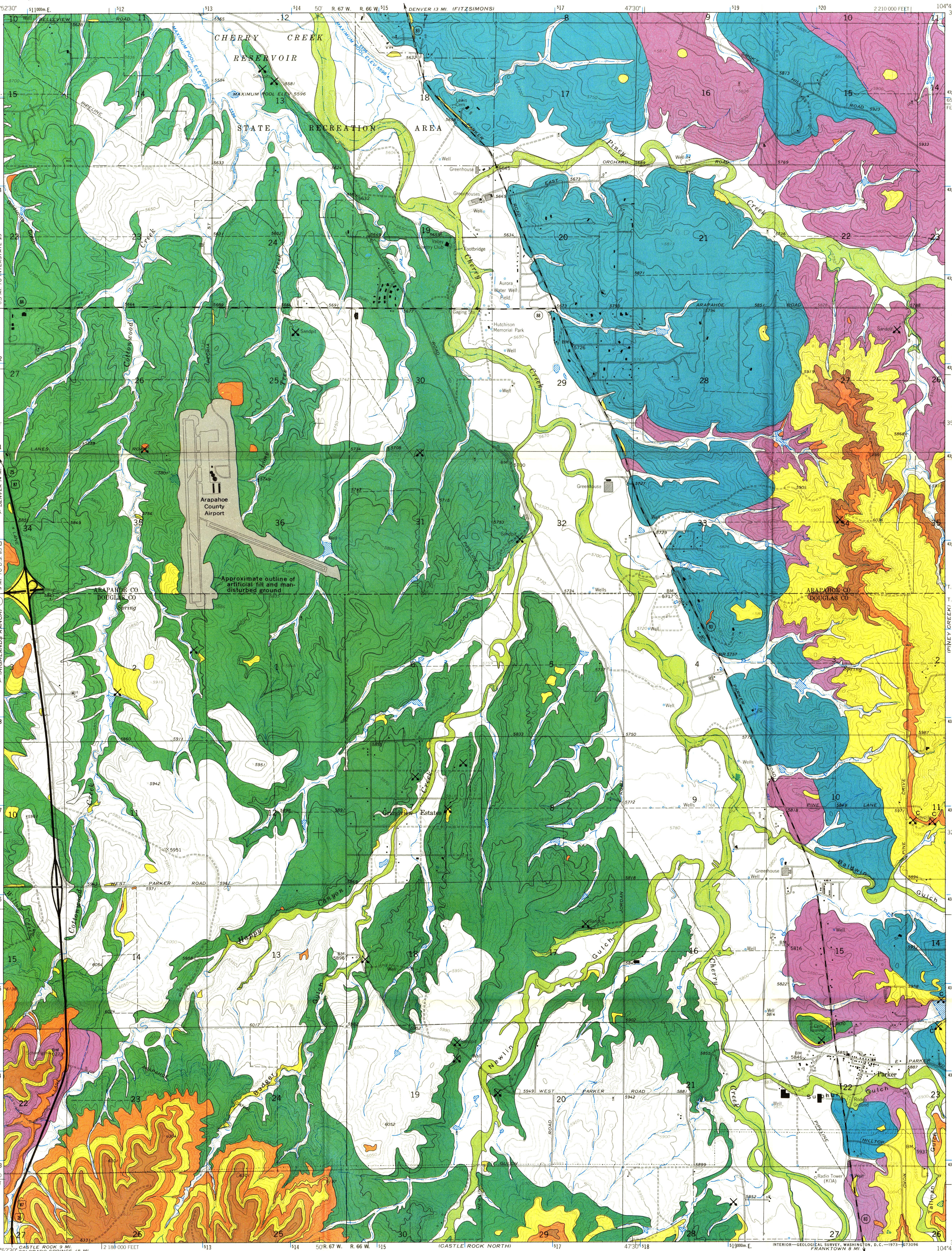
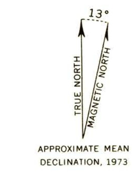
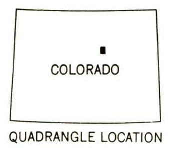


Base from U.S. Geological Survey, 1965
Photorevision as of 1972
10,000-foot grid based on Colorado coordinate system, central zone
1000-meter Universal Transverse Mercator grid ticks, zone 13, shown in blue



SCALE 1:24 000
1 ½ 0 1 MILE
1 .5 0 1 KILOMETER
CONTOUR INTERVAL 10 FEET
DATUM IS MEAN SEA LEVEL



QUADRANGLE LOCATION

Derivative data gathered during geologic mapping, 1970–71

MAP SHOWING CONSTRUCTION MATERIALS RESOURCES IN THE PARKER QUADRANGLE, ARAPAHOE AND DOUGLAS COUNTIES, COLORADO

By
John O. Maberry

1973

EXPLANATION

[White] Materials generally considered unsuitable for construction use; carefully defined local deposits may be usable, however. Includes areas covered by Arapahoe County Airport, artificial fill, very fine silt and clay, and materials with high organic-matter content

SAND AND GRAVEL

[Blue] Eolian (windblown) sand; quartz sand with some feldspar. Not cemented; contains negligible clay. May be useful for concrete mortar sand. As much as 30 feet thick

[Light green] Mostly quartz sand with some mica and clay. Not cemented; grains are bound together mostly by moisture. Small local deposits of fine to coarse gravel occur as crescent-shaped "sandbars" in major drainage channels. May be useful for fine concrete aggregate and for road-surfacing material. As much as 30 feet thick

[Green] Mostly sand and fine gravel composed of quartz with appreciable feldspar and mica. Poorly cemented with clay and silt. Some deposits contain calcium carbonate as separate grains. All deposits are wedge shaped in cross section, and are oblong or teardrop shaped in plan. Fine to coarse gravel occurs in discontinuous lens-shaped deposits along the northeastern edge of the deposits; black line inside colored area marks approximate outcrop of gravel deposits. Sand and gravel from these deposits commonly are used for road surfacing in the quadrangle and may be suitable for concrete aggregate. As much as 95 feet thick

[Yellow] Sandstone; quartz and feldspar sand with abundant clay and mica, partially hardened into rock. Moderately well cemented by clay and locally by iron oxide. Clay binder generally washes away readily under directed hydraulic pressure. Stone is structurally very weak when removed in blocks from natural deposits. Crushed and washed, the material commonly is used for road surfacing and may be suitable for concrete aggregate. As much as 85 feet thick

[Brown] Gravel; fine to extremely coarse gravel composed of many rock types, with varied amounts of medium to coarse sand. Firmly cemented by clay. Natural aggregate blocks of this material have very low structural strength when removed from natural deposits. Several local homes have been built with coarse gravel; after proper preparation, the material may be suitable for use as fieldstone, riprap, crushed stone, concrete aggregate, and road surfacing. As much as 60 feet thick

CLAY

[Orange] Claystone; soft rock composed of clay and some fine sand and silt, mica, and local thin sandstone interbeds. Contains little or no organic material. Variegated colors. Very soft on outcrops, tough and moderately hard where fresh, dry, and unweathered. Some layers contain swelling clay (Maberry, 1972). Clay has been used locally for brickmaking and other commercial clay products, and most may be suitable for general pottery manufacture. As much as 60 feet thick

[Pink] Interbedded deposits of sandstone and claystone; mostly covered by thin unconsolidated surficial material. Covering material makes impossible the identification and mapping of separate rock types without extensive subsurface investigations. Areas of outcrop of specific rock type are shown within the zone. Zone varies in thickness

X Sandpit, gravel pit, or combined sand and gravel pit

X^C Claypit

Most geologic materials in the Parker quadrangle may be considered as potential resources of construction materials. Soils in the quadrangle rarely exceed 6 feet in thickness; below the soil zone, geologic materials are clay, silt, sand, and gravel in varied proportions. Clay, sand, and gravel have been used from numerous local deposits; much more remains in deposits that range in composition from loose river sand to relatively hard well-cemented bedrock.

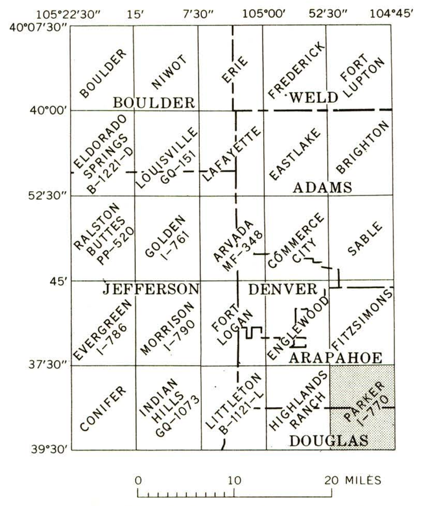
Evaluation of engineering characteristics is based on observations made during geologic mapping of the quadrangle (Maberry and Lindvall, 1972) and on actual testing of samples of the geologic units. Such tests include standard sieve analyses of selected samples, performed by Philip S. Powers of the U.S. Geological Survey, and sieve analyses in the field, using small screens of 200, 30, and 10 openings per inch. These sizes correspond approximately to the distinctions between silt and very fine sand, medium and coarse sand, and very coarse sand and fine gravel, respectively. Approximate amounts of other size classes shown in the table were estimated in the field. Additonal characteristics of the geologic materials are shown in the table

This map is intended solely for use in general land-use planning. It is not meant to supplant detailed field investigations. Commercial operators routinely perform suitability tests of construction materials; others using this map, however, should consult engineering specialists as to the suitability of materials for specific uses.

REFERENCES

Maberry, J. O., and Lindvall, R. M., 1972, Geologic map of the Parker quadrangle, Arapahoe and Douglas Counties, Colorado: U.S. Geol. Survey Misc. Geol. Inv. Map I-770-A.

Maberry, J. O., 1972, Relative swelling-pressure potential of geologic materials in the Parker quadrangle, Arapahoe and Douglas Counties, Colorado: U.S. Geol. Survey Misc. Geol. Inv. Map I-770-D.



INDEX SHOWING LOCATION OF PARKER QUADRANGLE

CHARACTERISTICS OF AND SIEVE TESTS ON GEOLOGIC MATERIALS

	MAP UNITS					
	SAND AND GRAVEL					CLAY
	[Blue]	[Light green]	[Green]	[Yellow]	[Brown]	[Orange]
CHARACTERISTICS OF GEOLOGIC MATERIALS						
Shape of grains	Well-rounded	Rounded	Rounded to well-rounded	Angular	Angular to rounded	Rounded
Type of encrustations on particles			Local caliche	Clay	Local caliche	Clay
Swelling-pressure potential of clays			Moderate			Low to extremely high
Plasticity index of clays			Low to moderate	Low to moderate		High to very high
Unweathered laminar materials			Mica; feldspar	Mica	Mica	
Soft or weak constituents		Local clay	Clay	Clay	Local clay	Clay
Material that will cause alkali reactivity if used for concrete aggregate			Opalized fossil wood	Opalized fossil wood		
Organic material		Locally abundant	Locally abundant			Sparse
Soluble minerals			Local calcium carbonate			
SIEVE ANALYSIS TESTS ON SELECTED SAMPLES FROM EACH MAP UNIT						
Number of samples	4	3	4	14	6	11
Type of test[1]	B	C	A	A	B	A
Average percent of sample by weight						
Clay (0.004 mm)	45	2	13	9	10	35
Silt (0.004-0.0625 mm)		4	16	15		31
Sand: Very fine to fine (0.0625-0.25 mm)	50	15	35	25	12	23
Sand: Medium (0.25-0.5 mm)	5	34	18	18	15	8
Sand: Coarse (0.5-2 mm)		44	13	24	20	2
Gravel: Very fine to fine (2-8 mm)		1	5	9	18	1
Gravel: Coarse (8 mm)					25	

[1] Type of test: A, all data from standard laboratory sieve analyses; B, all field-test data by geologist using portable sieve screens, results approximate; C, results from both field and laboratory tests.

For sale by U.S. Geological Survey, price 75 cents