

Matt Rasmussen
Calais Subdivision
Ogden, Utah

June 6, 2017

Dear Matt:

The inspection and logging of the three large trenches you have excavated within the Calais Subdivision may take two days. I plan on preparing a geologic log of each trench and a report. The cost for this work and report will be based on the time required to complete the work.

My time will be at the rate of \$90.00 per hour plus the mileage I drive from Provo to the site in Ogden, which will be at the rate of \$0.50 per mile.

Should you have any questions concerning my costs and the amount of work required please contact me.

Thank you for the opportunity to help you.

Sincerely,

A handwritten signature in cursive script that reads "C. Charles Payton".

C. Charles Payton, P.G., C.E.G.
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C. CHARLES PAYTON

Professional Engineering Geologist
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EDUCATION

University of Utah	Graduate Studies – Geotechnical & Mining Engineering	1970-1973
University of Oregon	M.S. Geology	1961
University of Oregon	B.S. Geology and Geography	1958
Portland State University	Undergraduate Studies – Civil Engineering	1953-1956

REGISTRATIONS

Registered Professional Geologist	State of Oregon No. G439
Certified Engineering Geologist	State of Oregon No. E439
Licensed Professional Geologist	State of Utah No. 5248599

PROFESSIONAL EXPERIENCE

Mr. Payton is currently an independent professional engineering geologist, licensed in the State of Utah, with over 55 years of experience in the fields of geoenvironmental, engineering geology, and mining geology. His experience includes a wide variety of civil, environmental, and mining projects, which have required detailed geologic mapping, soil and rock drilling and sampling, field and laboratory testing of soil, rock, and concrete, rock mechanics research, geophysical investigations, resident engineering management, and project and construction management. He has worked with many developers, civil engineering and geotechnical engineering firms on geologic hazards studies. He has served on the Board of Consultants for the Sand Hollow Project, a large water storage project, which includes two rock-fill dams, for the Washington County Utah Water Conservancy District and has also served on two value-engineering teams for the Central Utah Water Conservancy District. One was for the study of replacement alternatives for the Olmsted Flowline, a water conveyance pipeline system using R.C.P. and steel pipe. The second was for the evaluation of the plans to enlarge Big Sand Wash dam and reservoir to double the current capacity. Big Sand Wash dam is an earthfill embankment located near Roosevelt, Utah. Mr. Payton served with a team of geologists who reviewed the Guidelines for Evaluating Surface-Fault-Rupture Hazards for New Buildings in Utah. The Utah Geological Survey has now published these guidelines. He has also reviewed a draft document concerning debris-flow hazards and the procedures for evaluation of debris-flow hazards for the Utah Geological Survey. He has also been an adjunct professor at **Utah Valley University** in Orem, Utah, where he taught introduction to physical geology classes.

Currently, Mr. Payton is available as an engineering, environmental, and groundwater geologist consultant under his own company **Payton Geological Services, LLC**. He has provided engineering geology support to companies such as **IGES, Inc.** and **Johanson Engineering**.

Mr. Payton was employed on an as needed basis by **Applied Geotechnical Engineering Consultants, Inc. (AGEC)** from 2005 until 2009. AGEC is a locally owned geotechnical engineering and materials testing firm located in Sandy, Utah. His work included the evaluation of geologic hazards as they related to the development of commercial and residential properties throughout Utah. He assessed a gypsum deposit south of St. George, Utah which required the logging of four core drill holes and drawing cross-sections to aid in determining the volume of the high grade gypsum deposit and how much could be mined and processed. He has also worked on the siting of water tanks, which included the assessment of geologic hazards such as active faults, debris flows, and landslides.

In 2000, Mr. Payton joined **AMEC Earth & Environmental, Inc.**, an international geotechnical engineering, environmental and materials testing firm, with an office located in Salt Lake City, Utah. He served as a Senior Engineering Geologist. He was primarily involved in the geologic evaluation of various sites being planned for development. Studies have included surface fault rupture investigations and seismic analyses, other geologic hazard studies involving shallow groundwater, liquefaction, debris flows, landslides, avalanches, rock falls, flooding, erosion, and subsidence. Most of these studies were accomplished along the Wasatch Front. In addition, Mr. Payton was the project manager for slope stability studies for the TransAlta Centralia Mining LLC large coal strip mine in western Washington. The studies included analyses of a reactivated landslide and groundwater and how they related to mine operations, including planning the location of mine haul roads, placement of waste rock and soil, and reclamation of mined areas. Four monitor wells with electrical transducers were installed to monitor groundwater conditions.

Prior to joining AMEC, Mr. Payton owned and operated his own company, **American Geological Services, Inc. (AGS)**, from 1995 until August 2000. He provided geological engineering, groundwater, mining, and environmental geologic services. AGS worked on several different projects for Kennecott Utah Copper Corp., Bingham Canyon, Utah (1995-1999). Projects included a cut-off structure to bedrock in the Bingham Creek channel, design of large production well to determine aquifer parameters in the alluvial fan near the mouth of Bingham Canyon and the bedrock aquifer in Dry Fork Canyon. For three years AGS was involved in the design and construction of a 12 ft. x 12 ft. by 3350 ft. long mine acid water collection tunnel. Mr. Payton served as Principal Engineering Geologist and Construction Coordinator. The work included tunnel and tunnel support design, installation of and monitoring of instrumentation for tunnel support design, installation of and monitoring of instrumentation for tunnel support movements, detailed tunnel geological mapping and construction supervision. He also directed the development of groundwater through the strategic placement of bedrock production wells.

Mr. Payton has also provided engineering geology support to several civil engineering firms and developers. Most of this work involved the assessment of geologic hazards and groundwater on and adjacent to sites being planned for commercial and residential development throughout the State of Utah.

Dames & Moore, Inc. Salt Lake City, Utah and Anchorage, Alaska (1990-1994) - Associate Engineering Geologist and Business Development Manager.

Project Manager for the environmental restoration of PCB and lead-contaminated soils in the right-of-way of Badger Road near North Pole, Alaska for the Alaska Department of Transportation & Public Facilities. The work included the preparation of a removal action work plan and a health and safety plan. A field

chemical laboratory with a gas chromatograph was set up for field screening for PCBs. Soil samples were obtained and shipped to fixed laboratories for confirmation testing for lead and PCB concentrations. Excavated areas were cleared for highway construction once the contaminated soil was removed and the remaining soil met EPA standards. A report was prepared which described the field activities and provided all test results for EPA review.

Field Manager for groundwater development for Village Safe Water, an Alaska agency, in Hooper Bay, Alaska, which is located near the Bering Sea on the west coast of Alaska. This project included the use of geophysical exploration and drilling of boreholes to investigate the groundwater beneath 200 to 300 feet of permafrost as a water supply for Hooper Bay. Seven wells were drilled, logged, developed and pump tested. Downhole geophysical surveys were made to aid in selecting the depth of well screen. Water samples were obtained and tested during the 24 and 72-hour pump tests. A report was prepared which presented all field activities, well logs, geophysical data, and test results.

Project Engineering Geologist during the design and construction of a solid waste landfill located in the western portion of Salt Lake County, Utah. Work included exploration drilling, test pits, and trenching to determine soil conditions and to classify construction materials. Groundwater and surface water conditions were also evaluated with the installation of numerous groundwater-monitoring wells.

Project Manager for dam safety analyses and preparation of emergency action plans for two earth-fill dams in Bingham Canyon, Utah for Kennecott Utah Copper Corporation. Analyses included flood hydrology studies, installation of piezometers, embankment stability studies, the preparation of flood inundation maps, and preparing drill hole logs. Geological reconnaissance mapping was accomplished in the reservoir areas to determine the location of any active faults. A dam safety report, an emergency action plan, and a standard operating procedures manual were prepared for each dam.

Also served as Project Manager and Project Engineering Geologist on several dam safety analyses, including Ivins Bench Dam in southern Utah, Red Butte Dam near Salt Lake City, and the Gunlock Dam in southern Utah.

Have been involved in the geologic investigations during the selection and planning of hydroelectric dam projects in Belize and on the island of Guam.

Project Engineering Geologist for the surface and subsurface investigations and preliminary design of the Utah Winter Sports Park facilities near Park City, Utah. The facilities included 120K, 90K, and 65K ski jumps, bobsled and luge track, access roads, and support facilities.

International Engineering Company (IECO), MK Environmental Services, both companies of Morrison Knudsen Engineers located in San Francisco, California (1974-1990).

Project RI/FS Engineer directing geotechnical investigations for the Weldon Spring Chemical Plant Superfund site near St. Louis, Missouri. Provided geotechnical and geological support during the demobilization of plant facilities and design of containment facilities. Waste materials on site included general solid waste, industrial and dangerous waste, and some low-level radioactive waste.

Project Engineering Geologist for the investigation, design, and construction of a roller-compacted concrete (RCC) dam for the Quail Creek dam near St. George, Utah.

Project Engineering Geologist for the planning of a 400-foot high RCC dam, 10-mile long power tunnel, powerhouse and an earth-fill dam in central California.

Project Engineering Geologist for the preliminary design of facilities for an open-pit coal mine in northeastern Colombia, South America. Facilities included a diversion dam, mine dewatering, 90 miles of railroad, port facilities, town site, solid waste sites, and coal handling facilities.

Served as Project Engineering Geologist on several hydroelectric dam design and construction projects in western Oregon, in northeastern California, in southern California near San Diego, in the country of Nicaragua in Central America, and on the island of Java, Indonesia. Also on proposed and operating mining projects in British Columbia (coal), western Colorado (oil shale), Chile (copper), and central Utah (coal).

Project Manager for preliminary study of geologic hazards within the east bench area of Provo, Utah. Geologic hazards identified included active fault traces, landslides, debris flows, areas of shallow groundwater, and rock fall areas.

Kennecott Minerals Company, Salt Lake City, Utah (1966-1974)

Served as an engineering geologist and mining geologist for rock mechanics research for mine rock slope design, waste dump slope design, and for tailings dam design for open-pit copper mines in western Nevada, Arizona, Utah, and New Mexico.

Resident Engineering Geologist during the construction of a mine town site near Alice Arm, British Columbia, Canada. Construction included the earthwork and foundations for a recreation center, homes, and other camp facilities for an open-pit molybdenum mine.

Project Engineer for in-situ rock mechanics studies for the design of an underground copper mine in western Montana.

U.S. Army Corps of Engineers, Portland, Oregon District (1961-1966)

Staff Engineering Geologist performing geotechnical investigations and geologic studies for six large multi-purpose water supply and hydroelectric dams in western Oregon. This included the dam site area, abutment slopes, diversion tunnels, reservoir areas, and foundation design.

Project Engineering Geologist during the construction of four hydroelectric dams in western Oregon. This included the detailed geologic mapping of dam foundations and abutments.

Staff Engineer for geotechnical inspection and design during construction of runways, taxiways, and anti-aircraft facilities on and near Eielson Air Force Base located south of Fairbanks, Alaska.

PUBLICATIONS

Payton, C.C. and Hansen, M.N., 2003, Gypsum Karst in Southwestern Utah: Failure and Reconstruction of Quail Creek Dike: *in* Evaporate Karst and Engineering/Environmental Problems in the United States; Johnson, K.S. and Neal, J.T., editors; Oklahoma Geological Survey Circular 109, p. 293.

Payton, C.C., 1991, Geotechnical Investigations for the Reconstruction of Quail Creek Dike: Proceedings of the 27th symposium on Engineering Geology & Geotechnical Engineering, Logan, Utah.

Payton, C.C. and Truesdell, D.B., 1985, Geologic Hazards Mapping and Recommendations to Revise the Hillside Ordinances in Provo, Utah: *in* Proceedings, Delineation of Landslide, Flash Flood, and Debris Flow Hazards in Utah Conference; Utah State University.

Payton, C.C., 1974, Energy Resources of the Uintah Basin, Utah: Utah Geological Association Field Guide Book.