

**STAFF REPORT:      Engineering & Public Works Department**

**REPORT TO:**            Infrastructure & Recreation Committee  
**MEETING DATE:**    April 12<sup>th</sup> 2011  
**REPORT NO.:**        EPW.11.019  
**SUBJECT:**            Stormwater Management Facility Use  
                                 Restrictions  
**PREPARED BY:**     Jim McCannell, Manager of Roads and  
                                 Drainage Division

**A. Recommendations**

THAT Council enact a By-law to establish restrictions on uses permitted on and around stormwater management facilities owned by the Town, as detailed in Staff Report EPW.11.019, entitled "Stormwater Management Facility Use Restrictions".

**B. Background**

A stormwater management facility (SWF) is a man-made feature designed to catch and detain run-off from significant storm events within a designated catchment area.

An SWF can take the form of a Dry Pond which is a shallow area within a development area that is designed to be dry most of the time and in the case of a storm event, will store and slowly release run-off into a receiving watercourse at a reduced rate to prevent flooding. An Infiltration Pond is a type of Dry Pond that is designed for the same function but allows water to infiltrate slowly as groundwater rather than be released.

A Wet Pond is designed to have a permanent pool area which will have varying water levels depending on storm events and will store and slowly release run-off from a storm event similar to a Dry Pond.

Stormwater runoff can wash pollutants such as gasoline, oil, fertilizers and pesticides into storm sewers and ditches, where it can be directed to an SWF. Once collected in an SWF, runoff water can settle and biological processes can act to remove most of the pollutants if the facility is left undisturbed. As a result, it is recommended that human activity be restricted on such facilities for several reasons including; i) to allow the facility to function undisturbed, ii) to protect people from contacting any sort of pollutants, and iii) to protect people from the drowning hazards. Walking or ice skating on ice covered SWF shall not be permitted due to the risks associated with falling through the ice. The ice thickness can vary greatly from natural ponds and is not predictable due to rain or melt events.

Restricting activity that might impact an SWF would encourage and support the development of a habitat area intended to represent a natural ecosystem.

Human activity such as trails and walkways could be established around such habitat areas to encourage activities identified in the Leisure Activities Plan such as walking, bird-watching.

At present, the Town owns one stormwater management facility, being an Infiltration Pond located on Block 46, Registered Plan 1118, Alexandra Way. At least two more SWF's are proposed in new developments and more may be proposed in the future.

There are privately-owned SWF's located in the Town, either on condominium lands or serving development adjacent to a golf course. The proposed By-law is intended to address only Town-owned SWF's as the private SWF's are privately accessed and managed.

Staff will develop appropriate signage to warn of the dangers of the facility and that use is restricted by by-law.

### **C. The Blue Mountains' Strategic Plan**

Establishing restrictions on human activity on SWF's so as to promote public health and preserve habitat features would address the Town's Strategic Goal No. 1, "Managing growth to ensure the ongoing health and prosperity of the community" and Goal No. 3, "Preserving and enhancing natural and environmental features and cultural heritage of the community".

### **D. Environmental Impacts**

Positive in terms of the biological activity in the SWF that would naturally remove most of the pollutants in run-off if the facility is left undisturbed. Further, establishment of SWF's as habitat areas would provide opportunities for wildlife. Public safety is the primary reason for restricting access to SWFs.

### **E. Budget Impact**

Cost of signage for stormwater management facilities estimated at less than \$1,000 installed at each facility.

### **F. Attached**

1. Excerpt, City of Ottawa, Stormwater Facilities.
2. Fact Sheet, Town of Milton, Stormwater Management Facilities.
3. Draft By-law to regulate and prohibit activity on lands containing a Town-owned stormwater management facility.

Respectfully submitted,

***Jim McCannell***

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***Reg Russwurm***

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Director of Engineering and Public Works



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## Stormwater Facilities

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### Why do we have Ponds in our neighbourhoods?

Before an area is developed, rainwater can readily soak into soils, be absorbed by trees and other plants, evaporate into the air, or travel over land to receiving streams, lakes, rivers or wetlands. When an area is developed with driveways, buildings and roads, the rain can no longer easily soak into the soil and travels over these impervious surfaces as runoff, reaching a waterway much more quickly. This runoff also collects various pollutants (dirt, phosphorous, nitrogen) and debris (grass-clippings, paper, cigarette butts) as it flows over these surfaces, resulting in polluted water. Stormwater facilities (ponds) are built to temporarily hold this water, often providing treatment to remove the pollutants, then slowly release it back to the waterway, mimicking the natural runoff rate and quality before development occurred. Without stormwater ponds, a large amount of water would enter a stream all at once, causing flooding and stream bank erosion.

### What types of Stormwater Management Practices are implemented in our City?

To improve water quality and protect our natural waterways, regulations require the implementation of suitable Stormwater Management Practices within an urban setting. Stormwater management practices are typically implemented in a variety of ways depending on a number of local factors. These practices are typically characterized as:

- Lot-level or Source controls;
- Conveyance controls; and
- End-of-pipe stormwater facilities.

#### Lot-level Controls

Lot-level controls for stormwater involve practices and measures that can be implemented on the individual household lot basis that help to control stormwater before it reaches the storm sewer. These measures help to reduce the amount and rate of runoff coming off our properties, as well as helping to reduce the type and amount of pollutants the runoff carries.

An effective education and public awareness program is an important tool to educate people on the significant role they can play to help reduce stormwater pollution by changing certain everyday habits. For example, as a homeowner, you can:

- Select native and adapted plants species that require less water, fertilizer, and pesticides to thrive;
- Keep litter, pet wastes, leaves and debris out of street gutters, storm catchbasin and ditches, as these often discharge directly to streams, rivers, lakes and wetlands;
- Apply lawn and garden chemicals sparingly and according to directions;
- Dispose of used oil, antifreeze, paints, and other household chemicals properly, not into catchbasins or ditches; (See [Take it Back! Directory](#))
- Clean up spilled brake fluid, oil, grease, and antifreeze. Do not hose them to the street where they can eventually reach local streams and lakes;
- Control soil erosion on your property by planting ground cover and stabilizing erosion-prone areas; and
- Take your car for washing at a commercial car wash facility. Washing cars on driveways or streets means that

the cleaning products will flow directly into the storm sewers or ditches and into a nearby stream, lake, and river. Using a commercial car wash facility will ensure that the water and pollutants go to a wastewater treatment facility before entering local water bodies.

### Conveyance Controls

Conveyance controls are the measures implemented as the runoff travels down sewers and backyard or roadside swales. These measures help to infiltrate the runoff back into the ground, reducing the volume of runoff and improving its quality. These measures include pervious pipe systems (they have holes in them that allows the water to infiltrate into the surrounding soil), pervious catchbasins, and grassed swales with gentle slopes. Special chambers may also be installed in the storm sewer system that removes oil, debris and large sediment as the runoff travels down the pipe.

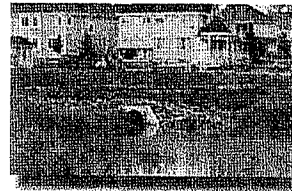
### End-of-Pipe Stormwater Facilities

End-of-pipe stormwater facilities are the man-made ponds we see in our neighbourhoods. These receive stormwater runoff from a storm sewer or ditch, hold the water back for a period of time to allow pollutants to settle, and then discharge the treated water back to the receiving watercourse at a controlled rate to prevent flooding and erosion. There are three main types of stormwater facilities and their names reflect their major differences.

*Dry Ponds:* Dry ponds, as the name implies, are designed to be dry most of the time, and are typically constructed in neighbourhoods to temporarily detain water to prevent overloading the storm sewer system, reducing flooding in large storm events. The stored water gets released back into the storm sewer system at a reduced rate, preventing downstream flooding. These facilities are often incorporated as depressions in parks or adjacent to roadways. You may have one near your home and not even know it is there! When designed for both flood control and water quality improvement, they are also known as dual-purpose or extended-detention basins. Vegetation on the bottom of a pond helps improve sediment capture and remove nutrient pollutants.

*Infiltration Ponds:* A special type of dry pond is called an infiltration pond. With an infiltration pond, collected stormwater infiltrates into the ground, improving water quality by filtering the runoff as it slowly passes through the soil. These ponds are also capable of recharging or replenishing the groundwater table. Suitable sandy soils are required for these special facilities, and are thus not common in the Ottawa area.

*Wet Ponds:* Wet ponds are those ponds that you see that always have water in them. The water levels rise and fall with each storm event, but they always retain a certain volume of the water (known as the permanent pool) and may include man-made wetland features as part of their design. Some of the larger facilities incorporate sophisticated control and monitoring systems with automatic gates to monitor and regulate the discharge. Wet ponds are intended to mimic natural lakes and often have healthy aquatic ecosystems, including fish, bird and waterfowl populations. Recreational pathways are commonly incorporated into the designs and can be beneficial amenities to a community.



### But what about mosquitoes?

A common concern we hear is that the ponds breed mosquitoes. This is not the case, as mosquitoes require stagnant water to develop. The ponds are always exposed to wind causing water currents to develop. The wet ponds, although they may look like they are not flowing, always have some water coming in from the upstream storm sewer, and some water flowing out, thus preventing mosquito development.

### So how many stormwater ponds do we have in the City?

The City of Ottawa owns and maintains over 150 stormwater facilities (plus a lot more private facilities serving commercial and industrial buildings), ranging from small dry ponds to very large wet ponds and artificial wetlands. Most neighbourhoods built since the early 1980's have had some sort of ponds incorporated into them. Some dry ponds also provide for recreational uses such as baseball and soccer fields. Wet ponds are often constructed adjacent to parks and include walking paths to allow you to view and enjoy the birds and animals that will inhabit the facility. Please note however that they are not suitable for swimming, fishing or boating, and no camping is permitted. Next time you are out for a walk, have a look around and see if you can discover all the facilities in your neighbourhood.

## Stormwater Management Facilities Ponds and creeks that protect our watershed

Throughout new subdivisions in Milton, you will see stormwater management facilities often incorporated in the parks and trails system. These facilities serve a variety of environmental purposes. In past development, rainfall runoff from the new hard surface areas would wash pollutants such as gasoline, engine oil, fertilizers and pesticides directly into our streams and lakes without being treated. This runoff would also increase water levels in creeks and streams, resulting in erosion and flooding downstream.

Today, we minimize these problems through the design and installation of stormwater management facilities. The engineered creeks and ponds are intended to replicate a natural environment and do not require routine maintenance such as grass and weed cutting.

The stormwater ponds act as temporary holding areas for rainfall runoff after rainstorms in order to prevent flooding. Biological processes help to remove most of the pollutants in the runoff so the water flows out of the pond much cleaner than when it entered. Essentially, the vegetative buffer around the pond, including the aquatic plants, act as an "environmental clean-up crew."

Plants within the facility are chosen because they naturally break down contaminants like lawn fertilizers and convert their energy into new plant stalks and leaves. Any sediment that does reach the pond will settle to the bottom, and the cleaner surface water will be released slowly to neighbouring creeks and rivers.

These facilities in Milton complement our park, trail, and open space system as they grow into attractive, naturalized areas.

To ensure these ponds function according to their design, please:

- Do not cut grass or remove any vegetation within the storm pond area as this is considered vandalism.
- Do not dump garbage, including grass clippings, yard waste, and other compost into and around the storm pond area.
- Do not pour waste or contaminants into catch basins as these will end up in our pond and eventually our rivers and lakes.

### Typical Flora and Fauna

#### Wood Frog

Wood Frogs are one of the many frog species that can be found in this area.



#### Red-winged Blackbird

Red-winged Blackbirds are often found in wetlands and areas, as they prefer to live near ponds near the water.

#### Great Blue Heron

Great Blue Herons are often found in wetlands and areas, as they prefer to live near ponds near the water.



#### Canada Waterweed

Canada Waterweed is a common aquatic plant found in ponds and streams.

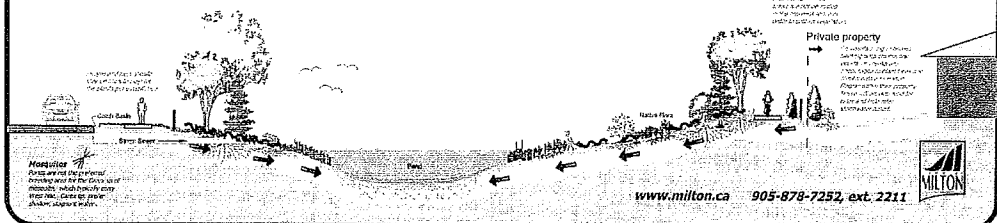
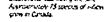


#### Red Osier Dogwood

Red Osier Dogwood is a common shrub found in wetlands and areas.

#### Willow

Willow is a common shrub found in wetlands and areas.



**THE CORPORATION OF THE TOWN OF  
THE BLUE MOUNTAINS**

**By-law No. 2011 –**

Being a By-law to regulate and prohibit activity in and around stormwater management facilities

**WHEREAS** section 11 of the Municipal Act, 2001, S.O. 2001, c. 25, as amended, enables the council of a municipality to pass by-laws regarding drainage and flood control and the health, safety and well-being of persons;

**AND WHEREAS** it is desirous to regulate and prohibit certain activity in and around stormwater management facilities for the health, safety and well-being of persons;

**NOW THEREFORE the** Council of the Corporation of the Town of The Blue Mountains hereby enacts as follows:

**1. DEFINITIONS**

Stormwater management facility: shall mean a Town-owned, man-made facility designed and constructed to receive stormwater runoff from a storm sewer or ditch and to hold the water back for a period of time to allow settling and infiltration and to discharge the runoff water back to a receiving watercourse or ditch or storm sewer at a controlled rate to prevent flooding and erosion. A stormwater management facility may include a dry pond, an infiltration pond or a wet pond.

Dry pond: shall mean a pond area that is designed to be dry most of the time and to detain stormwater during large storm events and to release the stored water into a receiving watercourse or ditch or storm sewer at a reduced rate to prevent flooding.

Infiltration Pond: shall mean a special type of dry pond that is designed to collect stormwater and store it until it infiltrates into the ground.

Wet Pond: shall mean a pond that is designed to collect stormwater and to have a permanent pool area which will have varying water levels with each storm event and to discharge a certain amount of runoff water back to a receiving watercourse or ditch or storm sewer at a controlled rate to prevent flooding and erosion.

**2. In, on or around a stormwater management facility, no person shall:**

- a) have or make direct contact with water contained in such a facility;
- b) operate any sort or type of boat including a sailboard or kiteboard in such a facility;
- c) operate any sort or type of vehicle in such a facility;
- d) have or make direct contact or walk or skate on ice in such a facility.

**3. This By-law shall come into full force and effect upon the appropriate signage being placed by the Town identifying the stormwater management facility and noting the restrictions contained in Clause 2 of this By-law.**

**4. Any person who contravenes any of the provisions of this By-law is guilty of an offence and upon conviction is liable to a fine as provided for in the Provincial Offences Act.**

Enacted and passed this day of , 2011

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Ellen Anderson, Mayor

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Corrina Giles, Clerk