



LIST OF MAP UNITS

SURFICIAL DEPOSITS

HUMAN-MADE DEPOSITS

af

Artificial fill (latest Holocene) — Riprap, engineered fill, and refuse placed during construction of roads, railroads, buildings, dams, and landfills. Generally consists of unsorted silt, sand, clay, and rock fragments. The average thickness of the unit is less than 20 feet. Artificial fill may be subject to settlement, slumping, and erosion if not adequately compacted.

ALLUVIAL DEPOSITS

Qa₁

Alluvium one (late Holocene) — Tan to pale-brown, poorly to moderately sorted, poorly consolidated, sand, gravel, silt, and minor clay and occasional boulders in the currently active stream channels or in low stream-terrace deposits less than 5 feet above the current stream channel. It may be deposited as non-terrace forming alluvium in valleys and swales. Clasts are subrounded to well rounded and the dominant sediment is sandy gravel with a sandy silt matrix. The unit correlates with the Piney Creek Alluvium described by Hunt (1954) in the Denver area and of Maberry and Lindvall (1972). The unit is subject to frequent flooding and is a source of sand and gravel. Maximum exposed thickness of the unit locally exceeds 5 feet.

Qa₂

Alluvium two (early Holocene) — Dark gray to brown, poorly to well sorted, moderately consolidated, silt, sand, gravel, and minor clay and occasional boulders in stream terrace deposits approximately 6-12 feet above the modern flood plain or as non-terrace forming alluvium in valley headwaters. Clasts are subrounded to well rounded and the dominant sediment is sandy gravel with a silty sand matrix. Clay seams are poorly to moderately stratified. The unit correlates with the Piney Creek Alluvium described by Hunt (1954) in the Denver area and of Maberry and Lindvall (1972). The unit is subject to occasional flooding and is a potential source of sand and gravel. Maximum exposed thickness of the unit locally exceeds 20 feet.

Qa₃

Alluvium three (late Pleistocene) — Tan to reddish brown to grayish brown, poorly sorted, moderately consolidated, poorly to moderately stratified silt, sand, gravel, and cobbly gravel and occasional boulders in stream terrace deposits approximately 10-20 feet above the modern flood plain or as non-terrace forming alluvium in valley headwaters that underlies the younger alluviums. The unit contains dark gray clay beds that may be expansive. Clasts are subrounded to well rounded and the dominant sediment is sandy gravel with a sandy matrix. The unit is correlative with the Broadway Alluvium described by Hunt (1954) in the Denver area and of Maberry and Lindvall (1972). The unit is a potential source of sand and gravel. Maximum exposed thickness of the unit locally exceeds 20 feet.

Qa₄

Alluvium four (late middle Pleistocene) — Dark grayish-brown to yellow-reddish-brown, poorly sorted, moderately consolidated, weakly stratified silt, sand, gravel, and cobbly gravel and occasional boulders in stream terrace deposits approximately 20-30 feet above the modern flood plain. Clasts are subrounded to well rounded and have varied lithology. The unit is correlative with the Louvers Alluvium of the Denver area (Scott and Wobus, 1973). This unit is a source of commercial sand and gravel. Maximum exposed thickness of unit locally may exceed 40 feet.

Qa

Alluvium, undivided (Holocene to late Pleistocene) — Gray brown to tan brown, poorly sorted sand and fine gravel in valley heads in the upper parts of drainages and in main trunk streams where differentiation of specific alluvial units was not possible. The unit includes sheetwash and stream-deposited alluvium that are undivided. Maximum exposed thickness of the unit locally exceeds 20 feet.

Qaf

Alluvial-fan deposits (late Holocene) — Tan to pale-brown, poorly to moderately sorted, poorly consolidated clay, silt, sand, gravel, and boulders deposited as alluvial fans at the mouths of perennial streams. They have a fan-like shape and consist of subangular to well-rounded clasts of varied lithology that are derived from local surficial deposits; however, sand and gravel derived from the Dawson Basin Group is a major constituent. Sediments are deposited primarily by streams with significant input from sheetwash, debris flows, and hyperconcentrated flows. Deposits locally exceed 10 feet in thickness. Areas mapped as alluvial fans are subject to future flash floods and debris flow events. Deposits may be prone to collapse, hydrocompaction, or slope failure when wetted or loaded. The unit is a potential source of sand and gravel.

Qg₁

Pediment gravel one (middle Pleistocene) — Brownish-red to reddish-tan, poorly sorted, moderately to poorly stratified pebble and cobbler gravel derived from the upper Denver Basin Group of Thorson (2011) and older gravel deposits. Clasts are subrounded to rounded and are moderately weathered. Locally, the unit is stained by iron-oxides. Top of the unit is 30-40 feet above adjacent modern streams and the unit locally exceeds 30 feet in thickness. Unit correlates the Slocum Alluvium of the Denver area (Scott and Wobus, 1973). The deposit forms a stable building surface, but excavations may be prone to slumping. The unit is a potential source of sand and gravel.

Qg₂

Pediment gravel two (middle Pleistocene) — Medium-red to brown, poorly sorted, moderately to poorly stratified pebble, cobble, and boulder gravel derived from the upper Denver Basin Group of Thorson (2011). Clasts are subrounded to rounded and are moderately weathered. Locally, the unit is stained by iron-oxides and may contain large fragments of petrified wood. Top of the unit is 60-80 feet above adjacent modern streams and the unit locally exceeds 40 feet in thickness. Unit correlates with the Verdos Alluvium of the Denver area (Scott and Wobus, 1973). An minimum age of >59,100 OSR years was determined from a fine sand sample taken within an active gravel pit in sec. 21, T. 13 S., R. 64 W. In the Denver area, the upper part of the Verdos Alluvium contains Lava Creek B ash (Scott, 1963), which was dated at 640,000 years before present (Lanphere and others, 2002). This unit forms a stable building surface, but excavations may be prone to slumping. The unit is a source of sand and gravel.

Qsw

Sheetwash deposits (Holocene to late Pleistocene) — Light-grayish-brown, pale-brown, to brown, poorly sorted sand, silty and clayey sand, and minor amounts of gravel including some cobbles. Unit consists chiefly of local materials transported on moderate slopes (~10 percent grade) by sheet flow but also includes some sediment delivered by runoff in rills and minor gullies. Maximum exposed thickness is 20 feet.

EOLIAN DEPOSITS

Qes

Eolian sand (Holocene to late Pleistocene) — Yellowish-brown to tan, fine- to coarse-grained, frosted sand and silt deposited by wind. Typically this unit is faintly stratified and non-cohesive; dune forms are not present. The unit is likely deposited as a sand sheet by winds capable of moving very fine gravel-sized clasts. Eolian sand is moderately compacted, easily excavated, and drains well. Unit locally may exceed 5 feet in thickness.

PLUVIAL DEPOSITS

Qp

Playa deposits (Holocene) — Gray to dark brown, moderately well sorted, moderately consolidated, clay, silt, sand, and scattered granules. Forms flat-surfaced seasonal ponds within eolian sand (Qes). In some areas this unit may be overlain by windblown sand and sheetwash deposits.

BEDROCK

Denver Basin Group

Tda

Dawson Arkose (Paleocene to Eocene) — White and tan thick to massive, cross-bedded arkoses, pebbly arkoses, and arkosic pebble conglomerates. Contains beds of white and tan fine- to medium-grained feldspathic cross-bedded friable sandstone that are poorly sorted, have high clay contents, and are commonly thin or medium bedded. The unit also contains sparse interbeds of thin-bedded gray claystone and sandy claystone or dark-brown, organic-rich siltstone to coarse sandstone that contains fossilized plant fragments. Thickness may reach 1000 feet in the Monument area; however, the exposed thickness in the Falcon quadrangle is approximately 700 feet. The unit is prone to swelling when wet. The Dawson Arkose is described in detail by Thorson (2011).

Tbs

Black Squirrel Formation (Paleocene) — Gray-green to tan to brownish gray, moderately well sorted cross-bedded sandy arkoses interbedded with micaceous sandy claystones that contain abundant plant fragments and occasional, fine- to medium-grained massive arkosic beds. Intermittent paleosols are developed locally. The exposed upper part of the Black Squirrel Formation is gradational with the overlying Dawson Arkose making the location of the contact problematic. The basal contact with the underlying Jimmy Camp Formation is not exposed within the mapped area. Thickness may reach 600 feet in the Monument area; however, the exposed thickness in the Falcon quadrangle is approximately 130 feet. The claystones within this unit may be prone to swelling when wet. The Black Squirrel Formation is described in detail by Thorson (2011).

TKjc

Jimmy Camp Formation (Paleocene) — Greenish-brown pebbly arkosic sandstone interbedded with dark greenish-gray micaceous claystone with minor amounts of organic material. The pebbles are andesite, dacite, and occasional granite that may reach 6 inches in diameter. Iron concretions and petrified wood are common. The sandstone beds are cross-bedded or massive, poorly sorted, micaceous, and contain coarse sand-sized grains of quartz and feldspar. Thickness may reach 1000 feet in the Elmore area; however, the exposed thickness in the Falcon quadrangle is approximately 200 feet. The Jimmy Camp Formation is described in detail by Thorson (2011).

TKdb

Denver Basin Group, undivided (Upper Cretaceous to Paleocene) — Includes the Pikeview Member and Pulpit Rock Member of Thorson (2011). Shown on cross section only.

Contact—Approximately located

Strike and dip of inclined bedding—Showing direction and angle of dip

★ Sample location for optically stimulated luminescence (OSL) age dating

Alignment of cross section

References

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FALCON QUADRANGLE GEOLOGIC MAP, EL PASO COUNTY, COLORADO

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2012



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