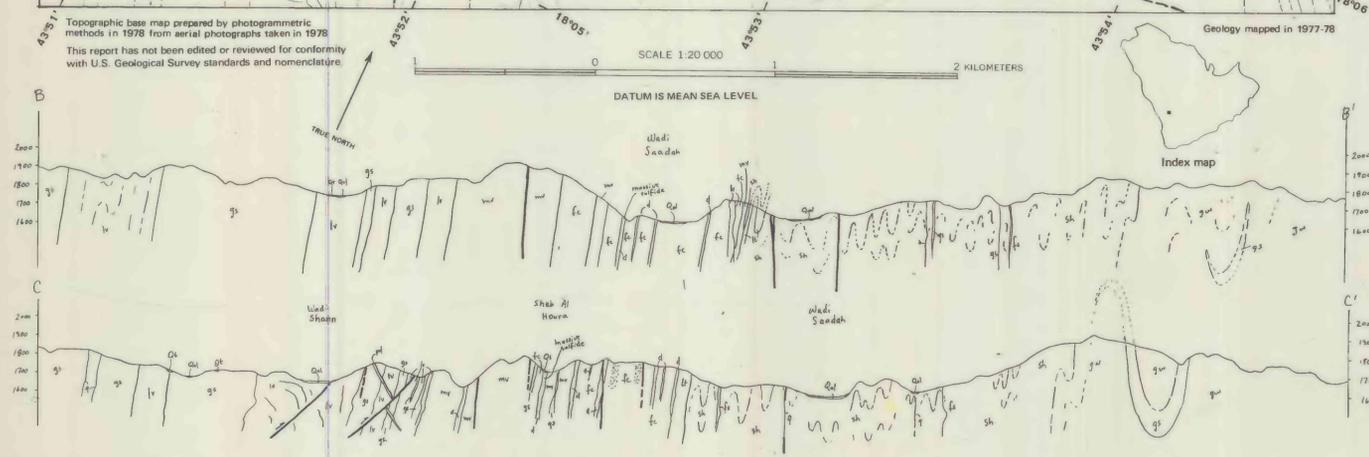


- DESCRIPTION OF MAP UNITS**
- Qal** ALLUVIUM (QUATERNARY)--Sand and gravel, mostly in drainages
 - Qt** TALUS (QUATERNARY)--Slope debris
 - Oew** WAJID SANDSTONE (ORDOVICIAN--CAMBRIAN)--Light-gray to red-brown, generally coarse-grained, moderately well sorted quartz arenite
 - q** QUARTZ VEINS (PROTEROZOIC)--White, massive quartz mostly in fault zones. Veins are a few centimeters to a few meters thick
 - b** BASALT DIKES (PROTEROZOIC)--Unfoliated dark-gray to brown aphanitic to aphanitic porphyritic intrusive basalt and rare gabbro. Basalt contains plagioclase phenocrysts and sparse small calcite amygdules. Dikes are 1-6 meters wide and commonly weather in negative relief
 - pd** PORPHYRITIC DIORITE DIKES (PROTEROZOIC)--Unfoliated medium- to coarse-grained diorite with seriate porphyritic texture. Phenocrysts are plagioclase. Dikes are 1-15 meters thick
 - m** MAFIC DIKES (PROTEROZOIC)--Undifferentiated porphyritic to aphyric mafic dikes. Trends are similar to those for porphyritic diorite dikes but lithologies are more akin to basalt dikes
 - gb** GABBRO (PROTEROZOIC)--Unfoliated dark-gray, medium-grained, sub-ophitic gabbro
 - gm** QUARTZ MONZONITE AND GRANODIORITE (PROTEROZOIC)--Unfoliated light-gray to pink, medium-grained biotite-hornblende quartz monzonite to granodiorite
 - fs** FELSIC SILLS (PROTEROZOIC)--Unfoliated tan to pink granitic aplite, rhyodacitic porphyry, and minor hypidimorphic-granular rocks possibly related to the plutons. Sills are concordant to semi-concordant and usually 0.5-2 meters thick
- The following units are foliated, folded, and metamorphosed in the greenschist facies.
- gs** GABBRO SILLS (PROTEROZOIC)--Dark-greenish-brown, hypidimorphic-granular to sub-ophitic, fine- to rarely coarse grained gabbro. Generally concordant sills are a few meters to several hundred meters thick. Foliated felsic sills (f) are present within a few large sills
 - lv** LAPILLI TUFF AND VOLCANIC BRECCIA (PROTEROZOIC)--Lapilli tuff, subordinate tuff and volcanic breccia, and minor shale, volcanic sandstone and conglomerate. Lapilli tuff is medium to dark blue gray and weathers light gray to brown. Generally contains light-colored, 0.5-3 centimeter, pumice platelets and quartz and plagioclase phenocrysts. Dark-gray voids of marble are present locally in western parts. Tuff is similar but finer grained and has inconspicuous or absent pumice platelets. Volcanic clasts in grit to pebble volcanic breccia are only slightly flattened. These volcanic materials are approximately rhyodacitic in composition. There are gradations between these types and from them into the minor interbedded sedimentary rocks. Shale and tuffaceous shale constitute thick beds (as much as 50 meters) locally
 - mv** MAFIC VOLCANIC ROCKS (PROTEROZOIC)--Medium- to dark-green pillow flows and chaotic mafic detritus of cobble to sand size material. Minor mafic volcanic sandstone and green to tan shale. Locally complexly intermixed with felsic crystal tuff (stippled)
 - d** DOLOMITE (PROTEROZOIC)--Tan to rusty-brown limy, impure dolomite. Shaly to tuffaceous and commonly gradational into felsic crystal tuff and mafic volcanic detritus
 - fc** FELSIC CRYSTAL TUFF (PROTEROZOIC)--Light- to dark-green or gray-green inconspicuously bedded quartz-plagioclase crystal tuff. Homogeneous in hand specimen and commonly at outcrop scale. Aphanitic matrix. Interbeds of dolomite, shale, and mafic volcanic rocks. Locally complexly intermixed with mafic volcanic detritus (stippled)
 - lt** LAPILLI-CRYSTAL TUFF (PROTEROZOIC)--Gray to brown, light-dirty-brown weathering lapilli-crystal tuff and minor shale, tuff and volcanic breccia. Lapilli-crystal tuff contains light-colored, 0.5-2 centimeter, pumice platelets, plagioclase and quartz phenocrysts and minor lithic clasts
 - sh** SHALE (PROTEROZOIC)--Light brown, gray, or green aluminous shale and subordinate dark gray to green siliceous shale (tuff?) and minor carbonaceous shale, lithic graywacke, and tuffaceous graywacke. Rock types are intergradational. Brown limestone lenses (0.5-4 meters in length) common, particularly in eastern exposures. Wacke interbeds (w)
 - gw** GRAYWACKE (PROTEROZOIC)--Brown, fine-grained sand to pebble graywacke and subordinate aluminous and siliceous shale. Graywacke is poorly sorted and is gradationally interbedded with shale. Carbonaceous shale and graywacke present in southern exposures



- 60** CONTACT--Dashed where position uncertain, short dashed where inferred. Attitude shows direction and amount dip
- 82** FAULT--Dashed where position uncertain, short dashed where inferred. Attitude shows direction and amount of dip
- *** SYNFORM--Dashed where position uncertain, short dashed where inferred
- ↑** TRENDS OF BEDDING OR STRUCTURES FROM AERIAL PHOTOGRAPHS OR DETAILED MAPPING--Dashed where position uncertain
- Y** MINE PORTAL
- o** WELL
- DRY WELL
- ▭** CULTIVATED LAND
- ▭** PERMANENT DWELLING OR OTHER BUILDING
- road** DIRT ROAD OR INFREQUENTLY USED VEHICLE TRAIL

GEOLOGIC MAP OF THE AL MASANE ANCIENT MINE AREA, SOUTHEASTERN ARABIAN SHIELD, KINGDOM OF SAUDI ARABIA
 by
 Clay M. Conway
 1985