CEU Plan is submitting a ten-hour course bundle, to include:

CEU ID #	Course Category	Course Number	CEU Hrs.	✓	Oregon - Consolidated - DW/WW Course Title	instructor
151	WW only		1		Identification & Control of Filamentous Bacteria	Glymph
291	DW/WW		1		Operator Math Made Easy - Area	Krauth
292	DW/WW		1		Operator Math Made Easy - Volume	Krauth
293	DW/WW		1		Operator Math Made Easy - Flow Rates	Krauth
299	WW only		1		Wastewater Treatment P & C - part 5 - Biosolids	Martin
304	WW/CS only		1		I & I: Inflow and Infiltration	Leverette
309	WW/CS only		2		Sanitary Sewer Manhole & Wet Well Rehabilitation	Leverette
314	DW/WW		1		Lead Sampling in School Buildings	Doss
318	DW/WW		1		Physical Infrastructure Security Planning	Hofer

Quick Reference Link page:

Website: www.ceuplan.com

Program Tutorial: https://www.ceuplan.com/CourseTutorial.html
https://www.ceuplan.com/gs_tutorial.html

Technical Support form: https://www.ceuplan.com/Help.aspx

Support e-mail address: support@ceuplan.com

Mailing address: CEU Plan
Post Office Box 10355
Brooksville, FL 34603

CEU Plan was developed in the late 1990's, to assist the Vietnam Vet Apprenticeship Training Program and the beginning of the continuing education program for water and wastewater operators in 1999. On September 5th, 2001 at 7:30 PM, the program went LIVE and began our years of tracking, monitoring, and reporting of CEUs for operators across the USA. Since then, CEU Plan pioneered the first text base course for water and wastewater treatment operators, along with the first blended learning online course combining text and streaming (video) formats. The original text within embedded video clips was introduced in 2005, in conjunction with a PBS environmental documentary to enhance operators understanding of the underground aquifers. Later, CEU Plan produced and launched the first streaming (video) format course and built a large library of uniquely developed training courses in a variety of topics. CEU Plan was one of the original training organizations to become accredited through IACET and meets the ANSI/IACET Standards 1-2018 for continuing education training. In order to achieve the accreditation, **CEU Plan** completed a rigorous application process, including a review by an IACET site visitor, and successfully demonstrated adherence to the ANSI/IACET standard, addressing the design, development, administration, and evaluation of its programs. IACET performs an audit every five years of each training provider for compliance and adherence to the ANSI/IACET Standard.

CEU Plan is recognized for over twenty years of educational and training experience in the public health – water and wastewater treatment field involving collections and distribution, treatment process and control, laboratory practices and safety, along with the basic and fundamental aspects of utility operation, maintenance, and facility management. The Instructor Group consist of highly experienced individuals with a minimum of 15-20 years of experience in their area of expertise and over 1,500 years of combined experience. 2021 carries special celebrations for us, whether it is Happy Birthday or Happy 20th Anniversary; it has been a wonderful experience. Many mountains that we have climbed as we have continued our work to make it better operators everywhere.

Accreditation through

www.ceuplan.com

Oregon Environmental Services Advisory Committee
Application for Sponsor Distance Education
OESAC CEU Committee

P. O. Box 577 • Canby, OR 97013-0577
Phone: (503)698-6486
Email: info@oesac.org • Web: http://www.oesac.org

Course title: _____DW/WW Treatment series – Operations & Process Control

Instructor(s): _____see individual course description within this course bundle

Location(s): _____ www.ceuplan.com

Date(s): _____anything – 365/7/24

Requested CEUs (1 hour class time = .1 CEU; do not include time for breaks, lunch) – see course description

DW: _____ WW: _____ O2-I: _____ O2-SP: _____

Has this course been through OESAC review before? XX No ☐ Yes If yes, what was the previous OESAC number _____

Course Format: Online/Internet XX Webinar ☐ CD Rom ☐ Correspondence Course ☐ Video ☐

One time class ☐ Recurring ☐ Recurring Dates: _____ On-going ❑

Was the content of this course designed by qualified subject matter experts?
Yes XX No ☐ - see course description with instructor bio

Is CEU awarded based on beta-testing results? Yes XX No ☐ If no, supply accrediting formula and submit results - see the IACET Instructional Course Design Worksheets

Is the requested course being bundled with like courses? Name each individual course on a separate paper. *(See instructions)* - see attached worksheet for each course listed in this DW/WW Treatment series – Operations & Process Control

Training Objective: _____see IACET Instructional Course Design Worksheet for Learning Outcomes

Target Audience: _____ DW = drinking water, DS – distribution system, and WW - wastewater

Method of Tracking Attendance: ___ see supplemental disc which illustrates the CEU Program

Are quizzes or other forms of review and feedback included in this course?
Yes XX No ☐ - each training course within CEU Plan includes quiz of true-false, multiple choice, and fill-in-the-blank, along with final essay question.

If yes, what is the minimum passing score for successful completion of this course? _ 70%

Does this course promote a product or apparatus or offer such to those attending? Yes ☐ No XX

If YES, this must be explained on a separate attachment to this application and disclosed

Course contact name: ____ William Edgar, Program Administrator

Address: _____ Post Office Box 10355

City, State, Zip: _____ Brooksville, FL 34603

Phone: _____ (352) 754-1259 Fax: __ N/A

Email: _____ wwedgar@ceuplan.org

Sponsor: _____ CEU Plan

Address: _____ same as above

City, State, Zip: _____

Contact: _____

Phone: _____ Fax: _____

Email: _____

Enclosed:
Instructor Biography ☐
Course Agenda ☐
Course Timeline ☐
Course Brochure ☐

Check #: _____
Amount enclosed: $_____

Do you want to be listed on the website as an available course? (Contact Sponsor)
Yes XX No ☐

If you want to list newly scheduled classes from an already approved course, you must send the new schedule to OESAC.

Author Full Name: Toni Glymph

Experience: Toni Glymph is a certified wastewater treatment plant operator with more than 15 years of actual hands-on wastewater treatment system experience and has spent more than 30 years conducting microscopic evaluations and troubleshooting wastewater treatment system upsets. She has conducted over 150 Wastewater Microbiology workshops including, *Wastewater Microbiology and Process Control, Filamentous Bacteria Identification and Control, Lagoon Treatment System Microbiology, Algae Identification in Wastewater Treatment Lagoons, Slime Bulking & Foaming and The Use of Staining in Wastewater Microbiology Process Control*. She continues to conduct an average of 12 workshops each year.

Course Title: Identification & Control of Filamentous Bacteria

Expected Hours Required to Complete Course: 1 hour course – streaming series

Course Summary:

Identification & Control of Filamentous Bacteria is a one hour updated video-based course on Filamentous Bacteria. Toni Glymph-Martin, the instructor, has years of experience and knowledge in the field of microbiology and she has authored many courses available to wastewater treatment operators and lab.

The presence of some filaments in the activated sludge is advantageous. They aid in settling by providing a "back-bone" for floc-forming bacteria to attach to. However, when filaments begin to grow in excess amounts, extending from the floc into the bulk fluid, they can interfere with settling and my cause foaming upon aeration. Different types of filaments dominate under different conditions. Identifying which filaments are dominating in the system will help the operator to understand the condition in the treatment system so that corrective changes can be made.

Under normal conditions in activated sludge, bacteria occur singly, in small chains or clumps. Under adverse conditions however, bacteria that grow in filaments begin to form longer chains called filamentous bacteria or "filaments". Filaments can dominate in the wastewater treatment system under a variety of conditions. These conditions are usually less favorable for the floc-forming bacteria so, this allows the filaments to gain an advantage.

Toni identifies filamentous bacteria, along with the various types and process control parameters. This course will provide a simple approach to identifying filaments in the activated sludge as well as provide suggestions for corrections. Identification & Control of Filamentous Bacteria illustrates unique screen shots of the types and describes their characteristics ….. please feel free to re-play the section videos to better identify Filamentous under your plant microscope …..

Learning Outcomes – Assessment Analysis:

By the end of this training course, you will have the ability to:

- compare the various filaments which may cause foaming in your treatment plant
- describe Filamentous Bacteria
- indicate some of the Gram Variable types associated with your sample
- describe a “Nocardia” filament found in foam
- explain sludge foaming
- discuss the presents of a “Beggiatoa” – sulfur granules filament
- compare the types of a Gram Stain test and which are positive or negative, along with the variable type
- indicate elements to control filaments
- describe the Gram Stain method
- list some of the problems associated with filamentous bacteria in your treatment plant

Course Breakdown:

The following course breakdown illustrates the individual sections:

- **Section 1 -** Introduction to Filamentous Bacteria
- **Section 2 -** A Simpler Approach, Bulking Filaments
- **Section 3 -** Bulking Filaments (cont.), Foaming Filaments

CEU Plan – Content & Instructional Course Design Worksheet

CEU Plan # 151 – Identification & Control of Filamentous Bacteria

Preparing for Activation - 05.06.2021
Instructor: Toni Glymph-Martin
amount of course hours**:** **one**

Unit/Lesson Name	Time Allotted	Content Description and/or Purpose	List Learning Outcomes	Method Used (Demonstrate Accommodation of Different Learning Styles	Assessment Method	Instructional Materials Used	Comments/ Notes
Section 1	**content:** 15.22 Minutes **quiz:** 14 minutes **accumulative:** **29** minutes	Introduction to Filamentous Bacteria	● describe Filamentous Bacteria ● list some of the problems associated with filamentous bacteria in your treatment plant ● explain sludge foaming	Text Based Streaming Based Online Video Clip illustrating content within this section	**Computer Based Exam**	Required text reading of content material and view of streaming clip, via streaming – take quiz upon completion of course material section View table, Charts, and Photograph Images View the video clip on	Inform students of the required text reading in their course enrollment confirmation – Auto response At the conclusion of the course section, instructions to proceed to the quiz will be indicated.

Lesson Name	Time	Content Description	Learning Outcomes	Learning Styles	Assessment	Instructional Materials	Comments
Section 2	**content:** 14.14 Minutes **quiz:** 10 minutes **accumulative: 24** minutes	A Simpler Approach, Bulking Filaments	● indicate some of the Gram Variable types associated with your sample ● describe the Gram Stain method ● compare the types of a Gram Stain test and which are positive or negative, along with the variable type	Streaming Based Online	**Computer Based Exam**	Required view of streaming clip, listen to audio presentation via streaming – take quiz upon completion of course material section View table, Charts, and Photograph Images	Inform students of the required assignments in the top header of the content section. At the conclusion of the course section, instructions to proceed to the quiz will be indicated.
Section 3 Final Course Requirements	**content:** 14.37 Minutes **quiz:** 10 minutes **accumulative: 24** Minutes	Bulking Filaments (cont.), Foaming Filaments	● discuss the presents of a "Beggiatoa" – sulfur granules filament ● compare the various filaments which may cause foaming in your treatment plant ● describe a "Nocardia" filament found in foam ● indicate elements to control filaments	Streaming Based Online	**Computer Base - Final Exam** **Final Course Essay and Evaluation form**	Required view of streaming clip, listen to audio presentation via streaming – take quiz upon completion of course material section **Case Study exercise with discussion – midway in the content section**	Inform students of the required assignments in the top header of the content section. At the conclusion of the course section, instructions to download worksheet and proceed to the quiz will be indicated. Complete the essay and evaluation form, prior to course being complete.

Accumulative Time:

sec 1 =	29									
sec 2 =	24									
sec 3 =	24									

accumulative time total : 77 minutes = 1 hours = 0.1 CEU

**** standard beta allows one minute for each question and answer. The essay requirement listing three things that they have learned from the course with a 10-15 word description of each thing is a non-measured time element of the course; it is not included the beta testing.**

Assessment Analysis- Level 3 - CEU Plan Beta Testing will be performed during the fall of 2021. At the beginning, student feedback and comments will be reflected in the final beta testing results, along with accumulative average of student tracking and monitoring posted during the September - December 2021 test period. The Level 1 and Level 2 Beta Testing have been completed and comply with the ANSI I IACET 1-2018 Standard, along with the internal review by CEU Plan.

Student Feedback:

- to be inserted, upon course activation and student feedback and final beta testing completed
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Author's Full Name: Paul Krauth

Experience: Paul graduated from the University of Utah in 1987. After a long and undistinguished career as a professional student earning two engineering degrees (a geek squared), he went to work for the Utah Division of Water Quality in 1989. At the Utah DWQ, he worked for two and a half years in the UPDES permits program, including the writing of discharge permits. During this time he was involved with pretreatment, wastewater sludge and stormwater issues, providing technical and operational assistance to all of Utah's wastewater treatment facilities, along with process reviews for all proposed wastewater facilities within the state. He holds ABC wastewater certifications in small lagoons systems, collections, treatment, biosolids applicator, plant maintenance, and laboratory analysis. Paul recently retired from the Utah Division of Water Quality. In 2015, Paul received the WEAU Bedell Award for extraordinary personal service to a Member Association. Paul has been a true friend to the wastewater treatment community, and his passion is shown in sharing his experience and knowledge to operators across the country.

Category: Mathematics of the Treatment Process

Course Title: Operator Math Made Easy - Area

ANSI/IACET CEU Calculations - Required to complete this Course: one hour

Course Summary:

A treatment plant operator is expected to be able to solve a number of mathematical equations to determine that the plant is running correctly and efficiently, to order chemicals and supplies, or as a prerequisite to a licensing exam. Math is not generally a popular subject, but a few rules can make it easier to master. The "Power Circle" or "Blair Witch" method is a shortcut that can be used to solve almost any equation. This short course shows how these methods can be used to find area. Several downloadable formula sheets using these techniques are included in the course, along with a downloadable worksheet for calculation practice of the section quizzes.

Operator Math Made Easy is a three part series, including: Area, Volume and Flow Rates. The basic and fundamental procedures are illustrated by the instructor in terms of pipe and tanks, so you will understand how much water is in a tank or flowing through a pipeline, and be able to calculate area and volume of various tanks within your treatment facility. It is essential to master these basics, in order to determine dosage and feed rates, re-order chemicals and double check the engineer or to make sure your tankage is sized to maintain the correct amount of storage.

Learning Outcomes: By the end of this training course, you will have the ability to:

- Demonstrate and calculate the surface area of a tank
- Illustrate the "Power Circle" method for calculating area
- Estimate the base and height areas of a tank

Course Breakdown: The following course breakdown headlines the individual sections:

- **Section 1 –** Introduction to Area Measurements
- **Section 2 –** Area Equations
- **Section 3 –** Calculate Various Tank Areas

Learning Outcomes – Assessment Analysis:

- ***Assessment Analysis – Level 3 - CEU Plan Beta Testing*** will be performed in the fall of 2017-18. At the beginning of 2018, student feedback and comments will be reflected in the final beta testing, along with cumulative average of student tracking and monitoring posted during the November 2017 – March 2018 test period. The ***Level 1*** and ***Level 2 Beta Testing*** has been completed and complies with the ANSI / IACET 1-2018 Standard, along with the internal review by CEU Plan.

CEU ID #	Course Title	Instructor	CEU Hours
291	Operator Math Made Easy - Area	Krauth	one

CEU Plan – Content & Instructional Course Design Worksheet

activated: 07.28.2017

CEU Plan # 291 – Operator Math Made Easy – Area

Instructor: Paul Krauth

amount of course hours**:** one

Unit/Lesson Name	Time Allotted	Content Description and/or Purpose	List Learning Outcomes	Method Used (Demonstrate Accommodation of Different Learning Styles	Assessment Method	Instructional Materials Used	Comments/ Notes
Section 1	**content:** 9.44 Minutes **quiz:** 10 minutes **accumulative: 20** minutes	Introduction to Area Measurements	• describe the basics of math • discuss the problem solving rule • estimate psi to feet conversion • demonstrate and calculate the surface area of a tank	Streaming Based Online	Written Exam Student is provided mathematical problems to calculate	Required text reading of content material with view of streaming clip, via streaming – take quiz upon completion of course material section View formula charts and mathematical Images	Inform students of the required text reading in their course enrollment confirmation – Auto response At the conclusion of the course section, instructions to download worksheet and proceed to the quiz will be indicated.

Lesson Name	Time	Content Description	Learning Outcomes	Learning Styles	Assessment	Instructional Materials	Comments
Section 2	**content:** 8.06 Minutes **quiz:** 11 minutes **accumulative: 19** minutes	Area Equations	● calculate diameters ● explain formula used in area calculations ● estimate surface area ● calculate the area of pipes and tanks ● describe the area radius	Streaming Based Online	Written Exam Student is provided mathematical problems to calculate	Required view of streaming clip, listen to audio presentation via streaming – take quiz upon completion of course material section View formula charts and mathematical Images	Inform students of the required assignments in the top header of the content section. At the conclusion of the course section, instructions to download worksheet and proceed to the quiz will be indicated.
Section 3	**content:** 10.51 Minutes **quiz:** 10 minutes **accumulative: 21** Minutes	Calculate Various Tank areas	● estimate the base & height areas of a tank or structure ● calculate a U-shaped channel ● illustrate the Power Circle Method for calculating the surface area and volumes	Streaming Based Online	Written Exam Student is provided mathematical problems to calculate	Required view of streaming clip, listen to audio presentation via streaming – take quiz upon completion of course material section View formula charts and mathematical Images	Inform students of the required assignments in the top header of the content section. At the conclusion of the course section, instructions to download worksheet and proceed to the quiz will be indicated. Complete the essay and evaluation form, prior to course being complete.

Accumulative Time:

sec 1 =	20									
sec 2 =	19									
sec 3 =	21									

accumulative time total : 60 minutes = 1 hours = 0.1 CEU **

**** standard beta allows one minute for each question and answer. As this being a mathematical course, the student will be spending additional time in the calculation exercise. The essay requirement listing three things that they have learned from the course with a 10-15 word description of each thing is a non-measured time element of the course; it is not included the beta testing.**

Assessment Analysis- Level 3 - CEU Plan Beta Testing will be performed during the fall of 2018. At the beginning of 2019, student feedback and comments will be reflected in the final beta testing results, along with accumulative average of student tracking and monitoring posted during the September2018 - March 2019 test period. The Level 1 and Level 2 Beta Testing have been completed and comply with the ANSI I IACET 1-2018 Standard, along with the internal review by CEU Plan.

Beta Test and Student Feedback are scheduled for Spring of 2019 to allow adequate time to collect tracking data for the 3rd tier Beta.

Student Feedback:

- to be inserted, upon course activation and student feedback and final beta testing completed
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Author's Full Name: Paul Krauth

Experience: Paul graduated from the University of Utah in 1987. After a long and undistinguished career as a professional student earning two engineering degrees (a geek squared), he went to work for the Utah Division of Water Quality in 1989. At the Utah DWQ, he worked for two and a half years in the UPDES permits program, including the writing of discharge permits. During this time he was involved with pretreatment, wastewater sludge and stormwater issues, providing technical and operational assistance to all of Utah's wastewater treatment facilities, along with process reviews for all proposed wastewater facilities within the state. He holds ABC wastewater certifications in small lagoons systems, collections, treatment, biosolids application, plant maintenance, and laboratory analysis. Paul recently retired from the Utah Division of Water Quality. In 2015, Paul received the WEAU Bedell Award for extraordinary personal service to a Member Association. Paul has been a true friend to the wastewater treatment community, and his passion is shown in sharing his experience and knowledge to operators across the country.

Category: Mathematics of the Treatment Process

Course Title: Operator Math Made Easy - Volume

ANSI/IACET CEU Calculations - Required to complete this Course: one hour

Course Summary:

A treatment plant operator is expected to be able to solve a number of mathematical equations to determine that the plant is running correctly and efficiently, to order chemicals and supplies, or as a prerequisite to a licensing exam. Math is not generally a popular subject, but a few rules can make it easier to master. The "Power Circle" or "Blair Witch" method is a shortcut that can be used to solve almost any equation. This short course shows how these methods can be used to find volume measurements. Several downloadable formula sheets using these techniques are included in the course, along with a downloadable worksheet for calculation practice of the section quizzes.

Operator Math Made Easy is a three part series, including: Area, Volume and Flow Rates. The basic and fundamental procedures are illustrated by the instructor in terms of pipe and tanks, so you will understand how much water is in a tank or flowing through a pipeline, and be able to calculate area and volume of various tanks within your treatment facility. It is essential to master these basics, in order to determine dosage and feed rates, re-order chemicals and double check the engineer or to make sure your tankage is sized to maintain the correct amount of storage.

Learning Outcomes: **By the end of this training course, you will have the ability to:**

- Define the basics for calculating volume
- Calculate the volume of a circular tank
- Describe the volume measurements of a cylinder

Course Breakdown: **The following course breakdown headlines the individual sections:**

- **Section 1 –** Introduction to Volume Measurements
- **Section 2 –** Volume Equations
- **Section 3 –** Calculate Various Volume Measurements

Learning Outcomes – Assessment Analysis:

- ***Assessment Analysis – Level 3 - CEU Plan Beta Testing*** will be performed in the fall of 2017-18. At the beginning of 2018, student feedback and comments will be reflected in the final beta testing, along with cumulative average of student tracking and monitoring posted during the November 2017 – March 2018 test period. The ***Level 1*** and ***Level 2 Beta Testing*** has been completed and complies with the ANSI / IACET 1-2018 Standard, along with the internal review by CEU Plan.

CEU ID #	Course Title	Instructor	CEU Hours
292	Operator Math Made Easy - Volumes	Krauth	one

CEU Plan – Content & Instructional Course Design Worksheet

Activated : 7-29-2017

CEU Plan # 292 – Operator Math Made Easy - Volume

Instructor: Paul Krauth

amount of course hours**:** one

Unit/Lesson Name	Time Allotted	Content Description and/or Purpose	List Learning Outcomes	Method Used (Demonstrate Accommodation of Different Learning Styles	Assessment Method	Instructional Materials Used	Comments/ Notes
Section 1	**content:** 10.36 Minutes **quiz:** 10 minutes **accumulative:** 20.36 minutes	Introduction to Volume Measurements	• describe the basics of math • discuss the power circle method for calculating • define the basics for calculating volumes • illustrate the volume formula	Streaming Based Online	Written Exam Student is provided mathematical problems to calculate	Required text reading of content material with view of streaming clip, via streaming – take quiz upon completion of course material section View formula charts and mathematical Images	Inform students of the required text reading in their course enrollment confirmation – Auto response At the conclusion of the course section, instructions to proceed to the quiz will be indicated.

Lesson Name	Time	Content Description	Learning Outcomes	Learning Styles	Assessment	Instructional Materials	Comments
Section 2	**content:** 7.41 Minutes **quiz:** 10 minutes **accumulative:** 17.41 minutes	Volume Equations	• define the volume formula • describe the various applications for volume measurement • calculate the volume of a circular tank • calculate the volume of water in a pipe	Streaming Based Online	Written Exam Student is provided mathematical problems to calculate	Required text reading of content material with view of streaming clip, via streaming – take quiz upon completion of course material section View formula charts and mathematical Images	Inform students of the required assignments in the top header of the content section. At the conclusion of the course section, instructions to download worksheet and proceed to the quiz will be indicated.
Section 3	**content:** 8.21 Minutes **quiz:** 10 minutes **accumulative:** 18.21 Minutes	Calculate various Volume Measurement	• describe the volume measurements of cylinders • calculate the volume in a cone • indicate the various units of measurement • calculate the volume of water in a circular tank	Streaming Based Online	Written Exam Student is provided mathematical problems to calculate	Required view of streaming clip, listen to audio presentation via streaming – take quiz upon completion of course material section View table, Charts, and Photograph Images	Inform students of the required assignments in the top header of the content section. At the conclusion of the course section, instructions to download worksheet and proceed to the quiz will be indicated. Complete the essay and evaluation form, prior to course being complete.

Accumulative Time:

sec 1 =	21									
sec 2 =	18									
sec 3 =	19									

accumulative time total : 58 minutes = 1 hours = 0.1 CEU **

**** standard beta allows one minute for each question and answer. As this being a mathematical course, the student will be spending additional time in the calculation exercise. The essay requirement listing three things that they have learned from the course with a 10-15 word description of each thing is a non-measured time element of the course; it is not included the beta testing.**

Assessment Analysis- Level 3 - CEU Plan Beta Testing will be performed during the fall of 2018. At the beginning of 2018, student feedback and comments will be reflected in the final beta testing results, along with accumulative average of student tracking and monitoring posted during the September - December 2018 test period. The Level 1 and Level 2 Beta Testing have been completed and comply with the ANSI I IACET 1-2018 Standard, along with the internal review by CEU Plan.

Beta Test and Student Feedback are scheduled for September - December, 2018 to allow adequate time to collect tracking data for the 3rd tier Beta.

Student Feedback:

- to be inserted, upon course activation and student feedback and final beta testing completed
-
-
-

Author's Full Name: Paul Krauth

Experience: Paul graduated from the University of Utah in 1987. After a long and undistinguished career as a professional student earning two engineering degrees (a geek squared), he went to work for the Utah Division of Water Quality in 1989. At the Utah DWQ, he worked for two and a half years in the UPDES permits program, including the writing of discharge permits. During this time he was involved with pretreatment, wastewater sludge and stormwater issues, providing technical and operational assistance to all of Utah's wastewater treatment facilities, along with process reviews for all proposed wastewater facilities within the state. He holds ABC wastewater certifications in small lagoons systems, collections, treatment, biosolids applicator, plant maintenance, and laboratory analysis. Paul recently retired from the Utah Division of Water Quality. In 2015, Paul received the WEAU Bedell Award for extraordinary personal service to a Member Association. Paul has been a true friend to the wastewater treatment community, and his passion is shown in sharing his experience and knowledge to operators across the country.

Category: Mathematics of the Treatment Process

Course Title: Operator Math Made Easy - Flow Rates

ANSI/IACET CEU Calculations - Required to complete this Course: one hour

Course Summary:

A treatment plant operator is expected to be able to solve a number of mathematical equations to determine that the plant is running correctly and efficiently, to order chemicals and supplies, or as a prerequisite to a licensing exam. Math is not generally a popular subject, but a few rules can make it easier to master. The "Power Circle" or "Blair Witch" method is a shortcut that can be used to solve almost any equation. This short course shows how these methods can be used to calculate flow rates. Several downloadable formula sheets using these techniques are included in the course, along with a downloadable worksheet for calculation practice of the section quizzes.

Operator Math Made Easy is a three part series, including: Area, Volume and Flow Rates. The basic and fundamental procedures are illustrated by the instructor in terms of pipe and tanks, so you will understand how much water is in a tank or flowing through a pipeline, and be able to calculate area and volume of various tanks within your treatment facility. It is essential to master these basics, in order to determine dosage and feed rates, re-order chemicals and double check the engineer or to make sure your tankage is sized to maintain the correct amount of storage.

Learning Outcomes: **By the end of this training course, you will have the ability to:**

- Illustrate the basic flow rate measurements through an open channel
- Describe the common conversion used in flow rate equations
- Explain the conversion of cubic feet formula

Course Breakdown: **The following course breakdown headlines the individual sections:**

- **Section 1 –** Introduction to Flow Rates
- **Section 2 –** Flow Rate Equations
- **Section 3 –** Calculate Various Flow Rate Measurements

Learning Outcomes – Assessment Analysis:

- ***Assessment Analysis – Level 3 - CEU Plan Beta Testing*** will be performed in the fall of 2017-18. At the beginning of 2018, student feedback and comments will be reflected in the final beta testing, along with cumulative average of student tracking and monitoring posted during the November 2017 – March 2018 test period. The ***Level 1*** and ***Level 2 Beta Testing*** has been completed and complies with the ANSI / IACET 1-2018 Standard, along with the internal review by CEU Plan.

CEU ID #	Course Title	Instructor	CEU Hours
293	Operator Math Made Easy - Flow Rates	Krauth	one

CEU Plan – Content & Instructional Course Design Worksheet

CEU Plan # 293 – Operator Math Made Easy – Flow Rates

Activation - 07.28.2017

Instructor: Paul Krauth

amount of course hours: **one**

Unit/Lesson Name	Time Allotted	Content Description and/or Purpose	List Learning Outcomes	Method Used (Demonstrate Accommodation of Different Learning Styles	Assessment Method	Instructional Materials Used	Comments/ Notes
Section 1	**content:** 9.27 Minutes **quiz:** 11 minutes accumulative: **20.5** minutes	Introduction to Flow Rates	• describe the "Blair" Witch Method • indicate Flow Rate Equations • illustrate the classic Flow rate measure-ment through open channels • explain the various Units of Measure-ments: cfs gpd gps mgd gpm	Streaming Based Online	Written Exam Student is provided mathematical problems to calculate	Required text reading of content material and view of streaming clip, via streaming – take quiz upon completion of course material section View table, Charts, and Photograph Images	Inform students of the required text reading in their course enrollment confirmation – Auto response At the conclusion of the course section, instructions to proceed to the quiz will be indicated.

Lesson Name	Time	Content Description	Learning Outcomes	Learning Styles	Assessment	Instructional Materials	Comments
Section 2	**content:** 10.31 Minutes **quiz:** 10 minutes **accumulative:** **20.5** minutes	Flow Rate Equations	• describe the common conversion used in flow rate equations • explain the conversion to cubic feet formula • illustrate the conversion to gallons in an enclosed pipe	Streaming Based Online	Written Exam Student is provided mathematical problems to calculate	Required view of streaming clip, listen to audio presentation via streaming – take quiz upon completion of course material section View table, Charts, and Photograph Images	Inform students of the required assignments in the top header of the content section. At the conclusion of the course section, instructions to proceed to the quiz will be indicated.
Section 3 Final Course Requirements	**content:** 11.26 Minutes **quiz:** 10 minutes **accumulative:** **21** Minutes	Calculate various Flow Rate Measurements	• describe the flow rates of a pipe • calculate the flow rate of a channel • calculate the depth of water in a tank	Streaming Based Online	Written Exam Student is provided mathematical problems to calculate **Final Course Essay and Evaluation form**	Required view of streaming clip, listen to audio presentation via streaming – take quiz upon completion of course material section View table, Charts, and Photograph Images	Inform students of the required assignments in the top header of the content section. At the conclusion of the course section, instructions to download worksheet and proceed to the quiz will be indicated. Complete the essay and evaluation form, prior to course being complete.

Accumulative Time:

sec 1 =	21									
sec 2 =	21									
sec 3 =	21									

accumulative time total : 63 minutes = 1 hours = 0.1 CEU **

**** standard beta allows one minute for each question and answer. As this being a mathematical course, the student will be spending additional time in the calculation exercise. The essay requirement listing three things that they have learned from the course with a 10-15 word description of each thing is a non-measured time element of the course; it is not included the beta testing.**

Assessment Analysis- Level 3 - CEU Plan Beta Testing will be performed during the fall of 2018. At the beginning of 2018, student feedback and comments will be reflected in the final beta testing results, along with accumulative average of student tracking and monitoring posted during the September - December 2018 test period. The Level 1 and Level 2 Beta Testing have been completed and comply with the ANSI I IACET 1-2018 Standard, along with the internal review by CEU Plan.

Beta Test and Student Feedback are scheduled for September - December, 2018 to allow adequate time to collect tracking data for the 3rd tier Beta.

Student Feedback:

- to be inserted, upon course activation and student feedback and final beta testing completed
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Author Full Name: Russ Martin

Experience: **Russ Martin** worked at USEPA for more 40 years, retiring at the end of 2011. Mr. Martin spent his first years in a field office figuring out that a lot of POTWs were not working right, then spent the next several years in various areas of the Construction Grants Program, awarding grants to help municipalities expand wastewater treatment capabilities. Since 1985, he has worked in wastewater treatment compliance assistance, helping more than 50 plants improve performance and has assisted a National compliance effort, funded under 104g1 of the Clean Water Act, that has improved the performance of thousands of POTWs. POTWs assisted by him have won National and/or Regional EPA operation and maintenance excellence awards in all six states in EPA Region 5. In addition, his most recent activities include: sustainable water infrastructure (especially asset management), security at POTWs and combined sewers.

Category: Operation and Control of a Treatment Plant

Course Title: Wastewater Treatment Performance & Control - part five - Biosolids

ANSI/IACET CEU Calculations - Required to complete this Course: one hour

Course Summary:

Part five - Biosolids. Sludge digestion, drying and solids handling process are included in this learning adventure. We conclude our tour of the Flagg Creek Water Reclamation Plant with a discussion of the solids train. Popular CEU Plan instructor Russ Martin concludes his survey of WWTP processes. Here we discuss solids thickening through centrifugation, sludge digestion (both aerobic and anaerobic), storage and drying, and land application of the biosolids.

Utilizing a Midsized POTW, Russ Martin, the instructor for this series, will explain how one can learn to better control treatment plant performance just by walking around the POTW using one's senses, armed with the knowledge of how things are supposed to work. This enables an operator to better control a facility and to use this knowledge to make a wastewater treatment plant operate more efficiently.

Russ has built this course on the knowledge gained from assisting or evaluating POTWs over the 40 years. He worked for the USEPA in enforcement and compliance assistance and/or evaluation of facilities throughout the upper Midwest of the US. Facilities that he assisted have won Regional & National Operation and Maintenance Excellence Awards, in every State in EPA Region 5. (Buffalo, MN; Reedsburg, WI; Munising, MI; Sandwich, IL; Martinsville, IN; Fredericktown, OH) POTWs he assisted included standard and extended activated sludge, rotating biological contactors, sequencing batch reactors, trickling filters and pond systems.

(POTW – Flagg Creek one of 772 Combined Sewer Communities, 12 MGD but can go to 30 MGD, Influent flows typical (210 mg/l BOD & SS), Facilities include: Influent screening, grit removal, primary clarifiers, activated sludge, secondary clarifiers, final filters, disinfection, anaerobic digestion, centrifuges, and sand drying beds).

Learning Objectives

After completing this course, the student should be able to:

- identify the expected performance and benefits of solids handling
- explain the Anaerobic Digester System
- describe the operation of an aerobic digester system
- explain the methane gas generated in an anaerobic system
- compare the benefits of aerobic to anaerobic digester systems
- illustrate the liquid sludge lagoon process
- describe the sand drying beds process
- examine the benefits of tank covers for digester, especially in cold climate

Course Breakdown:

The following course breakdown illustrates the individual sections:

- Section 1 - Solids Handling
- Section 2 – Solids Handling (continued)
- Section 3 – Land Application and Conclusion

Learning Outcomes – Assessment Analysis:

- ***Assessment Analysis – Level 3 - CEU Plan Beta Testing*** will be performed in the winter of 2021. In the midst of 2021, student feedback and comments will be reflected in the final beta testing, along with cumulative average of student tracking and monitoring posted during the June - October 2021 test period.
- The ***Level 1*** and ***Level 2 Beta Testing*** has been completed and complies with the ANSI / IACET 1-2018 Standard, along with the internal review by CEU Plan.

CEU ID #	Course Title	Instructor	CEU Hours
299	Wastewater Treatment Performance & Control - part five	Russ Martin	one

CEU Plan – Content & Instructional Course Design Worksheet

CEU Plan # 299 – Wastewater Treatment P & C part 5 - Biosolids

Activation - 01.19.2021

Instructor: Russ Martin

amount of course hours: one

Unit/Lesson Name	Time Allotted	Content Description and/or Purpose	List Learning Outcomes	Method Used (Demonstrate Accommodation of Different Learning Styles	Assessment Method	Instructional Materials Used	Comments/ Notes
Section 1	**content:** 16.11 Minutes **quiz:** 10 minutes **accumulative:** **26** minutes	Solids Handling	● identify the expected performance and benefits of solids handling ● describe the limitations to solids handling ● explain the Anaerobic Digester System	Streaming Based Online Video Clip illustrating content within this section	**Computer Based Exam**	Required text reading of content material and view of streaming clip, via streaming – take quiz upon completion of course material section View table, Charts, and Photograph Images	Inform students of the required text reading in their course enrollment confirmation – Auto response At the conclusion of the course section, instructions to proceed to the quiz will be indicated.

Lesson Name	Time	Content Description	Learning Outcomes	Learning Styles	Assessment	Instructional Materials	Comments
Section 2	**content:** 14.34 Minutes **quiz:** 10 minutes **accumulative: 25** minutes	Solids Handling, (continued)	● describe the operation of an aerobic digester system ● explain the methane gas generated in an anaerobic system ● compare the benefits of aerobic to anaerobic digester systems	Streaming Based Online	**Computer Based Exam**	Required view of streaming clip, listen to audio presentation via streaming – take quiz upon completion of course material section View table, Charts, and Photograph Images	Inform students of the required assignments in the top header of the content section. At the conclusion of the course section, instructions to proceed to the quiz will be indicated.
Section 3 Final Course Requirements	**content:** 10.36 Minutes **quiz:** 10 minutes **accumulative: 21** Minutes	Land Application and Conclusion	● illustrate the liquid sludge lagoon process ● describe the sand drying beds process ● examine the benefits of tank covers for digester, especially in cold climate	Streaming Based Online	**Computer Base - Final Exam** Essay Question - listing objectives that they learned from the course and how they apply to their job and workplace **Final Course Essay and Evaluation form**	Required view of streaming clip, listen to audio presentation via streaming – take quiz upon completion of course material section	Inform students of the required assignments in the top header of the content section. At the conclusion of the course section, instructions to download worksheet and proceed to the quiz will be indicated. Complete the essay and evaluation form, prior to course being complete.

Accumulative Time:

sec 1 =	26									
sec 2 =	25									
sec 3 =	21									

accumulative time total : 72 minutes = 1 hours = 0.1 CEU

**** standard beta allows one minute for each question and answer. The essay requirement listing three things that they have learned from the course with a 10-15 word description of each thing is a non-measured time element of the course; it is not included the beta testing.**

Assessment Analysis- Level 3 - CEU Plan Beta Testing will be performed during the winter of 2021. At the beginning of 2021, student feedback and comments will be reflected in the final beta testing results, along with accumulative average of student tracking and monitoring posted during the February - July 2021 test period. The Level 1 and Level 2 Beta Testing have been completed and comply with the ANSI I IACET 1-2018 Standard, along with the internal review by CEU Plan.

Student Feedback:

- to be inserted, upon course activation and student feedback and final beta testing completed
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Author's Full Name: Joey Leverette

Experience: Joey Leverette has 21 years' experience in the Water & Wastewater industry, and has served in several management positions with municipal utilities and contract operations. He is a state certificated operator in Water Treatment, Water Distribution, and Water Collections in the State of Georgia. Likewise, Joey is a member of the Georgia Association of Water Professionals (GAWP) and American Water Works Association (AWWA). He has served on various committees with these associations and has authored and presented at state conferences. Mr. Leverette holds a Bachelor of Arts (BA) from the University of Georgia and a Master of Public Administration (MPA) from Georgia College and State University.

Category: Distribution and Collection Systems

Course Title: I & I: Inflow and Infiltration

ANSI/IACET CEU Calculations - Required to complete this Course: one hour - video

Course Summary:

Inflow & Infiltration is a one-hour course providing a detailed overview of the issues caused by I&I and the benefits of reducing and preventing these problems. What are I & I …? Inflow and infiltration. The course explains how to distinguish the sources, discusses assessment tools, and reduction techniques.

Whether you're a plant operator, a collection system technician, an engineer, or an urban planner, Inflow and Infiltration (I&I) should be of concern to you. Sanitary sewer systems are designed to convey a specific volume of wastewater, and when rainwater (storm water) or groundwater enters the system; problem occur. The student will gather a great understanding of Inflow and Infiltration, along with methods for addressing the problem.

In the final section of this course, the instructor - Joey Leverette provides a case study and cost benefit analysis of an existing collection system. The study illustrates some of the problems associated with the existing system and the estimated pay-back.

Learning Outcomes: By the end of this training course, you will have the ability to:

- Describe Inflow and Infiltration
- Identify some of the causes of infiltration
- Compare techniques available for collection system testing for I & I
- Examine the cost and pay back for I & I repairs
- Implement a preventive maintenance plan for I & I

Course Breakdown: The following course breakdown lists the individual sections:

- Section 1 - What is Inflow and Infiltration?
- Section 2 - Why is I & I a Problem?
- Section 3 - Reduction Techniques and Case Study

CEU ID #	Course Title	Instructor	CEU Hours
304	I & I: Inflow and Infiltration	Joey Leverette	1 hr.

CEU Plan – Content & Instructional Course Design Worksheet

CEU Plan # 304 - I & I: Inflow and Infiltration

Preparing for Activation - 05.13.2019

Instructor: Joey Leverette

amount of course hours: **one**

Unit/Lesson Name	Time Allotted	Content Description and/or Purpose	List Learning Outcomes	Method Used (Demonstrate Accommodation of Different Learning Styles	Assessment Method	Instructional Materials Used	Comments/ Notes
Section 1	**content:** 12.48 Minutes **quiz:** 10 minutes **accumulative: 24** minutes	What is Inflow & Infiltration	● describe infiltration ● estimate excessive amounts of infiltration per USEPA standards ● categorize the causes of inflow and infiltration issues ● assess a CSS (combined sewer system) ● relate to collection system problems	Streaming Based Online	**Computer Based Exam**	Required text reading of content material and view of streaming clip, via streaming – take quiz upon completion of course material section View table, Charts, and Photograph Images	Inform students of the required text reading in their course enrollment confirmation – Auto response At the conclusion of the course section, instructions to proceed to the quiz will be indicated.

Lesson Name	Time	Content Description	Learning Outcomes	Learning Styles	Assessment	Instructional Materials	Comments
Section 2	**content:** 17.57 Minutes **quiz:** 10 minutes **accumulative: 28** minutes	Why is Inflow & Infiltration a problem	● rate the I & I testing procedures suitable for your collection application ● examine I & I test results ● identify measuring devices used in I & I data collection	Streaming Based Online	**Computer Based Exam**	Required view of streaming clip, listen to audio presentation via streaming – take quiz upon completion of course material section View table, Charts, and Photograph Images	Inform students of the required assignments in the top header of the content section. At the conclusion of the course section, instructions to proceed to the quiz will be indicated.
Section 3 Final Course Section - Requirements	**content:** 16.31 Minutes **quiz:** 10 minutes **accumulative: 26** Minutes	I & I Reduction Techniques	● explain the CIPP process ● describe the pay back benefits from repairs to a collection system ● list some of the inflow prevention devices used for manholes	Streaming Based Online	**Computer Base - Final Exam** Essay Question - listing objectives that they learned from the course and how they apply to their job and workplace **Final Course Essay and Evaluation form**	Required view of streaming clip, listen to audio presentation via streaming – take quiz upon completion of course material section View table, Charts, and Photograph Images	Inform students of the required assignments in the top header of the content section. At the conclusion of the course section, instructions to download any worksheet and proceed to the quiz will be indicated. Complete the essay and evaluation form, prior to course being complete.

Accumulative Time:

sec 1 =	24									
sec 2 =	28									
sec 3 =	26									

accumulative time total : 78 minutes = one hours = 0.1 CEU

**** standard beta allows one minute for each question and answer. As this being a mathematical course, the student will be spending additional time in the calculation exercise. The essay requirement listing three things that they have learned from the course with a 10-15 word description of each thing is a non-measured time element of the course; it is not included the beta testing.**

Assessment Analysis- Level 3 - CEU Plan Beta Testing will be performed during the fall of 2019-20. At the beginning of 2020, student feedback and comments will be reflected in the final beta testing results, along with accumulative average of student tracking and monitoring posted during the February - July 2020 test period. The Level 1 and Level 2 Beta Testing have been completed and comply with the ANSI I IACET 1-2018 Standard, along with the internal review by CEU Plan.

Student Feedback:

- to be inserted, upon course activation and student feedback and final beta testing completed
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Author's Full Name: Joey Leverette

Experience:

Joey Leverette has 21 years' experience in the Water & Wastewater industry, and has served in several management positions with municipal utilities and contract operations. He is a state certificated operator in Water Treatment, Water Distribution, and Water Collections in the State of Georgia. Likewise, Joey is a member of the Georgia Association of Water Professionals (GAWP) and American Water Works Association (AWWA). He has served on various committees with these associations and has authored and presented at state conferences. Mr. Leverette holds a Bachelor of Arts (BA) from the University of Georgia and a Master of Public Administration (MPA) from Georgia College and State University.

Category: Distribution and Collection Systems

Course Title: Sanitary Sewer Manhole & Wet Well Rehabilitation

ANSI/IACET CEU Calculations - Required to complete this Course: two hour – streaming

Course Summary:

Sanitary Sewer Infrastructure Systems in the United Sates are facing a crisis due to a number of factors including age, system demands, poor material selection, and poor designs. The life-cycles of existing concrete manholes and wet wells are at a critical stage of deterioration caused primarily by Microbiologically Induced Corrosion (MIC). This course focuses on the solutions demanded of this problem.

A student in the course will learn knowledge of the various liner, coating, and mortar products available in the rehabilitation market as well as alternative products to address the failing infrastructure. The course discusses polymeric and cementitious products, and other rehabilitation techniques for manhole and wet wells. A summary of design considerations and testing criteria for rehabilitation is presented in this course. Students are provided a case study related to alternative methods for breaking the rehabilitation cycle in the wastewater industry.

Learning Outcomes:

By the end of this training course, you will have the ability to:

- Define the corrosion aspects of your Collection System
- Explain the Sulfur Cycle and its' effect on your underground piping
- describe some of the testing techniques used for internal - external pressure strengths, along with tensile and flexible strength for pipes and wet well - manhole structures

Course Breakdown:

The following course breakdown lists the individual sections:

- Section 1 - Introduction
- Section 2 - Types of Rehabilitation Products - part 1
- Section 3 - Types of Rehabilitation Products - part 2
- Section 4 - Other Manhole & Wet Well Rehabilitation Components
- Section 5 - Design & Testing Criteria
- Section 6 - Alternatives - Breaking the Rehabilitation Cycle

CEU ID #	Course Title	Instructor	CEU Hours
309	Sanitary Sewer Manhole & Wet Well Rehabilitation	Joey Leverette	2 hr.

CEU Plan – Content & Instructional Course Design Worksheet

Activation - 10.02.2019

CEU Plan # 309 - Sanitary Sewer Manhole & Wet Well Rehabilitation **Instructor:** Joey Leverette

amount of course hours: **two**

Unit/Lesson Name	Time Allotted	Content Description and/or Purpose	List Learning Outcomes	Method Used (Demonstrate Accommodation of Different Learning Styles	Assessment Method	Instructional Materials Used	Comments/ Notes
Section 1	**content:** 17.29 Minutes **quiz:** 10 minutes **accumulative: 27** minutes	Introduction	● define the corrosion aspects of your Collection System ● explain the Sulfur Cycle and its' effect on your under-ground piping ● indicate some of the current corrosion problems associated with Collection Systems	Text with Streaming Online monitor of student's progress measured in elapsed time (in minutes) Reinforcement Techniques: utilize images and illustrations for double Reinforcement of Need-to-Know criteria	**Computer Based Exam** Online monitor of student's progress measured in score Percent (70% min) pass/fail	Required view of streaming clip, listen to audio presentation via streaming – take quiz upon completion of course content section View table, Charts, and Photograph Images	Inform students of the required text reading in their course enrollment confirmation – Auto response At the conclusion of the course section, instructions to proceed to the quiz will be indicated

Lesson Name	Time	Content Description	Learning Outcomes	Learning Styles	Assessment	Instructional Materials	Comments
Section 2	**content:** 12.46 Minutes **quiz:** 10 minutes **accumulative: 23** minutes	Types of Rehabilitation Products - part 1	● list some of the pros and cons related to coatings and liners ● identify some of the limitations for corrosion protection ● describe various types of spray-on techniques for wet well liners	Text with Streaming Streaming Online monitor of student's progress measured in elapsed time (in minutes)	**Computer Based Exam** Online monitor of student's progress measured in score Percent (70% min) pass/fail	Required view of streaming clip, listen to audio presentation via streaming – take quiz upon completion of course content section View table, Charts, and Photograph Images	Inform students of the required assignments in the top header of the content section. At the conclusion of the course section, instructions to proceed to the quiz will be indicated
Section 3	**content:** 11.22 Minutes **quiz:** 10 minutes **accumulative: 21** minutes	Types of Rehabilitation Products - part 2	● define some of the additives used in concrete to enhance structural duration ● compare the cement / mortar mixtures used for corrosion protection ● understand the grouts available for rehabilitation	Text with Streaming Streaming Online monitor of student's progress measured in elapsed time (in minutes)	**Computer Based Exam** Online monitor of student's progress measured in score Percent (70% min) pass/fail	Required view of streaming clip, listen to audio presentation via streaming – take quiz upon completion of course material section View table, Charts, and Photograph Images	Inform students of the required assignments in the top header of the content section. At the conclusion of the course section, instructions to proceed to the quiz will be indicated.

Lesson Name	Time	Content Description	Learning Outcomes	Learning Styles	Assessment	Instructional Materials	Comments
Section 4	**content:** 12.34 Minutes **quiz:** 10 minutes **accumulative: 22** minutes	Other Manhole & Wet Well Rehabilitation Components	● compare the various sealing applications and penetrations within manholes ● describe the joint seals used for manholes ● illustrate pipe sealing techniques used for wet wells and manholes	Text with Streaming Streaming Online monitor of student's progress measured in elapsed time (in minutes)	**Computer Based Exam** Online monitor of student's progress measured in score Percent (70% min) pass/fail	Required view of streaming clip, listen to audio presentation via streaming – take quiz upon completion of course material section View table, Charts, and Photograph Images	Inform students of the required assignments in the top header of the content section. At the conclusion of the course section, instructions to proceed to the quiz will be indicated.
Section 5	**content:** 16.00 Minutes **quiz:** 10 minutes **accumulative: 26** minutes	Design & Testing Criteria	● list various engineering and structural testing techniques used in rehabilitations ● define the components to consider in rehabilitating your structures ● describe some of the testing techniques used for internal - external pressure strengths, along with tensile and flexible strength for pipes and wet well - manhole structures	Text with Streaming Streaming Online monitor of student's progress measured in elapsed time (in minutes)	**Computer Based Exam** Online monitor of student's progress measured in score Percent (70% min) pass/fail	Required view of streaming clip, listen to audio presentation via streaming – take quiz upon completion of course material section View table, Charts, and Photograph Images	Inform students of the required assignments in the top header of the content section. At the conclusion of the course section, instructions to proceed to the quiz will be indicated.

Lesson Name	Time	Content Description	Learning Outcomes	Learning Styles	Assessment	Instructional Materials	Comments
Section 6 **FINAL SECTION**	**content:** 18.37 Minutes **quiz:** 10 minutes **accumulative: 29** minutes	Alternatives - Breaking the Rehabilitation Cycle	● describe polymer concrete with the benefit for corrosion protection ● explain the various concrete additives used for water tightness ad structural protection against corrosion ● discuss the Super Oxgenation System	Text with Streaming Streaming Online monitor of student's progress measured in elapsed time (in minutes)	**Computer Base - Final Exam** Essay Question - listing objectives that they learned from the course and how they apply to their job and workplace **Final Course Essay and Evaluation form**	Required view of streaming clip, listen to audio presentation via streaming – take quiz upon completion of course material section View table, Charts, and Photograph Images	Inform students of the required assignments in the top header of the content section. At the conclusion of the course section, instructions to proceed to the quiz will be indicated. Followed by the Evaluation form and essay requirement

Accumulative Time:

sec 1 =	27
sec 2 =	23
sec 3 =	21
sec 4 =	22
sec 5 =	26
sec 6 =	29

accumulative time total : 148 minutes = 2 hours = 0.2 CEU

** **standard beta allows one minute for each question and answer. The essay requirement listing three things that they have learned fron a 10-15 word description of each thing is a non-measured time element of the course; it is not included the beta testing.**

Author's Full Name: Margaret Doss

Experience: Margaret Doss is the Water Quality Manager for the Columbia County Water Utility in Evans, Georgia. She began her tenure with the Water Utility in 1991, working as the Laboratory Analyst at the Little River WPCP, a secondary-treatment activated sludge plant. Since that time she has served as Laboratory Manager for the Central Laboratory, which analyzes both - wastewater and drinking water samples. She is also the Industrial Pretreatment Coordinator, and the Utility's Environmental Trainer.

Course Title: Lead Sampling in School Buildings

ANSI/IACET CEU Calculations - Required to complete this Course: one hour

Course Summary:

Lead Sampling in School Buildings is a one-hour course based on the basic fundamentals of lead and its effects on human health, both in adults and children. The identification of the health effects and symptoms related to lead contamination through drinking water in public schools and child care centers has become a focal point in the lead service line issue. The locations and procedures related to sampling for lead contamination within drinking water are highlighted in this course and a step by step procedure for performing lead sampling within a school building will be illustrated through a unique animation exercise.

In this course, you will learn the process and planning for sampling a multiple story school building with water outlets throughout, in an animated exercise of what should and should not be required of sampling for lead in the water supply. From locating the sampling sites, preparing for the test, preparing the Chain-of-Custody form and transmittal paperwork, to grabbing the samples and recording the data for submitting to the lab, Margaret details the steps involved in preparing and sampling, and explains "How to Fill Out the Chain-of-Custody" form. An understanding of these procedures and techniques will be very beneficial for entry level and first-time responders when taking a sample, and can serve as reinforcement of the requisites, as a review at all levels.

Learning Outcomes:

By the end of this training course, you will have the ability to:

- List health effects of lead in children
- Explain the inhalation and digestive exposures from lead contamination in water
- Describe a sampling plan for a public-school building
- Explain importance of a "Do Not Use" label
- Indicate the sampling procedure for lead sample

Course Breakdown:

The following course breakdown highlights the individual sections:

- **Section 1 –** Lead Sampling in School Buildings
- **Section 2 –** Lead Sampling in Day Care Centers
- **Section 3 –** Case Study: Ernieville High School

Learning Outcomes – Assessment Analysis:

Assessment Analysis – Level 3 - CEU Plan Beta Testing will be performed in the fall of 2020-21. At the beginning of 2021, student feedback and comments will be reflected in the final beta testing, along with cumulative average of student tracking and monitoring posted during the February – July 2021 test period. The ***Level 1*** and ***Level 2 Beta Testing*** has been completed and complies with the ANSI / IACET 1-2018 Standard, along with the internal review by CEU Plan.

CEU ID #	Course Title	Instructor	CEU Hours
314	Lead Sampling in School Buildings	Doss	one

CEU Plan – Content & Instructional Course Design Worksheet

CEU Plan # 314 - Lead Sampling in School Buildings

Activation - 10.22.2020

Instructor: Margaret Doss

amount of course hours: **one**

Unit/Lesson Name	Time Allotted	Content Description and/or Purpose	List Learning Outcomes	Method Used (Demonstrate Accommodation of Different Learning Styles	Assessment Method	Instructional Materials Used	Comments/ Notes
Section 1	**content:** 16.42 Minutes **quiz:** 10 minutes **accumulative: 27** minutes	Lead Sampling in School Buildings	● list Health Effects of Lead in children ● explain the inhalation and ingestive exposures from lead contamination in water ● describe a sampling plan of a public school building ● identify the requirements for a chain-of-custody form	Streaming Based Online Video Clip illustrating content within this section	Computer Based Exam	Required view of streaming clip, via streaming – take quiz upon completion of course material section View table, Charts, and Photograph Images View the video clip on	Inform students of the required text reading in their course enrollment confirmation – Auto response At the conclusion of the course section, instructions to proceed to the quiz will be indicated.

Lesson Name	Time	Content Description	Learning Outcomes	Learning Styles	Assessment	Instructional Materials	Comments
Section 2	**content:** 11.34 Minutes **quiz:** 10 minutes **accumulative: 21** minutes	Lead Sampling in Day-Care Facilities	● discuss the sampling and remediation aspects to a child care facility ● compare the communication resources to educate students & staff of lead contamination ● define the 3 – Ts for reducing lead in drinking water, according to USEPA	Streaming Based Online	Computer Based Exam	Required view of streaming clip, listen to audio presentation via streaming – take quiz upon completion of course material section View table, Charts, and Photograph Images	Inform students of the required assignments in the top header of the content section. At the conclusion of the course section, instructions to proceed to the quiz will be indicated.
Section 3 Final Course Requirements	**content:** 15.02 Minutes **quiz:** 10 minutes **accumulative: 25** Minutes	Case Study: Ernieville High School	● **REVIEW: learning styles and animated exercise** ● describe the preparation for taking a sample ● explain importance for a "Do Not Use" label ● indicate the sampling procedure for lead sampling	Streaming Based Online **Animated Exercise:** ● illustrating High School and sampling locations ● illustrating preparation and submitting chain-of-custody form	**Computer Base - Final Exam** Essay Question - listing objectives that they learned from the course and how they apply to their job and workplace **Final Course Essay and Evaluation form**	Required view of streaming clip, listen to audio presentation via streaming – take quiz upon completion of course material section View table, Charts, and Photograph Images	Inform students of the required assignments in the top header of the content section. At the conclusion of the course section, instructions to download worksheet and proceed to the quiz will be indicated. Complete the essay and evaluation form, prior to course being complete.

Accumulative Time:

sec 1 =	27									
sec 2 =	21									
sec 3 =	25									

accumulative time total : 73 minutes = 1 hours = 0.1 CEU

**** standard beta allows one minute for each question and answer. As this being, in this lead sampling course, the student will be spending additional time in the evaluation and locations, in developing a sampling exercise and plan. The essay requirement listing three things that they have learned from the course with a 10-15 word description of each thing is a non-measured time element of the course; it is not included the beta testing.**

Assessment Analysis- Level 3 - CEU Plan Beta Testing will be performed during the fall of 2017-18. At the beginning of 2018, student feedback and comments will be reflected in the final beta testing results, along with accumulative average of student tracking and monitoring posted during the February - July 2018 test period. The Level 1 and Level 2 Beta Testing have been completed and comply with the ANSI I IACET 1-2018 Standard, along with the internal review by CEU Plan.

Student Feedback:

- to be inserted, upon course activation and student feedback and final beta testing completed
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Author Full Name: Tom Hofer

Experience:

Thomas Hofer is a retired U.S. Army Warrant Officer and Military Intelligence (MI) professional with nearly 30 years of service. Thomas had enlisted time as a Prisoner of War (IPW) interrogator followed by 25 years as an Army Warrant Officer, reaching the most senior warrant officer rank - Chief Warrant Officer 5 (CW5). In his final military assignment, Thomas served as an instructor with the Central Intelligence Agency's clandestine operations course. Following his 2003 military retirement, Thomas embarked on a second career as a clandestine operations officer with the Central Intelligence Agency until his retirement in 2014. Thomas was named an Exceptional Intelligence Collector by the Intelligence Community Staff in 1985. His military awards include multiple awards of the Legion of Merit and Defense Meritorious Service medal.

Category: Supervision and Management

Course Title: Physical Infrastructure Security Planning

ANSI/IACET CEU Calculations - Required to complete this Course: one hour

Course Summary:

This one-hour short course provides step-by-step guidance in developing a detailed security plan focusing on physical infrastructure of a utility organization; integrating and upgrading existing physical security systems and security personnel staffing. The course presents the detailed topical areas to be addressed in the planning process, providing a methodology to address current physical security systems in the utility; breaking down the steps to incorporate physical security systems for greater efficiency and security and best practices in the employment of security forces including the role of the utility security officer.

Course Syllabus: The following course breakdown illustrates the individual sections:

Section 01 – Developing the Physical Infrastructure Security Plan

Section 02 – Integrating Physical Security Systems

Section 03 – Security Personnel Staffing

Learning Outcomes:

By the end of this training course, you will have the ability to:

- list levels of preparedness and accessibility for security purposes
- developing effective measures in security protection
- indicate components in the various zones of security surveillance
- describe the technical aspects of an integrated security system
- explain the difference between policies and procedures
- compare your current security plan with requirements of today

By the end of this training course, you will be able to develop and implement an infrastructure security plan for your utility. This plan will focus on integrating your existing security systems. If such a plan already exists, you will have the information in order to review and implement changes where needed. You will also have a better understanding of the role of a security officer and security officials, if employed in your utility.

Course Breakdown:

The following course breakdown illustrates the individual sections:

- Section 1 – Developing the Physical Infrastructure Security Plan
- Section 2 – Integrating Physical Security Systems
- Section 3 – Security Personnel Staffing

Learning Outcomes – Assessment Analysis:

- ***Assessment Analysis – Level 3 - CEU Plan Beta Testing*** will be performed in the winter of 2021. At the beginning of 2021, student feedback and comments will be reflected in the final beta testing, along with cumulative average of student tracking and monitoring posted during the February 2021 –June 2021 test period.
- The ***Level 1*** and ***Level 2 Beta Testing*** has been completed and complies with the ANSI / IACET 1-2018 Standard, along with the internal review by CEU Plan.

CEU ID #	Course Title	Instructor	CEU Hours
318	Physical Infrastructure Security Planning	Hofer	one

CEU Plan – Content & Instructional Course Design Worksheet

CEU Plan # 318 – Physical Infrastructure Security Planning

Activation - 12.19.2020

Instructor: Tom Hofer

amount of course hours: one

Unit/Lesson Name	Time Allotted	Content Description and/or Purpose	List Learning Outcomes	Method Used (Demonstrate Accommodation of Different Learning Styles	Assessment Method	Instructional Materials Used	Comments/ Notes
Section 1	**content:** 17.57 Minutes **quiz:** 10 minutes **accumulative:** 28 minutes	Developing the Physical Infrastructure Security Plan	● indicate basic physical infrastructure areas ● list levels of preparedness and accessibility for security purposes ● define the security aspects of your treatment plant assets and infrastructures	Streaming Online monitor of student's progress measured in elapsed time (in minutes)	**Computed based exam** Online monitor of student's progress measured in score Percent (70% min) pass/fail	Required view of streaming clip, listen to audio presentation via streaming – take quiz upon completion of course content section View table, Charts, and Photograph Images	Inform students of the required text reading in their course enrollment confirmation – Auto response At the conclusion of the course section, instructions to proceed to the quiz will be indicated

Lesson Name	Time	Content Description	Learning Outcomes	Learning Styles	Assessment	Instructional Materials	Comments
Section 2	**content:** 14.53 Minutes **quiz:** 10 minutes **accumulative:** 25 minutes	Integrating Physical Security Systems	● developing effective measures in security protection ● indicate components in the various zones of security surveillance ● describe the technical aspects of an integrated security system	Streaming Online monitor of student's progress measured in elapsed time (in minutes)	**Computed based exam** Online monitor of student's progress measured in score Percent (70% min) pass/fail	Required view of streaming clip, listen to audio presentation via streaming – take quiz upon completion of course material section View table, Charts, and Photograph Images	Inform students of the required assignments in the top header of the content section.
Lesson Name	**Time**	**Content Description**	**Learning Outcomes**	**Learning Styles**	**Assessment**	Instructional Materials	**Comments**
Section 3	**content:** 15.32 Minutes **quiz:** 10 minutes **accumulative:** 25 minutes	Human Aspects to Utility Physical Security	● describe the role that training has on utility physical security ● explain the difference between policies and procedures ● compare your current security plan with requirements of today	Streaming Online monitor of student's progress measured in elapsed time (in minutes)	**Computed based Final exam** Essay – listing 3 things learned and how they apply to their workplace Online monitor of student's progress measured in score Percent (70% min) pass/fail	Required view of streaming clip, listen to audio presentation via streaming – take quiz upon completion of course material section View table, Charts, and Photograph Images	Inform students of the required assignments in the top header of the content section. At the conclusion of the course section, instructions to proceed to the quiz will be indicated. Followed by the Evaluation form and essay requirement

Accumulative Time:

sec 1 =	28		sec 2 =	25		sec 3 =	25

accumulative time total : 78 minutes = 1 hours = 0.1 CEU

**** standard beta allows one minute for each question and answer. The essay requirement listing three things that they have learned from the course with a 10-15 word description of each thing is a non-measured time element of the course; it is not included the beta testing.**

Assessment Analysis- Level 3 - CEU Plan Beta Testing will be performed during the winter of 2021. At the beginning of 2021, student feedback and comments will be reflected in the final beta testing results, along with accumulative average of student tracking and monitoring posted during the February - July 2021 test period. The Level 1 and Level 2 Beta Testing have been completed and comply with the ANSI I IACET 1-2018 Standard, along with the internal review by CEU Plan.

Student Feedback:

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