



CORRELATION OF MAP UNITS

| | | |
|-----|-------------------|-----------------------------|
| Qa | Qs | } QUATERNARY |
| QTs | | |
| QTb | } Pleistocene | } QUATERNARY OR TERTIARY |
| Tsl | | |
| Tw | } Eocene | } TERTIARY |
| Jt | } Middle Jurassic | } JURASSIC |
| Tt | } Lower Triassic | } TRIASSIC |
| Td | | |
| Ppr | | } PERMIAN |
| Ppm | | |
| PPw | | } 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 PIOCENE)—Olivine and augite-olivine basalt.
 - Tsl** SALT LAKE FORMATION (PLIOCENE AND MIOCENE)—Limestone, sandstone, and chert conglomerate and rhyolitic tuff. Approximately 1,000 ft thick.
 - Tw** WASATCH FORMATION (LOWER EOCENE)—Red conglomerate and sandstone.
 - Jt** TWIN CREEK LIMESTONE (MIDDLE JURASSIC)—Limestone, siltstone, and sandstone.
 - Tt** THAYNES LIMESTONE (LOWER TRIASSIC)—Sandstone, limestone, siltstone, and shale. As mapped, may include the Lanes Tongue of the Ankaeh Formation. Approximately 1,700 ft thick.
 - Td** DINWOODY FORMATION (LOWER TRIASSIC)—Siltstone, shale, and limestone. As mapped, may include tongue of the Woodside Shale. Approximately 1,400 to 1,800 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 240 to 300 ft thick.
 - Ppm** Meade Peak Phosphatic Shale Member (Lower Permian)—Phosphorite and mudstone. Approximately 150 to 200 ft thick.
 - PPw** WELLS FORMATION (PERMIAN AND PENNSYLVANIAN)—Sandstone and limestone. As mapped, may include the Grandeur Tongue of the Park City Formation. Approximately 1,500 to 2,000 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—Sawtooth 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—For computing resource tonnages.
- PHOSPHATE TRENCH—
- PHOSPHATE MINE PIT BOUNDARY—As of September 1979.

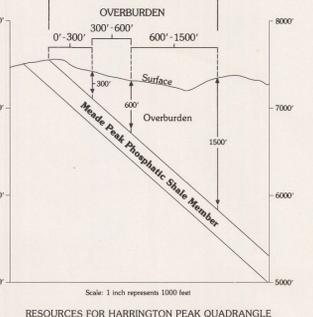
- FAULT SEPARATION—No calculated resource.
- FAULT OVERLAP—Twice calculated resources if covered by 1500 ft. or less of overburden.
- OVERBURDEN ISOPACHS—On top of the Meade Peak Phosphatic Shale Member of the Phosphoria Formation. Only 300-, 600-, and 1500-foot isopachs are shown. Dashed where isopachs 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.

Note—Phosphate resources were not calculated for small blocks in the SE 1/4 sec. 1, T. 10 S., R. 44 E.

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

Geology compiled by Pamela Palmer from Cressman (1964, pl. 3), Oberlander and others (written commun., 1981), and Pamela Palmer (unpublished data, 1981); geologic interpretation by Bea Johnston and R. David Hovland; overburden isopachs by Bea Johnston; pit boundaries by Pamela Dunlap Derkey; resource blocks by Pamela Palmer, assisted by Marge Lane and Mahasi Fakourbayat; cartography by David Taylor and Glib C. Johnson.

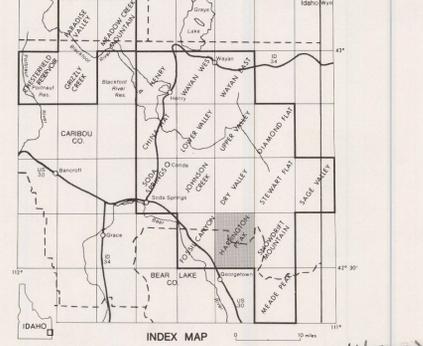
IDENTIFIED PHOSPHATE RESOURCES



RESOURCES FOR HARRINGTON PEAK QUADRANGLE

| Overburden | 0'-300' | 300'-600' | 600'-1500' | TOTAL |
|--------------------|---------|-----------|------------|-------|
| Million Short Tons | 265 | 73.7 | 147 | 486 |

Resources calculated to three significant figures for phosphate rock containing $\geq 16\%$ P₂O₅.



IDENTIFIED PHOSPHATE RESOURCES
MAPS SHOWING SELECTED GEOLOGY AND PHOSPHATE RESOURCES OF THE HARRINGTON PEAK QUADRANGLE, BEAR LAKE AND CARIBOU COUNTIES, IDAHO

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