

EROSION AND SEDIMENT CONTROL REQUIREMENTS

for Large Projects of Three Units or More, Streamside Developments, and Projects on Steep Slopes or with Slope Instability as Identified by a Geotechnical Study

Stormwater is collected from the City's impermeable surfaces, and then flows through ditches and underground storm sewers, eventually discharging into streams and the Burrard Inlet. Pollutants can be transported through the stormwater system, harming fish and other aquatic organisms. The purpose of this guide is to inform applicants of their responsibility to keep their work-sites tidy and prevent the discharge of any *Prohibited Substances* (soil, sand, concrete, dirty water, oil, paint, etc.) into the City drainage system.

Allowing a prohibited substance to enter the City drainage system is a significant environmental concern, and a violation of the Stream and Drainage System Protection Bylaw, No. 7541, 2003.



For a City Permit (Demolition Permit, Building Permit, etc.) on large projects of three units or more, streamside developments, and projects on steep slopes or with slope instability as identified by a geotechnical study, applicants must:

- Submit an Erosion and Sediment Control (ESC) Plan in compliance with the requirements of the "Stream and Drainage System Protection Bylaw, No. 7541, 2003".
- Submit a Letter of Undertaking signed by a Qualified Environmental Professional, who commits to accept responsibility for the management of the ESC Plan.
- Develop an ESC monitoring program with reports submitted to the City's Engineering Department (esc@cnv.org) within one week of each site inspection.
- Mitigate the ESC issues on the site to the City's satisfaction.

**Prohibited Substances are Prohibited Substances as defined in the Stream and Drainage System Protection Bylaw, No. 7541, 2003. Penalties for discharge of a prohibited substance include fines of up to \$10,000 per offence. As the City drainage system is connected to fish-bearing streams and Burrard Inlet, any discharges to the storm drains are also prohibited under the Federal Fisheries Act, with fines of up to \$300,000 for first time offences.*

Erosion and Sediment Control Plan Requirements for large projects

The Erosion and Sediment Control (ESC) Plan must include all of the works and measures required during all phases of the construction work to prevent the discharge of prohibited substances to the drainage system. The ESC Plan shall be designed, signed and sealed by a Professional Engineer or Certified Professional in Erosion and Sediment Control (CPESC), and be reviewed and signed by the ESC Monitor.

The ESC Plan shall include the following information:

1. Four-stage ESC Plan (Demolition, Civil Construction, Maintenance and ESC Deactivation), with all proposed ESC measures for each stage and implementation timing;
2. Detailed design drawing(s) showing the location of:
 - a. property line(s) and legal designations of the subject property or properties;
 - b. existing underground services and proposed connections to existing services;
 - c. existing catch basins and drainage infrastructure, and proposed protection measures;
 - d. existing and proposed watercourses, ditches, swales or other bodies of water within 100 m of the site boundaries, and proposed protection measures;
 - e. existing and proposed buildings or ancillary buildings or structures;
 - f. existing and proposed contours and relevant spot elevations;
 - g. proposed limits of disturbance for each phase of development;
 - h. anticipated soil type in areas to be disturbed and at all depths to be excavated;
 - i. proposed site access location(s) and protection measures to prevent sediment from being tracked off-site; and
 - j. proposed ESC measures;
3. Detailed plans, specifications and design calculations necessary to describe works required to convey, control and treat suspended solids in run-off water from the site;
4. A detailed cost estimate for the installation, maintenance and removal of ESC measures;
5. An ESC monitoring program (see next page for details);
6. An operation and maintenance program during all phases of the construction work that contains a maintenance schedule, methodology and maintenance designee's name, address and emergency contact telephone number;
7. The proposed methods to restore disturbed areas following the completion of the development; and
8. A letter of undertaking signed by a Qualified Environmental Professional who commits to accept responsibility for the management of the ESC Plan, including:
 - a. Conducting a pre-construction inspection of initial ESC Measures installation to ensure accordance with the approved ESC Plan;
 - b. Periodic inspection of construction work to ensure that the materials entering the Drainage System are in compliance with the *Stream and Drainage System Protection Bylaw*.
 - c. Conducting a post-construction inspection of ESC Measure deactivation and removal.

Monitoring Program Requirements for large projects

All large projects (three-unit or greater) require regular inspection of the construction work and the water quality in the receiving environment until at least 90% construction completion. The purpose of the Erosion and Sediment Control monitoring program is to ensure the ESC Plan is implemented, the ESC measures are maintained, and the site is compliant with the Stream and Drainage System Protection Bylaw, No. 7541, 2003 for the duration of the project.

Monitoring Frequency

Monitoring shall occur, at minimum, weekly during wet months (October – April), bi-weekly during dry months (May – September), and during or within 24 hours following a significant rain event (>24mm in 24 hours). *City rain station data can be accessed through [FlowWorks](#) (user: cnvrain; pw: Abcd1234)*

Water Quality Testing

At minimum, water quality tests for Turbidity and pH must be taken for any site runoff or water discharged from site. All water leaving the site must be:

1. Less than 100 Nephelometric Turbidity Units (NTU) during and for 24 hours following a significant rainfall event;
2. Less than 25 NTU during any other time; and
3. Within the pH range of 6.5 to 8.

Reporting

Reports shall confirm whether the site follows the Erosion and Sediment Control Plan and ensure compliance with the Stream and Drainage System Protection Bylaw, No.7541, 2003. Reports shall include the following:

1. Weather conditions at time of inspection;
2. Amount of rainfall in the 24 hours prior to inspection;
3. A description of current construction activities;
4. Confirmation that each of the ESC measures outlined in the ESC plan are installed and maintained;
5. Water quality test results;
6. Captioned photos showing, at minimum:
 - a. the current construction activity;
 - b. all access/egress points and condition of offsite road(s);
 - c. any stockpiles on site;
 - d. the condition of catch basins and catch basin socks;
 - e. the location of any water quality tests taken; and
 - f. the condition of any other site-specific ESC measures (silt fences, swales, etc.); and
7. Any recommendations to ensure compliance with the ESC plan and applicable legislation.

All reports are to be submitted to the City's Engineering, Parks & Environment Department (esc@cnv.org) within one week of each site inspection. Report document name should include the Development Engineering Works Number, site address, inspection date, and report number (Example: DEW2020-12345 - 150 E 2ND - 2020-06-01 - ESC Report #23).

Monitoring Program Requirements for large projects continued...

Removing Sediment Tanks

Send a request to esc@cnv.org to seek approval for sediment tank removal. Sediment tanks may be removed from site at 90% project completion (in general, meaning that all onsite work is complete, with only landscaping and minor offsite work to be completed). Sediment tanks can only be removed from site prior to 90% completion if:

- The site has a track record of overall ESC compliance;
- The ESC monitor provides written justification to the city for removal; and
- A site visit is conducted by City Staff confirming appropriate timing for removal.

The City may also request 3 samples be taken at varying times and weather conditions to show compliance with the bylaw.

The ESC monitor shall continue to monitor the water quality of any water discharged from site. If future sediment problems arise, sediment tanks may be required back on site.

Removing pH Treatment System

Send a request to esc@cnv.org to seek approval for pH treatment system removal. The pH treatment system may be removed from site at 90% project completion. The pH treatment system can only be removed from site prior to 90% completion if:

- All concrete works (cutting, pouring, etc.) are complete; and
- The ESC monitor provides written justification to the city for removal.

The ESC monitor must continue to test the water quality of any water discharged from site. If in future the pH is outside of the acceptable range of 6.5-8, the treatment system may be required back on site.

Pausing or Terminating Monitoring

To cease monitoring, seek approval from City Environmental Staff by sending a request to esc@cnv.org. For approval:

- All ESC monitoring reports must be submitted;
- Any outstanding ESC Monitoring Report recommendations must be addressed; and
- The site:
 - Must be stable with no work occurring for a period of 1 month or longer; or
 - Must have reached 90% project completion.

The site must continue to follow the Erosion and Sediment Control Plan and stay in compliance with all applicable legislation for the remainder of the project.

Erosion and Sediment Control Guidelines for large projects

Erosion and sediment control measures must be installed and must meet or surpass the standards outlined in the Fisheries and Oceans Canada "Land Development Guidelines for the Protection of Aquatic Habitat". The objectives are to minimize erosion and release of sediment off-site by controlling the development and construction activities. Source erosion control measures, outlined in guidelines 1-4 below, should be used as a primary method, with sediment control measures, outlined in guidelines 5-8, used as a secondary control method.



1. Minimize Surface Disturbance

- Design and layout the building site to minimize impervious areas.
- Phase construction to limit the total area disturbed at any one time.
- Retain existing vegetation and ground cover where possible. Use fencing or flagging to restrict access to this area.
- Clearly mark building area and clearing boundaries on-site. Equipment must stay within these limits.

2. Keep Clean Water Clean

- Manage clean surface runoff, preventing clean water from reaching on-site exposed surfaces.
- Use control measures such as interception ditches or berms to divert surface runoff away from exposed surfaces.
- Use a downspout gutter connection to control rooftop runoff.



3. Protect and Cover Stockpiles

- Designate an area for soil stockpiling and keep all materials (e.g. sand, gravel, spoil material, concrete mix) off paved surfaces and as far as possible from the City storm sewer system or watercourses.
- Protect stockpiles with polyethylene tarps. Use rocks, sandbags or pegs to pin the tarps in place.
- Any fill used on site must be inert material, free of contaminants or any other substances deleterious to aquatic life.

4. Stabilize Exposed Soils

- Cover exposed slopes with filter cloth, polyethylene tarps or an alternative erosion control product. Ensure coverings are secure at the end of each day.
- Consider seeding or mulching if exposed soils will sit idle for one month or longer
- Re-vegetate or final landscape disturbed areas as soon as practically possible.





5. Establish Access/Egress Controls

- Install a gravel access pad (min. depth of 30 cm, length of 15 m and rock size of 75 mm clear gravel, with a geotextile liner underlain). If a gravel access pad will not adequately prevent sediment from being tracked off-site, a wheel wash will be required.
- Limit machine access and operation to prepared access areas only. Take care to ensure that no silt or soil is tracked, spilled, or deposited onto the street. Sweep roads at end of each day and as needed.

6. Install Site Specific Sediment Controls

- Note the type of soils, topography, slope and drainage of the site when determining appropriate placement and type of sediment controls.
- Utilize silt fences, swales, and/or check dams on sloped areas.



7. Manage Water Leaving Site

- Install a sediment tank and pH control system to treat sediment-laden and high pH water prior to discharging offsite. Check sediment tank regularly and remove built-up sediment.
- Collect and dispose of concrete or cement wash-water appropriately or take off-site for disposal. Concrete wash-water must not be discharged into the storm drainage system. It is toxic and can alter the pH of the surrounding environment, resulting in the death of aquatic life.

Please note: Filtering concrete wash-water will not remove the poisonous components that kill fish even if the wash-water appears crystal clear.

8. Protect Catch Basins

- Install sediment socks in catch basins on and downslope of the site. To prevent socks from falling into catch basins, socks should have a wire frame.
- Inspect catch basin socks after every rainfall event. Clean or replace as needed.
- Sweep roads to keep dirt and debris out of catch basins. Ensure roads are clean and swept at the end of each day.



Please Note: This bulletin is provided as a reference guide only. It is the responsibility of the applicant to ensure compliance with all applicable by-laws and legislation.