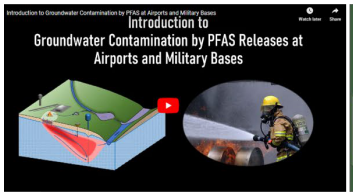
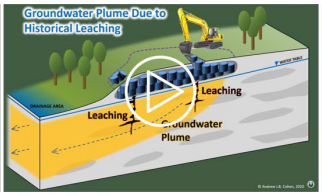
**Overview**



Dr. Andrew J.B. Cohen is a Contaminant Hydrogeologist and Certified Professional Hydrologist with 33 years of experience in consulting, teaching, and research focused on site characterization, forensic analysis, contaminant fate and transport modeling, and risk assessment. Skilled as an expert witness and technical advisor in dissecting complex data sets to establish causation and apportionment, optimizing investigations, developing conceptual models, and presenting clear, persuasive findings to stakeholders.









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## EDUCATION & CERTIFICATION

Ph.D., Civil & Environmental Engineering, University of California, Berkeley, 1999
M.S., Civil Engineering, University of California, Berkeley, 1993
B.S., Water Resources, SUNY Oneonta, 1991

Certified Professional Hydrologist (08-HGU-1024), American Institute of Hydrology

## MEMBERSHIPS

International Association of Hydrogeologists
National Ground Water Association
American Bar Association - Section of Environment Energy and Resources
Heterodox Academy (HxA)

## WORK HISTORY

Founder, GroundwaterU.org, 2022 – current
Independent Consultant, 2020 – current
Environmental Consulting Firms (1999 – 2020), URS, Geosyntec, TRC
Adjunct Professor, Contaminant Hydrogeology, New Jersey Institute of Technology, Newark, NJ, 2012, 2018
Adjunct Professor, Environmental Hydrogeology, Montclair State University, Montclair, NJ, 2014
Research Associate, Earth Science Division, Lawrence Berkeley National Laboratory, Berkeley, CA, 1992 – 1999

## ACADEMIC EXPERIENCE

**Adjunct Professor, New Jersey Institute of Technology (NJIT) and Montclair State University**

- Contaminant Hydrogeology, full semester courses (2012, 2014, and 2018)

**Research Associate, Lawrence Berkeley National Laboratory**

- 1992 – 1999
- Hydrogeologic characterization of fractured crystalline bedrock, USDOE and USEPA Research Site, California.
- Groundwater flow modeling of proposed nuclear waste repository, Yucca Mountain, Nevada.

**Instructor, Online Education**

- "Analysis and Visualization of Groundwater Contamination;" Course delivered through live online classes, (18 hours total), October 15-31, 2024.

*"Andrew Cohen has mastered the art of communication using visual tools and graphics to help others understand complex problems. Whether it is PFAS or NAPL, Andrew's grasp and deep understanding of the subsurface behaviors of these contaminants is translated into pictures with visually appealing clarity that almost anyone can understand."*

– **Guy Patrick, GeoEnviroPro Environmental Sciences Training, Vancouver, British Columbia**

## PUBLICATION HIGHLIGHTS

**"EPA's Unprecedented Interim Drinking Water Health Advisories for PFOA and PFOS," 2023**
Co-authored with Joe Cotruvo[1] and Susan Goldhaber. Article describes how the Health Advisory levels are scientifically debatable, and that EPA should not focus on low-risk issues. Link

**"Conceptual and Visual Understanding of Hydraulic Head and Groundwater Flow," 2020**
Co-authored with John A. Cherry[2]. 17,000+ pdf downloads and 76,000+ webbook views as of September, 2025. Available in English, Bahasa Indonesia, Farsi, and Portuguese. Translations in Progress: Bengali, Catalan, French, Italian, Spanish, Turkish, and Vietnamese. Link

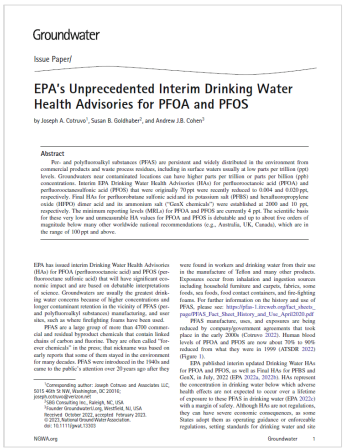
*"Thanks for your important book. I will use the book for teaching."*
**– Sileshi Mamo Fantaye, Assistant Professor, Bahir Dar University**

*"…an insightful primer on groundwater flow…a resource that I recommend to my students at Princeton."*
**– Bob Cleary, Ph.D., Princeton Groundwater, Inc.**

**"Hydrogeologic Characterization of Fractured Rock Formations: A Guide for Groundwater Remediators," 1995**
Authored USDOE/USEPA guidance report, which describes, compares, and provides recommendations for using and integrating different characterization methodologies, including surface and subsurface fracture detection and measurement, well drilling, pumping, injection and tracer tests, geophysical logging, borehole flow logging, seismic imaging techniques, and computer visualization techniques. Download

*"I used this as a regulator in Pennsylvania years back. One of the tools of the trade."*
**– Former regulator, Pennsylvania Department of Environmental Protection**

*"The report remains a valuable reference for environmental agencies and consultants tackling contamination in complex geological settings."*
**– Bob Cleary, Ph.D., Princeton Groundwater, Inc.**


Groundwater

Issue Paper/

EPA's Unprecedented Interim Drinking Water Health Advisories for PFOA and PFOS

by Joseph A. Cotruvo[1], Susan B. Goldhaber[2], and Andrew J.B. Cohen[3]

Abstract

Per- and polyfluoroalkyl substances (PFAS) are persistent and widely distributed in the environment from commercial products and waste process residues, including in surface waters usually at low parts per trillion (ppt) levels. Groundwaters near contaminated locations can have higher parts per trillion or parts per billion (ppb) concentrations. Interim EPA Drinking Water Health Advisories (HAs) for perfluorooctanoic acid (PFOA) and perfluorooctanesulfonic acid (PFOS) that were originally 70 ppt were recently reduced to 0.004 and 0.020 ppt, respectively. Final HAs for perfluorobutane sulfonic acid and its potassium salt (PFBS) and hexafluoropropylene oxide (HFPO) dimer acid and its ammonium salt ("GenX chemicals") were established at 2000 and 10 ppt, respectively. The minimum reporting levels (MRLs) for PFOA and PFOS are currently 4 ppt. The scientific basis for these very low and unmeasurable HA values for PFOA and PFOS is debatable and up to about five orders of magnitude below many other worldwide national recommendations (e.g., Australia, UK, Canada), which are in the range of 100 ppt and above.

EPA has issued interim Drinking Water Health Advisories (HAs) for PFOA (perfluorooctanoic acid) and PFOS (perfluorooctane sulfonic acid) that will have significant economic impact and are based on debatable interpretations of science. Groundwaters are usually the greatest drinking water concerns because of higher concentrations and longer contaminant retention in the vicinity of PFAS (perand polyfluoroalkyl substances) manufacturing, and user sites, such as where firefighting foams have been used.

PFAS are a large group of more than 4700 commercial and residual byproduct chemicals that contain linked chains of carbon and fluorines. They are often called "forever chemicals" in the press; that nickname was based on early reports that some of them stayed in the environment for many decades. PFAS were introduced in the 1940s and came to the public's attention over 20 years ago after they were found in workers and drinking water from their use in the manufacture of Teflon and many other products. Exposures occur from inhalation and ingestion sources including household furniture and carpets, fabrics, some foods, sea foods, food contact containers, and fire-fighting foams. For further information on the history and use of PFAS, please see: https://pfas-1.itrcweb.org/fact_sheets_page/PFAS_Fact_Sheet_History_and_Use_April2020.pdf

PFAS manufacture, uses, and exposures are being reduced by company/government agreements that took place in the early 2000s (Cotruvo 2022). Human blood levels of PFOA and PFOS are now about 70% to 90% reduced from what they were in 1999 (ATSDR 2022) (Figure 1).

EPA published interim updated Drinking Water HAs for PFOA and PFOS, as well as Final HAs for PFBS and GenX, in July, 2022 (EPA 2022a, 2022b). HAs represent the concentration in drinking water below which adverse health effects are not expected to occur over a lifetime of exposure to those PFAS in drinking water (EPA 2022c) with a margin of safety. Although HAs are not regulations, they can have severe economic consequences, as some States adopt them as operating guidance or enforceable regulations, setting standards for drinking water and site

[1]Corresponding author: Joseph Cotruvo and Associates LLC, 1011 40th St NW, Washington, DC 20016; joseph@cotruvo.biz; ORCID 0000-0002-7686-4151.
[2]Consulting Inc., Raleigh, NC, USA
[3]Founder GroundwaterLorg, Westfield, NJ, USA
Received: October 2022; accepted: February 2023.
© 2023, National Ground Water Association.
doi: 10.1111/gwat.13303

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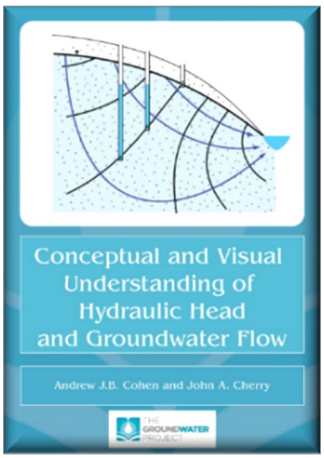
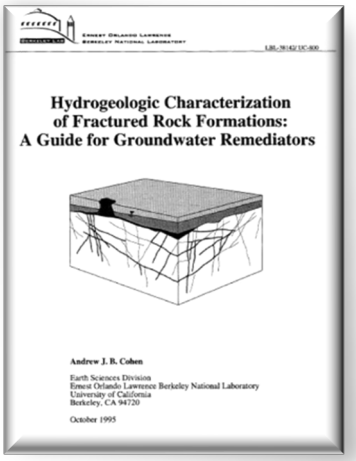
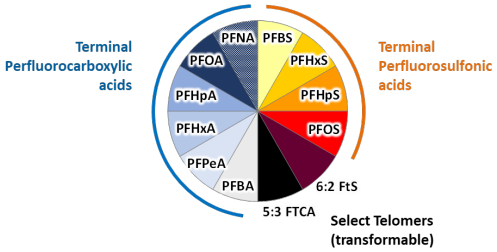


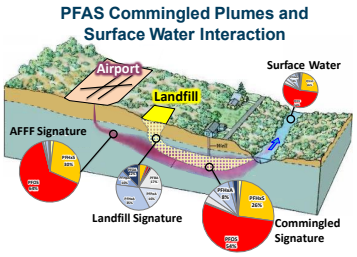




[1] First Director of USEPA's Drinking Water Standards Division and member of WHO Drinking Water Guidelines Committee.
[2] 2020 Stockholm Water Prize Laureate and Professor Emeritus, Waterloo University.

# EXPERIENCE

## PER- AND POLYFLUOROALKYL SUBSTANCES (PFAS)




**Class Action Analysis: PFAS Groundwater Impacts from Metal Plating Facility**
Evaluated historical reports and soil/groundwater data related to PFOA and PFOS contamination due to mist-suppressant use at a metal plating facility. Conducted forensic analysis of contaminant distribution, identifying co-contamination that indicates a portion of drinking water impacts are not exclusively due to the chemical manufacturer's product, and presented a conceptual site model to defense counsel. Findings provide insight into the variability of contamination sources and help demonstrate that the class does not meet the definition required for certification.

**[redacted] Petroleum Refinery – Identify PFAS Sources, Extent, and Fate & Transport Phenomena**
[redacted] Commerce City, Colorado: Evaluated extensive PFAS dataset that includes groundwater, surface water impoundments, wastewater treatment plant influent/effluent, groundwater treatment system influent/effluent, outfalls, and stream and river samples to determine impacts of site discharges to surface water quality. Analysis of PFAS chemical signatures and hydrogeologic details enabled attribution of upstream Air Force base as a partial source of on-site groundwater contamination.

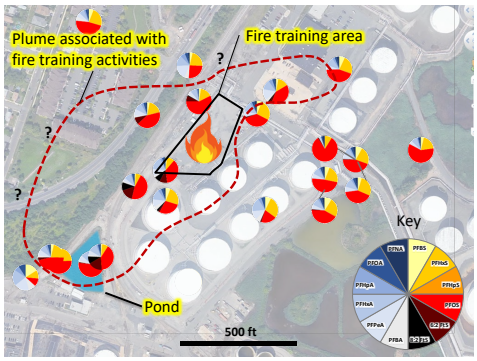



*Figure: PFAS speciation measured in groundwater wells and differentiated plume due to fire training area releases.*

**Air National Guard – Identify PFAS Sources**
Atlantic City International Airport, New Jersey: Evaluated groundwater data, including chemical signatures based on 21 PFAS compounds across shallow, intermediate, and deep aquifer zones. The analysis integrated groundwater flow directions, potential source locations, and chemical compositions from both on-site and off-site sources. Key conclusions highlighted the identification of off-site PFAS sources north of the site and attributed PFAS detections in the intermediate and deep aquifer zones to the Former Fire Training Area. Additionally, the study indicated an off-site plume migrating beneath the site from the northwest, while dismissing the nearby landfill as a significant PFAS source.

**Investigation of PFAS and Hexavalent Chromium Co-Contamination**
Evaluated historical reports and hydrogeologic and chemical data related to PFOA and PFOS contamination of groundwater due to mist-suppressant use at a metal plating facility. Conducted forensic analysis of contaminant distribution, identifying co-contamination (hexavalent chromium) that indicates a portion of drinking water impacts are not exclusively due to PFAS.

**[redacted] Metals Plating Facility – PFAS Plume Differentiation**
Roselle, New Jersey: Evaluated PFAS chemical signatures in on-site and off-site wells, which enabled identification of the origins of different portions of the overall offsite plume footprint.

**PFAS Publication**
- "EPA's Unprecedented Interim Drinking Water Health Advisories for PFOA and PFOS [a critique]," *Groundwater*, 2023. Co-authored with former Director, USEPA Drinking Water Standards Division. Download

**PFAS Presentations**

- Introduction to Groundwater Contamination by PFAS Releases at Airports and Military Bases. Watch video
- PFAS Forensics: View slides
- Occurrence and Migration of AFFF PFAS Firefighting Foam in Surface Water and Groundwater. Watch webinar
- Migration of PFAS in Surface Water. Play animation

## CHLORINATED SOLVENTS AND DNAPL

**Rebuttal of $1.7 Billion Claim**

Evaluated Plaintiff's Expert Report, which estimated cost of groundwater remediation at historical chemical manufacturing facility is $1.7 billion. Identified error in Plaintiff's Expert Report and recalculated the extent and mass of contaminant sources; demonstrated that Plaintiff's claim lacked credibility.

**Identification of Potentially Responsible Party (PRP), Former Multiuse Site**

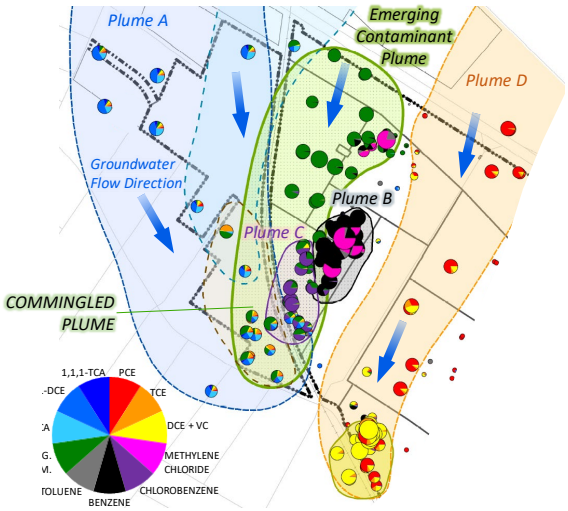
Analyzed historical operations, soil, and groundwater data of a multiple-owner site to determine the Potentially Responsible Party for PCE and TCA contamination in soil and groundwater at a former aeronautical parts manufacturer. Concluded that client was not the RP based on age dating via detections of TCE chemical impurities (1,1,2-trichloroethane) in groundwater and the time and history of client's ownership.

*"Andrew's analysis of soil and groundwater contamination was central to our liability allocation case. He reviewed all data, created clear visuals for counsel and clients, and helped develop a remediation plan accepted by Ohio EPA. His work supported key cost-allocation arguments and contributed to a favorable settlement. I continue to recommend him in my post-retirement advisory role."*

**– Wray Blattner,** [redacted]

**Identification of off-Site PRPs, Former Pharmaceutical Plant**

Investigation design and analysis of hydrogeologic data at complex site enabled identification of additional PRPs responsible for groundwater plumes beneath and downgradient of client's 120-acre manufacturing plant. Investigation findings provide a basis for plume apportionment and litigation strategy. Prepared a comprehensive Conceptual Site Model report and detailed expert rebuttal challenging the Plaintiff's expert report.




*Groundwater plume map based on chemical signatures of groundwater samples, detailed hydrogeologic characterization of complex fractured rock aquifer, chemical fate and transport analysis, and review of historical on-Site and off-site operations. Plume A and Plume D originate from sites located north and west of the client's property. Emerging contaminant=1,4-dioxane.*

[redacted] – [redacted] **Technical Lead**

[redacted] Technical Lead (as consultant; 2006-2012) – Site investigations and remedial strategy at 1,450-acre site. Multiple projects, including investigation planning and analysis of site-wide data to identify sources, nature and extent, fate and transport, and risks associated with soil, groundwater, surface water, and sediment contamination. Preparation of investigation and remediation-related reports. Frequent presentations to NJDEP, USEPA, and [redacted] Science Advisory Board. In concert with client team, developed short- and long-term remediation strategies.



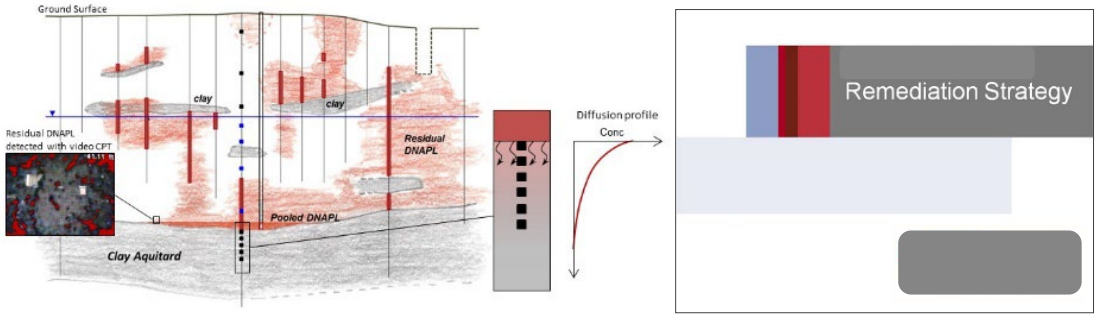
*Picture: Aerial view of a portion of [redacted] in Deepwater, New Jersey. Play video flyover. Figure below: cross section of residual DNAPL distribution based on soil core observations and borehole camera logging (revealing NAPL globules in soil), and conceptual aquitard diffusion profile.*

*"I first had the pleasure of meeting Andrew when he presented remedial investigation findings to the Remediation Science Advisory Board for a large chemical plant. He impressed me with his ability to identify important details of contamination at the site, as well as build coherent conceptual models of groundwater and sediment contamination based on sound analysis and integration of multiple datasets. Andrew was able to describe contaminant behavior at multiple scales, while at the same time focusing on the key issues and conveying the big picture. Furthermore, as Andrew continued to educate the SAB at subsequent meetings, I was always impressed by his outstanding analytical and communication skills. He is sincere and very enjoyable to work with, and it is with overwhelming support that I recommend Andrew for developing sustainable approaches and solutions in the site remediation process."*

**– Lisa Axe, PhD. Professor New Jersey Institute of Technology, Department of Chemical Engineering**

*"In my years of working with Andrew, he has proven to be a valuable and reliable team member. He developed unique approaches for data analysis which have supported conclusions used in making strategic decisions. His work is always thorough and clearly presented, and his participation enabled us to proceed with confidence on a wide range of technical projects"*

**– Ed Lutz, PE, [redacted] Remediation Project Director**



**[redacted] – Site Investigation**

Contaminant source, and transport and fate assessment; identification of 9 on-Site contaminant sources and plumes, and 8 sources and off-site plumes, which migrated beneath client's site. See Fractured Rock Hydrogeology section for further description.

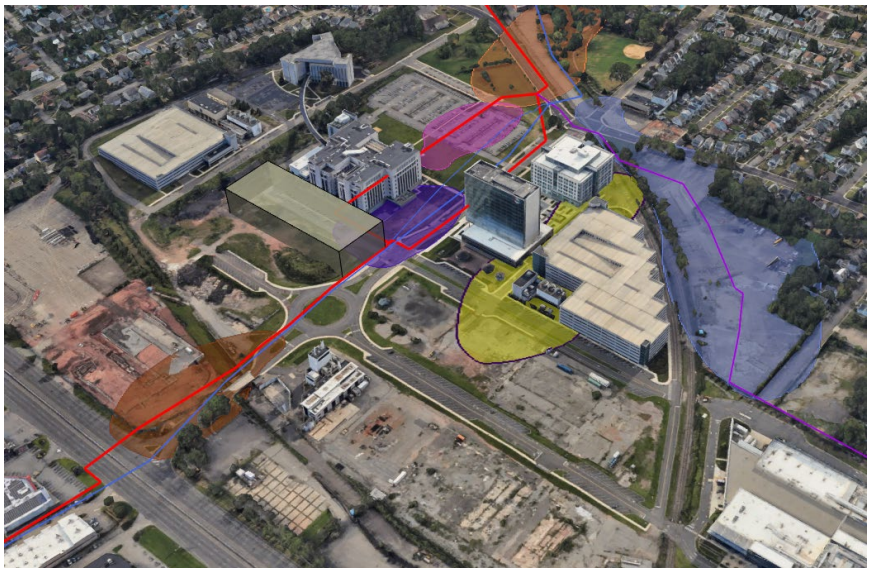


*Figure: Birds-eye view of the site showing 6 of the 17 groundwater plumes.*

**[redacted] – Hazardous Waste Landfill Investigation and Treatability Study, [redacted]**

Deepwater, New Jersey: Assessed DNAPL distribution in landfill and managed treatability study that included bench tests of enhanced surfactant recovery.

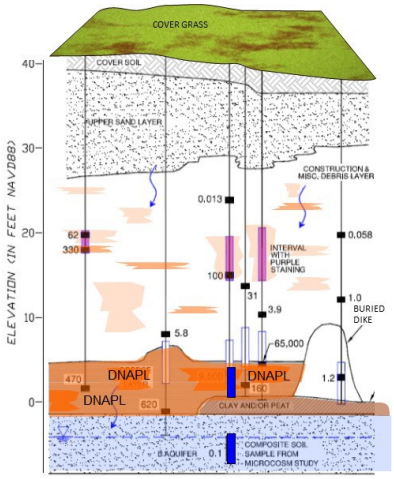
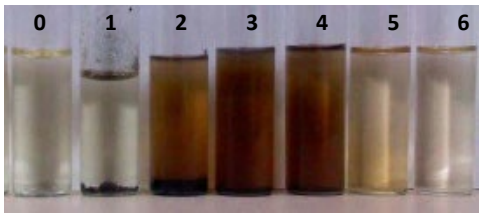
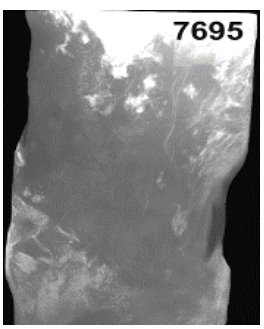


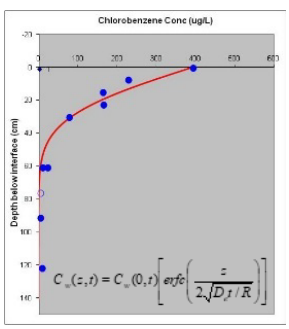

*Figure: Cross section through a portion of the landfill showing water infiltration through hazardous waste, including zones of DNAPL. Picture: Effluent samples from surfactant flushing bench-scale test of groundwater and DNAPL sample. Injection of surfactant results in mobilization (1) and then complete mobilization and solubilization (2-6).*




**[redacted] – Aquitard Evaluation, [redacted]**

Deepwater, New Jersey: Identified lines of evidence that a water supply aquifer is not significantly impacted by a shallow, contaminated aquifer. Study included X-ray analysis of aquitard clay samples to identify potential secondary pathways for DNAPL migration (such as root holes and burrows), and measurement and matrix diffusion analysis of chemical concentration profiles in the aquitard.




*Figures: X-ray of clay sample showing mineralized root zones; 1-D diffusion model fit to VOC measurements.* More detail here.

**NYDEC – Site Characterization, Brillo Landfill Superfund Site**
Victory, New York: Analysis of site chemical and historical data to identify nature and extent of soil and groundwater contamination due to buried drums of paint sludge.

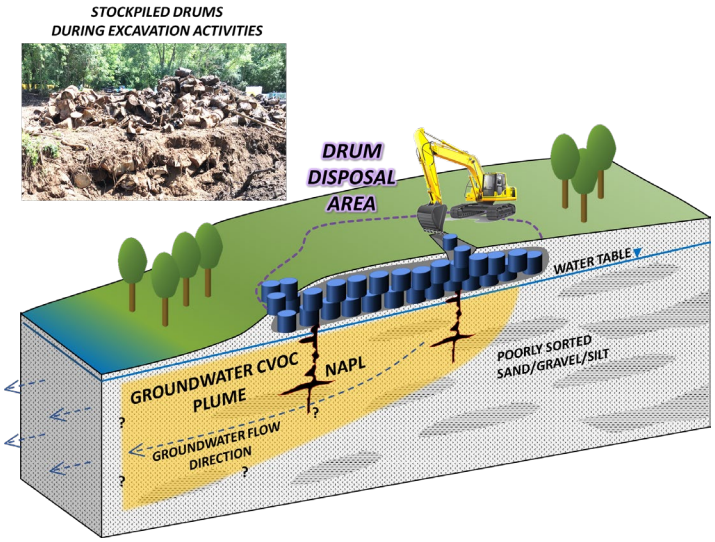



*Figure: Conceptual model of groundwater contamination by buried, leaking drums containing DNAPL. Note: CVOC=chlorinated volatile organic compound, such as PCE and TCE.*

**Former [redacted] Site**
Tenafly, New Jersey: Analysis of historical data and conceptual site model (CSM) development to aid stakeholder communication about site conditions, remedial actions, and ecological and human health risks associated with PCE, TCE, vinyl chloride, and 1,4-dioxane.

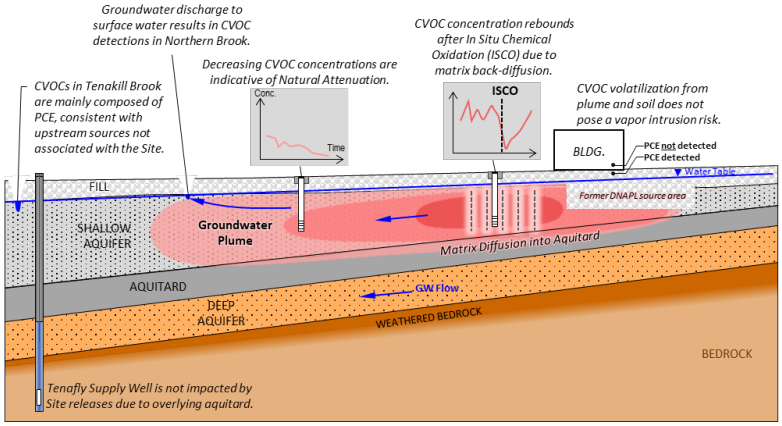
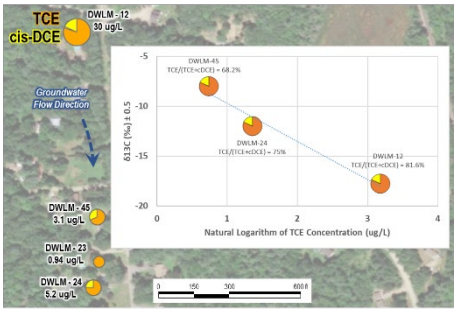



*Figure: Conceptual Site Model cross section illustrating the sources, transport, fate, and risks due to historical site releases.*

**[redacted] – Groundwater Plume Degradation Analysis Using CSIA**



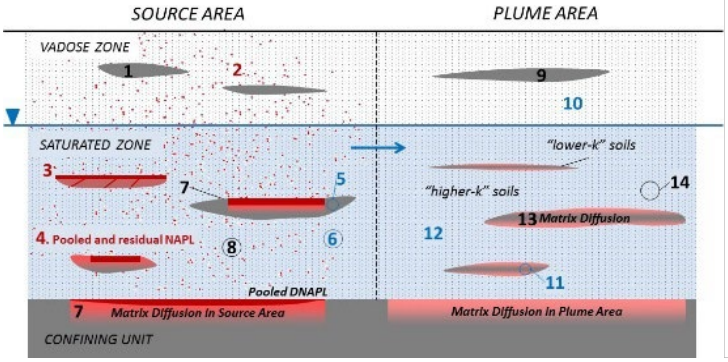

[redacted], Leeds, Maine: Used Compound Specific Isotope Analysis (CSIA) to provide additional line of evidence that a groundwater plume is degrading and that the VOCs detected in private wells originate from an upgradient landfill.

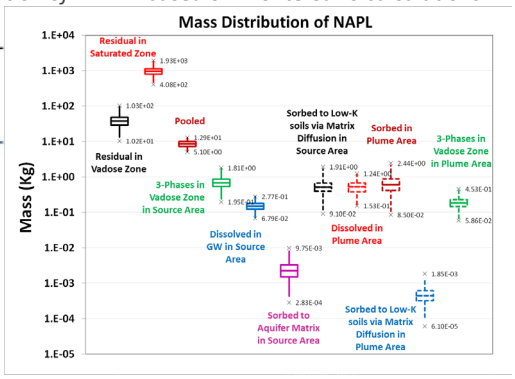
*Figure: VOC concentrations and speciation, and associated Carbon-13 isotope measurements. Data is indicative of degradation along groundwater flow path.*

**DNAPL Assessment Toolbox**

Developed Excel-based VBA program used to assess if NAPL is present in the subsurface based on user-defined soil, groundwater, or soil gas concentrations. Program also performs estimates of NAPL mass distribution (free-phase, dissolved, vapor, and sorbed) and considers the uncertainty of chemical and field properties via Monte Carlo calculations.

*Figures: Conceptual DNAPL distribution in subsurface and mass distribution of DNAPL based on Monte Carlo calculations.*



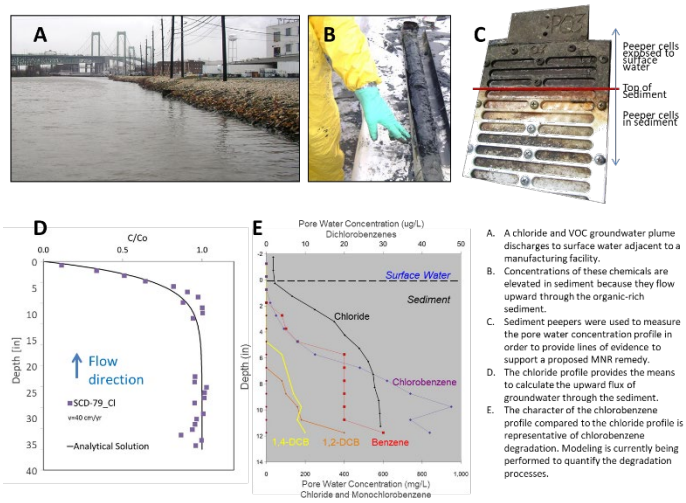



## SEDIMENT & SURFACE WATER INVESTIGATIONS AND REMEDIATION

**Position Brief: Estimated Allocation Share for Contaminated Sediment, Passaic River**
Prepared a Position Brief that provides estimates of the potential contribution of contaminants of concern (COCs) to the Passaic River sediment from a former manufacturing site. Calculations considered evaluation of historical data to estimate COC mass flux due to sewerage discharges. Evaluation shows that client's potential contribution is de minimis. Also identified mathematical errors in Cost Allocator's protocol.

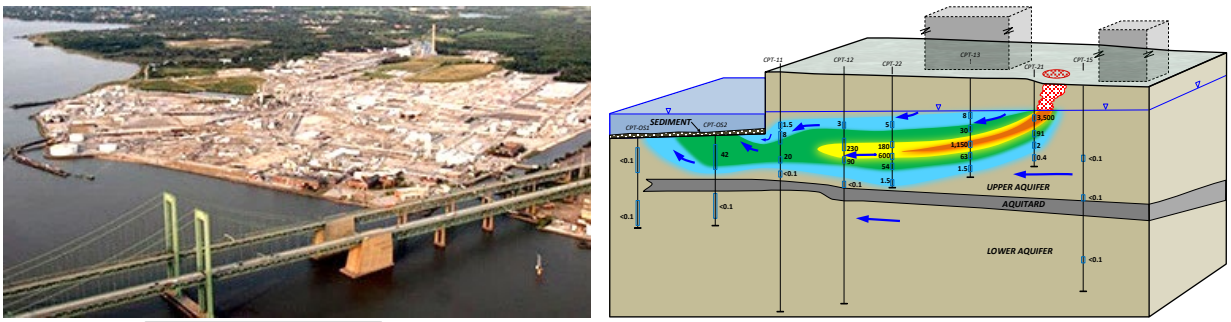
**[redacted] – Contaminated Sediment Assessment & Remediation, [redacted]**

[redacted] Deepwater, New Jersey: Investigation, design, Conceptual Site Model development, and remedial selection for sediment contaminated with VOCs and aniline. Project included high-resolution profiling of sediment pore water concentrations, sediment pore water transport modeling, bench-scale tests to assess efficacy of a Geosynthetic Bentonite Liner cap, and design of a sheet pile barrier to prevent groundwater plume discharge to surface water. Fate and transport modeling in concert with measured sediment pore water profile data to quantify groundwater-sediment-surface water interaction and degradation of chlorobenzene in sediment.
Capping poster
Rutgers Presentation




**[redacted] – Groundwater Plume Discharge and Sediment Investigation, Delaware River**

[redacted] Assessed the distribution, sources, and transport mechanisms of chlorofluorocarbons (e.g., Freon), chlorinated solvents, and gasoline antiknock chemicals in Delaware River (river sediment and surface water), and in an aquifer beneath the Delaware River. Investigation performed over 2.5 miles of coastline included dual frequency echo-sounder for bathymetric mapping, side-scan sonar to map sediment types, vibratory coring to map lithology of sediment and depth to an underlying aquifer, and push-probe and grab confirmatory sampling of sediment. Temporary wells were advanced beneath the riverbed to collect groundwater samples. Identified aquifer subcrop and DNAPL beneath the river, and calculated plume mass flux discharge to the river.

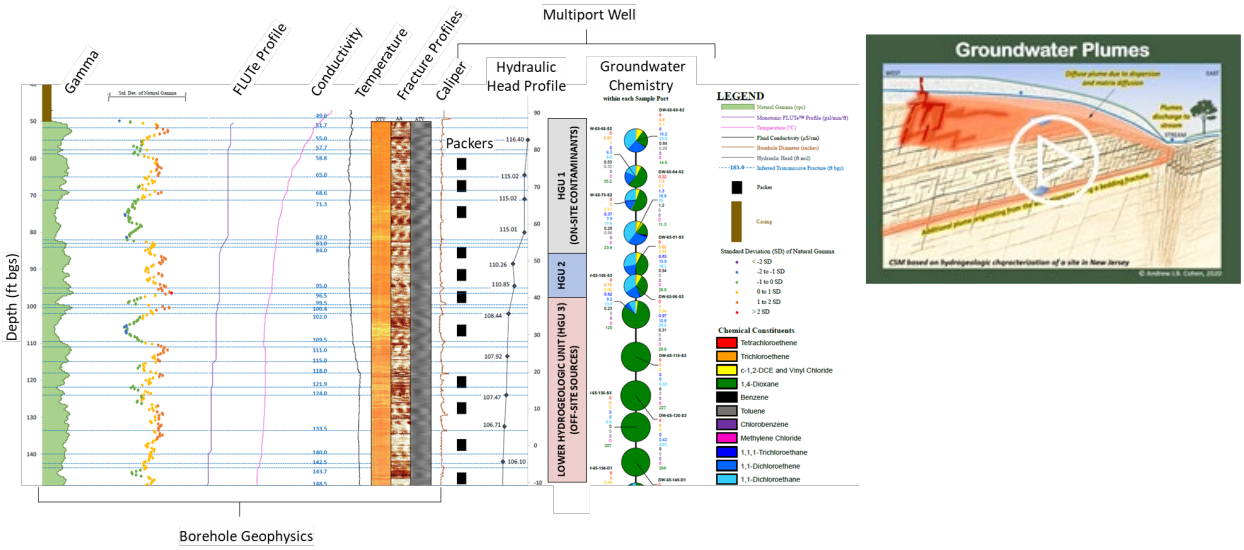



*Aerial view of [redacted] along the Delaware River, and conceptual rendition of groundwater plume discharge to surface water.*

## FRACTURED ROCK HYDROGEOLOGY AND BOREHOLE GEOPHYSICS

**[redacted] – Site Characterization**

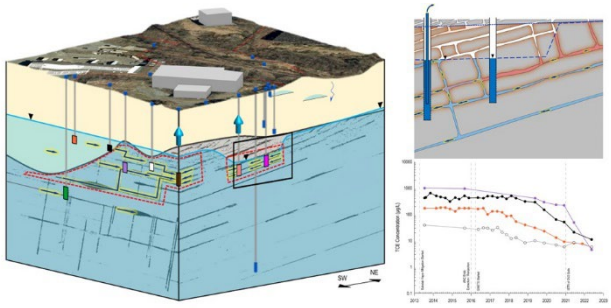
[redacted] Pharmaceutical manufacturing; Nutley, New Jersey: High-resolution site characterization of contaminated groundwater in fractured and faulted sandstone (Passaic Formation). Integration of large dataset including chemical and hydraulic data from 1,100 wells, 19,800 soil samples from 9,000+ locations, multiport wells (19 to 24 ports/well), surface and borehole geophysics (110 borings), rock coring, and integration of on-site and off-site historical records. Bedrock aquifer is contaminated with DNAPL, VOCs, and 1,4-dioxane. The resulting conceptual site model includes multiple dipping hydrogeologic units (HGUs) offset by faults. Investigation results supported remedial design selection.




*Figures: Left) Borehole geophysical logs, permeable fractures, multiport sampling intervals, groundwater chemical concentration profile, and Hydrogeologic Geologic Units (HGUs); Right) fate & transport illustration. Play animation.*

**[redacted] – Site Characterization and Reduced Long-Term Remediation Costs**

[redacted] [redacted], New Jersey: Analyzed hydrogeologic data and TCE concentration data to characterize fracture zones in fractured dolostone aquifer and the factors affecting pump and treat system performance. The revised Conceptual Site Model provided the basis for reducing extraction rates and remedial costs.



*Figures: Hydrogeologic structure, fate, and transport illustration, and TCE concentration trends indicative of contaminant source removal.*

**USDOE – Hydrogeologic Characterization Research Site**

Raymond, California: project included testing and development of traditional and new tools to characterize groundwater flow in fractured crystalline rock, including multi-well pumping tests, downhole flow measurement technologies, downhole fracture detection and borehole geophysical and cross-hole seismic data, and fracture distribution and geometry data. Constructed numerical model to simulate groundwater flow, including calibration to pumping tests. Developed analytical solution of transient crossflow between aquifers that can occur because wells connect different fracture zones.

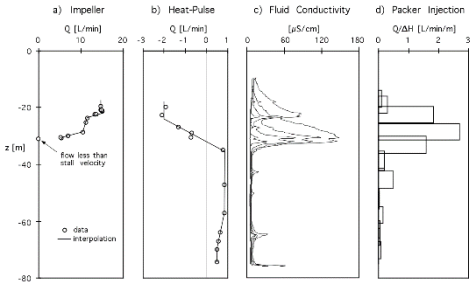



*Figure: Various borehole flow logging techniques used to identify permeable fractures.* Download Report

## MODELING

**[redacted] – Groundwater Plume Modeling for Remedial Design**

[redacted] JFK International Airport, Jamaica, New York: Simulated chemical retardation and biodegradation of benzene and MTBE plume using MODFLOW, MODPATH, and MT3D. Model used as a design tool to define an optimal system layout at JFK International Airport. Created graphical interface via Excel VBA programming to query a remediation performance database and visualize multi-well extraction system performance.

**USDOE – Groundwater Flow Modeling, Proposed Nuclear Waste Repository**

U.S. Department of Energy: Used the computer code TOUGH2 (Berkeley National Lab) to construct 3-D groundwater model of proposed nuclear waste repository at Yucca Mountain, Nevada. Model accurately represents faulted strata of variable thicknesses, orientations, and displacement along strike. Also developed a post-processor for particle tracking and an analytical solution of transient 3-D gas flow in the vadose zone.

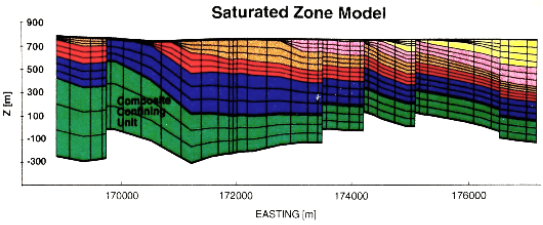



*Figure: Cross section through 3D groundwater model showing faulted hydrogeologic units. View example simulation result.*

**USEPA – 3D Geologic Modeling**

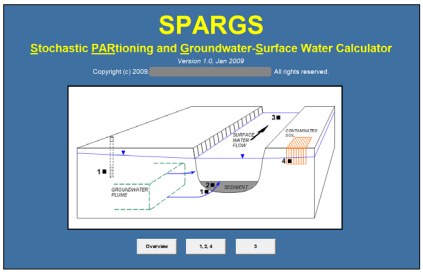
Used Advanced Visual Systems (AVS) software to create a 3-D geologic model of a research sites in Raymond, California. The model aided interpretation of borehole geophysical logging data.

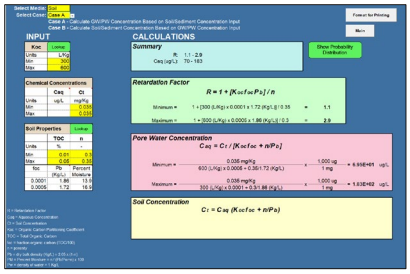


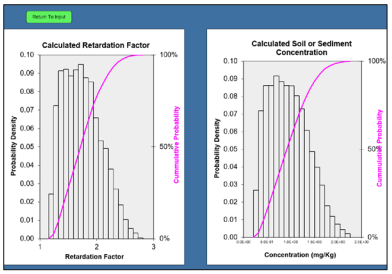
*Figure: Oblique view of translucent land surface (with topographic elevation contours. A known, dipping fracture in a borehole is extrapolated (yellow disk) to estimate outcrop location. See Chapter 12 here.*

**[redacted] – Groundwater-Sediment-Surface Water Partitioning Tool**

[redacted] Developed SPARGS (Stochastic Partitioning Groundwater-Surface water calculator), used to quantify groundwater plume discharge and subsequent surface water dilution, chemical partitioning in sediment, and assessment of residual NAPL in soil samples. The calculator is a spreadsheet-based program constructed as a stand-alone software application, and has an easy user interface, Monte Carlo analysis, and lookup tables.



## OTHER PROJECTS

**[redacted] – Groundwater Remedial Action, [redacted] Oil Refinery, New Jersey**

[redacted] Responsible for remedial action selection for ammonia-contaminated groundwater. Identified the mechanisms and evidence of natural attenuation. Proposed MNA approach accepted by NJDEP.

**[redacted] – Hexavalent Chromium Superfund Site**




Franklin Square, New York; Characterized source and extent of PCE and hexavalent chromium plume that originated at a former metal plating facility. Conducted nanoscale zero-valent iron (nZVI) remediation pilot test. Frequent interaction with USEPA Region II and US Army Corps of Engineers.

**[redacted] – Public Relations Support Video**

[redacted] Created video to convey clients' commitment to environmental cleanup. Video includes animation of groundwater remediation.




Play

*"Andrew is an experienced, thorough, analytical, and creative professional. We worked with him on a project involving the cleanup of contaminated groundwater. We needed someone to communicate highly complex concepts and data to non-scientists. We were extremely impressed with his work ethic and results. I highly recommend Andrew. He is one of those reliable consultants you use repeatedly throughout your career."*

**–Ed Urquhart, CEO, [redacted], Ohio**

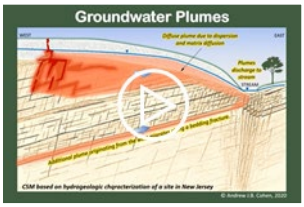
**Various**

Analyzed chemical and hydrogeologic data, developed Conceptual Site Models, prepared Remedial Investigation Work Plans, Remedial Action Investigation Reports, Remedial Action Progress Reports, Remedial Action Technology Selection Reports, and Classification Exception Area Reports. Other clients included, for example, [redacted] (analysis of pumping tests), [redacted] (site characterization; conceptual model), [redacted] (groundwater sampling and reporting), New Jersey Turnpike Authority (groundwater remediation), [redacted] (groundwater monitoring and reporting), Lawrence Berkeley National Laboratory (in-situ remediation system design), [redacted] (capture zone analysis), and [redacted] (mine dewatering calculations).

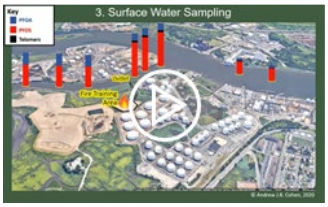
## TECHNICAL ILLUSTRATION & ANIMATION

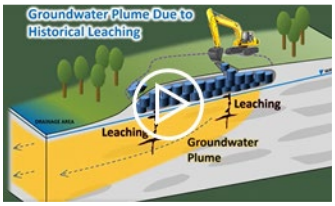
Skilled at creating illustrations and animations to help convey investigation findings, Conceptual Site Models, and complex concepts to all stakeholders and for litigation support. Link

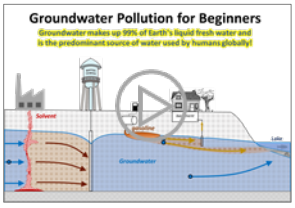
Example animations of various contaminant transport & fate phenomena for client projects and public education:














*"Thanks Andrew! A great tool – a picture is worth a thousand words."*
**– Wray Blattner, Attorney at** [redacted]

*"Excellent presentation for the general public."*
**– Dan Brown, Brown Law Office**

*"This would be great for my environmental law school class."*
**– Larry Schnapf, Environmental Lawyer; Professor of Environmental Law and Real Estate Transactions**

*"Congratulations, Andrew, for this didactic video. It should be made available to high schools systematically."*
**– Jean Fried, Project Scientist, University of California, Irvine**

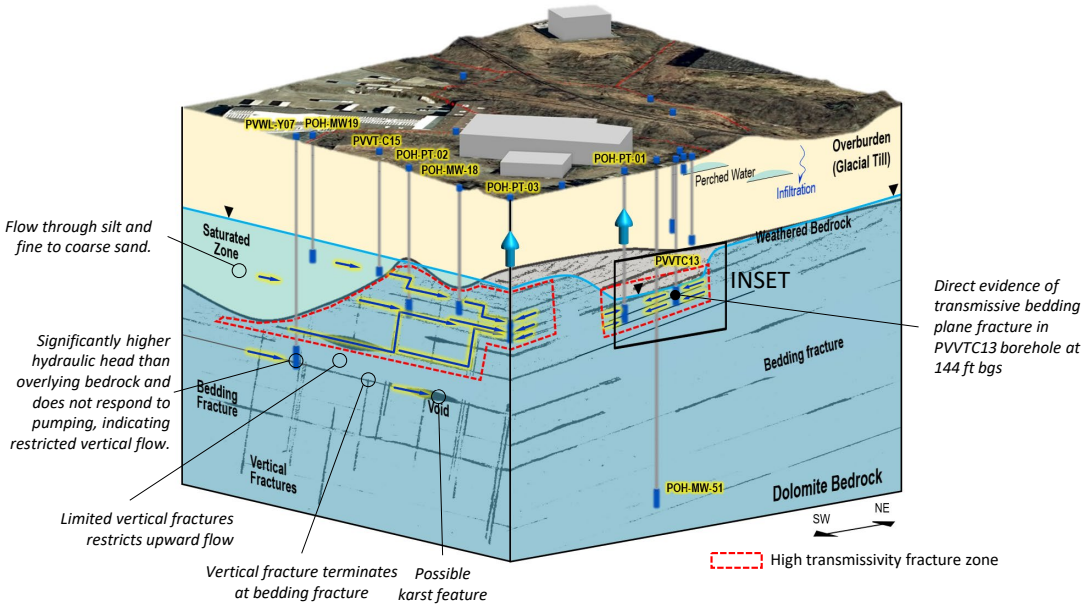
*"Brilliant Andrew….elegantly simple."*
**– Karl Reimer, Environmental Remediation Specialist, Canadian Nuclear Laboratories**

*"Perfect example of how to approach stakeholders, simple and consistent."*
**– Nicolas Franco, Senior Environmental Scientist, Riley Consultants, New Zealand**

*"This is a great platform for providing understandable info to the general public and those outside of the field. Great work!"*
**– Louis Volpe, Environmental Science Specialist at Montana Dept Environmental Quality**

*"This is fantastic! It makes it really clear how contamination can travel up as well as down – something which can be challenge for the novice to grasp. I can see uses for this outside the formal education setting (e.g., a client who doesn't quite understand the problem they have). I for one will be checking out the other videos – thank you."*
**– Phil Child, Senior Consultant; Geotechnical Information Management; Seequent, the Bentley Systems Subsurface Company**

**Example illustrations presented throughout this CV, including data-based Conceptual Site Models.**



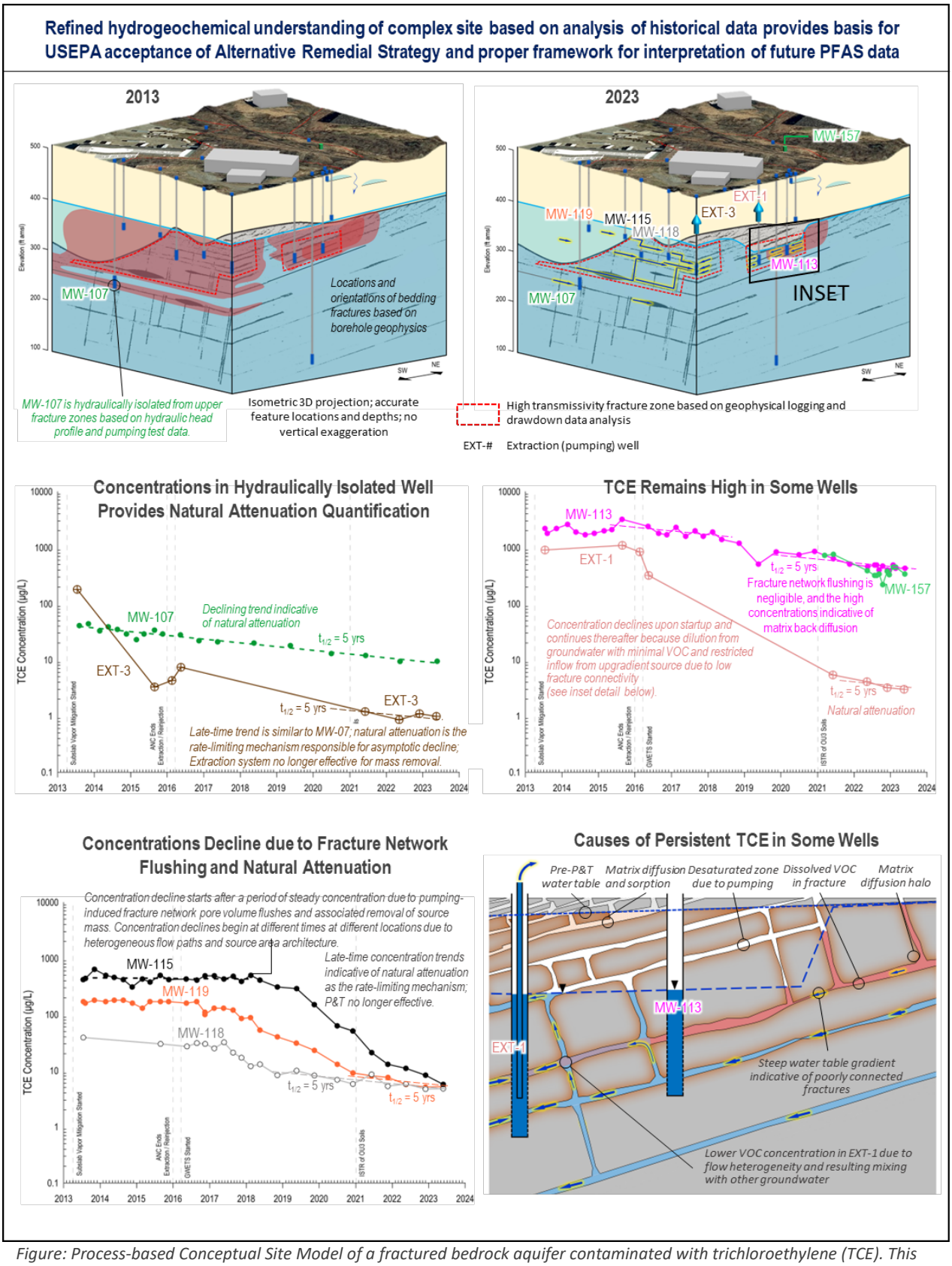
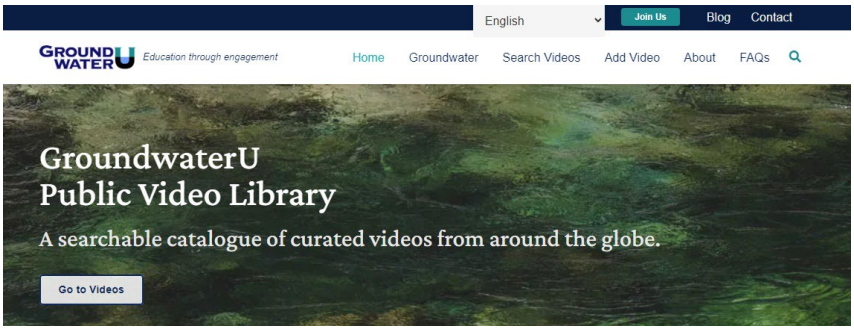



*Figure: Process-based Conceptual Site Model of a fractured bedrock aquifer contaminated with trichloroethylene (TCE). This CSM was developed by reexamination of historical data, which is available at many legacy sites.*

## NON-PROFIT INITIATIVES

**GroundwaterU.org**
Founder of GroundwaterU.org, a unique online library of curated educational videos related to all things groundwater – from science and engineering to law and policy – and for all interest and learning levels. It bridges the knowledge gap between groundwater experts and the millions of people who need to sustain access to clean water. GroundwaterU.org is a non-profit initiative developed by GroundwaterU, LLC.
Watch overview




**The Groundwater Project**
Co-author (with John A. Cherry[3]), *Conceptual and Visual Understanding of Hydraulic Head and Groundwater Flow*, 2020, ISBN: 978-1-7770541-6-8. 16,000+ pdf downloads and 50,000+ webbook views as of May 1, 2025. Available from The Groundwater Project website (gw-project.org).
Download

*"Thanks for your important book. I will use the book for teaching."*
**– Sileshi Mamo Fantaye, Assistant Professor, Bahir Dar University**

*"…an insightful primer on groundwater flow—a resource that I recommend to my students at Princeton."*
**– Bob Cleary, Ph.D., Princeton Groundwater, Inc.**

**USAID Farmer to Farmer Program**
Hydrogeologic Exploration to Benefit Farmers in Morocco.
Watch 2024 webinar




High Atlas Foundation
مؤسسة الأطلس الكبير
HAF
USAID
FROM THE AMERICAN PEOPLE

*"Dr. Cohen was an excellent collaborator who assisted in our mission to assess and make decisions regarding sustainable water management in remote regions of Morocco. His analysis was integrative of all sorts of data - physical, geological, satellite, historical, sociological - and his recommendations weighed probabilities, economic factors, and prospective returns. He is immediately responsive, and his follow-up is entirely reliable. He is a totally professional environmental scientist."*
**–Yossef Ben-Meir, President of the High Atlas Foundation, Morocco**

**Educational Webinars**
Link.

[3] 2020 Stockholm Water Prize Laureate and Professor Emeritus, Waterloo University.

# PUBLICATIONS AND PRESENTATIONS

## BOOK

Cohen, Andrew J.B., and John A. Cherry[4], **Conceptual and Visual Understanding of Hydraulic Head and Groundwater Flow**, 2020, The Groundwater Project. [17,000+ book downloads as of September 2025]

## GUIDANCE REPORT

- **Hydrogeologic Characterization of Fractured Rock Formations: A Guide for Groundwater Remediators**, Sponsored by US Department of Energy and US Environmental Protection Agency, Washington, DC, Oct 1995, 145 pp. https://www.osti.gov/servlets/purl/219408

## UNIVERSITY THESES

- Cohen, A.J.B., 1999. Three-dimensional numerical modeling of the influence of faults on groundwater flow at Yucca Mountain, Nevada, 148 pp.
- Cohen, A.J.B., Hydrogeologic Characterization of a Fractured Granitic Rock Aquifer, Raymond, California, 97 pp.

## PROFESSIONAL CONFERENCE PRESENTATIONS

- **Introduction to GroundwaterU – A Public Video Library for Groundwater Education**, International Association of Hydrogeologists Congress, Davos, Switzerland, September 12, 2024.
- **Introduction to GroundwaterU – A Public Video Library for Groundwater Education**, Sustainable Development Goals Conference, Paris, France, May 18, 2022.
- **Effects of Variable Analytical Parameter Suite on Identification of PFAS Sources to Surface Water & Groundwater**, Northeast Conference on the Science of PFAS: Public Health & the Environment, Framingham, MA, December 1, 2020.
- **PFAS Forensics: Chemical Signatures in Surface Water and Groundwater**, Emerging Contaminants Program Meeting, Environmental Business Council of New England, May 2, 2019.
- **Comparison of Techniques for Pore Water Monitoring of VOCs**, (with E. Lutz, S. Norcross, and K. West), Eighth International Conference on Remediation of Chlorinated and Recalcitrant Compounds, Monterey, California, May 21-24, 2012.
- **Comparison of Techniques for Pore Water Monitoring and Biodegradation Assessment in Freshwater Sediments**, (with E. Lutz, S. Norcross, and K. West), Sediment Management Work Group 2012 Spring Sponsor Forum, Newark, New Jersey, May 16-17, 2012.
- **Engineering Test Evaluation for Capping of Contaminated Sediments in Salem Canal, [redacted], New Jersey, USA** (with H. Huls, T.A. Ei, and D. Hwang), Fifth International Conference on Remediation of Contaminated Sediments, Jacksonville, Florida, February 2-5, 2009. https://www.slideshare.net/AndrewJBCohen1/cs-poster-final-020109.pdf.
- **Quantitative Evaluation of Chlorobenzene Transport between Sediment and Groundwater** (with K. West), 4th International Conference on Remediation of Contaminated Sediments, Savannah, GA, January 22-25, 2007.
- **Sub-Site-Scale Saturated Zone Model for Yucca Mountain** (with C. M. Oldenburg, A. M. Simmons, A. K. Mishra, and J. Hinds), International High-Level Waste Management Conference and Exposition, Las Vegas, NV, May 11-14, 1998.
- **Effects of Faulted Stratigraphy on Saturated Zone Flow beneath Yucca Mountain** (with C.M. Oldenburg), Field Testing and Associated Modeling of Potential High-Level Nuclear Waste Geologic Disposal Sites (FTAM) conference, Berkeley, CA, December 15-16, 1997. https://tough.lbl.gov/assets/files/02/documentation/proceedings/1998-CohenOldenburg.pdf
- **Reactive Transport Studies at the Raymond Field Site** (with B. Freifeld, K. Karasaki, and R. Solbau), Sixth Annual International Conference on High Level Radioactive Waste Management, Las Vegas, NV, April 30-May 5, 1995.
- **Integrated Hydrogeologic Characterization of a Fractured Granitic Rock Formation** (with K. Karasaki and B. Freifeld), American Geophysical Union Fall Meeting, San Francisco, CA, December 5-9, 1994.

[4] 2020 Stockholm Water Prize Laureate and Professor Emeritus, Waterloo University.

- **Site Characterization of Groundwater Flow and Transport in Fractured Rock Systems for Improvement of Pump-and-Treat Remediation**, Robert S. Kerr Environmental Research Laboratory Ground-Water Seminar, Oklahoma City, OK, June 1-3, 1994.
- **Hydrologic Imaging of Fractured Rock** (with K. Karasaki, B. Freifeld, and P. Cook), XVIII International Symposium on the Scientific Basis for Nuclear Waste Management, Kyoto, Japan, October 23-27, 1994; *Lawrence Berkeley National Laboratory Report, LBL-36012.*
- **Characterizing a Fractured Granitic Rock Aquifer**, Geotechnical Society Meeting Seminar, University of California, Berkeley, CA, May 4, 1994.
- **Inferred Hydrogeologic Structure of a Fractured Rock Aquifer From Well Log and Well Test Analysis**, 5th International Symposium on Geophysics for Minerals, Geotechnical, and Environmental Applications, Tulsa, OK, Oct 24-28, 1993.
- **Effect of Boreholes on the Nature of Flow in Fractured Crystalline Formations** (with K. Karasaki), American Geophysical Union Fall Meeting, San Francisco, CA, Dec 11-15, 1995.

## INVITED PRESENTATIONS

- **PFAS Fingerprinting: Patterns that Persuade, Pitfalls that Mislead; Why Groundwater Flow Analysis and Plume Mapping Remain the Gold Standard,** GeoEnviroPro Webinar, December 3, 2025 (upcoming).
- **"Visualization of Groundwater Contamination**, University of New Mexico, Dept. of Earth and Planetary Sciences, September 10, 2025.
- **Hydrogeologic Explorations to Benefit Farmers in the Atlas Mountains, Morocco**, GeoEnviroPro Webinar, January 31, 2024. https://groundwateru.org/hydrogeologic-explorations-to-benefit-farmers-in-the-atlas-mountains-morocco/
- **USEPA Guidance on Groundwater Contaminated by PFAS is Technically Unsound**, GeoEnviroPro Webinar, February 1, 2023. https://youtu.be/TDLb_fc9tR0
- **Introduction to GroundwaterU: An Online Library of Groundwater Educational Videos**, Groundwater Resources Association of California, May 25, 2022. https://youtu.be/8xlOIlKPgDg
- **Visual Understanding of Groundwater Contamination**, New Jersey Licensed Site Remediation Professionals Association (LSRPA) Aspiring Professionals Series, March 24, 2022.
- **Introduction to Groundwater Contamination**, Geosystems Weekly Seminar, University of California, Berkeley, September 8, 2021.
- **Occurrence and Migration of PFAS Firefighting Foam in Surface Water and Groundwater**, GeoEnviroPro Educational Series, February 17, 2021. https://youtu.be/SC5dGla70BQ.
- **Visual Understanding of Groundwater Contamination**, Hugo Neu Corporation Sustainability Seminar Series, Stevens Institute of Technology, February 16, 2021 (https://youtu.be/4oHW_jBM_uM).
- **Introduction to "Conceptual and Visual Understanding of Hydraulic Head and Groundwater Flow,"** GeoEnviroPro Webinar, September 16, 2020.
- **PFAS Forensics: Chemical Signatures in Surface Water and Groundwater**, [redacted] Technology Forum Meeting, July 31, 2019.
- **In Situ Measurement of Seepage Velocity and Chlorobenzene Degradation Rates in Freshwater Sediment**, Rutgers University Geotechnical Seminar, Sept 1, 2015. https://www.slideshare.net/AndrewJBCohen/chl-sediment-project-rutgers-presentation-52383456.
- **Example Conceptual Site Models of** [redacted] (with E. Lutz, S. Norcross, and G. Wealthall), 26th Annual University Consortium for Field - Focused Groundwater Meeting, Guelph, Ontario, June 2014.
- **Calculated Organic Carbon Partitioning Coefficient (Koc) in Sediment at** [redacted], [redacted] Technology Forum Meeting, September 16, 2013
- **Field Investigation of Aquitard Integrity and Plume Arrival Time Analysis** (with T. Ei, N. Grosso, S. Norcross, and K. West), 22nd Annual University Consortium for Field - Focused Groundwater Meeting, Guelph, Ontario, May 19-21, 2010. https://www.slideshare.net/AndrewJBCohen1/draftdeaquitardintegrityanalysisreportoct2010pdf.
- **Groundwater Plume Discharge Through Canal Sediment and the Proposed Groundwater and Sediment Remedial Actions**, 20th Annual Univ. Consortium for Field - Focused Groundwater Meeting, Orangeville, ON, May 6-8, 2008.
- **Characterizing a Fractured Granitic Rock Aquifer**, **Geotechnical** Society Meeting Seminar, University of California, Berkeley, CA., May 4, 1994.
- **Site Characterization of Groundwater Flow and Transport in Fractured Rock Systems for Improvement of Pump-and-Treat Remediation**, Robert S. Kerr Environmental Research Laboratory Ground-Water Seminar, Oklahoma City, OK, June 1-3, 1994.

- **Inferred Hydrogeologic Structure of a Fractured Rock Aquifer from Well Log and Well Test Analysis**, 5th International Symposium on Geophysics for Minerals, Geotechnical, and Environmental Applications, Tulsa, OK, October 24-28, 1993.

## SCIENCE ADVISORY BOARD PRESENTATIONS

In my role as the Technical Lead for Environmental Investigations at [redacted], I presented findings to [redacted] Science Advisory Board (SAB), which provided peer review of the data collection methods, data analysis, and conclusions associated with numerous investigations and remediation activities. The SAB was comprised of Dr. John Cherry, Professor, University of Waterloo; Dr. Lisa Axe, Professor, New Jersey Institute of Technology; Dr. Donna Fennell, Professor, Rutgers University; Dr. David Sabatini, Professor, University of Oklahoma; Dr. Jim Spain, Professor, Georgia Institute of Technology.

- **Salem Canal Sediment Biodegradation Study** (with S. Kota, and D. Hwang), [redacted] Science Advisory Board meeting, Wilmington, DE, March 30, 2010.
- **Freon and Fluoroproducts Contamination of Groundwater: Investigation and Conceptual Site Model** (with P. Chen, and S. Norcross), [redacted] Science Advisory Board meeting, Wilmington, DE, July 9, 2009.
- **Delaware River Investigation Findings – Groundwater to Surface Water Interaction** (with S. Norcross and K. West), [redacted] Science Advisory Board meeting, Wilmington, DE, October 1, 2008.
- **Protection of Drinking Water Aquifer Assessment, [redacted] Site** (with S. Norcross and K. West), [redacted] Science Advisory Board meeting, Wilmington, DE, September 30, 2008.
- **Dense Non-Aqueous Phase Liquid (DNAPL) Architecture, Source Prioritization Modeling, and DNAPL Characterization Strategy** (with S. Norcross), [redacted] Science Advisory Board meeting, Wilmington, DE, March 27, 2008.
- **Hazardous Waste Landfill – Conceptual Model and Treatability Studies** (with B. Butler, D. Hwang, S. Kota, and P. Madden), [redacted] Science Advisory Board meeting, Wilmington, DE, March 26, 2008.
- **Analysis of Metals Fate and Transport, Carneys Point**, [redacted] Science Advisory Board meeting, Deepwater, NJ, September 7, 2007.
- **Groundwater Plume Discharge to Surface Water and Sediment Contamination**, [redacted] Science Advisory Board meeting, Deepwater, NJ, September 6, 2006.

## LAWRENCE BERKELEY NATIONAL LABORATORY REPORTS

- **Simulation of Pumping Tests to Characterize Faults at Yucca Mountain**, NV, *Lawrence Berkeley National Laboratory Report, LBNL-42084*, July 1998.
- **Sub-Site-Scale Saturated Zone Model for Yucca Mountain** (with C. M. Oldenburg, A. M. Simmons, A. K. Mishra, and J. Hinds), 1998, *Lawrence Berkeley National Laboratory Report, LBNL-41773*.
- **Effects of Faulted Stratigraphy on Saturated Zone Flow beneath Yucca Mountain** (with C. M. Oldenburg), *Lawrence Berkeley National Laboratory Report, LBNL-41774*, May 1998.
- **Analysis of pressure disturbances in unsaturated rock from installation of new boreholes**, *Lawrence Berkeley National Laboratory Report, LBNL-41484*, March 1998.
- **Hydrogeologic Characterization of a Fractured Granitic Rock Aquifer, Raymond, California**, *Lawrence Berkeley National Laboratory Report, LBL-34838*, Oct 1993.

## US ENVIRONMENTAL PROTECTION AGENCY REPORTS

- **Hydrogeologic Characterization of Fractured Rock Formations: A Guide for Groundwater Remediators** (with K. Karasaki, S. Benson, G. Bodvarsson, B. Freifeld, P. Benito, P. Cook, J. Clyde, K. Grossenbacher, J. Peterson, R. Solbau, B. Thapa, D. Vasco, and P. Zawislanski), US Environmental Protection Agency Project Summary, EPA/600/S-96/001, May 1996. https://gw-project.org/books/hydrogeologic-characterization-of-fractured-rock-formations/

## JOURNAL ARTICLES

- **EPA's Unprecedented Interim Drinking Water Health Advisories for PFOA and PFOS** (with J. Cotruvo[5] and S. Goldhaber[6]), *Groundwater*, February 20, 2023. https://groundwateru.org/pfas-pub
- **A Multidisciplinary Fractured Rock Characterization Study at Raymond field site, Raymond, CA** (with K. Karasaki, B. Freifeld, K. Grossenbacher, P. Cook and D. Vasco), *Journal of Hydrology*, *236*, 17-34, Sept 2000.

## PRINT MEDIA

- **PFOA and PFOS Limits** (with J. Cotruvo and S. Goldhaber), *Chemical & Engineering News*, Vol 100 (37), October 15, 2022. https://cen.acs.org/environment/persistent-pollutants/Reactions-Drinking-water-advisories-PFOA/100/i37

[5] First Director of USEPA's Drinking Water Standards Division and member of WHO Drinking Water Guidelines Committee.
[6] Former Toxicologist, USEPA.

## CONTACT INFORMATION



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Contaminant Hydrogeologist
Westfield, New Jersey, USA
+1 908 787 2254
andrew.cohen@experthydrogeologist.com

Website:

ExpertHydrogeologist.com

## TESTIMONIALS

*"Andrew's analysis of soil and groundwater contamination was central to our liability allocation case. He reviewed all data, created clear visuals for counsel and clients, and helped develop a remediation plan accepted by Ohio EPA. His work supported key cost-allocation arguments and contributed to a favorable settlement. I continue to recommend him in my post-retirement advisory role."*

**–Wray Blattner, [redacted]**

*"I first had the pleasure of meeting Andrew when he presented remedial investigation findings to the Remediation Science Advisory Board for a large chemical plant. He impressed me with his ability to identify important details of contamination at the site, as well as build coherent conceptual models of groundwater and sediment contamination based on sound analysis and integration of multiple datasets. Andrew was able to describe contaminant behavior at multiple scales, while at the same time focusing on the key issues and conveying the big picture. Furthermore, as Andrew continued to educate the SAB at subsequent meetings, I was always impressed by his outstanding analytical and communication skills. He is sincere and very enjoyable to work with, and it is with overwhelming support that I recommend Andrew for developing sustainable approaches and solutions in the site remediation process."*

**–Lisa Axe, PhD. Professor New Jersey Institute of Technology, Department of Chemical Engineering**

*"In my years of working with Andrew, he has proven to be a valuable and reliable team member. He developed unique approaches for data analysis which have supported conclusions used in making strategic decisions. His work is always thorough and clearly presented, and his participation enabled us to proceed with confidence on a wide range of technical projects"*

**–Ed Lutz, PE, [redacted] Remediation Project Director**

*"We needed someone to communicate highly complex concepts and data to non-scientists. We were extremely impressed with his work ethic and results. I highly recommend Andrew. He is one of those reliable consultants you use repeatedly throughout your career."*

**–Ed Urquhart, CEO, [redacted]**

*"I first met Andrew at the Battelle Chlorinated Solvent Conference in 2014. Over the years, his academic and consulting achievements stand out. He has a rare blend of intellectual depth, professional excellence, and practical knowledge. His expertise spans many aspects of groundwater hydrogeology, numerical modeling, site characterization, contamination, and remediation. His 1995 report for Lawrence Berkeley National Laboratory provided needed guidance on hydrogeologic characterization of fractured rock, and it remains a valuable reference. He founded GroundwaterU.org and also co-authored a GW-Project book with John Cherry, an insightful primer on groundwater flow—a resource that I recommend to my students at Princeton. He also co-authored an Issue Paper in Groundwater Journal (2023) that critically examines the EPA's Interim Drinking Water Health Advisories for PFAS. After my decades of involvement in groundwater science and engineering both in the U.S. and internationally, I can confidently say that Andrew is among the top 1% of Teacher-Scholars and Practitioners in the profession.*

**–Bob Cleary, Ph.D., Princeton Groundwater, Inc.**

*"Andrew's efforts have positively impacted professionals and academics. His broad experience and knowledge in the field of groundwater is well-regarded and impressive. He has interacted with many professional groups and shared his knowledge with others, with some of his efforts being highly hydrophilanthropic. He is a solid hydrogeologist, easy to work with, and brings a wealth of experience and familiarity with real-world environmental challenges."*

**–Dave Kreamer, Ph.D., Professor Emeritus University of Nevada, Las Vegas; Past President, International Association of Hydrogeologists; Co-author: Applied Hydrogeology, and Contaminant Hydrogeology**

*"I worked with Andrew for about 6 years in the same group of site characterization and remedial strategy development. Andrew is an expert in hydrogeology and transport modeling applied to conceptual site model, site characterization, and remediation. He is thoroughly familiar with various technical approaches and tools for quantitative hydrogeologic analysis."*

**–Daekyoo Hwang, Principal Geoenvironmental Engineer at Sedsol Engineering**

*"Andrew Cohen has mastered the art of communication using visual tools and graphics to help others understand complex problems. Whether it is PFAS or NAPL, Andrew's grasp and deep understanding of the subsurface behaviors of these contaminants is translated into pictures with visually appealing clarity that almost anyone can understand."*

**–Guy Patrick, GeoEnviroPro Environmental Sciences Training, Vancouver, British Columbia**

*"Dr. Cohen was an excellent collaborator who assisted in our mission to assess and make decisions regarding sustainable water management in remote regions of Morocco. His analysis was integrative of all sorts of data - physical, geological, satellite, historical, sociological - and his recommendations weighed probabilities, economic factors, and prospective returns. He is immediately responsive, and his follow-up is entirely reliable. He is a totally professional environmental scientist."*

**–Yossef Ben-Meir, President of the High Atlas Foundation, Morocco**

*"I have known Andrew through his membership in a philosophical community. Andrew displays a highly analytical and compassionate approach to the topics under discussion. He is respectful and curious, yet not afraid to offer an alternative perspective, even when that perspective goes against a prevailing narrative. And he consistently does so in a patient and reasonable manner. I have benefited greatly from seeing him think through many issues with a careful and judicious attitude."*

**–Tim Iverson, Facilitator, Minnesota Stoics**

*"Andrew is an experienced, insightful, and conscientious hydrogeologic consultant. He has a special ability to creatively present complex information in ways that are readily understood, often through surprisingly simple illustrations. And he constantly develops his skills and expertise. These attributes make Andrew an important resource and a reliable member of any project team."*

**–Jim Peterson, President, Princeton Geosciences, Inc.**

## INDEX A: PROJECTS BY CONTAMINANT TYPE

**Ammonia**
- [redacted] Refinery, Perth Amboy, NJ

**Aniline**
- [redacted], NJ

**Arsenic**
- [redacted], NJ
- [redacted] facility, IN

**Benzene, Ethylbenzene, Toluene, Xylene**
- [redacted], NJ
- [redacted], TX
- [redacted] Terminal, JFK Airport
- [redacted] Refinery, NJ
- [redacted], NJ (3)

**Chlorinated Volatile Organic Compounds**[7]
- [redacted], NJ
- [redacted], TX
- [redacted], NJ
- [redacted], NY
- Atlantic City National Guard Base, NJ
- Brillo Landfill, NY
- [redacted], NJ
- [redacted] Site, NJ

**DNAPL**
- [redacted], NJ
- Hazardous Waste Landfill, NJ
- Ink Manufacturing, NJ
- [redacted], TX
- [redacted], NJ
- Brillo Landfill, NY
- Developed DNAPL Calculation Tool

**Hexavalent Chromium**
- [redacted], NY
- Metal Plating Facility, DE
- Metal Plating Facility, MO

**Lead-containing compounds**[8]
- [redacted], NJ

**LNAPL**
- New Jersey Turnpike Service Area, NJ
- [redacted] Gasoline Station, NJ
- [redacted] Refinery, NJ

**MTBE**
- [redacted] Terminal, JFK Airport

**PFAS (Including AFFF)**
- Atlantic City National Guard Base, NJ
- [redacted], NJ
- [redacted] Refinery, CO
- Metal Plating Facility, DE
- Metal Plating Facility, MO
- Publication with Former EPA Director[9]
- Educational Webinars and Animation

**Refrigerants (e.g., Freon)**
- [redacted], NJ

**1,4-dioxane**
- [redacted], NJ
- Former [redacted] Site, NJ

[7] PCE (tetrachloroethene), TCE (trichloroethene), dichloroethene, (DCE), vinyl chloride, carbon tetrachloride, chlorobenzene, chloroform, Freon, 1,2-dichlorobenzene, 1,1,1-trichloroethane (TCA), 1,1,2-trichloroethane, 1,1-dichloroethene, and 1,1-dichloroethane, methylene chloride, and others.
[8] Tetraethyl Lead, tetramethyl lead, and trimethylethyl lead.
[9] EPA's Unprecedented Interim Drinking Water Health Advisories for PFOA and PFOS (with J. Cotruvo and S. Goldhaber), *Groundwater*, February 20, 2023. https://groundwateru.org/pfas-pub

## INDEX B: PROJECTS BY LOCATION

**California**
- USDOE/USEPA Fractured Rock Research Site: Raymond, CA
- Lawrence Berkeley National Laboratory: Berkeley, CA

**Colorado**
- [redacted] Refinery: Commerce City, CO

**Delaware**
- Metal Plating Facility, Blades, DE

**Indiana**
- [redacted] Facility: East Chicago, IN

**Maine**
- [redacted]: Leeds, ME

**Missouri**
- Metal Plating Facility: Portageville, MO

**Nevada**
- USDOE, Proposed Nuclear Waste Repository: Yucca Mountain, NV (2)
- [redacted], Battle Mountain, NV

**New Jersey**
- [redacted]: Deepwater, NJ (14)
- [redacted]: Deepwater, NJ (2)
- Air National Guard Base: Atlantic City, NJ
- [redacted] Manufacturing Complex: Nutley, NJ (4)
- [redacted] Refinery: Perth Amboy, NJ (2)
- [redacted] Facility: Parlin, NJ
- [redacted]: Washington Township, NJ
- [redacted]: Palmyra, NJ
- Former [redacted] facility: Dunellen, NJ
- [redacted]: Roselle, NJ
- Former [redacted] Site: Tenafly, NJ
- Former [redacted] Plant: Linden, NJ
- New Jersey Turnpike Service Area
- Former [redacted]: Linden, NJ
- [redacted] Gasoline Station: Laurence Harbor, NJ
- [redacted]: Newark, NJ

**New York**
- Brillo Landfill Superfund Site: Victory, NY
- [redacted]: Franklin Square, NY (2)
- JFK International Airport: Jamaica, NY

**Ohio**
- [redacted]: Yellow Springs, OH
- Former aeronautics manufacturer: Dayton, OH

**Texas**
- [redacted]: Beaumont, TX

**Virginia**
- [redacted], South River in Waynesboro, VA

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**Canada**
- Former [redacted] facility: Toronto, Ontario

**Morocco**
- High Atlas Foundation: Marrakech (2)

Number shown in parentheses indicates multiple projects.

# INDEX C: INDUSTRIES SERVED

**Air Transportation**
- [redacted]
- Air National Guard

**Aluminum Can Manufacturing**
- [redacted]

**Anti-knock Fuel Additives Manufacturing**
- [redacted]

**Bedding Manufacturing**
- [redacted]

**Engineering**
- [redacted]
- [redacted]

**Freon Manufacturing**
- [redacted]
- [redacted]

**Gasoline Service Stations**
- [redacted]
- New Jersey Turnpike Authority

**Government and International Agencies**
- U.S. Army Corps of Engineers
- U.S. Agency for International Development
- U.S. Department of Energy
- U.S. Environmental Protection Agency

**Gunpowder Manufacturing**
- [redacted]

**Hazardous Waste Landfills**
- [redacted]
- NYDEC (Brillo Landfill)

**Ink Manufacturing**
- [redacted]
- [redacted]

**Metals Plating**
- [redacted]
- [redacted]
- Confidential Client (two)

**Offices of Lawyers**
- [redacted]
- [redacted]
- [redacted]
- [redacted]

**Petroleum Refineries**
- [redacted]
- [redacted]

**Pharmaceuticals Manufacturing**
- [redacted]
- [redacted]