



A GENERAL GUIDE TO

UNDERSTANDING THE EROSION & SEDIMENT CONTROL (ESC) BY-LAW

What is the ESC By-law?

As a result of poor soil management, historical construction practices often resulted in significant stormwater pollution entering the City's drainage system. Eroded soils that enter the City's drainage system cause considerable damage and maintenance issues. In early 2007 following consultation with the development community, the BC Ministry of Environment, and the Department of Fisheries and Oceans Canada, the City enacted the Erosion and Sediment Control (ESC) By-law.

The ESC By-law establishes mandatory standards that apply to all construction within the City, ensuring that Best Management Practises (BMP's) are implemented and managed at all times during construction. These standards are to make sure that sites comply with the discharge limit specified within the by-law.



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Engineering Department
City of Surrey

This guide provides an overview of the City's Erosion and Sediment Control (ESC) By-law and its implications for construction projects.

Does this apply to your project?

This by-law is applicable to all construction projects within Surrey that will disturb the existing ground cover, either natural or manmade, and that has the potential to permit sediment to enter the City's drainage system.

What's Inside

- Allowable water quality discharge limit
- Construction site requirements
- Understanding the impacts of poor site practises



The above image provides an example of different water quality. The bottle on the left is drinking water, the next bottle shows the allowable limit while the last two show what often flows off poorly managed construction sites.

The By-law's Water Quality Discharge Limit

The by-law **prohibits** sediment or sediment-laden water in **concentrations greater than 75 milligrams per litre (mg/L)** of Total Suspended Solids (TSS) to enter the City drainage system.

Field measurements used to determine compliance are done using a handheld meter that uses Nephelometric Turbidity Units (NTU's) as a quick reference. If the sample shows a high turbidity reading greater than 65NTU's then a sample is sent to the lab to determine the TSS value. NTU's are a measure of the cloudiness or haziness of the water caused by the amount of soil in the water.

TSS assesses the amount of solids present in a water sample by weight. At the lab, water samples are passed through a 1 micron filter to capture the soil particles that are suspended in the sample. Once the filter is dried, a weight of the soil collected can be determined by comparing the pre-filter and after filter weights. If this test returns a result exceeding the allowable discharge limit then the City will follow up with by-law enforcement.

Construction Site Requirements

The ESC By-law has two compliance components. The first relates directly to the water quality leaving the construction site by setting a threshold limit of the allowable level of soil pollution (refer to the information to the left). The second generates the most noticeable implications when it comes to construction projects this is the requirement for Best Management Practices to be implemented and managed during construction.

The requirements to implement BMP's under the by-law are based on a tiered structure that determines the level of regulation based on the size of the property/area of construction. All sites, no matter the size are required to implement BMP's. Which BMP's are necessary are defined by your site size.

In order to understand what the regulatory requirements are for your construction project, you need to determine if the project results in a total disturbed area of **less than** or **greater than** 2000m² (approximately half an acre).

This area requirement is set as a trigger point at which the level of potential risk of soil pollution and the capability of standard BMP's require different levels of expertise and supervision.

Projects Less than 2000m²

Projects that are less than 2000m² are customarily less complex by nature and the area of construction and construction scenarios are able to be managed using commonly prescribed BMP's. If your project is less than 2000m² then please refer to the General Guide to Erosion & Sediment Control on Small Construction Sites.

Projects Exceeding 2000m²

Projects equal to or exceeding this area are deemed to be more complex and require detailed plans with appropriate BMP's to manage site sediment discharge around the proposed construction. If your project is equal to or greater than 2000m², please refer to the General Guide to Erosion & Sediment Control on Large Construction Sites.



Understanding the Impact of Poor Site Practises

While erosion is a natural process, in urban environments the single most significant source of soil pollution in water courses is from construction sites. Studies have shown that the same amount of soil is eroded from a construction project that would have eroded from the same area over a period of more than 60 years. Once this material leaves the construction site, the cost of repairing the damage is passed to the surrounding residents and the greater community.

The release of soil into the drainage system has two main impacts:

- Impacts to the drainage conveyance system, and
- Impacts on the receiving environment, such as creeks & streams.

Sediment that accumulates in the drainage system impedes the system's capacity to carry stormwater during rain events. This can result in flooding and damage to public and private property. Associated with this impact is a considerable cost to the City to remove this accumulated sediment from pipes, catch basins and drainage control structures.

Once sediment, either suspended or settled, reaches the receiving environments, it has considerable impacts on the aquatic organisms that live in Surrey's streams. Other pollutants such as oils, hydrocarbons, metals and pesticides often are transported attached to soil particles carried to and accumulating in the streams. Suspended soils also stress aquatic life, both plant and animal alike, resulting in lower growth rates and higher mortality rates. During salmon spawning in Autumn through to the following Spring, salmon eggs are especially sensitive to poor water quality and smothering that occurs as sediment settles. These environmental impacts have a far reaching intrinsic cost to the greater community, and can be attributed back to a poorly managed construction sites.



This image shows sediment that is beginning to accumulate in the pipe system.



Turbid water that enters the local creeks and stream does considerable damage to the aquatic ecosystems. While it may not be apparent at first, many of these streams take decades to recover.

Frequently Asked Questions

What is classed as construction?

Construction refers to any clearing, excavating, depositing soil, building, landscaping, or any other activity which may cause sediment or sediment-laden water to discharge into the City drainage system.

Who is responsible under the By-law?

The by-law applies to all construction personnel and anyone who permits or causes an offence against the by-law is liable for possible charges. Ultimately, the Property Owner, Builder and/or Developer are deemed primarily responsible to ensure that their construction project is managed in strict accordance with this By-law.

Doesn't this add a cost to my project?

As with everything there is an associated cost. Erosion and Sediment Control has been shown to add between 1 to 2 % to the total cost of construction. If done effectively it can often result in cost savings as it improves wet weather access, reduces costly cleanup, and adds marketing value for potential buyers. These costs are applied to all construction projects, private and public, ensuring that it is a level playing field across the industry. While cost avoidance may seem appealing, the cost of non-compliance will result in fines, site closures, and cleanup costs being charged back to the project by the City.

Isn't Catchbasin protection alone adequate?

No, catchbasin protection is only able to target the larger suspended solids and often can't deal with the volume of water. Using these devices alone will not address the problem and will not achieve compliance with the By-law.

Where can I find more information?

The City has further information about Erosion and Sediment Control available on the City's website at www.surrey.ca/esc. There are also a number of other guides that are part of this information series. Outside of the City, there are a large number of product suppliers, professionals, training providers and associations like the PNWIECA that offer additional resources.

For more information

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