Formation Properties Table

Age	Unit Name (Symbol)	Features and Description	Erosion Resistance	Suitability for development	Hazards	Potential Paleontologic Resources	Potential Cultural Resources	Mineral Specimens	Mineral Resources	Habitat	Recreation Potential	Global Significance	Limits on restoration
QUATERNARY	Alluvium (Qal))	Valley fill and terrace gravel; silt, sand and gravel, w/ some soil, colluvium and aeolian deposits	Low to very low	OK except where units exposed on slopes; high permeability of deposits makes waste facility development problematic	Slumping, landslides on exposed slopes - flash flooding increases hazard	Some fossils washed from other units	Native American artifacts; trails, dwellings, and hunting sites present	None	Gravel, Sand, Silt, Clay	Under-ground dwellings	Trails and picnic areas	Glacial deposits record glacial conditions	Unstable slopes
	Eolian deposits (Qe)	Reddish- brown loess, unconsolidated silt and sand; exposed on mesa tops and pediment surfaces											
	Undiff. (Qae)	Alluvial and aeolian deposits											
	Colluvial deposits (Qc)	Talus, slope wash, block rubble, rock glaciers, and locally glacial till											
CRETACEOUS	Mancos Shale (Km)	610 - 914 m (2,000 - 3,000 ft) thick; gray to dark olive- gray soft, fissile shale with a few thin distinctive yellowish- orange calcareous sandstone and sandy, clayey limestone ledges in lower beds; this unit is rather homogeneous with a few thin fossiliferous beds and a thin limestone near the base		No development on bentonite; prone to slumping & sliding on slopes	Sliding & slumping on slopes, esp. when saturated; rockfalls	Fossiliferous marine rock unit	Chert nodules may have provided tool material	Salt casts	Shale	Burrowing habitat	Unsuitable for most recreation	Thick, complete marine shales; sea level in Late Cretaceous	Bentonite beds
	Dakota Sandstone (Kd)	Ave. 38 m (125 ft) thick; yellow- gray and tan carbonaceous sandstone in lower beds and yellow- brown and gray beach sandstone in upper beds; gray to dark gray carbonaceous mudstone and coal are locally interbedded - some iron oxide cement	Mod. to high	OK unless highly fractured, rendering unit too permeable for waste facility development and unstable on slopes	High rockfall potential exists where undercut or exposed on slopes and cliffs	Some fossils; coal beds with petrified wood & pelecypods	Dwelling materials, sites and tools; springs supported agriculture	Iron oxide nodules	Coal, Flagstone, Building materials	Vugs on cliffs may provide nesting habitat	Rock climbing	Records nearshore environment; grades east to marine	Coal beds
		With Burro Canyon Formation (Kdb): fluvial sandstone beds in lower part and more carbonaceous beds in the upper; locally undifferentiated from overlying Dakota Sandstone (see discussion above)											
	Burro Canyon Formation (Kbc)	Averages 46 m (150 ft) thick; light- gray and light- brown fluvial quartzose sandstone and conglomerate in thick beds; lenticular greenish- gray, locally purplish, commonly non-bentonitic siltstone, shale, and mudstone; a few thin lenses of gray limestone and chert near top of unit	High	OK unless highly fractured rendering unit too permeable for waste facilities and unstable on slopes	High rockfall potential exists where undercut or exposed on slopes and cliffs	No fossils documented	Dwelling materials, sites and tools	None	Flagstone, Building stone	Vugs on cliffs may provide nesting habitat	Rock climbing	None	None
JURASSIC	Morrison Formation (Jm): Brushy Basin (Jmb)	~ 30 - 107 m (100- 350 ft) thick; variegated gray, pale- green, red- brown, or purple bentonitic mudstone with a few chert pebble conglomeratic sandstone beds; vanadium deposits locally present - unit is approximately 61 m (200 ft) thick; Dominantly fluvial, subordinately lacustrine, green, red, purple, pink, and gray laminated, bentonitic shale; fine- to coarse-grained red, buff, and white conglomeratic sandstone; shale, sandy shale, and shaly sandstone; sandstones and conglomerates are lenticular and contain red chert locally - ~183 m (600 ft) thick	Moderate	OK for some development, but can be unstable on slopes and if clay rich - high concentration of uranium may be hazardous for some types of development	Slumping and sliding on slopes, especially if water saturated; some heavy metals in water	Abundant fossils known elsewhere, but not at HOVE; dinosaur bone and petrified wood locally found in Brushy Basin Member, charophytes and palynomorphs in lower beds	Unit may have provided tool material for Native Americans	Uranium, Vanadium	Coal, Uranium, Vanadium	Burrowing habitat; certain plants (Winkler's cactus) prefer soils derived from unit	Trails and picnic areas unless uranium is present at proposed sites	World famous dinosaur fossils; abundant mineral wealth from this Unit is a premier Upper Jurassic volcanic ash-bearing formation	Uranium; unstable clay layers
	Westwater Canyon (Jmw)	Mostly yellowish- and greenish- gray to pinkish- gray lenticular fine- to coarse- grained arkosic sandstone; locally interbedded greenish- gray or grayish- red sandy shale & mudstone; ~ 55 m (180 ft) thick											
	Recapture (Jmr)	Mostly reddish- gray, white and brown, fine- to medium- grained sandstone with light and dark colored grains, interbedded with reddish-gray siltstone and mudstone											
	Salt Wash (Jms)	46 to 76 m (150 to 250 ft) thick; pale- gray, grayish- orange, or moderate reddish- brown fine- to medium- grained fluvial sandstone in thick discontinuous beds; interbedded greenish- and reddish- gray mudstone; thin limestone beds near base; some thicker sandstone beds contain numerous uranium deposits											
	Junction Creek Sandstone (Jj)	Pink, reddish- orange, and brown, fine- to coarse- grained sandstone; informally divided into 3 units (Ekren and Houser, 1965): upper unit - fine- grained argillaceous sandstone with poorly exposed stratification; middle unit - thick- bedded sandstone with large to very large-scale, high- angle crossbeds; coarse grains of chert concentrated on laminations; lower unit - alternating flatbedded and low- angle cross- stratified beds with numerous horizontal bedding planes - total thickness: 61 - 91 m (200- 300 ft)		Some development, but unstable on slopes and if clay rich; likely to slump along bedding planes between distinctively different layers making it locally unstable	Rockfall potential on slopes; clay and mudstone beds prone to fail, if water saturated; high degree of variability between beds leads to some instability	No fossils catalogued in HOVE area	Unit may have provided tool material for Native Americans	None	None	None	Suitable for most uses	None	None
	Wanakah Formation (Jw)	8 - 31 m (25 - 100 ft) thick; light to dark reddish- brown and reddish- orange, very fine grained, thin- bedded sandstone and dark reddish- brown mudstone; locally 3 members (in descending order): marl member: greenish- gray to red- brown friable limey sandy siltstone; Bilk Creek Sandstone Member: light- colored friable fine- grained quartz sandstone in thin even beds with a distinctive red chalcedony zone at the top; Pony Express Limestone Member, dark- gray fetid bituminous thin- bedded limestone generally about 3 m (10 ft) thick											
	Entrada Sandstone (Je)	Two members: Slick Rock Member: white, pinkish- orange, and reddish- orange, very fine to fine- grained aeolian sandstone; alternating medium- to thick- bedded sets of flatbedded and crossbedded strata; lower part is slightly more argillaceous than upper, weathers into large alcoves; 21- 24 m (70- 80 ft) thk. (Ekren and Houser, 1965); Dewey Bridge Member: dark reddish- orange, argillaceous, very fine grained, sandstone; 8- 11 m (25- 35 ft) thk. (Ekren and Houser, 1965); recently reassigned to the Carmel Formation (Doelling, 2000)	Mod. to high	OK unless highly fractured rendering unit too permeable for waste facility development and unstable on slopes	High rockfall potential exists where unit is undercut or exposed on slopes and cliffs	No fossils catalogued in HOVE area	Petroglyphs, Alcoves for shelter and dwelling sites	None	Flagstone, Building stone	Vugs in cliffs may provide nesting habitat	Suitable for most uses	Spectacular desert scenery formations in SW U.S.	None