

Surficial Geology of the Fairmont 7.5 Minute Quadrangle, Nebraska

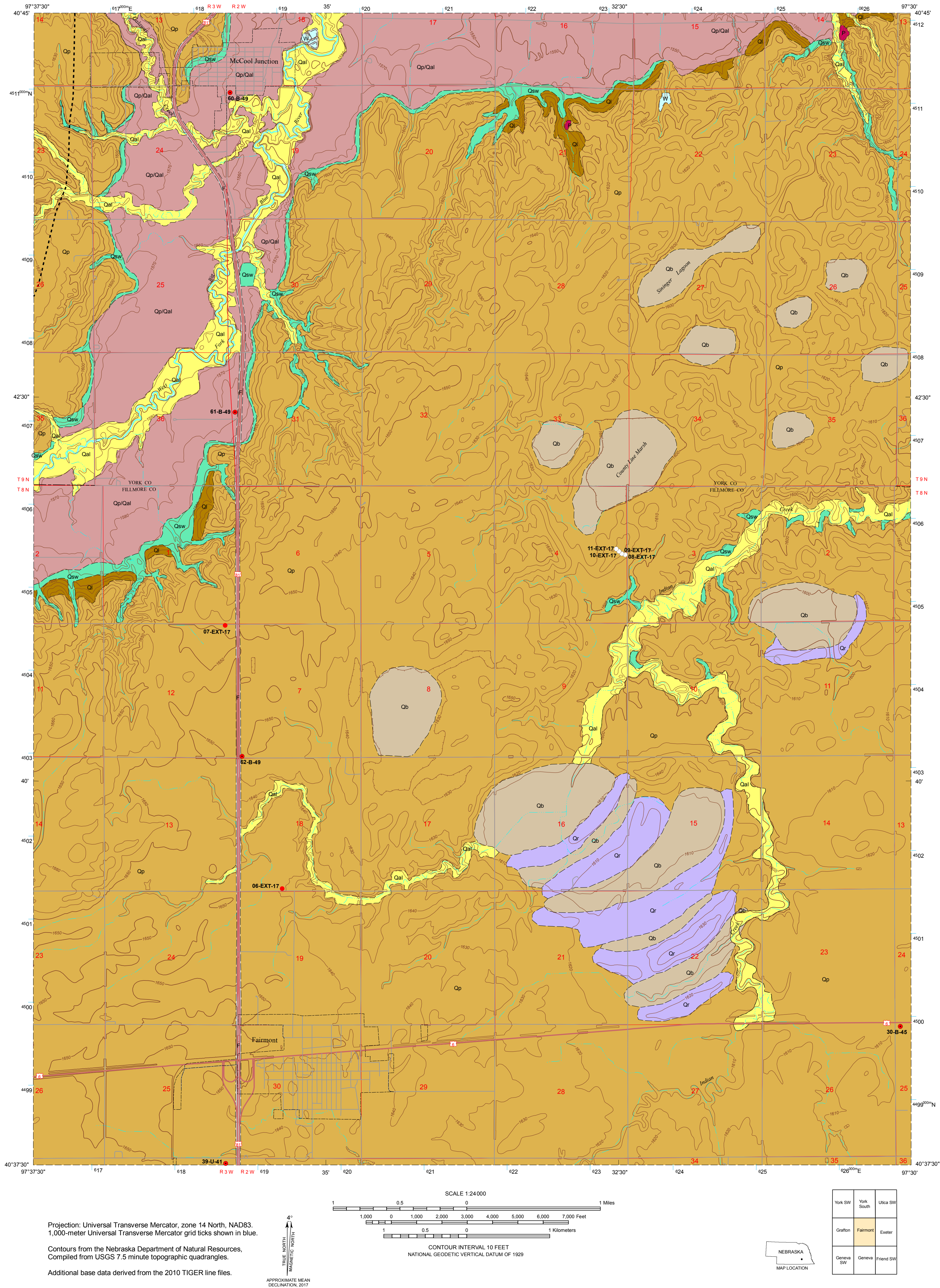
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Description of Mapping Units

Qal Recent alluvial deposits and active river channels

Late Holocene

Silt and silty clay

Alluvial deposits in valleys associated with tributaries of the West Fork of the Big Blue River. Generally, these deposits are relatively thin, and are usually less than 4 meters (~ 13 feet) in total thickness. Alluvial sediments primarily consist of reworked loess.

Qsw Slope wash

Silt to silty clay

Holocene to recent

Sediments accumulated at the base of slopes, usually along the margins of stream valleys. Generally, slope wash is sourced from nearby Peoria Loess (Qp). In most areas mapped, slope wash has been enhanced by agricultural practices which caused increased erosion rates over the past century. Total sediment accumulation is usually less than 3 meters (~ 10 feet).

Qp Peoria Loess

Late Pleistocene

Silt to silty clay

Late Pleistocene aged loess. Loess is a wind-blown silt and clay deposit that locally contains very fine and fine sand. Peoria Loess in the region generally ranges from 4 to 8 meters (13 to 26 feet) in total thickness. Peoria Loess was likely deposited between ~ 25,000 and 14,000 years ago (Bettis et al., 2003; Mason et al., 2011). This unit is sporadically underlain by the Gilman Canyon Formation, a dark brown or black colored silty loess unit that is ~1 meter (3 feet) in thickness, and is usually underlain by the Loveland Loess (Ql).

Qp/Qal Peoria Loess overlying alluvium

Late Pleistocene

Silt to silty clay overlying sand and gravel

Peoria loess (Qp) overlying low relief alluvial deposits in local stream valleys. Peoria loess overlies alluvium that includes silt, clay and sand and gravel. The alluvium is approximately 6 m (18 feet) thick. Till and associated glacial sediments underlie the sand and gravel.

Ql Loveland Loess

Middle Pleistocene

Silty clay to clayey silt.

Middle Pleistocene aged loess. Loveland Loess is older than both the overlying Peoria and Gilman Canyon Formation loess deposits. Loveland Loess can be distinguished from Peoria Loess by its characteristic red or pink color and finer (clay-rich) texture. Areas mapped as Ql are generally found on valley side slopes where stream incision has exposed the Loveland Loess. Deposits are generally less than 3 meters (~ 10 feet) in total thickness.

Qb Rainwater Basin deposits

Middle Pleistocene to Holocene

Reduced silt and silty clay with sand beds and occasional organic matter

Silty and sandy sediments that accumulated in closed depressions that are locally referred to as 'rainwater basins'. Basins are elliptical depressions with long axes that are typically oriented southwest to northeast. The depressions commonly have a linear ridge (Qr) on their southeastern edge. Basin fills are typically 4-8 m thick in the mapped area. The depressions commonly contain wetlands, and seasonal lakes. Basins are immediately underlain by loess and re-worked loess as well as bedded sands that frequently contain organic rich deposits and buried soils. These sediments are in turn underlain by pink sand and gravels which are interpreted as alluvium deposited by the Platte River >200,000 yrs ago (Swinehart et al., 1994).

Qr Rainwater Basin Rim

Middle to late Pleistocene

Silt to silty clay overlying sand and sand and gravel

Peoria loess (Qp) overlying older eolian and alluvial deposits. Rims are common on many, but not all, of the southeastern edges of rainwater basins throughout the area. Rims range from approximately 5-7 meters (15-21 feet) above the surrounding landscape. Stratigraphy of the rims varies, but often includes Peoria Loess overlying Gilman Canyon Formation loess followed by medium sand, and sand and gravel. The rim likely formed as wind erosion scoured the rainwater basin. Within the mapping area basins were likely formed prior to the deposition of both the Peoria and Gilman Canyon loess.

F Artificial fill

P Pit (active and abandoned soil borrow pit)

W Water



Mud rotary test holes



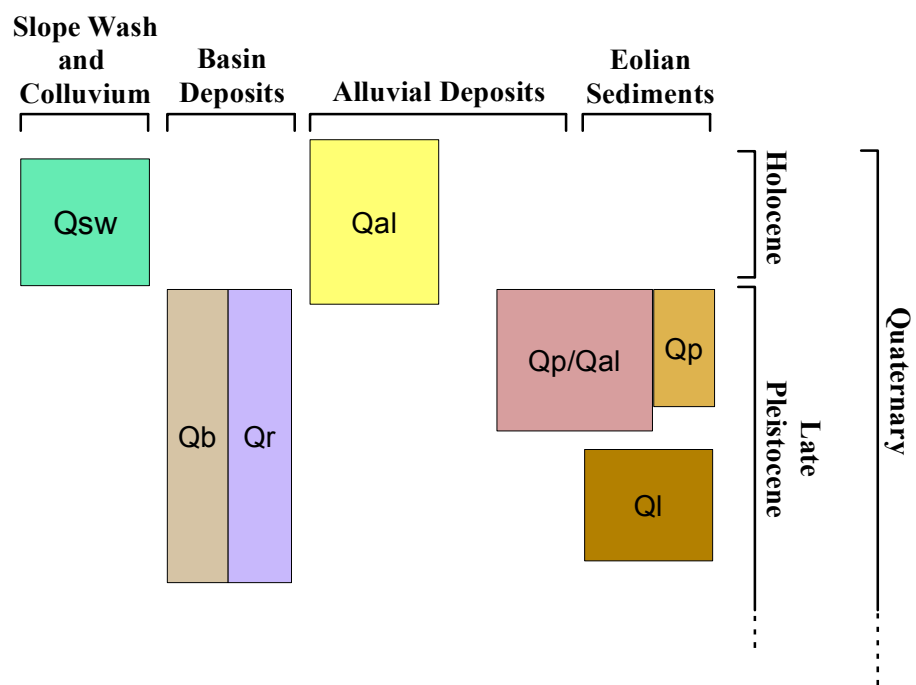
Historic test hole drilled by the CSD drilling program (the last two digits indicate year drilled)



Sediment core

--- Map unit contact, approximate

----- Western glacial boundary



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