



**Todd H. Wiedemeier, P.G.
President**

EXPERIENCE SUMMARY

Todd Wiedemeier has over 20 years of experience in the field of Environmental Engineering including extensive experience as both a technical director and a project manager. Prior to starting T.H. Wiedemeier & Associates, LLC, he was a Technical Director for one of the World's largest engineering companies. In addition to being an internationally-recognized expert in the area of contaminant fate and migration, Mr. Wiedemeier's areas of expertise lie in evaluating natural attenuation and installing bioremediation systems. Over his career Mr. Wiedemeier has conducted natural attenuation evaluations and remediation feasibility studies, and/or installed and evaluated remediation systems at hundreds of sites contaminated with petroleum hydrocarbons, MTBE, chlorinated solvents, and other organic compounds. Based on the work performed by Mr. Wiedemeier, monitored natural attenuation was implemented at more than 50 Air Force sites across the country. The Air Force Center for Engineering and the Environment (AFCEE) estimates that implementing MNA at these sites has saved the American taxpayer more than \$525 million in unwarranted and unnecessary remediation costs (<http://www.afcee.af.mil/resources/technologytransfer/technologytransferoverview/index.asp>). In addition, Mr. Wiedemeier was instrumental in developing the Enhanced In-Situ Anaerobic Bioremediation (EISAB) approach currently used by remediation companies throughout the world. This work involves the injection of electron donors to stimulate dechlorination, including the injection of food-grade vegetable oil and emulsifications thereof. The AFCEE estimates that the use of EISAB has saved the American taxpayer more than \$130 million.

Mr. Wiedemeier has published more than 150 technical papers, books, and training manuals on contaminant fate and migration and remediation topics since 1993. Landmark documents for which Mr. Wiedemeier was senior author include:

- The American Petroleum Institute's *Technical Protocol for Evaluating the Natural Attenuation of MTBE*.
- The United States Department of Energy's *Multiple Lines of Evidence Supporting Natural Attenuation: Lines of Inquiry Supporting Monitored Natural Attenuation and Enhanced Attenuation of Chlorinated Solvents*.
- The John Wiley & Son's book *Natural Attenuation of Fuels and Chlorinated Solvents in the Subsurface*.

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STATE OF THE ART SOIL AND GROUNDWATER CHARACTERIZATION AND REMEDIATION®

- The United States Environmental Agency's *Technical Protocol for Evaluating Natural Attenuation of Chlorinated Solvents in Ground Water*.
- The United States Air Force's *Technical Protocol for Implementing Intrinsic Remediation with Long-Term Monitoring for Natural Attenuation of Fuel Contamination Dissolved in Groundwater*.
- The United States Air Force's *Technical Protocol for Evaluating Natural Attenuation of Chlorinated Solvents in Groundwater*.
- The United States Navy's *Technical Guidelines for Evaluating Monitored Natural Attenuation of Petroleum Hydrocarbons and Chlorinated Solvents in Ground Water at Naval and Marine Corps Facilities*.
- The United States Air Force's *Draft Technical Protocol for Testing and Evaluating the Injection of Vegetable Oil to Stimulate the Reductive Dechlorination of Chlorinated Solvents*.

Mr. Wiedemeier has served on many expert committees and panels including the Lawrence Livermore National Laboratory's volatile organic compound investigation expert review panel and the ASTM committee that developed a standard for evaluating natural attenuation. He recently served on the Technical Working Group for the United States Department of Energy's *Monitored Natural Attenuation and Enhanced Attenuation for Chlorinated Solvents Technology Alternative Project* and served on the American Petroleum Institute's Task Force that developed the *Technical Protocol for Evaluating the Natural Attenuation of MTBE*.

He has developed and taught short courses around the world including the National Ground Water Association's (NGWA) short courses on Enhanced Bioremediation, Low Cost Remediation Strategies, and Natural Attenuation for Remediation of Contaminated Sites. He has also developed and taught numerous specialty courses as an invited instructor. Additional short courses are listed below.

His current interests involve stimulating biological reductive dechlorination of chlorinated solvents through substrate addition. Mr. Wiedemeier was one of the co-inventors of the process whereby food-grade vegetable oil is injected into the subsurface to stimulate reductive dechlorination. Since he first applied vegetable oil at the field scale and wrote a draft protocol for vegetable oil injection, this technique has gained acceptance around the world as an efficient way to remediate chlorinated solvents in the subsurface.

PROFESSIONAL RECORD

**January 2003 – Present: President and Technical Director,
T.H. Wiedemeier & Associates, LLC**

In addition to being President of T.H. Wiedemeier & Associates, LLC (THWA), Mr. Wiedemeier is involved in developing, implementing, and enhancing approaches for evaluating monitored natural attenuation and enhanced remediation for both petroleum hydrocarbon mixtures and chlorinated solvents. He also is involved in developing long-term monitoring plans for both natural and engineered remediation systems.



Representative Projects:

Technical director for a focused feasibility study conducted for the United States Navy at North Island Naval Air Station (May 2007 – present). This project involves a focused site characterization effort to identify the source of contamination and the use of the Navy's Natural Attenuation Screening Model to evaluate various remedial alternatives.

Natural Attenuation Evaluations – Multiple Sites, former Naval Air Station El Toro: Involves the evaluation of natural attenuation of multiple sites contaminated with petroleum hydrocarbons and MTBE. After evaluating the efficacy of natural attenuation, long-term monitoring plans were developed, as appropriate.

August 1992 – January 2003: Parsons

June 1999 – January 2003: Technical Director and Associate, Parsons, Inc., Denver, Colorado

Technology Leader for Natural Attenuation and Bioremediation. Responsibilities included contaminant fate and transport analysis and bioremediation system design and implementation at hazardous waste sites with a wide variety of contaminants in diverse hydrogeologic regimes. Major responsibilities included:

- Parsons lead hydrogeologist for the Lowry Landfill Superfund Site Five Year Review.
- Technical Director for a technical protocol on enhanced anaerobic dechlorination. Much of this work was published in
- Senior Author of the US Air Force Center for Environmental Excellence (AFCEE) protocol for testing and evaluating the injection of vegetable oil to stimulate the reductive dechlorination of chlorinated solvents.
- Senior Author of the US Air Force Center for Environmental Excellence (AFCEE) protocol for developing long-term monitoring programs for Natural Attenuation.
- Instructor for numerous short courses covering the remediation of fuels and solvents.

March 1997 – May 1999: Technical Director and Associate, Parsons, Inc. (Formerly Parsons Engineering-Science, Inc.), Pasadena, California

Technical Direction

Technical Director for Cost-Effective Remediation. Responsible for technical direction of contaminant fate and transport analysis and remedial system design and implementation at hazardous waste sites with a wide variety of contaminants in diverse hydrogeologic regimes. Major technical direction responsibilities included:

- Instructor for numerous short courses covering the remediation of fuels and solvents.
- Coauthor of the US Air Force Center for Environmental Excellence (AFCEE) protocol for evaluating natural attenuation of MTBE.

- Technical director for \$300,000 contract with the US Air Force to conduct bioslurping at three sites on the East Coast. Contaminants at these sites are predominantly fuel hydrocarbons. Responsible for winning this work and building it to the current value.
- Technical director for \$1,000,000 contract with the US Navy to conduct bioventing, biosparging, and natural attenuation demonstrations at 6 Navy sites in Southern California. Contaminants at these sites are predominantly fuel hydrocarbons. Responsible for winning this work and building it to the current value.
- Technical director for \$300,000 contract with the AFCEE for a detailed natural attenuation evaluation at the Massachusetts Military Reservation. Contaminants at this site were predominantly chlorinated solvents and landfill leachate. Responsible for winning this work and building it to the current value. This project resulted in saving the US Air Force at least \$60,000,000 in unnecessary remediation costs.
- Technical director for \$4,000,000 contract with the US Navy to conduct natural attenuation demonstrations at multiple Navy sites in the southwest. Contaminants at these sites are dominantly chlorinated solvents but some sites have commingled fuel hydrocarbons and chlorinated solvents. Responsible for winning this work and building it to the current value. Also technical director for a project at the US Navy's North Island Facility. Project involves natural attenuation of a site contaminated with chlorinated solvents and fuel hydrocarbons.
- Technical director (formerly project manager) for \$7,500,000 contract with the US Air Force to conduct natural attenuation demonstrations at 70 sites across the country. Contaminants at these sites include fuel hydrocarbons and chlorinated solvents. Responsible for winning this work and building it to the current value.
- Technical director for a remediation project at Williams Air Force Base. Project involves integration of soil vapor extraction followed by bioventing, bioslurping, and natural attenuation.
- Technical director for numerous natural attenuation studies being performed by other offices of Parsons ES across the United States.
- Recognized both within Parsons ES and externally as a national and international leader in evaluating natural attenuation at sites contaminated with fuel hydrocarbons and chlorinated solvents.

Department Management

Manager of the Intrinsic Remediation Section of the Remediation Department of the Denver Office of Parsons Engineering Science, Inc. (Parsons ES). Founded and built this section to 12 people over the period from February 1995 to February 1997. Interim Department Manager for the Remediation Department of the Pasadena, California office. This department grew from 5 to 20 employees under my leadership. Responsible for selecting, hiring, training, and mentoring personnel who perform bioventing, nonaqueous phase liquid recovery, dual-phase extraction, natural attenuation evaluations, and risk-based corrective action studies.



August 1992 – February 1997: Project Manager and Associate (1994), Parsons, Inc. (Formerly Parsons Engineering-Science, Inc.), Denver, Colorado

Responsible for project management for remedial system design and implementation at hazardous waste sites in a wide variety of hydrogeologic regimes. Major projects managed include:

- Project manager for \$7,500,000 contract with the US Air Force to conduct natural attenuation evaluations at 48 Air Force sites across the country. Contaminants at these sites include fuel hydrocarbons and chlorinated solvents. Responsible for winning this work and building it to the current value. Relinquished management of this project to allow more time for technical direction and business development and to give another employee project management experience.
- Project manager for a contract with the US Navy to conduct natural attenuation evaluations at 4 Navy Bases (20 sites) in the Southwestern United States. Contaminants at these sites include fuel hydrocarbons and chlorinated solvents. Responsible for winning this work and completing this work.
- Project manager for US Air Force for groundwater simulation/optimization modeling. This project involved the optimization of groundwater extraction at a site with an on-going pump and treat system. Algorithms used during optimization/simulation modeling included MODFLOW, MT3D, and REMAX. Worked with researchers from Utah State University on this project. Responsible for winning this work and building it to the current value.
- Project manager for numerous smaller projects across the country. The total value of these projects exceeds \$5,000,000.

July 1991–August 1992: AGRA Earth and Environmental, Denver, Colorado

Project Manager

Responsible for mine and landfill permitting and operational monitoring and for the characterization of contaminated soil and groundwater at hazardous waste sites. This position included the use of a variety of groundwater modeling programs to predict the fate and transport of fuels, metals, volatile organics, and other substances in subsurface systems.

February 1990-July 1991: James L. Grant and Associates, Denver, Colorado

Staff Hydrogeologist

Participated in the characterization of hazardous waste sites such as wood products treatment facilities and petroleum hydrocarbon underground storage tank sites. Involved in the design and installation of remedial actions such as groundwater pump and treat and product recovery systems, contaminated water treatment facilities, and soil vapor extraction systems. Experience included supervising the siting, installation, and completion of monitoring, recovery, and injection wells; sampling of a variety of contaminated media; conducting hydraulic tests to characterize aquifer flow velocity and direction; data interpretation, including analytical and numerical groundwater flow and solute transport modeling; and report preparation.

EDUCATION

B.S., Geology, Colorado State University, Fort Collins, Colorado, 1987

M.S., Geology, Wichita State University, Wichita, Kansas, 1989

Numerous Post-Graduate Courses in Mathematics, Engineering, and Hydrogeology

EXPERT PANELS

Member of the Technical Working Group for the United States Department of Energy for their Monitored Natural Attenuation and Enhanced Attenuation for Chlorinated Solvents Technology Alternative Project

Member of the American Petroleum Institute's Task Force that developed an approach for evaluating the natural attenuation of MTBE

Member of the Lawrence Livermore National Laboratory's volatile organic compound investigation expert review panel

Member of the ASTM Committee that Developed a Standard titled *Remediation of Ground Water by Natural Attenuation at Petroleum Release Sites*

Invited Panelist for the *National Stakeholders Forum on Monitored Natural Attenuation*

Expert Panel: Natural Attenuation - Chlorinated Solvents in Ground Water, Hill AFB, UT

SHORT COURSES

Australian Contaminated Land Consultants Association (ACLCA) short courses titled "Introduction to Monitored Natural Attenuation and Enhanced Bioremediation" (2009).

Australian Contaminated Land Consultants Association (ACLCA) short courses titled "Introduction to Monitored Natural Attenuation and Enhanced Bioremediation," "Monitored Natural Attenuation for Groundwater Remediation and Management," and "Enhanced Bioremediation and Other Low Cost Remediation Methods for Soil and Groundwater." (2007)

National Ground Water Association Short Course – Low Cost Remediation Strategies for Contaminated Soil and Ground Water (1998 -present).

National Ground Water Association Short Course - Natural Attenuation for the Remediation of Contaminated Sites (1996 - present).

Technical University of Denmark, Danish Committee on Ground Water Restoration, - Natural Attenuation for the Remediation of Contaminated Sites (1997).

American Society for Testing and Materials Short Course – Remediation of Ground Water by Natural Attenuation at Petroleum Release Sites.

National Ground Water Association Short Course –Natural Attenuation of Fuel Hydrocarbons and Chlorinated Solvents: Processes, Monitoring, and Modeling with BIOSCREEN and BIOPLUME III.

National Ground Water Association Short Course – Computer Modeling of Natural Attenuation and Bioremediation Systems.

National Ground Water Association Short Course – Transport and Fate Principles and Parameter Estimation: Use and Modeling for Risk-Based Evaluation and Screening of Soil Contamination.

National Ground Water Association Short Course – Applied Transport and Fate Modeling for Risk-Based Soil Screening and Cleanup Levels.

International Ground Water Modeling Center Short Course - Computer Implementation of the Air Force Intrinsic Remediation Protocol: Computer Assisted Planning, Design, Permit Application and Monitoring Plan for Hydrocarbon Remediation.

International Network for Environmental Training Short Course - Intrinsic Bioremediation: Principles, Applications, and Case Studies.

Parsons Engineering Science, Inc. - Internal Training on Cost Effective Remediation

Parsons Engineering Science, Inc. - Internal Training Course on Natural Attenuation

Northwest Center for Occupational Health and Safety - Hazardous Waste Solvents in Subsurface Environments: Transport, Risks, Remediation. Short course on intrinsic remediation.

PROFESSIONAL AFFILIATIONS/REGISTRATIONS

Licensed Professional Geologist

American Geophysical Union

American Society for Microbiology

National Ground Water Association

American Chemical Society

American Society of Civil Engineers

Geological Society of America

Member of Sigma Gamma Epsilon Earth Science Honor Society

Member of Xi Sigma Pi Honor Society

REFERENCES

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National Risk Management Research Laboratory

919 Robert Kerr Drive

Ada, Oklahoma 74820

Phone: (580) 436-8532

Dr. Ross N. Miller, P. E.

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406 West South Jordan Parkway

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Additional references provided upon request.



PUBLICATIONS

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- Wiedemeier, T.H., Yux, J.L., Wong, R.L., White, B.C., and Pound, M.J., 2008, Natural Attenuation of Chlorinated Solvents, A Case Study from Naval Air Station North Island: Battelle Memorial Institute, Sixth International Conference on Remediation of Chlorinated and Recalcitrant Compounds, Monterey, California, May 19-22, 2008
- Wiedemeier, T.H., Wong, R.C., White, B., Pound, M.J., and Perry, C., 2007, State of the Art for Evaluating Natural Attenuation: Ninth International Symposium on In Situ and On-Site Bioremediation, Baltimore, Maryland, May 7-10, 2007.
- Zeeb, P. and Wiedemeier, T.H., 2007, Technical Protocol for Evaluating the Natural Attenuation of MtBE: API Publication 4761, 186 pp.
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- Wiedemeier, T.H., Dickson, W.Z., and Haas, P.E., 2005, The use of modeling to predict MNA and Social Issues of Active Remediation versus MNA: Remediation Journal, p. 128-136.
- Wilson, J.T., C. J. Newell, J. Seaberg, B. E. Rittmann, T. H. Wiedemeier, W. Z. Dickson and P. E. Haas, 2005, Monitored natural attenuation panel: The use of modeling to predict MNA and social issues of active remediation versus MNA: Remediation Journal: v. 15, no. 3, p. 120-138. URL: <http://dx.doi.org/10.1002/rem.20055>
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