

# EROSION AND SEDIMENT CONTROL WORKSHOP – BUILDERS FORUM

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PREPARED BY  
THE DISTRICT OF MAPLE RIDGE  
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# Overview

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1. Background
2. Issues and Opportunities
3. Building Practices - Do's and Don'ts
4. New Requirements
5. The Next Step

# Why Are We Here?

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- Unique Topography
- Record rainfall events
- High growth rate
- Outdated practices
- Agency Downloading
- Public Concerns
- Council Directive

# Key Issues With Past Practices

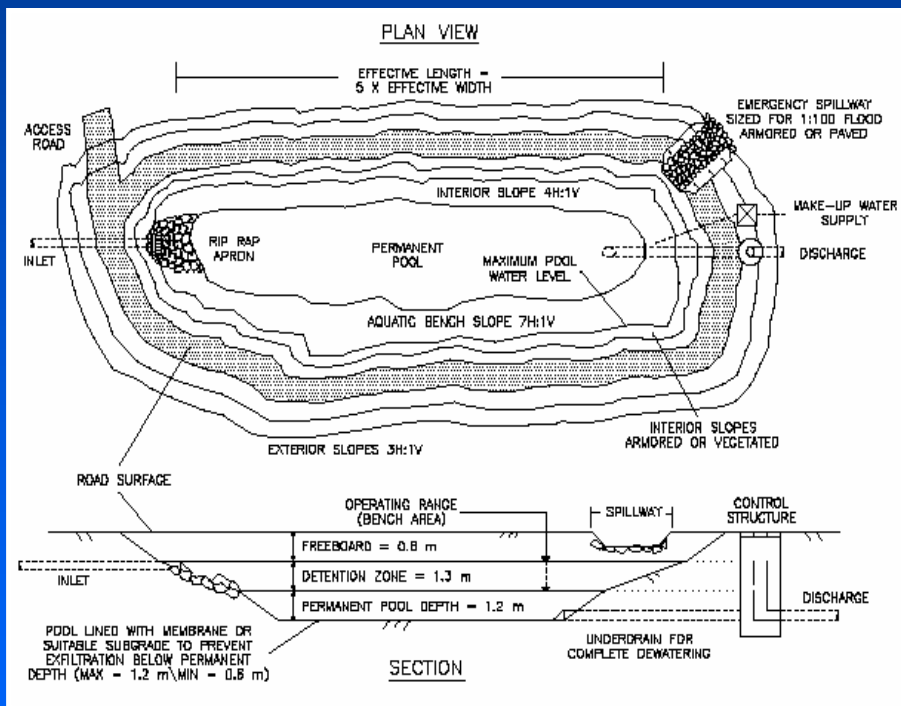
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## Operating in a Spirit of Cooperation

1. Outdated Standards and Practices
2. Inconsistent Requirements for All Players
3. Confusion over Responsibilities
4. Lack of Enforcement

# Issues With Past Practices

## Sediment control is the last line of defence



Typical BMP's have not been successful at removing suspended sediments to within DFO lawful limits prior to discharge.

Traditional Efforts included:

- Hay Bales
- Sediment Fence
- Sediment traps
- Filter fabrics
- Wet detention ponds
- Polyethylene slopes and soil mounds

Testing site (Surrey) has NOT been able to reduce turbidity levels to acceptable limits using ONLY BMP's outlined in the Land Development Guidelines.

# Inconsistent Requirements For Developers and Builders





# Complex Terrain and Soils with no or limited focus on source controls



# Large Scale Clearing of sites





# Inconsistent on- site and off- site maintenance practices



# Poor Installation, Monitoring and Maintenance of Controls on Sites



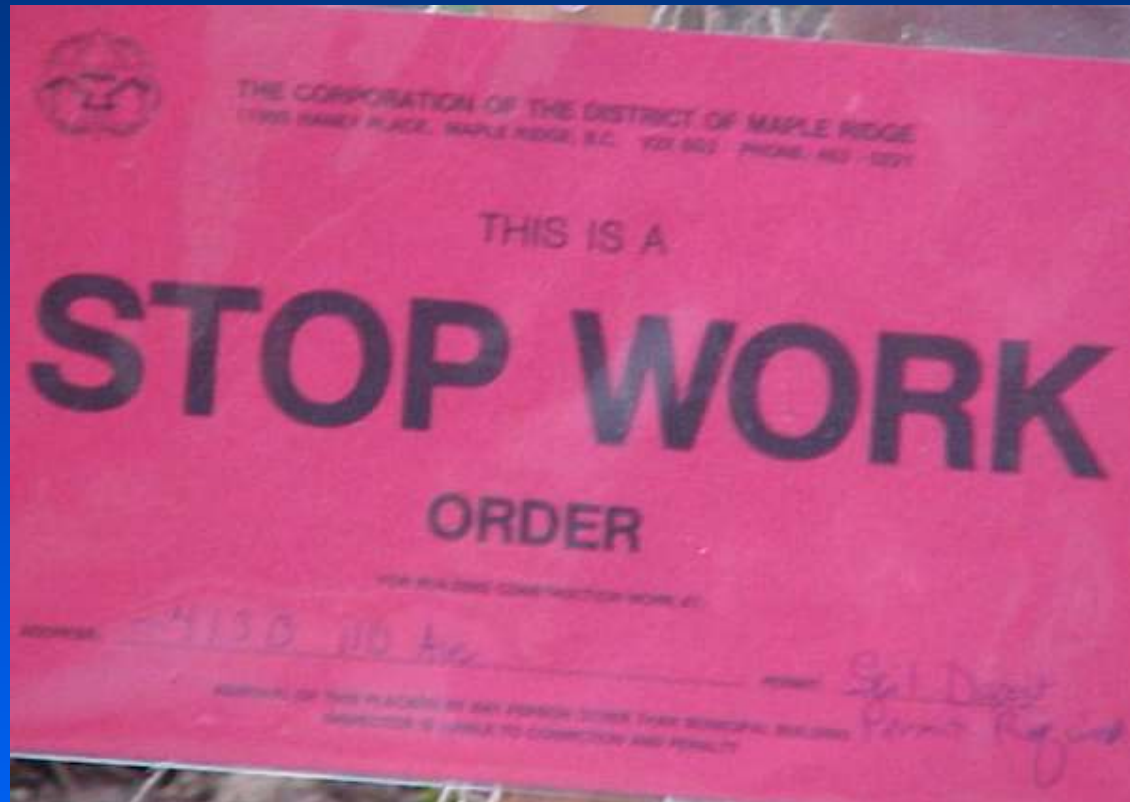
# Why Bother?

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1. Water quality degradation in fish and nutrient bearing watercourses.
2. Cost increases for the developer, civil contractor and home builders for remedial measures and delays
3. Property damage and increasing legal and social responsibility to deal with erosion / sediment both on and off site.
4. Legal obligation to Department Fish and Oceans and provincial Water Act

# Why Bother?

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1. **Stop work orders** for discharge of highly turbid or sediment laden stormwater.
2. Larger tickets – up to \$1,000
3. Larger fines for convictions – from \$2,000 up to \$10,000



# What's New in the Lower Mainland?

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- DFO legal limits for stormwater discharge are 25 mg/l during non-storm conditions and 75 mg/l during storm conditions
- Extensive erosion and sediment control program. This also includes digital sensor systems, increased monitoring, large security deposits and hefty fines.



# How was the new Bylaw developed?

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1. Reviewed other municipal bylaws

City of Burnaby

Township of Langley

City of Coquitlam

City of Surrey

City of Abbotsford

District of North Vancouver

2. Reviewed with various staff and departments

3. Reviewed existing literature and reports by environmental consultants

4. GAP analysis and integration of existing Watercourse Protection Bylaw and other relevant bylaws.

# Erosion and Sediment Control Strategy

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The strategy for this sediment and erosion control plan is one that seeks to provide:

- 1. Pro-active approach for erosion and sediment control.**
- 2. Greater clarity and consistency**
- 3. A more integrated approach**
- 4. More efficient use of professional resources and practices.**

# Who is responsible?

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1. No person shall cause or permit any Prohibited Material, or water containing Prohibited Material to be released, directly or indirectly into the Drainage System.
2. No person shall obstruct or impede the flow of any Drainage System.



# A Pro-Active Approach

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The most cost-effective and efficient strategy is to focus on pro-active measures at the source:

1. Install basic primary erosion control measures prior to any construction works taking place.
2. Protect the existing vegetative cover, setback areas, and controls on site.
3. Schedule construction works for drier periods i.e. May 15 to October 15 where possible.
4. Ensure regular inspection and maintenance of erosion and sediment control facilities as well as adjacent roads.

# 1. EROSION CONTROL

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**Erosion control is the first line of defense** in preventing sediment laden water discharging from construction sites. Erosion control features include but are not limited to:

- Access Pads and Staging Areas for Vehicles
- Polyethylene cover for slopes and stockpiles
- Mulching of soils, Hydro-seeding and Tackifiers for stabilizing disturbed soils
- Protect vegetated and protected areas where possible
- Terraced slopes and Water Diversions on steep slopes
- Timing of works in drier periods

# Protect the soil surface

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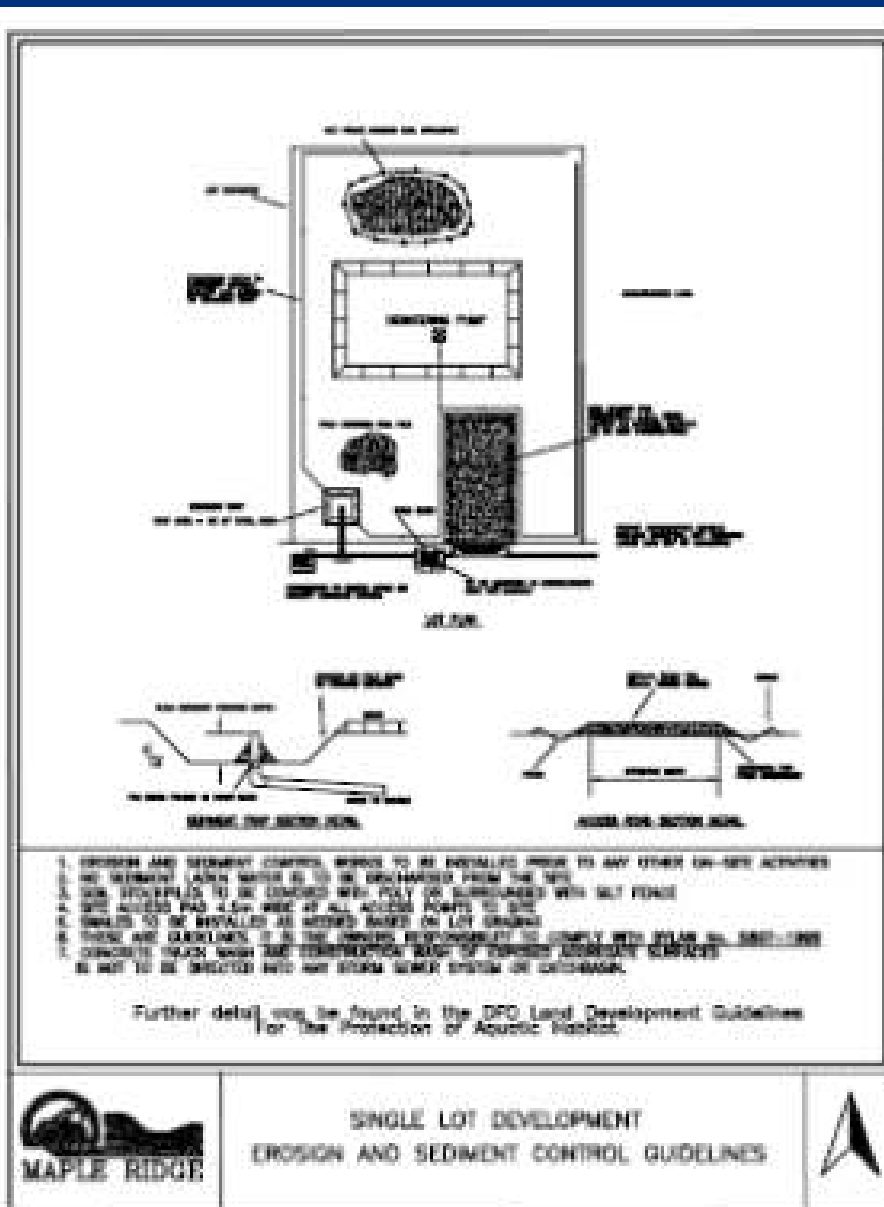
1. **Protect the soil surface** – Every effort should be made to limit the extent of disturbance and stabilize soil surfaces immediately.
- **Access areas** must have a gravel pad in place with a staging area for construction vehicles.
- **Disturbed soils must be immediately protected** with appropriate cover, such as poly, mulch, straw matting, or vegetation.
- **Protect vegetated areas** where possible and ensure protection of watercourse setback areas using temporary fencing.
- **Schedule construction** to dry months and phase works to minimize clearance of vegetation.

Cover stockpiles and remove from road side





# Ensure Site Contain Necessary Facilities



1. Access Pads
2. Staging Area  
Wheelwash  
Facilities
3. Perimeter ditch
4. Silt Fences
5. Temporary Fences
6. Sediment Traps
7. Stockpile Area to  
be covered.

# Identify and Protect Boundaries



# Stabilize, cover, or re-vegetate slopes



# Control surface runoff

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2. **Control surface runoff** – Surface runoff from undisturbed areas will be diverted away from disturbed areas.
  - Long running slopes (including your access road and linear trenches / ditches) will be broken up with diversion controls to reduce velocity of runoff.
  - Any sediment-laden water should be diverted to sediment control structures, traps, and on site vegetated infiltration areas.
  - Re-vegetate and stabilize disturbed areas as soon as practically possible (within 30 days of completion of construction works before October 15 where possible.)





Before



After





Line channels  
with geotextile  
and baffles



Pump water to a  
collection  
(disposal) sump



# Surface Runoff - Cover Steep Slopes



## 2. SEDIMENT CONTROL

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**Sediment control is the last line of defense** in preventing sediment laden water discharging from construction sites. Sediment control features include but are not limited to:

- Sediment Ponds
- Check Dams
- Conveyance Systems
- Sediment Traps
- Biofiltration Systems
- Flocculation Systems

# Capture sediment on-site

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## 3. Capture sediment on-site –

- The drainage channels will be lined with clean drain rock, check dams and silt fences, and convey water to silt traps or an appropriately sized siltation pond
- Sediment control facilities will be regularly maintained / cleaned out and for proper disposal of the trapped sediment.
- No Concrete truck wash, construction wash of exposed aggregate surfaces, or chemicals are to be directed into any drainage system or catch basin.





# Maintenance

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## 4. Maintenance and Good Housekeeping

- Regular maintenance of all erosion and sediment controls is required.
- Roadways (fronting the respective lots) are to be swept free and cleaned of accumulated soils, fines/sediments on a regular basis (at least once a day during rain events).
- The contractor shall provide on-site disposal facilities at all times and disposed of on a regular basis .
- Remove all temporary control measures and construction materials at the end of the project and ensure soils have been vegetated.

# Maintenance Issues







# Regular Maintenance







# Monitoring and Reporting

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## 5. Inspection and Monitoring

- Regular inspection and monitoring of all erosion and sediment controls is required by contractors as well as environmental monitors.
- Requirement for monitors to ensure compliance through maintenance, modification of controls, adaptation of activities, and/or shut down the site.
- Proper installation and maintenance of facilities can sometimes be complex.

# Expertise in Installation





# Appropriate Sizing and Design



# Inspection and Compliance





# Greater Responsibility for Professionals

1. Provide clear standards and basic checklist of erosion and sediment control requirements
2. Review and approval of ESC plans by both professional engineer and the monitor
3. Pre and post development inspections required by environmental monitor before final approval
4. More emphasis on the monitoring and maintenance responsibilities.

# New Requirements For Developers

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1. Provide a more comprehensive erosion and sediment control plan.
2. Provide A BCCLS Surveyed Comprehensive Grading Plan
3. Provide an environmental security deposit for each lot until final approval.
4. Ensure gravel pads are in place for each lot

# New Requirements For Builders

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1. Small Scale building application ESC requirements.
2. Environmental monitors and security deposits are required for some building applications depending on the following:
  - the size of project,
  - complexity of site, and
  - timing of construction works.
  - status of the site with respect to development approvals and Certificate of Acceptance.
3. Large Scale building applications with larger security deposit, monitoring, and ESC plan are required.

# Potential Exemptions

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1. **Construction timing** and schedule that is conducive to drier periods (April 16 – Oct.14) as opposed to rainy periods (Oct.15-April 15)
2. **Size and location** of the proposed Construction Works with respect to the perimeter and sensitivity of the parcel of land.
3. **Slope and soil conditions** on the parcel are conducive to infiltration and pertinent to drainage.

# Municipal Practices

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1. Erosion and sediment control requirements need to be in place before clearing or construction works proceed. Pre and post construction inspections are required.
2. Regular reporting of monitoring and maintenance of erosion and sediment controls on site is required of monitors.
3. Stronger enforcement related measures where infractions occur including use of stop work orders, fines, and use of environmental security deposit.

# Enforcement Measures

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## **Municipal Ticketing**

- Additional effort by District staff to carry out Municipal enforcement and ticketing system
- Tickets up to \$500 for offences including sediment discharge, failure to comply with ESC permit, and failure to maintain logbook.



# Enforcement Measures

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## **Fines**

- Contravention of bylaw liable for fines from \$2,000 up to \$10,000 per day

## **Environmental Security Deposit**

- Costs incurred by the District will be deducted from the security deposit

# The Next Steps

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1. Council hearings and adoption of new Watercourse Protection Bylaw.
2. Education and awareness sessions
  - Spring and fall workshops
  - Website materials
3. Consider moderate measures over the next couple of years and re-evaluate whether tougher controls are required.

# The Next Steps - Improve Watercourse Quality

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