What is SOIL EROSION?

Soil erosion is the detachment and movement of soil particles by water, wind, ice, or gravity.

What is SEDIMENTATION?

Sediment is the result of erosion. Sedimentation is the build-up of eroded soil particles that are transported in runoff from their site of origin and deposited in drainage systems, on other ground surfaces, or in bodies of water or wetlands.

Why should I care?

- **It’s the Law** - Federal, State and local regulations require construction sites to be compliant with the Clean Water Act.
- **Water Quality** - Erosion from construction projects can be a non-point source pollutant that deteriorates the health of our lakes, streams and Narragansett Bay.
- **Soil Loss** - Much of the total sediment loss that occurs each year is generated by highway construction and land development projects.
- **Quality of Life** - If you enjoy fishing, eating local shellfish or swimming at one of Rhode Island’s beautiful beaches, this pollution can threaten your quality of life.

What problems happen on construction sites?

- **Safety and Nuisance Issues** - Sediment on roadways & in the air can cause safety hazards.
- **Flooding** - Excessive sediment accumulation in drainage systems can create blockages that promote flooding.
- **Sediment Build-Up** - Sediment that accumulates in streams, lakes, and bays can only be remediated by costly dredging.
- **Increased Costs** - Uncontrolled erosion and sedimentation requires costly maintenance and repair. *It is cheaper and easier to PREVENT erosion than to fix sedimentation problems.*
- **Negative Public Perception** - Observing muddy water flowing from construction sites negatively affects public perception.
What can be done to control soil erosion, runoff, and sedimentation?

Install, maintain, and inspect control measures on your construction site according to the site’s Soil Erosion and Sediment Control (SESC) Plan or Stormwater Pollution Prevention Plan (SWPPP).

Types of Controls

Erosion Controls
- The primary defense against sediment pollution
- Installed to PREVENT sediment from being detached by natural causes
- Examples: Keeping exposed soil covered with mulch or temporary vegetation; covering soil stockpiles; slope surface roughening

Runoff Controls
- Used to SLOW the velocity of flowing stormwater
- Diverts water towards a stabilized outlet or treatment practice
- Examples: check dams; pipe slope drains

Sediment Controls
- The LAST line of defense against moving sediment
- Prevents sediment from leaving construction sites and entering environmentally sensitive areas
- Examples: construction entrances; sediment traps; inlet protection, compost filter socks, wheel wash system

Where can I get help?
- Your construction project’s site-specific SESC Plan or SWPPP has measures identified specifically for your construction site.
- RI Department of Transportation Office of Stormwater Management: www.dot.ri.gov/about/stormwater.php 401-734-4892

Even if BMP controls are correctly installed and maintained on a site according to the approved SESC Plan/SWPPP, the site is only in compliance when erosion, runoff, and sedimentation are effectively controlled throughout the entire site.
Pollution Prevention
Construction Site Fact Sheet No. 2

The Scoop When You Pollute

Pollution from construction sites such as sediment, diesel, solvents, concrete washout, hydraulic fluid, and litter all contribute to poor water quality in RI rivers, lakes, and Narragansett Bay.

Rainwater washes these pollutants off construction sites, into storm drains and nearby surface waters, degrading water quality and leading to loss of fishing and swimming areas. Toxic pollutants also can seep into the ground, contaminating groundwater supplies.

Contain All Chemicals!

Chemicals such as solvents, fertilizers, paints, and cleaners can leach into groundwater or runoff into surrounding waterbodies. This creates hazardous waste which threatens all waters.

What you can do:
- Store and dispose of all chemicals properly.
- Use chemicals carefully and prevent them from entering storm drains and surface waters.
- Keep a spill kit handy in a visible location.
- If you see a spill be proactive:
  1. Stop it!
  2. Contain it!
  3. Report it!

Lose the Litter!

Exposed trash such as coffee cups and waste building materials are easily swept up by rain into nearby streams. This clogs storm drains, harms water quality and wildlife, and decreases aesthetic value.

What you can do:
- Dispose of all trash in the proper receptacles.
- Keep dumpsters and trash receptacles covered.
- Clean up the site daily!

Designate Washout Areas

Concrete washout, stucco and paint are highly toxic to aquatic life. Without proper washout facilities, these wastes flow directly into waterbodies causing pollution and channel blockages. They also degrade soil quality for plants and threaten groundwater.

What you can do:
- Designate and clearly mark washout areas at least 50 feet away from natural resources and storm drains.
- Maintain all washout areas to assure they are working properly to contain waste.
- Make sure contractors and sub-contractors use them.
**Designate Fueling Areas**

Even small amounts of fuel, diesel oil, and hydraulic fluid can contaminate groundwater and poison aquatic life.

**What you can do:**
- Designate clearly marked fueling areas at least 50 feet away from natural resources and storm drains.
- Maintain all fueling areas.
- Clean up spilled fuel immediately.

**Stabilize Construction Exits**

With vehicles and equipment constantly driving in and out, exits to construction sites can become hotspots for tracking soil onto paved surfaces. Without proper management, rain events will wash this sediment into the nearby waterbodies.

**What you can do:**
- Stabilize construction entrances by covering the driveway in crushed stone to prevent soil erosion.
- Surround the driveway with barrier BMPs to prevent escaped sediment from washing away.

**Cover Stockpiles**

Stockpiles are piles of sediment waiting for a rain event to break free. Not only will you lose building material, sediment flowing into waterways blocks light, smother fish habitat, and fills in channels, resulting in flooding.

**What you can do:**
- Locate stockpiles at least 50 feet away from natural resources and storm drains.
- Cover all stockpiles with either temporary vegetation or tarps to prevent erosion.
- Surround stockpiles with barrier BMPs such as compost filter socks to prevent escaped sediment from washing away.

**Control Dust and Loose Sediment**

Active construction sites lose an average of 1.2 tons/acre of soil a month to windblown sediment. This dust blows onto roads where it can reduce driving visibility and is washed into storm drains and waterways by the next rain.

**What you can do:**
- Control dust on site with proper BMPs such as mulch or temporary vegetation.
- Routinely sweep roads and paved surfaces to limit the sediment runoff.

*A clean (and compliant) construction site starts with YOU! Do your part to keep our RI waterbodies healthy!*

**Questions? Call RIDOT’s Office of Stormwater Management**

401-734-4892
Preparing for a Significant Rain Event

Construction Site Fact Sheet No. 3

You have been proactive and have been monitoring the weather for storm events. You see that a large storm is heading right to your construction site…

What do you do next?

Information & Scheduling:

✓ Inform trade supervisors of predicted rain
✓ Schedule staff for extended rain inspections (including weekends & holidays)
✓ Review BMP map

Material Storage Areas:

✓ Material under cover or in sheds (eg. treated wood, stockpiles)
✓ Perimeter control around stockpiles (checking all BMPs)
✓ Properly store ANY & ALL chemicals in a shed/trailer

Waste Management Areas:

✓ Dumpsters closed
✓ Drain holes plugged
✓ Recycling bins/trash cans emptied/covered
✓ Sanitary stations bermed and protected from tipping

Concrete Wash Out Area:

✓ Check for adequate capacity for rain
✓ Cover wash-out bins

Construction Operations:

✓ Shut down exterior operations for rain event (ex: no concrete pours or paving)
✓ Do not apply soil treatments (ex: fertilizer) within 24 hours of event
✓ Properly store and cover materials and equipment (ex: tools)
✓ Dispose of waste and debris in covered dumpsters or remove from site
✓ Protect trenches and excavations
✓ Install perimeter controls around disturbed areas, fix areas that need attention
✓ Cover and berm fueling and repair areas

Site SESC BMPs:

✓ Check for adequate capacity in sediment basins and traps
✓ Site perimeter controls in place
✓ Catch basin and drop inlet protection in place
✓ Deploy temporary erosion control on inactive areas
✓ Deploy temporary perimeter control around disturbed areas or stockpiles
✓ Sweep roads; stabilize construction entrance/exit points

Spill and Drips:

✓ Clean up all incident spills and drips, including paint, fuel, and oil
✓ Empty drip pans

Don’t get caught by surprise. Have a plan. Be prepared.

Questions?
Contact the Office of Stormwater Management
401-734-4892
What is an ILLICIT DISCHARGE?

An illicit discharge is any discharge to a RIDOT property or drainage system that is not comprised entirely of stormwater.

Storm drain systems typically do not have filters or treatment, so pollutants go directly to the waters Rhode Islanders use for drinking, fishing, swimming, and boating.

Discharges from Construction Sites

Construction sites often contribute illicit discharges that may go unnoticed. As stormwater flows over a site, it can pick up sediment, chemicals, and debris. Illicit discharges from construction sites can include:

- Sediment tracked offsite
- Runoff from stockpiles
- Concrete washout
- Paint and stucco washout
- Hydraulic fluid leaks, fueling overflows
- Trash and construction wastes
- Fertilizer/pesticides used on site

If you see any of these signs, take measures to STOP THE DISCHARGE ASAP.

Contact RIDOT Office of Stormwater Management for assistance at 401-734-4892.

How can they be prevented?

Following the project’s site-specific Soil Erosion and Sediment Control Plan (SESC) or Stormwater Pollution Prevention Plan (SWPPP) is critical to keeping illicit discharges from occurring. Examples of best management practices that can prevent illicit discharges include, but are not limited to:

- Cover all soil stockpiles
- Dispose of concrete washout properly off site
- Use maintained gravel construction entrances to enter and exit the site
- Keep trash contained and covered
- Dispose of chemicals and waste materials properly
- Clean up hydraulic fluid leaks and other spills immediately

How is an illicit discharge different from a spill?

A spill is an unintentional release of a non-stormwater substance to RIDOT’s stormwater drainage system or property related to a single event. Many times, spills are associated with emergency situations such as an automobile accident spilling oil or other automotive fluids onto the highway surface and potentially flowing into the stormwater system.
What Is An Illicit Connection?

An illicit connection is any unauthorized pipe, ditch, or other manmade structure that is physically connected to RIDOT’s property or drainage system. These are often found during construction.

Examples might include:

- Sanitary wastewater pipe that is directly connected from a home or business to the storm drain system
- A shop floor drain that is connected to the storm drain system

Typical pollutants found in flows coming from illicit connections include: raw sewage, heavy metals, oil and grease, solids, detergents, chlorine, potassium, ammonia and nutrients. Raw sewage typically includes fecal bacteria, which may cause public health concerns.

Discharges from illicit connections occur during wet weather and dry weather. During dry weather, the pollution effects of local waters can be severe because the discharge is not diluted in the storm sewers before it reaches the water body.

What do I look for?

- Non-RIDOT piping materials connected to the storm sewer system like PVC piping
- Pipes leading into the storm sewer system from private homes and businesses
- Abnormal flow during dry weather periods
- Odors coming from the storm sewer system
- Any of the following in the storm sewer system: discolored water, floatables, suds, oil, staining and residues.

What do I do if I find one?

Call the Office of Stormwater Management!

401-734-4892
What is soil stabilization?

Soil stabilization is a general term for any biological, physical, chemical, or combined engineering method that provides protection of the soil against the impacts of wind, rain, and stormwater runoff. Stabilization measures prevent erosion and runoff from occurring on soil stockpiles, bare or disturbed areas, and slopes.

Techniques

An area is considered fully stabilized when the area has an established stand of grass or suitable treatment and is free from future uncontrolled discharges.

TEMPORARY VEGETATIVE COVER is the establishment of vegetative cover on soils exposed for a period greater than one month but less than 12 months; considered established when there is approximately 80% vegetative surface cover.

PERMANENT VEGETATIVE COVER is the establishment of permanent vegetative cover by seeding and mulching exposed soils with an appropriate seed mixture to facilitate long term stabilization following site preparation and topsoiling; considered established when there is ~95% vegetative surface cover, it prevents soil erosion and withstands severe weather conditions.

STRUCTURAL SOIL STABILIZATION practices include mulches, stone aggregate, turf reinforcement matting, erosion control blankets, riprap, cellular confinement systems, gabion mattresses, or articulating concrete block revetment systems. All need to be installed in accordance with manufacturers’ recommendations and good engineering practices.
Keys to Success (as per the RIPDES Construction General Permit & SESC Plans/SWPPPs)

1. Stabilization of disturbed areas must, at a minimum, be initiated immediately whenever any clearing, grading, excavating or other earth disturbance activities have permanently ceased on any portion of the site, or temporarily ceased on any portion of the site and will not resume for a period exceeding fourteen (14) calendar days.

2. Stabilization must be completed using vegetative stabilization measures or using alternative measures whenever vegetative measures are deemed impracticable or during periods of drought.

3. All disturbed soils exposed prior to October 15th shall be seeded by that date.

4. Any such areas which do not have adequate vegetative stabilization by November 15th must be stabilized through the use of non-vegetative erosion control measures.

5. If work continues within any stabilized areas during the period from October 15th through April 15th care must be taken to ensure that only the area required for that day’s work is exposed, and all erodible soil must be restabilized within five (5) working days.

Questions?
Contact RIDOT Office of Stormwater Management
401-734-4892
SESC/ SWPPP
Requirements
Construction Site Fact Sheet No. 6

What is a Soil Erosion & Sediment Control (SESC) Plan?

A SESC Plan is a site-specific Soil Erosion and Sediment Control Plan (aka Stormwater Pollution Prevention Plan (SWPPP)). This plan is a requirement under the RIDEM Rhode Island Pollutant Discharge Elimination System (RIPDES) program. The SESC Plan specifically names the temporary control measures to be installed and maintained to reduce soil erosion, runoff, sedimentation, and pollution on a construction site.

Who does the inspections?

On a Large Site, RIDOT sometimes hires a consultant to do the inspections. It is the RESIDENT ENGINEER’S responsibility to contact the Inspector to start work, if the RE is not responsible for the inspections.

On a Small Site, RIDOT is responsible for the inspections. It is the RESIDENT ENGINEER’S responsibility to inspect the site or designate an inspector.

When do the inspections start?

All appropriate Control Measures must be installed correctly and inspected BEFORE EARTHWORK BEGINS.

Inspection Requirements

Minimum Frequency – The construction site must be inspected at least once EVERY 7 CALENDAR DAYS AND WITHIN 24-HOURS AFTER ANY STORM EVENT of 0.25-inches of rain in 24-hours.

When do the inspections end?

Weekly/Post-Storm inspections are required to continue UNTIL ALL PROJECT AREAS ARE FULLY STABILIZED and free of uncontrolled discharges.

Final Acceptance by RIDOT shall not be granted until the site is fully stabilized in accordance with the RIPDES Construction General Permit.

Winter Shutdown

If FROZEN GROUND CONDITIONS exist and NO EARTHWORK is being done, inspections may be reduced to a frequency of once per month.

These criteria are not met by the site simply being in “Winter Shutdown”. If the site is in Winter Shutdown, but the ground is not frozen, weekly/storm inspections must still take place. Please see Fact Sheet # 8 for more information on Winter Shutdown procedures.

Site Owner & Site Operator
The RIDOT is the Site Owner.
The Contractor is the Site Operator.
BOTH ARE EQUALLY RESPONSIBLE FOR SITE COMPLIANCE.

Record Keeping

The SESC Plan, Owner/Operator Signatures, Inspection Reports, Corrective Action Logs, Amendments, Plans, etc. must be kept on-site at all times.

Large Site – vs – Small Site

RIDOT construction projects are considered “Large Site” if there is greater or equal to one-acre of soil disturbance. These sites are required to have a RIPDES Construction General Permit and a SESC Plan.

RIDOT construction projects are considered “Small Site” if there is less than one acre of soil disturbance. These sites are required to have a small-site SWPPP.

Questions? Call RIDOT Office of Stormwater Management:
401-734-4892

THE SESC REQUIRES INSPECTIONS OF THE CONTROL MEASURES TO ENSURE PROPER INSTALLATION, MAINTENANCE, & EFFECTIVENESS.
What is the CAP and who does it apply to?

CAP is a tool used to assist owners and operators of RIDOT construction sites in understanding the requirements of the RIDEM RIPDES Construction General Permit (CGP) and staying compliant with the various rules and regulations of RIDEM stormwater permits. This program applies to any RIDOT construction site with soil disturbance.

How does CAP work?

- The University of Rhode Island (URI) provides compliance assistance – in the form of on-site assistance, training, and plain language fact sheets that explain a project's environmental obligations as well as proposed pollution prevention and health and safety practices.

- A RIDOT owner/operator certifies that the construction site is in compliance and will continue to be in compliance.

- If the construction site is not in compliance, it must file a Corrective Action Plan with a schedule for returning to compliance.

- URI conducts "before and after" inspections to judge the accuracy of certification and the degree of performance improvements for individual construction sites and for RIDOT as a whole.

- URI/RIDOT also use the data to strategically target inspections and compliance assistance efforts; to track results to show success to the public, industry and legislators and, as appropriate, take enforcement action.

What is required in the CAP?

- Submission of two Self-Certification Checklists to URI
  - Start of Construction Stormwater Self-Certification Checklist (Submittal 1)
    - Must be submitted within 30 days after starting soil disturbance activities
    - Allows the owner and operator to be in compliance from the start of the project and be aware of all compliance regulations
    - Can be used as an “anytime” Self-Certification Checklist to ensure all proper procedures are being followed and the site is in compliance
  - Completion of Construction Stormwater Self-Certification Checklist (Submittal 2)
    - Must be submitted within 30 days after completion of permanent site stabilization
    - Allows the owner and operator to properly close out the project
- The Self-Certification inspections are in addition to the SESC Plan/SWPPP weekly inspections.
Who should fill out the Self-Certification Checklists?

The person filling out the checklists must have a vast understanding of the RIDEM CGP requirements, any other applicable permit requirements and the site specific SESC Plan/SWPPP. It is suggested that the RIDOT Resident Engineer perform the Self-Certification inspections.

What are the benefits to participating in the CAP?

- Allows the owner and operator to promptly correct environmental violations
- Enables the owner and operator to proactively prevent environmental violations
- Educates the owner and operator on what the DEM and/or EPA are looking for when it comes to construction site compliance
- Diminishes the chance of RIDOT receiving fines associated with environmental violations

Questions?

Contact the RIDOT Office of Stormwater Management

401-734-4892
What is winter shutdown?

Winter shutdown is a term used to describe the period between November 15 and April 15 where most earth work is halted due to the start of the winter season typically bringing snow and frozen soil.

Why is it important to stabilize disturbed soils before winter shutdown?

It is important to stabilize all disturbed areas of soil before the winter shutdown period to avoid significant erosion. Snowmelt, wind and rain all can erode the soil leaving sediment runoff to pollute the waterways.

How do I prepare my site for winter shutdown?

According to the Soil Erosion and sediment control handbook, no undisturbed areas will be cleared of existing vegetation after October 15th during any period of full or limited winter shutdown.

- All disturbed soils exposed prior to October 15, must be seeded or protected by that date by erosion controls.

- Areas without adequate vegetative stabilization (determined by the resident engineer or environmental inspector) by November 15, must be stabilized through the use of erosion control blankets or straw mulch.

What if my site is active during winter shutdown?

If work continues during the period from October 15 through April 15, care must be taken to ensure that only the area required for that day’s work is exposed, and all erodible soil must be re-stabilized within 5 working days.

Monitoring your winter shutdown site

Although there is no construction activity at a winter shutdown site there is still potential for severe erosion of the area from weather events. Erosion controls can fail, leaving the site vulnerable to storms. It is important to inspect the site monthly for damage and to perform maintenance on the erosion controls when necessary.

Consult the Winter Shutdown Section of your RIDOT SESC Inspection Report for a full checklist on how to prepare for winter shutdown.

Questions? Call the RIDOT Office of Stormwater Management: 401-734-4892
What is a Soil Erosion & Sediment Control (SESC) Plan & Stormwater Pollution Prevention Plan (SWPPP)?

A SESC Plan is a site-specific Soil Erosion and Sediment Control Plan (aka Stormwater Pollution Prevention Plan (SWPPP)). This plan is a requirement under the RIDEM Rhode Island Pollutant Discharge Elimination System (RIPDES) program. The SESC Plan/SWPPP specifically names the temporary control measures to be installed and maintained to reduce soil erosion, runoff, sedimentation, and pollution on a construction site.

THE SESC PLAN & SWPPP REQUIRE CORRECTIVE ACTIONS OF THE CONTROL MEASURES TO ENSURE PROPER INSTALLATION, MAINTENANCE, & EFFECTIVENESS.

Site Owner & Site Operator

The RIDOT is the Site Owner.

The Contractor is the Site Operator.

BOTH ARE EQUALLY RESPONSIBLE FOR COMPLIANCE.

Record Keeping

The SESC Plan/SWPPP, Owner/Operator Signatures, Inspection Reports, Corrective Action Logs, Plans, Amendments, etc. must be kept on-site at all times.

Corrective Actions

What are they?

If, during an inspection, the RE determines that corrective actions are necessary to install or repair erosion and pollution control measures, it is their responsibility to document them (in writing and by photos) in the inspection report and contact the Site Operator to perform the corrective action. A corrective action is made when a control measure is failing at its intended job.

What do you do if you have corrective actions?

The Site Operator must aggressively and expeditiously perform such cleaning and maintenance work until the original problem is remedied to the complete satisfaction of the RE. They must also document their actions to correct the problem by recording them in the Corrective Action Log attached to each SESC Plan/SWPPP inspection form.

If the Site Operator disagrees with the corrective action recommendations, it must be documented, with justifiable reasons, in the Corrective Action Log, as well. Required timeframes for corrective actions are established by regulation and are discussed in Section 5.3 of both your large site SESC Plan or your Small Site SWPPP.

Once the corrective actions are completed, the Owner and Site Operator must ensure that they are documented on the inspection report in which the problem was first discovered. These corrective actions must be documented, signed, and dated by the site operator once all necessary repairs have been completed.

What are the timeframes to fix the SESC issues?

When an inspector/RE discovers a problem (i.e. erosion, runoff, sediment or pollution prevention controls require replacement, repair, or maintenance), the Owner and Site Operator must ensure that the necessary repairs or modifications are made in accordance with the following time frame (as per the RIPDES Construction General Permit, the SESC Plan/SWPPP and Section 212 of the RIDOT Standard Specifications):
i. Initiate work to fix the problem immediately after discovering the problem, and complete such work by the close of the next work day, if the problem does not require significant repair or replacement, or if the problem can be corrected through routine maintenance.

ii. When installation of a new control or a significant repair is needed, site owners and operators must ensure that the new or modified control practice is installed and made operational by no later than seven (7) calendar days from the time of discovery where feasible. If it is infeasible to complete the installation or repair in that timeframe, the reasons why it is infeasible must be documented in the SESC Plan/SWPPP along with the schedule for installing the stormwater control(s) and making it operational as soon as practicable after the 7-day timeframe. Where these actions result in changes to any of the stormwater control measures outlined in the SESC Plan/SWPPP, site owners and operators must modify the SESC Plan/SWPPP accordingly within seven (7) calendar days of completing this work in accordance with Part III.F. once all necessary repairs have been completed.

What are the consequences for no action?
The Site Operator and the Site Owner may be fined for no action. If the RE decides on any given day that those erosion and pollution controls specified in the Contract are not in place or have not been adequately maintained, the daily charge set forth in Special Provision Code 212.1000 will be deducted from monies due the Site Operator as a charge for failure to comply with this Specification. Moreover, the stated daily charge will continue each consecutive calendar day thereafter until the deficiencies noted have been corrected to the complete satisfaction of the RE.

The Site Owner, RIDOT, can face fines of up to $25,000 per day, per violation of our RIPDES CGP. It pays to prevent problems when possible, and fix them as they occur!

Questions?
Call the RIDOT Office of Stormwater Management
401-734-4892

SITE OPERATOR is required to fill out Corrective Action Log and submit to RIDOT RE when work is complete.