COUNTY ADMINISTRATOR'S OFFICE
PIMA COUNTY GOVERNMENTAL CENTER
130 W. CONGRESS, FLOOR 10, TUCSON, AZ 85701-1317
(520) 724-8661 FAX (520) 724-8171

C.H. HUCKELBERRY
County Administrator

July 2, 2013

Cherie Campbell, Interim Executive Director
Pima Association of Governments
177 N. Church Avenue, Suite 405
Tucson, Arizona 85701

Re: **Transportation Planning Activities in the Area West of the Tucson Mountains; Linkage with Interstates 19 and 10 through the Aerospace and Defense Corridor**

Dear Ms. Campbell:

Pima County is aware of certain transportation planning activities that are underway for addressing major transportation corridor possibilities in the area west of the Tucson Mountains. Such planning activities appropriately recognize the existence of Pima County Resolution No. 2007-343 entitled, "A Resolution of the Pima County Board of Supervisors in Opposition to Construction of an Interstate Highway Link that Bypasses Tucson and Traverses Pristine and Invaluable Sonoran Desert Areas" (attached). Please note this resolution is six years old and was based on a general alignment study of the Arizona Department of Transportation (ADOT) and known as Route 4.

There are two particular transportation planning efforts underway that potentially will define a transportation corridor alignment through Avra Valley. In particular, the Regionally Significant Corridor Study is targeted for completion in the next few weeks and will be routed through the Pima Association of Governments (PAG) committee process for ultimate action by the PAG Regional Council. In addition, the Interstate 11 and Intermountain West Corridor Study is being undertaken by ADOT. This study is currently focused on transportation corridors between the Phoenix metropolitan area and Las Vegas, Nevada. However, subsequent phases of this study effort will explore the feasibility of extensions into southern Arizona through Pima County.

This ADOT Interstate 11 (I-11) study will ultimately be presented for consideration by the State Transportation Board or some other designated approving authority for adoption as a long-term plan for addressing transportation needs in the State of Arizona.

While the Pima County adopted resolution pertaining to interstate highway bypasses in our region expresses concerns as to the potential impact of such corridors, the resolution also supports the continuation of studies related to such bypass routes to fully identify mitigation measures that would be necessary to address impacts resulting from these transportation corridors.

It should also be noted that the resolution of opposition was based on a single alignment, the Route 4 potential corridor, from a single ADOT study conducted in 2007. While the resolution in opposition is general, most of the concern arose from Route 4 bisecting the Bureau of Reclamation Wildlife Corridor. Any new route alignment must minimize this impact, as well as fully elaborate all of the possible impacts and detailed mitigation strategies, options and costs.

Six years after adoption, the resolution of concern has been viewed by some in the Phoenix metropolitan area as a reason or excuse to exclude southern Arizona from the I-11 discussion or from sharing in the benefits of funding I-11 transportation improvements. Our present planning for the Aerospace and Defense Sonoran Corridor achieves the exact same benefits of trade, commerce and economic development that will be accomplished by the I-11 Phoenix to Las Vegas corridor discussions.

I would expect some opposition to a new roadway alignment through Avra Valley. All ADOT planning studies for I-10 show this existing facility is constrained to a maximum of eight lanes from Prince Road to Alvernon Way; a distance of 11 miles with no furthering widening possible. The peak traffic volume on this section of I-10 now occurs in the downtown area and was 175,000 vehicles per day in 2011. It is projected this volume will increase to 275,000 vehicles per day by 2030, and this section of the interstate will operate at Level of Service F. This level of congestion will discourage through traffic and be a detriment not only to basic mobility but economic development as well. An alternate route for through traffic is essential. I-11 may provide such an alternative.

The attached preliminary alignment and impact study is uniquely different from previous conceptual alignments such as Route 4, which significantly impacted residential areas. This possible 56-mile corridor is almost entirely within the unincorporated area of Pima County. This route potentially requires 2,035 acres of right of way, of which 826 acres, or 41 percent, is State Trust land. Only 492 acres (24 percent) are privately owned, of which the majority is agricultural, vacant and mining. This route avoids residential areas that account for only three percent of the total land impacts, and it could potentially displace as few as 47 residential parcels. The greatest impact is to vacant land, 61 percent of which is State Trust land.

More importantly, based on the conservation land system of the Sonoran Desert Conservation Plan, 4,964 acres of land must be purchased to mitigate for habitat losses based on the preliminary route. These mitigation lands can be used effectively to restore and establish viable wildlife corridors. A key challenge of this or any other route through Avra Valley will be mitigating the impacts to the U.S. Bureau of Reclamation Wildlife Mitigation Corridor and not impacting lands of the Tohono O'odham Nation at the Garcia Strip.

As you know from attending the Aerospace and Defense Corridor Executive Oversight Committee (EOC) meeting, the County was tasked with developing a potential I-11 route through Avra Valley that is a substantial departure from the previous Route 4 studied by the Arizona Department of Transportation. We indicated an appropriate and significantly revised alignment would be made available within the next 30 days for review by the EOC.

It should be noted that the 2040 Regional Transportation Plan acknowledged the need for further studies to address an I-10 bypass (Page 77, Policy Recommendation 2), and we believe PAG should advance such studies in cooperation with the County at the earliest possible date.

We need to actively pursue transportation planning improvements and options that benefit southern Arizona. This includes planning for transportation capacity and mobility through central Pima County adjacent to the Tucson Mountains.

I appreciate your cooperation in this matter and look forward to continuing our interaction with respect to appropriate long-term transportation planning for our region.

Sincerely,

C.H. Huckelberry
County Administrator

CHH/mjk

Attachment

c: The Honorable Chairman and Members, Pima County Board of Supervisors
John Bernal, Deputy County Administrator for Public Works
Priscilla Cornelio, Director, Transportation Department
Dr. John Moffatt, Director, Strategic Planning Office

RESOLUTION NO. 2007- 343

A RESOLUTION OF THE PIMA COUNTY BOARD OF SUPERVISORS IN OPPOSITION TO CONSTRUCTION OF AN INTERSTATE HIGHWAY LINK THAT BYPASSES TUCSON AND TRAVERSES PRISTINE AND INVALUABLE SONORAN DESERT AREAS

WHEREAS, Pima County's landmark Sonoran Desert Conservation Plan identifies 55 rare local species of concern, whose areas of habitat and corridors between habitat areas already are under threat from development; and

WHEREAS, Pima County has established a Sustainability Program that recognizes the detriment of petroleum-fueled car and truck travel to this effort because of their greenhouse-gas and pollutant emissions, and therefore calls for the County to shift its fleet to use alternative fuels; and

WHEREAS, since 1974 Pima County has bought more than 45,000 acres of land and assumed grazing leases on 86,000 acres for open-space and wildlife habitat preservation, and to mitigate impacts from development; and

WHEREAS, Pima County updated its Riparian Mitigation Ordinance in 2005 to avoid and minimize impacts to riparian vegetation along local washes; and

WHEREAS, the Arizona Department of Transportation (ADOT) has undertaken the Interstate 10 Phoenix-Tucson Bypass Study to look at alternative routes for new controlled access highways that Interstate 10 cars and trucks could use to bypass the Tucson and Phoenix metropolitan areas; and

WHEREAS, the study has advanced to the point of identifying two alternative routes which impact Pima County; and

WHEREAS, each of the alternatives would degrade the Sonoran Desert, sever wildlife corridors identified by the ADOT-sponsored "Arizona Wildlife Linkages Assessment," impede washes, open new areas to intense residential and commercial development far from existing urban centers, and thus encourage more car and truck travel at time when global warming and air pollution are growing concerns; and

WHEREAS, one of the alternatives would traverse the San Pedro River Valley impacting both Cochise County and Pima County; and

WHEREAS, the San Pedro River and its valley constitute one of the most biologically diverse and important ecosystems in North America, which also serves as vitally important flyway for hundreds of unique migratory bird species and is a sensitive aquatic and terrestrial wildlife corridor; and

WHEREAS, there are more than 500 known archaeological sites in the San Pedro River Valley, some dating back as much as 12,000 years and some considered sacred to Native American people; and

WHEREAS, a second identified route runs through the Avra Valley, negatively impacting Tucson Mountain Park, Saguaro National Park, Ironwood National Monument, Bureau of Reclamation's Central Arizona Project Canal mitigation area, and important elements of the County's Sonoran Desert Conservation Plan by slicing through sensitive areas, severing linkages between important habitat areas, and disturbing an unknown number of archeological sites; and

WHEREAS, the cost of building a new controlled-access highway would be enormous, requiring the acquisition of thousands of acres of new rights of way, expenditures on high and rapidly increasing costs of concrete and asphalt, putting a tremendous burden on taxpayers and future highway users; and

WHEREAS, the production of the millions of tons of concrete and asphalt for this massive construction project would cause significant air pollution and greenhouse gas emissions, as would the operation of heavy machinery in the construction process; and

WHEREAS, a new controlled-access highway near or through Pima County on any route, would promote urban sprawl, causing local governments to incur large financial responsibilities for new infrastructure costs and force major changes to existing county land-use and zoning designations; and

WHEREAS, a new controlled-access highway bypass would divert cars and trucks away from existing businesses that are dependent upon commerce generated from traffic on existing highways; and

WHEREAS, the state of Arizona could reduce highway traffic congestion, reduce the cost of highway maintenance, and save on the costs of rights of way purchases and concrete and asphalt production and installation – while reducing air pollution and greenhouse gas emissions – by instead expanding capacity and developing multi-modal transportation facilities in existing transportation corridors to sustainably accommodate projected increases in freight while providing for much-needed passenger rail traffic.

NOW, THEREFORE, BE IT RESOLVED that the Pima County Board of Supervisors:

1. Opposes the construction of any new highways in or around the County that have the stated purpose of bypassing the existing Interstate 10 as it is believed that the environmental, historic, archeological, and urban form impacts could not be adequately mitigated.

2. Supports the continuation of studies relating to this bypass such that the full costs of mitigation measures can be brought forth.

3. Calls upon the office of Governor Janet Napolitano to direct ADOT to undertake studies related to expanding capacity along Interstate 10 for multiple modes of travel including, but not limited to, freight, passenger cars, transit, intercity passenger rail, and bicycle, and for beautification of the existing corridor.

Passed by the Board of Supervisors of Pima County, this 18th day of December, 2007.

Chairman, Pima County Board of Supervisors

ATTEST:

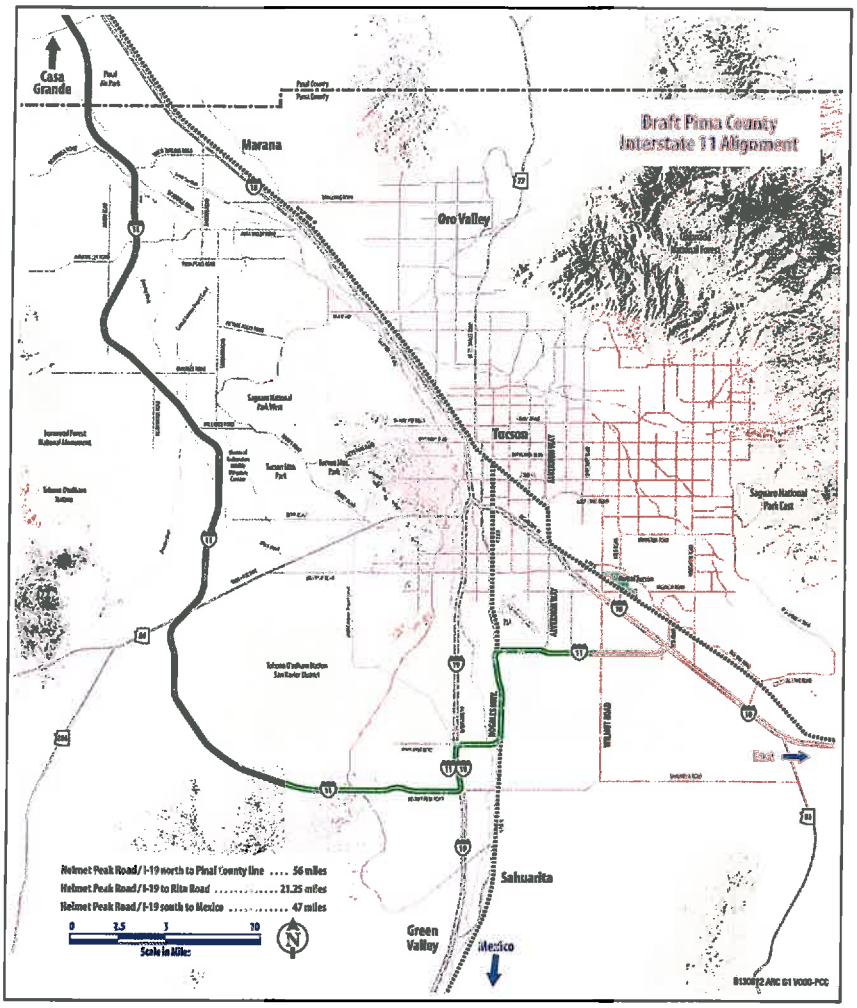
Clerk of the Board

APPROVED AS TO FORM:

Deputy County Attorney

Interstate 11 in Pima County

A Preliminary GIS-Based Roadway Alignment and Impact Study



Pima County Department of Transportation

June 21, 2013

Study Purpose and Background

The purpose of this alignment study and impact report is to develop and analyze an alternative roadway alignment for a theoretical new interstate route through Avra Valley that could connect to Interstate 10 in Pinal County and to Interstate 19 south of Tucson. Several local and state transportation plans and studies have suggested similar bypass routes, but no detailed analysis has ever been conducted. This report identifies a conceptual corridor and provides some initial quantitative evaluation of impacts based on existing GIS data and analysis. Much further study would be required to determine if such as route is feasible and if so, the full extent of impacts that could be expected. Future analysis would likely develop alternative alignments based on multiple criteria. The presented route is simply one alternative that may be used as a starting point for further evaluation.

Corridor Description

This corridor extends from the Pima/Pinal County line on the north to the Sahuarita Road interchange on Interstate 19 to the south as shown in Figure 1. The route is approximately 56 miles long and travels through Avra Valley, across State Route 86, and connects to I-19 south of the San Xavier District of the Tohono O'odham Nation.

This route was located to traverse undeveloped State Trust Lands and to avoid populated areas as much as possible. It avoids Ironwood National Forest, Saguaro National Park, the Tohoho O'odham Nation, and the Town of Marana. Other considerations, such as cultural resources, wildlife habitat and floodplains for example, were analyzed briefly but were not used as the basis for this particular route. On the north, the corridor runs parallel to portions of Trico Road, Avra Valley Road, and Anway Road and it follows a portion of Sandario Road. To the south, the corridor runs parallel to Sierrita Mountain Road, then heads east across undeveloped state land before aligning with Helmet Peak Road and Interstate 19.

The 56-mile long corridor was analyzed with a 300 foot wide right-of-way, which is typical for an intestate facility. A formal roadway alignment study would typically define a wider corridor for planning purposes and to study impacts. Assuming a final right of way of 300 feet, the roadway corridor encompasses 2,035 acres of land. The entire corridor is within unincorporated Pima County, except the last 1,500 linear feet within the Town of Sahuarita along Helmet Peak Road. Engineering requirements, not considered in this analysis, would affect the length and right of way requirements.

Study Methodology

The 56-mile long corridor was mapped and analyzed very generally using the Pima County Geographic Information Systems (GIS), which provides numerous types of geographic spatial data. Several GIS data files were selected to identify basic types of impacts, such as land use and ownership as well as several environmental categories. No field studies were conducted and a full inventory and analysis of corridor conditions and impacts is not within the scope of this study and report. The resulting maps and summary data are presented in the remainder of the report. The following key statistics summarize the draft roadway corridor:

- 56 miles long, 300' wide right of way
- 2,035 acres of right of way required
- 179 parcels of land impacted
- All lands unincorporated, except 4 acres in the Town of Sahuarita
- 111 private parcels, 492 acres impacted

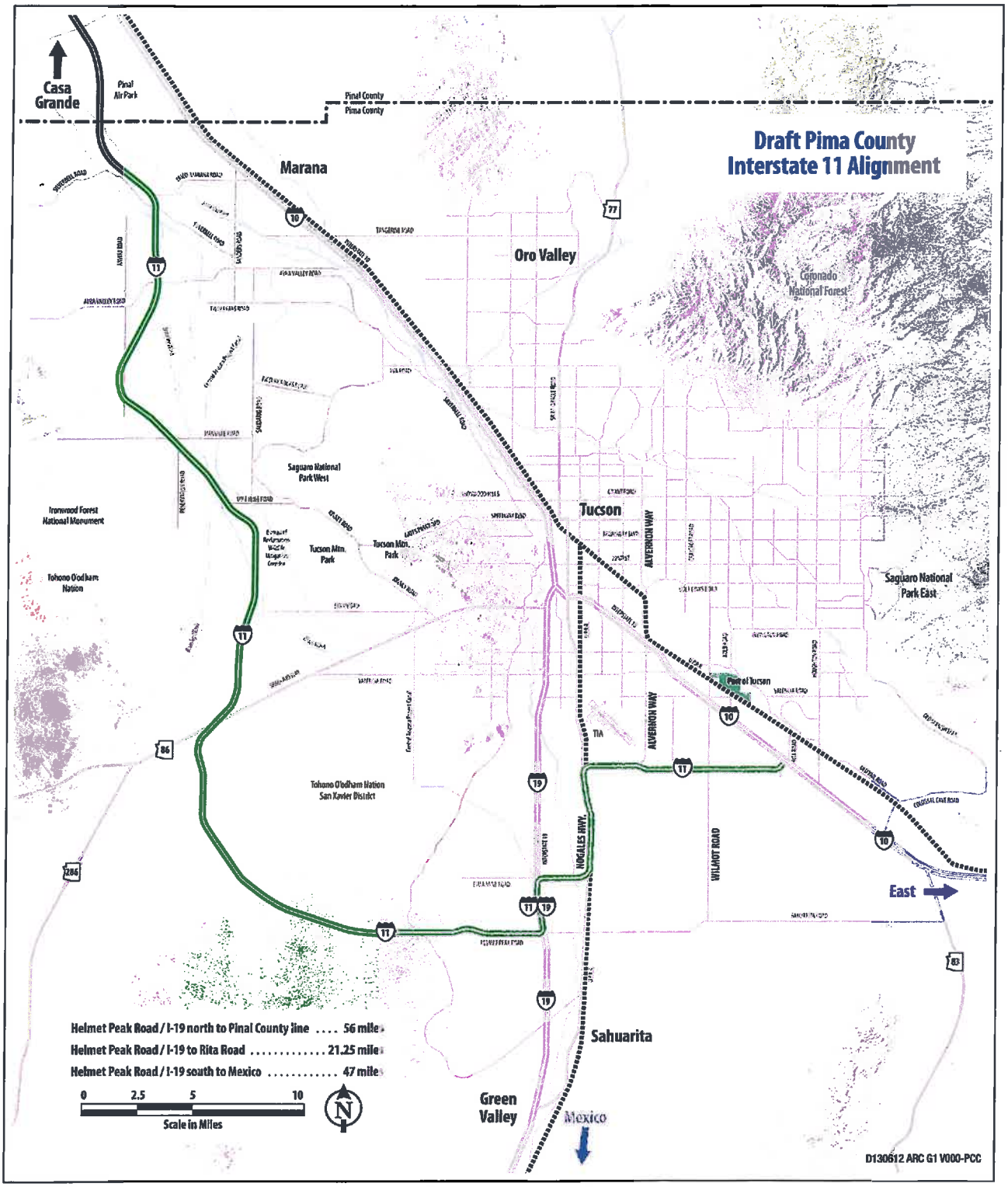


Figure 1: Draft Interstate 11 Alignment

Right of Way Challenge

One of the most significant physical challenges to locating an interstate roadway facility through Avra Valley is the lack of available right of way in one key 2-mile section, adjacent to the Tohono O'odham Nation (Garcia Strip) and the Bureau of Reclamation (BOR) Wildlife Mitigation Corridor (Figure 2). The Garcia Strip is approximately 2.5 miles wide north to south and 13 miles long east to west and connects to the main Tohono O'odham Nation. The BOR Mitigation Corridor is a 4.25 square mile conservation area located adjacent to the Garcia Strip and east of Sandario Road. It was created by the BOR in 1990 as mitigation for environmental impacts caused by the Central Arizona Project (CAP) and it is managed by Pima County.

Sandario Road runs north-south between the Garcia Strip and the BOR Mitigation Corridor, but the existing roadway right of way is only 80 feet wide. The draft alignment is shown running along portions of Sandario Road, but additional right of way would be required for a typical 300-wide interstate right of way. One alternative is for either the T.O. Nation or the Bureau of Reclamation to provide additional right of way. Another concept is to elevate the roadway and use only the existing right of way for all piers and supporting infrastructure. In either case, maintaining the functionality of the wildlife corridor and support from the Nation, the Bureau of Reclamation, the City of Tucson, Arizona State Land Department, and other stakeholders would be required.

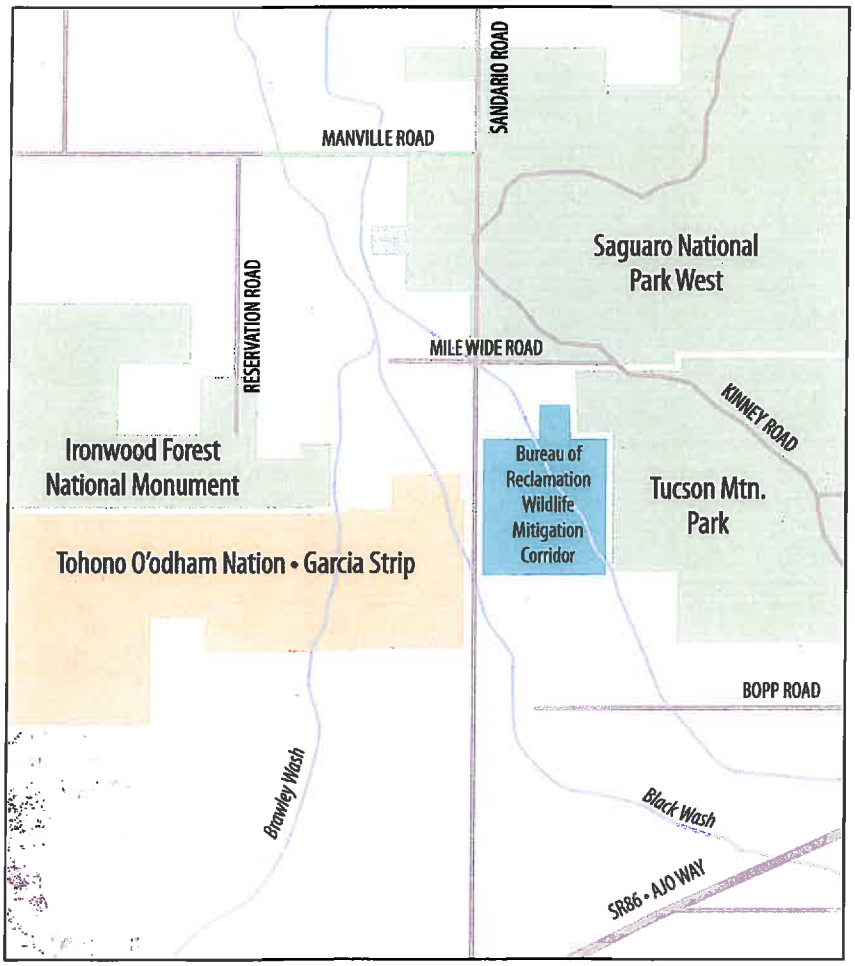


Figure 2. Garcia Strip and Wildlife Mitigation Corridor

Land Use Impacts

The roadway corridor impacts 179 parcels of land which range in size from a fraction of an acre up to 132 acres, but the average parcel size is 11 acres. The primary land use of these parcels (classified by the Pima County Assessor's Office) is vacant (66%), followed by agricultural (15%), mining (6%), roadways (4%), commercial (4%), retired farm (3%), and residential (3%). Most of the 1,348 acres of impacted vacant land is State Trust Lands (61%) followed by federal and City of Tucson (13% each), private (10%) and Pima County (2%). A summary of land use and vacant land data is shown in Tables 1 and 2 below and on the accompanying Land Use maps at the end of this report.

Table 1: Land Use Impacted

Land Use	Parcels	Acres	Percent Acres
Vacant	90	1,348	66%
Agricultural	30	296	15%
Mining	6	116	6%
Commercial	2	82	4%
Roadways	NA	72	4%
Residential	47	67	3%
Retired Farm	3	54	3%
Total	**179**	**2,035**	**100%**

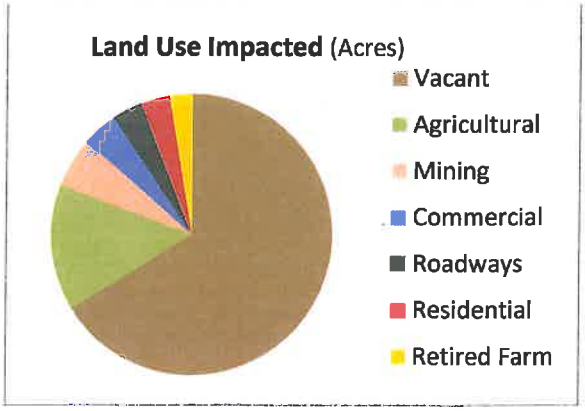
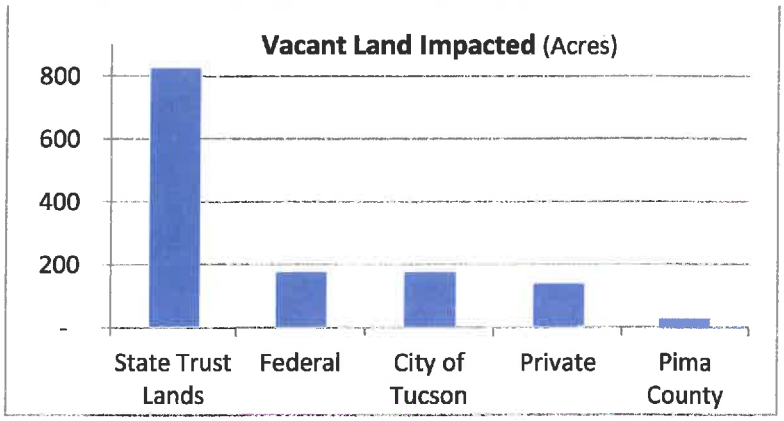


Table 2: Vacant Land Impacted

Land Use	Type	Parcels	Acres	Percent Acres
Vacant	State Trust Lands	30	826	61%
	Federal	11	177	13%
	City of Tucson	10	177	13%
	Private	36	140	10%
	Pima County	2	28	2%
	Commercial	1	0.2	<1%
TOTAL		**90**	**1,348**	**100%**

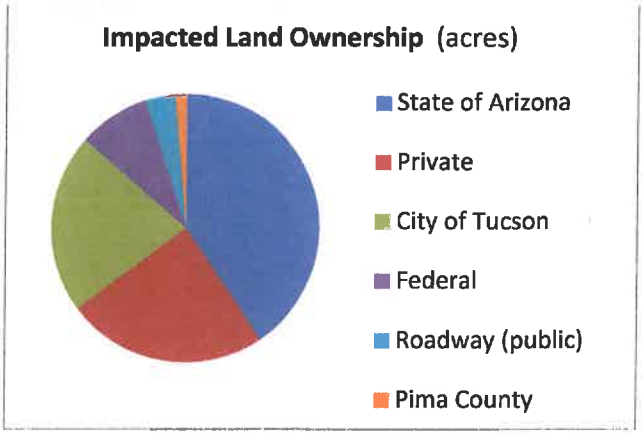


Land Ownership Impacts

The 179 parcels and 2,035 acres of land impacted by the roadway are primarily owned by the State of Arizona (41%) followed by private land holders (24%), City of Tucson (22%), federal (9%), and Pima County (2%). Existing roadways comprise 4% of the total. Land ownership is shown in Table 3 below and on the Land Ownership maps at the end of the report.

Table 3: Land Ownership Impacts

Parcels	Ownership	Acres	Percent
30	State of Arizona	826	41%
111	Private	492	24%
25	City of Tucson	440	22%
11	Federal	176	9%
NA	Roadway (public)	72	4%
2	Pima County	28	1%
179	**TOTAL**	**2,035**	**100%**



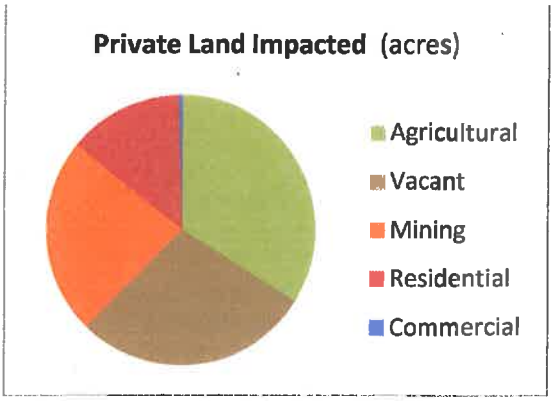
Private Land Impacts

Of the 111 parcels of private land totaling 492 acres, about one-third is agricultural use (34%), followed by vacant (28%), mining (24%) and residential (14%). There are many more small land parcels impacted than large land parcels, however the parcels larger than 10 acres in size comprise a higher amount of land (298 acres) than the numerous small parcels (198 acres). A summary of the private lands impacted are shown in Table 4 below.

Table 4: Private Land Ownership

Parcels	Land Use	Acres	Percent
19	Agricultural	166	34%
36	Vacant	140	28%
6	Mining	116	24%
47	Residential	67	14%
1	Commercial	2	1%
2	Other	0.2	<1%
111	**TOTAL**	**492**	**100%**

Parcel Size	Parcels	% Parcels	Acres	% Acres
< 10 acres	95	86%	194	39%
> 10 acres	16	14%	298	61%
TOTAL	**111**	**100%**	**492**	**100%**



Residential Impacts and Mitigation

As stated in the beginning of the report, avoiding residential areas was one of the primary considerations in locating this roadway. In fact, residential land use accounts for only 3% of the impacted lands. As shown in the Land Use Map included later in this report, the alignment avoids concentrations of residential areas (shown in blue) in northern and central Avra Valley and south of State Route 86. Where residential impacts are unavoidable are near the intersection of Mile Wide Road and Sandario Road because Sandario Road is the only route which avoids impacting the Tohono O'odham Nation (Garcia Strip). South of the Garcia Strip, the roadway also impacts residential areas west of Sandario Road. West of Interstate 19, the roadway also impacts several residential parcels located west of Mission Road generally along the Helmet Peak Road alignment.

According to GIS analysis, 47 residential parcels representing 67 acres of land are impacted by this alternative alignment, shown in Table 1 and Table 4 above. However, a visual survey of aerial photos suggests that this number could be smaller. If this alignment were selected, more detailed analysis and engineering studies would determine exactly which parcels would be impacted and which could be avoided. Some parcels would need to be purchased altogether and the owners relocated, while other owners could sell or dedicate a portion of their property to accommodate the roadway. Alternative alignments could increase or decrease the number of impacted residences.

Conservation Land System Impacts and Mitigation

Avra Valley includes a high percentage of biologically important conservation lands that are identified in the Sonoran Desert Conservation Plan (SDCP). These lands are associated with the Brawley and Black Washes and generally represent habitat that is valuable to the conservation of biological diversity based on numerous SDCP studies. The SDCP land categories include Special Species Management Areas, Biological Core Management Areas, Important Riparian Areas, Multiple-Use Management Areas and Agricultural Inholdings.

Because this route traverses Avra Valley, it is not surprising that most of the corridor (94%) impacts one or more categories of the Conservation Land System (CLS). The largest impacts are to the Multiple-Use Management Area (49%) followed by the Special Species Management Area (17%) Biological Core Management Area (17%), and Important Riparian Area (2%). As stated in the beginning of the report, conservation lands were not used as the primary consideration in locating this roadway. Adjustments to the route could reduce, but not eliminate, direct impacts to some of the more valuable conservation lands. As shown in Table 5, nearly 5,000 acres of other conservation lands would be necessary to mitigate for direct impacts to the CLS. Maps of Conservation Land System impacts are included at the end of this report.

Table 5: County Conservation Land System (CLS) Impacts

Conservation Land Category	Acres	Percent	Multiplier	Mitigation Acres
Multi-Use Management Area	1,003	49%	2	2,006
Special Species Management Area	347	17%	4	1,390
Biological Core Management Area	345	17%	4	1,382
Agricultural inholdings	170	8%	NA	0
Outside Conservation Land System	121	6%	NA	0
Important Riparian Area	47	2%	4	187
TOTAL	**2,035**	**100%**		**4,964**

City of Tucson Conservation Lands and Preserve Impacts

In addition to impacts to the Pima County Conservation Land System, the roadway alignment also impacts the City of Tucson's proposed Avra Valley Habitat Conservation Plan (AVHCP) permit area. The AVHCP permit area includes 22,000 acres of former agricultural lands in Avra Valley purchased by the City in the 1970s and 1980s for water rights. It is estimated that the roadway impacts 440 acres of proposed AVHCP lands. In fact, it appears that all the impacted City-owned land in Avra Valley is designated for the AVHCP. As stated earlier, avoiding conservation lands was not the primary consideration in locating this conceptual roadway. Further study could evaluate alignments that could reduce, but probably not eliminate, impacts to the City's AVHCP. A map of the Avra Valley Habitat Conservation Plan permit area is included at the end of this report.

Besides the County and City conservation land systems, the roadway alignment avoids most other designated preserve lands in Avra Valley and south of State Route 86. The roadway impacts three preserves: the BOR Wildlife Mitigation Corridor (62 acres), the Diamond Bell Ranch (44 acres), and a small Pima County floodplain preserve (8 acres). As discussed earlier in the report, this roadway alignment impacts the BOR Mitigation Corridor because of right of way constraints along Sandario Road. East of Sierrita Mountain Road, the corridor cuts through the Diamond Bell Ranch preserve to avoid the adjacent Diamond Bell Ranch subdivision. A map showing designated preserve lands is included at the end of this report.

Wildlife Corridor Impacts

The roadway alignment crosses through areas known for their importance to the movement of biological resources between the Tohono O'odham Nation, the Tucson Mountains, the Santa Cruz River, and across the Avra Valley. Within Avra Valley, these corridors follow the West Branch of the Brawley Wash, the Santa Cruz River basin, and broad areas of lowlands that connect the Tucson Mountains to the Ironwood National Monument and mountain ranges west and south of Avra Valley. The CAP canal has numerous land bridges, tunnels and other features to facilitate wildlife crossings. The BOR Mitigation Corridor was established specifically to enhance and facilitate wildlife movement. In some cases the roadway crosses wildlife corridors and in others it follows alongside the corridors. As stated earlier, the roadway follows a portion of Sandario Road which would impact the BOR Wildlife Mitigation Corridor. In total, approximately 389 acres of wildlife corridors are impacted, or 19% of the entire route. A map of wildlife linkages is included at the end of this report.

The principal environmental impact of the roadway would be to further isolate and fragment the Tucson Mountains from Avra Valley and adjacent mountain ranges. It is possible that adjustments to the route and other mitigation could reduce but not eliminate direct impacts to some of the wildlife corridors. Strategically-located wildlife crossing structures, tunnels, raised roadways and other features would be important components of wildlife mitigation for such a large-scale transportation project.

Floodplain Impacts

Avra Valley is characterized by many drainages and floodplains associated with the Brawley and Black Washes, which are braided and meander from State Route 86 north to the Pinal County line. The Santa Cruz River also runs northwest from Tucson and crosses Avra Valley at the county line. The draft alignment crosses through and runs alongside floodways several times from State Route 86 up to the Pinal County border. The west and east branches of the Brawley Wash, Black Wash, and the Santa Cruz

River are large washes with flows in excess of 10,000 cubic feet per second. These watercourses are distributary and have high potential for lateral migration and sediment mobility. As stated earlier, floodplain impacts were not the primary consideration in determining this alignment. Alternative routes could reduce floodplain impacts.

On the northern Pima County border, the roadway alignment crosses the broad riparian floodplain of the Santa Cruz River which is nearly ½ mile across. Moving southward, the corridor traverses current and former agricultural lands between the Santa Cruz River and Brawley Wash. South of Silverbell Road and just east of Trico Road, the alignment crosses the West Branch of Brawley Wash which is nearly ¼ mile wide. Further south, the roadway crosses the same wash again twice in the vicinity of Mile Wide Road. Continuing south, the corridor crosses the Black Wash on Sandario Road about 2.2 miles south of the intersection of San Joaquin Road. To the west of Sandario Road and north of State Route 86, the alignment again crosses large floodplains. A floodplain map is included at end of this report. Also included for historical reference is a map showing the aerial extent of flooding in 1962, the largest known flood and perhaps 10 times greater than any documented flood in Avra Valley.

Cultural Resource Impacts

Avra Valley is characterized by areas of high, medium and low cultural resource sensitivity associated with Hohokam culture and earlier inhabitants. Modeling suggests that about one-third of the draft alignment crosses areas of low sensitivity (39%), one-third crosses areas of high sensitivity (37%), and slightly lower than one-third crosses areas of moderate sensitivity (25%). Although only 326 acres of the roadway right of way has been surveyed, eight sites dating from the Pleistocene, Archaic, Hohokam, and historic periods are recorded. The alignment affects a total of 32 acres of known site areas. These sites include:

AZ AA:11:12(ASM) – Known as the "Hog Farm Site," this extensive site is comprised of five settlement areas or loci characterized by dense concentrations of features and artifacts that represent the remains of a long-occupied Hohokam village (AD 750-1200) with a ball court, burial areas, trash mounds, pit houses, roasting pits, and other domestic features. More than 18 acres of this site would be directly impacted by this draft alignment.

AZ AA:11:2(ASM) -This site is recorded as a Sedentary Hohokam village on a low ridge near the Brawley Wash floodplain. There is a low trash mound which has a high density artifact scatter in the center. More than four acres of this site would be impacted by the road alignment.

AZ AA:16:305(ASM) - A total of about 100 artifacts are at this site, mostly stone flakes, a few sherds, and ground stone. Two rock features are exposed in the banks of the adjacent wash.

AZ AA:16:311(ASM) - A very large Hohokam site with four large loci linked by a light scatter of artifacts, this site contains extensive artifact concentrations, at least 8 roasting pits and 4 trash mounds, 2 rock cairns, a cleared area, possible ball court and other features. Thousands of artifacts are present. A fifth small locus seems to be an outlier to the site, linked by a faint trail, possibly prehistoric. Nearly 4 acres of this site would be impacted.

AZ AA:16:377(ASM) - State Route 86 is recorded as the Tucson-Ajo Highway on the 1929 State Highway map and follows the historic route shown on 1893 Roskruge Map of Pima County.

AZ AA:16:39(ASM) – "Werner Site" is a broad area of scattered lithics with some concentrated areas with charcoal stains and clusters of fire-cracked rocks. Ceramics are relatively rare. The cultural features were all on sheet wash-eroded surfaces near arroyos. Pleistocene mammoth and horse bones occur in strata exposed beneath the 1+ m thick, upper floodplain silt layer; but their contemporaneity with cultural materials is uncertain. Diagnostic projectile points are mostly Late Archaic styles, but some Pinto, Gypsum and Hohokam points are found. No Paleo-Indian spear points were seen. More than four acres of this site would be impacted.

AZ AA:16:473(ASM) – This is a small Hohokam artifact scatter near Brawley Wash comprised of a concentration of plain brown ceramics, a single piece of flaked stone and a ground hand stone. The site is interpreted as a limited activity area.

AZ DD:4:156(ASM) - This site is a resource processing site comprised of a light scatter of sherds, flakes, a ground stone fragment, and a pestle around two small granite bedrock outcrops that each contain mortars. The systematic sample of pottery from the site indicates Hohokam occupation during the Early or Middle Rincon sub-phase. The mortars suggest that the site was utilized for harvesting and processing wild resources such as the mesquite that is abundant in the area.

As mentioned in the beginning of the report, avoiding cultural resources was not the primary consideration in locating this conceptual roadway. Only 16 percent of the draft alignment has been surveyed, and a full survey would undoubtedly identify additional sites affected by the roadway. If an alignment was selected, a complete inventory survey would be conducted to determine which site locations would be impacted by the route and whether it would be possible to adjust the route to reduce these direct impacts. Maps showing cultural resource sensitivity areas are included at the end of the report, along with a map showing where previously recorded surveys have been conducted.

Tucson Water Recharge Facility Impacts

The City of Tucson uses several large water recharge facilities in central and southern Avra Valley to store and recover Colorado River water from the Central Arizona Project. The Central Avra Valley Storage and Recovery Project (CAVSARP) is located on City-owned land near Sandario Road and Mile Wide Road. The Southern Avra Valley Storage and Recovery Project (SAVSARP) will be constructed on former agricultural land near the intersection of Sandario Road and Snyder Hill Road.

This draft alignment avoids the CAVSARP water recharge basins, but it does intersect pipeline and production well infrastructure related to the recharge facilities. Figure 3, provided by Pima Association of Governments (PAG), shows the roadway corridor and Tucson Water facilities in the Avra Valley area.

Central Avra Valley Storage and Recovery Project

Tucson Water Recharge Facility Impacts (continued)

The roadway corridor intersects two Colorado River water delivery pipelines as it crosses the northern half of the CAVSARP facility. A recharge recovery pipeline parallels Sandario Road between the Tohono O'odham Nation and the Bureau of Reclamation Tucson Mitigation Corridor property, which is also parallel with the roadway corridor. As the route crosses the SAVSARP facility, it appears to intersect 2 to 3 potable production wells and the potable distribution line along Sandario Road. The roadway corridor may also intersect a proposed recharge recovery pipeline and a proposed Colorado River water delivery pipeline.

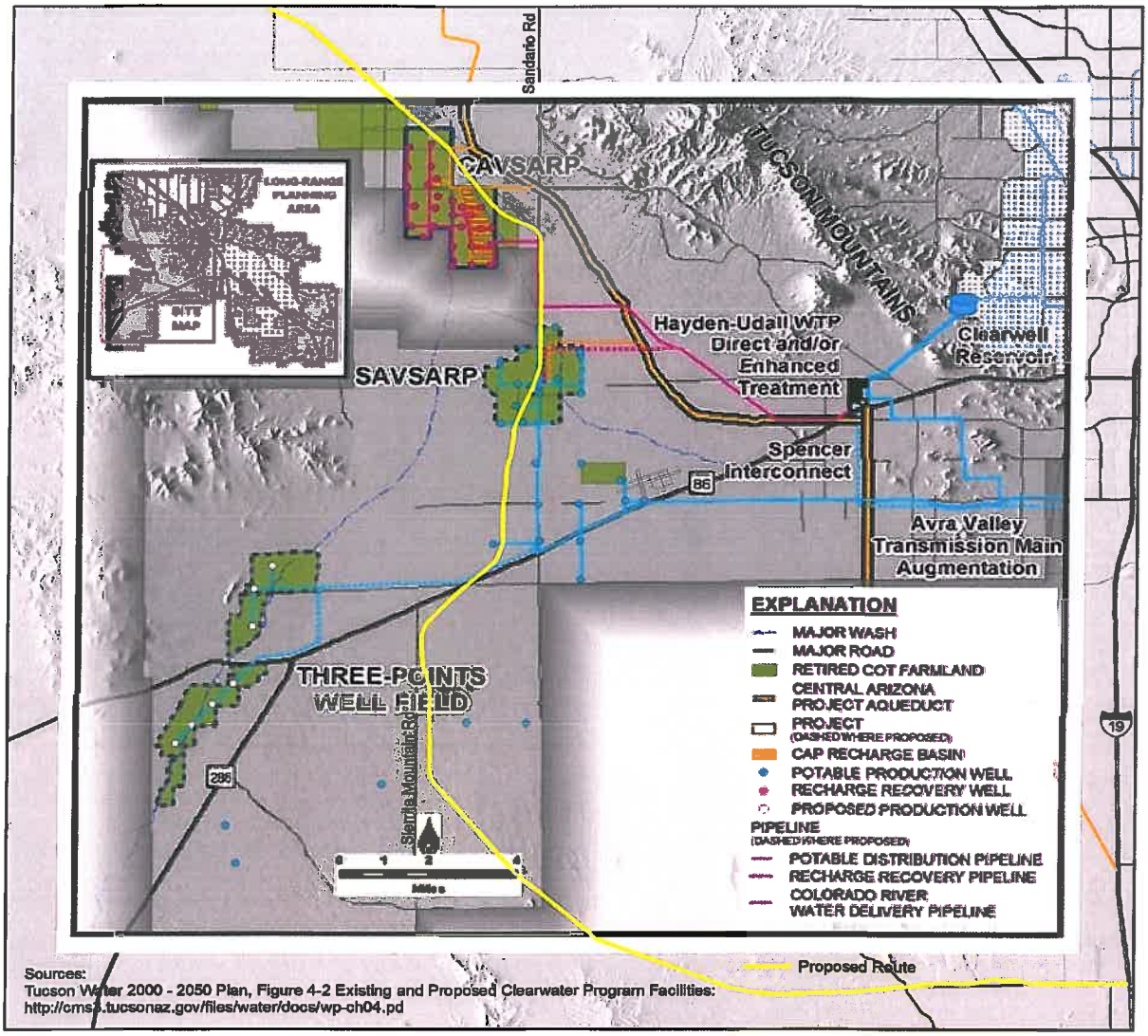


Figure 3: Tucson Water Infrastructure

Natural Gas Pipeline Impacts

The draft alignment crosses and runs parallel to two collocated underground natural gas pipelines 30" and 26" in diameter. These pipelines are a major connection for the region to the national natural gas distribution network and are operated by El Paso Natural Gas, now part of Kinder Morgan, Inc. These lines run northwesterly from Sandario Road to Trico Road, crossing Mile Wide, Manville, and Trico Roads. The alignment could be adjusted to avoid running directly above the collocated pipelines. The roadway crosses another natural gas pipeline in the vicinity of Trico Road and Trico Marana Road. Along State Route 86, the roadway crosses the proposed 36" diameter Kinder Morgan Sierrita pipeline which would serve Mexico. Figure 4, provided by Pima Association of Governments, shows the roadway corridor and natural gas facilities in the Avra Valley area.

Electrical Transmission Impacts

The draft alignment does not impact any known electrical transmission facilities, i.e. substations, but at three locations it crosses a transmission line that runs along Trico Road. The roadway avoids a sub-station facility located east of Trico Road and south of Marana Road. At several locations, the alignment also crosses a larger transmission line that connects a sub-station north of Ajo Way and west of Sierrita Mountain Road to another sub-station on Pima Mine Road east of I-19. Figure 4 shows the roadway corridor and known electrical transmission facilities.

Conclusion

This alignment study and impact report identifies and analyzes an alternative roadway alignment for a theoretical new interstate route through Avra Valley that could connect to Interstate 10 in Pinal County and to Interstate 19 south of Tucson. Preliminary analysis of the route and impacts based on existing GIS data are presented. One of the key challenges to this route is the lack of available right of way along Sandario Road between the Tohono O'odham Nation (Garcia Strip) and the Bureau of Reclamation Wildlife Mitigation Corridor. Environmental impacts in general are a key challenge given that the route intersects designated and proposed conservation lands. In addition to support from the Nation and Bureau of Reclamation, this roadway would also require the support of the City of Tucson, Arizona State Land Department, and other local, regional, and federal agencies and stakeholders.

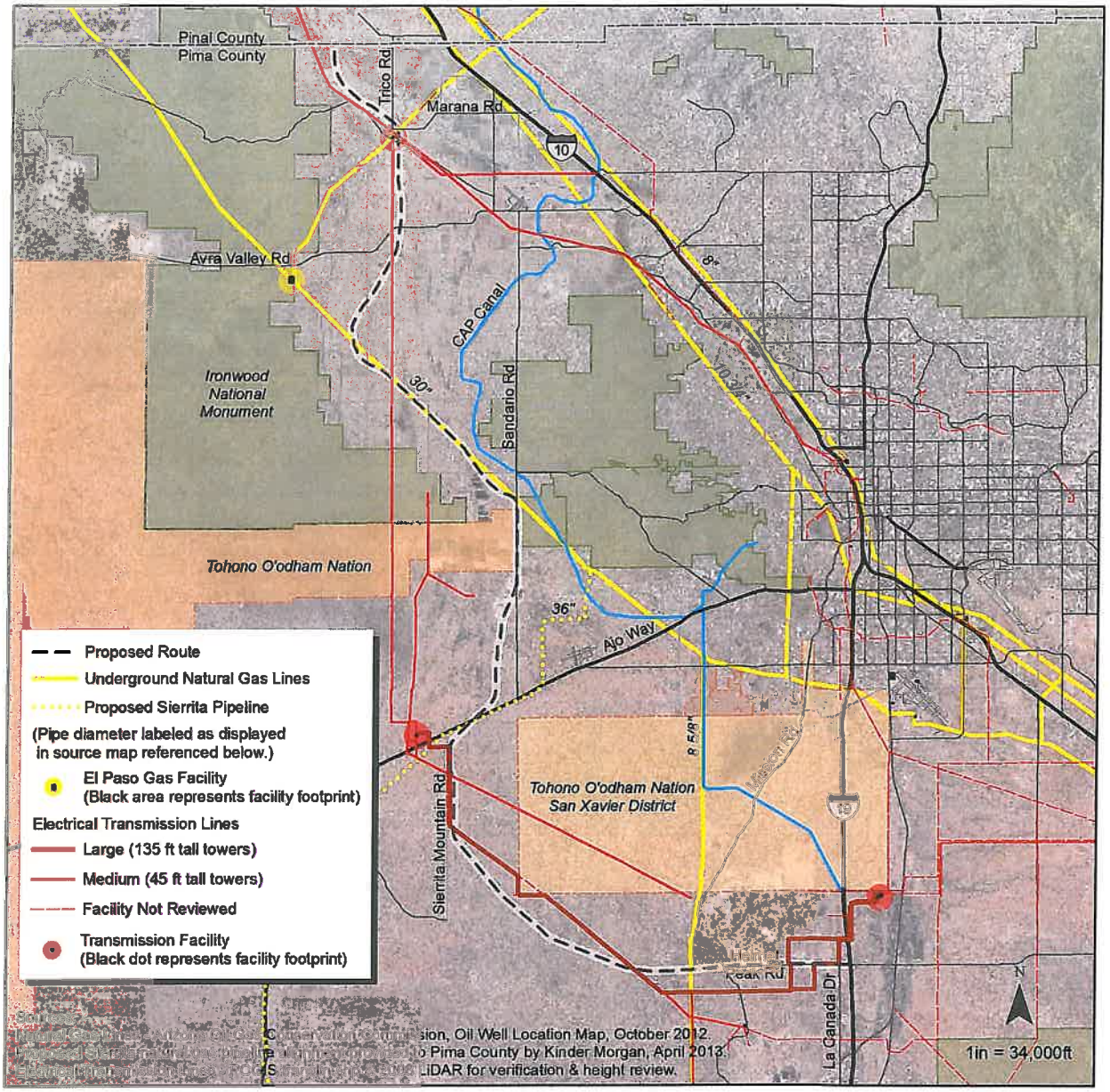


Figure 4: Natural Gas and Electrical Transmission Facilities

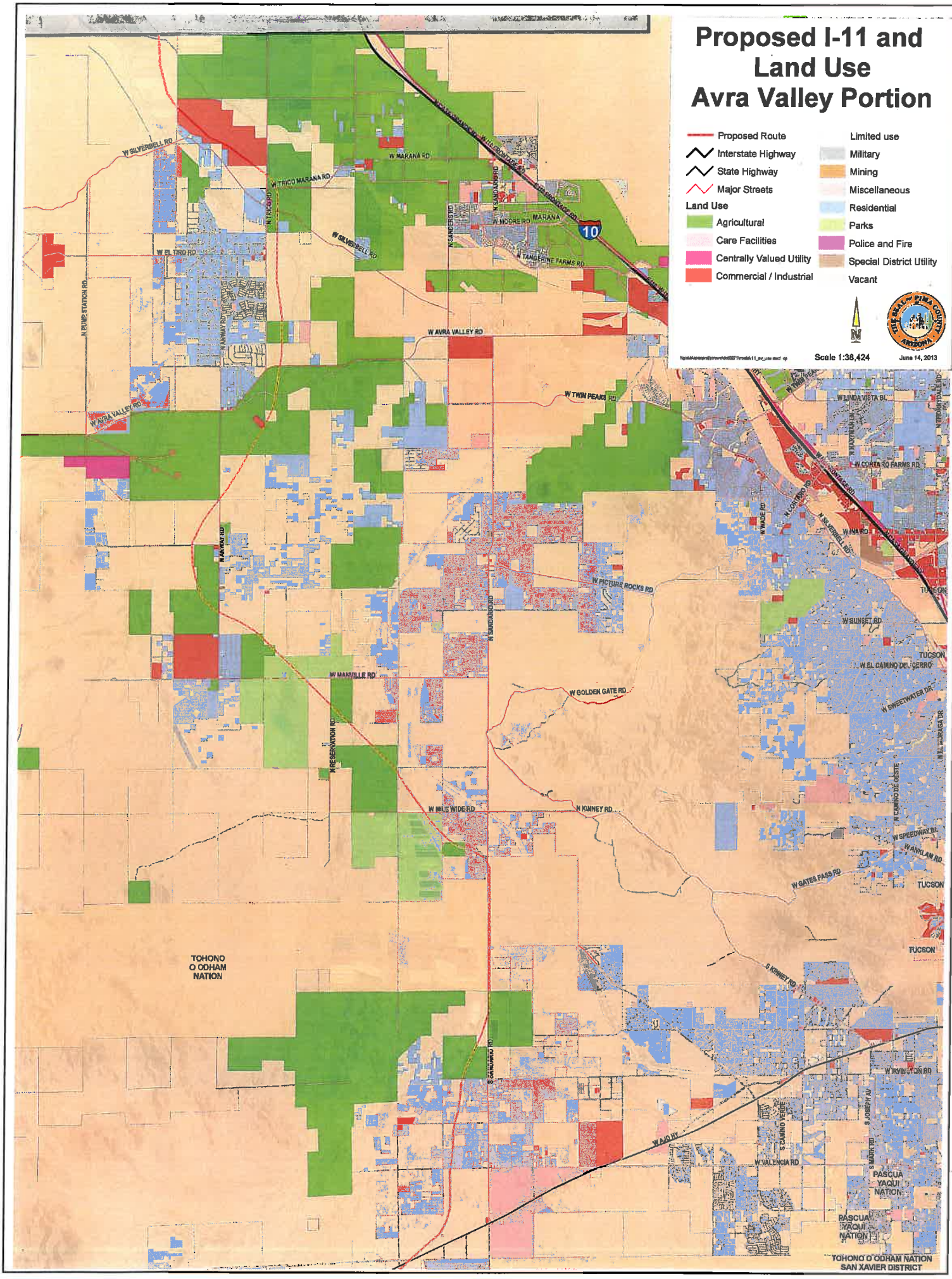
Proposed I-11 and Land Use Avra Valley Portion

Proposed Route
Interstate Highway
State Highway
Major Streets

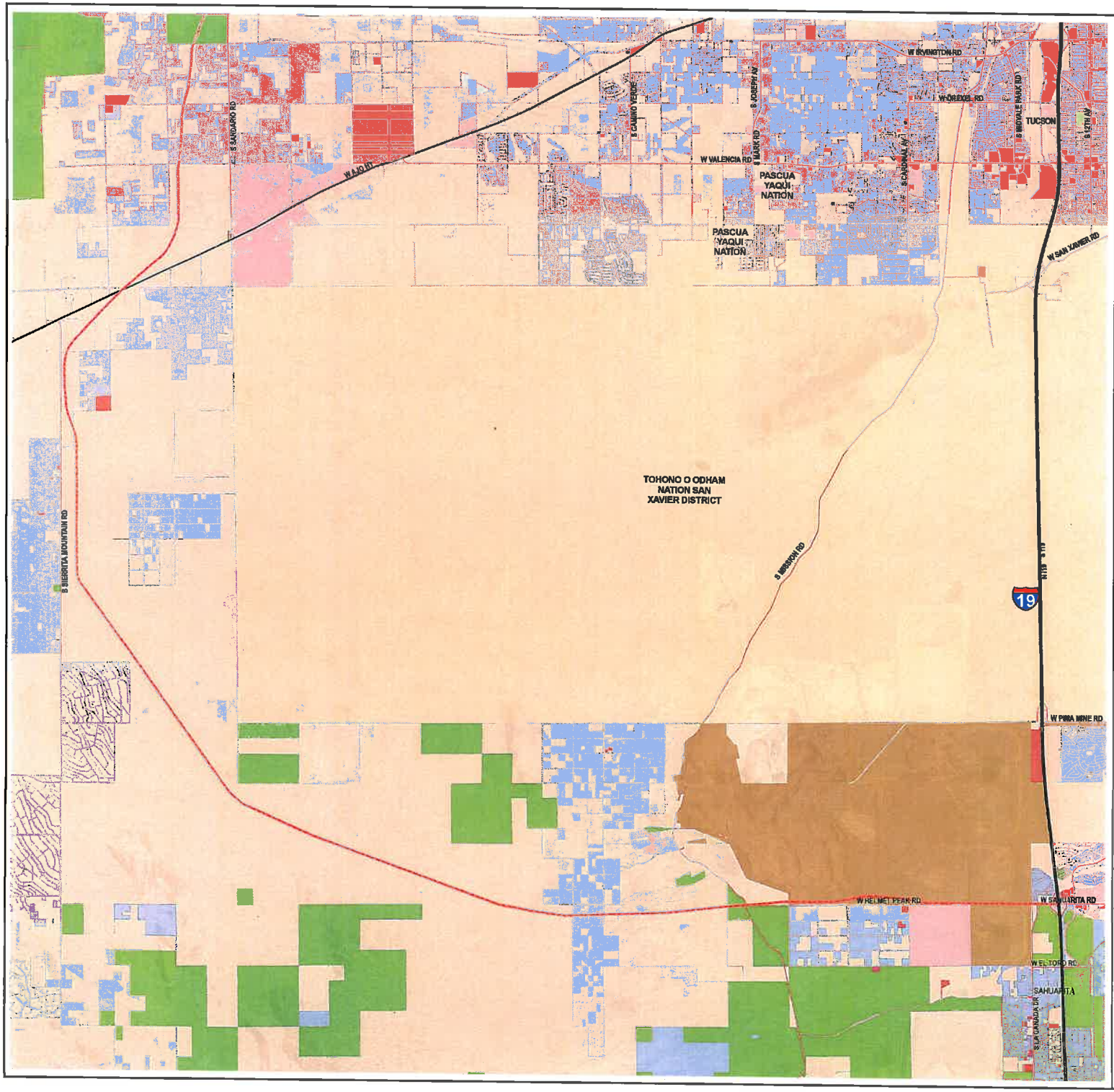
Land Use
Agricultural
Care Facilities
Centrally Valued Utility
Commercial / Industrial
Limited use
Military
Mining
Miscellaneous
Residential
Parks
Police and Fire
Special District Utility
Vacant

Scale 1:38,424

June 14, 2013



Proposed I-11 and Land Use Southern Portion

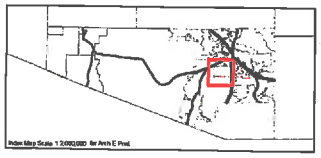


Proposed Route
Interstate Highway
State Highway
Indian Nations

Land Use

Agricultural
Care Facilities
Centrally Valued Utility
Commercial / Industrial
Limited use
Military
Mining
Miscellaneous
Residential
Parks
Police and Fire
Special District Utility
Vacant
Incorporated Areas

Pima County Index Map



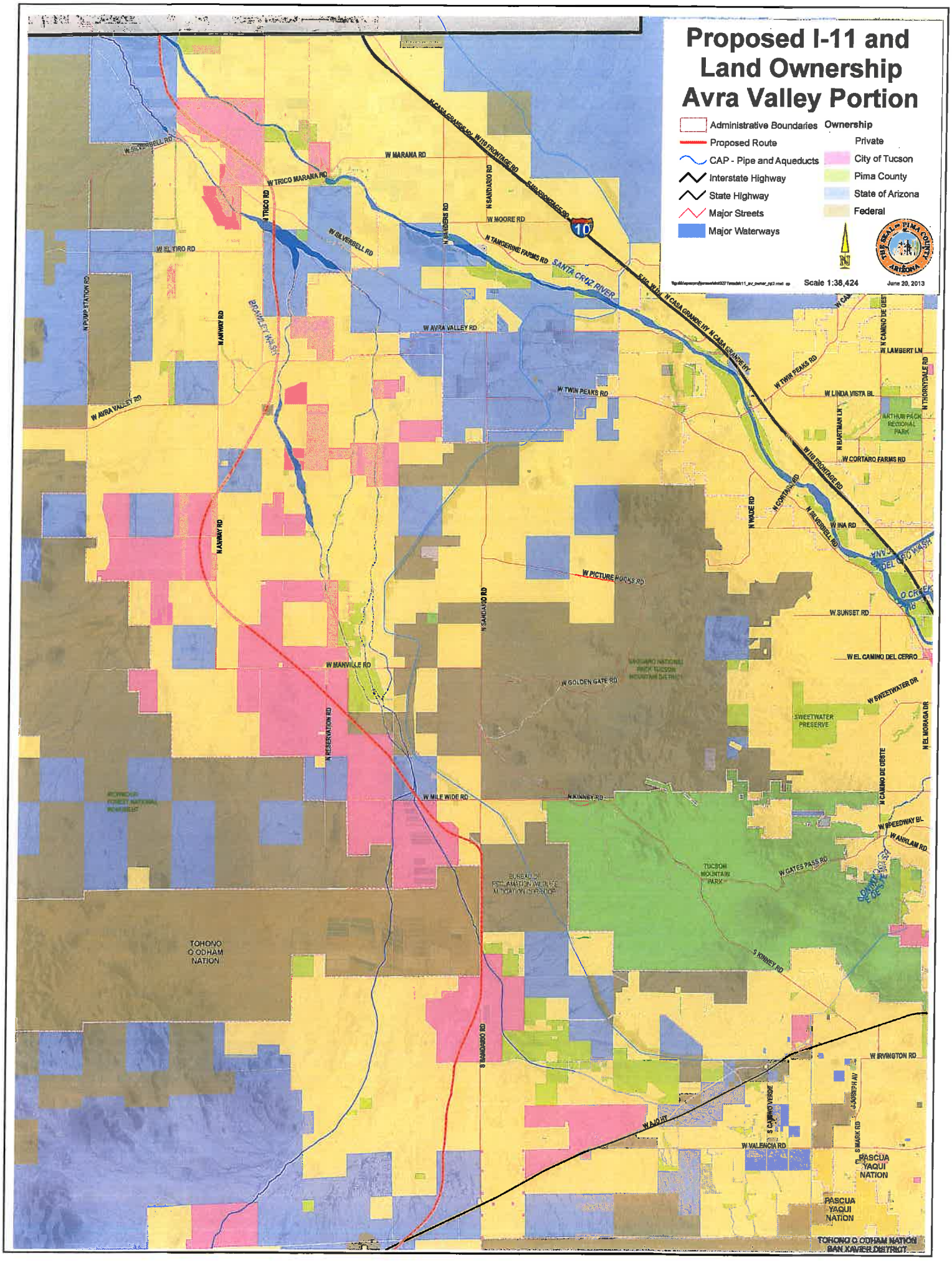
The information depicted on this display is the result of digital analyses performed on a variety of databases provided and maintained by several governmental agencies. The accuracy of the information presented is limited to the collective accuracy of these databases on the date of the analysis. Pima County Information Technology Department Geographic Information Systems makes no claims regarding the accuracy of the information depicted herein. This product is subject to the GIS Division Disclaimer and Use Restrictions.

GEOGRAPHIC INFORMATION SERVICES

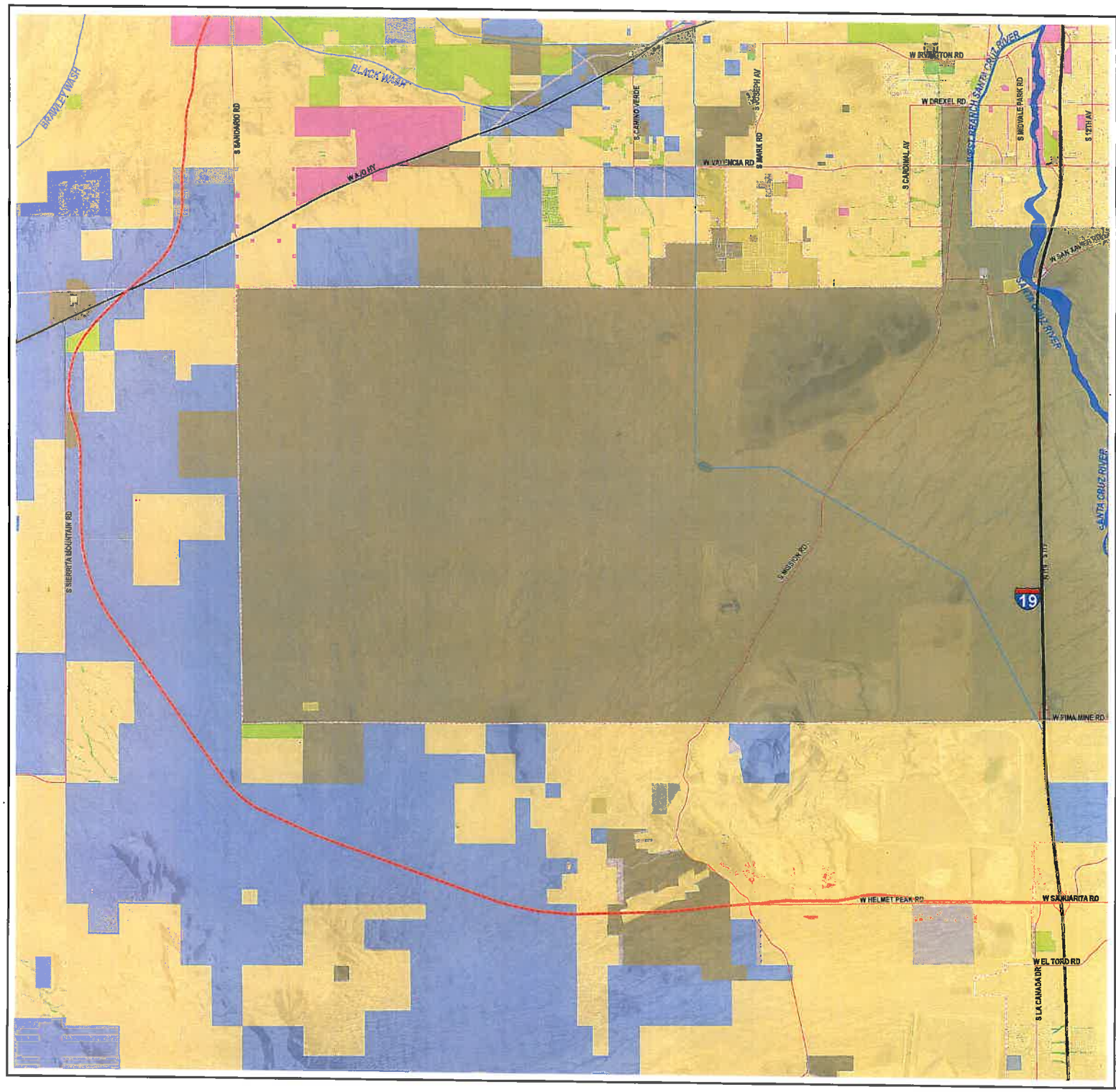
Scale 1:32,000

Pima County Information Technology Dept
201 North Stone Avenue - 9th Floor
Tucson, Arizona 85701-1207
(520)740-8670 - FAX (520)798-3429

June 14, 2013


Proposed I-11 and Land Ownership Avra Valley Portion
Administrative Boundaries
Proposed Route
CAP - Pipe and Aqueducts
Interstate Highway
State Highway
Major Streets
Major Waterways
Ownership
Private
City of Tucson
Pima County
State of Arizona
Federal
Scale 1:38,424
June 20, 2013
SANTA CRUZ RIVER
BRAWLEY WASH
TOHONO O ODHAM NATION
PASCUA YAQUI NATION
TOHONO O ODHAM NATION SAN XAVIER DISTRICT
W MARANA RD
W TRICO MARANA RD
W SILVERBELL RD
W EL TIRO RD
W AVRA VALLEY RD
W TWIN PEAKS RD
W MOORE RD
N TANGERINE FARMS RD
W PICTURE ROCKS RD
W MANVILLE RD
W GOLDEN GATE RD
W MILE WIDE RD
N KINNEY RD
W SUNSET RD
W EL CAMINO DEL CERRO
W SWEETWATER DR
SWEETWATER PRESERVE
W SPEEDWAY BL
W ANKLAM RD
W GATES PASS RD
S KINNEY RD
W IRVINGTON RD
W AJO HY
W VALENCIA RD
W LINDA VISTA BL
W CORTARO FARMS RD
W INA RD
N CAMINO DE OESTE
N SANDARIO RD
N RESERVATION RD
N ANWAY RD
N PUMP STATION RD
N TRICO RD
N SANDERS RD
N CASA GRANDE HY
W I10 FRONTAGE RD
E I10 FRONTAGE RD
N CAMINO DE OESTE
W LAMBERT LN
N THORNYDALE RD
N HARTMAN LN
N WADE RD
N CORTARO RD
N SILVERBELL RD
N EL MORAGA DR
S CAMINO VERDE
S MARK RD
S JOSEPH AV
10

Proposed I-11 and Land Ownership Southern Portion

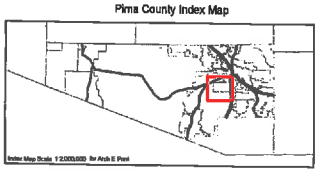


Proposed Route
CAP - Pipe and Aqueducts
Interstate Highway
State Highway
Administrative Boundaries
Major Waterways

Ownership

Private
City of Tucson
Pima County
State of Arizona
Federal

Pima County Index Map



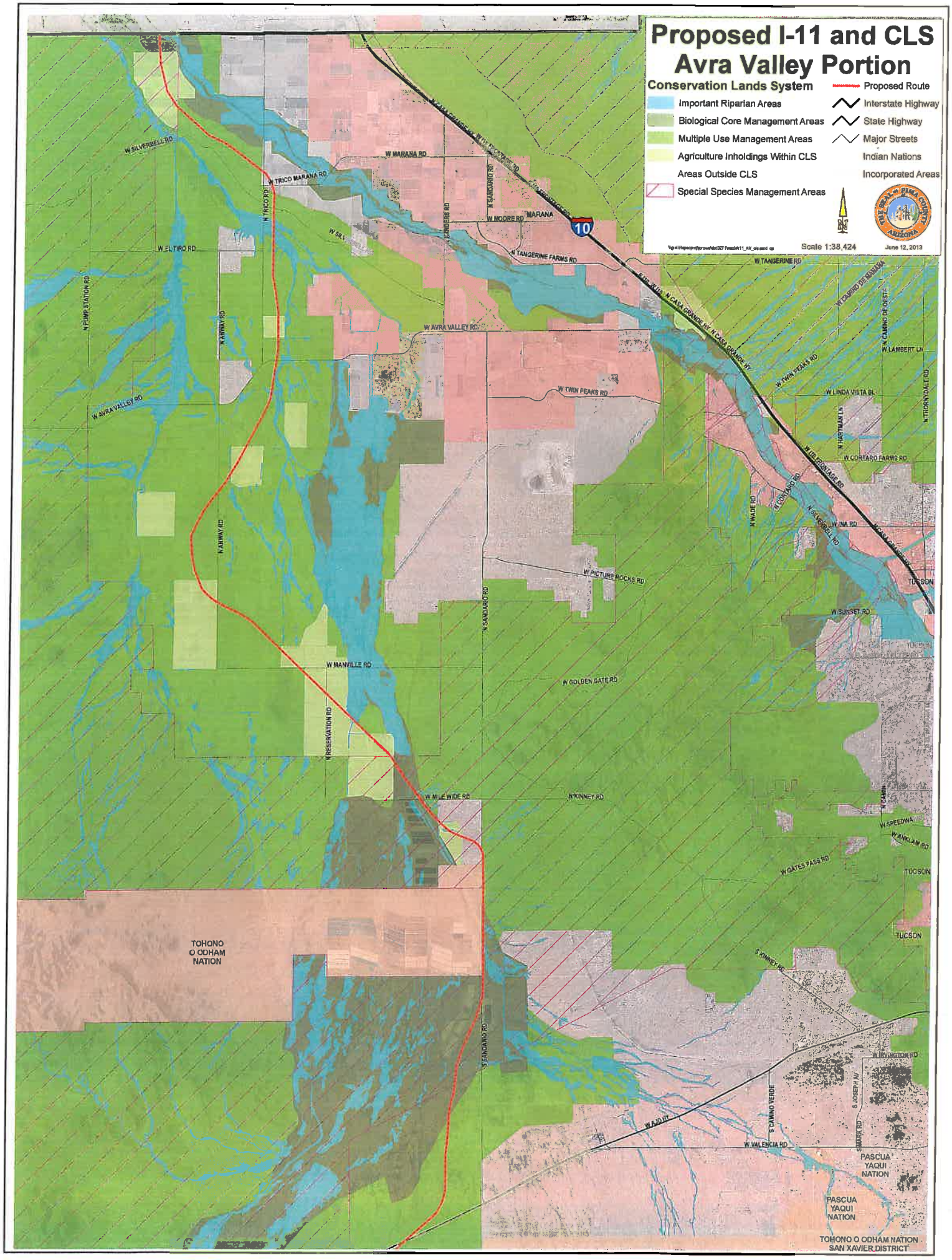
The information depicted on this display is the result of digital analyses performed on a variety of databases provided and maintained by several governmental agencies. The accuracy of the information presented is limited to the collective accuracy of these databases on the date of the analysis. Pima County Information Technology Department Geographic Information Systems makes no claims regarding the accuracy of the information depicted hereon. This product is subject to the GIS Division Disclaimer and Use Restrictions

GEOGRAPHIC INFORMATION SERVICES

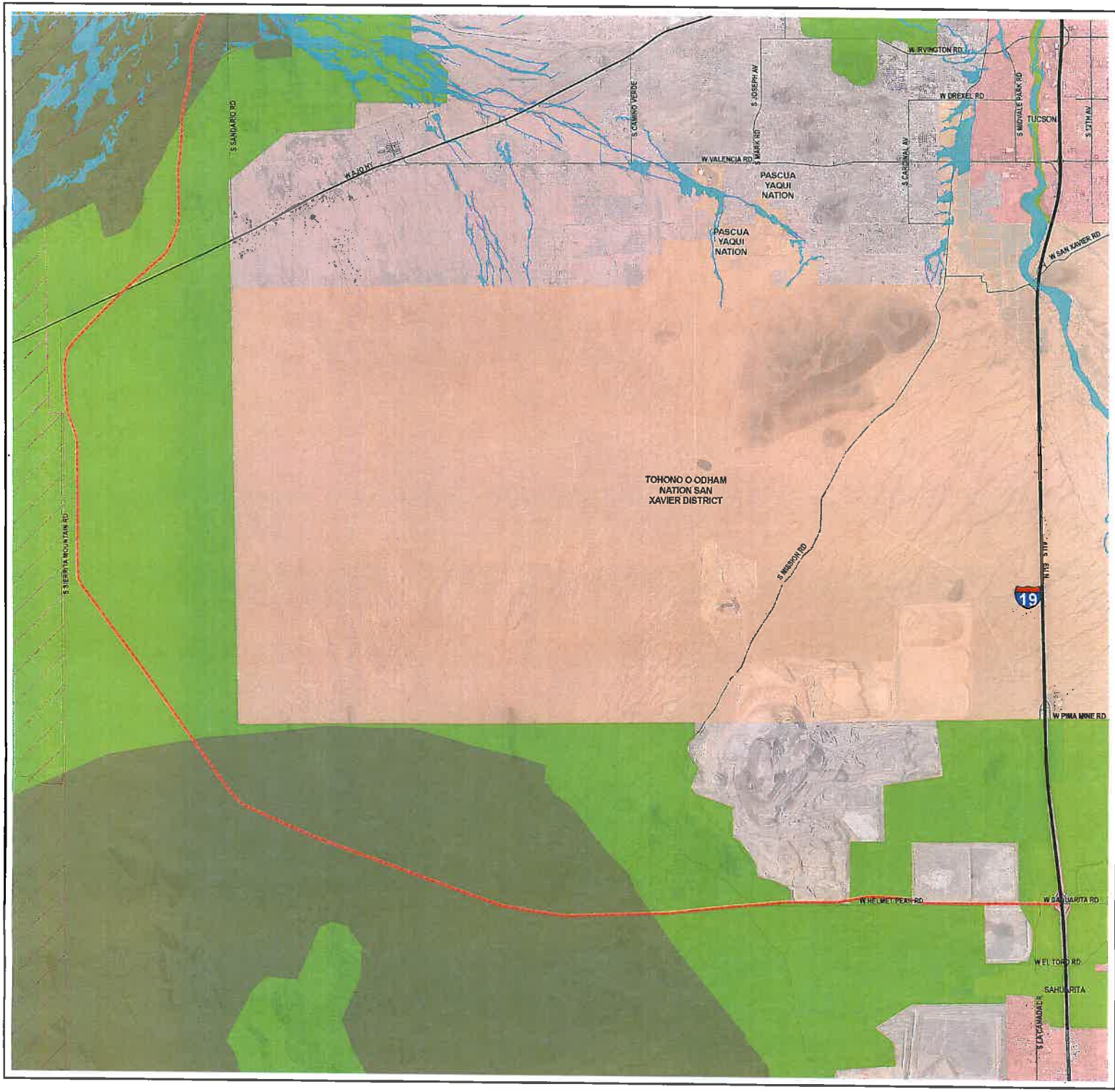
Scale 1:32,000

Pima County Information Technology Dept
201 North Stone Avenue - 8th Floor
Tucson, Arizona 85701-1207
(520)740-6870 - FAX (520)798-3429

June 20, 2013


Proposed I-11 and CLS
Avra Valley Portion
Conservation Lands System
Important Riparian Areas
Biological Core Management Areas
Multiple Use Management Areas
Agriculture Inholdings Within CLS
Areas Outside CLS
Special Species Management Areas
Proposed Route
Interstate Highway
State Highway
Major Streets
Indian Nations
Incorporated Areas
Scale 1:38,424
June 12, 2013
W SILVERBELL RD
W MARANA RD
W TRICO MARANA RD
N TRICO RD
N SANDARIO RD
W MOORE RD
MARANA
10
W EL TIRO RD
N TANGERINE FARMS RD
W TANGERINE RD
N PUMP STATION RD
N ANWAY RD
W AVRA VALLEY RD
W TWIN PEAKS RD
W LINDA VISTA BL
W CORTARO FARMS RD
W CORTARO RD
N SILVERBELL RD
W INA RD
W PICTURE ROCKS RD
TUCSON
W SUNSET RD
W MANVILLE RD
W GOLDEN GATE RD
N RESERVATION RD
W MILE WIDE RD
N KINNEY RD
W SPEEDWAY
W GATES PASS RD
TOHONO
O ODHAM
NATION
S KINNEY RD
W IRVINGTON RD
W AJO RD
S CAMINO VERDE
W VALENCIA RD
PASCUA
YAQUI
NATION
TOHONO O ODHAM NATION
SAN XAVIER DISTRICT

Proposed I-11 and CLS Southern Portion

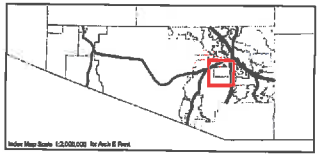


- Proposed Route
- Interstate Highway
- State Highway
- Indian Nations
- Incorporated Areas
- Special Species Management Areas

Conservation Lands System

- Important Riparian Areas
- Biological Core Management Areas
- Multiple Use Management Areas
- Agriculture Inholdings Within CLS
- Areas Outside CLS

Pima County Index Map



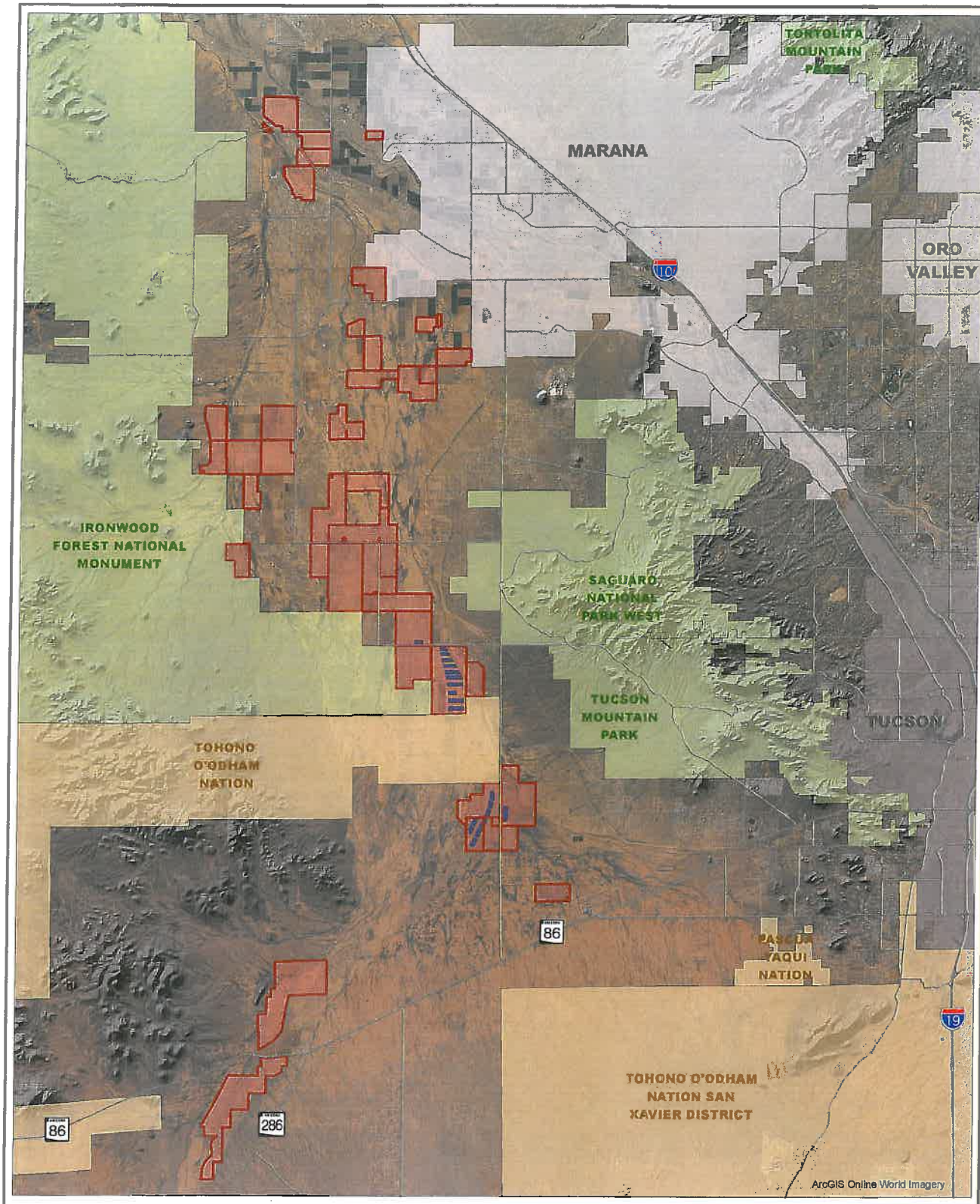
The information depicted on this display is the result of digital analyses performed on a variety of databases provided and maintained by several governmental agencies. The accuracy of the information presented is limited to the collective accuracy of these databases on the date of the analysis. Pima County Information Technology Department Geographic Information Systems makes no claims regarding the accuracy of the information depicted herein. This product is subject to the GIS Division Disclaimer and Use Restrictions.

GEOGRAPHIC INFORMATION SERVICES

Scale 1:32,000

Pima County Information Technology Dept
201 North Stone Avenue - 9th Floor
Tucson, Arizona 85701-1207
(520)740-8670 - FAX (520)798-3429

May 28, 2013



Location of the Avra Valley HCP Permit Area

- HCP Permit Area (21,740 ac.)
- Native American Jurisdiction
- Large Parks and National Forest Lands
- City of Tucson
- Other Incorporated Areas
- Unincorporated Pima County
- Major streets

N W E S

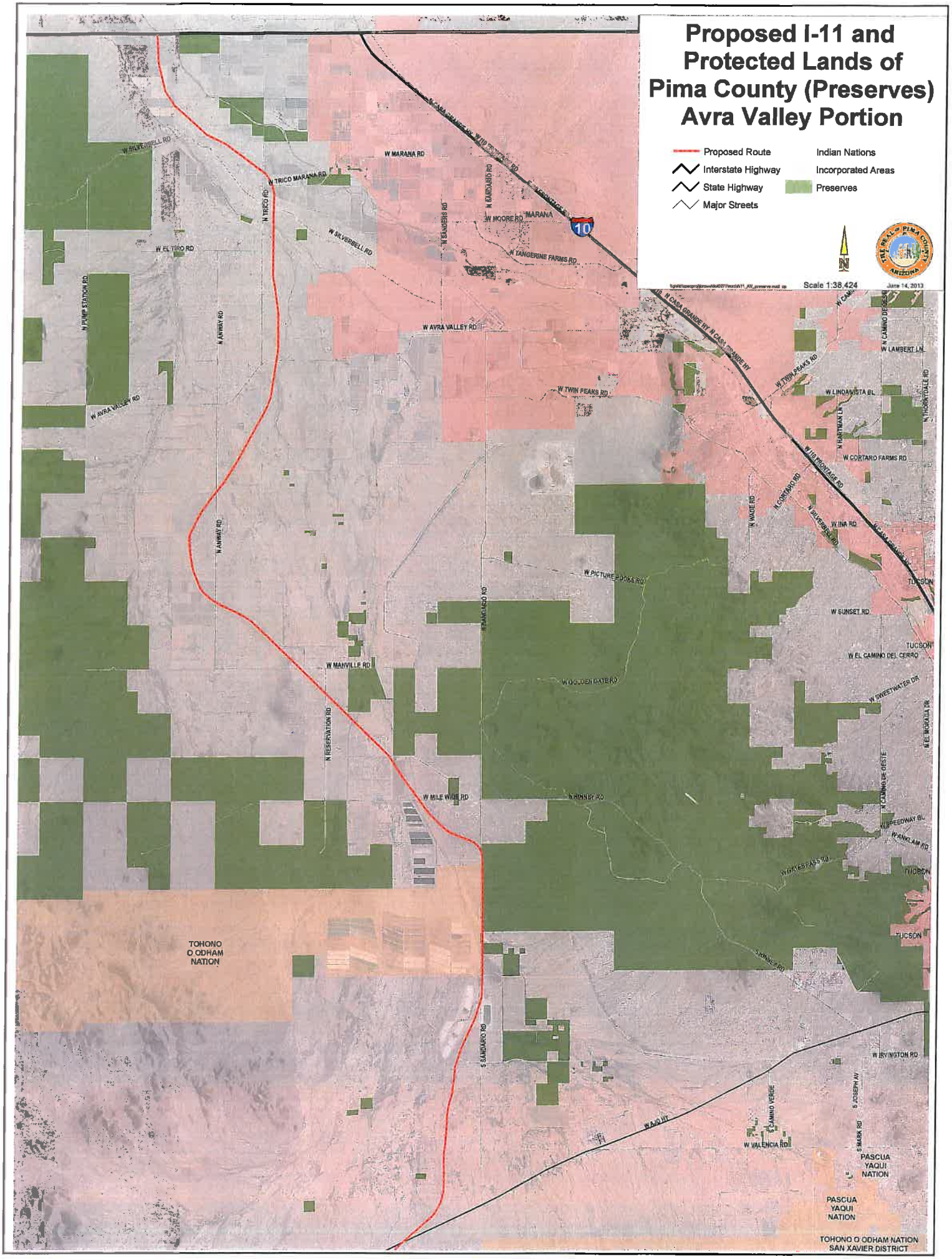
Miles 0 1 2 3 4

Kilometers 0 1 2 3 4 5 6

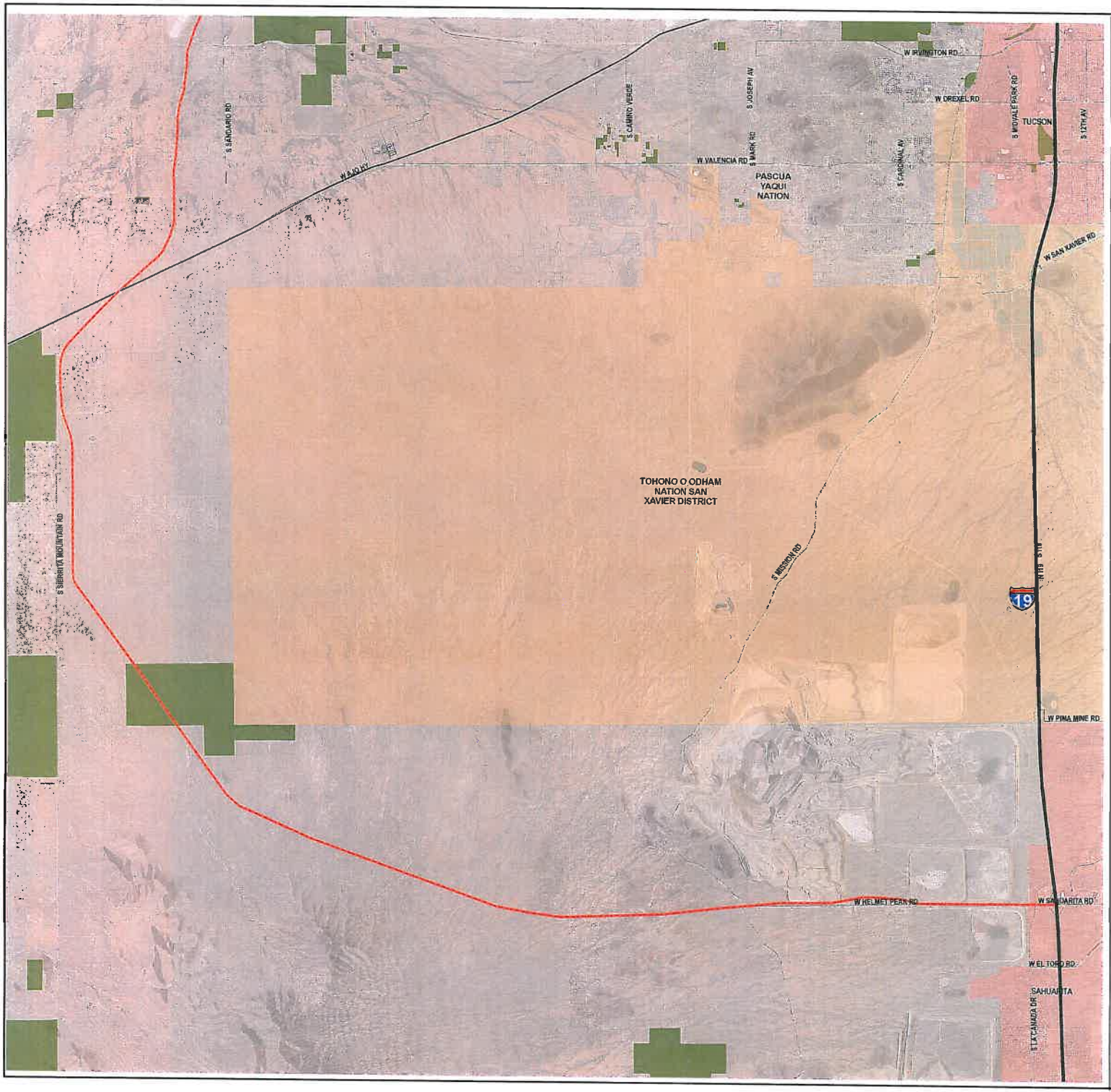
CITY OF TUCSON

6/2012

Proposed I-11 and Protected Lands of Pima County (Preserves) Avra Valley Portion

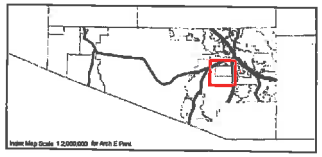


Proposed I-11 and Protected Lands of Pima County (Preserves) Southern Portion



Proposed Route
Interstate Highway
State Highway
Indian Nations
Incorporated Areas
Preserves

Pima County Index Map



The information depicted on this display is the result of digital analyses performed on a variety of databases provided and maintained by several governmental agencies. The accuracy of the information presented is limited to the collective accuracy of these databases on the date of the analyses. Pima County Information Technology Department Geographic Information Systems makes no claims regarding the accuracy of the information depicted herein This product is subject to the GIS Division Disclaimer and Use Restrictions

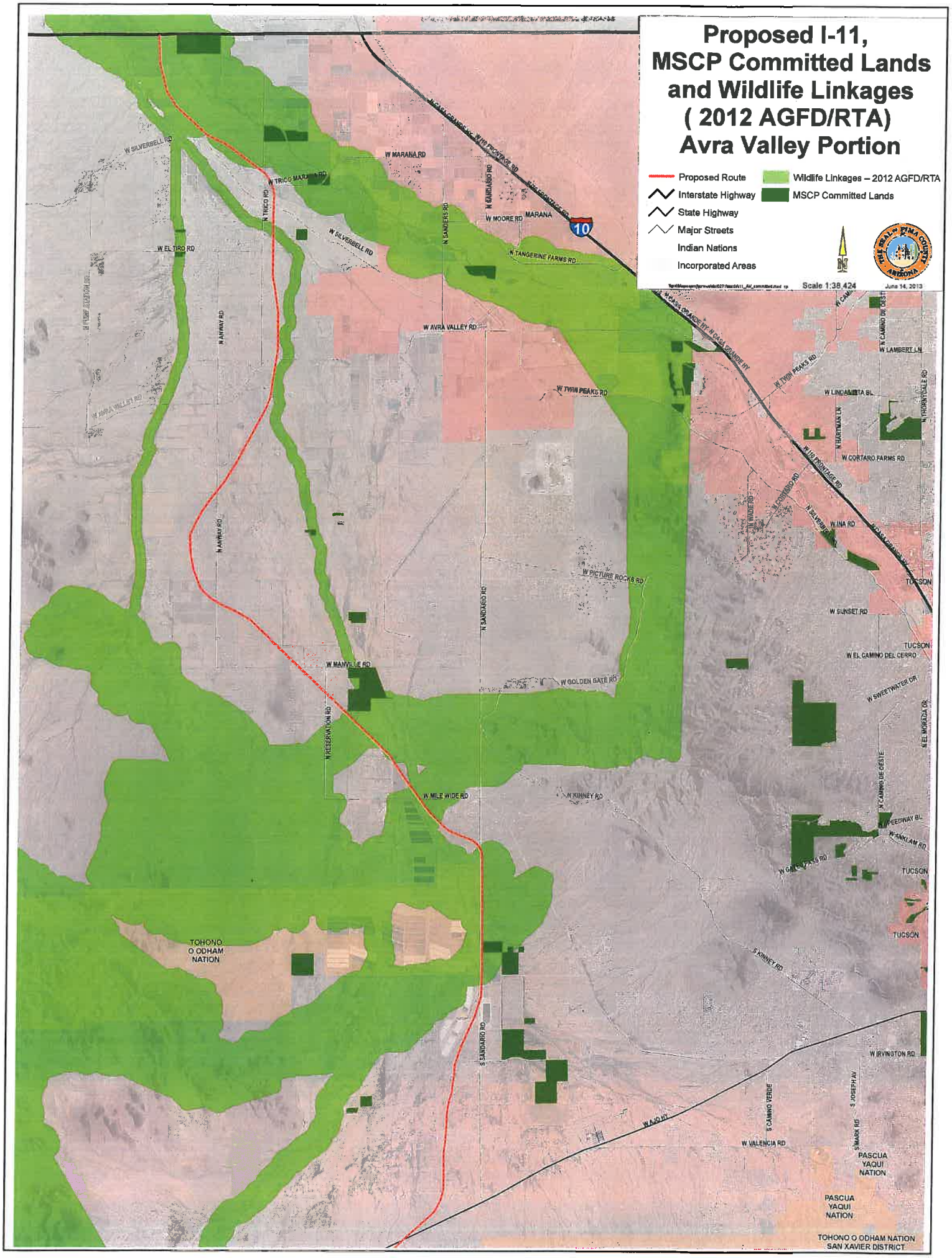
GEOGRAPHIC INFORMATION SERVICES

Scale 1:32,000

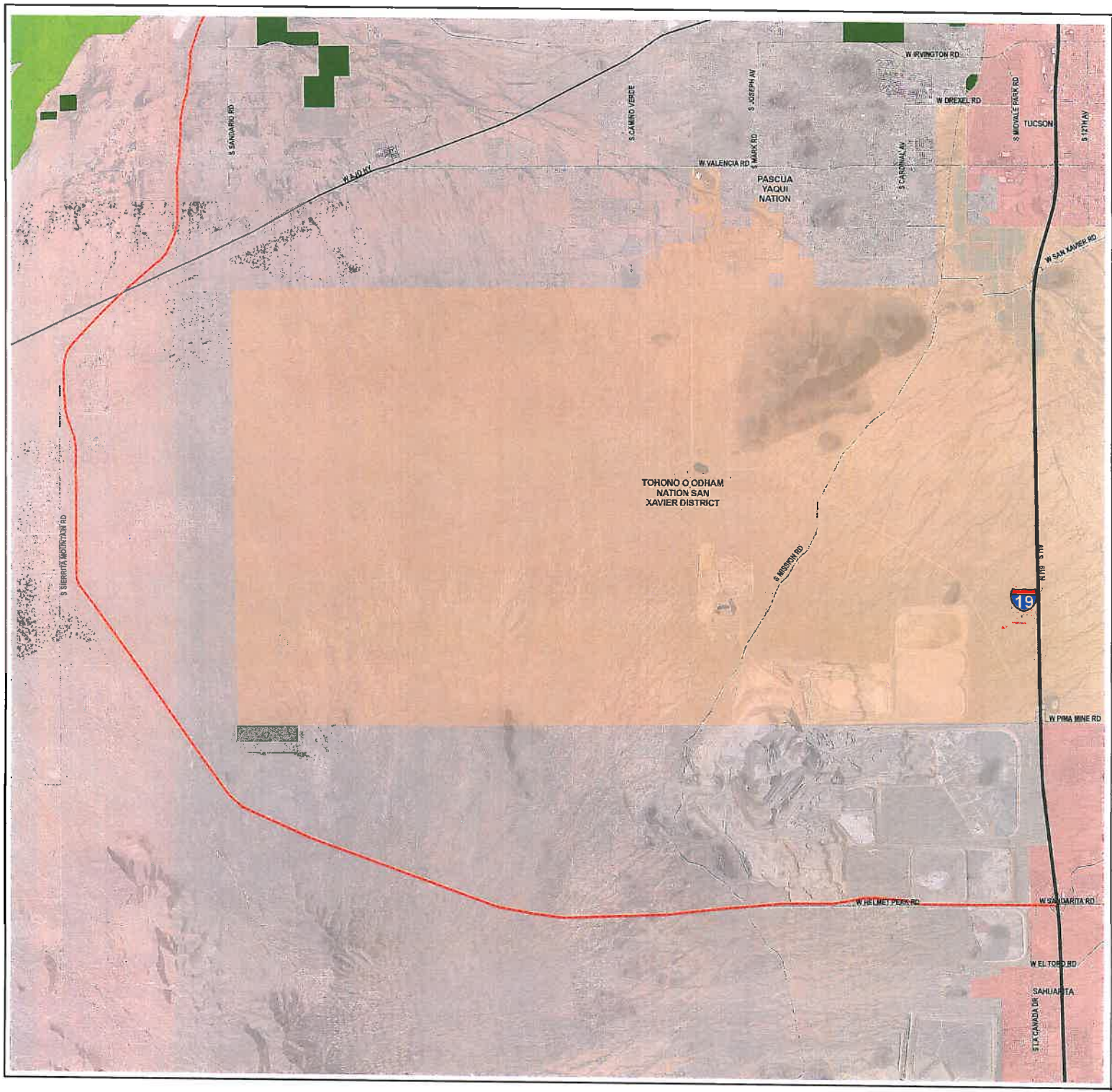
Pima County Information Technology Dept.
201 North Stone Avenue - 8th Floor
Tucson, Arizona 85701-1207
(520)740-8870 - FAX (520)798-3429

June 14, 2013

Proposed I-11, MSCP Committed Lands and Wildlife Linkages (2012 AGFD/RTA) Avra Valley Portion

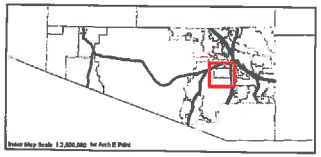


Proposed I-11, MSCP Committed Lands and Wildlife Linkages (2012 AGFD/RTA) Southern Portion



Proposed Route
Interstate Highway
State Highway
Indian Nations
Incorporated Areas
MSCP Committed Lands
Wildlife Linkages – 2012 AGFD/RTA

Pima County Index Map



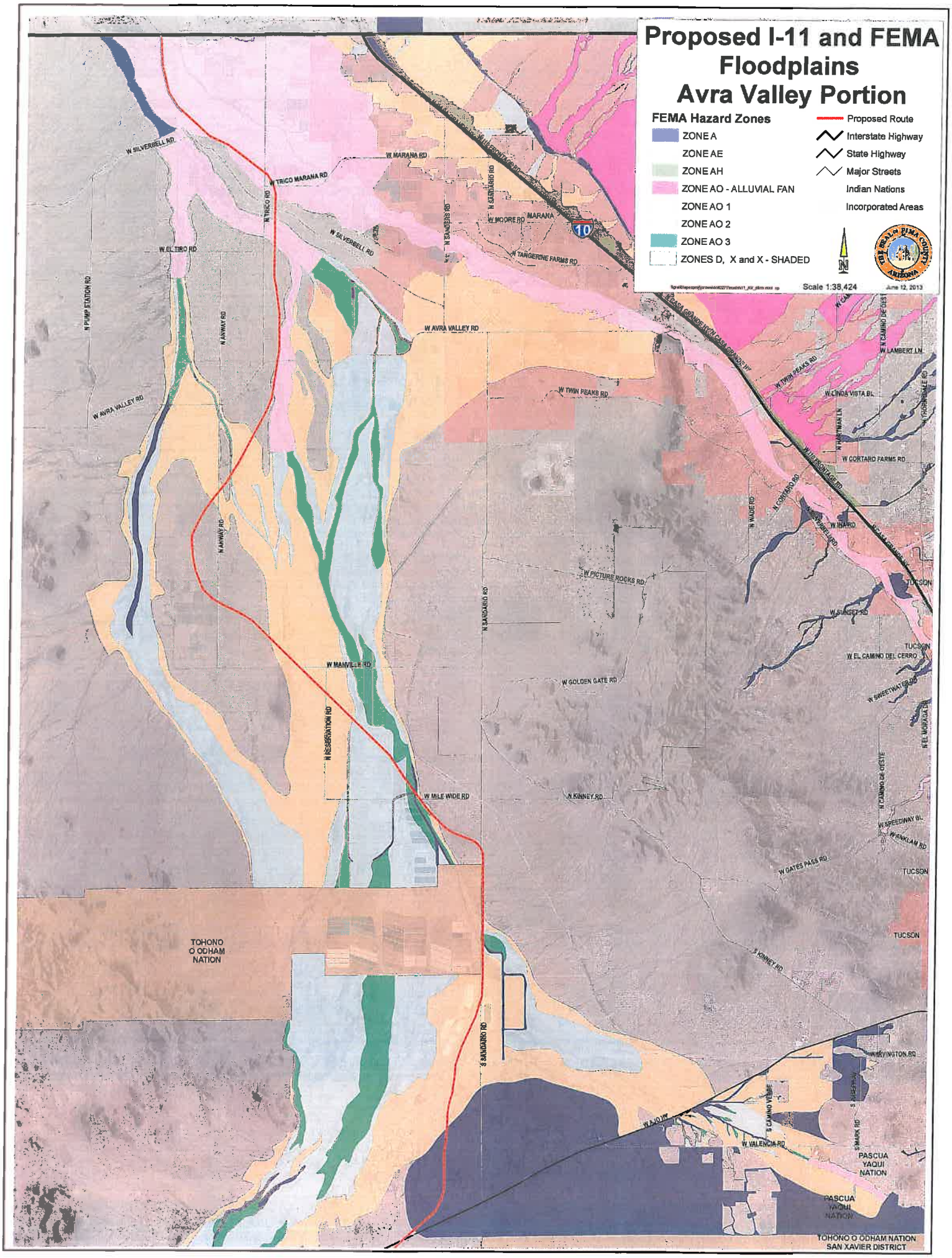
The information depicted on this display is the result of digital analyses performed on a variety of databases provided and maintained by several governmental agencies. The accuracy of the information presented is limited to the collective accuracy of these databases on the date of the analysis. Pima County Information Technology Department Geographic Information Systems makes no claims regarding the accuracy of the information depicted herein. This product is subject to the GIS Division Disclaimer and Use Restrictions.

GEOGRAPHIC INFORMATION SERVICES

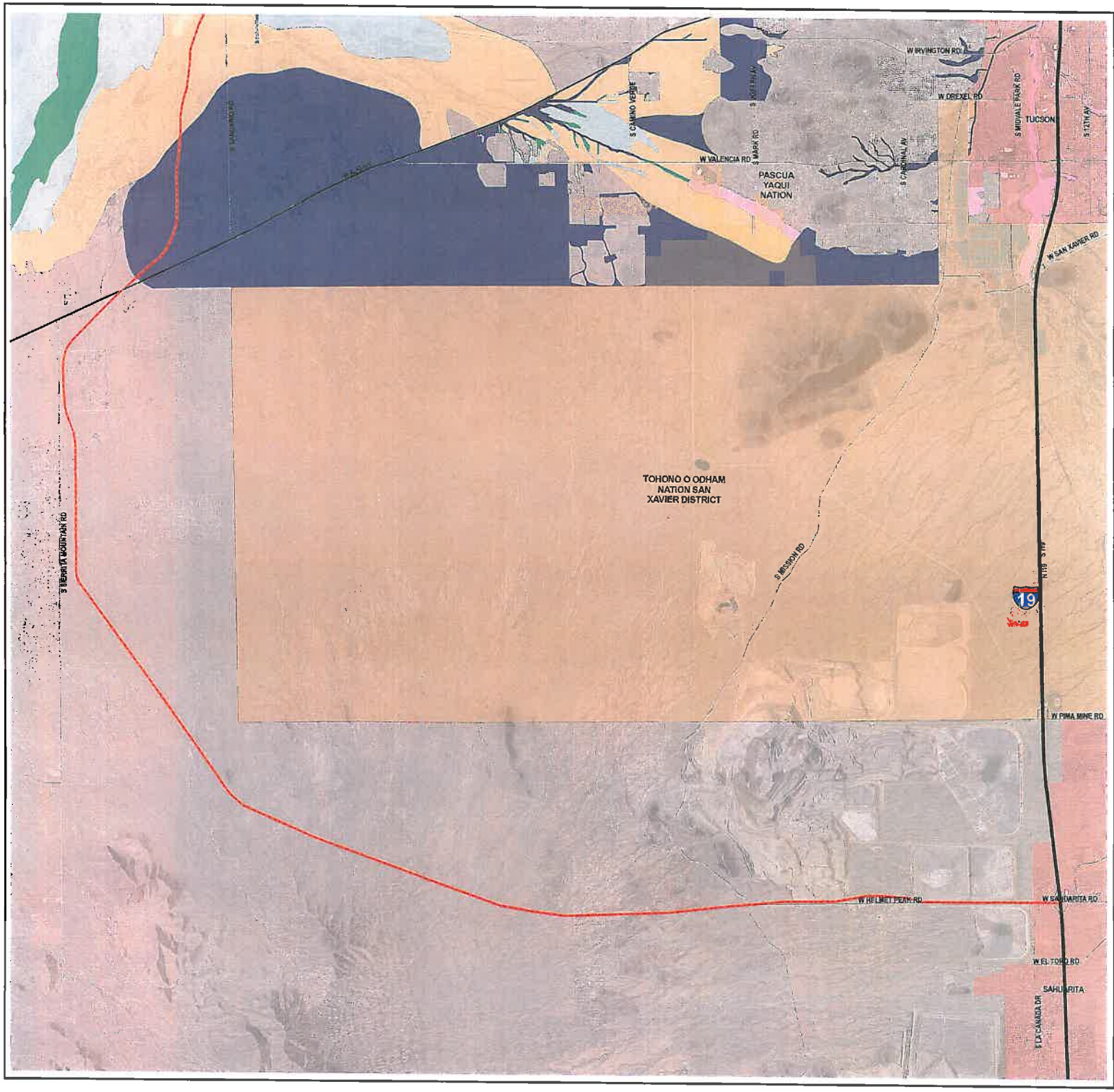
Scale 1:32,000

Pima County Information Technology Dept.
201 North Stone Avenue - 8th Floor
Tucson, Arizona 85701-1207
(520)740-6670 - FAX (520)788-3429

June 14, 2013


Proposed I-11 and FEMA Floodplains
Avra Valley Portion
FEMA Hazard Zones
ZONE A
ZONE AE
ZONE AH
ZONE AO - ALLUVIAL FAN
ZONE AO 1
ZONE AO 2
ZONE AO 3
ZONES D, X and X - SHADED
Proposed Route
Interstate Highway
State Highway
Major Streets
Indian Nations
Incorporated Areas
Scale 1:38,424
June 12, 2013
W SILVERBELL RD
W MARANA RD
W TRICO MARANA RD
N TRICO RD
N SANDARIO RD
W MOORE RD
MARANA
10
W SILVERBELL RD
W EL TIRO RD
W TANGERINE FARMS RD
N PUMP STATION RD
N ANWAY RD
W AVRA VALLEY RD
W TWIN PEAKS RD
W LAMBERT LN
W LINDA VISTA BL
W CORTARO FARMS RD
W INARO
W PICTURE ROCKS RD
W SUNSET RD
TUCSON
W EL CAMINO DEL CERRO
W SWEETWATER RD
W MANVILLE RD
W GOLDEN GATE RD
N RESERVATION RD
W MILE WIDE RD
N KINNEY RD
W SPEEDWAY BL
W FRANKLIN RD
W GATES PASS RD
TOHONO O ODHAM NATION
S SANDARIO RD
S KINNEY RD
W IRVINGTON RD
W AJO HW
W VALENCIA RD
PASCUA YAQUI NATION
TOHONO O ODHAM NATION SAN XAVIER DISTRICT

Proposed I-11 and FEMA Floodplains Southern Portion

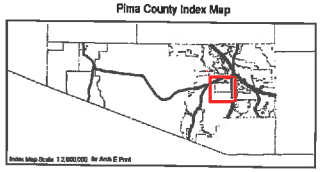


Proposed Route
Interstate Highway
State Highway
Indian Nations
Incorporated Areas

FEMA Hazard Zones

ZONE A
ZONE AE
ZONE AH
ZONE AO - ALLUVIAL FAN
ZONE AO 1
ZONE AO 2
ZONE AO 3
ZONES D, X and X - SHADED

Pima County Index Map



The information depicted on this display is the result of digital analyses performed on a variety of databases provided and maintained by several governmental agencies. The accuracy of the information presented is limited to the collective accuracy of these databases on the date of the analysis. Pima County Information Technology Department Geographic Information Systems makes no claims regarding the accuracy of the information depicted herein. This product is subject to the GIS Division Disclaimer and Use Restrictions.

GEOGRAPHIC INFORMATION SERVICES

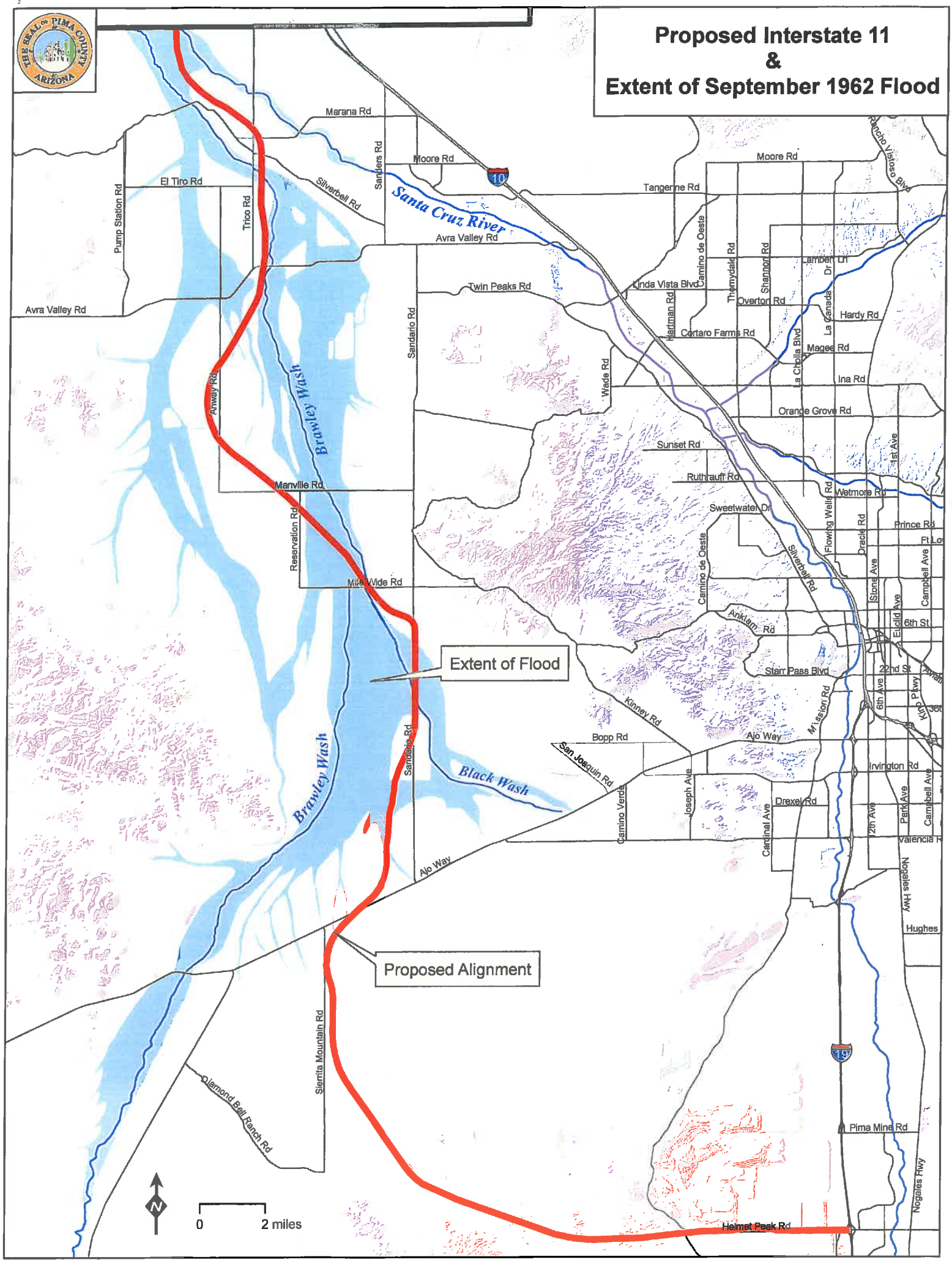
N

Scale 1:32,000

Pima County Information Technology Dept.
201 North Stone Avenue - 9th Floor
Tucson, Arizona 85701-1207
(520)740-6670 - FAX (520)798-3428

May 28, 2013

Proposed Interstate 11 & Extent of September 1962 Flood



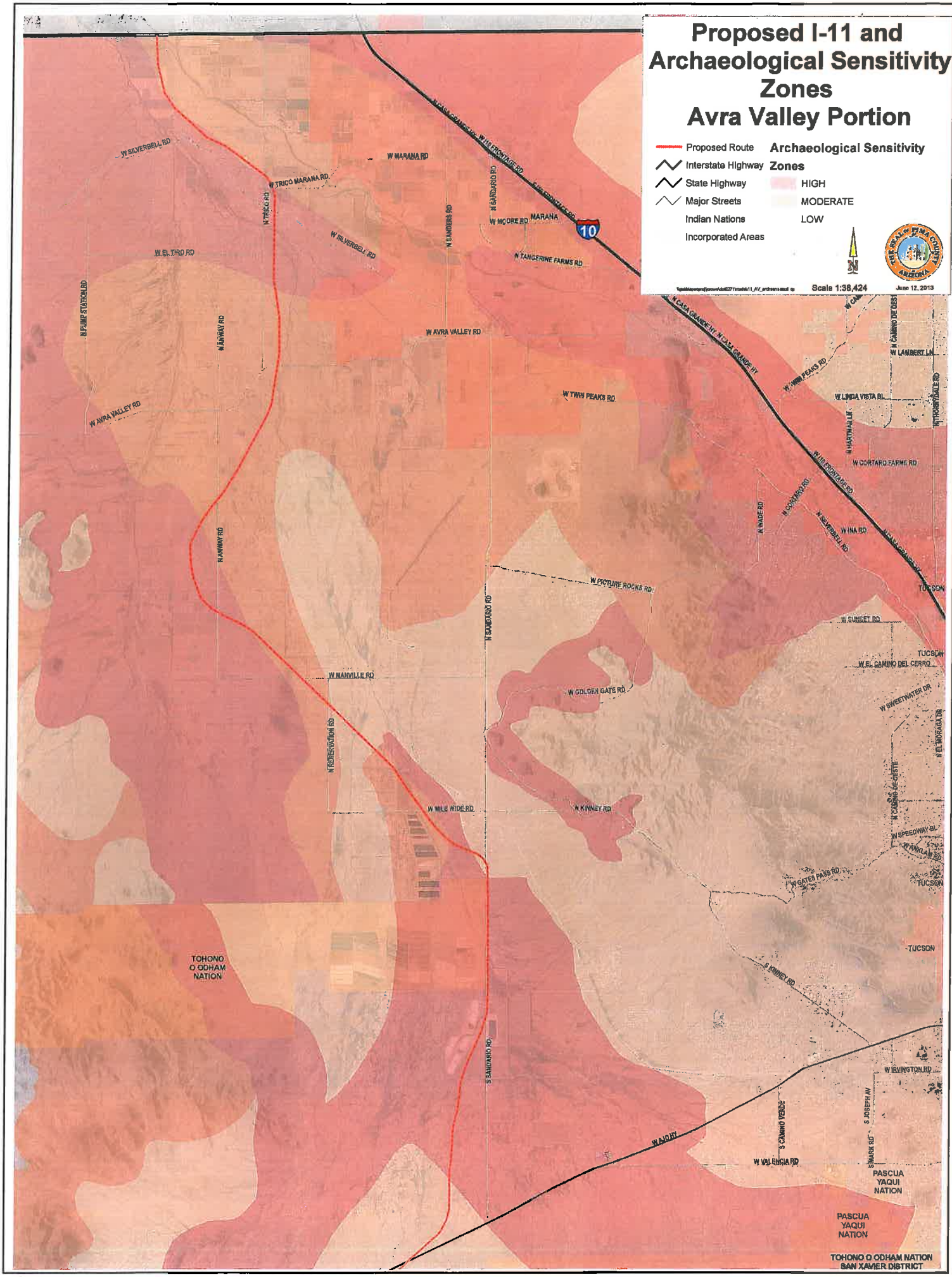
Proposed I-11 and Archaeological Sensitivity Zones Avra Valley Portion

Proposed Route
Interstate Highway
State Highway
Major Streets
Indian Nations
Incorporated Areas

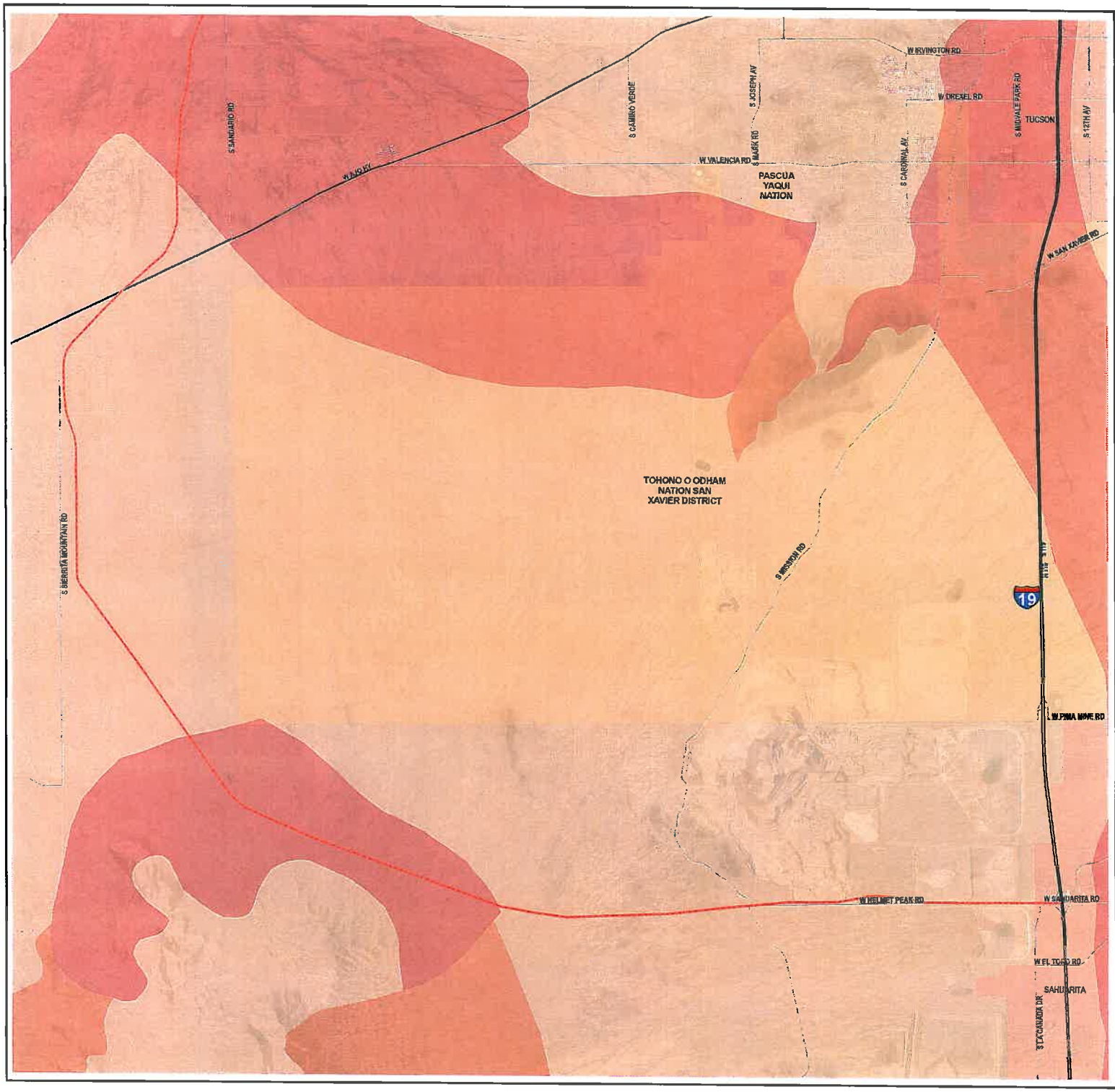
Archaeological Sensitivity Zones
HIGH
MODERATE
LOW

Scale 1:38,424

June 12, 2013



Proposed I-11 and Archaeological Sensitivity Zones Southern Portion

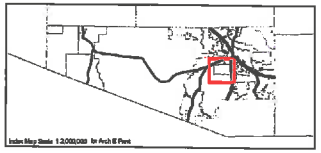


Proposed Route
Interstate Highway
State Highway
Indian Nations
Incorporated Areas

Archaeological Sensitivity Zones

HIGH
MODERATE
LOW

Pima County Index Map



The information depicted on this display is the result of digital analyses performed on a variety of databases provided and maintained by several governmental agencies. The accuracy of the information presented is limited to the collective accuracy of these databases on the date of the analyses. Pima County Information Technology Department Geographic Information Systems makes no claims regarding the accuracy of the information depicted herein. This product is subject to the GIS Division Disclaimer and Use Restrictions

GEOGRAPHIC INFORMATION SERVICES

Scale 1:32,000

Pima County Information Technology Dept.
201 North Stone Avenue - 9th Floor
Tucson, Arizona 85701-1207
(520)740-6870 - FAX (520)798-3429

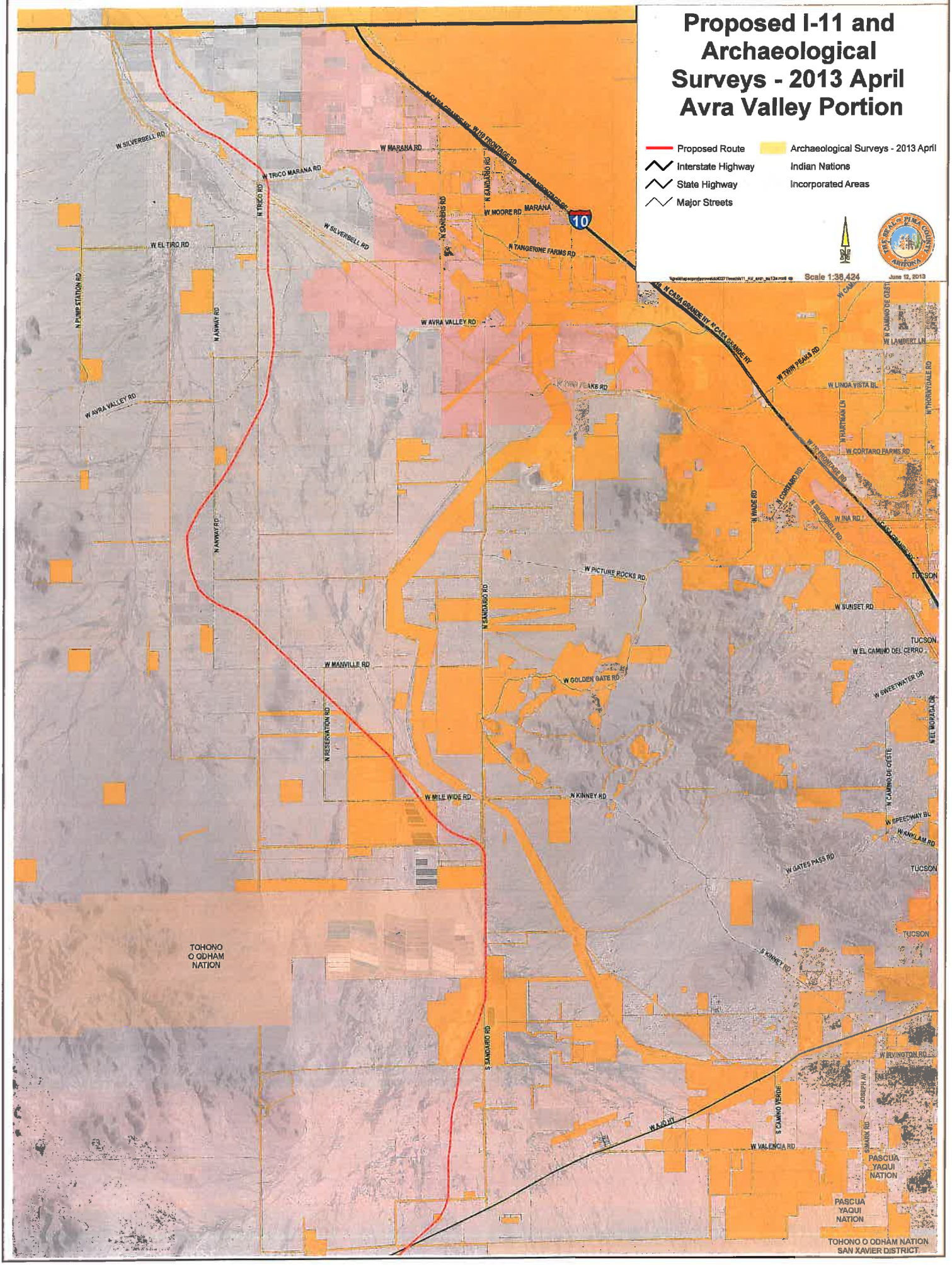
June 12, 2013

Proposed I-11 and Archaeological Surveys - 2013 April Avra Valley Portion

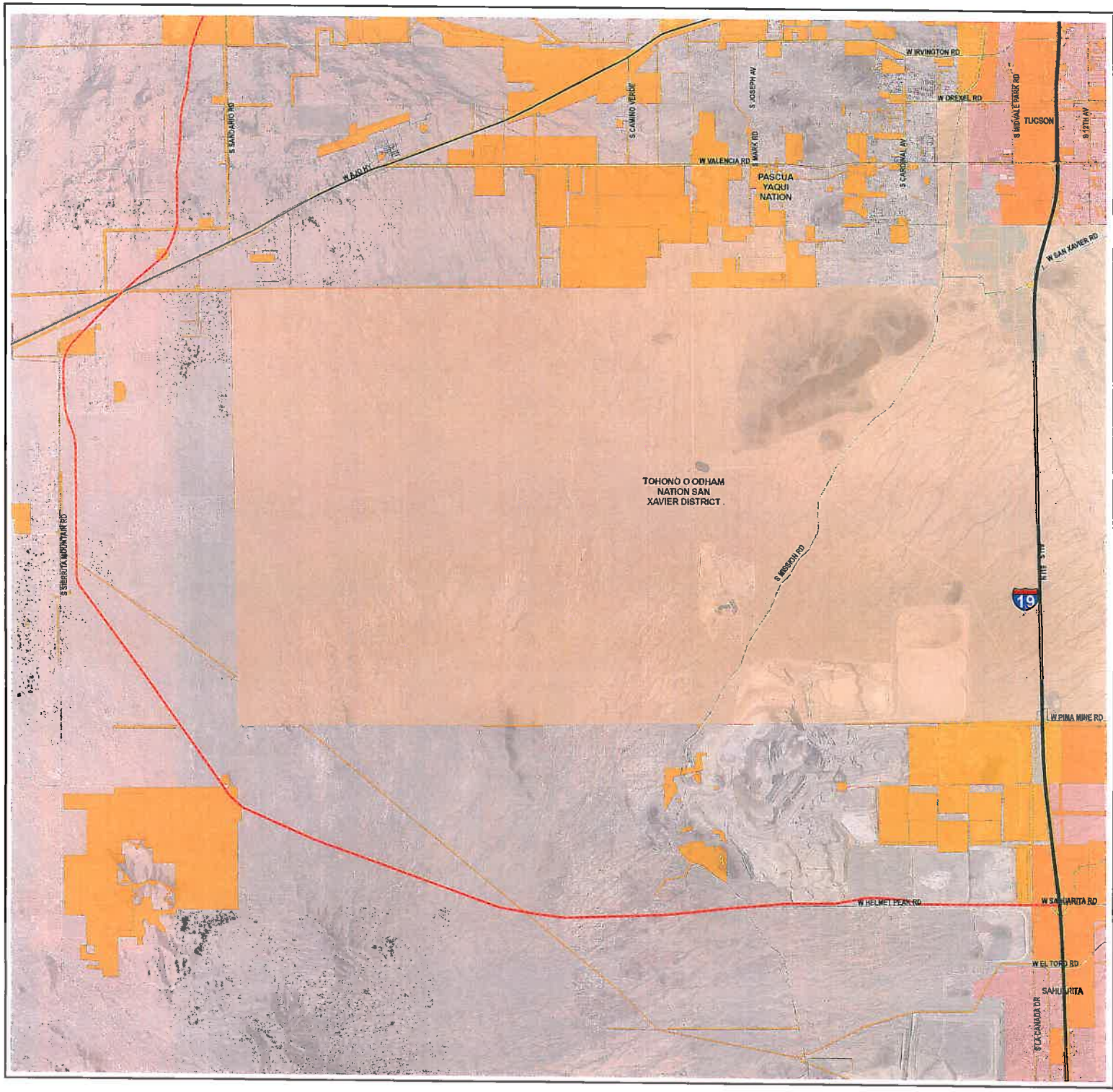
Proposed Route
Interstate Highway
State Highway
Major Streets
Archaeological Surveys - 2013 April
Indian Nations
Incorporated Areas

Scale 1:38,424

June 12, 2013

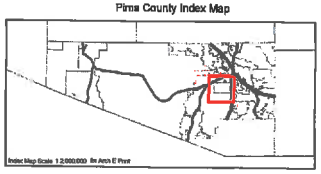


Proposed I-11 and Archaeological Surveys - 2013 April Southern Portion



Proposed Route
Interstate Highway
State Highway
Indian Nations
Incorporated Areas
Archaeological Surveys - 2013 April

Pima County Index Map



The information depicted on this display is the result of digital analyses performed on a variety of databases provided and maintained by several governmental agencies. The accuracy of the information presented is limited to the collective accuracy of these databases on the date of the analysis. Pima County Information Technology Department Geographic Information Systems makes no claims regarding the accuracy of the information depicted herein. This product is subject to the GIS Division Disclaimer and Use Restrictions

GEOGRAPHIC INFORMATION SERVICES

Scale 1:32,000

Pima County Information Technology Dept
201 North Stone Avenue - 8th Floor
Tucson, Arizona 85701-1207
(520)740-6870 - FAX (520)798-3429

June 12, 2013