BYLAW NO. 4403, 2013

Consolidated with amendments in Bylaw: (1) 4606, 2015; (2) 5273, 2022; (3) 5391, 2024; (4) 5454, 2025

NOTE: This is a consolidation for convenience purposes only and does not have the force of law.

A Bylaw to protect the stream and drainage systems in the City of Coquitlam

WHEREAS:

A. The *Community Charter*, S.B.C. 2003, c. 26 (the "*Community Charter*") authorizes Council to regulate, prohibit and impose requirements in relation to the protection of the natural environment;

B. The *Community Charter* authorizes Council to prohibit a person from fouling, obstructing or impeding the flow of a stream, creek, waterway, waterworks, ditch, drain or sewer;

C. The *Community Charter* authorize Council to require works and services for drainage collection and disposal; and

D. Council deems it in the best interests of the environmental well-being of the community that streams, creeks, waterways, watercourses, ditches, drains and sewers are protected from pollution, obstructions, sediment, and sediment laden water,

NOW THEREFORE, the Council of the City of Coquitlam, in open meeting lawfully assembled, ENACTS AS FOLLOWS:

1 Name of Bylaw

This Bylaw may be cited for all purposes as the "Stream and Drainage System Protection Bylaw No. 4403, 2013".

2 Interpretation

2.1 In this Bylaw, unless the context otherwise requires, the following words have the following meanings:

CITY means the City of Coquitlam;

CONSTRUCTION means erecting buildings and structures, and installing or repairing services, utilities and other engineering works, and includes but is not limited to, clearing, grading, excavating, filling, soil deposition or removal, landscaping, and land development, but does not include an activity that will not result in the disruption of any soil;

DEVELOPMENT means a subdivision or any *Construction* for which a building permit, conservation permit, development permit or tree cutting permit is required and shall also include the demolition of a building or structure where a demolition permit is required;

DEVELOPER means an owner, as defined in the Local Government Act, R.S.B.C. 1996, c. 323, who subdivides land, or applies for a building permit, conservation permit, development permit, tree cutting permit, demolition permit and includes a duly authorized representative of the Owner;

DRAINAGE SYSTEM means any natural, designed, constructed or installed system or network of streams, creeks, waterways, watercourses, waterworks, ditches, drains or sewers located in the City on private or public property that conveys, or is capable of conveying, drainage or runoff.

DELETERIOUS SUBSTANCE has the same meaning as defined in the *Fisheries Act,* R.S.C. 1985, c. F-14, as amended.

EROSION AND SEDIMENT CONTROL (ESC) FACILITIES means all erosion and sediment control works, measures, facilities and methods constructed, installed or employed to reduce the likelihood of sediment and sediment laden water reaching the *Drainage System* during all stages of *Development*.

EROSION AND SEDIMENT CONTROL (ESC) PLAN means the specifications, drawings, plans, phased *Development* schedules and design calculations of a Professional Engineer or Certified Professional in Erosion and Sediment Control in accordance with Schedule B of this Bylaw.

EROSION AND SEDIMENT CONTROL (ESC) SUBMISSION FORM means the documentation and related submission requirements in the format prescribed for that purpose by the *Manager*.

EROSION AND SEDIMENT CONTROL (ESC) SUPERVISOR means a *Qualified Professional* who meets the qualification requirements and has the responsibilities set out in Schedule "C" – Responsibilities of the Erosion & Sediment Control (ESC) Supervisor;

MANAGER means the General Manager of Engineering and Public Works or his or her designates;

PRE-DEVELOPMENT APPROVAL means *City* acceptance to proceed with *Development* following an on site meeting involving City staff, the *ESC Supervisor* and the *Developer*;

QUALIFIED PROFESSIONAL means an individual, whether acting alone or together with another Qualified Professional, who:

(a) is registered, in good standing, and acting under the Code of Ethics, of one or more of the following professional organizations: Association of Professional Engineers and Geoscientists of BC; Association of BC Forest Professionals; College of Applied Biology; Applied Science Technologists and Technicians of BC;

BC Institute of Agrologists; EnviroCert International (Certified Professional in Erosion and Sediment Control); or BC Society of Landscape Architects,

(b) is registered, in good standing, and acting under the Code of Ethics of the Erosion and Sediment Control Association of British Columbia,

(c) has an area of expertise that is recognized in the field of Erosion and Sediment Control as one that is acceptable for the purpose of providing all or part of the design, inspection and monitoring of *ESC Facilities;*

(d) is acting within their area of expertise; and

(e) is undertaking the activities described in this Bylaw in accordance with the *Joint Professional Practice Guidelines – Erosion and Sediment Control* published by Engineers and Geoscientists British Columbia, The College of Applied Biologists and the BC Institute of Agrologists and as amended from time to time.

REAL-TIME MONITORING FACILITIES means the facilities described in Schedule "D".

SIGNIFICANT RAINFALL EVENT means any precipitation event, which meets or exceeds the intensity of 25 mm per 24 hour period;

TURBIDITY means the measurement of the suspended particulate matter in water, which affects the clarity or degree of transparency of the water by interfering with the passage of a beam of light through the water. Turbidity values are generally reported in Nephelometric Turbidity Units (NTU);

WASTE has the same meaning as defined in the *Environmental Management Act,* S.B.C 2003, c. 53, as amended.

3 Prohibition of Discharge

3.1 No person shall obstruct or impede the flow of the *Drainage System*.

3.2 No person shall place, store, transport or dispose of any *Waste* or *Deleterious Substance* in such manner, so as to permit the likely escape of the materials into the *Drainage System*, or any part of it.

3.3 No person shall cause or permit to be released, directly or indirectly into the *Drainage System* any *Waste* or *Deleterious Substance*.

3.4 Without limiting the generality of s.3.3, no person shall cause or permit to be released, directly or indirectly into the *Drainage System* any sediment, earth, *Construction* or excavation wastes, cement, concrete, or other substances, which when mixed with water, will result in:

3.4.1 a pH value outside the range of 6.5 to 8.0; or

3.4.2 a discharge exceeding a Turbidity level of 25 NTU, except during and for 24 hours following a Significant Rainfall Event a discharge exceeding 100 NTU.

3.5 If during any *Construction* work, any *Waste*, *Deleterious Substance*, or water that exceeds the limits outlined in s.3.4, is being released directly or indirectly into the *Drainage System*, or otherwise impedes the *Drainage System* as described in s.3.1, the *Developer* performing the work must immediately notify the *City*, as well as the appropriate Federal and Provincial agencies.

4 Erosion and Sediment Control (ESC) Requirements

4.1 Every person who proposes to carry out *Development* under a building permit for small-scale residential building containing two or fewer principal dwelling units shall first before carrying out any *Development* on the land:

4.1.1 submit a completed and signed *ESC Submission Form* in the format prescribed for that purpose by the *Manager*;

4.1.2 submit a non-refundable Infrastructure Inspection Fee as specified in the City of Coquitlam *Fees and Charges Bylaw, No. 4338, 2012* as amended; and

4.1.3 install the minimum *ESC Facilities* identified in Schedule A, and ensure these are maintained in good working order during all phases of *Development*.

4.2 Every person who proposes to carry out *Development* other than Section 4.1 shall first before carrying out any *Development* on the land:

4.2.1 submit to the *City* a completed and signed *ESC Submission Form* in the format prescribed for that purpose by the *Manager*, accompanied by:

4.2.1.1 an *ESC Plan* in accordance with Schedule "B" and, if applicable, Schedule "D" of this Bylaw, and to the acceptance of the *Manager*;

4.2.1.2 a certified cost estimate for the *ESC Facilities* design, installation, monitoring, and maintenance;

4.2.1.3 a non-refundable Administration and Inspection Fee as specified in the City of Coquitlam *Subdivision and Development Servicing Bylaw, No. 3558, 2003* as amended; and

4.2.1.4 security deposit in accordance with Section 7;

4.2.2 post on the land, advisory signage, in the format prescribed for that purpose by the *Manager*; and

4.2.3 obtain *Pre-Development Approval* from the *Manager*.

4.2.4 install the *ESC* Facilities identified in an approved *ESC Plan* including, but not limited to, the minimum *ESC Facilities* identified in Schedule A, and ensure these are maintained in good working order during all phases of *Development*.

4.2.5 for *Developments* identified in Section 1 Application of Schedule "D", install the *Real-Time Monitoring Facilities* and ensure these are maintained in good working order during all phases of *Development*.

4.3 Notwithstanding the provisions of Sections 4.1 and 4.2, in the case of *Development* under a building permit for a small-scale residential building containing two or fewer principal dwelling units, the *Manager* may require a *Developer* to comply with one or more of the requirements of Section 4.2 where the *Manager* considers this necessary for the protection of the *Drainage System*.

5 Exemptions From Erosion and Sediment Control (ESC) Submission Requirements

5.1 The *Manager* may waive one or more of the requirements of section 4.2 where in the opinion of the *Manager* the proposed *Development* is in response to an emergency, or can be shown to the *Manager's* satisfaction to have no negative impact on the *Drainage System*.

6 Erosion and Sediment Control (ESC) Implementation, Monitoring and Maintenance Requirements

6.1 Every person who proposes to carry out *Development* is responsible to ensure the site is in compliance with the Bylaw for the duration of *Development*, which includes ensuring that all *ESC Facilities* and *Real-Time Monitoring Facilities* are constructed, installed, implemented, and maintained for the duration of *Development*.

6.2 Where the requirements of section 4.2 apply, the *Developer* must:

6.2.1 appoint an *ESC Supervisor* who is a *Qualified Professional* trained in implementing *ESC Plans*;

6.2.2 ensure the *ESC Supervisor* implements an *ESC Plan* that has been prepared in accordance with Schedule B of this Bylaw;

6.2.3 ensure the *ESC Supervisor* conducts the inspection, monitoring and maintenance of the *ESC Facilities* in accordance with Schedule C of this Bylaw;

6.2.4 immediately notify the *City* and cease *Development*, if for any reason the *ESC Supervisor's* services are terminated or withdrawn, until a replacement *ESC Supervisor* is appointed;

6.2.5 where *Real-Time Monitoring Facilities* are required pursuant to this Bylaw, ensure the *ESC Supervisor* conducts the inspection and monitoring of *the Real-Time Monitoring Facilities* in accordance with Schedule "D" of this Bylaw; and

6.2.6 where *Real-Time Monitoring Facilities* are required pursuant to this Bylaw, ensure the *Real-Time Monitoring Facilities* provider conducts the inspection, maintenance and monitoring of the *Real-Time Monitoring Facilities* in accordance with Schedule "D" of this Bylaw.

6.3 Notwithstanding the provisions of Section 4.2.5 the *Manager* may require the installation of *Real-Time Monitoring Facilities* at any *Development* where one or more of the following conditions are met and the *Manager* considers this necessary for the protection of the *Drainage System*:

6.3.1 on 2 or more occasions, water with a turbidity level greater than 25 NTUs has been discharged into the *Drainage System* when a *Significant Rainfall Event* has not occurred during the preceding 24 hours;

6.3.2 on 2 or more occasions, water with a turbidity level greater than 100 NTUs has been discharged into the *Drainage System*; or,

6.3.3 on 2 or more occasions, water with a pH outside the range of 6.5 to 8.0 has been discharged into the *Drainage System*.

7 Erosion and Sediment Control (ESC) Security Requirements

7.1 The *Manager* may require a security deposit in an amount of 110% of the certified *ESC Facilities* design, installation, monitoring and maintenance cost or $5,000, whichever is greater, to secure the full and proper compliance with the provisions of this Bylaw.

7.2 If the amount of the security deposit is insufficient for the *City* to complete the remedial work, the *Developer*, will pay any deficiency to the *City* on demand.

7.3 When the *Developer* complies with the provisions of this Bylaw the *City* will return the security deposit at such a time as the *ESC Supervisor* provides the *City* with written notice that all *Development* at the site is complete, the site is stable and under control, and no longer poses a threat to the *Drainage System,* and the *ESC Facilities* have been removed to the acceptance of the *Manager*.

8 Remedial Action

8.1 If any person is carrying on any *Construction* work or any activity in contravention of this Bylaw, and which in the opinion of the *Manager* is causing or is likely to result in contravention of this Bylaw, then the *Manager* may order the immediate suspension of all or any portion of such *Construction* work or other activity by posting a notice to that effect at the place where the construction work or other activity is ongoing.

8.2 In addition to the authority of the *Manager* under section 8.1, the *Manager* may direct that steps be taken to prevent further contravention of this Bylaw. The *Manager* shall send a copy of the written notice to the owner of the land where the *Construction* or activity is occurring at the owner's address as it appears on the records of the Land Title Office, or other last known address.

8.3 If in the opinion of the *Manager* immediate steps should be taken to prevent the likely or ongoing contravention of this Bylaw, or if the *Manager* is not satisfied that the owner, or other responsible person, has taken appropriate steps to mitigate the damages, then the *City* may enter onto the property to take such steps as are necessary in the circumstances. The *Manager* must provide written notice of the actions taken or proposed.

9 Offence

9.1 Every person who violates any provision of this Bylaw, or who causes, permits or allows any act or thing to be done in violation of this Bylaw, or who neglects to or refrains from doing anything required to be done by any provision of this Bylaw, is guilty of an offence against this Bylaw and each day that a violation continues is deemed to be a separate offence against this Bylaw.

9.2 Every person who violates a provision of this Bylaw, or who causes, permits, or allows an act or thing to be done in violation of a provision of this Bylaw, or who neglects or refrains from doing anything required by a provision of this Bylaw, is guilty of an offence and is liable, upon summary conviction, to a fine not exceeding the maximum set out in the *Offence Act*, R.S.B.C. 1996, c. 338, as amended.

10 Severance

10.1 The provisions of this Bylaw are intended to be severable and, should any part of this Bylaw be found to be invalid by a court of competent jurisdiction, the finding of invalidity will not affect the validity of the remainder of this Bylaw.

11 Repeal and Transition

11.1 The *City of Coquitlam Sediment Control Bylaw No. 2929, 1995* is repealed in its entirety.

11.2 The *City of Coquitlam Stream and Drainage System Protection Bylaw No. 3447, 2001* is repealed in its entirety.

11.3 Notwithstanding section 11.2 of this Bylaw, the *City of Coquitlam Stream and Drainage System Protection Bylaw No. 3447, 2001* will continue to apply to *Development* work for which a permit, permission or approval of the *City* was required, and for which an application was received by the *City*, prior to the date of final adoption of this Bylaw.

READ A FIRST TIME this 29th day of July, 2013.

READ A SECOND TIME this 29th day of July, 2013.

READ A THIRD TIME this 29th day of July, 2013.

GIVEN FOURTH AND FINAL READING and the Seal of the Corporation affixed this 9th day of September, 2013.

_____ MAYOR

_____ CLERK

Schedule "A" - Erosion & Sediment Control (ESC) Submission Requirements

1. *Development* Requirements

1.1. The ESC provisions of the Stream and Drainage System Protection Bylaw No. 4403, 2013 (the Bylaw) focus on preventing or minimizing the erosion of sediment, earth or soil from *Development* sites and the resulting discharge to the Drainage System. The ESC Submission Requirements apply to the following two categories of *Development*:

1.1.1 A small-scale residential building containing two or fewer principal dwelling units;

1.1.2 All other.

1.2. The submission requirements for these two types of *Development* are detailed in the table below:

Table A-1. ESC Submissions Checklist

Submission Requirement	**Residential with two or fewer principal dwelling units, Demolition**	**All Other**
ESC Submission Form	✓	✓
ESC Plan		✓
ESC Facilities cost estimate		✓
ESC Pre- *Development* Approval Form (Completed at Site with City Staff)		✓
ESC security deposit in accordance with the Bylaw		✓
ESC Assurance Statement in a form acceptable to the City		✓

2. Mandatory ESC Facilities

The following *ESC Facilities* from the City publication *Erosion & Sediment Control Best Management Practices* must be implemented and maintained in good working order for all *Development* sites:

2.1. Clean water management;

2.2. Access/egress controls;

2.3. Perimeter control measures;

2.4. Temporary drainage swale and sump;

2.5. Storm inlet protection (where storm inlets exist);

2.6. Disturbed surfaces protection;

2.7. Paved surfaces sweeping/maintenance; and,

2.8. Any and all other *ESC Facilities* that are necessary to ensure compliance with the Bylaw.

Schedule "B" - Erosion & Sediment Control (ESC) Plan Requirements

1. *ESC Plan* Design & Review

An *ESC Plan* submitted to the City must:

1.1. be designed, signed and sealed by a *Qualified Professional*;

1.2. be reviewed and signed by the *ESC Supervisor*; and,

1.3. conform to the City's design submission requirements outlined in *Schedule A, Part I of Subdivision and Development Servicing Bylaw No. 3558, 2003*, as amended.

2. *ESC Plan* Phasing

2.1. An *ESC Plan* submitted to the City must consist of a multi-stage plan that shows the measures for erosion and sediment control during the following phases (where applicable):

2.1.1 land clearing, grubbing and grading;

2.1.2 the installation of services or infrastructure;

2.1.3 the building construction; and,

2.1.4 the maintenance period.

3. *ESC Plan* Contents

An *ESC Plan* submitted to the City must include all mandatory minimum *ESC Facilities* described in Schedule "A", as well as the following information:

3.1. Facility Locations:

ESC Plans must show details of existing and proposed features including but not limited to:

3.1.1 locations of property line(s) and other legal designations of the subject property or properties;

3.1.2 location(s) of existing drainage infrastructure and the proposed measures to protect it;

3.1.3 location(s) of existing and proposed watercourses, ditches, swales or other bodies of water within 50m of the site boundaries, along with the proposed protection measures;

3.1.4 location(s) of existing underground services, as well as any proposed connections to existing services from the site;

3.1.5 location(s) of existing and proposed buildings, including residential buildings or ancillary buildings or structures;

3.1.6 location(s) of limits of disturbance for each phase of *Development*;

3.1.7 existing and proposed contours and relevant spot elevations;

3.1.8 location of all proposed *ESC Facilities* to be implemented on site, including site access locations, sediment ponds and any necessary wheel wash facilities;

3.1.9 location(s) of water quality monitoring site(s);

3.1.10 specify the appropriate rain gauge to be monitored for SREs;

3.2. Design Basis and Calculations:

ESC Plans must include details of the basis for the design of the *ESC Facilities* and the calculations used to complete the *ESC Plan* including but not limited to:

3.2.1 anticipated soil type in all areas to be disturbed and at all depths to be excavated;

3.2.2 the design calculations, installation specifications and maintenance requirements for each ESC Facility;

3.2.3 the return period and duration of the selected storm event using current/updated rainfall information and the time of year the *Construction* will take place; and,

3.2.4 the anticipated groundwater volumes to be managed on site and describe the measures in place to ensure that the groundwater meets the quality criteria set out in Section 3.4 and any other applicable local, provincial and federal legislation before being discharged to a receiving environment.

3.3. *ESC Plan* Monitoring Information:

ESC Plans must provide the following information regarding performance monitoring:

3.3.1 the name, address and telephone number of the ESC Supervisor;

3.3.2 the proposed monitoring and inspection schedule.

3.4. Design Details

ESC Plans must describe design details including but not limited to:

3.4.1 proposed measures to ensure that any existing ground cover is maintained as long as practicably possible, that work is staged to prevent erosion whenever possible, and that exposed soils are placed under non-erosive cover as soon as possible;

3.4.2 proposed measures to address the erosion and sediment control requirements for clearing limits, cover measures, perimeter protection, traffic area stabilization (including detailed design of any necessary wheel washes), sediment retention, surface water control and dust control, with source controls being the primary method of erosion and sediment control;

3.4.3 for ESC Plans utilizing treatment chemicals, technical specifications including ecological toxicity data from the treatment chemical manufacturer and specifications for the location of treatment and general deployment;

3.4.4 the proposed methods to restore disturbed areas following the completion of *Development* (where applicable, application rates and specifications for mulch must be clearly defined);

3.4.5 a description of the redundancies, contingencies and mitigation measures in place to ensure that in the event that the design storm event/return period is exceeded there are no adverse impacts to ecosystem values, private property or public safety downstream of the property. These measures must consider all water flows to be managed including stormwater, recirculation volumes triggered by the Real-Time Monitoring Facilities and groundwater; and,

3.4.6 all other details pertaining to the proposed *Development*, describing how the *ESC Facilities* will meet the criteria set out in Section 3 of the *Stream and Drainage System Protection Bylaw No. 4403, 2013*.

Schedule "C" – Erosion and Sediment Control (ESC) Facility Monitoring

1. *ESC Supervisor* Responsibilities

The *ESC Supervisor* is responsible for ensuring that the *ESC Facilities* are installed, operated and maintained in accordance with the *ESC Plan* and that the *ESC Facilities* are ensuring compliance with the Bylaw. These duties include but are not limited to:

1.1. assisting the *Qualified Professional* in preparing the ESC Plan;

1.2. reviewing and signing the *ESC Plan*;

1.3. attending the pre- *Development* meeting held with the City;

1.4. completing the inspection, monitoring and reporting of the *ESC Facilities* in accordance with this Schedule "C" to ensure *ESC Facilities* are implemented according to the *ESC Plan*, through all phases of *Development*;

1.5. advising the *Qualified Professional* and *Developer* of any deficiencies in the *ESC Plan* or corrective actions required to adapt to changing site conditions or unforeseen problems that arise regarding compliance with this Bylaw;

1.6. requiring the suspension of *Development* based on pending or existing weather conditions or based on unusual, unacceptable or inappropriate *Development* practices to ensure compliance with the Bylaw;

1.7. coordinating the removal of *ESC Facilities* with site decommissioning;

1.8. maintaining a logbook of all inspections, and making the logbook available to the City upon request;

1.9. for any sites with a water treatment system, completing a post-installation water treatment system inspection with the water treatment system provider and, completing, signing and submitting the Water System Verification Form;

1.10. delivering written notice to the City's assigned Engineering Inspector and Environmental Services Division staff when all *Development* at the site is completed, the site is stable and under control and no longer poses a threat to the Drainage System and the *ESC Facilities* may be safely removed;

1.11. the *ESC Supervisor* may delegate site inspections other than the post-installation water treatment inspection to a suitably qualified subordinate. In such a case the *ESC Supervisor* remains responsible for directing the work and must review and sign any data, reports and correspondence submitted to the City.

2. *ESC Supervisor* Qualifications

The Erosion and Sediment Control (ESC) Supervisor must be a *Qualified Professional* who is experienced in implementing ESC Plans. The *ESC Supervisor* must be experienced in the design, monitoring and adaptation of ESC best management practices and all *ESC Facilities* in use at the *Development*.

3. *ESC Facility* Inspection, Monitoring and Reporting

3.1. Purpose

3.1.1 Regular and ongoing inspections of *ESC Facilities* and adhering to the *ESC Plan* are crucial to compliance with the Bylaw. To ensure that the prescribed *ESC Facilities* remain effective, regular inspections and maintenance must be conducted though all phases of *Development*.

3.2. Daily Site Inspections

3.2.1 Daily site inspections must include daily visual checks that target critical areas on and off the site as per the Daily Site Inspection Checklist available from the City's website.

3.2.2 Under the guidance of the *ESC Supervisor*, daily inspections may be conducted by suitably qualified on-site personnel (such as the site superintendent or designate).

3.2.3 The *ESC Supervisor* must ensure that copies of the checklists are kept on site and made available for inspection by City staff.

3.3. Scheduled ESC Facility Monitoring

3.3.1 In addition to the daily site inspections, water quality monitoring by the *ESC Supervisor*, or suitably qualified designate, of the site discharge, as well as assessments of the condition and performance of *ESC Facilities* must be conducted and reported to the City' Environmental Services Division at the minimum regular intervals noted in Table C-1, below.

3.3.2 Summary reports must include a review of *ESC Facilities* implemented and any deficiencies observed, maintenance undertaken, or recommendations of adaptive measures to ensure compliance with the approved ESC Plan. A summary table of in-situ monitoring results and/or laboratory analysis results must be also be included in the submitted report (see ESC Site Monitoring Report Template available from the City's website).

3.3.3 The *ESC Supervisor* is required to conduct visual inspections to ensure that all *ESC Facilities* are installed in accordance with the approved ESC Plan. The inspections should identify any installation deficiencies that could impair the *ESC Facilities* performance and notify the Developer or designate to remedy the deficiency. Time and date-stamped photos must be taken for inclusion in the monitoring report.

3.3.4 It is the responsibility of the *ESC Supervisor* to identify any maintenance issues that need addressing whereby the effectiveness of the *ESC Facilities* is likely to be compromised. Likewise it is up to the discretion of the *ESC Supervisor* to evaluate whether or not the installed *ESC Facilities* are capable of meeting the ESC requirements of the *ESC Plan* and ensure that measures are undertaken to mitigate any potential deficiencies in the *ESC Facilities*.

3.4. Significant Rainfall Events

3.4.1 If a *Significant Rainfall Event* is forecast (via Environment Canada or other) or anticipated, the *ESC Supervisor* must, 48 hours prior to the event, conduct an onsite *ESC Facilities* review meeting with the *Developer* and site superintendent and document this meeting using the Significant Rainfall Event Planning Checklist available from the City's website.

3.4.2 Spot checks should be conducted during *Significant Rainfall Events* to evaluate *ESC Facility* performance under storm flow conditions when the likelihood of deficiencies is more prevalent.

3.4.3 Inspections must be carried out within 24 hours of a Significant Rainfall Event.

Table C-1. Monitoring and Reporting Frequencies.

Season	**Minimum Monitoring Frequency**	**Minimum Reporting Frequency**
Wet season (October 15 to May 15)	Weekly	Bi-weekly
Dry season (May 16 to October 14)	Bi-weekly	Monthly
Significant Rainfall Events	- 48 hours prior to event, - during the event; and, - within 24 hours of event	Within 7 days of event

4. Water Quality Monitoring

4.1. General

4.1.1 The *ESC Supervisor* will monitor the water quality parameters described in Section 4.2 Monitoring Parameters at the frequency described in Table C-1. Monitoring and Reporting Frequencies.

4.1.2 The *ESC Supervisor* will report the results of the water quality parameter monitoring at the frequency described in Table C-1. Monitoring and Reporting Frequencies.

4.1.3 All sample collection and testing must be in accordance with water quality sampling and testing standard practice.

4.2. Monitoring Parameters

4.2.1 The *ESC Supervisor* will, at a minimum, monitor the site discharge for the following parameters:

4.2.1.1. Turbidity measured in NTUs

4.2.1.2. pH

4.3. Water Quality Sampling Locations

4.3.1 Monitoring locations shall be based on the designated monitoring locations in the approved ESC Plan.

4.3.2 Water quality monitoring locations should appropriately reflect site discharge at the downstream boundary of the *Development* site and be independent of drainage ditches that convey off site water flows. If the primary point of discharge is piped flow or if there is a potential for water flows conveyed off-site as piped flow, then water quality sampling must be conducted on flows as they leave the site.

"Schedule D" - *Real-Time Monitoring Facilities*

1. Application

1.1. The requirements in this Schedule "D" apply to *Developments* within all watersheds in the City.

1.2. Notwithstanding the provisions of section 1.1 the requirements of Schedule "D" do not apply to the following *Developments*:

1.2.1. *Developments* that only require a demolition permit as defined in The City of Coquitlam *Building Bylaw No. 3598, 2003*, as amended or replaced from time to time; and,

1.2.2. *Small-scale residential* developments as defined in the City of Coquitlam *Zoning Bylaw No. 3000, 1996*, as amended or replaced from time to time.

1. *Real-Time Monitoring Facilities* for Construction Site Discharge Water Quality

2.1. Minor variations or alternates to these requirements are permitted at the discretion of the Manager.

2.2. *ESC Plans*

Where this Schedule "D" applies, the *ESC Plan* must include all *Real-Time Monitoring Facilities* required by this Schedule "D" including but not limited to the following:

2.2.1. The location of all *Real-Time Monitoring Facilities* on site;

2.2.2. Drawings and schematics detailing all *Real-Time Monitoring Facilities*;

2.2.3. Any Notification Limits or Shut Off Limits required in addition to the minimum requirements listed in Section 2.5 Notification and Shut Off Limits;

2.2.4. The design calculations, installation specifications and maintenance requirements for the *Real-Time Monitoring Facilities*; and,

2.2.5. Timing for installation and removal of the *Real-Time Monitoring Facilities*.

2.3. Real-Time Monitoring Facility Design, Operation and Maintenance

2.3.1. *Real-Time Monitoring Facilities* must be designed by a *Qualified Professional*.

2.3.2. *Real-Time Monitoring Facilities* must be installed, operated, calibrated and maintained in accordance with the designer's and manufacturer's recommendations as described in documented Standard Operating Procedures supplied by the *Real-Time Monitoring Facilities* provider. The City may require that a copy of these procedures is provided to the City, a copy must be available for inspection on site.

2.3.3. Date and time-stamped administrative activity logs including maintenance, parts replacement, calibrations and other servicing must be kept available for inspection on site or made available to the City and *ESC Supervisor* through the dashboard.

2.3.4. The *ESC Supervisor* must carry out the responsibilities described in Schedule "C" and must also:

2.3.4.1 complete routine inspections of the Real-Time Monitoring Facilities in accordance with the Standard Operating Procedures;

2.3.4.2 compare data collected during monitoring under Schedule "C" to data provided by the Real-Time Monitoring Facilities, investigate any discrepancies outside the limits of accuracy for any analysis, and take any remedial action required to ensure accuracy of the data collected by routine monitoring and by the Real-Time Monitoring Facilities.

2.3.5. The City will establish and maintain a list of pre-qualified *Real-Time Monitoring Facilities* providers. *Real-Time Monitoring Facilities* must be provided by one of these pre-qualified providers.

2.3.6. The *Real-Time Monitoring Facilities* provider must not be affiliated in any way with any contractors or sub-contractors engaged to provide water treatment services, ESC Supervision or to act as the *Qualified Professional* for the Construction.

2.4. Water Quality Parameters

2.4.1. *Real-Time Monitoring Facilities* must provide monitoring of at least the following water quality parameters:

2.4.1.1 pH;

2.4.1.2 turbidity measured in NTU or FNU;

2.4.1.3 temperature measured in degrees Celsius;

2.4.1.4 discharge flow rate measured in gallons per minute, cubic metres per second or litres per second;

2.4.1.5 cumulative discharge volume measured in gallons per minute, cubic metres or litres; and,

2.4.1.6 recirculation flow rate measured in cubic metres per second or litres per second.

2.4.2. The *Real-Time Monitoring Facilities* must obtain and report on local rainfall data from an accredited source which will provide data to the system allowing for shut off in the event that turbidity exceeds limits linked to Significant Rainfall Events.

2.4.3. The water quality parameters listed in Section 2.4.1 will be sampled no less frequently than once every 45 seconds.

2.5. Notification and Shut Off Limits

2.5.1. The *Real-Time Monitoring Facilities* will provide automated SMS and email notifications to the City, the *ESC Supervisor* and appropriate site staff whenever

the following notification limits are reached and at any additional limits specified by the *ESC Plan*:

Parameter	**Notification Limit**
pH	When pH is less than 6.5; and, When pH is above 8.0
Turbidity	No Significant Rainfall Event and turbidity is greater than 25 NTU for 60 seconds; and Turbidity is greater than 100 NTU for 60 seconds
Valve State	The discharge valve is closed for 60 minutes
Data Transmission	No data transmission for one or more sensors for 15 minutes

2.5.2. The Notification Limits for a particular *Development* may be changed at the discretion of the Manager;

2.5.3. The *Real-Time Monitoring Facilities* will automatically shut off discharge and recirculate the storm water for further treatment whenever the following shut of limits are reached and at any additional limits specified by the *ESC Plan*:

Parameter	**Shut Off Limit**
pH	When pH is below 6.5 for 5 min; and When pH is above 8.0 for 5 min
Turbidity	No Significant Rainfall Event and turbidity is greater than 25 NTU for 5 mins; and Turbidity is greater than 100 NTU for 5 mins
Power Failure	In the event of a power failure to the *Real-Time Monitoring Facilities* or the *ESC Facilities*, the discharge shut off valve must close automatically and remain closed until full functioning is restored

2.5.4. The Manager may require that the Shut Off Limits be changed in the event that these limits do not ensure that the *ESC Facilities* are able to treat the storm water to the extent that it complies with the requirements of this Bylaw and any other applicable legislation.

2.6. Data Sharing Capabilities

2.6.1. The *Real-Time Monitoring Facilities* will include a cloud-based data sharing dashboard that provides the following information and capabilities to the City and the *ESC Supervisor*:

2.6.1.1 Real-time and historical data for all monitored water quality parameters and rainfall data;

2.6.1.2 historical data must be available from the start of the Development to such time as the Manager or their designate grants permission for the removal of the Real-Time Monitoring Facilities;

2.6.1.3 the dashboard must also allow for the download of all data related to the Development to pdf or excel format;

2.6.1.4 the dashboard must show the notification limits and shut off limits in use at all times; and,

2.6.1.5 the dashboard must show the maintenance record and any other periods during which the *Real-Time Monitoring Facilities* are not operational.