

# IN-DEPTH COAL ASH IMPOUNDMENT CLOSURE

**September 25-26, 2017**  
**Sheraton Denver Downtown Hotel**  
**Denver, CO**



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EUCI is authorized  
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1.2 CEUs for the  
course

# OVERVIEW

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With the impact and enforcement of the Federal Coal Combustion Residuals (CCR) Rule, owners and operators of coal ash impoundments have been engaged in and are facing the closure of their impoundments. This course shares the expertise of industry leaders from multiple closure service providers. The purpose of the course is to give individuals involved with closure projects either directly or indirectly, a more comprehensive understanding of the process and steps involved in closure of these impoundments. The program will dive into detail on a variety of those steps such as: geotechnical work, dewatering, stability issues, civil design, cover design, groundwater monitoring and corrective action, construction approaches and contractor selection.

# LEARNING OUTCOMES

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- Review the information to look for in geotechnical investigations and receive recommendations
- Engage in a discussion on dewatering, ash stabilization and the steps needed and taken during the process
- Listen to experts discuss structural stability issues and their solutions for closure
- Discuss the civil design of a closure and its steps and process
- Review the requirements and types of final cover design
- Engage in a review of the groundwater requirements, detection systems and best practices
- Discuss the final site closure and methods and best practices
- Listen to various construction approaches and methodologies from a contractor's perspective
- Engage in an overview of the contractor evaluation process for closure projects

# INSTRUCTORS

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## Bob Baker, P.E.

*CCR Engineering Manager, Energy Waste Management, Tetra Tech*

## Graham Crockford

*CPG, Engineering, Construction and Remediation, TRC Companies, Inc.*

## Don Grahlherr

*Vice President, National CCR Practice, Tetra Tech*

## Kevin Harshberger, P.E.

*Vice President, R.B. Jergens Contractors, Inc.*

## Greg Landry, P.E.

*Chief Dewatering Engineer, Moretrench*

## Joel Roberts

*VP, Construction Services, TRC Companies, Inc.*

## Paul Schmall, PhD, P.E.

*Chief Engineer, Moretrench*

# COURSE TIMING

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MONDAY, SEPTEMBER 25, 2017

**7:30 – 8:00 am**            **Registration and Continental Breakfast**

**8:00 am – 5:00 pm**        **Course Timing**

**12:00 – 1:00 pm**         **Group Luncheon**

# AGENDA

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## **Geotechnical Behaviors of Fine Grained, Non-Cohesive Materials**

- Geotechnical differences between soil and ash
- Field vs Laboratory testing
- Moisture sensitivity
- Capillarity
- Vibration sensitivity

## **The Typical “Construction” of an Ash Pond**

### **The Behavior of a Typical Ash Pond as it Pertains to Closure Work**

- Instability
- Stable crust thickness
- Localized liquefaction

### **Methods of Improving Ash Behavior**

- Drainage techniques
- Rim ditching and sumping
- Wellpoints
  - o Deep wells
  - o Other drainage methods
- Selecting a drainage (dewatering) technique
- Access and safety for dewatering system installation
- Ground improvement methods for ash

### **What is an “Adequate” Geotechnical Investigation?**

- Investigation for dewatering
- Investigation for other geotechnical concerns
- When pilot testing is warranted
- Different types of pilot tests
- Groundwater modelling relevant to pond closure

### **Instrumentation and Monitoring**

- Evaluation of geotechnical data for dewatering
- Pore water pressure
- Shear strength

### **Case Studies in Ash Stabilization**

- Shallow & deep ponds
- Lined and unlined impoundments
- Site specific access and safety considerations

# AGENDA

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MONDAY, SEPTEMBER 25, 2017 (CONTINUED)

## **Water Treatment**

- Ponded water
- Ash pore water
- Available treatment technologies

## **An Integrated Approach to Closure**

- Relationship between schedule, safety, quality, and cost
- Project acceleration with early dewatering
- Design/Build approach

## **New Advancements in Practice**

- Measurement of geotechnical parameters (and difficult access work)
- Drainage methods/devices

## **Structural Stability Issues/Solutions for Closure**

- CCR Rule requirements/State of practice
- Slope stability, and stability enhancements (e.g., reconfiguration, buttressing, ground improvement)
- General construction considerations (unwatering, dewatering, sequencing and rate of construction, ground control during construction, water management)
- Ground control during impoundment capping
- Construction period and post-closure instrumentation

## **Civil Design of Closure and Site**

- CCR Rule requirements/State of practice
- Survey early, survey well!
- Site constraints (e.g, berms, property lines, wetlands)
- H&H methodology – methods for evaluation
- Final configuration/Re-grading for drainage, to accommodate settlements, for stability, and for potential repurposing of the impoundment
- Surface water drainage design – accordion drainage, interior, exterior, minimum slopes on mains and laterals
- Types of ancillary structures of closure
- Critical items for construction bid package
- Construction planning and design integration
- Construction monitoring and management
- Approach to closure, “clean” closure criteria
- Post-closure maintenance considerations
- Groundwater quality, cap settlement and other post-closure Monitoring

## **Final Cover Design**

- CCR Rule requirements/State of practice
- Minimum vs recommended system vs alternative caps
- Geocomposite drainage; depending on liner/cover; required on slopes? Required on top?
- Geomembrane vs soil liner
- Synthetic turf vs vegetated soil cover

## **Groundwater**

- CCR rule requirements/State monitoring programs
- Monitoring network evaluation and installation
- Baseline sampling and analysis
- Detection and assessment monitoring
- Corrective action and closure triggers

## **Closure Case Study**

American Electric Power’s Amos Fly Ash Pond Closure

# COURSE TIMING

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TUESDAY, SEPTEMBER 26, 2017

**7:30 – 8:00 am**      **Continental Breakfast**

**8:00 am – 12:00 pm**      **Course Timing**

# AGENDA

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## **Groundwater Challenges and Impacts**

- Preemptive groundwater corrective action opportunities prior to/during closure
- Groundwater corrective action technologies for confirmed COC releases
- Background and monitoring program design, statistical evaluation and response (short and long term)
- Feasibility/Pilot studies

## **Contractor Selection Process**

- Selection process overview
- Evaluating qualifications and experience
- Evaluating value in the selection process
- Evaluating the approach to change management
- Evaluating the contractor's implementation team and approach

## **Construction Approach and Methodology**

- Evaluating site conditions and final resting place for CCR
- CCR Rule evaluation and impact on methodology
- Factors to consider when evaluating methodology
- Linking approach and methodology to schedule logic



*“Great course and a lot of good information.”*

Engineer/Project Manager, Chesapeake Containment Systems



*“A good opportunity to discuss CCR issues.”*

Senior Project Manager, SESCO

## INSTRUCTIONAL METHODS

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Case studies, PowerPoint presentations, and group discussion will be used in this event

## REQUIREMENTS FOR SUCCESSFUL COMPLETION

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Participants must sign in/out each day and be in attendance for a minimum of four hours to be eligible for any continuing education credit.

## IACET CREDITS

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EUCI has been accredited as an Authorized Provider by the International Association for Continuing Education and Training (IACET). In obtaining this accreditation, EUCI has demonstrated that it complies with the ANSI/IACET Standard which is recognized internationally as a standard of good practice. As a result of their Authorized Provider status, EUCI is authorized to offer IACET CEUs for its programs that qualify under the ANSI/IACET Standard.

**EUCI is authorized by IACET to offer 1.2 CEUs for this course**

## EVENT LOCATION

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A room block has been reserved at the Sheraton Denver Downtown Hotel, 1550 Court Place, Denver, CO 80202, for the nights of September 24-28, 2017. Room rates are US \$219, plus applicable tax. Call **1-303-893-3333** for reservations and mention the EUCI event to get the group rate. The cutoff date to receive the group rate is August 27, 2017 but as there are a limited number of rooms available at this rate, the room block may close sooner. ***Please make your reservations early.***

## REGISTER 3, SEND THE 4TH FREE

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Any organization wishing to send multiple attendees to this conference may send 1 FREE for every 3 delegates registered. Please note that all registrations must be made at the same time to qualify.



Please make checks payable to: "PMA"

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## PLEASE REGISTER

**IN-DEPTH COAL ASH IMPOUNDMENT CLOSURE COURSE**

SEPTEMBER 25-26, 2017: US \$1395,

Early bird on or before September 8, 2017: US \$1195

How did you hear about this event? (direct e-mail, colleague, speaker(s), etc.)

Print Name Job Title

Company

What name do you prefer on your name badge?

Address

City State/Province Zip/Postal Code Country

Phone Email

List any dietary or accessibility needs here

**CREDIT CARD INFORMATION**

Name on Card Billing Address

Account Number Billing City Billing State

Exp. Date Security Code (last 3 digits on the back of Visa and MC or 4 digits on front of AmEx) Billing Zip Code/Postal Code

**OR** Enclosed is a check for \$ \_\_\_\_\_ to cover \_\_\_\_\_ registrations.

**Substitutions & Cancellations**

Your registration may be transferred to a member of your organization up to 24 hours in advance of the event. Cancellations must be received on or before August 25, 2017 in order to be refunded and will be subject to a US \$195.00 processing fee per registrant. No refunds will be made after this date. Cancellations received after this date will create a credit of the tuition (less processing fee) good toward any other EUCL event. This credit will be good for six months from the cancellation date. In the event of non-attendance, all registration fees will be forfeited. In case of course cancellation, EUCL's liability is limited to refund of the event registration fee only. For more information regarding administrative policies, such as complaints and refunds, please contact our offices at (201) 871-0474.