

June 2-6, 2024 | Denver, Colorado

**Thirteenth International Conference on Remediation
of Chlorinated and Recalcitrant Compounds**

Final Program

BATTELLE

Conference Sponsors

As the Conference organizer and presenter, Battelle gratefully acknowledges support of the following Conference Sponsors. Their financial contributions help defray general operating costs of planning and conducting the Conference. The corporate descriptions they provided appear on pages 42-46.



Thirteenth International Conference on Remediation of Chlorinated and Recalcitrant Compounds

Welcome to Denver!

The 2024 Chlorinated Conference presents an extensive technical program with ten wide-ranging technical tracks, live demonstrations from learning labs, exhibits, and several educational and networking opportunities.

We are eager to see and hear all the updates and advancements in the field since we gathered last and working together to better understand complex and challenging site conditions and accelerating cleanups through the expanded use of innovative and sustainable remedial technologies.

With more than 1,000 platform and poster presentations in 88 technical sessions, eleven short courses, nine panel discussions, and twenty-four Learning Lab demonstrations to choose from, there are countless opportunities to meet, learn, and share ideas with more than 1,700 members of the environmental remediation community from 21 countries over the next few days. The Conference will also host 134 Exhibitors from organizations that provide environmental assessment, remediation, and management services and products.

We acknowledge and appreciate the participation of the Conference Sponsors, seen to the left, whose financial support is vital to Battelle's ability to organize and host the Conference.

In addition, we recognize the efforts of the Technical Steering Committee, Session Chairs, Panel organizers, student event and activity coordinators, and others, who have committed their time and technical expertise to developing a high-quality program.

Our sincere thanks are also extended to the platform and poster presenters who are responsible for all the research, hard work, and innovation that will be shared in individual presentations over the course of this week. We look forward to hearing on a range of topics from the state of science in each area, solutions practiced, lessons learned, and the next challenge we need to be prepared for.

We hope you enjoy the key features of the conference throughout the week ahead and can take away crucial learning experiences that benefit you in your everyday work.

Kavitha Dasu, Ph.D. (Battelle)
Carolyn Scala, PE, PMP (Battelle)
Conference Program Chairs

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Exhibit Hall Floor Plan (Exhibit Level, Hall F)

Exhibit Hall Hours

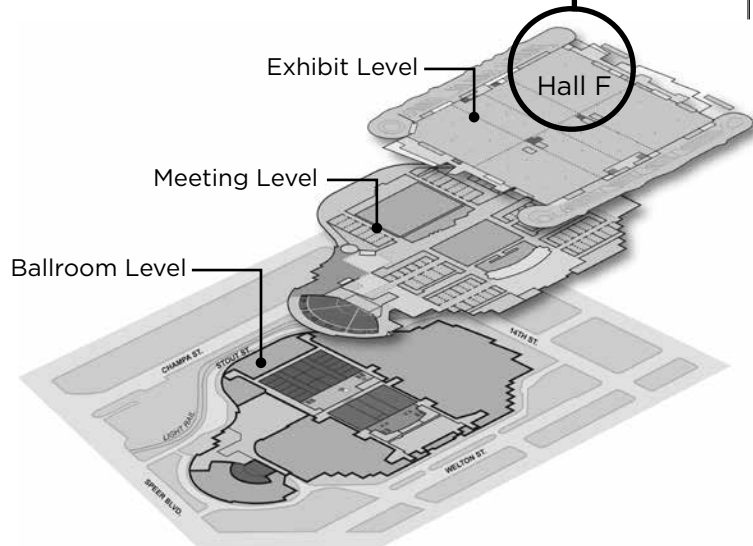
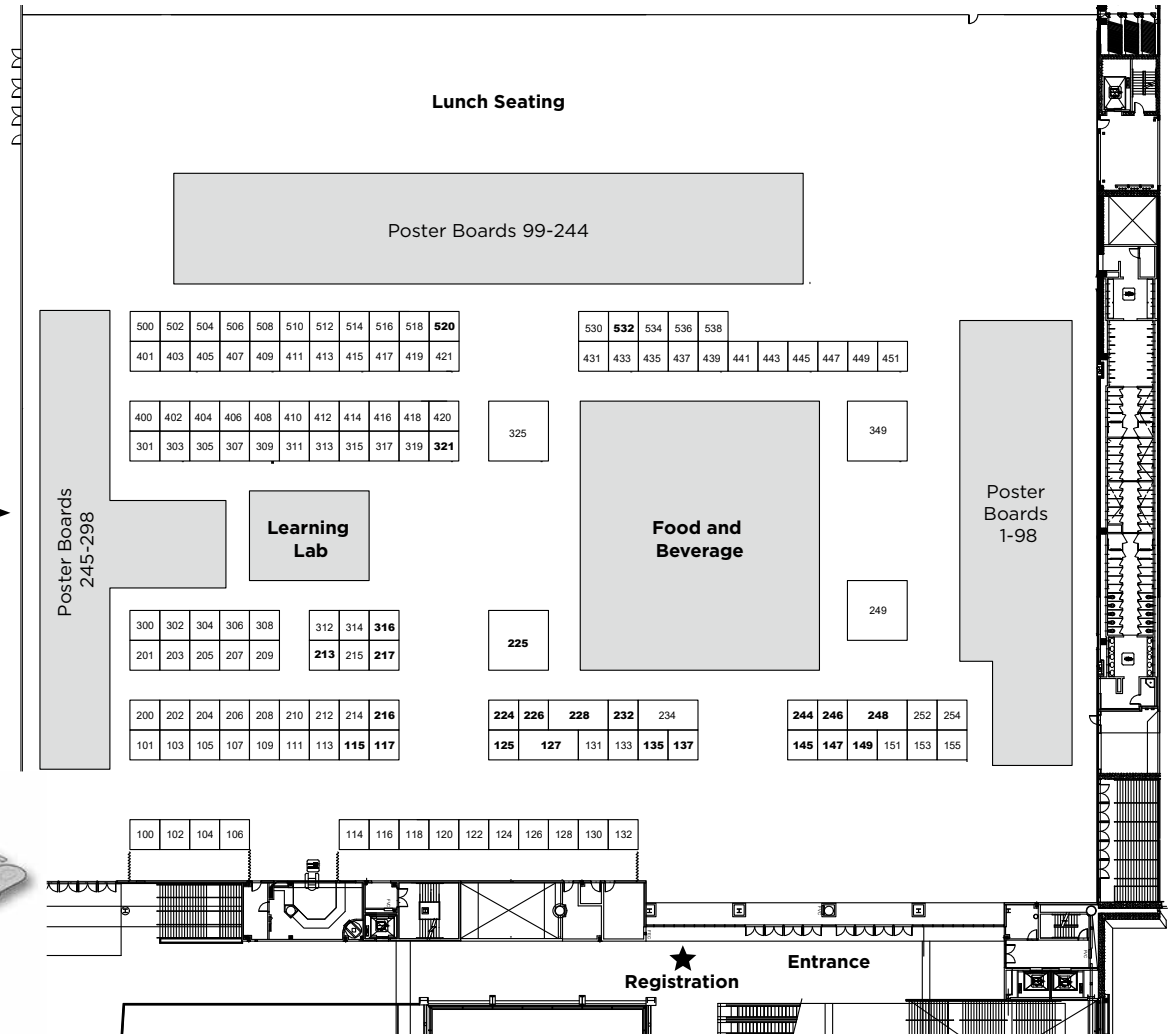
Sunday, June 2: 5:30-7:30 p.m.

Monday, June 3: 7:00 a.m.-6:30 p.m.

Tuesday, June 4: 7:00 a.m.-1:00 p.m.

Wednesday, June 5: 7:00 a.m.-6:30 p.m.

Thursday, June 6: 7:00 a.m.-1:00 p.m.



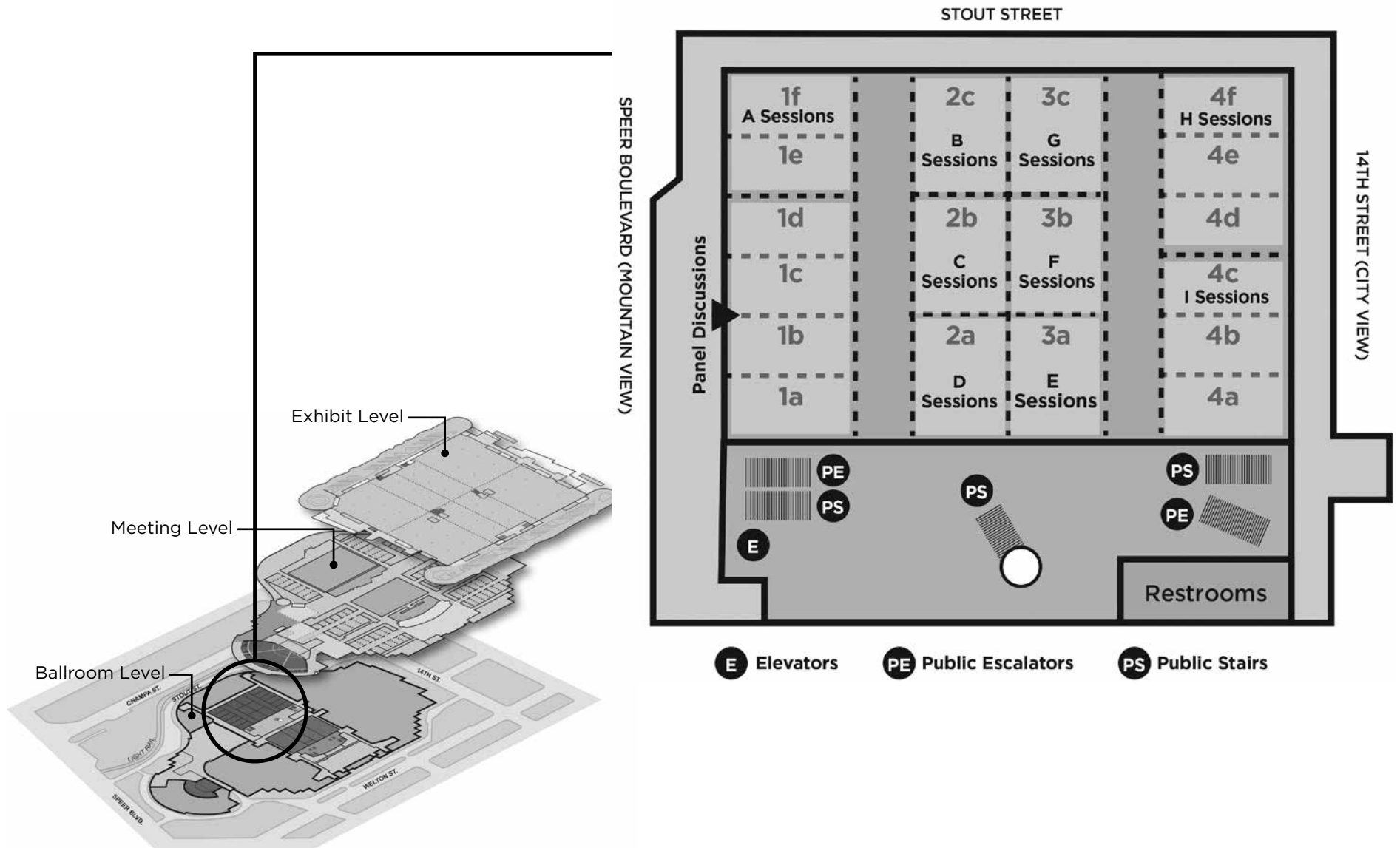
Conference and Learning Lab Sponsors shown to the right in **bold**.

Exhibitors

Accelerated Remediation Technologies, Inc. (ART)	433	ECT2	421	Parsons	135
AECOM	115	E-Flux	124	Perma-Fix Environmental Services, Inc.	502
Aestus, LLC	153	Ellingson - DTD	309	Pine Environmental	510
Albemarle	226	EN Rx	500	Porewater Solutions	244
Allonnia	228	ENTACT, LLC	349	Provectus Environmental Products, Inc.	147
ALS	405	Enthalpy Analytical	417	QED Environmental Systems, Inc.	109
Ambipar	536	Environmental Material Science	412	RadonAway	101
Applied Natural Sciences, Inc.	128	Environmental Waste Minimization, Inc.	103	Ramboll	321
APTIM	205	EON Products	206	Redox Tech	449
AQUABLOK, LLC	317	EPRO	407	REGENESIS	225
Aquagga, Inc.	504	ERM	300	RemBind	316
Aqueous Vets	202	ETEC, Inc.	106	RemWell	416
ARCADIS	216	Eurofins Environment Testing	111	Revive Environmental Technology	301
AST Environmental	232	Evonik Corporation	249	Rigsby Search Group	406
AWT Environmental Services, Inc.	151	Field Environmental Instruments, Inc.	126	RNAS Remediation Products	203
Axine Water Technologies	530	FRx, Inc.	117	RPI Group	248
Barr Engineering Co.	311	GEI Consultants, Inc.	308	S.S. Papadopoulos & Associates, Inc.	252
Battelle	234	Geo Lab Drilling	215	Savron	437
Beacon Environmental	431	Geoprobe Systems®	207	SCIDEV, Ltd.	122
Betts Drilling, Inc.	114	Geo-Solutions	313	Seametrics	100
Blaine Tech Services, Inc.	435	Geosyntec Consultants	214	Seequent	520
BluumBio	512	Geotech Environmental Equipment, Inc.	306	SERD Construction	538
Brice Engineering, LLC	403	Good Earthkeeping Organization	400	SERDP & ESTCP	200
Burns & McDonnell Engineering Co	149	GreenSoil Group	130	SGS North America, Inc.	420
CAP Remediation, LLC	411	Groundwater & Environmental Services, Inc.	409	SiREM	447
Carus, LLC	127	Haemers Technologies	133	Soil-Therm Equipment Inc	212
Cascade Environmental	325	Hepure, Inc.	304	Talon/LPE, Ltd.	204
CDM Smith	137	Hilltop Environmental Solutions	302	TDJ Group, Inc.	102
CERES Remediation Products	118	Honeywell UOP	506	Terra Systems, Inc.	217
CETCO	413	Integral Consulting, Inc.	314	Tersus Environmental	408
ChemGrout, Inc.	209	Intrinsyx Environmental	113	Tetra Tech	254
Claros Technologies	516	ISOTEC Remediation Technologies	224	TRC Companies	303
Clean Harbors	410	Isotope Tracer Technologies Inc.	104	TRS Group	445
Clean Vapor	319	Ivey International, Inc.	305	TWS Environmental	404
Connelly-GPM, Inc.	307	Jacobs	312	Vapor Pin Enterprises, Inc.	131
Cornelsen Umweltt, GmbH	415	JHA	201	VaporSafe	210
ddms, Inc.	443	JRW Bioremediation	439	Verdantas, LLC	534
DeepEarth Technologies, Inc.	451	Langan	532	Vista GeoScience	441
Defiant Technologies, Inc.	107	Legacy Remediation, Inc.	315	VLS Environmental Solutions	116
DE-FLUORO	508	McMillan-McGee Corp.	418	Waterloo Barrier, Inc.	208
DeWind One-Pass Trenching	402	Mersino	514	Weston Solutions, Inc.	246
Directional Technologies, Inc.	125	Microbial Insights, Inc.	155	Winoa	132
Eagle Synergistic	414	Montrose Environmental Group	419	Wintersun Chemical	145
		Mount Sopris Instruments	105	WSP	213
		MYCELX Technologies Corp.	518	Yellow Jacket Drilling	120
		Pace Analytical	401		

Session Floor Plan (Ballroom Level)

Mile High Ballroom



Plenary Session

Plenary Session Schedule

Monday, June 3, 8:30-10:00 a.m.
(Mile High Ballroom, 1a-1e)

Welcome and Opening Remarks

Conference Chairs:

Kavitha Dasu, Ph.D. (Battelle)

Carolyn Scala, PE, PMP (Battelle)

Plenary Speaker: Richard Kidd (Former Deputy Assistant Secretary of Defense for Environment and Energy Security)



and oversaw an RDT&E budget of \$450M. He now provides strategic advice and consulting services on sustainability, environmental remediation, decarbonization, and climate resilience, to a diverse set of clients, including international consultancies, private equity firms, utilities, and clean-tech startups.

He holds degrees from the United States Military Academy and the Yale School of Management. He has extensive travel and work experience in over 70 countries.

Mr. Kidd's plenary talk, 'How to "Apply" Science to the Policy Process,' will reflect on the intersection of science and policy formulation, emphasizing the crucial role of scientific expertise in guiding decision-making across various government agencies.

Drawing from personal experiences, he will highlight how science informs policy development, program design, and resource allocation, stressing the importance of effective communication between scientists and policymakers. He will highlight the complexity of the policy making process and the particular need to address scientific disinformation.

Ultimately, he calls upon scientists to continue providing sound advice to uphold evidence-based policymaking, essential for maintaining a functioning democratic society.

Exhibitors and booth staff are invited to attend the Plenary Session.

Mr. Richard Kidd has held key leadership roles in four U.S. Federal Agencies and the Executive Office of the President. He is a recognized leader in public sector sustainability and led the multi-billion-dollar clean energy deployment and environmental clean-up and restoration programs at the U.S. Department of Defense.

Beginning his career in the Army, he then served as an international civil servant with the United Nations' World Food Programme and the UN High Commissioner for Refugees, addressing food insecurity and development needs of societies impacted by conflict. Transitioning to the U.S. State Department's Bureau of Political Military Affairs, he managed programs addressing post-conflict threats to civilians.

In 2007, he became the Director of the Department of Energy's Federal Energy Management Program, accelerating the adoption of clean energy technologies across federal agencies. Later, as the Deputy Assistant Secretary of the Army for Energy and Sustainability, he fostered public-private partnerships focused on

energy efficiency and renewable energy deployment as well as sustainable waste management. Mr. Kidd's career journey led him to the Executive Office of the President, where he established the Federal Permitting Improvement Steering Council, a small agency dedicated to accelerating the construction of major infrastructure projects.

Mr. Kidd's most recent public role was as the Deputy Assistant Secretary of Defense for Environment and Energy Security, providing strategic direction and oversight for the Department's environmental stewardship and energy resilience efforts. In this position he created an "innovation" team that included the SERDP/ESTCP and OECIF/OEPF programs

General Information

All Conference events will be held at the **Colorado Convention Center** (700 14th St. Denver, CO 80202). A room block with group rates was made available at the adjacent Hyatt Regency Denver at the Colorado Convention Center (650 15th St. Denver, CO 80202).

The 88 technical sessions and eight panel discussions are organized according to the following major topics:

- Remediation Technology Innovations
- Assessing Remediation Effectiveness
- Green and Sustainable Remediation
- Addressing Challenging Site Conditions
- Fractured Rock and Complex Geology
- Petroleum and Heavy Hydrocarbon Site Strategies
- Per- and Polyfluorinated Alkyl Substances (PFAS)
- Metals
- Vapor Intrusion
- Characterization, Fate and Transport
- Advanced Diagnostic Tools
- Technology Transfer and Stakeholder Communications
- International Environmental Remediation Markets
- Emerging Contaminants

Program Overview

Sunday, June 2, 2024

- **8:00 a.m.-5:00 p.m.** Short Courses
- **1:00-2:40 p.m.** Student/Young Professional Panel Discussion
- **2:00-7:30 p.m.** Registration Desk Open
- **3:00-5:00 p.m.** Career KickStarter
- **5:30-7:30 p.m.** Welcome Reception, Exhibits, Poster Group 1 Display

Monday, June 3, 2024

- **7:00-8:00 a.m.** Continental Breakfast
- **8:30-10:00 a.m.** Plenary Session
- **10:30 a.m.-12:00 p.m.** General Lunch
- **12:10-4:20 p.m.** Platform Presentations
- **2:00-2:30 p.m.** Afternoon Beverage Break
- **4:30-6:30 p.m.** Group 1 Poster Presentations

Tuesday, June 4, 2024

- **7:00-8:00 a.m.** Continental Breakfast
- **9:30-10:00 a.m.** Morning Beverage Break
- **11:30 a.m.-12:00 p.m.** Afternoon Snack and Beverage Break
- **8:00 a.m.-1:50 p.m.** Platform Presentations
- **1:50 p.m.** Technical Program Recess
- **Lunch on own, general lunch not provided**
- **2:00-6:00 p.m.** Short Courses

Wednesday, June 5, 2024

- **7:00-8:00 a.m.** Continental Breakfast
- **9:30-10:00 a.m.** Morning Beverage Break
- **8:00 a.m.-4:20 p.m.** Platform Presentations
- **11:00 a.m.-12:30 p.m.** General Lunch
- **2:00-2:30 p.m.** Afternoon Beverage Break
- **4:30-6:30 p.m.** Group 2 Poster Presentations

Thursday, June 6, 2024

- **7:00-8:00 a.m.** Continental Breakfast
- **9:30-10:00 a.m.** Morning Beverage Break
- **8:00 a.m.-4:20 p.m.** Platform Presentations
- **11:00 a.m.-12:30 p.m.** General Lunch
- **2:00-2:30 p.m.** Afternoon Beverage Break
- **4:30 p.m.** Closing Reception

Short Courses

Pre-registration was required to attend a Short Course. Limited availability for on-site Short Course registration may be available; check at the Registration Desk for details.

Registered participants may pick up their Conference badge and materials at the Conference Registration Desk up to one hour before the course start time.

Sunday, June 2, 2024

8:00 a.m.-5:00 p.m. (All-Day Short Courses)

- How to Strategize on Site Investigation, In Situ Remediation and Monitored Natural Attenuation (MNA)-Natural Source Zone Depletion (NSZD): Addressing Subsurface Heterogeneity throughout the Project Lifecycle
- In Situ Management of PFAS in Groundwater

8:00 a.m.-Noon (Morning Short Courses)

- Application of Molecular Biological Tools to Assess Biological Processes at Contaminated Sites
- Best Practices for Applying In Situ Chemical Oxidation (ISCO): Over Two Decades of Successful Applications, Lessons Learned and Evolution
- Borehole Geophysics and Hydrogeologic Characterization for Multilevel Well Design and Construction
- SURF Guide to Sustainable Resilient Remediation Tools

1:00-5:00 p.m. (Afternoon Short Courses)

- Extraction and Injection Methods for Chlorinated and Recalcitrant Compounds: Applications and Enhancements for Groundwater and Soil Remediation
- Hydrogeochemistry Made Easy for Applied Site Investigation and Remediation
- Leveraging Volumetric and Mass Flux Metrics to Optimize Remedies: Exploring Key Concepts, Efficient Workflows, and a Compelling Case Study

Tuesday, June 4, 2024

2:00-6:00 p.m.

- Environmental Forensics: Where Did that Contamination Originate and Where Is It Going?
- ITRC Guidance: Implementing Advanced Site Characterization Tool

Presentations

Platform presentations scheduled as of May 14, 2024, are listed by day on pages 16-41.

Program changes made after May 14, 2024, will be reflected in the Conference app.

Platform talks are scheduled at 25-minute intervals. Each talk is to begin promptly at the time printed in the schedule. Session chairs will adhere strictly to the schedule, making it possible for registrants to move between breakout rooms to hear the talks most pertinent to them. To minimize distraction, please confine such movement to the short intervals between talks. Revisions and changes will be reflected in the digital session room signage positioned in the hallways between session rooms.

Posters will be presented on Monday and Wednesday evenings in the Exhibit Hall. During the poster sessions, presenters will be at their posters to discuss their work, and light refreshments will be served.

All poster listings and board numbers may be found only in the Conference app. Go to the “Program” tab and filter by “Type” for “Poster.”

Group 1 Posters

Display: Sunday 6:00 p.m.–Tuesday 1:00 p.m.

Presentations: Monday 4:30–6:30 p.m.

Sessions: A1-A9, B1-B7, C1-C7, D1-D7, E1-E4, F1-F3, G1-G3, H1-H3, I1-I3

Group 2 Posters

Display: Wednesday 7:00 a.m.–Thursday 1:00 p.m.

Presentations: Wednesday 4:30–6:30 p.m.

Sessions: A10-A12, B8-B10, C8-C11, D8-D10, E5-E9, F4-F9, G4-G9, H4-H9, I4-I9

Audio, video, and still photography is prohibited in session rooms during platform presentations or panel discussions without FIRST securing the speaker(s) permission and notifying the session chair or panel moderator in advance.

Video and still photography of poster board presentations is also prohibited without FIRST securing author/ speaker permission.

Exhibits

Exhibit booths are provided by 134 organizations that conduct remediation activities or supply equipment used in such work. Exhibits are on display Sunday, June 2, from 5:30 p.m. through Thursday, June 6, at 1:00 p.m. in Exhibit Hall F (Colorado Convention Center). Access to the Exhibit Hall after 1:00 p.m. on Thursday is restricted to exhibit booth staff for move-out. See page 4-5 for exhibit hours and the list of participating Exhibitors.

Learning Lab

The Learning Lab, located in the Exhibit Hall, will consist of live demonstrations highlighting specific technologies, tools, and software. The schedule of planned demonstrations is available in the conference app. Go to the “Program” tab and filter by “Type” for “Learning Lab.”



Look for this symbol in the left-hand margin of each program grid 2-page spread to see the times a Learning Lab is scheduled.

Learning Lab Sponsors



ramboll.com | Booth #321



rembind.com | Booth #316



Complimentary wireless Internet access is available in the Exhibit Hall and session rooms.

SSID: battelle2024

Password: chlorconf24

Professional Development

General Attendance Certificate. If you would like to receive a general certificate of Conference attendance, inquire at the Registration Desk. PDF certificates will be emailed after the Conference.

Daily Attendance Certificate. If your state licensing board accepts conference attendance for credit and will require documentation of hours attended during the Monday through Thursday technical program, a daily attendance log may be established for you.

Please review the compliance instructions listed below.

State of Massachusetts LSP Credits. The Conference has applied for State of Massachusetts LSP credits approval for the technical program and short courses. Pending approval, attendees who wish to receive credit are required to establish and maintain a daily attendance log and follow all compliance requirements. **Please review the compliance instructions listed below.**

Compliance. To log attendance hours for a daily attendance certificate or the State of Massachusetts LSP credits, you are required to sign in and out at the Registration Desk when you arrive at or leave the Conference. A PDF certificate will be emailed after the Conference with the total number of hours logged.

You may not complete or sign a previous days' log. Only those days with complete attendance logs (i.e., sign-in, sign-out, and signature) will be included on your certificate, no exceptions. Sign-out must be completed prior to the Registration Desk closing each evening. No exceptions are made to the compliance requirements; all professional development records are subject to audit.

Professional Headshot Lounge

A professional photographer will be available on-site in the Mile High Ballroom Foyer to take professional headshots.

- Tuesday, June 4: 10:00 a.m.-2:00 p.m.
- Wednesday, June 5: 10:00 a.m.-2:00 p.m.

There is no cost to participate, but interested participants must sign up for a time-slot at the Registration Desk before the desk closes on Monday, June 3, at 6:30 p.m.

Participants must wear their Conference badge to check-in with the photographer to be eligible and for file access after the event.

Meals, Breaks, & Receptions

The meals, breaks, and light receptions seen to the right will be provided at no additional cost to program registrants and exhibit booth staff during the food service times listed.

Food service for breakfasts, morning and afternoon beverage breaks, lunches, and receptions will be in Exhibit Hall F (Colorado Convention Center). The Thursday afternoon break and closing reception will be held in the Mile High Ballroom Foyer.

Guest Tickets. If registrants wish to bring guests to meals or receptions, guest tickets can be purchased at the Conference Registration Desk. Guest tickets will be priced equal to the cost incurred by the Conference for each meal.

Food & Beverage Sponsor



ghd.com



Food Service Times

Breaks in the technical program between sessions may not correspond with food service times. If you wish to attend specific food functions, please plan your schedule accordingly.

Continental Breakfast

Monday-Thursday, 7:00–8:00 a.m.

Morning Beverage Break

Tuesday-Thursday, 9:30-10:00 a.m.

Lunch

Monday, 10:30 a.m.–12:00 p.m.

Tuesday, **lunch not provided.**

Wednesday–Thursday, 11:00 a.m.–12:30 p.m.

Afternoon Beverage Break

Monday, Wednesday, and Thursday,
2:00–2:30 p.m.

Tuesday, 11:30 a.m.–12:00 p.m.

Welcome Reception

Sunday, 5:30-7:30 p.m.

Poster Group 1 Presentations & Reception

Monday, 4:30–6:30 p.m.

Poster Group 2 Presentations & Reception

Wednesday, 4:30–6:30 p.m.

Closing Reception

Thursday, 4:30–5:00 p.m.

Closing Reception Sponsors



eaglesynergistic.com | Booth #414



IveyInternational.com | Booth #305



winoagroup.com | Booth #132

Conference App & Abstract Collection

It is recommended that attendees review the schedule and abstracts available on the Conference mobile app prior to the event. Abstracts are available only through the mobile app and include all platform and poster presentations and panel discussions.

Poster listings are also available only through the Conference app.

Upon log-in, the app may be used to build a personalized schedule with reminders. In addition, you have the option of creating a personal profile to enhance networking opportunities with other participants. Enable "Notifications" in the app to receive reminders and important program updates as push notifications.

Proceedings

All presentations given at the Conference will be represented in the proceedings. The abstract will be

included supplemented with the slide files for platform presentations. Poster presenters have also been invited to submit PDFs of their poster presentations. After the Conference, the proceedings will be compiled and published only online. A link to access the proceedings will be sent to all technical program registrants when available.

Job Postings, Lost & Found

A message board will be available near the Registration Desk for the use of attendees wishing to contact one another. Notices about jobs available or wanted can be posted here. This board also will be used for messages taken by the registration staff for attendees. Please turn any found items in to the Registration Desk. Lost items may be picked up with a detailed description of the item.

Student/Young Professional Events & Career Opportunities

University students, through Ph.D. candidates, will find participation in the Conference valuable to their career development. In addition to the technical information gained by attending presentations and visiting exhibits, students will be able to meet and talk with environmental professionals representing a wide range of work experience and employers. Recruitment is a major focus of many participating Exhibitors and Sponsors and the Conference will provide enhanced networking opportunities for student jobseekers. Be sure to check the Message Board near the Registration Desk where job postings may be available from participating companies.

Sunday, June 2

1:00-2:40 p.m.

Panel Discussion—Total Career Mastery: From Networking to Leadership and Self-Development

Pre-registration not required.

The objective of this panel discussion is to equip students and young professionals with strategies and a roadmap for career advancement and growth.

Sunday, June 2

3:00-5:00 p.m.

Career KickStarter

Pre-registration was required to match Mentors and Mentees.

Participants will be matched with an experienced professional in a mentorship relationship, which both mentee and mentor are committed to sustaining for 1 year.

Student Poster Competition

Student participants with abstracts accepted for the technical program as poster presentations were given the opportunity to participate in a poster competition.

Posters will be judged by a panel of experts and the winner will receive a \$500 prize at the closing reception.

Student Event Sponsors



geoprobe.com | Booth #207



haemers-technologies.com | Booth #133



haleyaldrich.com



jacobs.com | Booth #312



mabbett.com

Program Committee, Session Chairs, & Panel Moderators

Program Committee

Conference Chairs

Kavitha Dasu, Ph.D. (Battelle)
Carolyn Scala, PE, PMP (Battelle)

Steering Committee

Greg Gervais, PE, SES (U.S. EPA)
Steve Gragert, CHMM (U.S. Army Corps of Engineers, Omaha District)
Ramona Iery, Ph.D. (U.S. Navy/EXWC)
Purshotam Juriasingani, PE (Tetra Tech)
Lisa Kunza, Ph.D. (South Dakota Mines)
Matthew Lahvis (Shell)
Samuel Moore (Battelle)
Vicki Pearce, MBUS (Ventia)
Ryan Thomas, Ph.D. (Parsons)
Roy Thun, MBA, PG, ENV SP (Broadbent & Associates Inc.)
Usha Vedagiri, Ph.D. (WSP)
Rick Wice, PG (Battelle)

MONDAY PLATFORM SESSIONS

A1. Remediation Approaches in Fractured Rock and Karst Aquifers

Beth Parker (University of Guelph/Morwick G360 Groundwater Research Institute)
Keith White (Arcadis U.S., Inc.)

A2. Challenges and Lessons Learned in Remediating Sites with Complex Geology

Bonani Langan (GSI Environmental Inc.)
Raymond Lees (Langan)

B1. Remedial Design/Optimization: Applications of Mass Flux and Mass Discharge

Thomas McHugh (GSI Environmental Inc.)
Lorenzo Sacchetti (Carus Europe SL)

B2. Optimizing Remedial Systems

Stephen Corish (Treo Environment)
Samuel Moore (Battelle)

C1. Landfill Assessment and Remediation

Aroona Boodram (Langan)
Heather Hallett (Foth Infrastructure & Environment)

C2. Large, Dilute and Commingled Plume Case Studies

Hanan Meron (LDD Advanced Technologies LTD)
George Walters (United States Air Force)

D1. Vapor Intrusion Mitigation and Effectiveness

Deepti Krishnan Nair (Battelle)
Todd McAlary (Geosyntec Consultants, Inc.)

E1. Advances in the Analysis of Non-Target Per- and Polyfluorinated Alkyl Substances (PFAS)

Cameron Orth (Battelle)
Emily Pulcher (Burns & McDonnell Engineering Company)

F1. Conceptual Site Models: Improvements in Development and Application

Dan Bryant (Woodard & Curran Inc.)
Richard Desrosiers (GZA GeoEnvironmental Inc.)

G1. Innovations in ZVI Amendment Formulations and Applications

Drew Baird (FRx, Inc.)
Ronald Britto (Tetra Tech, Inc.)

G2. Innovative and Optimized Amendment Delivery and Monitoring Methods

Emma Ehret (CDM Smith)
Holly Holbrook (AECOM)

H1. In Situ Technologies: Lessons Learned

Tim Colgan (Carus LLC)
Troy Lizer (Provectus Environmental Products, Inc.)

I1. Ex Situ PFAS Water Treatment Technologies

Ian Ross (CDM Smith)
Mahsa Shayan (CAPE Environmental Management)

TUESDAY PLATFORM SESSIONS

A3. Technical Impracticability: Challenges and Considerations for Evaluation of Fractured Rock Sites

Steve Verdibello (Battelle Memorial Institute)
David Zbieszkowski (August Mack Environmental, Inc.)

A4. Depositional Environments and Stratigraphic Considerations for Remediation

Christopher Alger (Terraphase Engineering, Inc.)
Colin Plank (Burns & McDonnell)

A5. Process-Based Conceptual Site Models (CSMs) for Informing Remediation

Kevin Pasternak (Atlas Technical Consultants)
Tracy Roth (Terraphase Engineering, Inc.)

B3. Remedy Implementation: Assessing Performance and Costs

Jay Shaw (Provectus Environmental)
John Simon (Gnarus Advisors)

C3. Adaptive Site Management: Lessons Learned for Site Characterization and Remedy Implementation

Megan Duley (Oneida ESC Group)
Dylan Kemmerer (Carus LLC)

C4. Adaptive Site Management: Lessons Learned for Site Characterization and Remedy Performance Monitoring

Charles Grimison (Ventia)
Kathi Stetser (GEI Consultants)

D2. Vapor Intrusion Preferential Pathways

Lila Beckley (GSI Environmental Inc.)
Kelly Pennell (University of Kentucky)

D3. Vapor Intrusion Risk Assessment and Site Management

Loren Lund (Jacobs)
Laura Trozzolo (TRC)

E2. In Situ PFAS Treatment Approaches

Paul Erickson (Regenesis Bioremediation)
Ramona Iery (U.S. Navy/EXWC)

E3. In Situ PFAS Soil Treatment Approaches

Adam Fletcher (Ventia)
Richard Stewart (RemBind)

F2. Improvements in Site Data Collection, Data Management, and Data Visualization

Andrew Mitchell (ADE Consulting Group)
Harvinder Singh (Oneida ESC Group)

F3. Advanced Data Visualization Techniques

Emily Jones (Floyd|Snider)
Evan Trumpatori (Woodard & Curran)

G3. In Situ Chemical Oxidation: Optimized Design Approaches and Lessons Learned

Will Caldicott (ISOTEC Remediation Technologies)
Dirk Pohlmann (OESC Group)

H2. Thermal Conductive Heating: Best Practices and Lessons Learned

Mark Kluger (TRS Group)
Jonah Munholland (Arcadis)

H3. Remediation of Legacy Contaminants using Thermal Conductive Heating

Thomas Patterson (Roux Associates, Inc.)
Rubens Spina (EBP Brasil)

I2. PFAS Fate and Transport in Surface Water

Bart Jordan (Seequent)
Joseph Quinnan (Arcadis US, Inc.)

I3. PFAS Fate and Transport

Richard Anderson (Air Force Civil Engineer Center [AFCEC])
Rachel Mole (Carnegie Mellon University)

WEDNESDAY PLATFORM SESSIONS

A6. Advances in the Application of Geologic Interpretation to Remediation

Tesema Chekol (Battelle/DTRA)
Lloyd Stewart (Praxis Enviro/Va Tech)

A7. Environmental Forensics: Site Characterization and Source Determinations

James Feild (Burns & McDonnell)
Sam Rosolina (Microbial Insights, Inc.)

A8. Remote Sensing, Drones, and Other Unmanned Systems for Remote Monitoring and Site Assessments

Ravi Bhatia (Terraphase Engineering)
Michael Meyer (Battelle Memorial Institute)

A9. Using Omic Approaches and Advanced Molecular Tools to Optimize Site Remediation

Trent Key (ExxonMobil Biomedical Sciences, Inc.)
Dora Taggart (Microbial Insights, Inc.)

B4. In Situ Activated Carbon-Based Amendments: Assessing Effectiveness and Performance

Maureen Dooley (REGENESIS)
Grant Carey (Porewater Solutions)

B5. Data Analytics: Use of Machine Learning and Artificial Intelligence Tools for Improved Analysis, Optimization and Decision Making

Rula Deeb (Geosyntec Consultants)
John Stults (CDM Smith)

B6. Practice of Risk Communication and Stakeholder Engagement

Rose Hanson (CDM Smith)
Jane Parkin-Kullmann (WSP)

B7. 1,4-Dioxane Remediation Challenges

David Adamson (GSI Environmental Inc.)
Bryon Dahlgren (Battelle)

C5. DNAPL Source Zone Remediation: Lessons Learned

Norbert Brandsch (EBP)
Brian Hoyer (Burns & McDonnell Engineering Company, Inc.)

C6. Evaluating Surface Water/Groundwater Interactions: Innovative Monitoring Approaches and Modeling Applications

Mark Kelley (Haley & Aldrich, Inc.)
Lisa Lefkovitz (Battelle)

C7. Low-Permeability Zone Treatment Approaches, Permeability Enhancements, and Case Studies

Grant Geckeler (ISOTEC)
Nathan Smith (U.S. EPA/Region 8)

D4. Advances in Vapor Intrusion Investigations

Bart Eklund (Haley & Aldrich)
Thomas Szocinski (GES)

D5. Heavy Hydrocarbons: Characterization and Remediation

Samantha Saalfeld (EA Engineering, Science, and Technology, Inc., PBC)
Tracey Tapley (US Army Corps of Engineers, Savannah District)

D6. LNAPL Recovery/Remediation Technology Transitions

Christine Gaines (NAVFAC SW)
Andrew Kirkman (Remediation Management, bp)

D7. Natural Source Zone Depletion

Scott Noland (Remediation Products Incorporated)
Julio Zimbron (E-Flux)

E4. Ex Situ PFAS Treatment Approaches

Kent S. Sorenson, Jr. (Allonnnia)
Fiona Laramay (AECOM)

E5. Innovative Ex Situ PFAS Destruction Technologies

Nasim Pica (Weston Solution)
Stephen Rosansky (Battelle)

F4. High-Resolution Site Characterization (HRSC)

Michael Fischer (U.S. EPA/Region 8)
Karla Leslie (Parsons)

F5. HRSC Suites of Tools to Improve CSMs

Mike Chapa (Weston Solutions, Inc.)
Kevin French (Vertex Environmental Inc.)

G4. Bioremediation: Advances in Amendment Formulations

Michael Lee (Terra Systems)
Derek Pizarro (AST Environmental, Inc.)

G5. Emerging Remediation Technologies

Thiago L. Gomes (DOXOR)
Mike Singletary (NAVFAC Southeast)

G6. Thermally-Enhanced In Situ Degradation Processes at Sub-Boiling Temperatures

Lauren Soos (TRS Group, Inc.)
Julie Sophis (Directional Technologies, Inc.)

H4. Abiotic and In Situ Biogeochemical Processes: Applications and Lessons Learned

Emily Bausher (Terraphase Engineering Inc.)
John Wilson (Scissortail Environmental Solutions, Inc.)

H5. Electrical Resistance Heating: Best Practices and Lessons Learned

Emily Crownover (TRS Group)
James Cummings (U.S. EPA)

I4. PFAS Fate and Transport Properties

Theresa Guillette (Arcadis)
Jeff Silva (Arclight Research & Consulting, LLC)

I5. PFAS Conceptual Site Model Approaches

Dora Chiang (Jacobs)
Ryan Swanson (HGL)

I6. PFAS: Groundwater Treatment Case Studies

Allan Horneman (Arcadis)
Barry Poling (REGENESIS)

THURSDAY PLATFORM SESSIONS

A10. Managing Chromium-Contaminated Sites

Matthew Alexander (Texas A&M University-Kingsville)
Richard Wilkin (U.S. Environmental Protection Agency)

A11. Mining and Uranium Site Restoration

Al Laase (RSI EnTech, LLC)
Steve Livingstone (Porewater Solutions)

A12. Precipitation and Stabilization of Metals

Sophia Dore (GHD)
Laurie LaPat-Polasko (Matrix New World Engineering)

B8. Advances in 1,4-Dioxane Biological Treatment Technologies

Zach Pierce (Allonnia)
Edward Winner (Remediation Products Inc.)

B9. Advances in Biological Treatment of Mixed Contaminant Plumes

Arul Ayyaswami (Tetra Tech)
Todd Webster (Envirogen Technologies, Inc.)

B10. Microplastics, Pharmaceuticals, and Other Emerging Contaminants

Purshotam Juriasingani (Tetra Tech, Inc)
Usha Vedagiri (WSP)

C8. GSR Best Practices and Nature-Based Remediation Case Studies

Paige Molzahn (Jacobs)
Matt Rousseau (GHD Limited)

C9. GSR Metrics and Sustainable Remediation Assessment Tools

Dick Raymond (Terra Systems)
Danielle Welch (Weston Solutions, Inc.)

C10. Climate Resilience and Site Remediation

Andrew Punsoni (Allonnia)
Rick Wice (Battelle)

C11. Aligning Remediation Goals with Environmental, Social, and Governance (ESG) Considerations

Stacey Helton (General Motors)
Roy Thun (Broadbent & Associates Inc.)

D8. Surfactant-Enhanced Remediation

Stephanie Fiorenza (Arcadis)
Scott Pittenger (ISOTEC Remediation Technologies)

D9. LNAPL Sites: Understanding and Managing Risks

Ranga Muthu (ExxonMobil)
Victor Vanin Sewaybricker (EBP Brasil)

D10. In Situ Remediation of Petroleum Hydrocarbons

Sandra Dworatzek (SIREM)
Jack Sheldon (Antea Group)

E6. PFAS Source and Forensic Considerations

Kavitha Dasu (Battelle)
Ryan Thomas (Parsons Corporation)

E7. PFAS and Bugs: The Search Continues

Paul Hatzinger (APTIM)
Jinxia Liu (McGill University)

E8. PFAS Human Health and Ecological Risk Assessment and Toxicity

Tamara House-Knight (GHD)
Jonathan Petali (New Hampshire Department of Environmental Services)

E9. PFAS Site Characterization

Lisa Kammer (Weston Solutions, Inc.)
James Lesperance (Integral Consulting)

F6. Advanced Investigation Tools and Techniques

Matt Burns (WSP)
Steve Rembish (Parsons)

F7. Advanced Sampling and Analysis Tools and Techniques

Michael C. Mazzaresse (AST Environmental, Inc.)
Bob Symons (Eurofins)

F8. Advanced Geophysics and Remote/Direct Sensing Tools and Techniques

John Dougherty (CDM Smith)
Todd Halihan (Oklahoma State University/Aestus, LLC)

F9. Groundwater Modeling: Advancements and Applications

James Montague (HGL)
James Schuetz (Parsons)

G7. Combined Remedies and Treatment Train Technologies

Stewart Abrams (Langan Engineering)
Will Moody (Provectus Environmental Products, Inc.)

G8. Combined Remedies and Treatment Train Technologies for Chlorinated Contamination

Brett Hicks (REGENESIS)
Raphael Mandelbaum (LDD Advanced Technologies)

G9. Phytoremediation

Christopher Gale (Applied Natural Sciences)
Bruce Smith (Civil & Environmental Consultants, Inc.)

H6. Injectable Activated Carbon Amendments: Lessons Learned and Best Practices

Rich Evans (Groundwater & Environmental Services, Inc.)
Colin Hogg (AST Environmental, Inc.)

H7. Permeable Reactive Barriers: Best Practices and Lessons Learned

Dan Griffiths (Parsons)
Bruce Tunnicliffe (Vertex Environmental, Inc.)

H8. Monitored Natural Attenuation: Innovative Monitoring Approaches/Lines of Evidence and Lessons Learned

John Gallagher (Microbial Insights, Inc.)
Charles Newell (GSI Environmental Inc.)

H9. Horizontal Wells: Applications and Lessons Learned in Site Characterization and Remediation

Elliott Andelman (Directional Technologies, Inc.)
Corissa Reynolds (August Mack Environmental, Inc.)

I7. PFAS Program Management in a Rapidly Changing Regulatory Environment

Rosa Gwinn (AECOM)
Shalene Thomas (Battelle)

I8. Managing PFAS at Publicly-Owned Treatment Works (POTWs)

Rick Gillespie (Revive Environmental)
Ali Ling (University of St. Thomas)

I9. Ex Situ PFAS Treatment: Soils/Solids and Other Waste Streams

Bill DiGuseppi (Jacobs)
Kristen Freiburger (Shannon & Wilson, Inc.)

Panel Discussions
(Mile High Ballroom, 1a-1d)

MONDAY

12:10 p.m.—Environmental Justice and Sustainable Practices: A Synergistic Approach
Moderator: Gerlinde Wolf (Ramboll)

2:40 p.m.—Decision-Making and Financial Implications of PFAS Fate and Transport in Multiple Environmental Media
Moderator: Usha Vedagiri (WSP)

TUESDAY

9:40 a.m.—Deciphering the PFAS Dilemma: Federal Regulations, Streamlined Definitions, and Their Implications
Moderator: Shalene Thomas (Battelle)

12:10 p.m.—Microplastics: The State of Science and Uncertainties on Risk-Based Management
Moderator: Dora Chiang (Jacobs)

WEDNESDAY

9:15 a.m.—Geology Revolution Continued ... Know What the Well Will Tell You Before You Drill
Moderator: Rick Wice (Battelle)

1:25 p.m.
Cost Impacts to Society of PFAS Remediation and Treatment
Moderator: Stewart Abrams (Langan Engineering)

THURSDAY

9:15 a.m.—Vapor Intrusion: Past, Present, and Future
Moderator: Thomas E. McHugh
(GSI Environmental Inc.)

1:25 p.m.—PFAS towards 2029: Priorities for Action, An Interactive Session
Moderator: Andrew Mitchell (ADE Consulting Group)

Monday Platform Sessions—12:10–2:40 p.m.

	PANEL DISCUSSIONS Mile High Ballroom, 1a-1d	A SESSIONS Mile High Ballroom, 1e/1f	B SESSIONS Mile High Ballroom, 2c	C SESSIONS Mile High Ballroom, 2b	D SESSIONS Mile High Ballroom, 2a
12:10	Environmental Justice and Sustainable Practices: A Synergistic Approach Moderator Gerlinde Wolf (Ramboll) Panelists Sebastian Harrison (Center for Creative Land Recycling) David Heinze (Ramboll) Jay Smith (Philips) Rick B. Wice (Battelle)	Bedrock Vapor Extraction to Remove TCE: Santa Susana Field Laboratory, California. <i>J. Hartley, D. Hill, and P. Zorba.</i> Danny Hill (JACOBS/United States)	Designing a Treatment Solution Using Quantitative High Resolution Site Characterization Data to Determine Life Cycle Mass Flux and Discharge. <i>D. Guilfoil.</i> Duane Guilfoil (AST Environmental, Inc./United States)	Unexpected Construction Dewatering Event Causes Changes in Groundwater Plume Flow Direction and Failure of the Groundwater Extraction System. <i>H. Hallett and B. Symons.</i> Heather Hallett (Foth Infrastructure & Environment/United States)	Vapor Intrusion Mitigation Systems: Is a Parking Garage Enough? <i>C. Regan, B.M. Eklund, and R. Rago.</i> Catherine Regan (Haley & Aldrich/United States)
12:35		Putting Conduits to Work: Evidence of Efficient Vapor Extraction in Karst Aquifers. <i>M. Cobb and K. White.</i> Michael Cobb (Arcadis U.S., Inc./United States)	Systematic, Mass Flux-Based Remedy to Mitigate PFAS Discharges. <i>A. Lorenz, J. Saling, M. Samp, and D. Favero.</i> Andrew Lorenz (Arcadis U.S., Inc./United States)	Challenges in Soil Vapor Extraction Treatment Design to Deplete Contaminant Mass at the Nation's Worst Carbon Tetrachloride Landfill Site. <i>B.S. Kennington, D.T. Heidlauf, S. Tarmann, and G. Barry.</i> Bruce Kennington (Ramboll/United States)	SSDS Enables Safe Implementation of ERD Beneath Buildings. <i>R.R. Saari, J. Martin, and K. Erickson.</i> Megan Hamilton (Arcadis/United States)
1:00		Karst Formation Bioaugmentation Pilot Study for a Trichloroethylene Source at an Electronics Manufacturer in New York. <i>S.A. Mirabello, K.J. Warner, T. Daniluk, and E. Rossano.</i> Stephen Mirabello (ERM/United States)	Combined Soil Vapor Extraction and Enhanced In Situ Bioremediation to Reduce Mass Flux of Chlorinated Volatile Organic Compounds to Groundwater beneath a Highway and Residential Neighborhood. <i>J. Hickey.</i> Joseph Hickey (Brown and Caldwell/United States)	ISTR Pilot Testing for Improvement of Full-Scale Design: How to Deal with Surprises and Improve Design. <i>G. Heron, R. Glass, C. Gambelli, M. Donati, and A. Corcagnani.</i> Gorm Heron (TRS Group/United States)	Distributed and Optimized Sub-Slab Venting (DOSSV). <i>L. Moorman.</i> Leo Moorman (Radon Home Measurement and Mitigation, Inc./United States)
1:25		Sustainable and Resilient Adaptive Management Strategies for Source Area Bioremediation of TCE DNAPL in Fractured Bedrock. <i>K.A. Morris.</i> Kevin Morris (ERM/United States)	Remediation Monitoring, Technology Transitions, and Site Closure: Multiple Lines-of-Evidence Approach. <i>K. Walker and T. McGuire.</i> Kenneth Walker (GSI Environmental Inc./United States)	Tackling the Complexities, Challenges and Impact of Heavy Rainfall on PFAS Treatment in Landfill Leachate. <i>M. Kearney, J. Reardon, and S. Halpin.</i> Sean Halpin (SCIDEV LTD/Australia)	Passive or Active VI Mitigation: The Success and Demise of Each. <i>T. Szocinski.</i> Thomas Szocinski (GES/United States)
1:50	Combined In Situ Conductive Heating, Steam Injection and Air Sparging for Remediation of Fractured Chalk at a Former Chemical Facility in Kent (UK). <i>G. Maini, L.F. Allen, R. Socciarelo, O. Crockford, R. Jenadri, J. Haemers, and F. Couto.</i> Felipe Couto (Ecologia Environmental Solutions Ltd./United Kingdom)	SESSION BREAK	SESSION BREAK	Advances in Existing Building Methane Mitigation. <i>T.E. Hatton.</i> Thomas Hatton (Clean Vapor LLC/United States)	
2:15	SESSION BREAK	Optimization of Groundwater Remediation Design and Performance. <i>M. Ozbek, N. Voorhies, J. Montague, T. Fox, and J. Fairbanks.</i> Tad Fox (HGL/United States)	Lessons Learned from Large-Scale Bioaugmentation at a Remote Site. <i>P.M. Dombrowski, S. Pittenger, J. Roberts, C. Scales, and K. O'Neal.</i> Paul Dombrowski (ISOTEC Remediation Technologies/United States)	SESSION BREAK	



Monday Platform Sessions—12:10–2:40 p.m.

	E SESSIONS Mile High Ballroom, 3a	F SESSIONS Mile High Ballroom, 3b	G SESSIONS Mile High Ballroom, 3c	H SESSIONS Mile High Ballroom, 4d-4f	I SESSIONS Mile High Ballroom, 4a-4c
12:10	<p>Non-Targeted Analysis and High Resolution Mass Spectrometry: The Basic and Beyond. <i>S.J. Choyke.</i> Sarah Choyke (Eurofins Environment Testing/United States)</p>	<p>Challenges of Conducting an Environmental Site Investigation in Aquifers with Low-Permeability Zones. <i>C.H. Pinto, B.H. Vitorino, T.H. Meneguzzo, and G.D. de Mello.</i> Gustavo Dorota Carreiro de Mello (Ramboll Brasil Engenharia e Consultoria Ambiental Ltda/Brazil)</p>	<p>An Innovative Approach to In Situ Soil Mixing Applied at a Chlorinated Solvent-Impacted Site in Batavia, New York. <i>M.A. Popek, S. Dore, D. Vanetti, and D. MacDougall.</i> Margaret Popek (GHD/United States)</p>	<p>Cynicism and Optimism with In Situ Remediation: The Other Lessons Learned. <i>J. Rossabi, J.S. Haselow, S. Markesic, and K. Clarke.</i> Joseph Rossabi (Redox Tech, LLC/United States)</p>	<p>Assessment of Environmental Footprints for Per- and Polyfluoroalkyl Substances (PFAS) Treatment Technologies for Liquids and Solids. <i>P. Molzahn, B. Collins, B. DiGuseppi, N. Fitzgerald, P. Favara, and S. Grieco.</i> Paige Molzahn (Jacobs/United States)</p>
12:35	<p>Non-Extractable PFAS in Solid Matrices Using Draft 1633 Method: How to Improve Your Understanding? <i>D. Chiang, L. Mankowski, and A. Christianson.</i> Leonard Mankowski (WSP/United States)</p>	<p>What's after Sequence Stratigraphy? Hydrogeologic Best Practices to Interpret Contaminant Migration Pathways with Case Study Applications. <i>D. Stock and B. Campanaro.</i> Dawn Stock (AECOM/United States)</p>	<p>Using Zero-Valent Bimetals for the Degradation of Chlorinated Solvents Vapors in the Unsaturated Zone. <i>C. Settimi, D. Zingaretti, I. Verginelli, and R. Baciocchi.</i> Daniela Zingaretti (University of Rome Tor Vergata/Italy)</p>	<p>The Past Paves the Way for Future Innovation? <i>T.J. Pac, M.D. Lee, J. Baldock, J. Begley, B.J. Cote, M. Crimi, J. Cummings, M. Leahy, R. Lewis, and M. Klemmer.</i> Tim Pac (Terra Systems/United States)</p>	<p>Removal of Per- and Polyfluoroalkyl Substances from Wastewater via Aerosol Capture. <i>D. Nguyen, C. Schaefer, and J. Stults.</i> Dung Nguyen (CDM Smith/United States)</p>
1:00	<p>Application of Nontargeted Analysis (NTA) via High-Resolution Mass Spectrometry (HRMS) for Identifying Transformation Products (TPs) during Hydrothermal Alkaline Treatment (HALT) of Per- and Polyfluoroalkyl Substances (PFAS). <i>S. Hao, T.J. Strathmann, and C. Higgins.</i> Shilai Hao (Colorado School of Mines/United States)</p>	<p>Conceptual Site Model Enhancement and Performance Monitoring Applications Using Multi-Level Monitoring Wells. <i>J.R. Butner, A. Estabrook, A. Sidebottom, T. Wallis, and T. Magill.</i> Tatum Magill (Jacobs/United States)</p>	<p>DPT Jet Injection for Enhanced Treatment of Chloropicrin in Low-Permeability Soils: A Five-Year Review. <i>C. Ross, D. Baird, and C. Martin.</i> Chapman Ross (FRx, Inc./United States)</p>	<p>Successful Cleanup of Low-Level Chlorinated Propanes in Groundwater Using an In Situ Bioreactor. <i>S. Varadhan, M. Asher, R. Hodges, S. Dworatzek, and E. Suchomel.</i> Srinivasa Varadhan (Geosyntec Consultants International Inc./Canada)</p>	<p>Column Testing to Assess PFAS Removal Using Various Treatment Media: Lessons Learned and Practical Engineering Considerations. <i>D. Nguyen and C. Schaefer.</i> Dung Nguyen (CDM Smith/United States)</p>
1:25	<p>Untargeted PFAS Analysis and Forensics: Promise and Bottlenecks to Widespread Adoption from a Commercial Lab Perspective. <i>B. Chandramouli.</i> Bharat Chandramouli (SGS North America Inc./Canada)</p>	<p>Fractured Rock Groundwater Conceptual Site Model: Diabase and Sandstone Contact in a Basin-Edge Context. <i>J.C. Galhardo, T. Favaro, and G.J. Borges.</i> Guilherme Borges (Ramboll/Brazil)</p>	<p>Sulfidated Zero-Valent Iron: Theory, Mechanisms, and Performance Review. <i>J. Freim.</i> John Freim (REGENESIS/United States)</p>	<p>Lessons Learned from Treating Over 60,000 Pounds of TCE with 475 Metric Tons of ZVI in Dense Clay Soils. <i>J. Depa, D. Kulczycki, J.S. Haselow, and K. Clarke.</i> Jim Depa (Jacob and Hefner Associates/United States)</p>	<p>Regenerable Resin Five Years Later: What We've Learned. <i>D. Kempisty, E.F. Houtz, M. Thompson, P. Newman, and S. Woodard.</i> David Kempisty (ECT2/United States)</p>
1:50	<p>Profiling of Target and Nontarget PFAS in Agricultural Soils. <i>B. Su and M. Li.</i> Boyuan Su (New Jersey Institute of Technology/United States)</p>	SESSION BREAK	SESSION BREAK	<p>Phased Pre-Design Investigation Approach in Support of CSM Refinement and Effective Injection Design. <i>J.D. Tribley, J.G. Booth, and D.E. Spicuzza.</i> Jill Tribley (Woodard & Curran/United States)</p>	SESSION BREAK
2:15	SESSION BREAK	<p>What Does It All Mean? Recognizing the Uncertainty in the Data We Collect. <i>M. Killingstad and S.T. Potter.</i> Marc Killingstad (Arcadis/United States)</p>	<p>Optimizing Injection Dosage of Enhanced In Situ Bioremediation Substrate and Incorporating Interactive Data Visualization Software for System Management. <i>C. Rohr.</i> Claudia Rohr (CDM Smith/United States)</p>	SESSION BREAK	<p>Technologies for Effective Treatment of Ultra-Short Chain PFAS. <i>J. Berry and S. Woodard.</i> Steve Woodard (ECT2/United States)</p>

Monday Platform Sessions—2:40–4:20 p.m.

	PANEL DISCUSSIONS Mile High Ballroom, 1a-1d	A SESSIONS Mile High Ballroom, 1e/1f	B SESSIONS Mile High Ballroom, 2c	C SESSIONS Mile High Ballroom, 2b	D SESSIONS Mile High Ballroom, 2a
2:40	Decision-Making and Financial Implications of PFAS Fate and Transport in Multiple Environmental Media Moderator Usha Vedagiri (WSP) Panelists Nicolette Andrzejczyk (U.S. Navy/NAVFAC) Rebecca Higgins (AECOM) Jinxia Liu (McGill University) Grant R. Trigger (RACER Trust)	Demonstration of Multiple Amendment Delivery Technologies for DNAPL Remediation in Fractured Crystalline Bedrock. <i>R.A. Wymore, N.Castonguay, and E. Ashley.</i> Ryan Wymore (CDM Smith/United States)	Adaptive Management in Groundwater Remediation via Source Zone Depletion at the Nation's Most Impacted Carbon Tetrachloride Site. <i>D.T. Heidlauf.</i> David Heidlauf (Ramboll/United States)	Lessons Learned Applying Compound Specific Isotope Analysis in Large, Dilute, and Co-mingled Groundwater Plumes. <i>K. Leslie, D.R. Griffiths, and E.M. Jennings.</i> Karla Leslie (PARSONS/United States)	Subfloor Tunnels and Floating Slabs in a 7-acre Building: The Case of the Accidental VI Mitigation System(s). <i>V. Hosangadi, S. Lowe, J. Ryncarz, and N. Shih.</i> Vitthal Hosangadi (NOREAS, Inc./United States)
3:05		Remediation of DNAPL in Competent Mudstone: Challenges and Importance of Post Monitoring to Evaluate Performance. <i>R.S. Srirangam, F. Lakhwala, E. Magdar, and D. Macaulay.</i> Ravi Srirangam (Ramboll/United States)	Sustainable Application of Combined Remediation Technologies: Integration of DPE and DGR for Chlorinated Contaminants in a Short-Term Project. <i>E. Nassar, J. Matos, F. Gutierrez, R.A. Zeitune, and L.J. Athayde.</i> Jammille Matos (Arcadis/Brazil)	Documentation of Kilometer-Scale Transport of DNAPL Resulting in a Remote Secondary Source and Persistent High-Concentration Groundwater. <i>J. Rossabi, B.B. Looney, H.H. Vermeulen, and D.G. Jackson.</i> Joseph Rossabi (Redox Tech, LLC/United States)	How to Estimate Sub-Slab Constituent Concentrations Using Riser Monitoring Data. <i>J. Schaettle, S. Reinis, and K. Kyain.</i> Jessica Schaettle (Langan Engineering & Environmental Services, Inc./United States)
3:30		Optimizing Remediation in Fractured and Weathered Bedrock: Lessons from Successful Injection Projects. <i>P.M. Dombrowski.</i> Paul Dombrowski (ISOTEC Remediation Technologies/United States)	Bioaugmentation Design for Treatment of High-Level Source Area Contaminated with Explosives. <i>S.T. Downey, R.E. Mayer, and Z. Parham.</i> Steven Downey (Aptim Federal Services, LLC/United States)	Re-Evaluating Existing Point of Compliance Well Locations at a Site with Commingled Plumes. <i>N. Scholl and C.M. Ross.</i> Nadja Scholl (Engineering Analytics, Inc./United States)	Using Active Subslab Depressurization to Mitigate Diffusion-Based Vapor Intrusion. <i>K.E. Hallberg, J. Persons, J. Minchak, and M. Strong.</i> Keri Hallberg (Jacobs/United States)
3:55		Eating the Elephant: Development of a Remedial Strategy in a Complex Karst Bedrock Setting. <i>W.L. Sauve, P. Fluck, B. McMillan, and K. White.</i> Whitney Sauve (Arcadis U.S., Inc./United States)	TBD	Alternative Approach to Pump and Treat/MCLs and Meeting the New EPA Accelerated Closure Directives: A Sustainable Plume Management Approach Using the Arizona WQARF Model and Adaptive Management. <i>S.P. Zachary.</i> Scott Zachary (Haley & Aldrich/United States)	The Art of Designing and Implementing Constructable Vapor Intrusion Mitigation Systems for Complex Industrial Projects. <i>J.E. Knight, M.J. Ambrusch, A. Boodram, M. Spievack, and C. Savidge.</i> Jordan Knight (MTN INC/United States)



NOTES

Monday Platform Sessions—2:40-4:20 p.m.

	E SESSIONS Mile High Ballroom, 3a	F SESSIONS Mile High Ballroom, 3b	G SESSIONS Mile High Ballroom, 3c	H SESSIONS Mile High Ballroom, 4d-4f	I SESSIONS Mile High Ballroom, 4a-4c
2:40	Forensic Fingerprinting of the Unseen: Revealing the Dark Secrets of PFAS with High-Resolution Ion Mobility. <i>F. Strathmann, T. Lubinsky, T. McKnight, E. Redman, T. Phomsopha, and A. Patterson.</i> Frederick Strathmann (MOBILion Systems/United States)	The DNAPL “1 Percent Rule”: Is It Still Relevant? <i>M. Zhang, J. Fiacco, J. Baldock, and A. Boroumand.</i> Miao Zhang (Environmental Resources Management, Inc./United States)	Barrier Reinjection of Emulsified Vegetable Oil within a Bedrock Aquifer and Innovative Monitoring Methods. <i>T. McMillan and A.M. Bugher.</i> Teresa McMillan (EA Engineering, Science, and Technology, Inc., PBC/United States)	Large-Scale In Situ Reductive Dechlorination of Groundwater Impacted with Commingled TCE and Hexavalent Chromium in Israel. <i>M. Mejac, J. Nielsen, M. Harkness, N. Gafni, E. MoshKovich, R.T. Mandelbaum, A.L. Tenzer, and S. Sagi Ben Moshe.</i> Mark Mejac (Ramboll/United States)	Evaluation of PFAS Removal by Surface Activated Foam Fractionation of Low Foaming Groundwater and High Foaming Surface Water. <i>H. Temme and L. Lewis.</i> Hanna Temme (AECOM/United States)
3:05	Rapid Screening of PFAS in Real-World Water Samples Using Particle-Induced Gamma-Ray Emission Spectroscopy. <i>Y. Jin, A. Wicks, D.D. Almeida, and G. Peaslee.</i> Yukun Jin (University of Notre Dame/United States)	Reevaluating the Conceptual Site Model of a Shoreline Chlorinated Solvent Plume in Groundwater. <i>M.T. Meyer, A.L. Rohrbaugh, and S. Verdibello.</i> Michael Meyer (Battelle Memorial Institute/United States)	Rapid Abiotic Dechlorination of Chlorinated Solvents by Remediation Emplacement of Zero Valent Iron (ZVI). <i>H. Sturm, G. Guest, M. Cronin, and L. Kessel.</i> Gord Guest (Geo Tactical Remediation Ltd./Canada)	Adaptive Recirculation System Design for ISCR Cycling of Metal Plating Releases. <i>C. Luther, B.J. Lazar, and N.M. Rabah.</i> Connor Luther (TRC Environmental Corporation/United States)	Nanofiltration Followed by Electrical Discharge Plasma for PFAS Destruction in Groundwater. <i>S.D. Richardson, P.R. Kulkarni, W.G. Bailey, S. Mededovic, T. Holsen, A.R. Denn, W. Knutson, C. Bellona, and C. Schaefer.</i> Whitney Bailey (GSI Environmental Inc./United States)
3:30	Challenges and Lessons Learned in Validating a PFAS Suspect Screening Workflow. <i>C.W. Orth, L. Mullins, and K. Dasu.</i> Cameron Orth (Battelle/United States)	Integrating Multi-Source Data for Targeted Remediation of Long-Term Chlorinated Solvent Contamination in Groundwater: A 3-D Geospatial Approach. <i>P. Ciampi, D. Feriaud, E. Bartsch, E.J. Alesi, and M. Petrangeli Papini.</i> Paolo Ciampi (Sapienza University of Rome/Italy)	Well Maintenance Techniques to Improve Injectability over Time for Long-Term In Situ Bioremediation. <i>J. Dabbs, D. Grady, and R. Britto.</i> Jenny Dabbs (Tetra Tech, Inc./United States)	In Situ Stabilization of Impacted Organic Peat during Ongoing Development. <i>D. Shaffer (Schnell), M. Vetter, and J. Simpson.</i> Deborah Shaffer (Schnell) (Cascade/United States)	Catalytic Reductive Deflurination Enables the Bio-Mineralization of PFAS in a Reduction and Oxidation Synergistic Platform (ROSP). <i>B. Rittmann, C. Zhou, M. Long, and Y. Luo.</i> Bruce Rittmann (Arizona State University/United States)
3:55	Development of a New Surface Testing Method to Comprehensively Assess Supramolecular PFAS on Surfaces. <i>I.F. Ross and G. Williams.</i> Ian Ross (CDM Smith/United States)	3-D CSM Development as a Precursor to Groundwater Flow Modeling. <i>M. Farmer.</i> Morgan Farmer (ERM/United States)	Long-Term Performance of Microscale ZVI Delivered to Low-Permeability Formations via Hydraulic Fracturing. <i>D. Baird and C. Ross.</i> Drew Baird (FRx, Inc/United States)	Challenges Implementing In Situ Solidification/Stabilization of DNAPL (Chlorinated/Brominated VOCs) at a Park Development Site. <i>B. Anderson, J.M. Omwake, and A. Breckenridge.</i> Brandon Anderson (ERM/United States)	Application of High Recovery Membrane Systems for the Separation of PFAS. <i>A. Safulko, C. Bellona, B. Tajdini, and T. Cath.</i> Andrew Safulko. (Brown and Caldwell/United States)

NOTES

Tuesday Platform Sessions—8:00–10:30 a.m.

	PANEL DISCUSSIONS Mile High Ballroom, 1a-1d	A SESSIONS Mile High Ballroom, 1e/1f	B SESSIONS Mile High Ballroom, 2c	C SESSIONS Mile High Ballroom, 2b	D SESSIONS Mile High Ballroom, 2a
8:00	SESSION BREAK	The Challenges with Amendment Delivery in Fractured Porous Rocks: Using DFM Simulations to Forecast Remediation Efficacy. <i>K.M. Walton, T.L. Pilato, and B. Parker.</i> Kenneth Walton (Morwick G360 Groundwater Research Institute, University of Guelph/Canada)	Bioremediation of Industrial Chemical Plant Using Multiple Injectates: Enhanced Reductive Dechlorination, Chemical Reduction, and Bioaugmentation. <i>S. Stumpf and L. Thompson.</i> Lisa Thompson (Farallon Consulting/United States)	Combined In Situ Treatment Methods and Technologies Reduce Mass at Large DNAPL Solvent Site. <i>M.C. Mazzaresse.</i> Michael Mazzaresse (AST Environmental, Inc./United States)	Implementation of Wisconsin's Preferential Pathway and Conduit Vapor Intrusion Guidance, RR-649. <i>J. Walden and J. Borski.</i> James Walden (Wisconsin Department of Natural Resources/United States)
8:25		A Novel Approach for Mapping Hydraulic Connectivity in Fractured Bedrock Aquifers. <i>K.J. Warner and L. Mاستera.</i> Kevin Warner (ERM/United States)	Thermal Remediation: Is it Worth the Price? <i>J. Galligan, S. Griepke, E. Hauber, and J. LaChance.</i> Jim Galligan (TerraTherm, Inc./United States)	Optimizing the Remedial Approach to Accelerate the Remediation Timeline while Managing Client Expectations: Remediating a Complex Former Manufacturing Site. <i>A. Kokorsky, J.D. Wood, Z. Smith, F. Lakhwala, and R.S. Srirangam.</i> Zackary Smith (Verdantas/United States)	Identification of New Preferential Pathways for Vapor Intrusion of Chlorinated Solvents Found by Combining VaporSafe™ and Detection Dogs. <i>L. Torin, J. Inkapööl, and I. Johansson.</i> Lena Torin (WSP/Sweden)
8:50		GWQS Achieved in Fractured Bedrock at a TCE Release Site in the Passaic Formation. <i>B. Brab.</i> Bill Brab (AST Environmental, Inc./United States)	Fast Kinetics In Situ Chemical Oxidation Treatment of a PCE Source Area with Sodium Persulfate Activated with Hydrogen Peroxide. <i>A.A. Cuellar, E. Bays, and Z. Pinkowski.</i> Angel Cuellar (Tetra Tech/United States)	Optimizing Operation of an SVE System to Remove CVOCs while Impacted by Regional Natural Gas. <i>H. Li, M.J. Moes, C. Ingalls, E. James, R.H. Christensen, Jr., and L.G. Stenblom.</i> Hui Li (EKI Environment & Water, Inc./United States)	Preferential Pathways: Responding to Changes in the Vapor Intrusion Conceptual Site Model. <i>M.K. Hamilton and S. Jonker.</i> Megan Hamilton (Arcadis/United States)
9:15		Impacts of Matrix Diffusion on Solute Transport and Groundwater Remediation in Fractured Crystalline Bedrock: Empirical and Modeling Demonstrations. <i>M.J. Gefell and D.S. Lipson.</i> Michael Gefell (Anchor QEA/United States)	18 Years of Full-Scale Mulch Biowall System Performance to Address Chlorinated Solvents in Groundwater. <i>D.R. Griffiths, B. Badik, T. Belanger, and C.T. Gallo.</i> Daniel Griffiths (Parsons/United States)	SESSION BREAK	Vapor Intrusion through Sewers: Sample Collection and Mitigation Methods. <i>A. Lee, D. Bertrand, N. Head, P. Nicholson, G. Johnson, J. Johnson, and D. Zolp.</i> Annie Lee (Geosyntec Consultants/Canada)
9:40	Deciphering the PFAS Dilemma: Federal Regulations, Streamlined Definitions, and Their Implications Moderator Shalene Thomas (Battelle) Panelists Usha Vedagiri (WSP) Bill Nelson (Godfrey and Kahn) David Connolly (U.S. EPA) Linda G.T. Gaines (U.S. EPA)	SESSION BREAK	SESSION BREAK	Case Study: Adaptive Management to Achieve Closure of a Dry Cleaner Site in California. <i>P. Devericks, L. Larsen, and E. Molina.</i> Patrick Devericks (Oneida ESC Group/United States)	SESSION BREAK
10:05		When Life Gives You Lemonade, Make Lemons: How to Reverse Engineer Valid Geological Data from Analogs, Outcrops and Regional Geology in a Remediation Project. <i>J. Sadeque and B. Campanaro.</i> Junaid Sadeque (AECOM/United States)	Legacy Liability to Managed Closure: Performance-Based Characterization and Remediation. <i>B. Brab.</i> Bill Brab (AST Environmental, Inc./United States)	Getting the Last 1% for Closure. <i>S.W. Kirschner and A. Doubleday.</i> Stephen Kirschner (Montrose Environmental Solutions/United States)	Prioritizing Vapor Intrusion Risk across Entire Residential Suburbs. <i>J. Coley, M.J. Morris, and S. Thompson.</i> James Coley (South Australia Environment Protection Authority/Australia)



Tuesday Platform Sessions—8:00–10:30 a.m.

	E SESSIONS Mile High Ballroom, 3a	F SESSIONS Mile High Ballroom, 3b	G SESSIONS Mile High Ballroom, 3c	H SESSIONS Mile High Ballroom, 4d-4f	I SESSIONS Mile High Ballroom, 4a-4c
8:00	PFAS Behavior and Removal in a Zerovalent Iron Permeable Reactive Barrier. <i>C. Clark, R.T. Wilkin, M. Rovero, S.D. Ross, N. Goers, D. Cutt, P. Zarella, and J. Mason.</i> Catherine Clark (U. S. Environmental Protection Agency/United States)	Leveraging Digital Workflows and Integrated Conceptual Site Models to Streamline Complex Assessment Projects. <i>J. Grant, R. Mikeal, and D.P. Joyner.</i> Jeremy Grant (AECOM/United States)	Ferrous Sulfide: A New Activation Chemistry for Persulfate. <i>T.J. Pac, M.D. Lee, D. Raymond, G. Cronk, and B. Duffy.</i> Tim Pac (Terra Systems/United States)	Pasco Sanitary Landfill NPL Site: Regulatory and Design Approach for Implementation of Thermal Conductive Heating. <i>L.R. Wachter, J. Massingale, and S. Avritt.</i> Layni Wachter (Floyd Snider/United States)	Characterization of Per- and Polyfluoroalkyl Substances in Stormwater and Evaluation of Fate and Transport of PFAS in Stormwater Management Systems. <i>T. Hussain, B. Rao, C. Avila-Gomez, H. Zhou, D. Sackey, N. Kumar, J. Guelfo, and D.D. Reible.</i> Tariq Hussain (Haley & Aldrich, Inc./United States)
8:25	In Situ and Ex Situ Destruction of PFAS Using a Novel Approach to Catalyzed Chemical Oxidation. <i>A. Parenky, D.R. Griffiths, and K. Diller.</i> Daniel Griffiths (Parsons/United States)	Real-Time Data Management and Visualization for Well Screen Placement during Remedial Action at the Puchack Well Field Superfund Site. <i>J.N. Dougherty, M. Simon, J. Von Uderitz, B. Yezuita, L. Pype, W. Wallace, C. Bonney, and R. Griffiths.</i> John Dougherty (CDM Smith/United States)	ADEQ Experience with Remediation of Deep Tetrachloroethylene (PCE) Plume Using In Situ Micro-Diffusion Ozone Treatment in Phoenix, Arizona. <i>M.J. Morales, J.W. Rackow, D. Sola, and T. Carlson.</i> Mikel Morales (Arizona Department of Environmental Quality/United States)	Using Multiple Lines of Evidence to Show Thermal Remediation Completeness When Soil Sampling Access is Limited. <i>S. Tarmann, B.S. Kennington, G. Heron, C. Crownover, C. Thomas, R. Glass, and G. Crisp.</i> Scott Tarmann (Ramboll Americas Engineering Solutions, Inc./United States)	Cloudy with a Chance of PFAS: Influence of Precipitation Formation Mechanisms and Demographics on PFAS. <i>D. Bryant, S. Olney, M.S. Jones, C. Rockwell, D. Collins, and J. Occhialini.</i> Dan Bryant (Woodard & Curran Inc/United States)
8:50	Time-Critical Gravity-Powered PFAS Remediation of Groundwater Seeps. <i>C. Shores.</i> Chris Shores (Geosyntec Consultants, Inc./United States)	Practical Applications of Cloud-Based Database Dashboards at a Major Superfund Site. <i>S. Bennett, M. Packard, M. Palmer, J. Turner, and S. Lapiers.</i> Mark Packard (ddms, inc./United States)	Solar Thermal Activation of Persulfate for ISCO Source Zone Treatment at Former Industrial Site. <i>T. Schöne, R. Engelhardt, P. Jacobs, P. Aquino, and J.J. Overgord.</i> Tim Schöne (TAUW GmbH/Germany)	Investigating the Effectiveness of the Dry-Out and Two-Phase Zones around Heaters for Vapor Extraction during Thermal Conduction Heating. <i>L.M. Price and K.G. Mumford.</i> Liam Price (Queen's University/Canada)	Polymer-Based Per- and Polyfluoroalkyl Substances (PFAS) as Long-Term Source to Surface Water in the Alabama River System. <i>E. DiFilippo, C. Andrews, B. Hoagland, and G. Davis.</i> Charles Andrews (S.S. Papadopoulos & Associates, Inc./United States)
9:15	SESSION BREAK	The Power of Well-Organized Data: Using Power Apps, Automate, and BI to Structure Information for a Large-Scale Drinking Water Sampling Effort. <i>E. Dietrich, A. Schneider, K. Caddy, and S.J. Ramsden.</i> Erin Dietrich (Barr Engineering Co./United States)	Hydroxyl and Sulfate Radical Scavenging by Solid Phase Mineral Species: Rate Constants, Implications, Future Directions. <i>K. Crincoli, and S.G. Huling.</i> Klara Crincoli (US Environmental Protection Agency/United States)	SESSION BREAK	Impact of Sea Spray Aerosols as a Diffuse PFAS Load on Soil, Surface Water, and Groundwater. <i>S.R. Lenschow, A.B. Henriksen, A.G. Christensen, A. Hansen, and H. Sckerl.</i> Søren Lenschow (NIRAS A/S/Denmark)
9:40	Case Studies and Long-Term Strategies for PFAS In Situ Remediation Using Colloidal Activated Carbon. <i>G.R. Carey, A. Danko, R.H. Anderson, P.B. Hatzinger, and K. Soderberg.</i> Grant Carey (Porewater Solutions/Canada)	SESSION BREAK	SESSION BREAK	Playing the Long Game: Predicting Heat Dissipation following In Situ Thermal Remediation to Enhance Degradation. <i>P. Hegele.</i> Paul Hegele (Arcadis/Canada)	Tempe Cell Method for Quantifying Vadose Zone Leaching of PFAS Sources. <i>J. Quinnan, D. Liles, A. Baumeister, M. Brusseau, and B. Guo.</i> Joseph Quinnan (Arcadis US, Inc./United States)
10:05	Gas Sparging Directly in Aquifers to Remove or Retain PFAS: Literature, Experiments, and Modeling. <i>C.J. Newell, E. Stockwell, H.M. Hort, J. White, P.R. Kulkarni, D.T. Adamson, S.T. Robinson, S. Panday, and J. Scalia IV.</i> Charles Newell (GSI Environmental Inc./United States)	Digital Reporting with PlanEngage: Synthesize, Summarize, Explore, Deliver. <i>B. Campanaro and M. Hirt.</i> Ben Campanaro (AECOM/United States)	Case Study: Using Recirculation Injection Methodology to Improve Efficacy of In Situ Chemical Oxidation Remediation. <i>J. Ferguson, I. Pelz, A. Chemburkar, J. Molin, and K.A. Malley.</i> Kylie Malley (ERM/United States)	Geotechnical Considerations when Using Thermal Conduction Heating under Buildings and Sensitive Infrastructure. <i>S. Griepke, J. LaChance, E. Hauber, and N. Ploug.</i> Steffen Griepke (TerraTherm, Inc./United States)	SESSION BREAK

Tuesday Platform Sessions—10:30 a.m.–1:00 p.m.

	PANEL DISCUSSIONS Mile High Ballroom, 1a-1d	A SESSIONS Mile High Ballroom, 1e/1f	B SESSIONS Mile High Ballroom, 2c	C SESSIONS Mile High Ballroom, 2b	D SESSIONS Mile High Ballroom, 2a
10:30	Panel Discussion Panel, Continued: Deciphering the PFAS Dilemma: Federal Regulations, Streamlined Definitions, and Their Implications	The Evolution and Application of the Puchack Site Geologic Model: From Paper to Digital, from Lithostratigraphic to Environmental Sequence Stratigraphy. <i>J.N. Dougherty, M. Simon, B. Yezuita, L. Pype, W. Wallace, C. Bonney, R. Griffiths, and J. Von Uderitz.</i> John Dougherty (CDM Smith/United States)	B3. Remedy Implementation: Assessing Performance and Costs Cost Benefit Analysis of Chlorinated Ethene Bioaugmentation in Groundwater. <i>L.T. LaPat-Polasko, B. Hoagland Stamatovski, and J. King.</i> Laurie LaPat-Polasko (Matrix New World Engineering/United States)	C3. Adaptive Site Management: Lessons Learned for Site Characterization and Remedy Implementation DNAPL Containment Remedy at a Large Site with a Complicated CSM. <i>B. Quann, S.A. Kessel, and C.A. Spinapolic.</i> Brendan Quann (Brown and Caldwell/United States)	D3. Vapor Intrusion Risk Assessment and Site Management Use of a 3-D Conceptual Site Model for Rapid Site Assessment and Communication. <i>R. Jones and K. Wilder.</i> Ryan Jones (Brown and Caldwell/United States)
10:55		Application of Environmental Sequence Stratigraphy to Sedimentary Bedrock Aquifers with Commingled and Co-located VOC and PFAS Plumes. <i>B. Bond, M. Morris, K. Kelly, and E. Dieck.</i> Bob Bond (LANGAN/United States)			
11:20	SESSION BREAK	Later Stage Remedial Design Refinement Based on Depositional Environment and Stratigraphic Evaluation. <i>D.E. Wilt, M. Hertz, M.J. O'Neill, W. Moody, and H. Rafiee.</i> Denise Wilt (EA Engineering, Science, and Technology, Inc. PBC/United States)	SESSION BREAK	C3. Adaptive Site Management: Lessons Learned for Site Characterization and Remedy Implementation Adaptive Injection Strategies for Zero-Valent Iron and In Situ Bioremediation in a Complex Geologic Setting: Lessons Learned and New Techniques. <i>K.E. Myers, T. Macbeth, E. Ehret, I. Lo, T. Tomaselli, D. Nguyen, and J.N. Dougherty.</i> Kimberly Myers (CDM Smith/United States)	D3. Vapor Intrusion Risk Assessment and Site Management Optimizing Long-Term Vapor Intrusion Monitoring during Site Management. <i>G. Buckley, K.E. Hallberg, L. Lund, and A. Jones.</i> Gwendolyn Buckley (Jacobs/United States)
11:45		SESSION BREAK	B3. Remedy Implementation: Assessing Performance and Costs In Situ Solidification Approaches at MGP Sites to Reduce Costs/Uncertainties and Address Challenging Site Conditions. <i>A.R. Sherman, K. Bogatch, and A.S. Gutta.</i> Adam Sherman (Brown and Caldwell/United States)	SESSION BREAK	SESSION BREAK
12:10	Panel Discussion Microplastics: The State of Science and Uncertainties on Risk-Based Management Moderator Dora Chiang (Jacobs) Panelists Bharat Chandramouli (SGS North America Inc.) Usha Vedagiri (WSP) Yasemin Kunukcu (WSP) Scott Coffin (Office of Environmental Health Hazard Assessment [OEHHA])	Breaking the Uncertainty Logjam: Leveraging CSMs to Make Remedial Progress in Bedrock Aquifers. <i>U. Tulsiani, J. Martin, M. Cobb, and K. Brill.</i> Urvi Tulsiani (Arcadis/United States)	B3. Remedy Implementation: Assessing Performance and Costs Trialling Three Parallel Remediation Options to Select One Strategy for the Entire Site. <i>J. Bergman, H. Nord, J. Shore, J. Molin, M. Petersens, and J. Ryden.</i> Jonny Bergman (Sheeba Environmental Engineering AB/Sweden)	C4. Adaptive Site Management Variability in Fill Material and an Abundance of Underground Utilities Complicates the CSM and Remedial Approach at a MGP Site on Lake Superior. <i>H. Hallett, B. Symons, and M.S. Raimonde.</i> Heather Hallett (Foth Infrastructure & Environment/United States)	D3. Vapor Intrusion Risk Assessment and Site Management Considerations for Empirically-Derived Default Attenuation Factors for Vapor Intrusion Screening. <i>M. Lahvis.</i> Matthew Lahvis (Shell Oil Products/United States)
12:35		High Resolution Characterization of a Complex Chlorinated Compound-Impacted Fractured Bedrock Site in South Africa. <i>S.K. Kalule and N. Chere.</i> Steve Kalule (USK Consulting Africa/South Africa)	B3. Remedy Implementation: Assessing Performance and Costs The Gift that Keeps on Giving: Post-Bioremediation Sustained Treatment. <i>T. McGuire, K. Walker, D.T. Adamson, and C.J. Newell.</i> Travis McGuire (GSI Environmental Inc./United States)	C4. Adaptive Site Management Lessons Learned: A 20-Year Review of the Effectiveness of Containment Barrier Walls in the Pacific Northwest. <i>T.W. Louviere and P. Hsieh.</i> Trevor Louviere (Dalton, Olmsted, & Fuglevand, Inc./United States)	D3. Vapor Intrusion Risk Assessment and Site Management The Role of Trichloroethene in Congenital Heart Defects: Updated Weight of Evidence Shifts Risk Management. <i>J. Peters.</i> Jay Peters (Haley & Aldrich, Inc./United States)

Tuesday Platform Sessions—10:30 a.m.–1:00 p.m.

	E SESSIONS Mile High Ballroom, 3a	F SESSIONS Mile High Ballroom, 3b	G SESSIONS Mile High Ballroom, 3c	H SESSIONS Mile High Ballroom, 4d-4f	I SESSIONS Mile High Ballroom, 4a-4c
10:30	In Situ Treatment of the Air-Water Interface within a PFAS Source Zone Using Colloidal Activated Carbon. <i>R. McGregor.</i> Rick McGregor (InSitu Remediation Services/Canada)	Managing, Assessing, and Presenting Imperfect Chlorinated Solvent Data in Support of Environmental Litigation. <i>K. Pumphrey.</i> Kerry-Anne Pumphrey (BlueFrog Environmental Consulting Inc./Canada)	Adaptive ISCO Injection Strategy for DNAPL Source Zone Treatment. <i>F. Krembs and K. McDonald.</i> Fritz Krembs (Trihydro Corporation/United States)	How to Manage the Thermal Remediation of a Chemical Waste Landfill? Chemistry is Key! <i>S. Eriksen, N. Ploug, and J. Holm.</i> Søren Eriksen (Krüger A/S/Denmark)	Practical Applications of Lysimeters within a Regulatory Framework and Lessons Learned. <i>K.H. Hasbrouck and C. Schaefer.</i> Kristen Hasbrouck (Tanaq Environmental LLC/United States)
10:55	Efficient Sorption of Short-Chain and Ether PFAS on a Modified Clay. <i>F. Pazoki, B. Yan, and J. Liu.</i> Faezeh Pazoki (McGill University/Canada)	Lead in School Drinking Water: Adopting Smart Data Management Technologies for Efficient Analysis and Communication. <i>N. Tumney, J. Luchette, and D. Bishop.</i> Joe Luchette (Terraphase Engineering/United States)	A Comprehensive Design Approach to A Multicontaminant, Multireceptor Site. <i>B. Parekh and M. McBride.</i> Bhuvnesh Parekh (GZA GeoEnvironmental/United States)	Lessons Learned Thermally Treating 18 Source Areas on the Velsicol Chemical Superfund Site in Michigan. <i>J. Cole, S.T. Pratt, D. Phelan, and S. Griepke.</i> Jason Cole (Jacobs/United States)	Lysimeters to Evaluate PFAS Leaching at AFFF-Impacted Sites. <i>C. Schaefer, S. Hao, N. Gonda, C. Zhang, D. Lippincott, G. Lavorgna, D. Nguyen, K.H. Hasbrouck, and C. Higgins.</i> Charles Schaefer (CDM Smith/United States)
11:20	SESSION BREAK	SESSION BREAK	SESSION BREAK	SESSION BREAK	Use of Lysimeters to Estimate Site-Specific Soil Standards for PFAS. <i>M. Hirt and M. Zenker.</i> Matthew Zenker (AECOM/United States)
11:45	Formulation and Development of a Novel Dust-Free Carbon-Based Amendment for PFAS Immobilization in Soil. <i>S. Kabiri and M. McLaughlin.</i> Shervin Kabiri (The University of Adelaide/Australia)	Using a Digital CSM to Expedite Workflow for DoD PFAS Site Investigations. <i>P. Curry, A. Yanites, and O. Day.</i> Matthew Schnobrich (Arcadis/United States)	Expedited Implementation of Combined In Situ Treatment Technologies to Address DNAPL at a Multi-Parcel Former MGP Site. <i>B.T. Clement.</i> Ben Clement (Burns & McDonnell Engineering Company, Inc./United States)	Thermal Conduction Heating (TCH) Removed over 400,000 Pounds of Jet Fuel Contamination from Former Bulk Fuel Source Area. <i>J. Galligan, S. Griepke, N. Huard, T. Mahoney, M. Walling, B. Kline, and S. Lorden.</i> Jim Galligan (TerraTherm, Inc./United States)	SESSION BREAK
12:10	In Situ Stabilization and Solidification for PFAS Remediation in Soils: A Sustainable Solution for Mass Flux Reduction. <i>T. Guillette, J. Quinnan, K. Heinze, J. Erickson, D. Liles, and T. Olechiw.</i> Theresa Guillette (Arcadis/United States)	Application of HRSC Technology to Create an Accurate Three-Dimensional Site Model and Accelerate CSM Understanding and Remedial Alternatives Evaluation. <i>J. Castle and E.R. Gessert.</i> Janet Castle (Eagle Synergistic/United States)	Approaching ISCO Application Differently to Reduce Matrix Diffusion/Rebound: Flexible and Scalable Automated, Low-Volume Chemical Oxidant Injection Systems. <i>P. Gruca and J. Yerton.</i> Paul Gruca (Weaver Consultants Group, LLC/United States)	Confronting ISTR's Ultimate Challenge: Pre-ZVI Altered Permeabilities and Floating LNAPLs/Sinking DNAPLs on Bedrock. <i>X. Chen, C. Winell, D. Lamsma, I. Cowie, C. Zhou, and S. Guan.</i> Xiaosong Chen (GEO Inc./United States)	Recharge at PFAS-Impacted Sites: The Other Half of the Mass Discharge Story. <i>K. Walker, E. Stockwell, J. Alanis, D.T. Adamson, C.J. Newell, and R.H. Anderson.</i> Kenneth Walker (GSI Environmental Inc./United States)
12:35	In Situ Thermal Treatment of PFAS in Vadose Zone Soils. <i>R. Iery, A. Struse, J. Cole, N. Fitzgerald, B. DiGuseppi, G. Heron, E. Crownover, L. Stauch, P. Joyce, K. Dasu, T.J. Strathmann, and S. Hao.</i> Nicole Fitzgerald (Jacobs/United States)	Use of Dynamic Data Visualization Tools to Improve Remediation Outcomes at Well-Studied Sites. <i>E. Jones and H. Bates.</i> Emily Jones (Floyd Snider/United States)	Challenges When Remediation Timeline is Driven by Construction: A Phased Approach to Address Commingled Contamination in Vadose and Saturated Zones. <i>C. Spilatro, J. Bracken, R.S. Srirangam, and F. Lakhwala.</i> John Bracken (Verdantas/United States)	Innovative Solutions for Implementing Thermal Treatment of a Deep TCE Source beneath an Active Facility. <i>S. Tarmann, B.S. Kennington, G. Heron, C. Crownover, C. Thomas, R. Glass, and G. Crisp.</i> Scott Tarmann (Ramboll Americas Engineering Solutions, Inc./United States)	Avoiding over Predicting PFAS Soil Porewater Concentrations: Implications for Hydrogeological Risk Assessment and Soil Remediation. <i>M. Vanderkooy and J. Rayner.</i> James Rayner (Geosyntec Consultants/United Kingdom)

Tuesday Platform Sessions—1:00–1:50 p.m.

PANEL DISCUSSIONS Mile High Ballroom, 1a-1d		A SESSIONS Mile High Ballroom, 1e/1f		B SESSIONS Mile High Ballroom, 2c		C SESSIONS Mile High Ballroom, 2b		D SESSIONS Mile High Ballroom, 2a	
1:00	Panel Discussion	A5. Process-Based Conceptual Site Models (CSMs) for Informing Remediation	Pneumatic Characterization of Gas Flow and Contaminant Concentrations in Unsaturated, Fractured Bedrock. <i>L. Stewart.</i> Lloyd Stewart (Praxis Enviro / Va Tech/United States)	B3. Remedy Implementation: Assessing Performance and Costs	Optimizing Remedial Strategies in Brazil: An Evaluation of Dual Thermal Treatment Technologies Using Dynamic Cost Modeling. <i>M. Ingraham and J. Arthur.</i> Miles Ingraham (Jacobs/United States)	C4. Adaptive Site Management	Adaptive Site Management via Innovative Monitoring of ISCO Remediation. <i>S.N. Jacobson, S. Murphy, B.A. Green, and L. Daubert.</i> Samuel Jacobson (Sanborn, Head and Associates/United States)	D3. Vapor Intrusion Risk Assessment and Site Management	Human Health Risk Assessment Considering Biodegradation of Petroleum Hydrocarbon Vapors in Brazil. <i>G.C. Silva, K. Guiguer, R. Santos, A. Bustamante, E. Castro, and F. Cavallari.</i> Gustavo Silva (Arcadis/Brazil)
			Process-Based Conceptual Site Model Development for Complex Fractured Sedimentary Bedrock Sites. <i>L. Mastera, J. Fiacco, D. Riddle, J. Winkler, and M. Hayes.</i> Larry Mastera (ERM/United States)		The Anatomy of a Defensible Case Study. <i>E.D. Cooper.</i> Eliot Cooper (Cascade Environmental LLC/United States)		Expedited Site Investigation and Dynamic Remedy Deployment to Reduce Environmental Risks and Long-Term Liability. <i>A.P. Friedrich, J. Flattery, and E.P. Smith.</i> Aaron Friedrich (ERM/United States)		Mitigating a Phantom Source: Where Are These Vapors Coming From? <i>M.J. Ambrusch, A. Boodram, J. Stoicescu, B. Comey, S. Baker, and A. Looman.</i> Matthew Ambrusch (Langan Engineering/United States)
1:25									

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Tuesday Platform Sessions—1:00–1:50 p.m.

	E SESSIONS Mile High Ballroom, 3a	F SESSIONS Mile High Ballroom, 3b	G SESSIONS Mile High Ballroom, 3c	H SESSIONS Mile High Ballroom, 4d-4f	I SESSIONS Mile High Ballroom, 4a-4c
1:00	In Situ Soil Stabilization to Mitigate PFAS Transport via Stormwater at an AFFF Source Area. <i>J. Bamer, D. Nguyen, C.J. Gurr, and J. Greene.</i> Jeffrey Bamer (CDM Smith/United States)	Enhanced Data Visualization and Analysis Approach at Former Industrial Site with Collocated Contamination. <i>E. Trumpatori, K. Elich, and R. Ansari.</i> Katie Elich (Woodard & Curran/United States)	ISCO Application for the Treatment of MCB, BTEX and CF in Groundwater at a Pharmaceutical Site. <i>A. Leombruni, B. Smith, and M. Mueller.</i> Alberto Leombruni (Evonik Operations GmbH/Italy)	Remediation of a Chlorinated Solvents Contaminated Site by a Thermal Remediation System. <i>T.R. Do Valle and C. Calderon.</i> Thamires Do Valle (EBP BRASIL/Brazil)	The Influence of Tension-Driven Flow on the Transport of AFFF in Unsaturated Zone. <i>F. Vahedian, J.A. Silva, J. Simunek, and J.E. McCray.</i> Faran Vahedian (Colorado School of Mines/United States)
1:25	In Situ Electro-Osmosis Removal of PFAS from Impacted Soils. <i>S.M. Al-Dirani and K. Dasu.</i> Samer Al-Dirani (Battelle Memorial Institute/United States)	Data Management, Visualization, and Predictive Analytics Tools to Streamline Decision-Making and Optimize Performance on Steam-Enhanced Extraction Sites. <i>G.N. Mackey, L.L. Jenkins, J. Baldock, M. Appel, and N.W. Dumaresq.</i> Graham Mackey (ERM/United States)	Using “Stacked Fractures” to Increase Oxidant Loading to Subsurface for VOC and 1,4-Dioxane Treatment. <i>M. Lamar, D. Baird, C. Ross, B. Smith, J. Bamer, J. Molin, S. Cwick, P. Stoick, and S. Teschner.</i> Michael Lamar (CDM Smith/United States)	Thermal Desorption of VHOC Contaminated Soil and Vapor Management at Lucciana, France. <i>T. Renson, L. Devaux, A. Jordens, H. Saadaoui, and J. Haemers.</i> Aurelien Vandekerckhove (Haemers Technologies/Belgium)	Derivation of Site-Specific Soil Standards Reflective of Mass Loading from PFAS Source Areas. <i>D.M. Drennan, J. Quinnan, M. Brusseau, and B. Guo.</i> Dina Drennan (BEM Systems/United States)

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Wednesday Platform Sessions—8:00–10:30 a.m.

	PANEL DISCUSSIONS Mile High Ballroom, 1a-1d	A SESSIONS Mile High Ballroom, 1e/1f	B SESSIONS Mile High Ballroom, 2c	C SESSIONS Mile High Ballroom, 2b	D SESSIONS Mile High Ballroom, 2a
8:00	SESSION BREAK	In Situ Bioremediation of Perchlorate in a Highly Heterogeneous Geologic Setting. <i>J. Dabbs, D. Grady, and R. Britto.</i> Jenny Dabbs (Tetra Tech, Inc./United States)	In Situ Treatment of PFAS-Impacted Groundwater: Do We See Desorption or Competitive Sorption Occurring in the Field. <i>R. McGregor.</i> Rick McGregor (InSitu Remediation Services/Canada)	Lessons Learned from a Major Southern California Superfund Site. <i>P. Joyce, D. Seiler, L.D. Soos, M. Palmer, and K. King.</i> Michael Palmer (de maximis/United States)	A New Look at Diffusion and Subslab Vapor Intrusion Sampling: Passive Adsorption Diffusion Samplers. <i>B.F. Thompson, M. Niemet, L. Lund, and H. O'Neill.</i> Benjamin Thompson (Jacobs/United States)
8:25		Evaluation of Chlorinated Solvent Source Mass for the Baghurst Drive Superfund Site Thermal Remedial Design. <i>D. Macone, D.J. Russell, K. Mudrick, E. Schmidley, and J. Bulova.</i> Kevin Mudrick (AECOM Technical Services, Inc./United States)	Colloidal Activated Carbon Barrier to Reduce PFAS Migration. <i>R.E. Mayer, P.B. Hatzinger, A.S. Eloskof, N. Johnson, and G. Cronk.</i> Robert Mayer (APTIM/United States)	Recalcitrant DNAPL Source Zone Characterization and Remediation. <i>B.J. Lazar, R. Pepalla, E. Baumgarten, and J. Rice.</i> Brendan Lazar (TRC Environmental Corporation/United States)	Background Indoor Air Levels of Volatile Organic Compounds in California Residences. <i>G. Plantz, K. Chatterton, and R. Rago.</i> Gina Plantz (Haley & Aldrich, Inc./United States)
8:50		Revisiting the Role of Steeply Dipping Extension Fractures in the Newark Basin to Improve CSMs for Remedial Design. <i>B. Bond, K. Kelly, and M. Morris.</i> Kevin Kelly (LANGAN/United States)	In Situ Sorption of PFAS Using Colloidal Activated Carbon. <i>A. Danko, P.B. Hatzinger, G. Lavorgna, D. Lippincott, and S.J. Foxwell.</i> Anthony Danko (NAVFAC EXWC/United States)	Lessons Learned from Two Phases of TCH Treatment at a Former MGP Site. <i>E. Hauber, J. LaChance, and S. Griepke.</i> Erin Hauber (TerraTherm, Inc./United States)	Optimizing Site-Specific Ventilation-Based Mitigation Strategies Using Mass Discharge Test in Vapor Intrusion Studies. <i>T.S. Jepsen, A. Rokkjaer, M.G. Møller, P. Loll, M. Hag, R.R. Kyndesen, and M. Flyhn.</i> Trine Jepsen (DMR A/S/Denmark)
9:15		Geology Revolution Continued... Know What the Well Will Tell You Before You Drill Moderator Rick Wice (Battelle)	Pressure Transient Analysis of Drawdown and its Derivative Provide Insight on Complex Flow Regimes Affecting Groundwater and Contaminant Transport in a Bedrock Aquifer in the North Carolina Piedmont. <i>J. Simpson, L. Franklyn, and J. Cai.</i> Joshua Simpson (GZA/United States)	Colloidal Activated Carbon Barrier Long-Term Performance: Ten-Year Review Supported by Aspect Ratio Analysis, Flux Measurement and Modelling. <i>J. Birnstingl, C. Lee, and C. Sandefur.</i> Jeremy Birnstingl (REGENESIS/United Kingdom)	Lessons from DNAPL Remediation in Bedrock by Chemical Oxidation: Concentrations Had to Go Up to Come Down. <i>P.M. Dombrowski and P. Kakarla.</i> Paul Dombrowski (ISOTEC Remediation Technologies/United States)
9:40	Panel Discussion Panelists Todd Hailhan (Oklahoma State University/Aestus, LLC) Fonda Apostolopoulos (Colorado Department of Public Health and Environment) Paolo Ciampi (Sapienza University of Rome) Ian Bowen (U.S. EPA) Rick Cramer (Burns & MacDonnell)	SESSION BREAK	SESSION BREAK	SESSION BREAK	SESSION BREAK
10:05		Noble Gas Analyses to Distinguish between Surface and Subsurface Brine Releases at a Legacy Oil Site. <i>D.C. Segal, A. Visser, and C. Bridge.</i> Daniel Segal (Chevron/United States)	How AI is Helping Improve Data Transparency and Regulatory Compliance for Environmental Sites. <i>J.R. Eller, K. Sivasubramanian, and S. Chrastina.</i> Jonathan Eller (GHD/United States)	Intertidal Geophysics to Improve Characterization of Groundwater to Surface Water Contaminant Transport. <i>S. Moore, M.T. Meyer, A. Baird, S.A. Lee, B. Rhiner, T. Lewis, and A. Gavaskar.</i> Samuel Moore (Battelle/United States)	Sources and Reference Concentrations of PAHs in Surface Soil at Eielson Air Force Base. <i>S. Saalfeld, M. Powell, T.C. Hines, R. Jordan, and M.J. Cejas.</i> Samantha Saalfeld (EA Engineering, Science, and Technology, Inc., PBC/United States)

Wednesday Platform Sessions—8:00–10:30 a.m.

	E SESSIONS Mile High Ballroom, 3a	F SESSIONS Mile High Ballroom, 3b	G SESSIONS Mile High Ballroom, 3c	H SESSIONS Mile High Ballroom, 4d-4f	I SESSIONS Mile High Ballroom, 4a-4c
8:00	Pilot-Scale PFAS Separations and Transformations: State of the Science and Lessons Learned. <i>C.S. Griggs and J. Puhnaty.</i> Justin Puhnaty (U.S. Army Engineer Research and Development Center/United States)	Best Management Practices for Site Characterization: The End of Poke and Hope? <i>S. Frandsen, K. Spears, and S.W. McDonald.</i> Samantha Frandsen (Aestus, LLC/United States)	Optimizing Bioremediation with Low pH Tolerant Dhc. <i>C. Scales, J. Roberts, and P.C. Dennis.</i> Corey Scales (SiREM/Canada)	Pathways and Kinetics of Dechlorination in Abiotic Natural Attenuation. <i>P.G. Tratnyek, M. Scherer, C. Chelsvig, A. Neumann, and M. Patial.</i> Paul Tratnyek (Oregon Health & Science University/United States)	Recent Advancements in Mechanistic Understandings of PFAS Fate and Transport in the Vadose Zone. <i>J. Stults, C. Schaefer, T. Macbeth, C. Higgins, T. Illangasekare, and C. Rockwell.</i> John Stults (CDM Smith/United States)
8:25	AFFF Transition to Fluorine-Free Foam: Waste Minimization. <i>D. Kempisty, C. Bennett, S. Woodard, and M. Nickelsen.</i> David Kempisty (ECT2/United States)	Not All Is as It Seems: Reinvestigating a Persistent Benzene Plume Using HRSC. <i>G.D. Miller, E. Walsh, and M. Agnew.</i> Emma Walsh (Senversa/Australia)	Initiating the Biotransformation of Martian Regolith by Dissimilatory Perchlorate-Reducing Microorganisms. <i>B.M. Paiz, A.G. Delgado, and A.J. Medina Benitez.</i> Alba Medina Benitez (Arizona State University/United States)	Naturally-Occurring Abiotic Dechlorination in Clay. <i>C. Schaefer, D. Shih, D. Tran, Z. Zheng, and C. Werth.</i> Charles Schaefer (CDM Smith/United States)	The Role of Precursor Transformation on PFAS Fate and Transport in the Saturated Zone. <i>E. Stockwell, J.D. Gamlin, P.R. Kulkarni, D.T. Adamson, C.J. Newell, and R.W. Falta.</i> Emily Stockwell (GSI Environmental Inc./United States)
8:50	State of the Art for PFAS-Impacted Soils: What are the Available Remediation Technologies? <i>J. Haemers, A. Jordens, L. Devaux, and H. Saadaoui.</i> Jan Haemers (Haemers Technologies/Belgium)	High-Resolution Site Characterization of Sequence Stratigraphy and Contaminants in Soil for Effective Remedial Design. <i>J. Dunahue, J. Bamer, T. Tomaselli, H. Johannes, M. Gorman, A.S. King, and A. Ddamulira.</i> James Dunahue (CDM Smith/United States)	Chlorinated Solvent Daughter Product Management and Remediation Using an Activated Carbon Based Injectate. <i>M.C. Mazzaresse.</i> Michael Mazzaresse (AST Environmental, Inc./United States)	Quantification of Abiotic Transformation Rates for cDCE Using a ¹⁴C Assay. <i>D.L. Freedman, A. Rivera-Cruz, O. Dunn, and J.T. Wilson.</i> David Freedman (Clemson University/United States)	Partitioning and Storage of Per- and Polyfluoroalkyl Substances at Fire Training Areas Considering Supramolecular Assemblies. <i>I.F. Ross.</i> Ian Ross (CDM Smith/United States)
9:15	Ball Milling as an Emerging Destruction Technique for PFAS Contaminated Soils. <i>K. Gobindlal and M. Glucina.</i> Kapish Gobindlal (Environmental Decontamination [NZ] Limited/New Zealand)	SESSION BREAK	Laboratory Evaluations of ZVI and EVO in Combination with Sulfidation and Added Sulfur Containing Amendments. <i>M.D. Lee and D. Raymond.</i> Michael Lee (Terra Systems/United States)	SESSION BREAK	Field Validation of a Modified HYDRUS Model for Simulating PFAS Leaching in the Vadose Zone. <i>J.A. Silva, M. Olson, F. Krembs, J. Simunek, and J.E. McCray.</i> Jeff Silva (Arclight Research & Consulting/United States)
9:40	SESSION BREAK	Biogeochemical Characterization of CVOC-Impacted Bay Sediments Using High-Resolution Passive Profiler. <i>H. Schneider, H. Girod, N. Durant, H. Rectanus, E. Rosen, A. Jackson, D. Dressler, S.A. Lee, and M. Pound.</i> Haley Schneider (Geosyntec Consultants/United States)	Coupling Biological Reductive Dechlorination and Adsorption for TCE Removal Exploiting Raw Polyhydroxyalkanoates (PHA) from Organic Waste as Electron Donor and Pine Wood Biochar (PWB). <i>M. Petrangeli Papini, L. Lorini, M. Abruzzese, and B. Matturo.</i> Marco Petrangeli Papini (Sapienza University of Rome/Italy)	What to Expect When You are Not Expecting: Challenges, Solutions, and Results of a Limited Bedrock Injection. <i>H. Kilts, D. Good, S. Grillo, and F. Lakhwala.</i> Heather Kilts (Groundwater & Environmental Service, Inc./United States)	SESSION BREAK
10:05	Sorbed PFAS under Weather Conditions: Resilient Enough? <i>J. Buhl and R. Stewart.</i> Jurgen Buhl (Cornelsen Group/Germany)	High Resolution Site Characterization for PCE Source Area to Support a Time Critical Removal Action. <i>K. Fox, K. Lazzari, M.D. Thornton, and C. Matta.</i> Kathy Fox (EA Engineering, Science, and Technology, Inc., PBC/United States)	SESSION BREAK	Developing a Field-Deployable ORP Kit to Measure Redox Potential of Aquifer Reactive Solids for Assessment of Abiotic Natural Attenuation. <i>D. Fan, C. Kocur, P.G. Tratnyek, and R. Johnson.</i> Dimin Fan (Geosyntec Consultants/United States)	Characterization of Relevant PFAS Fate and Transport Processes at Multiple AFFF Sites Using a Mass Balance Approach. <i>D.T. Adamson, C.J. Newell, P.R. Kulkarni, R. Iery, J. Cook, and H.F. Stroo.</i> David Adamson (GSI Environmental Inc./United States)

Wednesday Platform Sessions—10:30 a.m.–1:00 p.m.

	PANEL DISCUSSIONS Mile High Ballroom, 1a-1d	A SESSIONS Mile High Ballroom, 1e/1f	B SESSIONS Mile High Ballroom, 2c	C SESSIONS Mile High Ballroom, 2b	D SESSIONS Mile High Ballroom, 2a
10:30	Panel Discussion Panel, Continued: Geology Revolution Continued ... Know What the Well Will Tell You Before You Drill	Automated Visual Tools for Source Distinction, Commingled Plume Differentiation, and Attenuation Assessment for Complex Chlorinated Compound Mixtures. <i>M.B. Heintz and A. Huang.</i> Monica Heintz (Arcadis US Inc./ United States)	Towards Improved Hydrocarbon Soil Assessment: The Application of Mid-Infrared Spectroscopy and Binary Classification Techniques. <i>D. Beniwal, R.K. Nachimuthu,</i> <i>C.S. Smith, G. Tsiminis, and</i> <i>S. Manning.</i> Deeksha Beniwal (Ziltek Pty. Ltd./ Australia)	Assessing the Genetic Potential for Long-Term Bioremediation in East Palestine, Ohio. <i>E.P. Browning, D.M. Taggart,</i> <i>S.M. Rosolina, F. Loeffler, and</i> <i>G. Chen.</i> Dora Taggart (Microbial Insights, Inc./United States)	Shovel or Scalpel? Modern Simulated Distillation, Updated TPH Fraction Methods to Define Contamination and Remediate. <i>K. Horiuchi, P. Michalski, W. Henton,</i> <i>and D. Garcia.</i> Kelly Horiuchi (VSOL Group, Volterre Environmental/United States)
10:55	SESSION BREAK	Evaluating Anthropogenic Cd Sources in Surface Soils Using Cd, Zn, Pb Concentrations and Stable Isotope Data. <i>J.G. Booth,</i> <i>M. Van Der Heijden, E. Trumpatori,</i> <i>R. Coffin, and R. Ansari.</i> J. Greg Booth (Woodard & Curran/ United States)	From Spreadsheets to Scripts: Optimizing Data Analytics Workflow with an R Shiny Application for a Complex Groundwater Site. <i>E. Ehret,</i> <i>R. Cotter, C. Storrar, K. Kelley,</i> <i>W. Lai, T. Macbeth, H.M. Rolston,</i> <i>and J. Elsey.</i> Emma Ehret (CDM Smith/United States)	The Hunt for PFAS: Modeling the Shenanigans of Groundwater- Surface Water Interactions. <i>P. Khambhammettu, M. Kladias,</i> <i>C. Divine, and S.T. Potter.</i> Scott Potter (ARCADIS/United States)	Response of Petroleum Degrading Microbial Community to Biostimulation and Seasonal Variations in Marine Sediment Microcosms. <i>H.Z. Hamdan and</i> <i>D.A. Salam.</i> Hamdan Hamdan (Lebanese American University/Lebanon)
11:20		Geochemical Evaluation of Arsenic in Groundwater and the Interaction of Organic-Rich Sediments and Underlying Beach Sands at a Former Petroleum Release Site. <i>W.A. Foss, P. Srivastav, and</i> <i>K. Thorbjornsen.</i> William Foss (APTIM Federal Services, LLC/United States)	Application of Principal Component and Hierarchical Cluster Analysis to Delineate Hydrogeochemical Units at Fractured Rock Sites. <i>T. Ward, S. Ceyhan, S. Olney,</i> <i>D. Bryant, and J. House.</i> Tori Ward (Woodard & Curran, Inc./ United States)	High Resolution Groundwater and Surface Water Characterization: Advanced Techniques to Improve Conceptual Site Models. <i>I. Bowen,</i> <i>R.L. Runkel, D. Werkema, N. Terry,</i> <i>and M. Briggs.</i> Ian Bowen (USEPA/United States)	Ex Situ Bioremediation at a Large Hydrocarbon-Contaminated Site. <i>G. Overbeeke and P. Wilson.</i> Gavin Overbeeke (AEL/Canada)
11:45		SESSION BREAK	SESSION BREAK	SESSION BREAK	SESSION BREAK
12:10	SESSION BREAK	SESSION BREAK	SESSION BREAK	SESSION BREAK	SESSION BREAK
12:35		A8. Source Determination of Volatile Fugitive Emissions in Near Real Time. <i>T. Quinn and M. Crouch.</i> Tim Quinn (SGS North America Inc./ United States)	B6. The PFAS Risk Management Strategy for Stakeholders. <i>C.S. Koll, J. Sheldon, C. Tufts,</i> <i>and S. Meyers.</i> Caron Koll (Antea Group/United States)	C7. Can Permeability Enhancement Circumvent Back Diffusion, Rebound and Reduce Remediation Time at Low Permeability Sites? <i>L. Kessel.</i> Lowell Kessel (CERES Remediation Products/United States)	D6. Managing LNAPL Sites Using the Latest Tools and Science. <i>C.J. Mulry.</i> Chris Mulry (Groundwater & Environmental Services, Inc. ([GES])/ United States)



Wednesday Platform Sessions—10:30 a.m.–1:00 p.m.

	E SESSIONS Mile High Ballroom, 3a	F SESSIONS Mile High Ballroom, 3b	G SESSIONS Mile High Ballroom, 3c	H SESSIONS Mile High Ballroom, 4d-4f	I SESSIONS Mile High Ballroom, 4a-4c
10:30	<p>PFAS Destruction Case Study: Pairing Foam Fractionation with Photo-Activated Reductive Defluorination at a Chrome Plating Facility. <i>M.D. Byker, M. Wang, S.L. Meyer, and S. Witt.</i> Marcus Byker (Enspired Solutions Inc./United States)</p>	<p>High-Resolution Design Optimization (HRDO) and Injection at Brookley AFB Mobile, Alabama. <i>E.D. Cooper, J.P. Bauman, M. Gerber, and B. Carlson.</i> Eliot Cooper (Cascade Environmental LLC/United States)</p>	<p>Sustainable Remediation via Bioelectrochemical System for a Petroleum Site. <i>A. Boodram, M. Spievaek, S. Sherman, D. Deacon, V. Yarina, S. Abrams, S. Jin, and P. Fallgren.</i> Michael Spievaek (Langan Engineering and Environmental Services, Inc./United States)</p>	<p>Assessing Chlorinated Solvent Breakdown Using a Waste-Based Catalyst in a Simulated Aquifer Experiment. <i>A.G. Kühl, J.U. Bastrup, T.V. Pedersen, K.U. Dideriksen, C.U. Albers, F. Grandia, D.J. Tobler, H.C. Hansen, and N. Tuxen.</i> Anton Kühl (GEO/Denmark)</p>	<p>3M Settlement Project 1007 Source Assessment and Feasibility Study Findings: Regulation and Resource Protection. <i>R. Higgins.</i> Rebecca Higgins (AECOM/United States)</p>
10:55	<p>Treatment Train for Removing PFAS from High Concentration Stormwater. <i>R. Mora, M. Riley, M. McCloskey, P. Tacy, and J. Cuthbertson.</i> Rebecca Mora (AECOM/United States)</p>	<p>High-Resolution Site Characterization Workflow for Hydrocarbon Remediation. <i>T. Casseb Barbosa, E.M. Carvalho, C.A. Carvalho, T.T. Pereira, L.L. Garcez, D.C. Carvalho, H.G. Fernandes, and M.G. da Rocha.</i> Danielle Carvalho (Geoambiente S/A/Brazil)</p>	<p>Biological Degradation of High Concentrations of 2,4- and 2,6-DNT on Laboratory and Field Scale. <i>M. Slooijer, J. Dijk, R. Peters, S. Verissimo, M. Brito, and F. Martins.</i> John Dijk (GreenSoil Group/Belgium)</p>	<p>Site-Specific Reductive Dechlorination Designs Using a Full Toolbox of Abiotic with Biotic Reagents. <i>P.M. Dombrowski, P. Kakarla, M.D. Lee, and D. Raymond.</i> Paul Dombrowski (ISOTEC Remediation Technologies/United States)</p>	<p>Accelerating Site Characterization and Conceptual Site Model Development via TRIAD-Like Stakeholder Engagement Strategies and Technologies. <i>A. Wickham.</i> Arthur Wickham (BEM Systems, Inc./United States)</p>
11:20	<p>Field Demonstrations of Enhanced Contact Plasma for PFAS Destruction: Lessons Learned. <i>W. Knutson, T. Holsen, K. Camarco, and S. Mededovic Thagard.</i> William Knutson (DMAX Plasma/United States)</p>	<p>Using a Combined OIHPT Probe to Evaluate the Distribution and Efficiency of a Remediation Agent with an Added Dye Tracer. <i>V. Knytl, O. Lhotský, and T. Cajthaml.</i> Ondřej Lhotský (Dekonta, a.s./Czech Republic)</p>	<p>Aerobic and Anaerobic In Situ Bioremediation Evaluation of Chlorinated Ethenes and Chlorinated Benzenes. <i>L.T. LaPat-Polasko, E.J. Huss, J. Warnicke, and G.T. Waters.</i> Laurie LaPat-Polasko (Matrix New World Engineering/United States)</p>	<p>Abiotic Degradation Can Account for Rate Constants for Natural Attenuation of TCE and cDCE in Groundwater. <i>J.T. Wilson, B.E. Wilson, M.L. Ferrey, D.L. Freedman, O. Dunn, D.T. Adamson, and C.J. Newell.</i> John Wilson (Scissortail Environmental Solutions, Inc./United States)</p>	<p>Interactive Dashboard Toolboxes with Coupled DataBased Mass-Flux Models for High Resolution PFAS Conceptual Site Models. <i>J. Stults and T. Macbeth.</i> John Stults (CDM Smith/United States)</p>
11:45	SESSION BREAK				
12:10	SESSION BREAK				
12:35	<p>Development of a Cost-Effective and Reliable Destructive Technology for PFAS: A Promising Advanced Reduction Process. <i>Z.J. Xiong.</i> Zhong Xiong (Haley & Aldrich, Inc./United States)</p>	<p>Using Multiple HRSC Technologies to Develop a Detailed CSM for a Complex Fractured Bedrock Site. <i>K.E. French.</i> Kevin French. (Vertex Environmental Inc./Canada)</p>	<p>Adsorptive Removal of Munitions Compounds from Aqueous Solutions via Graphene Nanoplatelets. <i>L.A. Gurtowski, S.J. McLeod, S. Zetterholm, C.S. Griggs, and F. Sanchez.</i> Luke Gurtowski (U.S. Army ERDC/United States)</p>	<p>Power Delivery: Why It Matters. <i>C. Thomas, G. Heron, and E. Maki.</i> Chris Thomas (TRS Group/United States)</p>	<p>Large-Scale PFAS Remediation Progress over Eight Years at RAAF Base Williamtown, NSW, Australia. <i>P. McCabe.</i> Paul McCabe (AECOM Australia Pty Ltd/Australia)</p>

Wednesday Platform Sessions—1:00–3:30 p.m.

	PANEL DISCUSSIONS Mile High Ballroom, 1a-1d	A SESSIONS Mile High Ballroom, 1e/1f	B SESSIONS Mile High Ballroom, 2c	C SESSIONS Mile High Ballroom, 2b	D SESSIONS Mile High Ballroom, 2a
1:00	SESSION BREAK	Use of Unmanned Aerial Vehicles to Monitor Ebullition-Facilitated NAPL Transport. <i>L. Reyenga and N. McNurlen.</i> Nathan McNurlen (GEI Consultants, Inc./United States)	Automation of Data Management for Quality, Stakeholder Access, and Improved Reporting. <i>C. Crozier.</i> Carrie Crozier (Parsons/United States)	Design, Implementation, and Assessment of a Slurry Injection Pilot Study to Treat a Low Permeability Aquifer Contaminated with TCE. <i>E. Ehret, T. Macbeth, M. Lamar, K.E. Myers, T.J. Cook, and D. Baird.</i> Emma Ehret (CDM Smith/United States)	Reevaluating Mass Removal Efficiency Metrics Using Environmental Footprint Data. <i>S. Stromberg, K. Waldron, and M. Purchase</i> Michael Purchase (Orion Environmental Inc./United States)
1:25	Cost Impacts to Society of PFAS Remediation and Treatment Moderator Stewart Abrams (Langan Engineering) Panelists John Simon (Gnarus Advisors) Grant Ferrier (Environmental Business International) Shalene Thomas (Battelle) Rebecca Higgins (AECOM) Chris Moody (American Water Works Association)	Estimating Stockpile Volumes using Drone Surveying Technology. <i>A. Lizzi and J.B. Recla.</i> Jared Recla (Ninyo & Moore/United States)	ENVIRO.wiki - Tech Transfer in the 21st Century. <i>B. Yuncu and F.J. Hurley.</i> Bilgen Yuncu (TRC/United States)	Enhancing Remediation in Low Permeability Soils. <i>E. Davis.</i> Eva Davis (EPA/United States)	Insights from 100 Baildown Tests: Pace of Progress toward LNAPL Transmissivity Metrics. <i>A. Pennington, C. Bartz, and S. Fiorenza.</i> Stephanie Fiorenza (Arcadis/United States)
1:50		Drone Applications to Optimize Long-Term Operational Success of a Phytoremediation Facility. <i>J.R. Butner, A. Sidebottom, M. Madison, J. Friesen, and A. Estabrook.</i> James Butner (Jacobs/United States)	Translating Forever Chemicals: Lessons Learned from PFAS Communication. <i>E.M. Goldberg and H. Lanza.</i> Emma Goldberg (CDM Smith/United States)	SESSION BREAK	Field Pilot to Evaluate Feasibility of Enhanced LNAPL Depletion with Gypsum Land Application. <i>R.V. Kolhatkar, and K. Sra.</i> Ravi Kolhatkar (Chevron/United States)
2:15		SESSION BREAK	SESSION BREAK	Answering the Challenges of Low Permeability Formations. <i>A. Mogos, H. Sturm, and G. Guest.</i> Gord Guest (Geo Tactical Remediation Ltd./Canada)	SESSION BREAK
2:40		Evaluation of Enhanced In Situ Bioremediation of Chlorinated Ethenes in Groundwater Using Molecular Tools. <i>L.T. LaPat-Polasko, R. Britton, M. Heye, and E.J. Huss.</i> Laurie LaPat-Polasko (Matrix New World Engineering/United States)	Sustainable Bioremediation of 1,4-Dioxane Using Membrane Biofilm Reactors. <i>C. Bell, B. Rittmann, C. Zheng, M.B. Heintz, and J. Provolt.</i> Caitlin Bell (Arcadis U.S., Inc./United States)	Large-Scale Design and Implementation of Zero-Valent Iron Coupled with In Situ Bioremediation for VOC Treatment. <i>C. Voci, J. Roberts, C.N. Elmendorf, C. Jones, D. Campeau, and A. Romolo.</i> Chris Voci (Terraphase Engineering Inc/United States)	Continuous Soil Redox Sensing and Microbiome Characterization for Monitoring NSZD and Enhanced NSZD. <i>S.K. De Long, M.K. Irianni Renno, J.K. Rico, and T.A. Key.</i> Susan De Long (Colorado State University/United States)
3:05		SESSION BREAK	Sorption-Supported Biological Dechlorination: Laboratory and Field Lines of Evidence. <i>P.R. Erickson, S. Nguyen, J. Freim, and J. Parker.</i> Paul Erickson (Regensis Bioremediation/United States)	TCE and 1,4-Dioxane AOP Treatment in Groundwater at New Brighton/Arden Hills Superfund Site, Arden Hills, Minnesota. <i>S. Miller and A. Lorenz.</i> Scott Miller (APT Water LLC/United States)	Manners Piece: Getting to the Last Bite of Contaminant Mass through Fracture Emplacement. <i>M. Killingstad and T. Hays.</i> Marc Killingstad (Arcadis/United States)



Wednesday Platform Sessions—1:00–3:30 p.m.

	E SESSIONS Mile High Ballroom, 3a	F SESSIONS Mile High Ballroom, 3b	G SESSIONS Mile High Ballroom, 3c	H SESSIONS Mile High Ballroom, 4d-4f	I SESSIONS Mile High Ballroom, 4a-4c
1:00	<p>Pulse Electrochemical Oxidative Destruction of PFAS: A Simple Method for Improving Water Treatment Efficiency. <i>K. Lee, S. Snyder, and M. Inman.</i> Katherine Lee (Faraday Technology, Inc./United States)</p>	<p>Integration of Non-Invasive Surface Geophysics, High-Resolution Site Characterization, Borehole Geophysics, and Vertical Rock Core Profiling to Completely Delineate CVOC and 1,4-Dioxane Source Areas in Weathered and Fractured Bedrock. <i>L. Mاستera and L. Franklyn.</i> Larry Mاستera (ERM/United States)</p>	<p>Gels as Innovative Fluids for In Situ Remediation, Overview of Projects from Laboratory to Field Scale. <i>J. Maire, I. Bouzid, A. Joubert, and L. Mansuelle.</i> Julien Maire (SERPOL/France)</p>	<p>Fast-Track Implementation of the First In Situ Thermal Treatment System at an Active Air National Guard Base. <i>M. Perlmutter, J. Cole, R. Glass, C. Thomas, S. Meyers, M. Dickerson, S. Rizzo, and N. Warrick.</i> Mike Perlmutter (Jacobs/United States)</p>	<p>Large-Scale In Situ Remediation of PFAS in Groundwater using Colloidal Activated Carbon. <i>J. Cuthbertson, R. Mora, R. Moore, K. Gaskill, and J. Birnstingl.</i> John Cuthbertson (AECOM/United States)</p>
1:25	<p>Foam Fractionation Coupled with Hydrothermal Alkaline Treatment for Remediation of a PFAS-Impacted Fire Training Pond. <i>B. Pinkard, C. Woodruff, E.F. Houtz, N. Bolea, and P.A. True.</i> Chris Woodruff (Aquagga, Inc./United States)</p>	<p>High-Resolution Site Characterization Combined with BIM Process to Improve Sustainability in the Remedial Design for a LNAPL-Impacted Site. <i>K. Campos, J. Ramirez, V.M. Limeira, F. Minzon, and R. Ramalho.</i> Kamilo Campos. (Arcadis/Brazil)</p>	<p>Use of Cutting-Edge Molecular Microbial Technologies to Drive a Successful, Novel, Anaerobic EISB Bioremediation. <i>E.M. Jennings, T. Frantz, and R. Patel.</i> Eleanor Jennings (Parsons/United States)</p>	<p>Application of ERH and SEE to Address Complex Geology and High Groundwater Flux Zones to Treat a PCE DNAPL Source Zone. <i>J. LaChance, K. Crowder, and D. Phelan.</i> John LaChance (TerraTherm, Inc., a Cascade Company/United States)</p>	<p>In Situ Destructive Treatment of PFAS using Sonolysis within a Horizontal Treatment Well. <i>M. Crimi, C. Divine, J. Wright, J. Vidonish, S. Kalra, C.S. Griggs, S. Waisner, M. Bussemaker, M.D. Lubrecht, and M. Riggie.</i> Michelle Crimi (Clarkson University/United States)</p>
1:50	<p>Electrochemical Oxidation Field Demonstration for PFAS Destruction: What Could Possibly Go Wrong? <i>H. Temme, R. Mora, F.J. Barajas Rodriguez, and R. Gwinn.</i> Hanna Temme (AECOM/United States)</p>	<p>Identification of Mobile, Residual and Entrapped LNAPL Using Laser-Induced Fluorescence as a Line of Evidence. <i>J. Garcia-Rincon.</i> Jonas Garcia-Rincon (Legion Drilling/Australia)</p>	<p>Field-Scale Pilot Study Using In Situ Electrobiochemical Reactors to Address Soil and Groundwater Benzene Impacts. <i>D. Gray, A. Martin, and B. Witt.</i> Doug Gray (AECOM/United States)</p>	SESSION BREAK	<p>Colloidal Activated Carbon Treats PFAS Impacts at AFFF Training Areas at Three Regional Airports. <i>K. Gaskill, R. Moore, and M.A. Dooley.</i> Keith Gaskill (REGENESIS/United States)</p>
2:15	SESSION BREAK	<p>Better, Stronger, Faster! Revolutionizing CSM Development and Updates with Real-Time Geospatial Applications and Interactive Data Analytics. <i>M. Chapa.</i> Mike Chapa (Weston Solutions, Inc./United States)</p>	SESSION BREAK	<p>Thermal Remediation in the Vicinity of Dense Utility Installation. <i>P. Coop, S. Hodskins, M. Johnson, S. Avritt, and M. Boulos.</i> Phillip Coop (EnSafe/United States)</p>	<p>A Case Study Example of Optimizing an Existing Treatment System to Address PFAS. <i>J. McDonough, J. Hnatko, E. Vanyo, J. Parikh, and K. Kwasiak.</i> Jeff McDonough (United States)</p>
2:40	<p>Per- and Polyfluoroalkyl Substances Field Pilot Study at Operable Unit 1, Hill Air Force Base, Utah. <i>T. Mehraban, S. Rosansky, T. Holsen, K. Camarco, and W. Knutson.</i> Toni Mehraban (Brice Engineering, LLC/United States)</p>	SESSION BREAK	<p>The Science Behind Low Temperature Thermal Remediation. <i>E. Davis.</i> Eva Davis (EPA/United States)</p>	<p>Design and Installation of Electrical Resistance Heating System Using Horizontal Directional Drilling. <i>M.D. Lubrecht, D. Bardsley, A. Doxtator, and T.W. Lackman.</i> Michael Lubrecht (Ellingson-DTD/United States)</p>	SESSION BREAK
3:05	<p>The Energy Cost of PFAS Destruction across the Range of Commercially-Available Technologies. <i>J. McDonough and E.F. Houtz.</i> Jeff McDonough (United States)</p>	<p>Using HRSC Techniques to Identify Contaminant Transport Pathways and Revise 3D CSM for Remedy Re-Evaluation. <i>J.M. Pavlowsky, B. Porter, P. Tamashiro, N. Voorhies, and R.D. Swanson.</i> Johanna Pavlowsky (APTIM/United States)</p>	<p>Colloidal Zero-Valent Iron Injection and Low-Temperature Thermal Degradation of a TCE DNAPL Source. <i>E.M. Waibel and C. Jacob.</i> Erin Waibel (Landau Associates/United States)</p>	<p>In Situ Thermal Treatment of DNAPL Site Using Sheet Pile Electrodes. <i>M. Dacey, J.E. Blackwell, K. Novello, E. Kowalkowski, S.M. Fournier, B. Poulin, and E. Crownover.</i> James Blackwell (Verdantas/United States)</p>	<p>Regenerable Ion Exchange Treatment with Hydrothermal Alkaline Treatment (HALT): Full Spectrum PFAS Capture and Destruction. <i>E.F. Houtz, B. Pinkard, and A. Millevolte.</i> Erika Houtz (ECT2/United States)</p>

Wednesday Platform Sessions—3:30–4:20 p.m.

	PANEL DISCUSSIONS Mile High Ballroom, 1a-1d	A SESSIONS Mile High Ballroom, 1e/1f	B SESSIONS Mile High Ballroom, 2c	C SESSIONS Mile High Ballroom, 2b	D SESSIONS Mile High Ballroom, 2a
3:30	SESSION BREAK	<p>Shifting the Paradigm of Characterization and Remedy Decisions with Application of Machine-Learning Algorithms and Molecular Biological Tools. <i>A.S. Madison, S. Sorsby, and S. Porman.</i> Andrew Madison (WSP/United States)</p>	<p>Enhanced Aerobic Biostimulation and Bioaugmentation of Chlorinated Solvents and 1,4-Dioxane in Groundwater. <i>L.T. LaPat-Polasko, A.L. Polasko, B. Hoagland Stamatovski, B. Buehler, and J. Ponticello.</i> Laurie LaPat-Polasko (Matrix New World Engineering/United States)</p>	<p>Technology Development from Concept to Field Implementation of EK Enhanced Amendment Delivery for In Situ Remediation in Low-Permeability Materials. <i>J. Wang.</i> James Wang (Geosyntec Consultants/United States)</p>	<p>In Search of Correlations between Natural Source Zone Depletion Rates, Site Conditions, and Underlying Processes in NAPL-Impacted Systems. <i>S. Shafieiyoun, M. Aviles, J. Dyson, D. Puddephatt, and M. Rousseau.</i> Saeid Shafieiyoun (GHD Limited/Canada)</p>
3:55		<p>Advancing a Novel Next-Generation, Sequencing-Based Metric for Optimizing Bioremediation Performance: Microbial Community Structure Index (MCSI). <i>S.K. De Long, J.D. Gamlin, R. Caird, S. Mahendra, Y. Miao, N. Sachdeva, and C. Walecka-Hutchison.</i> Susan De Long (Colorado State University/United States)</p>	<p>Assessment of Metabolic and Cometabolic 1,4-Dioxane Biodegradation in Groundwater with Complex Hydrocarbon Contamination. <i>S. Dworatzek, J. Webb, R. Hallman, A. Perez-de-Mora, and L. Immler.</i> Sandra Dworatzek (SIREM/Canada)</p>	<p>In Situ Remediation of Chlorinated Solvents in Tight Matrix by Applying Low-Intensity Electric Fields. <i>S. Jin and P. Fallgren.</i> Song Jin (Advanced Environmental Technologies LLC/United States)</p>	<p>Natural Source Zone Depletion Study at a Former Central California Refinery Site: Evaluating the Influence of Vapor Extraction System and Air Sparging on NSZD Rate Determination and Study Duration. <i>T. Carlson, A. Andrews, C. Zhang, S. Ganna, and J. Lentini.</i> Andy Andrews (Geosyntec Consultants/United States)</p>

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Wednesday Platform Sessions—3:30–4:20 p.m.

	E SESSIONS Mile High Ballroom, 3a	F SESSIONS Mile High Ballroom, 3b	G SESSIONS Mile High Ballroom, 3c	H SESSIONS Mile High Ballroom, 4d-4f	I SESSIONS Mile High Ballroom, 4a-4c
3:30	<p>Technoeconomic Analysis of a Regional Supercritical Water Oxidation (SCWO) Facility for Handling PFAS-Laden Wastes. <i>A. McCabe, A. Ling, D. Garb, and S. Viswanathan.</i> Ali Ling (University of St. Thomas/ United States)</p>	<p>HRSC Techniques Used to Identify Preferential Flow Paths and Inform Monitoring Well Screened Intervals in a Heterogeneous Aquifer. <i>W.A. Treadway, C.R. Christopher, and A. Welch.</i> Whitney Treadway (CDM Smith/ United States)</p>	<p>Low-Temperature Haloalkane Treatment Using In Situ Thermal Hydrolysis. <i>J. Cole, J. Krueger, G. Dyke, A. Sidebottom, and M. Snyder.</i> Jason Cole (Jacobs/United States)</p>	<p>Remediation of CVOCs under Six Occupied Residential Buildings by ERH. <i>T.L. Gomes, J. Seeman, B.A. Ribeiro, A. Basaglia, B. Pioli, and M. Altafani.</i> Thiago Gomes (DOXOR/Brazil)</p>	<p>A Successful Case of In Situ Electrochemical Nanoremediation for PFAS-Contaminated Groundwater. <i>E. Brown, N. Ganbat, I. Phillipp, P. Kvapil, and J. Nosek.</i> Emily Brown (Photon Remediation/ Australia)</p>
3:55	<p>PFAS Destruction: A Discussion of Emerging Technologies Aimed at Destroying Fluorinated Organics. <i>L.A. March, C. Divine, J.D. Anderson, B. Miatke, and C. Theriault.</i> Craig Divine (Arcadis/United States)</p>	<p>Sustainable High Resolution/ Remediation Design Characterization Allows Optimization of Future In Situ Remediation Footprint. <i>M.C. Mazzaresse, G.G. Ceriani, and P. Ejlskov.</i> Palle Ejlskov (Ejlskov A/S/Denmark)</p>	<p>Thermally Enhanced Biodegradation of Dissolved TCE in LNAPL under Active Building Using Horizontal Wells. <i>V. Hosangadi, A. Hoseyni, D. Dressler, G. Christensen, and K. Asam.</i> Vithal Hosangadi (NOREAS, Inc./ United States)</p>	<p>Lessons Learned from Multiple ERH Implementations: Design Considerations and Challenges. <i>M.H. Sapanara, A.J. Ricciardelli, P.F. Sheehan, J.J. Clark, and M.J. Barvenik.</i> Maryann Sapanara (GZA/United States)</p>	<p>Aqueous Film-Forming Foam (AFFF) Source Area Groundwater Per- and Polyfluoroalkyl Substances (PFAS) Treatment with Foam Fractionation Bench- and Pilot-Scale Demonstration. <i>A. Danko, B. Miatke, C. Theriault, V. Demetrios, and N. Carter.</i> Baxter Miatke (Arcadis/United States)</p>

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Thursday Platform Sessions—8:00-10:30 a.m.

	PANEL DISCUSSIONS Mile High Ballroom, 1a-1d	A SESSIONS Mile High Ballroom, 1e/1f	B SESSIONS Mile High Ballroom, 2c	C SESSIONS Mile High Ballroom, 2b	D SESSIONS Mile High Ballroom, 2a
8:00		Expedited Implementation of RCRA Corrective Action Process for Hexavalent Chromium: A Case Study. <i>E.W. Carter and M. McCaughey.</i> Prashanth Khambhammettu (Arcadis/United States)	What We Know Now and What We Need to Know to Establish Biodegradation of 1,4-Dioxane in the Environment. <i>S. Mahendra.</i> Shaily Mahendra (UCLA/United States)	Sustainable In Situ Remediation with Targeted Solids Emplacement for Expedited Brownfield Redevelopment: A German Case Study. <i>P. Martus, M. Herbst, M. Zitzwitz, G.H. Bures, S. Huettmann, and M. Mueller.</i> Peter Martus (AECOM Deutschland GmbH/Germany)	Optimizing NAPL Remediation in a Complex, Urban Setting: Surfactant Enhanced Extractions and In Situ Chemical Oxidations. <i>G. Geckeler, B. Holderness, and B.T. Clement.</i> Grant Geckeler (ISOTEC/United States)
8:25	SESSION BREAK	Permeable Reactive Transects for Treatment of Hexavalent Chromium in Varied Geology. <i>D. Pizarro and T. McCullough.</i> Derek Pizarro (AST Environmental, Inc./United States)	Updates from the Field: Continued Success of Propane Biosparging for 1,4-Dioxane Treatment. <i>C. Bell, A. Lorenz, and D. Favero.</i> Caitlin Bell (Arcadis U.S., Inc./United States)	Remediation of a Former Wastewater Lagoon with a Forested Wetland. <i>L. Reyenga, J. Trast, and S. Michalanko.</i> Steve Michalanko (GEI Consultants, Inc./United States)	Surfactant Enhanced Mobilization of Polycyclic Aromatic Hydrocarbons from Marine Sediment by Washing and Flushing Processes. <i>B. Barbati, L. Lorini, G. Moscatelli, M. Bellagamba, M. Buccolini, and M. Petrangeli Papini.</i> Bernardino Barbati (La Sapienza University of Rome/Italy)
8:50		Successful In Situ Treatment of Hexavalent Chromium in Saturated Clay Soils Using ISCR Enhanced Bioremediation. <i>O. Miller and R. Moore.</i> Owen Miller (REGENESIS/United States)	Initial Results from a 1,4-Dioxane In Situ Subgrade Biogeochemical Reactor Field Test. <i>C. Walecka-Hutchison, R. Caird, J. Sprague, M. Fulkerson, C. Katzen, S. Brubaker, and S. Mahendra.</i> Claudia Walecka-Hutchison (Dow Chemical/United States)	Identifying Green and Sustainable Remediation Potentials: Case Study from a Complex Former Industrial Site in Brazil. <i>T. Schöne, P. Jacobs, R. Engelhardt, P. Aquino, and J.J. Overgard.</i> Tim Schöne (TAUW GmbH/Germany)	Enhanced Remediation of LNAPL-Contaminated Heterogeneous Aquifers Using Polymer-Alcohol Emulsions. <i>B. Sabyrbay, C. Dichary, M. Krimissa, M. Lorthioy, S. Omirbekov, D. Davarzani, and S. Colombano.</i> Bexultan Sabyrbay (EDF R&D/BRGM/UNIV PAU & PAYS ADOUR/France)
9:15	Vapor Intrusion: Past, Present, and Future Moderator Thomas E McHugh (GSI Environmental Inc.)	CrVI Remediation at Chrome Plating Facilities and Chromite Ore Processing Residue (COPR) Facilities. <i>L. Kessel.</i> Lowell Kessel (CERES Remediation Products/United States)	SESSION BREAK	Decarbonizing the Global Economy: How Can the Environmental Remediation Industry Contribute? <i>F. Beaudoin.</i> Francois Beaudoin (GHD/Canada)	Full Scale Application of ISCO and S-ISCO® for Treatment of NAPL Pharmaceutical Waste Mixture. <i>F. Solano, L. MacKinnon, N. Durant, T. Jørgensen, B. Gerdmundsson, J. Sørensen, K. Mortensen, and J. Christensen.</i> Felipe Solano (Geosyntec Consultants/Canada)
9:40	Panel Discussion Panelists Helen Dawson (Geosyntec) Dave Folkes (Geosyntec Consultants, Inc.) Ian Hers (Hers Environmental Consulting, Inc. [HEC])	SESSION BREAK	Microbial Degradation of 1,4-Dioxane in Groundwater. <i>A. Banerjee, P. Leggeri, M. Shreve, A. Punsoni, Z. Pierce, D. Saran, and K. Sorenson, Jr.</i> Areen Banerjee (Allonnia LLC/United States)	Integrating Nature-Based Solutions into Long-Term Monitoring Methodologies at Reclamation Sites: A Pilot Study. <i>S. Hellekson, M. Little, and M. van Cutsem.</i> Meghan Little (Woodard & Curran/United States)	SESSION BREAK
10:05	 Paul Johnson (Colorado School of Mines) Todd A. McAlary (Geosyntec Consultants, Inc)	Quantifying Contaminant Release Rates from Secondary Sources at a Uranium Disposal Cell. <i>C.D. Richardson.</i> Charles Richardson (RSI EnTech, LL/United States)	Novel Group-6 Propane Monoxygenases Responsible for 1,4-Dioxane Biodegradation in Psychrophilic Propanotrophic Consortia. <i>J.M. Antunes and M. Li.</i> Jose Antunes (New Jersey Institute of Technology/United States)	SESSION BREAK	Moving Petroleum Release Sites to Closure. <i>T.J. Schruben, L. Trozzolo, M. Lahvis, A. Kirkman, E.H. Luo, I. Hers, C.C. Stanley, and C. Bruce.</i> Thomas Schruben (U.S. EPA/United States).

Thursday Platform Sessions—8:00-10:30 a.m.

	E SESSIONS Mile High Ballroom, 3a	F SESSIONS Mile High Ballroom, 3b	G SESSIONS Mile High Ballroom, 3c	H SESSIONS Mile High Ballroom, 4d-4f	I SESSIONS Mile High Ballroom, 4a-4c
8:00	<p>Sampling of PFAS in Aqueous Media to Determine Contaminant Signatures Using a State-Wide Approach. <i>M. Penzone, T.A. Keyser, J.G. Cargill, P. Wang, and E. Bryne.</i> Michael Penzone (Delaware Department of Natural Resources and Environmental Control/United States)</p>	<p>Upcoming Attractions: The Future of Molecular Biological Tools. <i>S.M. Rosolina and D.M. Taggart.</i> Sam Rosolina (Microbial Insights, Inc./United States)</p>	<p>LNAPL Remediation in Bedrock: Combining MPE and Injection of a Carbon-Based Remedial Amendment. <i>K.E. French and B. Tunnicliffe.</i> Bruce Tunnicliffe (Vertex Environmental Inc./Canada)</p>	<p>Overcoming Implementability Challenges: Activated Carbon Slurry PRB Installation to Prevent LNAPL Migration to Surface Water Body. <i>C. Smith and T. Uhler.</i> Chad Smith (PBF Energy, Inc./United States)</p>	<p>Updated Interim Guidance on PFAS Destruction and Disposal from U.S. EPA (2023). <i>C. Frickle.</i> Cindy Frickle (U.S. Environmental Protection Agency/United States)</p>
8:25	<p>A Robust Approach to Interpreting Changes in Profiles when Applying Statistical Fingerprinting to PFAS. <i>M. Bock, N. Rose, and J. Jones.</i> Michael Bock (The Intelligence Group/Verdantas/United States)</p>	<p>Environmental Forensics: Case Studies on the Use of CSIA for Site Characterization and Source Determinations. <i>O. Shouakar-stash, M. Marchesi, and L. Alberti.</i> Orfan Shouakar-Stash (Isotope Tracer Technologies Inc./Canada)</p>	<p>Application of Electrokinetic Remediation Combined with Pumping for Metal Remediation in a Low Hydraulic Conductivity Area. <i>C.D. Maluf and L. Puerta Machado.</i> Cristina Maluf (Ambscience Engenharia Ltda/Brazil)</p>	<p>Evaluation of CAT 100-Induced Sequestration, Reductive Dechlorination, and Biodegradation of a Mixture of Chlorinated Solvents, PFAS, and 1,4-Dioxane. <i>R. Vaske, B. Martinek, A. Riffel, and S.A. Noland.</i> Raymond Vaske (Trihydro Corporation/United States)</p>	<p>PFAS Soil and Groundwater Threshold Limits in Europe: What Should We Do When PFAS Are Not Regulated? <i>F.M. Motta and W. Leys.</i> Francesca Motta (AECOM/Italy)</p>
8:50	<p>Seeing the Forest for the (Decision) Trees: Machine-Learning Enhances PFAS Analytics. <i>S. Sorsby, S. Marconetto, and P. Hurst.</i> Skyler Sorsby (WSP/United States)</p>	<p>Hydrogen Isotope Exchange between Trichloroethene and Water: A Disadvantage for the Use of Hydrogen CSIA for TCE Source Apportionment and an Opportunity for Developing Contaminant Dating Applications. <i>T. Kuder and A.S. Ojeda.</i> Tomasz Kuder (University of Oklahoma/United States)</p>	<p>20 Years of Cleanup: A Tale of 6 Remedies. <i>J. McNew and A. McGinty.</i> Jason McNew (EA Engineering, Science, and Technology, Inc., PBC/United States)</p>	<p>Significant Return on Investment Achieved by Successfully Remediating a Challenging Chlorinated Solvent Site. <i>K.E. French.</i> Kevin French (Vertex Environmental Inc./Canada)</p>	<p>So Many PFAS Regulations, So Much Confusion: Practical Considerations Balancing Federal and State Oversight. <i>P. Hsieh and T. Gray.</i> Patrick Hsieh (DOF/United States)</p>
9:15	<p>How High-Resolution Mass Spectral Tools Can Help with PFAS Forensic Analysis. <i>K. Dasu, L. Mullins, C.W. Orth, and D. Friedenber.</i> Kavitha Dasu (Battelle/United States)</p>	<p>Assessment, Planning, and Execution of Passive Methods to Measure Mass Flux and Groundwater Velocity. <i>P.R. Erickson and J. Moreno.</i> Paul Erickson (Regenesis Bioremediation/United States)</p>	<p>Full Scale Application of ERD following ISCO/S-ISCO® for Treatment of NAPL Pharmaceutical Waste Mixture. <i>L. MacKinnon, F. Solano, N. Durant, T. Jørgensen, B. Gerdmundsson, J. Sørensen, K. Mortensen, and J. Christensen.</i> Leah MacKinnon (Geosyntec Consultants/Canada)</p>	<p>Laboratory Assessment of Injectable Activated Carbon on Biological Reductive Dechlorination of Chlorinated Ethenes. <i>D. Fan, J. Wang, B. Kjellerup, A. Riyahi, J. Pignatello, and Z. Wang.</i> Dimin Fan (Geosyntec Consultants/United States)</p>	<p>PFAS in Stormwater at PFAS Sites: Characteristics, Tools, and Potential Management Strategies. <i>C.J. Newell, H. Javed, N.W. Johnson, M.Q. Lentz, J.D. Gamlin, D.T. Adamson, G. Garvey, and H.S. Rifai.</i> Charles Newell (GSI Environmental Inc./United States)</p>
9:40	SESSION BREAK	SESSION BREAK	SESSION BREAK	SESSION BREAK	SESSION BREAK
10:05	<p>PFAS Are Not Forever: Existing Enzymes and New Evolution Show Success. <i>L.P. Wackett.</i> Lawrence Wackett (University of Minnesota/United States)</p>	<p>Factors Influencing In Situ Detection of Analytes with the Membrane Interface Probe. <i>D.A. Pipp, W. McCall, N.R. Basore, and T.M. Christy.</i> Daniel Pipp (Geoprobe Systems/United States)</p>	<p>Bench Testing for Transforming Methyl Methacrylate via Base-Catalyzed Hydrolysis. <i>S. Pittenger, P. Kakarla, and Y. Chin.</i> Scott Pittenger (ISOTEC Remediation Technologies/United States)</p>	<p>Combined Remedy PRB Approach Arrests 1500-ft CVOC Plume Protecting Surface Water Body while Saving Client \$380K. <i>S. Connors, B. Hicks, and O. Miller.</i> Brett Hicks (REGENESIS/United States)</p>	<p>Use of High-Pressure Membranes for the Industrial Pretreatment of PFAS in Semiconductor Wastewater. <i>A.M. Griffin, C. Bellona, and T.J. Strathmann.</i> Aron Griffin (Colorado School of Mines/United States)</p>

Thursday Platform Sessions—10:30 a.m.–1:00 p.m.

	PANEL DISCUSSIONS Mile High Ballroom, 1a-1d	A SESSIONS Mile High Ballroom, 1e/1f	B SESSIONS Mile High Ballroom, 2c	C SESSIONS Mile High Ballroom, 2b	D SESSIONS Mile High Ballroom, 2a
10:30	Panel Discussion Panel, Continued: Vapor Intrusion: Past, Present, and Future	Secondary Uranium Sources Remain in the Unsaturated Zone after Tailings Removal: Now What? <i>R.H. Johnson and R.D. Kent.</i> Raymond Johnson (RSI/United States)	Identification and Enhancement of Naturally-Occurring In Situ Aerobic Metabolic Biodegradation of 1,4-Dioxane. <i>K. Diller, D.R. Griffiths, T. Ovbey, E.E. Mack, and D.P. Fletcher.</i> Kristi Diller (Parsons/United States)	Quantifying Carbon and Environmental Footprints in Remediation Activities: Advancements in China. <i>M. Xiao, X. Li, H. Meng, C. Sang, J. Dong, H. Zhang, and N. Wei.</i> Nan Wei (Chinese Academy of Environmental Planning/China)	Advances in the Characterization and Remediation of LNAPL-Contaminated Sites: Insights from a Collaborative Effort. <i>J. Garcia-Rincon, E. Gatsios, R.J. Lenhard, E.A. Atekwana, and R. Naidu.</i> Jonas Garcia-Rincon (Legion Drilling/Australia)
10:55	SESSION BREAK	Ranger Uranium Mine: Pit 3 Wick Drain Installation and Injection Well Directional Drilling. <i>S. Bourhill and J. Gaul.</i> Stephen Bourhill (Ventia/Australia)	Bioelectrochemical Biodegradation of 1,4-Dioxane in Groundwater under Anaerobic Conditions. <i>S. Jin, P. Fallgren, M. Seewald, A. Parenky, and D.R. Griffiths.</i> Song Jin (Advanced Environmental Technologies LLC/United States)	Green Metrics Analytics: A New Approach to Sustainable Resilient Remediation. <i>A. Martinho, J. Galhardi, F. Delfino, M. Lourenço, L.G. de Freitas, L. Oliveira, R.A. Zeitune, and J. Gattenby.</i> Aline Martinho (Arcadis, Brazil/Brazil)	Ebullition-Facilitated NAPL Transport: Case Studies where Screening Evaluations Changed the Remedial Path. <i>L. Reyenga.</i> Lisa Reyenga (GEI Consultants, Inc./United States)
11:20		Tailings Ponds Mine Site Restoration at High Elevations in the Colorado Rockies. <i>L. Kessel.</i> Lowell Kessel (CERES Remediation Products/United States)	Biological Degradation of High Concentrations of 1,4-Dioxane: From Laboratory to Field and Back. <i>M. Slooijer and J. Dijk.</i> Martin Slooijer (GreenSoil Group/Netherlands)	Testing of LCA Screening to Assess the Environmental Impact of Different Remediation Strategies for Cleanup of Chlorinated Solvents. <i>B. Groesen, A.L. Gade, H. Kerm-Jespersen, M. Radsted, and A. Rokkjaer.</i> Bernt Groesen (COWI/Denmark)	LNAPL Transmissivity and Enhanced NSZD at a Petroleum Pipeline Release Site: Is it Time to Transition to a Nature-Based LNAPL Management Strategy? <i>J. Dyson, M. Rousseau, C. Flanders, K. Zoras, C. Fick, and A. Wabisca.</i> Joann Dyson (GHD/United States)
11:45		SESSION BREAK	SESSION BREAK	A Step-by-Step Approach to Decarbonizing Remedial Action through Performance-Based Remedial Design. <i>M. Schlosser, M. Harclerode, S. Sheldrake, C.J. Gurr, C. Campbell, and J. Bamer.</i> Jeffrey Bamer (CDM Smith/United States)	SESSION BREAK
12:10	SESSION BREAK	SESSION BREAK	SESSION BREAK	SESSION BREAK	SESSION BREAK
12:35	SESSION BREAK	Sediment pH and Redox Profile Shift in Response to an Electromagnetic Treatment Affecting Metal Speciation, Mobility, and Bioavailability in Treated Bodies of Water. <i>K. Shukla, P. Varathan, V.M. Cunningham, V. Bostan, and A.E. Laursen.</i> Kruti Shukla (Toronto Metropolitan University/Canada)	Column Study of Aerobic Cometabolism of Chlorinated Solvents and 1,4-Dioxane with Co-Encapsulated Hydrogel Beads. <i>K. Bennett, K. Bailey, and L. Semprini.</i> Kaden Bennett (Oregon State University/United States)	SESSION BREAK	Addressing Residual Hydrocarbon Concentrations Using Micron-Scale Carbon Injections at Formerly Used Defense Sites. <i>T. Tapley and K. Moon.</i> Tracey Tapley (US Army Corps of Engineers, Savannah District/United States)



Thursday Platform Sessions—10:30 a.m.–1:00 p.m.

	E SESSIONS Mile High Ballroom, 3a	F SESSIONS Mile High Ballroom, 3b	G SESSIONS Mile High Ballroom, 3c	H SESSIONS Mile High Ballroom, 4d-4f	I SESSIONS Mile High Ballroom, 4a-4c
10:30	<p>Precursor Biotransformation Leads to PFAS Assimilation. <i>D. Ramirez, M.J. Keller, R.L. Hettich, and F. Loeffler.</i> Diana Ramirez (University of Tennessee/United States)</p>	<p>Using Passive Flux Meters to Design In Situ Remediation and Overcome Limitations of Other Characterization Methods: Case Studies for Two Sites. <i>I. Pelz.</i> Isaac Pelz (ERM/United States)</p>	<p>Combined ERH and ISCR Site. <i>T.L. Gomes, J. Seeman, B.A. Ribeiro, and M. Sabbag.</i> Thiago Gomes (DOXOR/Brazil)</p>	<p>Hazardous is the New Clean: Contaminant Management Supported Redevelopment. <i>L. Samuel and P. Patel.</i> Lingwood Samuel (Pinchin Ltd./Canada)</p>	<p>Removing Short- and Long-Chain Per- and Polyfluoroalkyl Substances from Landfill Leachate: Comparing Two Pilot Studies. <i>J. Novak, H. Croll, O. Tedrow, and B. Ballavance.</i> Jonathan Novak (Northeast Technical Services, Inc./United States)</p>
10:55	<p>Multiomics Insights into Fungal-Mediated PFAS Precursor Biotransformation. <i>K. Shah, Y. Gao, and S. Mahendra.</i> Kshitija Shah (University of California, Los Angeles/United States)</p>	<p>A Biogeochemical Model for Enhanced Bioremediation of Chloro-, Nitro- and Amino-Substituted Aromatics Using Advanced Tools and Methods. <i>L. Ribeiro, S. Mancini, S. Kraus, C. Cheyne, C. Crea, J. Rayner, M. Lemes, P. Carvalho, E.E. Mack, and J. Henderson.</i> Lucas Ribeiro (Geosyntec Consultants/Canada)</p>	<p>A New Method to Treat Fumigant Pesticides-Spent Granular Activated Carbon Utilizing Alkaline Hydrolysis. <i>K. Crincoli and S.G. Huling.</i> Klara Crincoli (US Environmental Protection Agency/United States)</p>	<p>Zero-Valent Iron Permeable Reactive Barrier to Remediate Volatile Organic Compounds in Groundwater. <i>A.H. Willey, J. Ross, M. Amidon, and P. Prater.</i> Adam Willey (Savannah River Nuclear Solutions, LLC/United States)</p>	<p>Treatment of a 1 MGD Lagoon System POTW Effluent to PFAS Drinking Water Standards Using Foam Fractionation. <i>S. Woodard, P. Rodriguez, and C. Hutchins.</i> Steve Woodard (ECT2/United States)</p>
11:20	<p>Biotransformation of an Electrochemical Fluorination-Based AFFF by a Soil Microbial Community from an AFFF-Impacted Site. <i>S. Dong, P. Yan, K.E. Manz Almodovar, M. Woodcock, L.M. Abriola, K. Pennell, and N.L. Cápiro.</i> Natalie Cápiro (Cornell University/United States)</p>	<p>Use of Passive Groundwater/Mass Flux Meters to Support Natural Attenuation in Complex Geologic/Hydrogeologic Conditions. <i>D. Gray, S. Martin, E.E. Mack, and N. Grosso.</i> Doug Gray (AECOM/United States)</p>	<p>SESSION BREAK</p>	<p>How to Remediate a Hexavalent Chromium and Volatile Organic Plume in a Single Application Using Injection Flow Through Barriers. <i>R.J. Desrosiers and D.J. Rusczyk.</i> Richard Desrosiers (GZA GeoEnvironmental Inc./United States)</p>	<p>Cost of Removing PFAS from WRRF Effluent and Biosolids. <i>A. McCabe, B. Vermace, A. Ling, K. Wolohan, D. Richard, M. Blate, M. Abu-Orf, A. Munson, D. Dursun, and S. Kyser.</i> Katie Wolohan (Barr Engineering Co./United States)</p>
11:45	<p>SESSION BREAK</p>	<p>SESSION BREAK</p>		<p>Installation of a Successful Activated Carbon Based Permeable Reactive Barrier for Petroleum Hydrocarbons and 1,2-DCA. <i>M.C. Mazzaresse.</i> Michael Mazzaresse (AST Environmental, Inc./United States)</p>	<p>SESSION BREAK</p>
12:10	<p>SESSION BREAK</p>	<p>SESSION BREAK</p>		<p>Sustainable Remediation Case Study: Transitioning from Pump and Treat to ISS and ISBR to Address DNAPL and Dissolved-Phase VOCs. <i>I. Pelz, R.J. Bradford, A. Breckenridge, A. Chemburkar, and B. Anderson.</i> Richard Bradford (ERM/United States)</p>	<p>SESSION BREAK</p>
12:35	<p>Integrating Evidence for Dose-Response Assessment in PFAS Regulatory Risk Assessment. <i>L.D. Dell and H. Clewell.</i> Linda Dell (Ramboll/United States)</p>	<p>Groundwater Pathway Investigations of Columbia River Basalts in the Yakima Fold and Thrust Belt via Resistivity/Seismic Imaging and Borehole Geophysics. <i>G.B. Byer, A. Villhauer, A. Balson, and M. Brown.</i> Gregory Byer (Arcadis U.S., Inc./United States)</p>	<p>From Bench Test to Full-Scale Remedy: Combining ZVI with Bioremediation to Treat Mixed VOCs in a Low-Permeability Formation. <i>C. Ross and D. Baird.</i> Chapman Ross (FRX, Inc./United States)</p>	<p>SESSION BREAK</p>	<p>Defining the Scale and Complexity of the Per- and Polyfluoroalkyl Substances (PFAS) Problem in Solid Waste. <i>D. Burns.</i> David Burns (EPOC Enviro/Australia)</p>

Thursday Platform Sessions—1:00–3:30 p.m.

	PANEL DISCUSSIONS Mile High Ballroom, 1a-1d	A SESSIONS Mile High Ballroom, 1e/1f	B SESSIONS Mile High Ballroom, 2c	C SESSIONS Mile High Ballroom, 2b	D SESSIONS Mile High Ballroom, 2a	
1:00	SESSION BREAK	High Efficacy Two-Stage Metal Treatment Incorporating Basic Oxygen Furnace Slag and Microbiological Sulfate Reduction. <i>E.G. Miranda, C.M. McLaughlin, L. Santisteban, and A.G. Delgado.</i> Anca Delgado (Arizona State University/United States)	Degradation of 1,4-Dioxane and CVOC Mixtures by CAT 100 in Bench Tests. <i>J.C. Ritenour and S.A. Noland.</i> Jason Ritenour (Remediation Products Incorporated/United States)	Conducting a Climate Change Resilience Assessment in Support of Remedy Selection. <i>B. Collins, L. Shaw, C.E. Shewen, and J. Langlais.</i> Betsy Collins (Jacobs/United States)	Steam Enhanced NAPL Recovery at a Former Manufacturing Site in Canada: Challenges and Solutions. <i>N.W. Dumaresq, J. Baldock, T. Bonchek, and B.G. Svendsen.</i> Nick Dumaresq (ERM/Canada)	
1:25	PFAS towards 2029: Priorities for Action, An Interactive Session Moderator Andrew Mitchell (ADE Consulting Group) Panelists Richard Hunter Anderson (Air Force Civil Engineer Center [AFCEC]) James Cummings (U.S. EPA) Ian F. Ross (CDM Smith) Patricia Reyes (Clean Harbors) Rebecca Higgins (AECOM) Matthew P.J. Askeland (ADE Consulting Group)	Laboratory and Pilot Testing for Precipitation of Chromium and Nickel in Groundwater. <i>S. Dore, D. Pope Jr., A. Cox, and C. Meincke.</i> Sophia Dore (GHD/United States)	Comparison of Isobutane and Isobutene as Primary Substrates for Cometabolic Biodegradation of 1,4-Dioxane and Chlorinated Hydrocarbon Mixtures. <i>H.M. Rolston, L. Semprini, and K.J. Krippaehne-Stein.</i> Hannah Rolston (CDM Smith/United States)	Sea Level Rise Vulnerability Assessments: An Emerging Issue at Cleanup Sites. <i>L. Goldstein and S. Fiorenza.</i> Stephanie Fiorenza (Arcadis/United States)	Implementing Effective In Situ Permeable Colloidal Activated Carbon (CAC) Barriers to Stop Hydrocarbon Plume Migration. <i>T. Herrington.</i> Todd Herrington (REGENESIS/United States)	
1:50		SESSION BREAK	Cometabolic Treatment of 1,4-Dioxane and cVOCs Using an Isobutane-Fed Fluidized Bed Bioreactor: Bench Studies. <i>T.S. Webster, J. Pezzillo, P.B. Hatzinger, and R. Rezes.</i> Todd Webster (Envirogen Technologies, Inc./United States)	From Global to Local: Using Models for Climate Risk Screening and Resilient Remediation. <i>C.J. Ritchie, G. Wolf, and A. Singhal.</i> Alka Singhal (Ramboll Consulting Inc./United States)	Breaking Benzene: Translating Decades of Anaerobic Bioremediation Research to Field Practice. <i>S. Dworatzek, J. Webb, E.E. Edwards, and C. Toth.</i> Sandra Dworatzek (SIREM/Canada)	
2:15		SESSION BREAK	Optimization of a Combined Active and Passive In Situ Stabilization Approach for High Concentration Metals in Groundwater. <i>L. Hellerich, R. Ansari, and N. Hastings.</i> Lucas Hellerich (Woodard & Curran, Inc./United States)	SESSION BREAK	Cleanup Sites Transition to Carbon Farms: Potential Application of Soil Carbon Sequestration Practices for Sustainable Site Remedies. <i>Y. Li, K. Walker, L.M. Smith, and J.A. Connor.</i> Yue Li (GSI Environmental Inc./United States)	In Situ Solidification to Limit Uncertainties in LNAPL/Grossly Contaminated Media Remediation. <i>B. Robinson.</i> Brian Robinson (Roux Associates/United States)
2:40		Chromium(VI) and Vanadium(V) in Groundwater: Investigating Bioremediation Solutions. <i>M. Slooijer, J. Dijk, and M. Bhend.</i> John Dijk (GreenSoil Group/Belgium)	Pharmaceuticals in Surface Water: Extent and Sources of Contamination. <i>M.L. Ferrey.</i> Mark Ferrey (Minnesota Pollution Control Agency/United States)	SESSION BREAK	SESSION BREAK	SESSION BREAK
3:05		Halting Migration through Coprecipitation: A Nontraditional Approach to Treatment of Dissolved Arsenic in Groundwater. <i>W.L. Sauve, B. McMillan, M. Hay, D. Groher, N. Klaber, and J. Mathews-Flynn.</i> Whitney Sauve (Arcadis U.S., Inc./United States)	Pilot-Scale Removal of Emerging Contaminants from Graywater: Overcoming the Barriers to Reuse. <i>C.S. Griggs, J. Lalley, and A. Thompson.</i> Audie Thompson (ERDC/United States)	Project Demonstration: Aligning a Remediation Project to Corporate Sustainability Goals. <i>P. Molzahn, C. Katzen, B. Collins, J. Sprague, and C. Walecka-Hutchison.</i> Paige Molzahn (Jacobs/United States)	Active Service Station: A Better Understanding of the Hydrogeology Facilitated Successful Cleanup and Cost Settlement. <i>G. Cisneros and J. Massingale.</i> Gabe Cisneros (Floyd Snider/United States)	

Thursday Platform Sessions—1:00–3:30 p.m.

	E SESSIONS Mile High Ballroom, 3a	F SESSIONS Mile High Ballroom, 3b	G SESSIONS Mile High Ballroom, 3c	H SESSIONS Mile High Ballroom, 4d-4f	I SESSIONS Mile High Ballroom, 4a-4c
1:00	Comparison of Approaches for Evaluating Relative Toxicity and Risk of PFAS without Regulatory Toxicity Values. <i>B. Selcoe, N. Gowadia, and L. Lund.</i> Barrie Selcoe (Jacobs/United States)	Utilizing Electrical Hydrogeology to Create More Meaningful Conceptual Site Models (CSMs). <i>K. Spears, S.W. McDonald, and S. Frandsen.</i> Kyle Spears (Aestus, LLC/United States)	Investigation and Combined Remedies Approach of CVOC Plumes in Soil and Multiple Fractured Bedrock Horizons. <i>B.E. Smith, D. Riddle, C. Gale, and D. Wanty.</i> Bruce Smith (Civil & Environmental Consultants, Inc./United States)	In Situ Reactive Sampling Probe for Quantifying Abiotic Degradation Rate at Chlorinated Solvent-Impacted Sites. <i>L. Fan and W. Yan.</i> Lingfei Fan (University of Massachusetts, Lowell/United States)	Soil Washing 2.0: Sustainable Cost-Effective Treatment for Per- and Polyfluoroalkyl Substances. <i>N. Nagle, J. Quinnan, C. Morrell, and J. Vidonish.</i> Joseph Quinnan (Arcadis/United States)
1:25	PFAS in Biological Samples at AFFF Site, Alaska. <i>J.L. Benning, E. Heyse, B. Henry, B.R. Blicker, M.C. Rigby, and K. Fields.</i> Jennifer Benning (Parsons/United States)	Using Surface Geophysics as a Critical Tool in Development of a Conceptual Site Model for Contaminant Fate and Transport in a Faulted Karst Setting. <i>C.R. Maxwell, T. Hallihan, D. Evans, and A. Riemer.</i> Andrew Riemer (Stantec Consulting Services, Inc./United States)	Combined Remedy for Rapid Redevelopment of Multi-Acre TCE and 1,4-Dioxane Plumes. <i>P. Kakarla, P.M. Dombrowski, M. Temple, J. Kazanjian, P. Downham, and R. Chimchirian.</i> Prasad Kakarla (ISOTEC Remediation Technologies/United States)	Advancements in Monitored Natural Attenuation Assessments at Complex Sites with Incorporation of Advanced Data Analytics and Innovative Characterization Tools. <i>J.S. Konzuk, C. Crea, C. Cheyne, L. D'Agostino, S. Miles, S. Ambridge, M.S. Cho, L. Jorstad, J. Stening, and O. Bukhteeva.</i> Julie Konzuk (Geosyntec Consultants International, Inc./Canada)	Bench-Scale Testing of a Novel Soil PFAS Treatment Plan for Informed Remedial Planning and Decision-Making. <i>H. Lanza, D. Nguyen, C. Schaefer, J. Bamer, and R.H. Anderson.</i> Heather Lanza (CDM Smith/United States)
1:50	PFAS Sampling in Deer at an AFFF-Contaminated Site, New York. <i>M.C. Rigby, T. Belanger, K. Leslie, B. Badik, and C.T. Gallo.</i> Mark Rigby (Parsons/United States)	In Situ NMR Measurements to Quantify Crude Oil at Bemidji Crude Oil Spill Site. <i>D. Morozov, D.O. Walsh, D.A. Pipp, N.R. Basore, and T.M. Christy.</i> Darya Morozov (Vista Clara Inc./United States)	Combined Remedies to Expedite Remediation of a Carbon Tetrachloride Source Zone at an Active Grain Elevator Facility. <i>E.S. Dulle.</i> Eric Dulle (Burns & McDonnell Engineering Company/United States)	Application of Radiocarbon-Corrected Soil Gas Fluxes to Quantify the Field Degradation Rates of Chlorinated Solvents. <i>J. Zimbron.</i> Julio Zimbron (E-Flux/United States)	Stabilizing PFAS-Contaminated Water, Sediments, and 6,000 yd³ Soil with Six Different Amendments (Buick City, Michigan). <i>D.P. Cassidy, G.R. Trigger, and C. Peters.</i> Daniel Cassidy (Western Michigan University/United States)
2:15	SESSION BREAK	SESSION BREAK	SESSION BREAK	Natural Attenuation of Vinyl Chloride and Butyl Acrylate Released in the East Palestine, Ohio Train Derailment. <i>G. Chen, E. Padilla-Crespo, G. He, D.M. Taggart, S.M. Rosolina, A. Arosemena, B.E. Rosado, C. Swift, and F. Loeffler.</i> Gao Chen (University of Tennessee, Knoxville/United States)	SESSION BREAK
2:40	Source Identification and Mitigation of PFAS in Stormwater at Gerald Ford International Airport. <i>S.B. Bell and C. Cieciek.</i> Scott Bell (LimnoTech/United States)	Efficient Reactive Transport Simulations of Tracer Studies at a Former Uranium Mill Site Using PHT-USG. <i>R.D. Kent and R.H. Johnson.</i> Ronald Kent (RSI EnTech, LLC/United States)	Pushing beyond Limits, Engineered Phytoremediation Provides Cost-Effective, Nature-Based, Sustainable Remediation Alternative. <i>C. Gale and P. Thomas.</i> Christopher Gale (Applied Natural Sciences/United States)	SESSION BREAK	Smoldering Treatment of PFAS: Part II. Field Demonstration. <i>D. Major, L. Kinsman, B. Harrison, J. Gabayet, J. Brown, J. Gerhard, K. Pennell, K. Manz, D. Patch, K. Weber, K. Doudrick, L. Chernysheva, A. Abarca-Perez, and G. Peaslee.</i> David Major (Savron/Canada)
3:05	PFAS Migration to Groundwater: Measuring In Situ Partitioning. <i>M. Rovero, R.T. Wilkin, D. Cutt, J. Costanza, and E. Gleason.</i> Matt Rovero (U. S. Environmental Protection Agency/United States)	Effect on Cleanup Timeframe from Heterogeneity, Back-Diffusion, and Abiotic/Biotic Degradation. <i>D.K. Burnell.</i> Daniel Burnell (Tetra Tech/United States)	Performance of In Situ Biochar Stabilization Integrated with TreeWells® to Remediate PFAS in Groundwater. <i>L. Mankowski, D. Chiang, and J. Adams.</i> Leonard Mankowski (WSP/United States)	The HRX Well® for Effective Long-Term In Situ cVOC and PFAS Mass Discharge Control at Three Sites. <i>C. Divine.</i> Craig Divine (Arcadis/United States)	Lessons Learned for Ex Situ PFAS-Impacted Soil Treatment Using Thermal Conduction Heating. <i>E. Crownover, G. Heron, P. Joyce, and P. Stallings.</i> Emily Crownover (TRS Group/United States)

Thursday Platform Sessions—3:30-4:20 p.m.

	PANEL DISCUSSIONS Mile High Ballroom, 1a-1d	A SESSIONS Mile High Ballroom, 1e/1f	B SESSIONS Mile High Ballroom, 2c	C SESSIONS Mile High Ballroom, 2b	D SESSIONS Mile High Ballroom, 2a
3:30	SESSION BREAK	Evaluation of a New Treatment Amendment to Remove Mercury from Recovered Groundwater/Leachate at a Landfill. <i>D. Gray, R. Hazenstab, and D. Vollero.</i> Doug Gray (AECOM/United States)	Evaluation of Aluminum Sulfate (“Alum”) Dosing to Remediate Harmful Algal Blooms in Reservoirs. <i>A. Jones and M. Ladewig.</i> Amelia Jones (TRC/United States)	Lessons Learned from the Consideration of ESG Goals during Remediation at a Portfolio and Site Level. <i>A.O. Thomas.</i> Alan Thomas (ERM/United Kingdom)	Smoldering Combustion (STAR and STARx): Adaptive Remedy Implementation in Complex Environments. <i>D. Lief.</i> Dave Lief (Savron/Canada)
3:55		Combining Nature-Based and In Situ Technologies to Develop a Full-Scale Remedy to Address a Dissolved Arsenic Plume at an Industrial Facility. <i>A. Chemburkar and J. Kerl.</i> Justin Kerl (ERM/United States)	Modeling the Interaction of Crude Oil Hydrocarbons with Polyethylene Microplastics in Aquatic Environments. <i>F. Ali Ahmad and D.A. Salam.</i> Farah Ali Ahmad (American University of Beirut/Lebanon)	Sustainability and Remediation: The Hidden Cost of Going too Far. <i>K.M. Hill, D. Jenkins, and R. Macedo.</i> Kristina Hill (GHD/United States)	Progressing a High Mass Petroleum Site Using In Situ Desorption/Sorption. <i>J. Sheldon, M. Partridge, and C. Tufts.</i> Jack Sheldon (Antea Group/United States)

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Thursday Platform Sessions—3:30–4:20 p.m.

	E SESSIONS Mile High Ballroom, 3a	F SESSIONS Mile High Ballroom, 3b	G SESSIONS Mile High Ballroom, 3c	H SESSIONS Mile High Ballroom, 4d-4f	I SESSIONS Mile High Ballroom, 4a-4c
3:30	E9. PFAS Site Characterization It's Raining PFAS: A Nationwide Study of PFAS in Rain. <i>S. Mass, B.M. Eklund, and T. McKnight.</i> Sarah Mass (Haley & Aldrich/United States)	F9. Groundwater Modeling: Advancements and Applications Leveraging Open Source Options To Improve Groundwater Modeling Capabilities, Validation, and Verification. <i>A.L. Manzella and J. Schuetz.</i> Antonio Manzella (Parsons/United States)	G9. Phytoremediation (Cont) New Advances in Phytoremediation and Successful Treatment on Chlorinated Solvents Sites. <i>R. Murphy, G. O'Toole, J. Freeman, and E. Guttman.</i> Chris Cohu (Intrinsyx Environmental/United States)	H9. Horizontal Wells: Applications and Lessons Learned in Site Characterization and Remediation Nested Horizontal Wells Selected to Assess, Inject, and Monitor a Multi-Aquifer Chlorinated Solvent Plume. <i>L.I. Robinson.</i> Lance Robinson (EN Rx Inc./United States)	I9. (Cont) Technologies to Support the Quality Control of PFAS Immobilization and Minimize Uncertainty. <i>M.P. Askeland, A. Mitchell, and T. Dowle.</i> Matthew Askeland (ADE Consulting Group/Australia)
3:55	E9. PFAS Site Characterization Historical Lessons Learned: What Might PFAS Site Closure Look Like? <i>J.D. Gamlin and C.J. Newell.</i> Jeff Gamlin (GSI Environmental Inc./United States)	F9. Groundwater Modeling: Advancements and Applications The More the Merrier: Towards Improved Remedial Outcomes Using Ensemble Methods. <i>P. Khambhampettu, P. Renard, J. Doherty, J. White, M. Killingstad, and M. Kladias.</i> Prashanth Khambhampettu (Arcadis/United States)	G9. Phytoremediation (Cont) Pivot to Phytoremediation to Successfully Close a Legacy Chlorinated VOC Brownfield Site. <i>D.M. Burge and J. Wang.</i> Douglas Burge (Ramboll Americas Engineering Solutions, Inc./United States)	H9. Horizontal Wells: Applications and Lessons Learned in Site Characterization and Remediation Horizontal Electrode Installation for Thermal Remediation Operations while Minimizing Business Impacts: Installation Strategies and Implementation. <i>C. Thomas, D. Seiler, B. Morris, D. Reinsma, J.T. Gamble, and B. Nagle.</i> Chris Thomas (TRS Group/United States)	I9. (Cont) Decontamination of PFAS-Contaminated Fire Suppression System Pipes: Treatment Verification with Time of Flight/Elastic Recoil Detection (ToF-ERD). <i>I.F. Ross, B. Bonnet, and L. Ahrens.</i> Ian Ross (CDM Smith/United States)

NOTES

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Program at a Glance

MONDAY, June 3 7:00 a.m.–6:30 p.m. Registration, Exhibits, Poster Group 1 Display 7:00–8:00 a.m. Continental Breakfast 8:30–10:00 a.m. Plenary Session 10:30 a.m.–12:00 p.m. General Lunch 2:00–2:30 p.m. Afternoon Beverage Break	TUESDAY, June 4 7:00 a.m.–1:50 p.m. Registration, Exhibits, Poster Group 1 Display 7:00–8:00 a.m. Continental Breakfast 9:30–10:00 a.m. Morning Beverage Break 11:30 a.m.–12:00 p.m. Afternoon Snack and Beverage Break	WEDNESDAY, June 5 7:00 a.m.–6:30 p.m. Registration, Exhibits, Poster Group 2 Display 7:00–8:00 a.m. Continental Breakfast 9:30–10:00 a.m. Morning Beverage Break 11:00 a.m.–12:30 p.m. General Lunch 2:00–2:30 p.m. Afternoon Beverage Break	THURSDAY, June 6 7:00 a.m.–1:00 p.m. Registration, Exhibits, Poster Group 2 Display 7:00–8:00 a.m. Continental Breakfast 9:30–10:00 a.m. Morning Beverage Break 11:00 a.m.–12:30 p.m. General Lunch 2:00–2:30 p.m. Afternoon Beverage Break
<p style="text-align: center;">12:10–4:20 p.m. Panel Discussions, Platform Presentations, & Learning Lab Demonstrations</p>	<p style="text-align: center;">8:00 a.m.–1:50 p.m. Platform Presentations, & Learning Lab Demonstrations</p>	<p style="text-align: center;">8:00 a.m.–4:20 p.m. Panel Discussions, Platform Presentations, & Learning Lab Demonstrations</p>	<p style="text-align: center;">8:00 a.m.–4:20 p.m. Panel Discussions & Platform Presentations 8:00 a.m.–1:00 p.m. Learning Lab Demonstrations</p>
<p>Panel Discussion: Environmental Justice and Sustainable Practices: A Synergistic Approach Panel Discussion: Decision-Making and Financial Implications of PFAS Fate and Transport in Multiple Environmental Media</p>	<p>Panel Discussion: Deciphering the PFAS Dilemma: Federal Regulations, Streamlined Definitions, and Their Implications Panel Discussion: Microplastics: The State of Science and Uncertainties on Risk-Based Management</p>	<p>Panel Discussion:Geology Revolution Continued ... Know What the Well Will Tell You Before You Drill Panel Discussion: Cost Impacts to Society of PFAS Remediation and Treatment</p>	<p>Panel Discussion: Vapor Intrusion: Past, Present, and Future Panel Discussion: PFAS towards 2029: Priorities for Action, An Interactive Session</p>
<p>A1. Remediation Approaches in Fractured Rock and Karst Aquifers A2. Challenges and Lessons Learned in Remediating Sites with Complex Geology</p>	<p>A3. Technical Impracticability: Challenges and Considerations for Evaluation of Fractured Rock Sites A4. Depositional Environments and Stratigraphic Considerations for Remediation A5. Process-Based Conceptual Site Models (CSMs) for Informing Remediation</p>	<p>A6. Advances in the Application of Geologic Interpretation to Remediation A7. Environmental Forensics: Site Characterization and Source Determinations A8. Remote Sensing, Drones, and Other Unmanned Systems for Remote Monitoring and Site Assessments A9. Using Omic Approaches and Advanced Molecular Tools to Optimize Site Remediation</p>	<p>A10. Managing Chromium-Contaminated Sites A11. Mining and Uranium Site Restoration A12. Precipitation and Stabilization of Metals</p>
<p>B1. Remedial Design/Optimization: Applications of Mass Flux and Mass Discharge B2. Optimizing Remedial Systems</p>	<p>B3. Remedy Implementation: Assessing Performance and Costs</p>	<p>B4. In Situ Activated Carbon-Based Amendments: Assessing Effectiveness and Performance B5. Data Analytics: Use of Machine Learning and Artificial Intelligence Tools for Improved Analysis, Optimization and Decision Making B6. Practice of Risk Communication and Stakeholder Engagement B7. 1,4-Dioxane Remediation Challenges</p>	<p>B8. Advances in 1,4-Dioxane Biological Treatment Technologies B9. Advances in Biological Treatment of Mixed Contaminant Plumes B10. Microplastics, Pharmaceuticals, and Other Emerging Contaminants</p>
<p>C1. Landfill Assessment and Remediation C2. Large, Dilute and Commingled Plume Case Studies</p>	<p>C3. Adaptive Site Management: Lessons Learned for Site Characterization and Remedy Implementation C4. Adaptive Site Management: Lessons Learned for Site Characterization and Remedy Performance Monitoring</p>	<p>C5. DNAPL Source Zone Remediation: Lessons Learned C6. Evaluating Surface Water/Groundwater Interactions: Innovative Monitoring Approaches and Modeling Applications C7. Low-Permeability Zone Treatment Approaches, Permeability Enhancements, and Case Studies</p>	<p>C8. GSR Best Practices and Nature-Based Remediation Case Studies C9. GSR Metrics and Sustainable Remediation Assessment Tools C10. Climate Resilience and Site Remediation C11. Aligning Remediation Goals with Environmental, Social, and Governance (ESG) Considerations</p>

MONDAY, June 3	TUESDAY, June 4	WEDNESDAY, June 5	THURSDAY, June 6
D1. Vapor Intrusion Mitigation and Effectiveness	D2. Vapor Intrusion Preferential Pathways D3. Vapor Intrusion Risk Assessment and Site Management	D4. Advances in Vapor Intrusion Investigations D5. Heavy Hydrocarbons: Characterization and Remediation D6. LNAPL Recovery/Remediation Technology Transitions D7. Natural Source Zone Depletion	D8. Surfactant-Enhanced Remediation D9. LNAPL Sites: Understanding and Managing Risks D10. In Situ Remediation of Petroleum Hydrocarbons
E1. Advances in the Analysis of Non-Target Per- and Polyfluorinated Alkyl Substances (PFAS)	E2. In Situ PFAS Treatment Approaches E3. In Situ PFAS Soil Treatment Approaches	E4. Ex Situ PFAS Treatment Approaches E5. Innovative Ex Situ PFAS Destruction Technologies (Poster)	E6. PFAS Source and Forensic Considerations E7. PFAS and Bugs: The Search Continues E8. PFAS Human Health and Ecological Risk Assessment and Toxicity E9. PFAS Site Characterization
F1. Conceptual Site Models: Improvements in Development and Application	F2. Improvements in Site Data Collection, Data Management, and Data Visualization F3. Advanced Data Visualization Techniques	F4. High-Resolution Site Characterization (HRSC) F5. HRSC Suites of Tools to Improve CSMS	F6. Advanced Investigation Tools and Techniques F7. Advanced Sampling and Analysis Tools and Techniques F8. Advanced Geophysics and Remote/Direct Sensing Tools and Techniques F9. Groundwater Modeling: Advancements and Applications
G1. Innovations in ZVI Amendment Formulations and Applications G2. Innovative and Optimized Amendment Delivery and Monitoring Methods	G3. In Situ Chemical Oxidation: Optimized Design Approaches and Lessons Learned	G4. Bioremediation: Advances in Amendment Formulations G5. Emerging Remediation Technologies G6. Thermally-Enhanced In Situ Degradation Processes at Sub-Boiling Temperatures	G7. Combined Remedies and Treatment Train Technologies G8. Combined Remedies and Treatment Train Technologies for Chlorinated Contamination G9. Phytoremediation
H1. In Situ Technologies: Lessons Learned	H2. Thermal Conductive Heating: Best Practices and Lessons Learned H3. Remediation of Legacy Contaminants using Thermal Conductive Heating	H4. Abiotic and In Situ Biogeochemical Processes: Applications and Lessons Learned H5. Electrical Resistance Heating: Best Practices and Lessons Learned	H6. Injectable Activated Carbon Amendments: Lessons Learned and Best Practices H7. Permeable Reactive Barriers: Best Practices and Lessons Learned H8. Monitored Natural Attenuation: Innovative Monitoring Approaches/Lines of Evidence and Lessons Learned H9. Horizontal Wells: Applications and Lessons Learned in Site Characterization and Remediation
I1. Ex Situ PFAS Water Treatment Technologies	I2. PFAS Fate and Transport in Surface Water I3. PFAS Fate and Transport	I4. PFAS Fate and Transport Properties I5. PFAS Conceptual Site Model Approaches I6. PFAS: Groundwater Treatment Case Studies	I7. PFAS Program Management in a Rapidly Changing Regulatory Environment I8. Managing PFAS at Publicly-Owned Treatment Works (POTWs) I9. Ex Situ PFAS Treatment: Soils/Solids and Other Waste Streams
4:00–6:30 p.m. Poster Group 1 Presentations and Refreshments	2:00–6:00 p.m. Short Courses	4:30–6:30 p.m. Poster Group 2 Presentations and Refreshments	4:30 p.m. Closing Reception

NOTES

The Conference is organized and presented by Battelle.

Battelle's environmental engineers, scientists and professionals offer focused expertise to government and industrial clients in the U.S. and abroad. Combining sound science and engineering solutions with creative management strategies, Battelle works with clients to develop innovative and cost-effective solutions to complex problems in site restoration, risk assessment, hydrogeologic assessment and monitoring and sustainable remediation. Every day, the people of Battelle apply science and technology to solving what matters most. At major technology centers and national laboratories around the world, Battelle conducts research and development, designs and manufactures products and delivers critical services for government and commercial customers. Headquartered in Columbus, Ohio, since its founding in 1929, Battelle serves the national security, health and life sciences and energy and environmental industries.

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