Guidelines

for

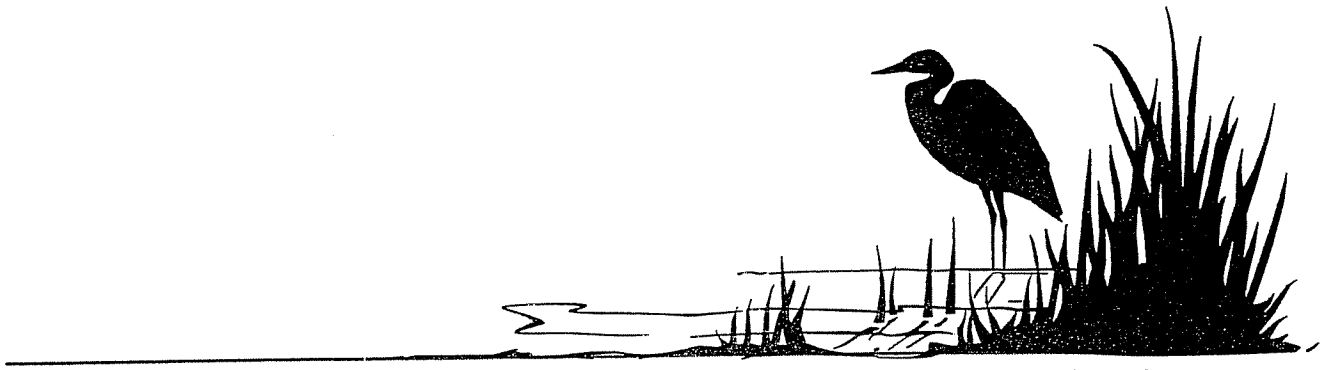
Protecting

our

Water Resources

prepared by the
Halifax Watershed Advisory Board

The focus of the Watershed Advisory Board is on the protection of water quality and quantity, as well as the quality of life associated with our water resources. The Board reviews development applications submitted to the Halifax Regional Municipality that could have an impact on local watercourses. The following guidelines discuss water protection issues associated with development and suggest a variety of ecologically responsible land use practices designed to protect our fragile water resources in freshwater, estuarine and marine environments.



Soil Erosion

Undisturbed soil generally has a high resistance to erosion from wind and water. However, after disturbance (i.e. removal of vegetation and regrading) many soil types are prone to erosion that can result in sedimentation of local watercourses and saltwater inlets. This sedimentation is both unsightly and potentially deadly to many forms of aquatic life. The reduction and elimination of sediment-laden, over-land runoff and erosion should be the goal of all developers and residents. To accomplish this, any development or lot improvement that disturbs soil should have an Erosion and Sedimentation (E&S) Control Plan, in compliance with municipal and provincial codes. In small, single lot, homeowner projects, the E&S Plan could be as simple as soil coverage with tarps or straw and silt fencing to prevent silt laden water from escaping the site. Larger projects may require a comprehensive plan developed by qualified professionals to ensure that every precaution is taken. Methods to reduce or prevent this unwanted occurrence should be diligently undertaken, therefore:

- ✓ **Any development that disturbs soil should include an Erosion and Sedimentation Control Plan with the development proposal.**

- ✓ **Soil disturbance should be kept to a minimum, and where regrading or landscaping is carried out, the area exposed should be stabilized using an environmentally sound method such as sodding, hydro seeding or other proven methods.**

Storm Water Management Systems

The term, 'storm water management systems,' generally refers to the infrastructure installed by a developer or a municipality to collect the run-off from roads, parking lots and other impermeable surfaces associated with a development, as well as natural run-off. The system may include ditches, culverts, swales, subsurface interceptor drains, roadway curbs and gutters, catch basins, manholes, retention ponds, canals etc. Current systems often incorporate natural watercourses, flood plains, ravines, gullies, springs and creeks in the area. Storm water management requires that a storm drainage system be carefully designed and implemented before any development proceeds. Any storm water drainage system should be designed to achieve the following objectives:

- to prevent loss of life and to protect structures and property from damage due to a major storm event;

- to provide safe and convenient use of streets, lot areas, and other improvements during and following rain and snow events;

- to adequately convey storm water flow from upstream sources;

- to mitigate the adverse effects of storm water flow; downstream flooding and erosion;

- to preserve natural watercourses and areas of discharge into fresh and salt water bodies;

- to minimize the long term effect of development on receiving watercourses on ground water.

Therefore:

- ✓ **Storm water should not be discharged directly into natural watercourses.**

- ✓ **Storm water management should be an integral part of overall site design and development and must meet all the requirements of the Halifax Regional Municipality Municipal Services System Design Standards.**

Buffer Strips

A buffer strip is a zone of undisturbed vegetation and soil on both sides of a watercourse (including lake, pond, wetland) and salt water inlet or estuary. The buffer strip will help control storm water flow, reduce sedimentation and help protect the natural ecosystem processes within the watercourse. The width of the buffer strip is very important to the effectiveness of the buffer. Therefore:

- ✓ **A buffer strip of natural undisturbed vegetation should be provided adjacent to the ordinary high water mark on any watercourse and be a minimum of 30 metres wide on each side. Development proposals should identify this clearly on proposed final plans and developers are encouraged to provide deed covenants in an effort to protect watercourses. In situations where natural vegetation does not already exist, indigenous species should be planted to provide a 30 metre buffer.**

Setbacks for On-Site Sewage Disposal Systems

Historical research has shown that even with current Nova Scotia Environment and Labour regulated setbacks of 30.5 metres, nutrients, in particular phosphorus compounds, are reaching lakes relatively quickly. Other municipalities are attempting to limit the number of on-site sewage disposal systems around lakes by requiring wider lots or by simply setting the maximum number of lots permitted. However, increased setbacks for onsite systems result in longer time scales (possibly 30 - 40 years) allowing for more nutrients to be utilized before the effluent reaches a water body. Therefore:

- ✓ **Setbacks associated with onsite disposal (septic) systems for residential lots in new subdivisions should exceed the minimum standards of NSEL (i.e. 30.5 metres). Where possible, a minimum 100 metre setback is encouraged from lakes and saltwater bodies.**

Floodplains

A floodplain is the area adjacent to a watercourse that is periodically inundated with floodwaters. The natural tendency of freshwater systems to flood during and after periods of extreme rainfall events or snow melt often leads to the damage of property located within the floodplain or tidal area. At the same time floodplains play an important role in floodwater management as water retention areas, reducing the risk or the extent of flooding downstream. Both to eliminate damage due to periodic

flooding and to conserve this natural floodwater management system, the following restrictions should be followed:

- ✓ **There should be no development, land grade alteration or major vegetation removal within the 1:20 year floodplain.**

- ✓ **Any development within the 1:100 year floodplain fringe should be of such a nature that it will not be overly damaged by flooding or reduce the water storage capacity of the floodplain.**

Wetlands including Saltmarshes

Wetlands and salt marshes are very important to the health of our ecosystems. They are the areas of high biomass productivity and therefore require special attention for their continued protection. In the past, wetlands and saltmarshes were considered wastelands and therefore areas to be bulldozed and infilled to make way for development. These areas, especially along watercourses are essential in maintaining water quality and quantity. Wetlands and salt marshes are also important for the storage of carbon (decayed plant material) which would otherwise be released as greenhouse gases, for aquifer recharge, water purification, flood control and stream base flow. Therefore:

- ✓ **Natural wetlands and salt marshes should not be infilled, altered or destroyed.**

- ✓ **Where possible, artificial wetlands should be created to treat storm water and be isolated from natural systems.**

Surface Water

This includes all watercourses and wetlands with the exception of groundwater.

- ✓ **Wherever possible, all piped watercourses should be returned to their natural state.**

Groundwater

The most abundant quantity of fresh water in the Halifax Regional Municipality is stored in the ground in bedrock fractures and in the pore spaces in the soil. Protection of these underground water storage systems (aquifers) from environmental damage requires careful study and cooperation from every land user. Even a small spill of gasoline can cause a major contamination of groundwater. Effluent from septic tanks can result in water quality problems in adjacent wells. Road salting is also a concern since it makes freshwater more saline. Taking water out of the aquifer (particularly when a number of wells are located close together) can change the water flow patterns below ground and affect the overall supply.

Measures can be taken to mitigate the impact of development on the groundwater system but they cannot be relied upon as the only water protection plan for individual water supplies. The most important protection is provided by the well owner; therefore:

- ✓ **All citizens should be aware of any water supply well they have on their property. Well owners should be careful not to use chemicals or other materials near the well that could result in a water quality problem.**

- ✓ **Anyone with a concern about their well should contact Nova Scotia Environment and Labour in their area for assistance.**

Landscaping and Lot Maintenance

After a new area has been developed, long term landscaping and lot maintenance has traditionally involved the use of a wide variety of chemicals. Runoff laden with fertilizers and pesticides presents an ever-growing problem to watercourses and estuaries. Care in the planning and design stages can greatly help to reduce the amounts of chemicals used in landscaping and lot maintenance. For example:

Sodded areas:

Sod requires constant maintenance in the form of cutting, fertilizing, and pest control. Natural areas do not require the use of chemicals. Adjacent to watercourses, they cool the run-off and filter out contaminants. Rainfall is more readily absorbed into the ground in natural areas and vegetation slows down the rate of runoff thereby assisting in the prevention of erosion and/or flooding; therefore,

- ✓ **The extent of sodded areas should be reduced to allow increased naturalization; this is especially important around watercourses.**

Treatment of Pests and Weeds:

The use of natural methods to control pests and weeds are seen as being favourable over the application of certain types of chemicals that may adversely impact water quality. HRM has strict controls on the application of pesticides (and herbicides) through its "Pesticide By-law (P-800)", which prohibits the application of certain chemicals without a permit. HRM is also a resource for information on alternative methods of pest and weed control through a list of permitted treatment applications, a "Sustainable Maintenance Tips" brochure and other documentation. All of these are available from the HRM website under Environmental Management Services.

- ✓ **Natural means to control pests and weeds should be used wherever possible.**

Winter Maintenance:
During the winter months, the use of salt as a de-icing agent may result in salt-laden run-off into water bodies. Salt has been designated as a toxic substance under the Canadian Environmental Protection Act; therefore:

✓ **The use of salt as a de-icing agent should be avoided wherever possible.**

Planting for soil and site conditions:
Incorrect plantings will usually fail to adapt to new conditions or rely heavily on chemical supplements to survive. Today many plants are sold based on their ability to grow in dry or wet conditions, shade or sun, sand or clay type soils; therefore:

✓ **Native species appropriate to the site conditions should be used where possible.**

Run-off:
Water passing over roadways accumulates a high level of oils, fuels, metals, dirt, and other contaminants. When they are flushed into a watercourse, they are at high concentrations and can adversely affect water quality. In addition, rain falling on hot pavement will enter local watercourses at elevated temperatures. These elevated temperatures can kill fish and cause heavy weed growth that displaces natural species, especially in shallow waters. Natural areas trap and filter silt and treat contaminants and the shade from trees and shrubs adjacent to the watercourse helps maintain water temperature, thus sustaining a healthy aquatic habitat; therefore:

✓ **Run-off should be directed to natural vegetated areas before entering a watercourse.**

Glossary of Terms

erosion
The detachment of soil particles by erosive forces, primarily wind, water, ice and gravity. (Source: Erosion and Sedimentation Control Handbook for Construction Sites, Nova Scotia Department of the Environment)

erosion & sedimentation control plan
A plan which identifies potential problem situations and recommends remedial actions to prevent erosion and the sedimentation of watercourses.

floodplain
The area of land around a watercourse or water body that has a statistical chance of being inundated by water.

ground water
All water naturally occurring under the surface of the Province. (Source: Environment Act, Province of Nova Scotia, 1995)

ordinary high water mark
The accepted normal point of highest water in a watercourse during an average year.

runoff
The portion of precipitation on a drainage area that is not absorbed into the ground but is discharged into streams. Components of runoff include overland flow (sheetflow), open channel flow and ground water flow. (Source: Erosion and Sedimentation Control Handbook for Construction Sites, Nova Scotia Department of the Environment)

sedimentation or siltation
Transportation and deposition of soil particles that become detached through erosion. (Source: Erosion and Sedimentation Control Handbook for Construction Sites, Nova Scotia Department of the Environment)

stabilization
The process of establishing an enduring soil cover of vegetation and/or mulch or other ground cover in combination with installing temporary or permanent structures for the purpose of minimizing soil erosion. (Source: Erosion and Sedimentation Control Handbook for Construction Sites, Nova Scotia Department of the Environment)

1:20 year floodplain
The frequency of a flood of a certain magnitude (to that locale) to occur and cause flooding of the floodplain to a determined depth for that locale. There is a 5% chance of a flood of that magnitude in any given year.

1:100 year floodplain
The frequency of a flood of a certain magnitude (to that locale) to occur and cause flooding of the floodplain to a determined depth for that locale. There is a 1% chance of a flood of that magnitude in any given year.

watercourse
The bed and shore of every river, stream, lake, creek, pond, spring, lagoon or other natural body of water, and the water therein, within the jurisdiction of the Province, whether it contains water or not, and all ground water. (Source: Environment Act, Province of Nova Scotia, 1995)

wetland
Lands commonly referred to as marshes, swamps, fens, bogs and shallow water areas that are saturated with water long enough to promote wetland or aquatic processes which are indicated by poorly drained soil, vegetation and various kinds of biological activity which are adapted to a wet environment. (Source: Environmental Assessment Regulations pursuant to the Environment Act, Province of Nova Scotia, 1995.)

Important contacts and phone numbers...

HALIFAX REGIONAL MUNICIPALITY:

Development Services (for info on development/building permits and subdivision):		
(Eastern Region)	Building Permit Process	490-4490
	Subdivision	490-4435
(Central Region)	Building Permit Process	869-4375
	Subdivision	869-4380
(Western Region)	Building Permit Process	490-5650
	Subdivision	490-5650
Planning Services (for info on land use planning issues and initiatives):		
(Eastern Region)		490-4472
(Central Region)		869-4260
(Western Region)		490-4393
HRM Call Centre		490-4000
HRM website:		www.halifax.ca

DIRECT REGULATORY AUTHORITIES (PROVINCIAL/FEDERAL):

Nova Scotia Department of the Environment, Central Region (for information and permits on alteration of watercourses & wetlands)	424-7773
Coast Guard (Fisheries & Oceans Canada) (for information and permits on alterations (wharves, etc.) affecting navigable waters)	426-2726
(for 24 hour environmental pollution reporting)	1-800-565-1633
Fisheries & Oceans Canada, Habitat Management Branch (for information and permits (thru NSDOE) on fish habitat and alteration of habitat)	426-4612

AGENCIES FOR INFORMATION AND ADVICE:

Environment Canada (for general information)	426-7231
Nova Scotia Department of Natural Resources	
Coastal and Tidal Waters Section (for general information)	424-3160
Wetlands (for classification and information)	679-6224
Nova Scotia Department of Agriculture (for information on natural pest controls & organic fertilizers)	1-877-461-6545

HALIFAX WATERSHED ADVISORY BOARD*:

Sheilagh Edmonds (HRM)	490-6520

* There are a number of local and community based watershed protection groups represented on the Watershed Advisory Board. Information about these groups and contact names available on request.