

FARM BOUNDARY/ALLOTMENT CORNER SURVEY
FOR THE
SAN XAVIER DISTRICT OF THE TOHONO O'ODHAM NATION
LYING IN SECTIONS 16, 21, 22, 27 AND 35 OF TOWNSHIP 15 SOUTH, RANGE 13 EAST
GILA AND SALT RIVER MERIDIAN, PIMA COUNTY, ARIZONA
CONTRACT NO. SXD-71403

GENERAL NOTES

A. COORDINATE SYSTEM DETAILS

THE CONTROL NETWORK FOR THIS PROJECT WAS BASED IN THE CENTRAL ZONE OF THE ARIZONA STATE PLANE COORDINATE SYSTEM OF 1983. COORDINATES WERE SCALED TO CREATE THE "MMLA MODIFIED" COORDINATE SYSTEM REPRESENTATIVE OF GROUND DISTANCES. THE INVERSE OF THE COMBINED GRID FACTOR OF 0.999868075 (1.000131942) WAS APPLIED AT POINT 503 (N=401404.83, E=978819.65 INTERNATIONAL FEET), THEN TRUNCATED (TO PREVENT CONFUSION WITH GRID COORDINATES), TO PRODUCE THE FINAL "MMLA MODIFIED" COORDINATES.

THE BASIS OF BEARINGS USED FOR THIS PROJECT IS N 89°12'50" E, BETWEEN FOUND MONUMENTS AT THE SOUTH ONE-QUARTER CORNER AND THE SOUTHEAST CORNER OF SECTION 16. SEE SHEET 2 FOR DETAILS.

THE COORDINATES SHOWN PER THE NORTH AMERICAN DATUM OF 1927 (NAD27) HEREIN WERE COMPUTED FROM THE WORLD GEODETIC SYSTEM OF 1984 (WGS84) GEOGRAPHIC COORDINATES USING TRIMBLE GEOMATICS OFFICE SOFTWARE AND CHECKED USING THE NATIONAL GEODETIC SURVEY'S "NADCON" PROGRAM. STATIONS 403, 106 & 107 OF THIS SURVEY WERE COMPARED TO PUBLISHED VALUES PROVIDED BY THE U. S. BUREAU OF RECLAMATION AND WERE FOUND TO HAVE A MEAN ERROR OF ±0.42 FEET. THIS ERROR FALLS WELL WITHIN THE EXPECTED TOLERANCE OF ±2.5 FEET WHEN USING A DATA TRANSFORMATION PROGRAM TO CONVERT BETWEEN THE TWO SYSTEMS (SEE BUCKNER, 1983, "STATE PLANE COORDINATES IN MODERN SURVEYING PRACTICE", PAGE 106).

SAID CONTROL NETWORK WAS ESTABLISHED USING TRIMBLE 4000SSI, 4700, 4800 & 5700 GPS UNITS.

SAID CONTROL NETWORK CONSISTS OF THE FOLLOWING POINTS:

401: 3" U.S.C.&G.S. BRASS TABLET MARKED "LAVA KNOLL" IN CONCRETE AT THE TOP OF A VOLCANIC ROCK, N.G.S. POINT IDENTIFIER NO. CZ1974. THIS IS THE PRIMARY POINT HELD FOR USE IN CONSTRAINING THIS G.P.S. NETWORK.

402: 1.5" C.O.T. ALUMINUM CAP MARKED "HL-11" ON 1/2" IRON ROD, NEAR THE CENTER OF SECTION 16, C.O.T./P.C.D.O.T. INDEX CODE L11.

403: 2.5" PIMA COUNTY ALUMINUM CAP MARKED "NN-107" IN CONCRETE, NEAR THE INTERSECTION OF LOS REALES ROAD AND INDIAN AGENCY ROAD, U.S.B.R. POINT NO. NN107.

441: 3" U.S.C.&G.S. BRASS DISK MARKED "X333" IN CONCRETE HEADWALL, NEXT TO RAILROAD TRACKS, NEAR THE INTERSECTION OF TUCSON-NOGALES HIGHWAY AND ST. KATHERINE'S COURT, N.G.S. POINT IDENTIFIER NO. CZ0216. NOTE: ACCORDING TO THE SURVEY DIVISION AT THE PIMA COUNTY DEPARTMENT OF TRANSPORTATION, THIS POINT APPEARS TO BE SINKING AND WAS NOT HELD FOR THIS GPS NETWORK ADJUSTMENT.

503: 1.25" BRASS CAP MARKED "503" IN CONCRETE AT THE TOP OF A VOLCANIC ROCK ON A HILL SOUTHEASTERLY OF THE INTERSECTION OF SAN XAVIER ROAD AND MISSION ROAD, SAN XAVIER DISTRICT POINT NUMBER 503.

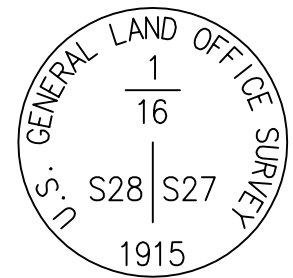
B. MONUMENTATION

UNLESS OTHERWISE NOTED, THE LOCATIONS OF BENT MONUMENTS WERE MADE BY MEASURING TO THE STRAIGHTEST PORTION AND LEANING MONUMENTS WERE MEASURED AT THE BASE.

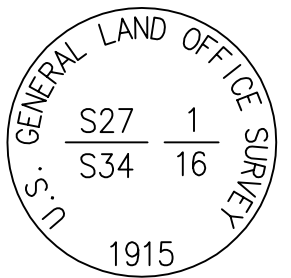
ABBREVIATIONS USED WHEN IDENTIFYING FOUND MONUMENTS AND/OR ACCESSORIES (NEXT TO THE POINT NUMBER) ARE AS FOLLOWS:

BT = BEARING TREE
CC = CLOSING CORNER AS IDENTIFIED ON THE MONUMENT ITSELF
GPS NET = POINT USED AS CONTROL IN THE GPS NETWORK
NA = NOT ACCEPTED
RDM = RANCHO DE MARTINEZ MONUMENT AS IDENTIFIED ON THE MONUMENT ITSELF

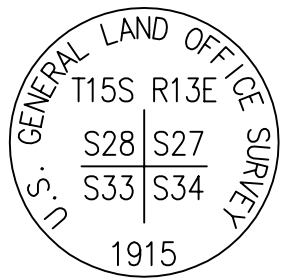
MANY ORIGINAL GENERAL LAND OFFICE MONUMENTS WERE FOUND AND MARKED APPROPRIATELY PER THE BUREAU OF LAND MANAGEMENT'S MANUAL OF SURVEYING INSTRUCTIONS. SAID MONUMENTS WERE 2.5" BRASS CAPS SET IN CONCRETE IN A 1" IRON PIPE, AND TYPICALLY MARKED AS FOLLOWS:



1/4, 1/16, 1/64
& 1/256 CORNERS
ALONG N-S LINES



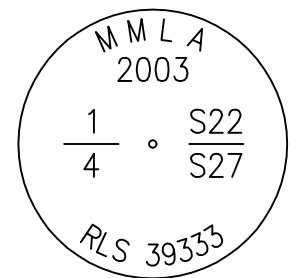
1/4, 1/16, 1/64
& 1/256 CORNERS
ALONG E-W LINES



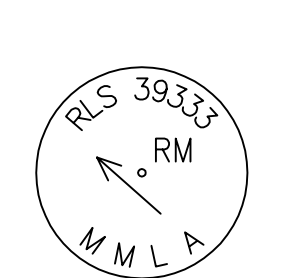
SECTION CORNERS

RECORD DISTANCES PER THE ORIGINAL G.L.O. NOTES SHOWN HEREON HAS BEEN CONVERTED FROM CHAINS TO FEET TO EASE COMPARISONS BETWEEN RECORD AND MEASURED.

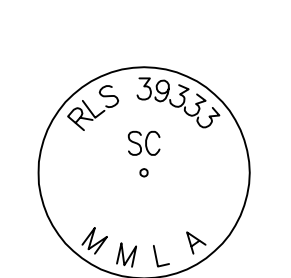
MONUMENTS TYPICALLY SET PER THIS SURVEY ARE 2.5" BRASS CAPS ON 2" IRON PIPES. EXCEPTIONS TO THIS RULE ARE THE NORTHEAST CORNER, THE EAST ONE-QUARTER CORNER AND THE SOUTHEAST CORNER OF SECTION 22, WHERE 5/8" BY 48" IRON RODS WERE SET WITH REFERENCE MARKERS SET AT APPROXIMATE 45° ANGLES ON OPPOSING BANKS OF THE SANTA CRUZ RIVER (SEE MAP FOR DETAILS).



TYPICAL MARKINGS
OF MONUMENTS AS
SET PER THIS SURVEY



REFERENCE MONUMENT
MARKINGS AS SET
PER THIS SURVEY



MARKINGS OF MONUMENTS
LANDING IN THE RIVER AS
SET PER THIS SURVEY

THE SOUTHEAST CORNER OF SECTION 22 WAS ESTABLISHED USING A THREE-WAY PROPORTION METHOD IN ACCORDANCE WITH THE BUREAU OF LAND MANAGEMENT'S MANUAL OF SURVEYING INSTRUCTIONS (1974). IN ADDITION, THE BOOK "BOUNDARY CONTROL AND LEGAL PRINCIPLES, THIRD EDITION" BY BROWN, ROBILARD AND WILSON (SEE CHAPTER 11, SECTION 30 AT PAGE 307) WAS USED FOR TECHNICAL ASSISTANCE IN THE COMPUTATION OF SAID METHOD. THE NORTHEAST CORNER OF SAID SECTION 22 WAS THEN COMPUTED USING THE SAME THREE-WAY PROPORTION METHOD. THE EAST ONE-QUARTER CORNER OF SAID SECTION 22 WAS ESTABLISHED AT THE MIDPOINT BETWEEN THE PREVIOUSLY COMPUTED SECTION CORNERS.

THE SOUTH CORNER COMMON TO ALLOTMENTS 219 & 224 (SECTION 35) AND THE NORTH CORNER COMMON TO ALLOTMENTS 130 & 138 (SECTION 26) WERE CALCULATED USING THE BEST AVAILABLE SURVEY INFORMATION AT THE TIME AND REFERENCING THE ORIGINAL G.L.O. NOTES. ADDITIONAL FIELD SURVEYING WOULD BE REQUIRED TO DETERMINE THE MOST ACCURATE POSITION WHICH COULD CAUSE A MINIMAL VARIATION IN ITS LOCATION. NOTHING WAS SET AT THESE POSITIONS.

REFERENCES

- [] R1: U.S. GENERAL LAND OFFICE FIELD NOTES, "RESURVEY OF SUBDIVISION AND MEANDER LINES IN TOWNSHIP 15 SOUTH, RANGE 13 EAST AND RANCHO DE MARTINEZ WITHIN THE PAPAGO INDIAN RESERVATION" BY CHARLES N. LEEDY, FOR SURVEYS PERFORMED BETWEEN JANUARY 18, 1915 AND APRIL 1, 1915. DATA SHOWN IN [] ARE DERIVED FROM THIS RECORD AND ALL DISTANCES WERE CONVERTED FROM CHAINS TO FEET FOR THE SAKE OF COMPARISON.
- [] R2: EL SOL ACRES SUBDIVISION, LOTS 1 THRU 29, RECORDED IN BOOK 18 OF MAPS & PLATS AT PAGE 85 ON OCTOBER 24, 1966.
- [] R3: MISSION VALLEY SUBDIVISION, LOTS 1 THRU 115, RECORDED IN BOOK 24 OF MAPS & PLATS AT PAGE 89 ON MARCH 5, 1973.
- [] R4: RECORD OF SURVEY BY TETRA TECH INC. (RLS NO. 22759), RECORDED IN BOOK 24 OF RECORDS OF SURVEY AT PAGE 53 ON SEPTEMBER 26, 2001. IT APPEARS THAT TETRA TECH DID NOT LOCATE MANY OF THE ORIGINAL G.L.O. MONUMENTS NECESSARY TO PROPERLY DEFINE THE BOUNDARIES PER THE BUREAU OF LAND MANAGEMENT'S MANUAL OF INSTRUCTIONS FOR THE SURVEY OF PUBLIC LANDS IN THE UNITED STATES, 1930 (AS IS APPLICABLE TO THE ORIGINAL G.L.O. SURVEY PERFORMED IN 1915 AND REFERENCED HEREON); THEREFORE, THIS SURVEY IS IN SUBSTANTIAL DISAGREEMENT. MMLA CONTACTED TETRA TECH ON JANUARY 12, 2004 AS A COURTESY AND TO COMPLY WITH ARIZONA LAW.
- [] R5: VALENCIA ROAD ESTABLISHMENT PROCEEDINGS NO. 997 BY PIMA COUNTY HIGHWAY DEPARTMENT, RECORDED IN BOOK 8 OF ROAD MAPS AT PAGE 88 ON MAY 6, 1959.
- [] R6: VALENCIA ROAD RIGHT-OF-WAY MAP BY PIMA COUNTY HIGHWAY DEPARTMENT, RECORDED IN BOOK 8 OF ROAD MAPS AT PAGE 46 ON APRIL 4, 1958.
- [] R7: VALENCIA ROAD ESTABLISHMENT PROCEEDINGS NO. 846 BY PIMA COUNTY HIGHWAY DEPARTMENT, RECORDED IN BOOK 7 OF ROAD MAPS AT PAGE 54 ON JANUARY 27, 1956.
- [] R8: VALENCIA ROAD ESTABLISHMENT PROCEEDINGS NO. 846 BY PIMA COUNTY HIGHWAY DEPARTMENT, RECORDED IN BOOK 7 OF ROAD MAPS AT PAGE 20 ON MAY 5, 1955.
- [] R9: LOS REALES ROAD ESTABLISHMENT PROCEEDINGS NO. 1531 BY PIMA COUNTY HIGHWAY DEPARTMENT, RECORDED IN BOOK 12 OF ROAD MAPS AT PAGE 23 ON OCTOBER 10, 1966.

LEGEND & ABBREVIATIONS

- FOUND MONUMENT AS NOTED
● SET SECTION CORNER OR QUARTER CORNER MONUMENT AS NOTED
⊗ SET REFERENCE MONUMENT AS NOTED
□ CALCULATED POINT - NOT FOUND OR SET
⊠ CALCULATED POINT - APPROXIMATE
--- SECTIONAL LINES
--- APPROXIMATE RANCHO DE MARTINEZ BOUNDARY
--- APPROXIMATE ROADWAY CENTERLINE
/// SAN XAVIER DISTRICT RESERVATION BOUNDARY
--- SEE LINE TABLE
702 POINT NUMBER - SEE POINT TABLE
ALC ALUMINUM CAP
BCSM BRASS CAP SURVEY MONUMENT
DN DOWN (BELOW GROUND SURFACE)
GLO U. S. GENERAL LAND OFFICE
IP IRON PIPE
IR IRON ROD
M&P MAPS & PLATS (PIMA COUNTY RECORDATION REFERENCE)
MKD MARKED
PCDOT PIMA COUNTY DEPARTMENT OF TRANSPORTATION
PCHD PIMA COUNTY HIGHWAY DEPARTMENT (SEE PCDOT)
RM REFERENCE MONUMENT
ROS RECORDS OF SURVEY (PIMA COUNTY RECORDATION REFERENCE)
99 ALLOTMENT NUMBER PER RECORDS PROVIDED BY THE SAN XAVIER DISTRICT AND THE BUREAU OF INDIAN AFFAIRS AS OF APRIL 15, 2004

NOTE CONCERNING RECORDATION

DUE TO THE SOVEREIGN IMMUNITY STATUS OF THE TOHONO O'ODHAM NATION, AND THE FEDERAL LAWS GOVERNING THE RESERVATION, THE PORTION OF THIS SURVEY WHICH LIES WITHIN THE BOUNDARIES OF THE RESERVATION ARE NOT SHOWN AS A PART OF THE RECORD OF SURVEY TO BE RECORDED WITH THE PIMA COUNTY RECORDER'S OFFICE. A LETTER FROM THE SAN XAVIER DISTRICT OF THE TOHONO O'ODHAM NATION TO MMLA, INC., CONCERNING CONTRACT NO. SXD-71403, DATED NOVEMBER 6, 2003, MAKES THE FOLLOWING STATEMENT:

"THE DISTRICT HAS SINCE SOLICITED AN OPINION FROM ITS LEGAL COUNSEL ON THE SUBJECT ISSUE AND OFFERS THE FOLLOWING RESPONSE. UNDER SECTION A - MUTUAL PROMISES AND AGREEMENT, ITEM A.15 OF THE SUBJECT CONTRACT, THE DISTRICT SPECIFICALLY STATES THAT NOTHING WITHIN THE CONTRACT DOCUMENT SHALL BE CONSTRUED AS AN EXPRESSED OR IMPLIED WAIVER OF THE TOHONO O'ODHAM NATION'S SOVEREIGN IMMUNITY. THE DISTRICT VIEWS LAND HOLDINGS ON THE RESERVATION AS CONFIDENTIAL AND IS SENSITIVE TO THE SOVEREIGNTY ASPECTS OF SUBMITTING SUCH INFORMATION TO A RECORDING SYSTEM MAINTAINED BY THE STATE OF ARIZONA. THE DISTRICT THEREFORE TAKES THE POSITION THAT STATE LAW DOES NOT APPLY TO THE SURVEY RESULTS OF LAND WITHIN THE RESERVATION AND THAT, WITH THE POSSIBLE EXCEPTION OF THE RESERVATION BOUNDARY ITSELF, SURVEY RESULTS ARE NOT TO BE SUBMITTED FOR RECORDING IN ANY STATE OR COUNTY OFFICE."

NOTE, HOWEVER, THAT THE PORTIONS OF THIS SURVEY ALONG THE RESERVATION BOUNDARY AND OUTSIDE THE LIMITS OF THE RESERVATION HAS BEEN INCLUDED AS A PART OF SAID RECORD OF SURVEY.

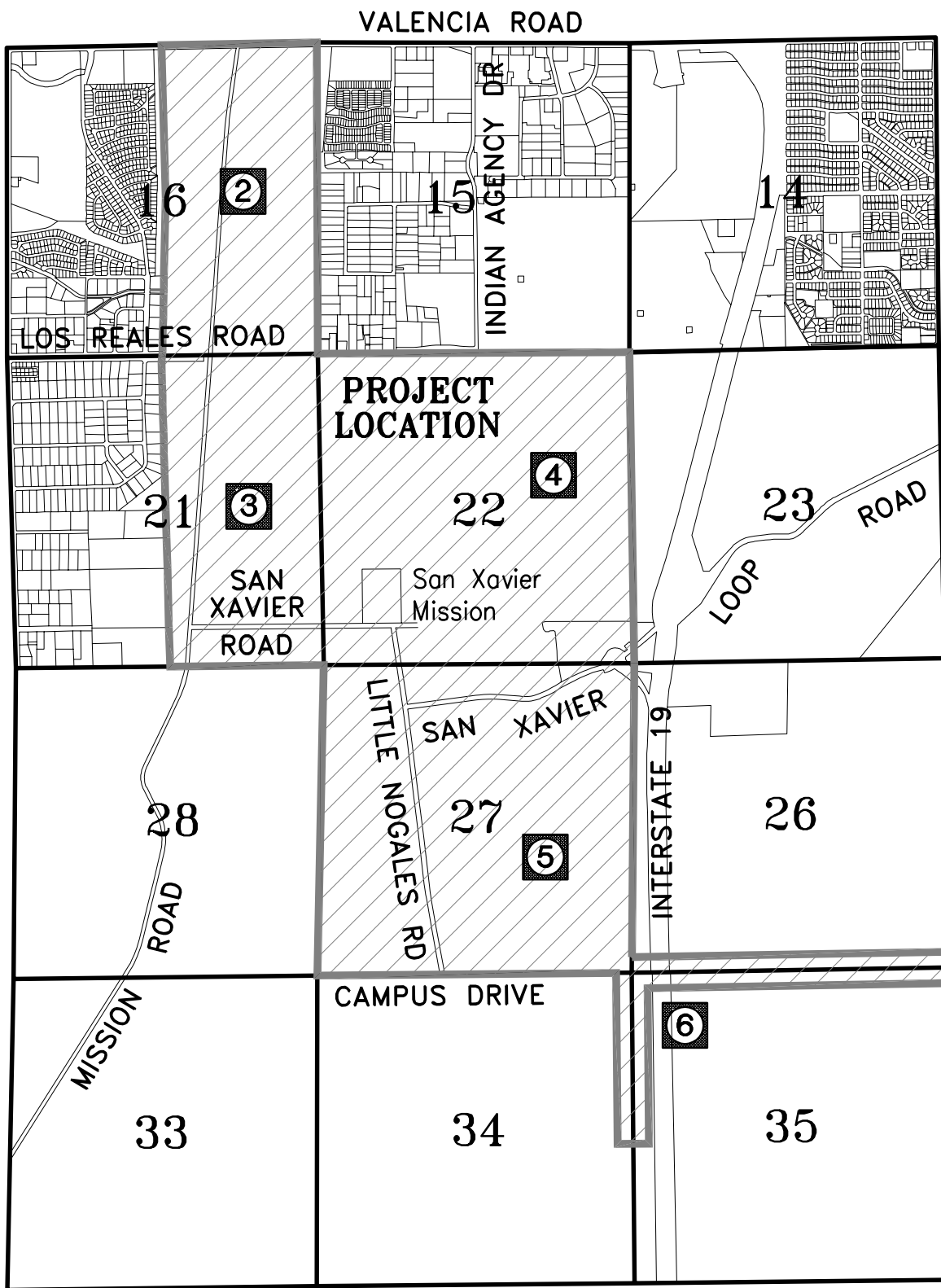
LOCATION MAP & SHEET INDEX



SCALE: 2"=1 MILE
T15S R13E G&SRM



SHEET
REFERENCE



CERTIFICATION

I, WENDELL T. HARNESS, HEREBY CERTIFY THAT THIS SURVEY, INCLUDING THE LOCATION OF FOUND AND SET MONUMENTATION AND THE PREPARATION OF THIS MAP, WAS PERFORMED UNDER MY DIRECTION.



WENDELL T. HARNESS
ARIZONA R.L.S. NO. 39333

NOTE: THE USE OF THE WORD "CERTIFY" OR "CERTIFICATION" BY A REGISTERED LAND SURVEYOR IN THE PRACTICE OF LAND SURVEYING OR THE PREPARATION OF MAPS, PLATS, REPORTS, DESCRIPTIONS OR OTHER SURVEYING DOCUMENTS ONLY CONSTITUTES AN EXPRESSION OF PROFESSIONAL OPINION REGARDING THOSE FACTS OR FINDINGS WHICH ARE THE SUBJECT OF THE CERTIFICATION AND DOES NOT CONSTITUTE A WARRANTY OR GUARANTEE EITHER EXPRESSED OR IMPLIED.

| NO. | REVISION | DATE |
|-----|----------|------|
| • | • | • |
| • | • | • |



FARM BOUNDARY/ALLOTMENT CORNER SURVEY
FOR THE
SAN XAVIER DISTRICT
OF THE TOHONO O'ODHAM NATION
IN SECTIONS 16, 21, 22, 26, 27 & 35
OF T15S, R13E, G&SRM, PIMA COUNTY, ARIZONA

PROJ NO: 03076-01
DATE: 05/07/04
SCALE: HORIZ 1" = N/A
VERT 1" = N/A
1 OF 6
Engineering • Planning • Environmental • Surveying • Water Resources