

# SC-40 Contaminated and Erodible Areas

## Description

Areas within an industrial site that are bare of vegetation or are subject to activities that promote the suppression of vegetation are often subject to erosion. In addition, they may or may not be contaminated from past or current activities. If the area is temporarily bare because of construction, see SC-42 Building Repair and Construction. Sites with excessive erosion or the potential for excessive erosion should consider employing the soil erosion best management practices (BMPs) identified in the *Construction BMP Handbook*.

**Note:** This fact sheet addresses soils that do not exceed hazardous waste criteria (see Title 22 California Code of Regulations for hazardous waste criteria).

## Approach

Reduce potential for pollutant discharge through source control pollution prevention and BMP implementation. Successful implementation depends on effective training of employees on applicable BMPs and general pollution prevention strategies and objectives.

## General Pollution Prevention Protocols

Implement erosion and sediment control BMPs to stabilize soils and reduce pollutant discharges from contaminated or erodible surfaces.



## Erosion and Sediment Controls

- Preserve natural vegetation whenever possible. See also EC-2 Preservation of Existing Vegetation in the *Construction BMP Handbook*.
- Analyze soil conditions.
- Remove contaminated soil and dispose of it properly.
- Stabilize loose soils by revegetating whenever possible. See also EC-4 Hydroseeding in the *Construction BMP Handbook*.

## Objectives

- Cover
- Contain
- Educate
- Reduce/Minimize
- Product Substitution

## Targeted Constituents

Sediment	✓
Nutrients	✓
Trash	
Metals	✓
Bacteria	✓
Oil and Grease	✓
Organics	✓

## Minimum BMPs Covered

	Good Housekeeping	
	Preventative Maintenance	
	Spill and Leak Prevention and	
	Material Handling & Waste Management	
	Erosion and Sediment Controls	✓
	Employee Training Program	✓
	Quality Assurance and Record Keeping	✓



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- Use nonvegetative stabilization methods for areas prone to erosion where vegetative options are not feasible. Examples include:
  - ✓ Areas of vehicular or pedestrian traffic such as roads or paths;
  - ✓ Arid environments where vegetation would not provide timely ground coverage or would require excessive irrigation;
  - ✓ Rocky substrate, infertile or droughty soils where vegetation would be difficult to establish; and
  - ✓ Areas where vegetation will not grow adequately within the construction time frame.

There are several nonvegetative stabilization methods, and selection should be based on site-specific conditions. See also EC-16 Non-Vegetative Stabilization in the *Construction BMP Handbook*.

- Use chemical stabilization when needed. See also EC-5 Soil Binders in the *Construction BMP Handbook*.
- Use geosynthetic membranes to control erosion if feasible. See also EC-7 Geotextiles and Mats in the *Construction BMP Handbook*.
- Stabilize all roadways, entrances, and exits to sufficiently control discharges of erodible materials from discharging or being tracked off the site. See also TC 1-3 Tracking Control in the *Construction BMP Handbook*.
- Implement wind erosion control measures as necessary. See also WE-1 Wind Erosion Control in the *Construction BMP Handbook*.



## Employee Training Program

- Educate employees about pollution prevention measures and goals.
- Train employees how to properly install and maintain the erosion and sediment source control BMPs described above. Detailed information is provided in the *Construction BMP Handbook*.
- Use a training log or similar method to document training.



## Quality Assurance and Record Keeping

- Keep accurate logs that document actions taken to maintain and improve the effectiveness of the erosion and sediment control BMPs described above.
- Keep accurate logs of spill response actions that document what was spilled, how it was cleaned up, and the method used to dispose of the waste.
- Establish procedures to complete logs and file them in the central office.

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## Potential Capital Facility Costs and Operation & Maintenance Requirements

### Facilities

- Many facilities do not have contaminated or erodible areas and will require no additional capital expenditures.
- For sites with contaminated or erodible areas, purchase and installation of erosion and sediment controls will require additional capital investments. That amount will vary depending on site characteristics and the types of BMPs being implemented.
- Minimize costs by maintaining existing vegetation and limiting site operations on bare soils.

### Maintenance

- The erosion and sediment control BMPs described above require periodic inspection and maintenance to remain effective. The cost of these actions will vary depending on site characteristics and the types of BMPs being implemented.
- Irrigation costs might be required to establish and maintain vegetation.

## Supplemental Information

### Stabilization of Erodible Areas

Preserving stabilized areas minimizes erosion potential, protects water quality, and provides aesthetic benefits. The most effective way to control erosion is to preserve existing vegetation. Preservation of natural vegetation provides a natural buffer zone and an opportunity for infiltration of stormwater and capture of pollutants in the soil matrix. This practice can be used as a permanent source control measure.

Vegetation preservation should be incorporated into the site. Preservation requires good site management to minimize operations on bare soils where vegetation exists. Proper maintenance is important to ensure healthy vegetation that can control erosion. Different species, soil types, and climatic conditions will require different maintenance activities such as mulching, fertilizing, liming, irrigation, pruning, and weed and pest control.

The preferred approach is to leave as much native vegetation on-site as possible, thereby reducing or eliminating any erosion problem. However, assuming the site already has contaminated or erodible surface areas, consider the following courses of action:

- The area can be revegetated if it is not in use and, therefore, not subject to damage from site activities. Since the area is already devoid of vegetation, special measures are likely necessary. Lack of vegetation could have been caused by lack of water and/or poor soils. Fertilizing can possibly solve the latter problem or the ground might simply be too compacted from prior use. Improving soil conditions may be sufficient to support the recovery of vegetation. Use process wastewater for irrigation

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if possible, and see the *Construction BMP Handbook* for further procedures on establishing vegetation.

- Watering trucks can prevent dust.
- Chemical stabilization can be used as an alternate method in areas where temporary seeding practices cannot be used because of season or climate. It can provide immediate, effective, and inexpensive erosion control. Application rates and procedures recommended by the manufacturer should be followed as closely as possible to prevent the products from forming ponds and creating large areas where moisture cannot penetrate the soil. See also EC-5 Soil Binders in the *Construction BMP Handbook* for more information. Advantages of chemical stabilization include:
  - ✓ Easy surface application
  - ✓ Effective stabilization of the areas
  - ✓ Immediate protection of soils that are in danger of eroding
- Contaminated soils should be cleaned up or removed. First the level and extent of the contamination must be determined. Removal must comply with state and federal regulations; permits must be acquired and fees paid.
- Non-vegetated stabilization methods are suitable for permanently protecting areas from erosion by water and wind. These methods should be used only when vegetation cannot be established because of soil or climactic conditions, or where vegetation could be a potential fire hazard.

The following are examples of nonvegetative stabilization BMPs:

- ✓ **Decomposed Granite (DG) and Gravel Mulch** are suitable for use in areas where vegetation establishment is difficult; on flat surfaces, trails, and pathways; and when used in conjunction with a stabilizer or tackifier on shallow slopes (i.e., 10:1 [H:V]). DG and gravel can also be used for permanent erosion control on shallow rocky slopes where vegetation cannot be established.
- ✓ **Degradable Mulches** can be used to cover and protect soil surfaces from erosion both in temporary and permanent applications. In many cases, the use of mulches by themselves requires routine inspection and reapplication. See EC-3 Hydraulic Mulch, EC-6 Straw Mulch, EC-8 Wood Mulch, and EC-14 Compost Blankets in the *Construction BMP Handbook* for more information.
- ✓ **Geotextiles and Mats** can be used as a temporary stand-alone soil stabilization method. Depending on material selection, geotextiles and mats can be a short-term (3 months–1 year) or long-term (1–2 years) temporary stabilization method. For more information, see EC-7 Geotextiles and Mats in the *Construction BMP Handbook*.

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- ✓ **Rock Slope Protection** can be used when the slopes are subject to scour or have a high erosion potential, such as slopes adjacent to flowing waterways or slopes subject to overflow from detention facilities (spillways).
- ✓ **Soil Binders** can be used for temporary stabilization of stockpiles and disturbed areas not subject to heavy traffic. See EC-5 Soil Binders in the *Construction BMP Handbook* for more information.

## References and Resources

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