

ADRIAN BROWN

EDUCATION

B.E. (Hons I), 1966, Civil Engineering, Monash University, Australia
M.S., 1970, Engineering Science, Monash University, Australia
M.B.A., 1974, Public Administration, Monash University, Australia

REGISTRATION

Registered Professional Engineer, Arkansas, Arizona, California, Colorado, Idaho, Illinois, Kansas, Massachusetts, Montana, Nevada, New Jersey, New Mexico, North Dakota, Oregon, Pennsylvania, South Dakota, Texas, Utah, Washington, Wyoming
Member, Institution of Engineers, Australia
Registered Professional Engineer, British Columbia, Canada
President, International Mine Water Association
Member, National Water Well Association

SPECIALIZATION

Adrian Brown is a Civil Engineer who specializes in the solution of groundwater, surface water, and earth-science problems in the mining, hazardous waste, water supply, manufacturing, and civil construction industries. Specific areas of expertise are:

- Contamination in groundwater, soil, and surface water
- Fate and transport of contaminants
- Groundwater remediation
- Groundwater engineering
- Mine inflow and dewatering
- Slope stability and stabilization
- Water management
- Acid rock drainage
- Sediment transport and management
- Groundwater extraction and injection
- Geotechnical engineering
- Subsidence engineering

Mr. Brown provides expert guidance in the planning and execution of investigations and projects in groundwater, contamination, contaminant transport, environmental protection, remediation, geotechnical and mine water engineering. He has been retained as an expert witness and an expert reviewer in a large number of matters related to groundwater and surface water flow and contamination, impact, remediation, soil contamination, and slope stability.

Mr. Brown's experience spans more than 40 years, and over 500 projects. He has published papers and book chapters on groundwater flow, contamination, remediation,

and remediation, and has lectured in the US, Australia, Canada and China. Mr. Brown served for two years as an adjunct professor in groundwater engineering at the Colorado School of Mines. He is currently the President of the International Mine Water Association.

EXPERIENCE

President, Adrian Brown Consultants, Denver, 1983 - present.

Technical specialist in the areas of groundwater and soil contamination; remediation of contaminated sites; organic and metal contaminant fate and transport; groundwater flow; mine inflow and dewatering; slope stabilization; groundwater resource management; and geotechnical engineering. Projects performed include studies in contaminant migration, aquifer restoration, acid rock drainage, unsaturated seepage, geohydrologic evaluation, dewatering design, waste containment, groundwater flow and transport modeling, mine inflow, slope stability, subsidence, permitting, dam stability, and computer program development. Expert witness in groundwater flow, contaminant fate and transport, remediation, and slope control matters, particularly related to mining, processing, and industrial and hydrocarbon projects.

President, Nuclear Waste Consultants, Denver, 1985-1989.

Specialist consultant to the Nuclear Regulatory Commission on geohydrology, geochemistry, and solute transport aspects of regulation of deep geological disposal of nuclear waste.

Founding Vice-President, MidWest Mining Company, Casper, 1986-1989.

Technical director and manager of abandoned mined land projects performed in Wyoming. Designed and implemented 800,000 ton slurry backfill project to stabilize subsidence due to progressive collapse of an abandoned coal mine in Hanna, Wyoming. Directed a range of other investigations into subsidence impact and remediation of underground coal mines.

Golder Associates, Vancouver and Denver, 1974-1983.

Senior Engineer through Principal responsible for development of Golder Associates' geohydrology capability in the areas of slope stabilization, dewatering, contaminant transport and baseline monitoring. Directed and performed a wide range of groundwater flow, groundwater contamination, and slope stability projects in the United States, Australia, South America, and China. Particular emphasis on stability, groundwater control, and environmental protection in soft, low permeability rock masses in the energy minerals industries: coal, lignite, copper, uranium, and oil shale.

State Electricity Commission of Victoria, Australia, 1966-1974.

Geotechnical Engineer in lignite mining division, with responsibility for major open pit lignite mines in the Latrobe Valley, Victoria. This work included design and oversight of dewatering system for major aquifer systems beneath the mines, the analysis and improvement of slope stability conditions in open pits and overburden

storage areas, and analysis and monitoring of local and regional impact of dewatering on aquifers and surface streams.

PROJECTS

Mr. Brown has performed, directed, or been a principal investigator in a wide range of environmental, remediation, hydrology, litigation, geotechnical, regulation, water supply, and computing projects, a partial list of which is provided below.

Hydrology:

Amax Phosphate Pit Dewatering Study	Florida
Barrick Goldstrike Dewatering Evaluation	Nevada
Bel Aire Tunnel Hydrology Evaluation	California
Big Black Mountain Coal Hydrology	Kentucky
Black Thunder Coal Groundwater Permitting Study	Wyoming
Bougainville Copper Mine Inflow Study	Bougainville
Brenda Copper Mine Geohydrology	British Columbia
Brohm Gilt Edge Expansion Geohydrology	South Dakota
Burgin U/G Mine Inflow Evaluation	Utah
C-b Tract Oil Shale Mine Inflow Project.....	Colorado
Cash Mine Groundwater Permit	Colorado
Chelan County Fish Hatchery Wellfield Study.....	Oregon
Chimney Creek Gold Section 30 Dewatering Study	Nevada
Cigar Lake Uranium Mine Hydrology Review.....	Saskatchewan
Cinola Gold Mine Inflow Study.....	British Columbia
Clear Creek Oil Shale Hydrology Permitting Study.....	Colorado
Cluff Lake Groundwater Inflow Study	Saskatchewan
Copper Flat Mine EIS Groundwater Permitting.....	New Mexico
Craig Coal Dewatering and Impact Study	Colorado
Crandon Project Tailings Pond Permitting Study	Wisconsin
Cresson Mine Amendment 7 Permit Hydrogeology	Colorado
Cresson Mine Amendment 8 Permit Hydrogeochemistry	Colorado
Cresson Mine Life Extension Permit Hydrogeochemistry	Colorado
Cresson Mine Complex Geohydrology Model.....	Colorado
Cresson Mine Life Extension 2 Permit Hydrogeochemistry.....	Colorado
Detour Mine Inflow Evaluation/Dewatering Design	Quebec
Elliott Lake Uranium Mine Dewatering/Impact	Ontario
Falconbridge Nickel Pit Inflow Evaluation.....	Ontario
Florence Copper Pit Dewatering Evaluation	Arizona
Fording Greenhills Coal Dewatering Study	British Columbia
Gays River Lead/Zinc Mine Inflow Prevention	Nova Scotia
Getty Oil Shale Hydrology Permitting Project.....	Colorado
Grant Gold Mine Aquifer Test Evaluation	Alaska
Grassy Mountain EIS Mine Inflow Evaluation	Oregon
Green Creek Gold Mine Groundwater Study	Alaska
Haile Mine Groundwater/Hydrology Evaluation	South Carolina
Hat Creek Coal Dewatering and Impact Study	British Columbia

Homestake Lead Water Management Study	South Dakota
Horse Draw Oil Shale Shaft Inflow Evaluation	Colorado
Jerritt Canyon Mine Water Management Study	Nevada
K-2 Potash Mine Inflow Evaluation	Saskatchewan
Kennecott Bingham Canyon Groundwater Flow Study.....	Utah
Key Lake Uranium Mine Dewatering Study.....	Saskatchewan
Kiena Gold Mine Crown Pillar/Inflow Evaluation	Quebec
Lamefoot Mine Hydrology/Geochemistry EIS Evaluation	Washington
Lee Ranch Coal Mine Dewatering Study	New Mexico
Lihir Mine Dewatering Review	New Guinea
Mesquite Gold Project Geohydrology	California
Midwest Uranium Mine Inflow/Dewatering	Saskatchewan
Minera Carbonifera Mine Dewatering.....	Mexico
Minuteman Underground Mine Waste Stowage	Kentucky
Monkman Pass Coal Dewatering Review Study.....	British Columbia
Murray Mine Dewatering Evaluation.....	Nevada
Mt. Whaleback Dewatering/Stabilization Study.....	Western Australia
Narbalek Uranium Water Management Review.....	Australia
New Castle Coal Mine Inflow and Permitting	Colorado
Northair Gold Mine Tailings Review	British Columbia
Overlook Mine Portal Plugging	Washington
Pan Continental Mine Inflow Evaluation	Australia
Phulbari Coal Mine Groundwater Model Review	Bangladesh
Platoro Underground Gold Mine Inflow Review	Colorado
Pogo Gold Mine Inflow/Closure Evaluation	Alaska
Pumkin Buttes Uranium Mine Inflow/Baseline Study	Wyoming
Ranger Uranium Water Management Review	Australia
Ridgeway Gold Dewatering	South Carolina
Roosevelt Tunnel Mine Discharge Evaluation.....	Colorado
Salar de Atacama Brine Evaluation	Chile
Similkameen Copper Tailings Pond Seepage Study	British Columbia
Sleeper Gold Mine Dewatering Project	Nevada
South Haystack Stability/Environmental Hydrology	Wyoming
Snap Lake Diamond Mine Inflow Review	Northwest Territories
Sutter Creek Gold Inflow and Impact Study	California
Tongue River Coal Bed Methane Hydrology.....	Montana
Twin Metals Minnesota Mine Permitting Review.....	Minnesota
Water Management in Oil Shale Mining.....	Colorado
Zacatacas Copper Mine Tailings Facility Permitting	Mexico

Environmental:

Allied Signal Burbank Plant Solvent Contamination Evaluation	California
Arsenau Petroleum Spill Evaluation	Illinois
Arsenic Waste Disposal Pond Design	British Columbia
Barrick Goldstrike Seepage Reinjection Evaluation.....	Nevada
Barrick Goldstrike Spring Impact Evaluation	Nevada
Battle Mountain Gold Mine Cyanide Evaluation.....	Nevada

Baxter Springs/Treece RI/FS Evaluation.....	Kansas
Betz Gasoline Station Evaluation	Colorado
Bolinder Well (Tooete) Contamination Litigation	Utah
Breckenridge Minesite Evaluation	Colorado
Brookhurst CERCLA Site Evaluation.....	Wyoming
Bullwackers Casino Environmental Evaluation	Colorado
C-a Oil Shale Seepage Study.....	Colorado
Carbon Creek Coal Environmental Hydrology Study	British Columbia
Caribou Mine Property Evaluation	Wyoming
Carson Hill Gold Leach Pad Decommissioning	California
Cash Mine Groundwater Permitting Study	Colorado
Chula Vista Phase I Evaluation	California
Cinola Gold Geohydrology Permitting Support	British Columbia
Cinderella City Drive-In Environmental Assessment.....	Colorado
Cleveland Mill CERCLA Remediation/Evaluation	New Mexico
Climax Molybdenum Tailings Pond Evaluation	Colorado
Coal Mine Groundwater Permitting Review	Kentucky
Cobre Hanover Mine EIS Hydrology and Pit Lake Quality Evaluation	New Mexico
Copper Flat Mine EIS Hydrology Evaluation	New Mexico
Cow Camp Coal Mine Geohydrology Permitting.....	Colorado
Carlton Tunnel Sediment Pond Expansion Design.....	Colorado
Cripple Creek Mine ARD Testing and Evaluation	Colorado
Dacono Landfill Permitting Hydrology Evaluation	Colorado
Diavik Ammonia Management Plan Expert Review.....	N.W.T., Canada
DePue Zinc Plant Remedial Investigation	Illinois
ECS Composites TCE Impact Evaluation	Oregon
Elitch Gardens Relocation Environmental Review.....	Colorado
Elk Mountain Coal Project Permitting Hydrology Evaluation	Colorado
Elkhorn Gold Mine Hydrology/Geochemical Evaluation	Montana
Empire Gold Mine Hydrology Permitting Study	Colorado
Estes Rocket Facility Site Evaluation Review	Colorado
Flambeau Mine Closure Groundwater Evaluation	Wisconsin
Galena Lead/Zinc Mining Area CERCLA Suit.....	Kansas
Gates East Site VOC Contamination Evaluation	Colorado
Georgetown Tailings Site Redevelopment Permitting	Colorado
Getchell Gold Mine Groundwater Quality Study	Nevada
Glenwood/Dotsero Salinity Reduction Project.....	Colorado
Golden Reward Nitrate Impact Evaluation	South Dakota
Grassy Valley Environmental Evaluation.....	Colorado
Hanna Backfilling UIC Permit.....	Wyoming
Hanson Uranium Minesite Evaluation	Colorado
Indian Bend Wash (Tempe) Superfund Site Evaluation	Arizona
Keystone Mine Groundwater Permitting Study	South Dakota
Lakewood Equipment Site Evaluation	Colorado
Lincoln Landfill Geohydrology Review.....	Nebraska
Lisbon Uranium Mine Salinity Evaluation	Utah
Lisbon Valley Copper Project EIS Hydrology Evaluation.....	Utah

Lowry Chemical Waste Facility Groundwater Review	Colorado
Loy Yang Lignite Mine Hydrology Review	Victoria, Australia
Macdonald Industrial Products Solvent/Metal Groundwater Cleanup	Michigan
Mactung Tungsten Contaminant Fate Study	N.W.T., Canada
Midcontinent Coal NPDES Permit Renewal	Colorado
Midwest Mine EIS Groundwater Evaluation	Saskatchewan
Mouat Facility Chromium Remediation Study	Montana
Mountain Coals Acid Mine Drainage Study	Kentucky
Mountain Pass Rare Earth Water Management Study	California
Mule Creek Gold Mine Environmental Hydrology	Nevada
Neodesha Refinery Hazardous Waste Cleanup	Kansas
Occidental 697-15-54 Well Impact Evaluation	Colorado
Ohio Commons Site Evaluation	Colorado
Oilfield Brine Disposal Evaluation	Colorado
Old Dominion Mine Impact Evaluation	Arizona
Ortiz Mine Pit Refill Water Quality/ARD Evaluation	New Mexico
Pakootas vs. Teck Corporation Upper Columbia River Litigation	Washington
Palmerton OU-4 Aquifer Test Evaluation	Pennsylvania
Pine Point Pilot Project Regulatory Review (INAC)	N.W.T, Canada
Pitch Uranium Water Quality Study	Colorado
Priest Drive (Tempe) Landfill Investigation	Arizona
Quartz Mountain Gold Project EIS Project	Oregon
Quintette Coal Ground and Surface Water Study	British Columbia
Revenue Virginius Mine Impact Evaluation	Colorado
Rio Tinto Copper Mine Impact Evaluation	Nevada
Rose Park Hazardous Waste Cleanup Project	Utah
San Roberto Mine Tailings Impact Evaluation	Zacatacas, Mexico
Schwartzwalder Uranium Groundwater Contamination	Colorado
Shattuck Chemical Groundwater Impact Evaluation	Colorado
Silver Engineering Facility Environmental Study	Colorado
Sukunka Coal Environmental Hydrology Study	British Columbia
Summitville Gold Project Groundwater Study	Colorado
Tiger Gold Mine Remedial Evaluation	Colorado
Twin Buttes Tailings Facility Closure Study	Arizona
Uravan Tailings Disposal Third Party EIS Review	Colorado
Waukegan Asbestos Plant Closure	Illinois
West Metro Landfill Permitting Evaluation	Colorado
Wharf Resources Cyanide Impact Evaluation	South Dakota
Wharf Resources Gold Project Permitting Support	South Dakota
Wharf Resources Ross Creek Nitrate Control	South Dakota
White Pine Copper Mine Abandonment Study	Michigan
Whitehorse Copper Mine Reclamation Review	Yukon

Remediation:

Aggreko Site UST Removal/Remediation	Utah
Black Eagle Mine Tailings Reclamation	Colorado
Bonnie Brae Cleaners PCE Remediation.....	Colorado
Broderick Wood Products Site Remediation	Colorado
Bullfrog Mine Waste Rock and Tailings Facility Closure.....	New Mexico
California Gulch/Stringtown Tailings Remediation	Colorado
Canon City Uranium Mill Aquifer Restoration	Colorado
Canon City Zinc Smelting Facility Remediation	Colorado
Cleveland Mill Tailings Remediation/CERCLA.....	New Mexico
DePue Zinc/Fertilizer Plant Remediation.....	Illinois
ECS Composites VOC Impact Remedation	Oregon
E.W. Bliss Groundwater Remediation	Michigan
Eagle Mine ARD Remediation	Colorado
Eagle Mine Remedial Treatment Facility Design	Colorado
Ferris/Haggarty Mine AML Evaluation/Remediation	Wyoming
Flypast Site Platinum Soil and Groundwater Remediation	South Africa
Gallium Arsenide Cleanup Project.....	Utah
Gates Rubber Site TCE Remediation.....	Colorado
Grants Uranium Mill Remediation/Closure	New Mexico
Halaco Metal Recyclers Site Abandonment Review	California
Hanna Coal Mine Subsidence Remediation Project	Wyoming
Hanover Tailings Remediation.....	New Mexico
Holden Mine Reclamation Project	Washington
Kennecott Bingham Operation ARD Remediation	Utah
KNEnergy Facility Hydrocarbon Remediation	Wyoming
Leadville-California Gulch Tailings Remediation.....	Colorado
Morse Tool Solvent Remediation.....	Massachusetts
Ortiz Mine Residue Pile Reclamation	New Mexico
Palmerton Blue Mountain Remediation	Pennsylvania
Palmerton OU-4 Groundwater Remediation	Pennsylvania
Palmerton Metal Removal Zone Remedation	Pennsylvania
Palmerton Superfund Site East End Remedial Treatment Cell	Pennsylvania
Paramount Studios Hydrocarbon Remediation.....	California
PG&E Kettleman Hills Gas Facility Civil Litigation	California
Ports of Call Facility Hydrocarbon Cleanup.....	Colorado
Riverton UMTRA Uranium Tailings Remediation.....	Wyoming
Roseville Railyard Hydrocarbon Contamination Remediation	California
Ruidoso Diesel Spill Cleanup Review	New Mexico
San Antonio Water System Well System Remediation.....	Texas
Schwartzwalder Uranium Mine Hydrology/Geochemistry.....	Colorado
Shasta Mining District ARD Remediation	California
Summitville Mine Plugging/Metal Remediation	Colorado
Taylor Forge TCE Remediation	New Jersey
Tracy Railyard Facility Hydrocarbon and Solvent Remediation.....	California
Trojan Explosives Facility Groundwater Remediation.....	Utah
Uravan Tailings Remediation Insurance Litigation.....	Colorado

USS Lead Site Remediation	Illinois
Wellington-Oro ARD Remediation	Colorado
Wellington Neighborhood Flood Control Environmental Protection	Colorado
West Shasta Mine District Remediation Evaluation	California

Litigation:

Abex/Jetway Solvent/Hydrocarbon Discharge	Utah
Adams vs PG&E Chromium Toxic Tort Litigation	California
Aerrco Site CERCLA 106 Removal	Colorado
Albertson vs. KNEnergy Toxic Tort Suit	Wyoming
American Lumber vs. Dow Solvent Litigation	Colorado
ANR vs. Diamond Parking Remediation Litigation	Utah
Asarco LLC Bankruptcy Litigation.....	Texas
Atzlan Center Groundwater Contamination Litigation	Colorado
Bailey Texaco Gas Station Litigation	Colorado
Baldwin Park Well Impact Litigation.....	California
Ball Four vs. Sundstrand Contamination Litigation	Colorado
Big Dalton Pumping Station Litigation	California
Bolinder vs. United States of America Contamination Litigation	Utah
Boulder/Marshall Landfill CERCLA Suit	Colorado
Buena Vista Mercury Mine Remediation Expert Witness	California
Canon City Mill CERCLA Resource Damage Suit	Colorado
CBE vs Tosco MTBE Litigation.....	California
CC&V Gold Mining CWA Litigation.....	Colorado
Coal Bed Methane Water Impact Litigation	Montana
Colorado Memory Systems Property Contamination.....	Colorado
Con Imperial Mine Slope Stability Litigation	Nevada
Creede Mining CWA Suit.....	Colorado
Crown Jewell Project EIS Litigation	Washington
CVY Cleaners PCE Cleanup Litigation.....	Colorado
Diamond vs. ANR Groundwater Contamination Litigation	Utah
Diamond Cross Coal Bed Methane Impact Litigation	Montana
Dodge vs. Cotter Corporation Contamination Litigation	Colorado
Dow vs. Thoro Solvent Contamination Litigation.....	Colorado
Rivers SOS vs. Peabody Coal Subsidence Litigation	NSW, Australia
Fresno v. Shell DBCP Contamination Litigation.....	California
Friends of Santa Fe vs. LAC Minerals Mining Litigation	New Mexico
Green River Hydrocarbon Contamination Litigation.....	Wyoming
K-2 Mine Inflow Insurance Litigation.....	Saskatchewan
Kennecott Bingham Operation NRDC Litigation	Utah
KNEnergy Insurance Litigation	Wyoming
La Puente Well Impact Litigation	California
Leadville Mine Insurance Litigation.....	Colorado
Leviathan Mine Remediation Litigation.....	California
Lidco/Western Processing Superfund Litigation.....	Washington
LM Properties vs. Gujarat Coal Impact Litigation	NSW, Australia
McColl CERCLA Site Insurance Litigation.....	California

Miami #2 Pinal Creek Impact Litigation	Arizona
Midvale Tailings Insurance Litigation.....	Utah
Midvale Tailings Remediation Litigation	Utah
Mint Canyon Civil Litigation.....	California
Montrose Torrance Facility Toxic Tort/Property Damage Litigation.....	California
Mount Emmons Mine Inflow/Impact Litigation.....	Colorado
New World Mine Clean Water Litigation.....	Montana
Newman vs. Stringfellow Toxic Tort Litigation.....	California
Newmont California Gulch and Idarado Insurance Litigation.....	Colorado
Orange County Water District v Northrop Remediation Litigation	California
Ortiz Mine Clean Water Act Litigation.....	New Mexico
Pakootas vs. Teck-Cominco Upper Columbia River Litigation	Washington
Paramount Communications vs. Horsehead Industries Litigation	Illinois
Peppertree vs. Rohr Groundwater Contamination Litigation	California
Polkadot Cleaners Impact Litigation	Colorado
Redlands Groundwater Contamination Litigation.....	California
Reip vs. PG&E Chromium Impact Litigation.....	California
Ridgeway Gold Mine Permitting Litigation.....	South Carolina
Rocky Flats Environmental Performance Litigation	Colorado
Rohr vs. U.S. Army Riverside Plant Litigation	California
Schroeder vs. PG&E Hinkley Chromium Contamination Litigation	California
Shasta Mine District Clean Water Act Litigation.....	California
Sherman Square Environmental Litigation.....	Colorado
Simpson Paper Landfill Contamination Civil Litigation.....	California
Sinclair Oil Gas Station Leakage Suit.....	Colorado
South El Monte VOC Damage Litigation	California
South Lake Tahoe MTBE Litigation.....	California
Southern Pacific Environmental Insurance Litigation.....	California
Standard Equipment Environmental Damage Suit	Washington
Stark v. Wymore Building Seepage Litigation	Colorado
Stone v. Rockwell Rocky Flats Litigation.....	Colorado
Tar Creek Subsidence Litigation.....	Oklahoma
TH Agriculture vs. ACETO Chemical Co. Contamination Litigation	California
Torrance DDT Plant Toxic Tort Litigation	California
Transit Mix CWA Action	Colorado
Trojan Explosives Plant Litigation.....	Utah
Twins Inn Solvent Contamination Litigation.....	Colorado
Valenzuela vs. Hughes Aircraft Toxic Tort Suit	Arizona
Viacom Zinc Process Remediation Insurance Litigation.....	New Jersey
Walker Mine Copper Contamination Litigation	California
Willets Chromium Contamination Litigation.....	California
Your Valet Cleaners Litigation	Colorado

Regulation:

NRC Nuclear Waste Disposal Technical Assistance	Washington, D.C.
Center for Nuclear Waste Regulatory Assessment.....	Texas
Geotechnical Technical Assistance to NRC	Minnesota
Diavik Diamond Mine Ammonia Expert Review Panel	N.W.T., Canada
Tamerlane PPPP Lead/Zinc Mine EIR	N.W.T., Canada
Mine Stability Technical Review Board	Victoria, Australia

Geotechnical:

Byron Creek Coal Stability and Pollution Study	British Columbia
Cerrejon Coal Stability/Dewatering Evaluation.....	Columbia
Con Imperial Gold/Silver Mine Stability	Nevada
Cresson Mine Slope Design	Colorado
East Cresson Mine Slope Design	Colorado
Cresson Mine Life Extension Slope Design	Colorado
Cresson Mine Slope Stability Monitoring and Review.....	Colorado
Globe Hill Mine Slope Design	Colorado
Domtar Gravel Depot Stability Evaluation	British Columbia
East Cresson Mine Stability Project.....	Colorado
Fushun Coal Slope Stabilization Study	China
Hanna Underground Coal Mine Subsidence Mitigation	Wyoming
Highland Uranium Stability Evaluation	Wyoming
Kemmerer/Evanston/Gillette/Superior Subsidence.....	Wyoming
Latrobe Valley Mine Subsidence Evaluation	Australia
Lornex Copper Slope Stabilization Project.....	British Columbia
Mine Stability Technical Review Board	Victoria, Australia
Morwell Open Cut Stability/Dewatering Project.....	Australia
N.B.H.C. Mine Subsidence Project.....	Australia
New Castle Coal Mine Stability Study	Colorado
OSM Subsidence Control Consulting	Colorado
Paz de Rio Stability Study.....	Columbia
Pinson Gold Mine Stability Review	Nevada
Summitville Adit Plugging Design	Colorado
Summitville Water Storage/Sediment Dam Stability	Colorado
Tar Creek Subsidence Evaluation	Oklahoma
Tonkin Springs Gold Mine Stability Evaluation.....	Nevada

Water Supply:

Apex Project Mill Water Supply	Utah
Baca Grant Project Groundwater Supply	Colorado
Cash Mine Non-Tributary Designation	Colorado
Crawford Ranch Development Water Supply System	Colorado
Crawford Ranch Well Rehabilitation	Colorado
Crockett Coal Process Plant Water Supply	Kentucky
Deerwood Park Water Supply Well System	Colorado
Haystack Butte Water Supply	Colorado
Kennecott Bingham Operation Water Supply Well	Utah

Minerva Exploration Water Supply	South Dakota
Palmerton Municipal Authority Water Supply Protection.....	Pennsylvania
Quartz Mountain Water Supply.....	Oregon
Republican River Flow Depletion.....	Colorado
Ruidoso Well Water Supply Replacement	New Mexico
San Roberto Copper Mine Water Supply	Zacatecas, Mexico
Sleeper Mine Water Supply	Nevada
Tecoma Gold Leach Project Water Supply	Nevada
Wood Gulch Gold Project Water Supply	Nevada

Computing:

Finite Element Groundwater Flow Model Package	Colorado
Finite Element Package Translation to C	Colorado
Random Walk Solute Transport Package	Colorado
Translation of BLM Groundwater Modeling Package	Colorado
BSTAB – Block Sliding Stability Model for Coal Measures.....	Victoria, Australia

Patents

Disposal of Processed Oil Shale Waste	Colorado
Soil Vapor Well Construction	Colorado
Soil Sparge System.....	Colorado

PUBLICATIONS

1969 "Earth Movement and Batter Stability in the Latrobe Valley Coalfields", M.Eng.Sci. Thesis, Monash University, Australia.

1974 "The Simulation of Personnel Movements: A Case Study of Two Departments in Bureaucratic, Governmental Hierarchy", Master of Administration Thesis, Monash University, Australia.

1977 Water Management in Oil Shale Mining. Final Report of USBM Contract J0265019. (co-author)

1978 "Water Management for Oil Shale Mining and Retorting in the Piceance Creek Basin, Colorado." Proceedings, Eleventh Oil Shale Symposium, Golden, Colorado.

1979 "Simple Mine Inflow Evaluation for Underground Oil Shale Mines." Chapter 25, Mine Drainage, Miller Freeman.

1980 "A Strategy for Hydrology Investigations for Mining Projects in North America." EMJ, September, 1980, p. 112-117.

1981 "The Influence and Control of Groundwater in Large Slopes." Chapter 3, Stability in Surface Mining, Society of Mining Engineers, Vancouver.

1982 "Water Availability and Use in Western Colorado - A Consultant's View." Proceedings, Water Use and Availability Seminar, University of Colorado at Denver.

1982 "A Validated Theory of Underground Mine Flooding." Proceedings First International Mine Water Congress, Budapest.

1982 "Toppling-Induced Movements in Large, Relatively Flat Rock Slopes." Proceedings, 23rd Symposium in Rock Mechanics, Berkeley, California.

1982 "A Rational Method of Evaluating Dewatering Requirements to Control Heave in Large Open Pit Mines." SME 1st International Fall Meeting, Honolulu.

1983 "Mine Dewatering: A Case History at Les Mines Selbaie". Proceedings: C.I.M. Annual Meeting, Winnipeg.

1984 "An Engineering Approach to the Elimination of Contaminated Seepage from Processed Oil Shale - I," 17th Oil Shale Symposium, Golden, Colorado.

1985 "An Engineering Approach to the Elimination of Contaminated Seepage from Processed Oil Shale - II", 18th Oil Shale Symposium, Golden, Colorado.

1987 "Hydraulic Conductivity of Lurgi Process Oil Shale", 20th Oil Shale Symposium, Golden, Colorado.

1988 "Use of Hydraulic Fill to Stabilize an Abandoned Underground Coal Mine", Proceedings Hydraulic Fill Structures 88, Ft. Collins, Colorado (co-author)

1988 "Efficient Environmental Hydrology in the Reemerging Mining Industry", Proceedings CMA, Denver, Colorado.

1988 "Achieving the Impossible in Environmental Hydrology", 7th Conference Rocky Mountain Association of Environmental Professionals, Park City, Utah.

1988 "Groundwater Evaluation and Control for Gold Mining Projects", Proceedings: 2nd International Conference on Gold Mining, Vancouver, B.C., Canada.

1989 "Prediction of Groundwater Inflows and Impacts in Mines", Groundwater & Mining, Johannesburg, South Africa.

1990 "Environmentally Driven Design of Disposal Facilities for Acid Generating Materials", Geotechnical Design in Waste Management Practice, American Society of Civil Engineers, Denver, Colorado.

1991 "Towards More Efficient Groundwater Remediation", Rocky Mountain Mineral Law Institute, Salt Lake City, Utah

1991 "Soil Standards for Cleaning Up Mining and Petroleum Sites: A Review", Rocky Mountain Mineral Law Institute, Monterey, California

1991 "Existing In-Service Tailings Dams", CIMM Conference on Environment in Mining, Timmins, Ontario

1992 "Transport Modeling - Technical and Legal Issues", Natural Resources Law Center Conference on "Uncovering the Hidden Resource: Groundwater Law, Hydrology, and Policy in the 1990's", University of Colorado, Boulder, Colorado

1992 "Leaking underground storage tanks", National Center for Preventive Law Conference, "Clean Air, Clean Water, Clean Business", Denver, Colorado

1993 "Groundwater Remediation under Superfund", Environmental Regulation, Albuquerque, New Mexico.

1994 "Packer testing of low permeability rock", IMWA/IAH, Conference on Water Resources at Risk, Denver, Colorado.

1995 "Groundwater Remediation", Utah Water Law Conference, Salt Lake City, UT

1996 "Suppression of sulfide mineral oxidation in mine pit walls. Part I: Hydrologic modeling", Tailings and Mine Waste '97 Conference, Fort Collins, CO

1996 "Suppression of sulfide mineral oxidation in mine pit walls. Part II: Geochemical modeling", Tailings and Mine Waste '97 Conference, Fort Collins, CO

1997 "Groundwater Quantity & Groundwater Quality", Chapter 6 Mining Environmental Handbook, ICP Imperial College Press.

1997 "Environmental Permitting: Defining surface water baseline data requirements and philosophy for surface water resource investigation" Chapter 7, Section 7.3.3, Mining Environmental Handbook, ICP Imperial College Press.

1998 "Influence of tectonic displacement barriers on alluvial aquifer behavior", 50th Annual NGWA Convention and Exposition, Las Vegas, Nevada.

1998 "Reconstructing the Past and Predicting the Future: Environmental and Legal Issues in Groundwater Modeling", 6th Annual Conference on Utah Water Law Ogden, Utah.

1999 "ARD Remediation in Steep Terrain in the Shasta Mining District", California Mining Association, 49'er Mining Conference, South Lake Tahoe, California

2000 "Infiltration and Water Fate in High Altitude Environments", 2000 High Altitude Revegetation Conference, Fort Collins, CO

2001 "Underground Mine Closure and Environmental Control", IMWA Symposium, Belo Horizonte, Brazil

2002 "Infiltration to Groundwater at High Altitude", IMWA Symposium, Freiberg, Germany

2004 "Chemical Grouting of Underground Mines" IMWA Congress, Oveido, Spain

2006 "Quantitative Prediction of Chemical Release from Oxidizing Mined Material", 7th ICARD, St. Louis, MO

2007 "Predicting Mine Inflow for Water Treatment", 14th BC/MEND Workshop, Vancouver, Canada

2008 "Treatment of Metal-Containing Water Using Processed Electric Arc Furnace Cinder", 10th International Mine Water Congress, Karlovy Vary, Czech Republic.

2009 "Sediment Pond Removal of Precipitates from Neutralized Acid Rock Drainage", International Mine Water Conference, Pretoria, RSA, October 2009 (co-author).

2010 "Reliable Mine Water Technology", Mine Water and the Environment, Vol.29, No.3, September, 2010.

2011 "Reliable Mine Water Evaluations", First Global Mining Water Management Initiative Conference, Las Vegas, Nevada, January 2011.

2012 "Bankable Mine Inflow and Impact Determination", 2012 International Mine Water Conference, Bunbury, 2012.