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PRINTED: 01/17/2003

ARIZONA DEPARTMENT OF MINES AND MINERAL RESOURCES AZMILS DATA

PRIMARY NAME: CROSS HILL

ALTERNATE NAMES:
MINERAL LEASE NO. 23880 C
PANTANO CLAY PIT
PHOENIX BRICK CLAY PIT

PIMA COUNTY MILS NUMBER: 454

LOCATION: TOWNSHIP 16 S RANGE 17 E SECTION 35 QUARTER NW
LATITUDE: N 32DEG 00MIN 16SEC LONGITUDE: W 110DEG 34MIN 54SEC
TOPO MAP NAME: RINCON PEAK - 7.5 MIN

CURRENT STATUS: PAST PRODUCER

COMMODITY:
CLAY STRUCTURAL
GYPSUM SELENITE SPC

BIBLIOGRAPHY:
ADMMR CROSS HILL FILE
MOHON,JOHN,1979,CERAMIC MATERIALS IN SOUTHERN ARIZONA, P.6, (GEOLOGY FILE)
JANDERS, CAVID J.,1978, COMPARATIVE SEDIMENTOLOGY, STARTIGRAPHY, AND ECONOMIC POTENTIAL OF TWO TERTIARY LACUSTRINE DPSTS IN ARIZ.,AZ ST UNIV. MASTER THESIS, (ADMMR GEOLOGY FILE)

09/25/92

ARIZONA DEPARTMENT OF MINES AND MINERAL RESOURCES FILE DATA

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BIBLIOGRAPHY:
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US MSHA METAL-NONMETAL MINE INFO. SUPP.
ADMMR CROSS HILL FILE
MOHON,JOHN,1979,CERAMIC MATERIALS IN SOUTHERN ARIZONA, P.6, (GEOLOGY FILE)

11/26/86

ARIZONA DEPARTMENT OF MINES AND MINERAL RESOURCES FILE DATA

PRIMARY NAME: CROSS HILL

ALTERNATE NAMES:
MINERAL LEASE NO. 23880 C
PANTANO CLAY PIT

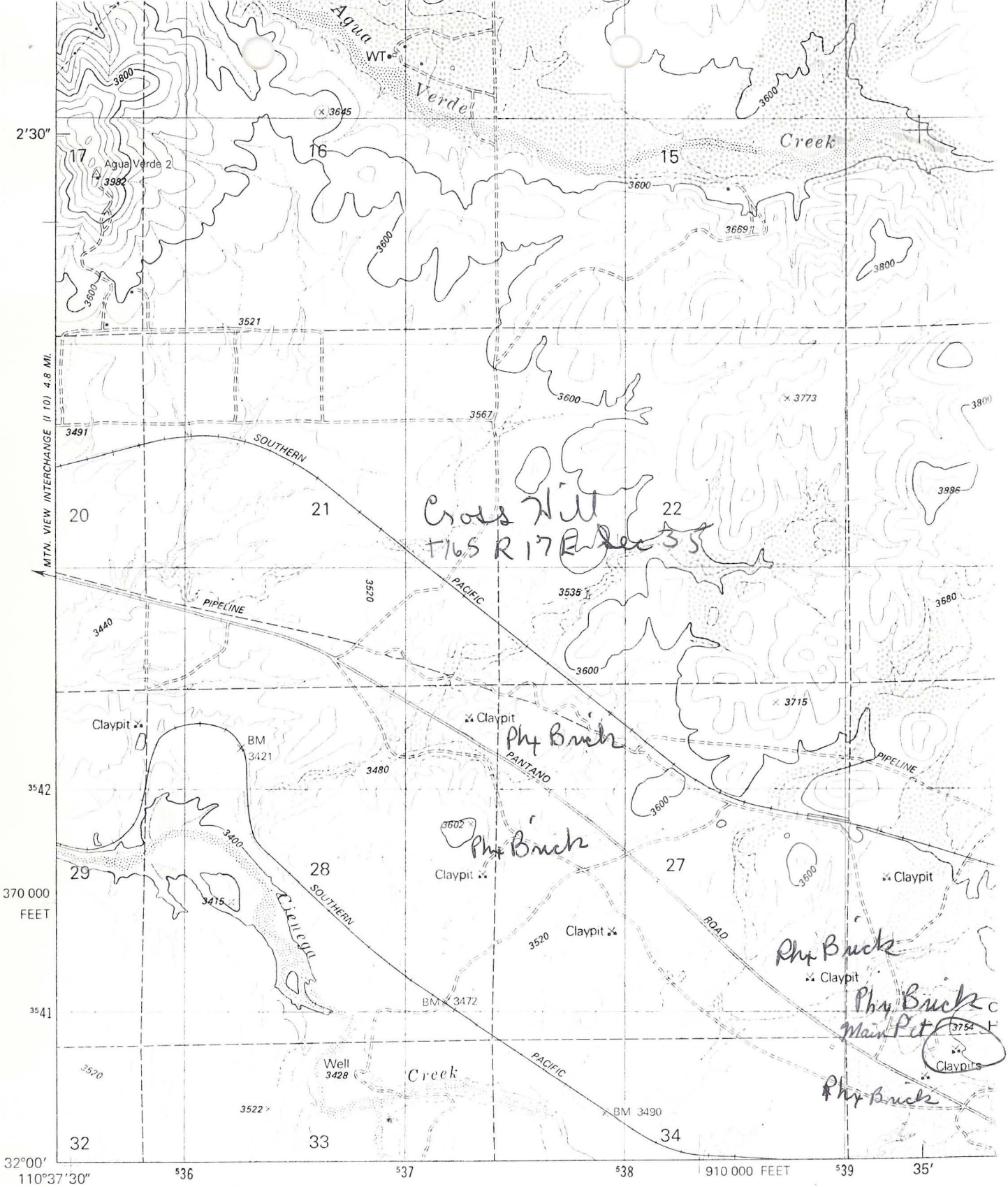
PIMA COUNTY MILS NUMBER: 454

LOCATION: TOWNSHIP 16 S RANGE 17 E SECTION 35 QUARTER NW
LATITUDE: N 32DEG 07MIN SEC LONGITUDE: W 110DEG 30MIN SEC
TOPO MAP NAME: RINCON PEAK 7.5

CURRENT STATUS: ACTIVE

COMMODITY:
CLAY STRUCTURAL

BIBLIOGRAPHY:
US MSHA METAL-NONMETAL MINE FILE REF. 1976
US MSHA METAL-NONMETAL MINE INFO. SUPP.
ADMMR CROSS HILL FILE



(MOUNT FAGAN) 3847 I NW

Mapped, edited, and published by the Geological Survey

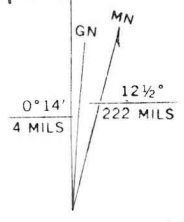
Control by USGS and NOS/NOAA

Topography by photogrammetric methods from aerial photographs taken 1975. Field checked 1976
Map edited 1981

Projection and 10,000-foot grid ticks: Arizona coordinate system, central zone (transverse Mercator)
1000-meter Universal Transverse Mercator grid, zone 12
1927 North American Datum
To place on the predicted North American Datum 1983 move the projection lines 7 meters south and 61 meters east as shown by dashed corner ticks

Where omitted, land lines have not been established

Rincon Peak 7.5



UTM GRID AND 1981 MAGNETIC NORTH DECLINATION AT CENTER OF SHEET

ABSTRACTED FROM ADMMR ACTIVE MINES DIRECTORY, 1992 Cross Hill file Pima

CLINTON - CAMPBELL CONTRACTING INC.

Phoenix Brick Yard
1814 S. 7th Ave., Phoenix, AZ 85007 - Phone 258-7158 - Employees: 96.
President Frederic Campbell
Plant Superintendent Don Campbell
Tolleson Mine T1N R1E Sec. 3
Clay pit located on 84th Avenue north of Van Buren - Used in manufacture of structural clay products.
Pantano Clay Pits T16S R17E Secs. 21, 26, 27, 28, 35
Clay pits located 25 miles southeast of Tucson (North of Interstate 10 - 2 miles northwest of the Pantano Interchange) - Clay used in the manufacture of structural clay products.

ABSTRACTED FROM ADMMR ACTIVE MINES DIRECTORY, 1990

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Phoenix Brick Yard

1814 S. 7th Ave., Phoenix, AZ 85007 - Phone 258-7158 - Employees: 96.
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Plant Superintendent ..... Don Campbell
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ABSTRACTED FROM ADMMR ACTIVE MINES DIRECTORY, 1989

CLINTON - CAMBELL CONTRACTING INC.
Phoenix Brick Yard

1814 S. 7th Ave., Phoenix 85007 - Phone 258-7158 - Employees 100.

President ..... Frederic Campbell
Plant Superintendent ..... Don Campbell

Pantano Clay Pits T16S R17E Secs. 21,26, 27,28 & 35

Clay pits located 25 miles southeast of Tucson (North of Interstate 10 - 2 miles northwest of the Pantano Interchange) - Clay used in the manufacture of structural clay products.

ABSTRACTED FROM ADMMR ACTIVE MINES DIRECTORY, 1988

CLINTON - CAMBELL CONTRACTING INC.
Phoenix Brick Yard

1814 S. 7th Ave., Phoenix 85007 - Phone 258-7158 - Employees 100.

President ..... Frederic Campbell
Plant Superintendent ..... Don Campbell

Tolleson Mine T1N R3E Sec. 18

Clay pit located on 84th Avenue north of Van Buren - Used in manufacture of clay products.

Pantano Clay Pits T16S R17E Secs. 21,26, 27,28 & 35

Clay pits located 25 miles southeast of Tucson (North of Interstate 10, 2 miles northwest of the Pantano Interchange) - Clay used in the manufacture of structural clay products.

Samples here described from the mine listed below are are contained in the AzDMMR collection of reference samples.

Date Taken: 04/04/92
Date Logged: 09/30/93
Sample Number: 04/04/92-016

MINE: Cross Hill (file)
COUNTY: Pima
LOCATION: Pima AzMILS 454; Clinton-Campbell, dba Phoenix Brick Company's Pantano Wash clay deposit.
DESCRIPTION: Hand selected selenite from gypsum seams in clay deposit.
MATERIAL: Selenite (Satin Spar)
COMMENTS: A lot of samples were collected for Arizona Department of Mines and Mineral Resources teachers' kits.

CROSS HILL PIMA COUNTY

MG 11/86: Current operator of Cross Hill is the Phoenix Brick Co.

NJN WR 12/29/87: Wes Pierce reported during a review of industrial minerals of Arizona at the annual SME metting that an Oligocene shale is the most important brick clay in the State. This deposit supplies the material produced from the Pantano Wash Clay (Cross Hill - file) Pima County.

FAX - AZ. DEPT OF MINES
AND MINERAL RESOURCES
KEN PHILLIPS 3 PAGES 255-3777

FROM - DTE - GSA RESOURCES

Most cement plants have been faced with the problem of cleaning up airborne particulate emissions. This has been done by covering stockpiles and utilizing dust collection equipment. Nevertheless, many cement quarries and plants would be faced with a serious problem in meeting airborne particulate standards if a single fiber standard is promulgated by OSHA.

Clay

Clay used in structural applications is produced from two widely separated localities in Arizona. The high alumina clays from the Pantano deposit southeast of Tucson are used for making bricks and also as a source of alumina in cement production at the Rillito plant. The kaolinitic clay mined at a deposit near Pinedale is blended with aluminous shales and other mineral additives in the fabrication of vitrified pipe. Geologically, these clays are classified as clastic sedimentary rocks. Though structural clays do not appear in the end use classification, kaolinitic clays used in refractory and ceramic applications are categorized as ball clays which are chemical minerals. Certainly, all of these clays are in fact ceramic raw materials and should be classified as chemical minerals.

Cross Hill (Pima) →

The clays being mined near Pantano occur near the base of the Pantano Formation of upper Oligocene to lower Miocene age. The clay beds range from a light to dark reddish brown color

and contain veinlets of satin spar, an fibrous variety of gypsum (Pennebaker, 1959). Experience has shown that the Pantano clays by blending, produce bricks exhibiting a wide range of colors after firing. The Pantano clays are blended with clays from Tolleson for brick manufacturing at the Phoenix Brick Yard.

The clays near Pinedale are kaolinitic underclays at the stratigraphic position of coal beds in the Cretaceous rocks (Morris, 1985). These clays do not contain calcite and therefore can be used for manufacture of vitrified pipe.

Vitrified pipe and bricks are both examples of value added by processing crude clays into fired or ceramic clay products. These ceramic products require both high purity raw materials. Thus, the ceramic clays mined at Pinedale and Pantano should not be classified as common clays.

Feldspar

Feldspar production began from a pegmatite deposit in Precambrian granitic rock on the east side of the Cerbat Mountains north of Kingman in 1923. The Taylor mine suspended operations in the late 1970's after over 50 years of operation when the reserves available for surface mining were depleted. The milling facility operated until 1984 by grinding stockpiled quartz, a byproduct of the earlier feldspar mining operation. The geological classifi-