

April 8-11, 2019



2019 U.S. SOCIETY ON DAMS ANNUAL CONFERENCE

Conference Information

**Second City – Second Chances:
Stories of Rehabilitation, Modification
and Revitalization**

**Chicago Hilton
April 8-11, 2019**

Conference Eligible for 1.25 CEUs (12.5 PDHs)
Workshop CEUs & PDHs Vary



Dams and levees continue to provide essential public benefits including flood control, water supply, renewable energy, recreation, navigation, and habitat and environmental enhancement. The need to maintain and improve our aging infrastructure has been well publicized, making it important to also share the great success stories of restoration and upgrades for dams and levees.

The “Second City” of Chicago is the site for the 2019 USSD Annual Conference. The conference theme echoes Chicago’s history of rebuilding and modernization to adapt to changing public needs. Rehabilitation, modification, and revitalization of dams and levees give new life to these existing structures through increased public safety and new or enhanced benefits. Papers and presentations addressing the conference theme and other technical topics remind ourselves and the greater community of the value of, and need for, dams and levees in society.

Technical Committee Meetings

Interested in or curious about our technical committees? Then plan on arriving Monday to attend the Legacy Lecture Series and then attend any committee meeting of interest Monday or Tuesday afternoon. Technical committee meetings are open to any conference attendee and are a great opportunity to meet the committee chairs and other committee members. [View committee meeting schedule.](#)

Conference Topics

- Conference Theme: Second City, Second Chances: Stories of Rehabilitation, Modification, and Revitalization
- Advocacy and Public Awareness
- Concrete Dams
- Construction and Rehabilitation
- Dam Safety
- Earthquakes
- Embankment Dams
- Environment and Sustainability/Dam Decommissioning
- Foundations
- Hydraulics and Hydrology
- Levees
- Monitoring of Dams and their Foundations
- Public Safety, Security and Emergency Management for Dams

The conference and exhibition will include a legacy presentation, USSD committee meetings, and plenary and concurrent technical sessions. Events throughout the week will offer plenty of networking opportunities.

Legacy Lecture Series

Eligible for .35 CEUs or 3.5 PDHs

Monday, April 8th: 8:30am – 12:00 noon

Dr. Donald Bruce, President of Geosystems, L.P. will be the speaker for this continuing series designed to provide an opportunity for esteemed professionals to discuss projects, people, thoughts, and paradigm shifts that led to their advancements.

Moderator – Dr. Brian Greene

The Foundations Committee has initiated, in what is hoped to be a continuing series of USSD workshops/seminars, a forum to recognize and highlight the professionals that have pioneered substantial advances in the field of dam safety and dam engineering. These forums are designed to provide an opportunity for esteemed professionals to discuss projects, people, thoughts, and paradigm shifts that led to their advancements. It is an opportunity for the entry level individual and the seasoned professional to listen and learn from these masters of the profession. In addition to the technical presentation, a colleague of Dr. Bruce, Dr. Brian Greene, will lead a one-on-one interview of Dr. Bruce. This will be followed by a time of questions to Dr. Bruce from the audience.

Donald A. Bruce, Ph.D., C.Eng., D.GE, L.G., L.E.G., is President of Geosystems, L.P. He specializes in geotechnical construction processes, particularly anchoring (his Ph.D. dissertation topic), drilling and grouting. He has over 42 years of experience in dam anchoring and works on projects throughout North America and four other continents. Donald is active in many technical committees and is the former Chairman of the Geo-Institute's Grouting Committee and Honorary Chairman of the International Society for Micropiles. He is also an active member of PTI's Committee on Rock and Soil Anchors and is a co-author of the past (1996, 2004) and new (2012) Anchor Recommendations.

In addition, Dr. Bruce has authored or co-authored more than 300 technical papers for journal and conference publications and is co-author of Dam Foundation Grouting, and a new book Specialty Construction Techniques for Dam and Levee Remediation. Dr. Bruce has won numerous awards, including the Kapp, Baker and Terzaghi Awards from ASCE.

Learning Objectives:

- Examples of the aspects of critical thinking in the understanding and development of solving unique and challenging problems.
- Transfer of knowledge by an esteemed professional through the use of project examples, case histories, and other examples.
- Fostering technical competency

Workshops – Thursday, April 11th

All workshops are included with full conference registrations or can be purchased separately. Workshops are either full-day or half-day as noted in the description. You will be asked to select noncurrent workshops to attend on the registration form.

Flood Consequence Estimation with HEC-LifeSim (full-day)

Eligible for 0.8 CEUs or 8 PDHs

Several Federal agencies and dam / levee owners have made significant efforts over the last decade to understand and quantify the risk of their dam and levee portfolios. The dam and levee safety community is relatively familiar with potential failure mode analysis and estimating failure likelihoods, but there is less familiarity with estimating the consequences of failure.

Risk is estimated through the combination of the probability of an event, the performance of the structure, and the consequences of failure. Quantifying consequences can be done in varying levels of detail and there are several tools available to perform these estimates. USSD is proposing a series of workshops for the dam engineering community to gain familiarity in using these tools. The focus of the first in this series is the US Army Corps' model, HEC-LifeSim, which provides a detailed look at flood impacts and evacuation. Future workshops may cover: RCEM (US Bureau of Reclamation), the Life Safety Model (HR Wallingford), and the "Dutch method" (Dr. Bas Jonkman).

The 8-hour, hands-on workshop is designed for dam and levee owners and regulators, hydraulic engineers, consequence modelers, and young professionals to get familiar with the software and its uses. The workshop includes the following topics:

- Risk Assessment Process Overview
- How to Quantify Consequences
- Building a HEC-LifeSim Model (Structures, Floodplains, Warning and Evacuation)
- Application of the Model Results
- Review of a Historic Flood

Introducing ICOLD Bulletin 177 on Roller Compacted Concrete (morning)

Eligible for 0.4 CEUs or 4 PDHs

The USSD Committee on Concrete Dams is organizing a workshop to introduce a new ICOLD Bulletin on Roller-Compacted Concrete finalized in 2018. The purpose of this Bulletin is to present the current state-of-the-art practice on roller-compacted concrete (RCC) for dams. During the workshop, primary authors of the Bulletin chapters will be giving presentations on design and construction of RCC dams.

The 2018 Bulletin addresses all aspects of the planning, design, construction and performance of RCC in dams, with specific topics related to mix proportioning and quality control. Many aspects of RCC dam construction have become better understood since the 2003 publication of Bulletin 126. The new Bulletin contains more comprehensive information particularly in relation to design, mixture proportioning, and construction. With a greater understanding of the requirements of successful RCC dams, as well as the pitfalls and difficulties associated with RCC dam design and construction, an effective discussion can be utilized.

Workshop Organizing Committee:

Dr. Jerzy Salamon
Mr. Mike Rogers
Dr. Quentin Shaw

Bureau of Reclamation
Stantec
ARQ

Agenda:

8:00 AM

Welcome - Jerzy Salamon – USSD Committee on Concrete Dams Chair
Purpose of the Bulletin - Quentin Shaw – Bulletin 177 Subcommittee Chair
Background and Design of RCC Dams - Quentin Shaw
Key New Developments of the RCC Technology - Quentin Shaw
RCC Mix Design -Tim Dolen (Dolen and Associates)
Construction of RCC Dams - Rafael Ibanez de Aldecoa (Dragados)

9:50 AM

Break

Quality Control -Tim Dolen
Performance of RCC Dams -Tim Dolen
Other Applications of RCC - Mike Rogers
Summary - Quentin Shaw
Application of the Bulletin to the US Practice - Kenneth Hansen (Consultant)
Workshop Closeout - Jerzy Salamon

Threshold and Action Levels Workshop

(morning)

Eligible for 0.4 CEUs or 4 PDHs

Workshop Description

When used effectively, threshold and actions levels can help dam owners and engineers identify instrument readings outside the expected range and trigger action when needed. Potential action includes reading verification, engineer evaluation, formal investigation and implementation of risk reduction measures. Threshold and action levels should be customized for each dam based on owner needs, potential failure modes of the dam and available instrumentation. Because the use of threshold and action levels varies greatly between different dams and owners, there is some confusion about how these tools should be developed and used as part of a dam safety program. To help workshop participants understand the various uses of threshold and action levels, this workshop will include presentations, case studies and panel discussion from four federal agencies, dam owners and consulting engineers.

Workshop Objective

Workshop attendees will learn how threshold and action levels can be an effective safety tool for dams of varying type, size and complexity.

Primary Audience

Dam owners, consultants, and regulators

Agenda

Introduction (8-8:30)

- Overview of how monitoring is an integral part of a dam safety program
- Introduction of threshold and action levels as a dam safety tool
- Review of key terms
- Consideration of instrument accuracy and precision

How to develop threshold and action levels (8:30-10:00)

- Approaches
 - Design basis
 - Historic range
 - Expected performance

- How to use as a tool for dam safety
 - Construction vs. Long-term performance monitoring
 - Monitoring Potential Failure Modes (PFMs)
 - Identifying unexpected performance (general health monitoring)
- Advanced concepts
 - Automated monitoring and alarms
 - Varying thresholds based on pool level, activity of other sensors, time, rate of change
- Agency approaches
 - USACE
 - USBR
 - FERC
 - TVA

Break (10:00-10:30)

Case Studies: Successful application of threshold and action levels (10:30-11:30)

- Case studies presented will be diverse with regard to:
 - Federal agency, private owner and consultant
 - Type and size of dam
 - Type of monitoring system
 - Approach to developing threshold and action levels
 - One case study will highlight a state of the art monitoring system that triggers alarms when threshold and action levels are exceeded

Panel Discussion/Wrap-up (11:30-12:00)

- Participants will be able to submit questions throughout the workshop and during the panel discussion

Seismic Evaluation of Concrete Dams

(afternoon)

Eligible for 0.4 CEUs or 4 PDHs

Seismic analyses of concrete dams are becoming more dependent on advanced modeling techniques as the needs of the industry advance. The relative scarcity of data related to the performance of dams subjected to extreme seismic events limits verification of analytical tools and analysis results. Recognizing this constraint, solicitation of opinions among researchers and practitioners about the current state-of-practice in seismic analysis of concrete dams is warranted. It is essential to verify the consistency of the analysis results for the considered potential failure modes.

The primary objectives of the workshop are:

1. Review, summarize and interpret past USSD workshop outcomes.
2. Evaluate accuracy of analysis methods used in the seismic analysis of concrete dams.
3. Identify research priorities for both public safety and the needs of dam owners.
4. Solicitation of opinions among researchers and practitioners about the current state-of-practice in seismic analysis of concrete dams regarding whether analysis results are consistent with observed performance and whether the right potential failure modes are being addressed.

The USSD Committee on Concrete Dams and the Earthquake Committee organized a workshop during the 2018 USSD Conference in Miami on the *Evaluation of Numerical Models and Input Parameters in the Analysis of Concrete Dams*. The workshop was attended by dozens of professionals representing the engineering industry and academia, dam owners, and the dam safety community. The 2019 session is a continuation of the previous workshops held every year since 2016 on the aspects related to the structural analysis of concrete dams.

Workshop Organizing Committee:

Dr. Jerzy Salamon
Dr. Lelio Mejia
Mrs. Hillery Venturini

Bureau of Reclamation
Geosyntec Consultants
Bureau of Reclamation

Agenda:

1:00 PM Welcome

Presentation of 2018 Workshop Results and Conclusions (Hillery Venturini & Jerzy Salamon) (40 min)

Accuracy in the Advanced Analysis of Concrete Dams- Professor Boris Jeremic, CEED, University of California, Davis, and Faculty Scientist, EESA, Lawrence Berkeley National Laboratory, Berkeley, CA (60 min)

2:45 PM Break

3:00 PM Discussion

Lessons Learned from the Past USSD Workshops (30 min)

Developing Best Practice in Seismic Analysis of Concrete Dams (30 min)

Open discussion (55 min)

Conclusions (5 min)

5:00 PM Adjourn

Emergency Communication Primer (afternoon)

Eligible for 0.5 CEUs or 5 PDHs

Communication during and immediately preceding an emergency is a critical step of response and recovery necessary to protect public safety and minimize damages. In these scenarios, key technical information must be communicated quickly, clearly, and concisely to varied, non-technical audiences with differing concerns and perspectives. Direct communication from dam owners and their agents is the best way to properly inform and reassure these affected parties, which include emergency responders, government officials, construction workers, and the general public.

This workshop aims to refine communication skills through presentations, a real-life case study with experienced emergency responders, discussions, and a group activity. Participants will learn and rehearse best practices for communication of critical, precise information under emergency conditions to facilitate public safety, risk reduction, and damage mitigation. This workshop offers an opportunity for participants to practice seemingly obvious skills in a controlled environment to be better prepared should the unthinkable happen, when judgment can be hampered by stress, urgency, and fatigue.

Workshop objectives include:

- Parsing technical information for non-technical stakeholders (e.g. emergency responders, government officials, construction workers, the public, etc.)
- Succinct messaging in high-stress, time-sensitive situations
- Understanding and avoiding mass panic
- Upsides and downsides of social media
- Lessons learned from past emergencies

By attending this workshop, the attendees will learn strategies for efficient, audience-oriented communication in emergency scenarios.

Field Tour – Tunnel and Reservoir Plan Project (TARP)

Thursday, April 11th

There are two 1/2-day options at an additional cost of \$50.

The \$3.6-billion Tunnel and Reservoir Plan (TARP) Project in Chicago is a mega project, one of the largest civil engineering projects ever undertaken in terms of scope, cost and time frame.



Morning tour – 8 am to 12:00 pm

Afternoon tour – 1 pm to 5:00 pm (note: if there is sufficient interest, one bus will stop at Lagunitas Brewing Company, returning to the hotel approximately 6:15 pm.)

Each tour will visit the Thornton Composite Reservoir and McCook Reservoir, features of the Chicago's TARP project. At Thornton, participants will visit an overlook where they'll see the reservoir, rock dam, RCC dam and gate shaft. At McCook Reservoir, participants will see the mining operation under construction in Phase 2, and the reservoir, completed in 2017 as part of Phase 1. Engineers from the Metropolitan Water Reclamation District of Greater Chicago will be on the motor coaches and at each project site to explain the project and answer questions.

The \$3.6-billion Tunnel and Reservoir Plan (TARP) Project in Chicago is a mega-project - one of the largest civil engineering projects ever undertaken in terms of scope, cost and timeframe. TARP was conceived to reduce pollution and flooding in the metropolitan Chicago area, and to reduce the harmful effects of flushing raw sewage and other contaminated water into Lake

Michigan by diverting storm water and sewage (combined sewer overflow, CSO) into temporary holding reservoirs until it can be pumped to existing plants for treatment. Commissioned in the mid-1970s, the project is managed by the Metropolitan Water Reclamation District of Greater Chicago (MWRDGC). Completion of the system is not anticipated until 2029 though substantial portions of the system have already been opened and are currently operational. The 2019 USSD Conference field tour will visit the Thornton Composite Reservoir (TCR) and McCook Reservoir.

The TCR is located in the former north lobe of the Thornton Quarry and is estimated to provide \$40 million per year in flood damage reduction benefits to 556,000 people in 56 communities. This 7.9- billion- gallon capacity CSO reservoir serves the Calumet System south of Chicago and has been in operation since November 2015. A 2,700-ft long and 300-ft high Rock Dam separates the north lobe from the active portion of the quarry and supports Interstate I-80/294, a key highway within the Tri-State region. In the center of the Rock Dam, is a 109-foot-high roller compacted concrete (RCC) gravity dam, called the Gap Dam. The RCC Gap Dam spans a former haul route through the Rock Dam to complete the full height water barrier between TCR and the active main lobe of the quarry. A double-row grout curtain was constructed around the perimeter of the TCR to prevent exfiltration of reservoir waters into the surrounding areas.

McCook Reservoir is being developed in two phases to serve the Mainstream and Des Plaines Systems, approximately 252 square miles of Chicagoland surface area. Phase I was completed at the end of 2017 and Phase II is under construction with mining underway to form the reservoir. The total capacity of the reservoir will be 10 billion gallons and bring an estimated \$90 million per year in flood damage reduction benefits to 3.1 million people in 37 communities.

Conference Closing Party- Wednesday, April 10th

The conference closing party will take place at The Crystal Gardens, an indoor 1-acre botanical garden at historic Navy Pier. **Event ticket is included with all full conference and guest registration fees. Additional tickets can be purchased online or at registration.**



Partake in the Chicago themed food stations and bars while exploring the many entertainment surprises waiting for you throughout the gardens. A great way to unwind after your technical sessions and before sitting in workshops or participating in the field tour.

Sponsorships

Expand your marketing efforts and increase your ROI by supporting USSD through an exclusive sponsorship. Join companies like HDR and Phillips & Jordan! Sponsorship information can be found in the Exhibitor and Sponsorship Prospectus at www.ussdams.org





BARNARD

5k FUNds Run-Wednesday, April 10th @ 6:30am

Run, walk, or be a virtual runner and sleep in. The 5th Annual 5k FUNds Run will take place in Grant Park on Wednesday, April 10th. Net proceeds benefit the USSD Scholarship Program. Registration is separate from the conference registration and will open on Nov. 14th. Race registration is \$40 until March 27th; \$50 after March 27th. Register and pay for the 5k FUNds Run separately. **Register online at www.usstdams.wildapricot.org/event-3133349.**

Become a Partner in Education Donor and support the USSD Scholarship Program! For \$350, donors will get their logo on the 5k Race poster that will be displayed on the conference website, on the event mobile app, and at the conference. Partner in Education Donors also receive one free race registration.

Hotel Information and Registration

The conference hotel is the Hilton Chicago with an additional room block at the nearby Congress Plaza Hotel. Room blocks are filling up quickly, so don't delay.

Hilton Chicago	720 So. Michigan Ave.	877-865-5320	\$229 + tax
Congress Plaza Hotel	520 So. Michigan Ave.	800-635-1666	\$179 + tax

Cancellation Policy

Conference attendee cancellations must be received by email in order to receive full refund (less cancellation fee) prior to March 15, 2019. No refunds after March 15th, however substitutions are permitted. Cancellations between January 1-March 14, 2019 without substitution are subject to a \$50 cancellation fee.

For More Information:

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