

# Stormwater Erosion and Sedimentation Control Practice Exam (Sample)

## Study Guide



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**SAMPLE**

## **Questions**

- 1. Which of the following is a classification of water erosion?**
  - A. Funnel and Basin**
  - B. Overland and Stream/Channel**
  - C. Surface and Subsurface**
  - D. Coastal and Riverine**
  
- 2. What is the primary goal of using mulch in erosion control?**
  - A. To decorate the landscape**
  - B. To provide a protective layer that retains moisture and reduces erosion**
  - C. To facilitate weed growth**
  - D. To absorb all nutrients in the soil**
  
- 3. Before discharging chemically treated water, what parameter should you test for?**
  - A. Turbidity limits**
  - B. Water temperature**
  - C. Electrical conductivity**
  - D. Color intensity**
  
- 4. What is hydromulching?**
  - A. A traditional method of planting trees**
  - B. A technique using water and mulch to establish vegetation**
  - C. A process of applying chemicals to prevent erosion**
  - D. A method of creating artificial lakes**
  
- 5. Which methods can be used to prepare the subgrade?**
  - A. Discing or scarifying**
  - B. Excavating or compaction**
  - C. Leveling or filling**
  - D. Rolling or vibrating**

- 6. How can slopes be stabilized on construction sites?**
- A. By only planting native grass species**
  - B. Through techniques like terracing, planting vegetation, and using retaining walls**
  - C. By covering slopes with plastic sheeting**
  - D. Through heavy machinery compaction alone**
- 7. When is maintenance required on a gravel entrance?**
- A. When it is too dry**
  - B. When void spaces are full of sediment**
  - C. Every six months**
  - D. Only on weekends**
- 8. What are the potential consequences of failing to control erosion and sedimentation?**
- A. Increased sunlight in water bodies**
  - B. Water quality degradation, habitat loss, increased flooding, and higher costs for remediation**
  - C. Improved agricultural practices**
  - D. Reduction in soil temperature**
- 9. What should be done if a Best Management Practice (BMP) is not performing?**
- A. Ignore the BMP and continue**
  - B. Report it to local authorities**
  - C. Replace it with an alternative**
  - D. Adjust the existing BMP**
- 10. To which structure should anchor lines be attached?**
- A. The bottom of the curtain**
  - B. The float of the curtain**
  - C. The buoys**
  - D. The water surface**

## **Answers**

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1. B
2. B
3. A
4. B
5. A
6. B
7. B
8. B
9. C
10. C

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## **Explanations**

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**1. Which of the following is a classification of water erosion?**

- A. Funnel and Basin
- B. Overland and Stream/Channel**
- C. Surface and Subsurface
- D. Coastal and Riverine

Water erosion is classified based on the way water interacts with the soil and landscape, particularly focusing on the mechanisms involved in the erosion process. The classification into overland and stream/channel erosion encompasses two primary methods through which soil can be eroded by water. Overland erosion, also known as sheet erosion, occurs when rainwater runs off across the soil surface, detaching and carrying away soil particles. This process is influenced by factors such as soil structure, vegetation cover, and the slope of the land. It typically leads to the formation of thin layers of erosion across a wide area. On the other hand, stream or channel erosion happens within defined waterways like rivers, streams, or drainage channels. It entails the more concentrated flow of water removing soil and sediment from the banks and bed of these channels, which can lead to increased soil loss and changes in the landscape over time. The other classifications mentioned, such as funnel and basin or surface and subsurface, do not accurately represent the specific processes associated with water erosion in the same direct manner. Funnel and basin could refer to topographical features rather than erosion types, while surface and subsurface more broadly categorize the location of water flow rather than categorizing the type of erosion caused by water action. Coastal and river

**2. What is the primary goal of using mulch in erosion control?**

- A. To decorate the landscape
- B. To provide a protective layer that retains moisture and reduces erosion**
- C. To facilitate weed growth
- D. To absorb all nutrients in the soil

The primary goal of using mulch in erosion control is to provide a protective layer that retains moisture and reduces erosion. When applied to the soil surface, mulch acts as a barrier, protecting the soil from the direct impact of rainfall that can cause soil particles to detach and wash away. This protective layer helps maintain soil structure and prevents the loss of valuable topsoil, which is essential for plant growth. Additionally, mulch helps in moisture retention by reducing evaporation, creating a microclimate that supports plant health. It can also assist in temperature regulation of the soil, promoting better root development. By covering the soil, mulch can inhibit the growth of weeds that compete for nutrients and water, further contributing to the desired health of the landscaped area. While decorative aspects, nutrient absorption, and facilitating weed growth may be considerations in plant health or landscape aesthetics, they do not align with the primary function of mulch in the context of erosion control. The use of mulch specifically targets reducing erosion and conserving soil moisture.

**3. Before discharging chemically treated water, what parameter should you test for?**

- A. Turbidity limits**
- B. Water temperature**
- C. Electrical conductivity**
- D. Color intensity**

Testing for turbidity limits before discharging chemically treated water is essential because turbidity indicates the presence of suspended particles in the water, which can include sediments, pollutants, and microorganisms. When water is too turbid, it can lead to negative impacts on aquatic ecosystems, as high turbidity can block sunlight from reaching submerged aquatic vegetation and can harm fish and other aquatic life by clogging gills and reducing overall water quality. Monitoring turbidity is critical in ensuring that the treated water meets regulatory standards before discharge. If the turbidity levels exceed permissible limits, it may indicate that the water is not adequately treated and could harm downstream environments. While other parameters like water temperature, electrical conductivity, and color intensity may provide useful information about water quality, turbidity specifically relates to the clarity of the water and its potential to carry harmful substances, making it the most relevant parameter to test in this context.

**4. What is hydromulching?**

- A. A traditional method of planting trees**
- B. A technique using water and mulch to establish vegetation**
- C. A process of applying chemicals to prevent erosion**
- D. A method of creating artificial lakes**

Hydromulching is a technique that combines water, mulch, and seeds to establish vegetation, primarily used for erosion control and land reclamation. This method involves mixing a slurry of seed, mulch, and water, which is then sprayed onto the soil surface. The mulch helps to retain moisture, protects seeds from erosion, and provides a favorable environment for germination and growth. This approach is particularly beneficial in areas where traditional planting methods may be less effective, such as steep slopes or disturbed lands. By ensuring soil stability and promoting plant growth through hydromulching, it plays a critical role in preventing erosion and enhancing biodiversity in rehabilitated landscapes.

## 5. Which methods can be used to prepare the subgrade?

- A. Discing or scarifying**
- B. Excavating or compaction**
- C. Leveling or filling**
- D. Rolling or vibrating**

Discing or scarifying is a method that can effectively prepare the subgrade for construction. This practice involves breaking up compacted soil to create a loose and workable surface, which is essential for proper drainage and preventing erosion. Discing slices through the top layer of soil, while scarifying involves raking or tearing at the soil to improve its structure and promote a better bond with any subsequent materials that will be placed on it, such as gravel or asphalt. These actions enhance soil aeration, increase permeability, and remove debris or organic matter that might otherwise hinder construction processes. By properly preparing the subgrade in this manner, subsequent layers laid over it can adhere better, resulting in a more stable final surface. Other options mentioned may touch on aspects of site preparation but do not specifically focus on tasks designed to condition or enhance the surface of the subgrade in the same effective way as discing or scarifying does.

## 6. How can slopes be stabilized on construction sites?

- A. By only planting native grass species**
- B. Through techniques like terracing, planting vegetation, and using retaining walls**
- C. By covering slopes with plastic sheeting**
- D. Through heavy machinery compaction alone**

Stabilizing slopes on construction sites is crucial for preventing erosion and ensuring the safety and integrity of the soil. The correct approach involves a combination of techniques such as terracing, planting vegetation, and using retaining walls. Terracing involves creating stepped levels on the slope, which reduces the speed of water runoff, thereby minimizing erosion and allowing for better water absorption. Planting vegetation is essential because it helps bind the soil with roots, absorbs water, and can also reduce the impact of raindrops hitting the soil surface. This vegetation can include a variety of plant species that are suited to the local conditions, providing biodiversity which can further enhance soil stability. Retaining walls are structures designed to hold back soil and prevent it from eroding down the slope, effectively managing the slope's angle and providing further stabilization. Other methods alone, such as covering slopes with plastic sheeting, fail to address long-term stability and can result in water pooling, which may exacerbate erosion problems. Heavy machinery compaction may temporarily harden the surface but does not provide the sustainable, ecological benefits that a combined approach does, and can sometimes lead to increased surface runoff. Therefore, the comprehensive strategy outlined is the only effective way to ensure sustainable slope stabilization on construction sites.

**7. When is maintenance required on a gravel entrance?**

- A. When it is too dry
- B. When void spaces are full of sediment**
- C. Every six months
- D. Only on weekends

Maintenance is required on a gravel entrance when void spaces are full of sediment. This is crucial because the primary function of a gravel entrance is to reduce the amount of sediment tracked onto a paved surface from construction sites or other disturbed areas. When the voids in the gravel are filled with sediment, the effectiveness of the entrance is compromised. Not only does it fail to trap more sediment, but it can also lead to increased tracking of sediment onto roadways and other areas, thus negating the entrance's purpose. Regular inspection and maintenance are essential to ensure that the gravel entrance continues to function properly. If the void spaces are not cleared of sediment, it may result in poor drainage and ultimately affect the surrounding environment by allowing more sediment to enter stormwater systems and waterways. This maintenance approach is vital for minimizing erosion and controlling sediment transport effectively.

**8. What are the potential consequences of failing to control erosion and sedimentation?**

- A. Increased sunlight in water bodies
- B. Water quality degradation, habitat loss, increased flooding, and higher costs for remediation**
- C. Improved agricultural practices
- D. Reduction in soil temperature

The potential consequences of failing to control erosion and sedimentation are multifaceted and can have significant impacts on both the environment and human communities. When erosion occurs, it often leads to sediment being washed into nearby waterways, which can degrade water quality. Sediments can carry pollutants, including nutrients, heavy metals, and pathogens, which contaminate the water, harm aquatic life, and disrupt ecosystems. Additionally, uncontrolled erosion can result in habitat loss. Species that depend on clean water and stable shorelines may decline as their habitats become degraded by increased turbidity and sedimentation, which impacts their feeding and breeding grounds. The influx of sediment can also alter channel morphology, affecting water flow and creating conditions that are less favorable for various aquatic organisms. Increased flooding is another significant consequence linked to erosion and sedimentation. With more sediment in water bodies, the capacity of these systems to manage water volume during rain events diminishes, leading to a higher risk of flooding in surrounding areas. This flooding can cause property damage and incur significant economic costs for remediation efforts needed to restore the environment and manage stormwater effectively. The costs associated with remediation can escalate quickly; municipalities and organizations may need to invest in enhanced stormwater management systems, erosion control measures, and habitat restoration initiatives to address

**9. What should be done if a Best Management Practice (BMP) is not performing?**

- A. Ignore the BMP and continue**
- B. Report it to local authorities**
- C. Replace it with an alternative**
- D. Adjust the existing BMP**

The most effective approach when a Best Management Practice (BMP) is not performing is to adjust the existing BMP. This is crucial because BMPs are designed to manage stormwater and mitigate erosion and sedimentation issues effectively. When a BMP is underperforming, it often indicates that adjustments can be made to improve its efficacy without the need for complete replacement. Adjustments may include modifying the design or operational parameters, adding maintenance activities, or changing the materials used. By carefully evaluating and adjusting the current setup, stakeholders can enhance its performance, which is generally more resource-efficient than opting for a new BMP altogether. In addition, this method encourages ongoing improvement and optimization of existing practices, aligning with a sustainable approach to stormwater management. Making adjustments represents a commitment to continuous learning and adaptation based on observed performance rather than taking drastic measures that may not address the underlying issues effectively.

**10. To which structure should anchor lines be attached?**

- A. The bottom of the curtain**
- B. The float of the curtain**
- C. The buoys**
- D. The water surface**

Anchor lines should be attached to the buoys of the structure. This is because buoy systems are designed to keep floating barriers or curtains in place, allowing them to function effectively in managing stormwater runoff and sediment control. By securing the anchor lines to the buoys, the barriers remain stable and are less likely to be displaced by currents or wind, ensuring that they maintain their intended position and effectiveness in trapping sediment and controlling water flow. Other options, such as the bottom of the curtain, float of the curtain, or the water surface, do not provide the necessary stability or configuration that buoys offer for anchoring. Attaching lines to the curtain itself could lead to distortion or limit its movement with water flow, while securing to the water surface does not provide a reliable method of holding the curtain in position against environmental forces.