SPECIAL PUBLICATION 5-B

ATLAS OF SAND, GRAVEL, AND QUARRY AGGREGATE RESOURCES COLORADO FRONT RANGE COUNTIES

by

S. D. Schwochow, R. R. Shroba, and P. C. Wicklein

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COLORADO GEOLOGICAL SURVEY
DEPARTMENT OF NATURAL RESOURCES
STATE OF COLORADO
DENVER, COLORADO

1974

STATE OF COLORADO

John D. Vanderhoof, *Governor*

DEPARTMENT OF NATURAL RESOURCES

Thomas W. Ten Eyck, *Executive Director*

COLORADO GEOLOGICAL SURVEY

John W. Rold, *Director and State Geologist*

MISSION OF THE COLORADO GEOLOGICAL SURVEY

The Colorado Geological Survey was legislatively re-established in February 1969 to meet the geologic needs of the citizens, governmental agencies and mineral industries of Colorado. This modern legislation is aimed at applying geologic knowledge toward the solution of today's and tomorrow's problems of an expanding population, mounting environmental concern and the growing demand for mineral resources.

SPECIFIC LEGISLATIVE CHARGES ARE

"Assist, consult with and advise state and local governmental agencies on geologic problems."

"Promote economic development of mineral resources."

"Evaluate the physical features of Colorado with reference to present and potential human and animal use."

"Conduct studies to develop geological information."

"Inventory the state's mineral resources."

"Collect, preserve and distribute geologic information."

"Determine areas of geologic hazard that could affect the safety of or economic loss to the citizens of Colorado."

"Prepare, publish and distribute geologic reports, maps and bulletins."

Post Office Box 2645
Denver, Colorado 80201
June 30, 1974

LETTER OF TRANSMITTAL

Mr. John W. Rold
State Geologist and Director
Colorado Geological Survey
1845 Sherman Street
Denver, Colorado 80203

Subject: Completion of the "ATLAS OF SAND, GRAVEL, AND QUARRY AGGREGATE RESOURCES, COLORADO FRONT RANGE COUNTIES."

Dear Mr. Rold:

This atlas of 212 preliminary 1:75,000-scale resource maps was prepared by Stephen D. Schwochow, Ralph R. Shroba, and Phillip C. Wicklein under contract to the Colorado Geological Survey as authorized by the 1973 Colorado House Bill 1529. The contract was administered by Mr. A. L. Hornbaker, the Colorado Geological Survey Mineral Deposits Geologist. The maps were prepared utilizing photogeologic methods and published data. All photogeologic maps were prepared and field checked during the fall and winter of 1973-1974. Maps and data prepared by the U. S. Geological Survey staff for the Front Range Urban Corridor study were utilized in preparing 74 of the quadrangles in this atlas.

Individual revised 1:24,000-scale copies of these maps have been sent to the appropriate city, county, and regional planning agencies. These maps are available from the appropriate counties or the Colorado Geological Survey. This atlas was prepared as a convenient reference document and should be a valuable aid to your geologic staff, sand and gravel producers, geologic consultants, contractors, realtors, and government agencies. The atlas should be used in conjunction with "Sand, Gravel and Quarry Aggregate Resources of the Colorado Front Range Counties", Colorado Geological Survey Special Publication 5-A.

Sincerely,

Phillip C. Wicklein
Project Consultant

Stephen D. Schwochow
Consultant

Ralph R. Shroba
Consultant

PCW/je

PREFACE

Last year House Bill 1529 charged the Colorado Geological Survey to

> *"contract for a study of the commercial mineral deposits in the populous counties of the state in order to identify and locate such deposits. Such study shall be of sand, gravel, and quarry aggregate, and shall be completed on or before July 1, 1974, and shall include a map or maps of the state showing such commercial mineral deposits, copies of which may be generally circulated. Any commercial mineral deposits discovered subsequent to July 1, 1974, may be, upon discovery, included in such study."*

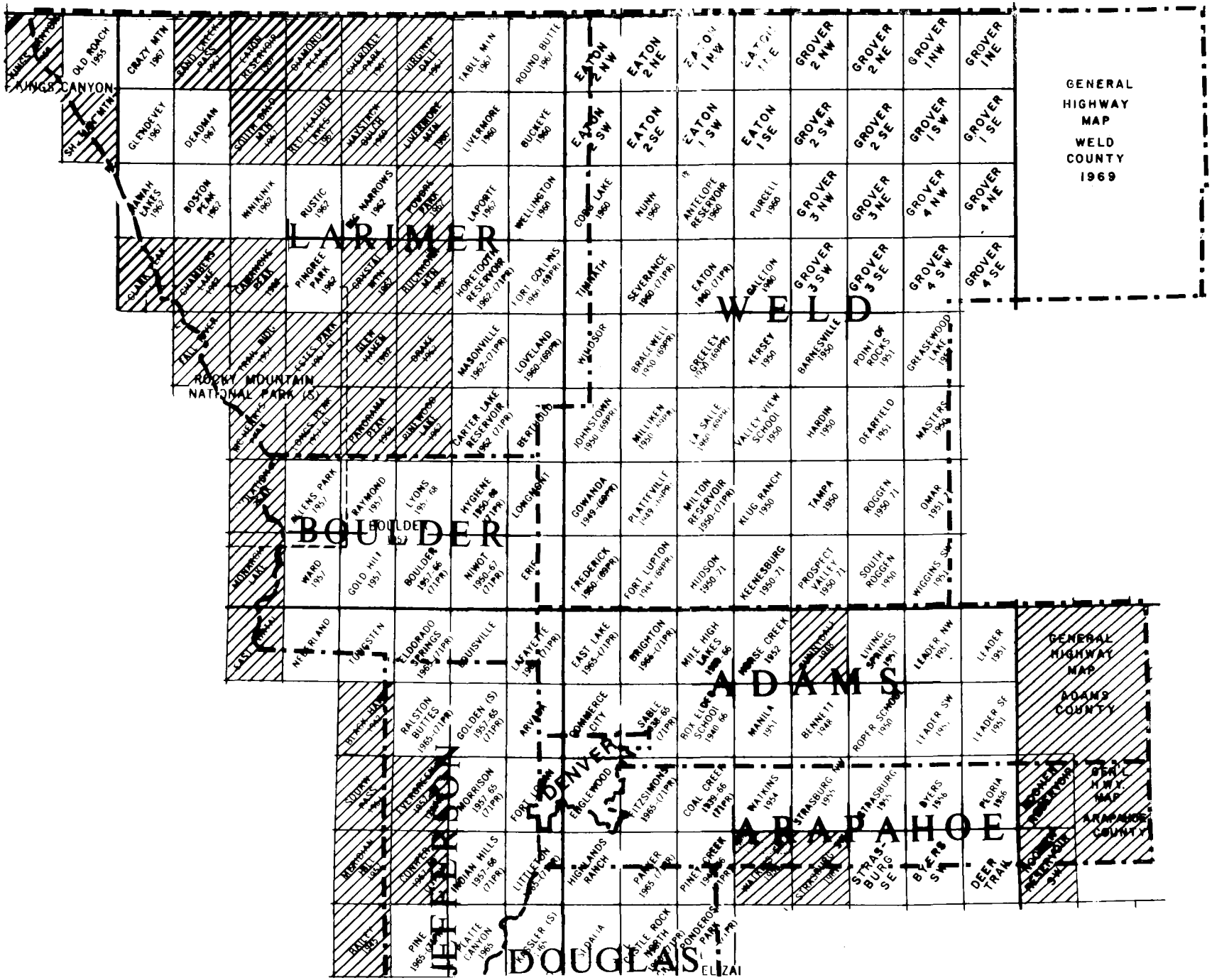
Carrying out this contract required the comprehensive photogeologic and field geologic evaluation of 271 quadrangles in Larimer, Weld, Boulder, Jefferson, Adams, Denver, Arapahoe, El Paso and Pueblo Counties. Douglas County was not included in the statutory charge, but because of its nearness to and relationship to the sand and gravel supply and demand problems of the area, it was included in the project.

Results of this study are being distributed in three different ways:

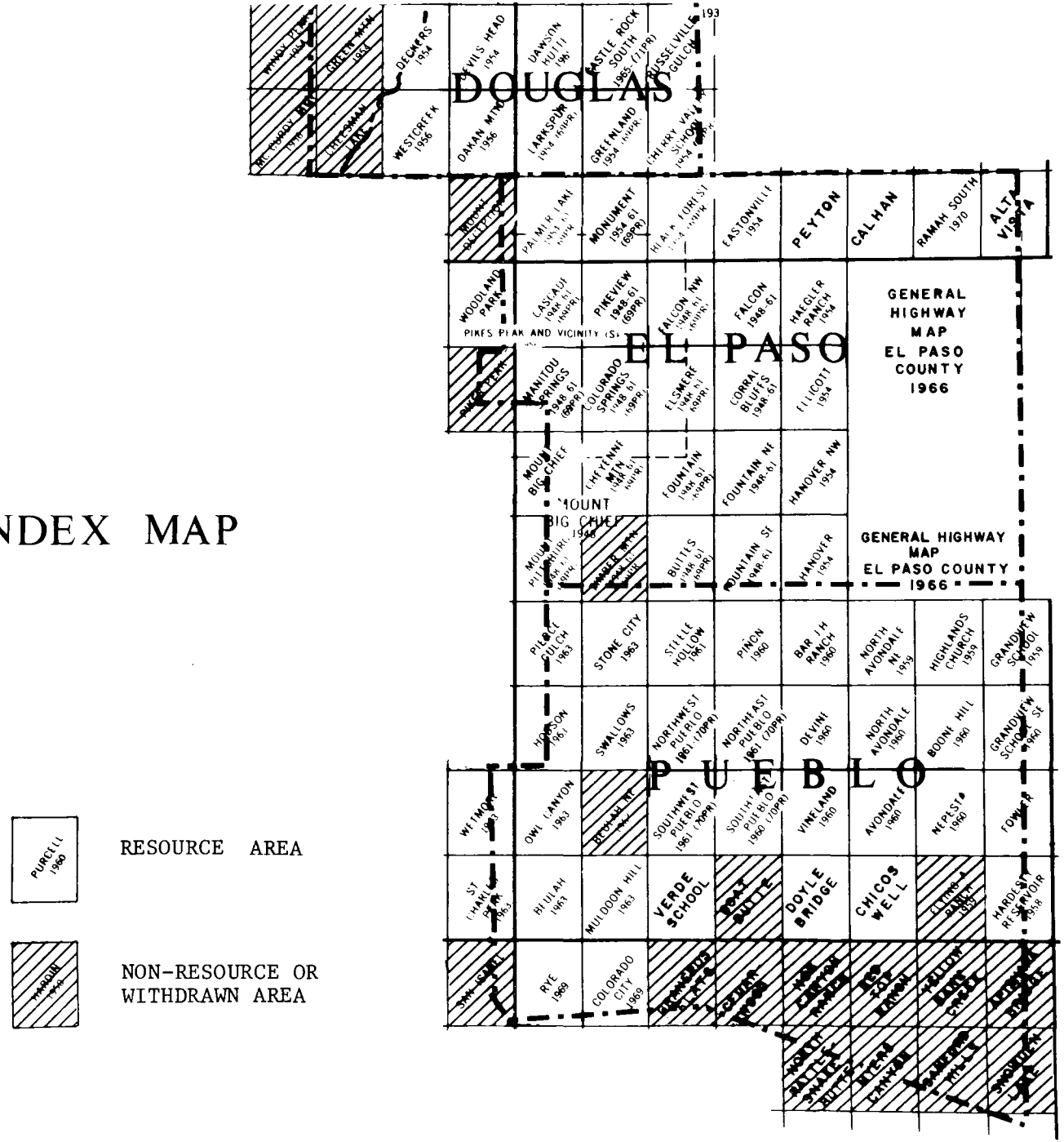
First, a text and 3 1:250,000-scale regional maps have been completed by the consultants for publication by the Colorado Geological Survey as Special Publication 5-A.

Second, detailed 1:24,000-scale quadrangle maps have been prepared and distributed to the appropriate counties and cities within the project area. Copies of these detailed resource maps are held on open file in the Colorado Geological Survey offices, and may be purchased there or acquired from the appropriate county planning offices.

Third, this atlas, which is a compilation of reduced-scale preliminary maps, is intended to provide a convenient substitute for the more expensive and bulky detailed maps. It is available through the Colorado Geological Survey as Special Publication 5-B. The 1:75,000-scale preliminary maps presented in this atlas were produced during the step reduction of 1:24,000-scale field maps to 1:250,000-scale composite regional maps. Quadrangles in the atlas appear in alphabetical order by name. Because of the size of these 1:75,000-scale maps, the authors believe this atlas will be a convenient and valuable reference for the Colorado Geological Survey staff, sand and gravel producers, geologic consultants, contractors, realtors, and governmental agencies. An explanatory text and detailed acknowledgments to the geologists, governmental agencies and gravel producers, without whose help this project would have been impossible, appear in Colorado Geological Survey Special Publication 5-A, SAND, GRAVEL, AND QUARRY AGGREGATE RESOURCES OF THE COLORADO FRONT RANGE COUNTIES by S. D. Schwochow, R. R. Shroba, and P. C. Wicklein, 1974.


GENERAL HIGHWAY MAP WELD COUNTY 1969
LARIMER
WELD
BOULDER
ADAMS
ARAPAHOE
DOUGLAS
JEFFERSON
DENVER
KINGS CANYON
ROCKY MOUNTAIN NATIONAL PARK (S)
BOULDER
GENERAL HIGHWAY MAP ADAMS COUNTY
GEN'L HWY. MAP ARAPAHOE COUNTY
DEER TRAIL

INDEX MAP


DOUGLAS
EL PASO
PUEBLO
GENERAL HIGHWAY MAP EL PASO COUNTY 1966
GENERAL HIGHWAY MAP EL PASO COUNTY 1966
PIKES PEAK AND VICINITY (S.
MOUNT BIG CHIEF
DECKERS 1954
DEVILS HEAD 1954
DAWSON BUTTE 1961
CASTLE ROCK SOUTH 1965 (7)PR)
RUSSELVILLE GULCH
WESTCREEK 1956
DAKAN MTN. 1956
LARKSPUR 1954 (6)PR)
GREENLAND 1954 (6)PR)
CHERRY VALLEY SCHOOL 1954
PALMER LAKE 1954 (6)PR)
MONUMENT 1954 6) (69PR)
HIGHER FORES 1954 (6)PR)
EASTONVILLE 1954
PEYTON
CALHAN
RAMAH SOUTH 1970
ALTA VISTA
WOODLAND PARK
CASCADE 1948 6) (69PR)
PIKEVIEW 1948 6) (69PR)
FALCON NW 1948 6) (69PR)
FALCON 1948 6)
HAEGLER RANCH 1954
MANITOU SPRINGS 1948 6) (69PR)
COLORADO SPRINGS 1948 6) (69PR)
ELSMERE 1948 6) (69PR)
CORRAL BLUFFS 1948 6)
ELLICOTT 1954
MOUNT BIG CHIEF
CHEYENNE MTN. 1948 6) (69PR)
FOUNTAIN 1948 6) (69PR)
FOUNTAIN NE 1948 6)
HANOVER NW 1954
MOUNT PISGAH 1948 6) (69PR)
BUTTES 1948 6) (69PR)
FOUNTAIN SE 1948 6)
HANOVER 1954
PIKES PEAK 1963
STONE CITY 1963
STEELE HOLLOW 1961
PIÑON 1960
BAR JH RANCH 1960
NORTH AVONDALE NE 1959
HIGHLANDS CHURCH 1959
GRANDVIEW SCHOOL 1959
HOOSON 1963
SWALLOWS 1953
NORTHWEST PUEBLO 1961 (70PR)
NORTHEAST PUEBLO 1961 (70PR)
DEVINE 1960
NORTH AVONDALE 1960
BOONE HILL 1960
GRANDVIEW SCHOOL SE 1960
WETMORE 1963
OWL CANYON 1963
SOUTHWEST PUEBLO 1961 (70PR)
SOUTHEAST PUEBLO 1960 (70PR)
VINELAND 1960
AVONDALE 1960
NEPESTA 1960
FOWLER
ST CHARLES PEAK 1963
HUALAH 1961
MULDOON HILL 1963
VERDE SCHOOL
BOAT BUTTE
DOYLE BRIDGE
CHICOS WELL
HARDSCRABBLE RESERVOIR 1958
RYE 1969
COLORADO CITY 1969
PURCELL 1960
RESOURCE AREA
MARGIN 1960
NON-RESOURCE OR WITHDRAWN AREA

EXPLANATION *

F1 — *Landform unit* / *Resource classification*

LANDFORM UNITS

F	Floodplain deposit
T	Stream terrace deposit
V	Valley fill (F & T)
U	Upland deposits
A	Alluvial fan
E	Wind-deposited sand (eolian)
M	Man-made deposits (slag, tailings, spoils....)

RESOURCE CLASSIFICATION

Coarse Aggregate
(at least 30% retained on #4 screen, visual estimation)

1	Gravel: relatively clean and sound
2	Gravel: significant fines, decomposed rock, calcium carbonate.

Fine Aggregate
(greater than 70% passing #4 screen, 60% retained on #200 screen, visual estimation

3	Sand

Unevaluated Resource

4	Probable aggregate resource

MAP SYMBOLS

●	Operating gravel and/or sand pit
▲	Abandoned gravel and/or sand pit
⚒	Operating stone quarry
⚒	Abandoned stone quarry
▨	Potential quarry aggregate resource area
$\circ\frac{2}{17_g}$	Selected well or drill-hole location with overburden thickness (ft) over sand/gravel resource thickness (ft), obtained from well logs.
	"$_g$" indicates gravel; "$_s$" indicates sand
	"$_x$" in symbol denotes unevaluated or unknown property.
	"WG" denotes Colorado Geological Survey Windsor/Sand and Gravel projects' drill hole
~	Landform boundary, solid where known or observed; dashed where approximate or inferred.

STATION, LOCATION AND GEOLOGICAL DESCRIPTION OF DEPOSIT

overburden thickness (ft)
sand/gravel resource thickness (ft)
percent sand and fines (passing #4 screen, 0.25 in.), visual estimation

5, 17, 40
s s s

significant amount of fines (passing #200 screen, 0.0059 in. or 0.074 mm.)
significant amount of decomposed or weak rock.
significant amount of calcium carbonate (caliche)

"x" in symbol denotes unevaluated or unknown property

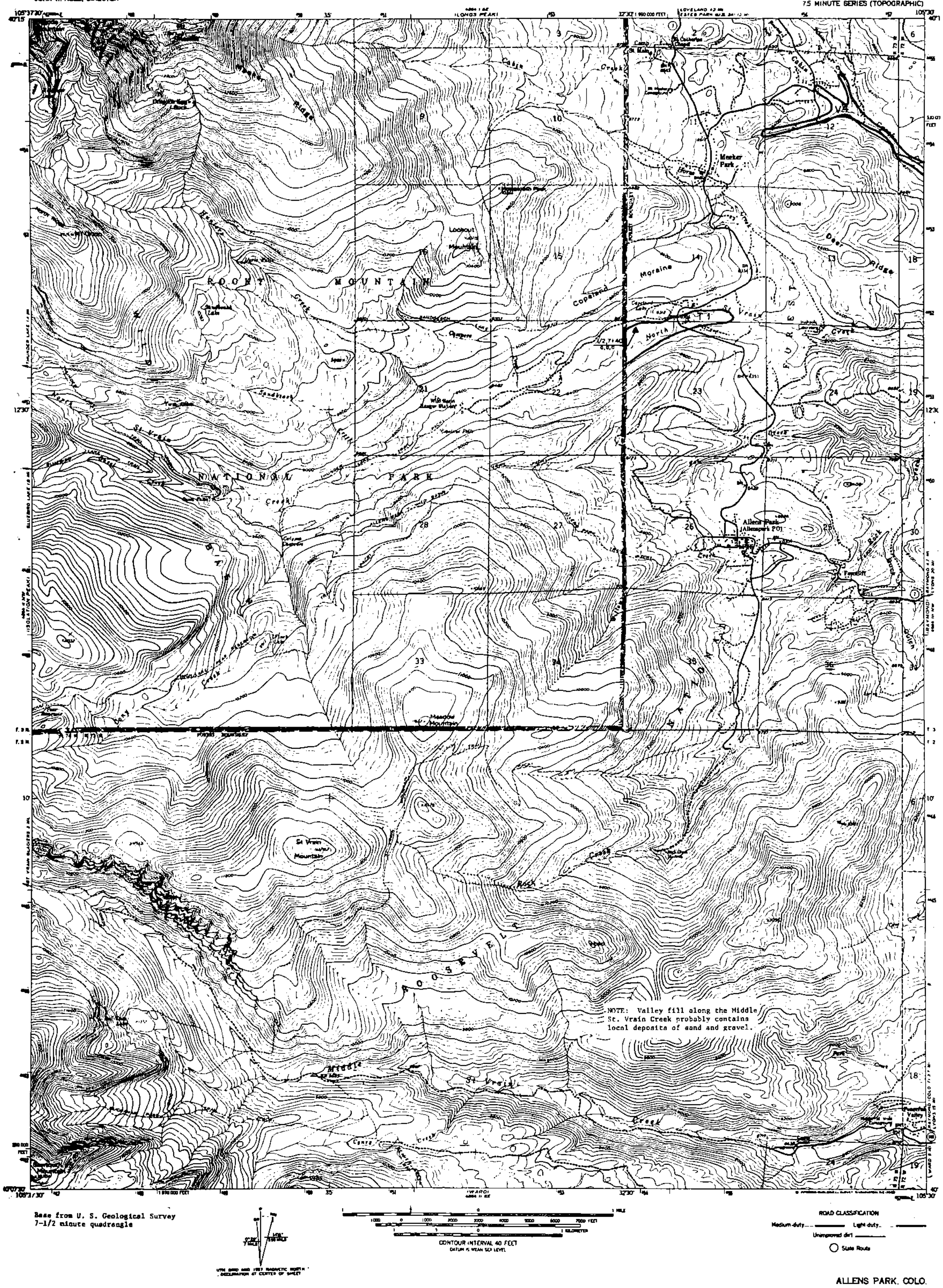
"a" in symbol denotes property absent or insignificant

* *Definition and derivation of terms and map units, explanation of field methods, explanatory text and regional maps are contained in the companion volume, Colorado Geological Survey Special Publication 5-A.*

SAND, GRAVEL AND QUARRY AGGREGATE RESOURCES MAP

DEPARTMENT OF NATURAL RESOURCES
COLORADO GEOLOGICAL SURVEY
JOHN W. ROLD, DIRECTOR

ALLENS PARK QUADRANGLE
COLORADO–BOULDER CO
7.5 MINUTE SERIES (TOPOGRAPHIC)



Base from U. S. Geological Survey
7-1/2 minute quadrangle

ALLENS PARK, COLO.

EXPLANATION

F — Landform unit; Resource classification

LANDFORM UNITS

- F Floodplain deposit
- T Stream terrace deposit
- V Valley fill (F & T)
- U Upland deposits
- A Alluvial fan
- E Wind-deposited sand (eolian)
- M Man-made deposits (slag, tailings, spoils....)

RESOURCE CLASSIFICATION

Coarse Aggregate
(at least 30% retained on #4 screen, visual estimation)

1 Gravel: relatively clean and sound
2 Gravel: significant fines, decomposed rock, calcium carbonate.

Fine Aggregate
(greater than 70% passing #4 screen, 60% retained on #200 screen, visual estimation)

3 Sand

Unevaluated Resource

4 Probable aggregate resource

MAP SYMBOLS

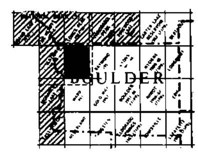
- Operating gravel and/or sand pit
- Abandoned gravel and/or sand pit
- Operating stone quarry
- Abandoned stone quarry
- Potential quarry aggregate resource or a
- Selected well or drill-hole location with overburden thickness (ft) over sand/gravel resource thickness (ft), obtained from well logs.
  "g" indicates gravel; "s" indicates sand
  "?" in symbol denotes unevaluated or unknown property.
  "wh" denotes Colorado Geological Survey Windsor/Sand and Gravel projects' drill hole
- Landform boundary, solid where known or observed; dashed where approximate or inferred.

STATION, LOCATION AND GEOLOGICAL DESCRIPTION OF DEPOSIT

5, 17, 40
- overburden thickness (ft)
- sand/gravel resource thickness (ft)
- percent sand and fines (passing #4 screen, 0.25 in.), visual estimation
- significant amount of fines (passing #200 screen, 0.0059 in. or 0.074 mm.)
- significant amount of decomposed or weak rock.
- significant amount of calcium carbonate (caliche)

"?" in symbol denotes unevaluated or unknown property

"o" in symbol denotes property absent or insignificant



QUADRANGLE LOCATION

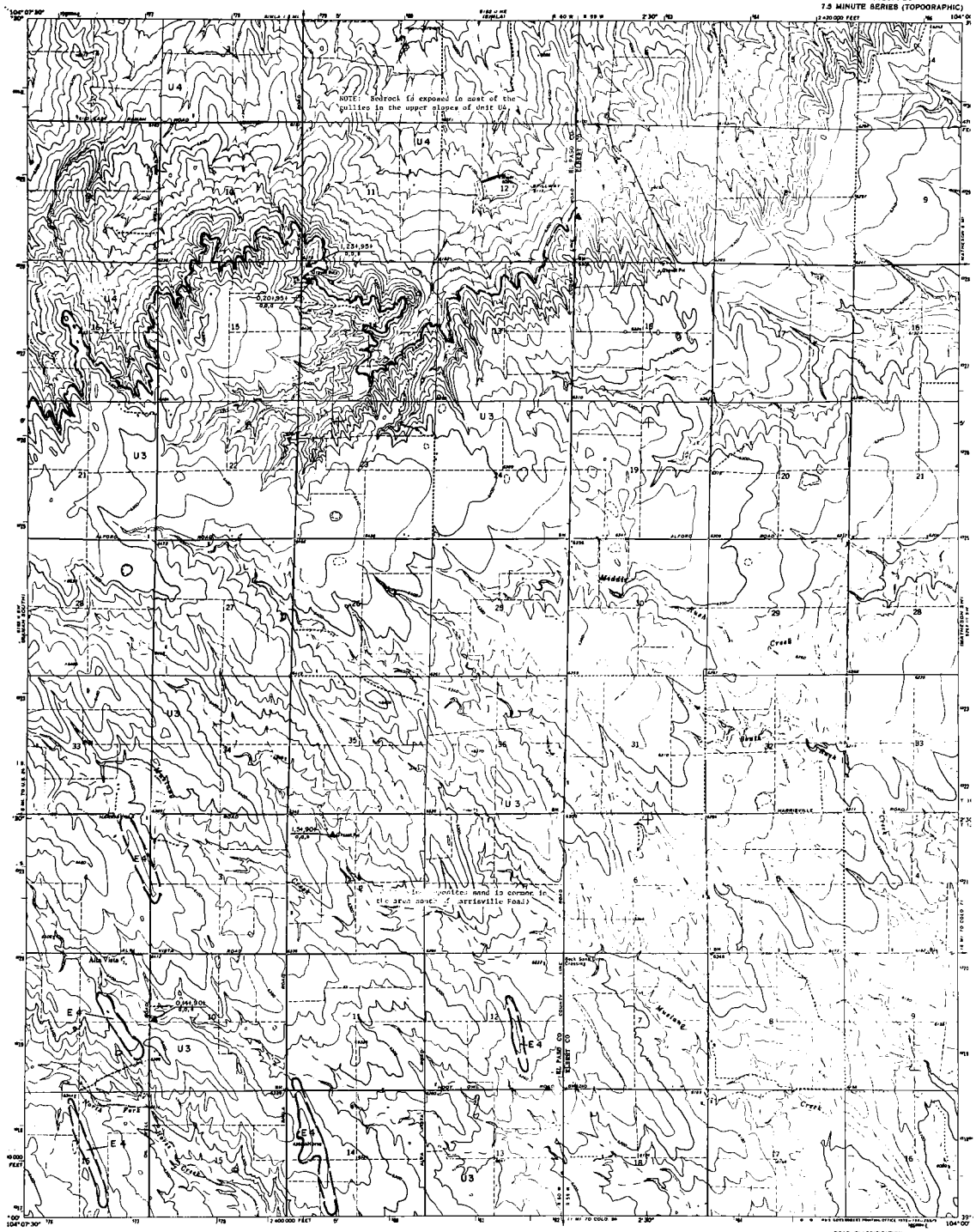
NON-RESOURCE OR WITHDRAWN AREA

Mapped by: Ralph R. Shroba
Date: June 30, 1974

SAND, GRAVEL AND QUARRY AGGREGATE RESOURCES MAP

DEPARTMENT OF NATURAL RESOURCES
COLORADO GEOLOGICAL SURVEY
JOHN W. ROLD, DIRECTOR

ALTA VISTA QUADRANGLE
COLORADO
7.5 MINUTE SERIES (TOPOGRAPHIC)



Base from U. S. Geological Survey
7-1/2 minute quadrangle

UTM GRID AND 1970 MAGNETIC NORTH DECLINATION AT CENTER OF SHEET

CONTOUR INTERVAL 20 FEET
DATUM IS MEAN SEA LEVEL

ROAD CLASSIFICATION

Primary highway, hard surface
Secondary highway, hard surface
Light-duty road, hard or improved surface
Unimproved road
Interstate Route
U. S. Route
State Route

ALTA VISTA, COLO.

EXPLANATION

Landform unit
Resource classification

LANDFORM UNITS

F Floodplain deposit
T Stream terrace deposit
V Valley fill (F & T)
U Upland deposits
A Alluvial fan
E Wind-deposited sand (eolian)
M Man-made deposits (slag,tailings, spoils....)

RESOURCE CLASSIFICATION

Coarse Aggregate
(at least 30% retained on #4 screen, visual estimation)

1 Gravel - relatively clean sand and gravel
2 Gravel - significant fines, decomposed rock, calcium carbonate.

Fine Aggregate
(greater than 70% passing #4 screen, 60% retained on #200 screen, visual estimation

3 Sand

Unevaluated Resource

4 Probable aggregate resource

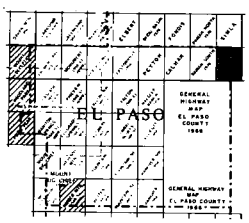
MAP SYMBOLS

Operating gravel and/or sand pit
Abandoned gravel and/or sand pit
Operating stone quarry
Abandoned stone quarry
Potential quarry aggregate resource area
Selected well or drill-hole locations with overburden thickness (fc) over sand/gravel resource thickness (fr), obtained from well logs.
"g" indicates gravel; "s" indicates sand
"-" in symbol denotes unevaluated or unknown property.
"WS" denotes Colorado Geological Survey Windsor/Sand and Gravel project drill hole
Landform boundary, solid where known or observed; dashed where approximate or inferred.

STATION, LOCATION AND GEOLOGICAL DESCRIPTION OF REPORTS

overburden thickness (fc)
sand/gravel resource thickness (fr)
percent sand and fines (passing #4 screen, 0.24 in.), visual estimation
significant amount of fines (passing #200 screen, 0.0058 in. or 0.074 mm.)
significant amount of decomposed or weak rock.
significant amount of calcium carbonate (caliche)

"e" in symbol denotes unevaluated or unknown property.
"-" in symbol denotes property absent or insignificant



QUADRANGLE LOCATION

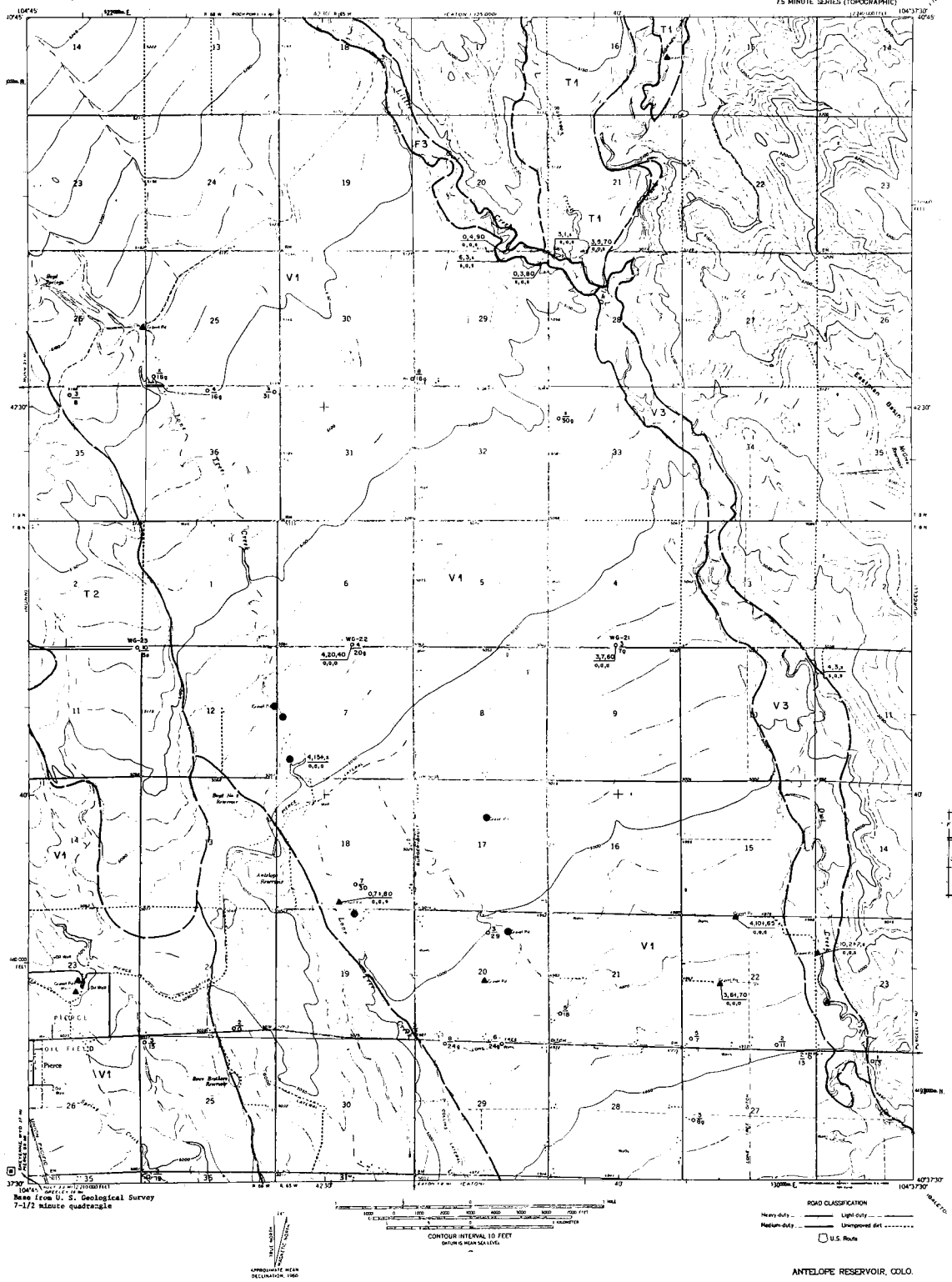
NON-RESOURCE OR WITHDRAWN AREA

Mapped by: Ralph R. Shroba
Date: June 30, 1974

SAND, GRAVEL AND QUARRY AGGREGATE RESOURCES MAP

DEPARTMENT OF NATURAL RESOURCES
COLORADO GEOLOGICAL SURVEY
JOHN W. ROLD, DIRECTOR

ANTELOPE RESERVOIR QUADRANGLE
COLORADO - WELD CO
7.5 MINUTE SERIES (TOPOGRAPHIC)



EXPLANATION

Landform unit
Resource classification

LANDFORM UNITS

- F — Floodplain deposit
- T — Stream terrace deposit
- V — Valley fill (F & T)
- U — Upland deposits
- A — Alluvial fan
- E — Wind-deposited sand (eolian)
- M — Man-made deposits (slag, tailings, spoils....)

RESOURCE CLASSIFICATION

Coarse aggregate
(at least 50% retained on #4 screen, visual estimation)

- 1 Gravel — relatively clean and sound
- 2 Gravel — significant fines, decomposed rock, calcium carbonate.

Fine aggregate
(greater than 70% passing #4 screen, 50% retained on #200 screen, visual estimate

- 3 Sand

Undervalued Resource

- 4 Probable aggregate resource

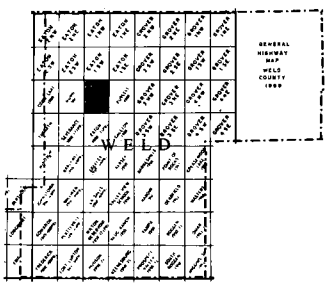
MAP SYMBOLS

- Operating gravel and/or sand pit
- Abandoned gravel and/or sand pit
- Operating stone quarry
- Abandoned stone quarry
- Potential quarry aggregate resource area
- Selected well or drill-hole location with overburden thickness (ft) over sand/gravel resource thickness (ft), obtained from well logs. "g" indicates gravel; "s" indicates sand. "-" in symbol denotes unevaluated or unknown property. "wm" denotes Colorado Geological Survey Windsor/Sand and Gravel projects' drill hole
- Landfore boundary, solid where known or observed; dashed where approximate or inferred.

STATION, LOCATION AND GEOLOGICAL DESCRIPTION OF DEPOSIT

- overburden thickness (ft)
- sand/gravel resource thickness (ft)
- percent sand and fines (passing #4 screen, 0.23 in.), visual estimation
- significant amount of fines (passing #200 screen, 0.0029 in. or 0.074 mm.)
- significant amount of decomposed or weak rock.
- significant amount of calcium carbonate (caliche)

"x" in symbol denotes unevaluated or unknown property
"o" in symbol denotes property absent or insignificant



QUADRANGLE LOCATION

NON-RESOURCE OR WITHDRAWN AREA

REFERENCE:

Hershey, L.A., and Schneider, P.A., Jr., 1972, Geologic map of the lower Cache La Poudre River basin, north-central Colorado: U. S. Geol. Survey Misc. Geol. Inv. Map I-687.

Mapped by: Stephen D. Schwochow
Date: June 30, 1974

Base from U. S. Geological Survey
7-1/2 minute quadrangle

CONTOUR INTERVAL 10 FEET
DATUM IS MEAN SEA LEVEL

ROAD CLASSIFICATION
Heavy-duty ——— Light-duty ———
Medium-duty ——— Unimproved dirt - - - - - -
U.S. Routes

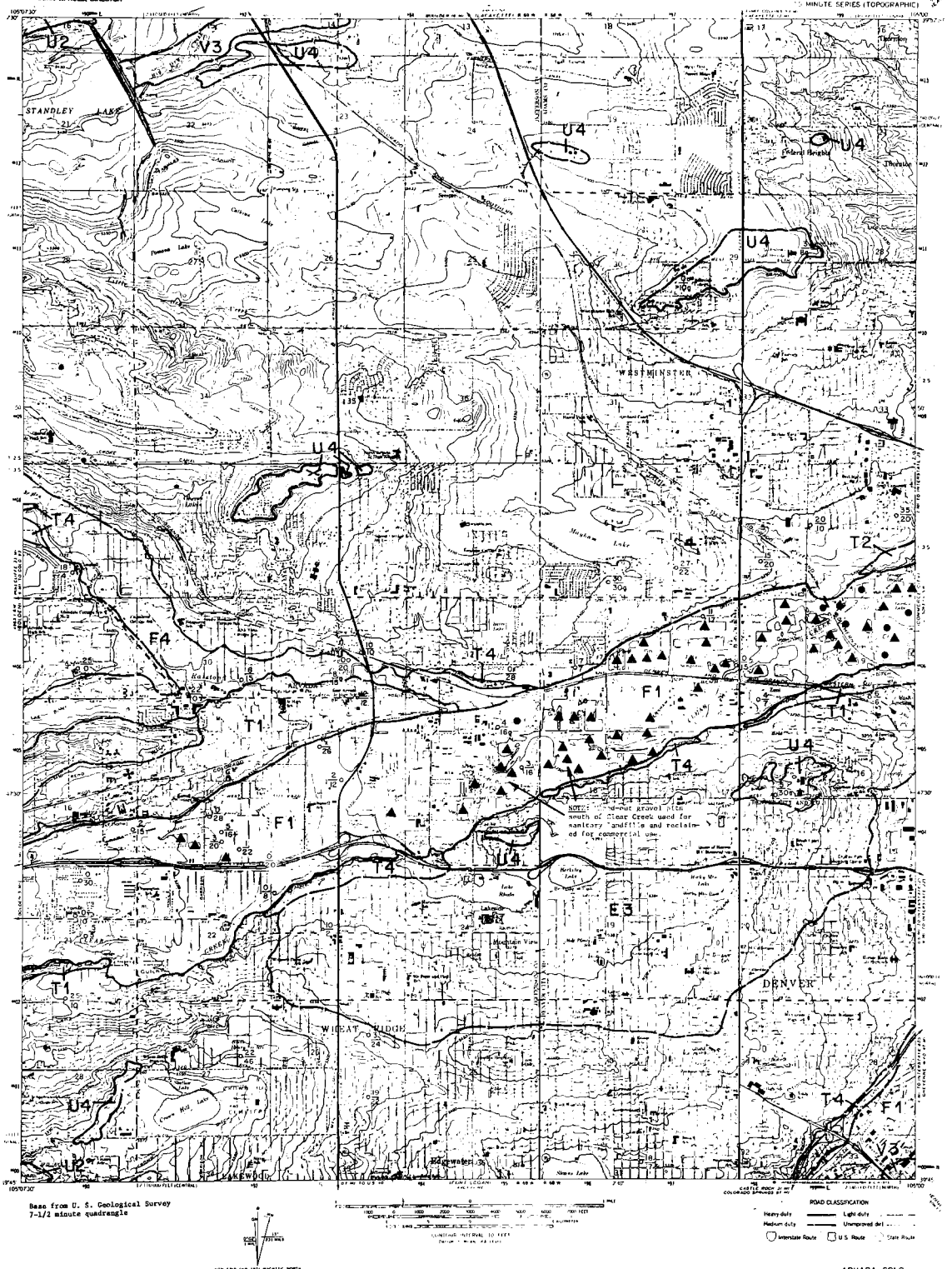
APPROXIMATE MEAN DECLINATION, 1960

ANTELOPE RESERVOIR, COLO.

SAND, GRAVEL AND QUARRY AGGREGATE RESOURCES MAP

DEPARTMENT OF NATURAL RESOURCES
COLORADO GEOLOGICAL SURVEY
JOHN W. ROLD, DIRECTOR

ARVADA QUADRANGLE
COLORADO
7.5 MINUTE SERIES (TOPOGRAPHIC)



EXPLANATION

Landform units
Colorado classification

LANDFORM UNITS

F Floodplain deposit
T Stream terrace deposit
V Valley fill (F & T)
U Upland deposits
A Alluvial fan
E Wind-deposited sand (eolian)
M Man-made deposits (slag, tailings, spoils....)

RESOURCE CLASSIFICATION

Coarse Aggregate
(at least 30% retained on #4 screen, visual estimation)

1 Gravel: relatively clean and sound
2 Gravel: significant fines, decomposed rock, calcium carbonate.

Fine Aggregate
(passing #4 screen, at least 70% passing #4 screen, visual estimation)

3 Sand

Unevaluated Resource

4 Probable aggregate resource

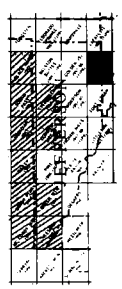
MAP SYMBOLS

- Operating gravel and/or sand pit
- Abandoned gravel and/or sand pit
- Operating stone quarry
- Abandoned stone quarry
- Potential quarry aggregate resource area
- Selected well or drill-hole location with overburden thickness (ft) over sand/gravel resource thickness (ft), obtained from well logs. "g" indicates gravel; "s" indicates sand
- "-" in symbol denotes unevaluated or unknown property
- "cm" denotes Colorado Geological Survey Windsor/Sand and Gravel projects' drill hole
- Land use boundary, solid where known or observed; dashed where approximate or inferred.

STATION, LOCATION AND GEOLOGICAL DESCRIPTION OF DEPOSIT

- overburden thickness (ft)
- sand/gravel resource thickness (ft)
- percent sand and fines (passing #4 screen, 0.25 in.), visual estimation
- significant amount of fines (passing #200 screen, 0.0029 in. or 0.074 mm)
- significant amount of decomposed or weak rock
- significant amount of calcium carbonate (caliche)

"s" in symbol denotes unevaluated or unknown property
"n" in symbol denotes property absent or insignificant



QUADRANGLE LOCATION

NON-RESOURCE OR WITHDRAWN AREA

Geology modified after:
Lindvall, R.M., 1972, Geologic map of the Arvada quadrangle, Adams, Denver, and Jefferson Counties, Colorado: U.S. Geol. Survey Misc. Field Studies Map MF-348.
and
Hunt, C.B., 1954, Pleistocene and Recent deposits in the Denver area, Colorado: U.S. Geol. Survey Bull. 996-C, pl. 3.

Reference:
Chase, G.H. and McConaghy, J.A., 1972, Generalized surficial geologic map of the Denver area, Colorado: U.S. Geol. Survey Misc. Geol. Inv. Map I-731

Inter-County Regional Planning Commission, 1961, Drainage course plan for the Denver region - Part 1, sand and gravel resources: Denver, Colo., Inter-County Reg. Plan. Comm. pl. 1.

Hamilton, J.L., and Owens, W.C., 1972, Geologic aspects, soils and related foundation problems, Denver metropolitan area, Colorado: Colorado Geol. Survey Environmental Geology Rept. 1, pl. 1.

Trimble, D.E., and Fitch, H.R., 1974, Map showing potential sources of gravel and crushed-rock aggregate in the Greater Denver Area, Front Range Urban Corridor, Colo.: U. S. Geol. Survey Misc. Geol. Inv. Map I-856-A.

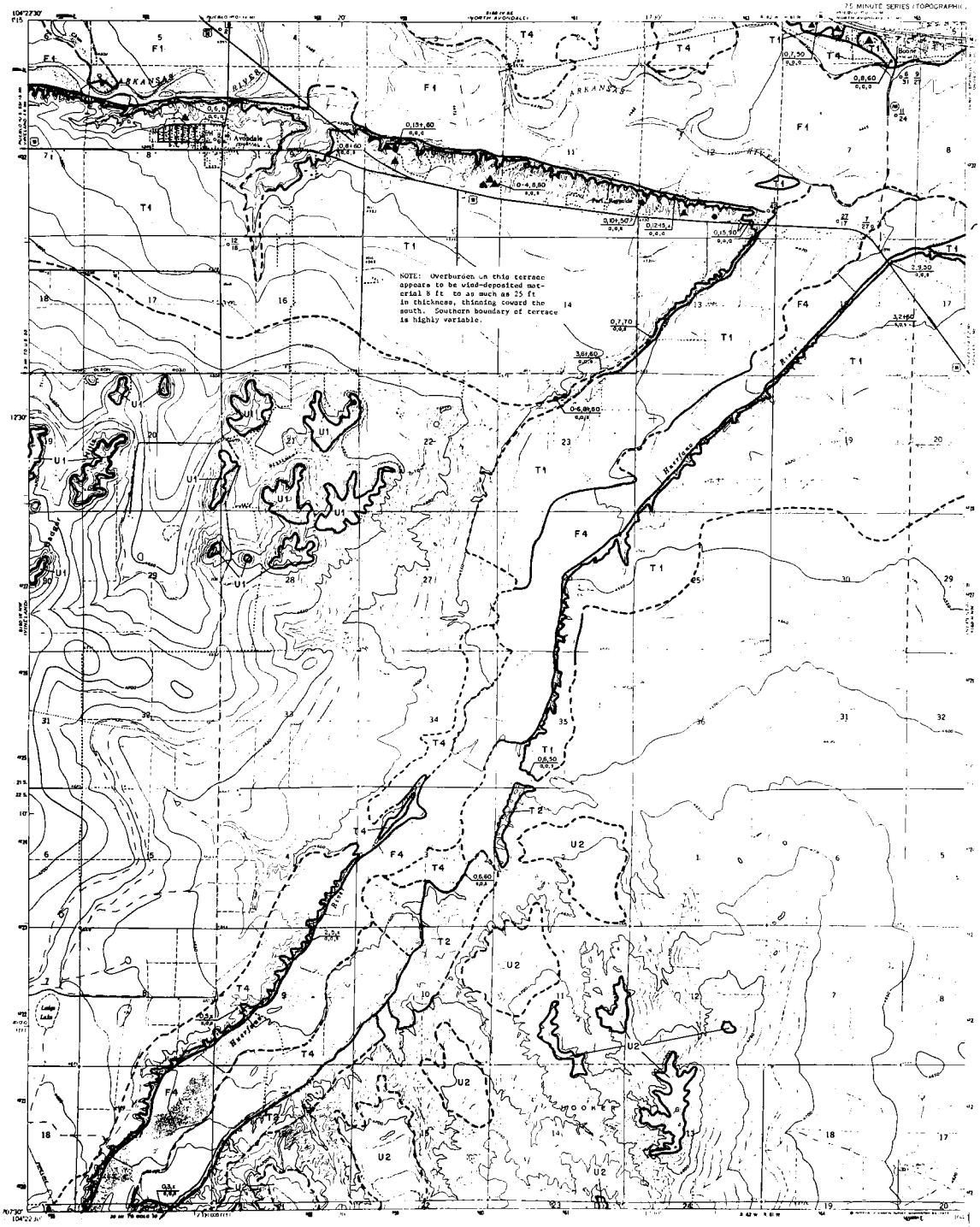
Mapped by: Stephen D. Schwochow
Date: June 30, 1974

Prepared in cooperation with the U. S. Geological Survey.

SAND, GRAVEL AND QUARRY AGGREGATE RESOURCES MAP

DEPARTMENT OF NATURAL RESOURCES
COLORADO GEOLOGICAL SURVEY
JOHN W. ROLD, DIRECTOR

AVONDALE QUADRANGLE
COLORADO-PUEBLO CO
7.5 MINUTE SERIES (TOPOGRAPHIC)



EXPLANATION

(Landform unit)
Resource classification

LANDFORM UNITS

- F Floodplain deposit
- T Stream terrace deposit
- V Valley fill (F & T)
- U Upland deposits
- A Alluvial fan
- E Wind-deposited sand (eolian)
- M Man-made deposits (slag,tailings, spoils....)

RESOURCE CLASSIFICATION

Concrete Aggregate
(at least 50% retained on #4 screen, visual estimation)

- 1 Gravel: relatively clean and sound
- 2 Gravel: significant fines, decomposed rock, calcium carbonate.

Fine Aggregate
(greater than 70% passing #4 screen, 67% retained on #200 screen, visual estimation)

- 3 Sand

Unevaluated Resource

- 4 Probable aggregate resource

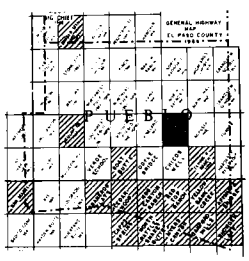
MAP SYMBOLS

- Operating gravel and/or sand pit
- Abandoned gravel and/or sand pit
- Operating stone quarry
- Abandoned stone quarry
- Potential quarry aggregate resource area
- Selected well or drill-hole location with overburden thickness (ft) over sand/gravel resource thickness (ft), obtained from well logs. "s" indicates gravel, "a" indicates sand
- "-" in symbol denotes unevaluated or unknown property.
- "wc" denotes Colorado Geological Survey Study/Sand and Gravel projects' drill hole
- Landform boundary, solid where known or observed, dashed where approximate or inferred.

STATION, LOCATION AND GEOLOGICAL DESCRIPTION OF DEPOSIT

- overburden thickness (ft)
- sand/gravel resource thickness (ft)
- percent sand and fines (passing #4 screen, 0.25 in.), visual estimation
- significant amount of fines (passing #200 screen, 0.0058 in. or 0.074 mm.)
- significant amount of decomposed or weak rock.
- significant amount of calcium carbonate (caliche)

"m" in symbol denotes unevaluated or unknown property
"a" in symbol denotes property absent or insignificant



QUADRANGLE LOCATION

NON-RESOURCE OR WITHDRAWN AREA

Mapped by: Stephen D. Schwochow
Date: June 30, 1974

Base from U. S. Geological Survey
7-1/2 minute quadrangle

CONTOUR INTERVAL 10 FEET

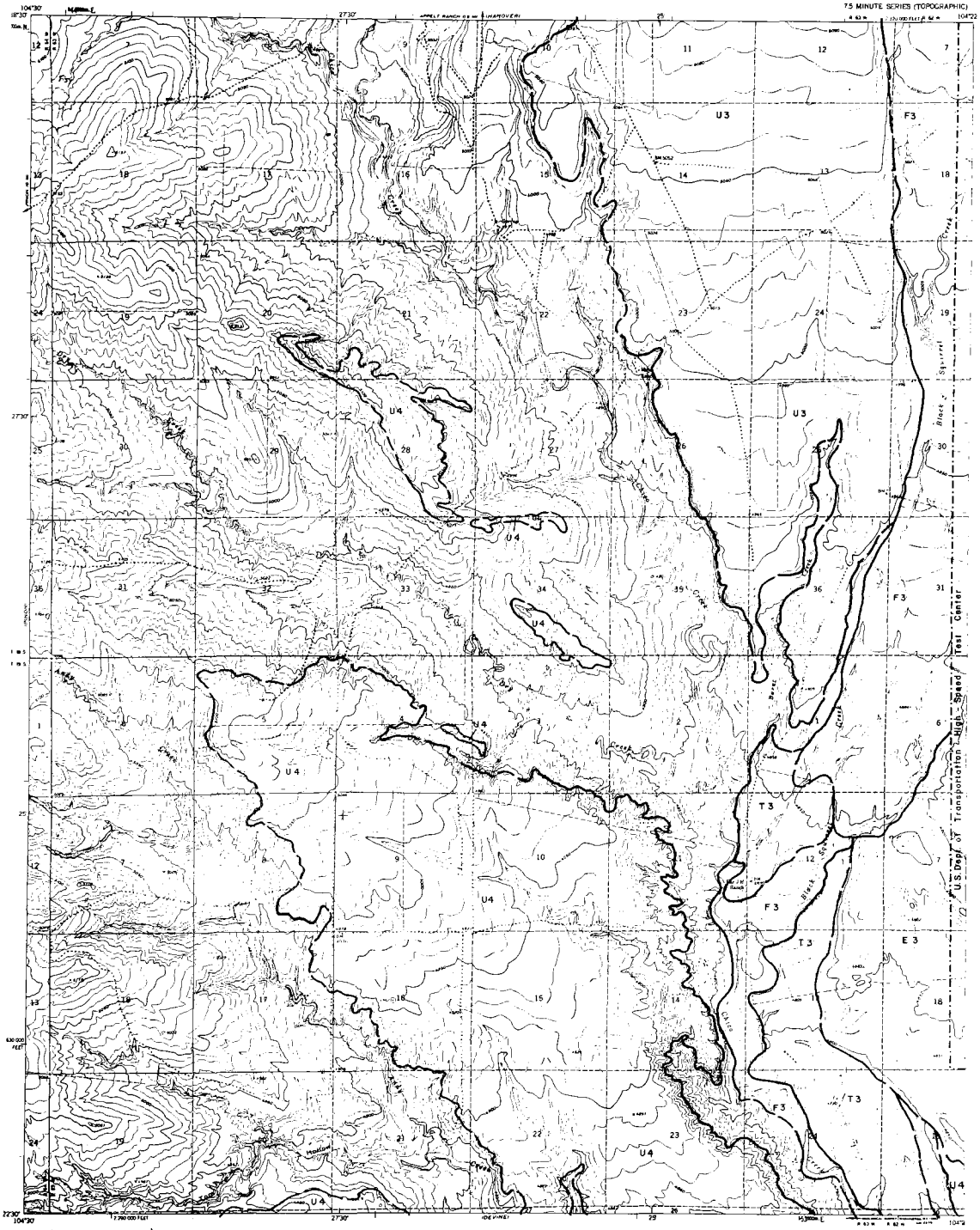
ROAD CLASSIFICATION

AVONDALE, COLO

SAND, GRAVEL AND QUARRY AGGREGATE RESOURCES MAP

DEPARTMENT OF NATURAL RESOURCES
COLORADO GEOLOGICAL SURVEY
JOHN W. ROLD, DIRECTOR

BAR J H RANCH QUADRANGLE
COLORADO-PUEBLO CO
7.5 MINUTE SERIES (TOPOGRAPHIC)



EXPLANATION

Landform unit
Resource classification

LANDFORM UNITS

- F Floodplain deposit
- T Stream terrace deposit
- V Valley fill (F & T)
- D Dyland deposits
- A Alluvial fan
- E Wind-deposited sand (eolian)
- M Man-made deposits (slag,tailings, spoils....)

RESOURCE CLASSIFICATION

Coarse Aggregate
(at least 50% retained on #4 screen, visual estimate)

- 1 Gravel: relatively clean and sound
- 2 Gravel: significant fines, decomposed rock, calcium carbonate.

Fine Aggregate
(greater than 70% passing #4 screen, 60% retained on #200 screen, visual estimate)

- 3 Sand

Unevaluated Resource

- 4 Probable aggregate resource

MAP SYMBOLS

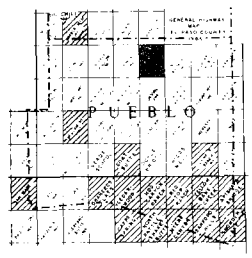
- Operating gravel and/or sand pit
- Abandoned gravel and/or sand pit
- Operating stone quarry
- Abandoned stone quarry
- Potential quarry aggregate resource area
- Selected well or drill-hole location with overburden thickness (ft) over sand/gravel resource thickness (ft), obtained from well logs. "g" indicates gravel; "s" indicates sand
- "x" in symbol denotes unevaluated or unknown property.
- "ws" denotes Colorado Geological Survey Windsor/Sand and Gravel projects' drill hole
- Landform boundary, solid where known or observed; dashed where approximate or inferred.

STATION: LOCATION AND GEOLOGICAL DESCRIPTION OF DEPOSIT

- overburden thickness (ft)
- sand/gravel resource thickness (ft)
- percent sand and fines (passing #4 screen, 0.24 in.), visual estimation
- significant amount of fines (passing #200 screen, 0.0029 in. or 0.074 mm.)
- significant amount of decomposed or weak rock.
- significant amount of calcium carbonate (caliche)

"x" in symbol denotes unevaluated or unknown property

"g" in symbol denotes property absent or insignificant



QUADRANGLE LOCATION

NON-RESOURCE OR WITHDRAWN AREA

Mapped by: Stephen D. Schwochow
Date: June 30, 1974

Base from U. S. Geological Survey
7-1/2 minute quadrangle

CONTOUR INTERVAL 10 FEET
DATUM IS MEAN SEA LEVEL

Unimproved dirt .....

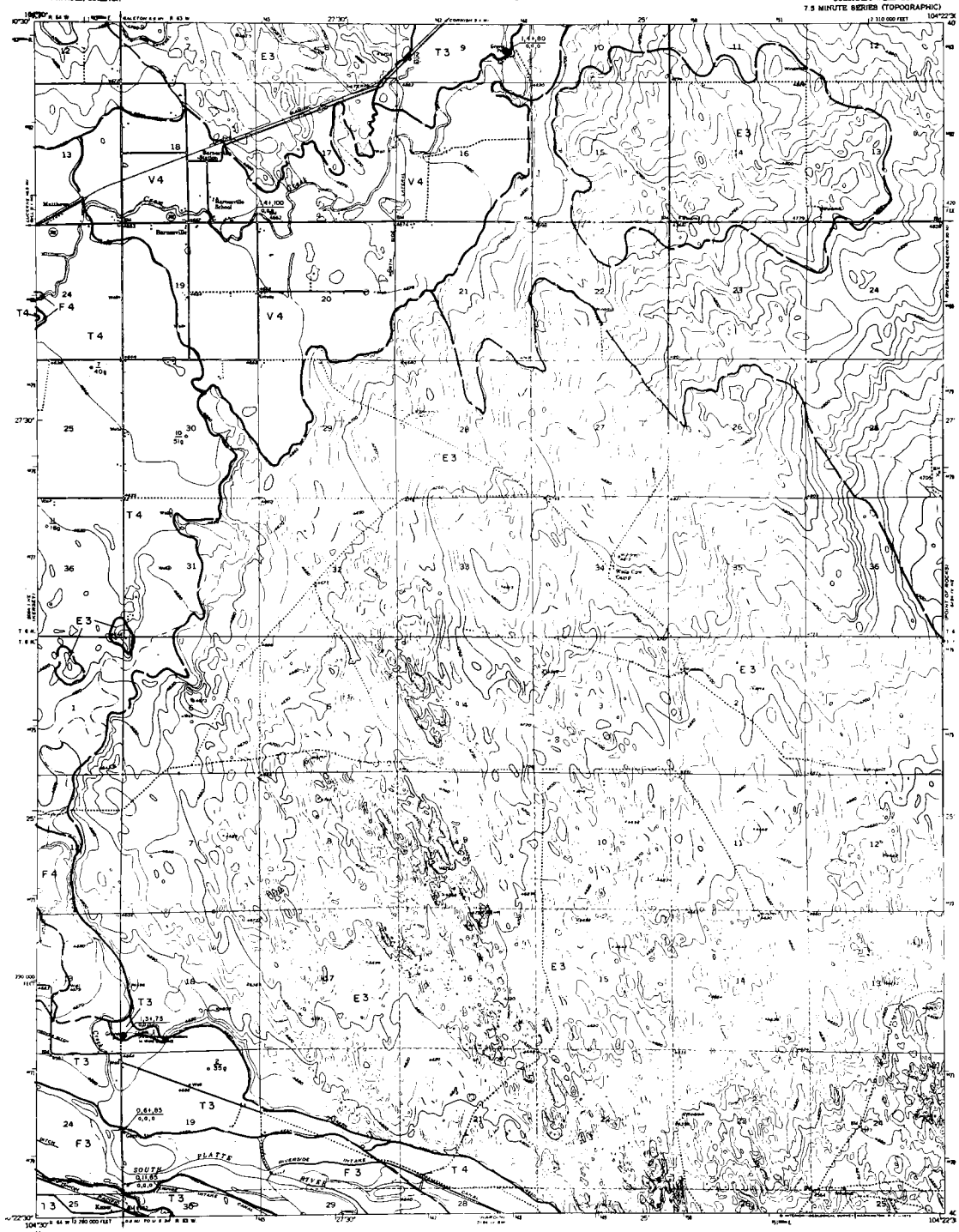
APPROXIMATE MEAN DECLINATION, 1960

BAR J H RANCH, COLO.

SAND, GRAVEL AND QUARRY AGGREGATE RESOURCES MAP

DEPARTMENT OF NATURAL RESOURCES
COLORADO GEOLOGICAL SURVEY
JOHN W. HOLD, DIRECTOR

BARNESVILLE QUADRANGLE
COLORADO-WELD CO.
7 5 MINUTE SERIES (TOPOGRAPHIC)



EXPLANATION

Landform unit
Resource classification

LANDFORM UNITS

- F Floodplain deposit
- T Stream terrace deposit
- V Valley fill (F & T)
- U Upland deposits
- A Alluvial fan
- E Wind-deposited sand (eolian)
- M Man-made deposits (slag,tailings, spoils....)

RESOURCE CLASSIFICATION

Coarse Aggregate
(at least 50% retained on #4 screen, Unified definition)

1 Gravel: relatively clean and sound
2 Gravel: significant fines, decomposed rock, calcium carbonate.

Fine Aggregate
(greater than 50 passing #4 screen, 50% retained on #200 screen, Unified definition)

3 Sand

Unevaluated Resource

4 Probable aggregate resource

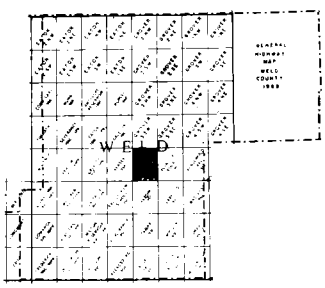
MAP SYMBOLS

- Operating gravel and/or sand pit
- Abandoned gravel and/or sand pit
- Operating stone quarry
- Abandoned stone quarry
- Potential quarry aggregate resource area
- Selected well or drill-hole location with overburden thickness (ft) over sand/gravel resource thickness (ft), obtained from well logs. "g" indicates gravel; "s" indicates sand
- "." in symbol denotes unevaluated or unknown property.
- "wn" denotes Colorado Geological Survey Windsor/Sand and Gravel projects' drill hole
- Landform boundary, solid where known or observed; dashed where approximate or inferred.

STATION, LOCATION AND GEOLOGICAL DESCRIPTION OF DEPOSIT

- overburden thickness (ft)
- sand/gravel resource thickness (ft)
- percent sand and fines (passing #4 screen, 2.12 fm.), Unified definition
- significant amount of fines (passing #200 screen, 0.0029 in. or 0.074 mm.)
- significant amount of decomposed or weak rock
- significant amount of calcium carbonate (caliche)

"w" in symbol denotes unevaluated or unknown property
"." in symbol denotes property absent or insignificant



QUADRANGLE LOCATION

NON-RESOURCE OR WITHDRAWN AREA

REFERENCE: Bjorklund, L.J., and Brown, R.F., 1957, Geology and ground-water resources of the lower South Platte River valley between Hardin, Colorado, and Paxton, Nebraska: U. S. Geol. Survey Water-Supply Paper 1378, pl. 1.

Mapped by: Phillip C. Wicklein
Date: June 30, 1974

Base from U. S. Geological Survey
7-1/2 minute quadrangle

CONTOUR INTERVAL 10 FEET
DATUM IS MEAN SEA LEVEL

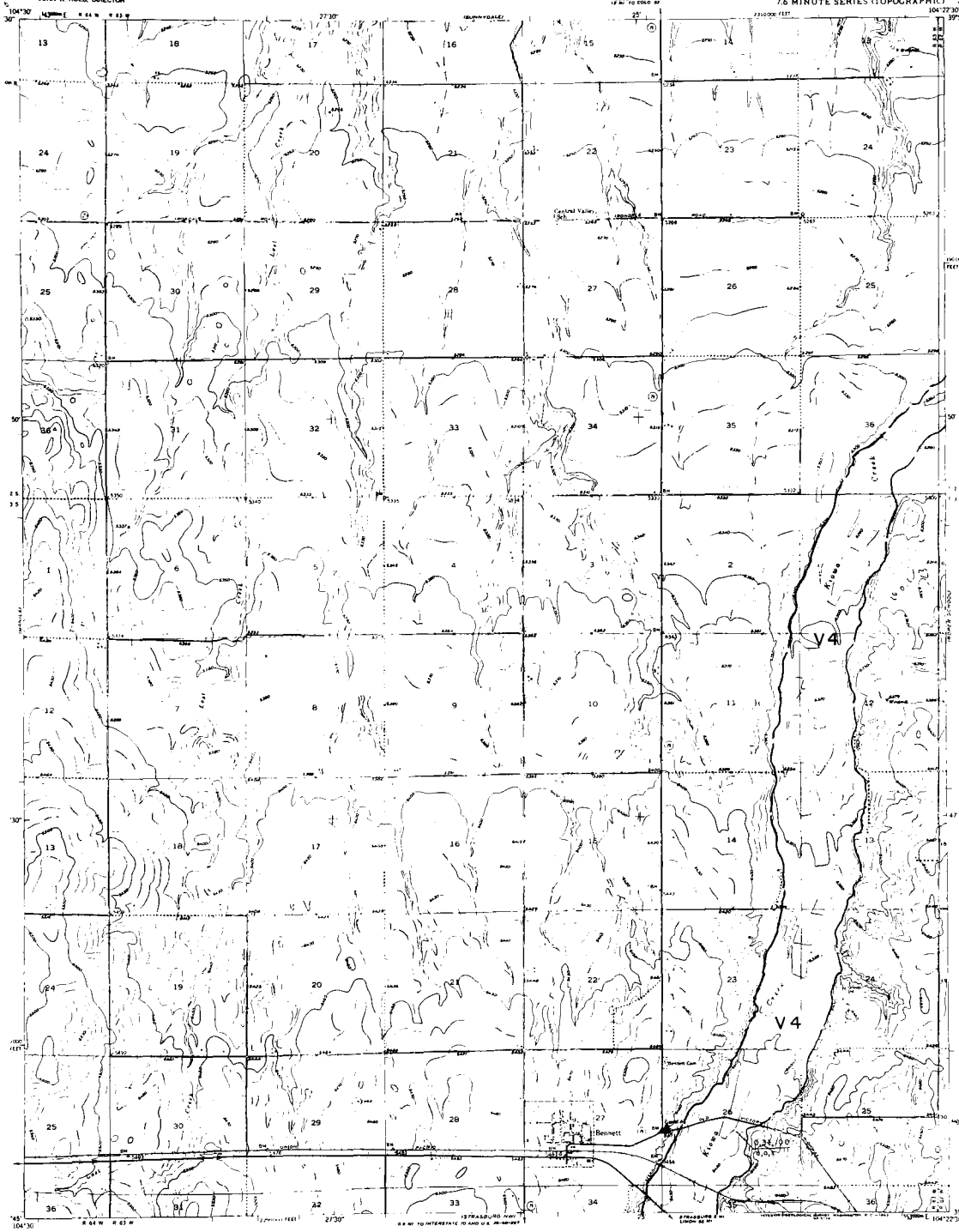
ROAD CLASSIFICATION
Heavy duty — Light duty
Medium-duty — Unimproved dirt
U.S. Route — State Route

BARNESVILLE, COLO.

SAND, GRAVEL AND QUARRY AGGREGATE RESOURCES MAP

DEPARTMENT OF NATURAL RESOURCES
COLORADO GEOLOGICAL SURVEY
JOHN W. ROLD, DIRECTOR

BENNETT QUADRANGLE
COLORADO-ADAMS CO
7.5 MINUTE SERIES (TOPOGRAPHIC)



EXPLANATION

LANDFORM UNITS

- F Floodplain deposit
- T Stream terrace deposit
- V Valley fill (F & T)
- U Upland deposits
- A Alluvial fan
- E Wind-deposited sand or silt
- M Man-made deposits

RESOURCE CLASSIFICATION

Coarse aggregate

1 Gravel: relatively clean and sound
2 Gravel: significant fines, decomposed rock, calcium carbonate.

Fine aggregate

3 Sand

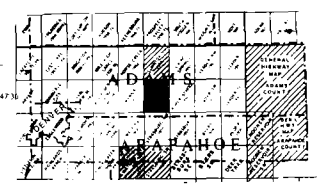
Overburden Resource

4 Probable aggregate resource

MAP SYMBOLS

- Operating gravel and/or sand pit
- Abandoned gravel and/or sand pit
- Operating stone quarry
- Abandoned stone quarry
- Potential quarry aggregate resource area
- Selected well or drill-hole location with overburden thickness (ft) over sand/gravel resource thickness (ft), obtained from well logs "g" indicates gravel; "s" indicates sand
- "-" in symbol denotes unevaluated or unknown property.
- "mg" denotes Colorado Geological Survey Mapdoor/Sand and Gravel projects' drill hole
- Landform boundary, solid where known or observed; dashed where approximate or inferred.

STATION LOCATION AND GEOLOGICAL DESCRIPTION OF DEPOSIT



QUADRANGLE LOCATION

NON-RESOURCE OR WITHDRAWN AREA

Mapped by: Phillip C. Wicklein
Date: June 30, 1974

Base from U. S. Geological Survey
7-1/2 minute quadrangle

CONTOUR INTERVAL 10 FEET
DATUM IS MEAN SEA LEVEL

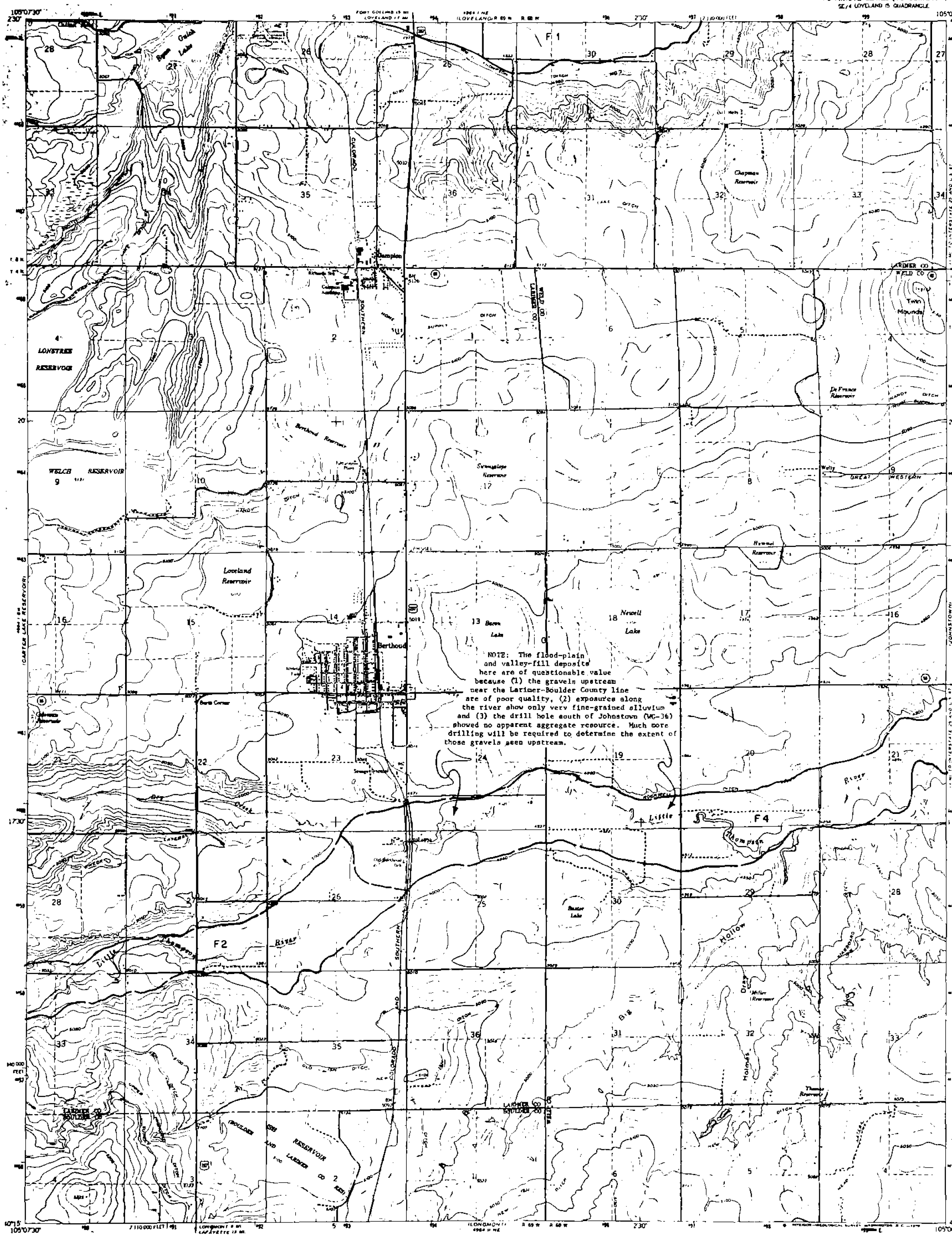
ROAD CLASSIFICATION
Heavy-duty
Light-duty
Unimproved dirt
State Route

BENNETT, COLO.

SAND, GRAVEL AND QUARRY AGGREGATE RESOURCES MAP

DEPARTMENT OF NATURAL RESOURCES
COLORADO GEOLOGICAL SURVEY
JOHN W. ROLD, DIRECTOR

BERTHOUD QUADRANGLE
COLORADO
7.5 MINUTE SERIES (TOPOGRAPHIC)
SE/4 LOVELAND 15' QUADRANGLE



Base from U. S. Geological Survey
7-1/2 minute quadrangle

EXPLANATION

Landform unit / Resource classification

LANDFORM UNITS

- F — Floodplain deposit
- T — Stream terrace deposit
- V — Valley fill (F & T)
- U — Upland deposits
- A — Alluvial fan
- E — Wind-deposited sand (eolian)
- M — Man-made deposits (slag, tailings, spoils....)

RESOURCE CLASSIFICATION

Coarse Aggregate (at least 30% retained on #4 screen, visual estimation)

- 1 — Gravel: relatively clean and sound
- 2 — Gravel: significant fines, decomposed rock, calcium carbonate.

Fine Aggregate (greater than 70% passing #4 screen, 60% retained on #200 screen, visual estimation)

- 3 — Sand

Unevaluated Resource

- 4 — Probable aggregate resource

MAP SYMBOLS

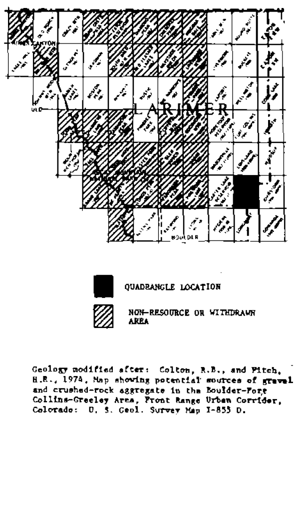
- Operating gravel and/or sand pit
- Abandoned gravel and/or sand pit
- Operating stone quarry
- Abandoned stone quarry
- Potential quarry aggregate resource area
- Selected well or drill-hole location with overburden thickness (ft) over sand/gravel resource thickness (ft), obtained from well logs.
  - "g" indicates gravel; "s" indicates sand
  - "?" in symbol denotes unevaluated or unknown property.
  - "WG" denotes Colorado Geological Survey Windsor/Sand and Gravel projects' drill hole
- Landform boundary, solid where known or observed; dashed where approximate or inferred.

STATION, LOCATION AND GEOLOGICAL DESCRIPTION OF DEPOSIT

- overburden thickness (ft)
- sand gravel resource thickness (ft)
- percent sand and fines (passing #4 screen, 0.25 in.), visual estimation
- significant amount of fines (passing #200 screen, 0.0029 in. or 0.074 mm)
- significant amount of decomposed or weak rock.
- significant amount of calcium carbonate (caliche)

"?" in symbol denotes unevaluated or unknown property.

"0" in symbol denotes property absent or insignificant



QUADRANGLE LOCATION

NON-RESOURCE OR WITHDRAWN AREA

Geology modified after: Colton, R.B., and Fitch, H.R., 1974, Map showing potential sources of gravel and crushed-rock aggregate in the Boulder-Fort Collins-Greeley Area, Front Range Urban Corridor, Colorado: U. S. Geol. Survey Map I-855 D.

Mapped by: Stephen D. Schwochow
Date: June 30, 1974

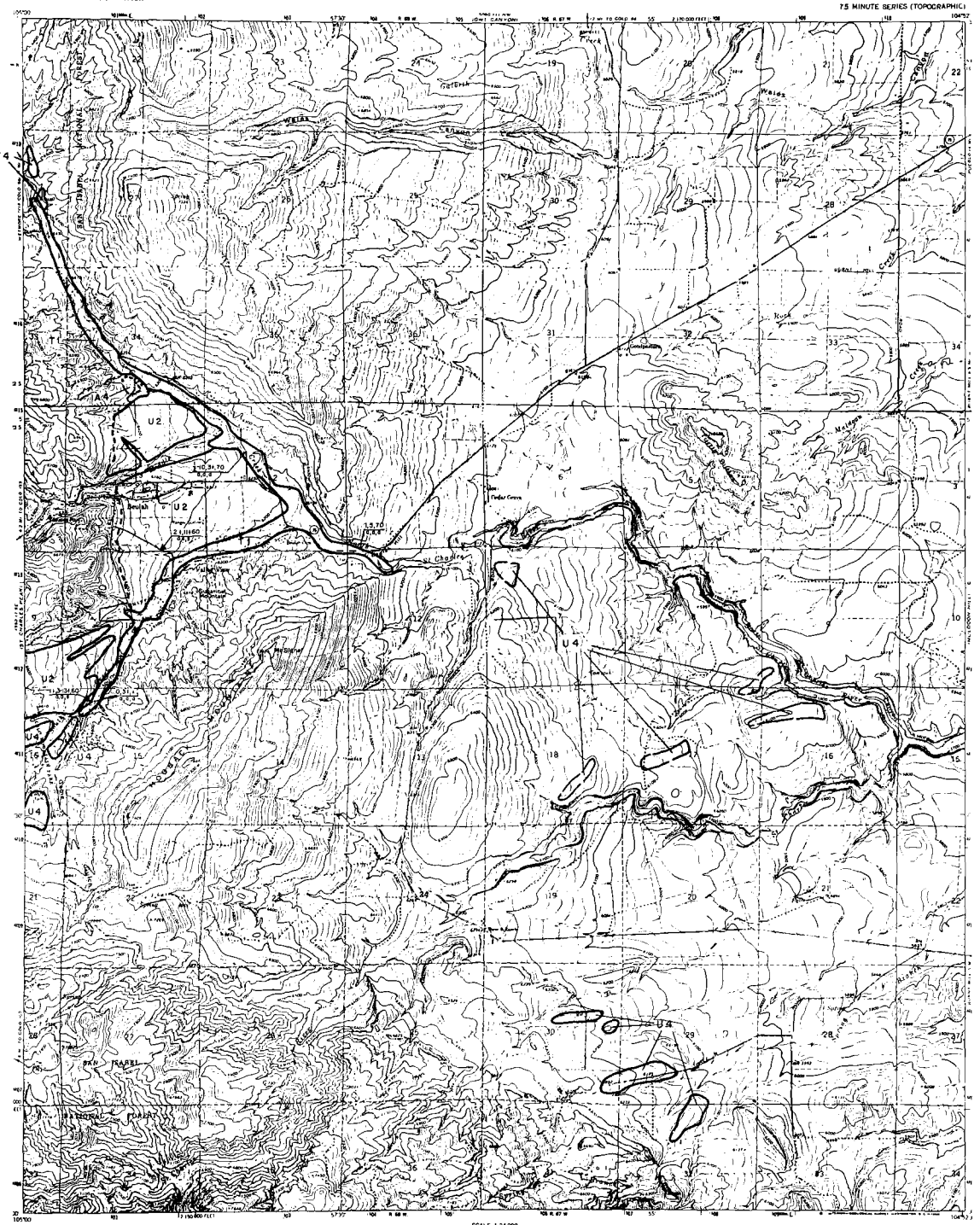
Prepared in cooperation with the U. S. Geological Survey

BERTHOUD, COLO

SAND, GRAVEL AND QUARRY AGGREGATE RESOURCES MAP

DEPARTMENT OF NATURAL RESOURCES
COLORADO GEOLOGICAL SURVEY
JOHN W. ROLD, DIRECTOR

BEULAH QUADRANGLE
COLORADO - PUEBLO CO
7.5 MINUTE SERIES (TOPOGRAPHIC)



Landform unit

Resource classification

LANDFORM UNITS

F Floodplain deposit
T Stream terrace deposit
V Valley fill (F & T)
U Upland deposits
A Alluvial fan
E Wind-deposited sand (eolian)
M Man-made deposits (slag, tailings, spoils....)

RESOURCE CLASSIFICATION

Coarse aggregate
(at least 50% retained on #4 screen, visual estimate)

1 Gravel: relatively clean and sound
2 Gravel: significant fines, decomposed rock calcium carbonate.

Fine aggregate
(greater than 50 passing #4 screen, 40% retained on #200 screen, visual estimate

3 Sand

Unevaluated Resource

4 Probable aggregate resource

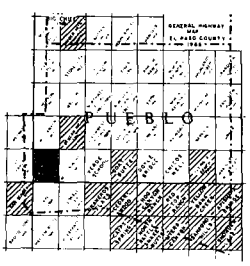
MAP SYMBOLS

- Operating gravel and/or sand pit
- Abandoned gravel and/or sand pit
- Operating stone quarry
- Abandoned stone quarry
- Potential quarry aggregate resource area
- Selected well or drill-hole location with overburden thickness (ft) over sand/gravel resource thickness (ft), obtained from well logs. "s" indicates gravel; "s" indicates sand. "x" in symbol denotes unevaluated or unknown property. "DH" denotes Colorado Geological Survey Windsor/Sand and Gravel projects' drill hole
- Landform boundary, solid where known or observed; dashed where approximate or inferred

STATION, LOCATION AND GEOLOGICAL DESCRIPTION OF DRYHOLE

- overburden thickness (ft)
- sand/gravel resource thickness (ft)
- percent sand and fines (passing #4 screen, U.S.S.S., visual estimation)
- significant amount of fines (passing #200 screen, 0.0088 in. or 0.074 mm.)
- significant amount of decomposed or weak rock.
- significant amount of calcium carbonate (calcite)

"x" in symbol denotes unevaluated or unknown property.
"o" in symbol denotes property absent or insignificant



QUADRANGLE LOCATION

NON-RESOURCE OR WITHDRAWN AREA

Geology modified after Scott, G. R., and Taylor, R. B., 1973, U. S. Geological Survey, Map MF-551.

Mapped by: Ralph R. Shroba
Date: June 30, 1974

Base from U. S. Geological Survey
7-1/2 minute quadrangle

SCALE 1:24000

CONTOUR INTERVAL 20 FEET
DATUM IS MEAN SEA LEVEL

ROAD CLASSIFICATION

Medium-duty ——— Light-duty ———
Unimproved dirt --------
State Route

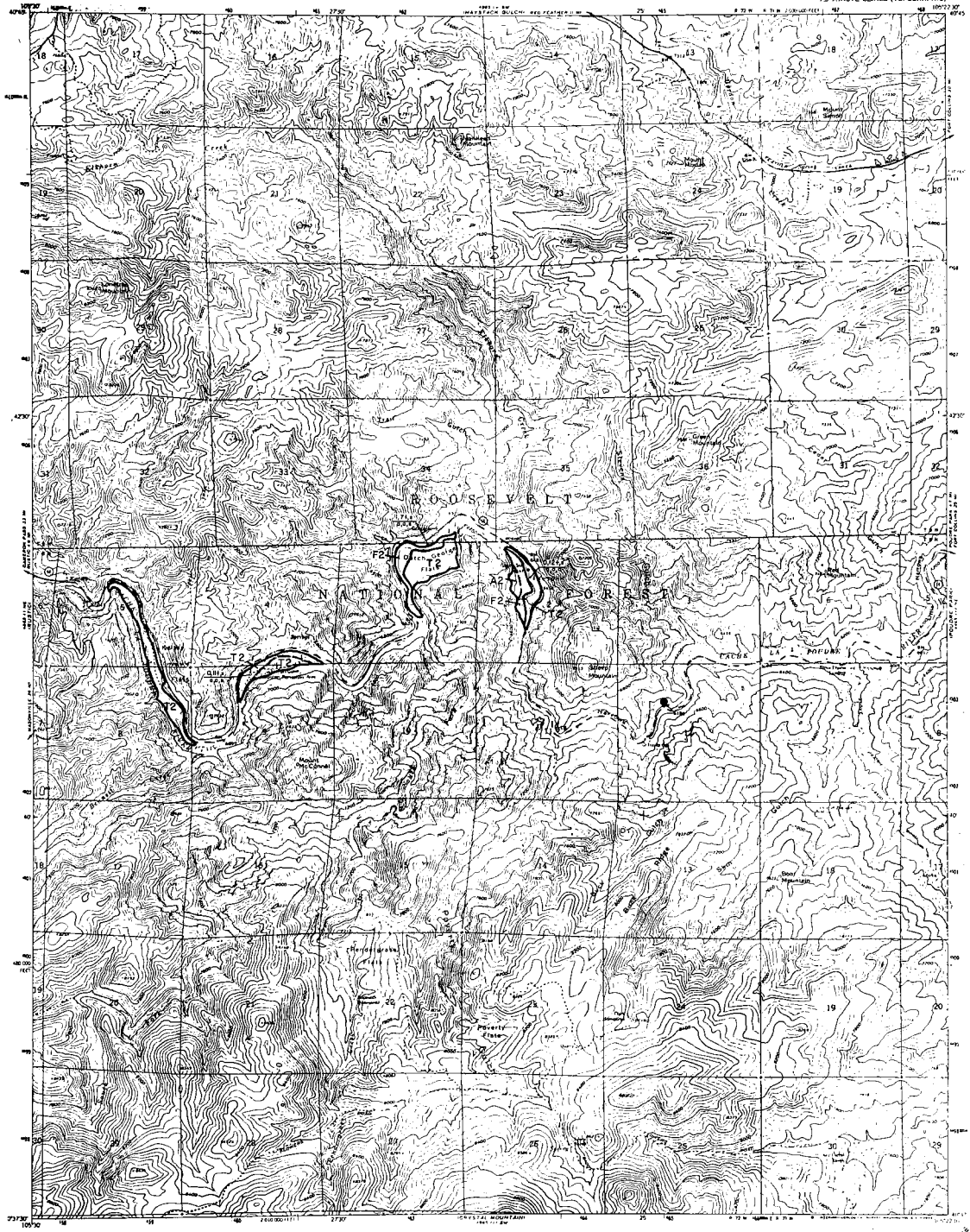
UTM GRID AND 1963 MAGNETIC NORTH DECLINATION AT CENTER OF SHEET

BEULAH, COLO.

SAND, GRAVEL AND QUARRY AGGREGATE RESOURCES MAP

DEPARTMENT OF NATURAL RESOURCES
COLORADO GEOLOGICAL SURVEY
JOHN W. ROLD, DIRECTOR

BIG NARROWS QUADRANGLE
COLORADO-LARIMER CO
7.5 MINUTE SERIES (TOPOGRAPHIC)



EXPLANATION

Landform unit
Resource classification

LANDFORM UNITS

- F Floodplain deposit
- T Stream terrace deposit
- V Valley fill (F & T)
- U Upland deposits
- A Alluvial fan
- E Wind-deposited sand (eolian)
- M Man-made deposits (slag,tailings, spoils...)

RESOURCE CLASSIFICATION

Coarse Aggregate
(at least 30% retained on #4 screen, gravel estimation)

- 1 Gravel: relatively clean and sound
- 2 Gravel: significant fines, decomposed rock, calcium carbonate.

Fine Aggregate
(greater than 70% passing #4 screen, 40% retained on #200 screen, visual estimation

- 3 Sand

Unevaluated Resources

- 4 Probable aggregate resource

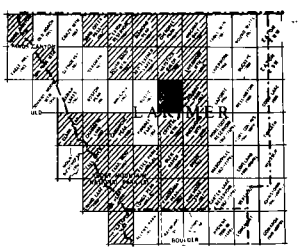
MAP SYMBOLS

- Operating gravel and/or sand pit
- Abandoned gravel and/or sand pit
- Operating stone quarry
- Abandoned stone quarry
- Potential quarry aggregate resource area
- Selected well or drill-hole location with overburden thickness (ft) over sand/gravel resource thickness (ft), obtained from well logs. "g" indicates gravel; "s" indicates sand. "-" in symbol denotes unevaluated or unknown property.
- "sg" denotes Colorado Geological Survey Windsor/Sand and Gravel projects' drill hole
- Landform boundary, solid where known or observed; dashed where approximate or inferred.

STATION, LOCATION AND GEOLOGICAL DESCRIPTION OF PROJECT

- overburden thickness (ft)
- sand/gravel resource thickness (ft)
- percent sand and fines (passing #4 screen, 0.22 in.), visual estimation
- significant amount of fines (passing #200 screen, 0.0058 in. or 0.074 mm.)
- significant amount of decomposed or weak rock.
- significant amount of calcium carbonate (caliche)

"s" in symbol denotes unevaluated or unknown property.
"n" in symbol denotes property absent or insignificant



QUADRANGLE LOCATION

NON-RESOURCE OR WITHDRAWN AREA

Mapped by: Stephen D. Schwochow
Date: June 30, 1974

Base from U. S. Geological Survey
7-1/2 minute quadrangle

CONTOUR INTERVAL 40 FEET
DATUM IS MEAN SEA LEVEL

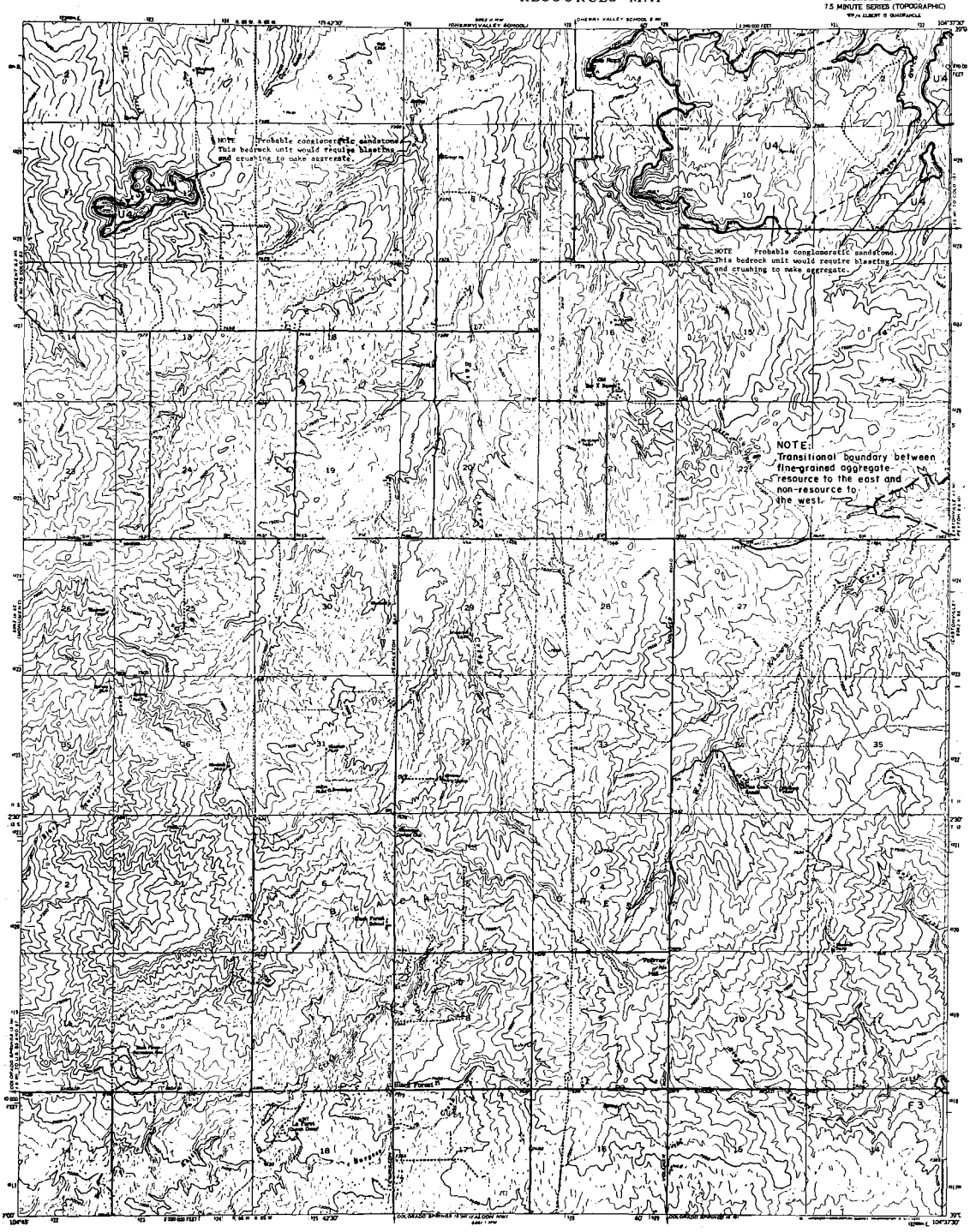
ROAD CLASSIFICATION
Medium duty — Light duty
Unimproved dirt .....
State Route

BIG NARROWS, COLO.

SAND, GRAVEL AND QUARRY AGGREGATE RESOURCES MAP

DEPARTMENT OF NATURAL RESOURCES
COLORADO GEOLOGICAL SURVEY
JOHN W. ROLD, DIRECTOR

BLACK FOREST QUADRANGLE
COLORADO—EL PASO CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)



EXPLANATION

Landform unit

Resource classification

LANDFORM UNITS

- F Floodplain deposit
- T Stream terrace deposit
- V Valley fill (F & T)
- U Upland deposits
- A Alluvial fan
- E Wind-deposited sand (eolian)
- M Man-made deposits (slag,tailings, spoils....)

RESOURCE CLASSIFICATION

Coarse aggregate
(at least 50% retained on #4 screen, visual estimation)

- 1 Gravel: relatively clean and sound
- 2 Gravel: significant fines, decomposed rock, calcium carbonate.

Fine Aggregate
(greater than 70% passing #4 screen, 40% retained on #200 screen, visual estimation

- 3 Sand

Unevaluated Resource

- 4 Probable aggregate resource

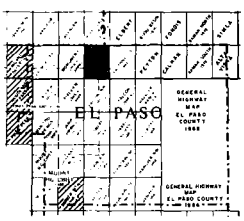
MAP SYMBOLS

- Operating gravel and/or sand pit
- Abandoned gravel and/or sand pit
- Operating stone quarry
- Abandoned stone quarry
- Potential quarry aggregate resource area
- Selected well or drill-hole location with overburden thickness (ft) over sand/gravel resource thickness (ft), obtained from well logs. "g" indicates gravel; "s" indicates sand
- "x" in symbol denotes unevaluated or unknown property.
- "cm" denotes Colorado Geological Survey Windsor/Sand and Gravel projects' drill hole
- Landform boundary, solid where known or observed; dashed where approximate or inferred.

STATION, LOCATION AND GEOLOGICAL DESCRIPTION OF DEPOSIT

overburden thickness (ft)
sand/gravel resource thickness (ft)
percent sand and fines (passing #4 screen, 0.31 in.), visual estimation
17, 60
significant amount of fines (passing #200 screen, 0.0080 in. or 0.074 mm.)
significant amount of decomposed or weak rock.
significant amount of calcium carbonate (caliche)

"x" in symbol denotes unevaluated or unknown property
"o" in symbol denotes property absent or insignificant



QUADRANGLE LOCATION

NON-RESOURCE OR WITHDRAWN AREA

Geology modified after:

Trimble, D.E., and Fitch, H.R., 1974, Map showing potential sources of gravel and crushed-rock aggregate in the Colorado Springs-Castle Rock Area, Front Range Urban Corridor, Colorado: U. S. Geol. Survey Map I-857 A.

Mapped by: Phillip C. Wicklein
Date: June 30, 1974

Prepared in cooperation with the U. S. Geological Survey.

Base from U. S. Geological Survey
7-1/2 minute quadrangle

CONTOUR INTERVAL 20 FEET
DATUM IS MEAN SEA LEVEL

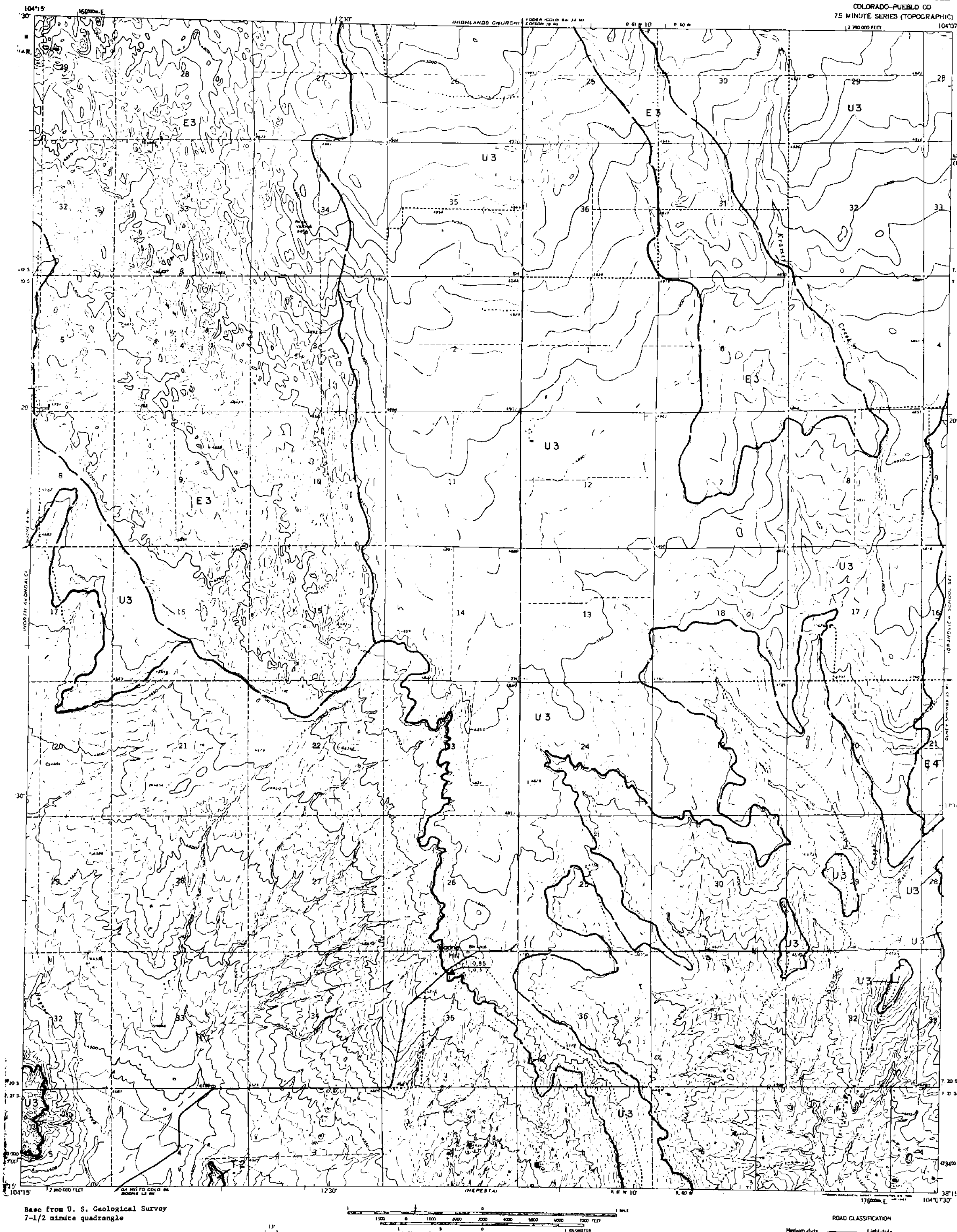
ROAD CLASSIFICATION
Light duty ——— Unimproved dirt .....

BLACK FOREST, COLO.

DEPARTMENT OF NATURAL RESOURCES
COLORADO GEOLOGICAL SURVEY
JOHN W. ROLD, DIRECTOR

SAND, GRAVEL AND QUARRY AGGREGATE RESOURCES MAP

BOONE HILL QUADRANGLE
COLORADO–PUEBLO CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)



Base from U. S. Geological Survey
7-1/2 minute quadrangle

CONTOUR INTERVAL 10 FEET
DATUM IS MEAN SEA LEVEL

APPROXIMATE MEAN DECLINATION, 1960

ROAD CLASSIFICATION
Medium-duty
Light-duty
Unimproved dirt

BOONE HILL, COLO.

EXPLANATION

F — Landform unit; 1 — Resource classification

LANDFORM UNITS

- F Floodplain deposit
- T Stream terrace deposit
- V Valley fill (F & T)
- U Upland deposits
- A Alluvial fan
- E Wind-deposited sand (eolian)
- M Man-made deposits (slag, tailings, spoils....)

RESOURCE CLASSIFICATION

Coarse Aggregate
(at least 30% retained on #4 screen, visual estimation)

- 1 Gravel: relatively clean and sound
- 2 Gravel: significant fines, decomposed rock, calcium carbonate.

Fine Aggregate
(greater than 70% passing #4 screen, 60% retained on #200 screen, visual estimation)

- 3 Sand

Unevaluated Resource

- 4 Probable aggregate resource

MAP SYMBOLS

- Operating gravel and/or sand pit
- Abandoned gravel and/or sand pit
- Operating stone quarry
- Abandoned stone quarry
- Potential quarry aggregate resource area
- Selected well or drill-hole location with overburden thickness (ft) over sand/gravel resource thickness (ft), obtained from well logs.
  - "g" indicates gravel; "s" indicates sand
  - "?" in symbol denotes unevaluated or unknown property.
  - "wo" denotes Colorado Geological Survey Windsor/Sand and Gravel projects' drill hole
- Landform boundary, solid where known or observed; dashed where approximate or inferred.

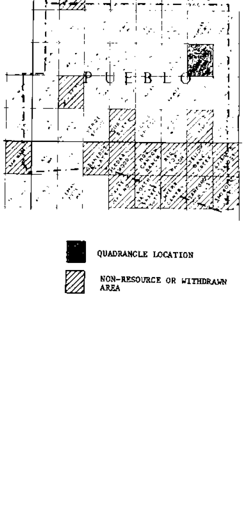
STATION, LOCATION AND GEOLOGICAL DESCRIPTION OF DEPOSIT

5, 17, 40

- overburden thickness (ft)
- sand/gravel resource thickness (ft)
- percent sand and fines (passing #4 screen, 0.25 in.), visual estimation
- significant amount of fines (passing #200 screen, 0.0029 in. or 0.074 mm.)
- significant amount of decomposed or weak rock.
- significant amount of calcium carbonate (caliche)

"?" in symbol denotes unevaluated or unknown property

"o" in symbol denotes property absent or insignificant



QUADRANGLE LOCATION

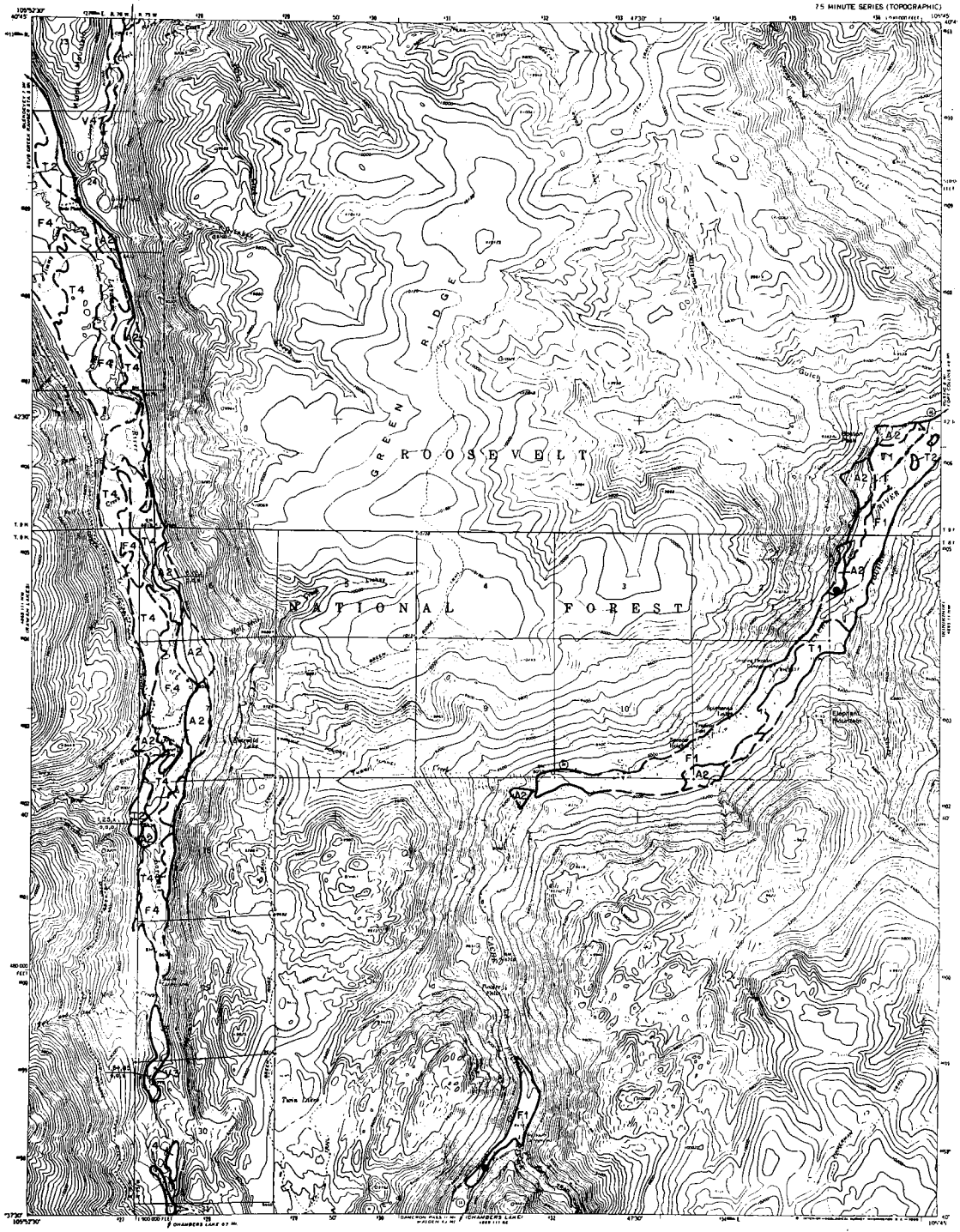
NON-RESOURCE OR WITHDRAWN AREA

Mapped by: Stephen D. Schwochow
Date: June 30, 1974

DEPARTMENT OF NATURAL RESOURCES
COLORADO GEOLOGICAL SURVEY
JOHN W. ROLD, DIRECTOR

SAND, GRAVEL AND QUARRY AGGREGATE RESOURCES MAP

BOSTON PEAK QUADRANGLE
COLORADO - LARIMER CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)



EXPLANATION

Landform unit
Resource classification

LANDFORM UNITS

- F Floodplain deposit
- T Stream terrace deposit
- V Valley fill (F & T)
- U Upland deposits
- A Alluvial fan
- E Wind-deposited sand (dunes)
- M Manmade deposits (slag, tailings, spoils....)

RESOURCE CLASSIFICATION

Coarse Aggregate
(at least 3/4 retained on #4 screen, visual estimation)

1. Gravel: relatively clean and sound
2. Gravel: significant fines, decomposed rock, caliche carbonate.

Fine Aggregate
(greater than 3/4 passing #4 screen, 60% retained on #200 screen, visual estimation

3. Sand

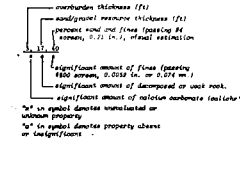
Unevaluated Resource

4. Probable aggregate resource

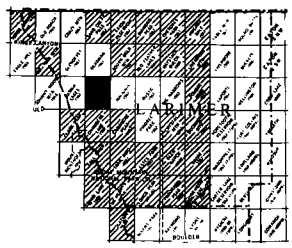
MAP SYMBOLS

- Operating gravel and/or sand pit
- Abandoned gravel and/or sand pit
- Operating stone quarry
- Abandoned stone quarry
- Potential quarry aggregate resource area
- Selected well or drill-hole location with overburden thickness (ft) over sand/gravel resource thickness (ft), obtained from well logs. "g" indicates gravel; "s" indicates sand. "u" in symbol denotes unevaluated or unknown property. "wm" denotes Colorado Geological Survey Windsor/Wood and Gravel projects' drill hole
- Landform boundary, solid where known or observed; dashed where approximate or inferred.

STATION, LOCATION AND GEOLOGICAL DESCRIPTION OF DEPOSIT



"u" in symbol denotes unevaluated or unknown property.
"o" in symbol denotes property absent or insignificant.



QUADRANGLE LOCATION

NON-RESOURCE OR WITHDRAWN AREA

Mapped by: Stephen D. Schwochow
Date: June 30, 1974

Base from U. S. Geological Survey
7-1/2 minute quadrangle

UTM GRID AND 1968 MAGNETIC NORTH DECLINATION AT CENTER OF SHEET

CONTOUR INTERVAL 40 FEET
DOTTED LINES REPRESENT 20 FOOT CONTOURS
DATUM IS MEAN SEA LEVEL

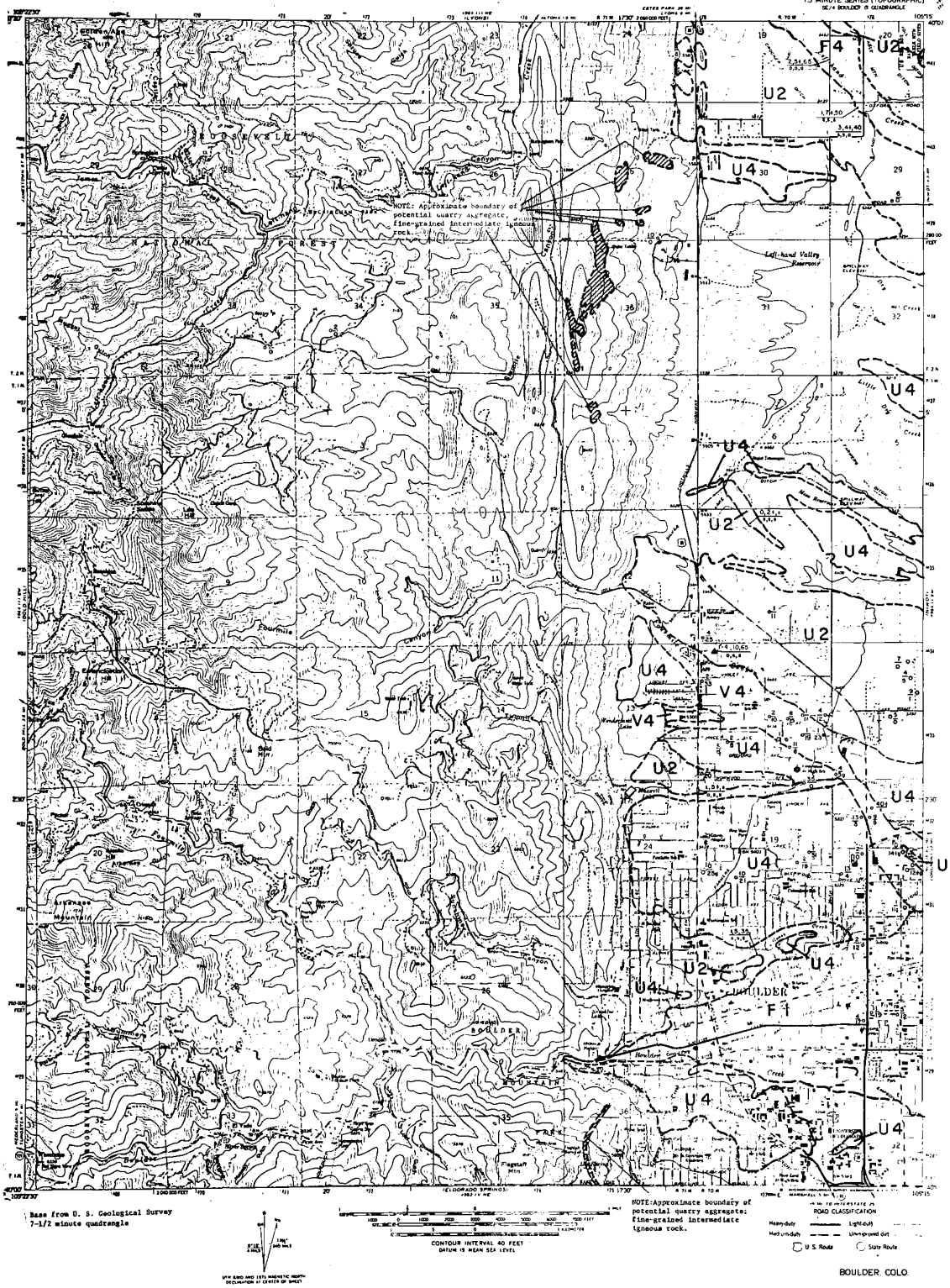
ROAD CLASSIFICATION
Light-duty —— Unimproved dirt - - - -
State Route

BOSTON PEAK, COLO.

SAND, GRAVEL AND QUARRY AGGREGATE RESOURCES MAP

DEPARTMENT OF NATURAL RESOURCES
COLORADO GEOLOGICAL SURVEY
JOHN W. ROLD, DIRECTOR

BOULDER QUADRANGLE
COLORADO-BOULDER CO
7.5 MINUTE SERIES (TOPOGRAPHIC)
SE/4 BOULDER 15 QUADRANGLE



EXPLANATION

Landform unit

Resource classification

LANDFORM UNITS

- F — Floodplain deposit
- T — Stream terrace deposit
- V — Valley fill (F & T)
- U — Upland deposits
- A — Alluvial fan
- E — Wind-deposited sand (eolian)
- M — Man-made deposits (slag,tailings, spoils....)

RESOURCE CLASSIFICATION

Coarse Aggregate
(at least 50% retained on #4 screen, visual estimation)

- 1 — Gravel: relatively clean and sound
- 2 — Gravel: significant fines, decomposed rock, calcium carbonate.

Fine Aggregate
(gravelly when 75% passing #4 screen, 50% retained on #200 screen, visual estimation

- 3 — Sand

Unevaluated Resource

- 4 — Probable aggregate resource

MAP SYMBOLS

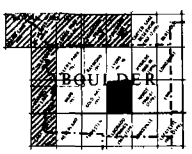
- Operating gravel and/or sand pit
- Abandoned gravel and/or sand pit
- Operating stone quarry
- Abandoned stone quarry
- Potential quarry aggregate resource area
- Selected well or drill-hole location with overburden thickness (ft) over sand/gravel resource thickness (ft), obtained from well logs. "g" indicates gravel; "s" indicates sand
- "-" in symbol denotes unevaluated or unknown property.
- "cm" denotes Colorado Geological Survey Windsor/Sand and Gravel projects' drill hole
- Landform boundary, solid where known or observed; dashed where approximate or inferred.

STATION, LOCATION AND GEOLOGICAL DESCRIPTION OF DEPOSIT

- overburden thickness (ft)
- sand/gravel resource thickness (ft)
- percent sand and fines (passing #4 screen, 0.25 in.), visual estimation
- significant amount of fines (passing #200 screen, 0.0058 in. or 0.074 mm.)
- significant amount of decomposed or weak rock.
- significant amount of calcium carbonate (caliche)

"n" in symbol denotes unevaluated or unknown property

"n" in symbol denotes frequently absent or insignificant



QUADRANGLE LOCATION

NON-RESOURCE OR WITHDRAWN AREA

Geology modified after:

Colton, R.B., and Pitch, H.R., 1974, Map showing potential sources of gravel and crushed-rock aggregate in the Boulder-Fort Collins-Greeley Area, Front Range Urban Corridor, Colorado: U. S. Geol. Survey Map I-855 D.

Gardner, M.E., 1968, Engineering Geologic Map of the Boulder Quadrangle, Boulder County, Colorado: U. S. Geol. Survey Open-File Report.

Mapped by: Ralph R. Shroba
Date: June 30, 1974

Prepared in cooperation with the U. S. Geological Survey.

Base from U. S. Geological Survey 7-1/2 minute quadrangle

CONTOUR INTERVAL 40 FEET
DATUM IS MEAN SEA LEVEL

NOTE: Approximate boundary of potential quarry aggregate; fine-grained intermediate igneous rock.

ROAD CLASSIFICATION

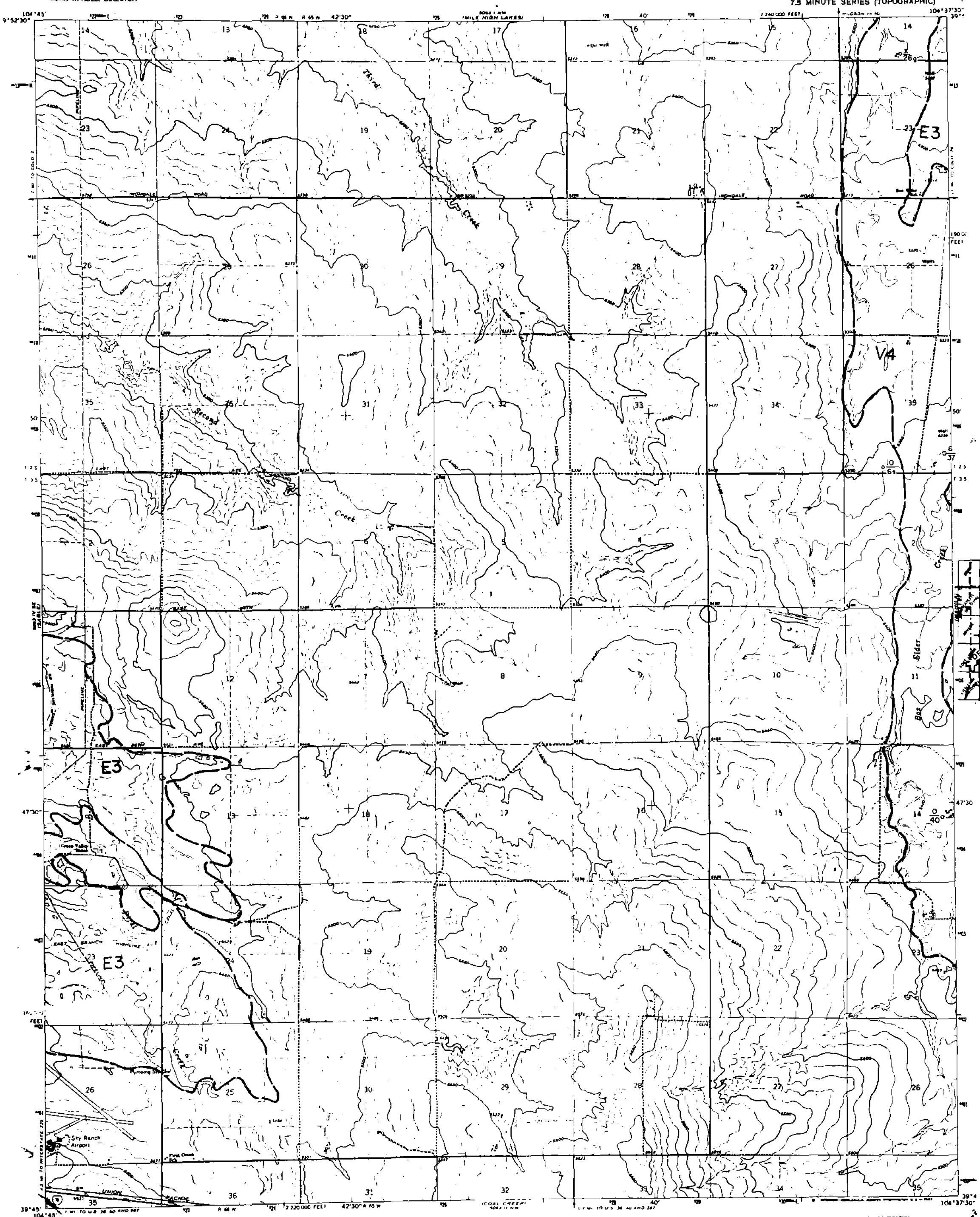
Heavy-duty — Light-duty
Medium-duty — Unimproved dirt
U.S. Route — State Route

BOULDER, COLO.

DEPARTMENT OF NATURAL RESOURCES
COLORADO GEOLOGICAL SURVEY
JOHN W. ROLD, DIRECTOR

SAND, GRAVEL AND QUARRY AGGREGATE RESOURCES MAP

BOX ELDER SCHOOL QUADRANGLE
COLORADO–ADAMS CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)



Base from U. S. Geological Survey
7-1/2 minute quadrangle

EXPLANATION

F — Landform unit / Resource classification

LANDFORM UNITS

- F Floodplain deposit
- T Stream terrace deposit
- V Valley fill (F & T)
- U Upland deposits
- A Alluvial fan
- E Wind-deposited sand (eolian)
- M Man-made deposits (slag, tailings, spoils....)

RESOURCE CLASSIFICATION

Coarse Aggregate

- 1 Gravel: relatively clean and sound
- 2 Gravel: significant fines, decomposed rock, calcium carbonate.

Fine Aggregate

- 3 Sand

Unevaluated Resource

- 4 Probable aggregate resource

MAP SYMBOLS

- Operating gravel and/or sand pit
- Abandoned gravel and/or sand pit
- Operating stone quarry
- Abandoned stone quarry
- Potential quarry aggregate resource area
- Selected well or drill-hole location with overburden thickness (ft) over sand/gravel resource thickness (ft), obtained from well logs.
  - "g" indicates gravel; "s" indicates sand
  - "x" in symbol denotes unevaluated or unknown property.
  - "sg" denotes Colorado Geological Survey Windsor/Sand and Gravel projects' drill hole
- Landform boundary, solid where known or observed; dashed where approximate or inferred.

STATION, LOCATION AND GEOLOGICAL DESCRIPTION OF DEPOSIT

3, 17, 40

- overburden thickness (ft)
- sand/gravel resource thickness (ft)
- percent sand and fines (passing #4 screen, 0.25 in.), visual estimation
- significant amount of fines (passing #200 screen, 0.0059 in. or .074 mm)
- significant amount of decomposed or weak rock.
- significant amount of calcium carbonate (caliche)

"x" in symbol denotes unevaluated or unknown property

"o" in symbol denotes property absent or insignificant

QUADRANGLE LOCATION

NON-RESOURCE OR WITHDRAWN AREA

References:

Chase, G.H., and McConaghy, J.A., 1972, Generalized surficial geologic map of the Denver area, Colorado: U.S. Geol. Survey Misc. Geol. Inv. Map I-731.

Smith, R.O., Schneider, P.A., Jr., and Petri, L.R., 1964, Ground-water resources of the South Platte River basin in western Adams and southwestern Weld Counties, Colorado: U.S. Geol. Survey Water-Supply Paper 1658, pl. 1.

Trimble, D.E., and Fitch, H.R., 1974, Map showing potential sources of gravel and crushed-rock aggregate in the Greater Denver Area, Front Range Urban Corridor, Colo.: U. S. Geol. Survey Misc. Geol. Inv. Map I-856-A.

Mapped by: Stephen D. Schwochow
Date: June 30, 1974

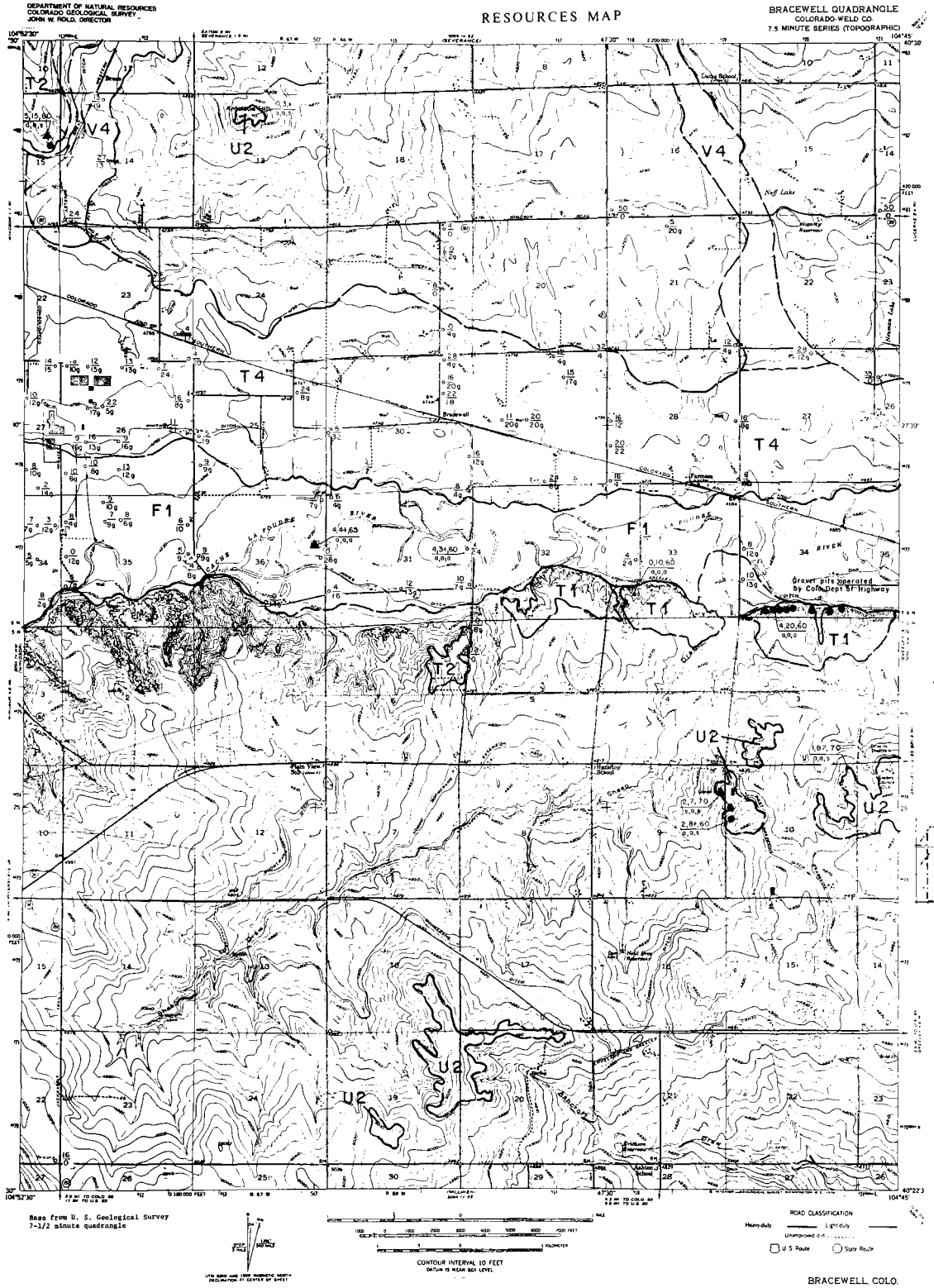
Prepared in cooperation with the U. S. Geological Survey.

BOX ELDER SCHOOL, COLO.

SAND, GRAVEL AND QUARRY AGGREGATE RESOURCES MAP

DEPARTMENT OF NATURAL RESOURCES
COLORADO GEOLOGICAL SURVEY
JOHN W. ROLD, DIRECTOR

BRACEWELL QUADRANGLE
COLORADO-WELD CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)



EXPLANATION

LANDFORM UNITS

- F Floodplain deposit
- T Stream terrace deposit
- V Valley fill (F & T)
- U Upland deposits
- A Alluvial fan
- E Wind-deposited sand (mantles)
- M Man-made deposits (slag, tailings, spoils, ...)

RESOURCE CLASSIFICATION

Concrete Aggregate

1 Gravel: relatively clean and sound.

2 Gravel: significant fines, decomposed rock, calcium carbonate.

Fine aggregate

3 Sand

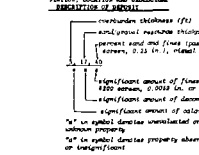
Unevaluated Resource

4 Probable aggregate resource

MAP SYMBOLS

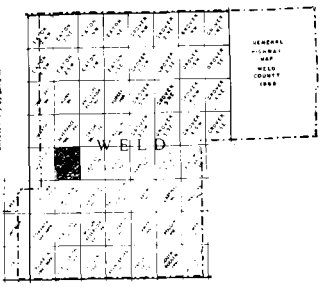
- Operating gravel and/or sand pit
- Abandoned gravel and/or sand pit
- Operating stone quarry
- Abandoned stone quarry
- Potential quarry aggregate resource area
- Selected well or drill-hole location with overburden thickness (ft) over sand/gravel resource thickness (ft), estimated from well logs. "g" indicates gravel, "s" indicates sand. "-" in symbol denotes unevaluated or unknown property. "ws" denotes Colorado Geological Survey Windsor/Bracewell gravel project drill hole
- Landform boundary, solid where known or observed, dashed where approximate or inferred

STATION LOCATION AND GEOLOGICAL DESCRIPTION OF DEPOSIT



"x" in symbol denotes unevaluated or unknown property

"o" in symbol denotes property absent or insignificant



QUADRANGLE LOCATION

NON-RESOURCE OR WITHDRAWN AREA

REFERENCE:

Swan, F. S., III, 1972, Map of surficial geology of the Bracewell quadrangle: Reconn. mapping for Colorado Geol. Survey Windsor Environmental Geology Project, open-file map.

Hershey, L.A., and Schneider, P.A., Jr., 1972, Geologic map of the lower Cache La Poudre River basin, north-central Colorado: U. S. Geol. Survey Misc. Geol. Inv. Map I-687.

Shelton, D.C., 1974, personal communication.

Ching, P.W., 1972, Economic gravel deposits of the lower Cache La Poudre River: Colorado State Univ. Unpub. Master Sci. Thesis.

Geology modified after:

Colton, R.B., and Fitch, H.R., 1974, Map showing potential sources of gravel and crushed-rock aggregate in the Boulder-Fort Collins-Greeley Area, Front Range Urban Corridor, Colo.: U. S. Geol. Survey Misc. Geol. Inv. Map I-855-D.

Mapped by: Stephen D. Schwochow
Date: June 30, 1974

Prepared in cooperation with the U. S. Geological Survey

Base from U. S. Geological Survey 7-1/2 minute quadrangle

CONTOUR INTERVAL 10 FEET
DATUM IS MEAN SEA LEVEL

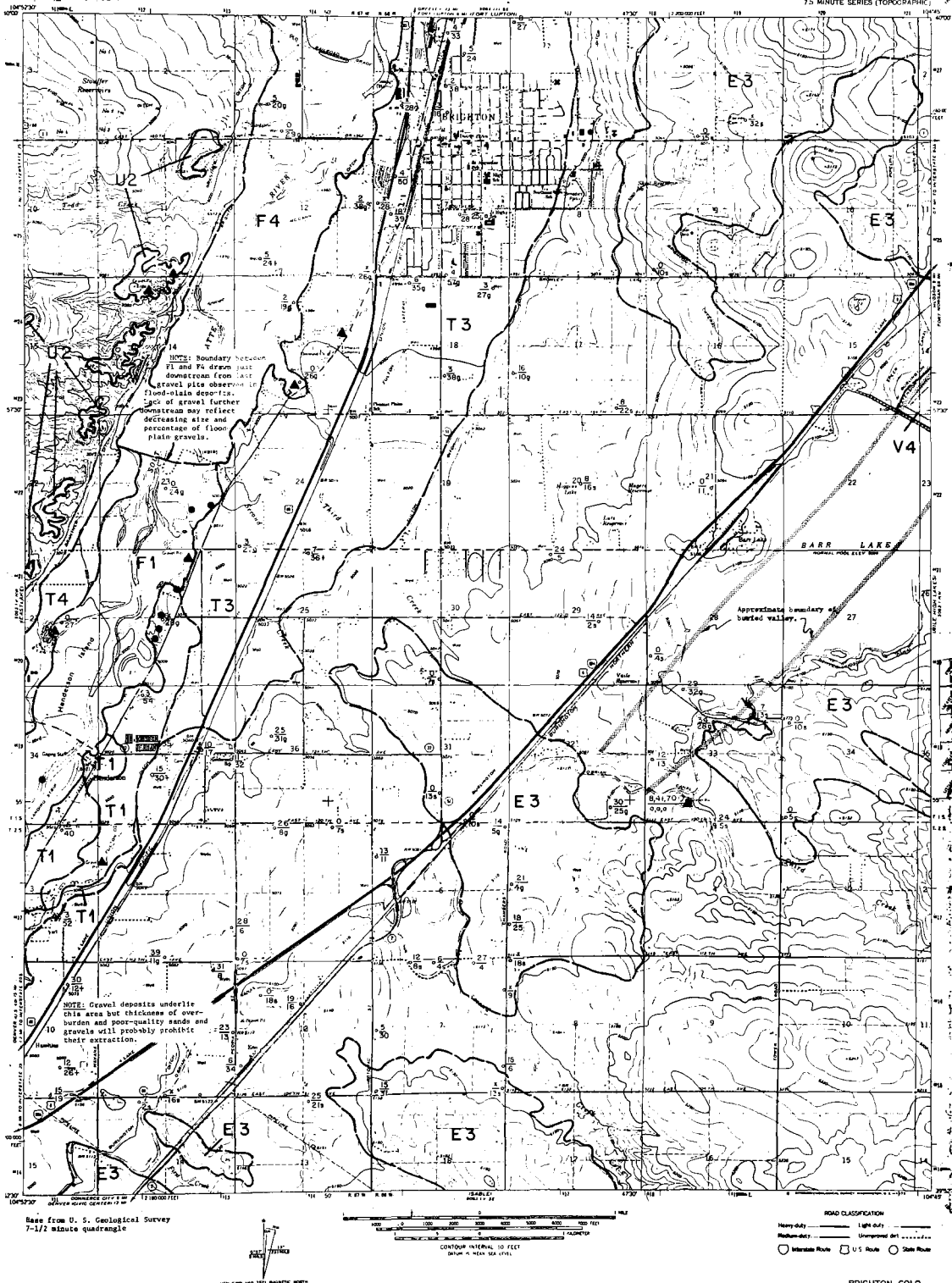
ROAD CLASSIFICATION
Heavy-duty ——— Light-duty ———
Unimproved dirt - - - - - -
U.S Route ○ State Route

BRACEWELL COLO.

SAND, GRAVEL AND QUARRY AGGREGATE RESOURCES MAP

DEPARTMENT OF NATURAL RESOURCES
COLORADO GEOLOGICAL SURVEY
JOHN W. ROLD, DIRECTOR

BRIGHTON QUADRANGLE
COLORADO - ADAMS CO
7.5 MINUTE SERIES (TOPOGRAPHIC)



EXPLANATION

Landform unit

Resource older/younger than

DEPOSIT UNITS

- F — Floodplain deposit
- T — Stream terrace deposit
- V — Valley fill (F & T)
- U — Upland deposits
- A — Alluvial fan
- E — Wind-deposited sand (eolian)
- M — Man-made deposits (slag, tailings, spoils....)

RESOURCE CLASSIFICATION

Coarse Aggregate
(at least 35% retained on #4 screen, visual estimation)

1 — Gravel: relatively clean and sound

2 — Gravel: significant fines, decomposed rock, calcium carbonate.

Fine Aggregate
(greater than 75% passing #4 screen, 60% retained on #200 screen, visual estimation

3 — Sand

Unevaluated Resource

4 — Probable aggregate resource

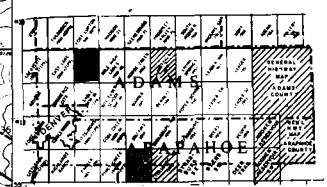
MAP SYMBOLS

- Operating gravel and/or sand pit
- Abandoned gravel and/or sand pit
- Operating stone quarry
- Abandoned stone quarry
- Potential quarry aggregate resource area
- Selected well or drill-hole location with overburden thickness (ft) over sand/gravel resource thickness (ft), obtained from well logs. "g" indicates gravel; "s" indicates sand. "-" in symbol denotes unevaluated or unknown property. "ms" denotes Colorado Geological Survey Windsor Sand and Gravel project drill hole
- Landform boundary, solid where known or observed; dashed where approximate or inferred.

STATION, LOCATION AND GEOLOGICAL DESCRIPTION OF DEPOSIT

- overburden thickness (ft)
- sand/gravel resource thickness (ft)
- percent sand and fines (passing #4 screen, 9.25 m.m.), visual estimation
- 5, 37, 40
- significant amount of fines (passing #200 screen, 0.0058 in. or 0.074 mm.)
- significant amount of decomposed or weak rock.
- significant amount of calcium carbonate (caliche)

"m" in symbol denotes unevaluated or unknown property.
"n" in symbol denotes property absent or insignificant



QUADRANGLE LOCATION

NON-RESOURCE OR WITHDRAWN AREA

References:

De Vera, E.R., 1965, Quaternary history of Rocky Mountain Arsenal and environs, Adams County, Colorado: Colorado School Mines Quart. v. 60, no. 1, pt. 2.

Hamilton, G.H., and Owens, W.E., 1972, Geologic aspects, soils and related foundation problems, Denver metropolitan area, Colorado: Colorado Geol. Survey Environmental Geology Ser. 1, pl. 1.

Chase, G.H., and McConaghy, S.A., 1972, Generalized surficial geologic map of the Denver area, Colorado: U.S. Geol. Survey Misc. Geol. Inv. Map I-731.

Smith, R.O., Schneider, P.A., Jr., and Petri, L.R., 1964, Ground-water resources of the South Platte River basin in eastern Adams and southwestern Weld Counties, Colorado: U.S. Geol. Survey Water-Supply Paper 1658, pl. 1.

Inter-County Regional Planning Commission, 1961, Drainage systems plan for the Denver region - Part I, Sand and gravel resources: Denver, Colo., Inter-County Reg. Plan. Comm., pl. 2.

Trimble, D.E., and Fitch, Hall, 1974, Map showing potential sources of gravel and crushed-rock aggregate in the Denver Denver Area, Front Range Urban Corridor, Colo.: U.S. Geol. Survey Misc. Geol. Inv. Map I-[illegible].

Mapped by: Stephen D. Schwochow
Date: June 30, 1974

Prepared in cooperation with the U. S. Geological Survey.

Base from U. S. Geological Survey
7-1/2 minute quadrangle

CONTOUR INTERVAL 10 FEET
DATUM IS MEAN SEA LEVEL

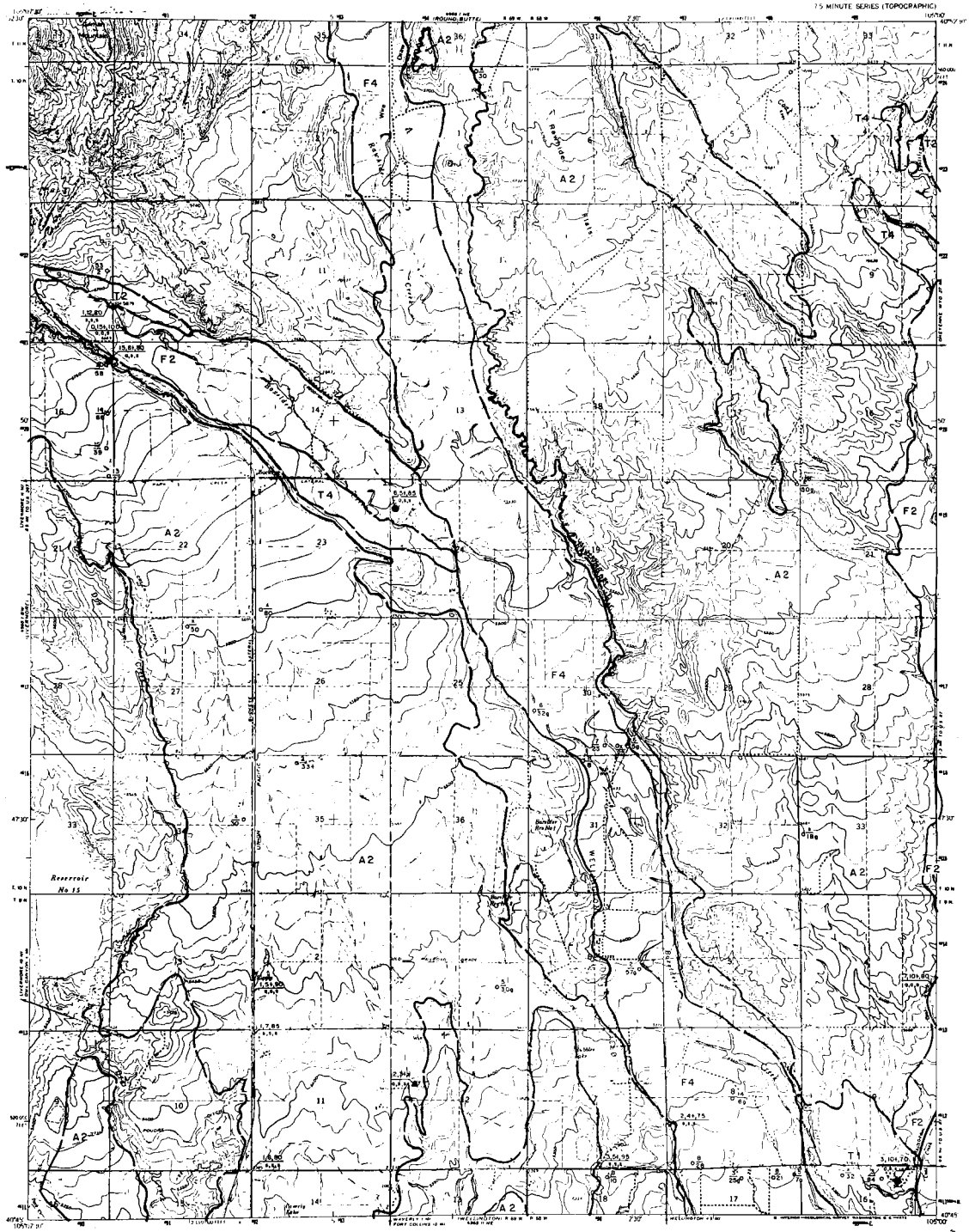
ROAD CLASSIFICATION
Heavy-duty — Light-duty —
Medium-duty — Unimproved dirt ....
Interstate Route — U.S Route — State Route

BRIGHTON, COLO.

SAND, GRAVEL AND QUARRY AGGREGATE RESOURCES MAP

DEPARTMENT OF NATURAL RESOURCES
COLORADO GEOLOGICAL SURVEY
JOHN W. ROLD, DIRECTOR

BUCKEYE QUADRANGLE
COLORADO-LARIMER CO
7.5 MINUTE SERIES (TOPOGRAPHIC)



EXPLANATION

Landform unit
Resource classification

LANDFORM UNITS

- F Floodplain deposit
- T Stream terrace deposit
- *V Valley fill (F & T)
- U Upland deposits
- A Alluvial fan
- E Wind-deposited sand (soltan)
- M Manmade deposits (slag,tailings, spoils....)

RESOURCE CLASSIFICATION

Coarse aggregate
(at least 22% retained on #4 screen, visual estimation)

- 1 Gravel: relatively clean and sound
- 2 Gravel: significant fines, decomposed rock, caliche carbonate.

Fine aggregate
(greater than 70% passing #4 screen, 60% retained on #200 screen, visual estimation

- 3 Sand

Unevaluated resource

- 4 Probable aggregate resource

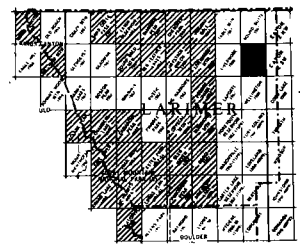
MAP SYMBOLS

- Operating gravel and/or sand pit
- Abandoned gravel and/or sand pit
- Operating stone quarry
- Abandoned stone quarry
- Potential quarry aggregate resource area
- Selected well or drill-hole location with overburden thickness (ft) over sand/gravel resource thickness (ft), obtained from well logs. "," indicates gravel; "s" indicates sand "s" in symbol denotes unevaluated or unknown property.
- "wn" denotes Colorado Geological Survey Windsor/Sand and Gravel projects' drill hole
- Landform boundary, solid where known or observed; dashed where approximate or inferred.

STATION, LOCATION AND GEOLOGICAL DESCRIPTION OF DEPOSIT

- overburden thickness (ft)
- sand/gravel resource thickness (ft)
- percent sand and fines (passing #4 screen, 0.25 in.), visual estimation
- significant amount of fines (passing #200 screen, 0.0029 in. or 0.074 mm.)
- significant amount of decomposed or weak rock.
- significant amount of calcium carbonate (caliche)

"s" in symbol denotes unevaluated or unknown property
"n" in symbol denotes property absence or insignificant



QUADRANGLE LOCATION

NON-RESOURCE OR WITHDRAWN AREA

REFERENCE:

Hershey, L.A., and Schneider, P.A., Jr., 1973, Geologic map of the lower Cache La Poudre River basin, north-central Colorado: U. S. Geol. Survey Misc. Geol. Inv. Map I-887.

Mapped by: Stephen D. Schwochow
Date: June 30, 1974

Base from U. S. Geological Survey
7-1/2 minute quadrangle

CONTOUR INTERVAL 10 FEET

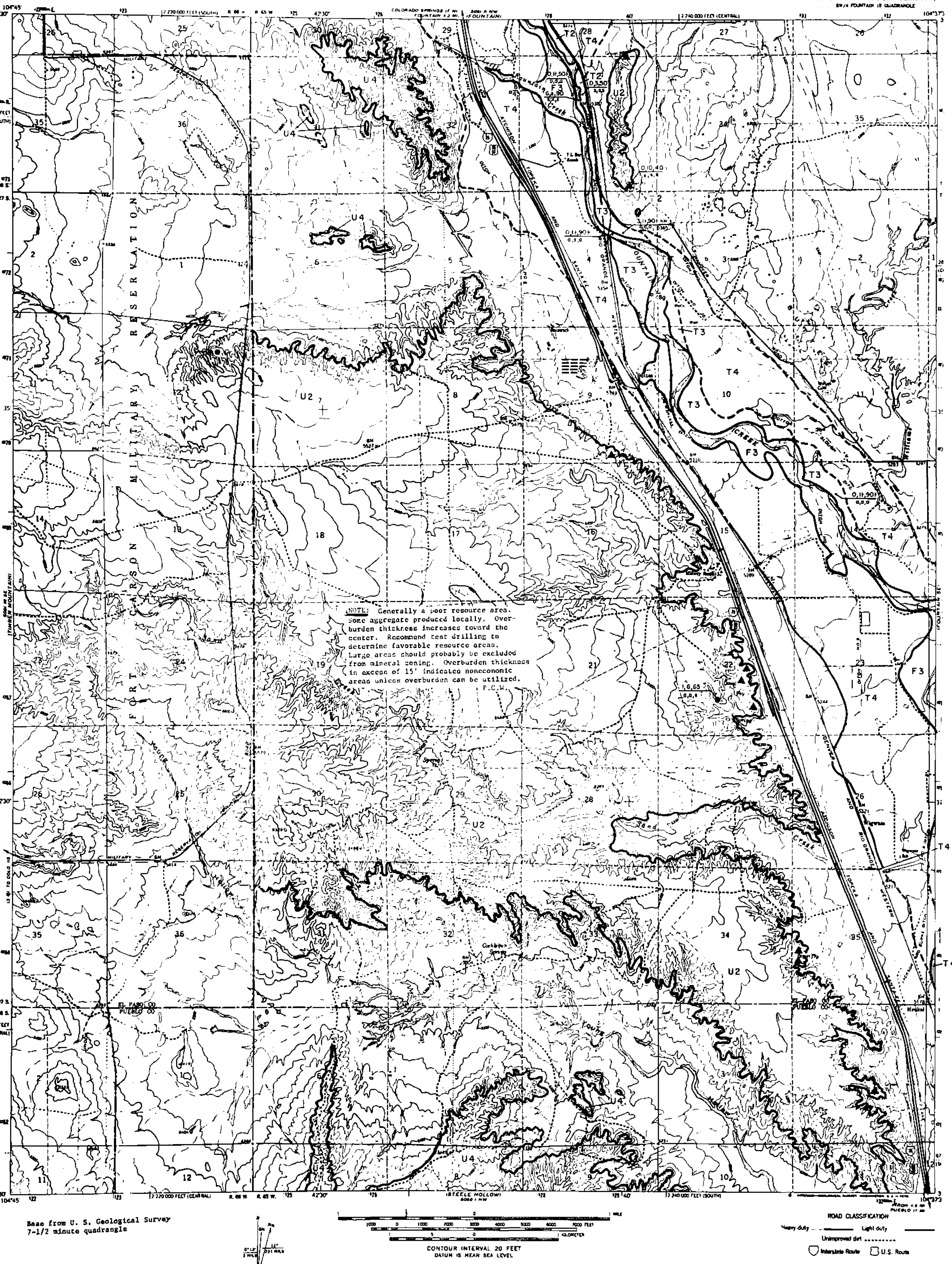
ROAD CLASSIFICATION
Medium-duty ——— Light-duty ———
Unimproved dirt - - - - - -

BUCKEYE, COLO.
N4045—W10500/7.5
1960

SAND, GRAVEL AND QUARRY AGGREGATE RESOURCES MAP

DEPARTMENT OF NATURAL RESOURCES
COLORADO GEOLOGICAL SURVEY
JOHN W. ROLD, DIRECTOR

BUTTES QUADRANGLE
COLORADO
7.5 MINUTE SERIES (TOPOGRAPHIC)



Base from U. S. Geological Survey
7-1/2 minute quadrangle

BUTTES, COLO.

EXPLANATION

F — Landform unit; 1 — Resource classification

LANDFORM UNITS

- F Floodplain deposit
- T Stream terrace deposit
- V Valley fill (F & T)
- U Upland deposits
- A Alluvial fan
- E Wind-deposited sand (eolian)
- M Man-made deposits (slag, tailings, spoils....)

RESOURCE CLASSIFICATION

Coarse Aggregate
(at least 30% retained on #4 screen, visual estimation)

- 1 Gravel: relatively clean and sound
- 2 Gravel: significant fines, decomposed rock, calcium carbonate.

Fine Aggregate
(greater than 70% passing #4 screen, 60% retained on #200 screen, visual estimation

- 3 Sand

Unevaluated Resource

- 4 Probable aggregate resource

MAP SYMBOLS

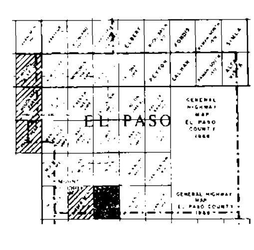
- Operating gravel and/or sand pit
- Abandoned gravel and/or sand pit
- Operating stone quarry
- Abandoned stone quarry
- Potential quarry aggregate resource area
- Selected well or drill-hole location with overburden thickness (ft) over sand/gravel resource thickness (ft), obtained from well logs.
  "g" indicates gravel; "s" indicates sand
  "x" in symbol denotes unevaluated or unknown property.
- "wo" denotes Colorado Geological Survey Windsor/Sand and Gravel projects' drill hole
- Landform boundary, solid where known or observed; dashed where approximate or inferred.

STATION, LOCATION AND GEOLOGICAL DESCRIPTION OF DEPOSIT

5, 17, 40
- overburden thickness (ft)
- sand/gravel resource thickness (ft)
- percent sand and fines (passing #4 screen, 0.25 in.), visual estimation
- significant amount of fines (passing #200 screen, 0.0029 in. or 0.074 mm.)
- significant amount of decomposed or weak rock.
- significant amount of calcium carbonate (caliche)

"x" in symbol denotes unevaluated or unknown property

"o" in symbol denotes property absent or insignificant



QUADRANGLE LOCATION

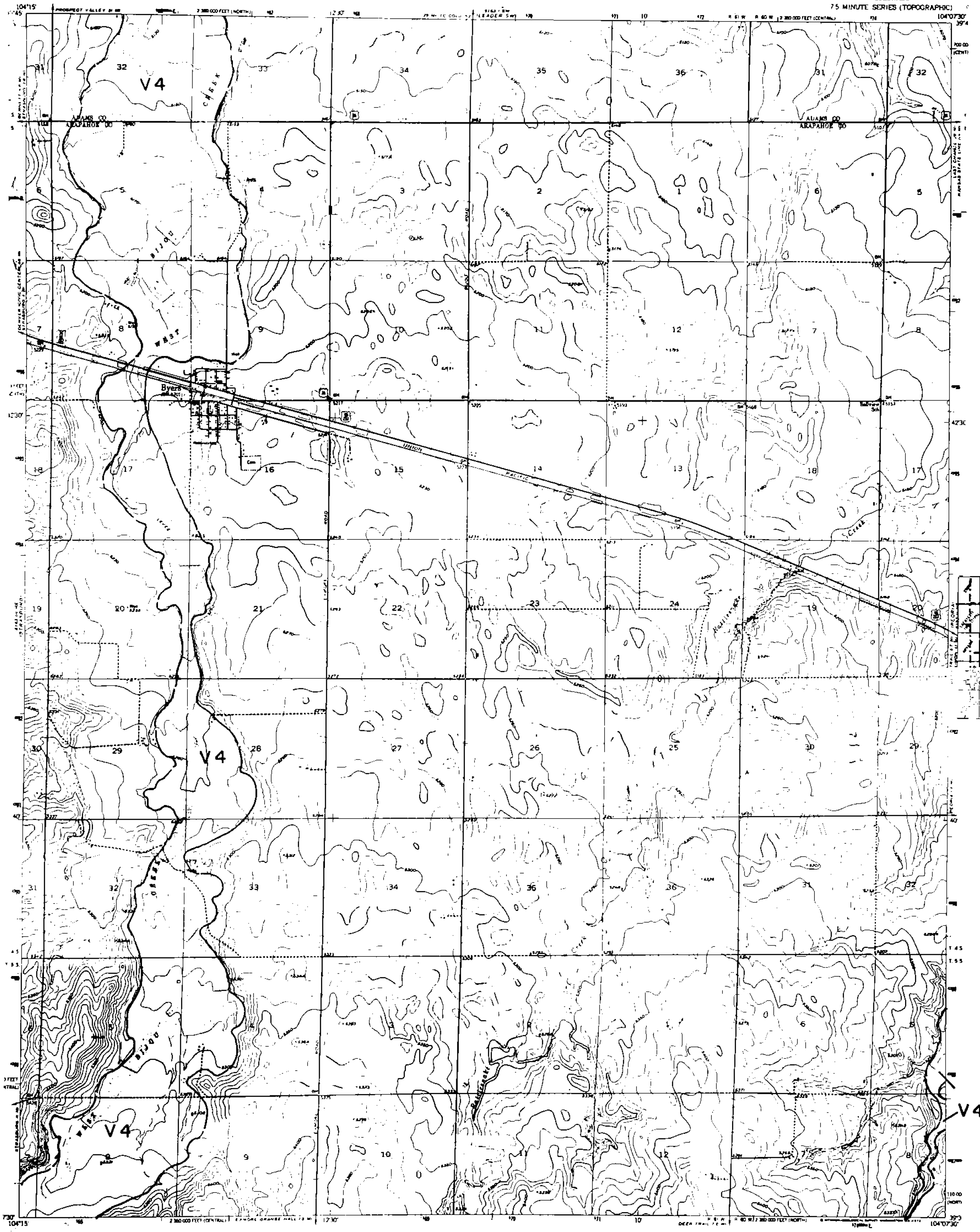
NON-RESOURCE OR WITHDRAWN AREA

Mapped by: Phillip C. Wicklein
Date: June 30, 1974

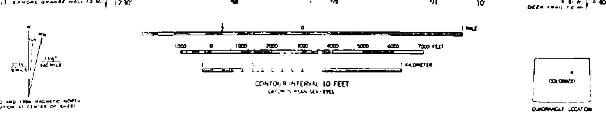
DEPARTMENT OF NATURAL RESOURCES
COLORADO GEOLOGICAL SURVEY
JOHN W. ROLD, DIRECTOR

SAND, GRAVEL AND QUARRY AGGREGATE RESOURCES MAP

BYERS QUADRANGLE
COLORADO
7.5 MINUTE SERIES (TOPOGRAPHIC)



Base from U. S. Geological Survey
7-1/2 minute quadrangle



BYERS, COLO.
N3937.5—W10407.5/7.5
1956

EXPLANATION

F — Landform unit / Resource classification

LANDFORM UNITS

- F Floodplain deposit
- T Stream terrace deposit
- V Valley fill (F & T)
- U Upland deposits
- A Alluvial fan
- e Wind-deposited sand (eolian)
- M Man-made deposits (slag, tailings, spoils....)

RESOURCE CLASSIFICATION

Coarse Aggregate
(at least 2/3 retained on #4 screen, visual estimation)

- 1 Gravel: relatively clean and sound
- 2 Gravel: significant fines, decomposed rock, calcium carbonate.

Fine Aggregate
(greater than 70% passing #4 screen, 60% retained on #200 screen, visual estimation)

- 3 Sand

Unevaluated Resource

- 4 Probable aggregate resource

MAP SYMBOLS

- Operating gravel and/or sand pit
- Abandoned gravel and/or sand pit
- Operating stone quarry
- Abandoned stone quarry
- Potential quarry aggregate resource area
- Selected well or drill-hole location with overburden thickness (ft) over sand/gravel resource thickness (ft), obtained from well logs. "g" indicates gravel; "s" indicates sand. "x" in symbol denotes unevaluated or unknown property.
- "wg" denotes Colorado Geological Survey Windsor/Sand and Gravel projects' drill hole
- Landform boundary, solid where known or observed; dashed where approximate or inferred.

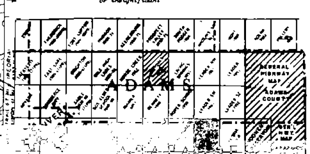
STATION, LOCATION AND GEOLOGICAL DESCRIPTION OF DEPOSIT

5, 17, 60

- overburden thickness (ft)
- sand/gravel resource thickness (ft)
- percent sand and fines (passing #4 screen, 0.25 in.), visual estimation
- significant amount of fines (passing #200 screen, 0.0029 in. or 0.074 mm)
- significant amount of decomposed or weak rock.
- significant amount of calcium carbonate (caliche)

"x" in symbol denotes unevaluated or unknown property

"o" in symbol denotes property absent or insignificant



- QUADRANGLE LOCATION
- NON-RESOURCE OR WITHDRAWN AREA

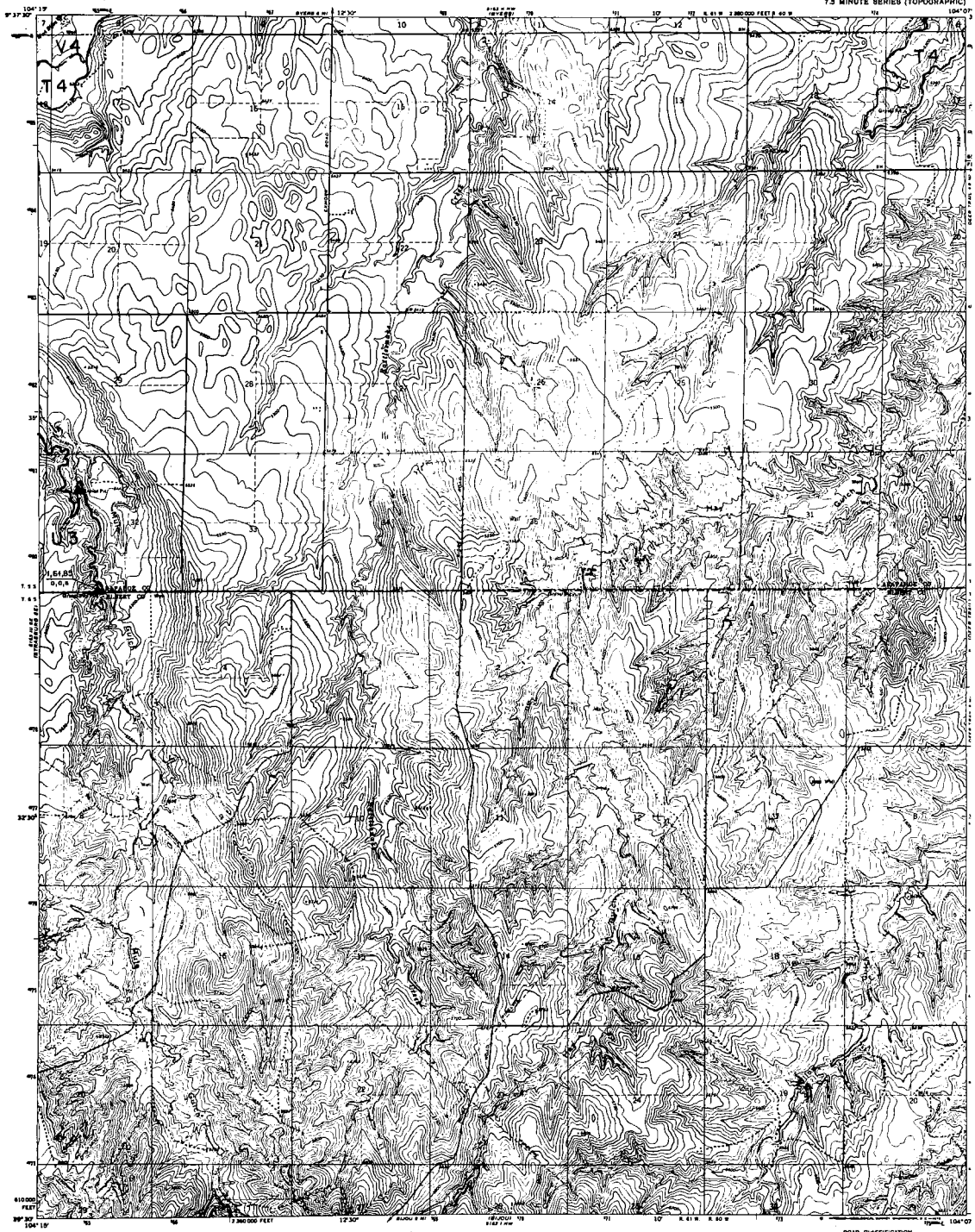
Reference:
Shadul, S.A., 1971, The Bijou Creek Damsites and Reservoirs of Adams and Arapahoe Counties Colorado: Colo. Sch. Mines: ER-1327

Mapped by: Phillip C. Wicklein
Date: June 30, 1974

SAND, GRAVEL AND QUARRY AGGREGATE RESOURCES MAP

DEPARTMENT OF NATURAL RESOURCES
COLORADO GEOLOGICAL SURVEY
JOHN W. ROLD, DIRECTOR

BYERS SW QUADRANGLE
COLORADO
7.5 MINUTE SERIES (TOPOGRAPHIC)



EXPLANATION

Landform unit
Resource class/certainty

LANDFORM UNITS

- F Floodplain deposit
- T Stream terrace deposit
- V Valley fill (F & T)
- U Upland deposits
- A Alluvial fan
- E Wind-deposited sand (eolian)
- M Man-made deposits (slag,tailings, spoils....)

RESOURCE CLASSIFICATION

Coarse Aggregate
(at least 30% retained on #4 screen, visual estimation)

- 1 Gravel: relatively clean and sound.
- 2 Gravel: significant fines, decomposed rock, calcium carbonate.

Fine aggregate
(greater than 70% passing #4 screen, 40% retained on #200 screen, visual estimation)

- 3 Sand

Unevaluated Resource

- 4 Probable aggregate resource

MAP SYMBOLS

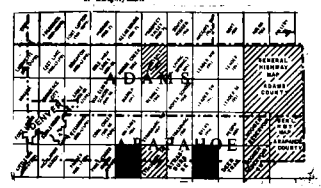
- Operating gravel and/or sand pit
- Abandoned gravel and/or sand pit
- Operating stone quarry
- Abandoned stone quarry
- Potential quarry aggregate resource area
- Selected well or drill-hole location with overburden thickness (ft) over sand/gravel resource thickness (ft), obtained from well logs. "g" indicates gravel; "s" indicates sand
- "-" in symbol denotes unevaluated or unknown property
- "wq" denotes Colorado Geological Survey Windsor/Sand and Gravel projects' drill hole
- Landform boundary, solid where known or observed; dashed where approximate or inferred.

STATION LOCATION AND GEOLOGICAL DESCRIPTION OF DEPOSIT

- overburden thickness (ft)
- sand/gravel resource thickness (ft)
- percent sand and fines (passing #4 screen, 0.19 in.), visual estimation
- significant amount of fines (passing #200 screen, 0.0029 in. or 0.074 mm.)
- significant amount of decomposed or weak rock.
- significant amount of calcium carbonate (caliche)

"s" in symbol denotes unevaluated or unknown property.

"s" in symbol denotes property shows no significant



QUADRANGLE LOCATION

NON-RESOURCE OR WITHDRAWN AREA

Base from U. S. Geological Survey
7-1/2 minute quadrangle

CONTOUR INTERVAL 10 FEET
DATUM IS MEAN SEA LEVEL

ROAD CLASSIFICATION

- Primary highway, hard surface — Light-duty road, hard or improved surface
- Secondary highway, hard surface — Unimproved road
- Interstate Route
- U. S. Route
- State Route

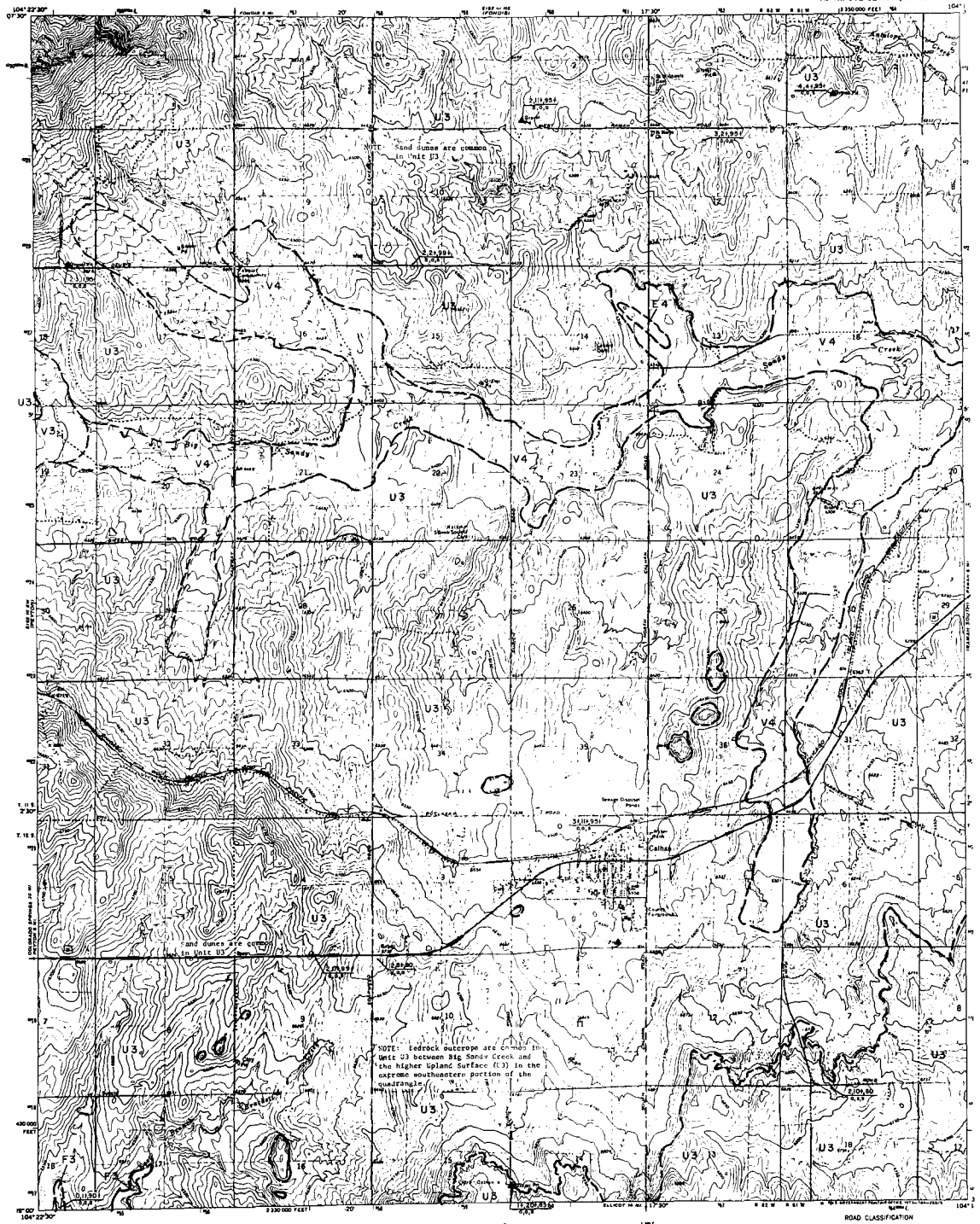
Mapped by: Phillip C. Wicklein
Date: June 30, 1974

BYERS SW, COLO.

SAND, GRAVEL AND QUARRY AGGREGATE RESOURCES MAP

DEPARTMENT OF NATURAL RESOURCES
COLORADO GEOLOGICAL SURVEY
JOHN W. ROLD, DIRECTOR

CALHAN QUADRANGLE
COLORADO–EL PASO CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)



EXPLANATION

Landform unit
Resource classification

LANDFORM UNITS

- E Floodplain deposit
- T Stream terrace deposit
- V Valley fill (E & T)
- U Upland deposits
- A Alluvial fan
- E Wind-deposited sand (eolian)
- M Man-made deposits (slag,tailings, spoils....)

RESOURCE CLASSIFICATION

Coarse Aggregate
(at least 50% retained on #4 screen, visual estimation)

- 1 Gravel: relatively clean and sound
- 2 Gravel: significant fines, decomposed rock, calcium carbonate.

Fine Aggregate
(greater than 70% passing #4 screen, 60% retained on #100 screen, visual estimation

- 3 Sand

Unevaluated Resource

- 4 Probable aggregate resource

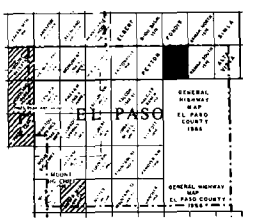
MAP SYMBOLS

- Operating gravel and/or sand pit
- Abandoned gravel and/or sand pit
- Operating stone quarry
- Abandoned stone quarry
- Potential quarry aggregate resource area
- Selected well or drill-hole location with overburden thickness (ft) over sand/gravel resource thickness (ft), obtained from well logs. "s" indicates gravel; "m" indicates sand "-" in symbol denotes unevaluated or unknown property. "sg" denotes Colorado Geological Survey Windsor/Sand and Gravel projects' drill hole
- Landform boundary, solid where known or observed; dashed where approximate or inferred

STATION, LOCATION AND GEOLOGICAL DESCRIPTION OF DEPOSIT

- overburden thickness (ft)
- sand/gravel resource thickness (ft)
- percent sand and fines (passing #4 screen, 0.18 in.), visual estimation
- significant amount of fines (passing 100 screen, 0.0058 in. or 0.074 mm.)
- significant amount of decomposed or weak rock.
- significant amount of calcium carbonate (caliche)

"x" in symbol denotes unestimated or unknown property
"n" in symbol denotes property absent or insignificant



QUADRANGLE LOCATION

NON-RESOURCE OR WITHDRAWN AREA

Mapped by: Ralph R. Shroba
Date: June 30, 1974

Base from U. S. Geological Survey
7-1/2 minute quadrangle

CONTOUR INTERVAL 10 FEET
DATUM IS MEAN SEA LEVEL

ROAD CLASSIFICATION

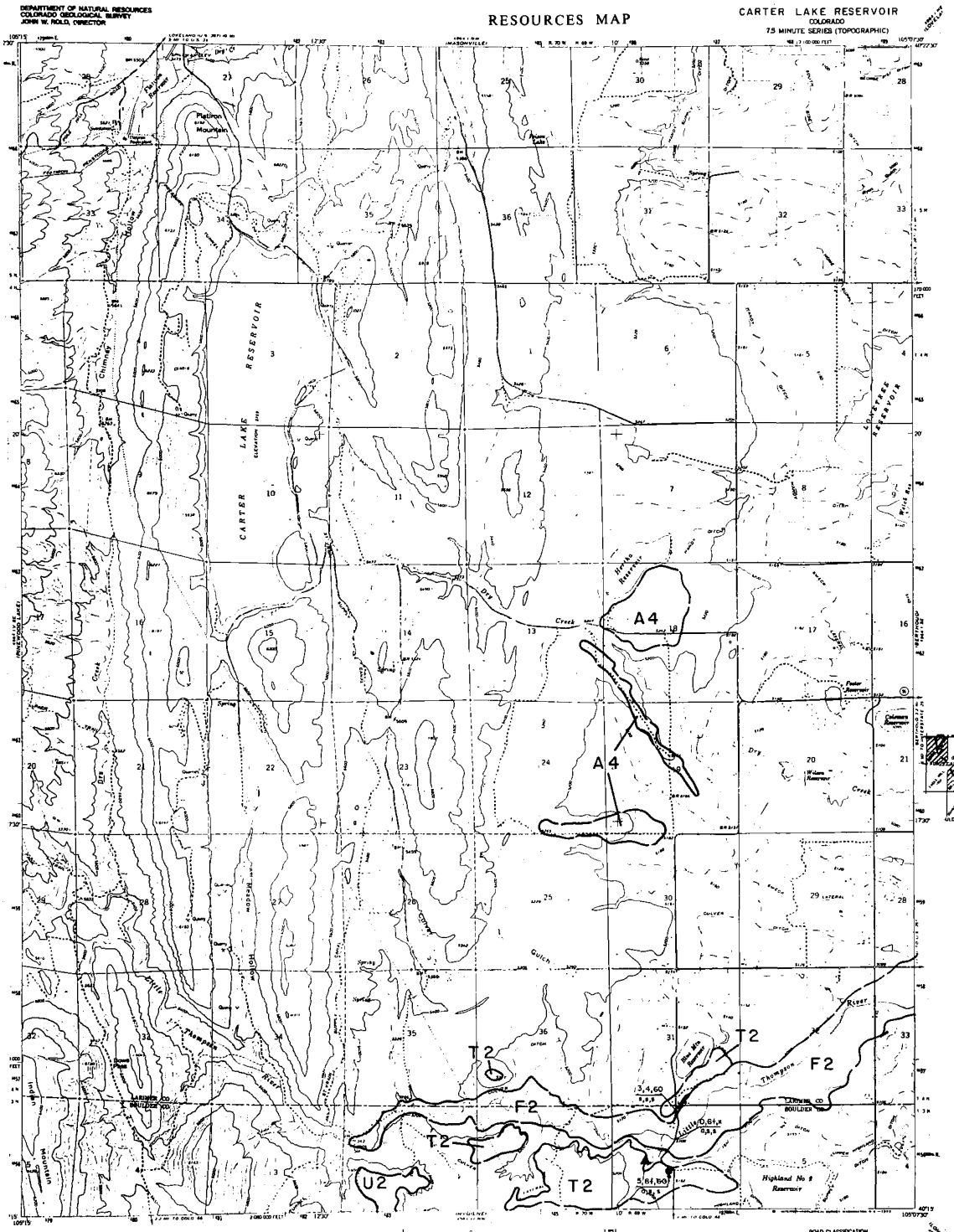
- Primary highway, hard surface
- Light-duty road, hard or improved surface
- Secondary highway, hard surface
- Unimproved road
- Interstate Route
- U S Route
- State Route

CALHAN, COLO.

SAND, GRAVEL AND QUARRY AGGREGATE RESOURCES MAP

CARTER LAKE RESERVOIR
COLORADO
7.5 MINUTE SERIES (TOPOGRAPHIC)

DEPARTMENT OF NATURAL RESOURCES
COLORADO GEOLOGICAL SURVEY
JOHN W. ROLD, DIRECTOR



EXPLANATION

Landform unit
Resource classification

LANDFORM UNITS

- F Floodplain deposit
- T Stream terrace deposit
- V Valley fill (F & T)
- U Upland deposits
- A Alluvial fan
- E Wind-deposited sand (eolian)
- M Man-made deposits (slag,tailings, spoils,....)

RESOURCE CLASSIFICATION

Coarse Aggregate
(at least 50% retained on #4 screen, visual estimation)

- 1 Gravel: relatively clean and sound
- 2 Gravel: significant fines, decomposed rock, calcium carbonate.

Fine Aggregate
(greater than 70% passing #4 screen, 60% retained on #200 screen, visual estimate

- 3 Sand

Unevaluated Resource

- 4 Probable aggregate resource

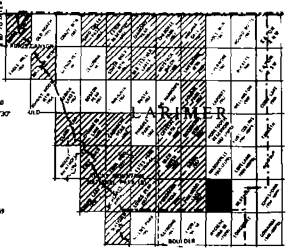
MAP SYMBOLS

- Operating gravel and/or sand pit
- Abandoned gravel and/or sand pit
- Operating stone quarry
- Abandoned stone quarry
- Potential quarry aggregate resource area
- Selected well or drill-hole location with overburden thickness (ft) over sand/gravel resource thickness (ft), obtained from well logs. "g" indicates gravel; "s" indicates sand. "-" in symbol denotes unevaluated or unknown property.
- "mw" denotes Colorado Geological Survey Windsor/Sand and Gravel projects' drill hole
- Landform boundary, solid where known or observed; dashed where approximate or inferred.

STATION, LOCATION AND GEOLOGICAL DESCRIPTION OF DEPOSIT

- overburden thickness (ft)
- sand/gravel resource thickness (ft)
- percent sand and fines (passing #4 screen, 7.25 in.), visual estimation
- significant amount of fines (passing #200 screen, 0.0016 in. or 0.076 mm.)
- significant amount of decomposed or weak rock.
- significant amount of calcium carbonate (caliche)

"m" in symbol denotes unevaluated or unknown property
"x" in symbol denotes property absent or insignificant



QUADRANGLE LOCATION

NON-RESOURCE OR WITHDRAWN AREA

Geology modified after: Colton, R.B., and Fitch, H.R., 1974, Map showing potential sources of gravel and crushed-rock aggregate in the Boulder-Fort Collins-Greeley Area, Front Range Urban Corridor, Colorado: U. S. Geol. Survey Map I-833 D.

Mapped by: Stephen D. Schwochow
Date: June 30, 1974

Prepared in cooperation with the U. S. Geological Survey

Base from U. S. Geological Survey
7-1/2 minute quadrangles

CONTOUR INTERVAL 40 FEET
DOTTED LINES REPRESENT 20 FOOT CONTOURS
DATUM IS MEAN SEA LEVEL

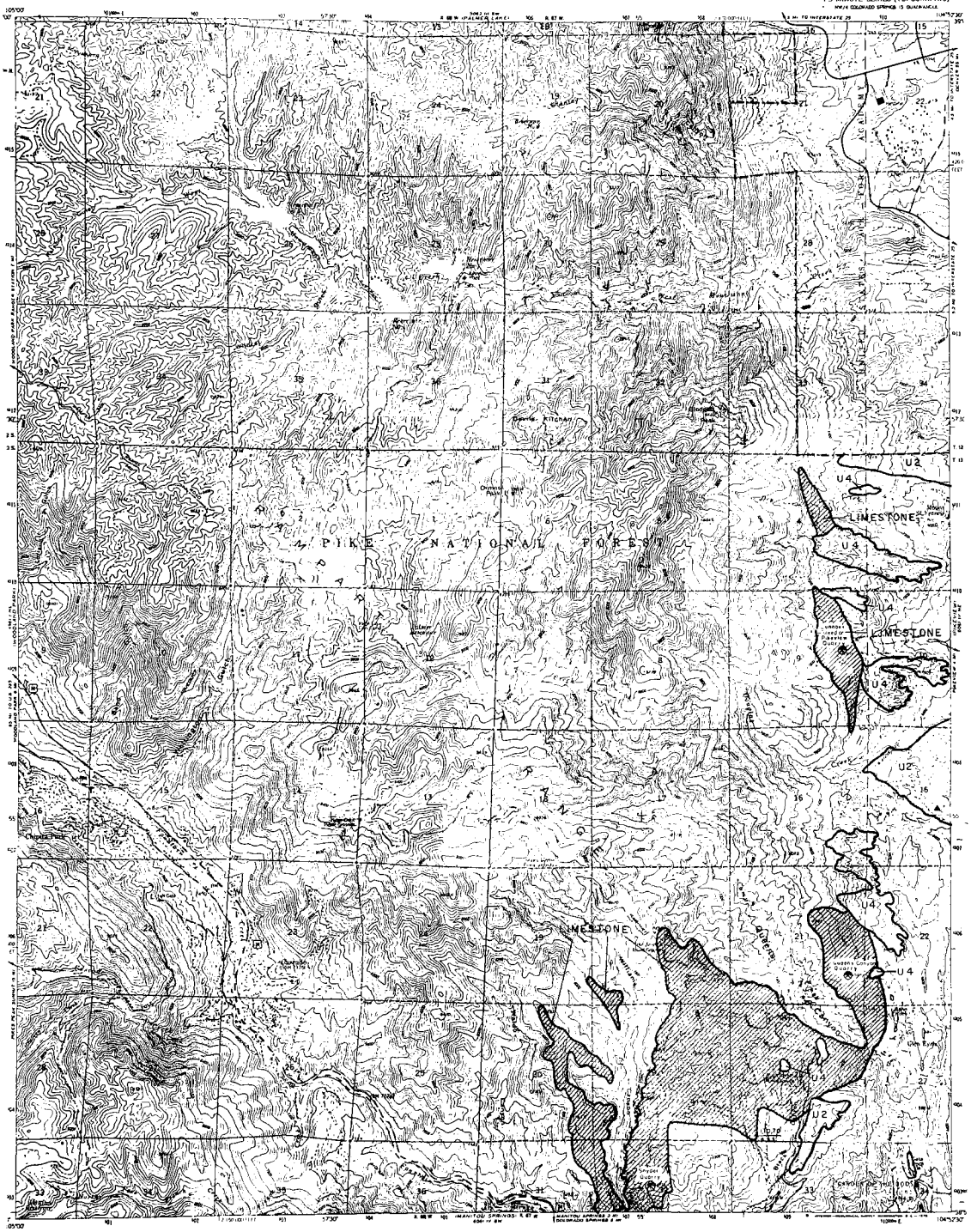
ROAD CLASSIFICATION
Medium duty ——— Light duty ———
Unimproved dirt .....
State Route

CARTER LAKE RESERVOIR, COLO.

SAND, GRAVEL AND QUARRY AGGREGATE RESOURCES MAP

DEPARTMENT OF NATURAL RESOURCES
COLORADO GEOLOGICAL SURVEY
JOHN W. ROLD, DIRECTOR

CASCADE QUADRANGLE
COLORADO-EL PASO CO
7.5 MINUTE SERIES (TOPOGRAPHIC)



EXPLANATION

Landform unit

Resource classification

LANDFORM UNITS

- F Floodplain deposit
- T Stream terrace deposit
- V Valley fill (F & T)
- U Upland deposits
- A Alluvial fan
- E Wind-deposited sand (eolian)
- M Man-made deposits (slag,tailings, spoils....)

RESOURCE CLASSIFICATION

Coarse aggregate
(at least 50% retained on #4-screen, visual estimation)

- 1 Gravel: relatively clean and sound
- 2 Gravel: significant fines, decomposed rock, calcium carbonate.

Fine aggregate
(greater than 50% passing #4 screen, 85% retained on #200 screen, visual estimation)

- 3 Sand

Undetermined Resource

- 4 Probable aggregate resource

MAP SYMBOLS

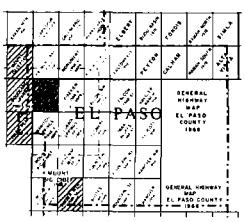
- Operating gravel and/or sand pit
- Abandoned gravel and/or sand pit
- (S) Operating stone quarry
- (S) Abandoned stone quarry
- Potential quarry aggregate resource area
- Selected well or drill-hole location with overburden thickness (ft) over sand/gravel resource thickness (ft), obtained from well logs.
  - "g" indicates gravel, "s" indicates sand
  - "-" in symbol denotes unevaluated or unknown property.
  - "wc" denotes Colorado Geological Survey Windsor/Sand and Gravel projects' drill hole
- Landform boundary, solid where known or observed; dashed where approximate or inferred.

STATION, LOCATION AND GEOLOGICAL DESCRIPTION OF DEPOSIT

- overburden thickness (ft)
- sand/gravel resource thickness (ft)
- percent sand and fines passing #4 screen, 0.25 in.), visual estimation
- significant amount of fines (passing #200-screen, 0.0059 in. or 0.074 mm.)
- significant amount of decomposed or weak rock.
- significant amount of calcium carbonate (caliche)

"n" in symbol denotes unevaluated or unknown property

"no" in symbol denotes property absent or insignificant



QUADRANGLE LOCATION

NON-RESOURCE OR WITHDRAWN AREA

Geology modified after:

Scott, G.R., & Wobus, R. A.
1973, Reconnaissance geologic map of Colorado Springs and Vicinity, Colorado: U. S. Geological Survey Map, MF-482.

Trimble, D.E., and Pitch, H.R., 1974, Map showing potential sources of gravel and crushed-rock aggregate in the Colorado Springs-Castle Rock Area, Front Range Urban Corridor, Colorado: U. S. Geol. Survey Map I-837 A.

Mapped by: Phillip C. Wicklein
Date: June 30, 1974

Prepared in cooperation with the U. S. Geological Survey.

Base from U. S. Geological Survey
7-1/2 minute quadrangle

CONTOUR INTERVAL 40 FEET*
DATUM IS MEAN SEA LEVEL

ROAD CLASSIFICATION

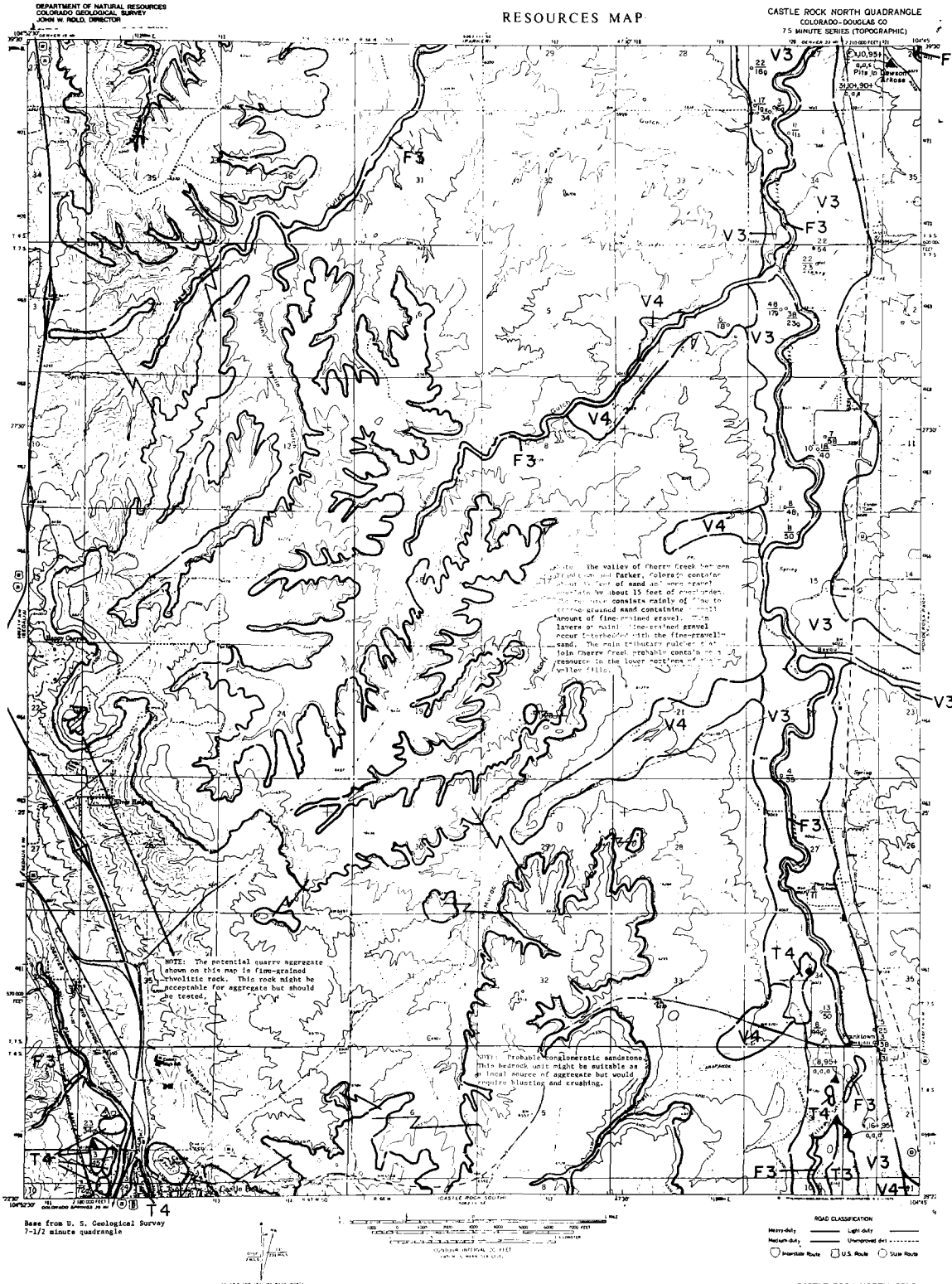
- Heavy-duty
- Medium duty
- Light duty
- Unimproved dirt
- U.S. Route

CASCADE, COLO.

SAND, GRAVEL AND QUARRY AGGREGATE RESOURCES MAP

DEPARTMENT OF NATURAL RESOURCES
COLORADO GEOLOGICAL SURVEY
JOHN W. ROLD, DIRECTOR

CASTLE ROCK NORTH QUADRANGLE
COLORADO-DOUGLAS CO
7.5 MINUTE SERIES (TOPOGRAPHIC)



Base from U. S. Geological Survey
7-1/2 minute quadrangle

CASTLE ROCK NORTH, COLO.

EXPLANATION

Landform unit
Resource classification

LANDFORM UNITS

- F Floodplain deposit
- T Stream terrace deposit
- V Valley fill (F & T)
- U Upland deposits
- A Alluvial fan
- E Wind-deposited sand (eolian)
- M Man-made deposits (slag,tailings, spoils....)

RESOURCE CLASSIFICATION

Coarse Aggregate
(at least 50% retained on #4 screen, visual estimation)

- 1 Gravel: relatively clean and sound
- 2 Gravel: significant fines, decomposed rock, calcium carbonate.

Fine Aggregate
(greater than 50% passing #4 screen, 80% retained on #200 screen, visual estimation

- 3 Sand

Unevaluated Resource

- 4 Probable aggregate resource

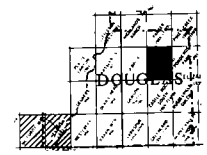
MAP SYMBOLS

- Operating gravel and/or sand pit
- Abandoned gravel and/or sand pit
- Operating stone quarry
- Abandoned stone quarry
- Potential quarry aggregate resource area
- Selected well or drill-hole location with overburden thickness (ft) over sand/gravel resource thickness (ft), obtained from well logs. "," indicates gravel; "s" indicates sand "-" in symbol denotes unevaluated or unknown property. "wm" denotes Colorado Geological Survey Windsor/Sand and Gravel projects' drill hole
- Landform boundary, solid where known or observed; dashed where approximate or inferred.

STATION, LOCATION AND GEOLOGICAL DESCRIPTION OF DEPOSIT

- overburden thickness (ft)
- sand/gravel resource thickness (ft)
- percent sand and fines (passing #4 screen, 0.16 in.), visual estimation
- significant amount of fines (passing #200 screen, 0.018 in. or 0.074 mm.)
- significant amount of decomposed or weak rock.
- significant amount of calcium carbonate (caliche)

"n" in symbol denotes unevaluated or unknown property.
"o" in symbol denotes property absent or insignificant



QUADRANGLE LOCATION

NON-RESOURCE OR WITHDRAWN AREA

ROAD CLASSIFICATION

Heavy-duty — Light-duty
Medium-duty — Unimproved dirt
Interstate Route · U.S. Route · State Route

Geology modified after:
Trimble, D.E., and Fitch, H.R., 1974, Map showing potential sources of gravel and crushed rock aggregate in the Greater Denver Area, Front Range Urban Corridor, Colo.: U.S. Geol. Survey Misc. Geol. Inv. Map I-856-A.

References:
Chase, G.W., and McConaghy, J.A., 1972, Generalized surficial geologic map of the Denver area, Colorado: U.S. Geol. Survey Misc. Geol. Inv. Map I-731

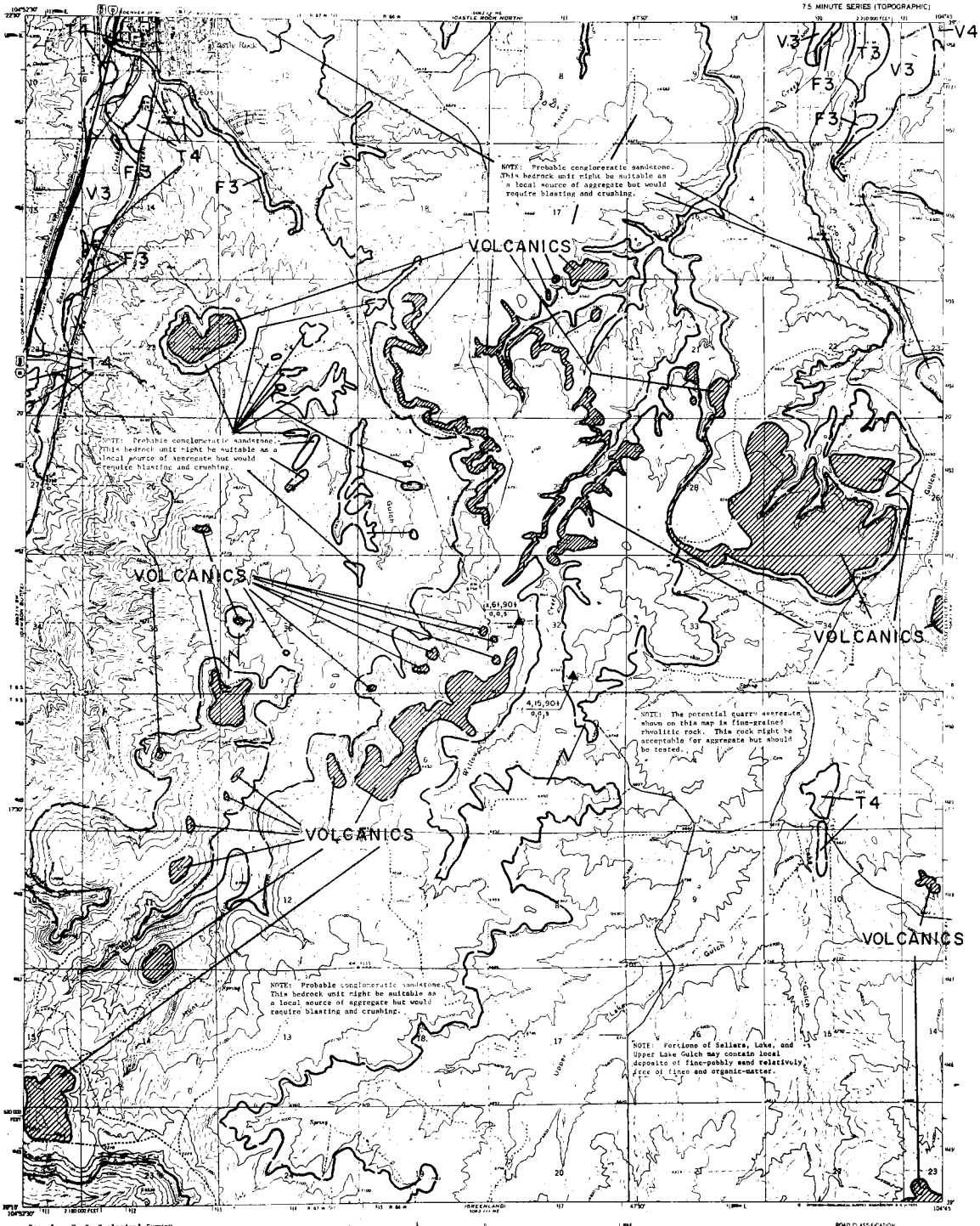
Mapped by: Ralph R. Shroba
Date: June 30, 1974

Prepared in cooperation with the U. S. Geological Survey

SAND, GRAVEL AND QUARRY AGGREGATE RESOURCES MAP

DEPARTMENT OF NATURAL RESOURCES
COLORADO GEOLOGICAL SURVEY
JOHN W. ROLD, DIRECTOR

CASTLE ROCK SOUTH QUADRANGLE
COLORADO - DOUGLAS CO
7.5 MINUTE SERIES (TOPOGRAPHIC)



EXPLANATION

Landform unit
Resource classification

LANDFORM UNITS

- F Floodplain deposit
- T Stream terrace deposit
- V Valley fill (F & T)
- U Upland deposits
- A Alluvial fan
- E Wind-deposited sand (eolian)
- M Man-made deposits (slag,tailings, spoils....)

RESOURCE CLASSIFICATION

Coarse aggregate
(at least 75% retained on #4 screen, visual estimate)

- 1 Gravel: relatively clean and sound
- 2 Gravel: significant fines, decomposed rock, calcium carbonate.

Fine aggregate
(greater than 75% passing #4 screen, 80% retained on #200 screen, visual estimate)

- 3 Sand

Unevaluated Resource

- 4 Probable aggregate resource

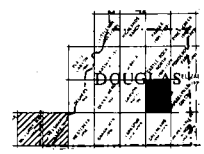
MAP SYMBOLS

- Operating gravel and/or sand pit
- Abandoned gravel and/or sand pit
- Operating stone quarry
- Abandoned stone quarry
- Potential quarry aggregate resource area
- Selected well or drill-hole location with overburden thickness (ft) over sand/gravel resource thickness (ft), obtained from well logs
  - "s" indicates gravel; "s" indicates sand
  - "x" in symbol denotes unevaluated or unknown property.
  - "cm" denotes Colorado Geological Survey Windsor/Sand and Gravel projects' drill hole
- Landform boundary, solid where known or observed; dashed where approximate or inferred

STATION, LOCATION AND GEOLOGICAL DESCRIPTION OF DEPOSIT

- overburden thickness (ft)
- sand/gravel resource thickness (ft)
- percent sand and fines (passing #4 screen, 0.19 in.), visual estimation
- significant amount of fines (passing #200 screen, 0.0049 in. or 0.074 mm.)
- significant amount of decomposed or weak rock.
- significant amount of calcium carbonate (caliche)

"x" in symbol denotes unevaluated or unknown property
"o" in symbol denotes property absent or insignificant



QUADRANGLE LOCATION

NON-RESOURCE OR WITHDRAWN AREA

REFERENCE:

Chase, G.H., and McConaghy, J.A., 1972, Generalized surficial geologic map of the Denver area, Colorado: U. S. Geol. Survey Misc. Geol. Inv. Map I-731.

Geology modified after:

Wobbie, D.E., and Finch, E.E., 1974, Map showing potential sources of gravel and crushed-rock aggregate in the Colorado Springs-Castle Rock Area, Front Range Urban Corridor, Colorado: U. S. Geol. Survey Map I-857 A.

Mapped by: Ralph R. Shroba
Date: June 30, 1974

Prepared in cooperation with the U. S. Geological Survey.

Base from U. S. Geological Survey 7-1/2 minute quadrangle

ROAD CLASSIFICATION

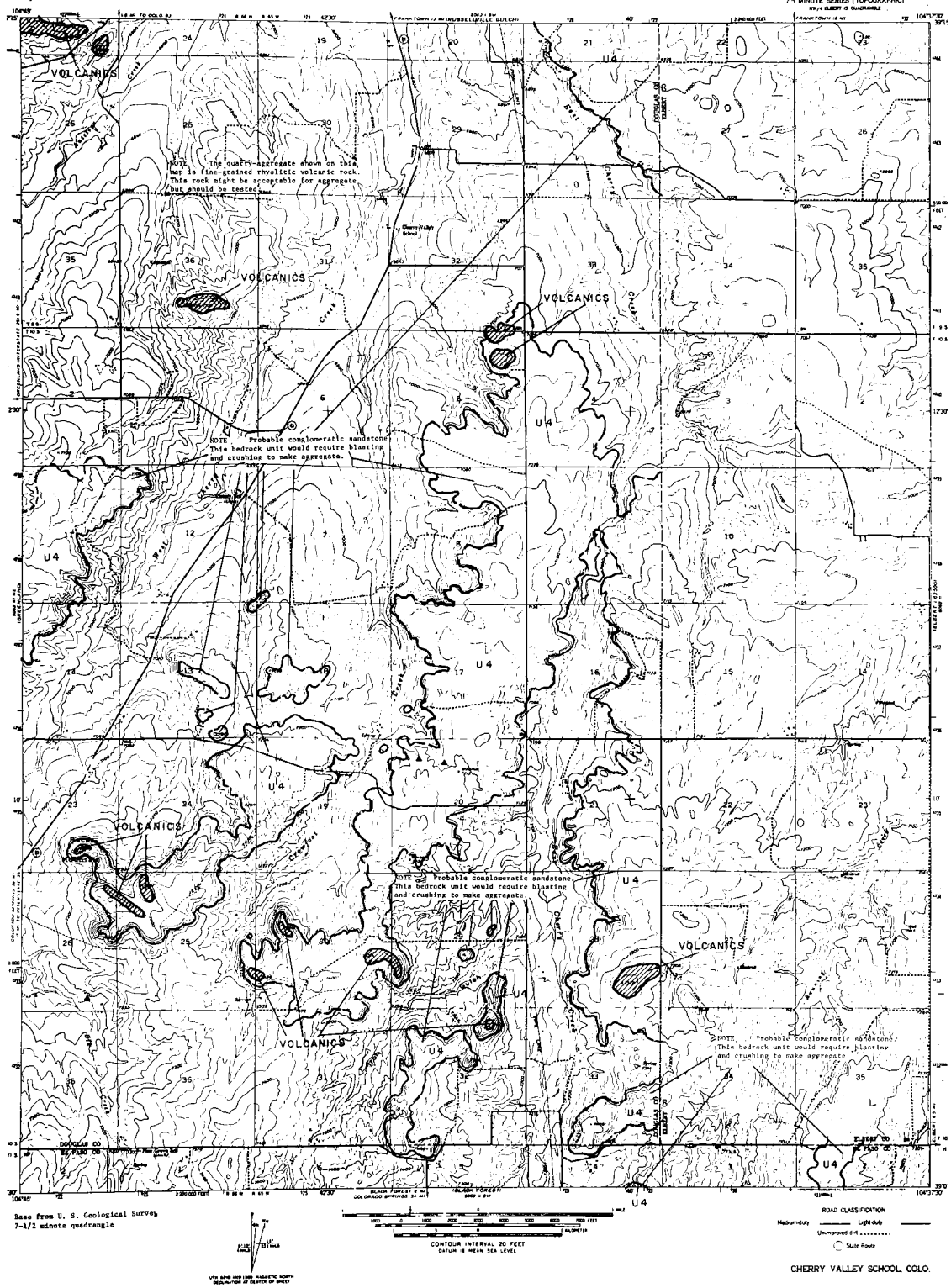
Heavy-duty ——— Light-duty - - -
Medium-duty ——— Unimproved dirt .....
Interstate Route U.S. Route State Route

CASTLE ROCK SOUTH, COLO.

SAND, GRAVEL AND QUARRY AGGREGATE RESOURCES MAP

DEPARTMENT OF NATURAL RESOURCES
COLORADO GEOLOGICAL SURVEY
JOHN W. ROLD, DIRECTOR

CHERRY VALLEY SCHOOL QUADRANGLE
COLORADO
7.5 MINUTE SERIES (TOPOGRAPHIC)



EXPLANATION

Landform unit
Resource classification

LANDFORM UNITS

- F Floodplain deposit
- T Stream terrace deposit
- V Valley fill (F & T)
- U Upland deposits
- A Alluvial fan
- E Wind-deposited sand (eolian)
- M Man-made deposits (slag,tailings, spoils....)

RESOURCE CLASSIFICATION

Coarse Aggregate
(at least 25% retained on #4 screen, visual estimation)

- 1 Gravel: relatively clean and sound
- 2 Gravel: significant fines, decomposed rock, calcium carbonate.

Fine Aggregate
(greater than 75% passing #4 screen, 60% retained on #200 screen, visual estimation

- 3 Sand

Overburden Resource

- 4 Probable aggregate resource

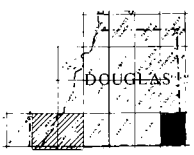
MAP SYMBOLS

- Operating gravel and/or sand pit
- Abandoned gravel and/or sand pit
- Operating stone quarry
- Abandoned stone quarry
- Potential quarry aggregate resource area
- Selected well or drill-hole location with overburden thickness (ft) over sand/gravel resource thickness (ft), obtained from well logs. "g" indicates gravel; "s" indicates sand. "-" in symbol denotes unevaluated or unknown property. "dh" denotes Colorado Geological Survey Windsor/Sand and Gravel projects' drill hole
- Landform boundary, solid where known or observed; dashed where approximate or inferred.

STATION, LOCATION AND GEOLOGICAL DESCRIPTION OF DEPOSIT

- overburden thickness (ft)
- sand/gravel resource thickness (ft)
- percent sand and fines (passing #4 screen, 0.25 in.), visual estimation
- significant amount of fines (passing #200 screen, 0.0058 in. or 0.074 mm.)
- significant amount of decomposed or weak rock.
- significant amount of calcium carbonate (caliche)

"-" in symbol denotes unevaluated or unknown property
"0" in symbol denotes property absent or insignificant



QUADRANGLE LOCATION

NON-RESOURCE OR WITHDRAWN AREA

Geology modified after:

Trimble, D.E., and Fitch, H.R., 1974, Map showing potential sources of gravel and crushed-rock aggregate in the Colorado Springs-Castle Rock Area, Front Range Urban Corridor, Colorado: U. S. Geol. Survey Map I-837 A.

REFERENCE: Trimble, Donald, 1974, U.S.G.S.; Personal Communication

Mapped by: Phillip C. Wicklein
Date: June 30, 1974

Prepared in cooperation with the U. S. Geological Survey.

Base from U. S. Geological Survey
7-1/2 minute quadrangle

CONTOUR INTERVAL 20 FEET
DATUM IS MEAN SEA LEVEL

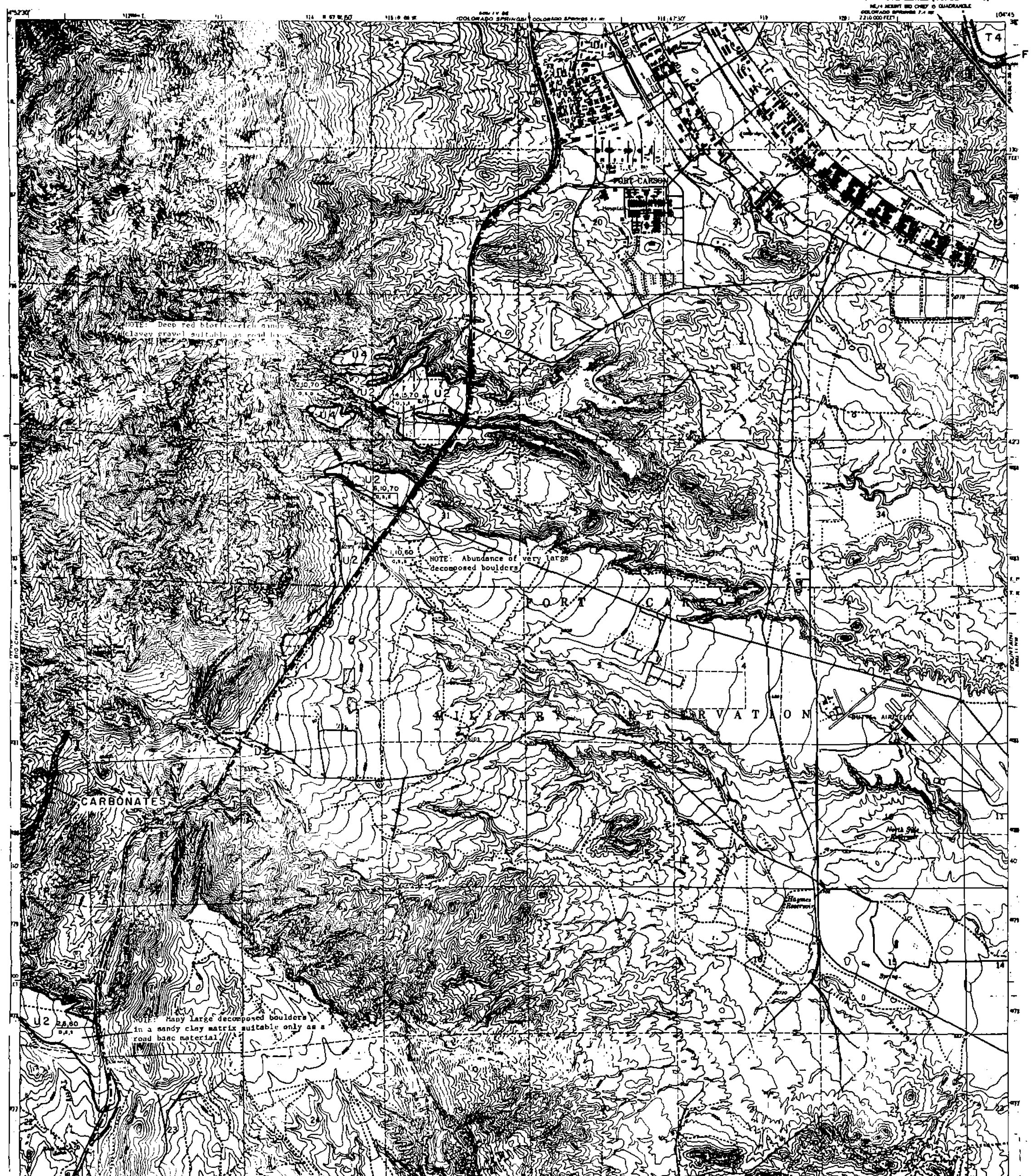
ROAD CLASSIFICATION
Medium-duty ——— Light duty ———
Unimproved dirt .....
State Route

CHERRY VALLEY SCHOOL, COLO.

DEPARTMENT OF NATURAL RESOURCES
COLORADO GEOLOGICAL SURVEY
JOHN W. ROLD, DIRECTOR

SAND, GRAVEL AND QUARRY AGGREGATE RESOURCES MAP

CHEYENNE MOUNTAIN QUADRANGLE
COLORADO–EL PASO CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)



Base from U. S. Geological Survey 7-1/2 minute quadrangle

CHEYENNE MOUNTAIN, COLO.

EXPLANATION

F — Landform unit; Resource classification

LANDFORM UNITS

- F — Floodplain deposit
- T — Stream terrace deposit
- V — Valley fill (F & T)
- U — Upland deposits
- A — Alluvial fan
- E — Wind-deposited sand (eolian)
- M — Man-made deposits (slag, tailings, spoils....)

RESOURCE CLASSIFICATION

Coarse Aggregate (at least 30% retained on #4 screen, visual estimation)

- 1 — Gravel: relatively clean and sound
- 2 — Gravel: significant fines, decomposed rock, calcium carbonate.

Fine Aggregate (greater than 70% passing #4 screen, 60% retained on #200 screen, visual estimation)

- 3 — Sand

Unevaluated Resource

- 4 — Probable aggregate resource

MAP SYMBOLS

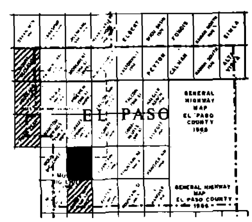
- Operating gravel and/or sand pit
- Abandoned gravel and/or sand pit
- Operating stone quarry
- Abandoned stone quarry
- Potential quarry aggregate resource area
- Selected well or drill-hole location with overburden thickness (ft) over sand/gravel resource thickness (ft), obtained from well logs. "g" indicates gravel; "s" indicates sand
- "x" in symbol denotes unevaluated or unknown property.
- "WS" denotes Colorado Geological Survey Windsor/Sand and Gravel projects' drill hole
- Landform boundary, solid where known or observed; dashed where approximate or inferred.

STATION, LOCATION AND GEOLOGICAL DESCRIPTION OF DEPOSIT

5, 17, 40
- overburden thickness (ft)
- sand/gravel resource thickness (ft)
- percent sand and fines (passing #4 screen, 0.25 in.), visual estimation
- significant amount of fines (passing #200 screen, 0.0029 in. or 0.074 mm.)
- significant amount of decomposed or weak rock.
- significant amount of calcium carbonate (caliche)

"x" in symbol denotes unevaluated or unknown property

"o" in symbol denotes property absent or insignificant



QUADRANGLE LOCATION

NON-RESOURCE OR WITHDRAWN AREA

Geology Modified after:
Harms, J.C., 1951, Structural geology of the eastern flank of the southern Front Range, Colorado: University of Colorado Ph.D. Thesis, 121 p., 3 pls.
Scott, G.R., & Wobus, R. A. 1973, Reconnaissance geologic map of Colorado Springs and Vicinity, Colorado: U. S. Geological Survey Map, MF-482.
Trimble, D.E., and Fitch, H.R., 1974, Map showing potential sources of gravel and crushed-rock aggregate in the Colorado Springs-Castle Rock Area, Front Range Urban Corridor, Colorado: U. S. Geol. Survey Map I-857 A.

REFERENCE:
McLaughlin, K.F., 1947, Pennsylvanian stratigraphy of Colorado Springs quadrangle: Am. Assoc. Petroleum Geol. Bull. v. 31, p. 1936-1981.
Finlay, G.I., 1916, Colorado Springs Folio, Colorado: U.S. Geol. Survey Folio no. 203.

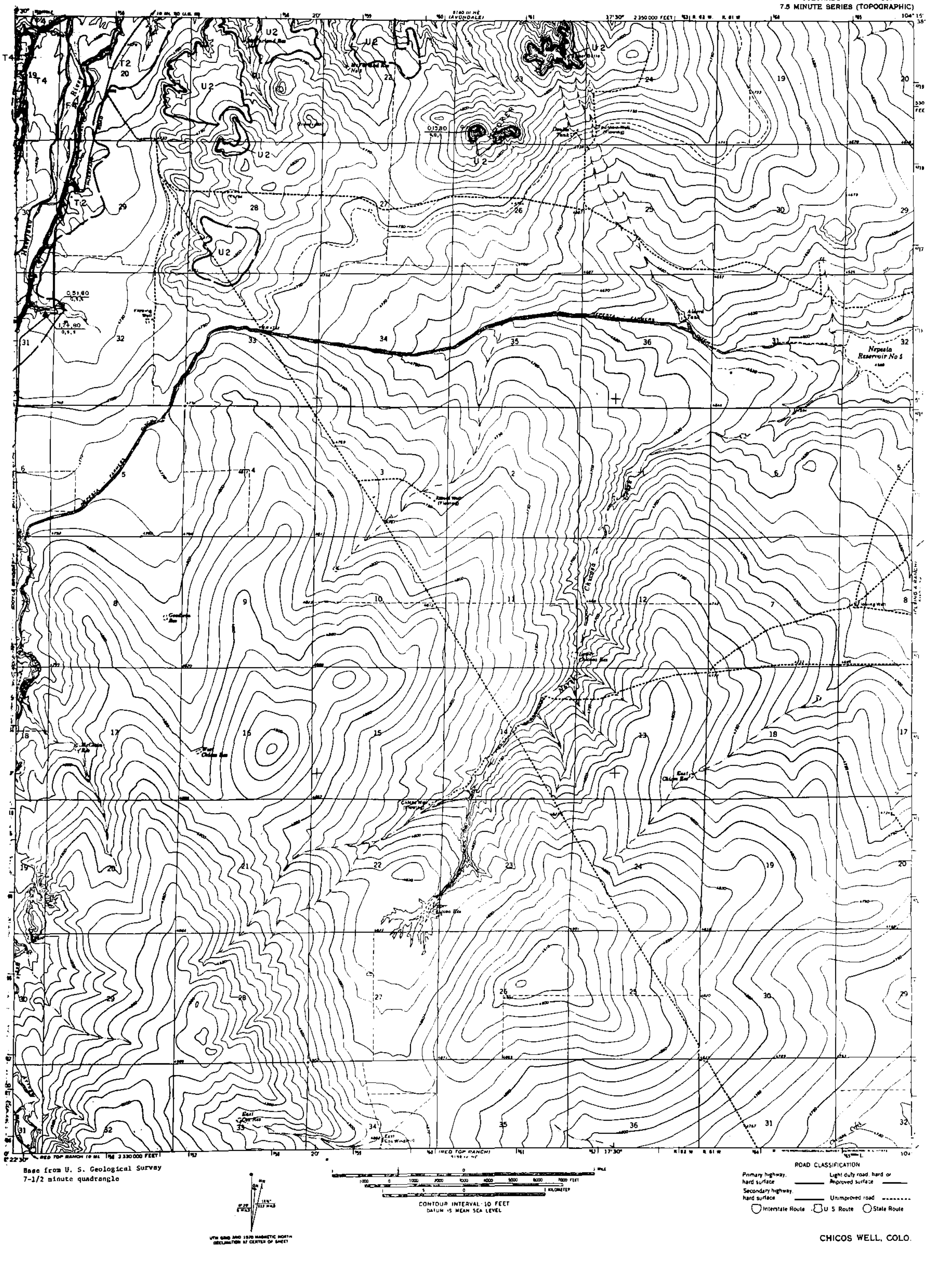
Mapped by: Phillip C. Wicklein
Date: June 30, 1974

Prepared in cooperation with the U. S. Geological Survey.

SAND, GRAVEL AND QUARRY AGGREGATE RESOURCES MAP

DEPARTMENT OF NATURAL RESOURCES
COLORADO GEOLOGICAL SURVEY
JOHN W. ROLD, DIRECTOR

CHICOS WELL QUADRANGLE
COLORADO–PUEBLO CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)



Base from U. S. Geological Survey
7-1/2 minute quadrangle

ROAD CLASSIFICATION

Primary highway, hard surface — Light duty road, hard or improved surface
Secondary highway, hard surface — Unimproved road
Interstate Route — U S Route — State Route

CHICOS WELL, COLO.

EXPLANATION

F — Landform unit; Resource classification

LANDFORM UNITS

- F — Floodplain deposit
- T — Stream terrace deposit
- V — Valley fill (F & T)
- U — Upland deposits
- A — Alluvial fan
- E — Wind-deposited sand (eolian)
- M — Man-made deposits (slag, tailings, spoils.....)

RESOURCE CLASSIFICATION

Coarse Aggregate
(at least 30% retained on #4 screen, visual estimation)

1. Gravel: relatively clean and sound
2. Gravel: significant fines, decomposed rock, calcium carbonate.

Fine Aggregate
(greater than 70% passing #4 screen, 60% retained on #200 screen, visual estimation)

3. Sand

Unevaluated Resource

4. Probable aggregate resource

MAP SYMBOLS

- Operating gravel and/or sand pit
- Abandoned gravel and/or sand pit
- Operating stone quarry
- Abandoned stone quarry
- Potential quarry aggregate resource area
- Selected well or drill-hole location with overburden thickness (ft) over sand/gravel resource thickness (ft), obtained from well logs.
  "g" indicates gravel; "s" indicates sand
  "x" in symbol denotes unevaluated or unknown property.
  "wo" denotes Colorado Geological Survey Windsor/Sand and Gravel projects' drill hole
- Landform boundary, solid where known or observed; dashed where approximate or inferred.

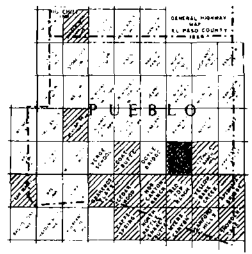
STATION, LOCATION AND GEOLOGICAL DESCRIPTION OF DEPOSIT

5, 17, 40

- overburden thickness (ft)
- sand/gravel resource thickness (ft)
- percent sand and fines (passing #4 screen, 0.25 in.), visual estimation
- significant amount of fines (passing #200 screen, 0.0059 in. or 0.074 mm.)
- significant amount of decomposed or weak rock.
- significant amount of calcium carbonate (caliche)

"x" in symbol denotes unevaluated or unknown property

"o" in symbol denotes property absent or insignificant



QUADRANGLE LOCATION

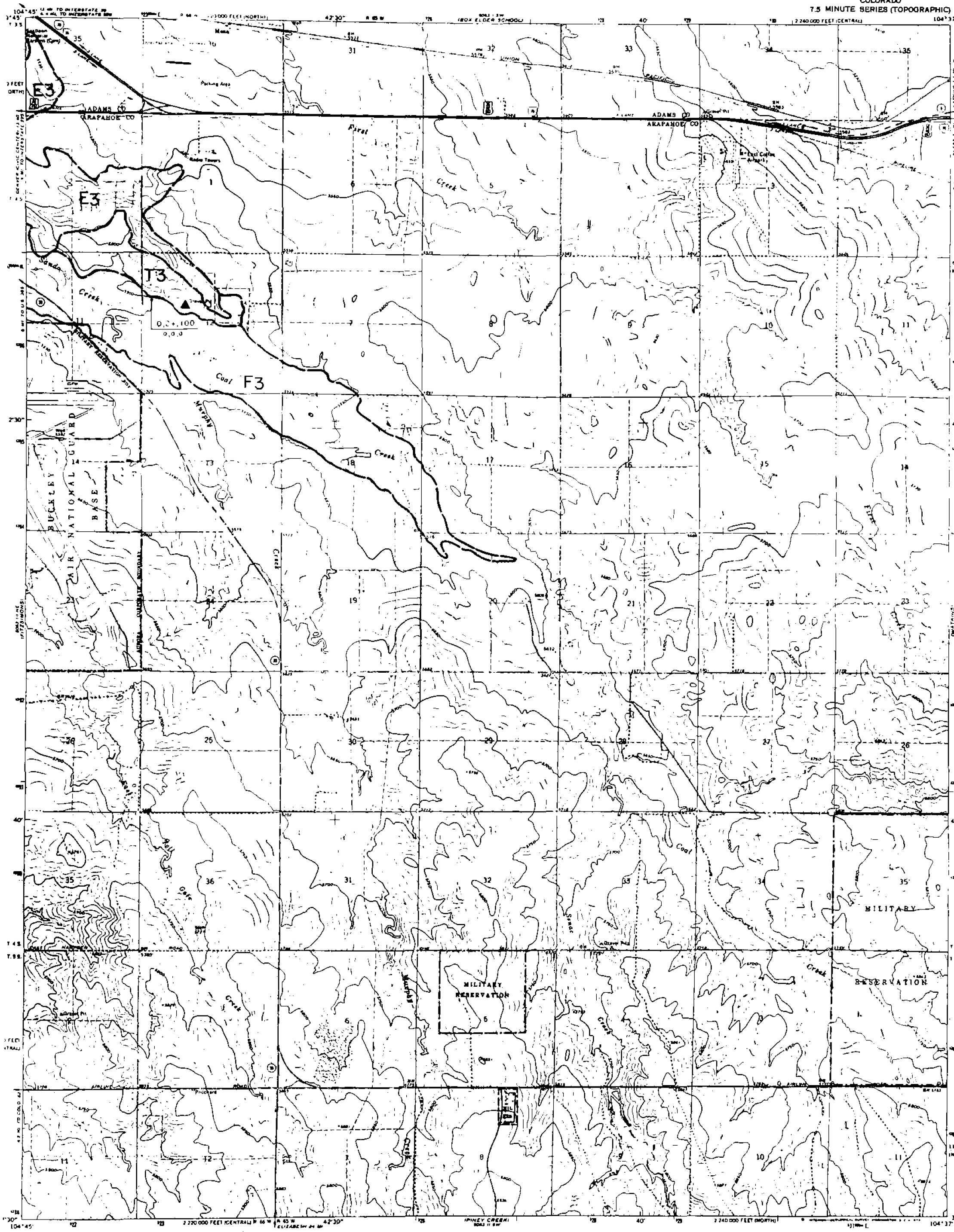
NON-RESOURCE OR WITHDRAWN AREA

Mapped by: Stephen D. Schwochow
Date: June 30, 1974

DEPARTMENT OF NATURAL RESOURCES
COLORADO GEOLOGICAL SURVEY
JOHN W. ROLD, DIRECTOR

SAND, GRAVEL AND QUARRY AGGREGATE RESOURCES MAP

COAL CREEK QUADRANGLE
COLORADO
7.5 MINUTE SERIES (TOPOGRAPHIC)



Base from U. S. Geological Survey
7-1/2 minute quadrangle

CONTOUR INTERVAL 10 FEET
DATUM IS MEAN SEA LEVEL

ROAD CLASSIFICATION
Heavy-duty
Light-duty
Medium-duty
Unimproved dirt
Interstate Route
U S Route
State Route

COAL CREEK, COLO.

EXPLANATION

LANDFORM UNIT

F Floodplain deposit
T Stream terrace deposit
V Valley fill (F & T)
U Upland deposits
A Alluvial fan
E Wind-deposited sand
M Man-made deposits (slag, tailings, spoils)

RESOURCE CLASSIFICATION

Coarse Aggregate

1 Gravel: relatively clean and sound
2 Gravel: significant fines, decomposed rock, calcium carbonate

Fine Aggregate

3 Sand

Unevaluated Resource

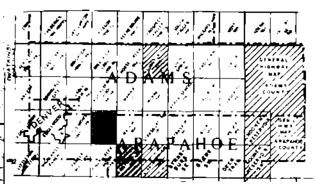
4 Probable aggregate resource

MAP SYMBOLS

Operating gravel and/or sand pit
Abandoned gravel and/or sand pit
Operating stone quarry
Abandoned stone quarry
Potential quarry aggregate resource area
Selected well or drill-hole location with overburden thickness (ft) over sand/gravel resource thickness (ft), obtained from well logs
"g" indicates gravel, "s" indicates sand
"?" in symbol denotes unevaluated or unknown property.
"WO" denotes Colorado Geological Survey Windsor/Sand and Gravel projects' drill hole
Landform boundary, solid where known or observed; dashed where approximate or inferred.

STATION, LOCATION AND GEOLOGICAL DESCRIPTION OF DEPOSIT

significant amount of fines (passing #200 screen, 0.0029 in. or 0.074 mm.)
significant amount of decomposed or weak rock.
"?" in symbol denotes unevaluated or unknown property.



QUADRANGLE LOCATION

NON-RESOURCE OR WITHDRAWN AREA

Reference:
Chase, G.H., and McConaghy, J.A., 1972, Generalized surficial geologic map of the Denver area, Colorado: U.S. Geol. Survey Misc. Geol. Inv. Map I-731.

Trimble, D.E., and Fitch, H.R., 1974, Map showing potential sources of gravel and crushed-rock aggregate in the Greater Denver Area, Front Range Urban Corridor, Colo.: U.S. Geol. Survey Misc. Geol. Inv. Map I-856-A.

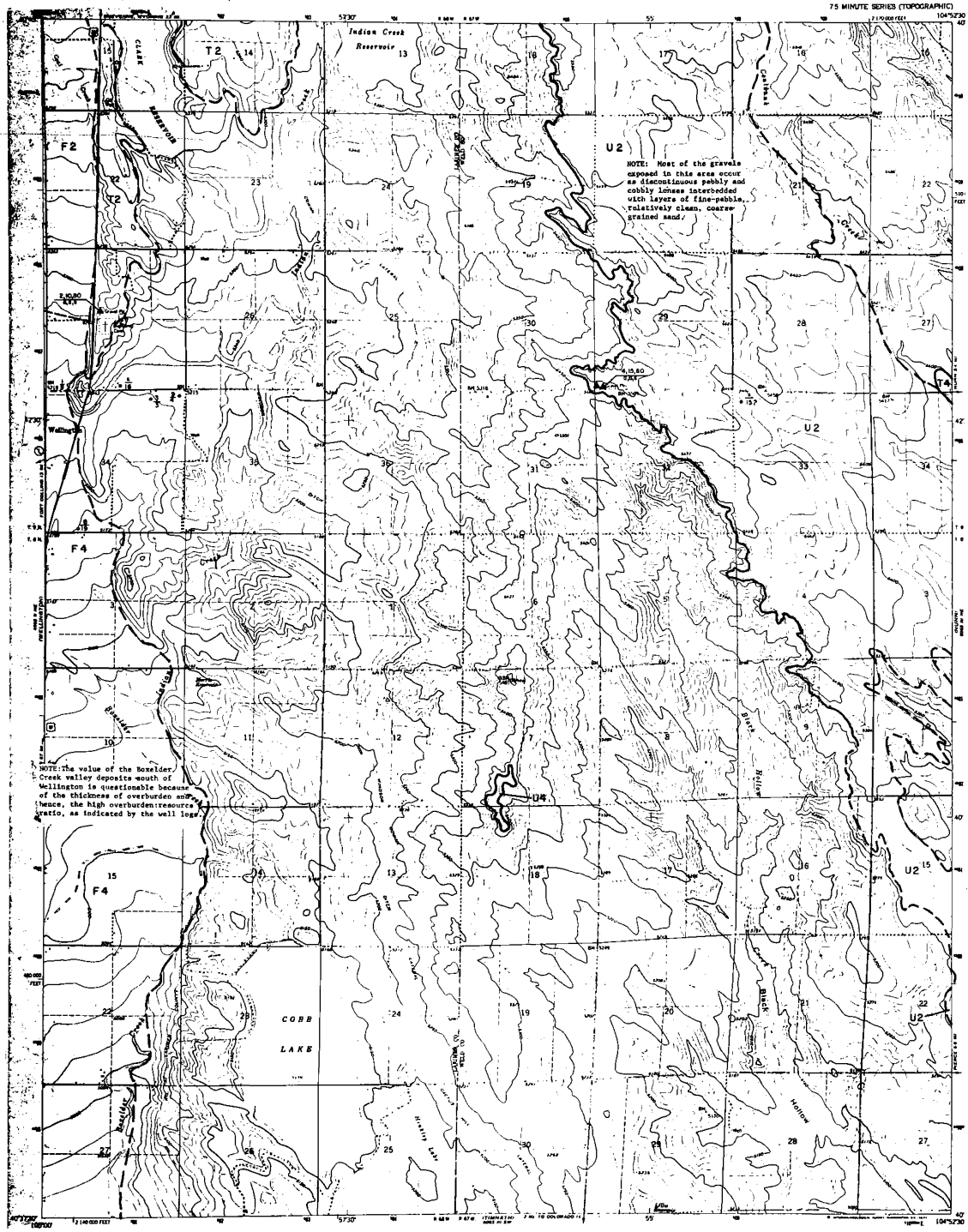
Mapped by: Stephen D. Schwochow
Date: June 30, 1974

Prepared in cooperation with the U. S. Geological Survey.

SAND, GRAVEL AND QUARRY AGGREGATE RESOURCES MAP

DEPARTMENT OF NATURAL RESOURCES
COLORADO GEOLOGICAL SURVEY
JOHN W. ROLD, DIRECTOR

COBB LAKE QUADRANGLE
COLORADO
7.5 MINUTE SERIES (TOPOGRAPHIC)



EXPLANATION

Landform unit
Resource classification

LANDFORM UNITS

- F Floodplain deposit
- T Stream terrace deposit
- V Valley fill (F & T)
- U Upland deposits
- A Alluvial fan
- E Wind-deposited sand (eolian)
- M Man-made deposits (slag,tailings, spoils....)

RESOURCE CLASSIFICATION

Coarse aggregate
(at least 50% retained on #4 screen, visual estimation)

- 1 Gravel: relatively clean and sound
- 2 Gravel: significant fines, decomposed rock, calcium carbonate.

Fine aggregate
(greater than 70% passing #4 screen, 60% retained on #200 screen, visual estimate)

- 3 Sand

Unevaluated Resource

- 4 Probable aggregate resource

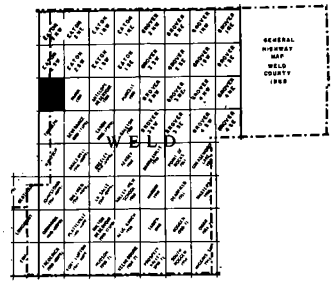
MAP SYMBOLS

- Operating gravel and/or sand pit
- Abandoned gravel and/or sand pit
- Operating stone quarry
- Abandoned stone quarry
- Potential quarry aggregate resource area
- Selected well or drill-hole location with overburden thickness (ft) over sand/gravel resource thickness (ft), obtained from well logs.
  - "x" indicates gravel; "s" indicates sand
  - "-" in symbol denotes unevaluated or unknown property.
  - "ws" denotes Colorado Geological Survey Windsor/Sand and Gravel projects' drill hole
- Landform boundary, solid where known or observed; dashed where approximate or inferred.

STATION, LOCATION AND GEOLOGICAL DESCRIPTION OF DEPOSIT

- overburden thickness (ft)
- sand/gravel resource thickness (ft)
- percent sand and fines (passing #4 screen, 0.18 in.), visual estimation
- significant amount of fines (passing #200 screen, 0.0058 in. or 0.074 mm.)
- significant amount of decomposed or weak rock.
- significant amount of calcium carbonate (caliche)

"u" in symbol denotes unevaluated or unknown property
"n" in symbol denotes property absent or insignificant



QUADRANGLE LOCATION

NON-RESOURCE OR WITHDRAWN AREA

REFERENCE:

Hershey, L.A., and Schneider, P.A., Jr., 1972, Geologic map of the lower Cache La Poudre River basin, north-central Colorado: U. S. Geol. Survey Misc. Geol. Inv. Map I-687.

Mapped by: Stephen D. Schwochow
Date: June 30, 1974

Base from U. S. Geological Survey
7-1/2 minute quadrangle

CONTOUR INTERVAL 10 FEET
DATUM IS MEAN SEA LEVEL

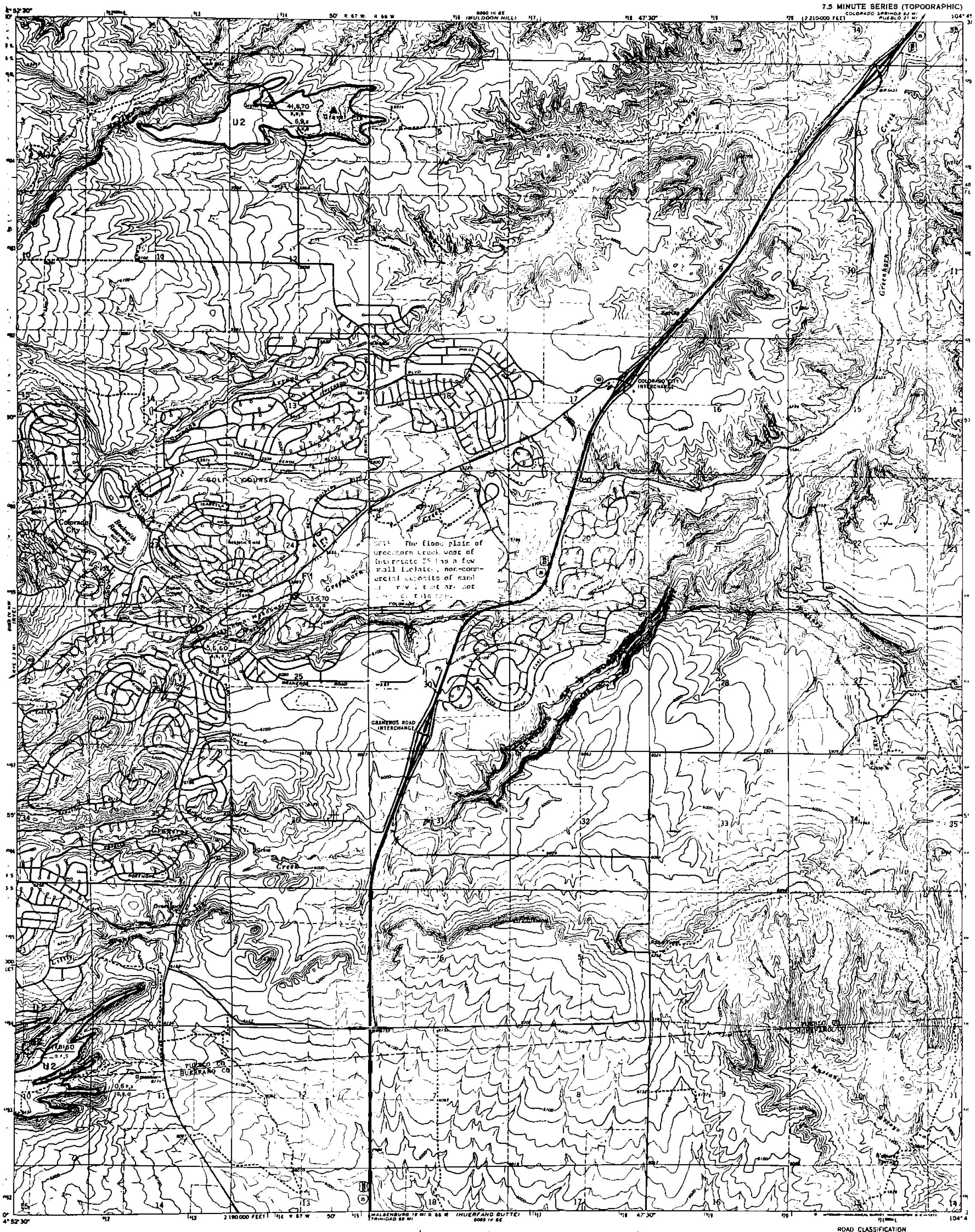
ROAD CLASSIFICATION
Medium duty — Light duty
Unimproved dirt .....
U.S. Route State Route

COBB LAKE, COLO.

DEPARTMENT OF NATURAL RESOURCES
COLORADO GEOLOGICAL SURVEY
JOHN W. ROLD, DIRECTOR

SAND, GRAVEL AND QUARRY AGGREGATE RESOURCES MAP

COLORADO CITY QUADRANGLE
COLORADO
7.5 MINUTE SERIES (TOPOGRAPHIC)



Base from U. S. Geological Survey
7-1/2 minute quadrangle

CONTOUR INTERVAL 20 FEET
DATUM IS MEAN SEA LEVEL

ROAD CLASSIFICATION
Primary highway, hard surface
Light duty road, hard or improved surface
Secondary highway, hard surface
Unimproved road
Interstate Route
U S Route
State Route

COLORADO CITY, COLO.

EXPLANATION

F — Landform unit; Resource classification

LANDFORM UNITS

- F Floodplain deposit
- T Stream terrace deposit
- V Valley fill (F & T)
- U Upland deposits
- A Alluvial fan
- E Wind-deposited sand (eolian)
- M Man-made deposits (slag, tailings, spoils....)

RESOURCE CLASSIFICATION

Coarse Aggregate
(at least 35% retained on #4 screen, visual estimation)

- 1 Gravel: relatively clean and sound
- 2 Gravel: significant fines, decomposed rock, calcium carbonate.

Fine Aggregate
(greater than 70% passing #4 screen, 60% retained on #200 screen, visual estimation)

- 3 Sand

Unevaluated Resource

- 4 Probable aggregate resource

MAP SYMBOLS

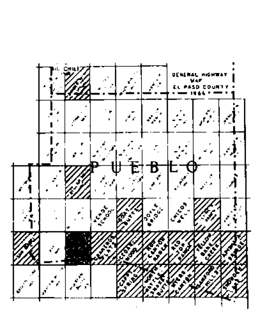
- Operating gravel and/or sand pit
- Abandoned gravel and/or sand pit
- Operating stone quarry
- Abandoned stone quarry
- Potential quarry aggregate resource area
- Selected well or drill-hole location with overburden thickness (ft) over sand/gravel resource thickness (ft), obtained from well logs.
  "g" indicates gravel; "s" indicates sand
  "x" in symbol denotes unevaluated or unknown property.
  "ms" denotes Colorado Geological Survey Windsor/Sand and Gravel projects' drill hole
- Landform boundary, solid where known or observed; dashed where approximate or inferred.

STATION, LOCATION AND GEOLOGICAL DESCRIPTION OF DEPOSIT

5, 17, 40
- overburden thickness (ft)
- sand/gravel resource thickness (ft)
- percent sand and fines (passing #4 screen, 0.25 in.), visual estimation
- significant amount of fines (passing #200 screen, 0.0059 in. or 0.074 mm.)
- significant amount of decomposed or weak rock.
- significant amount of calcium carbonate (caliche)

"x" in symbol denotes unevaluated or unknown property

"o" in symbol denotes property absent or insignificant



QUADRANGLE LOCATION

NON-RESOURCE OR WITHDRAWN AREA

REFERENCE:

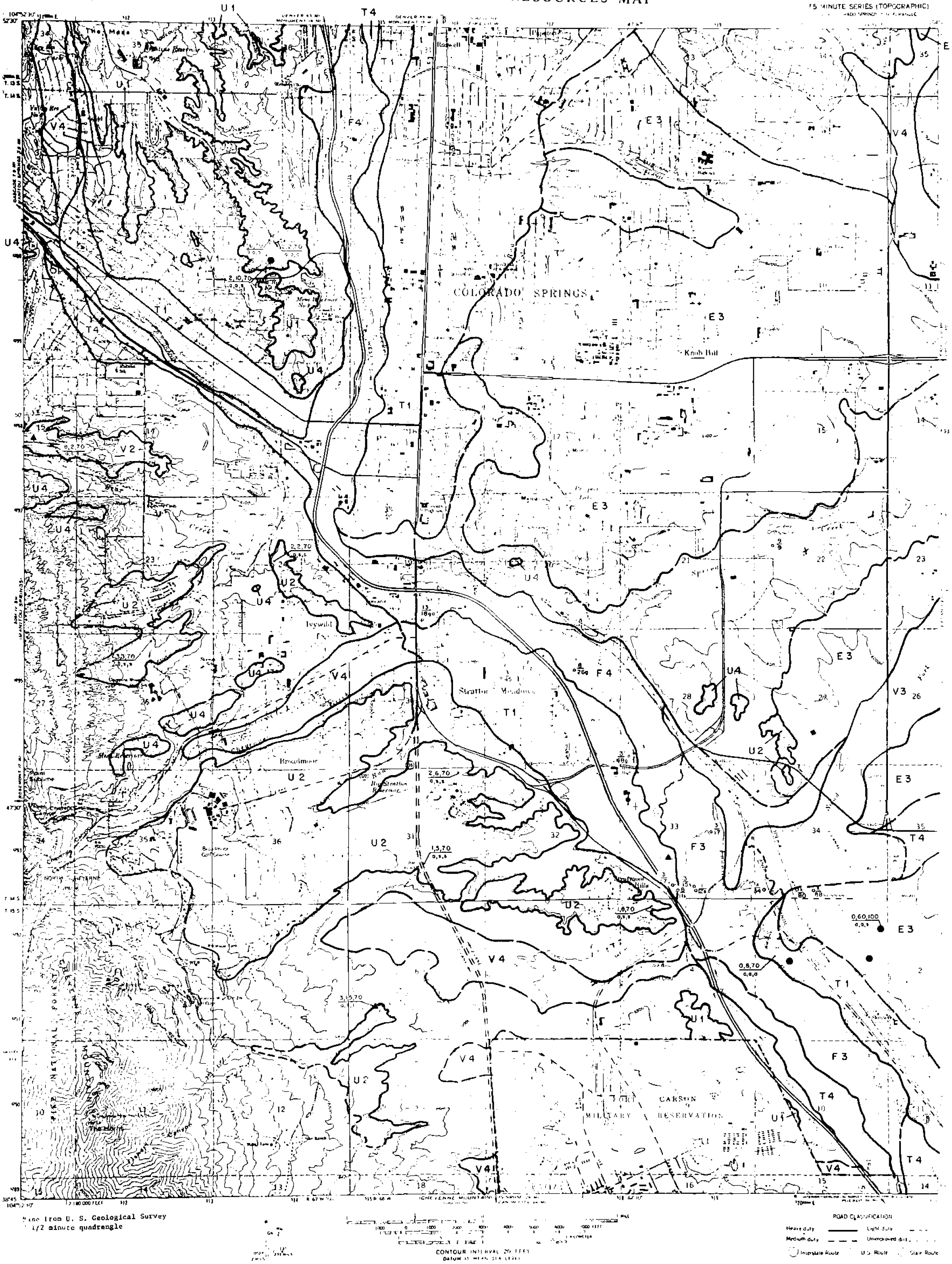
Blanco, Stephen, 1971, Geologic Map of the Rye-Colorado City Area, Pueblo and Huerfano Counties, Colorado: Colorado School of Mines, M.S. Thesis T 1360, Plate I.

Mapped by: Ralph R. Shroba
Date: June 30, 1974

DEPARTMENT OF NATURAL RESOURCES
COLORADO GEOLOGICAL SURVEY
JOHN W. ROLD, DIRECTOR

SAND, GRAVEL AND QUARRY AGGREGATE RESOURCES MAP

COLORADO SPRINGS QUADRANGLE
COLORADO-EL PASO CO
7.5 MINUTE SERIES (TOPOGRAPHIC)



Base from U. S. Geological Survey 7 1/2 minute quadrangle

COLORADO SPRINGS, COLO

EXPLANATION

LANDFORM UNITS

- F Floodplain deposit
- T Stream terrace deposit
- V Valley fill (F & T)
- U Upland deposits
- A Alluvial fan
- E Wind-deposited sand (eolian)
- M Man-made deposits (slag, tailings, spoils....)

RESOURCE CLASSIFICATION

Coarse Aggregate

- 1 Gravel: relatively clean and sound
- 2 Gravel: significant fines, decomposed rock, calcium carbonate.

Fine Aggregate

- 3 Sand

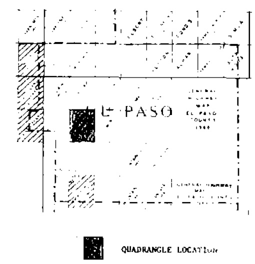
Unevaluated Resource

- 4 Probable aggregate resource

MAP SYMBOLS

- ● Operating gravel and/or sand pit
- ▲ Abandoned gravel and/or sand pit
- Operating stone quarry
- Abandoned stone quarry
- Potential quarry aggregate resource area
- Selected well or drill-hole location with overburden thickness (ft) over sand/gravel resource thickness (ft), obtained from well logs
- "g" indicates gravel; "s" indicates sand
- "x" in symbol denotes unevaluated or unknown property.
- "wq" denotes Colorado Geological Survey Windsor/Sand and Gravel projects' drill hole
- Landform boundary, solid where known or observed; dashed where approximate or inferred.

STATION, LOCATION AND LITHOLOGICAL DESCRIPTION OF DEPOSIT



QUADRANGLE LOCATION

NON-RESOURCE OR WITHDRAWN AREA

Geology modified after Scott, G.R., & Wobus, R. A. 1973, Reconnaissance geologic map of Colorado Springs and Vicinity, Colorado: U. S. Geological Survey Map, MF-482.

REFERENCE:

Trimble, D.E., and Fitch, H.R., 1974, Map showing potential sources of gravel and crushed-rock aggregate in the Colorado Springs-Castle Rock Area, Front Range Urban Corridor, Colorado: U. S. Geol. Survey Map I-857 A.

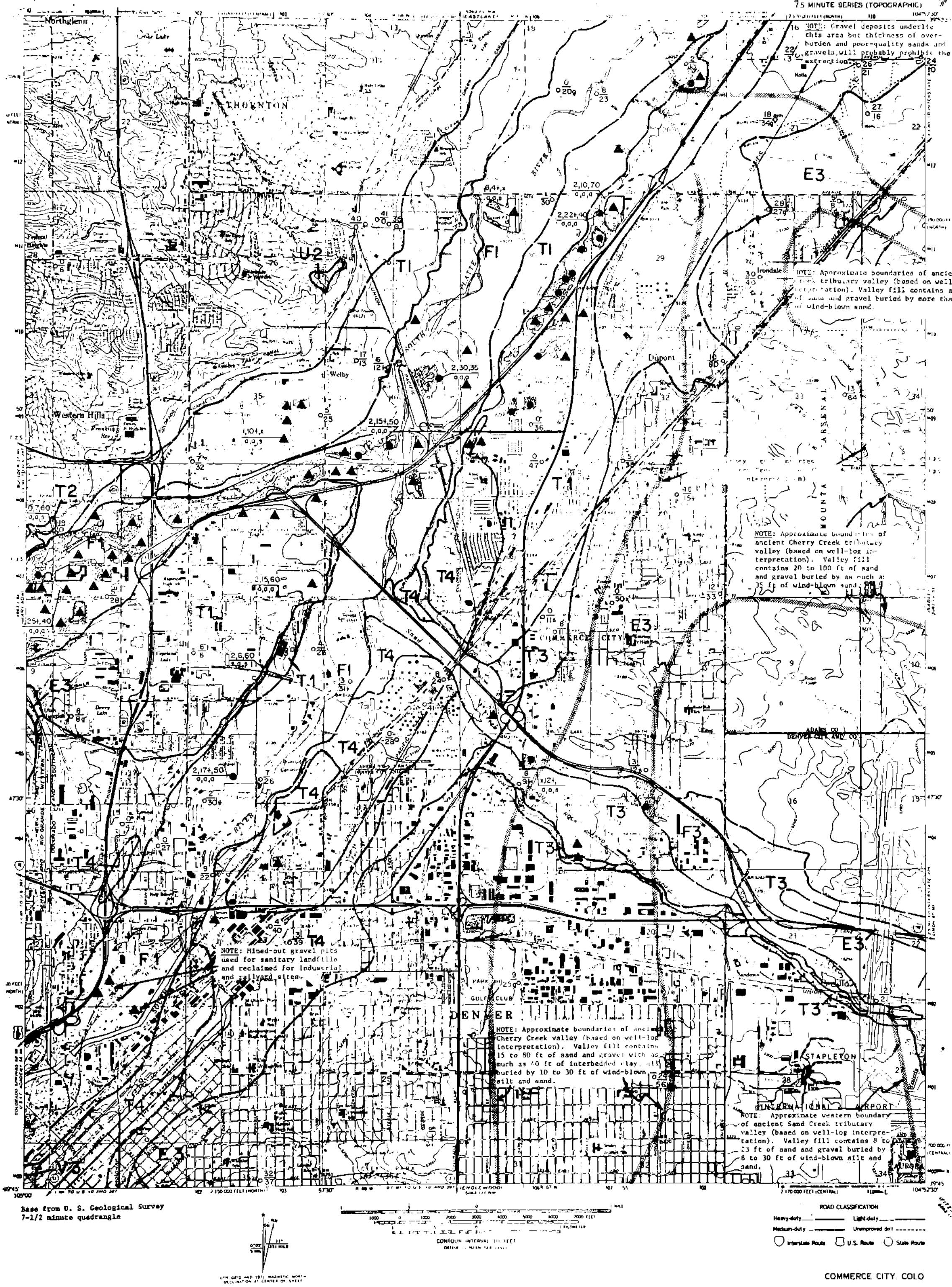
Mapped by: Phillip C. Wicklein
Date: June 30, 1974

Prepared in cooperation with the U. S. Geological Survey.

DEPARTMENT OF NATURAL RESOURCES
COLORADO GEOLOGICAL SURVEY
JOHN W. ROLD, DIRECTOR

SAND, GRAVEL AND QUARRY AGGREGATE RESOURCES MAP

COMMERCE CITY QUADRANGLE
COLORADO
7.5 MINUTE SERIES (TOPOGRAPHIC)



Base from U. S. Geological Survey
7-1/2 minute quadrangle

COMMERCE CITY, COLO

EXPLANATION

F — Landform unit; Resource classification

LANDFORM UNITS

- F — Floodplain deposit
- T — Stream terrace deposit
- V — Valley fill (F & T)
- U — Upland deposits
- A — Alluvial fan
- E — Wind-deposited sand (eolian)
- M — Man-made deposits (slag, tailings, spoils...)

RESOURCE CLASSIFICATION

Coarse Aggregate
(at least 30% retained on #4 screen, visual estimation)

1 Gravel: relatively clean and sound
2 Gravel: significant fines, decomposed rock, calcium carbonate.

Fine Aggregate
(greater than 70% passing #4 screen, 60% retained on #200 screen, visual estimation)

3 Sand

Unevaluated Resource

4 Probable aggregate resource

MAP SYMBOLS

- Operating gravel and/or sand pit
- Abandoned gravel and/or sand pit
- Operating stone quarry
- Abandoned stone quarry
- Potential quarry aggregate resource area
- Selected well or drill-hole location with overburden thickness (ft) over sand/gravel resource thickness (ft), obtained from well logs. "g" indicates gravel; "s" indicates sand. "," in symbol denotes unevaluated or unknown property.
- "WG" denotes Colorado Geological Survey Windsor/Sand and Gravel projects' drill hole
- Landform boundary, solid where known or observed; dashed where approximate or inferred.

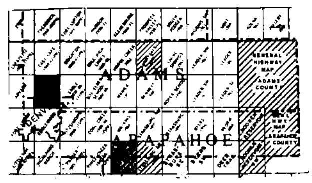
STATION, LOCATION AND GEOLOGICAL DESCRIPTION OF DEPOSIT

3, 17, 40

- overburden thickness (ft)
- sand/gravel resource thickness (ft)
- percent sand and fines (passing #4 screen, 0.15 in.), visual estimation
- significant amount of fines (passing #200 screen, 0.0029 in. or 0.074 mm.)
- significant amount of decomposed or weak rock.
- significant amount of calcium carbonate (caliche)

"e" in symbol denotes unevaluated or unknown property

"o" in symbol denotes property absent or insignificant



QUADRANGLE LOCATION

NON-RESOURCE OR WITHDRAWN AREA

Geology modified after

Hunt, C.B., 1954, Pleistocene and Recent deposits in the Denver area, Colorado: U.S. Geol. Survey Bull. 996-C, pl. 3.

and

DeVoto, R.H., 1968, Quaternary history of Rocky Mountain Arsenal and environs, Adams County, Colorado: Colorado School Mines Quart., v. 63, no. 1, pl. 1.

References:

Inter-county Regional Planning Commission, 1961, Drainage course plan for the Denver region - Part 1, Sand and gravel resources: Denver, Colo., Inter-County Reg. Plan. Comm., pl. 1.

Hamilton, J.L., and Owens, W.G. 1972, Geologic aspects, soils and related foundation problems, Denver metropolitan area, Colorado: Colorado Geol. Survey Environmental Geol. Rept. 1, pl. 1.

Chase, G.H., and McConaghy, J.A., 1972, Generalized surficial geologic map of the Denver area, Colorado: U.S. Geol. Survey Misc. Geol. Inv. Map I-731.

Smith R.O., Schneider, P.A., Jr. and Petri, L.R., 1964, Ground-water resources in the South Platte River basin in western Adams and southwestern Weld Counties, Colorado: U.S. Geol. Survey Water-Supply Paper 1658, pl. 1.

Trimble, D.E., and Fitch, H.R., 1974, Map showing potential sources of gravel and crushed-rock aggregate in the Greater Denver Area, Front Range Urban Corridor, Colo.: U. S. Geol. Survey Misc. Geol. Inv. Map I-856-A.

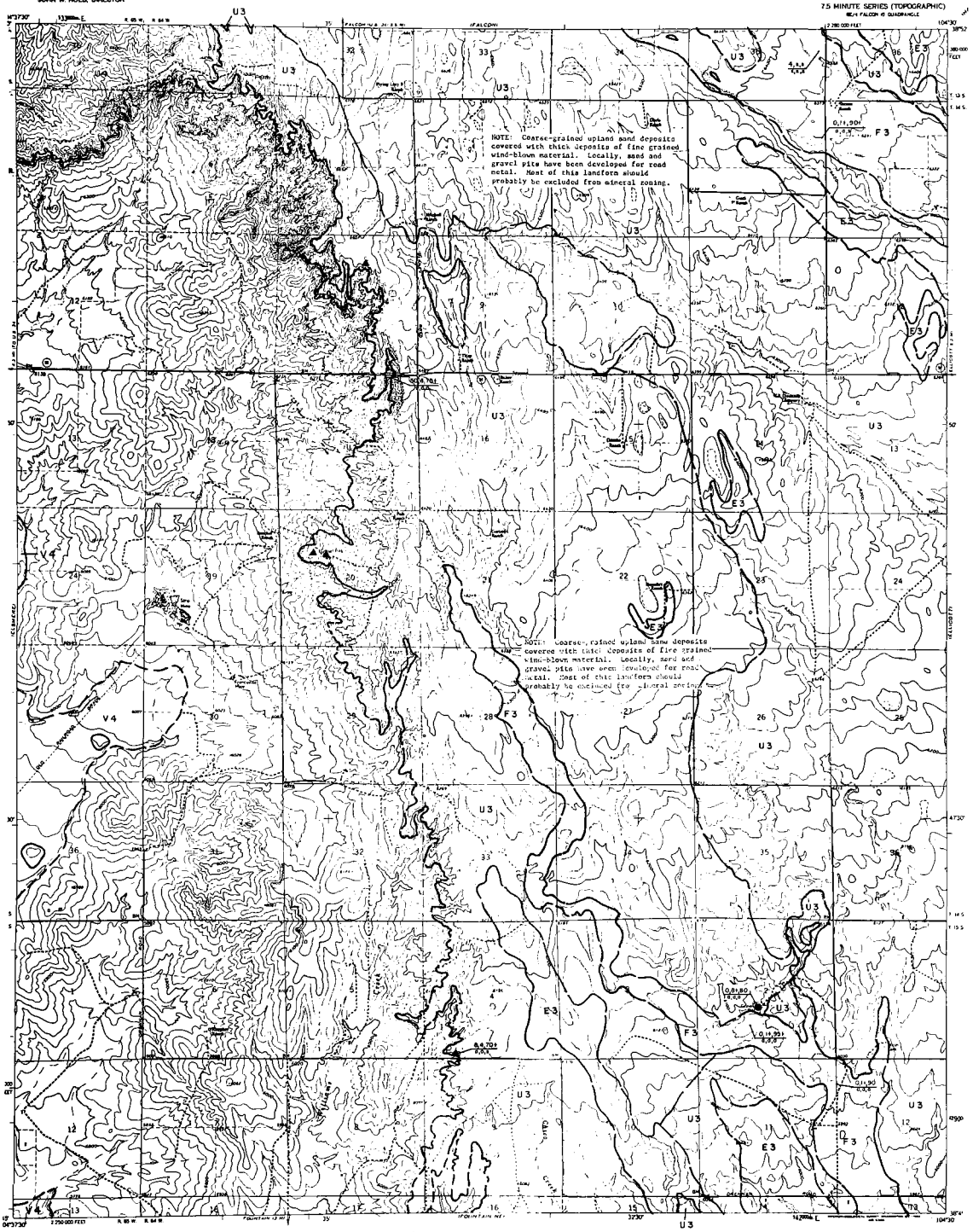
Prepared in cooperation with the U. S. Geological Survey.

Mapped by: Stephen D. Schwochow
Date: June 30, 1974

SAND, GRAVEL AND QUARRY AGGREGATE RESOURCES MAP

DEPARTMENT OF NATURAL RESOURCES
COLORADO GEOLOGICAL SURVEY
JOHN W. ROLD, DIRECTOR

CORRAL BLUFFS QUADRANGLE
COLORADO - EL PASO CO
7.5 MINUTE SERIES (TOPOGRAPHIC)
MEAN FALCON 15 QUADRANGLE



EXPLANATION

Landform unit
Resource classification

LANDFORM UNITS

- F Floodplain deposit
- T Stream terrace deposit
- V Valley fill (F & T)
- U Upland deposits
- A Alluvial fan
- E Wind-deposited sand (eolian)
- M Man-made deposits (slag, tailings, spoils...)

RESOURCE CLASSIFICATION

Coarse Aggregate
(at least 50% retained on #4 screen, visual estimation)

1 Gravel: relatively clean and sound

2 Gravel: significant fines, decomposed rock, calcium carbonate.

Fine Aggregate
(greater than 50% passing #4 screen, 50% retained on #200 screen, visual estimation)

3 Sand

Unevaluated Resource

4 Probable aggregate resource

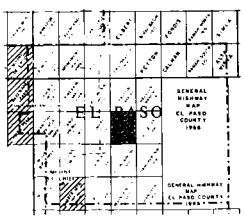
MAP SYMBOLS

- Operating gravel and/or sand pit
- Abandoned gravel and/or sand pit
- Operating stone quarry
- Abandoned stone quarry
- Potential quarry aggregate resource area
- Selected well or drill-hole location with overburden thickness (ft) over sand/gravel resource thickness (ft), obtained from well logs. "g" indicates gravel, "s" indicates sand. "x" in symbol denotes unevaluated or unknown property.
- "mp" denotes Colorado Geological Survey Windsor/Sand and Gravel projects' drill hole
- Landform boundary, solid where known or observed; dashed where approximate or inferred.

STATION, LOCATION AND GEOLOGICAL DESCRIPTION OF DEPOSIT

- overburden thickness (ft)
- sand/gravel resource thickness (ft)
- percent sand and fines (passing #4 screen, 0.25 in.), visual estimation
- significant amount of fines (passing #200 screen, 0.0029 in. or 0.074 mm.)
- significant amount of decomposed or weak rock.
- significant amount of calcium carbonate (caliche)

"x" in symbol denotes unevaluated or unknown property.
"o" in symbol denotes property absent or insignificant



QUADRANGLE LOCATION

NON-RESOURCE OR WITHDRAWN AREA

Geology modified after Scheiner, P. E., 1968, U. S. Geological Survey, Map GQ-783.

Mapped by: Phillip C. Wicklein
Date: June 30, 1974

Base from U. S. Geological Survey
7-1/2 minute quadrangle

CONTOUR INTERVAL 20 FEET
DATUM IS MEAN SEA LEVEL

APPROXIMATE MEAN DECLINATION, 1961

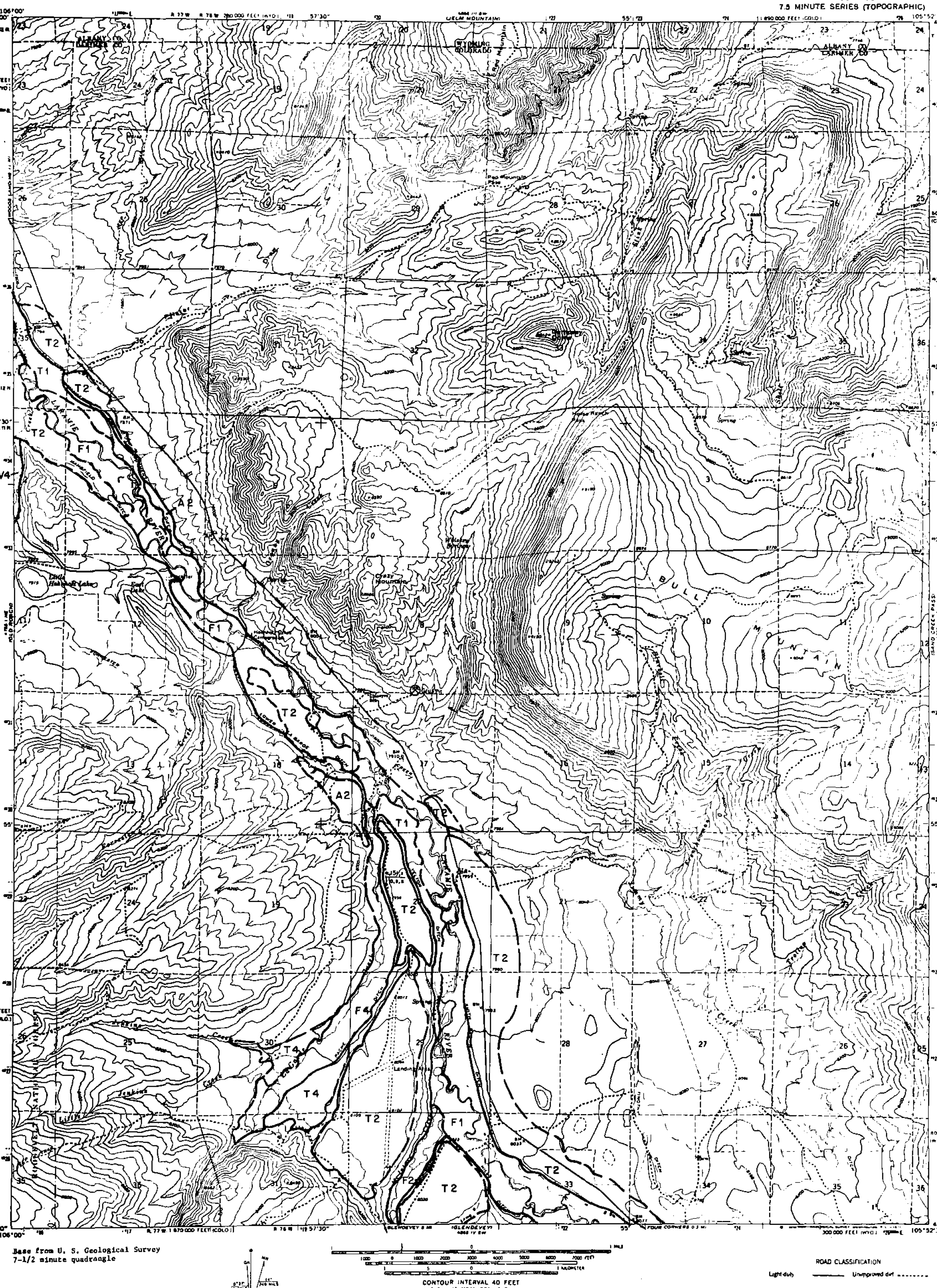
ROAD CLASSIFICATION
Medium duty
Light duty
Unimproved dirt
State Route

CORRAL BLUFFS, COLO.

DEPARTMENT OF NATURAL RESOURCES
COLORADO GEOLOGICAL SURVEY
JOHN W. ROLD, DIRECTOR

SAND, GRAVEL AND QUARRY AGGREGATE RESOURCES MAP

CRAZY MOUNTAIN QUADRANGLE
COLORADO - WYOMING
7.5 MINUTE SERIES (TOPOGRAPHIC)



EXPLANATION

F — Landform unit; Resource classification

LANDFORM UNITS

- F Floodplain deposit
- T Stream terrace deposit
- V Valley fill (F & T)
- U Upland deposits
- A Alluvial fan
- E Wind-deposited sand (eolian)
- M Man-made deposits (slag, tailings, spoils....)

RESOURCE CLASSIFICATION

Coarse Aggregate (at least 50% retained on #4 screen, visual estimation)

- 1 Gravel: relatively clean and sound
- 2 Gravel: significant fines, decomposed rock, calcium carbonate.

Fine Aggregate (greater than 70% passing #4 screen, 80% retained on #200 screen, visual estimation)

- 3 Sand

Unevaluated Resource

- 4 Probable aggregate resource

MAP SYMBOLS

- Operating gravel and/or sand pit
- Abandoned gravel and/or sand pit
- Operating stone quarry
- Abandoned stone quarry
- Potential quarry aggregate resource area
- Selected well or drill-hole location with overburden thickness (ft) over sand/gravel resource thickness (ft), obtained from well logs.
  - "g" indicates gravel; "s" indicates sand
  - "?" in symbol denotes unevaluated or unknown property.
  - "wa" denotes Colorado Geological Survey Windsor/Sand and Gravel projects' drill hole
- Landform boundary, solid where known or observed; dashed where approximate or inferred.

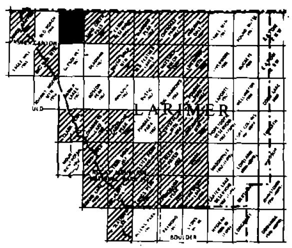
STATION, LOCATION AND GEOLOGICAL DESCRIPTION OF DEPOSIT

5, 17, 40

- overburden thickness (ft)
- sand/gravel resource thickness (ft)
- percent sand and fines (passing #4 screen, 0.25 (in.), visual estimation
- significant amount of fines (passing #200 screen, 0.0059 in. or 0.074 mm.)
- significant amount of decomposed or weak rock.
- significant amount of calcium carbonate (caliche)

"?" in symbol denotes unevaluated or unknown property

"a" in symbol denotes property absent or insignificant



QUADRANGLE LOCATION

NON-RESOURCE OR WITHDRAWN AREA

Base from U. S. Geological Survey
7-1/2 minute quadrangle

CONTOUR INTERVAL 40 FEET
DATUM IS MEAN SEA LEVEL

ROAD CLASSIFICATION
Light duty ——— Unimproved dirt ....

Mapped by: Stephen D. Schwochow
Date: June 30, 1974

CRAZY MOUNTAIN, COLO. - WYO.

DEPARTMENT OF NATURAL RESOURCES
COLORADO GEOLOGICAL SURVEY
JOHN W. ROLD, DIRECTOR

SAND, GRAVEL AND QUARRY AGGREGATE RESOURCES MAP

DAKAN MOUNTAIN QUADRANGLE
COLORADO
7.5 MINUTE SERIES (TOPOGRAPHIC)

EXPLANATION

Landform unit
Resource classification

LANDFORM UNITS

- F Floodplain deposit
- T Stream terrace deposit
- V Valley fill (F & T)
- U Upland deposits
- A Alluvial fan
- E Wind-deposited sand (eolian)
- M Man-made deposits (slag,tailings, spoils....)

RESOURCE CLASSIFICATION

Coarse Aggregate
(at least 75% retained on #4 screen, visual estimation)

- 1 Gravel: relatively clean and sound
- 2 Gravel: significant fines, decomposed rock, calcium carbonate.

Fine Aggregate
(greater than 70% passing #4 screen, 60% retained on #200 screen, visual estimation

- 3 Sand

Unevaluated Resource

- 4 Probable aggregate resource

MAP SYMBOLS*

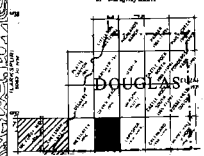
- Operating gravel and/or sand pit
- Abandoned gravel and/or sand pit
- Operating stone quarry
- Abandoned stone quarry
- Potential quarry aggregate resource area
- Selected well or drill-hole location with overburden thickness (ft) over sand/gravel resource thickness (ft), obtained from well logs.
  - "g" indicates gravel; "s" indicates sand
  - "-" in symbol denotes unevaluated or unknown property.
  - "ws" denotes Colorado Geological Survey Windsor/Sand and Gravel projects' drill hole
- Landform boundary, solid where known or observed; dashed where approximate or inferred.

STATION, LOCATION AND GEOLOGICAL DESCRIPTION OF DEPOSIT

- overburden thickness (ft)
- sand/gravel resource thickness (ft)
- percent sand and fines (passing #4 screen, 0.33 in.), visual estimation
- significant amount of fines (passing #200 screen, 0.0088 in. or 0.074 mm.)
- significant amount of decomposed or weak rock.
- significant amount of calcium carbonate (calic.

"s" in symbol denotes unevaluated or unknown property

"-" in symbol denotes property absent or insignificant



QUADRANGLE LOCATION

NON-RESOURCE OR WITHDRAWN AREA

Geology Modified after:
Harms, J.C., 1951, Structural geology of the eastern flank of the southern Front Range, Colorado: University of Colorado Ph.D. Thesis, 121 p., 3 pls.

Mapped by: Phillip C. Wicklein
Date: June 30, 1974

Base from U. S. Geological Survey
7-1/2 minute quadrangle

CONTOUR INTERVAL 40 FEET
DATUM IS MEAN SEA LEVEL

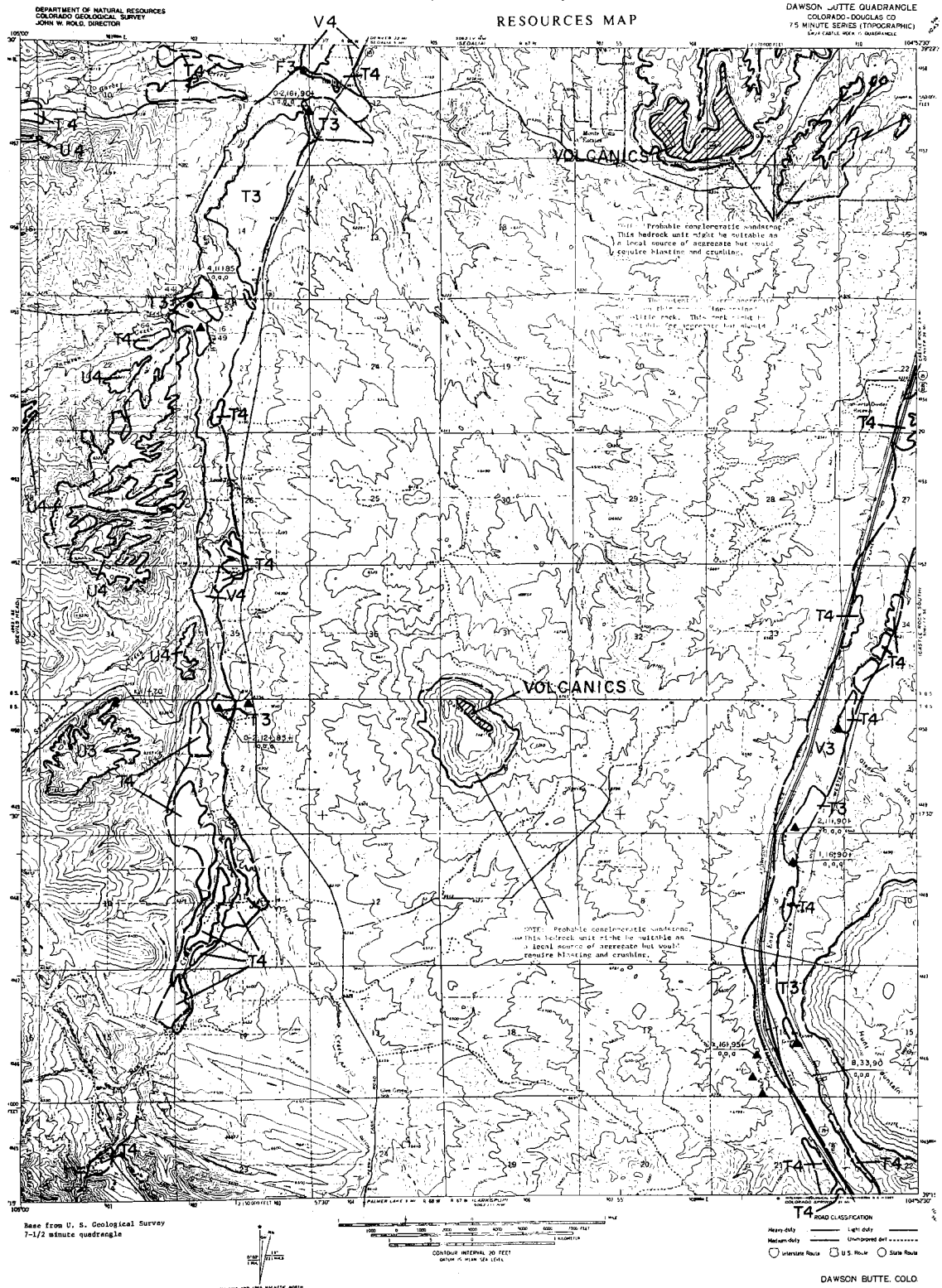
ROAD CLASSIFICATION
Medium duty
Light duty
Unimproved dirt

DAKAN MOUNTAIN, COLO.

SAND, GRAVEL AND QUARRY AGGREGATE RESOURCES MAP

DEPARTMENT OF NATURAL RESOURCES
COLORADO GEOLOGICAL SURVEY
JOHN W. ROLD, DIRECTOR

DAWSON BUTTE QUADRANGLE
COLORADO - DOUGLAS CO
7.5 MINUTE SERIES (TOPOGRAPHIC)



EXPLANATION

Landform unit
Resource classification

LANDFORM UNITS

- F Floodplain deposit
- T Stream terrace deposit
- V Valley fill (P & T)
- U Upland deposits
- A Alluvial fan
- E Wind-deposited sand (eolian)
- M Man-made deposits (slag, tailings, spoils....)

RESOURCE CLASSIFICATION

Coarse Aggregate
(at least 20% retained on #4 screen, visual estimation)

- 1 Gravel: relatively clean and sound
- 2 Gravel: significant fines, decomposed rock, calcium carbonate.

Fine Aggregate
(greater than 7% passing #4 screen, 7% retained on #200 screen, visual estimation)

- 3 Sand

Unevaluated Resource

- 4 Probable aggregate resource

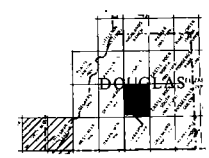
MAP SYMBOLS

- Operating gravel and/or sand pit
- Abandoned gravel and/or sand pit
- Operating stone quarry
- Abandoned stone quarry
- Potential quarry aggregate resource area
- Selected well or drill-hole location with overburden thickness (ft) over sand/gravel resource thickness (ft), obtained from well logs. "g" indicates gravel; "s" indicates sand. "-" in symbol denotes unevaluated or unknown property.
- "ms" denotes Colorado Geological Survey Windsor/Sand and Gravel projects' drill hole
- Landform boundary, solid where known or observed; dashed where approximate or inferred.

STATION LOCATION AND GEOLOGICAL DESCRIPTION OF DEPOSIT

- overburden thickness (ft)
- sand/gravel resource thickness (ft)
- percent sand and fines (passing #4 screen, 0.25 in.), visual estimation
- significant amount of fines (passing #200 screen, 0.0058 in. or 0.074 mm.)
- significant amount of decomposed or weak rock.
- significant amount of calcium carbonate (caliche)

"g" in symbol denotes unevaluated or unknown property
"-" in symbol denotes property absent or insignificant



QUADRANGLE LOCATION

NON-RESOURCE OR WITHDRAWN AREA

Geology Modified after:
Trimble, D.E., and Pitch, H.R., 1974, Map showing potential sources of gravel and crushed-rock aggregate in the Colorado Springs-Castle Rock Area, Front Range Urban Corridor, Colorado: U.S. Geol. Survey Map I-857-A.

Reference:
Chase, G.H., and McConaghy, J.A., 1972, Generalized surficial geologic map of the Denver area, Colorado: U.S. Geol. Survey Misc. Geol. Inv. Map I-731.

Mapped by: Ralph R. Shroba
Date: June 30, 1974

Prepared in cooperation with the U. S. Geological Survey.

Base from U. S. Geological Survey
7-1/2 minute quadrangle

CONTOUR INTERVAL 20 FEET

ROAD CLASSIFICATION

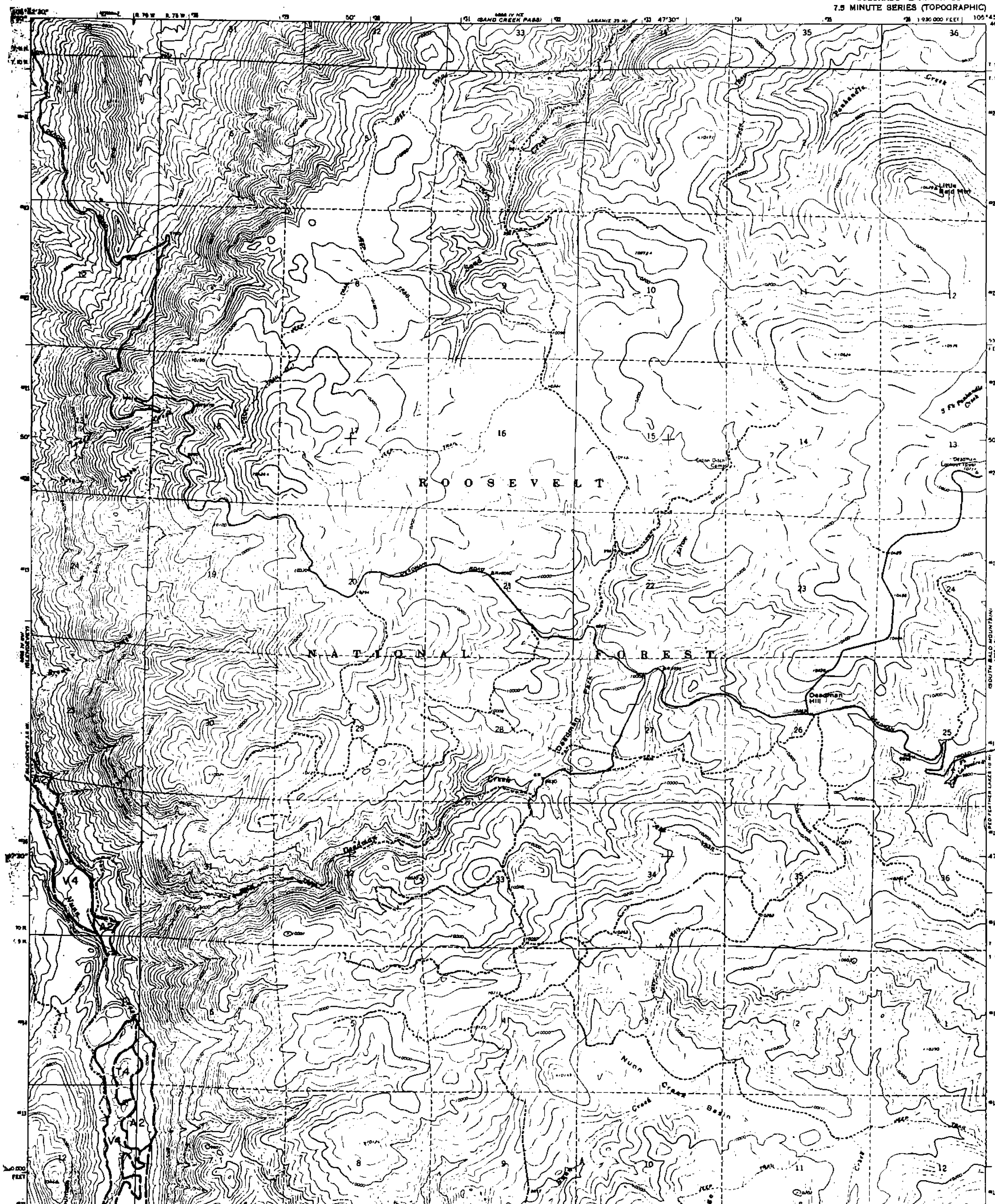
Heavy-duty — Light duty —
Medium-duty — Unimproved dirt - - - - -
Interstate Route — U.S. Route — State Route

DAWSON BUTTE, COLO.

DEPARTMENT OF NATURAL RESOURCES
COLORADO GEOLOGICAL SURVEY
JOHN W. ROLD, DIRECTOR

SAND, GRAVEL AND QUARRY AGGREGATE RESOURCES MAP

DEADMAN QUADRANGLE
COLORADO-LARIMER CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)



Base from U. S. Geological Survey
7-1/2 minute quadrangle

CONTOUR INTERVAL 40 FEET
DOTTED LINES REPRESENT 20-FOOT CONTOURS
DATUM IS MEAN SEA LEVEL

ROAD CLASSIFICATION
Light-duty ________ Unimproved dirt ________

DEADMAN, COLO.

EXPLANATION

F — Landform unit; Resource classification

LANDFORM UNITS

F Floodplain deposit
T Stream terrace deposit
V Valley fill (F & T)

U Upland deposits
A Alluvial fan
E Wind-deposited sand (eolian)
M Man-made deposits (slag, tailings, spoils....)

RESOURCE CLASSIFICATION

Coarse Aggregate
(at least 30% retained on #4 screen, visual estimation)

1 Gravel: relatively clean and sound
2 Gravel: significant fines, decomposed rock, calcium carbonate.

Fine Aggregate
(greater than 70% passing #4 screen, 60% retained on #200 screen, visual estimation)

3 Sand

Unevaluated Resource

4 Probable aggregate resource

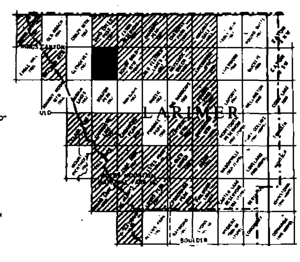
MAP SYMBOLS

● Operating gravel and/or sand pit
▲ Abandoned gravel and/or sand pit
Operating stone quarry
Abandoned stone quarry
Potential quarry aggregate resource area
Selected well or drill-hole location with overburden thickness (ft) over sand/gravel resource thickness (ft), obtained from well logs.
"g" indicates gravel; "s" indicates sand
"x" in symbol denotes unevaluated or unknown property.
"ws" denotes Colorado Geological Survey Windsor/Sand and Gravel projects' drill hole
Landform boundary, solid where known or observed; dashed where approximate or inferred.

STATION, LOCATION AND GEOLOGICAL DESCRIPTION OF DEPOSIT

3, 17, 40
- overburden thickness (ft)
- sand/gravel resource thickness (ft)
- percent sand and fines (passing #4 screen, 0.83 in.), visual estimation
- significant amount of fines (passing #200 screen, 0.0029 in. or 0.074 mm.)
- significant amount of decomposed or weak rock.
- significant amount of calcium carbonate (caliche)

"x" in symbol denotes unevaluated or unknown property
"o" in symbol denotes property absent or insignificant



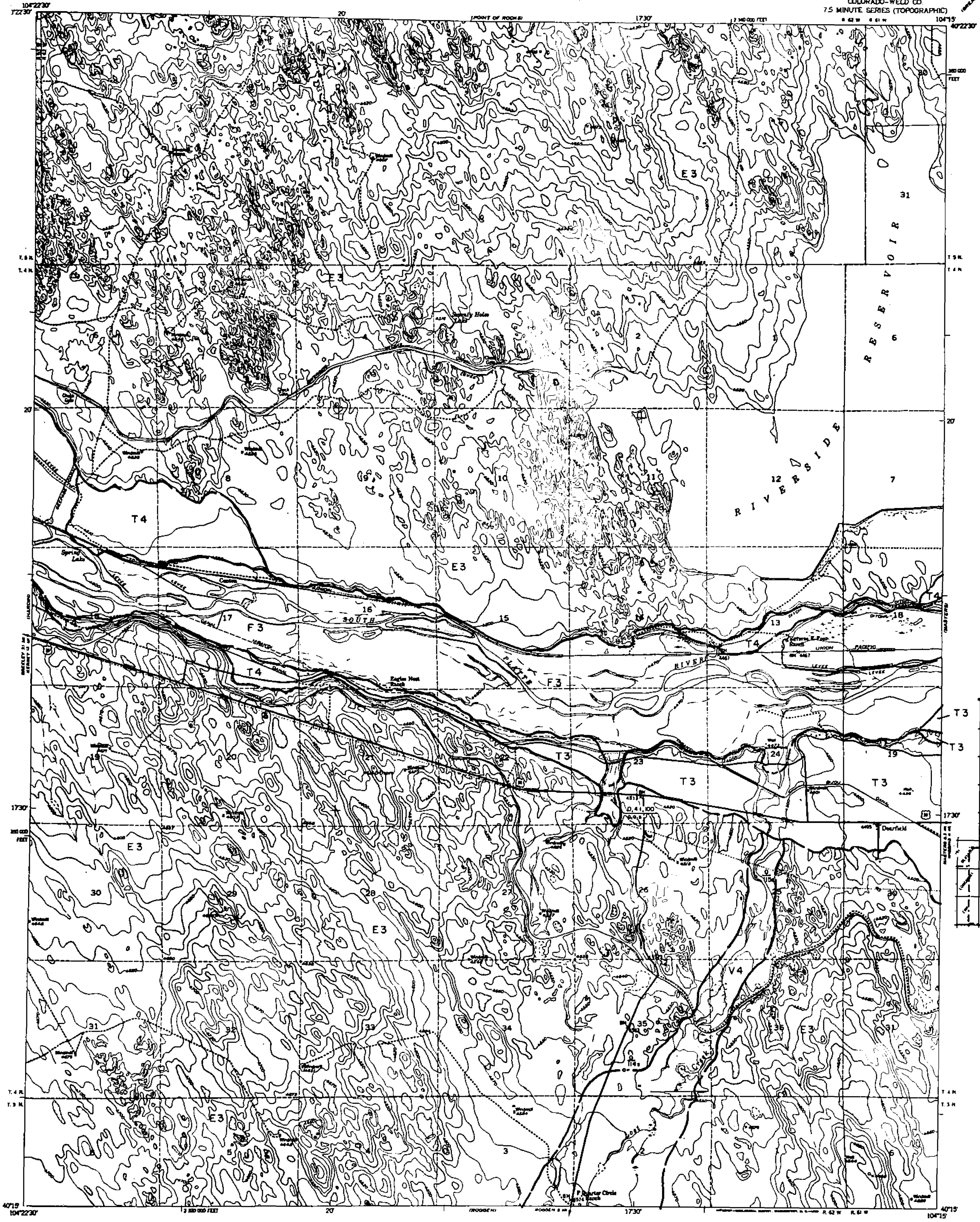
QUADRANGLE LOCATION
NON-RESOURCE OR WITHDRAWN AREA

Mapped by: Stephen D. Schwochow
Date: June 30, 1974

DEPARTMENT OF NATURAL RESOURCES
COLORADO GEOLOGICAL SURVEY
JOHN W. ROLD, DIRECTOR

SAND, GRAVEL AND QUARRY AGGREGATE RESOURCES MAP

DEARFIELD QUADRANGLE
COLORADO-WELD CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)



EXPLANATION

F — Landform unit; Resource classification

LANDFORM UNITS

F Floodplain deposit
T Stream terrace deposit
V Valley fill (F & T)
U Upland deposits
A Alluvial fan
E Wind-deposited sand (eolian)
M Man-made deposits (slag, tailings, spoils....)

RESOURCE CLASSIFICATION

Coarse Aggregate
(at least 50% retained on #4 screen, visual estimation)

1 Gravel: relatively clean and sound
2 Gravel: significant fines, decomposed rock, calcium carbonate.

Fine Aggregate
(greater than 70% passing #4 screen, 85% retained on #200 screen, visual estimation)

Sand

Unevaluated Resource

4 Probable aggregate resource

MAP SYMBOLS

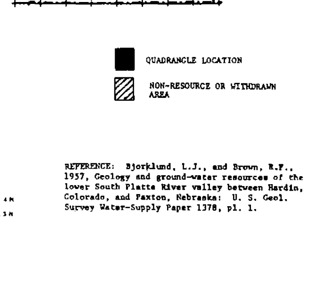
- Operating gravel and/or sand pit
- Abandoned gravel and/or sand pit
- Operating stone quarry
- Abandoned stone quarry
- Potential quarry aggregate resource area
- Selected well or drill-hole location with overburden thickness (ft) over sand/gravel resource thickness (ft), obtained from well logs.
  - "g" indicates gravel; "s" indicates sand
  - "x" in symbol denotes unevaluated or unknown property.
  - "WS" denotes Colorado Geological Survey Windsor/Sand and Gravel projects' drill hole
- Landform boundary, solid where known or observed; dashed where approximate or inferred.

STATION, LOCATION AND GEOLOGICAL DESCRIPTION OF DEPOSIT

5, 17, 40
- overburden thickness (ft)
- sand/gravel resource thickness (ft)
- percent sand and fines (passing #4 screen, 0.35 in.), visual estimation
- significant amount of fines (passing #200 screen, 0.0018 in. or 0.074 mm.)
- significant amount of decomposed or weak rock.
- significant amount of calcium carbonate (caliche)

"x" in symbol denotes unevaluated or unknown property

"o" in symbol denotes property absent or insignificant



QUADRANGLE LOCATION

NON-RESOURCE OR WITHDRAWN AREA

REFERENCE: Bjorklund, L.J., and Brown, R.F., 1957, Geology and ground-water resources of the lower South Platte River valley between Hardin, Colorado, and Paxton, Nebraska: U. S. Geol. Survey Water-Supply Paper 1378, pl. 1.

Mapped by: Phillip C. Wicklein
Date: June 30, 1974

Base from U. S. Geological Survey
7-1/2 minute quadrangle

APPROXIMATE MEAN DECLINATION, 1961

CONTOUR INTERVAL 10 FEET
DATUM IS MEAN SEA LEVEL

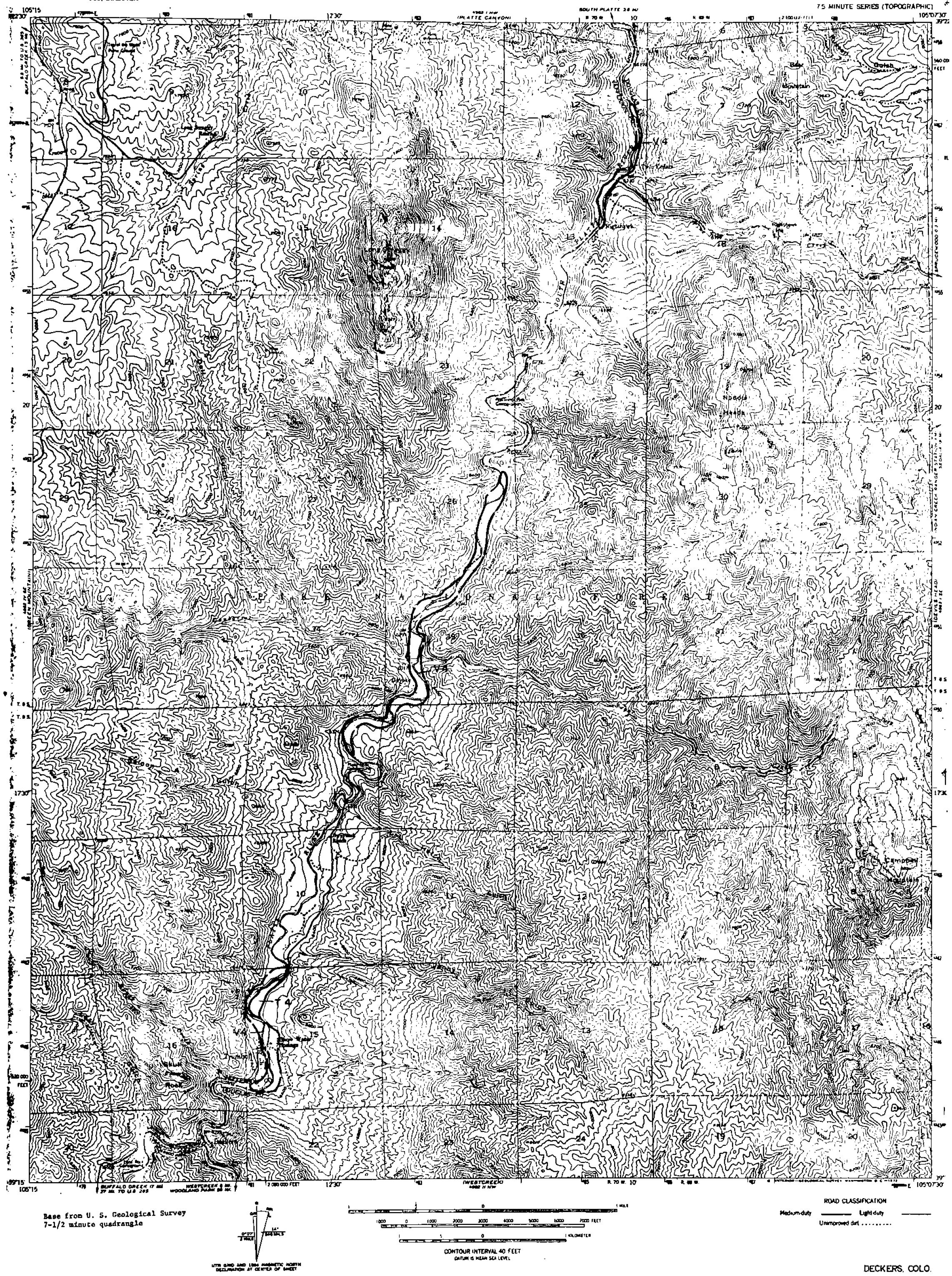
ROAD CLASSIFICATION
Heavy-duty — Light-duty
Medium-duty — Unimproved dirt
U.S. Route — State Route

DEARFIELD, COLO.

DEPARTMENT OF NATURAL RESOURCES
COLORADO GEOLOGICAL SURVEY
JOHN W. ROLD, DIRECTOR

SAND, GRAVEL AND QUARRY AGGREGATE RESOURCES MAP

DECKERS QUADRANGLE
COLORADO
7.5 MINUTE SERIES (TOPOGRAPHIC)



Base from U. S. Geological Survey
7-1/2 minute quadrangle

DECKERS, COLO.

EXPLANATION

F — Landform unit; 1 — Resource classification

LANDFORM UNITS

- F Floodplain deposit
- T Stream terrace deposit
- V Valley fill (F & T)
- U Upland deposits
- A Alluvial fan
- E Wind-deposited sand (eolian)
- M Man-made deposits (slag, tailings, spoils....)

RESOURCE CLASSIFICATION

Coarse Aggregate
(at least 30% retained on #4 screen, visual estimation)

- 1 Gravel: relatively clean and sound
- 2 Gravel: significant fines, decomposed rock, calcium carbonate.

Fine Aggregate
(greater than 70% passing #4 screen, 80% retained on #200 screen, visual estimation)

- 3 Sand

Unevaluated Resource

- 4 Probable aggregate resource

MAP SYMBOLS

- Operating gravel and/or sand pit
- Abandoned gravel and/or sand pit
- Operating stone quarry
- Abandoned stone quarry
- Potential quarry aggregate resource area
- Selected well or drill-hole location with overburden thickness (ft) over sand/gravel resource thickness (ft), obtained from well logs.
  "g" indicates gravel; "s" indicates sand
  "x" in symbol denotes unevaluated or unknown property.
  "wg" denotes Colorado Geological Survey Windsor/Sand and Gravel projects' drill hole
- Landform boundary, solid where known or observed; dashed where approximate or inferred.

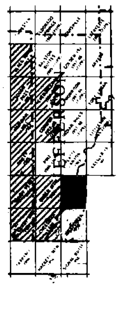
STATION, LOCATION AND GEOLOGICAL DESCRIPTION OF DEPOSIT

5, 17, 40

- overburden thickness (ft)
- sand/gravel resource thickness (ft)
- percent sand and fines (passing #4 screen, 0.25 in.), visual estimation
- significant amount of fines (passing #200 screen, 0.0029 in. or 0.074 mm.)
- significant amount of decomposed or weak rock.
- significant amount of calcium carbonate (caliche)

"x" in symbol denotes unevaluated or unknown property

"o" in symbol denotes property absent



QUADRANGLE LOCATION

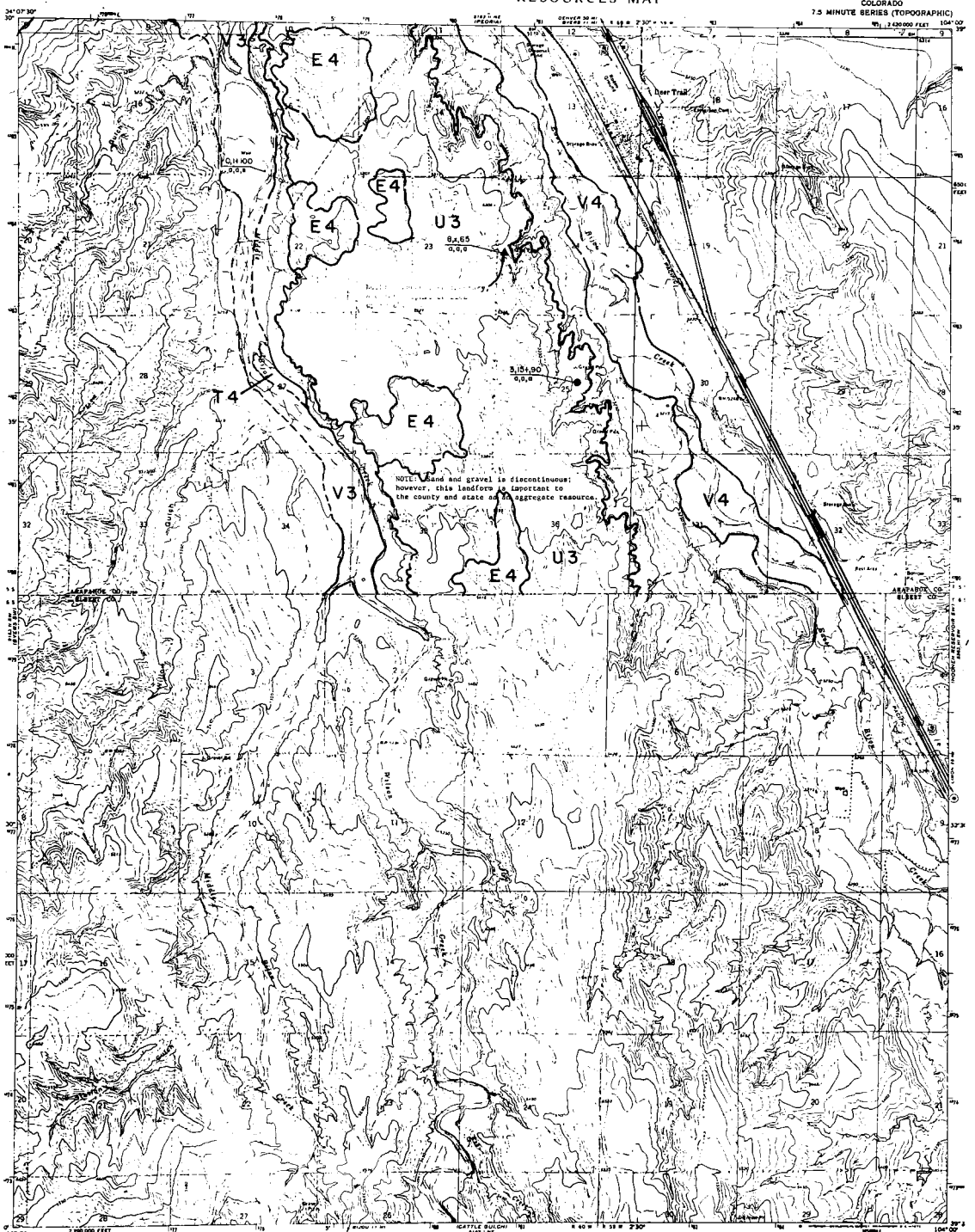
NON-RESOURCE OR WITHDRAWN AREA

Mapped by: Phillip C. Wicklein
Date: June 30, 1974

SAND, GRAVEL AND QUARRY AGGREGATE RESOURCES MAP

DEPARTMENT OF NATURAL RESOURCES
COLORADO GEOLOGICAL SURVEY
JOHN W. ROLD, DIRECTOR

DEER TRAIL QUADRANGLE
COLORADO
7.5 MINUTE SERIES (TOPOGRAPHIC)



EXPLANATION

Landform unit

Resource classification

LANDFORM UNITS

- F, Floodplain deposit
- T Stream terrace deposit
- V Valley fill (F & T)
- U Upland deposits
- A Alluvial fan
- E Wind-deposited sand (eolian)
- M Man-made deposits (slag, tailings, spoils....)

RESOURCE CLASSIFICATION

Coarse Aggregate
(at least 20% retained on #4 screen, visual estimation)

- 1 Gravel: relatively clean and sound
- 2 Gravel: significant fines, decomposed rock, calcium carbonate.

Fine Aggregate
(greater than 70% passing #4 screen, 63% retained on #200 screen, visual estimation

- 3 Sand

Unevaluated Resource

- 4 Probable aggregate resource

MAP SYMBOLS

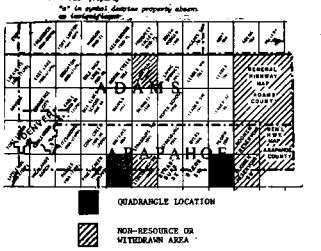
- Operating gravel and/or sand pit
- Abandoned gravel and/or sand pit
- Operating stone quarry
- Abandoned stone quarry
- Potential quarry aggregate resource area
- Selected well or drill-hole location with overburden thickness (ft) over sand/gravel resource thickness (ft), obtained from well logs.
  - "s" indicates gravel; "s" indicates sand
  - "-" in symbol denotes unevaluated or unknown property.
  - "ws" denotes Colorado Geological Survey Windsor/Sand and Gravel projects' drill hole
- Landform boundary, solid where known or observed; dashed where approximate or inferred.

STATION, LOCATION AND GEOLOGICAL DESCRIPTION OF DEPOSIT

- overburden thickness (ft)
- sand/gravel resource thickness (ft)
- percent sand and fines (passing #4 screen, 0.24 in.), visual estimation
- 17 - 40
- significant amount of fines (passing #200 screen, 0.0058 in. or 0.074 mm.)
- significant amount of decomposed or weak rock.
- significant amount of calcium carbonate (caliche)

"s" in symbol denotes unevaluated or unknown property

"s" in symbol denotes property absent or lacking/poor



Mapped by: Phillip C. Wicklein
Date: June 30, 1974

Base from U. S. Geological Survey
7-1/2 minute quadrangle

CONTOUR INTERVAL 10 FEET
DATUM IS MEAN SEA LEVEL

ROAD CLASSIFICATION

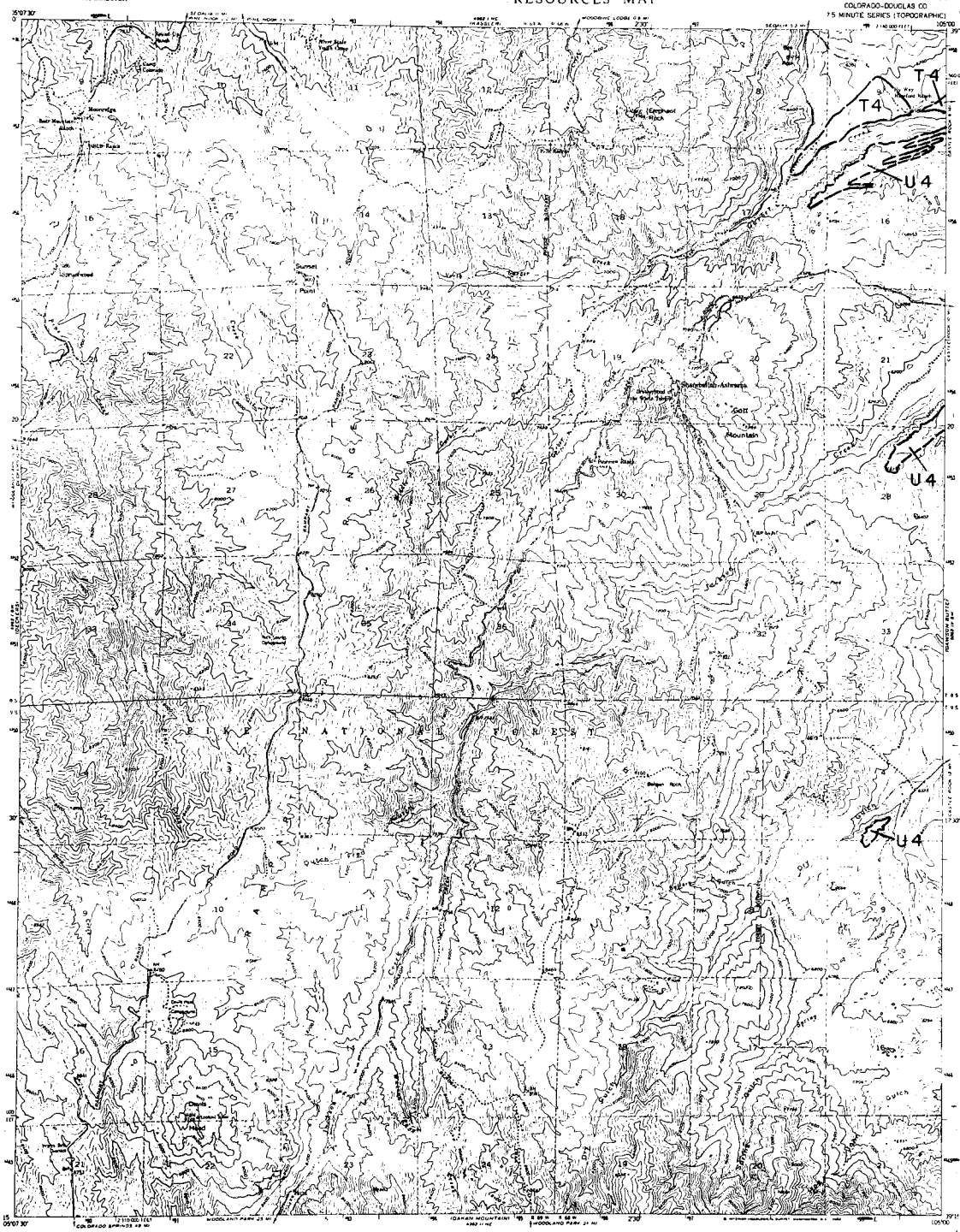
- Primary highway, hard surface
- Light duty road, hard or improved surface
- Secondary highway, hard surface
- Unimproved road
- Interstate Route
- U S Route
- State Route

DEER TRAIL, COLO.
N3930—W10400/7.5
1969

SAND, GRAVEL AND QUARRY AGGREGATE RESOURCES MAP

DEPARTMENT OF NATURAL RESOURCES
COLORADO GEOLOGICAL SURVEY
JOHN W. ROLD, DIRECTOR

DEVILS HEAD QUADRANGLE
COLORADO-DOUGLAS CO
7.5 MINUTE SERIES (TOPOGRAPHIC)



EXPLANATION

LANDFORM UNITS

- F — Floodplain deposit
- T — Stream terrace deposit
- V — Valley fill (F & T)
- U — Upland deposits
- A — Alluvial fan
- E — Wind-deposited sand (eolian)
- M — Man-made deposits (slag,tailings, spoils....)

RESOURCE CLASSIFICATION

Coarse aggregate

- 1 — Gravel: relatively clean and sound
- 2 — Gravel: significant fines, decomposed rock, calcium carbonate.

Fine aggregate

- 3 — Sand

Unevaluated Resource

- 4 — Probable aggregate resource

MAP SYMBOLS

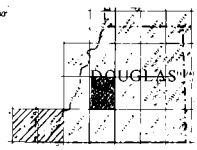
- Operating gravel and/or sand pit
- Abandoned gravel and/or sand pit
- Operating stone quarry
- Abandoned stone quarry
- Potential quarry aggregate resource area
- Selected well or drill-hole location with overburden thickness (ft) over sand/gravel resource thickness (ft), obtained from well logs. "g" indicates gravel, "s" indicates sand
- "-" in symbol denotes unevaluated or unknown property.
- "ms" denotes Colorado Geological Survey Windsor/Sand and Gravel projects' drill hole
- Landform boundary, solid where known or observed; dashed where approximate or inferred.

STATION, LOCATION AND GEOLOGICAL DESCRIPTION OF DEPOSIT

- overburden thickness (ft)
- sand/gravel resource thickness (ft)
- percent sand and fines (passing #4 screen, 0.25 in.), visual estimation
- significant amount of fines (passing #200 screen, 0.0058 in. or 0.074 mm.)
- significant amount of decomposed or weak rock.
- significant amount of calcium carbonate (caliche)

"s" in symbol denotes unevaluated or unknown property

"-" in symbol denotes property absent or insignificant



QUADRANGLE LOCATION

NON-RESOURCE OR WITHDRAWN AREA

REFERENCE:

Trimble, D.E., and Pitch, H.R., 1974, Map showing potential sources of gravel and crushed-rock aggregate in the Colorado Springs-Castle Rock Area, Front Range Urban Corridor, Colorado: U. S. Geol. Survey Map I-857 A.

Mapped by: Ralph R. Shroba
Date: June 30, 1974

Prepared in cooperation with the U. S. Geological Survey.

Base from U. S. Geological Survey
7-1/2 minute quadrangle

CONTOUR INTERVAL 40 FEET
DATUM IS MEAN SEA LEVEL

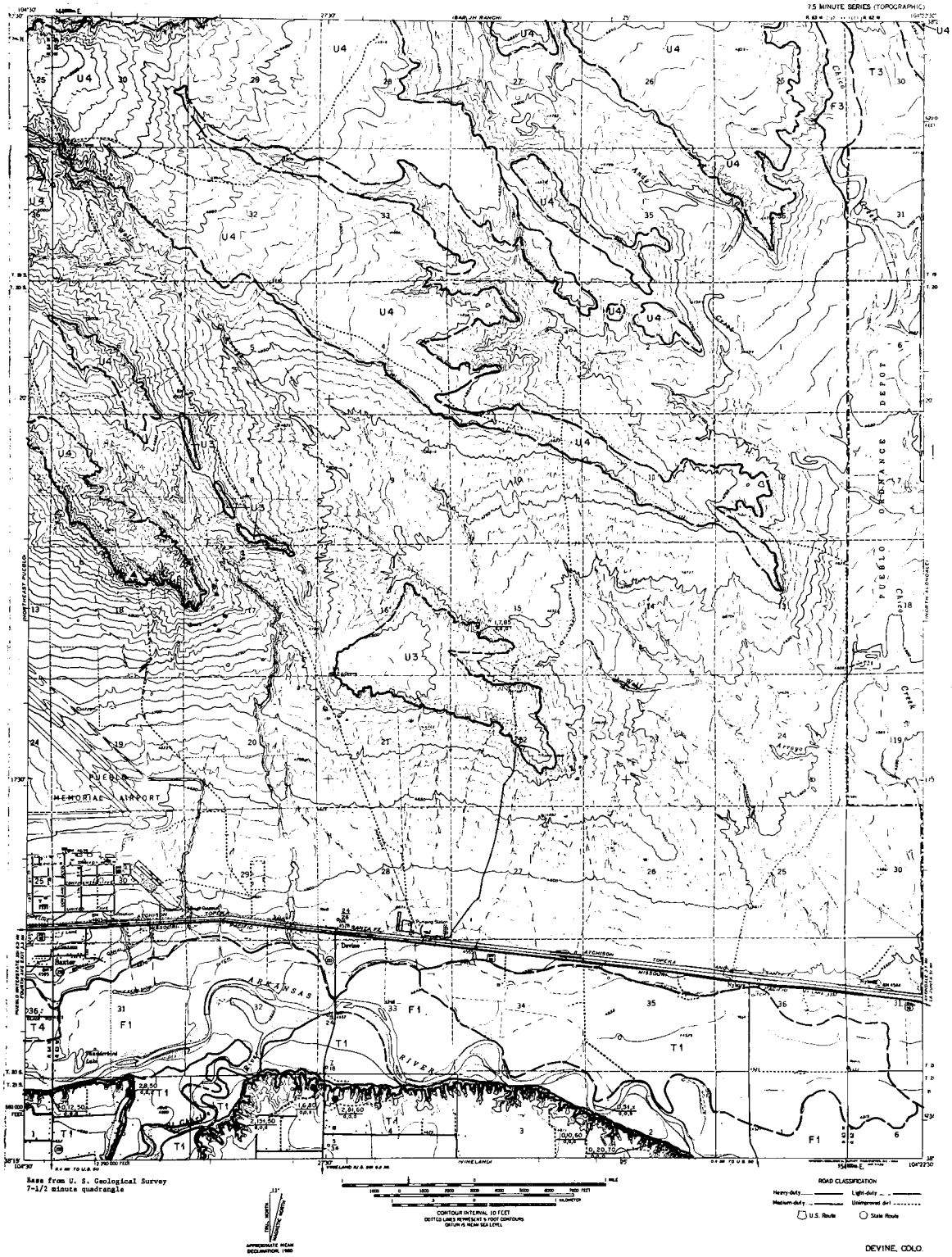
ROAD CLASSIFICATION
Light-duty ——— Unimproved dirt .....

DEVILS HEAD, COLO.

SAND, GRAVEL AND QUARRY AGGREGATE RESOURCES MAP

DEPARTMENT OF NATURAL RESOURCES
COLORADO GEOLOGICAL SURVEY
JOHN W. ROLD, DIRECTOR

DEVINE QUADRANGLE
COLORADO - PUEBLO CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)



EXPLANATION

Landform unit
Resource classification

LANDFORM UNITS

F Floodplain deposit
T Stream terrace deposit
V Valley fill (F & T)
U Upland deposits
A Alluvial fan
E Wind-deposited sand (eolian)
M Man-made deposits (slag, tailings, spoils....)

RESOURCE CLASSIFICATION

Coarse Aggregate
(at least 30% retained on #4 screen, visual estimation)

1 Gravel: relatively clean and sound
2 Gravel: significant fines, decomposed rock, calcium carbonate.

Fine Aggregate
(greater than 70% passing #4 screen, #8 retained on #200 screen, visual estimation

3 Sand

Unevaluated Resource

4 Probable aggregate resource

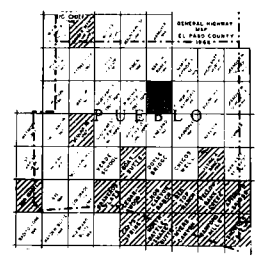
MAP SYMBOLS

- Operating gravel and/or sand pit
- Abandoned gravel and/or sand pit
- Operating stone quarry
- Abandoned stone quarry
- Potential quarry aggregate resource area
- Selected well or drill-hole location with overburden thickness (ft) over sand/gravel resource thickness (ft), obtained from well logs. "g" indicates gravel; "s" indicates sand. "-" in symbol denotes unevaluated or unknown property.
- "cm" denotes Colorado Geological Survey Windsor/Sand and Gravel projects' drill hole
- Landform boundary, solid where known or observed; dashed where approximate or inferred.

STATION, LOCATION AND GEOLOGICAL DESCRIPTION OF DEPOSIT

- overburden thickness (ft)
- sand/gravel resource thickness (ft)
- percent sand and fines (passing #4 screen, 4.25 in.), visual estimation
- significant amount of fines (passing #200 screen, 0.0058 in. or 0.074 mm.)
- significant amount of decomposed or weak rock.
- significant amount of calcium carbonate (caliche)

"n" in symbol denotes unevaluated or unknown property.
"o" in symbol denotes property absent or insignificant



QUADRANGLE LOCATION

NON-RESOURCE OR WITHDRAWN AREA

Mapped by: Stephen D. Schwochow
Date: June 30, 1974

Base from U. S. Geological Survey
7-1/2 minute quadrangle

CONTOUR INTERVAL 10 FEET
DOTTED LINES REPRESENT 5 FOOT CONTOURS
DATUM IS MEAN SEA LEVEL

ROAD CLASSIFICATION

Heavy-duty ——— Light-duty - - -
Medium-duty ——— Unimproved dirt .....
U.S. Route ○ State Route

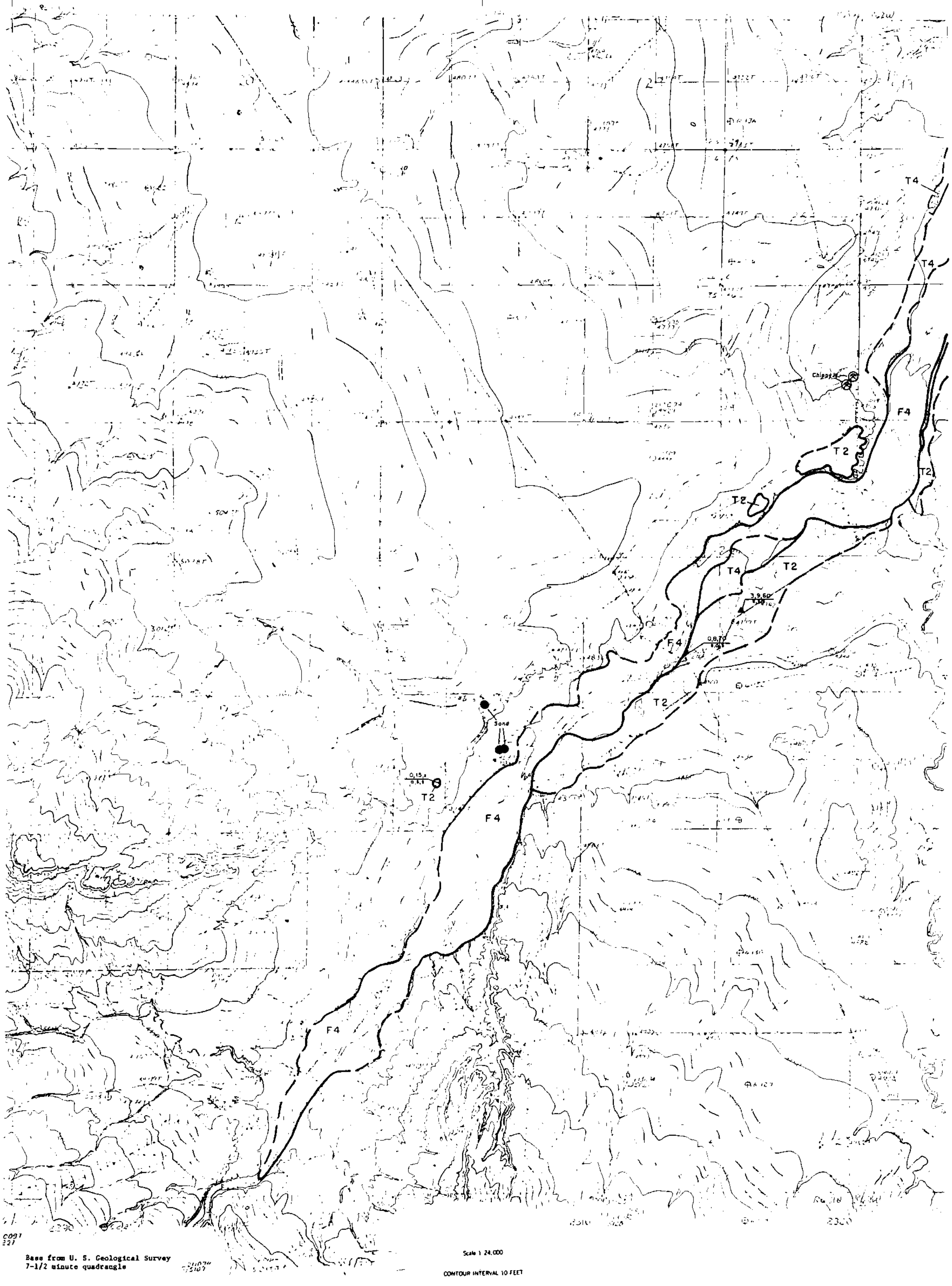
APPROXIMATE MEAN DECLINATION, 1980

DEVINE, COLO.

DEPARTMENT OF NATURAL RESOURCES
COLORADO GEOLOGICAL SURVEY
JOHN W. ROLD, DIRECTOR

SAND, GRAVEL AND QUARRY AGGREGATE RESOURCES MAP

DOYLE BRIDGE QUADRANGLE



Base from U. S. Geological Survey
7-1/2 minute quadrangle

Scale 1:24,000

CONTOUR INTERVAL 10 FEET

EXPLANATION

F1 — Landform unit; Resource classification

LANDFORM UNITS

- F Floodplain deposit
- T Stream terrace deposit
- V Valley fill (F & T)
- U Upland deposits
- A Alluvial fan
- E Wind-deposited sand (eolian)
- M Man-made deposits (slag, tailings, spoils....)

RESOURCE CLASSIFICATION

Coarse Aggregate
(at least 50% retained on #4 screen, visual estimation)

1 Gravel: relatively clean and sound

2 Gravel: significant fines, decomposed rock, calcium carbonate.

Fine Aggregate
(greater than 50% passing #4 screen, 95% retained on #200 screen, visual estimation)

3 Sand

Unevaluated Resource

4 Probable aggregate resource

MAP SYMBOLS

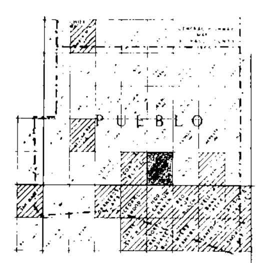
- Operating gravel and/or sand pit
- Abandoned gravel and/or sand pit
- Operating stone quarry
- Abandoned stone quarry
- Potential quarry aggregate resource area
- Selected well or drill-hole location with overburden thickness (ft) over sand/gravel resource thickness (ft), obtained from well logs
  - "g" indicates gravel, "s" indicates sand
  - "x" in symbol denotes unevaluated or unknown property.
  - "wb" denotes Colorado Geological Survey Windsor/Sand and Gravel projects' drill hole
- Landform boundary, solid where known or observed; dashed where approximate or inferred.

STATION, LOCATION AND GEOLOGICAL DESCRIPTION OF DEPOSIT

- overburden thickness (ft)
- sand/gravel resource thickness (ft)
- percent sand and fines (passing #4 screen, visual estimation)
- significant amount of fines (passing #200 screen)
- significant amount of decomposed or weak rock.
- significant amount of calcium carbonate (caliche)

"x" in symbol denotes unevaluated or unknown property

"o" in symbol denotes property absent or insignificant



QUADRANGLE LOCATION

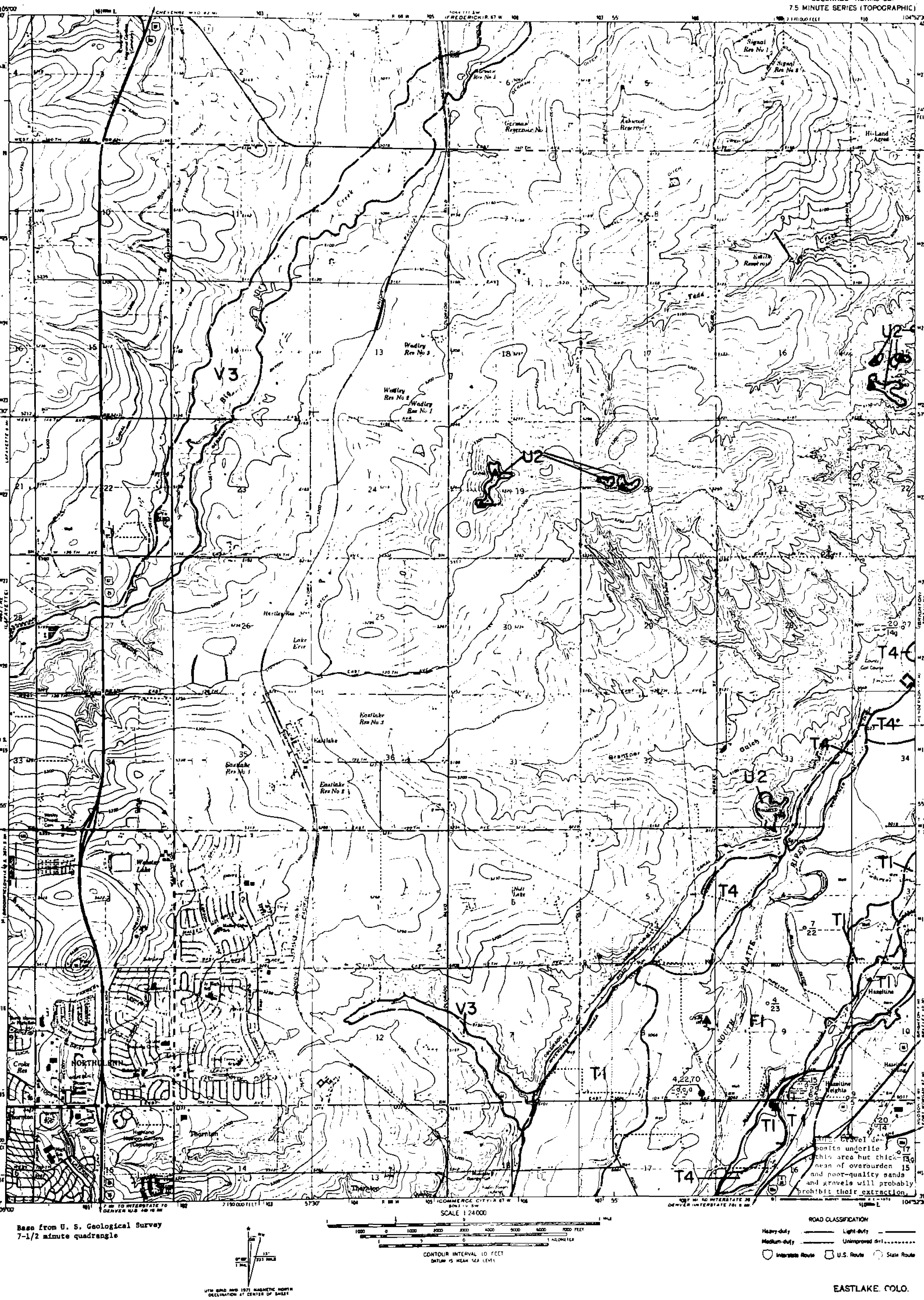
NON-RESOURCE OR WITHDRAWN AREA

Mapped by: Stephen D. Schwochow
Date: June 30, 1974

DEPARTMENT OF NATURAL RESOURCES
COLORADO GEOLOGICAL SURVEY
JOHN W. ROLD, DIRECTOR

SAND, GRAVEL AND QUARRY AGGREGATE RESOURCES MAP

EASTLAKE QUADRANGLE
COLORADO - ADAMS CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)



Base from U. S. Geological Survey
7-1/2 minute quadrangle

EASTLAKE, COLO.

EXPLANATION

F1 — Landform unit; Resource classification

LANDFORM UNITS

- F Floodplain deposit
- T Stream terrace deposit
- V Valley fill (F & T)
- U Upland deposits
- A Alluvial fan
- E Wind-deposited sand (eolian)
- M Man-made deposits (slag, tailings, spoils....)

RESOURCE CLASSIFICATION

Coarse Aggregate
(at least 2/3 retained on #4 screen, visual estimation)

- 1 Gravel: relatively clean and sound
- 2 Gravel: significant fines, decomposed rock calcium carbonate.

Fine Aggregate
(greater than 1/3 passing #4 screen, 85% retained on #200 screen, visual estimate)

- 3 Sand

Unevaluated Resource

- 4 Probable aggregate resource

MAP SYMBOLS

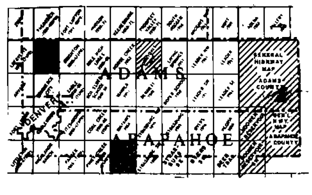
- Operating gravel and/or sand pit
- Abandoned gravel and/or sand pit
- Operating stone quarry
- Abandoned stone quarry
- Potential quarry aggregate resource area
- Selected well or drill-hole location with overburden thickness (ft) over sand/gravel resource thickness (ft), obtained from well logs. "g" indicates gravel; "s" indicates sand. "?" in symbol denotes unevaluated or unknown property.
- "wo" denotes Colorado Geological Survey Windsor/Sand and Gravel projects' drill hole
- Landform boundary, solid where known or observed; dashed where approximate or inferred.

STATION, LOCATION AND GEOLOGICAL DESCRIPTION OF DEPOSIT

5, 17, 40
- overburden thickness (ft)
- sand/gravel resource thickness (ft)
- percent sand and fines (passing #4 screen, 0.25 in.), visual estimation
- significant amount of fines (passing #200 screen, 0.0059 in. or 0.074 mm.)
- significant amount of decomposed or weak rock.
- significant amount of calcium carbonate (caliche)

"?" in symbol denotes unevaluated or unknown property

"o" in symbol denotes property absent or insignificant



QUADRANGLE LOCATION

NON-RESOURCE OR WITHDRAWN AREA

References:

Schwochow, S.D., 1972, Surficial geology of the Eastlake quadrangle, Adams County, Colorado: Colorado School Mines Unpub. Master Sci. Thesis T-1465, pl. 2.

De Voto, R.H., 1968, Quaternary history of Rocky Mountain Arsenal and environs, Adams County, Colorado: Colorado School Mines Quart., v. 63, no. 1, pl. 1.

Hamilton, J.L., and Owens, W.G., 1972, Geologic aspects, soils and related foundation problems, Denver metropolitan area, Colorado: Colorado Geol. Survey Environmental Geology Rept. 1, pl. 1.

Inter-County Regional Planning Commission, 1961, Drainage course plan for the Denver region - Part 1, Sand and gravel resources: Denver, Colo., Inter-County Reg. Plan. Comm., pl. 1.

Chase, G.H., and McConaghy, J.A., 1972, Generalized surficial geologic map of the Denver area, Colorado: U.S. Geol. Survey Misc. Geol. Inv. Map I-731.

Smith, R.O., Schneider, P.A., Jr., and Petri, L.R., 1964, Ground-water resources of the South Platte River basin in western Adams and southwestern Weld Counties, Colorado: U.S. Geol. Survey Water-Supply Paper 1658, pl. 1.

Trimble, D.E., and Fitch, H.R., 1974, Map showing potential sources of gravel and crushed-rock aggregate in the Greater Denver Area, Front Range Urban Corridor, Colo.: U.S. Geol. Survey Misc. Geol. Inv. Map I-856-A.

Mapped by: Stephen D. Schwochow
Date: June 30, 1974

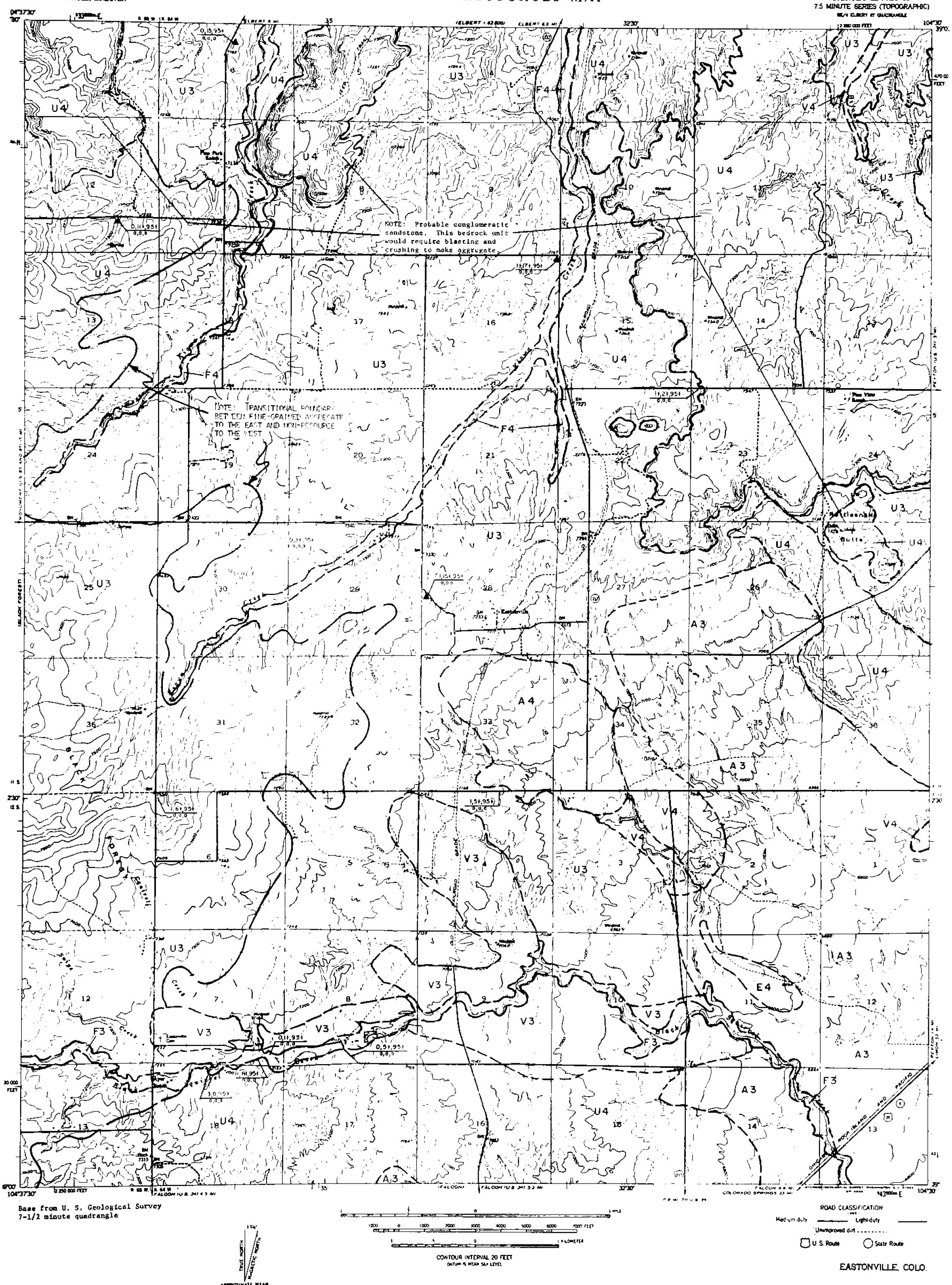
Prepared in cooperation with the U. S. Geological Survey.

SAND, GRAVEL AND QUARRY AGGREGATE

RESOURCES MAP

DEPARTMENT OF NATURAL RESOURCES
COLORADO GEOLOGICAL SURVEY
JOHN W. ROLD, DIRECTOR

EASTONVILLE QUADRANGLE
COLORADO–EL PASO CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)



Base from U. S. Geological Survey
7-1/2 minute quadrangle

CONTOUR INTERVAL 20 FEET
DATUM IS MEAN SEA LEVEL

ROAD CLASSIFICATION
Medium-duty
Light-duty
Unimproved dirt
U.S. Route
State Route

EASTONVILLE, COLO.

EXPLANATION

F1 — Landform unit; Resource classification

LANDFORM UNITS

- F Floodplain deposit
- T Stream terrace deposit
- V Valley fill (F & T)
- U Upland deposits
- A Alluvial fan
- E Wind-deposited sand (eolian)
- M Man-made deposits (slag, tailings, spoils....)

RESOURCE CLASSIFICATION

Coarse Aggregate
(at least 3/8 retained on #4 screen, visual estimation)

1 Gravel: relatively clean and sound

2 Gravel: significant fines, decomposed rock, calcium carbonate.

Fine Aggregate
(greater than 1/2 passing #4 screen, 60% retained on #200 screen, visual estimation)

3 Sand

Unevaluated Resource

4 Probable aggregate resource

MAP SYMBOLS

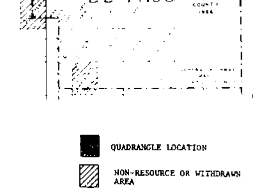
- Operating gravel and/or sand pit
- Abandoned gravel and/or sand pit
- Operating stone quarry
- Abandoned stone quarry
- Potential quarry aggregate resource area
- Selected well or drill-hole location with overburden thickness (ft) over sand/gravel resource thickness (ft), obtained from well logs. "g" indicates gravel; "s" indicates sand
- "x" in symbol denotes unevaluated or unknown property.
- "mg" denotes Colorado Geological Survey Windsor/Sand and Gravel projects' drill hole
- Landform boundary, solid where known or observed; dashed where approximate or inferred.

STATION, LOCATION AND GEOLOGICAL DESCRIPTION OF DEPOSIT

- overburden thickness (ft)
- resource thickness (ft)
- percent sand and fines (passing #4 screen, 0.25 in.), visual estimation
- significant amount of fines (passing #200 screen, 0.0030 in. or 0.074 mm.)
- significant amount of decomposed or weak rock
- significant amount of calcium carbonate (caliche)

"x" in symbol denotes unevaluated or unknown property

"o" in symbol denotes property absent or insignificant



QUADRANGLE LOCATION

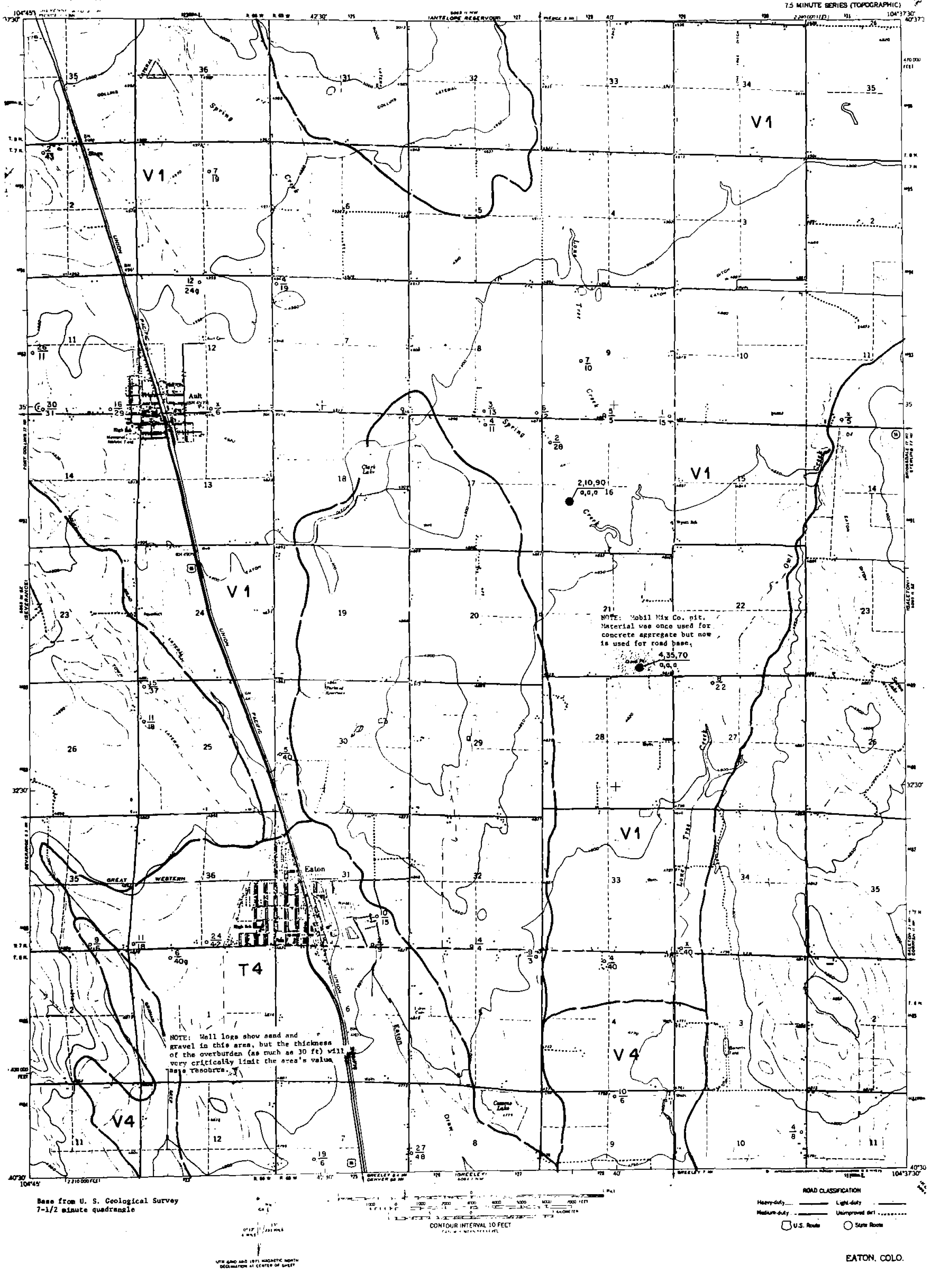
NON-RESOURCE OR WITHDRAWN AREA

Mapped by: Ralph R. Shroba
Date: June 30, 1974

SAND, GRAVEL AND QUARRY AGGREGATE RESOURCES MAP

DEPARTMENT OF NATURAL RESOURCES
COLORADO GEOLOGICAL SURVEY
JOHN W. ROLD, DIRECTOR

EATON QUADRANGLE
COLORADO-WELD CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)



Base from U. S. Geological Survey 7-1/2 minute quadrangle

EATON, COLO.

EXPLANATION

F1 — Landform unit; Resource classification

LANDFORM UNITS

- F — Floodplain deposit
- T — Stream terrace deposit
- V — Valley fill (F & T)
- U — Upland deposits
- A — Alluvial fan
- E — Wind-deposited sand (eolian)
- M — Man-made deposits (slag, tailings, spoils....)

RESOURCE CLASSIFICATION

Coarse Aggregate
(at least 50% retained on #4 screen, visual estimation)

- 1 — Gravel: relatively clean and sound
- 2 — Gravel: significant fines, decomposed rock, calcium carbonate.

Fine Aggregate
(greater than 70% passing #4 screen, 40% retained on #200 screen, visual estimation)

- 3 — Sand

Unevaluated Resource

- 4 — Probable aggregate resource

MAP SYMBOLS

- Operating gravel and/or sand pit
- Abandoned gravel and/or sand pit
- Operating stone quarry
- Abandoned stone quarry
- Potential quarry aggregate resource area
- Selected well or drill-hole location with overburden thickness (ft) over sand/gravel resource thickness (ft), obtained from well logs.
  - "g" indicates gravel; "s" indicates sand
  - "*" in symbol denotes unevaluated or unknown property.
  - "ws" denotes Colorado Geological Survey Windsor/Sand and Gravel projects' drill hole
- Landform boundary, solid where known or observed; dashed where approximate or inferred.

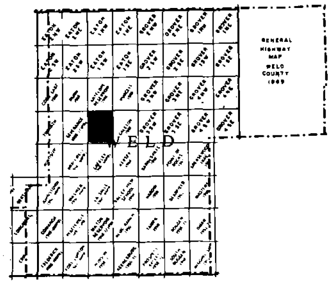
STATION, LOCATION AND GEOLOGICAL DESCRIPTION OF DEPOSIT

2, 17, 40

- overburden thickness (ft)
- sand/gravel resource thickness (ft)
- percent sand and fines (passing #4 screen, 0.25 in.), visual estimation
- significant amount of fines (passing #200 screen, 0.0018 in. or 0.074 mm.)
- significant amount of decomposed or weak rock.
- significant amount of calcium carbonate (caliche)

"*" in symbol denotes unevaluated or unknown property

"o" in symbol denotes property absent or insignificant



QUADRANGLE LOCATION

NON-RESOURCE OR WITHDRAWN AREA

REFERENCE:

Hershey, L.A., and Schneider, P.A., Jr., 1972, Geologic map of the lower Cache La Poudre River basin, north-central Colorado: U. S. Geol. Survey Misc. Geol. Inv. Map I-687.

Swan, R. H., III, 1972, Map of surficial geology of part of the Eaton quadrangle: Reconn. mapping for Colorado Geol. Survey Windsor Environmental Geology Project, open-file map.

Shelton, D.C., 1974, personal communication.

Geology modified after: Colton, R.B., and Fitch, H.R., 1974, Map showing potential sources of gravel and crushed-rock aggregate in the Boulder-Fort Collins-Greeley Area, Front Range Urban Corridor, Colorado: U. S. Geol. Survey Map I-855-D.

Mapped by: Stephen D. Schwochow
Date: June 30, 1974

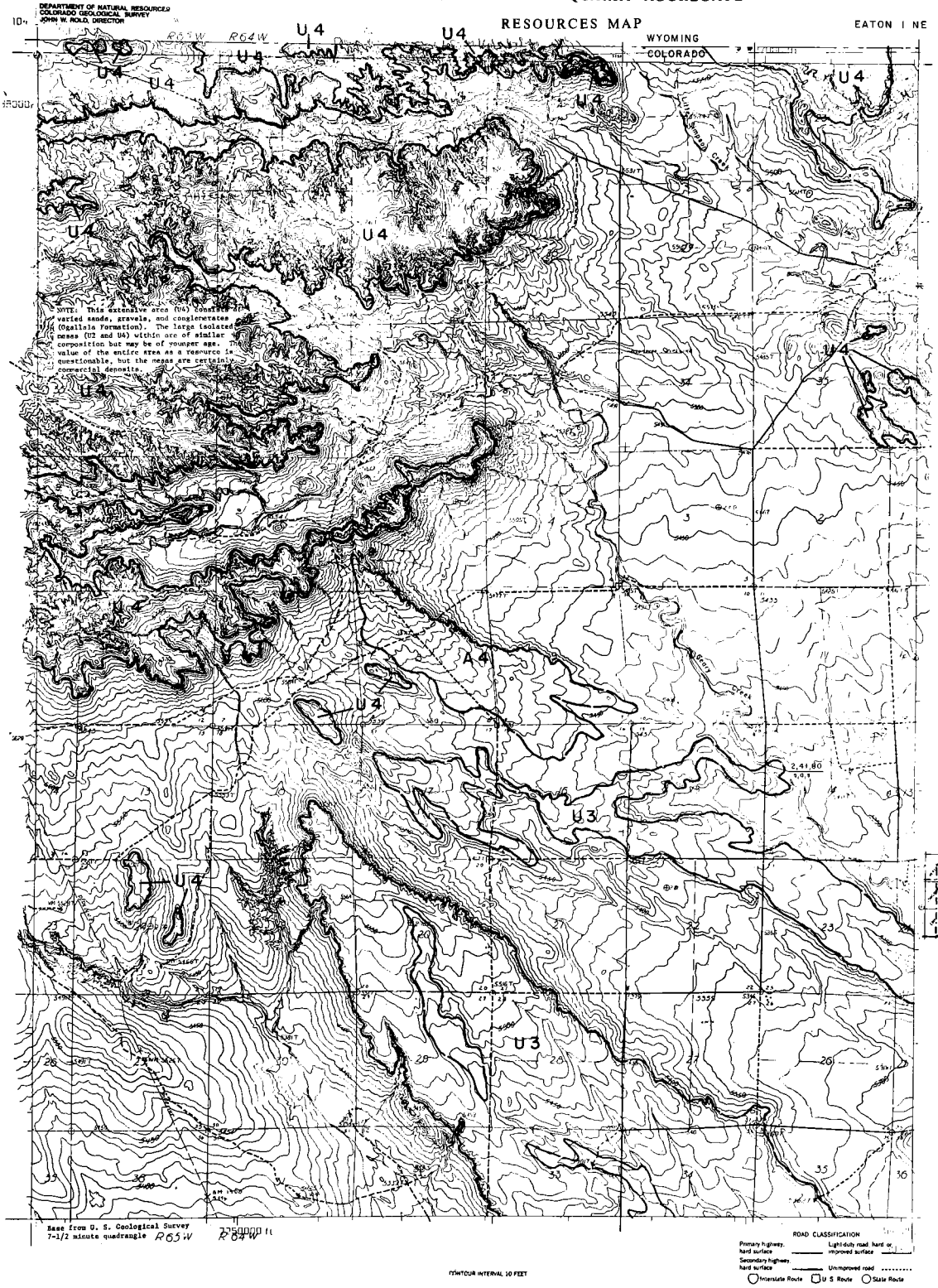
Prepared in cooperation with the U. S. Geological Survey

SAND, GRAVEL AND QUARRY AGGREGATE RESOURCES MAP

DEPARTMENT OF NATURAL RESOURCES
COLORADO GEOLOGICAL SURVEY
JOHN W. ROLD, DIRECTOR

EATON I NE

WYOMING
COLORADO



EXPLANATION

Landform unit
Resource classification

LANDFORM UNITS

- F Floodplain deposits
- T Stream terrace deposits
- V Valley fill (F & T)
- U Upland deposits
- A Alluvial fan
- E Wind-deposited sand (soltan)
- M Man-made deposits (slag,tailings, spoils....)

RESOURCE CLASSIFICATION

Coarse Aggregate
(at least 50% retained on #4 screen, visual estimation)

- 1 Gravel: relatively clean and sound
- 2 Gravel: significant fines, decomposed rock, calcium carbonate.

Fine Aggregate
(greater than 70% passing #4 screen, 50% retained on #200 screen, visual estimation

- 3 Sand

Unevaluated Resource

- 4 Probable aggregate resource

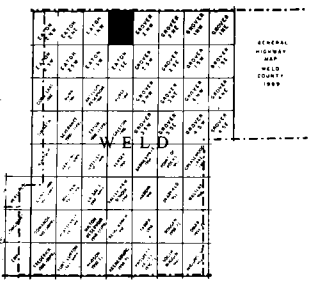
MAP SYMBOLS

- Operating gravel and/or sand pit
- Abandoned gravel and/or sand pit
- Operating stone quarry
- Abandoned stone quarry
- Potential quarry aggregate resource area
- Selected soil or drill-hole location with overburden thickness (ft) over sand/gravel resource thickness (ft), obtained from well logs.
  - "g" indicates gravel; "s" indicates sand
  - "-" in symbol denotes unevaluated or unknown property.
- "wm" denotes Colorado Geological Survey Widefield and Gravel projects' drill hole
- Landform boundary, solid where known or observed; dashed where approximate or inferred.

STATION, LOCATION AND GEOLOGICAL DESCRIPTION OF DEPOSIT

- overburden thickness (ft)
- sand/gravel resource thickness (ft)
- percent sand and fines (passing #4 screen, 0.25 in.), visual estimation
- significant amount of fines (passing #200 screen, 0.0058 in. or 0.074 mm.)
- significant amount of decomposed or weak rock.
- significant amount of calcium carbonate (caliche)

"#" in symbol denotes unevaluated or unknown property.
"0" in symbol denotes property absent or insignificant



QUADRANGLE LOCATION

NON-RESOURCE OR WITHDRAWN AREA

ROAD CLASSIFICATION

- Primary highway, hard surface
- Light-duty road, hard or improved surface
- Secondary highway, hard surface
- Unimproved road
- Interstate Route
- U S Route
- State Route

REFERENCE:

Lowry, M.E., and Crist, M.A., 1967, Geology and ground-water resources of Laramie County, Wyoming: U. S. Geol. Survey Water-Supply Paper 1834, pl. 1.

Weist, W.G., Jr., 1965, Reconnaissance of ground-water resources in parts of Larimer, Logan, Morgan, Sedgwick, and Weld Counties, Colo.: U. S. Geol. Survey Water-Supply Paper 1809-L, pl. 1.

Denson, N.M., 1974, personal communication.

Mapped by: Stephen D. Schwochow
Date: June 30, 1974

SAND, GRAVEL AND QUARRY AGGREGATE RESOURCES MAP

WYOMING — COLORADO

EATON I NW

DEPARTMENT OF NATURAL RESOURCES
COLORADO GEOLOGICAL SURVEY
JOHN W. ROLD, DIRECTOR

R 66 W R 65 W

NOTE: This extensive area (U4) consists of varied sands, gravels, and conglomerates (Ogallala Formation). The large isolated mesas (U2 and U4) within are of similar composition but may be of younger age. The value of the entire area as a resource is questionable, but the mesas are certainly commercial deposits.

EXPLANATION

Landform unit
Resource classification

LANDFORM UNITS

- F Floodplain deposit
- T Stream terrace deposit
- V Valley fill (F & T)
- U Upland deposits
- A Alluvial fan
- E Wind-deposited sand (dunes)
- M Man-made deposits (slag, tailings, spoils, ...)

RESOURCE CLASSIFICATION

Coarse Aggregate
(at least 50% retained on #4 screen, visual estimation)

- 1 Gravel: relatively clean and sound
- 2 Gravel: significant fines, decomposed rock, calcium carbonate

Fine Aggregate
(greater than 50% passing #4 screen, 50% retained on #200 screen, visual estimation)

- 3 Sand

Unevaluated Resource

- 4 Probable aggregate resource

MAP SYMBOLS

- Operating gravel and/or sand pit
- Abandoned gravel and/or sand pit
- Operating stone quarry
- Abandoned stone quarry
- Potential quarry aggregate resource area
- Selected well or drill-hole location with overburden thickness (ft) over sand/gravel resource thickness (ft), obtained from well logs. "s" indicates gravel; "m" indicates sand. "x" in symbol denotes unevaluated or unknown property.
- "WH" denotes Colorado Geological Survey Windsor/Hand and Gravel projects' drill hole
- Location boundary, solid where known or observed; dashed where approximate or inferred.

STATION, LOCATION AND GEOLOGICAL DESCRIPTION OF DEPOSIT

- overburden thickness (ft)
- sand/gravel resource thickness (ft)
- percent sand and fines (passing #4 screen, 0.25 in.), visual estimation
- significant amount of fines (passing #200 screen, 0.0058 in. or 0.074 mm.)
- significant amount of decomposed or weak rock
- significant amount of calcium carbonate (caliche)

"x" in symbol denotes unevaluated or unknown property
"n" in symbol denotes property absent or insignificant

GENERAL HIGHWAY MAP WELD COUNTY 1969

WELD

QUADRANGLE LOCATION

NON-RESOURCE OR WITHDRAWN AREA

REFERENCE:

Lowry, M.E., and Crist, M.A., 1967, Geology and ground-water resources of Laramie County, Wyoming: U. S. Geol. Survey Water-Supply Paper 1834, pl. 1.

Dengen, N.M., 1974, personal communication.

Weist, W.G., Jr., 1965, Reconnaissance of ground-water resources in parts of Larimer, Logan, Morgan, Sedgwick, and Weld Counties, Colo.: U. S. Geol. Survey Water-Supply Paper 1809-L, pl. 1.

Mapped by: Stephen D. Schwochow
Date: June 30, 1974

2210000ft
Base from U. S. Geological Survey 7-1/2 minute quadrangle

CONTOUR INTERVAL 10 FEET

ROAD CLASSIFICATION

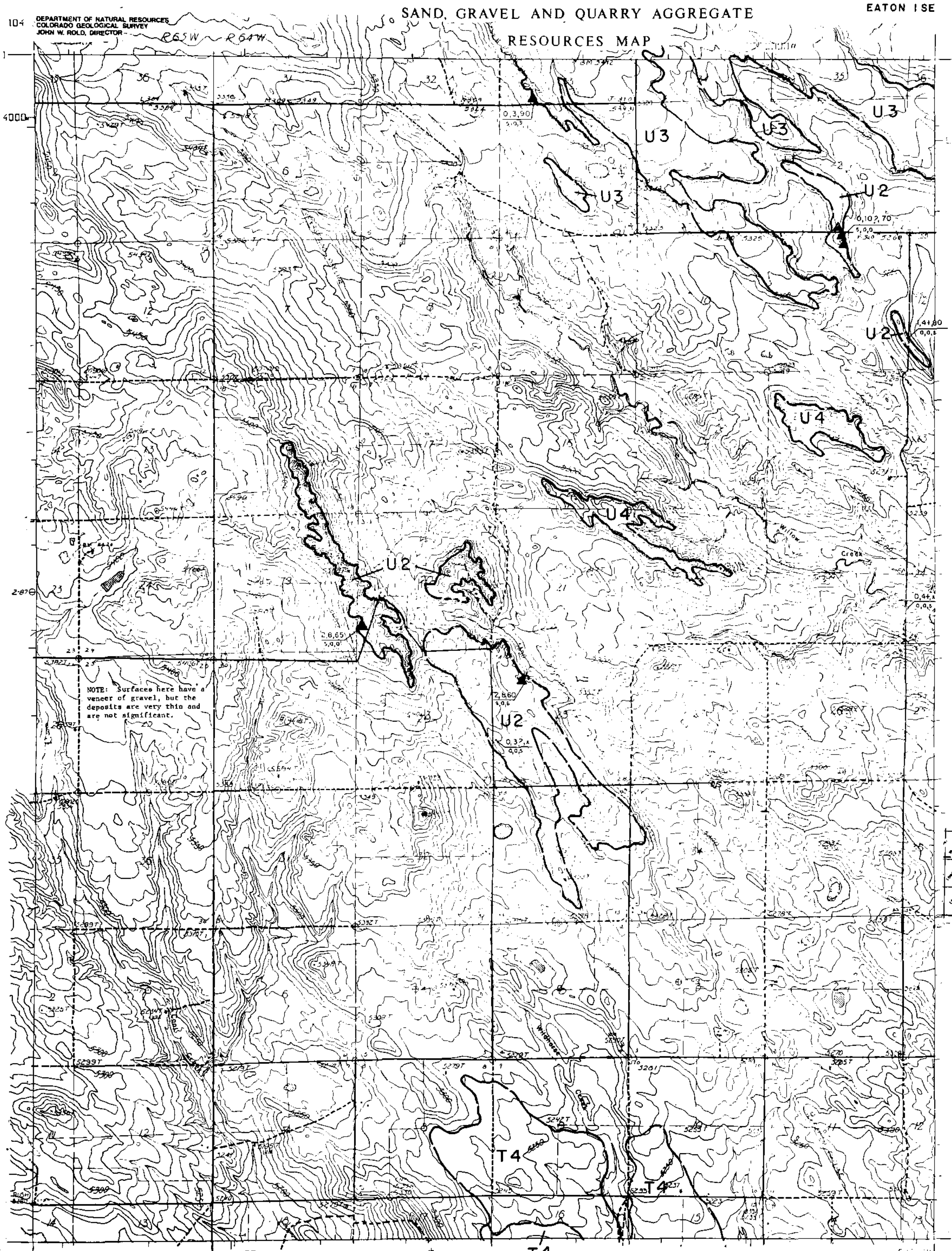
- Primary highway, hard surface
- Secondary highway, hard surface
- Light-duty road, hard or improved surface
- Unimproved road
- Interstate Route
- U.S. Route
- State Route

EATON I NW (03) (COLO.)

EATON 1 SE

DEPARTMENT OF NATURAL RESOURCES
COLORADO GEOLOGICAL SURVEY
JOHN W. ROLD, DIRECTOR

SAND, GRAVEL AND QUARRY AGGREGATE RESOURCES MAP



Base from U. S. Geological Survey 7-1/2 minute quadrangle

ROAD CLASSIFICATION

Primary highway, hard surface — Light-duty road, hard or improved surface

Secondary highway, hard surface — Unimproved road

Interstate Route, U. S. Route, State Route

EXPLANATION

Landform unit / Resource classification

LANDFORM UNITS

- F Floodplain deposit
- T Stream terrace deposit
- V Valley fill (F & T)
- U Upland deposits
- A Alluvial fan
- E Wind-deposited sand (eolian)
- M Man-made deposits (slag, tailings, spoils....)

RESOURCE CLASSIFICATION

Coarse Aggregate (at least 50% retained on #4 screen, visual estimation)

1 Gravel: relatively clean and sound

2 Gravel: significant fines, decomposed rock, calcium carbonate.

Fine Aggregate (greater than 50% passing #4 screen, 60% retained on #200 screen, visual estimation)

3 Sand

Unevaluated Resource

4 Probable aggregate resource

MAP SYMBOLS

- Operating gravel and/or sand pit
- Abandoned gravel and/or sand pit
- Operating stone quarry
- Abandoned stone quarry
- Potential quarry aggregate resource area
- Selected well or drill-hole location with overburden thickness (ft) over sand/gravel resource thickness (ft), obtained from well logs. "g" indicates gravel; "s" indicates sand. "x" in symbol denotes unevaluated or unknown property. "wg" denotes Colorado Geological Survey Windsor/Sand and Gravel projects' drill hole
- Landform boundary, solid where known or observed; dashed where approximate or inferred.

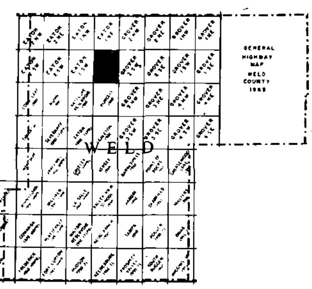
STATION, LOCATION AND GEOLOGICAL DESCRIPTION OF DEPOSIT

5, 17, 40

- overburden thickness (ft)
- sand/gravel resource thickness (ft)
- percent sand and fines (passing #4 screen, 0.25 in.), visual estimation
- significant amount of fines (passing #200 screen, 0.0059 in. or 0.074 mm.)
- significant amount of decomposed or weak rock.
- significant amount of calcium carbonate (caliche)

"x" in symbol denotes unevaluated or unknown property

"o" in symbol denotes property absent or insignificant



QUADRANGLE LOCATION

NON-RESOURCE OR WITHDRAWN AREA

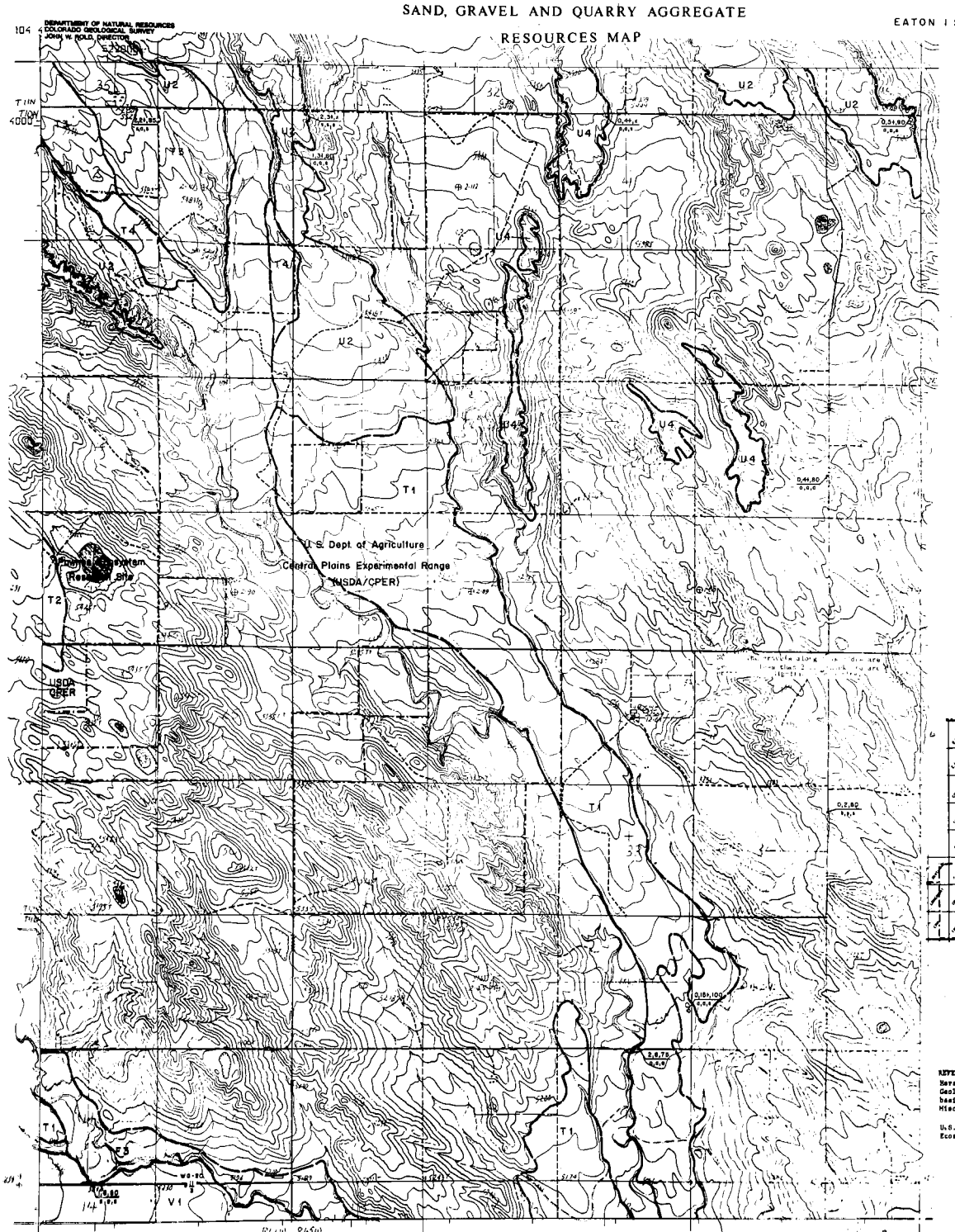
Mapped by: Stephen D. Schwochow
Date: June 30, 1974

EATON 1 SE (08) COLO

SAND, GRAVEL AND QUARRY AGGREGATE RESOURCES MAP

DEPARTMENT OF NATURAL RESOURCES
COLORADO GEOLOGICAL SURVEY
JOHN W. ROLD, DIRECTOR

EATON I SW



EXPLANATION

Landform unit
Resource classification

LANDFORM UNITS

- F Floodplain deposit
- T Stream terrace deposit
- V Valley fill (F & T)
- U Upland deposits
- A Alluvial fan
- E Wind-deposited sand (eolian)
- M Man-made deposits (slag, tailings, spoils....)

RESOURCE CLASSIFICATION

Coarse Aggregate
(at least 50% retained on #4 screen, visual estimation)

- 1 Gravel: relatively clean and sound
- 2 Gravel: significant fines, decomposed rock, calcium carbonate.

Fine Aggregate
(greater than 75% passing #4 screen, 80% retained on #200 screen, visual estimate

- 3 Sand

Unevaluated Resource

- 4 Probable aggregate resource

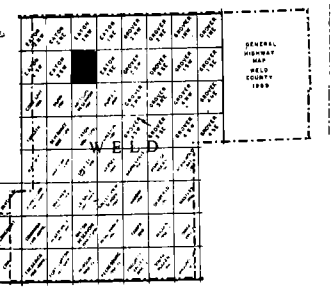
MAP SYMBOLS

- Operating gravel and/or sand pit
- Abandoned gravel and/or sand pit
- Operating stone quarry
- Abandoned stone quarry
- Potential quarry aggregate resource area
- Selected well or drill-hole location with overburden thickness (ft) over sand/gravel resource thickness (ft), obtained from well logs. "g" indicates gravel; "s" indicates sand. "-" in symbol denotes unevaluated or unknown property. "wm" denotes Colorado Geological Survey Windsor/Sand and Gravel projects' drill holes.
- Landform boundary, solid where known or observed; dashed where approximate or inferred.

STATION, LOCATION AND GEOLOGICAL DESCRIPTION OF REPORT

- overburden thickness (ft)
- sand/gravel resource thickness (ft)
- percent sand and fines (passing #4 screen, 0.18 in.), visual estimation
- 17 46
- significant amount of fines (passing #200 screen, 0.0058 in. or 0.074 mm.)
- significant amount of decomposed or weak rock.
- significant amount of calcium carbonate (caliche)

"#" in symbol denotes unevaluated or unknown property.
"0" in symbol denotes property absent or insignificant



QUADRANGLE LOCATION

NON-RESOURCE OR WITHDRAWN AREA

REFERENCE:
Hershey, L.A., and Schneider, F.A., Jr., 1973, Geologic map of the lower Cache La Poudre River basin, north-central Colorado: U. S. Geol. Survey Misc. Geol. Inv. Map I-687.

U.S.D.A. Pawnee Site
Ecosystem Research Headquarters, Map

Mapped by: Stephen D. Schwochow
Date: June 30, 1974

Base from U. S. Geological Survey
7-1/2 minute quadrangle

CONTOUR INTERVAL 10 FEET

ROAD CLASSIFICATION

Primary highway, hard surface
Secondary highway hard surface
Light duty road, hard or improved surface
Unimproved road
Interstate Route
U.S. Route
State Route

EATON SW (01)

EATON 2 NE

SAND, GRAVEL AND QUARRY AGGREGATE RESOURCES MAP

DEPARTMENT OF NATURAL RESOURCES
COLORADO GEOLOGICAL SURVEY
JOHN W. ROLD, DIRECTOR

WYOMING
COLORADO

NOTE: More than 100 ft of coarse sands, pebbly, cobbly, and bouldery gravels (Ogallala Formation). Cementation (calcium carbonate), soundness, and percent fines vary significantly from bed to bed. Cementation in the upper gravels is so thorough that it forms a resistant caprock of conglomerate.

NOTE: This extensive area (U4) consists of varied sands, gravels, and conglomerates (Ogallala Formation). The large isolated mesas (U2) within are of similar composition but may be of younger age. The value of the entire area as a resource is questionable, but the U2 mesas are certainly commercial deposits.

Base from U. S. Geological Survey
7-1/2 minute quadrangle

CONTOUR INTERVAL 10 FEET

ROAD CLASSIFICATION

Primary highway, hard surface
Secondary highway, hard surface
Light-duty road, hard or improved surface
Unimproved road
Interstate Route
U. S. Route
State Route

EATON 2NE 10¢ COLO

EXPLANATION

Landform unit
Resource classification

LANDFORM UNITS

F Floodplain deposit
T Stream terrace deposit
V Valley fill (F & T)
U Upland deposits
A Alluvial fan
E Wind-deposited sand (sollan)
M Man-made deposits (slag,tailings, spoils....)

RESOURCE CLASSIFICATION

Coarse aggregate
(at least 30% retained on #4 screen, visual estimate)

1 Gravel: relatively clean and sound
2 Gravel: significant fines, decomposed rock, calcium carbonate.

Fine aggregate
(greater than 70% passing #4 screen, 60% retained on #200 screen, visual estimate)

3 Sand

Unevaluated Resource

4 Probable aggregate resource

MAP SYMBOLS

Operating gravel and/or sand pit
Abandoned gravel and/or sand pit
Operating, stone quarry
Abandoned stone quarry
Potential quarry aggregate resource area
Selected well or drill-hole location with overburden thickness (ft) over sand/gravel resource thickness (ft), obtained from well logs. "g" indicates gravel, "s" indicates sand. "-" in symbol denotes unevaluated or unknown property.
"wm" denotes Colorado Geological Survey Windsor/Sand and Gravel projects' drill hole
Landform boundary, solid where known or observed; dashed where approximate or inferred

STATION, LOCATION AND GEOLOGICAL DESCRIPTION OF DEPOSIT

overburden thickness (ft)
sand/gravel resource thickness (ft)
percent sand and fines (passing #4 screen, 0.33 in.; visual estimate)
significant amount of fines (passing #200 screen, 0.0088 in. or 0.074 mm.)
significant amount of decomposed or weak rock.
significant amount of silicate carbonate (pisolite)

"m" in symbol denotes unevaluated or unknown property
"-" in symbol denotes property absent or insignificant

GENERAL HIGHWAY MAP WELD COUNTY 1968

WELD

QUADRANGLE LOCATION

NON-RESOURCE OR WITHDRAWN AREA

REFERENCE:
Lowry, M.E., and Crist, M.A., 1967, Geology and ground-water resources of Laramie County, Wyoming: U. S. Geol. Survey Water-Supply Paper 1834, pl. 1.

Denson, N.M., 1974, personal communication.

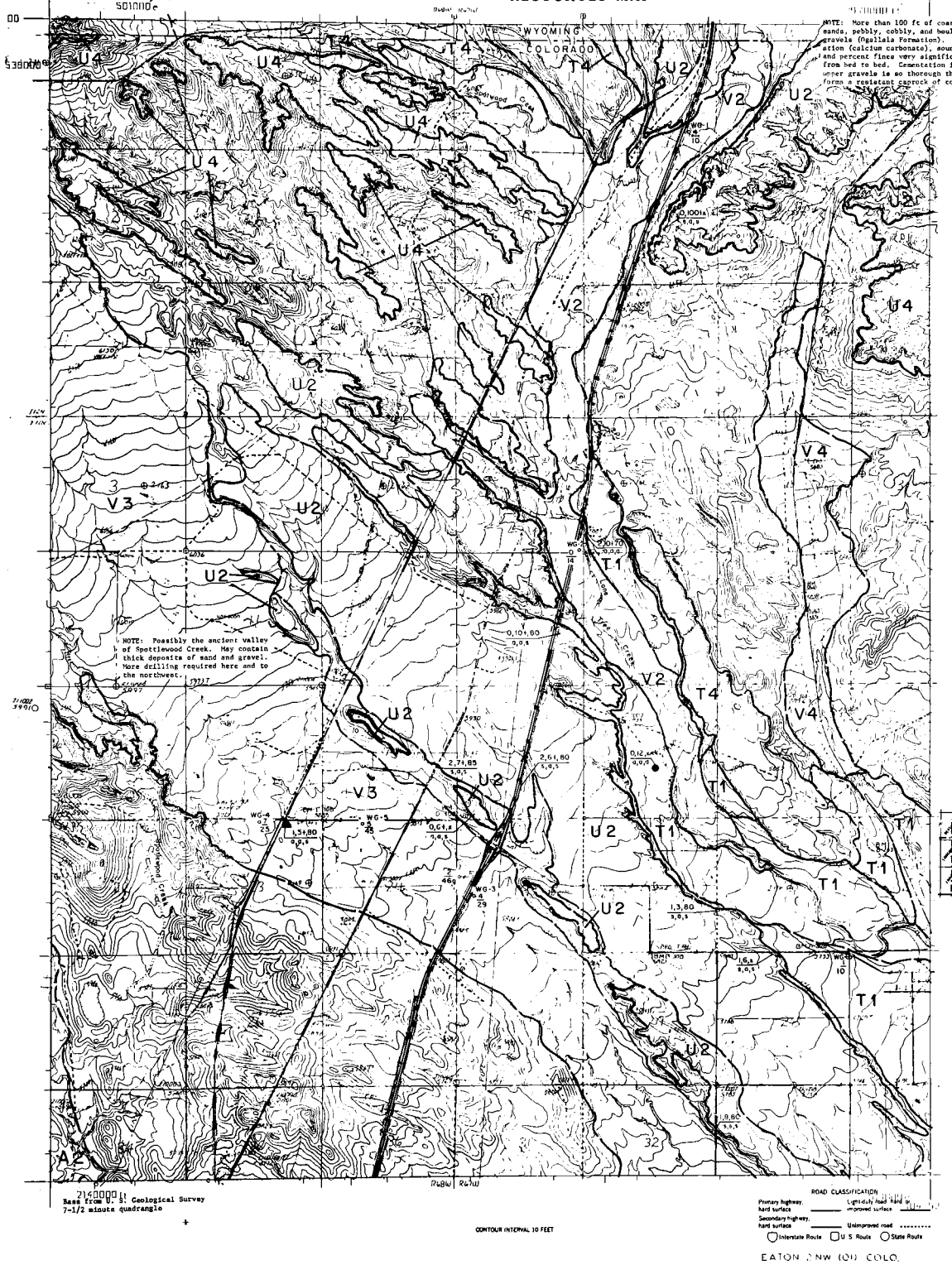
Weist, W.G., Jr., 1965, Reconnaissance of ground-water resources in parts of Larimer, Logan, Morgan, Sedgwick, and Weld Counties, Colo.: U. S. Geol. Survey Water-Supply Paper 1809-I, pl. 1.

Mapped by: Stephen D. Schwochow
Date: June 30, 1974

SAND, GRAVEL AND QUARRY AGGREGATE RESOURCES MAP

DEPARTMENT OF NATURAL RESOURCES
COLORADO GEOLOGICAL SURVEY
JOHN W. ROLD, DIRECTOR

EATON 2 NW



NOTE: More than 100 ft of coarse sands, pebbly, cobbly, and bouldery gravels (Ogallala Formation). Cementation (calcium carbonate), soundness, and percent fines very significantly from bed to bed. Cementation in the upper gravels is so thorough that it forms a resistant caprock of conglomerate.

EXPLANATION

Landform unit

Resource classification

LANDFORM UNITS

- F Floodplain deposit
- T Stream terrace deposit
- V Valley fill (F & T)
- U Upland deposits
- A Alluvial fan
- E Wind-deposited sand (eolian)
- M Man-made deposits (slag,tailings, spoils....)

RESOURCE CLASSIFICATION

Coarse Aggregate
(at least 75% retained on #4 screen, visual estimation)

1 Gravel: relatively clean and sound

2 Gravel: significant fines, decomposed rock, calcium carbonate.

Fine Aggregate
(fraction that is passing #4 screen, 60% retained on #200 screen, visual estimation

3 Sand

Unevaluated Resource

4 Probable aggregate resource

MAP SYMBOLS

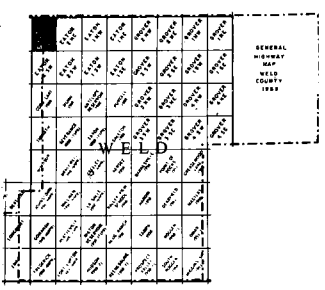
- Operating gravel and/or sand pit
- Abandoned gravel and/or sand pit
- Operating stone quarry
- Abandoned stone quarry
- Potential quarry aggregate resource area
- Selected well or drill-hole location with overburden thickness (ft) over sand/gravel resource thickness (ft), obtained from well logs. "g" indicates gravel; "s" indicates sand. "u" in symbol denotes unevaluated or unknown property. "wg" denotes Colorado Geological Survey Windsor/Sand and Gravel projects' drill hole
- Landform boundary, solid where known or observed; dashed where approximate or inferred.

STATION, LOCATION AND GEOLOGICAL DESCRIPTION OF DEPOSIT

- overburden thickness (ft)
- sand/gravel resource thickness (ft)
- percent sand and fines (passing #4 screen, 0.25 in.), visual estimation
- significant amount of fines (passing #200 screen, 0.0058 in. or 0.074 mm.)
- significant amount of decomposed or weak rock
- significant amount of calcium carbonate (caliche)

"u" in symbol denotes unevaluated or unknown property

"s" in symbol denotes property absent or insignificant



QUADRANGLE LOCATION

NON-RESOURCE OR WITHDRAWN AREA

REFERENCE:

Lowry, M.E., and Crist, M.A., 1967, Geology and ground-water resources of Laramie County, Wyoming: U. S. Geol. Survey Water-Supply Paper 1834, pl. 1.

Moore, P.E., 1959, Geomorphic evolution of the east flank of the Laramie Range, Colorado and Wyoming: Univ. Wyoming Unpub. Ph.D. Thesis, pl. 4.

Denson, N.M., 1974, personal communication.

Weist, W.G., Jr., 1965, Reconnaissance of ground-water resources in parts of Larimer, Logan, Morgan, Sedgwick, and Weld Counties, Colo.: U. S. Geol. Survey Water-Supply Paper 1809-L, pl. 1.

Mapped by: Stephen D. Schwochow
Date: June 30, 1974

Base from U. S. Geological Survey 7-1/2 minute quadrangle

CONTOUR INTERVAL 10 FEET

ROAD CLASSIFICATION

Primary highway, hard surface — Light-duty road, hard or improved surface

Secondary highway, hard surface — Unimproved road

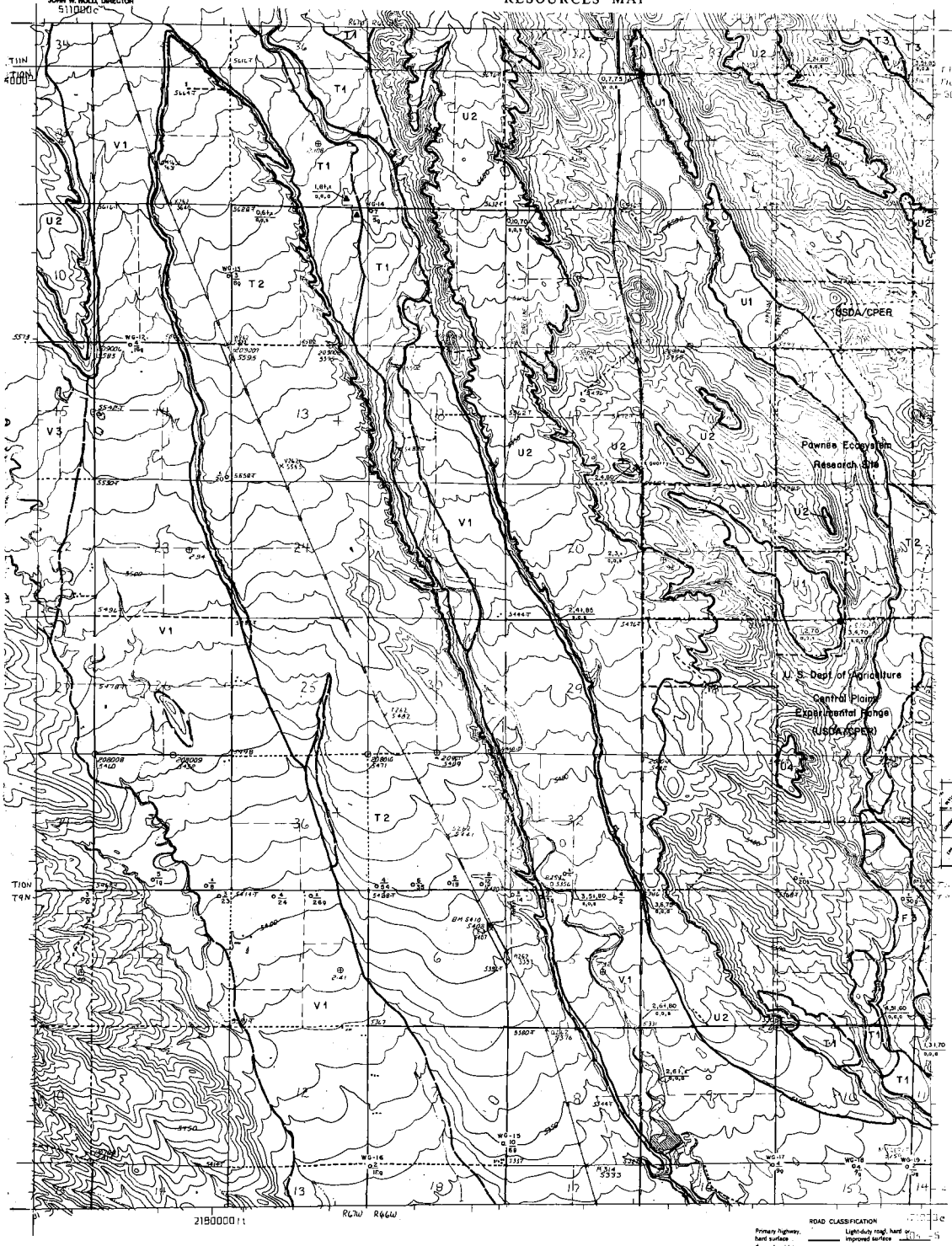
Interstate Route U S Route State Route

EATON 2 NW (QU) COLO.

SAND, GRAVEL AND QUARRY AGGREGATE RESOURCES MAP

EATON 2 SE

DEPARTMENT OF NATURAL RESOURCES
COLORADO GEOLOGICAL SURVEY
JOHN W. ROLD, DIRECTOR



EXPLANATION

Landform unit

Resource classification

LANDFORM UNITS

- F Floodplain deposit
- T Stream terrace deposit
- V Valley fill (F & T)
- U Upland deposits
- A Alluvial fan
- E Wind-deposited sand (veilan)
- M Man-made deposits (slag, tailings, spoils....)

RESOURCE CLASSIFICATION

Coarse Aggregate
(at least 50% retained on #4 screen, visual estimation)

- 1 Gravel: relatively clean and sound
- 2 Gravel: significant fines, decomposed rock, calcium carbonate.

Fine Aggregate
(greater than 70% passing #4 screen, 50% retained on #200 screen, visual estimation

- 3 Sand

Overwhelmed Resource

- 4 Probable aggregate resource

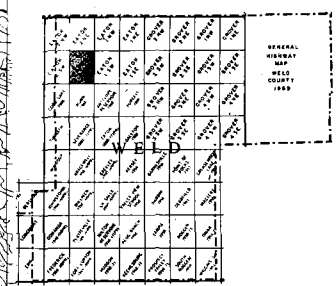
MAP SYMBOLS

- Operating gravel and/or sand pit
- Abandoned gravel and/or sand pit
- Operating stone quarry
- Abandoned stone quarry
- Potential quarry aggregate resource area
- Selected well or drill-hole location with overburden thickness (ft) over sand/gravel resource thickness (ft), obtained from well logs. "x" indicates gravel; "s" indicates sand. "-" in symbol denotes unevaluated or unknown property. "ws" denotes Colorado Geological Survey Windsor/Sand and Gravel projects' drill hole.
- Landform boundary, solid where known or observed; dashed where approximate or inferred.

STATION, LOCATION AND GEOLOGICAL DESCRIPTION OF REPORT

- overburden thickness (ft)
- sand/gravel resource thickness (ft)
- percent sand and fines (passing #4 screen, 0.19 in.), visual estimation
- significant amount of fines (passing #200 screen, 0.0029 in. or 0.074 mm.)
- significant amount of decomposed or weak rock.
- significant amount of calcium carbonate (calcite)

"-" or symbol denotes unevaluated or unknown property.
"s" in symbol denotes property absent or insignificant



QUADRANGLE LOCATION

NON-RESOURCE OR WITHDRAWN AREA

REFERENCE:

Hershey, L.A., and Schneider, P.A., Jr., 1972, Geologic map of the lower Cache La Poudre River basin, north-central Colorado: U. S. Geol. Survey Misc. Geol. Inv. Map I-687.

U.S.D.A. Pawnee Site Ecosystem Research Headquarters, Map. .

Mapped by: Stephan D. Schwochow
Date: June 30, 1974

Base from U. S. Geological Survey
7-1/2 minute quadrangle.

CONTOUR INTERVAL 10 FEET

ROAD CLASSIFICATION

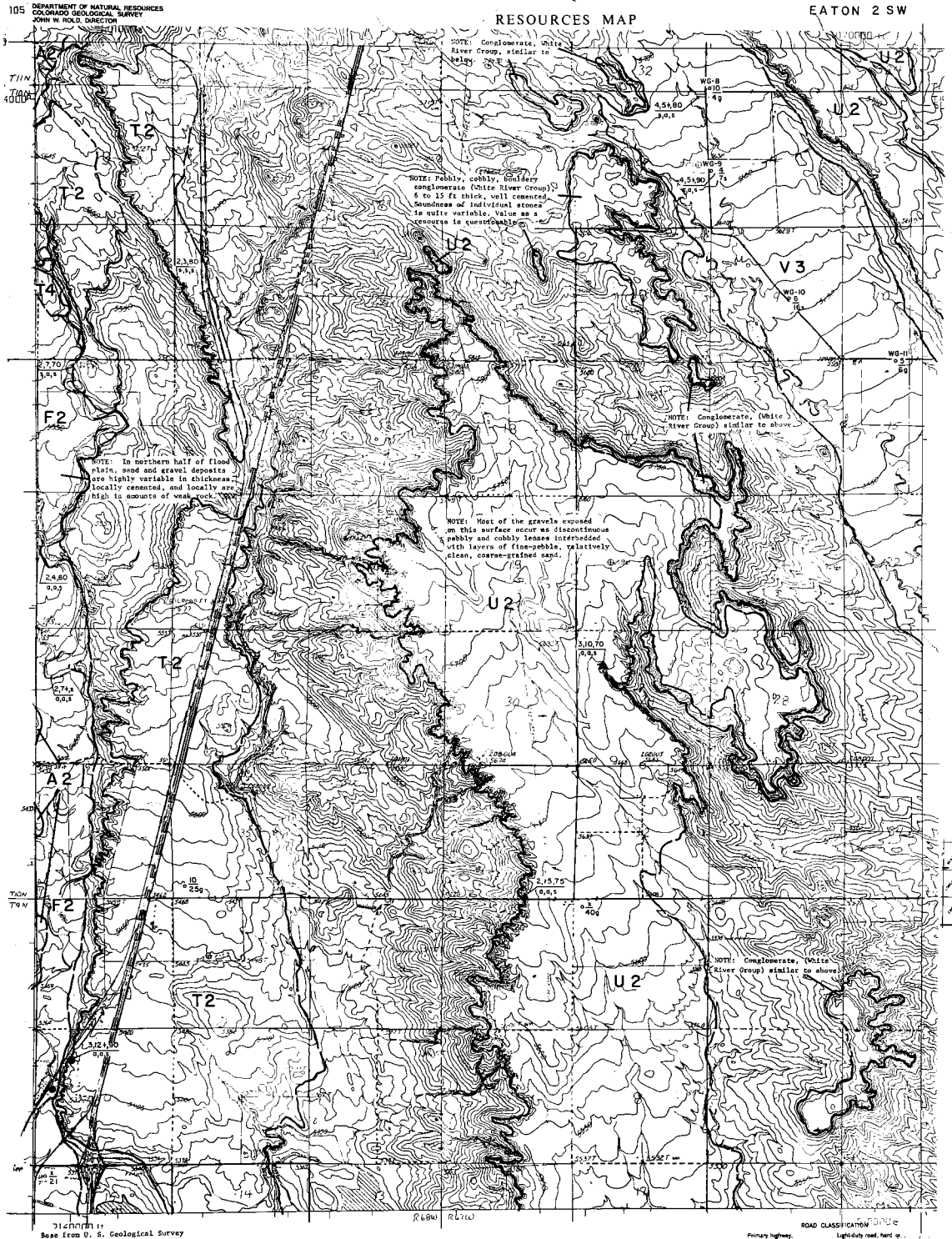
- Primary highway, hard surface — Light-duty road, hard or improved surface
- Secondary highway, hard surface — Unimproved road
- Interstate Route
- U. S. Route
- State Route

EATON 2SE (06) COLO

105 DEPARTMENT OF NATURAL RESOURCES
COLORADO GEOLOGICAL SURVEY
JOHN W. ROLD, DIRECTOR

SAND, GRAVEL AND QUARRY AGGREGATE RESOURCES MAP

EATON 2 SW



Base from U. S. Geological Survey
7-1/2 minute quadrangle

CONTOUR INTERVAL 10 FEET

ROAD CLASSIFICATION

Primary highway, hard surface ——— Light-duty road, hard or improved surface ———
Secondary highway, hard surface ——— Unimproved road - - - - - -
Interstate Route U. S. Route State Route

EATON 2SW (105) COLO.

EXPLANATION

Landform unit
Resource classification

LANDFORM UNITS

F Floodplain deposit
T Stream terrace deposit
V Valley fill (F & T)
U Upland deposits
A Alluvial fan
E Wind-deposited sand (soliun)
M Man-made deposits (slag,tailings, spoils....)

RESOURCE CLASSIFICATION

Coarse Aggregate
(at least 50% retained on #4 screen, visual estimation)

1 Gravel: relatively clean and sound
2 Gravel: significant fines, decomposed rock, calcium carbonate

Fine aggregate
(greater than 50% passing #4 screen, 50% retained on #200 screen, visual estimation

3 Sand

Unevaluated Resource

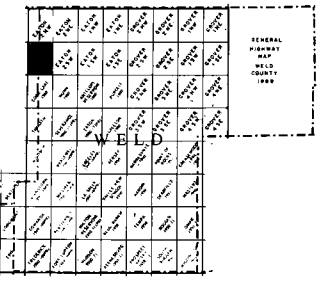
4 Probable aggregate resource

MAP SYMBOLS

Operating gravel and/or sand pit
Abandoned gravel and/or sand pit
Operating stone quarry
Abandoned stone quarry
Potential quarry aggregate resource area
Selected well or drill-hole location with overburden thickness (ft) over sand/gravel resource thickness (ft), obtained from well logs.
"s" indicates gravel; "s" indicates sand
"x" in symbol denotes unevaluated or unknown property.
"ws" denotes Colorado Geological Survey Windsor/Seed and Gravel projects' drill hole
Landform boundary, solid where known or observed; dashed where approximate or inferred.

STATION, LOCATION AND GEOLOGICAL DESCRIPTION OF DEPOSIT

overburden thickness (ft)
sand/gravel resource thickness (ft)
percent sand and fines (passing #4 screen, 0.25 in.), visual estimation
significant amount of fines (passing #200 screen, 0.0058 in. or 0.074 mm.)
significant amount of decomposed or weak rock.
significant amount of calcium carbonate (caliche)
"x" in symbol denotes unevaluated or unknown property.
"o" in symbol denotes property absent or insignificant



QUADRANGLE LOCATION
NON-RESOURCE OR WITHDRAWN AREA

REFERENCE:

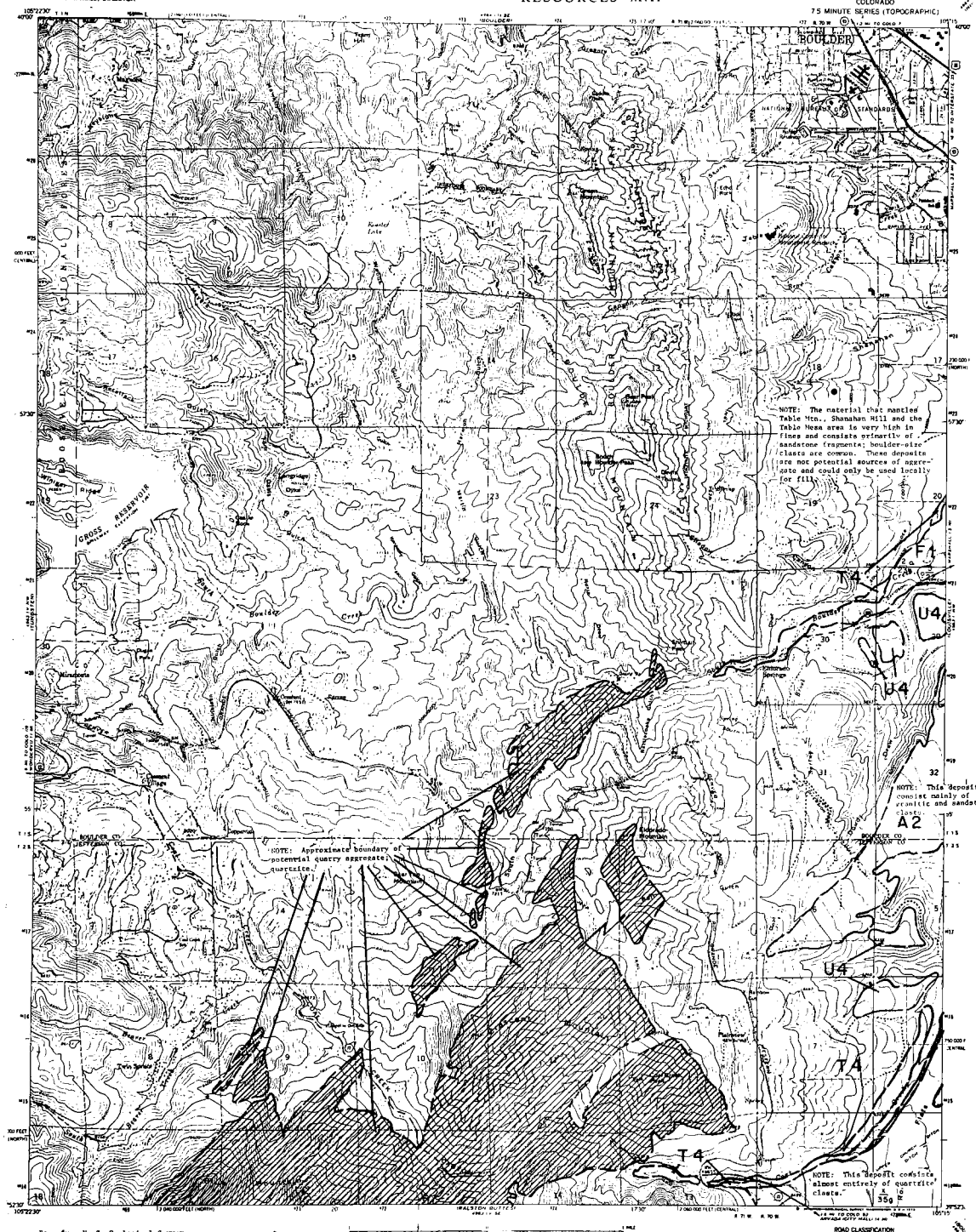
Areas of conglomerate outcrop adapted in part from Hershey, L.A., and Schneider, P.A., Jr., 1972, Geologic map of the lower Cache La Poudre River basin, north-central Colorado: U. S. Geol. Survey Misc. Geol. Inv. Map I-687.

Mapped by: Stephen D. Schwochow
Date: June 30, 1974

SAND, GRAVEL AND QUARRY AGGREGATE RESOURCES MAP

DEPARTMENT OF NATURAL RESOURCES
COLORADO GEOLOGICAL SURVEY
JOHN W. ROLD, DIRECTOR

ELDORADO SPRINGS QUADRANGLE
COLORADO
7.5 MINUTE SERIES (TOPOGRAPHIC)



EXPLANATION

Landform unit
Resource classification

LANDFORM UNITS

- F Floodplain deposit
- T Stream terrace deposit
- V Valley fill (F & T)
- U Upland deposits
- A Alluvial fan
- E Wind-deposited sand (eolian)
- M Man-made deposits (slag,tailings, spoils....)

RESOURCE CLASSIFICATION

Coarse Aggregate
(at least 25% retained on #4 screen, visual estimate)

1 Gravel: relatively clean and sound
2 Gravel: significant fines, decomposed rock, calcium carbonate.

Fine Aggregate
(greater than 75% passing #4 screen, 67% retained on #200 screen, visual estimate)

3 Sand

Undeveloped Resource

4 Probable aggregate resource

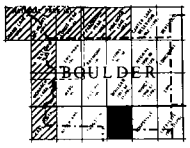
MAP SYMBOLS

- Operating gravel and/or sand pit
- Abandoned gravel and/or sand pit
- Operating stone quarry
- Abandoned stone quarry
- Potential quarry aggregate resource area
- Selected well or drill-hole location with overburden thickness (ft) over sand/gravel resource thickness (ft), obtained from well logs. "g" indicates gravel; "s" indicates sand. "-" in symbol denotes unevaluated or unknown property.
- "gs" denotes Colorado Geological Survey Standard/Sand and Gravel projects' drill hole
- Landform boundary, solid where known or observed, dashed where approximate or inferred.

STATION, LOCATION AND GEOLOGICAL DESCRIPTION OF DEPOSIT

- overburden thickness (ft)
- sand/gravel resource thickness (ft)
- (assumes sand and fines (passing #4 screen, 4.75 mm.), visual estimation)
- significant amount of fines (passing #200 screen, 0.0059 in. or 0.074 mm.)
- significant amount of decomposed or weak rock.
- significant amount of calcium carbonate (caliche)

"e" in symbol denotes unevaluated or unknown property
"n" in symbol denotes property absent or insignificant



QUADRANGLE LOCATION

NON-RESOURCE OR WITHDRAWN AREA

REFERENCE:

Chase, G.H., and McConaghy, J.A., 1972, Generalized surficial geologic map of the Denver area, Colorado: U. S. Geol. Survey Misc. Geol. Inv. Map I-731.

Trimble, D.E., and Pitch, H.R. 1974, Map showing potential sources of gravel and crushed-rock aggregate in the Greater Denver Area, Front Range Urban Corridor, Colo.: U. S. Geol. Survey Misc. Geol. Inv. Map I-856-A.

Geology modified after:

Wells, J.D., 1963, Preliminary Geologic Map of the Eldorado Springs Quadrangle, Boulder and Jefferson Counties, Colorado: U. S. Geol. Survey Misc. Geol. Inv. Map I-385.

Geology modified after:

Gardner, M.E., 1969, Preliminary report on the engineering geology of the Eldorado Springs Quadrangle, Boulder and Jefferson Counties, Colorado: U. S. Geol. Survey Open-File Report.

Mapped by: Ralph R. Shroba
Date: June 30, 1974

Prepared in cooperation with the U. S. Geological Survey.

Base from U. S. Geological Survey 7-1/2 minute quadrangle

CONTOUR INTERVAL 40 FEET
DATUM IS MEAN SEA LEVEL

ROAD CLASSIFICATION

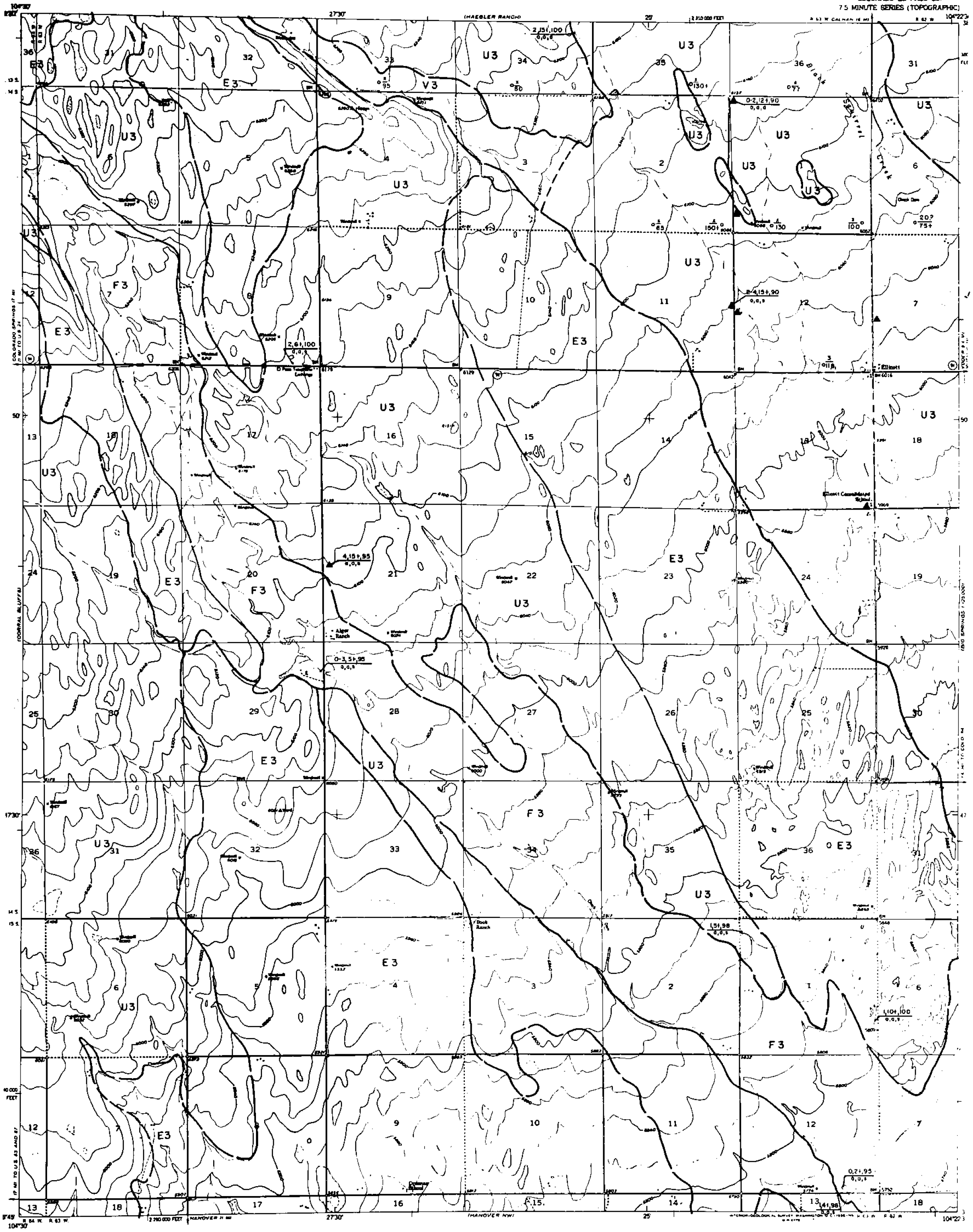
- Heavy-duty
- Light duty
- Medium-duty
- Unimproved dirt
- U.S. Route
- State Route

ELDORADO SPRINGS, COLO.

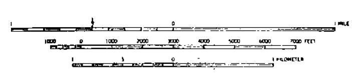
DEPARTMENT OF NATURAL RESOURCES
COLORADO GEOLOGICAL SURVEY
JOHN W. ROLD, DIRECTOR

SAND, GRAVEL AND QUARRY AGGREGATE RESOURCES MAP

ELLICOTT QUADRANGLE
COLORADO–EL PASO CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)



Base from U. S. Geological Survey
7-1/2 minute quadrangle



ROAD CLASSIFICATION
Heavy-duty — Light-duty
Medium-duty — Unimproved dirt
U.S. Route — State Route

ELLICOTT, COLO.

EXPLANATION

F1 — Landform unit; Resource classification

LANDFORM UNITS

- F Floodplain deposit
- T Stream terrace deposit
- V Valley fill (F & T)
- U Upland deposits
- A Alluvial fan
- E Wind-deposited sand (eolian)
- M Man-made deposits (slag, tailings, spoils....)

RESOURCE CLASSIFICATION

Course Aggregate
(at least 30% retained on #4 screen, visual estimation)

- 1 Gravel: relatively clean and sound
- 2 Gravel: significant fines, decomposed rock, calcium carbonate.

Fine Aggregate
(greater than 70% passing #4 screen, 60% retained on #200 screen, visual estimation)

- 3 Sand

Unevaluated Resource

- 4 Probable aggregate resource

MAP SYMBOLS

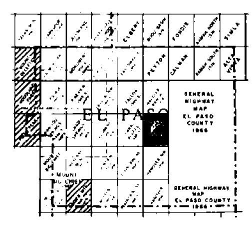
- ● Operating gravel and/or sand pit
- ▲ Abandoned gravel and/or sand pit
- Operating stone quarry
- Abandoned stone quarry
- Potential quarry aggregate resource area
- Selected well or drill-hole location with overburden thickness (ft) over sand/gravel resource thickness (ft), obtained from well logs.
  - "g" indicates gravel; "s" indicates sand
  - "x" in symbol denotes unevaluated or unknown property.
  - "WS" denotes Colorado Geological Survey Windsor/Sand and Gravel projects' drill hole
- Landform boundary, solid where known or observed; dashed where approximate or inferred.

STATION, LOCATION AND GEOLOGICAL DESCRIPTION OF DEPOSIT

5, 17, 40

- overburden thickness (ft)
- sand/gravel resource thickness (ft)
- percent sand and fines (passing #4 screen, 0.25 (in.), visual estimation
- significant amount of fines (passing #200 screen, 0.0058 (in. or 0.074 mm.)
- significant amount of decomposed or weak rock.
- significant amount of calcium carbonate (caliche)

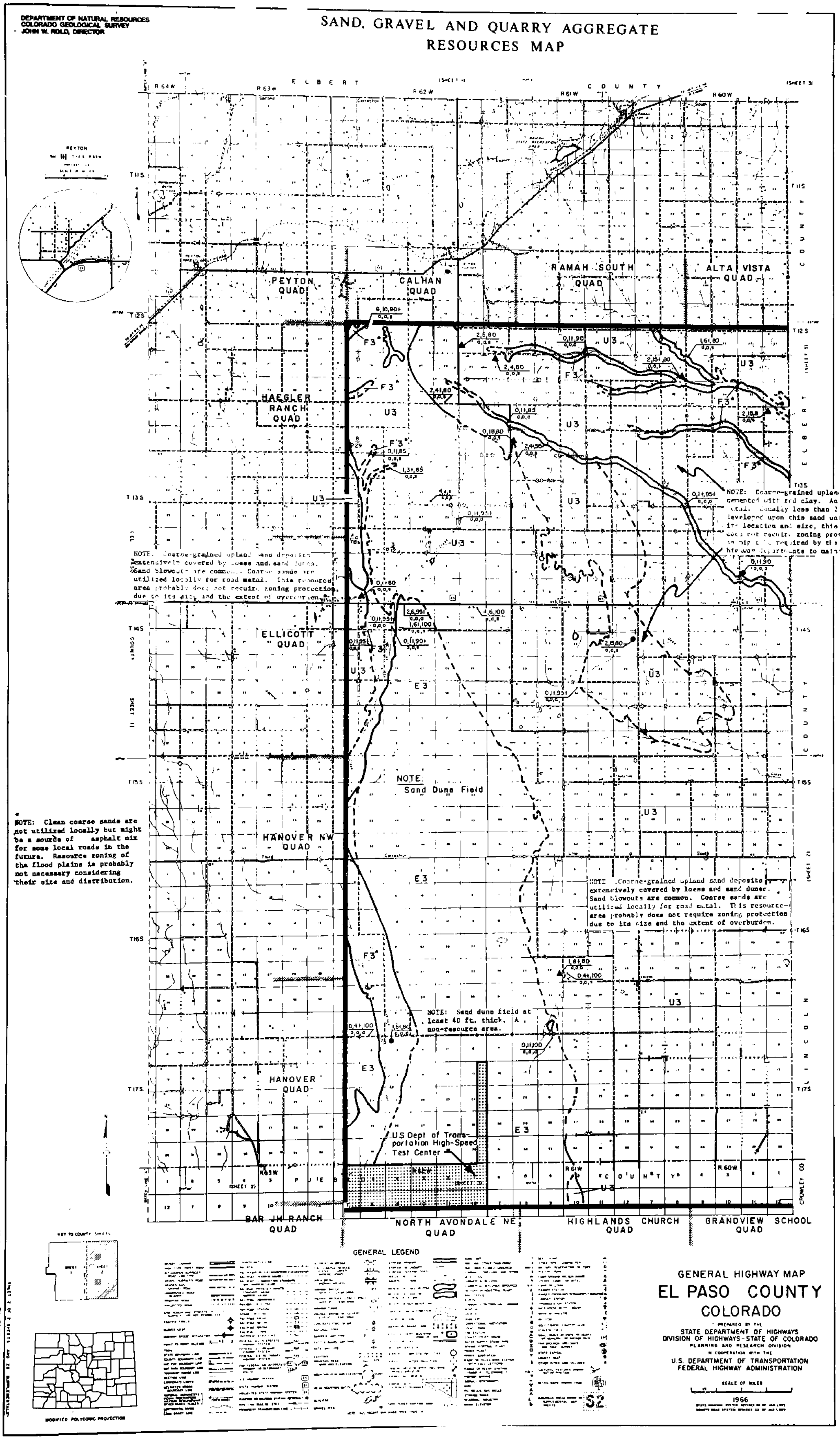
"x" in symbol denotes unevaluated or unknown property
"o" in symbol denotes property absent or insignificant



QUADRANGLE LOCATION

NON-RESOURCE OR WITHDRAWN AREA.

Mapped by: Stephen D. Schwochow
Date: June 30, 1974



EXPLANATION

LANDFORM UNITS

- F — Floodplain deposit
- T — Stream terrace deposit
- V — Valley fill (F & T)
- U — Upland deposits
- A — Alluvial fan
- E — Wind-deposited sand (eolian)
- M — Man-made deposits (slag, tailings, spoils....)

RESOURCE CLASSIFICATION

Coarse Aggregate

- 1 — Gravel relatively clean and sound
- 2 — Gravel significant fines, decomposed rock, calcium carbonate.

Fine Aggregate

- 3 — Sand

Unevaluated Resource

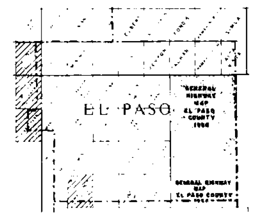
- 4 — Probable aggregate resource

MAP SYMBOLS

- Operating gravel and/or sand pit
- Abandoned gravel and/or sand pit
- Operating stone quarry
- Abandoned stone quarry
- Potential quarry aggregate resource area
- Selected well or drill-hole location with overburden thickness (ft) over sand/gravel resource thickness (ft), obtained from well logs. "g" indicates gravel; "s" indicates sand. "x" in symbol denotes unevaluated or unknown property.
- denotes Colorado Geological Survey Windsor/Sand and Gravel projects' drill hole
- Landform boundary, solid where known or observed; dashed where approximate or inferred.

STATION, LOCATION AND GEOLOGICAL DESCRIPTION OF DEPOSIT

- significant amount of decomposed or weak rock.



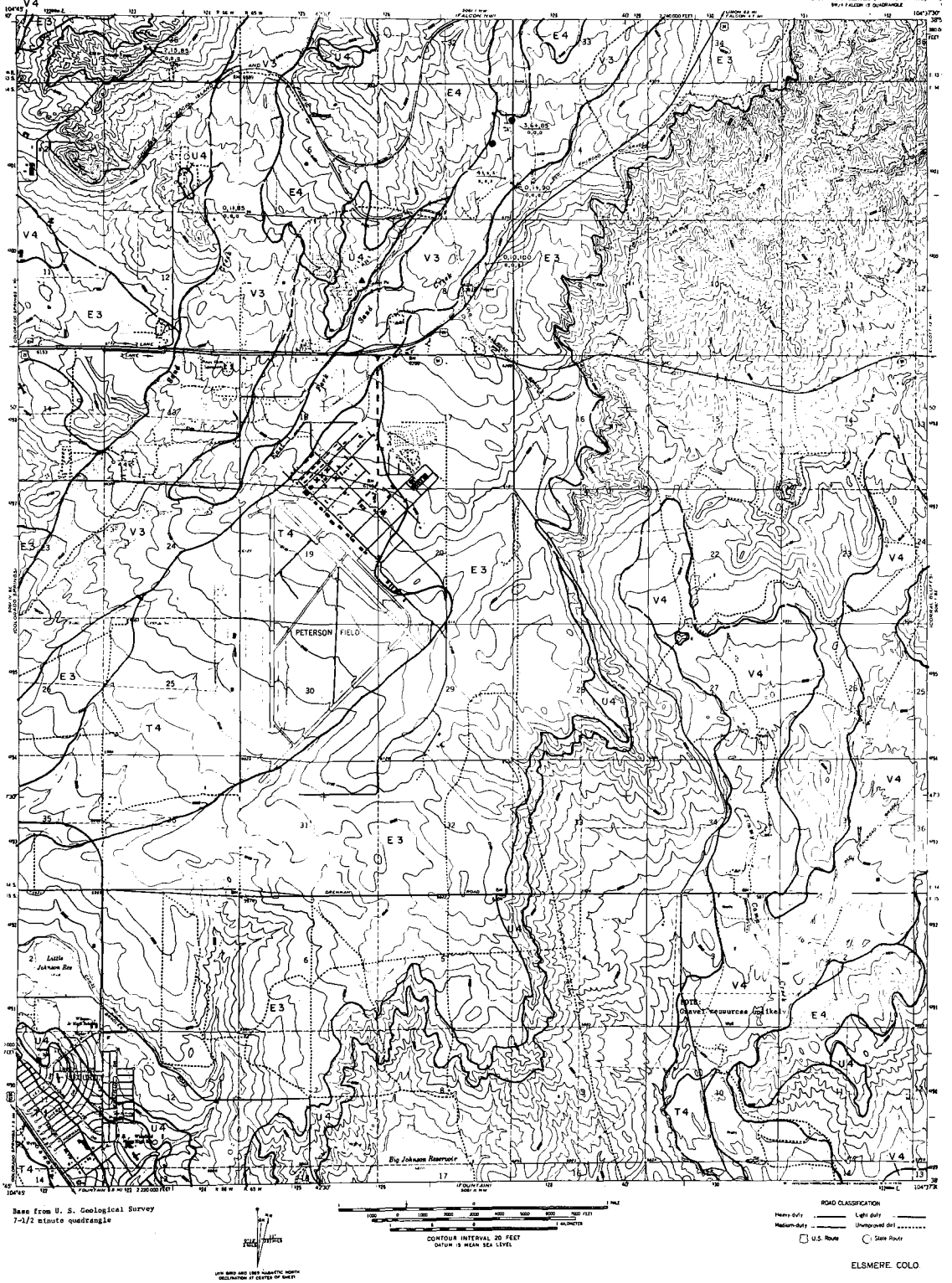
- QUADRANGLE LOCATION
- NON-RESOURCE OR WITHDRAWN AREA

Mapped by: Phillip C. Wicklein
Date: June 30, 1974

SAND, GRAVEL AND QUARRY AGGREGATE RESOURCES MAP

DEPARTMENT OF NATURAL RESOURCES
COLORADO GEOLOGICAL SURVEY
JOHN W. ROLD, DIRECTOR

ELSMERE QUADRANGLE
COLORADO-EL PASO CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)



EXPLANATION

Landform unit
Resource classification

LANDFORM UNITS

F Floodplain deposit
T Stream terrace deposit
V Valley fill (F & T)
U Upland deposits
A Alluvial fan
E Wind-deposited sand (eolian)
M Man-made deposits (slag,tailings, spoils....)

RESOURCE CLASSIFICATION

Coarse Aggregate
(at least 30% retained on #4 screen, visual estimation)

1 Gravel: relatively clean and sound
2 Gravel: significant fines, decomposed rock, calcium carbonate.

Fine Aggregate
(greater than 70% passing #4 screen, 80% retained on #200 screen, visual estimation

3 Sand

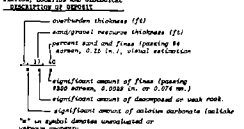
Overlayered Resource

4 Probable aggregate resource

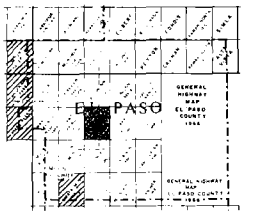
MAP SYMBOLS

Operating gravel and/or sand pit
Abandoned gravel and/or sand pit
Operating stone quarry
Abandoned stone quarry
Potential quarry aggregate resource area
Selected well or drill-hole location with overburden thickness (ft) over sand/gravel resource thickness (ft), obtained from well logs.
"g" indicates gravel; "s" indicates sand
"-" in symbol denotes unevaluated or unknown property.
"m" denotes Colorado Geological Survey windsor/Sand and Gravel projects' drill hole
Landform boundary, solid where known or observed; dashed where approximate or inferred.

STATION, LOCATION AND GEOLOGICAL DESCRIPTION OF DEPOSIT



"m" in symbol denotes unevaluated or unknown property
"-" in symbol denotes property absent or insignificant



QUADRANGLE LOCATION
NON-RESOURCE OR WITHDRAWN AREA

Geology modified after Scott, G.R.,& Wobus,R.A. 1973, Reconnaissance geologic map of Colorado Springs and Vicinity, Colorado: U. S. Geological Survey Map, MF-482.

REFERENCE:

Trimble, D.E., and Pfeil, R.H., 1974, Map showing potential sources of gravel and crushed-rock aggregate in the Colorado Springs-Castle Rock Area, Front Range Urban Corridor, Colorado: U. S. Geol. Survey Map I-857 A.

Mapped by: Phillip C. Wicklein
Date: June 30, 1974

Prepared in cooperation with the U. S. Geological Survey.

Base from U. S. Geological Survey 7-1/2 minute quadrangle

CONTOUR INTERVAL 20 FEET
DATUM IS MEAN SEA LEVEL

ROAD CLASSIFICATION

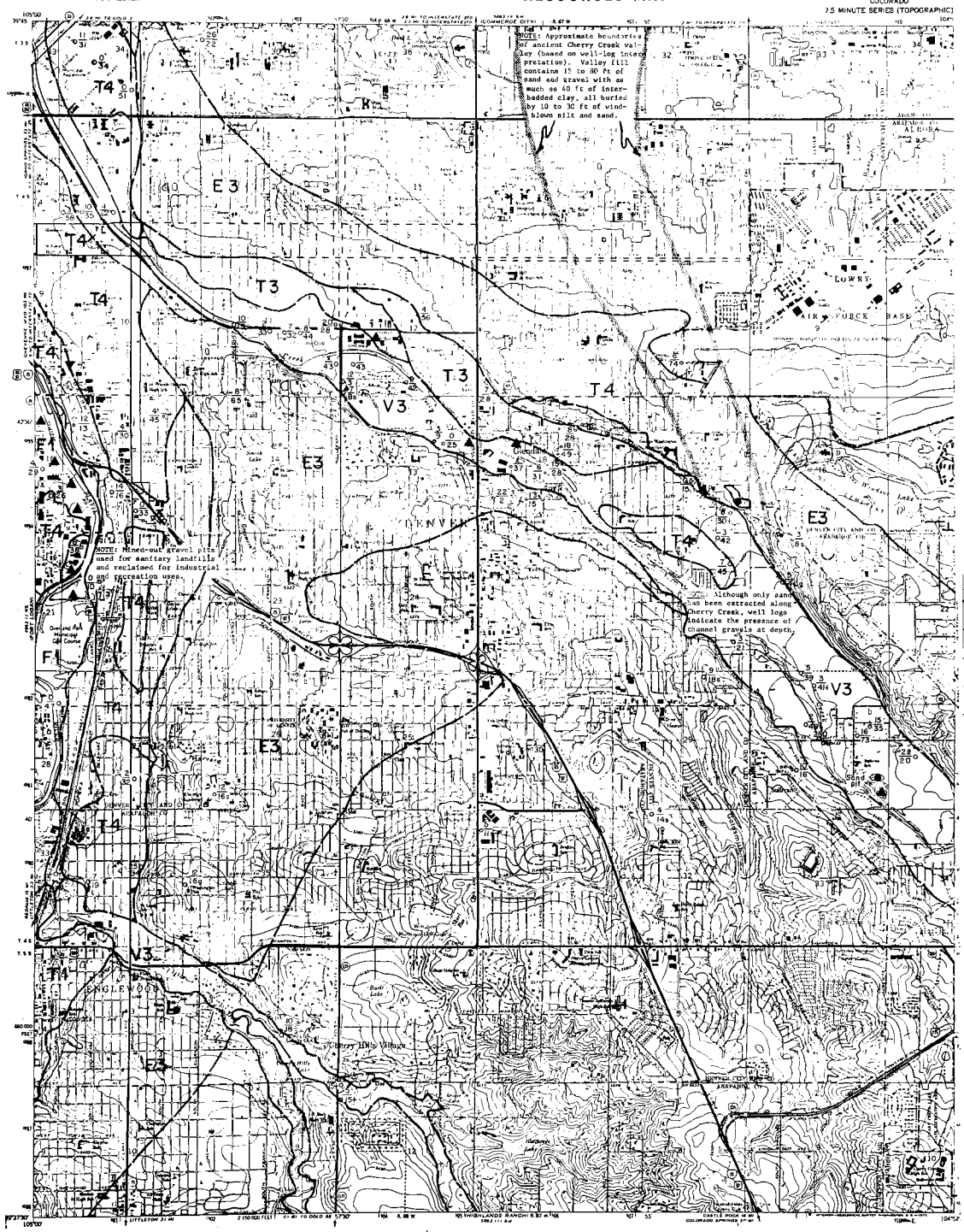
Heavy duty ——— Light duty ———
Medium-duty ——— Unimproved dirt - - - - -
U.S. Route State Route

ELSMERE, COLO.

SAND, GRAVEL AND QUARRY AGGREGATE RESOURCES MAP

DEPARTMENT OF NATURAL RESOURCES
COLORADO GEOLOGICAL SURVEY
JOHN W. ROLD, DIRECTOR

ENGLEWOOD QUADRANGLE
COLORADO
7.5 MINUTE SERIES (TOPOGRAPHIC)



EXPLANATION

LANDFORM UNITS

- F Floodplain deposit
- T Stream terrace deposit
- V Valley fill (F & T)
- U Upland deposits
- A Alluvial fan
- E Wind-deposited sand (eolian)
- M Man-made deposits (slag,ceilings, spoils....)

RESOURCE CLASSIFICATION

Coarse Aggregate

- 1 Gravel: relatively clean and sound
- 2 Gravel: significant fines, decomposed rock, calcium carbonate.

Fine Aggregate

- 3 Sand

Unevaluated Resource

- 4 Probable aggregate resource

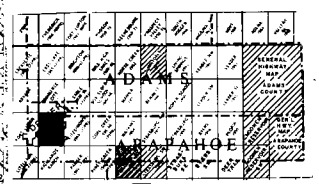
MAP SYMBOLS

- Operating gravel and/or sand pit
- Abandoned gravel and/or sand pit
- Operating stone quarry
- Abandoned stone quarry
- Potential quarry aggregate resource area
- Selected well or drill-hole location with overburden thickness (ft) over sand/gravel resource thickness (ft), obtained from well logs. "g" indicates gravel; "s" indicates sand. "u" in symbol denotes unevaluated or unknown property.
- "wb" Denotes Colorado Geological Survey Windsor/Sand and Gravel projects' drill hole
- Landform boundary, solid where known or observed, dashed where approximate or inferred.

STATION, LOCATION AND GEOLOGICAL DESCRIPTION OF DEPOSIT

- overburden thickness (ft)
- sand and gravel resource thickness (ft)
- significant amount of fines (passing #200 screen, 0.0059 in. or 0.074 mm.)
- significant amount of decomposed or weak rock.
- significant amount of calcium carbonate (caliche)

"u" in symbol denotes unevaluated or unknown property.
"n" in symbol denotes property absent or insignificant



QUADRANGLE LOCATION

NON-RESOURCE OR WITHDRAWN AREA

Geology modified after:
Hunt, C.B., 1954, Pleistocene and Recent deposits in the Denver area, Colorado: U.S. Geol. Survey Bull. 996-C, pl. 3.

References:

Inter-County Regional Planning Commission, 1961, Drainage course plan for the Denver region - Part 1, Sand and gravel resources: Denver, Colo., Inter-County Reg. Plan. Comm., pl. 1.

Hamilton, J.L., and Owens, W.C., 1972, Geologic aspects, soils and related foundation problems, Denver metropolitan area, Colorado: Geol. Survey Environmental Geology Rept. 1, pl. 1.

Thase, G.H., and McConaghy, J.A., 1972, Generalized surficial geologic map of the Denver area, Colorado: U.S. Geol. Survey Misc. Geol. Inv. Map I-731.

Trimble, D.E., and Pitch, H.E., 1974, Map showing potential sources of gravel and crushed-rock aggregate in the Greater Denver Area, Front Range Urban Corridor, Colo.: U. S. Geol. Survey Misc. Geol. Inv. Map I-856-A.

Mapped by: Stephen D. Schwochow
Date: June 30, 1974

Prepared in cooperation with the U. S. Geological Survey.

Base from U. S. Geological Survey
7-1/2 minute quadrangle

UTM GRID AND 1971 MAGNETIC NORTH DECLINATION AT CENTER OF SHEET

CONTOUR INTERVAL 10 FEET
DATUM IS MEAN SEA LEVEL

ROAD CLASSIFICATION

- Heavy-duty
- Light duty
- Medium-duty
- Unimproved dirt
- Interstate Route
- U.S. Route
- State Rou.

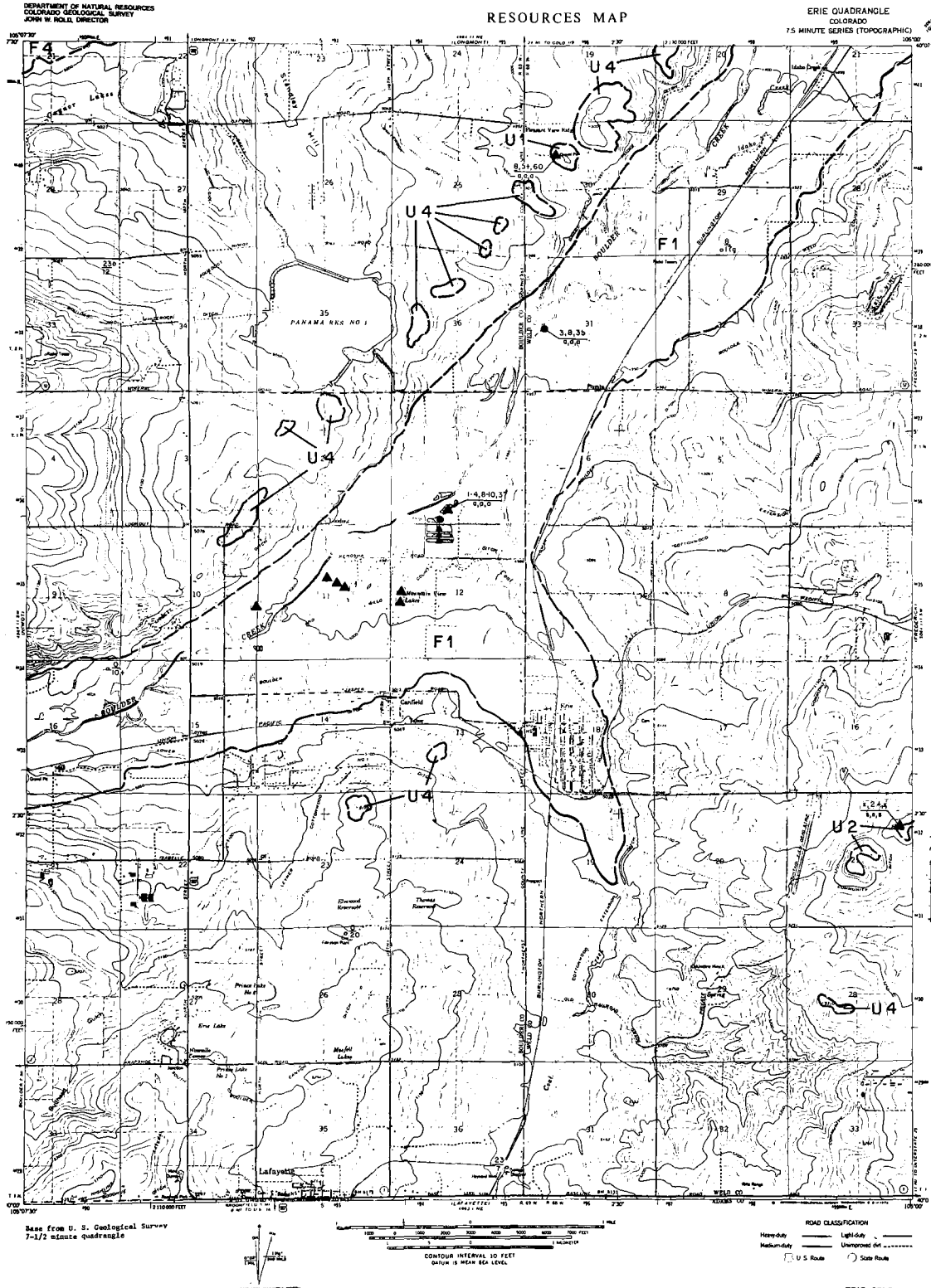
COLORADO
QUADRANGLE LOCATION

ENGLEWOOD, COLO.
N3937.5-W10452.5/7.5
1965
PHOTOREVISED 1971
AMS 5065 III NW-SERIES V877

SAND, GRAVEL AND QUARRY AGGREGATE RESOURCES MAP

DEPARTMENT OF NATURAL RESOURCES
COLORADO GEOLOGICAL SURVEY
JOHN W. ROLD, DIRECTOR

ERIE QUADRANGLE
COLORADO
7.5 MINUTE SERIES (TOPOGRAPHIC)



EXPLANATION

Landform unit
Resource classification

LANDFORM UNITS

- F Floodplain deposit
- T Stream terrace deposit
- V Valley fill (F & T)
- U Upland deposits
- A Alluvial fan
- E Wind-deposited sand (eolian)
- M Man-made deposits (dike,tailings, spoils.....)

RESOURCE CLASSIFICATION

Coarse Aggregate
(at least 50% retained on #4 screen, visual estimation)

- 1 Gravel: relatively clean and sound
- 2 Gravel: significant fines, decomposed rock, calcium carbonate.

Fine Aggregate
(greater than 70% passing #4 screen, 60% retained on #200 screen, visual estimate)

- 3 Sand

Unevaluated Resource

- 4 Probable aggregate resource

MAP SYMBOLS

- a Operating gravel and/or sand pit
- A Abandoned gravel and/or sand pit
- Operating stone quarry
- Abandoned stone quarry
- Potential quarry aggregate resource area
- Selected well or drill-hole location with overburden thickness (ft) over sand/gravel resource thickness (ft), obtained from well logs. "s" indicates gravel, "a" indicates sand. "-" in symbol denotes unevaluated or unknown property. "ws" denotes Colorado Geological Survey Windsor/Sand and Gravel projects' drill hole
- Landform boundary, solid where known or observed, dashed where approximate or inferred.

STATION, LOCATION AND GEOLOGICAL DESCRIPTION OF DEPOSIT

- overburden thickness (ft)
- sand/gravel resource thickness (ft)
- percent sand and fines (passing #4 screen, 0.25 in.), visual estimation
- significant amount of fines (passing #200 screen, 0.0029 in, or 0.074 mm.)
- significant amount of decomposed or weak rock
- significant amount of calcium carbonate (caliche)

"x" in symbol denotes unevaluated or unknown property
"o" in symbol denotes property absent or insignificant

QUADRANGLE LOCATION

NON-RESOURCE OR WITHDRAWN AREA

Geology modified after:

Colton, R.B., and Pitch, H.R., 1974, Map showing potential sources of gravel and crushed-rock aggregate in the Boulder-Fort Collins-Greeley Area, Front Range Urban Corridor, Colo.: U. S. Geol. Survey Misc. Geol. Inv. Map I-855-D.

Mapped by: Ralph R. Shroba
Date: June 30, 1974

Prepared in cooperation with the U. S. Geological Survey

Base from U. S. Geological Survey
7-1/2 minute quadrangle

CONTOUR INTERVAL 10 FEET
DATUM IS MEAN SEA LEVEL

ROAD CLASSIFICATION

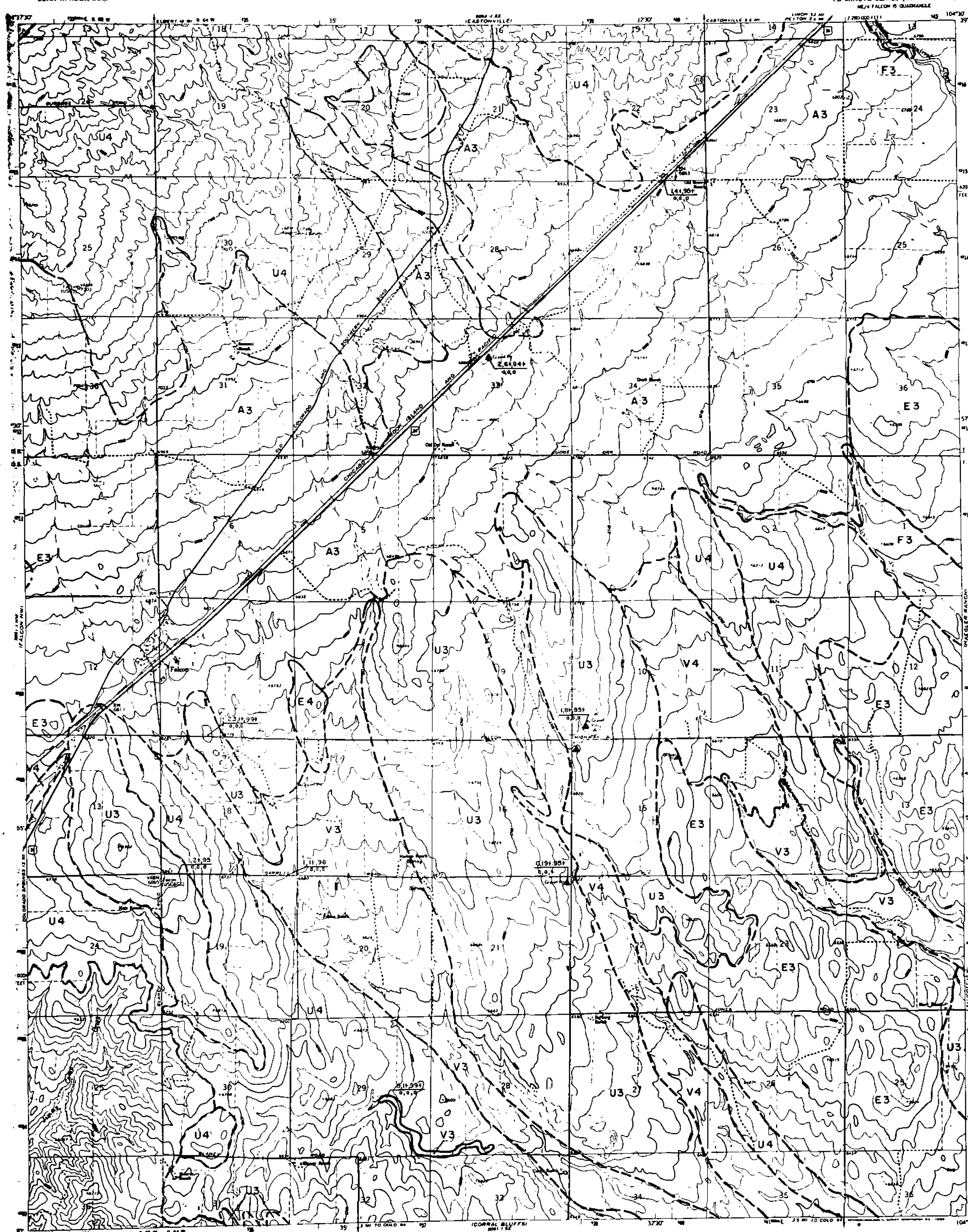
Heavy-duty — Light-duty
Medium-duty — Unimproved dirt
U.S Route — State Route

ERIE, COLO.

DEPARTMENT OF NATURAL RESOURCES
COLORADO GEOLOGICAL SURVEY
JOHN W. ROLD, DIRECTOR

SAND, GRAVEL AND QUARRY AGGREGATE RESOURCES MAP

FALCON QUADRANGLE
COLORADO–EL PASO CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)



EXPLANATION

F1 — Landform unit / Resource classification

LANDFORM UNITS

- F Floodplain deposit
- T Stream terrace deposit
- V Valley fill (F & T)
- U Upland deposits
- A Alluvial fan
- E Wind-deposited sand (eolian)
- M Man-made deposits (slag, tailings, spoils....)

RESOURCE CLASSIFICATION

Coarse Aggregate
(at least 30% retained on #4 screen, visual estimation)

- 1 Gravel: relatively clean and sound
- 2 Gravel: significant fines, decomposed rock, calcium carbonate.

Fine Aggregate
(greater than 70% passing #4 screen, 60% retained on #200 screen, visual estimation)

- 3 Sand

Unevaluated Resource

- 4 Probable aggregate resource

MAP SYMBOLS

- Operating gravel and/or sand pit
- Abandoned gravel and/or sand pit
- Operating stone quarry
- Abandoned stone quarry
- Potential quarry aggregate resource area
- Selected well or drill-hole location with overburden thickness (ft) over sand/gravel resource thickness (ft), obtained from well logs.
  "g" indicates gravel; "s" indicates sand
  "x" in symbol denotes unevaluated or unknown property.
- "WS" denotes Colorado Geological Survey Windsor/Sand and Gravel projects' drill hole
- Landform boundary, solid where known or observed; dashed where approximate or inferred.

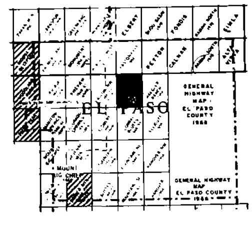
STATION, LOCATION AND GEOLOGICAL DESCRIPTION OF DEPOSIT

5, 17, 60

- overburden thickness (ft)
- sand/gravel resource thickness (ft)
- percent sand and fines (passing #4 screen, 0.25 in.), visual estimation
- significant amount of fines (passing #200 screen, 0.0059 in. or 0.074 mm.)
- significant amount of decomposed or weak rock.
- significant amount of calcium carbonate (caliche)

"x" in symbol denotes unevaluated or unknown property

"o" in symbol denotes property absent or insignificant



QUADRANGLE LOCATION

NON-RESOURCE OR WITHDRAWN AREA

Mapped by: Ralph R. Shroba
Date: June 30, 1974

Base from U. S. Geological Survey
7-1/2 minute quadrangle

CONTOUR INTERVAL 20 FEET

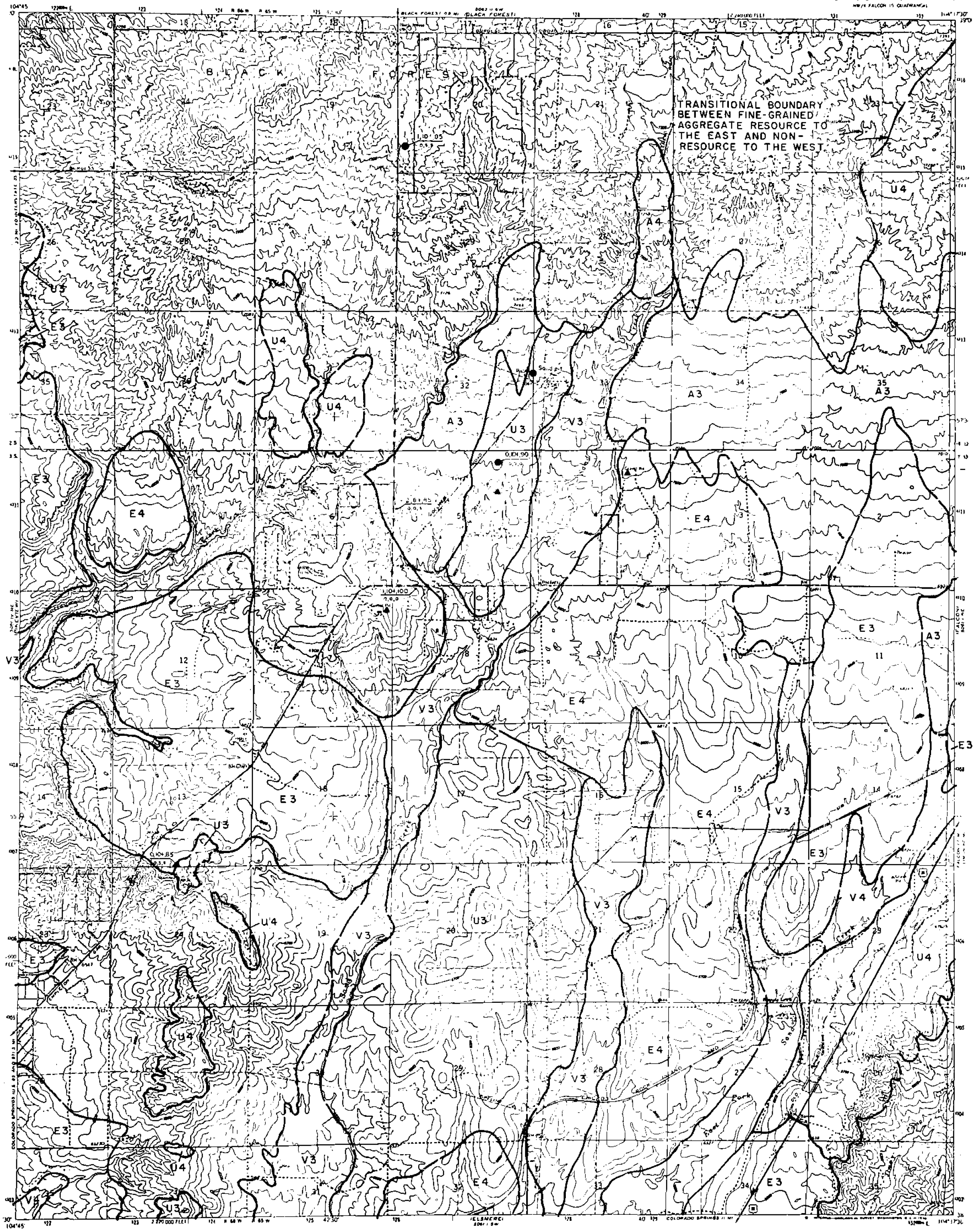
ROAD CLASSIFICATION
Heavy-duty — Light duty — Unimproved dirt
U.S. Route — State Route

FALCON, COLO

DEPARTMENT OF NATURAL RESOURCES
COLORADO GEOLOGICAL SURVEY
JOHN W. ROLD, DIRECTOR

SAND, GRAVEL AND QUARRY AGGREGATE RESOURCES MAP

FALCON NW QUADRANGLE
COLORADO - EL PASO CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)



Base from U. S. Geological Survey
7-1/2 minute quadrangle

FALCON NW, COLO.

EXPLANATION

F — Landform unit
Resource classification

LANDFORM UNITS

- F Floodplain deposit
- T Stream terrace deposit
- V Valley fill (F & T)
- U Upland deposits
- A Alluvial fan
- E Wind-deposited sand (eolian)
- M Man-made deposits (slag, tailings, spoils....)

RESOURCE CLASSIFICATION

Coarse Aggregate
(at least 30% retained on #4 screen, visual estimation)

- 1 Gravel: relatively clean and sound
- 2 Gravel: significant fines, decomposed rock, calcium carbonate.

Fine Aggregate
(greater than 70% passing #4 screen, 8% retained on #200 screen, visual estimation)

- 3 Sand

Unevaluated Resource

- 4 Probable aggregate resource

MAP SYMBOLS

- Operating gravel and/or sand pit
- Abandoned gravel and/or sand pit
- Operating stone quarry
- Abandoned stone quarry
- Potential quarry aggregate resource area
- Selected well or drill-hole location with overburden thickness (ft) over sand/gravel resource thickness (ft), obtained from well logs.
  "g" indicates gravel; "s" indicates sand
  "x" in symbol denotes unevaluated or unknown property.
- "WG" denotes Colorado Geological Survey Windsor/Sand and Gravel projects' drill hole
- Landform boundary, solid where known or observed; dashed where approximate or inferred.

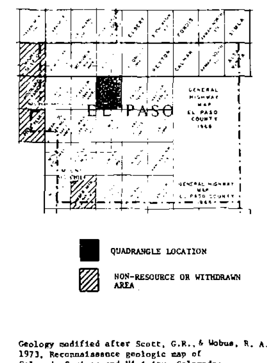
STATION, LOCATION AND GEOLOGICAL DESCRIPTION OF DEPOSIT

5, 17, 40

- overburden thickness (ft)
- sand/gravel resource thickness (ft)
- percent sand and fines (passing #4 screen, 0.05 in.), visual estimation
- significant amount of fines (passing #200 screen, 0.0059 in. or 0.074 mm.)
- significant amount of decomposed or weak rock
- significant amount of calcium carbonate (caliche)

"x" in symbol denotes unevaluated or unknown property

"o" in symbol denotes property absent or insignificant



QUADRANGLE LOCATION

NON-RESOURCE OR WITHDRAWN AREA

Geology modified after Scott, G.R., & Wobus, R. A. 1973, Reconnaissance geologic map of Colorado Springs and Vicinity, Colorado: U. S. Geological Survey Map, MF-482.

REFERENCE:

Trimble, D.E., and Fitch, H.R., 1974, Map showing potential sources of gravel and crushed-rock aggregate in the Colorado Springs-Castle Rock Area, Front Range Urban Corridor, Colorado: U. S. Geol. Survey Map I-857 A.

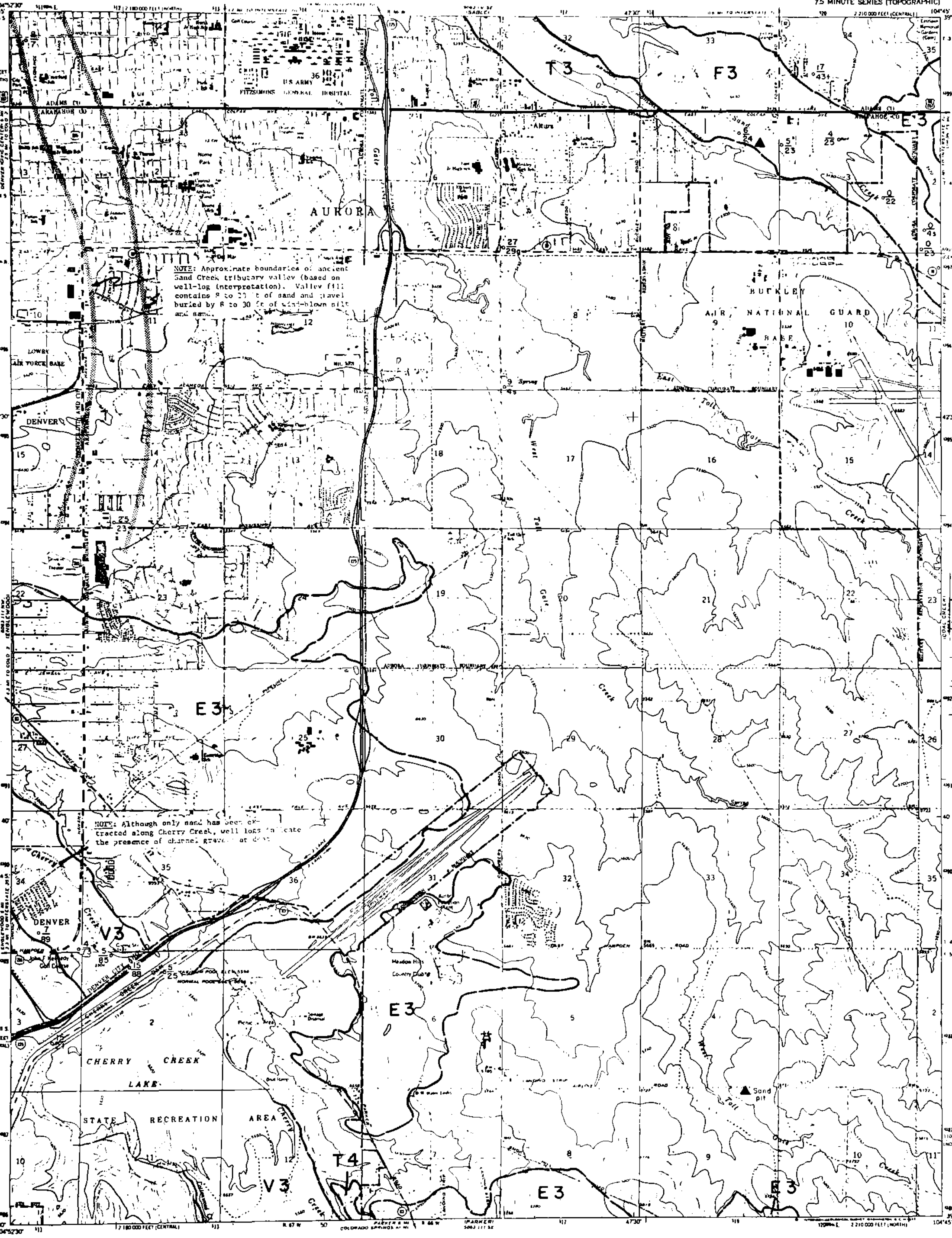
Mapped by: Phillip C. Wicklein
Date: June 30, 1974

Prepared in cooperation with the U. S. Geological Survey

SAND, GRAVEL AND QUARRY AGGREGATE RESOURCES MAP

DEPARTMENT OF NATURAL RESOURCES
COLORADO GEOLOGICAL SURVEY
JOHN W. ROLD, DIRECTOR

FITZSIMONS QUADRANGLE
COLORADO
7.5 MINUTE SERIES (TOPOGRAPHIC)



Base from U. S. Geological Survey
7-1/2 minute quadrangle

EXPLANATION

F1 — landform unit; resource classification

LANDFORM UNITS

- F — Floodplain deposit
- T — Stream terrace deposit
- V — Valley fill (F & T)
- U — Upland deposits
- A — Alluvial fan
- E — Wind-deposited sand (eolian)
- M — Man-made deposits (slag, tailings, spoils....)

RESOURCE CLASSIFICATION

Coarse Aggregate

- 1 — Gravel: relatively clean and sound
- 2 — Gravel: significant fines, decomposed rock, calcium carbonate.

Fine Aggregate

- 3 — Sand

Unevaluated Resource

- 4 — Probable aggregate resource

MAP SYMBOLS

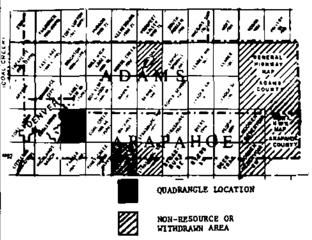
- ● Operating gravel and/or sand pit
- ▲ Abandoned gravel and/or sand pit
- Operating stone quarry
- Abandoned stone quarry
- Potential quarry aggregate resource area
- Selected well or drill-hole location with overburden thickness (ft) over sand/gravel resource thickness (ft), obtained from well logs.
  - "g" indicates gravel; "s" indicates sand
  - "?" in symbol denotes unevaluated or unknown property.
  - "wd" denotes Colorado Geological Survey Windsor/Sand and Gravel projects' drill hole
- Landform boundary, solid where known or observed; dashed where approximate or inferred.

STATION, LOCATION AND GEOLOGICAL DESCRIPTION OF DEPOSIT

- overburden thickness (ft)
- sand/gravel resource thickness (ft)
- percent sand and fines (passing #4 screen, 0.25 in.), visual estimate
- significant amount of fines (passing #200 screen, 0.0059 in. or 0.074 mm.)
- significant amount of decomposed or weak rock.
- significant amount of calcium carbonate (caliche)

"?" in symbol denotes unevaluated or unknown property

"o" in symbol denotes property absent or insignificant



REFERENCE:

Trimble, D.E., and Fitch, H.R. 1974, Map showing potential sources of gravel and crushed-rock aggregate in the Greater Denver Area, Front Range Urban Corridor, Colo.: U. S. Geol. Survey Misc. Geol. Inv. Map I-856-A.

Chase, G.H., and McConaghy, J.A., 1972, Generalized surficial geologic map of the Denver area, Colorado: U.S. Geol. Survey Misc. Geol. Inv. Map I-731

Hamilton, J.L., and Owens, W.G., 1972, Geologic aspects, soils and related foundation problems, Denver metropolitan area, Colorado: Colorado Geol. Survey Environmental Geology Rept. 1, pl. 1.

Inter-County Regional Planning Commission, 1961, Drainage course plan for the Denver region - Part 1, Sand and gravel resources: Denver, Colo., Inter-County Reg. Plan. Comm., pl. 1.

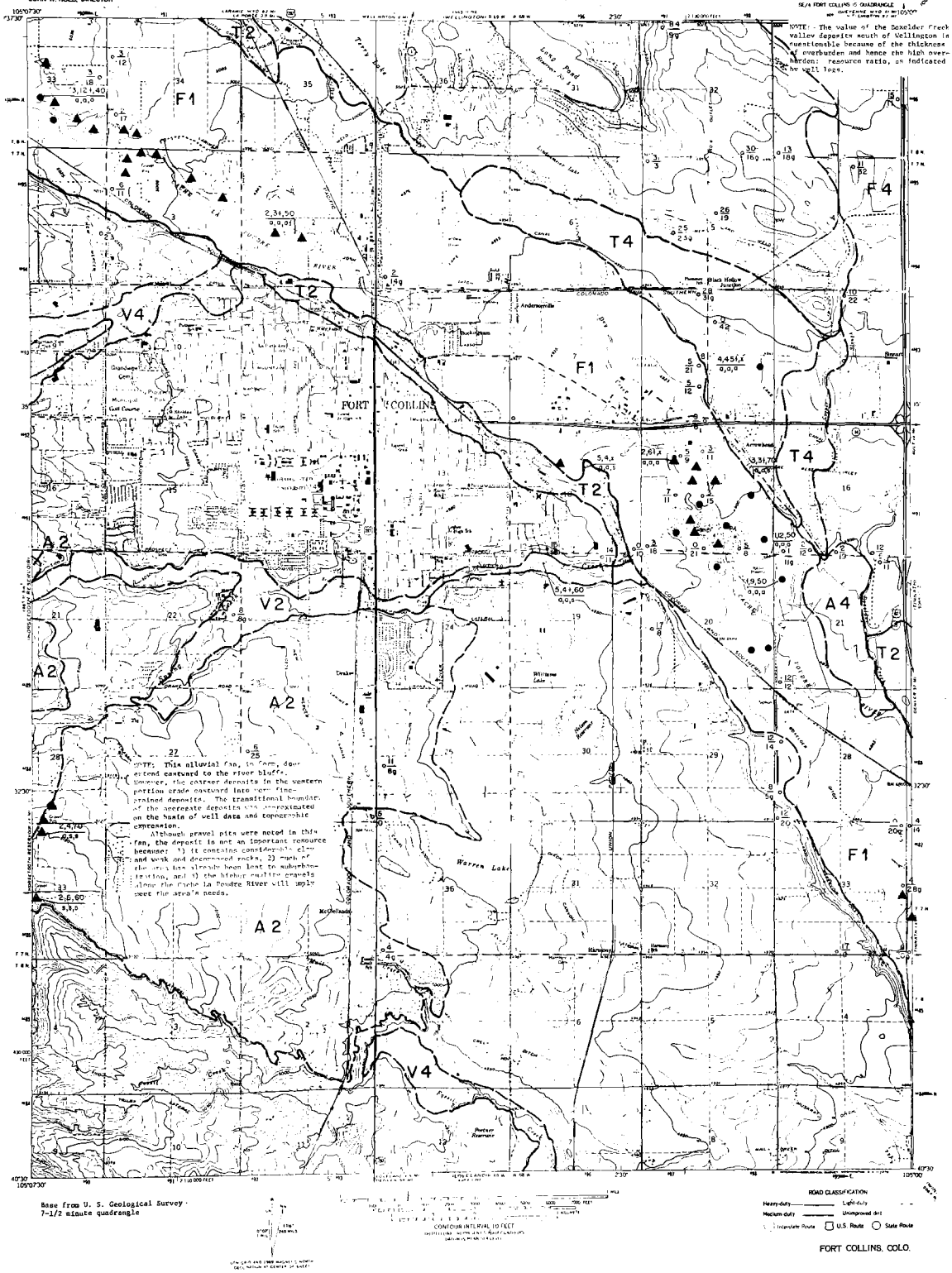
Mapped by: Stephen D. Schwochow
Date: June 30, 1974

Prepared in cooperation with the U. S. Geological Survey.

SAND, GRAVEL AND QUARRY AGGREGATE RESOURCES MAP

DEPARTMENT OF NATURAL RESOURCES
COLORADO GEOLOGICAL SURVEY
JOHN W. ROLD, DIRECTOR

FORT COLLINS QUADRANGLE
COLORADO-LARIMER CO
7.5 MINUTE SERIES (TOPOGRAPHIC)
SE/4 FORT COLLINS 15 QUADRANGLE



Base from U. S. Geological Survey
7-1/2 minute quadrangle

CONTOUR INTERVAL 10 FEET

ROAD CLASSIFICATION
Heavy-duty — Light-duty
Medium duty — Unimproved dirt
Interstate Route U.S. Route State Route

FORT COLLINS, COLO.

EXPLANATION

Landform unit
Resource classification

LANDFORM UNITS

F Floodplain deposit
T Stream terrace deposit
V Valley fill (F & T)
U Upland deposits
A Alluvial fan
E Wind-deposited sand (dunes)
M Man-made deposits (slag,tailings, spoils....)

RESOURCE CLASSIFICATION

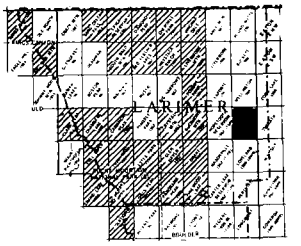
Coarse Aggregate
1 Gravel: relatively clean and sound
2 Gravel: significant fines, decomposed rock, calcium carbonate.
Fine Aggregate
3 Sand
Unevaluated Resources
4 Probable aggregate resource

MAP SYMBOLS

Operating gravel and/or sand pit
Abandoned gravel and/or sand pit
Operating stone quarry
Abandoned stone quarry
Potential quarry aggregate resource area
Selected well or drill-hole location with overburden thickness (t) over sand/gravel resource thickness (r), obtained from well logs.
"g" indicates gravel; "s" indicates sand
"," in symbol denotes unevaluated or unknown property
"wo" denotes Colorado Geological Survey Windsor/Sand and Gravel projects' drill hole
Landform boundary, solid where known or observed; dashed where approximate or inferred.

STATION, LOCATION AND GEOLOGICAL DESCRIPTION OF DEPOSIT

"e" in symbol denotes unevaluated or unknown property
"n" in symbol denotes property absent or insignificant



QUADRANGLE LOCATION
NON-RESOURCE OR WITHDRAWN AREA

REFERENCE:

Swan, F. B., III, 1972, Map of surficial geology of the Fort Collins quadrangle: Recons. mapping for Colorado Geol. Survey Windsor Environmental Geology Project, open-file map.

Ching, P.W., 1972, Economic gravel deposits of the lower Cache La Poudre River: Colorado State Univ. Unpub. Master Sci. Thesis.

Shelton, D.C., 1974, personal communication.

Hershey, L. A. and Schneider, P. A. 1972, Geological map of the lower Cache La Poudre River Basin, north-central Colorado: U. S. Geol. Survey Misc. Geol. Inv. Map I-687

Geology modified after; Colton, R.B., and Pitch, H.R., 1974, Map showing potential sources of gravel and crushed-rock aggregate in the Boulder-Fort Collins-Greeley Area, Front Range Urban Corridor, Colorado: U. S. Geol. Survey Map I-855 D.

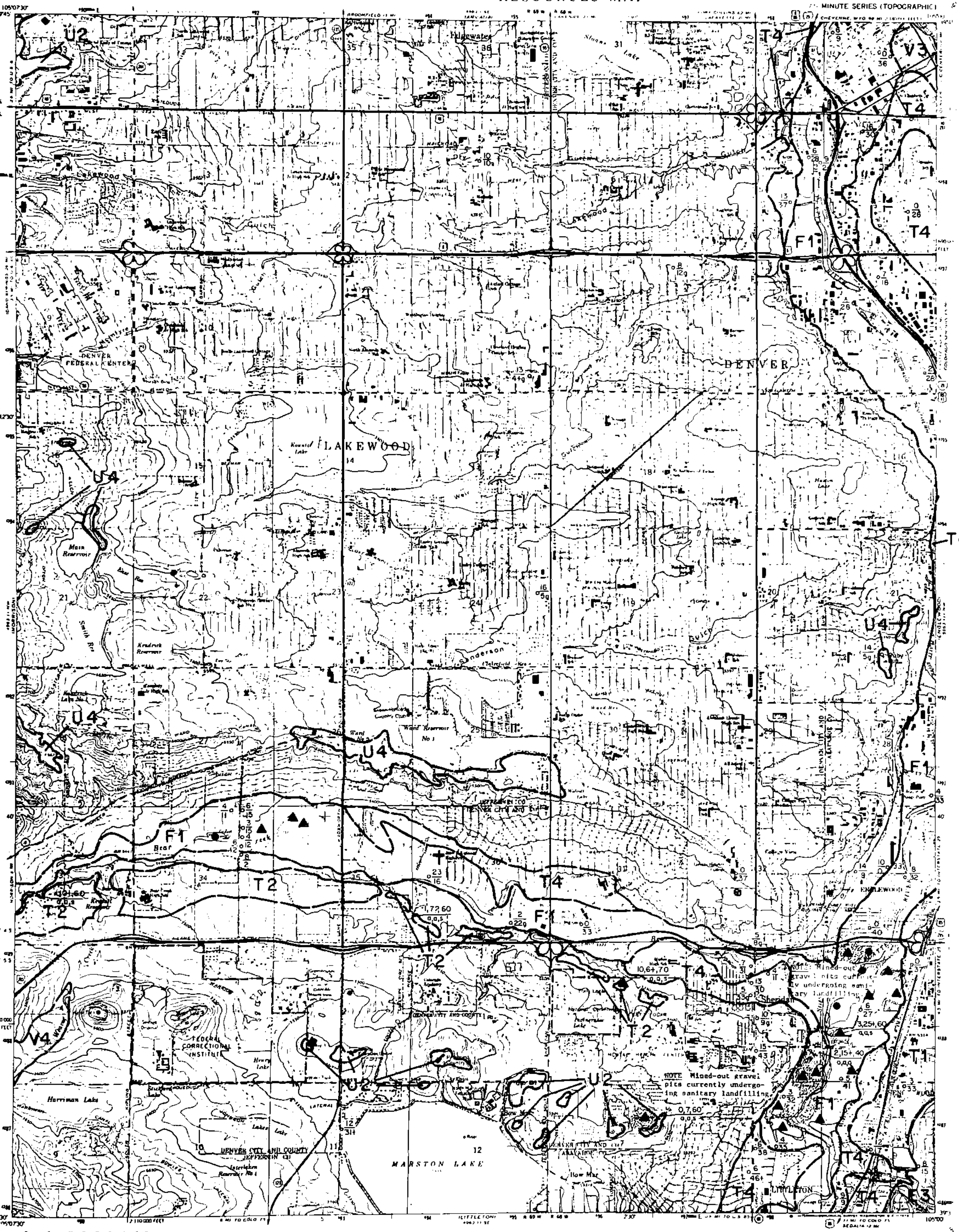
Mapped by: Stephen D. Schwochow
Date: June 30, 1974

Prepared in cooperation with the U. S. Geological Survey

DEPARTMENT OF NATURAL RESOURCES
COLORADO GEOLOGICAL SURVEY
JOHN W. ROLD, DIRECTOR

SAND, GRAVEL AND QUARRY AGGREGATE RESOURCES MAP

FORT LOGAN QUADRANGLE
COLORADO
7½ MINUTE SERIES (TOPOGRAPHIC)



Base from U. S. Geological Survey
7-1/2 minute quadrangle

CONTOUR INTERVAL 10 FEET
DATUM IS MEAN SEA LEVEL

ROAD CLASSIFICATION
Heavy-duty — Light duty
Medium-duty — Unimproved dirt
Interstate Route U.S. Route State Route

FORT LOGAN, COLO.

EXPLANATION

Landform unit
Resource classification

LANDFORM UNITS

- F Floodplain deposit
- T Stream terrace deposit
- V Valley fill (F & T)
- U Upland deposits
- A Alluvial fan
- E Wind-deposited sand (eolian)
- M Man-made deposits (slag, tailings, spoils....)

RESOURCE CLASSIFICATION

Coarse Aggregate
(at least 25% [illegible] visual estimation)

- 1 Gravel: relatively clean and sound
- 2 Gravel: significant fines, decomposed rock calcium carbonate.

Fine Aggregate
(greater than 70% passing #4 screen, 4% retained on #200 screen, visual estimation)

- 3 Sand

Unevaluated Resource

- 4 Probable aggregate resource

MAP SYMBOLS

- Operating gravel and/or sand pit
- Abandoned gravel and/or sand pit
- Operating stone quarry
- Abandoned stone quarry
- Potential quarry aggregate resource area
- Selected well or drill-hole location with overburden thickness (ft) over sand/gravel resource thickness (ft), obtained from well logs. "g" indicates gravel; "s" indicates sand.
- "x" in symbol denotes unevaluated or unknown property.
- "wb" denotes Colorado Geological Survey Windsor/Sand and Gravel projects' drill hole
- Landform boundary, solid where known or observed; dashed where approximate or inferred.

STATION, LOCATION AND GEOLOGICAL DESCRIPTION OF DEPOSIT

- overburden thickness (ft)
- sand gravel resource thickness (ft)
- percent sand and fines (passing #4 screen, 0.25 in.), visual estimation
- significant amount of fines (passing #200 screen, 0.0058 in. or 0.074 mm.)
- significant amount of decomposed or weak rock.
- significant amount of calcium carbonate (caliche)

"x" in symbol denotes unevaluated or unknown property
"o" in symbol denotes property absent or insignificant

QUADRANGLE LOCATION
NON-RESOURCE OR WITHDRAWN AREA

Geology modified after
Hunt, C.B., 1954, Pleistocene Recent deposits in the Denver area, Colorado: U.S. Geol. Survey Bull. 996-C, pl. 3.

References:
Inter-County Regional Planning Commission, 1961. Drainage course plan for the Denver region - Part 1, Sand and gravel resources: Denver Colo., Inter-County Reg. Plan. Comm., pl. 1.

Hamilton, J.L., and Owens, W.G., 1972, Geologic aspects, soils and related foundation problems, Denver metropolitan area, Colorado: Colorado Geol. Survey Environmental Geology Rept. 1., pl. 1.

Chase, G.H., and McConaghy, J.A., 1972, Generalized surficial geologic map of the Denver area, Colorado: U.S. Geol. Survey Misc. Geol. Inv. Map I-731.

Trimble, D.E., and Fitch, 1974, Map showing potential sources of gravel and crushed-rock aggregate in the Greater Denver Area, Front Range Urban Corridor, Colo.: U. S. Geol. Survey Misc. Geol. Inv. Map I-856-A.

Mapped by: Stephen D. Schwochow
Date: June 30, 1974

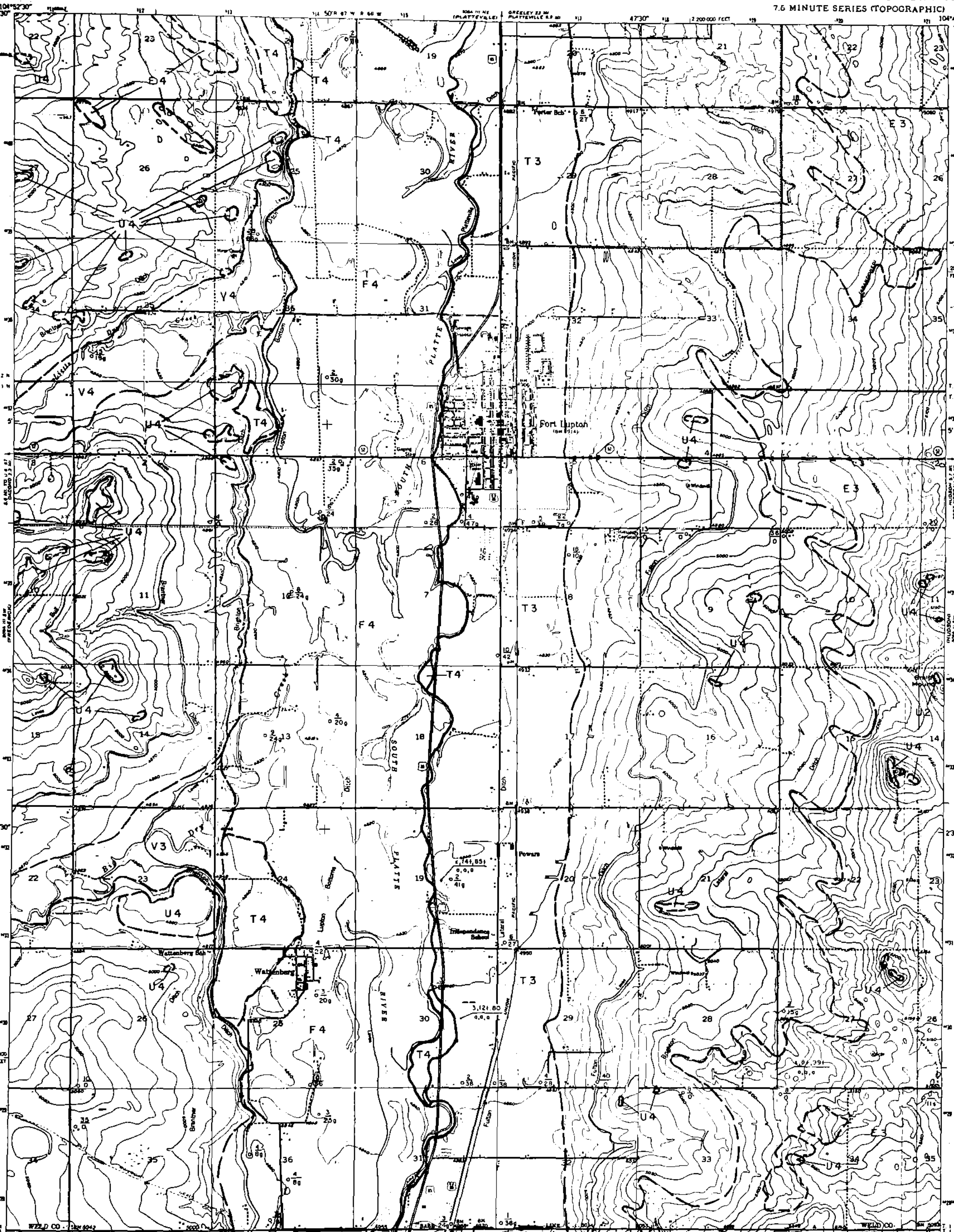
Prepared in cooperation with the U. S. Geological Survey.

SAND, GRAVEL AND QUARRY AGGREGATE

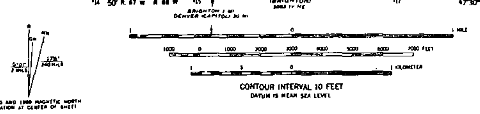
RESOURCES MAP

DEPARTMENT OF NATURAL RESOURCES
COLORADO GEOLOGICAL SURVEY
JOHN W. ROLD, DIRECTOR

FORT LUPTON QUADRANGLE
7.5 MINUTE SERIES (TOPOGRAPHIC)



Base from U. S. Geological Survey
7-1/2 minute quadrangle



ROAD CLASSIFICATION

Heavy-duty — Light-duty
Medium-duty — Unimproved dirt
U.S. Route — State Route

FORT LUPTON, COLO.

EXPLANATION

F1 — Landform unit; Resource classification

LANDFORM UNITS

- F Floodplain deposit
- T Stream terrace deposit
- V Valley fill (F & T)
- U Upland deposits
- A Alluvial fan
- E Wind-deposited sand (eolian)
- M Man-made deposits (slag, tailings, spoils....)

RESOURCE CLASSIFICATION

Coarse Aggregate
(at least 25% retained on #4 screen, visual estimation)

1 Gravel: relatively clean and sound

2 Gravel: significant fines, decomposed rock, calcium carbonate.

Fine Aggregate
(greater than 70% passing #4 screen, 40% retained on #200 screen, visual estimation)

3 Sand

Unevaluated Resource

4 Probable aggregate resource

MAP SYMBOLS

- Operating gravel and/or sand pit
- Abandoned gravel and/or sand pit
- Operating stone quarry
- Abandoned stone quarry
- Potential quarry aggregate resource area
- Selected well or drill-hole location with overburden thickness (ft) over sand/gravel resource thickness (ft), obtained from well logs. "g" indicates gravel; "s" indicates sand
- "•" in symbol denotes unevaluated or unknown property.
- "ws" denotes Colorado Geological Survey Windsor/Sand and Gravel projects' drill hole
- Landform boundary, solid where known or observed; dashed where approximate or inferred.

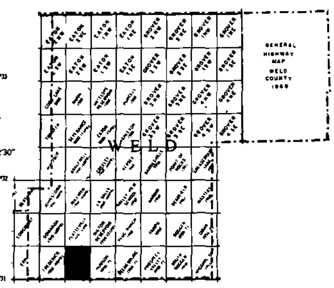
STATION, LOCATION AND GEOLOGICAL DESCRIPTION OF DEPOSIT

5, 17, 40

- overburden thickness (ft)
- sand/gravel resource thickness (ft)
- percent sand and fines (passing #4 screen, 0.25 in.), visual estimation
- significant amount of fines (passing #200 screen, 0.0029 in. or 0.074 mm.)
- significant amount of decomposed or weak rock.
- significant amount of calcium carbonate (caliche)

"•" in symbol denotes unevaluated or unknown property

"o" in symbol denotes property absent or insignificant



QUADRANGLE LOCATION

NON-RESOURCE OR WITHDRAWN AREA

Geology modified after:

Colton, R.B., and Fitch, H.R., 1974, Map showing potential sources of gravel and crushed-rock aggregate in the Boulder-Fort Collins-Greeley Area, Front Range Urban Corridor, Colorado: U. S. Geol. Survey Map I-855 D.

Soister, P. E., 1965, U. S. Geological Survey Geological Quadrangle Map, GQ-397.

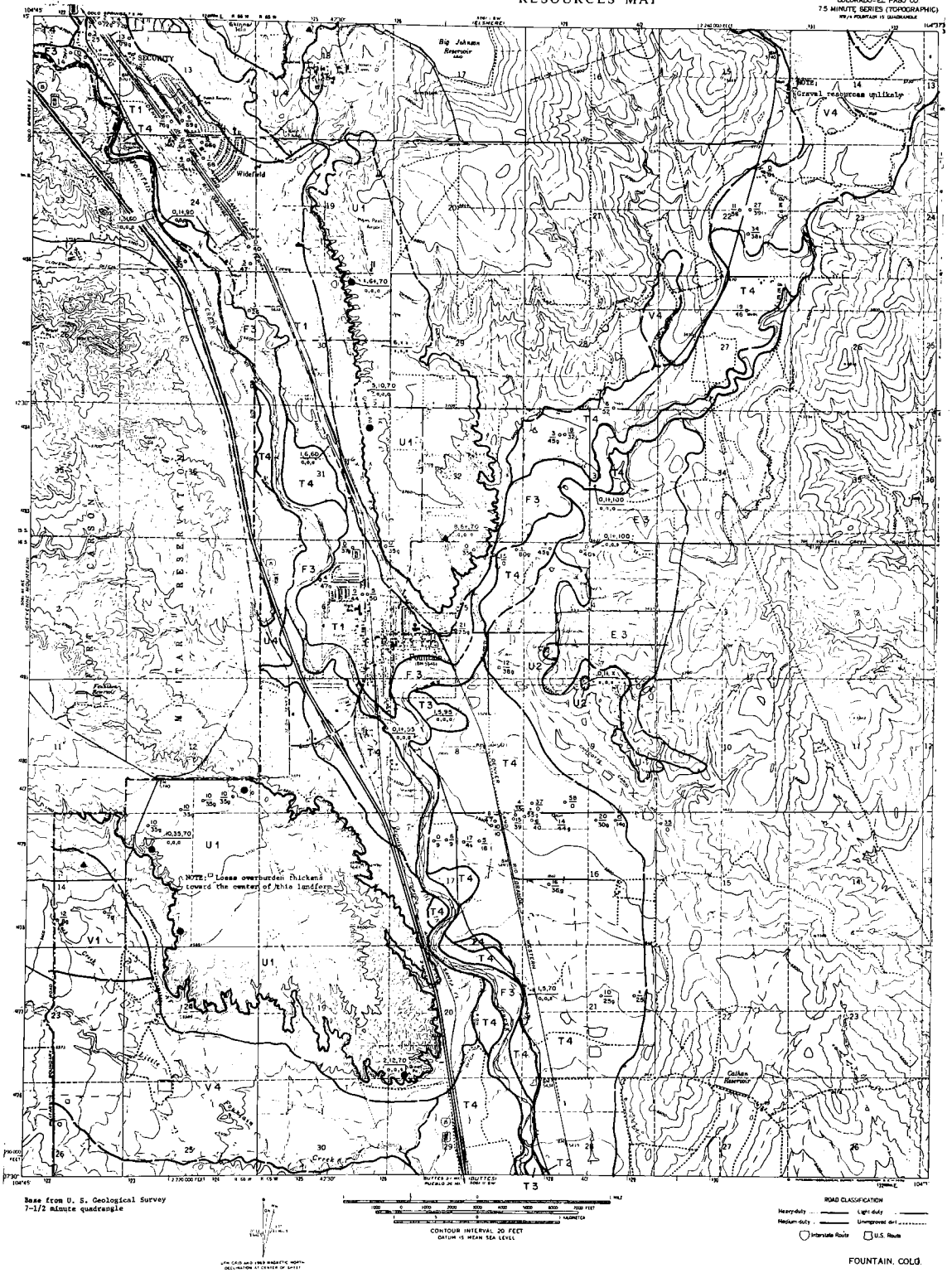
Mapped by: Ralph R. Shroba
Date: June 30, 1974

Prepared in cooperation with the U. S. Geological Survey.

SAND, GRAVEL AND QUARRY AGGREGATE RESOURCES MAP

DEPARTMENT OF NATURAL RESOURCES,
COLORADO GEOLOGICAL SURVEY
JOHN W. ROLD, DIRECTOR

FOUNTAIN QUADRANGLE
COLORADO-EL PASO CO
7.5 MINUTE SERIES (TOPOGRAPHIC)



EXPLANATION

Landform unit
Resource classification

LANDFORM UNITS

- F Floodplain deposit
- T Stream terrace deposit
- V Valley fill (F & T)
- U Upland deposits
- A Alluvial fan
- E Wind-deposited sand (eolian)
- M Man-made deposits (slag, tailings, spoils....)

RESOURCE CLASSIFICATION

Concrete Aggregate
(at least 30% retained on #4 screen, gravel extraction)

- 1 Gravel: relatively clean sand and gravel
- 2 Gravel: significant fines, decomposed rock, calcium carbonate.

Fair Aggregate
(greater than 70% passing #4 screen, 40% retained on #10 screen, gravel extraction)

- 3 Sand

Unevaluated Resource

- 4 Possible aggregate resource

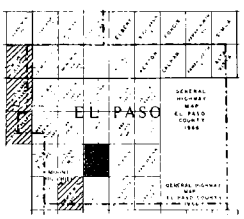
MAP SYMBOLS

- Operating gravel and/or sand pit
- Abandoned gravel and/or sand pit
- Operating stone quarry
- Abandoned stone quarry
- Potential quarry aggregate resource area
- Selected soil or drill-hole location with overburden thickness (ft) over sand/gravel resource thickness (ft), obtained from well logs. "g" indicates gravel; "s" indicates sand
- "-" in symbol denotes unevaluated or unknown property
- "ms" denotes Colorado Geological Survey Windsor/Sand and Gravel projects' drill hole
- Landform boundary, solid where known or observed; dashed where approximate or inferred.

STATION, LOCATION AND GEOLOGICAL DESCRIPTION OF DEPOSIT

- overburden thickness (ft)
- sand/gravel resource thickness (ft)
- percent sand and fines (passing #4 screen, 0.25 in.), gravel extraction
- significant amount of fines (passing #200 screen, 0.0058 in. or 0.074 mm.)
- significant amount of decomposed or weak rock.
- significant amount of calcium carbonate (caliche)

"m" in symbol denotes accumulated or unknown property
"n" in symbol denotes property absent or insignificant



QUADRANGLE LOCATION

NON-RESOURCE OR WITHDRAWN AREA

Geology modified after Scott, G.R., & Wobus, R.A 1973, Reconnaissance geologic map of Colorado Springs and Vicinity, Colorado: U. S. Geological Survey Map, MF-482.

REFERENCE:

Trimble, D.E., and Fitch, H.R., 1974, Map showing potential sources of gravel and crushed-rock aggregate in the Colorado Springs-Castle Rock Area, Front Range Urban Corridor, Colorado: U. S. Geol. Survey Map I-857 A.

Mapped by: Phillip C. Wicklein
Date: June 30, 1974

Prepared in cooperation with the U. S. Geological Survey.

Base from U. S. Geological Survey
7-1/2 minute quadrangle

CONTOUR INTERVAL 20 FEET
DATUM IS MEAN SEA LEVEL

ROAD CLASSIFICATION

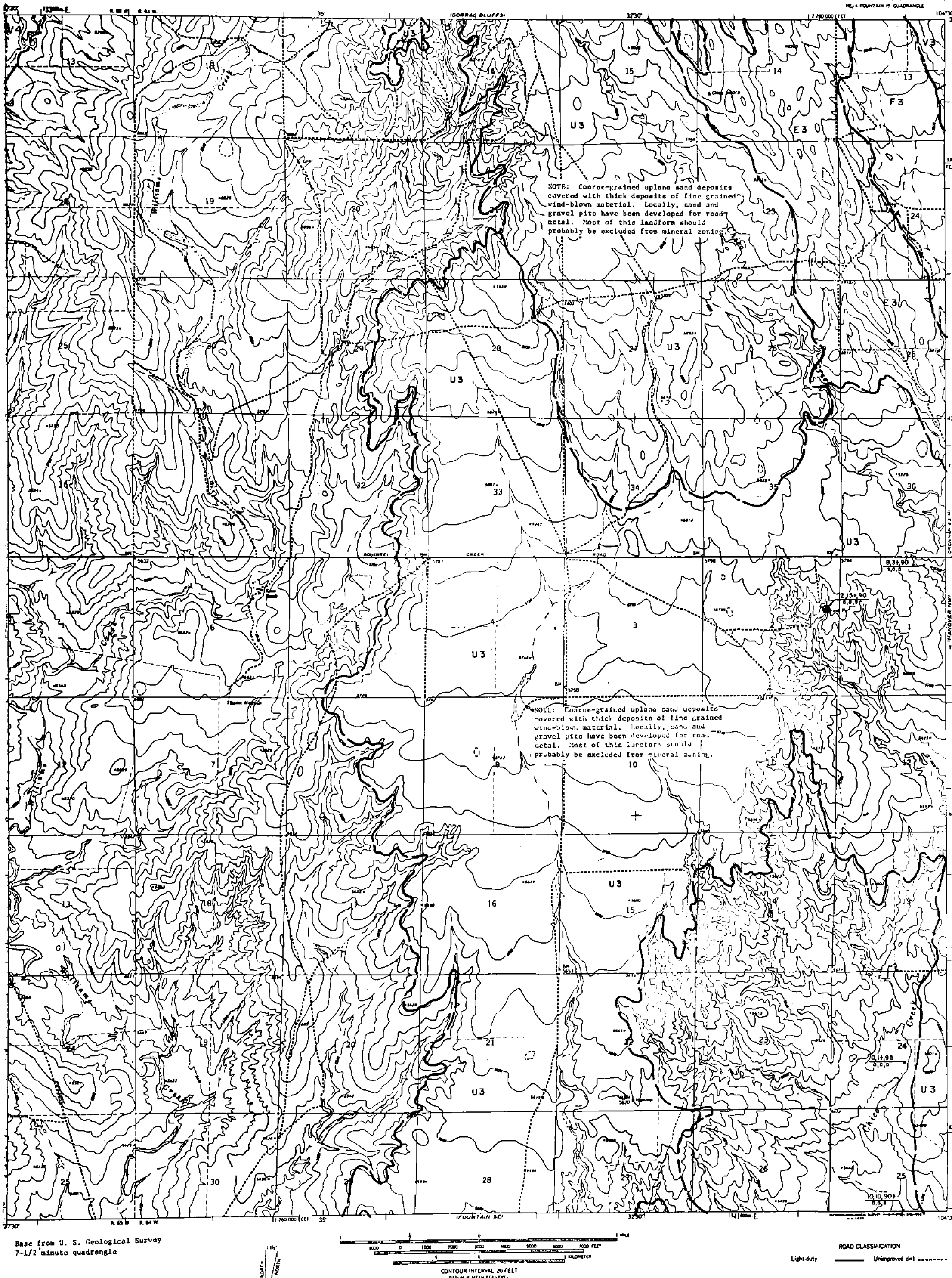
Heavy duty
Light duty
Medium duty
Unimproved dirt
Interstate Route
U.S. Route

FOUNTAIN, COLO.

DEPARTMENT OF NATURAL RESOURCES
COLORADO GEOLOGICAL SURVEY
JOHN W. ROLD, DIRECTOR

SAND, GRAVEL AND QUARRY AGGREGATE RESOURCES MAP

FOUNTAIN NE QUADRANGLE
COLORADO-EL PASO CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)



Base from U. S. Geological Survey
7-1/2 minute quadrangle

EXPLANATION

F3 — Landform unit / Resource classification

LANDFORM UNITS

- F Floodplain deposit
- T Stream terrace deposit
- V Valley fill (F & T)
- U Upland deposits
- A Alluvial fan
- E Wind-deposited sand (eolian)
- M Man-made deposits (slag, tailings, spoils....)

RESOURCE CLASSIFICATION

Coarse Aggregate
(at least 3/4 retained on #4 screen, visual estimation)

1. Gravel: relatively clean and sound
2. Gravel: significant fines, decomposed rock, calcium carbonate.

Fine Aggregate
(greater than 70% passing #4 screen, 60% retained on #200 screen, visual estimation

3. Sand

Unevaluated Resource

4. Probable aggregate resource

MAP SYMBOLS

- Operating gravel and/or sand pit
- Abandoned gravel and/or sand pit
- Operating stone quarry
- Abandoned stone quarry
- Potential quarry aggregate resource area
- Selected well or drill-hole location with overburden thickness (ft) over sand/gravel resource thickness (ft), obtained from well logs. "g" indicates gravel; "s" indicates sand. "?" in symbol denotes unevaluated or unknown property.
- "WS" denotes Colorado Geological Survey Windsor/Sand and Gravel projects' drill hole
- Landform boundary, solid where known or observed; dashed where approximate or inferred.

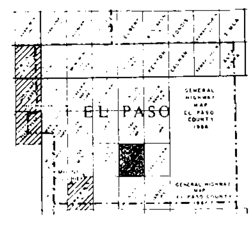
STATION, LOCATION AND GEOLOGICAL DESCRIPTION OF DEPOSIT

3, 17, 60

- overburden thickness (ft)
- sand/gravel resource thickness (ft)
- percent sand and fines (passing #4 screen, 0.25 in.), visual estimation
- significant amount of fines (passing #200 screen, 0.0059 in. or 0.074 mm.)
- significant amount of decomposed or weak rock.
- significant amount of calcium carbonate (caliche)

"?" in symbol denotes unevaluated or unknown property

"o" in symbol denotes property absent or insignificant



QUADRANGLE LOCATION

NON-RESOURCE OR WITHDRAWN AREA

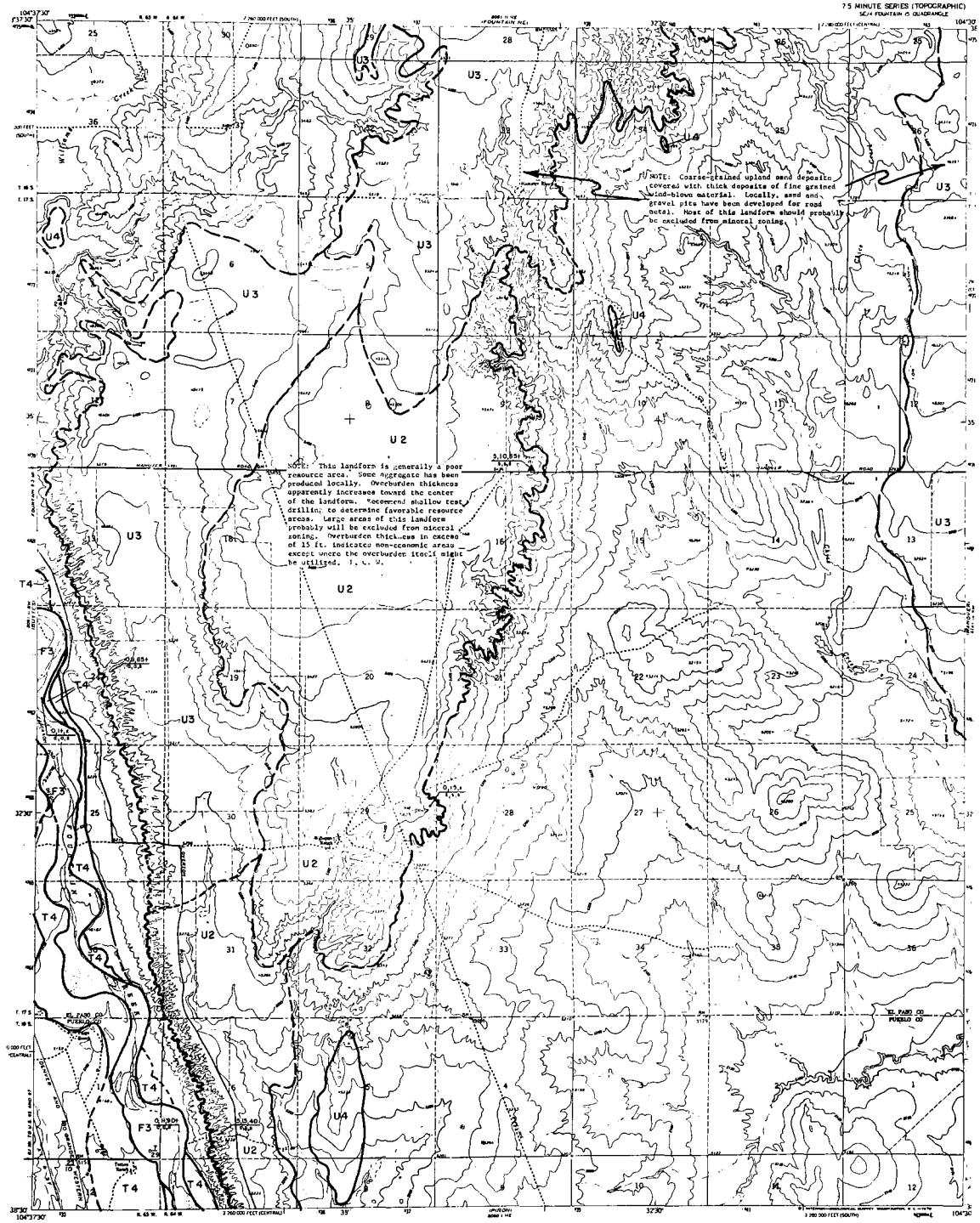
Mapped by: Phillip C. Wicklein
Date: June 30, 1974

FOUNTAIN NE, COLO.

DEPARTMENT OF NATURAL RESOURCES
COLORADO GEOLOGICAL SURVEY
JOHN W. ROLD, DIRECTOR

SAND, GRAVEL AND QUARRY AGGREGATE RESOURCES MAP

FOUNTAIN SE QUADRANGLE
COLORADO
7.5 MINUTE SERIES (TOPOGRAPHIC)
SE/4 FOUNTAIN 15 QUADRANGLE



EXPLANATION

Landform unit
Resource class/fraction

LANDFORM UNITS

F Floodplain deposit
T Stream terrace deposit
V Valley fill (F & T)
U Upland deposits
A Alluvial fan
E Wind-deposited sand (eolian)
M Man-made deposits (slag, tailings, spoils....)

RESOURCE CLASSIFICATION

Coarse Aggregate
(at least 25% retained on #4 screen, visual estimation)
1 Gravel: relatively clean and sound
2 Gravel: significant fines, decomposed rock, calcium carbonate.

Fine Aggregate
(greater than 75% passing #4 screen, 80% retained on #325 screen, visual estimation)
3 Sand

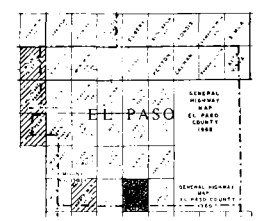
Undeveloped Resource
4 Probable aggregate resource

MAP SYMBOLS

Operating gravel and/or sand pit
Abandoned gravel and/or sand pit
Operating stone quarry
Abandoned stone quarry
Potential quarry aggregate resource area
Selected well or drill-hole location with overburden thickness (ft) over sand/gravel resource thickness (ft), obtained from well logs
"g" indicates gravel, "s" indicates sand
"-" in symbol denotes unevaluated or unknown property.
"DH" denotes Colorado Geological Survey Windsor/Boyd End Gravel projects' drill hole
Landform boundary, solid where known or observed; dashed where approximate or inferred

STATION, LOCATION AND GEOLOGICAL DESCRIPTION OF DEPOSIT

overburden thickness (ft)
sand/gravel resource thickness (ft)
percent sand and fines (passing #4 screen, 0.25 in.), visual estimation
significant amount of fines (passing #200 screen, 0.0058 in. or 0.074 mm.)
significant amount of decomposed or weak rock.
significant amount of calcium carbonate (caliche)
"x" in symbol denotes unevaluated or unknown property
"o" in symbol denotes property absent or insignificant



QUADRANGLE LOCATION
NON-RESOURCE OR WITHDRAWN AREA

Mapped by: Phillip C. Wicklein
Date: June 30, 1974

Base from U. S. Geological Survey 7-1/2 minute quadrangle

CONTOUR INTERVAL 20 FEET
DATUM IS MEAN SEA LEVEL

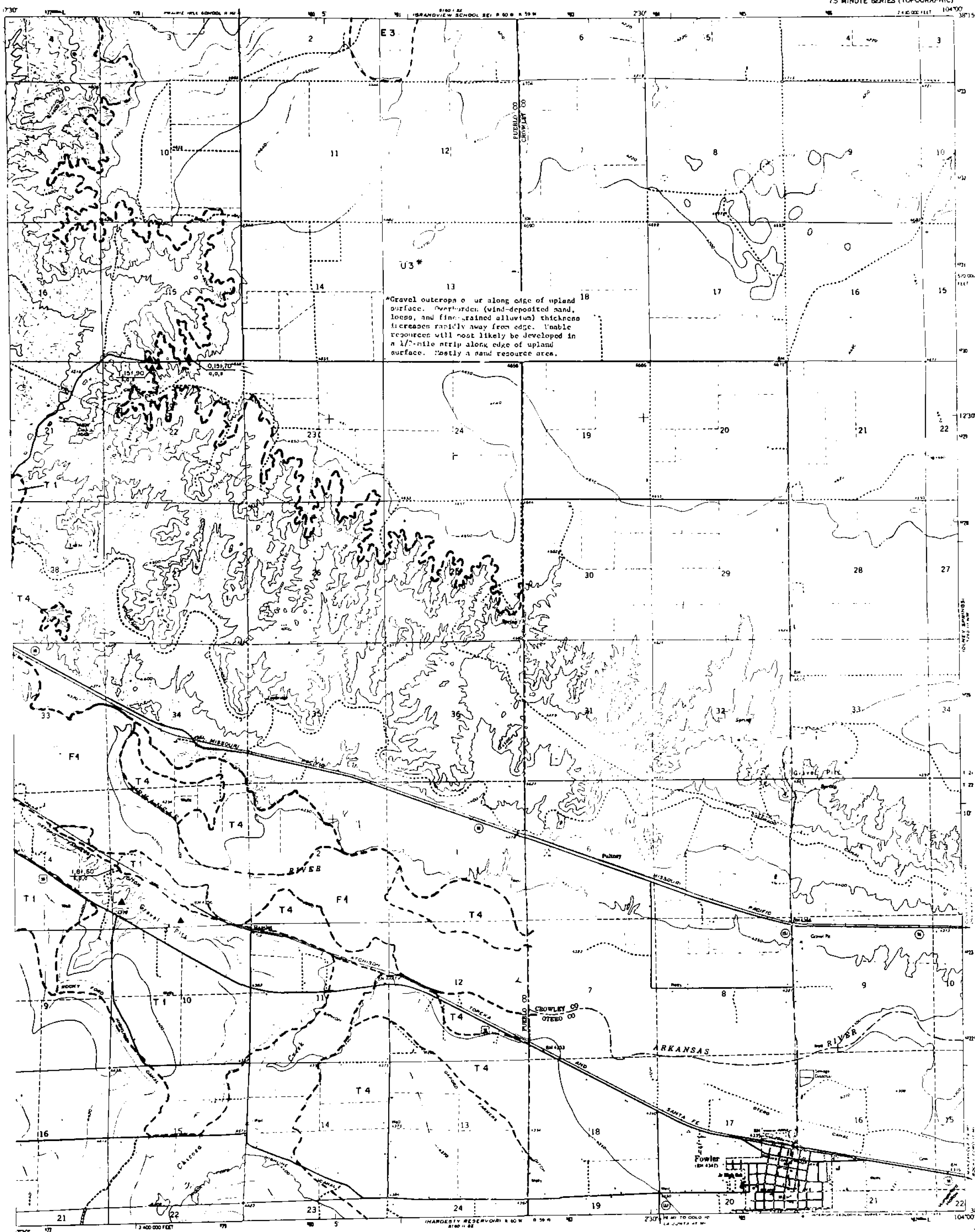
ROAD CLASSIFICATION
Light-duty ——— Unimproved dirt ----------

FOUNTAIN SE, COLO.

SAND, GRAVEL AND QUARRY AGGREGATE RESOURCES MAP

DEPARTMENT OF NATURAL RESOURCES
COLORADO GEOLOGICAL SURVEY
JOHN W. ROLD, DIRECTOR

FOWLER QUADRANGLE
COLORADO
7.5 MINUTE SERIES (TOPOGRAPHIC)



Base from U. S. Geological Survey
7-1/2 minute quadrangle

CONTOUR INTERVAL 10 FEET
DATUM IS MEAN SEA LEVEL

ROAD CLASSIFICATION
Heavy duty — Light duty
Medium duty — Unimproved dirt
U S Route — State Route

EXPLANATION

F — Landform unit; Resource classification

LANDFORM UNITS

- F Floodplain deposit
- T Stream terrace deposit
- V Valley fill (F & T)
- U Upland deposits
- A Alluvial fan
- E Wind-deposited sand (eolian)
- M Man-made deposits (slag, tailings, spoils...)

RESOURCE CLASSIFICATION

Coarse Aggregate
(at least 2/3 retained on #4 screen, visual estimation)

- 1 Gravel: relatively clean and sound
- 2 Gravel: significant fines, decomposed rock, calcium carbonate.

Fine Aggregate
(greater than 2/3 passing #4 screen, #01 retained on #200 screen, visual estimation)

- 3 Sand

Unevaluated Resource

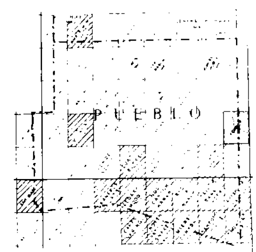
- 4 Probable aggregate resource

MAP SYMBOLS

- Operating gravel and/or sand pit
- Abandoned gravel and/or sand pit
- Operating stone quarry
- Abandoned stone quarry
- Potential quarry aggregate resource area
- Selected well or drill-hole location with overburden thickness (ft) over sand/gravel resource thickness (ft), obtained from well logs. "g" indicates gravel; "s" indicates sand. "x" in symbol denotes unevaluated or unknown property.
- denotes Colorado Geological Survey Windsor/Sand and Gravel projects drill hole
- Landform boundary, solid where known or observed; dashed where approximate or inferred.

STATION, LOCATION AND GEOLOGICAL DESCRIPTION OF DEPOSIT

overburden thickness (ft)
sand/gravel resource thickness (ft)
percent sand and fines (passing #4 screen, 0.75 in.), visual estimation
5, 17, 40
significant amount of fines (passing #200 screen, 0.0029 in. or 0.074 mm)
significant amount of decomposed or weak rock.
significant amount of calcium carbonate (caliche)
"x" in symbol denotes unevaluated or unknown property
"o" in symbol denotes property absent or insignificant



QUADRANGLE LOCATION

NON-RESOURCE OR WITHDRAWN AREA

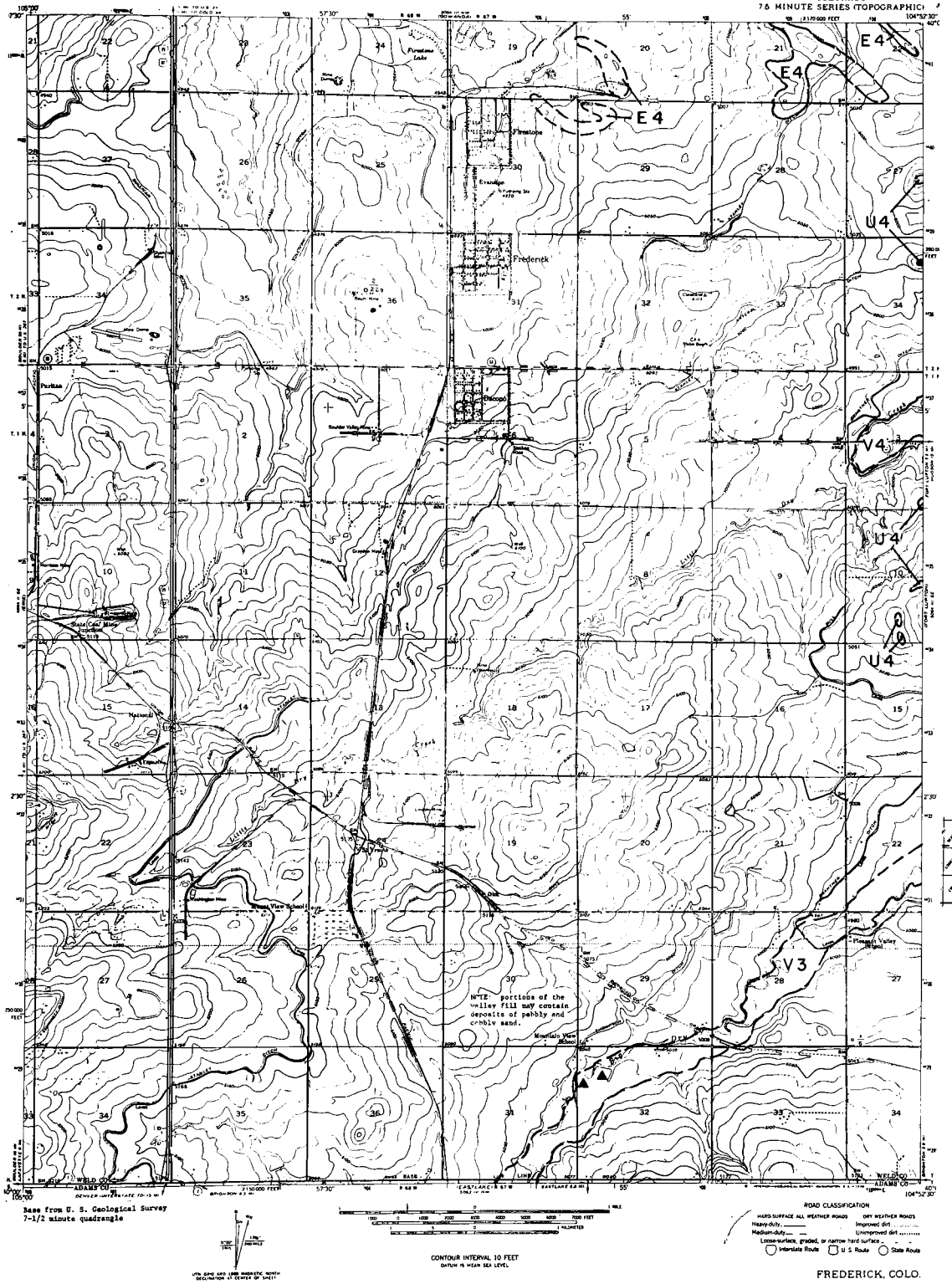
Mapped by: Stephen D. Schwochow
Date: June 30, 1974

FOWLER, COLO.

SAND, GRAVEL AND QUARRY AGGREGATE RESOURCES MAP

DEPARTMENT OF NATURAL RESOURCES
COLORADO GEOLOGICAL SURVEY
JOHN W. ROLD, DIRECTOR

FREDERICK QUADRANGLE
COLORADO
7.5 MINUTE SERIES (TOPOGRAPHIC)



EXPLANATION

Landform unit
Resource classification

LANDFORM UNITS

- F Floodplain deposit
- T Stream terrace deposit
- V Valley fill (F & T)
- U Upland deposits
- A Alluvial fan
- E Wind-deposited sand (eolian)
- M Man-made deposits (slag,tailings, spoils....)

RESOURCE CLASSIFICATION

Coarse Aggregate (at least 35% material on #4 screen, visual estimation)

- 1 Gravel: relatively clean and sound
- 2 Gravel: significant fines, decomposed rock, calcium carbonate.

Fine Aggregate (greater than 70% passing #4 screen, 60% retained on #200 screen, visual estimation)

- 3 Sand

Unevaluated Resource

- 4 Probable aggregate resource

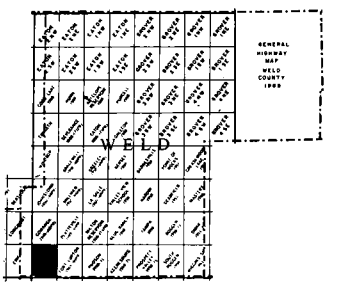
MAP SYMBOLS

- Operating gravel and/or sand pit
- Abandoned gravel and/or sand pit
- Operating stone quarry
- Abandoned stone quarry
- Potential quarry aggregate resource area
- Selected well or drill-hole location with overburden thickness (ft) over sand/gravel resource thickness (ft), obtained from well logs. "s" indicates gravel, "a" indicates sand
- "-" in symbol denotes unevaluated or unknown property.
- "wd" denotes Colorado Geological Survey Windsor/Sand and Gravel projects' drill hole
- Landform boundary, solid where known or observed; dashed where approximate or inferred.

STATION LOCATION AND GEOLOGICAL DESCRIPTION OF DEPOSIT

overburden thickness (ft)
sand/gravel resource thickness (ft)
percent sand and fines (passing #4 screen, 0.86 sq.), visual estimation
significant amount of fines (passing #200 screen, 0.0058 in. or 0.074 mm)
significant amount of decomposed or weak rock.
significant amount of calcium carbonate (caliche)

"a" in symbol denotes unevaluated or unknown property.
"x" in symbol denotes property absent or insignificant



QUADRANGLE LOCATION

NON-RESOURCE OR WITHDRAWN AREA

Geology modified after:

Colton, R.B., and Pitch, H.R., 1974, Map showing potential sources of gravel and crushed-rock aggregate in the Boulder-Fort Collins-Greeley Area, Front Range Urban Corridor, Colo.: U. S. Geol. Survey Misc. Geol. Inv. Map I-855-D.

Mapped by: Ralph R. Shroba
Date: June 30, 1974

Prepared in cooperation with the U. S. Geological Survey.

Base from U. S. Geological Survey 7-1/2 minute quadrangle

CONTOUR INTERVAL 10 FEET
DATUM IS MEAN SEA LEVEL

ROAD CLASSIFICATION

HARD-SURFACE ALL WEATHER ROADS
Heavy-duty
Medium-duty
Loose-surface, graded, or narrow hard surface
Interstate Route
U.S. Route
State Route

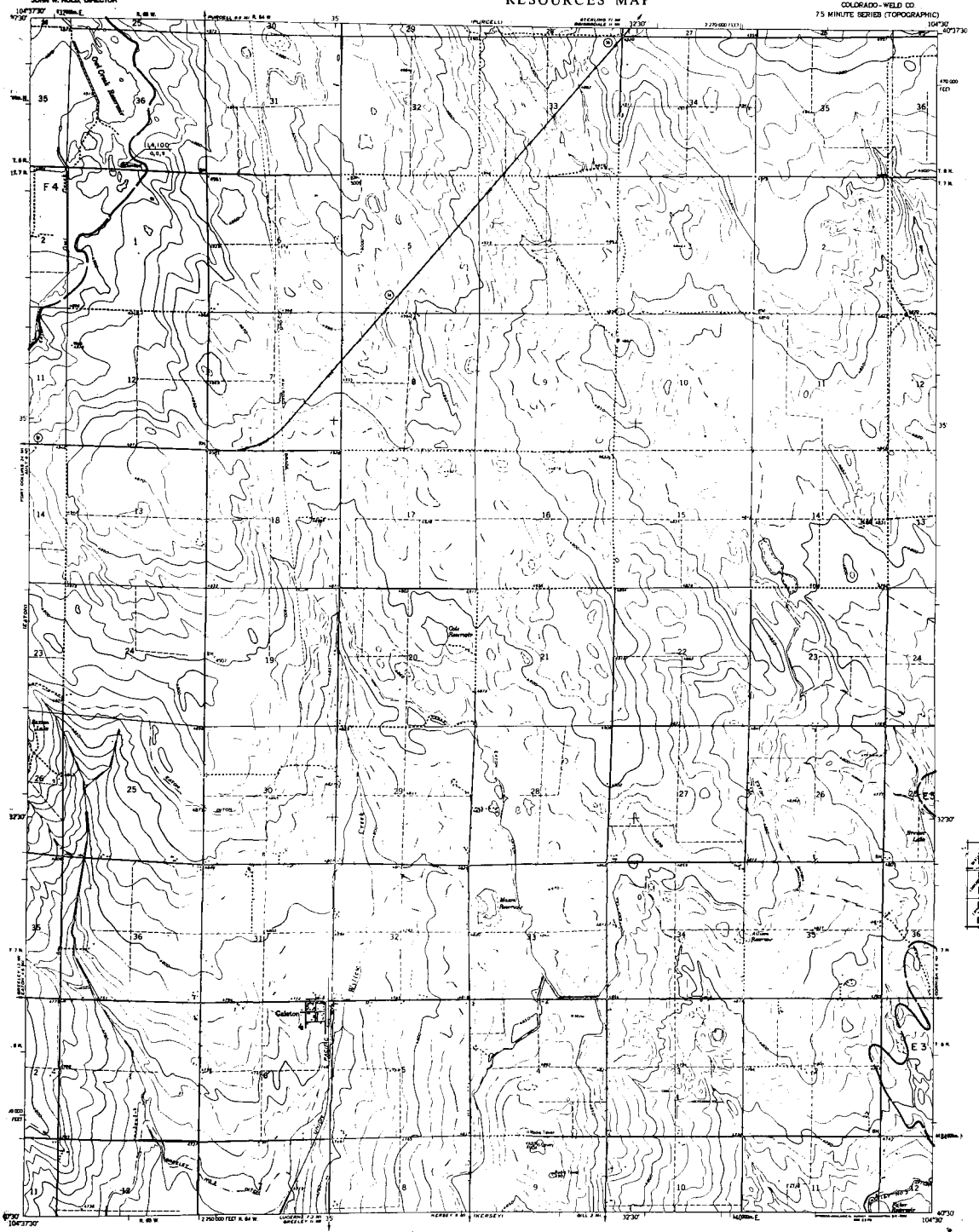
DRY WEATHER ROADS
Improved dirt
Unimproved dirt

FREDERICK, COLO.

SAND, GRAVEL AND QUARRY AGGREGATE RESOURCES MAP

DEPARTMENT OF NATURAL RESOURCES
COLORADO GEOLOGICAL SURVEY
JOHN W. ROLD, DIRECTOR

GALETON QUADRANGLE
COLORADO - WELD CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)



EXPLANATION

Landform unit

Resource classification

LANDFORM UNITS

- F Floodplain deposit
- T Stream terrace deposit
- V Valley fill (F & T)
- U Upland deposits
- A Alluvial fan
- E Wind-deposited sand (soliun)
- M Man-made deposits (slag,tailings, spoils,...)

RESOURCE CLASSIFICATION

Coarse Aggregate
(at least 50% retained on #4 screen, visual estimation)

- 1 Gravel: relatively clean and sound
- 2 Gravel: significant fines, decomposed rock, calcium carbonate.

Fine Aggregate
(greater than 50% passing #4 screen, 40% retained on #200 screen, visual estimation

- 3 Sand

Recreational Resource

- 4 Probable aggregate resource

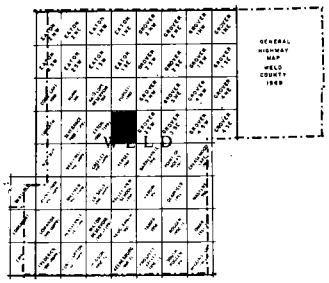
MAP SYMBOLS

- Operating gravel and/or sand pit
- Abandoned gravel and/or sand pit
- Operating stone quarry
- Abandoned stone quarry
- Potential quarry aggregate resource area
- Selected well or drill-hole location with overburden thickness (ft) over sand/gravel resource thickness (ft), obtained from well logs. "s" indicates gravel, "s" indicates sand. "x" in symbol denotes unevaluated or unknown property.
- "wc" denotes Colorado Geological Survey Windsor/Flood and Gravel projects' drill hole
- Landform boundary, solid where known or observed, dashed where approximate or inferred.

STATION, LOCATION AND GEOLOGICAL DESCRIPTION OF DEPOSIT

- overburden thickness (ft)
- sand/gravel resource thickness (ft)
- percent sand and fines (passing #4 screen, 0.25 in.), visual estimation
- significant amount of fines (passing #200 screen, 0.0058 in. or 0.074 mm.)
- significant amounts of decomposed or weak rock.
- significant amount of calcium carbonate (caliche)

"x" in symbol denotes unevaluated or unknown property.
"n" in symbol denotes property absent or insignificant



QUADRANGLE LOCATION

NON-RESOURCE OR WITHDRAWN AREA

REFERENCE:

Swan, R. H., III, 1972, Map of surficial geology of part of the Galeton quadrangle: Reconn. mapping for Colorado Geol. Survey Windsor Environmental Geology Project, open-file map.

Mapped by: Phillip C. Wicklein
Date: June 30, 1974

Base from U. S. Geological Survey
7-1/2 minute quadrangle

CONTOUR INTERVAL 10 FEET
DATUM IS MEAN SEA LEVEL

ROAD CLASSIFICATION
Medium-duty ——— Light-duty ———
Unimproved dirt ·····
State Route

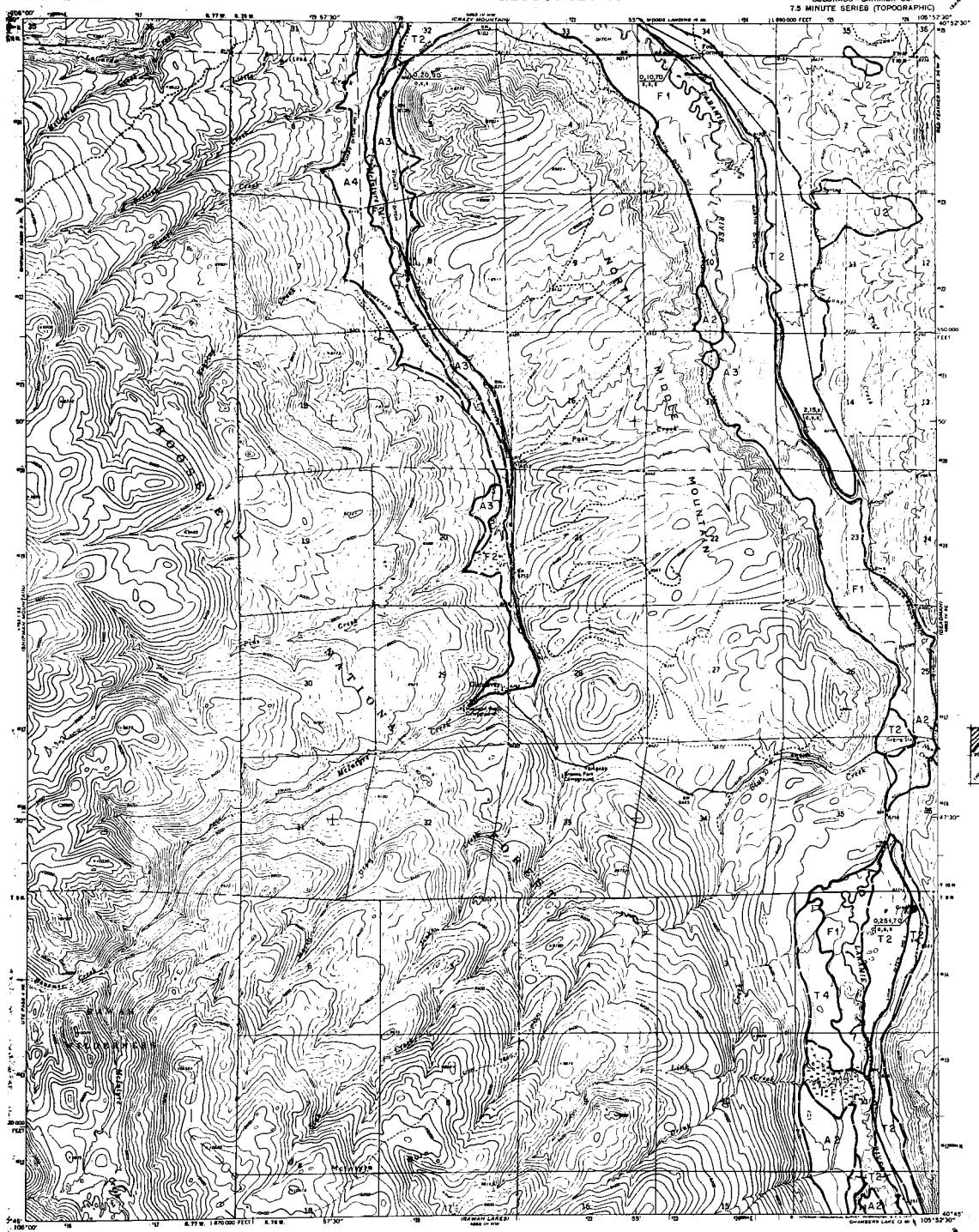
APPROXIMATE MEAN DECLINATION, 1980

GALETON, COLO.

SAND, GRAVEL AND QUARRY AGGREGATE RESOURCES MAP

DEPARTMENT OF NATURAL RESOURCES
COLORADO GEOLOGICAL SURVEY
JOHN W. RETD, DIRECTOR

OLENDEVEY QUADRANGLE
COLORADO - LARIMER CO
7.5 MINUTE SERIES (TOPOGRAPHIC)



EXPLANATION

landform unit
Resource classification

LANDFORM UNITS

- F Floodplain deposit
- T Stream terrace deposit
- V Valley fill (F & T)
- U Upland deposits
- A Alluvial fan
- E Wind-deposited sand (eolian)
- M Man-made deposits (slag,tailings, spoils....)

RESOURCE CLASSIFICATION

Coarse Aggregate
(at least 50% retained on #4 screen, visual estimation)

- 1 Gravel: relatively clean and sound
- 2 Gravel: significant fines, decomposed rock, caliche carbonate.

Fine Aggregate
(greater than 70% passing #4 screen, 60% retained on #200 screen, visual estimation

- 3 Sand

Unevaluated Resource

- 4 Probable aggregate resource

MAP SYMBOLS

- Operating gravel and/or sand pit
- Abandoned gravel and/or sand pit
- Operating stone quarry
- Abandoned stone quarry
- Potential quarry aggregate resource area
- Selected well or drill-hole location with overburden thickness (ft) over sand/gravel resource thickness (ft), obtained from well logs. "g" indicates gravel; "s" indicates sand. "x" in symbol denotes unevaluated or unknown property. "ms" denotes Colorado Geological Survey Windsor/Island and Gravel projects' drill hole
- Landform boundary, solid where known or observed; dashed where approximate or inferred.

STATUS, LOCATION AND GEOLOGICAL DESCRIPTION OF DEPOSIT

- overburden thickness (ft)
- sand/gravel resource thickness (ft)
- percent sand and fines (passing #4 screen, 0.26 m.), visual estimation
- significant amount of fines (passing #200 screen, 0.0058 in. or 0.074 mm.)
- significant amount of decomposed or weak rock.
- significant amount of calcium carbonate (caliche)

"N" in symbol denotes unevaluated or unknown property
"0" in symbol denotes property absent or insignificant

QUADRANGLE LOCATION

NON-RESOURCE OR WITHDRAWN AREA

Mapped by: Stephen D. Schwochow
Date: June 30, 1974

Base from U. S. Geological Survey
7-1/2 minute quadrangle

CONTOUR INTERVAL 40 FEET
DOTTED LINES REPRESENT 20-FOOT CONTOURS
DATUM IS MEAN SEA LEVEL

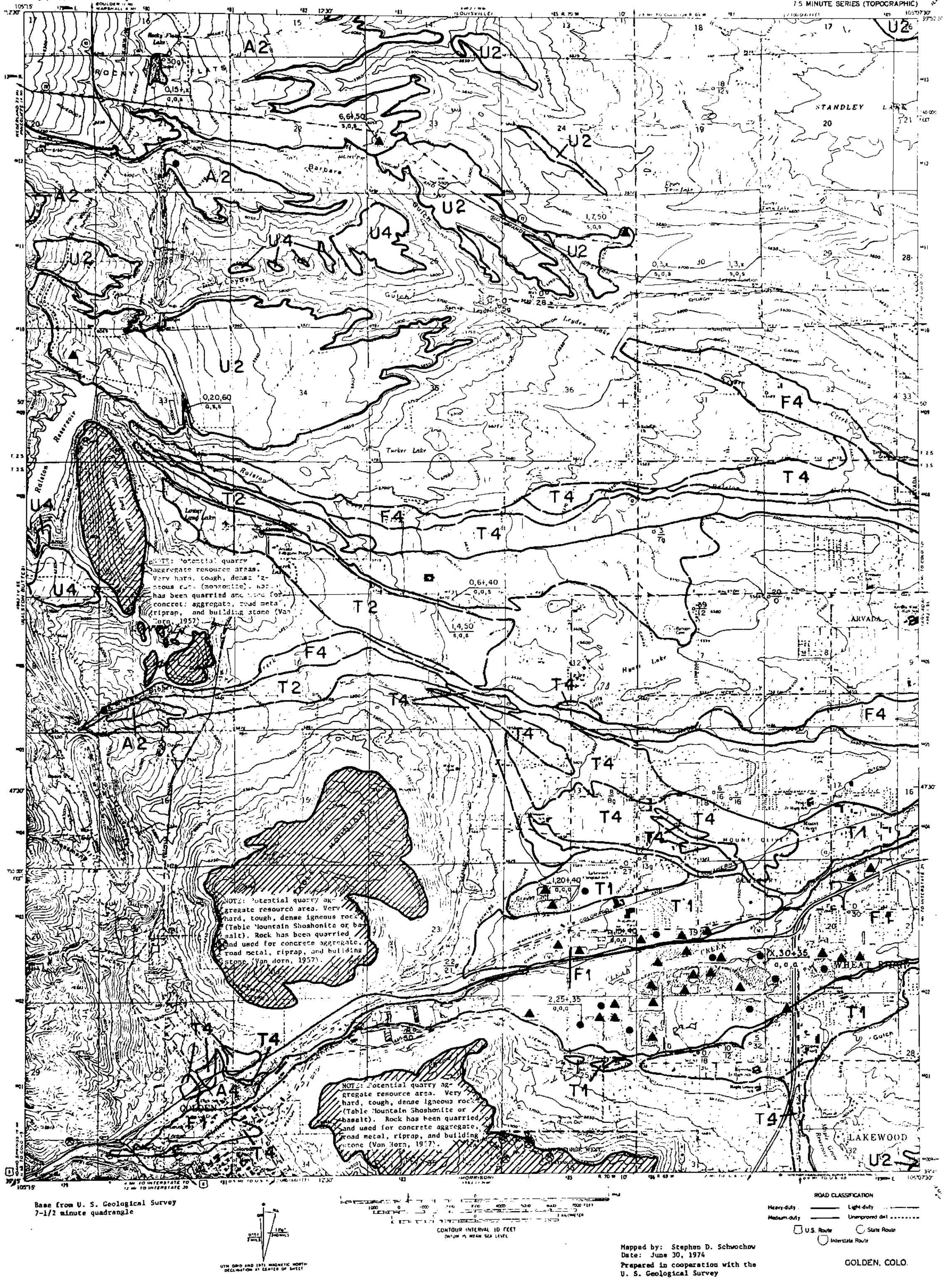
ROAD CLASSIFICATION
Light-duty ——— Unimproved dirt .....

GLENDEVEY, COLO.

DEPARTMENT OF NATURAL RESOURCES
COLORADO GEOLOGICAL SURVEY
JOHN W. ROLD, DIRECTOR

SAND, GRAVEL AND QUARRY AGGREGATE RESOURCES MAP

GOLDEN QUADRANGLE
COLORADO-JEFFERSON CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)



Base from U. S. Geological Survey
7-1/2 minute quadrangle

Mapped by: Stephen D. Schwochow
Date: June 30, 1974
Prepared in cooperation with the U. S. Geological Survey

GOLDEN, COLO.

EXPLANATION

F1 — Landform unit; Resource classification

LANDFORM UNITS

- F Floodplain deposit
- T Stream terrace deposit
- V Valley fill (F & T)
- U Upland deposits
- A Alluvial fan
- E Wind-deposited sand (eolian)
- M Man-made deposits (slag, tailings, spoils....)

RESOURCE CLASSIFICATION

Coarse Aggregate
(at least 1/3 retained on #4 screen, visual estimation)

- 1 Gravel: relatively clean and sound
- 2 Gravel: significant fines, decomposed rock, calcium carbonate.

Fine Aggregate
(greater than 2/3 passing #4 screen, 2/3 retained on #200 screen, visual estimation)

- 3 Sand

Unevaluated Resource

- 4 Probable aggregate resource

MAP SYMBOLS

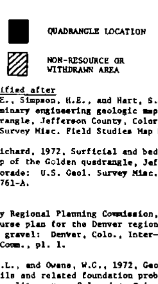
- Operating gravel and/or sand pit
- Abandoned gravel and/or sand pit
- Operating stone quarry
- Abandoned stone quarry
- Potential quarry aggregate resource area
- Selected well or drill-hole location with overburden thickness (ft) over sand/gravel resource thickness (ft), obtained from well logs.
  "g" indicates gravel; "s" indicates sand
  "x" in symbol denotes unevaluated or unknown property.
  "wo" denotes Colorado Geological Survey Windsor/Sand and Gravel projects' drill hole
- Landform boundary, solid where known or observed; dashed where approximate or inferred.

STATION, LOCATION AND GEOLOGICAL DESCRIPTION OF DEPOSIT

5, 17, 40
- overburden thickness (ft)
- sand/gravel resource thickness (ft)
- percent sand and fines (passing #4 screen, 0.25 in.), visual estimation
- significant amount of fines (passing #200 screen, 0.0029 in. or 0.074 mm.)
- significant amount of decomposed or weak rock.
- significant amount of calcium carbonate (caliche)

"x" in symbol denotes unevaluated or unknown property

"o" in symbol denotes property absent or insignificant



QUADRANGLE LOCATION

NON-RESOURCE OR WITHDRAWN AREA

Geology modified after

Gardner, M.E., Simpson, H.E., and Hart, S.S., 1971, Preliminary engineering geologic map of the Golden quadrangle, Jefferson County, Colorado: U.S. Geol. Survey Misc. Field Studies Map MF-308.
and
Van Horn, Richard, 1972, Surficial and bedrock geologic map of the Golden quadrangle, Jefferson County, Colorado: U.S. Geol. Survey Misc. Geol. Inv. Map I-761-A.

References:

Inter-County Regional Planning Commission, 1961, Drainage course plan for the Denver region - Part 1, Sand and gravel: Denver, Colo., Inter-County Reg. Plan. Comm., pl. 1.

Hamilton, J.L., and Owens, W.C., 1972, Geologic aspects, soils and related foundation problems, Denver metropolitan area, Colorado: Colorado Geol. Survey Environmental Geology Rept. 1, pl. 1.

Chase, G.H., and McConaghy, J.A., 1972, Generalized surficial geologic map of the Denver area, Colorado: U.S. Geol. Survey Misc. Geol. Inv. Map I-731.

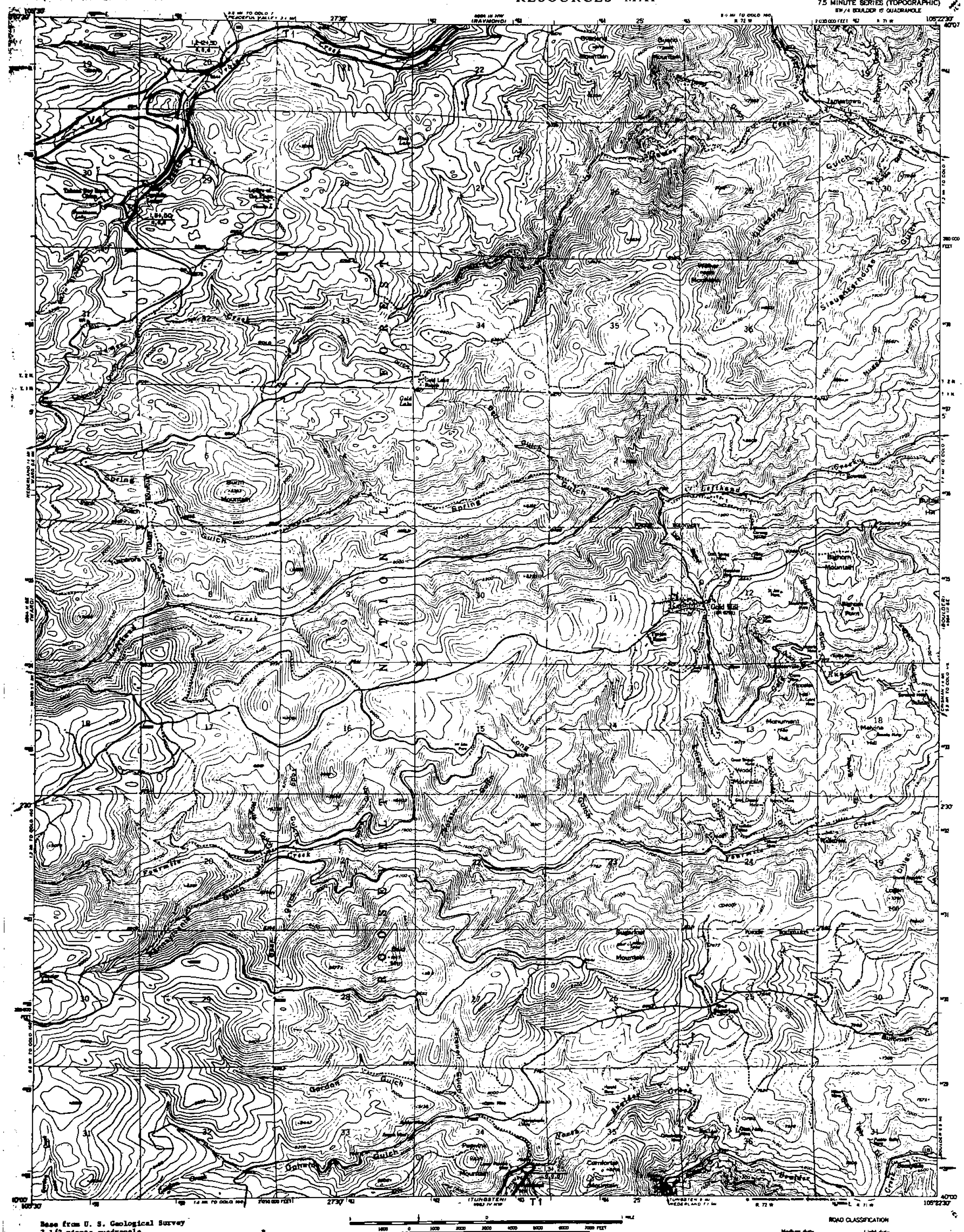
Van Horn, Richard, 1957, Bedrock geology of the Golden quadrangle, Colorado: U.S. Geol. Survey Geol. Quad. Map GQ 103.

Trimble, D.E., and Fitch, H.R., 1974, Map showing potential sources of gravel and crushed-rock aggregate in the Greater Denver Area, Front Range Urban Corridor, Colo.: U. S. Geol. Survey Misc. Geol. Inv. Map I-856-A.

DEPARTMENT OF NATURAL RESOURCES
COLORADO GEOLOGICAL SURVEY
JOHN W. ROLD, DIRECTOR

SAND, GRAVEL AND QUARRY AGGREGATE RESOURCES MAP

GOLD HILL QUADRANGLE
COLORADO-BOULDER CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)
SW/4 BOULDER 15' QUADRANGLE



Base from U. S. Geological Survey
7-1/2 minute quadrangle

CONTOUR INTERVAL 40 FEET
DATUM IS MEAN SEA LEVEL

ROAD CLASSIFICATION
Medium-duty .... Light duty ....
Unimproved dirt ....
State Route

GOLD HILL, COLO.

EXPLANATION

Landform unit
Resource classification

LANDFORM UNITS

F Floodplain deposit
T Stream, terrace deposit
V Valley fill (F & T)
U Upland deposits
A Alluvial fan
E Wind-deposited sand (eolian)
M Man-made deposits (slag, tailings, spoils....)

RESOURCE CLASSIFICATION

Coarse Aggregate
(at least 50% retained on #4 screen, visual estimation)

1 Gravel: relatively clean and sound
2 Gravel: significant fines, decomposed rock, calcium carbonate.

Fine Aggregate
(greater than 70% passing #4 screen, 60% retained on #200 screen, visual estimation)

3 Sand

Unevaluated Resource

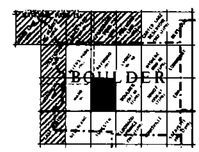
4 Probable aggregate resource

MAP SYMBOLS

Operating gravel and/or sand pit
Abandoned gravel and/or sand pit
Operating stone quarry
Abandoned stone quarry
Potential quarry aggregate resource area
Selected well or drill-hole location with overburden thickness (ft) over sand/gravel resource thickness (ft), obtained from well logs.
"g" indicates gravel; "s" indicates sand
"?" in symbol denotes unevaluated or unknown property.
"WS" denotes Colorado Geological Survey Windsor/Sand and Gravel projects' drill hole
Landform boundary, solid where known or observed; dashed where approximate or inferred.

STATION, LOCATION AND GEOLOGICAL DESCRIPTION OF DEPOSIT

overburden thickness (ft)
sand/gravel resource thickness (ft)
percent sand and fines (passing #4 screen, 0.25 in.), visual estimation
5, 17, 40
significant amount of fines (passing #200 screen, 0.0029 in. or 0.074 mm.)
significant amount of decomposed or weak rock.
significant amount of calcium carbonate (caliche
"u" in symbol denotes unevaluated or unknown property
"n" in symbol denotes property absent or insignificant



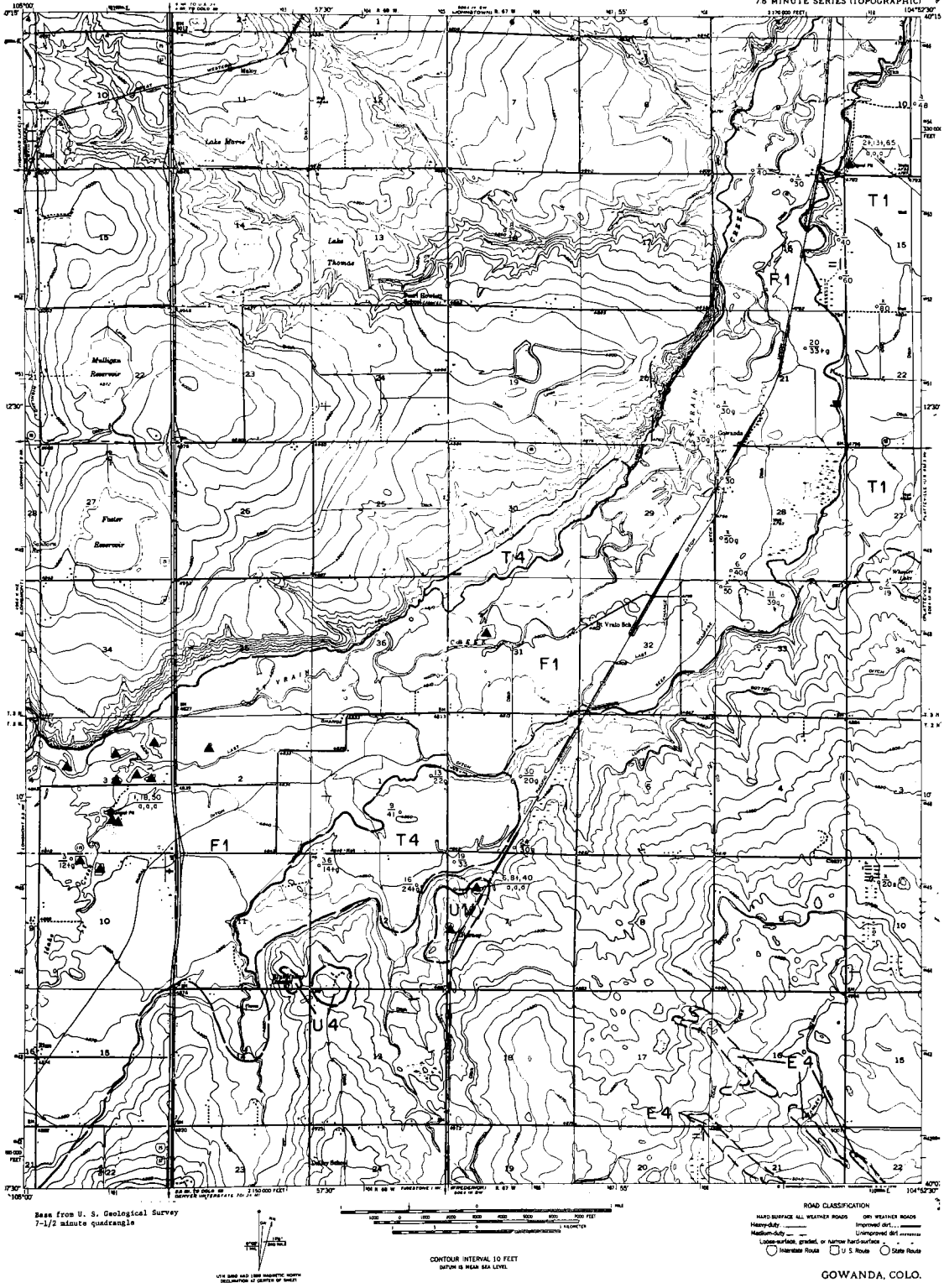
QUADRANGLE LOCATION
NON-RESOURCE OR WITHDRAWN AREA

Mapped by: Ralph R. Shroba
Date: June 30, 1974

SAND, GRAVEL AND QUARRY AGGREGATE RESOURCES MAP

DEPARTMENT OF NATURAL RESOURCES
COLORADO GEOLOGICAL SURVEY
JOHN W. ROLD, DIRECTOR

GOWANDA QUADRANGLE
COLORADO-WELD CO
7.5 MINUTE SERIES (TOPOGRAPHIC)



EXPLANATION

Landform unit
Resource classification

LANDFORM UNITS

- F Floodplain deposit
- T Stream terrace deposit
- V Valley fill (F & T)
- U Upland deposits
- A Alluvial fan
- E Wind-deposited sand (eolian)
- M Man-made deposits (slag, tailings, spoils....)

RESOURCE CLASSIFICATION

Coarse Aggregate
(at least 50% retained on #4 screen, visual estimation)

- 1 Gravel: relatively clean and sound
- 2 Gravel: significant fines, decomposed rock, calcium carbonate.

Fine Aggregate
(greater than 50% passing #4 screen, 50% retained on #200 screen, visual estimation)

- 3 Sand

Unevaluated Resource

- 4 Probable aggregate resource

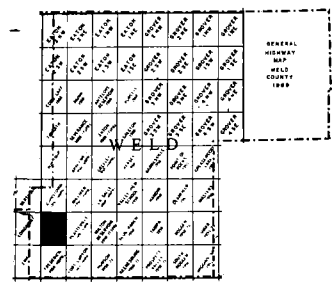
MAP SYMBOLS

- Operating gravel and/or sand pit
- Abandoned gravel and/or sand pit
- Operating stone quarry
- Abandoned stone quarry
- Potential quarry aggregate resource area
- Selected well or drill-hole location with overburden thickness (ft) over sand/gravel resource thickness (ft), obtained from well logs. "s" indicates gravel; "m" indicates sand "-" in symbol denotes unevaluated or unknown property.
- "WL" Denotes Colorado Geological Survey Windsor/Sand and Gravel projects' drill hole
- Landform boundary, solid where known or observed; dashed where approximate or inferred.

STATION, LOCATION AND GEOLOGICAL DESCRIPTION OF DEPOSIT

- overburden thickness (ft)
- sand/gravel resource thickness (ft)
- percent sand and fines (passing #4 screen, 0.25 in.), visual estimation
- significant amount of fines (passing #200 screen, 0.0059 in. or 0.074 mm.)
- significant amount of decomposed or weak rock.
- significant amount of calcium carbonate (caliche)

"m" in symbol denotes unevaluated or unknown property.
"n" in symbol denotes property absent or insignificant



QUADRANGLE LOCATION

NON-RESOURCE OR WITHDRAWN AREA

Geology modified after: Colton, R.B., and Fitch, H.R., 1974, Map showing potential sources of gravel and crushed-rock aggregate in the Boulder-Fort Collins-Greeley Area, Front Range Urban Corridor, Colorado: U. S. Geol. Survey Map I-855-D.

Mapped by: Ralph E. Shroba
Date: June 30, 1974

Prepared in cooperation with the U. S. Geological Survey

Base from U. S. Geological Survey
7-1/2 minute quadrangle

CONTOUR INTERVAL 10 FEET
DATUM IS MEAN SEA LEVEL

ROAD CLASSIFICATION

HARD SURFACE ALL WEATHER ROADS
Heavy-duty
Medium-duty
Loose-surface, graded, or narrow hard-surface
Interstate Route U. S. Route State Route

DRY WEATHER ROADS
Improved dirt
Unimproved dirt

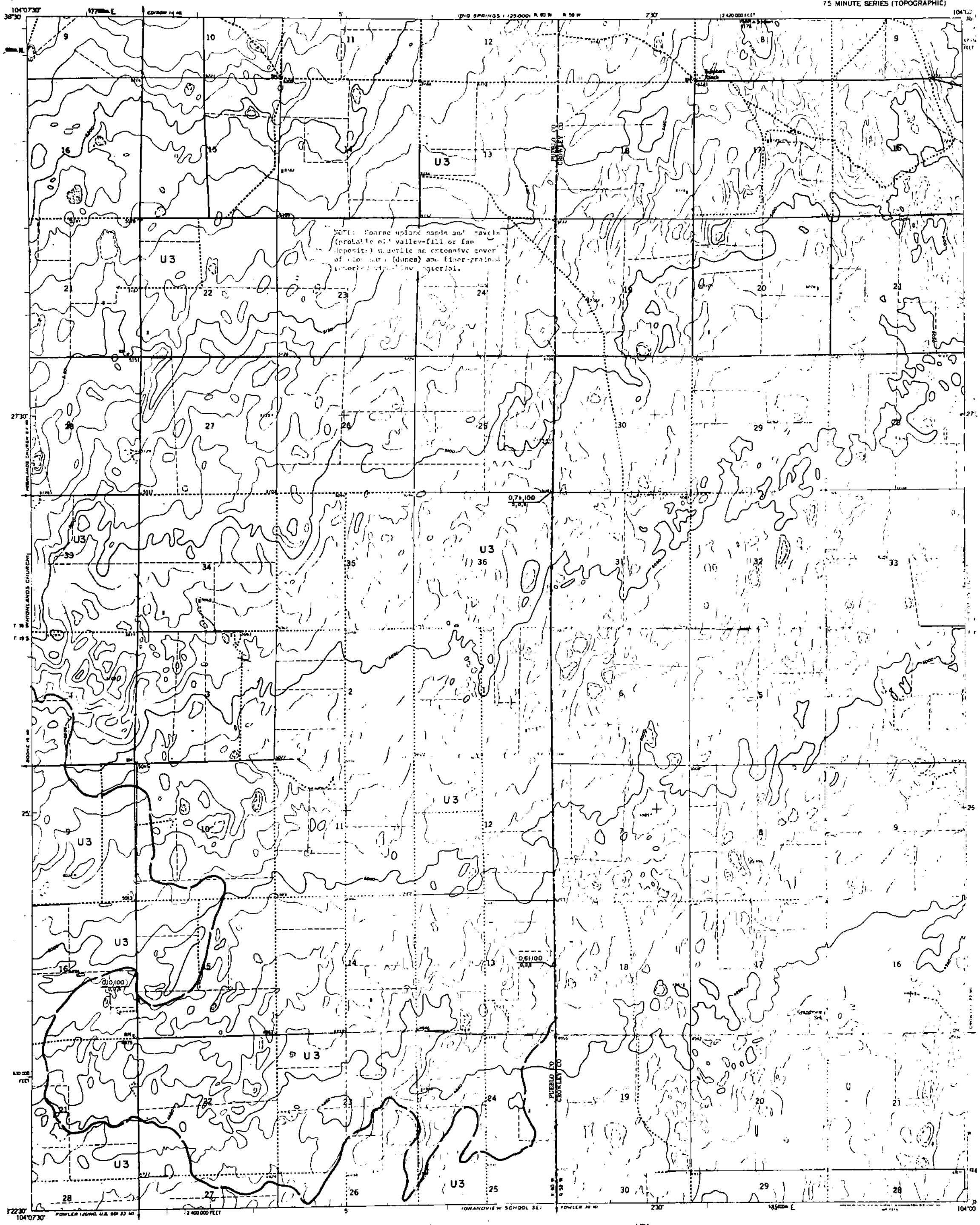
GOWANDA, COLO.

SAND, GRAVEL AND QUARRY AGGREGATE

RESOURCES MAP

DEPARTMENT OF NATURAL RESOURCES
COLORADO GEOLOGICAL SURVEY
JOHN W. ROLD, DIRECTOR

GRANDVIEW SCHOOL QUADRANGLE
COLORADO
7.5 MINUTE SERIES (TOPOGRAPHIC)



Base from U. S. Geological Survey
7-1/2 minute quadrangle

CONTOUR INTERVAL 10 FEET

ROAD CLASSIFICATION

Light duty — — Unimproved dirt - - -

APPROXIMATE MEAN DECLINATION, 1950

GRANDVIEW SCHOOL, COLO

EXPLANATION

F — Landform unit; Resource classification

LANDFORM UNITS

- F Floodplain deposit
- T Stream terrace deposit
- V Valley fill (F & T)
- U Upland deposits
- A Alluvial fan
- E Wind-deposited sand (eolian)
- M Man-made deposits (slag, tailings, spoils....)

RESOURCE CLASSIFICATION

Coarse Aggregate
(at least 30% retained on #4 screen, visual estimation)

- 1 Gravel: relatively clean and sound
- 2 Gravel: significant fines, decomposed rock, calcium carbonate.

Fine Aggregate
(greater than 70% passing #4 screen, 60% retained on #200 screen, visual estimation)

- 3 Sand

Unevaluated Resource

- 4 Probable aggregate resource

MAP SYMBOLS

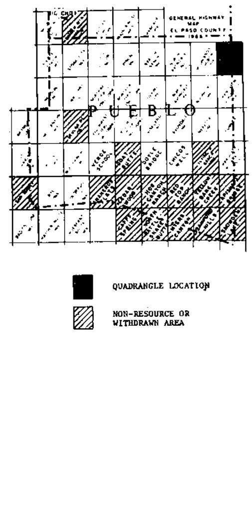
- Operating gravel and/or sand pit
- Abandoned gravel and/or sand pit
- Operating stone quarry
- Abandoned stone quarry
- Potential quarry aggregate resource area
- Selected well or drill-hole location with overburden thickness (ft) over sand/gravel resource thickness (ft), obtained from well logs.
  - "g" indicates gravel; "s" indicates sand
  - "?" in symbol denotes unevaluated or unknown property.
  - "WS" denotes Colorado Geological Survey Windsor/Sand and Gravel projects' drill hole
- Landform boundary, solid where known or observed; dashed where approximate or inferred.

STATION, LOCATION AND GEOLOGICAL DESCRIPTION OF DEPOSIT

- overburden thickness (ft)
- sand/gravel resource thickness (ft)
- percent sand and fines (passing #4 screen, 0.25 in.), visual estimation
- significant amount of fines (passing #200 screen, 0.0058 in. or 0.074 mm.)
- significant amount of decomposed or weak rock.
- significant amount of calcium carbonate (caliche)

"?" in symbol denotes unevaluated or unknown property

"o" in symbol denotes property absent or insignificant



QUADRANGLE LOCATION

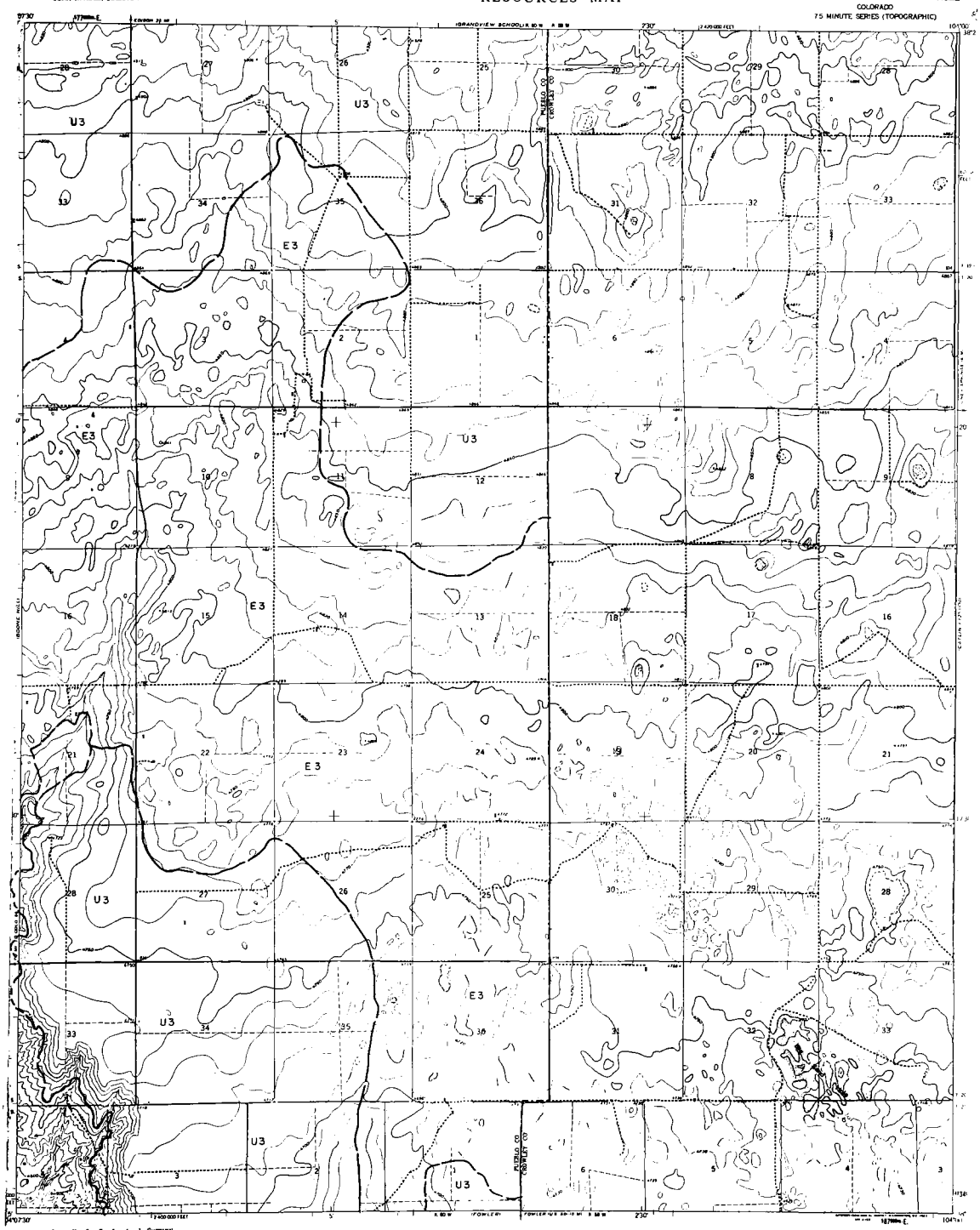
NON-RESOURCE OR WITHDRAWN AREA

Mapped by: Stephen D. Schwochow
Date: June 30, 1974

SAND, GRAVEL AND QUARRY AGGREGATE RESOURCES MAP

DEPARTMENT OF NATURAL RESOURCES
COLORADO GEOLOGICAL SURVEY
JOHN W. ROLD, DIRECTOR

GRANDVIEW SCHOOL SE QUADRANGLE
COLORADO
7.5 MINUTE SERIES (TOPOGRAPHIC)



EXPLANATION

Landform unit
Resource classification

LANDFORM UNITS

F Floodplain deposit
T Stream terrace deposit
V Valley fill (F & T)
U Upland deposits
A Alluvial fan
E Wind-deposited sand (eolian)
M Man-made deposits (slag,tailings, spoils....)

RESOURCE CLASSIFICATION

Coarse Aggregate
(at least 50% retained on #4 screen, visual estimation)

1 Gravel: relatively clean and sound
2 Gravel: significant fines, decomposed rock, calcium carbonate.

Fine Aggregate
(greater than 1/3 passing #4 screen, 80% retained on #200 screen, visual estimation

3 Sand

Unevaluated Resource

4 Probable aggregate resource

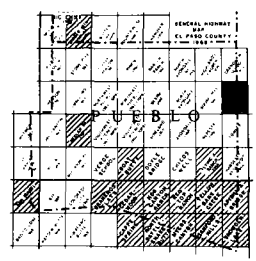
MAP SYMBOLS

Operating gravel and/or sand pit
Abandoned gravel and/or sand pit
Operating stone quarry
Abandoned stone quarry
Potential quarry aggregate resource area
Selected well or drill-hole location with overburden thickness (ft) over sand/gravel resource thickness (ft), obtained from well logs.
"x" indicates gravel; "s" indicates sand
"-" in symbol denotes unevaluated or unknown property.
"mg" denotes Colorado Geological Survey Windsor/Sand and Gravel projects' drill hole
Landform boundary, solid where known or observed; dashed where approximate or inferred.

STATION, LOCATION AND GEOLOGICAL DESCRIPTION OF DEPOSIT

overburden thickness (ft)
sand/gravel resource thickness (ft)
percent sand and fines (passing #4 screen, 0.25 in.), visual estimation
significant amount of fines (passing #200 screen, 0.0088 in. or 0.074 mm.)
significant amount of decomposed or weak rock.
significant amount of calcium carbonate (caliche)

"#" in symbol denotes unevaluated or unknown property
"0" in symbol denotes property absent or insignificant



QUADRANGLE LOCATION

NON-RESOURCE OR WITHDRAWN AREA

Mapped by: Stephen D. Schwochow
Date: June 30, 1974

Base from U. S. Geological Survey
7-1/2 minute quadrangle

CONTOUR INTERVAL 10 FEET
DATUM IS MEAN SEA LEVEL

APPROXIMATE MEAN DECLINATION, 1980

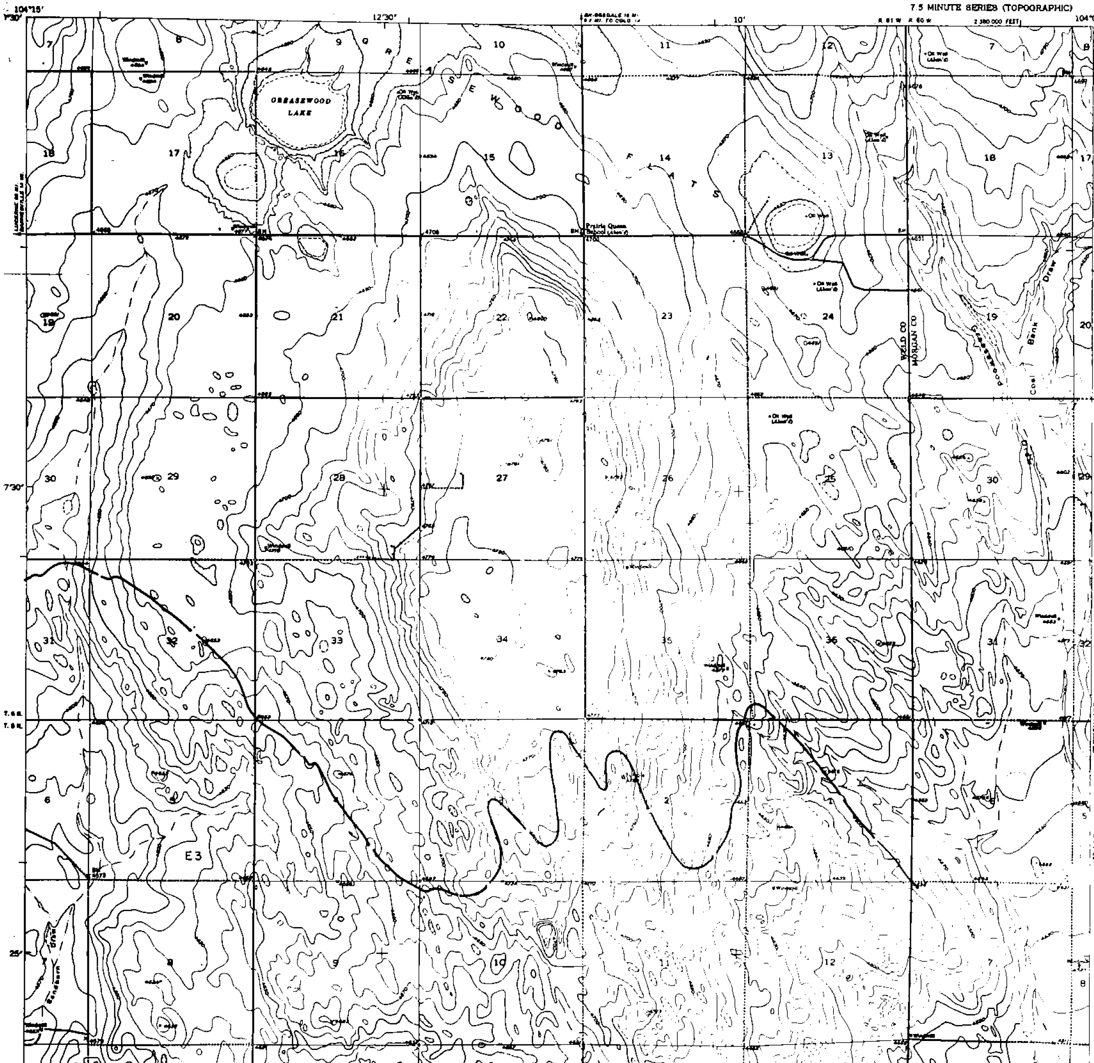
ROAD CLASSIFICATION
Light duty ——— Unimproved dirt .....

GRANDVIEW SCHOOL SE, COLO.

DEPARTMENT OF NATURAL RESOURCES
COLORADO GEOLOGICAL SURVEY
JOHN W. ROLD, DIRECTOR

SAND, GRAVEL AND QUARRY AGGREGATE RESOURCES MAP

GREASEWOOD LAKE QUADRANGLE
COLORADO
7.5 MINUTE SERIES (TOPOGRAPHIC)



EXPLANATION

F (landform unit) / (resource classification)

LANDFORM UNITS

- F Floodplain deposit
- T Stream terrace deposit
- V Valley fill (F & T)
- U Upland deposits
- A Alluvial fan
- E Wind-deposited sand (eolian)
- M Man-made deposits (slag, tailings, spoils....)

RESOURCE CLASSIFICATION

Coarse Aggregate
(at least 25% retained on #4 screen, visual estimation)

- 1 Gravel relatively clean and sound
- 2 Gravel significant fines, decomposed rock, calcium carbonate.

Fine Aggregate
(greater than 50% passing #4 screen, and retained on #200 screen, visual estimation)

- 3 Sand

Unevaluated Resource

- 4 Probable aggregate resource

MAP SYMBOLS

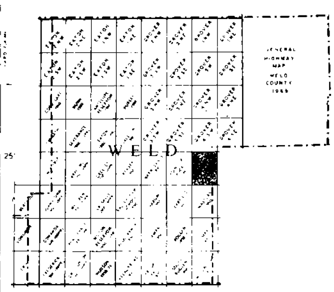
- Operating gravel and/or sand pit
- Abandoned gravel and/or sand pit
- Operating stone quarry
- Abandoned stone quarry
- Potential quarry aggregate resource area
- Selected well or drill hole location with overburden thickness (ft) over sand/gravel resource thickness (ft), obtained from well logs
  - "g" indicates gravel, "s" indicates sand
  - "e" in symbol denotes unevaluated or unknown property.
  - "WS" denotes Colorado Geological Survey Windsor/Sand and Gravel projects' drill hole
- Landform boundary, solid where known or observed; dashed where approximate or inferred.

STATION, LOCATION AND GEOLOGICAL DESCRIPTION OF DEPOSIT

- overburden thickness (ft)
- sand/gravel resource thickness (ft)
- percent sand and fines (passing #4 screen, 25 to 1, visual estimation)
- significant amount of fines (passing #200 screen, 0.0029 in. or 0.074 mm.)
- significant amount of decomposed or weak rock.
- significant amount of calcium carbonate (caliche)

"e" in symbol denotes unevaluated or unknown property

"o" in symbol denotes property absent or insignificant



QUADRANGLE LOCATION

NON-RESOURCE OR WITHDRAWN AREA

REFERENCE: Bjorklund, L.J., and Brown, R.F., 1957, Geology and ground-water resources of the lower South Platte River valley between Hardin, Colorado, and Paxton, Nebraska: U. S. Geol. Survey Water-Supply Paper 1378, pl. 1.

Mapped by: Phillip C. Wicklein
Date: June 30, 1974

Base from U. S. Geological Survey 7-1/2 minute quadrangle

APPROXIMATE MEAN DECLINATION, 1950

CONTOUR INTERVAL 10 FEET
DATUM IS MEAN SEA LEVEL

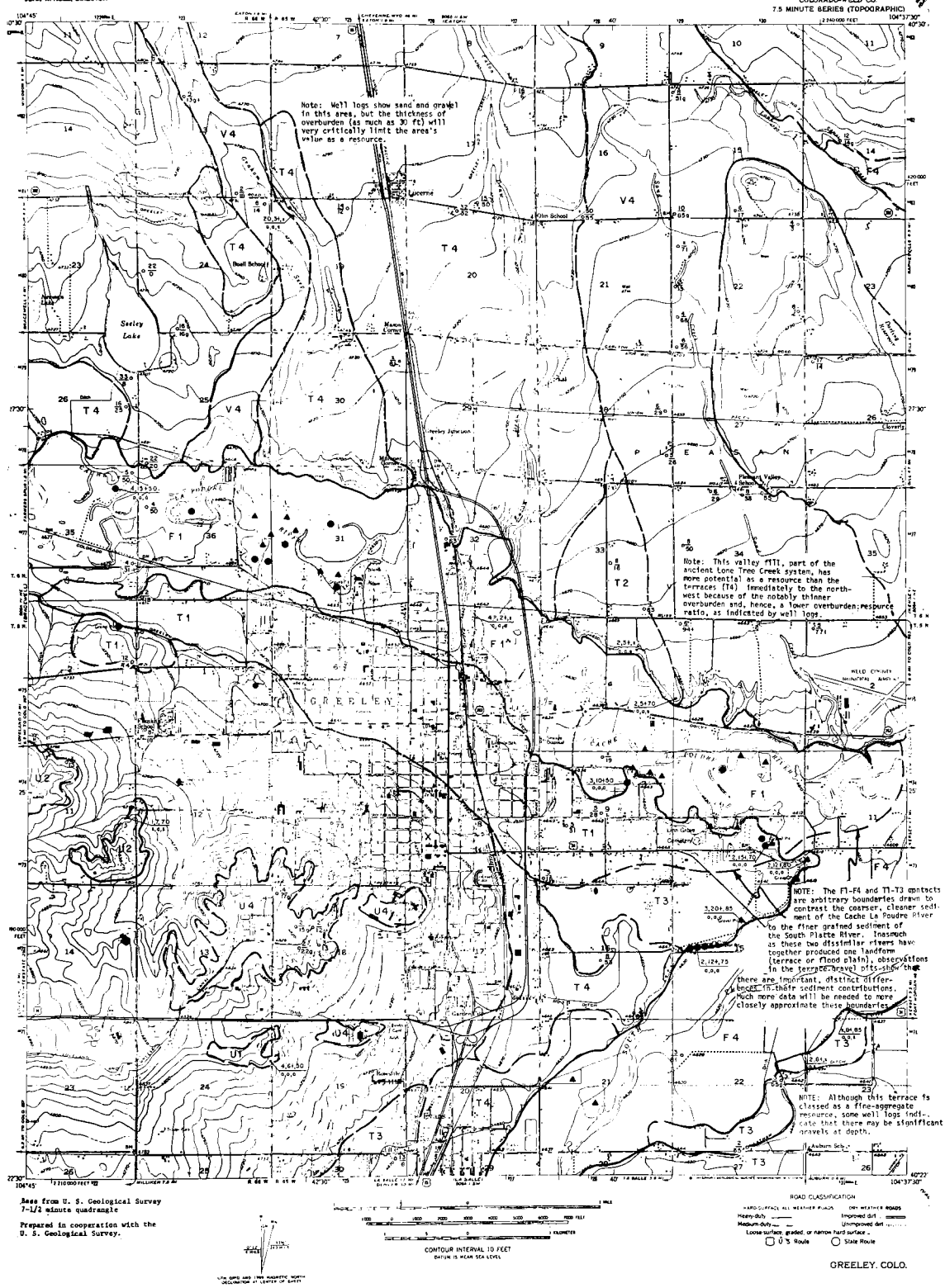
ROAD CLASSIFICATION
Heavy-duty — Light-duty
Medium-duty — Unimproved dirt
U.S. Route — State Route

GREASEWOOD LAKE, COLO.

SAND, GRAVEL AND QUARRY AGGREGATE RESOURCES MAP

DEPARTMENT OF NATURAL RESOURCES
COLORADO GEOLOGICAL SURVEY
JOHN W. ROLD, DIRECTOR

GREELEY QUADRANGLE
COLORADO-WELD CO
7.5 MINUTE SERIES (TOPOGRAPHIC)



EXPLANATION

LANDFORM UNITS

- F — Floodplain deposit
- T — Stream terrace deposit
- V — Valley fill (F & T)
- U — Upland deposits
- A — Alluvial fan
- E — Wind-deposited sand (eolian)
- M — Man-made deposits (slag, tailings, spoils....)

RESOURCE CLASSIFICATION

Coarse Aggregate
(at least 30% retained on #4 screen, visual estimation)

1 Gravel: relatively clean and sound
2 Gravel: significant fines, decomposed rock, calcium carbonate.

Fine Aggregate
(greater than 70% passing #4 screen, 80% retained on #200 screen, visual estimation

3 Sand

Unevaluated Resource

4 Probable aggregate resource

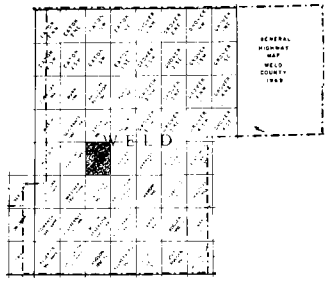
MAP SYMBOLS

- Operating gravel and/or sand pit
- Abandoned gravel and/or sand pit
- Operating stone quarry
- Abandoned stone quarry
- Potential quarry aggregate resource area
- Selected well or drill-hole location with overburden thickness (ft) over sand/gravel resource thickness (ft), obtained from well logs. "g" indicates gravel; "s" indicates sand. "-" in symbol denotes unevaluated or unknown property. "wa" denotes Colorado Geological Survey Windsor/Sand and Gravel projects' drill hole
- Landform boundary, solid where known or observed; dashed where approximate or inferred

STATION, LOCATION AND GEOLOGICAL DESCRIPTION OF DEPOSIT

- overburden thickness (ft)
- sand/gravel resource thickness (ft)
- percent sand and fines (passing #4 screen, 0.25 in.), visual estimation
- significant amount of fines (passing #200 screen, 0.0029 in. or 0.074 mm.)
- significant amount of decomposed or weak rock.
- significant amount of calcium carbonate (caliche)

"s" symbol denotes unevaluated or unknown property
"o" in symbol denotes property absent or insignificant



QUADRANGLE LOCATION

NON-RESOURCE OR WITHDRAWN AREA

References:

Swan, F. H., III, 1972, Map of surficial geology of the Greeley quadrangle: Reconn. Mapping for Colorado Geol. Survey Windsor Environmental Geology Project, Open-File Map.

Hershey, L. A., and Schneider, P. A., Jr., 1972, Geologic map of the Lower Cache La Poudre River basin, north-central Colorado: U. S. Geol. Survey Misc. Geol. Inv. Map I-687.

Shelton, D. C., 1974, Personal communication.

Smith, R.O., Schneider, P.A., Jr., and Petri, L.R., 1964, Ground-water resources of the South Platte River basin in western Adams and southwestern Weld Counties, Colorado: U.S. Geol. Survey Water-Supply Paper 1658, pl.1.

Geology modified after: Colton, R.B., and Fitch, B.R., 1974, Map showing potential sources of gravel and crushed-rock aggregate in the Boulder-Fort Collins-Greeley Area, Front Range Urban Corridor Colorado: U. S. Geol. Survey Map I-855-D.

Mapped by: Stephan D. Schwochow
Date: June 30, 1974

Base from U. S. Geological Survey 7-1/2 minute quadrangle

Prepared in cooperation with the U. S. Geological Survey.

CONTOUR INTERVAL 10 FEET
DATUM IS MEAN SEA LEVEL

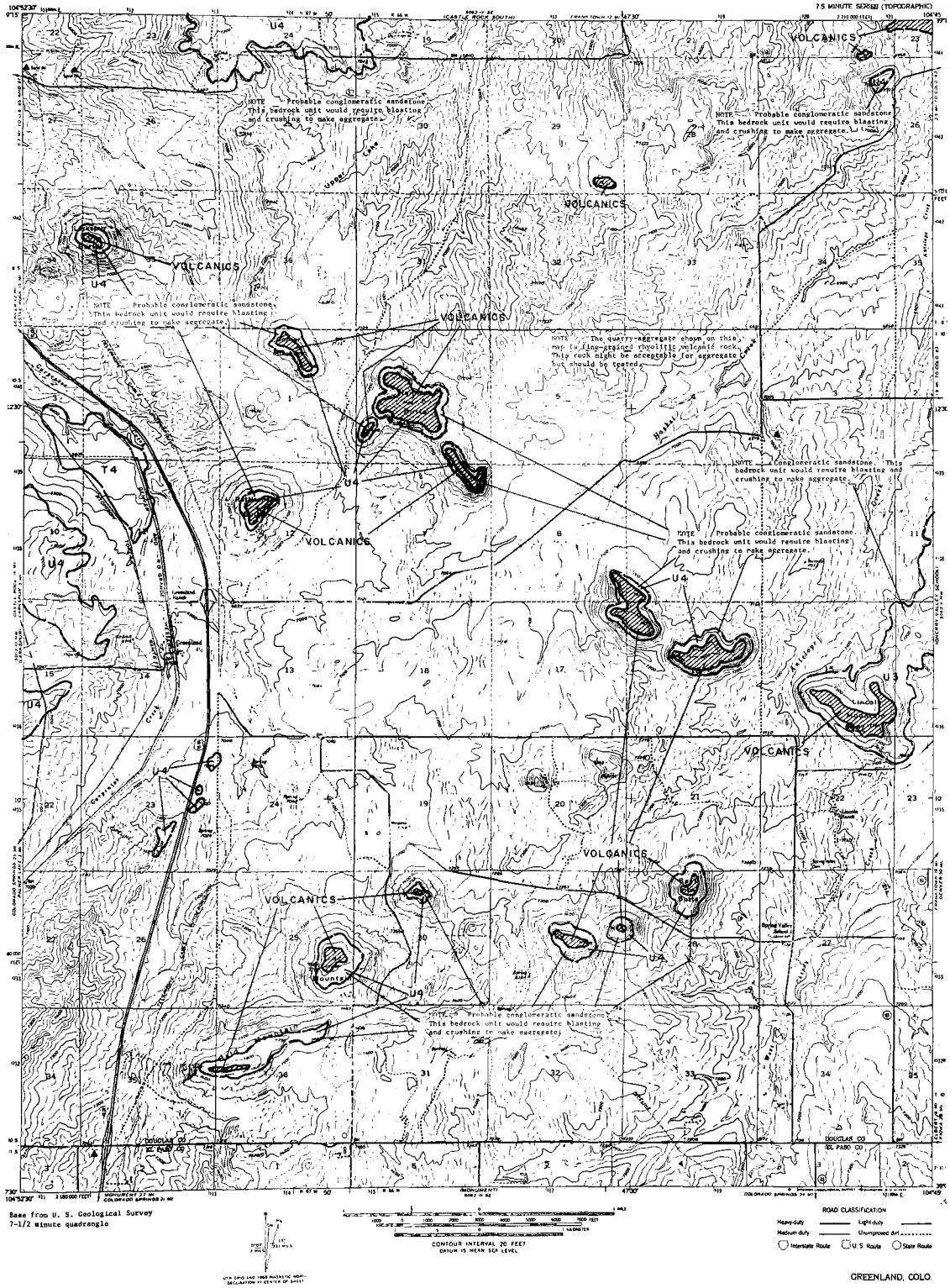
ROAD CLASSIFICATION
HARD-SURFACE ALL WEATHER ROADS — DRY WEATHER ROADS
Heavy-duty — Improved dirt
Medium-duty — Unimproved dirt
Loose surface, graded, or narrow hard surface
U S Route — State Route

GREELEY, COLO.

SAND, GRAVEL AND QUARRY AGGREGATE RESOURCES MAP

DEPARTMENT OF NATURAL RESOURCES
COLORADO GEOLOGICAL SURVEY
JOHN W. ROLD, DIRECTOR

GREENLAND QUADRANGLE
COLORADO
7.5 MINUTE SERIES (TOPOGRAPHIC)



EXPLANATION

Landform unit

Resource classification

LANDFORM UNITS

- F Floodplain deposit
- T Stream terrace deposit
- V Valley fill (F & T)
- U Upland deposits
- A Alluvial fan
- E Wind-deposited sand (eolian)
- M Man-made deposits (slag, tailings, spoils....)

RESOURCE CLASSIFICATION

Coarse Aggregate
(at least 27% retained on #4 screen, visual estimation)

1 Gravel: relatively clean and sound

2 Gravel: significant fines, decomposed rock, calcium carbonate.

Fine Aggregate
(greater than 70% passing #4 screen, 6% retained on #200 screen, visual estimate

3 Sand

Overburdened Resource

4 Probable aggregate resource

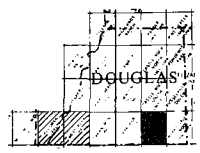
MAP SYMBOLS

- Operating gravel and/or sand pit
- Abandoned gravel and/or sand pit
- Operating stone quarry
- Abandoned stone quarry
- Potential quarry aggregate resource area
- Selected well or drill-hole location with overburden thickness (ft) over sand/gravel resource thickness (ft), retained from well logs. "g" indicates gravel; "s" indicates sand. "-" in symbol denotes unevaluated or unknown properties.
- "mc" denotes Colorado Geological Survey Windsor/Sand and Gravel projects' drill hole
- Landform boundary, solid where known or observed, dashed where approximate or inferred.

STATION, LOCATION AND GEOLOGICAL DESCRIPTION OF DEPOSIT

overburden thickness (ft)
sand/gravel resource thickness (ft)
percent sand and fines (passing #4 screen, 0.25 in.), visual estimation
17, 60
significant amount of fines (passing #200 screen, 0.0669 in. or 0.074 mm.)
significant amount of decomposed or rock.
significant amount of calcium carbonate (caliche)

"m" in symbol denotes unevaluated or unknown property
"n" in symbol denotes property absent or insignificant



QUADRANGLE LOCATION

NON-RESOURCE OR WITHDRAWN AREA

REFERENCE:

Trimble, D.E., and Fitch, H.R., 1974, Map showing potential sources of gravel and crushed-rock aggregate in the Colorado Springs-Castle Rock Area, Front Range Urban Corridor, Colorado: U. S. Geol. Survey Map I-857 A.

Trimble, Donald, 1974, U.S.G.S., Personal Communication

Mapped by: Phillip C. Wicklein
Date: June 30, 1974

Prepared in cooperation with the U. S. Geological Survey

Base from U. S. Geological Survey
7-1/2 minute quadrangle

CONTOUR INTERVAL 20 FEET
DATUM IS MEAN SEA LEVEL

ROAD CLASSIFICATION

Heavy duty — Light duty ——
Medium duty —— Unimproved dirt.....
Interstate Route U.S Route State Route

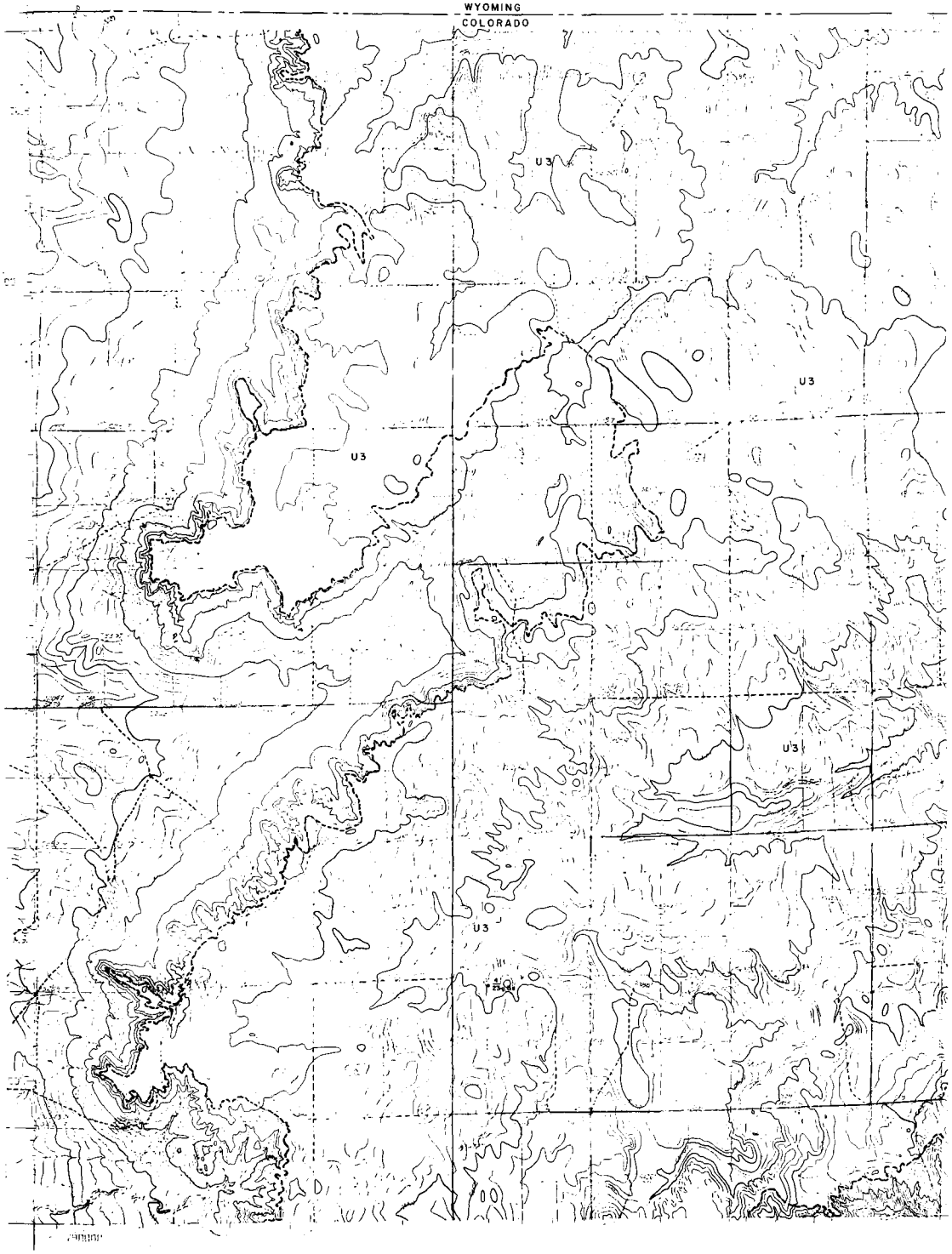
GREENLAND, COLO.

SAND, GRAVEL AND QUARRY AGGREGATE RESOURCES MAP

GROVER INE

DEPARTMENT OF NATURAL RESOURCES
COLORADO GEOLOGICAL SURVEY
JOHN W. ROLD, DIRECTOR

WYOMING
COLORADO



Base from U. S. Geological Survey
7-1/2 minute quadrangle

EXPLANATION

Landform unit
Resource classification

LANDFORM UNITS

- F Floodplain deposit
- T Stream terrace deposit
- V Valley fill (F & T)
- U Upland deposits
- A Alluvial fan
- E Wind-deposited sand (eolian)
- M Man-made deposits (slag, tailings, spoils....)

RESOURCE CLASSIFICATION

Coarse Aggregate
(at least 50% retained on #4 screen, visual estimation)

1 Gravel: relatively clean and sound
2 Gravel: significant fines, decomposed rock, calcium carbonate.

Fine Aggregate
(greater than 50% passing #4 screen, 50% retained on #200 screen, visual estimate)

3 Sand

Undervalued Resource

4 Probable aggregate resource

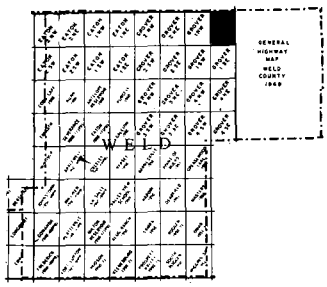
MAP SYMBOLS

- Operating gravel and/or sand pit
- Abandoned gravel and/or sand pit
- Operating stone quarry
- Abandoned stone quarry
- Potential quarry aggregate resource area
- Selected well or drill-hole location with overburden thickness (ft) over sand/gravel resource thickness (ft), obtained from well logs.
  "g" indicates gravel; "s" indicates sand
  "-" in symbol denotes unevaluated or unknown property.
- "ws" denotes Colorado Geological Survey Windsor/Sand and Gravel projects' drill hole
- Landform boundary, solid where known or observed; dashed where approximate or inferred.

STATION, LOCATION AND GEOLOGICAL DESCRIPTION OF DRILLHOLE

- overburden thickness (ft)
- sand/gravel resource thickness (ft)
- percent sand and fines (passing #4 screen, 0.12 in.), visual estimation
- significant amount of fines (passing #200 screen, 0.0016 in. or 0.074 mm.)
- significant amount of decomposed or weak rock.
- significant amount of calcium carbonate (caliche)

"s" in symbol denotes unevaluated or unknown property
"c" in symbol denotes property absent or insignificant



QUADRANGLE LOCATION

NON-RESOURCE OR WITHDRAWN AREA

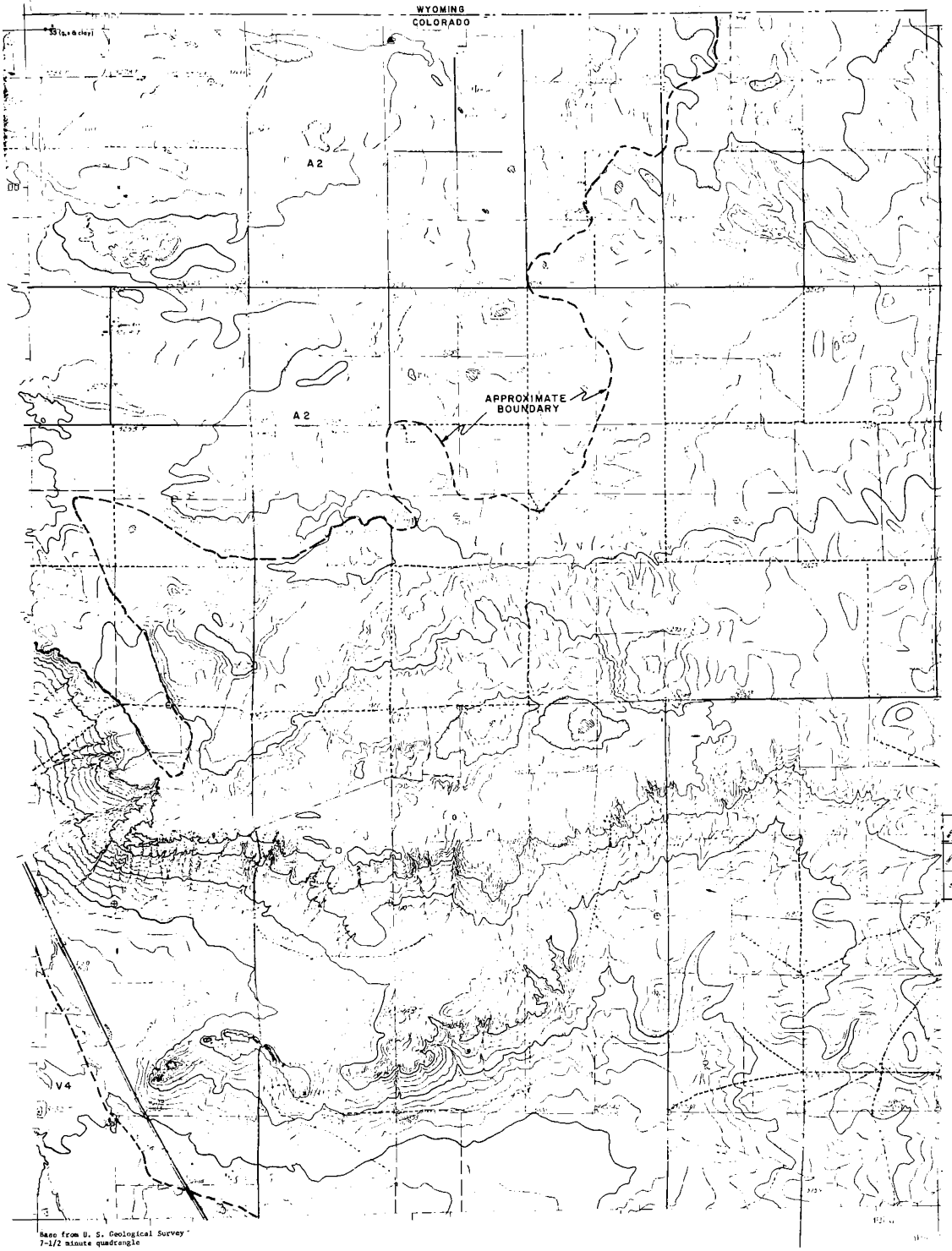
REFERENCE: Weist, W.G., Jr., 1965, Reconnaissance of ground-water resources in parts of Larimer, Logan, Morgan, Sedgwick, and Weld Counties, Colo.: U. S. Geol. Survey Water-Supply Paper 1809-L, pl. 1.

Mapped by: Ralph R. Shroba
Date: June 30, 1974

SAND, GRAVEL AND QUARRY AGGREGATE RESOURCES MAP

GROVER INW

DEPARTMENT OF NATURAL RESOURCES
COLORADO GEOLOGICAL SURVEY
JOHN W. ROLD, DIRECTOR



EXPLANATION

landform unit

Resource classification

LANDFORM UNITS

F Floodplain deposit
T Stream terrace deposit
V Valley fill (F & T)

U Upland deposits
A Alluvial fan
E Wind-deposited sand (eolian)
M Man-made deposits (mine tailings, spoils....)

RESOURCE CLASSIFICATION

Coarse Aggregate
(at least 50% retained on #4 screen, visual estimation)

1 Gravel: relatively clean and sound
2 Gravel: significant fines, decomposed rock, calcium carbonate.

Fine Aggregate
(greater than 50% passing #4 screen, 50% retained on #200 screen, visual estimate)

3 Sand

Unevaluated Resource

4 Probable aggregate resource

MAP SYMBOLS

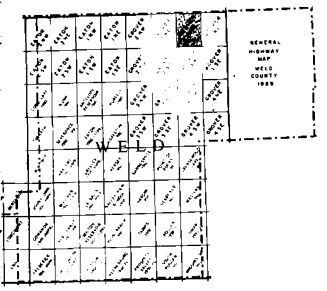
- Operating gravel and/or sand pit
- Abandoned gravel and/or sand pit
- Operating stone quarry
- Abandoned stone quarry
- Potential quarry aggregate resource area
- Selected well or drill-hole location with overburden thickness (ft) over sand/gravel resource thickness (ft), obtained from well logs. "g" indicates gravel, "s" indicates sand "-" in symbol denotes unevaluated or unknown property.
- "ws" denotes Colorado Geological Survey Windsor/Sand and Gravel projects' drill hole
- Landform boundary, solid where known or observed; dashed where approximate or inferred.

STATION, LOCATION AND GEOLOGICAL DESCRIPTION OF DEPOSIT

- overburden thickness (ft)
- sand/gravel resource thickness (ft)
- percent sand and fines (passing #4 screen, 0.25 (m.), visual estimation
- significant amount of fines (passing #200 screen, 0.0074 in. or 0.074 mm.)
- significant amount of decomposed or weak rock.
- significant amount of calcium carbonate (caliche)

"s" in symbol denotes unevaluated or unknown property

"s" in symbol denotes property absent or insignificant



QUADRANGLE LOCATION

NON-RESOURCE OR WITHDRAWN AREA

REFERENCE: Weist, W.G., Jr., 1965, Reconnaissance of ground-water resources in parts of Larimer, Logan, Morgan, Sedgwick, and Weld Counties, Colo.: U. S. Geol. Survey Water-Supply Paper 1809-L, pl. 1.

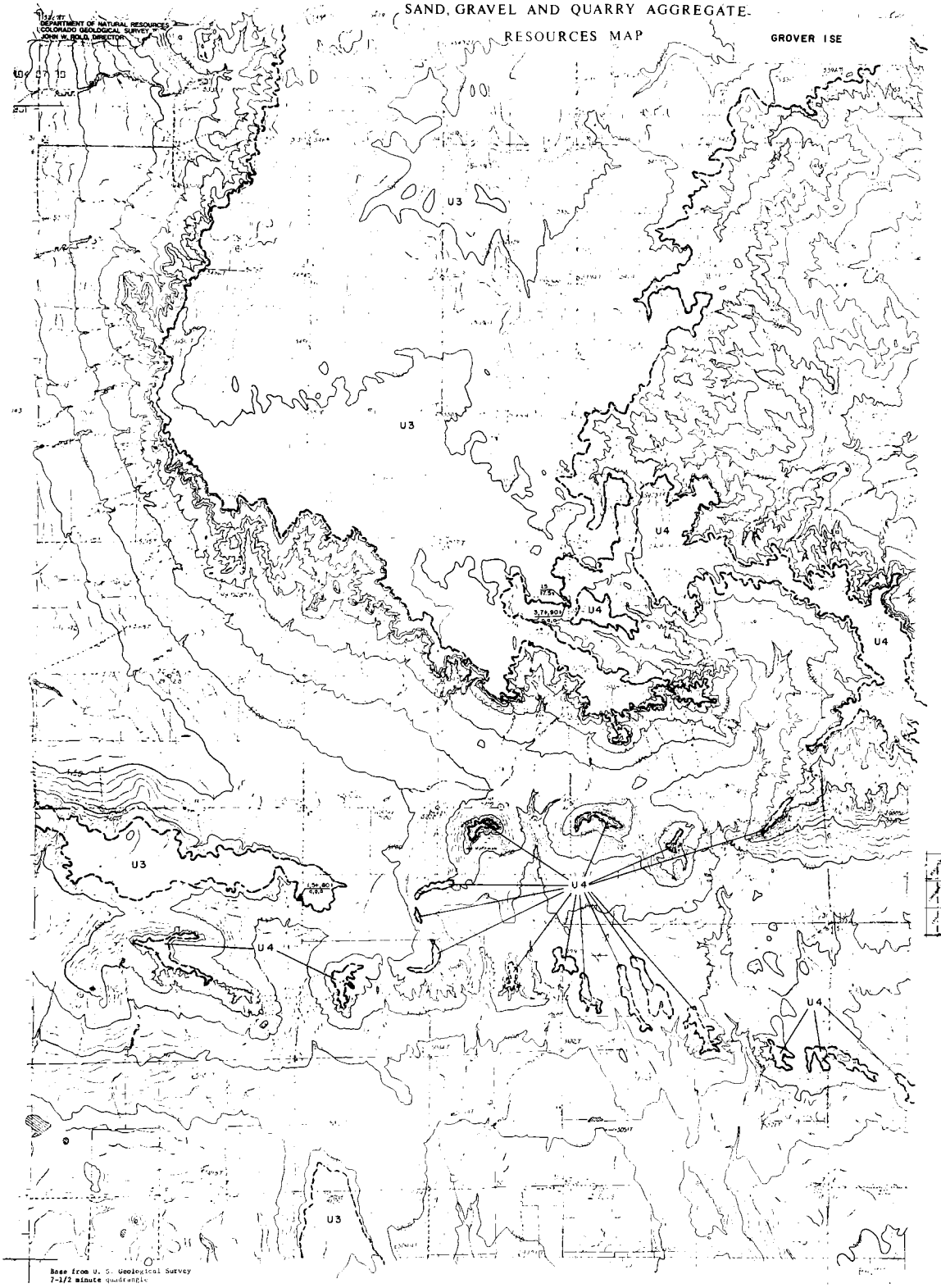
Mapped by: Ralph R. Shroba
Date: June 30, 1974

Base from U. S. Geological Survey 7-1/2 minute quadrangle

SAND, GRAVEL AND QUARRY AGGREGATE RESOURCES MAP

GROVER ISE

DEPARTMENT OF NATURAL RESOURCES
COLORADO GEOLOGICAL SURVEY
JOHN W. ROLD, DIRECTOR



EXPLANATION

Landform unit
Resource classification

LANDFORM UNITS

- F Floodplain deposit
- T Stream terrace deposit
- V Valley fill (F & T)
- U Upland deposits
- A Alluvial fan
- E Wind-deposited sand (dunes)
- M Man-made deposits (slag, tailings, spoils...)

RESOURCE CLASSIFICATION

Coarse Aggregate
(at least 50% retained on #4 screen, visual estimate)

- 1 Gravel: relatively clean and sound
- 2 Gravel: significant fines, decomposed rock, calcium carbonate.

Fine Aggregate
(greater than 50% passing #4 screen, 50% retained on #200 screen, visual estimate)

- 3 Sand

Unevaluated Resource

- 4 Probable aggregate resource

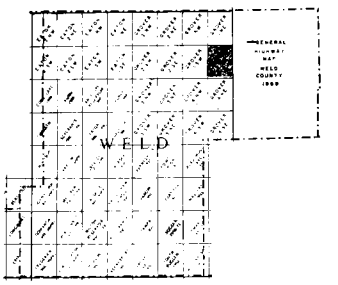
MAP SYMBOLS

- Operating gravel and/or sand pit
- Abandoned gravel and/or sand pit
- Operating stone quarry
- Abandoned stone quarry
- Potential quarry aggregate resource area
- Selected well or drill-hole location with overburden thickness (ft) over sand/gravel resource thickness (ft), obtained from well logs
  "s" indicates gravel; "s" indicates sand
  "-" in symbol denotes unevaluated or unknown property.
- 'wp' denotes Colorado Geological Survey Windsor/Sand and Gravel projects drill hole
- Landform boundary, solid where known or observed; dashed where approximate or inferred.

STATION LOCATION AND GEOLOGICAL DESCRIPTION OF REPORT

- overburden thickness (ft)
- sand/gravel resource thickness (ft)
- percent sand and fines (passing #4 screen, 0.25 in.), visual estimation
- sign/least amount of fines (passing #200 screen, 0.0029 in. or 0.074 mm.)
- sign/least amount of decomposed or weak rock.
- sign/least amount of calcium carbonate (soil/dust)

"s" in symbol denotes unevaluated or unknown property.
"o" in symbol denotes property absent or sign/least



QUADRANGLE LOCATION

NON-RESOURCE OR WITHDRAWN AREA

REFERENCE: Weist, W.G., Jr., 1965, Reconnaissance of ground-water resources in parts of Larimer, Logan, Morgan, Sedgwick, and Weld Counties, Colo.: U. S. Geol. Survey Water-Supply Paper 1809-L, pl. 1.

Mapped by: Ralph R. Shroba

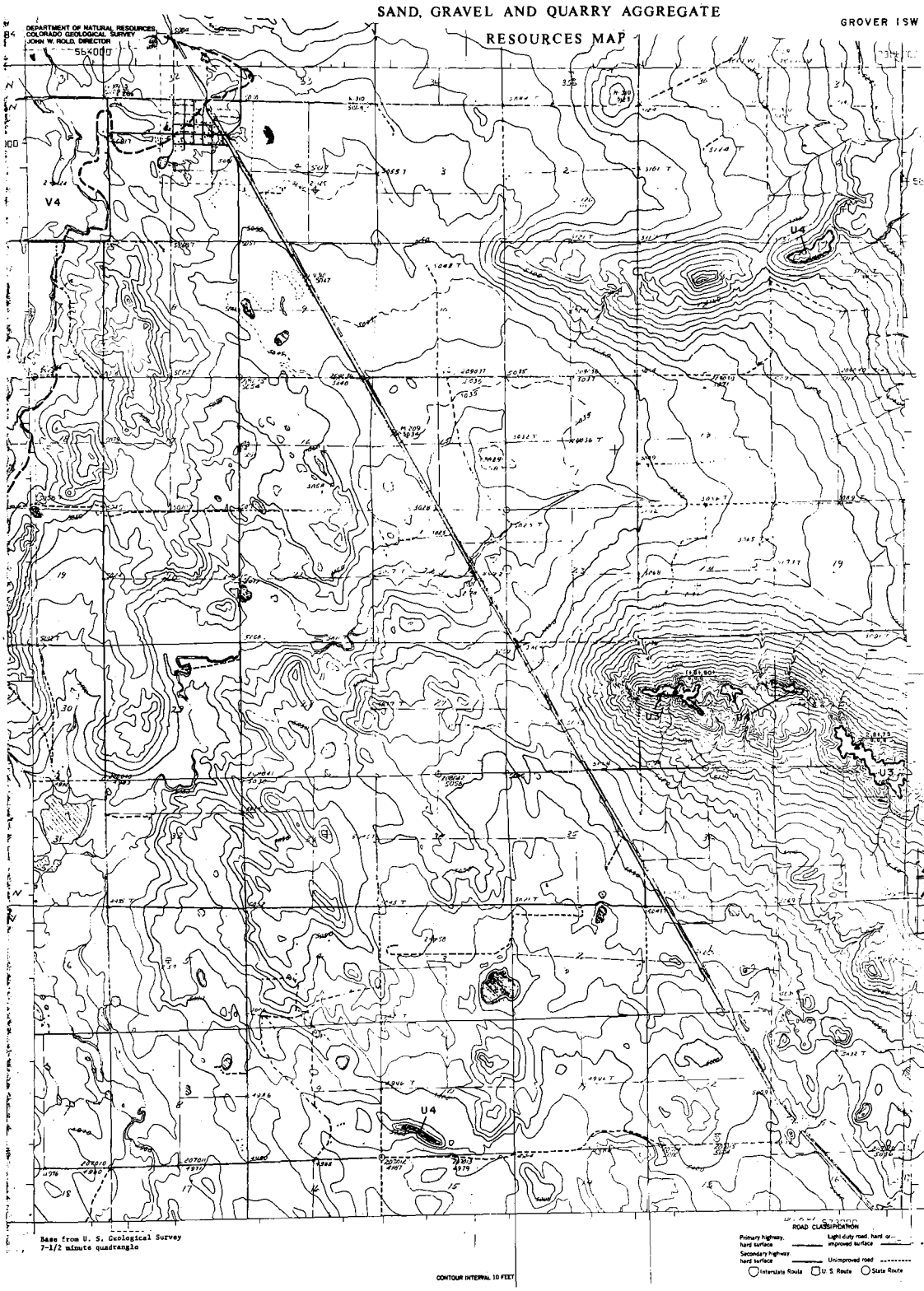
Date: June 30, 1974

Base from U. S. Geological Survey
7-1/2 minute quadrangle

SAND, GRAVEL AND QUARRY AGGREGATE RESOURCES MAP

GROVER ISW

DEPARTMENT OF NATURAL RESOURCES
COLORADO GEOLOGICAL SURVEY
JOHN W. ROLD, DIRECTOR



EXPLANATION

Landform unit

Resource classification

LANDFORM UNITS

- F Floodplain deposit
- T Stream terrace deposit
- V Valley fill (F & T)
- U Upland deposits
- A Alluvial fan
- E Wind-deposited sand (eolian)
- M Man-made deposits (slag,tailings, spoils....)

RESOURCE CLASSIFICATION

Coarse Aggregate
(at least 30% retained on #4 screen, visual estimation)

- 1 Gravel: relatively clean and sound
- 2 Gravel: significant fines, decomposed rock, calcium carbonate.

Fine Aggregate
(greater than 70% passing #4 screen, 60% retained on #100 screen, visual estimation

- 3 Sand

Unevaluated Resource

- 4 Probable aggregate resource

MAP SYMBOLS

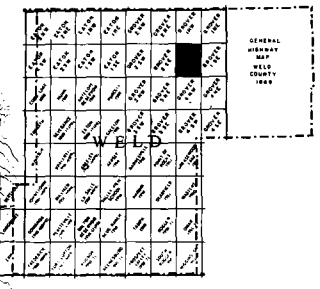
- Operating gravel and/or sand pit
- Abandoned gravel and/or sand pit
- Operating stone quarry
- Abandoned stone quarry
- Potential quarry aggregate resource area
- Selected well or drill-hole location with overburden thickness (ft) over sand/gravel resource thickness (ft), obtained from well logs. "g" indicates gravel; "s" indicates sand. "-" in symbol denotes unevaluated or unknown property.
- "ws" denotes Colorado Geological Survey Windsor/Hesed and Crowal projects' drill hole
- Landform boundary, solid where known or observed; dashed where approximate or inferred.

STATION, LOCATION AND GEOLOGICAL DESCRIPTION OF DEPOSIT

- overburden thickness (ft)
- sand/gravel resource thickness (ft)
- percent sand and fines (passing #4 screen, 0.25 in.), visual estimation
- significant amount of fines (passing #200 screen, 0.006 in. or 0.074 mm.)
- significant amount of decomposed or weak rock.
- significant amount of calcium carbonate (caliche)

"n" in symbol denotes unevaluated or unknown property

"o" in symbol denotes property absent or insignificant



GENERAL HIGHWAY MAP WELD COUNTY 1968

QUADRANGLE LOCATION

NON-RESOURCE OR WITHDRAWN AREA

REFERENCE: Weist, W.G., Jr., 1965, Reconnaissance of ground-water resources in parts of Larimer, Logan, Morgan, Sedgwick, and Weld Counties, Colo.: U. S. Geol. Survey Water-Supply Paper 1809-L, pl. 1.

Mapped by: Ralph R. Shroba
Date: June 30, 1974

Base from U. S. Geological Survey
7-1/2 minute quadrangle

CONTOUR INTERVAL 10 FEET

ROAD CLASSIFICATION

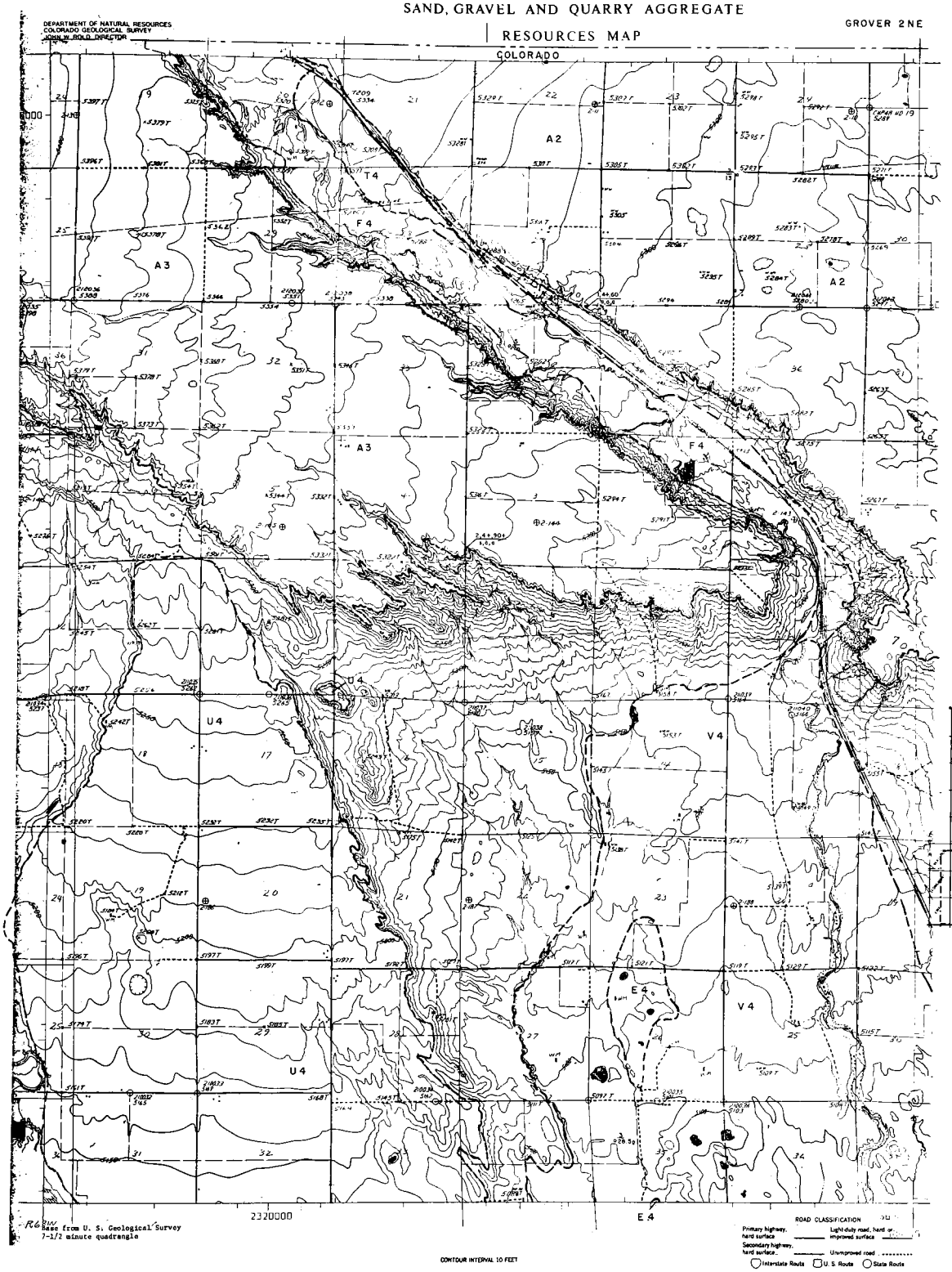
- Primary highway, hard surface
- Light-duty road, hard or improved surface
- Secondary highway, hard surface
- Unimproved road
- Interstate Route
- U. S. Route
- State Route

SAND, GRAVEL AND QUARRY AGGREGATE RESOURCES MAP

DEPARTMENT OF NATURAL RESOURCES
COLORADO GEOLOGICAL SURVEY
JOHN W. ROLD, DIRECTOR

GROVER 2NE

COLORADO



EXPLANATION

Landform unit
Resource classification

LANDFORM UNITS

- F Floodplain deposit
- T Stream terrace deposit
- V Valley fill (F & T)
- U Upland deposits
- A Alluvial fan
- E Wind-deposited sand (eolian)
- M Man-made deposits (slag,tailings, spoils.....)

RESOURCE CLASSIFICATION

Coarse Aggregate
(at least 50% retained on #4 screen, visual estimate)

1 Gravel: relatively clean and sound
2 Gravel: significant fines, decomposed rock, calcium carbonate.

Fine Aggregate
(greater than 50% passing #4 screen, 50% retained on #200 screen, visual estimate)

3 Sand

Overlapping Resource

4 Probable aggregate resource

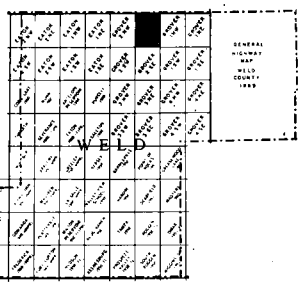
MAP SYMBOLS

- Operating gravel and/or sand pit
- Abandoned gravel and/or sand pit
- Operating stone quarry
- Abandoned stone quarry
- Potential quarry aggregate resource area
- Selected well or drill-hole location with overburden thickness (ft) over sand/gravel resource thickness (ft), obtained from well logs. "x" indicates gravel; "o" indicates sand. "-" in symbol denotes unevaluated or unknown property.
- "mn" denotes Colorado Geological Survey Windsor/Sand and Gravel projects' drill hole
- Landform boundary, solid where known or observed; dashed where approximate or inferred.

STATION, LOCATION AND GEOLOGICAL DESCRIPTION OF SURVEY

- overburden thickness (ft)
- sand/gravel resource thickness (ft)
- percent sand and fines (passing #4 screen, 0.25 in.), visual estimation
- significant amount of fines (passing #200 screen, 0.0058 in. or 0.074 mm.)
- significant amount of decomposed or weak rock.
- significant amount of calcium carbonate (caliche)

"x" in symbol denotes unevaluated or unknown property
"o" in symbol denotes property absent or insignificant



QUADRANGLE LOCATION

NON-RESOURCE OR WITHDRAWN AREA

REFERENCE: Weist, W.G., Jr., 1965, Reconnaissance of ground-water resources in parts of Larimer, Logan, Morgan, Sedgwick, and Weld Counties, Colo.: U. S. Geol. Survey Water-Supply Paper 1809-L, pl. 1.

Mapped by: Ralph R. Shroba
Date: June 30, 1974

Base from U. S. Geological Survey 7-1/2 minute quadrangle

CONTOUR INTERVAL 10 FEET

ROAD CLASSIFICATION

Primary highway, hard surface
Secondary highway, hard surface
Light-duty road, hard or improved surface
Unimproved road
Interstate Route
U. S. Route
State Route

SAND, GRAVEL AND QUARRY AGGREGATE RESOURCES MAP

GROVER 2 NW

DEPARTMENT OF NATURAL RESOURCES
COLORADO GEOLOGICAL SURVEY
JOHN W. ROLD, DIRECTOR

WYOMING
COLORADO

NOTE: Most likely a part of the fine-aggregate resource area east of Porter Creek. Both areas are now the dissected remnants of a possible large fan complex whose source was ancient Porter Creek in an area to the northwest of Wyoming.

NOTE: Younger fan of Porter Creek origin. Value as a resource is questionable because of high scripping ratio.

EXPLANATION

Landform unit
Resource classification

LANDFORM UNITS

- F Floodplain deposit
- T Stream terrace deposit
- V Valley fill (F & T)
- U Upland deposits
- A Alluvial fan
- E Wind-deposited sand (soltan)
- M Man-made deposits (slag, tailings, spoils....)

RESOURCE CLASSIFICATION

Coarse aggregate
- 1 Gravel: relatively clean and sound
- 2 Gravel: significant fines, decomposed rock, calcium carbonate.

Fine aggregate
- 3 Sand

Unevaluated Resource
- 4 Probable aggregate resource

MAP SYMBOLS

- Operating gravel and/or sand pit
- Abandoned gravel and/or sand pit
- Operating stone quarry
- Abandoned stone quarry
- Potential quarry aggregate resource area
- Selected well or drill-hole location with overburden thickness (ft) over sand/gravel resource thickness (ft), obtained from well logs. "g" indicates gravel; "s" indicates sand. "-" in symbol denotes unevaluated or unknown property. "WW" denotes Colorado Geological Survey Windsor/Sand and Gravel projects' drill hole
- Landform boundary, solid where known or observed; dashed where approximate or inferred.

STATION, LOCATION AND GEOLOGICAL DESCRIPTION OF DEPOSIT

- overburden thickness (ft)
- sand/gravel resource thickness (ft)
- percent sand and fines (passing #4 screen, 0.23 in., Wenal extraction)
- significant amount of fines (passing #200 screen, 0.0018 in. or 0.074 mm.)
- significant amount of decomposed or weak rock.
- significant amount of calcium carbonate (caliche)

"s" in symbol denotes unevaluated or unknown property.
"0" in symbol denotes property absent or insignificant

GENERAL HIGHWAY MAP WELD COUNTY 1988

WELD

QUADRANGLE LOCATION

NON-RESOURCE OR WITHDRAWN AREA

REFERENCE: Weist, W.G., Jr., 1965, Reconnaissance of ground-water resources in parts of Larimer, Logan, Morgan, Sedgwick, and Weld Counties, Colo.: U. S. Geol. Survey Water-Supply Paper 1809-L, pl. 1.

Mapped by: Stephen D. Schwochow
Date: June 30, 1974

Base from U. S. Geological Survey
7-1/2 minute quadrangle

ROAD CLASSIFICATION

- Primary highway, hard surface
- Secondary highway, hard surface
- Light-duty road, hard or improved surface
- Unimproved road
- Interstate Route
- U. S. Route
- State Route

CONTOUR INTERVAL 10 FEET

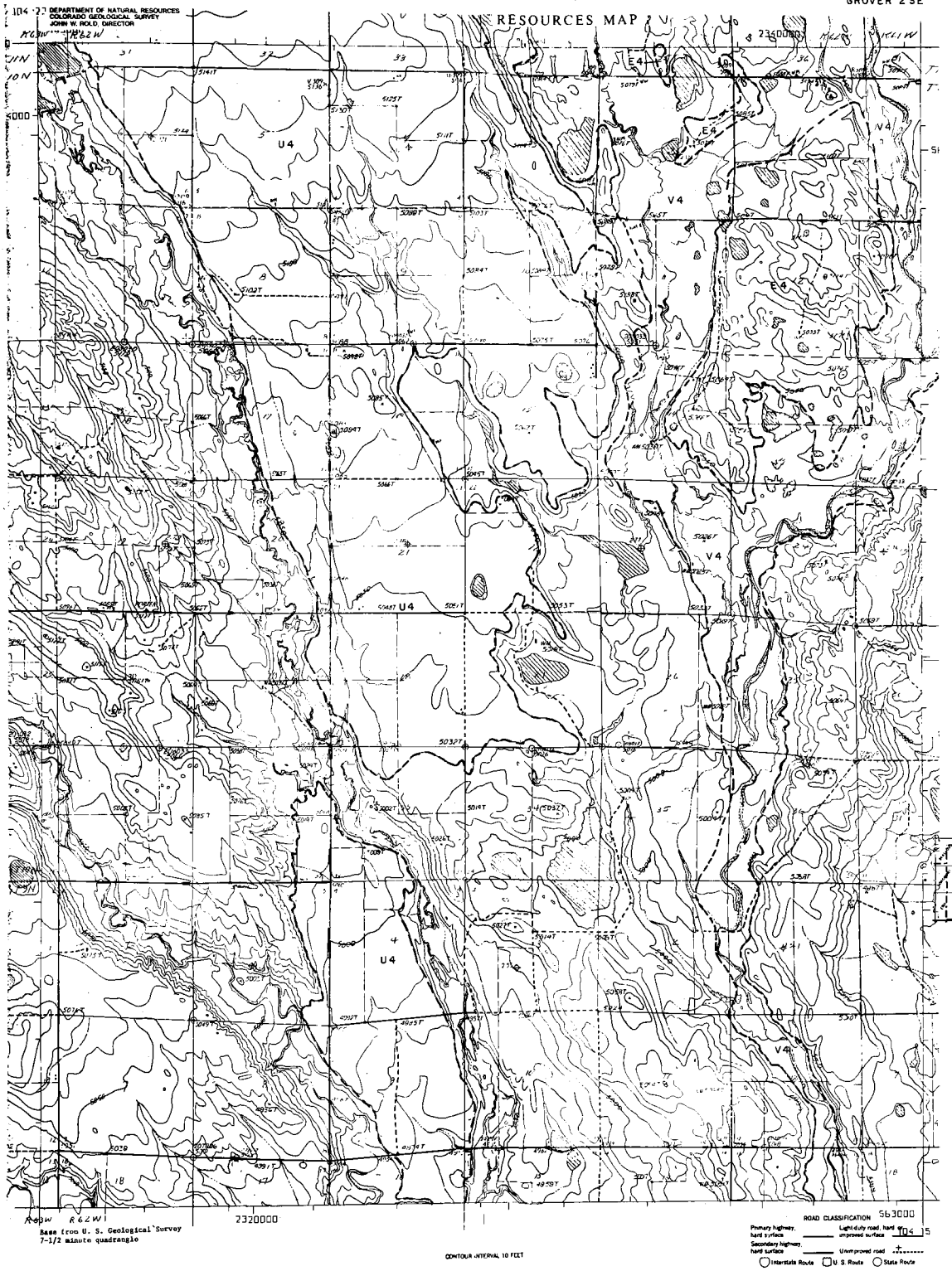
GROVER 2 NW (02)
7.5 MINUTE SERIES (TOPOGRAPHIC)

A.F.C.

SAND, GRAVEL AND QUARRY AGGREGATE RESOURCES MAP

GROVER 2 SE

DEPARTMENT OF NATURAL RESOURCES
COLORADO GEOLOGICAL SURVEY
JOHN W. ROLD, DIRECTOR



EXPLANATION

Landform unit
Resource classification

LANDFORM UNITS

- F Floodplain deposit
- T Stream terrace deposit
- V Valley fill (F & T)
- U Upland deposits
- A Alluvial fan
- E Wind-deposited sand (eolian)
- M Man-made deposits (slag,tailings, spoils....)

RESOURCE CLASSIFICATION

Coarse Aggregate
(at least 30% retained on #4 screen, visual estimation)

- 1 Gravel: relatively clean sand and gravel
- 2 Gravel: significant fines, decomposed rock, calcium carbonate.

Fine Aggregate
(greater than 70% passing #4 screen, 60% retained on #200 screen, visual estimation

- 3 Sand

Undesignated Resource

- 4 Probable aggregate resource

MAP SYMBOLS

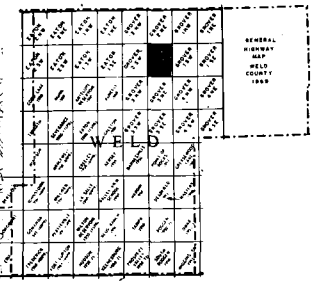
- Operating gravel and/or sand pit
- Abandoned gravel and/or sand pit
- Operating stone quarry
- Abandoned stone quarry
- Potential quarry aggregate resource area
- Selected well or drill-hole location with overburden thickness (ft) over sand/gravel resource thickness (ft), obtained from well logs. "g" indicates Gravel; "s" indicates sand
- "c" in symbol denotes unevaluated or unknown property.
- "wc" denotes Colorado Geological Survey Windsor/Sand and Gravel projects' drill hole
- Landform boundary, solid where known or observed; dashed where approximate or inferred.

STATUS, LOCATION AND GEOLOGICAL DESCRIPTION OF DEPOSIT

- overburden thickness (ft)
- sand/gravel resource thickness (ft)
- percent sand and fines (passing #4 screen, 9.25 in.), visual estimation
- significant amount of fines (passing #200 screen, 0.0058 in. or 0.074 mm.)
- significant amount of decomposed or weak rock.
- significant amount of calcium carbonate (caliche)

"s" in symbol denotes unevaluated or unknown property

"a" in symbol denotes property absent or insignificant



QUADRANGLE LOCATION

NON-RESOURCE OR WITHDRAWN AREA

Mapped by: Ralph R. Shroba
Date: June 30, 1974

Base from U. S. Geological Survey
7-1/2 minute quadrangle

CONTOUR INTERVAL 10 FEET

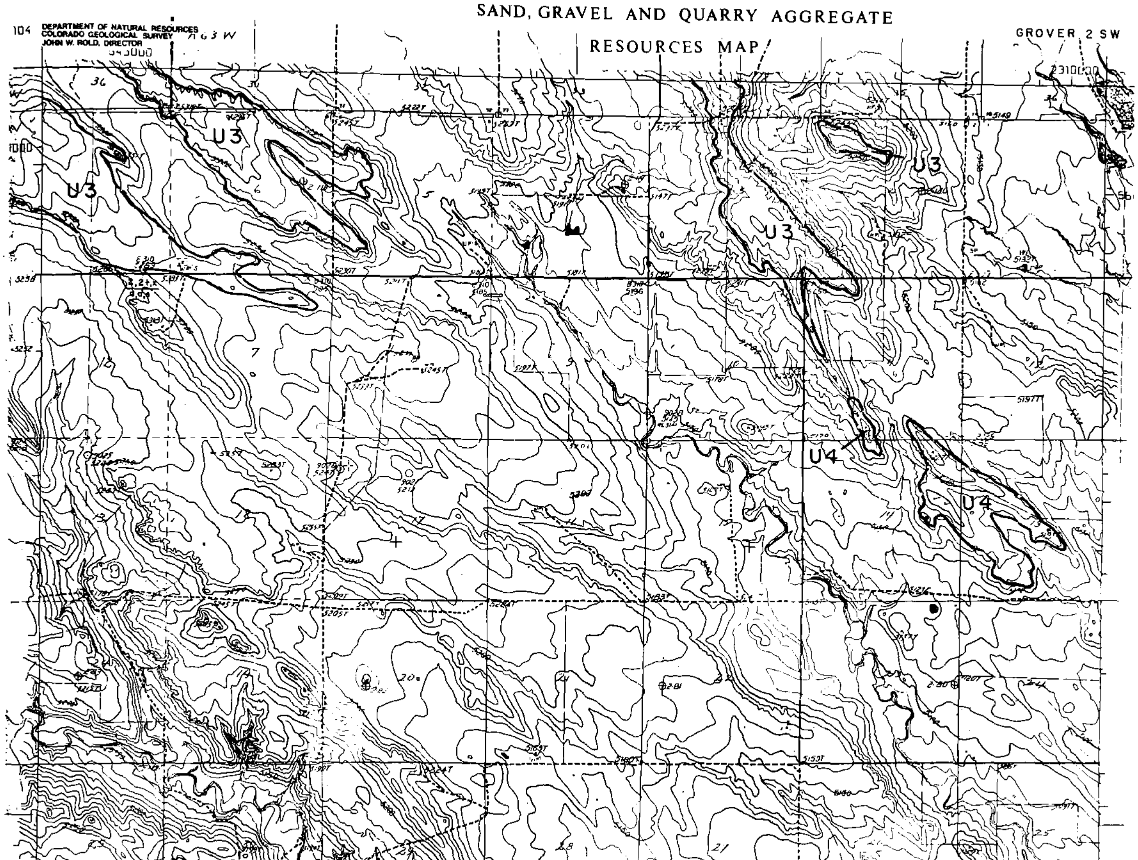
ROAD CLASSIFICATION

Primary highway, hard surface
Light-duty road, hard or unimproved surface
Secondary highway, hard surface
Unimproved road
Interstate Route U. S. Route State Route

104 DEPARTMENT OF NATURAL RESOURCES
COLORADO GEOLOGICAL SURVEY
JOHN W. ROLD, DIRECTOR

SAND, GRAVEL AND QUARRY AGGREGATE RESOURCES MAP

GROVER 2 SW



Base from U. S. Geological Survey
7-1/2 minute quadrangle

CONTOUR INTERVAL 10 FEET

ROAD CLASSIFICATION
Primary highway, hard surface
Light-duty road, hard or improved surface
Secondary highway, hard surface
Unimproved road
Interstate Route
U. S. Route
State Route

104 22 3

EXPLANATION

F1 — Landform unit; Resource classification

LANDFORM UNITS

- F Floodplain deposit
- T Stream terrace deposit
- V Valley fill (F & T)
- U Upland deposits
- A Alluvial fan
- E Wind-deposited sand (eolian)
- M Man-made deposits (slag, tailings, spoils....)

RESOURCE CLASSIFICATION

Coarse Aggregate
(at least 50% retained on #4 screen, visual estimation)

- 1 Gravel: relatively clean and sound
- 2 Gravel: significant fines, decomposed rock, calcium carbonate.

Fine Aggregate
(greater than 50% passing #4 screen, 60% retained on #200 screen, visual estimation)

- 3 Sand

Unevaluated Resource

- 4 Probable aggregate resource

MAP SYMBOLS

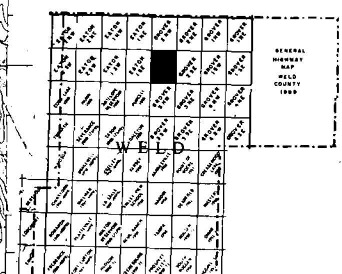
- Operating gravel and/or sand pit
- Abandoned gravel and/or sand pit
- Operating stone quarry
- Abandoned stone quarry
- Potential quarry aggregate resource area
- Selected well or drill-hole location with overburden thickness (ft) over sand/gravel resource thickness (ft), obtained from well logs. "g" indicates gravel; "s" indicates sand
- "x" in symbol denotes unevaluated or unknown property.
- "wm" denotes Colorado Geological Survey Windsor/Sand and Gravel projects' drill hole
- Landform boundary, solid where known or observed; dashed where approximate or inferred.

STATION, LOCATION AND GEOLOGICAL DESCRIPTION OF DEPOSIT

- overburden thickness (ft)
- sand/gravel resource thickness (ft)
- percent sand and fines (passing #4 screen, 0.25 in.), visual estimation
- 5, 17, 40
- significant amount of fines (passing #200 screen, 0.0029 in. or 0.074 mm.)
- significant amount of decomposed or weak rock
- significant amount of calcium carbonate (caliche)

"x" in symbol denotes unevaluated or unknown property

"a" in symbol denotes property absent or insignificant



QUADRANGLE LOCATION

NON-RESOURCE OR WITHDRAWN AREA

Mapped by: Stephen D. Schwochow
Date: June 30, 1974

SAND, GRAVEL AND QUARRY AGGREGATE RESOURCES MAP

GROVER 3 NE

DEPARTMENT OF NATURAL RESOURCES
COLORADO GEOLOGICAL SURVEY
JOHN W. ROLD, DIRECTOR

EXPLANATION

Landform unit

Resource classification

LANDFORM UNITS

- F Floodplain deposit
- T Stream terrace deposit
- V Valley fill (F & T)
- U Upland deposits
- A Alluvial fan
- E Wind-deposited sand (eolian)
- M Mesa-cap deposits (sand,tailings, spoils....)

RESOURCE CLASSIFICATION

Coarse Aggregate
(at least 50% retained on #4 screen, visual estimation)

1 Gravel: relatively clean and sound

2 Gravel: significant fines, decomposed rock, calcium carbonate.

Fine Aggregate
(greater than 75% passing #4 screen, 40% retained on #200 screen, visual estimation

3 Sand

Unevaluated Resource

4 Probable aggregate resource

MAP SYMBOLS

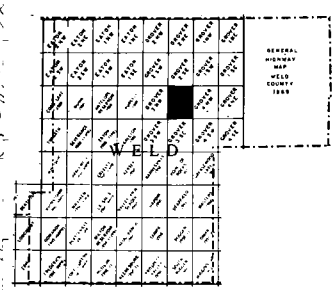
- Operating gravel and/or sand pit
- Abandoned gravel and/or sand pit
- Operating stone quarry
- Abandoned stone quarry
- Potential quarry aggregate resource area
- Selected well or drill-hole location with overburden thickness (ft) over sand/gravel resource thickness (ft), obtained from well logs.
  - "," indicates gravel; "=" indicates sand
  - "x" in symbol denotes unevaluated or unknown property.
  - "ws" denotes Colorado Geological Survey Windsor/Sand and Gravel projects' drill hole
- Landform boundary, solid where known or observed; dashed where approximate or inferred.

STATION, LOCATION AND GEOLOGICAL DESCRIPTION OF DEPOSIT

overburden thickness (ft)
sand/gravel resource thickness (ft)
percent sand and fines (passing #4 screen, 0.25 in.), visual estimation
significant amount of fines (passing #200 screen, 0.0059 in. or 0.074 mm.)
significant amount of decomposed or weak rock.
significant amount of calcium carbonate (caliche)

"x" in symbol denotes unevaluated or unknown property

"n" in symbol denotes property absent or insignificant



QUADRANGLE LOCATION

NON-RESOURCE OR WITHDRAWN AREA

Mapped by: Ralph R. Shroba
Date: June 30, 1974

Base from U. S. Geological Survey
7-1/2 minute quadrangle

ROAD CLASSIFICATION

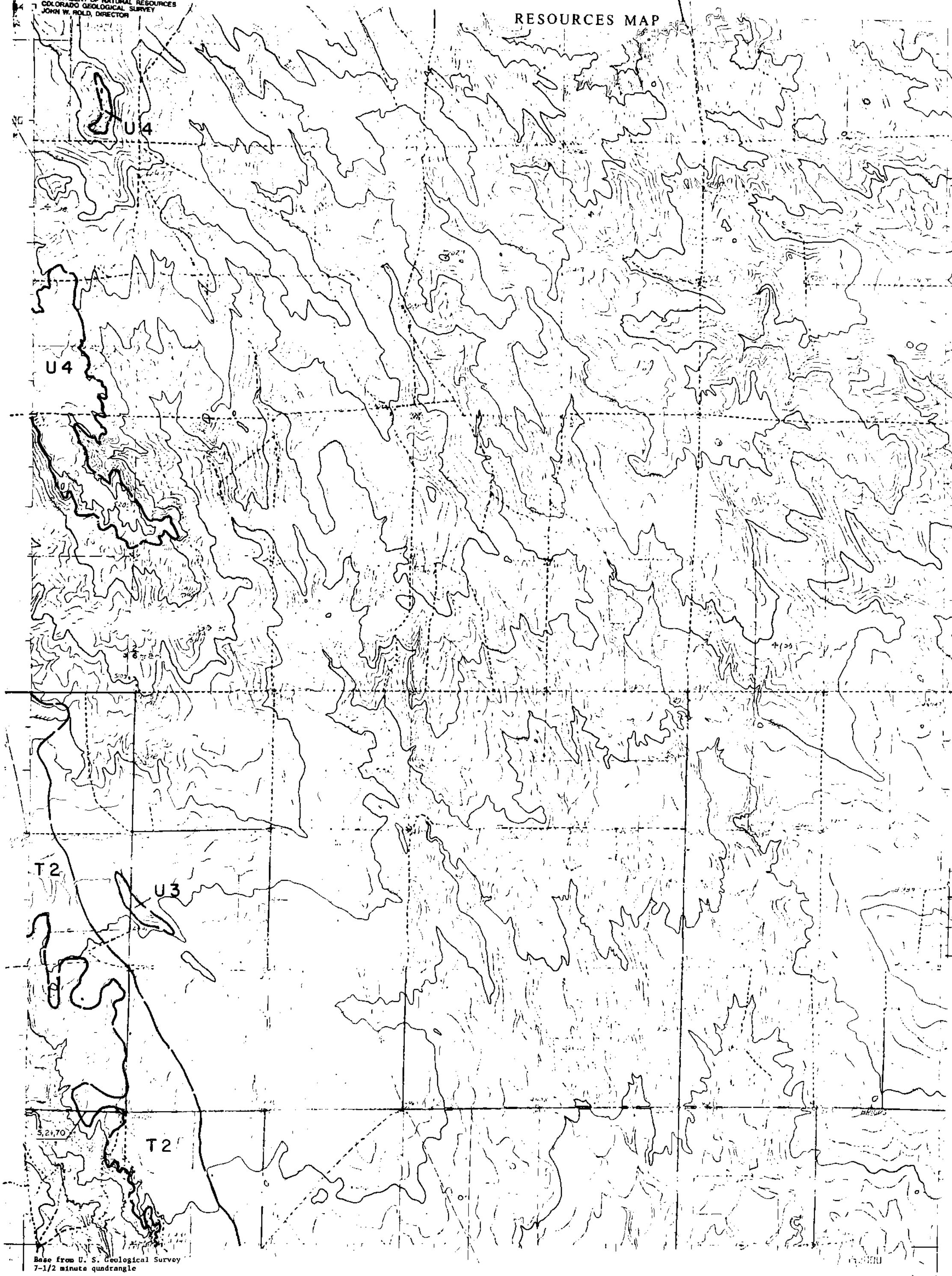
Primary highway, hard surface
Secondary highway, hard surface
Light-duty road, hard or improved surface
Unimproved road
Interstate Route
U S Route
State Route

CONTOUR INTERVAL 10 FEET

DEPARTMENT OF NATURAL RESOURCES
COLORADO GEOLOGICAL SURVEY
JOHN W. ROLD, DIRECTOR

SAND, GRAVEL AND QUARRY AGGREGATE RESOURCES MAP

GROVER 3 NW



Base from U. S. Geological Survey
7-1/2 minute quadrangle

EXPLANATION

F — Landform unit; Resource classification

LANDFORM UNITS

- F — Floodplain deposit
- T — Stream terrace deposit
- V — Valley fill (F & T)
- U — Upland deposits
- A — Alluvial fan
- E — Wind-deposited sand (eolian)
- M — Man-made deposits (slag, tailings, spoils....)

RESOURCE CLASSIFICATION

Coarse Aggregate
(at least 50% retained on #4 screen, visual estimation)

- 1 — Gravel: relatively clean and sound
- 2 — Gravel: significant fines, decomposed rock, calcium carbonate.

Fine Aggregate
[illegible]

- 3 — Sand

Unevaluated Resource

- 4 — Probable aggregate resource

MAP SYMBOLS

- Operating gravel and/or sand pit
- Abandoned gravel and/or sand pit
- Operating stone quarry
- Abandoned stone quarry
- Potential quarry aggregate resource area
- Selected well or drill-hole location with overburden thickness (ft) over sand/gravel resource thickness (ft), obtained from well logs.
  - "g" indicates gravel; "s" indicates sand
  - "x" in symbol denotes unevaluated or unknown property.
  - "WG" denotes Colorado Geological Survey Windsor/Sand and Gravel projects' drill hole
- Landform boundary, solid where known or observed; dashed where approximate or inferred.

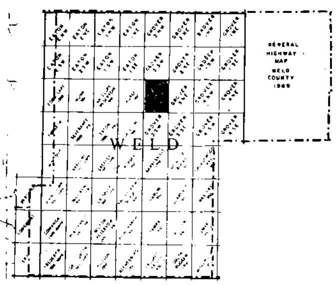
STATION, LOCATION AND GEOLOGICAL DESCRIPTION OF DEPOSIT

5, 17, 60

- overburden thickness (ft)
- sand/gravel resource thickness (ft)
- percent sand and fines (passing #4 screen, 0.25 in.), visual estimation
- significant amount of fines (passing #200 screen, 0.0029 in. or 0.074 mm.)
- significant amount of decomposed or weak rock.
- significant amount of calcium carbonate (caliche)

"x" in symbol denotes unevaluated or unknown property

"o" in symbol denotes property absent or insignificant



QUADRANGLE LOCATION

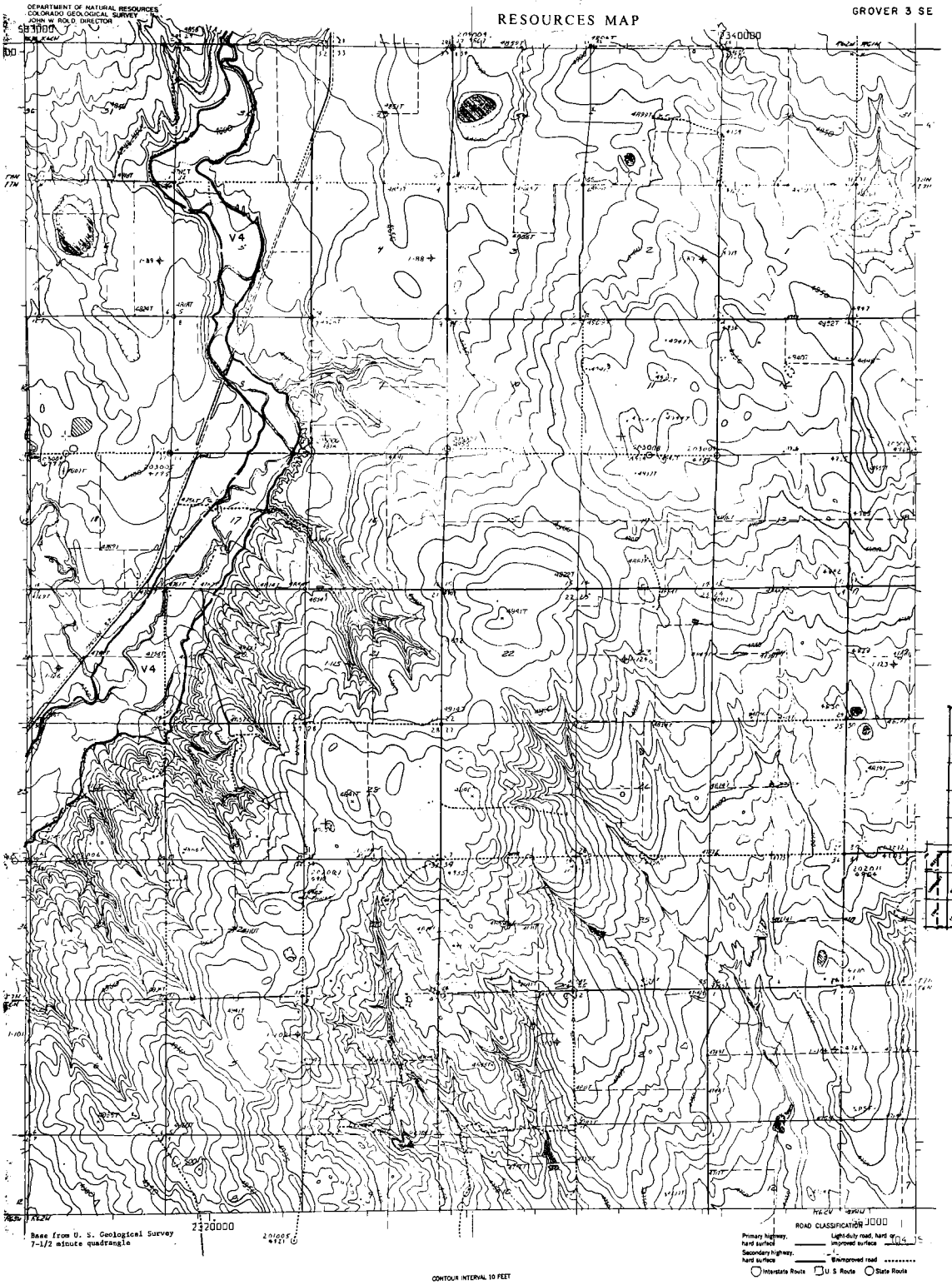
NON-RESOURCE OR WITHDRAWN AREA

Mapped by: Stephen D. Schwochow
Date: June 30, 1974

SAND, GRAVEL AND QUARRY AGGREGATE RESOURCES MAP

GROVER 3 SE

DEPARTMENT OF NATURAL RESOURCES
COLORADO GEOLOGICAL SURVEY
JOHN W. ROLD, DIRECTOR



EXPLANATION

Landform unit
Resource classification

LANDFORM UNITS

F Floodplain deposit
T Stream terrace deposit
V Valley fill (F & T)

U Upland deposits
A Alluvial fan
E Wind-deposited sand (dunes)
M Man-made deposits (slag,tailings, spoils....)

RESOURCE CLASSIFICATION

Coarse Aggregate
(at least 30% retained on #4 screen, visual estimation)

1 Gravel: relatively clean and sound
2 Gravel: significant fines, decomposed rock, calcium carbonate.

Fine Aggregate
(greater than 70% passing #4 screen, 40% retained on #200 screen, visual estimation

3 Sand

Unevaluated Resource

4 Probable aggregate resource

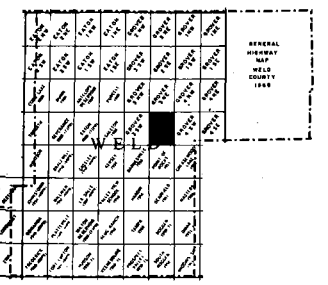
MAP SYMBOLS

- Operating gravel and/or sand pit
- Abandoned gravel and/or sand pit
- Operating stone quarry
- Abandoned stone quarry
- Potential quarry aggregate resource area
- Selected well or drill-hole location with overburden thickness (ft) over sand/gravel resource thickness (ft), obtained from well logs. "g" indicates gravel, "s" indicates sand. "-" in symbol denotes unevaluated or unknown property. "wd" denotes Colorado Geological Survey Weaver/Sand and Gravel projects' drill hole
- Landform boundary, solid where known or observed; dashed where approximate or inferred.

STATION, LOCATION AND GEOLOGICAL DESCRIPTION OF DEPOSIT

- overburden thickness (ft)
- sand/gravel resource thickness (ft)
- percent sand and fines passing #4 screen, 0.20 (n.), visual estimation
- significant amount of fines (passing #200 screen, 0.0058 in. or 0.074 mm.)
- significant amount of decomposed or weak rock.
- significant amount of calcium carbonate (caliche)

"n" in symbol denotes unevaluated or unknown property.
"0" (n symbol denotes property absent or insignificant



QUADRANGLE LOCATION

NON-RESOURCE OR WITHDRAWN AREA

Mapped by: Phillip C. Wicklein
Date: June 30, 1974

Base from U. S. Geological Survey
7-1/2 minute quadrangle

CONTOUR INTERVAL 10 FEET

ROAD CLASSIFICATION

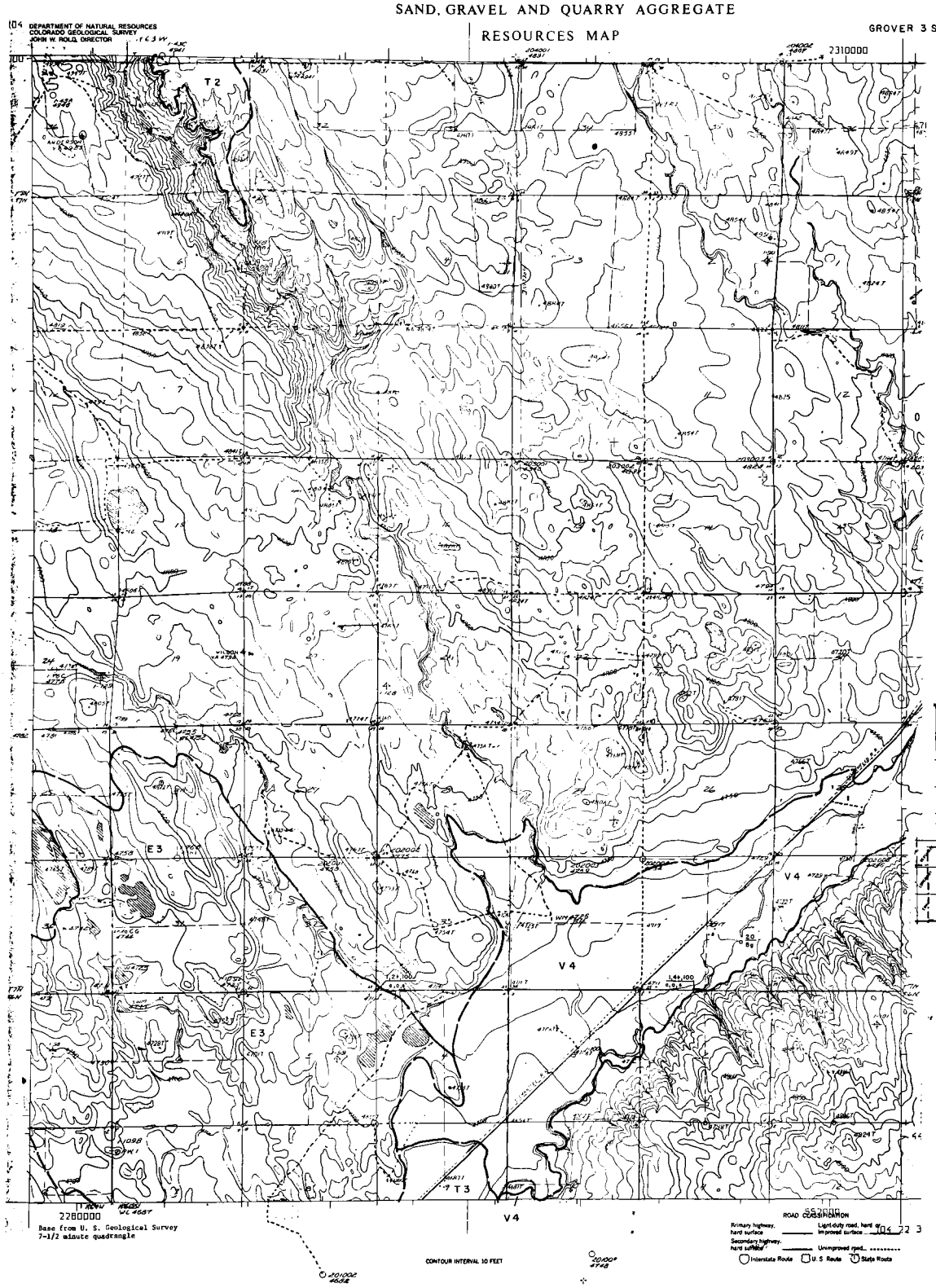
Primary highway, hard surface — Light-duty road, hard or improved surface
Secondary highway, hard surface — Unimproved road
Interstate Route U. S Route State Route

GROVER 3 SE (1AFC

SAND, GRAVEL AND QUARRY AGGREGATE RESOURCES MAP

DEPARTMENT OF NATURAL RESOURCES
COLORADO GEOLOGICAL SURVEY
JOHN W. ROLD, DIRECTOR

GROVER 3 SW



EXPLANATION

Landform unit
Resource classification

ALLUVIAL UNITS

- F Floodplain deposit
- T Stream terrace deposit
- V Valley fill (F & T)
- U Upland deposits
- A Alluvial fan
- E Wind-deposited sand (eolian)
- M Man-made deposits (slag, tailings, spoils....)

RESOURCE CLASSIFICATION

Coarse aggregate
(at least 30% retained on #4 screen, visual estimation)

1 Gravel: relatively clean sand and gravel

2 Gravel: significant fines, decomposed rock calcium carbonate.

Fine aggregate
(greater than 30% passing #4 screen, 60% retained on #200 screen, visual estimation

3 Sand

Undervalued resource

4 Probable aggregate resource

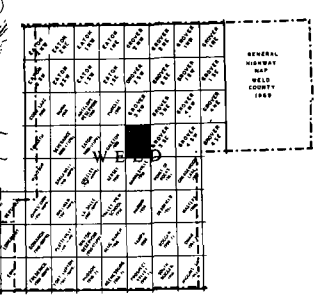
MAP SYMBOLS

- Operating gravel and/or sand pit
- Abandoned gravel and/or sand pit
- Operating stone quarry
- Abandoned stone quarry
- Potential quarry aggregate resource area
- Selected well or drill-hole location with overburden thickness (ft) over sand/gravel resource thickness (ft), obtained from well logs. "g" indicates gravel; "s" indicates sand. "x" in symbol denotes unevaluated or unknown property. "wo" denotes Colorado Geological Survey Windsor/Sand and Gravel projects' drill hole
- Landform boundary, solid where known or observed; dashed where approximate or inferred.

STATION, LOCATION AND GEOLOGICAL DESCRIPTION OF REPORTS

- overburden thickness (ft)
- sand/gravel resource thickness (ft)
- percent sand and fines (passing #4 screen, 0.24 in.), visual estimation
- significant amount of fines (passing #200 screen, 0.0029 in. or 0.074 mm.)
- significant amount of decomposed or weak rock.
- significant amount of calcium carbonate (caliche)

"x" in symbol denotes unevaluated or unknown property
"o" in symbol denotes property absent or insignificant



QUADRANGLE LOCATION

NON-RESOURCE OR WITHDRAWN AREA

Mapped by: Phillip C. Wicklein
Date: June 30, 1974

Base from U. S. Geological Survey
7-1/2 minute quadrangle

CONTOUR INTERVAL 10 FEET

ROAD CLASSIFICATION

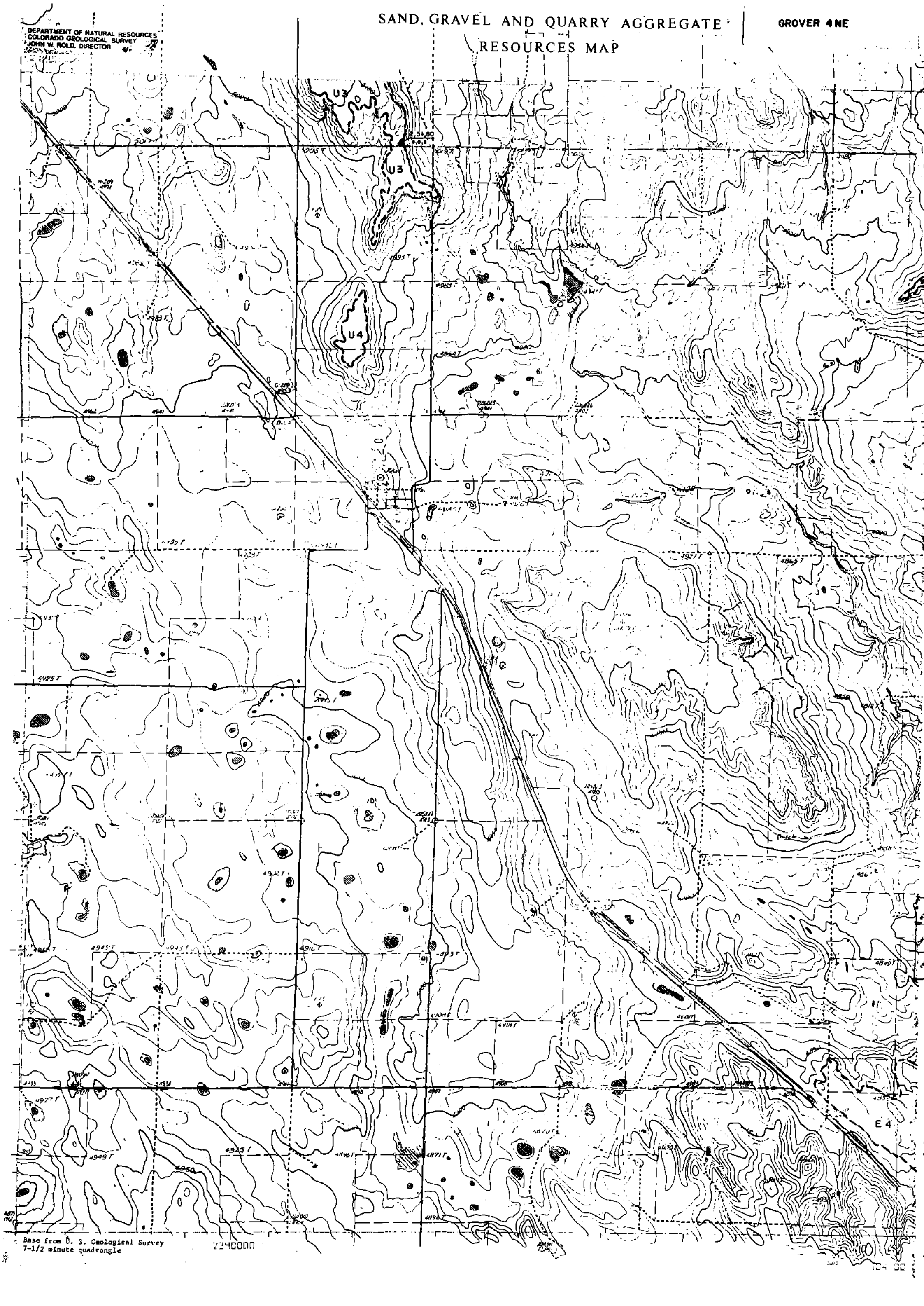
- Primary highway, hard surface — Light-duty road, hard or improved surface
- Secondary highway, hard surface — Unimproved road
- Interstate Route
- U.S. Route
- State Route

GROVER 3 SW (13) A.F.C.

DEPARTMENT OF NATURAL RESOURCES
COLORADO GEOLOGICAL SURVEY
JOHN W. ROLD, DIRECTOR

SAND, GRAVEL AND QUARRY AGGREGATE RESOURCES MAP

GROVER 4 NE



Base from U. S. Geological Survey
7-1/2 minute quadrangle

EXPLANATION

F — Landform unit
Resource classification

LANDFORM UNITS

F Floodplain deposit
T Stream terrace deposit
V Valley fill (F & T)

U Upland deposits
A Alluvial fan
E Wind-deposited sand (eolian)
M Man-made deposits (slag, tailings, spoils....)

RESOURCE CLASSIFICATION

Coarse Aggregate
(at least 30% retained on #4 screen, visual estimation)

1 Gravel: relatively clean and sound
2 Gravel: significant fines, decomposed rock, calcium carbonate.

Fine Aggregate
(greater than 70% passing #4 screen, 40% retained on #200 screen, visual estimatio

3 Sand

Unevaluated Resource

4 Probable aggregate resource

MAP SYMBOLS

- Operating gravel and/or sand pit
- Abandoned gravel and/or sand pit
- Operating stone quarry
- Abandoned stone quarry
- Potential quarry aggregate resource area
- Selected well or drill-hole location with overburden thickness (ft) over sand/gravel resource thickness (ft), obtained from well logs.
  "g" indicates gravel; "s" indicates sand
  "x" in symbol denotes unevaluated or unknown property.
  "WS" denotes Colorado Geological Survey Windsor/Sand and Gravel projects' drill hole
- Landform boundary, solid where known or observed; dashed where approximate or inferred.

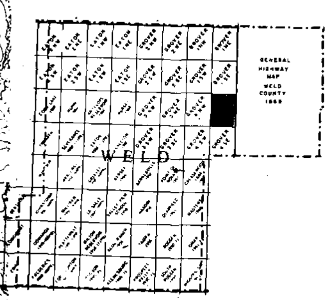
STATION, LOCATION AND GEOLOGICAL DESCRIPTION OF DEPOSIT

3, 17, 40

- overburden thickness (ft)
- sand/gravel resource thickness (ft)
- percent sand and fines (passing #4 screen, 0.19 in.), visual estimation
- significant amount of fines (passing #200 screen, 0.0029 in. or 0.074 mm.)
- significant amount of decomposed or weak rock.
- significant amount of calcium-carbonate (caliche)

"x" in symbol denotes unevaluated or unknown property

"o" in symbol denotes property absent or insignificant



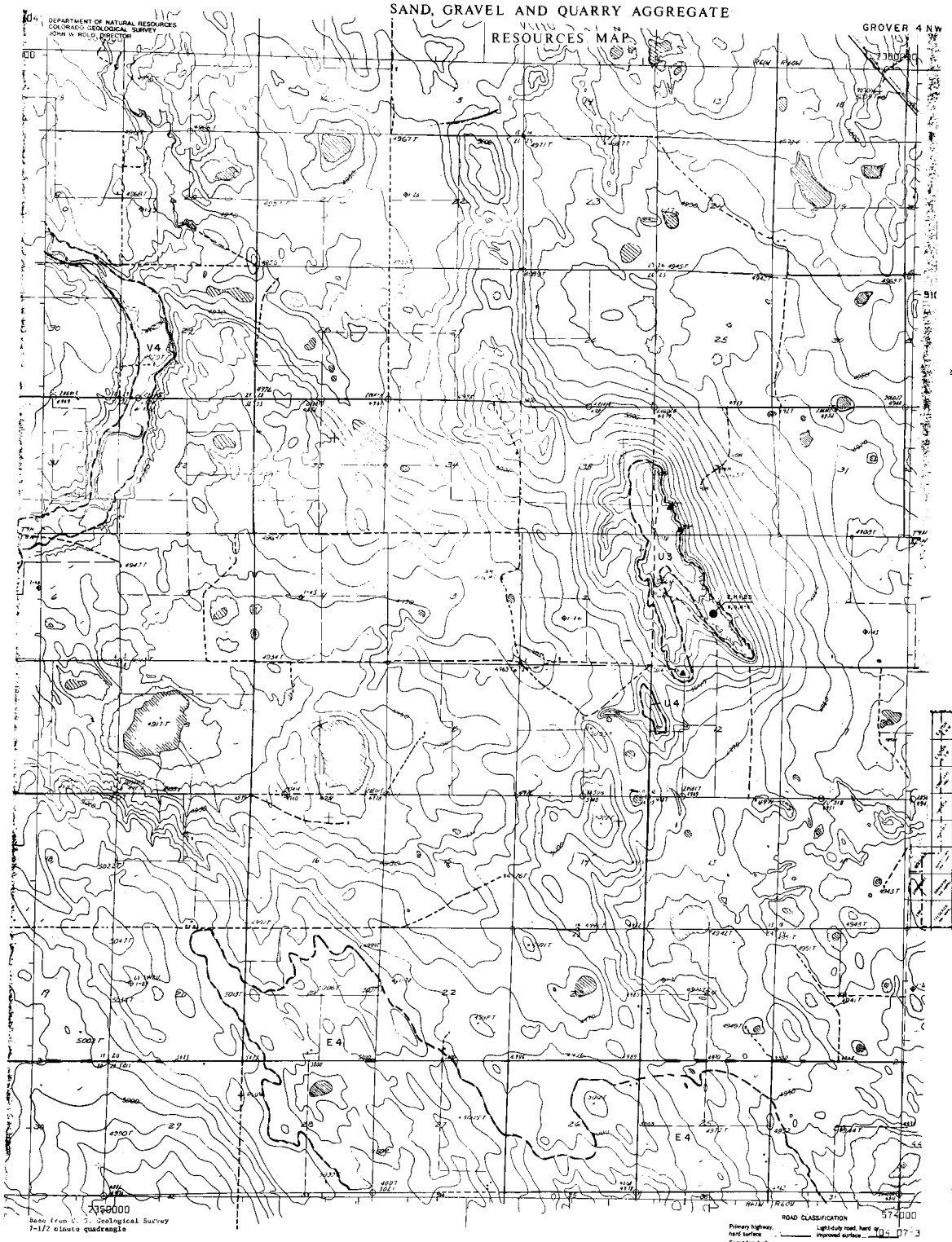
QUADRANGLE LOCATION

NON-RESOURCE OR WITHDRAWN AREA

REFERENCE: Weist, W.G., Jr., 1965, Reconnaissance of ground-water resources in parts of Larimer, Logan, Morgan, Sedgwick, and Weld Counties, Colo.: U. S. Geol. Survey Water-Supply Paper 1809-L, pl. 1.

Mapped by: Ralph R. Shroba
Date: June 30, 1974

SAND, GRAVEL AND QUARRY AGGREGATE RESOURCES MAP



EXPLANATION

Geologic unit

Resource classification

LANDFORM UNITS

- F — Floodplain deposit
- T — Stream terrace deposit
- V — Valley fill (F & T)
- U — Upland deposits
- A — Alluvial fan
- E — Wind-deposited sand (eolian)
- M — Man-made deposits (slag, tailings, spoils....)

RESOURCE CLASSIFICATION

Coarse Aggregate
(at least 30% retained on #4 screen, visual estimation)

- 1 — Gravel: relatively clean and sound
- 2 — Gravel: significant fines, decomposed rock, calcium carbonate.

Fine Aggregate
(greater than 70% passing #4 screen, 80% retained on #200 screen, visual estimation)

- 3 — Sand

Unevaluated Resource

- 4 — Probable aggregate resource

MAP SYMBOLS

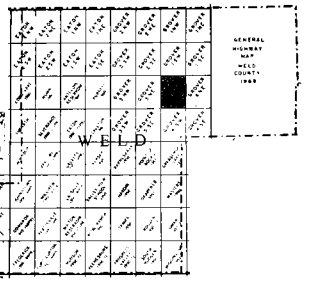
- Operating gravel and/or sand pit
- Abandoned gravel and/or sand pit
- Operating stone quarry
- Abandoned stone quarry
- Potential quarry aggregate resource area
- Selected well or drill-hole location with overburden thickness (ft) over sand/gravel resource thickness (ft), obtained from well logs. "g" indicates gravel; "s" indicates sand. "-" in symbol denotes unevaluated or unknown property. "wg" denotes Colorado Geological Survey Weldon/Sand and Gravel projects' drill hole
- Landform boundary, solid where known or observed, dashed where approximate or inferred.

STATION, LOCATION AND GEOLOGICAL DESCRIPTION OF DEPOSIT

- overburden thickness (ft)
- sand/gravel resource thickness (ft)
- percent sand and fines (passing #4 screen, 0.26 in.), visual estimation
- significant amount of fines (passing #200 screen, 0.0058 in. or 0.074 mm.)
- significant amount of decomposed or weak rock.
- significant amount of calcium carbonate (caliche)

"-" in symbol denotes unevaluated or unknown property

"0" in symbol denotes property absent or insignificant



GENERAL HIGHWAY MAP WELD COUNTY 1968

QUADRANGLE LOCATION

NON-RESOURCE OR WITHDRAWN AREA

Mapped by: Ralph R. Shroba
Date: June 30, 1974

Base from U. S. Geological Survey
7-1/2 minute quadrangle

ROAD CLASSIFICATION

Primary highway, hard surface — Light-duty road, hard or improved surface

Secondary highway, hard surface — Unimproved road

Interstate Route ☐ U. S. Route ◯ State Route

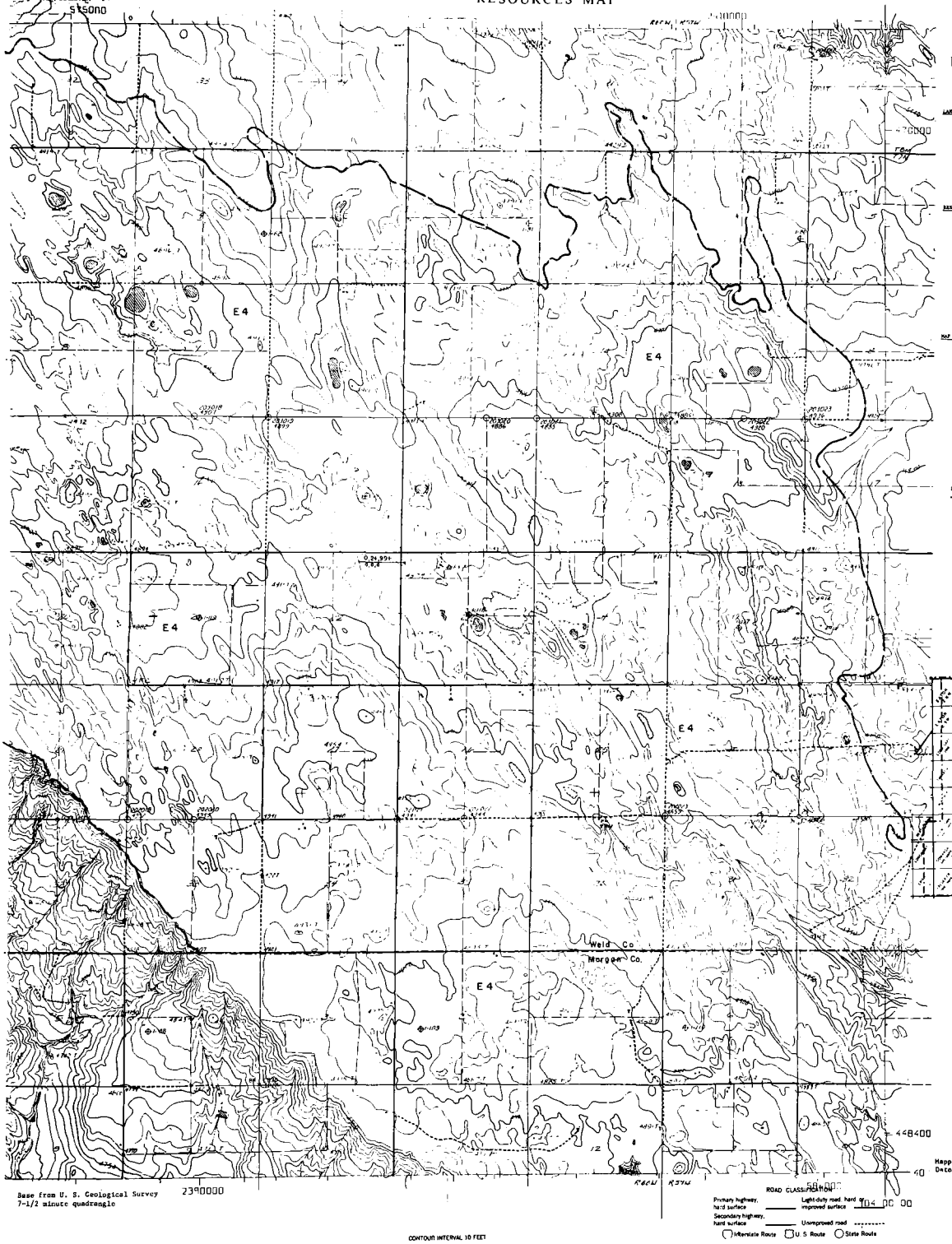
CONTOUR INTERVAL 10 FEET

105 07 30

DEPARTMENT OF NATURAL RESOURCES
COLORADO GEOLOGICAL SURVEY
JOHN W. ROLD, DIRECTOR

SAND, GRAVEL AND QUARRY AGGREGATE RESOURCES MAP

GROVER 4 SE



EXPLANATION

Landform unit

Resource classification

LANDFORM UNITS

- F Floodplain deposit
- T Stream terrace deposit
- V Valley fill (F & T)
- U Upland deposits
- A Alluvial fan
- E Wind-deposited sand (eolian)
- M Man-made deposits (slag,tailings, spoils....)

RESOURCE CLASSIFICATION

Coarse Aggregate
(at least 50% retained on #4 screen, visual estimation)

1 Gravel: relatively clean and sound

2 Gravel: significant fines, decomposed rock, calcium carbonate.

Fine Aggregate
(greater than 50% passing #4 screen, 50% retained on #200 screen, visual estimation)

3 Sand

Unevaluated Resource

4 Probable aggregate resource

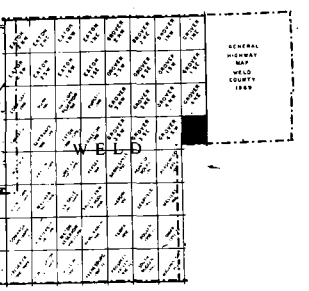
MAP SYMBOLS

- Operating gravel and/or sand pit
- Abandoned gravel and/or sand pit
- Operating stone quarry
- Abandoned stone quarry
- Potential quarry aggregate resource area
- Selected well or drill-hole location with overburden thickness (ft) over sand/gravel resource thickness (ft), obtained from well logs. "s" indicates gravel; "a" indicates sand. "-" in symbol denotes unevaluated or unknown property. "wq" denotes Colorado Geological Survey Windsor/Sand and Gravel projects' drill hole
- Landform boundary, solid where known or observed; dashed where approximate or inferred.

STATION, LOCATION AND GEOLOGICAL DESCRIPTION OF DEPOSIT

- overburden thickness (ft)
- sand/gravel resource thickness (ft)
- percent sand and fines (passing #4 screen, 0.19 cm.), visual estimation
- significant amount of fines (passing #200 screen, 0.0074 cm.)
- significant amount of decomposed or rock rock.
- significant amount of calcium carbonate tailche

"a" in symbol denotes unevaluated or unknown property.
"a" in symbol denotes property absent or insignificant.



QUADRANGLE LOCATION

NON-RESOURCE OR WITHDRAWN AREA

Mapped by: Ralph R. Shroba
Date: June 30, 1974

Base from U. S. Geological Survey
7-1/2 minute quadrangle

CONTOUR INTERVAL 10 FEET

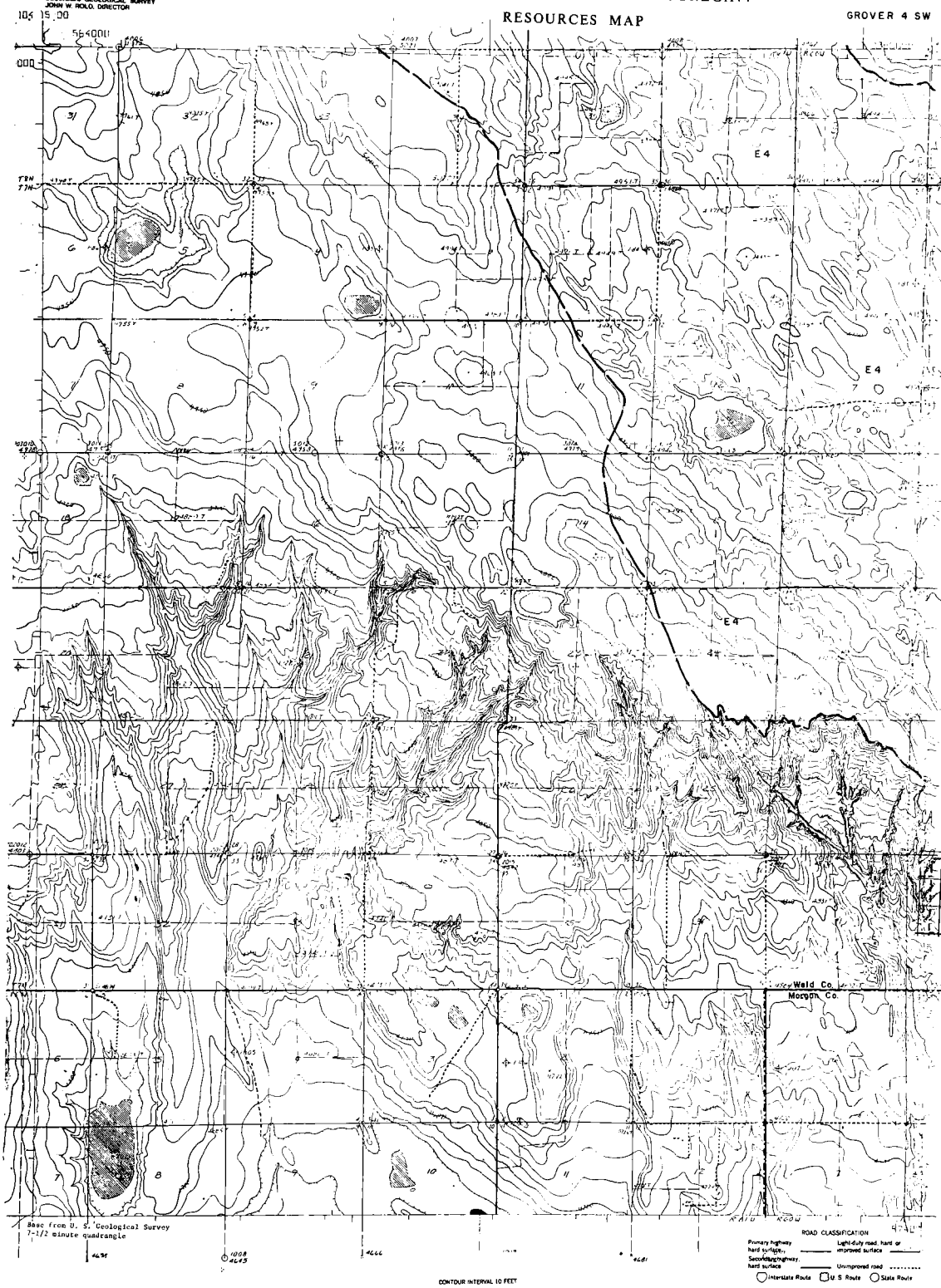
ROAD CLASSIFICATION

Primary highway, hard surface
Light-duty road, hard or improved surface
Secondary highway, hard surface
Unimproved road
Interstate Route
U. S. Route
State Route

DEPARTMENT OF NATURAL RESOURCES
COLORADO GEOLOGICAL SURVEY
JOHN W. ROLD, DIRECTOR

SAND, GRAVEL AND QUARRY AGGREGATE RESOURCES MAP

GROVER 4 SW



EXPLANATION

Landform unit
Resource classification

LANDFORM UNITS

- F Floodplain deposit
- T Stream terrace deposit
- V Valley fill (F & T)
- U Upland deposits
- A Alluvial fan
- E Wind-deposited sand (dunes)
- M Man-made deposits (slag, tailings, spoils....)

RESOURCE CLASSIFICATION

Coarse Aggregate
(at least 30% retained on #4 screen, visual estimation)

- .1 Gravel: relatively clean and sound
- .2 Gravel: significant fines, decomposed rock, calcium carbonate.

Fine Aggregate
(greater than 70% passing #4 screen, 80% retained on #200 screen, visual estimation

- 3 Sand

Unevaluated Resource

- 4 Probable aggregate resource

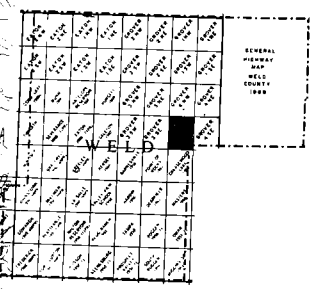
MAP SYMBOLS

- Operating gravel and/or sand pit
- Abandoned gravel and/or sand pit
- Operating stone quarry
- Abandoned stone quarry
- Potential quarry aggregate resource area
- Selected well or drill-hole location with overburden thickness (ft) over sand/gravel resource thickness (ft), obtained from well logs. "x" indicates gravel; "s" indicates sand. "-" in symbol denotes unevaluated or unknown property.
- "wc" denotes Colorado Geological Survey Windsor/Sand and Gravel projects' drill hole
- Landform boundary, solid where known or observed; dashed where approximate or inferred.

STATION, LOCATION AND GEOLOGICAL DESCRIPTION OF DEPOSIT

- overburden thickness (ft)
- sand/gravel resource thickness (ft)
- percent sand and fines (passing #4 screen, 0.25 in.), visual estimation
- significant amount of fines (passing #200 screen, 0.0024 in. or 0.074 mm.)
- significant amount of decomposed or weak rock.

"x" in symbol denotes unevaluated or unknown property.
"o" in symbol denotes property absent or insignificant



GENERAL HIGHWAY MAP WELD COUNTY 1968

QUADRANGLE LOCATION

NON-RESOURCE OR WITHDRAWN AREA.

Weld Co.
Morgan Co.

Base from U. S. Geological Survey
7-1/2 minute quadrangle

CONTOUR INTERVAL 10 FEET

ROAD CLASSIFICATION

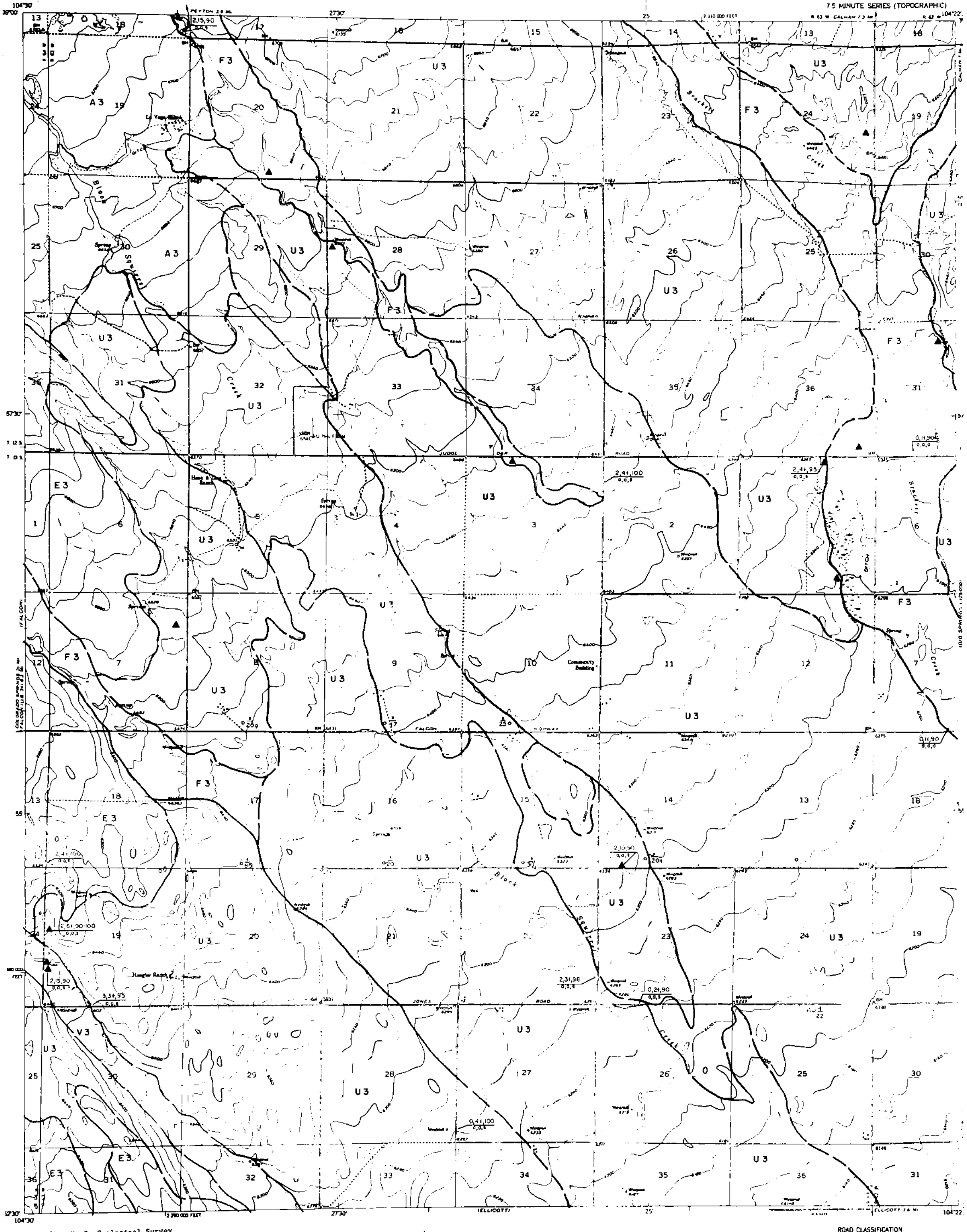
- Primary highway, hard surface
- Light-duty road, hard or improved surface
- Secondary highway, hard surface
- Unimproved road
- Interstate Route
- U.S. Route
- State Route

Mapped by: Phillip C. Wicklein
Date: June 30, 1974

SAND, GRAVEL AND QUARRY AGGREGATE RESOURCES MAP

DEPARTMENT OF NATURAL RESOURCES
COLORADO GEOLOGICAL SURVEY
JOHN W. ROLD, DIRECTOR

HAEGLER RANCH QUADRANGLE
COLORADO-EL PASO CO
7.5 MINUTE SERIES (TOPOGRAPHIC)



EXPLANATION

F — Landform unit / Resource classification

LANDFORM UNITS

- F Floodplain deposit
- T Stream terrace deposit
- V Valley fill (F & T)
- U Upland deposits
- A Alluvial fan
- E Wind-deposited sand (eolian)
- M Man-made deposits (slag, tailings, spoils....)

RESOURCE CLASSIFICATION

Coarse Aggregate
(at least 30% retained on #4 screen, visual estimation)

- 1 Gravel: relatively clean and sound
- 2 Gravel: significant fines, decomposed rock, calcium carbonate.

Fine Aggregate
(greater than 70% passing #4 screen, 80% retained on #200 screen, visual estimation)

- 3 Sand

Unevaluated Resource

- 4 Probable aggregate resource

MAP SYMBOLS

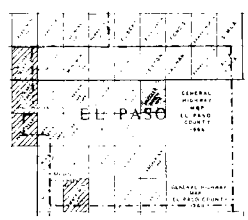
- Operating gravel and/or sand pit
- Abandoned gravel and/or sand pit
- Operating stone quarry
- Abandoned stone quarry
- Potential quarry aggregate resource area
- Selected well or drill-hole location with overburden thickness (ft) over sand/gravel resource thickness (ft), obtained from well logs
  - "g" indicates gravel; "s" indicates sand
  - "x" in symbol denotes unevaluated or unknown property.
  - "ws" denotes Colorado Geological Survey Windsor/Sand and Gravel projects' drill hole
- Landform boundary, solid where known or observed; dashed where approximate or inferred.

STATION, LOCATION AND GEOLOGICAL DESCRIPTION OF DEPOSIT

- overburden thickness (ft)
- sand/gravel resource thickness (ft)
- percent sand and fines (passing #4 screen, 0.25 in.), visual estimation
- significant amount of fines (passing #200 screen, 0.0029 in. or 0.074 mm.)
- significant amount of decomposed or weak rock.
- significant amount of calcium carbonate (caliche)

"x" in symbol denotes unevaluated or unknown property

"o" in symbol denotes property absent or insignificant



QUADRANGLE LOCATION

NON-RESOURCE OR WITHDRAWN AREA

Mapped by: Stephen D. Schwochow
Date: June 30, 1974

Base from U. S. Geological Survey
7-1/2 minute quadrangle

APPROXIMATE MEAN DECLINATION, 1964

CONTOUR INTERVAL 20 FEET

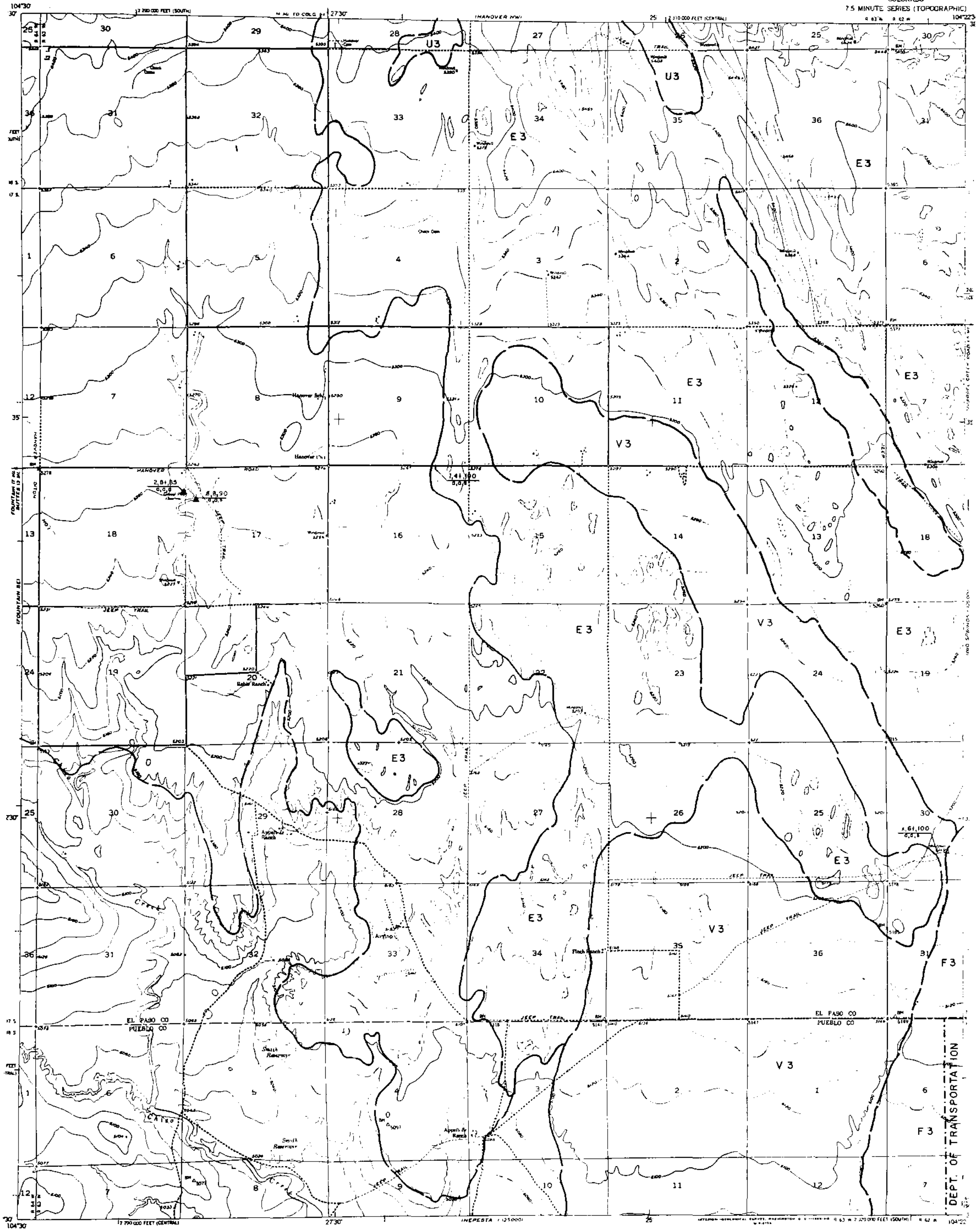
ROAD CLASSIFICATION
Heavy-duty — Light-duty
Medium-duty — Unimproved dirt
U.S. Route — State Route

HAEGLER RANCH, COLO

DEPARTMENT OF NATURAL RESOURCES
COLORADO GEOLOGICAL SURVEY
JOHN W. ROLD, DIRECTOR

SAND, GRAVEL AND QUARRY AGGREGATE RESOURCES MAP

HANOVER QUADRANGLE
COLORADO
7.5 MINUTE SERIES (TOPOGRAPHIC)



Base from U. S. Geological Survey
7-1/2 minute quadrangle

CONTOUR INTERVAL 20 FEET
DATUM IS MEAN SEA LEVEL

ROAD CLASSIFICATION

HANOVER, COLO

EXPLANATION

F1 — Landform unit; Resource classification

LANDFORM UNITS

- F Floodplain deposit
- T Stream terrace deposit
- V Valley fill (F & T)
- U Upland deposits
- A Alluvial fan
- E Wind-deposited sand (eolian)
- M Man-made deposits (slag, tailings, spoils....)

RESOURCE CLASSIFICATION

Coarse Aggregate
(at least 20% retained on #4 screen, visual estimation)

- 1 Gravel: relatively clean and sound
- 2 Gravel: significant fines, decomposed rock, calcium carbonate.

Fine Aggregate
(greater than 70% passing #4 screen, 8% retained on #200 screen, visual estimation)

- 3 Sand

Unevaluated Resource

- 4 Probable aggregate resource

MAP SYMBOLS

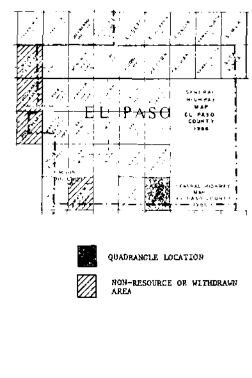
- Operating gravel and/or sand pit
- Abandoned gravel and/or sand pit
- Operating stone quarry
- Abandoned stone quarry
- Potential quarry aggregate resource area
- Selected well or drill-hole location with overburden thickness (ft) over sand/gravel resource thickness (ft), obtained from well logs. "g" indicates gravel; "s" indicates sand. "?" in symbol denotes unevaluated or unknown property.
- "WS" denotes Colorado Geological Survey Windsor/Sand and Gravel projects' drill hole
- Landform boundary, solid where known or observed; dashed where approximate or inferred.

STATION, LOCATION AND GEOLOGICAL DESCRIPTION OF DEPOSIT

- overburden thickness (ft)
- sand/gravel resource thickness (ft)
- percent sand and fines (passing #4 screen, 0.25 in.), visual estimation
- significant amount of fines (passing #200 screen, 0.0058 in. or 0.074 mm.)
- significant amount of decomposed or weak rock.
- significant amount of calcium carbonate (caliche)

"x" in symbol denotes unevaluated or unknown property

"o" in symbol denotes property absent or insignificant



QUADRANGLE LOCATION

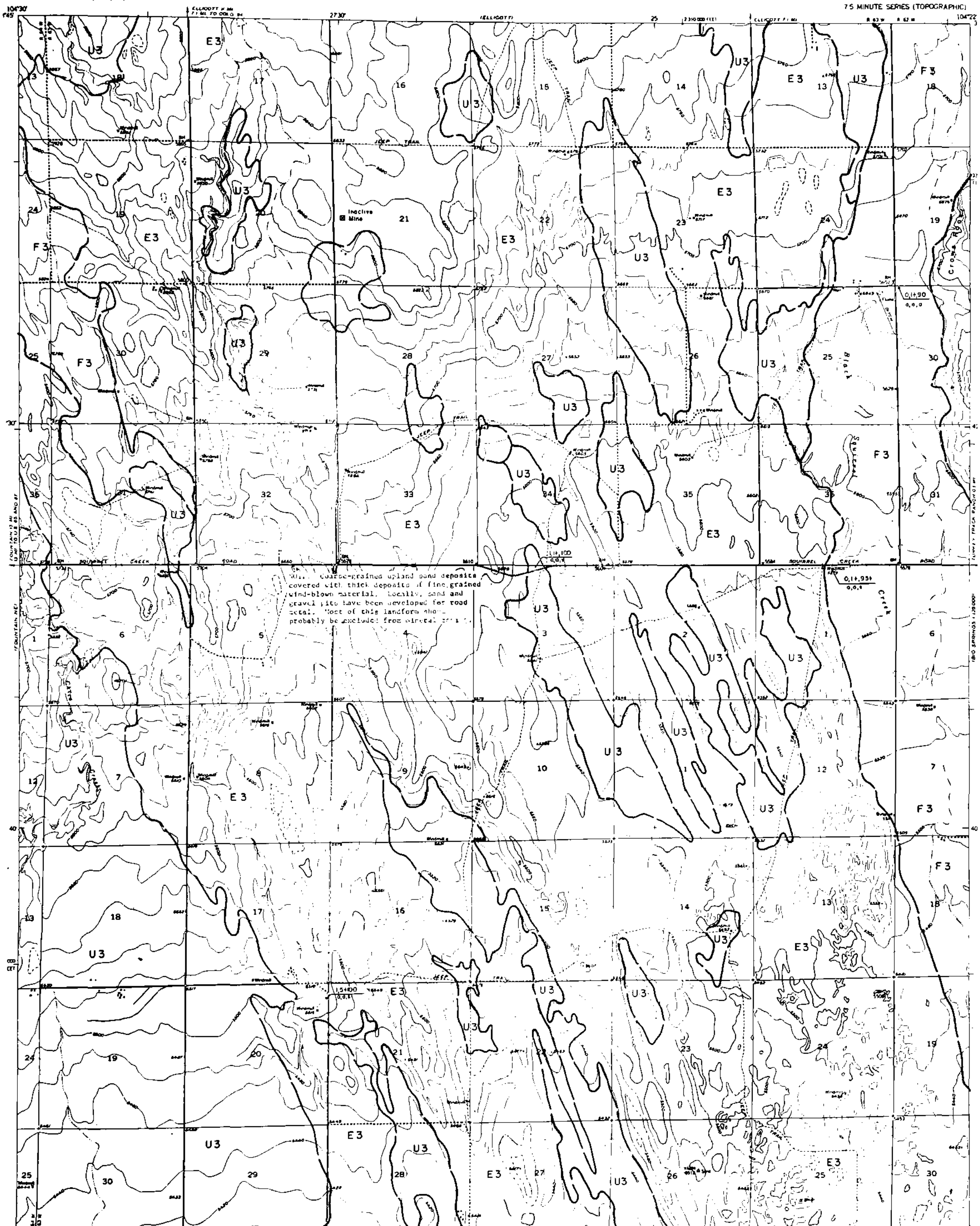
NON-RESOURCE OR WITHDRAWN AREA

Mapped by: Stephen D. Schwochow
Date: June 30, 1974

DEPARTMENT OF NATURAL RESOURCES
COLORADO GEOLOGICAL SURVEY
JOHN W. ROLD, DIRECTOR

SAND, GRAVEL AND QUARRY AGGREGATE RESOURCES MAP

HANOVER NW QUADRANGLE
COLORADO–EL PASO CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)



Base from U. S. Geological Survey 7-1/2 minute quadrangle

CONTOUR INTERVAL 20 FEET
DATUM IS MEAN SEA LEVEL

APPROXIMATE MEAN DECLINATION, 1954

ROAD CLASSIFICATION
Heavy-duty — Light-duty
Medium-duty — Unimproved dirt
U. S. Route — State Route

HANOVER NW, COLO.

EXPLANATION

F1 — Landform unit; resource classification

LANDFORM UNITS
- F Floodplain deposit
- T Stream terrace deposit
- V Valley fill (F & T)
- U Upland deposits
- A Alluvial fan
- E Wind-deposited sand (eolian)
- M Man-made deposits (slag, tailings, spoils....)

RESOURCE CLASSIFICATION

Coarse Aggregate
(at least 25% retained on #4 screen, visual estimation)

- 1 Gravel: relatively clean and sound
- 2 Gravel: significant fines, decomposed rock, calcium carbonate.

Fine Aggregate
(greater than 70% passing #4 screen, 60% retained on #200 screen, visual estimation)

- 3 Sand

Unevaluated Resource

- 4 Probable aggregate resource

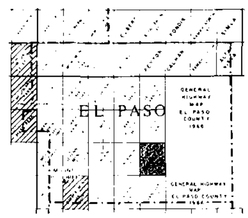
MAP SYMBOLS
- Operating gravel and/or sand pit
- Abandoned gravel and/or sand pit
- Operating stone quarry
- Abandoned stone quarry
- Potential quarry aggregate resource area
- Selected well or drill-hole location with overburden thickness (ft) over sand/gravel resource thickness (ft), obtained from well logs.
- "g" indicates gravel; "s" indicates sand
- "x" in symbol denotes unevaluated or unknown property.
- "wg" denotes Colorado Geological Survey Windsor/Sand and Gravel projects' drill hole
- Landform boundary, solid where known or observed; dashed where approximate or inferred.

STATION, LOCATION AND GEOLOGICAL DESCRIPTION OF DEPOSIT

5, 17, 60
- overburden thickness (ft)
- sand/gravel resource thickness (ft)
- percent sand and fines (passing #4 screen, 0.21 in.), visual estimation
- significant amount of fines (passing #200 screen, 0.0058 in. or 0.074 mm.)
- significant amount of decomposed or weak rock.
- significant amount of calcium carbonate (caliche)

"x" in symbol denotes unevaluated or unknown property

"o" in symbol denotes property absent or insignificant



QUADRANGLE LOCATION

NON-RESOURCE OR WITHDRAWN AREA

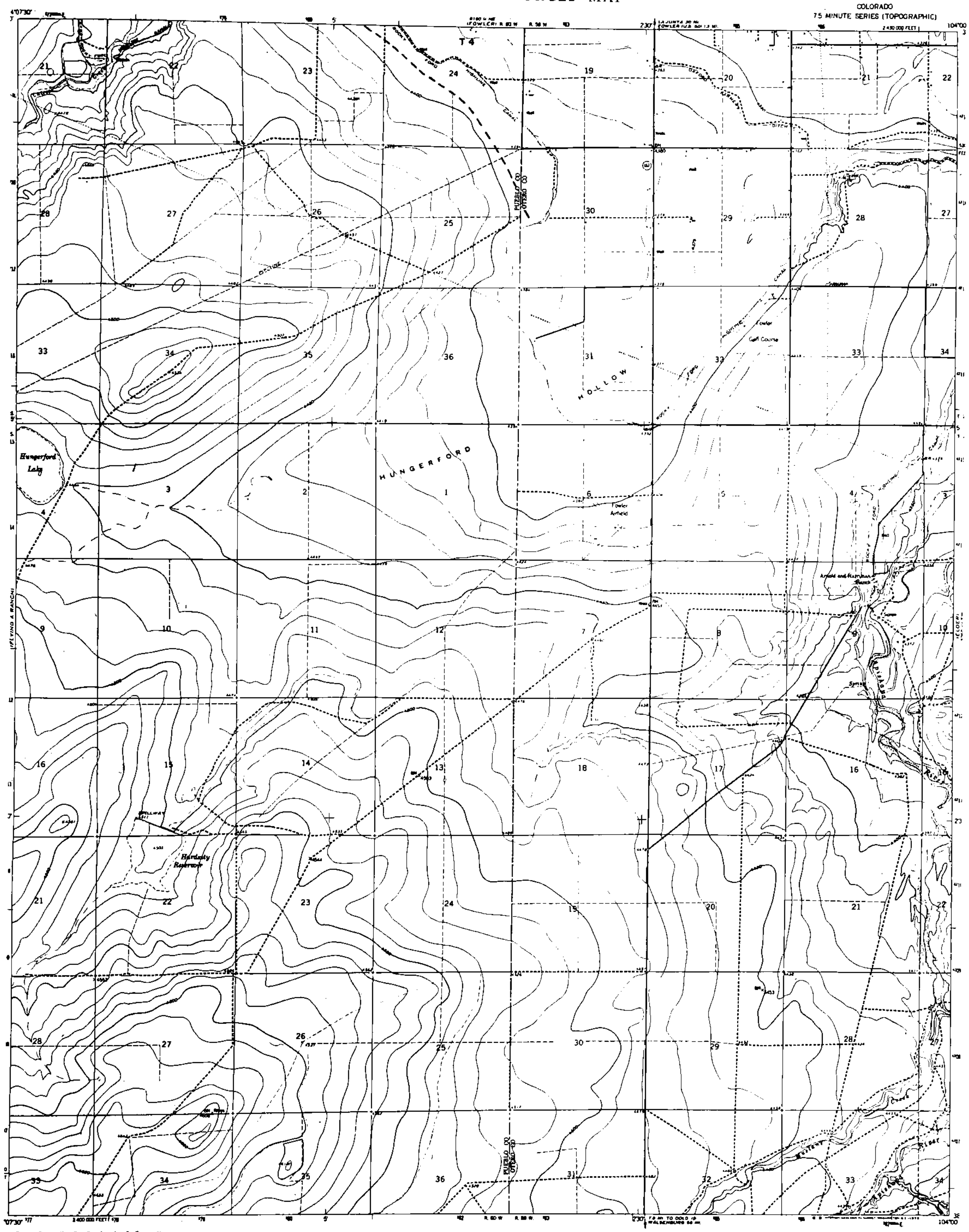
Geology modified after Soister, P. E., 1968, U. S. Geological Survey, Map GQ-725.

Mapped by: Phillip C. Wicklein
Date: June 30, 1974

DEPARTMENT OF NATURAL RESOURCES
COLORADO GEOLOGICAL SURVEY
JOHN W. ROLD, DIRECTOR

SAND, GRAVEL AND QUARRY AGGREGATE RESOURCES MAP

HARDESTY RESERVOIR QUADRANGLE
COLORADO
7.5 MINUTE SERIES (TOPOGRAPHIC)



Base from U. S. Geological Survey
7-1/2 minute quadrangle

CONTOUR INTERVAL 10 FEET
DOTTED LINES REPRESENT 5 FOOT CONTOURS
DATUM IS MEAN SEA LEVEL

ROAD CLASSIFICATION
Medium-duty ——— Light-duty ———
Unimproved dirt - - - - - -
State Route

EXPLANATION

F1 — Landform unit; Resource classification

LANDFORM UNITS

- F Floodplain deposit
- T Stream terrace deposit
- V Valley fill (F & T)
- U Upland deposits
- A Alluvial fan
- E Wind-deposited sand (eolian)
- M Man-made deposits (slag, tailings, spoils....)

RESOURCE CLASSIFICATION

Coarse Aggregate
(at least 30% retained on #4 screen, visual estimation)

1 Gravel: relatively clean and sound
2 Gravel: significant fines, decomposed rock, calcium carbonate.

Fine Aggregate
(greater than 70% passing #4 screen, 60% retained on #200 screen, visual estimation)

3 Sand

Unevaluated Resource

4 Probable aggregate resource

MAP SYMBOLS

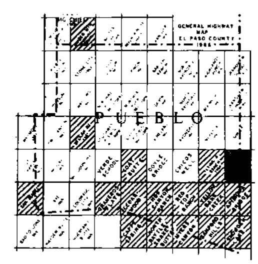
- Operating gravel and/or sand pit
- Abandoned gravel and/or sand pit
- Operating stone quarry
- Abandoned stone quarry
- Potential quarry aggregate resource area
- Selected well or drill-hole location with overburden thickness (ft) over sand/gravel resource thickness (ft), obtained from well logs.
  "g" indicates gravel; "s" indicates sand
  "x" in symbol denotes unevaluated or unknown property.
  "WS" denotes Colorado Geological Survey Windsor/Sand and Gravel projects' drill hole
- Landform boundary, solid where known or observed; dashed where approximate or inferred.

STATION, LOCATION AND GEOLOGICAL DESCRIPTION OF DEPOSIT

3, 17, 60
- overburden thickness (ft)
- sand/gravel resource thickness (ft)
- percent sand and fines (passing #4 screen, 0.25 in.), visual estimation
- significant amount of fines (passing #200 screen, 0.0029 in. or 0.074 mm.)
- significant amount of decomposed or weak rock.
- significant amount of calcium carbonate (caliche)

"x" in symbol denotes unevaluated or unknown property

"o" in symbol denotes property absent or insignificant



QUADRANGLE LOCATION

NON-RESOURCE OR WITHDRAWN AREA

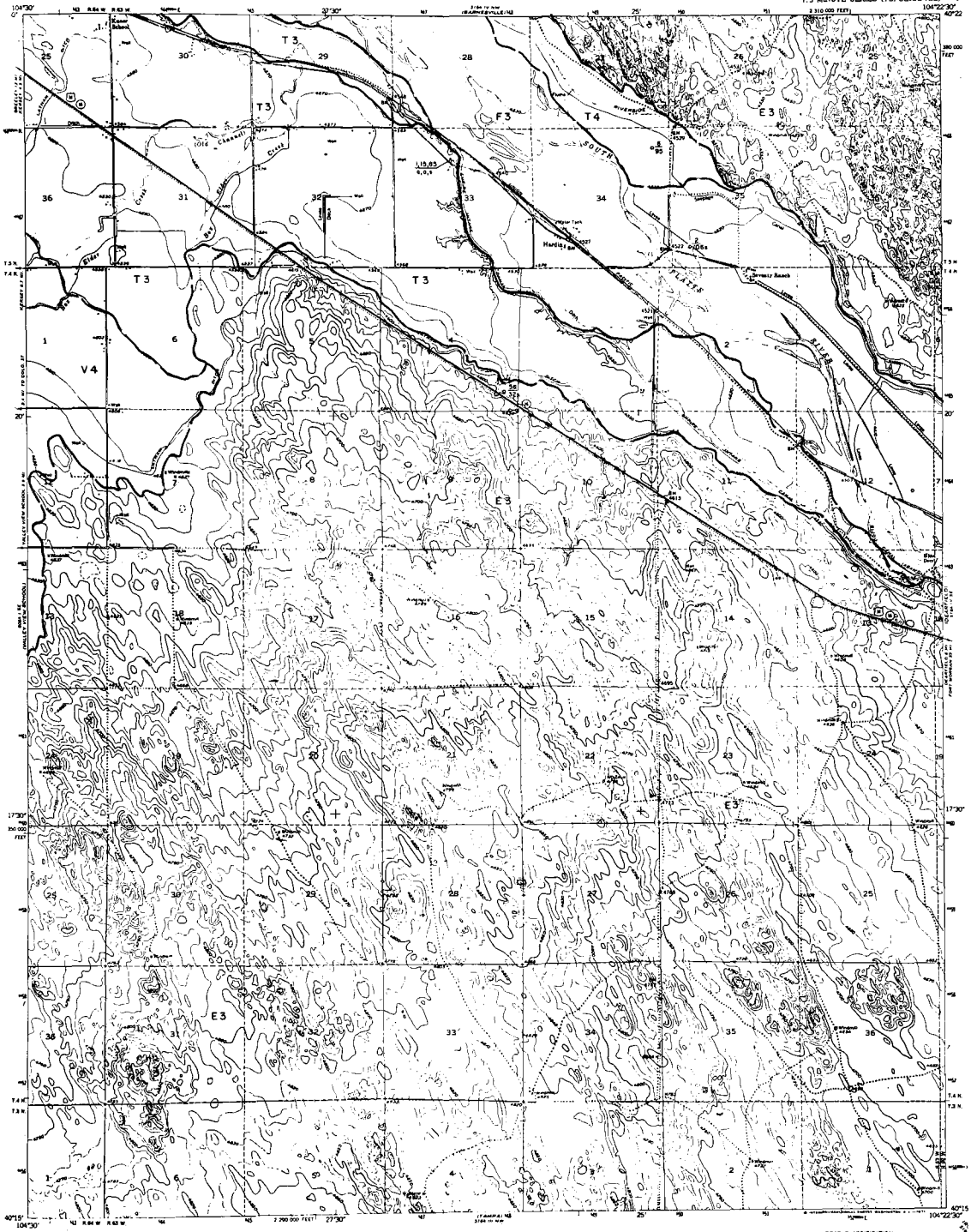
Mapped by: Stephen D. Schwochow
Date: June 30, 1974

HARDESTY RESERVOIR, COLO

DEPARTMENT OF NATURAL RESOURCES
COLORADO GEOLOGICAL SURVEY
JOHN W. ROLD, DIRECTOR

SAND, GRAVEL AND QUARRY AGGREGATE RESOURCES MAP

HARDIN QUADRANGLE
COLORADO-WELD CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)



EXPLANATION

Landform unit
Resource classification

LANDFORM UNITS

F Floodplain deposit
T Stream terrace deposit
V Valley fill (F & T)
U Upland deposits
A Alluvial fan
E Wind-deposited sand (eolian)
M Man-made deposits (slag,tailings, spoils,...)

RESOURCE CLASSIFICATION

Coarse aggregate
(at least 50% retained on #4 screen, visual estimation)

1 Gravel: relatively clean and sound
2 Gravel: significant fines, decomposed rock, calcium carbonate.

Fine aggregate
(greater than 70% passing #4 screen, 50% retained on #200 screen, visual estimation

3 Sand

Unevaluated Resource

4 Probable aggregate resource

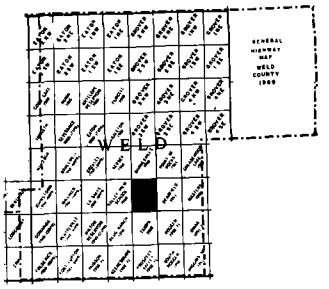
MAP SYMBOLS

- Operating gravel and/or sand pit
- Abandoned gravel and/or sand pit
- Operating stone quarry
- Abandoned stone quarry
- Potential quarry aggregate resource area
- Selected well or drill-hole location with overburden thickness (ft) over sand/gravel resource thickness (ft), obtained from well logs. "g" indicates gravel "s" indicates sand
- "x" in symbol denotes unevaluated or unknown property.
- "ws" denotes Colorado Geological Survey Windsor/Sand and Gravel projects' drill hole
- Landform boundary, solid where known or observed; dashed where approximate or inferred.

STATION, LOCATION AND GEOLOGICAL DESCRIPTION OF DEPOSIT

- overburden thickness (ft)
- sand/gravel resource thickness (ft)
- percent sand and fines (passing #4 screen, U.S. Std. visual estimation
- significant amount of fines (passing #200 screen, 0.0080 in. or 0.074 mm.)
- significant amount of decomposed or weak rock.
- significant amount of calcium carbonate (caliche)

"x" in symbol denotes unevaluated or unknown property
"o" in symbol denotes property absent or insignificant



QUADRANGLE LOCATION

NON-RESOURCE OR WITHDRAWN AREA

REFERENCE: Bjorklund, L.J., and Brown, R.F., 1957, Geology and ground-water resources of the lower South Platte River valley between Hardin, Colorado, and Paxton, Nebraska: U. S. Geological Survey Water-Supply Paper 1378, pl. 1.

Mapped by: Phillip C. Wicklein
Date: June 30, 1974

Base from U. S. Geological Survey
7-1/2 minute quadrangle

UTM GRID AND 1968 MAGNETIC NORTH DECLINATION AT CENTER OF SHEET

CONTOUR INTERVAL 10 FEET
Datum is mean sea level

ROAD CLASSIFICATION

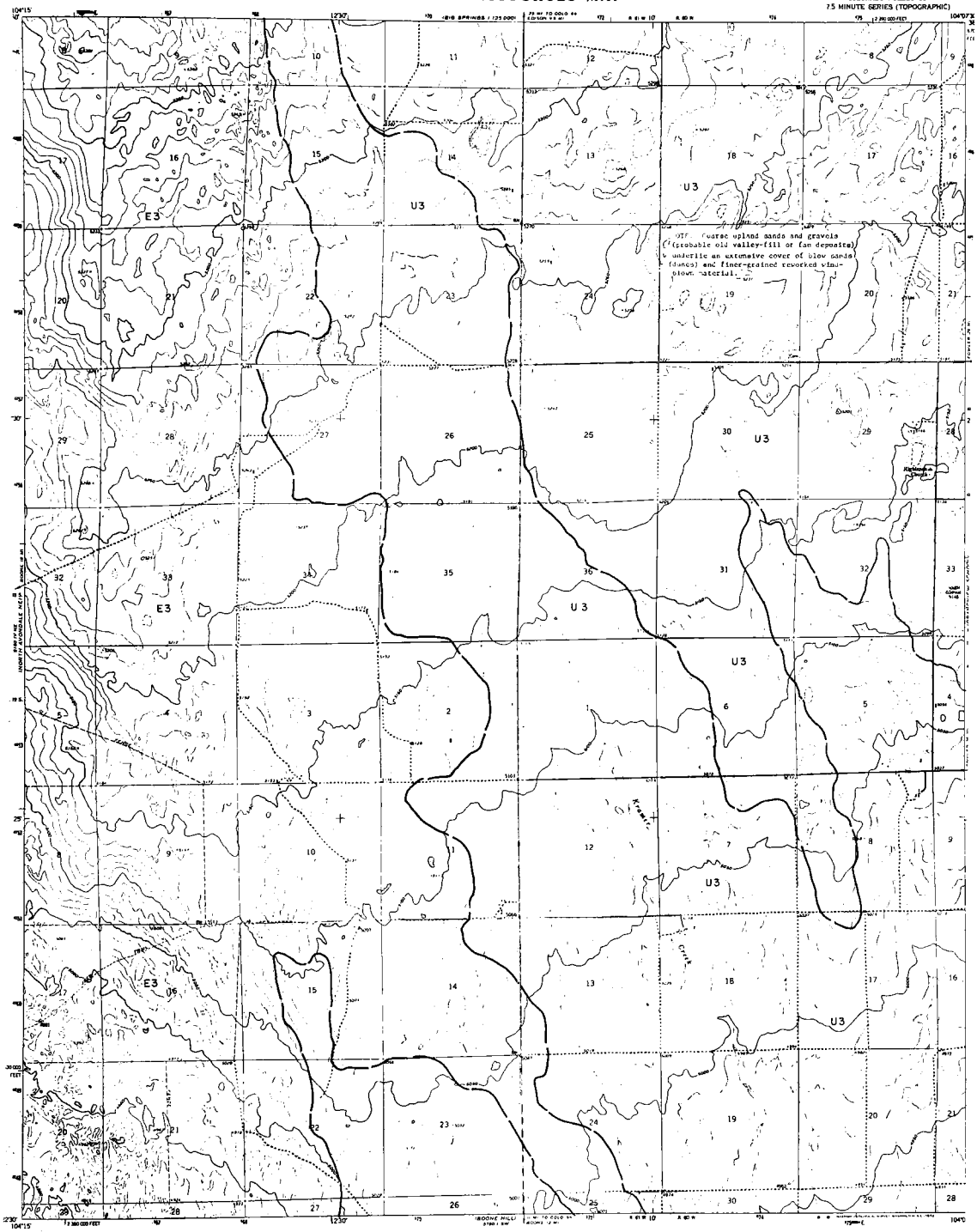
Heavy-duty ——— Light-duty .....
Medium-duty ——— Unimproved dirt .....
U S Route
State Route

HARDIN, COLO.
N4015 W.10422.5/7.5
1950
AMS 5164 IV SW—SERIES V877

SAND, GRAVEL AND QUARRY AGGREGATE RESOURCES MAP

DEPARTMENT OF NATURAL RESOURCES
COLORADO GEOLOGICAL SURVEY
JOHN W. HOLD, DIRECTOR

HIGHLANDS CHURCH QUADRANGLE
COLORADO-PUEBLO CO
7.5 MINUTE SERIES (TOPOGRAPHIC)



EXPLANATION

landform unit
resource classification

LANDFORM UNITS

- F Floodplain deposit
- T Stream terrace deposit
- V Valley fill (F & T)
- U Upland deposits
- A Alluvial fan
- E Wind-deposited sand (eolian)
- M Man-made deposits (slag, tailings, spoils....)

RESOURCE CLASSIFICATION

Coarse aggregate (at least 67% retained on #4 screen, visual estimation)

- 1 Gravel: relatively clean and sound
- 2 Gravel: significant lines, decomposed rock, calcium carbonate.

Fine Aggregate (greater than 67% passing #4 screen, 67% retained on #10 screen, visual estimation)

- 3 Sand

Unevaluated Resource

- 4 Probable aggregate resource

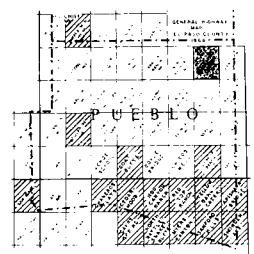
MAP SYMBOLS

- Operating gravel and/or sand pit
- Abandoned gravel and/or sand pit
- Operating stone quarry
- Abandoned stone quarry
- Potential quarry aggregate resource area
- Selected well or drill-hole location with overburden thickness (ft) over sand/gravel resource thickness (ft), obtained from well logs. "s" indicates gravel; "s" indicates sand. "-" in symbol denotes unevaluated or unknown property.
- "WH" denotes Colorado Geological Survey Windsor/Sand and Gravel projects' drill hole
- Landform boundary, solid where known or observed, dashed where approximate or inferred.

STATION, LOCATION AND GEOLOGICAL DESCRIPTION OF DEPOSIT

overburden thickness (ft)
sand/gravel resource thickness (ft)
percent sand and fines (passing #4 screen, 0.25 in.), visual estimation
significant amount of fines (passing #200 screen, 0.0058 in. or 0.074 mm.)
significant amount of decomposed or weak rock.
significant amount of calcium carbonate (calcite)

"s" in symbol denotes unevaluated or unknown property
"o" in symbol denotes property absent or insignificant



QUADRANGLE LOCATION
NON-RESOURCE OR WITHDRAWN AREA

Mapped by: Stephen D. Schwochow
Date: June 30, 1974

Base from U. S. Geological Survey
7-1/2 minute quadrangle

CONTOUR INTERVAL 10 FEET

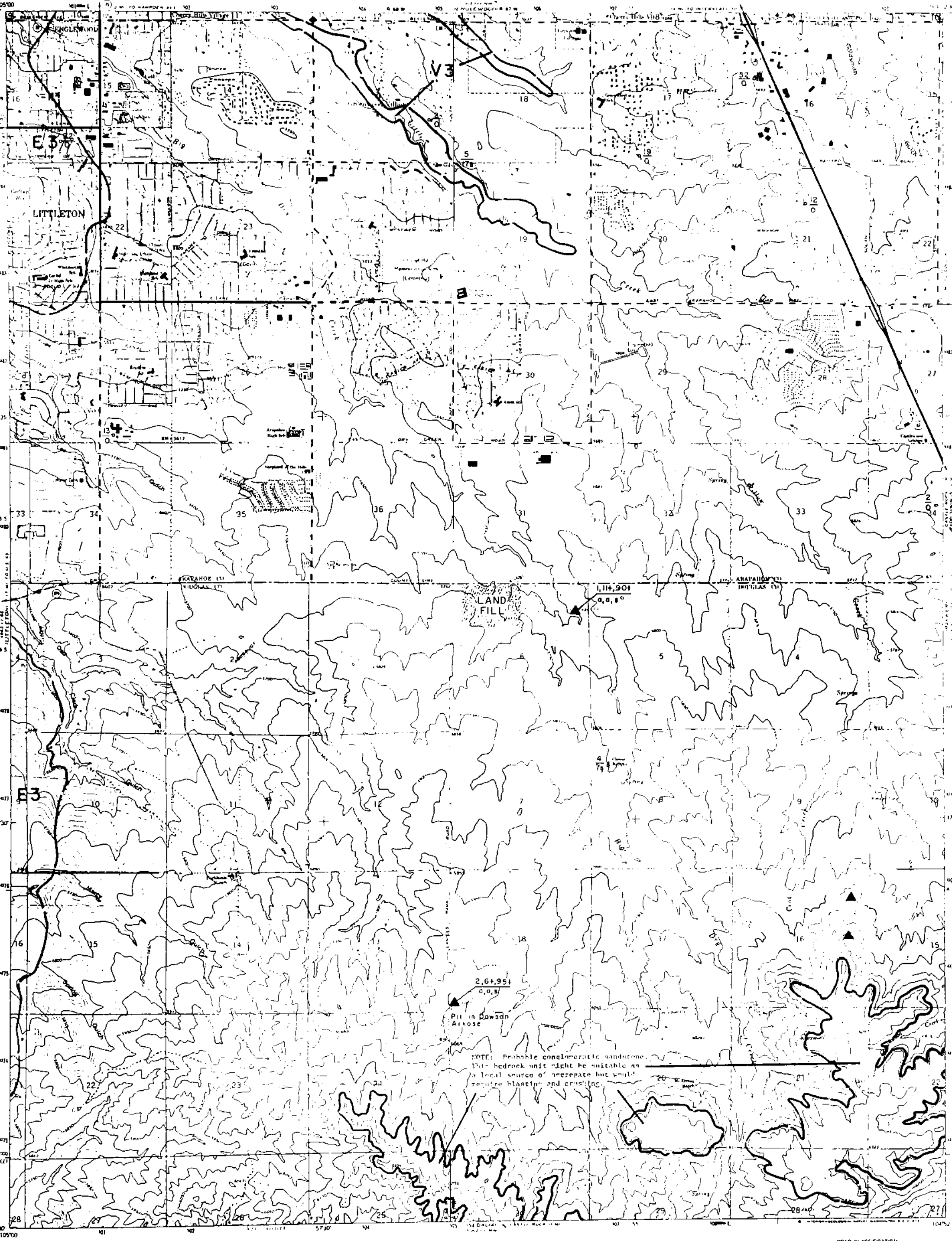
ROAD CLASSIFICATION
Medium-duty — Light duty —
Unimproved dirt - - - -

HIGHLANDS CHURCH, COLO.

DEPARTMENT OF NATURAL RESOURCES
COLORADO GEOLOGICAL SURVEY
JOHN W. ROLD, DIRECTOR

SAND, GRAVEL AND QUARRY AGGREGATE RESOURCES MAP

HIGHLANDS RANCH QUADRANGLE
COLORADO
MINUTE SERIES (TOPOGRAPHIC)



Base from U. S. Geological Survey
7-1/2 minute quadrangle

CONTOUR INTERVAL 10 FEET

ROAD CLASSIFICATION
Heavy duty — Light duty
Medium duty — Unimproved dirt
Interstate Route — U.S. Route — State Route

HIGHLANDS RANCH COLO

EXPLANATION

F1 — Landform unit; Resource classification

LANDFORM UNITS

- F Floodplain deposit
- T Stream terrace deposit
- V Valley fill (F & T)
- U Upland deposits
- A Alluvial fan
- E Wind-deposited sand (eolian)
- M Man-made deposits (slag, tailings, spoils....)

RESOURCE CLASSIFICATION

Coarse Aggregate
(at least 70% retained on #4 screen, visual estimation)

- 1 Gravel: relatively clean and sound
- 2 Gravel: significant fines, decomposed rock, calcium carbonate.

Fine Aggregate
(greater than 70% passing #4 screen, 40% retained on #200 screen, visual estimation)

- 3 Sand

Unevaluated Resource

- 4 Probable aggregate resource

MAP SYMBOLS

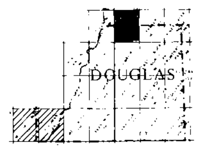
- Operating gravel and/or sand pit
- Abandoned gravel and/or sand pit
- Operating stone quarry
- Abandoned stone quarry
- Potential quarry aggregate resource area
- Selected well or drill-hole location with overburden thickness (ft) over sand/gravel resource thickness (ft), obtained from well logs.
  - "g" indicates gravel; "s" indicates sand
  - "x" in symbol denotes unevaluated or unknown property.
  - "sg" denotes Colorado Geological Survey Windsor/Sand and Gravel projects' drill hole
- Landform boundary, solid where known or observed; dashed where approximate or inferred.

STATION, LOCATION AND GEOLOGICAL DESCRIPTION OF DEPOSIT

3, 17, 40
- overburden thickness (ft)
- sand/gravel resource thickness (ft)
- percent sand and fines (passing #4 screen, 0.19 in.), visual estimation
- significant amount of fines (passing #200 screen, 0.0029 in. or 0.074 mm.)
- significant amount of decomposed or weak rock.
- significant amount of calcium carbonate (caliche)

"x" in symbol denotes unevaluated or unknown property

"o" in symbol denotes property absent or insignificant



QUADRANGLE LOCATION

NON-RESOURCE OR WITHDRAWN AREA

REFERENCE:

Chase, G.H., and McConaghy, J.A., 1972, Generalized surficial geologic map of the Denver area, Colorado: U. S. Geol. Survey Misc. Geol. Inv. Map I-731.

Trimble, D.E., and Fitch, H.R., 1974, Map showing potential sources of gravel and crushed-rock aggregate in the Greater Denver Area, Front Range Urban Corridor, Colo.: U. S. Geol. Survey Misc. Geol. Inv. Map I-856-A.

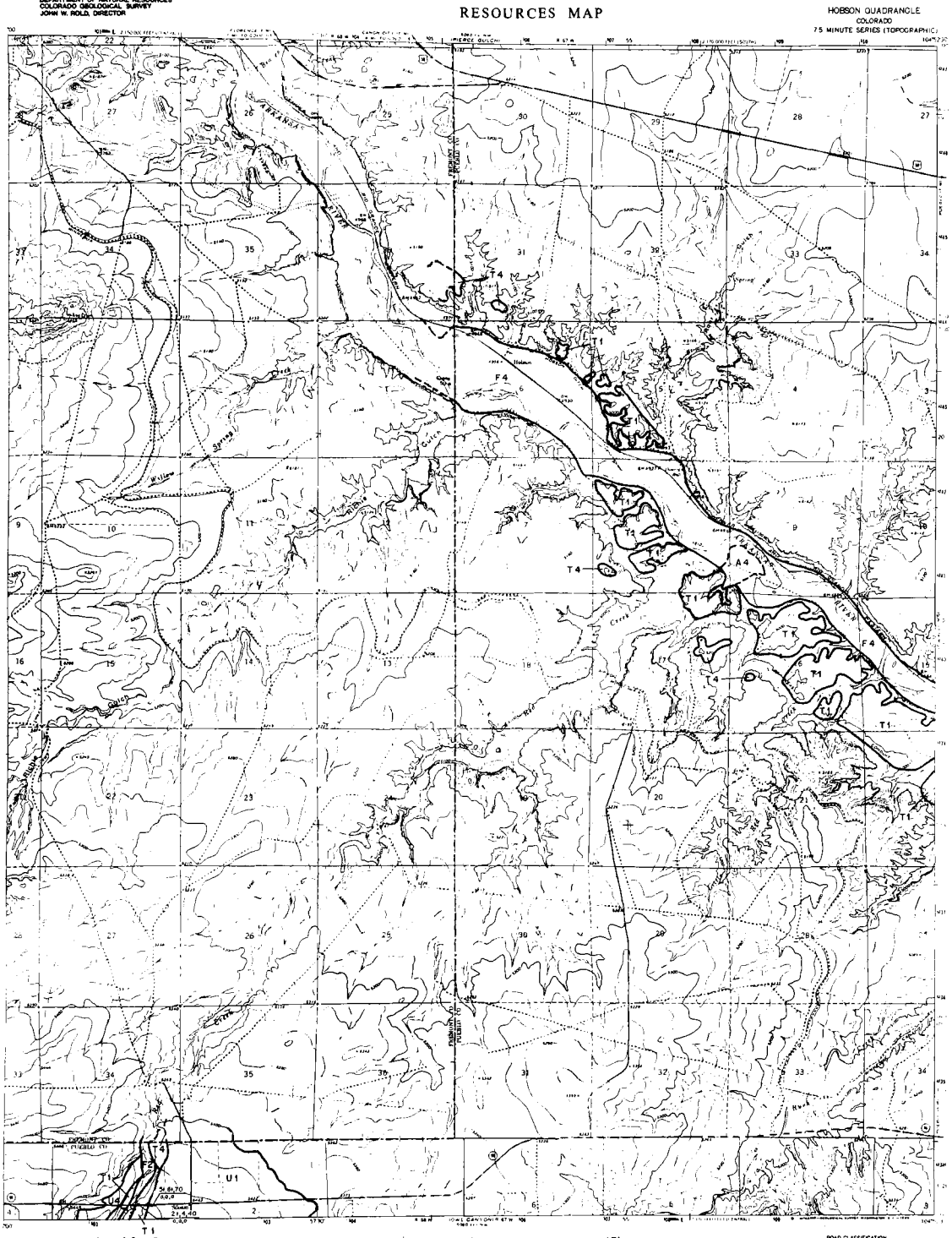
Mapped by: Ralph R. Shroba
Date: June 30, 1974

Prepared in cooperation with the U. S. Geological Survey.

SAND, GRAVEL AND QUARRY AGGREGATE RESOURCES MAP

DEPARTMENT OF NATURAL RESOURCES
COLORADO GEOLOGICAL SURVEY
JOHN W. ROLD, DIRECTOR

HOBSON QUADRANGLE
COLORADO
7.5 MINUTE SERIES (TOPOGRAPHIC)



EXPLANATION

Landform unit
Resource classification

LANDFORM UNITS

- F Floodplain deposit
- T Stream terrace deposit
- V Valley fill (F & T)
- U Upland deposits
- A Alluvial fan
- E Wind-deposited sand (eolian)
- M Man-made deposits (slag, tailings, spoils...)

RESOURCE CLASSIFICATION

Coarse aggregate
(at least 75% retained on #4 screen, visual estimation)

- 1 Gravel: relatively clean and sound
- 2 Gravel: significant fines, decomposed rock, calcium carbonate

Fine aggregate
(greater than 75% passing #4 screen, 75% retained on #200 screen, visual estimation)

- 3 Sand

Downgraded Resource

- 4 Probable aggregate resource

MAP SYMBOLS

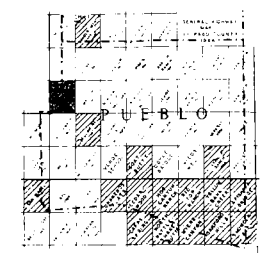
- Operating gravel and/or sand pit
- Abandoned gravel and/or sand pit
- Operating stone quarry
- Abandoned stone quarry
- Potential quarry aggregate resource area
- Selected well or drill-hole location with overburden thickness (ft) over sand/gravel resource thickness (ft), obtained from well logs
  - "s" indicates gravel; "a" indicates sand
  - "x" in symbol denotes unevaluated or unknown property.
  - "MW" denotes Colorado Geological Survey Windsor/Sand and Gravel projects' drill hole
- Landform boundary, solid where known or observed; dashed where approximate or inferred.

FEATURE, LOCATION AND GEOLOGICAL DESCRIPTION OF DEPOSIT

- overburden thickness (ft)
- sand-gravel resource thickness (ft)
- percent sand and fines (passing #4 screen, 0.25 in.), visual estimation
- significant amount of fines (passing #200 screen, 0.0029 in. or 0.074 mm.)
- significant amount of decomposed or weak rock.
- significant amount of calcium carbonate (caliche)

"a" in symbol denotes unevaluated or unknown property

"x" in symbol denotes property, absent or insignificant



QUADRANGLE LOCATION

NON-RESOURCE OR WITHDRAWN AREA

Geology modified after Scott, G. R., 1972, U. S. Geological Survey Map MF-353.

Mapped by: Ralph R. Shroba
Date: June 30, 1974

Base from U. S. Geological Survey
7-1/2 minute quadrangle

CONTOUR INTERVAL 20 FEET
DOTTED LINES REPRESENT 10 FOOT CONTOURS
DATUM IS MEAN SEA LEVEL

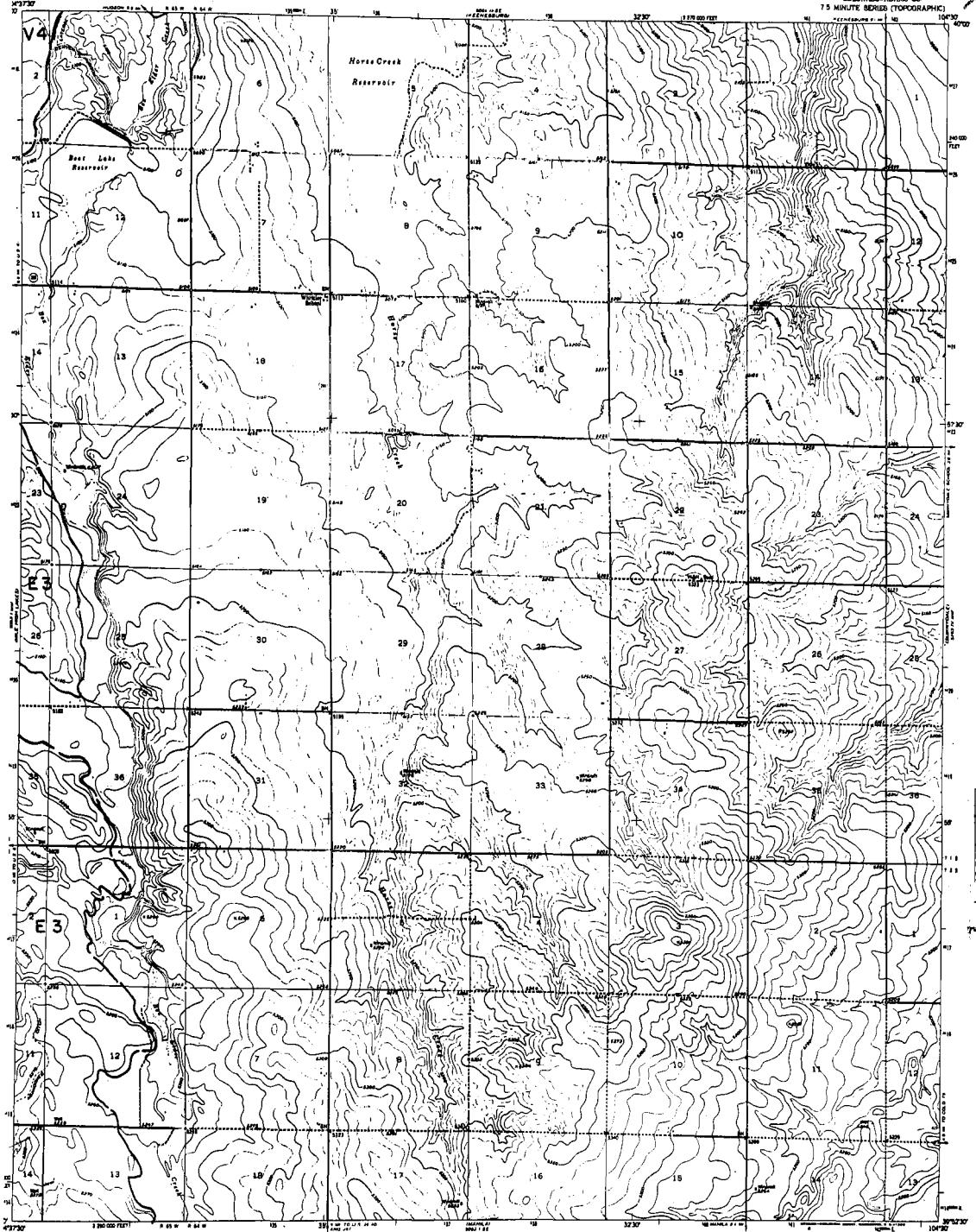
ROAD CLASSIFICATION
Medium-duty — Light-duty ——
Unimproved dirt .....
U.S. Route
State Route

HOBSON, COLO.

SAND, GRAVEL AND QUARRY AGGREGATE RESOURCES MAP

DEPARTMENT OF NATURAL RESOURCES
COLORADO GEOLOGICAL SURVEY
JOHN W. ROLD, DIRECTOR

HORSE CREEK QUADRANGLE
COLORADO-ADAMS CO
7.5 MINUTE SERIES (TOPOGRAPHIC)



EXPLANATION

Landform unit
Resource classification

LANDFORM UNITS

- P Floodplain deposit
- T Stream terrace deposit
- V Valley fill (P & T)
- U Upland deposits
- A Alluvial fan
- E Wind-deposited sand (active)
- M Man-made deposits (mine tailings, spoils....)

RESOURCE CLASSIFICATION

Coarse aggregate
(at least 50% retained on #4 screen, visual estimation)

- 1 Gravel: relatively clean and sound
- 2 Gravel: significant fines, decomposed rock, calcium carbonate.

Fine aggregate
(greater than 70% passing #4 screen, 70% retained on #200 screen, visual estimation

- 3 Sand

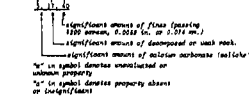
Unevaluated Resource

- 4 Probable aggregate resource

MAP SYMBOLS

- Operating gravel and/or sand pit
- Abandoned gravel and/or sand pit
- Operating stone quarry
- Abandoned stone quarry
- Potential quarry aggregate resource area
- Mineral well or drill-hole location with overburden thickness (ft) over sand/gravel resource thickness (ft), obtained from well logs
  "g" indicates gravel; "s" indicates sand
  "x" in symbol denotes unevaluated or unknown property.
  "wd" denotes Colorado Geological Survey Windsor/Sand and Gravel projects' drill hole
- Landform boundary, solid where known or observed; dashed where approximate or inferred.

STATION, LOCATION AND GEOLOGICAL DESCRIPTION OF REPORT



"x" in symbol denotes unanalyzed or unknown property
"n" in symbol denotes property absent or insignif/cant

QUADRANGLE LOCATION

NON-RESOURCE OR WITHDRAWN AREA

REFERENCE:

Smith, R.O., Schneider, P.A., Jr., and Petri, L.R., 1964, Ground-water resources of the South Platte River basin in northern Adams and southwestern Weld Counties, Colorado: U. S. Geol. Survey Water-Supply Paper 1658, pl. 3

Mapped by: Phillip C. Wicklein
Date: June 30, 1974

Base from U. S. Geological Survey
7-1/2 minute quadrangle

CONTOUR INTERVAL 10 FEET
DATUM IS MEAN SEA LEVEL

ROAD CLASSIFICATION

- Heavy-duty ——— Light-duty ———
- Medium-duty ——— Unimproved dirt ·····
- U.S. Route
- State Route

HORSE CREEK, COLO.

SAND, GRAVEL AND QUARRY AGGREGATE RESOURCES MAP

HORSETOOTH RESERVOIR

DEPARTMENT OF NATURAL RESOURCES
COLORADO GEOLOGICAL SURVEY
JOHN W. ROLD, DIRECTOR

EXPLANATION

Landform unit
Resource classification

LANDFORM UNITS

F Floodplain deposit
T Stream terrace deposit
V Valley fill (F & T)
U Upland deposits
A Alluvial fan
E Wind-deposited sand (eolian)
M Man-made deposits (slag,tailings, spoils...)

RESOURCE CLASSIFICATION

Coarse Aggregate
(at least 50% retained on #4 screen, visual estimation)

1 Gravel: relatively clean and sound
2 Gravel: significant fines, decomposed rock, calcium carbonate.

Fine Aggregate
(greater than 70% passing #4 screen, 0% retained on #200 screen, visual estimation

3 Sand

Unevaluated Resource

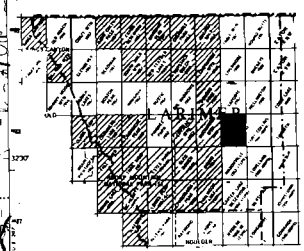
4 Probable aggregate resource

MAP SYMBOLS

Operating gravel and/or sand pit
Abandoned gravel and/or sand pit
Operating stone quarry
Abandoned stone quarry
Potential quarry aggregate resource area
Selected well or drill-hole location with overburden thickness (ft) over sand/gravel resource thickness (ft), obtained from well logs.
"g" indicates gravel; "s" indicates sand
"c" in symbol denotes unevaluated or unknown property.
"ms" denotes Colorado Geological Survey Windsor/Sand and Gravel project drill hole
Landform boundary, solid where known or observed; dashed where approximate or inferred.

STATION, LOCATION AND GEOLOGICAL DESCRIPTION OF DEPOSIT

overburden thickness (ft)
sand/gravel resource thickness (ft)
percent sand and fines (passing #4 screen, 0.83 in.), visual estimation
significant amount of fines (passing #200 screen, 0.0058 in. or 0.074 mm.)
significant amount of decomposed or unsound rock.
significant amount of calcium carbonate (caliche)
"A" in symbol denotes unevaluated or unknown property
"a" in symbol denotes property absent or insignificant



QUADRANGLE LOCATION
NON-RESOURCE OR WITHDRAWN AREA

REFERENCE:

Swan, F. H., III, 1972, Map of surficial geology of part of the Horsetooth Reservoir quadrangle: Resour. mapping for Colorado Geol. Survey Windsor Environmental Geology Project, open-file map.

Braddock, W. A., Calvert, R. H., O'Connor, J. T., and Swann, G. A., 1973, Geologic map of the Horsetooth Reservoir quadrangle, Larimer County, Colorado: U.S. Geological Survey Open-File map.

Hershey, L.A., and Schneider, P.A., Jr., 1972, Geologic map of the lower Cache La Poudre River basin, north-central Colorado: U. S. Geol. Survey Misc. Geol. Inv. Map I-687.

Shelton, D.C., 1974, personal communication.

Geology modified after: Colton, R.B., and Fitch, H.R., 1974, Map showing potential sources of gravel and crushed-rock aggregate in the Boulder-Fort Collins-Greeley Area, Front Range Urban Corridor, Colorado: U. S. Geol. Survey Map I-855 D.

Mapped by: Stephan D. Schwochow
Date: June 30, 1974

Prepared in cooperation with the U. S. Geological Survey.

Base from U. S. Geological Survey 7-1/2 minute quadrangle

CONTOUR INTERVAL 40 FEET
DOTTED LINES REPRESENT 20 FOOT CONTOURS

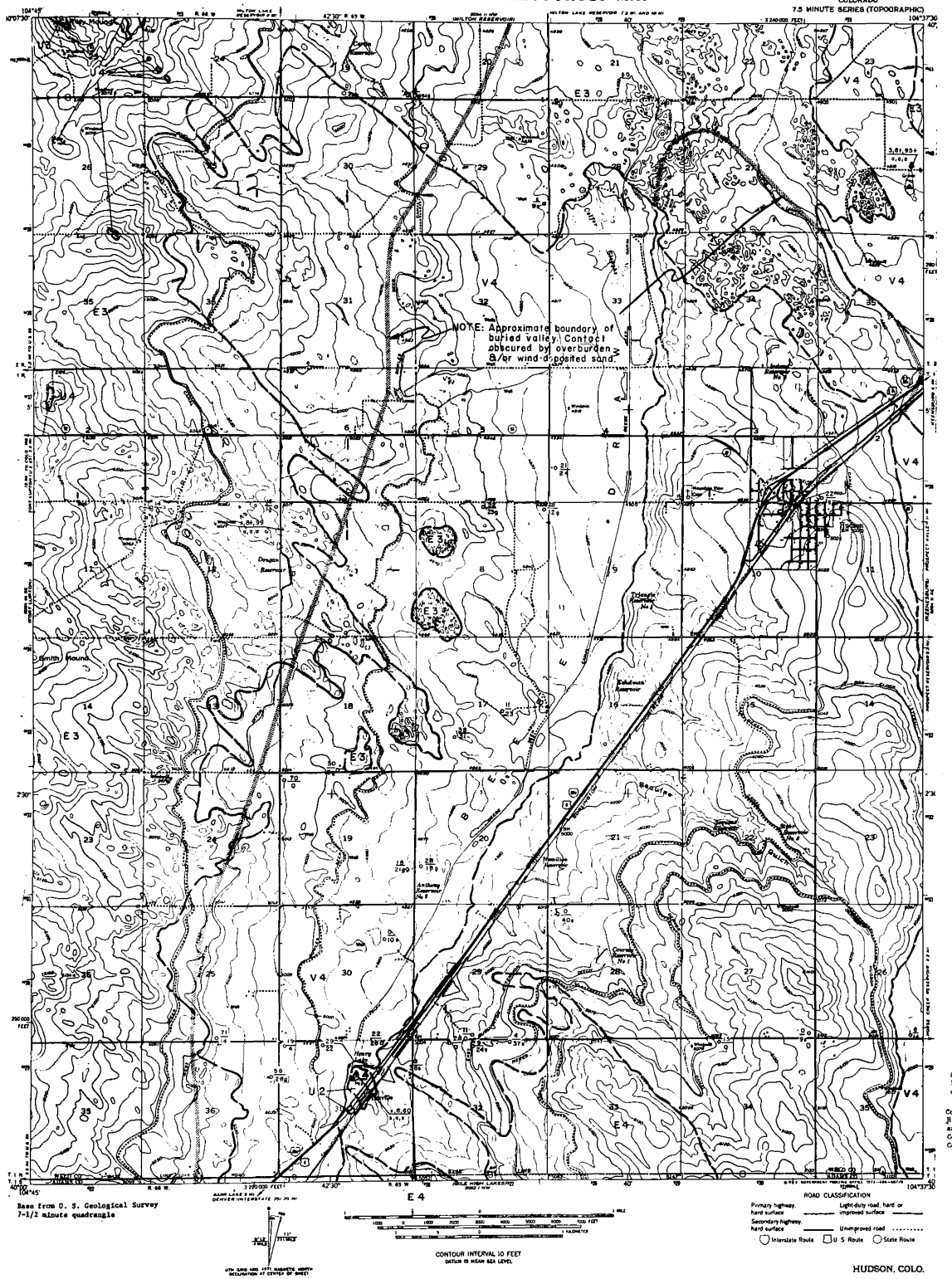
ROAD CLASSIFICATION
Asphalt duty — Light duty — Unimproved dirt .....

HORSETOOTH RESERVOIR, COLO.

SAND, GRAVEL AND QUARRY AGGREGATE RESOURCES MAP

DEPARTMENT OF NATURAL RESOURCES
COLORADO GEOLOGICAL SURVEY
JOHN W. ROLD, DIRECTOR

HUDSON QUADRANGLE
COLORADO
7.5 MINUTE SERIES (TOPOGRAPHIC)



EXPLANATION

Landform unit
Resource classification

LANDFORM UNITS

F Floodplain deposit
T Stream terrace deposit
V Valley fill (F & T)
U Upland deposits
A Alluvial fan
E Wind-deposited sand (soiian)
M Man-made deposits (slag,tailings, spoils....)

RESOURCE CLASSIFICATION

Coarse Aggregate
(at least 50% retained on #4 screen, visual estimation)

1 Gravel: relatively clean and sound
2 Gravel: significant fines, decomposed rock, calcium carbonate.

Fine Aggregate
(greater than 50% passing #4 screen, 50% retained on #200 screen, visual estimate

3 Sand

Unevaluated Resources

4 Probable aggregate resource

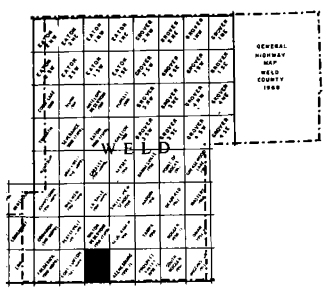
MAP SYMBOLS

Operating gravel and/or sand pit
Abandoned gravel and/or sand pit
Operating stone quarry
Abandoned stone quarry
Potential quarry aggregate resource area
Selected well or drill-hole location with overburden thickness (ft) over sand/gravel resource thickness (ft), obtained from well logs.
"s" indicates gravel; "s" indicates sand
"-" in symbol denotes unevaluated or unknown property.
"wk" denotes Colorado Geological Survey Windsor/Sand and Gravel projects' drill holes
Landform boundary, solid where known or observed; dashed where approximate or inferred.

STATION LOCATION AND GEOLOGICAL DESCRIPTION OF DEPOSIT

overburden thickness (ft)
sand/gravel resource thickness (ft)
percent sand and fines (passing #4 screen, 0.25 in.), visual estimation
significant amount of fines (passing #200 screen, 0.0030 in. or 0.074 mm.)
significant amount of decomposed or rock.
significant amount of calcium carbonate (caliche)

"s" in symbol denotes unevaluated or unknown property
"n" in symbol denotes property absent or insignificant



QUADRANGLE LOCATION

NON-RESOURCE OR WITHDRAWN AREA

Base from U. S. Geological Survey
7-1/2 minute quadrangle

CONTOUR INTERVAL 10 FEET
DATUM IS MEAN SEA LEVEL

ROAD CLASSIFICATION

Primary highway, hard surface — Lightduty road, hard or improved surface
Secondary highway, hard surface — Unimproved road
Interstate Route — U S Route — State Route

HUDSON, COLO.

Geology modified after Scheier, P. E., 1965, U. S. Geological Survey, Geologic Quadrangle Map, GQ-398.

Colton, R.B., and Pitch, R.R., 1974, Map showing potential sources of gravel and crushed-rock aggregate in the Boulder-Fort Collins-Greeley Area, Front Range Urban Corridor, Colorado: U. S. Geol. Survey Map I-855-D.

Mapped by: Ralph R. Shroba
Date: June 30, 1974

Prepared in cooperation with the U. S. Geological Survey.

DEPARTMENT OF NATURAL RESOURCES
COLORADO GEOLOGICAL SURVEY
JOHN W. ROLD, DIRECTOR

SAND, GRAVEL AND QUARRY AGGREGATE RESOURCES MAP

HYGIENE QUADRANGLE
COLORADO-BOULDER CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)

EXPLANATION

F1 — Landform unit / Resource classification

LANDFORM UNITS

- F Floodplain deposit
- T Stream terrace deposit
- V Valley fill (F & T)
- U Upland deposits
- A Alluvial fan
- E Wind-deposited sand (eolian)
- M Man-made deposits (slag, tailings, spoils....)

RESOURCE CLASSIFICATION

Coarse Aggregate
(at least 50% retained on #4 screen, visual estimation)

1. Gravel: relatively clean and sound
2. Gravel: significant fines, decomposed rock, calcium carbonate.

Fine Aggregate
(greater than 75% passing #4 screen, 85% retained on #200 screen, visual estimation)

3. Sand

Unevaluated Resource

4. Probable aggregate resource

MAP SYMBOLS

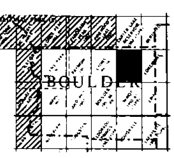
- Operating gravel and/or sand pit
- Abandoned gravel and/or sand pit
- Operating stone quarry
- Abandoned stone quarry
- Potential quarry aggregate resource area
- Selected well or drill-hole location with overburden thickness (ft) over sand/gravel resource thickness (ft), obtained from well logs. "g" indicates gravel; "s" indicates sand. "x" in symbol denotes unevaluated or unknown property.
- "ws" denotes Colorado Geological Survey Windsor/Sand and Gravel projects' drill hole
- Landform boundary, solid where known or observed; dashed where approximate or inferred.

STATION, LOCATION AND GEOLOGICAL DESCRIPTION OF DEPOSIT

5, 17, 40
- overburden thickness (ft)
- sand/gravel resource thickness (ft)
- percent sand and fines (passing #4 screen, 0.25 in.), visual estimation
- significant amount of fines (passing #200 screen, 0.0059 in. or 0.074 mm.)
- significant amount of decomposed or weak rock.
- significant amount of calcium carbonate (caliche)

"x" in symbol denotes unevaluated or unknown property

"o" in symbol denotes property absent or insignificant



QUADRANGLE LOCATION

NON-RESOURCE OR WITHDRAWN AREA

Geology modified after:

Colton, R.B., and Fitch, H.R., 1974, Map showing potential sources of gravel and crushed-rock aggregate in the Boulder-Fort Collins-Greeley Area, Front Range Urban Corridor, Colo.: U. S. Geol. Survey Misc. Geol. Inv. Map I-855-D.

Base from U. S. Geological Survey 7-1/2 minute quadrangle

CONTOUR INTERVAL 10 FEET
DATUM IS MEAN SEA LEVEL

Mapped by: Ralph R. Shroba
Date: June 30, 1974

Prepared in cooperation with the U. S. Geological Survey.

DEPARTMENT OF NATURAL RESOURCES
COLORADO GEOLOGICAL SURVEY
JOHN W. ROLD, DIRECTOR

SAND, GRAVEL AND QUARRY AGGREGATE RESOURCES MAP

INDIAN HILLS QUADRANGLE
COLORADO-JEFFERSON CO
7.5 MINUTE SERIES (TOPOGRAPHIC)

Base from U. S. Geological Survey
7-1/2 minute quadrangle

INDIAN HILLS, COLO.

EXPLANATION

Landform unit
Resource classification

LANDFORM UNITS

- F Floodplain deposit
- T Stream terrace deposit
- V Valley fill (F & T)
- U Upland deposits
- A Alluvial fan
- E Wind-deposited sand (eolian)
- M Man-made deposits (slag, tailings, spoils....)

RESOURCE CLASSIFICATION

Coarse Aggregate
(at least 30% retained on #4 screen, visual estimation)

1. Gravel: relatively clean and sound
2. Gravel: significant fines, decomposed rock, calcium carbonate.

Fine Aggregate
(greater than 70% passing #4 screen, 0% retained on #200 screen, visual estimation)

3. Sand

Unevaluated Resource

4. Probable aggregate resource

MAP SYMBOLS

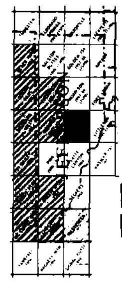
- Operating gravel and/or sand pit
- Abandoned gravel and/or sand pit
- Operating stone quarry
- Abandoned stone quarry
- Potential quarry aggregate resource area
- Selected well or drill-hole location with overburden thickness (ft) over sand/gravel resource thickness (ft), obtained from well logs.
  - "g" indicates gravel; "s" indicates sand
  - "?" in symbol denotes unevaluated or unknown property.
  - "wb" denotes Colorado Geological Survey Windsor/Sand and Gravel projects' drill hole
- Landform boundary, solid where known or observed; dashed where approximate or inferred.

STATION, LOCATION AND GEOLOGICAL DESCRIPTION OF DEPOSIT

3, 17, 40
- overburden thickness (ft)
- sand/gravel resource thickness (ft)
- percent sand and fines (passing #4 screen, 0.25 in.), visual estimation
- significant amount of fines (passing #200 screen, 0.0059 in. or 0.074 mm.)
- significant amount of decomposed or weak rock.
- significant amount of calcium carbonate (caliche)

"?" in symbol denotes unevaluated or unknown property

"o" in symbol denotes property absent or insignificant



QUADRANGLE LOCATION

NON-RESOURCE OR WITHDRAWN AREA

Geology modified after
Scott, G.R., 1961, Preliminary geologic map of the Indian Hills quadrangle, Jefferson County, Colorado: U.S. Geol. Survey Misc. Geol. Inv. Map I-333.

References:
Chase, G.H., and McConaghy, J.A., 1972, Generalized surficial geologic map of the Denver area, Colorado: U.S. Geol. Survey Misc. Geol. Inv. Map I-731.

Trimble, D.E., and Fitch, H.R., 1974, Map showing potential sources of gravel and crushed-rock aggregate in the Greater Denver Area, Front Range Urban Corridor, Colo.: U. S. Geol. Survey Misc. Geol. Inv. Map I-856-A.

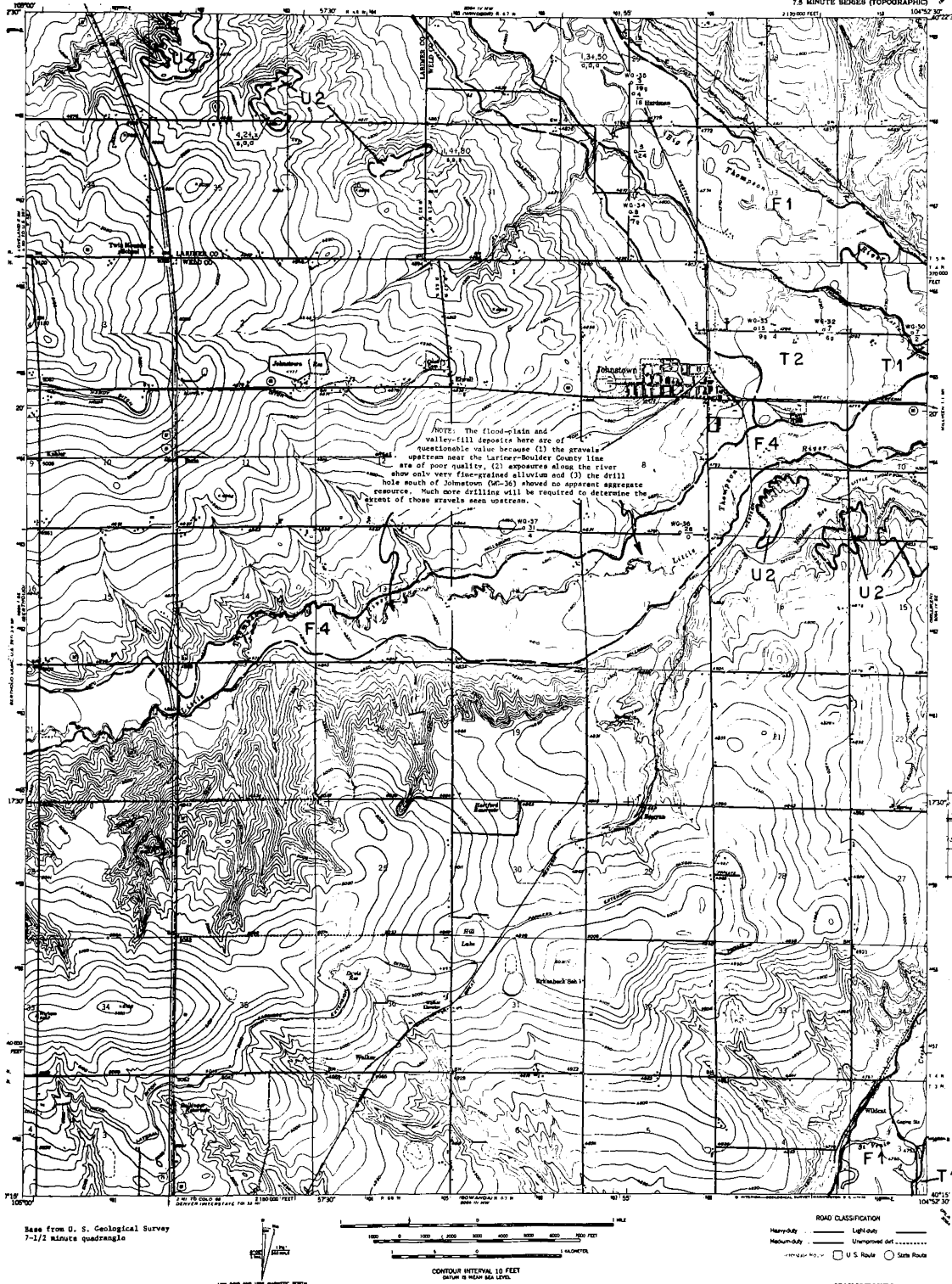
Mapped by: Stephen D. Schwochow
Date: June 30, 1974

Prepared in cooperation with the U. S. Geological Survey

SAND, GRAVEL AND QUARRY AGGREGATE RESOURCES MAP

DEPARTMENT OF NATURAL RESOURCES
COLORADO GEOLOGICAL SURVEY
JOHN W. ROLD, DIRECTOR

JOHNSTOWN QUADRANGLE
COLORADO
7.5 MINUTE SERIES (TOPOGRAPHIC)



EXPLANATION

Landform unit
Resource classification

LANDFORM UNITS

F Floodplain deposit
T Stream terrace deposit
V Valley fill (F & T)
U Upland deposits
A Alluvial fan
E Wind-deposited sand (eolian)
M Man-made deposits (slag,tailings, spoils....)

RESOURCE CLASSIFICATION

Coarse aggregate
(at least 50% retained on #4 screen, visual estimation)

1 Gravel: relatively clean and sound
2 Gravel: significant fines, decomposed rock, calcium carbonate.

Fine aggregate
(greater than 50% passing #4 screen, 10% retained on #200 screen, visual estimation)

3 Sand

Undevaluated Resource

4 Probable aggregate resource

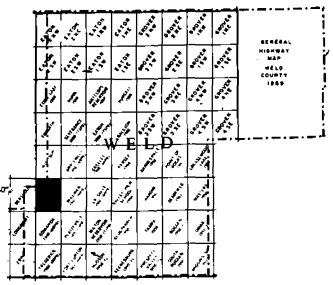
MAP SYMBOLS

- Operating gravel and/or sand pit
- Abandoned gravel and/or sand pit
- Operating stone quarry
- Abandoned stone quarry
- Potential quarry aggregate resource area
- Selected well or drill-hole location with overburden thickness (ft) over sand/gravel resource thickness (ft), obtained from well logs. "s" indicates gravel; "e" indicates sand. "-" in symbol denotes unevaluated or unknown property.
- "WC" denotes Colorado Geological Survey Windsor/Sand and Gravel project drill hole
- Landform boundary, solid where known or observed, dashed where approximate or inferred.

STATION, LOCATION AND GEOLOGICAL DESCRIPTION OF DEPOSIT

- overburden thickness (ft)
- sand/gravel resource thickness (ft)
- percent sand and fines (passing #4 screen, 0.2$\frac{1}{2}$ in.), visual estimation
- significant amount of fines (passing #200 screen, 0.0058 in. or 0.074 mm.)
- significant amount of decomposed or weak rock.
- significant amount of calcium carbonate (caliche)

"X" in symbol denotes unevaluated or unknown property.
"0" in symbol denotes property absent or insignificant.



QUADRANGLE LOCATION

NON-RESOURCE OR WITHDRAWN AREA

Geology modified after:

Colton, R.B., and Fitch, H.R., 1974, Map showing potential sources of gravel and crushed-rock aggregate in the Boulder-Fort Collins-Greeley Area, Front Range Urban Corridor, Colo.: U. S. Geol. Survey Misc. Geol. Inv. Map I-835-D.

Mapped by: Stephen D. Schwochow
Date: June 30, 1974

Prepared in cooperation with the U. S. Geological Survey

Base from U. S. Geological Survey
7-1/2 minute quadrangle

CONTOUR INTERVAL 10 FEET
DATUM IS MEAN SEA LEVEL

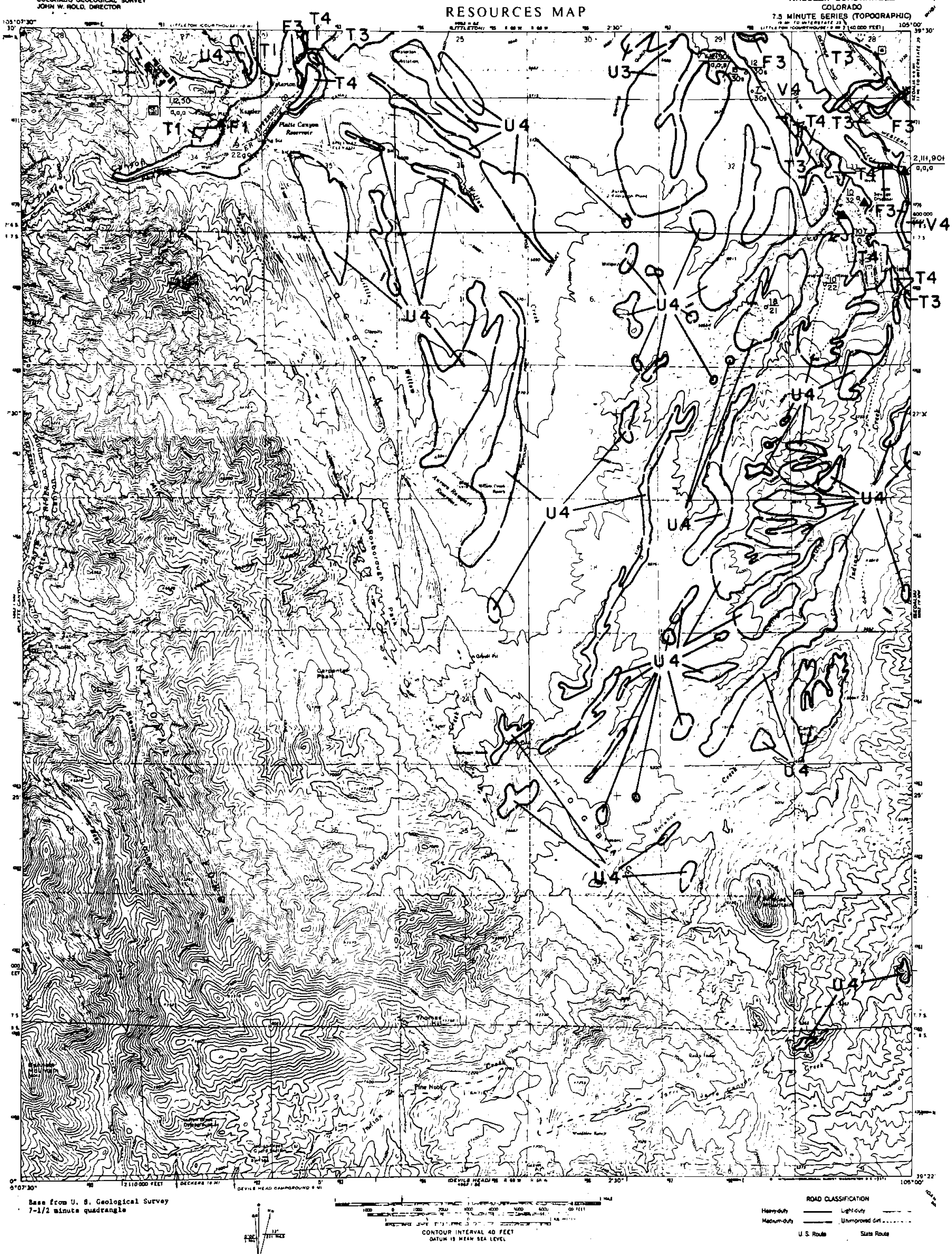
ROAD CLASSIFICATION
Heavy-duty — Light-duty
Medium-duty — Unimproved dirt
U.S. Route State Route

JOHNSTOWN, COLO.

DEPARTMENT OF NATURAL RESOURCES
COLORADO GEOLOGICAL SURVEY
JOHN W. ROLD, DIRECTOR

SAND, GRAVEL AND QUARRY AGGREGATE RESOURCES MAP

KASSLER QUADRANGLE
COLORADO
7.5 MINUTE SERIES (TOPOGRAPHIC)



Base from U. S. Geological Survey
7-1/2 minute quadrangle

KASSLER, COLO.

EXPLANATION

Landform unit
Resource classification

LANDFORM UNITS

- F Floodplain deposit
- T Stream terrace deposit
- V Valley fill (F & T)
- U Upland deposits
- A Alluvial fan
- E Wind-deposited sand (eolian)
- M Man-made deposits (slag, tailings, spoils....).

RESOURCE CLASSIFICATION

Coarse Aggregate
(at least 50% retained on #4 screen, visual estimation)

1 Gravel: relatively clean and sound
2 Gravel: significant fines, decomposed rock, calcium carbonate.

Fine Aggregate
(greater than 70% passing #4 screen, 60% retained on #200 screen, visual estimation)

3 Sand

Unevaluated Deposits

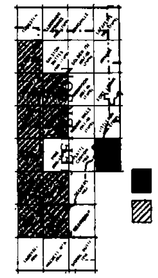
4 Probable aggregate resource

MAP SYMBOLS

- Operating gravel and/or sand pit
- Abandoned gravel and/or sand pit
- Operating stone quarry
- Abandoned stone quarry
- Potential quarry aggregate resource area
- Selected well or drill-hole location with overburden thickness (ft) over sand/gravel resource thickness (ft), obtained from well logs.
  "g" indicates gravel; "s" indicates sand
  "?" in symbol denotes unevaluated or unknown property.
  "wh" denotes Colorado Geological Survey Windsor/Sand and Gravel projects' drill hole
- Landform boundary, solid where known or observed; dashed where approximate or inferred.

STATION, LOCATION AND GEOLOGICAL DESCRIPTION OF DEPOSIT

overburden thickness (ft)
sand/gravel resource thickness (ft)
percent sand and fines (passing #4 screen, 0.18 in.), visual estimation
2, 17, 40
significant amount of fines (passing #200 screen, 0.0029 in. or 0.074 mm.)
significant amount of decomposed or weak rock.
significant amount of calcium carbonate (caliche)
"?" in symbol denotes unevaluated or unknown property
"o" in symbol denotes property absent or insignificant



QUADRANGLE LOCATION

NON-RESOURCE OR WITHDRAWN AREA

Geology modified after:
Scott, G.R., 1963, Quaternary geology and geomorphic history of the Kassler quadrangle, Colorado: U.S. Geol. Survey Prof. Paper 421-A, 70 p., 1 pl.

References:
Chase, G.H., and McConaghy, J.A., 1972, Generalized surficial geologic map of the Denver area, Colorado: U.S. Geol. Survey Misc. Geol. Inv. Map I-731.

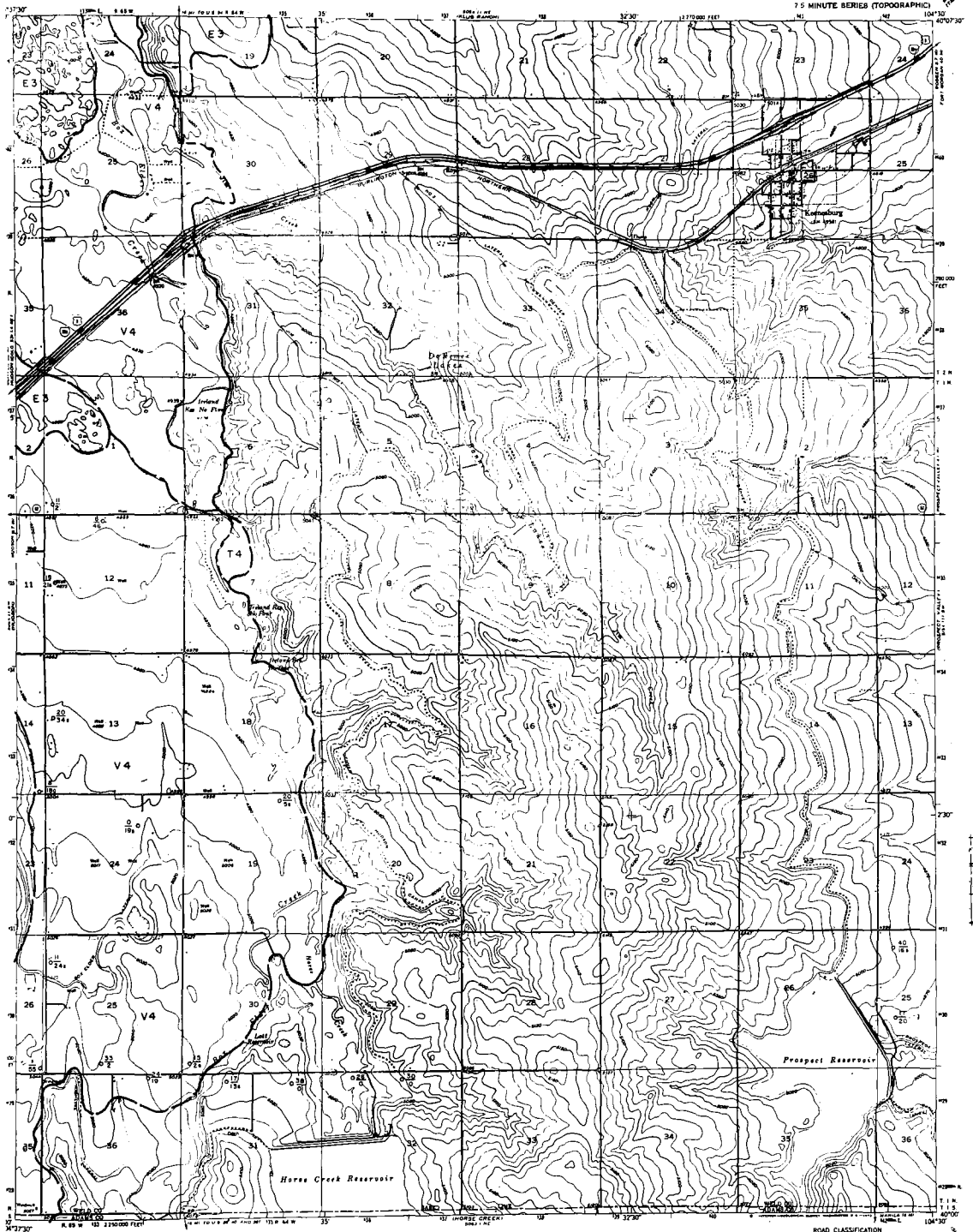
Trimble, D.E., and Fitch, H.R., 1974, Map showing potential sources of gravel and crushed-rock aggregate in the Greater Denver Area, Front Range Urban Corridor, Colo.: U.S. Geol. Survey Misc. Geol. Inv. Map I-856-A.

Mapped by: Ralph R. Shroba
Date: June 30, 1974
Prepared in cooperation with the U. S. Geological Survey.

SAND, GRAVEL AND QUARRY AGGREGATE RESOURCES MAP

DEPARTMENT OF NATURAL RESOURCES
COLORADO GEOLOGICAL SURVEY
JOHN W. ROLD, DIRECTOR

KEENESBURG QUADRANGLE
COLORADO
7 5 MINUTE SERIES (TOPOGRAPHIC)



EXPLANATION

Landform unit
Resource classification

LANDFORM UNITS

- F Floodplain deposit
- T Stream terrace deposit
- V Valley fill (F & T)
- U Upland deposits
- A Alluvial fan
- E Wind-deposited sand (eolian)
- M Man-made deposits (slag, tailings, spoils....)

RESOURCE CLASSIFICATION

Coarse Aggregate
(at least 50% retained on #4 screen, visual estimation)

- 1 Gravel: relatively clean and sound
- 2 Gravel: significant fines, decomposed rock calcium carbonate.

Fine Aggregate
(greater than 70% passing #4 screen, 60% retained on #200 screen, visual estimation

- 3 Sand

Undeveloped Resource

- 4 Probable aggregate resource

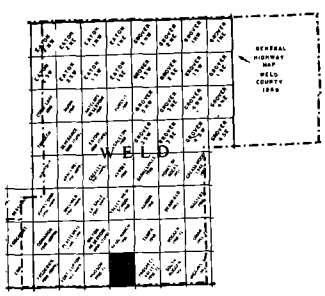
MAP SYMBOLS

- Operating gravel and/or sand pit
- Abandoned gravel and/or sand pit
- Operating stone quarry
- Abandoned stone quarry
- Potential quarry aggregate resource area
- Selected well or drill-hole location with overburden thickness (ft) over sand/gravel resource thickness (ft), obtained from well logs. "g" indicates gravel; "s" indicates sand. "-" in symbol denotes unevaluated or unknown property. "cm" denotes Colorado Geological Survey Windsor/Sand and Gravel projects' drill hole
- Landform boundary, solid where known or observed; dashed where approximate or inferred.

PATTERN, LOCATION AND GEOLOGICAL DESCRIPTION OF DEPOSIT

- overburden thickness (ft)
- sand/gravel resource thickness (ft)
- percent sand and fines (passing #4 screen, 0.18 in.), visual estimation
- significant amount of fines (passing #200 screen, 0.0029 in. or 0.074 mm.)
- significant amount of decomposed or soft rock
- significant amount of calcium carbonate (caliche)

"x" in symbol denotes unevaluated or unknown property
"o" in symbol denotes property absent or insignificant



QUADRANGLE LOCATION

NON-RESOURCE OR WITHDRAWN AREA

Mapped by: Phillip C. Wicklein
Date: June 30, 1974

Base from U. S. Geological Survey
7-1/2 minute quadrangle

CONTOUR INTERVAL 10 FEET
DATUM IS MEAN SEA LEVEL

ROAD CLASSIFICATION

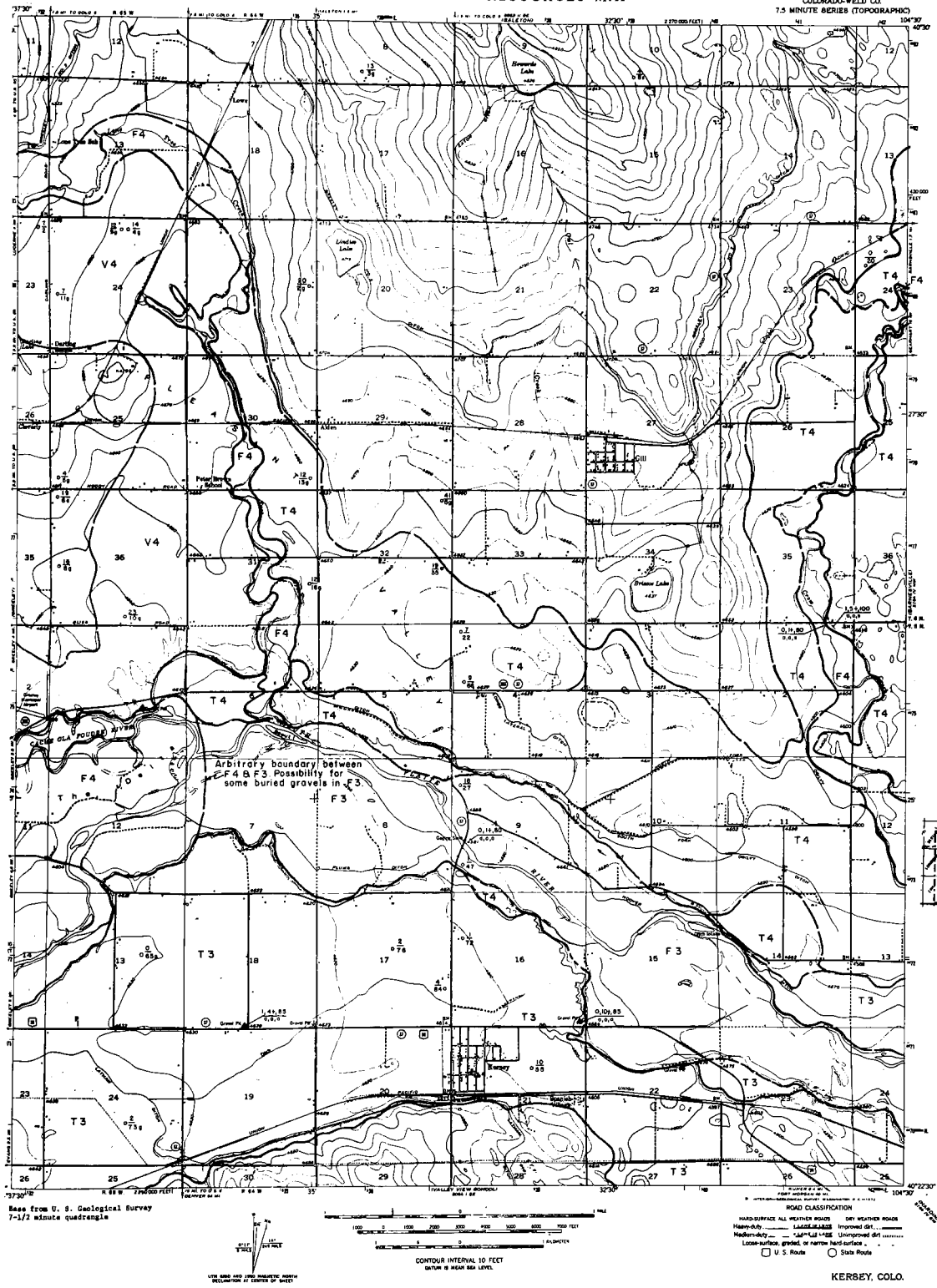
- Primary highway, hard surface
- Secondary highway, hard surface
- Light-duty road, hard or improved surface
- Unimproved road
- Interstate Route
- U. S. Route
- State Route

KEENESBURG, COLO.

SAND, GRAVEL AND QUARRY AGGREGATE RESOURCES MAP

DEPARTMENT OF NATURAL RESOURCES
COLORADO GEOLOGICAL SURVEY
JOHN W. ROLD, DIRECTOR

KERSEY QUADRANGLE
COLORADO-WELD CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)



EXPLANATION

Land/gm unit
Resource classification

LANDFORM UNITS

- F Floodplain deposit
- T Stream terrace deposit
- V Valley fill (F & T)
- U Upland deposits
- A Alluvial fan
- E Wind-deposited sand (eolian)
- M Man-made deposits (slag, tailings, spoils....)

RESOURCE CLASSIFICATION

Coarse Aggregate
(at least 30% retained on #4 screen, visual estimation)

- 1 Gravel: relatively clean and sound
- 2 Gravel: significant fines, decomposed rock, calcium carbonate.

Fine Aggregate
(greater than 70% passing #4 screen, 40% retained on #200 screen, visual estimation

- 3 Sand

Unevaluated Resource

- 4 Probable aggregate resource

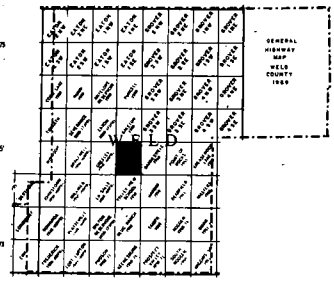
MAP SYMBOLS

- Operating gravel and/or sand pit
- Abandoned gravel and/or sand pit
- Operating stone quarry
- Abandoned stone quarry
- Potential quarry aggregate resource area
- Selected well or drill-hole location with overburden thickness (ft) over sand/gravel resource thickness (ft), obtained from well logs; "s" indicates gravel; "a" indicates sand
- "-" in symbol denotes unevaluated or unknown property.
- "wm" denotes Colorado Geological Survey Windsor/Sand and Gravel project drill hole
- Landform boundary, solid where known or observed; dashed where approximate or inferred.

STATION, LOCATION AND GEOLOGICAL DESCRIPTION OF REPORT

- overburden thickness (ft)
- sand/gravel resource thickness (ft)
- percent sand and fines (passing #4 screen, 0.24 in.), visual estimation
- significant amount of fines (passing #200 screen, 0.0018 in. or 0.074 mm.)
- significant amount of decomposed or rank rock.
- significant amount of calcium carbonate (caliche)

"e" in symbol denotes unevaluated or unknown property
"o" in symbol denotes property absent or insignificant



QUADRANGLE LOCATION

NON-RESOURCE OR WITHDRAWN AREA

REFERENCE:

Smith, R.O., Schneider, P.A., Jr., and Patri, L.R., 1964, Ground-water resources of the South Platte River basin in western Adams and southwestern Weld Counties, Colorado: U. S. Geol. Survey Water-Supply Paper 1658, pl. 1.

Swan, F. H., III, 1972, Map of surficial geology of part of the Kersey quadrangle: Reconn. mapping for Colorado Geol. Survey Windsor Environmental Geology Project, open-file map.

Mapped by: Phillip C. Wicklein
Date: June 30, 1974

Base from U. S. Geological Survey
7-1/2 minute quadrangle

CONTOUR INTERVAL 10 FEET
DATUM IS MEAN SEA LEVEL

ROAD CLASSIFICATION

	HARD-SURFACE ALL WEATHER ROADS	DRY WEATHER ROADS
Heavy-duty		Improved dirt
Medium-duty		Unimproved dirt
Loose-surface, graded, or natural hard-surface		

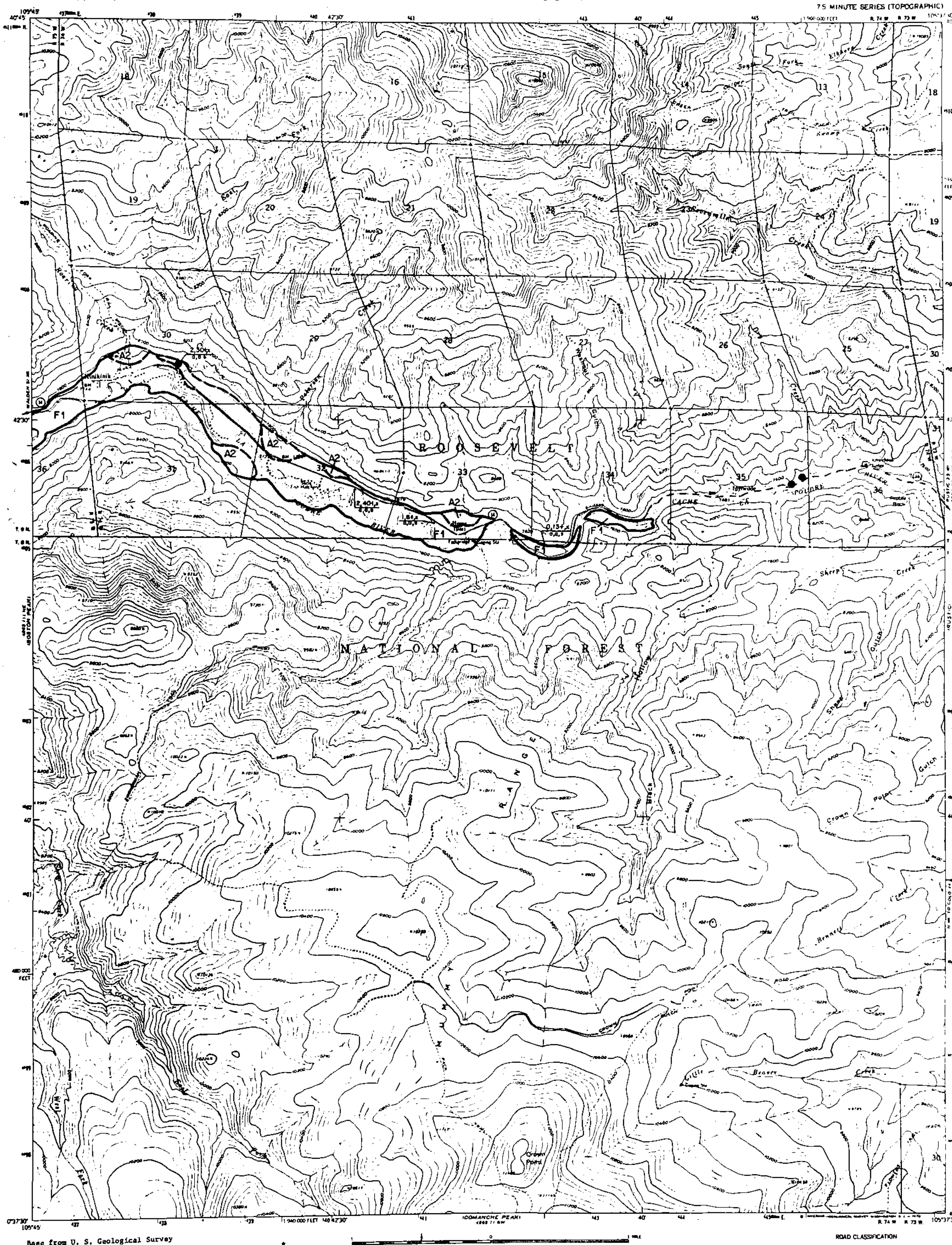
U. S. Route ○ State Route

KERSEY, COLO.

DEPARTMENT OF NATURAL RESOURCES
COLORADO GEOLOGICAL SURVEY
JOHN W. ROLD, DIRECTOR

SAND, GRAVEL AND QUARRY AGGREGATE RESOURCES MAP

KINIKINIK QUADRANGLE
COLORADO-LARIMER CO
7.5 MINUTE SERIES (TOPOGRAPHIC)



Base from U. S. Geological Survey
7-1/2 minute quadrangle

KINIKINIK, COLO.

EXPLANATION

F1 — Landform unit; Resource classification

LANDFORM UNITS

- F — Floodplain deposit
- T — Stream terrace deposit
- V — Valley fill (F & T)
- U — Upland deposits
- A — Alluvial fan
- Æ — Wind-deposited sand (eolian)
- M — Man-made deposits (slag, tailings, spoils....)

RESOURCE CLASSIFICATION

Coarse Aggregate
(at least 12% retained on #4 screen, visual estimation)

- 1 — Gravel: relatively clean and sound
- 2 — Gravel: significant fines, decomposed rock, calcium carbonate.

Fine Aggregate
(greater than 70% passing #4 screen, 60% retained on #200 screen, visual estimation)

- 3 — Sand

Unevaluated Resource

- 4 — Probable aggregate resource

MAP SYMBOLS

- Operating gravel and/or sand pit
- Abandoned gravel and/or sand pit
- Operating stone quarry
- Abandoned stone quarry
- Potential quarry aggregate resource area
- Selected well or drill-hole location with overburden thickness (ft) over sand/gravel resource thickness (ft), obtained from well logs.
  "g" indicates gravel; "s" indicates sand
  "x" in symbol denotes unevaluated or unknown property.
  "WS" denotes Colorado Geological Survey Windsor/Sand and Gravel projects' drill hole
- Landform boundary, solid where known or observed; dashed where approximate or inferred.

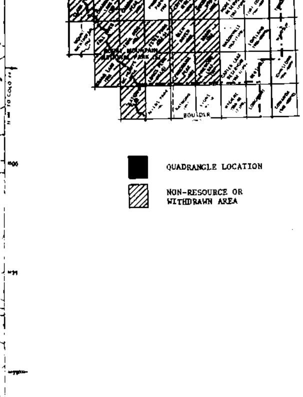
STATION, LOCATION AND GEOLOGICAL DESCRIPTION OF DEPOSIT

5, 17, 40

- overburden thickness (ft)
- sand/gravel resource thickness (ft)
- percent sand and fines (passing #4 screen, 0.25 in.), visual estimation
- significant amount of fines (passing #200 screen, 0.0029 in. or 0.074 mm.)
- significant amount of decomposed or weak rock.
- significant amount of calcium carbonate (caliche)

"x" in symbol denotes unevaluated or unknown property

"o" in symbol denotes property absent or insignificant



QUADRANGLE LOCATION

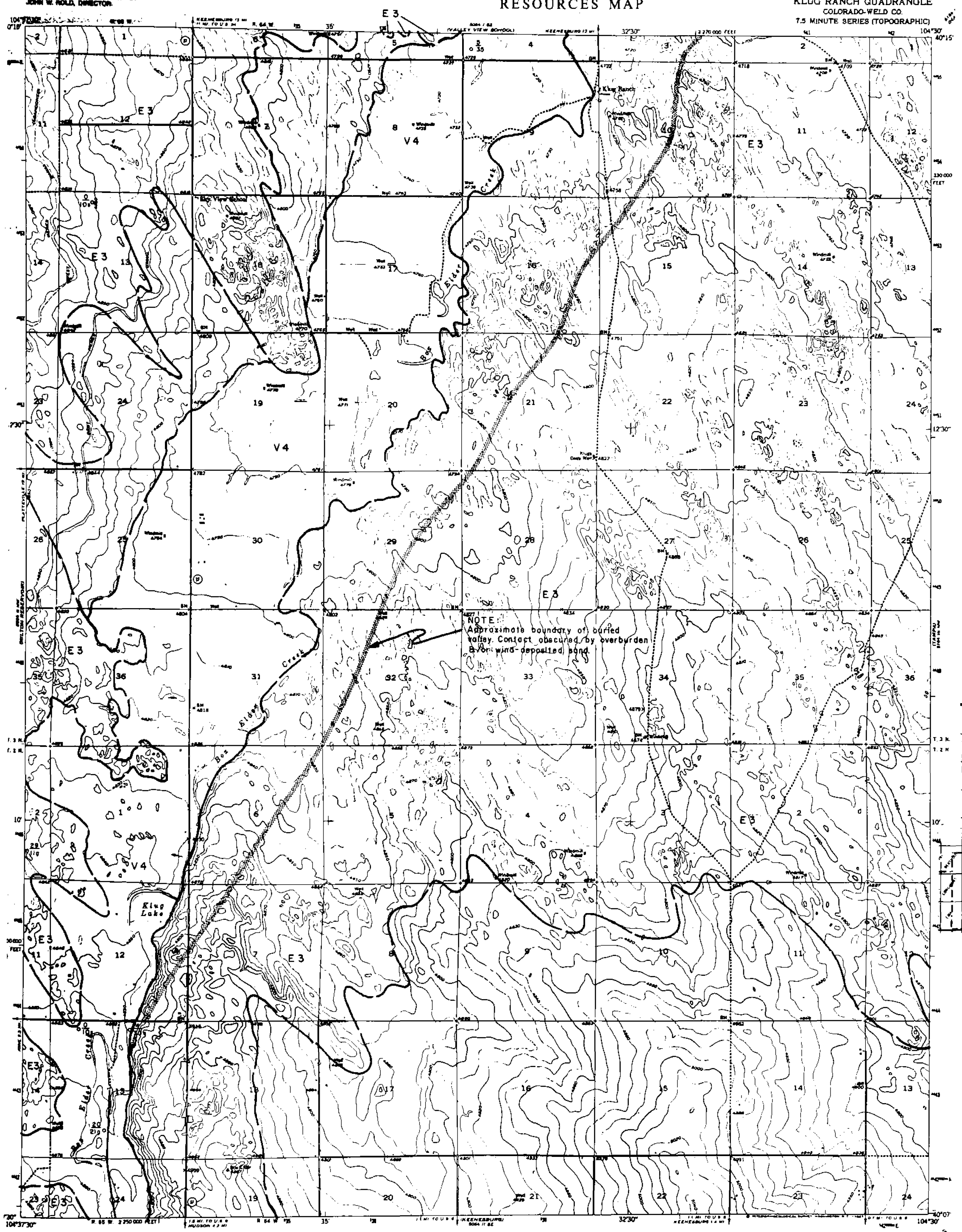
NON-RESOURCE OR WITHDRAWN AREA

Mapped by: Stephen D. Schwochow
Date: June 30, 1974

SAND, GRAVEL AND QUARRY AGGREGATE RESOURCES MAP

DEPARTMENT OF NATURAL RESOURCES
COLORADO GEOLOGICAL SURVEY
JOHN W. ROLD, DIRECTOR

KLUG RANCH QUADRANGLE
COLORADO-WELD CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)



EXPLANATION

F — Landform unit / Resource classification

LANDFORM UNITS

- F Floodplain deposit
- T Stream terrace deposit
- V Valley fill (F & T)
- U Upland deposits
- A Alluvial fan
- E Wind-deposited sand (eolian)
- M Man-made deposits (slag, tailings, spoils....)

RESOURCE CLASSIFICATION

Coarse Aggregate
(at least 30% retained on #4 screen, visual estimation)

- 1 Gravel: relatively clean and sound
- 2 Gravel: significant fines, decomposed rock, calcium carbonate.

Fine Aggregate
(greater than 70% passing #4 screen, 40% retained on #200 screen, visual estimation)

- 3 Sand

Unevaluated Resource

- 4 Probable aggregate resource

MAP SYMBOLS

- Operating gravel and/or sand pit
- Abandoned gravel and/or sand pit
- Operating stone quarry
- Abandoned stone quarry
- Potential quarry aggregate resource area
- Selected well or drill-hole location with overburden thickness (ft) over sand/gravel resource thickness (ft), obtained from well logs. "g" indicates gravel; "s" indicates sand. "x" in symbol denotes unevaluated or unknown property. "ws" denotes Colorado Geological Survey Windsor/Sand and Gravel projects' drill hole
- Landform boundary, solid where known or observed; dashed where approximate or inferred.

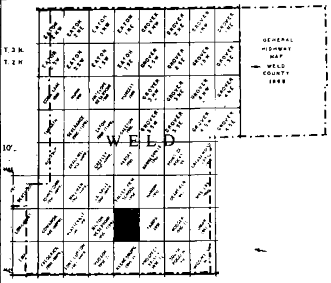
STATION, LOCATION AND GEOLOGICAL DESCRIPTION OF DEPOSIT

5, 17, 40

- overburden thickness (ft)
- sand/gravel resource thickness (ft)
- percent sand and fines (passing #4 screen, 0.25 in.), visual estimation
- significant amount of fines (passing #200 screen, 0.0029 in. or 0.074 mm.)
- significant amount of decomposed or weak rock.
- significant amount of calcium carbonate (caliche)

"x" in symbol denotes unevaluated or unknown property

"a" in symbol denotes property absent or insignificant



QUADRANGLE LOCATION

NON-RESOURCE OR WITHDRAWN AREA

Reference: Smith, R. O. and others, 1964, U.S.G.S. Water Supply Paper 1658, Plate I.

Mapped by: Phillip C. Wicklein
Date: June 30, 1974

Base from U. S. Geological Survey 7-1/2 minute quadrangle

CONTOUR INTERVAL 10 FEET
DATUM IS MEAN SEA LEVEL

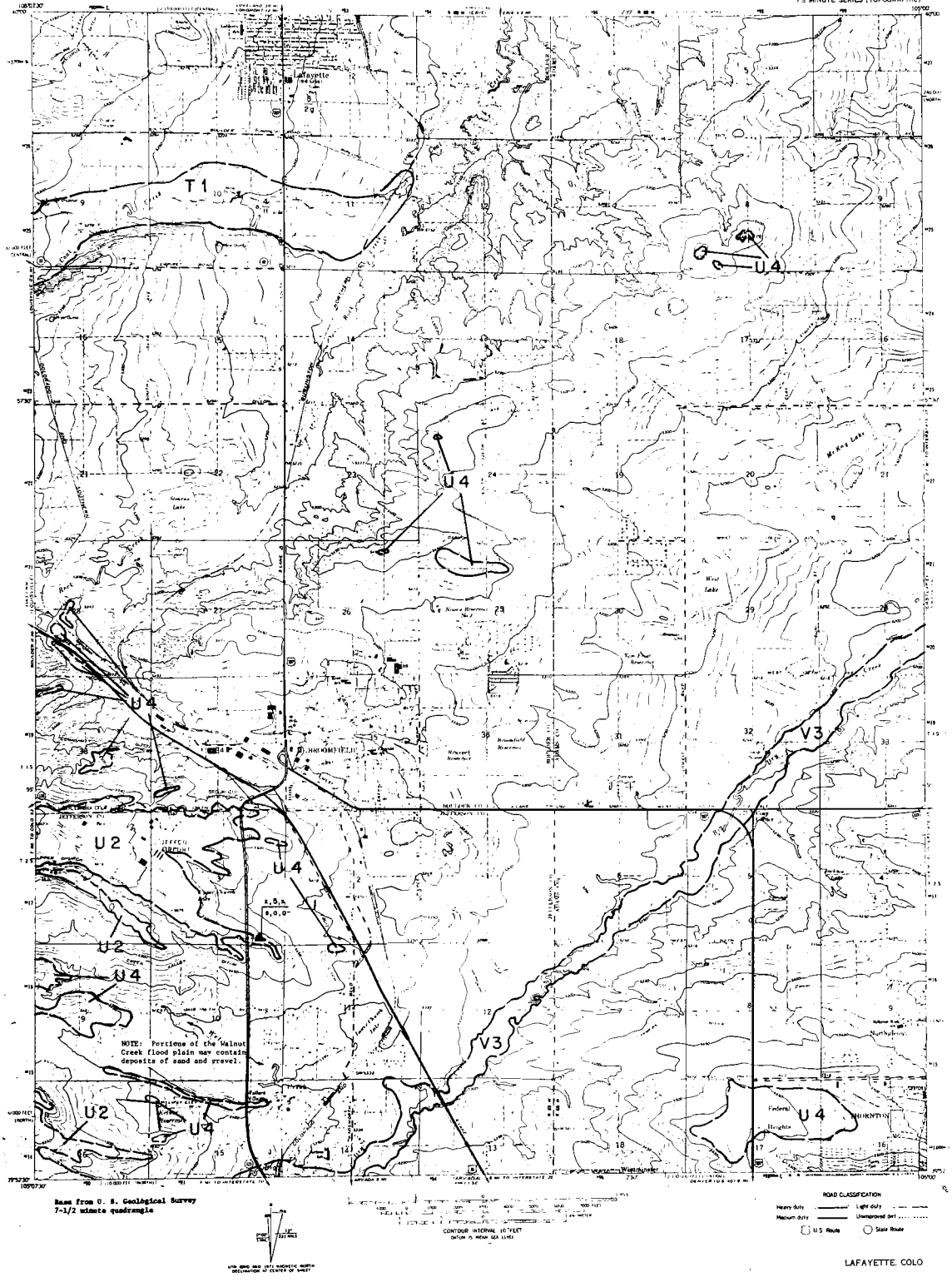
ROAD CLASSIFICATION
Hard-surface all weather roads — Dry weather roads
Heavy-duty — Improved dirt
Medium-duty — Unimproved dirt
Loose-surface, graded, or narrow hard-surface
U. S. Route — State Route

KLUG RANCH, COLO.

SAND, GRAVEL AND QUARRY AGGREGATE RESOURCES MAP

DEPARTMENT OF NATURAL RESOURCES
COLORADO GEOLOGICAL SURVEY
JOHN W. HOLD, DIRECTOR

LAFAYETTE QUADRANGLE
COLORADO
7.5 MINUTE SERIES (TOPOGRAPHIC)



LAFAYETTE, COLO

EXPLANATION

LANDFORM UNITS

- F Floodplain deposit
- T Stream terrace deposit
- V Valley fill (F & T)
- U Upland deposits
- A Alluvial fan
- E Wind-deposited sand (eolian)
- M Man-made deposits (slag, tailings, spoils, ...)

RESOURCE CLASSIFICATION

Coarse aggregate

- 1 Gravel: relatively clean and sound
- 2 Gravel: significant fines, decomposed rock, calcium carbonate

Fine aggregate

- 3 Sand

Undetailed Resource

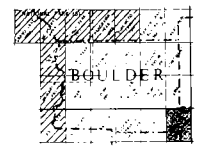
- 4 Probable aggregate resource

MAP SYMBOLS

- Operating gravel and/or sand pit
- Abandoned gravel and/or sand pit
- Operating stone quarry
- Abandoned stone quarry
- Potential quality aggregate resource area
- Selected well or drill-hole location with overburden thickness (ft) over sand/gravel resource thickness (ft), obtained from well logs
- "3" indicates gravel, "4" indicates sand
- "x" in symbol denotes abandonment or unknown property
- wc denotes Colorado Geological Survey stratigraphic and gravel projects drill hole
- Landform boundary, solid where known or observed, dashed where approximate or inferred

STATION, LOCATION AND GEOLOGICAL DESCRIPTION OF DEPOSIT

"A" in symbol denotes known/mined or unknown property
"B" in symbol denotes property absent or insignificant



QUADRANGLE LOCATION

NON-RESOURCE OR WITHDRAWN AREA

REFERENCE:

Chase, C.H., and McConaghy, J.A., 1972, Generalized surficial geologic map of the Denver area, Colorado: U. S. Geol. Survey Misc. Geol. Inv. Map I-731.

Machette, M. N. 1974, personal communication

Geology modified after:

Trimble, D.E., and Pitch, H.R., Map showing potential sources of gravel and crushed-rock aggregate in the Greater Denver Area, Front Range Urban Corridor, Colo.: U. S. Geol. Survey Misc. Geol. Inv. Map I-856-A.

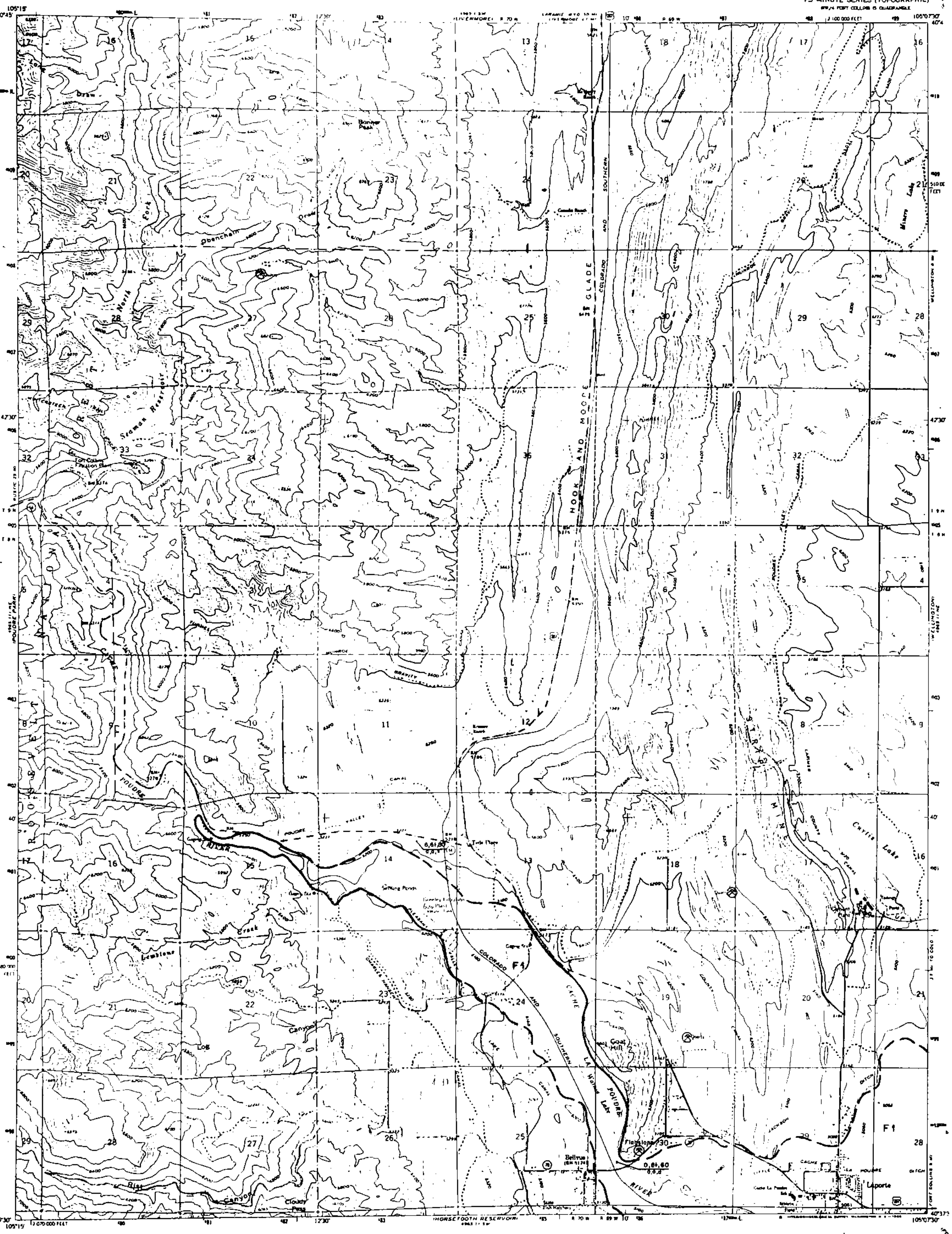
Mapped by: Ralph R. Shroba
Date: June 30, 1974

Prepared in cooperation with the U. S. Geological Survey.

DEPARTMENT OF NATURAL RESOURCES
COLORADO GEOLOGICAL SURVEY
JOHN W. ROLD, DIRECTOR

SAND, GRAVEL AND QUARRY AGGREGATE RESOURCES MAP

LAPORTE QUADRANGLE
COLORADO-LARIMER CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)



Base from U. S. Geological Survey
7-1/2 minute quadrangle

CONTOUR INTERVAL 40 FEET
DOTTED LINES REPRESENT 20 FOOT CONTOURS
DATUM IS MEAN SEA LEVEL

ROAD CLASSIFICATION
Heavy-duty — Light-duty
Medium-duty — Unimproved dirt
U.S. Route — State Route

LAPORTE, COLO.

EXPLANATION

Landform unit
Resource classification

LANDFORM UNITS

- F Floodplain deposit
- T Stream terrace deposit
- V Valley fill (F & T)
- U Upland deposits
- A Alluvial fan
- E Wind-deposited sand (eolian)
- M Man-made deposits (slag, tailings, spoils....)

RESOURCE CLASSIFICATION

Coarse Aggregate
(at least 50% retained on #4 screen, visual estimation)

1. Gravel: relatively clean and sound
2. Gravel: significant fines, decomposed rock, calcium carbonate.

Fine Aggregate
(greater than 50% passing #4 screen, 60% retained on #200 screen, visual estimation)

3. Sand

Unevaluated Resource

4. Probable aggregate resource

MAP SYMBOLS

- Operating gravel and/or sand pit
- Abandoned gravel and/or sand pit
- Operating stone quarry
- Abandoned stone quarry
- Potential quarry aggregate resource area
- Selected well or drill-hole location with overburden thickness (ft) over sand/gravel resource thickness (ft), obtained from well logs.
  "g" indicates gravel; "s" indicates sand
  "x" in symbol denotes unevaluated or unknown property.
  "wo" denotes Colorado Geological Survey Windsor/Sand and Gravel projects' drill hole
- Landform boundary, solid where known or observed; dashed where approximate or inferred.

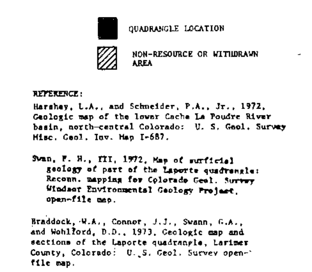
STATION, LOCATION AND GEOLOGICAL DESCRIPTION OF DEPOSIT

2, 17, 60

- overburden thickness (ft)
- sand/gravel resource thickness (ft)
- percent sand and fines (passing #4 screen, 0.55 in.), visual estimation
- significant amount of fines (passing #200 screen, 0.0029 in. or 0.074 mm.)
- significant amount of decomposed or weak rock.
- significant amount of calcium carbonate (caliche)

"x" in symbol denotes unevaluated or unknown property

"o" in symbol denotes property absent or insignificant



QUADRANGLE LOCATION

NON-RESOURCE OR WITHDRAWN AREA

REFERENCE:

Hershey, L.A., and Schneider, P.A., Jr., 1972, Geologic map of the lower Cache La Poudre River basin, north-central Colorado: U. S. Geol. Survey Misc. Geol. Inv. Map I-687.

Swan, F. H., III, 1972, Map of surficial geology of part of the Laporte quadrangle: Reconn. mapping for Colorado Geol. Survey Windsor Environmental Geology Project, open-file map.

Braddock, W.A., Connor, J.J., Swann, G.A., and Wohlford, D.D., 1973, Geologic map and sections of the Laporte quadrangle, Larimer County, Colorado: U. S. Geol. Survey open-file map.

Mapped by: Stephen D. Schwochow
Date: June 30, 1974

SAND, GRAVEL AND QUARRY AGGREGATE RESOURCES MAP

DEPARTMENT OF NATURAL RESOURCES
COLORADO GEOLOGICAL SURVEY
JOHN W. ROLD, DIRECTOR

LARKSPUR QUADRANGLE
COLORADO
7.5 MINUTE SERIES (TOPOGRAPHIC)

EXPLANATION

Landform unit
Resource classification

LANDFORM UNITS

- F Floodplain deposit
- T Stream terrace deposit
- V Valley fill (F & T)
- U Upland deposits
- A Alluvial fan
- E Wind-deposited sand (eolian)
- M Man-made deposits (slag,tailings, spoils....)

RESOURCE CLASSIFICATION

Coarse fraction
(at least 50% retained on #4 screen, visual estimation)

1 Gravel: relatively clean and sound
2 Gravel: significant fines, decomposed rock, calcium carbonate.

Fine fraction
(greater than 50% passing #4 screen, 80% retained on #100 screen, visual estimate

3 Sand

Reevaluated Resource

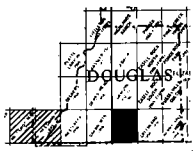
4 Probable aggregate resource

MAP SYMBOLS

- Operating gravel and/or sand pit
- Abandoned gravel and/or sand pit
- Operating stone quarry
- Abandoned stone quarry
- Potential quarry aggregate resource area
- Selected well or drill-hole location with overburden thickness (ft) over sand/gravel resource thickness (ft), obtained from well logs. "g" indicates gravel; "s" indicates sand
- "-" in symbol denotes unevaluated or unknown property.
- "ms" denotes Colorado Geological Survey Windsor/Sand and Gravel projects' drill hole
- Landform boundary, solid where known or observed; dashed where approximate or inferred.

STATION, LOCATION AND GEOLOGICAL DESCRIPTION OF DEPOSIT

- overburden thickness (ft)
- sand/gravel resource thickness (ft)
- percent sand and fines (passing #4 screen, 0-12 in.), visual estimation
- significant amount of fines (passing #200 screen, 0.0058 in. or 0.074 mm.)
- significant amount of decomposed or weak rock
- significant amount of calcium carbonate (caliche)
- "s" in symbol denotes unevaluated or unknown property
- "s" in symbol denotes property absent or insignificant



QUADRANGLE LOCATION

NON-RESOURCE OR WITHDRAWN AREA

Geology Modified after:
Harms, J.C., 1951, Structural geology of the eastern flank of the southern Front Range, Colorado: University of Colorado Ph.D. Thesis, 121 p., 3 pls.

Trimble, D.E., and Fitch, H.R., 1974, Map showing potential sources of gravel and crushed-rock aggregate in the Colorado Springs-Castle Rock Area, Front Range Urban Corridor, Colorado: U. S. Geol. Survey Map I-857 A.

REFERENCE: Trimble, Donald, 1974, U.S.G.S. Personal Communication

Lee, W.T., 1902, Areal geology of the Castle Rock region: Am. Geologist, v. 29, p. 96-109, Pl. 4, 1:250,000.

Mapped by: Phillip C. Wicklein
Date: June 30, 1974

Prepared in cooperation with the U. S. Geological Survey.

Base from U. S. Geological Survey
7-1/2 minute quadrangle

CONTOUR INTERVAL 40 FEET
DATUM IS MEAN SEA LEVEL

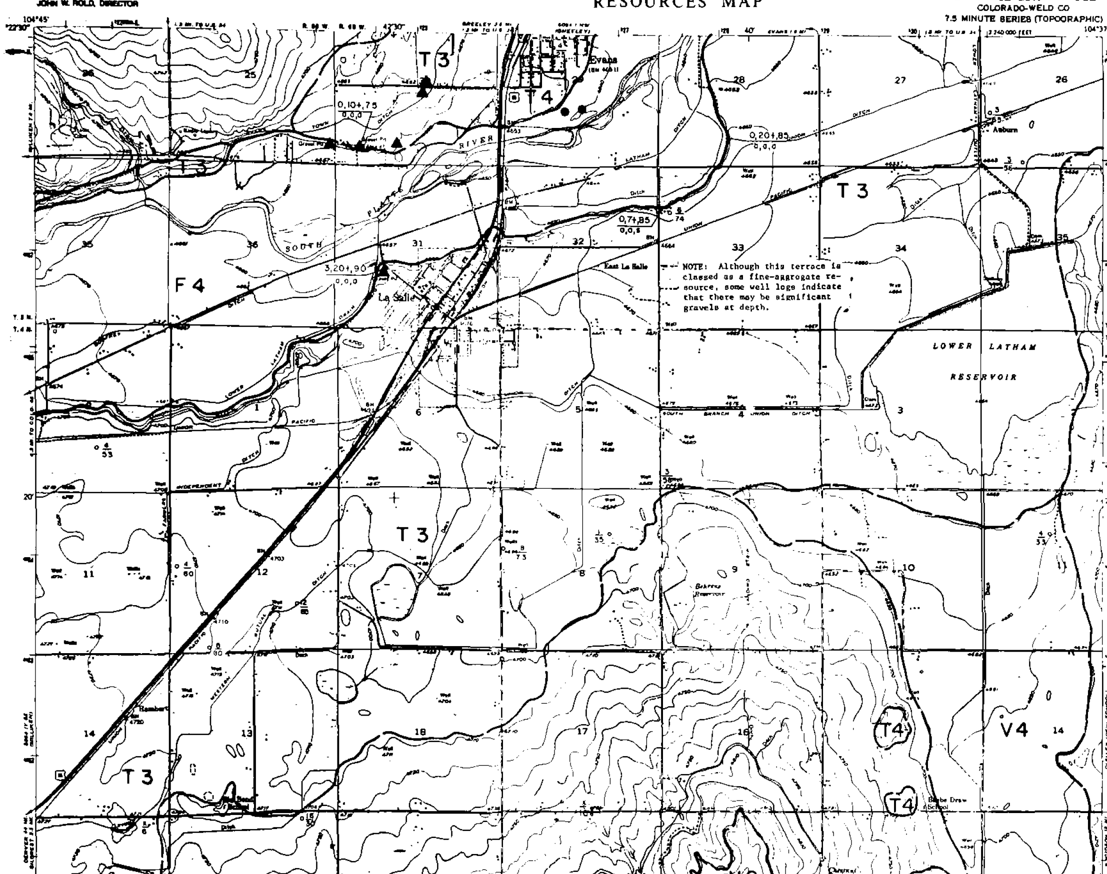
ROAD CLASSIFICATION
Heavy-duty — Light-duty
Medium-duty — Unimproved dirt
Interstate Route · U.S. Route · State Route

LARKSPUR, COLO.

SAND, GRAVEL AND QUARRY AGGREGATE RESOURCES MAP

DEPARTMENT OF NATURAL RESOURCES
COLORADO GEOLOGICAL SURVEY
JOHN W. ROLD, DIRECTOR

LA SALLE QUADRANGLE
COLORADO-WELD CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)



Base from U. S. Geological Survey 7-1/2 minute quadrangle

CONTOUR INTERVAL 10 FEET
DATUM IS MEAN SEA LEVEL

ROAD CLASSIFICATION

EXPLANATION

Landform unit / Resource classification

LANDFORM UNITS

- F Floodplain deposit
- T Stream terrace deposit
- V Valley fill (F & T)
- U Upland deposits
- A Alluvial fan
- E Wind-deposited sand (eolian)
- M Man-made deposits (slag, tailings, spoils....)

RESOURCE CLASSIFICATION

Coarse Aggregate
(at least 50% retained on #4 screen, visual estimation)

1 Gravel: relatively clean and sound
2 Gravel: significant fines, decomposed rock, calcium carbonate.

Fine Aggregate
(greater than 50% passing #4 screen, 50% retained on #200 screen, visual estimation)

3 Sand

Unevaluated Resource

4 Probable aggregate resource

MAP SYMBOLS

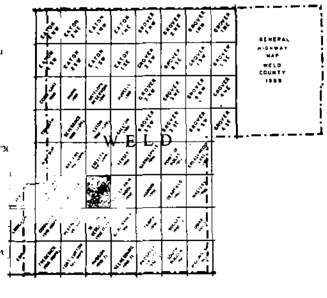
- Operating gravel and/or sand pit
- Abandoned gravel and/or sand pit
- Operating stone quarry
- Abandoned stone quarry
- Potential quarry aggregate resource area
- Selected well or drill-hole location with overburden thickness (ft) over sand/gravel resource thickness (ft), obtained from well logs. "g" indicates gravel, "s" indicates sand. "x" in symbol denotes unevaluated or unknown property.
- "WG" denotes Colorado Geological Survey Windsor/Sand and Gravel projects' drill hole
- Landform boundary, solid where known or observed; dashed where approximate or inferred.

STATION, LOCATION AND GEOLOGICAL DESCRIPTION OF DEPOSIT

- overburden thickness (ft)
- sand gravel resource thickness (ft)
- percent sand and fines (passing #4 screen, 0.18 in.), visual estimation
- significant amount of fines (passing #200 screen, 0.0029 in. or 0.074 mm.)
- significant amount of decomposed or weak rock.
- significant amount of calcium carbonate (caliche)

"x" in symbol denotes unevaluated or unknown property

"o" in symbol denotes property absent or insignificant



QUADRANGLE LOCATION

NON-RESOURCE OR WITHDRAWN AREA

REFERENCE:

Smith, R.O., Schneider, P.A., Jr., and Petri, L.R., 1964, Ground-water resources of the South Platte River basin in western Adams and southwestern Weld Counties, Colorado: U. S. Geol. Survey Water-Supply Paper 1658, pl. 1.

Geology modified after:

Colton, R.B., and Fitch, H.R., 1974, Map showing potential sources of gravel and crushed-rock aggregate in the Boulder-Fort Collins-Greeley Area, Front Range Urban Corridor, Colo.: U. S. Geol. Survey Misc. Geol. Inv. Map I-855-D.

Mapped by: Stephen D. Schwochow
Date: June 30, 1974

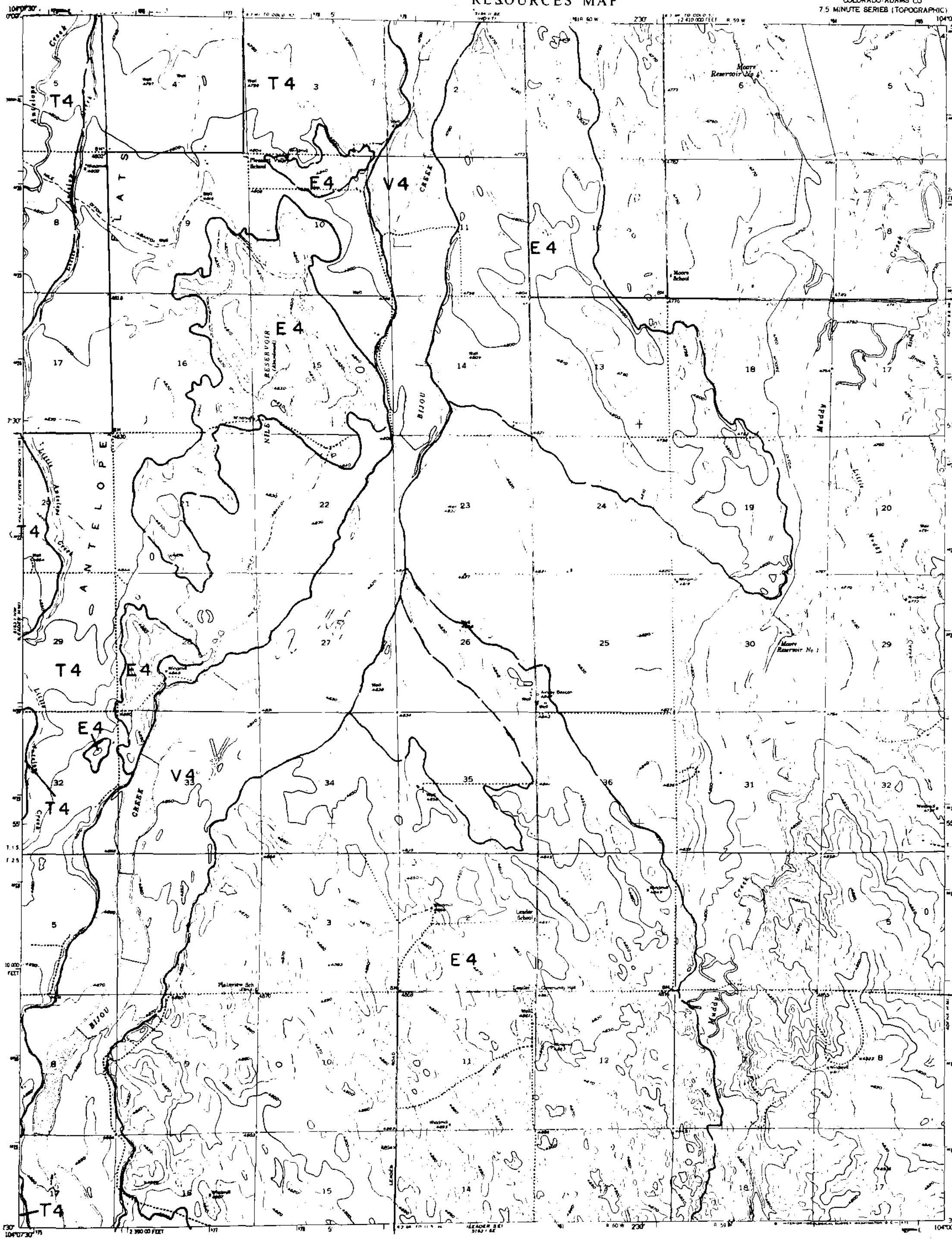
Prepared in cooperation with the U. S. Geological Survey.

LA SALLE, COLO.

DEPARTMENT OF NATURAL RESOURCES
COLORADO GEOLOGICAL SURVEY
JOHN W. ROLD, DIRECTOR

SAND, GRAVEL AND QUARRY AGGREGATE RESOURCES MAP

LEADER QUADRANGLE
COLORADO-ADAMS CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)



Base from U. S. Geological Survey
7-1/2 minute quadrangle

CONTOUR INTERVAL 10 FEET
DATUM IS MEAN SEA LEVEL

ROAD CLASSIFICATION
Heavy-duty — Light-duty
Medium-duty — Unimproved dirt
U. S. Route — State Route

LEADER, COLO.

EXPLANATION

F — Landform unit
F — Resource classification

LANDFORM UNITS

- F Floodplain deposit
- T Stream terrace deposit
- V Valley fill (F & T)
- U Upland deposits
- A Alluvial fan
- E Wind-deposited sand (eolian)
- M Man-made deposits (slag, tailings, spoils....)

RESOURCE CLASSIFICATION

Coarse Aggregate
(at least 30% retained on #4 screen, visual estimation)

- 1 Gravel: relatively clean and sound
- 2 Gravel: significant fines, decomposed rock, calcium carbonate.

Fine Aggregate
(greater than 70% passing #4 screen, 60% retained on #200 screen, visual estimation)

- 3 Sand

Unevaluated Resource

- 4 Probable aggregate resource

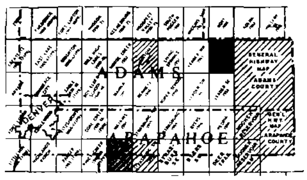
MAP SYMBOLS

- Operating gravel and/or sand pit
- Abandoned gravel and/or sand pit
- Operating stone quarry
- Abandoned stone quarry
- Potential quarry aggregate resource area
- Selected well or drill-hole location with overburden thickness (ft) over sand/gravel resource thickness (ft), obtained from well logs.
  "g" indicates gravel; "s" indicates sand
  "x" in symbol denotes unevaluated or unknown property.
  "ws" denotes Colorado Geological Survey Windsor/Sand and Gravel projects' drill hole
- Landform boundary, solid where known or observed; dashed where approximate or inferred.

STATION, LOCATION AND GEOLOGICAL DESCRIPTION OF DEPOSIT

- overburden thickness (ft)
- sand/gravel resource thickness (ft)
- percent sand and fines (passing #4 screen, 0.25 in.), visual estimation
- significant amount of fines (passing #200 screen, 0.0029 in. or 0.074 mm.)
- significant amount of decomposed or weak rock
- significant amount of calcium carbonate (caliche)

"x" in symbol denotes unevaluated or unknown property
"o" in symbol denotes property absent or insignificant



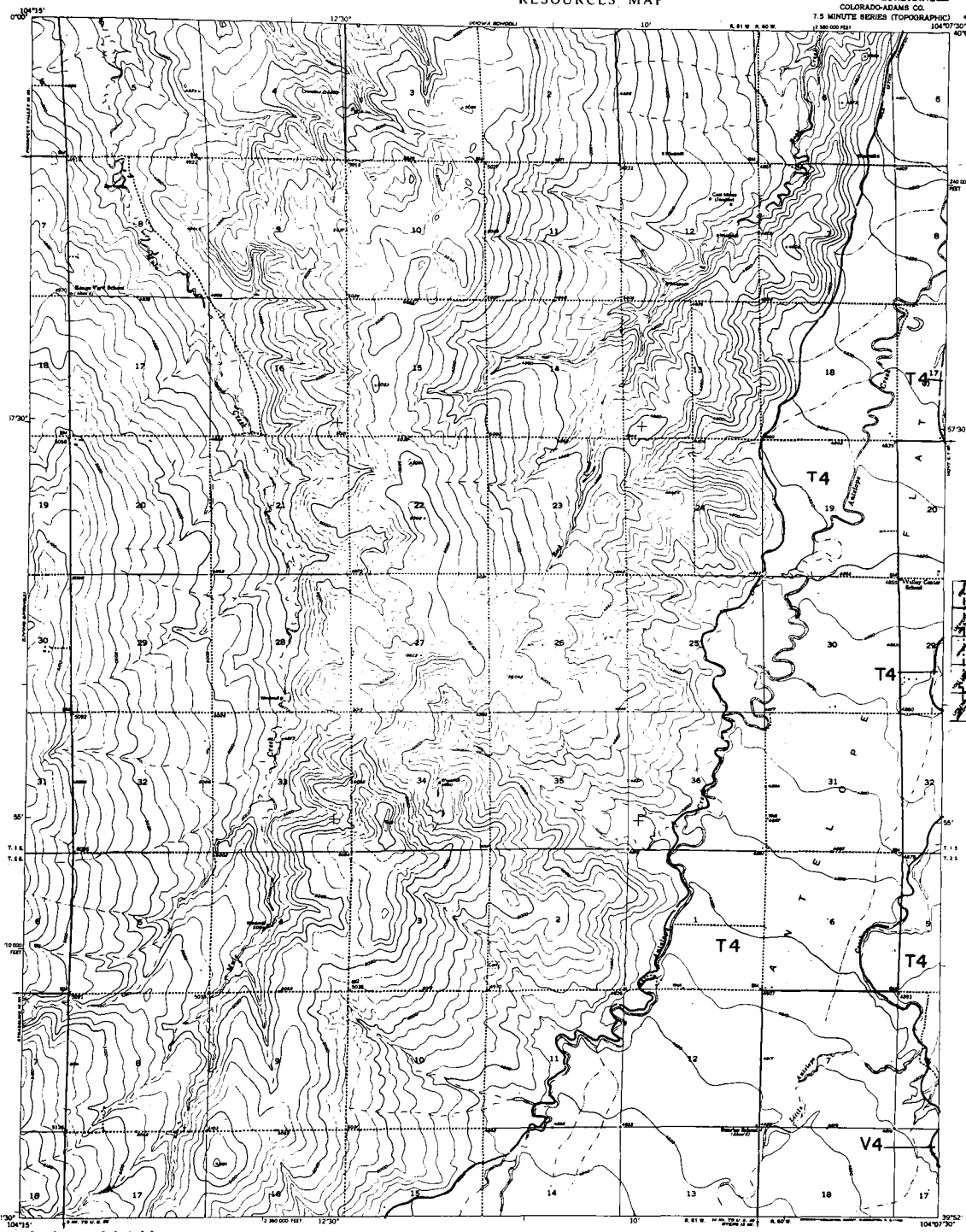
QUADRANGLE LOCATION
NON-RESOURCE OR WITHDRAWN AREA

Mapped by: Phillip C. Wicklein
Date: June 30, 1974

DEPARTMENT OF NATURAL RESOURCES
COLORADO GEOLOGICAL SURVEY
JOHN W. ROLD, DIRECTOR

SAND, GRAVEL AND QUARRY AGGREGATE RESOURCES MAP

LEADER NW QUADRANGLE
COLORADO-ADAMS CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)



EXPLANATION

Landform unit
Resource classification

LANDFORM UNITS

- F Floodplain deposit
- T Stream terrace deposit
- V Valley fill (F & T)
- U Upland deposits
- A Alluvial fan -
- E Wind-deposited sand (eolian)
- M Man-made deposits (slag,tailings, spoils,...)

RESOURCE CLASSIFICATION

Coarse Aggregate
(at least 30% retained on #4 screen, visual estimation)

- 1 Gravel: relatively clean and sound
- 2 Gravel: significant fines, decomposed rock, calcium carbonate.

Fine Aggregate
(greater than 70% passing #4 screen, 60% retained on #200 screen, visual estimation)

- 3 Sand

Unevaluated Resource

- 4 Probable aggregate resource

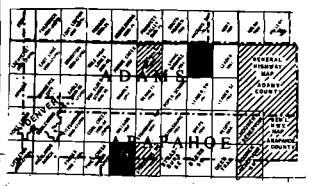
MAP SYMBOLS

- Operating gravel and/or sand pit
- Abandoned gravel and/or sand pit
- Operating stone quarry
- Abandoned stone quarry
- Potential quarry aggregate resource area
- Selected well or drill-hole location with overburden thickness (ft) over sand/gravel resource thickness (ft), obtained from well logs. "-" indicates gravel; "s" indicates sand "-" is symbol denotes unevaluated or unknown property. "ms" denotes Colorado Geological Survey Windsor/Sand and Gravel project drill hole
- Landform boundary, solid where known or observed; dashed where approximate or inferred.

STATION, LOCATION AND GEOLOGICAL DESCRIPTION OF DEPOSIT

- overburden thickness (ft)
- sand/gravel resource thickness (ft)
- percent sand and fines (passing #4 screen, 0.25 in.), visual estimation
- significant amount of fines (passing #200 screen, 0.0058 in. or 0.074 mm.)
- significant amount of decomposed or weak rock.
- significant amount of calcium carbonate (caliche)

"m" in symbol denotes unevaluated or unknown property
"n" in symbol denotes property absent or insignificant



QUADRANGLE LOCATION

NON-RESOURCE OR WITHDRAWN AREA

Mapped by: Phillip C. Wicklein
Date: June 30, 1974

Base from U. S. Geological Survey
7-1/2 minute quadrangle

CONTOUR INTERVAL 10 FEET
DATUM IS MEAN SEA LEVEL

ROAD CLASSIFICATION
Heavy-duty — Light-duty
Medium-duty — Unimproved dirt
U.S. Route — State Route

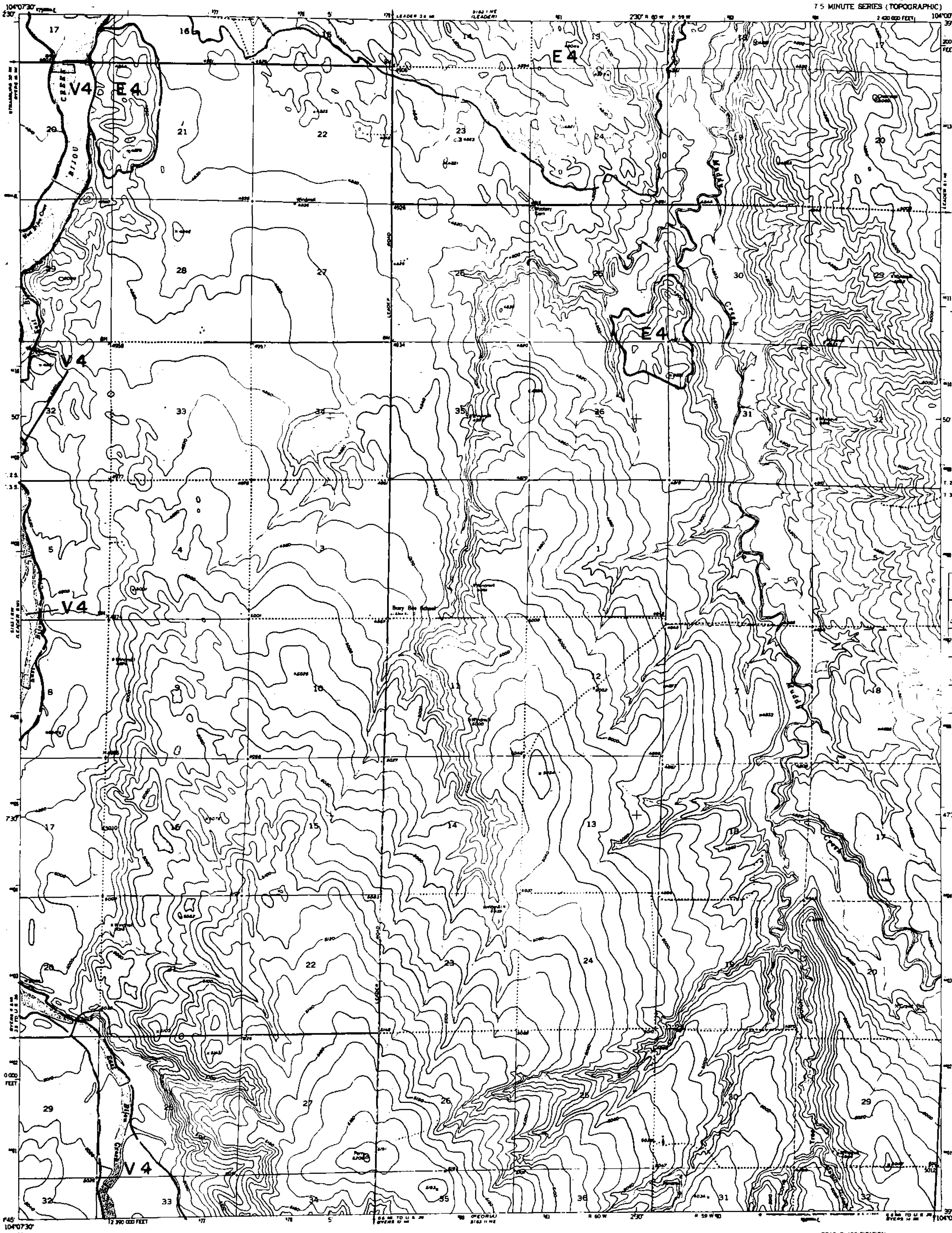
APPROXIMATE MEAN DECLINATION, 1951

LEADER NW, COLO.

DEPARTMENT OF NATURAL RESOURCES
COLORADO GEOLOGICAL SURVEY
JOHN W. ROLD, DIRECTOR

SAND, GRAVEL AND QUARRY AGGREGATE RESOURCES MAP

LEADER SE QUADRANGLE
COLORADO-ADAMS CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)



Base from U. S. Geological Survey 7-1/2 minute quadrangle

EXPLANATION

F — Landform unit; Resource classification

LANDFORM UNITS

- F Floodplain deposit
- T Stream terrace deposit
- V Valley fill (F & T)
- U Upland deposits
- A Alluvial fan
- E Wind-deposited sand (eolian)
- M Man-made deposits (slag, tailings, spoils....)

RESOURCE CLASSIFICATION

Coarse Aggregate
(at least 30% retained on #4 screen, visual estimation)

- 1 Gravel: relatively clean and sound
- 2 Gravel: significant fines, decomposed rock, calcium carbonate.

Fine Aggregate
(greater than 70% passing #4 screen, 80% retained on #200 screen, visual estimation)

- 3 Sand

Unevaluated Resource

- 4 Probable aggregate resource

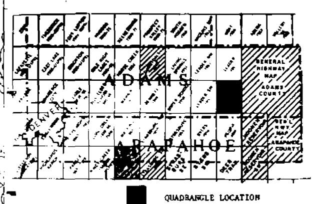
MAP SYMBOLS

- Operating gravel and/or sand pit
- Abandoned gravel and/or sand pit
- Operating stone quarry
- Abandoned stone quarry
- Potential quarry aggregate resource area
- Selected well or drill-hole location with overburden thickness (ft) over sand/gravel resource thickness (ft), obtained from well logs.
  "g" indicates gravel; "s" indicates sand
  "x" in symbol denotes unevaluated or unknown property.
  "wg" denotes Colorado Geological Survey Windsor/Sand and Gravel projects' drill hole
- Landform boundary, solid where known or observed; dashed where approximate or inferred.

STATION, LOCATION AND GEOLOGICAL DESCRIPTION OF DEPOSIT

5, 17, 60
- overburden thickness (ft)
- sand/gravel resource thickness (ft)
- percent sand and fines (passing #4 screen, 0.18 in.), visual estimation
- significant amount of fines (passing #200 screen, 0.0029 in. or 0.074 mm.)
- significant amount of decomposed or weak rock.
- significant amount of calcium carbonate (caliche)

"x" in symbol denotes unevaluated or unknown property
"a" in symbol denotes property absent or insignificant



QUADRANGLE LOCATION

NON-RESOURCE OR WITHDRAWN AREA

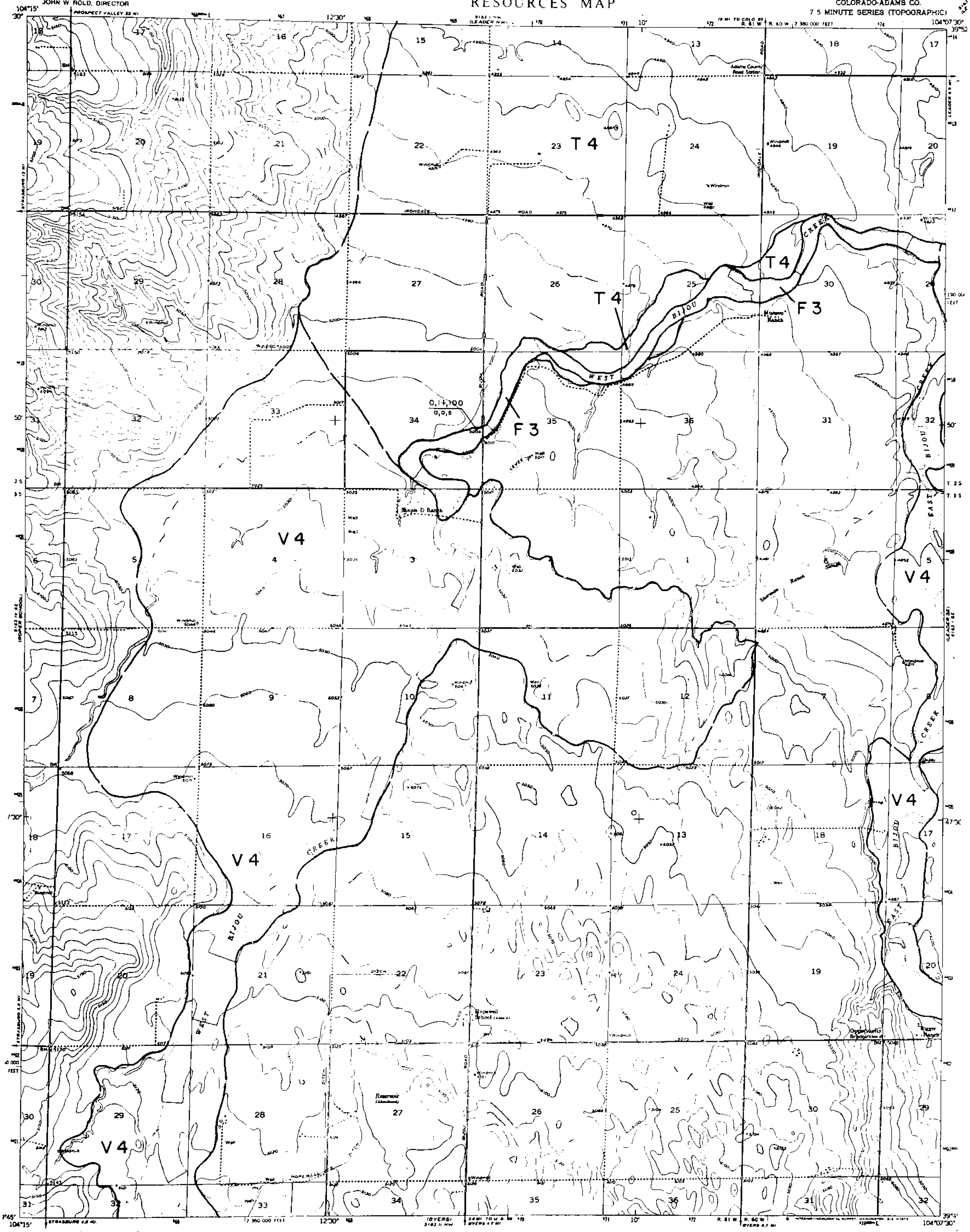
REFERENCE:
Shadul, S.A., 1971, The Bijou Creek Damsites and Reservoirs of Adams and Arapahoe Counties, Colorado; Colorado School of Mines: ER-1327.

Mapped by: Phillip C. Wicklein
Date: June 30, 1974

SAND, GRAVEL AND QUARRY AGGREGATE RESOURCES MAP

DEPARTMENT OF NATURAL RESOURCES
COLORADO GEOLOGICAL SURVEY
JOHN W ROLD, DIRECTOR

LEADER SW QUADRANGLE
COLORADO-ADAMS CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)



Base from U. S. Geological Survey
7-1/2 minute quadrangle

CONTOUR INTERVAL 10 FEET
DATUM IS MEAN SEA LEVEL

ROAD CLASSIFICATION
Heavy-duty — Light-duty
Medium-duty — Unimproved dirt
U. S. Route — State Route

LEADER SW, COLO.
N3945-W10407.5/7.5
1952

Mapped by: Phillip C. Wicklein
Date: June 30, 1974

EXPLANATION

F — Landform unit; Resource classification

LANDFORM UNITS

- F — Floodplain deposit
- T — Stream terrace deposit
- V — Valley fill (F & T)
- U — Upland deposits
- A — Alluvial fan
- E — Wind-deposited sand (eolian)
- M — Man-made deposits (slag, tailings, spoils....)

RESOURCE CLASSIFICATION

Coarse Aggregate
(at least 50% retained on #4 screen, visual estimation)

- 1 — Gravel: relatively clean and sound
- 2 — Gravel: significant fines, decomposed rock, calcium carbonate.

Fine Aggregate
(greater than 50% passing #4 screen, 60% retained on #200 screen, visual estimation)

- 3 — Sand

Unevaluated Resource

- 4 — Probable aggregate resource

MAP SYMBOLS

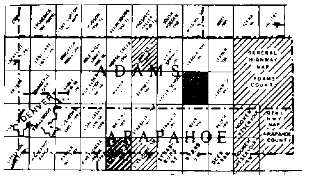
- Operating gravel and/or sand pit
- Abandoned gravel and/or sand pit
- Operating stone quarry
- Abandoned stone quarry
- Potential quarry aggregate resource area
- Selected well or drill-hole location with overburden thickness (ft) over sand/gravel resource thickness (ft), obtained from well logs.
  "g" indicates gravel; "s" indicates sand
  "?" in symbol denotes unevaluated or unknown property.
  "WS" denotes Colorado Geological Survey Windsor/Sand and Gravel projects' drill hole
- Landform boundary, solid where known or observed; dashed where approximate or inferred.

STATION, LOCATION AND GEOLOGICAL DESCRIPTION OF DEPOSIT

- overburden thickness (ft)
- sand/gravel resource thickness (ft)
- percent sand and fines (passing #4 screen, 0.25 in.), visual estimation
- significant amount of fines (passing #200 screen, 0.0058 in. or 0.074 mm.)
- significant amount of decomposed or weak rock.
- significant amount of calcium carbonate (caliche)

"?" in symbol denotes unevaluated or unknown property

"0" in symbol denotes property absent or insignificant



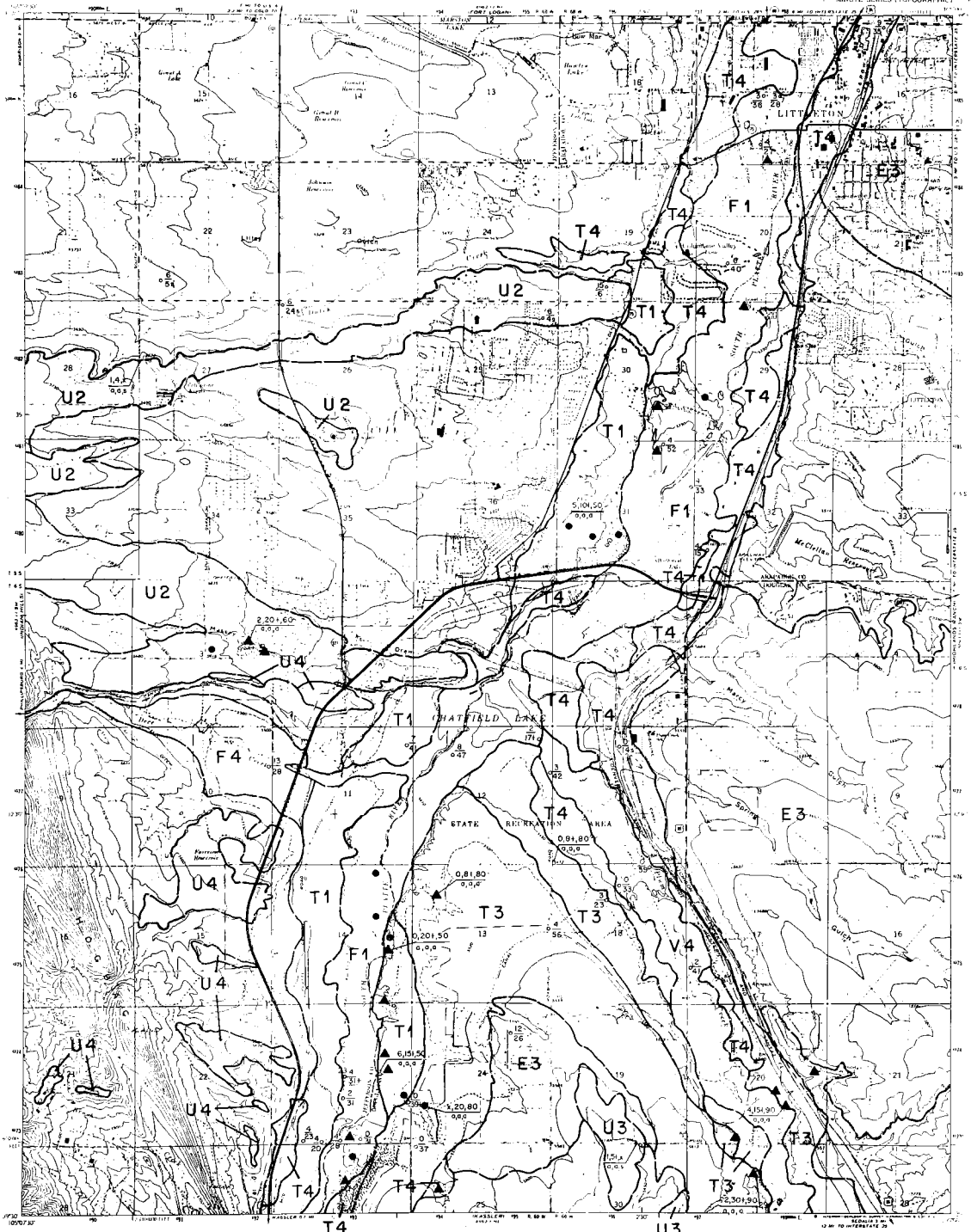
QUADRANGLE LOCATION

NON-RESOURCE OR WITHDRAWN AREA

SAND, GRAVEL AND QUARRY AGGREGATE RESOURCES MAP

DEPARTMENT OF NATURAL RESOURCES
COLORADO GEOLOGICAL SURVEY
JOHN W. ROLD, DIRECTOR

LITTLETON QUADRANGLE
COLORADO
7½ MINUTE SERIES (TOPOGRAPHIC)



Base from U. S. Geological Survey
7-1/2 minute quadrangle

UTM GRID AND 1971 MAGNETIC NORTH DECLINATION AT CENTER OF SHEET

CONTOUR INTERVAL 10 FEET
(ADJUSTED TO MEAN SEA LEVEL)

ROAD CLASSIFICATION

Heavy duty — Light duty
Medium duty — Unimproved dirt
U.S. Route — State Route

LITTLETON COLO

EXPLANATION

LANDFORM UNITS

- F Floodplain deposit
- T Stream terrace deposit
- V Valley fill (F & T)
- U Upland deposits
- A Alluvial fan
- E Wind-deposited sand (eolian)
- M Man-made deposits (mine,tailings, spoils....)

RESOURCE CLASSIFICATION

Coarse Aggregate

- 1 Gravel: relatively clean and sound
- 2 Gravel: significant fines, decomposed rock, calcium carbonate.

Fine Aggregate

- 3 Sand

Unevaluated Resource

- 4 Probable aggregate resource

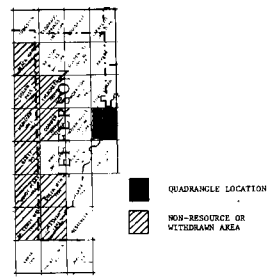
MAP SYMBOLS

- Operating gravel and/or sand pit
- Abandoned gravel and/or sand pit
- Operating stone quarry
- Abandoned stone quarry
- Potential quarry aggregate resource area
- Selected well or drill-hole location with overburden thickness (ft) over sand/gravel resource thickness (ft), obtained from well logs. "g" indicates gravel, "s" indicates sand "-" to symbol denotes unevaluated or unknown property. "ms" denotes Colorado Geological Survey Windsor/Sand and Gravel projects' drill hole
- Landform boundary, solid where known or observed; dashed where approximate or inferred.

STATION, LOCATION AND GEOLOGICAL DESCRIPTION OF DEPOSIT

overburden thickness (ft)
sand gravel resource thickness (ft)
percent sand and fines passing #200 screen, 0.0787 in. or 0.074 mm.)
significant amount of fines (passing #200 screen, 0.0787 in. or 0.074 mm.)
significant amount of decomposed or rock.
significant amount of calcium carbonate (caliche)

"x" in symbol denotes unevaluated or unknown property.
"n" in symbol denotes property absent or insignificant



Geology modified after:
Scott, G.R., 1963, Geology of the Littleton quadrangle, Jefferson, Douglas, and Arapahoe Counties, Colorado: U.S. Geol. Survey Bull. 1121-L, pl. 1.

References:

Inter-County Regional Planning Commission, 1961, Drainage course plan for the Denver region - Part 1, Sand and gravel resources: Denver, Colo., Inter-County Reg. Plan. Comm., pl. 1.

Hamilton, J.L., and Owens, W.C., 1972, Geologic aspects, soils and related foundation problems, Denver metropolitan area, Colorado: Colorado Geol. Survey Environmental Geology Rept. 1, pl. 1.

Chase, C.H., and McConaghy, J.A., 1972, Generalized surficial geologic map of the Denver area, Colorado: U.S. Geol. Survey Misc. Geol. Inv. Map I-731.

Trimble, D.E., and Fitch, H.R., 1974, Map showing potential sources of gravel and crushed-rock aggregate in the Greater Denver Area, Front Range Urban Corridor, Colo.: U.S. Geol. Survey Misc. Geol. Inv. Map I-856-A.

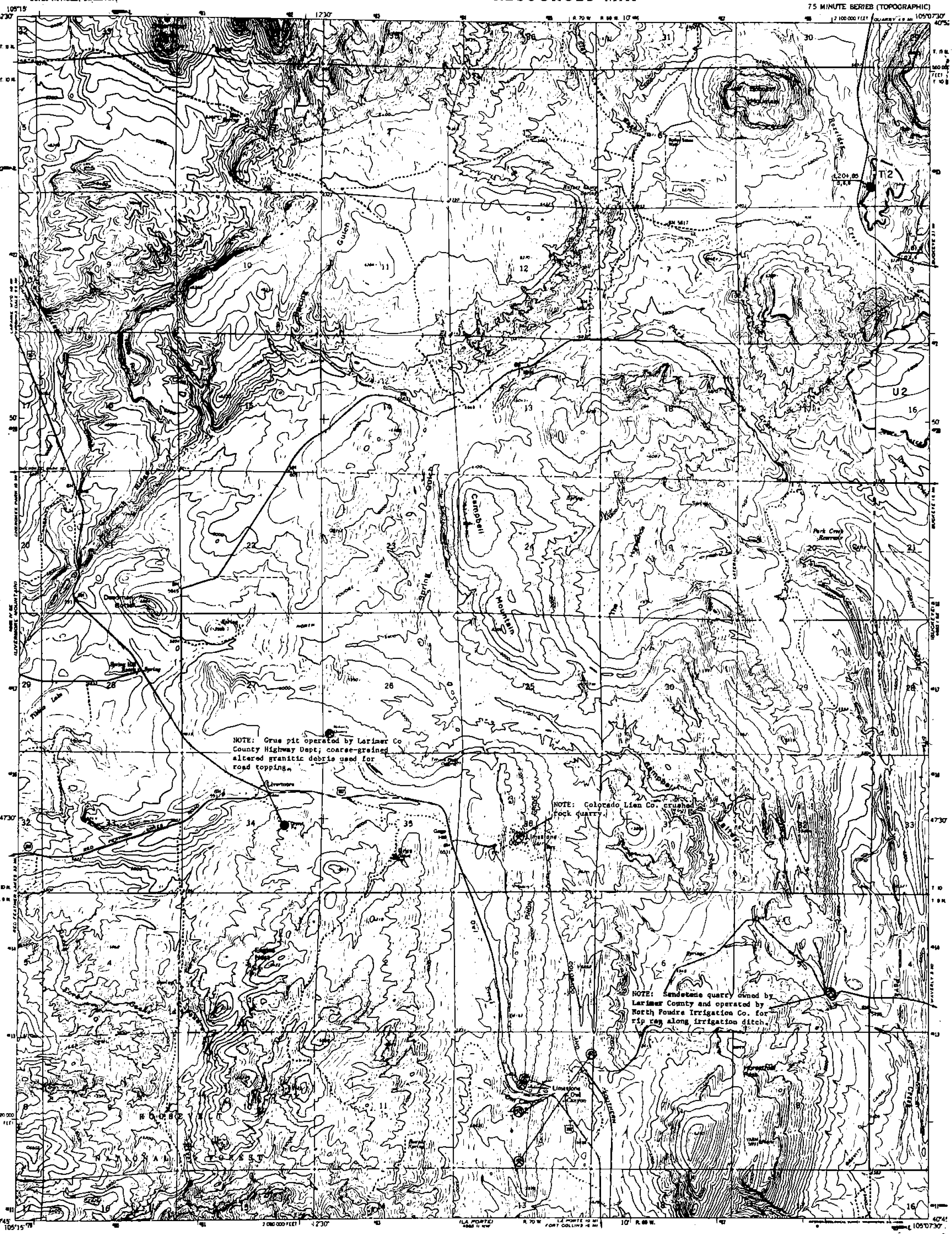
Mapped by: Stephen D. Schwochow
Date: June 30, 1974

Prepared in cooperation with the U. S. Geological Survey

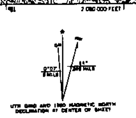
SAND, GRAVEL AND QUARRY AGGREGATE RESOURCES MAP

DEPARTMENT OF NATURAL RESOURCES
COLORADO GEOLOGICAL SURVEY
JOHN W. ROLD, DIRECTOR

LIVERMORE QUADRANGLE
COLORADO–LARIMER CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)



Base from U. S. Geological Survey 7-1/2 minute quadrangle



1 MILE
1000 0 1000 2000 3000 4000 5000 6000 7000 FEET
1 KILOMETER
CONTOUR INTERVAL 20 FEET
DATUM IS MEAN SEA LEVEL

ROAD CLASSIFICATION
Medium-duty ———— Light-duty ————
Unimproved dirt - - - - - - -
U.S. Route ○ State Route

LIVERMORE, COLO.

EXPLANATION

F — Landform unit
F — Resource classification

LANDFORM UNITS

- F Floodplain deposit
- T Stream terrace deposit
- V Valley fill (F & T)
- U Upland deposits
- A Alluvial fan
- E Wind-deposited sand (eolian)
- M Man-made deposits (slag, tailings, spoils....)

RESOURCE CLASSIFICATION

Coarse Aggregate
(at least 80% retained on #4 screen, visual estimation)

- 1 Gravel: relatively clean and sound
- 2 Gravel: significant fines, decomposed rock, calcium carbonate.

Fine Aggregate
(greater than 70% passing #4 screen, 60% retained on #200 screen, visual estimation)

- 3 Sand

Unevaluated Resource

- 4 Probable aggregate resource

MAP SYMBOLS

- Operating gravel and/or sand pit
- Abandoned gravel and/or sand pit
- Operating stone quarry
- Abandoned stone quarry
- Potential quarry aggregate resource area
- Selected well or drill-hole location with overburden thickness (ft) over sand/gravel resource thickness (ft), obtained from well logs.
  "g" indicates gravel; "s" indicates sand
  "x" in symbol denotes unevaluated or unknown property.
  "ws" denotes Colorado Geological Survey Windsor/Sand and Gravel projects' drill hole
- Landform boundary, solid where known or observed; dashed where approximate or inferred.

STATION, LOCATION AND GEOLOGICAL DESCRIPTION OF DEPOSIT

5, 17, 40

- overburden thickness (ft)
- sand/gravel resource thickness (ft)
- percent sand and fines (passing #4 screen, 0.23 in.), visual estimation
- significant amount of fines (passing #200 screen, 0.0059 in. or 0.074 mm.)
- significant amount of decomposed or weak rock.
- significant amount of calcium carbonate (caliche)

"x" in symbol denotes unevaluated or unknown property
"o" in symbol denotes property absent or insignificant

QUADRANGLE LOCATION

NON-RESOURCE OR WITHDRAWN AREA

REFERENCE:

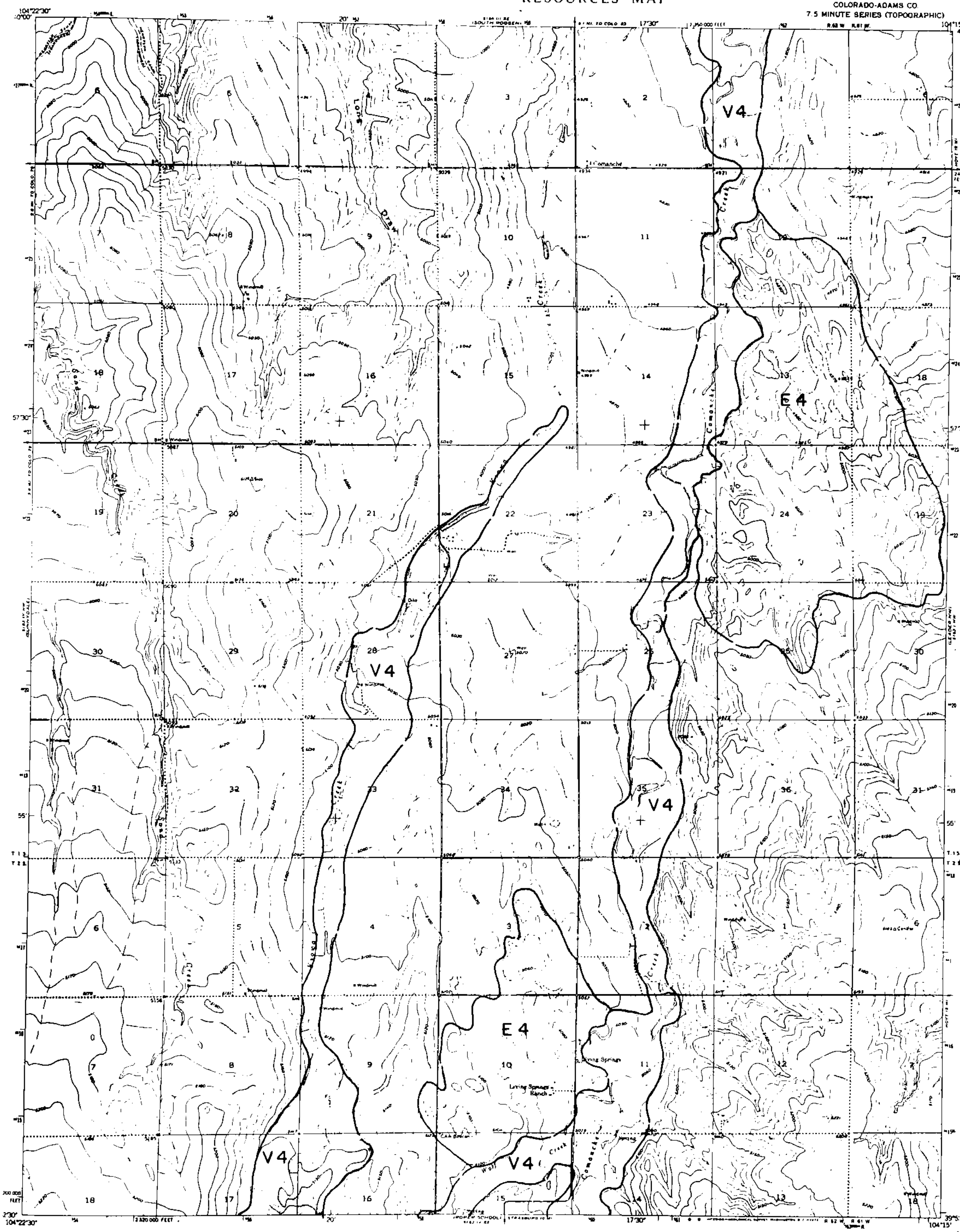
Hershey, L.A., and Schneider, P.A., Jr., 1972, Geologic map of the lower Cache La Poudre River basin, north-central Colorado: U. S. Geol. Survey Misc. Geol. Inv. Map I-687.

Mapped by: Stephen D. Schwochow
Date: June 30, 1974

DEPARTMENT OF NATURAL RESOURCES
COLORADO GEOLOGICAL SURVEY
JOHN W. ROLD, DIRECTOR

SAND, GRAVEL AND QUARRY AGGREGATE RESOURCES MAP

LIVING SPRINGS QUADRANGLE
COLORADO-ADAMS CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)



Base from U. S. Geological Survey
7-1/2 minute quadrangle

CONTOUR INTERVAL 10 FEET
DATUM IS MEAN SEA LEVEL

ROAD CLASSIFICATION
Heavy-duty — Light-duty
Medium-duty — Unimproved dirt
U. S. Route — State Route

LIVING SPRINGS, COLO.

EXPLANATION

F — Landform unit; Resource classification

LANDFORM UNITS

- F Floodplain deposit
- T Stream terrace deposit
- V Valley fill (F & T)
- U Upland deposits
- A Alluvial fan
- E Wind-deposited sand (eolian)
- M Man-made deposits (slag, tailings, spoils....)

RESOURCE CLASSIFICATION

Coarse Aggregate
(at least 30% retained on #4 screen, visual estimation)

- 1 Gravel relatively clean and sound
- 2 Gravel significant fines, decomposed rock, calcium carbonate.

Fine Aggregate
(greater than 70% passing #4 screen, 60% retained on #200 screen, visual estimation)

- 3 Sand

Unevaluated Resource

- 4 Probable aggregate resource

MAP SYMBOLS

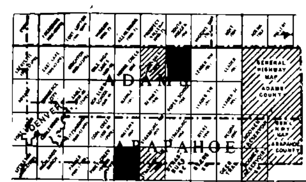
- Operating gravel and/or sand pit
- Abandoned gravel and/or sand pit
- Operating stone quarry
- Abandoned stone quarry
- Potential quarry aggregate resource area
- Selected well or drill-hole location with overburden thickness (ft) over sand/gravel resource thickness (ft), obtained from well logs. "g" indicates gravel, "s" indicates sand. "-" in symbol denotes unevaluated or unknown property. "CG" denotes Colorado Geological Survey Windsor/Sand and Gravel projects' drill hole
- Landform boundary, solid where known or observed; dashed where approximate or inferred.

STATION, LOCATION AND GEOLOGICAL DESCRIPTION OF DEPOSIT

- overburden thickness (ft)
- sand gravel resource thickness (ft)
- percent sand and fines (passing #4 screen, 0.19 in.), visual estimation
- significant amount of fines (passing #200 screen, 0.0029 in. or 0.074 mm)
- significant amount of decomposed or weak rock
- significant amount of calcium carbonate (caliche)

"x" in symbol denotes unevaluated or unknown property

"o" in symbol denotes property absent or insignificant



QUADRANGLE LOCATION

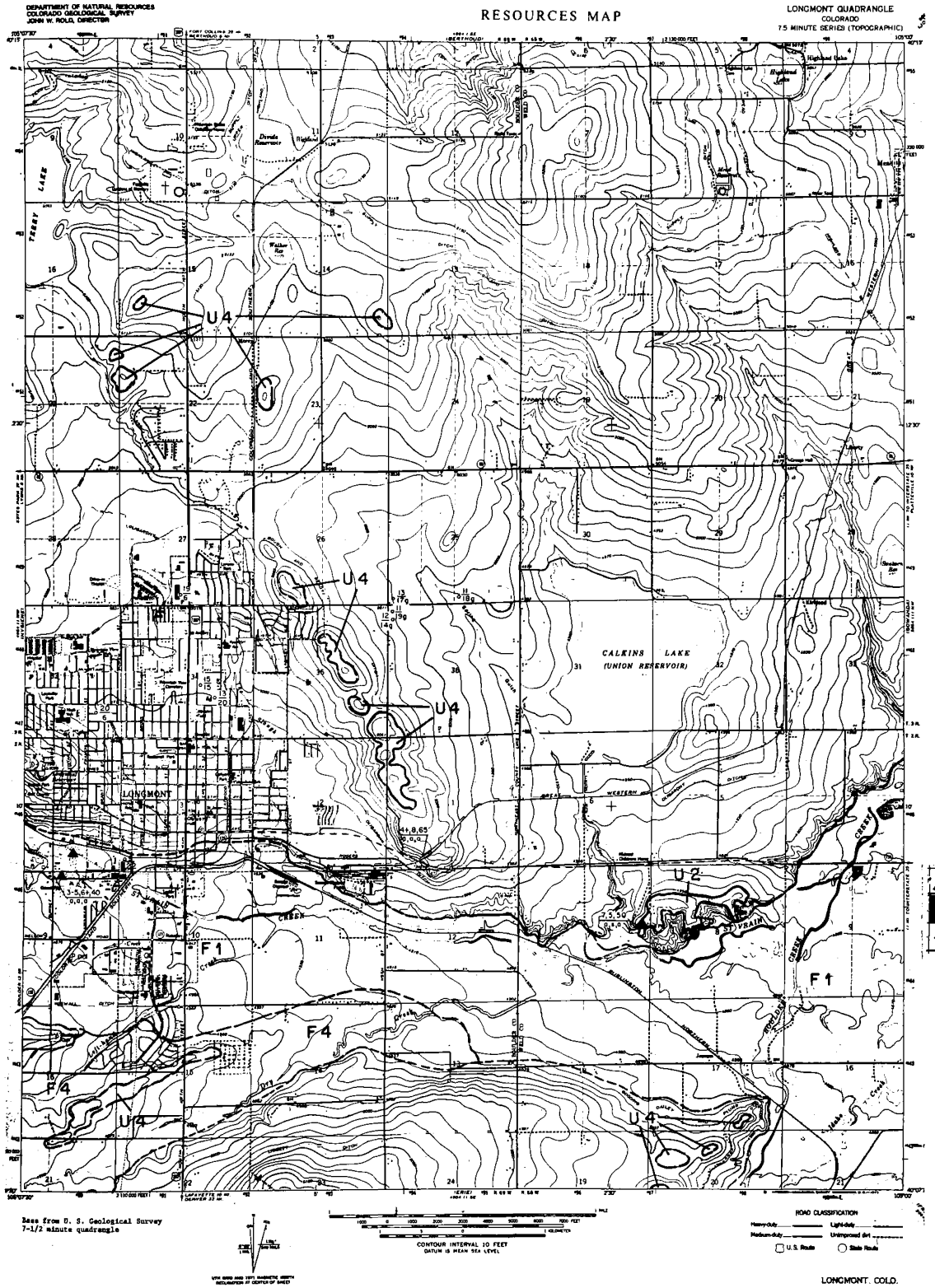
NON-RESOURCE OR WITHDRAWN AREA

Mapped by: Philip C. Wicklein
Date: June 30, 1974

SAND, GRAVEL AND QUARRY AGGREGATE RESOURCES MAP

DEPARTMENT OF NATURAL RESOURCES
COLORADO GEOLOGICAL SURVEY
JOHN W. ROLD, DIRECTOR

LONGMONT QUADRANGLE
COLORADO
7.5 MINUTE SERIES (TOPOGRAPHIC)



EXPLANATION

Landform unit
Resource classification

LANDFORM UNITS

- F Floodplain deposits
- T Stream terrace deposit
- V Valley fill (F & T)
- U Upland deposits
- A Alluvial fan
- E Wind-deposited sand (eolian)
- M Man-made deposits (slag,tailings, spoils....)

RESOURCE CLASSIFICATION

Coarse Aggregate
(at least 30% retained on #4 screen, visual estimation)

- 1 Gravel: relatively clean and sound
- 2 Gravel: significant fines, decomposed rock, calcium carbonate.

Fine Aggregate
(greater than 70% passing #4 screen, 62% retained on #200 screen, visual estimate

- 3 Sand

Undelineated Resource

- 4 Probable aggregate resource

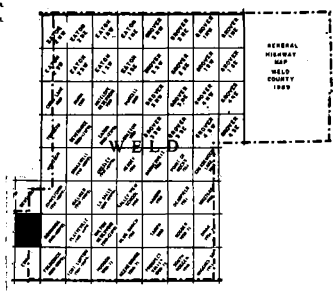
MAP SYMBOLS

- Operating gravel and/or sand pit
- Abandoned gravel and/or sand pit
- Operating stone quarry
- Abandoned stone quarry
- Potential quarry aggregate resource area
- Selected well or drill-hole location with overburden thickness (ft) over sand/gravel resource thickness (ft), entered from well logs. "g" indicates gravel; "s" indicates sand
- "-" in symbol denotes unevaluated or unknown property.
- "ws" denotes Colorado Geological Survey Windsor/Sand and Gravel projects' drill hole
- Landform boundary, solid where known or observed; dashed where approximate or inferred.

STATION, LOCATION AND GEOLOGICAL DESCRIPTION OF REPORT

- overburden thickness (ft)
- sand/gravel resource thickness (ft)
- percent sand and fines (passing #4 screen, 0.19 in.), visual estimation
- significant amount of fines (passing #200 screen, 0.0029 in. or 0.074 mm.)
- significant amount of decomposed or weak rock.
- significant amount of calcium carbonate (caliche)

"s" in symbol denotes unevaluated or unknown property
"x" in symbol denotes property shown on Longmont base



QUADRANGLE LOCATION

NON-RESOURCE OR WITHDRAWN AREA

Geology modified after: Colton, R.B., and Fitch, H.R., 1974, Map showing potential sources of gravel and crushed-rock aggregate in the Boulder-Fort Collins-Greeley Area, Front Range Urban Corridor, Colorado: U. S. Geol. Survey Map I-859-D.

Mapped by: Ralph E. Shroba
Date: June 30, 1974

Prepared in cooperation with the U. S. Geological Survey

Base from U. S. Geological Survey
7-1/2 minute quadrangle

CONTOUR INTERVAL 10 FEET
DATUM IS MEAN SEA LEVEL

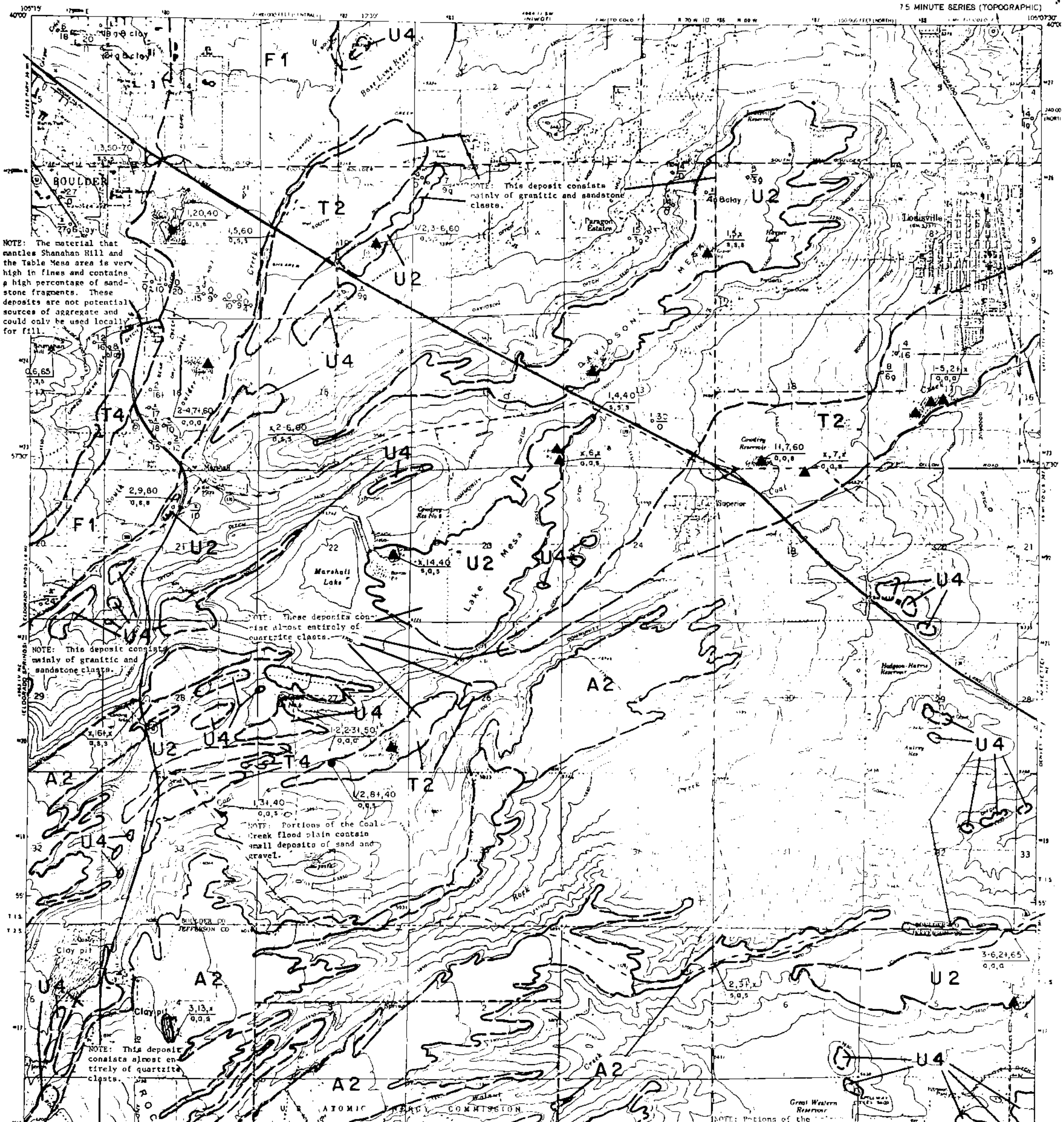
ROAD CLASSIFICATION
Heavy-duty — Light-duty —
Medium-duty — Unimproved dirt —
U.S. Route — State Route

LONGMONT, COLO.

DEPARTMENT OF NATURAL RESOURCES
COLORADO GEOLOGICAL SURVEY
JOHN W. ROLD, DIRECTOR

SAND, GRAVEL AND QUARRY AGGREGATE RESOURCES MAP

LOUISVILLE QUADRANGLE
COLORADO
7.5 MINUTE SERIES (TOPOGRAPHIC)



Base from U. S. Geological Survey
7-1/2 minute quadrangle

CONTOUR INTERVAL 10 FEET

ROAD CLASSIFICATION
Heavy duty — Light duty
Medium duty — Unimproved dirt
State Route
U.S. Route

EXPLANATION

Landform unit
Resource classification

LANDFORM UNITS

- F Floodplain deposit
- T Stream terrace deposit
- V Valley fill (F & T)
- U Upland deposits
- A Alluvial fan
- E Wind-deposited sand (eolian)
- M Man-made deposits (slag, tailings, spoils....)

RESOURCE CLASSIFICATION

Coarse Aggregate

- 1 Gravel: relatively clean and sound
- 2 Gravel: significant fines, decomposed rock, calcium carbonate.

Fine Aggregate

- 3 Sand

Unevaluated Resource

- 4 Probable aggregate resource

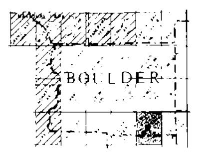
MAP SYMBOLS

- Operating gravel and/or sand pit
- Abandoned gravel and/or sand pit
- Operating stone quarry
- Abandoned stone quarry
- Potential quarry aggregate resource area
- Selected well or drill-hole location with overburden thickness (ft) over sand/gravel resource thickness (ft), obtained from well logs
- "g" indicates gravel, "s" indicates sand
- "x" in symbol denotes unevaluated or unknown property.
- "wo" denotes Colorado Geological Survey Windsor/Sand and Gravel projects' drill hole
- Landform boundary, solid where known or observed; dashed where approximate or inferred.

STATION, LOCATION AND GEOLOGICAL DESCRIPTION OF DEPOSIT

- overburden thickness (ft)
- sand gravel resource thickness (ft)
- significant amount of decomposed or weak rock.

"x" in symbol denotes unevaluated or unknown property.



QUADRANGLE LOCATION

NON-RESOURCE OR WITHDRAWN AREA

REFERENCE:

Chase, G.H., and McConaghy, J.A., 1972, Generalized surficial geologic map of the Denver area, Colorado: U. S. Geol. Survey Misc. Geol. Inv Map I-731.
Trimble, D.E., and Fitch, H.R., 1974, Map showing potential sources of gravel and crushed-rock aggregate in the Greater Denver Area, Front Range Urban Corridor, Colo.: U. S. Geol. Survey Misc. Geol. Inv. Map I-856-A.

Geology modified after:

Malde, H.E., 1955, Surficial geology of the Louisville quadrangle, Colorado: U.S. Geol Survey Bull. 996-E, p. 211-259, Pl. 1

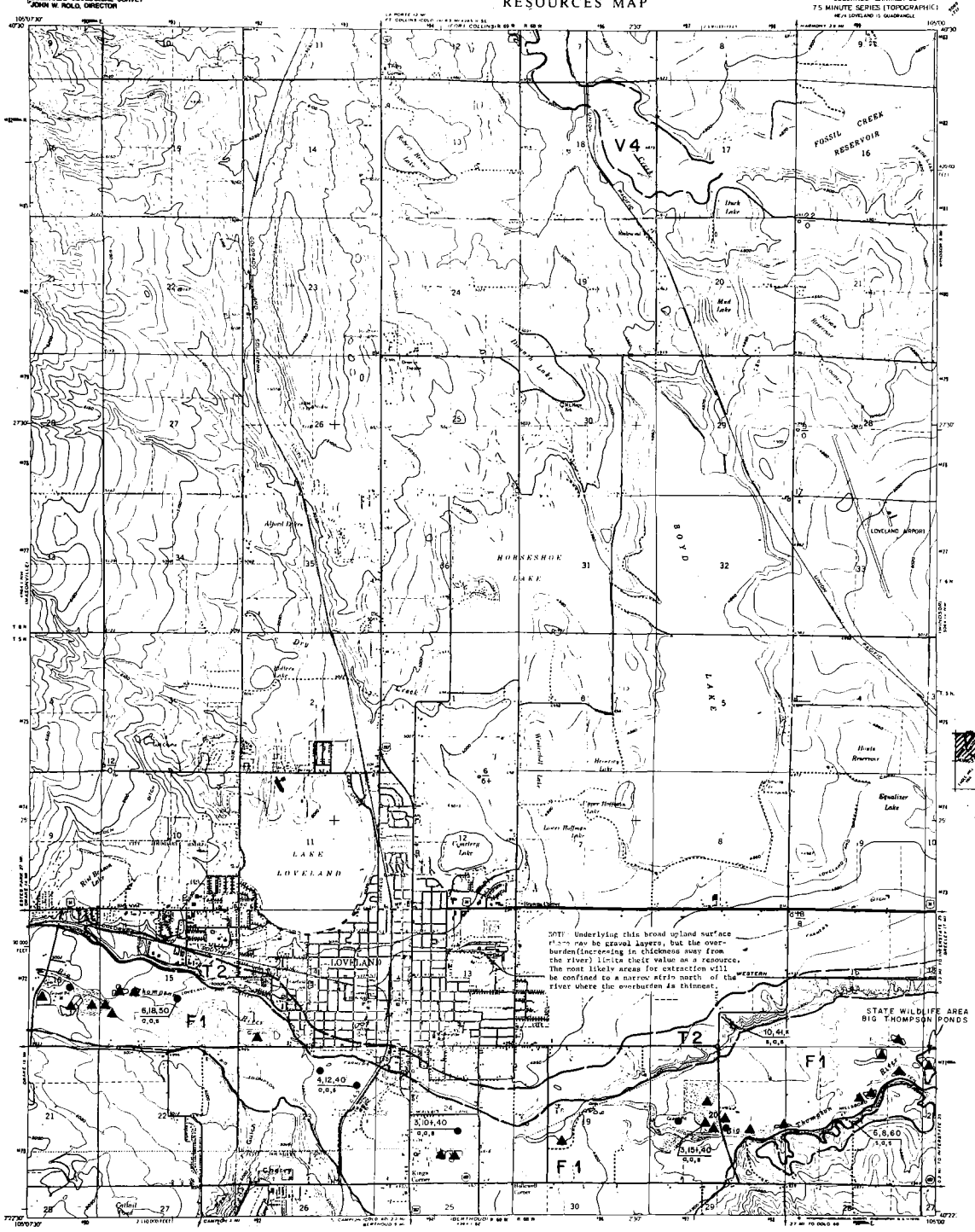
Mapped by: Ralph R. Shroba
Date: June 30, 1974

Prepared in cooperation with the U. S. Geological Survey

SAND, GRAVEL AND QUARRY AGGREGATE RESOURCES MAP

DEPARTMENT OF NATURAL RESOURCES
COLORADO GEOLOGICAL SURVEY
JOHN W. ROLD, DIRECTOR

LOVELAND QUADRANGLE
COLORADO-LARIMER CO
7.5 MINUTE SERIES (TOPOGRAPHIC)



EXPLANATION

Landform unit
Resource classification

LANDFORM UNITS

- F Floodplain deposit
- T Stream terrace deposit
- V Valley fill (F & T)
- U Upland deposits
- A Alluvial fan
- E Wind-deposited sand (dunes)
- M Man-made deposits (slag,tailings, spoils....)

RESOURCE CLASSIFICATION

Coarse Aggregate
(at least 30% retained on #4 screen, visual estimation)

- 1 Gravel: relatively clean and sound
- 2 Gravel: significant fines, decomposed rock, calcium carbonate.

Fine Aggregate
(greater than 70% passing #4 screen, 40% retained on #200 screen, visual estimation)

- 3 Sand

Unevaluated Resource

- 4 Probable aggregate resource

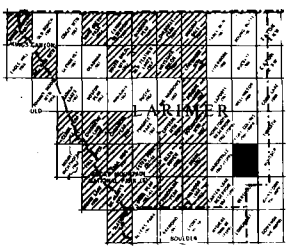
MAP SYMBOLS

- Operating gravel and/or sand pit
- Abandoned gravel and/or sand pit
- Operating stone quarry
- Abandoned stone quarry
- Potential quarry aggregate resource area
- Selected well or drill-hole location with overburden thickness (fc) over sand/gravel resource thickness (fr), obtained from well logs. "g" indicates gravel; "s" indicates sand. "-" in symbol denotes unevaluated or unknown property.
- "ms" denotes Colorado Geological Survey Windsor/Sand and Gravel projects drill hole
- Landform boundary, solid where known or observed; dashed where approximate or inferred.

STATION, LOCATION AND GEOLOGICAL DESCRIPTION OF DEPOSIT

- overburden thickness (fc)
- sand/gravel resource thickness (fr)
- percent sand and fines (passing #4 screen, 0.25 in.), visual estimation
- significant amount of fines (passing #200 screen, 0.0049 in. or 0.074 mm.)
- significant amount of decomposed or weak rock.
- significant amount of calcium carbonate (caliche)

"-" in symbol denotes unevaluated or unknown property.
"0" in symbol denotes property absent or insignificant.



QUADRANGLE LOCATION

NON-RESOURCE OR WITHDRAWN AREA

REFERENCE:

Swan, F. H., III, and Whitney, J. W., 1972, Map of surficial geology of the Loveland quadrangle: Recomm. mapping for Colorado Geol. Survey Windsor Environmental Geology Project, open-file map.

Shelton, D.C., 1974, personal communication.

Geology modified after:

Colton, R.B., and Pitch, W.R., 1974, Map showing potential sources of gravel and crushed-rock aggregate in the Boulder-Fort Collins-Greeley Area, Front Range Urban Corridor, Colo.: U. S. Geol. Survey Misc. Geol. Inv. Map I-855-D.

Mapped by: Stephen D. Schwochow
Date: June 30, 1974

Prepared in cooperation with the U. S. Geological Survey

Base from U. S. Geological Survey
7-1/2 minute quadrangle

CONTOUR INTERVAL 10 FEET

ROAD CLASSIFICATION

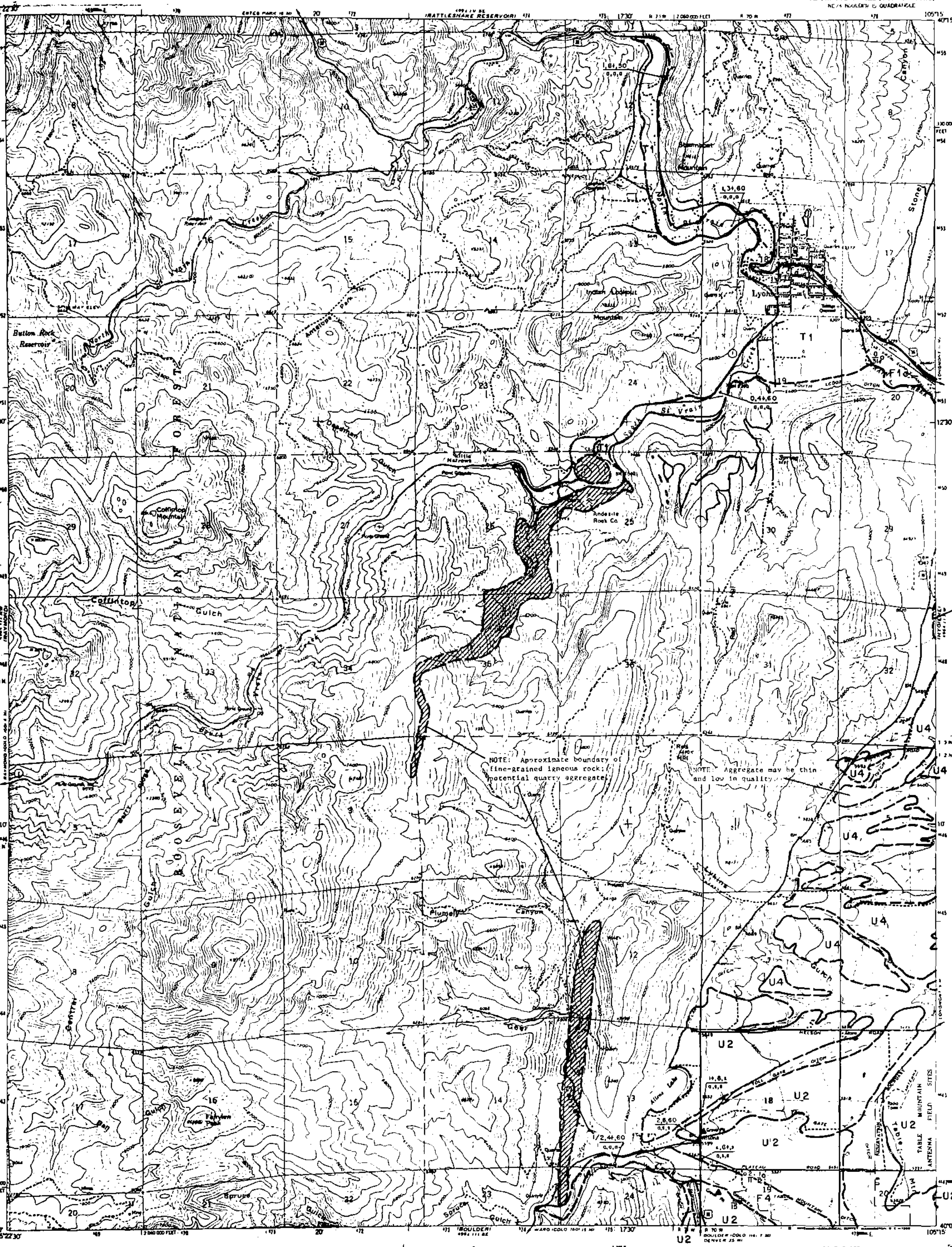
- Heavy-duty
- Light-duty
- Medium-duty
- Unimproved dirt
- U.S. Route
- State Route

LOVELAND, COLO.

DEPARTMENT OF NATURAL RESOURCES
COLORADO GEOLOGICAL SURVEY
JOHN W. ROLD, DIRECTOR

SAND, GRAVEL AND QUARRY AGGREGATE RESOURCES MAP

LYONS QUADRANGLE
COLORADO-BOULDER CO
7.5 MINUTE SERIES (TOPOGRAPHIC)



Base from U. S. Geological Survey
7-1/2 minute quadrangle

LYONS, COLO.

EXPLANATION

F — Landform unit; 1 — Resource classification

LANDFORM UNITS

- F — Floodplain deposit
- T — Stream terrace deposit
- V — Valley fill (F & T)
- U — Upland deposits
- A — Alluvial fan
- E — Wind-deposited sand (eolian)
- M — Man-made deposits (slag, tailings, spoils....)

RESOURCE CLASSIFICATION

Coarse Aggregate
(at least 30% retained on #4 screen, visual estimation)

- 1 — Gravel: relatively clean and sound
- 2 — Gravel: significant fines, decomposed rock, calcium carbonate.

Fine Aggregate
(greater than 70% passing #4 screen, 80% retained on #200 screen, visual estimation)

- 3 — Sand

Unevaluated Resource

- 4 — Probable aggregate resource

MAP SYMBOLS

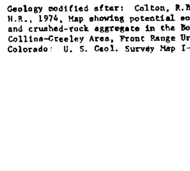
- ● Operating gravel and/or sand pit
- ▲ Abandoned gravel and/or sand pit
- Operating stone quarry
- Abandoned stone quarry
- Potential quarry aggregate resource area
- Selected well or drill-hole location with overburden thickness (ft) over sand/gravel resource thickness (ft), obtained from well logs.
  "g" indicates gravel; "s" indicates sand
  "?" in symbol denotes unevaluated or unknown property.
- "WS" denotes Colorado Geological Survey Windsor/Sand and Gravel projects' drill hole
- Landform boundary, solid where known or observed; dashed where approximate or inferred.

STATION, LOCATION AND GEOLOGICAL DESCRIPTION OF DEPOSIT

5, 17, 40
- overburden thickness (ft)
- sand/gravel resource thickness (ft)
- percent sand and fines (passing #4 screen, 0.25 in.), visual estimation
- significant amount of fines (passing #200 screen, 0.0029 in. or 0.074 mm.)
- significant amount of decomposed or weak rock.
- significant amount of calcium carbonate (caliche)

"?" in symbol denotes unevaluated or unknown property

"o" in symbol denotes property absent or insignificant



QUADRANGLE LOCATION

NON-RESOURCE OR WITHDRAWN AREA

Geology modified after: Colton, R.B., and Fitch, H.R., 1974, Map showing potential sources of gravel and crushed-rock aggregate in the Boulder-Fort Collins-Greeley Area, Front Range Urban Corridor, Colorado: U. S. Geol. Survey Map I-855 D.

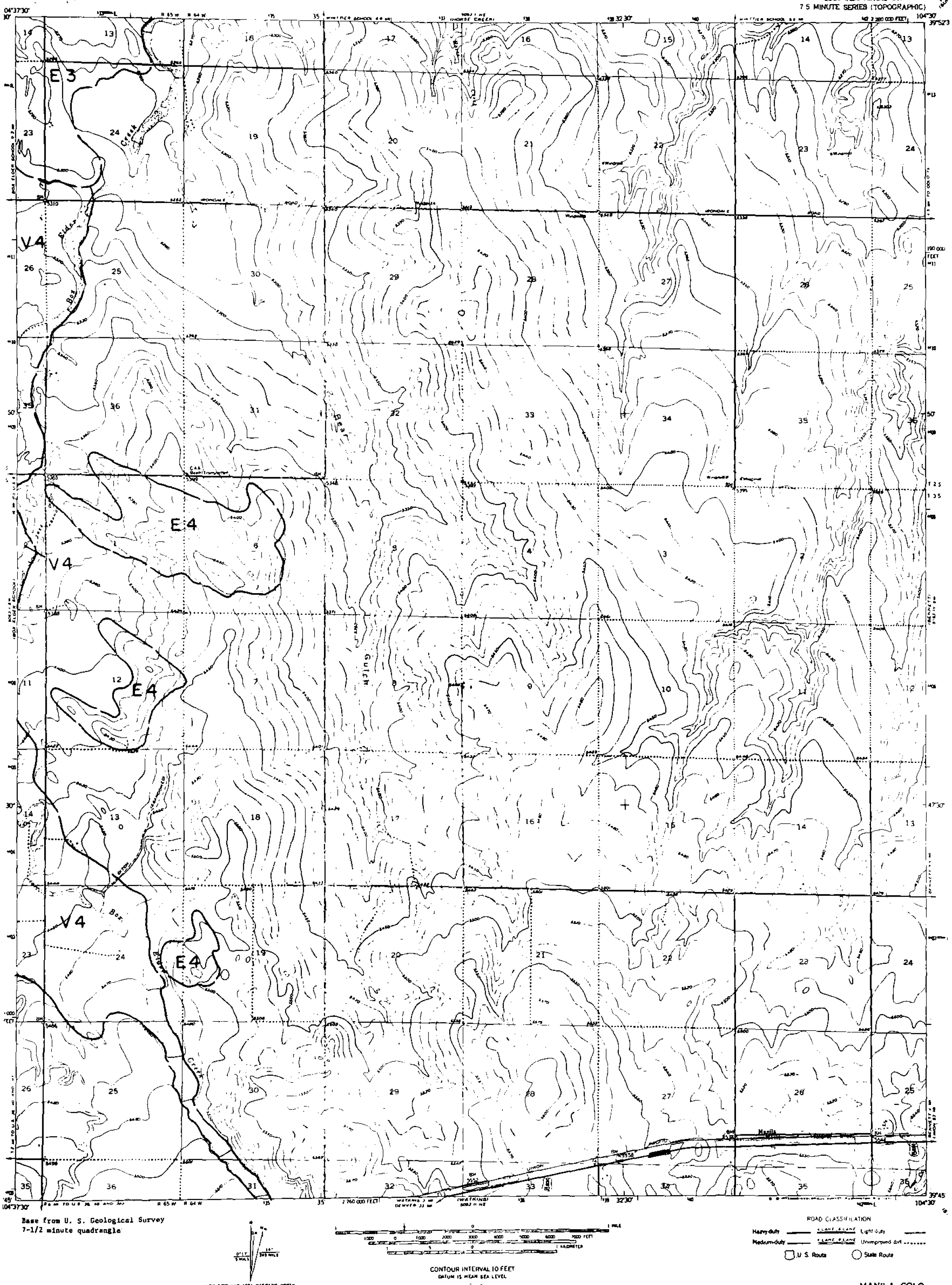
Mapped by: Ralph R. Shroba
Date: June 30, 1974

Prepared in cooperation with the U. S. Geological Survey

DEPARTMENT OF NATURAL RESOURCES
COLORADO GEOLOGICAL SURVEY
JOHN W. ROLD, DIRECTOR

SAND, GRAVEL AND QUARRY AGGREGATE RESOURCES MAP

MANILA QUADRANGLE
COLORADO-ADAMS CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)



Base from U. S. Geological Survey
7-1/2 minute quadrangle

MANILA, COLO.

EXPLANATION

F — Landform unit; resource classification

LANDFORM UNITS

- F — Floodplain deposit
- T — Stream terrace deposit
- V — Valley fill (F & T)
- U — Upland deposits
- A — Alluvial fan
- E — Wind-deposited sand (eolian)
- M — Man-made deposits (slag, tailings, spoils, ...)

RESOURCE CLASSIFICATION

Coarse Aggregate
[illegible]

- 1 — Gravel: relatively clean and sound
- 2 — Gravel: significant fines, decomposed rock, calcium carbonate

Fine Aggregate
[illegible]

- 3 — Sand

Unevaluated Resource

- 4 — Probable aggregate resource

MAP SYMBOLS

- Operating gravel and/or sand pit
- Abandoned gravel and/or sand pit
- Operating stone quarry
- Abandoned stone quarry
- Potential quarry aggregate resource area
- Selected well or drill-hole location with overburden thickness (ft) over sand/gravel resource thickness (ft), obtained from well logs. "g" indicates gravel, "s" indicates sand. "?" in symbol denotes unevaluated or unknown property. "WS" denotes Colorado Geological Survey Windsor/Sand and Gravel projects' drill hole
- Landform boundary, solid where known or observed; dashed where approximate or inferred

STATION, LOCATION AND GEOLOGICAL DESCRIPTION OF DEPOSIT

- overburden thickness (ft)
- sand/gravel resource thickness (ft)
- percent sand and fines (passing #4 screen, 0.22 in.), visual estimation
- significant amount of fines (passing #200 screen, 0.0059 in. or 0.074 mm)
- significant amount of decomposed or weak rock
- significant amount of calcium carbonate (caliche)

"?" in symbol denotes unevaluated or unknown property

"o" in symbol denotes property absent or insignificant

■ QUADRANGLE LOCATION

▨ NON-RESOURCE OR WITHDRAWN AREA

REFERENCE:

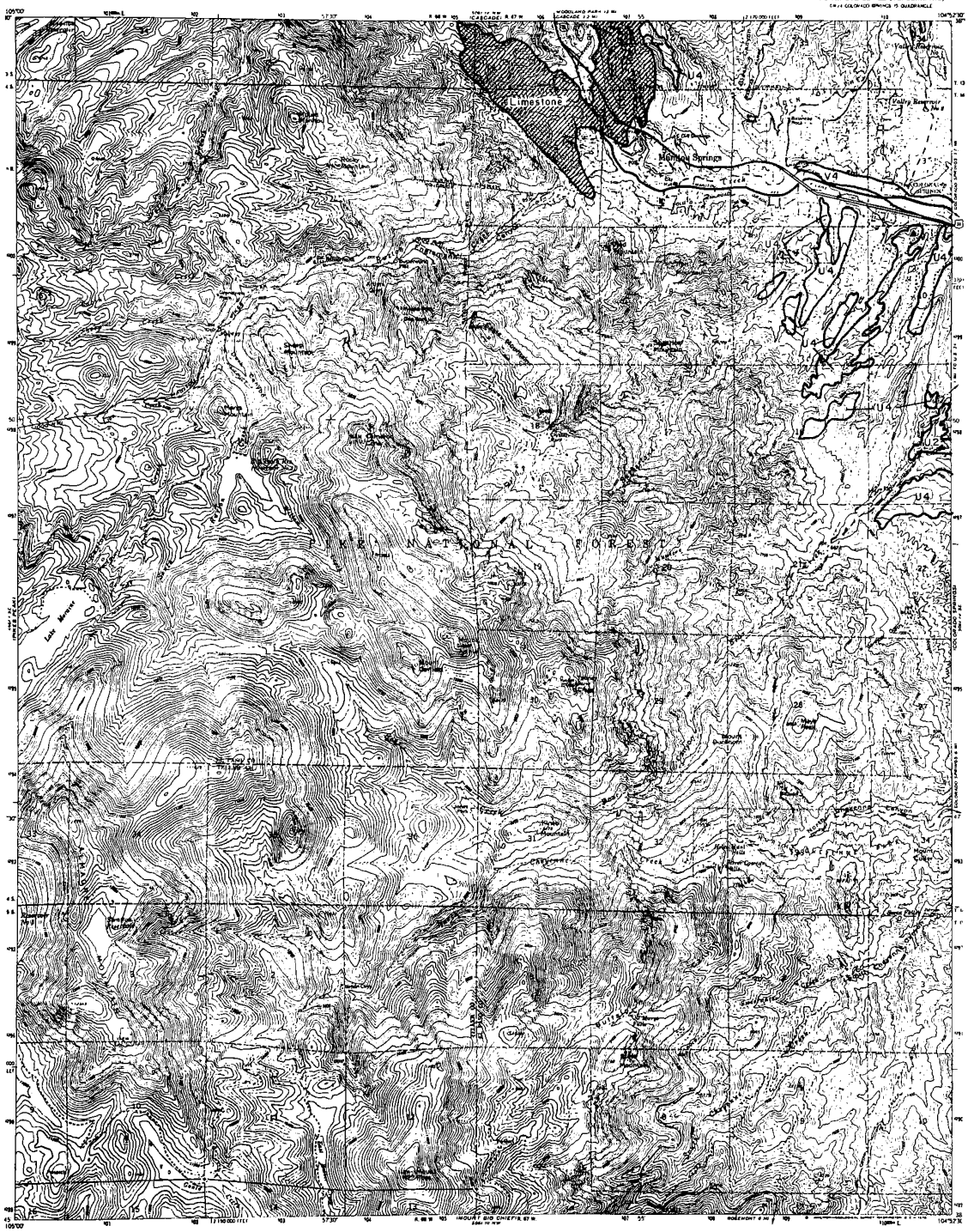
Smith, R.O., Schneider, P.A., Jr., and Petri, L.R., 1964, Ground-water resources of the South Platte River basin in western Adams and southwestern Weld Counties, Colorado: U. S. Geol. Survey Water-Supply Paper 1658, pl. 1.

Mapped by: Phillip C. Wicklein
Date: June 30, 1974

SAND, GRAVEL AND QUARRY AGGREGATE RESOURCES MAP

DEPARTMENT OF NATURAL RESOURCES
COLORADO GEOLOGICAL SURVEY
JOHN W. ROLD, DIRECTOR

MANITOU SPRINGS QUADRANGLE
COLORADO
7.5 MINUTE SERIES (TOPOGRAPHIC)



EXPLANATION

Landform unit

Resource classification

LANDFORM UNITS

- F — Floodplain deposit
- T — Stream terrace deposit
- V — Valley fill (F & T)
- U — Upland deposits
- A — Alluvial fan
- E — Wind-deposited sand (eolian)
- M — Man-made deposits (slag,tailings, spoils....)

RESOURCE CLASSIFICATION

Coarse aggregate
(at least 20% retained on #4 screen, visual estimation)

- 1 — Gravel: relatively clean and sound
- 2 — Gravel: significant fines, decomposed rock, calcium carbonate.

Fine aggregate
(greater than 70% passing #4 screen, 40% retained on #200 screen, visual estimation

- 3 — Sand

Unevaluated Resource

- 4 — Probable aggregate resource

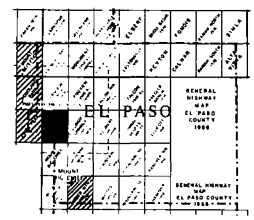
MAP SYMBOLS

- Operating gravel and/or sand pit
- Abandoned gravel and/or sand pit
- Operating stone quarry
- Abandoned stone quarry
- Potential quarry aggregate resource area
- Selected well or drill-hole location with overburden thickness (ft) over sand/gravel resource thickness (ft), obtained from well logs. "s" indicates gravel; "s" indicates sand. "/" in symbol denotes unevaluated or unknown property. "mw" denotes Colorado Geological Survey Windsor/Sand and Gravel projects' drill hole
- Landform boundary, solid where known or observed, dashed where approximate or inferred.

STATION, LOCATION AND GEOLOGICAL DESCRIPTION OF DEPOSIT

- overburden thickness (ft)
- sand/gravel resource thickness (ft)
- percent sand and fines (passing #4 screen, 5.25 cm.), visual estimation
- significant amount of fines (passing #200 screen, 0.0029 in. or 0.074 mm.)
- significant amount of decomposed or weak rock.
- significant amount of calcium carbonate (caliche)

"/" in symbol denotes unevaluated or unknown property.
"0" in symbol denotes property absent or insignificant



QUADRANGLE LOCATION

NON-RESOURCE OR WITHDRAWN AREA

Geology modified after Scott, G.R., & Wobus, R. A. 1973, Reconnaissance geologic map of Colorado Springs and Vicinity, Colorado: U. S. Geological Survey Map, MF-482.

REFERENCE:

Trimble, D. E. and Pitch, H.R., 1974, Map showing potential sources of gravel and crushed-rock aggregate in the Colorado Springs-Castle Rock Area, Front Range Urban Corridor, Colorado: U. S. Geol. Survey Map I-857 A.

Mapped by: Phillip C. Wicklein
Date: June 30, 1974

Prepared in cooperation with the U. S. Geological Survey.

Base from U. S. Geological Survey
7-1/2 minute quadrangle

CONTOUR INTERVAL 40 FEET
DATUM IS MEAN SEA LEVEL

ROAD CLASSIFICATION

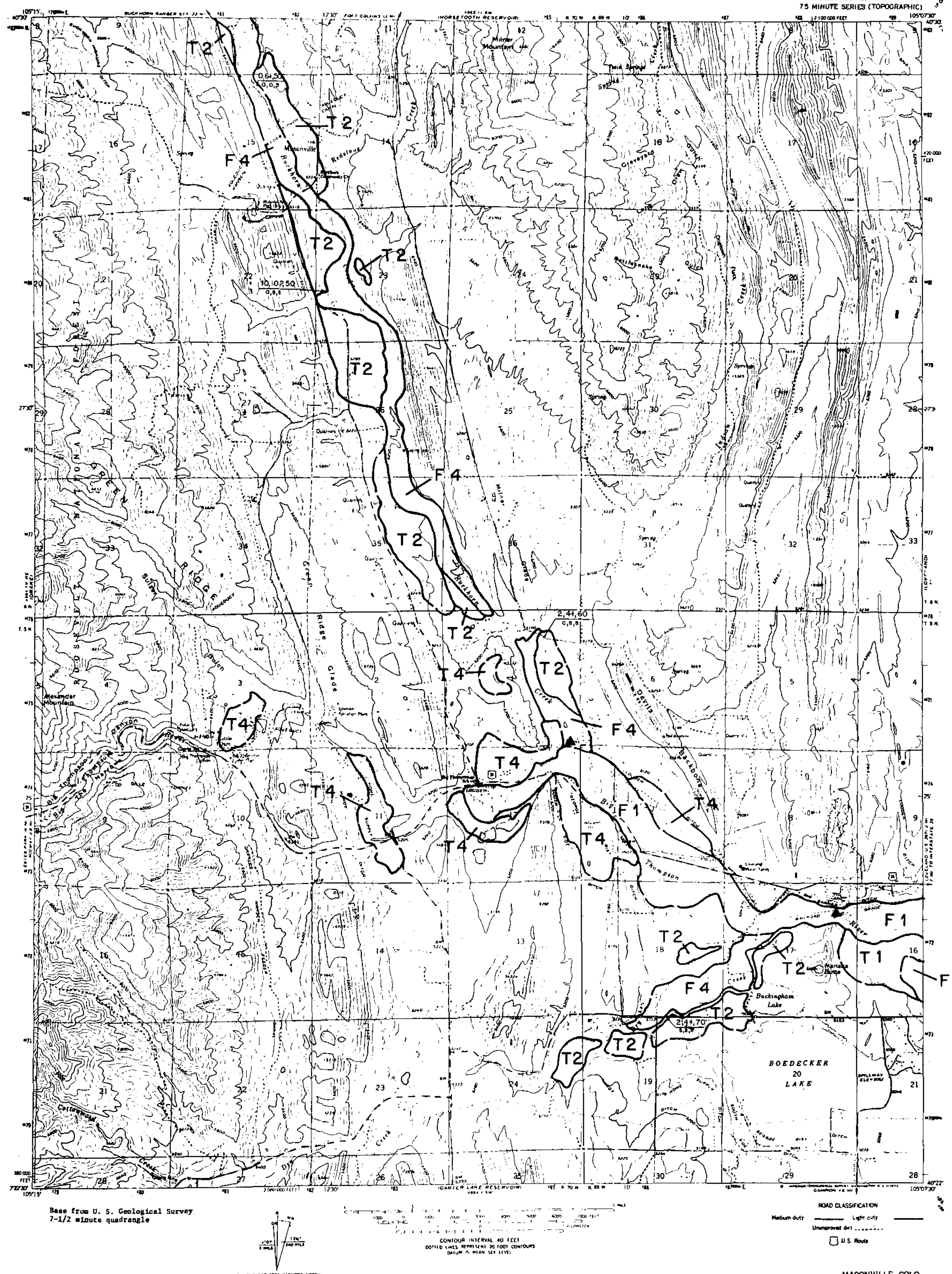
Heavy duty — Light duty
Medium duty — Unimproved dirt
U.S. Route

MANITOU SPRINGS, COLO.

DEPARTMENT OF NATURAL RESOURCES
COLORADO GEOLOGICAL SURVEY
JOHN W. ROLD, DIRECTOR

SAND, GRAVEL AND QUARRY AGGREGATE RESOURCES MAP

MASONVILLE QUADRANGLE
COLORADO–LARIMER CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)



Base from U. S. Geological Survey
7-1/2 minute quadrangle

MASONVILLE, COLO.

EXPLANATION

F1 — Landform unit (F); Resource classification (1)

LANDFORM UNITS

- F Floodplain deposit
- T Stream terrace deposit
- V Valley fill (F & T)
- U Upland deposits
- A Alluvial fan
- E Wind-deposited sand (eolian)
- M Man-made deposits (slag, tailings, spoils....)

RESOURCE CLASSIFICATION

Coarse Aggregate
(at least 20% retained on #4 screen, visual estimation)

- 1 Gravel: relatively clean and sound
- 2 Gravel: significant fines, decomposed rock, calcium carbonate.

Fine Aggregate
(greater than [illegible] passing #4 screen, 80% retained on #200 screen, visual estimation)

- 3 Sand

Unevaluated Resource

- 4 Probable aggregate resource

MAP SYMBOLS

- ● Operating gravel and/or sand pit
- ▲ Abandoned gravel and/or sand pit
- Operating stone quarry
- Abandoned stone quarry
- Potential quarry aggregate resource area
- Selected well or drill-hole location with overburden thickness (ft) over sand/gravel resource thickness (ft), obtained from well logs.
  "g" indicates gravel; "s" indicates sand
  "x" in symbol denotes unevaluated or unknown property.
  "ms" denotes Colorado Geological Survey Windsor/Sand and Gravel projects' drill hole
- Landform boundary, solid where known or observed; dashed where approximate or inferred.

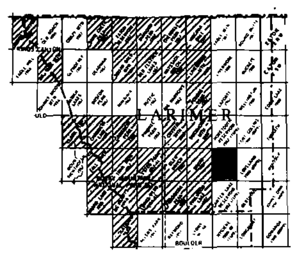
STATION, LOCATION AND GEOLOGICAL DESCRIPTION OF DEPOSIT

5, 17, [illegible] — overburden thickness (ft); sand/gravel resource thickness (ft); percent sand and fines (passing #4 screen, visual estimation)

- significant amount of fines (passing #200 screen, 0.0029 in. or 0.074 mm.)
- significant amount of decomposed or weak rock.
- significant amount of calcium carbonate (caliche)

"x" in symbol denotes unevaluated or unknown property

"o" in symbol denotes property absent or insignificant



■ QUADRANGLE LOCATION

▨ NON-RESOURCE OR WITHDRAWN AREA

Geology modified after: Colton, R.B., and Fitch, H.R., 1974, Map showing potential sources of gravel and crushed-rock aggregate in the Boulder-Fort Collins-Greeley Area, Front Range Urban Corridor, Colorado: U. S. Geol. Survey Map I-855 D.

REFERENCE:

Braddock, W.A., Calvert, R.H., Gawarecki, S.J., and Nutalaya, Prinya, 1970, Geologic map of the Masonville quadrangle, Larimer County, Colorado: U. S. Geol. Survey Geol. Quad Map GQ-832.

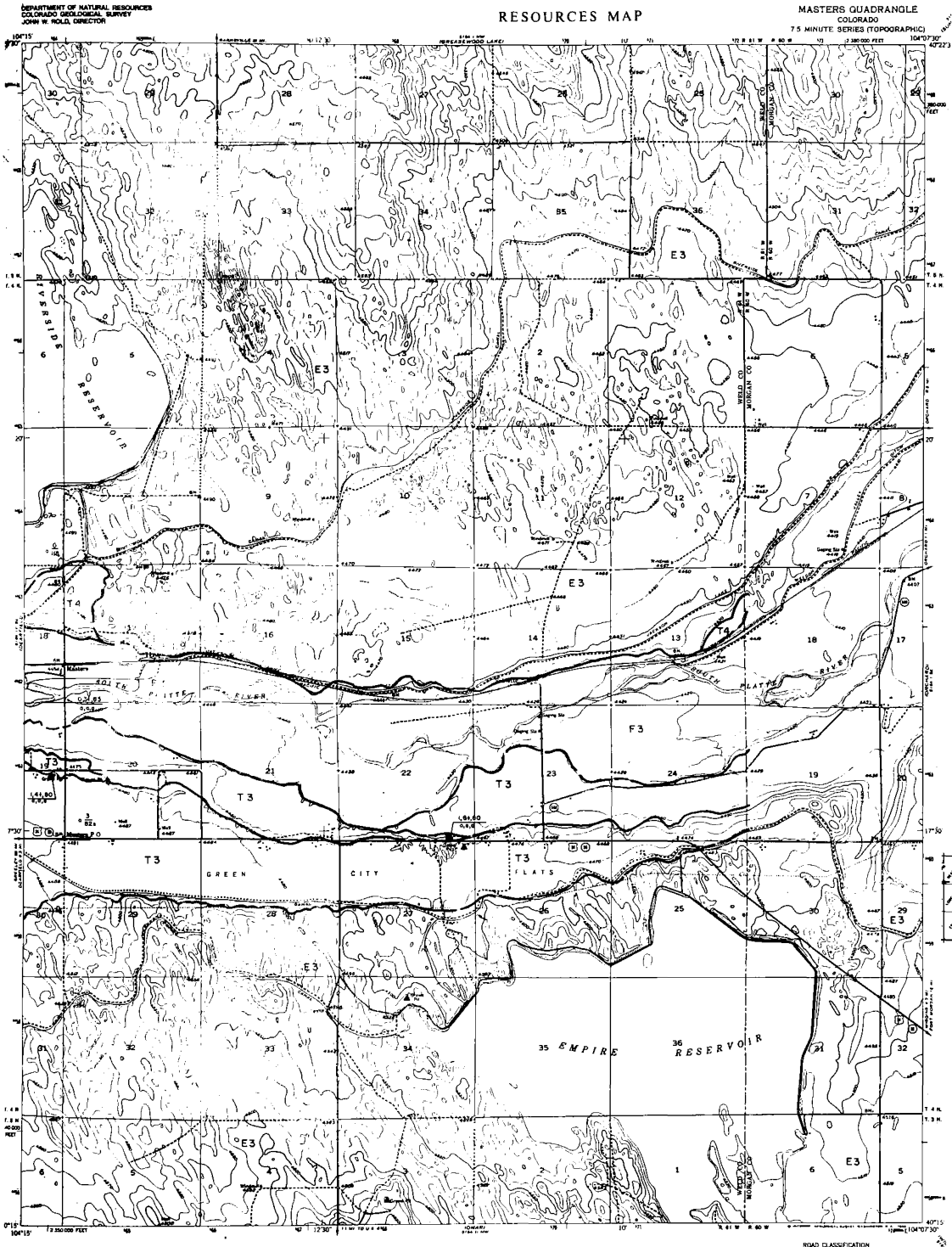
Mapped by: Stephen D. Schwochow
Date: June 30, 1974

Prepared in cooperation with the U. S. Geological Survey

SAND, GRAVEL AND QUARRY AGGREGATE RESOURCES MAP

DEPARTMENT OF NATURAL RESOURCES
COLORADO GEOLOGICAL SURVEY
JOHN W. HOLD, DIRECTOR

MASTERS QUADRANGLE
COLORADO
7.5 MINUTE SERIES (TOPOGRAPHIC)



EXPLANATION

Landform unit
Resource classification

LANDFORM UNITS

- F Floodplain deposit
- T Stream terrace deposit
- V Valley fill (F & T)
- U Upland deposits
- A Alluvial fan
- E Wind-deposited sand (soltan)
- M Man-made deposits (slag, tailings, spoils....)

RESOURCE CLASSIFICATION

Coarse Aggregate
(at least 35% retained on #4 screen, visual estimate)

- 1 Gravel: relatively clean and sound
- 2 Gravel: significant fines, decomposed rock, calcium carbonate.

Fine Aggregate
(material finer than #4 screen, 65% retained on #200 screen, visual estimate)

- 3 Sand

Unevaluated Resource

- 4 Probable aggregate resource

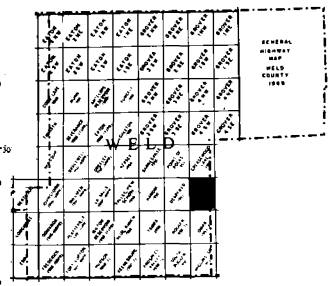
MAP SYMBOLS

- Operating gravel and/or sand pit
- Abandoned gravel and/or sand pit
- Operating stone quarry
- Abandoned stone quarry
- Potential quarry aggregate resource area
- Selected well or drill-hole location with overburden thickness (ft) over sand/gravel resource thickness (ft), obtained from well logs. "g" indicates gravel; "s" indicates sand. "-" in symbol denotes unevaluated or unknown property. "mc" denotes Colorado Geological Survey Windsor/Sand and Gravel projects' drill hole
- Landform boundary, solid where known or observed; dashed where approximate or inferred.

STATION, LOCATION AND GEOLOGICAL DESCRIPTION OF DEPOSIT

- overburden thickness (ft)
- sand/gravel resource thickness (ft)
- percent sand and fines (passing #4 screen, 0.5% fr.), visual estimation
- significant amount of fines (passing #200 screen, 0.0058 in. or 0.074 mm.)
- significant amount of decomposed or weak rock.
- significant amount of calcium carbonate (caliche)

"m" in symbol denotes unevaluated or unknown property.
"-" in symbol denotes property absent or insignificant



QUADRANGLE LOCATION

NON-RESOURCE OR WITHDRAWN AREA

REFERENCE: Bjorklund, L.J., and Brown, R.F., 1957, Geology and ground-water resources of the lower South Platte River valley between Hardin, Colorado, and Paxton, Nebraska: U. S. Geol. Survey Water-Supply Paper 1378, pl. 1.

Mapped by: Phillip C. Wicklein
Date: June 30, 1974

Base from U. S. Geological Survey
7-1/2 minute quadrangle

CONTOUR INTERVAL 10 FEET
DATUM IS MEAN SEA LEVEL

ROAD CLASSIFICATION

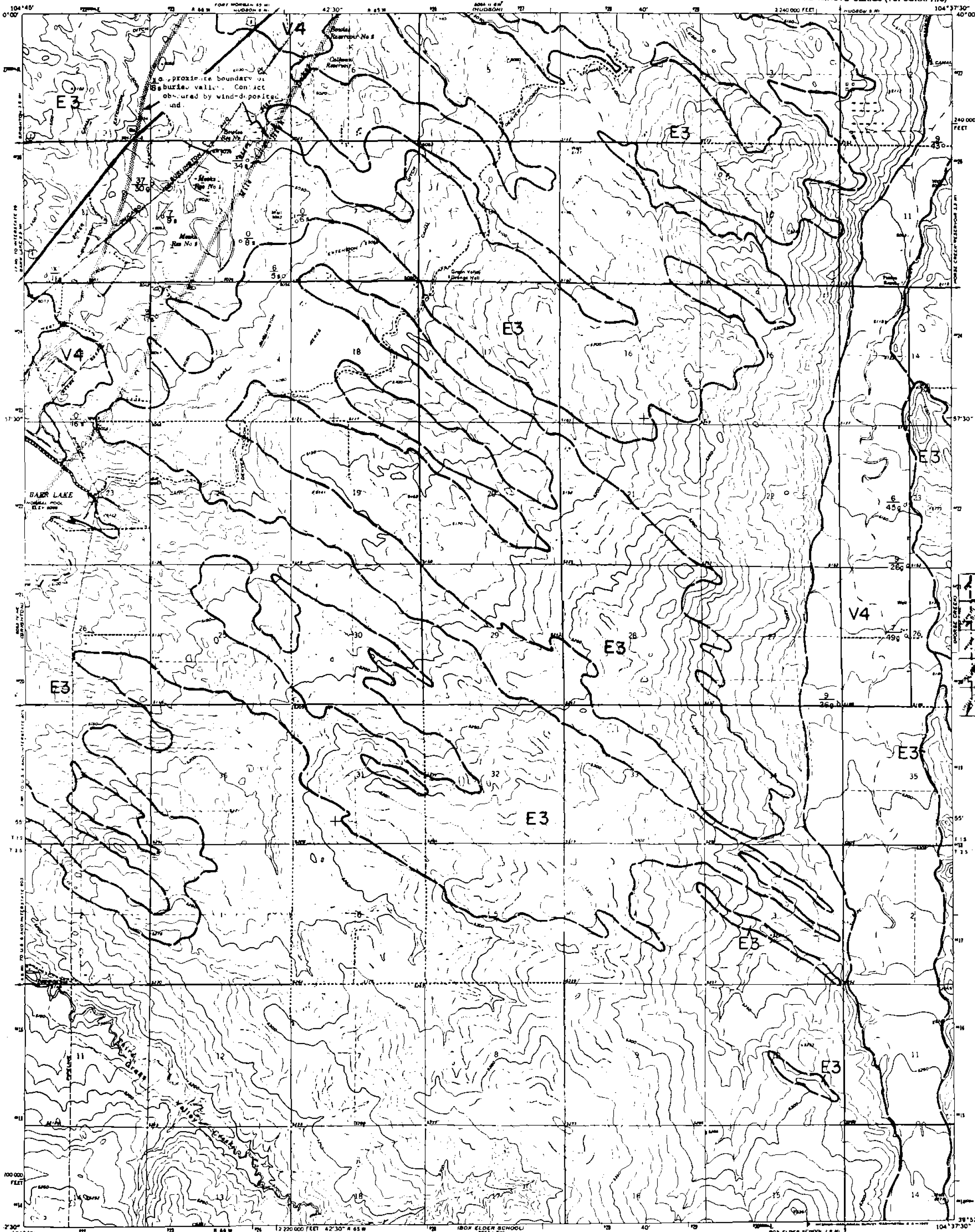
HARD-SURFACE ALL WEATHER ROADS — DRY WEATHER ROADS
Heavy-duty — Improved dirt
Medium-duty — Unimproved dirt
Loose-surface, graded, or narrow hard-surface
U. S. Route
State Route

MASTERS, COLO.

DEPARTMENT OF NATURAL RESOURCES
COLORADO GEOLOGICAL SURVEY
JOHN W. ROLD, DIRECTOR

SAND, GRAVEL AND QUARRY AGGREGATE RESOURCES MAP

MILE HIGH LAKES QUADRANGLE
COLORADO – ADAMS CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)



Base from U. S. Geological Survey
7-1/2 minute quadrangle

CONTOUR INTERVAL 10 FEET
DATUM IS MEAN SEA LEVEL

ROAD CLASSIFICATION
Heavy-duty — Light-duty
Medium-duty — Unimproved dirt
Interstate Route — U.S. Route — State Route

EXPLANATION

F Landform unit
Resource classification

LANDFORM UNITS

- F Floodplain deposit
- T Stream terrace deposit
- V Valley fill (F & T)
- U Upland deposits
- A Alluvial fan
- E Wind-deposited sand (eolian)
- M Man-made deposits (slag, tailings, spoils....)

RESOURCE CLASSIFICATION

Coarse Aggregate

- 1 Gravel relatively clean and sound
- 2 Gravel, significant fines, decomposed rock, calcium carbonate

Fine Aggregate

- 3 Sand

Unevaluated Resource

- 4 Probable aggregate resource

MAP SYMBOLS

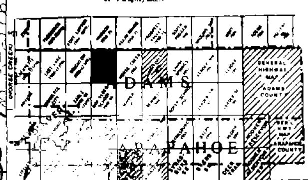
- Operating gravel and/or sand pit
- Abandoned gravel and/or sand pit
- Operating stone quarry
- Abandoned stone quarry
- Potential quarry aggregate resource area
- Selected well or drill-hole location with overburden thickness (ft) over sand/gravel resource thickness (ft), obtained from well logs. "g" indicates gravel; "s" indicates sand. "*" in symbol denotes unevaluated or unknown property.
- "wd" denotes Colorado Geological Survey Windsor/Sand and Gravel projects' drill hole
- Landform boundary, solid where known or observed; dashed where approximate or inferred.

STATION, LOCATION AND GEOLOGICAL DESCRIPTION OF DEPOSIT

- overburden thickness (ft)
- sand/gravel resource thickness (ft)
- percent sand and fines (passing #4 screen, 0.25 in.), visual estimation
- significant amount of fines (passing #200 screen, 0.0029 in. or 0.074 mm)
- significant amount of decomposed or weak rock.
- significant amount of calcium carbonate (caliche)

"*" in symbol denotes unevaluated or unknown property

"o" in symbol denotes property absent or insignificant



QUADRANGLE LOCATION

NON-RESOURCE OR WITHDRAWN AREA

References:

Chase, G.H., and McConaghy, J.A., 1972, Generalized surficial geologic map of the Denver area, Colorado: U.S. Geol. Survey Misc. Geol. Inv. Map I-731.

Smith, R.D., Schneider, P.A., Jr., and Petri, L.R., 1964, Ground-water resources of the southwestern Weld Counties, Colorado: U.S. Geol. Survey Water-Supply Paper 1658, pl. 1.

Trimble, D.E., and Fitch, H.R., 1974, Map showing potential sources of gravel and crushed-rock aggregate in the Greater Denver Area, Front Range Urban Corridor, Colo.: U.S. Geol. Survey Misc. Geol. Inv. Map I-856-A.

Mapped by: Stephen D. Schwochow

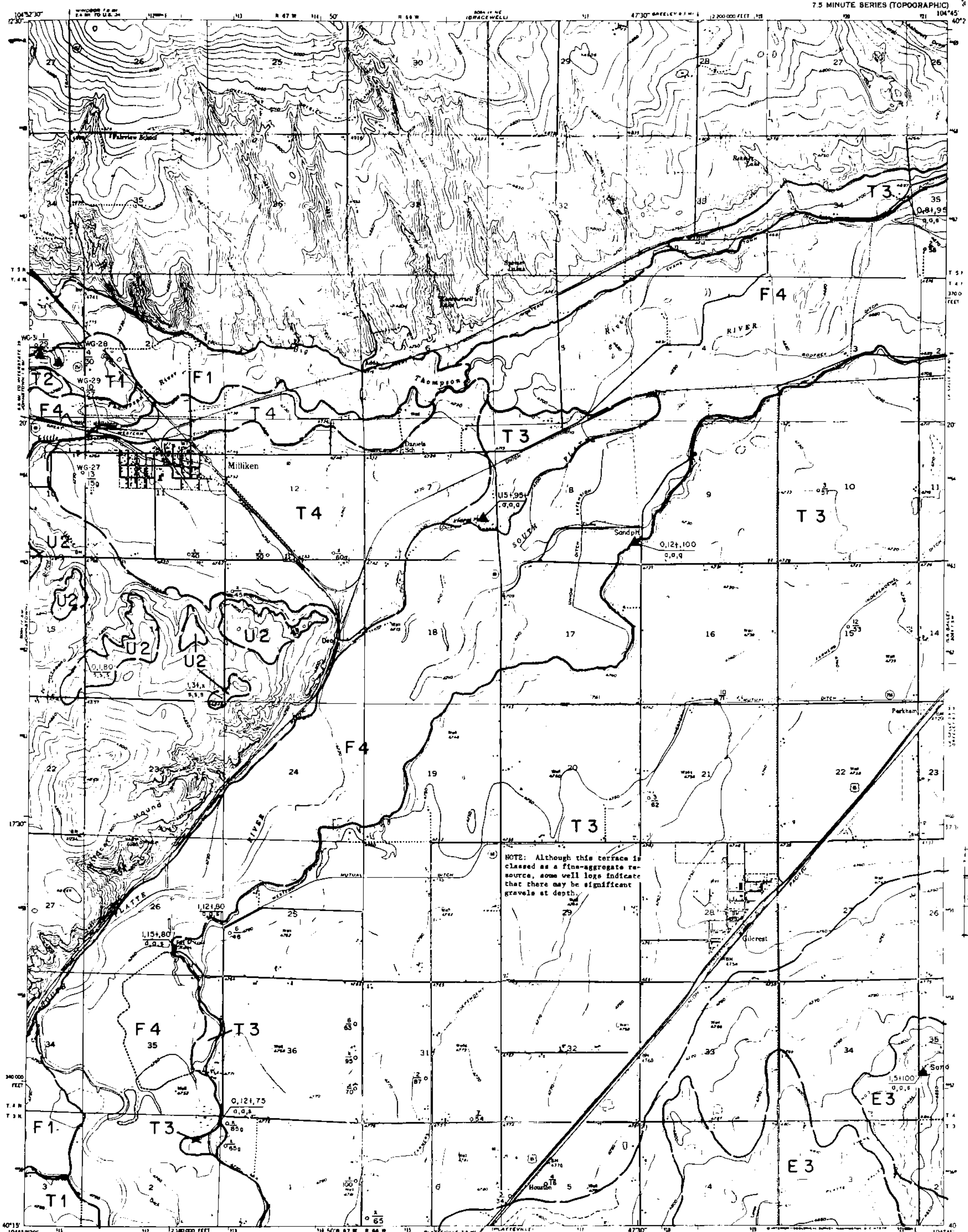
Date: June 30, 1974
Prepared in cooperation with the U. S. Geological Survey

MILE HIGH LAKES, COLO.

DEPARTMENT OF NATURAL RESOURCES
COLORADO GEOLOGICAL SURVEY
JOHN W. ROLD, DIRECTOR

SAND, GRAVEL AND QUARRY AGGREGATE RESOURCES MAP

MILLIKEN QUADRANGLE
COLORADO-WELD CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)



Base from U. S. Geological Survey
7-1/2 minute quadrangle

CONTOUR INTERVAL 10 FEET
DATUM IS MEAN SEA LEVEL

ROAD CLASSIFICATION
Heavy-duty — Light-duty
Unimproved dirt
U S Route — State Route

EXPLANATION

Landform unit
Resource classification

LANDFORM UNITS

F	Floodplain deposit
T	Stream terrace deposit
V	Valley fill (F & T)
U	Upland deposits
A	Alluvial fan
E	Wind-deposited sand (eolian)
M	Man-made deposits (slag, tailings, spoils....)

RESOURCE CLASSIFICATION

Coarse Aggregate
(at least 50% retained on #4 screen, visual estimation)

1 Gravel relatively clean and sound
2 Gravel significant fines, decomposed rock, calcium carbonate.

Fine Aggregate
(greater than 50% passing #4 screen, 40% retained on #200 screen, visual estimation)

3 Sand

Unevaluated Resource

4 Probable aggregate resource

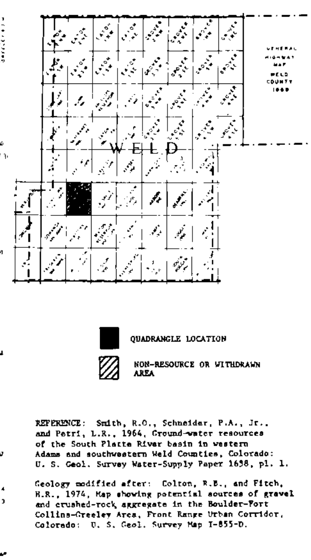
MAP SYMBOLS

- Operating gravel and/or sand pit
- Abandoned gravel and/or sand pit
- Operating stone quarry
- Abandoned stone quarry
- Potential quarry aggregate resource area
- Selected well or drill-hole location with overburden thickness (ft) over sand/gravel resource thickness (ft), obtained from well logs.
  "g" indicates gravel; "s" indicates sand
  "?" in symbol denotes unevaluated or unknown property.
- "WG" denotes Colorado Geological Survey Windsor/Sand and Gravel projects' drill hole
- Landform boundary, solid where known or observed; dashed where approximate or inferred.

STATION, LOCATION AND GEOLOGICAL DESCRIPTION OF DEPOSIT

3, 17, 60
- overburden thickness (ft)
- sand/gravel resource thickness (ft)
- percent sand and fines (passing #4 screen, 0.18 in.), visual estimation
- significant amount of fines (passing #200 screen, 0.0029 in. or 0.074 mm.)
- significant amount of decomposed or weak rock.
- significant amount of calcium carbonate (caliche)

"?" in symbol denotes unevaluated or unknown property
"o" in symbol denotes property absent or insignificant



QUADRANGLE LOCATION

NON-RESOURCE OR WITHDRAWN AREA

REFERENCE: Smith, R.O., Schneider, P.A., Jr., and Petri, L.R., 1964, Ground-water resources of the South Platte River basin in western Adams and southwestern Weld Counties, Colorado: U. S. Geol. Survey Water-Supply Paper 1658, pl. 1.

Geology modified after: Colton, R.B., and Fitch, H.R., 1974, Map showing potential sources of gravel and crushed-rock aggregate in the Boulder-Fort Collins-Greeley Area, Front Range Urban Corridor, Colorado: U. S. Geol. Survey Map I-855-D.

Mapped by: Stephen D. Schwochow
Date: June 30, 1974

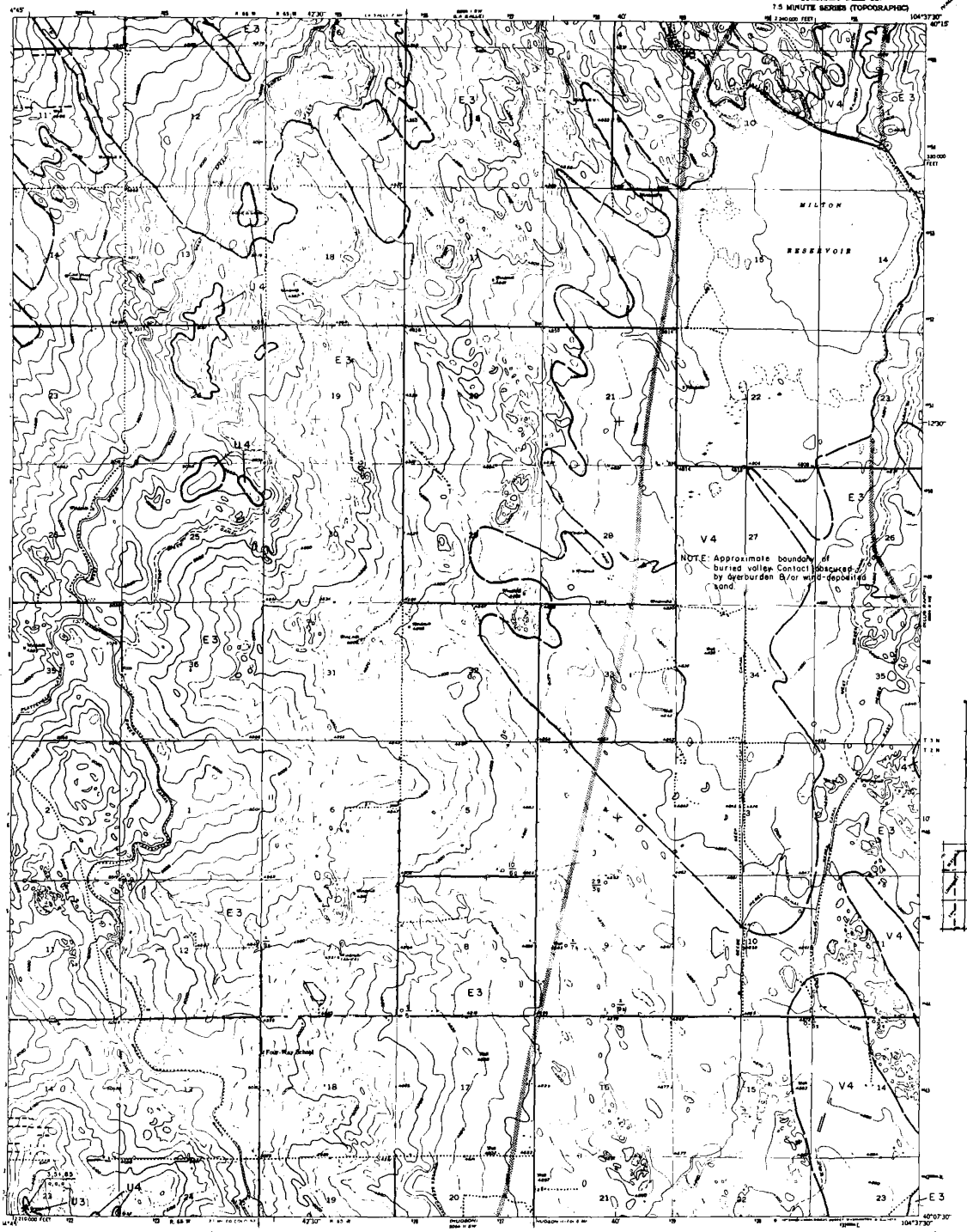
Prepared in cooperation with the U. S. Geological Survey.

MILLIKEN, COLO.

SAND, GRAVEL AND QUARRY AGGREGATE RESOURCES MAP

DEPARTMENT OF NATURAL RESOURCES
COLORADO GEOLOGICAL SURVEY
JOHN W. ROLD, DIRECTOR

MILTON RESERVOIR
COLORADO-WELD CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)



EXPLANATION

LANDFORM UNITS

- F Floodplain deposit
- T Stream terrace deposit
- V Valley fill (F & T)
- U Upland deposits
- A Alluvial fan
- E Wind-deposited sand (eolian)
- M Man-made deposits (slag, tailings, spoils....)

RESOURCE CLASSIFICATION

Coarse aggregate (at least 50% by weight on #4 screen, gravel variation)

- 1 Gravel: relatively clean and sound
- 2 Gravel: significant fines, decomposed rock, calcium carbonate

Fine aggregate (greater than 50% passing #4 screen, 50% retained on #200 screen, gravel variation)

- 3 Sand

Unevaluated Resources

- 4 Probable aggregate resource

MAP SYMBOLS

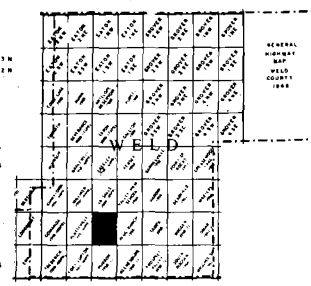
- Operating gravel and/or sand pit
- Abandoned gravel and/or sand pit
- Operating stone quarry
- Abandoned stone quarry
- Potential quarry aggregate resource area
- Selected well or drill-hole location with overburden thickness (ft) over sand/gravel resource thickness (ft), obtained from well logs
  - "g" indicates gravel; "s" indicates sand
  - "u" in symbol denotes unevaluated or unknown property
  - "ms" denotes Colorado Geological Survey Windsor/Flood and Gravel projects' drill hole
- Landform boundary, solid where known or observed, dashed where approximate or inferred

STATION, LOCATION AND GEOLOGICAL DESCRIPTION OF DEPOSIT

- overburden thickness (ft)
- sand/gravel resource thickness (ft)
- percent sand and fines (passing #4 screen, 0.01 in.², mixed) extraction
- significant amount of fines (passing #200 screen, 0.0018 in. or 0.074 mm.)
- significant amount of decomposed or weak rock.
- significant amount of calcium carbonate (caliche)

"u" in symbol denotes unevaluated or unknown property

"n" in symbol denotes property absent or insignificant



QUADRANGLE LOCATION

NON-RESOURCE OR WITHDRAWN AREA

Geology modified after

Colton, R.B., and Fitch, H.R., 1974, Map showing potential sources of gravel and crushed-rock aggregate in the Boulder-Fort Collins-Greeley Area, Front Range Urban Corridor, Colo.: U. S. Geol. Survey Misc. Geol. Inv. Map I-855-D.

Mapped by: Ralph B. Shroba
Date: June 30, 1974

Prepared in cooperation with the U. S. Geological Survey

Base from U. S. Geological Survey
7-1/2 minute quadrangle

CONTOUR INTERVAL 10 FEET
DATUM IS MEAN SEA LEVEL

ROAD CLASSIFICATION

HARD-SURFACE ALL WEATHER ROADS	DRY WEATHER ROADS
Heavy-duty	Improved dirt
Medium-duty	Unimproved dirt
Loose-surface, graded, or narrow hard-surface	

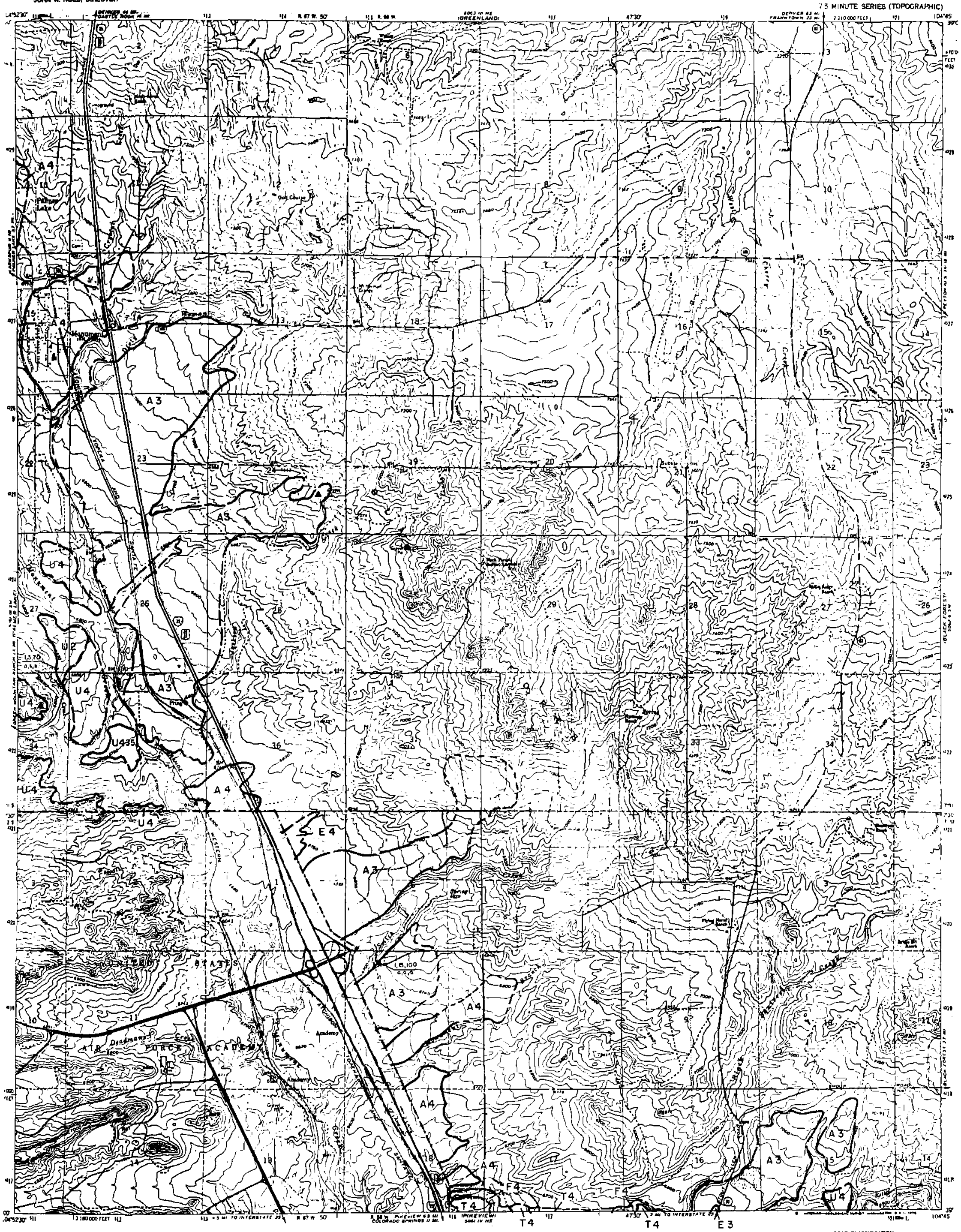
U.S. Route ○ State Route

MILTON RESERVOIR, COLO.

DEPARTMENT OF NATURAL RESOURCES
COLORADO GEOLOGICAL SURVEY
JOHN W. ROLD, DIRECTOR

SAND, GRAVEL AND QUARRY AGGREGATE RESOURCES MAP

MONUMENT QUADRANGLE
COLORADO-EL PASO CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)



Base from U. S. Geological Survey
7-1/2 minute quadrangle

CONTOUR INTERVAL 20 FEET
DATUM IS MEAN SEA LEVEL

MONUMENT, COLO.

EXPLANATION

F — Landform unit; Resource classification

LANDFORM UNITS

- F Floodplain deposit
- T Stream terrace deposit
- V Valley fill (F & T)
- U Upland deposits
- A Alluvial fan
- E Wind-deposited sand (eolian)
- M Man-made deposits (slag, tailings, spoils....)

RESOURCE CLASSIFICATION

Coarse Aggregate
(at least 40% retained on #4 screen, visual estimation)

- 1 Gravel: relatively clean and sound
- 2 Gravel: significant fines, decomposed rock, calcium carbonate.

Fine Aggregate
(greater than 60% passing #4 screen, 60% retained on #200 screen, visual estimation)

- 3 Sand

Unevaluated Resource

- 4 Probable aggregate resource

MAP SYMBOLS

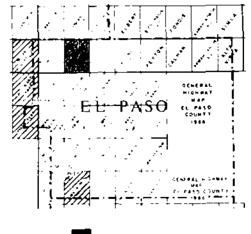
- Operating gravel and/or sand pit
- Abandoned gravel and/or sand pit
- Operating stone quarry
- Abandoned stone quarry
- Potential quarry aggregate resource area
- Selected well or drill-hole location with overburden thickness (ft) over sand/gravel resource thickness (ft), obtained from well logs.
  "g" indicates gravel; "s" indicates sand
  "x" in symbol denotes unevaluated or unknown property.
- "wo" denotes Colorado Geological Survey Windsor/Sand and Gravel projects' drill hole
- Landform boundary, solid where known or observed; dashed where approximate or inferred.

4 STATION, LOCATION AND GEOLOGICAL DESCRIPTION OF DEPOSIT

- overburden thickness (ft)
- sand/gravel resource thickness (ft)
- percent sand and fines (passing #4 screen, 0.25 in.), visual estimation
- significant amount of fines (passing #200 screen, 0.0029 in. or 0.074 mm.)
- significant amount of decomposed or weak rock.
- significant amount of calcium carbonate (caliche)

"x" in symbol denotes unevaluated or unknown property

"o" in symbol denotes property absent or insignificant



QUADRANGLE LOCATION

NON-RESOURCE OR WITHDRAWN AREA

REFERENCE:

Trimble, D.E., and Fitch, H.R., 1974, Map showing potential sources of gravel and crushed-rock aggregate in the Colorado Springs-Castle Rock Area, Front Range Urban Corridor, Colorado: U. S. Geol. Survey Map I-857 A.

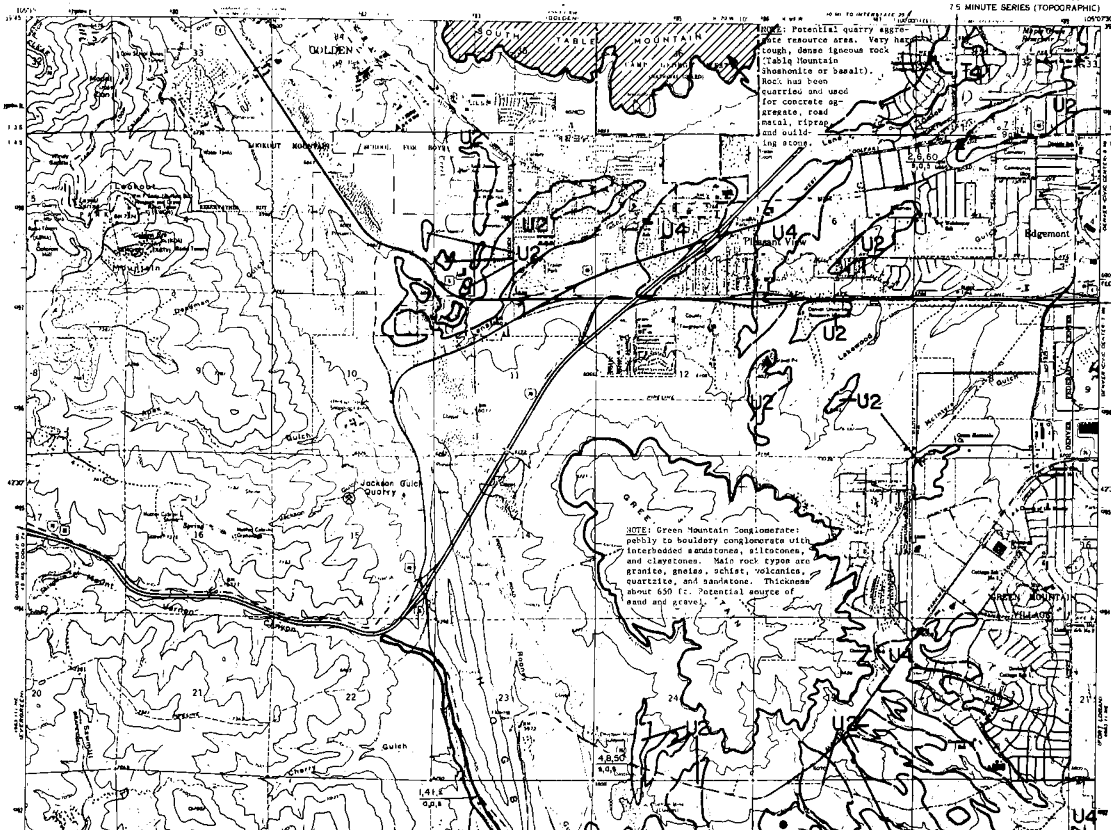
Mapped by: Phillip C. Wicklein
Date: June 30, 1974

Prepared in cooperation with the U. S. Geological Survey.

SAND, GRAVEL AND QUARRY AGGREGATE RESOURCES MAP

DEPARTMENT OF NATURAL RESOURCES
COLORADO GEOLOGICAL SURVEY
JOHN W. ROLD, DIRECTOR

MORRISON QUADRANGLE
COLORADO-JEFFERSON CO
7.5 MINUTE SERIES (TOPOGRAPHIC)



Base from U. S. Geological Survey
7-1/2 minute quadrangle

MORRISON, COLO.

EXPLANATION

Landform unit
Resource classification

LANDFORM UNITS

- F Floodplain deposit
- T Stream terrace deposit
- V Valley fill (F & T)
- U Upland deposits
- A Alluvial fan
- E Wind-deposited sand (eolian)
- M Man-made deposits (slag, tailings, spoils....)

RESOURCE CLASSIFICATION

Coarse Aggregate
(at least 30% retained on #4 screen, visual estimation)

- 1 Gravel: relatively clean and sound
- 2 Gravel: significant fines, decomposed rock, calcium carbonate.

Fine Aggregate
(greater than 70% passing #4 screen, 60% retained on #200 screen, visual estimation)

- 3 Sand

Unevaluated Resource

- 4 Probable aggregate resource

MAP SYMBOLS

- Operating gravel and/or sand pit
- Abandoned gravel and/or sand pit
- Operating stone quarry
- Abandoned stone quarry
- Potential quarry aggregate resource area
- Selected well or drill-hole location with overburden thickness (ft) over sand/gravel resource thickness (ft), obtained from well logs. "g" indicates gravel; "s" indicates sand. "x" in symbol denotes unevaluated or unknown property.
- "WG" denotes Colorado Geological Survey Windsor/Sand and Gravel projects' drill holes
- Landform boundary, solid where known or observed; dashed where approximate or inferred.

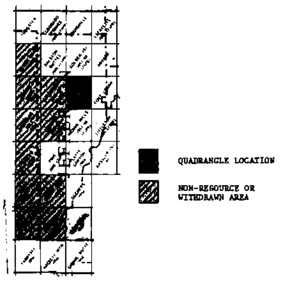
STATION, LOCATION AND GEOLOGICAL DESCRIPTION OF DEPOSIT

2, 17, 40

- overburden thickness (ft)
- sand/gravel resource thickness (ft)
- percent sand and fines (passing #4 screen, 0.25 in.), visual estimation
- significant amount of fines (passing #200 screen, 0.0029 in. or 0.074 mm.)
- significant amount of decomposed or weak rock.
- significant amount of calcium carbonate (caliche)

"x" in symbol denotes unevaluated or unknown property

"o" in symbol denotes property absent or insignificant



Geology modified after
Scott, G.R., 1972, Geologic map of the Morrison quadrangle, Jefferson County, Colorado: U.S. Geol. Survey Misc. Geol. Inv. Map I-790-A, and
Scott, G.R., 1972, Map showing potential source areas for non-metallic mineral resources, Morrison quadrangle, Jefferson County, Colorado: U.S. Geol. Survey Misc. Geol. Inv. Map I-790-D.

References:
Pearl, R.H., 1968, Quaternary geology of the Morrison quadrangle, Colorado: Mtn. Geologist, v. 5, no. 4.

Inter-County Regional Planning Commission, 1961, Drainage course plan for the Denver region - Part 1, Sand and gravel resources: Denver, Colo., Inter-County Reg. Plan. Comm. pl. 1.

Hamilton, J.L., and Owens, W.G., 1972, Geologic aspects, soils and related foundation problems, Denver metropolitan area, Colorado: Colorado Geol. Survey Environmental Geology Rept. 1, pl. 1.

Chase, G.H., and McConaghy, J.A., 1972, Generalized surficial geologic map of the Denver area, Colorado: U.S. Geol. Survey Misc. Geol. Inv. Map I-731.

Trimble, D.E., and Fitch, H.R., 1974, Map showing potential sources of gravel and crushed-rock aggregate in the Greater Denver Area, Front Range Urban Corridor, Colo.: U. S. Geol. Survey Misc. Geol. Inv. Map I-856-A.

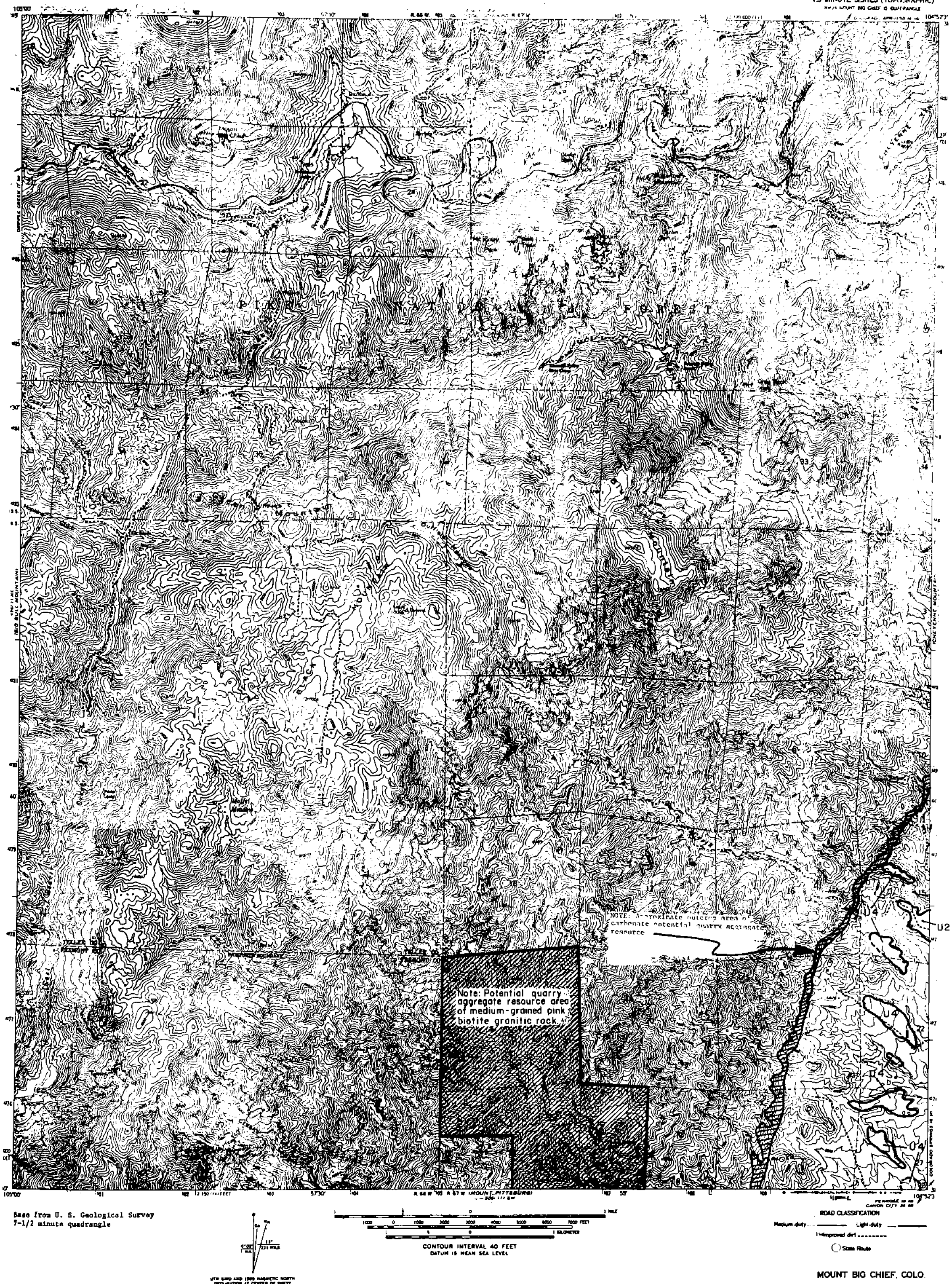
Mapped by: Stephen D. Schwochow
Date: June 30, 1974

Prepared in cooperation with the U. S. Geological Survey.

DEPARTMENT OF NATURAL RESOURCES
COLORADO GEOLOGICAL SURVEY
JOHN W. ROLD, DIRECTOR

SAND, GRAVEL AND QUARRY AGGREGATE RESOURCES MAP

MOUNT BIG CHIEF QUADRANGLE
COLORADO
7.5 MINUTE SERIES (TOPOGRAPHIC)



EXPLANATION

F — Landform Unit; Resource classification

LANDFORM UNITS

- F — Floodplain deposit
- T — Stream terrace deposit
- V — Valley fill (F & T)
- U — Upland deposits
- A — Alluvial fan
- E — Wind-deposited sand (eolian)
- M — Man-made deposits (slag, tailings, spoils....)

RESOURCE CLASSIFICATION

Coarse Aggregate
(at least 30% retained on #4 screen, visual estimation)

1 Gravel: relatively clean and sound
2 Gravel: significant fines, decomposed rock, calcium carbonate.

Fine Aggregate
(greater than 70% passing #4 screen, 40% retained on #200 screen, visual estimation)

3. Sand

Unevaluated Resource

4 Probable aggregate resource

MAP SYMBOLS

- Operating gravel and/or sand pit
- Abandoned gravel and/or sand pit
- Operating stone quarry
- Abandoned stone quarry
- Potential quarry aggregate resource area
- Selected well or drill-hole location with overburden thickness (ft) over sand/gravel resource thickness (ft), obtained from well logs. "g" indicates gravel; "s" indicates sand. "?" in symbol denotes unevaluated or unknown property.
- "wm" denotes Colorado Geological Survey Windsor/Sand and Gravel project drill hole
- Landform boundary, solid where known or observed; dashed where approximate or inferred.

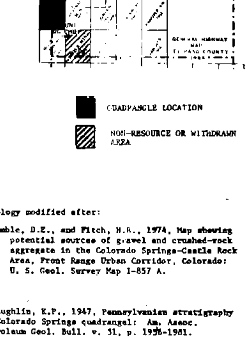
STATION, LOCATION AND GEOLOGICAL DESCRIPTION OF DEPOSIT

1, 11, 40

- overburden thickness (ft)
- sand/gravel resource thickness (ft)
- percent sand and fines (passing ... screen, 0.25 in.), visual estimation
- significant amount of fines (passing #200 screen, 0.0029 in. or 0.074 mm.)
- significant amount of decomposed or weak rock.
- significant amount of calcium carbonate (caliche)

"?" in symbol denotes unevaluated or unknown property

"o" in symbol denotes property absent or insignificant



QUADRANGLE LOCATION

NON-RESOURCE OR WITHDRAWN AREA

Geology modified after:

Trimble, D.E., and Fitch, H.R., 1974, Map showing potential sources of gravel and crushed-rock aggregate in the Colorado Springs-Castle Rock Area, Front Range Urban Corridor, Colorado: U. S. Geol. Survey Map I-857 A.

McLaughlin, K.P., 1947, Pennsylvanian stratigraphy of Colorado Springs quadrangel: Am. Assoc. Petroleum Geol. Bull. v. 31, p. 1936-1981.

Finlay, G.I., 1916, Colorado Springs Folio, Colorado: U.S. Geol. Survey Folio no. 203

Harms, J.C., 1951, Structural geology of the eastern flank of the southern Front Range, Colorado: University of Colorado Ph.D. Thesis, 121 p., 3 pls.

Mapped by: Phillip C. Wicklein
Date: June 30, 1974

Prepared in cooperation with the U. S. Geological Survey.

Base from U. S. Geological Survey 7-1/2 minute quadrangle

CONTOUR INTERVAL 40 FEET
DATUM IS MEAN SEA LEVEL

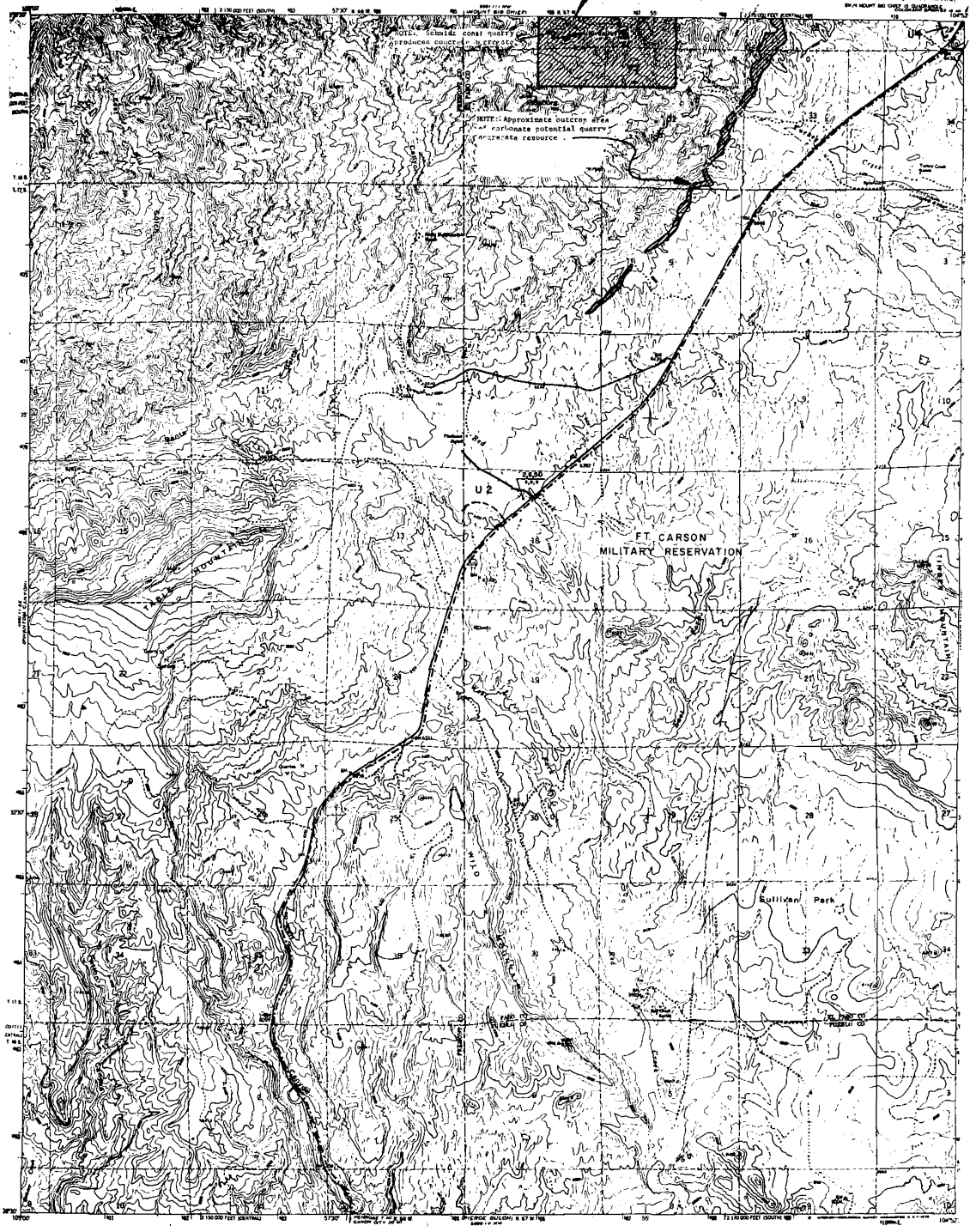
ROAD CLASSIFICATION
Medium-duty — Light-duty — Unimproved dirt — State Route

MOUNT BIG CHIEF, COLO.

SAND, GRAVEL AND QUARRY AGGREGATE RESOURCES MAP

DEPARTMENT OF NATURAL RESOURCES
COLORADO GEOLOGICAL SURVEY
JOHN W. ROLD, DIRECTOR

MOUNT PITTSBURG QUADRANGLE
COLORADO
7.5 MINUTE SERIES (TOPOGRAPHIC)



EXPLANATION

Landform unit

Resource classification

LANDFORM UNITS

- F Floodplain deposit
- T Stream terrace deposit
- V Valley fill (F & T)
- U Upland deposits
- A Alluvial fan
- E Wind-deposited sand (eolian)
- M Man-made deposits (slag, tailings, spoils....)

RESOURCE CLASSIFICATION

Coarse aggregate
(at least 50% retained on #4 screen, visual estimation)

1 Gravel: relatively clean and sound

2 Gravel: significant fines, decomposed rock, calcium carbonate.

Fine aggregate
(greater than 70% passing #4 screen, 50% retained on #200 screen, visual estimate

3 Sand

Unevaluated Resource

4 Probable aggregate resource

MAP SYMBOLS

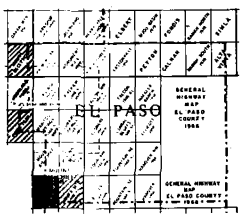
- Operating gravel and/or sand pit
- Abandoned gravel and/or sand pit
- Operating stone quarry
- Abandoned stone quarry
- Potential quarry aggregate resource area
- Selected well or drill-hole location with overburden thickness (ft) over sand/gravel resource thickness (ft), obtained from well logs.
  - "g" indicates gravel; "s" indicates sand
  - "u" is symbol denotes unevaluated or unknown property.
  - "ms" denotes Colorado Geological Survey Windsor/Sand and Gravel projects' drill hole
- Landform boundary, solid where known or observed, dashed where approximate or inferred.

STATION, LOCATION AND GEOLOGICAL DESCRIPTION OF REPORT

overburden thickness (ft)
sand/gravel resource thickness (ft)
percent sand and fines (passing #4 screen, 0.23 in.), visual estimation
significant amount of fines (passing #200 screen, 0.0018 in. or 0.074 mm.)
significant amount of decomposed or weak rock.
significant amount of calcium carbonate (caliche)

"u" is symbol denotes unevaluated or unknown property

"s" is symbol denotes property absent or insignificant



QUADRANGLE LOCATION

NON-RESOURCE OR WITHDRAWN AREA

REFERENCE:

McLaughlin, K.P., 1947, Pennsylvanian stratigraphy of Colorado Springs quadrangle: Am. Assoc. Petroleum Geol. Bull. v. 31, p. 1936-1981.

Finlay, G.I., 1916, Colorado Springs Folio, Colorado: U.S. Geol. Survey Folio no. 203.

Geology Modified after:
Herms, J.C., 1951, Structural geology of the eastern flank of the southern Front Range, Colorado: University of Colorado Ph.D. Thesis, 121 p., 3 pls.

Mapped by: Phillip C. Wicklein
Date: June 30, 1974

Base from U. S. Geological Survey
7-1/2 minute quadrangle

CONTOUR INTERVAL 40 FEET
DOTTED LINES REPRESENT 20-FOOT CONTOURS
DATUM IS MEAN SEA LEVEL

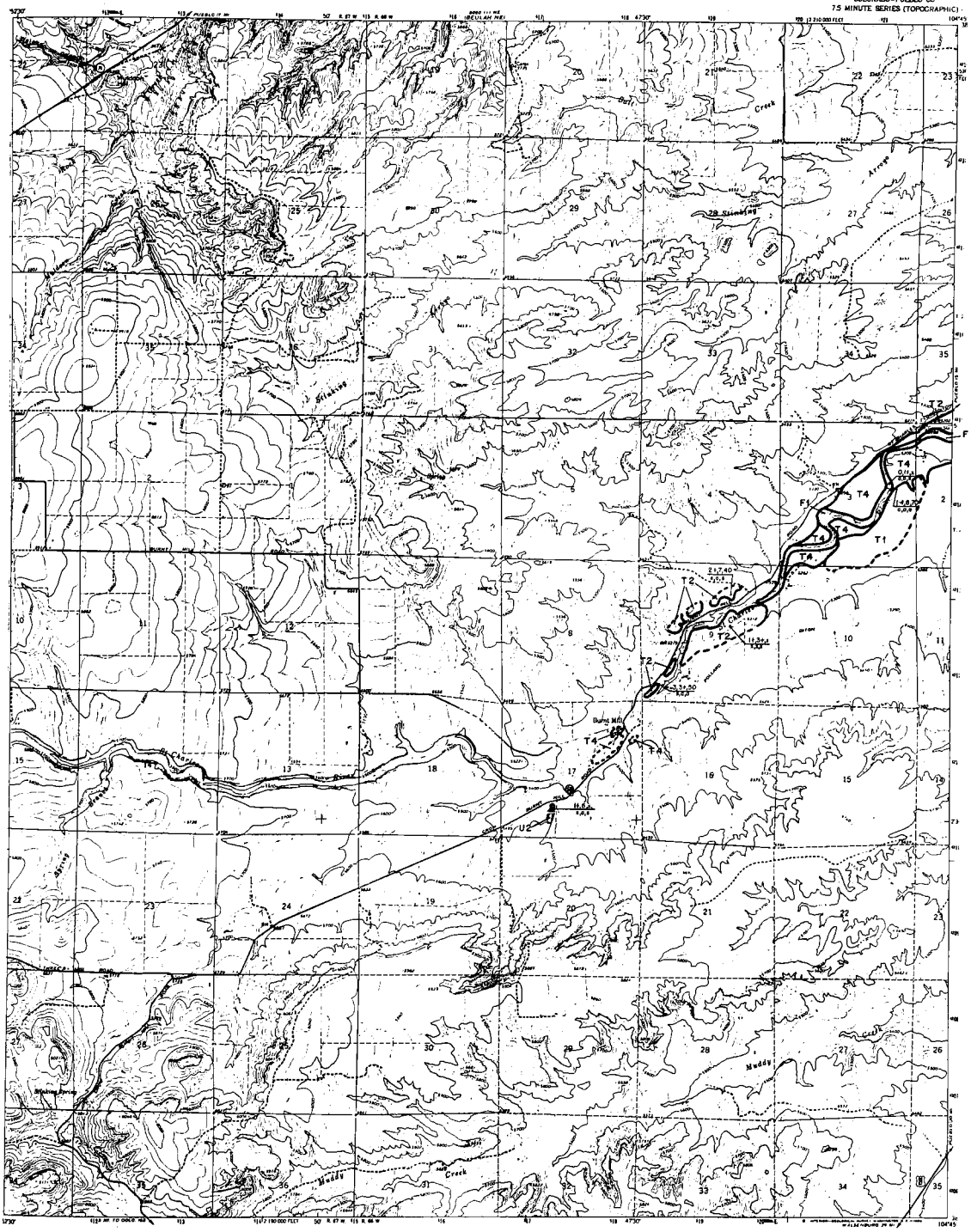
ROAD CLASSIFICATION
Medium duty ——— Light duty ———
Unimproved dirt .....
( ) State Route

MOUNT PITTSBURG, COLO.

SAND, GRAVEL AND QUARRY AGGREGATE RESOURCES MAP

DEPARTMENT OF NATURAL RESOURCES
COLORADO GEOLOGICAL SURVEY
JOHN W. ROLD, DIRECTOR

MULDOON HILL QUADRANGLE
COLORADO-PUEBLO CO
7.5 MINUTE SERIES (TOPOGRAPHIC)



EXPLANATION

Landform unit
Resource classification

LANDFORM UNITS

F Floodplain deposit
T Stream terrace deposit
V Valley fill (F & T)
U Upland deposits
A Alluvial fan
E Wind-deposited sand (dallas)
M Man-made deposits (slag, tailings, spoils....)

RESOURCE CLASSIFICATION

Coarse Aggregate
(at least 30% retained on #4 screen, visual estimation)

1 Gravel: relatively clean and sound
2 Gravel: significant fines, decomposed rock, calcium carbonate

Fine Aggregate
(greater than 70% passing #4 screen, 60% retained on #200 screen, visual estimation

3 Sand

Unevaluated Resource

4 Probable aggregate resource

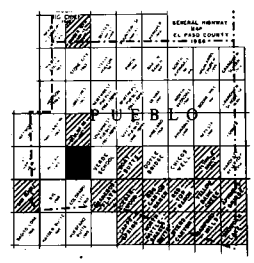
MAP SYMBOLS

- Operating gravel and/or sand pit
- Abandoned gravel and/or sand pit
- Operating stone quarry
- Abandoned stone quarry
- Potential quarry aggregate resource area
- Selected well or drill-hole location with overburden thickness (ft) over sand/gravel resource thickness (ft), obtained from well logs. "x" indicates gravel; "o" indicates sand. "?" in symbol denotes unevaluated or unknown property. "ws" denotes Colorado Geological Survey Windsor/Sand and Gravel project drill hole
- Landform boundary, solid where known or observed; dashed where approximate or inferred.

STATION, LOCATION AND GEOLOGICAL DESCRIPTION OF DEPOSIT

- overburden thickness (ft)
- sand/gravel resource thickness (ft)
- percent sand and fines (passing #4 screen, 0.22 in.), visual estimation
- significant amount of fines (passing #200 screen, 0.0058 in. or 0.074 mm.)
- significant amount of decomposed or weak rock.
- significant amount of calcium carbonate (caliche)

"?" in symbol denotes unevaluated or unknown property.
"o" in symbol denotes property absent or insignificant



QUADRANGLE LOCATION

NON-RESOURCE OR WITHDRAWN AREA

Mapped by: Ralph R. Shroba
Date: June 30, 1974

Base from U. S. Geological Survey
7-1/2 minute quadrangle

UTM GRID AND 1965 MAGNETIC NORTH DECLINATION AT CENTER OF SHEET

CONTOUR INTERVAL 20 FEET

ROAD CLASSIFICATION

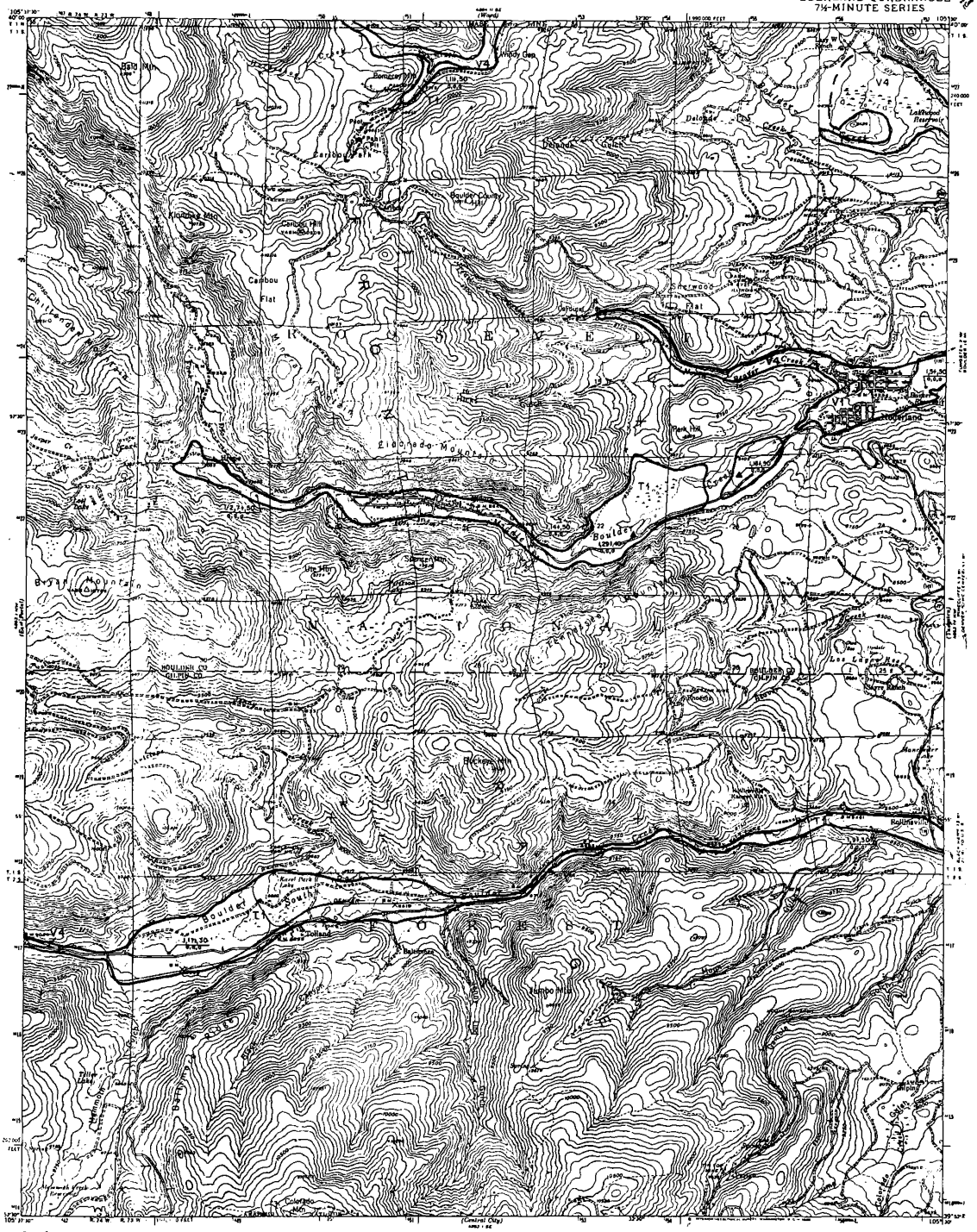
Heavy-duty — Light-duty
Medium-duty — Unimproved dirt
U.S. Route State Route

MULDOON HILL, COLO.

SAND, GRAVEL AND QUARRY AGGREGATE RESOURCES MAP

DEPARTMENT OF NATURAL RESOURCES
COLORADO GEOLOGICAL SURVEY
JOHN W. ROLD, DIRECTOR

COLORADO
NEDERLAND QUADRANGLE
7½-MINUTE SERIES



EXPLANATION

Landform unit
Resource classification

LANDFORM UNITS

- F Floodplain deposit
- T Stream terrace deposit
- V Valley fill (F & T)
- U Upland deposits
- A Alluvial fan
- E Wind-deposited sand (eolian)
- M Man-made deposits (slag, tailings, spoils....)

RESOURCE CLASSIFICATION

Coarse Aggregate
(at least 70% retained on #4 screen, visual estimate)

- 1 Gravel: relatively clean and sound
- 2 Gravel: significant fines, decomposed rock, calcium carbonate.

Fine Aggregate
(greater than 70% passing #4 screen, 60% retained on #200 screen, visual estimate)

- 3 Sand

Overburdened Resource

- 4 Probable aggregate resource

MAP SYMBOLS

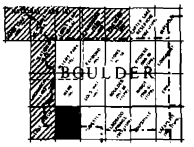
- Operating gravel and/or sand pit
- Abandoned gravel and/or sand pit
- Operating stone quarry
- Abandoned stone quarry
- Potential quarry aggregate resource area
- Selected well or drill-hole location with overburden thickness (ft) over sand/gravel resource thickness (ft), obtained from well logs
  - "g" indicates gravel; "s" indicates sand
  - "x" in symbol denotes unevaluated or unknown property.
  - "ms" denotes Colorado Geological Survey Windsor/Sand and Gravel projects' drill hole
- Landform boundary, solid where known or observed; dashed where approximate or inferred.

STATION, LOCATION AND GEOLOGICAL DESCRIPTION OF DEPOSIT

- overburden thickness (ft)
- sand/gravel resource thickness (ft)
- percent sand and fines (passing #4 screen, 0.35 in.), visual estimation
- significant amount of fines (passing #200 screen, 0.008 in. or 0.074 mm.)
- significant amount of decomposed or weak rock.
- significant amount of calcium carbonate (caliche)

"x" in symbol denotes unevaluated or unknown property

"o" in symbol denotes property absent or insignificant



QUADRANGLE LOCATION

NON-RESOURCE OR WITHDRAWN AREA

REFERENCE:

Gable, D. J., 1969, U. S. Geol. Survey Geol. Quad Map GQ-833.

Mapped by: Ralph R. Shroba
Date: June 30, 1974

Base from U. S. Geological Survey
7-1/2 minute quadrangle

Contour interval 80 feet
Datum is mean sea level

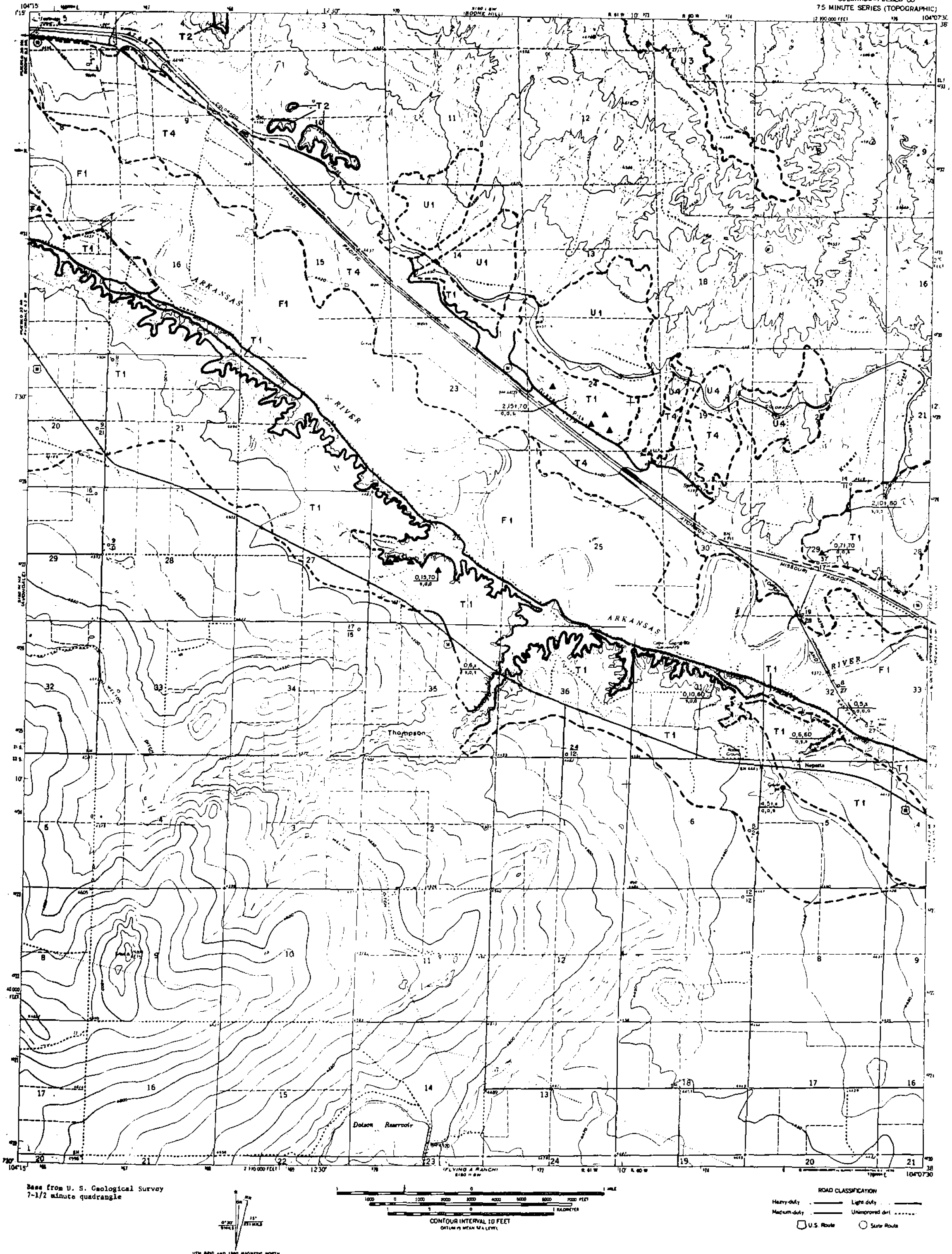
ROAD CLASSIFICATION
Medium-duty — Light-duty
Unimproved dirt .....
State Route

NEDERLAND, COLO.

DEPARTMENT OF NATURAL RESOURCES
COLORADO GEOLOGICAL SURVEY
JOHN W. ROLD, DIRECTOR

SAND, GRAVEL AND QUARRY AGGREGATE RESOURCES MAP

NEPESTA QUADRANGLE
COLORADO-PUEBLO CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)



EXPLANATION

F1 — Landform unit; Resource classification

LANDFORM UNITS

- F Floodplain deposit
- T Stream terrace deposit
- V Valley fill (F & T)
- U Upland deposits
- A Alluvial fan
- E Wind-deposited sand (eolian)
- M Man-made deposits (slag, tailings, spoils....)

RESOURCE CLASSIFICATION

Coarse Aggregate
(at least 30% retained on #4 screen, visual estimation)

- 1 Gravel: relatively clean and sound
- 2 Gravel: significant fines, decomposed rock, calcium carbonate.

Fine Aggregate
(greater than 70% passing #4 screen, 5% retained on #200 screen, visual estimation)

- 3 Sand

Unevaluated Resource

- 4 Probable aggregate resource

MAP SYMBOLS

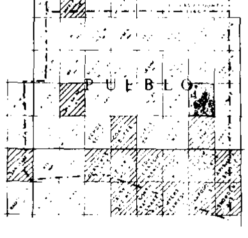
- Operating gravel and/or sand pit
- Abandoned gravel and/or sand pit
- Operating stone quarry
- Abandoned stone quarry
- Potential quarry aggregate resource area
- Selected well or drill-hole location with overburden thickness (ft) over sand/gravel thickness (ft), obtained from well logs. "g" indicates gravel; "s" indicates sand
- "?" in symbol denotes unevaluated or unknown property.
- "wd" denotes Colorado Geological Survey Windsor/Sand and Gravel Projects' drill hole
- Landform boundary, solid where known or observed; dashed where approximate or inferred.

STATION, LOCATION AND GEOLOGICAL DESCRIPTION OF DEPOSIT

- Overburden thickness (ft)
- Significant resource thickness (ft)
- Percent sand and fines passing #4 screen, visual estimation
- significant amount of fines (passing #200 screen)
- significant amount of decomposed or weak rock
- significant amount of calcium carbonate (caliche)

"x" in symbol denotes unevaluated or unknown property.

"o" in symbol denotes property absent or insignificant.



QUADRANGLE LOCATION

NON-RESOURCE OR WITHDRAWN AREA

Base from U. S. Geological Survey 7-1/2 minute quadrangle

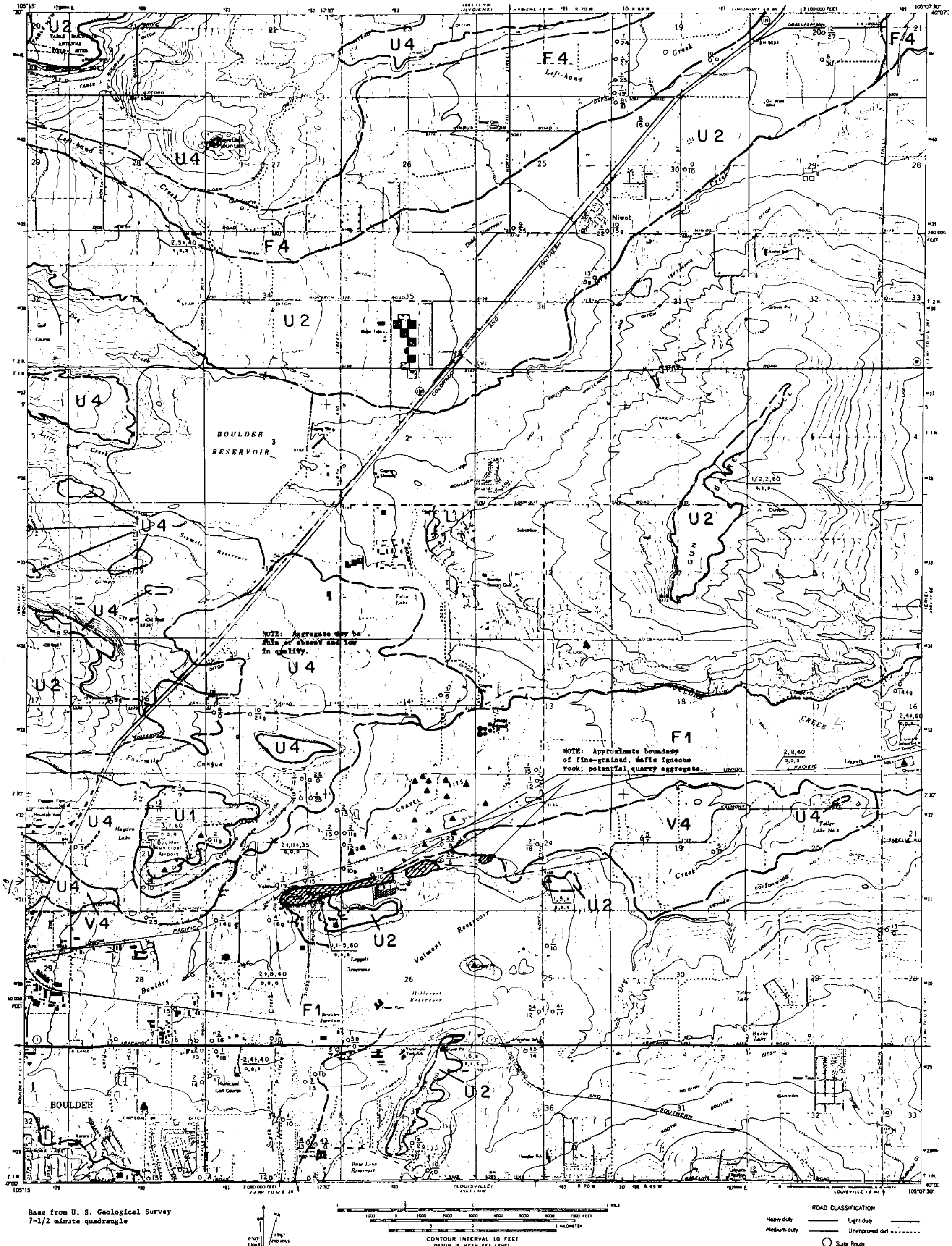
Mapped by: Stephen D. Schwochow
Date: June 30, 1974

NEPESTA, COLO.

DEPARTMENT OF NATURAL RESOURCES
COLORADO GEOLOGICAL SURVEY
JOHN W. ROLD, DIRECTOR

SAND, GRAVEL AND QUARRY AGGREGATE RESOURCES MAP

NIWOT QUADRANGLE
COLORADO - BOULDER CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)



EXPLANATION

F1 — Landform unit; Resource classification

LANDFORM UNITS

- F Floodplain deposit
- T Stream terrace deposit
- V Valley fill (F & T)
- U Upland deposits
- A Alluvial fan
- E Wind-deposited sand (eolian)
- M Man-made deposits (slag, tailings, spoils....)

RESOURCE CLASSIFICATION

Coarse Aggregate
(at least 30% retained on #4 screen, visual estimation)

- 1 Gravel: relatively clean and sound
- 2 Gravel: significant fines, decomposed rock, calcium carbonate.

Fine Aggregate
(greater than 70% passing #4 screen, 60% retained on #200 screen, visual estimation)

- 3 Sand

Unevaluated Resource

- 4 Probable aggregate resource

MAP SYMBOLS

- ● Operating gravel and/or sand pit
- ▲ Abandoned gravel and/or sand pit
- Operating stone quarry
- Abandoned stone quarry
- Potential quarry aggregate resource area
- $\circ\frac{2}{17_g}$ Selected well or drill-hole location with overburden thickness (ft) over sand/gravel resource thickness (ft), obtained from well logs.
  - "g" indicates gravel; "s" indicates sand
  - "x" in symbol denotes unevaluated or unknown property.
  - "WB" denotes Colorado Geological Survey Windsor/Sand and Gravel projects' drill hole
- Landform boundary, solid where known or observed; dashed where approximate or inferred.

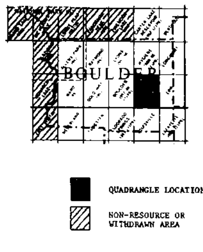
STATION, LOCATION AND GEOLOGICAL DESCRIPTION OF DEPOSIT

5, 17, 40

- overburden thickness (ft)
- sand/gravel resource thickness (ft)
- percent sand and fines (passing #4 screen, 0.25 in.), visual estimation
- significant amount of fines (passing #200 screen, 0.0059 in. or 0.074 mm.)
- significant amount of decomposed or weak rock.
- significant amount of calcium carbonate (caliche)

"x" in symbol denotes unevaluated or unknown property

"o" in symbol denotes property absent or insignificant



QUADRANGLE LOCATION

NON-RESOURCE OR WITHDRAWN AREA

Geology modified after: Colton, R.B., and Fitch, H.R., 1974, Map showing potential sources of gravel and crushed-rock aggregate in the Boulder-Fort Collins-Greeley Area, Front Range Urban Corridor, Colorado: U. S. Geol. Survey Map I-855 D.

Mapped by: Ralph R. Shroba
Date: June 30, 1974

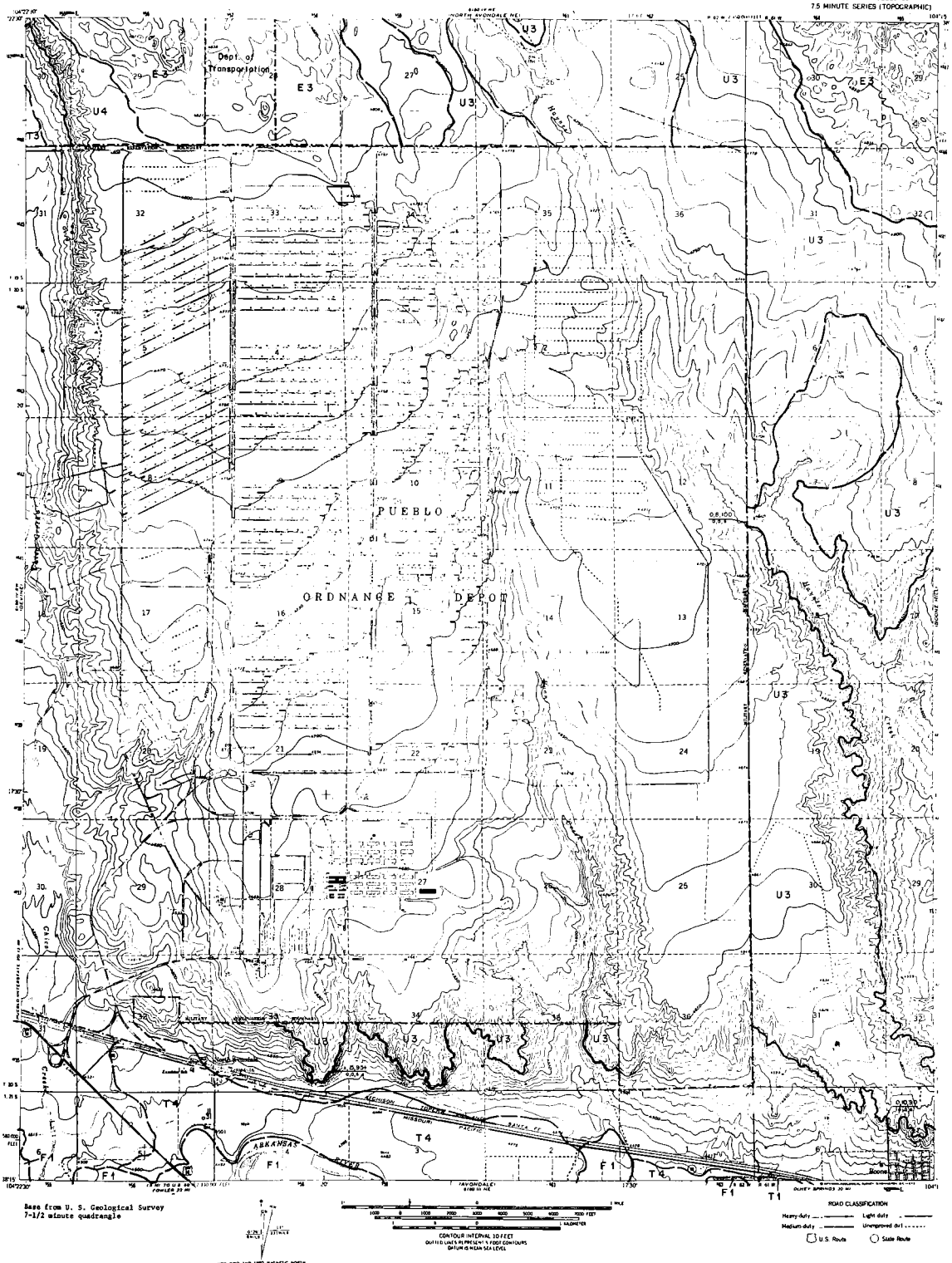
Prepared in cooperation with the U. S. Geological Survey.

NIWOT, COLO.

SAND, GRAVEL AND QUARRY AGGREGATE RESOURCES MAP

DEPARTMENT OF NATURAL RESOURCES
COLORADO GEOLOGICAL SURVEY
JOHN W. ROLD, DIRECTOR

NORTH AVONDALE QUADRANGLE
COLORADO - PUEBLO CO
7.5 MINUTE SERIES (TOPOGRAPHIC)



EXPLANATION

Landform unit
Resource classification

LANDFORM UNITS

- F — Floodplain deposit
- T — Stream terrace deposit
- V — Valley fill (F & T)
- U — Upland deposits
- A — Alluvial fan
- E — Wind-deposited sand (eolian)
- M — Man-made deposits (slag, tailings, spoils....)

RESOURCE CLASSIFICATION

Coarse Aggregate
(at least 50% retained on #4 screen, visual estimation)

- 1 — Gravel: relatively clean and sound
- 2 — Gravel: significant fines, decomposed rock, calcium carbonate.

Fine Aggregate
(greater than 70% passing #4 screen, 80% retained on #200 screen, visual estimate

- 3 — Sand

Reevaluated Resource

- 4 — Probable aggregate resource

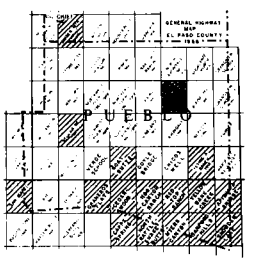
MAP SYMBOLS

- Operating gravel and/or sand pit
- Abandoned gravel and/or sand pit
- Operating stone quarry
- Abandoned stone quarry
- Potential quarry aggregate resource area
- Selected well or drill-hole location with overburden (thickness (fo)) over sand/gravel resource thickness (fc), obtained from well logs. "g" indicates gravel; "s" indicates sand
- "-" in symbol denotes unevaluated or unknown property
- "mb" denotes Colorado Geological Survey Minder/Sand and Gravel projects' drill hole
- Landform boundary, solid where known or observed; dashed where approximate or inferred.

STATION, LOCATION AND GEOLOGICAL DESCRIPTION OF DEPOSIT

- overburden thickness (fo)
- sand/gravel resource thickness (fc)
- percent sand and fines (passing #4 screen, 0.25 in.), visual estimation
- sign/loam amount of fines (passing #200 screen, 0.0058 in, or 0.074 mm.)
- sign/loam amount of decomposed or weak rock.
- sign/loam amount of calcium carbonate (caliche)

"s" in symbol denotes unevaluated or unknown property
"n" in symbol denotes property absent or insignificant



QUADRANGLE LOCATION

NON-RESOURCE OR WITHDRAWN AREA

Mapped by: Stephen D. Schwochow
Date: June 30, 1974

Base from U. S. Geological Survey
7-1/2 minute quadrangle

CONTOUR INTERVAL 10 FEET
DOTTED LINES REPRESENT 5 FOOT CONTOURS
DATUM IS MEAN SEA LEVEL

ROAD CLASSIFICATION

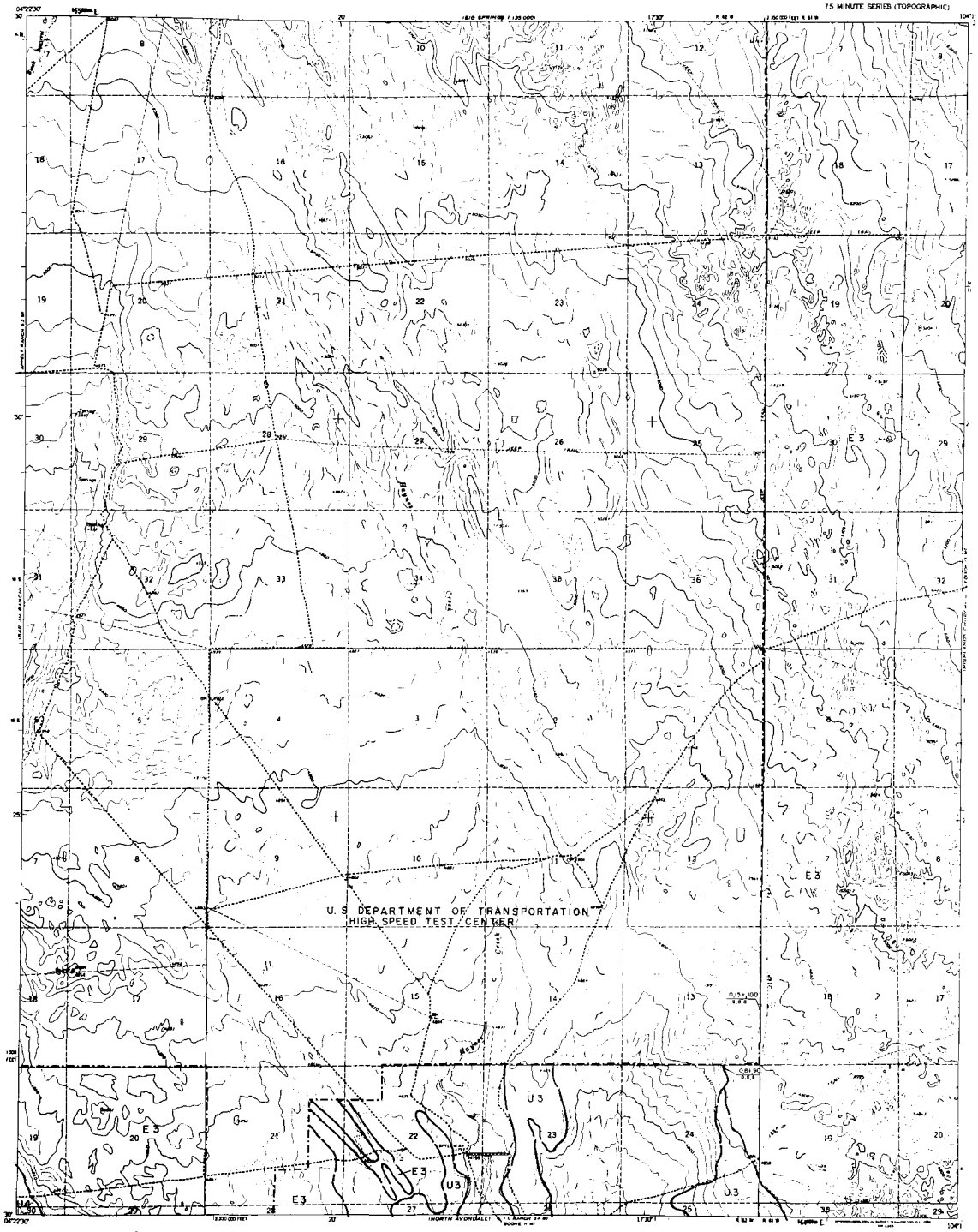
- Heavy-duty ——— Light duty - - -
- Medium-duty ——— Unimproved dirt - - - -
- U.S. Route ○ State Route

NORTH AVONDALE, COLO.

DEPARTMENT OF NATURAL RESOURCES
COLORADO GEOLOGICAL SURVEY
JOHN W. ROLD, DIRECTOR

SAND, GRAVEL AND QUARRY AGGREGATE RESOURCES MAP

NORTH AVONDALE NE QUADRANGLE
COLORADO-PUEBLO CO
7.5 MINUTE SERIES (TOPOGRAPHIC)



EXPLANATION

Landform unit
Resource classification

LANDFORM UNITS

F Floodplain deposit
T Stream terrace deposit
V Valley fill (F & T)

U Upland deposits
A Alluvial fan
E Wind-deposited sand (dunes)
M Man-made deposits (slag,tailings, spoils....)

RESOURCE CLASSIFICATION

Coarse Aggregate
(at least 50% retained on #4 screen, visual estimation)

1 Gravel: relatively clean and sound
2 Gravel: significant fines, decomposed rock, calcium carbonate

Fine Aggregate
(greater than 70% passing #4 screen, 60% retained on #200 screen, visual estimation

3 Sand

Undefined Resource

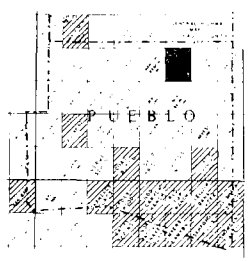
4 Probable aggregate resource

MAP SYMBOLS

Operating gravel and/or sand pit
Abandoned gravel and/or sand pit
Operating stone quarry
Abandoned stone quarry
Potential quarry aggregate resource area
Selected well or drill-hole location with overburden thickness (ft) over sand/gravel resource thickness (ft), obtained from well logs.
"g" indicates gravel; "s" indicates sand
"-" in symbol denotes unevaluated or unknown property.
"cc" denotes Colorado Geological Survey Windsor/Sand and Gravel projects' drill hole
Landform boundary, solid where known or observed; dashed where approximate or inferred.

STATION, LOCATION AND GEOLOGICAL DESCRIPTION OF DEPOSIT

overburden thickness (ft)
sand/gravel resource thickness (ft)
percent sand and fines (passing #4 screen, 0.16 in.), visual estimation
significant amount of fines (passing #200 screen, 0.0029 in. or 0.074 mm)
significant amount of decomposed or weak rock.
significant amount of calcium carbonate (caliche)
"s" in symbol denotes unevaluated or unknown property
"o" in symbol denotes property absent or insignificant



QUADRANGLE LOCATION

NON-RESOURCE OR WITHDRAWN AREA

Mapped by: Stephen D. Schwochow
Date: June 30, 1974

Base from U. S. Geological Survey
7-1/2 minute quadrangle

CONTOUR INTERVAL 10 FEET
DATUM IS MEAN SEA LEVEL

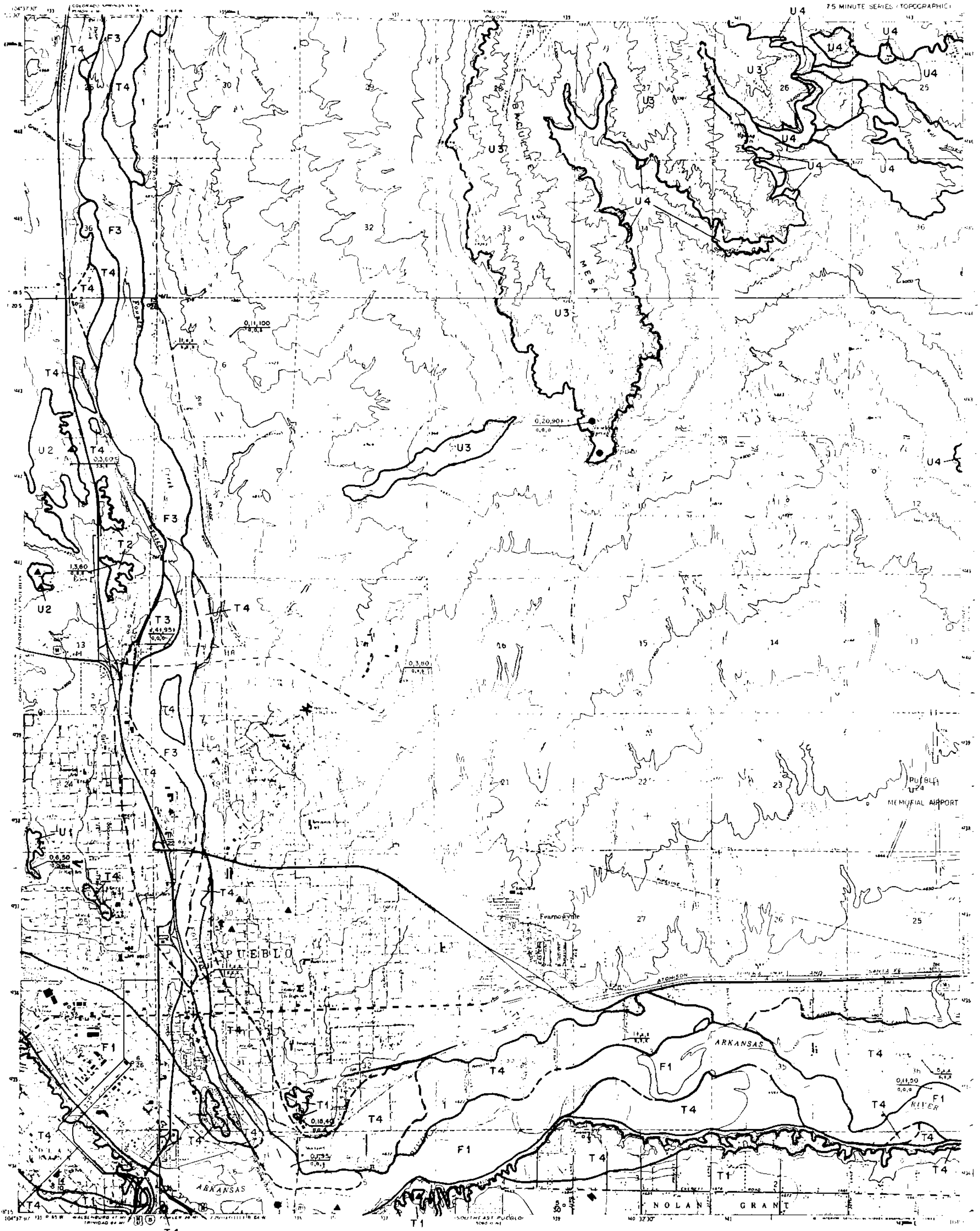
ROAD CLASSIFICATION
Unimproved dirt

NORTH AVONDALE NE, COLO.

DEPARTMENT OF NATURAL RESOURCES
COLORADO GEOLOGICAL SURVEY
JOHN W. ROLD, DIRECTOR

SAND, GRAVEL AND QUARRY AGGREGATE RESOURCES MAP

NORTHEAST PUEBLO QUADRANGLE
COLORADO PUEBLO CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)



Base from U. S. Geological Survey
7-1/2 minute quadrangle

ROAD CLASSIFICATION
Heavy duty — Light duty
Medium duty — Unimproved dirt
Interstate Route — U.S. Route — State Route

CONTOUR INTERVAL 10 FEET

EXPLANATION

F1 — Landform unit; Resource classification

LANDFORM UNITS

- F — Floodplain deposit
- T — Stream terrace deposit
- V — Valley fill (F & T)
- U — Upland deposits
- A — Alluvial fan
- E — Wind-deposited sand (eolian)
- M — Man-made deposits (slag, tailings, spoils....)

RESOURCE CLASSIFICATION

Coarse Aggregate
(at least 40% retained on #4 screen, visual estimation)

- 1 — Gravel: relatively clean and sound
- 2 — Gravel: significant fines, decomposed rock, calcium carbonate.

Fine Aggregate
(greater than 70% passing #4 screen, 40% retained on #100 screen, visual estimation)

- 3 — Sand

Unevaluated Resource

- 4 — Probable aggregate resource

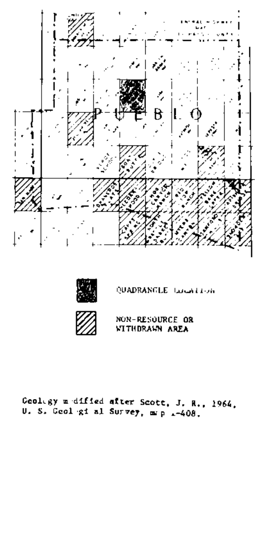
MAP SYMBOLS

- Operating gravel and/or sand pit
- Abandoned gravel and/or sand pit
- Operating stone quarry
- Abandoned stone quarry
- Potential quarry aggregate resource area
- Selected well or drill-hole location with overburden thickness (ft) over sand/gravel resource thickness (ft), obtained from well logs.
  - "g" indicates gravel; "s" indicates sand
  - "u" in symbol denotes unevaluated or unknown property.
  - "wg" denotes Colorado Geological Survey Windsor/Sand and Gravel projects' drill hole
- Landform boundary, solid where known or observed; dashed where approximate or inferred.

STATION, LOCATION AND GEOLOGICAL DESCRIPTION OF DEPOSIT

3, 17, 40
- overburden thickness (ft)
- sand/gravel resource thickness (ft)
- percent sand and fines (passing #4 screen, 0.25 in.), visual estimation
- significant amount of fines (passing #200 screen, 0.0029 in. or 0.074 mm.)
- significant amount of decomposed or weak rock.
- significant amount of calcium carbonate (caliche)

"u" in symbol denotes unevaluated or unknown property
"s" in symbol denotes property absent or insignificant



QUADRANGLE LOCATION
NON-RESOURCE OR WITHDRAWN AREA

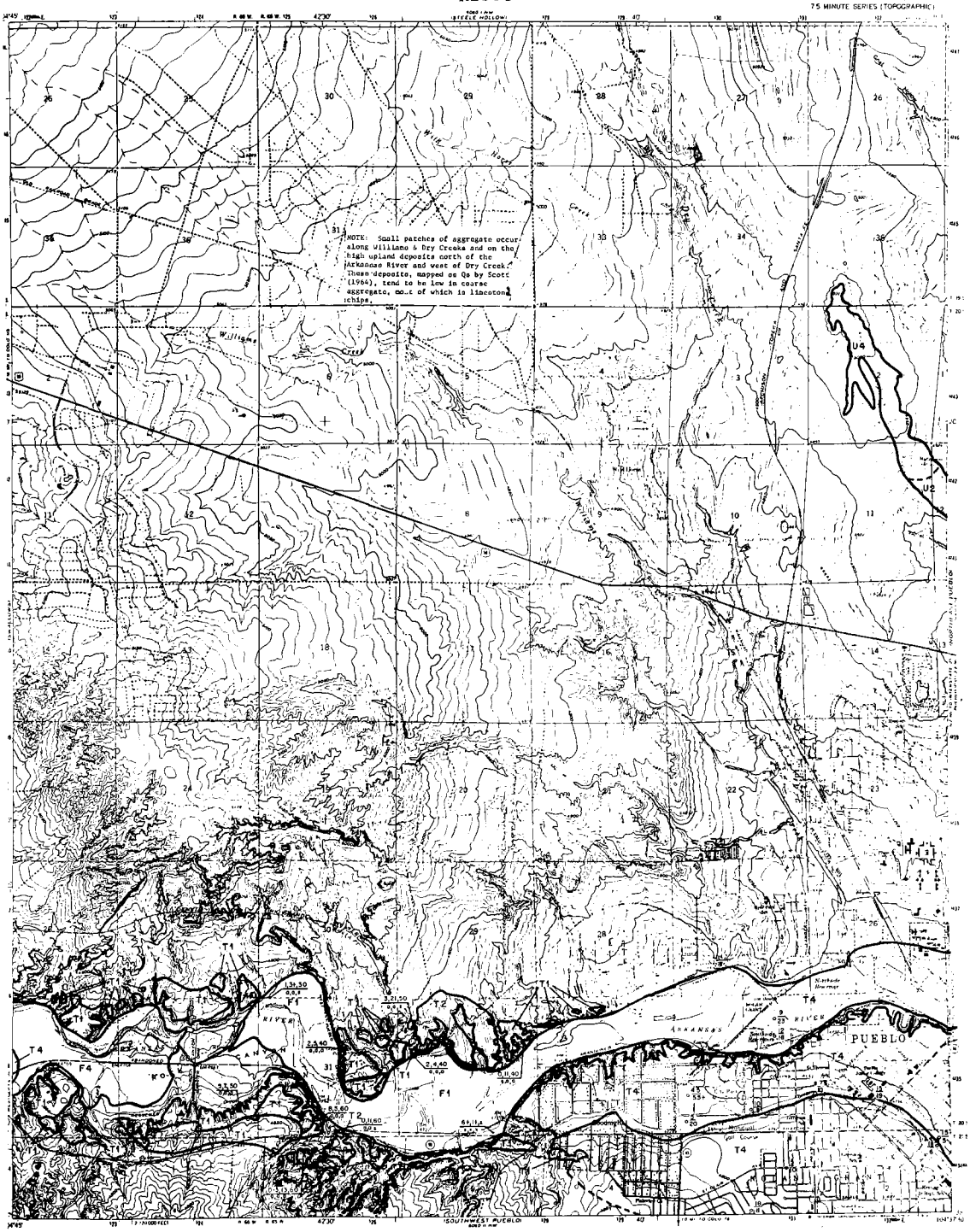
Geology modified after Scott, J. R., 1964, U. S. Geological Survey, map I-408.

Mapped by: Phillip C. Wicklein
Date: June 30, 1974

SAND, GRAVEL AND QUARRY AGGREGATE RESOURCES MAP

DEPARTMENT OF NATURAL RESOURCES
COLORADO GEOLOGICAL SURVEY
JOHN W. ROLD, DIRECTOR

NORTHWEST PUEBLO QUADRANGLE
COLORADO - PUEBLO CO
7.5 MINUTE SERIES (TOPOGRAPHIC)



EXPLANATION

Landform unit
Resource classification

LANDFORM UNITS

- F Floodplain deposit
- T Stream terrace deposit
- V Valley fill (F & T)
- U Upland deposits
- A Alluvial fan
- E Wind-deposited sand (eolian)
- M Man-made deposits (slag, tailings, spoils....)

RESOURCE CLASSIFICATION

Coarse Aggregate
(at least 50% retained on #4 screen, visual estimation)

- 1 Gravel: relatively clean and sound
- 2 Gravel: significant fines, decomposed rock, calcium carbonate.

Fine Aggregate
(greater than 70% passing #4 screen, 50% retained on #200 screen, visual estimation

- 3 Sand

Overlained Resource

- 4 Probable aggregate resource

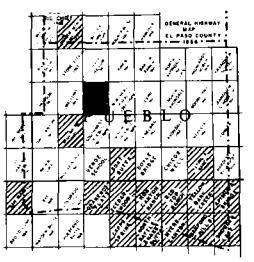
MAP SYMBOLS

- Operating gravel and/or sand pit
- Abandoned gravel and/or sand pit
- Operating stone quarry
- Abandoned stone quarry
- Potential quarry aggregate resource area
- Selected soil or drill-hole location with overburden thickness (ft) over sand/gravel resource thickness (ft), obtained from well logs.
- "x" indicates gravel; "s" indicates sand
- "x" in symbol denotes unevaluated or unknown property.
- "ss" denotes Colorado Geological Survey Winder/Sand and Gravel projects' drill hole
- Landform boundary, solid where known or observed; dashed where approximate or inferred.

STATION LOCATION AND GEOLOGICAL DESCRIPTION OF EXPOSURE

- overburden thickness (ft)
- sand/gravel resource thickness (ft)
- percent sand and fines (passing #4 screen, 0.18 in.), visual estimation
- slight/decent amount of fines (passing #200 screen, 0.0018 in. or 0.074 mm.)
- slight/decent amount of decomposed or weak rock.
- slight/decent amount of calcium carbonate (caliche)

"ss" in symbol denotes unevaluated or unknown property
"s" in symbol denotes property absent or insignificant



QUADRANGLE LOCATION

NON-RESOURCE OR WITHDRAWN AREA

Geology modified after Scott, G. R., 1964, U. S. Geological Survey Map I-408.

Mapped by: Ralph R. Shroba
Date: June 30, 1974

Base from U. S. Geological Survey 7-1/2 minute quadrangle

CONTOUR INTERVAL 10 FEET
DATUM IS MEAN SEA LEVEL

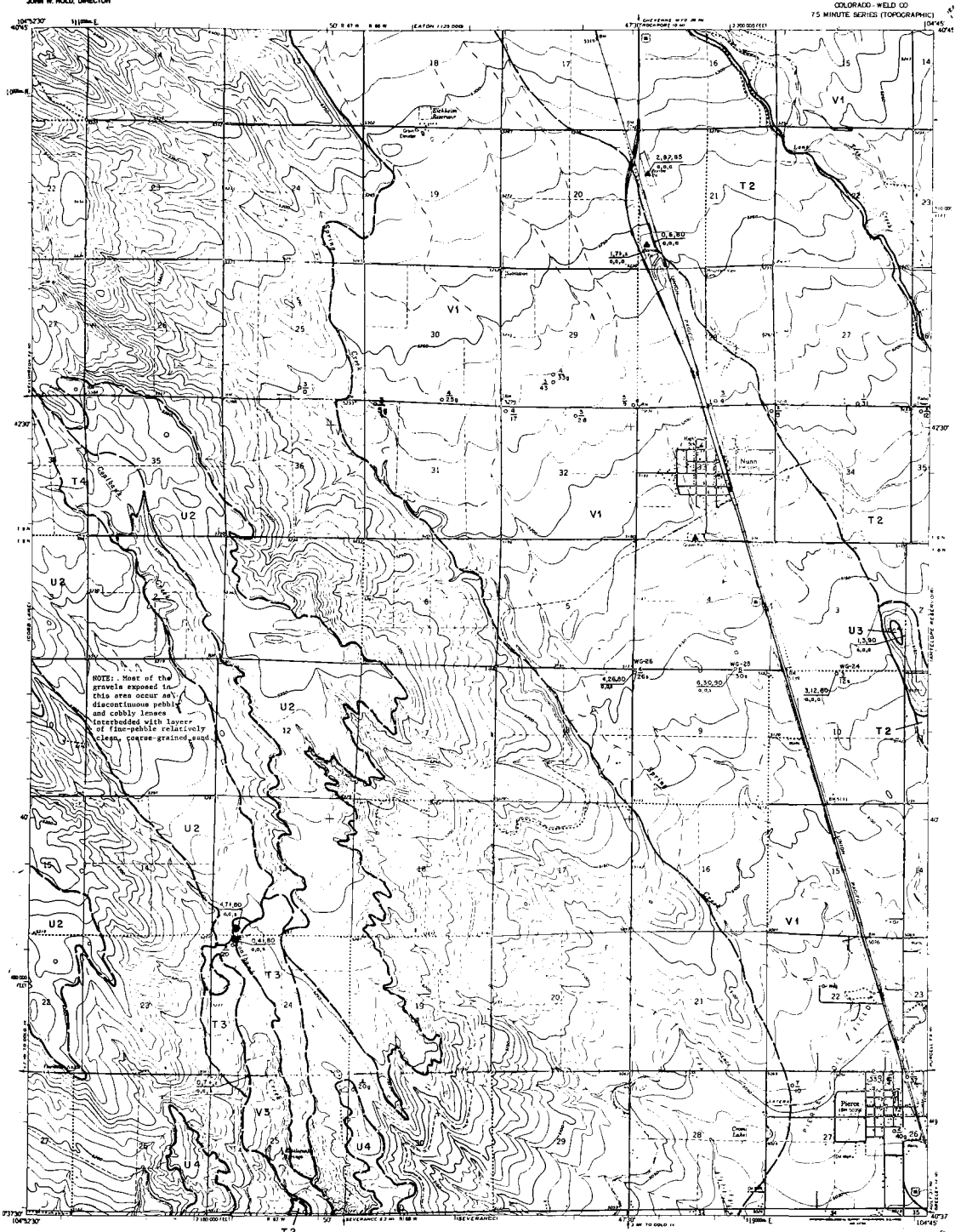
ROAD CLASSIFICATION
Heavy duty — Light duty
Medium duty — Unimproved dirt
U.S. Route — State Route

NORTHWEST PUEBLO, COLO

SAND, GRAVEL AND QUARRY AGGREGATE RESOURCES MAP

DEPARTMENT OF NATURAL RESOURCES
COLORADO GEOLOGICAL SURVEY
JOHN W. HOLD, DIRECTOR

NUNN QUADRANGLE
COLORADO - WELD CO
7.5 MINUTE SERIES (TOPOGRAPHIC)



EXPLANATION

Landform unit

Resource classification

LANDFORM UNITS

- F Floodplain deposit
- T Stream terrace deposit
- V Valley fill (F & T)
- U Upland deposits
- A Alluvial fan
- E Wind-deposited sand (eolian)
- M Man-made deposits (slag,tailings, spoils....)

RESOURCE CLASSIFICATION

Coarse Aggregate
at least 35% retained on #4 screen, [illegible]

1 Gravel: relatively clean and sound

2 Gravel: significant fines, decomposed rock, calcium carbonate.

Fine Aggregate
(greater than 70% passing #4 screen, 60% retained on #200 screen, mixed composition

3 Sand

Unevaluated Resource

4 Probable aggregate resource

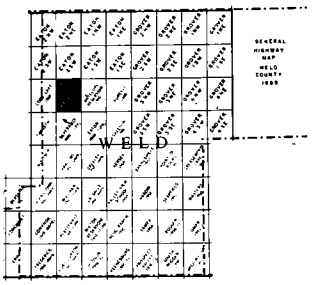
MAP SYMBOLS

- Operating gravel and/or sand pit
- Abandoned gravel and/or sand pit
- Operating stone quarry
- Abandoned stone quarry
- Potential quarry aggregate resource area
- Selected well or drill-hole location with overburden thickness (ft) over sand/gravel resource thickness (ft), obtained from well logs. "s" indicates gravel; "a" indicates sand. "-" to symbol denotes unevaluated or unknown property.
- "WG" denotes Colorado Geological Survey Windsor/Sand and Gravel projects' drill hole
- Landform boundary, solid where known or observed; dashed where approximate or inferred.

STATION LOCATION AND GEOLOGICAL DESCRIPTION OF DEPOSIT

overburden thickness (ft)
sand/gravel resource thickness (ft)
percent sand and fines (passing #4 screen, 0.19 in., mixed composition
significant amount of fines (passing #200 screen, 0.0059 in. or 0.074 mm.)
significant amount of decomposed or weak rock.
significant amount of calcium carbonate (caliche)

"s" in symbol denotes unevaluated or unknown property.
"o" in symbol denotes property absent or insignificant



QUADRANGLE LOCATION

NON-RESOURCE OR WITHDRAWN AREA

Mapped by: Stephen D. Schwochow
Date: June 30, 1974

Base from U. S. Geological Survey
7-1/2 minute quadrangle

APPROXIMATE MEAN DECLINATION, 1960

CONTOUR INTERVAL 10 FEET
DATUM IS MEAN SEA LEVEL

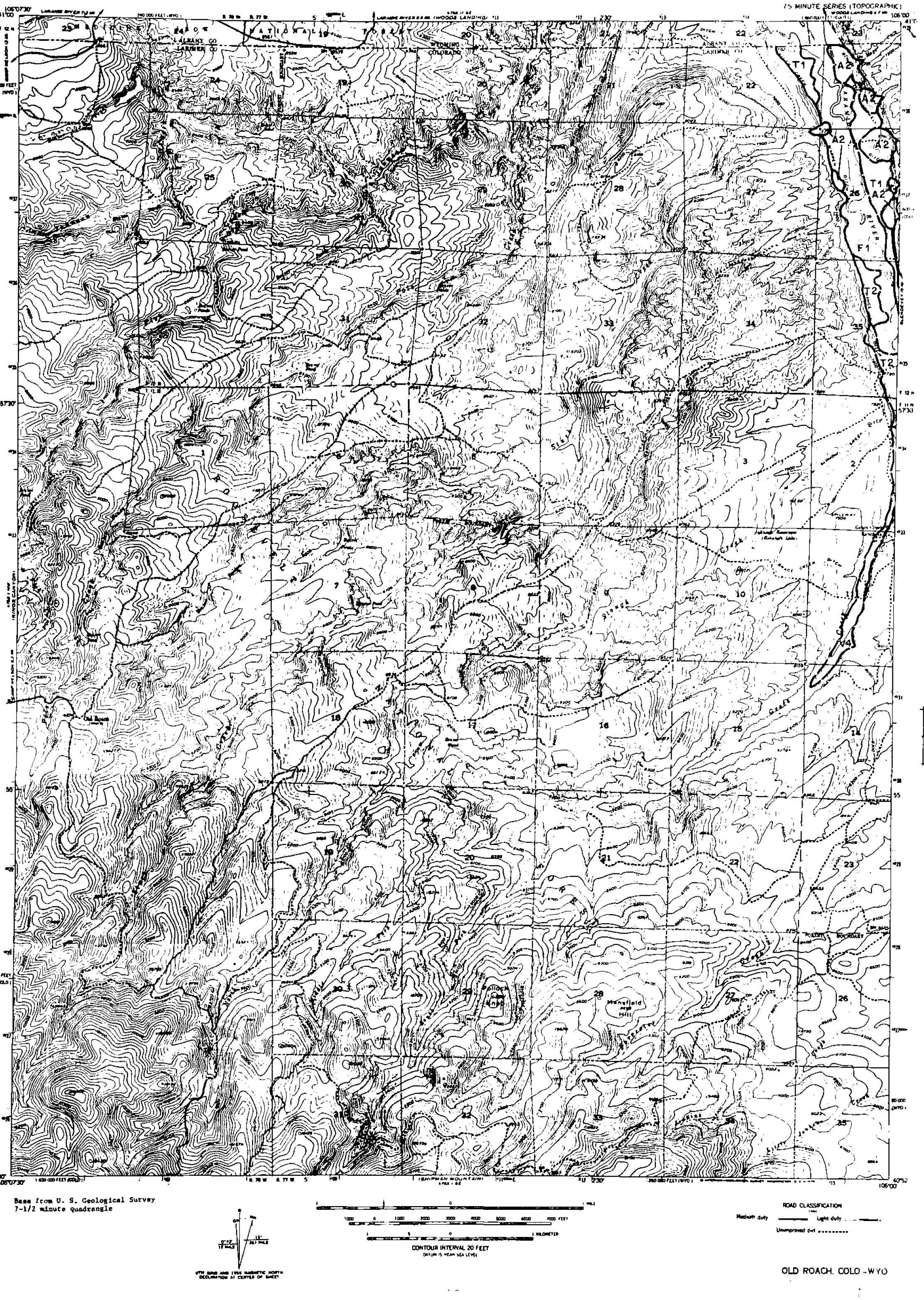
ROAD CLASSIFICATION
Heavy-duty ——— Light-duty ———
Unimproved dirt - - - - - -
U.S. Route

NUNN, COLO.

DEPARTMENT OF NATURAL RESOURCES
COLORADO GEOLOGICAL SURVEY
JOHN W. ROLD, DIRECTOR

SAND, GRAVEL AND QUARRY AGGREGATE RESOURCES MAP

OLD ROACH QUADRANGLE
COLORADO-WYOMING
7.5 MINUTE SERIES (TOPOGRAPHIC)



Base from U. S. Geological Survey
7-1/2 minute quadrangle

CONTOUR INTERVAL 20 FEET
DATUM IS MEAN SEA LEVEL

ROAD CLASSIFICATION
Medium duty — Light duty — Unimproved dirt

OLD ROACH, COLO.-WYO.

EXPLANATION

Landform unit
Resource classification

LANDFORM UNITS

- F Floodplain deposit
- T Stream terrace deposit
- V Valley fill (F & T)
- U Upland deposits
- A Alluvial fan
- E Wind-deposited sand (eolian)
- M Man-made deposits (slag, tailings, spoils....)

RESOURCE CLASSIFICATION

Coarse Aggregate
(at least 50% retained on #4 screen, visual estimation)

- 1 Gravel: relatively clean and sound
- 2 Gravel: significant fines, decomposed rock, calcium carbonate.

Fine Aggregate
(greater than 50% passing #4 screen, 80% retained on #200 screen, visual estimation)

- 3 Sand

Unevaluated Resource

- 4 Probable aggregate resource

MAP SYMBOLS

- Operating gravel and/or sand pit
- Abandoned gravel and/or sand pit
- Operating stone quarry
- Abandoned stone quarry
- Potential quarry aggregate resource area
- Selected well or drill-hole location with overburden thickness (ft) over sand/gravel resource thickness (ft), obtained from well logs. "g" indicates gravel, "s" indicates sand
- "." in symbol denotes unevaluated or unknown property.
- "wd" denotes Colorado Geological Survey Windsor/Sand and Gravel projects' drill hole
- Landform boundary, solid where known or observed; dashed where approximate or inferred.

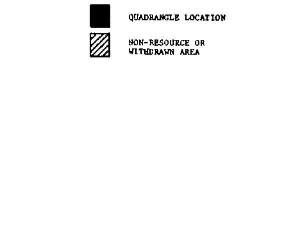
STATION, LOCATION AND GEOLOGICAL DESCRIPTION OF DEPOSIT

5, 17, 40

- overburden thickness (ft)
- sand/gravel resource thickness (ft)
- percent sand and fines (passing #4 screen, 0.25 in.), visual estimation
- significant amount of fines (passing #200 screen, 0.0058 in. or 0.074 mm.)
- significant amount of decomposed or weak rock.
- significant amount of calcium carbonate (caliche)

"•" in symbol denotes unevaluated or unknown property

"o" in symbol denotes property absent or insignificant



QUADRANGLE LOCATION

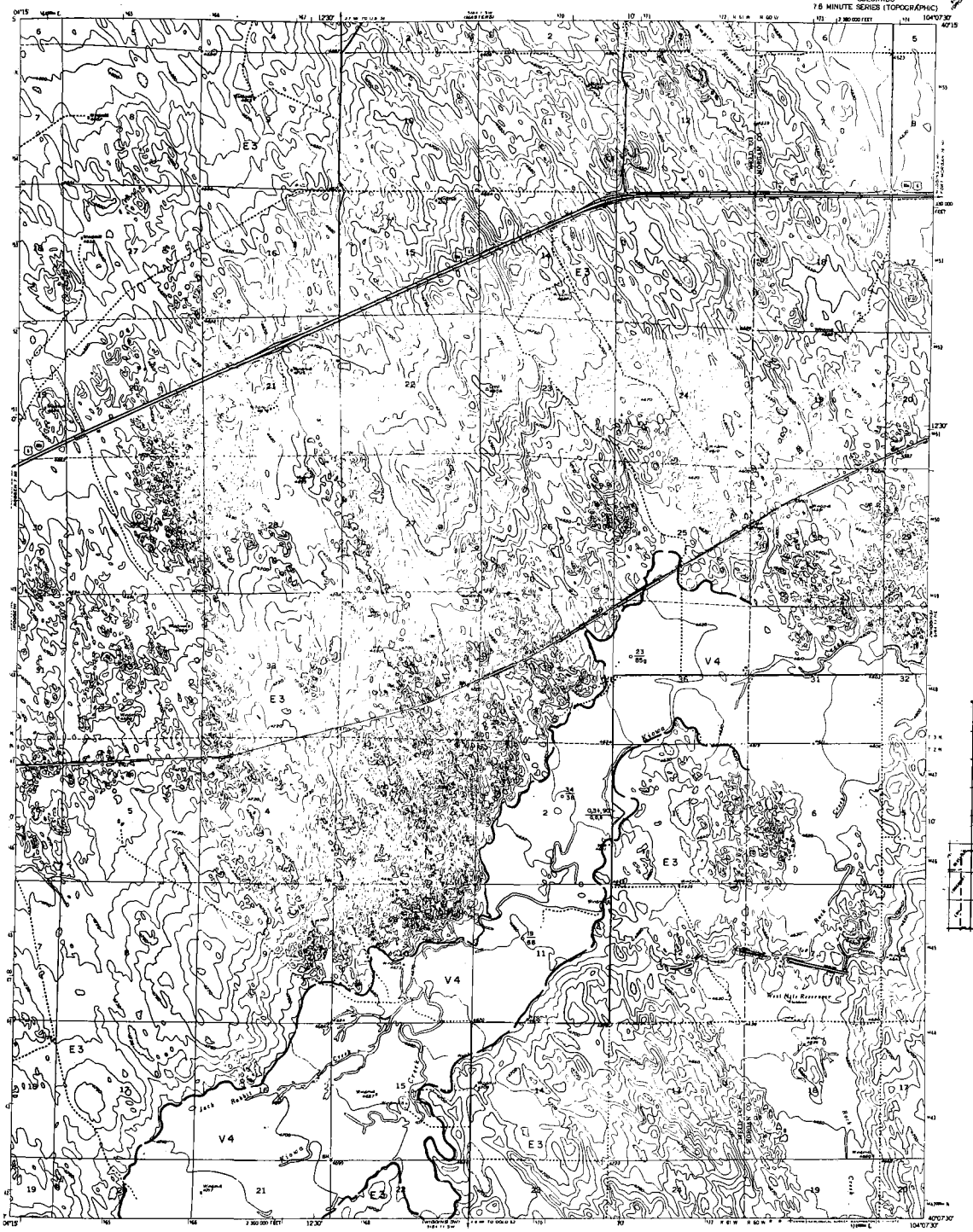
NON-RESOURCE OR WITHDRAWN AREA

Mapped by: Stephen D. Schwochow
Date: June 30, 1974

SAND, GRAVEL AND QUARRY AGGREGATE RESOURCES MAP

DEPARTMENT OF NATURAL RESOURCES
COLORADO GEOLOGICAL SURVEY
JOHN W. ROLD, DIRECTOR

OMAR QUADRANGLE
COLORADO
7.5 MINUTE SERIES (TOPOGRAPHIC)



EXPLANATION

LANDFORM UNITS

- F Floodplain deposit
- T Stream terrace deposit
- V Valley fill (F & T)
- U Upland deposits
- A Alluvial fan
- E Wind-deposited sand (eolian)
- M Man-made deposits (slag, tailings, spoils....)

RESOURCE CLASSIFICATION

Coarse Aggregate
(at least 35% retained on #4 screen, actual determined)

1 Gravel: relatively clean and sound
2 Gravel: significant fines, decomposed rock, calcium carbonate.

Fine Aggregate
(more than 35% passing #4 screen, 75% retained on No. 200 screen, actual determined)

3 Sand

Unevaluated Resource

4 Probable aggregate resource

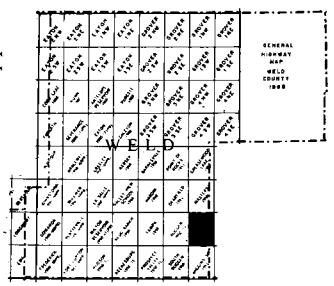
MAP SYMBOLS

- Operating gravel and/or sand pit
- Abandoned gravel and/or sand pit
- Operating stone quarry
- Abandoned stone quarry
- Potential quarry aggregate resource area
- Selected well or drill-hole location with overburden thickness (ft) over sand/gravel resource thickness (ft), obtained from well logs. "g" indicates gravel; "s" indicates sand "-" in symbol denotes unevaluated or unknown property.
- "wo" denotes Colorado Geological Survey Windsor/Sand and Gravel projects' drill hole
- Landform boundary, solid where known or observed; dashed where approximate or inferred.

STATION, LOCATION AND GEOLOGICAL DESCRIPTION OF DEPOSIT

- overburden thickness (ft)
- sand/gravel resource thickness (ft)
- percent sand and fines (passing #4 screen, 0.22 in.), actual estimation
- significant amount of fines (passing #200 screen, 0.0328 in. or 0.074 mm.)
- significant amount of decomposed or weak rock.
- significant amount of calcium carbonate (caliche)

"x" in symbol denotes accumulated or unknown property
"o" in symbol denotes property absent or insignificant



QUADRANGLE LOCATION

NON-RESOURCE OR WITHDRAWN AREA

REFERENCE: Bjorklund, L.J., and Brown, R.F., 1957, Geology and ground-water resources of the lower South Platte River valley between Hardin, Colorado, and Paxton, Nebraska: U. S. Geol. Survey Water-Supply Paper 1378, pl. 1.

Mapped by: Phillip C. Wicklein
Date: June 30, 1974

Base from U. S. Geological Survey
7-1/2 minute quadrangle

CONTOUR INTERVAL 10 FEET

ROAD CLASSIFICATION

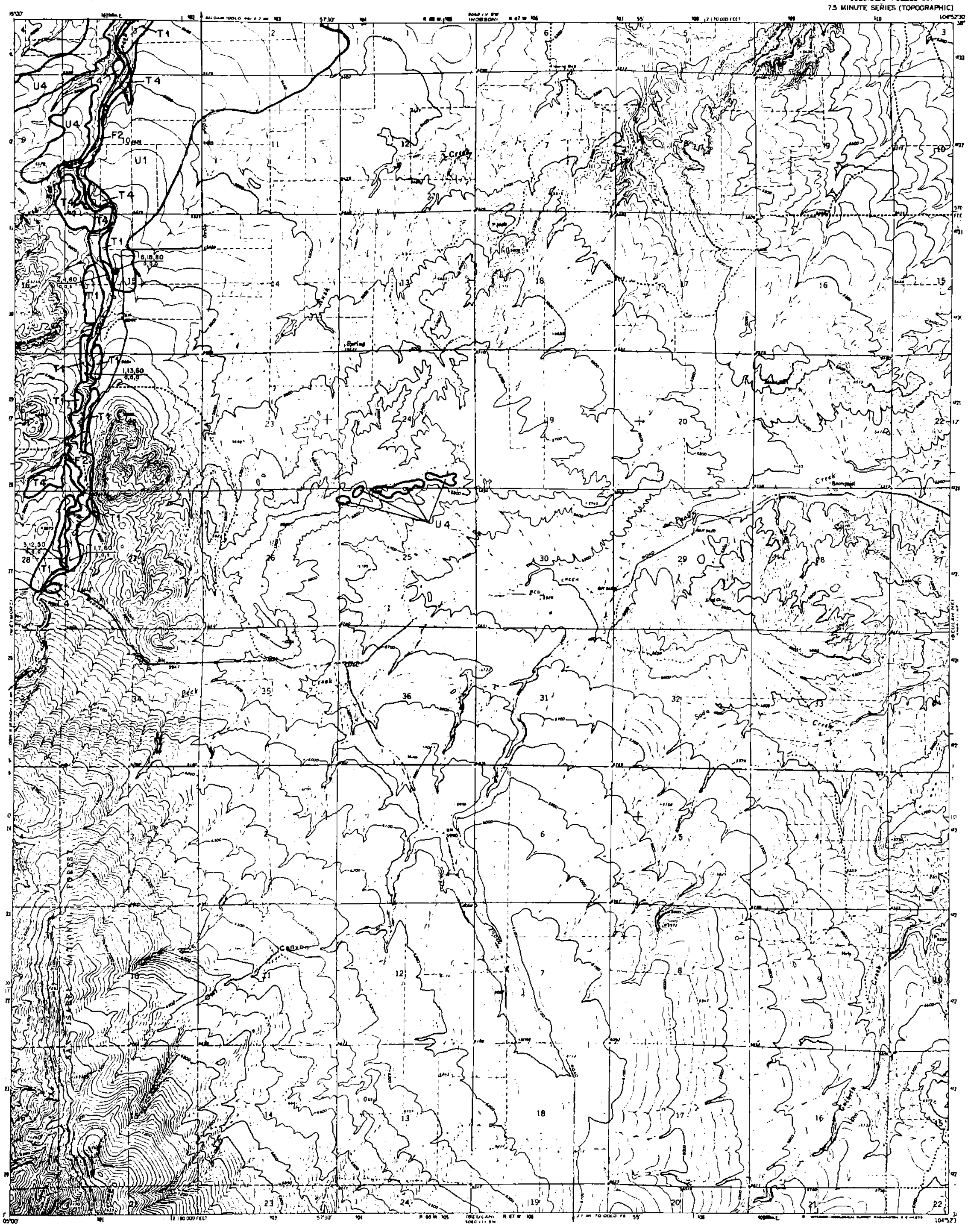
- Primary highway, hard surface
- Secondary highway, hard surface
- Light-duty road, hard or improved surface
- Unimproved road
- Interstate Route
- U. S. Route
- State Route

OMAR, COLO.

DEPARTMENT OF NATURAL RESOURCES
COLORADO GEOLOGICAL SURVEY
JOHN W. ROLD, DIRECTOR

SAND, GRAVEL AND QUARRY AGGREGATE RESOURCES MAP

OWL CANYON QUADRANGLE
COLORADO - PUEBLO CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)



Base from U. S. Geological Survey
7-1/2 minute quadrangle

CONTOUR INTERVAL 20 FEET
DATUM IS MEAN SEA LEVEL

ROAD CLASSIFICATION
Light-duty .... Unimproved dirt ....

EXPLANATION

Landform unit
Resource classification

LANDFORM UNITS

- F Floodplain deposit
- T Stream terrace deposit
- V Valley fill (F & T)
- U Upland deposits
- A Alluvial fan
- E Wind-deposited sand (eolian)
- M Man-made deposits (slag, tailings, spoils....)

RESOURCE CLASSIFICATION

Coarse Aggregate
(at least 50% retained on #4 screen, visual estimation)

- 1 Gravel: relatively clean and sound
- 2 Gravel: significant fines, decomposed rock, calcium carbonate.

Fine Aggregate
(greater than 70% passing #4 screen, 60% retained on #200 screen, visual estimation)

- 3 Sand

Unevaluated Resource

- 4 Probable aggregate resource

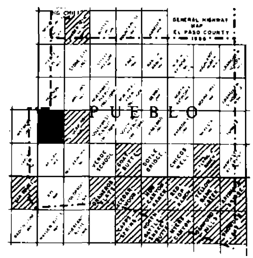
MAP SYMBOLS

- Operating gravel and/or sand pit
- Abandoned gravel and/or sand pit
- Operating stone quarry
- Abandoned stone quarry
- Potential quarry aggregate resource area
- Selected well or drill-hole location with overburden thickness (ft) over sand/gravel resource thickness (ft), obtained from well logs.
  "g" indicates gravel; "s" indicates sand
  "x" in symbol denotes unevaluated or unknown property.
  "ws" denotes Colorado Geological Survey Windsor/Sand and Gravel projects' drill hole
- Landform boundary, solid where known or observed; dashed where approximate or inferred.

STATION, LOCATION AND GEOLOGICAL DESCRIPTION OF DEPOSIT

- overburden thickness (ft)
- sand/gravel resource thickness (ft)
- percent sand and fines (passing #4 screen, 0.18 in.), visual estimation
- significant amount of fines (passing #200 screen, 0.0058 in. or 0.074 mm.)
- significant amount of decomposed or weak rock.
- significant amount of calcium carbonate (caliche)

"x" in symbol denotes unevaluated or unknown property
"o" in symbol denotes property absent or insignificant



QUADRANGLE LOCATION

NON-RESOURCE OR WITHDRAWN AREA

Geology modified after Scott, G. R., 1973, U. S. Geological Survey Map MF-547.

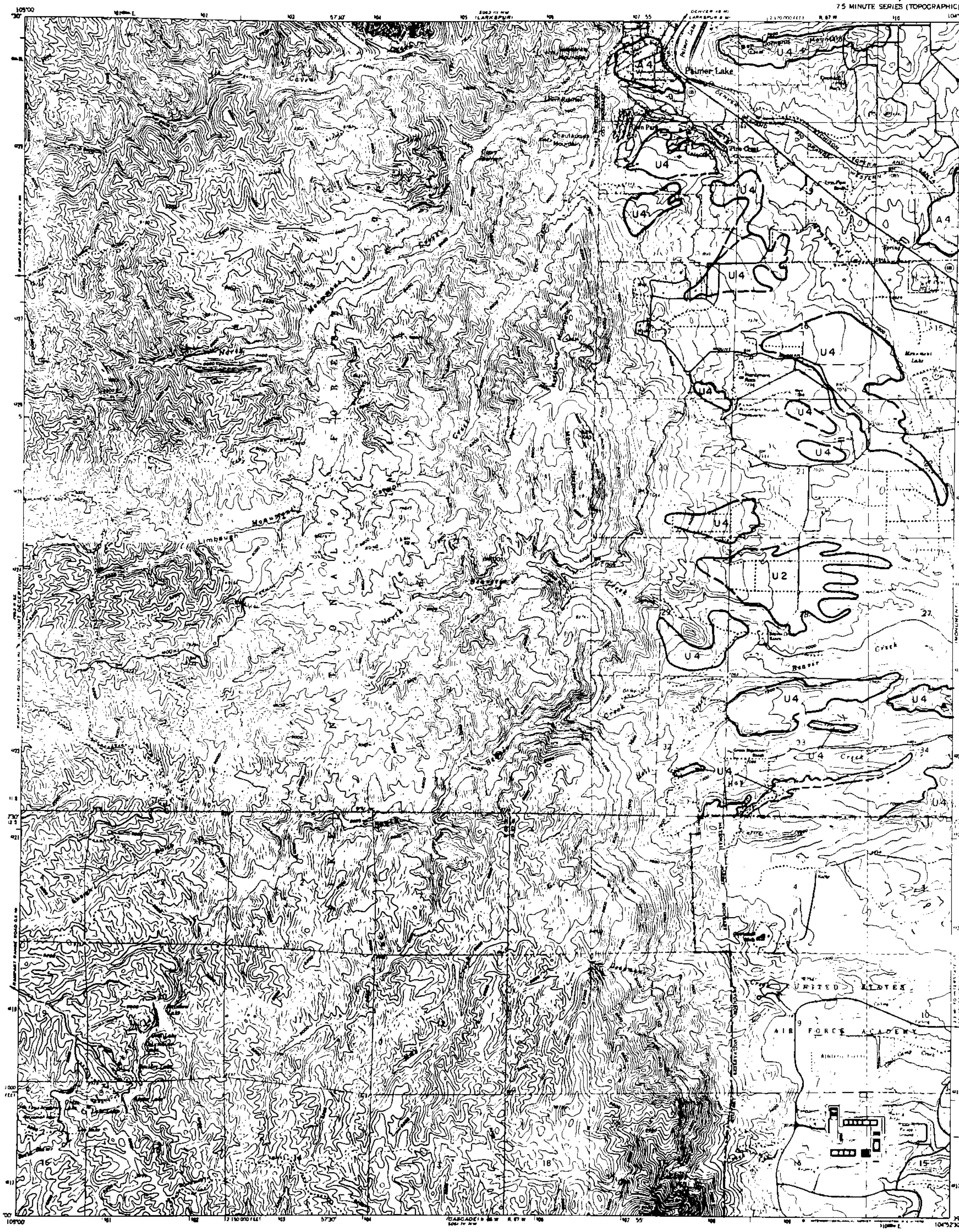
Mapped by: Ralph R. Shroba
Date: June 30, 1974

OWL CANYON, COLO

DEPARTMENT OF NATURAL RESOURCES
COLORADO GEOLOGICAL SURVEY
JOHN W. ROLD, DIRECTOR

SAND, GRAVEL AND QUARRY AGGREGATE RESOURCES MAP

PALMER LAKE QUADRANGLE
COLORADO-EL PASO CO
7.5 MINUTE SERIES (TOPOGRAPHIC)



Base from U. S. Geological Survey
7-1/2 minute quadrangle

CONTOUR INTERVAL 40 FEET
DATUM IS MEAN SEA LEVEL

ROAD CLASSIFICATION
Heavy-duty — Light duty
Medium duty — Unimproved dirt
( ) State Route

PALMER LAKE, COLO

EXPLANATION

F — Landform unit
1 — Resource classification

LANDFORM UNITS

- F Floodplain deposit
- T Stream terrace deposit
- V Valley fill (F & T)
- U Upland deposits
- A Alluvial fan
- E Wind-deposited sand (eolian)
- M Man-made deposits (slag, tailings, spoils....)

RESOURCE CLASSIFICATION

Coarse Aggregate
(at least 3/4 retained on #4 screen, visual estimation)

- 1 Gravel: relatively clean and sound
- 2 Gravel: significant fines, decomposed rock, calcium carbonate.

Fine Aggregate
(greater than 70% passing #4 screen, 40% retained on #200 screen, visual estimation

- 3 Sand

Unevaluated Resource

- 4 Probable aggregate resource

MAP SYMBOLS

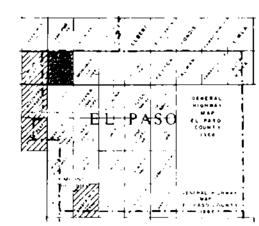
- Operating gravel and/or sand pit
- Abandoned gravel and/or sand pit
- Operating stone quarry
- Abandoned stone quarry
- Potential quarry aggregate resource area
- Selected well or drill-hole location with overburden thickness (ft) over sand/gravel resource thickness (ft), obtained from well logs
  "g" indicates gravel, "s" indicates sand
  "/" in symbol denotes unevaluated or unknown property.
  "WS" denotes Colorado Geological Survey Windsor/Sand and Gravel projects' drill hole
- Landform boundary, solid where known or observed; dashed where approximate or inferred.

STATION, LOCATION AND GEOLOGICAL DESCRIPTION OF DEPOSIT

- overburden thickness (ft)
- sand/gravel resource thickness (ft)
- percent sand and fines (passing #4 screen, 0.25 in.), visual estimation
- significant amount of fines (passing #200 screen, 0.0029 in. or 0.074 mm.)
- significant amount of decomposed or weak rock.
- significant amount of calcium carbonate (caliche)

"x" in symbol denotes unevaluated or unknown property

"a" in symbol denotes property absent or insignificant



QUADRANGLE LOCATION

NON-RESOURCE OR WITHDRAWN AREA

Geology modified after:

Trimble, D.E., and Fitch, H.R., 1974, Map showing potential sources of gravel and crushed-rock aggregate in the Colorado Springs-Castle Rock Area, Front Range Urban Corridor, Colorado: U. S. Geol. Survey Map I-857 A.

REFERENCE: Trimble, Donald, 1974, U.S.G.S.; Personal Communication

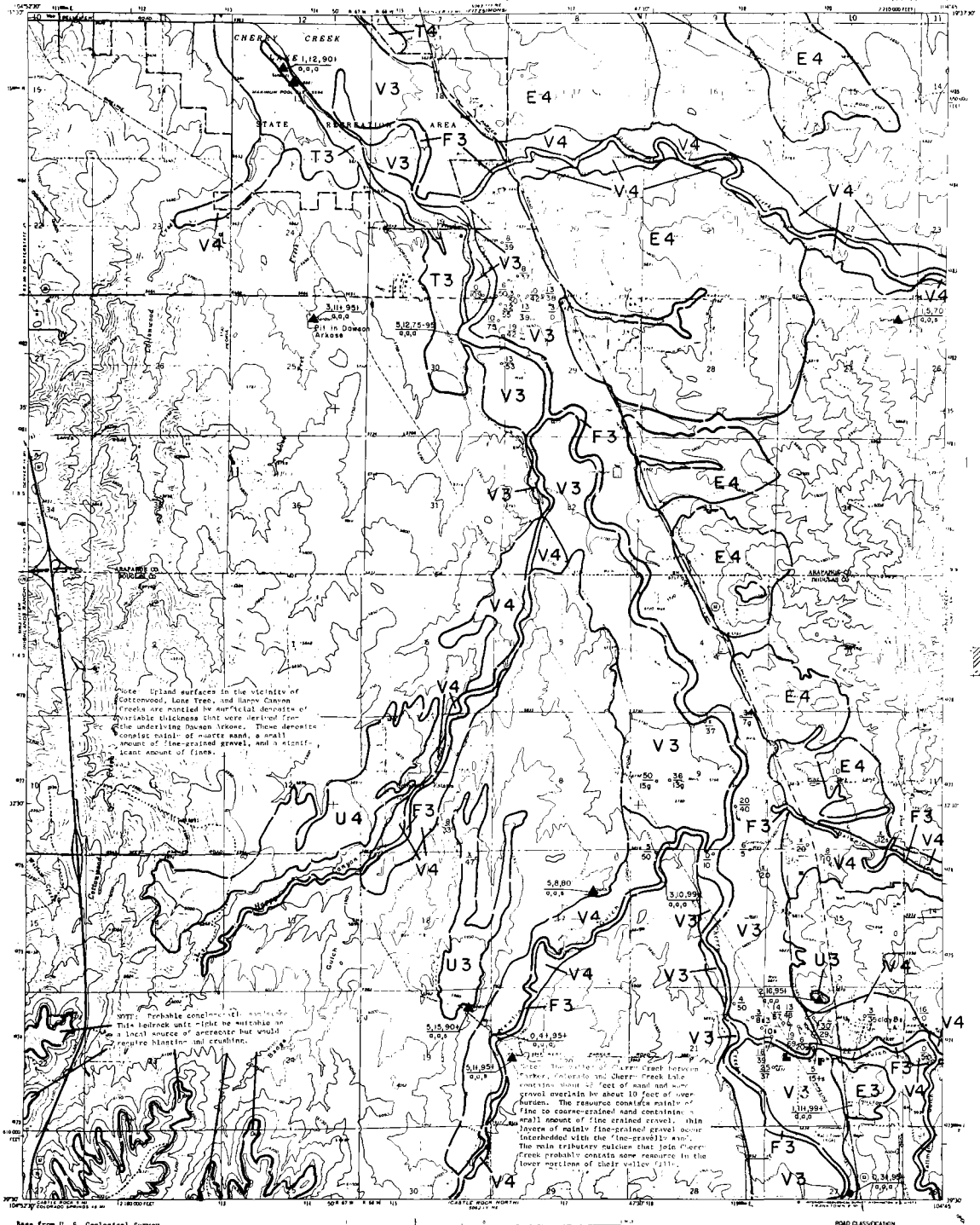
Mapped by: Phillip C. Wicklein
Date: June 30, 1974

Prepared in cooperation with the U. S. Geological Survey.

SAND, GRAVEL AND QUARRY AGGREGATE RESOURCES MAP

DEPARTMENT OF NATURAL RESOURCES
COLORADO GEOLOGICAL SURVEY
JOHN W. ROLD, DIRECTOR

PARKER QUADRANGLE
COLORADO
7.5 MINUTE SERIES (TOPOGRAPHIC)



EXPLANATION

Landform unit
Resource classification

LANDFORM UNITS

- F Floodplain deposit
- T Stream terrace deposit
- V Valley fill (F & T)
- U Upland deposits
- A Alluvial fan
- E Wind-deposited sand (eolian)
- M Man-made deposits (slag, tailings, spoils...)

RESOURCE CLASSIFICATION

Coarse aggregate
- 1 Gravel: relatively clean and sound
- 2 Gravel: significant fines, decomposed rock, calcium carbonate.

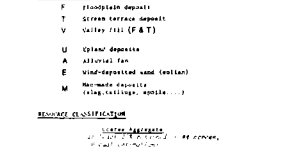
Fine aggregate
- 3 Sand

Unevaluated Resource
- 4 Probable aggregate resource

MAP SYMBOLS

- Operating gravel and/or sand pit
- Abandoned gravel and/or sand pit
- Operating stone quarry
- Abandoned stone quarry
- Potential quarry aggregate resource area
- Selected well or drill-hole location with overburden thickness (ft), and sand/gravel resource thickness (ft), obtained from well logs
- "g" indicates gravel; "s" indicates sand
- "n" in symbol denotes unevaluated or unknown property.
- Denotes Colorado Geological Survey Windsor/Sand and Gravel projects' drill hole
- Landform boundary, solid where known or observed, dashed where approximate or inferred.

STATION, LOCATION AND GEOLOGICAL DESCRIPTION OF DEPOSIT



QUADRANGLE LOCATION

NON-RESOURCE OR WITHDRAWN AREA

REFERENCE:

Chase, G.R., and McConaghy, J.A., 1972, Generalized surficial geologic map of the Denver area, Colorado: U. S. Geol. Survey Misc. Geol. Inv. Map I-731.

Trimble, D.E., and Pitch, H.B., 1974, Map showing potential sources of gravel and crushed-rock aggregate in the Greater Denver Area, Front Range Urban Corridor, Colo.: U. S. Geol. Survey Misc. Geol. Inv. Map I-856-A.

Geology modified after:

Mayberry, J. O. 1973, Map showing construction materials resources in the Parker quadrangle, Arapahoe and Douglas Counties, Colorado: U. S. Geol. Survey Misc. Geol. Inv. Map I-770-L

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

Mapped by: Ralph R. Shroba
Date: June 30, 1974

Prepared in cooperation with the U. S. Geological Survey.

Base from U. S. Geological Survey 7-1/2 minute quadrangle

UTM GRID AND 1972 MAGNETIC NORTH DECLINATION AT CENTER OF SHEET

CONTOUR INTERVAL 10 FEET
DATUM IS MEAN SEA LEVEL

ROAD CLASSIFICATION

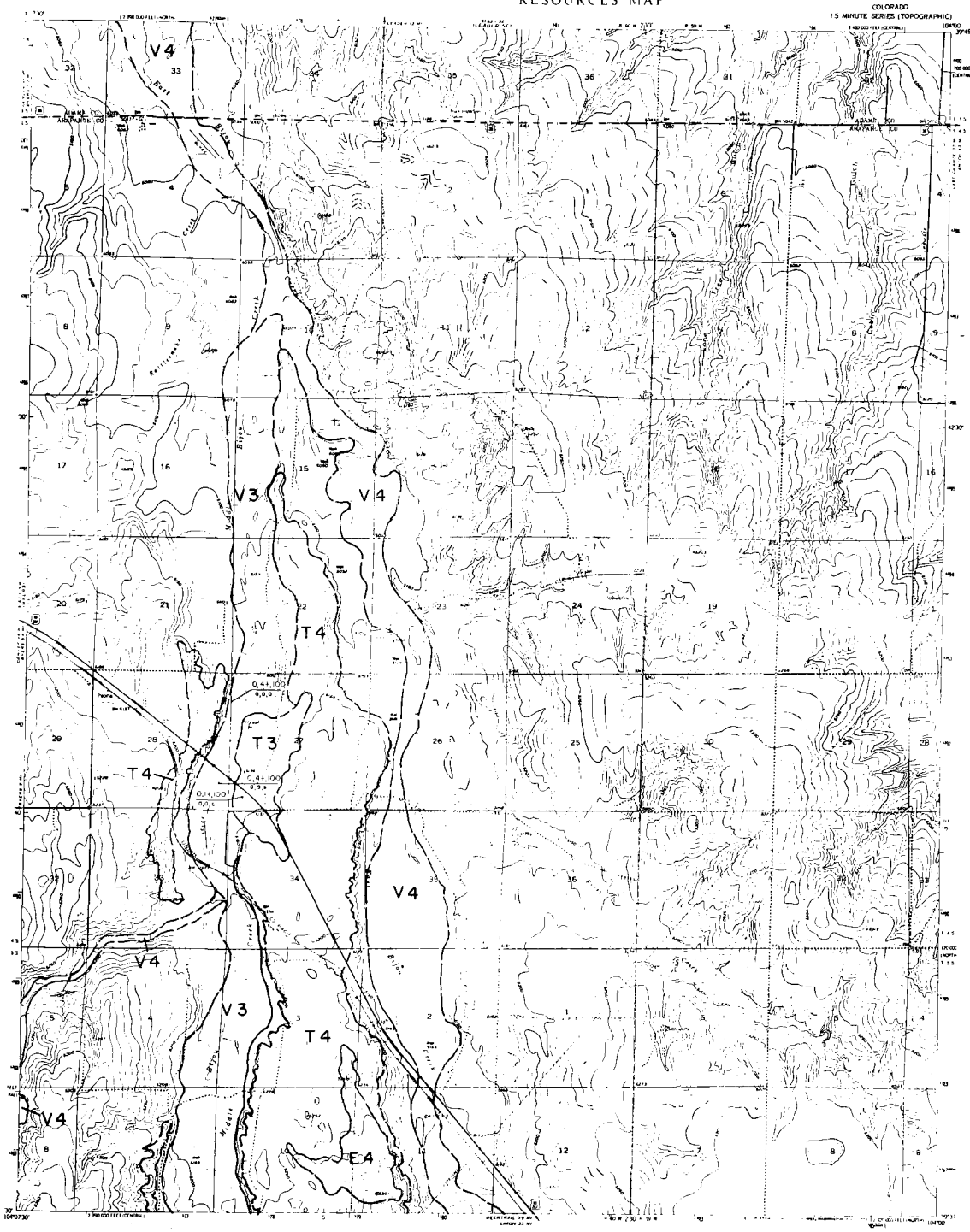
Heavy duty
Medium duty
Light duty
Unimproved dirt
Interstate Route
U.S. Route
State Route

PARKER, COLO.

SAND, GRAVEL AND QUARRY AGGREGATE RESOURCES MAP

DEPARTMENT OF NATURAL RESOURCES
COLORADO GEOLOGICAL SURVEY
JOHN W. HOLD, DIRECTOR

PEORIA QUADRANGLE
COLORADO
15 MINUTE SERIES (TOPOGRAPHIC)



Base from U. S. Geological Survey
7-1/2 minute quadrangle

EXPLANATION

Landform units

- F Floodplain deposit
- T Stream terrace deposit
- V Valley fill (F & T)
- U Upland deposits
- A Alluvial fan
- E Wind-deposited sand (dunes)
- M Man-made deposits (slag, tailings, spoils, ...)

Resource classification

Coarse Aggregate

1 Gravel: relatively clean and sound

2 Gravel: significant fines, decomposed rock, calcium carbonate.

Fine Aggregate

3 Sand

Unevaluated Resource

4 Probable aggregate resource

Map symbols

- Operating gravel and/or sand pit
- Abandoned gravel and/or sand pit
- Operating stone quarry
- Abandoned stone quarry
- Potential quarry aggregate resource area
- Selected well or drill-hole location with overburden thickness (ft) over sand/gravel resource thickness (ft), obtained from well logs. "x" indicates gravel; "o" indicates sand. "-" in symbol denotes unevaluated or unknown property.
- "ws" denotes Colorado Geological Survey Windsor/Sand and Gravel projects' drill hole
- Landform boundary, solid where known or observed; dashed where approximate or inferred.

Station, location and geological description of deposit

- overburden thickness (ft)
- sand/gravel resource thickness (ft)
- percent sand and fines (passing #4 screen, 0.25 in.), visual estimation
- significant amount of fines (passing #200 screen, 0.0029 in. or 0.074 mm.)
- significant amount of decomposed or weak rock.
- significant amount of calcium carbonate (caliche)

"u" in symbol denotes unevaluated or unknown property

"x" in symbol denotes property absent or insignificant

QUADRANGLE LOCATION

NON-RESOURCE OR WITHDRAWN AREA

Geology modified after
Scheier, P. E., 1973,
Peoria geologic quadrangle,
[illegible] (GQ-875).

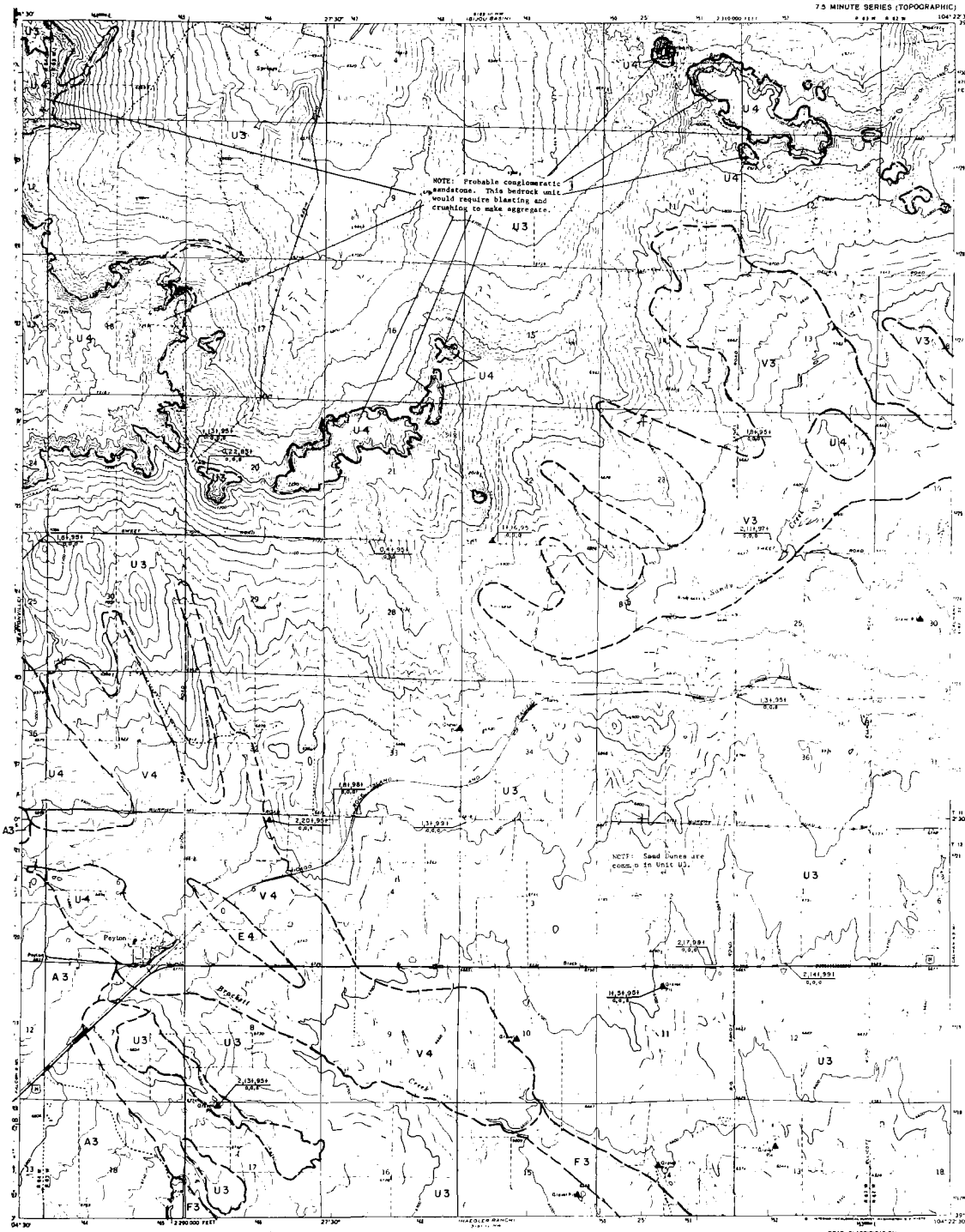
Mapped by: Phillip C. Wicklein
Date: June 30, 1974

PEORIA, COLO.
AS9375—W(0400)/75
1956

SAND, GRAVEL AND QUARRY AGGREGATE RESOURCES MAP

DEPARTMENT OF NATURAL RESOURCES
COLORADO GEOLOGICAL SURVEY
JOHN W. ROLD, DIRECTOR

PEYTON QUADRANGLE
COLORADO—EL PASO CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)



EXPLANATION

Landform unit

Resource classification

SURFICIAL UNITS

- F — Floodplain deposit
- T — Stream terrace deposit
- V — Valley fill (F & T)
- U — Upland deposits
- A — Alluvial fan
- E — Wind-deposited sand (eolian)
- M — Man-made deposits (slag,tailings, spoils....)

RESOURCE CLASSIFICATION

Coarse Aggregate
(at least 50% retained on #4 screen, visual estimation)

1 — Gravel: relatively clean and sound

2 — Gravel: significant fines, decomposed rock, caliche carbonate.

Fine Aggregate
(greater than 50% passing #4 screen, 60% retained on #200 screen, visual estimation

3 — Sand

Unclassified Resource

4 — Probable aggregate resource

MAP SYMBOLS

- Operating gravel and/or sand pit
- Abandoned gravel and/or sand pit
- Operating stone quarry
- Abandoned stone quarry
- Potential quarry aggregate resource area
- Selected well or drill-hole location with overburden thickness (ft) over sand/gravel resource thickness (ft), obtained from well logs. "s" indicates gravel; "s" indicates sand
- "x" in symbol denotes unexplained or unknown property.
- "sg" denotes Colorado Geological Survey Windsor/Sand and Gravel project drill hole
- Landform boundary, solid where known or observed, dashed where approximate or inferred.

STATION, LOCATION AND GEOLOGICAL DESCRIPTION OF DEPOSIT

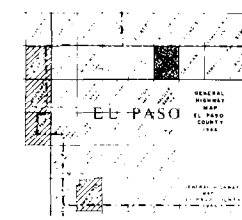
- overburden thickness (ft)
- sand/gravel resource thickness (ft)
- percent sand and fines (passing #4 screen, 0.25 in.), visual estimation

Example: 5 | 17 | 40

- 40 — significant amount of fines (passing #200 screen, 0.0049 in. or 0.074 mm.)
- 17 — significant amount of decomposed or weak rock.
- 5 — significant amount of calcium carbonate (caliche)

"x" in symbol denotes unexplained or unknown property

"o" in symbol denotes property absent or insignificant



QUADRANGLE LOCATION

NON-RESOURCE OR WITHDRAWN AREA

Mapped by: Ralph R. Shroba
Date: June 30, 1974

Base from U. S. Geological Survey
7-1/2 minute quadrangle

CONTOUR INTERVAL 20 FEET

ROAD CLASSIFICATION

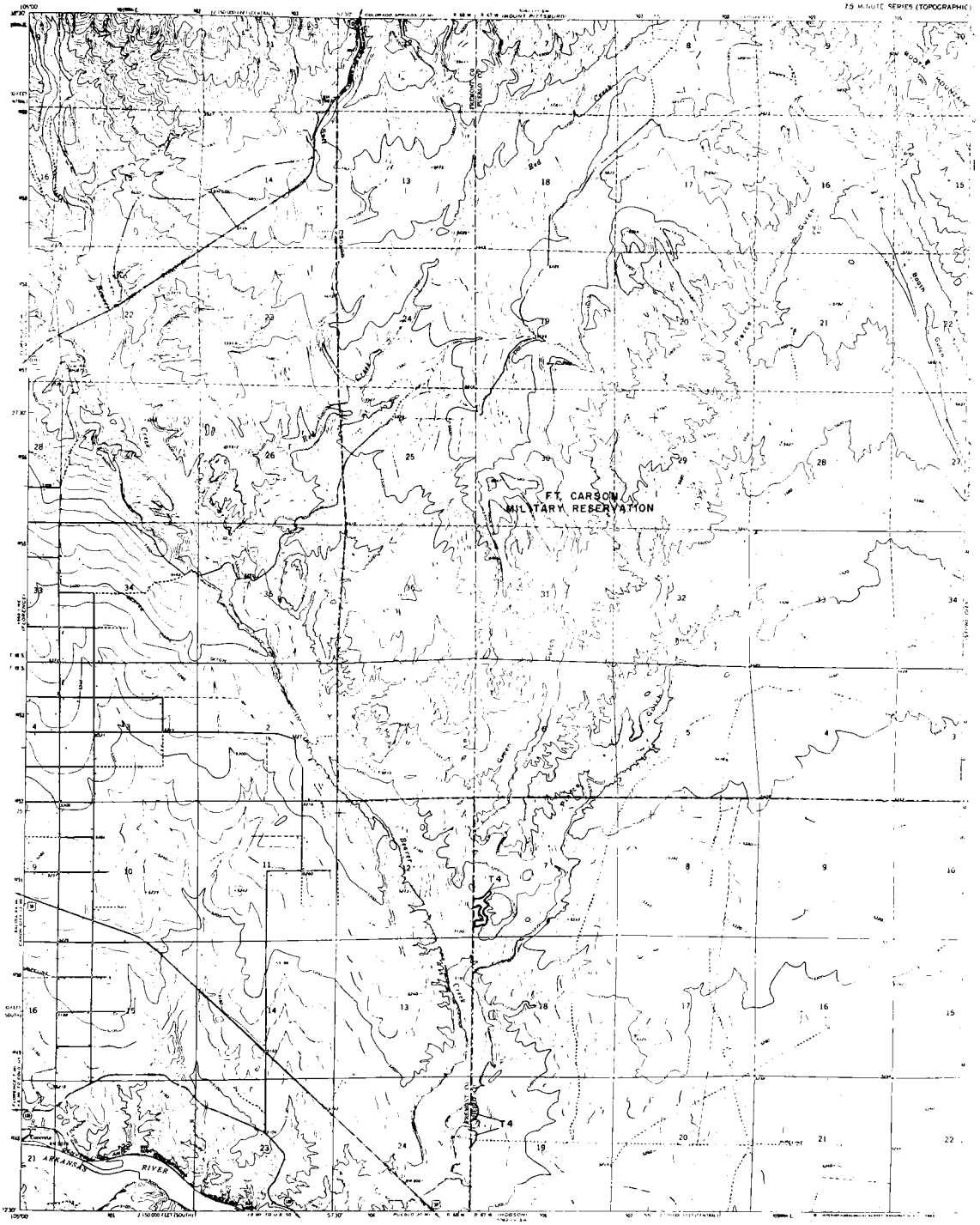
Primary highway, hard surface
Light duty road, hard or improved surface
Secondary highway, hard surface
Unimproved road
Interstate Route | U. S. Route | State Route

PEYTON, COLO.

DEPARTMENT OF NATURAL RESOURCES
COLORADO GEOLOGICAL SURVEY
JOHN W. ROLD, DIRECTOR

SAND, GRAVEL AND QUARRY AGGREGATE RESOURCES MAP

PIERCE GULCH QUADRANGLE
COLORADO
7.5 MINUTE SERIES (TOPOGRAPHIC)



EXPLANATION

Landform unit
Resource classification

LANDFORM UNITS

- F — Floodplain deposit
- T — Stream terrace deposit
- V — Valley fill (F & T)
- U — Upland deposits
- A — Alluvial fan
- E — Wind-deposited sand (dunes)
- M — Man-made deposits (slag,tailings, spoils....)

RESOURCE CLASSIFICATION

Coarse Aggregate
(at least 50% retained on #4 screen, visual estimation)

1 — Gravel: relatively clean and sound.

2 — Gravel: significant fines, decomposed rock, calcium carbonate.

Fine Aggregate
(greater than 50% passing #4 screen, 80% retained on #200 screen, visual estimation

3 — Sand

Unevaluated Resource

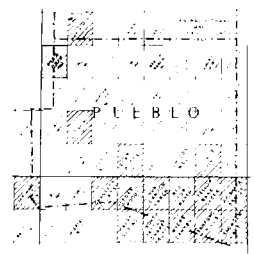
4 — Probable aggregate resource

MAP SYMBOLS

- Operating gravel and/or sand pit
- Abandoned gravel and/or sand pit
- Operating stone quarry
- Abandoned stone quarry
- Potential quarry aggregate resource area
- Selected well or drill-hole location with overburden thickness (ft) over sand/gravel resource thickness (ft), obtained from well logs
  "s" indicates gravel; "n" indicates sand
  "-" in symbol denotes unevaluated or unknown property.
  "cm" denotes Colorado Geological Survey Windsor/Sand and Gravel projects' drill hole
- Landform boundary, solid where known or observed, dashed where approximate or inferred.

STATION, LOCATION AND GEOLOGICAL DESCRIPTION OF DEPOSIT

overburden thickness (ft)
sand/gravel resource thickness (ft)
percent sand and fines (passing #4 screen, 0.25 in.), visual estimation
significant amount of fines (passing #200, screen, 0.003 in. or 0.074 mm)
significant amount of decomposed or weak rock.
significant amount of calcium carbonate (caliche)
"x" in symbol denotes unevaluated or unknown property.
"o" in symbol denotes property absent or insignificant



QUADRANGLE LOCATION
NON-RESOURCE OR WITHDRAWN AREA

Mapped by: Ralph R. Shroba
Date: June 30, 1976

Base from U. S. Geological Survey
7-1/2 minute quadrangle

CONTOUR INTERVAL 20 FEET

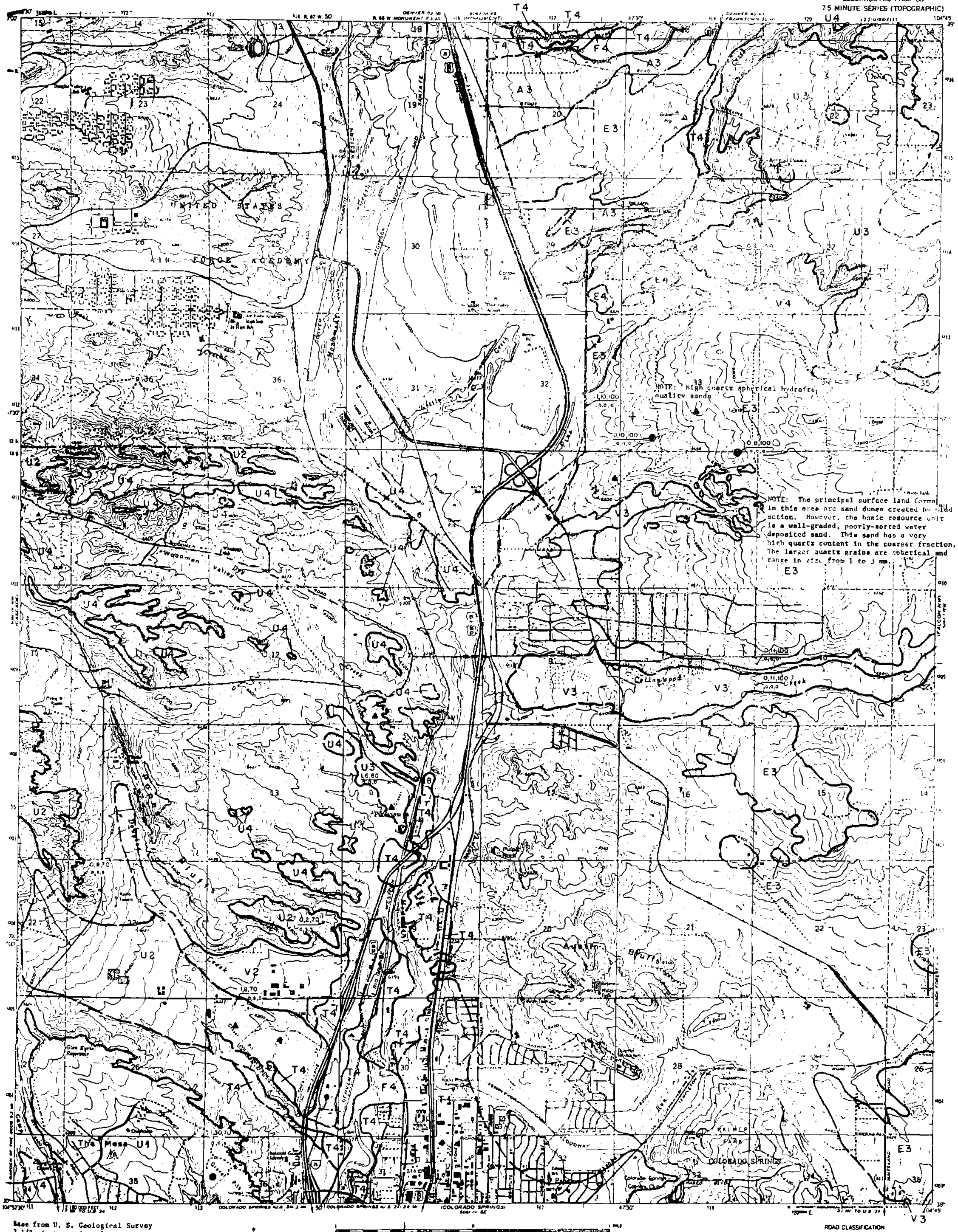
ROAD CLASSIFICATION
Medium duty — Light duty
Unimproved dirt
U.S. Route — State Route

PIERCE GULCH, COLO.

DEPARTMENT OF NATURAL RESOURCES
COLORADO GEOLOGICAL SURVEY
JOHN W. ROLD, DIRECTOR

SAND, GRAVEL AND QUARRY AGGREGATE RESOURCES MAP

PIKEVIEW QUADRANGLE
COLORADO-EL PASO CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)



Base from U. S. Geological Survey
7-1/2 minute quadrangle

CONTOUR INTERVAL 20 FEET
DATUM IS MEAN SEA LEVEL

ROAD CLASSIFICATION
Heavy-duty — Light-duty
Medium-duty — Unimproved dirt
Interstate Route — U S Route — State Route

EXPLANATION

F — Landform unit
1 — Resource classification

LANDFORM UNITS

- F — Floodplain deposit
- T — Stream terrace deposit
- V — Valley fill (F & T)
- U — Upland deposits
- A — Alluvial fan
- E — Wind-deposited sand (eolian)
- M — Man-made deposits (slag, tailings, spoils....)

RESOURCE CLASSIFICATION

Coarse Aggregate (at least 25% retained on #4 screen, visual estimation)

- 1 — Gravel: relatively clean and sound
- 2 — Gravel: significant fines, decomposed rock, calcium carbonate.

Fine Aggregate (greater than 70% passing #4 screen, 25% retained on #200 screen, visual estimation)

- 3 — Sand

Unevaluated Resource

- 4 — Probable aggregate resource

MAP SYMBOLS

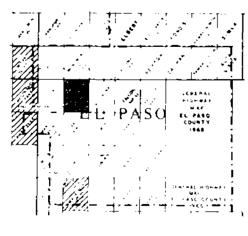
- Operating gravel and/or sand pit
- Abandoned gravel and/or sand pit
- Operating stone quarry
- Abandoned stone quarry
- Potential quarry aggregate resource area
- Selected well or drill-hole location with overburden thickness (ft) over sand/gravel resource thickness (ft), obtained from well logs.
  - "g" indicates gravel; "s" indicates sand
  - "x" in symbol denotes unevaluated or unknown property.
  - "wo" denotes Colorado Geological Survey Windsor/Sand and Gravel projects' drill hole
- Landform boundary, solid where known or observed; dashed where approximate or inferred.

STATION, LOCATION AND GEOLOGICAL DESCRIPTION OF DEPOSIT

- overburden thickness (ft)
- sand/gravel resource thickness (ft)
- percent sand and fines (passing #4 screen, 0.25 in.), visual estimation
- significant amount of fines (passing #200 screen, 0.0059 in. or 0.074 mm.)
- significant amount of decomposed or weak rock.
- significant amount of calcium carbonate (caliche)

"x" in symbol denotes unevaluated or unknown property

"o" in symbol denotes property absent or insignificant



QUADRANGLE LOCATION

NON-RESOURCE OR WITHDRAWN AREA

Geology modified after Scott, G.R., & Wobus, R. A. 1973, Reconnaissance geologic map of Colorado Springs and Vicinity, Colorado: U. S. Geological Survey Map, MF-482.

Geology modified after Eichler, R.J., 1973, Geologic map of Cottonwood Creek area, Plate I, Colorado School of Mines, M.S. Thesis, T-1516.

REFERENCE:

Trimble, D.E., and Fitch, H.R., 1974, Map showing potential sources of gravel and crushed-rock aggregate in the Colorado Springs-Castle Rock Area, Front Range Urban Corridor, Colorado: U. S. Geol. Survey Map I-857 A.

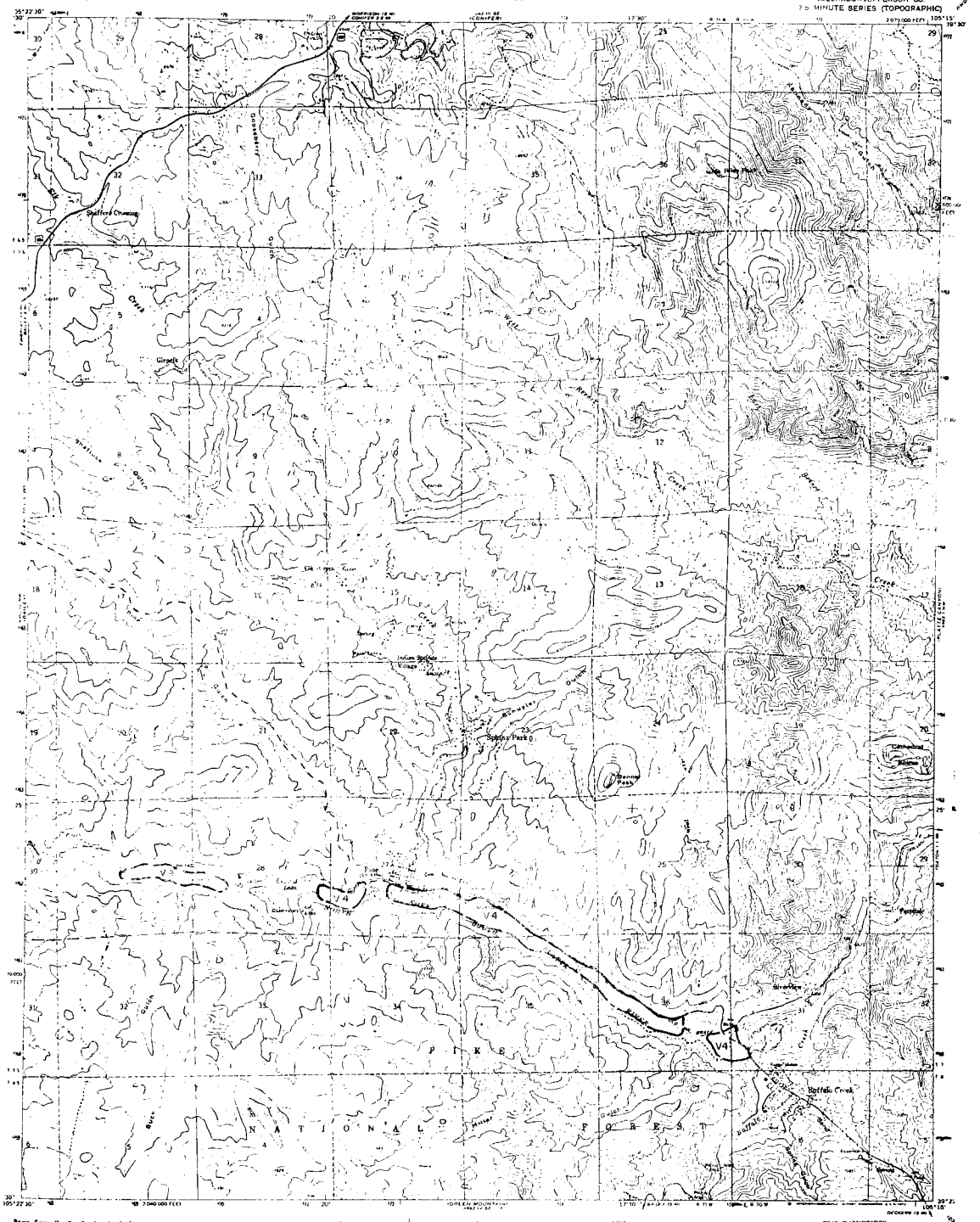
Mapped by: Phillip C. Wicklein
Date: June 30, 1974

Prepared in cooperation with the U. S. Geological Survey.

DEPARTMENT OF NATURAL RESOURCES
COLORADO GEOLOGICAL SURVEY
JOHN W. ROLD, DIRECTOR

SAND, GRAVEL AND QUARRY AGGREGATE RESOURCES MAP

PINE QUADRANGLE
COLORADO–JEFFERSON CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)



EXPLANATION

Resource classification

LANDFORM UNITS

- F Floodplain deposit
- T Stream terrace deposit
- V Valley fill (F & T)
- U Upland deposits
- A Alluvial fan
- E Wind-deposited sand (eolian)
- M Man-made deposits (mine tailings, spoils....)

RESOURCE CLASSIFICATION

Concrete Aggregate

- 1 Gravel: relatively clean and sound
- 2 Gravel: significant fines, decomposed rock, caliche carbonate.

Fine Aggregate

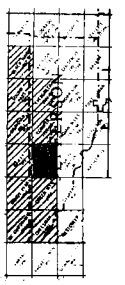
- 3 Sand

Undesignated Resource

- 4 Probable aggregate resource

MAP SYMBOLS

- Operating gravel and/or sand pit
- Abandoned gravel and/or sand pit
- Operating stone quarry
- Abandoned stone quarry
- Potential quarry aggregate resource area
- Selected well or drill-hole locations with overburden thickness (ft) over sand/gravel resource thickness (ft), obtained from well logs. "g" indicates gravel, "s" indicates sand. "x" in symbol denotes unevaluated or unknown property.
- "ws" denotes Colorado Geological Survey Windsor/Island and Gravel projects' drill hole
- Landform boundary, solid where known or observed; dashed where approximate or inferred.



QUADRANGLE LOCATION

NON-RESOURCE OR WITHDRAWN AREA

Geology modified after:

Trimble, D.E., and Pitch, H.P., 1974, Map showing potential sources of gravel and crushed-rock aggregate in the Greater Denver Area, Front Range Urban Corridor Colo.: U. S. Geol. Survey Misc. Geol. Inv. Map I-856-A.

Base from U. S. Geological Survey
7-1/2 minute quadrangle

ROAD CLASSIFICATION

Heavy-duty ——— Light-duty ———
Medium-duty ——— Unimproved dirt - - - - -
U.S. Route

Mapped by: Phillip C. Wicklein
Date: June 30, 1974

Prepared in cooperation with the U. S. Geological Survey.

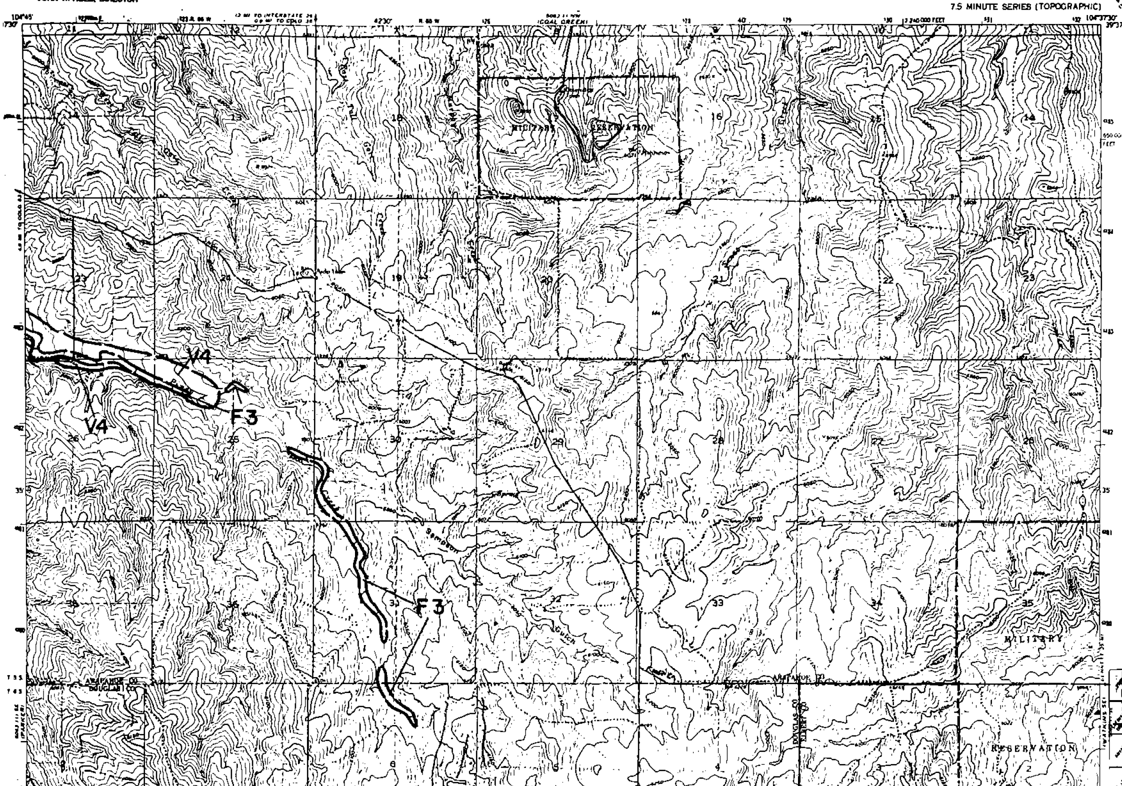
PINE, COLO.

SAND, GRAVEL AND QUARRY AGGREGATE

RESOURCES MAP

DEPARTMENT OF NATURAL RESOURCES
COLORADO GEOLOGICAL SURVEY
JOHN W. ROLD, DIRECTOR

PINEY CREEK QUADRANGLE
COLORADO
7.5 MINUTE SERIES (TOPOGRAPHIC)



Base from U. S. Geological Survey
7-1/2 minute quadrangle

CONTOUR INTERVAL 10 FEET
DATUM IS MEAN SEA LEVEL

ROAD CLASSIFICATION
Light-duty
Unimproved dirt

EXPLANATION

F — Landform unit; Resource classification

LANDFORM UNITS

- F Floodplain deposit
- T Stream terrace deposit
- V Valley fill (F & T)
- U Upland deposits
- A Alluvial fan
- E Wind-deposited sand (eolian)
- M Man-made deposits (slag, tailings, spoils....)

RESOURCE CLASSIFICATION

Coarse Aggregate
(at least 50% retained on #4 screen, visual estimation)

- 1 Gravel: relatively clean and sound
- 2 Gravel: significant fines, decomposed rock, calcium carbonate.

Fine Aggregate
(greater than 50% passing #4 screen, 67% retained on #200 screen, visual estimation)

- 3 Sand

Unevaluated Resource

- 4 Probable aggregate resource

MAP SYMBOLS

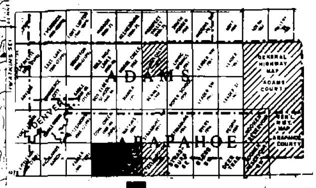
- Operating gravel and/or sand pit
- Abandoned gravel and/or sand pit
- Operating stone quarry
- Abandoned stone quarry
- Potential quarry aggregate resource area
- Selected well or drill-hole location with overburden thickness (ft) over sand/gravel resource thickness (ft), obtained from well logs.
  "g" indicates gravel; "s" indicates sand
  "x" in symbol denotes unevaluated or unknown property.
  "WG" denotes Colorado Geological Survey Windsor/Sand and Gravel projects' drill hole
- Landform boundary, solid where known or observed; dashed where approximate or inferred.

STATION, LOCATION AND GEOLOGICAL DESCRIPTION OF DEPOSIT

3, 17, 40
- overburden thickness (ft)
- sand/gravel resource thickness (ft)
- percent sand and fines (passing #4 screen, 0.22 in.), visual estimation
- significant amount of fines (passing #200 screen, 0.0029 in. or 0.074 mm.)
- significant amount of decomposed or weak rock.
- significant amount of calcium carbonate (caliche)

"x" in symbol denotes unevaluated or unknown property

"o" in symbol denotes property absent or insignificant



QUADRANGLE LOCATION

NON-RESOURCE OR WITHDRAWN AREA

Geology modified after:

Trimble, D.E., and Fitch, H.R., 1974, Map showing potential sources of gravel and crushed-rock aggregate in the Greater Denver Area, Front Range Urban Corridor, Colo.: U. S. Geol. Survey Misc. Geol. Inv. Map I-856-A.

REFERENCE:
Chase, G.H., and McConaghy, J.A., 1972, Generalized surficial geologic map of the Denver area, Colorado: U. S. Geol. Survey Misc. Geol. Inv. Map I-731.

Mapped by: Ralph R. Shroba
Date: June 30, 1974

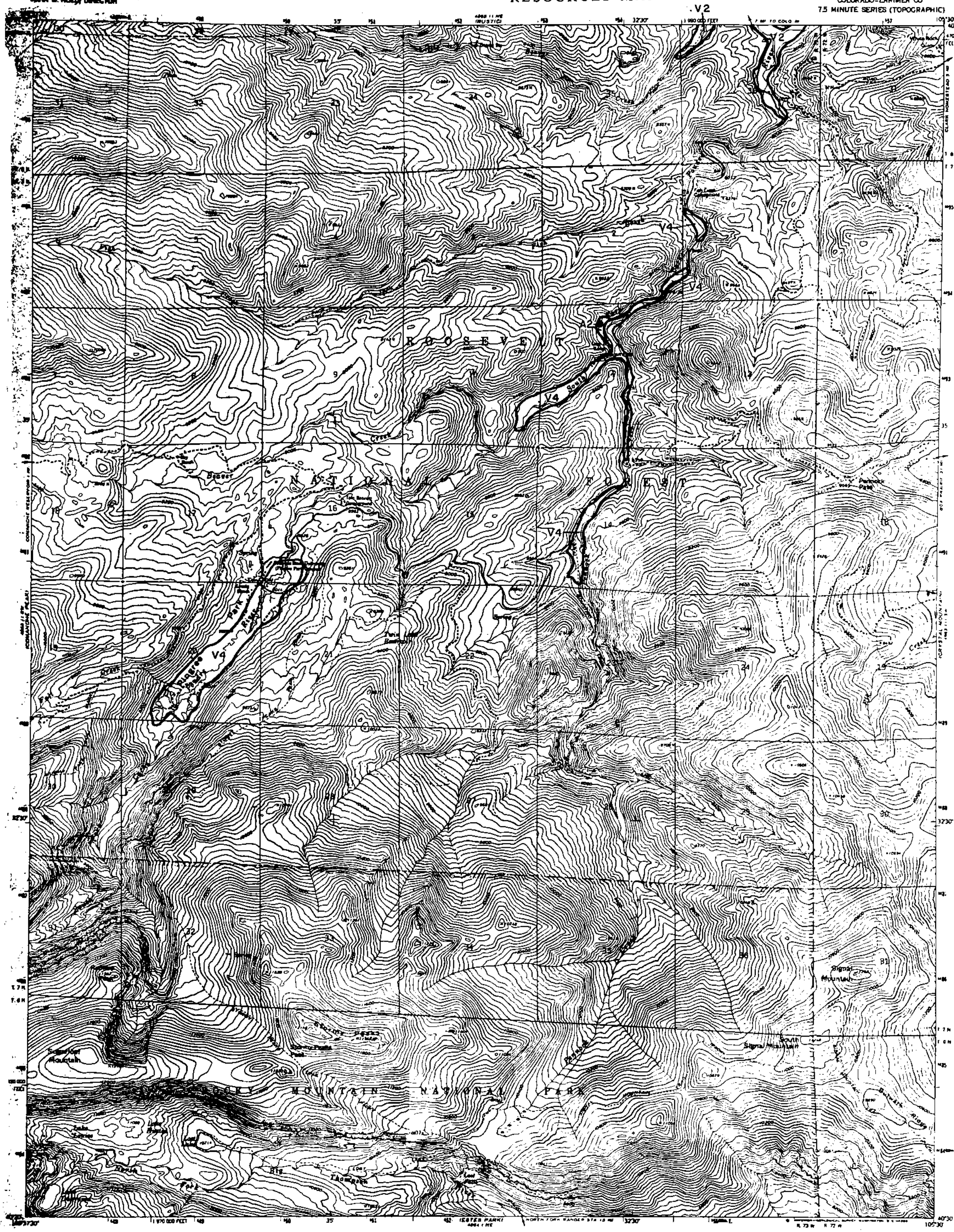
Prepared in cooperation with the U. S. Geological Survey.

PINEY CREEK, COLO.

DEPARTMENT OF NATURAL RESOURCES
COLORADO GEOLOGICAL SURVEY
JOHN W. ROLD, DIRECTOR

SAND, GRAVEL AND QUARRY AGGREGATE RESOURCES MAP

PINGREE PARK QUADRANGLE
COLORADO-LARIMER CO
7.5 MINUTE SERIES (TOPOGRAPHIC)



Base from U. S. Geological Survey
7-1/2 minute quadrangle

CONTOUR INTERVAL 40 FEET
DATUM IS MEAN SEA LEVEL

ROAD CLASSIFICATION
Light-duty ——— Unimproved dirt - - - - -

PINGREE PARK, COLO.

EXPLANATION

F — Landform unit
— Resource classification

LANDFORM UNITS

- F Floodplain deposit
- T Stream terrace deposit
- V Valley fill (F & T)
- U Upland deposits
- A Alluvial fan
- E Wind-deposited sand (eolian)
- M Man-made deposits (slag, tailings, spoils....)

RESOURCE CLASSIFICATION

Coarse Aggregate
(at least 50% retained on #4 screen, visual estimation)

- 1 Gravel: relatively clean and sound
- 2 Gravel: significant fines, decomposed rock, calcium carbonate.

Fine Aggregate
(greater than 70% passing #4 screen, 80% retained on #200 screen, visual estimation)

- 3 Sand

Unevaluated Resource

- 4 Probable aggregate resource

MAP SYMBOLS

- Operating gravel and/or sand pit
- Abandoned gravel and/or sand pit
- Operating stone quarry
- Abandoned stone quarry
- Potential quarry aggregate resource area
- Selected well or drill-hole location with overburden thickness (ft) over sand/gravel resource thickness (ft), obtained from well logs. "g" indicates gravel; "s" indicates sand
- "x" in symbol denotes unevaluated or unknown property.
- "ww" denotes Colorado Geological Survey Windsor/Sand and Gravel projects' drill hole
- Landform boundary, solid where known or observed; dashed where approximate or inferred.

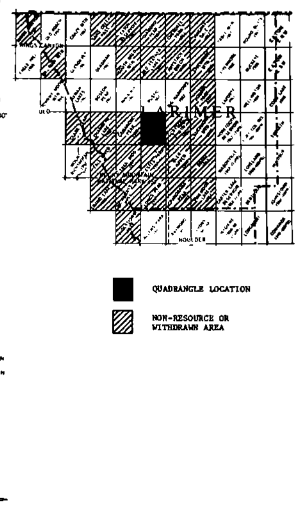
STATION, LOCATION AND GEOLOGICAL DESCRIPTION OF DEPOSIT

5, 17, 40

- overburden thickness (ft)
- sand/gravel resource thickness (ft)
- percent sand and fines (passing #4 screen, 0.25 in.), visual estimation
- significant amount of fines (passing #200 screen, 0.0059 in. or 0.074 mm.)
- significant amount of decomposed or weak rock.
- significant amount of calcium carbonate (caliche)

"x" in symbol denotes unevaluated or unknown property

"o" in symbol denotes property absent or insignificant



QUADRANGLE LOCATION

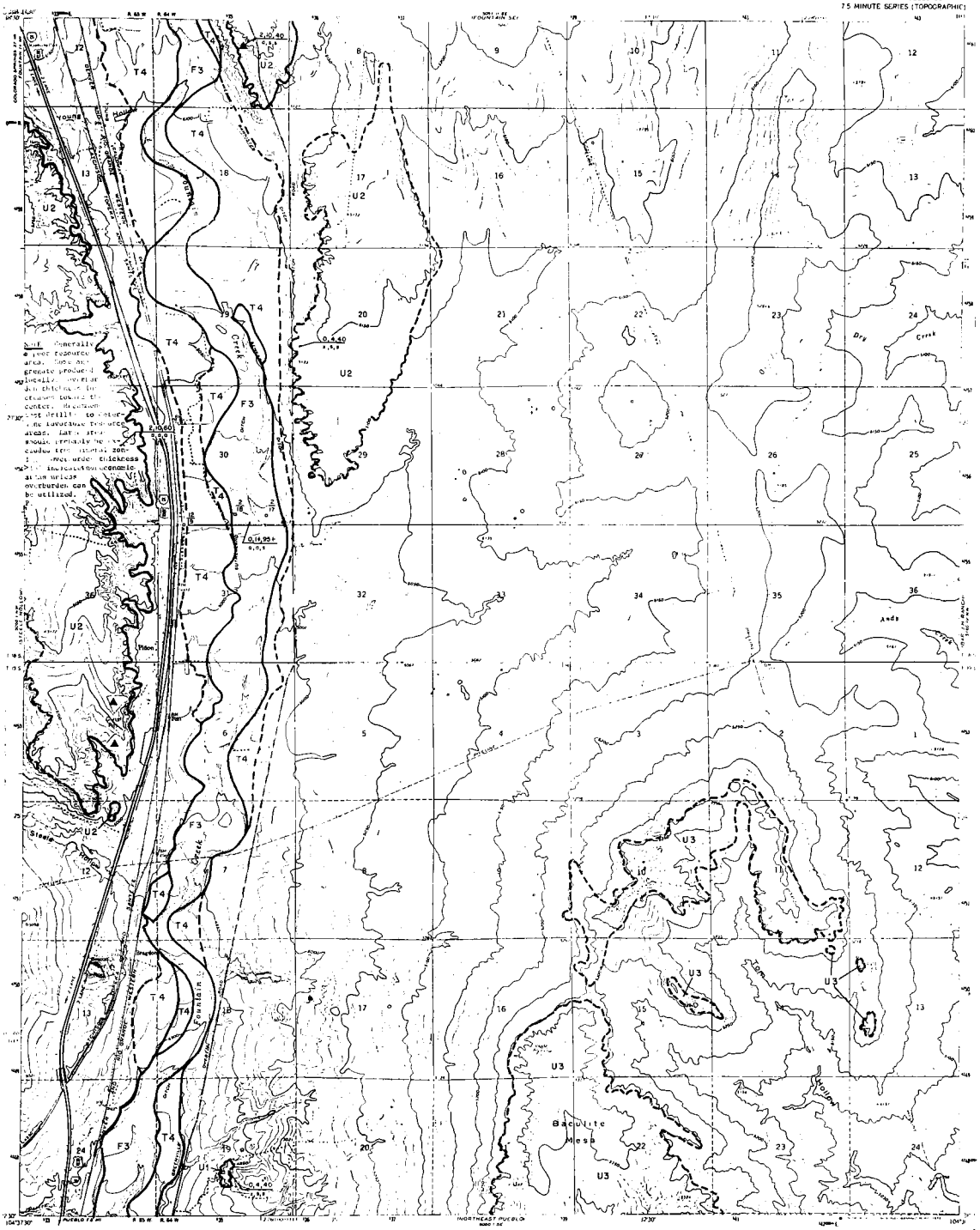
NON-RESOURCE OR WITHDRAWN AREA

Mapped by: Stephen D. Schwochow
Date: June 30, 1974

DEPARTMENT OF NATURAL RESOURCES
COLORADO GEOLOGICAL SURVEY
JOHN W. ROLD, DIRECTOR

SAND, GRAVEL AND QUARRY AGGREGATE RESOURCES MAP

PIÑON QUADRANGLE
COLORADO - PUEBLO CO
7.5 MINUTE SERIES (TOPOGRAPHIC)



EXPLANATION

Landform unit
Resource classification

LANDFORM UNITS

- F Floodplain deposit
- T Stream terrace deposit
- V Valley fill (F & T)
- U Upland deposits
- A Alluvial fan
- E Wind-deposited sand (eolian)
- M Mass-wasted deposits (slag,tailings, spoils....)

RESOURCE CLASSIFICATION

Coarse Aggregate
(at least 50% material on #4 screen, visual estimation)

- 1 Gravel relatively clean and sound
- 2 Gravel significant fines, decomposed rock, calcium carbonate.

Fine Aggregate
(greater than 50% passing #4 screen, 40% retained on #200 screen, visual estimation)

- 3 Sand

Overlayered Resource

- 4 Probable aggregate resource

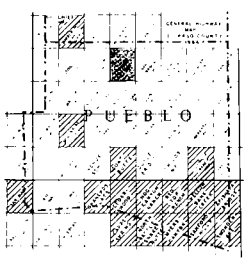
MAP SYMBOLS

- Operating gravel and/or sand pit
- Abandoned gravel and/or sand pit
- Operating stone quarry
- Abandoned stone quarry
- Potential quarry aggregate resource area
- Selected well or drill-hole location with overburden thickness (ft) over sand/gravel resource thickness (ft), obtained from well logs. "g" indicates gravel; "s" indicates sand. "x" in symbol denotes unevaluated or unknown property.
- "MG" denotes Colorado Geological Survey Windsor/Sand and Gravel projects' drill hole
- Landform boundary, solid where known or observed; dashed where approximate or inferred.

STATION, LOCATION AND GEOLOGICAL DESCRIPTION OF DEPOSIT

- overburden thickness (ft)
- resource thickness (ft)
- percent sand and fines (passing #4 screen, 0.25 in.), visual estimation
- significant amount of fines (passing #200 screen, 0.0029 in. or 0.074 mm.)
- significant amount of decomposed or weak rock.
- significant amount of calcium carbonate (caliche)

"x" in symbol denotes unevaluated or unknown property.
"o" in symbol denotes property absent or insignificant



QUADRANGLE LOCATION

NON-RESOURCE OR WITHDRAWN AREA

Mapped by: Phillip C. Wicklein
Date: June 30, 1974

Base from U. S. Geological Survey
7-1/2 minute quadrangle

ROAD CLASSIFICATION
Heavy duty — Light duty
Medium duty - - - Unimproved dirt
Interstate Route U.S. Route

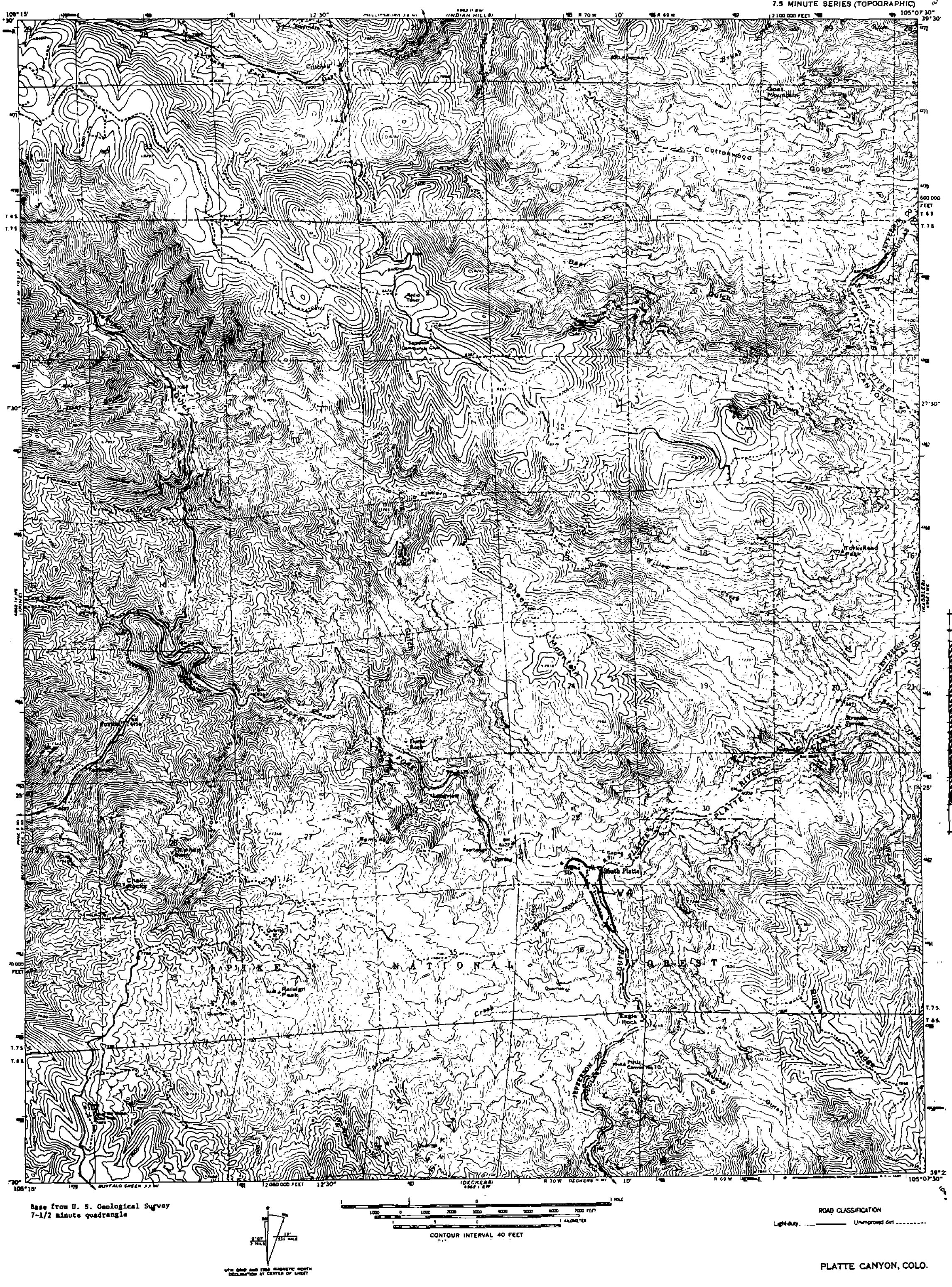
PIÑON, COLO

SAND, GRAVEL AND QUARRY AGGREGATE

RESOURCES MAP

DEPARTMENT OF NATURAL RESOURCES
COLORADO GEOLOGICAL SURVEY
JOHN W. ROLD, DIRECTOR

PLATTE CANYON QUADRANGLE
COLORADO
7.5 MINUTE SERIES (TOPOGRAPHIC)



Base from U. S. Geological Survey
7-1/2 minute quadrangle

EXPLANATION

Ft — Landform unit; Resource classification

LANDFORM UNITS

- F — Floodplain deposit
- T — Stream terrace deposit
- V — Valley fill (F & T)
- U — Upland deposits
- A — Alluvial fan
- E — Wind-deposited sand (eolian)
- M — Man-made deposits (slag, tailings, spoils....)

RESOURCE CLASSIFICATION

Coarse Aggregate
(at least 50% retained on #4 screen, visual estimation)

- 1 — Gravel: relatively clean and sound
- 2 — Gravel: significant fines, decomposed rock, calcium carbonate.

Fine Aggregate
(greater than 70% passing #4 screen, 40% retained on #200 screen, visual estimation)

- 3 — Sand

Unevaluated Resource

- 4 — Probable aggregate resource

MAP SYMBOLS

- Operating gravel and/or sand pit
- Abandoned gravel and/or sand pit
- Operating stone quarry
- Abandoned stone quarry
- Potential quarry aggregate resource area
- Selected well or drill-hole location with overburden thickness (ft) over sand/gravel resource thickness (ft), obtained from well logs.
  - "g" indicates gravel; "s" indicates sand
  - "." in symbol denotes unevaluated or unknown property.
- "WS" denotes Colorado Geological Survey Windsor/Sand and Gravel projects' drill hole
- Landform boundary, solid where known or observed; dashed where approximate or inferred.

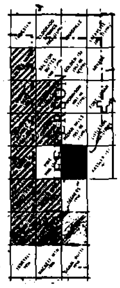
STATION, LOCATION AND GEOLOGICAL DESCRIPTION OF DEPOSIT

5, 17, 40

- overburden thickness (ft)
- sand/gravel resource thickness (ft)
- percent sand and fines (passing #4 screen, 0.25 in.), visual estimation
- significant amount of fines (passing #200 screen, 0.0059 in. or 0.074 mm.)
- significant amount of decomposed or weak rock.
- significant amount of calcium carbonate (caliche)

"x" in symbol denotes unevaluated or unknown property

"o" in symbol denotes property absent or insignificant



QUADRANGLE LOCATION

NON-RESOURCE OR WITHDRAWN AREA

REFERENCE:

Trimble, D.E., and Fitch, H.R., 1974, Map showing potential sources of gravel and crushed-rock aggregate in the Greater Denver Area, Front Range Urban Corridor, Colo.: U. S. Geol. Survey Misc. Geol. Inv. Map I-[illegible]-A.

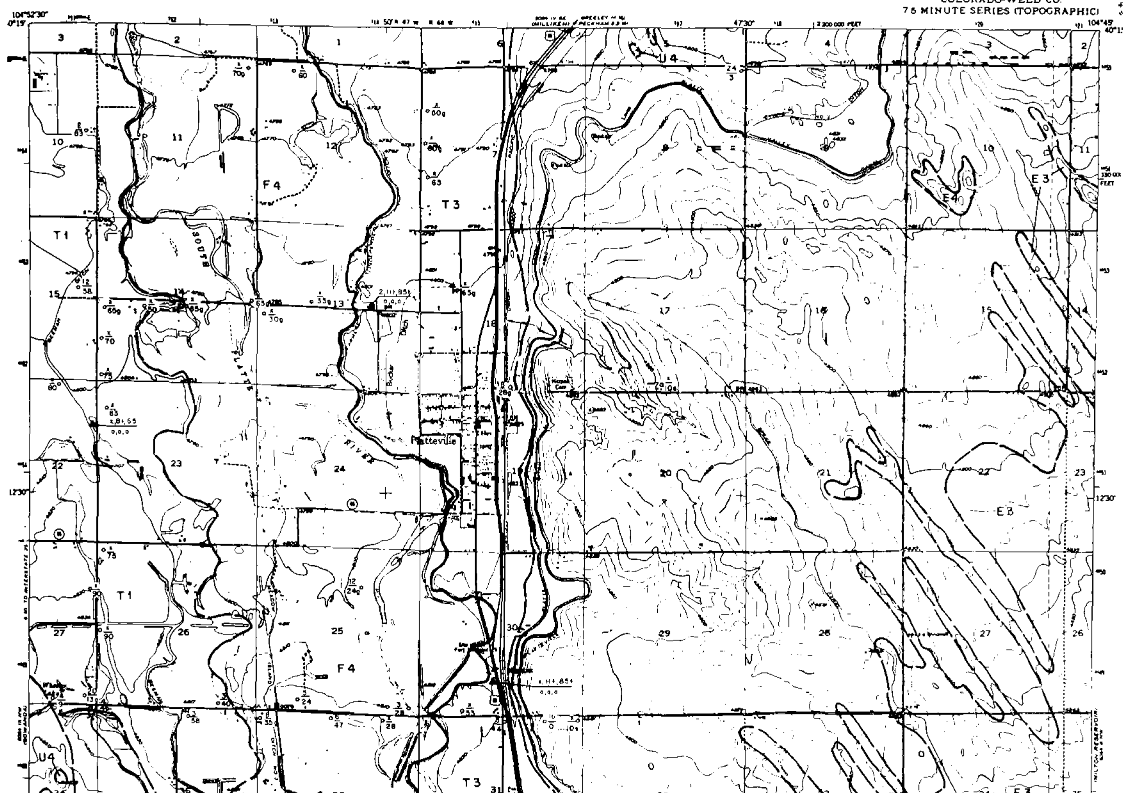
Mapped by: Phillip C. Wicklein
Date: June 30, 1974

Prepared in cooperation with the U. S. Geological Survey.

DEPARTMENT OF NATURAL RESOURCES
COLORADO GEOLOGICAL SURVEY
JOHN W. ROLD, DIRECTOR

SAND, GRAVEL AND QUARRY AGGREGATE RESOURCES MAP

PLATTEVILLE QUADRANGLE
COLORADO-WELD CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)



EXPLANATION

F 1 — Landform unit / Resource classification

LANDFORM UNITS

- F Floodplain deposit
- T Stream terrace deposit
- V Valley fill (F & T)
- U Upland deposits
- A Alluvial fan
- E Wind-deposited sand (eolian)
- M Man-made deposits (slag, tailings, spoils...)

RESOURCE CLASSIFICATION

Coarse Aggregate

- 1 Gravel: relatively clean and sound
- 2 Gravel: significant fines, decomposed rock, calcium carbonate.

Fine Aggregate

- 3 Sand

Unevaluated Resource

- 4 Probable aggregate resource

MAP SYMBOLS

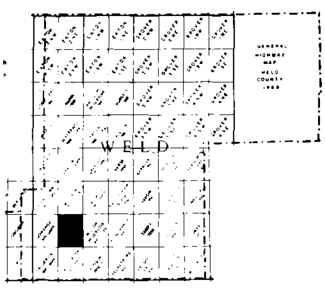
- Operating gravel and/or sand pit
- Abandoned gravel and/or sand pit
- Operating stone quarry
- Abandoned stone quarry
- Potential quarry aggregate resource area
- Selected well or drill-hole location with overburden thickness (ft) over sand/gravel resource thickness (ft), obtained from well logs. "g" indicates gravel, "s" indicates sand. "x" to symbol denotes unevaluated or unknown property.
- "ms" denotes Colorado Geological Survey Windsor/Sand and Gravel projects' drill hole
- Landform boundary, solid where known or observed; dashed where approximate or inferred.

STATION, LOCATION AND GEOLOGICAL DESCRIPTION OF DEPOSIT

- overburden thickness (ft)
- sand/gravel resource thickness (ft)
- significant amount of fines
- significant amount of decomposed or weak rock.
- significant amount of calcium carbonate (caliche)

"x" in symbol denotes unevaluated or unknown property

"o" in symbol denotes property absent or insignificant



QUADRANGLE LOCATION

NON-RESOURCE OR WITHDRAWN AREA

Geology modified after:

Colton, R.B., and Fitch, H.R., 1974, Map showing potential sources of gravel and crushed-rock aggregate in the Boulder-Fort Collins-Greeley Area, Front Range Urban Corridor, Colo.: U. S. Geol. Survey Misc. Geol. Inv. Map I-855-D.

Soister, P. E., 1965, U. S. Geological Survey Geological Quadrangle, Map GQ-399

Base from U. S. Geological Survey 7-1/2 minute quadrangle

CONTOUR INTERVAL 10 FEET
DATUM IS MEAN SEA LEVEL

ROAD CLASSIFICATION

Mapped by: Ralph R. Shroba
Date: June 30, 1974

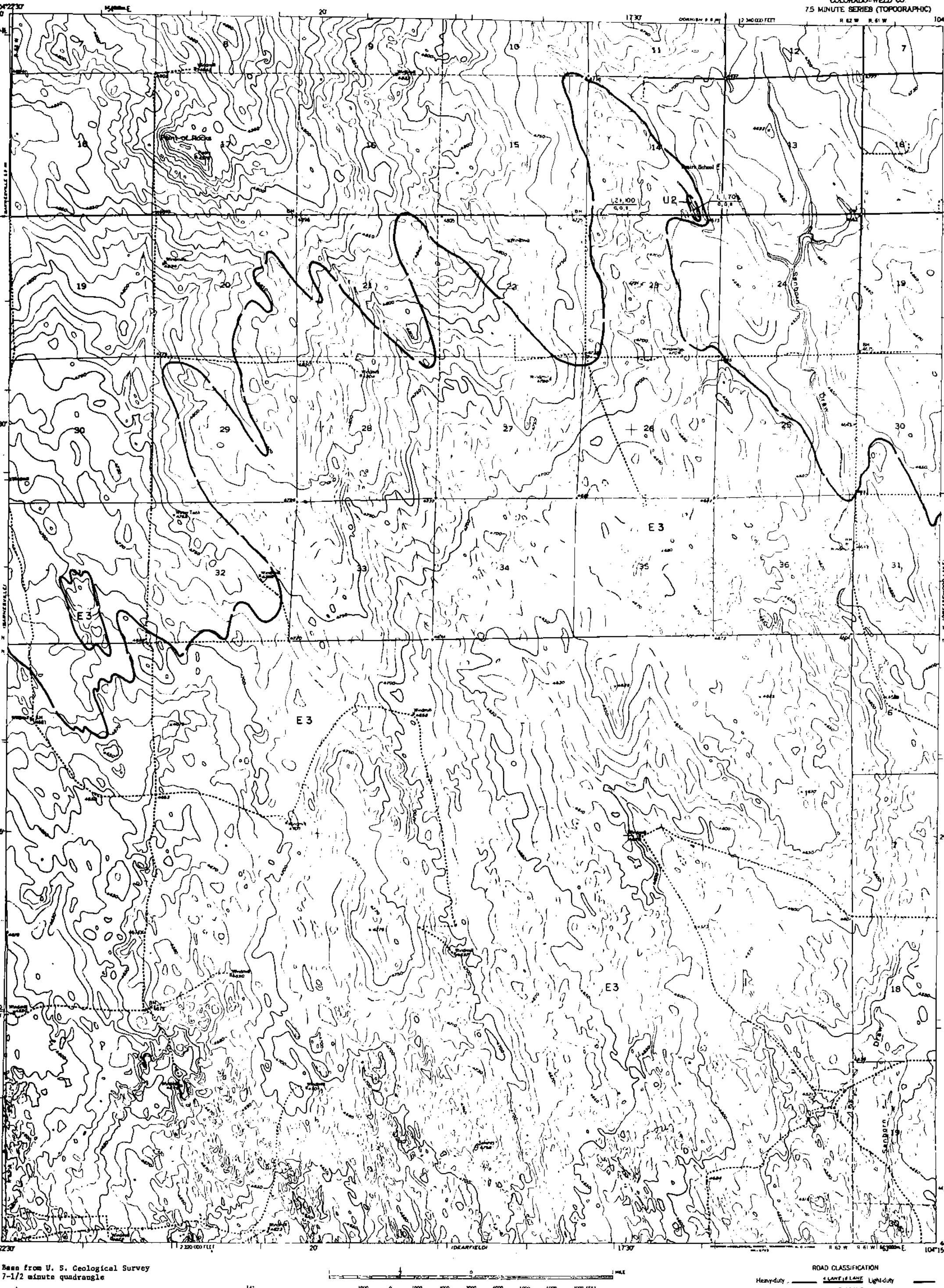
Prepared in cooperation with the U. S. Geological Survey.

PLATTEVILLE, COLO.

DEPARTMENT OF NATURAL RESOURCES
COLORADO GEOLOGICAL SURVEY
JOHN W. ROLD, DIRECTOR

SAND, GRAVEL AND QUARRY AGGREGATE RESOURCES MAP

POINT OF ROCKS QUADRANGLE
COLORADO-WELD CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)



EXPLANATION

F — Landform unit / Resource classification

LANDFORM UNITS

- F Floodplain deposit
- T Stream terrace deposit
- V Valley fill (F & T)
- U Upland deposits
- A Alluvial fan
- E Wind-deposited sand (eolian)
- M Man-made deposits (slag, tailings, spoils....)

RESOURCE CLASSIFICATION

Coarse Aggregate
(at least 50% retained on #4 screen, visual estimation)

- 1 Gravel: relatively clean and sound
- 2 Gravel: significant fines, decomposed rock, calcium carbonate.

Fine Aggregate
(greater than 50% passing #4 screen, 60% retained on #200 screen, visual estimation)

- 3 Sand

Unevaluated Resource

- 4 Probable aggregate resource

MAP SYMBOLS

- Operating gravel and/or sand pit
- Abandoned gravel and/or sand pit
- Operating stone quarry
- Abandoned stone quarry
- Potential quarry aggregate resource area
- Selected well or drill-hole location with overburden thickness (ft) over sand/gravel resource thickness (ft), obtained from well logs. "g" indicates gravel; "s" indicates sand
- "." in symbol denotes unevaluated or unknown property.
- "wo" denotes Colorado Geological Survey Windsor/Sand and Gravel projects' drill hole
- Landform boundary, solid where known or observed; dashed where approximate or inferred.

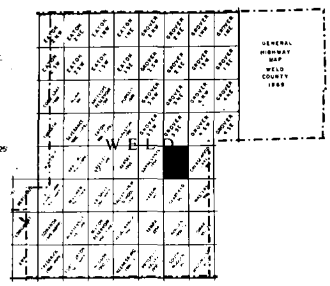
STATION, LOCATION AND GEOLOGICAL DESCRIPTION OF DEPOSIT

5, 17, 60

- overburden thickness (ft)
- sand/gravel resource thickness (ft)
- percent sand and fines (passing #4 screen, 0.25 in.), visual estimation
- significant amount of fines (passing #200 screen, 0.0069 in. or 0.074 mm.)
- significant amount of decomposed or weak rock.
- significant amount of calcium carbonate (caliche)

"•" in symbol denotes unevaluated or unknown property

"o" in symbol denotes property absent or insignificant



QUADRANGLE LOCATION

NON-RESOURCE OR WITHDRAWN AREA

REFERENCE: Bjorklund, L.J., and Brown, R.F., 1957, Geology and ground-water resources of the lower South Platte River valley between Hardin, Colorado, and Paxton, Nebraska: U. S. Geol. Survey Water-Supply Paper 1378, pl. 1.

Mapped by: Phillip C. Wicklein
Date: June 30, 1974

Base from U. S. Geological Survey 7-1/2 minute quadrangle

CONTOUR INTERVAL 10 FEET
DATUM IS MEAN SEA LEVEL

APPROXIMATE MEAN DECLINATION, 1951

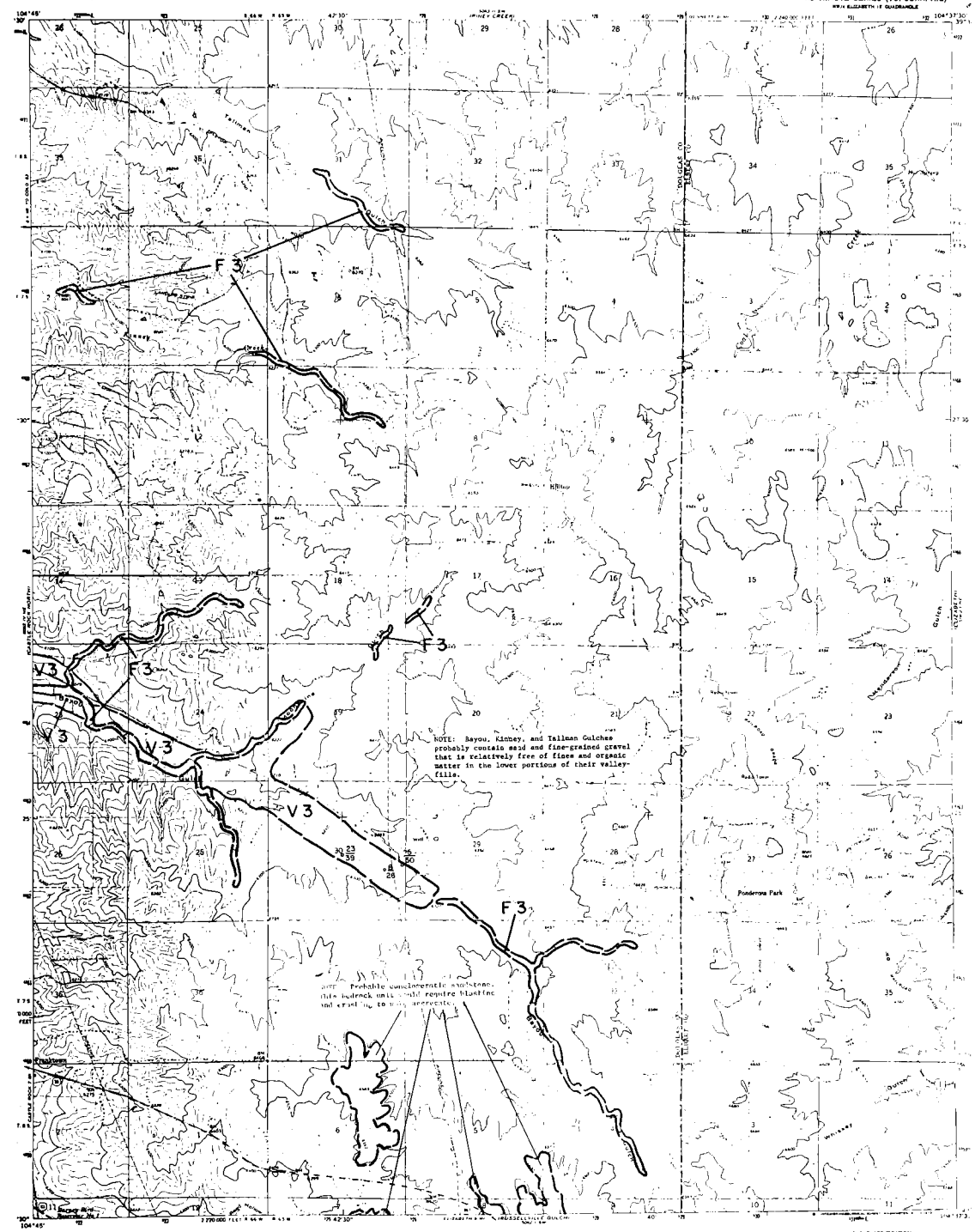
ROAD CLASSIFICATION
Heavy-duty — Light-duty
Medium-duty — Unimproved dirt
U.S. Route — State Route

POINT OF ROCKS, COLO.

SAND, GRAVEL AND QUARRY AGGREGATE RESOURCES MAP

DEPARTMENT OF NATURAL RESOURCES
COLORADO GEOLOGICAL SURVEY
JOHN W. ROLD, DIRECTOR

PONDEROSA PARK
7.5 MINUTE SERIES (TOPOGRAPHIC)



EXPLANATION

LANDFORM UNITS

- F Floodplain deposits
- T Stream terrace deposits
- V Valley fill (F & T)
- U Upland deposits
- A Alluvial fan
- E Wind-deposited sand (eolian)
- M Man-made deposits (slag,tailings, spoils....)

AGGREGATE CLASSIFICATION

Coarse Aggregate

1 Gravel - relatively clean and sound

2 Gravel - significant fines, decomposed rock, calcium carbonate

Fine Aggregate

3 Sand

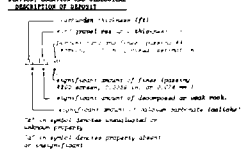
Undeveloped Resource

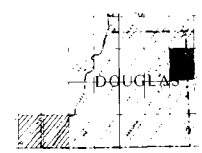
4 Probable aggregate resource

MAP SYMBOLS

- Operating gravel and/or sand pit
- Abandoned gravel and/or sand pit
- Operating stone quarry
- Abandoned stone quarry
- Potential quarry aggregate resource area
- Selected well or drill-hole location with overburden thickness (ft) over sand/gravel resource thickness (ft), obtained from well logs. "g" indicates gravel; "s" indicates sand
- "-" in symbol denotes unevaluated or unknown property
- "wd" denotes Colorado Geological Survey Windsor/Sand and Gravel projects' drill hole
- Landform boundary, solid where known or observed; dashed where approximate or inferred.

STATION, LOCATION AND STRUCTURAL DESCRIPTION OF DEPOSIT





QUADRANGLE LOCATION

NON-RESOURCE OR WITHDRAWN AREA

REFERENCE:

Chase, G.N., and McConaghy, J.A., 1972, Generalized surficial geologic map of the Denver area, Colorado: U. S. Geol. Survey Misc. Geol. Inv. Map I-731.

Geology modified after:

Trimble, D.E., and Fitch, H.R., 1974, Map showing potential sources of gravel and crushed-rock aggregate in the Greater Denver Area, Front Range Urban Corridor, Colo.: U. S. Geol. Survey Misc. Geol. Inv. Map I-856-A.

Base from U. S. Geological Survey
7-1/2 minute quadrangle

CONTOUR INTERVAL 20 FEET
DATUM IS MEAN SEA LEVEL

ROAD CLASSIFICATION
Medium-duty — Light-duty
Unimproved dirt .....
State Route

PONDEROSA PARK, COLO.

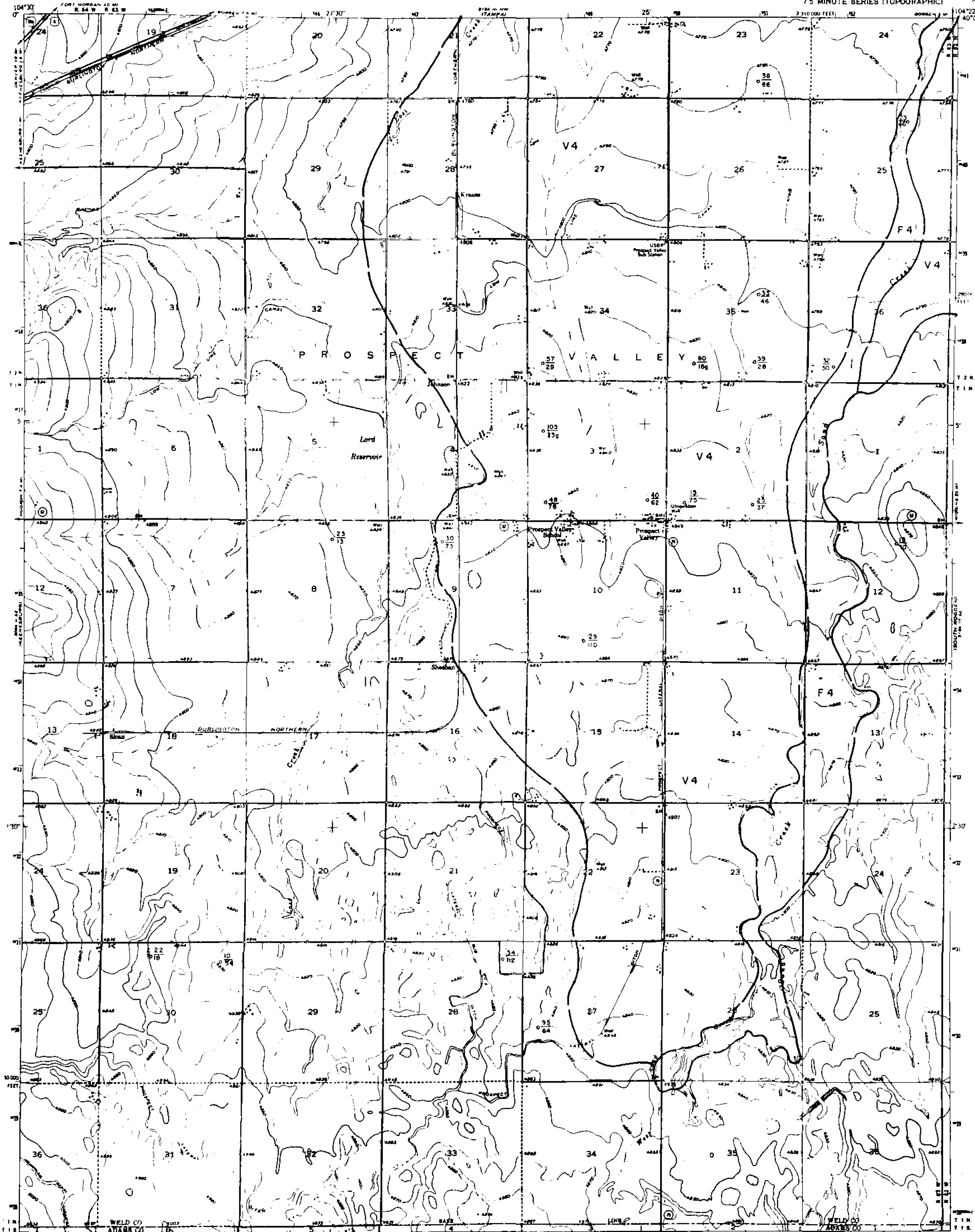
Mapped by: Ralph R. Shroba
Date: June 30, 1974

Prepared in cooperation with the U. S. Geological Survey.

DEPARTMENT OF NATURAL RESOURCES
COLORADO GEOLOGICAL SURVEY
JOHN W. ROLD, DIRECTOR

SAND, GRAVEL AND QUARRY AGGREGATE RESOURCES MAP

PROSPECT VALLEY QUADRANGLE
COLORADO
7.5 MINUTE SERIES (TOPOGRAPHIC)



Base from U. S. Geological Survey
7-1/2 minute quadrangle

CONTOUR INTERVAL 10 FEET
DATUM IS MEAN SEA LEVEL

ROAD CLASSIFICATION
Primary highway, hard surface
Light-duty road, hard or improved surface
Secondary highway, hard surface
Unimproved road
Interstate Route
U S Route
State Route

PROSPECT VALLEY, COLO.

EXPLANATION

F4 — Landform unit; Resource classification

LANDFORM UNITS

- F Floodplain deposit
- T Stream terrace deposit
- V Valley fill (F & T)
- U Upland deposits
- A Alluvial fan
- E Wind-deposited sand (eolian)
- M Man-made deposits (slag, tailings, spoils....)

RESOURCE CLASSIFICATION

Coarse Aggregate
(at least 50% retained on #4 screen, visual estimation)

1. Gravel: relatively clean and sound
2. Gravel: significant fines, decomposed rock, calcium carbonate.

Fine Aggregate
(greater than 50% passing #4 screen, 8% retained on #200 screen, visual estimation)

3. Sand

Unevaluated Resource

4. Probable aggregate resource

MAP SYMBOLS

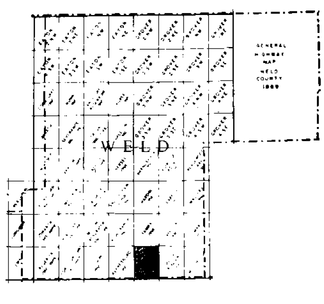
- Operating gravel and/or sand pit
- Abandoned gravel and/or sand pit
- Operating stone quarry
- Abandoned stone quarry
- Potential quarry aggregate resource area
- Selected well or drill-hole location with overburden thickness (ft) over sand/gravel resource thickness (ft), obtained from well logs.
  - "g" indicates gravel; "s" indicates sand
  - "x" in symbol denotes unevaluated or unknown property.
  - "WS" denotes Colorado Geological Survey Windsor/Sand and Gravel projects' drill hole
- Landform boundary, solid where known or observed; dashed where approximate or inferred.

STATION, LOCATION AND GEOLOGICAL DESCRIPTION OF DEPOSIT

- overburden thickness (ft)
- sand/gravel resource thickness (ft)
- percent sand and fines (passing #4 screen, 0.18 in.), visual estimation
- significant amount of fines (passing #200 screen, 0.0058 in. or 0.074 mm)
- significant amount of decomposed or weak rock.
- significant amount of calcium carbonate (caliche)

"x" in symbol denotes unevaluated or unknown property

"o" in symbol denotes property absent or insignificant



QUADRANGLE LOCATION

NON-RESOURCE OR WITHDRAWN AREA

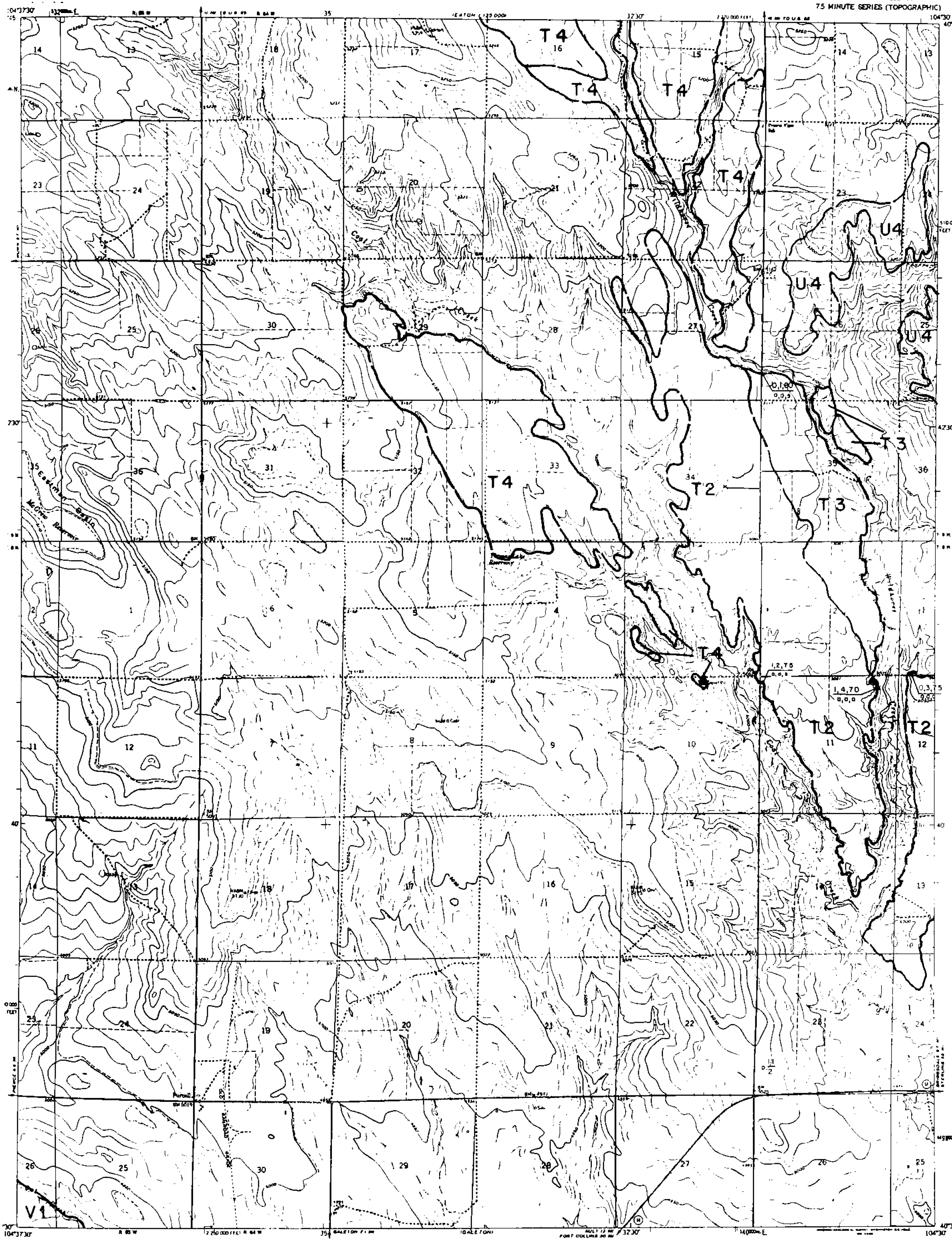
REFERENCE: Bjorklund, L.J., and Brown, R.F., 1957, Geology and ground-water resources of the lower South Platte River valley between Hardin, Colorado, and Paxton, Nebraska: U. S. Geol. Survey Water-Supply Paper 1378, pl. 1.

Mapped by: Phillip C. Wicklein
Date: June 30, 1974

DEPARTMENT OF NATURAL RESOURCES
COLORADO GEOLOGICAL SURVEY
JOHN W. ROLD, DIRECTOR

SAND, GRAVEL AND QUARRY AGGREGATE RESOURCES MAP

PURCELL QUADRANGLE
COLORADO-WELD CO
7.5 MINUTE SERIES (TOPOGRAPHIC)



EXPLANATION

Landform unit / Resource classification

LANDFORM UNITS

- F Floodplain deposit
- T Stream terrace deposit
- V Valley fill (F & T)
- U Upland deposits
- A Alluvial fan
- E Wind-deposited sand (eolian)
- M Man-made deposits (slag, tailings, spoils....)

RESOURCE CLASSIFICATION

Coarse Aggregate

- 1 Gravel: relatively clean and sound
- 2 Gravel: significant fines, decomposed rock, calcium carbonate.

Fine Aggregate

- 3 Sand

Unevaluated Resource

- 4 Probable aggregate resource

MAP SYMBOLS

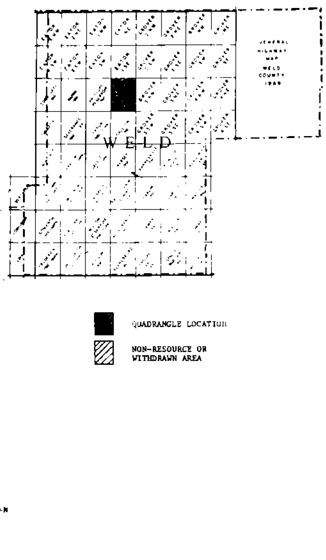
- Operating gravel and/or sand pit
- Abandoned gravel and/or sand pit
- Operating stone quarry
- Abandoned stone quarry
- Potential quarry aggregate resource area
- Selected well or drill-hole location with overburden thickness (ft) over sand/gravel resource thickness (ft), obtained from well logs. "g" indicates gravel, "s" indicates sand. "x" in symbol denotes unevaluated or unknown property.
- "wa" denotes Colorado Geological Survey Windsor/Sand and Gravel projects' drill hole
- Landform boundary, solid where known or observed; dashed where approximate or inferred.

STATION, LOCATION AND GEOLOGICAL DESCRIPTION OF DEPOSIT

- overburden thickness (ft)
- sand gravel resource thickness (ft)
- percent sand and fines (passing #4 screen)
- significant amount of fines
- significant amount of decomposed or weak rock
- significant amount of calcium carbonate (caliche)

"x" in symbol denotes unevaluated or unknown property

"o" in symbol denotes property absent or insignificant



QUADRANGLE LOCATION

NON-RESOURCE OR WITHDRAWN AREA

Mapped by: Stephen D. Schwochow
Date: June 30, 1974

Base from U. S. Geological Survey
7-1/2 minute quadrangle

CONTOUR INTERVAL 10 FEET
DATUM IS MEAN SEA LEVEL

ROAD CLASSIFICATION
Medium-duty / Light-duty / Unimproved dirt / State Route

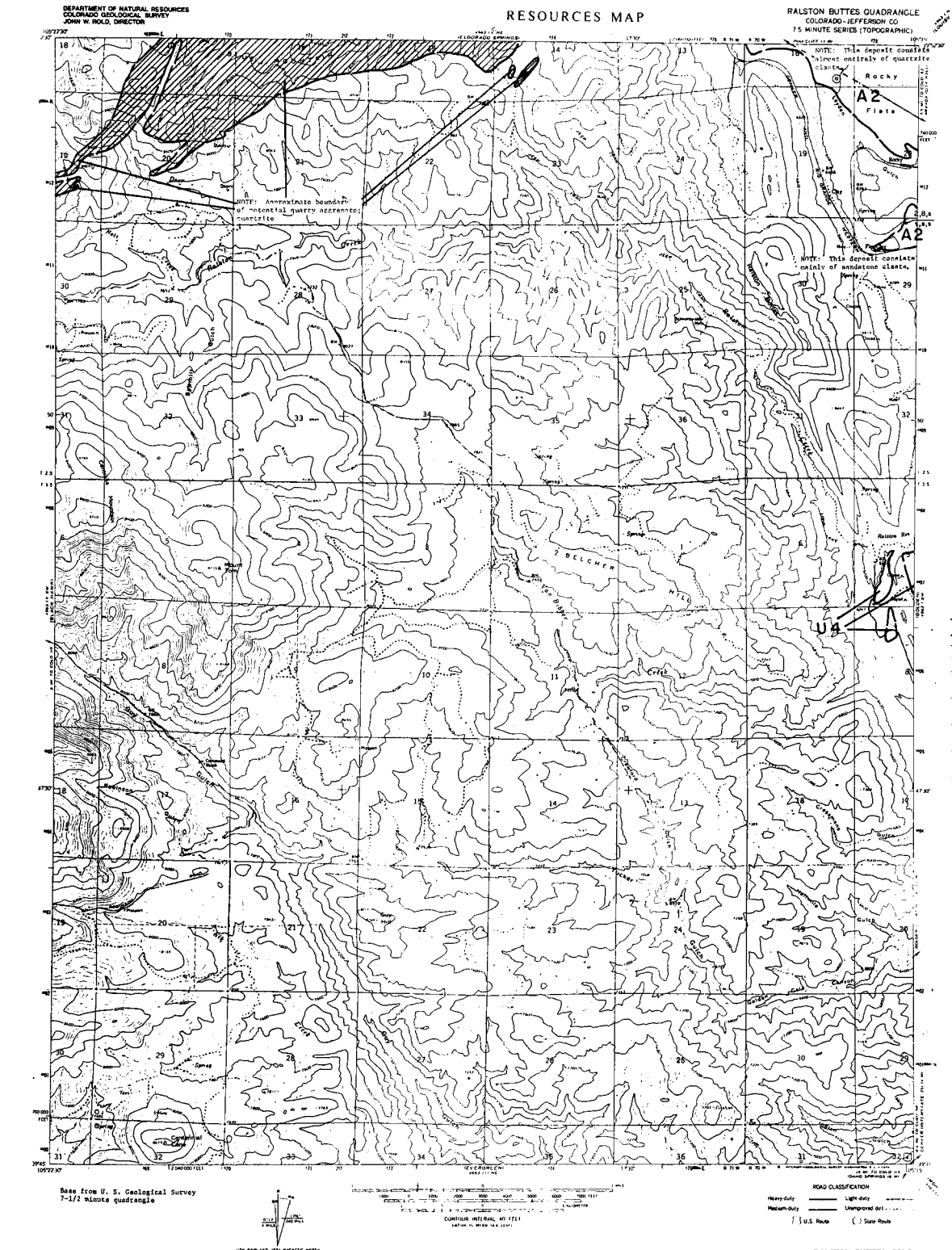
APPROXIMATE MEAN DECLINATION, 1960

PURCELL, COLO

SAND, GRAVEL AND QUARRY AGGREGATE RESOURCES MAP

DEPARTMENT OF NATURAL RESOURCES
COLORADO GEOLOGICAL SURVEY
JOHN W. ROLD, DIRECTOR

RALSTON BUTTES QUADRANGLE
COLORADO - JEFFERSON CO
7.5 MINUTE SERIES (TOPOGRAPHIC)



EXPLANATION

Landform unit
Resource classification

LANDFORM UNITS

- F — Floodplain deposits
- T — Stream terrace deposits
- V — Valley fill (F & T)
- U — Upland deposits
- A — Alluvial fan
- E — Wind-deposited sand (eolian)
- M — Man-made deposits (dams, tailings, spoils, ...)

RESOURCE CLASSIFICATION

Coarse Aggregate
(at least 30% retained on #4 screen, visual estimation)

- 1 — Gravel: relatively clean and sound
- 2 — Gravel: significant fines, decomposed rock, calcium carbonate.

Fine Aggregate
greater than 70% passing #4 screen, 70% retained on #200 screen, visual estimation

- 3 — Sand

Nonevaluated Resource

- 4 — Probable aggregate resources

MAP SYMBOLS

- Operating gravel and/or sand pit
- Abandoned gravel and/or sand pit
- Operating stone quarry
- Abandoned stone quarry
- Potential quarry aggregate resource area
- Selected soil or drill-hole location with overburden thickness (ft) over sand/gravel resource thickness (ft), obtained from well logs. "g" indicates gravel; "s" indicates sand. "-" in symbol denotes unevaluated or unknown property. "wm" denotes Colorado Geological Survey Windsor/Sand and Gravel projects' drill holes.
- Landform boundary, solid where known or observed; dashed where approximate or inferred.

STATION, LOCATION AND GEOLOGICAL DESCRIPTION OF DEPOSIT

- overburden thickness (ft)
- sand/gravel resource thickness (ft)
- percent sand and fines (passing #4 screen, 0.25 in.), visual estimation
- significant amount of fines (passing #200 screen, 0.0029 in. or 0.074 mm.)
- significant amount of decomposed or weak rock.
- significant amounts of calcium carbonate (calcium)

"s" in symbol denotes unevaluated or unknown property.
"n" in symbol denotes property absent or insignificant.

QUADRANGLE LOCATION

NON-RESOURCE OR WITHDRAWN AREA

Geology modified after:

Sheridan, D.M., Maxwell, C.H., Albee, A.L., and Van Horn, Richard, 1958, Preliminary map of the bedrock geology of the Ralston Buttes quadrangle, Jefferson County, Colorado: U. S. Geol. Survey Mineral Inv. Field Studies Map MF-179.

Trimble, D.E., and Fitch, H.R., 1974, Map showing potential sources of gravel and crushed-rock aggregate in the Greater Denver Area, Front Range Urban Corridor, Colo.: U. S. Geol. Survey Misc. Geol. Inv. Map I-856-A.

REFERENCE:

Chase, G.H., and McConaghy, J.A., 1972, Generalized surficial geologic map of the Denver area, Colorado: U. S. Geol. Survey Misc. Geol. Inv. Map I-731.

Base from U. S. Geological Survey
7-1/2 minute quadrangle

ROAD CLASSIFICATION

Heavy-duty ——— Light-duty - - - -
Medium-duty ——— Unimproved dirt . . . .
U.S. Route ( ) State Route

CONTOUR INTERVAL 40 FEET

RALSTON BUTTES, COLO

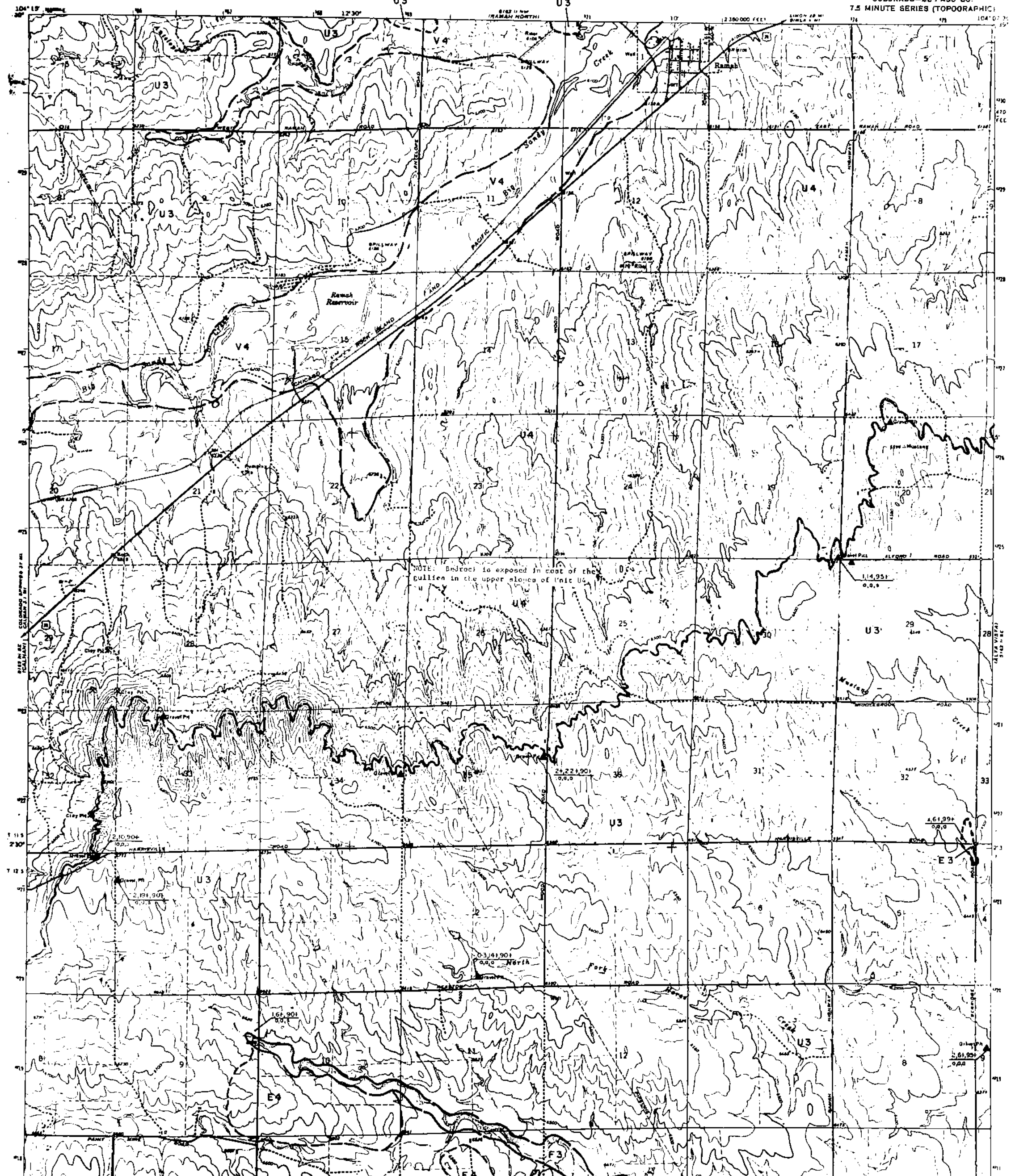
Mapped by: Ralph R. Shroba
Date: June 30, 1974

Prepared in cooperation with the U. S. Geological Survey.

DEPARTMENT OF NATURAL RESOURCES
COLORADO GEOLOGICAL SURVEY
JOHN W. ROLD, DIRECTOR

SAND, GRAVEL AND QUARRY AGGREGATE RESOURCES MAP

RAMAH SOUTH QUADRANGLE
COLORADO–EL PASO CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)



Base from U. S. Geological Survey
7-1/2 minute quadrangle

CONTOUR INTERVAL 20 FEET
DATUM IS MEAN SEA LEVEL

ROAD CLASSIFICATION

Primary highway, hard surface
Light-duty road, hard or improved surface
Secondary highway, hard surface
Unimproved road
Interstate Route
U. S. Route
State Route

RAMAH SOUTH, COLO.

EXPLANATION

F — Landform unit; 1 — Resource classification

LANDFORM UNITS

F Floodplain deposit
T Stream terrace deposit
V Valley fill (F & T)

U Upland deposits
A Alluvial fan
E Wind-deposited sand (eolian)
M Man-made deposits (slag, tailings, spoils....)

RESOURCE CLASSIFICATION

Coarse Aggregate
(at least 25% retained on #4 screen, visual estimation)

1 Gravel: relatively clean and sound
2 Gravel: significant fines, decomposed rock, calcium carbonate.

Fine Aggregate
(greater than 70% passing #4 screen, <75% retained on #200 screen, visual estimation)

3 Sand

Unevaluated Resource

4 Probable aggregate resource

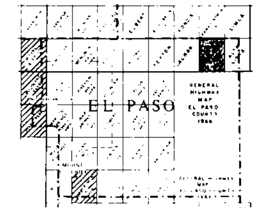
MAP SYMBOLS

Operating gravel and/or sand pit
Abandoned gravel and/or sand pit
Operating stone quarry
Abandoned stone quarry
Potential quarry aggregate resource area
Selected well or drill-hole location with overburden thickness (ft) over sand/gravel resource thickness (ft), obtained from well logs.
"g" indicates gravel; "s" indicates sand
"?" in symbol denotes unevaluated or unknown property.
"WS" denotes Colorado Geological Survey Windsor/Sand and Gravel projects' drill hole
Landform boundary, solid where known or observed; dashed where approximate or inferred.

STATION, LOCATION AND GEOLOGICAL DESCRIPTION OF DEPOSIT

5, 17, 40

overburden thickness (ft)
sand gravel resource thickness (ft)
percent sand and fines (passing #4 screen, 0.25 in.), visual estimation
significant amount of fines (passing #200 screen, 0.0029 in. or 0.074 mm.)
significant amount of decomposed or weak rock.
significant amount of calcium carbonate (caliche)
"x" in symbol denotes unevaluated or unknown property
"o" in symbol denotes property absent or insignificant



QUADRANGLE LOCATION

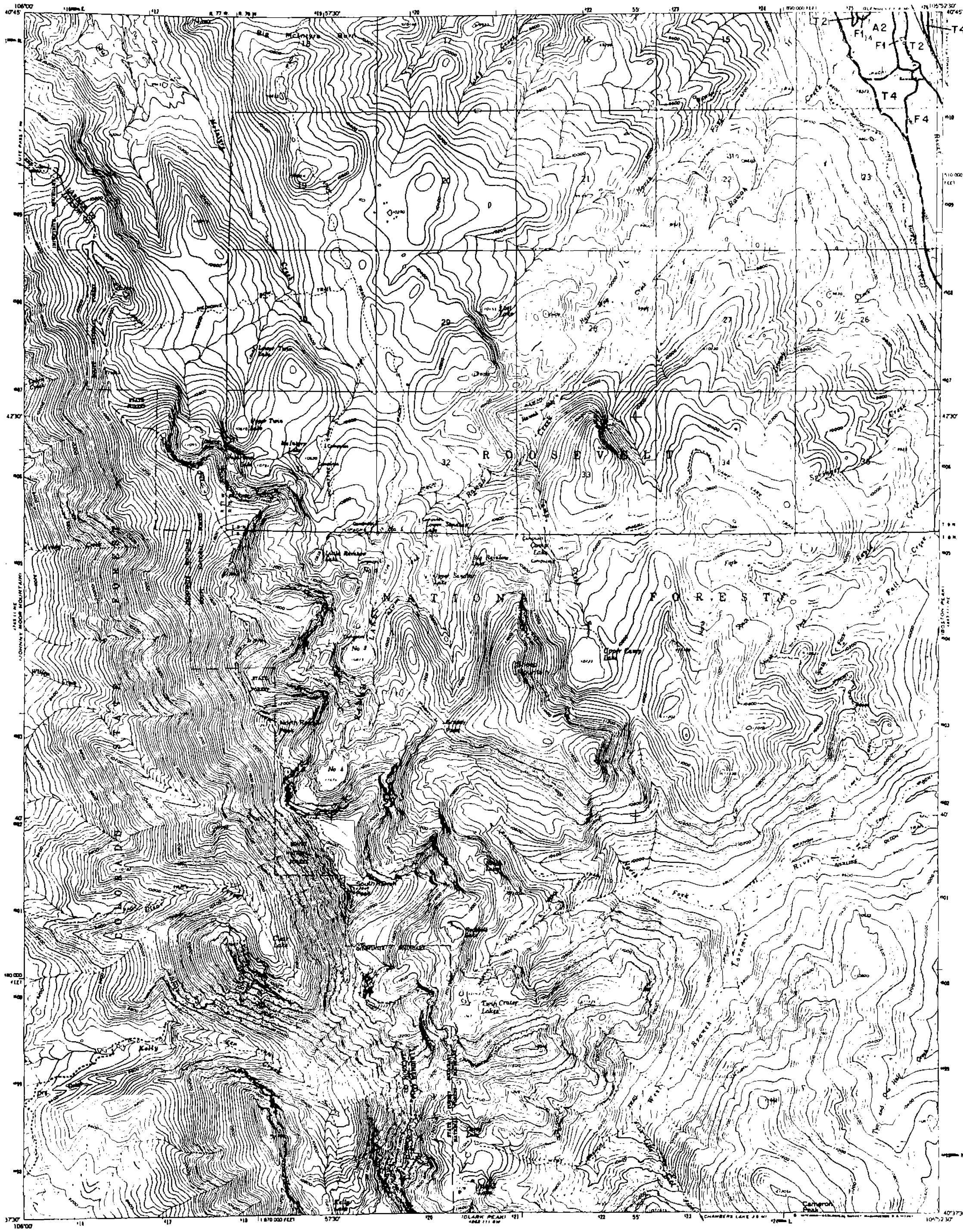
NON-RESOURCE OR WITHDRAWN AREA

Mapped by: Ralph R. Shroba
Date: June 30, 1974

DEPARTMENT OF NATURAL RESOURCES
COLORADO GEOLOGICAL SURVEY
JOHN W. ROLD, DIRECTOR

SAND, GRAVEL AND QUARRY AGGREGATE RESOURCES MAP

RAWAH LAKES QUADRANGLE
COLORADO
7.5 MINUTE SERIES (TOPOGRAPHIC)



Base from U. S. Geological Survey
7-1/2 minute quadrangle

CONTOUR INTERVAL 40 FEET
DOTTED LINES REPRESENT 20 FOOT CONTOURS
DATUM IS MEAN SEA LEVEL

ROAD CLASSIFICATION
Light-duty
Unimproved dirt

Mapped by: Stephen D. Schwochow
Date: June 30, 1974

EXPLANATION

F1 — Landform unit; Resource classification

LANDFORM UNITS

- F — Floodplain deposit
- T — Stream terrace deposit
- V — Valley fill (F & T)
- U — Upland deposits
- A — Alluvial fan
- E — Wind-deposited sand (eolian)
- M — Man-made deposits (slag, tailings, spoils....)

RESOURCE CLASSIFICATION

Coarse Aggregate
(at least 30% retained on #4 screen, visual estimation)

- 1 — Gravel: relatively clean and sound
- 2 — Gravel: significant fines, decomposed rock, calcium carbonate.

Fine Aggregate
(greater than 70% passing #4 screen, 60% retained on #200 screen, visual estimation)

- 3 — Sand

Unevaluated Resource

- 4 — Probable aggregate resource

MAP SYMBOLS

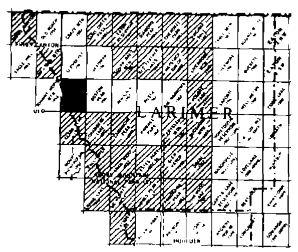
- Operating gravel and/or sand pit
- Abandoned gravel and/or sand pit
- Operating stone quarry
- Abandoned stone quarry
- Potential quarry aggregate resource area
- Selected well or drill-hole location with overburden thickness (ft) over sand/gravel resource thickness (ft), obtained from well logs.
  "g" indicates gravel; "s" indicates sand
  "x" in symbol denotes unevaluated or unknown property.
  "ms" denotes Colorado Geological Survey Windsor/Sand and Gravel projects' drill hole
- Landform boundary, solid where known or observed; dashed where approximate or inferred.

STATION, LOCATION AND GEOLOGICAL DESCRIPTION OF DEPOSIT

2, 17, 60
- overburden thickness (ft)
- sand/gravel resource thickness (ft)
- percent sand and fines (passing #4 screen, 0.25 in.), visual estimation
- significant amount of fines (passing #200 screen, 0.0029 in. or 0.074 mm.)
- significant amount of decomposed or weak rock.
- significant amount of calcium carbonate (caliche)

"x" in symbol denotes unevaluated or unknown property

"o" in symbol denotes property absent or insignificant



QUADRANGLE LOCATION

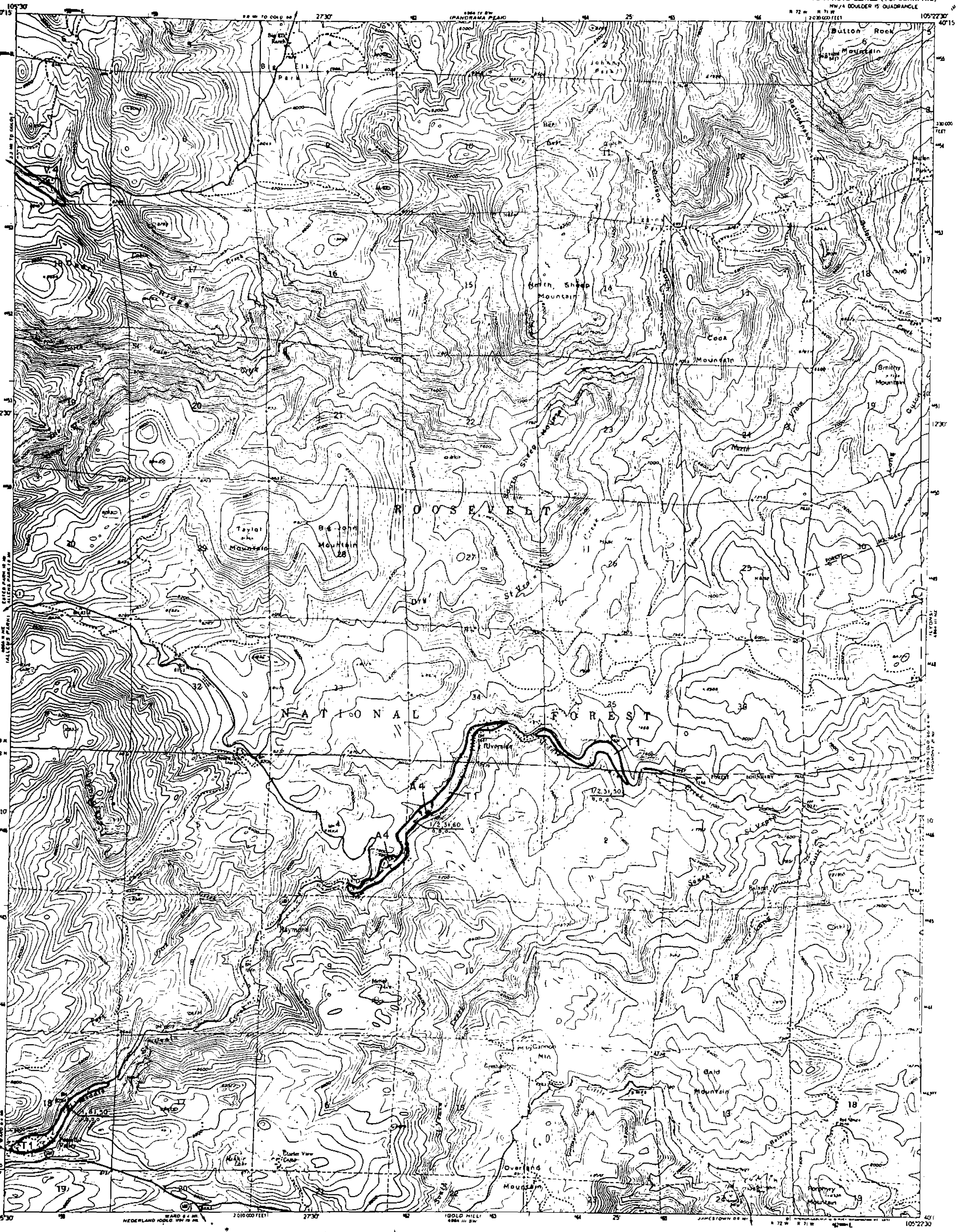
NON-RESOURCE OR WITHDRAWN AREA

SAND, GRAVEL AND QUARRY AGGREGATE

RESOURCES MAP

DEPARTMENT OF NATURAL RESOURCES
COLORADO GEOLOGICAL SURVEY
JOHN W. ROLD, DIRECTOR

RAYMOND QUADRANGLE
COLORADO–BOULDER CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)



Base from U. S. Geological Survey
7-1/2 minute quadrangle

CONTOUR INTERVAL 40 FEET
DATUM IS MEAN SEA LEVEL

ROAD CLASSIFICATION
Medium duty — Light duty
Unimproved dirt
State Route

RAYMOND, COLO.

EXPLANATION

F — Landform unit
— Resource classification

LANDFORM UNITS

- F Floodplain deposit
- T Stream terrace deposit
- V Valley fill (F & T)
- U Upland deposits
- A Alluvial fan
- E Wind-deposited sand (eolian)
- M Man-made deposits (slag, tailings, spoils....)

RESOURCE CLASSIFICATION

Coarse Aggregate
(at least 33% retained on #4 screen, visual estimation)

- 1 Gravel: relatively clean and sound
- 2 Gravel: significant fines, decomposed rock, calcium carbonate.

Fine Aggregate
(greater than 75% passing #4 screen, 60% retained on #200 screen, visual estimation)

- 3 Sand

Unevaluated Resource

- 4 Probable aggregate resource

MAP SYMBOLS

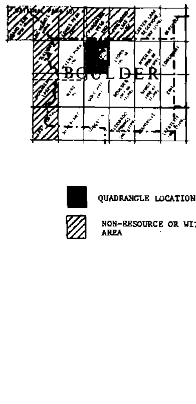
- Operating gravel and/or sand pit
- Abandoned gravel and/or sand pit
- Operating stone quarry
- Abandoned stone quarry
- Potential quarry aggregate resource area
- Selected well or drill-hole location with overburden thickness (ft) over sand/gravel resource thickness (ft), obtained from well logs.
  "g" indicates gravel; "s" indicates sand
  "u" in symbol denotes unevaluated or unknown property.
- "WG" denotes Colorado Geological Survey Windsor/Sand and Gravel projects' drill hole
- Landform boundary, solid where known or observed; dashed where approximate or inferred.

STATION, LOCATION AND GEOLOGICAL DESCRIPTION OF DEPOSIT

3, 17, 40
- overburden thickness (ft)
- sand/gravel resource thickness (ft)
- percent sand and fines passing #4 screen, 0.25 in., visual estimation
- significant amount of fines (passing #200 screen, 0.003 in. or 0.074 mm.)
- significant amount of decomposed or weak rock.
- significant amount of calcium carbonate (caliche)

"u" in symbol denotes unevaluated or unknown property

"a" in symbol denotes property absent or insignificant



QUADRANGLE LOCATION

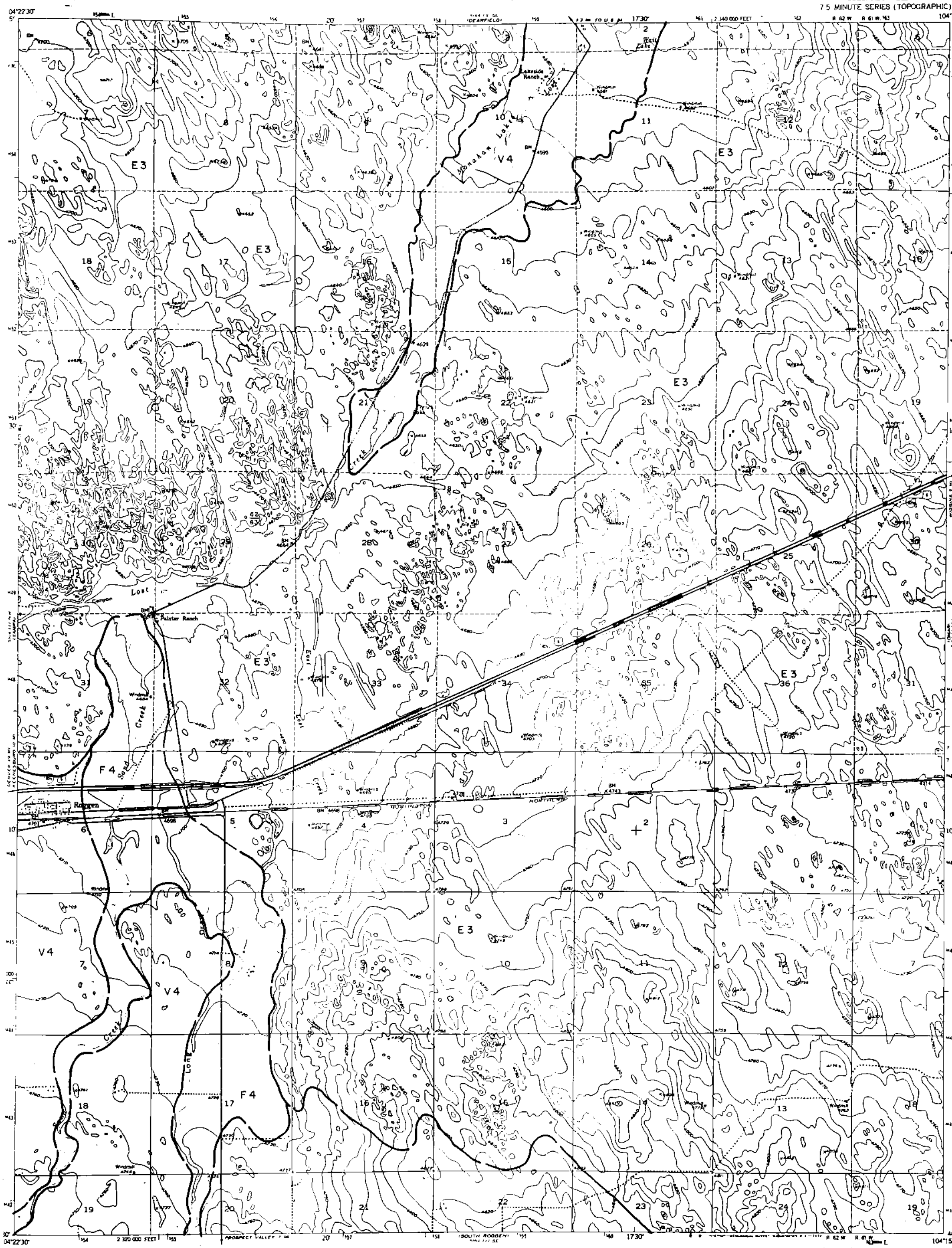
NON-RESOURCE OR WITHDRAWN AREA

Mapped by: Ralph R. Shroba
Date: June 30, 1974

DEPARTMENT OF NATURAL RESOURCES
COLORADO GEOLOGICAL SURVEY
JOHN W. ROLD, DIRECTOR

SAND, GRAVEL AND QUARRY AGGREGATE RESOURCES MAP

ROGGEN QUADRANGLE
COLORADO-WELD CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)



Base from U. S. Geological Survey
7-1/2 minute quadrangle

EXPLANATION

F1 — Landform unit; Resource classification

LANDFORM UNITS

- F — Floodplain deposit
- T — Stream terrace deposit
- V — Valley fill (F & T)
- U — Upland deposits
- A — Alluvial fan
- E — Wind-deposited sand (eolian)
- M — Man-made deposits (slag, tailings, spoils....)

RESOURCE CLASSIFICATION

Coarse Aggregate
(at least 20% retained on #4 screen, visual estimation)

1. Gravel: relatively clean and sound
2. Gravel: significant fines, decomposed rock, calcium carbonate.

Fine Aggregate
(greater than [illegible] passing #4 screen, 60% retained on #[illegible] screen, visual estimation)

3. Sand

Unevaluated Resource

4. Probable aggregate resource

MAP SYMBOLS

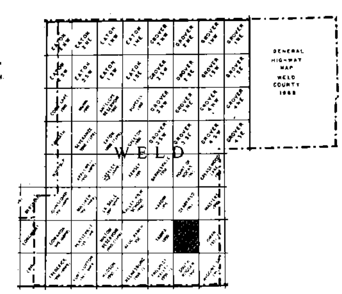
- Operating gravel and/or sand pit
- Abandoned gravel and/or sand pit
- Operating stone quarry
- Abandoned stone quarry
- Potential quarry aggregate resource area
- Selected well or drill-hole location with overburden thickness (ft) over sand/gravel resource thickness (ft), obtained from well logs.
  - "g" indicates gravel; "s" indicates sand
  - "x" in symbol denotes unevaluated or unknown property.
  - "WD" denotes Colorado Geological Survey Windsor/Sand and Gravel projects' drill hole
- Landform boundary, solid where known or observed; dashed where approximate or inferred.

STATION, LOCATION AND GEOLOGICAL DESCRIPTION OF DEPOSIT

- overburden thickness (ft)
- sand/gravel resource thickness (ft)
- percent sand and fines (passing #4 screen, 0.25 in.), visual estimation
- significant amount of fines (passing #200 screen, 0.0059 in. or 0.074 mm.)
- significant amount of decomposed or weak rock.
- significant amount of calcium carbonate (caliche)

"x" in symbol denotes unevaluated or unknown property

"o" in symbol denotes property absent or insignificant



- QUADRANGLE LOCATION
- NON-RESOURCE OR WITHDRAWN AREA

REFERENCE: Bjorklund, L.J., and Brown, R.F., 1957, Geology and ground-water resources of the lower South Platte River valley between Hardin, Colorado, and Paxton, Nebraska: U. S. Geol. Survey Water-Supply Paper 1378, pl. 1.

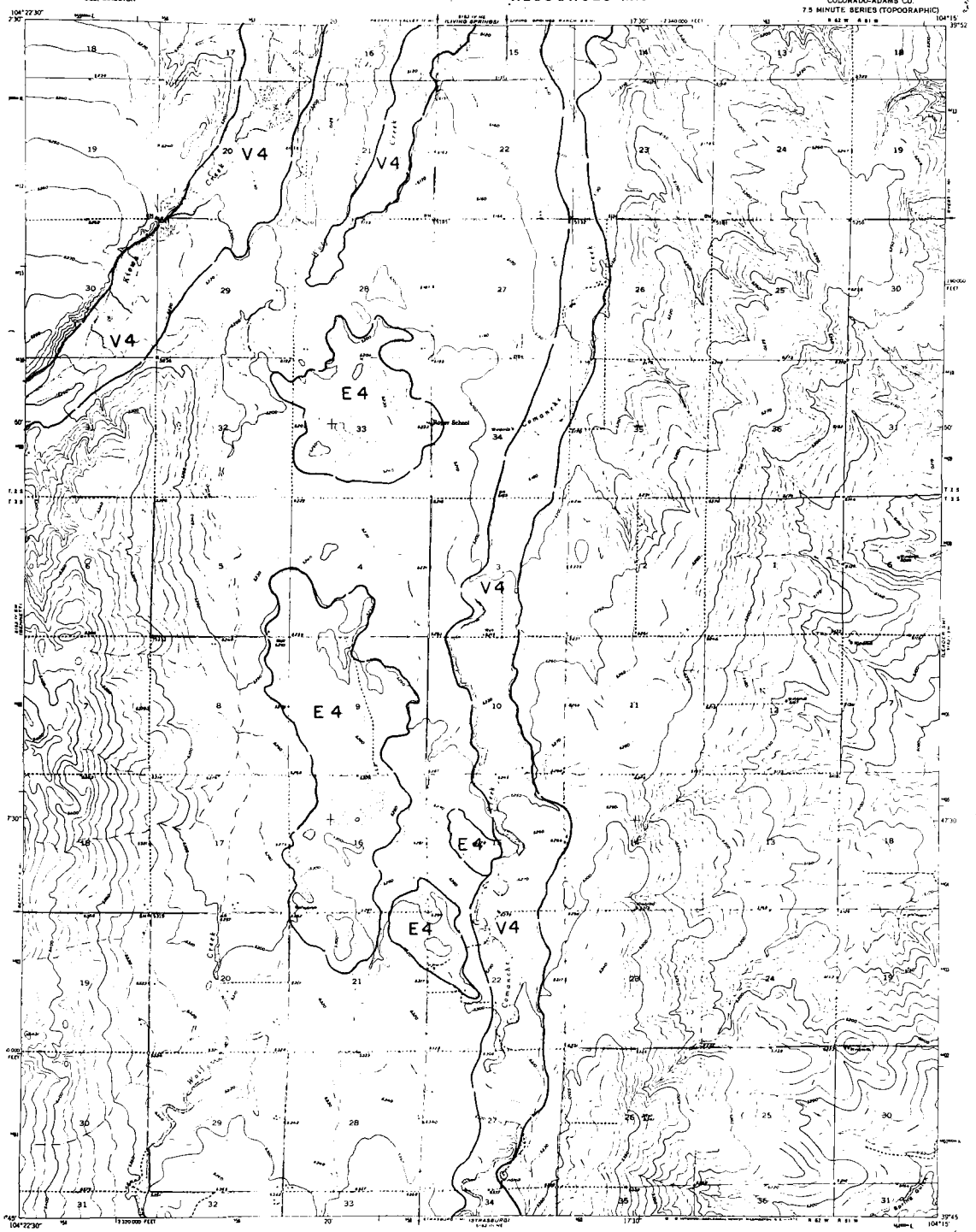
Mapped by: Phillip C. Wicklein
Date: June 30, 1974

ROGGEN, COLO.

SAND, GRAVEL AND QUARRY AGGREGATE RESOURCES MAP

DEPARTMENT OF NATURAL RESOURCES
COLORADO GEOLOGICAL SURVEY
JOHN W. ROLD, DIRECTOR

ROPER SCHOOL QUADRANGLE
COLORADO-ADAMS CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)



EXPLANATION

LANDFORM UNITS

- F Floodplain deposit
- T Stream terrace deposit
- V Valley fill (F & T)
- U Colian deposits
- A Alluvial fan
- E Wind-deposited sand (eolian)
- M Man-made deposits (slag,tailings, spoils,...)

RESOURCE CLASSIFICATION

Coarse Aggregate

- 1 Gravel: relatively clean and sound
- 2 Gravel: significant fines, decomposed rock, calcium carbonate

Fine Aggregate

- 3 Sand

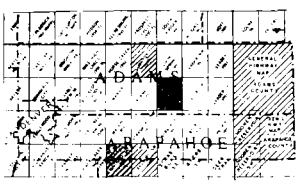
Unevaluated Resource

- 4 Probable aggregate resource

MAP SYMBOLS

- Operating gravel and/or sand pit
- Abandoned gravel and/or sand pit
- Operating stone quarry
- Abandoned stone quarry
- Potential quarry aggregate resource area
- Selected well or drill-hole location with overburden thickness (ft), over sand/gravel resource thickness (ft), obtained from well logs
  - "g" indicates gravel; "s" indicates sand
  - "-" in symbol denotes unevaluated or unknown prospects
- "WD" denotes Colorado Geological Survey Windsor/Island and Gravel projects drill holes
- Landform boundary, solid where known or observed, dashed where approximate or inferred.

STATION, LOCATION AND GEOLOGICAL DESCRIPTION OF DEPOSIT



QUADRANGLE LOCATION

NON-RESOURCE OR WITHDRAWN AREA

Mapped by: Phillip C. Wicklein
Date: June 30, 1974

Base from U. S. Geological Survey
7-1/2 minute quadrangle

CONTOUR INTERVAL 10 FEET
DATUM IS MEAN SEA LEVEL

ROAD CLASSIFICATION

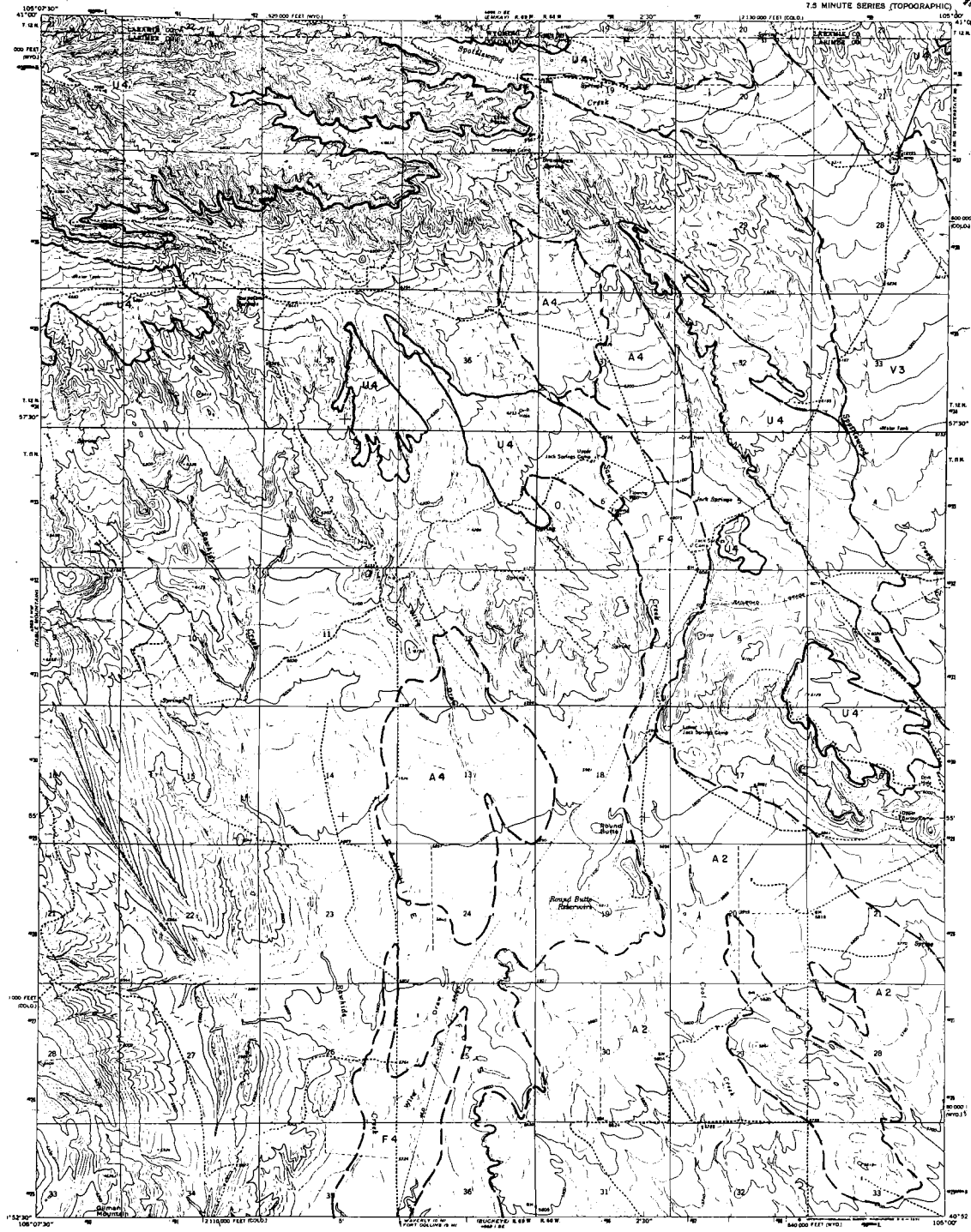
HARD-SURFACE ALL WEATHER ROADS — DRY WEATHER ROADS
Heavy-duty —— Light-duty ——
Medium-duty —— Unimproved dirt .....
U S Route State Route

ROPER SCHOOL, COLO.

SAND, GRAVEL AND QUARRY AGGREGATE RESOURCES MAP

DEPARTMENT OF NATURAL RESOURCES
COLORADO GEOLOGICAL SURVEY
JOHN W. ROLD, DIRECTOR

ROUND BUTTE QUADRANGLE
COLORADO – WYOMING
7.5 MINUTE SERIES (TOPOGRAPHIC)



EXPLANATION

Landform unit
Resource classification

LANDFORM UNITS

F Floodplain deposit
T Stream terrace deposit
V Valley fill (F & T)
U Upland deposits
A Alluvial fan
E Wind-deposited sand (soltan)
M Man-made deposits (slag, tailings, spoils....)

RESOURCE CLASSIFICATION

Coarse Aggregate
(at least 30% retained on #4 screen, visual estimate)

1 Gravel: relatively clean and sound
2 Gravel: significant fines, decomposed rock, calcium carbonate.

Fine Aggregate
(greater than 70% passing #4 screen, 60% retained on #200 screen, visual estimate

3 Sand

Overburden Resource

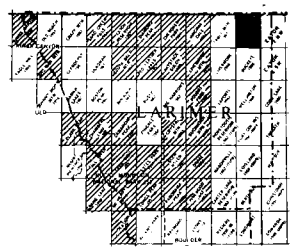
4 Probable aggregate resource

MAP SYMBOLS

Operating gravel and/or sand pit
Abandoned gravel and/or sand pit
Operating stone quarry
Abandoned stone quarry
Potential quarry aggregate resource area
Selected well or drill-hole location with overburden thickness (ft) over sand/gravel resource thickness (ft), obtained from well logs. "g" indicates gravel; "s" indicates sand
"-" (a symbol) denotes unevaluated or unknown property.
"no" denotes Colorado Geological Survey Windsor/Sand and Gravel projects' drill hole
Landform boundary, solid where known or observed; dashed where approximate or inferred.

STATION, LOCATION AND GEOLOGICAL DESCRIPTION OF DEPOSIT

overburden thickness (ft)
sand/gravel resource thickness (ft)
percent sand and fines (passing #4 screen, 0.25 in.), visual estimation
17, 40
significant amount of fines (passing #200 screen, 0.0059 in. or 0.074 mm.)
significant amount of decomposed or weak rock.
significant amount of calcium carbonate (caliche)
"m" in symbol denotes unevaluated or unknown property
"0" in symbol denotes property absent or insignificant



QUADRANGLE LOCATION

NON-RESOURCE OR WITHDRAWN AREA

REFERENCE:

Moore, F.E., 1959, Geomorphic evolution of the east flank of the Laramie Range, Colorado and Wyoming: Univ. Wyoming Unpub. Ph.D. Thesis, pl. 4.

Denson, N.M., 1974, personal communication.

Weist, W.G., Jr., 1965, Reconnaissance of ground-water resources in parts of Larimer, Logan, Morgan, Sedgwick, and Weld Counties, Colo.: U. S. Geol. Survey Water-Supply Paper 1809-I, pl. 1.

Lowry, M.E., and Crist, M.A., 1967, Geology and ground-water resources of Laramie County Wyoming: U. S. Geol. Survey Water-Supply Paper 1834, pl. 1.

Mapped by: Stephen D. Schwochow
Date: June 30, 1974

Base from U. S. Geological Survey
7-1/2 minute quadrangle

CONTOUR INTERVAL 20 FEET
DATUM IS MEAN SEA LEVEL

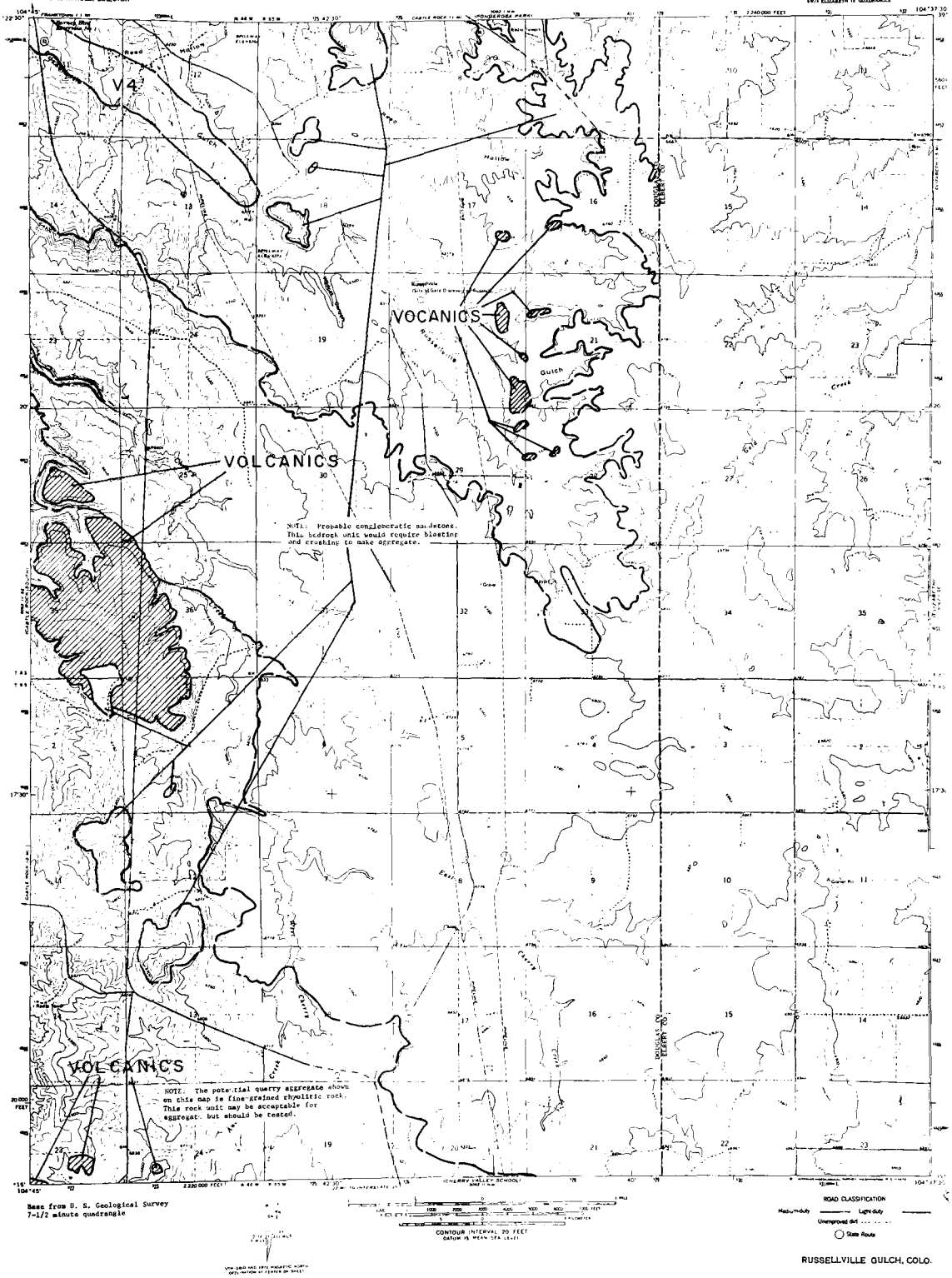
ROAD CLASSIFICATION
Light-duty ——— Unimproved dirt ---------

ROUND BUTTE, COLO. – WYO.

SAND, GRAVEL AND QUARRY AGGREGATE RESOURCES MAP

DEPARTMENT OF NATURAL RESOURCES
COLORADO GEOLOGICAL SURVEY
JOHN W. ROLD, DIRECTOR

RUSSELLVILLE GULCH
7.5 MINUTE SERIES (TOPOGRAPHIC)



EXPLANATION

LANDFORM UNITS

- F Floodplain deposit
- T Stream terrace deposit
- V Valley fill (F & T)
- U Upland deposits
- A Alluvial fan
- E Wind-deposited sand (eolian)
- M Man-made deposits (slag,tailings, spoils....)

RESOURCE CLASSIFICATION

Coarse Aggregate

- 1 Gravel: relatively clean and sound
- 2 Gravel: significant fines, decomposed rock, calcium carbonate

Fine Aggregate

- 3 Sand

Unevaluated Resource

- 4 Probable aggregate resource

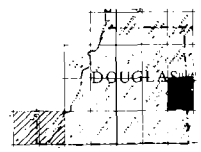
MAP SYMBOLS

- Operating gravel and/or sand pit
- Abandoned gravel and/or sand pit
- Operating stone quarry
- Abandoned stone quarry
- Potential quarry aggregate resource area
- Selected well or drill-hole location with overburden thickness (ft) over sand/gravel resource thickness (ft), obtained from well logs; "g" indicates gravel; "s" indicates sand; "x" in symbol denotes unevaluated or unknown property; "sd" denotes Colorado Geological Survey Windsor/Sand and Gravel projects' drill hole
- Landform boundary, solid where known or observed; dashed where approximate or inferred

STATION, LOCATION AND GEOLOGICAL DESCRIPTION OF DEPOSIT

- overburden thickness (ft)
- sand/gravel resource thickness (ft)
- percent sand and fines (passing #4 screen, 7.32 mm, normal estimate)
- significant amount of fines (passing #200 screen, 0.0058 in. or 0.074 mm)
- significant amount of decomposed or weak rock
- significant amount of calcium carbonate (caliche)

"x" in symbol denotes unevaluated or unknown property
"o" in symbol denotes property absent or insignificant



QUADRANGLE LOCATION

NON-RESOURCE OR WITHDRAWN AREA

REFERENCE:

Chase, G.H., and McConaghy, J.A., 1972, Generalized surficial geologic map of the Denver area, Colorado: U. S. Geol. Survey Misc. Geol. Inv. Map I-731.

Geology modified after:

Trimble, D.E., and Pitch, H.R., 1974, Map showing potential sources of gravel and crushed-rock aggregate in the Colorado Springs-Castle Rock Area, Front Range Urban Corridor, Colorado: U. S. Geol. Survey Map I-857 A.

Mapped by: Ralph R. Shroba
Date: June 30, 1974

Prepared in cooperation with the U. S. Geological Survey.

Base from U. S. Geological Survey
7-1/2 minute quadrangle

CONTOUR INTERVAL 20 FEET
DATUM IS MEAN SEA LEVEL

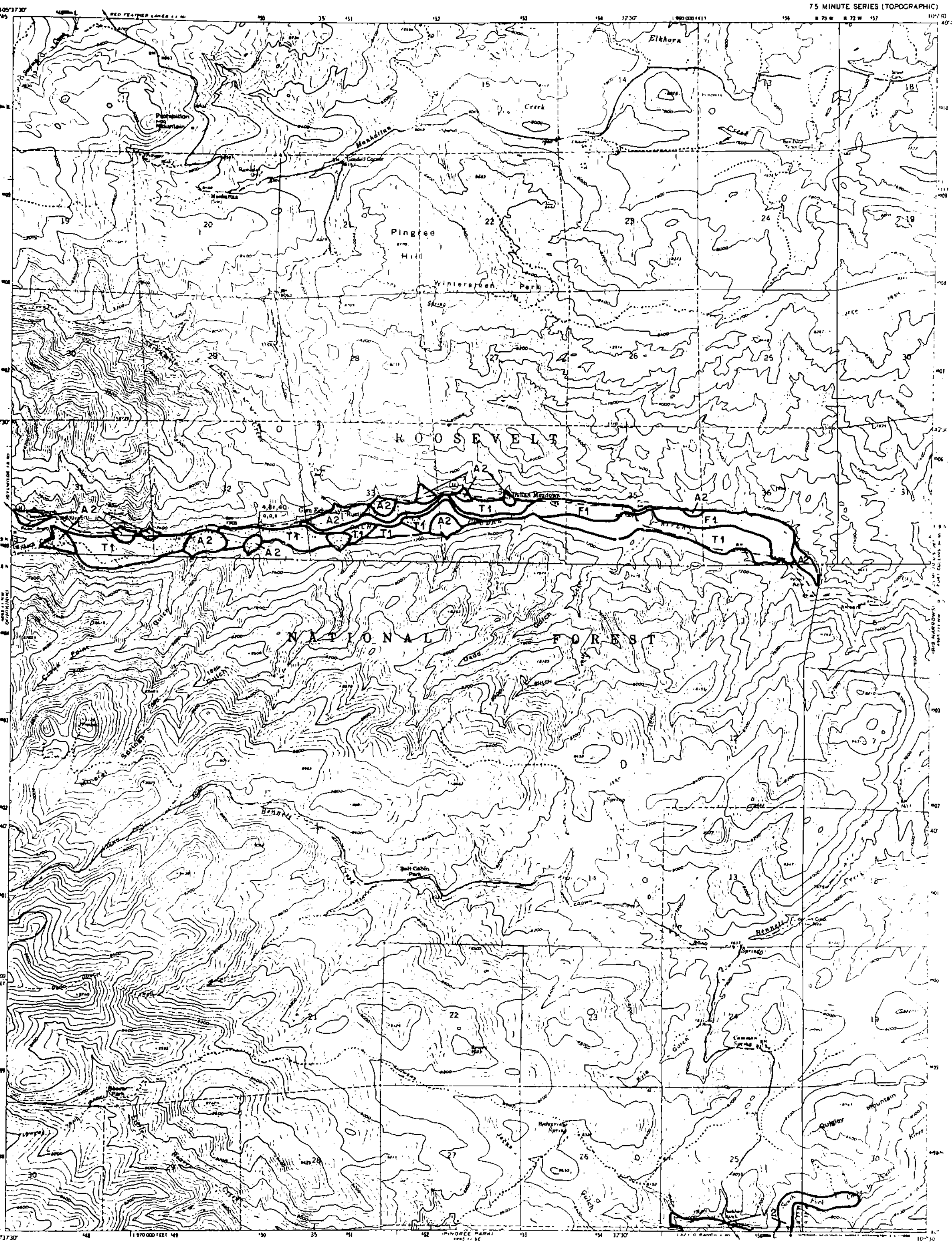
ROAD CLASSIFICATION
Medium-duty ——— Light-duty ———
Unimproved dirt - - - - -
State Route

RUSSELLVILLE GULCH, COLO.

DEPARTMENT OF NATURAL RESOURCES
COLORADO GEOLOGICAL SURVEY
JOHN W. ROLD, DIRECTOR

SAND, GRAVEL AND QUARRY AGGREGATE RESOURCES MAP

RUSTIC QUADRANGLE
COLORADO-LARIMER CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)



Base from U. S. Geological Survey
7-1/2 minute quadrangle

CONTOUR INTERVAL 40 FEET

ROAD CLASSIFICATION
Medium duty — Light duty
Unimproved dirt
State Route

EXPLANATION

F — Landform unit / Resource classification

LANDFORM UNITS

- F Floodplain deposit
- T Stream terrace deposit
- V Valley fill (F & T)
- U Upland deposits
- A Alluvial fan
- E Wind-deposited sand (eolian)
- M Man-made deposits (slag, tailings, spoils....)

RESOURCE CLASSIFICATION

Coarse Aggregate
(at least 20% retained on #4 screen, visual estimation)

- 1 Gravel: relatively clean and sound
- 2 Gravel: significant fines, decomposed rock, calcium carbonate.

Fine Aggregate
(greater than 75% passing #4 screen, <25% retained on #200 screen, visual estimation)

- 3 Sand

Unevaluated Resource

- 4 Probable aggregate resource

MAP SYMBOLS

- ● Operating gravel and/or sand pit
- ▲ Abandoned gravel and/or sand pit
- Operating stone quarry
- Abandoned stone quarry
- Potential quarry aggregate resource area
- Selected well or drill-hole location with overburden thickness (ft) over sand/gravel resource thickness (ft), obtained from well logs.
  "g" indicates gravel, "s" indicates sand
  "x" in symbol denotes unevaluated or unknown property.
  "wd" denotes Colorado Geological Survey Windsor/Sand and Gravel projects' drill hole
- Landform boundary, solid where known or observed; dashed where approximate or inferred.

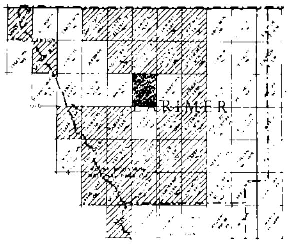
STATION, LOCATION AND GEOLOGICAL DESCRIPTION OF DEPOSIT

5, 11, 40

- overburden thickness (ft)
- sand/gravel resource thickness (ft)
- percent sand and fines (passing #4 screen, 0.25 in.), visual estimation
- significant amount of fines (passing #200 screen, 0.0029 in. or 0.074 mm)
- significant amount of decomposed or weak rock.
- significant amount of calcium carbonate (caliche)

"x" in symbol denotes unevaluated or unknown property

"o" in symbol denotes property absent or insignificant



■ QUADRANGLE LOCATION

▨ NON-RESOURCE OR WITHDRAWN AREA

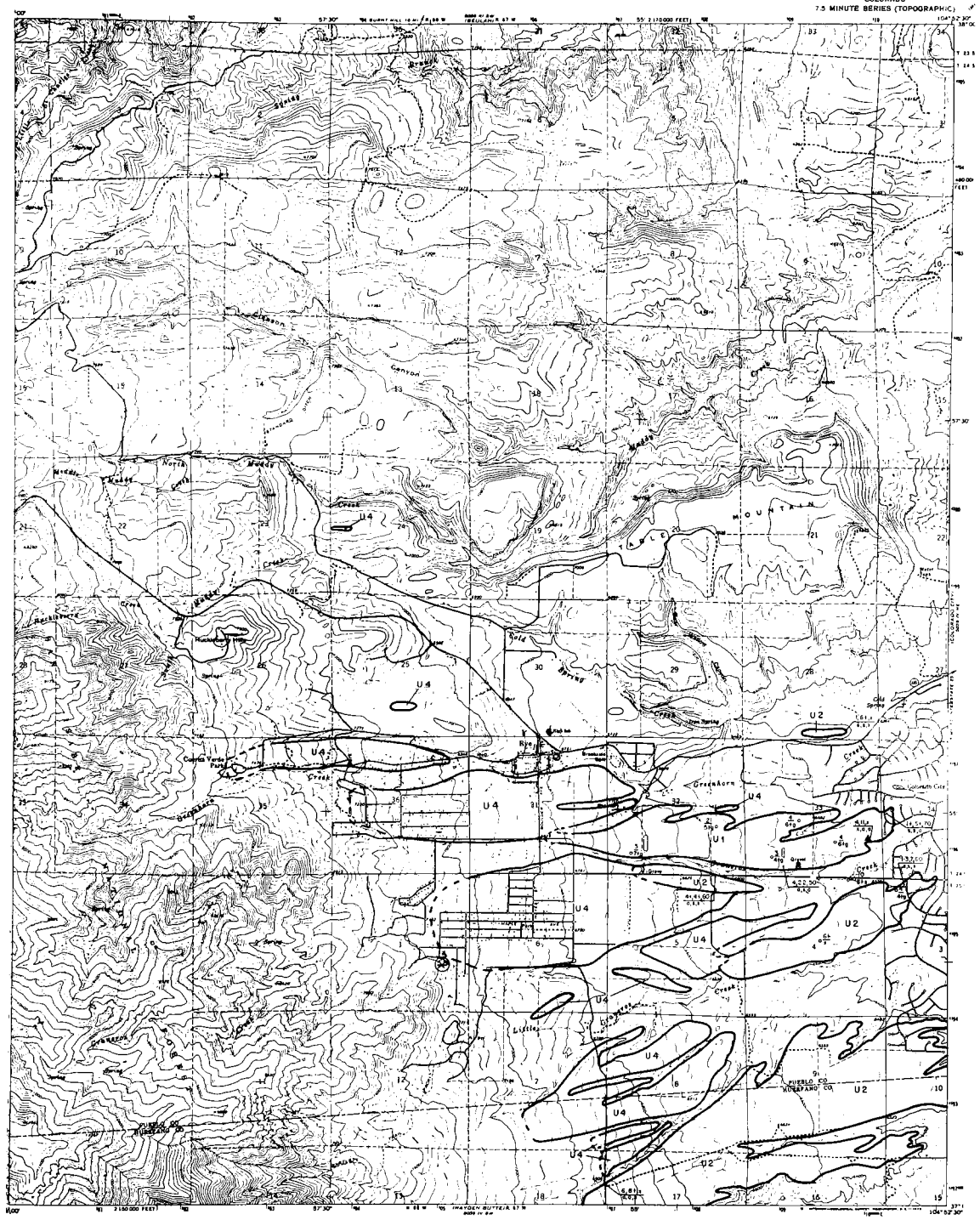
Mapped by: Ralph R. Shroba
Date: June 30, 1974

RUSTIC, COLO

DEPARTMENT OF NATURAL RESOURCES
COLORADO GEOLOGICAL SURVEY
JOHN W. ROLD, DIRECTOR

SAND, GRAVEL AND QUARRY AGGREGATE RESOURCES MAP

RYE QUADRANGLE
COLORADO
7.5 MINUTE SERIES (TOPOGRAPHIC)



EXPLANATION

Landform unit

Resource classification

LANDFORM UNITS

- F — Floodplain deposit
- T — Stream terrace deposit
- V — Valley fill (F & T)
- U — Upland deposits
- A — Alluvial fan
- E — Wind-deposited sand (eolian)
- M — Man-made deposits (slag, tailings, spoils....)

RESOURCE CLASSIFICATION

Coarse Aggregate
(at least 30% retained on #4 screen, visual estimation)

1 Gravel: relatively clean and sound

2 Gravel: significant fines, decomposed rock, calcium carbonate

Fine Aggregate
(greater than 70% passing #4 screen, 67% retained on #200 screen, visual estimation)

3 Sand

Unevaluated Resource

4 Probable aggregate resource

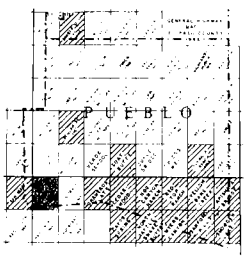
MAP SYMBOLS

- Operating gravel and/or sand pit
- Abandoned gravel and/or sand pit
- Operating stone quarry
- Abandoned stone quarry
- Potential quarry aggregate resource area
- Selected well or drill-hole location with overburden thickness (ft) over sand/gravel resource thickness (ft), obtained from well logs. "-" indicates gravel; "s" indicates sand. "-" in symbol denotes unevaluated or unknown property. "mg" denotes Colorado Geological Survey Windsor/Sand and Gravel projects' drill hole
- Landform boundary, solid where known or observed, dashed where approximate or inferred.

STATION, LOCATION AND GEOLOGICAL DESCRIPTION OF DEPOSIT

overburden thickness (ft)
sand/gravel resource thickness (ft)
percent sand and fines (passing #4 screen, 0.28 in.), visual estimation
significant amount of fines (passing #200 screen, 0.0058 in. or 0.074 mm.)
significant amount of decomposed or weak rock.
significant amount of calcium carbonate (caliche)

"s" in symbol denotes unevaluated or unknown property.
"s" in symbol denotes property absent or insignificant



QUADRANGLE LOCATION

NON-RESOURCE OR WITHDRAWN AREA

REFERENCE: Stephen Blanco, 1971, Geologic Map of the Rye-Colorado City Area, Pueblo and Huerfano Counties, Colorado: Colorado School of Mines, M. S. Thesis T 1360, Plate I.

Mapped by: Ralph R. Shroba
Date: June 30, 1974

Base from U. S. Geological Survey
7-1/2 minute quadrangle

CONTOUR INTERVAL 40 FEET
DATUM IS MEAN SEA LEVEL

ROAD CLASSIFICATION

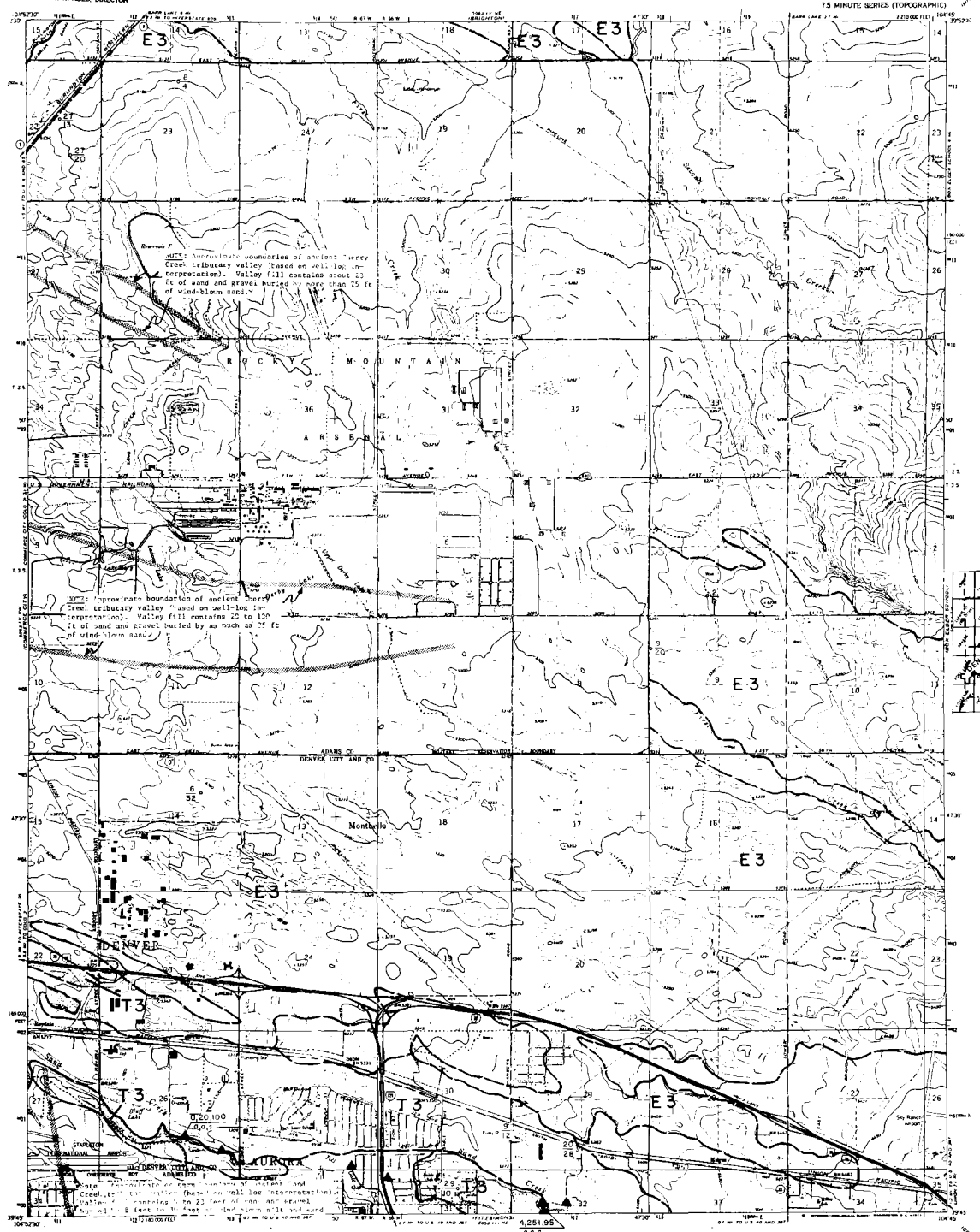
Secondary highway, all weather, hard surface
Light-duty road, all weather, improved surface
Unimproved road, fair or dry weather
State Route

RYE, COLO.

SAND, GRAVEL AND QUARRY AGGREGATE RESOURCES MAP

DEPARTMENT OF NATURAL RESOURCES
COLORADO GEOLOGICAL SURVEY
JOHN W. ROLD, DIRECTOR

SABLE QUADRANGLE
COLORADO
7.5 MINUTE SERIES (TOPOGRAPHIC)



EXPLANATION

Landform unit.
Resource classification

LANDFORM UNITS

- F Floodplain deposit
- T Stream terrace deposit
- V Valley fill (F & T)
- U Upland deposits
- A Alluvial fan
- E Wind-deposited sand (eolian)
- M Man-made deposits (slag, tailings, spoils....)

RESOURCE CLASSIFICATION

Coarse Aggregate
(at least 50% retained on #4 sieve), gravel estimated

- 1 Gravel: relatively clean and sound
- 2 Gravel: significant fines, decomposed rock, calcium carbonate.

Fine Aggregate
(greater than 50% passing #4 sieve, 50% retained on #200 sieve), sand estimated

- 3 Sand

Unevaluated Resource

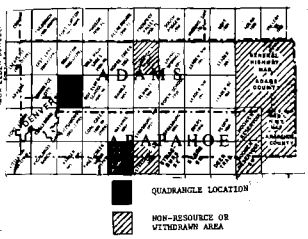
- 4 Probable aggregate resource

MAP SYMBOLS

- Operating gravel and/or sand pit
- A Abandoned gravel and/or sand pit
- Operating stone quarry
- Abandoned stone quarry
- Potential future aggregate resource area
- Selected well or drill-hole location with overburden thickness (ft) over sand/gravel resource thickness (ft), obtained from well logs. "g" indicates gravel; "s" indicates sand. "-" in symbol denotes unevaluated or unknown property. "wo" denotes Colorado Geological Survey Windsor/Sand and Gravel projects' drill hole
- Landform boundary, solid where known or observed; dashed where approximate or inferred.

STATION, LOCATION AND GEOLOGICAL DESCRIPTION OF DEPOSIT

- overburden thickness (ft)
- average gravel resource thickness (ft)
- percent sand and fines (passing #4 sieve, 0.25 in., sieve estimation)
- significant amount of fines (passing #200 sieve, 0.0029 in. or 0.074 mm.)
- significant amount of decomposed or weak rock
- significant amount of calcium carbonate (calcite)
- "x" in symbol denotes unevaluated or unknown property
- "o" in symbol denotes property absent or insignificant



References:

Inter-County Regional Planning Commission, 0961. Drainage course plan for the Denver region - Part I, Sand and gravel resources: Denver, Colo., Inter-County Reg. Plan. Comm., pl. 1.

Hamilton, J.L., and Owens, W.G., 1972, Geologic aspects, soils and related foundation problems, Denver metropolitan area, Colorado: Colorado Geol. Survey Environmental Geologic Series, 3, pl. 1.

Chase, G.H., and McConaghy, J.A., 1972, Generalized surficial geologic map of the Denver area, Colorado: U.S. Geol. Survey Misc. Geol. Inv. Map I-738.

De Voto, R.H., 1968, Quaternary Geology of Rocky Mountain Arsenal and environs, Adams County, Colorado: Colorado School Mines Quart., v. 63, no. 1, pl. 1.

Trimble, D.E., and Fitch, H.R., 1974, Map showing potential sources of gravel and crushed-rock aggregate in the Greater Denver Area, Front Range Urban Corridor, Colo.: U.S. Geol. Survey Misc. Geol. Inv. Map I-858-A

Base from U. S. Geological Survey
7-1/2 minute quadrangle

CONTOUR INTERVAL 10 FEET
DATUM IS MEAN SEA LEVEL

ROAD CLASSIFICATION
Heavy-duty ——— Light-duty ———
Medium-duty ——— Unimproved dirt - - - - - -
Interstate Route State Route
U.S. Route

SABLE, COLO.

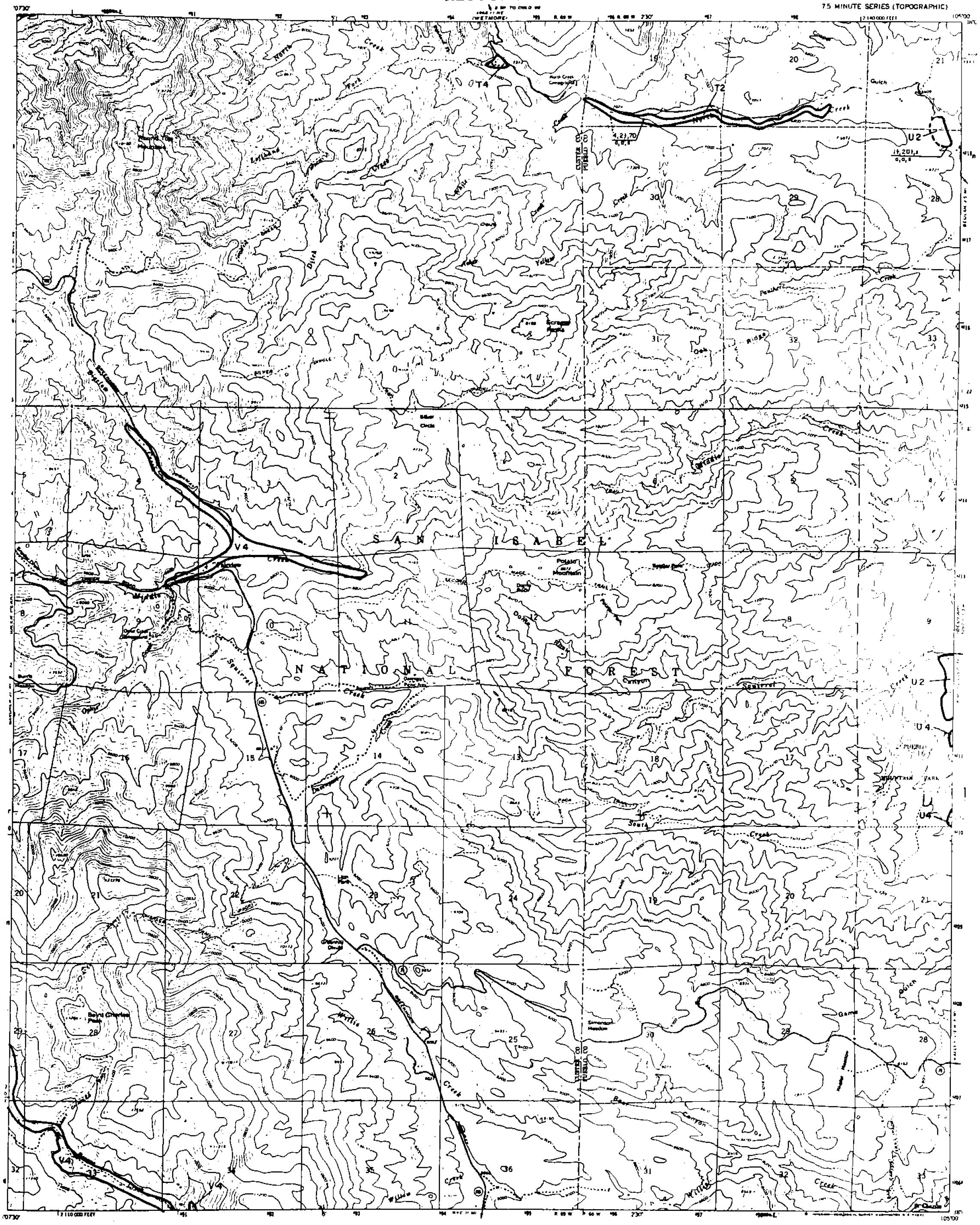
Mapped by: Stephen D. Schwochow
Date: June 30, 1974

Prepared in cooperation with the U. S. Geological Survey

DEPARTMENT OF NATURAL RESOURCES
COLORADO GEOLOGICAL SURVEY
JOHN W. ROLD, DIRECTOR

SAND, GRAVEL AND QUARRY AGGREGATE RESOURCES MAP

SAINT CHARLES PEAK QUADRANGLE
COLORADO
7.5 MINUTE SERIES (TOPOGRAPHIC)



Base from U. S. Geological Survey
7-1/2 minute quadrangle

CONTOUR INTERVAL 40 FEET
DATUM IS MEAN SEA LEVEL

ROAD CLASSIFICATION
Medium-duty
Light duty
Unimproved dirt
State Route

SAINT CHARLES PEAK, COLO.

EXPLANATION

F1 — Landform unit; Resource classification

LANDFORM UNITS

- F Floodplain deposit
- T Stream terrace deposit
- V Valley fill (F & T)
- U Upland deposits
- A Alluvial fan
- E Wind-deposited sand (eolian)
- M Man-made deposits (slag, tailings, spoils....)

RESOURCE CLASSIFICATION

Coarse Aggregate
(at least 30% retained on #4 screen, visual estimation)

1 Gravel: relatively clean and sound
2 Gravel: significant fines, decomposed rock, calcium carbonate.

Fine Aggregate
(greater than 70% passing #4 screen, 60% retained on #200 screen, visual estimation)

3 Sand

Unevaluated Resource

4 Probable aggregate resource

MAP SYMBOLS

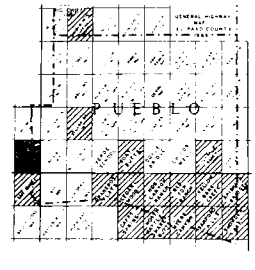
- Operating gravel and/or sand pit
- Abandoned gravel and/or sand pit
- Operating stone quarry
- Abandoned stone quarry
- Potential quarry aggregate resource area
- Selected well or drill-hole location with overburden thickness (ft) over sand/gravel resource thickness (ft), obtained from well logs.
  "g" indicates gravel; "s" indicates sand
  "u" in symbol denotes unevaluated or unknown property.
- "WS" denotes Colorado Geological Survey Windsor/Sand and Gravel projects' drill hole
- Landform boundary, solid where known or observed; dashed where approximate or inferred.

STATION, LOCATION AND GEOLOGICAL DESCRIPTION OF DEPOSIT

3, 17, 40
- overburden thickness (ft)
- sand/gravel resource thickness (ft)
- percent sand and fines (passing #4 screen, 0.25 in.), visual estimation
- significant amount of fines (passing #200 screen, 0.0058 in. or 0.074 mm.)
- significant amount of decomposed or weak rock.
- significant amount of calcium carbonate (caliche)

"u" in symbol denotes unevaluated or unknown property

"o" in symbol denotes property absent or insignificant



QUADRANGLE LOCATION

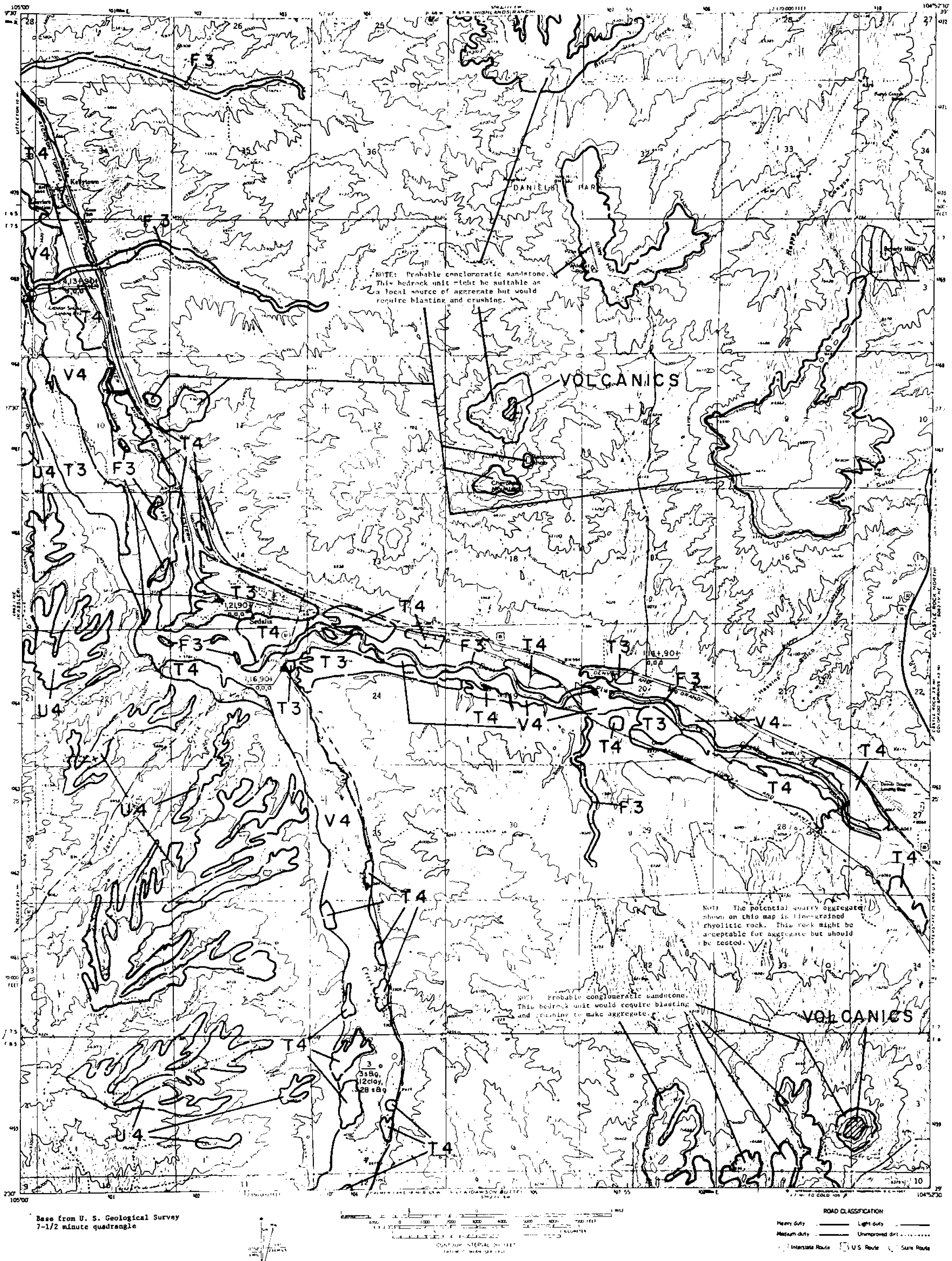
NON-RESOURCE OR WITHDRAWN AREA

Mapped by: Ralph R. Shroba
Date: June 30, 1974

DEPARTMENT OF NATURAL RESOURCES
COLORADO GEOLOGICAL SURVEY
JOHN W. ROLD, DIRECTOR

SAND, GRAVEL AND QUARRY AGGREGATE RESOURCES MAP

SEDALIA QUADRANGLE
COLORADO–DOUGLAS CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)



Base from U. S. Geological Survey 7-1/2 minute quadrangle

SEDALIA, COLO.

EXPLANATION

F — Landform unit; Resource classification

LANDFORM UNITS

- F Floodplain deposit
- T Stream terrace deposit
- V Valley fill (F & T)
- U Upland deposits
- A Alluvial fan
- E Wind-deposited sand (eolian)
- M Man-made deposits (slag, tailings, spoils....)

RESOURCE CLASSIFICATION

Coarse Aggregate (at least 50% retained on #4 screen, visual estimation)

- 1 Gravel: relatively clean and sound
- 2 Gravel: significant fines, decomposed rock, calcium carbonate.

Fine Aggregate (greater than 70% passing #4 screen, 60% retained on #200 screen, visual estimation)

- 3 Sand

Unevaluated Resource

- 4 Probable aggregate resource

MAP SYMBOLS

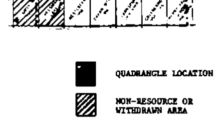
- Operating gravel and/or sand pit
- Abandoned gravel and/or sand pit
- Operating stone quarry
- Abandoned stone quarry
- Potential quarry aggregate resource area
- Selected well or drill-hole location with overburden thickness (ft) over sand/gravel resource thickness (ft), obtained from well logs. "g" indicates gravel; "s" indicates sand. "?" in symbol denotes unevaluated or unknown property.
- "ws" denotes Colorado Geological Survey Windsor/Sand and Gravel projects' drill hole
- Landform boundary, solid where known or observed; dashed where approximate or inferred.

STATION, LOCATION AND GEOLOGICAL DESCRIPTION OF DEPOSIT

3, 17, 40
- overburden thickness (ft)
- sand/gravel resource thickness (ft)
- percent sand and fines (passing #4 screen, 0.15 in.), visual estimation
- significant amount of fines (passing #200 screen, 0.0029 in. or 0.074 mm.)
- significant amount of decomposed or weak rock.
- significant amount of calcium carbonate (caliche)

"?" in symbol denotes unevaluated or unknown property

"o" in symbol denotes property absent or insignificant



QUADRANGLE LOCATION

NON-RESOURCE OR WITHDRAWN AREA

REFERENCE:

Chase, G.H., and McConaghy, J.A., 1972, Generalized surficial geologic map of the Denver area, Colorado: U. S. Geol. Survey Misc. Geol. Inv. Map I-731.

Geology modified after:

Trimble, D.E., and Fitch, H.R., 1974, Map showing potential sources of gravel and crushed-rock aggregate in the Greater Denver Area, Front Range Urban Corridor, Colo.: U. S. Geol. Survey Misc. Geol. Inv. Map I-856-A.

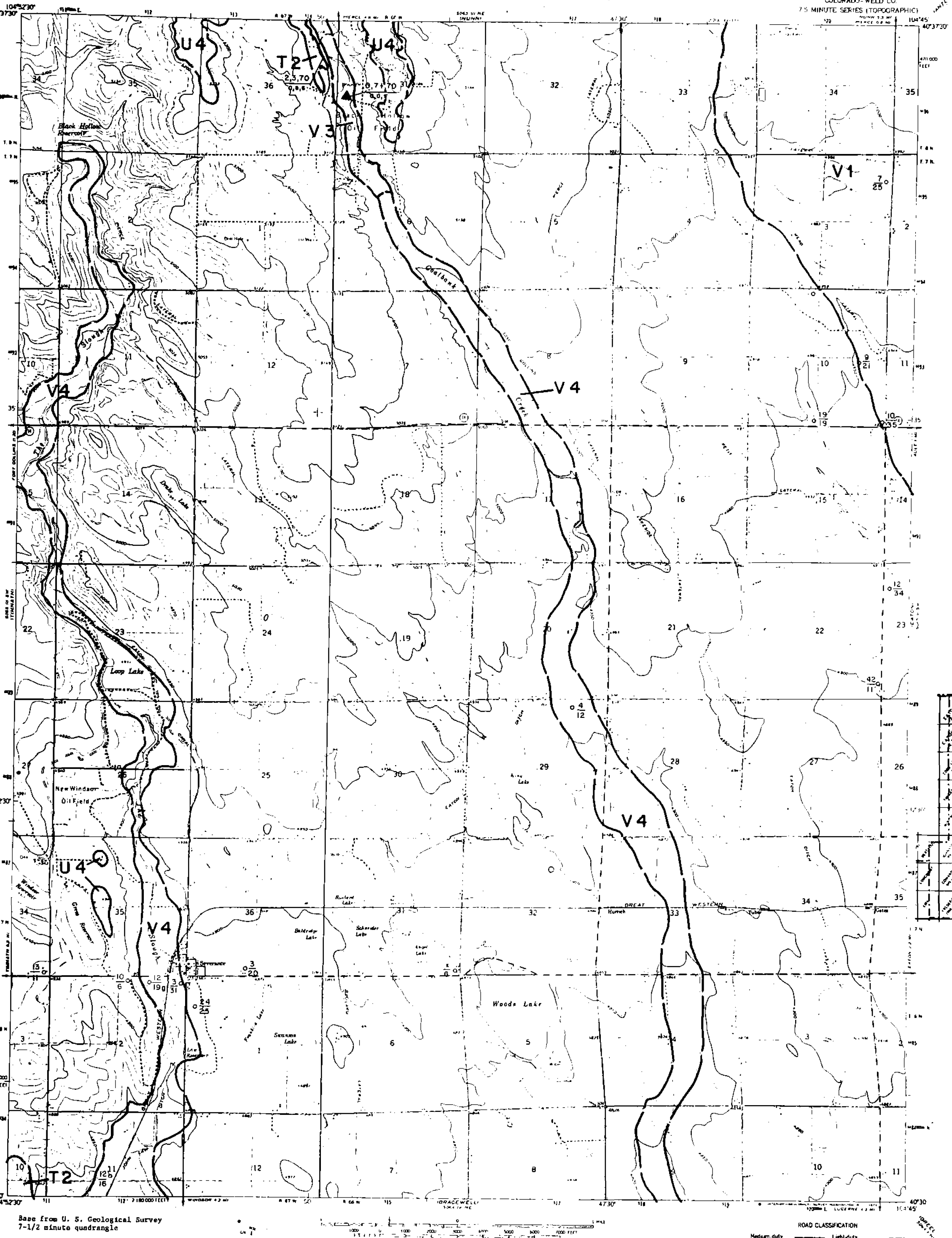
Mapped by: Ralph R. Shroba
Date: June 30, 1974

Prepared in cooperation with the U. S. Geological Survey.

DEPARTMENT OF NATURAL RESOURCES
COLORADO GEOLOGICAL SURVEY
JOHN W. ROLD, DIRECTOR

SAND, GRAVEL AND QUARRY AGGREGATE RESOURCES MAP

SEVERANCE QUADRANGLE
COLORADO - WELD CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)



Base from U. S. Geological Survey
7-1/2 minute quadrangle

EXPLANATION

F — Landform unit; Resource classification

LANDFORM UNITS

- F Floodplain deposit
- T Stream terrace deposit
- V Valley fill (F & T)
- U Upland deposits
- A Alluvial fan
- E Wind-deposited sand (eolian)
- M Man-made deposits (slag, tailings, spoils....)

RESOURCE CLASSIFICATION

Coarse Aggregate
(at least 50% retained on #4 screen, visual estimation)

- 1 Gravel: relatively clean and sound
- 2 Gravel: significant fines, decomposed rock, calcium carbonate.

Fine Aggregate
(greater than 70% passing #4 screen, 60% retained on #200 screen, visual estimation)

- 3 Sand

Unevaluated Resource

- 4 Probable aggregate resource

MAP SYMBOLS

- Operating gravel and/or sand pit
- Abandoned gravel and/or sand pit
- Operating stone quarry
- Abandoned stone quarry
- Potential quarry aggregate resource area
- Selected well or drill-hole location with overburden thickness (ft) over sand/gravel resource thickness (ft), obtained from well logs.
  "g" indicates gravel; "s" indicates sand
  "x" in symbol denotes unevaluated or unknown property.
  "wa" denotes Colorado Geological Survey Windsor/Sand and Gravel projects' drill hole
- Landform boundary, solid where known or observed; dashed where approximate or inferred.

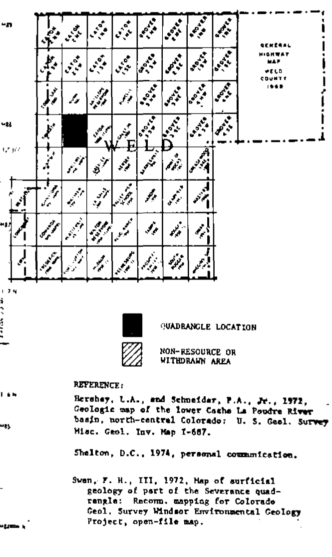
STATION, LOCATION AND GEOLOGICAL DESCRIPTION OF DEPOSIT

2, 17, 40

- overburden thickness (ft)
- sand/gravel resource thickness (ft)
- percent sand and fines (passing #4 screen, 0.18 in.), visual estimation
- significant amount of fines (passing #200 screen, 0.0029 in. or 0.074 mm.)
- significant amount of decomposed or weak rock.
- significant amount of calcium carbonate (caliche)

"x" in symbol denotes unevaluated or unknown property

"o" in symbol denotes property absent or insignificant



QUADRANGLE LOCATION

NON-RESOURCE OR WITHDRAWN AREA

REFERENCE:

Hershey, L.A., and Schneider, P.A., Jr., 1972, Geologic map of the lower Cache La Poudre River basin, north-central Colorado: U. S. Geol. Survey Misc. Geol. Inv. Map I-687.

Shelton, D.C., 1974, personal communication.

Swan, F. H., III, 1972, Map of surficial geology of part of the Severance quadrangle: Recomm. mapping for Colorado Geol. Survey Windsor Environmental Geology Project, open-file map.

Geology modified after:

Colton, R.B., and Fitch, H.R., 1974, Map showing potential sources of gravel and crushed-rock aggregate in the Boulder-Fort Collins-Greeley Area, Front Range Urban Corridor, Colo.: U. S. Geol. Survey Misc. Geol. Inv. Map I-855-D.

Mapped by: Stephen D. Schwochow
Date: June 30, 1974

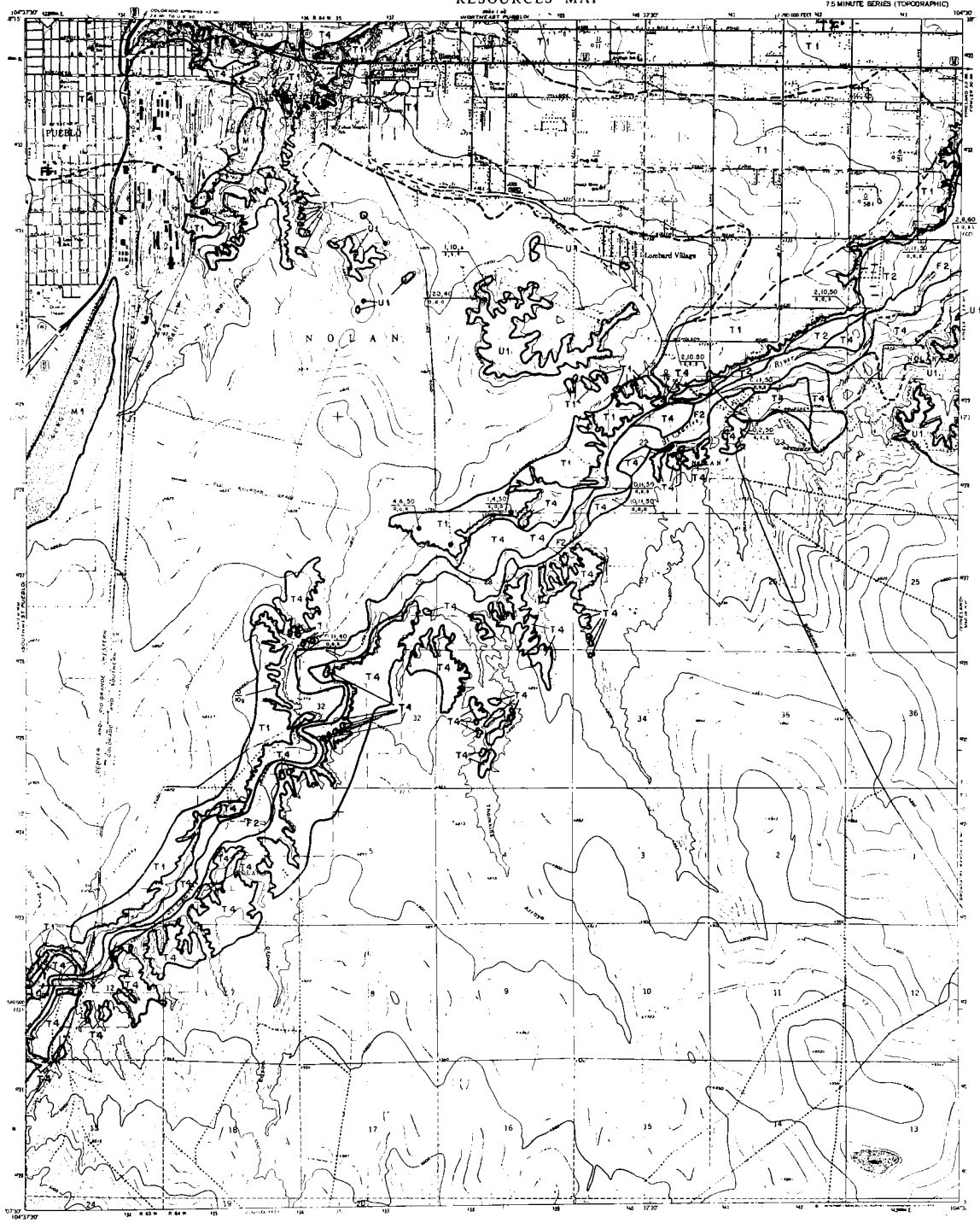
Prepared in cooperation with the U. S. Geological Survey.

SEVERANCE, COLO.

DEPARTMENT OF NATURAL RESOURCES
COLORADO GEOLOGICAL SURVEY
JOHN W. ROLD, DIRECTOR

SAND, GRAVEL AND QUARRY AGGREGATE RESOURCES MAP

SOUTHEAST PUEBLO QUADRANGLE
COLORADO-PUEBLO CO
7.5 MINUTE SERIES (TOPOGRAPHIC)



EXPLANATION

Landform unit
Resource classification

LANDFORM UNITS

F Floodplain deposit
T Stream terrace deposit
V Valley fill (F & T)
U Upland deposits
A Alluvial fan
E Wind-deposited sand (eolian)
M Man-made deposits (slag,tailings, spoils....)

RESOURCE CLASSIFICATION

Coarse aggregate
(at least 50% retained on #4 screen, mineral estimate)

1 Gravel: relatively clean and sound
2 Gravel: significant fines, decomposed rock, calcium carbonate.

Fine aggregate
(greater than 50% passing #4 screen, 50% retained on #200 screen, mineral estimate)

3 Sand

Unevaluated Resource

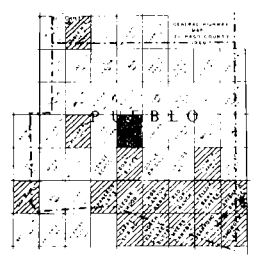
4 Probable aggregate resource

MAP SYMBOLS

Operating gravel and/or sand pit
Abandoned gravel and/or sand pit
Operating stone quarry
Abandoned stone quarry
Potential quarry aggregate resource area
Selected well or drill-hole location with overburden thickness (ft) over sand/gravel resource thickness (ft), obtained from well logs "g" indicates gravel; "s" indicates sand
"x" in symbol denotes unevaluated or unknown property
"ws" denotes Colorado Geological Survey Windsor/Sand and Gravel projects' drill hole
Landform boundary, solid where known or observed; dashed where approximate or inferred

STATION, LOCATION AND GEOLOGICAL DESCRIPTION OF DEPOSIT

overburden thickness (ft)
aggregate resource thickness (ft)
percent sand and fines passing #4 screen, #200 screen, mineral estimation
significant amount of fines (passing #200 screen, 0.074 mm.)
significant amount of decomposed or weak rock
significant amount of calcium carbonate (caliche)
"s" in symbol denotes unexamined or unknown property
"x" in symbol denotes property absent or unexplored



QUADRANGLE LOCATION

NON-RESOURCE OR WITHDRAWN AREA

Geology modified after Scott, G. R., 1969, U. S. Geological Survey Map I-597.

Mapped by: Phillip C. Wicklein
Date: June 30, 1974

Base from U. S. Geological Survey
7-1/2 minute quadrangle

CONTOUR INTERVAL 10 FEET

ROAD CLASSIFICATION

Heavy-duty — Light-duty
Medium-duty — Unimproved dirt
Interstate Route U.S. Route State Route

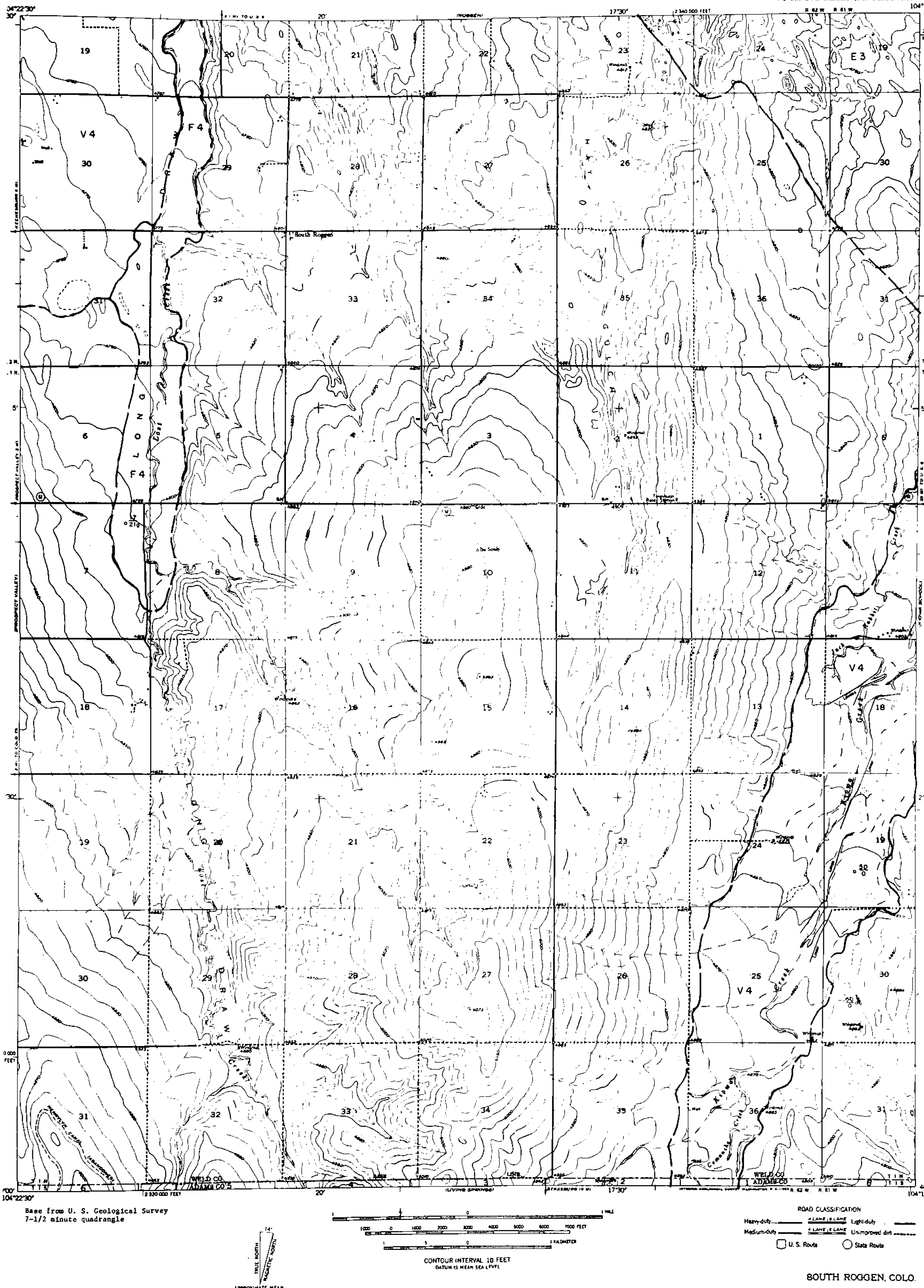
SOUTHEAST PUEBLO, COLO.

SAND, GRAVEL AND QUARRY AGGREGATE

RESOURCES MAP

DEPARTMENT OF NATURAL RESOURCES
COLORADO GEOLOGICAL SURVEY
JOHN W. ROLD, DIRECTOR

SOUTH ROGGEN QUADRANGLE
COLORADO
7.5 MINUTE SERIES (TOPOGRAPHIC)



EXPLANATION

F — landform unit; resource classification

LANDFORM UNITS

- F — Floodplain deposit
- T — Stream terrace deposit
- V — Valley fill (F & T)
- U — Upland deposits
- A — Alluvial fan
- E — Wind-deposited sand (eolian)
- M — Man-made deposits (slag, tailings, spoils....)

RESOURCE CLASSIFICATION

Coarse Aggregate
(at least 40% retained on #4 screen, visual estimation)

- 1 — Gravel: relatively clean and sound
- 2 — Gravel: significant fines, decomposed rock, calcium carbonate.

Fine Aggregate
(greater than 70% passing #4 screen, 60% retained on #200 screen, visual estimation)

- 3 — Sand

Unevaluated Resource

- 4 — Probable aggregate resource

MAP SYMBOLS

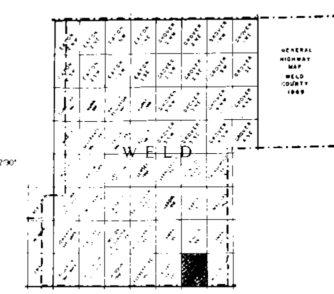
- Operating gravel and/or sand pit
- Abandoned gravel and/or sand pit
- Operating stone quarry
- Abandoned stone quarry
- Potential quarry aggregate resource area
- Selected well or drill-hole location with overburden thickness (ft) over sand/gravel resource thickness (ft), obtained from well logs.
  "g" indicates gravel; "s" indicates sand
  "*" in symbol denotes unevaluated or unknown property.
  "wg" denotes Colorado Geological Survey Windsor/Sand and Gravel projects' drill hole
- Landform boundary, solid where known or observed; dashed where approximate or inferred.

STATION, LOCATION AND GEOLOGICAL DESCRIPTION OF DEPOSIT

- overburden thickness (ft)
- sand/gravel resource thickness (ft)
- percent sand and fines passing #4 screen, visual estimation
- significant amount of fines (passing #200 screen, 0.0029 in. or 0.074 mm.)
- significant amount of decomposed or weak rock.
- significant amount of calcium carbonate (caliche)

"*" in symbol denotes unevaluated or unknown property

"o" in symbol denotes property absent or insignificant



QUADRANGLE LOCATION

NON-RESOURCE OR WITHDRAWN AREA

REFERENCE: Bjorklund, L.J., and Brown, R.F., 1957, Geology and ground-water resources of the lower South Platte River valley between Hardin, Colorado, and Paxton, Nebraska: U. S. Geol. Survey Water-Supply Paper 1378, pl. 1.

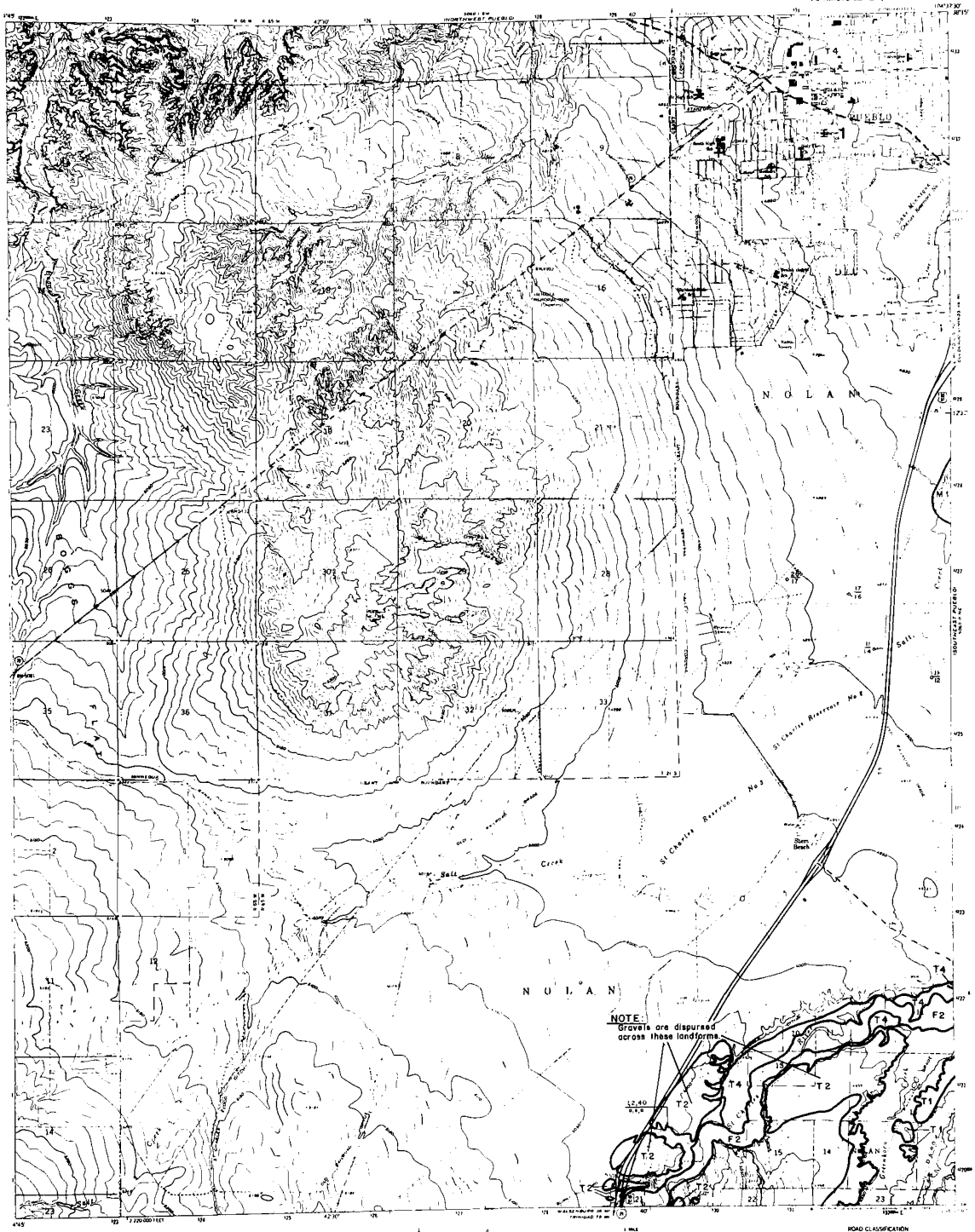
Mapped by: Phillip C. Wicklein
Date: June 30, 1974

SOUTH ROGGEN, COLO.

DEPARTMENT OF NATURAL RESOURCES
COLORADO GEOLOGICAL SURVEY
JOHN W. ROLD, DIRECTOR

SAND, GRAVEL AND QUARRY AGGREGATE RESOURCES MAP

SOUTHWEST PUEBLO QUADRANGLE
COLORADO - PUEBLO CO
7.5 MINUTE SERIES (TOPOGRAPHIC)



EXPLANATION

Landform unit
Resource class/location

LANDFORM UNITS

- F Floodplain deposit
- T Stream terrace deposit
- V Valley fill (F & T)
- U Upland deposits
- A Alluvial fan
- E Wind-deposited sand (eolian)
- M Man-made deposits (slag,ceilings, spoils....)

RESOURCE CLASSIFICATION

Coarse aggregate
(at least 75% retained on #4 screen, visual estimation)

- 1 Gravel: relatively clean and sound
- 2 Gravel: significant fines, decomposed rock, calcium carbonate.

Fine aggregate
(greater than 75% passing #4 screen, 80% retained on #200 screen, visual estimation

- 3 Sand

Unevaluated Resource

- 4 Probable aggregate resource

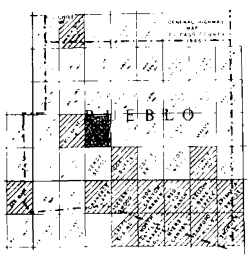
MAP SYMBOLS

- Operating gravel and/or sand pit
- Abandoned gravel and/or sand pit
- Operating stone quarry
- Abandoned stone quarry
- Potential quarry aggregate resource area
- Selected well or drill-hole location with overburden thickness (ft) over sand/gravel resource thickness (ft), obtained from well logs. "g" indicates gravel; "s" indicates sand "-" in symbol denotes unevaluated or unknown property. "mo" denotes Colorado Geological Survey Windsor/Sand and Gravel projects' drill hole
- Landform boundary, solid where known or observed; dashed where approximate or inferred

STATION, LOCATION AND GEOLOGICAL DESCRIPTION OF DEPOSIT

- overburden thickness (ft)
- sand/gravel resource thickness (ft)
- percent sand and fines (passing #4 screen, 0.23 in.), visual estimation
- significant amount of fines (passing #200 screen, 0.0029 in. or 0.074 mm.)
- significant amount of decomposed or weak rock.
- significant amount of calcium carbonate (caliche)

"s" in symbol denotes unevaluated or unknown property.
"m" in symbol denotes property absent or insignificant



QUADRANGLE LOCATION

NON-RESOURCE OR WITHDRAWN AREA

Mapped by: Phillip C. Wicklein
Date: June 30, 1974

Base from U. S. Geological Survey
7-1/2 minute quadrangle

ROAD CLASSIFICATION

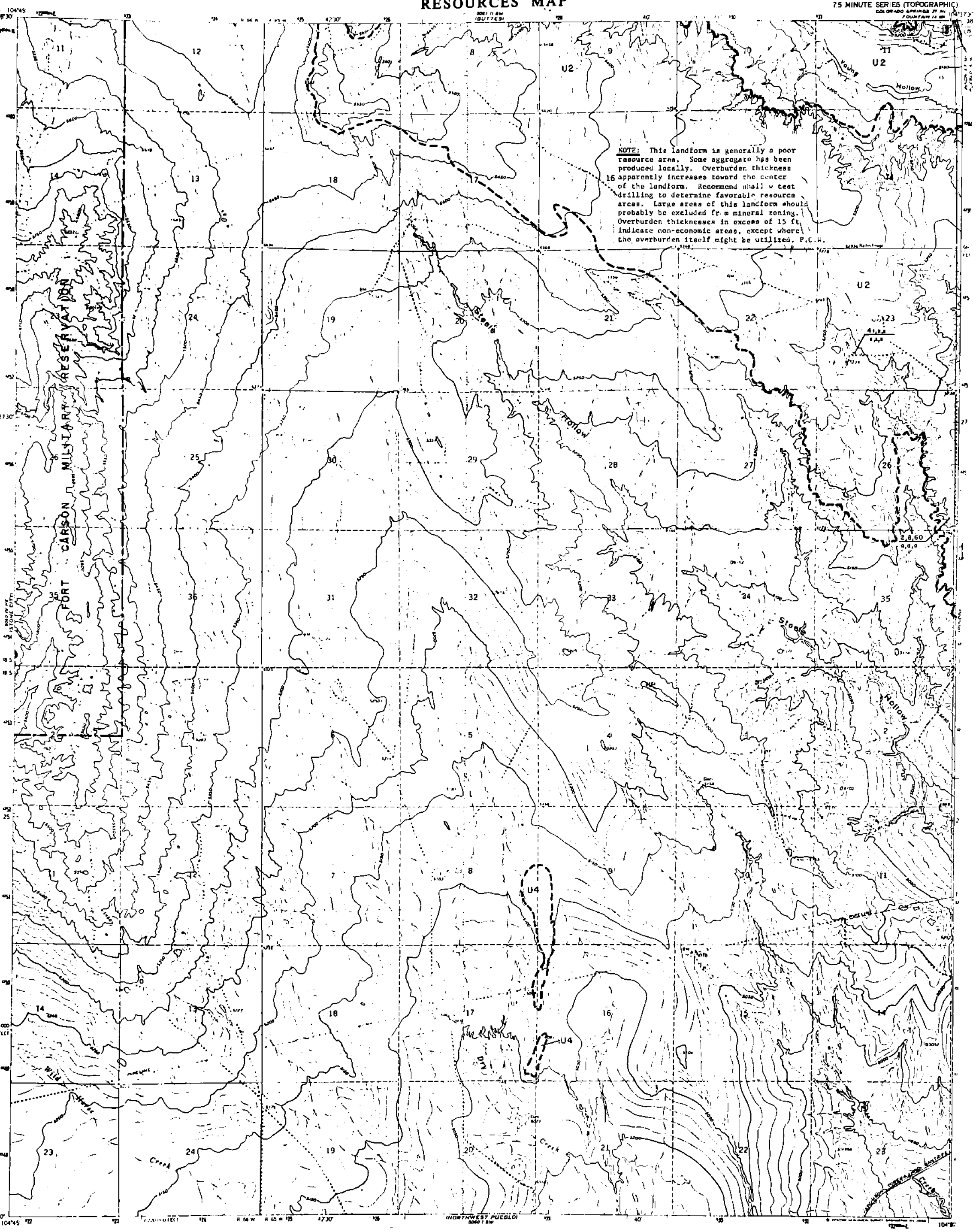
Heavy duty — Light duty
Medium duty — Unimproved dirt
Interstate Route ( ) U.S. Route ( ) State Route

SOUTHWEST PUEBLO, COLO

DEPARTMENT OF NATURAL RESOURCES
COLORADO GEOLOGICAL SURVEY
JOHN W. ROLD, DIRECTOR

SAND, GRAVEL AND QUARRY AGGREGATE RESOURCES MAP

STEELE HOLLOW QUADRANGLE
COLORADO-PUEBLO CO
7.5 MINUTE SERIES (TOPOGRAPHIC)



Base from U. S. Geological Survey
7-1/2 minute quadrangle

EXPLANATION

Landform unit
Resource classification

LANDFORM UNITS

- F Floodplain deposit
- T Stream terrace deposit
- V Valley fill (F & T)
- U Upland deposits
- A Alluvial fan
- E Wind-deposited sand (eolian)
- M Man-made deposits (slag, tailings, spoils....)

RESOURCE CLASSIFICATION

Coarse Aggregate
(at least 30% retained on #4 screen, visual estimation)

- 1 Gravel: relatively clean and sound
- 2 Gravel: significant fines, decomposed rock, calcium carbonate.

Fine Aggregate
(greater than 70% passing #4 screen, 60% retained on #200 screen, visual estimation)

- 3 Sand

Unevaluated Resource

- 4 Probable aggregate resource

MAP SYMBOLS

- Operating gravel and/or sand pit
- Abandoned gravel and/or sand pit
- Operating stone quarry
- Abandoned stone quarry
- Potential quarry aggregate resource area
- Selected well or drill-hole location with overburden thickness (ft) over sand/gravel resource thickness (ft), obtained from well logs. "g" indicates gravel; "s" indicates sand
- "-" in symbol denotes unevaluated or unknown property.
- 'ws' denotes Colorado Geological Survey Windsor/Sand and Gravel projects' drill hole
- Landform boundary, solid where known or observed; dashed where approximate or inferred.

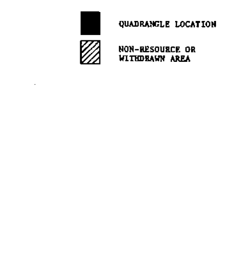
STATION, LOCATION AND GEOLOGICAL DESCRIPTION OF DEPOSIT

3, 17, 40

- overburden thickness (ft)
- sand/gravel resource thickness (ft)
- percent sand and fines (passing #4 screen, 0.25 in.), visual estimation
- significant amount of fines (passing #200 screen, 0.0059 in. or 0.074 mm.)
- significant amount of decomposed or weak rock.
- significant amount of calcium carbonate (caliche)

"u" in symbol denotes unevaluated or unknown property

"o" in symbol denotes property absent or insignificant



QUADRANGLE LOCATION

NON-RESOURCE OR WITHDRAWN AREA

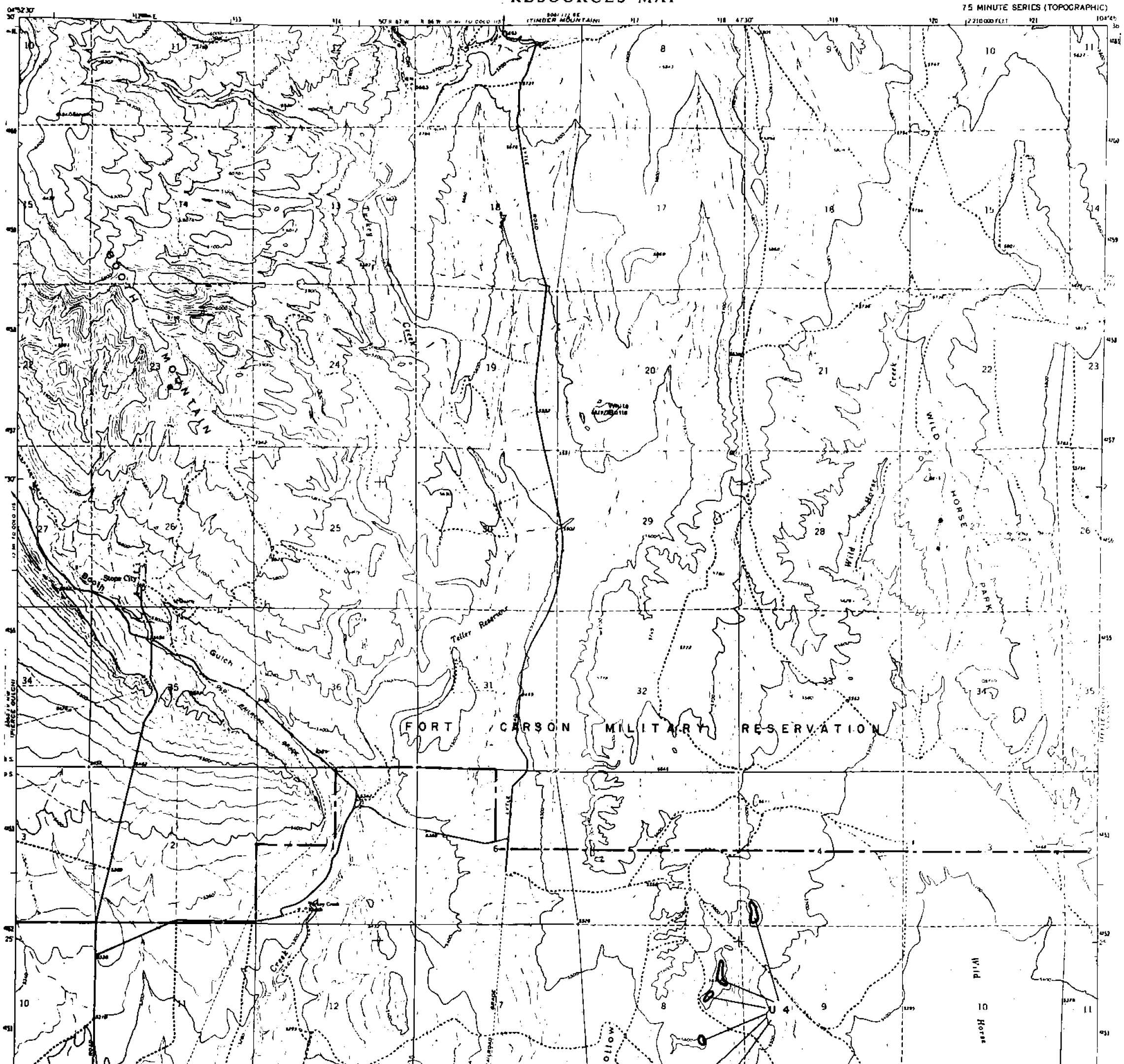
Mapped by: Phillip C. Wicklein
Date: June 30, 1974

STEELE HOLLOW, COLO.

DEPARTMENT OF NATURAL RESOURCES
COLORADO GEOLOGICAL SURVEY
JOHN W. ROLD, DIRECTOR

SAND, GRAVEL AND QUARRY AGGREGATE RESOURCES MAP

STONE CITY QUADRANGLE
COLORADO-PUEBLO CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)



Base from U. S. Geological Survey
7-1/2 minute quadrangle

CONTOUR INTERVAL 20 FEET
DOTTED LINES REPRESENT 10 FOOT CONTOURS
DATUM IS MEAN SEA LEVEL

ROAD CLASSIFICATION
Light-duty ——— Unimproved dirt ....

UTM GRID AND 1983 MAGNETIC NORTH
DECLINATION AT CENTER OF SHEET

STONE CITY, COLO.

EXPLANATION

F1 — Landform unit / Resource classification

LANDFORM UNITS

- F Floodplain deposit
- T Stream terrace deposit
- V Valley fill (F & T)
- U Upland deposits
- A Alluvial fan
- E Wind-deposited sand (eolian)
- M Man-made deposits (slag, tailings, spoils....)

RESOURCE CLASSIFICATION

Coarse Aggregate
(at least 30% retained on #4 screen, visual estimation)

- 1 Gravel: relatively clean and sound
- 2 Gravel: significant fines, decomposed rock, calcium carbonate.

Fine Aggregate
(greater than 70% passing #4 screen, 60% retained on #200 screen, visual estimation)

- 3 Sand

Unevaluated Resource

- 4 Probable aggregate resource

MAP SYMBOLS

- Operating gravel and/or sand pit
- Abandoned gravel and/or sand pit
- Operating stone quarry
- Abandoned stone quarry
- Potential quarry aggregate resource area
- Selected well or drill-hole location with overburden thickness (ft) over sand/gravel resource thickness (ft), obtained from well logs.
  "g" indicates gravel; "s" indicates sand
  "x" in symbol denotes unevaluated or unknown property.
  "wg" denotes Colorado Geological Survey Windsor/Sand and Gravel projects' drill hole
- Landform boundary, solid where known or observed; dashed where approximate or inferred.

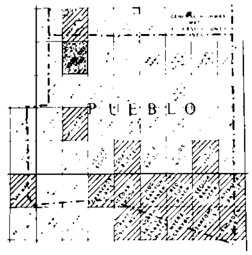
STATION, LOCATION AND GEOLOGICAL DESCRIPTION OF DEPOSIT

3, 17, 60

- overburden thickness (ft)
- sand/gravel resource thickness (ft)
- percent sand and fines (passing #4 screen, 0.15 in.), visual estimation
- significant amount of fines (passing #200 screen, 0.0058 in. or 0.074 mm.)
- significant amount of decomposed or weak rock.
- significant amount of calcium carbonate (caliche)

"x" in symbol denotes unevaluated or unknown property

"o" in symbol denotes property absent or insignificant



QUADRANGLE LOCATION

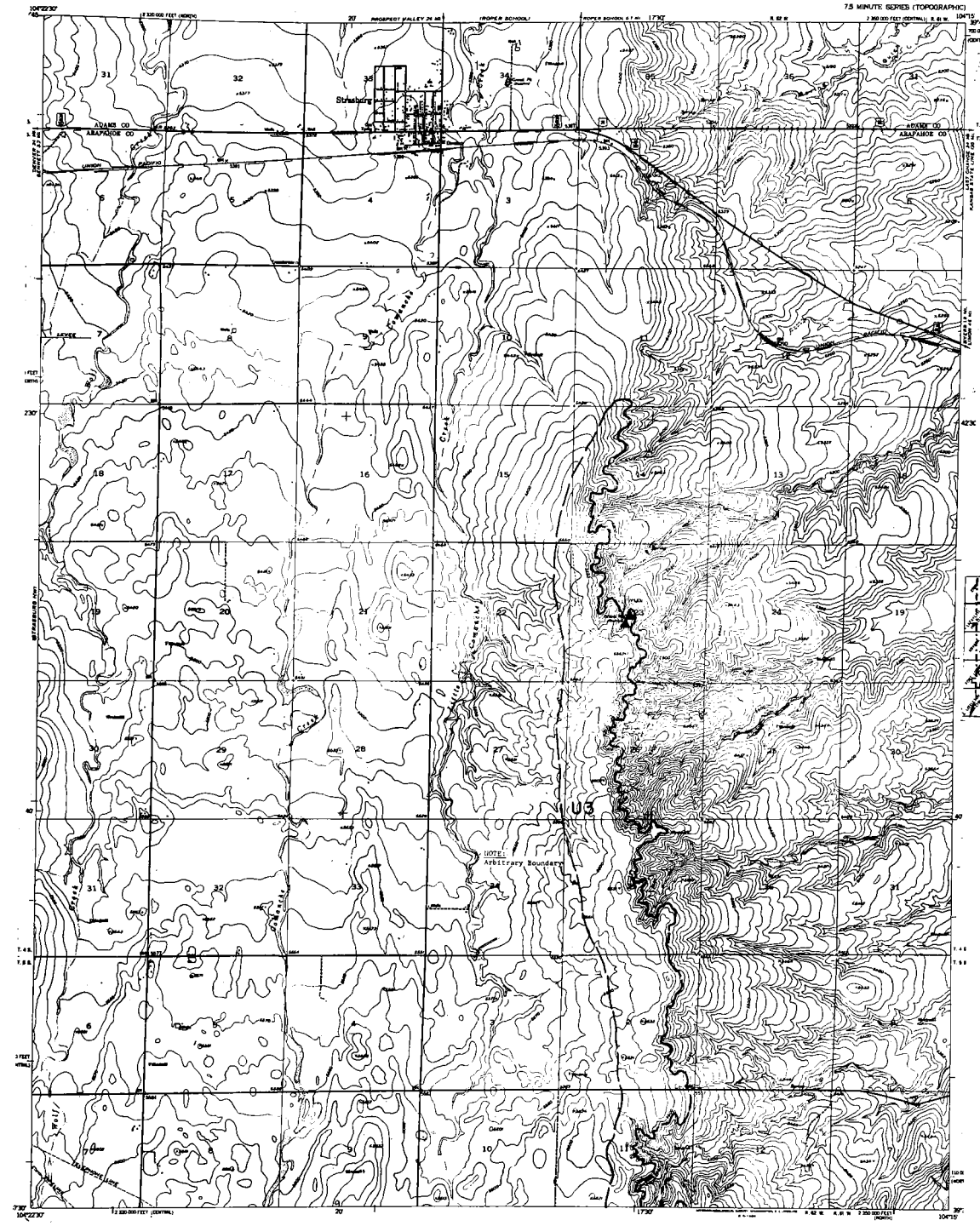
NON-RESOURCE OR WITHDRAWN AREA

Mapped by: Phillip C. Wicklein
Date: June 30, 1974

SAND, GRAVEL AND QUARRY AGGREGATE RESOURCES MAP

DEPARTMENT OF NATURAL RESOURCES
COLORADO GEOLOGICAL SURVEY
JOHN W. ROLD, DIRECTOR

STRASBURG QUADRANGLE
COLORADO
7.5 MINUTE SERIES (TOPOGRAPHIC)



EXPLANATION

Landform unit

Resource classification

LANDFORM UNITS

- F Floodplain deposit
- T Stream terrace deposit
- V Valley fill (F & T)
- U Upland deposits
- A Alluvial fan
- E Wind-deposited sand (eolian)
- M Man-made deposits (dikes, tailings, spoils....)

RESOURCE CLASSIFICATION

Coarse Aggregate
(at least 50% retained on #4 sieve, visual estimation)

- 1 Gravel: relatively clean and sound
- 2 Gravel: significant fines, decomposed rock, calcium carbonate.

Fine Aggregate
(greater than 75% passing #4 screen, 50% retained on #200 screen, visual estimation

- 3 Sand

Overburden Resource

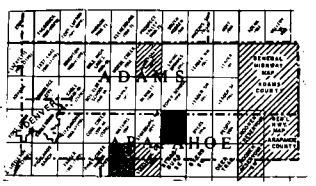
- 4 Probable aggregate resource

MAP SYMBOLS

- Operating gravel and/or sand pit
- Abandoned gravel and/or sand pit
- Operating stone quarry
- Abandoned stone quarry
- Potential quarry aggregate resource area
- Selected well or drill-hole location with overburden thickness (ft) over sand/gravel resource thickness (ft), obtained from well logs. "x" indicates gravel; "s" indicates sand. "x" in symbol denotes unevaluated or unknown property. "DH" denotes Colorado Geological Survey Windsor/Sand and Gravel projects' drill hole
- Landform boundary, solid where known or observed, dashed where approximate or inferred.

STATION, LOCATION AND GEOLOGICAL DESCRIPTION OF DEPOSIT

overburden thickness (ft)
sand/gravel resource thickness (ft)
percent sand and fines (passing #4 screen, 0.25 in.), visual estimation
3 17 40
significant amount of fines (passing #200 screen, 0.0058 in. or 0.074 mm.)
significant amount of decomposed or weak rock.
significant amount of calcium carbonate (caliche)
"x" in symbol denotes unevaluated or unknown property
"o" in symbol denotes property absent or insignificant



QUADRANGLE LOCATION

NON-RESOURCE OR WITHDRAWN AREA

Reference:
Shadle, S.A., 1971, The Bijou Creek Domestic and Reservoirs of Adams and Arapahoe Counties, Colorado: Colo. Sch. Mines, RR-1327.

Mapped by: Phillip C. Wicklein
Date: June 30, 1974

Base from U. S. Geological Survey
7-1/2 minute quadrangle

APPROXIMATE MEAN DECLINATION, 1955

CONTOUR INTERVAL 10 FEET
DATUM IS MEAN SEA LEVEL

ROAD CLASSIFICATION

- Heavy-duty
- Medium-duty
- Light-duty
- Unimproved dirt
- U.S. Route
- State Route

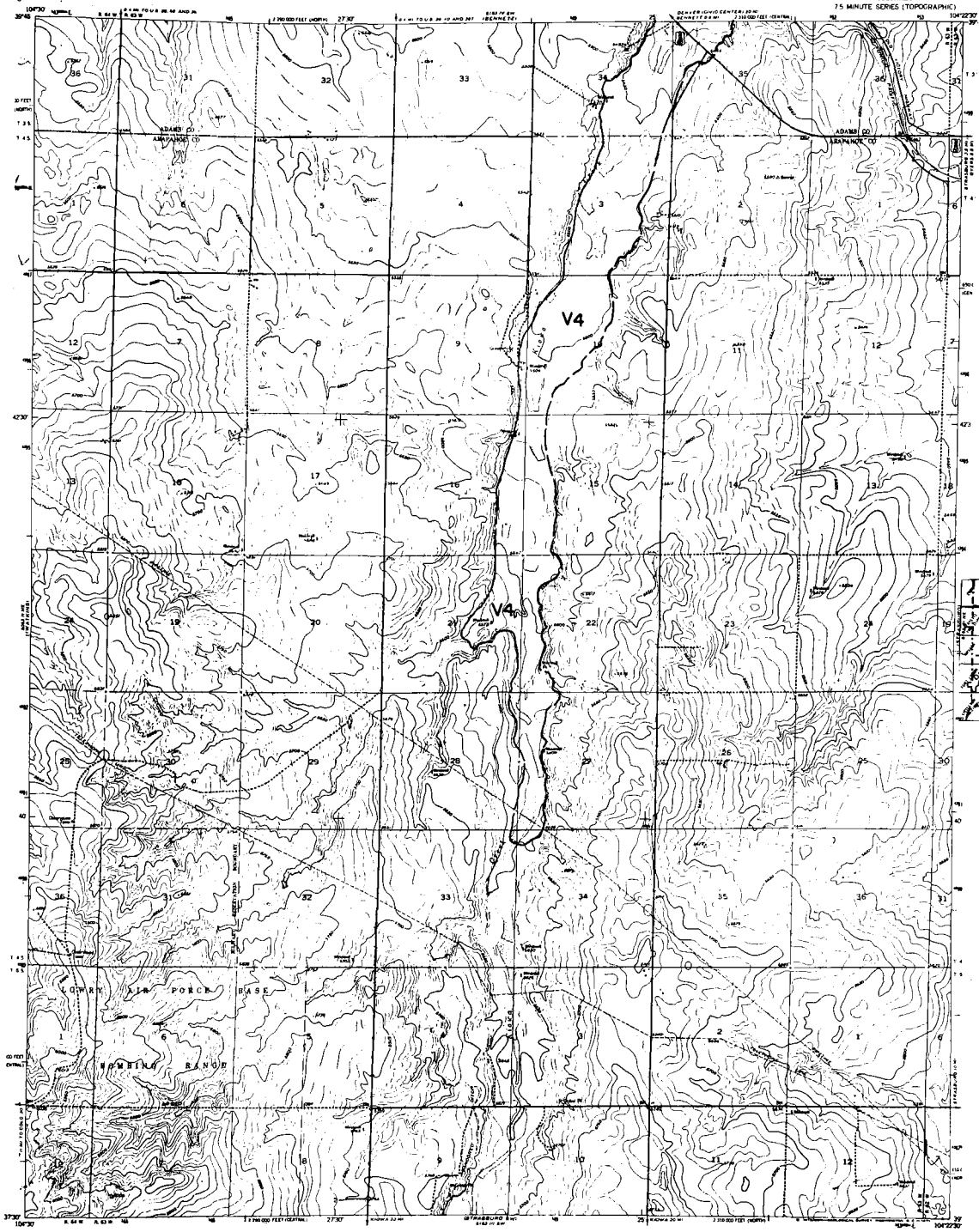
COLORADO
QUADRANGLE LOCATION

STRASBURG, COLO.
N3937.5—W10415/7.5

SAND, GRAVEL AND QUARRY AGGREGATE RESOURCES MAP

DEPARTMENT OF NATURAL RESOURCES
COLORADO GEOLOGICAL SURVEY
JOHN W. HOLD, DIRECTOR

STRASBURG NW QUADRANGLE
COLORADO
7.5 MINUTE SERIES (TOPOGRAPHIC)



EXPLANATION

Geologic unit
Resource classification

LANDFORM UNITS

- F Floodplain deposit
- T Stream terrace deposit
- V Valley fill (F & T)
- U Upland deposits
- A Alluvial fan
- E Wind-deposited sand (eolian)
- M Man-made deposits (slag,tailings, spoils....)

RESOURCE CLASSIFICATION

Coarse Aggregate
(at least 50% retained on #4 screen., visual estimation)

- 1 Gravel: relatively clean and sound
- 2 Gravel: significant fines, decomposed rock, calcium carbonate.

Fine Aggregate
(greater than 70% passing #4 screen, 02% retained on #200 screen, visual estimate

- 3 Sand

Unevaluated Resource

- 4 Probable aggregate resource

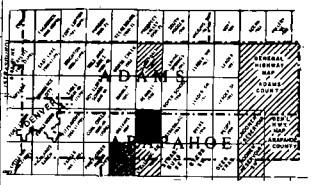
MAP SYMBOLS

- Operating gravel and/or sand pit
- Abandoned gravel and/or sand pit
- Operating stone quarry
- Abandoned stone quarry
- Potential quarry aggregate resource area
- Selected well or drill-hole location with overburden thickness (ft) over sand/gravel resource thickness (ft), obtained from well logs. "g" indicates gravel; "s" indicates sand
- "+" in symbol denotes unevaluated or obscure property.
- "DG" denotes Colorado Geological Survey Windsor/Sand and Gravel projects' drill hole
- Landform boundary, solid where known or observed; dashed where approximate or inferred.

STATION, LOCATION AND GEOLOGICAL DESCRIPTION OF DEPOSIT

- overburden thickness (ft)
- sand/gravel resource thickness (ft)
- percent sand and fines (passing #4 screen, 0.33 in.), visual estimation
- significant amount of fines (passing #200 screen, 0.0030 in. or 0.074 mm.)
- significant amount of decomposed or weak rock.
- significant amount of calcium carbonate (calliche)

"0" in symbol denotes unevaluated or unknown property
"+" in symbol denotes property absent or insignificant



QUADRANGLE LOCATION

NON-RESOURCE OR WITHDRAWN AREA

Mapped by: Phillip C. Wicklein
Date: June 30, 1974

Base from U. S. Geological Survey
7-1/2 minute quadrangle

CONTOUR INTERVAL 10 FEET
Datum is mean sea level

ROAD CLASSIFICATION

- Heavy-duty
- Light-duty
- Medium-duty
- Unimproved dirt
- U.S. Route
- State Route

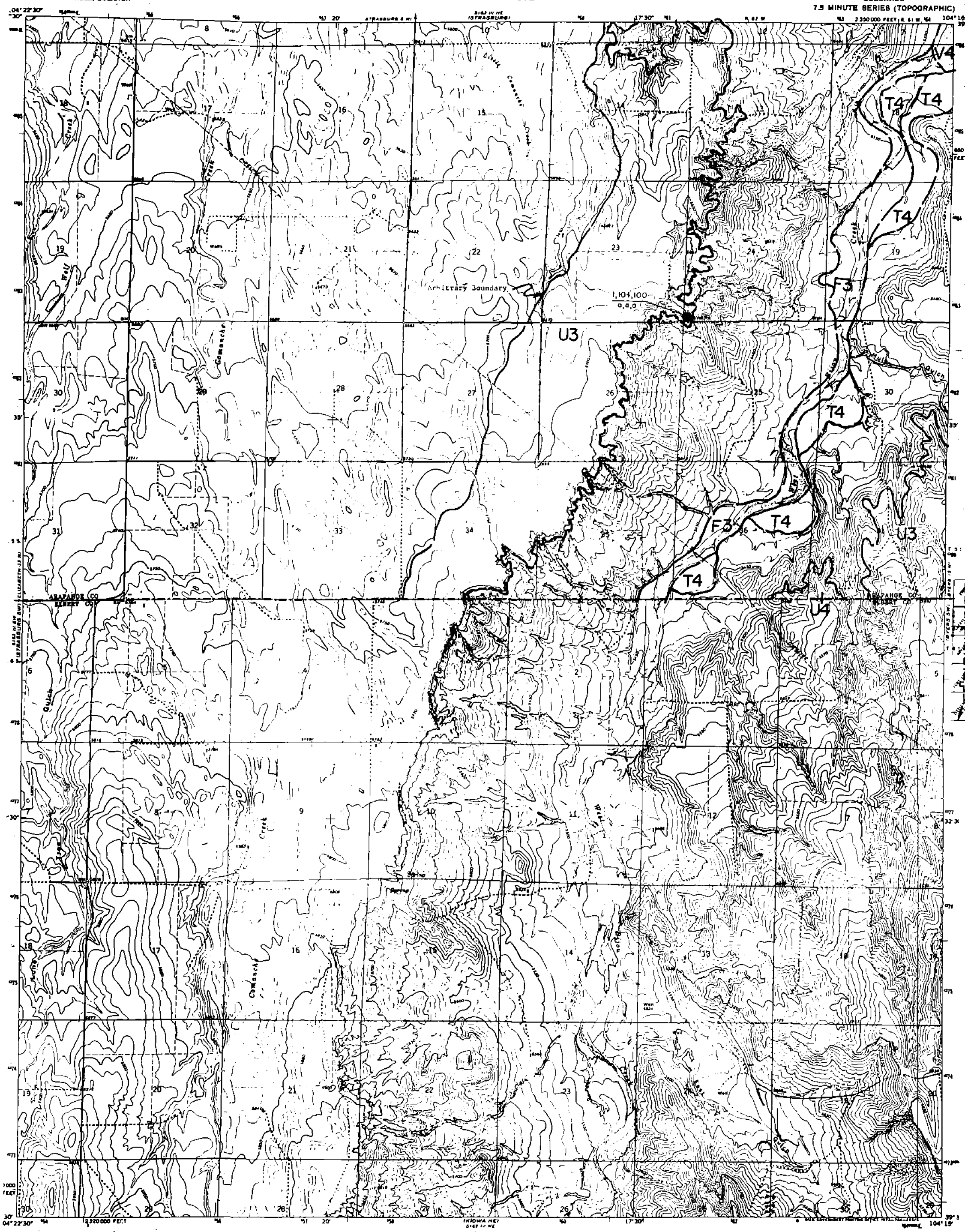
STRASBURG NW, COLO.
N3937.5—W10422.5/7.5
1955
AMS 6163 IV NW—SERIES V877

SAND, GRAVEL AND QUARRY AGGREGATE

RESOURCES MAP

DEPARTMENT OF NATURAL RESOURCES
COLORADO GEOLOGICAL SURVEY
JOHN W ROLD, DIRECTOR

STRASBURG SE QUADRANGLE
COLORADO
7.5 MINUTE SERIES (TOPOGRAPHIC)



Base from U. S. Geological Survey
7-1/2 minute quadrangle

CONTOUR INTERVAL 10 FEET
DATUM IS MEAN SEA LEVEL

UTM GRID AND 1969 MAGNETIC NORTH DECLINATION AT CENTER OF SHEET

ROAD CLASSIFICATION

Primary highway, hard surface
Light-duty road, hard or improved surface
Secondary highway, hard surface
Unimproved road
Interstate Route
U S Route
State Route

QUADRANGLE LOCATION

STRASBURG SE, COLO.
N3930—W10415/7.5
1969

EXPLANATION

F1 — Landform unit; Resource classification

LANDFORM UNITS

- F Floodplain deposit
- T Stream terrace deposit
- V Valley fill (F & T)
- U Upland deposits
- A Alluvial fan
- E Wind-deposited sand (eolian)
- M Man-made deposits (slag, tailings, spoils....)

RESOURCE CLASSIFICATION

Coarse Aggregate
(at least 25% retained on #4 screen, visual estimation)

1 Gravel: relatively clean and sound

2 Gravel: significant fines, decomposed rock, calcium carbonate.

Fine Aggregate
(greater than 75% passing #4 screen, 25% retained on #200 screen, visual estimation)

3 Sand

Unevaluated Resource

4 Probable aggregate resource

MAP SYMBOLS

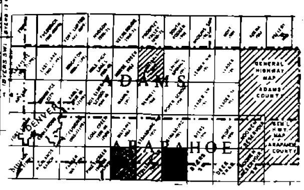
- Operating gravel and/or sand pit
- Abandoned gravel and/or sand pit
- Operating stone quarry
- Abandoned stone quarry
- Potential quarry aggregate resource area
- Selected well or drill-hole location with overburden thickness (ft) over sand/gravel resource thickness (ft), obtained from well logs. "g" indicates gravel; "s" indicates sand
- "x" in symbol denotes unevaluated or unknown property.
- "wd" denotes Colorado Geological Survey Windsor/Sand and Gravel projects' drill holes
- Landform boundary, solid where known or observed; dashed where approximate or inferred.

STATION, LOCATION AND GEOLOGICAL DESCRIPTION OF DEPOSIT

5, 17, 40
- overburden thickness (ft)
- sand/gravel resource thickness (ft)
- percent sand and fines (passing #4 screen, 0.25 in.), visual estimation
- significant amount of fines (passing #200 screen, 0.0029 in. or 0.074 mm.)
- significant amount of decomposed or weak rock.
- significant amount of calcium carbonate (caliche)

"x" in symbol denotes unevaluated or unknown property

"o" in symbol denotes property absent or insignificant



QUADRANGLE LOCATION

NON-RESOURCE OR WITHDRAWN AREA

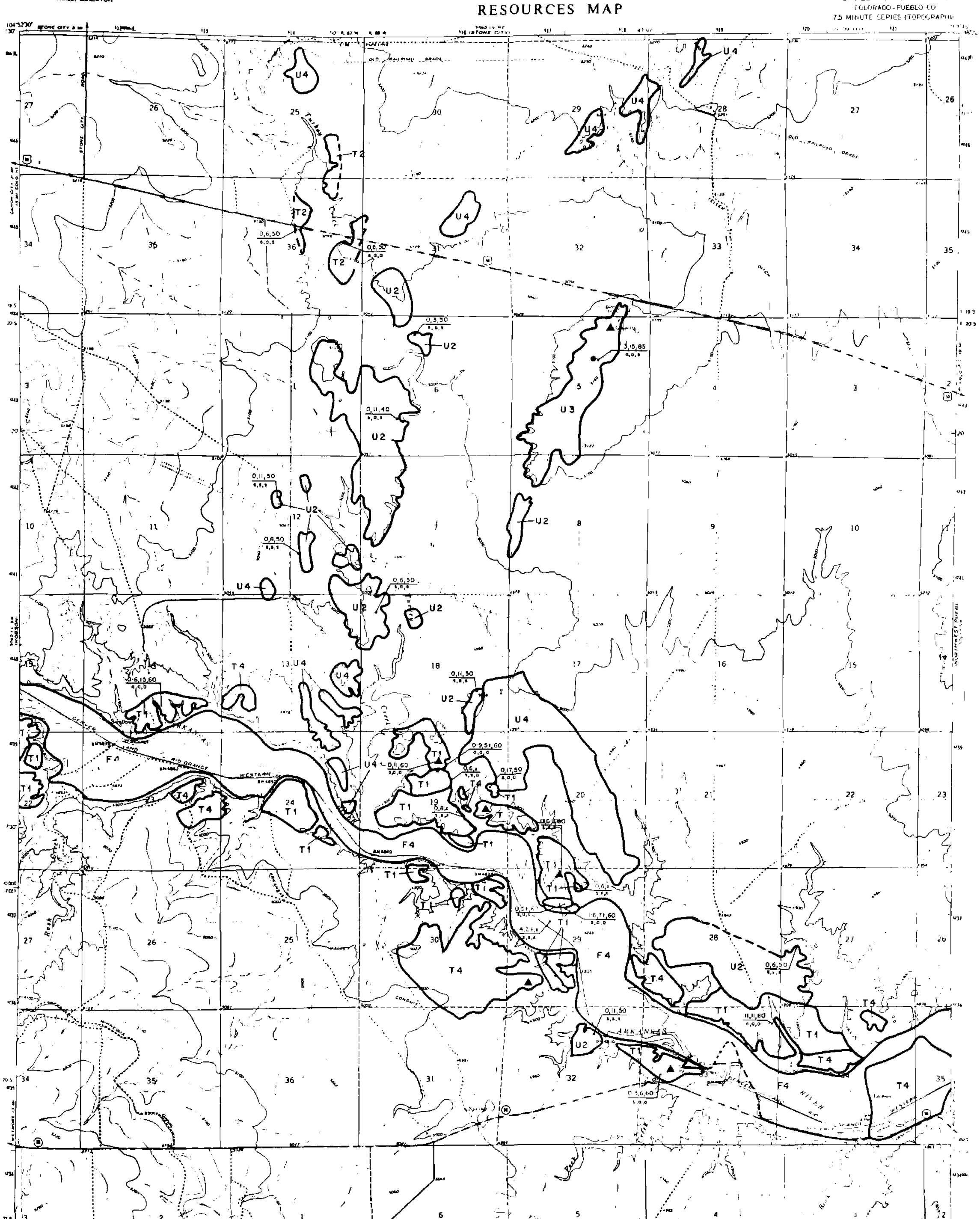
Reference:
Shadulo, S.A., 1971, The Bijou Creek Damsites and Reservoirs of Adams and Arapahoe Counties, Colorado: Colo. Sch. Mines ER-1327.

Mapped by: Phillip C. Wicklein
Date: June 30, 1974

DEPARTMENT OF NATURAL RESOURCES
COLORADO GEOLOGICAL SURVEY
JOHN W. ROLD, DIRECTOR

SAND, GRAVEL AND QUARRY AGGREGATE RESOURCES MAP

SWALLOWS QUADRANGLE
COLORADO-PUEBLO CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)



EXPLANATION

LANDFORM UNITS

- F — Floodplain deposit
- T — Stream terrace deposit
- V — Valley fill (F & T)
- U — Upland deposits
- A — Alluvial fan
- E — Wind-deposited sand (eolian)
- M — Man-made deposits (slag, tailings, spoils....)

RESOURCE CLASSIFICATION

Coarse Aggregate

- 1 — Gravel: relatively clean and sound
- 2 — Gravel: significant fines, decomposed rock, calcium carbonate.

Fine Aggregate

- 3 — Sand

Unevaluated Resource

- 4 — Probable aggregate resource

MAP SYMBOLS

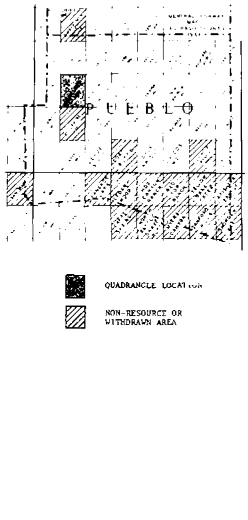
- ● Operating gravel and/or sand pit
- ▲ Abandoned gravel and/or sand pit
- Operating stone quarry
- Abandoned stone quarry
- Potential quarry aggregate resource area
- Selected well or drill-hole location with overburden thickness over sand/gravel resource thickness (ft), obtained from well logs. "g" indicates gravel, "s" indicates sand. "?" in symbol denotes unevaluated or unknown property.
- Landform boundary, solid where known or observed; dashed where approximate or inferred.

STATION, LOCATION AND GEOLOGICAL DESCRIPTION OF DEPOSIT

- overburden thickness (ft)
- sand/gravel resource thickness (ft)
- visual estimation
- significant amount of fines
- significant amount of decomposed or weak rock.
- significant amount of calcium carbonate (caliche)

"?" in symbol denotes unevaluated or unknown property.

"0" in symbol denotes property absent or insignificant.



QUADRANGLE LOCATION

NON-RESOURCE OR WITHDRAWN AREA

Mapped by: Ralph R. Shroba
Date: June 30, 1974

Base from U. S. Geological Survey
7-1/2 minute quadrangle

CONTOUR INTERVAL 20 FEET

ROAD CLASSIFICATION
Medium duty — Light duty
Unimproved dirt
U.S. Route — State Route

SWALLOWS, COLO.

DEPARTMENT OF NATURAL RESOURCES
COLORADO GEOLOGICAL SURVEY
JOHN W. ROLD, DIRECTOR

SAND, GRAVEL AND QUARRY AGGREGATE RESOURCES MAP

TABLE MOUNTAIN QUADRANGLE
COLORADO – WYOMING
7.5 MINUTE SERIES (TOPOGRAPHIC)

Base from U. S. Geological Survey
7-1/2 minute quadrangle

CONTOUR INTERVAL 40 FEET
DATUM IS MEAN SEA LEVEL

ROAD CLASSIFICATION
Light-duty ——— Unimproved dirt ....

TABLE MOUNTAIN, COLO.–WYO.

EXPLANATION

Landform unit / Resource classification

LANDFORM UNITS

- F Floodplain deposit
- T Stream terrace deposit
- V Valley fill (F & T)
- U Upland deposits
- A Alluvial fan
- E Wind-deposited sand (eolian)
- M Man-made deposits (slag, tailings, spoils....)

RESOURCE CLASSIFICATION

Coarse Aggregate
(at least 50% retained on #4 screen, visual estimate)

- 1 Gravel: relatively clean and sound
- 2 Gravel: significant fines, decomposed rock, calcium carbonate.

Fine Aggregate
(greater than 50% passing #4 screen, 60% retained on #200 screen, visual estimate)

- 3 Sand

Unevaluated Resource

- 4 Probable aggregate resource

MAP SYMBOLS

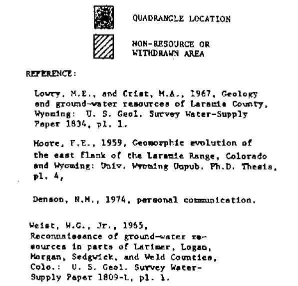
- Operating gravel and/or sand pit
- Abandoned gravel and/or sand pit
- Operating stone quarry
- Abandoned stone quarry
- Potential quarry aggregate resource area
- Selected well or drill-hole location with overburden thickness (ft) over sand/gravel resource thickness (ft), obtained from well logs.
  "g" indicates gravel; "s" indicates sand
  "x" in symbol denotes unevaluated or unknown property.
  "wd" denotes Colorado Geological Survey Windsor/Sand and Gravel projects' drill hole
- Landform boundary, solid where known or observed; dashed where approximate or inferred.

STATION, LOCATION AND GEOLOGICAL DESCRIPTION OF DEPOSIT

3, 17, 40
- overburden thickness (ft)
- sand/gravel resource thickness (ft)
- percent sand and fines (passing #4 screen, 0.25 in.), visual estimation
- significant amount of fines (passing #200 screen, 0.0059 in. or 0.074 mm.)
- significant amount of decomposed or weak rock.
- significant amount of calcium carbonate (caliche)

"x" in symbol denotes unevaluated or unknown property

"o" in symbol denotes property absent or insignificant



QUADRANGLE LOCATION

NON-RESOURCE OR WITHDRAWN AREA

REFERENCE:

Lowry, M.E., and Crist, M.A., 1967, Geology and ground-water resources of Laramie County, Wyoming: U. S. Geol. Survey Water-Supply Paper 1834, pl. 1.

Moore, F.E., 1959, Geomorphic evolution of the east flank of the Laramie Range, Colorado and Wyoming: Univ. Wyoming Unpub. Ph.D. Thesis, pl. 4,

Denson, N.M., 1974, personal communication.

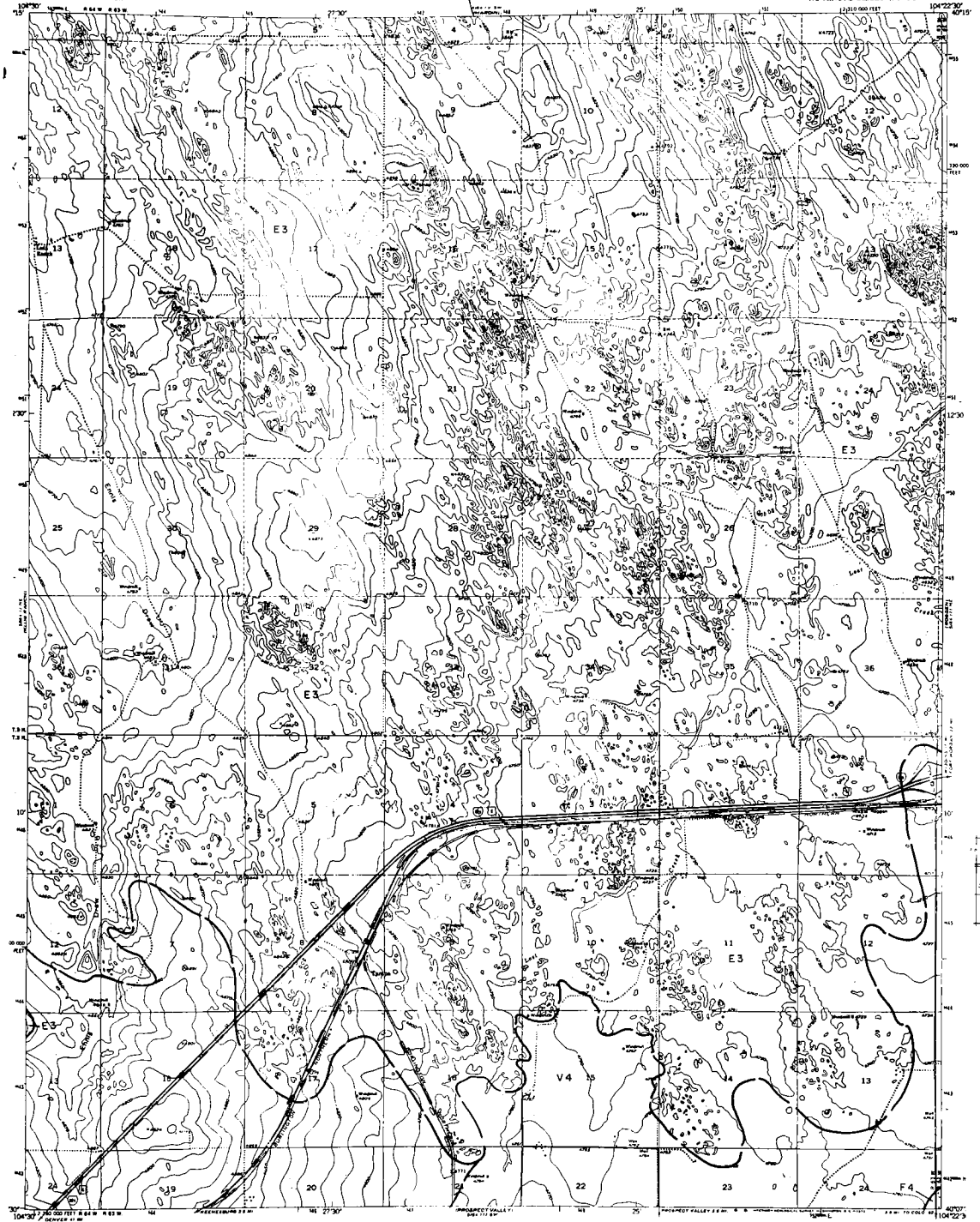
Weist, W.G., Jr., 1965, Reconnaissance of ground-water resources in parts of Larimer, Logan, Morgan, Sedgwick, and Weld Counties, Colo.: U. S. Geol. Survey Water-Supply Paper 1809-L, pl. 1.

Mapped by: Stephen D. Schwochow
Date: June 30, 1974

SAND, GRAVEL AND QUARRY AGGREGATE RESOURCES MAP

DEPARTMENT OF NATURAL RESOURCES
COLORADO GEOLOGICAL SURVEY
JOHN W. ROLD, DIRECTOR

TAMPA QUADRANGLE
COLORADO-WELD CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)



EXPLANATION

Landform unit

Resource classification

LANDFORM UNITS

- F Floodplain deposit
- T Stream terrace deposit
- V Valley fill (F & T)
- U Upland deposits
- A Alluvial fan
- E Wind-deposited sand (soil)
- M Man-made deposits (slag,tailings, spoils....)

RESOURCE CLASSIFICATION

Coarse aggregate
(> about 25% retained on #4 screen, visual estimation)

- 1 Gravel: relatively clean and sound
- 2 Gravel: significant fines, decomposed rock calcium carbonate.

Fine aggregate
(greater than 75% passing #4 screen, 50% retained on #200 screen, visual estimation

- 3 Sand

Overvalued Resource

- 4 Probable aggregate resource

MAP SYMBOLS

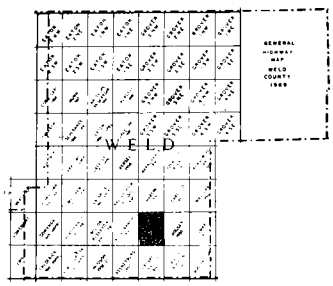
- Operating gravel and/or sand pit
- Abandoned gravel and/or sand pit
- Operating stone quarry
- Abandoned stone quarry
- Potential quarry aggregate resource area
- Selected well or drill-hole location with overburden thickness (ft) over sand/gravel resource thickness (ft), obtained from well logs. "g" indicates gravel; "s" indicates sand. "-" in symbol denotes unevaluated or unknown property.
- "ws" denotes Colorado Geological Survey Windsor/Sand and Gravel projects' drill hole
- Landform boundary, solid where known or observed; dashed where approximate or inferred.

STATION, LOCATION AND GEOLOGICAL DESCRIPTION OF DEPOSIT

- overburden thickness (ft)
- sand/gravel resource thickness (ft)
- percent sand and fines (passing #4 screen, 0.25 in.), visual estimation
- significant amount of fines (passing #200 screen, 0.0029 in. or 0.074 mm.)
- significant amount of decomposed or weak rock.
- significant amount of calcium carbonate (calcite)

"x" in symbol denotes unevaluated or unknown property.

"o" in symbol denotes property absent or (slight)least



QUADRANGLE LOCATION

NON-RESOURCE OR WITHDRAWN AREA

REFERENCE: Bjorklund, L.J., and Brown, R.F., 1957, Geology and ground-water resources of the lower South Platte River valley between Hardin, Colorado, and Paxton, Nebraska: U. S. Geol. Survey Water-Supply Paper 1378, pl. 1.

Mapped by: Phillip C. Wicklein
Date: June 30, 1974

Base from U. S. Geological Survey
7-1/2 minute quadrangle

CONTOUR INTERVAL 10 FEET

ROAD CLASSIFICATION

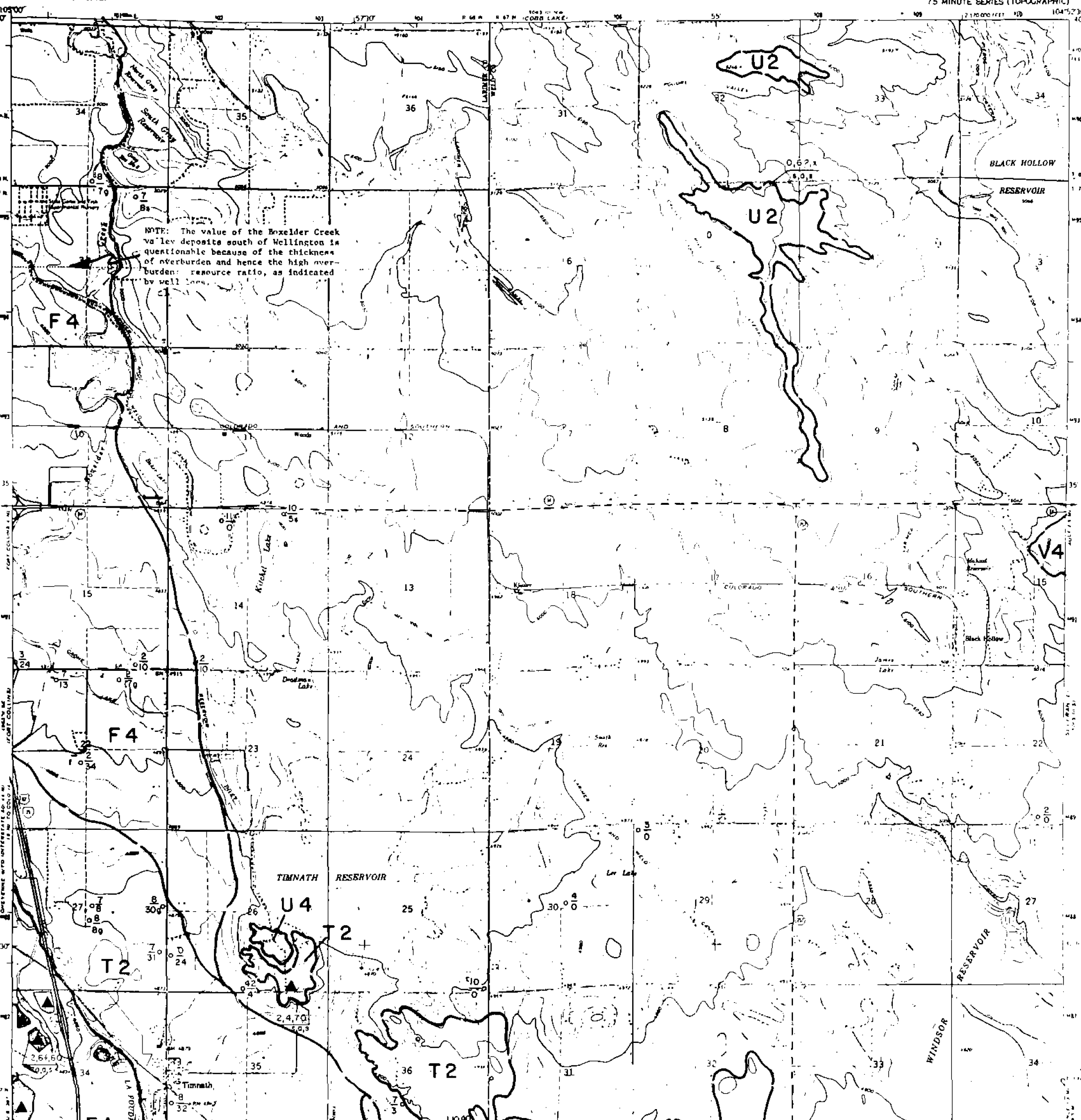
- Primary highway, hard surface — Light-duty road, hard or improved surface
- Secondary highway, hard surface — Unimproved road
- Interstate Route · U. S. Route · State Route

TAMPA, COLO.

SAND, GRAVEL AND QUARRY AGGREGATE RESOURCES MAP

DEPARTMENT OF NATURAL RESOURCES
COLORADO GEOLOGICAL SURVEY
JOHN W. ROLD, DIRECTOR

TIMNATH QUADRANGLE
COLORADO
7.5 MINUTE SERIES (TOPOGRAPHIC)



EXPLANATION

F1 — Landform unit; Resource classification

LANDFORM UNITS

- F Floodplain deposit
- T Stream terrace deposit
- V Valley fill (F & T)
- U Upland deposits
- A Alluvial fan
- E Wind-deposited sand (eolian)
- M Man-made deposits (slag, tailings, spoils....)

RESOURCE CLASSIFICATION

Coarse Aggregate
(at least 50% retained on #4 screen, visual estimation)

- 1 Gravel: relatively clean and sound
- 2 Gravel: significant fines, decomposed rock, calcium carbonate.

Fine Aggregate
(greater than 50% passing #4 screen, 60% retained on #200 screen, visual estimation)

- 3 Sand

Unevaluated Resource

- 4 Probable aggregate resource

MAP SYMBOLS

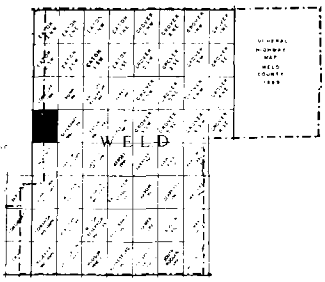
- Operating gravel and/or sand pit
- Abandoned gravel and/or sand pit
- Operating stone quarry
- Abandoned stone quarry
- Potential quarry aggregate resource area
- Selected well or drill-hole location with overburden thickness (ft) over sand/gravel resource thickness (ft), obtained from well logs.
  "g" indicates gravel; "s" indicates sand
  "x" in symbol denotes unevaluated or unknown property.
- "wo" denotes Colorado Geological Survey Windsor/Sand and Gravel projects' drill hole
- Landform boundary, solid where known or observed; dashed where approximate or inferred.

STATION, LOCATION AND GEOLOGICAL DESCRIPTION OF DEPOSIT

1, 17, 40
- overburden thickness (ft)
- sand/gravel resource thickness (ft)
- percent sand and fines (passing #4 screen, 0.25 in.), visual estimation
- significant amount of fines (passing #200 screen, 0.0029 in. or 0.074 mm.)
- significant amount of decomposed or weak rock
- significant amount of calcium carbonate (caliche)

"x" in symbol denotes unevaluated or unknown property

"0" in symbol denotes property absent or insignificant



QUADRANGLE LOCATION

NON-RESOURCE OR WITHDRAWN AREA

REFERENCE:

Hershey, L.A., and Schneider, P.A., Jr., 1972, Geologic map of the lower Cache La Poudre River basin, north-central Colorado: U. S. Geol. Survey Misc. Geol. Inv. Map I-687.

Ching, P.W., 1972, Economic gravel deposits of the lower Cache La Poudre River: Colorado State Univ. Unpub. Master Sci. Thesis.

Shelton, D.C., 1974, personal communication.

Swan, F.H., III, 1972, Map of surficial geology of part of the Timnath quadrangle: Recon. Mapping for Colorado Geol. Survey Windsor Environmental Geology Project. open-file map.

Geology modified after: Colton, R.B., and Fitch, H.R., 1974, Map showing potential sources of gravel and crushed-rock aggregate in the Boulder-Fort Collins-Greeley Area, Front Range Urban Corridor, Colorado: U. S. Geol. Survey Map I-855-D.

Base from U. S. Geological Survey 7-1/2 minute quadrangle

CONTOUR INTERVAL 10 FEET
DOTTED LINES REPRESENT 5-FOOT CONTOURS
DATUM IS MEAN SEA LEVEL

ROAD CLASSIFICATION
Heavy-duty — Light-duty
Medium-duty — Unimproved dirt
Interstate Route — U.S. Route — State Route

TIMNATH, COLO.

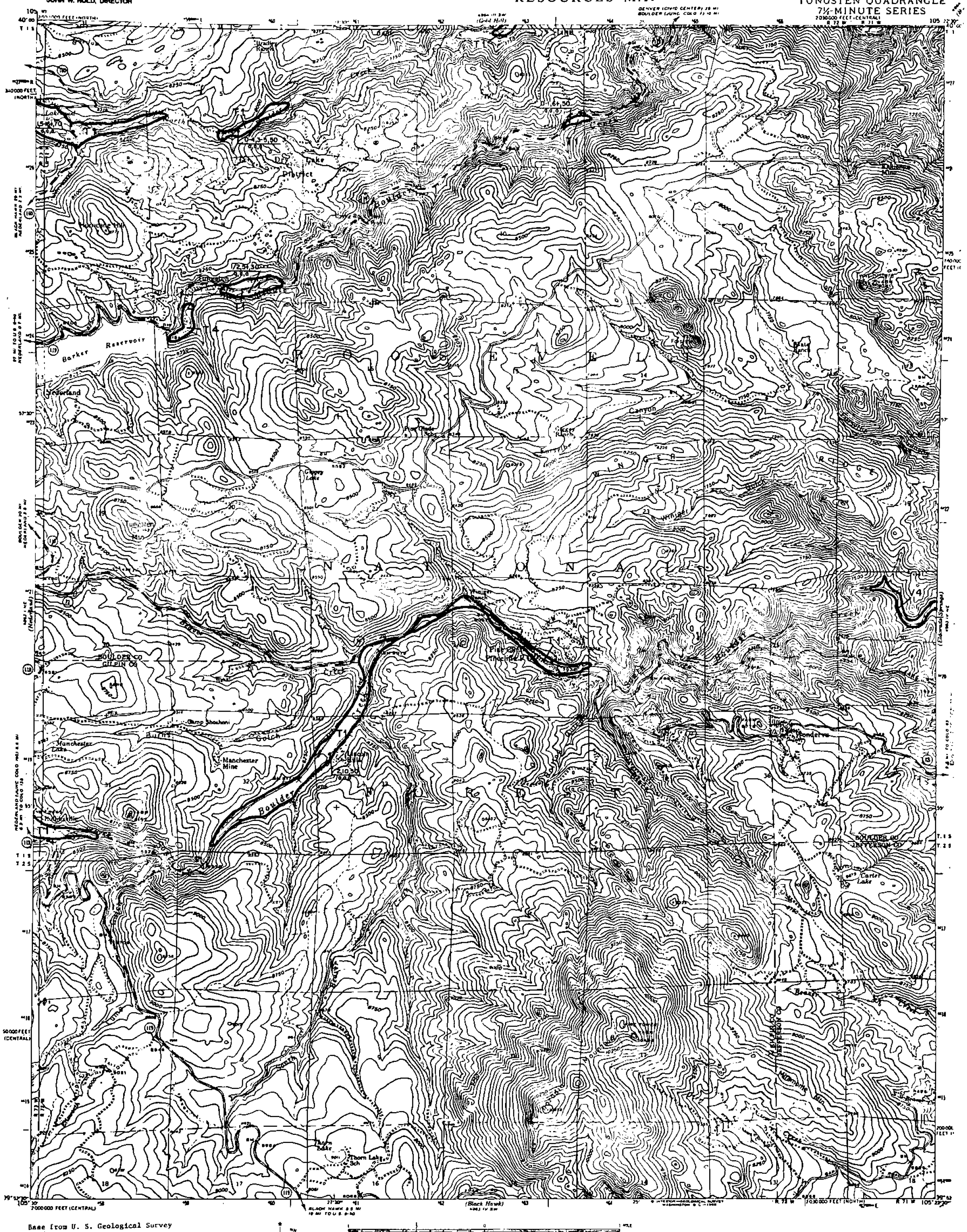
Mapped by: Stephen D. Schwochow
Date: June 30, 1974

Prepared in cooperation with the U. S. Geological Survey

DEPARTMENT OF NATURAL RESOURCES
COLORADO GEOLOGICAL SURVEY
JOHN W. ROLD, DIRECTOR

SAND, GRAVEL AND QUARRY AGGREGATE RESOURCES MAP

COLORADO
TUNGSTEN QUADRANGLE
7½-MINUTE SERIES



Base from U. S. Geological Survey
7-1/2 minute quadrangle

EXPLANATION

F — Landform unit; Resource classification

LANDFORM UNITS

- F Floodplain deposit
- T Stream terrace deposit
- V Valley fill (F & T)
- U Upland deposits
- A Alluvial fan
- E Wind-deposited sand (eolian)
- M Man-made deposits (slag, tailings, spoils....)

RESOURCE CLASSIFICATION

Coarse Aggregate
(at least 5?% retained on #4 screen, visual estimation)

- 1 Gravel: relatively clean and sound
- 2 Gravel: significant fines, decomposed rock, calcium carbonate.

Fine Aggregate
(greater than ?% passing #4 screen, 60% retained on #?? screen, visual estimation)

- 3 Sand

Unevaluated Resource

- 4 Probable aggregate resource

MAP SYMBOLS

- Operating gravel and/or sand pit
- Abandoned gravel and/or sand pit
- Operating stone quarry
- Abandoned stone quarry
- Potential quarry aggregate resource area
- Selected well or drill-hole location with overburden thickness (ft) over sand/gravel resource thickness (ft), obtained from well logs.
  "g" indicates gravel; "s" indicates sand
  "x" in symbol denotes unevaluated or unknown property
  "ws" denotes Colorado Geological Survey Windsor/Sand and Gravel projects' drill hole
- Landform boundary, solid where known or observed; dashed where approximate or inferred.

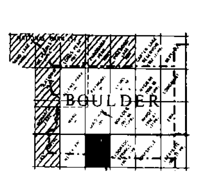
STATION, LOCATION AND GEOLOGICAL DESCRIPTION OF DEPOSIT

5, 17, 40

- overburden thickness (ft)
- sand, gravel resource thickness (ft)
- percent sand and fines (passing #4 screen, ...), visual estimation
- significant amount of fines (passing #200 screen, 0.0029 in. or 0.074 mm)
- significant amount of decomposed or weak rock.
- significant amount of calcium carbonate (caliche)

"x" in symbol denotes unevaluated or unknown property

"o" in symbol denotes property absent or insignificant



QUADRANGLE LOCATION

NON-RESOURCE OR WITHDRAWN AREA

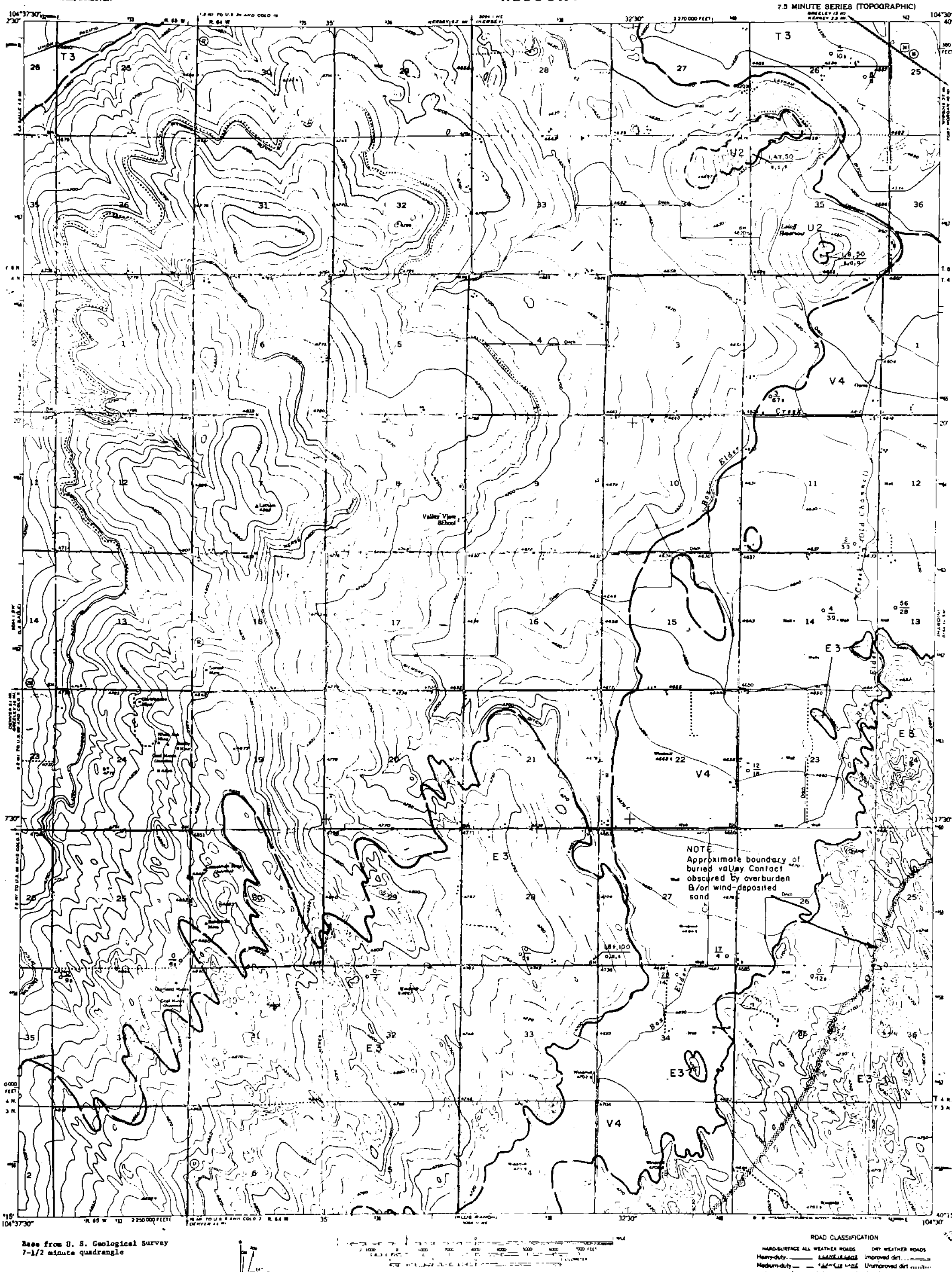
Reference:
Gable, D. J., 1972,
U. S. Geol. Survey Geol.
Quad Map GQ-978

Mapped by: Ralph R. Shroba
Date: June 30, 1974

SAND, GRAVEL AND QUARRY AGGREGATE RESOURCES MAP

DEPARTMENT OF NATURAL RESOURCES
COLORADO GEOLOGICAL SURVEY
JOHN W. ROLD, DIRECTOR

VALLEY VIEW SCHOOL QUADRANGLE
COLORADO-WELD CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)



EXPLANATION

F — Landform unit / Resource classification

LANDFORM UNITS

- F — Floodplain deposit
- T — Stream terrace deposit
- V — Valley fill (F & T)
- U — Upland deposits
- A — Alluvial fan
- E — Wind-deposited sand (eolian)
- M — Man-made deposits (slag, tailings, spoils....)

RESOURCE CLASSIFICATION

Coarse Aggregate (at least 70% retained on #4 screen, visual estimation)

- 1 — Gravel: relatively clean and sound
- 2 — Gravel: significant fines, decomposed rock, calcium carbonate.

Fine Aggregate (greater than 70% passing #4 screen, 40% retained on #200 screen, visual estimation)

- 3 — Sand

Unevaluated Resource

- 4 — Probable aggregate resource

MAP SYMBOLS

- Operating gravel and/or sand pit
- Abandoned gravel and/or sand pit
- Operating stone quarry
- Abandoned stone quarry
- Potential quarry aggregate resource area
- $\frac{2}{17_g}$ Selected well or drill-hole location with overburden thickness (ft) over sand/gravel resource thickness (ft), obtained from well logs.
  "g" indicates gravel; "s" indicates sand
  "x" to symbol denotes unevaluated or unknown property.
- "ws" denotes Colorado Geological Survey Windsor/Sand and Gravel projects' drill hole
- Landform boundary, solid where known or observed; dashed where approximate or inferred.

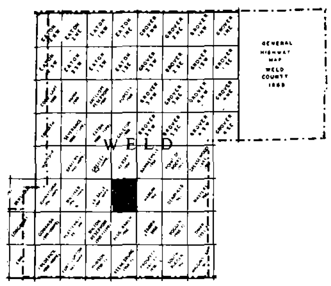
STATION, LOCATION AND GEOLOGICAL DESCRIPTION OF DEPOSIT

5, 17, 40

- overburden thickness (ft)
- sand/gravel resource thickness (ft)
- percent sand and fines (passing #4 screen, 0.25 in.), visual estimation
- significant amount of fines (passing #200 screen, 0.0029 in. or 0.074 mm.)
- significant amount of decomposed or weak rock.
- significant amount of calcium carbonate (caliche)

"x" in symbol denotes unevaluated or unknown property

"o" in symbol denotes property absent or insignificant



QUADRANGLE LOCATION

NON-RESOURCE OR WITHDRAWN AREA

Reference: Smith, R. O. and others, 1964, U.S.G.S. Water Supply Paper 1658, Plate I

Mapped by: Phillip C. Wicklein
Date: June 30, 1974

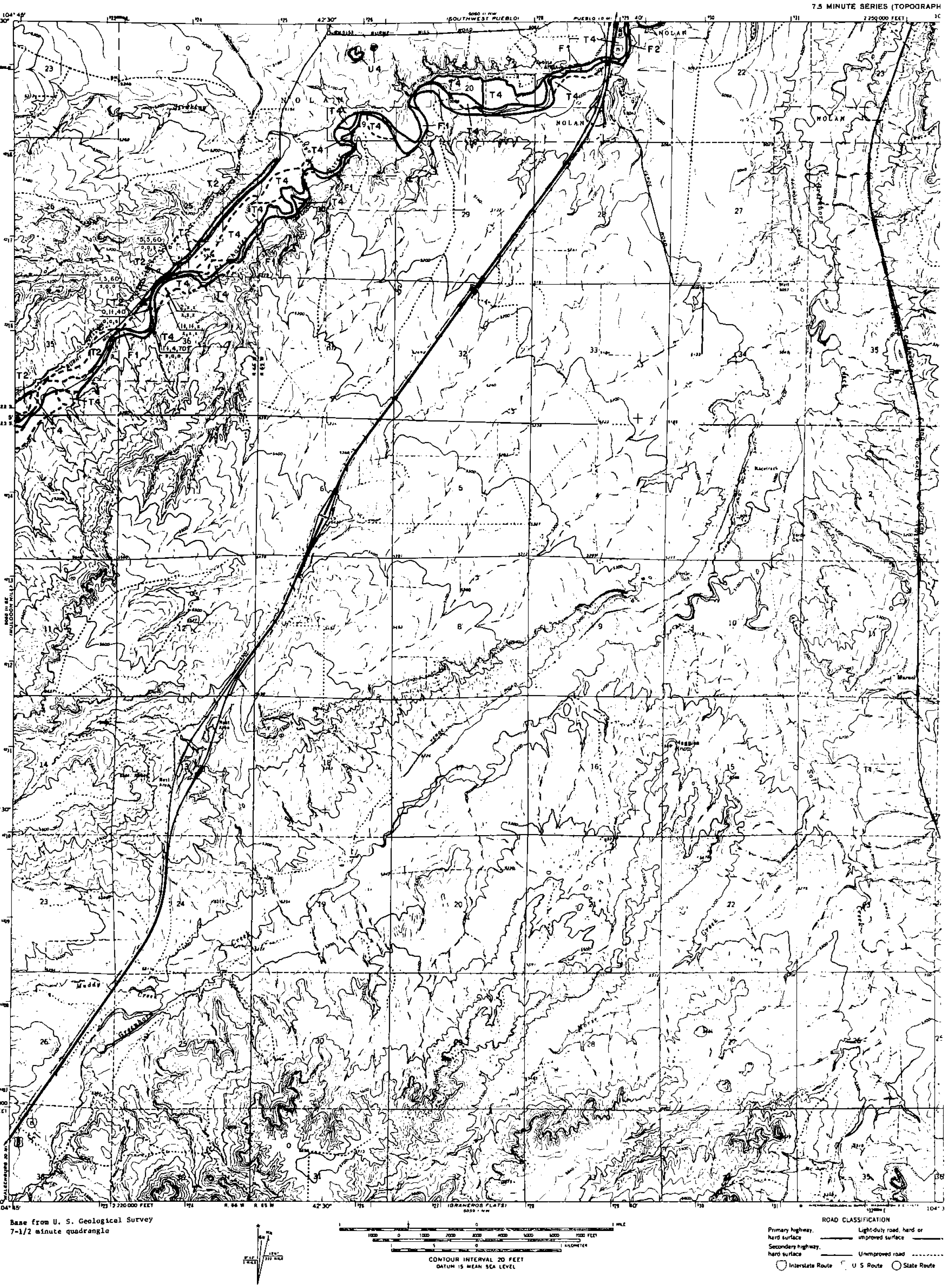
Base from U. S. Geological Survey 7-1/2 minute quadrangle

VALLEY VIEW SCHOOL, COLO.

DEPARTMENT OF NATURAL RESOURCES
COLORADO GEOLOGICAL SURVEY
JOHN W. ROLD, DIRECTOR

SAND, GRAVEL AND QUARRY AGGREGATE RESOURCES MAP

VERDE SCHOOL QUADRANGLE
COLORADO–PUEBLO CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)



EXPLANATION

Landform unit / Resource classification

LANDFORM UNITS

- F Floodplain deposit
- T Stream terrace deposit
- V Valley fill (F & T)
- U Upland deposits
- A Alluvial fan
- E Wind-deposited sand (eolian)
- M Man-made deposits (slag, tailings, spoils....)

RESOURCE CLASSIFICATION

Coarse Aggregate

- 1 Gravel: relatively clean and sound
- 2 Gravel: significant fines, decomposed rock, calcium carbonate.

Fine Aggregate

- 3 Sand

Unevaluated Resource

- 4 Probable aggregate resource

MAP SYMBOLS

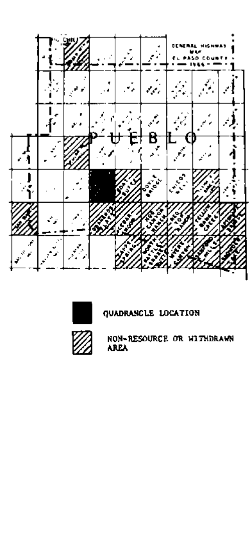
- Operating gravel and/or sand pit
- Abandoned gravel and/or sand pit
- Operating stone quarry
- Abandoned stone quarry
- Potential quarry aggregate resource area
- Selected well or drill-hole location with overburden thickness (ft) over sand/gravel resource thickness (ft), obtained from well logs. "g" indicates gravel; "s" indicates sand. "?" in symbol denotes unevaluated or unknown property.
- "WS" denotes Colorado Geological Survey Windsor/Sand and Gravel projects' drill hole
- Landform boundary, solid where known or observed; dashed where approximate or inferred.

STATION, LOCATION AND GEOLOGICAL DESCRIPTION OF DEPOSIT

- overburden thickness (ft)
- sand/gravel resource thickness (ft)
- percent sand and fines (passing #4 screen, 0.25 in.), visual estimation
- significant amount of fines (passing #200 screen, 0.0029 in. or 0.074 mm.)
- significant amount of decomposed or weak rock.
- significant amount of calcium carbonate (caliche)

"x" in symbol denotes unevaluated or unknown property

"o" in symbol denotes property absent or insignificant



QUADRANGLE LOCATION

NON-RESOURCE OR WITHDRAWN AREA

Mapped by: Phillip C. Wicklein
Date: June 30, 1974

Base from U. S. Geological Survey
7-1/2 minute quadrangle

UTM GRID AND 1970 MAGNETIC NORTH DECLINATION AT CENTER OF SHEET

CONTOUR INTERVAL 20 FEET
DATUM IS MEAN SEA LEVEL

ROAD CLASSIFICATION

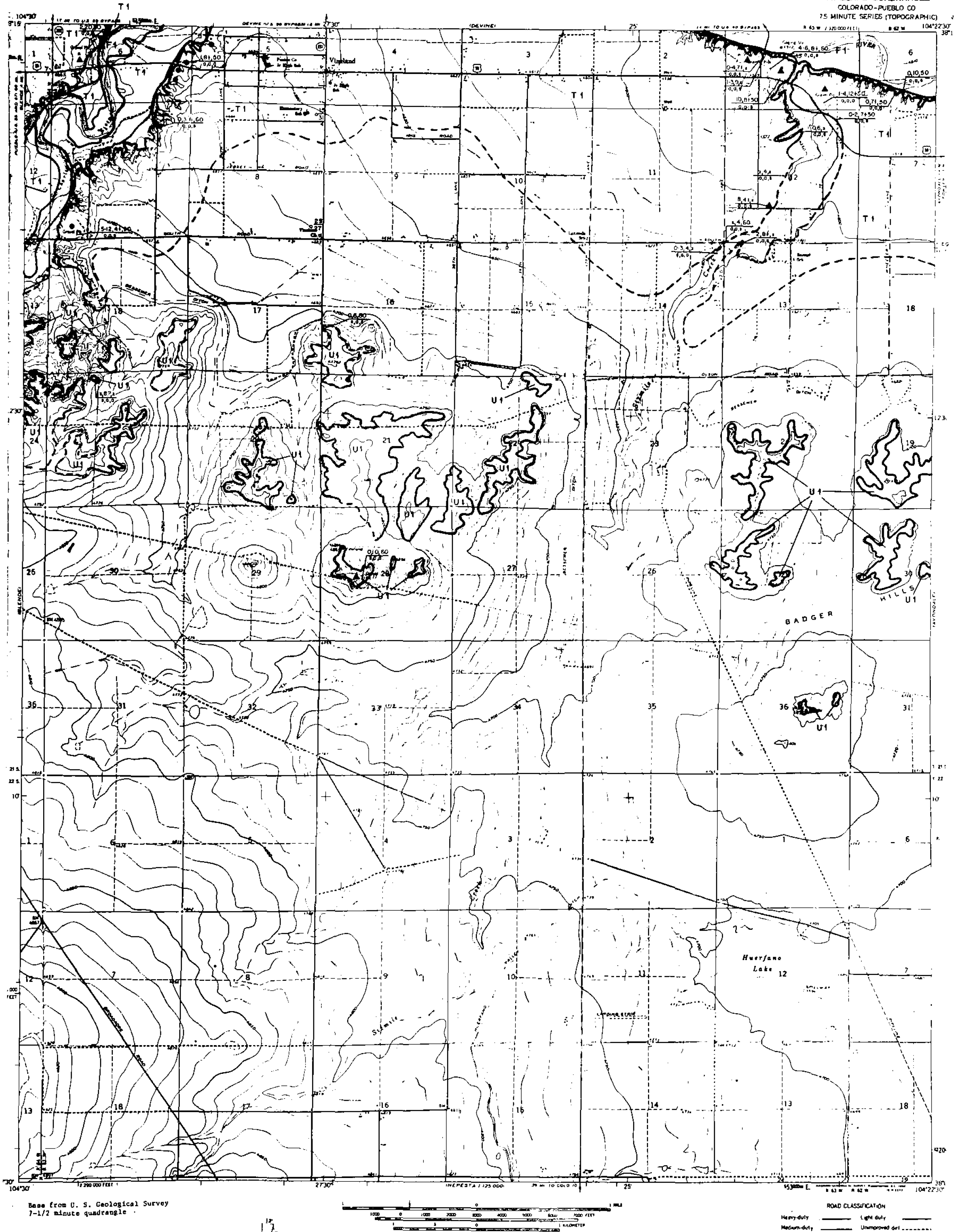
Primary highway, hard surface — Light-duty road, hard or improved surface
Secondary highway, hard surface — Unimproved road
Interstate Route — U. S. Route — State Route

VERDE SCHOOL, COLO.

SAND, GRAVEL AND QUARRY AGGREGATE RESOURCES MAP

DEPARTMENT OF NATURAL RESOURCES
COLORADO GEOLOGICAL SURVEY
JOHN W. ROLD, DIRECTOR

VINELAND QUADRANGLE
COLORADO-PUEBLO CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)



EXPLANATION

Landform unit / Resource classification

LANDFORM UNITS

- F Floodplain deposit
- T Stream terrace deposit
- V Valley fill (F & T)
- U Upland deposits
- A Alluvial fan
- E Wind-deposited sand (eolian)
- M Man-made deposits (slag, tailings, spoils, ...)

RESOURCE CLASSIFICATION

Coarse Aggregate
(at least 2/3 retained on #4 screen, visual estimation)

- 1 Gravel: relatively clean and sound
- 2 Gravel: significant fines, decomposed rock, calcium carbonate.

Fine Aggregate
(greater than 1/3 passing #4 screen, 2/3 retained on #200 screen, visual estimation)

- 3 Sand

Unevaluated Resource

- 4 Probable aggregate resource

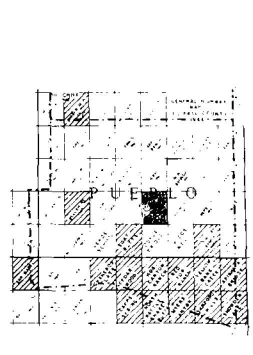
MAP SYMBOLS

- Operating gravel and/or sand pit
- Abandoned gravel and/or sand pit
- Operating stone quarry
- Abandoned stone quarry
- Potential quarry aggregate resource sites
- Selected well or drill-hole location with overburden thickness (ft) over sand/gravel resource thickness (ft), obtained from well logs.
  "g" indicates gravel; "s" indicates sand
  "x" in symbol denotes unevaluated or unknown property.
- "wx" denotes Colorado Geological Survey Windsor/Sand and Gravel projects' drill hole
- Landform boundary, solid where known or observed; dashed where approximate or inferred.

STATION, LOCATION AND GEOLOGICAL DESCRIPTION OF DEPOSIT

5, 17, 40
- overburden thickness (ft)
- sand/gravel resource thickness (ft)
- percent sand and fines (passing #4 screen, 0.25 in.), visual estimation
- significant amount of fines (passing #200 screen, 0.0029 in. or 0.074 mm.)
- significant amount of decomposed or weak rock.
- significant amount of calcium carbonate (caliche)

"x" in symbol denotes unevaluated or unknown property
"o" in symbol denotes property absent or insignificant



QUADRANGLE LOCATION

NON-RESOURCE OR WITHDRAWN AREA

Mapped by: Stephen D. Schwochow
Date: June 30, 1974

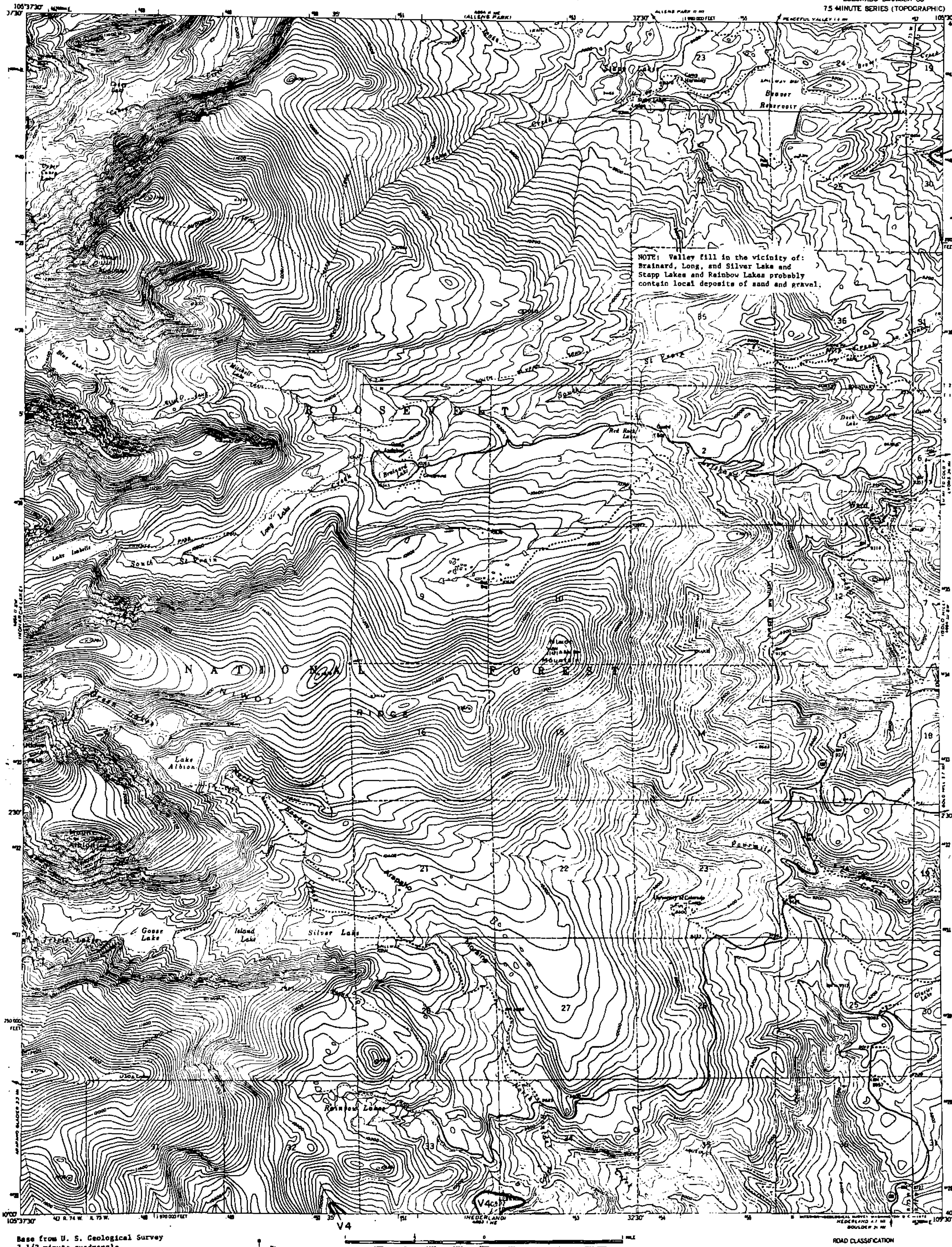
Base from U. S. Geological Survey
7-1/2 minute quadrangle

VINELAND, COLO

DEPARTMENT OF NATURAL RESOURCES
COLORADO GEOLOGICAL SURVEY
JOHN W. ROLD, DIRECTOR

SAND, GRAVEL AND QUARRY AGGREGATE RESOURCES MAP

WARD QUADRANGLE
COLORADO-BOULDER CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)



EXPLANATION

Landform unit / Resource classification

LANDFORM UNITS

- F Floodplain deposit
- T Stream terrace deposit
- V Valley fill (F & T)
- U Upland deposits
- A Alluvial fan
- E Wind-deposited sand (eolian)
- M Man-made deposits (slag, tailings, spoils....)

RESOURCE CLASSIFICATION

Coarse Aggregate
(at least 40% retained on #4 screen, visual estimation)

- 1 Gravel: relatively clean and sound
- 2 Gravel: significant fines, decomposed rock, calcium carbonate.

Fine Aggregate
(greater than 70% passing #4 screen, 40% retained on #200 screen, visual estimation)

- 3 Sand

Unevaluated Resource

- 4 Probable aggregate resource

MAP SYMBOLS

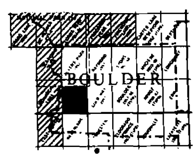
- Operating gravel and/or sand pit
- Abandoned gravel and/or sand pit
- Operating stone quarry
- Abandoned stone quarry
- Potential quarry aggregate resource area
- Selected well or drill-hole location with overburden thickness (ft) over sand/gravel resource thickness (ft), obtained from well logs.
  - "●" indicates gravel; "s" indicates sand
  - "?" in symbol denotes unevaluated or unknown property.
  - "wd" denotes Colorado Geological Survey Windsor/Sand and Gravel projects' drill hole
- Landform boundary, solid where known or observed; dashed where approximate or inferred.

STATION, LOCATION AND GEOLOGICAL DESCRIPTION OF DEPOSIT

- overburden thickness (ft)
- sand/gravel resource thickness (ft)
- percent sand and fines (passing #4 screen, 0.25 in.), visual estimation
- significant amount of fines (passing #200 screen, 0.0029 in. or 0.074 mm.)
- significant amount of decomposed or weak rock.
- significant amount of calcium carbonate (caliche)

"?" in symbol denotes unevaluated or unknown property.

"ø" in symbol denotes property absent or insignificant



QUADRANGLE LOCATION

NON-RESOURCE OR WITHDRAWN AREA

Mapped by: Ralph R. Shroba
Date: June 30, 1974

Base from U. S. Geological Survey
7-1/2 minute quadrangle

CONTOUR INTERVAL 40 FEET
DATUM IS MEAN SEA LEVEL

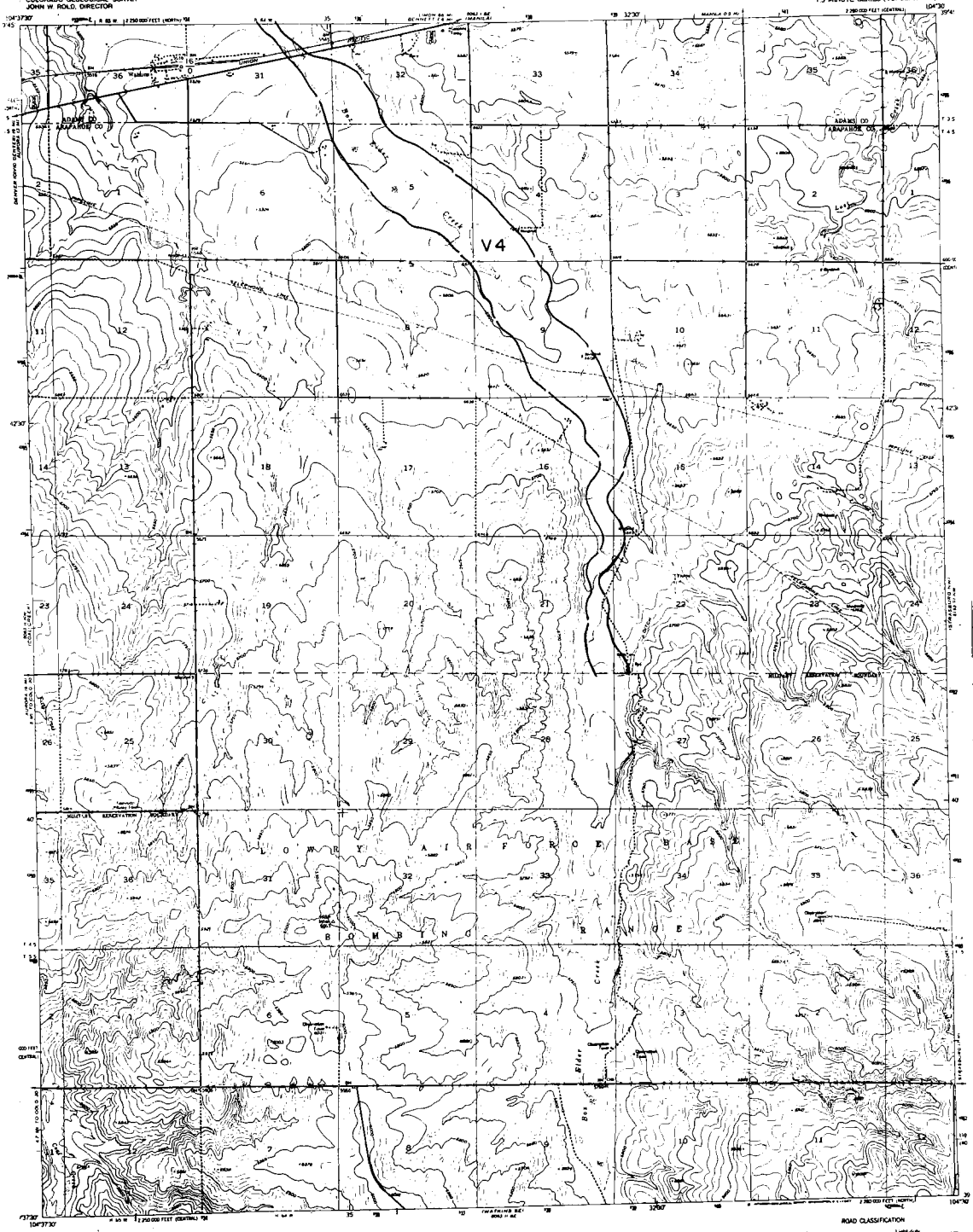
ROAD CLASSIFICATION
Light-duty ——— Unimproved dirt ....
State Route

WARD, COLO.

SAND, GRAVEL AND QUARRY AGGREGATE RESOURCES MAP

DEPARTMENT OF NATURAL RESOURCES
COLORADO GEOLOGICAL SURVEY
JOHN W. ROLD, DIRECTOR

WATKINS QUADRANGLE
COLORADO
7.5 MINUTE SERIES (TOPOGRAPHIC)



Base from U. S. Geological Survey
7-1/2 minute quadrangle

CONTOUR INTERVAL 10 FEET
(DATUM IS MEAN SEA LEVEL)

ROAD CLASSIFICATION
Heavy-duty ——— Light-duty ———
Medium-duty ——— Unimproved dirt - - - - -
U.S. Route ○ State Route

WATKINS, COLO.
N3937.5—W10430/7.5
1954

EXPLANATION

LANDFORM UNITS
- F Floodplain deposit
- T Stream terrace deposit
- V Valley fill (F & T)
- U Upland deposits
- A Alluvial fan
- E Wind-deposited sand (eolian)
- M Man-made deposits (slag, tailings, spoils....)

RESOURCE CLASSIFICATION

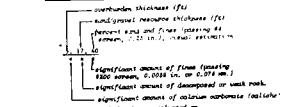
Coarse aggregate
(at least 25% retained on #4 screen, visual estimation)
- 1 Gravel: relatively clean and sound
- 2 Gravel: significant fines, decomposed rock caliche carbonate.

Fine aggregate
(greater than 75% passing #4 screen, 25% retained on #200 screen, visual estimation)
- 3 Sand

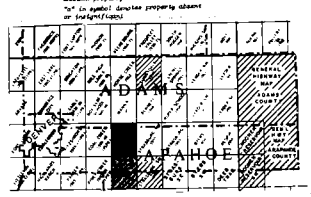
Unevaluated Resource
- 4 Probable aggregate resource

MAP SYMBOLS
- Operating gravel and/or sand pit
- Abandoned gravel and/or sand pit
- Operating stone quarry
- Abandoned stone quarry
- Potential quarry aggregate resource area
- Selected well or drill-hole location with overburden thickness (ft) over sand/gravel resource thickness (ft), obtained from well logs
  - "s" indicates gravel; "s" indicates sand
  - "-" in symbol denotes unevaluated or unknown property.
  - "ws" denotes Colorado Geological Survey Windsor/sand and Gravel projects' drill hole
- Landform boundary, solid where known or observed, dashed where approximate or inferred.

STATION, LOCATION AND GEOLOGICAL DESCRIPTION OF DEPOSIT



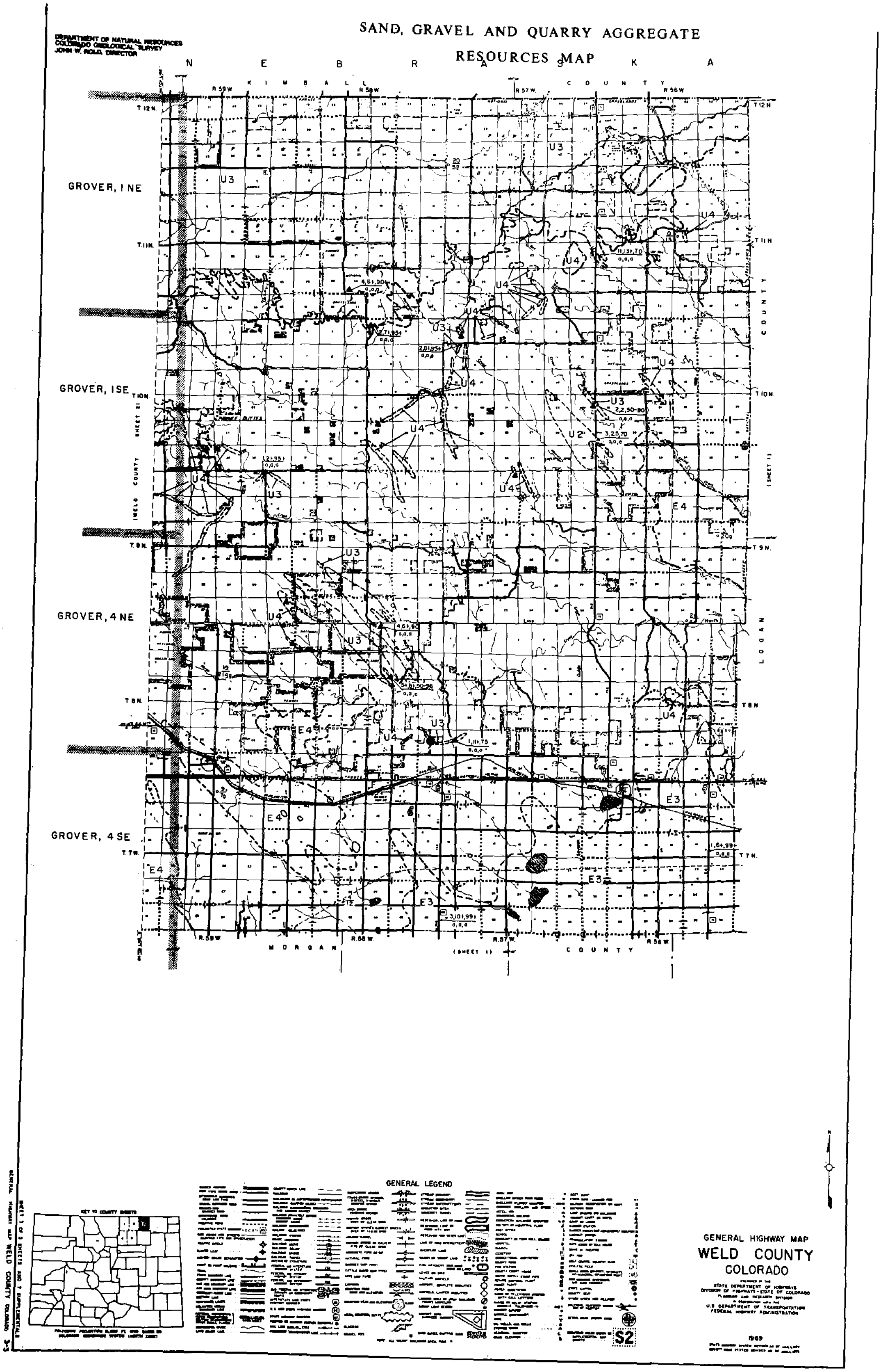
"x" in symbol denotes unevaluated or unknown property
"no" in symbol denotes property absent or insignificant



QUADRANGLE LOCATION

NON-RESOURCE OR WITHDRAWN AREA

Mapped by: Phillip C. Wicklein
Date: June 30, 1974



EXPLANATION

F1 — Landform unit; Resource classification

LANDFORM UNITS

- F — Floodplain deposit
- T — Stream terrace deposit
- V — Valley fill (F & T)
- U — Upland deposits
- A — Alluvial fan
- E — Wind-deposited sand (eolian)
- M — Man-made deposits (slag, tailings, spoils....)

RESOURCE CLASSIFICATION

Coarse Aggregate
(at least 50% retained on #4 screen, visual estimation)

- 1 — Gravel: relatively clean and sound
- 2 — Gravel: significant fines, decomposed rock, calcium carbonate.

Fine Aggregate
(greater than [illegible] passing #4 screen, [illegible] retained on #[illegible] screen, visual estimation)

- 3 — Sand

Unevaluated Resource

- 4 — Probable aggregate resource

MAP SYMBOLS

- Operating gravel and/or sand pit
- Abandoned gravel and/or sand pit
- Operating stone quarry
- Abandoned stone quarry
- Potential quarry aggregate resource area
- Selected well or drill-hole location with overburden thickness (ft) over sand/gravel resource thickness (ft), obtained from well logs.
  "g" indicates gravel; "s" indicates sand
  "?" in symbol denotes unevaluated or unknown property.
  "WS" denotes Colorado Geological Survey Windsor/Sand and Gravel projects' drill hole
- Landform boundary, solid where known or observed; dashed where approximate or inferred.

STATION, LOCATION AND GEOLOGICAL DESCRIPTION OF DEPOSIT

?, 17, 40

- Overburden thickness (ft)
- Sand/gravel resource thickness (ft)
- Percent sand and fines (passing #4 screen, 0.25 in.), visual estimation
- significant amount of fines (passing #200 screen, 0.0058 in. or 0.074 mm.)
- significant amount of decomposed or weak rock.
- significant amount of calcium carbonate (caliche)

"?" in symbol denotes unevaluated or unknown property

"0" in symbol denotes property absent or insignificant

QUADRANGLE LOCATION

NON-RESOURCE OR WITHDRAWN AREA

REFERENCE:

Weist, W. G., Jr., 1965, Reconnaissance of ground-water resources in parts of Larimer, Logan, Morgan, Sedgwick, and Weld Counties, Colo.: U. S. Geol. Survey, Water-Supply Paper 1809-L, pl.11.

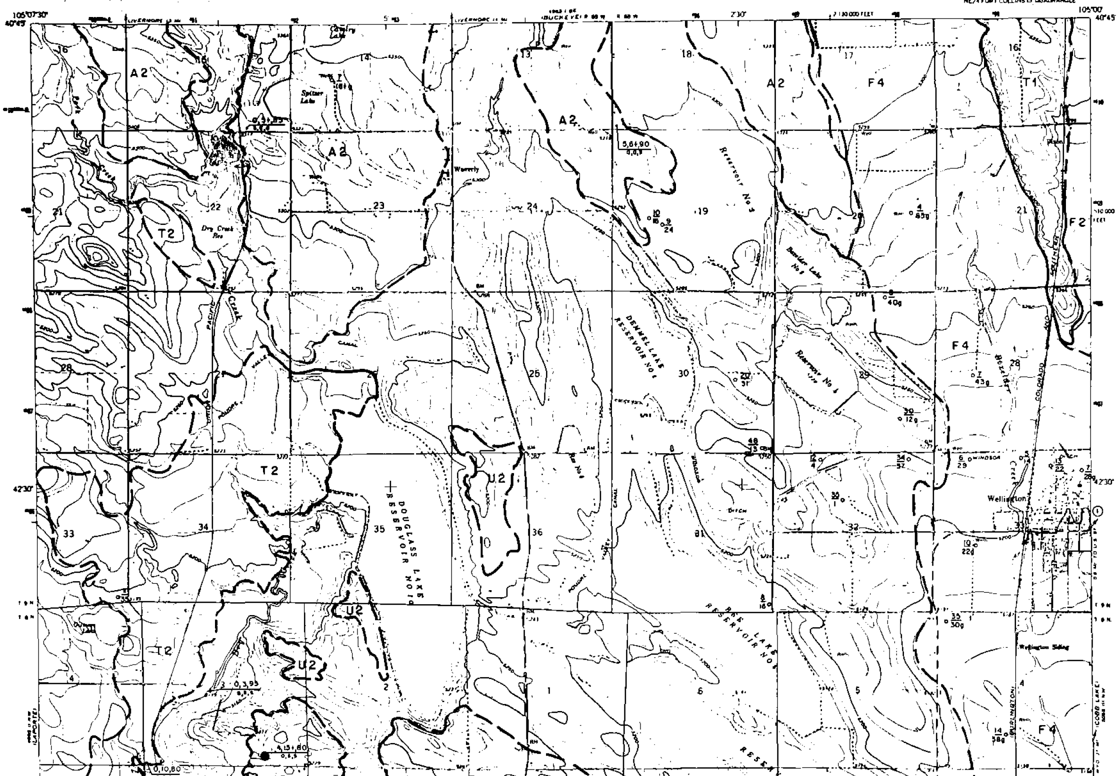
Denson, N.M., 1974, personal communication.

Mapped by: Ralph R. Shroba
Date: June 30, 1974

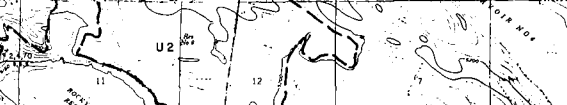
DEPARTMENT OF NATURAL RESOURCES
COLORADO GEOLOGICAL SURVEY
JOHN W. ROLD, DIRECTOR

SAND, GRAVEL AND QUARRY AGGREGATE RESOURCES MAP

WELLINGTON QUADRANGLE
COLORADO-LARIMER CO
7.5 MINUTE SERIES (TOPOGRAPHIC)
NE/4 FORT COLLINS 15 QUADRANGLE



Base from U. S. Geological Survey
7-1/2 minute quadrangle



ROAD CLASSIFICATION
Heavy duty — Light duty
Medium duty — Unimproved dirt
U.S. Route — State Route

WELLINGTON, COLO

EXPLANATION

F — Landform unit
Resource classification

LANDFORM UNITS

- F Floodplain deposit
- T Stream terrace deposit
- V Valley fill (F & T)
- U Upland deposits
- A Alluvial fan
- E Wind-deposited sand (eolian)
- M Man-made deposits (slag, tailings, spoils....)

RESOURCE CLASSIFICATION

Coarse Aggregate
(at least 25% retained on #4 screen, visual estimation)

- 1 Gravel: relatively clean and sound
- 2 Gravel: significant fines, decomposed rock, calcium carbonate.

Fine Aggregate
(greater than 75% passing #4 screen, 40% retained on #200 screen, visual estimation)

- 3 Sand

Unevaluated Resource

- 4 Probable aggregate resource

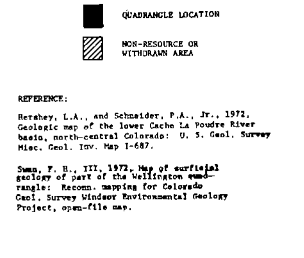
MAP SYMBOLS

- Operating gravel and/or sand pit
- Abandoned gravel and/or sand pit
- Operating stone quarry
- Abandoned stone quarry
- Potential quarry aggregate resource area
- Selected well or drill-hole location with overburden thickness (ft) over sand/gravel resource thickness (ft), obtained from well logs.
  "g" indicates gravel; "s" indicates sand
  "?" in symbol denotes unevaluated or unknown property.
  "WS" denotes Colorado Geological Survey Windsor/Sand and Gravel projects' drill hole
- Landform boundary, solid where known or observed; dashed where approximate or inferred.

STATION, LOCATION AND GEOLOGICAL DESCRIPTION OF DEPOSIT

overburden thickness (ft)
sand/gravel resource thickness (ft)
percent sand and fines (passing #4 screen, 0.25 in.), visual estimation
3, 17, 40
significant amount of fines (passing #200 screen, 0.0029 in. or 0.074 mm.)
significant amount of decomposed or weak rock.
significant amount of calcium carbonate (caliche)

"?" in symbol denotes unevaluated or unknown property
"0" in symbol denotes property absent or insignificant



QUADRANGLE LOCATION

NON-RESOURCE OR WITHDRAWN AREA

REFERENCE:

Hershey, L.A., and Schneider, P.A., Jr., 1972, Geologic map of the lower Cache La Poudre River basin, north-central Colorado: U. S. Geol. Survey Misc. Geol. Inv. Map I-687.

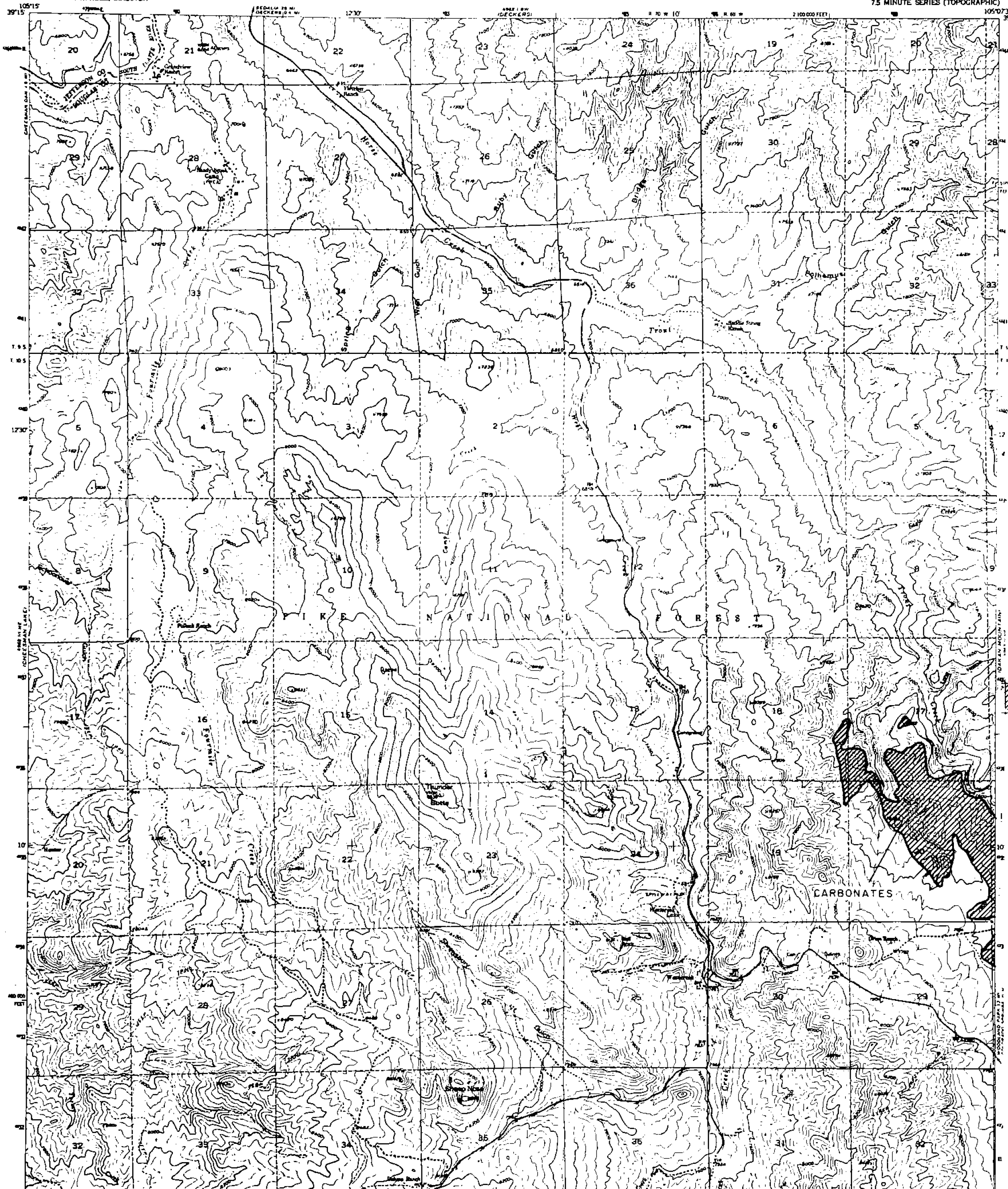
Swan, F. H., III, 1972, Map of surficial geology of part of the Wellington quadrangle: Reconn. mapping for Colorado Geol. Survey Windsor Environmental Geology Project, open-file map.

Mapped by: Stephen D. Schwochow
Date: June 30, 1974

SAND, GRAVEL AND QUARRY AGGREGATE RESOURCES MAP

DEPARTMENT OF NATURAL RESOURCES
COLORADO GEOLOGICAL SURVEY
JOHN W. ROLD, DIRECTOR

WESTCREEK QUADRANGLE
COLORADO
7.5 MINUTE SERIES (TOPOGRAPHIC)



EXPLANATION

LANDFORM UNITS

- F Floodplain deposit
- T Stream terrace deposit
- V Valley fill (F & T)
- U Upland deposits
- A Alluvial fan
- E Wind-deposited sand (eolian)
- M Man-made deposits (slag, tailings, spoils....)

Coarse Aggregate

- 1 Gravel: relatively clean and sound
- 2 Gravel: significant fines, decomposed rock, calcium carbonate.

Fine Aggregate

- 3 Sand

Unevaluated Resource

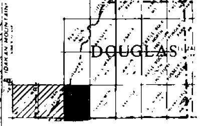
- 4 Probable aggregate resource

MAP SYMBOLS

- Operating gravel and/or sand pit
- Abandoned gravel and/or sand pit
- Operating stone quarry
- Abandoned stone quarry
- Potential quarry aggregate resource area
- Selected well or drill-hole location with overburden thickness (ft) over sand/gravel resource thickness (ft), obtained from well logs. "g" indicates gravel; "s" indicates sand. "x" in symbol denotes unevaluated or unknown property.
- Landform boundary, solid where known or observed; dashed where approximate or inferred.

STATION, LOCATION AND GEOLOGICAL DESCRIPTION OF DEPOSIT

- significant amount of decomposed or weak rock.



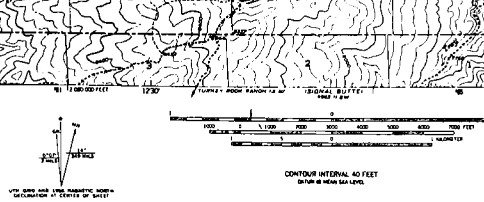
QUADRANGLE LOCATION

NON-RESOURCE OR WITHDRAWN AREA

Geology Modified after:
Harms, J.C., 1951, Structural geology of the eastern flank of the southern Front Range, Colorado: University of Colorado Ph.D. Thesis, 121 p., 3 pls.

Mapped by: Phillip C. Wicklein
Date: June 30, 1974

Base from U. S. Geological Survey
7-1/2 minute quadrangle



CONTOUR INTERVAL 40 FEET
DATUM IS MEAN SEA LEVEL

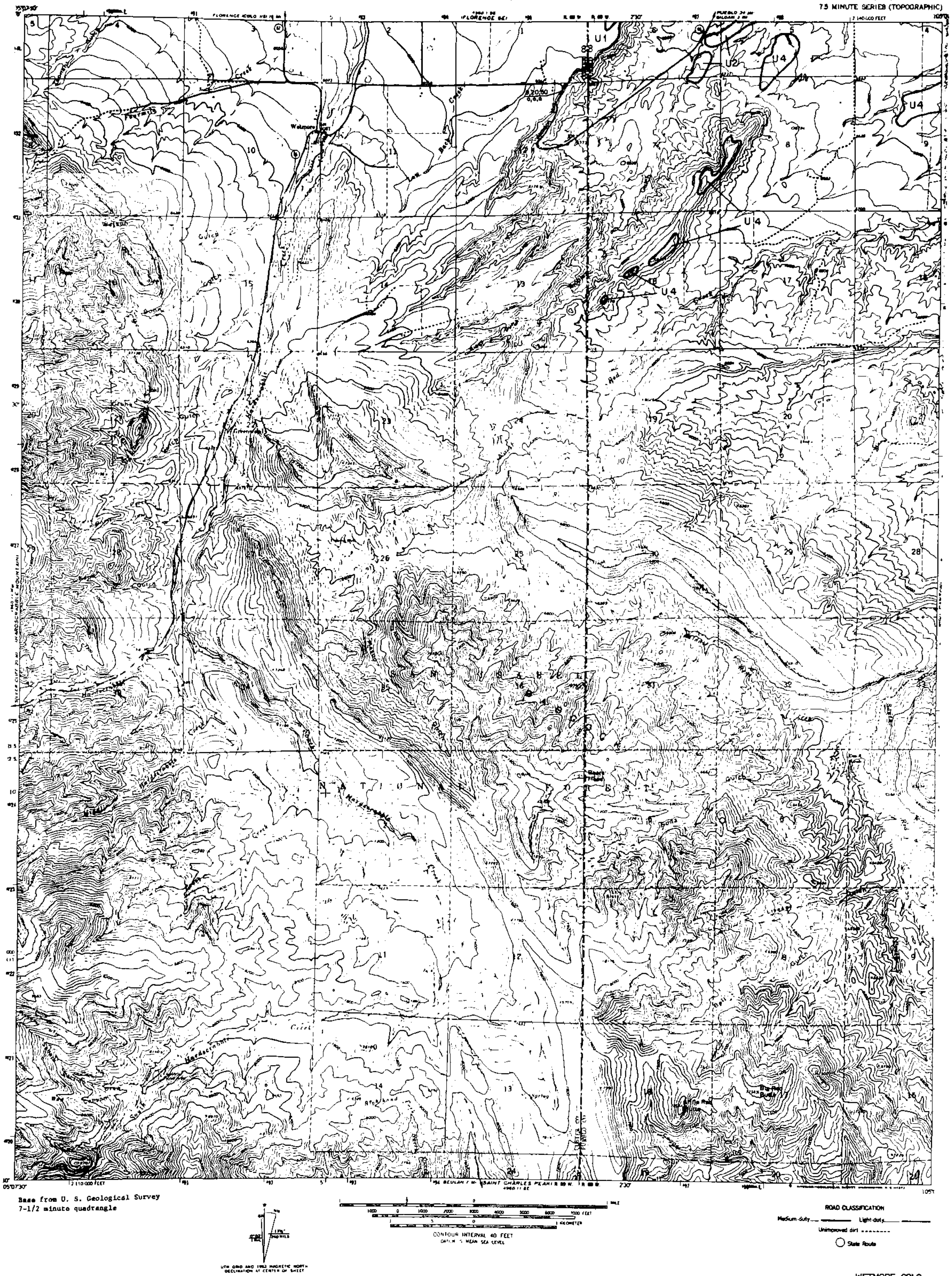
ROAD CLASSIFICATION
Medium-duty ——— Light-duty – – –
Unimproved dirt – – –

WESTCREEK, COLO.

DEPARTMENT OF NATURAL RESOURCES
COLORADO GEOLOGICAL SURVEY
JOHN W. ROLD, DIRECTOR

SAND, GRAVEL AND QUARRY AGGREGATE RESOURCES MAP

WETMORE QUADRANGLE
COLORADO
7.5 MINUTE SERIES (TOPOGRAPHIC)



Base from U. S. Geological Survey
7-1/2 minute quadrangle

CONTOUR INTERVAL 40 FEET
DATUM IS MEAN SEA LEVEL

ROAD CLASSIFICATION
Medium-duty
Light-duty
Unimproved dirt
State Route

WETMORE, COLO.

EXPLANATION

F — Landform unit / Resource classification

LANDFORM UNITS

- F Floodplain deposit
- T Stream terrace deposit
- V Valley fill (F & T)
- U Upland deposits
- A Alluvial fan
- E Wind-deposited sand (eolian)
- M Man-made deposits (slag, tailings, spoils....)

RESOURCE CLASSIFICATION

Coarse Aggregate
(at least 30% retained on #4 screen, visual estimation)

1 Gravel: relatively clean and sound
2 Gravel: significant fines, decomposed rock, calcium carbonate.

Fine Aggregate
(greater than 70% passing #4 screen, 60% retained on #200 screen, visual estimation)

3 Sand

Unevaluated Resource

4 Probable aggregate resource

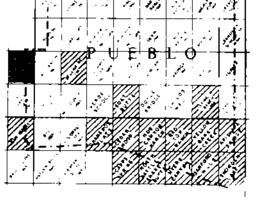
MAP SYMBOLS

- Operating gravel and/or sand pit
- Abandoned gravel and/or sand pit
- Operating stone quarry
- Abandoned stone quarry
- Potential quarry aggregate resource area
- Selected well or drill-hole location with overburden thickness (ft) over sand/gravel resource thickness (ft), obtained from well logs.
  "g" indicates gravel; "s" indicates sand
  "x" in symbol denotes unevaluated or unknown property.
  "CG" denotes Colorado Geological Survey Windsor/Sand and Gravel projects' drill hole
- Landform boundary, solid where known or observed; dashed where approximate or inferred.

STATION, LOCATION AND GEOLOGICAL DESCRIPTION OF DEPOSIT

3, 17, 40
- overburden thickness (ft)
- sand/gravel resource thickness (ft)
- percent sand and fines (passing #4 screen, 0.25 in.), visual estimation
- significant amount of fines (passing #200 screen, 0.0029 in. or 0.074 mm.)
- significant amount of decomposed or weak rock.
- significant amount of calcium carbonate (caliche)

"x" in symbol denotes unevaluated or unknown property
"o" in symbol denotes property absent or insignificant



QUADRANGLE LOCATION

NON-RESOURCE OR WITHDRAWN AREA

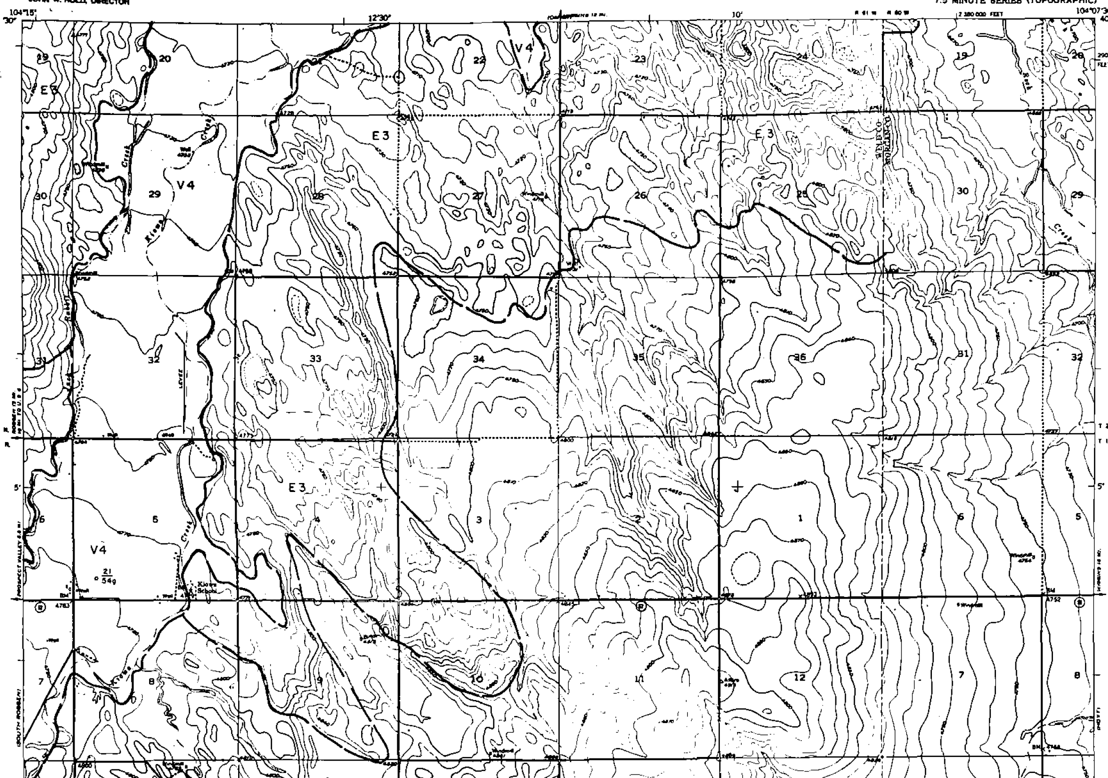
Geology modified after Taylor, R. B., and Scott, G. R., 1973, U. S. Geological Survey Map MF-548.

Mapped by: Ralph R. Shroba
Date: June 30, 1974

DEPARTMENT OF NATURAL RESOURCES
COLORADO GEOLOGICAL SURVEY
JOHN W. ROLD, DIRECTOR

SAND, GRAVEL AND QUARRY AGGREGATE RESOURCES MAP

WIGGINS SW QUADRANGLE
COLORADO
7.5 MINUTE SERIES (TOPOGRAPHIC)



Base from U. S. Geological Survey
7-1/2 minute quadrangle

APPROXIMATE MEAN DECLINATION, 1950

CONTOUR INTERVAL 10 FEET
DATUM IS MEAN SEA LEVEL

ROAD CLASSIFICATION
Heavy-duty — Light-duty
Medium-duty — Unimproved dirt
U. S. Route — State Route

WIGGINS SW, COLO.

EXPLANATION

F — Landform unit; Resource classification

LANDFORM UNITS

- F Floodplain deposit
- T Stream terrace deposit
- V Valley fill (F & T)
- U Upland deposits
- A Alluvial fan
- E Wind-deposited sand (eolian)
- M Man-made deposits (slag, tailings, spoils....)

RESOURCE CLASSIFICATION

Coarse Aggregate
(at least 50% retained on #4 screen, visual estimation)

- 1 Gravel: relatively clean and sound
- 2 Gravel: significant fines, decomposed rock, calcium carbonate.

Fine Aggregate
(greater than 50% passing #4 screen, 80% retained on #200 screen, visual estimation)

- 3 Sand

Unevaluated Resource

- 4 Probable aggregate resource

MAP SYMBOLS

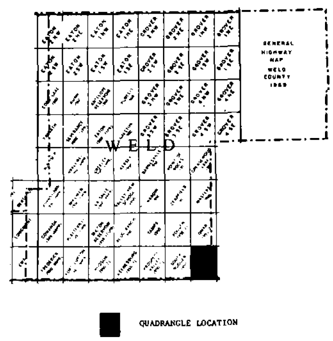
- Operating gravel and/or sand pit
- Abandoned gravel and/or sand pit
- Operating stone quarry
- Abandoned stone quarry
- Potential quarry aggregate resource area
- Selected well or drill-hole location with overburden thickness (ft) over sand/gravel resource thickness (ft), obtained from well logs.
  "g" indicates gravel; "s" indicates sand
  "x" in symbol denotes unevaluated or unknown property.
- "WS" denotes Colorado Geological Survey Windsor/Sand and Gravel projects' drill hole
- Landform boundary, solid where known or observed; dashed where approximate or inferred.

STATION, LOCATION AND GEOLOGICAL DESCRIPTION OF DEPOSIT

5, 17, 40
- overburden thickness (ft)
- sand/gravel resource thickness (ft)
- percent sand and fines (passing #4 screen, 0.75 (in.), visual estimation
- significant amount of fines (passing #200 screen, 0.0059 in. or 0.074 mm.)
- significant amount of decomposed or weak rock.
- significant amount of calcium carbonate (caliche)

"x" in symbol denotes unevaluated or unknown property

"o" in symbol denotes property absent or insignificant



QUADRANGLE LOCATION

NON-RESOURCE OR WITHDRAWN AREA

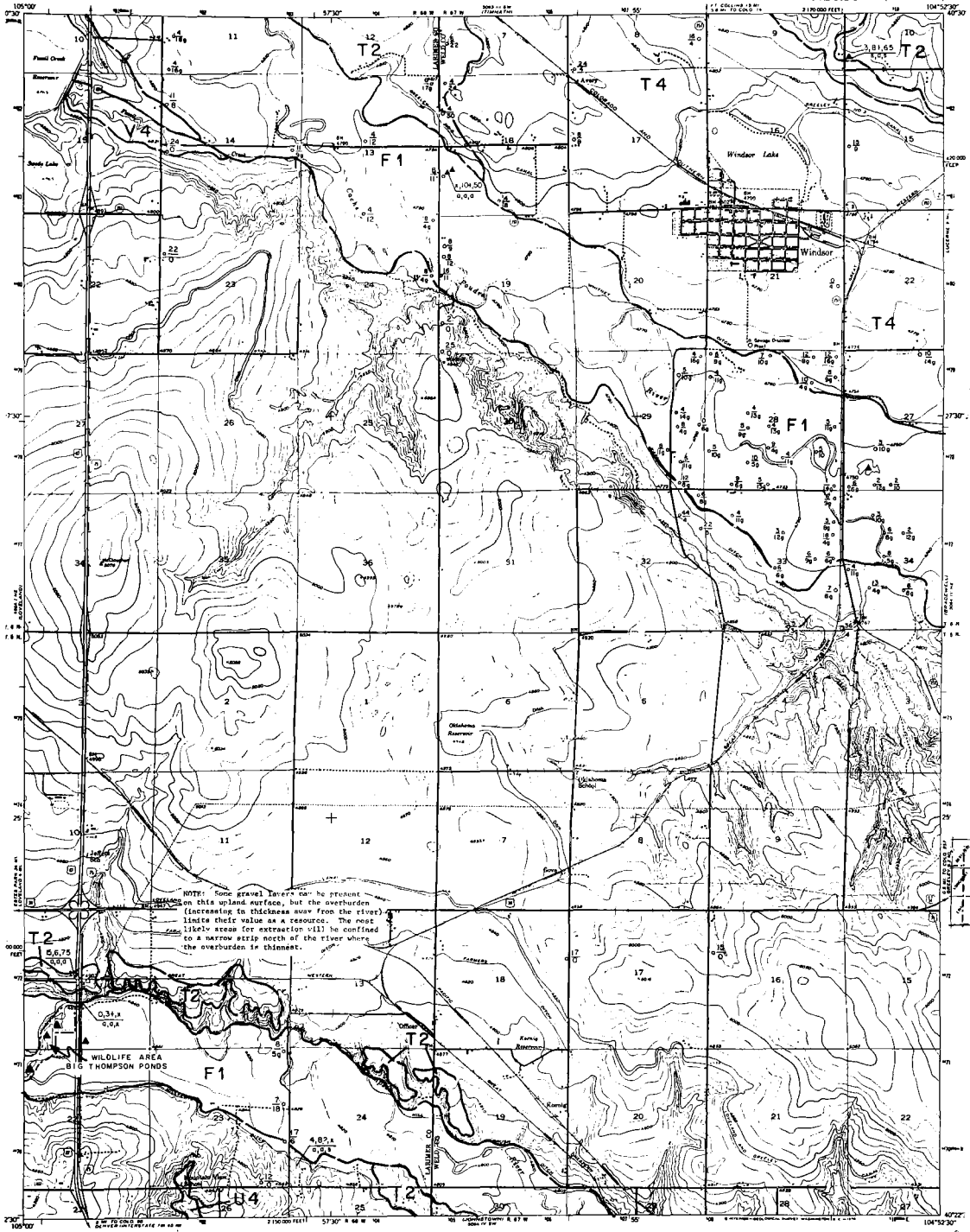
REFERENCE: Bjorklund, L.J., and Brown, R.F., 1957, Geology and ground-water resources of the lower South Platte River valley between Hardin, Colorado, and Paxton, Nebraska: U. S. Geol. Survey Water-Supply Paper 1378, pl. 1.

Mapped by: Phillip C. Wicklein
Date: June 30, 1974

SAND, GRAVEL AND QUARRY AGGREGATE RESOURCES MAP

DEPARTMENT OF NATURAL RESOURCES
COLORADO GEOLOGICAL SURVEY
JOHN W. ROLD, DIRECTOR

WINDSOR QUADRANGLE
COLORADO
7.5 MINUTE SERIES (TOPOGRAPHIC)



EXPLANATION

LANDFORM UNITS

- F Floodplain deposits
- T Stream terrace deposits
- V Valley fill (F & T)
- U Upland deposits
- A Alluvial fan
- E Wind-deposited sand (dune)
- M Man-made deposits (slag,tailings, spoils,...)

RESOURCE CLASSIFICATION

Coarse Aggregate

- 1 Gravel: relatively clean sand and gravel
- 2 Gravel: significant fines, decomposed rock, calcium carbonate

Fine Aggregate

- 3 Sand

Unconsolidated Resource

- 4 Probable aggregate resource

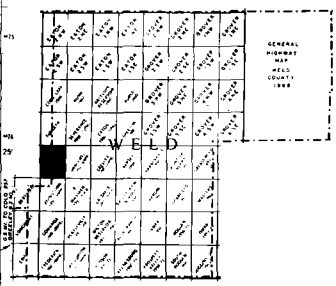
MAP SYMBOLS

- Operating gravel and/or sand pit
- Abandoned gravel and/or sand pit
- Operating stone quarry
- Abandoned stone quarry
- Potential quarry aggregate resource area
- Selected well or drill-hole location with overburden thickness (ft) over sand/gravel resource thickness (ft), obtained from well logs. "g" indicates gravel; "s" indicates sand. "-" in symbol denotes unevaluated or unknown property. "ws" denotes Colorado Geological Survey Windsor/Sand and Gravel projects' drill hole
- Landform boundary, solid where known or observed, dashed where approximate or inferred.

STATION, LOCATION AND GEOLOGICAL DESCRIPTION OF DEPOSIT

- overburden thickness (ft)
- sand/gravel resource thickness (ft)
- percent sand and fines (passing #4 screen, by wt., visual estimation)
- significant amount of fines (passing #200 sieve, 0.074 mm or 1/74 mm)
- significant amounts of decomposed or weak rock
- significant amount of calcium carbonate (caliche)

"n" in symbol denotes unanalyzed or unknown property.
"0" in symbol denotes property absent or insignificant



QUADRANGLE LOCATION

NON-RESOURCE OR WITHDRAWN AREA

REFERENCE:

Swan, F. H., III, 1972, Map of surficial geology of part of the Windsor quadrangle: Reconn. mapping for Colorado Geol. Survey Windsor Environmental Geology Project, open-file map.

Hershey, L.A., and Schneider, P.A., Jr., 1972, Geologic map of the lower Cache La Poudre River basin, north-central Colorado: U. S. Geol. Survey Misc. Geol. Inv. Map I-687.

Shelton, D.C., 1974, personal communication.

Ching, P.W., 1972, Economic gravel deposits of the lower Cache La Poudre River: Colorado State Univ. Unpub. Master Sci. Thesis.

Geology modified after: Colton, R.B., and Fitch, H.R., 1974, Map showing potential sources of gravel and crushed-rock aggregate in the Boulder-Fort Collins-Greeley Area, Front Range Urban Corridor, Colorado: U. S. Geol. Survey Map I-855 D.

Mapped by: Stephen D. Schwochow
Date: June 30, 1974

Prepared in cooperation with the U. S. Geological Survey.

Base from U. S. Geological Survey
7-1/2 minute quadrangle

CONTOUR INTERVAL 10 FEET

ROAD CLASSIFICATION

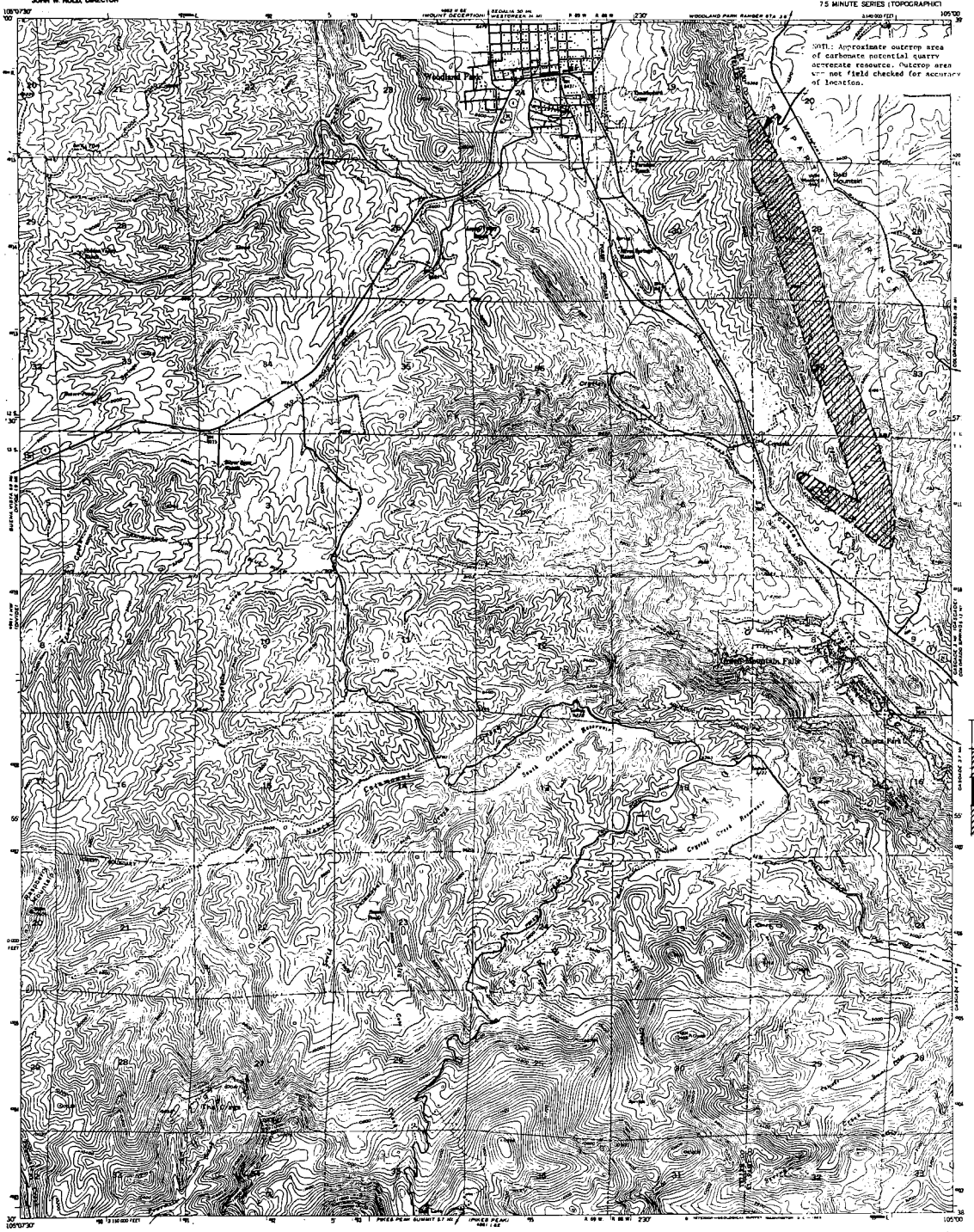
Heavy-duty — Light duty —
Medium-duty — Unimproved dirt .....
Interstate Route U.S. Route State Route

WINDSOR, COLO.

SAND, GRAVEL AND QUARRY AGGREGATE RESOURCES MAP

DEPARTMENT OF NATURAL RESOURCES
COLORADO GEOLOGICAL SURVEY
JOHN W. ROLD, DIRECTOR

WOODLAND PARK QUADRANGLE
COLORADO
7.5 MINUTE SERIES (TOPOGRAPHIC)



EXPLANATION

Landform unit

Resource classification

LANDFORM UNITS

- F Floodplain deposit
- T Stream terrace deposit
- V Valley fill (F & T)
- U Upland deposits
- A Alluvial fan
- E Wind-deposited sand (eolian)
- M Man-made deposits (slag, tailings, spoils....)

RESOURCE CLASSIFICATION

Coarse Aggregate
(at least 30% retained on #4 screen, visual estimate)(%)

- 1 Gravel: relatively clean and sound
- 2 Gravel: significant fines, decomposed rock, calcium carbonate.

Fine Aggregate
(greater than 70% passing #4 screen, 60% retained on #200 screen, visual estimation

- 3 Sand

Unevaluated Resource

- 4 Probable aggregate resource

MAP SYMBOLS

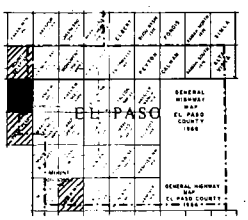
- Operating gravel and/or sand pit
- Abandoned gravel and/or sand pit
- Operating stone quarry
- Abandoned stone quarry
- Potential quarry aggregate resource area
- Selected well or drill-hole location with overburden thickness (ft) over sand/gravel resource thickness (ft), obtained from well logs. "g" indicates gravel, "s" indicates sand. "-" in symbol denotes unevaluated or unknown property.
- "m" denotes Colorado Geological Survey Windsor/Sand and Gravel projects' drill hole
- Landform boundary, solid where known or observed, dashed where approximate or inferred.

STATION, LOCATION AND GEOLOGICAL DESCRIPTION OF DEPOSIT

- overburden thickness (ft)
- sand/gravel resource thickness (ft)
- percent sand and fines (passing #4 screen; 0.19 in.), visual estimation
- significant amount of fines (passing #200 screen, 0.0058 in. or 0.074 mm.)
- significant amount of decomposed or weak rock.
- significant amount of calcium carbonate (caliche)

"m" in symbol denotes unevaluated or unknown property

"n" in symbol denotes property absent or insignificant



QUADRANGLE LOCATION

NON-RESOURCE OR WITHDRAWN AREA

REFERENCE:

Crosby, W.O., 1899, Archean-Cambrian contact near Manitou: Geol. Soc. Am. Bull., v. 10, p. 141-164. Pl. 14, 1:160,000.

Cross, W., 1894, Pikes Peak Folio, Colorado: U. S. Geol. Survey Folio no. 7.

Mapped by: Phillip C. Wicklein
Date: June 30, 1974

Base from U. S. Geological Survey
7-1/2 minute quadrangle

UTM GRID AND 1964 MAGNETIC NORTH DECLINATION AT CENTER OF SHEET

CONTOUR INTERVAL 40 FEET
DATUM IS MEAN SEA LEVEL

ROAD CLASSIFICATION

- Heavy-duty
- Medium-duty
- Light-duty
- Unimproved dirt
- U.S. Route
- State Route

WOODLAND PARK, COLO.