

CURRICULUM VITAE

STEVEN S. SIBRAY

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Conservation and Survey Division
Panhandle Research and Extension Center
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AREAS OF INTEREST: Geochemistry of ground water, ground water and surface water interaction, groundwater management and geologic framework of Nebraska Panhandle aquifers, exploration for uranium roll front deposits, and economic geology.

EDUCATION

- B.S. (with honors) Geology, University of California at Davis (1972)
- M.S. Geology, University of New Mexico (1977)
M.S. Thesis title: Mineralogy, Petrology and Geochemistry of Some Lavas from Kohala Volcano, Hawaii.

HYDROGEOLOGY RELATED EDUCATION

- 1969 Water Science, University of California at Davis
- 1974 Sedimentary Geochemistry, University of New Mexico
- 1981 Basic Well Logging, Exxon
- 1982 Drilling Operations School, Exxon
- 1982 Basic Carbonate School, Exxon
- 1983 Reservoir Geology School, Exxon
- 1984 Basic Clastic School, Exxon
- 1989 Groundwater Hydrology Principles, Exploration and Measurement, Wright State University
- 1990 Modflow for Simulation of Groundwater Flow and Advective Transport, NGWA
- 1991 Analytical Methods to Determine Aquifer Properties, U.S.G.S.
- 1992 Fluid Flow and Solute Transport in Fractured Rocks, U.S.G.S.
- 1993 Ground-water/Surface-water Relationships, U.S.G.S.
- 1994 Rock Mechanics/Fractured Reservoirs, AAPG
- 1995 Ground-Water Solute Transport, U.S.G.S.
- 1998 High-Resolution Well-Log Sequence Stratigraphy, AAPG
- 2002 Well Log Interpretation, Petro Skills LLC

PROFESSIONAL EXPERIENCE

- 2004 - present Geoscientist - School of Natural Resources, Panhandle Research and Extension Center, Scottsbluff, Nebraska. Currently studying local aquifers using electromagnetic surveys in two studies with the U.S.G.S. Developed a model for the origin of the uranium deposit near Crawford, NE based on paleohydrogeology and the recently revised stratigraphy of the White River Group. Logged and interpreted 350+ test holes and help design and install 600+ monitoring wells for Natural Resource Districts. Provided the public and policymakers with information on the impact of groundwater pumping in different geologic settings in order to develop plans for groundwater management.
- 1995 - 2004 Associate Geoscientist – Conservation and Survey Divison (C.S.D.) Panhandle Research and Extension Center, Scottsbluff, Nebraska. Initiated borehole geophysical logging program to study the geology of the Panhandle aquifers. Conducted research on groundwater chemistry in the Pumpkin Creek Valley. Provided public and policymakers hydrogeologic information and background on interaction between surface water and groundwater.
- 1989 - 1995 Assistant Research Hydrogeologist - C.S.D., U.N.L., Scottsbluff, Nebraska. Conducted research in groundwater chemistry in the Alkali Lakes Region and North Platte Valley. Developed a three dimensional modflow model to investigate the hydraulic properties of a fractured aquifer in the Brule Formation near Sidney. Provided hydrogeologic information to the public and policymakers.
- 1987 - 1989 Senior Reservoir Technology Geologist - Exxon, Midland, Texas. Conducted detailed research of clastic and carbonate reservoirs for the development of enhanced oil recovery projects in the Permian Basin and Rocky Mountains. Interpreted porosity/permeability trends, depositional environment and diagenetic history using petrographic data, well logs, core analysis and x-ray diffraction data.
- 1985 - 1987 Senior Petroleum Geologist - Exxon, Midland, Texas. Generated prospects and development drilling in the Rocky Mountain area. Responsibilities included economic analysis, reservoir prediction and well evaluation.
- 1981 - 1985 Senior Geologist - Exxon, Oklahoma, City, Oklahoma. Proposed, planned and supervised \$45 million in development drilling in the Anadarko Basin. Responsible for subsurface mapping, well evaluation and supervising borehole geophysical logging and mud logging at the well site.
- 1976 - 1981 Geologist, Pathfinder Mines, Albuquerque, New Mexico. Managed and supervised numerous uranium exploration and development drilling programs throughout Arizona, New Mexico, Utah and Texas for Pathfinder Mines. Interpreted borehole geophysical logs and geochemical data.
- 1973 - 1976 Research Assistant, University of New Mexico. Investigated the detailed mineralogy of lunar samples, meteorites and volcanic rocks using an electron microprobe at the Institute of Meteoritics.

Pre-1973 Employment - summer jobs: Forest Service, USDA and farming.

GRANTS AND CONTRACTS = \$5,595,856*

Year Amount

2016	\$24,237.00	Hydrogeologic Framework Study of Portions of the Niobrara River. Nebraska Department of Natural Resources.
2014	\$71,074.00	<i>Documenting Stream/Groundwater Interactions in the South Platte River.</i> Nebraska Water Center, Federal, Research
2014	\$825,000.00	<i>Hydrogeology of Western Nebraska.</i> South Platte\North Platte\Twin Platte Natural Resources Districts, State Agencies, Research. Collaborator
2013	\$744,250.00	<i>Water Quality Monitoring Wells.</i> Nebraska Department of Environmental Quality, State Agencies, Research
2011	\$525,000	<i>Characterization of Selected Panhandle and West Central Aquifers Using Geophysics with Magnetic Resonance Survey.</i> Nebraska Environmental Trust. Collaborator
2010	\$529,190	<i>Expanding the Hydrogeologic Framework for Selected Areas of the South Platte Natural Resources District.</i> Nebraska Environmental Trust Fund. Collaborator
2008	\$443,850	<i>Heliborne Electromagnetic Surveys within the North Platte River and Lodgepole Creek Valleys, Western Nebraska.</i> Nebraska Environmental Trust Fund. Collaborator
2006	\$1,192,896	<i>Characterization of Near-Surface Lithologies under Selected Irrigation Canals within the North Platte Valley, Western Nebraska, using Geophysical Methods.</i> Nebraska Department of Natural Resources, Co-Investigator.
2005	\$31,500	<i>Evaluation of Public Water Supply Wells Having High Arsenic and/or Uranium NHHSS Grant.</i>
2003	\$206,600	<i>Evaluation of Source Water to Sidney's North Well Field,</i> Nebraska Environmental Trust Fund (N.E.T.F.) co-investigator with South Platte NRD (Sponsor), and U.S.G.S. (co-investigator).

2000	\$262,000	<i>Groundwater Quality Assessment Program</i> (N.E.T.F.) co-investigator with North Platte NRD (Sponsor), and U.S.G.S. (co-investigator).
1998	\$11,035	<i>Western Nebraska Hydrogeology</i> , Upper Niobrara White NRD. Principal Investigator.
1997	\$604,000	<i>Groundwater Information Program</i> (N.E.T.F.) co- investigator with North Platte NRD (Sponsor).
1997	\$10,506	<i>Western Nebraska Hydrogeology</i> - Upper Niobrara White NRD. Principal Investigator.
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1995	\$10,506	<i>Western Nebraska Hydrogeology</i> - Upper Niobrara White NRD. Principal Investigator.
1994	\$10,506	<i>Western Nebraska Hydrogeology</i> - Upper Niobrara White NRD. Principal Investigator.
1993	\$10,000	<i>Western Nebraska Hydrogeology</i> - Upper Niobrara White NRD. Principal Investigator.
1992	\$10,000	<i>Western Nebraska Hydrogeology</i> - Upper Niobrara White NRD. Principal Investigator.
1991	\$9,200	<i>Western Nebraska Hydrogeology</i> - Upper Niobrara White NRD. Principal Investigator.
1991	\$8,000	<i>Hydraulic Behavior of the Brule Formation</i> , granted by South Platte NRD and the City of Sidney. Principal Investigator.
1991	\$9,200	<i>Western Nebraska Hydrogeology</i> - Upper Niobrara White NRD. Principal Investigator.
1990	\$9,200	<i>Western Nebraska Hydrogeology</i> - Upper Niobrara White NRD. Principal Investigator.
1989	\$27,600	<i>Western Nebraska Hydrogeology</i> - Upper Niobrara White NRD and South Platte NRD. Principal Investigator.

*All grants and contracts are related to scholarly service although some have led to research publications.

PUBLICATIONS

Peer Reviewed Articles

Divine, Dana P. and Steven S. Sibray. 2017. An Overview of Secondary Aquifers in Nebraska. EC#26 Conservation and Survey Division, University of Nebraska, Lincoln. pp 40
<https://digitalcommons.unl.edu/conservationsurvey/138/>

Sibray, S. and Hallum, D. (2017), Petroleum Pipelines: Facts and Safety. Educational Circular 3003. University of Nebraska, Lincoln.
<http://extensionpubs.unl.edu/publication/9000018360133/petroleum-pipelinesfacts-and-safety-ec3003/>

Hobza, C.M., and Sibray, S.S., (2014), Hydrostratigraphic interpretation of test-hole and borehole geophysical data, Kimball, Cheyenne, and Deuel Counties, Nebraska, 2011–12: U.S. Geological Survey Open-File Report 2014–1103, 45 p.,
<http://dx.doi.org/10.3133/ofr20141103>.

Hobza, C.M., Abraham, J.D., Cannia, J.C., Johnson, M.R., and Sibray, S.S., (2014), Base of principal aquifer for parts of the North Platte, South Platte, and Twin Platte Natural Resources Districts, western Nebraska: U.S. Geological Survey Scientific Investigations Map 3310, 2 sheets, <http://dx.doi.org/10.3133/sim3310>

AAPG, (2013). *Unconventional Energy Resources: 2013 Review*. *Natural Resources Research*. Springer. <http://link.springer.com/article/10.1007%2Fs11053-013-9224-6#page-1>
Status Published (Please note, I am not listed as an author but my report to AAPG was copied into this review and published. Listed author is Energy Minerals Division [EMD] of AAPG.

Sibray, S., Cannia, J., Smith, B., Abraham, J. (2012) *Exploring for Roll Front Uranium Deposits and Ground Water in the Nebraska Panhandle*. Grand Junction, Colorado: Abstract in Program Book. Rocky Mountain Section of AAPG.

Abraham, J.D., Cannia, J.C., Bedrosian, P.A., Johnson, M.R. Ball, L.B., Sibray, S. (2012) *Airborne Electromagnetic Mapping of the Base Aquifer in Areas of Western Nebraska*

(2011-5219 ed.,pp.38)/ Report of Scientific Investigations. U.S. Geological Survey.
[Http://pubs.usgs.gov/sir/2011/5219/](http://pubs.usgs.gov/sir/2011/5219/)

Sibray, S.S. *White River Group Paleosols as Source Rocks for Uranium Mineralization in Western Nebraska*. **The Mountain Geologist**, 2011, Vol 48, No 1, 9-21.

Steele, G.V., S.S. Sibray, and K.A. Quandt. *Evaluation of the Source Water near Sidney, Western Nebraska, 2004 - 2005*. **USGS Scientific Investigations Report - 2007 - 5086**, 54p.

Steele, G.V., J.C. Cannia, S.S. Sibray and V.L. McGuire. *Age of ground water and sources of nitrogen in the surficial aquifers in Pumpkin Creek Valley, Western, Nebraska, 2000*; **USGS Scientific Investigations Report – 2005, 5157**, 68p.

Harvey, F. and S. Sibray. *Delineating Ground Water Recharge from Leaking Irrigation Canals Using Water Chemistry and Isotopes*. **Ground Water** May – June 2001, 39 (3), 408-421.

Gosselin, D.C., P.E. Nabelek, Z.E. Peterman and S. Sibray. *Oxygen, Hydrogen and Strontium Isotopes in Saline Alkaline Lakes from Western Nebraska, U.S.A.*, **Journal of Paleolimnology**, 1997, 17, 51-65.

Verstraeten, I.M., S.S. Sibray, J.C. Cannia and D.Q. Tanner. *Reconnaissance of Ground Water Quality in the North Platte Natural Resources District, Western Nebraska, June July 1991*. **U.S.G.S. Water-Resources Investigations Report 94-4057**, 114 pages, 1995.

Gosselin, D.C., S. Sibray and J.F. Ayers. *Geochemistry of K-Rich Alkaline Lakes, Western Sandhills, Nebraska U.S.A.* **Geochimica Cosmochimica Acta**, 1994, 58, 1403-1418.

Published Abstracts and Related Presentations

Cannia, J.C., J.D. Abraham, S.S. Sibray, M.R. Johnson, and B.B. Bull. *Results from Advanced Three Dimensional Mapping for Improved Hydrogeologic Frameworks in the North and*

- South Platte River Basins, Western Nebraska*. American Geophysical Union annual meeting. San Francisco, California. December 5-9, 2011.
- Smith, B., J. Abraham, S. Sibray, S. Hall, and S. Van Gosen. *Review of Airborne Electromagnetic Survey Methods Applied to Uranium Exploration and Resource Assessment, with Emphasis on Unconformity, Breccia Pipe and Sandstone-hosted Deposits*. U2011 Uranium Symposium. Casper, Wyoming. Sept. 18-21, 2011.
- Sibray, S., B. Smith, J. Abraham, and J. Cannia. *The Use of Airborne Electromagnetic Surveys as an Exploration Tool for Uranium Deposits in the Nebraska Panhandle*. U2011 Uranium Symposium. Casper, Wyoming. Sept. 18-21, 2011.
- Sibray, S.S. *Sequence Stratigraphy and Paleopedology: New Tools for Exploring for Sandstone Uranium Deposits*. Rocky Mountain Section Meeting, AAPG. Cheyenne, Wyoming. June 25-29, 2011.
- Sibray, S.S. *Potential Uranium Source Rocks of the White River Group in Western Nebraska and South Dakota*. AAPG Annual Meeting. Houston, Texas. April 10-13, 2011.
- Sibray, S.S. *Revised White River Group Stratigraphy and Uranium Mineralization in the Nebraska Panhandle*. Rocky Mountain Section Meeting, AAPG, June, 2010
- Sibray, S.S. and M.P Carlson. *Nebraska - The New Uranium Frontier*. RMAG magazine/newsletter, October 2009
- Abraham, J., J. Cannia, B. Smith, and S. Sibray. *Improved Hydrogeologic Frameworks Using Helibourne Electromagnetic Surveys for the North Platte Valley, Western Optimization Model*, GSA annual meeting, Oct. 2009
- Sibray, S.S. *Uranium Exploration Targets in the Overlooked and Under-explored Nebraska Panhandle*. Global Uranium Symposium. Keystone Colorado, May 9-13 2009
- Sibray, S. and M.P. Carlson. *Hydrostratigraphic Controls on Uranium Mineralization - Example: The Nebraska Panhandle*. AAPG Annual Meeting Denver, Colorado. June 7-10, 2009. Alternative and Renewable Energy section
- Steele, G., K. Quandt, and S. Sibray. *Evaluation of Source Water near Sidney, Western Nebraska*. Midwest Ground Water Conference, 20006. Lincoln Nebraska

Steele, G., J. Cannia, and S. Sibray. 2002. *Ground-water quality and age in Pumpkin Creek Valley, western Nebraska [abs.]*: Geological Society of America Abstracts with Programs, 34 (6), 97.

Sibray, S. and F. Harvey. 1997 *Determining Recharge Sources and the Impact of Unlined Irrigation Canals in Western Nebraska, Using Stable Isotope and Major Ion Chemistry and Tritium and Carbon 14 Dating [abs.]*: Geological Society of America Abstracts with Programs v. 29, No. 6.

Sibray, S.S. and Y.K. Zhang. *Three-dimensional Modeling of Hydraulic Behavior of a Highly Conductive Secondary Permeability Zone in the Brule Formation*. Proceedings 1994 Ground Water Modeling Conference, p445-452 .(poster session)

Gosselin, D.C., J.F., Ayers, D. Rundquist, S. Sibray, and A.M. Matherne. *The Alkali Lakes Project: A Multidisciplinary Investigation of a Dynamic Hydrologic and Geochemical System*. Annual Meeting of Front Range Section, American Geophysical Union, Golden, CO 1993, p11. (oral presentation)

Matherne, A.M. and S.S. Sibray. *Seepage from Unlined Irrigation Canals and the Development of Wetlands in Semi-Arid Regions Abstract*. **E.O.S.** ,Vol. 74, No. 43, p243, 1993.

Gosselin, D.C., A.M. Matherne, J.F. Ayers, and S. Sibray. *Geochemical Characteristics of Alkaline Lakes in the Western Sand Hills, Nebraska*. Geological Society of America 1991 Abstract with Programs. (poster presentation)

CSD Publications

Dreeszen, V., S. Sibray, and F. Smith. 2002. *Scotts Bluff County Test-Hole Logs: Nebraska Water Survey, **Test-Hole Report** No. 79, 279.*

Sibray, S.S., D.A. Eversoll, J. Cannia, D. Weinert, M. Brost, C. Miller, and D. Carlson. *Western Nebraska Geology Field Trip Guide*. **C.S.D.** open file report, 5 pages, 2001.

Sibray, S. and F. Smith. 2000. *Scotts Bluff County Test-Hole Logs: Nebraska Water Survey, Test-Hole Report No. 79, 49.*

Cannia, J. and S. Sibray. *Computer Mapping of Changes in Saturated Thickness of the Principle Aquifer of Box Butte County. C.S.D. open file report, 1991.*

CONTRACT REPORTS

Evaluation of Public Water Supply Wells Having High Aresenic and/or Uranium: A Collaborative Project Between HHHSS and UNL - Sept. 2005.

Summary of Recent Changes in Ground Water Levels in the South Platte NRD - Spring 1999.

Summary of Recent Changes in Ground Water Levels in the Upper Niobrara White NRD - Fall 1998.

Summary of Recent Changes in Ground Water Levels in the South Platte NRD - Fall 1998.

Summary of Recent Changes in Ground Water Levels in the Upper Niobrara White NRD - Spring 1998.

Summary of Recent Changes in Ground Water Levels in the South Platte NRD - Spring 1998.

Summary of Recent Changes in Ground Water Levels in the Upper Niobrara White NRD - Fall 1997.

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Summary of Recent Changes in Ground Water Levels in the Upper Niobrara White NRD - Spring 1997.

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Summary of Recent Changes in Ground Water Levels in the Upper Niobrara White NRD - Fall 1996.

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Summary of Recent Changes in Ground Water Levels in the Upper Niobrara White NRD - Spring 1993.

Summary of Recent Changes in Ground Water Levels in the South Platte NRD - Spring 1993.

Summary of Recent Changes in Ground Water Levels in the Upper Niobrara White NRD - Fall 1992.

Summary of Recent Changes in Ground Water Levels in the South Platte NRD - Fall 1992.

Summary of Recent Changes in Ground Water Levels in the Upper Niobrara White NRD - Spring 1992.

Summary of Recent Changes in Ground Water Levels in the South Platte NRD - Spring 1992.
Older Ground Water Reservoirs in Nebraska, a Description of Pre-cenozoic Hydrostratigraphic Units to Include Their Distribution, Thickness, Depth and Water Quality, Carlson, M. and S. Sibray, C.S.D. contract report (NDEQ) 1992
Summary of Recent Changes in Ground Water Levels in the Upper Niobrara White NRD - Fall 1991.
Summary of Recent Changes in Ground Water Levels in the South Platte NRD - Fall 1991.
Summary of Recent Changes in Ground Water Levels in the Upper Niobrara White NRD - Spring 1991.
Summary of Recent Changes in Ground Water Levels in the South Platte NRD - Spring 1991.
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Summary of Recent Changes in Ground Water Levels in the Upper Niobrara White NRD - Spring 1989.
Summary of Recent Changes in Ground Water Levels in the South Platte NRD - Spring 1989.

ORGANIZATIONAL CITIZENSHIP

Panhandle Research & Extension Center – Awards Committee

OTHER PROFESSIONAL ACTIVITIES

Member, National Groundwater Association

Member, American Association of Petroleum Geologists

Registered Professional Geologist, Wyoming #626

Certified Petroleum Geologist (American Association of Petroleum Geologists) #4565