Geologic and Hydrologic History of the Sinks Drainages

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The Sinks Drainages have been controlled by topographic uplift and subsidence of the northeast-migrating Yellowstone hotspot over the last 17 million years. From Oligocene to middle Miocene (30 to 12 Ma), drainage was eastward from the eroded roots of the Idaho batholith and probably into the Missouri River. As the topographic bulge associated with the hotspot began to affect eastern Idaho (10 to 4 Ma), the Snake River Plain became an uplifted volcanic plateau, and drainage was radial, away from the volcanic locus. The Lost River, Lemhi, and Beaverhead ranges were uplifted, and the Big and Little Lost Rivers drained northward into the Salmon River. Ancestral Medicine Lodge and Camas creeks drained eastward into the Green River. Pliocene to Holocene subsidence of the Snake River Plain resulted in northward migration of the headwaters of the now south-draining Big and Little Lost rivers and Birch Creek and integration of the west-flowing Snake River, likely near its present location. Pleistocene construction of the northeast-trending Axial Volcanic High and northwest-trending basaltic rift zones resulted in isolation of the northern drainages from the Snake River. The result was formation of the Big Lost Trough and Lake Terreton basins and the modern Sinks Drainage pattern. Pleistocene to Holocene connections among Sinks Drainage streams occurred via common drainage into a lake system on the Snake River Plain. Periodic Pleistocene connections with the Snake River were also likely. Recent volcanism on the Yellowstone Plateau and desiccation of the Snake River Plain lakes produced the present drainage system.