



PO Box 1749
Halifax, Nova Scotia
B3J 3A5 Canada

Halifax Regional Council
September 23, 2003

TO: Mayor Kelly and Members of Halifax Regional Council

SUBMITTED BY:

George McLellan, Chief Administrative Officer

Dan English, Deputy Chief Administrative Officer

DATE: September 9, 2003

SUBJECT: Water Resource Management Study Project

ORIGIN

Staff

RECOMMENDATION

It is recommended that Halifax Regional Council accept the HRM Water Resource Management Study Report (WRMS Report) prepared by Dillon Consulting Limited and dated December 2002, and direct staff to begin the implementation process described herein, using as a basis the WRMS Report and the comments provided by the Watershed Advisory Boards on the report.

BACKGROUND

The protection of water resources is of critical importance to Halifax Regional Municipality. Approximately 8% (458 sq. km.) of HRM's geographical area consists of freshwater resources, also HRM has approximately 2400 kilometres of coastal and island shoreline. Improperly managed land use development can have an adverse effect on the surface and ground water resources. The United Nations Environment Program estimates that 80% of all ocean pollution originates from point and non-point sources on land (Charles, 2002). The cumulative effects of land development is now evident at HRM shores and there is a need to undertake an overall policy approach to protect HRM's fresh and marine water resources from the unintended consequences of land use development.

Staff is in the process of developing comprehensive and modern policies with respect to water resource issues in Halifax Regional Municipality. The project is a joint effort of Environmental Management Services and Regional Planning/Planning & Development Services and will harmonize the differing policies and regulations relative to the various aspects of wastewater and storm water management, including those related to the development of land. This report summarizes our findings and outlines recommendations and is further to the information report submitted to Regional Council on July 8, 2003.

By a motion of Regional Council on September 19, 2000, a consultant was engaged to develop a report to assist HRM in developing water resource management policies. This report was completed in December 2002 and was presented to the three Watershed Advisory Boards (WABs) in January 2003, as requested by Regional Council. The three WABs have provided written comments on the WRMS report and its implementation. These comments are generally favorable and these, along with the consultant's report, were distributed to Council in an Information Report on July 8, 2003. The WABs' priority recommendations have been considered in development of the implementation plan.

The Executive Summary of the WRMS Report is attached to this report as Appendix A.

A list of the WRMS recommendations and staff action plan, entitled "Water Resource Management Project, Recommendations and Action Plan" is attached as Appendix B.

DISCUSSION

It should be noted that by approving the recommendation as presented, Council will not be approving any of the specific recommendations in the WRMS Report.

By approving the recommendation, Council will simply be allowing staff to proceed with the process to consider implementation of the various WRMS report recommendations, with full consideration of the WABs' comments. With the exception of several operational-type issues, staff will be returning to Council for approval of the various recommendations utilizing one of the five

implementation processes described later in this staff report.

It should also be noted that the HRM is not obligated to adopt or implement most of the recommendations in the WRMS Report. The HRM, through Council, may generally choose to adopt each recommendation, or not, based on an understanding of the costs and the benefits associated with each recommendation. Also, if implemented, some of the recommendations will result in the HRM becoming involved in issues that have traditionally been seen as the purview of the Province. Two key examples are water quality and on-site sewage disposal systems.

This project represents an opportunity for HRM to become more involved in protecting our water resources than we ever have in the past. The majority of the recommendations in the report identify activities that are not mandated by Provincial or Federal laws. The work, however, is necessary to meet the HRM Vision 20/20 relative to protection of the natural environment, and Council's business strategies relative to sustainable growth. To do this, and to do it properly, will require a commitment on the part of both Council and staff. Additional resources will be required, but the benefits - cleaner water and a healthier environment - are great. Also, an investment now in new and enhanced programs will bear fruit in the future in terms of more sustainable development and a reduced impact on our water resources.

Water resource policy plays a unique role in municipal planning and can have a profound affect on how, where and when development occurs. Good environmental management can also ensure the long-term sustainability of the water resources upon which HRM residents depend. Further, the protection of HRM's natural heritage is fundamentally linked to water resource management since it affects hydrological flows, prevents property damage, purifies and cleanses water resources, sustains drinking water supplies, and supports the local economy and recreation.

The WRMS report will aid in the formulation of a consistent and comprehensive set of policies to address the water resource management issues throughout HRM. The key water resource issues addressed under this study include the following:

- watercourse, wetlands and coastline protection;
- municipal service boundaries;
- wastewater management systems, including those for rural development;
- urban wastewater management issues such as infiltration/inflow; stormwater management issues relating to the impacts of peak wet weather flows and impacts on water quality; and
- monitoring of the impacts of development and the positive or negative effects of any future environmental initiatives on selected watersheds.

It should also be noted that staff have already started, or are intending to start, several initiatives consistent with the recommendations of the WRMS Report. These are described later in this report.

Watershed Advisory Boards' Comments and Recommendations

Generally the three Watershed Advisory Boards i.e., Bedford (BWAB), Dartmouth (DLAB), and

Halifax and Halifax County (HWAB), felt that the study represented a positive step for HRM, and were supportive of most recommendations. Council have previously received the full text of the WABs' comments on the CD provided with the Information Report of July 15, 2003.

Recommendations in the WRMS Report receiving particular support by the WABs included:

- Establishment of protected buffer zones around water bodies; 20-metre minimum width (Recommendation 5-1, DLAB; 5-2 BWAB)
- Incorporation of natural channel design to the extent practical for modified watercourses (5-4, BWAB)
- Definition of urban development boundaries and establishment of settlement/service centres (6-1, BWAB)
- Planning for urban and rural service centres defining the sequence and pattern of proposed development and servicing provisions (6-2, BWAB)
- Establishment of a hierarchy of preferred sewage treatment methodologies for designated rural settlement/service centres (7-1, HWAB)
- Use of public education on proper septic system management, use and maintenance (7-4, DLAB)
- Recommendations on establishing wastewater management systems and mechanisms (7-1 to 7-10, BWAB)
- Establishment of stormwater management guidelines (8-3, HWAB)
- Application of erosion and sediment controls to all development and construction approvals (8-5, HWAB)
- Establishment of 1:20 and 1:100 year floodway zoning for the Sackville and Little Sackville and other river systems (8-6, HWAB)

Recommendations which were identified as priorities for immediate implementation included the establishment of 20-metre minimum protected buffer zones along watercourses, wetlands, lakes and coastlines, moving towards a 100-metre setback from lakes for new development areas with on-site septic service, and the development of consistent stormwater management guidelines. Also considered priorities were the mapping of flood plains, and the establishment of performance measurements.

The WABs had particular concerns with allowance of development activity within designated flood plain zoning or protected buffer zones unless valid reasons are clearly defined and limited. There was support for the establishment and use of performance measures (environmental monitoring) for water resources, but there was concern that the data collected must be properly assessed and used to improve methods and identify problem areas.

The WABs had some concerns with issues such as drinking water and coastal waters which were not included in the study scope, the concentration on stormwater management rather than overall watershed management, and the need for effective enforcement and public education.

There are additional recommendations submitted by the Boards. All of these will be considered when developing and implementing policy.

Implementation Strategy

The various recommendations of the WRMS report will be implemented through one of a number of different mechanisms. These mechanisms, and the organization or business unit responsible to lead the implementation process for each, are as follows:

1. Municipal Planning Strategy and By-Law - Regional Planning Team
2. Environmental Policy - Environmental Management Services
3. Municipal Services Systems Design Guideline - Environmental Management Services
4. Business Plan and Budget
5. Capital Cost Contribution Policy

Although a specific organization has been identified as leading some of the various implementation processes, for many of the recommendations, others will be involved in a support role. An integrated approach involving internal and external stakeholders is proposed to be used for many of the recommendations. Exceptions might be those where the recommendations are operational in nature, e.g. a wastewater wet weather flow study, which would be implemented through the Business Plan and Budget process.

There is a significant public participation process inherent in the Municipal Planning Strategy and By-Law developed through the Regional Planning Project. The details of how the Environmental Policy will be developed have not yet been determined but it is assured that there will be a significant public participation process, culminating with approval by Regional Council.

The point is reiterated that, by approving the recommendations of this report, Regional Council is not approving that the various recommendations of the Water Resource Management Study will be implemented as presented. That decision will be made by Regional Council as a result of the implementation process as defined for each specific recommendation.

A more detailed discussion of each of the five implementation processes follows:

1. Municipal Planning Strategy and By-Law - Regional Planning Team

Numerous recommendations in the WRMS Report speak to the need to create new land use regulation in HRM to protect water resources from the impacts of various forms of land development. These recommendations must be considered in the context of the full range of regional planning issues which may ultimately bring about change to regulations respecting land use. This section of the report briefly describes the need to pursue these recommendations as part of the Regional Planning Project.

The recommendations in Chapter 5 of the WRMS Report generally speak to the need to establish larger buffers for water courses and to better integrate HRM land regulation with that of the Nova Scotia Department of Natural Resources land management practices concerning harvesting of natural resources. This idea will be explored with the public as part of the Regional Planning public participation program now underway. It is likely that policy in this area will be developed early in the Regional Planning project due to the high level of public interest noted to date.

The recommendations in Chapter 6 speak to the use of settlement policies to encourage a preferred development plan which concentrates growth within development areas to reduce impacts on natural resources. For the urban areas, the Master Plan process and Capital Cost Contribution policy achieve this objective now. For outer areas, these policies are under active consideration through the Regional Planning Project and must be integrated with discussion concerning community character, economic factors, improving efficiency in our use of infrastructure, existing property rights and other issues. It is anticipated that final consideration of this fundamental Regional Planning issue will be concluded with adoption of the Regional Plan in the fall of 2005.

The recommendations found in Chapter 7 are generally concerned with management of on-site sewage disposal mechanisms. A study is currently underway through the regional planning process to evaluate and recommend the specific management options which would best serve HRM to promote the use of a system which would achieve less land consumptive development practices while preserving appropriate protection of health.

Chapter 8 of the WRMS Report recommends a watershed-based approach to land use planning. This is currently done on a reduced scale through the master plan process. The concept of expanding this approach to all areas of HRM will be considered through the Regional Planning Project in conjunction with community, cultural, infrastructure and economic factors which must be considered in any land use planning program. This chapter also recommends mapping and protection of sensitive watersheds and flood plain mapping. It further recommends protection of flood plain areas through land use regulation. Flood plain mapping already exists in some areas of HRM and watershed management is an important focus of Master Plan studies for large development areas. Additional work will be carried on through the Regional Planning Project to anticipate where issues might arise in other flood plain areas in HRM.

2. Environmental Policy

Environmental Management Services is a new business unit formed pursuant to the most recent realignment in HRM. It has brought together the various staff and functions related to environmental issues in HRM, including the Harbour Solutions Project, wastewater and storm water management, wastewater treatment, solid waste resources, greenhouse gases, by-law enforcement and others. This consolidation of responsibilities provides an opportunity for a more comprehensive approach to environmental issues within HRM. EMS will be responsible for the development of environmental policy in HRM. Some such policy already exists, but it is currently scattered about the HRM administrative landscape. EMS has begun the process of identifying and gathering all existing policies, with the intent of determining gaps and conflicts, so we can move forward with the development of a comprehensive Environmental Policy for HRM.

It is intended that many of the recommendations of the Water Resource Management Study will form part of this Environmental Policy.

3. Municipal Service Systems Design Guidelines

The Municipal Service Systems Design Guidelines are a set of minimum standards for the design and construction of municipal service systems in the Municipality. They were adopted by resolution of Council under the authority of the Municipal Government Act, and so have the same status as an administrative policy.

The Design Guidelines are reviewed annually by a committee which is lead by Public Works and Transportation Services. The review committee typically includes representatives of both internal and external stakeholders. Internal stakeholders include representatives from Real Property and Asset Management, Environmental Management Services, Planning and Development Services, and Public Works and Transportation. External stakeholders include representatives from the Nova Scotia Home Builders Association, the Urban Development Institute, the Nova Scotia Road Builders Association, and the Nova Scotia Consulting Engineers Association.

4. Business Plan and Budget

A small number of the recommendations, which are related to operational issues, will be implemented through the annual Business Plan and Budget process. One example is any study pursuant to Recommendation 7-8, which would likely be implemented and funded through HRM's Infiltration/Inflow Reduction Program.

5. Capital Cost Contribution Policy

The capital cost contribution policy is referenced in relation to recommendations concerning expansion of urban services and related studies. The policy is HRM's main mechanism for recouping costs of major infrastructure in new growth areas.

Immediate Action Items

Staff have started, or will soon be starting, a number of initiatives recommended by the WRMS report, some of which were identified by the WABs as being a high priority.

1. Regional Planning have drafted a Request for Proposals for a study entitled "Options for On-Site and Small Scale Wastewater Management in Halifax Regional Municipality". Staff from EMS have been involved in developing the project and reviewing the draft Request for Proposals. It is expected that the Request for Proposals will be issued by October.

This study will provide background technical support to facilitate the later implementation of the WRMS Recommendations 7-1, 7-2 and 7-3.

2. A high priority identified by the WABs was the provision of buffers in HRM as protection for our water resources. After further public consultation this fall, Regional Planning will look for opportunities for early implementation.

This work will lead to the possible implementation of the WRMS Report Recommendations 5-1, 5-2 and 5-3.

3. EMS staff have begun drafting a Request for Proposals entitled "Best Management Practices - Infiltration/Inflow Prevention and Reduction in HRM". This study will address in part the WRMS Report Recommendations 7-8 and 7-10.

Staff are intending to issue the Request for Proposals in October of this year. The study will be funded through HRM's Infiltration/Inflow Reduction Program.

4. The Wet Weather Flow Study - Halifax STP Sewershed, has already been approved in the Capital Budget. The work has been delayed due to the recent uncertainties surrounding the Harbour Solutions Project. Staff will proceed with the project through the winter months.
5. Develop policy regarding HRM's role in storm water management and surface water quality. The degree of HRM involvement in this issue is seen as a new direction and will require considerable time and resources. Staff will meet with the Province to better define mandates, and will develop a Request for Proposals for a study to develop comprehensive stormwater management water quality guidelines for both HRM operations and private developments.
6. The Water Resource Management Project has been co-ordinated to date by a Steering Committee comprised of staff from Environmental Management Services and Planning & Development Services. These same staff continue to function as a Co-ordinating Committee for the Water Resource Management Project. It is contemplated that this Committee would oversee the implementation process and time lines and serve as a resource to others involved in implementation.

BUDGET IMPLICATIONS

There are no direct budget implications resulting from the recommendations contained in this report. Any future budget requirements with respect to the implementation of any of the recommendations will be identified in business plans and/or reports to Halifax Regional Council as appropriate.

FINANCIAL MANAGEMENT POLICIES / BUSINESS PLAN

This report complies with the Municipality's Multi-Year Financial Strategy, the approved Operating, Capital and Reserve budgets, policies and procedures regarding withdrawals from the utilization of Capital and Operating reserves, as well as any relevant legislation.

REGIONAL PLANNING IMPLICATIONS

As identified in the attached table, **Water Resource Management Project, Recommendations and Action Plan**, many of the recommendations have regional planning implications or require completion of the regional plan before final implementation. This has been identified in the Regional Planning work plans.

ALTERNATIVES

None recommended

ATTACHMENTS

1. Appendix A - Executive Summary, WRMS report by Dillon Consulting Limited
2. Appendix B - Water Resource Management Study, Recommendations and Action Plan

Additional copies of this report, and information on its status, can be obtained by contacting the Office of the Municipal Clerk at 490-4210, or Fax 490-4208.

Report Prepared by: Mark Bernard, P.Eng., Senior Policy Engineer, 490-6716

Report Approved by:

Betty MacDonald, Director, Governance & Strategic Initiatives, 490-4769

Brad Anguish, P.Eng., PMP, MBA, Director, Environmental Management Services, 490-4825

Paul Dunphy, Director, Planning & Development Services, 490-4933

Carol Macomber, Project Manager, Regional Planning, 490-5908

Austin French, Regional Planning Manager, 490-6717

John P. Sheppard, P.Eng., Manager, Environmental Services, 490-6958

Executive Summary

Water resource policy plays a unique role in municipal planning. For the purposes of this report, water resources include streams and rivers, lakes and ponds, wetlands and coastal marine waters and estuaries. The water resource management policies recommended in the study will have a profound effect on the character of HRM in the future. The policies will affect where, when and how development happens and they reflect the priority the community places on the health of water systems including preservation of water quality and habitat for humans and non-humans. Implementation of the policies has significant economic implications because water resource management has a substantial price associated with both action and inaction.

HRM has a large number of key water resources issues. These issues have been addressed under main categories in this report:

- watercourse, wetland and coastline protection (e.g., need for comprehensive, consistent and scientifically defensible policy for all of HRM)
- service boundaries (e.g., questions about how and why such boundaries are defined)
- wastewater management (e.g., questions about the most appropriate and sustainable rural systems and issues with existing urban system problems such as combined sewer overflows)
- stormwater management (e.g., need for consistent policy to address wet weather water quality and quantity)
- performance measures (e.g., how to best monitor surface water quality in fresh water systems in HRM to ensure protection of human health and monitor infrastructure system performance)

Existing and emerging approaches to each of the key issues provides guidance to HRM. Practices in HRM, elsewhere in Canada, in the United States and Europe have been identified and relied on for direction in the identification and evaluation of options available to HRM for water resource management for each of the five resource components.

The recommendations are summarized as follows under each category:

Watercourse, Wetland and Coastline Protection

- Recommends definition of riparian buffers for watercourses, wetlands and coastlines. Vegetation would be retained and development generally prohibited. The recommended method of riparian buffer width determination is to apply the criteria of the existing NSDNR *Wildlife Habitat and Watercourses Protection Regulations*.
- Where watercourses have previously been channelized and infilled and there are consequent hazards and maintenance needs, it is recommended that natural channel design be considered as a suitable solution.

Service Boundaries

- Recommends that urban development boundaries be defined based on population and employment forecasts and allocated to settlement areas using a range of social, economic and environmental criteria.
- Recommends that the detailed pattern and sequence of development be defined in detailed plans for key settlement and rural service centres.
- Recommends full municipal services for the urban development area, a hierarchy approach for the rural settlement/services centres and individual on-site services for the rural resource areas.
- Recommends specific criteria to be considered for extensions to services or changes to the urban development boundary.

Wastewater Management

Rural

- Recommends the development of a hierarchy of wastewater management forms to be used for new development in rural settlement/service areas;
- Recommends the development of a hierarchy of wastewater management forms to be used when remediating failed on-site systems;
- Recommends the use of WMD or condominium agreement for the management of communal systems;
- Recommends the development of public education material regarding proper operations and maintenance of septic systems;
- Recommends that NSDEL use their database to evaluate failure trends for on-site systems;
- Recommends that HRM cooperate with NSDEL to evaluate failures of on-site systems on central water services; and
- Recommends that HRM encourage the use of water conservation devices.

Urban

- Recommends that HRM prioritize I/I problems on a watershed basis;
- Recommends that HRM perform wet weather flow studies to evaluate the merits of separating sewers and/or reducing CSOs; and
- Recommends that when sanitary sewers are installed, there must be stormwater management provided.

Stormwater Management

- Recommends the development of stormwater management guidelines;
- Recommends the utilization of watershed management planning for stormwater management for sensitive watersheds;
- Recommends specific requirements to be included in the stormwater management guidelines;
- Recommends public education for source control of stormwater;

- Recommends the requirement for erosion and sediment control for all development and construction approvals;

- Recommends flood zone mapping be performed based on a priority listing of watersheds; and,
- Recommends restrictions for development within the flood zones.

Performance Measurement

- Recommends including performance monitoring in all development agreements, including development of fundamental parameters and targets in cooperation with other levels of government;
- Recommends that HRM undertake a moderate level of performance monitoring based on 50-70 sites, 3-4 times per year for 4 physical chemical base parameters and occasional more complex analysis including bioindicators. In addition to this HRM will undertake lake based or watershed based studies to establish community based water quality objectives, targets and monitoring parameters and to establish comprehensive development criteria. These studies will be phased over time and be implemented based on need and when funding is available.
- It is also recommended that HRM assess data on an annual basis to assess effect of development as measured against the objective standards established for water quality.

Water Resource Management Project Recommendations and Action Plan

September 9, 2003

Note: RP is Regional Planning
EMS is Environmental Management Services

No.	Recommendation	Action Plan	Lead BU
Chapter 5.0 Watercourse, Wetland and Coastline Protection			
5-1	It is recommended that HRM provide protection for lands adjacent to watercourses, wetlands, lakes and coastlines through the use of planning and development controls where appropriate. These would provide riparian buffers to be defined in by-law in riparian areas, shoreline areas and around wetlands. In these adjacent lands, vegetation will be retained, and development, soil removal, excavation and infilling will be prohibited. The intent of the protection of riparian buffers would include the general prohibition of the infilling and channelization of watercourses.	Municipal Planning Strategy and By-Law This will be considered through the Regional Plan. Further to public consultation this fall, staff will look for opportunities to do early implementation.	RP
5-2	It is recommended that the general width of the riparian buffer be 20 m from high water mark along each bank or shore or wetland edge. It is recommend that, where the land within the 20 m buffer zone has an average slope of greater than 20%, the riparian buffer width will be increased and the riparian buffer designation will be extended by 1 m for each additional 2% of slope to a maximum of 60 m in width.		
5-3	It is recommended that where there are valid reasons to modify the riparian buffer width, or infill a wetland or watercourse, policy and by-law should provide flexibility where appropriate.		
5-4	It is recommended that, where natural systems have been modified, natural channel design be incorporated (to the extent practical) into the storage, flow and quality improvement of storm runoff, while seeking to remediate and enhance the watercourse conditions.	Municipal Service Systems Design Guideline HRM do not have a program to pro-actively restore channels. However, staff will capitalize on any practical possibilities where remedial works are undertaken. This will be addressed during the next amendment of the Design Guideline.	EMS

Water Resource Management Project Recommendations and Action Plan

September 9, 2003

Note: RP is Regional Planning
EMS is Environmental Management Services

No.	Recommendation	Action Plan	Lead BU
Chapter 6.0 Service Boundaries			
6-1	<p>It is recommended that development boundaries in HRM be defined based on population and employment forecasts for a defined planning period (minimum of 20 years). Population should be allocated to settlement areas based on a range of environmental, social and economic criteria as set forth in Section 6.4.4. Allowable lot sizes should be increased significantly to discourage high density development outside the settlement/ service centres and to make efficient use of existing and planned infrastructure.</p> <p>It is recommended that external boundaries of urban development areas be defined to follow roads, environmental features, rights-of-way, railways, transmission lines, lot lines, concession lines, and watercourses.</p>	<p>Municipal Planning Strategy and By-Law</p> <p>Most of these policies already exist in current Community Planning Strategies.</p> <p>This recommendation is currently being implemented in the Master Plan Studies in priority growth areas, and the Greenfield Study will help implement the recommendation on a Regional scale as part of the Regional Plan.</p>	RP
6-2	<p>It is recommended that HRM prepare detailed plans for significant urban centres and rural service centres in HRM that define the sequence and pattern of proposed development in detail including servicing provisions.</p>	<p>Municipal Planning Strategy and By-Law</p> <p>This is being implemented in urban areas through Master Planning Process. The Greenfield Study will help implement the recommendation on a Regional scale as part of the Regional Plan.</p> <p>An RFP is being drafted for an Options Study for On-site and Small Scale Wastewater Management, which will help in the development of settlement patterns for the rural areas.</p>	RP

Water Resource Management Project Recommendations and Action Plan

September 9, 2003

Note: RP is Regional Planning
EMS is Environmental Management Services

No.	Recommendation	Action Plan	Lead BU
6-3	<p>It is recommended that for the defined urban development areas, full municipal services be required for all new development. Priority should be given to the provision of municipal services within urban areas which produce an intensive and compact form of development. HRM will direct that sufficient municipal water and sanitary sewerage facilities should be provided to urban areas, within the financial capability of the municipality to accommodate anticipated growth for a specified period of time. Council should ensure that at least a 20 year supply of serviced lands in the urban development area will be maintained at all times. Servicing capacity can be reassigned in some urban areas (outside the urban core) if a plan of subdivision is not registered within three years of draft approval. Provision of partial services should be discouraged to reduce potential for wastewater system failures. For rural settlements/service centres a hierarchy approach to defining service priorities should be applied as defined in Chapter 7.0.</p> <p>The feasibility of the options in order of priority should be based on an evaluation of:</p> <ul style="list-style-type: none"> • the scale and form of development; • physical or environmental constraints; • potential cumulative impacts to ground and surface water resources; • comparison of costs and benefits of the alternatives including costs associated with planning, construction, start-up, operation, maintenance, financing and replacement; • funding availability. <p>In rural resource areas, individual on-site systems are recommended for wastewater service.</p> <p>Regular surveys and forecasts should be undertaken to implement this policy (e.g. 5 year updates).</p>	<p>Municipal Planning Strategy and By-Law, Municipal Service Systems Design Guideline, Business plans and Budgets , Capital Cost Contribution Policy</p> <p>Through the Multi Year Financial Strategy and the Capital Cost Contribution Policy, this recommendation is achieved now in some areas. There is more to do.</p> <p>Regional Planning is directing this recommendation and considers it a high priority. The initial step is an RFP to examine the feasibility of the various in-ground management options (see Recommendation 6-2) and the criteria around them. This RFP is presently being drafted. Service centres may then be established in response to a community process.</p>	RP

Water Resource Management Project

Recommendations and Action Plan

September 9, 2003

Note: RP is Regional Planning
EMS is Environmental Management Services

No.	Recommendation	Action Plan	Lead BU
6-4	<p>It is recommended that the following criteria be considered when reviewing requests for extensions of services or changes to the urban development area:</p> <ul style="list-style-type: none"> • Municipal sewers or water may be extended outside the urban area where required to correct an existing health problem; • Extensions may be permitted for necessary operating purposes, such as the looping of existing mains, the replacement of existing mains and the interconnection of urban areas; • Where full servicing is being discouraged for areas adjacent to urban areas policies can be developed to state that expansions on individual water and septs is not allowed except for once per settlement area in order to “round” the area, and add a maximum of 5 residential units; • Amendments to boundaries may be considered to implement the results of reviews of municipal population and housing forecasts; • Delete designation if total land available for urban area does not show a need for additional lands to be designated; • Consideration and evaluation of alternative/expansion development policies must include analysis of impacts on natural heritage and availability of existing or committed infrastructure, impacts of increased densities, agricultural capability, financial capability of the municipality as well as population/employment forecasts; • Consideration of other matters deemed necessary by Council; • Compliance with buffer and distance separation policies/regulations such as those for aggregate and sand deposit extraction, forestry and fishing in rural and coastal areas; • Consideration of fiscal impacts including property assessments; • That alternatives to the provision of piped municipal water and sewer services have been thoroughly investigated; • The development is in compliance with the desired pattern of development within the local area and the region; • That the development is within a reasonable distance of existing infrastructure; • That the development is contiguous to an existing subdivision serviced with water and sewer; and • That there are sufficient community services in the area capable of servicing the development. <p>In addition, where full servicing is expected to be supplied in the future, HRM should consider encouraging lot development that will allow for subdivision in the future to increase densities and compact settlement form (e.g. buildings placed on side of lots).</p>	<p>Municipal Planning Strategy and By-Law, Municipal Service Systems Design Guideline, Capital Cost Contribution Policy</p> <p>Existing policies cover some of the criteria in this recommendation. Staff have the general authority to implement most of the recommendation.</p> <p>Work by Regional Planning team is necessary for complete implementation.</p>	RP

Water Resource Management Project Recommendations and Action Plan

September 9, 2003

Note: RP is Regional Planning
EMS is Environmental Management Services

No.	Recommendation	Action Plan	Lead BU
Chapter 7.0 Wastewater Management			
7-1	<p>It is recommended that HRM develop a hierarchy of wastewater management forms to be used for new development in designated rural settlement/service centres as designated through the Regional Plan.</p> <ul style="list-style-type: none"> • Central collection and treatment with surface water discharge is the preferred form of servicing for designated rural settlement/service centres. These systems should only be permitted at locations designated by the Municipality as a focal point for the provision of a mix of commercial, residential, community facility, entertainment and employment services to the surrounding rural settlement area. Lot creation will be permitted only if sufficient sewage treatment plant capacity will be available to accommodate it; • Communal system with subsurface discharge is the preferred means of servicing multiple lots/units in rural settlement/service centres where it is not feasible to implement a central collection and treatment system, where conditions are suitable over the long term and appropriate management plans are in place for system maintenance, and where lot sizes can be reduced to allow the clustering of development on a small portion of the site; and • Rural settlement/service centres may be serviced by individual on-site systems where the use of communal systems is not feasible and where conditions are suitable over the long term. <p>The preferred method of servicing for the rural settlement/service centres would be determined through a study of the options available. The selection of the preferred method would consider capital and operational financial aspects of the potential service options.</p> <p>In low density resource-based areas, outside of the designated rural settlement/service centres, individual on-site systems will continue to be the form of wastewater servicing.</p>	<p>Municipal Planning Strategy and By-Law</p> <p>Through the Multi Year Financial Strategy and the Capital Cost Contribution Policy, this recommendation is achieved now in some areas. There is more to do.</p> <p>Regional Planning is directing this recommendation and considers it a high priority. The initial step is an RFP to examine the feasibility of the various in-ground management options (see Recommendation 6-2) and the criteria around them. This RFP is presently being drafted. Service centres may then be established in response to a community process.</p>	RP

Water Resource Management Project Recommendations and Action Plan

September 9, 2003

Note: RP is Regional Planning
EMS is Environmental Management Services

No.	Recommendation	Action Plan	Lead BU
7-2	<p>It is recommended that HRM develop a hierarchy of wastewater management forms to be used when remediating failed individual on-site systems. Remediating on-site wastewater treatment systems should recognize that:</p> <ul style="list-style-type: none"> • when single failures are identified it is preferred that they be remediated or replaced with individual on-site systems where there is space available; • communal services are the preferred means of servicing multiple lots/units in areas where multiple failures have been identified, where conditions are suitable over the long term; and, • central collection and treatment with surface water discharge is to be provided where there is a large number of failures and/or where the above methods cannot be utilized. 	<p>Environmental Policy</p> <p>This policy will be developed using in part the conclusions of the study identified in 6-2: Options Study for On-site and Small Scale Wastewater Management.</p>	EMS
7-3	<p>It is recommended that HRM consider the use of Wastewater Management Districts or condominium agreements for communal systems with subsurface discharge.</p>	<p>Municipal Planning Strategy and By-Law</p> <p>This will be considered as part of the Options Study for On-site and Small Scale Wastewater Management as identified in 6-2 and 6-3.</p>	RP

Water Resource Management Project

Recommendations and Action Plan

September 9, 2003

Note: RP is Regional Planning
EMS is Environmental Management Services

No.	Recommendation	Action Plan	Lead BU
7-4	It is recommended that methods of public education and information dispersal be implemented on septic system operation and management. The program should be prepared in cooperation with other levels of government and based on improving public awareness of septic system management, operation and maintenance requirements and other matters of environmental and public health concern.	Environmental Policy This is part of a management system, however, a Level I education plan can begin immediately and at little cost to the Province and HRM via distribution of data. It is important to insure a long-term view of education and develop a partnership with the Province on this. This can be done through the Environmental Education Committee. Future costs will be identified in the Business Plan.	EMS
7-5	It is recommended that HRM request that NSDEL use the on-site system data base to evaluate system failures.	Environmental Policy Regional Planning are acquiring the data for analysis and Environmental Management Services will determine if the data base will be helpful to evaluate and avoid future problems.	RP EMS
7-6	It is recommended that HRM cooperate with NSDEL to undertake a study to evaluate failures of on-site systems with central water servicing. It is further recommended that if there is a trend of failures identified, HRM request that NSDEL review the requirement for larger capacity on-site sewage disposal systems when approving lots to be serviced with on-site wastewater treatment and central water services.	Environmental Policy The Province is the lead with on-site systems. However, HRM has a vested interest. To meet the aims of the recommendations, HRM shall start discussions with the Province.	EMS
7-7	It is recommended that HRM encourage homeowners to install water conservation devices.	Environmental Policy HRM now pursues this through the Development Agreement process and will partner with the Halifax Regional Water Commission and the Province to pursue further.	EMS
7-8	It is recommended that the existing infrastructure be prioritized by watershed for the purposes of I/I evaluation. The watersheds should then be examined to determine sources of I/I and action plans developed to either eliminate the source of I/I or expand collection and treatment facilities.	Environmental Policy, Capital Budget Staff will develop a priority list and identify in the capital budget as necessary.	EMS

Water Resource Management Project Recommendations and Action Plan

September 9, 2003

Note: RP is Regional Planning
EMS is Environmental Management Services

No.	Recommendation	Action Plan	Lead BU
7-9	It is recommended that HRM perform wet weather flow studies to evaluate the merits of separating sewers and/or reducing CSOs.	Environmental Policy, Capital Budget Funds have been provided in the Capital Budget for the sewershed of the Halifax STP. Funds will be provided for other sewersheds through the budget process.	EMS
7-10	It is recommended that when sanitary sewers are to be installed, the design must include provision for stormwater management, including the management of stormwater from roof leaders and foundation drains.	Municipal Service Systems Design Guideline The next amendment of the Design Guideline will allow for this requirement.	EMS

Water Resource Management Project Recommendations and Action Plan

September 9, 2003

Note: RP is Regional Planning
EMS is Environmental Management Services

No.	Recommendation	Action Plan	Lead BU
Chapter 8.0 Stormwater Management			
8-1	It is recommended that HRM develop stormwater management guidelines to be used throughout the Municipality.	Municipal Planning Strategy, Environmental Policy Need interpretative guidelines for drainage works approvals now due to Nova Scotia Department of Environment and Labour policy. Must develop more comprehensive guidelines and recommend a study to develop this be started immediately.	RP EMS
8-2	It is recommended that, where HRM has identified particularly sensitive watersheds, a watershed approach to stormwater management be applied.	Municipal Planning Strategy and By-Law Done in Master Plans now. Under Regional Planning, will be required in all community plans. Regional Planning will map any sensitive areas.	RP
8-3	It is recommended that the stormwater management guidelines require: <ul style="list-style-type: none"> • pre-development hydrology be maintained or enhanced to the extent practical, keeping in mind the potential for basement flooding, groundwater contamination and inflow and infiltration to the sanitary sewer. It is also recommended that natural systems should be preserved and maintained; • the volume of sediments and contaminants being discharged into the storm sewer system and eventually into a receiving water be reduced to levels that are not harmful to the intended use of the receiving waters and shall not exceed current limits under the wastewater discharge by-law; • peak storm discharges be reduced through a hierarchy of source, conveyance, and end-of-pipe control measures to reduce the risk of flooding and stream bank erosion in a watershed approach; • emerging technologies be considered for water resource management with an emphasis on the importance of natural systems; and • developers be required to investigate the cumulative effects of existing and future developments on the downstream environment. 	Municipal Planning Strategy and By-Law Need interpretative guidelines for drainage works approvals now due to Nova Scotia Department of Environment and Labour policy. Must develop more comprehensive guidelines and recommend a study to develop this be started immediately.	RP

Water Resource Management Project Recommendations and Action Plan

September 9, 2003

Note: RP is Regional Planning
EMS is Environmental Management Services

No.	Recommendation	Action Plan	Lead BU
8-4	It is recommended that a public education plan be instituted to inform storm sewer users of their potential effect on the environment.	Environmental Policy, Business plans and Budgets The source control program is now underway with focussed education as a significant part of the program. A wider public campaign will follow.	EMS
8-5	It is recommended that erosion and sediment control shall be applied to all development and construction approvals through the development of policy that includes lot level erosion and sediment control.	Municipal Planning Strategy and By-Law The study identified in 8-1 and 8-3 will determine the resources required for this.	RP
8-6	It is recommended that a Floodway designation in Zoning mapping be established that reflects the 1:20 year floodways and a Floodway Fringe designation of the 1:100 year floodway fringe of the Sackville River and the Little Sackville River as defined by mapping of the Canada-Nova Scotia Flood Reduction Program, and adjacent to other rivers where similar conditions are recognized.	Municipal Planning Strategy and By-Law Analysis to establish mapping priorities is presently being carried out under the Regional Plan. The cost of floodplain mapping which is required in large development areas will be completed as part of a Master Plan, and can be recovered from developers through the Capital Cost Contribution Program. Floodplain mapping which may be required in existing developed areas will be costed and carried out separately as part of a community plan.	RP
8-7	It is recommended that for watercourses which have not been mapped under the Canada-Nova Scotia Flood Damage Reduction Program, the provisions of designated floodplains be applied. Mapping will be undertaken on a watershed basis. Watersheds will be prioritized based on environmental sensitivity, historical flooding and development pressure.	Municipal Planning Strategy and By-Law The master planning process will identify the need for floodplain protection in the priority growth areas.	RP

Further analysis which is presently being done under the Regional Plan will determine large new development areas that require flood- plain mapping and protection.

Water Resource Management Project

Recommendations and Action Plan

September 9, 2003

Note: RP is Regional Planning
EMS is Environmental Management Services

No.	Recommendation	Action Plan	Lead BU
8-8	<p>It is recommended that within the Floodway designation a Floodway Zone be established, encompassing the 1:20 year floodway, in which conservation related uses, public and private parks and playgrounds, recreation uses, roadways, utility and service corridors, parking lots, temporary uses and uses of a similar nature shall be permitted. Notwithstanding that these uses shall be permitted, any structures intended for human habitation, whether permanent or temporary, shall be prohibited, and the placement of off-site fill shall be prohibited.</p>		
8-9	<p>It is recommended that the redevelopment of existing uses within the 1:20 year floodway be permitted through the development agreement process, subject to the proponent agreeing to maintain, or enhance where possible, the water retention capabilities of the floodway</p>		
8-10	<p>It is recommended that the 1:100 Floodway fringe be identified on the Zoning map. Permitted uses within the floodway fringe should be determined by the underlying zones. Further to the applicable zone requirements, require floodproofing of structures erected within the 1:100 floodway fringe and regulate the placement and stabilization of fill necessary for the floodproofing of permitted structures unless the structures have been specifically designed to accommodate water flow and storage.</p>		
8-11	<p>Notwithstanding the uses permitted within the zones underlying the Floodway fringe, it is recommended that any use associated with the warehousing or the production of hazardous materials be prohibited. Prohibit the placement of off-site fill except as required for flood proofing or flood risk management.</p>		
8-12	<p>It is recommended that where existing uses are established within the floodway, the expansion of any structures that increase the area of the structure at or below the flood proof elevation be prohibited.</p>		
8-13	<p>It is recommended that a proponent for a development be required to complete a hydrotechnical study to determine the 1:20 year Floodway and the 1:100 year Floodway fringe, where there is a known floodplain.</p>		

Water Resource Management Project

Recommendations and Action Plan

September 9, 2003

Note: RP is Regional Planning
EMS is Environmental Management Services

No.	Recommendation	Action Plan	Lead BU
8-14	It is recommended that development contrary to these Floodplain Protection policies be considered, provided a hydrotechnical study, carried out by a qualified person, shows that the proposed development will not contribute to upstream or downstream flooding or result in a change to flood water flow patterns. On the basis of such a study, the rezoning of Floodway Zone lands to Floodway Fringe Zone or to the abutting zone be allowed. Also consider the rezoning of Floodway Fringe Zone to the abutting zone.		
8-15	It is recommended that within the Floodplain Designation a mixed use designation be applied to those lands beyond the 1:20 year floodplain but within the 1:100 year floodplain. Consider only permitting buildings within the 1:100 year floodplain by development agreement and according to the provisions of the <u>Municipal Government Act</u> . In considering any such agreement, have regard to the following: (a) that adequate flood proofing measures are undertaken for any building; (b) that the type of residential development is consistent with that permitted by the zone within which the lands are located and that the minimum standards for such developments are no less than those required by the zone unless necessary for reasons of safety; and (c) the environmental protection of the watercourse with respect to proper storm drainage.		
8-16	It is recommended that, to minimize the effects upon natural stormwater flows, control be exercised over the placement and stabilization of fill necessary for the floodproofing of structures permitted within the Floodplain Designation. Further, through the review of subdivision applications, co-operate with the Department of Transportation and Public Works to ensure that any roadways proposed within the Floodplain Designation meet the requirements.		
Chapter 9.0 Performance Measurement			

Water Resource Management Project

Recommendations and Action Plan

September 9, 2003

Note: RP is Regional Planning
EMS is Environmental Management Services

No.	Recommendation	Action Plan	Lead BU
9-1	<p>It is recommended that all development agreements should include the following elements:</p> <ul style="list-style-type: none"> N requirement for a water quality monitoring plan addressing pre-development, development and post development periods; N monitoring to include a basic level of monitoring to be established in by-law, and additional measures specific to the site and development conditions as appropriate; N requirement for baseline water quality information; N long-term monitoring to include community volunteers as appropriate; N sampling, analysis and monitoring procedures to follow valid methods; N results to be provided promptly to HRM and the appropriate WAB; and N HRM to retain database of monitoring results. 	<p>Municipal Planning Strategy and By-Law</p> <p>The study identified in 8-1 shall set the requirements of a monitoring program that will identify the effectiveness of our requirements for storm water management. The recommendations in the Halifax Watershed Advisory Board's report "Recommendations for Monitoring Freshwater Quality to Assess Impact of Development in the Halifax Regional Municipality" will be considered when these are developed.</p>	RP
9-2	<p>It is recommended that HRM undertake a water quality monitoring program in the order of 50 to 70 sites per year, 3-4 times per year for 4 physical chemical base parameters and occasional more complex analyses including bioindicators. In addition to this HRM will undertake lake based or watershed based studies to establish community based water quality objectives, targets and monitoring parameters and to establish comprehensive development criteria. These studies will be phased over time and be implemented based on need and when funding is available.</p>	<p>Environmental Policy, Business plans and Budgets</p> <p>Identify through the business plan and budget process.</p>	EMS
9-3	<p>It is recommended that performance measures be developed in cooperation with other levels of government and organizations, to include:</p> <ul style="list-style-type: none"> N Review the adoption of fundamental parameters and targets with other levels of government, specifically NSDEL and DFO. N Negotiate with NSDEL and Environment Canada in the development of a water quality monitoring program consistent with those in other provinces. N Cooperate in the adoption of the CABIN bioindicators program, with the adoption of sites in HRM. 	<p>Environmental Policy</p> <p>The Province is now considering defining objectives for Nova Scotia. HRM will confer with the Province and consider using theirs.</p>	EMS

Water Resource Management Project Recommendations and Action Plan

September 9, 2003

Note: RP is Regional Planning
EMS is Environmental Management Services

No.	Recommendation	Action Plan	Lead BU
9-4	It is recommended that water quality monitoring/ performance measures data be reviewed as it becomes available in HRM on an annual basis and to assess the effect of development as measured against the objective standards established for water quality. As established water quality standards/targets are approached, consider further actions to avoid exceeding water quality targets and performance measures.	Environmental Policy Identify priorities through the business planning process.	EMS

C:\Documents and Settings\user\Local Settings\Temp\MXLibDir\WRMSTABLE2 - Sept. 9, 03.wpd