094	0.534235	0.676364	0	104.167956	Not Full	No	-0.228044	4.926044
SMH7345	113.869	0.598407	0.947804	0	109.033668	Not Full	No	-0.188332	4.835332
SMH7346	108.842	0.560209	0.786729	0	103.661717	Not Full	No	-0.234283	5.180283
SMH7347	110.272	0.5121	0.583079	0	106.284869	Not Full	No	-0.164131	3.987131
SMH7348	108.64	0.59542	0.918533	0	102.637152	Not Full	Yes	-0.453848	6.002848
SMH7349	113.284	1.287087	3.666949	0	109.306211	Not Full	No	-0.217789	3.977789
SMH7350	108.579	0.519125	0.611801	0	102.115826	Not Full	Yes	-0.417174	6.463174
SMH7351	110.444	0.528493	0.654804	0	107.337309	Not Full	No	-0.214691	3.106691
SMH8592	115.956	1.780302	5.474514	0	111.717875	Not Full	No	-0.274125	4.238125
SMH8593	113.742	0.557567	0.778114	0	100.56768	Not Full	Yes	-0.23232	13.17432
SMH8594	110.956	1.736065	5.346164	0	100.44743	Not Full	No	-0.19357	10.50857
SMH8595	109.686	0.492999	0.499947	0	100.31941	Not Full	No	-0.19259	9.36659
SMH8598	108.749	0.490999	0.490999	0	100.339772	Not Full	No	-0.217228	8.409228
SMH8599	108.606	0.736362	1.500052	0	100.588564	Not Full	No	-0.213436	8.017436
SMH8600	109.318	2.485123	8.076829	0	105.929535	Not Full	No	-0.226465	3.388465
SMH8601	108.888	0.528331	0.650996	0	104.761053	Not Full	No	-0.234947	4.126947
PMH3-11	109	0	0	0	104.460469	Not Full	No	-0.247531	4.539531
PMH3-2	118	0	0	0	113.946133	Not Full	No	-0.253867	4.053867
PMH3-3	117	0	0	0	113.655804	Not Full	No	-0.254196	3.344196
PMH3-4	117.5	1.039998	4.140085	0	113.377126	Not Full	No	-0.223874	4.122874
PMH3-5	117	0	0	0	113.260227	Not Full	No	-0.223773	3.739773
PMH3-6	116	0	0	0	112.969213	Not Full	No	-0.223787	3.030787
PMH3-7	116	0	0	0	112.669401	Not Full	No	-0.223599	3.330599
PMH3-8	116	0	0	0	112.616254	Not Full	No	-0.223746	3.383746
PMH3-9	116	0	0	0	112.555218	Not Full	No	-0.223782	3.444782
PMH3-12	106.5	2.579996	2.579996	0	103.159597	Not Full	Yes	-0.225403	3.340403
PMH3-13	106	0	0	0	102.665286	Not Full	No	-0.290714	3.334714
PMH3-14	106.75	0	0	0	102.407286	Not Full	No	-0.290714	4.342714
PMH3-15	107	0	0	0	102.107091	Not Full	No	-0.290909	4.892909
PMH3-16	106.75	0	0	0	102.023297	Not Full	No	-0.290703	4.726703
PMH5-1	116.25	0.659999	2.688213	0	113.600652	Not Full	No	-0.249348	2.649348
PMH5-2	118	0	0	0	113.300629	Not Full	No	-0.249371	4.699371
PMH3-1	117.5	0.539999	2.218629	0	114.539024	Not Full	No	-0.260976	2.960976
PMH3-10	113.5	0	0	0	108.806141	Not Full	No	-0.248859	4.693859
SMH19655	107.626	1.561997	4.747738	0	100.062167	Not Full	Yes	-0.662833	7.563833
SMH7353	109.229	1.174354	3.398157	0	105.97773	Not Full	No	-0.19627	3.25127
SMH19654	107.088	0.491999	0.495485	0	99.598117	Not Full	No	-0.660883	7.489883
SMH19656	107.373	0.490999	0.490999	0	99.225431	Not Full	No	-0.661569	8.147569
SMH7352	107.774	0.594153	0.923296	0	101.725434	Not Full	No	-0.417566	6.048566
SMH19659	106.843	0.490999	0.490999	0	98.908638	Not Full	No	-0.655362	7.934362
PMH3-17	107	0	0	0	101.74728	Not Full	No	-0.29072	5.25272
SMH19660	105.258	0.490999	0.490999	0	98.259978	Not Full	No	-0.673022	6.998022
SMH19661	104.251	0.490999	0.490999	0	97.792281	Not Full	No	-0.655719	6.458719
SMH19665	103.462	0.490999	0.490999	0	97.352578	Not Full	No	-0.657422	6.109422
SMH19663	101.816	7.250988	23.77956	0	96.572872	Not Full	No	-0.644128	5.243128
SMH19664	102.867	0.490999	0.490999	0	96.95772	Not Full	No	-0.65528	5.90928
SMH19653	100.417	0.721403	1.451846	0	95.931521	Not Full	No	-0.647479	4.485479
SMH19662	100.777	0.500999	0.53545	0	96.117541	Not Full	Yes	-0.639459	4.659459
SMH8602	102.337	0.657268	1.18453	0	98.600967	Not Full	No	-0.274033	3.736033
SMH8603	101.658	0.515983	0.59957	0	97.706499	Not Full	No	-0.268501	3.951501
SMH19666	100.076	0.500999	0.53545	0	95.653558	Not Full	No	-0.643442	4.422442
SMH11061	101.265	0.500999	0.53545	0	95.937469	Not Full	No	0.793469	5.327531
SMH11064	101.444	0.749918	1.574914	0	95.937416	Not Full	Yes	0.802416	5.506584
SMH16594	103.674	0.517058	0.598423	0	96.077364	Not Full	No	-0.278636	7.596636
SMH16595	101.565	0.500999	0.53545	0	95.780176	Not Full	No	-0.269824	5.784824
SMH17976	100.275	0.63189	1.090592	0	94.752663	Not Full	No	-0.623337	5.522337
SMH19668	100.399	0.935993	2.305598	0	93.75077	Not Full	Yes	-0.73623	6.64823
SMH19669	100.354	0.964233	2.369415	0	94.29357	Not Full	No	-0.62243	6.06043
SMH19670	100.514	7.622822	24.870238	0	95.213432	Not Full	No	-0.622568	5.300568
PMH7-1	101	6.759989	23.28856	0	98.064755	Not Full	No	-0.235245	2.935245
PMH4-1	106.5	1.799997	1.799997	0	103.533465	Not Full	No	-0.266535	2.966535
PMH7-2	102	0	0	0	97.765133	Not Full	No	-0.234867	4.234867
PMH7-3	102.75	0	0	0	97.448413	Not Full	No	-0.251587	5.301587
PMH6-1	105	6.759989	23.28856	0	102.100214	Not Full	No	-0.199786	2.899786

Below is table for loading manholes

Proposed Manhole

ID	Rim Elevation (m)	Base Flow (L/s)	Total Flow (L/s)	Storm Flow (L/s)	Grade (m)	Status	Hydraulic Jump	Surcharge Depth (m)	Unfilled Depth (m)
SMH11129	100.15	2.820995	9.348861	0	97.098956	Not Full	No	-0.228044	3.051044
PMH7-1	101	6.759989	23.28856	0	98.064755	Not Full	No	-0.235245	2.935245
PMH6-1	105	6.759989	23.28856	0	102.100214	Not Full	No	-0.199786	2.899786
SMH19670	100.514	7.622822	24.870238	0	95.213432	Not Full	No	-0.622568	5.300568
SMH19663	101.816	7.250988	23.77956	0	96.572872	Not Full	No	-0.644128	5.243128
SMH19655	107.626	1.561997	4.747738	0	100.062167	Not Full	Yes	-0.662833	7.563833
SMH7349	113.284	1.287087	3.666949	0	109.306211	Not Full	No	-0.217789	3.977789
SMH16352	115.825	2.263767	7.275262	0	112.656812	Not Full	No	-0.199188	3.168188
PMH5-1	116.25	0.659999	2.688213	0	113.600652	Not Full	No	-0.249348	2.649348
PMH3-1	117.5	0.539999	2.218629	0	114.539024	Not Full	No	-0.260976	2.960976
PMH3-4	117.5	1.039998	4.140085	0	113.377126	Not Full	No	-0.223874	4.122874
SMH8600	109.318	2.485123	8.076829	0	105.929535	Not Full	No	-0.226465	3.388465
PMH3-12	106.5	2.579996	2.579996	0	103.159597	Not Full	Yes	-0.225403	3.340403
PMH4-1	106.5	1.799997	1.799997	0	103.533465	Not Full	No	-0.266535	2.966535
SMH8594	110.956	1.736065	5.346164	0	100.44743	Not Full	No	-0.19357	10.50857
SMH8592	115.956	1.780302	5.474514	0	111.717875	Not Full	No	-0.274125	4.238125
SMH8586	117.598	1.881997	5.933557	0	108.104429	Not Full	No	-0.243571	9.493571
SMH10861	108.546	1.470927	4.432399	0	100.033563	Not Full	No	-0.173437	8.512438
PMH1-4	106.5	1.339998	5.254986	0	103.016374	Not Full	No	-0.284626	3.483626
PMH1-1	107.5	1.339998	5.254986	0	103.783897	Not Full	No	-0.316103	3.716103
PMH2-1	101.75	12.22998	39.320229	0	98.862523	Not Full	No	-0.187477	2.887477

PMH6-2	104	0	0	0	99.79925	Not Full	No	-0.19975	4.20075
PMH6-3	101	0	0	0	98.301269	Not Full	No	-0.199731	2.698731
SFT327	104.302	0.490999	0.490999	0	98.076506	Not Full	No	-0.280494	6.225494
SMH10899	108.203	0.691223	1.359741	0	99.683902	Not Full	No	-0.178098	8.519098
SMH10906	111.35	0.492999	0.499947	0	101.402213	Not Full	No	-0.243787	9.947787
SMH10935	108.61	0.491999	0.49548	0	99.485133	Not Full	Yes	-0.125867	9.124867
SMH10955	107.793	0.498125	0.521851	0	99.154428	Not Full	No	-0.183572	8.638572
SMH10965	108.079	0.669308	1.260663	0	99.702943	Not Full	No	-0.132057	8.376057
SMH10988	105.506	0.848237	2.002229	0	97.725768	Not Full	No	-0.078232	7.780232
SMH10990	104.34	0.490999	0.490999	0	97.814893	Not Full	Yes	-0.222107	6.525107
SMH11003	104.645	30.112853	121.376186	0	98.07648	Not Full	No	0.04448	6.56852
SMH11007	104.125	0.491999	0.49548	0	97.080218	Not Full	No	-0.104782	7.044782
SMH11018	104.858	0.490999	0.490999	0	98.076499	Not Full	No	-0.198501	6.781501
SMH8596	108.328	0.490999	0.490999	0	99.957691	Not Full	No	-0.132309	8.370309
SMH8597	108.69	0.490999	0.490999	0	100.180296	Not Full	Yes	-0.149704	8.509704
PMH1-6	106.25	0	0	0	102.7135	Not Full	No	-0.2845	3.5365
PMH4-2	105.75	0	0	0	102.792693	Not Full	No	-0.258307	2.957307
SMH11028	104.624	0.492999	0.499948	0	97.034865	Not Full	No	0.676865	7.589135
SMH11046	101.871	0.492999	0.499948	0	96.447281	Not Full	Yes	0.870281	5.423719
PMH5-4	116.5	0	0	0	112.859638	Not Full	No	-0.249362	3.640362
PMH5-3	117	0	0	0	113.00072	Not Full	No	-0.24928	3.99928
SMH8587	117.156	0.491999	0.495485	0	107.551525	Not Full	No	-0.230475	9.604475
SMH8588	116.626	0.510182	0.574661	0	107.13237	Not Full	No	-0.23063	9.49363
SMH8589	115.695	0.491999	0.495485	0	106.700489	Not Full	Yes	-0.111511	8.994511
SMH8590	116.384	0.492999	0.499947	0	106.463663	Not Full	No	-0.248337	9.920337
SMH8591	114.349	0.492999	0.499947	0	104.712658	Not Full	No	-0.250342	9.636342
SMH8584	117.892	0.491999	0.495485	0	108.437461	Not Full	No	-0.161539	9.454539
SMH8585	117.788	0.491999	0.495485	0	108.227873	Not Full	Yes	-0.143127	9.560127
SMH8586	117.598	1.881997	5.933557	0	108.104429	Not Full	No	-0.243571	9.493571
SMH10660	118.431	0.556552	0.775839	0	116.123282	Not Full	No	-0.173718	2.307718
SMH8581	118.676	0.491999	0.495485	0	115.733927	Not Full	No	-0.184073	2.942073
SMH8583	118.291	0.491999	0.495485	0	108.840351	Not Full	No	-0.165649	9.450649
SMH10861	108.546	1.470927	4.432399	0	100.033563	Not Full	No	-0.173437	8.512438
SMH10879	108.439	0.530317	0.657929	0	99.88937	Not Full	No	-0.18663	8.54963
SMH10826	108.668	0.535025	0.678449	0	100.575477	Not Full	No	-0.214523	8.092523
SMH10843	108.72	0.56481	0.808182	0	100.284147	Not Full	Yes	-0.202853	8.435853
SMH10795	108.74	0.685493	1.268594	0	100.889413	Not Full	No	-0.217587	7.850587
SMH10799	113.904	0.537792	0.690066	0	102.677196	Not Full	No	-0.189804	11.226804
SMH10821	111.327	0.491999	0.495485	0	101.364407	Not Full	No	-0.185593	9.962593
SMH10743	115.063	0.491999	0.495485	0	103.643214	Not Full	No	-0.225786	11.419786
SMH10777	114.707	2.179302	7.809437	0	103.123805	Not Full	No	-0.173195	11.583195
SMH22952	114.829	0.491999	0.495485	0	103.381878	Not Full	No	-0.222122	11.447122
SMH22954	114.708	0.491999	0.495485	0	103.213144	Not Full	No	-0.216856	11.494856
SMH10716	114.589	0.545079	0.715143	0	111.989038	Not Full	No	-0.238962	2.599962
PMH1-4	106.5	1.339998	5.254986	0	103.016374	Not Full	No	-0.284626	3.483626
PMH1-5	106.5	0	0	0	102.972317	Not Full	No	-0.284683	3.527683
PMH1-3	106.5	0	0	0	103.291678	Not Full	No	-0.309322	3.208322
PMH1-1	107.5	1.339998	5.254986	0	103.783897	Not Full	No	-0.316103	3.716103
PMH1-2	106.5	0	0	0	103.579418	Not Full	No	-0.321582	2.920582
PMH2-4	101.5	0	0	0	98.047454	Not Full	No	-0.187546	3.452546
PMH2-5	102.5	0	0	0	97.750637	Not Full	No	-0.187363	4.749363
PMH2-3	102.5	0	0	0	98.300592	Not Full	No	-0.187408	4.199408
PMH2-2	101.75	0	0	0	98.562454	Not Full	No	-0.187546	3.187546
PMH2-1	101.75	12.22998	39.320229	0	98.862523	Not Full	No	-0.187477	2.887477
SFT256750	101.092	0.500999	0.53545	0	94.924021	Not Full	No	0.751021	6.167979
SMH11086	101.074	0.500999	0.53545	0	98.446103	Not Full	No	-0.627897	2.627897
SMH11102	100.83	0.500999	0.53545	0	94.71031	Not Full	Yes	0.84131	6.11969
SMH11116	100.673	0.500999	0.53545	0	97.809463	Not Full	No	-0.285537	2.863537
SMH11129	100.15	2.820995	9.348861	0	97.098956	Not Full	No	-0.228044	3.051044
SMH19652	100.155	0.902932	2.234271	0	93.667333	Not Full	No	-0.304667	6.487667
SMH19667	100.068	0.556906	0.776987	0	93.675246	Not Full	No	-0.573754	6.392754
SMH11161	98.944	0.500999	0.53545	0	96.525295	Not Full	No	0.057295	2.418705
SMH17975	98.758	0.500999	0.53545	0	96.519537	Not Full	No	-0.238463	2.238463
SMH19651	98.7	0.491999	0.495479	0	93.629703	Not Full	Yes	0.071703	5.070297

Gravity main results for all pipes in domain

ID	From ID	To ID	Diameter (mm)	Length (m)	Slope	Total Flow (L/s)	Unpeakable Flow (L/s)	Peakable Flow (L/s)	Coverage Flow (L/s)	Infiltration Flow (L/s)	Storm Flow (L/s)	Flow Type	Velocity (m/s)	d/D	q/Q	Water Depth (m)	Critical Depth (m)	Froude Number	Full Flow (L/s)	Coverage Count	Backwater Adjustment	Adjusted Depth (m)	Adjusted Velocity (m/s)
SMN6972	SMH7321	SMH7319	300	63.65098	0.003205	1.656126	1.095998	0	0.135622	0	0	Free Surface	0.347993	0.119217	0.03017	0.035765	0.030081	0.709987	54.89237	223.48	Yes	0.037241	0.328034
SMN6976	SMH7341	SMH7342	250	48.270074	0.02457	10.096432	0.981998	0	2.434767	0	0	Free Surface	1.245272	0.221939	0.108023	0.055485	0.079499	2.01221	93.465252	1,216.74	No	0.055485	1.245272
SMN6977	SMH7342	SMH7345	250	71.554175	0.023045	12.178019	1.472998	0	2.916654	0	0	Free Surface	1.285314	0.247742	0.134536	0.061935	0.087599	1.958241	90.518981	1,544.65	No	0.061935	1.285314
SMN6978	SMH7344	SMH7346	300	78.209187	0.006393	9.780624	1.963997	0	2.074692	0	0	Free Surface	0.750397	0.239853	0.126157	0.071956	0.074218	1.061949	77.527461	1,120.46	No	0.071956	0.750397
SMN6979	SMH7345	SMH7347	250	102.552426	0.026747	13.007295	1.963997	0	3.024062	0	0	Free Surface	1.381235	0.246674	0.133383	0.061668	0.090644	2.109277	97.518442	1,636.90	No	0.061668	1.381235
SMN6980	SMH7346	SMH7348	300	76.61658	0.010572	10.490719	2.454996	0	2.143901	0	0	Free Surface	0.915417	0.219055	0.105226	0.065717	0.076936	1.359751	99.696652	1,197.46	No	0.065717	0.915417
SMN6981	SMH7347	SMH7350	250	102.473251	0.008031	13.559752	2.454996	0	3.045163	0	0	Free Surface	0.908629	0.343475	0.253752	0.085869	0.092623	1.156885	53.436927	1,663.15	No	0.085869	0.908629
SMN6982	SMH7348	SMH7350	525	120.16152	0.004369	11.231877	2.945995	0	2.248322	0	0	Free Surface	0.639198	0.135529	0.039405	0.071152	0.068319	0.922744	285.040096	1,472.46	Yes	0.072989	0.615932
SMN7911	SMH8593	SMH8594	300	48.446647	0.003282	6.200463	0.981998	0	1.355871	0	0	Free Surface	0.518868	0.225601	0.111624	0.06768	0.05878	0.758734	55.547708	836.06	Yes	0.087055	0.3641
SMN7912	SMH8594	SMH8595	300	72.505739	0.001779	11.03123	1.472998	0	2.600937	0	0	Free Surface	0.491185	0.354767	0.269722	0.10643	0.078948	0.560545	40.898569	1,522.27	Yes	0.10692	0.488127
SMN7913	SMH8595	SMH8597	300	70.296181	0.001878	11.529088	1.963997	0	2.602937	0	0	Free Surface	0.506998	0.358032	0.274394	0.10741	0.08076	0.575587	42.016565	1,523.18	No	0.10741	0.506998
SMN7915	SMH8598	SMH8597	250	27.524727	0.008247	1.991051	0.981998	0	0.245363	0	0	Free Surface	0.52453	0.131088	0.036769	0.032772	0.034657	1.116344	54.149972	248	Yes	0.066534	0.189998
SMN11713	SMH8601	SMH7344	300	71.412101	0.008402	9.162674	1.472998	0	2.031456	0	0	Free Surface	0.811171	0.216843	0.103094	0.065053	0.071774	1.211422	88.876955	1,053.46	Yes	0.068504	0.753691
SMN14481	SMH7350	SMH7352	525	87.597682	0.003653	24.085143	5.89199	0	5.321611	0	0	Free Surface	0.752308	0.205383	0.092408	0.107826	0.10068	0.874095	260.637975	3,197.52	No	0.107826	0.752308
SMN14482	SMH7351	SMH7353	250	47.010637	0.028206	4.298238	0.981998	0	0.833582	0	0	Free Surface	1.015926	0.141235	0.042921	0.035309	0.05127	2.080422	100.14298	490.93	No	0.035309	1.015926
SMN18475	SMH7324	SMH7321	300	66.637815	0.002611	0.724555	0.547999	0	0.041401	0	0	Free Surface	0.252521	0.08445	0.014624	0.025335	0.019828	0.614641	49.546582	83.24	Yes	0.03055	0.191768
SMN18703	SMH8592	SMH8593	300	82.0608	0.136387	5.474514	0.490999	0	1.289303	0	0	Free Surface	1.849601	0.08625	0.015288	0.025875	0.055163	4.453805	358.084419	785.15	Yes	0.046778	0.778424
SMN18704	SMH8599	SMH8598	250	82.397813	0.002973	1.500052	0.490999	0	0.245363	0	0	Free Surface	0.337014	0.146255	0.046135	0.036564	0.030024	0.677763	32.514121	248	No	0.036564	0.337014
SMN20195	SMH16352	SMH7341	250	22.36068	0.031663	9.598486	0.490999	0	2.432767	0	0	Free Surface	1.342076	0.203247	0.090465	0.050812	0.077448	2.27222	106.101358	1,215.83	No	0.050812	1.342076
SMN20236	SMH7349	SMH7351	250	64.884513	0.030053	3.666949	0.490999	0	0.796088	0	0	Free Surface	0.99064	0.128845	0.035474	0.032211	0.047278	2.127216	103.369782	466.68	No	0.032211	0.99064
SMN27357	SMH8600	SMH25559	300	101.542784	0.003998	8.076829	0.490999	0	1.994124	0	0	Free Surface	0.600952	0.245117	0.131736	0.073535	0.067283	0.840606	61.310934	985.46	No	0.073535	0.600952
SMN27358	SMH25559	SMH8601	300	29.946555	0.00581	8.567829	0.981998	0	1.994124	0	0	Free Surface	0.698067	0.229889	0.115923	0.068967	0.069347	1.010573	73.909563	985.46	No	0.068967	0.698067
PSP5-2	PMH5-2	PMH5-3	300	149.792054	0.002003	2.688213	0	0	0.659999	0	0	Free Surface	0.340936	0.168762	0.061951	0.050629	0.038434	0.580988	43.392601	308.83	Yes	0.050674	0.340492
PSP5-4	PMH5-4	SMH16352	300	82.953652	0.002001	2.688213	0	0	0.659999	0	0	Free Surface	0.340847	0.168793	0.061977	0.050638	0.038434	0.580782	43.374625	308.83	No	0.050638	0.340847
PSP5-1_	PMH5-1	PMH5-2	300	150.078699	0.001999	2.688213	0	0	0.659999	0	0	Free Surface	0.340714	0.168839	0.06201	0.050652	0.038434	0.580472	43.351142	308.83	No	0.050652	0.340714
PSP3-1	PMH3-1	PMH3-2	300	150	0.004	2.218629	0	0	0.539999	0	0	Free Surface	0.410478	0.130081	0.036179	0.039024	0.034874	0.800674	61.323854	253.68	Yes	0.042579	0.361576
PSP3-2	PMH3-2	PMH3-3	300	149.537803	0.001999	2.218629	0	0	0.539999	0	0	Free Surface	0.321869	0.153778	0.051171	0.046133	0.034874	0.575719	43.357032	253.68	Yes	0.050469	0.282669
PSP3-3	PMH3-3	PMH3-4	300	150	0.00206	2.218629	0	0	0.539999	0	0	Free Surface	0.32523	0.152679	0.050414	0.045804	0.034874	0.583902	44.008144	253.68	Yes	0.060965	0.215471
PSP3-4	PMH3-4	PMH3-5	300	58.237661	0.002009	6.131768	0	0	1.579997	0	0	Free Surface	0.434486	0.253754	0.14109	0.076126	0.058447	0.596533	43.460069	738.98	Yes	0.076176	0.434082
PSP3-5	PMH3-5	PMH3-6	300	145.606777	0.001999	6.131768	0	0	1.579997	0	0	Free Surface	0.433678	0.254089	0.141459	0.076227	0.058447	0.595	43.346611	738.98	No	0.076227	0.433678
PSP3-6	PMH3-6	PMH3-7	300	150	0.002	6.131768	0	0	1.579997	0	0	Free Surface	0.433788	0.254044	0.141407	0.076213	0.058447	0.595208	43.362513	738.98	Yes	0.076307	0.433037
PSP3-7	PMH3-7	PMH3-8	300	26.753934	0.001981	6.131768	0	0	1.579997	0	0	Free Surface	0.432288	0.254669	0.142083	0.076401	0.058447	0.592364	43.156236	738.98	No	0.076401	0.432288
PSP3-8	PMH3-8	PMH3-9	300	30.56517	0.001996	6.131768	0	0	1.579997	0	0	Free Surface	0.433458	0.254181	0.141558	0.076254	0.058447	0.594582	43.31626	738.98	No	0.076254	0.433458
PSP3-9	PMH3-9	PMH3-10	300	112.036663	0.001999	6.131768	0	0	1.579997	0	0	Free Surface	0.433752	0.254059	0.14143	0.076218	0.058447	0.595139	43.355418	738.98	No	0.076218	0.433752
PSP3-10	PMH3-10	PMH3-11	300	134.686823	0.010001	6.131768	0	0	1.579997	0	0	Free Surface	0.766447	0.170471	0.063236	0.051141	0.058447	1.299244	96.96627	738.98	No	0.051141	0.766447
PSP3-11	PMH3-11	PMH3-12	300	146.957997	0.009003	6.131768	0	0	1.579997	0	0	Free Surface	0.738651	0.174896	0.06665	0.052469	0.058447	1.235457	91.998926	738.98	Yes	0.063533	0.561443
PSP3-12	PMH3-12	PMH3-13	300	97.61709	0.004395	8.711764	2.579996	0	1.579997	0	0	Free Surface	0.635208	0.248657	0.135532	0.074597	0.069942	0.8817	64.278416	738.98	No	0.074597	0.635208
PSP3-13	PMH3-13	PMH3-14	375	128.989313	0.002	8.711764	2.579996	0	1.579997	0	0	Free Surface	0.469049	0.224762	0.110801	0.084286	0.065753	0.614693	78.625309	738.98	No	0.084286	0.469049
PSP3-14	PMH3-14	PMH3-15	375	150	0.002	8.711764	2.579996	0	1.579997	0	0	Free Surface	0.469049	0.224762	0.110806	0.084286	0.065753	0.614693	78.622052	738.98	No	0.084286	0.469049
PSP3-15	PMH3-15	PMH3-16	375	41.608021	0.002019	8.711764	2.579996	0	1.579997	0	0	Free Surface	0.470591	0.224243	0.110287	0.084091	0.065753	0.617475	78.991524	738.98	Yes	0.084194	0.469774
PSP3-16	PMH3-16	PMH3-17	375	138.057634	0.001999	8.711764	2.579996	0	1.579997	0	0	Free Surface	0.468958	0.224792	0.110829	0.084297	0.065753	0.61453	78.60564	738.98	No	0.084297	0.468958
SMN14488	SMH7353	SMH19655	250	90.092659	0.015218	7.448695	1.472998	0	1.516936	0	0	Free Surface	0.961705	0.21492	0.101265	0.05373	0.06796	1.580773	73.556464	582.18	No	0.05373	0.961705
SMN14490	SMH19655	SMH19654	900	103.29944	0.003272	157.838919	66.068887	0	33.651612	0	0	Free Surface	1.178417	0.263519	0.152008	0.237167	0.226647	0.915241	1,038.36	16,749.11	No	0.237167	1.178417
SMN14493	SMH19657	SMH19655	900	74.784874	0.003423	149.715932	64.10489	0	31.027677	0	0	Free Surface	1.179533	0.253632	0.140967	0.228268	0.220584	0.935236	1,062.07	15,667.66	No	0.228268	1.179533
SMN14486	SMH7352	SMH19654	525	84.481977	0.003942	24.835324	6.382989	0	5.424765	0	0	Free Surface	0.779793	0.204636	0.091732	0.107434	0.102268	0.907779	270.737923	3,347.77	No	0.107434	0.779793
SMN14491	SMH19654	SMH19656	900	86.152836	0.003958	176.416697	72.942875	0	39.041377	0	0	Free Surface	1.302065	0.265686	0.154475	0.239117	0.23998	1.006798	1,142.04	20,097.13	No	0.239117	1.302065
SMN16879	SMH19656	SMH19659	900	65.102922	0.004024	176.907697	73.433875	0	39.041377	0	0	Free Surface	1.310969	0.264923	0.153623	0.238431	0.240324	1.015264	1,151.57	20,097.13	No	0.238431	1.310969
SMN16880	SMH19659	SMH19660	900	122.055417	0.003916	183.526934	76.50487	0	40.621374	0	0	Free Surface	1.31189	0.27182	0.161557	0.244638	0.244907	1.001905	1,135.99	20,836.11	No	0.244638	1.31189
PSP3-17	PMH3-17	SMH19659	375	45.981699	0.002001	8.711764	2.579996	0	1.579997	0	0	Free Surface	0.469094	0.224747	0.110784	0.08428	0.065753	0.614775	78.637697	738.98	No	0.08428	0.469094
SMN14500	SMH19660	SMH19661	900	77.13122	0.00529	184.017933	76.995869	0	40.621374	0	0	Free Surface	1.46141	0.252197	0.139382	0.226978	0.245244	1.162279	1,320.24	20,836.11	No	0.226978	1.46141
SMN14501	SMH19661	SMH19665	900	90.96424	0.00398	184.508932	77.486868	0	40.621374	0	0	Free Surface	1.32161	0.271423	0.161124	0.244281	0.24558	1.01013	1,145.14	20,836.11	No	0.244281	1.32161
SMN14502	SMH19665	SMH19664	900	81.700557	0.004113	184.999931	77.977867	0	40.621374	0	0	Free Surface	1.338178	0.269531	0.158919	0.242578	0.245916	1.026687	1,164.11	20,836.11	No	0.242578	1.338178
SMN14503	SMH19664	SMH19663	900	83.879484	0.003994	185.49093	78.468866	0	40.621374	0	0	Free Surface	1.325303	0.271912	0.161692	0.24472	0.246252	1.011964	1,147.18	20,836.11	No	0.24472	1.325303
SMN14504	SMH19663	SMH19662	900	111.380173	0.003941	201.041396	78.959865	0	47.381363	0	0	Free Surface	1.349684	0.284302	0.176408	0.255872	0.256672	1.00585	1,139.64	23,814.61	No	0.255872	1.349684
SMN14499	SMH8603	SMH19653	300	78.25034	0.006262	1.774401	0.981998	0	0.191253	0	0	Free Surface	0.449031	0.104996	0.023126	0.031499	0.031148	0.977862	76.728087	206.14	No	0.031499	0.449031
SMN14505	SMH19662	SMH19653	900	48.21375	0.003692	201.554653	79.450865	0	47.391363	0	0	Free Surface	1.319456	0.28949	0.182738	0.260541	0.25701	0.973638	1,102.97	23,818.68	No	0.260541	1.319456
SMN16881	SMH19653	SMH19666	900	61.207329	0.004264	203.787016	80.923862	0	47.813019	0	0	Free Surface	1.393519	0.280579	0.171917	0.252521	0.258472	1.046023	1,185.38	24,197.89	No	0.252521	1.393519
SMN20551	SMH8602	SMH8603	300	57.245047	0.006289	1.18453	0.490999	0	0.166269	0	0	Free Surface	0.398125	0.086555	0.015405	0.025967	0.0254	0.956953	76.892103	172.07	No	0.025967	0.398125
SMN16882	SMH19666	SMH19670	900	108.995968	0.004028	204.30023	81.414861	0	47.823019	0	0	Free Surface	1.366446	0.285065	0.177339	0.256558	0.258807	1.016851	1,152.04	24,201.96	No	0.256558	1.366446
SMN14509	SMH19670	SMH17976	900	111.286368	0.003945	235.320679	82.887859	0	61.75089	0	0	Free Surface	1.411871	0.308258	0.2064	0.277432	0.278383	1.006416	1,140.12	30,619.17	No	0.277432	1.411871
SMN14510	SMH19669	SMH19668	900	109.622151	0.004005	237.302301	83.869857	0	62.365015	0	0	Free Surface	1.422786	0.308411	0.206576	0.27757	0.279592	1.013919	1,148.74	31,220.31	No	0.27757	1.422786
SMN9682	SMH11046	SMH11064	375	67.224556	0.006575	152.67396	23.403961	0	40.51153	0	0	Pressurized	1.382335	1	1.070997	0.375	0.27837	0.720547	142.553059	5,711.82	Yes	0.375	1.382335
SMN14507	SMH16595	SMH19670	300	67.024822	0.003044	1.130541	0.981998	0	0.036059	0	0	Free Surface	0.304681	0.100586	0.021134	0.030176	0.024809	0.678249	53.492968	238.14	No	0.030176	0.304681
SMN14508	SMH17976	SMH19669	900	109.354284	0.004014	236.082001	83.378858	0	61.891781	0	0	Free Surface	1.42189	0.307404	0.205263	0.276663	0.278848	1.015115	1,150.15	30,709.24	No	0.276663	1.42189
SMN16883	SMH19668	SMH19667	1,050.00	109.417271	0.002011	238.631698	84.360857	0	62.810009	0	0	Free Surface	1.098166	0.298828	0.194354	0.31377	0.268246	0.737265	1,227.82	31,521.38	Yes	0.386008	0.826471
SMN19144	SMH11061	SMH11064	200	19.906886	0.009243	0.53545	0.490999	0	0.01	0	0	Pressurized	0.379032	0.09053	0.016935	0.018106	0.018918	1.090546	31.617253	4.07	Yes	0.2	0.017044
SMN20237	SMH11064	SFT256750	375	84.649655	0.011364	191.813054	24.38596	0	59.770417	0	0	Pressurized	1.736707	1	1.023467	0.375	0.315879	0.905264	187.414987	14,233.46	Yes	0.375	1.736707
SMN20240	SMH16594	SMH16595	300	83.486526	0.003665	0.598423	0.490999	0	0.026059	0	0	Free Surface	0.268211	0.071213	0.010194	0.021364	0.018008	0.711983	58.701874	234.07	Yes	0.02577	0.203399
PSP4-1	PMH4-1	PMH4-2	300	149.834127	0.004999	1.799997	1.799997	0	0	0	0	Free Surface	0.416844	0.111549	0.026256	0.033465	0.031374	0.880012	68.554345	0	Yes	0.037579	0.351866
PSP2-5	PMH2-5	SMH11064	375	149.792771	0.001996	39.320229	0	0	12.22998	0	0	Free Surface	0.711353	0.500366	0.500607	0.187637	0.142664	0.591425	78.545181	5,384.00	No	0.187637	0.711353
PSP7-1	PMH7-1	PMH7-2	375	149.523635	0.002006	23.28856	0	0	6.759989	0	0	Free Surface	0.620782	0.372681	0.295738	0.139755	0.108788	0.616082	78.747193	2,978.50	Yes	0.139944	0.619651
PSP7-2	PMH7-2	PMH7-3	375	151.063486	0.001986	23.28856	0	0	6.759989	0	0	Free Surface	0.618524	0.373688	0.297257	0.140133	0.108788	0.612891	78.344814	2,978.50	No	0.140133	0.618524
PSP7-3	PMH7-3	SMH11064	375	93.283137	0.003205	23.28856	0	0	6.759989	0	0	Free Surface	0.735406	0.329102	0.23398	0.123413	0.108788	0.783089	99.532154	2,978.50	No	0.123413	0.735406
PSP6-1	PMH6-1	PMH6-2	300	150.732543	0.009958	23.28856	0	0	6.759989	0	0	Free Surface	1.125801	0.334045	0.240689	0.100214	0.116172	1.329148	96.757866	2,978.50	No	0.100214	1.125801
PSP6-2	PMH6-2	PMH6-3	300	150.636342	0.009944	23.28856	0	0	6.759989	0	0	Free Surface	1.125237	0.334167	0.240853	0.10025	0.116172	1.32821	96.691984	2,978.50	Yes	0.100259	1.125096
PSP6-3	PMH6-3	SMH19670	300	30.088359	0.009937	23.28856	0	0	6.759989	0	0	Free Surface	1.124955	0.334229	0.240939	0.100269	0.116172	1.327742	96.657552	2,978.50	No	0.100269	1.124955
SMN7914	SMH8597	SMH8596	250	51.689041	0.004643	13.765553	3.436994	0	2.848299	0	0	Free Surface	0.747789	0.401184	0.338798	0.100296	0.093351	0.870925	40.630597	1,771.18	Yes	0.108994	0.669751
SMN9560	SMH10879	SMH10899	300	60.959003	0.003511	17.435122	5.89199	0	3.124752	0	0	Free Surface	0.712675	0.377899	0.303485	0.11337	0.09997	0.784466	57.449652	1,431.73	Yes	0.117636	0.678148
SMN9575	SMH10899	SMH10935	300	81.691088	0.003073	18.639172	6.382989	0	3.324975	0	0	Free Surface	0.691274	0.406342	0.346799	0.121902	0.103488	0.729473	53.746349	1,469.00	Yes	0.148018	0.536401
SMN9577	SMH10906	SMH10935	300	82.562604	0.024648	11.677404	5.89199	0	1.487734	0	0	Free Surface	1.273917	0.187378	0.076711	0.056213	0.081293	2.055087	152.226395	716.39	Yes	0.115173	0.467286

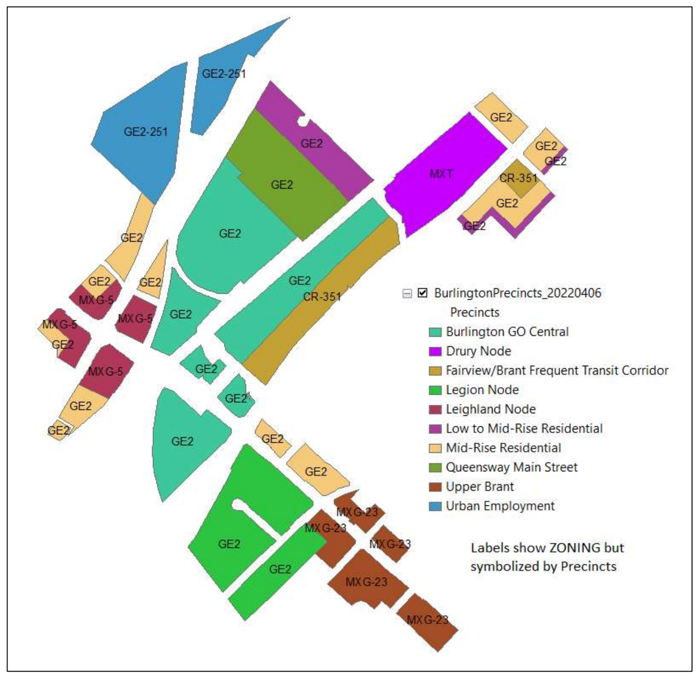
SMN9599	SMH10935	SMH10955	300	55.731992	0.004898	43.31473	17.184971	0	7.840317	0	0	Free Surface	1.017929	0.580444	0.638274	0.174133	0.160654	0.857109	67.862286	4,006.08	No	0.174133	1.017929
SMN9602	SMH10965	SMH10935	250	84.468282	0.003244	15.366969	4.418993	0	3.026608	0	0	Free Surface	0.674566	0.471771	0.452494	0.117943	0.098849	0.712739	33.960593	1,820.18	Yes	0.146038	0.516043
SMN9620	SMH10955	SMH10990	300	68.539339	0.020076	43.797614	17.675971	0	7.847443	0	0	Free Surface	1.727294	0.388092	0.318795	0.116428	0.16159	1.872273	137.384807	4,048.08	Yes	0.13466	1.424344
SMN9633	SMH10990	SMH10988	375	44.709405	0.005211	44.288613	18.16697	0	7.847443	0	0	Free Surface	1.046512	0.407715	0.348967	0.152893	0.151776	0.985796	126.913521	4,048.08	Yes	0.224831	0.64066
SMN9637	SMH11003	SMH10988	375	54.323386	0.004197	124.158181	3.272995	0	29.621854	0	0	Pressurized	1.124148	1	1.090114	0.375	0.248501	0.585966	113.894666	296	No	0.375	1.124148
SMN9639	SMH10988	SMH11007	375	78.257534	0.00791	151.191488	21.930964	0	40.50653	0	0	Free Surface	1.612807	0.791382	0.966976	0.296768	0.286481	0.928195	156.354946	5,709.59	No	0.296768	1.612807
SMN9650	SMH11018	SMH11003	375	61.218617	0.003969	0.981998	0.981998	0	0	0	0	Free Surface	0.310438	0.066681	0.008866	0.025005	0.021813	0.762095	110.761992	0	Yes	0.29799	0.010434
SMN9654	SMH11007	SMH11028	375	83.859942	0.009862	151.684196	22.421963	0	40.50753	0	0	Free Surface	1.780227	0.720581	0.868831	0.270218	0.286932	1.129334	174.584167	5,710.10	Yes	0.375	1.373373
SMN10043	SMH8591	SMH10906	300	88.45903	0.037498	11.179103	5.400991	0	1.485734	0	0	Free Surface	1.457976	0.165527	0.05954	0.049658	0.07949	2.50976	187.759144	715.48	Yes	0.052936	1.329592
SMN10044	SMH8596	SMH10965	250	90.664904	0.002813	14.256552	3.927993	0	2.848299	0	0	Free Surface	0.627553	0.470764	0.450835	0.117691	0.095067	0.663943	31.62258	1,771.18	Yes	0.117817	0.626686
SMN19135	SFT327	SMH11018	300	24.578236	0.006388	0.490999	0.490999	0	0	0	0	Free Surface	0.306434	0.056938	0.006336	0.017081	0.016303	0.911151	77.495042	0	Yes	0.098003	0.024474
PSP4-2	PMH4-2	SMH11003	300	150	0.002	1.799997	1.799997	0	0	0	0	Free Surface	0.302452	0.138977	0.04151	0.041693	0.031374	0.570137	43.362513	0	No	0.041693	0.302452
PSP1-5	PMH1-5	PMH1-6	375	129.277343	0.002003	10.008364	0	0	2.679996	0	0	Free Surface	0.488577	0.240845	0.127188	0.090317	0.07057	0.617063	78.689729	1,254.00	Yes	0.090408	0.487878
PSP1-6	PMH1-6	SMH10988	375	41.274689	0.001987	10.008364	0	0	2.679996	0	0	Free Surface	0.48718	0.241333	0.127723	0.0905	0.07057	0.614631	78.359995	1,254.00	No	0.0905	0.48718
SMN9671	SMH11028	SMH11046	375	77.976368	0.010016	152.179078	22.912962	0	40.50953	0	0	Pressurized	1.792852	0.718018	0.864931	0.269257	0.287382	1.141099	175.943568	5,710.96	Yes	0.375	1.377854
PSP5-3	PMH5-3	PMH5-4	300	70.923977	0.001988	2.688213	0	0	0.659999	0	0	Free Surface	0.340048	0.169067	0.06218	0.05072	0.038434	0.578929	43.23271	308.83	No	0.05072	0.340048
SMN7906	SMH8586	SMH8587	300	42.588057	0.01329	8.641638	2.945995	0	1.460551	0	0	Free Surface	0.937582	0.188095	0.077309	0.056429	0.069653	1.509476	111.779908	685.85	Yes	0.062977	0.801241
SMN7907	SMH8587	SMH8588	300	65.488782	0.006398	9.136394	3.436994	0	1.461551	0	0	Free Surface	0.735925	0.23175	0.117802	0.069525	0.071669	1.0608	77.557357	686.12	No	0.069525	0.735925
SMN7908	SMH8588	SMH8589	300	62.127743	0.007259	9.687752	3.927993	0	1.480734	0	0	Free Surface	0.78282	0.231232	0.117268	0.06937	0.073855	1.129749	82.612341	713.39	Yes	0.078929	0.652421
SMN7909	SMH8589	SMH8590	200	34.089079	0.005867	10.1825	4.418993	0	1.481734	0	0	Free Surface	0.759268	0.442444	0.404232	0.088489	0.085344	0.932818	25.189773	713.66	No	0.088489	0.759268
SMN7910	SMH8590	SMH8591	300	60.108236	0.029098	10.680802	4.909992	0	1.483734	0	0	Free Surface	1.315656	0.172211	0.064577	0.051663	0.077649	2.218433	165.396898	714.57	No	0.051663	1.315656
SMN7903	SMH8583	SMH8584	200	58.180753	0.006995	1.766449	1.472998	0	0.067553	0	0	Free Surface	0.49146	0.171753	0.064221	0.034351	0.034639	1.016348	27.505809	34.81	Yes	0.036406	0.45201
SMN7904	SMH8584	SMH8585	200	31.530282	0.007231	2.261753	1.963997	0	0.068553	0	0	Free Surface	0.534865	0.192307	0.080877	0.038461	0.03929	1.042432	27.965358	35.08	Yes	0.047667	0.393961
SMN7905	SMH8585	SMH8586	200	54.501901	0.002257	2.757055	2.454996	0	0.069553	0	0	Free Surface	0.374703	0.284363	0.176474	0.056873	0.043473	0.592303	15.622971	35.35	No	0.056873	0.374703
SMN7902	SMH8581	SMH8583	200	77.182009	0.089555	1.271144	0.981998	0	0.066553	0	0	Free Surface	1.086869	0.079636	0.012916	0.015927	0.029304	3.338333	98.414867	34.54	Yes	0.025139	0.556297
SMN19221	SMH10660	SMH8581	200	88.086987	0.004076	0.775839	0.490999	0	0.065553	0	0	Free Surface	0.318225	0.131409	0.036954	0.026282	0.022818	0.756258	20.99463	34.27	No	0.026282	0.318225
SMN9536	SMH10843	SMH10861	300	80.7572	0.003467	12.951117	4.909992	0	2.105507	0	0	Free Surface	0.653382	0.323822	0.22684	0.097147	0.085743	0.784927	57.093654	933.42	Yes	0.111855	0.539088
SMN9546	SMH10861	SMH10879	300	59.665736	0.002196	16.866274	5.400991	0	3.085434	0	0	Free Surface	0.595126	0.421875	0.371233	0.126562	0.098269	0.61425	45.433123	1,333.46	No	0.126562	0.595126
SMN9521	SMH10821	SMH10843	250	72.876784	0.015272	10.712021	3.436994	0	1.793176	0	0	Free Surface	1.069937	0.257629	0.145369	0.064407	0.081969	1.596081	73.688514	335.89	Yes	0.080777	0.780573
SMN9523	SMH10826	SMH10843	250	63.565013	0.005553	1.926076	0.981998	0	0.23852	0	0	Free Surface	0.452118	0.141907	0.043346	0.035477	0.034079	0.923581	44.434991	537.02	Yes	0.066312	0.184663
SMN19097	SMH10795	SMH10826	250	90.426766	0.003506	1.268594	0.490999	0	0.194494	0	0	Free Surface	0.339604	0.129654	0.035933	0.032413	0.027584	0.726886	35.304328	448.51	Yes	0.033945	0.31752
SMN9482	SMH10777	SMH10799	250	69.215009	0.006213	9.637325	2.454996	0	1.745383	0	0	Free Surface	0.752875	0.30722	0.205057	0.076805	0.07761	1.020155	46.998165	244.35	No	0.076805	0.752875
SMN9500	SMH10799	SMH10821	250	72.50382	0.018165	10.217243	2.945995	0	1.792176	0	0	Free Surface	1.122643	0.240784	0.127138	0.060196	0.079989	1.736773	80.363577	335.62	Yes	0.062302	1.069435
SMN24157	SMH10743	SMH22952	250	24.514771	0.01081	1.210275	0.981998	0	0.05508	0	0	Free Surface	0.496487	0.096855	0.019522	0.024214	0.026935	1.23435	61.994882	204.54	Yes	0.026046	0.446086
SMN24159	SMH22952	SMH22954	250	14.642238	0.011883	1.705407	1.472998	0	0.05608	0	0	Free Surface	0.568996	0.111511	0.026237	0.027878	0.03204	1.316109	65.000652	204.81	Yes	0.030511	0.498657
SMN24160	SMH22954	SMH10777	250	13.834735	0.009613	2.200539	1.963997	0	0.05708	0	0	Free Surface	0.570266	0.132576	0.037639	0.033144	0.036462	1.206632	58.463824	205.08	Yes	0.054975	0.274999
SMN19086	SMH10716	SMH10743	250	78.75462	0.10614	0.715143	0.490999	0	0.05408	0	0	Free Surface	0.937508	0.044151	0.003681	0.011038	0.020652	3.472551	194.261152	204.27	Yes	0.017626	0.468436
PSP1-3	PMH1-3	PMH1-4	375	150	0.002	5.254986	0	0	1.339998	0	0	Free Surface	0.404326	0.17514	0.066839	0.065678	0.05086	0.604434	78.622052	627	Yes	0.078026	0.315803
PSP1-4	PMH1-4	PMH1-5	375	22.019972	0.001998	10.008364	0	0	2.679996	0	0	Free Surface	0.48814	0.240997	0.127355	0.090374	0.07057	0.616302	78.586389	1,254.00	No	0.090374	0.48814
PSP1-2	PMH1-2	PMH1-3	375	64.079516	0.004682	5.254986	0	0	1.339998	0	0	Free Surface	0.54521	0.142448	0.043686	0.053418	0.05086	0.907578	120.290241	627	Yes	0.059548	0.465762
PSP1-1	PMH1-1	PMH1-2	375	63.624022	0.003128	5.254986	0	0	1.339998	0	0	Free Surface	0.473228	0.157059	0.053447	0.058897	0.05086	0.748824	98.320789	627	No	0.058897	0.473228
PSP2-3	PMH2-3	PMH2-4	375	126.67252	0.001997	39.320229	0	0	12.22998	0	0	Free Surface	0.711574	0.500244	0.500458	0.187592	0.142664	0.591701	78.568495	5,384.00	No	0.187592	0.711574
PSP2-4	PMH2-4	PMH2-5	375	148.316506	0.002002	39.320229	0	0	12.22998	0	0	Free Surface	0.712238	0.499878	0.499808	0.187454	0.142664	0.592529	78.670672	5,384.00	Yes	0.187546	0.711796
PSP2-2	PMH2-2	PMH2-3	375	130.824226	0.002003	39.320229	0	0	12.22998	0	0	Free Surface	0.712238	0.499878	0.499781	0.187454	0.142664	0.592529	78.674852	5,384.00	Yes	0.187523	0.711906
PSP2-1	PMH2-1	PMH2-2	375	150	0.002	39.320229	0	0	12.22998	0	0	Free Surface	0.711906	0.500061	0.500117	0.187523	0.142664	0.592115	78.622052	5,384.00	No	0.187523	0.711906
SMN14511	SMH11116	SMH11129	300	47.507894	0.01545	0.53545	0.490999	0	0.01	0	0	Free Surface	0.427752	0.04821	0.004443	0.014463	0.017029	1.383531	120.521516	4.07	Yes	0.026209	0.177517
SMN14512	SMH11129	SMH11161	300	87	0.006517	9.875203	0.981998	0	2.339996	0	0	Free Surface	0.757653	0.239853	0.126158	0.071956	0.074585	1.072218	78.276491	998.14	No	0.071956	0.757653
SMN14514	SMH11102	SMH19652	375	85.743212	0.00842	193.347672	25.858958	0	59.800417	0	0	Pressurized	1.750601	1	1.198508	0.375	0.295465	0.912507	161.323674	14,245.67	Yes	0.375	1.750601
SMN14506	SMH11086	SMH11116	300	78.492038	0.01181	0	0	0	0	0	0	Free Surface	0	0	0	0	0	0	105.372312	0	No	0	0
SMN16884	SMH19667	SMH19652	1,050.00	102.710413	0.002376	239.253156	84.851856	0	62.875916	0	0	Free Surface	1.166613	0.286652	0.179269	0.300984	0.268604	0.801307	1,334.61	31,558.45	Yes	0.59429	0.473304
SMN16885	SMH19652	SMH19651	1,050.00	179.903971	0.002273	394.204292	111.201813	0	123.088265	0	0	Free Surface	1.320412	0.376831	0.301936	0.395673	0.347454	0.778154	1,305.59	45,914.19	Yes	0.931018	0.485608
SMN20238	SFT256750	SMH11102	375	17.662462	0.017212	192.836133	25.367959	0	59.790417	0	0	Pressurized	2.33801	0.699219	0.83608	0.262207	0.319613	1.524004	230.643144	14,241.60	Yes	0.375	1.74597
SMN20239	SMH11086	SFT256750	200	16.420754	0.282569	0.53545	0.491	0	0.01	0	0	Free Surface	1.246265	0.040516	0.003063	0.008103	0.018918	5.389716	174.815255	4.070006	Yes	0.2	0.017044
SMN14513	SMH11161	SMH17975	300	49.790952	0.007652	10.40153	1.472998	0	2.349996	0	0	Pressurized	0.81426	0.236465	0.122634	0.07094	0.0766	1.161141	84.817745	1,002.21	Yes	0.3	0.147152
SMN14517	SMH17975	SMH19651	300	18.993188	0.014953	10.927841	1.963997	0	2.359996	0	0	Free Surface	1.047228	0.205124	0.092167	0.061537	0.078567	1.610695	118.565867	1,006.28	No	0.061537	1.047228
SMN16886	SMH19651	SFT31368	1,200.00	12.756044	0.002352	400.977698	113.656809	0	125.449261	0	0	Pressurized	1.329712	0.312195	0.211497	0.374634	0.337189	0.815115	1,895.90	46,921.02	Yes	1.2	0.354543

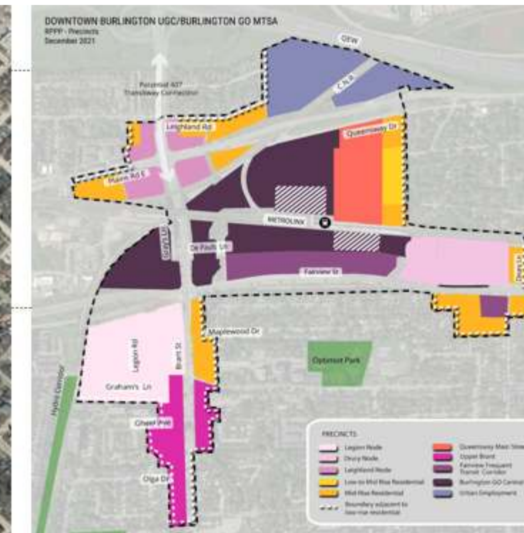
esults for proposed pipe

ID	From ID	To ID	Diameter (mm)	Length (m)	Slope	Total Flow (L/s)	Unpeakable Flow (L/s)	Peakable Flow (L/s)	Coverage Flow (L/s)	Infiltration Flow (L/s)	Storm Flow (L/s)	Flow Type	Velocity (m/s)	d/D	q/Q	Water Depth (m)	Critical Depth (m)	Froude Number	Full Flow (L/s)	Coverage Count	Backwater Adjustment	Adjusted Depth (m)	Adjusted Velocity (m/s)
PSP2-4	PMH2-4	PMH2-5	375	148.316506	0.002002	39.320229	0	0	12.22998	0	0	Free Surface	0.712238	0.499878	0.499808	0.187454	0.142664	0.592529	78.670672	5,384.00	Yes	0.187546	0.711796
PSP2-5	PMH2-5	SMH11064	375	149.792771	0.001996	39.320229	0	0	12.22998	0	0	Free Surface	0.711353	0.500366	0.500607	0.187637	0.142664	0.591425	78.545181	5,384.00	No	0.187637	0.711353
PSP2-3	PMH2-3	PMH2-4	375	126.67252	0.001997	39.320229	0	0	12.22998	0	0	Free Surface	0.711574	0.500244	0.500458	0.187592	0.142664	0.591701	78.568495	5,384.00	No	0.187592	0.711574
PSP2-1	PMH2-1	PMH2-2	375	150	0.002	39.320229	0	0	12.22998	0	0	Free Surface	0.711906	0.500061	0.500117	0.187523	0.142664	0.592115	78.622052	5,384.00	No	0.187523	0.711906
PSP2-2	PMH2-2	PMH2-3	375	130.824226	0.002003	39.320229	0	0	12.22998	0	0	Free Surface	0.712238	0.499878	0.499781	0.187454	0.142664	0.592529	78.674852	5,384.00	Yes	0.187523	0.711906
PSP7-1	PMH7-1	PMH7-2	375	149.523635	0.002006	23.28856	0	0	6.759989	0	0	Free Surface	0.620782	0.372681	0.295738	0.139755	0.108788	0.616082	78.747193	2,978.50	Yes	0.139944	0.619651
PSP7-2	PMH7-2	PMH7-3	375	151.063486	0.001986	23.28856	0	0	6.759989	0	0	Free Surface	0.618524	0.373688	0.297257	0.140133	0.108788	0.612891	78.344814	2,978.50	No	0.140133	0.618524
PSP7-3	PMH7-3	SMH11064	375	93.283137	0.003205	23.28856	0	0	6.759989	0	0	Free Surface	0.735406	0.329102	0.23398	0.123413	0.108788	0.783089	99.532154	2,978.50	No	0.123413	0.735406
PSP1-5	PMH1-5	PMH1-6	375	129.277343	0.002003	10.008364	0	0	2.679996	0	0	Free Surface	0.488577	0.240845	0.127188	0.090317	0.07057	0.617063	78.689729	1,254.00	Yes	0.090408	0.487878
PSP1-6	PMH1-6	SMH10988	375	41.274689	0.001987	10.008364	0	0	2.679996	0	0	Free Surface	0.48718	0.241333	0.127723	0.0905	0.07057	0.614631	78.359995	1,254.00	No	0.0905	0.48718
PSP1-3	PMH1-3	PMH1-4	375	150	0.002	5.254986	0	0	1.339998	0	0	Free Surface	0.404326	0.17514	0.066839	0.065678	0.05086	0.604434	78.622052	627	Yes	0.078026	0.315803
PSP1-4	PMH1-4	PMH1-5	375	22.019972	0.001998	10.008364	0	0	2.679996	0	0	Free Surface	0.48814	0.240997	0.127355	0.090374	0.07057	0.616302	78.586389	1,254.00	No	0.090374	0.48814
SMN19097	SMH10795	SMH10826	250	90.426766	0.003506	1.268594	0.490999	0	0.194494	0	0	Free Surface	0.339604	0.129654	0.035933	0.032413	0.027584	0.726886	35.304328	448.51	Yes	0.033945	0.31752
PSP1-1	PMH1-1	PMH1-2	375	63.624022	0.003128	5.254986	0	0	1.339998	0	0	Free Surface	0.473228	0.157059	0.053447	0.058897	0.05086	0.748824	98.320789	627	No	0.058897	0.473228
PSP1-2	PMH1-2	PMH1-3	375	64.079516	0.004682	5.254986	0	0	1.339998	0	0	Free Surface	0.54521	0.142448	0.043686	0.053418	0.05086	0.907578	120.290241	627	Yes	0.059548	0.465762
PSP4-1	PMH4-1	PMH4-2	300	149.834127	0.004999	1.799997	1.799997	0	0	0	0	Free Surface	0.416844	0.111549	0.026256	0.033465	0.031374	0.880012	68.554345	0	Yes	0.037579	0.351866
PSP4-2	PMH4-2	SMH11003	300	150	0.002	1.799997	1.799997	0	0	0	0	Free Surface	0.302452	0.138977	0.04151	0.041693	0.031374	0.570137	43.362513	0	No	0.041693	0.302452
PSP3-16	PMH3-16	PMH3-17	375	138.057634	0.001999	8.711764	2.579996	0	1.579997	0	0	Free Surface	0.468958	0.224792	0.110829	0.084297	0.065753	0.61453	78.60564	738.98	No	0.084297	0.468958
PSP3-17	PMH3-17	SMH19659	375	45.981699	0.002001	8.711764	2.579996	0	1.579997	0	0	Free Surface	0.469094	0.224747	0.110784	0.08428	0.065753	0.614775	78.637697	738.98	No	0.08428	0.469094
PSP3-14	PMH3-14	PMH3-15	375	150	0.002	8.711764	2.579996	0	1.579997	0	0	Free Surface	0.469049	0.224762	0.110806	0.084286	0.065753	0.614693	78.622052	738.98	No	0.084286	0.469049
PSP3-15	PMH3-15	PMH3-16	375	41.608021	0.002019	8.711764	2.579996	0	1.579997	0	0	Free Surface	0.470591	0.224243	0.110287	0.084091	0.065753	0.617475	78.991524	738.98	Yes	0.084194	0.469774
PSP3-12	PMH3-12	PMH3-13	300	97.61709	0.004395	8.711764	2.579996	0	1.579997	0	0	Free Surface	0.635208	0.248657	0.135532	0.074597	0.069942	0.8817	64.278416	738.98	No	0.074597	0.635208

PSP3-13	PMH3-13	PMH3-14	375	128.989313	0.002	8.711764	2.579996	0	1.579997	0	0	Free Surface	0.469049	0.224762	0.110801	0.084286	0.065753	0.614693	78.625309	738.98	No	0.084286	0.469049
PSP3-11	PMH3-11	PMH3-12	300	146.957997	0.009003	6.131768	0	0	1.579997	0	0	Free Surface	0.738651	0.174896	0.06665	0.052469	0.058447	1.235457	91.998926	738.98	Yes	0.063533	0.561443
PSP3-10	PMH3-10	PMH3-11	300	134.686823	0.010001	6.131768	0	0	1.579997	0	0	Free Surface	0.766447	0.170471	0.063236	0.051141	0.058447	1.299244	96.96627	738.98	No	0.051141	0.766447
PSP3-6	PMH3-6	PMH3-7	300	150	0.002	6.131768	0	0	1.579997	0	0	Free Surface	0.433788	0.254044	0.141407	0.076213	0.058447	0.595208	43.362513	738.98	Yes	0.076307	0.433037
PSP3-7	PMH3-7	PMH3-8	300	26.753934	0.001981	6.131768	0	0	1.579997	0	0	Free Surface	0.432288	0.254669	0.142083	0.076401	0.058447	0.592364	43.156236	738.98	No	0.076401	0.432288
PSP3-8	PMH3-8	PMH3-9	300	30.56517	0.001996	6.131768	0	0	1.579997	0	0	Free Surface	0.433458	0.254181	0.141558	0.076254	0.058447	0.594582	43.31626	738.98	No	0.076254	0.433458
PSP3-9	PMH3-9	PMH3-10	300	112.036663	0.001999	6.131768	0	0	1.579997	0	0	Free Surface	0.433752	0.254059	0.14143	0.076218	0.058447	0.595139	43.355418	738.98	No	0.076218	0.433752
PSP3-5	PMH3-5	PMH3-6	300	145.606777	0.001999	6.131768	0	0	1.579997	0	0	Free Surface	0.433678	0.254089	0.141459	0.076227	0.058447	0.595	43.346611	738.98	No	0.076227	0.433678
PSP3-3	PMH3-3	PMH3-4	300	150	0.00206	2.218629	0	0	0.539999	0	0	Free Surface	0.32523	0.152679	0.050414	0.045804	0.034874	0.583902	44.008144	253.68	Yes	0.060965	0.215471
PSP3-4	PMH3-4	PMH3-5	300	58.237661	0.002009	6.131768	0	0	1.579997	0	0	Free Surface	0.434486	0.253754	0.14109	0.076126	0.058447	0.596533	43.460069	738.98	Yes	0.076176	0.434082
PSP3-1	PMH3-1	PMH3-2	300	150	0.004	2.218629	0	0	0.539999	0	0	Free Surface	0.410478	0.130081	0.036179	0.039024	0.034874	0.800674	61.323854	253.68	Yes	0.042579	0.361576
PSP3-2	PMH3-2	PMH3-3	300	149.537803	0.001999	2.218629	0	0	0.539999	0	0	Free Surface	0.321869	0.153778	0.051171	0.046133	0.034874	0.575719	43.357032	253.68	Yes	0.050469	0.282669
PSP5-2	PMH5-2	PMH5-3	300	149.792054	0.002003	2.688213	0	0	0.659999	0	0	Free Surface	0.340936	0.168762	0.061951	0.050629	0.038434	0.580988	43.392601	308.83	Yes	0.050674	0.340492
PSP5-1_	PMH5-1	PMH5-2	300	150.078699	0.001999	2.688213	0	0	0.659999	0	0	Free Surface	0.340714	0.168839	0.06201	0.050652	0.038434	0.580472	43.351142	308.83	No	0.050652	0.340714
PSP5-3	PMH5-3	PMH5-4	300	70.923977	0.001988	2.688213	0	0	0.659999	0	0	Free Surface	0.340048	0.169067	0.06218	0.05072	0.038434	0.578929	43.23271	308.83	No	0.05072	0.340048
PSP5-4	PMH5-4	SMH16352	300	82.953652	0.002001	2.688213	0	0	0.659999	0	0	Free Surface	0.340847	0.168793	0.061977	0.050638	0.038434	0.580782	43.374625	308.83	No	0.050638	0.340847

RSN	GISID	PROPTYPE	HOUSENUM	STREET	STRTYPE	STRDIR	UNITTYPE	UNIT	ADDRESS	ROLL	ZONING	LEGALDESC	FRONTAGE	DEPTH	Shape_Leng	Shape_Area	Precincts	TotalAreaH	
32097	8461	10	2011	Plains	Rd.	E			2011 Plains Rd. E	2402050501042000000	MXG-5	PLAN 342 PT LOT A RP 20R16949 PART 1	61.94		1678.86553255000	36549.16975400000	Leighland Node	3.65491697540	1188
33165	7880	10	2170	Queensway	Dr.				2170 Queensway Dr.	2402050503101000000	GE2	PLAN 99 PT LOT 17			1001.56244016000	53851.01167060000	Queensway Main Street	5.38510116706	1751
32135	3970	10	760	Brant	St.				760 Brant St.	2402050502007000000	MXG-23	PLAN M59 BLK A	106.74		2270.21314356000	52534.26575750000	Upper Brant	5.25342657575	1708
34295	7890	10	2243	Fairview	St.				2243 Fairview St.	2402050507041000000	MXT	PLAN 203 LOT 7 PT LOTS 6,8 RP 20R8796 PART 3 RP 20R14862 PART 1	146.6		989.83043660700	50787.96084390000	Drury Node	5.07879608439	1651
32115	7691	10	1055	Truman	St.				1055 Truman St.	2402050501047000000	GE2-251	PLAN 99 PT LOT 17			1911.76383357000	80340.43466330000	Urban Employment	8.03404346633	2612
33154	8313	10	2078	Queensway	Dr.				2078 Queensway Dr.	2402050503094000000	GE2	PLAN 99 PT LOT 17 RP 20R9730 PARTS 5,6,7			1961.11988806000	38134.57698230000	Low to Mid-Rise Residential	20.04126962460	6514
33154	8313	10	2078	Queensway	Dr.				2078 Queensway Dr.	2402050503094000000	GE2	PLAN 99 PT LOT 17 RP 20R9730 PARTS 5,6,7			2153.89645271000	84480.24231670000	Legion Node	20.04126962460	6514
33154	8313	10	2078	Queensway	Dr.				2078 Queensway Dr.	2402050503094000000	GE2	PLAN 99 PT LOT 17 RP 20R9730 PARTS 5,6,7			4606.77140052000	182492.29448800000	Burlington GO Central	20.04126962460	6514
97132	95537	10	2065	Fairview	St.				2065 Fairview St.	2402050503022060000	CR-351	PLAN 99 PT LOTS 79,81,82 RP 20R17748 PARTS 9,10,11,12,13,22,24,25,27,28			1578.05829088000	43965.19330420000	Fairview/Brant Frequent Transit Corridor	4.26841917013	1388
33154	8313	10	2078	Queensway	Dr.				2078 Queensway Dr.	2402050503094000000	GE2	PLAN 99 PT LOT 17 RP 20R9730 PARTS 5,6,7			4244.84264228000	79963.96480220000	Mid-Rise Residential	20.04126962460	6514
																			36354





Traffic Zone	Population	Employment
1	847	244
2	4,514	2,821
3	2,612	2,395
4	456	224
5	440	172
6	753	505
7	1,538	914
8	982	901
9	370	130
10	370	130
Sub-Total (Build Out)	**12,882**	**8,435**

The following information was received from Zhongwei Shi (Brook McIlroy), on Nov 29/2017

APPLEBY			
MTSA ZONES			
ZONE 1			
	Number of People	ADD (L/s)	MDD (L/s)
Population (Residential)	847	2.50	5.62
Employment	244	0.64	1.43
Total	1091	3.14	7.05
ZONE 2			
Population (Residential)	4514	13.32	29.98
Employment	2821	7.35	16.53
Total	7335	20.67	46.51
ZONE 3			
Population (Residential)	2612	7.71	17.35
Employment	2395	6.24	14.03
Total	5007	13.95	31.38
ZONE 4			
Population (Residential)	456	1.35	3.03
Employment	244	0.64	1.43
Total	700	1.98	4.46
ZONE 5			
Population (Residential)	440	1.30	2.92
Employment	172	0.45	1.01
Total	612	1.75	3.93
ZONE 6			
Population (Residential)	753	2.22	5.00
Employment	505	1.32	2.96
Total	1258	3.54	7.96
ZONE 7			
Population (Residential)	1538	4.54	10.21
Employment	914	2.38	5.36
Total	2452	6.92	15.57
ZONE 8			
Population (Residential)	982	2.90	6.52
Employment	901	2.35	5.28
Total	1883	5.24	11.80
ZONE 9			
Population (Residential)	370	1.09	2.46
Employment	130	0.34	0.76
Total	500	1.43	3.22
ZONE 10			
Population (Residential)	370	1.09	2.46
Employment	130	0.34	0.76
Total	500	1.43	3.22
	21338	**60**	**135**
Total Residential Population	12882		85.5
Total Employment	8456		49.5
Total intensification	21338		

Flow Calculation

Res Flow= 255 L/cap/day

ICI Flow= 225 L/employee/day

MDD Peaking Factor = 2.25

		Contributing Zones	Junction ID from Model	**ADD**	**MDD**	New or Relocated	
Node #1	BurlGO Dem Node 1	1	BUR GO 33	1.05 L/s	2.35 L/s		
Node #2	BurlGO Dem Node 2	1, 2	WFT513420	5.18 L/s	11.65 L/s		
Node #3	BurlGO Dem Node 3	9, 10	WFT16785	2.86 L/s	6.44 L/s		
Node #4	BurlGO Dem Node 4	1, 2	WFT224048	5.18 L/s	11.65 L/s		
Node #5	BurlGO Dem Node 5	2	BUR GO 25	4.13 L/s	9.30 L/s		
Node #6	BurlGO Dem Node 6	2	BUR GO 27	4.13 L/s	9.30 L/s		
Node #7	BurlGO Dem Node 7	2	BUR GO 38	4.13 L/s	9.30 L/s		
Node #8	BurlGO Dem Node 8	8	BUR GO 17	5.24 L/s	11.80 L/s		
Node #9	BurlGO Dem Node 9	3	BUR GO 12	6.97 L/s	15.69 L/s		
Node #10	BurlGO Dem Node 10	3	BUR GO 9	6.97 L/s	15.69 L/s		
Node #11	BurlGO Dem Node 11	4	BUR GO 5	1.98 L/s	4.46 L/s		
Node #12	BurlGO Dem Node 12	5	WFT16765	1.75 L/s	3.93 L/s		
Node #13	BurlGO Dem Node 13	7	WFT148792	3.46 L/s	7.78 L/s		
Node #14	New	6	WFT14627	3.54 L/s	7.96 L/s	WFT14627	
Node #15	New	7	WFT144482	3.46 L/s	7.78 L/s	WFT144482	New to split flow with zone 7
			subtotal	**60.0 L/s**	**135.1 L/s**		

The following table is for presentation in the map

New Demand Nodes	**Residential Population**	**Employment Population**	**Total Population**
Node #1	282	81	364
Node #2	1185	646	1831
Node #3	740	260	1000
Node #4	1185	646	1831
Node #5	903	564	1467
Node #6	903	564	1467
Node #7	903	564	1467
Node #8	982	901	1883
Node #9	1306	1198	2504
Node #10	1306	1198	2504
Node #11	456	244	700
Node #12	440	172	612
Node #13	769	457	1226
Node #14	753	505	1258
Node #15	769	457	1226
	12882	8456	

	ID (Char)	Demand 7	Demand 9
Node #9	BUR GO 12	7.9	3.8
Node #8	BUR GO 17	4.9	1.5
Node #5	BUR GO 25	7.9	3.8
Node #6	BUR GO 27	6.0	3.3
Node #1	BUR GO 33	1.9	0.5
Node #7	BUR GO 38	6.0	3.3
Node #11	BUR GO 5	6.0	3.3
Node #10	BUR GO 9	6.5	5.3
Node #15	WFT144482	8.7	7.0
Node #14	WFT14627	8.7	7.0
Node #13	WFT148792	3.0	1.4
Node #12	WFT16765	2.9	1.0
Node #3	WFT16785	5.1	2.7
Node #4	WFT224048	5.0	3.0
Node #2	WFT513420	5.1	2.7
		85.5	49.5

Flow Calculation

Res Flow = 255 L/cap/day
Commercial Flow = 135 L/employee/day
Industrial Flow = 170 L/employee/day
MDD Peaking Factor = 1.9

(Note - The design criteria above is confirmed by Dave Huk, Halton region.)

Res Pop	Commercial Pop	Res Flow	Commercial Flow	total ADD	total MDD
22000	9500	64.9	14.8	79.8	151.6

Total Burlington GO intensification is = 31,500

****Total MDD is evenly distributed into 13 nodes**

	Description	Junction ID from Model	MDD
	BurlGO Dem Node 1	BUR_GO_33	11.7 L/s
Node #2	BurlGO Dem Node 2	WFT513420	11.7 L/s
Node #3	BurlGO Dem Node 3	WFT16785	11.7 L/s
Node #4	BurlGO Dem Node 4	WFT224048	11.7 L/s
Node #5	BurlGO Dem Node 5	BUR_GO_25	11.7 L/s
Node #6	BurlGO Dem Node 6	BUR_GO_27	11.7 L/s
Node #7	BurlGO Dem Node 7	BUR_GO_38	11.7 L/s
Node #8	BurlGO Dem Node 8	BUR_GO_17	11.7 L/s
Node #9	BurlGO Dem Node 9	BUR_GO_12	11.7 L/s
Node #10	BurlGO Dem Node 10	BUR_GO_9	11.7 L/s
Node #11	BurlGO Dem Node 11	BUR_GO_5	11.7 L/s
Node #12	BurlGO Dem Node 12	WFT16765	11.7 L/s
Node #13	BurlGO Dem Node 13	WFT148792	11.7 L/s

Pattern 3 (Cha	Demand 4 (lps	Pattern 4 (Cha	Demand 5 (lps	Pattern 5 (Cha	Demand 6 (lps	Pattern 6 (Cha	Demand 7 (lps	Pattern 7 (Cha	Demand 8 (lps	Pattern 8 (Cha	Demand 9 (lps	Pattern 9 (Cha	Demand 10 (lps)
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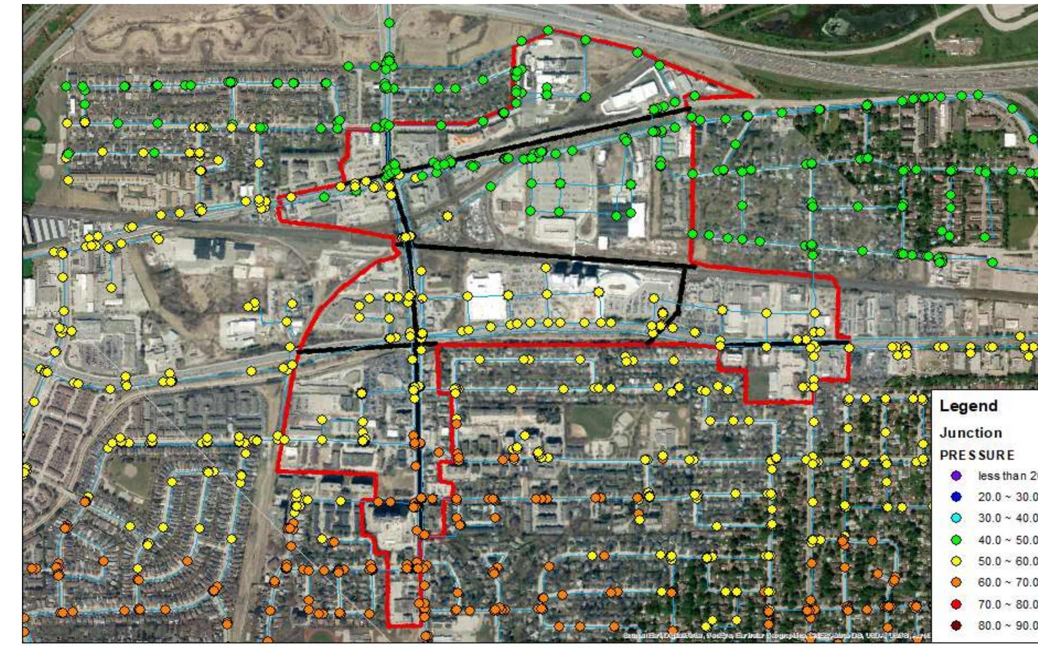
0			0	0	0	0
0			0.1	0	0	0
0			0.1	0	0	0

ID	Demand (L/s)	Elevation (m)	Head (m)	Pressure (psi)
BUR_GO_1	0	93.5	134.9	58.9
BUR_GO_10	0	99	134.9	51.1
BUR_GO_11	0	96.3	134.9	54.9
BUR_GO_12	11.7	99	134.9	51.1
BUR_GO_13	0	99	134.9	51.1
BUR_GO_14	0	96	134.9	55.3
BUR_GO_15	0	99	134.9	51.1
BUR_GO_16	0	97	135	54
BUR_GO_17	6.4	97	134.9	53.9
BUR_GO_18	0	96.6	134.9	54.5
BUR_GO_19	0	97	134.9	53.9
BUR_GO_2	0	93.4	134.9	59
BUR_GO_20	0	96	134.9	55.4
BUR_GO_21	0	96.5	134.9	54.6
BUR_GO_22	0	100.6	135	48.8
BUR_GO_23	0	100.5	135	49
BUR_GO_24	0	100	135	49.7
BUR_GO_25	11.7	100.5	134.9	49
BUR_GO_26	0	100	134.9	49.7
BUR_GO_27	9.3	100.5	134.9	49
BUR_GO_28	0	100.5	134.9	49
BUR_GO_29	0	100.6	135	48.8
BUR_GO_3	0	99	135	51.2
BUR_GO_31	0	104.5	135	43.3
BUR_GO_32	0	103	135	45.4
BUR_GO_33	2.4	103	135	45.4
BUR_GO_34	0	104	135	44
BUR_GO_35	0	103	135	45.4
BUR_GO_36	0	103	135	45.4
BUR_GO_37	0	100.5	135	49
BUR_GO_38	9.3	99.3	135	50.7
BUR_GO_4	0	97.5	135	53.3
BUR_GO_5	9.3	97	135	54
BUR_GO_6	0	97.5	135	53.2
BUR_GO_7	0	98.5	135	51.8
BUR_GO_8	0	97	134.9	53.9
BUR_GO_9	11.8	98.5	134.9	51.8
WAP172	0	93.6	135	58.7
WCV10062	0.2	92.4	134.9	60.4
WCV114872	0	100.7	135	48.7
WCV115280	0	100.5	135	49
WCV115282	0	100.5	135	49.1
WCV115601	0	97.5	135	53.3
WCV115602	0	97.6	135	53.2
WCV115603	0.1	97.4	135	53.4
WCV117404	0.3	99.3	134.9	50.6
WCV119848	0	95.9	135	55.5
WCV173605	0	96	135	55.4
WCV173606	0	95.9	135	55.5
WCV20301	0	102.4	135	46.2
WCV223614	0	101.9	135	47
WCV223615	0	101.9	135	47
WCV223619	0	103.6	135	44.6
WCV35378	0	100.8	135	48.6
WCV56290	0.2	92.5	134.9	60.3
WCV6086	0	92.2	134.9	60.8
WCV6092	0	92.1	134.9	60.8
WCV6093	0.2	91.5	134.9	61.7
WCV6094	0.2	91.6	134.9	61.7
WCV6095	0.2	91.3	134.9	62
WCV6096	0.2	91.6	134.9	61.6
WCV6104	0.8	92	134.9	61.1
WCV6116	0.1	94	134.9	58.3
WCV6117	0	93.8	134.9	58.5
WCV6118	0	96	135	55.4
WCV6119	0	95.9	135	55.5
WCV6120	0	96.2	135	55.1
WCV6121	0	96	135	55.4
WCV6122	0	96	135	55.4
WCV6123	0.4	96	135	55.4
WCV6124	0	96.4	134.9	54.8
WCV6125	0.2	97.1	135	53.7
WCV6126	0	97.3	135.1	53.8
WCV6127	0.1	97.5	135	53.4
WCV6165	0	101.9	135	47
WCV6170	0	101.6	135	47.5
WCV6171	0	102.3	135	46.5
WCV6174	0	99.9	135	49.9
WCV6175	0	100.1	135	49.5
WCV6176	0	100.6	135	48.9
WCV6177	0	100	135	49.7
WCV6178	0	99.3	135	50.6
WCV6179	0	99.1	135	50.9
WCV6180	0	99.2	135	50.8
WCV6181	0.1	101.5	135	47.5
WCV6191	0	99.6	134.9	50.1
WCV6192	0	99.5	135	50.4
WCV6193	0	94	135	58.3
WCV6194	0	96.3	135	55
WCV6195	0.1	97.2	135	53.6

ID	Demand (L/s)	Elevation (m)	Head (m)	Pressure (psi)
BUR_GO_33	2.4	103	135	45.4
WFT513420	7.8	103.6	135	44.5
BUR_GO_25	11.7	100.5	134.9	49
BUR_GO_27	9.3	100.5	134.9	49
BUR_GO_9	11.8	98.5	134.9	51.8
BUR_GO_12	11.7	99	134.9	51.1
BUR_GO_5	9.3	97	135	54
WFT16765	3.9	97.5	135	53.3
WFT144482	15.8	91.3	134.4	61.2
WFT14627	15.7	92	134.8	61
BUR_GO_17	6.4	97	134.9	53.9
WFT16785	8	99.7	134.9	50
BUR_GO_38	9.3	99.3	135	50.7
WFT148792	4.5	94.4	134.9	57.6
WFT224048	8	100.5	135	49.1

ID	From Node	To Node	Length (m)	Diameter (mm)	Roughness	Flow (ML/d)	Velocity (m/s)	Headloss (m)	HL/1000 (m/k-m)	Status
WMN_BUR_GO_1	WFT14667	BUR_GO_1	56.3	300	110	-0.7	0.1	0	0.1	Open
WMN_BUR_GO_2	BUR_GO_1	WFT148795	108.1	300	110	-0.7	0.1	0	0.1	Open
WMN_BUR_GO_3	WFT148792	BUR_GO_2	138.2	300	110	-1	0.2	0	0.2	Open
WMN_BUR_GO_23	BUR_GO_20	BUR_GO_18	78.9	300	110	0.3	0	0	0	Open
WMN_BUR_GO_21	BUR_GO_18	WFT657123	56.2	300	110	0.7	0.1	0	0.1	Open
WMN_BUR_GO_20	BUR_GO_17	BUR_GO_18	57.1	300	110	0.5	0.1	0	0	Open
WMN_BUR_GO_22	BUR_GO_17	BUR_GO_19	53.6	300	110	0.3	0	0	0	Open
WMN_BUR_GO_24	BUR_GO_19	BUR_GO_21	32.6	300	110	0.3	0	0	0	Open
WMN_BUR_GO_25	BUR_GO_20	BUR_GO_21	31.2	300	110	-0.3	0	0	0	Open
WMN_BUR_GO_18	BUR_GO_13	BUR_GO_16	120.8	300	110	-0.8	0.1	0	0.1	Open
WMN_BUR_GO_16	BUR_GO_13	BUR_GO_14	93.1	300	110	-0.1	0	0	0	Open
WMN_BUR_GO_15	BUR_GO_12	BUR_GO_13	108.2	300	110	-0.9	0.1	0	0.1	Open
WMN_BUR_GO_14	BUR_GO_12	WFT14372	83.8	300	110	-0.3	0.1	0	0	Open
WMN_BUR_GO_13	BUR_GO_10	BUR_GO_12	101.8	300	110	-0.2	0	0	0	Open
WMN_BUR_GO_12	BUR_GO_10	BUR_GO_11	79.9	300	110	-0.2	0	0	0	Open
WMN_BUR_GO_11	BUR_GO_9	BUR_GO_10	139.1	300	110	-0.4	0.1	0	0	Open
WMN_BUR_GO_10	BUR_GO_8	BUR_GO_9	84.2	300	110	0.6	0.1	0	0.1	Open
WMN_BUR_GO_8	BUR_GO_6	BUR_GO_7	75.6	300	110	-0.4	0.1	0	0	Open
WMN_BUR_GO_9	BUR_GO_7	BUR_GO_5	183.9	300	110	-0.4	0.1	0	0	Open
WMN_BUR_GO_5	BUR_GO_4	WFT14116	93.3	300	110	-0.1	0	0	0	Open
WMN_BUR_GO_7	BUR_GO_5	WFT14166	84.9	300	110	-0.2	0	0	0	Open
WMN_BUR_GO_6	BUR_GO_4	BUR_GO_5	118.1	300	110	1	0.2	0	0.2	Open
WMN_BUR_GO_4	BUR_GO_3	BUR_GO_4	129.2	300	110	0.9	0.1	0	0.1	Open
WMN_BUR_GO_45	BUR_GO_38	WFT14399	110.7	300	110	-0.6	0.1	0	0.1	Open
WMN_BUR_GO_44	BUR_GO_37	BUR_GO_38	139	300	110	0.2	0	0	0	Open
WMN_BUR_GO_43	WFT14175	BUR_GO_37	126.3	300	110	0.2	0	0	0	Open
WMN_BUR_GO_26	BUR_GO_22	BUR_GO_23	69.2	300	110	0.7	0.1	0	0.1	Open
WMN_BUR_GO_27	BUR_GO_23	BUR_GO_24	79.2	300	110	0.3	0	0	0	Open
WMN_BUR_GO_28	BUR_GO_23	BUR_GO_25	76.1	300	110	0.4	0.1	0	0	Open
WMN_BUR_GO_35	BUR_GO_29	BUR_GO_25	84.3	300	110	0.6	0.1	0	0.1	Open
WMN_BUR_GO_30	BUR_GO_25	BUR_GO_26	77.9	300	110	-0.1	0	0	0	Open
WMN_BUR_GO_29	BUR_GO_24	BUR_GO_26	76.2	300	110	0.3	0	0	0	Open
WMN_BUR_GO_31	BUR_GO_26	BUR_GO_28	190	300	110	0.1	0	0	0	Open
WMN_BUR_GO_32	BUR_GO_28	BUR_GO_27	81	300	110	0.1	0	0	0	Open
WMN_BUR_GO_33	BUR_GO_25	BUR_GO_27	189.8	300	110	0.1	0	0	0	Open
WMN_BUR_GO_34	BUR_GO_27	WCV6247	121.1	300	110	-0.5	0.1	0	0	Open
WMN_BUR_GO_36	WFT14122	BUR_GO_33	87.4	300	110	0	0	0	0	Open
WMN_BUR_GO_37	BUR_GO_33	BUR_GO_32	101.5	300	110	-0.2	0	0	0	Open
WMN_BUR_GO_38	BUR_GO_31	BUR_GO_32	158.3	300	110	0.2	0	0	0	Open
WMN_BUR_GO_39	WFT18352	BUR_GO_31	101.8	300	110	0.2	0	0	0	Open
WMN_BUR_GO_40	BUR_GO_31	BUR_GO_34	143.4	300	110	0	0	0	0	Open
WMN_BUR_GO_41	BUR_GO_34	BUR_GO_35	66.8	300	110	0	0	0	0	Open
WMN_BUR_GO_42	BUR_GO_35	BUR_GO_36	112.2	300	110	0	0	0	0	Open



WCV6243	0.1	98	135	52.6
WCV6244	0	97.9	135	52.6
WCV6247	0.1	101.4	135	47.7
WCV6270	0	96.3	135	55
WCV6271	0.1	96.3	135	55.1
WCV6346	0.1	94.8	134.9	56.9
WCV6347	0	94.8	134.9	57
WCV6393	0	96.4	134.9	54.7
WCV6976	0	101.8	134.9	47.2
WCV6977	0	101	135	48.2
WCV6978	0	100.6	135	48.8
WCV6979	0	100.9	135	48.5
WCV6980	0.2	101.6	135	47.4
WCV7045	0.2	101.4	135	47.7
WCV76926	0	102	135	46.8
WCV76932	0	100.6	135	48.9
WCV81935	0.2	91.3	134.9	62.1
WCV81936	0.2	91.3	134.9	62.1
WCV81938	0.1	91.9	134.9	61.1
WCV81939	0	92.2	134.9	60.7
WCV82137	0.2	91.5	134.9	61.7
WCV82138	0.1	92.2	134.9	60.8
WCV82139	0	92	134.9	61
WCV82140	0.1	92.1	134.9	61
WCV82141	0	93.9	134.9	58.3
WCV82142	0	93.8	134.9	58.5
WCV83221	0	94.3	134.9	57.7
WCV83222	0.1	94.2	134.9	57.9
WCV83223	0.2	93.8	134.9	58.5
WCV83226	0.1	94.8	134.9	57.1
WCV83303	0	101.9	135	47
WCV83411	0.2	91.9	134.4	60.4
WCV83412	0.2	91.4	134.4	61.1
WCV91737	0	93.4	134.9	59
WCV9458	0.5	93.4	135	59.1
WCV9459	0.3	92.1	134.9	60.9
WCV9461	0.1	95.3	135	56.4
WCV9466	0	93.5	135	59
WCV9467	0	93.2	135	59.4
WCV9468	0	92.6	135	60.2
WCV9469	0	93.4	135	59.1
WCV9470	0	93.1	135	59.4
WCV9471	0.4	93.2	135	59.4
WCV9477	0.1	91.8	134.9	61.2
WDV13960	0	93.7	135	58.7
WDV13961	0	93.9	135	58.4
WDV13977	0.1	101	135	48.3
WDV88713	0	100.4	135	49.1
WFT112656	0	95.2	134.9	56.5
WFT112657	0.1	94.3	134.9	57.8
WFT112658	0	94	134.9	58.2
WFT112659	0.1	94.8	134.9	57.1
WFT113163	0.2	94.4	134.9	57.6
WFT113164	0.1	94.8	134.9	57.1
WFT113165	0.1	95.3	134.9	56.4
WFT114257	0.1	94.7	134.9	57.3
WFT114258	0.1	94.5	134.9	57.4
WFT114259	0.1	94.6	134.9	57.3
WFT13917	0.1	102.4	135	46.3
WFT14021	0.1	97.7	135	53.1
WFT14031	0.2	102	135	46.9
WFT14036	0.1	101.5	135	47.6
WFT14039	0.3	98.1	135	52.5
WFT14042	0.1	103.4	135	44.8
WFT14050	0	101.6	135	47.4
WFT14060	0	97.4	135.1	53.7
WFT14104	0.1	96.5	135	54.8
WFT14110	0.1	96.5	135	54.8
WFT14115	0	100.8	135	48.6
WFT14116	0.4	97.1	135	53.8
WFT14122	0	100.7	135	48.7
WFT14128	0	100.6	135	48.8
WFT14140	0.1	100.9	135	48.4
WFT14166	0	96.5	135	54.7
WFT14172	0.5	96.9	135	54.2
WFT14175	0	100.6	135	48.8
WFT14179	0	97.3	135	53.6
WFT14181	0.1	100.9	135	48.4
WFT14193	0	101.9	135	47.1
WFT14202	0	97.7	135	53
WFT14210	0	97.7	135	52.9
WFT14211	0	97	135.1	54.1
WFT14229	0	100.6	135	48.9
WFT14245	0	97.2	134.9	53.6
WFT14250	0.2	96.7	135	54.3
WFT14252	0.3	100.9	135	48.5
WFT14279	0.1	95.1	135	56.6
WFT14291	0	96.2	134.9	55
WFT14294	0.1	96.4	135	54.8
WFT14298	0.1	95.1	135	56.7
WFT14308	0	101.6	135	47.4

WFT14310	0	101.6	135	47.4
WFT14316	0	101.5	134.9	47.6
WFT14331	0	99.2	135	50.8
WFT14335	0	101	135	48.3
WFT14339	0	100.5	135	48.9
WFT14341	0.1	95.4	135	56.3
WFT14344	0	100	135	49.7
WFT14346	0	100.5	135	49
WFT14347	0	100.4	135	49.2
WFT14348	0	100.3	135	49.3
WFT14355	0	100	135	49.7
WFT14372	0	96.6	134.9	54.5
WFT14375	0	98.2	135	52.2
WFT14387	0	99.5	135	50.4
WFT14389	0	96.5	134.9	54.6
WFT14390	0	99.4	135	50.5
WFT14394	0	99.6	134.9	50.3
WFT14399	0	94.2	135	57.9
WFT14406	0	99.7	134.9	50.1
WFT14410	0	93.6	135	58.7
WFT14412	0	93.5	135	59
WFT14443	0	96.1	134.9	55.2
WFT144482	15.8	91.3	134.4	61.2
WFT14457	0	96.3	135	54.9
WFT14482	0	95.9	135	55.5
WFT14484	0	93.4	135	59
WFT14487	0.1	92.8	135	59.9
WFT14493	0	96	135	55.4
WFT14495	0	95.9	135	55.5
WFT14500	0	95.9	135	55.5
WFT14513	0.1	92.9	135	59.7
WFT14527	0.1	92.4	134.9	60.4
WFT14529	0.4	92.5	135	60.4
WFT14538	0.2	93.8	134.9	58.4
WFT14565	0.6	92.1	134.9	60.9
WFT14585	0.4	92.1	134.9	61
WFT14587	0	92.2	134.9	60.7
WFT14595	0	92.2	134.9	60.8
WFT14627	15.7	92	134.8	61
WFT14639	0.2	93.6	134.9	58.8
WFT14642	0.1	95.9	134.9	55.4
WFT14645	0.2	91.6	134.9	61.6
WFT14664	0.2	91.8	134.9	61.4
WFT14667	0.2	94.4	134.9	57.6
WFT14684	0.1	91.5	134.9	61.8
WFT14692	0.2	91.3	134.9	62
WFT14702	0	94.8	134.9	56.9
WFT148789	0	93.3	134.9	59.2
WFT148791	0	93.6	134.9	58.8
WFT148792	4.5	94.4	134.9	57.6
WFT148793	0.1	94.4	134.9	57.6
WFT148794	0.1	94.3	134.9	57.7
WFT148795	0.1	93.8	134.9	58.5
WFT150345	0	93.4	134.9	59
WFT16762	0.1	101.9	135	47
WFT16765	3.9	97.5	135	53.3
WFT16783	0	99.4	135	50.6
WFT16785	8	99.7	134.9	50
WFT16790	0	96	135	55.4
WFT16795	0.2	92.1	134.9	61
WFT18352	0	104.6	135	43.2
WFT18358	0.1	98	135	52.6
WFT18359	0	102	135	46.9
WFT18364	1.2	102.3	134.9	46.5
WFT18374	0.1	96.6	135	54.6
WFT18377	0.1	100.7	135	48.8
WFT18385	0	98.1	135	52.5
WFT18386	0	97.7	135	52.9
WFT18408	0.1	95.2	135	56.6
WFT18409	0.1	96.4	135	54.8
WFT18416	0	100.2	135	49.3
WFT18420	0	99.5	135	50.4
WFT18431	0.4	93.7	135	58.6
WFT18432	0	93.6	135	58.8
WFT18433	0	93.6	135	58.8
WFT20311	1.2	101.8	134.9	47.1
WFT20316	0	100.6	135	48.8
WFT20348	0.1	96.4	135	54.8
WFT20353	0.1	101.3	134.9	47.8
WFT20355	0	100	135	49.6
WFT20376	0	97	135	54
WFT20382	0.5	96.5	134.9	54.6
WFT20400	0.2	91.3	134.9	62.1
WFT204002	0.2	93.2	134.9	59.3
WFT204003	0	93.4	134.9	59
WFT204004	0	93.5	134.9	58.8
WFT215459	0	94.7	134.9	57.3
WFT217187	0	96	135	55.3
WFT217188	0	96.4	134.9	54.8
WFT217189	0	96.2	134.9	55
WFT220800	0.2	97.3	135	53.6

WFT224035	0	100.4	135	49.2
WFT224038	0	100.5	135	49
WFT224043	0	100.5	135	49
WFT224048	8	100.5	135	49.1
WFT224050	0	100.3	135	49.3
WFT224055	0	101.1	135	48.2
WFT224058	0	100.7	135	48.7
WFT224059	0	100.7	135	48.7
WFT224062	0	100.8	135	48.7
WFT224063	0	100.7	135	48.7
WFT224064	0	100.7	135	48.8
WFT225396	0	101.5	135	47.6
WFT225397	0	101.2	135	48.1
WFT227131	0	100.8	135	48.6
WFT227132	0	100.4	135	49.1
WFT239360	0	99.7	135	50.1
WFT257958	0.3	99.5	134.9	50.3
WFT257959	0.3	99.8	134.9	49.9
WFT27197	0	102.1	135	46.7
WFT27198	0	102	135	46.8
WFT27201	0	102.9	135	45.5
WFT407	0.2	92.4	134.9	60.4
WFT412	0.1	91.8	134.9	61.2
WFT43516	0	100.7	135	48.7
WFT43521	0.1	100.5	135	49
WFT43553	0.2	100.2	135	49.4
WFT44686	0.4	96.5	135	54.6
WFT513409	0	101.9	135	47
WFT513410	0	101.9	135	47
WFT513411	0	101.9	135	47
WFT513419	0	103.6	135	44.6
WFT513420	7.8	103.6	135	44.5
WFT513427	0	101.9	135	47.1
WFT65680	0.2	92.3	134.9	60.7
WFT65681	0.1	94	134.9	58.2
WFT657122	0.1	97.3	134.9	53.5
WFT657123	0.5	96.5	134.9	54.6
WFT86347	0	102.1	135	46.8
WFT86348	0	100.6	135	48.8
WFT86350	0	101.2	135	48.1
WFT86352	0	100.7	135	48.6
WFT86584	0.1	91.8	134.9	61.2
WFT90150	0	93.3	135	59.3
WFT92397	1.8	91.4	134.9	61.8
WFT92399	0.4	93.2	134.9	59.3
WFT93748	0.4	92	134.9	61
WFT93757	0	93.9	134.9	58.4
WFT93758	0.2	94.7	134.9	57.3
WFT94577	0.2	91.5	134.9	61.8
WFT94582	1.7	91.6	134.9	61.7
WPV2650	0	102	135	46.9
WPV73	0	96.2	134.9	55.1
WSV35396	0.1	100.3	135	49.4
WSV76934	0	100.8	135	48.6
WSV83033	0.2	92.2	134.9	60.7
				43.20
				53.59
				62.10

ID	Total Demand (L/s)	Hydrant Available Flow (L/s)	Critical Node ID for Design Run	Critical Node Pressure at Available Flow (psi)	Critical Node Pressure at Fire Demand (psi)	Critical Pressure for Design Run (psi)	Hydrant Design Flow (L/s)	Hydrant Pressure at Design Flow (psi)
BUR_GO_12	291.7	464.1	BUR_GO_12	28.4	39	28.4	464.1	28.4
BUR_GO_17	286.4	844.4	BUR_GO_17	28.4	46.7	28.4	844.4	28.4
BUR_GO_25	291.7	535.6	BUR_GO_25	28.4	39.5	28.4	535.6	28.4
BUR_GO_27	289.3	472.4	BUR_GO_27	28.4	38.2	28.4	472.4	28.4
BUR_GO_33	282.4	346.4	BUR_GO_33	28.4	32.5	28.4	346.5	28.4
BUR_GO_38	289.3	556.7	BUR_GO_38	28.4	41.1	28.4	556.7	28.4
BUR_GO_5	289.3	419.6	BUR_GO_5	28.4	39	28.4	419.7	28.4
BUR_GO_9	291.8	381.7	BUR_GO_9	28.4	35.9	28.4	381.8	28.4
WFT144482	295.8	115.9	WFT144482	28.4	-111.4	28.4	115.9	28.4
WFT14627	295.7	287.5	WFT14627	28.4	26.9	28.4	287.5	28.4
WFT148792	284.5	712.7	WFT148792	28.4	48.7	28.4	712.7	28.4
WFT16765	283.9	487.7	WFT16765	28.4	41.4	28.4	487.7	28.4
WFT16785	288	156	WFT16785	28.4	-9.5	28.4	156	28.4
WFT224048	288	643.5	WFT224048	28.4	41.2	28.4	643.5	28.4
WFT513420	287.8	392.3	WFT513420	28.4	33.7	28.4	392.3	28.4

The following information was received from Zhongwei Shi (Brook McIlroy), on Nov 29/2017

APPLEBY		
MTSA ZONES		
ZONE 1		
	Number of People	ADD (L/s)
Population (Residential)	847	2.06
Employment	244	0.52
Total	1091	2.58
ZONE 2		
Population (Residential)	4514	10.97
Employment	2821	6.04
Total	7335	17.01
ZONE 3		
Population (Residential)	2612	6.35
Employment	2395	5.13
Total	5007	11.48
ZONE 4		
Population (Residential)	456	1.11
Employment	244	0.52
Total	700	1.63
ZONE 5		
Population (Residential)	440	1.07
Employment	172	0.37
Total	612	1.44
ZONE 6		
Population (Residential)	753	1.83
Employment	505	1.08
Total	1258	2.91
ZONE 7		
Population (Residential)	1538	3.74
Employment	914	1.96
Total	2452	5.70
ZONE 8		
Population (Residential)	982	2.39
Employment	901	1.93

Flow Calculation

Res Flow= 210 L/cap/day
ICI Flow= 185 L/employee/day

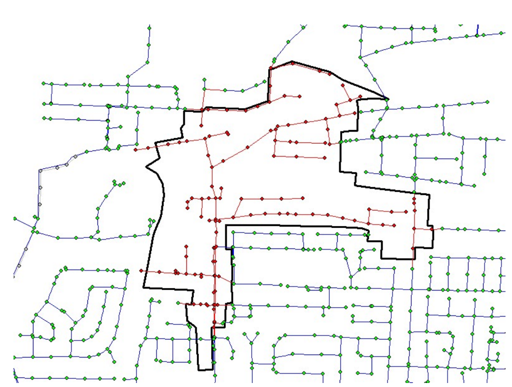
			Residential		ICI			
ZONE 1	Loading MH in Model	Area Split (%)	Avg Flow (L/s)	Pop	Avg Flow (L/s)	Pop		Area
5	PMH1-1	0.23	0.48	195.46	0.12	56.31	849.58	3.30
6	PMH2-1	0.29	0.59	242.85	0.15	69.96		4.10
4	PMH3-1	0.24	0.50	207.31	0.13	59.72		3.50
27	SMH9028	0.13	0.27	112.54	0.07	32.42		1.90
3	SMH8986	0.10	0.22	88.85	0.05	25.59		1.50
								14.30
ZONE 2	Loading MH in Model	Area Split (%)	Avg Flow (L/s)	Pop	Avg Flow (L/s)	Pop		Area
8,25	PMH4-1	0.27	2.94	1207.97	1.62	754.92	4531.01	5.70
9,31,24,26	PMH5/6-1	0.55	6.03	2479.52	3.32	1549.56		11.70
7	SMH11522	0.18	2.01	826.51	1.11	516.52		3.90
								21.30
ZONE 3	Loading MH in Model	Area Split (%)	Avg Flow (L/s)	Pop	Avg Flow (L/s)	Pop		Area
18	SMH9498	0.36	2.26	930.53	1.83	853.22	2377.53	5.70
17	PSP8-1	0.44	2.82	1159.08	2.28	1062.78		7.10
15	SMH35548	0.11	0.67	277.53	0.54	254.47		1.70
16	SMH9276	0.09	0.60	244.88	0.48	224.53		1.50
								16.00
ZONE 4	Loading MH in Model	Area Split (%)	Avg Flow (L/s)	Pop	Avg Flow (L/s)	Pop		Area
19	PMH7-1	0.77	0.86	352.00	0.40	188.35	457.63	4.40
20	SMH57382	0.23	0.25	104.00	0.12	55.65		1.30
								5.70
ZONE 5	Loading MH in Model	Area Split (%)	Avg Flow (L/s)	Pop	Avg Flow (L/s)	Pop		Area
21	SMH9635	0.44	0.47	191.79	0.16	74.97	441.44	1.70
23	SMH19383	0.28	0.30	124.10	0.10	48.51		1.10
22	SMH19384	0.28	0.30	124.10	0.10	48.51		1.10
								3.90
ZONE 6	Loading MH in Model	Area Split (%)	Avg Flow (L/s)	Pop	Avg Flow (L/s)	Pop		
13,14	SMH9320	0.50	0.92	376.50	0.54	252.50	755.91	
	SMH9450	0.50	0.92	376.50	0.54	252.50		
ZONE 7	Loading MH in Model	Area Split (%)	Avg Flow (L/s)	Pop	Avg Flow (L/s)	Pop		
12,11	SMH9378	0.50	1.87	769.00	0.98	457.00	1543.70	
	SMH9489	0.50	1.87	769.00	0.98	457.00		
ZONE 8	Loading MH in Model	Area Split (%)	Avg Flow (L/s)	Pop	Avg Flow (L/s)	Pop		Area
10	PSP10-1	0.72	1.71	704.08	1.38	646.00	986.32	3.80
28	PSP9-1	0.28	0.68	277.92	0.55	255.00		1.50

Total	1883	4.32
ZONE 9		
Population (Residential)	370	0.90
Employment	130	0.28
Total	500	1.18
ZONE 10		
Population (Residential)	370	0.90
Employment	130	0.28
Total	500	1.18
	21338	**49.42**

Total Residential Population	**12882**
Total Employment	**8456**
Total intensification	**21338**

								5.30
ZONE 9	Loading MH in Model	Area Split (%)	Avg Flow (L/s)	Pop	Avg Flow (L/s)	Pop		Area
	SMH11525	0.65	0.58	240.00	0.18	84.32	371.18	2.40
	SMH9035	0.35	0.32	130.00	0.10	45.68		1.30
								3.70
ZONE 10	Loading MH in Model	Area Split (%)	Avg Flow (L/s)	Pop	Avg Flow (L/s)	Pop		
	SMH8968	1.00	0.90	370.00	0.28	130.00	371.18	

HEADLOSS (Num)	LOAD1 (Num)	TYPE1 (Num)	PATTERN1 (Char)	COVERAGE1 (Num)	LOAD2 (Num)	TYPE2 (Num)	PATTERN2 (Char)	COVERAGE2 (Num)	LOAD3 (Num)	TYPE3 (Num)	PATTERN3 (Char)	COVERAGE3 (Num)	LOAD4 (Num)	TYPE4 (Num)	PATTERN4 (Char)	COVERAGE4 (Num)	LOAD5 (Num)	TYPE5 (Num)	PATTERN5 (Char)	COVERAGE5 (Num)	LOAD6 (Num)	TYPE6 (Num)	PATTERN6 (Char)	COVERAGE6 (Num)	LOAD7 (Num)	TYPE7 (Num)	PATTERN7 (Char)	COVERAGE7 (Num)	LOAD8 (Num)	TYPE8 (Num)	PATTERN8 (Char)	COVERAGE8 (Num)	LOAD9 (Num)	TYPE9 (Num)	PATTERN9 (Char)	COVERAGE9 (Num)
		2: Peakable Coverage				2: Peakable Coverage			0.491	0: Unpeakable		0				0	0.003	2: Peakable Coverage		1.14	0.001	2: Peakable Coverage		0.34	0	0: Unpeakable		0	0			0	0			0
0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0
0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0
		2: Peakable Coverage				2: Peakable Coverage			0	0: Unpeakable		0				0	0.007	2: Peakable Coverage		2.75	0.001	2: Peakable Coverage		0.3	0	0: Unpeakable		0	0			0	0			0
0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0
0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0
0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0
		2: Peakable Coverage				2: Peakable Coverage			0	0: Unpeakable		0				0	0.005	2: Peakable Coverage		1.86	0.001	2: Peakable Coverage		0.24	0	0: Unpeakable		0	0			0	0			0
		2: Peakable Coverage			0.170795	2: Peakable Coverage		117	0	0: Unpeakable		0				0	0.005	2: Peakable Coverage		1.86	0.001	2: Peakable Coverage		0.24	0	0: Unpeakable		0	0			0	0			0
0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0
		2: Peakable Coverage			0.048427	2: Peakable Coverage		158	0	0: Unpeakable		0				0	0.005	2: Peakable Coverage		1.86	0.001	2: Peakable Coverage		0.24	0	0: Unpeakable		0	0			0	0			0
0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0
0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0
		2: Peakable Coverage				2: Peakable Coverage			0.206	0: Unpeakable		0				0	0.058	2: Peakable Coverage		23.93	0.024	2: Peakable Coverage		9.76	0	0: Unpeakable		0	0			0	0			0
0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0
0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0
0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0
0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0
0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0
0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0
0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0
		2: Peakable Coverage				2: Peakable Coverage			0	0: Unpeakable		0				0	0.007	2: Peakable Coverage		2.75	0.001	2: Peakable Coverage		0.3	0	0: Unpeakable		0	0			0	0			0
0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0
0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0
		2: Peakable Coverage				2: Peakable Coverage			0.206	0: Unpeakable		0				0	0.081	2: Peakable Coverage		33.35	0.027	2: Peakable Coverage		11.31	0	0: Unpeakable		0	0			0	0			0
0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0
0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0
0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0
		2: Peakable Coverage				2: Peakable Coverage			0.206	0: Unpeakable		0				0	0.081	2: Peakable Coverage		33.35	0.027	2: Peakable Coverage		11.31	0	0: Unpeakable		0	0			0	0			0
		2: Peakable Coverage			0.058344	2: Peakable Coverage		13	0.206	0: Unpeakable		0				0	0.01	2: Peakable Coverage		4	0	2: Peakable Coverage		0	0	0: Unpeakable		0	0			0	0			0
		2: Peakable Coverage				2: Peakable Coverage			0.902	0: Unpeakable		0				0	0	2: Peakable Coverage		0	0	2: Peakable Coverage		0.15	0	0: Unpeakable		0	0			0	0			0
0	0	2: Peakable Coverage		0	0	2: Peakable Coverage		0	0.206	0: Unpeakable		0	0	0: Unpeakable		0	0.002	2: Peakable Coverage		0.75	0	2: Peakable Coverage		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0
		2: Peakable Coverage				2: Peakable Coverage			0.206	0: Unpeakable		0				0	0.005	2: Peakable Coverage		1.88	0.001	2: Peakable Coverage		0.21	0	0: Unpeakable		0	0			0	0			0
		2: Peakable Coverage				2: Peakable Coverage			0.206	0: Unpeakable		0				0	0.002	2: Peakable Coverage		0.71	0	2: Peakable Coverage		0.04	0	0: Unpeakable		0	0			0	0			0
0	0	2: Peakable Coverage		0	0	2: Peakable Coverage		0	0.206	0: Unpeakable		0	0	0: Unpeakable		0	0.002	2: Peakable Coverage		0.71	0	2: Peakable Coverage		0.04	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0
		2: Peakable Coverage			0.193151	2: Peakable Coverage		80	0.206	0: Unpeakable		0				0	0.002	2: Peakable Coverage		0.71	0	2: Peakable Coverage		0.04	0	0: Unpeakable		0	0			0	0			0
		2: Peakable Coverage				2: Peakable Coverage			0	0: Unpeakable		0				0	0.007	2: Peakable Coverage		2.75	0.001	2: Peakable Coverage		0.3	0	0: Unpeakable		0	0			0	0			0
		2: Peakable Coverage			0.018176	2: Peakable Coverage		25	0.206	0: Unpeakable		0				0	0.002	2: Peakable Coverage		0.71	0	2: Peakable Coverage		0.04	0	0: Unpeakable		0	0			0	0			0
	0.028731	2: Peakable Coverage		15	0.162364	2: Peakable Coverage		98	0.206	0: Unpeakable		0				0	0.002	2: Peakable Coverage		0.71	0	2: Peakable Coverage		0.04	0	0: Unpeakable		0	0			0	0			0
		2: Peakable Coverage				2: Peakable Coverage			0.206	0: Unpeakable		0				0	0.081	2: Peakable Coverage		33.35	0.027	2: Peakable Coverage		11.31	0	0: Unpeakable		0	0			0	0			0
		2: Peakable Coverage			0.007688	2: Peakable Coverage		35	0.902	0: Unpeakable		0				0	0	2: Peakable Coverage		0	0	2: Peakable Coverage		0.15	0	0: Unpeakable		0	0			0	0			0
		2: Peakable Coverage			0.020844	2: Peakable Coverage		56	0.206	0: Unpeakable		0				0	0.002	2: Peakable Coverage		0.71	0	2: Peakable Coverage		0.04	0	0: Unpeakable		0	0			0	0			0
		2: Peakable Coverage				2: Peakable Coverage			0.206	0: Unpeakable		0				0	0.002	2: Peakable Coverage		0.71	0	2: Peakable Coverage		0.04	0	0: Unpeakable		0	0			0	0			0
	0.012676	2: Peakable Coverage		6		2: Peakable Coverage			0.888	0: Unpeakable		0				0	-0.002	2: Peakable Coverage		0.01	0	2: Peakable Coverage		0.14	0	0: Unpeakable		0	0			0	0			0
0	0.004321	2: Peakable Coverage		3	1.532718	2: Peakable Coverage		264	0.888	0: Unpeakable		0	0	0: Unpeakable		0	-0.002	2: Peakable Coverage		0.01	0	2: Peakable Coverage		0.14	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0
		2: Peakable Coverage			0.189446	2: Peakable Coverage		41	0.902	0: Unpeakable		0				0	0.005	2: Peakable Coverage		1.86	0.001	2: Peakable Coverage		0.24	0	0: Unpeakable		0	0			0	0			0
		2: Peakable Coverage			0.055755	2: Peakable Coverage		122	0.902	0: Unpeakable		0				0	0.015	2: Peakable Coverage		6.33	0.001	2: Peakable Coverage		0.57	0	0: Unpeakable		0	0			0	0			0
		2: Peakable Coverage			0.020897	2: Peakable Coverage		11	0.206	0: Unpeakable		0				0	0.002	2: Peakable Coverage		0.75	0	2: Peakable Coverage		0	0	0: Unpeakable		0	0			0	0			0
	0.046361	2: Peakable Coverage		132		2: Peakable Coverage			0	0: Unpeakable		0				0	0.007	2: Peakable Coverage		2.75	0.001	2: Peakable Coverage		0.3	0	0: Unpeakable		0	0			0	0			0
	0.005305	2: Peakable Coverage		3		2: Peakable Coverage			0.206	0: Unpeakable		0				0	0.058	2: Peakable Coverage		23.93	0.024	2: Peakable Coverage		9.76	0	0: Unpeakable		0	0			0	0			0
		2: Peakable Coverage				2: Peakable Coverage			0.206	0: Unpeakable		0				0	0.058	2: Peakable Coverage		23.93	0.024	2: Peakable Coverage		9.76	0	0: Unpeakable		0	0			0	0			0
		2: Peakable Coverage				2: Peakable Coverage			0.206	0: Unpeakable		0				0	0.002	2: Peakable Coverage		0.75	0	2: Peakable Coverage		0	0	0: Unpeakable		0	0			0	0			0
		2: Peakable Coverage				2: Peakable Coverage			0.206	0: Unpeakable		0				0	0.081	2: Peakable Coverage		33.35	0.027	2: Peakable Coverage		11.31	0	0: Unpeakable		0	0			0	0			0
		2: Peakable Coverage				2: Peakable Coverage			0.206	0: Unpeakable		0				0	0.004	2: Peakable Coverage		1.78	0	2: Peakable Coverage		0.13	0	0: Unpeakable		0	0			0	0			0
		2: Peakable Coverage				2: Peakable Coverage			0.206	0: Unpeakable		0				0	0.005	2: Peakable Coverage		1.88	0.001	2: Peakable Coverage		0.21	0	0: Unpeakable		0	0			0	0			0
	0.010256	2: Peakable Coverage		3		2: Peakable Coverage			0.206	0: Unpeakable		0				0	0.081	2: Peakable Coverage		33.35	0.027	2: Peakable Coverage		11.31	0	0: Unpeakable		0	0			0	0			0
		2: Peakable Coverage			0.169755	2: Peakable Coverage		22	0.206	0: Unpeakable		0				0	0.004	2: Peakable Coverage		1.78	0	2: Peakable Coverage		0.13	0	0: Unpeakable		0	0			0	0			0
0		2: Peakable Coverage				2: Peakable Coverage			0	0: Unpeakable		0				0	0.007	2: Peakable Coverage		2.75	0.001	2: Peakable Coverage		0.3	0	0: Unpeakable		0	0			0	0			0
	0.060813	2: Peakable Coverage		20	0.020871	2: Peakable Coverage		52	0.888	0: Unpeakable		0				0	0.008	2: Peakable Coverage		3.33	0	2: Peakable Coverage		0.17	0	0: Unpeakable		0	0			0	0			0
		2: Peakable Coverage				2: Peakable Coverage			0.888	0: Unpeakable		0				0	0.006	2: Peakable Coverage		2.33	0	2: Peakable Coverage		0.17	0	0: Unpeakable		0	0			0	0			0
		2: Peakable Coverage				2: Peakable Coverage			0	0: Unpeakable		0				0	0.007	2: Peakable Coverage		2.75	0.001	2: Peakable Coverage		0.3	0	0: Unpeakable		0	0			0	0			0
	0.003617	2: Peakable Coverage		3	0.002759	2: Peakable Coverage		5	0.206	0: Unpeakable		0				0	0.002	2: Peakable Coverage		0.75	0	2: Peakable Coverage		0	0	0: Unpeakable		0	0			0	0			0
	0.080437	2: Peakable Coverage		16		2: Peakable Coverage			0.888	0: Unpeakable		0				0	-0.002	2: Peakable Coverage		0.01	0	2: Peakable Coverage		0.14	0	0: Unpeakable		0	0			0	0			0
		2: Peakable Coverage			0.042626	2: Peakable Coverage		11	0.206	0: Unpeakable		0				0	0.01	2: Peakable Coverage		4	0	2: Peakable Coverage		0	0	0: Unpeakable		0	0			0	0			0
		2: Peakable Coverage			0.005356	2: Peakable Coverage		8	0.206	0: Unpeakable		0				0	0.004	2: Peakable Coverage		1.78	0	2: Peakable Coverage		0.13	0	0: Unpeakable		0	0			0	0			0
	0.020607	2: Peakable Coverage		10		2: Peakable Coverage			0.888	0: Unpeakable		0				0	-0.002	2: Peakable Coverage		0.01	0	2: Peakable Coverage		0.14	0	0: Unpeakable		0	0			0	0			0
		2: Peakable Coverage				2: Peakable Coverage			0.206	0: Unpeakable		0				0	0.002	2: Peakable Coverage		0.71	0	2: Peakable Coverage		0.04	0	0: Unpeakable		0	0			0	0			0
		2: Peakable Coverage			0.46684	2: Peakable Coverage		189	0.206	0: Unpeakable		0				0	0.016	2: Peakable Coverage		5.89	0.002	2: Peakable Coverage		0.54	0	0: Unpeakable		0	0			0	0			0
		2: Peakable Coverage			0.010843	2: Peakable Coverage		232	0.902	0: Unpeakable		0				0	0	2: Peakable Coverage		0	0	2: Peakable Coverage		0.15	0	0: Unpeakable		0	0			0	0			0
		2: Peakable Coverage			0.002941	2: Peakable Coverage		13	0.206	0: Unpeakable		0				0	0.005	2: Peakable Coverage		1.88	0.001	2: Peakable Coverage		0.21	0	0: Unpeakable		0	0			0	0			0
		2: Peakable Coverage			0.145811	2: Peakable Coverage		70	0.206	0: Unpeakable		0				0	0.005	2: Peakable Coverage		1.88	0.001	2: Peakable Coverage		0.21	0	0: Unpeakable		0	0			0	0			0
		2: Peakable Coverage			0.005904	2: Peakable Coverage		46	0.206	0: Unpeakable		0				0	0.001	2: Peakable Coverage		0.39	0	2: Peakable Coverage		0.15	0	0: Unpeakable		0	0			0	0			0
		2: Peakable Coverage			0.001653	2: Peakable Coverage		7	0.902	0: Unpeakable		0				0	0	2: Peakable Coverage		0	0	2: Peakable Coverage		0.15	0	0: Unpeakable		0	0			0	0			0
		2: Peakable Coverage				2: Peakable Coverage			0.902	0: Unpeakable		0				0	-0.002	2: Peakable Coverage		0.01	0	2: Peakable Coverage		0.14	0	0: Unpeakable		0	0			0	0			0
0	0	2: Peakable Coverage		0	0.004438	2: Peakable Coverage		9	0.902	0: Unpeakable		0	0	0: Unpeakable		0	0	2: Peakable Coverage		0	0	2: Peakable Coverage		0.15	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0
0	0	2: Peakable Coverage		0	0.069197	2: Peakable Coverage		45	0.206	0: Unpeakable		0	0	0: Unpeakable		0	0.004	2: Peakable Coverage		1.78	0	2: Peakable Coverage		0.13	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0
		2: Peakable Coverage				2: Peakable Coverage			0.206	0: Unpeakable		0				0	0.005	2: Peakable Coverage		1.88	0.001	2: Peakable Coverage		0.21	0	0: Unpeakable		0	0			0	0			0
0	0	2: Peakable Coverage		0	0.10267	2: Peakable Coverage		72	0.206	0: Unpeakable		0	0	0: Unpeakable		0	0.004	2: Peakable Coverage		1.78	0	2: Peakable Coverage		0.13	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0
0	0	2: Peakable Coverage		0	0.020949	2: Peakable Coverage		89	0.902	0: Unpeakable		0	0	0: Unpeakable		0	-0.002	2: Peakable Coverage		0.01	0	2: Peakable Coverage		0.14	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0
		2: Peakable Coverage			0.024372	2: Peakable Coverage		18	0.206	0: Unpeakable		0				0	0.002	2: Peakable Coverage		0.75	0	2: Peakable Coverage		0	0	0: Unpeakable		0	0			0	0			0
		2: Peakable Coverage			0.019959	2: Peakable Coverage		51	0.902	0: Unpeakable		0				0	-0.002	2: Peakable Coverage		0.01	0	2: Peakable Coverage		0.14	0	0: Unpeakable		0	0			0	0			0
		2: Peakable Coverage			0.110592	2: Peakable Coverage		237	0.902	0: Unpeakable		0				0	0	2: Peakable Coverage		0	0	2: Peakable Coverage		0.15	0	0: Unpeakable		0	0			0	0			0
		2: Peakable Coverage			0.002809	2: Peakable Coverage		6	0.902	0: Unpeakable		0				0	0	2: Peakable Coverage		0	0	2: Peakable Coverage		0.15	0	0: Unpeakable		0	0			0	0			0
		2: Peakable Coverage			0.011744	2: Peakable Coverage		16	0.206	0: Unpeakable		0				0	0.004	2: Peakable Coverage		1.78	0	2: Peakable Coverage		0.13	0	0: Unpeakable		0	0			0	0			0
		2: Peakable Coverage			0.130541	2: Peakable Coverage		104	0.206	0: Unpeakable		0				0	0.002	2: Peakable Coverage		0.75	0	2: Peakable Coverage		0	0	0: Unpeakable		0	0			0	0			0
	0.003868	2: Peakable Coverage		3		2: Peakable Coverage			0.206	0: Unpeakable		0				0	0.088	2: Peakable Coverage		36	0.015	2: Peakable Coverage		6.29	0	0: Unpeakable		0	0			0	0			0
0	0	2: Peakable Coverage		0	0.02903	2: Peakable Coverage		21	0.206	0: Unpeakable		0	0	0: Unpeakable		0	0.004	2: Peakable Coverage		1.78	0	2: Peakable Coverage		0.13	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0
		2: Peakable Coverage			0.021171	2: Peakable Coverage		43	0.902	0: Unpeakable		0				0	0	2: Peakable Coverage		0.01	0	2: Peakable Coverage		0.05	0	0: Unpeakable		0	0			0	0			0
		2: Peakable Coverage			0.145418	2: Peakable Coverage		37	0.206	0: Unpeakable		0				0	0.004	2: Peakable Coverage		1.78	0	2: Peakable Coverage		0.13	0	0: Unpeakable		0	0			0	0			0
0	0.146869	2: Peakable Coverage		122	0.185662	2: Peakable Coverage		8	0.206	0: Unpeakable		0	0	0: Unpeakable		0	0.01	2: Peakable Coverage		4	0	2: Peakable Coverage		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0
	0.014049	2: Peakable Coverage		11	0.000786	2: Peakable Coverage		4	0.206	0: Unpeakable		0				0	0.002	2: Peakable Coverage		0.75	0	2: Peakable Coverage		0	0	0: Unpeakable		0	0			0	0			0
		2: Peakable Coverage				2: Peakable Coverage			0.206	0: Unpeakable		0				0	0.004	2: Peakable Coverage		1.78	0	2: Peakable Coverage		0.13	0	0: Unpeakable		0	0			0	0			0
	0.003991	2: Peakable Coverage		3		2: Peakable Coverage			0.206	0: Unpeakable		0				0	0.09	2: Peakable Coverage		37	0.014	2: Peakable Coverage		5.76	0	0: Unpeakable		0	0			0	0			0
		2: Peakable Coverage				2: Peakable Coverage			0	0: Unpeakable		0				0	0.007	2: Peakable Coverage		2.75	0.001	2: Peakable Coverage		0.3	0	0: Unpeakable		0	0			0	0			0
	0.004213	2: Peakable Coverage		3	1.788823	2: Peakable Coverage		105	0.206	0: Unpeakable		0				0	0.081	2: Peakable Coverage		33.35	0.027	2: Peakable Coverage		11.31	0	0: Unpeakable		0	0			0	0			0
0	0.048227	2: Peakable Coverage		16	0.004442	2: Peakable Coverage		4	0.888	0: Unpeakable		0	0	0: Unpeakable		0	-0.002	2: Peakable Coverage		0.01	0	2: Peakable Coverage		0.14	0.22	2: Peakable Coverage		88.85	0	0: Unpeakable		0	0.05	2: Peakable Coverage		25.59
0	0	2: Peakable Coverage		0	0.005109	2: Peakable Coverage		6	0.902	0: Unpeakable		0	0	0: Unpeakable		0	0.005	2: Peakable Coverage		1.86	0.001	2: Peakable Coverage		0.24	0.25	2: Peakable Coverage		104	0	0: Unpeakable		0	0.12	2: Peakable Coverage		55.65
0	0.026048	2: Peakable Coverage		10	0.041629	2: Peakable Coverage		75	0.888	0: Unpeakable		0	0	0: Unpeakable		0	-0.002	2: Peakable Coverage		0.01	0	2: Peakable Coverage		0.14	0.27	2: Peakable Coverage		112.54	0	0: Unpeakable		0	0.07	2: Peakable Coverage		32.42
0	0.086031	2: Peakable Coverage		38	0.161182	2: Peakable Coverage		111	0.491	0: Unpeakable		0	0	0: Unpeakable		0	0.002	2: Peakable Coverage		0.69	0	2: Peakable Coverage		0.07	0.3	2: Peakable Coverage		124.1	0	0: Unpeakable		0	0.1	2: Peakable Coverage		48.51
0	0	2: Peakable Coverage		0	0	2: Peakable Coverage		0	0.491	0: Unpeakable		0	0	0: Unpeakable		0	0.015	2: Peakable Coverage		6.33	0.001	2: Peakable Coverage		0.57	0.3	2: Peakable Coverage		124.1	0	0: Unpeakable		0	0.1	2: Peakable Coverage		48.51
0	0	2: Peakable Coverage		0	0.001361	2: Peakable Coverage		34	0.206	0: Unpeakable		0	0	0: Unpeakable		0	0.002	2: Peakable Coverage		0.71	0	2: Peakable Coverage		0.04	0.32	2: Peakable Coverage		130	0	0: Unpeakable		0	0.1	2: Peakable Coverage		45.68
0	0	2: Peakable Coverage		0	0.373106	2: Peakable Coverage		209	0	0: Unpeakable		0	0	0: Unpeakable		0	0.005	2: Peakable Coverage		1.86	0.001	2: Peakable Coverage		0.24	0.47	2: Peakable Coverage		191.79	0	0: Unpeakable		0	0.16	2: Peakable Coverage		74.97
0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0.48	2: Peakable Coverage		195.46	0	0: Unpeakable		0	0.12	2: Peakable Coverage		56.31
0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0.5	2: Peakable Coverage		207.31	0	0: Unpeakable		0	0.13	2: Peakable Coverage		59.72
0	0.022569	2: Peakable Coverage		14	0.289611	2: Peakable Coverage		140	0.206	0: Unpeakable		0	0	0: Unpeakable		0	0.002	2: Peakable Coverage		0.71	0	2: Peakable Coverage		0.04	0.58	2: Peakable Coverage		240	0	0: Unpeakable		0	0.18	2: Peakable Coverage		84.32
0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0.59	2: Peakable Coverage		242.85	0	0: Unpeakable		0	0.15	2: Peakable Coverage		69.96
0	0	2: Peakable Coverage		0	0	2: Peakable Coverage		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0.007	2: Peakable Coverage		2.75	0.001	2: Peakable Coverage		0.3	0.6	2: Peakable Coverage		244.88	0	0: Unpeakable		0	0.48	2: Peakable Coverage		224.53
0	0	2: Peakable Coverage		0	0	2: Peakable Coverage		0	0.206	0: Unpeakable		0	0	0: Unpeakable		0	0.005	2: Peakable Coverage		1.88	0.001	2: Peakable Coverage		0.21	0.67	2: Peakable Coverage		277.53	0	0: Unpeakable		0	0.54	2: Peakable Coverage		254.47
0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0.68	2: Peakable Coverage		277.92	0	0: Unpeakable		0	0.55	2: Peakable Coverage		255
0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0.86	2: Peakable Coverage		352	0	0: Unpeakable		0	0.4	2: Peakable Coverage		188.35
0	0	2: Peakable Coverage		0	0	2: Peakable Coverage		0	0.888	0: Unpeakable		0	0	0: Unpeakable		0	0.008	2: Peakable Coverage		3.33	0	2: Peakable Coverage		0.17	0.9	2: Peakable Coverage		370	0	0: Unpeakable		0	0.28	2: Peakable Coverage		130
0	0	2: Peakable Coverage		0	0	2: Peakable Coverage		0	0.206	0: Unpeakable		0	0	0: Unpeakable		0	0.058	2: Peakable Coverage		23.93	0.024	2: Peakable Coverage		9.76	0.92	2: Peakable Coverage		376.5	0	0: Unpeakable		0	0.54	2: Peakable Coverage		252.5
0	0	2: Peakable Coverage		0	0	2: Peakable Coverage		0	0.206	0: Unpeakable		0	0	0: Unpeakable		0	0.002	2: Peakable Coverage		0.75	0	2: Peakable Coverage		0	0.92	2: Peakable Coverage		376.5	0	0: Unpeakable		0	0.54	2: Peakable Coverage		252.5
0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	1.71	2: Peakable Coverage		704.08	0	0: Unpeakable		0	1.38	2: Peakable Coverage		646
0	0	2: Peakable Coverage		0	0	2: Peakable Coverage		0	0.206	0: Unpeakable		0	0	0: Unpeakable		0	0.081	2: Peakable Coverage		33.35	0.027	2: Peakable Coverage		11.31	1.87	2: Peakable Coverage		769	0	0: Unpeakable		0	0.98	2: Peakable Coverage		457
0	0.008503	2: Peakable Coverage		3	0.060226	2: Peakable Coverage		9	0.206	0: Unpeakable		0	0	0: Unpeakable		0	0.01	2: Peakable Coverage		4	0	2: Peakable Coverage		0	1.87	2: Peakable Coverage		769	0	0: Unpeakable		0	0.98	2: Peakable Coverage		457
0	0	2: Peakable Coverage		0	0	2: Peakable Coverage		0	0.206	0: Unpeakable		0	0	0: Unpeakable		0	0.002	2: Peakable Coverage		0.71	0	2: Peakable Coverage		0.04	2.01	2: Peakable Coverage		826.51	0	0: Unpeakable		0	1.11	2: Peakable Coverage		516.52
0	0	2: Peakable Coverage		0	0	2: Peakable Coverage		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0.005	2: Peakable Coverage		1.86	0.001	2: Peakable Coverage		0.24	2.26	2: Peakable Coverage		930.53	0	0: Unpeakable		0	1.83	2: Peakable Coverage		853.22
0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	2.82	2: Peakable Coverage		1,159.08	0	0: Unpeakable		0	2.28	2: Peakable Coverage		1,062.78
0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	2.94	2: Peakable Coverage		1,207.97	0	0: Unpeakable		0	1.62	2: Peakable Coverage		754.92
0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	6.03	2: Peakable Coverage		2,479.52	0	0: Unpeakable		0	3.32	2: Peakable Coverage		1,549.56
																									31.34								18.11			
																									49.45											



LOAD10 (Num)	TYPE10 (Num)	PATTERN10 (Char)	COVERAGE10 (Num)	SWS AREA (Num)	SWS RUNOFF (Num)	SWS SLOPE (Num)	SWS LEN (Num)	HYETOGRAPH (Char)	HYDROGRAPH (Char)	SWS PERIMP (Num)	SWS PERV (Num)	SWS IMPERV (Num)	SWS INFIL1 (Num)	SWS INFIL2 (Num)	SWS DECAY (Num)	SWS REGEN (Num)	SWS TOC (Num)
0			0														
0	0: Unpeakable		0	0	0	0	0			0.75	0.01	0.01	3	0.1	0.001	0.0001	0
0	0: Unpeakable		0	0	0	0	0			0.75	0.01	0.01	3	0.1	0.001	0.0001	0
0			0														
0	0: Unpeakable		0	0	0	0	0			0.75	0.01	0.01	3	0.1	0.001	0.0001	0
0	0: Unpeakable		0	0	0	0	0			0.75	0.01	0.01	3	0.1	0.001	0.0001	0
0	0: Unpeakable		0	0	0	0	0			0.75	0.01	0.01	3	0.1	0.001	0.0001	0
0			0														
0			0														
0	0: Unpeakable		0	0	0	0	0			0.75	0.01	0.01	3	0.1	0.001	0.0001	0
0			0														
0	0: Unpeakable		0	0	0	0	0			0.75	0.01	0.01	3	0.1	0.001	0.0001	0
0	0: Unpeakable		0	0	0	0	0			0.75	0.01	0.01	3	0.1	0.001	0.0001	0
0			0														
0	0: Unpeakable		0	0	0	0	0			0.75	0.01	0.01	3	0.1	0.001	0.0001	0
0	0: Unpeakable		0	0	0	0	0			0.75	0.01	0.01	3	0.1	0.001	0.0001	0
0	0: Unpeakable		0	0	0	0	0			0.75	0.01	0.01	3	0.1	0.001	0.0001	0
0	0: Unpeakable		0	0	0	0	0			0.75	0.01	0.01	3	0.1	0.001	0.0001	0
0	0: Unpeakable		0	0	0	0	0			0.75	0.01	0.01	3	0.1	0.001	0.0001	0
0	0: Unpeakable		0	0	0	0	0			0.75	0.01	0.01	3	0.1	0.001	0.0001	0
0	0: Unpeakable		0	0	0	0	0			0.75	0.01	0.01	3	0.1	0.001	0.0001	0
0			0														
0	0: Unpeakable		0	0	0	0	0			0.75	0.01	0.01	3	0.1	0.001	0.0001	0
0	0: Unpeakable		0	0	0	0	0			0.75	0.01	0.01	3	0.1	0.001	0.0001	0
0			0														
0	0: Unpeakable		0	0	0	0	0			0.75	0.01	0.01	3	0.1	0.001	0.0001	0
0	0: Unpeakable		0	0	0	0	0			0.75	0.01	0.01	3	0.1	0.001	0.0001	0
0	0: Unpeakable		0	0	0	0	0			0.75	0.01	0.01	3	0.1	0.001	0.0001	0
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0	2: Peakable Coverage		478	0	0	0	0			0	0	0	0	0	0	0	0
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0	2: Peakable Coverage		0	0	0	0	0			0	0	0	0	0	0	0	0
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0	2: Peakable Coverage		0	0	0	0	0			0	0	0	0	0	0	0	0
0	2: Peakable Coverage		0	0	0	0	0			0	0	0	0	0	0	0	0
0			0														
0	2: Peakable Coverage		1,247.00	0	0	0	0			0	0	0	0	0	0	0	0
0	2: Peakable Coverage		0	0	0	0	0			0	0	0	0	0	0	0	0
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0	2: Peakable Coverage		545	0	0	0	0			0	0	0	0	0	0	0	0
0			0														
0			0														
0	2: Peakable Coverage		1,843.00	0	0	0	0			0	0	0	0	0	0	0	0
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0	2: Peakable Coverage		628	0	0	0	0			0	0	0	0	0	0	0	0
0	2: Peakable Coverage		544	0	0	0	0			0	0	0	0	0	0	0	0
0	2: Peakable Coverage		776	0	0	0	0			0	0	0	0	0	0	0	0
0	2: Peakable Coverage		489	0	0	0	0			0	0	0	0	0	0	0	0
0	2: Peakable Coverage		489	0	0	0	0			0	0	0	0	0	0	0	0
0	2: Peakable Coverage		550	0	0	0	0			0	0	0	0	0	0	0	0
0	2: Peakable Coverage		610	0	0	0	0			0	0	0	0	0	0	0	0
0	2: Peakable Coverage		718	0	0	0	0			0.75	0.01	0.01	3	0.1	0.001	0.0001	0
0	2: Peakable Coverage		1,437.00	0	0	0	0			0.75	0.01	0.01	3	0.1	0.001	0.0001	0
0	2: Peakable Coverage		1,066.00	0	0	0	0			0	0	0	0	0	0	0	0
0	2: Peakable Coverage		1,341.00	0	0	0	0			0.75	0.01	0.01	3	0.1	0.001	0.0001	0
0	2: Peakable Coverage		649	0	0	0	0			0	0	0	0	0	0	0	0
0	2: Peakable Coverage		294	0	0	0	0			0	0	0	0	0	0	0	0
0	2: Peakable Coverage		665	0	0	0	0			0.75	0.01	0.01	3	0.1	0.001	0.0001	0
0	2: Peakable Coverage		1,421.00	0	0	0	0			0.75	0.01	0.01	3	0.1	0.001	0.0001	0
0	2: Peakable Coverage		427	0	0	0	0			0	0	0	0	0	0	0	0
0	0: Unpeakable		0	0	0	0	0			0	0	0	0	0	0	0	0
0	2: Peakable Coverage		859	0	0	0	0			0	0	0	0	0	0	0	0
0	2: Peakable Coverage		1,046.00	0	0	0	0			0.75	0.01	0.01	3	0.1	0.001	0.0001	0
0	0: Unpeakable		0	0	0	0	0			0	0	0	0	0	0	0	0
0	0: Unpeakable		0	0	0	0	0			0	0	0	0	0	0	0	0
0	2: Peakable Coverage		715	0	0	0	0			0	0	0	0	0	0	0	0
0	2: Peakable Coverage		1,933.00	0	0	0	0			0	0	0	0	0	0	0	0
0	2: Peakable Coverage		2,020.00	0	0	0	0			0.75	0.01	0.01	3	0.1	0.001	0.0001	0
0	2: Peakable Coverage		2,235.00	0	0	0	0			0.75	0.01	0.01	3	0.1	0.001	0.0001	0
0	2: Peakable Coverage		2,307.00	0	0	0	0			0.75	0.01	0.01	3	0.1	0.001	0.0001	0

Results for all pipes in domain

ID	From ID	To ID	Diameter (mm)	Length (m)	Slope	Total Flow (L/s)	Unpeakable Flow (L/s)	Peakable Flow (L/s)	Coverage Flow (L/s)	Infiltration Flow (L/s)	Storm Flow (L/s)	Flow Type	Velocity (m/s)	d/D	q/Q	Water Depth (m)	Critical Depth (m)	Froude Number	Full Flow (L/s)	Coverage Count	Backwater Adjustment	Adjusted Depth (m)	Adjusted Velocity (m/s)
SMN8587	SMH9450	SMH9483	450	88.31914	0.004235	132.954444	13.389978	0	45.246521	0	0	Pressurized	1.271168	0.625122	0.714681	0.281305	0.254978	0.828137	186.033173	20,462.33	Yes	0.45	0.835966
SMN8594	SMH9456	SMH9489	300	94.739243	0.003694	30.192902	4.531992	0	7.296827	0	0	Pressurized	0.838765	0.507263	0.512314	0.152179	0.133008	0.772876	58.934352	2,442.32	Yes	0.3	0.427143
SMN8615	SMH9489	SMH9511	300	54.585035	0.004214	39.215811	4.737992	0	10.254822	0	0	Pressurized	0.938851	0.571655	0.623067	0.171497	0.152504	0.798981	62.939975	3,712.98	Yes	0.3	0.554791
SMN10104	SMH11576	SMH22951	200	43.176491	0.004748	3.53379	1.853997	0	0.407154	0	0	Free Surface	0.524598	0.266968	0.155945	0.053394	0.049368	0.858241	22.660534	229.45	No	0.053394	0.524598
SMN24155	SMH9483	SMH22951	450	7.982218	0.003633	133.344629	13.595977	0	45.328521	0	0	Pressurized	1.19634	0.660522	0.773849	0.297235	0.255369	0.746714	172.313464	20,496.02	Yes	0.45	0.838419
SMN24156	SMH22951	SMH9517	450	75.92476	0.00436	136.453285	15.655974	0	45.82298	0	0	Pressurized	1.292803	0.630005	0.722902	0.283502	0.258466	0.837293	188.757532	20,762.16	Yes	0.45	0.857965
SMN8561	SMH9423	SMH9442	300	67.430833	0.003871	17.893637	3.089995	0	4.075165	0	0	Pressurized	0.743709	0.37326	0.296625	0.111978	0.101322	0.824461	60.324043	1,736.70	Yes	0.3	0.253144
SMN8562	SMH9432	SMH9434	200	7.071068	0.004384	12.251241	0.823999	0	2.897662	0	0	Pressurized	0.713459	0.536621	0.562633	0.107324	0.094002	0.776173	21.774853	571.64	Yes	0.2	0.38997
SMN8564	SMH9419	SMH9450	450	74.033469	0.005295	123.647949	9.681984	0	42.584667	0	0	Pressurized	1.364046	0.555054	0.594396	0.249774	0.245475	0.967155	208.022825	18,940.97	Yes	0.45	0.77745
SMN8566	SMH9434	SMH9442	250	33.493549	0.002538	12.829568	1.029998	0	3.005662	0	0	Pressurized	0.587875	0.456421	0.427107	0.114105	0.089999	0.63391	30.038324	616.3	Yes	0.25	0.261362
SMN8575	SMH9442	SMH9456	300	21.93996	0.009754	29.653903	4.325993	0	7.188827	0	0	Pressurized	1.194553	0.382019	0.309666	0.114606	0.131763	1.306688	95.760944	2,397.66	Yes	0.3	0.419518
SMN25210	SMH9481	SMH23878	250	76.902676	0.002874	7.29415	3.295995	0	1.037856	0	0	Free Surface	0.527645	0.324829	0.228193	0.081207	0.067231	0.693174	31.964817	824.98	No	0.081207	0.527645
SMN25211	SMH23878	SMH9450	250	16.046131	0.2514	7.804135	3.501994	0	1.119856	0	0	Free Surface	2.613208	0.111237	0.026103	0.027809	0.06961	6.052101	298.971368	858.67	Yes	0.25	0.158985
SMN38200	SMH9406	SMH35131	200	36.091412	0.00532	11.053795	0.411999	0	2.671407	0	0	Pressurized	0.747978	0.476746	0.460835	0.095349	0.089082	0.877852	23.986427	479.32	Yes	0.2	0.351854
SMN38201	SMH35131	SMH9432	200	30.436777	0.00529	11.634663	0.617999	0	2.779406	0	0	Pressurized	0.756073	0.492004	0.486433	0.098401	0.091498	0.870002	23.91831	523.98	Yes	0.2	0.370343
SMN18861	SMH9369	SMH9406	200	83.486526	0.005198	3.335584	0.206	0	0.770374	0	0	Pressurized	0.532879	0.253387	0.140675	0.050677	0.047927	0.896749	23.711201	326.66	Yes	0.2	0.106175
SMN8506	SMH9348	SMH9378	300	75.126837	0.004898	2.068483	0.411999	0	0.395156	0	0	Pressurized	0.431529	0.119804	0.030481	0.035941	0.033659	0.878197	67.861867	149	Yes	0.3	0.029263
SMN8507	SMH9353	SMH9384	375	76.507927	0.007999	117.422493	8.239986	0	40.502464	0	0	Pressurized	1.561042	0.644226	0.746792	0.241585	0.252427	1.088665	157.235958	18,115.03	Yes	0.375	1.063162
SMN8532	SMH9378	SMH9423	300	88.852961	0.004479	17.333515	2.883995	0	3.968297	0	0	Pressurized	0.77726	0.352936	0.267105	0.105881	0.099668	0.889624	64.894073	1,691.41	Yes	0.3	0.245219
SMN8533	SMH9384	SMH9419	450	80.23568	0.003141	123.197814	9.475984	0	42.476676	0	0	Pressurized	1.110911	0.657593	0.768961	0.295917	0.245007	0.695869	160.213279	18,895.21	Yes	0.45	0.77462
SMN18855	SFT256339	SMH9378	250	69.477697	0.002922	4.894064	2.265996	0	0.644417	0	0	Pressurized	0.473928	0.263367	0.151844	0.065842	0.054788	0.698613	32.230878	300.41	Yes	0.25	0.099701
SMN31943	SMH30066	SMH30067	250	89.157876	0.005047	8.370002	0.823999	0	1.949316	0	0	Free Surface	0.671455	0.301392	0.197584	0.075348	0.072166	0.919504	42.361684	767.68	No	0.075348	0.671455
SMN31944	SMH30067	SMH9384	250	18.432244	0.007053	8.583252	1.029998	0	1.951316	0	0	Free Surface	0.762286	0.280151	0.171405	0.070038	0.073107	1.086571	50.075972	768.43	No	0.070038	0.762286
SMN8449	SMH9263	SMH9314	200	93.622389	0.002115	0.79364	0.411999	0	0.088941	0	0	Free Surface	0.254512	0.15567	0.052476	0.031134	0.023081	0.554019	15.123755	64.56	No	0.031134	0.254512
SMN8455	SMH9291	SMH9314	250	42.503921	0.006235	2.278516	1.029998	0	0.300022	0	0	Free Surface	0.495038	0.149673	0.048392	0.037418	0.037112	0.983702	47.08417	183.51	Yes	0.099127	0.125732
SMN8477	SMH9314	SMH9339	250	47.337198	0.092042	3.26355	1.647997	0	0.392962	0	0	Free Surface	1.414601	0.093292	0.018041	0.023323	0.044551	3.58495	180.900315	249.85	Yes	0.25	0.066485
SMN8483	SMH9313	SMH9353	375	74.412683	0.004703	117.202465	8.033986	0	40.494088	0	0	Pressurized	1.243965	0.795532	0.972068	0.298325	0.252185	0.711474	120.570183	18,106.28	Yes	0.375	1.06117
SMN18830	SMH9231	SMH9263	200	52.497619	0.00501	0.522244	0.206	0	0.073197	0	0	Free Surface	0.303745	0.103485	0.022436	0.020697	0.018681	0.81617	23.27689	46.78	Yes	0.025916	0.218633
SMN18841	SMH9236	SMH35132	250	85.575739	0.003307	0.891379	0.411999	0	0.113574	0	0	Free Surface	0.299319	0.111023	0.025995	0.027756	0.023079	0.693896	34.289781	120.17	Yes	0.076888	0.069532
SMN18842	SMH35132	SMH9291	250	14.873253	0.003295	1.455937	0.823999	0	0.150604	0	0	Free Surface	0.346269	0.140633	0.04254	0.035158	0.029574	0.710664	34.224875	144.73	Yes	0.150475	0.047166
SMN18843	SMH9277	SMH35132	250	10.918624	0.002839	0.350431	0.206	0	0.03303	0	0	Free Surface	0.214085	0.07391	0.01103	0.018477	0.01442	0.610896	31.771938	22.78	Yes	0.110521	0.016741
SMN18852	SMH9311	SMH9348	300	73.552702	0.00639	1.646872	0.206	0	0.34253	0	0	Pressurized	0.442207	0.100838	0.021248	0.030251	0.029996	0.983137	77.508451	134	Yes	0.3	0.023299
SMN18854	SMH9339	SFT256339	250	32.450992	0.003297	3.505325	1.853997	0	0.402318	0	0	Pressurized	0.449073	0.216095	0.102377	0.054024	0.046204	0.736017	34.239287	259.63	Yes	0.25	0.07141
SMN18856	SMH9361	SFT256339	250	12.089278	0.002812	0.965321	0.206	0	0.173755	0	0	Pressurized	0.2897	0.119888	0.030527	0.029972	0.024027	0.645601	31.621764	23.78	Yes	0.25	0.019665
SMN16731	SMH9189	SMH9236	250	94.04786	0.0089	0.235833	0.206	0	0.006904	0	0	Free Surface	0.28244	0.046921	0.004192	0.01173	0.011817	1.014521	56.251627	46.39	Yes	0.019743	0.130656
SMN8452	SMH9271	SMH9313	375	80.986415	0.010002	108.355831	4.325993	0	38.221938	0	0	Pressurized	1.674181	0.567749	0.616292	0.212906	0.242189	1.2804	175.818998	17,068.06	Yes	0.375	0.981071
SMN8471	SMH9320	SMH9313	200	7.231686	0.009956	12.058112	3.501994	0	2.255315	0	0	Pressurized	0.964507	0.419495	0.367465	0.083899	0.093224	1.223336	32.814316	1,022.47	Yes	0.2	0.383822
SMN8383	SMH9177	SMH9233	300	111.776112	0.010065	76.581254	3.295995	0	25.156357	0	0	Pressurized	1.52452	0.668701	0.787266	0.20061	0.215771	1.153829	97.274993	11,006.60	Yes	0.3	1.083405
SMN8414	SMH9233	SMH9244	300	10.489302	0.003337	107.421504	3.707994	0	38.061025	0	0	Pressurized	1.519706	1	1.917923	0.3	0.183754	0.885653	56.009304	16,943.81	Yes	0.3	1.519706
SMN8426	SMH9276	SMH9233	525	94.31569	0.001802	40.938579	0	0	12.892668	0	0	Free Surface	0.681461	0.321381	0.22361	0.168725	0.132074	0.621464	183.080251	5,933.03	No	0.168725	0.681461
SMN8428	SMH9244	SMH9271	300	61.089244	0.008103	107.891652	4.119993	0	38.089397	0	0	Pressurized	1.526357	1	1.236141	0.3	0.23012	0.889529	87.280991	16,963.31	Yes	0.3	1.526357
SMN18824	SFT368	SMH9233	600	34.979747	0.0008	0.232762	0.206	0	0.006	0	0	Pressurized	0.107071	0.027525	0.001336	0.016515	0.009402	0.324795	174.191444	2.09	Yes	0.6	0.000823
SMN18829	SFT367	SMH9244	300	19.846889	0.002217	0.214952	0.206	0	0.002	0	0	Pressurized	0.164911	0.049541	0.004708	0.014862	0.010766	0.5261	45.654077	0.75	Yes	0.3	0.003041
PSPB9-1	PMHB9-1	PMHB10-4	300	97.291511	0.009281	4.870573	0	0	1.229998	0	0	Free Surface	0.697362	0.155182	0.05214	0.046555	0.051974	1.241475	93.412683	532.92	Yes	0.06963	0.391478
SMN8261	SMH9035	SMH9079	300	66.189123	0.010002	19.940687	2.059997	0	5.056799	0	0	Pressurized	1.079565	0.307678	0.205639	0.092303	0.107173	1.334272	96.969494	2,312.13	Yes	0.3	0.282103
SMN8305	SMH9079	SMH9138	300	100.37878	0.010749	59.823891	2.265996	0	18.968776	0	0	Pressurized	1.4837	0.55542	0.595094	0.166626	0.190156	1.287848	100.528502	8,304.81	Yes	0.3	0.846336
SMN8338	SMH9138	SMH9177	300	67.038349	0.008368	61.308147	2.471996	0	19.453615	0	0	Pressurized	1.354	0.611328	0.691192	0.183398	0.192587	1.098432	88.699102	8,500.24	Yes	0.3	0.867334
SMN10053	SMH11520	SMH9035	300	92.78917	0.010001	18.390418	1.853997	0	4.633438	0	0	Free Surface	1.055097	0.295074	0.189656	0.088522	0.10277	1.334447	96.967185	2,101.74	Yes	0.3	0.260172
SMN18817	SMH9156	SMH9177	250	34.631269	0.028096	15.80461	0.206	0	4.328934	0	0	Pressurized	1.486788	0.26886	0.15813	0.067215	0.100305	2.167268	99.946832	1,898.09	Yes	0.25	0.321969
SMN38803	SMH35548	SMH9177	200	23.564461	0.044134	5.24919	0.411999	0	1.221998	0	0	Free Surface	1.297246	0.186493	0.075978	0.037299	0.060515	2.569433	69.088347	536.18	No	0.037299	1.297246
SMN38804	SMH35547	SMH35548	200	54.549087	0.027498	0.232762	0.206	0	0.006	0	0	Free Surface	0.430154	0.047318	0.004268	0.009464	0.012432	1.720148	54.534178	2.09	No	0.009464	0.430154
PSPB10-1	PMHB10-1	PMHB10-2	300	31.009432	0.010029	11.470568	0	0	3.089995	0	0	Free Surface	0.922046	0.232086	0.118128	0.069626	0.080549	1.328056	97.10302	1,350.08	Yes	0.074448	0.838722
PSPB10-2	PMHB10-2	PMHB10-3	300	31.207923	0.005992	11.470568	0	0	3.089995	0	0	Free Surface	0.767813	0.264236	0.152826	0.079271	0.080549	1.031366	75.056415	1,350.08	No	0.079271	0.767813
PSPB10-3	PMHB10-3	PMHB10-4	300	51.124613	0.00401	11.470568	0	0	3.089995	0	0	Free Surface	0.665254	0.292786	0.18682	0.087836	0.080549	0.844995	61.399009	1,350.08	Yes	0.090271	0.640458
PSPB10-4	PMHB10-4	SMH9156	300	39.153811	0.006002	15.57788	0	0	4.319993	0	0	Free Surface	0.838302	0.309021	0.207378	0.092706	0.094313	1.033594	75.118405	1,883.00	No	0.092706	0.838302
PSPB5-6-8	PMHB5-6-8	SMH9079	300	69.886019	0.00807	44.112242	0	0	13.909977	0	0	Free Surface	1.236199	0.503784	0.506425	0.151135	0.162196	1.144121	87.105153	5,991.97	No	0.151135	1.236199
SMN10054	SMH16408	SMH11520	250	96.695971	0.003009	6.15226	1.029998	0	1.312293	0	0	Free Surface	0.511285	0.293823	0.188081	0.073456	0.061602	0.71003	32.710646	675.87	Yes	0.080989	0.446693
SMN10055	SMH11519	SMH11520	300	27.021028	0.00222	12.883972	0.617999	0	3.319145	0	0	Free Surface	0.555497	0.363281	0.281985	0.108984	0.085514	0.625439	45.690314	1,425.16	No	0.108984	0.555497
SMN19232	SMH11521	SMH11519	300	93.371032	0.002196	12.671093	0.411999	0	3.317145	0	0	Free Surface	0.550707	0.361145	0.278897	0.108344	0.084783	0.622135	45.432883	1,424.45	Yes	0.108664	0.548505
SMN19233	SMH11522	SMH11521	200	11.188358	0.004022	11.79984	0.206	0	3.121995	0	0	Free Surface	0.684358	0.538391	0.565757	0.107678	0.092175	0.742889	20.856734	1,343.74	Yes	0.108011	0.681735
PSPB5-6-6	PMHB5-6-6	PMHB5-6-7	300	150	0.002	44.112242	0	0	13.909977	0	0	Pressurized	0.624062	1	1.01729	0.3	0.160747	0.36369	43.362513	5,991.97	Yes	0.3	0.624062
PSPB5-6-7	PMHB5-6-7	PMHB5-6-8	300	150	0.002	44.112242	0	0	13.909977	0	0	Pressurized	0.624062	1	1.01729	0.3	0.160747	0.36369	43.362513	5,991.97	No	0.3	0.624062
SMN8352	SMH9148	SMH9190	300	93.949707	0.002214	1.848712	1.803997	0	0.010843	0	0	Free Surface	0.315921	0.137375	0.040522	0.041212	0.031801	0.599108	45.622954	232	Yes	0.04335	0.293535
SMN8386	SMH9190	SMH9226	300	107.940354	0.00326	2.757464	2.705996	0	0.012496	0	0	Free Surface	0.407697	0.151779	0.049807	0.045534	0.038933	0.734212	55.363316	239	Yes	0.195054	0.056676
SMN10146	SMH9260	SMH11621	250	79.077848	0.002302	12.543782	9.019985	0	0.926412	0	0	Pressurized	0.563633	0.463348	0.438504	0.115837	0.088954	0.602185	28.605865	986.84	Yes	0.25	0.25554
SMN10147	SMH11621	SMH57390	300	56.750532	0.004458	13.465896	9.921984	0	0.9341	0	0	Pressurized	0.723068	0.309509	0.207999	0.092853	0.087482	0.890736	64.740305	1,021.84	Yes	0.3	0.190504
PSPB4-1	PMHB4-1	PMHB4-2	300	150	0.002	16.379937	0	0	4.559992	0	0	Free Surface	0.570642	0.425964	0.377744	0.127789	0.096793	0.585608	43.362513	1,962.89	No	0.127789	0.570642
PSPB4-2	PMHB4-2	PMHB4-3	300	33.539763	0.001998	16.379937	0	0	4.559992	0	0	Free Surface	0.570318	0.426147	0.377968	0.127844	0.096793	0.585126	43.336801	1,962.89	No	0.127844	0.570318
PSPB4-3	PMHB4-3	PMHB5-6-4	300	80.06974	0.001998	16.379937	0	0	4.559992	0	0	Free Surface	0.570426	0.426086	0.377909	0.127826	0.096793	0.585287	43.343625	1,962.89	No	0.127826	0.570426
PSPB5-6-1.	PMHB5-6-1	PMHB5-6-2	300	150	0.002	31.14026	0	0	9.349984	0	0	Free Surface	0.667298	0.627197	0.718138	0.188159	0.135172	0.531104	43.362513	4,029.08	No	0.188159	0.667298
PSPB5-6-2.	PMHB5-6-2	PMHB5-6-3	300	118.013805	0.008999	31.14026	0	0	9.349984	0	0	Free Surface	1.175466	0.401001	0.338553	0.1203	0.135172	1.250077	91.980401	4,029.08	Yes	0.153827	0.853365
PSPB5-6-3.	PMHB5-6-3	PMHB5-6-4	300	80.002938	0.002025	31.14026	0	0	9.349984	0	0	Free Surface	0.67066	0.624512	0.713704	0.187354	0.135172	0.535508	43.631886	4,029.08	Yes	0.259085	0.479852
SMN20725	SFT362	SMH9148	150	57.311918	0.005967	0.901999	0.901999	0	0	0	0	Free Surface	0.394527	0.187073	0.076467	0.028061	0.02661	0.900851	11.795961	0	Yes	0.034637	0.292118
PSPB5-6-4	PMHB5-6-4	PMHB5-6-5	300	61.904276	0.001987	44.112242	0	0	13.909977	0	0	Pressurized	0.624062	1	1.020628	0.3	0.160471	0.36369	43.220688	5,991.97	Yes	0.3	0.624062
PSPB5-6-5	PMHB5-6-5	PMHB5-6-6	300	26.965107	0.00204	44.112242	0	0	13.909977	0	0	Pressurized	0.624062	1	1.007348	0.3	0.161576	0.36369	43.790481	5,991.97	Yes	0.3	0.624062
SMN8453	SMH9324	SMH9276	525	91.452626	0.002734	22.889383	0	0	6.704678	0	0	Free Surface	0.668976	0.215179	0.10152	0.112969	0.098099	0.758317	225.46593	3,238.71	Yes	0.140847	0.489751
SMN8491	SMH9358	SMH9324	525	78.714865	0.001524	22.864434	0	0	6.696678	0	0	Free Surface	0.543617	0.248901	0.135797	0.130673	0.098045	0.570098	168.372537	3,235.66	No	0.130673	0.543617
SMN8510	SMH9388	SMH9358	450	73.899869	0.002977	22.839482	0	0	6.688678	0	0	Free Surface	0.700469	0.258575	0.146425	0.116359	0.102268	0.777302	155.980933	3,232.61	No	0.116359	0.700469
SMN8534	SMH9417	SMH59188	450	43.932091	0.004552	22.789565	0	0	6.672678	0	0	Free Surface	0.814181	0.232086	0.118149	0.104439	0.102154	0.957502	192.888381	3,226.51	Yes	0.104459	0.813954
SMN8557	SMH9441	SMH9417	450	89.249008	0.003361	22.70938	0	0	6.618317	0	0	Free Surface	0.730229	0.250031	0.137014	0.112514	0.10197	0.825146	165.745191	3,091.46	No	0.112514	0.730229

SMN8576	SMH9460	SMH9441	450	77.592531	0.002835	22.684351	0	0	6.610317	0	0	Free Surface	0.687146	0.260864	0.149019	0.117389	0.101912	0.758893	152.224091	3,088.41	No	0.117389	0.687146
SMN61933	SMH59188	SMH9388	450	43.89032	0.004557	22.814526	0	0	6.680678	0	0	Free Surface	0.814617	0.232178	0.118222	0.10448	0.102211	0.957813	192.980146	3,229.56	Yes	0.110419	0.75332
PSPB8-1	PMHB8-1	PMHB8-2	300	110.5964	0.005986	18.104036	0	0	5.099992	0	0	Free Surface	0.873532	0.334503	0.241333	0.100351	0.101938	1.030522	75.016698	2,221.86	No	0.100351	0.873532
PSPB8-2	PMHB8-2	PMHB8-3	300	102.926191	0.005995	18.104036	0	0	5.099992	0	0	Free Surface	0.87397	0.334381	0.241155	0.100314	0.101938	1.031249	75.072189	2,221.86	Yes	0.105968	0.810904
PSPB8-3	PMHB8-3	PMHB8-4	300	108.222899	0.00401	18.104036	0	0	5.099992	0	0	Free Surface	0.755708	0.37207	0.294843	0.111621	0.101938	0.839299	61.402313	2,221.86	No	0.111621	0.755708
PSPB8-4	PMHB8-4	SMH9276	300	106.991119	0.005944	18.104036	0	0	5.099992	0	0	Free Surface	0.871353	0.335114	0.242171	0.100534	0.101938	1.026899	74.757392	2,221.86	No	0.100534	0.871353
SMN8660	SMH9593	SMH9557	300	75.316465	0.003452	4.043464	0	0	1.015104	0	0	Free Surface	0.465992	0.180359	0.070976	0.054108	0.04728	0.766956	56.969336	479.96	Yes	0.062518	0.378833
SMN18889	SMH9635	SMH9593	250	61.665605	0.007427	4.020538	0	0	1.009104	0	0	Free Surface	0.622916	0.189194	0.07824	0.047298	0.049551	1.095235	51.387567	477.86	Yes	0.097703	0.2262
PSPB7-1	PMHB7-1	PMHB7-2	300	78.48694	0.010014	4.985374	0	0	1.259998	0	0	Free Surface	0.721181	0.154083	0.051379	0.046225	0.052595	1.288631	97.031338	540.35	Yes	0.054185	0.573356
PSPB7-2	PMHB7-2	PMHB7-3	300	117.367474	0.002991	4.985374	0	0	1.259998	0	0	Free Surface	0.471083	0.207153	0.09402	0.062146	0.052595	0.720788	53.024811	540.35	Yes	0.065339	0.438606
SMN15173	SMH19381	SMH19382	600	41.553067	0.011912	421.381167	358.687652	0	22.349671	0	0	Pressurized	2.509624	0.573975	0.627073	0.344385	0.425573	1.505956	671.981309	14,105.40	Yes	0.6	1.490333
SMN15174	SMH19382	SMH19383	600	94.260256	0.001347	422.395295	359.58965	0	22.421426	0	0	Pressurized	1.49392	1	1.869069	0.6	0.307985	0.615625	225.992324	14,234.30	No	0.6	1.49392
SMN15175	SMH19383	SMH19384	600	107.549266	0.011883	431.44847	364.008643	0	24.254725	0	0	Free Surface	2.520717	0.58313	0.642852	0.349878	0.43066	1.495954	671.147285	14,923.07	No	0.349878	2.520717
SMN15176	SMH9693	SMH19383	600	92.183624	0.003504	9.554834	3.927993	0	1.4173	0	0	Free Surface	0.553732	0.111473	0.026218	0.066884	0.060764	0.826899	364.443751	509.26	Yes	0.33849	0.058118
SMN15177	SMH19380	SMH57382	600	35.939766	0.003506	418.103174	356.883655	0	21.773117	0	0	Pressurized	1.47874	1	1.146911	0.6	0.395227	0.60937	364.547216	13,894.55	Yes	0.6	1.47874
SMN61668	SMH57382	SMH19381	600	22.566302	0.003501	419.960551	357.785653	0	22.154226	0	0	Pressurized	1.485309	1	1.15284	0.6	0.39508	0.612077	364.283486	14,062.30	Yes	0.6	1.485309
SMN8738	SMH9705	SMH9693	600	56.727418	0.002785	9.048879	3.436994	0	1.4133	0	0	Free Surface	0.502765	0.114731	0.027849	0.068839	0.059117	0.739765	324.928773	507.78	Yes	0.12297	0.217054
SMN15172	SMH19384	SMH19385	600	108.928554	0.012449	433.511833	364.499642	0	24.903937	0	0	Free Surface	2.56924	0.576294	0.631082	0.345776	0.431692	1.537406	686.934157	15,245.37	No	0.345776	2.56924
SMN8640	SMH9557	SMH9540	300	74.052661	0.002701	9.225853	0	0	2.451897	0	0	Free Surface	0.542847	0.289764	0.183089	0.086929	0.072028	0.69345	50.389971	1,139.41	Yes	0.088812	0.52691
PSPB7-3	PMHB7-3	SMH9557	300	74.828904	0.002018	4.985374	0	0	1.259998	0	0	Free Surface	0.409847	0.228439	0.114458	0.068532	0.052595	0.595332	43.556525	540.35	No	0.068532	0.409847
SMN8597	SMH9498	SMH9460	450	81.077258	0.00259	22.659319	0	0	6.602317	0	0	Free Surface	0.665098	0.266785	0.155742	0.120053	0.101854	0.725669	145.49301	3,085.36	Yes	0.123721	0.637641
SMN8627	SMH9540	SMH9498	300	64.893755	0.003698	9.332939	0	0	2.506324	0	0	Free Surface	0.609319	0.268982	0.158276	0.080695	0.072455	0.810608	58.966264	1,299.51	No	0.080695	0.609319
SMN8416	SMH9223	SMH9262	200	63.457016	0.004129	5.802505	2.705996	0	0.774907	0	0	Free Surface	0.573863	0.358154	0.274592	0.071631	0.063729	0.797763	21.131373	452.84	No	0.071631	0.573863
SMN8419	SMH9262	SMH9226	300	74.342299	0.008084	7.684293	4.509993	0	0.798887	0	0	Free Surface	0.760047	0.200638	0.088142	0.060191	0.06559	1.182735	87.180366	501.84	Yes	0.087406	0.448712
SMN18837	SMH9284	SMH9262	300	78.804905	0.005228	0.993616	0.901999	0	0.021171	0	0	Free Surface	0.353947	0.083206	0.014173	0.024962	0.023246	0.86805	70.108622	43	Yes	0.042577	0.161945
SMN8408	SMH9240	SMH9223	200	76.116473	0.00356	4.908502	1.803997	0	0.776907	0	0	Free Surface	0.519283	0.340881	0.250142	0.068176	0.058456	0.742365	19.622855	452.83	Yes	0.069904	0.501844
SMN18827	SMH9248	SMH9240	200	56.187955	0.003186	0.979454	0.901999	0	0.017959	0	0	Free Surface	0.312901	0.156082	0.052767	0.031216	0.025675	0.680184	18.561873	51.01	Yes	0.049696	0.160846
PSPB2-1	PMHB2-1	SMH9240	300	89.238207	0.001995	3.012277	0	0	0.739999	0	0	Free Surface	0.352113	0.178589	0.06956	0.053577	0.040717	0.582532	43.3046	312.81	No	0.053577	0.352113
SMN8420	SMH9226	SMH9260	250	59.412853	0.007237	11.281042	8.117987	0	0.815821	0	0	Free Surface	0.831386	0.320465	0.222386	0.080116	0.084194	1.100467	50.727194	749.84	Yes	0.25	0.229816
PSPB3-1	PMHB3-1	PMHB3-2	300	77.253882	0.002006	2.582727	0	0	0.629999	0	0	Pressurized	0.337108	0.165436	0.059467	0.049631	0.037662	0.580465	43.431531	267.03	Yes	0.3	0.036538
PSPB3-2	PMHB3-2	SMH9040	300	87.860004	0.001992	2.582727	0	0	0.629999	0	0	Pressurized	0.336256	0.165726	0.059684	0.049718	0.037662	0.578471	43.273584	267.03	Yes	0.3	0.036538
SMN8235	SMH16802	SMH9040	450	86.278619	0.005401	280.58185	226.785592	0	18.044347	0	0	Pressurized	1.76419	1	1.335476	0.45	0.322936	0.839467	210.098704	9,399.99	Yes	0.45	1.76419
SMN8246	SMH9040	SMH9028	450	67.884364	0.004066	283.169945	227.67359	0	18.692953	0	0	Pressurized	1.780463	1	1.553444	0.45	0.300433	0.84721	182.28531	9,677.03	Yes	0.45	1.780463
SMN15576	SMH16805	SMH16802	450	95.997733	0.005906	279.666981	225.897593	0	18.033671	0	0	Pressurized	1.758438	1	1.272911	0.45	0.330227	0.83673	219.706572	9,393.98	Yes	0.45	1.758438
PSPB1-2	PMHB1-2	PMHB1-3	300	149.769486	0.002003	2.46593	0	0	0.599999	0	0	Pressurized	0.332353	0.161804	0.056824	0.048541	0.03679	0.578939	43.39587	251.77	Yes	0.3	0.034886
PSPB1-3	PMHB1-3	SMH16805	300	118.122051	0.001998	2.46593	0	0	0.599999	0	0	Pressurized	0.332036	0.161911	0.056897	0.048573	0.03679	0.578188	43.340105	251.77	Yes	0.3	0.034886
SMN15577	SMH16804	SMH16805	450	36.502053	0.003918	272.8006	225.009595	0	15.898636	0	0	Pressurized	1.715265	1	1.524593	0.45	0.297578	0.816187	178.933386	8,875.20	Yes	0.45	1.715265
PSPB1-1	PMHB1-1	PMHB1-2	300	54.410413	0.001985	2.46593	0	0	0.599999	0	0	Pressurized	0.331269	0.16217	0.057083	0.048651	0.03679	0.576371	43.198664	251.77	Yes	0.3	0.034886
SMN8216	SMH9014	SMH8986	450	98.357869	0.004057	286.175731	229.449587	0	19.177066	0	0	Pressurized	1.799362	1	1.571697	0.45	0.300259	0.856203	182.080694	9,923.01	Yes	0.45	1.799362
SMN8234	SMH9028	SMH9014	450	66.339562	0.004387	285.069015	228.561589	0	19.09863	0	0	Pressurized	1.792404	1	1.505594	0.45	0.30634	0.852892	189.339925	9,907.00	Yes	0.45	1.792404
SMN8174	SMH8952	SMH8928	525	33.846017	0.002748	288.802808	231.225584	0	19.503735	0	0	Pressurized	1.334116	1	1.277629	0.525	0.320931	0.587731	226.045935	10,059.79	Yes	0.525	1.334116
SMN8196	SMH8986	SMH8952	450	98.983933	0.004233	287.899047	230.337586	0	19.497735	0	0	Pressurized	1.810198	1	1.547867	0.45	0.303558	0.861359	185.997311	10,057.46	Yes	0.45	1.810198
SMN8150	SMH8903	SMH8928	300	109.781046	0.003115	7.041848	5.327991	0	0.409897	0	0	Pressurized	0.52854	0.243607	0.130118	0.073082	0.062726	0.741775	54.118882	160.7	Yes	0.3	0.099622
SMN8151	SMH8929	SMH8903	200	111.018017	0.003999	4.851322	3.551994	0	0.307667	0	0	Pressurized	0.539745	0.328583	0.233264	0.065717	0.058104	0.787691	20.797524	118.04	Yes	0.2	0.154423
SMN8154	SMH8928	SMH8904	525	88.036126	0.003578	300.238704	238.329573	0	21.191314	0	0	Pressurized	1.386944	1	1.163946	0.525	0.343678	0.611004	257.948987	10,799.15	Yes	0.525	1.386944
SMN18768	SMH8968	SMH8928	200	88.183631	0.00398	5.607608	0.887999	0	1.187998	0	0	Pressurized	0.560946	0.355164	0.270272	0.071033	0.062614	0.783532	20.74801	503.33	Yes	0.2	0.178496
SMN15531	SMH16441	SMH16408	250	39.048252	0.002996	5.884658	0.823999	0	1.289449	0	0	Free Surface	0.504066	0.287506	0.180294	0.071877	0.060212	0.708397	32.639158	619.16	Yes	0.072666	0.496455
SMN16978	SMH11525	SMH16441	250	60.864425	0.00299	5.671164	0.617999	0	1.287449	0	0	Free Surface	0.498422	0.282257	0.173929	0.070564	0.059082	0.707559	32.606242	618.45	Yes	0.07122	0.492028
SMN16736	SMH11524	SMH11525	250	107.276485	0.003002	1.307987	0.411999	0	0.213271	0	0	Free Surface	0.32459	0.136581	0.040039	0.034145	0.028013	0.676321	32.667995	139.42	Yes	0.052355	0.175235
SMN19231	SMH11523	SMH11524	250	67.785944	0.002995	0.29407	0.206	0	0.020176	0	0	Free Surface	0.206802	0.067196	0.009012	0.016799	0.013203	0.619356	32.630596	25.71	Yes	0.025472	0.111988

Model Results for proposed pipes

ID	From ID	To ID	Diameter (mm)	Length (m)	Slope	Total Flow (L/s)	Unpeakable Flow (L/s)	Peakable Flow (L/s)	Coverage Flow (L/s)	Infiltration Flow (L/s)	Storm Flow (L/s)	Flow Type	Velocity (m/s)	d/D	q/Q	Water Depth (m)	Critical Depth (m)	Froude Number	Full Flow (L/s)	Coverage Count	Backwater Adjustment	Adjusted Depth (m)	Adjusted Velocity (m/s)
PSPB9-1	PMHB9-1	PMHB10-4	300	97.291511	0.009281	4.870573	0	0	1.229998	0	0	Free Surface	0.697362	0.155182	0.05214	0.046555	0.051974	1.241475	93.412683	532.92	Yes	0.06963	0.391478
PSPB10-1	PMHB10-1	PMHB10-2	300	31.009432	0.010029	11.470568	0	0	3.089995	0	0	Free Surface	0.922046	0.232086	0.118128	0.069626	0.080549	1.328056	97.10302	1,350.08	Yes	0.074448	0.838722
PSPB10-2	PMHB10-2	PMHB10-3	300	31.207923	0.005992	11.470568	0	0	3.089995	0	0	Free Surface	0.767813	0.264236	0.152826	0.079271	0.080549	1.031366	75.056415	1,350.08	No	0.079271	0.767813
PSPB10-3	PMHB10-3	PMHB10-4	300	51.124613	0.00401	11.470568	0	0	3.089995	0	0	Free Surface	0.665254	0.292786	0.18682	0.087836	0.080549	0.844995	61.399009	1,350.08	Yes	0.090271	0.640458
PSPB10-4	PMHB10-4	SMH9156	300	39.153811	0.006002	15.57788	0	0	4.319993	0	0	Free Surface	0.838302	0.309021	0.207378	0.092706	0.094313	1.033594	75.118405	1,883.00	No	0.092706	0.838302
SMN18817	SMH9156	SMH9177	250	34.631269	0.028096	15.80461	0.206	0	4.328934	0	0	Pressurized	1.486788	0.26886	0.15813	0.067215	0.100305	2.167268	99.946832	1,898.09	Yes	0.25	0.321969
PSPB8-4	PMHB8-4	SMH9276	300	106.991119	0.005944	18.104036	0	0	5.099992	0	0	Free Surface	0.871353	0.335114	0.242171	0.100534	0.101938	1.026899	74.757392	2,221.86	No	0.100534	0.871353
PSPB8-2	PMHB8-2	PMHB8-3	300	102.926191	0.005995	18.104036	0	0	5.099992	0	0	Free Surface	0.87397	0.334381	0.241155	0.100314	0.101938	1.031249	75.072189	2,221.86	Yes	0.105968	0.810904
PSPB8-3	PMHB8-3	PMHB8-4	300	108.222899	0.00401	18.104036	0	0	5.099992	0	0	Free Surface	0.755708	0.37207	0.294843	0.111621	0.101938	0.839299	61.402313	2,221.86	No	0.111621	0.755708
PSPB8-1	PMHB8-1	PMHB8-2	300	110.5964	0.005986	18.104036	0	0	5.099992	0	0	Free Surface	0.873532	0.334503	0.241333	0.100351	0.101938	1.030522	75.016698	2,221.86	No	0.100351	0.873532
PSPB7-2	PMHB7-2	PMHB7-3	300	117.367474	0.002991	4.985374	0	0	1.259998	0	0	Free Surface	0.471083	0.207153	0.09402	0.062146	0.052595	0.720788	53.024811	540.35	Yes	0.065339	0.438606
PSPB7-1	PMHB7-1	PMHB7-2	300	78.48694	0.010014	4.985374	0	0	1.259998	0	0	Free Surface	0.721181	0.154083	0.051379	0.046225	0.052595	1.288631	97.031338	540.35	Yes	0.054185	0.573356
PSPB7-3	PMHB7-3	SMH9557	300	74.828904	0.002018	4.985374	0	0	1.259998	0	0	Free Surface	0.409847	0.228439	0.114458	0.068532	0.052595	0.595332	43.556525	540.35	No	0.068532	0.409847
PSPB5-6-1.	PMHB5-6-1	PMHB5-6-2	300	150	0.002	31.14026	0	0	9.349984	0	0	Free Surface	0.667298	0.627197	0.718138	0.188159	0.135172	0.531104	43.362513	4,029.08	No	0.188159	0.667298
PSPB5-6-2.	PMHB5-6-2	PMHB5-6-3	300	118.013805	0.008999	31.14026	0	0	9.349984	0	0	Free Surface	1.175466	0.401001	0.338553	0.1203	0.135172	1.250077	91.980401	4,029.08	Yes	0.153827	0.853365
PSPB4-1	PMHB4-1	PMHB4-2	300	150	0.002	16.379937	0	0	4.559992	0	0	Free Surface	0.570642	0.425964	0.377744	0.127789	0.096793	0.585608	43.362513	1,962.89	No	0.127789	0.570642
PSPB4-2	PMHB4-2	PMHB4-3	300	33.539763	0.001998	16.379937	0	0	4.559992	0	0	Free Surface	0.570318	0.426147	0.377968	0.127844	0.096793	0.585126	43.336801	1,962.89	No	0.127844	0.570318
PSPB4-3	PMHB4-3	PMHB5-6-4	300	80.06974	0.001998	16.379937	0	0	4.559992	0	0	Free Surface	0.570426	0.426086	0.377909	0.127826	0.096793	0.585287	43.343625	1,962.89	No	0.127826	0.570426
PSPB5-6-3.	PMHB5-6-3	PMHB5-6-4	300	80.002938	0.002025	31.14026	0	0	9.349984	0	0	Free Surface	0.67066	0.624512	0.713704	0.187354	0.135172	0.535508	43.631886	4,029.08	Yes	0.259085	0.479852
PSPB5-6-4	PMHB5-6-4	PMHB5-6-5	300	61.904276	0.001987	44.112242	0	0	13.909977	0	0	Pressurized	0.624062	1	1.020628	0.3	0.160471	0.36369	43.220688	5,991.97	Yes	0.3	0.624062
PSPB5-6-5	PMHB5-6-5	PMHB5-6-6	300	26.965107	0.00204	44.112242	0	0	13.909977	0	0	Pressurized	0.624062	1	1.007348	0.3	0.161576	0.36369	43.790481	5,991.97	Yes	0.3	0.624062
PSPB5-6-6	PMHB5-6-6	PMHB5-6-7	300	150	0.002	44.112242	0	0	13.909977	0	0	Pressurized	0.624062	1	1.01729	0.3	0.160747	0.36369	43.362513	5,991.97	Yes	0.3	0.624062
PSPB5-6-7	PMHB5-6-7	PMHB5-6-8	300	150	0.002	44.112242	0	0	13.909977	0	0	Pressurized	0.624062	1	1.01729	0.3	0.160747	0.36369	43.362513	5,991.97	No	0.3	0.624062
PSPB5-6-8	PMHB5-6-8	SMH9079	300	69.886019	0.00807	44.112242	0	0	13.909977	0	0	Free Surface	1.236199	0.503784	0.506425	0.151135	0.162196	1.144121	87.105153	5,991.97	No	0.151135	1.236199
PSPB3-1	PMHB3-1	PMHB3-2	300	77.253882	0.002006	2.582727	0	0	0.629999	0	0	Pressurized	0.337108	0.165436	0.059467	0.049631	0.037662	0.580465	43.431531	267.03	Yes	0.3	0.036538
PSPB3-2	PMHB3-2	SMH9040	300	87.860004	0.001992	2.582727	0	0	0.629999	0	0	Pressurized	0.336256	0.165726	0.059684	0.049718	0.037662	0.578471	43.273584	267.03	Yes	0.3	0.036538
PSPB2-1	PMHB2-1	SMH9240	300	89.238207	0.001995	3.012277	0	0	0.739999	0	0	Free Surface	0.352113	0.178589	0.06956	0.053577	0.040717	0.582532	43.3046	312.81	No	0.053577	0.352113
PSPB1-3	PMHB1-3	SMH16805	300	118.122051	0.001998	2.46593	0	0	0.599999	0	0	Pressurized	0.332036	0.161911	0.056897	0.048573	0.03679	0.578188	43.340105	251.77	Yes	0.3	0.034886
PSPB1-2	PMHB1-2	PMHB1-3	300	149.769486	0.002003	2.46593	0	0	0.599999	0	0	Pressurized	0.332353	0.161804	0.056824	0.048541	0.03679	0.578939	43.39587	251.77	Yes	0.3	0.034886

PSPB1-1	PMHB1-1	PMHB1-2	300	54.410413	0.001985	2.46593	0	0	0.599999	0	0	Pressurized	0.331269	0.16217	0.057083	0.048651	0.03679	0.576371	43.198664	251.77	Yes	0.3	0.034886