RECEIVED
AUG 19 2013
MINERALS & MINING PROGRAM

STATE OF SOUTH DAKOTA
DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES
BOARD OF MINERALS AND ENVIRONMENT

IN THE MATTER OF THE APPLICATION OF POWERTECH (USA) INC. FOR A LARGE SCALE MINING PERMIT (Dewey-Burdock Project) (designated Permit No. 480).

CERTIFICATE OF SERVICE

I, MAX MAIN, as one of the attorneys for Powertech (USA) Inc., do hereby certify that on the 15th day of August, 2013, I caused the original of the following documents:

1. **POWERTECH'S DISCLOSURE OF EXPERT WITNESSES;** and
2. **CERTIFICATE OF SERVICE,**

to be filed with:

Mike Cepak
Minerals & Mining Program - DENR
Foss Building
523 E. Capitol Ave.
Pierre, SD 57501-3182

and full, true and complete copies of said documents to be served upon the following named persons at their last known mailing addresses, as follows:

STEVEN R BLAIR
ASSISTANT ATTORNEY GENERAL
MICKELSON CRIMINAL JUSTICE CENTER
1302 E. HIGHWAY 14 SUITE 1
PIERRE SD 57501

RICHARD M WILLIAMS
ASSISTANT ATTORNEY GENERAL
MICKELSON CRIMINAL JUSTICE CENTER
1302 E. HIGHWAY 14 SUITE 1
PIERRE SD 57501

JILLIAN ANAWATY
2804 WILLOW AVE
RAPID CITY SD 57701-7240

JERRI BAKER
705 N RIVER ST
HOT SPRINGS SD 57747-1412

CINDY BRUNSON
11122 FORT IGLOO RD
EDGEMONT SD 57735-7346

BRUCE ELLISON
CLEAN WATER ALLIANCE
PO BOX 2508
RAPID CITY SD 57709-2508

KAREN ELLISON
8265 DARK CANYON RD
RAPID CITY SD 57702-4769

MARY GOULET
338 S 5TH ST
HOT SPRINGS SD 57747-2302

GARDNER GRAY
PO BOX 153
PRINGLE SD 57773-0153

EDWARD F HARVEY
1545 ALBANY AVE
HOT SPRINGS SD 57747-2216

GARY HECKENLAIBLE
PO BOX 422
RAPID CITY SD 57709-0422

SUSAN R HENDERSON
11507 HWY 471
EDGEMONT SD 57735-7322

DAYTON O HYDE
PO BOX 932
HOT SPRINGS SD 57747-0932

LILIAS JARDING
PO BOX 591
RAPID CITY SD 57709-0591

MARVIN KAMMERER
22198 ELK VALE RD
RAPID CITY SD 57701-8408

SABRINA KING
917 WOOD AVE
RAPID CITY SD 57701-0947

RODNEY KNUDSON
PO BOX 25
HULETT WY 82720-0025

SYLVIA LAMBERT
PO BOX 78
INTERIOR SD 57750-0078

KARLA LARIVE
839 ALMOND ST
HOT SPRINGS SD 57747-1301

REBECCA R LEAS
6509 SEMINOLE LN
RAPID CITY SD 57702-7088

ROBERT LEE
338 S 5TH ST
HOT SPRINGS SD 57747-2302

DAHL MC LEAN
11853 ACORN RIDGE RD
SPEARFISH SD 57783-3307

GENA PARKHURST
PO BOX 1914
RAPID CITY SD 57709-1914

CHERYL ROWE
7950 DARK CANYON RD
RAPID CITY SD 57701-4766

ROGER ROWE
7950 DARK CANYON RD
RAPID CITY SD 57701-4766

RICK V SUMMERVILLE
6509 SEMINOLE LN
RAPID CITY SD 57702-7088

DOUGLAS C UPTAIN
3213 W MAIN #112
RAPID CITY SD 57702-2314

SUSAN W WATT
PO BOX 790
HOT SPRINGS SD 57747-0790

MICHAEL M HICKEY
WILD HORSE SANCTUARY
BANGS, MCCULLEN LAW FIRM
PO BOX 2670
RAPID CITY SD 57709-2670

ATTN: MICHELLE MAY
WOKSAPE TIPI
OGLALA LAKOTA COLLEGE
P. O. BOX 310
KYLE, SD 57752

ATTN: ASHLEY CORTNEY
EDGEMONT PUBLIC LIBRARY
P. O. BOX A / 412 2ND
EDGEMONT, SD 57735

ATTN: JASON WALKER
RAPID CITY PUBLIC LIBRARY
610 QUINCY STREET
RAPID CITY, SD 57701

ATTN: CINDY MESSENGER
HOT SPRINGS PUBLIC LIBRARY
2005 LIBRARY DRIVE
HOT SPRINGS, SD 57747

ATTN: DORIS ANN MERTZ
CUSTER COUNTY LIBRARY
447 CROOKS ST., STE. 4
CUSTER, SD 57730

by depositing the same in the United States Mail in Belle Fourche, South Dakota with first class postage thereon fully prepaid, in envelopes addressed as above.

Max Main

MAX MAIN

RECEIVED
AUG 19 2013
MINERALS & MINING PROGRAM

STATE OF SOUTH DAKOTA
DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES
BOARD OF MINERALS AND ENVIRONMENT

IN THE MATTER OF THE APPLICATION OF POWERTECH (USA) INC. FOR A LARGE SCALE MINING PERMIT (Dewey-Burdock Project) (designated Permit No. 480).	**POWERTECH'S DISCLOSURE OF EXPERT WITNESSES**

Powertech (USA) Inc. ("Powertech") hereby discloses its potential expert witnesses. All of the disclosed expert witnesses may not testify, and some of them may also give non-expert testimony. Powertech reserves the right to designate additional expert witnesses. Powertech also reserves the right to call rebuttal expert witnesses that are not disclosed herein. The disclosed expert witnesses do not have separate reports apart from their contributions to Powertech's large scale mine permit application. References are made to sections of the large scale mine permit application to which the experts contributed. A copy of each expert's curriculum vitae is attached.

<u>John Mays</u>
Section 5 Mine Plan (all)
(especially 5.1, 5.2, 5.3.1, 5.3.2, 5.3.3, 5.3.4, 5.3.5, 5.3.6, 5.4, 5.5.1, 5.5.2, 5.5.3, 5.5.5, 5.6.3, 5.6.5, 5.6.10)
Section 6 Reclamation Plan (all)
(especially 6.2, 6.3.2, 6.3.3, 6.5, 6.7, 6.8)
Appendix 5.3-A Pond Design Report
Appendix 6.7-A Financial Assurance Estimate

<u>Richard Blubaugh</u>
Section 1 (all)
2.1 County Conditional Use Permit/Zoning
2.3 Determination of Special, Exceptional, Critical or Unique Lands
3.11 Cultural Resources
3.14 Baseline Radiological Characteristics
5.6.5 Spills and Leaks
5.6.6 Potential Accidents
5.6.7 Potential Natural Disaster Risk

5.6.8 Potential Fire and Explosion Risk
5.6.9 Potential Radiological Impacts and Effluent Control Systems
5.6.12 Cultural Resources
5.7 Operations
6.3 Decontamination and Decommissioning
Appendix 3.11-A Cultural Resources Report
Appendix 3.11-B MOA with SD Archeologist
Appendix 3.14-A Baseline Radiological Assessment

Jim Bonner
1.3 Project History
2.2 Legal Right to Enter and Mine
3.2 Geology and Depositional Environment
(esp. 3.2.3 Clarification of Breccia Pipes)
Appendix 2.2-A Surface and Mineral Ownership
Appendix 3.2-C Clarification of Breccia Pipes

Dick Clement
Section 1 (all)
5.7.1 Corporate Organization and Administrative Procedures

Frank Lichnovsky
3.2 Geology and Depositional Environment
6.3.3 Well Plugging and Abandonment
Appendix 3.2-A Exploration Drill Holes
Appendix 3.2-B Morrison Formation Drill Hole Logs

Mark Hollenbeck
1.2 Project Overview
3.1 Land Use
5.1 General Mine Planning and Design
5.2 Schedule
5.6.1 Land Use [Mitigation of Potential Impacts]

Lisa Scheinost
3.4.3 Baseline Groundwater Monitoring Program
3.4.4 Groundwater Quality
3.5.3 Baseline Surface Water Monitoring Program
3.5.4 Surface Water Quality
Appendix 3.4-B Well Inventory Summary Tables
Appendix 3.4-C Well Inventory

Appendix 3.4-G Groundwater Quality Summary Tables
Appendix 3.4-H Groundwater Quality Analytical Data
Appendix 3.4-I TVA Groundwater Quality
Appendix 3.5-B Surface Water Quality Summary Tables
Appendix 3.5-C Surface Water Quality Analytical Results
Appendix 5.6-C Conceptual Spill Contingency Plan
Appendix 6.4-A Postmining Land Use Consultation

Hal Demuth
3.4.1 Regional Hydrogeology
3.4.2 Site Hydrogeology
5.3.3.3 Pump Testing
5.3.3.4 Well Field Hydrogeologic Data Packages
5.3.3.5.1.1 Flare Control
5.3.3.6 Approach to Well Field Development with Respect to Partially Saturated Conditions
5.3.3.9 Approach to Well Field Development with Respect to Historical Exploration Holes
5.4.1.1.1 Deep Disposal Wells
5.6.3.1.2 Potential Drawdown
Appendix 3.4-A Class V UIC
Appendix 3.4-D Water Levels in Inyan Kara Wells
Appendix 3.4-E TVA Pumping Tests
Appendix 3.4-F 2008 Pump Tests
Appendix 5.6-A Numerical Groundwater Model
Appendix 6.2-A Numerical Modeling of Groundwater Conditions (well field-scale model)

Gwyn McKee
3.9 Wildlife
3.10 Aquatic Resources
5.5.9 Wildlife [Monitoring]
5.6.11 Ecological Resources [Mitigation of Potential Impacts]
Appendix 3.9-A Baseline Wildlife

Doyl Fritz
6.4 Plans and Schedules for Reclaiming Disturbed Lands
6.8 Postclosure Monitoring Plan
Appendix 4.0-A Socioeconomic Assessment

Jack Fritz
3.5 Surface Water
Section 5 (all)
Section 6 (all)

Ronn Smith
3.6 Meteorology, Climatology and Air Quality
5.5.10 Air Monitoring
5.5.11 Meteorological Monitoring
5.6.10 Air Quality [Potential Impacts and Mitigation]
Appendices 3.6-A, 3.6-B, 3.6-C

Brenda Schladweiler
3.3 Soils
3.7 Vegetation
3.8 Wetlands
5.6.2 Soils [Mitigation of Potential Impacts]
Appendix 3.3-A Baseline Soils Assessment
Appendix 3.7-A Baseline Vegetation
Appendix 3.8-A Baseline Wetland Assessment

Mike Schierman
3.14 Baseline Radiological Characteristics
5.6.9 Potential Radiological Impacts and Effluent Control Systems
Appendix 3.14-A Baseline Radiological Assessment

DATED this 15th day of August, 2013.

BENNETT, MAIN & GUBBRUD, P.C.
Attorneys for Powertech

By _____
Max Main
618 State Street
Belle Fourche, SD 57717-1489
(605) 892.2011

RECEIVED
AUG 19 2013
MINERALS & MINING PROGRAM

POWERTECH (USA) INC.

Richard F. Clement, Jr., President and CEO

Powertech (USA) Inc. 8910 Adams Street NE Albuquerque, NM 87113
E-mail: rfclement@powertechuranium.com (505) 821-6007

EDUCATION

- B.S., Geology, 1965, Boston College
- M.S., Geology, 1967, University of Vermont

SPECIALIZED TRAINING

- Post-graduate courses in Uranium Geology, Exploration Geology, Economic Evaluations and Decision Methods, Colorado School of Mines, 1971-1972
- Post-graduate courses in Hazardous Waste Management, Southern Methodist University, 1990-1993

PROFESSIONAL REGISTRATION AND MEMBERSHIPS

- Professional Geologist, Wyoming (1819)
- American Institute of Professional Geologists, Professional Member
- Society for Mining, Metallurgy and Exploration, Inc., Professional Member
- American Association of Petroleum Geologists

PROFESSIONAL EXPERIENCE

(2006 - Present):	Powertech Uranium Corporation and Powertech (USA) Inc., President/CEO
(2003 - 2006):	Lone Mountain Archaeological Services, Inc., Owner/President
(2000 - 2003):	Retired
(1995 - 2000):	HRI, Inc., Albuquerque, NM, President
(1983 - 1995):	Uranium Resources, Inc., V.P. Exploration
(1967 - 1983):	Mobil Oil Corp., including:
1983:	Special Projects O&G, Dallas, TX
1978-82:	VP Exploration, Mobil Energy Minerals Australia, Inc.
1976-78:	Planning Associate, New York City, NY
1975-76:	Operations Coordinator, Uranium - all U.S.
1972-74:	Associate Regional Geologist, Uranium
1969-71:	Senior Field Geologist, Uranium
1967-69:	Petroleum Geologist, Oklahoma City, OK

- While serving as V.P. Exploration for Uranium Resources, Inc., supervised geological staff designing drill programs and implementing same for Kingsville Dome ISR Project, Kingsville, TX and Rosita ISR Project, Duval County, TX. During that time the V.P. of Environmental Resources reported to Clement, and during which time the Benevides and Longoria ISR projects were reclaimed and the Kingsville Dome and Rosita Projects were permitted and brought into production.

- While serving as President of HRI Inc., the permitting of the Crownpoint/Churchrock ISR Projects in New Mexico was completed under Clement's direction.

- Throughout Clement's career he was a pioneer in geological interpretation of sedimentary uranium ore bodies. From this basic data the design of efficient and safe wellfields were determined and implemented. This interpretation included the Crownpoint Uranium Project ISR Pilot of Mobil Oil Corp. as a joint venture with the U.S. Tennessee Valley Authority. It also included Uranium Resources, Inc.'s Kingsville Dome and Rosita projects that were mined via the ISR method from 1988 until he left in 2000.

RECEIVED
AUG 19 2013
MINERALS & MINING PROGRAM

POWERTECH (USA) INC.

Richard Blubaugh, Vice President of Health, Safety and Environmental Resources

Powertech (USA) Inc. 5575 DTC Parkway, Suite 140 Greenwood Village, CO 80111
E-mail: rblubaugh@powertechuranium.com (303) 790-7528

EDUCATION

- B.S., Biology, 1972, University of New Mexico
- MAPA, 1976, University of New Mexico
- Health Physics Certificate, 1977, Associated Universities of Oak Ridge, TN
- University of California, Berkeley, 1970-1971
- New Mexico State University, 1971

SPECIALIZED TRAINING

- Numerous conferences, short courses and RSO refresher training courses

PROFESSIONAL REGISTRATION AND MEMBERSHIPS

- Radiation Safety Officer (RSO)

PROFESSIONAL EXPERIENCE

(2006 - Present):	Powertech (USA) Inc., V.P. of Health, Safety & Environmental Resources
(2004 - 06):	George C. Brandt, Inc., Denver, CO, Sales
(2002 - 04):	Atlas Minerals Inc., Denver, CO, Director of Business Development & Governmental Affairs
(2000 - 2002):	Richard Blubaugh Consulting, Denver, CO, Consultant
(1981 - 2000):	Atlas Corporation/Atlas Minerals/Atlas Precious Metals, including:
1998 - 2000:	Executive Vice President/Director, Denver, CO
1989 - 2000:	Vice President - Environmental Health and Safety, Denver, CO
1985 - 1989:	Regulatory Affairs Manager, Grand Junction, CO
1981 - 1985:	Regulatory Affairs Manager, Moab, UT
(1980 - 1981):	Federal-American Partners, Riverton, WY, Environmental Manager
(1980):	Espey, Huston & Associates - Denver, CO, Project Manager
(1978 - 1980):	Chevron Resources - Panna Maria, TX, Environmental/Safety Coordinator
(1977 - 1978):	United Nuclear - Churchrock and Grants, NM, Radiation Safety Officer
(1972 - 1977):	State of New Mexico, Environmental Improvement Agency, Environmental Scientist and Environmental Supervisor, Las Cruces, Roswell, Albuquerque and Grants, NM

- Mr. Blubaugh had formal training in health physics in a concentrated 10-week course at Oak Ridge Associated Universities, sponsored by NRC and the State of NM, and over 25 years practical experience.

RECEIVED
AUG 19 2013
MINERALS & MINING PROGRAM

James A. Bonner, Vice President of Geology and Exploration

POWERTECH (USA) INC.

Powertech (USA) Inc. 8910 Adams Street NE Albuquerque, NM 87113
E-mail: jbonner@powertechuranium.com (505) 821-6007

EDUCATION

- B.S., Geology, University of Wyoming

SPECIALIZED TRAINING

- Rocky Mountain Energy Company in-house training on ISR technology

PROFESSIONAL REGISTRATION AND MEMBERSHIPS

- Professional Geologist, Wyoming (906)
- American Institute of Professional Geologists, Certified Professional Geologist

PROFESSIONAL EXPERIENCE

(2006 - Present): Powertech (USA) Inc., V.P. of Geology and Exploration
(2003 - 2006): Gordon Environmental Engineers, Senior Geologist
(1988 - 1998): S.M. Stoller Corporation, Manager
(1971 - 1985): Rocky Mountain Energy Company, a subsidiary of Union Pacific Railroad, Exploration Manager

- While at Powertech (USA) Inc., Mr. Bonner directed exploration drilling and land acquisition for projects in New Mexico, Colorado, South Dakota, and Wyoming.

- While at S.M. Stoller Corporation, Mr. Bonner provided regulatory compliance services to government and private sector clients.

- Worked on uranium exploration and development programs for Rocky Mountain Energy Company, a subsidiary of Union Pacific Railroad, including:

    - Involved in the discovery and development drilling of the deposit that became the Bear Creek Uranium Mine, Converse County, Wyoming, in 1977.

    - Involved in exploration drilling on multiple ISR projects including Reno Creek, Wyoming, which is currently being permitted through the U.S. Nuclear Regulatory Commission as an ISR facility.

    - Provided discovery, development drilling and geologic input into the design and well field construction of an experimental ISR pilot program on the Nine Mile Lake Project, Natrona County, Wyoming.

    - As Regional Exploration Manager for the Southwest United States, directed breccia pipe exploration programs in Utah and Arizona.

    - While in the same position, directed discovery and exploration drilling of the Centennial Uranium Deposit in northeastern Colorado.

RECEIVED
AUG 19 2013
MINERALS & PROGRAM
POWERTECH (USA) INC.

Mark Hollenbeck, Project Manager

Powertech (USA) Inc. 310 2nd Avenue Edgemont, SD 57735
E-mail: mhollenbeck@powertechuranium.com (605) 662-8308

EDUCATION

- B.S., Chemical Engineering, South Dakota School of Mines and Technology

PROFESSIONAL REGISTRATION AND MEMBERSHIPS

- Professional Engineer, South Dakota (4516)
- National Society of Professional Engineers (Member and Past Legislative Director)
- South Dakota Engineering Society (Member and Past Legislative Director)
- Rapid City Jaycees (Past President)
- Black Hills Engineering Society
- Edgemont Chamber of Commerce (Past President)
- Southern Hills Economic Development Corporation (Director)

PROFESSIONAL EXPERIENCE

(2007 - Present):	Powertech (USA) Inc., Project Manager
(2000 - Present):	Self-Employed Rancher
(2000 - 2007):	Self-Employed Construction
(2001 - 2006):	City of Edgemont, SD, Mayor
(1996 - 2006):	Lobbyist
(1998 - 1999):	American Petroleum Institute, SD Office, Executive Director
(1993 - 1998):	City of Fort Pierre, SD, Director of Public Works
(1982 - 1993):	Montana Dakota Utilities, Black Hills Division, including:
1985 - 1993:	Division Engineer
1982 - 1985:	Project Engineer

RECEIVED
AUG 19 2013
MINERALS & MINING PROGRAM

POWERTECH (USA) INC.

John Mays, Vice President of Engineering

Powertech (USA) Inc. 5575 DTC Parkway, Suite 140 Greenwood Village, CO 80111
E-mail: jmays@powertechuranium.com (303) 790-7528

EDUCATION

- B.S., Chemical Engineering and Petroleum Refining, 1992, Colorado School of Mines

SPECIALIZED TRAINING

- "Introduction to MICROMINE" – 2009, Micromine
- "Eleventh Annual Resources Drilling Fundamentals Training Seminar 2007" – GEFCO, Enid, OK
- "Applied Groundwater Flow & Contaminant Transport Modeling" – Waterloo Hydrogeologic
- "Techbase –Basic Training Course" – Techbase International
- "The MODFLOW Course and Model Calibration using PEST" – National Ground Water Association

PROFESSIONAL REGISTRATION

- Professional Engineer, South Dakota (11295)
- Professional Engineer, Colorado (45996)

PROFESSIONAL EXPERIENCE

(2008 - Present):	Powertech (USA) Inc., V.P. of Engineering
(2006 - 2008):	UrAsia Energy Ltd. (Akdala and South Inkai Projects [Joint Venture Betpak Dala] and Kharasan-1 Project [Joint Venture Kyzylkum), Almaty, Kazakhstan, Chief In Situ Mining Engineer/Vice President
(2003 - 2006):	Searles Valley Minerals, Trona, CA, Senior Mining Engineer/Superintendent of Lake Development
(2002 - 2003):	Power Resources, Inc. (Smith Ranch/Highland Uranium Project), Douglas, WY, Superintendent of Well Field Construction
(2001 - 2002):	Rio Algom Mining Corp. (Smith Ranch Facility), Douglas, WY, Well Field Engineer
(2000 - 2001):	Rio Algom Mining Corp. (Smith Ranch Facility), Douglas, WY, Restoration Engineer
(1996 - 2000):	Rio Algom Mining Corp. (Quivira Mining Co.), Grants, NM, Production Engineer
(1995 - 1996):	Energy Fuels Nuclear, Inc. (White Mesa Mill), Blanding, UT, Plant Operator
(1993 - 1995):	Energy Fuels Nuclear, Inc. (Reno Creek Project), Gillette, WY, Junior Engineer
(1992):	Colorado School of Mines, Department of Economic Geology, Assistant
(1988):	Everest Minerals Co., Highland Uranium Project, Maintenance Technician
(1986):	Everest Minerals Co., Corpus Christi, TX, Lab Technician

- Extensive, direct experience in construction, operation and reclamation of ISR facilities.

- Mr. Mays at times has been directly responsible for managing ISR well field operations to maintain compliance with groundwater monitoring requirements.

POWERTECH (USA) INC.

Elizabeth (Lisa) A. Scheinost

Powertech (USA) Inc.
5575 Denver Tech Center Parkway, Suite 140
Greenwood Village, Colorado 80111
escheinost@powertechuranium.com
(303) 790-7528

RECEIVED
AUG 19 2013
MINERALS & MINING PROGRAM

Education

- B.S. Geological Engineering, South Dakota School of Mines and Technology, 1986

Professional Registration and Memberships

- Engineer in Training 142742T
- National Mining Association

Areas of Expertise

- Sample planning, collection and data management
- Monitoring well design, construction and sampling
- Environmental site characterization studies and groundwater investigations
- CERCLA RI/FS
- Landowner, community and government relations

Professional Experience

2013 – Present: Powertech (USA) Inc., Greenwood Village, Colorado, *Data Manager*
2008 – 2013: Powertech (USA) Inc., Edgemont, South Dakota, *Office Manager*
2002 – 2004: ETI Professionals, Las Vegas, Nevada, *Geological Assistant*
2002: IT Corporation, St. Paul, Minnesota, *General Manager*
2000 – 2001: IT Corporation, St. Paul, Minnesota, *Environmental Engineer/Scientist III*
1988 – 1996: IT Corporation, St. Paul, Minnesota, *Environmental Engineer/Scientist III*
1987 – 1988: AeroVironment, Inc., Monrovia, California, *Data Technician and Field Geologist*
1985 – 1986: Ellsworth Air Force Base, Rapid City, South Dakota, *Missile Engineering Aid*
Summer 1985: Department of Water and Natural Resources, Mining and Exploration Program, Pierre, South Dakota, *Engineering Intern*

Professional Training

8-Hour Enviro Data Training, Geotech Computer Systems, Inc., Centennial, Colorado
12-Hour Microsoft Project Training Workshop, SkillPath Seminars, Rapid City, South Dakota
40-Hour Fundamentals of Engineering Project Management, IT Corporation, Pittsburgh, Pennsylvania
40-Hour Short Course, DNAPLs in Porous and Fractured Media, University of Waterloo, Toronto
8-Hour Site Supervisor Training, IT Corporation, St. Paul, Minnesota
8-Hour OSHA Annual HAZWOPER Refresher Courses, IT Corporation, St. Paul, Minnesota
40-Hour OSHA HAZWOPER, IT Corporation, St. Paul, Minnesota

Publications

Scheinost, E. and A. Desai, "Performance Assessment of a Groundwater Recovery System Designed Using Geoflow – A Case Study," IT Technology Exchange Symposium, Proceedings, Scottsdale, Arizona, 1992.

Project Experience

Data Manager, Powertech (USA) Inc., Dewey-Burdock In Situ Uranium Recovery Project, Fall River and Custer Counties, South Dakota. Manage baseline environmental data, water well inventories and field sampling programs for U.S. NRC Materials License, U.S. EPA Underground Injection Control Class III and V permit applications, and SD DENR Large Scale Mine, Water Rights and Groundwater Discharge Plan permit applications. Support landowner, community and government relations activities.

Project Engineer and Geologist, U.S. Department of Energy, Nevada Test Site, Underground Test Area, Las Vegas, Nevada. Prepared well completion reports summarizing geophysical, geochemical, hydrogeologic, lithologic, drilling, and well construction data. Created summary tables, boring logs, location drawings, and well construction diagrams. Analyzed formation fractures using downhole borehole imaging software. Prepared standard operating procedures for collecting groundwater samples and conducting RCRA facility investigations. Outlined requirements for preparing data quality objectives (DQOs) including the need to identify the decisions to be made, data uses and data collection, and storage and retrieval systems. Suggested formation of technical review committee, development of groundwater hydrogeologic model, and records search to aid DQO development. Wrote background sections of UGTA RI/FS work and field sampling plans.

Project Manager, USDA Forest Service, Laona, Wisconsin. Completed Engineering Evaluation and Cost Analysis (EE/CA) for closure of a 3.3-acre landfill using CERCLA Non-Time Critical Removal Action (NTCRA) principles. Coordinated multidisciplinary team of engineers, risk assessors and scientists to complete human health and ecological risk assessments, conduct field investigations, evaluate and select the closure alternative, prepare an action memorandum, achieve community, Forest Service and State acceptance, design a cap at 35%, 95% and 100% review intervals, prepare construction specifications, drawings, schedules of items and contract bid documents, and estimate construction costs.

Project Controls Engineer and Project Manager, Canadian Pacific Railway, Shoreham Facility, Minneapolis, Minnesota. Cost/revenue manager for multi-site, multi-task investigation. Implemented, with client's counsel and project manager, a detailed work breakdown structure capturing and assigning investigation costs to multiple PRPs, each with varying site liability, to support client's cost-recovery litigation. Responded to Minnesota Pollution Control Agency (MPCA) comments on Stage 1 Phase II RI Work Plan. Managed excavation, survey, laboratory, and IDW disposal contracts. Supervised field geologist, field health and safety officer, field technician, and data manager during site work, data validation and completion of draft report.

Task Manager and Field Team Leader, Navy IR Program, Naval Air Station Miramar, San Diego, California. Field supervisor and report task manager for Navy CLEAN hydrogeologic assessment report (HAR) for fire fighter drill pits located adjacent to NAS Miramar runway. Supervised mud and air rotary drilling crews and field technicians, and completed, developed and sampled monitoring wells. Prepared HAR for Regional Water Quality Management Board. Presented preliminary results to CERCLA Technical Review Committee. Responded to questions regarding field methods and analytical results. Responded to agency comments on HAR. Assisted with preparation of RI/FS Work Plan and groundwater Solid Waste Assessment Test (SWAT) work plan. Directed assembly of CERCLA administrative record and site management plan. Coordinated project health and safety requirements, flight-line clearances, budgeting and schedules with Jacobs Engineering Group, the lead consultant.

Task Manager, USACE Omaha Installation Restoration Program (IRP) Formerly Used Defense Sites (FUDS) CERCLA RI/FS, Former Air Force Airfield and BOMARC Missile Site, Raco, Michigan. Prepared Stage I RI quality control and field sampling plans for eight sites including a wastewater treatment lagoon, 28 missile silos, a transformer pad, and underground storage tank areas. Led RI Report preparation. Incorporated Michigan Act 307 Rules to assess site cleanup needs. Addressed USACE and Michigan DNR comments to achieve report acceptance.

Project Engineer and Field Team Leader, USACE Omaha IRP/FUDS CERCLA RI/FS, Former Sault Ste. Marie Radar Base, Sault Ste. Marie, Michigan. Prepared RI quality control and field sampling plans for investigation of old auto hobby shop, a landfill and a drain field. Supervised drilling crew, logged discharge line soil and rock samples, supervised wireline coring, installed bedrock monitoring wells, and collected groundwater and surface soil samples. Prepared Stage 1 RI Report. Responded to Michigan DNR and USACE comments. Prepared invoice summaries and Primavera project schedule updates.

Field Team Leader and Project Engineer, Navy IR Program, Marine Corps Logistics Base, Barstow, California. Supervised drilling crew during Phase I, Stage A, CERCLA RI field program. Collected and logged soil samples. Supervised monitoring well construction and piezometer installation. Assisted with assembly, wiring and installation of Grundfos submersible pumps. Assisted with step-drawdown and recovery tests. Used Hermit data logger. Purged wells, measured field parameters and collected groundwater samples. Prepared descriptions of field sampling and aquifer test procedures. Prepared site-wide groundwater contour maps. Measured infiltration rates across 3-acre area, at two depths, to assess feasibility of site for land application of treated groundwater. Prepared detailed cross-sections and fence diagrams. Assisted with preparation of Navy CLEAN Phase II Field Sampling Plan for MCLB Barstow Operable Units 1 and 2.

Project Engineer, Navy IR Program, Naval Amphibious Base Coronado, San Diego, California. Assisted with CERCLA Site Inspection (SI) Report and groundwater SWAT Report. Used IT Environmental Management System (ITEMS) to manage and report laboratory data.

Assistant Hydrogeologist and Field Team Member, USACE Omaha IRP, Ellsworth Air Force Base, Rapid City, South Dakota. Prepared CERCLA RI/FS Stage 2 field sampling and quality control plans for eight sites including a fire protection training area, landfills, flight-line refueling systems, and oil/water separators. Wrote field procedures and data reduction instructions for packer testing the Pierre Shale. Designed a specialty flow meter capable of measuring 10^{-6} to 10^{-9} hydraulic conductivities. Performed packer and slug tests. Reduced data, calculated hydraulic conductivities, vertical and horizontal gradients, groundwater flow rates, and groundwater travel times. Collected split-spoon samples, logged borehole samples, installed monitoring wells, developed wells, collected groundwater samples, and supervised drilling rig decontamination at approximately 40 borehole locations. Collected surface water and sediment samples. Performed soil gas surveys using on-site gas chromatograph for analysis. Assisted with preparation of Stage 2 RI Report. Described field procedures and summarized hydrogeologic data for each site. Described contaminant nature, extent, fate, and transport. Assisted with presentation of FS alternatives to USACE.

Project Engineer, USACE Omaha IRP CERCLA RI/FS, Grand Forks Air Force Base, Grand Forks, North Dakota. Assisted with RI report for four sites including a landfill, a fire training area, exploded ordnance disposal area, and a fuel leak area. Evaluated field data, compiled laboratory data, prepared figures, and

wrote RI sections summarizing analytical results. Responded to USACE comments to gain RI report acceptance. Prepared invoice summaries and Primavera project schedule updates.

Task Manager, USACE Omaha IRP CERCLA RI/FS, Wright-Patterson Air Force Base, Dayton, Ohio. Managed completion of CERCLA RI work plan, field sampling plan and quality assurance project plan.

Field Team Member, Bluff Road CERCLA Superfund Site, Columbia, South Carolina. Collected soil and groundwater samples at former drum reconditioning and storage facility. Cleared pathways through forest for drilling and sampling equipment. Hiked to remote monitoring locations. Developed wells with nitrogen air lift system and bailers. Worked about 30% of time in Level C PPE. Organized daily drilling activities and assembled and led drilling crews, sampling technicians, EPA site inspectors, and health and safety coordinators to field locations. Supervised hollow-stem auger drilling at approximately 30 locations, collected in-situ samples for permeability testing, collected geotechnical and analytical samples, used a power hand auger to sample subsurface soils in areas inaccessible to the drilling rig, supervised crew operation of track-mounted drilling rig, and prepared boring logs. Documented activities and sample collection in accordance with the CERCLA RI/FS field sampling plan.

Task Manager, Argonne National Laboratory, Lemont, Illinois. Directed preparation of CERCLA Hazard Ranking System (HRS) scores for six separate sites at laboratory. Coordinated activities between St. Paul and Chicago offices to complete scoring worksheets in two weeks.

Project Engineer, Battelle Engineering Management Operations, Richland, Washington. Edited CERCLA preliminary assessment (PA) report and assisted with preparation of the HRS score for the US Coast Guard Station Charlevoix. Reviewed SI reports for Thunder Bay and Cheboygan Coast Guard Stations.

Project Engineer, MidAmerican Energy Company, Des Moines, Iowa. Reviewed existing site investigation, analytical and remediation data for two former manufactured gas plants and completed RI contaminant nature and extent summaries for each.

Project Manager, Deluxe Corporation, Shoreview, Minnesota. Reviewed and commented on reports prepared by outside consultants. Presented a review of the New Jersey Cleanup Responsibility Act (ECRA) to Deluxe environmental staff and attorneys. Developed soil and roof sampling program to define extent of lead contamination at the New Jersey printing facility. Directed collection of samples, reviewed results and prepared report. Summarized DNAPL fate and transport characteristics for chlorinated solvent (PCE) release.

Task Manager, Valspar Corporation, East Moline, Illinois. Responsible for preparing assessment of potential remedial technologies for paint manufacturing plant. Identified remedial action objectives consistent with State and client requirements; defined volume of media to be remediated; identified five potential soil remedial technologies and seven potential groundwater technologies; assessed the effectiveness, implementability and cost of each technology; identified general response actions; and identified additional data requirements. Prepared preliminary cost estimate for technologies appearing most appropriate.

Project Engineer, Westinghouse Feed Materials Process Center, Fernald, Ohio. Inspected process area. Received training in radioactive materials handling and decontamination. Prepared sampling methods for

radioactive wastes stored in silos. Assisted with groundwater contaminant fate and transport modeling report.

Field Geologist, Navy IR Program Missile Facility, San Diego, California. Supervised completion of three 600-foot deep wells through conglomerate. Utilized air rotary drilling method. Logged samples. Performed field sieve analyses and moisture content testing.

Project Manager, USDA Forest Service Munising Landfill, Munising, Michigan. Prepared engineering cost estimate for capping Munising Sanitary Landfill using native materials, geotextiles, flexible membrane liners, and geosynthetic clay liners. Managed reconditioning of vandalized monitoring wells by purging using Grundfos pumps. Oversaw sample collection and containerization of purged water. Coordinated with laboratory to establish test parameters, detection limits and cost estimates.

Project Manager, Mayo Foundation, Rochester, Minnesota. Developed and implemented remediation program for contaminated soil and directed confirmatory groundwater sampling. Achieved necessary client and MPCA Voluntary Investigation Cleanup (VIC) program staff approvals for closure.

Project Manager and Field Team Leader, Reichhold Chemical, Inc., Durham, North Carolina. Lead geologist responsible for supervising drilling, soil sampling and monitoring well installation at Minneapolis facility during underground storage tank (UST) investigation. Prepared MPCA petroleum tank release reports and Minnesota Petrofund Reimbursement Application.

Task Manager, Mobil Oil, West Bloomfield, Michigan. Prepared interim site investigation report for Mobil gas station. Reviewed and summarized site history, soil boring and soil sampling procedures, monitoring well installation and groundwater sampling procedures, soil and groundwater analytical results, and the geologic and hydrogeologic characteristics of the site. Prepared data summary tables and constructed groundwater contour maps and contaminant concentration isopleth maps. Recommended additional soil and groundwater sampling prior to designing remediation system.

Project Engineer, Interlake Corporation, Duluth, Minnesota. Estimated PAH and BTEX concentrations in rainwater flowing across contaminated surface soils using modification of the universal soil loss equation and the soil/water partitioning equation in EPA's Superfund Exposure Assessment Manual. Used results in an ecological assessment to estimate risk associated with runoff entering Lake Superior. Method accepted by MPCA. Assisted with preparation of baseline risk assessment.

Project Engineer, J.T. Baker, Philipsburg, New Jersey. Assisted with preparation of a performance assessment report for a pump and treat system to comply with an ECRA Administrative Consent Order. Prepared groundwater contour maps, assembled modeling input data, checked modeling results, and assembled data tables to support assessment. Prepared isoconcentration maps, tabulated analytical data and reviewed report for data consistency.

Project Engineer, Safety Kleen, St. Paul, Minnesota. Prepared description of the hydrogeologic conditions at site and constructed a groundwater contour map.

Project Engineer, Little Lake Butte Des Morts, Neenah, Wisconsin. Prepared sampling plan for collection of PCB contaminated sediments in lake. Utilized grid system, scuba diver and on-shore surveyor to locate sampling points.

Project Engineer, Onan Corporation, Fridley, Minnesota. Reviewed groundwater analytical results and assessed plume migration fate. Prepared annual report evaluating groundwater monitoring data. Compared data with past sampling events. Contoured two separate plumes for various times to show continuous plume migration toward property-line creek.

Field Team Leader, Ideal Security Hardware, Minneapolis, Minnesota. Supervised installation of three borings and one shallow groundwater monitoring well using a hollow-stem auger drilling rig. Collected soil samples, developed wells, sampled wells, prepared chain-of-custody documentation, and packaged samples for shipment to laboratory.

Field Team Member, University of Minnesota, Rosemount, Minnesota. Collected groundwater samples during MCPA field audit with no errors.

Field Team Member, Armstrong Rubber Company, Des Moines, Iowa. Prepared a field sampling plan and assisted with preparation of a health and safety plan. Performed field work including drilling, logging, installing, and sampling groundwater monitoring wells. Performed percolation tests in an area proposed for land treatment of contaminated creek sludge. Reviewed the land application permit and recommended a schedule of aerating soil by tilling to increase volatilization of fuel compounds. Also recommended applying nutrients such as nitrogen, phosphorous, sulfur, and/or moisture to increase biodegradation rates.

Project Engineer, US Postal Service, Central Region Contract, St. Paul, Minnesota. Summarized RCRA requirements for mail facilities in all 50 states as part of a comprehensive environmental compliance handbook.

Project Engineer, Federal Cartridge Company, New Brighton, Minnesota. Assisted with preparation of soil washing and soil excavation plans.

Field Geologist and Project Engineer, USDA Forest Service, Wisconsin. Prepared sampling and analysis plan (SAP) and site-specific health and safety plan (HSP) for CERCLA SI at Bay Mills Landfill in Hiawatha National Forest. Supervised completion of the SAP and HSP for the Florence Warehouse SI in Nicolet National Forest. Responded to agency comments. Managed Bay Mills and Florence Warehouse field investigations. Prepared SAP and HSP for DDT drum burial investigation in Chequamegon National Forest. Supervised field program. Collected soil samples, logged boreholes, and installed, developed and sampled groundwater monitoring wells. Reviewed and provided comments on Rhinelander landfill cap design, construction documents and quality control plans.

Task Manager, Amoco Chemical Corporation, Joliet, Illinois. Prepared CERCLA RI/FS work plan for investigation of on-site wastewater treatment lagoons and industrial waste landfill.

Field Geologist, Marvin Windows, Warroad, Minnesota. Measured groundwater levels, purged wells and collected groundwater samples from approximately 40 monitoring wells.

Project Engineer, Witco Corporation, Chicago, Illinois. Prepared Phase I and II environmental assessment reports for two oil blending facilities. Incorporated State cleanup criteria.

Field Team Leader, Air Quality Control Board, San Bernardino and Los Angeles Counties, California. Prepared work plans and reports for ambient air and soil gas monitoring at 29 solid waste disposal facilities as part of air SWAT field investigations. Led field sampling teams. Operated portable meteorological stations. Assisted with design of landfill gas and ambient air monitoring equipment.

Field Team Member, Air Resources Board, Los Angeles, California. Operated air monitoring equipment and samplers, including high-volume air samplers, at locations across the Los Angeles basin during the Southern California Air Quality Study.

Other Education

2004 – 2007: Accounting – 38 of 72 credit hours toward B.S., St. Cloud State University, St. Cloud, Minnesota

Other Work Experience

1996 – 2000: Northwest Airlines, Minneapolis/St. Paul, Minnesota, *Domestic, International, Elite, Group, and City Ticket Office Reservation Sales Agent*

Other Certifications

2001 - 2002: American Sailing Association 101, 103 and 104 certifications
2001: Scuba diver certification
1994: Private pilot, single engine land

Community Involvement and Leadership

2011 – Present: Chair, City of Edgemont Planning and Zoning Board
2010 – 2011: Co-Chair, Southern Hills United Way Campaign
2008 – 2012: Edgemont YMCA Cardio Room Volunteer
2008 – 2011: Secretary, Edgemont Area Chamber of Commerce

BKS Environmental Associates, Inc.

BRENDA SCHLADWEILER, PRESIDENT
President
Principal Scientist
bschladweiler@bksenvironmental.com

RECEIVED
AUG 19 2013
MINERALS & MINING PROGRAM

BKS Environmental Associates, Inc.
www.bksenvironmental.com

SPECIALTIES

Overall site resource interpretations, soil and vegetation assessments, reclamation design and monitoring, wetland delineations, threatened and endangered (T&E) plant species and habitat surveys, and environmental compliance.

WORK ACTIVITIES

- Directing and maintaining initial and ongoing operation soils and vegetation assessments on various energy development projects.
- Compiling reclamation plans for various proposed, existing or abandoned mining and oil and gas projects.
- Administering and coordinating construction management and monitoring on various mining and oil and gas reclamation projects.
- Conducting environmental audits or Phase I assessments of various industrial sites.
- Reclamation skills training for interested parties, including topsoil management.
- Due diligence: carrying out desk-based research to review previous investigations of a site, and possibly undertaking field work, to identify ongoing activities on the site.

EXPERIENCE

President *1982 - Present*
BKS Environmental Associates, Inc., Gillette WY, Rock Springs, WY and Dickinson, ND
Wyoming Reclamation and Restoration Center Liaison *2011- Present*
University of Wyoming Adjunct Professor *2013*
Project Coordinator *1982*
Anaconda Minerals Company
Associate Environmental Coordinator *1980 - 1982*
ARCO Coal Company, Coal Creek Mine, Wright, WY
Range Scientist *1980*
Energy Fuels, Kerr Coal Company Walden, CO
Environmental Technician 1979
Thunder Basin Coal Company, Black Thunder Mine, Wright, WY

EDUCATION

PhD, Soil Science, University of Wyoming: Laramie Dissertation: Soil and Plant Responses to Variable Topsoil Replacement Depths at a Coal Mine in Northeastern Wyoming. Research was conducted at the North Antelope/Rochelle Mine southeast of Wright, Wyoming *2003*

M.S., Soil Science University of Wyoming: Laramie Thesis: Relationship Between Soil Selenium Concentration and Selenium Uptake by Vegetation on Surface Coal Mine Lands in Wyoming *1995*

B.S., Range Management (Land Rehabilitation), Colorado State University; Fort Collins *1980*

P.O. Box 3467
Gillette, WY 82717-3467
(307) 686-0800
(307) 686-0880 Fax

P.O. Box 3017
Rock Springs, WY 82902-3017
(307) 382-2443

P.O. Box 1930
Dickinson, ND 58602
701-300-0672

CERTIFICATIONS & TRAINING

Safeland USA Training	*May 2010*
Mine Safety and Health Administration; Experienced Miner Annual Refresher, (MSHA)	*December 2012*
NRCS Technical Service Provider for Nutrient and Pest Management	*April 2011*
NRCS Technical Service Provider for Grazing Plans	*May 2010*
Leadership Wyoming Class of 2010	
Hazwoper- Hazardous Waste Site Worker Refresher	*January 2013*

T & E Plant Surveys, State of Wyoming Abandoned Mine Program
Wetland Delineator, Omaha and Sacramento Districts, U.S. Corps of Engineers
OSHA Hazardous Waste/Supervisor
Certified Professional Soil Scientist, ARCPAC
Registered Professional Soil Classifier (MN)
Certified Professional in Rangeland Management (CPRM)Certified Carbon Verifier
Commercial Pesticide Applicator

MEMBERSHIPS

Soil and Water Conservation Society
Soil Science Society of America
Society for Range Management
American Society of Mining and Reclamation
Society for Mining, Metallurgy, and Exploration, Inc.
Western Society of Soil Science
Association of Women Soil Scientists
National Society of Consulting Soil Scientists (now part of SSSA)
Wyoming Weed Management Association
SSSA Council of Soil Science Examiners
Wyoming Native Plant Society

COMMITTEE PARTICIPATION

Campbell County Conservation District (CCCD) Board of Supervisors
Energy Mineral Counties Coalition
Camp Wyoba Board
Campbell County Five-Year Strategic Planning Committee
Campbell County Five-Year Strategic Planning Implementation
Campbell County Outdoor Classroom Planning Committee
National Executive Committee- American Society for Mine and Reclamation
Soil and Water Conservation Society, Northeast Wyoming Area Director
Leadership Wyoming- Alumni
Liaison for Wyoming Reclamation and Restoration Center

PUBLICATIONS

- Schladweiler, B.K. and D.M. Gardner. 2011. *Determining reclamation potential for steep oil and gas sites in the Powder River Basin, Wyoming.* National Meeting of the American Society of Mining and Reclamation, Bismarck, ND. Reclamation: Sciences Leading to Success June 11-16, 2011.
- Schladweiler, B. and C. Adams. 2010. *Comparison of Three Vegetation Sampling Methods on Oil and Gas sites in Southwestern Wyoming.* Presented at the 2010 National Meeting of the American Society of Mining and Reclamation, Pittsburgh, PA, Bridging Reclamation, Science, and the Community. June 8, 2010.
- Schladweiler, B.K. 2009. *Comparison of Coal Mine Reclamation under the Surface Mining Control and Reclamation Act of 1977 and Oil and Gas Sites in Wyoming.* American Society of Mining and Reclamation. Billings, Montana
- Schladweiler, B.K. 2007. *Ongoing Evaluation of Effects from Variable Topsoil Depths at a Coal Mine in Northeastern Wyoming American Society of Mining and Reclamation.* Gillette, Wyoming
- Schladweiler, B.K., G.F. Vance, D.E. Legg, L.C. Munn, and R. Haroian. 2005. *Topsoil Depth Effects on Reclaimed Coal Mine and Native Area Vegetation in Northeastern Wyoming.* Rangeland Ecology & Management Bik 58:167 - 176
- Schladweiler, B.K., G.F. Vance, D.E. Legg, and S. Belden, 2005. *Ongoing Evaluation of Effects from Variable Topsoil Depths at a Coal Mine in Northeastern Wyoming.* 2005. National Meeting of the American Society of Mining and Reclamation.
- Schladweiler, B.K., G.F. Vance, D.E. Legg, L.C. Munn, and R. Haroian. 2004. *Influence of Variable Topsoil Replacement Depths on Soil Chemical Parameters within a Coal Mine in Northeastern Wyoming.* Arid Land Research and Management. Vol. 18:347 – 358
- Schladweiler, B.K., G.F. Vance, and R. Haroian. 2002. *Influence of Variable Topsoil Replacement Depths on Soil and Plant Characteristics at a Coal Mine in Northeastern Wyoming.* American Society of Mining and Reclamation. Lexington, Kentucky. Pg. 1157
- Schladweiler, B.K., and G.F. Vance. 1996. *Vegetation diversity within Native and Reclaimed Coal Mine Sites: Environmental Factors and Seasonal Variability.* American Society of Surface Mining and Reclamation Proceedings, Knoxville, Tennessee Vol. 13:472 – 483
- Schladweiler, B.K., G.F. Vance, D.E. Legg, and C. Bilen. 1995. *Regression Analysis to Predict Selenium Levels at Two Surface Coal Mines in the Powder River Basin, Wyoming.* Decades Later: A Time for Reassessment. American Society of Surface Mining and Reclamation, Princeton, WV. Bol. I: 246 – 257
- Schladweiler, B.K., G.F. Vance, R.N. Pasch, P.K. Carroll, M.S. Page, D.L. Bonett, S. E. Williams. 1993. *Relationship between Soil Selenium Concentrations, & Selenium Uptake by Vegetation on Surface Coal Mine Lands in Wyoming.* Billings Reclamation Symposium. Office of Surface Mining. Vol. I: 119 – 130.
- Schladweiler, B.K., G.F. Vance, R.N. Pasch, P.K. Carroll, M.S. Page, D.L. Bonett, & S.E. Williams. 1993. *Comparison of Selenium Uptake by Vegetation on Surface Coal Mine Lands in Wyoming and Seasonal Variability of Uptake.* American Society of Surface Mining and Reclamation. Vol. II: 828 – 838.
- Schladweiler, B.K., G.F. Vance, D.E. Legg, and S. Rexroat. 1997. *Hydric soils and their relationship to plant biodiversity within reclaimed stream channels in semi-arid environments.* Agronomy Abstracts, 89:315
- Schladweiler, B.K. , G.F. Vance, R.N. Pasch, P.K. Carroll, M.S. Page, D.L Bonett and S.E. Williams. 1995. *Relationship between Soil Selenium*

Concentrations and Selenium Uptake by Vegetation on Surface Coal Mine Lands in Wyoming. American Society of Surface Mining and Reclamation Abstracts, p.861

- Schladweiler, B.K., G.F. Vance, P.K.Carroll, M.S. Page, AP. Wanek, D.L Bonett, R.N. Pasch, and S.E. Williams. 1993. *Comparison of Selenium Uptake by Vegetation on Surface Coal Mine Land in Wyoming and Seasonal Variability of Uptake.* American Society of Surface Mining Reclamation Abstracts. P. 36
- Vance, G.F., R.N. Pasch, D.L. Bonett, B.K. Schladweiler, P.K. Carroll and M.S. Page. 1992. *Evaluation of Various Selenium Extraction Methods for Correlating Soil/Backfill Levels to Plant Concentrations.* Agronomy Abstracts, p.246.
- Vance, G.F., C.P. Skinner, B.K. Schladweiler, and J. A. Young. 1997. *Selenium in the Environment:* Soil/Geology, Vegetation, and Animal Science Research. U.S. Army, Fort Carson DECAM Research Report, Colorado Springs, CO. 45pp.
- Vance, G.F., R.N. Pasch, P.K. Carroll, M.S. Page, and B.K. Schladweiler. 1991-1994. *Relationship between Soil Selenium Concentrations and Selenium Uptake by Vegetation on Surface Coal Mine Lands in Wyoming.* Proceedings of the First, Second, Third, Fourth, Fifth, and Sixth Abandoned Coal Mine Lands Research Meeting. Sheridan, Gillette, Kemmerer, and Laramie, Wyoming, 24 pp.
- Pasch, R.N., G.F. Vance, S.E. Williams, M.S. Page, P.K. Carroll, and B.K. Schladweiler. 1992. *Relationship between Soil Selenium Concentrations and Selenium Uptake by Vegetation on Surface Coal Mine Lands in Wyoming.* Abandoned Coal Mine Lands Research Meeting, Gillette, Wyoming

PRESENTATIONS

- Schladweiler, B., C. Adams, and M. Kasten. 2013. *Long-term Comparison of Vegetation Reference Area on Reclaimed Coal Mines in Northeastern Wyoming.* National Meeting of the American Society of Mining and Reclamation, Laramie, WY. Reclamation: Sciences Leading to Success June 1-6, 2013.
- Gardner, D., B. Schladweiler, and M. Kasten. 2013. *Comparison of Vegetation Cover vs. Precipitation on a Reclaimed Coal Mine in Northeastern Wyoming.* National Meeting of the American Society of Mining and Reclamation, Laramie, WY. Reclamation: Sciences Leading to Success June 1-6, 2013.
- Cox, L., M. Kasten, and B. Schladweiler. 2013. *Soil Amendment Applications During Drought Periods on Oil and Gas Sites in Wyoming.* National Meeting of the American Society of Mining and Reclamation, Laramie, WY. Reclamation: Sciences Leading to Success June 1-6, 2013.
- Adams, C. and B.K. Schladweiler. 2013. *Comparison of Basal and Aerial Cover for Total Vegetation Cover and Total Ground Cover on Oil and Gas Sites in Wyoming.* National Meeting of the American Society of Mining and Reclamation, Laramie, WY. Reclamation: Sciences Leading to Success June 1-6, 2013.
- Brenda K. Schladweiler. 2013. *Soil Management- Linear Disturbances.* Pipeline Reclamation Workshop, Sidney, MT.
- Brenda K. Schladweiler. 2013. *It Begins with the Soil.* Wyoming Weed Management Association, Casper, WY.
- Brenda K. Schladweiler. 2012. *Topsoil Management Issues Related to Energy Development.* Colorado Oil and Gas Association, Denver, CO.
- Brenda K. Schladweiler. 2012. *Soil Amendment Applications During Drought Periods.* Petroleum Association of Wyoming, Casper, WY.
- Brenda K. Schladweiler and Lisa Cox. 2012. *Reclamation Implication of Overlapping Industries in Southern Campbell County, WY.* American Society of Mining and Reclamation, Tupelo, MS.

- Brenda K. Schladweiler and Dawn. M. Gardner. 2011. *Determining Reclamation Potential for Steep Oil and Gas Sites in the Powder River Basin, Wyoming*. American Society of Mining and Reclamation, Bismarck, ND.
- Schladweiler, B. and C. Adams. 2010. *Comparison of Three Vegetation Sampling Methods on Oil and Gas sites in Southwestern Wyoming*. American Society of Mining and Reclamation, Pittsburgh, PA.
- Adams C. and B.K. Schladweiler. 2009. *Comparison of Three Vegetation Sampling Methods*. PAW Second Annual Reclamation Conference, Casper, WY
- Schladweiler, B.K. 2009. *Comparison of Coal Mine Reclamation under the Surface Mining Control and Reclamation Act of 1977 and Oil and Gas Sites in Wyoming*. American Society of Mining Reclamation. Billings, MT
- Schladweiler, B.K. 2009. *Abandoned Mine Land Uranium Reclamation and Research in Wyoming*. U2009 Global Uranium Symposium. Denver, CO
- Schladweiler, B.K. 2008. *Reclamation in Northeastern Wyoming*. Society for Range Management/Society for Soil Water Conservation Society combined state meeting. Cheyenne, WY.
- Schladweiler, B.K. 2008. *Topsoil Management Issues Related to Oil and Gas Development*. PAW Reclamation Conference. Casper, WY.
- Schladweiler, B.K. 2007. *Ongoing Evaluation of Effects from Variable Topsoil Depths at a Coal Mine in Northeastern Wyoming*. American Society of Reclamation. Gillette, WY.
- Schladweiler, B.K. 2007. *Vegetation and Soils Recovery for Post-CBNG Co-produced Water Discharge*. Wyoming BLM, Buffalo Field Office, Best Management Practices.
- Schladweiler, B.K. 2006. *Vegetation and Soils Recovery for Post-CBNG Co-produced Water Discharge*. Coalbed Methane Education Fair.
- Schladweiler, B.K. 2006. Reclamation Class, Wyoming Workforce Development, Gillette Campus.
- Schladweiler, B.K. 2006. *A Survey of Successful Mineland Revegetation Techniques*. Billings Land Reclamation Symposium.
- Schladweiler, B.K. 2005. *Topsoil Management Workshop, Part 1*. Coalbed Methane Education Fair.
- Schladweiler, B.K. 2005. *A Survey of Successful Mineland Revegetation Techniques*. SRM/SWCS Combined Annual Meeting.
- Schladweiler, B.K. 2004. *Environmental Assessments Related to CBNG Activity*. Wyoming Water Well Association.
- Schladweiler, B.K. 2004. *Overview of Natural Resources in the Powder River Basin*. Wyoming L.E.A.D. Seminar.
- Schladweiler, B.K. 2001. *Effect of CBM Water on Soils and Vegetation*. Coalbed Methane Education Fair.

Michael J. Schierman, CHP

Senior Health Physicist / Manager

RECEIVED
AUG 19 2013
MINERALS & MINING PROGRAM

Professional Summary

Mr. Schierman has several years of experience in health physics as it applies to uranium mill license applications, characterization and remediation of radioactively contaminated sites, and radiological dose evaluation. Experience includes: Radiation Safety Officer (RSO) for uranium mill site and Remediation Leader for large chemical manufacturing company. Mr. Schierman developed, implemented, and managed radiological protection and environmental monitoring program for a large, complex CERCLA site. Most recently Mr. Schierman has worked as a consultant to the nuclear industry and has been involved in projects related to licensing through decommissioning of nuclear facilities.

Years of Experience

- 19 Relevant

Education

- MS, 1994, Health Physics, Colorado State University
- BS, 1991, Biology, University of Nevada, Las Vegas

Professional Registrations/Affiliations

- Member, American Board of Health Physics
- Member, Health Physics Society-Plenary

Certifications and Licenses

- OSHA 40-Hour HAZWOPER Training
- 40-Hour RSO Training
- Certified Health Physicist, 2007
- DOT Shipper Training for Radioactive Materials

Relevant Experience

Radiological Investigations, Johnny M Mine, San Mateo NM
Mr. Schierman developed and implemented a Site Assessment Plan (SAP) at legacy uranium mine near San Mateo New Mexico. Implementation of the SAP is complete and a Site Investigation Report (SIR) has been drafted. The information obtained from SIR will be used to develop an Engineering Assessment and Cost Analysis (EE/CA) for the site.

License Application and Dose Assessment, Bear Lodge Project, Upton WY
Mr. Schierman performed prospective radiation dose assessments, both public and occupational, to support an Environmental Impact Statement (EIS) and USNRC license application for the Bear Lodge Project.

Baseline Radiological Investigation, Bear Lodge Project, Sundance WY– Mr. Schierman developed and implemented a Baseline Radiological Investigation at a proposed rare earth mining facility near Sundance Wyoming. The baseline investigation is ongoing and includes an evaluation of soil, ambient external radiation, and ambient radionuclides in air.

Pipeline Removal Project, Mountain Pass CA - Mr. Schierman is currently the Radiation Safety Officer (RSO) for a project which involves removing 15 miles of waste water pipe containing pipe scale elevated with naturally occurring radionuclides. Developed the radiation protection program and oversees remedial activities as they relate to radiation protection and soil cleanup.

Baseline Gamma Survey, Centennial Site, Ft. Collins CO – Mr. Schierman developed, implemented, and presented the results of a baseline gamma radiation survey at a proposed in-situ uranium facility near Ft. Collins CO. The baseline investigation included evaluation of soil and ambient external radiation.

Baseline Radiological Investigation, Juan Tafoya Mill Site, Marquez NM – Mr. Schierman developed, implemented, and presented the results of a Baseline Radiological Investigation at a proposed conventional uranium mill near Marques NM. The baseline investigation included an evaluation of soil, ambient external radiation, biota, and ambient radon-222 in air.

Baseline Radiological Investigation, Pinon Ridge Mill Project, Paradox CO – Mr. Schierman developed, implemented, and presented the results of a Baseline Radiological Investigation at a proposed conventional uranium mill near Paradox Colorado. The Baseline Radiological Investigation Report was included as part of license application for a conventional uranium mill. This facility has been issued a radioactive materials license from the State of Colorado.

Baseline Radiological Investigation, Dewey-Burdock Uranium Project, Edgemont, SD – Mr. Schierman developed, implemented, and presented the results of a Baseline Radiological Investigation at a proposed uranium in situ recovery (ISR) facility near Edgemont, South Dakota. The baseline investigation included evaluation of soil, air, ambient external radiation and biota. The Baseline Radiological Investigation Report was included as part of license application for a uranium in-situ recovery site.

Baseline Radiological Investigation, Yuty Uranium Project, Yuty, Paraguay – Mr. Schierman developed and implemented the Baseline Radiological Investigation at proposed uranium ISR project in Yuty Paraguay. The baseline investigation included evaluation of soil, air, and biota.

License Renewal Application, Shootaring Mill Site, Ticaboo, UT – Mr. Schierman developed major portions of the Environmental Report including the radiation protection and environmental monitoring programs, environmental effects analysis, site cleanup standard development, and accident scenarios.

RECEIVED
AUG 19 2013
MINERALS & MINING PROGRAM

GWYN MCKEE

Gwyn is the President of and Principal Wildlife Biologist for Thunderbird Wildlife Consulting, Inc. She serves as a primary contact for both the energy industry and regulators (local, state, federal) in the Northern Great Plains regarding project requirements and design, impact assessment, and mitigation strategies. Projects range from small, single-day site assessments to large, multi-year efforts. Gwyn prepares and/or reviews technical reports and documents used by agencies during the permitting process, including contributing to and/or managing environmental impact statements (EISs) and environmental assessments (EAs). She also occasionally serves as a peer review referee or co-author for professional journals, or an invited speaker at professional meetings.

Gwyn manages a staff of biologists that provides wildlife inventory, monitoring, and other consulting services to several energy clients. She has extensive experience conducting aerial and ground surveys for a wide variety of wildlife species in the Northern Great Plains, Midwest, and the Alaskan wilderness. In addition, her specialized experience includes: raptor ecology and mitigation; trapping, radio-marking, and tracking various grouse and raptor species; and conducting clearance surveys for black-footed ferrets and swift fox.

Her recent relevant experience includes: data collection, resource assessments, impact analyses, and/or project management for multiple Bureau of Land Management (BLM) and US Forest Service (USFS) National Environmental Policy Act (NEPA) documents; mitigation planning and implementation; and participation in development of a joint Candidate Conservation Agreement with Assurances/Candidate Conservation Agreement (CCAA/CCA) for the greater sage-grouse and seven other species of concern in northeast Wyoming. Gwyn is well versed in the regulatory processes associated with the Endangered Species Act, Migratory Bird Treaty Act, and Bald and Golden Eagle Protection Act. Her service on numerous local and statewide boards has further enhanced her knowledge and expertise regarding impact analysis and mitigation options for terrestrial habitats and species.

Years of Professional Experience

- Total: 27 years
- With TWC: 20 years

Current Location

- Gillette, Wyoming

Education

- MS, Wildlife Management/ Ecology, University of Missouri, Columbia, 1995
- BS, Wildlife Management, University of Missouri, Columbia, 1982

Professional Standing(s) and Certifications

- Considered a Qualified Third Party NEPA Contractor by the BLM and US Forest Service
- Considered a Qualified Wildlife Biologist by the USFWS, USFS, BLM, and WGFD
- Published author/co-author in, and peer reviewer for, professional journals
- Member of The Wildlife Society & Raptor Research Foundation
- Black-footed ferret surveys, USFWS

PROJECT EXPERIENCE

EISs and EAs, Casper High Plains District Office—BLM, WY and Douglas Ranger District—USFS, WY

Principal Biologist/Project Manager. Third-party Project Manager for a recently completed coal lease EIS with the BLM High Plains District Office in Casper, Wyoming and for multiple coal-related EAs and an EIS with the USFS Douglas Ranger District in Douglas, Wyoming. For all projects, coordinated and led all agency assigned aspects of the process from initial kick-off meetings through printing of the final documents, including: regular communications with resource specialists (internal and subcontractors), agency project managers, and project applicants; identifying and addressing data gaps (either directly or by engaging internal or subcontractor resource specialists); and either reviewing/co-editing (BLM) or preparing/editing (USFS) the entire document to ensure completeness and "one-voice", among others. Collected and/or supervised collection of wildlife field data for all projects following current agency protocols and prepared the associated resource assessments and impact analyses (i.e., text and maps) for NEPA documents, including any necessary supporting summary reports.

EIS/EA Project Manager List:

North Antelope Rochelle Mine: Mackey Road Relocation-USFS EIS, Campbell County, WY 2013

Antelope Mine: Plant Expansion (Railroad Spur)-USFS EA, Converse County, WY 2013

School Creek Mine: Ancillary Facilities—USFS EA, Campbell County, WY 2012

Buckskin Mine: Hay Creek II Coal Lease by Application—BLM EIS, Campbell County, WY 2011 (BLM plans to use EIS as future template for coal projects)

North Antelope Rochelle Mine North Pit 69kV Power Line Relocation and School Creek Mine 69kV Power Line Spur-USFS EA, Campbell County, WY 2010

North Antelope Rochelle Mine: Antelope Road Relocation-USFS EA, Campbell County, WY 2009

Also provided wildlife resource text and impact analyses for six (6) additional BLM coal EISs and one (1) additional BLM coal EA, and reviewed wildlife text and analysis prepared by a different contractor for one (1) BLM coal EIS (2000-present). These projects are not listed above but are available on the BLM Wyoming NEPA web link for the Casper region.

NEPA-Related Documents: Buffalo, Lander, and Casper Field Offices—BLM, WY; Buffalo Field Office—USFWS, WY; Douglas Ranger District—USFS, WY; Nuclear Regulatory Commission-WY, SD; Rural Utility Services-WY

Principal Biologist/Data Collection and Impact Analysis

Collects relevant field data and prepares and/or reviews text and maps used in numerous NEPA support documents such as Biological Assessments, Biological Evaluations, Management Indicator Species appraisals, and Technical and Environmental Reports. These documents are incorporated into permit application packages submitted to the BLM, USFWS, USFS, Nuclear Regulatory Commission, and Rural Utility Services for a variety of energy-related and utility projects. 2000 to present.

Surface Mine Wildlife Monitoring and Reporting—WY, SD, MT

Principal Biologist/Data Collection and Reporting

Gwyn designs, manages, and conducts baseline wildlife inventories and annual wildlife monitoring at new and existing surface mines, respectively, and for expansions of existing mine properties. The overall coverage area has included more than 700 mi^2 at multiple surface coal, bentonite, and gold mines and in situ uranium projects in Wyoming, South Dakota, and Montana. Surveys encompass a variety of terrestrial vertebrates, including threatened and endangered and sensitive species (USFWS, BLM, USFS, and WGFD species), big game, lagomorphs, small mammal trapping, raptors, sage-grouse and other upland game birds, waterfowl, shorebirds, songbirds, and herptiles. Baseline and annual reports are submitted to federal and state agencies as part of permit application or amendment packages. 1994-present.

Impact Assessments, and Mitigation Planning and Implementation for Terrestrial Wildlife—WY, SD, MT

Principal Biologist/Data Collection and Impact Analysis

Gwyn routinely prepares USFWS-approved Avian Monitoring and Mitigation Plans for surface coal operators in northeast Wyoming, and similar mitigation plans for other energy-related projects in Wyoming, Montana, and South Dakota. She develops, modifies, and/or implements specific mitigation measures designed to minimize or mitigate impacts on wildlife from a wide variety of surface mine and utility projects. Recent special projects include management of sage-grouse telemetry projects in the Powder River and Big Horn basins, and prairie dog translocations to recreate mountain plover nesting habitat at a surface coal mine in northeast Wyoming. Gwyn also works with a group of private landowners as both a field biologist and in an advisory role during their ongoing development of a landscape-scale CCAA/CCA for the greater sage-grouse and seven other vertebrate species of concern in northeast Wyoming. These efforts have contributed to numerous state, regional, and national awards for the project proponents. 2000-present.

Electric Transmission and Distribution Projects—Powder River Energy Corporation (primary contractor) and Basin Electric (subcontractor), Powder River Basin, Wyoming

Principal Biologist/Data Collection, Reporting, and Impact Analysis. Manage and conduct biological inventories, habitat assessments, monitoring, and mitigation projects for T&E species and other vertebrates of concern for various transmission and distribution line projects for two electric coops operating in northeast Wyoming. Project size has ranged from 0.5 to 75 right-of-way miles. Develop and implement mitigation strategies for active and inactive raptor nests during and post construction. Prepare technical reports (including impact assessments) and mitigation plans; obtain, implement, and manage necessary state and federal permits. 2002 to present.

Sage-grouse Research—North Antelope Rochelle Mine, Campbell and Weston Counties, Wyoming

Principal Biologist/Project Manager. Captured, radio-collared, and tracked greater sage-grouse for voluntary, multi-year project in southern Campbell County and southwestern Weston County, Wyoming. This project provided current data regarding the home range, survival, nesting success, and general habitat use of grouse in a landscape heavily impacted by coal mining and oil and gas development. Efforts were expanded onto nearby private lands to assist ranchers with proactive management practices for this species. Results were summarized annually in a technical report provided to all interested entities (corporate, government) in the region. 2004-2008; project on-going and expanded under ICF.

Black-tailed Prairie Dog Translocations for Mountain Plover Habitat Mitigation—Antelope Coal Mine, Converse County, Wyoming

Principal Biologist/Project Manager. Initiated and implemented a project to create mountain plover habitat in reclamation to mitigate the loss of habitat during surface coal mining. Constructed burrow chambers in artificial prairie dog colonies covering approximately 10 non-contiguous acres. Translocated 138 prairie dogs (males, females, juveniles) into the colonies over 5-year period; project is ongoing. Monitor prairie dog presence, reproduction, and expansion in the colonies annually, and survey for mountain plovers. This project garnered four state awards and one national award for the Antelope Coal Mine, including the Excellence in Surface Coal Mining & Reclamation National Award from the Office of Surface Mining in 2003. 2000-present.

Breeding Bird Surveys and Aerial Raptor Nest Searches—Thunder Basin Grasslands Prairie Ecosystem Association (Association), Powder River Basin, Wyoming

Managed and conducted annual breeding bird surveys at multiple properties for members of the Association using point count and belt transect methods. Conducted aerial raptor nest searches in targeted years. Project areas encompassed a sizeable portion of northern Converse County. Prepared maps and technical reports summarizing survey results for targeted project areas and incorporating results from comparable survey efforts elsewhere in the region. 2009-2012.

Black-footed Ferret Surveys—Multiple Clients (Coal, Pipelines, Railroad), Wyoming and Montana

Senior Biologist/Project Manager. Supervised and conducted snow tracking and spotlight surveys for black-footed ferrets prior to potential habitat disturbance. Projects have included surface coal and bentonite mines, natural gas pipelines, CO_2 pipelines, a railroad, and a coal-fired power plant in Wyoming and southeast Montana. Related survey work includes mapping prairie dog colonies and determining burrow density, coordinating with federal regulating agencies, and report preparation. USFWS certified for black-footed ferret surveys. 1994-2004 (surveys no longer required in NE Wyoming by early 2004).

Swift Fox Surveys—National Forest System Lands, NE Wyoming

Principal Biologist/Project Manager. Considered by the USFS as qualified to conduct track plate and nocturnal spotlight surveys for swift fox. Projects have included clearance surveys for overhead power line projects and surface coal mines on the TBNG in northeast Wyoming. Survey efforts and results were fully documented in the Biological Evaluations submitted to the Douglas Ranger District of the USFS. In addition to conducting the surveys, efforts included coordinating with the USFS, the local WGFD game warden, and the local Sheriff's Department to notify all relevant parties of spotlighting activity. 2002-present, as required.

Road and Utility (Water/Sewer) Projects and Water Treatment Plant—Northeast Wyoming

Supervised and conducted all required wildlife surveys and habitat assessments for vertebrate T&E species and other wildlife species of concern prior to construction of various water, sewer (collection and trunk lines), road, and water treatment plant projects in the cities of Gillette and Pine Haven in northeast Wyoming. Prepared summary reports and maps for submittal to state and federal regulators. 1994-present.

Coal Bed Natural Gas Biological Inventories—Multiple Clients, Powder River Basin, Wyoming

Principal Biologist/Project Manager. Supervised and conducted biological inventories, habitat assessments, wildlife inventories and monitoring, and mitigation projects for coal bed natural gas developments in northeast Wyoming. Target species included bald eagles, sage-grouse, raptors, mountain plovers, prairie dogs, and a variety of other BLM special-status species. Prepared appropriate reports for agency review. BLM used report format as model for other contractors to follow. 2002-2004.

Stormwater Management—Natural Gas Clients, Powder River Basin, Wyoming

Conducted pre-construction wildlife clearance surveys as well as monitoring for all phases of pipeline construction to document proper use of stormwater management structures and post-construction re-vegetation. Prepared stormwater plans, installed and maintained stormwater control structures. 2007-2008.

Other Related Experience (1980-present)

Worked for and with various organizations across multiple states: trapped more than 150 migrating and resident raptors of 7 species using 5 different methods; banded more than 300 raptors; radio-collared/tracked more than 50 raptors: supervised reintroduction programs for more than 150 raptors (bald eagles and barn owls) in two states; identified/counted more than 1,350 migrating raptors of 17 species over 5 volunteer days; raptor rehabilitation, rearing, reintroduction, flight training, handling (eagles, vultures, hawks, falcons, accipiters, owls); trapped, banded, collared, radio-tracked more than 70 prairie grouse of 2 species; time-budget observations of nesting bald and golden eagles; vegetation sampling using various techniques in habitats ranging from the Northern Great Plains to the boreal forest of central Alaska; basic water chemistry and aquatic invertebrate sampling. Assisted local electric cooperative with creating voluntary raptor and sage-grouse protection plans. Currently assisting local group of property owners with development of a landscape scale joint CCAA/CCA for the greater sage-grouse and seven other species of concern encompassing six counties in northeast Wyoming and southeast Montana.

PUBLICATIONS AND PRESENTATIONS (in descending order)

Fedy, B.C., K.E. Doherty, C.L. Aldridge, M. O'Donnell, J.L. Beck, B. Bedrosian, M.J. Holloran, G.D. Johnson, N.W. Kaczor, C.P, Kirol, C.A. Mandich, D. Marshall, G. McKee, C. Olson, A. Pratt, and C.C. Swanson. 2013. Habitat Prioritization Across Large Landscapes, Multiple Seasons, and Novel Areas: An Example Using Greater Sage-Grouse in Wyoming (in review).

McKee, G., P. Griswold, and M. O'Rourke. 2013. Sustaining Raptor Populations at the North Antelope Rochelle Mine in Northeast Wyoming. Oral Presentation at the 2013 National Meeting of the American Society of Mining and Reclamation, Laramie, WY Reclamation Across Industries, June 1-6, 2013. R.I. Barnhisel (Ed.) Published by ASMR, 3134 Montavesta Rd., Lexington, KY 40502.

McKee, G. 2010. Long-term Trends for Nesting Raptors and Prey Populations Relative to the Effects of Surface Coal Mining on Nesting Raptors in Northeast Wyoming. Invited presentation for the annual Raptor Research Foundation meeting. September 2010. Ft. Collins, CO.

_____. 2007. Wildlife Mitigation Techniques at Surface Coal Mines in Northeast Wyoming. National meeting of American Society of Mining and Reclamation. June 2007. Gillette, WY.

_____. 2007. Nesting Issues and Solutions. Invited presentation for 6th Avian Electrocution & Collision Prevention Workshop. February 2007. Albuquerque, NM.

_____. 2006. Nesting Issues and Solutions. Invited presentation for 11th International ESMO Symposium. October 2006. Albuquerque, NM.

_____. 2006. Raptor Identification, Mitigation, and Regulation in Northeast Wyoming. Presentation at the Avian Protection Plan Public Forum hosted by Powder River Energy Corporation. March 2006. Gillette, WY.

_____. 2006. Wildlife Issues in Reclamation. Presentation for a course on Reclamation Basics in the State of Wyoming at the Gillette Campus of the Sheridan Community College. February 2006. Gillette, WY.

McKee, G., K.M. Clayton, H.R. Postovit, and B.C. Postovit. 2001. Long-term trends of wildlife use in native and reclaimed habitats in the Powder River Basin of northeastern Wyoming. Paper presented at the Interactive forum on surface-mining reclamation approaches to bond release: wildlife habitat construction and wildlife use of reclaimed lands in the arid and semi-arid west. August 2001. Gillette, WY.

Clayton, K.M., G. McKee, B.C. Postovit, and H.R. Postovit. 2001. Consequences of mining, reclamation, and mitigation for raptors in the Powder River Basin of Wyoming. Paper presented at the Interactive forum on surface-mining reclamation approaches to bond release: wildlife habitat construction and wildlife use of reclaimed lands in the arid and semi-arid west. August 2001. Gillette, WY.

McKee, G., M.R. Ryan, and L.M. Mechlin. 1998. Predicting greater prairie-chicken nest success from vegetation and landscape characteristics. Journal of Wildlife Management 62 (1): 314-321.

McKee, G. 1995. Ecology of greater prairie-chickens in relation to habitat characteristics in southwestern Missouri. M.S. Thesis, University of Missouri-Columbia. Columbia, MO.

Marshall, J.D., C.H. Hager, and G. McKee. 1986. The barn owl egg: weight loss characters, fresh weight prediction and incubation period. Raptor Research. Vol. 20, #3-4: 108-112

PEER REVIEWER ARTICLES

Gwyn has served as a peer reviewer for the following articles submitted to professional journals for publication.

Atamian, M.T., Sedinger, J.S., Heaton, J.S. 2008. Landscape level assessment of brood-rearing habitat for greater sage-grouse in east-central Nevada. Journal of Wildlife Management 00 (0): 000-000 (to be published). Reviewed January 2008.

Nguyen, L.P., Nol, E., Abraham, K.F. 2007. Using digital photographs to evaluate the effects of egg crypsis on survival of artificial and natural semipalmated plover nests. Journal of Wildlife Management 00 (0): 000-000 (to be published). Reviewed December 2006.

Gregg, M.A., Dunbar, M.R., Crawford, J.A. 2006. Use of implanted radio transmitters to estimate survival of greater sage-grouse chicks. Wildlife Society Bulletin 00 (0): 000-000. Reviewed August 2005.

Niemuth, N.D. Published year unknown. Characteristics of landscapes harboring primary and secondary populations of Greater Prairie-Chickens in Wisconsin. American Midland Naturalist 00 (0): 000-000. Reviewed February 2004.

RECENT VOLUNTEER COMMUNITY ACTIVITIES

Wyoming Wildlife and Natural Resource Trust Account Board – Appointed by the Governor of Wyoming to sit on the citizen board of the State's first Wildlife Trust Fund: March 2005-present.

Wyoming Wildlife Federation: Member1997-present; Board of Directors – 2001-2011 (President 8/02-5/04, Secretary 5/05-5/07; volunteer on several projects).

Mallo Outdoor Education Camp for Campbell County 5th grade students: Botany Instructor – 2000-2012.

Campbell County Jr. High School Intramural Soccer program: Coach - 1998-2003.

Gillette Lions Club: Member – 1998-present; Board of Directors – 2001-2005 (Chair Eyeglass Collection - 5 years, Chair Early Vision Screening Program - 1 year).

NEW Bird Rescue and Rehab: Board of Directors – 2001-2010 (former Secretary).

Campbell County High School Mentoring Program: Mentored 2 students interested in careers in biology/wildlife for 1 semester each – 2001-2002.

Physically Challenged Bowhunters of America: Helped arrange hunting opportunities and guide antelope hunters in Campbell County – 2003-2004.

Donkey Creek Pathways Committee: Charter member of citizen's group working to establish a walking/bike path around the City of Gillette – 2004-2010; Board Vice President June 2005-2008.

RECENT AWARDS

Personal Awards

Wildlife Stewardship Award – 2008 Wyoming Game and Fish Department
Murie Audubon Society -2004 Conservation Award (nominated by USFWS Law Enforcement)
Monarch Lion-2004 Gillette Lions Club
Wyoming Wildlife Federation -2003 Special Merit Award
Lion of the Year-2003 Gillette Lions Club
Girl Scouts of Wyoming - 2002 Woman of Distinction Award

National or Regional Corporate Awards (Direct and/or Participate in Project)

2012 Excellence in Surface Coal Mining and Reclamation National Award - Supervised and/or assisted in long-term raptor monitoring and mitigation efforts at the North Antelope Rochelle Mine that resulted in this national award from the DOI Office of Surface Mining Reclamation & Enforcement (OSM)

2012 Citizen's Conservation Achievement Award – Central Mountains and Plains Section of The Wildlife Society. Awarded to the Thunder Basin Grasslands Prairie Ecosystem Association for their proactive, collaborative work on the joint, landscape-scale CCAA/CCA for the greater sage-grouse and seven other terrestrial species of concern (member participaton).

2003 & 2009 - Created and implemented an innovative reclamation project for mountain plovers at a local surface coal mine that resulted in four awards at the state (three) and national (one) level for the mine during 2003, including the OSM's prestigious Excellence in Surface Coal Mining and Reclamation National Award. This project won a second award from the Wyoming Game and Fish Department in 2009 for Industry Reclamation and Wildlife Stewardship.

One coal mine and one electric utility corporation also have won awards from a statewide sportsmen's group for their innovative approaches to wildlife management in recent years.

RECEIVED
AUG 19 2013
MINERALS & MINING PROGRAM

HAL P. DEMUTH, M.S.; SENIOR ENGINEER, HYDROLOGIST

Petrotek Engineering Corporation 5935 South Zang Street., Suite 200 Littleton, Colorado 80127 USA
E-mail: hdemuth@petrotek.com Voice: (303) 290-9414 ext. 12 Fax: (303) 290-9580

EDUCATION

- M.S., Hydrogeology, University of Idaho
- B.S., Petroleum Engineering, University of Tulsa
- Various Short Courses: OSHA 40-Hour Hazardous Waste Training; OSHA 8-Hour Annual Hazardous Waste Training Refresher; OSHA Supervisor of Hazardous Workers Operations Training; 24-Hour MSHA Training

PROFESSIONAL REGISTRATION AND MEMBERSHIPS

- Association of Ground-water Scientists and Engineers (NGWA)
- Society of Petroleum Engineers (SPE)
- Society of Mining Engineers (SME)

AREAS OF EXPERTISE

- More than 27 years of combined experience in ISR uranium mining, petroleum engineering, and hydrogeology and groundwater investigations for hardrock mining projects.
- Management of groundwater projects related to ISR uranium mining permitting and development projects in WY, TX, NM and NE; Class I UIC disposal wells; engineering design and supervision of oil and gas drilling and production operations (offshore Gulf of Mexico and Rocky Mountains).
- Supervision of site characterization and ground-water remediation studies at CERCLA, non-CERCLA and RCRA sites (western and central US).

PROFESSIONAL EXPERIENCE

(2001 - Present) Petrotek Engineering Corporation, *Principal and Senior Engineer/Hydrologist*
(1991 - 2001) Harlan & Associates, Inc., *Senior Engineer/Hydrologist*
(1989 - 1991) University of Idaho, *Research Assistant*
(1983 - 1989) Tenneco Exploration & Production, Inc., *Drilling/Reservoir Engineer*

- Manager of groundwater projects including: In-Situ recovery (ISR) uranium operations (permitting, characterization, design, optimization and regulatory compliance). Team Leader for aquifer testing operations throughout the U.S. Project manager for ground-water modeling studies related to TDS and radionuclide/metals plume remediation and restoration operations and regulatory compliance for uranium ISR operations. Technical lead for assessments and characterization projects involving inorganics, organics (LNAPLs and DNAPLs), and radionuclides. Expert witness for ISR and oil and gas operators related to technical, regulatory and contractual issues.

- Design and operations engineer for Class I disposal wells and for oil and gas drilling and completion operations in the Rocky Mountains. Corporate responsibilities also include technical reporting, business development, proposal preparation, contract negotiations and part of management team for Petrotek corporate operations.

- Responsible for design, coordination, and supervision of ground-water investigations and remediation programs at sites throughout the western U.S. Performed hydrogeologic analyses, engineering evaluations and remedial designs, and prepared technical reports.

- Designed, permitted, and supervised installation of Class I UIC disposal wells in the western U.S. (Morrison, Parkman, Teapot, Teckla and Lance Formations) and central U.S. (Dundee Limestone and Mount Simon Sandstone). Typical depth range 4,000 to 10,000 feet. Coordinated and interpreted reservoir testing and analyses related to Class I wells (injection/falloff tests, DSTs, simulations and modeling).

- Project Manager for the design, permitting, installation, and evaluation of a 3,900-foot Class Underground Injection Control (UIC) disposal well at in-situ uranium mine in Dawes County, Nebraska. This was the first Class I permit approved in the State of Nebraska.

- Project Manager for technical review of two 8,000-foot Class I disposal wells at an in-situ uranium mine in Johnson County, Wyoming. For the same site, prepared permit modification request for Class I disposal wells requiring an aquifer exemption for 2,000 mg/l TDS waters in the Lance Formation. Provided technical support during EPA negotiations. After the exemption was granted, designed and supervised re-completion and testing operations.

- Lead Engineer for the design, drilling and completion of a 10,000-foot Class I disposal well at ISR facility in Converse County, Wyoming.

- Technical Team Leader for the design, drilling, testing and completion of a 10,000-foot exploration/test well at ISR facility in Sweetwater County, Wyoming.

- Member of technical team that designed and drilled a 4,600-foot Class I disposal well in Indiana. Supervised workover/stimulation operations for a 4,000-foot Class I disposal well in Indiana.

- Designed and supervised installation of 100 bedrock ground-water monitoring wells at a DNAPL site in Colorado (air hammer/coring). Performed 30 pumping tests to evaluate aquifer parameters. Analyzed pumping test results and compiled part of the Remedial Investigation Report and Remedial Measures Plan, Current Conditions/Release Report, and RFI Work Plan and RFI Report.

- Designed and supervised groundwater investigations for copper mine in southern New Mexico, including installation of bedrock ground-water monitoring wells, data evaluation and assessment of impacts from surface leaching operations. Analyzed testing results and compiled part of RCRA compliance/remediation documents.

- Performed hydrogeologic research at the Bunker Hill Mine in Idaho. Developed conceptual model to evaluate influence of major faults on ground water flow within the mine and production of acid mine drainage from specific ore bodies. Designed, performed and analyzed results from 30 pumping tests over a 12-month period. Identified areas to be targeted for acid mine drainage abatement.

- Reservoir Engineer for offshore platform with production of 12,000 BOPD. Performed well testing and analysis; systems analysis; recommended and supervised workovers and recompletions. Engineering Team increased production by over 1,000 BOPD in 12 months.

- Supervised offshore oil and gas drilling and production (completions/workover) operations in the Gulf of Mexico (triple-7 schedule). Work including use of steerable motors and MWD systems in over 50 directionally drilled wells (up to 88° deviation), including sub-salt development projects. Typical drilling rig staff included 60 men; typical well cost $5,000,000. Member of teams that

drilled wells in excess of 20,000 feet, with mud weights up to 18 ppg (sea-water lignosulfonate and oil-based muds), and completion fluid weights up to 16 ppg ($CaCl_2$ and $ZnBr_2$).

PUBLICATIONS/PRESENTATIONS

- Lawrence E.P., Demuth, H.P., Cooper, K.J., "Use of Hydrologic Tests and Numeric Models to Predict Hydraulic Behavior of an Unconfined Aquifer During Insitu Recovery of Uranium" presentation at the *National Groundwater Association 2010 Groundwater Summit,* Denver, Colorado, USA. April 2010.

- Lawrence E.P., Cooper, K.J., Demuth, H.P., "Groundwater Modeling Application to Uranium Insitu Recovery Projects: Relationship of Sweep Efficiency to Pore Volume Removal." Presented at the *Global Uranium Symposium 2009,* Keystone, Colorado, USA. May 2009.

- Schramke, J.A, Demuth, H.P. and Pelizza, M.S, 2009. "Geochemistry of Uranium in In-situ Recovery Aquifers after Restoration." Presented at the *Global Uranium Symposium 2009,* Keystone, Colorado, USA. May 2009.

- Cooper, K.J, and Demuth, H.P., "Wastewater Management via Deep Injection Wells at ISR/ISL Uranium Facilities" presentation at the 2009 Society of Mining Engineers Annual Meeting, February 25, 2009; Denver, Colorado.

- Cooper, K.J., Demuth, H.P., and Lawrence, E.P., 2008. "Overview of Operational Issues Associated with Groundwater, Restoration and Wastewater Management at ISR/ISL Facilities" presentation at the 2008 Ground Water Protection Council Winter Underground Injection Control Meeting, January 15, 2008; New Orleans, Louisiana.

RECEIVED
AUG 19 2013
MINERALS & MINING PROGRAM

DOYL M. FRITZ, P.E.
SENIOR TECHNICAL ADVISOR

REGISTRATIONS
Professional Engineer

Wyoming No. 1467
Colorado No. 11589

EDUCATION
M.S., Civil Engineering, Arizona State University. 1969

B.S., Civil Engineering, University of Wyoming. 1968

PROFESSIONAL MEMBERSHIPS
National Advisory Board, College of Engineering and Applied Sciences, University of Wyoming, 2008-2012 term, Chairman, 2010-2012

Life Member, American Society of Civil Engineers.

HONORS AND AWARDS
Wyoming Chapter of Tau Beta Pi, Wyoming Eminent Engineer. 2001

3-time recipient of Wyoming Mining Association Professional of the Year.

Partner in Environmental Excellence, Jacobs Ranch Mine.

SPECIALIZED TRAINING
NRCS Certified Technical Service Provider

Partnering in Construction Loss Prevention Training

PRESENTATIONS AND PUBLICATIONS
"Environmental Data Management", Society of Mining Engineers, Phoenix, Arizona.

"Probable Hydrologic Consequences" and "Hydrologic Reclamation", OSM Interactive Forum on Bond Release.

"Permitting Off-Drainage Reservoirs", Strategic Research Institute Seminar on CBM Water Management Strategies.

Doyl M. Fritz has over 40 years' professional experience in civil engineering, hydrologic investigations, hydraulic design, water rights, water supply and wastewater disposal studies, and surface mine permitting and regulation. Mr. Fritz has broad experience managing a variety of civil and environmental engineering projects. He co-founded WWC and has helped the firm grow into one of Wyoming's largest consulting engineering firms. He is past president of American Council of Engineering Companies of Wyoming, former National Director of American Council of Engineering Companies, and past president of Wyoming Section American Society of Civil Engineers.

PROFESSIONAL EXPERIENCE
Senior Technical Advisor, *WWC Engineering*, Sheridan, Wyoming. 2011 - Present

Principal, *WWC Engineering*, Sheridan, Wyoming. 1980 - 2011

Principal, Hydrology Associates, Inc., Sheridan, Wyoming. 1978 - 1980

District Engineer for Northeastern Wyoming, Wyoming Department of Environmental Quality, Land Quality Division, Sheridan, Wyoming. 1976 - 1978

Consulting Engineer, HKM Engineers, Billings, Montana. 1973 - 1976

Water Resource Engineer, Wyoming State Engineer's Office, Water Planning Program, Cheyenne, Wyoming. 1970 - 1973.

Research Engineer, International Plastics, Inc., Tempe, Arizona. Summer 1969

PROJECT EXPERIENCE
Expert witness in trials and administrative hearings on matters dealing with water rights, engineering design, hydraulic structures for roads and railroads, mineral disputes, environmental and hydrologic impacts, and regulatory enforcement actions.

Prepared and defended in administrative hearings various petitions to the Wyoming Board of Control to change use, place of use, point of diversion and means of conveyance for water rights, including redescription of territorial blanket appropriations.

Design engineer on twenty major earthfill dams.

Calculated state allocations of unappropriated and developable water under the terms of the Yellowstone River Compact for the Tongue and Powder Rivers. Mapped irrigated lands in Wyoming's portion of these basins and estimated consumptive uses of water.

Primary author of numerous NEPA compliance documents (Environmental Impact Statements and Environmental Assessments) working as a third-party contractor for various federal agencies, including the Bureau of Land Management and the Interstate Commerce Commission.

Designed hydrologic control structures for surface mines, including flood control dams, sediment control facilities, aquifer dewatering systems, and post-reclamation drainage systems.

Project manager for design of mine plans and reclamation plans for numerous major surface coal mines in the Powder River Basin in Wyoming and Montana.

Primary author of a report for U.S. Congress Office of Technology Assessment on hydrologic evaluation and reclamation technologies for western surface coal mining.

Principal in charge of road design projects for state, county, and private clients.

Principal engineer for hydrology, hydraulics, scour analyses and structure selection reports for new bridges and bridge replacements.

Principal investigator on Alluvial Valley Floor investigations in the western U.S. and Australia, including studies to quantify presence and extent of AVFs, identify hydrologic functions, and prepare plans and designs for the protection and restoration of essential hydrologic functions

Prepared numerous water management plans and discharge permit applications for coal bed natural gas operations.

RECEIVED
AUG 19 2013
MINERALS & MINING PROGRAM

JACK W. FRITZ, P.E.

SENIOR ENVIRONMENTAL ENGINEER/PROJECT MANAGER

REGISTRATIONS

Professional Engineer

Wyoming No. 10092
Idaho No. 12096
South Dakota No. 11037

EDUCATION

B.S. with Honors, Chemical Engineering, University of Wyoming. 1998

HONORS AND AWARDS

Project Manager and Lead Designer for a novel wastewater treatment and disposal project awarded honorable mention for 2006 Wyoming Engineering Society President's Project of the Year Award.

SPECIALIZED TRAINING

NRC/NMA Uranium Recovery Workshops, 2009-2012

Section 106 Navigator, 2011

NRC SEIS Lessons Learned Workshop, 2011

UW Public Forum on Uranium ISR, 2010

Essentials of Hydraulics for Civil Engineers and Designers, U.W. Madison, 2008.

Vadose Zone Hydrology: Principles and Practice, 2007.

Produced Waters Workshop, 2006.

Current HAZWOPER (OSHA) and MSHA certification.

PRESENTATIONS AND PUBLICATIONS

Hull, A.S., Z. Chen, J.W. Fritz, and P.K. Agarwal. "Influence of horizontal tube banks on the behavior of bubbling fluidized beds," Powder Technology 103 (1999) 230-242.

Presenter, "Design of a Small Commercial Wastewater System," University of Wyoming CE4350, 2005

Jack Fritz is a professional environmental engineer specializing in environmental permitting. Mr. Fritz has served as lead author and project manager on permit applications submitted to the U.S. Nuclear Regulatory Commission, Bureau of Land Management, U.S. Environmental Protection Agency and state regulatory agencies in Wyoming, Idaho, Montana and South Dakota. Mr. Fritz has extensive experience in uranium *in-situ* recovery permitting, coal bed natural gas permitting, and designing and permitting public water supplies and wastewater treatment and disposal systems.

PROFESSIONAL EXPERIENCE

Senior Environmental Engineer/Project Manager, *WWC Engineering*, Sheridan, Wyoming. 2000 - Present

Environmental Engineer, SECOR International Incorporated, Fort Collins, Colorado. 1998 - 2000

Research Assistant, UW Coal Utilization Research Group. 1997

PROJECT EXPERIENCE

Project manager/permit coordinator for an ISR uranium permit application on the western flank of the Black Hills Uplift. Responsible for leading an interdisciplinary team to prepare technical comment responses to the NRC, modifying the NRC Technical Report and EPA Class III UIC permit applications, and preparing numerous state permit applications.

Lead author of an Environmental Report supporting an NRC license application for an ISR uranium permit application in northeastern Wyoming. Responsibilities included evaluating the affected environment and potential impacts, incorporating environmental baseline studies, preparing an electronic document meeting NRC criteria for electronic submission, and serving as primary author for responses to requests for additional information.

Project manager or lead designer for 13 public water supply projects in Wyoming, Idaho and Montana. Responsibilities included aquifer testing, specifying well pumps, and designing and permitting water treatment, storage and distribution systems. Water treatment systems included ultraviolet or chlorine disinfection, methane gas removal, hydrogen sulfide treatment, iron removal, and corrosion control.

Project manager for methane gas evaluation in public water supply wells in the Federal District of Mexico. Responsibilities included sampling free and dissolved methane in the gathering system and treatment plant, evaluating the methane safety and operational risks, and recommending 16 potential solutions. Portions of design report were used in a presentation to the President of Mexico.

Project manager or lead designer for 17 commercial or public domestic wastewater projects in Wyoming, Idaho and Montana. Treatment systems included septic tanks, aerated lagoons, recirculating sand or geotextile filters, and extended aeration package plants. Effluent disposal included gravity drainfields, pressure-dosed or mounded drainfields, managed irrigation, and surface discharge to streams or constructed wetlands.

Project manager for hydraulic analysis of a major produced water pipeline network. The project involved evaluating pipeline materials, alignments, and pumping, pressure reducing, and air vent locations under various flow scenarios using WaterCAD.

Designed, permitted and tested produced water treatment facilities that achieved long-term compliance for sodium adsorption ratio (SAR) and barium effluent limits.

Quality Assurance/Quality Control Manager for water sampling database. Responsibilities included evaluating and recommending changes to database organization, migrating data into a new environmental data management system, reviewing database content and monitoring quality control in client updates.

Assessed potential impacts of surface coal mines and natural gas extraction facilities for NEPA compliance documents including Environmental Assessments (EAs) and Environmental Impact Statements (EISs).

RECEIVED
AUG 19 2013
MINERALS & MINING PROGRAM

Frank Lichnovsky, P.G.
Chief Geologist

Mr. Lichnovsky has been involved in uranium exploration and development activities for more than 40 years in both the United States and Australia. During the course of his career, he has directed geology and well field work at a total of eight in situ uranium mines, seven in the United States (Lamprecht, Bruni, Irrigary, Trevino, Kingsville, La Rosita, and Vasquez) and one in Australia (Beverley). His responsibilities have included conducting and overseeing exploration, drilling, casing, electrical, piping, and grade control activities for two to five well fields per mine, with between approximately 40 and 300 wells per well field. Mr. Lichnovsky has supervised all phases of field activities, including drilling programs, design and installation of groundwater monitoring systems, and assessment of geologic parameters. He is a Registered Member of the Society of Mining, Metallurgy, and Exploration, a Registered Professional Geologist in Wyoming, 2002, and a Registered Professional Geoscientist in Texas, 2003. He received his BSc. in Geology in 1967 from Sul Ross State University in Alpine, Texas.
Mr. Lichnovsky is the Chief Geologist at Powertech (USA) Inc.

RECEIVED
AUG 19 2013
MINERALS & MINING PROGRAM

Ronn G. Smith, P.E.
IML Air Science

Education: BSc Engineering Physics from Colorado School of Mines, MBA from the University of Wyoming

Registration: Licensed for 33 years in Wyoming as a Mechanical Engineer

Experience: 15 years teaching college physics, engineering and mathematics; 23 years as an engineering consultant to the energy and mining industries, contracting with IML Air Science for the past 13 years. Prepared air quality permit applications for mining, milling, and power generation facilities. Developed emissions inventories and evaluated best available control technologies (BACT). Modeled air quality impacts in support of permitting efforts, NEPA studies, and compliance determination. Provided statistical analyses for agency and industrial customers to support regulatory initiatives and compliance demonstrations. Developed analytical and operations management software for coal and gold mining clients, as well as software to model coal upgrading processes and to simulate wind turbine performance. Authored custom database software to acquire, validate, manage and interpret air quality and meteorological data.

Major Projects:

- AIR QUALITY MONITORING – Served as technical advisor for particulate, gaseous and meteorological monitoring design at dozens of coal and uranium air monitoring sites.
- AIR QUALITY PERMITTING – Managed the preparation and submittal of approximately two dozen air quality permit applications representing surface and underground coal mines, coal processing facilities, uranium mining and milling facilities, power plants, phosphate mines and a bentonite plant. Worked with EPA, NRC, BLM, and five state regulatory agencies.
- ENVIRONMENTAL IMPACT STATEMENTS – Performed modeling impact analyses and wrote air quality and meteorology sections for several EIS documents in support of federal Lease by Application (LBA) proposals. Wrote air-related sections of the environmental and technical reports (ER/TR) for uranium ISR license applications to NRC.
- BACT ANALYSES – Performed Best Available Control Technology (BACT) analyses for uranium milling operations, coal mines, rotary hearth furnaces, kiln dryers and coal-fired boilers. Pollutants analyzed include criteria pollutants, volatile organic compounds (VOC), radionuclides and hazardous air pollutants (HAP).
- PROCESS ENGINEERING – Performed basic design, analysis, and permitting of coal gasification and enhancement processes in the Powder River Basin. Developed and supported proprietary software to simulate convective drying and devolatilization of coal in a rotary hearth furnace, and heat and mass transfer to recover coal liquids in a packed column. Supported efforts to commercialize coal-to-liquids technology in China.
- WIND ENERGY SIMULATION – Developed a wind power software model to simulate commercially available wind turbines and optimize power generation based on hourly atmospheric conditions.

Volunteer Activities:

- Appointed by the Governor to the Wyoming Air Quality Advisory Board (1998 to 2010), elected Chair (2003-2007)
- Appointed by the Western Governors' Association to the Wind Energy Task Force (2006-2008)