

CPESC[®]

General Principles Review Manual

**Certified Professional
in Erosion and
Sediment Control[®]**



Mission Statement

"EnviroCert International, Inc. serves the public trust through the administration and coordination of programs which certify technically and ethically qualified environmental professionals throughout the world."

© EnviroCert International, Inc. 2017

All rights reserved.

ACKNOWLEDGEMENTS

This General Principles Review Manual was prepared by EnviroCert International, Inc. For more information please contact:

EnviroCert International, Inc.

6 E. Medical Court Drive

Marion, NC 28752-4020

Voice: (828) 655-1600

Fax: (828) 655-1622

Email: info@envirocertintl.org

Web: www.envirocertintl.org

EnviroCert International Inc. gratefully acknowledges the contributions of the following for their support in developing and maintaining this General Principles Review Manual:

2015 UPDATE AND REVISIONS

Alan Black, Technical Chair, PE, CPSWQ, CPESC,
CESSWI

Robert Anderson, Interim Executive Director
and President, PE, CPESC, CPSWQ, CESSWI,
CPMSM

Charles Wilson Jr., Technical Director, RLA,
CPESC, CPSWQ, CESSWI, CPMSM

Barry Fagan, CPESC, CESSWI, CPMSM

Mark Goldsmith, CPESC, CESSWI

Steve Anderson, CPESC, CPSWQ, CESSWI,
CPMSM

Michael Chase, CPESC, CPSWQ, CESSWI

2010 UPDATE AND REVISIONS

Ted Sherrod, CPESC, CPSWQ

Don Lake, P.E., CPESC, CPSWQ

J. Eric Scherer, CPESC, CPSWQ

Carol L. Forrest, CPESC, CPSWQ

Eric Berntsen, CPESC, CPSWQ

Jennifer Hildebrand, CPESC, CPSWQ, CESSWI

Pierre Bordenave, CPESC

Tony King, CPESC

David Franklin, CPESC, CESSWI

Mike Harding, CPESC



Trademarks

CPESC is a registered trademark of EnviroCert International, Inc.

The CPESC logo is a registered trademark of EnviroCert International, Inc.

Certified Professional in Erosion and Sediment Control is a trademark of EnviroCert International, Inc.



Date: **NOVEMBER 6, 2015**

To: **ALL EXAM CANDIDATES**

Subject: **PROFESSIONAL CERTIFICATION AND CERTIFICATE OF TRAINING**

Ladies and Gentlemen:

EnviroCert International Inc. (ECI) is an International Professional Certification organization whose purpose is to ensure that ECI Certified Professionals have sufficient knowledge and experience, and have demonstrated technical competency through a rigorous examination. Certified Professionals are required to further develop and expand their expertise in a variety of professional development opportunities.

These requirements set ECI (as a Professional Certification) apart from “certificates of training” programs. These designations are frequently confusing because the word “certification” is often used interchangeably. It is important for the Professional Certification Applicant to understand and recognize that no single course will adequately prepare them for a Professional Certification exam. Various education opportunities and years of experience in the profession are required to adequately prepare someone for Professional Certification.

“Certificates of training” are generally classes that present supplemental education and information, and “certificates” are available to all participants who attend the training. In contrast, a Professional Certification requires years of study and experience to develop sufficient knowledge and skills necessary to become a Certified Professional. An application demonstrating this experience and education is required to be submitted and accepted by ECI. Once accepted, passing a rigorous test is required. In addition, all Certified Professionals are required to know and abide by a code of ethics and professional conduct, and completion of professional development units to demonstrate continued learning in the ever changing dynamic environment of stormwater.

A certificate of training is typically a well-defined session where the person sits through the program and may take an exam of the information presented to demonstrate a learning process has occurred. There are no prerequisites and no other continuing requirements to maintain the “certificate”.



These training opportunities are important, and ECI encourages this education and experience for all applicants and Professionals. Continuing education and development are valuable and necessary to transfer education and technology and progress the industry.

ECI has developed a list of organizations where “certificate of trainings” may be obtained, which will be accepted for PDU credits. This will be a dynamic list that will be regularly updated. We ask that if you encounter organizations that are providing these types of training, that are not on the list, please assist us by sending the information and contact names to ECI so we can follow-up.

If you have any questions, feel free to contact us.

ENVIROCERT INTERNATIONAL, INC.

Mark S. Goldsmith, CPESC, CESSWI
Vice President / Associate Executive Director



Robert W. Anderson, PE, Juris Doctorate, CPESC, CPMSM, CPSWQ, CESSWI, CMS (APWA)
Chairman of Board /Interim Executive Director



Date: **NOVEMBER 6, 2015**
To: **ALL EXAM CANDIDATES**
Subject: **EXAMINATION PROCEDURES**

Dear Candidate:

EnviroCert International Inc. (ECI) would like to take this opportunity to provide some general information for the upcoming exam(s).

CPESC: This exam has nearly 30 years of historic test data. The exam was revised in February 2015, and additional versions of the test are currently being released. Part 1 exam will range from 150 to 200 questions and a 70 percent or greater score to pass this section of the exam. Part 2 will range from 30 to 50 questions, and will require a 70 percent or greater score to pass this section of the exam.

CESSWI: This exam has 8 years of test data, and was initially revised in February 2015. The test is being further revised and additional versions of the test are currently being released. Part 1 exam will range from 100 to 120 questions and a 70 percent or greater score to pass this section of the exam. Part 2 will range from 100 to 120 questions, and will require a 70 percent or greater score to pass this section of the exam.

CPSWQ: This exam has over 12 years of historic test data. Part 1 exam will range from 100 to 120 questions and a 70 percent or greater score to pass this section of the exam. Part 2 will range from 50 to 75 questions, and will require a 70 percent or greater score to pass this section of the exam.

CPMSM: This exam was written 5 years ago and is being revised. The test will range from 150 to 200 questions and a 70 percent or greater score to pass this exam is required.



ECI would like to provide the following information and advice:

1. All qualified individuals are expected to possess the necessary education and/or experience in the field of expertise within the industry on a national level. The exams will test the minimum depth and breadth of this knowledge.
2. Exam questions are written to be applied to applicants across the U.S. and other countries.
3. The certification knowledge and exams are not intended to test State specific, but national level information and general industry knowledge. ECI has left it to the individual States to develop “local” or “State-Level” test programs.
4. Every calculation has been checked by committees consisting of leading experts in the respective field. Computer spreadsheets and hand calculations have been developed for each analytical question. Questions are designed to test general and specific areas of knowledge and skillsets. If an applicant encounters a question that appears to not contain the requisite facts, and test taker is encouraged to re-exam the question and fact pattern and should re-assess her/his approach. The necessary information has been provided.
5. The Review Manuals provide a general overview of the necessary scope of practice that an Applicant should possess. These manuals are intended to provide an overview of the “general principles” and are not intended to be a comprehensive list of subject matter. Every question points to a principle in the review manual, and specifically addresses problems that are typically encountered in the industry. It is the Applicant’s duty to understand the fundamental principles and application thereof. The exam is designed to help ECI verify level of experience including decision-making and other skills that come with professional experience.
6. All tests are analyzed and results compiled, based on, but not limited to, total score, answer per question, and specific answers. This data is being compiled based on historic test results and test results based on various thresholds of education and experience.
7. ECI is an International Certification body that is seeking to be in conformance with International Accreditation Standards. As such, like Professional Licensing organizations, does not provide exam scores or information on exam questions (Policy PS6006.01).
8. All exams will be administered On-Line or via approved independent individuals that have been formally approved by ECI. Approvals are limited to independent individuals and ECI staff in conformance with International Accreditation Standards.



ECI test results and records conclusively demonstrate that applicants who 1) obtain the proper experience, 2) prepare with comprehensive review based on the Certification Scope of Practice, and 3) implement proper exam techniques, will have a higher degree of exam success. Each Applicant should properly prepare and familiarize themselves with testing techniques in conjunction with exam technical data. This should include familiarity with calculator use and proper time management.

ECI would like to thank each Applicant for considering ECI professional certification and we wish you the best of luck. We look forward to welcoming each and every one of you as a Certified Professional with ECI, the leader in professional certification for the stormwater industry.

If you have any questions, feel free to contact us.

ENVIROCERT INTERNATIONAL, INC.



Robert W. Anderson, PE, Juris Doctorate, CPESC, CPMSM, CPSWQ, CESSWI, CMS (APWA)
Chairman of Board /Interim Executive Director



EnviroCert International, Inc.

Code of Ethics and Professional Conduct

Integrity – Objectivity – Confidentiality – Competence – Professionalism

PREAMBLE

Certified Professionals/Individuals have certain fundamental obligations to society, to clients, to the profession, and to peers and colleagues. The cornerstone of ethics and professional conduct for EnviroCert International, Inc. (ECI) are built on the following five (5) fundamental principles:

Integrity – All ECI Certified Professionals/Individuals, employees and volunteers are held in a position of trust by the public at large. The preservation of that trust is dependent on exhibiting the highest degree of integrity.

Objectivity – ECI Certified Professionals/Individuals shall perform their work with integrity, objectivity, and avoid subordination of their judgment.

Confidentiality – ECI Certified Professionals/Individuals, employees, and volunteers shall maintain all confidential information that they are provided, or become aware of. This confidential principle does not extend to such actions that include violations of the law, violation of administration rules or regulations, or that may be hazardous to the environment as outlined in this Code of Ethics and Professional Conduct.

Competence – ECI Certified Professionals/Individuals shall only perform services within their demonstrated expertise. It is essential that all Certified Professionals/Individuals commit to continual learning and professional development, and shall perform Professional Development Hours (PDHs) to reinforce and expand their knowledge base.

Professionalism – ECI Certified Professionals/Individuals shall represent their respective professions responsibly, and in a manner that maintains and enhances the professions and organization's public image and reputation.

The Code of Ethics and Professional Conduct states guidelines and rules for the conduct of Certified Professionals/Individuals in fulfilling those obligations. The Code is arranged in three tiers of statements: Canons, Ethical Standards, and Rules of Conduct.

Canons are broad principles of Ethics and Conduct.

Ethical Standards are more specific goals, to which ECI Certified Professionals/Individuals should aspire in professional performance and behavior.



Rules of Conduct (Rule) are mandatory. Rules, in some instances, implement more than one canon or ethical standard. Violation of a Rule is grounds for disciplinary action, up to and including revocation of certification.

The Code applies to the professional activities of all categories of EnviroCert International, Inc. Certified Professionals/Individuals. Certification through one, or more, of the EnviroCert International, Inc. certifications is voluntary. By accepting certification, submitting proof of required Professional Development Hours and paying

annual dues, Certified Professionals/Individuals assume an obligation of self-discipline above and beyond the requirements of laws and regulations.

Compliance with the Code, as with all laws and rules in an open society, depends primarily upon understanding and voluntary compliance, secondarily upon reinforcement by peer and public scrutiny, and finally, when necessary, upon enforcement through disciplinary action against certified individuals who fail to comply with the Rules. The Code does not, however, exhaust the moral and ethical considerations that should inform Certified Professionals/Individuals, for no worthwhile human activity can be completely defined by laws or rules. Even so, the Code is wholly concerned with ethical constraints for professionalism; the Rules are not compromised by elements concerning social agendas or activism, but simply provide a moral and rational framework for the ethical conduct of Certified Professionals/Individuals.

Where it appears, commentary is meant to clarify or elaborate the intent of a rule. The commentary is not part of the Code, and is included to assist those seeking to conform their conduct to the Code.

This Code is intended to promote the highest quality of practice, and to strengthen public confidence in the profession. Toward that end, EnviroCert International, Inc. sets forth the following.

SECTION 1: GENERAL OBLIGATIONS

CANON 1:

ECI Certified Professionals/Individuals should maintain and advance their knowledge of the art, craft, and science of the practice, and contribute to its growth. Certified Professionals/Individuals should exercise learned and uncompromised professional judgment over any other motive in the pursuit of the art, craft, and science of the practice, even at the expense of personal advantage.

ETHICAL STANDARD 1.1: KNOWLEDGE AND SKILL

ECI Certified Professionals/Individuals should strive to improve their professional and technical knowledge and skill.



RULE 1.11:

In practicing design, Certified Professionals/Individuals shall demonstrate a consistent pattern of reasonable care and competence and shall, at minimum, apply the professional and technical knowledge and skill, which is ordinarily applied by Certified Professionals/Individuals of good standing, practicing in the same locality.

ETHICAL STANDARD 1.2: STANDARDS OF EXCELLENCE

ECI Certified Professionals/Individuals should continually seek to raise the standards of functional excellence, education, research, training, practice, and professional excellence.

ETHICAL STANDARD 1.3: HUMAN RIGHTS

ECI Certified Professionals/Individuals should uphold human rights in all their professional endeavors.

RULE 1.31:

ECI Certified Professionals/Individuals shall refuse to engage in or support discrimination against individuals on the basis of race, sex, age, religion, national origin, sexual orientation, or disability.

ETHICAL STANDARD 1.4: PROMOTION OF THE CERTIFICATIONS

ECI Certified Professionals/Individuals should promote the profession and contribute to the knowledge and capability of the EnviroCert International, Inc. certifications as a whole.

SECTION 2: OBLIGATIONS TO THE PUBLIC**CANON 2:**

ECI Certified Professionals/Individuals should embrace the spirit and letter of the law governing their professional affairs and should promote and serve the public interest in their professional activities.

ETHICAL STANDARD 2.1: CONDUCT

ECI Certified Professionals/Individuals should uphold the law in the conduct of their professional activities.

RULE 2.11:

ECI Certified Professionals/Individuals shall not, in the conduct of their professional practice, knowingly or unknowingly violate the law.



Commentary: As ignorance of the law offers no mitigation of offense or punishment under the law. Therefore, ignorance offers no mitigation of this rule.

RULE 2.12:

ECI Certified Professionals/Individuals shall neither offer nor make any payment or gift to a public official with the intent of influencing the official's judgment in connection with an existing or prospective project, in which Certified Professionals/Individuals are interested.

Commentary: This rule does not prohibit campaign contributions made in conformity with applicable campaign financing laws.

RULE 2.13:

ECI Certified Professionals/Individuals serving in a public capacity shall not accept payments or gifts, which are intended to influence their judgment.

RULE 2.14:

ECI Certified Professionals/Individuals shall not knowingly engage in work where the aim or result is misleading, deceptive, or false by intent or substance.

RULE 2.15:

ECI Certified Professionals/Individuals shall not engage in conduct involving fraud or wanton disregard of the rights of others.

Commentary: This rule addresses serious misconduct, whether or not related to Certified Professionals/Individuals professional practices.

RULE 2.16:

If, in the course of their work on a project, ECI Certified Professionals/Individuals become aware of a decision exercised or prescribed by their employer or client that is fraudulent or violates any law or regulation, Certified Professionals/Individuals shall: (1) advise their employer or client against the decision, (2) refuse to consent to the decision, and (3) report the decision to the appropriate authority, unless the Certified Professionals/Individuals are able to cause the matter to be satisfactorily resolved by other means.

RULE 2.17:

ECI Certified Professionals/Individuals shall not counsel or assist a client in conduct that Certified Professionals/Individuals know, or reasonably should know, is fraudulent or illegal.



ETHICAL STANDARD 2.2: CIVIC RESPONSIBILITY

ECI Certified Professionals/Individuals should be involved in civic activities as citizens and professionals, and should strive to improve public appreciation and understanding of design and the functions and responsibilities of Certified Professionals/Individuals.

RULE 2.21:

ECI Certified Professionals/Individuals making public statements on design issues shall disclose when they are being compensated for making such statements or when they have an economic interest in the issue.

RULE 2.22:

ECI Certified Professionals/Individuals, while engaged in the practice or instruction of design, shall not knowingly do anything that constitutes a deliberate or reckless disregard for the health and safety of the communities in which they live and practice or the privacy of the individuals and businesses therein.

RULE 2.23:

ECI Certified Professionals/Individuals shall consider environmental, economic, and cultural implications of their work and endeavor to minimize the adverse impacts.

RULE 2.24:

ECI Certified Professionals/Individuals shall not knowingly make use of goods or services offered by manufacturers, suppliers, or contractors that are accompanied by an obligation that is substantively detrimental to the best interests of their client, other individuals, or the environment.

SECTION 3: OBLIGATIONS TO CLIENTS**CANON 3:**

ECI Certified Professionals/Individuals should serve their clients in a competent and professional manner and shall otherwise act in the client's best interest within the limits of professional responsibility.

ETHICAL STANDARD 3.1: COMPETENCE

ECI Certified Professionals/Individuals should serve their clients in a timely, lawful, and competent manner.



RULE 3.11:

In performing professional services, ECI Certified Professionals/Individuals shall take into account applicable laws and regulations. Certified Professionals/Individuals may rely on the advice of other qualified persons as to the intent and meaning of such regulations.

RULE 3.12:

ECI Certified Professionals/Individuals shall undertake to perform professional services only when they, together with those whom they may engage as consultants, are qualified by education, training, or experience in the specific technical areas involved.

RULE 3.13:

When generally recognized standards do not exist with respect to an emerging area of practice, Certified Professionals/Individuals shall exercise careful judgment and take responsible steps (including appropriate education, research, training consultation, and supervision) to ensure the competence of their work and to protect clients from harm.

Rule 3.14:

ECI Certified Professionals/Individuals have a duty and responsibility, to be knowledgeable in laws, ordinances, rules, regulations, etc. for the specific country, region, state, or locality in which they practice.

ETHICAL STANDARD 3.2: CONTRACTS, FEES & BILLING

Project contracts should embody clarity and be functionally comprehensive, and project estimates should be reasonably specific and accurate.

RULE 3.21:

ECI Certified Professionals/Individuals shall in the conduct of professional practice, produce work only as clearly described in a mutually executed contract(s) that accounts for the project's scope, deliverables, costs, terms, and the relevant obligations of all involved parties.

Commentary: This rule is intended to require that all professionally contracted work be performed according to a binding scope of responsibilities, rather than with mere verbal agreements or undefined elements. In short, all professional design work must be accomplished under clearly defined legal, and mutual constraints.

RULE 3.22:

ECI Certified Professionals/Individuals shall not materially alter the contractually defined scope, objectives, or catalog of deliverable components of a project without the client's consent.



ETHICAL STANDARD 3.3: CONFLICT OF INTEREST

ECI Certified Professionals/Individuals should avoid conflicts of interest in their professional practices and fully disclose all unavoidable conflicts as they arise.

RULE 3.31:

ECI Certified Professionals/Individuals shall not render professional services if their judgment or quality of performance could be affected by responsibilities to another project or person, or by their own interests, unless all those who rely on the Certified Professional's/Individual's judgment consent after full disclosure.

Commentary: This rule is intended to embrace the full range of situations that may present Certified Professionals/Individuals with a conflict between their interests or responsibilities and the interest of others. Those who are entitled to disclosure may include a client, owner, employer, contractor, supplier, or others who rely on or are affected by the Certified Professional's/Individual's professional decisions. A Certified Professional/Individual who cannot appropriately communicate about a conflict directly with an affected person must take steps to ensure that disclosure is made by other means.

ETHICAL STANDARD 3.4: CANDOR AND TRUTHFULNESS

ECI Certified Professionals/Individuals should be candid and truthful in their professional communications and keep their clients reasonably informed about the clients' projects.

RULE 3.41:

ECI Certified Professionals/Individuals shall not intentionally or recklessly mislead existing or prospective clients about the results that can be achieved through the use of the Certified Professional's/Individual's services, nor shall Certified Professionals/Individuals state that they can achieve results by means that violate applicable law or this Code.

ETHICAL STANDARD 3.5: SECURITY

ECI Certified Professionals/Individuals should employ reasonable safeguards in systems and practices to protect the confidentiality of project materials—both analog and digital.

ETHICAL STANDARD 3.6: CONFIDENTIALITY

ECI Certified Professionals/Individuals should safeguard the trust placed in them by their clients.



RULE 3.61:

ECI Certified Professionals/Individuals shall not knowingly disclose information that would adversely affect their client or that they have been asked to maintain in confidence, including all knowledge of a client's intentions, production methods, and business organization, except as otherwise allowed or required by this Code or applicable law. Details of all work in progress prior to the completion of a project shall likewise be kept in confidence except as allowed by the consent of the client.

Commentary: To encourage the full and open exchange of information necessary for a successful professional project relationship, Certified Professionals/Individuals must recognize and respect the sensitive nature of confidential client communications. Because the law does not recognize a Certified Professional/Individual-client privilege; however, the rule permits a Certified Professional/Individual to reveal a confidence when a failure to do so would be unlawful or contrary to another ethical duty imposed by this Code.

ETHICAL STANDARD 3.7: INTEGRITY

ECI Certified Professionals/Individuals should uncompromisingly maintain their integrity.

RULE 3.71:

A client or employer issuing instructions that involve violation of this Code should be corrected by the Certified Professional/Individual, or the Certified Professional/Individual should refuse the assignment.

SECTION 4: OBLIGATIONS TO THE PROFESSION**CANON 4:**

ECI Certified Professionals/Individuals should uphold the integrity and dignity of the profession.

ETHICAL STANDARD 4.1: COMPENSATION

ECI Certified Professionals/Individuals should uphold the fundamental morality of profit, free from destructive interests or conflicts of interest.

RULE 4.11:

ECI Certified Professionals/Individuals shall work only for a fee, royalty, salary, or other agreed-upon ethical form of compensation.

Commentary: This rule is meant to preclude Certified Professionals/Individuals from retaining any kickbacks, hidden discounts, commission, allowances, or payment in kind from contractors or suppliers.



RULE 4.12:

ECI Certified Professionals/Individuals shall not participate in work that, in aim or substance, denies or works to deny the inherent value of design, the value of an individual's genius, effort, or creation, or the value of an individual's property.

Commentary: This rule is intended compel Certified Professionals/Individuals to carefully evaluate pitch invitations and preclude their engagement in any form of spec work.

RULE 4.13:

Independent Certified Professionals/Individuals shall not be party to a contract or engage in work that compromises the integrity of their copyright ownership.

Commentary: This rule is meant to prohibit Certified Professionals/Individuals engagement in work for hire or other schemes that compromise a Certified Professional's/Individual's legal property rights.

RULE 4.14:

ECI Certified Professionals/Individuals speaking or writing in a professional capacity shall not knowingly make false statements of material fact.

Commentary: This rule applies to statements made in all professional contexts, including communications with clients, employers, employees, in instructive articles and white papers, or while speaking to individuals or groups.

ETHICAL STANDARD 4.2: DIGNITY AND INTEGRITY

ECI Certified Professionals/Individuals should strive, through their actions, to promote the dignity and integrity of the profession, and to ensure that their representatives and employees conform their conduct to this Code.

RULE 4.21:

ECI Certified Professionals/Individuals shall not make misleading, deceptive, or false statements or claims about their professional qualifications, experience, or performance.

RULE 4.22:

ECI Certified Professionals/Individuals shall make reasonable efforts to ensure that those over whom they have supervisory authority conform their conduct to this Code.



SECTION 5: OBLIGATIONS TO PEERS AND COLLEAGUES

CANON 5:

ECI Certified Professionals/Individuals should respect the rights and acknowledge the professional aspirations and contributions of their colleagues.

ETHICAL STANDARD 5.1: PROFESSIONAL ENVIRONMENT

ECI Certified Professionals/Individuals should provide their associates and employees with a suitable working environment, compensate them fairly, and facilitate their professional development.

ETHICAL STANDARD 5.2: PROFESSIONAL DEVELOPMENT

ECI Certified Professionals/Individuals should recognize and fulfill their obligation to nurture fellow Certified Professionals/Individuals as they progress through all stages of their career.

ETHICAL STANDARD 5.3: PROFESSIONAL RECOGNITION

ECI Certified Professionals/Individuals should build their professional reputations on the merits of their own service and performance and should recognize and give credit to others for the professional work they have performed.

RULE 5.31:

ECI Certified Professionals/Individuals shall recognize and respect the professional contributions of their employees, employers, professional colleagues, and business associates. When not the sole author of a design, the Certified Professional/Individual shall accurately state the scope and nature of his/her responsibilities in connection with work for which he/she is claiming credit.

RULE 5.32:

ECI Certified Professionals/Individuals leaving an agency shall not, without the permission of their employer or partner, take designs, drawings, data, reports, notes, or other materials relating to the agency's work, whether or not performed by the Certified Professional/Individual.

RULE 5.33:

ECI Certified Professionals/Individuals shall not unreasonably withhold permission from a departing employee or partner to take copies of designs, drawings, data, reports, notes, or other materials relating to work performed by the employee or partner that are not confidential.



ETHICAL STANDARD 5.4: HONESTY & COURTESY

ECI Certified Professionals/Individuals should pursue their professional activities with honesty and courtesy.

RULE 5.41:

In the course of pursuing business opportunities, ECI Certified Professionals/Individuals shall not seek advantage by criticizing another Certified Professional/Individual or agency or attempt, directly or indirectly, to supplant or compete with another Certified Professional/Individual or agency by means of unethical inducements.

RULE 5.42:

ECI Certified Professionals/Individuals shall be objective in publicly criticizing another Certified Professional's/Individual's work and shall not baselessly denigrate the work or reputation of a fellow Certified Professional/Individual.

RULE 5.43:

ECI Certified Professional/Individual shall not accept instructions from a client or employer that involve infringement of another person's property rights without permission, or consciously act in any manner involving any such infringement.



EXAM UNIT CONVERSION TABLE

Length

	= __ inches	= __ feet	= __ yards	= __ miles
inch	1	0.08333	0.02778	1.578E-05
foot	12	1	0.33333	0.00019
yard	36	3	1	0.00057
mile	63,360	5,280	1,760	1

Area

	= __ Sq.In.	= __ Sq.Ft.	= __ Sq.Yds.	= __ Acres	= __ Sq.Miles
Square Inch	1	0.00694	0.00077	1.594E-07	2.491E-10
Square Foot	144	1	0.11111	2.296E-05	3.587E-08
Square Yard	1,296	9	1	2.296E-05	3.228E-07
Acre	6,272,640	43,560	4,840	1	0.00156
Square Mile	4,014,489,600	27,878,400	3,097,600	640	1

Volume

	= __ Cu.In.	= __ Gallons	= __ Cu.Ft.	= __ Cu.Yds.	= __ Ac.Ft.
Cubic Inch	1	0.00433	0.00058	2.140E-06	1.329E-08
Gallon	231	1	0.13368	0.00495	3.069E-06
Cubic Foot	1,728	7.48	1	0.03704	2.300E-05
Cubic Yard	46,656	201.97	27	1	6.200E-04
Acre Feet	72,271,680	325851.43	43,560	1,613.33	1

Liquid Volumes

	= __ Ounces	= __ Pints	= __ Quarts	= __ Gallons
Ounce	1	0.06250	0.03125	0.00781
Pint	16	1	0.5	0.125
Quart	32	2	1	0.25
Gallon	128	8	4	1

Weight/Mass

	= __ Ounces	= __ Pounds	= __ Tons
Ounce	1	0.06250	3.125E-05
Pound	16	1	0.00050
Ton	32,000	2000	1



CANDIDATE TEST INFORMATION

All test candidates will need to strictly adhere to the requirements shown below. No test packets will be issued by the proctor until all outside materials have been removed from the testing room and this form has been signed.

SUPPLIES

- Candidates should only bring the following supplies to the exam.
- Clear straight edge or a ruler
- Two #2 pencils (min.)
- Your EnviroCert letter of approval for the exam
- A government issued photo ID
- EnviroCert will provide scratch paper for the exam. No other supplies will be provided.

OUTSIDE MATERIALS

No material other than that provided by EnviroCert may be brought inside the testing room. Your pockets must be empty. Purses, backpacks, bags, cell phones or tablets are not allowed in the room. The proctor may designate a storage location for your personal items. EnviroCert will not be responsible for any loss or damaged items.

CALCULATOR

Calculators shall be limited to those that are approved by the National Council of Examiners for Engineering and Surveying (NCEES), which is posted yearly. A list of allowable calculators is available at the following web site:

<http://ncees.org/exams/calculator-policy/>

- The 2016 list includes:
- **Casio:** All fx-115 models
- **Hewlett Packard:** HP 33s and HP 35s models only
- **Texas Instruments:** All TI-30X and TI-36X models

This list is subject to change and shall be the responsibility of the Applicant to verify the calculator. Any questions should be directed to ECI Technical Director prior to the exam date.

If an applicant has a calculator that is not listed on the web site they must get it preapproved by the proctor prior to the exam. The calculator shall NOT be programmable and be limited to minimal functions, including no alphanumeric characters with memory storage.

Failure to bring a calculator or a model not on the approved list will result in the examinee forfeiting his/her ability to use a calculator on the exam.

If it is determined that the Applicant test taker used an unapproved calculator and/or violated this policy, even if the calculator was approved or overlooked by the Proctor, will result in the exam results being voided, and the Applicant may be subject to ethics charges.

Cell phones, smart phones, portable computing devices, and other devices are not allowed in the exam room.



TABLE OF CONTENTS

1	Introduction	1-1
2	Rules and Regulations.....	2-1
2.1	Federal Regulations	2-1
2.1.1	Overview of the Clean Water Act	2-1
2.1.2	Effluent Limitations Guidelines.....	2-11
2.2	State Regulations	2-12
2.2.1	Types of Stormwater Permits	2-12
2.2.2	Types of Permitting Authority	2-13
2.2.3	Permit Application Methods.....	2-14
2.2.4	Notice of Intent	2-14
2.2.5	State-Specific Requirements.....	2-14
2.3	Permit Application Requirements for Construction Activity.....	2-14
2.3.1	Who Should Obtain the Permit?..	2-15
2.3.2	NOI for Construction Activity.....	2-15
2.3.3	Deadlines	2-15
2.3.4	Additional Notification.....	2-16
2.3.5	Compliance with Other State Plans	2-16
2.3.6	Stormwater Pollution Prevention Plan Requirements	2-16
2.3.7	Enforcement and Penalties.....	2-22
2.3.8	Citizen Suits	2-24
2.3.9	State Enforcement Actions	2-25
2.3.10	State NPDES Enforcement Actions	2-25
2.4	Permit Application Requirements for Municipalities	2-25
2.5	Local Regulations	2-26
2.6	Section Two Slide Presentation	2-28
3	Site Planning and Management	3-1
3.1	Resource Planning.....	3-1
3.2	Erosion and Sediment Hazards Associated with Urban Developments	3-1
3.3	Factors That Influence Erosion.....	3-2
3.4	Land Development Plans.....	3-3
3.4.1	Geography of the Area To Be Developed	3-3
3.4.2	Study of Soils in the Area to Be Developed	3-3
3.5	Erosion and Sediment Control Plan.....	3-4
3.6	The Planning Process.....	3-4
3.6.1	Plan the Development to Fit the Site.....	3-4
3.6.2	Determine Limits of Clearing and Grading	3-4
3.6.3	Divide the Site into Natural Drainage Areas	3-4
3.6.4	Design Erosion and Sediment Control Practices.....	3-4



3.7	Implementation of Erosion and Sediment Control.....	3-6
3.8	Planning Assistance.....	3-6
3.9	Considerations in Construction Sequences Scheduling	3-7
3.10	Section Three Slide Presentation	3-9
4	Predicting Soil Loss	4-1
4.1	Erosion Prediction Technology	4-1
4.2	Revised Universal Soil-Loss Equation (RUSLE).....	4-5
4.2.1	Rainfall-Runoff Erosivity Factor (R)	4-8
4.2.2	Soil Erodibility Factor (K)	4-13
4.2.3	Slope Length Factor (L).....	4-20
4.2.4	Slope Steepness Factor (S)	4-23
4.2.5	Topographic Factor (LS).....	4-25
4.2.6	Guides for Choosing Slope Lengths.....	4-27
4.2.7	Cover-Management Factor (C)	4-29
4.2.8	Support Practice Factor (P).....	4-31
4.2.9	RUSLE 2	4-31
4.3	Modified Universal Soil-Loss Equation (MUSLE)	4-32
4.4	Procedure For Estimating Gross Erosion.....	4-32
4.4.1	Sheet and Rill Erosion	4-33
4.4.2	Other Erosion	4-33
4.4.3	Total Erosion.....	4-35
4.4.4	Wind Erosion	4-36
4.5	Review Problems	4-38
4.6	Section Four Slide Presentation	4-40
5	Runoff Management	5-1
5.1	Planning Considerations for Runoff Management	5-1
5.2	Hydrologic Cycle	5-1
5.3	The Hydrograph	5-3
5.3.1	Runoff Volume.....	5-3
5.3.2	Peak Discharge	5-3
5.4	Factors Affecting Runoff.....	5-4
5.5	Precipitation	5-4
5.6	Time Parameters.....	5-4
5.6.1	Time of Concentration.....	5-4
5.6.2	Travel Time	5-10
5.6.3	Sheet Flow	5-10
5.6.4	Shallow Concentrated Flow.....	5-10
5.6.5	Channel Flow	5-10
5.6.6	Initial Abstraction	5-10
5.7	Soil Permeability.....	5-11
5.7.1	Hydrologic Soil Group A.....	5-13
5.7.2	Hydrologic Soil Group B.....	5-13
5.7.3	Hydrologic Soil Group C.....	5-13



5.7.4	Hydrologic Soil Group D	5-13
5.7.5	Disturbed Soil Profiles.....	5-13
5.7.6	Drainage and Group D Soils	5-13
5.8	Runoff Equation	5-14
5.9	Runoff Management Measures	5-14
5.10	Review Problems	5-22
5.11	Section Five Slide Presentation.....	5-23
6	Soil Stabilization.....	6-1
6.1	Soil Stabilization (Erosion Control).....	6-1
6.2	Vegetative Measures	6-1
6.2.1	Trees and Shrubs.....	6-2
6.2.2	Mulching	6-2
6.2.3	Fertilizers.....	6-2
6.3	Biotechnical Protection Measures	6-4
6.3.1	Principles of Biotechnical Slope Protection	6-7
6.3.2	Structural Measures.....	6-7
6.3.3	Planning Considerations	6-8
6.3.4	Plant Materials.....	6-8
6.4	Soil Tackifiers or Stabilizers	6-8
6.5	Fertilizer Calculation Example.....	6-8
6.6	Calculating Pure Live Seed.....	6-9
6.7	Review Problems	6-9
6.8	Section Six Slide Presentation.....	6-11
7	Sediment Control	7-1
7.1	Introduction	7-1
7.2	Sediment Control Management Practices	7-1
7.3	Capture Devices	7-1
7.4	Active Treatment Systems.....	7-2
7.4.1	Purpose	7-2
7.4.2	ATS Treatment Overview.....	7-2
7.4.3	Stormwater Regulations	7-3
7.5	Review Problem.....	7-3
7.6	Section Seven Slide Presentation.....	7-6

Appendix

A	Glossary of Terms	A-1
	Introduction	A-1
	Acronyms	A-1
	Definitions.....	A-2
B	CPESC General Principles Review Manual References.....	B-1
C	Plan Review Checklist.....	C-1
D	Pre-Exam Questions	D-1

Tables

Table 4-1. Soil Erodibility Factors (K) and Textures of the A, B, and C Soil Layers	4-13
Table 4-2. LS Factors for Construction Sites	4-21
Table 4-3. Cover Management Factors (C) - Construction Sites.....	4-29
Table 4-4. Practice Factor (P) - Surface Condition for Construction Sites	4-30
Table 4-5. Estimated Weight of Soils ¹	4-33
Table 4-6. Adjustment Factor (M) for Estimating Monthly and Portions of Annual Soil Loss	4-34
Table 5-1. Hydrologic Soil Groups For U.S. Soils.....	5-12
Table 5-2. Runoff Curve Numbers for Urban Areas.....	5-15
Table 5-3. Runoff Curve Numbers for Cultivated Agricultural Lands	5-16
Table 5-4. Runoff Curve Numbers for Other Agricultural Lands	5-17
Table 5-5. Runoff Curve Numbers for Arid and Semiarid Rangelands	5-18
Table 6-1. Guide to Mulch Materials, Rates, and Uses	6-5

Figures

Figure 4-1. Isoerodent Map Of Eastern US (R-Factors)	4-8
Figure 4-2. Isoerodent Map Of Western US (R-Factors).....	4-9
Figure 4-3. Isoerodent Map Of California (R-Factors)	4-10
Figure 4-4. Isoerodent Map of Oregon and Washington (R-Factors).....	4-11
Figure 4-5. Soil Erodibility Nomograph.....	4-18
Figure 4-6. RUSLE Schematic Slope Profile	4-20
Figure 4-7. Illustration Of Deposition Beginning And Ending On A Slope	4-27
Figure 4-8. Percent of Annual Erosion Index for New York State.....	4-37
Figure 5-1. Hydrologic Cycle	5-2
Figure 5-2. Hydrograph.....	5-3
Figure 5-3. Isohyetal Map	5-5
Figure 5-4. Approximate Geographic Boundaries for NRCS Rainfall Distributions	5-6
Figure 5-5. NRCS 24-Hour Rainfall Distributions	5-7



Figure 5-6. Hydrograph for a Narrow Watershed	5-8
Figure 5-7. Hydrograph for a Wide Watershed.....	5-9
Figure 5-8. Solution of Runoff Equation.....	5-19
Figure 5-9. Planning Flow Chart - Runoff Management	5-21
Figure 6-1. Planning Flow Chart - Soil Stabilization.....	6-3
Figure 6-2. How to Read Fertilizer Labels	6-7
Figure 7-1. Planning Flow Chart - Sediment Control.....	7-4
Figure 7-2. Perry Veterinary Clinic Site Grading Plan.....	7-5

Worksheets

Worksheet 5-1. Runoff Curve Number and Runoff Worksheet.....	5-20
--	------

Equations

Equation 4-1. Revised Universal Soil Loss Equation (RUSLE)	4-5
Equation 4-2. Slope Length Factor (L)	4-20
Equation 4-3. Slope-Length Exponent.....	4-22
Equation 4-4. Values for the Ratio β of Rill to Inter-rill Erosion	4-22
Equation 4-5. Slope Steepness Factor (S) for Slope Steepness < 9%	4-23
Equation 4-6. Slope Steepness Factor (S) for Slope Steepness \geq 9%	4-23
Equation 4-7. Slope Steepness Factor (S) for Slopes Shorter Than 15 Feet	4-23
Equation 4-8. S Factor for Slope Steepness < 9% and Weakened Soils	4-24
Equation 4-9. S Factor for Slope Steepness \geq 9% and Weakened Soils	4-24
Equation 4-10. Sediment Yield from "ith" Segment from Top of Slope	4-25
Equation 4-11. Soil Loss per Unit Area (A_i) for the "ith" Segment.....	4-26
Equation 4-12. Modified Universal Soil-Loss Equation (MUSLE)	4-31
Equation 4-13. Wind Erosion	4-35
Equation 4-14. Emission Factor for Estimating Wind Erosion	4-36
Equation 5-1. Peak Discharge for a Rainfall Event	5-11