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The 14th Annual International Commission on Environmental Data Management (ICEDM)

ICEDM champions the adoption of best practices in environmental data management, fostering collaboration among leaders to drive data culture.

DATES: May 14th and 15th, 2025

TIMES: 8:00 – 4:30 Each Day – Happy Hour 5-7 on May 14

LOCATION: Dye House in Providence, RI or Virtually on Microsoft Teams

REGISTRATION: https://www.icedm.net

The 2025 Agenda may change as the conference approaches, please check the website and e-mail communications.

MEETING SPACE: Dye House – Studio Space/Teams Links (e-mail and IM)

VENDOR SPACE: Dye House – Loft Space

This year we have invited external vendors to provide information and answer questions.

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DAY 1 – May 14, 2025

8:00 – 9:00: Breakfast and Networking with BINGO (brought to you by Woodward & Curran)

Join us in the studio space for breakfast, coffee and bingo!

9:00 – 9:45: Welcome and Introductions

9:45 -10:00: BREAK

10:00 – 11:00: Geotechnical Data Management Discussion facilitated by Alexa Teipel (Terracon), Sarah Wright (GZA) and more TBD

11:00 – 11:30: Integrating EQuIS and R to Streamline Acid Rock Drainage and Metal Leaching Assessment and Management Programs, Kristoff Iliou, R. Paisley, K, De Vos (WSP)

11:30 – 12:00: The Path to Redemption: Using our resources to develop sound processes to improve project outcomes after a rough start, Elizabeth Madigan (ERM)

12:00 - 1:00: Lunch Break

1:00 - 2:15: - Breakout Session - Cloud File Management, Systems Integration/Data Architecture, Training Casual Users, Approaches to Field Data Collection

2:15 – 2:45: Presentation – Streamlining Principal Component and Cluster Analysis to Support Conceptual Site Models at Complex Remediation Sites, Tori Ward (Woodard & Curran)

2:45 – 3:00: SNACK BREAK

3:00 – 3:30: Presentation - Scale and Deploy, Kelsey Tobin and Sarah Sokol (Terracon)

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3:30 – 4:00: Presentation - Unlocking the Potential of EQuIS REST API for GIS Spatial Visualization, Andrea LoCashio (ddms, inc) and Kristin Angelillo EarthSoft)

4:00 – 5:00: Speed Mentoring: Speed dating for data professionals

5:00 – 7:00: Happy Hour at Dye House

DAY 2 – May 15, 2025

8:00 – 8:45: Breakfast and Networking

Join us in the studio space for breakfast and coffee.

8:45 – 9:30: 15 min Lightening Talks

8:45 – 9:00: From Form to Follow Through: Automating User Support, Requests, and Feedback at Scale

Omed Zibari (Terracon)

9:00 – 9:15: Optimizing Environmental Data Collection and Review with ArcGIS Field Maps,

Shana Whitney (Woodard & Curran)

9:15 – 9:30 **TBD**, Eric Sprouls (GZA)

9:30 – 10:00: Presentation - Exploring AI-Driven Innovations in Environmental Data Management, Tim Negley (Verdantas)

10:00 – 10:15: BREAK

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10:15 – 10:45: Presentation - AI: What's in store for Environmental Data Managers next week, next year, and beyond, Theresa Kennedy (ERM)

10:45 – 11:15: Presentation - Modern Borehole Logging & Database Management – A Data Lifecycle, Nick Read (TabLogs)

11:15 – 12:30: Round Table Discussion – Professional Certification/Skills Share

12:30 – 1:30: Lunch/Networking Activity

1:30 – 2:00: Presentation – Dynamic Data Collection: Juggling Multiple Platforms without Sacrificing Standards, Ping Zhou, Brittney Harvey and Amity Eklund (TRC)

2:00 – 2:30: Change Management and Adoption -Making Change without Ticking People Off, Sarah Wright (GZA)

2:45 – 3:00: SNACK BREAK

3:00 – 3:30: Power BI Skills Share DEMO, Tori Ward and Shana Whitney (Woodward & Curran)

3:30 – 4:30: Closing remarks, What I learned at ICEDM 2025!

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ABSTRACTS:

Integrating EQuIS and R to Streamline Acid Rock Drainage and Metal Leaching Assessment and Management Programs

Kristoff Iliou, R. Paisley, K, De Vos (WSP)

Acid rock drainage (ARD) and metal leaching (ML) result from the natural weathering of sulfide minerals, which can be accelerated by mining activities. To understand the potential for a material to generate ARD/ML, static and kinetic geochemical tests are conducted during characterization programs in the mine design and planning phases. These tests help to predict the geochemical response of materials under various conditions. Humidity cell tests are a common laboratory-based, kinetic test used to model weathering conditions and estimate leachate quality. Kinetic testing programs can operate for multiple weeks to decades and produce data weekly, making it difficult to effectively store the large dataset generated, ensure data quality controls are retained over the timeframe of the test, and analyze the results.

WSP developed an automated workflow that combines the data management abilities of EQuIS and the programmability of R to store, analyze, and visualize data from a 50-week kinetic testing program. The outputs from EQuIS are compared to relevant federal water quality guidelines and time series plots for various analytes are generated, allowing for a clear visualization of how these parameters evolve over time under the conditions of the humidity cells. The workflow has been refined to be project agnostic, with the R script relying solely on readily available reports generated in EQuIS and is therefore applicable to other kinetic programs.

The development of this workflow has reduced the time taken for data analysis, generation of figures, and reduced the potential for database errors in ARD/ML management. The combination of R's statistical and plotting capabilities with EQuIS' data management system offers a powerful tool for environmental professionals dealing with ARD/ML-related challenges. The integration of the two programs opens avenues for developing more advanced visualization tools and frameworks to address evolving challenges in ARD/ML management.

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The Path to Redemption: Using our resources to develop sound processes to improve project outcomes after a rough start.

Elizabeth Madigan (ERM)

Managing litigation project data, with the involvement of multiple consultants, laboratories, and sampling efforts can be complex when compared to standard remediation projects. Implementing EQuIS for litigation projects requires a unique workflow to address these complexities and contribute to successful outcomes. This presentation shares lessons learned and highlights key processes developed over the course of multiple litigation projects. The processes, workflows, and configurations have proven to be useful for a variety of other projects while increasing adoption and enthusiasm for EQuIS™ among project teams.

Streamlining Principal Component and Cluster Analysis to Support Conceptual Site Models at Complex Remediation Sites

Tori Ward (Woodard & Curran)

Principal Component Analysis (PCA) and Cluster Analysis are methods used to refine conceptual site models by providing a quantitative approach to identify patterns in assessment and monitoring data. Woodard & Curran has developed modularized Python scripts that facilitate the application of PCA and Cluster Analysis, enhancing our understanding of complex remediation sites.

Each application of PCA and cluster analysis followed the general steps of (1) calculating initial summary statistics to gain a better understanding of variability and distributions, (2) generating a Pearson correlation matrix to assess whether there are high correlations among variables supportive of reducing the features into a smaller number of components, (3) performing PCA, (4) visualizing the output of the PCA with three-dimensional (3D) charts of the factor loadings to determine which features most influenced each loading and 2D and 3D scatter charts of the PCA-transformed values to identify potential groupings, (5) performing cluster analysis, and (6) visualizing the

output of the cluster analysis together with the PCA by applying cluster labels as a color-scale to 2D and 3D scatter charts of PCA-transformed values.

Following the application of PCA and cluster analysis, sample locations were categorized into distinct groups. These groupings were subsequently assessed in conjunction with other analyses conducted at the sites. Steps taken to integrate the PCA and cluster results within the larger CSM development effort include visualizing the results spatially using GIS and comparing the results to other lines of evidence used to support the CSM.

Scale and Deploy

Kelsey Tobin and Sarah Sokol (Terracon)

Terracon has deployed EQuIS Enterprise as a simple, scalable, and self-service product to environmental professionals company-wide. EQuIS, traditionally used for large and custom projects, has been adapted by Terracon to provide a standardized workflow that is applicable to projects of all sizes.

This has been an ongoing effort, and this presentation will cover Terracon's 'new' product, product features, user workflows, and the results of a multi-office pilot. Additionally, we will speak to how messaging impacts adoption and engagement from users and executive stakeholders.

Unlocking the Potential of EQuIS REST API for GIS Spatial Visualization

Andrea LoCashio (ddms, inc) and Kristin Angelillo (EarthSoft)

This session explores the integration of EQuIS with Esri Enterprise via the EQuIS REST API, highlighting benefits such as enhanced user access, expanded spatial analytics, and improved organizational collaboration. ddms will cover back-end configuration and real-world analytics examples. EarthSoft will discuss the current state and future improvements of the EQuIS REST API for optimal use and scalability.

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From Form to Follow Through: Automating User Support, Requests, and Feedback at Scale

Omed Zibari (Terracon)

Terracon is deploying a self-service enterprise EQuIS instance to hundreds of users. How can a small team support over 180 offices, and hundreds of users, regulations, and projects?

Terracon is leveraging commonly available Microsoft tools to create an automated support, request, and feedback ticket flow. The automated flow sorts requests into relevant task boards based on type, logs request details, creates EDDs, and notifies users of ticket closure/completion. User engagement is centralized to one tool, and Power Automate allows Terracon to funnel that information into several different tools for different tracking and ticket completion needs.

Using Power Automate (among other tools) allows for a highly customized, user friendly, and flexible automated ticketing workflow that is controlled in-house by Terracon's Data Management team, without the need for support from company IT professionals.

Optimizing Environmental Data Collection and Review with ArcGIS Field Maps

Shana Whitney (Woodard & Curran)

TBD, Eric Sprouls (GZA)

Exploring AI-Driven Innovations in Environmental Data Management

Tim Negley (Verdantas)

In recent years, artificial intelligence (AI) has revolutionized how we work with environmental data, transforming how data is acquired, managed, and analyzed. This presentation explores the latest AI-driven innovations that streamline environmental data management, enhancing accuracy, efficiency, and insights. Through case studies and practical implementations, we will showcase how AI empowers stakeholders to make informed decisions and

mitigate adverse impacts. These technologies are not only changing how we manage data but also improving environmental assessment and remediation strategies. Our goal is to highlight the transformative power of AI in environmental data management and its vital role in stewarding our natural resources for future generations.

AI: What's in store for Environmental Data Managers next week, next year, and beyond.

Theresa Kennedy (ERM)

AI promises to automate or even eliminate many of the processes that we all consider part of our roles as

Environmental Data Managers. In this session I'll share my experiences and insights in my role as a technology enabler at ERM, highlighting the key challenges we face in the short, medium, and long term. More importantly, I'll explore the amazing opportunities AI offers for our teams and our careers.

Modern Borehole Logging & Database Management – A Data Lifecycle

Nick Read (TabLogs)

The environmental engineering sector has seen significant advancements in borehole logging and data management processes, transitioning from manual methods to sophisticated digital systems. This presentation will explore the historical evolution and current innovations in these processes, highlighting the impact of modern technologies, particularly Software as a Service (SaaS) solutions. The shift towards digital logging has enhanced the accuracy and accessibility of data, enabling real-time analysis and improved decision-making. Advanced data management systems offer features such as data integration, security, and user-friendly interfaces, that are crucial for managing complex datasets. SaaS platforms provide scalable, cost-effective solutions, offering unparalleled accessibility and regular updates. The adoption of these technologies has led to increased efficiency and cost-effectiveness, emphasizing the importance of data integrity in achieving successful project outcomes. This presentation will summarize the key findings and lessons learned from the industry's evolution, underscoring the critical role of precise data collection and sophisticated management systems in modern environmental and geotechnical studies.

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Dynamic Data Collection: Juggling Multiple Platforms without Sacrificing Standards”

Ping Zhou, Brittney Harvey and Amity Eklund (TRC)

In a company where field data collection is accomplished using multiple platforms, achieving seamless data management requires flexibility and adaptability. The presentation explores how TRC leverages multiple mobile data collection systems — including Fulcrum, EQuIS™ Collect, InSitu, and soon, BoreDM — to enhance operational efficiency and encourage adoption while ensuring consistent data quality. We will discuss the factors influencing platform selection, from field tasks and budget to personnel preferences, emphasizing that no single tool fits all scenarios. By using EQuIS™ as a central data repository, we’ve developed a unified approach that accommodates various data collection tools, standardizes templates based on corporate SOPs, and streamlines data integration. Additionally, we’ll share insights into overcoming challenges, adoption hurdles, and scaling efficiently proving that flexibility and standardization can coexist.

Change Management and Adoption -Making Change without Ticking People Off

Sarah Wright (GZA)