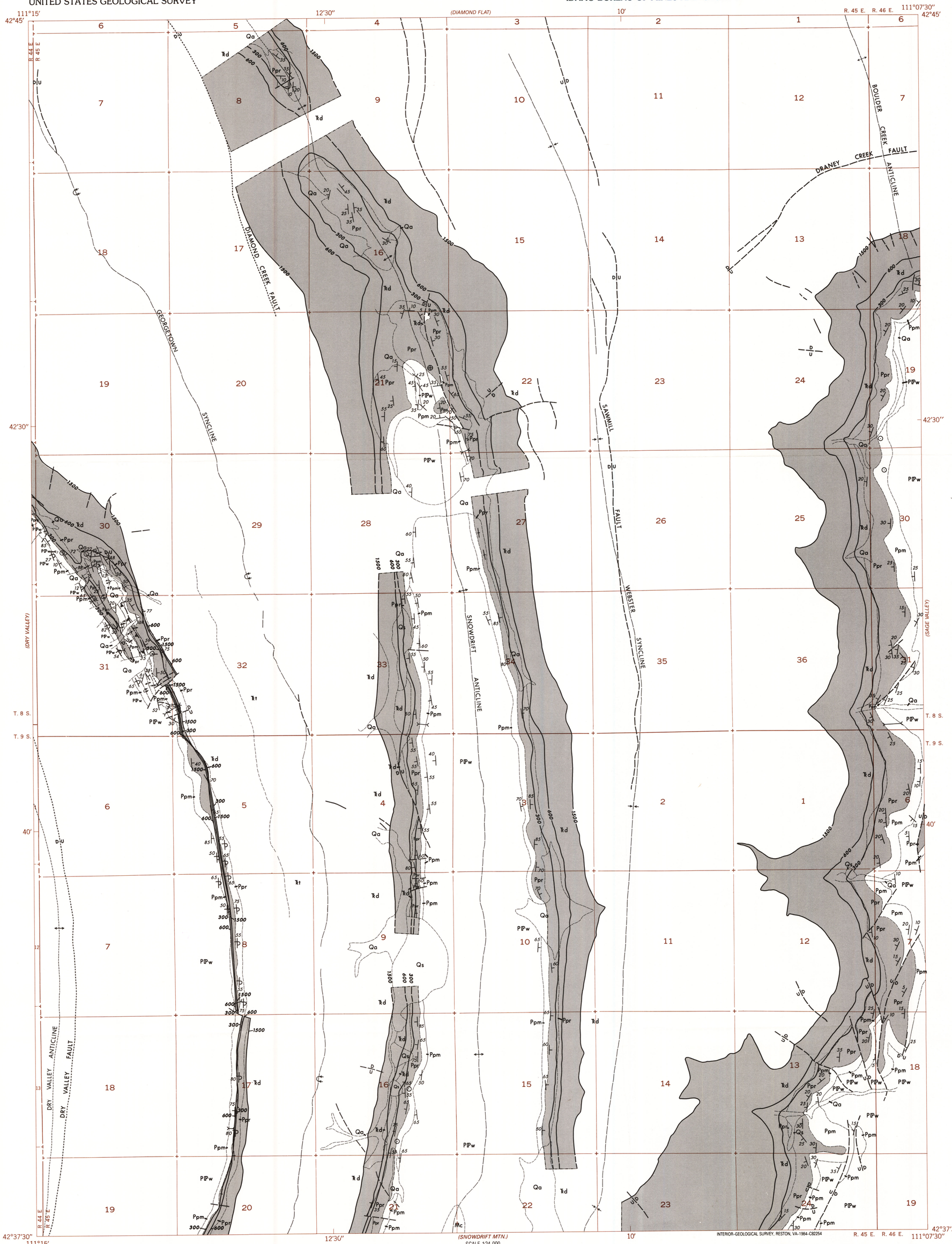
DEPARTMENT OF THE INTERIOR
UNITED STATES GEOLOGICAL SURVEY

A contribution of the
BUREAU OF LAND MANAGEMENT
Prepared in cooperation with the
IDAHO BUREAU OF MINES AND GEOLOGY

MINERAL INVESTIGATIONS
RESOURCE MAP MR–72
SHEET 2 OF 3



Base from U.S. Geological Survey, 1949

SCALE 1:24 000

15 ½°
TRUE NORTH
MAGNETIC NORTH
APPROXIMATE MEAN DECLINATION, 1984

INTERIOR-GEOLOGICAL SURVEY, RESTON, VA-1984-C82254

Geology compiled by Pamela Palmer from Montgomery and Cheney (1967) and Conda Partnership; geologic interpretation by Ken Paul and R. David Hovland; overburden isopachs by Ken Paul; drill hole and trench logs analyzed by Mahasti Fakourbayat and Nancy J. Wotruba; resource blocks by Pamela Palmer; assisted by Margie Lane and P.J. Keller; cartography by David Taylor and Gibb C. Johnson

CORRELATION OF MAP UNITS

Qa, Qs		QUATERNARY
QTs		QUATERNARY AND TERTIARY
QTb	Pleistocene or Pliocene	QUATERNARY OR TERTIARY
Tsl	Pliocene and Miocene	TERTIARY
Tw	Eocene	TERTIARY
Jt	Middle Jurassic	JURASSIC
Trt, Trd	Lower Triassic	TRIASSIC
Ppr, Ppm		PERMIAN
PIPw		PERMIAN AND PENNSYLVANIAN
Mc, Mm		MISSISSIPPIAN

DESCRIPTION OF MAP UNITS

Qa — ALLUVIUM (QUATERNARY)–Unconsolidated sedimentary deposits along stream valleys; may include colluvium in Fossil Canyon quadrangle and hillwash and alluvial fans in Dry Valley quadrangle

Qs — SURFICIAL DEPOSITS (QUATERNARY)–Includes colluvium, older alluvium, hillwash, talus, alluvial-fan, landslide, mud-flow, and boulder deposits

* QTs — SEDIMENTARY DEPOSITS (QUATERNARY AND TERTIARY) – Undivided surficial deposits and Salt Lake Formation

* QTb — BASALT (PLEISTOCENE OR PLIOCENE) – Olivine and augite-olivine basalt

* Tsl — SALT LAKE FORMATION (PLIOCENE AND MIOCENE) – Limestone, sandstone, and chert conglomerate and rhyolitic tuff

* Tw — WASATCH FORMATION (LOWER EOCENE) – Red conglomerate and sandstone

* Jt — TWIN CREEK LIMESTONE (MIDDLE JURASSIC) – Limestone, siltstone, and sandstone

Trt — THAYNES LIMESTONE (LOWER TRIASSIC)–Sandstone, limestone, siltstone, and shale. As mapped, may include the Lanes Tongue of the Ankareh Formation. Approximately 2,200 ft thick

Trd — DINWOODY FORMATION (LOWER TRIASSIC)–Siltstone, shale, and limestone. As mapped, may include tongue of the Woodside Shale. Approximately 1,650 ft thick

Ppr — PHOSPHORIA FORMATION (PERMIAN) – Includes:
Rex Chert Member (Lower Permian) – Chert. As mapped, may include cherty shale member of the Phosphoria Formation and lentils of the Franson Member of the Park City Formation. Approximately 235 to 250 ft thick

Ppm — Meade Peak Phosphatic Shale Member (Lower Permian) –Phosphorite and mudstone. Approximately 90 to 278 ft thick

PIPw — WELLS FORMATION (PERMIAN AND PENNSYLVANIAN) – Sandstone and limestone. As mapped, may include the Grandeur Tongue of the Park City Formation. Approximately 2,275 ft thick

Mc — CHESTERFIELD RANGE GROUP (UPPER AND LOWER MISSISSIPPIAN) – Limestone, sandstone, and siltstone. Approximately 800 ft. thick

* Mm — MADISON LIMESTONE (UPPER AND LOWER MISSISSIPPIAN) – Limestone

CONTACT – Dashed where approximately located, gradational, indefinite or inferred; dotted where concealed; queried where doubtful

FAULT – Dashed where approximately located or inferred; dotted where concealed; queried where doubtful. U, upthrown side; D, downthrown side; arrows show relative horizontal movement

THRUST FAULT – Sawteeth on upper plate. Dashed where approximately located or inferred; dotted where concealed; queried where doubtful

ANTICLINE – Showing crestline. Dashed where approximately located or inferred; dotted where concealed; queried where doubtful

SYNCLINE – Showing troughline. Dashed where approximately located or inferred; dotted where concealed; queried where doubtful

OVERTURNED ANTICLINE – Showing direction of dip of limbs. Dashed where approximately located or inferred; dotted where concealed; queried where doubtful

OVERTURNED SYNCLINE – Showing direction of dip of limbs. Dashed where approximately located or inferred; dotted where concealed; queried where doubtful

STRIKE AND DIP OF BEDS – Inclined; overturned; vertical; horizontal

PHOSPHATE DRILL HOLE
PHOSPHATE TRENCH
} For computing resource tonnages

* PHOSPHATE MINE PIT BOUNDARY – As of September 1979

The geology shown includes: 1) the trace of the top and bottom contacts of the Phosphoria Formation and where data are available the top and bottom contacts of the Meade Peak Phosphatic Shale Member of the Phosphoria Formation, 2) appropriate structural data required for construction of structure contours, overburden isopachs, and resource blocks, and 3) other structural data necessary for understanding the regional geologic picture.

* FAULT SEPARATION – No calculated resource
FAULT OVERLAP – Twice calculated resources if covered by 1500 ft. or less of overburden

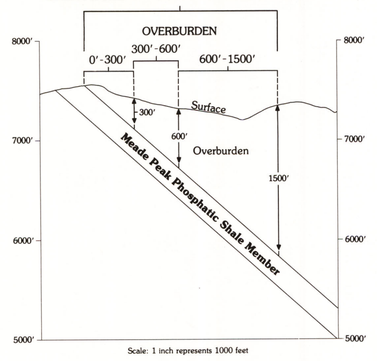
600 — OVERBURDEN ISOPACHS–On top of the Meade Peak Phosphatic Shale Member of the Phosphoria Formation. Only 300-, 600-, 1500-feet isopachs are shown. Dashed where isopachs are projected past control points or where structure is uncertain

RESOURCE BLOCK END BOUNDARY

IDENTIFIED PHOSPHATE RESOURCES–Excluding outcrop or projected outcrop of the Meade Peak Phosphatic Shale Member

* Map units and symbols shown with an asterisk are not on this map.

IDENTIFIED PHOSPHATE RESOURCES

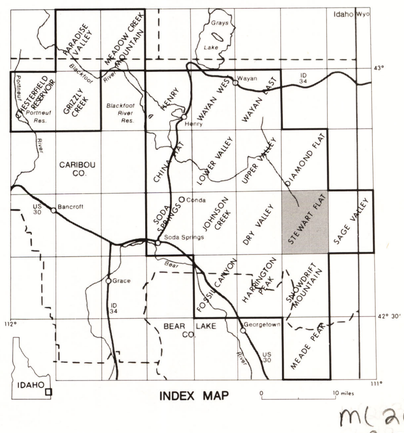


Scale: 1 inch represents 1000 feet

RESOURCES FOR STEWART FLAT QUADRANGLE

Overburden	0′-300′	300′-600′	600′-1500′	TOTAL
Million Short Tons	504	395	1,060	1,960

Resources calculated to three significant figures for phosphate rock containing ≥ 16% P_2O_5



IDENTIFIED PHOSPHATE RESOURCES

MAPS SHOWING SELECTED GEOLOGY AND PHOSPHATE RESOURCES OF THE STEWART FLAT QUADRANGLE, CARIBOU COUNTY, IDAHO

By

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1984