JOB TASK ANALYSIS REPORT

ENVIROCERT INTERNATIONAL INC.

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2022 CPESC STEERING COMMITTE

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INTRODUCTION

ECI is an International Non-Profit 501 (c) 6 that administers six (6) Professional Certification Programs and one (1) Certificate of Training in the United States and over twenty (20) countries. ECI has certified over 50,000 professionals over the past forty (40) years. This is the only stormwater and environmental organization that has a demonstrated accreditation compliant program that grants individuals with a Professional Certification.

The CPESC certification represents many disciplines and specialties, such as but not limited to

- Construction and Land Development
- Transportation and Linear projects
- Soil and Water Conservation
- Forestry
- Agriculture
- Mining Activities
- Landfill and Waste Management
- Oil and Gas
- Environmental Biology
- Energy including Geothermal
- Reclamation and Site Remediation
- Watershed Management
- Manufacturing and Product Suppliers
- Education.

CPESC's work to produce site-specific plans and designs that comprehensively address current and potential erosion and sedimentation issues with practices and measures that are cost effective, understandable and that meet environmental and regulatory requirements. CPESC registrants meet educational and practical experience standards, subscribe to the code of ethics, pass a rigorous qualifying exam, and maintain expertise through a continuing professional development program.

CPESC is the only stormwater certification recognized in the EPA Construction General Permit to perform Stormwater Management Plans and SWPPPs.

DEFINITION

CERTIFIED PROFESSIONAL IN EROSION AND SEDIMENT CONTROL (CPESC)

A CPESC embraces the science of surface erosion and sediment control. This practice also specializes in the study and subsequent reduction of the adverse effects of environmental pollutants, whether natural or manmade, as it relates to soil, water, and air.

A BRIEF HISTORY OF CPESC

The CPESC Program was initially proposed in 1977 by individuals working in an area where serious erosion and sediment problems were being created by improper land-development activities. Working with conservation districts, the Central Coast Section of the California Chapter of SWCS (then SCSA) prepared a formal resolution including a model program and presented it to the California Chapter on June 27, 1978. The resolution was originally proposed as a state certification program for E&SC professionals that would have led to a state licensing process. When considering the proposal, it was decided that the legalities involved in establishing and administering a licensing process was far beyond the capabilities of the state chapter. Therefore, the resolution was revised and proposed as a certification process and presented to SCSA's national leaders with endorsements by the California Chapter, the California Association of Conservation Districts, and other individuals and groups having been involved in the process.

At the national level of SCSA, a special ad-hoc committee studied the logistics and costs in creating such a certification process. Based on the recommendations of the committee, the CPESC Program was approved as a national SCSA Program in 1981. Also based on the committee's recommendation, one person from each of the nine SCSA regions was selected to serve on the first CPESC Certification Review Panel which was charged to oversee the program, its policies, procedures, and promotion.

Recognizing the limits of its promotional capabilities, the Certification Review Panel recommended that SCSA help to promote the program, which resulted in the formation of the CPESC Promotion Committee in 1984.

In 1986 the program was confronted with an unexpected insurance problem, the insurance industry indicated that a certification program requiring all applicants to pass an examination was desirable; thus, the changes made by the CRP to adopt application by examination.

A CPESC Council was formed as a replacement of the Certification Review Panel in 1999. In August that year the CPESC Council voted to incorporate, and in November was officially incorporated as CPESC, Inc.

In April 2007, EnviroCert International, Inc. was formed as an umbrella corporation to perform the administration of the Certification programs. Each Certification program became a separate corporation, all with a 501(c) 6, non-profit status. In 2013 the certification councils voted to become Divisions of EnviroCert International, Inc.

A series of CPESC program updates occurred between 2015 through 2020, to the current program management and structure.

CPESC REQUIREMENTS

CPESC® *Certified Professional in Erosion & Sediment Control™*

Education

- High School Diploma or GED Required: Yes
- College Diploma Required: No
- Required Total Professional Experience / Education Credit (min.): 7 years

Education Credit

Associate** (Science, Planning, or Construction Management)	1 year / .5 year
No degree but Professional License (PE, LA, PG, PH)*	4 years
Bachelors Degree** (Science, Planning, or Construction Mgmt. areas)	4 years / 2 years
Graduate (All of the above areas or Law)***	5 years

In Training Certifications

- In Training Program Offered
- Required Total Experience (min.): 2 years

Post-Secondary Education Credit

ECI automatically awards maximum Education Credit for Qualifying Degrees (science, planning, and construction management). Transcripts are required. Education credit is awarded for non-qualifying degrees at the rate of one half (1/2) a Qualifying Degree. Transcripts or ECI approved documentation are required. Education credit may also be awarded for professional licensure without a degree. Verification of license is required. Education credit is not cumulative.

* ECI reserves the right to review various State licensing not listed to determine applicability

** Not all science, planning, and construction management degrees apply to every certification. Non- related degrees will be given half credit

*** Graduate degrees not in the sciences will not receive any additional credit above a Bachelor's

LICENSURE VS CERTIFICATION

ECI Certified Professionals/Individuals shall only perform services within their demonstrated expertise and within the legally designated authority to practice.

Licensure

Licensure is the process by which a federal, state/province, local governmental agency or municipality grants an individual permission to practice in a particular occupation or profession that is subject to regulation under the government's authority and to refer to oneself as "Licensed" or authorized to practice. Jurisdictions adopt "practice acts" which create and empower a board to regulate the profession in the interest of public protection. Within the practice acts are mandates for practitioners to become licensed, usually based upon requirements such as education, examination, experience, and moral character. These requirements, which vary among jurisdictions, establish one's minimum competence to practice the regulated profession safely and effectively. The practice act also establishes the powers of the board, the scope of practice, and the legal requirement to uphold certain professional and ethical standards.

Obtaining a license in order to practice a profession is mandatory, and laws may provide for criminal or administrative penalties for unlicensed practice. Periodic licensure renewal is also mandatory and usually premised upon substantiating required continuing education or professional development.

Certification

Certification is the process by which private organizations recognize individuals for meeting certain criteria established by the private organization in which individuals are recognized for advanced knowledge and skills. It is a form of self-regulation which is voluntary in that it is not required of individuals prior to practice and is without governmental oversight. Practitioners seek certification usually as a form of self-promotion and in an attempt to distinguish one practitioner from another. There is no requirement to be certified and no governmental penalties for failure to achieve or loss of certification recognition. Like licensure, certification is usually granted for a limited period of time and must be renewed based upon criteria set by the private entity.

Certification does not provide a legal mechanism to practice an otherwise governmentally regulated profession but does provide certificate/certification holders to accurately promote the fact that they are certified by the private entity.

STATEMENT OF METHODOLOGY

This report describes the process for and results of a comprehensive Job Task Analysis (JTA) for the CPESC certification.

Over the years since the development of the certification, the CPESC Certification Review Panel, CPESC Councils, and CPESC Certification Committees have performed annual reviews of the CPESC program and conducted multiple small surveys of professionals within the erosion and sediment control profession. A comprehensive survey was completed in 2009 and an updated Scope of Practice was released. In 2018 the CPESC Program Committee, comprised of Subject Matter Experts (SME) completed a comprehensive review and updated the Scope of Practice. This report included Specific Areas of Practice (SAOP), Collaborative Practice Areas, Specific Guidelines, and a comprehensive list of Knowledge, Skills, and Abilities (KSAs). In 2019 the CPESC Steering Committee comprised of a different group of SMEs and the Chair of the Program Committee, reviewed, and approved the revised Scope of Practice and the KSAs. The latest surveys were completed in 2022 and results can be found in the appendices.

Preparation for this JTA has been compiled using the approved 2019 Scope of Practice document.

CERTIFIED PROFESSIONAL IN EROSION AND SEDIMENT CONTROL (CPESC) KNOWLEDGE, SKILLS, AND ABILITIES

A CPESC should be able to understand, describe and implement (as appropriate) the following concepts:

SECTION 1: SOIL EROSION AND SEDIMENTATION PROCESSES

1.1 Splash, sheet, and rill erosion
- 1.1.a Detachment
- 1.1.b Transport Mechanisms

1.2 Gully erosion
- 1.2.a Headcutting
- 1.2.b Downcutting
- 1.2.c Widening

1.3 Slope movement

1.4 Channel erosion
- 1.4.a Channel Stability

1.5 Wind erosion
- 1.5.a Creep
- 1.5.b Saltation
- 1.5.c Suspension

1.6 Sediment transport
- 1.6.a Soil type assessment

1.7 Impacts of erosion on soil resources

1.8 Impacts on water resources

1.9 Impacts on air and fugitive dust

SECTION 2: SITE CLIMATIC CONDITIONS RAINFALL AMOUNTS

2.1 Climatic Conditions

- 2.1.a Isohyetal Maps and Determinations
- 2.1.b Snow and Snow Runoff Impacts
- 2.1.c Rainfall Runoff Erosivity Factor "R"

SECTION 3: RUNOFF MANAGEMENT

3.1 Planning considerations for runoff management

- 3.1.a Drainage patterns
- 3.1.b Pre-developed conditions
- 3.1.c Construction/Project phase conditions
- 3.1.d Post-construction conditions
- 3.1.e Internal site conditions
- 3.1.f Perimeter site conditions
- 3.1.g Run on water
- 3.1.h Discharge points

3.2 Components of the Hydrologic Cycle

3.3 Factors affecting runoff

- 3.3.a Precipitation
- 3.3.b Time parameters
- 3.3.c Watershed area
- 3.3.d Ground cover
- 3.3.e Antecedent moisture condition
- 3.3.f Storage in the watershed
- 3.3.g Soil permeability

3.4 Components of precipitation

- 3.4.a Return period
- 3.4.b Rainfall distribution, rainfall depth, rainfall intensity
- 3.4.c Isohyetal map
- 3.4.d Storm types
- 3.4.e Risk analysis

3.5 Time parameters

- 3.5.a Time of concentration
- 3.5.b Travel time
- 3.5.c Sheet flow
- 3.5.d Shallow concentrated flow
- 3.5.e Channel flow
- 3.5.f Initial abstraction

3.6 Soil permeability categories

- 3.6.a Hydrologic soil groups
- 3.6.b Disturbed soil profiles

3.7 Runoff curve number components

- 3.7.a Composite curve number or weighted curve number
- 3.7.b Average runoff condition
- 3.7.c Cover description
- 3.7.d Cover type
- 3.7.e Hydrologic condition
- 3.7.f Cropping treatment
- 3.7.g Impervious areas

3.8 Runoff characteristics of the hydrograph

- 3.8.a Runoff volume
- 3.8.b Peak discharge
- 3.8.c Discharge
- 3.8.d Antecedent flow rate
- 3.8.e Rising limb
- 3.8.f Falling limb
- 3.8.g Runoff depth

3.9 Runoff estimation methods

- 3.9.a Rational Method
- 3.9.b Modified Rational Method
- e.9.c Unit Hydrograph
- 3.9.d Soil cover complex method (SCS/NRCS Method, TR 55)

Section 4: Estimating Erosion and Sedimentation Rates

4.1 Soil erosion caused by water

- 4.1.a Universal Soil Loss Equation (USLE)
- 4.1.b Revised Universal Soil Loss Equation (RUSLE and RUSLE2)
- 4.1.c Isoerodent maps, EPA Low Erosivity Waiver Calculator (LEW) or other methods for Calculating the "R" Factor
- 4.1.d Soil Erodibility Factor "K"
- 4.1.e Soil series
- 4.1.f Soil texture
- 4.1.g Topographic Factor "LS"
- 4.1.h Slope length "L"
- 4.1.i Slope steepness "S"
- 4.1.j Cover Management Factor "C"

4.1.k Practice Factor “P”

4.1.l Partial Year Factor “M”

4.2 Soil erosion caused by wind

4.2.a Total suspended particulates

4.2.b Silt content

4.2.c Wind erosion equation (WEPS or WEQ)

4.2.d Soil erosion caused in channels

4.2.e Shear stress

4.2.f Permissible tractive force

4.2.g Unit weight of water

4.2.h Depth of flow

4.2.i Direct volume

4.3 Gross erosion

4.3.a Sheet and rill

4.3.b Ephemeral gullies

4.3.c Classic gullies

4.3.d Channels

4.3.e Slope movement

4.3.f Sediment yield

4.3.g Modified Universal Soil Loss Equation (MUSLE)

4.4 Sediment yield

4.4.a Runoff depth

4.4.b Runoff volume

4.4.c Peak flow rate

4.4.d Soil Erodibility Factor “K”

4.4.e Topographic Factor “LS”

4.4.f Slope length "L"

4.4.g Slope steepness "S"

4.4.h Cover Management Factor "C"

4.4.i Practice Factor "P"

4.4.l Sediment Delivery Ratio

Section 5: Establishing and Managing Vegetation

5.1 Basic soil properties and attributes that affect soil management and plant growth

5.1.a Soil texture

5.1.b Textural triangle

5.1.c USDA / AASHTO / ASTM soil textures

5.1.d Soil structure

5.1.e Soil horizons

5.1.f Permeability, root development, water infiltration and aeration

5.1.g Bulk density

5.1.h restrictive soil layers

5.1.i Soil fertility and Ph

5.1.j Sources of organic matter

5.1.k Physical and chemical properties of soil organic matter

5.1.l Effects of residue cover

5.1.m Site orientation

5.2 Basic plant growth properties of trees, shrubs, grasses, and legumes

5.2.a Perennials, bi-annuals, and annuals

5.2.b Cool-season and warm-season

5.2.c Evergreen and deciduous

5.2.d Understory, mid-story, overstory plants

5.2.e Basic concepts of plant nutrition

5.2.f Macro and micro elements

5.2.g Difference between fibrous and tap root systems on erosion control

5.2.h Legumes and symbiotic nitrogen fixation

5.3 Concepts related to vegetation establishment and management

5.3.a Pure live seed (PLS)

5.3.b How soil temperature, soil moisture and seed/soil contact affect seed germination

5.3.c Use purity and germination information to calculate a seeding rate

5.3.d Consequences of seeding earlier or later than optimum

5.3.e Nutrient and soil amendments

5.3.f Soil fertility and chemistry testing and report

5.3.g Sources for nutrients and lime

5.3.h Liming potential of various products

5.3.i Nutrient and lime application methods

5.3.j Planting methods

5.3.k How construction operations affect soil structure and compaction

5.3.l Methods to alleviate soil compaction

5.3.m Mulching materials and application principles

5.3.n Management during establishment

5.3.n Management after establishment

Section 6: Measures to Control Erosion

6.1 Measures for soil stabilization for non-concentrated flow

6.1.a Temporary seeding

6.1.b Permanent seeding

6.1.c Sod

6.1.d Mulch

6.1.e Shrub and vine planting

6.1.f Tree planting

6.1.g Topsoil application

6.1.h Diversion

6.1.i Benching

6.1.j Grading

6.1.k Soil roughening

6.1.l Contouring

6.1.m Tracking

6.1.n Chemical treatment

6.1.o Downdrains

6.1.p Rolled Erosion Control Products (RECP)

6.1.q Manufactured logs and wattles

6.1.r Retaining wall or engineered structures

Section 7: Measures for Concentrated Flows

7.1 Channel protection with vegetation

7.1.a Grassed swales/waterways

7.1.b Sod

7.1.c RECP

7.1.d Turf reinforcement mats

7.2 Measures that provide channel protection with hard armor

7.2.a Rip rap

7.2.b Concrete

7.2.c Articulated concrete blocks

7.2.d Gabions

7.3 Diversion measures

7.3.a Diversions

7.3.b Earth dike

7.3.c Perimeter dike

7.3.d Temporary swale

7.3.e Silt ditch

7.3.f Water bar

7.3.g Bypass pipe

7.4 Measures used to protect outlets

7.4.a Rip rap

7.4.b Paved flume

7.4.c Level spreader

7.4.d Scour prevention transition mats

7.4.e RECP

Section 8: Measures to Control Wind Erosion

8.1 Measures to control wind erosion

8.1.a Management practices

8.1.a.1 Ridging

8.1.a.2 Soil inversion

8.1.a.3 Stockpile orientation

8.1.a.4 Irrigation

8.1.a.5 Crop residue

8.1.a.6 Vegetation

8.1.a.7 Fabric or poly covers

8.1.a.8 Windscreens

8.1.a.9 Soil binders/dust suppressants

8.1.a.10 Wind fence

Section 9: Measures to Control Sediment

9.1 Common sediment control measures

9.1.a Vegetated filter strip

9.1.b Brush dam

9.1.c Sediment fence

9.1.d Fiber rolls (wattles)

9.1.e Compost berm

9.1.f Sediment basin

9.1.g Outlet design

9.1.h Dewatering filter bags

9.1.i Baffles, turbidity curtains

9.2 Drain inlet protection

9.2.a Products and configurations

9.3 Advanced treatment systems

9.3.a Active

9.3.b Passive

Section 10: Site Planning for Erosion and Sediment Control

10.1 Communications

10.1.a Design team (engineers, hydrologists, landscape architect, etc.)

10.1.b Owner/Developer

10.1.c Contractors

- 10.1.d Agency regulators
- 10.2 Site assessment and sensitive resources
  - 10.2.a Onsite sensitive resources (wetlands, threatened and endangered species, cultural resources, floodplains)
  - 10.2.b Off-site sensitive resources, (with special attention to downstream resources)
  - 10.2.c Existing land use
  - 10.2.d Existing vegetative/other cover
  - 10.2.e Slopes (steepness and length)
  - 10.2.f Existing drainage conveyances/patterns
  - 10.2.g Contaminated sites
  - 10.2.h Receiving water considerations
- 10.3 Procedures and tools for site evaluations of a landscape
  - 10.3.a Topographic map
  - 10.3.b Soil Survey
  - 10.3.c Area calculation for specific area
  - 10.3.d Slope of a landscape
  - 10.3.e Floodplain map
  - 10.3.f Wetland map
- 10.4 Understand unique circumstances of proposed projects
  - 10.4.a Subdivisions and mixed use, commercial/industrial and linear projects (road and utility)
    - 10.4.a.1 Change in vegetative cover
    - 10.4.a.2 Cut and fill slopes
    - 10.4.a.3 Grade changes in other areas
    - 10.4.a.4 Increased storm runoff
    - 10.4.a.5 Increased peak flows
    - 10.4.a.6 Increased soil erosion

10.4.a.7 Increased sediment delivery

10.4.a.8 Increased turbidity

10.4.a.9 Potential for increased flooding

10.4.a.10 Key elements of low impact developments

10.4.a.11 Conservation

10.4.a.12 Small scale controls

10.4.a.13 Customized site design

10.4.a.14 Pollution prevention and education

10.4.a.15 Directing runoff to natural area

10.4.a.16 Drainage changes during development

10.4.b Forests

10.4.b.1 Landing and staging areas

10.4.b.2 Permanent and temporary roads

10.4.b.3 Stream avoidance and crossings

10.4.b.4 Clear cutting

10.4.b.5 Reforestation methods

10.4.b.6 Temporary and permanent seeding

10.4.b.7 Timber stand improvement

10.4.b.8 Prescribed fire

10.4.c Surface mines and landfills

10.4.d Farms and ranches

10.5 Components of a plan

10.5.a Site plan map

10.5.b Written narrative

10.5.c Function concept for MPs

10.5.d Measures to control erosion

10.5.e Measures for concentrated flow

10.5.f Measures to stabilize and protect streams

10.5.g Measures to control wind erosion

10.5.h Measures to control sediment

Section 11: Site Management

11.1 Regulatory requirements

11.1.a Amendments to SWPPP

11.1.b Inspections

11.1.c Training

11.1.d Documentation

11.1.e Reporting

11.2 Scheduling of work activities

11.2.a Project schedule and seasonal considerations

11.2.b Coordination among trades

11.2.c Protection of resources

11.2.d Egress points

11.2.e Discharge points and offsite impacts

11.3 Practices for material and waste management

11.3.a Delivery and storage locations

11.3.b Storage area construction

11.4 Stockpile management

11.5 Spill prevention and control

11.5.a Cleanup

11.5.b Disposal

11.5.c Reporting

11.5.d Education

11.5.e Safety

11.6 Management of activities having the potential to release pollutants other than sediment

11.6.a Solid waste

11.6.b Liquid waste

11.6.c Hazardous waste

11.6.d Contaminated soil

11.6.e Cement waste

11.6.e.1 Constructed facilities

11.6.e.2 Services

11.6.f Describe sanitary and septic waste

11.6.f.1 Paving and grinding

11.6.f.2 Illicit connections and illegal dumping

11.6.f.3 Vehicle and equipment cleaning, fueling and maintenance

11.7 Management of egress points

11.8 Water conservation strategies

11.9 Dewatering

11.9.a Regulations

11.9.b Plan components and options

11.9.c Equipment

11.10 Potable water uses and conservation

11.11 Practices and considerations for sampling

11.11.a Non-visible pollutants

11.11.b Sediment and other visible pollutant s

11.11.c Sampling and analysis plan

11.11.d Field equipment

11.11.e Monitoring preparation

11.11.f Sample collection, preservation, and delivery

11.11.g Quality assurance and quality control (QA/QC)

11.11.h Laboratory sample preparation and analytical methods

11.11.i Data management and reporting procedures

Section 12: Inspecting Construction Sites

12.1 Regulatory requirements

Affiliates and other countries will insert their own Rules, Regulations, and Ordinances. Within the United States these will refer to Federal Rules, Regulations, and Ordinances only.

12.2 Site plans & specifications (including contract requirements)

12.2.a Able to read & understand construction plans and specifications

12.2.a.1 Identify BMPs specified

12.2.a.2 Identify locations specified for BMP installation

12.3 Installation and maintenance of BMPs

12.3.a Plan and specifications

12.3.b Correct location per site maps

12.3.c Installation appears appropriate for site conditions

12.3.d BMPS need maintenance and repair

12.3.e BMP modification/substitution necessary

12.3.f Additional BMPs appear needed

12.4 Non-Stormwater Discharge Management

12.4.a Concrete Washout Containment

12.4.b Masonry Areas (cement/mortar mixes, granular materials)

12.4.c Process Waters

12.4.c.1 Dewatering operations

12.4.c.2 Cleaning operations

12.4.c.3 Other process waters

12.5 Site management

12.5.a Organization (good housekeeping plan)

12.5.b Construction materials management

12.5.b.1 Storage

12.5.b.1.a Location

12.5.b.1.b Proper Containment

12.5.b.1.3 Soil stockpile stabilization

12.5.b.2 Usage

12.5.b.3 Equipment Maintenance/Cleanup

12.5.b.4 Disposal

12.5.c Solid waste management

12.5.d Hazardous waste characterization and management

12.5.e Sanitary waste management (portable toilets)

12.5.f Equipment maintenance (including fueling operations)

12.5.f.1 Location

12.5.f.2 Proper containment

12.5.g Spill response and containment

12.5.g.1 List of expected materials on site

12.5.g.2 Safety Data Sheets (SDS)

12.5.g.3 Spill action plan

12.5.g.4 Reportable quantities list (including agency notification phone #s)

12.5.g.5 Spill kits outfitted based on expected materials list

12.6 Documentation requirements

12.6.a Plans and specifications

12.6.a.1 Meet regulatory content requirements

12.6.a.2 Kept up to date

12.6.a.2.a Current with construction

12.6.a.2.b Dates of BMP installation noted on plans

12.6.a.2.c MP design/location changes identified

12.6.a.3 Available on construction site

12.6.b Permits

12.6.b.1 Posted on site

12.6.c Signage

12.6.c.1 Required postings

12.6.c.2 Identification/guidance signage

12.6.d Inspection records

Section 13: Regulations*

***All United States candidates are tested in a separate take-home exam that must be passed prior to taking the certification exam. Affiliates and other countries may provide a separate exam to test applicants on their country's national rules, regulations, and ordinances that must be passed prior to taking the certification exam.*

13.1 United States Federal Regulations

13.1.a Clean Water Act

13.1.a.1 Purpose

13.1.a.2 Regulating Authority

13.1.a.3 Section 401 (Water Quality)

13.1.a.4 Section 402 (NPDES)

13.1.a.5 Section 404 (US Army Corp)

13.1.a.6 CZARA

13.1.a.7 Water Quality Standards

13.1.a.8 Enforcement and Penalties

13.1.a.9 Waters of the US (Surface Waters)

13.1.b Surface Mining Reclamation Act

13.1.c USDA Conservation Programs

13.2 State and local regulations

13.3 MS4 programs

13.4 Administrative requirements

13.4.a Permit filing procedures and fees

13.4.b Approval

13.4.c Inspections

13.4.d Enforcement and penalties

13.4.e Project termination

Specific Areas of Practice (SAOP) Descriptions with Tasks (T) and Proposed Test Objectives

SAOP 1. Rules and Regulations

T1.1. Knowledge of national, regional, local, and other relevant rules, regulations, and ordinances

Understand and apply

- Apply knowledge of the rules, regulations, and ordinances that have been developed to maintain or restore the chemical, physical and biological integrity of adjacent waterways and waterbodies to protect the beneficial uses of surface water
- Understand the progression history of the rules, regulations, and ordinances that have been developed to better understand current rules, regulations, and ordinances

T1.2. Communicate and/or provide information about the practices and methods used to comply with specific rules and regulations

Understand and apply

- Be able to explain the rules, regulations, and ordinances that have been developed to maintain or restore the chemical, physical and biological integrity of adjacent waterways and waterbodies to protect the beneficial uses of surface water

SAOP 1 Proposed Test Objectives (this is a common, separate exam portion, for all candidates that do not currently hold an EnviroCert International, Inc. professional certification.)

- T1.1 U/A – Apply the knowledge of the progression history and current rules, regulations, and ordinances
- T1.2 U/A – To demonstrate basic knowledge of current rules, regulations, and ordinances

SAOP 2. Site Assessment and Resource Inventory

T2.1. Ability to observe existing site conditions, assess limitations and develop an inventory of available resources, as well as resources meriting protection or mitigation

Understand and apply

- Knowledge and ability to assess existing site conditions by personal visitation or reading and interpreting existing site conditions reports
- Knowledge and ability to assess site limitations by personal visitation or reading and interpreting existing site conditions reports and develop an inventory of available resources
- Knowledge and ability to assess resources meriting protection and/or mitigation by personal visitation or reading and interpreting existing site conditions reports

T2.2. Ability to perform assessments of subsurface conditions by trenching and drilling to evaluate soil profiles to evaluate soil conditions and limitations, such as seasonal high-water table, soil texture, percent organic matter, depth to bedrock, etc.

Understand and apply

- Knowledge and ability to read and interpret soils reports to properly design, review, install, and maintain management practices

SAOP 2 Proposed Test Objectives

- T2.1 U/A – Demonstrate the knowledge and ability to assess existing site conditions, site limitations, determine resources needing mitigation or protection
- T2.2 U/A – Demonstrate the knowledge and ability to read and interpret soils reports

SAOP 3. Site Planning and Management

T3.1. Development of StormWater Pollution Prevention Plans, local Stormwater Management Plans, and/or Erosion and Sediment Control Plans

Understand and apply

- Knowledge of national, state or province, and local design standards and ordinances
- Knowledge and ability to read and understand site assessments and resource inventories
- Knowledge and ability to schedule work activities to reduce the amount of erosion and sediment
- Knowledge of practices for erosion control, sediment control, runoff and run-on control, material and waste management, stockpile management, spill prevention and control, management of ingress and egress points, grading, water conservation, dewatering, and sampling

T3.2. Develop Cost Estimates for plan implementation and management

Understand and apply

- Knowledge and ability to perform site takeoff and quantity calculations
- Knowledge to research item cost, maintenance cost, and replacement cost of measures and methods used to control erosion, sediment, and runoff and run-on

T3.3. Ability to Incorporate hydrology and drainage designs performed by a Registered/Licensed Professional

Understand and apply

- Knowledge of the components of the hydrologic cycle, including precipitation, time parameters, watershed area, soil permeability, runoff curve numbers, hydrographs, runoff estimation, and ground cover
- Knowledge of the factors affecting runoff during all stages of the project
- Knowledge and ability to determine and apply consideration for managing run-on, on-site runoff, and discharges from the site

- Knowledge to understand hydrology and drainage calculations and designs performed by a registered/licensed professional
- Ability to incorporate drainage designs into erosion and sediment control plans

SAOP 3 Proposed Test Objectives

- T3.1 U/A – Demonstrate the knowledge and ability to understand national, state or province, and local design standards and ordinances, assess existing site conditions, site limitations, determine resources needing mitigation or protection, to schedule work activities to reduce the amount of erosion and sediment, and practices for erosion control, sediment control, runoff and run-on control, material and waste management, stockpile management, spill prevention and control, management of ingress and egress points, grading, water conservation, dewatering, and sampling
- T3.2 U/A – Demonstrate the knowledge and ability to perform site takeoff and quantity calculations and research item cost, maintenance cost, and replacement cost of measures and methods used to control erosion, sediment, and runoff and run-on
- T3.3 U/A – Demonstrate the knowledge of the hydrologic cycle, factors that affect runoff, and the ability to determine, understand hydrology and drainage calculations and designs performed by a registered/licensed professional and apply consideration for managing run-on, on-site runoff, and discharges from the site, and incorporate drainage designs into erosion and sediment control plans

SAOP 4. Predicting Soil Loss

T4.1. Ability to Quantify Predicted Soil Loss, both for a single storm event and on an annual basis

Understand and apply

- Methodology and associated factors that quantify potential soil loss
- Ability to use calculated soil loss for site planning, and implementing systems to reduce the adverse effects of erosion and sediment control discharge

SAOP 4 Proposed Test Objectives

- T4.1 U/A – Demonstrate the knowledge and ability to understand and calculate potential soil loss, and use the results to design and implement systems to reduce the adverse effects of erosion and sediment control discharge

SAOP 5. Runoff Management

T5.1. Select the appropriate practices to properly intercept run-on, convey runoff through, and discharge from the site in a manner that reduces or eliminates the adverse effects of erosion and sediment discharge. (Please note measures may incorporate considerations of volume and velocity, but these determinations will require the professional oversight or site-specific designs of a registered/licensed professional.)

Understand and apply

- Drainage patterns during all stages of the site development
- Knowledge of the components of the hydrologic cycle, including precipitation, time parameters, watershed area, soil permeability, runoff curve numbers, hydrographs, runoff estimation, and ground cover
- Knowledge to understand hydrology and drainage calculations and designs performed by a registered/licensed professional
- Ability to incorporate drainage designs into erosion and sediment control plans

SAOP 5 Proposed Test Objectives

- T5.1 U/A – Demonstrate the knowledge and ability to understand and drainage patterns and apply consideration for managing run-on, on-site runoff, and discharges from the site, and incorporate drainage designs into erosion and sediment control plans

SAOP 6. Soil Stabilization

T6.1. Understanding of appropriate soil stabilization techniques and management practices, both temporary and permanent

Understand and apply

- Knowledge of the methods and techniques used to plan and implement both temporary and permanent stabilize soil

T6.2. Understanding of appropriate soil stabilization techniques and management practices used in runoff management

Understand and apply

- Knowledge of the methods and techniques used to plan and implement both temporary and permanent stabilize soil in areas of concentrated flows

SAOP 6 Proposed Test Objectives

- T6.1 U/A – Demonstrate the knowledge and ability to understand methods and techniques used in both temporary and permanent soil stabilization
- T6.2 U/A – Demonstrate the knowledge and ability to understand methods and techniques used to stabilize soil in areas of concentrated flows

SAOP 7. Assessing Soil Fertility and Soil Amendments

T7.1. Understand and interpret the agronomic potential for soils or substrates to develop and maximize establishment of sustainable vegetation for effective erosion and sediment control

Understand and apply

- Ability to read and interpret soil reports to determine the suitability and limitations of site soils

T7.2. Understanding of calculation in determining soil amendments to help in providing prescriptive agronomic measures to produce fertile, stable, and sustainable sites for the establishment of vegetation

Understand and apply

- Knowledge and ability to calculate and specify soil amendments based on soil scientist reports to produce fertile, stable, and sustainable site for the establishment of vegetation

T7.3. Understanding of calculation in determining soil amendments to help in providing prescriptive agronomic measures to produce f sustainable sites for non-vegetated areas (Please note these determinations will require the professional oversight or site-specific designs of a registered/licensed professional.)

Understand and apply

- Knowledge and ability to calculate and specify soil amendments based on soil scientist reports to provide a stable and sustainable site in non-vegetated areas (please note that this

SAOP 7 Proposed Test Objectives

- T7.1 U/A – Demonstrate the knowledge and ability to read and understand soil reports
- T7.2 U/A – Demonstrate the knowledge and ability to calculate soil amendments based on soil scientist reports to produce fertile, stable, and sustainable sites for the establishment of vegetation
- T7.3 U/A – Demonstrate the knowledge and ability to read and interpret a registered/licensed professional report concerning amendments based to provide a stable and sustainable site in non-vegetated areas

SAOP 8. Plant Species Selection

T8.1. Understand and be able to select the type of vegetation capable of providing erosion and sediment control while consistent with the project and site requirements (Please note these determinations may require the professional oversight or site-specific designs of a registered/licensed professional.)

Understand and apply

- Knowledge of the appropriate vegetation with regards to climate, soil moisture, soil chemistry, sunlight, temperatures, and slopes
- Knowledge of native plant communities

T8.2. Understand and be able to select the type of vegetation capable of restoring disturbed lands while consistent with the project and site requirements

Understand and apply

- Knowledge of the appropriate vegetation with regards to climate, soil moisture, soil chemistry, sunlight, temperatures, and slopes
- Knowledge of native plant communities

T8.3. Knowledge and ability to calculate Pure Live Seed when specifying a grass or cover crop

Understand and apply

- Knowledge and ability to calculate and specify the proper quantity of seed based on the purity and percent of germination for a grass or cover crop seed mixture

SAOP 8 Proposed Test Objectives

- T8.1 U/A – Demonstrate the knowledge of plant materials to provide adequate erosion and sediment control cover, especially native plant materials
- T8.2 U/A – Demonstrate the knowledge of plant materials to provide adequate erosion and sediment control cover for the

restoration of disturbed lands, especially native plant materials

- T8.3.U/A – Demonstrate the ability to calculate the quantity of seed required to establish the specified cover of a disturbed area

SAOP 9. Erosion and Sediment Control

T9.1. Understand and be able to select the appropriate management practices to reduce or eliminate soil loss as appropriate to the design

Understand and apply

- Knowledge of management practices for non-concentrated flow in relation to the site's physiographic factors, climate, soil type, targeted pollutants, MP effectiveness for pollutant removal, cost, and maintenance requirements.
- Knowledge of management practices for concentrated flow areas including channels, diversions, and outlets in relation to the site's physiographic factors, climate, soil type, targeted pollutants, MP effectiveness for pollutant removal, cost, and maintenance requirements.

T9.2. Understand and be able to select the appropriate measures to control sediment loss and pollutants to reduce or eliminate as appropriate to the design

Understand and apply

- Knowledge of management practices for concentrated flow areas including channels, diversions, and inlet and outlets in relation to the site's physiographic factors, climate, soil type, targeted pollutants, MP effectiveness for pollutant removal, cost, and maintenance requirements.

T9.3. Understand and be able to select the appropriate advanced treatment systems (if required) to control sediment and pollutant release or eliminate sediment and pollutant release as appropriate to the design

Understand and apply

- Knowledge of advanced treatment systems and the required testing and reporting requirements associated advanced treatment systems.

SAOP 9 Proposed Test Objectives

- T9.1 U/A – Demonstrate the knowledge management practices for non-concentrated flow conditions
- T9.2 U/A – Demonstrate the knowledge management practices for concentrated flow conditions
- T9.3 U/A – Demonstrate the knowledge of advanced treatment systems

SAOP 10. Specification of Pollution Prevention Measures

T10.1. Knowledge and ability to provide the requisite specifications for installation and maintenance of management practices to reduce and minimize pollutants of concern

Understand and apply

- Knowledge and ability to provide the requisite specifications for installation and maintenance of management systems

SAOP 10 Proposed Test Objectives

- T10.1 U/A – Demonstrate the knowledge management practices specifications for installation and maintenance

SAOP 11. Observation, Effectiveness Evaluation, and Measure Recommendation

T11.1. Knowledge and ability to establish, observe, and assess protocol(s) for performance of management practices

Understand and apply

- Knowledge and ability to observe and assess performance of management practices

T11.2. Knowledge and ability to provide requisite maintenance thresholds and ensure proper techniques for installation to improve performance and reduce maintenance

Understand and apply

- Knowledge and ability to provide requisite maintenance thresholds and ensure proper techniques for installation to improve performance and reduce maintenance

SAOP 11 Proposed Test Objectives

- T11.1 U/A – Demonstrate the ability to observe, inspect, and assess performance of management practices
- T11.2 U/A – Demonstrate the ability to provide requisite maintenance thresholds and ensure proper techniques for installation to improve performance and reduce maintenance

SAOP 12. Research and Development Related to Erosion and Sediment Control

T12.1. Knowledge and ability to research available technologies and recognize the appropriate applications

Understand and apply

- Knowledge and ability to research available technologies and recognize the appropriate applications

T12.2. Knowledge and ability to discuss and/or develop new technologies and improve existing technologies to minimize or eliminate soil loss and pollutants or concern

Understand and apply

- Knowledge and ability to discuss and/or develop new technologies and improve existing technologies to minimize or eliminate soil loss and pollutants or concern

SAOP 12 Proposed Test Objectives

- T12.1 U/A – Demonstrate the ability to research available technologies and recognize the appropriate applications
- T12.2 U/A – Demonstrate the ability to discuss and/or develop new technologies and improve existing technologies to minimize or eliminate soil loss and pollutants or concern

SAOP 13. Administration of Erosion and Sediment Control Program

T13.1. Knowledge and ability to manage and oversee the development of erosion and sediment control policies and procedures

Understand and apply

- Knowledge and ability to manage and oversee the development of erosion and sediment control policies and procedures

SAOP 13 Proposed Test Objectives

- T13.1 U/A – Demonstrate the ability to manage and oversee the development of erosion and sediment control policies and procedures

SAOP 14. Education of Erosion and Sediment Control Practitioners and Others

T14.1. Knowledge and ability to provide educational information to promote the implementation and to improve the chances of success of the stormwater control plans or programs

Understand and apply

- Knowledge and ability to provide educational information to promote the implementation and to improve the chances of success of the stormwater control plans or programs

SAOP 14 Proposed Test Objectives

- T14.1 U/A – Demonstrate the ability to provide educational information to promote the implementation and to improve the chances of success of the stormwater control plans or programs

SAOP 15. Erosion and Sediment Control Products

T15.1. Knowledge and ability to continue to develop and improve a basic understanding of erosion control products and technologies

Understand and apply

- Knowledge and ability to research available technologies and recognize the appropriate applications
- Knowledge and ability to provide educational information to promote the implementation and to improve the chances of success of the stormwater control plans or programs
- Understanding of limitations of the products

SAOP 15 Proposed Test Objectives

- T15.1 U/A – Demonstrate the ability to research available technologies and recognize the appropriate applications
- T15.2 U/A – Demonstrate the ability to provide educational information to promote the implementation and to improve the chances of success of the stormwater control plans or programs

SPECIFIC AREAS OF PRACTICE TABLE OF JOB ROLES

Primary ongoing Erosion and Sediment Control related functions for each job role for the Certified Professional in Erosion and Sediment Control (CPESC)

Designer	Reviewer / Regulator	Supplier / Materials	Instructor / Educator
SAOP 1 – T1.1 SAOP 1 – T1.2	SAOP 1 – T1.1 SAOP 1 – T1.2	SAOP 1 – T1.1 SAOP 1 – T1.2	SAOP 1 – T1.1 SAOP 1 – T1.2
SAOP 2 – T2.1 SAOP 2 – T2.2	SAOP 2 – T2.1 SAOP 2 – T2.2		SAOP 2 – T2.1 SAOP 2 – T2.2
SAOP 3 – T3.1 SAOP 3 – T3.2 SAOP 3 – T3.3	SAOP 3 – T3.1 SAOP 3 – T3.2 SAOP 3 – T3.3	SAOP 3 – T3.1 SAOP 3 – T3.2	SAOP 3 – T3.1 SAOP 3 – T3.2 SAOP 3 – T3.3
SAOP 4 – T4.1	SAOP 4 – T4.1		SAOP 4 – T4.1
SAOP 5 – T5.1	SAOP 5 – T5.1		SAOP 5 – T5.1
SAOP 6 – T6.1 SAOP 6 – T6.2	SAOP 6 – T6.1 SAOP 6 – T6.2	SAOP 6 – T6.1 SAOP 6 – T6.2	SAOP 6 – T6.1 SAOP 6 – T6.2
SAOP 7 – T7.1 SAOP 7 – T7.2 SAOP 7 – T7.3	SAOP 7 – T7.1 SAOP 7 – T7.2 SAOP 7 – T7.3	SAOP 7 – T7.1 SAOP 7 – T7.2 SAOP 7 – T7.3	SAOP 7 – T7.1 SAOP 7 – T7.2 SAOP 7 – T7.3
SAOP 8 – T8.1 SAOP 8 – T8.2 SAOP 8 – T8.3	SAOP 8 – T8.1 SAOP 8 – T8.2 SAOP 8 – T8.3	SAOP 8 – T8.1 SAOP 8 – T8.2 SAOP 8 – T8.3	SAOP 8 – T8.1 SAOP 8 – T8.2 SAOP 8 – T8.3
SAOP 9 – T9.1 SAOP 9 – T9.2 SAOP 9 – T9.3	SAOP 9 – T9.1 SAOP 9 – T9.2 SAOP 9 – T9.3		SAOP 9 – T9.1 SAOP 9 – T9.2 SAOP 9 – T9.3
SAOP 10 – T10.1	SAOP 10 – T10.1	SAOP 10 – T10.1	SAOP 10 – T10.1
SAOP 11 – T11.1 SAOP 11 – T11.2	SAOP 11 – T11.1 SAOP 11 – T11.2	SAOP 11 – T11.2	SAOP 11 – T11.1 SAOP 11 – T11.2
		SAOP 12 – T12.1 SAOP 12 – T12.2	
	SAOP 13 – T13.1		
SAOP 14 – T14.1	SAOP 14 – T14.1	SAOP 14 – T14.1	SAOP 14 – T14.1
SAOP 15 – T15.1	SAOP 15 – T15.1	SAOP 15 – T15.1	SAOP 15– T15.1

EXAM BLUEPRINT

CPESC Examination Blueprint

The erosion and sediment control (ESC) practices focused on in the Certified Professional in Erosion and Sediment Control (CPESC) are as follows: Rules and Regulations, Site Assessment and Resource Inventory, Site Planning and Management, Predicting Soil Loss, Runoff Management, Soil Stabilization, Assessing Soil Fertility and Soil Amendments, Plant Species Selection, Erosion and Sediment Control, Specification of Pollution Prevention Measures, Observation, Effectiveness Evaluation, and Measure Recommendation, Research and Development Related to Erosion and Sediment Control, Administration of Erosion and Sediment Control Program, Education of Erosion and Sediment Control Practitioners and Others, and Erosion and Sediment Control Products.

Presented below are the weightages for various sections:

SAOP 1 - Rules and Regulations	**0%**
This portion of the exam is a common section for all who do not hold a current and valid ECI professional certification and is administered as a separate exam	

SAOP 2 - Site Assessment and Resource Inventory	**6-8%**
Demonstrate the knowledge and ability to assess existing site conditions, site limitations, determine resources needing mitigation or protection	
Demonstrate the knowledge and ability to read and interpret soils reports	

SAOP 3 - Site Planning and Management	**8–10%**
Demonstrate the knowledge and ability to understand national, state or province, and local design standards and ordinances, assess existing site conditions, site limitations, determine resources needing mitigation or protection, to schedule work activities to reduce the amount of erosion and sediment, and practices for erosion control, sediment control, runoff and run-on control, material and waste management, stockpile management, spill prevention and control, management of ingress and egress points, grading, water conservation, dewatering, and sampling	

Demonstrate the knowledge and ability to perform site takeoff and quantity calculations and research item cost, maintenance cost, and replacement cost of measures and methods used to control erosion, sediment, and runoff and run-on

Demonstrate the knowledge of the hydrologic cycle, factors that affect runoff, and the ability to determine, understand hydrology and drainage calculations and designs performed by a registered/licensed professional and apply consideration for managing run-on, on-site runoff, and discharges from the site, and incorporate drainage designs into erosion and sediment control plans

SAOP 4 - Predicting Soil Loss	**10–13%**
Demonstrate the knowledge and ability to understand and calculate potential soil loss, and use the results to design and implement systems to reduce the adverse effects of erosion and sediment control discharge	

SAOP 5 - Runoff Management	**9–12%**
Demonstrate the knowledge and ability to understand and drainage patterns and apply consideration for managing run-on, on-site runoff, and discharges from the site, and incorporate drainage designs into erosion and sediment control plans sediment control discharge	

SAOP 6 - Soil Stabilization	**8–10%**
Demonstrate the knowledge and ability to understand methods and techniques used in both temporary and permanent soil stabilization	
Demonstrate the knowledge and ability to understand methods and techniques used to stabilize soil in areas of concentrated flows	

SAOP 7 - Assessing Soil Fertility and Soil Amendments	**4–6%**
Demonstrate the knowledge and ability to read and understand soil reports	
Demonstrate the knowledge and ability to calculate soil amendments based on soil scientist reports to produce fertile, stable, and sustainable sites for the establishment of vegetation	
Demonstrate the knowledge and ability to read and interpret a registered/licensed professional report concerning amendments based to provide a stable and sustainable site in non-vegetated areas	

SAOP 8 - Plant Species Selection	**2–3%**
Demonstrate the knowledge of plant materials to provide adequate erosion and sediment control cover, especially native plant materials	
Demonstrate the knowledge of plant materials to provide adequate erosion and sediment control cover for the restoration of disturbed lands, especially native plant materials	
Demonstrate the ability to calculate the quantity of seed required to establish the specified cover of a disturbed area	

SAOP 9 - Erosion and Sediment Control	**14–17%**
Demonstrate the knowledge management practices for non-concentrated flow conditions	
Demonstrate the knowledge management practices for concentrated flow conditions	
Demonstrate the knowledge of advanced treatment systems	

SAOP 10 - Specification of Pollution Prevention Measures	**16–20%**
Demonstrate the knowledge management practices specifications for installation and maintenance	

SAOP -11 - Observation, Effectiveness Evaluation, and Measure Recommendation	**4–6%**
Demonstrate the ability to observe, inspect, and assess performance of management practices	
Demonstrate the ability to provide requisite maintenance thresholds and ensure proper techniques for installation to improve performance and reduce maintenance	

SAOP 12 - Research and Development Relating to Erosion and Sediment Control	**0%**
Demonstrate the ability to research available technologies and recognize the appropriate applications	
Demonstrate the ability to discuss and/or develop new technologies and improve existing technologies to minimize or eliminate soil loss and pollutants or concern	

SAOP 13 - Administration of Erosion and Sediment Control Program	**0%**
Demonstrate the ability to manage and oversee the development of erosion and sediment control policies and procedures	

SAOP 14 - Education of Erosion and Sediment Control Practitioners and Others	**3–5%**
Demonstrate the ability to provide educational information to promote the implementation and to improve the chances of success of the stormwater control plans or programs	

SAOP 15 - Erosion and Sediment Control Products	**3–5%**
Demonstrate the ability to research available technologies and recognize the appropriate applications	
Demonstrate the ability to provide educational information to promote the implementation and to improve the chances of success of the stormwater control plans or programs	

APPENDIX A

Body of Knowledge

PLACE HOLDER

APPENDIX B

Subject Matter Experts

Robert Anderson - *P.E. Juris Doctorate, CPMSM, CPESC, CPSWQ, CPISM, CESSWI, QSM, NGICP*

Mike Chase - *CPESC, CESSWI, CPSWQ, CPISM*

Mark Goldsmith - *CPESC, CESSWI, QSM*

James O'Tousa - *CPESC, CPSWQ, CESSWI*

Charles Wilson Jr. - *PLA, CPESC, CPSWQ, CESSWI, CPMSM, QSM. NGICP*

Mike Kucharski, *CESSWI, CPESC, QSM, NGICP*

Adam Dibble, *CPESC, CESSWI* Gustavo

Salerno, *CPESC* Andrew Peach, *CPESC*

Jeremiah Walker, *CPESC, CESSWI*

Francisco Urueta, *CPESC*

Carlos Labadia, *CPESC*

Jay Stone, *CPESC, CPSWQ*

Anthony Aguilar, *CPESC, CPSWQ, CESSWI, CPISM*

Sharon Dotts - *CPESC*

Nicholas Elmasian - *CPESC, CPSWQ*

Charles Greene - *CPESC, CPSWQ*

Christopher Hargreaves - *CPESC*

Mieke Hoppin - *CPESC*

Gary Moody - *CPESC, CPISM*

Marc Theisen – *CPESC, CPSWQ, CESSWI*