

# Acknowledgements Vapor Intrusion Mitigation Team | December 2020

The members of the Interstate Technology & Regulatory Council (ITRC) Vapor Intrusion Mitigation Training (VIMT) Team wish to acknowledge and thank the individuals, organizations, and agencies that contributed to this online document, which includes multiple Fact Sheets, Technology Information Sheets, and Checklists.

The VIMT Team was led by: Mr. Matt Williams, Michigan Department of Environment, Great Lakes, and Energy (EGLE) and Mr. Kelly Johnson, North Carolina Department of Environmental Quality (NC DEQ).

The team leaders relied upon and were ably supported by two Program Advisors: Steve Brauner and Bobbilynne Koepke of Environmental Works, Inc. (EWI). Molly Olonoff, Tadbir Singh, and Evan Madden (ITRC/ECOS Program Associates) also provided support to the team on multiple occasions.

During the development of the VIMT work products and training materials, the team received many comments during reviews by experts who work for U.S. EPA, U.S. DOD, U.S. DOE, U.S. Bureau of Reclamation, U.S. Department of Housing and Urban Development, state agencies, public stakeholders, academic institutions, industry, consulting, contractors, and various international institutions. This input was invaluable to the development of these ITRC products. The team greatly appreciates those who offered advice, suggestions, questions, and comments.

The team co-leaders, Matt Williams (EGLE) and Kelly Johnson (NC DEQ), wish to thank and recognize the efforts and important contributions of all of our team members. Additionally, the team co-leaders would like to recognize the individual efforts of the following team members who stepped forward as subgroup leaders:

### Work Product Subgroup Leaders

- Eric Blodgett, Barr Engineering Co.
- John Boyer, Geosyntec Consultants
- Keith Brodock, Integral Consulting
- Shannon Cook, Ohio Environmental Protection Agency
- Jay Eichberger, Michigan Department of Environment, Great Lakes, and Energy (EGLE)
- Dave Folkes, Geosyntec Consultants
- Angela Gorman, South Carolina Department of Health and Environmental Control (SC DHEC)
- Peter Grant, EPRO
- Tim Grape, Minnesota Pollution Control Agency (MPCA)
- Nathan Lewis, Kentucky Division of Waste Management/Underground Storage Tank Branch (Kentucky DEP)
- Susan McKinley, Indiana Department of Environmental Management (IDEM)
- Marek Ostrowski, Brown and Caldwell
- Catherine Regan, Environmental Resource Management
- Lenny Siegel, Center for Public Environmental Oversight (CPEO)

#### **Training Materials Subgroup Leaders**

- Lila Beckley, GSI Environmental Inc.
- Eric Blodgett, Barr Engineering Co.
- Jennifer Borski, Wisconsin Department of Natural Resources (WDNR)
- Keith Brodock, Integral Consulting
- Joe Corsello, Sanborn, Head & Associates, Inc.
- Jay Eichberger, Michigan Department of Environment, Great Lakes, and Energy (EGLE)
- Dave Folkes, Geosyntec Consultants
- Rick Gillespie, Regenesis
- Peter Grant, EPRO
- Laurent Levy, Jacobs
- Melissa Meeuwsen, Minnesota Pollution Control Agency (MPCA)
- Catherine Regan, Environmental Resource Management (ERM)
- Sigrida Reinis, Langan

Special thanks to John Boyer (Geosyntec Consultants) for his willingness and insightful contributions to several team documents and training modules. The team co-leaders also appreciate the incredible assistance, encouragement, and thoughtful advice of Richard Spiese (Vermont Department of Environmental Conservation) throughout the process, which

helped ensure that work products were developed in accordance with ITRC policies.

Finally, the team co-leaders wish to thank and recognize the efforts and important contributions of our team members.

## **State and Local Government**

Lety Arzate City of San Antonio

**Eric Aufderhaar** North Carolina Department of Environmental Quality

Laura Badalamenti Michigan Department of Environment, Great Lakes, and Energy

**Eric Baiden** Utah Department of Environmental Quality

Erica Bays Michigan Department of Environment, Great Lakes, and Energy

**Todd Blessing** Alaska Department of Environmental Conservation

Marshall Brown

South Dakota Department of Environment and Natural Resouces

Kimberly Caldwell Department of Environmental Conservation Waste Management & Prevention Division

Jared Champagne Louisiana Department of Environmental Quality

Matthew Cohen California State Water Resources Control Board

Dayna Cordano California State Water Resources Control Board

Tim Eiken Missouri Department of Natural Resources

David Epema Missouri Department of Natural Resources

Becky Fiedler Illinois EPA

Sarah Foran Utah Department of Environmental Quality

Tom Fox Colorado DLE Division of Oil and Public Safety

**Rick Galloway** State of DE – Dept of Nat Res. & Envir. Control

Ken Gath CalEPA/DTSC

Jamie Grant Alaska Department of Environmental Conservation

Scott Green Arizona Department of Environmental Quality

Carl Gruszczak Connecticut Department of Energy & Environmental Protection **Nikki Haborak** Georgia Environmental Protection Division

Avery Holyoak Utah Department of Environmental Quality

Ricardo Jaimes Michigan Department of Environment, Great Lakes, and Energy

Haley Kelley Alabama Department of Environmental Management

**Brandon Kingsbury** Montana Department of Environmental Quality

Kimberly Kuhn South Carolina Department of Health and Environmental Control

**Bill Lawrence** Idaho Department of Environmental Quality

Marsha Lay Indiana Department of Environmental Management

Mihai Lefticariu Missouri Department of Natural Resources

Alexander MacDonald Regional Water Quality Control Board, Central Valley Region

Cathryn Mallonee Kansas Department of Health and Environment

**Robert Mangum** Georgia Environmental Protection Division

Solmaz Marzooghi California State Water Resources Control Board

Mark McClure Kansas Department of Health and Environment

Alicia McGill Georgia Environmental Protection Division

Sara Michael CalEPA/DTSC

Ricky Minor Alabama Department of Environmental Management

Pamela Monaghan Alabama Department of Environmental Management

**April Ni'Mary** Virginia Department of Environmental Quality

Matthew Pabich Idaho Department of Environmental Quality

Srikanth Paladugu New Mexico Department of Health

Reuben Panchol North Carolina Department of Environmental Quality

Ron Poustchi New Jersey Department of Environmental Protection

#### Jeff Rackow

Arizona Department of Environmental Quality

**Christine Roob** North Dakota Department of Environmental Quality

Craig Sanchez California State Water Resources Control Board

Riz Sarmiento CalEPA/DTSC

**Deepak Singh** District Department of Energy & Environment

Matt Smith Orange County Sanitation District

Richard Spiese Vermont Waste Management Division

**Debra Thoma** South Carolina Department of Health and Environmental Control

Garrett Thornton CalEPA/DTSC

**Priscilla Tomlinson** Washington State Department of Ecology

Holly Tucker Ohio EPA

Wally Wagaw Michigan Department of Environment, Great Lakes, and Energy

Todd Wallbom CalEPA/DTSC

Mary KV White Colorado DLE Division of Oil and Public Safety

Li Yang CalEPA/DTSC

Ken Ziegler City of Albuquerque, Environmental Health Department

### **Federal Government**

Jason Almcrantz US Department of Energy

Michelle Brown US Air Force

Donna Caldwell US Navy

Carlyn Chappel R2

Anna-Marie Cook USEPA

James Ferreira USEPA **Todd Fitch** Air Force Civil Engineer Center

Poppy Harrover US Army

**Eleni Kavvadias** USEPA

Mike Lawson US Bureau of Reclamation

Kathy McNulty US HUD

Ameesha Mehta-Sampath USEPA

Gary Newhart USEPA

Elizabeth Nightingale USEPA

Michael Riegert USACE

**Debbie Rosano** US Department of Energy

Jason Sherman Air Force Environmental Law Field Support Center

Tracey Spencer USMC

Tom Walker USEPA

Teresie Walker US Navy (NAVFAC)

Brett Wells USEPA

**Brian Zimmerman** US Department of Energy

# Public and Tribal Stakeholders

Andre Souza Cetrel

# Academia

Mark Leeper Colorado State University

Krendon Reynolds Texas State University

# **Industry Affiliates**

Kit Adsetts Cardno Jane Allan Apex Companies, LLC

Susan Bator GZA GeoEnvironmental, Inc.

Sam Baushke Geosyntec Consultants

Jody Berry Wood

James Bolint GHD

**Everett Bonniwell** Protect Environmental

Michaela Brewster Terracon

Chris Burrows ERM

Christopher Buzgo Ramboll

Brian Carey Terracon

Troy Carrington Shell

Norlito Cezar Parsons Corporation

Joel Chance GHD

Pamela Chang Battelle Memorial Institute

Eric Christodoulatos Honeywell

Ali Ciblak Geosyntec Consultants

Andrew Corcoran ERM

Jeff Crum Hamp, Mathews & Associates, Inc.

Katie Dally Arcadis

**Luke Davis** Tetra Tech, Inc.

George DeVaull Shell

Paul Ecker EES Environmental Consulting, Inc.

Chris Ferguson Protect Environmental

#### Jason Flagg

Langan

Noah Frey TRC

Aaron Friedrich ERM

**Joshua Golding** Langan

Matthew Groves GHD

Guy Guinot ERM

Elie Haddad Haley & Aldrich, Inc.

David Hanley Wood PLC

Thomas Hatton Clean Vapor LLC

Mike Hawthorne GEI Consultants, Inc.

Joel Hecker Pioneer Technologies Corporation

Brian Hecker GES, Inc

**Chris Heckle** Protect Environmental

David Heidlauf Ramboll

lan Hers Hers Environmental Consulting, Inc.

**Chuck Hornaday** Vadose Remediation Technologies

Andrew Horwath Civil & Environmental Consultants, Inc

**Kyle Hoylman** Protect Environmental

Jane Huber Eurofins

Mike Hudgins Terracon

James Hutchens Ramboll

Alex Jarrett Tetra Tech, Inc.

**Kevin Kallini** TRC

### **Christopher Kassel**

Arcadis

**Udaya Keshava** Arcadis

Agatha Kim TRC

Brian Kistner Burns & McDonnell Engineering Company, Inc

Christine Kuzmkowski Woodard & Curran

Matthew Lahvis Shell

**Ted LaMarre** Hamp, Mathews & Associates, Inc.

Steven LaRosa Weston & Sampson

**Daniel Lee** Arcadis

Laura Lopez Ortiz Litoclean, S.L. (VAT nº: SB61993291)

Eric Lovenduski Geosyntec Consultants

**Emma Hong Luo** Chevron

Chris Lutes Jacobs

**Alan Malagon** ERM

Diana Marquez Burns & McDonnell Engineering Company, Inc

Alan Mathews Hamp, Mathews & Associates, Inc.

Todd McAlary Geosyntec Consultants

Maureen McGraw Tetra Tech, Inc.

**Nikki Meskanen** GHD

William Morris Vapor Mitigation Sciences, LLC

**Brian Myller** Pinyon Environmental, Inc

Joseph Nemesh Tetra Tech, Inc.

Paul Nicholson Geosyntec Consultants Jenny Nilsson Litoclean, S.L. (VAT nº: ESB61993291)

Michael O'Hearn Wood PLC

**Rebecca Oliver** Geosyntec Consultants

**Ethan Olson** Battelle Memorial Institute

**Fernanda Paes Wilson** Fishbeck

Angela Paolucci Battelle Memorial Institute

**Bhuvnesh Parekh** GZA GeoEnvironmental, Inc.

**Derek Payne** Battelle Memorial Institute

**Daniele Peters** EES Environmental Consulting, Inc.

Susan Pfister Wood PLC

Nasim Pica CDM Smith

**Gina Plantz** Haley & Aldrich, Inc.

**Richard Rago** Haley & Aldrich, Inc.

Allison Roche Woodard & Curran

Andrew Rodak Duncklee & Dunham, P.C.

**Christopher Rolison** Pinyon Environmental, Inc

Julia Roth Clean Vapor LLC

**Rachel Saari** Arcadis

Marwan Salameh Terracon

Brian Sandberg GHD

**Jessica Schaettle** Langan

Sarah Seitz Trihydro Corporation

David Shea Sanborn, Head & Associates, Inc.

## Jennifer Stackhouse

Kleinfelder

**Jonathan Stocum** GES, Inc

Chris Stubbs Ramboll

Stephen Taranto TRC

Alexa Teipel Ramboll

**Jessica Telano** Honeywell

**Laura Trozzolo** TRC

Kerry Tull Wood PLC

Elizabeth Winger Eurofins

James Zentmeyer Civil & Environmental Consultants, Inc

# International Team Members

**Eric Bergeron** Golder Associates

James Coley South Austrailian EPA

Pamela Cushing Canada Dept of National Defence

Ying (Eric) Lai City of Casey, Victoria, Australia

**Claire McGuigan** Alberta Environment & Parks

Melinda Morris South Australian EPA

Sandra Navas EP Petroecuador

**Shannon Thompson** South Austrailian EPA

**Nina Wang** Alberta Health