



**TECHNICAL MEMORANDUM No. 2**

Issued Date:	June 26, 2024	File No.:	2279-235
Previous Issue Date:	March 1, 2024	City File No:	3242-04
To:	Carmi Simpson, ASCT, City of Nanaimo	Revision No.	1
From:	Mitchell Brook, P.Eng.		
Client:	City of Nanaimo		
Project Name:	Infill Development Review		
Subject:	Water System Improvement Review		

**1. Objective**

The objective of this technical memorandum is to review the impacts on the City’s water distribution network with the proposed infill development and associated fire flow.

**2. Background**

The fire flow requirement for the review is based on the Fire Underwriters Survey (FUS), 2020 Water Supply For Public Protection Guide calculations that were completed under Technical Memorandum 2279-235-TM1. For this review a design fire flow of 150 lps has been selected based on the proposed infill allowance of four dwelling units per lot.

Based on the City of Nanaimo Manual of Engineering Standards and Specifications (MoESS) design standards the maximum allowable velocity under maximum day plus fire flow conditions is 3.5 m/s in new mains. For the purposes of this review a higher velocity has been used to identify deficient areas in the distribution system. A maximum velocity of 4.9 m/s has been selected for this review. This velocity is based on the maximum design velocity for resilient seat gate valves as noted in AWWA C509-23 Section 1.1.1.

**3. Hydraulic Capacity Performance and Design Criteria**

Based on the items noted in Section 2 and the MoESS design standards, the criteria outlined below in **Table 1** was used to assess the hydraulic impact of the proposed infill development on the City water distribution system.

**Table 1: Analysis Criteria**

Criteria	Analysis Scenario	Parameter Value
Design Fire Flow	MDD+FF	150 lps
Minimum Residual Pressure (hydrant)	MDD+FF	150 kPa (22 psi)
Minimum Residual Pressure (system)	MDD+FF	35 kPa (5 psi)
Maximum Velocity	MDD+FF	4.9 m/s

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#### 4. Hydraulic Capacity Analysis

The City of Nanaimo InfoWater model was evaluated under 2023 conditions to determine the available fire flow in the areas of the proposed infill development. Hydrants with fire flows less than 150 lps under the design criteria summarized in Table 2 were identified and are shown in **Figure 1**.

Based on a review of the water model results the deficient hydrants can be grouped into the following categories:

- 1) Hydrants that can provide 150 lps but are limited due to velocities exceeding 4.9 m/s in the distribution system.
- 2) Hydrants that can provide 150 lps but are limited due to pressures less than 5 psi in system.
- 3) Hydrants that cannot provide 150 lps while maintaining a residual pressure of 22 psi at the hydrant.

For the areas under Category 2, water distribution piping upgrades will not be sufficient to maintain the required 5 psi in the water system under the 150 lps fire flow conditions. It is recommended that these areas are identified under the proposed zoning regulations, to ensure buildings in this area are designed to meet the available fire flow.

A summary of the deficient hydrants is provided in Appendix A.

#### 5. Proposed System Improvements

Once the deficient hydrants were identified, the water system was reviewed to determine potential improvements to provide the required design fire flow.

The watermains with velocities greater than 4.9 m/s under the 150 lps fire flow were identified for upgrades. For this review

For areas where the hydrants were not able to provide the 150 lps, while maintaining a residual pressure of 22 psi at the hydrant, the surrounding area of the distribution system was reviewed. Smaller 100 mm dia. and 150 mm dia. watermains were identified for upgrades to improve fire flows in these areas. For the purposes of this review alternate improvement options such as installing watermain loops or modifying pressure zone boundaries were not included.

Previously identified water system upgrades and water distribution DCC projects were reviewed and included in the overall system improvements if the projects were located within the proximity of the infill development areas.

The total length of the proposed improvements is summarized in Table 2 are shown on **Figure 1**.

**Table 2: System Upgrades**

Proposed Improvements	Total Length (m)
Watermain Upgrades (various diameters)	64,000

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It should be noted that the identified projects are meant to provide an order of magnitude estimate of the impacts to the system. The final required pipe diameters and lengths of piping will need to be finalized prior to detailed design. As the zoning regulations are finalized and implemented it is recommended that additional reviews should be completed on a per pressure zone basis to identify the detailed improvements required to provide the 150 lps fire flow for the new infill zoning.

## 6. Cost Estimates

The cost estimate shown in **Table 3** is Class 'D' (feasibility study) and is made without preliminary design input. The unit rate price has been provided by the City of Nanaimo and is based on their inhouse estimates for planning purposes. The estimate is in 2024 dollars and is exclusive of GST.

**Table 3: Cost Estimates**

Proposed Improvements	Total Length (m)	Unit Rate (\$/m)	Total Cost
Watermain Upgrades (various diameters)	64,000	1,700	\$109,000,000

## 7. Conclusions and Recommendations

Conclusions and recommendations will be provided following the City's review of the draft technical memorandum.

Yours truly,

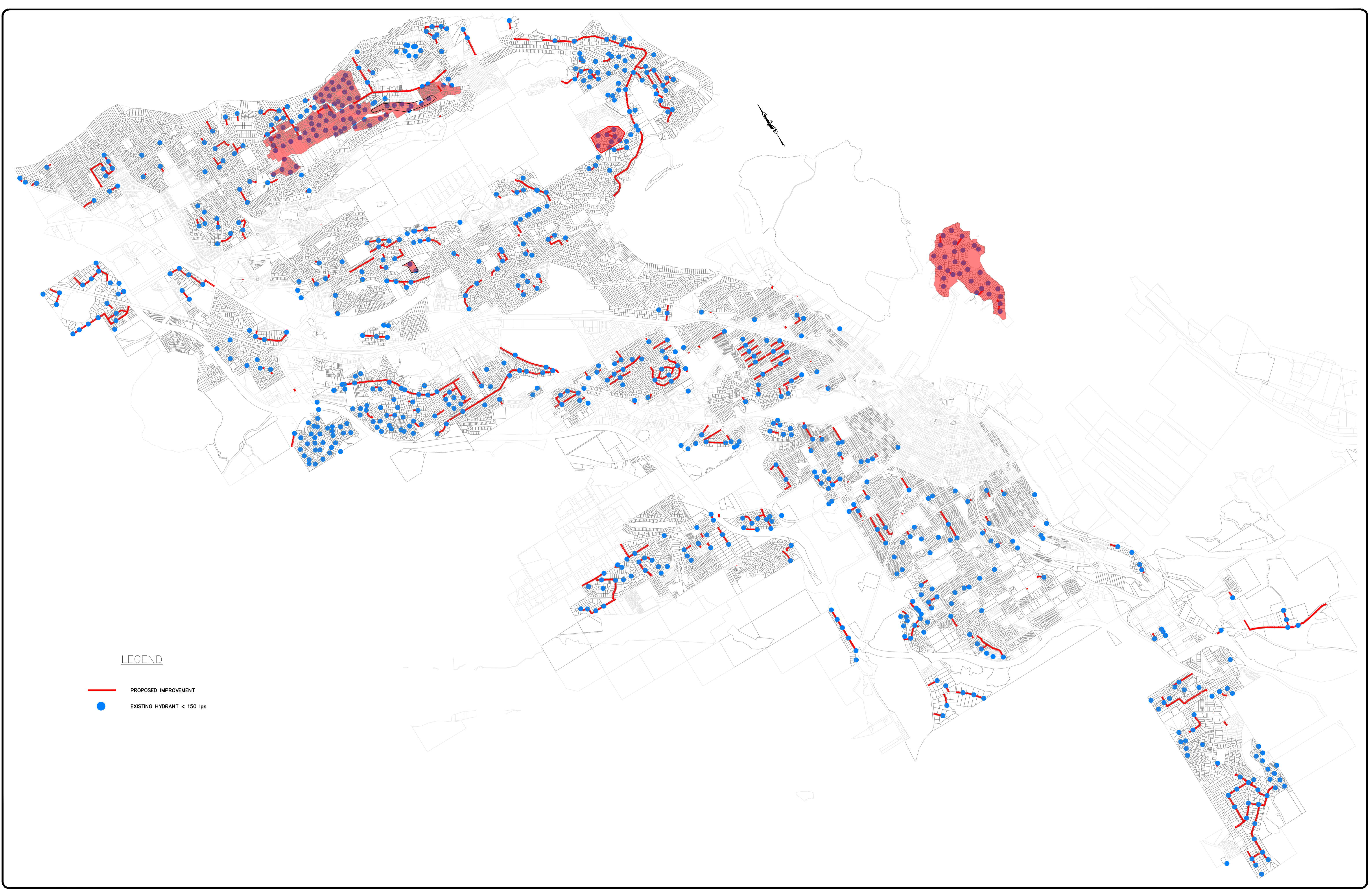
KOERS & ASSOCIATES ENGINEERING LTD.

Prepared By:

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Project Manager  
Permit to Practice No. 1001658

Enclosures

H:\5251 NANAIMO CITY\2278 WATER SYSTEM MODELLING\226 DEVELOPMENT INFILL REVIEW\03 DRAWINGS\EXTREME SCENARIO PARCELS WITH WATERMANS



LEGEND

- PROPOSED IMPROVEMENT
- EXISTING HYDRANT < 150 lps

Reference data

Consultant Logo



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No.	Date	By	Revisions	Eng.
1	29FEB24	MB	DRAFT REPORT	MB

Design by	Date	Permit to Practice: 1001658
MB	FEB 2024	
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MB		
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MB		



Scale	Horiz. NTS	Vert. NTS
Consultant Dwg No.	2279-235-01	Sheet 1 of 1
Engineering File No.	3242	
CoN Dwg No. FIGURE 1		

Project	2024 INFILL DEVELOPMENT REVIEW
Title	PROPOSED SYSTEM IMPROVEMENTS

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Appendix A – Fire Hydrant Summary

<b>GIS ID</b>	<b>PRESSURE ZONE</b>	<b>ADDRESS/LOCATION</b>	<b>HYDRANT ID</b>
63981	19	3628 GLEN OAKS DRIVE	1310
63979	10	501 GATEWOOD PLACE	1309
64451	10	3661 PLANTA ROAD	336
64373	10	3663 PLACE ROAD	275
62766	21	4290 CLUBHOUSE DRIVE	971
62767	21	4210 CLUBHOUSE DRIVE	970
64066	20	5454 CLIPPER DRIVE	859
62735	21	3380 BOURNEMOUTH ROAD	392
62795	20	5350 DUNSTER ROAD	446
62900	20	5310 DUNSTER ROAD	445
63632	5	847 GLENGARRY CRESCENT	2056
63633	5	823 GLENGARRY CRESCENT	2057
62049	7	825 DOGWOOD ROAD	1660
63629	10	614 SEVENTH STREET	1095
62644	20	3481 HILLSIDE AVENUE	364
64154	20	6573 SOUTHAMPTON ROAD	317
68154	22	4961 HAMMOND BAY ROAD	3311
64431	22		3310
64291	22	5020 LAGUNA WAY	3313
62309	19A		2555
62337	10	405 ELIZABETH STREET	2537
37094	10		9363
63726	10	617 CALVERLEY AVENUE	2379
63259	14	196 COLVILLETON TRAIL	1549
63260	14	206 COLVILLETON TRAIL	1550
63256	14	182 COLVILLETON TRAIL	1548
63258	14	179 CAPT MORGANS BOULEVARD	1551
63257	14	167 CAPT MORGANS BOULEVARD	1552
63302	12	245 LIGNITE PLACE	848
63300	12	1993 COAL TYEE TRAIL	849
63074	10	440 SUNDERLAND AVENUE	2117
63073	10	435 JOHNS AVENUE	1450
62686	20	305 COBBLESTONE PLACE	1126
62646	20	2416 BLACK FRANKS DRIVE	467
62679	20	2544 THERESA TERRACE	1302
62600	20	2563 THERESA TERRACE	1303
62602	20	2418 CONLIN WAY	462
64049	10	3473 ELLIS PLACE	335
62332	2		2543
64456	23	5936 SCHOONER WAY	1209
62223	23	6017 SCHOONER WAY	1507

GIS ID	PRESSURE	ADDRESS/LOCATION	HYDRANT ID
	ZONE		
63579	10	828 HARBOUR VIEW STREET	1164
43403	10	897 HARBOUR VIEW STREET	3277
62741	21	4100 APPLE GATE	884
63955	17	276 NOTTINGHAM DRIVE	339
63964	19	261 CANTERBURY CRESCENT	1174
63962	19	160 CANTERBURY CRESCENT	1173
63963	19	230 CANTERBURY CRESCENT	1175
63543	10	540 DUNDAS STREET	1107
62974	13		2024
62899	20	5271 SCARSDALE ROAD	447
62256	20	3337 WILLOWMERE CRESCENT	2530
62253	20	3304 WILLOWMERE CRESCENT	2531
62386	10	609 CHELSEA STREET	33
62924	10	873 CHELSEA STREET	2502
62384	10	718 ST GEORGE STREET	178
62202	15	1847 LATIMER ROAD	714
62201	15	1901 LATIMER ROAD	713
62933	10	631 CADOGAN STREET	26
62493	20	201 BURLWOOD PLACE	1063
64054	10	3446 MEADOW LANE ROAD	330
64053	10	3484 OSPREY LOOKOUT	331
63640	7	849 DOGWOOD ROAD	1629
63490	10	857 PARK AVENUE	1236
63669	7	811 NANAIMO LAKES ROAD	1873
63850	1	1935 HEALY ROAD	2070
64030	20	5934 CATHEDRAL CRESCENT	1836
64278	20	6422 LASALLE ROAD	2077
64139	23		2302
63821	1	2065 LAKESIDE DRIVE	507
63770	10	1072 HALIBURTON STREET	3290
63764	10	1003 HALIBURTON STREET	3294
63769	10	60 CENTENNIAL ROAD	3292
63789	10	1064 CEDAR ROAD	951
64527	22	5503 NORTON ROAD	866
62608	20	2645 LABIEUX ROAD	461
63447	10	56 VIEW STREET	819
62593	20	3098 TANGLEWOOD WAY	1586
62793	20	5350 METRAL DRIVE	427
62579	10	1840 DEERBORNE PLACE	1799
63170	12	2319 TOWERVIEW CRESCENT	769
62203	15	2135 CARMEN ROAD	715
62500	20	2240 ROSSTOWN ROAD	1073

GIS ID	PRESSURE	ADDRESS/LOCATION	HYDRANT ID
	ZONE		
62550	20	2306 ROSSTOWN ROAD	1104
62489	20	2350 BRACKENWOOD PLACE	678
63899	20		800
62396	16	1600 DUFFERIN CRESCENT	2504
62233	17	1435 MONTROSE AVENUE	1554
62597	20	2583 STAMPEDE TRAIL	1595
62462	10	2916 JAMES STREET	2025
64112	20	6658 EVEREST DRIVE	2198
63534	10	530 SIXTH STREET	823
62609	20	2655 BEAVER CREEK CRESCENT	469
63795	10	28 TROFTON ROAD	524
64367	22	4966 BRODYS PLACE	2425
64524	22	5569 LESLIE CRESCENT	802
64528	22	5521 HAMMOND BAY ROAD	803
64523	22	5473 WESTDALE ROAD	1814
62333	22	5550 NORTON ROAD	2591
64022	20	5538 CLIPPER DRIVE	858
63270	12	244 SHILOH DRIVE	1025
64490	10	4982 VISTA VIEW CRESCENT	1807
64502	10	101 SAND PIPER PLACE	1267
20548	10		9534
64503	10	113 SAND PIPER PLACE	1266
64501	10	205 SEVEN OAKS PLACE	1268
63066	10	430 MCKAY AVENUE	1079
64073	20	6085 CARLTON ROAD	2040
64009	21	5727 CARLTON ROAD	325
64531	22	5601 HAMMOND BAY ROAD	1386
63647	10	656 HILLCREST AVENUE	547
63739	2	1755 HARVEST PLACE	2433
64021	20	5488 VENTURA DRIVE	2418
63537	10	701 STIRLING AVENUE	590
64485	10	4853 FINNERTY PLACE	1981
62296	10	4889 FINNERTY CRESCENT	1894
64525	22	5540 LESLIE CRESCENT	1488
64402	21	5783 KERRY LANE	1083
62653	20	2438 NADELY CRESCENT	1592
44242	20	630 SHAUGHNESSY PLACE	9264
62077	20	3197 ROBIN HOOD DRIVE	354
62589	20	411 WALTON HEATH PLACE	988
63477	10		1225
62484	20	2324 ROSSTOWN ROAD	1787
63181	12	313 CARNDUFF PLACE	2123



GIS ID	PRESSURE	ADDRESS/LOCATION	HYDRANT ID
	ZONE		
63180	12	278 CARNDUFF PLACE	763
62980	13	136 PRYDE AVENUE	161
62975	13	1603 VENLAW ROAD	670
62476	15	2023 LATIMER ROAD	711
64506	10	5340 LESLIE CRESCENT	2178
64519	22	5307 CATALINA DRIVE	1577
64520	22	5389 JACOBS LANE	2016
64522	22	5433 WESTDALE ROAD	1813
64510	10	5426 LESLIE CRESCENT	2175
64514	10	5370 BAYSHORE DRIVE	2074
64516	10	5410 BAYSHORE DRIVE	1538
64535	10	5422 BAYSHORE DRIVE	1537
64518	22	5472 LESLIE CRESCENT	1163
64513	10	5371 SUNHAVEN PLACE	828
64509	10	5382 WESTHAVEN PLACE	2176
62585	17	2852 KEIGHLEY ROAD	1129
63360	10	245 CRAIG STREET	1744
63362	10	311 ELIZABETH STREET	2228
62545	20	3527 COUNTRY CLUB DRIVE	600
62548	20	3340 FAIRWAY CRESCENT	611
64116	20	6682 JENKINS ROAD	914
64119	20	102 DINES PLACE	917
64118	20	6694 JENKINS ROAD	916
64433	22	4780 ROXANNE DRIVE	2182
63660	10	611 LAMBERT AVENUE	3263
63646	10	650 SIXTH STREET	553
62317	5	868 LINWOOD LANE	2554
19743	20		1652
44065	20		9360
62487	20	2253 DORMAN ROAD	1929
62360	23	6728 MEDD ROAD	1000
64245	23	5971 DEVON PLACE	1686
64398	21	5534 RUTHERFORD ROAD	835
64164	20	6427 NIDRI PLACE	2078
64220	20	6233 SCOLLOS PLACE	1665
41959	10	5160 FILLINGER CRESCENT	3275
63892	20		799
63896	20	3756 MYRTA PLACE	1576
62365	20	2810 TAMARA DRIVE	2580
62363	20	2714 TAMARA DRIVE	2582
63602	10	255 LAURENCE PARK WAY	617
62771	21	4209 EARLY DRIVE	2103

<b>GIS ID</b>	<b>PRESSURE ZONE</b>	<b>ADDRESS/LOCATION</b>	<b>HYDRANT ID</b>
64026	20	6020 MONASHEE WAY	1764
64069	21	6028 CARLTON ROAD	326
62369	15	1660 CHICK-A-DEE CRESCENT	727
63480	10	730 CONNAUGHT AVENUE	594
63530	10	214 COLUMBIA STREET	1341
62190	15	2107 AARON WAY	1605
62294	10		264
64294	10	5229 FOX PLACE	2196
42742	10	5245 FOX PLACE	3316
64532	22	5732 HAMMOND BAY ROAD	1816
64533	22	201 ROVERE PLACE	257
64455	22	221 ROVERE PLACE	1022
64457	22	5771 GALWAY ROAD	1023
64458	23	134 AVALON PLACE	1024
64529	22	5591 WESTDALE ROAD	801
63810	1	1943 STANNARD DRIVE	1097
62607	20	2644 WILLOW GROUSE CRESCENT	475
57912	21	4971 SONGBIRD PLACE	9076
63452	10	20 STRICKLAND STREET	194
63735	2	1696 CENTENNARY DRIVE	517
63183	12	2251 NEIL DRIVE	1955
63685	10	953 BRUCE AVENUE	575
63171	12	2328 TOWERVIEW CRESCENT	1483
62072	10	5193 DUNN PLACE	2197
39441	22	5130 LAGUNA WAY	3314
64292	22	5159 LAGUNA WAY	3315
64512	10	5372 FAIRHAVEN PLACE	827
62099	10	750A THIRD STREET	2268
63351	10	257 TAYLOR PLACE	854
63433	10	727 O'BRIEN PLACE	855
63539	10	301 DUNDAS STREET	2322
62656	20	2494 NADELY CRESCENT	1590
63997	20	6000 PINE RIDGE CRESCENT	437
63568	10	851 STIRLING AVENUE	1747
63668	7	775 DOGWOOD ROAD	930
63667	7	735 DOGWOOD ROAD	929
64427	10	5301 WILLIAMSON ROAD	1583
63957	17	255 PRINCE JOHN WAY	977
63717	10	26 ALBION STREET	1319
63657	10	448 STIRLING AVENUE	592
64517	10	5378 CATALINA DRIVE	1272
62764	21	5824 RALSTON DRIVE	1993

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	ZONE		
44063	20		9397
62824	20	4200 JINGLE POT ROAD	1858
62458	10	2955 WILDWOOD AVENUE	633
62673	20	2542 STAMPEDE TRAIL	1740
62671	20	2332 TROY ANNE WAY	466
62204	15	2130 LANCASHIRE AVENUE	1230
62884	20		893
62483	15	2003 NORTHFIELD ROAD	836
62087	20	221 BLAIRGOWRIE PLACE	1178
62482	15	230 LADY ROSE PLACE	1117
62415	15	2206 FERN ROAD	692
64250	23	5965 VERMILLION PLACE	1624
64258	23	6265 FERLEY PLACE	1982
62791	21	3824 STRONACH DRIVE	960
62790	21	3705 COTTLEVIEW DRIVE	961
62789	21	3659 COTTLEVIEW DRIVE	962
62666	20	2625 ROSSTOWN ROAD	1081
62596	20	2572 QUILL DRIVE	1559
62672	20	2542 QUILL DRIVE	1560
64262	23	701 HYATT PLACE	1105
63638	5	893 BROOKFIELD DRIVE	1986
63627	5	823 HAREWOOD MINES ROAD	2054
63518	10	534 DEERING STREET	2019
63564	10	767 PARKVIEW DRIVE	1094
63678	10	558 HANNAH ROAD	2235
62370	10	901 DUFFERIN STREET	2503
62385	10	721 OAKLEY STREET	147
62926	10	1229 BLYTHE AVENUE	148
62465	15	1710 JAMES WAY	709
62221	22	5440 WESTDALE ROAD	1489
64459	23	5778 BROADWAY ROAD	1082
64521	10	5380 WESTDALE ROAD	1490
62728	20	3765 ROSS ROAD	2306
62727	20	3711 ROSS ROAD	393
64377	10	3884 HAMMOND BAY ROAD	272
62232	17	1420 WINDSOR AVENUE	2293
64410	21	5759 KERRY LANE	2411
64411	21	5730 KERRY LANE	2202
64412	21	101 BONAVIDA PLACE	1061
64339	21	5747 MALIBU TERRACE	1737
63731	2	1599 EXTENSION ROAD	2310
62381	10	1610 ESTEVAN ROAD	63

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64208	20	6366 LASALLE ROAD	1866
64199	20	6339 WATERBURY ROAD	1271
64077	20	5881 TWEEDSMUIR CRESCENT	1715
64526	22	5560 HAMMOND BAY ROAD	1815
44266	20	3248 LAUREN MARY PLACE	9362
63987	21	3764 GLEN OAKS DRIVE	2060
64446	19A	121 GIBRALTER ROCK	995
63985	21	3702 BELAIRE DRIVE	1311
63855	1	1825 DEAN ROAD	1301
63811	1	150 TAIT ROAD	513
62342	12	1901 PEAT PLACE	2583
63308	12	274 BLACK DIAMOND DRIVE	847
63301	12	173 CADBORO PLACE	851
62417	15	2128 LARK CRESCENT	1071
62408	15	2202 MEREDITH ROAD	619
63060	13	243 GARNER CRESCENT	86
63039	10	115 HOWARD AVENUE	101
63041	10		526
62683	20	2675 LABIEUX ROAD	460
62412	15	2242 FERN ROAD	693
62501	20	2305 BOWEN ROAD	1796
62499	20	2299 BOWEN ROAD	1798
63348	10	202 DERBY PLACE	852
62981	13		2347
64209	20	6330 LASALLE ROAD	1865
62604	20	2683 BEAVER CREEK CRESCENT	470
62611	20	2684 WILLOW GROUSE CRESCENT	474
62133	20	2690 CAMCREST DRIVE	1257
62881	20	2710 CAMCREST DRIVE	1256
62880	20	2742 CAMCREST DRIVE	1255
63976	10	3397 HAMMOND BAY ROAD	281
63304	12	231 CHAMBERS PLACE	845
63859	1	1915 KELSIE ROAD	1300
62295	10	4808 FILLINGER CRESCENT	2205
64293	22	5261 LAGUNA WAY	3317
62798	20	5263 SOMERSET DRIVE	424
62779	20	5107 SOMERSET DRIVE	423
62525	20	3097 SHAMROCK PLACE	3282
62592	20	3005 PERSIMMON PLACE	1508
62664	20	2542 ROSSTOWN ROAD	481
62893	20	3800 JINGLE POT ROAD	898
62889	20	3890 JINGLE POT ROAD	895

GIS ID	PRESSURE	ADDRESS/LOCATION	HYDRANT ID
	ZONE		
62892	20	3866 JINGLE POT ROAD	896
62891	20	3709 CAVENDISH BOULEVARD	897
62665	20	2272 MASTER ROAD	480
62875	20	2456 CRYSTAL BROOK WAY	2249
63278	10	726 FITZWILLIAM STREET	112
64045	10	3256 TRANQUIL BAY	1658
64194	20	6177 WATERBURY ROAD	1681
62595	20	2662 STARLIGHT TRAIL	1067
62647	20	2622 STARLIGHT TRAIL	478
64029	20	5982 CATHEDRAL CRESCENT	1834
64140	20	5854 TURNER ROAD	431
63790	10	1505 FREW ROAD	950
63788	10	1505 FREW ROAD	1153
63787	10	1505 FREW ROAD	1144
62603	20	2625 LABIEUX ROAD	2149
62667	20	2345 BARCLAY ROAD	952
62605	20	2674 TAMARA DRIVE	1676
63897	17	3151 GRANITE PARK ROAD	358
62355	15	1851 PEYTON PLACE	1305
62061	10	3612 PLACE ROAD	2341
64372	10	3642 PLACE ROAD	295
64468	10	4806 MCGUFFIE ROAD	1221
64390	10	4600 HAMMOND BAY ROAD	1220
64479	10	4931 DENFORD PLACE	1924
42775	10	1055 MORNINGSIDE DRIVE	3303
62070	10		2190
63206	12	245 KING ROAD	3308
62076	17	3427 ALLISON WAY	1519
64428	10	5350 ENTWHISTLE DRIVE	299
64486	10	4854 FILLINGER CRESCENT	1895
41943	10	4848 FILLINGER CRESCENT	9292
64151	20	6453 SOUTHAMPTON ROAD	318
62930	10	721 ST ANDREWS STREET	173
62927	10	891 BLYTHE AVENUE	174
64484	10	4865 FINNERTY CRESCENT	1863
63205	12	205 KING ROAD	3307
63192	12	179 KING ROAD	744
63611	10	602 SEVENTH STREET	544
63628	10		1145
63679	10		545
63752	4	717 SHORTHORN CRESCENT	1013
63749	4	688 WESTERN ACRES ROAD	1010

<b>GIS ID</b>	<b>PRESSURE ZONE</b>	<b>ADDRESS/LOCATION</b>	<b>HYDRANT ID</b>
62625	20	3690 COUNTRY CLUB DRIVE	598
62730	21		2161
44214	21		9135
63584	10	645 PINE STREET	2331
63553	10	645 PINE STREET	596
63062	13	224 EMERY WAY	2308
63248	14	55 CAPT MORGANS BOULEVARD	1543
63249	14	79 CAPT MORGANS BOULEVARD	1542
63236	14	90 PIRATES LANE	1526
63944	17	1460 ROSE ANN DRIVE	1869
64269	23	6573 ALBATROSS WAY	1957
64079	20	5805 TWEEDSMUIR CRESCENT	1760
63615	6	916 SPRING PLACE	1342
64530	22		258
64537	10	5610 MUGGIES WAY	2459
64464	10	5672 MUGGIES WAY	2460
64534	23	6068 BREONNA DRIVE	2458
63350	10	250 DERBY PLACE	853
63630	5	645 WAKESIAH AVENUE	1985
63965	19	426 NOTTINGHAM DRIVE	1176
63958	19	356 NOTTINGHAM DRIVE	1177
63956	17	234 ARROW WAY	340
63439	10	388 HILLCREST AVENUE	1453
63438	10	623 FOSTER STREET	529
63435	10	360 WATFIELD AVENUE	554
63750	4	678 WESTERN ACRES ROAD	1011
63751	4	664 WESTERN ACRES ROAD	1012
63753	4	710 RIMROCK TRAIL	1015
63355	10	680 BEACONSFIELD ROAD	1900
63045	10	147 DORIC AVENUE	674
62119	15	1601 CARDINAL WAY	699
62973	13	1650 CASPERS WAY	2023
62972	13	1640 CASPERS WAY	79
44981	13	1635 CASPERS WAY	9398
62971	13	1635 CASPERS WAY	671
63445	10	58 ATHLETIC STREET	2027
63307	12	245 BLACK DIAMOND DRIVE	846
62343	12	324 WESSEX LANE	2584
63233	14	52 PIRATES LANE	1140
20329	10		9148
64480	10	4911 DENFORD PLACE	1923
64488	10		1925

GIS ID	PRESSURE	ADDRESS/LOCATION	HYDRANT ID
	ZONE		
64489	10	4920 BELLA-VISTA CRESCENT	1805
64496	10	4956 BELLA-VISTA CRESCENT	1804
63986	21	3724 BELAIRE DRIVE	2121
63942	17	102 SIR LANCELOT PLACE	981
62102	10	951 TOWNSITE ROAD	1446
62923	10	910 ST GEORGE STREET	179
63784	10	1347 FIELDING ROAD	956
45146	10	510 MILLSTONE AVENUE	3319
61618	10	1100 HALIBURTON STREET	3289
62062	10	3444 ELLIS PLACE	1888
64056	10	3556 FALCON DRIVE	332
64055	10	3332 KITE WAY	333
63978	10	3480 HAMMOND BAY ROAD	280
63203	12	293 KATHRYN PLACE	877
62586	17	2123 BELCARRA PLACE	1635
62368	20	3676 MONTEREY DRIVE	2570
62340	20	3654 MONTEREY DRIVE	2571
62717	20	117 SHAMMYS PLACE	1021
62784	21	3747 LONG LAKE TERRACE	378
62785	21	3593 HILLSIDE AVENUE	834
64212	20	6335 GROVELAND DRIVE	1864
63813	1	1964 SZASZ DRIVE	505
63858	1	205 CARLY PLACE	1299
63860	1	1952 RICHARDSON ROAD	509
62041	1	104 CORY PLACE	1295
63854	1	1983 KELSIE ROAD	1297
62715	21	3274 CRYSTAL PLACE	2201
63191	12	2100 JINGLE POT ROAD	2156
62705	20	4088 WELLESLEY AVENUE	1130
62703	20	2797 103RD STREET	1374
63945	17	1559 KNIGHT COURT ROAD	982
64429	10	5357 FILLINGER CRESCENT	1269
21946	20	4157 VERTE PLACE	9571
62886	20	4157 VERTE PLACE	1870
62606	20	2350 WILD DOVE ROAD	479
62364	20	2760 TAMARA DRIVE	2581
64261	23	6715 ELLEN PLACE	1102
64042	20	6110 PINE RIDGE CRESCENT	436
62125	20	6160 PINE RIDGE CRESCENT	1899
64145	20	6241 SPARTAN ROAD	2375
64109	20	6666 NATHAN ROAD	2100
64110	20	6101 PEARCE ROAD	2217

GIS ID	PRESSURE	ADDRESS/LOCATION	HYDRANT ID
	ZONE		
64117	20	6688 JENKINS ROAD	915
62121	20	6017 MT VIEW ROAD	907
64177	20	6625 GREEN ACRES WAY	906
64179	20	6615 VALLEY VIEW DRIVE	903
64181	20	6619 AULDS ROAD	921
64183	20	6621 VALLEY VIEW DRIVE	902
64182	20	6633 VALLEY VIEW DRIVE	901
64188	20	121 GREEN LAKE CRESCENT	900
64189	20	105 GREEN LAKE CRESCENT	899
64121	20	6743 AULDS ROAD	928
40697	20	6403 SOUTHAMPTON ROAD	9324
64018	20	5917 TWEEDSMUIR CRESCENT	1725
64313	23	6103 LA MARCHE PLACE	1308
62871	20	5556 NOYE ROAD	452
62255	20	3224 WILLOWMERE CRESCENT	2533
62254	20	3260 WILLOWMERE CRESCENT	2532
62894	20	3717 CAVENDISH BOULEVARD	2404
62895	20	3729 CAVENDISH BOULEVARD	2405
62896	20	3745 CAVENDISH BOULEVARD	2438
19256	20	3753 CAVENDISH BOULEVARD	9485
62897	20	3784 AVONLEA DRIVE	2437
62890	20	3890 JINGLE POT ROAD	2436
62341	20	3616 MONTEREY DRIVE	2572
62009	20	3616 MONTEREY DRIVE	2613
63242	14	9 PIRATES LANE	1521
62040	14	26 PIRATES LANE	1522
63244	14	31 PIRATES LANE	1523
62111	14	14 CAPT KIDDS TERRACE	1531
63243	14	7A PIRATES LANE	1532
63250	14	7A PIRATES LANE	1540
63252	14	8 PIRATE PLACE	1545
63246	14	103 PIRATES LANE	1539
63247	14	22 TREASURE TRAIL	1529
63245	14	33 CAPT KIDDS TERRACE	1530
63234	14	53 PIRATES LANE	1524
63235	14	63 PIRATES LANE	1525
63255	14	143 CAPT MORGANS BOULEVARD	1553
63253	14	22 SPYGLASS LOOKOUT	1547
63254	14	181 PIRATES LANE	1546
62112	14	119 CAPT MORGANS BOULEVARD	1544
63251	14	95 CAPT MORGANS BOULEVARD	1541
63238	14	79 PIRATES LANE	1527



GIS ID	PRESSURE	ADDRESS/LOCATION	HYDRANT ID
	ZONE		
63237	14	35 CAPT MORGANS BOULEVARD	1528
63856	1	1963 KELSIE ROAD	1298
63853	1	2007 KELSIE ROAD	2068
63857	1	67 PORTER ROAD	1296
63861	1	1938 RICHARDSON ROAD	510
63849	1	130 TAIT ROAD	512
63814	1	105 CRITCHLEY PLACE	504
63808	1	46 LEVIN CRESCENT	2021
63809	1	1912 RICHARDSON ROAD	511
62042	1	1873 RICHARDSON ROAD	1640
63815	1	2042 LAKESIDE DRIVE	506
63822	2	2311 EXTENSION ROAD	1871
63794	10	44 LEBARZ ROAD	525
63742	2	1757 WHITE BLOSSOM WAY	2494
63747	2	1800 RICHARDSON ROAD	2340
63852	1	1951 HEALY ROAD	2071
63851	1	1937 KELLS BAY	2069
63701	10	109 YOUNG ROAD	1707
63704	10	1323 WEXFORD ROAD	1620
63230	11	109 CAMROSE PLACE	1035
63232	11	387 TRINITY DRIVE	741
63177	11	2367 PANORAMA VIEW DRIVE	771
63194	11	2364 ARBOT ROAD	878
63199	11	2382 ARBOT ROAD	2131
63202	11	2402 RIDGEPOINT DRIVE	2129
63201	11	2524 WESTBERRY PLACE	2130
63178	11	2384 WESTHILL PLACE	1893
64052	10	3472 FALCON DRIVE	334
64452	10	3572 BONNIE DRIVE	294
64057	10	176 MCKINNON PLACE	293
63980	19	3648 GLEN OAKS DRIVE	1315
63983	19	3677 GLEN OAKS DRIVE	1314
63982	19	3528 WILTSHIRE DRIVE	1313
62059	21	3702 GLEN OAKS DRIVE	2058
63988	21	3736 GLEN OAKS DRIVE	2059
63989	21	3759 OAK CREST PLACE	2061
64445	19A	115 GIBRALTER ROCK	2232
64369	10	3627 PLACE ROAD	276
41876	20	3446 UPLANDS DRIVE	9101
64290	22	5160 UNIVERSAL PLACE	3312
64515	10	5390 BAYSHORE DRIVE	2065
64511	10	5361 FAIRHAVEN PLACE	2073

GIS ID	PRESSURE	ADDRESS/LOCATION	HYDRANT ID
	ZONE		
62220	10	5311 BAYSHORE DRIVE	2072
64507	10	5386 LESLIE CRESCENT	2177
64508	22	5341 HAMMOND BAY ROAD	259
64383	10	5399 FILLINGER CRESCENT	1270
64425	10	5101 CARRIAGE DRIVE	1573
64473	10	4872 LOGAN'S RUN	2187
64434	10	4375 GULFVIEW DRIVE	2179
64549	23	6245 FOREST CRESCENT	2252
64551	23	6216 SHORELINE DRIVE	2278
64225	23	6124 KIRSTEN DRIVE	1606
64227	23	5963 CODY PLACE	1607
64229	23	5909 TASHA PLACE	1608
64461	23	5858 ANNSOBEL CIRCLE	312
62787	21	3720 CALDWELL STREET	366
63984	21	409 BELMONTE PLACE	1312
21475	10	1323 WEXFORD ROAD	9173
63703	10	1331 WEXFORD ROAD	1621
63676	4	1068 PALOMINO PLACE	1005
63240	14	86 CAPT MORGANS BOULEVARD	1534
63239	14	42 CUTLASS LOOKOUT	1533
63306	12	323 BLACK DIAMOND DRIVE	850
62103	12	332 HARWELL ROAD	1601
63266	12	265 FRANKIES PLACE	785
63262	12	2201 JINGLE POT ROAD	745
63267	12	2233 ASHLEE ROAD	3249
63184	12	2245 NEIL DRIVE	765
63268	12	264 TWIGGLY WIGGLY ROAD	943
63174	12	2301 JINGLE POT ROAD	750
63520	6	896 HOWARD AVENUE	546
63519	10	846 GEORGIA AVENUE	569
43383	10		9447
63634	5		1987
63635	5	846 LINWOOD LANE	1983
63636	5	872 BROOKFIELD DRIVE	1984
63637	5	875 GLENGARRY CRESCENT	2055
63639	5	859 BROOKFIELD DRIVE	2093
63672	4	1053 PALOMINO PLACE	1004
63478	10	785 BOWMAN AVENUE	936
64047	10	3356 WAVECREST DRIVE	2288
64044	10	3303 WAVECREST DRIVE	1657
62524	20	3074 SHAMROCK PLACE	3283
43857	20	3052 SHAMROCK PLACE	3284

GIS ID	PRESSURE	ADDRESS/LOCATION	HYDRANT ID
	ZONE		
62724	20		1896
44227	20	109 MARTINEZ PLACE	3248
62783	21	3360 HICKMAN PLACE	377
62716	20	3597 ROSS ROAD	1693
62706	20	4088 WELLESLEY AVENUE	2259
62702	20	4103 VICTORIA AVENUE	1373
62819	20	408 STABLE PLACE	1127
62825	20		3254
43592	20		3255
62916	20		894
62898	20	3724 MONTEREY DRIVE	2383
62903	20	5129 KAITLYNS WAY	1771
64051	10	3452 FALCON DRIVE	1891
62882	20	2720 WILLOW GROUSE CRESCENT	471
46383	20	2792 SHEFFIELD PLACE	9460
62876	20	2751 CAMCREST DRIVE	1254
62877	20	2766 GOLDFINCH CRESCENT	472
62878	20	2470 JEANS WAY	473
62879	20	2762 JOANNA TERRACE	2214
62372	10	1391 EPLETT PLACE	1283
62207	15	1665 BOB-O-LINK WAY	726
62200	15	1863 EVERGREEN WAY	716
62414	15	2114 LANG CRESCENT	1634
62194	15	1628 CORMORANT AVENUE	700
46398	15	1917 NORTHFIELD ROAD	3092
62481	15		1020
63344	10	117 KAMP PLACE	1561
63040	10	115 HOWARD AVENUE	248
63050	10	11 ACACIA AVENUE	2
63063	13	234 EMERY WAY	865
63349	10	703 SECOND STREET	527
63352	10	214 WAKESIAH AVENUE	1723
63353	10	689 BEACONSFIELD ROAD	528
56498	13	1406 JINGLE POT ROAD	9562
63223	13	131 WILDLIFE PLACE	795
63295	13	820 ROCKLAND ROAD	794
63427	10	501 THIRD STREET	3281
63723	10	447 WATFIELD AVENUE	556
63663	10	630 FIFTH STREET	3265
63538	10	698 WINCHESTER AVENUE	1492
62970	13		669
63666	7	705 DOGWOOD ROAD	1630

GIS ID	PRESSURE	ADDRESS/LOCATION	HYDRANT ID
	ZONE		
63035	10	515 CHURCHILL AVENUE	1286
63369	10	435 LAMBERT AVENUE	550
62006	15	2153 LARK CRESCENT	2661
62010	20	3537 MONTEREY DRIVE	2615
62011	20	3579 MONTEREY DRIVE	2614
62012	20	3508 MONTEREY DRIVE	2616
61993	20	5342 SOMERSET DRIVE	2641
50109	10	702 TOWNSITE ROAD	3318
62026	1	2147 LAKESIDE DRIVE	2607
63819	1	2121 LAKESIDE DRIVE	508
61980	21	5285 DEWAR ROAD	2644
61979	21	5225 DEWAR ROAD	2645
65422	21	5149 LAGUNA WAY	3135
61958	21	5707 LOST LAKE ROAD	3304
61959	10	2273 KINGSFORD PLACE	2669
61949	10	2298 KINGSFORD PLACE	2670
62359	15	1859 MEREDITH ROAD	717
62151	10	5560 OCEANVIEW TERRACE	305
64577	20	3511 CASTLE ROCK DRIVE	2686
64578	20	3542 VAQUERO PLACE	2685
64582	10	647 MILLER FARM DRIVE	2684
64598	16	1667 WADDINGTON ROAD	2672
39728	21	4011 ROSS ROAD	9126
51921	10		9548
52344	22	5376 LAGUNA WAY	9567
64642	22	5376 LAGUNA WAY	2747
64643	22	5461 HAMMOND BAY ROAD	2748
64644	22	5334 SEASCAPE TERRACE	2746
64645	22	5291 LAGUNA WAY	2745
64647	20	5731 HAMMOND BAY ROAD	2660
64648	17	3207 HAMMOND BAY ROAD	283
64637	20	2344 WOODSIDE PLACE	2707
64658	10	3193 WARBRICK PLACE	2767
52576	20		9538
63185	11	280 BENSON VIEW BOULEVARD	772
64659	20	3492 CASTLE ROCK DRIVE	2701
64660	20	3471 SANTA FE PLACE	2702
64742	13	850 THIRD STREET	2864
17324	10	1331 WEXFORD ROAD	9152
52901	21	4515 UPLANDS DRIVE	9304
63714	10	553 FIFTH STREET	560
53141	20	6074 METRAL DRIVE	9308

GIS ID	PRESSURE	ADDRESS/LOCATION	HYDRANT ID
	ZONE		
64584	10	175 BERKELEY PLACE	2682
63061	13	204 EMERY WAY	59
64376	10	3804 HAMMOND BAY ROAD	273
53344	10	791 HALIBURTON STREET	9006
62158	19A	3595 OAKRIDGE DRIVE	2733
62159	10	3604 OAKRIDGE DRIVE	338
62160	10	3699 PLANTA ROAD	337
63916	21	3657 SUNRISE PLACE	1811
62349	10	3580 OAKRIDGE DRIVE	2734
62709	20		1372
64640	22	4642 SHERIDAN RIDGE ROAD	2714
62610	20	2663 CAMCREST DRIVE	1355
64701	20	2319 YORK CRESCENT	2786
62038	22		2790
61976	22	5313 SEASCAPE TERRACE	2771
64721	20		2848
64566	13	106 JUNE AVENUE	84
62149	10	5470 OCEANVIEW TERRACE	304
62150	10	5520 OCEANVIEW TERRACE	2785
62036	10	1050 TERMINAL AVENUE N	2690
62480	15	2129 BOWEN ROAD	1741
55597	10	70 GILLESPIE STREET	9008
64573	17	112 CROSS BOW DRIVE	2798
62058	17	184 CROSS BOW DRIVE	997
63044	10		1
62028	10	1534 WILSON ROAD	2816
64707	10	1471 BLYTHE AVENUE	133
64713	20	110 DUGGAN PLACE	2840
64708	17	3019 KEIGHLEY ROAD	1053
64733	13		2853
64764	10	144 LINLEY ROAD	2878
64734	10	1 ROSAMOND STREET	2006
64783	22	5355 ROYAL SEA VIEW	2892
64695	10		2728
64785	20	123 GRACE PLACE	2894
64843	12		2942
56895	10	25 MAKI ROAD	9260
64781	22	5297 ROYAL SEA VIEW	2890
64782	22	5323 ROYAL SEA VIEW	2891
62874	20	2500 CRYSTAL BROOK WAY	2250
64791	20	3515 HILLSIDE AVENUE	2899
64788	10		2898

GIS ID	PRESSURE	ADDRESS/LOCATION	HYDRANT ID
	ZONE		
64789	2	2157 DODDS ROAD	2897
57839	20	140 YON PLACE	3256
64805	20		2398
64804	20	139 YON PLACE	2910
158931	21		9139
58427	20		9469
64852	10	1535 EXTENSION ROAD	1970
64371	10	3602 PLACE ROAD	2342
64893	19A	200 ROCKMOUNT PLACE	2980
58849	2	115 LENWOOD ROAD	3320
58203	20	3516 HILLSIDE AVENUE	9001
64897	20	124 LAKE VIEW CRESCENT	938
59284	20	87 LAKE PLACE	9221
64176	20	87 LAKE PLACE	909
69171	20	83 LAKE PLACE	3225
59327	10	521 DEERING STREET	3191
64896	10	2080 ESTEVAN ROAD	24
64947	20	2776 JOANNA TERRACE	3011
64924	10	605 HOWARD AVENUE	3001
64956	12	230 CALDER ROAD	3025
64870	11	2327 PANORAMA VIEW DRIVE	2968
63190	11	2311 PANORAMA VIEW DRIVE	773
64996	22	5260 NORTON ROAD	3043
64997	21	100 ROYAL PACIFIC WAY	3044
64958	12	2233 ARBOT ROAD	3027
62883	20	450 STABLE PLACE	1510
62222	10	5520 BAYSHORE DRIVE	302
64536	10	5440 BAYSHORE DRIVE	303
62630	20	3589 COUNTRY CLUB DRIVE	599
64909	16	1273 STRATHMORE STREET	2989
63541	10	504 DUKE STREET	561
65005	6	533 MARISA STREET	3077
65851	2	180 ALBERTA ROAD	3110
65966	21	134 ROYAL PACIFIC WAY	3096
65603	2	1721 HARAMBE WAY	3123
65609	2	100 CARLO PLACE	3124
63734	2	1726 CENTENNARY DRIVE	518
66579	20	2839 NEYLAND ROAD	888
66841	22	5299 HAMMOND BAY ROAD	260
66857	22		974
67066	13	125 EMERY WAY	3136
67078	13	165 GARNER CRESCENT	3137

<b>GIS ID</b>	<b>PRESSURE ZONE</b>	<b>ADDRESS/LOCATION</b>	<b>HYDRANT ID</b>
67081	13	107 GARNER CRESCENT	85
67215	10		3151
67336	12	2231 NEIL DRIVE	3152
67383	2	2123 CINNABAR DRIVE	3148
67386	2	2143 CINNABAR DRIVE	3149
67388	2	2162 CINNABAR DRIVE	3150
67430	10	45 LEBARZ ROAD	3143
66819	20	3900 JINGLE POT ROAD	3173
66822	20		3174
66824	20		3176
66823	20		3175
66966	6	544 LORI PLACE	3165
67100	6	539 GREWAL PLACE	3167
67089	10	102 LINLEY ROAD	3179
67090	19	101 LINLEY ROAD	3184
68129	20	3728 DELIA TERRACE	3205
68124	20	3701 DELIA TERRACE	3203
68238	19	299 NOTTINGHAM DRIVE	1170
68243	19	560 CUMBERLAND PLACE	1171
68248	19	121 LOCKSLEY PLACE	1172
62885	20		2066
63816	1	153 STACEY CRESCENT	503
63172	12	2275 ASHLEE ROAD	768
63176	11	2362 PANORAMA VIEW DRIVE	770
64697	12	2295 ASHLEE ROAD	2759
62799	20	5506 BIG BEAR RIDGE	449
62636	20	3795 DEPARTURE BAY ROAD	1930
62642	20	3400 UPLANDS DRIVE	2339
62641	20	3446 UPLANDS DRIVE	369
62032	21	3512 UPLANDS DRIVE	2819
62442	15	1110 THUNDERBIRD DRIVE	724
62206	15	1139 THUNDERBIRD DRIVE	725
62210	15	1631 MEREDITH ROAD	720
63067	10	798 GIRVIN AVENUE	102
62118	15		722
62195	15	2180 DUGGAN ROAD	944
62117	15	1609 MEREDITH ROAD	721
62211	15	1018 THUNDERBIRD DRIVE	723
62944	10	1251 DISCOVERY AVENUE	98
63966	10	3315 HAMMOND BAY ROAD	282
68319	10		3024
67664	20	2205 BOXWOOD ROAD	3206

<b>GIS ID</b>	<b>PRESSURE ZONE</b>	<b>ADDRESS/LOCATION</b>	<b>HYDRANT ID</b>
68384	20	2205 BOXWOOD ROAD	3207
68544	5	908 KENTWOOD WAY	3214
68648	20	3290 SMUGGLERS HILL DRIVE	352
68647	20	3261 TELESCOPE TERRACE	355
68645	20	3247 TELESCOPE TERRACE	9361
68642	20	3221 TELESCOPE TERRACE	356
68643	20	3213 TELESCOPE TERRACE	9357
69130	11	104 TIMBER VIEW DRIVE	774
69655	2	1531 MARBAN ROAD	3273
69654	2	1537 MARBAN ROAD	3274
40663	20	6626 EVEREST DRIVE	
56201	21	3764 GLEN OAKS DRIVE	
43812	20	3312 TUNNAH ROAD	
66939	6	548 STEEVES ROAD	3126