

WESTERN GEOLOGIC, LLC

BILL D. BLACK, P.G.

Title Associate Engineering Geologist

Expertise Environmental Due Diligence
Environmental Geology
Engineering Geology
Geologic Hazards
Groundwater Geology

Academic Background B.S., Geology, Weber State University, 1986, top department graduate

Registration Professional Geologist – Utah #5224898

Experience Mr. Black has over 27 years of experience conducting geologic investigations, mostly gained while working as a project geologist for the Utah Geological Survey. His expertise is in fault and seismic studies; geologic hazards mapping, analysis and mitigation; landslide, debris flows, and slope stability; and radon. He has completed numerous fault investigations under the U.S. Geological Survey's National Earthquake Hazard Reduction Program (NEHRP), and radon-hazard studies under the Environmental Protection Agency's State Indoor Radon Grant (SIRG) Program. Mr. Black served from 1998 to 2000 on the Utah Division of Comprehensive Emergency Management Interagency Technical Team.

Mr. Black also has experience in field reconnaissance and sampling of stream sediment for economic mineral evaluation, including trace mineral suites characteristic of Kimberlite deposits in northern Wyoming. Mr. Black has been involved in hydrogeologic investigations measuring spring flow and water quality, environmental investigations determining suitability for landfills and wastewater soil-absorption systems, and conducted numerous geotechnical report reviews for local governments.

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Environmental Site Assessments

- Conducted numerous Phase I Environmental Site Assessments, Phase II Subsurface Investigations, and Environmental Transaction Screens for a variety of commercial and industrial facilities throughout the western U.S.

Hydrogeology Projects

- Conducted a depth to bedrock seismic refraction study for Spring City, Utah municipal water well location in cooperation with the Utah Division of Water Resources.
- Conducted water quality and flow measurements for potential water sources, Antelope Island State Park, Utah.
- Conducted percolation tests and assisted in field bedrock characterization for a waste-water soil-absorption system suitability study for Duchesne County, Utah.
- Mapped areas of shallow ground water in Tooele Valley and the West Desert Hazardous Industry Area, Utah.
- Conducted shallow drilling studies to determine depth to the unconfined aquifer, Ogden Valley, Utah, for a water quality assessment.

Environmental Geology

- Authored and co-authored studies mapping and evaluating the radon-hazard potential of the lower Weber River area, Weber and Davis Counties, Utah; Tooele Valley, Tooele County, Utah; western Salt Lake Valley, Salt Lake County, Utah; and Sandy and Provo Cities, Salt Lake and Utah Counties, Utah.
- Compiled, mapped, and published the statewide radon-hazard potential map for Utah.
- Assisted in field reconnaissance for four proposed landfill sites in Wasatch County, Utah.

Geologic Hazards

- Authored and co-authored six NEHRP fault and trenching studies at sites along the Wasatch fault zone, Oquirrh fault zone, Mercur fault, and West Cache fault zone in Tooele, Cache, Salt Lake, and Utah Counties, Utah.
- Principal investigator, Cache Landmark Engineering, Canyon Ridge Estates fault trenching project, East Cache fault zone, North Logan, Cache County, Utah.
- Assisted with the Mapleton Megatrench project, Provo segment of the Wasatch fault zone, Utah County, Utah in cooperation with URS Corp. (Oakland, CA) and the Utah Geological Survey.
- Conducted numerous geologic hazard assessments for water tanks, schools, fire stations, and School Trust Lands in Utah.
- Evaluated and documented geologic effects associated with the 1992 St. George earthquake and Springdale landslide; evaluated causes and effects of the 1999 Weber-Davis Canal breach in Riverdale, Weber County, Utah; and responded to numerous other geologic hazard events in Utah resulting from landslides, rock falls, canal failures, and earthquakes.
- Mapped geology and geologic hazards of Tooele Valley and the West Desert Hazardous Industry Area, Tooele County, Utah; co-author for Geologic hazards of the Ogden area and Geology of Salt Lake City.
- Co-authored the digital Quaternary fault and fold database and map of Utah.
- Conducted numerous geologic hazard and site suitability assessments for water tanks, schools, fire stations, subdivisions, and State Trust land sales.

Economic Mineral Evaluation

- Conducted stream sediment sampling for trace minerals characteristic of Kimberlite deposits, Big Horn Mountains, Wyoming.

Geologic Hazards - Land Use Planning

- Prepared the geologic hazards analysis and maps for Tooele County Planning Division for Tooele Valley. Geologic hazards of prime consideration included: surface fault rupture, earthquake ground shaking, landslides, rock fall, debris flow, problem soils, stream flooding, liquefaction, shallow ground water, and radon.
- Prepared the geologic hazards analysis and maps for Tooele County Planning Division for the West Desert Hazardous Industry Area. Geologic hazards of prime consideration included: earthquake ground shaking, landslides, rock fall, pond and sheet flooding, problem soils, liquefaction, shallow ground water, and radon.
- Conducted numerous geologic and geotechnical consultant report reviews for developments in Cache, Weber, Davis, Morgan, Salt Lake, and Utah Counties, Utah.

Professional History

Associate Engineering Geologist, Western GeoLogic, Salt Lake City, UT (2003-present)
Project Geologist, Utah Geological Survey, Applied Geology Section, Salt Lake City, Utah (1995-1999).

Geologist, Utah Geological Survey, Applied Geology Section, Salt Lake City, Utah (1990-1995).

Geotechnician, Utah Geological Survey, Applied Geology Section, Salt Lake City, Utah (1986-1990).
Field Geotechnician, North American Exploration, Kaysville, Utah (1986).

Professional Awards	Co-recipient, Geological Society of America John C. Frye award for 1995. Received numerous Utah Geological Survey awards for excellence. Received Utah Division of Radiation Control award for achievements in radon hazards.
Citizenship	United States
Countries Worked In	United States
Language Proficiency	English

Partial List of Publications

- Black, B.D., 1993, The radon-hazard-potential map of Utah: Utah Geological Survey Map 149, scale 1:1,000,000, 12 p. pamphlet.
- 1996, Radon-hazard potential of western Salt Lake Valley, Salt Lake County, Utah: Utah Geological Survey Special Study 91, scale 1:50,000, 27 p.
- Black, B.D., Giraud, R.E., and Mayes, B.H., 2000, Paleoseismology of Utah, Volume 9—Paleoseismic investigation of the Clarkston, Junction Hills, and Wellsville faults, West Cache fault zone, Cache County, Utah: Utah Geological Survey Special Study 98, 23 p.
- Black, B.D., Hecker, Suzanne, Hylland, M.D., Christenson, G.E., and McDonald, G.N., 2003, Quaternary fault and fold database and map of Utah: Utah Geological Survey Map 193DM, digital format GIS map and spatial database CD-ROM, scale 1:500,000.
- Black, B.D., Lund, W.R., and Mayes, B.H., 1995, Large earthquakes on the Salt Lake City segment of the Wasatch fault zone—summary of new information from the South Fork Dry Creek site, Salt Lake County, Utah, *in* Lund, W.R., editor, Environmental and engineering geology of the Wasatch Front region: Salt Lake City, Utah Geological Association Publication 24, p. 11-30.
- Black, B.D., Lund, W.R., Schwartz, D.P., Gill, H.E., and Mayes, B.H., 1996, Paleoseismology of Utah, Volume 7--Paleoseismic investigation on the Salt Lake City segment of the Wasatch fault zone at the South Fork Dry Creek and Dry Gulch sites, Salt Lake County, Utah: Utah Geological Survey Special Study 92, 22 p.
- Black, B.D., Mulvey, W.E., Lowe, Mike, and Solomon, B.J., 1995, Geologic effects, *in* Christenson, G.E., editor, The September 2, 1992 M_L 5.8 St. George earthquake, Washington County, Utah: Utah Geological Survey Circular 88, p. 2-11.
- Black, B.D., and Solomon, B.J., 1996, Radon-hazard potential of the lower Weber River area, Tooele Valley, and southeastern Cache Valley, Cache, Davis, Tooele, and Weber Counties, Utah: Utah Geological Survey Special Study 90, scale 1:50,000 and 1:100,000, 56 p.
- Black, B.D., Solomon, B.J., and Harty, K.M., 1999, Geology and geologic hazards of Tooele Valley and the West Desert Hazardous Industry Area, Tooele County, Utah: Utah Geological Survey Special Study 96, 6 plates, scale 1:100,000, 65 p.

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- Lowe, Mike, Black, B.D., Harty, K.M., Keaton, J.R., Mulvey, W.E., Pashley, E.F., Jr., and Williams, S.R., 1992, Geologic hazards of the Ogden area, Utah, *in* Wilson, J.R., editor, Field guide to geologic excursions in Utah and adjacent areas of Nevada, Idaho, and Wyoming: Utah Geological Survey Miscellaneous Publication 92-3, p. 231-285. Winner of Geological Society of America's 1995 John C. Frye Environmental Geology Award.
- Lund, W.R., and Black, B.D., 1998, Paleoseismology of Utah, Volume 8--Paleoseismic investigation at Rock Canyon, Provo segment, Wasatch fault zone, Utah County, Utah: Utah Geological Survey Special Study 93, 2 plates, 21 p.
- Lund, W.R., Christenson, G.E., Harty, K.M., Hecker, Suzanne, Atwood, Genevieve, Case, W.F., Gill, H.E., Gwynn, J.W., Klauk, R.H., Mabey, D.R., Mulvey, W.E., Sprinkel, D.A., Tripp, B.T., Black, B.D., and Nelson, C.V., 1990, Geology of Salt Lake City, Utah: United States of America, Bulletin of the Association of Engineering Geologists, v. 27, no. 4, p. 391-478.
- Lund, W.R., Schwartz, D.P., Mulvey, W.E., Budding, K.E., and Black, B.D., 1991, Paleoseismology of Utah, Volume 1--Fault behavior and earthquake recurrence on the Provo segment of the Wasatch fault zone at Mapleton, Utah County, Utah: Utah Geological and Mineral Survey Special Studies 75, 41 p.
- Olig, S.S., Gorton, A.E., Black, B.D., and Forman, S.L., 2001, Paleoseismology of the Mercur fault and segmentation of the Oquirrh-East Great Salt Lake fault zone, Utah: URS Corporation, Unpublished Consultant Report, NEHRP Award No. 98HQGR1036, 41 p.
- Olig, S.S., Lund, W.R., Black, B.D., and Mayes, B.H., 1996, Paleoseismic investigation of the Oquirrh fault zone, Tooele County, Utah, *in* Lund, W.R., editor, Paleoseismology of Utah, Volume 6--The Oquirrh fault zone, Tooele County, Utah, surficial geology and paleoseismicity: Utah Geological Survey Special Study 88, p. 19-64.