



Certified Stormwater Manager Examination Content Outline

1. PROGRAM MANAGEMENT: 67 items (Recall: 16, Application: 40, Analysis: 11)

A. Overall Stormwater Management: 22 items (Recall: 5, Application: 13, Analysis: 4)

1. Identify the common sources and impact of non-point source pollutants caused by stormwater runoff (e.g., nitrogen, phosphorous, pesticides, fecal coliforms).
2. Maintain knowledge of applicable laws and regulations, such as the Clean Water Act and NPDES/TMDL programs.
3. Identify the impact of land use changes related to urban drainage systems.
4. Interpret engineering drawings and blueprints.
5. Understand the flood plain management program.
6. Understand the surface water/groundwater relationship.

B. Program Administration: 15 items (Recall: 3, Application: 9, Analysis: 3)

1. Monitor revenues and expenditures pertaining to stormwater programs.
2. Administer the stormwater program governing the quality and quantity of stormwater discharges.
3. Provide input in the determination of funding options for stormwater projects (e.g., grants, impact fees, general fund, stormwater utility).
4. Implement the annual NPDES stormwater discharge permit reporting, compliance, and monitoring program if applicable.
5. Develop stormwater budget:
 - a. compliance cost projections.
 - b. tracking ongoing costs.
6. Manage stormwater contracts.
7. Retain records of state, federal, and provincial correspondence related to stormwater environmental permits.
8. Implement permittee's stormwater management program (SWP).
9. Maintain a database of stormwater utility customers, updated, and amended from time to time through a system of adjustments, credits, variances, and new developments.
10. Track enforcement actions.
11. Ensure that workmanship and materials conform to specifications and standards during review and throughout project construction.

C. Communication/Education: 7 items (Recall: 3, Application: 4, Analysis: 0)

1. Confer with stakeholders, public officials, and legal counsel in developing:
 - a. stormwater quality and quantity programs.
 - b. new environmental programs.
 - c. draft permit responses to the issuing authority.
 - d. new ordinances.
2. Develop community outreach and educational programs concerning stormwater management issues (e.g., EPA Phase II Stormwater, adaptive management).



3. Educate stakeholders on environmental regulations (e.g., communicate violations, deficiencies, or noncompliance).
4. Educate stakeholders on matters pertaining to equipment, construction, and operations.

D. Planning and Design: 23 items (Recall: 5, Application: 14, Analysis: 4)

1. Determine the most cost-effective mix of structural vs. non-structural stormwater management practices that can meet the subwatershed goals.
2. Determine the primary stormwater pollutants of concern (e.g., phosphorus, bacteria, sediment, metals, hydrocarbons, or trash and debris).
3. Determine stormwater management practices that should be used or avoided in the subwatershed because of their environmental impacts.
4. Identify property as needed for the stormwater management program.
5. Develop capital improvement projects.
6. Evaluate low impact development alternatives for stormwater.
7. Review plans for impact of stormwater runoff from highways, parking lots, residential developments, and other impervious surfaces.
8. Review individual plans to ensure compliance and consistency with other plans (e.g., master plans for development).
9. Utilize GIS or other mapping techniques.

2. WATER QUALITY and QUANTITY: 68 items (Recall: 16, Application: 32, Analysis: 20)

A. Regulatory Programs: 30 items (Recall: 6, Application: 18, Analysis: 6)

1. Administer various pollution abatement management programs.
2. Implement programs to determine which local businesses require inspections for other pollutants such as oil and grease.
3. Conduct site inspections of businesses and private properties:
 - a. inspections for other pollutants.
 - b. discharge permits.
 - c. non-stormwater discharges.
4. Conduct illicit discharge inspections and surveys for:
 - a. cross-connections.
 - b. pollutant tracking.
5. Ensure construction projects are in compliance with applicable local, state, provincial, and federal stormwater regulations, laws, ordinances, policies, and specifications:
 - a. grading.
 - b. stormwater ponds and sewers.
 - c. erosion control measures.
6. Investigate and resolve environmental matters related to contamination of the sewer and storm drain systems and pollution problems such as:
 - a. oil leaks.
 - b. spills.
 - c. spill response.
 - d. chemical contamination.
 - e. outfall coliform source detection.



- f. sewer to storm drain cross-connections in compliance with existing legislation.
- 7. Determine and implement remedial and enforcement procedures.
- 8. Interpret sampling/monitoring data.
- 9. Demonstrate knowledge of the household hazardous waste program.

B. Structural Best Management Practices: 23 items (Recall: 4, Application: 5, Analysis: 14)

- 1. Address stormwater quality and quantity in:
 - a. ponds (e.g., micro-pool extended detention pond, wet pond, wet extended detention pond, multiple pond system, "pocket" pond).
 - b. wetlands (e.g., shallow wetlands, extended detention, pond/wetland system, "pocket" wetland).
 - c. infiltration (e.g., infiltration trench, infiltration basin, porous pavement).
 - d. filtering systems (e.g., surface sand filter, underground sand filter, perimeter sand filter, organic filter, bio-retention).
 - e. open channels (e.g., dry swale, wet swale, grass channels).
- 2. Assess stormwater pollution control facilities for:
 - a. stormwater benefits for varying degrees of pollutant removal.
 - b. maintenance requirements for different pollutant removal devices.
 - c. frequency for storm sewer cleaning and catch basin cleaning.
- 3. Select proper BMPs to meet water quality and quantity goals in order to:
 - a. meet measurable pollution reduction goals.
 - b. identify implementation status.
 - c. identify effectiveness of each BMP.
 - d. comprise a schedule for implementing each BMP.
 - e. monitor the BMP schedule status.

C. Hydrology and Hydraulics: 15 items (Recall: 6, Application: 9, Analysis: 0)

- 1. Conduct studies and analyses by:
 - a. determining percent impervious of the drainage areas.
 - b. performing drainage and flow calculations.
 - c. identifying soil type and infiltration rates for drainage areas.
 - d. delineating drainage areas.
 - e. utilizing models for analysis/design, if needed.
 - f. selecting rainfall data (e.g., storm duration and volume).
 - g. determining pipe sizing requirements.
 - h. determining pond size for water quantity issues (flooding).
 - i. determining pond size for water quality issues (pollutant removal).
- 2. Determine which hydrologic/hydraulic variables to manage in the subwatershed:
 - a. groundwater recharge.
 - b. stream bank protection/restoration.
 - c. channel protection.
 - d. flood reduction.



3. OPERATIONS and MAINTENANCE: 15 items (Recall: 6, Application: 9, Analysis: 0)

1. Administer the storm and/or sewer drain TV viewing program.
2. Coordinate with various internal city departments to enact BMPs.
3. Develop operational procedures for maintenance and repair of the stormwater infrastructure, drainage channels, and stormwater ponds.
4. Respond to drainage complaints, recommend solutions, and coordinate the implementation.
5. Analyze maintenance methods, equipment used, and performance to find new ways of increasing compliance, effectiveness, and high productivity (e.g., street sweeper, vacuum truck).