P.O. Box 1749
Halifax, Nova Scotia
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Info Item No. 2
Halifax and West Community Council
January 8, 2019

TO: Chair and Members of Halifax and West Community Council

SUBMITTED BY: ***-Original Signed-***

Peter Duncan, Acting Director, Planning and Development

-Original Signed-

Catherine Mullally, Acting Chief Administrative Officer

DATE: November 15, 2018

SUBJECT: **Storm Sewers on Melville Avenue and Winchester Avenue**

INFORMATION REPORT

ORIGIN

Motion from Chebucto Community Council on November 7, 2011:

"THAT Chebucto Community Council request a report regarding:

1. The potential for a new storm sewer on Melville Avenue and Winchester Avenue as an update to the September 24, 2009 Halifax Water report; and
2. What measures can be taken to help drainage on Purcell's Cove Road."

LEGISLATIVE AUTHORITY

Halifax Regional Municipality Charter Part IV, Finance, Power to expend money, section 79, permits Council to expend money required by the Municipality for preventing or decreasing flooding, and for wastewater facilities and stormwater systems.

BACKGROUND

Melville Avenue and Winchester Avenue are local streets in Armdale that were annexed by the City of Halifax in 1967. The roads have a narrow rural cross section, and do not meet the current standards, including a suitable stormwater drainage system. Urban roads typically have curbs, catch basins, and storm sewers to control drainage. Rural roads typically have ditches and culverts.

Winchester Avenue has a single catch basin at the southeast end of the road. Stormwater on Winchester Avenue travels mostly by overland flow to Melville Avenue over private property. Melville Avenue has several shallow ditches and short culverts crossing the road, directing stormwater between the houses on the north side and downhill through a treed area towards the back yards of the homes on the southern side of the Purcell's Cove Road.

Purcell's Cove Road is a two-lane collector road, near the shoreline of the Northwest Arm that was also annexed by the City of Halifax in 1967. It has a rural cross section, but has curb and sidewalk along the north side in select areas. Purcell's Cove Road has a storm drainage system that directs runoff to the Northwest Arm. Flooding on Purcell's Cove can be attributed to upstream runoff making its' way downhill through adjacent side streets and properties.

Properties at civic members 57 to 103 on the south side of Purcell's Cove Road are downhill of Melville Avenue and Winchester Avenue, as shown on the map in Appendix D. Much of the stormwater from Winchester and Melville Avenue travels downhill through yards and treed areas to the Purcell's Cove Road, and ultimately to the Northwest Arm. Some of the stormwater travels through the backyards of these properties before reaching Purcell's Cove Road.

A 2009 Halifax Water (HRWC) report to the Chebucto Community Council confirms this (Appendices A and B). For the period from 1994 to 2009, seven local properties filed drainage complaints that include "wet yard", "groundwater issues", "icing on private property", and "overflow from watercourse". The same report concluded that HRWC would be willing to cost share on a new storm sewer for Winchester Avenue because this could decrease the infiltration of rain into the sanitary sewer system. Since Melville Avenue does not have a sanitary sewer, HRWC was not willing to cost share on a storm sewer for Melville Avenue. The 2009 HRWC report estimated the cost to construct a storm sewer to current standards on Melville and Winchester Avenue could be as high as $2M, which in today's dollars would be approximately $3.0M.

DISCUSSION

HRM and HRWC have a long term strategic goal of improving stormwater management and flood mitigation across the municipality. With over 500 documented drainage problem areas, the list is a long one and will take time to address. As a first step, the Municipality and HRWC completed a Stormwater Funding Strategy Baseline Study in 2015. This study developed a short list of 30 key flood-prone areas. A "Flood Risk Assessment" study[1] further prioritized the sites to 10 critical areas identified for funding through the Federal Government's National Disaster Mitigation Program (NDMP).

The "Melville Ave @ Winchester Ave" location was on the list of the 30 key flood-prone sites identified by the Flood Risk Assessment Study, ranking 15th. A summary table is provided as Appendix C. The site was not identified among the 10 critical areas for this program. In a motion resulting from the NDMP Flood Risk Assessment staff report[1], Council has directed staff to develop a funding strategy with Halifax Water to address the 10 highest priority sites. After mitigation has been programmed for the highest priority sites, funding and staff efforts can then proceed to the next sites on the list.

[1] National Disaster Mitigation Program (NDMP) Flood Risk Assessments, WSP, January 2018, Agenda Item 14.2.1 for Regional Council on October 16th, 2018.

Stormwater runoff from Winchester Avenue and Melville Avenue contributes to the stormwater reaching the backyards of Civics 57-103 on Purcell's Cove Road. Temporary adjustments on Melville Avenue or Winchester may concentrate the flow downstream to the Purcell's Cove Road, making the problem worse. Addressing the flooding in this area will involve further investigation to find a suitable design for stormwater management that will not compromise neighbouring property. While this situation is not desirable, and modern standards strive to prevent these issues, the HRM Charter allows for stormwater to flow from the street over adjacent land [Section 382, 1, (e)].

While upstream improvements to stormwater management will decrease downstream flooding, Halifax Water noted that even when storm sewers are constructed on Melville Avenue and Winchester Avenue, the properties on this section of Purcell's Cove Road can expect to continue to receive a considerable amount of runoff from upland private property, because they are located at the base of a tall, steep hill.

Changing the grade of Purcell's Cove Road in this area may help alleviate flooding on the roadway, but would not alleviate the backyard flooding of Civics 57-103. This will be verified through further investigation when funding becomes available.

Residents can help reduce flood impacts by managing stormwater on their own property. For example, residents can ensure yards are graded away from the house, install interceptor drains, and/or create grass swales in the back yard and between the homes to direct water to the street, where it will drain to catch basins and be directed to the Northwest Arm.

FINANCIAL IMPLICATIONS

There are no financial implications associated with this report.

COMMUNITY ENGAGEMENT

Community Engagement as described by the Municipality's Community Engagement Strategy is not applicable to this process.

APPENDICES

1. Appendix A – Halifax Regional Water Commission Board report entitled "Storm Sewer Request – Melville Avenue" dated September 24, 2009 (including attachments)
2. Appendix B – Halifax Regional Water Commission Board minutes from September 24, 2009
3. Appendix C – Summary Table of Flood Area Preliminary Prioritization Matrix (excerpt from NDMP Flood Risk Assessment Study, WSP 2018)
4. Appendix D – Map of area

A copy of this report can be obtained online at halifax.ca or by contacting the Office of the Municipal Clerk at 902.490.4210.

Report Prepared by: Shannon O'Connell, P.Eng., M.A.Sc., Program Engineer 902.476.2917

Report Approved by: Paul Burgess, P.Eng., Manager, Infrastructure Policy & Standards Program Manager, 902.490.5578

Appendix A

Board of Commissioners

September 24, 2009

Halifax Water
Halifax Regional Water Commission

ITEM #8
HRWC Board
September 24, 2009

TO: Colleen Purcell, CA, Chair, and Members of the Halifax Regional Water Commission Board

SUBMITTED BY: [redacted]
John P. Sheppard, P.Eng., Director of Environmental Services

APPROVED: [redacted]
Carl Yates M.A.Sc., P.Eng., General Manager

DATE: September 24, 2009

SUBJECT: **Storm Sewer Request – Melville Avenue**

ORIGIN

Request from Councillor Linda Mosher for installation of a storm sewer on Melville Avenue over concerns about area flooding and Purcell's Cove Road flooding.

RECOMMENDATION

- It is recommended that the request for a new storm sewer on Melville Avenue be referred to HRM for their consideration.
- It is recommended that Halifax Water consider a new storm sewer on Winchester Avenue in future capital budget deliberations.

BACKGROUND

As indicated on the attached sketch, civic's 57 to 103 Purcell's Cove Road, on the land side of Purcell's Cove Road, are down gradient of Melville Avenue. Files indicate that in the past 15 years, seven of these 25 properties have forwarded drainage complaints. These complaints include such items as: "wet yard", "groundwater issues", "more flow due to upstream development", "icing on property", and "overflow from watercourse". The intent of the area Councillor request is to have a storm sewer installed on Melville Avenue to address these complaints.

DISCUSSION

Part of the solution to the drainage problems in the area is to have storm sewers installed on Melville Avenue and, as well, Winchester Avenue. The cost to install new storm sewers to today's standards on both streets is estimated to be upward of two million dollars.

A critical function of the new storm sewers would be to intercept stormwater that is discharged from both streets onto adjacent and downgrade lands, causing various flooding and erosion problems, especially during high rainfall/runoff events. This would alleviate known problems at many properties on Melville Avenue/Winchester Avenue and partially address some of the drainage issues experienced by the property owners on Purcell's Cove Road.

Another critical function of storm sewers generally is to accommodate stormwater that would otherwise be discharged into the wastewater system from private property. This practice is widespread in HRM, especially in areas where there is no stormwater system, and is in violation of provincial legislation and the Rules and Regulations of Halifax Water as approved by the NSUARB.

Staff provided a report to the Board on this issue in January of this year, copy attached. The report recommended a cost-sharing proposal to fund new storm sewers in HRM in areas where there are sanitary sewers, as a means to address a variety of problems which impact on the adjacent property owners, HRM (as owners of the street), and Halifax Water (as owners of the wastewater system). The Board approved the staff recommendation, and pursuant to that approval, staff made a formal request to HRM to approve the cost-share proposal. A copy of the letter of request is also attached. HRM is still considering the request, and we are awaiting a formal reply.

Winchester Avenue has a sanitary sewer but no storm sewer. It is therefore a street where Halifax Water would be interested in having a storm sewer installed, and where Halifax Water would consider cost-sharing with HRM and the property owners as defined in the cost-share proposal approved by the Board and forwarded to HRM. Having said this, Winchester Avenue is not a high priority for Halifax Water at this time, and considering the many higher capital wastewater and stormwater priorities and the limited funding currently available, it is possible that it could be a while before a new storm sewer on Winchester Avenue became a high priority for Halifax Water.

There is no sanitary sewer on Melville Avenue. This is somewhat of an anomaly in that most streets in the urbanized areas of HRM have sanitary sewers. Since there is no sanitary sewer on Melville Avenue, a new storm sewer here would not fall under the cost-share proposal approved by the Board and forwarded to HRM. Halifax Water's priority

in new storm sewers is to facilitate a solution to the high stormwater flows in our wastewater system.

There are other important reasons for urban streets like Winchester Avenue and Melville Avenue to have a stormwater system built to today's standards: to provide adjacent landowners with a place to discharge surface water, to reduce the accumulation of water on the street, to reduce the opportunity for the accumulation of ice in the street during winter conditions, and to improve the integrity of the street structure by reducing groundwater. These are issues that are primarily the mandate and responsibility of HRM as owners of the street, as opposed to Halifax Water.

HRM and Halifax Water receive hundreds of complaints annually with respect to drainage and flooding problems in HRM. Many of these problems exist because many streets do not have a decent stormwater system, and it is simply not possible to resolve such problems until an adequate stormwater system is provided. This is evidenced by the fact that many complaints are repeat complaints, some going back decades and unable to be resolved.

The provision of new storm sewers should therefore be part of a long-term, strategic plan for both HRM and Halifax Water.

It is noted that even if storm sewers are constructed on Melville Avenue/Winchester Avenue the properties on this section of Purcell's Cove Road can expect to continue to receive a considerable amount of runoff/elevated groundwater as they are located at the base of a hill which is upward of 300 meters in length and has a slope upward of 25% grade. These types of issues are considered private property matters and as per the "Drainage - Private Property" policy previously approved by HRM Council (copy attached), property owners have been, and will continue to be, advised that it is for their own resolution.

BUDGET IMPLICATIONS

Pending approval by HRM of the proposed cost-share proposal for storm sewers, the Winchester Avenue storm sewer project would be considered within Halifax Water's Capital Budget process and could proceed in some future year based on relative priority and available financial resources. Assuming the gross cost to be $1,000,000, Halifax Water's share would be $333,333 based upon the proposed cost sharing.

ALTERNATIVES

None recommended.

ATTACHMENTS

1. Letter to Cathie O'Toole, HRM, requesting cost sharing of new storms sewers.
2. Report on Drainage – Private Property, December 1997
3. Sketch

Report Prepared by: John P. Sheppard, P.Eng., Director of Environmental Services

HALIFAX
REGIONAL MUNICIPALITY

Melville Avenue

1:2,650

User: riceg
Print Date: Sep 18, 2009

For further information on civic address, street, street name or community(GSA) data please contact HRM Civic Addressing at 490-6347 or email civicadd@halifax.ca.

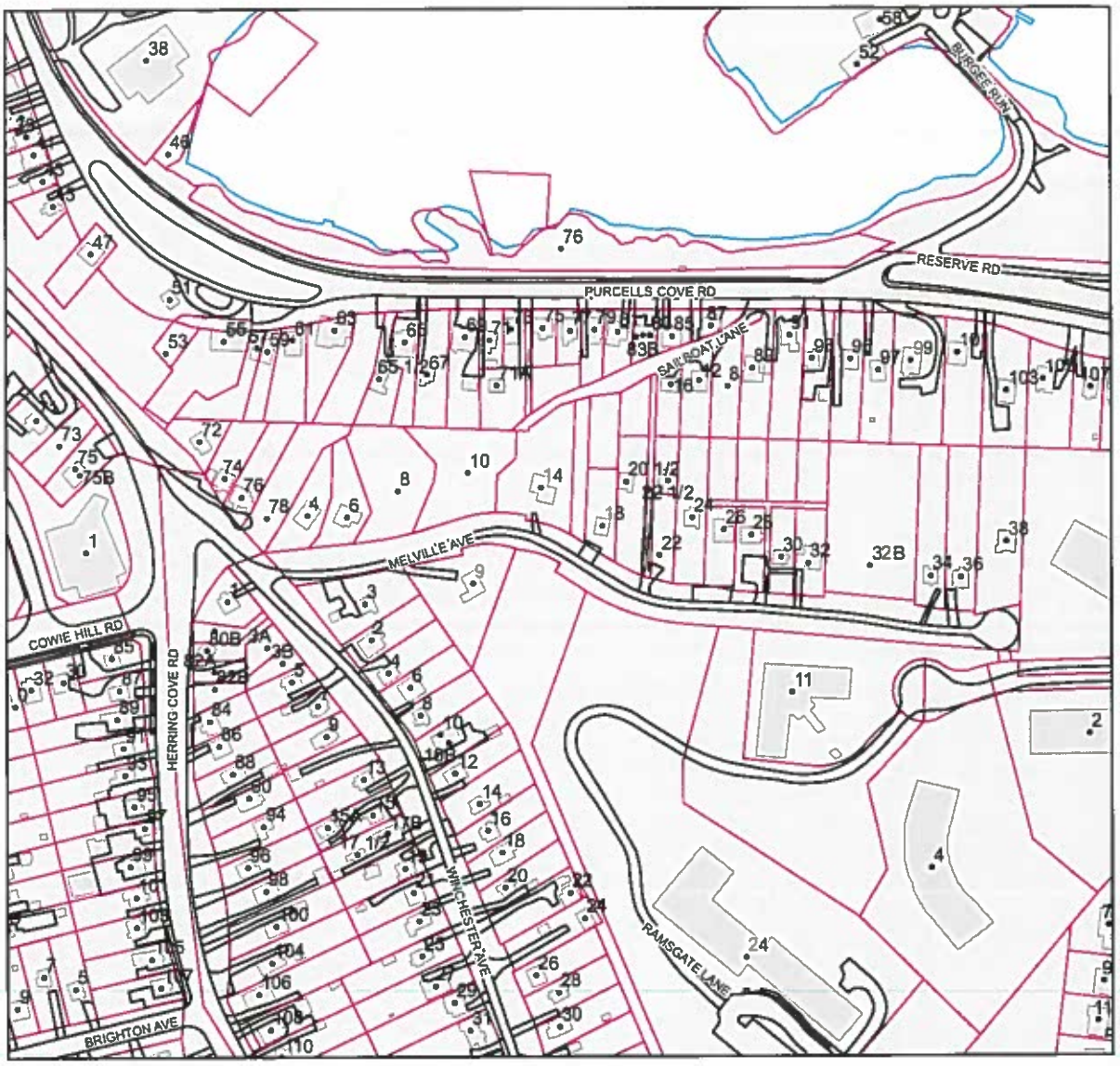
For further information on sewer infrastructure please contact Halifax Water Engineering at 490-6204 or email engineering_dept@halifaxwater.ca

For further information on zoning data please contact HRM Planning & Development Services at 490-4494 or email zoninginquiries@halifax.ca

For further information regarding any other aspect of this plot please contact HRM Geographic Information Systems & Services at 490-6568 or email geoinfo@halifax.ca.

Data of map is not indicative of the date of data creation. Scale of map is valid only if printed at 11x8.5 inches.

Projection is Modified Transverse Mercator Zone 5.



Halifax Water
Halifax Regional Water Commission
450 Cowie Hill Road, P.O. Box 8388 RPO CSC, Halifax, Nova Scotia B3K 5M1 phone 902 490-4820 fax 902 490-4808

February 13, 2009

VIA COURIER

Cathie O'Toole
Director of Infrastructure & Asset Management
Halifax Regional Municipality
P.O. Box 1749
Halifax, NS B3J 3A5

Re: Cost Sharing of New Storm Sewers

The attached report was approved by the Halifax Water Board at their meeting of January 29, 2009.

Please accept this letter as Halifax Water's formal request for Halifax Regional Municipality to agree to the cost-share arrangement for new storm sewers as outlined in the report.

We are available to meet with you and other staff as appropriate to assist in getting this matter before HRM Regional Council.

Please let me know how you wish to proceed.

Yours in service,

[redacted]

Carl D. Yates, M.A.Sc., P.Eng.
General Manager

Enclosure

c. David Hubley, Manager, Design & Construction, HRM
John Sheppard, Manager, Environmental Services, Halifax Water

Halifax Water
Halifax Regional Water Commission

ITEM #4.6
HRWC Board
January 29, 2009

TO: Harry McInroy, Chair, and Members of the Halifax Regional Water Commission Board

SUBMITTED BY: [redacted]
John P. Sheppard, P.Eng., Manager of Environmental Services

APPROVED: [redacted]
Carl Yates M.A.Sc., P.Eng., General Manager

DATE: **January 22, 2009**

SUBJECT: **Cost Sharing of New Storm Sewers**

ORIGIN

Board Reports of February 7, 2008 and August 7, 2008. Staff, in an effort to develop sustainable approaches to addressing wet weather flows and overflows, and related compliance issues, in Halifax Water's wastewater systems.

RECOMMENDATION

It is recommended that

1. Halifax Water install new storm sewers as described in this report, on an equal cost-share basis with Halifax Regional Municipality and with the owners of property adjacent to the new storm sewers, including provisions for cost-sharing of over-sizing, subject to the approval of HRM Council and the Nova Scotia Utility and Review Board.

2. Halifax Water submit a formal request to HRM to agree to this cost-share arrangement, including the requirement for HRM to recover the property owners' share of the costs using the Local Improvement Charge or other appropriate cost recovery process.

3. Halifax Water submit a formal application to the NSURB for approval of this cost-share arrangement and cost recovery mechanism, subject to the approval of HRM Council.

EXECUTIVE SUMMARY

The discharge of stormwater from private property into our wastewater system is a significant contributor to the problem of wet weather flows and overflows related to our wastewater system. This practice is contrary to applicable legislation and also the Rules and Regulations of Halifax Water.

A key requirement to facilitate the removal of such stormwater from the wastewater system is a stormwater system constructed to current standards, to which property owners can connect. This report identifies that the cost to provide such storm sewers to areas of HRM which do not currently have such storm sewers is in the order of $600 million. The draft Canada-wide CCME Municipal Wastewater Effluent Strategy provides for a timeframe of 30 years for full compliance. An annual expenditure of $20 million a year would be required in order to meet this 30 year timeline.

The report recommends that the cost of such new storm sewers be cost-shared equally, subject to oversizing considerations, by three stakeholders – Halifax Regional Municipality, the owners of property adjacent to the new storm sewers, and Halifax Water.

On a related issue, the Rules and Regulations provide that the customer is fully responsible for the cost of the lateral (building service connection) from the main to the building. When that portion of the lateral is constructed by Halifax Water, it is the intention of staff to recover the full cost from property owner at the time that the connection is made. Staff do not intend to recover such costs which were incurred pre-merger by HRM, where such costs were funded from general taxes, rather than from reserve funds.

BACKGROUND

Staff have previously provided two reports to the Halifax Water Board on the issue of Private Infiltration/Inflow Reduction through construction of storm sewers. The dates of each, the recommendations approved by the Board pursuant to each report, and a commentary on each, are as follows:

February 7, 2008

It is recommended that:

1. Halifax Water offer to HRM to share on a one-third basis in the cost of installation of new storm sewers on two street projects in 2008/09: Edward Laurie Drive and Canary Drive, both located in Halifax, as a pilot project,

Commentary: A new storm sewer was installed on only a portion of Edward Laurie Drive, primarily because HRM did not have adequate funding for the full project. Halifax Water provided its one-third share of the funding and HRM paid two-thirds. The storm sewer portion of the Canary Drive project was not done in 2008/09.

2. Halifax Water staff develop a policy related to the installation of new storm sewers on streets which have sanitary sewer service and sub-standard stormwater service, consistent with this report and utilizing the experience gained from the two projects noted above.

   Commentary: This January 29, 2009 report has been prepared to satisfy this item.

August 7, 2008

It is recommended that the Halifax Water Board approve the requirement for storm drainage systems, designed and constructed to current standards, to be installed as part of all sanitary sewer extension projects.

Commentary: This practice is now in place.

Private Infiltration/Inflow Reduction is a program intended to address the discharge of stormwater from private property into Halifax Water's wastewater system. Stormwater typically enters the system through direct connections – inflow – and through indirect connections – infiltration.

A fundamental requirement of a successful Private Infiltration/Inflow Reduction Program is the provision of a storm sewer constructed to current standards into which property owners can direct their stormwater. Many streets in HRM do not have such a storm sewer. Consequently, many property owners discharge their stormwater onto the street, or into the wastewater system. This discharge of stormwater into our wastewater system is contrary to the MGA, the HRWC Act, and the Rules and Regulations of Halifax Water as approved by the NSURB.

This report will outline staff's plan to facilitate the installation of storm sewers to current standards in all of those areas of HRM which have a wastewater system, on a planned basis over a defined period of time.

It should be noted that Private Infiltration/Inflow Reduction is one of a number of programs within Halifax Water which contribute to better management of wet weather flows within the wastewater system. Repair work is a continual program, which serves to reduce infiltration and inflow into the portions of the system owned by Halifax Water. Further, capital works on the mains, pumping stations, storage and treatment facilities which comprise our system often involve over-sizing to accommodate wet weather flows.

DISCUSSION

Staff has developed a breakdown of the types of stormwater systems in the streets and roads in HRM which have a wastewater system. These are:

Type of Stormwater Service	Length (km)	% of Total
Current Standards	410	38
Combined Sewer	250	23
Open Ditch	130	12
Shallow Storm Sewer	185	17
No Stormwater System	95	9
Total	1070	100

It should be noted that the record information for the sewer system is not complete or, in some areas, not very accurate. These numbers, and the resultant cost estimates provided later in this report, should therefore be considered as approximate only. More accurate estimates will be developed over time, as better information becomes available.

Most of these roads and streets - 38% - have storm sewers generally constructed to current standards. One of the key aspects of storm sewers built to current standards is that they are typically (although not always) deep enough for basements of buildings adjacent to the street to connect to that storm sewer by gravity, which thereby provides private property owners with a reliable system into which they can discharge their stormwater, even in the event of a power outage.

Combined Sewers represent 23% of the total. These systems are located in the older areas of Halifax and Dartmouth. The practice of allowing new combined sewers became unacceptable in the 1950s and 1960s. By their very nature, combined sewers generate large volumes of combined sewer overflow (CSO) during wet weather events. In the case of Halifax and Dartmouth, these CSOs are discharged into Halifax Harbour.

There is no specific regulatory requirement at this time for existing combined sewers to be phased out or separated, or for CSOs to be eliminated. Further, the last sentence of Section 13 of the Wastewater Rules and Regulations of Halifax Water specifically permits customers to discharge stormwater into the combined sewer system, as follows:

"No owner, customer, or other person hereinafter collectively referred to in this rule and regulation as "person" shall connect, cause to be connected, or allow to remain connected to the wastewater system or plumbing installation, without the express written consent of the Commission, any piping, fixtures, fitting or appliance in a manner which, under the circumstances, may allow water, stormwater, or any other liquid as specific elsewhere in these regulations to ingress or flow into the wastewater system. This regulation does not apply to existing premises currently connected to the combined sewer system."

Given this regulatory situation, staff are not recommending that combined sewers be separated or that CSOs be reduced or eliminated on a policy basis, although staff may recommend such projects from time to time, where it is logical to do so from the perspective of system operation, environmental protection and reduction of risk to public health, and where funding is available.

This report is primarily about providing new storm sewers in areas where there is a wastewater system, for the last three categories in the above table: Open Ditch, Shallow Storm Sewer or No Stormwater System.

Open ditches are typically too shallow to discharge basement drainage by gravity. Also, many ditches are not suited to intermittent discharge during winter months, as freezing and accumulation of ice may occur in the ditch, which may result in backup of stormwater onto private property and/or onto the street, and which may cause related operational and maintenance problems.

Shallow storm sewers were installed in many areas in order to eliminate open ditches and still serve its primary purpose of road drainage. Like ditches, these shallow storm sewers are typically too shallow to accommodate basement drainage by gravity.

Some of the roads and streets in the "No Stormwater System" category may have a shallow swale or a gutter, but are not suited in any case to accepting stormwater from buildings on private property.

For these reasons, areas which have these types of systems - Open Ditch, Shallow Storm Sewer or No Stormwater System - also predictably have very high rates of infiltration/inflow, with the concurrent problems of sewage overflows, lack of system capacity, backups into basements, washouts of treatment plant processes, with associated under-treatment of wastewater, all of which represent or result in frequent occurrences of regulatory non-compliance.

Some of the most serious overflow and undertreatment situations in HRM are identified in the table included as Attachment 1 to this report. The table notes the frequency of sewage overflows at each of these locations.

It should be further highlighted that the emerging Canada-wide CCME Municipal Wastewater Effluent Strategy, if adopted in its draft form, will place an even higher standard and greater responsibility on owners of wastewater systems – including Halifax Water – with respect to management of its systems as related to environmental protection.

Halifax Water's Private Infiltration/Inflow Reduction Program is a key aspect of our efforts to get our wastewater systems into better operating condition and into greater regulatory compliance.

The challenge is two-fold:

1. To install stormwater systems which meet current standards in all streets in HRM which have a wastewater system, and

2. To have the property owners adjacent to these streets cease discharging stormwater into Halifax Water's wastewater system, and direct that stormwater into the new storm sewers.

The solution to these challenges is expensive, and it is not immediate.

The first challenge is to have the stormwater systems installed. Based on the numbers in the table above, the length of new storm sewer required is in the order of 400 kilometers. Using a unit price of $1500 per metre, the total cost in today's dollars will be in the order of $600 million.

(There are a number of estimates of unit costs presented in this report. These are intended to be representative average unit costs which will cover a wide-range of differing situations. There are many variables in each situation which can significantly affect the actual unit cost, such as pipe size, depth of excavation, bedrock or not, proximity of other infrastructure, reinstatement, traffic, and others. In consideration of this, these unit costs should be considered to be very approximate only.)

The draft CCME Strategy provides a time frame for compliance of 30 years for wastewater systems. Reducing private infiltration/inflow is a key component of our wastewater compliance program, so planning for this work to be completed over a 30 year period of time is consistent with the strategy.

In today's dollars, meeting this CCME timeframe would require an annual capital expenditure of about $20 million per year.

This is a significant annual expenditure, and staff has been considering how to approach this given our funding challenges on the one hand, and our compliance responsibilities on the other.

Halifax Water staff have had discussions with HRM staff about funding such new storm sewers on an equal basis among the three stakeholders that would benefit from the provision of such a storm sewer, i.e. HRM, Halifax Water, and the property owners adjacent to the new storm sewer. HRM staff have indicated that they are supportive of this approach, although it should be noted that this matter has not yet been before HRM Council.

The February 7, 2008 report to the Board included the rationale for and benefit to each of the three stakeholders. Rather than repeat that text, the entire report is attached for reference purposes.

Similar to other service extension projects, it is contemplated that HRM will recover the property owners' share, possibly as a Local Improvement Charge, or through some other means.

Oversizing Considerations

The minimum storm sewer size permitted under the current standards is 300 mm (12 inches) diameter. Most storm sewers are larger than this in order to accommodate the stormwater flows from the upstream lands, sometimes 48 or 60 inches in diameter, or even larger. It would not be fair to expect the adjacent property owner to pay a one-third share of the cost of such a large pipe, where it serves no direct benefit to that property owner. In fact, there is no direct benefit to an adjacent property owner for any pipe larger than the minimum of 12 inches diameter.

Staff is therefore recommending that adjacent property owners pay only one-third of the cost of a 12 inch diameter pipe, and that Halifax Water and HRM pay the oversizing costs associated with providing a larger pipe. An example to illustrate this is as follows:

Estimated unit cost of minimum-sized (12 inch) storm sewer: $1000 per metre

The cost-share for the minimum-sized pipe will be:

HRM - $333 per metre

Halifax Water - $333 per metre

Property Owners - $167 per metre (which equals $333 per metre when considering both sides of the street)

This $167 per metre then becomes the default unit cost for all property owners, given that 12 inch is the minimum pipe diameter.

Let's say we have a street that requires a 36 inch pipe to handle the stormwater flow from upstream, and that the unit cost for the 36 inch pipe is $1800 per metre. The cost-share arrangement will be:

HRM base share - $600 per metre

Halifax Water base share - $600 per metre

Property Owners - $333 per metre (equal to $167 per metre per side), which is the default share using 12 inch diameter as per above.

That leaves an oversizing unit cost of $267 per metre that must be funded, and staff are recommending that it be shared 50-50 between HRM and Halifax Water, meaning an additional $133 per metre for each for this specific example.

For Halifax Water, staff are recommending that this oversizing cost be funded from the Sewer Redevelopment Charge or the Trunk Sewer Charge. The relevant sections of the Schedule of Rates and Charges for Wastewater and Stormwater Service are Sections 4 and 5, which state as follows:

"4. **Sewer Redevelopment Charge**

a. A Sewer Redevelopment Charge shall be levied and imposed on all new buildings, including buildings which are moved onto a new lot, and all building additions in services areas.
b. This charge shall be $0.30 per square foot of floor space. The payment will be due and payable to the Halifax Regional Municipality as agent for the Halifax Regional Water Commission, prior to the issuing of a building permit.
c. The Sewer Redevelopment Charge shall only be payable in cases of accessory buildings that contain facilities which can discharge effluent to the public sewer.
d. Notwithstanding Item 4(b), the payment of a Sewer Redevelopment Charge shall not apply to buildings or building additions which are located on a parcel of land which was subject to an Infrastructure Charge containing a component related to new or expanded wastewater facilities or stormwater systems.
e. The Sewer Redevelopment Charge collected will be placed in a separate reserve account and will be used to upgrade or oversize trunk sewers upon application and approval of the Board."

"5. **Trunk Sewer Charge**

a. A Trunk Sewer Charge shall be levied and imposed on an unserviced lot of land occupied by a building when it becomes serviced with the wastewater and/or stormwater system. The Trunk Sewer Charge will be as follows:

1.	Dwelling Units	$500.00 per unit
2.	All Other Buildings	$0.30 per square foot

b. The Trunk Sewer Charge is due and payable to the Halifax Regional Municipality as agent for the Halifax Regional Water Commission when the land is serviced.

c. The Trunk Sewer Charge collected will be placed in a separate reserve account and will be used to upgrade or oversize trunk sewers upon application and approval of the Board."

These sections of the Rates and Charges stipulate that the funds from the reserve accounts can be used to "oversize trunk sewers". Staff is recommending that any storm sewer oversized to greater than 12 inch diameter be considered a trunk sewer in that it will be used by other properties remote from the immediate area.

Using the $20 million estimate developed earlier, and if the proposed cost-share arrangement were in place and based on an estimation of the oversizing requirements, the annual cost to each of the three stakeholders would be in the order of:

HRM - $7.5 million

Halifax Water - $7.5 million

Property Owners - $5 million

The estimated cost per metre to individual property owners is the $167 per metre developed above, which is equal to about $50 per foot of street frontage. Based on this rate, the cost to a property owner with a lot frontage of 50 feet would be $2500 for his or her share of the capital cost of the new storm sewer. This would be a one-time charge.

The actual cost to any individual property owner will vary depending upon the length of frontage.

Staff's intention at this time is to propose a capital budget amount of $3 million gross for 2009/10 for new storm sewers, with $2 million of that amount recoverable from HRM and the private property owners, subject to the appropriate approvals. Ramping up to the $20 million annual gross amount will form part of the Cost of Service Study to be submitted to the NSURB.

The second challenge noted above is to ensure that property owners cease discharging stormwater into the wastewater system. Item 13 of the Rules and Regulations, cited above, is the instrument by which Halifax Water can regulate that activity. There is similar language in the MGA, which is referenced by the HRWC Act. If required to disconnect from the wastewater system, then property owners will almost always need to connect to the stormwater system, to ensure that their properties or other properties will not flood.

Stormwater Building Service Connections

It should be further noted that customers are fully responsible for the cost of the building service connection (commonly referred to as a lateral) from the main to the building. The relevant section is 14 of the Stormwater Rules and Regulations, which states as follows:

"14. Every stormwater building service connection shall be designed and constructed at the expense of the customer served by the connection, whether on privately owned property or not."

The estimated cost for a new storm lateral from the street main to the building is $6000 per property, which includes the cost of the lateral itself, plus the cost of plumbing work within and near the building to remove the stormwater discharge from the sanitary sewer system and reconnect it to the stormwater system. This full cost will be borne by the property owner.

As indicated for other costs presented in this report, the $6000 is an estimated average only, and the actual cost will sometimes vary considerably from the estimate.

There are situations where Halifax Water may decide to install the portion of the lateral within the street right-of-way, most commonly as part of a street repaving or reconstruction project on an integrated basis with HRM. If this portion of the lateral is not installed at the time of the street project, the newly-paved street will have to be excavated and reinstated each time that a private property owner is to connect to the system, which would be unacceptable to HRM and to the public. Staff has received legal advice that Halifax Water can recover the cost of that portion of the lateral from the customer later, at the time that the customer connects to the lateral.

There are situations like this where the portion of the lateral in the street right-of-way was installed as part of an integrated project, pre-merger, where the cost of such laterals was typically paid for through general taxes, rather than from reserve funds. Staff is therefore not intending to recover the cost of such laterals, where the costs were paid from HRM funds, not from reserve or Halifax Water funds. Staff does intend to recover lateral costs, as supported by legal advice, for projects which are constructed after the merger date of August 1, 2007.

BUDGET IMPLICATIONS

HRM and Halifax Water staff have had discussions with respect to budget and funding levels. In order for this program to be successful and given that the share of the cost to each of the two parties is to be equal, both will have to agree to budget an equal amount of capital funding per year towards the installation of new storm sewers. For this coming fiscal year, HRM and Halifax Water staff are intending to recommend about $1 million each, meaning that the gross amount, including the one-third share of the property owners, will be about $3 million.

It is anticipated that this amount will increase in the next number of years, as the program matures and as the CCME Strategy is adopted and implemented.

ALTERNATIVES

N/A

ATTACHMENTS

1. Areas with Substandard Stormwater Service – Sewage Overflows
2. February 7, 2008 Report entitled "Draft Strategy – Sustainable Stormwater Service for HRM Streets which have Sanitary Sewer Service and Sub-Standard Stormwater Service

Report Submitted by:
John P. Sheppard, P.Eng., Manager of Environmental Services

Attachment 1 – Areas with Substandard Stormwater Service - Sewage Overflows

Facility	Community	Type of Stormwater Service	Sewage Overflows Events/Year	Overflows to
Springfield Lake No. 3 Pumping Station	Springfield Lake	Open Ditches	4	Springfield Lake
Springfield Lake No. 8 Pumping Station	Springfield Lake	Open Ditches	1	Springfield Lake
Bedford-Sackville Trunk Sewer	Bedford Sackville	Varied but much is shallow storm or open ditch	3	Little Sackville and Sackville Rivers
O'Dell Drive Pumping Station	Humber Park	Shallow or no Storm	18	Ground Surface and Open Ditch
Humber Park Holding Tank	Humber Park	Shallow or no Storm	18	Ground Surface and Open Ditch
Humber Park Pumping Station	Humber Park	Shallow or no Storm	18	Ground Surface and Open Ditch
Memorial Drive Pumping Station	Humber Park	Shallow or no Storm	6	Open Ditch
Stewart Harris Drive Pumping Station	Settle Lake	Some deep storm, some shallow	14	Settle Lake
Anderson Street Pumping Station	Ellenvale	Shallow Storm	3	Ellenvale Run, which drains into Morris Lake
Anderson Street Holding Tank	Ellenvale	Shallow Storm	10	Ellenvale Run, which drains into Morris Lake
Bissett Lake Pumping Station	Colby Village	Some deep storm, some shallow	2	Bissett Run, which drains into Bissett Lake
Beaver Crescent Pumping Station	Morris Lake	Some deep storm, some shallow	18	Morris Run/Cow Bay Run
Caldwell Road Pumping Station	Morris Lake	Some deep storm, some shallow	6	Morris Run/Cow Bay Run
Gaston Road Pumping Station	Portland Estates	Some deep storm, some shallow	2	Russell Lake
Valleyford Avenue Chamber	Westphal	Some deep storm, some shallow	2	Red Bridge Pond which drains into Lake Mic Mac
Valleyford Avenue Holding Tank	Westphal	Some deep storm, some shallow	2	Red Bridge Pond which drains into Lake Mic Mac
Jaybe Drive Pumping Station	Port Wallace	Mostly deep storm	3	Lake Charles
Crichton Avenue Pumping Station	Crichton Park	Deep or no storm	6	On ground near station
Mason Street Pumping Station	Woodside	Deep, shallow or no storm	10	Overflow into pipe which drains into Halifax Harbour
Everette Street Pumping Station	Woodside	Deep, shallow or no storm	6	Overflow into pipe which drains into Halifax Harbour
Portland Street Grit Chamber	Dartmouth	Deep, shallow or no storm	3	Overflow into pipe which drains into Halifax Harbour
Quigleys Corner Pumping Station	Eastern Passage	Deep, shallow or no storm	4	Overflow into pipe which drains into Fisherman's Cove
York Lane Pumping Station	Eastern Passage	Deep, shallow or no storm	6	Overflow into pipe which drains into Halifax Harbour
Leiblin Drive Pumping Station	Leiblin Park	Deep, shallow or no storm	10	Brook which drains into Kidston Lake
Greenhead Road Pumping Station	Beechville/Lakeside/ Timberlea	No Storm Sewer	3	Small brook and Nine Mile River
Lakeside 2 Pumping Station	Beechville/Lakeside/ Timberlea	No Storm Sewer	1	Small brook and Nine Mile River

Halifax Regional Water Commission

ITEM #4.4
HRWC Board
February 7, 2008

TO: Donald L Mason P. Eng, MCIP, Chair, and Members of the Halifax Regional Water Commission Board

SUBMITTED BY: [redacted]
John Sheppard, P. Eng., Manager, Environmental Services

APPROVED: [redacted]
Carl Yates M.A.Sc., P.Eng., General Manager

DATE: February 7, 2008

SUBJECT: **Draft Strategy - Sustainable Stormwater Service for HRM Streets Which Have Sanitary Sewer Service and Sub-Standard Stormwater Service**

ORIGIN

Staff, in an effort to develop sustainable approaches to addressing wet weather flows and overflows, and related compliance issues, in Halifax Water's wastewater systems.

RECOMMENDATION

It is recommended that

1. Halifax Water offer to HRM to share on a one-third basis in the cost of installation of new storm sewers on two street projects in 2008/09: Edward Laurie Drive and Canary Drive, both located in Halifax, as a pilot project.

2. Halifax Water staff develop a policy related to the installation of new storm sewers on streets which have sanitary sewer service and sub-standard stormwater service, consistent with this report and utilizing the experience gained from the two projects noted above.

BACKGROUND

There are many urban and suburban streets in HRM that have a sanitary sewer but no storm sewer, or the storm sewer is incomplete and/or not designed or constructed to today's standards. The most problematic of these types of streets are those which have a set of specific characteristics, as follows:

1. The street has either no storm sewer at all, or no continuous storm sewer which services all of the properties on that street.
2. If there is a storm sewer, it is shallow and unable to provide gravity drainage from most of the basements of the buildings on the street.
3. The street may have occasional catch basins, but not to today's standards in terms of spacing and interception and capture of private property and street stormwater flows.
4. There is no ditching, and the street has curb and gutter, generally consistent with today's standards for urban and suburban streets.

There are a number of problems associated with this servicing situation, i.e. sanitary sewer and no or sub-standard storm sewer:

1. Surface water flows according to the topography of the land, regardless of property boundaries and land ownership. If surface water is not allowed to flow off a property, flooding or drainage problems of some sort will typically result, especially in more severe rainfall events. Without a storm drainage system in the street, it is often difficult for property owners to discharge surface water from their property without impacting the street. The impact can be excess stormwater on the street, or sometimes even more problematic, accumulation of ice in the street, which presents a variety of problems, such as safety and liability, operation and maintenance, service life, and environmental.

   The MGA at Section 318 (attached) defines the responsibilities of property owners with respect to discharge of stormwater onto the street. However, in practical terms, it is often very difficult, if not impossible, for property owners to get themselves into compliance with this section of the MGA, if there is not a properly functioning stormwater system in the street to which they can connect. Providing a storm sewer in the street will enable property owners or HRM to connect this stormwater into the system, and keep it off the street.

2. Discharge of Stormwater into Sanitary Sewer: A related private property problem when there is no adequate storm sewer in the street is that many property owners choose to discharge their stormwater into the sanitary sewer system. This practice is illegal and in contravention of the MGA, which now forms part of the HRWC Act, and also in contravention of the Rules and Regulations of the HRWC. A copy of the applicable sections are attached.

This discharge of stormwater comprises a significant component of the infiltration/inflow into Halifax Water's wastewater system, which in turn places Halifax Water in violation of federal and provincial regulations on a regular basis as a consequence of wet weather overflows into our receiving waters.

The provision of storm sewer in streets which currently do not have an adequate storm sewer will enable property owners to utilize the storm sewer and get into compliance with Halifax Water's regulations regarding the discharge of stormwater into our sanitary sewers.

Typically, the most cost-effective time to install new storm sewers on a street is when the street is being reconstructed or re-paved. However, it might be necessary to install the new storm sewer at another time, as a consequence of operational and compliance priorities.

DISCUSSION

There are three parties that will benefit from the provision of the new storm sewers:

1. Halifax Regional Municipality, who are the owners of the streets. An effective drainage system is essential to the proper functioning of a street. Providing a storm sewer will typically improve the drainage on the street surface, including the ability to reduce the accumulation of ice in the street, which is a problem from several perspectives: safety and liability, operation and maintenance, service life, and environmental. It will also typically improve the drainage of the street substructure, thereby improving the service life of the street.

2. Halifax Water, who are the owners of the wastewater system which is overwhelmed in many areas with stormwater from the owners of the properties adjacent to the street.

3. The owners of the properties adjacent to the street where the storm sewer is to be installed. Many of these properties suffer drainage problems on their properties, because there is no storm sewer, or they do not suffer drainage problems as they either direct their stormwater onto the street, possibly in violation of the MGA, or direct it into the wastewater system, in violation of the HRWC Act, and the Rules and Regulations.

It should be noted that this program will assist Halifax Water in complying with one of the overall objectives of the CCME Municipal Wastewater Effluent Strategy, which is to better manage combined sewer overflows (CSOs) and sanitary sewer overflows (SSOs).

There are two HRM street projects proposed for 2008/09 where the street currently does not have a storm sewer: Edward Laurie Drive and Canary Drive, both located in Halifax. Staff would like to offer to HRM that Halifax Water are prepared to provide one-third cost-share to install new storm sewer on both projects. Using the experience gained from these projects this year, staff may then develop a policy for such a program on a go-forward basis, which would be subject to the approval of the NSUARB.

BUDGET IMPLICATIONS

The estimated cost of installing a new storm sewer in the two streets is as follows:

Edward Laurie Drive	- $150,000
Canary Drive	- $450,000
Total	**- $600,000**

Halifax Water's share on a one-third basis for these two projects would be $200,000. This funding will be provided from the Gas Tax, which is available in the amount of $5.1 million for wastewater and stormwater for the fiscal year 2008/09.

ALTERNATIVES

If wet weather flow problems are to be resolved at source, i.e. at the properties that are discharging stormwater into the wastewater system, then it is necessary to install a storm sewer system to accommodate the stormwater which is currently being discharged into the wastewater system. Under this scenario, there is no alternative.

However, there are alternatives to managing the wet weather flows that result from infiltration/inflow, which generally entail the provision of new or expanded infrastructure on the public side. One approach is to construct facilities within the sewershed to store the wet weather flows and release them later after the peak of the storm has passed. Another is to build larger infrastructure within the system, typically pumping stations, sewer mains and wastewater treatment facilities.

Peak wet weather flows in the wastewater system in HRM are in the order of 5 to 20 times the average daily flows. This is a huge increase in the flow, and so the infrastructure required to capture and transport and treat all of these wet weather flows is considerable, and the capital costs are great. The operational and maintenance costs are also much greater, related to this larger infrastructure.

Eliminating the problem at source is often a more sustainable approach, in that the flows are prevented from entering the wastewater system in the first instance, which is facilitated by the installation of new storm sewers.

ATTACHMENTS

1. Municipal Government Act, Section 318, Obstruction of Street
2. Sections 12, 13, 14 and 15 of the Schedule of Rules and Regulations for Wastewater Services

Obstruction of street

318 (1) *Except as otherwise provided in this Act, no* person shall

(a) obstruct a street in a municipality;

(b) erect, construct or place a building or structure, fence, railing, wall, tree or hedge or part of them upon a street;

(c) deposit any snow or ice on the travelled way of a street;

(d) deposit any snow or ice near a portion of the travelled way of a street so as to hinder clearing of the travelled pathway;

(e) prevent water flowing from a street on to the adjoining land;

(f) cause or permit water to flow over a street, except as directed by the engineer or council;

(g) deposit, or permit to accumulate, sewage, refuse, garbage, rubbish or other matter on a street or in a drain, gutter, sluice or watercourse on a street; or

(h) cause or permit sewage, refuse, garbage, rubbish or any other matter to discharge or flow upon a street or into a drain, gutter, sluice or watercourse on a street.

(2) An owner or occupant of land who collects water upon the land and turns or allows the water to flow upon a street is liable for all damage to the street, gutters or drains occasioned thereby

(3) Where, as a result of the collection of the water, the flow requires, in the opinion of the engineer, the construction of a larger drain, sluice or culvert on the street, or makes necessary any alteration in the street or the building of new drains, sluices or culverts, the person is liable to pay the cost of the alteration or construction.

(4) Where a person is in apparent contravention of this Section, the engineer may serve notice on the person to remedy the contravention and, where the condition is not remedied within the time specified in the notice, the engineer may cause the condition to be remedied.

(5) Where an obstruction is a structure of any kind, the engineer may require the owner of the structure to remove the structure from the street within such time as the engineer specifies.

(6) Where the structure is not removed within the time specified, the engineer may remove, demolish or destroy the structure in such manner as is deemed expedient.

HALIFAX REGIONAL WATER COMMISSION

SCHEDULE OF RULES AND REGULATIONS FOR WASTEWATER SERVICE

Cross Connection of Wastewater and Stormwater Discharges

12. The Commission may from time to time undertake testing for cross connections to the wastewater system.

13 No owner, customer, or other person hereinafter collectively referred to in this rule and regulation as "person" shall connect, cause to be connected, or allow to remain connected to the wastewater system or plumbing installation, without the express written consent of the Commission, any piping fixtures, fittings or appliance in a manner which, under the circumstances, may allow water, stormwater, or any other liquid as specified elsewhere in these regulations to ingress or flow into the wastewater system.

14. Where in the opinion of the Commission, there may be a risk of water, stormwater and/or any other liquid as specified elsewhere in these regulations flowing into the wastewater system, the Commission may require the customer, at the customer's sole cost and expense, to install (or remove) at any point on the customer's wastewater system, one or more fittings or appurtances to prevent such connection.

15. In the event of any breach, contravention or non-compliance by a person of any of the provisions and regulations in Section 13 or 14, the Commission may:

a) suspend water service to such person, or

b) give notice to the person to correct the breach, contravention or non-compliance within 96 hours, or other specified period. If person fails to comply with such notice, the Commission may immediately thereafter suspend wastewater and/or water service to such person.

REPORT

ON

DRAINAGE - PRIVATE PROPERTY

DECEMBER 1997

This policy "Drainage - Private Property" was adopted by Halifax Regional Council at their meeting of December 16, 1997.

TABLE OF CONTENTS

1. Water and Ice in the Street

A common problem in the Municipality is the accumulation of water and ice in the street caused by the discharge of water from private property. Both the street travelway and the sidewalk may be affected.

Ice tends to be a much more significant problem, as safety is a key issue, both for vehicular traffic and for pedestrians. Where the accumulation of ice may represent an unsafe condition, then it is necessary for Municipal Operations staff to remove the ice, either by using a machine to physically remove it, or by salting.

These maintenance activities represent a drain on the resources of the Municipality. The use of a machine to physically remove the ice often results in damage to the street surface. Also, the salt used to melt the ice has an adverse impact on the watercourses to which the local stormwater will drain.

The Halifax Regional Municipality Act provides at Sections 132 and 133 that adjacent owners of land are responsible to resolve this type of situation.

A usual situation is that a property owner has a drain pipe from the backyard area discharging stormwater unto the street surface. The cost in that circumstance to connect the drain pipe to the storm sewer in the street would be in the vicinity of $2,000, including the cost of street repair. If the connection can be made to a catch basin located at the curb, the cost would be much less. If more extensive work is required to intercept the drainage on private property (e.g. a catch basin, or additional piping), then the cost would be more. There are various other factors that may also influence the cost, e.g. bedrock, the location of the storm sewer and other services in the street, etc.

Recommendation 1-1

That the Municipality require the owners of land to control the discharge of stormwater unto the street, where the discharge is causing water and ice problems in the street, as provided for in the Halifax Regional Municipality Act.

Recommendation 1-2

That the individual property owner be responsible for any drain required pursuant to Recommendation 1-1, as provided for in Section 157(1) of the Act.

The function of a catch basin is to receive surface water. It is typically not to receive drainage from pipes connected to it from private property. If a catch basin or catch basin lead should plug, and if such drains are connected to the catch basin, then there is a significantly higher risk of damage to adjacent property, and potential liability to the Municipality.

Recommendation 1-3

That where the property owner wishes to connect to a catch basin, the Municipality require a waiver to prevent claims against the Municipality related to damage from back-ups from the catch basin.

There is one circumstance in which the Municipality may choose a somewhat different course of action. It is not unusual that a number of adjacent properties may have similar conditions on their properties to cause all of them to discharge water unto the street.

It may be advantageous in that circumstance for the stormwater to be intercepted using a "community system" rather than for each of them to resolve their problems individually (see sketch on next page). The benefits of a community system are as follows:

1) If done individually, there will be a significant number of "cross cuts" in the street, which weakens the street structure and often results in a poor riding surface. With a community system, the number of "cross cuts" would be reduced significantly.

2) The cost of a community system would typically be less than the total cost of a number of individual connections.

3) If the community system is installed behind and parallel to the curb, it can also be designed to reduce the flow of ground water to the road bed, which typically can have a significant positive impact on the life of the street.

Recommendation 1-4

That - where it is determined to be advantageous to do so - the Municipality construct "community systems" to resolve water and ice problems in the street, and recover full costs from the owners of land for this work, as provided for in the Halifax Regional Municipality Act.

Recommendation 1-5

That community systems within the street right-of-way be owned by the Municipality, if they are constructed in accordance with the Municipality's policies, procedures and specifications.

The circumstances which result in property owners discharging stormwater unto the street are often predictable. The topography, the drainage patterns (both surface and sub-surface) and the soil type are all contributing factors.

Recommendation 1-6

That - in circumstances where it is likely that such problems will occur in the future - the Municipality will require in its Municipal Service Systems General Specifications, that developers be required to install drainage infrastructure to prevent this problem from occurring.

2. Maintenance and Alteration of Stormwater Systems on Private Property

The phrase "stormwater system" is defined in the Halifax Regional Municipality Act as:

> "Stormwater system" means any method or means of carrying stormwater, including ditches, swales, pipes, sewers, drains, canals, ravines, gullies, pumping stations, retention ponds, streams, watercourses, floodplains, ponds, springs, creeks, public or private streets, roadways or driveways.

Many stormwater systems in the Municipality are on private property. If the system is not properly maintained, or if it is filled, obstructed, diverted, or piped in an inappropriate fashion, it may hinder the flow of the stormwater, causing damage to others.

The Halifax Regional Municipality Act at Section 177 provides that the Municipality may make by-laws to regulate such activities. Of the four former municipalities, only the City of Halifax had a by-law of this sort - Ordinance 142 "Respecting Streams and Drains". Such a by-law would enable the Municipality to assist property owners in circumstances where other property owners have caused or may cause flooding by not maintaining or by altering stormwater systems on their properties.

Recommendation 2-1

That the Municipality develop, implement and administer a by-law to regulate the maintenance and alteration of stormwater systems on private property, and that a permitting system be developed in conjunction with this.

Ordinance 142 of the City of Halifax regulated watercourses, drains and sewers. Alterations to water courses are the jurisdiction of the Province of Nova Scotia, pursuant to the Environment Act.

It is the view of staff that the Municipality should not endeavour to regulate activities which are the mandate of the Province.

Recommendation 2-2

That the by-law be drafted so as to not regulate activities which are the jurisdiction of the Province.

There are many activities on private property which may result in flooding, which are not intended to be regulated by this by-law. Some examples are as follows: the alteration of the grade of land, the construction or installation of a stormwater system where one did not previously exist, and the erection of a building. It is not contemplated that this proposed by-law regulate such activities, unless it in some way relates to the maintenance or alteration of an existing stormwater system.

3. Ownership of Systems on Private Property

Stormwater systems are sometimes constructed on private property to prevent or resolve a drainage or flooding problem, or to convey stormwater from a private or public system. These systems may have been approved by the Municipality as part of the subdivision process and constructed by the developer prior to endorsement of the subdivision. In some cases, the system may have been designed and constructed by one of the former Municipalities, or it may have been designed and/or constructed by some other party - owner, builder, etc.

The ownership of these systems is important as to the inspection, maintenance, repair and eventual replacement of these systems, and potential liability attached to these responsibilities. Ownership is also important as to the right to use the system, e.g. adjacent property owners, including the Municipality. In the past, depending upon the circumstances, some of the former Municipalities have accepted ownership of stormwater systems on private property.

Recommendation 3-1

The Municipality will accept ownership of stormwater systems on private property, if a number of conditions can be satisfied, as follows:

(1) That the system is utilized to drain stormwater from a system of the Municipality's, and/or that it forms part of a trunk storm sewer system.

(2) That it can be shown that the system is constructed to the Municipality's standards.

(3) That an easement can be provided in a form acceptable to the Municipality.

(4) That, by accepting the system, the Municipality is not unduly exposing itself to liability or to unreasonable costs associated with inspection, maintenance, repair or replacement.

4. Drainage Complaints - Advice to Property Owners

Staff receive complaints from many owners of private property within the Municipality. Responding to such complaints virtually always requires a site visit by staff to determine the nature of the problem and the responsibility, if any, of the Municipality.

Where the Municipality does have some responsibility, appropriate action will be taken. If the action is maintenance related, the problem may be addressed quite promptly. Where a new system or a system upgrade is required, the resolution to the problem will likely require more time. In many such circumstances, it will be necessary to include the work in the draft Capital Budget for consideration by the Regional Council.

Even where the Municipality does not have direct responsibility, the problem may be investigated and analysed. If the situation is complex or the solution is not clearly evident, or where the Municipality may unreasonably expose itself to liability by providing

advice, the property owner will be advised to retain the services of a consulting engineer or other professional, and/or a contractor.

Where the solution is obvious, the Municipality may provide advice to the property owner which is general in nature only. It is not intended that the Municipality conduct surveys or prepare designs or site-specific sketches for an individual property owner. If standard details or sketches are available which may assist, then these may be provided.

It may also be appropriate that the Municipality write the property owner to document the advice provided.

In some circumstances, the Municipality will attempt to identify the individual or agency best able or willing to resolve the problem, e.g. developer, builder, consulting engineer, land surveyor, landscape architect, provincial or federal government department, other municipal department, Atlantic New Home Warranty, insurance company, adjacent property owner, or lawyer.

The Municipality is often requested by property owners to investigate and assist regarding a drainage or flooding problem which has been caused by the action of a neighbouring property owner. One example is the diversion of stormwater unto the property of Owner A by the regrading of land or by the construction of a pipe, ditch, drain, roof down spout or other facility on the property of Owner B. Another example is the filling of the property of Owner B so that the land of Owner A can no longer be effectively drained.

These matters are civil matters between adjacent owners, and not a matter for resolution by Municipal by-law.

The Municipality may provide advice in an attempt to resolve such disputes amicably, but must be careful not to interfere with the legal rights and responsibilities of property owners involved in a dispute.

Providing any advice will potentially expose the Municipality to some risk of liability. On the other hand, over the years that the former Municipalities provided this service, the instances in which the property owner has subsequently cited the Municipality for providing bad advice have been very rare. On balance, this practice provides a very beneficial and cost-effective service to property owners, with limited risk to the Municipality.

Recommendation 4-1

The Municipality will provide advice to property owners to assist in the resolution of drainage problems on private property, as described above.

5. Cost Sharing to Resolve Drainage Problems on Private Property

Some drainage problems on private property are very expensive to resolve. Others involve a group of property owners, in which the solution may comprise a system which is to be constructed on a number of properties. In these situations, it is very difficult for property owners to deal with such a problem on their own.

Prior to amalgamation, some of the former municipalities assisted property owners - both technically and financially - in the resolution of these types of problems, even where they had no legal obligation to do so.

For example, the former Halifax County Municipality allocated funds each year specifically for such works on private property. During the six years prior to amalgamation, the amount ranged from $40,000 to $100,000 annually.

These funds were utilized only in conjunction with contributions from the property owners who would benefit from the work, or from the developer. The maximum contribution for the County was 70%.

This program was successful in the County in that it resulted in the resolution of chronic flooding problems on private property, which otherwise might not have been resolved.

However, the process of negotiating with groups of private property owners was very time-consuming and labourious. Also, in today's fiscal climate, it may not be appropriate to spend public funds to resolve problems which the Municipality is not legally obligated to resolve.

It will be more productive to look for ways to prevent these problems from occurring in the future through appropriate land development standards and controls, than to attempt to resolve them post-development. The Grade Alteration By-Law has been in effect in Bedford for a number of years. Also, the Lot Grading and Drainage By-Law was recently put into effect in the serviced areas of the former Halifax County Municipality. Many drainage problems in the Regional Municipality would have been prevented if such by-laws had been in effect previously. Drainage problems now brought to the attention of Halifax Regional Municipality will be analysed to determine whether they could have been prevented if a Lot Grading and Drainage By-Law were in effect. Following a monitoring period, a report will be provided to Council as to whether a by-law of this type should be put into effect in other areas of the Halifax Regional Municipality.

Recommendation 5.1

That the Municipality consider implementing controls to resolve drainage problems on private property. In general, that the Municipality not contribute to the cost of resolving the drainage on private property, except in exceptional cases where Council so chooses.

6. Drainage Works on Lands of Halifax Regional Municipality

In some circumstances, it may be possible for the Municipality to resolve or to assist in resolving drainage problems on private property, by constructing works on its own land, even though it has no legal obligation to do so.

For example, a piece of land owned by the Municipality may drain unto the backyards of a number of private properties which may suffer wet and poorly drained backyards. It may be possible to alleviate this problem by constructing a drain on the Municipality's land.

If the Municipality's land has not been altered in any way, or if it has been altered but there has been no significant change in the surface water flow to the private properties in question, then the Municipality will have no legal responsibility to resolve this problem.

Again, given the current fiscal climate, it is the view of staff that it would be inappropriate to utilize public funds in this manner.

Also, if a drain were to be constructed on the Municipality's land, then the Municipality would be responsible to inspect, maintain, repair and eventually replace the drain, which would represent a further financial drain on the Municipality. Further, if we did not maintain the drain effectively, and the neighbouring properties flooded because of that, then the Municipality might find itself liable for the resultant damages.

Recommendation 6-1

That the Municipality not construct storm sewer systems/stormwater systems on its property to resolve problems on neighbouring properties, unless the municipally owned property is the cause of the problem. If the municipally owned land is the cause of the problem, then the Municipality would be part of the solution.

7. Drainage from School Lands

The Municipality is often contacted by property owners relative to the flow of storm water from school lands unto their properties. The Municipality should allow such matters to be resolved between the Regional School Board and the property owners.

The one exception may be where the storm water originates from a portion of school lands, which is maintained by the Municipality. A typical example is a sports field which is mowed by the Municipality, but would not include Regional School Board property or facilities where the Municipality merely provides maintenance service to the Regional School Board under contract.

Recommendation 7.1

That the Municipality not be involved in drainage issues relative to storm water flow from school lands, unless the flow is from land which is maintained by the Municipality, as detailed above.

Appendix B

HALIFAX REGIONAL WATER COMMISSION
MINUTES

September 24, 2009

PRESENT:	Commissioner Colleen Purcell, Chair Commissioner Robert Harvey, Vice Chair Commissioner Bill Karsten Commissioner David Melvin Commissioner Kent MacIntyre Cathie O'Toole, Director of Finance, HRM Paul Dunphy, Director, Community Development
REGRETS:	Commissioner Dan English Commissioner Linda Mosher Commissioner Peter Kelly
STAFF:	Mr. Carl Yates, General Manager, Halifax Regional Water Commission Mr. Blaine Rooney, Director of Finance & Customer Service, Halifax Regional Water Commission & Secretary/Treasurer of HRWC Board Ms. Lorna Skinner, Administrative Assistant, HRWC

TABLE OF CONTENTS

CALL TO ORDER

The Chair called the meeting to order at 9:03 a.m. in the Board Room of the HRWC, 450 Cowie Hill Road. The Board moved In Camera at 9:03 a.m. The regular meeting reconvened at 9:50 a.m.

1. RATIFICATION OF IN CAMERA MOTIONS

MOVED BY Commissioner Melvin, seconded by Commissioner Karsten, that the Halifax Water Board ratify the following In Camera motions:

MOVED BY Commissioner MacIntyre, seconded by Commissioner Melvin, that the minutes of August 12, 2009, as presented, be approved. MOTION PUT AND PASSED.

MOVED BY Commissioner Karsten, seconded by Commissioner Harvey, that the Halifax Regional Water Commission Board approve the sale of surplus Halifax Water Land, at Kearney Lake Road, to West Bedford Holdings Limited for a purchase price of $636,000 plus applicable HST. MOTION PUT AND PASSED.

MOVED BY Commissioner Harvey, seconded by Commissioner Karsten, that the Halifax Regional Water Commission Board approve the execution of the attached dividend agreement (Schedule C) between HRWC and HRM for a five year term, April 1, 2010 to March 31, 2015, subject to approval of the Nova Scotia Utility and Review Boad (NSUARB) and HRM. MOTION PUT AND PASSED.

2. APPROVAL OF MINUTES – August 12, 2009

MOVED by Commissioner Harvey, seconded by Commissioner Melvin, that the minutes of August 12, 2009, be approved as presented.

MOTION PUT AND PASSED.

3. BUSINESS ARISING FROM MINUTES

None.

4. FINANCIAL REPORT (VERBAL)

Blaine Rooney reported that due to vacations and staffing shortages, there are no financial reports to present at this time. He stated that there are no issues that he is aware of that require the Board's attention and the six month financial results will be presented at the next meeting of the Board.

5. CAPITAL PROJECTS

5.1 Pockwock Transmission Main Replacement – Detailed Design Kearney Lake Road – Kearney Run to Bluewater Road

A report dated September 16, 2009, was submitted.

MOVED BY Commissioner Karsten, seconded by Commissioner MacIntyre, that the Halifax Regional Water Commission Board approve the undertaking of the detailed design for the replacement of a 1.5 kilometre section of the 1200mm diameter Pockwock transmission main along Kearney Lake Road from Kearney Run to Bluewater Road. MOTION PUT AND PASSED.

5.2 Wastewater Pumping Station Upgrade Program

A report dated September 18, 2009, was submitted.

MOVED BY Commissioner Melvin, seconded by Commissioner Karsten, that the Halifax Regional Water Commission Board approve the Wastewater Pumping Station Upgrade Program, which includes the design phase of the following projects (includes HST):

Bissett Lake Pumping Station & Surge Tank Assessment	***$100,000***
Main Street, memorial Drive, O'Dell Drive,	
Humber Park Pumping Station Upgrades	***$150,000***
Quigley's Corner Pumping Station Upgrade	***$ 95,000***
Russell Lake Pumping Station Upgrade	***$130,000***
Windmill Road Pumping Station	***$ 75,000***
Bedford Pumping Station Rehabilitation	***$ 50,000***
Sherwood Drive Pumping Station Structural Assessment	***$ 25,000***
Total Costs:	***$625,000***

MOTION PUT AND PASSED.

6. PARTICIPATION IN THE FALL 2009 MUNICIPAL FINANCE CORPORATION (MFC) DEBENTURE ISSUE

A report dated September 16, 2009, was submitted.

Blaine Rooney informed the Board that the $13,000,000 portion of the Issue is the final funding for the completion of the Halifax Harbour Solutions Project. He also stated that staff will request that HRM guarantee this borrowing. Cathie O'Toole stated that a report will go to HRM Council on October 22, 2009, to speak to the guarantee.

MOVED BY Commissioner Harvey, seconded by Commissioner Melvin, that the Halifax Regional Water Commission Board approve the attached borrowing resolution that we participate in the fall 2009 MFC Debenture Issue in the amount of $15,250,000. The borrowing will consist of $13,000,000 which will be amortized over 20 years with a 10 year rate, and the remaining $2,250,000 for a ten year rate. The combine rate will not exceed 6.5%.

7. COST OF SERVICE STUDY AND RATE APPLICATION

A report dated September 16, 2009, was submitted.

Blaine Rooney informed the Board that a draft of the Cost of Service Study should be available in the first week of October. Mr. Rooney also stated that the NSUARB ordered that a cost of service study, as well as a rate application be filed by November 2, 2009, based on the theory that new rates would be implemented for the first of April, 2010. He suggested that the Board hold a workshop to review options and offer direction.

MOVED BY Commissioner Karsten, seconded by Commissioner Melvin, that the Halifax Regional Water Commission Board approve that the Board file the COSS with the NSUARB by November 2, 2009, and request an extension of the filing of a rate application until an implementation plan can be adopted by the Board for transition to the rate structure consistent with the COSS and include the provisions of the 2010/2011 to 2011/2012 business plan. MOTION PUT AND PASSED.

8. STORM SEWER REQUEST – MELVILLE AVENUE

A report dated September 24, 2009, was submitted.

Commissioner Karsten voiced concern about proceeding to HRM Council with projects of this nature without a formal response from the Director of Infrastructure. As well, he questioned whether the Board had some kind of policy to govern how requests come in from Councillors. Mr. Yates responded that with regard to the first recommendation, HW is acting more as a catalyst in opening up a dialogue with HRM and that it is being referred to staff and not Council; the second recommendation states that HW only "*consider*" the request. Mr. Yates suggested that the second recommendation be amended to request the Board approve it only within the context of the proposed policy for cost-sharing with HRM. As well, Commissioner Harvey suggested that it be made clear in the recommendation, that the request is being referred to HRM "staff". Therefore, the amended motion will read as follows:

MOVED BY Commissioner Harvey, seconded by Commissioner Karsten, that the Halifax Regional Water Commission Board approve

- **The request for a new storm sewer on Melville Avenue be referred to HRM Staff for their consideration.**
- **Halifax Water consider a new storm sewer on Winchester Avenue in future capital budget deliberations, in the context of Board approved policy.**

MOTION PUT AND PASSED.

9. DATE OF NEXT MEETING

The next meeting was scheduled for October 26, 2009.

10. ADJOURNMENT

The meeting was adjourned at 10:35 a.m.

[redacted]

Blaine S. Rooney, CA
Secretary and Treasurer

[redacted]

Commissioner Colleen Purcell, CA
Chair

The following Information Items were submitted:

1-I Water Services Report
2-I Capital Budget Approvals to Date
3-I Bank Balance and Disbursements

Appendix C

Table 4: Summary of Preliminary Prioritization Matrix

Site#	Site Name	GROUPED PRIORITY RANKING[2,3]	OVERALL PRIORITIZATION SCORE	WORKSHOP RANKING COMPARISON	
				HW Overall Rating (Workshop 1)	HRM Overall Rating (Workshop 2)
25	Bedford Highway, from Union Street to Highway 102 - Bedford	1	38	High	High
A6	Shubenacadie Lakes	2	27	High	High
8	Karlson's Wharf @ Upper Water Street - Halifax	3	25	High	High
9	Inglis Street @ Barrington Street - Halifax	4	21	High	Medium
24	Highway 2, from Holland Road to Miller Lake Road - Fall River	5	18	High	-
7	Pleasant Street, near Dartmouth General Hospital - Dartmouth	6	17	Medium	High
5	Cole Harbour Road @ Perron Drive - Cole Harbour	7	15	Medium	High
2	Shore Road - Eastern Passage	7	15	High	Medium
22	Hammonds Plains Road @ Bluewater Road - Bedford	7	15	High	High
A2	Mount Saint Vincent at Bedford Highway	7	15	High	High
19	Bambrick Road @ Orchard Drive - Middle Sackville	11	12	Medium	Medium
6	Nantucket Avenue @ Wyse Road - Dartmouth	11	12	Medium	High
1	Autoport - Eastern Passage	13	11	Low	Medium
27	Rocky Lake Drive, near quarry entrance - Bedford	14	10	Low	Medium
28	Cobequid Road @ Regwood Drive - Windsor Junction	15	9	Low	Low
12	Melville Avenue @ Winchester Avenue	15	9	Low	Low
11	Keating Road @ Crown Drive - Halifax	17	8	Low	Low
10	Kempt Road @ Lady Hammond - Halifax	17	8	High	Low
21	Sunnyvale Crescent @ Beaverbank Road - Lower Sackville	19	7	Low	Medium
18	Hammonds Plains Road, near Kynock Resources - Hammonds Plains	19	7	Low	Medium
13	Glenforest Weir - Halifax	19	7	Medium	Low
14	Leiblin Drive @ Guildwood Crescent - Halifax	22	4	Low	Low
4	Beaver Crescent - Cole Harbour	22	4	Low	Low
15	Bently Drive @ Ramsbrook Court - Halifax	24	3	Low	Low
26	Sackville Drive @ Cobequid Road - Lower Sackville *(see Site 25)*	N/A	25	Medium	Low
30	Ridge Avenue, from School Street to end – Waverley *(see Site A6)*	N/A	22	High	Low
3	John Stewart Drive – Dartmouth *(see Site 5)*	N/A	13	High	Low
20	Rankin Drive @ Glendale - Lower Sackville *(see Site 25)*	N/A	12	Low	Medium
16	Wellington Fire Station, Highway 2 – Wellington *(see Site A6)*	N/A	9	Low	Low
17	Fletcher's Drive, near civic 57 - Fall River *(see Sites A6 & 24)*	N/A	6	Low	-
23	Holland Road @ Highway 2 - Fletcher's Lake *(see Site 24)*	N/A	4	Low	-
29	Bedford Highway @ Shaunslieve Drive *(see SiteA2)*	N/A	2	Low	Low

Notes:

[1]Sites A2 and A6 were not originally included on the list of 30 Sites, but were identified during the Preliminary Assessment Workshops as opportunities for a more community-based risk assessment.

[2]The Top-10 Priority Sites, based on the Preliminary Prioritization process, are highlighted in blue.

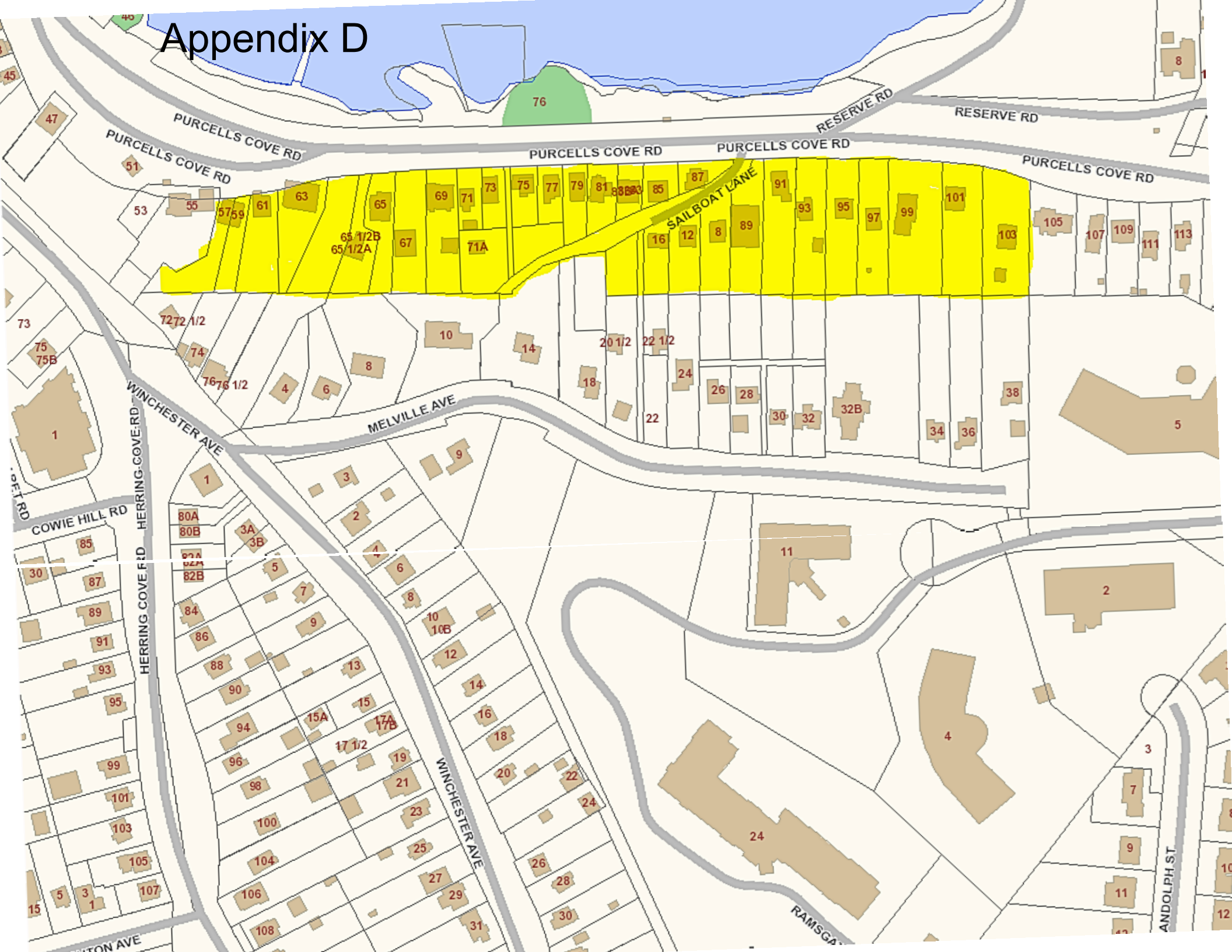
[3]A Priority Ranking of 'N/A' denotes the site was considered part of a grouping. The site in the grouping with the highest score was used in the Priority Ranking

[5]The Grouped Priority Ranking references the site with the highest score within the grouping.

The following should be considered in review of the Preliminary Prioritization Table:

- The prioritization rating system is a tool to scope the relative priorities across the 30 sites in comparison to each other.
- Impact ratings should be considered to be subjective, but were informed through stakeholder workshops, consultation, and preliminary review. Workshops and consultation involved representatives from HRM, Halifax Water and the project team the fields of engineering, operations, planning emergency management, and climate change.
- The Overall Priority Score for each site was developed by combining its scores for each of the Prioritization Impact criteria. See Table E-2 for descriptions of how the Level of Impact scoring was applied. Each Impact Criteria was weighted equally.
- Preliminary Consultation identified the opportunity to group several key sites under common themes better suited for future analysis and/or funding under the NDMP for a more community-based assessment.

Appendix D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RESERVE RD
SAILBOAT LANE
MELVILLE AVE
WINCHESTER AVE
HERRING COVE RD
COWIE HILL RD
RAMSGATE
ANDOLPH ST