BIA Rt 15: Battaglia Dr to SR 86
Road Safety Assessment

Prepared for:
The Tohono O'odham Nation

Prepared by:

Greenlight Traffic Engineering

KITTELSON & ASSOCIATES

Funded by:

U.S. Department of Transportation
Federal Highway Administration

NOT FOR CONSTRUCTION: Recommendations contained in this document are intended ONLY for use by the local agency determining possible future changes at the RSA location.

May 2023

Table of Contents

Project Request

The Road Safety Assessment (RSA) of the BIA Indian Route 15 was conducted at the request of the Tohono O'odham Nation. It should be noted that this RSA focused explicitly on the safety aspects of the BIA Rt 15 corridor from Battaglia Drive to State Route 86.

RSA Team

Mike Blankenship of Greenlight Traffic Engineering led the independent, multi-disciplinary RSA team. The RSA team included:

- Adam Larsen, Federal Highway Administration
- Jeff King, Federal Highway Administration
- Stacey Begay, Bureau of Indian Affairs
- David Smith, Bureau of Indian Affairs
- Mervin Garcia, Bureau of Indian Affairs
- Don Sneed, Arizona Department of Transportation
- Richard Nassi, Pima Association of Governments
- Gabe Thum, Pima Association of Governments
- Vamshi Yellisetty, Kittelson & Associates
- Felipe Ladron de Guevara, Kittelson & Associates
- Josh Barger, Greenlight Traffic Engineering

RSA Process

A Road Safety Assessment is a formal examination of user safety of a roadway by an independent, multi-disciplinary team that includes experienced and knowledgeable members. RSAs help promote safety by identifying a range of safety issues; promoting awareness of safer transportation planning, design, construction, and maintenance practices; integrating multimodal interests; and, more directly, considering the effect of human factors, enforcement and education activities, and emergency responder practices.

The RSA team conducted this assessment to the best of its abilities within the time allotted. The initial recommendations for the Nation to consider are based on the background information provided during the Start-Up and Preliminary Findings Meetings, an evaluation of recent crash data, stakeholder and community feedback, and day and night field reviews, as discussed in the following paragraphs. This information helped the RSA team identify potential opportunities to improve the expected safety performance of the BIA Route 15 corridor. While every attempt has been made to identify potential safety issues, it is essential to note that the safety performance of the roadway remains the responsibility of the roadway owner and the roadway users.

Start-Up Meeting

The assessment team met with the Nation and stakeholders to discuss background information on September 14, 2021, virtually at a Microsoft Teams conference and in person at the Sells District Conference room in the Tohono O'odham Nation. In addition to the RSA team members, participants included Garrett Melendez (Santa Rosa Ranch School), Damascus Francisco (Planning and Economic Development (PEDD) - Roads Program), Yuriko Toro (PEDD – Roads Program), Samuel Orozco (PEDD – Roads Program), Marilyn Celestine (PEDD), Ralph Maldonado (Tohono O'odham Fire Dept.), Juan Buendia (Sells District Chairman), Andy Lopez (Gu Achi District Rep.), Elaine Delahanty (Chukut Kuk District Chairwoman), Richard Saunders (Natural Resources Dept.), Patricia Pablo (PEDD), Bruce Garcia (Sells District Vice Chairman), Leo Porter Jr. (Planning Admin), Denice Williams (Health Specialist), Dr. Christopher Bonn (Superintendent, Baboquivari Unified School District), Dr. LaRonda Lugo (Santa Rosa Ranch School Principal), Marilyn Cowboy, Marian Ramirez, Tobias Nez (Tohono O'odham Health Transportation Services), Rita Wilson (Sif Oidak District Chairwoman), and Kevin Ramirez (Baboquivari Unified School District).

Safety concerns that were noted by the stakeholders to be considered in the RSA request include the following:

- Roadway flooding
- Shoulder erosion
- Roadside vegetation
- Animals in the roadway
- Speeding
- Future roadside developments
- Existing roadside communities

Specific priority locations, issues, and concerns noted by stakeholders follow.

Damascus stated that he had received public comments already. These comments typically involve storm events and heavy vehicles causing road damage, but the comments tend to lack location detail.

Richard Saunders noted concerns about oversized and overweight vehicles traveling along the route. Heavy vehicle-involved crashes are a concern on the route. Other concerns include oversized vehicle transport curfews and a request for public notification of scheduled oversize transports to the community.

Rita Wilson noted concerns on the route at mileposts 21 and 22 to 25, where flooding occurs due to levee breaches on the west side of the roadway. A recommendation for flood-oriented signage was made.

Concerns were raised over the lack of turn lanes at the following locations:

- New housing development near milepost 8 (will include 80 houses with a gym/rec center)
- Access into San Luis near milepost 13.5
- North and south access into Santa Rosa
- Near milepost 28 at Route 42

Kevin Ramirez noted that school buses have issues making turns at the above accesses. He also mentioned that installing a school bus stop sign would be helpful.

Jeff King stated that crashes involving cattle might be correlated to the time of day of cattle movements. Mike noted that fencing on the route might need to be evaluated and subsequently improved. Richard stated that there are no fences in patches along the route.

Damascus noted that late-night fatigue-related crashes might be attributed to employees returning to the Nation late at night. Mike suggested that rumble strip improvements on the route may help prevent these crashes.

A high cattle guard at the driveway for the new housing development near milepost eight is causing access issues. It was recommended that this and the damaged cattle guards on the route be replaced or repaired.

Speeding and illegal passing have been noted to occur throughout the route. Signage, enforcement, and public education should be considered recommendations. Mike pointed out that photo speed enforcement may be a solution, as well as speed feedback signs.

Damascus described the Santa Rosa bridge and turn-off as pedestrian attractions and may cause pedestrian safety concerns. The roadway shoulder in this area tends to attract parking. The bridge itself received two passing structural bridge inspections recently, Rita noted.

Tobias discussed that citations for speeding do not include fines. It was suggested to increase the penalty for speeding to deter speeders.

The stakeholder group recommended the installation of tortoise crossing signs along the route at locations that can be identified as popular crossing points.

Field Reviews

A daytime field visit was conducted on Tuesday, September 14, starting at approximately 1:00 PM, and an evening/nighttime field visit was conducted the same day at approximately 5:00 PM. The weather was hot and dry. The site review involved driving and walking the study area and observing road users.

The RSA team noted several existing and proposed roadway features that appear to enhance safety in the study area, including the following:

- Signs generally in good condition
- Pavement width is appropriate
- Curve warning signs
- Approach lighting at SR 86 intersection
- Striped passing and no-passing zones
- Roadside object markers
- Wash depth gauges
- 12’ lanes
- Reflective Pavement Markers (RPMs)
- Speed limit reduction at the approach to SR 86 intersection
- Flash flood warning signs
- No passing zone signs
- Rumble strips

Edge line rumble strips on the route

Roadside object marker

Evaluation of Crash Data

The most recent ten years of available crash data (2011 through 2020) for this 48.2-mile BIA Route 15 was obtained from ADOT's ACIS crash report database. A total of 181 crashes occurred over the 10-year period. The crashes on the route are broken down by crash severity, crashes by year, and crashes by time of day in **Figure 1** through **Figure 3**.

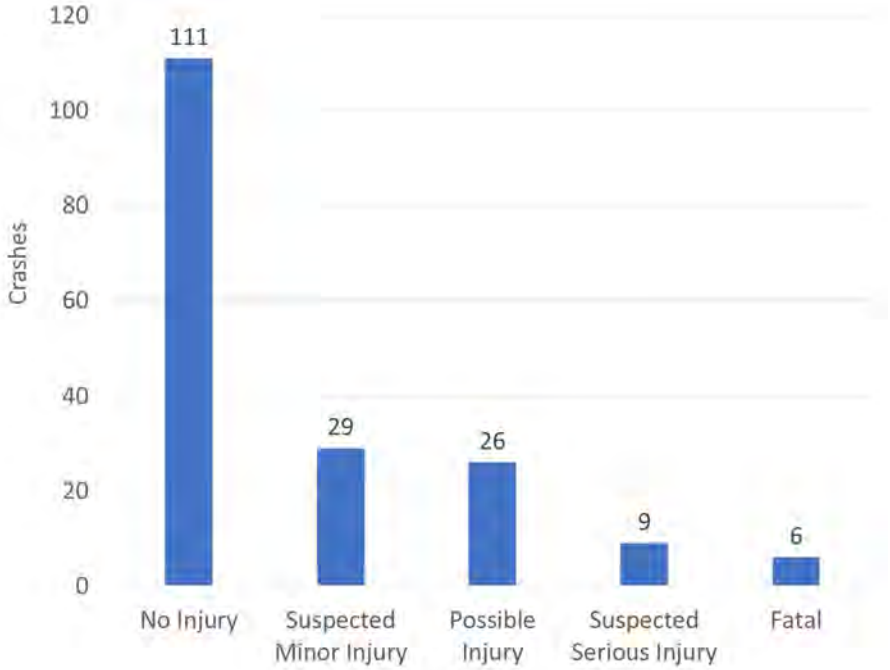


Figure 1: Route 15 Crash Severity

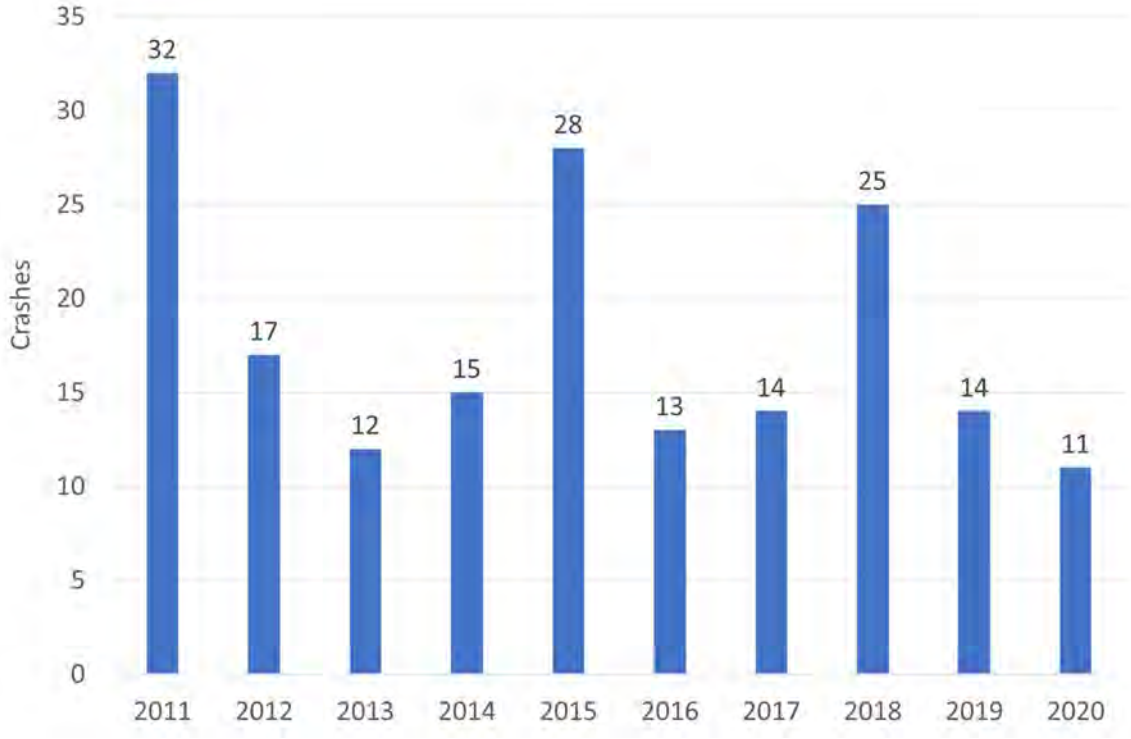


Figure 2: Route 15 Crashes by Year

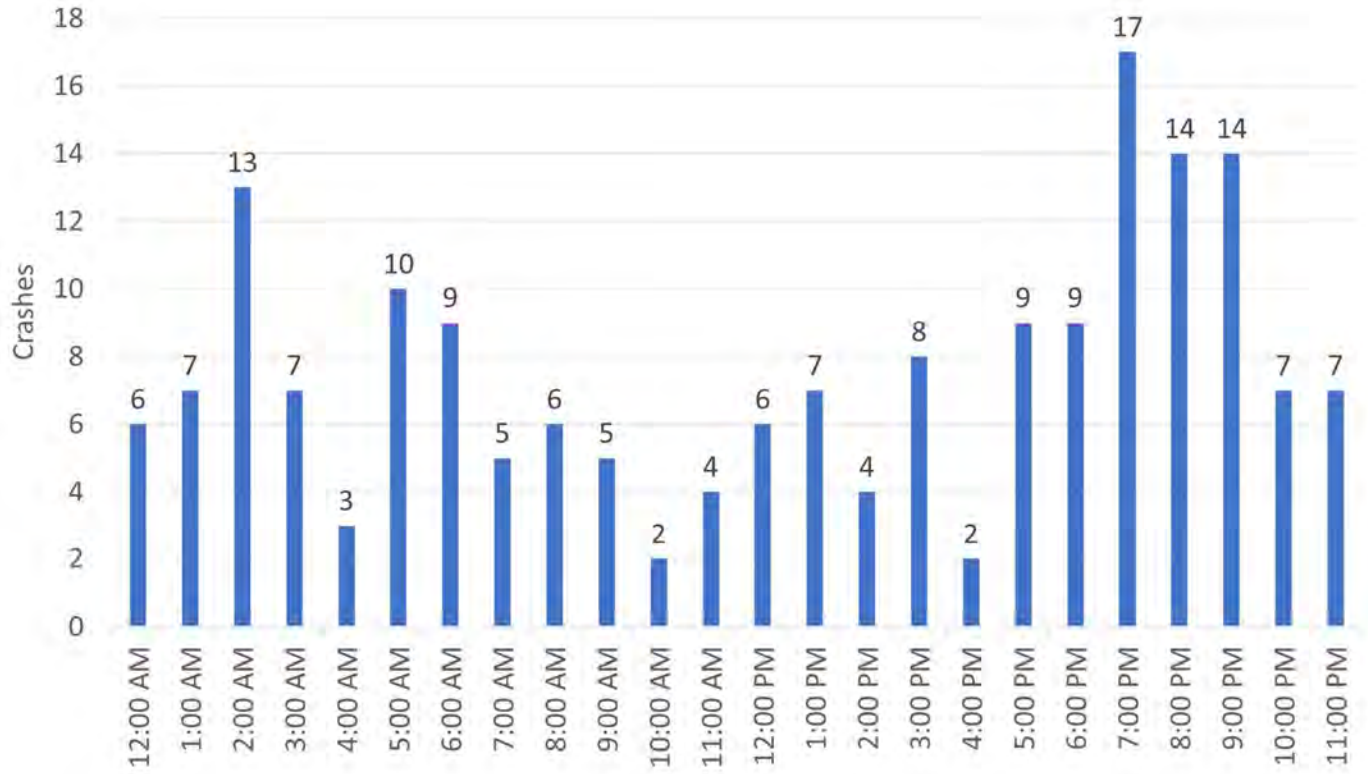


Figure 3: Route 15 Crashes by Time of Day

The crashes on the route are broken down by crash manners are shown in **Table 1**.

Table 1: Route 15 Crashes by Collision Manner

Collision Manner	Crashes	Percent of Total
Single Vehicle	155	86%
Other	7	4%
Rear End	7	4%
Angle (Front To Side)(Other Than Left Turn)	3	2%
Unknown	3	2%
Sideswipe Opposite Direction	3	2%
Sideswipe Same Direction	1	1%
Left Turn	1	1%
Rear To Side	1	1%
Total	**181**	**100%**

The route's number of first harmful event crashes is shown in **Figure 4**.

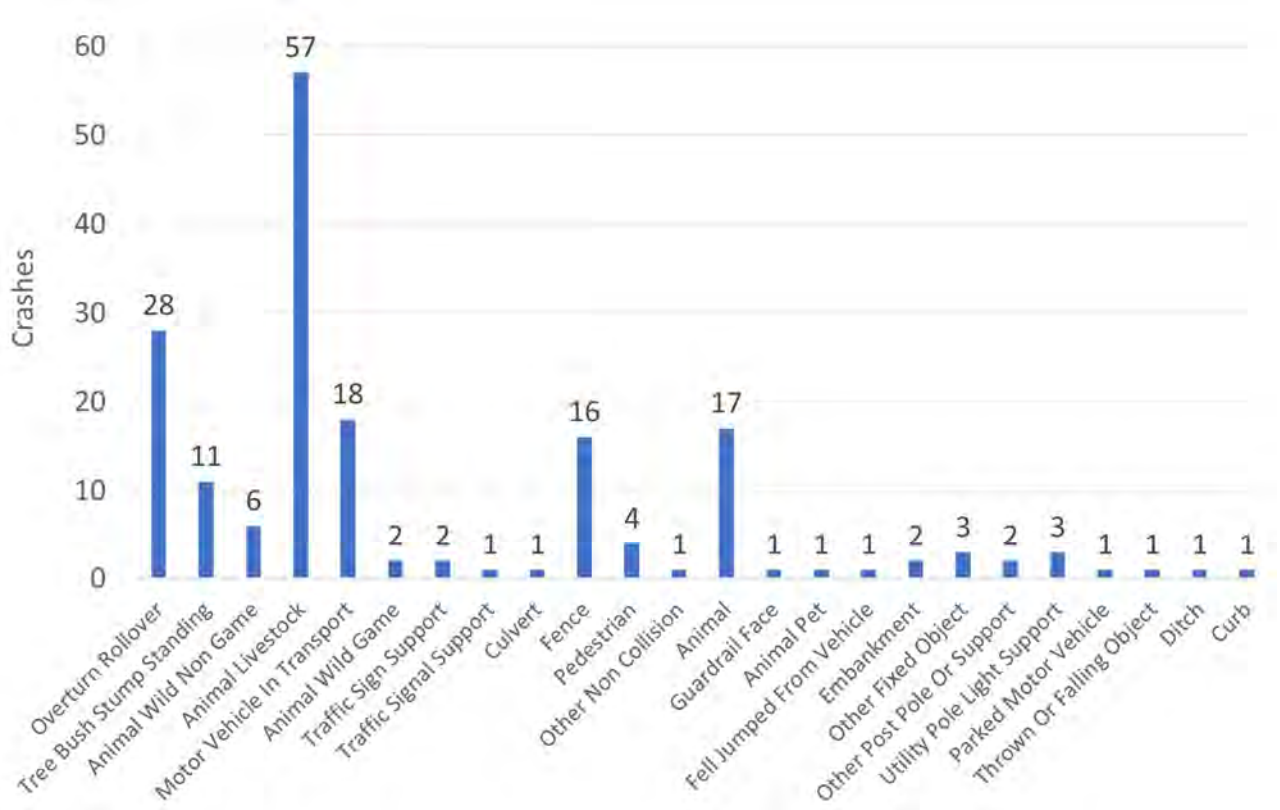


Figure 4: Route 15 Crashes by First Harmful Event

The route's crashes by the first harmful event compared to crash severity are shown in

Table 2.

Table 2: Route 19 First Harmful Event by Crash Severity

Row Labels	No Injury	Possible Injury	Suspected Minor Injury	Suspected Serious Injury	Fatal	Total
Animal	15		2			17
Animal Livestock	44	9	4			57
Animal Pet	1					1
Animal Wild Game	2					2
Animal Wild Non Game	4		2			6
Culvert					1	1
Curb			1			1
Ditch		1				1
Embankment	1	1				2
Fell Jumped From Vehicle				1		1
Fence	11	2		1	2	16
Guardrail Face	1					1
Motor Vehicle In Transport	6	5	5	2		18
Other Fixed Object		2		1		3
Other Non Collision	1					1
Other Post Pole Or Support	2					2
Overturn Rollover	12	4	9	1	2	28
Parked Motor Vehicle	1					1
Pedestrian				3	1	4
Thrown Or Falling Object	1					1
Traffic Sign Support	1	1				2
Traffic Signal Support	1					1
Tree Bush Stump Standing	4	1	6			11
Utility Pole Light Support	3					3
Total	**111**	**26**	**29**	**9**	**6**	**181**

The route's crashes that involved violations related to impaired drivers are shown in **Table 3**.

Table 3: Route 15 Crashes by Impairment

Impairment	Percent of Total
Fell Asleep/Fatigued	19%
Alcohol	7%
Drugs	2%
Other	2%
Illness	1%

There were six fatal crashes and nine suspected serious injury crashes. Crash frequency peaked in 2011 at 32 crashes, in 2015 at 28 crashes, and in 2018 at 25 crashes. The crash frequency fluctuated between 11 and 17 per year for all other of the ten years considered. The crashes by severity are shown in **Figure 5,** and the crash density or heat map is shown in **Figure 6** below.

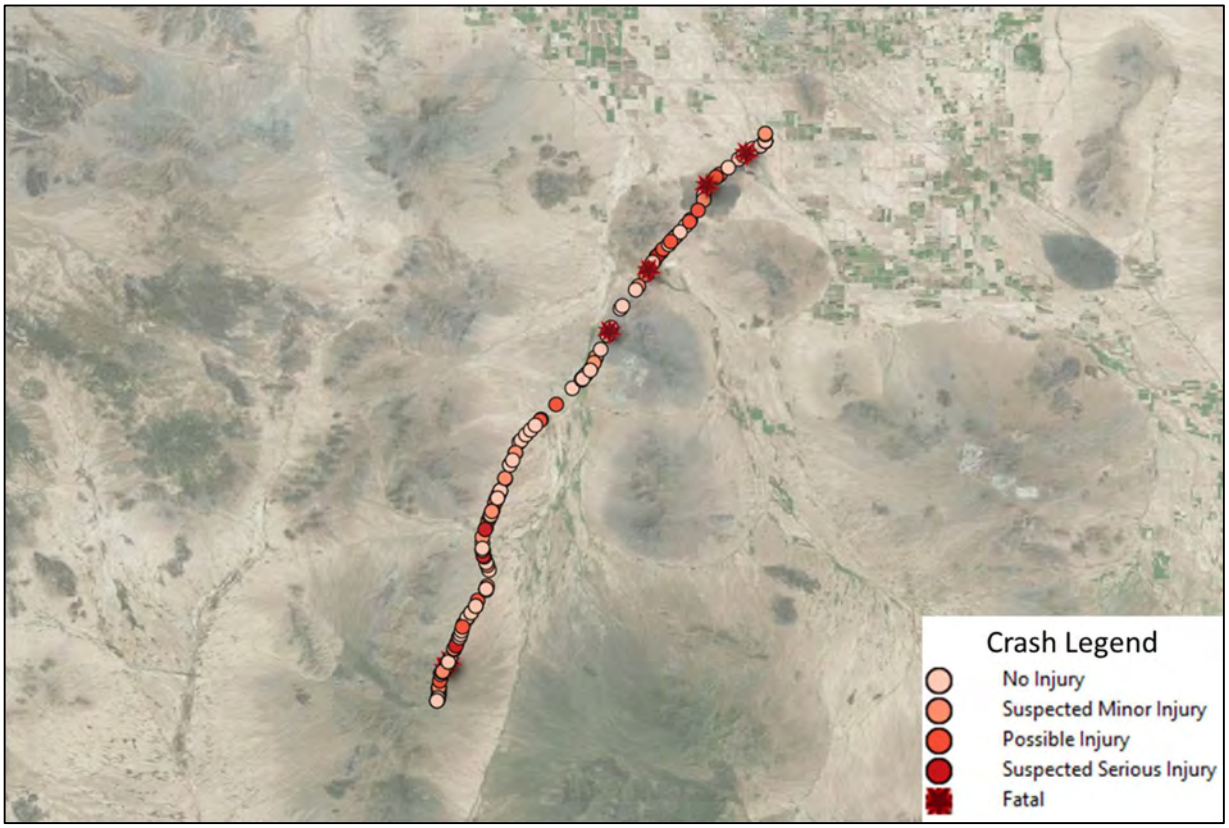


Figure 5: BIA Route 15 crashes between 2011 and 2020 by crash severity

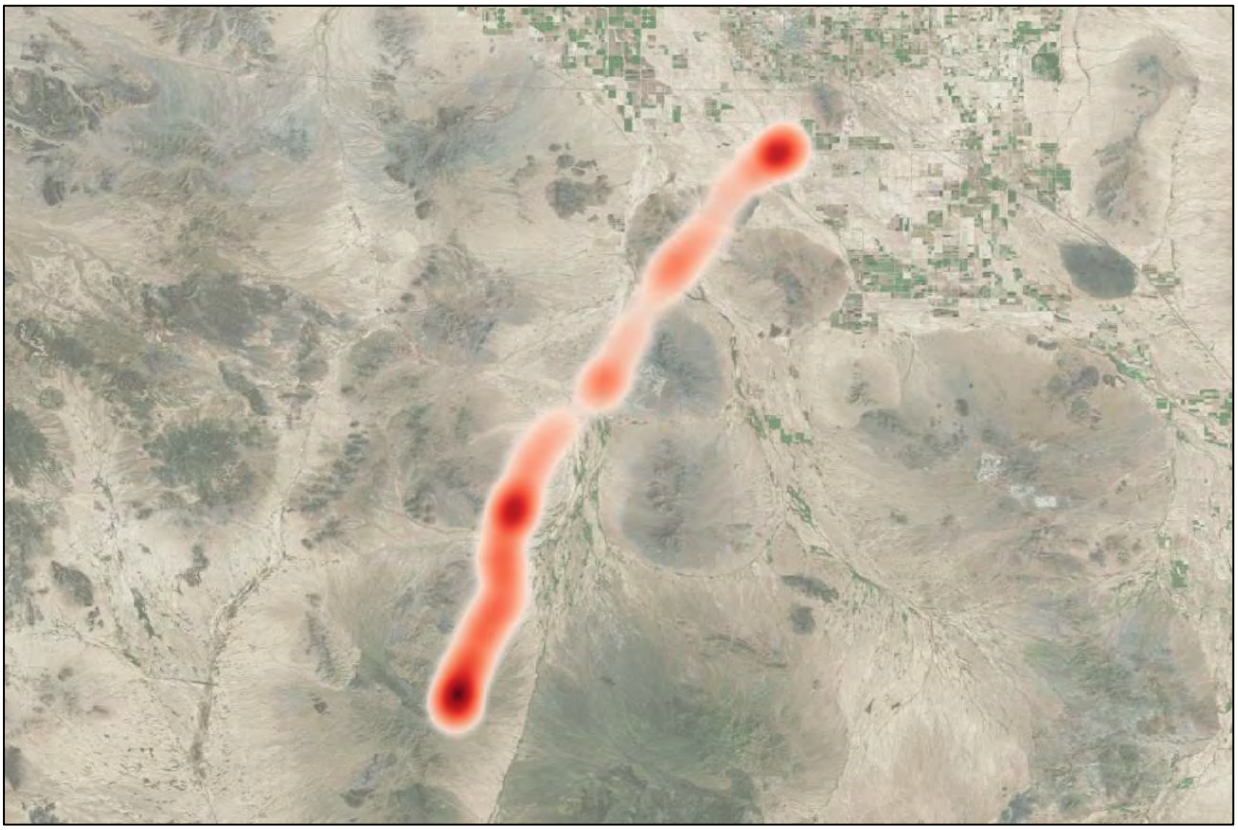


Figure 6: BIA Route 15 crash density (heat map) for crashes from 2011 to 2020

Public Outreach and Comment

Following the team's field review of the corridor, the Nation completed a public outreach initiative to garner public comments regarding safety on the BIA Route 15 corridor.

The public had a chance to review reported crashes and take a 360-degree video virtual tour of the route. The public was encouraged to make a comment by clicking on the map at the spot where they have concerns at the following link: https://fhwapolicy.maps.arcgis.com/apps/CrowdsourceReporter/index.html?appid=30a40892731b4cf7943210c1d642fcfd.

The public also had the option to send comments by email to TORoadsProgram@tonationnsn.gov while including the route number, location (nearest milepost), and a brief description of the safety concern. The last day for public comments was Friday, February 18, 2022.

These public comments can be found in **Appendix A**.

Additionally, presentations of the RSA's findings were given at District Meetings during their January, February, and March 2023 sessions.

Observations and Recommendations

Specific safety issues and recommendations for consideration are discussed in the following sections. Additionally, the locations of the existing safety issues and hazards, as determined by the RSA team, are displayed in the maps found in **Appendix B**.

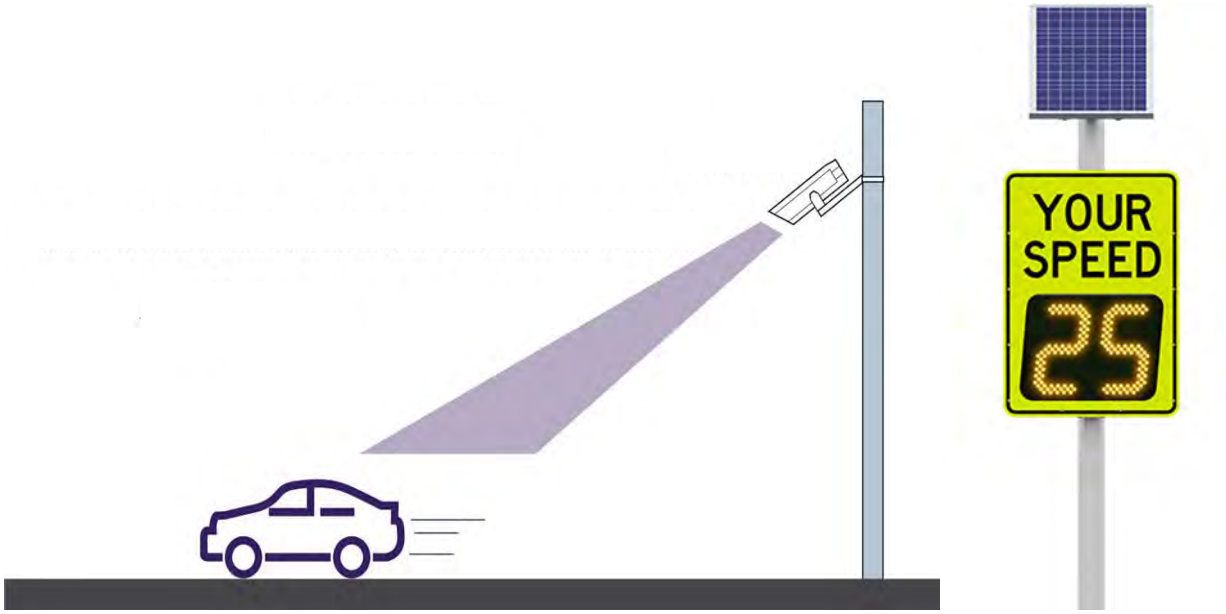
Corridor Speed

Law enforcement indicated that extremely high vehicle speeds are typical on BIA Rt 15, and the Nation has limited resources for speed enforcement. Speeding was a factor in 17% of crashes and 47% of this corridor's fatal and serious injury crashes.

Several vehicles were also observed traveling above the posted speed limit by the RSA team. Speed reductions are noted to be only present near the Santa Rosa Boarding Day School and at the approach to the intersection of the route with State Route 86. It was also observed that the corridor was designed for the 55 MPH speed limit, influencing the alignment, road curves, and all other design decisions.

Speed management recommendations along the study corridor include:

- Reduce speed limit near all communities
- Consider installing a roundabout at community intersections to encourage lower speeds
    - Install a roundabout at the intersection of Route 15 and the Santa Rosa School/community
    - Install a roundabout a mile marker 4.2 at the community driveway
- Consider establishing a strategic speed management program
    - Speed feedback signs
    - Targeted speed enforcement



Speed camera demonstration and speed feedback sign example

Fencing

The RSA team observed intermittent fencing along both sides of the roadway. In the crash data from 2011 to 2020, animal-related crashes appear to loosely correlate with locations with gaps in the fencing or damaged fencing. The areas with animal-related crashes are shown in **Figure 7** below.

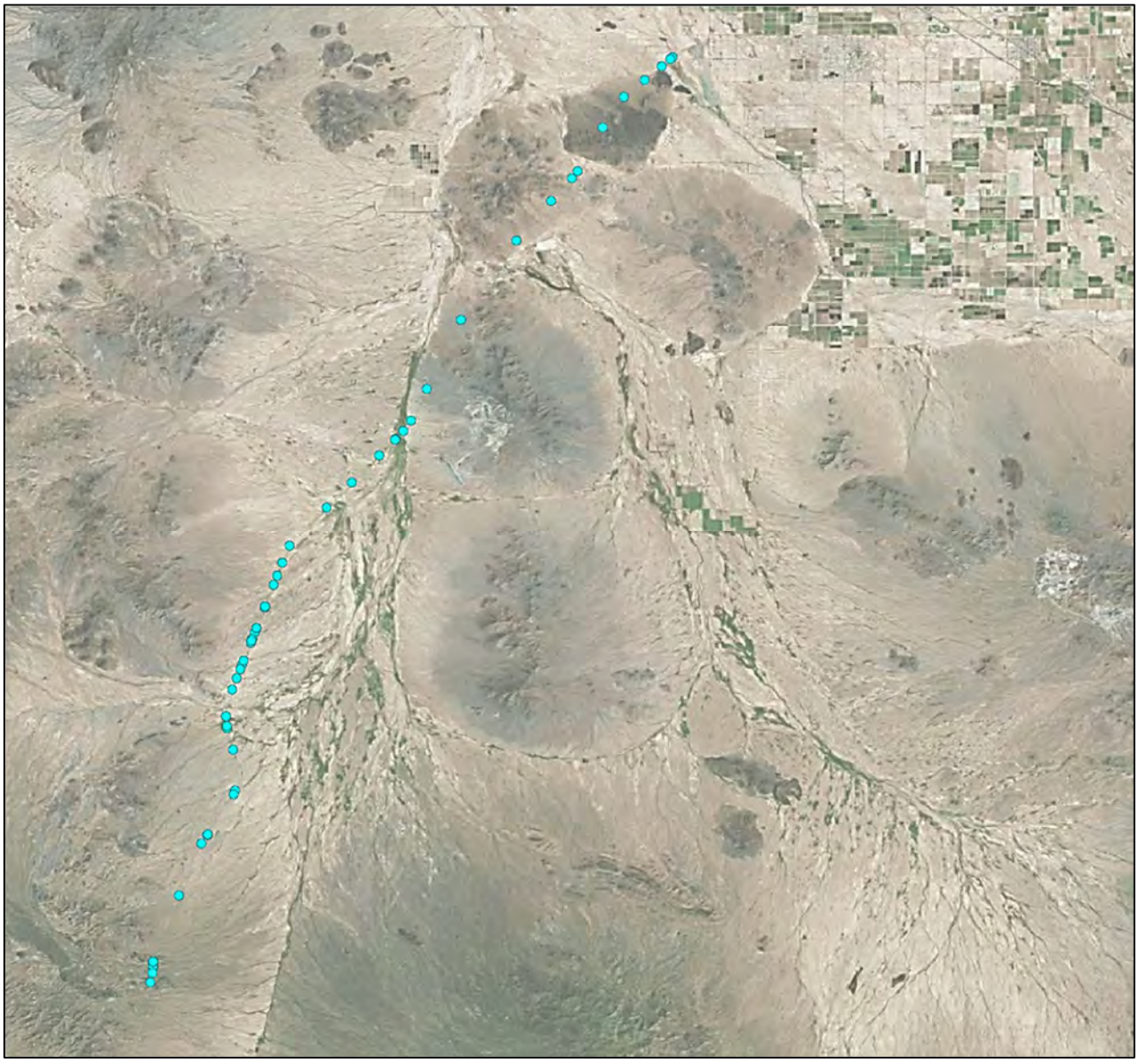
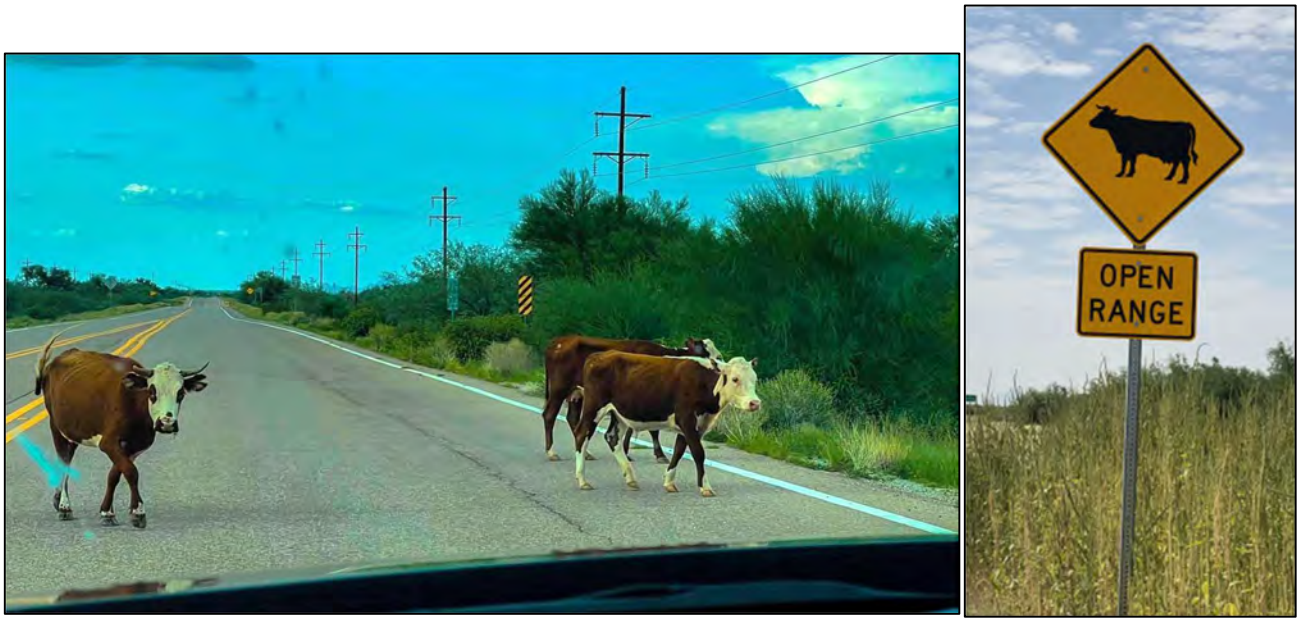


Figure 7: BIA Route 15 2011 to 2020 animal-related crashes

A cattle guard was observed to be set too high for the grade at the driveway for the Hanam Kek development near mile marker 8. This cattle guard was also noted as missing an object marker sign on either side.

Cattle guard at mile marker 8

It was observed that cattle were periodically walking in and along the roadway. The RSA team observed other cattle congregating on the side of the roadway where vegetation could potentially obstruct their view.



Cattle in the roadway and warning sign of an open range

Recommendations include:

- Continuous fencing
- Conduct a systematic inspection on the right-of-way fence, gates, and cattle guards and develop a repair plan
- Replace non-standard cattle guards with standard cattle guards

Lighting

The only street lighting on the corridor is at the SR 86 intersection. Solar street lighting has also been installed within the new Hanam Kek development.

Existing intersection lighting on Route 15 at the State Route 86 intersection.

Existing solar-powered intersection lighting at the new development on Route 15

Recommendations include:

- Continuous lighting at approaches to communities
- Intersection lighting at major intersections

Pavement and Shoulder

The pavement on most of the route appears to have experienced some cracking and pitting.

Vegetation was observed obstructing the view of the shoulder and some signs. The locations at mile markers 26 and 48 were noted to be in the worst condition.

Vegetation on the shoulder of Route 15

Recommendations include:

- Conduct pavement maintenance (i.e., Slurry Seal)
- Remove shoulder vegetation

Drainage

Areas along the route show degradation of protective dykes. Some dyke areas are observed to have been breached and have been allowing flooding in the right-of-way during storm events.

It was flooding between mileposts 22 and 26, as reported by a district chair person.

Extensive shoulder and sub-roadway erosion, as reported by Rita Wilson.

The RSA team observed clogging of existing wash drainage culverts in general. A sag curve in the roadway at the wash at mile marker 6.9 would benefit from a culvert directing drainage away from the roadway. A culvert at mile marker 22.5 seems to be breached, in addition to a nearby cattle tank. The existing culverts on the route appear to be undersized for the apparent drainage volume they experience.

Concerns were noted during the start-up meeting regarding the Anegam Bridge [H622]. The Structure Inventory and Appraisal Sheet (SI&A) from an inspection of the bridge completed in January 2020 were reviewed by the RSA team. This SI&A sheet can be found in **Appendix B**. The structural sufficiency rating from the inspection was 99.7, with a status of "not deficient." The RSA team concluded that the undulations experienced while driving over the bride are likely from road surface distortions and are not from a structural deficiency of the bridge's structure.

Areas with dense vegetation were observed in the clear zone where roadside dikes are suspected of being damaged. These areas were noted to be in mileposts 21.5, 27, and 28. The areas with dikes within the right-of-way should be repaired to reduce roadway flooding.

Recommendations include:

- Culverts at sag curves that experience flooding
- Clean and maintain clogged culverts and under bridges
- Inspect and repair damaged dikes in the right-of-way

Signage and Striping

Most signs were visible during the daytime and appeared to have adequate retroreflectivity at night. Signs near mile markers 1, 40, and 48 had graffiti damage. Signs near mile markers 26 and 48 were obstructed with vegetation.

Roadway signage is obscured with paint.

The roadway striping on the route appears to be in good condition and visible day and night. Some intersections do not have warning signs. A passing zone is marked in a horizontal curve near mile marker 4.2. There are some non-standard community signs on the route.

Sample intersection warning sign (W2-2) from the MUTCD

The passing zone is marked in a horizontal curve at milepost 4.2 on Route 15

Nonstandard community sign on Route 15

Recommendations include:

- Install intersection warning signs.
- Install cattle guard warning signs
- Removal of sign graffiti or replace damaged signs
- Removal of vegetation obstructing signs
- Review passing zones in curves for adequate sight distance
- Install standard community signs
- Install flash flood warning sign

Suggested Improvements/Countermeasures for Consideration

The following table summarizes the RSA team's observations and potential opportunities to improve safety. The locations of the recommended improvements are displayed in the maps found in **Appendix D**. These suggested improvements/countermeasures are presented as options for consideration; the road owner may also identify other effective alternative improvements and countermeasures. While every attempt has been made to identify potential safety issues and provide countermeasure options, the safety performance of the roadway remains the responsibility of the roadway owner and roadway users.

LOCATION/ISSUE	DESCRIPTION	COUNTERMEASURES FOR CONSIDERATION

Corridor Speed	• Speeding on the route reported by law enforcement and the community
	• Recorded speed-related crashes on the route
		• Reduce speed limit near communities
		• Consider installing a roundabout at community intersections to encourage lower speeds
		  ○ Install a roundabout at the intersection of Route 15 and the Santa Rosa School/community
		  ○ Install a roundabout a mile marker 8.2 at the community driveway
		• Consider establishing a strategic speed management program:
		  ○ Speed feedback signs
		  ○ Increase speed enforcement

Fencing	• Recorded animal-related crashes throughout the route • Cattle guard observed to be above grade • Damaged fencing observed	• Continuous fencing • Conduct a systematic inspection on the right-of-way fence, gates, and cattle guards and develop a repair plan • Replace non-standard cattle guards with standard cattle guards
Lighting	• Dark lighting conditions throughout the route	• Continuous lighting ○ Near communities • Intersection lighting

LOCATION/ISSUE	DESCRIPTION	COUNTERMEASURES FOR CONSIDERATION
Pavement and Shoulder	• Cracked and pitted pavement conditions observed • Shoulders appear to be too narrow in some areas • Shoulder vegetation blocking clear zone and shoulder sign throughout	• Conduct pavement maintenance (i.e., Slurry Seal) • Remove shoulder vegetation • Install shoulder and centerline rumble strips
Drainage	• Culverts at sag curves that experience flooding • Clogging in culverts and under bridges • Suspected areas with dike damage near mileposts 21.5, 27, and 28	• Install culverts at sag curves that experience flooding • Clean out clogged culverts and under bridges • Inspect and repair any damaged dikes in the right-of-way
Signage and Striping	• No intersection warning signs • Graffiti obstructing signs • Vegetation obstructing signs • Non-standard community signs • A passing zone near mile marker 4.2 in a horizontal curve	• Install advanced intersection and cattle guard warning sings • Removal of sign graffiti or replace damaged signs • Removal of vegetation obstructing signs • Install standard community signs • Install flash flood warning sign • Review passing zones in curves for adequate sight distance

Suggested Projects and Associated Unit Estimates for Consideration

PROJECT	PROJECT TYPE	SCOPE	CONSTRUCTION UNIT COST ESTIMATE
Sign and stripe	Sign and Marking	1 mile of sign and marking Improvements	$180,000 per mile
Round-about intersection	Intersection	Installation of one round-about intersection	$2,300,000 per intersection
Speed feedback signs	Sign and Marking	Installation of one pair of speed feedback signs	$50,000 per sign pair
Fencing and cattle guard	Clear Zone	Installation of 1 mile of continuous fencing inspection, repair, cattle guard repair/replacement	$200,000 per mile
Street lighting	Intersection	Installation of one intersection of street lighting and community area lighting	$ 180,000 per intersection
Pavement maintenance	Pavement	Installation of 1 mile of pavement maintenance (slurry seal)	$210,000 per mile
Rumble strips	Pavement	Installation of 1 mile of centerline rumble strips	$40,000 per mile
Clear zone maintenance	Clear Zone	1 mile of 32-foot clear zone clearing and grubbing	$80,000 per mile
Culvert maintenance	Drainage	1 wash crossing culvert maintenance	$50,000 per crossing
Culvert installation	Drainage	1 wash crossing culvert installation	$1,400,000 per crossing
Drainage maintenance	Drainage	1 wash crossing erosion control and riprap gabions	$1,140,000 per crossing

Appendix A

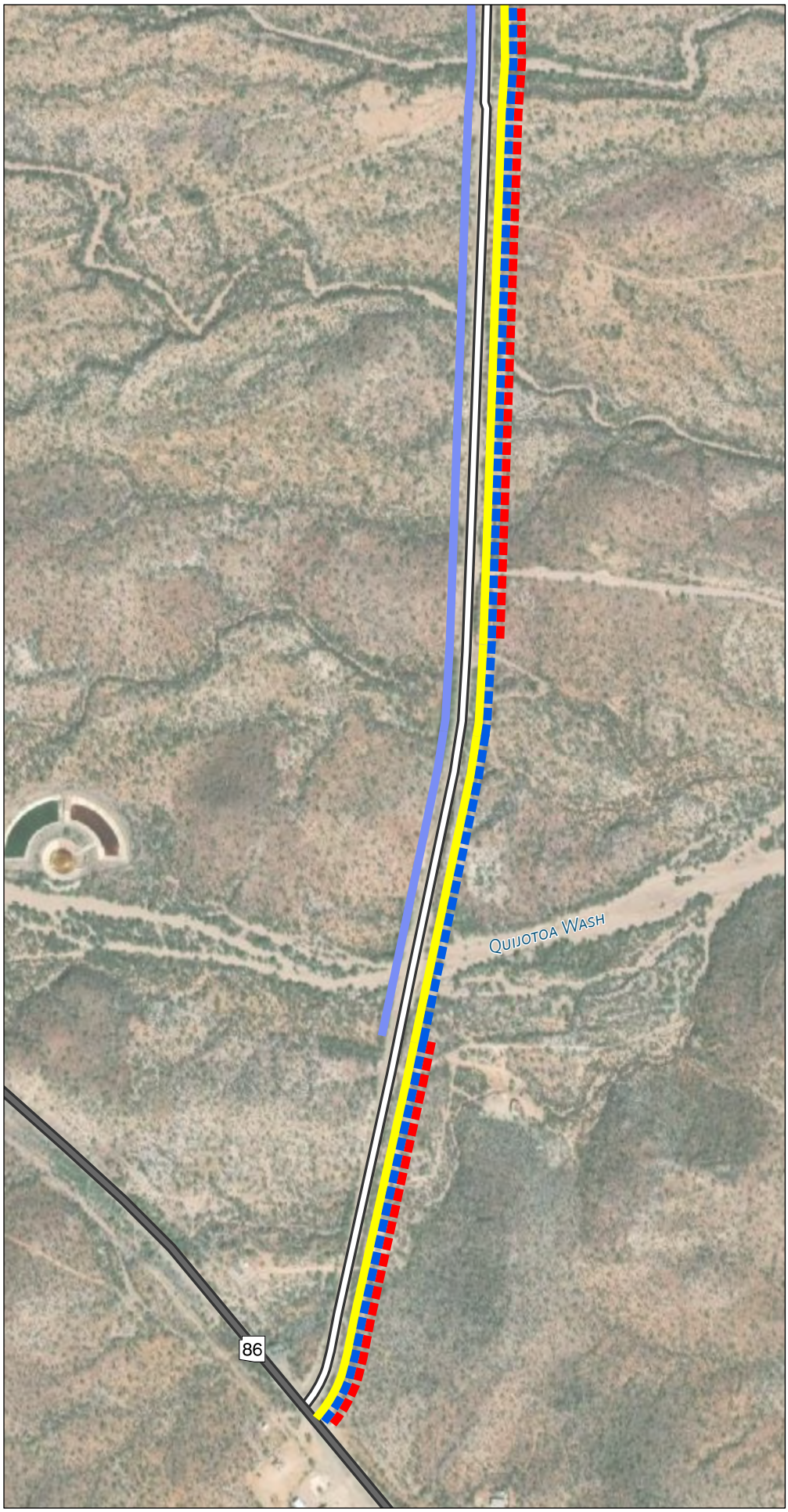
BIA Route 15 Public Outreach Safety Comments

OBJECTID	IssueType	Comments	GlobalID
1	Other (Please Specify Below)	There needs to be a turn sign for the turn off just north of mile post 12, on the east side of the road.	{45900CB0-B478-40A6-91C5-EC92F6330D2B}
2	Pavement Condition	This may not be part of your survey but it connected to Federal Route 15. Tath Memoli Dam Pass, which is the road between Federal Route 15 and Federal Route 42. The road goes over the Tath Memoli Dam near Viava Vo Farms. The pavement is almost gone and contains large pot holes. It either needs to be repaired or completely closed.	{FDF30AD1-4FC5-4A72-999E-C2BA6E07D74B}
3	Pavement Condition	Pavement is still good but however there are cracks all along the road that needs to be fixed or the whole road done because of the pot holes as well. I live on route 15 milepost 8	{D619F81A-1A4D-45C7-90D7-52D746A1885E}
4	No or Narrow Shoulder		{483CF0D7-3E7D-4548-AC82-13AC94BBE41E}
5	Object Close to Road	Overgrowth of vegetation limits drivers view on both sides of route 15 at some points. Plus there is flooding on route 15 during monsoon seasons.	{1CF8D854-9538-4E32-860E-675B09EE435E}
6	Object Close to Road	Water flooding on routh 15 N.E. of Chui Chu Village during monsoon season causing asphalt to deteriate.	{A2DE7AE4-A7CA-474E-87BA-6D57F21694B0}
7	Other (Please Specify Below)	Need suicide Lane all along the corridor of the new HUD Housing east of route 15	{2B8344BD-8EE1-44DB-8DD5-6135A324D0A8}
8	Other (Please Specify Below)	Need suicide Lane all along the corridor of the new HUD Housing east of route 15	{A4063D30-CA3A-4CD3-938B-9667352EE1F2}
9	Other (Please Specify Below)	Need right lane turn off east of route 15	{7FABE432-64F1-4355-879B-227372BEB553}
10	Other (Please Specify Below)	Need right lane turn off east of route 15	{618A3A05-53B0-48E4-8018-9DCF36D46545}
11	Other (Please Specify Below)	Need suicide Lane in middle of route 15 to turn east	{4673F389-15BC-4386-8E3F-BF5A9484B03D}
12	Other (Please Specify Below)	Need suicide Lane in middle of route 15 to turn east	{57585CE4-9E7A-46B4-A46B-57433A74BE2D}
13	Other (Please Specify Below)	Need suicide Lane in middle of route 15 to turn east	{3989CD2D-F9BA-44F3-9D78-B0BE57D72676}
14	Other (Please Specify Below)	Need suicide Lane in middle of route 15 to turn east	{16AAAB42-B014-440D-9DDD-301B1E2BCCF6}
15	Other (Please Specify Below)	Need suicide Lane in middle of route 15 to turn east	{4A4507ED-CE72-4DC6-B7E1-4A2D0C6542CB}
16	Other (Please Specify Below)	Need right Lane off route 15 to turn east	{2C2FC824-2928-4090-A486-266C2070B47D}
17	Other (Please Specify Below)	Need right Lane off route 15 to turn east	{57E85E05-0C8B-43E6-90E4-30E66FA22A7E}
18	Other (Please Specify Below)	Need right Lane off route 15 to turn east	{06C974E6-7079-442E-8A71-E30B6FA622E4}
19	Other (Please Specify Below)	Need right Lane off route 15 to turn east	{25E3A55A-06E7-4C1F-9EBF-017FE82E512B}
20	Other (Please Specify Below)	Along this road are multiple dips and when it rains flooding occurs. If bridges were built over these dips it will minimize the trouble with flooding and animal crossing which can cause accidents.	{FCFD899F-AA51-4250-9830-2E9073DA9DB7}
21	Pavement Edge Dropoff	Between Route 15, approximately between MP 22-MP 25 several areas of pavement on the east side (northbound), have washed away leaving a sharp dropoff which can be dangerous to travelers especially at night or rainy days if they get too close.	{9BB85027-5649-4313-B7B4-6151DE45244E}
22	Other (Please Specify Below)	Route 15, approximately between MP 21.5 and MP 26, major flooding occurs when it rains and several places of the roadway gets flooded due to the berms (4-5) on the westside of the roadway which broke years before and were never repaired. It has deteriorated causing further damage to the pavement. It is of great concern because it can and has caused vehicles to jackknife. The berms or dikes can be repaired and improved to prevent or minimize the flooding. I will email pictures to support my concerns.	{C89DFF17-9548-46CE-862B-85FEABA4AA20}
23	Other (Please Specify Below)	BIA Route 15 Chuichu, North of Greenes Wash bridge for approximately 1.5 miles the road gets flooded out during storms. Road is sometimes closed to traffic due to flood waters going over the pavement, immediately north of the bridge it is deeper on the northbound lane that the traffic is forced to a one lane and it creates chaos and angry motorists. Also the brush grows rapidly and there is no management. Flood mitigation and brush management need to be addressed to curb the issues. Thank you	{1EB9DF18-9913-4A51-A406-756CE2C1762F}

24	Animal Crossing	BIA Route 15, MP 17 - MP 21.5, there are a few culverts that were placed along the highway that were to serve as animal crossings, but the culverts have never served its purpose. As a result, animals cross the main highway to eat or drink from the two waterholes in the area and end up causing accidents, mainly at night due to it being dark. The culverts should be maintained to allow free passage for the livestock to avoid being hit.	{4E5C7EE7-7FC3-4BE2-A8A3-3BEB8287A161}
25	Sight Distance	BIA Route 15, MP 17, 18, 19, and 20, has alot of overgrown trees and brush alongside the southbound lane that makes it very difficult to see an animal from a distance. These are the areas where a majority of accidents occurred involving livestock. We as individuals or Districts are not allowed to clear the trees or brush without a permit from the Agency which is also very time consuming. Something should be done to periodically conduct some clearances from responsible parties.	{17DC4A9D-6F4E-45A1-A8EB-A6CE0D4E7D38}
26	Other (Please Specify Below)	BIA Route 15 at North Komelik and Anegam are two bridges of concern. Anegam is the worst due to some cracks that were observed under the bridge that may have deteriorated, it is very bouncy and we are worried that it may collapse when it can no longer handle the weight of the vehicles. According to the Federal Regulations, bridges should be inspected every two (2) years. We should be provided with a routine inspection report as it is conducted for assurance purposes that our bridges are safe and sound.	{B5F0C99F-5B2E-41D8-A64D-160DECA6085C}

Appendix B

Route 15 Existing Issues Map



Existing Issues

Route 15

Potential Safety Concerns

- High Crash Corridor
- Flooding Issue
- No Sidewalks
- Open Range, No Fencing
- No Shoulders
- Deteriorating Striping
- No Lighting
- Poor Pavement
- Curvy Roadway

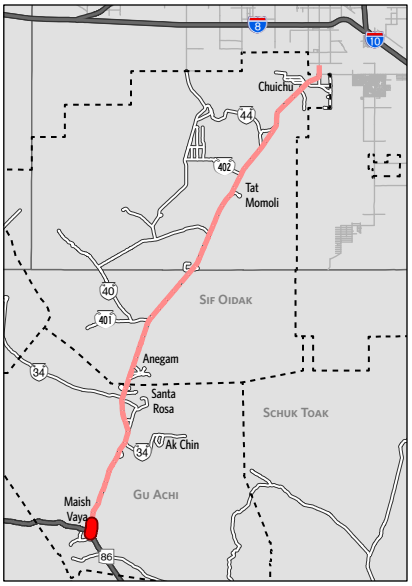
Reference

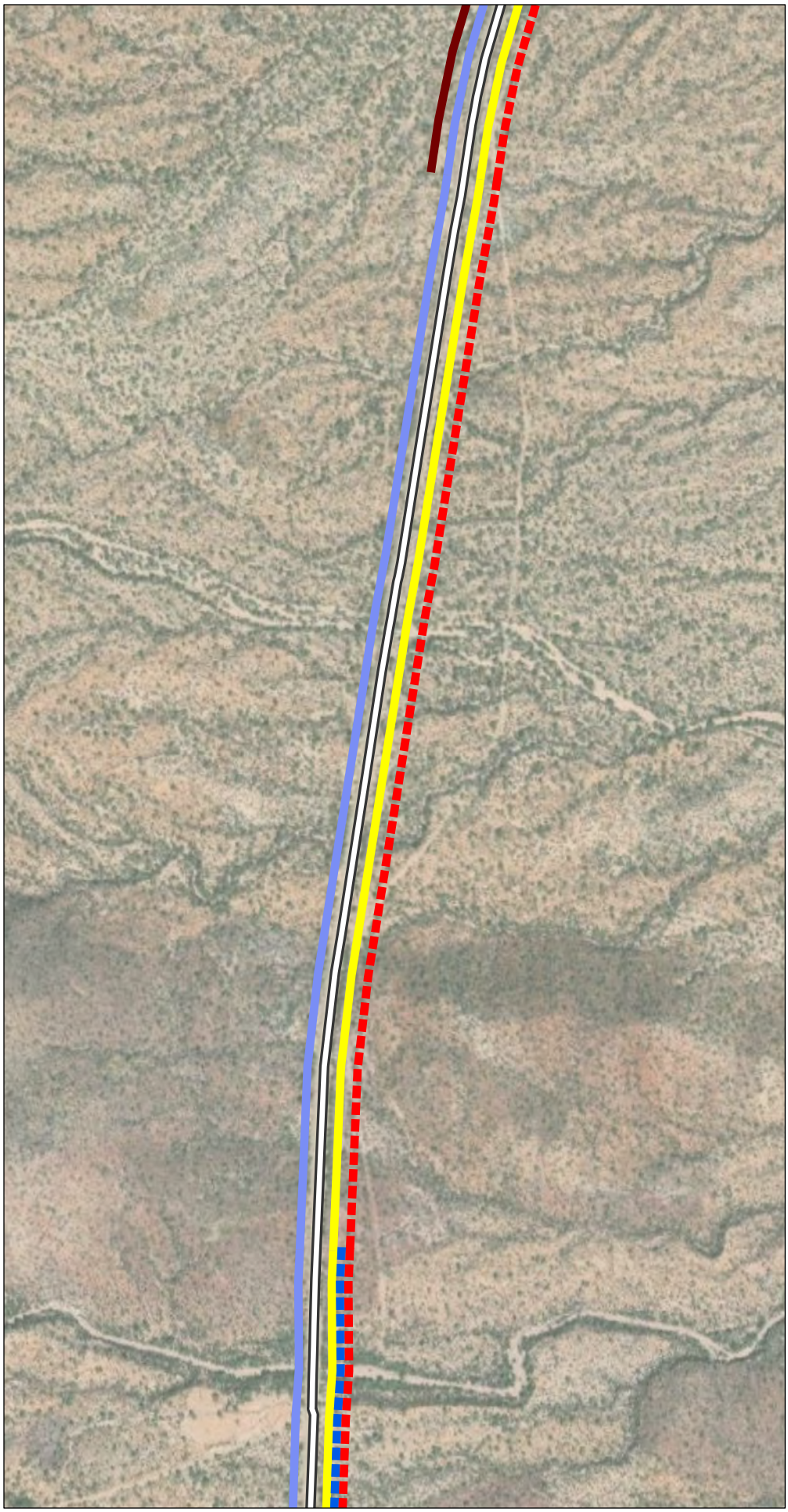
- Tohono O'odham District Boundary

0 300 600 Feet

1 inch equals 600 feet

N





Existing Issues

Route 15

Potential Safety Concerns

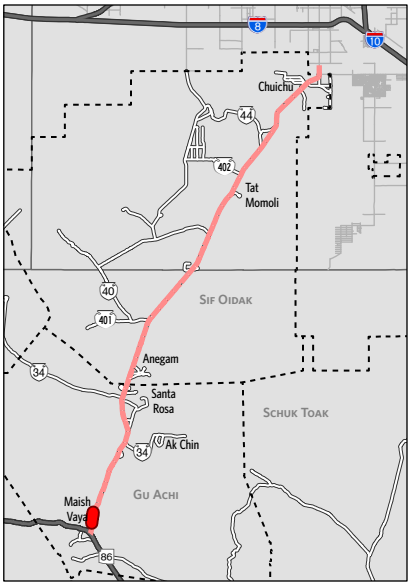
- High Crash Corridor
- Flooding Issue
- No Sidewalks
- Open Range, No Fencing
- No Shoulders
- Deteriorating Striping
- No Lighting
- Poor Pavement
- Curvy Roadway

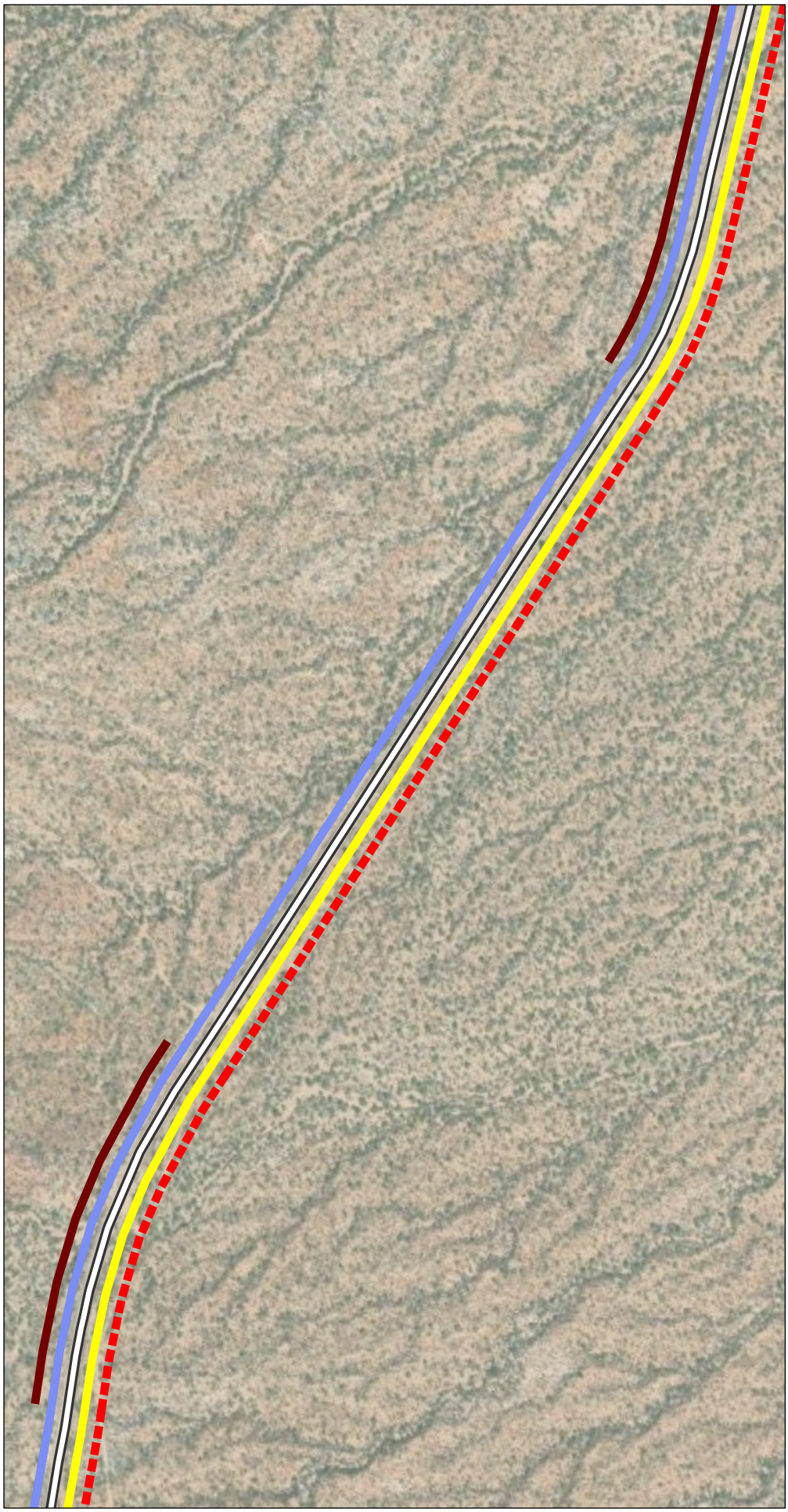
Reference

- Tohono O'odham District Boundary

0 300 600 Feet

1 inch equals 600 feet





Existing Issues

Route 15

Potential Safety Concerns

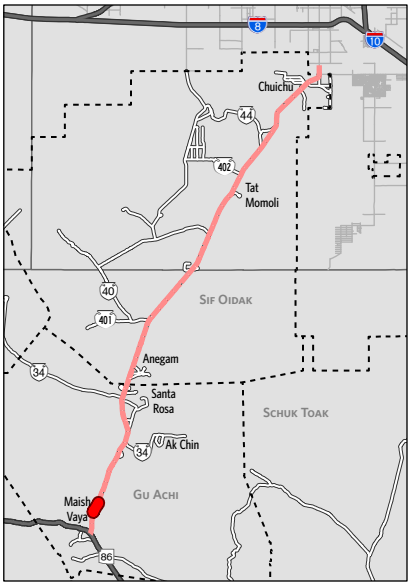
- High Crash Corridor
- Flooding Issue
- No Sidewalks
- Open Range, No Fencing
- No Shoulders
- Deteriorating Striping
- No Lighting
- Poor Pavement
- Curvy Roadway

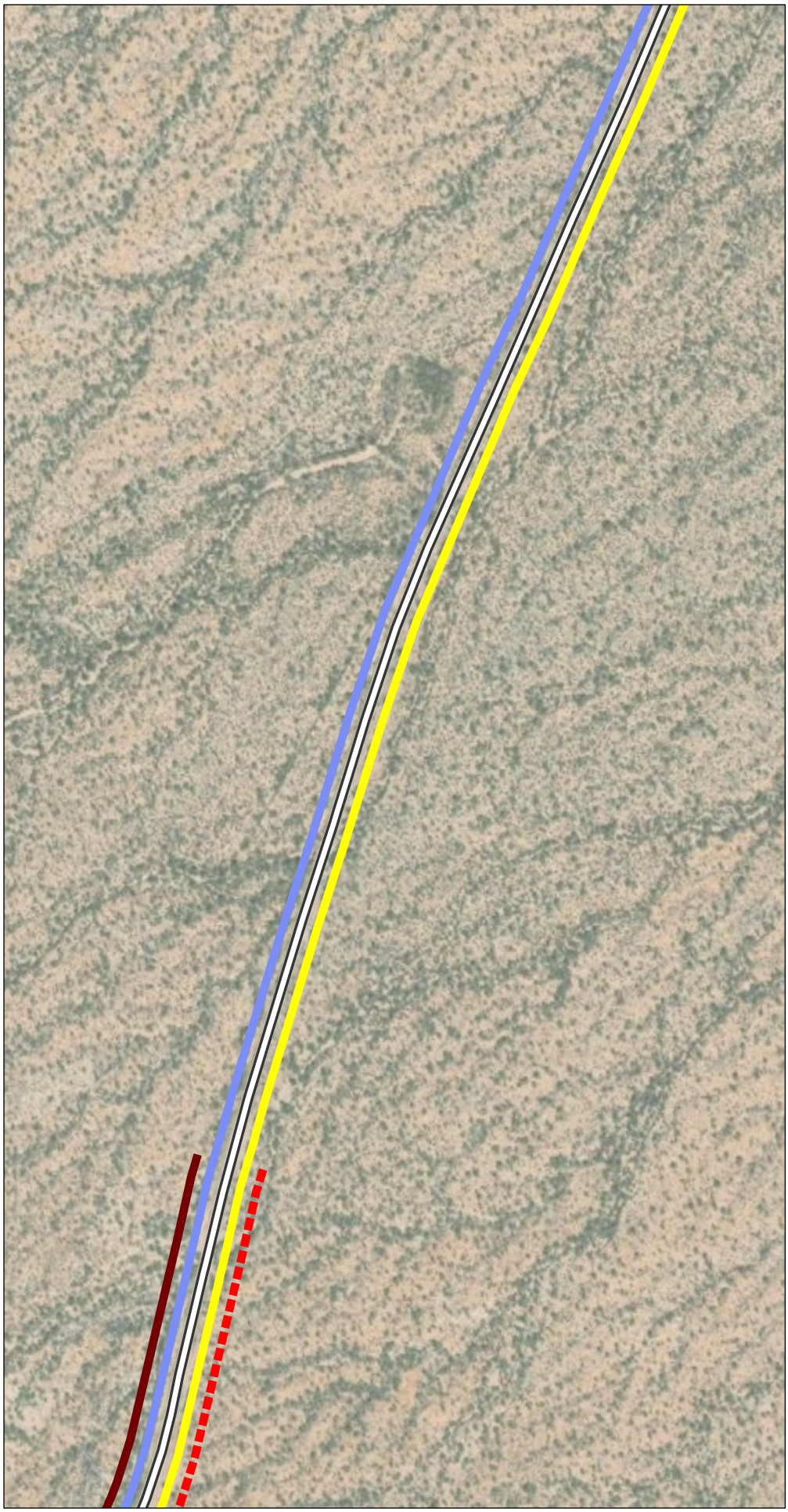
Reference

- Tohono O'odham District Boundary

0 300 600 Feet

1 inch equals 600 feet





Existing Issues

Route 15

Potential Safety Concerns

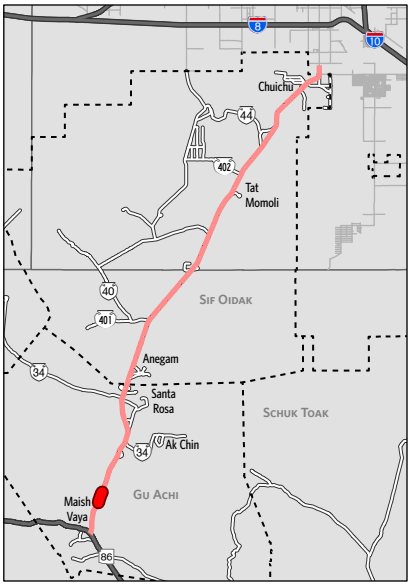
- High Crash Corridor
- Flooding Issue
- No Sidewalks
- Open Range, No Fencing
- No Shoulders
- Deteriorating Striping
- No Lighting
- Poor Pavement
- Curvy Roadway

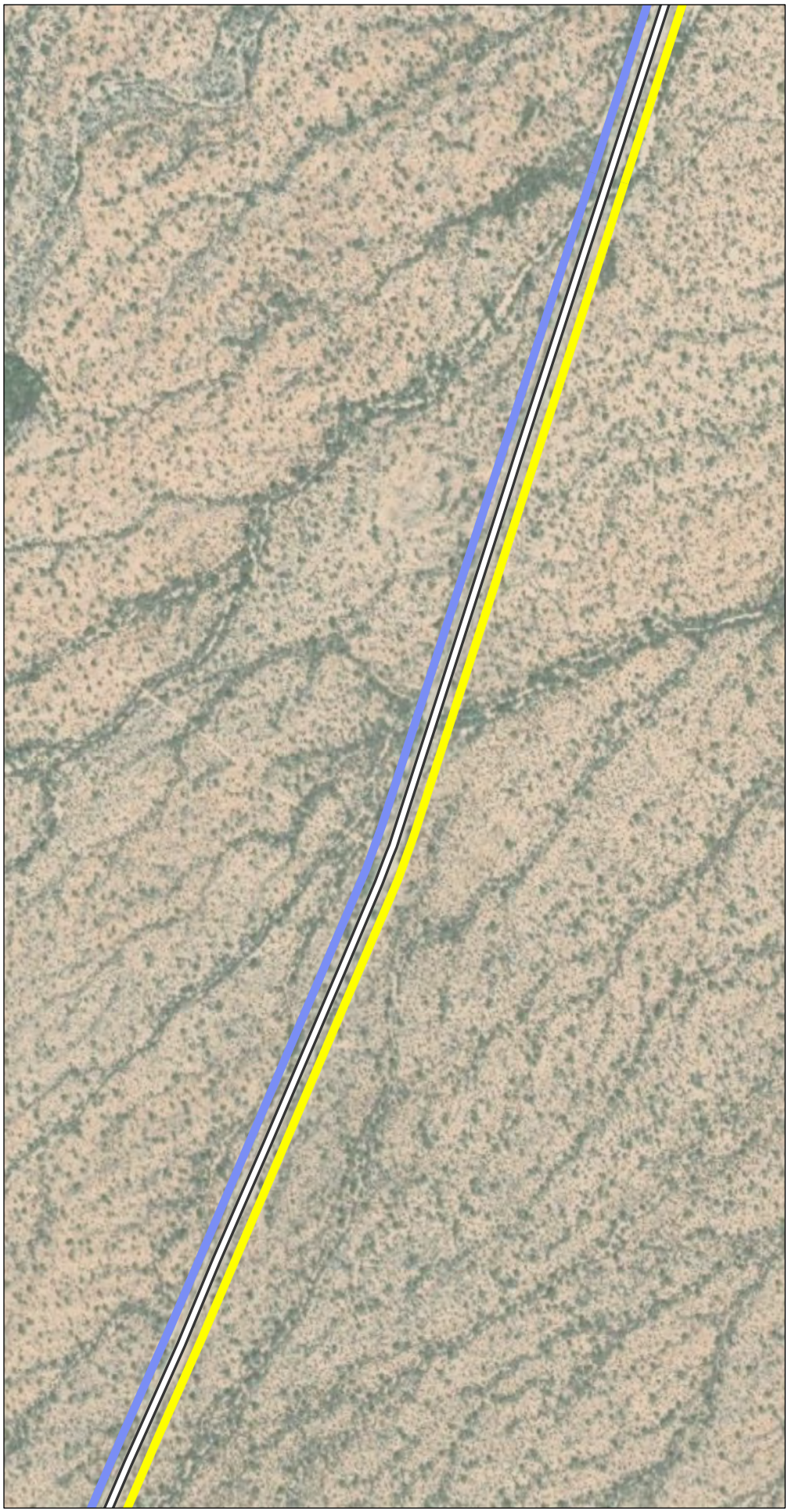
Reference

- Tohono O'odham District Boundary

0 300 600 Feet

1 inch equals 600 feet





Existing Issues

Route 15

Potential Safety Concerns

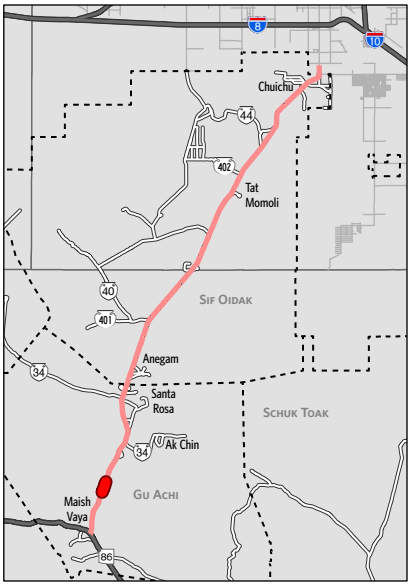
- High Crash Corridor
- Flooding Issue
- No Sidewalks
- Open Range, No Fencing
- No Shoulders
- Deteriorating Striping
- No Lighting
- Poor Pavement
- Curvy Roadway

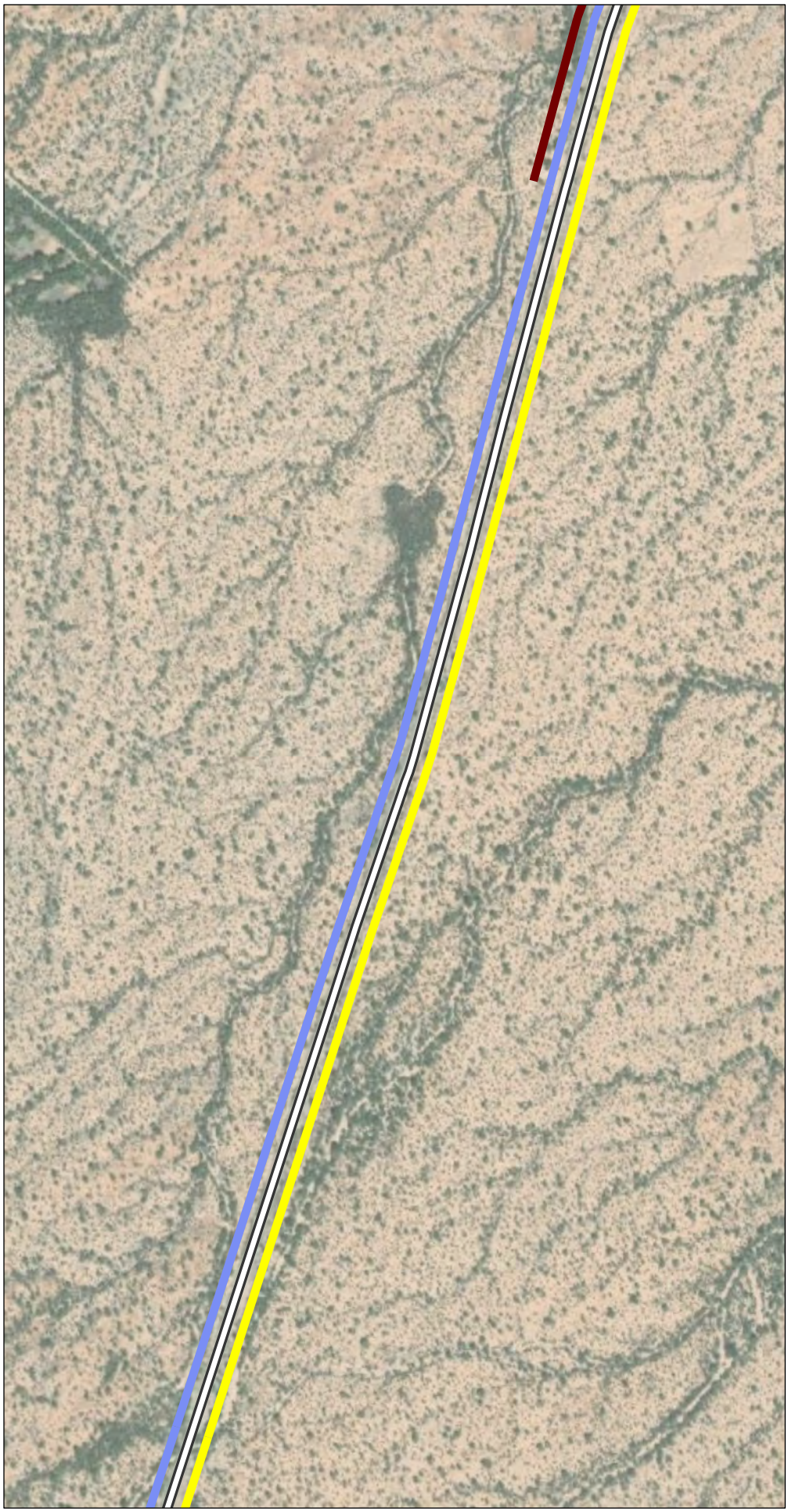
Reference

- Tohono O'odham District Boundary

0 300 600 Feet

1 inch equals 600 feet





Existing Issues

Route 15

Potential Safety Concerns

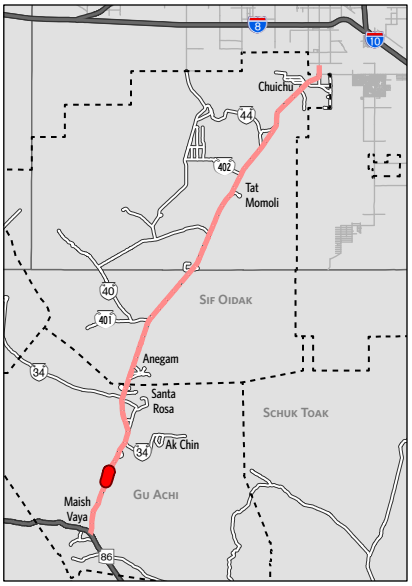
- High Crash Corridor
- Flooding Issue
- No Sidewalks
- Open Range, No Fencing
- No Shoulders
- Deteriorating Striping
- No Lighting
- Poor Pavement
- Curvy Roadway

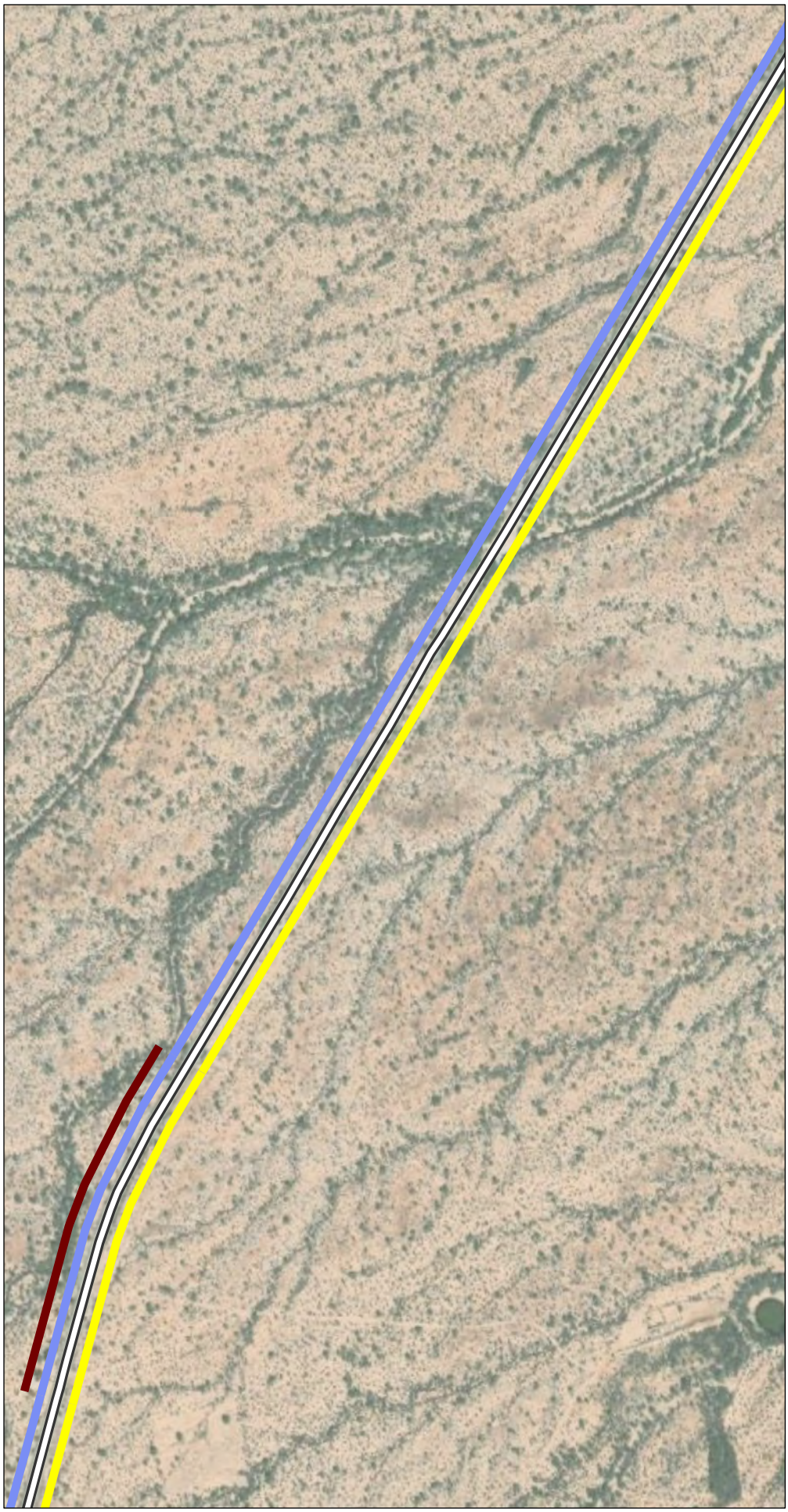
Reference

- Tohono O'odham District Boundary

0 300 600 Feet

1 inch equals 600 feet





Existing Issues

Route 15

Potential Safety Concerns

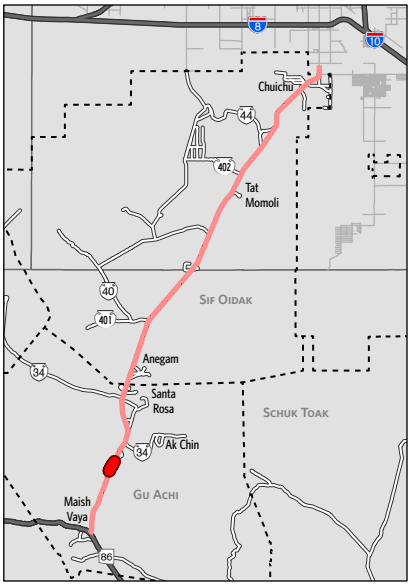
- High Crash Corridor
- Flooding Issue
- No Sidewalks
- Open Range, No Fencing
- No Shoulders
- Deteriorating Striping
- No Lighting
- Poor Pavement
- Curvy Roadway

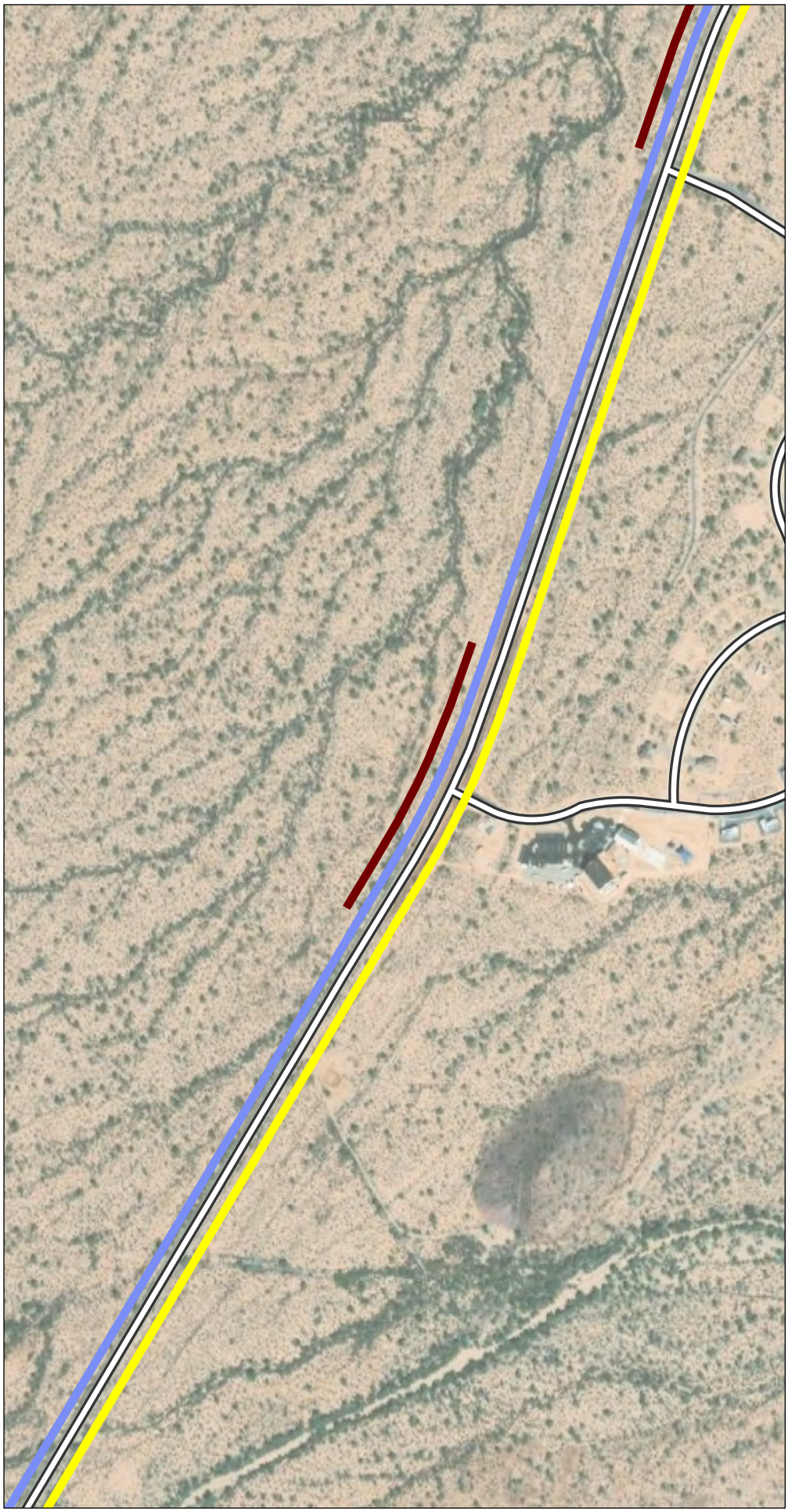
Reference

- Tohono O'odham District Boundary

0 300 600 Feet

1 inch equals 600 feet





Existing Issues

Route 15

Potential Safety Concerns

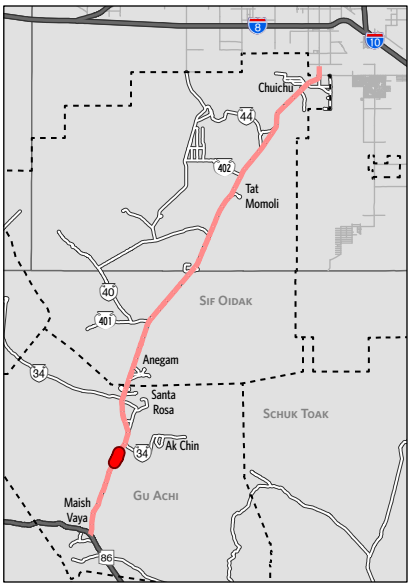
- High Crash Corridor
- Flooding Issue
- No Sidewalks
- Open Range, No Fencing
- No Shoulders
- Deteriorating Striping
- No Lighting
- Poor Pavement
- Curvy Roadway

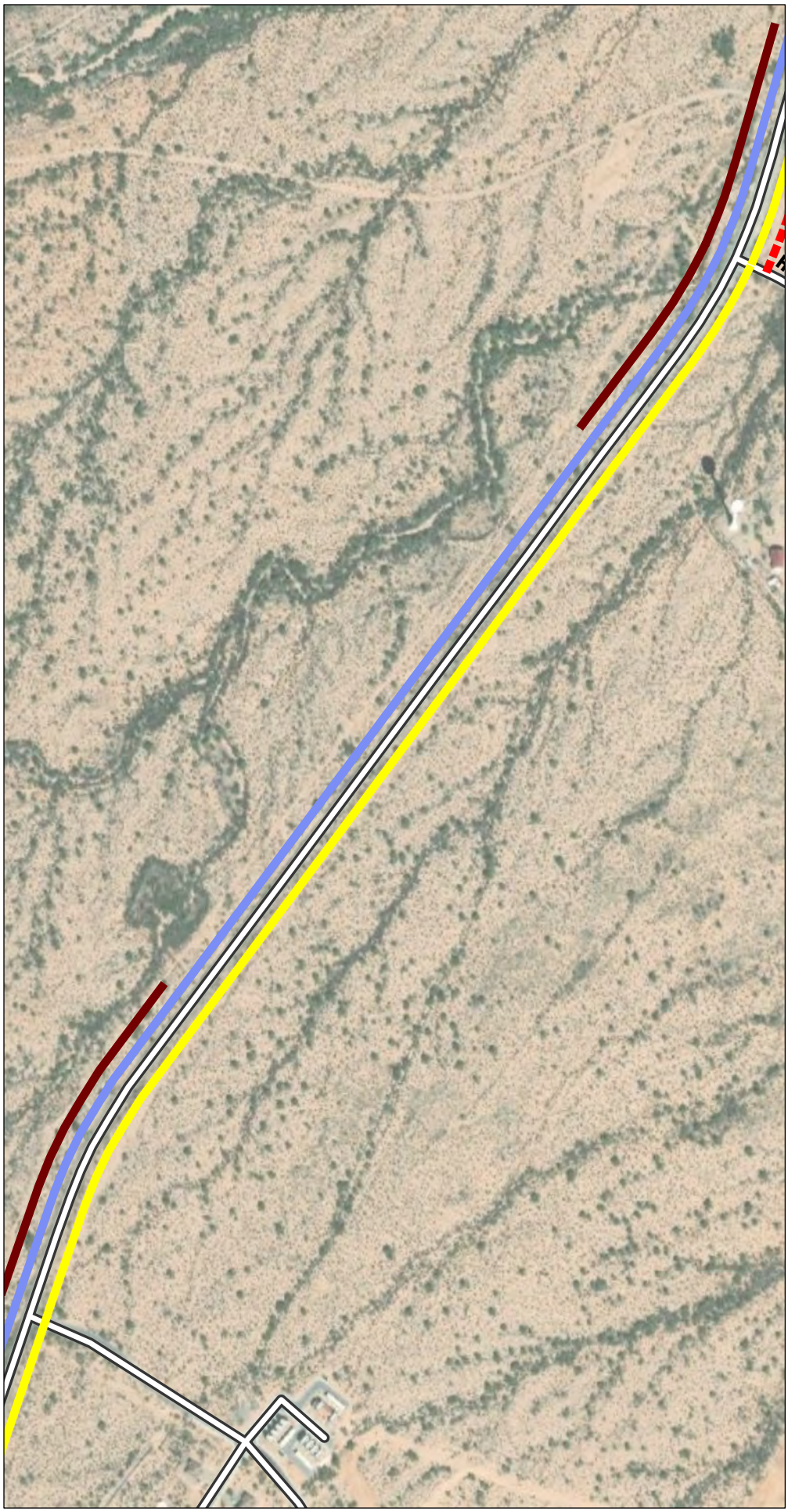
Reference

- Tohono O'odham District Boundary

0 300 600 Feet

1 inch equals 600 feet





Existing Issues

Route 15

Potential Safety Concerns

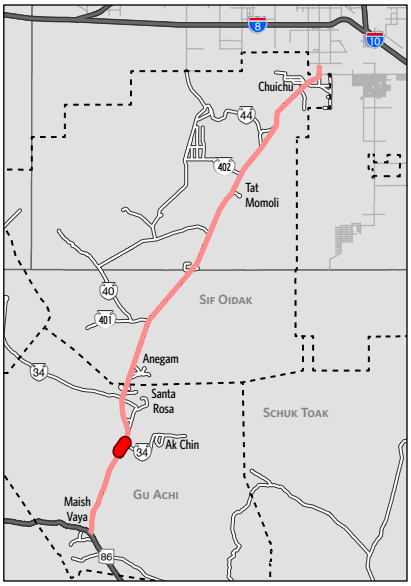
- High Crash Corridor
- Flooding Issue
- No Sidewalks
- Open Range, No Fencing
- No Shoulders
- Deteriorating Striping
- No Lighting
- Poor Pavement
- Curvy Roadway

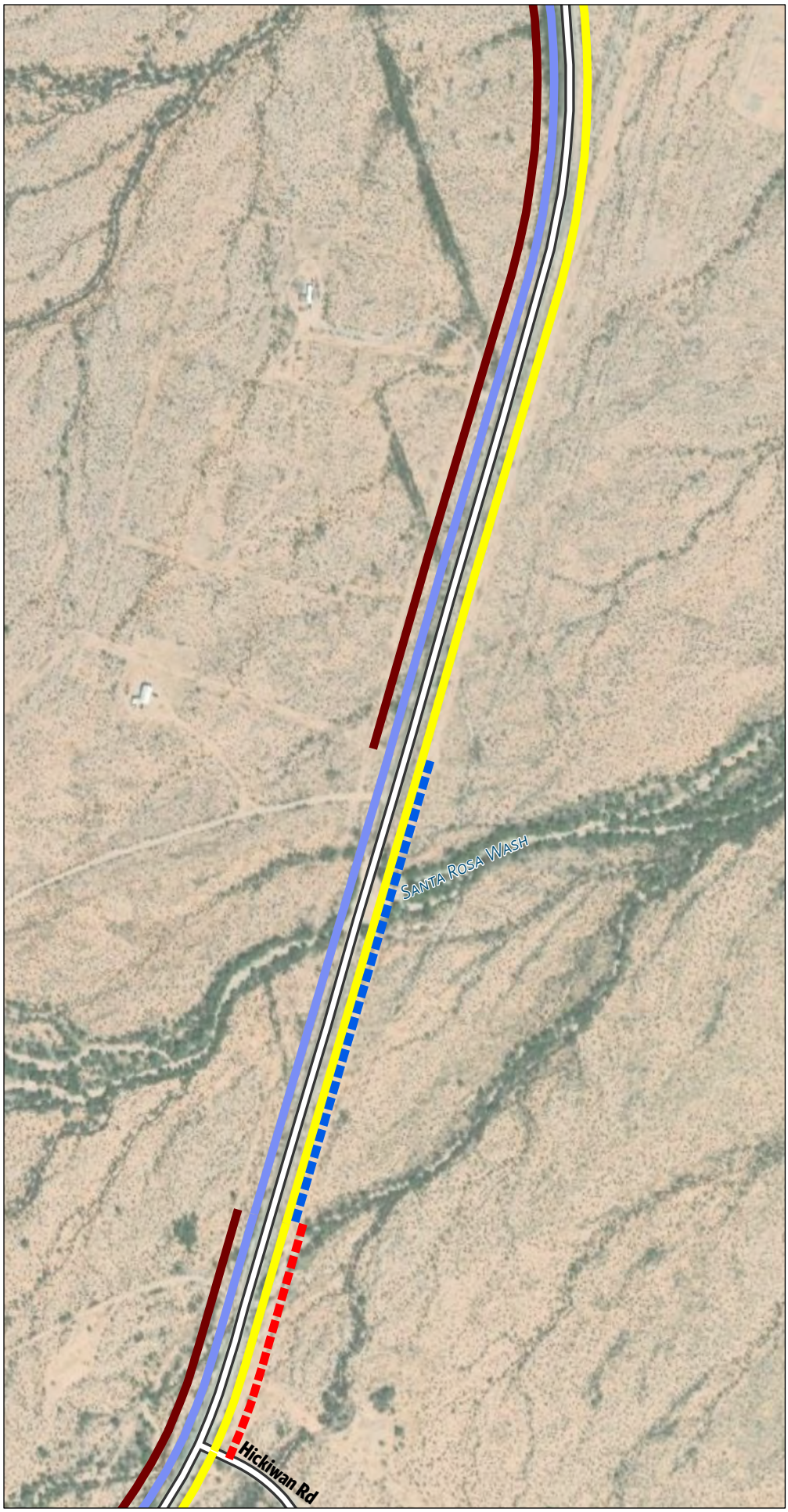
Reference

- Tohono O'odham District Boundary

0 300 600 Feet

1 inch equals 600 feet





Existing Issues

Route 15

Potential Safety Concerns

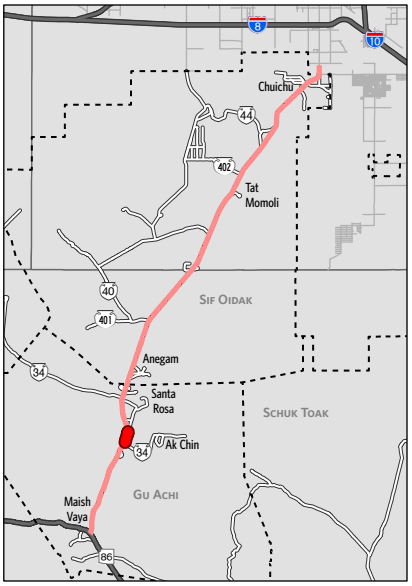
- High Crash Corridor
- Flooding Issue
- No Sidewalks
- Open Range, No Fencing
- No Shoulders
- Deteriorating Striping
- No Lighting
- Poor Pavement
- Curvy Roadway

Reference

- Tohono O'odham District Boundary

0 300 600 Feet

1 inch equals 600 feet



Existing Issues

Route 15

Potential Safety Concerns

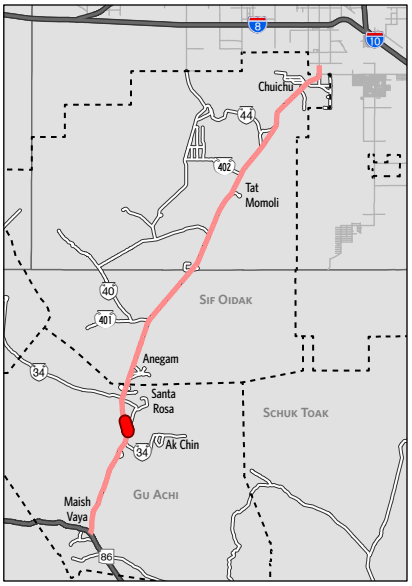
- High Crash Corridor
- Flooding Issue
- No Sidewalks
- Open Range, No Fencing
- No Shoulders
- Deteriorating Striping
- No Lighting
- Poor Pavement
- Curvy Roadway

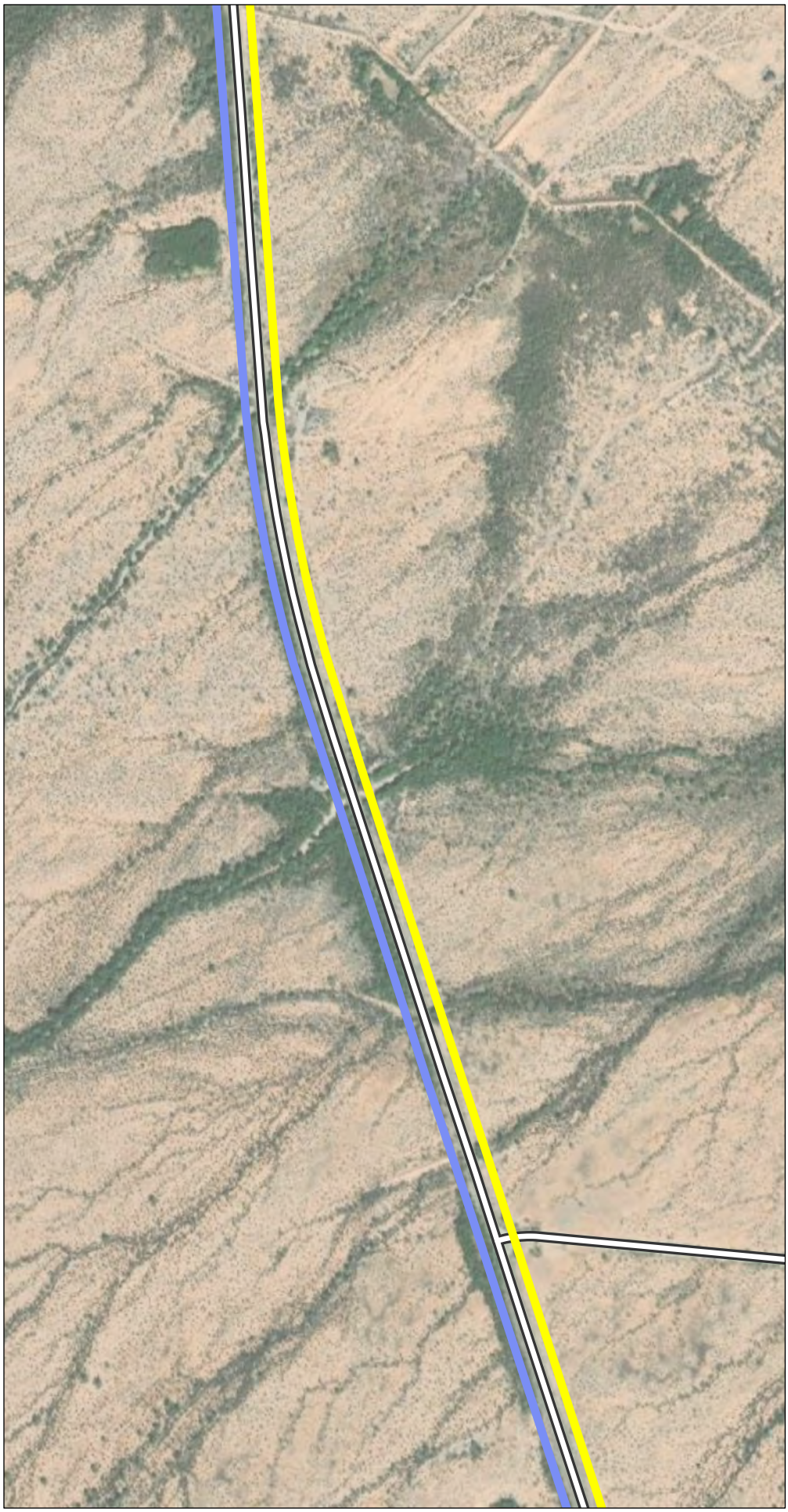
Reference

- Tohono O'odham District Boundary

0 300 600 Feet

1 inch equals 600 feet





Existing Issues

Route 15

Potential Safety Concerns

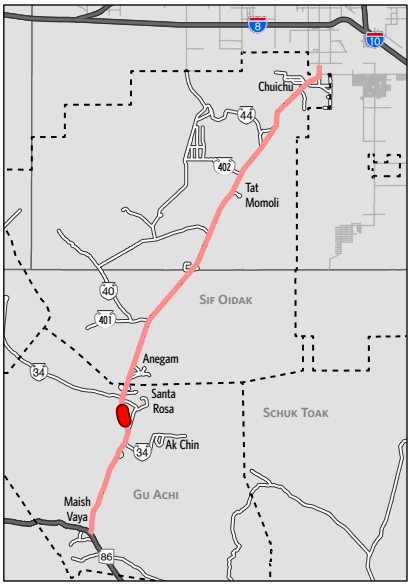
- High Crash Corridor
- Flooding Issue
- No Sidewalks
- Open Range, No Fencing
- No Shoulders
- Deteriorating Striping
- No Lighting
- Poor Pavement
- Curvy Roadway

Reference

- Tohono O'odham District Boundary

0 300 600 Feet

1 inch equals 600 feet



Existing Issues

Route 15

Potential Safety Concerns

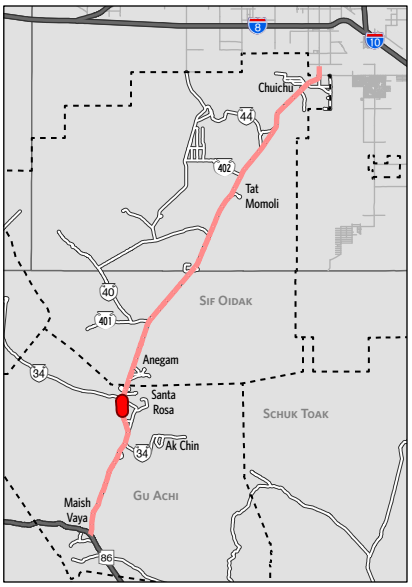
- High Crash Corridor
- Flooding Issue
- No Sidewalks
- Open Range, No Fencing
- No Shoulders
- Deteriorating Striping
- No Lighting
- Poor Pavement
- Curvy Roadway

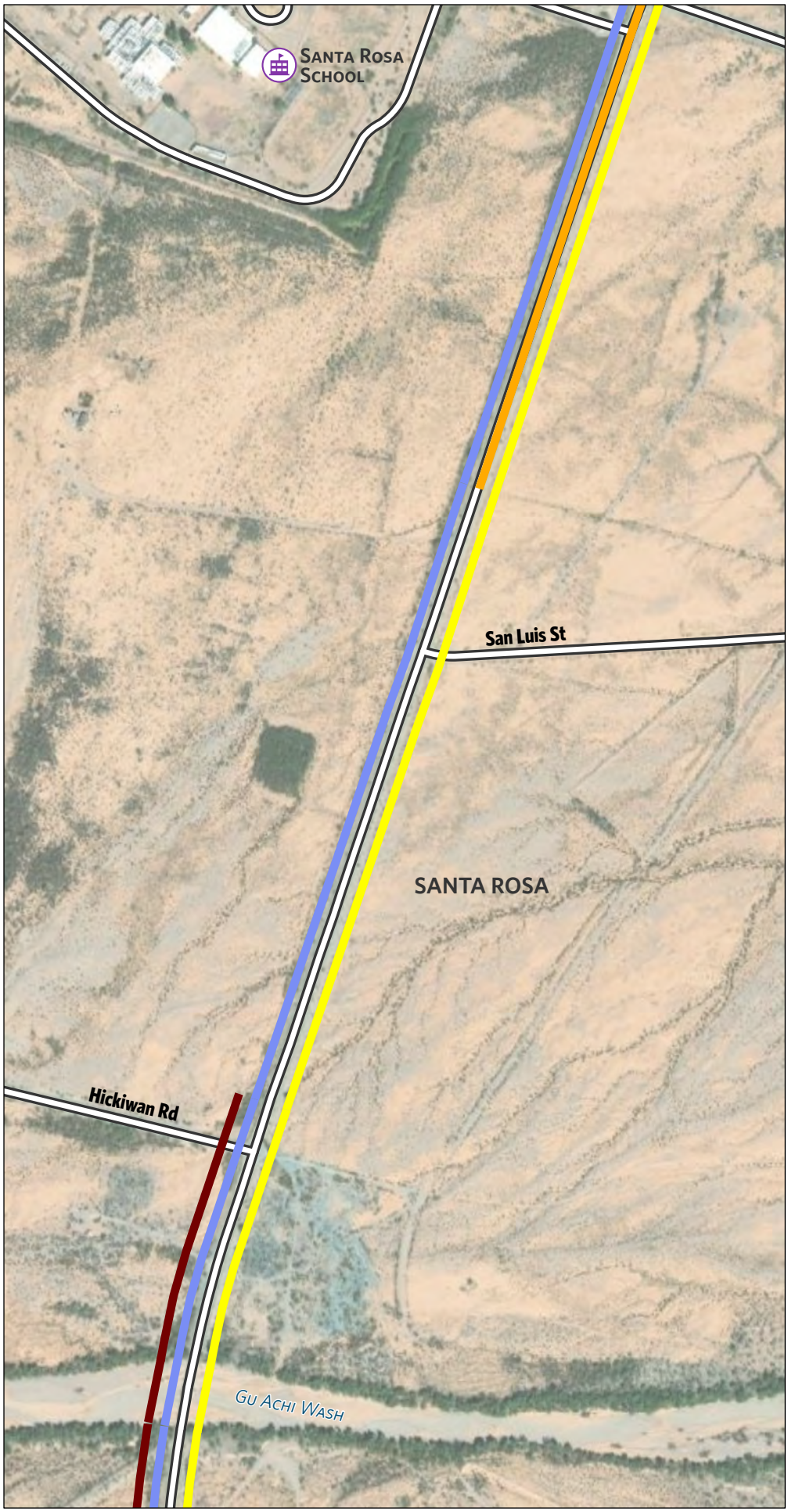
Reference

- Tohono O'odham District Boundary

0 300 600 Feet

1 inch equals 600 feet





Existing Issues

Route 15

Potential Safety Concerns

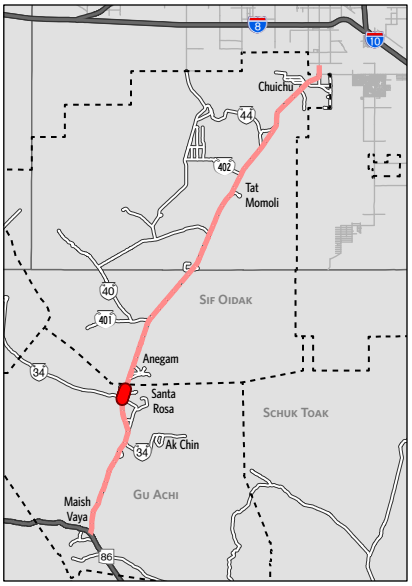
- High Crash Corridor
- Flooding Issue
- No Sidewalks
- Open Range, No Fencing
- No Shoulders
- Deteriorating Striping
- No Lighting
- Poor Pavement
- Curvy Roadway

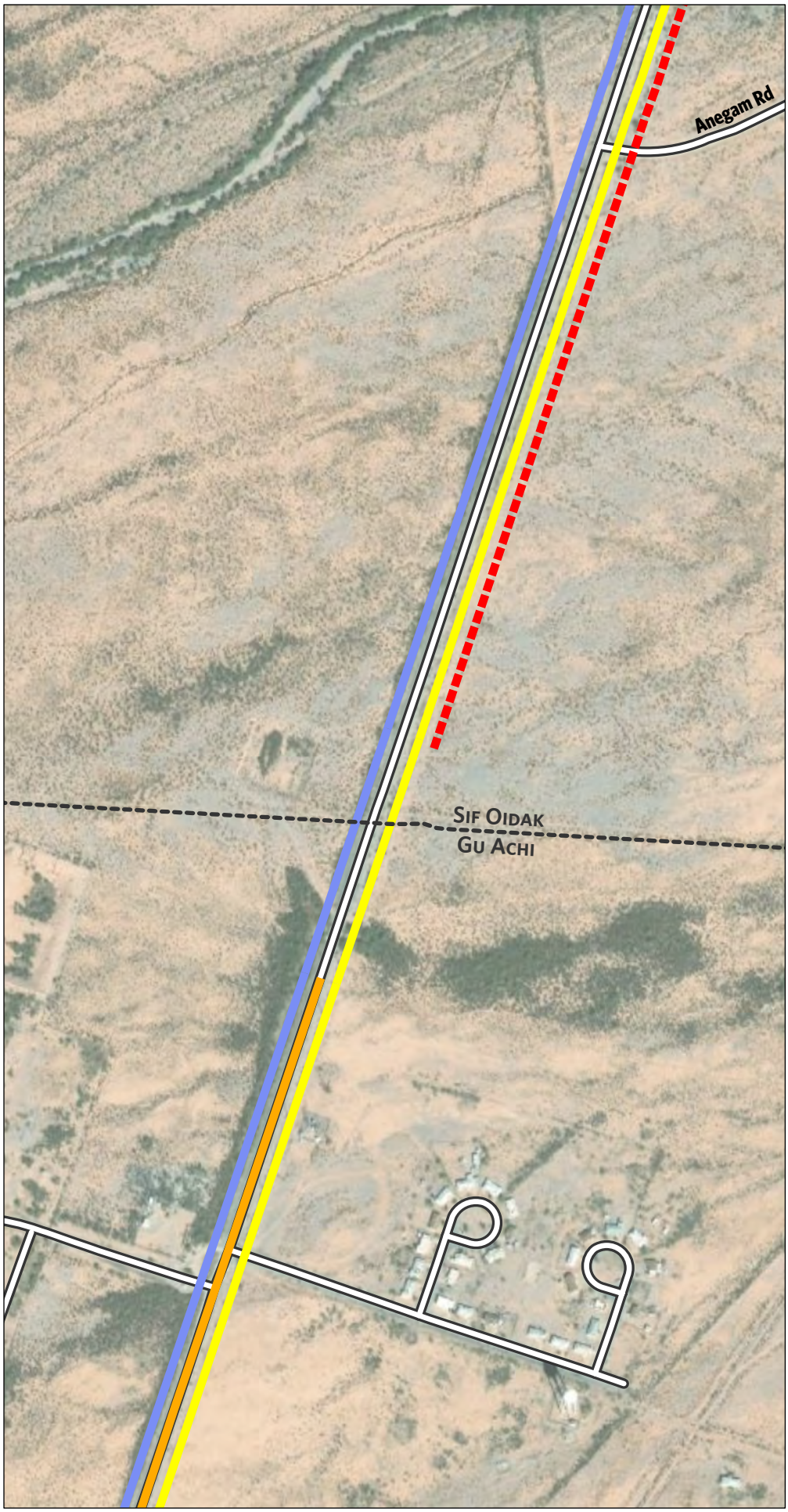
Reference

- School
- Tohono O'odham District Boundary

0 300 600 Feet

1 inch equals 600 feet





Existing Issues

Route 15

Potential Safety Concerns

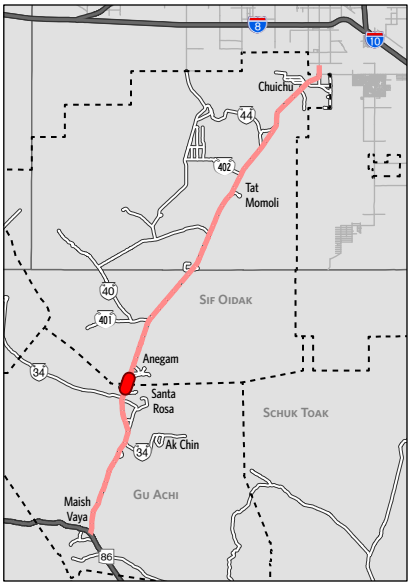
- High Crash Corridor
- Flooding Issue
- No Sidewalks
- Open Range, No Fencing
- No Shoulders
- Deteriorating Striping
- No Lighting
- Poor Pavement
- Curvy Roadway

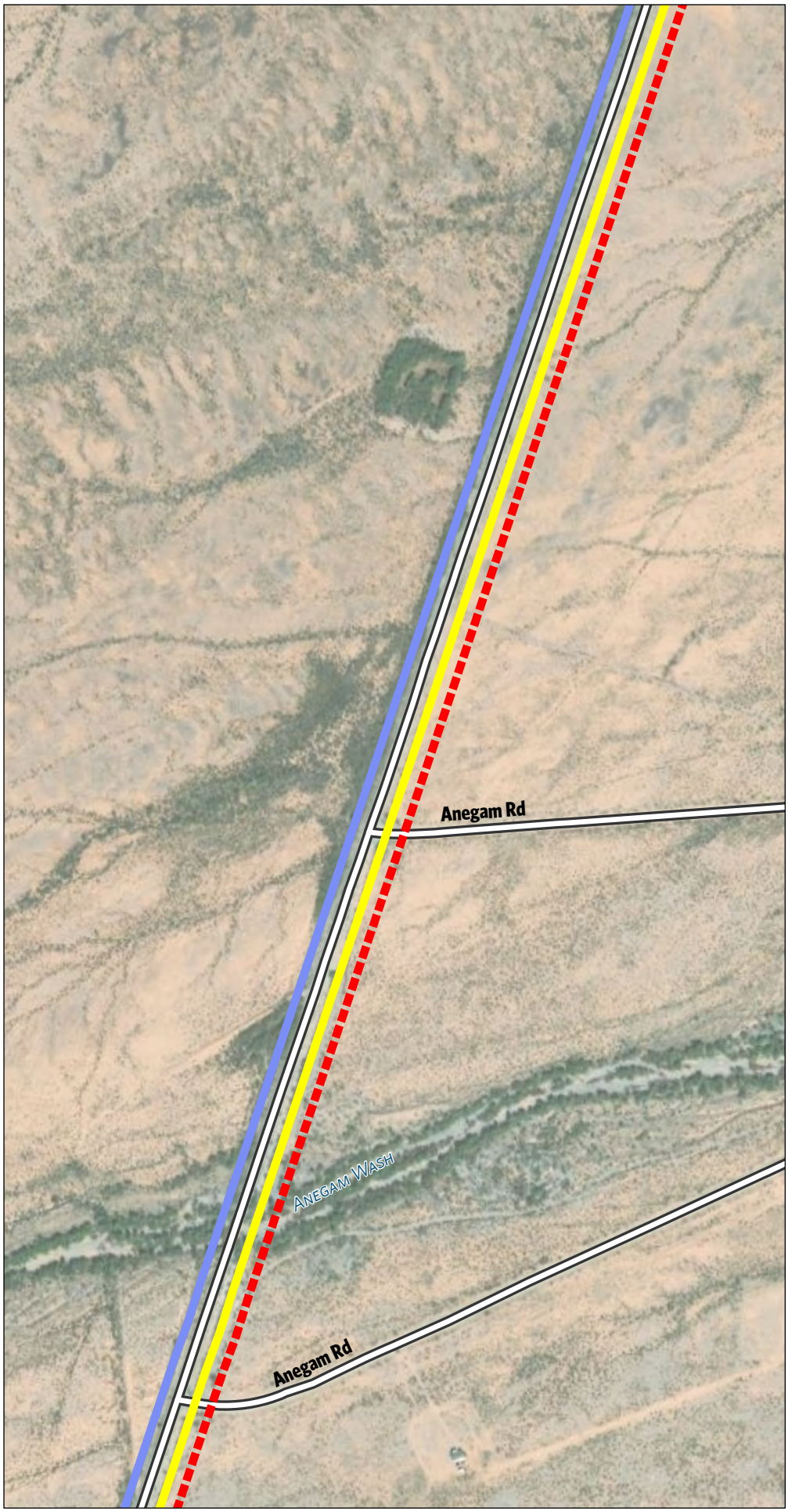
Reference

- Tohono O'odham District Boundary

0 300 600 Feet

1 inch equals 600 feet





Existing Issues

Route 15

Potential Safety Concerns

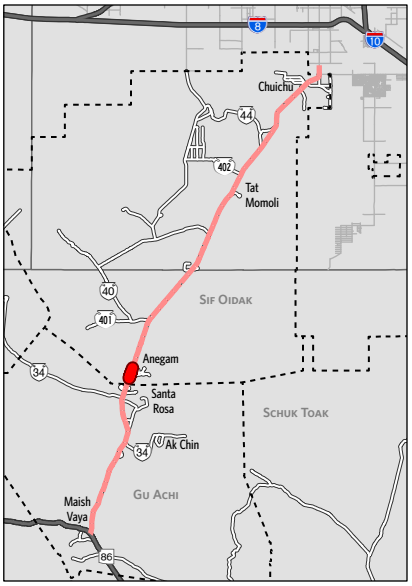
- High Crash Corridor
- Flooding Issue
- No Sidewalks
- Open Range, No Fencing
- No Shoulders
- Deteriorating Striping
- No Lighting
- Poor Pavement
- Curvy Roadway

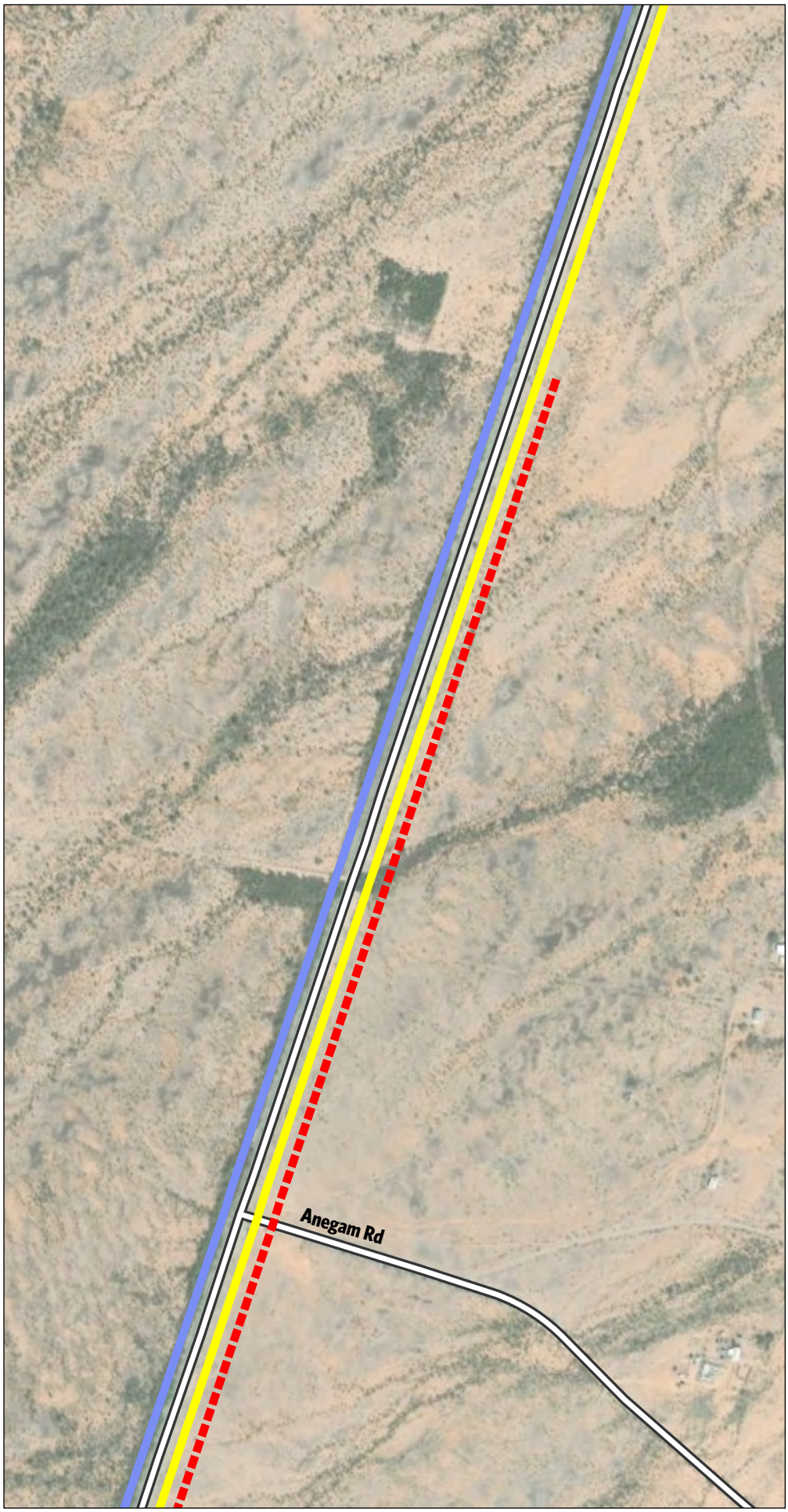
Reference

- Tohono O'odham District Boundary

0 300 600 Feet

1 inch equals 600 feet





Existing Issues

Route 15

Potential Safety Concerns

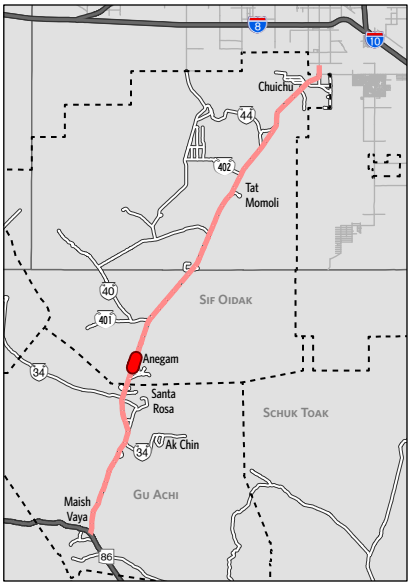
- High Crash Corridor
- Flooding Issue
- No Sidewalks
- Open Range, No Fencing
- No Shoulders
- Deteriorating Striping
- No Lighting
- Poor Pavement
- Curvy Roadway

Reference

- Tohono O'odham District Boundary

0 300 600 Feet

1 inch equals 600 feet



Existing Issues

Route 15

Potential Safety Concerns

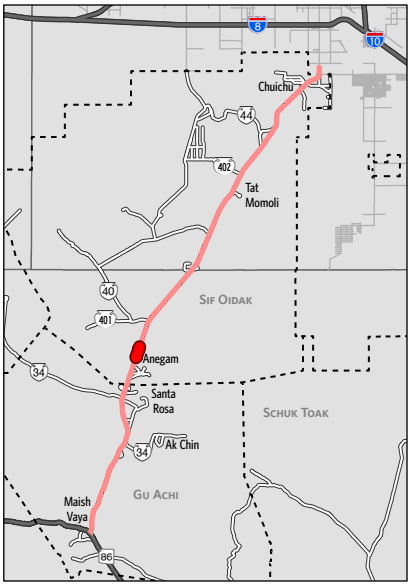
- High Crash Corridor
- Flooding Issue
- No Sidewalks
- Open Range, No Fencing
- No Shoulders
- Deteriorating Striping
- No Lighting
- Poor Pavement
- Curvy Roadway

Reference

- Tohono O'odham District Boundary

0 300 600 Feet

1 inch equals 600 feet



Existing Issues

Route 15

Potential Safety Concerns

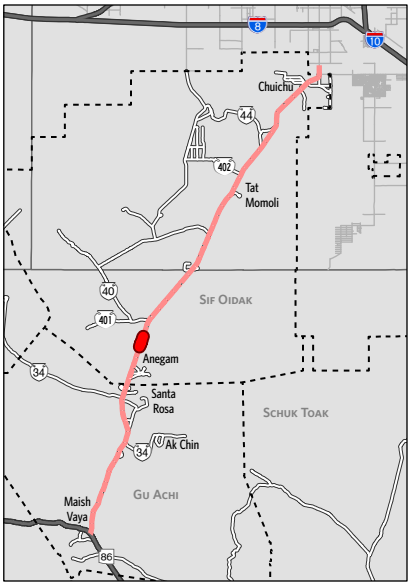
- High Crash Corridor
- Flooding Issue
- No Sidewalks
- Open Range, No Fencing
- No Shoulders
- Deteriorating Striping
- No Lighting
- Poor Pavement
- Curvy Roadway

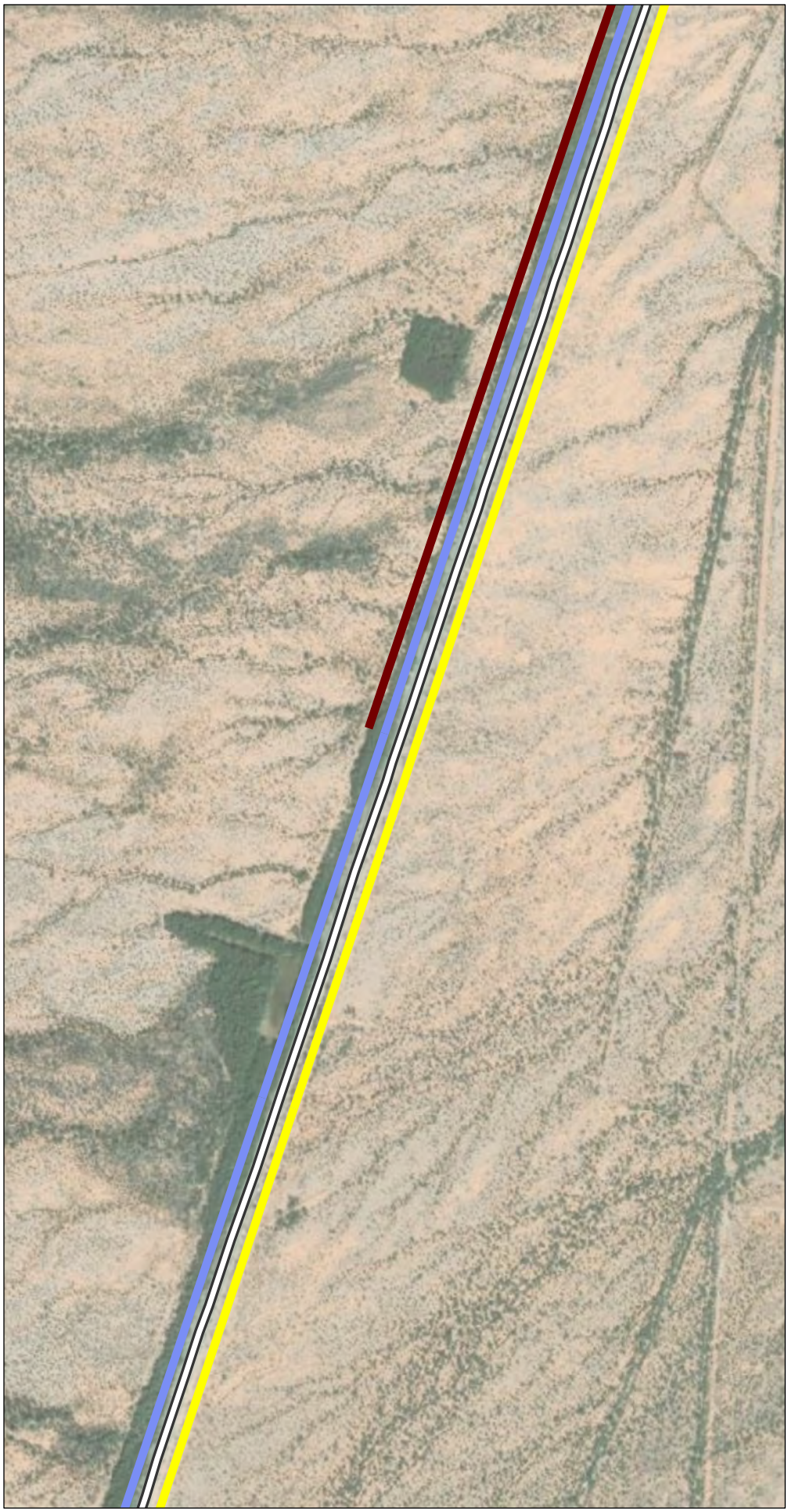
Reference

- Tohono O'odham District Boundary

0 300 600 Feet

1 inch equals 600 feet





Existing Issues

Route 15

Potential Safety Concerns

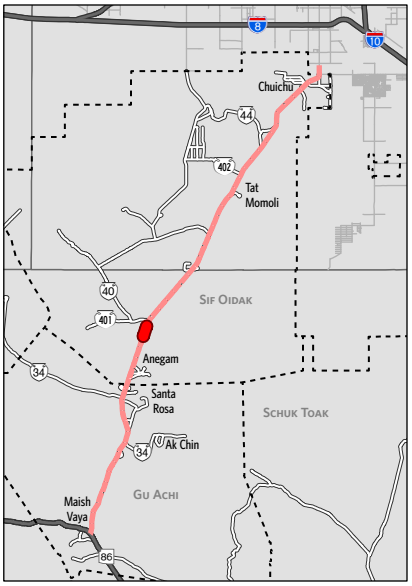
- High Crash Corridor
- Flooding Issue
- No Sidewalks
- Open Range, No Fencing
- No Shoulders
- Deteriorating Striping
- No Lighting
- Poor Pavement
- Curvy Roadway

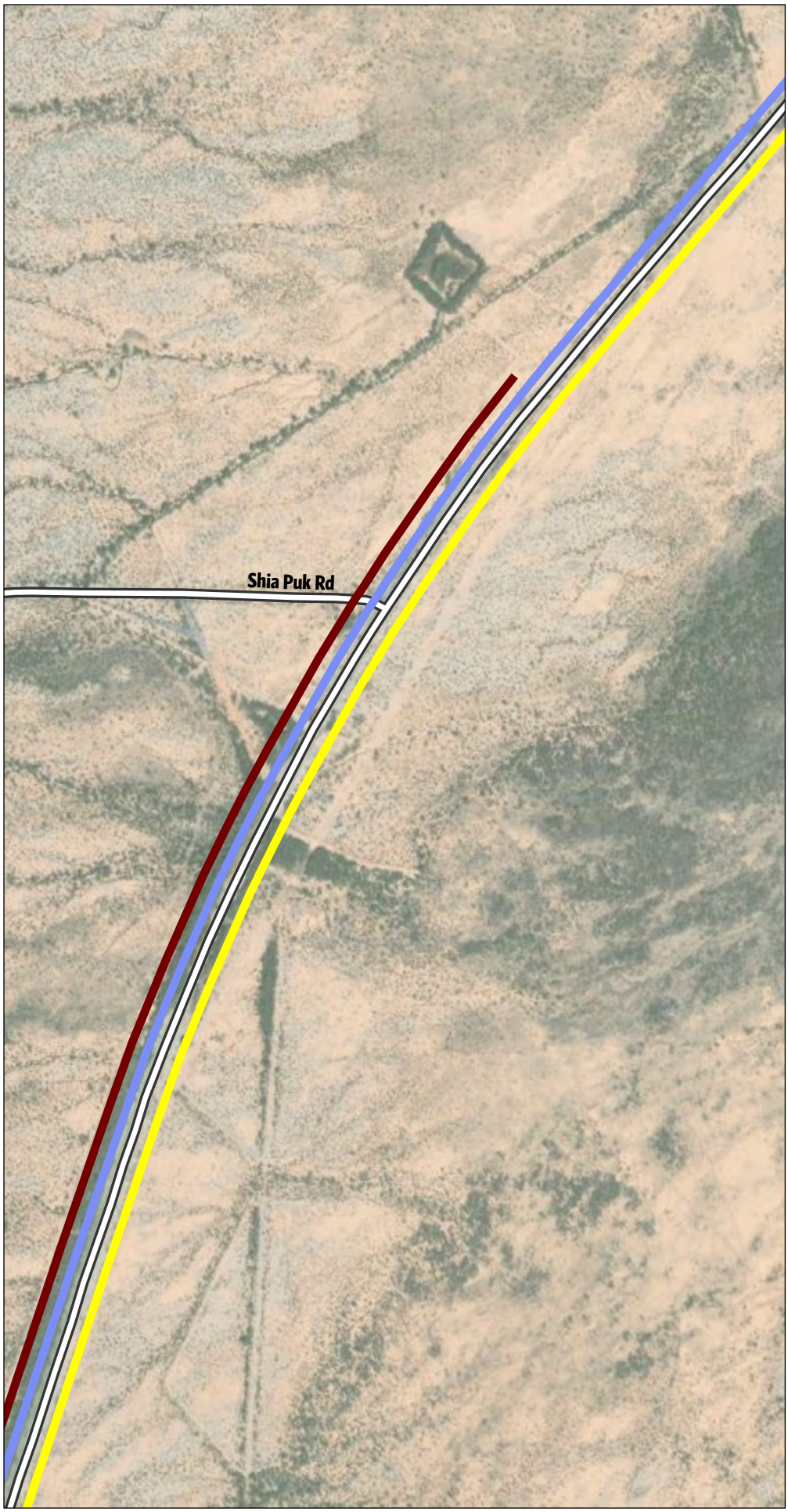
Reference

- Tohono O'odham District Boundary

0 300 600 Feet

1 inch equals 600 feet





Existing Issues

Route 15

Potential Safety Concerns

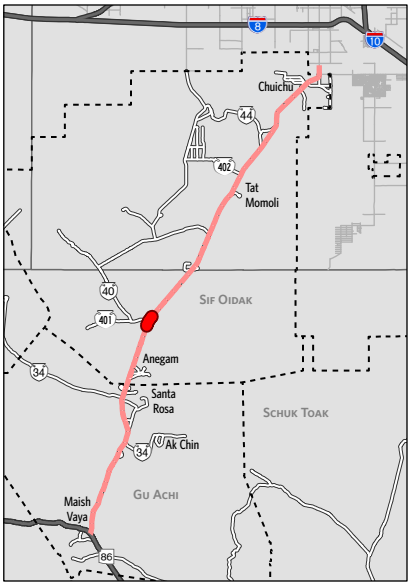
- High Crash Corridor
- Flooding Issue
- No Sidewalks
- Open Range, No Fencing
- No Shoulders
- Deteriorating Striping
- No Lighting
- Poor Pavement
- Curvy Roadway

Reference

- Tohono O'odham District Boundary

0 300 600 Feet

1 inch equals 600 feet



Existing Issues

Route 15

Potential Safety Concerns

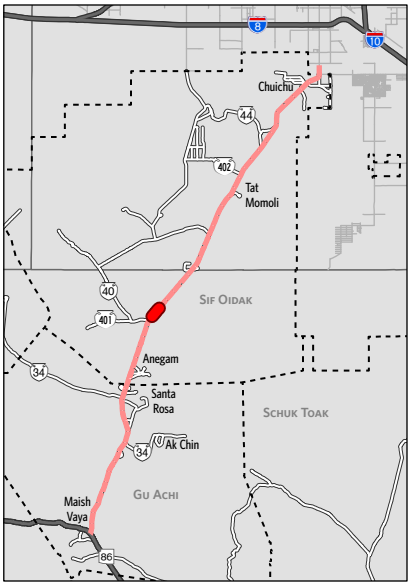
- High Crash Corridor
- Flooding Issue
- No Sidewalks
- Open Range, No Fencing
- No Shoulders
- Deteriorating Striping
- No Lighting
- Poor Pavement
- Curvy Roadway

Reference

- Tohono O'odham District Boundary

0 300 600 Feet

1 inch equals 600 feet



Existing Issues

Route 15

Potential Safety Concerns

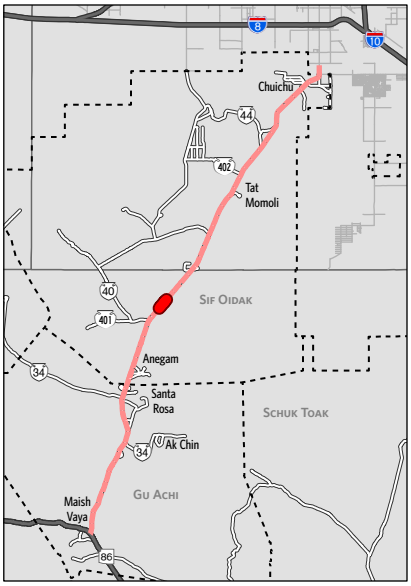
- High Crash Corridor
- Flooding Issue
- No Sidewalks
- Open Range, No Fencing
- No Shoulders
- Deteriorating Striping
- No Lighting
- Poor Pavement
- Curvy Roadway

Reference

- Tohono O'odham District Boundary

0 300 600 Feet

1 inch equals 600 feet



Existing Issues

Route 15

Potential Safety Concerns

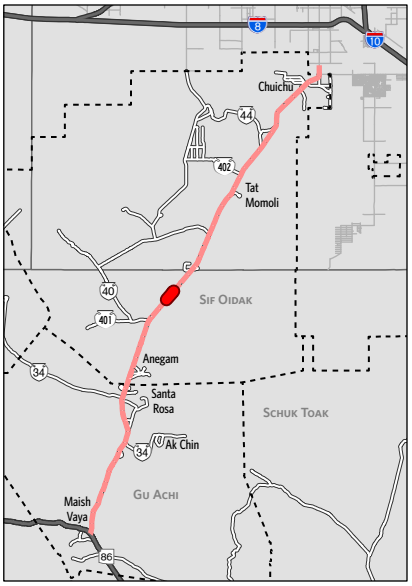
- High Crash Corridor
- Flooding Issue
- No Sidewalks
- Open Range, No Fencing
- No Shoulders
- Deteriorating Striping
- No Lighting
- Poor Pavement
- Curvy Roadway

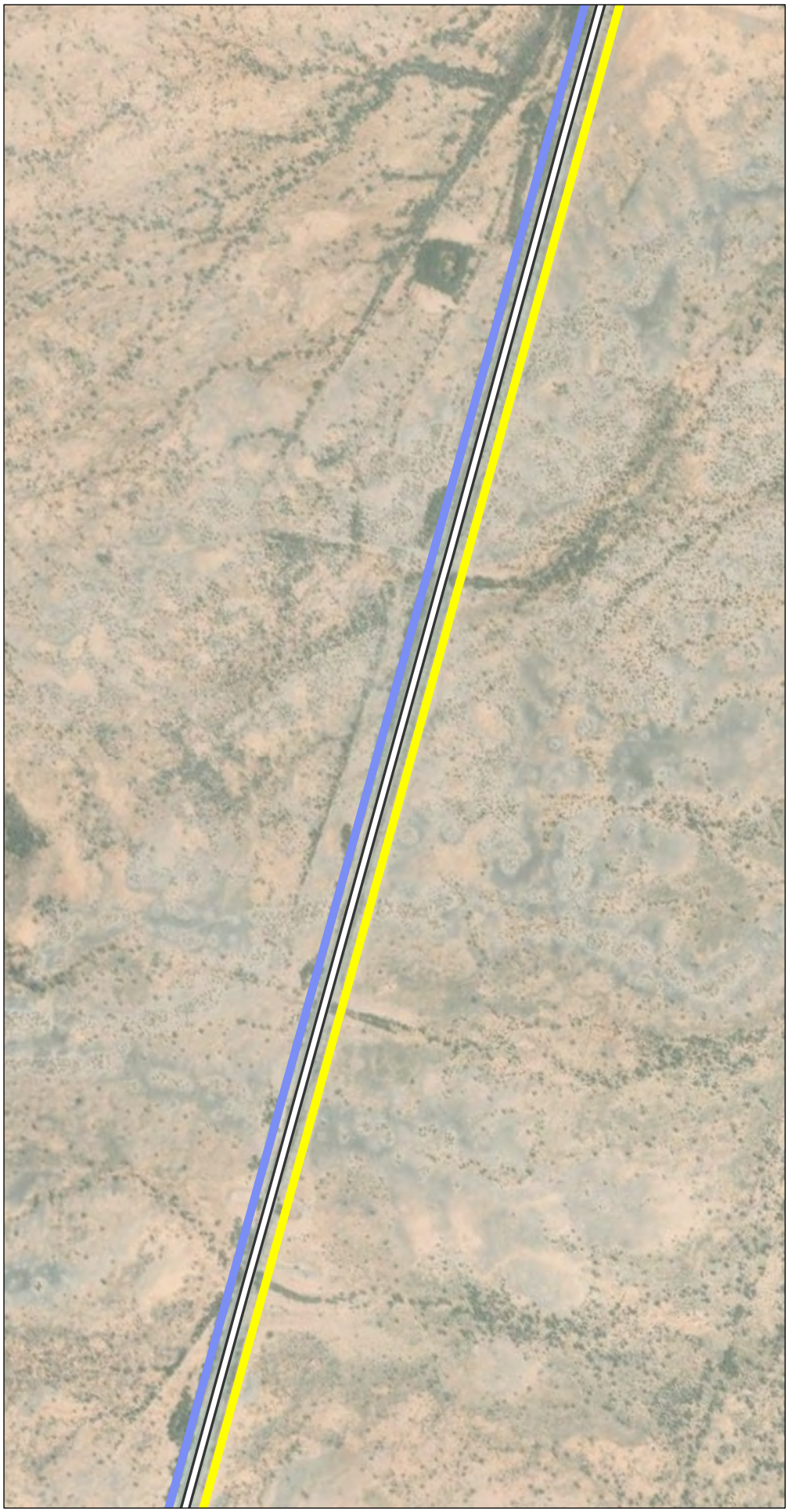
Reference

- Tohono O'odham District Boundary

0 300 600 Feet

1 inch equals 600 feet





Existing Issues

Route 15

Potential Safety Concerns

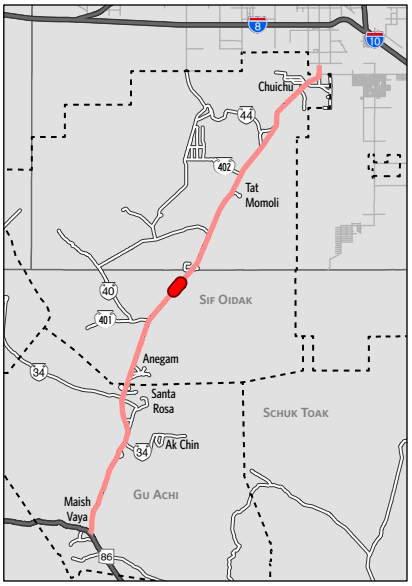
- High Crash Corridor
- Flooding Issue
- No Sidewalks
- Open Range, No Fencing
- No Shoulders
- Deteriorating Striping
- No Lighting
- Poor Pavement
- Curvy Roadway

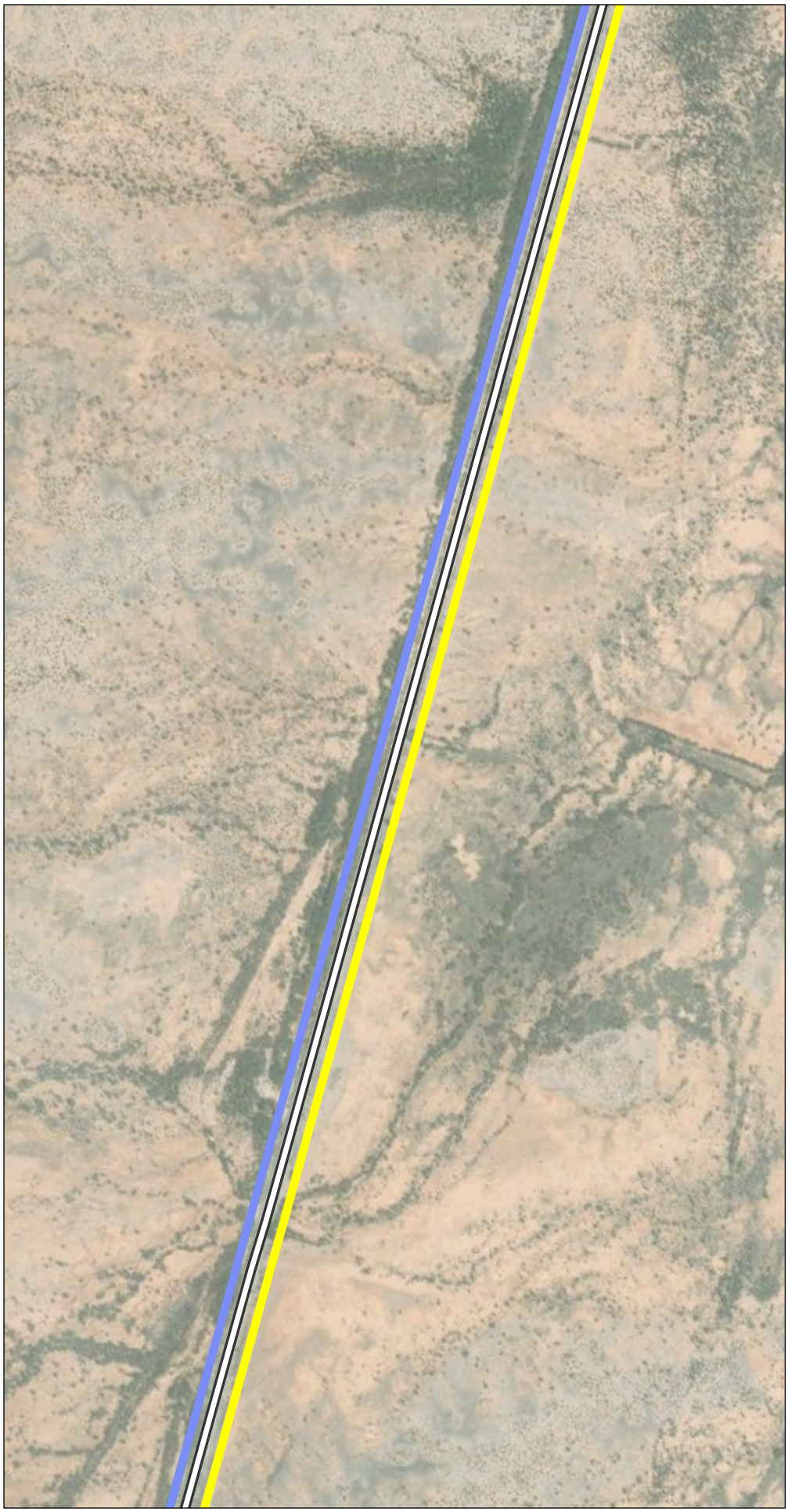
Reference

- Tohono O'odham District Boundary

0 300 600 Feet

1 inch equals 600 feet





Existing Issues

Route 15

Potential Safety Concerns

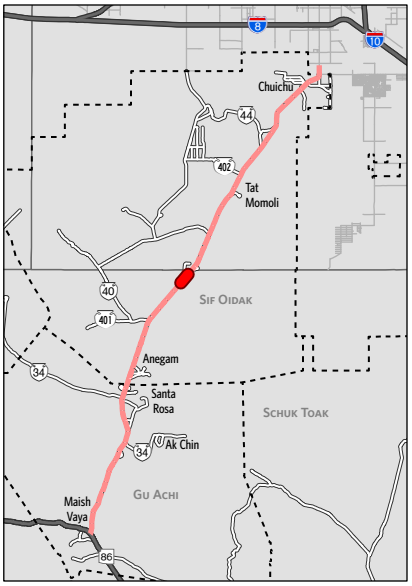
- High Crash Corridor
- Flooding Issue
- No Sidewalks
- Open Range, No Fencing
- No Shoulders
- Deteriorating Striping
- No Lighting
- Poor Pavement
- Curvy Roadway

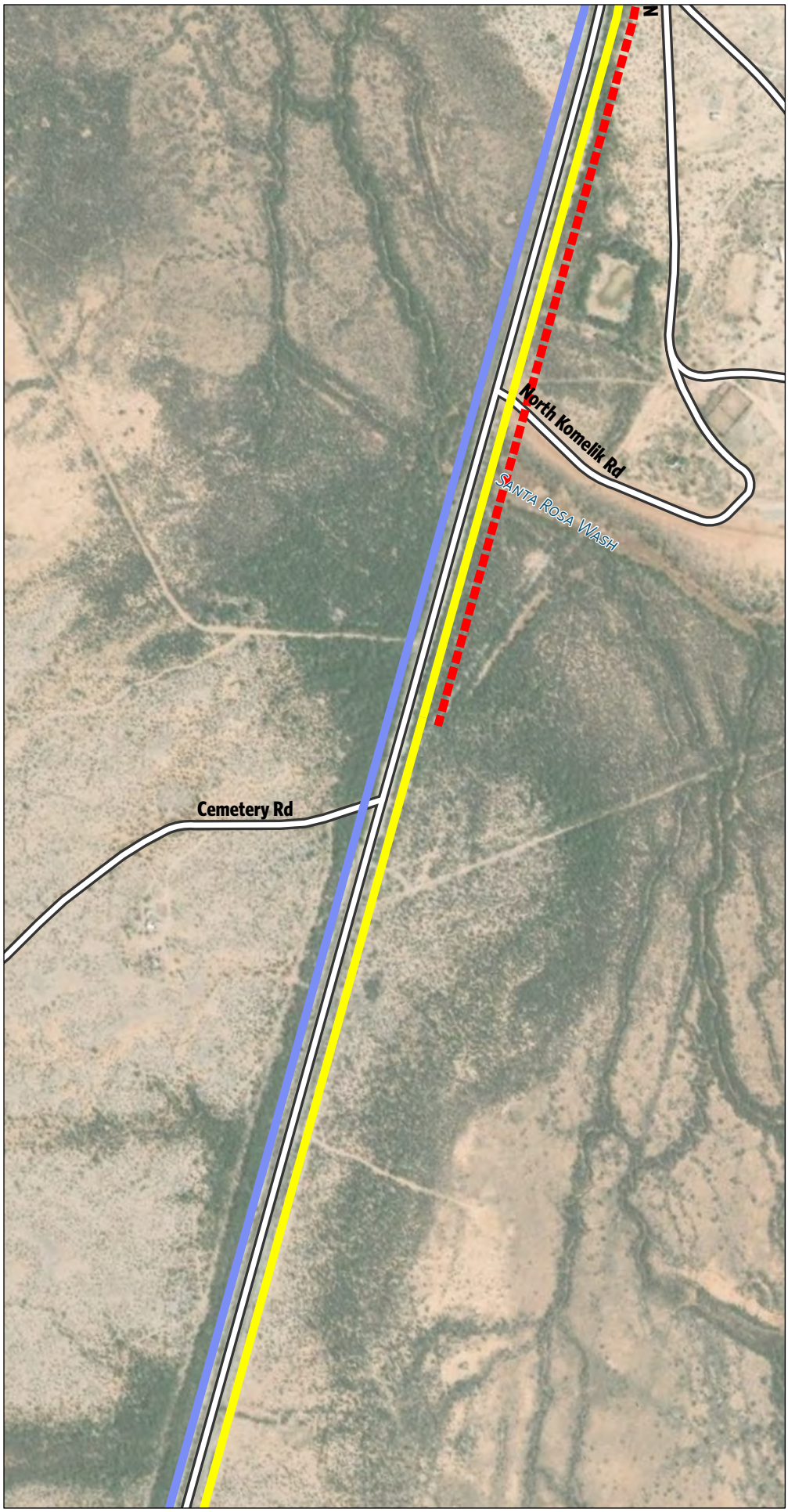
Reference

- Tohono O'odham District Boundary

0 300 600 Feet

1 inch equals 600 feet





Existing Issues

Route 15

Potential Safety Concerns

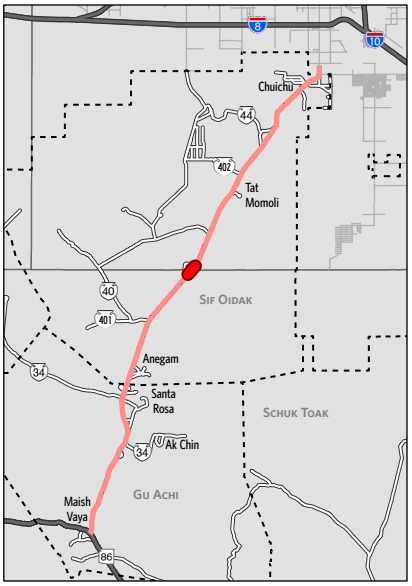
- High Crash Corridor
- Flooding Issue
- No Sidewalks
- Open Range, No Fencing
- No Shoulders
- Deteriorating Striping
- No Lighting
- Poor Pavement
- Curvy Roadway

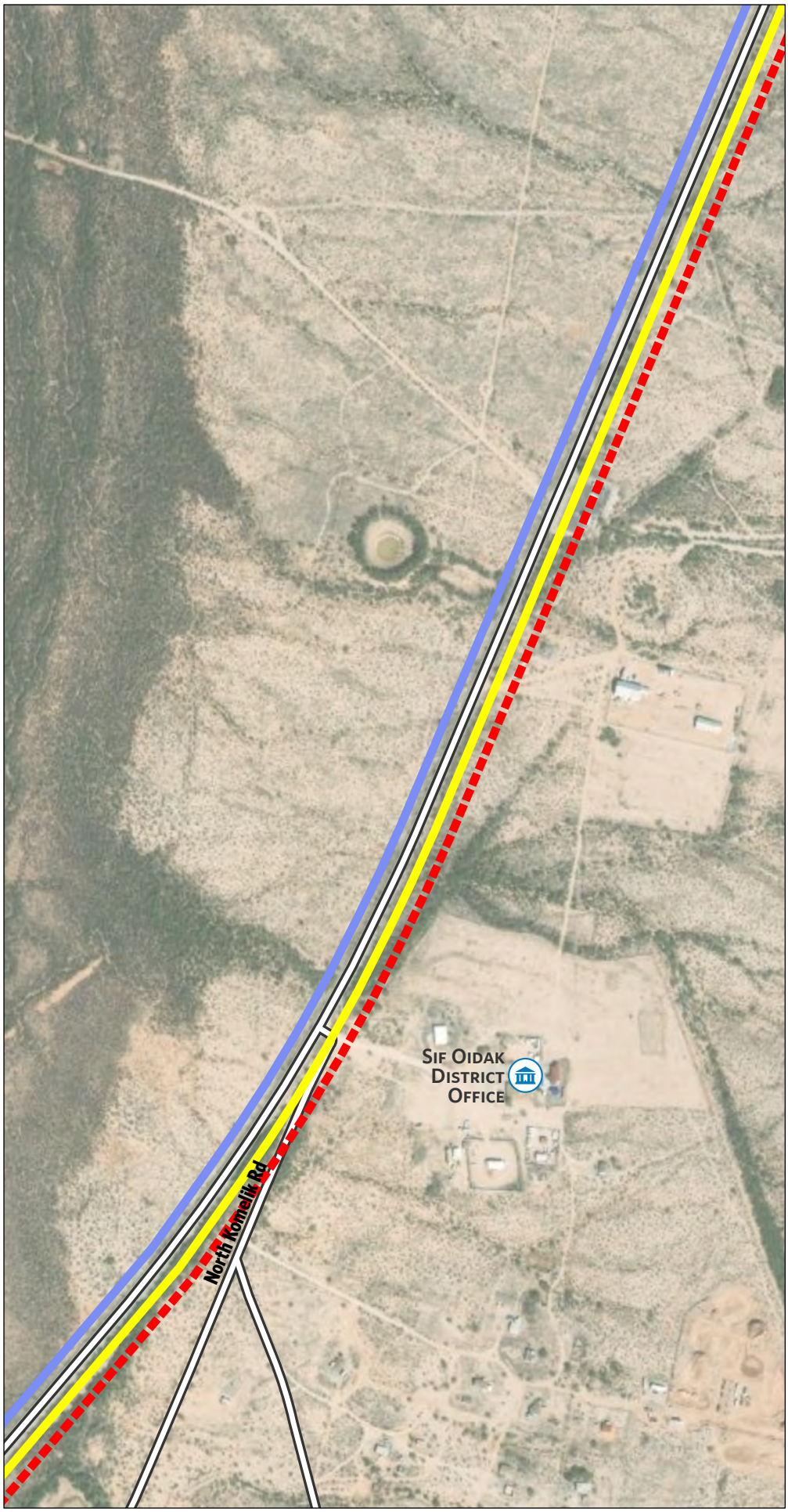
Reference

- Tohono O'odham District Boundary

0 300 600 Feet

1 inch equals 600 feet





Existing Issues

Route 15

Potential Safety Concerns

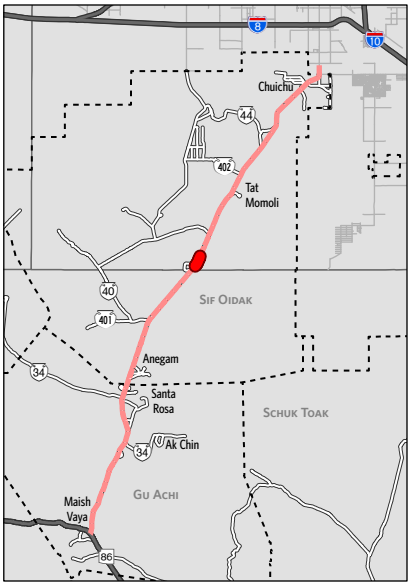
- High Crash Corridor
- Flooding Issue
- No Sidewalks
- Open Range, No Fencing
- No Shoulders
- Deteriorating Striping
- No Lighting
- Poor Pavement
- Curvy Roadway

Reference

- Government Office
- Tohono O'odham District Boundary

0 300 600 Feet

1 inch equals 600 feet



Existing Issues

Route 15

Potential Safety Concerns

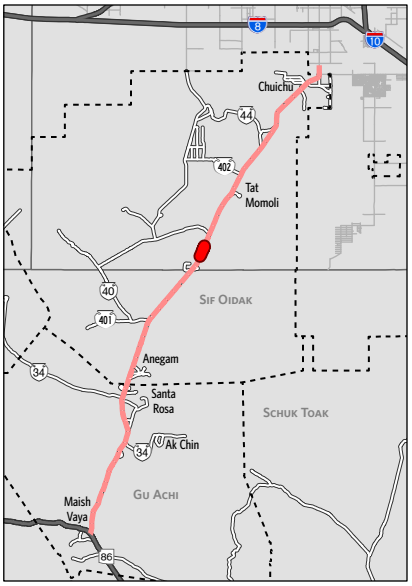
- High Crash Corridor
- Flooding Issue
- No Sidewalks
- Open Range, No Fencing
- No Shoulders
- Deteriorating Striping
- No Lighting
- Poor Pavement
- Curvy Roadway

Reference

- Tohono O'odham District Boundary

0 300 600 Feet

1 inch equals 600 feet



Existing Issues

Route 15

Potential Safety Concerns

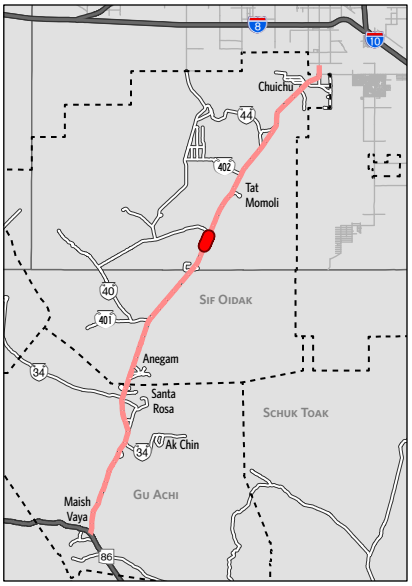
- High Crash Corridor
- Flooding Issue
- No Sidewalks
- Open Range, No Fencing
- No Shoulders
- Deteriorating Striping
- No Lighting
- Poor Pavement
- Curvy Roadway

Reference

- Tohono O'odham District Boundary

0 300 600 Feet

1 inch equals 600 feet



Existing Issues

Route 15

Potential Safety Concerns

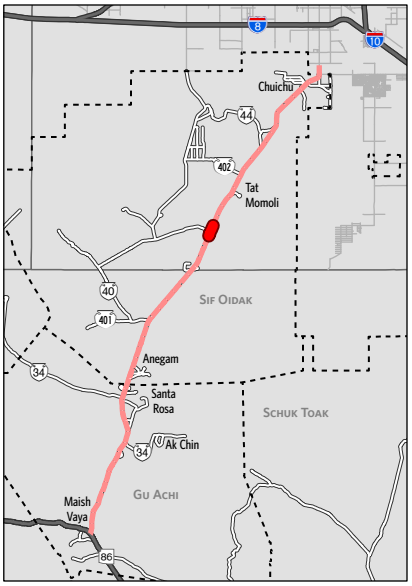
- High Crash Corridor
- Flooding Issue
- No Sidewalks
- Open Range, No Fencing
- No Shoulders
- Deteriorating Striping
- No Lighting
- Poor Pavement
- Curvy Roadway

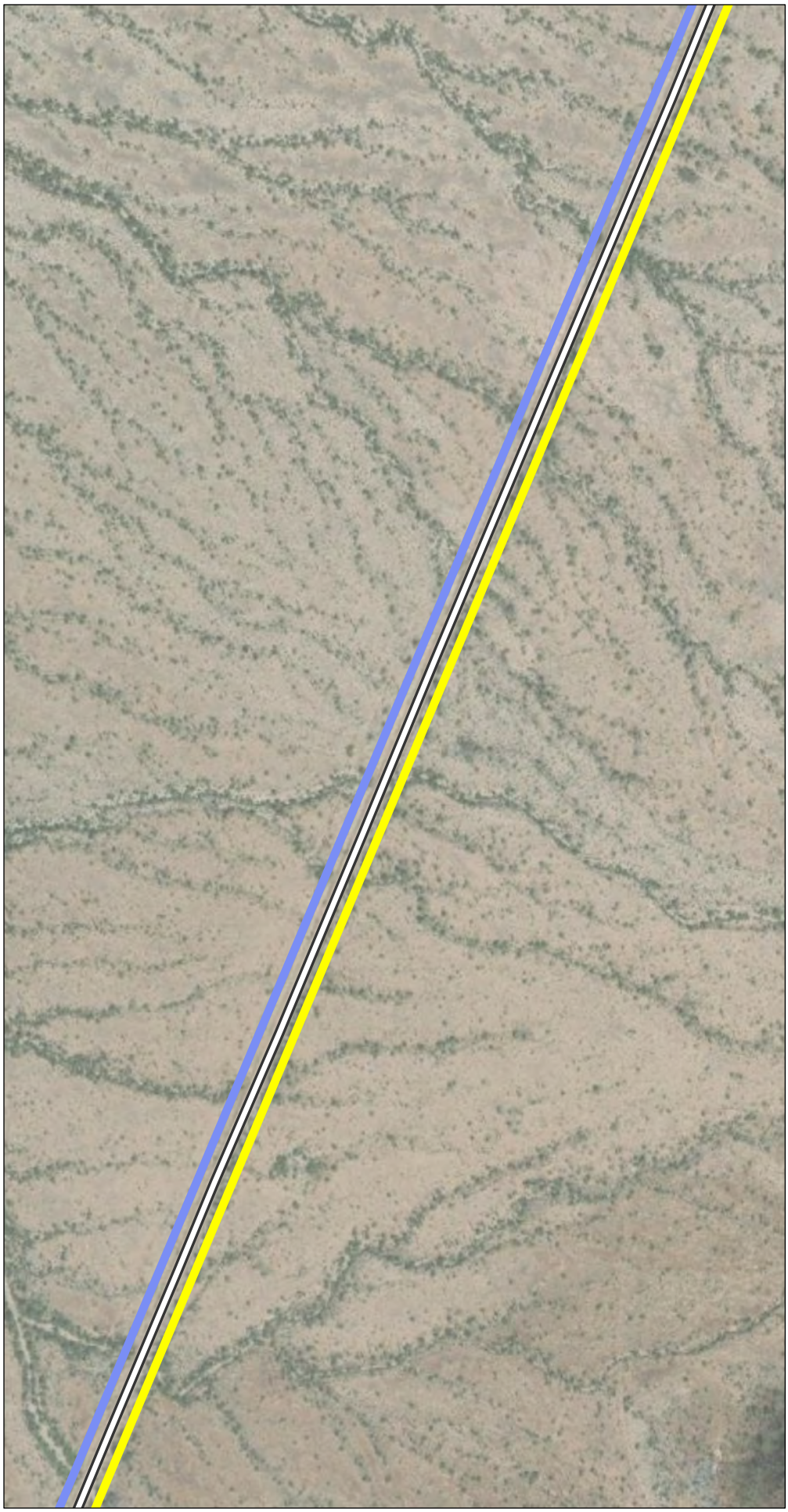
Reference

- Tohono O'odham District Boundary

0 300 600 Feet

1 inch equals 600 feet





Existing Issues

Route 15

Potential Safety Concerns

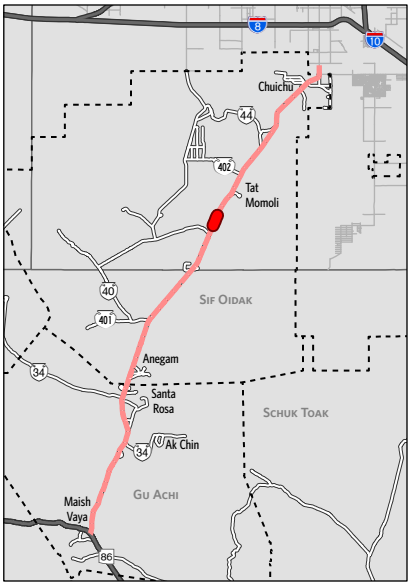
- High Crash Corridor
- Flooding Issue
- No Sidewalks
- Open Range, No Fencing
- No Shoulders
- Deteriorating Striping
- No Lighting
- Poor Pavement
- Curvy Roadway

Reference

- Tohono O'odham District Boundary

0 300 600 Feet

1 inch equals 600 feet



Existing Issues

Route 15

Potential Safety Concerns

- High Crash Corridor
- Flooding Issue
- No Sidewalks
- Open Range, No Fencing
- No Shoulders
- Deteriorating Striping
- No Lighting
- Poor Pavement
- Curvy Roadway

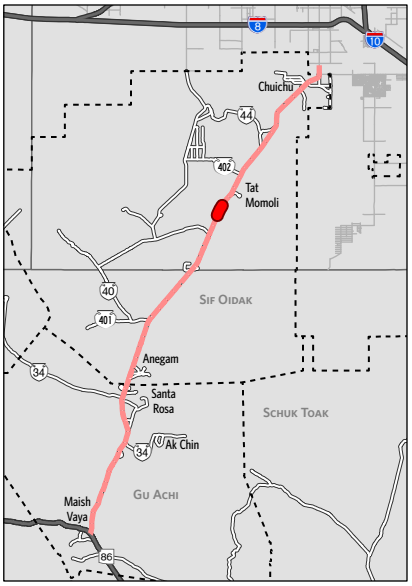
Reference

- Tohono O'odham District Boundary

0 300 600 Feet

1 inch equals 600 feet

N



Existing Issues

Route 15

Potential Safety Concerns

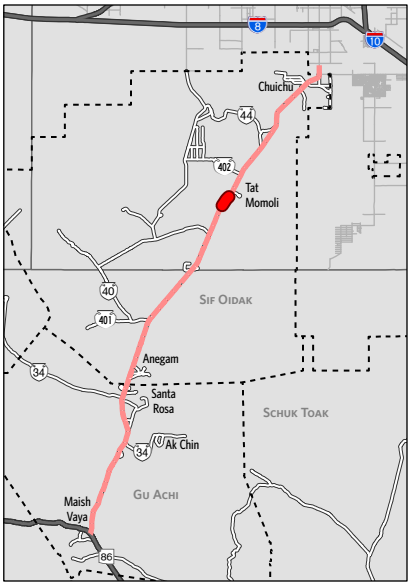
- High Crash Corridor
- Flooding Issue
- No Sidewalks
- Open Range, No Fencing
- No Shoulders
- Deteriorating Striping
- No Lighting
- Poor Pavement
- Curvy Roadway

Reference

- Tohono O'odham District Boundary

0 300 600 Feet

1 inch equals 600 feet



Existing Issues

Route 15

Potential Safety Concerns

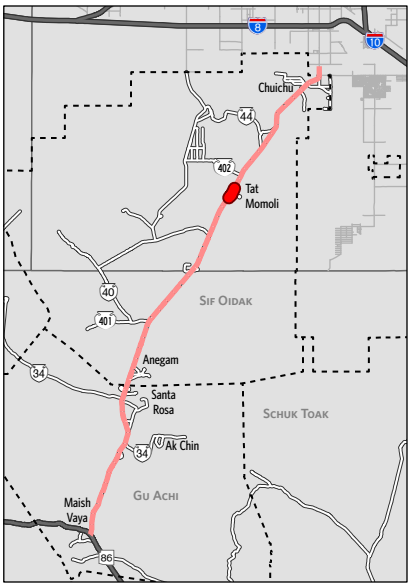
- High Crash Corridor
- Flooding Issue
- No Sidewalks
- Open Range, No Fencing
- No Shoulders
- Deteriorating Striping
- No Lighting
- Poor Pavement
- Curvy Roadway

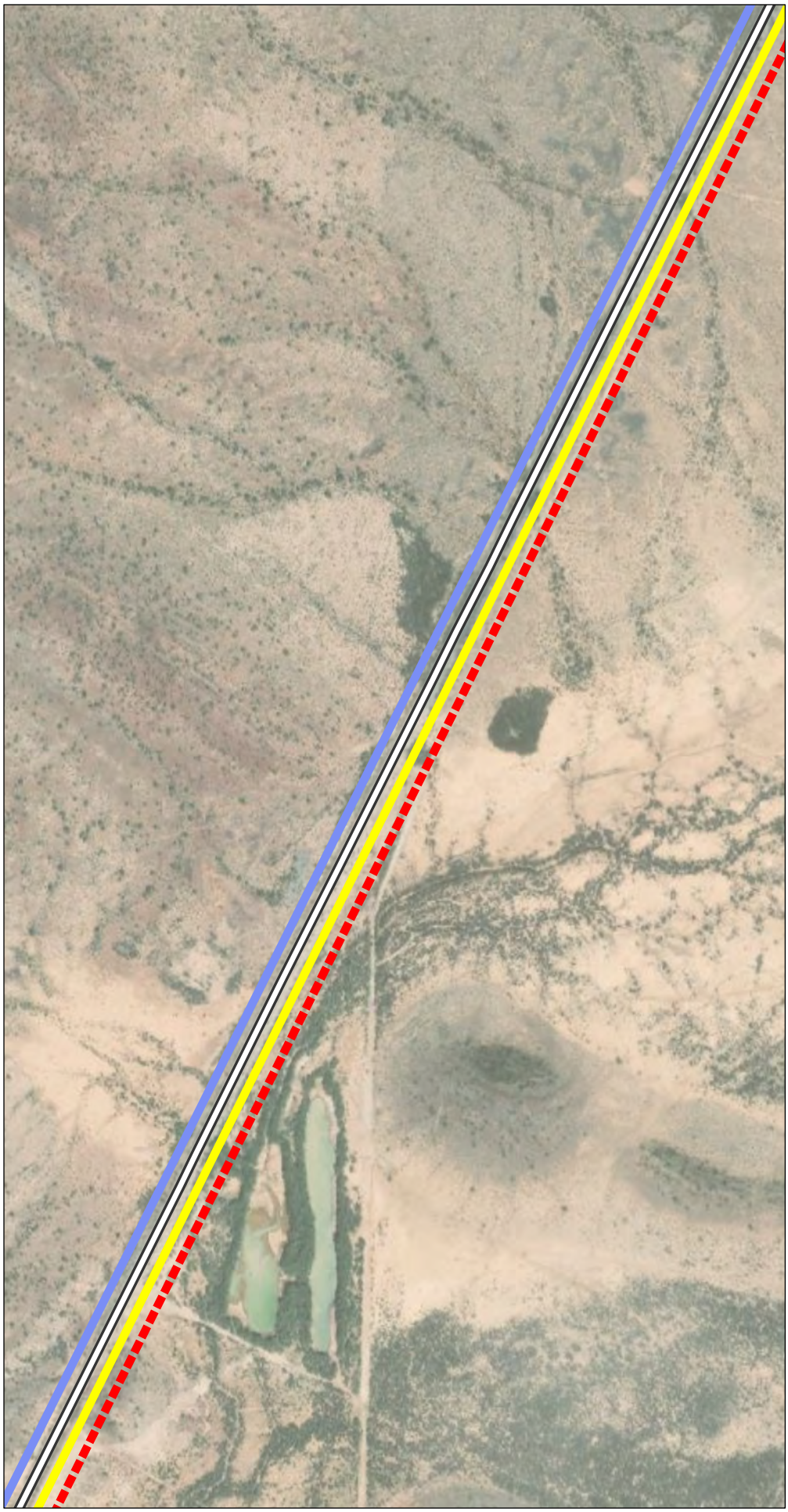
Reference

- Tohono O'odham District Boundary

0 300 600 Feet

1 inch equals 600 feet





Existing Issues

Route 15

Potential Safety Concerns

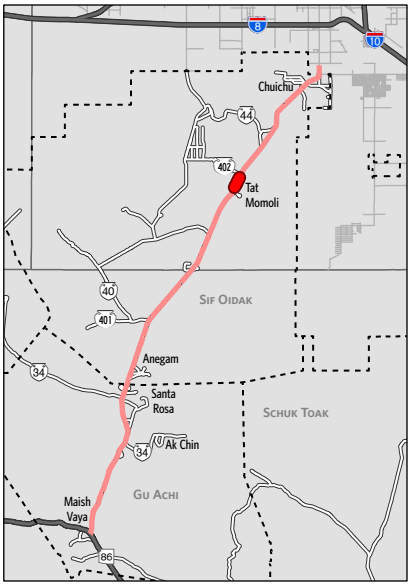
- High Crash Corridor
- Flooding Issue
- No Sidewalks
- Open Range, No Fencing
- No Shoulders
- Deteriorating Striping
- No Lighting
- Poor Pavement
- Curvy Roadway

Reference

- Tohono O'odham District Boundary

0 300 600 Feet

1 inch equals 600 feet



Existing Issues

Route 15

Potential Safety Concerns

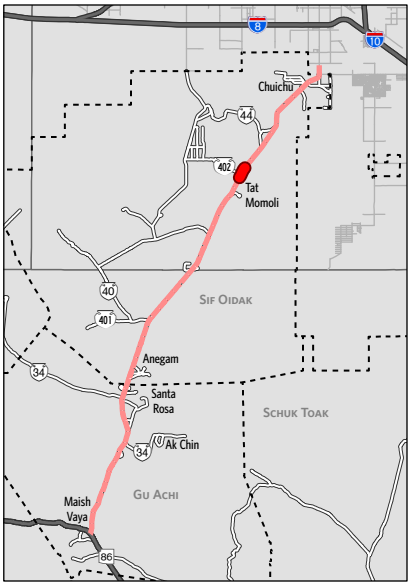
- High Crash Corridor
- Flooding Issue
- No Sidewalks
- Open Range, No Fencing
- No Shoulders
- Deteriorating Striping
- No Lighting
- Poor Pavement
- Curvy Roadway

Reference

- Tohono O'odham District Boundary

0 300 600 Feet

1 inch equals 600 feet



Existing Issues

Route 15

Potential Safety Concerns

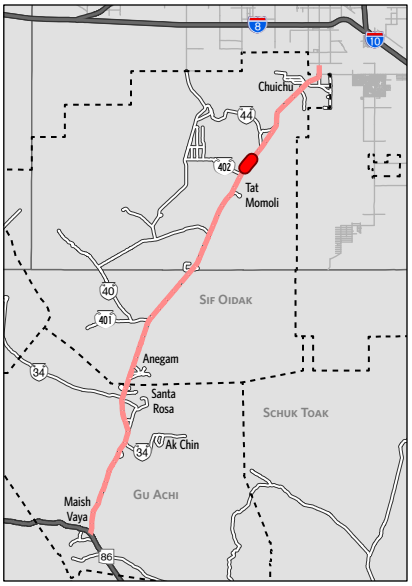
- High Crash Corridor
- Flooding Issue
- No Sidewalks
- Open Range, No Fencing
- No Shoulders
- Deteriorating Striping
- No Lighting
- Poor Pavement
- Curvy Roadway

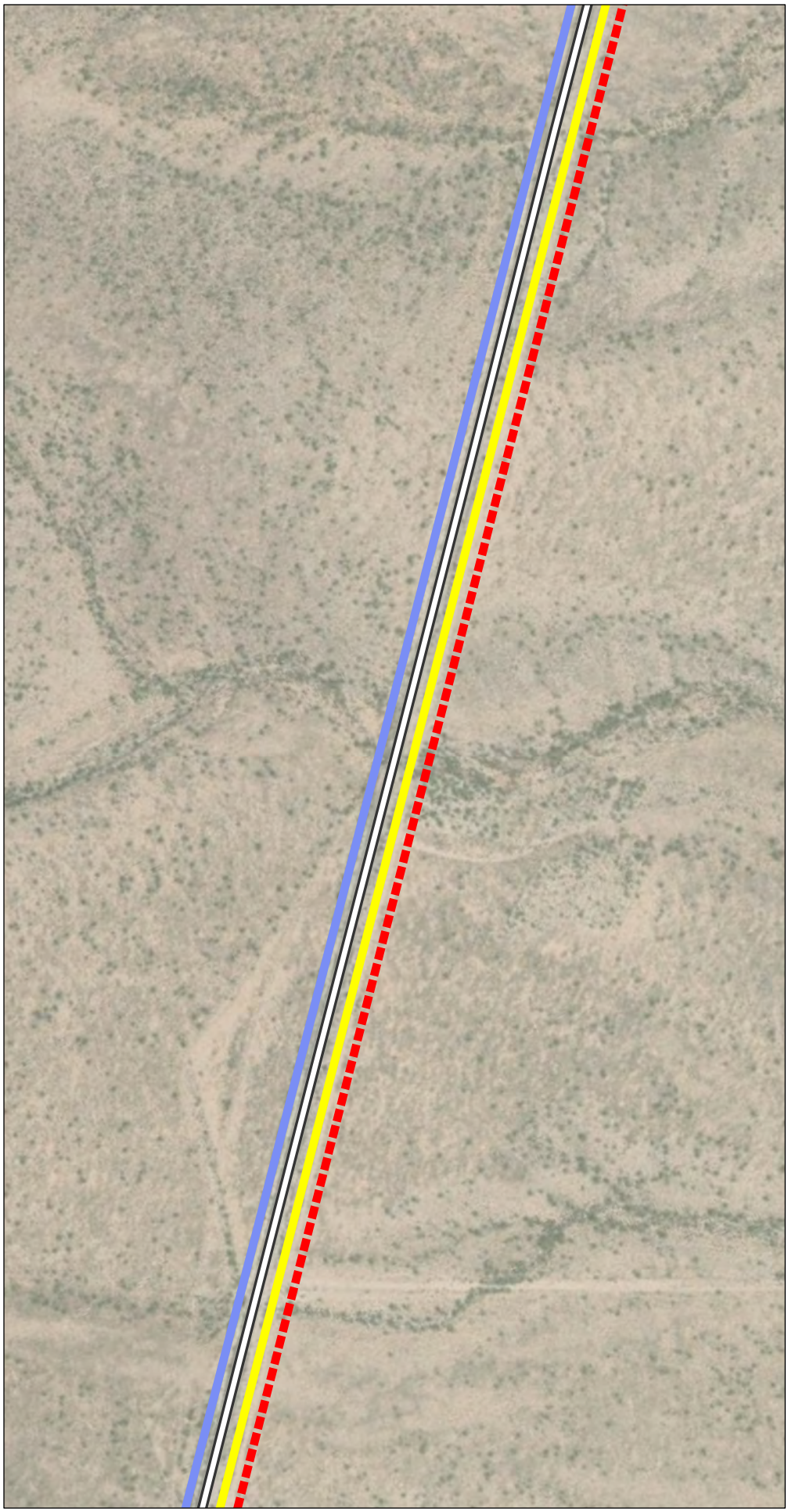
Reference

- Tohono O'odham District Boundary

0 300 600 Feet

1 inch equals 600 feet





Existing Issues

Route 15

Potential Safety Concerns

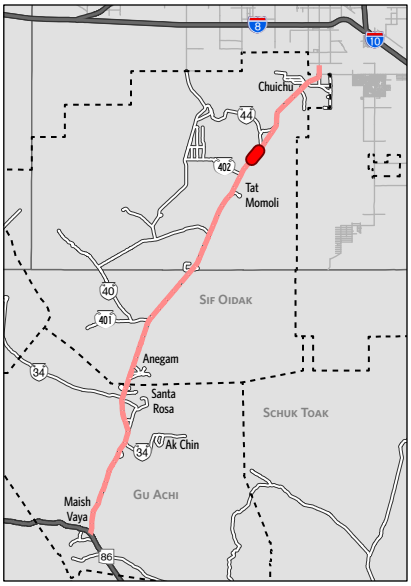
- High Crash Corridor
- Flooding Issue
- No Sidewalks
- Open Range, No Fencing
- No Shoulders
- Deteriorating Striping
- No Lighting
- Poor Pavement
- Curvy Roadway

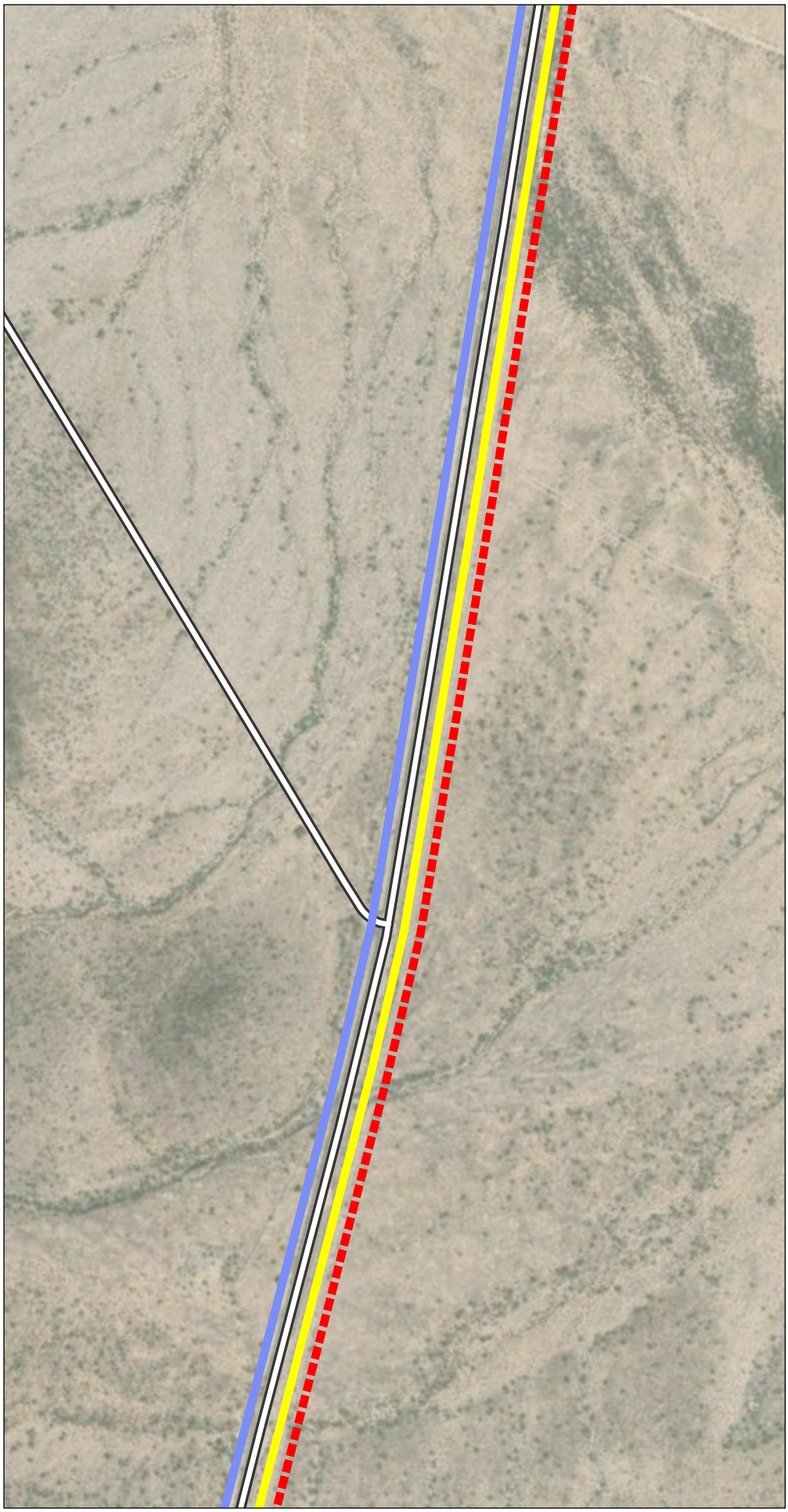
Reference

- Tohono O'odham District Boundary

0 300 600 Feet

1 inch equals 600 feet





Existing Issues

Route 15

Potential Safety Concerns

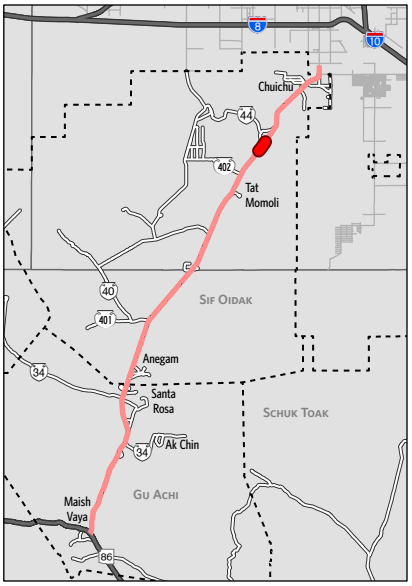
- High Crash Corridor
- Flooding Issue
- No Sidewalks
- Open Range, No Fencing
- No Shoulders
- Deteriorating Striping
- No Lighting
- Poor Pavement
- Curvy Roadway

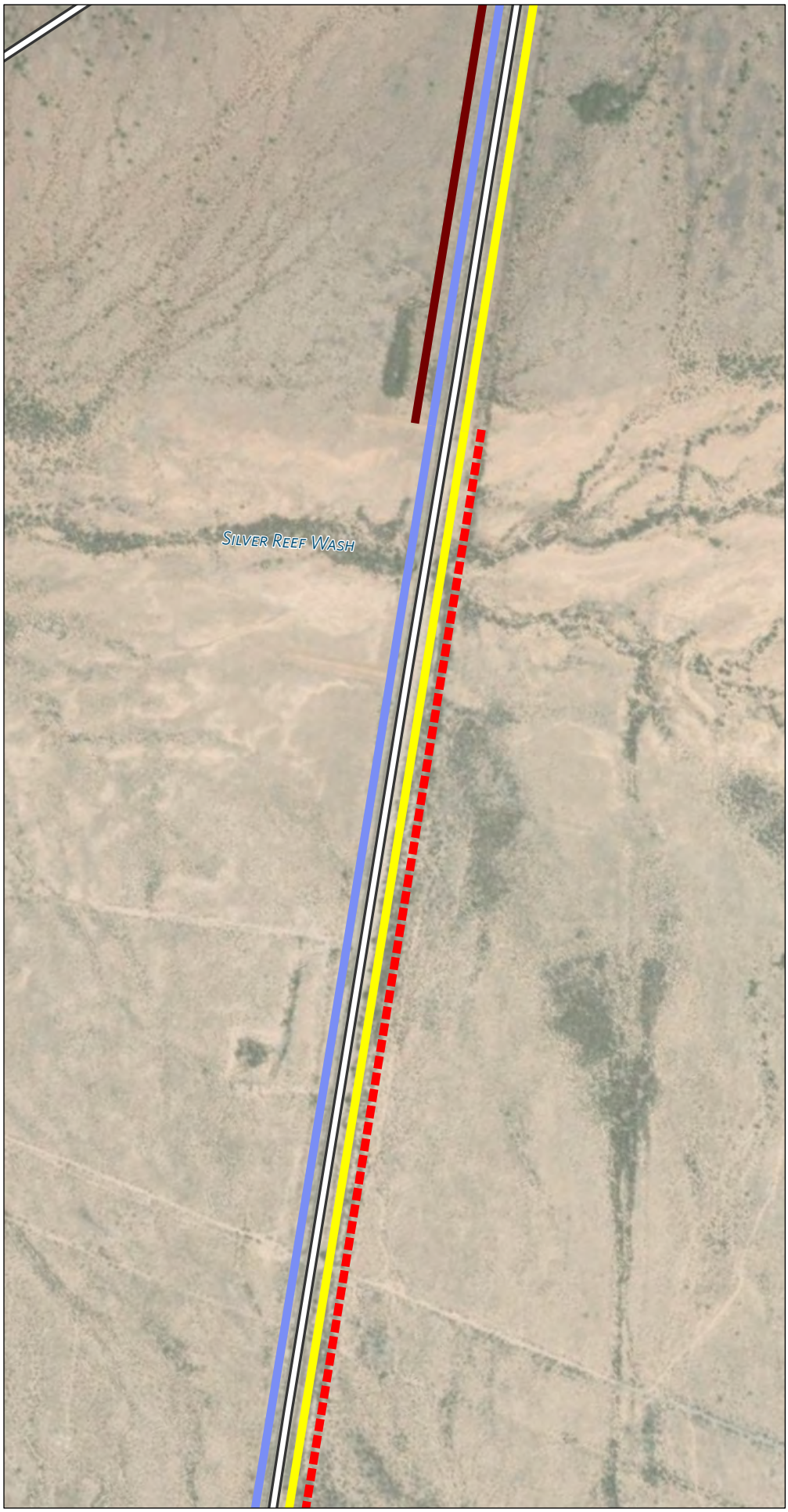
Reference

- Tohono O'odham District Boundary

0 300 600 Feet

1 inch equals 600 feet





Existing Issues

Route 15

Potential Safety Concerns

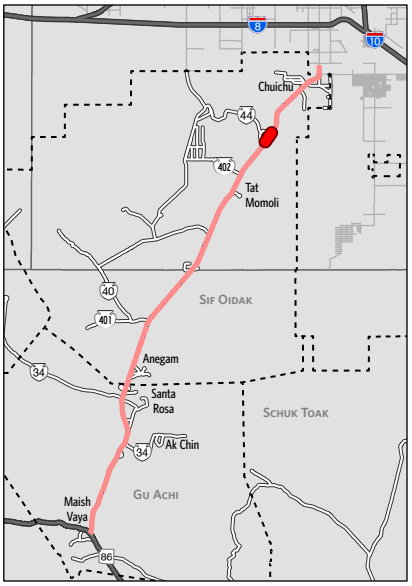
- High Crash Corridor
- Flooding Issue
- No Sidewalks
- Open Range, No Fencing
- No Shoulders
- Deteriorating Striping
- No Lighting
- Poor Pavement
- Curvy Roadway

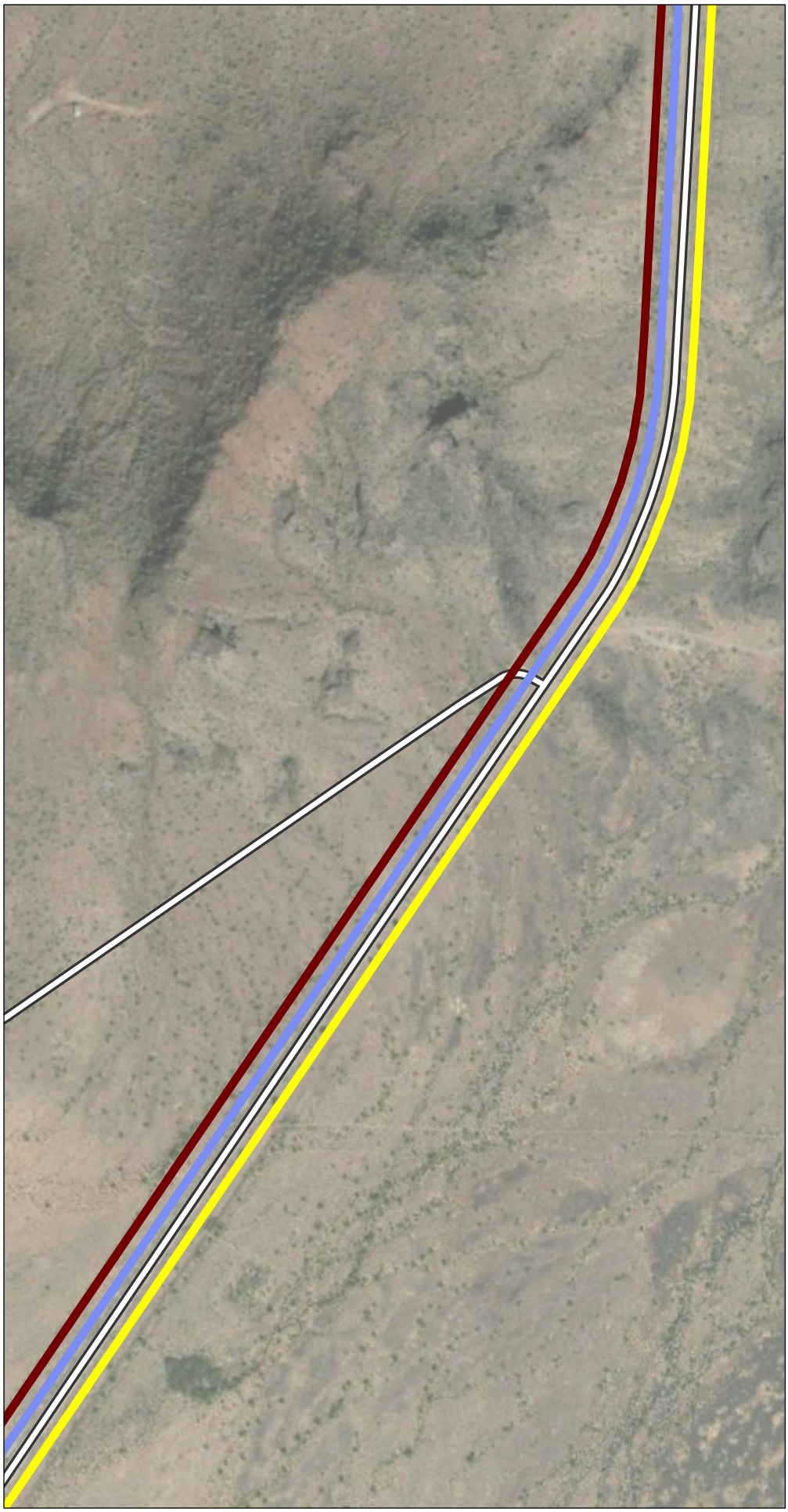
Reference

- Tohono O'odham District Boundary

0 300 600 Feet

1 inch equals 600 feet





Existing Issues

Route 15

Potential Safety Concerns

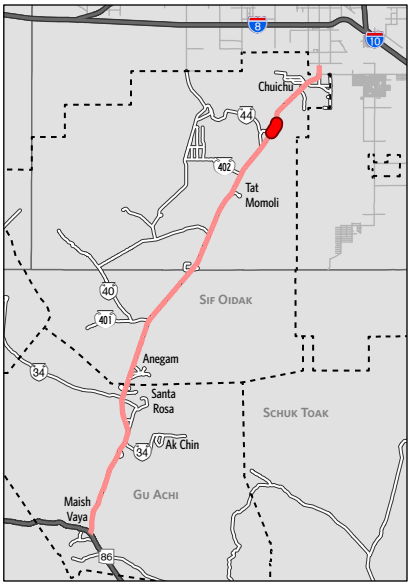
- High Crash Corridor
- Flooding Issue
- No Sidewalks
- Open Range, No Fencing
- No Shoulders
- Deteriorating Striping
- No Lighting
- Poor Pavement
- Curvy Roadway

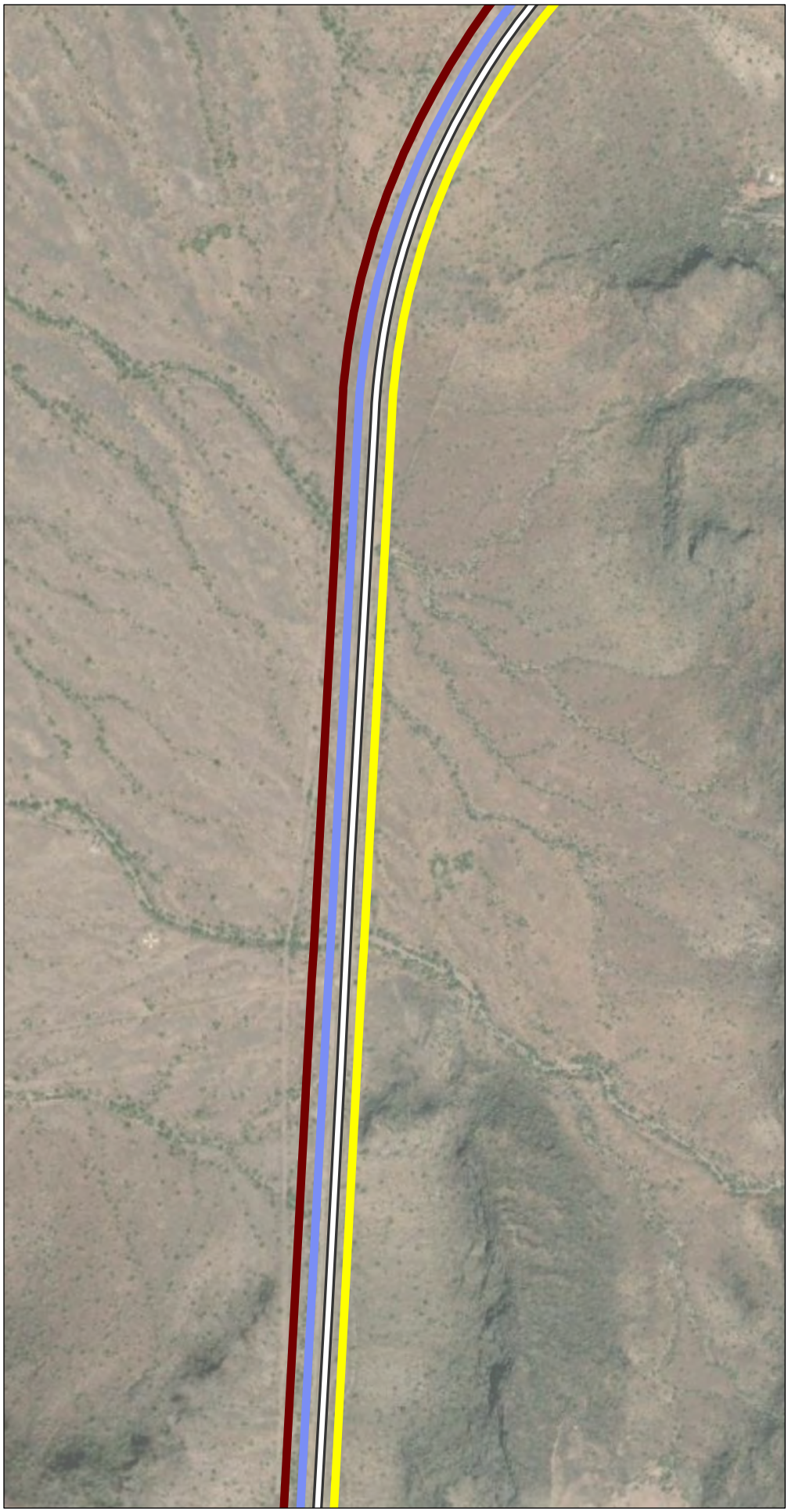
Reference

- Tohono O'odham District Boundary

0 300 600 Feet

1 inch equals 600 feet





Existing Issues

Route 15

Potential Safety Concerns

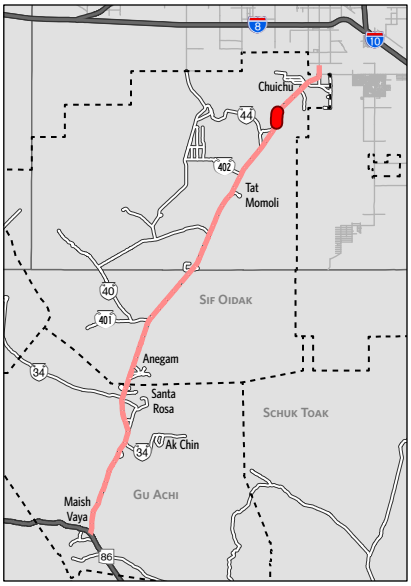
- High Crash Corridor
- Flooding Issue
- No Sidewalks
- Open Range, No Fencing
- No Shoulders
- Deteriorating Striping
- No Lighting
- Poor Pavement
- Curvy Roadway

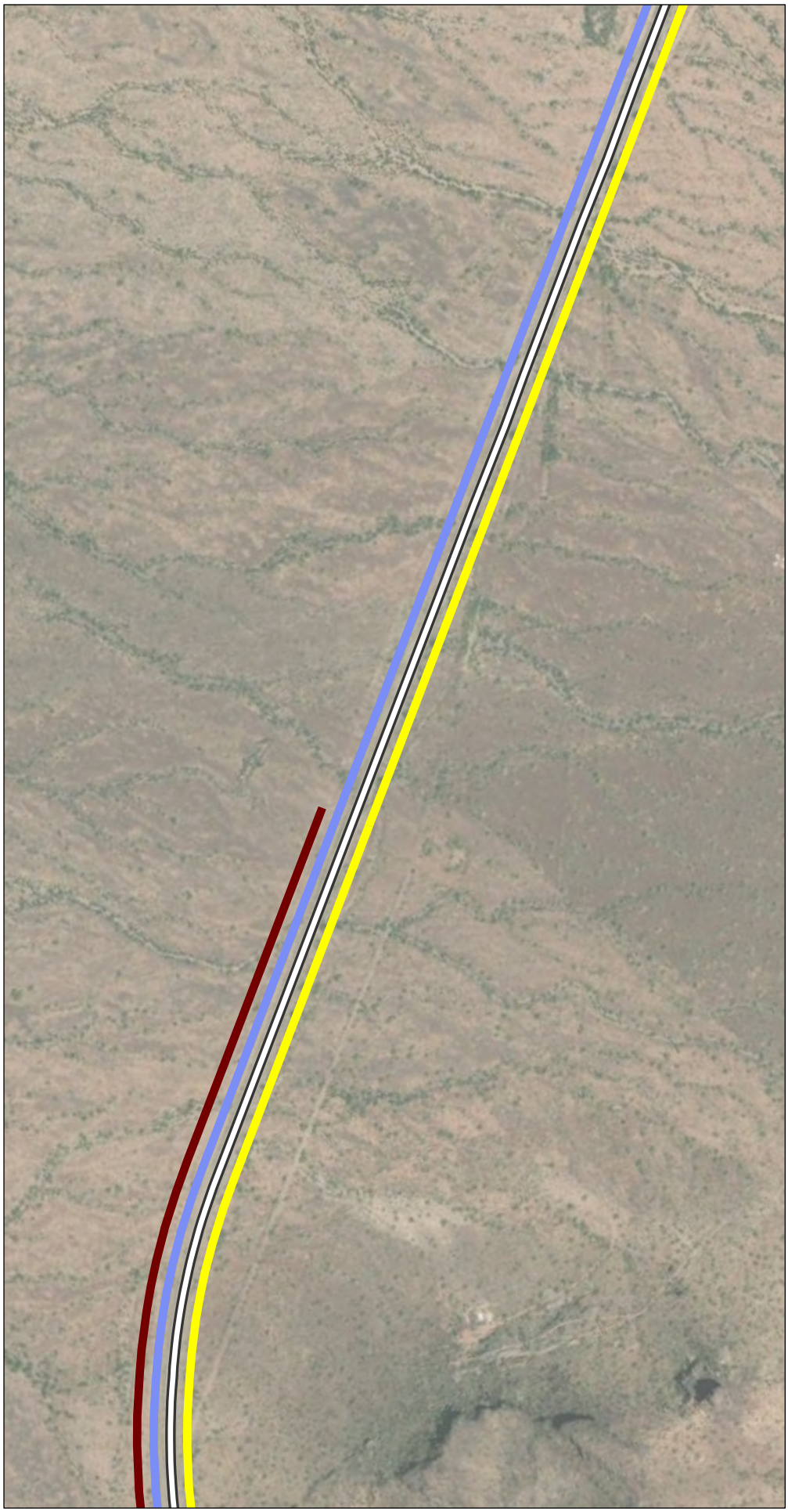
Reference

- Tohono O'odham District Boundary

0 300 600 Feet

1 inch equals 600 feet





Existing Issues

Route 15

Potential Safety Concerns

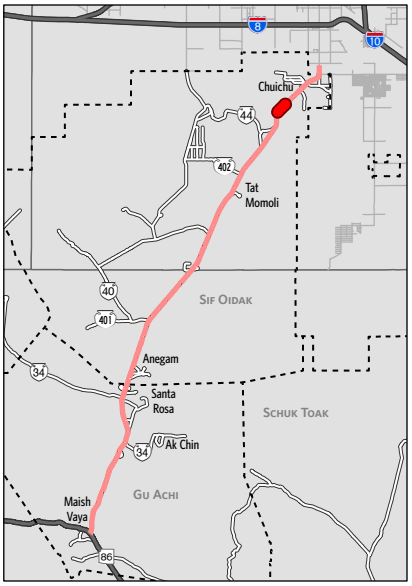
- High Crash Corridor
- Flooding Issue
- No Sidewalks
- Open Range, No Fencing
- No Shoulders
- Deteriorating Striping
- No Lighting
- Poor Pavement
- Curvy Roadway

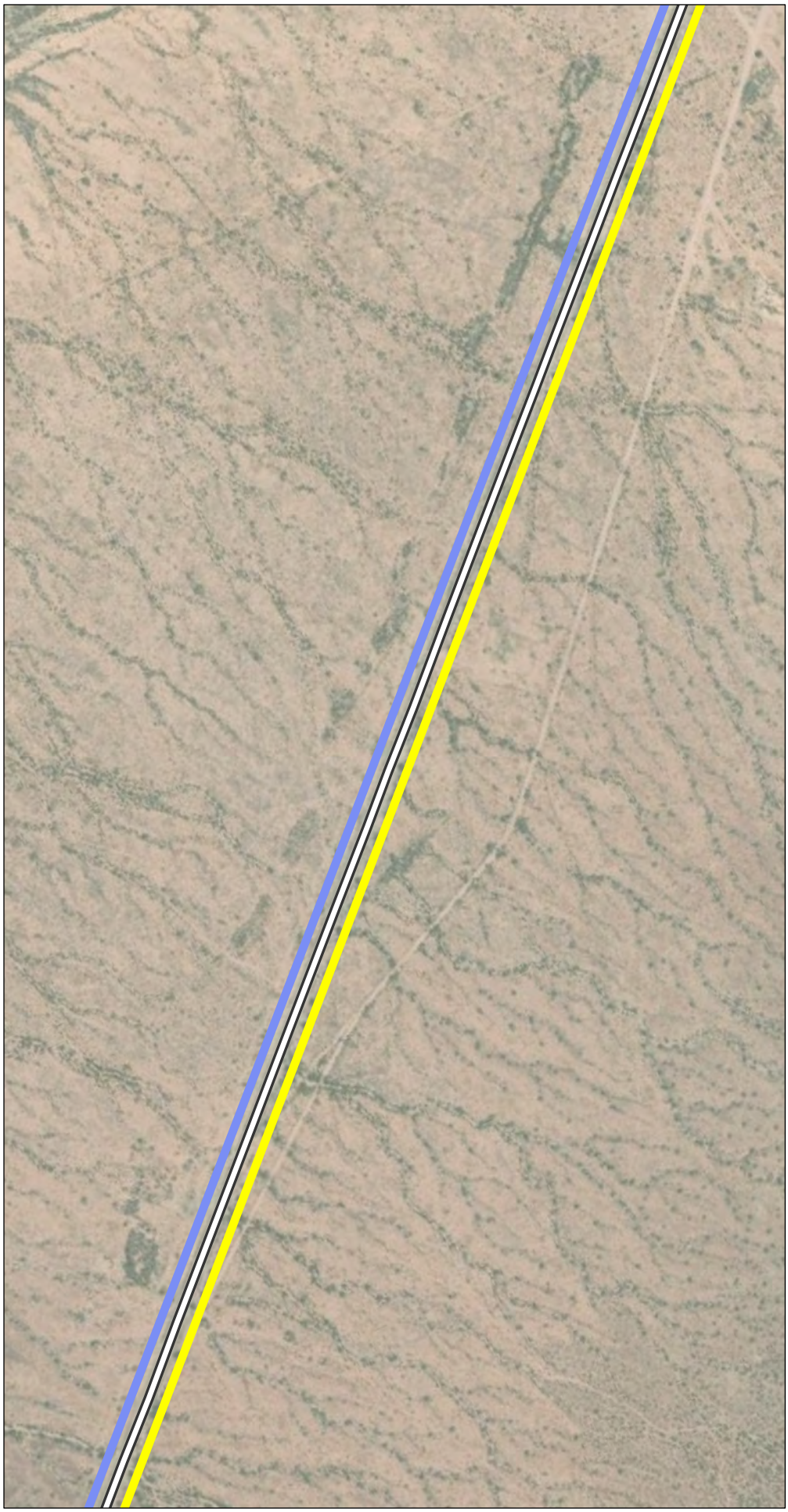
Reference

- Tohono O'odham District Boundary

0 300 600 Feet

1 inch equals 600 feet





Existing Issues

Route 15

Potential Safety Concerns

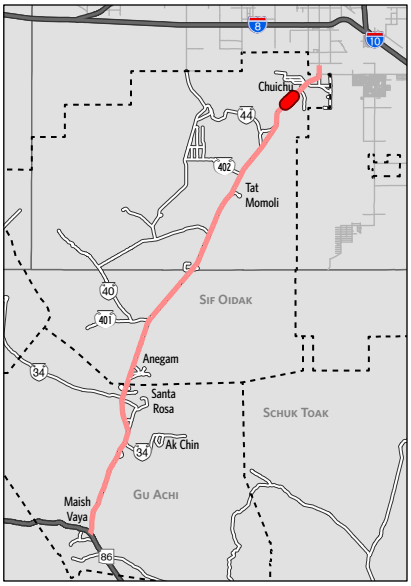
- High Crash Corridor
- Flooding Issue
- No Sidewalks
- Open Range, No Fencing
- No Shoulders
- Deteriorating Striping
- No Lighting
- Poor Pavement
- Curvy Roadway

Reference

- Tohono O'odham District Boundary

0 300 600 Feet

1 inch equals 600 feet



Existing Issues

Route 15

Potential Safety Concerns

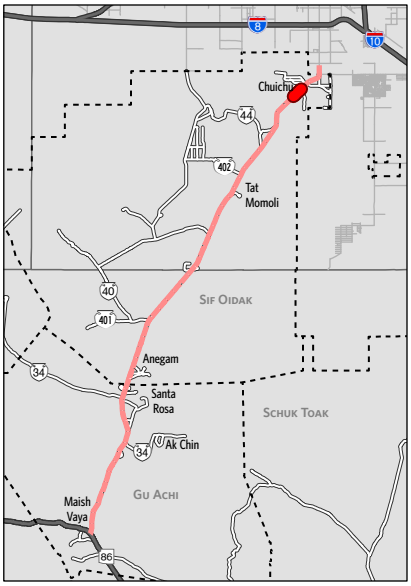
- High Crash Corridor
- Flooding Issue
- No Sidewalks
- Open Range, No Fencing
- No Shoulders
- Deteriorating Striping
- No Lighting
- Poor Pavement
- Curvy Roadway

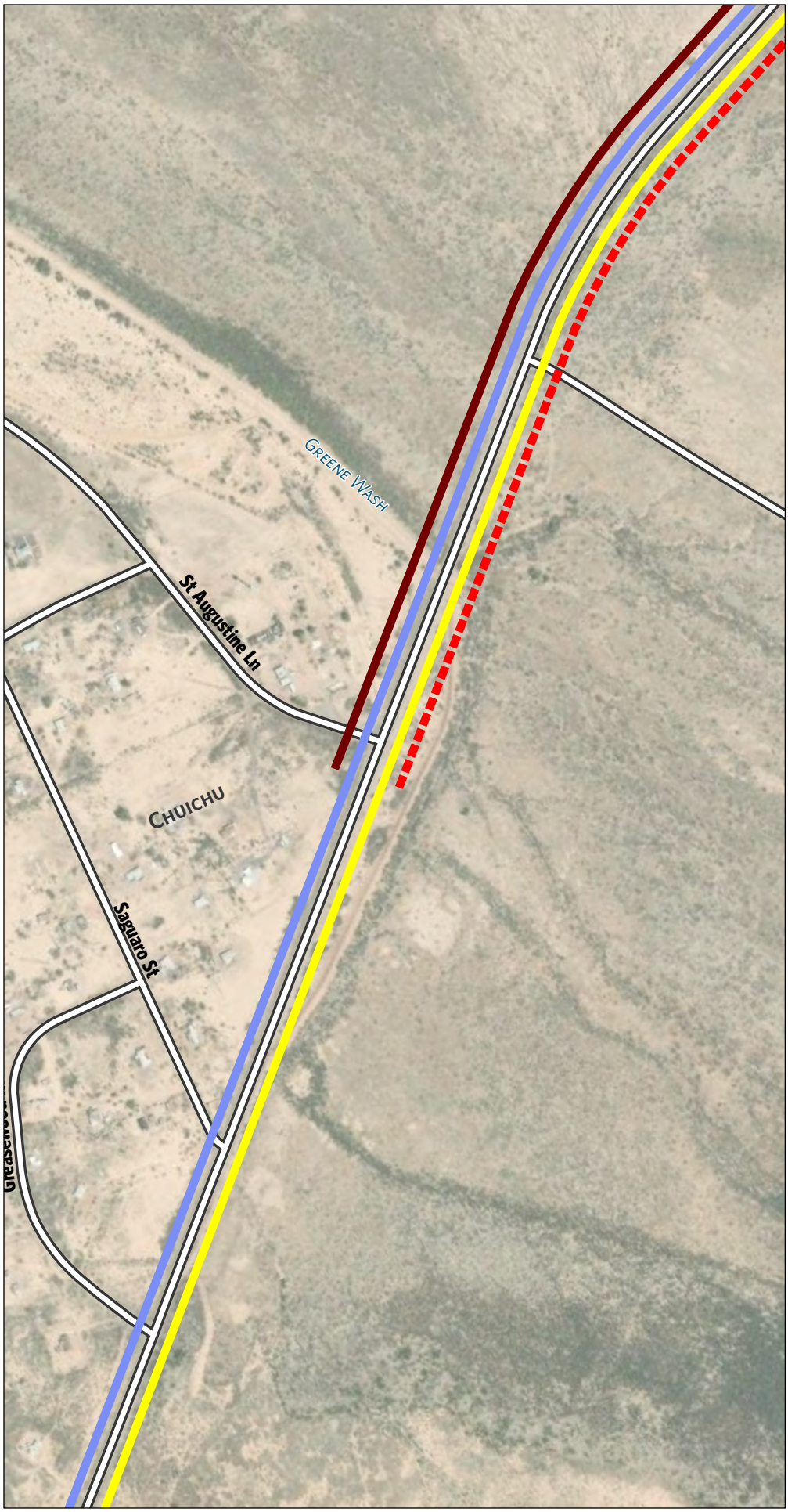
Reference

- Tohono O'odham District Boundary

0 300 600 Feet

1 inch equals 600 feet





Existing Issues

Route 15

Potential Safety Concerns

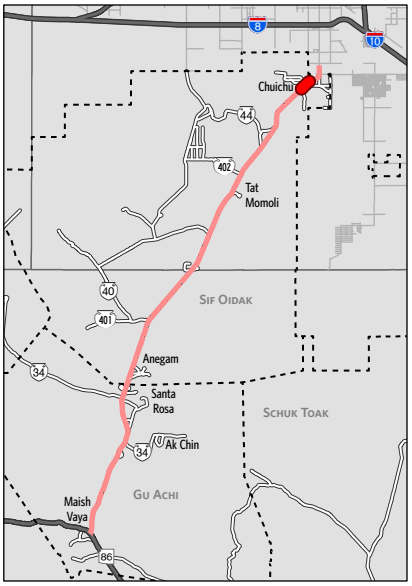
- High Crash Corridor
- Flooding Issue
- No Sidewalks
- Open Range, No Fencing
- No Shoulders
- Deteriorating Striping
- No Lighting
- Poor Pavement
- Curvy Roadway

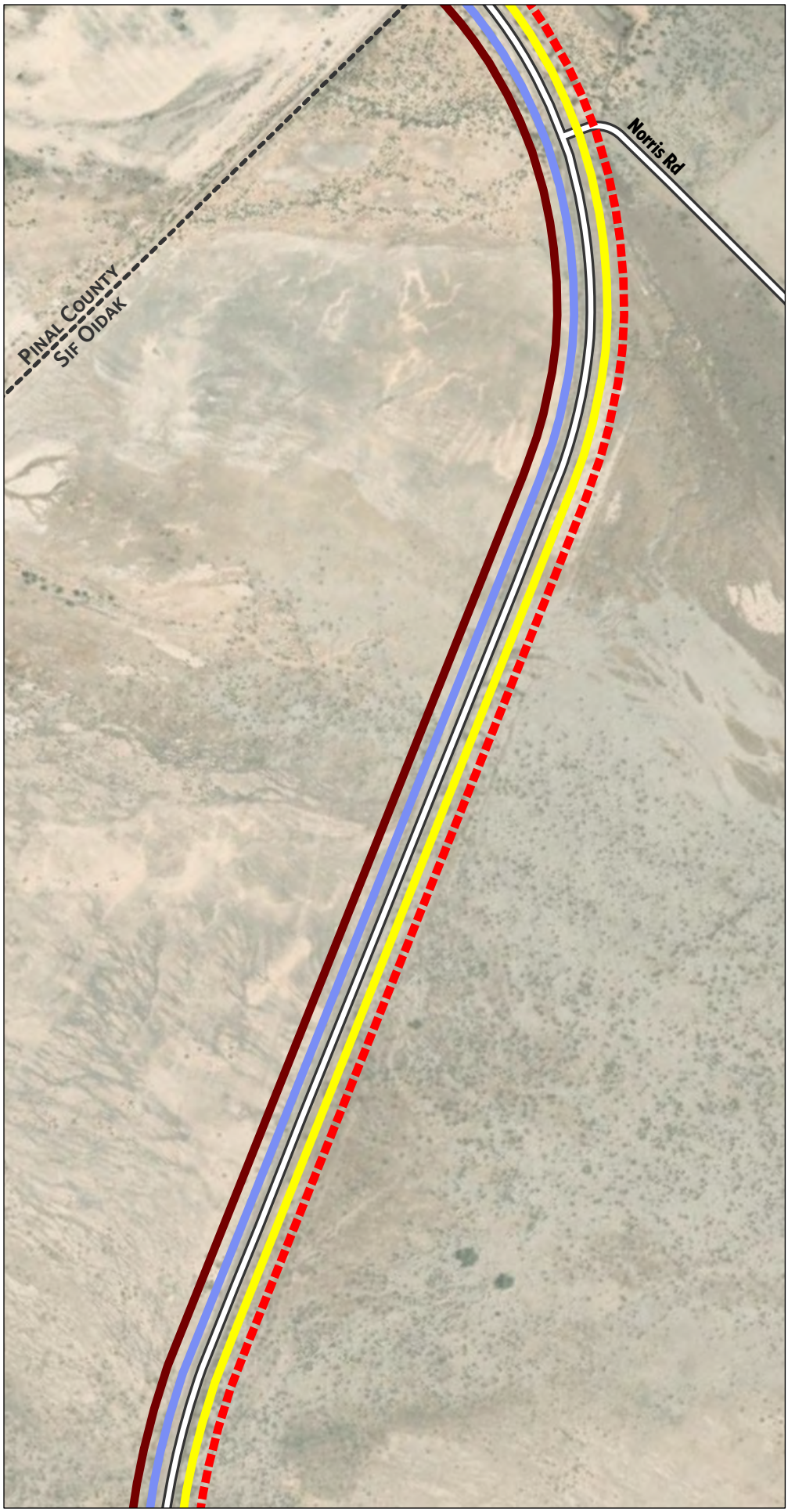
Reference

- Tohono O'odham District Boundary

0 300 600 Feet

1 inch equals 600 feet





Existing Issues

Route 15

Potential Safety Concerns

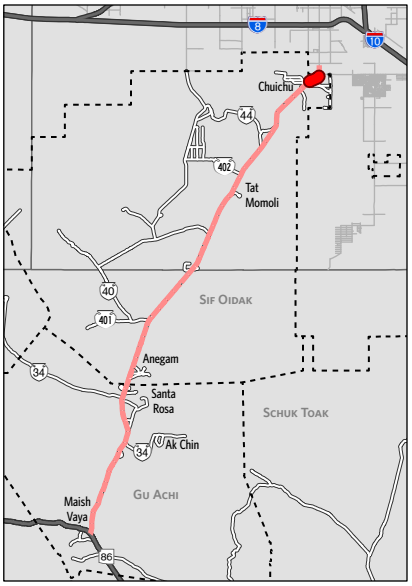
- High Crash Corridor
- Flooding Issue
- No Sidewalks
- Open Range, No Fencing
- No Shoulders
- Deteriorating Striping
- No Lighting
- Poor Pavement
- Curvy Roadway

Reference

- Tohono O'odham District Boundary

0 300 600 Feet

1 inch equals 600 feet



Existing Issues

Route 15

Potential Safety Concerns

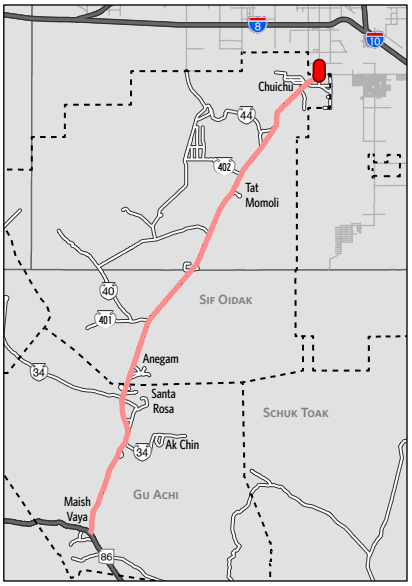
- High Crash Corridor
- Flooding Issue
- No Sidewalks
- Open Range, No Fencing
- No Shoulders
- Deteriorating Striping
- No Lighting
- Poor Pavement
- Curvy Roadway

Reference

- Tohono O'odham District Boundary

0 300 600 Feet

1 inch equals 600 feet



Appendix C

2020 Anegam Wash Bridge Structure Inventory and Appraisal Sheet

INSPECTION REPORT CONFIGURATION

This inspection is tagged 'suplementary'.
Static BIA data elements are being suppressed.
No database inspection on this structure is flagged 'initial'.

INSPECTION IDENTIFICATION

Inspectors: TODD KENNEDY (TEAM LEADER), DAVID O'DONAHUE, THOMAS FRONK
Firm Name: BIA - MIDWEST REGIONAL OFFICE
Structure Number: H622 Inspection Date: 04-JUN-2021 Report Due: 02-SEP-2021

STRUCTURE IDENTIFICATION AND LOCATION

Structure Name: BIA RTE 15 OVER ANEGAM WASH State: 04 - Arizona
Location: 24.2 KM NORTH OF ARIZONA HIGHWAY 86
Feature Crossed: ANEGAM WASH
Region: H - Western Community (if applicable):
Agency: H54 - Papago Reservation: H54610 - Tohono O'Odham
ADT: 1,100 ADT Year: 2021 Percent Trucks: 4 % State Load Limit: 40 TONS
A vehicular bypass exists at the site: NO The bypass is adequate for all vehicles: NO
The length of the detour is: 5 km (19)
BIA Route Number: 15 The area beside the bridge is: RURAL (26a)
Number of traffic lanes on route: 2 Number of traffic lanes on bridge: 2 (28a)
Flooding occured since last inspection: NO If yes, when (month / year): 02 / 1993
The highest water ever was BELOW the deck by 1.0 m

ADDITIONAL STRUCTURE IDENTIFICATION AND LOCATION

Initial Reason: NEW Station On Project: 277+25
Project Number: P.I.R. -15(8)-A
BIA Route Number: 15 Section Number: 060 Kilometer Point: 24.2
Geographical Points: CASA GRANDE TO THE NORTH, ANEGAM NEARBY TO THE EAST, QUIJOTOA THE SOUTH
Classes of Traffic - Commercial: YES School Bus: YES Car: YES

STRUCTURE DESCRIPTION INFORMATION

Year Original Construction: 1979 Year Reconstruction:
Design Load: HS20 Skew Degrees: 30

	Span Type	#	Span Lengths	Total Length	
Main Structure	CONCRETE CONTINUOUS - SLAB	4	9.8, 11.9, 11.9, 9.8	44.2	m
Approach Spans					m

Sidewalks - Right: 0 m Left: 0 m Curbs - Right: .4 m Left: .4 m
Bridge Roadway Width Type: Curb-Curb Width Roadway on Bridge Deck: 10.4 m
Overall Bridge Deck Width: 11.2 m

Waterway Data - Q (flow): 198 m3/s Storm Frequency: 50 yrs Velocity: 4.21 mps

Utilities on Structure: NONE
NO APPROACHES

Construction Plans Location: BIA BEO OFFICE IN ALBEQUERQUE

Design Stress Information - Type: PSI

Concrete: 1200 Re Bar: 24000 Steel: Timber F: Timber H:

Vertical Clearance: 99.99 Signed Clearance - Feet Part: 99 Inches Part: 0

Roadway Width (Surface): 10.2 m (Surface and Shoulders): 11 m

BRIDGE APPROACHES

Approach Direction: S

Surface Material: AC_PAVEMENT
Surface Condition: SMOOTH
Description: LONGITUDINAL AND TRANSVERSE CRACKS TO 10 MM.
Vertical Alignment Description: FLAT
Horizontal Alignment Description: TANGENT
Sight Distance: 1000 m
Obstruction to Sight Distance: NONE
Greatest difference in approach and bridge deck elevation: 40 mm
Comment about affect to speed: NONE

Opposite Alignment: N

Surface Material: AC_PAVEMENT
Surface Condition: SMOOTH
Description:
Vertical Alignment Description: FLAT
Horizontal Alignment Description: TANGENT
Sight Distance: 500 m
Obstruction to Sight Distance: CREST OF VERTICAL CURVE
Greatest difference in approach and bridge deck elevation: 40 mm
Comment about affect to speed: NONE

PREVIOUSLY NOTED DEFICIENCIES

1013	Date Discovered:	03-APR-2019	There is a stored image:	NO	Is Urgent:	NO
			Is Worse:	NO	Is Corrected:	NO

Description: MAJOR GRAFFITTI ON BOTH NORTH APPROAH GUARDRAILS

Worse Comment: CONDITION IS THE SAME SINCE THE LAST INSPECTION.

Estimated Cost: $10,000

1012	Date Discovered:	31-OCT-2016	There is a stored image:	NO	Is Urgent:	NO
			Is Worse:	NO	Is Corrected:	NO

Description: DRIFT AGAINST PILES.

Worse Comment: CONDITION IS THE SAME SINCE THE LAST INSPECTION.

Estimated Cost: $200

1008	Date Discovered:	18-DEC-2009	There is a stored image:	NO	Is Urgent:	NO
			Is Worse:	NO	Is Corrected:	NO

Description: TRANSVERSE (ALONG SKEW) HAIRLINE CRACKS IN BOTTOM OF SLAB.

Worse Comment: CONDITION IS THE SAME SINCE THE LAST INSPECTION.

Estimated Cost: $5,000

1009	Date Discovered:	18-DEC-2009	There is a stored image:	NO	Is Urgent:	NO
			Is Worse:	NO	Is Corrected:	NO

Description: VERTICAL CRACKS IN SLAB EDGES - SEAL CRACKS.

Worse Comment: CONDITION IS THE SAME SINCE THE LAST INSPECTION.

Estimated Cost: $5,000

P5	Date Discovered:	18-AUG-1995	There is a stored image:	NO	Is Urgent:	NO
			Is Worse:	NO	Is Corrected:	NO

Description: STEEL PILES HAVE MINOR COATING FAILURE AND SURFACE CORROSION.

Worse Comment: CONDITION IS THE SAME SINCE THE LAST INSPECTION.

Estimated Cost: $5,000

P7	Date Discovered:	14-APR-1991	There is a stored image:	NO	Is Urgent:	NO
			Is Worse:	NO	Is Corrected:	NO

Description: LONGITUDINAL CRACKS ON UNDERSIDE OF DECK NEAR BOTH ABUTMENTS.

Worse Comment: CONDITION IS THE SAME SINCE THE LAST INSPECTION.

Estimated Cost: $3,000

Total estimated urgent maintenance costs for previous deficiencies: $0
Total estimated non-urgent maintenance costs for previous deficiencies: $28,200

NEW DEFICIENCIES FOUND AT THIS TIME

Total estimated urgent maintenance costs for new deficiencies:
Total estimated non-urgent maintenance costs for previous deficiencies:

EXISTING SIGNS

Type Sign	# Signs	Statement	Up To Date	Condition	Comments	Cost to Correct
CLEARANCE	0	YELLOW AND B	NO	MISSING	INSTALL (4) MARKERS AT BRIDGE CORNERS.	$1,600

Total sign costs (urgent maintenance item): $1,600

COST SUMMARY

Total urgent maintenance or safety related costs: $1,600
Total routine maintenance costs: $28,200

MAINTENANCE/REPAIRS PERFORMED SINCE LAST INSPECTION

No Maintenance work since the last inspection.

Have all previously reported deficiencies been corrected? NO (223)
Have accidents occured on this structure since the last inspection? NO (222)

BRIDGE SAFETY FEATURES

Bridge railing exists:	YES
Bridge railing height:	0.92 m
Bridge railing meets AASHTO standards:	YES
Bridge railing not to AASHTO standards remark:	
Transition railing exists:	YES
The transition railing is firmly attached to both the bridge rails and the approach rails:	YES
The transition railing and supports are gradually stiffened/stronger prior to the bridge rail attachment:	YES
All curb and sidewalk ends are are either tapered or shielded by the transition rails:	YES
There exist pockets along the transition rail that create a hazard:	NO
Approach guardrailing exists:	YES
Approach guardrail height:	0.73 m
The approach guardrails are compatible with the construction / shape of the transition rails:	YES
The approach guardrails have adequate length for the current traffic speeds:	YES
The approach guardrails are effective in funneling traffic to the bridge lanes:	YES
The approach guardrails meet current AASHTO design criteria:	YES
The most appropriate description of the rail ends is:	BREAKAWAY
Comments about the rail system's adequacy:	NEW RAIL SYSTEM IS ADEQUATE, GRAFFITTI OBSCURES THE RAILING

ESTIMATED IMPROVEMENT COSTS

Type of Estimate: NEITHER

Description:

Improvement Length: m (76)

Replacement

Description of other replacement cost

	Cost ($1000)
Design / Construction Engineering:	$0
Demolition:	$0
Substructure (94):	$0
Superstructure (94):	$0
Approaches (95):	$0
Other:	$0
Total (96):	$0

Rehabilitation

Deficiency Fixed	Cost ($1000)
Total (96):	

SUPERSTRUCTURE CONDITION

Item	Material	Condition Description	Deformation	Defects	Deterioration	Cracks	Rating
rail system	AL	GOOD CONDITION					7
curbs or barriers	C	HAIRLINE CRACK THROUGHOUT				C	7
deck overlay		NONE					
deck	C	HAIRLINE CRACKS 1.5MM WITH MINOR EFFLORESCENCE ON UNDERSIDE, CRACKS ALONG THE SKEW AT THE ENDS, MAPS CRACKS THROUGHOUT			C	C	6
drainage system	S	ALL OPEN, MINOR DIRT AND DEBRIS ALONG THE GUTTERLINE					7
expansion joints		NONE					
stringers or girders	C	PART OF CONTINUOUS DECK UNIT			C	C	6
diaphragm	C	PART OF DECK			C	C	6
expansion bearings		NONE					
fixed bearings		NONE					

Deck Overlay Thickness: 0 mm

Deck Thickness: 420 mm

This structure has a continuous drainage system: NO

When not continuous, the number of drainage systems is: 8

When not continuous, the sizes of the drainage systems are: 125MM DIA

Expansion Joint Type: NONE

Expansion Joint Average Gap: 0 mm

Expansion Joint Amount Movement: 0 mm

Expansion Joint Inspection Temperature: 75 deg F

Stringers or Girders Number of Members: 1

Stringers or Girders Spacing: CONTINUOUS SLAB

Stringers or Girders Size of Each: .42M X FULL WIDTH

Expansion Bearings Amount Movement: 0 mm

MATERIAL: Prestressed Concrete = PC; Concrete = C; Timber = T; Asphalt = AS; Aluminum = AL; Masonry = M; Dirt = D; Rock = R; Sand = S; Wire = W; Elastomeric = EL; Other = O.
DEFORMATION: Sheared = S; Permanent Deflection = D; Buckled = B; Bent = BN; Crushed = C; Ruptured = R; Traffic Damage = T
DEFECTS: Knots in Timber = K; Excessive Timber Grain Slope = G; Loose Bolts or Rivets = L; Honeycombs in Concrete = H
DETERIORATION: Decay = D; Insect Attack = I; Chemical Attack (Rust) = C; Uneven or Excessive Wear = W; Seasoning of Timber (Checks, Splits, Shakes) = S
CRACKS: Cracks in Concrete (Not Overstress) = C; Concrete Overstress - Shear = CS; Concrete Overstress - Flexure = CF; Concrete Overstress - Compression = CC; Weld Crack = CW; Steel Crack - Fatigue or Other = SC

TRUSSES (59) - section suppressed because this structure has no trusses

SUBSTRUCTURE CONDITION (60) (Abutments, Piers, and Retaining Walls)

SUBSTRUCTURE CONDITION (60) (Abutments, Piers, and Retaining Walls)

Abutments

Item	Material	Condition Description	Deformation	Defects	Deterioration	Cracks	Rating
abutment type	S, C	VERTICAL CRACKS SPACED I M OR GREATER				C	7
movement		NONE OBSERVED					8
backwall beam seats	C	MINOR VERTICAL CRACKING, GOOD CONDITION				C	7
wingwall	C	GOOD CONDITION					7
foundation	C, S	NOT VISIBLE, ASSUME SAME CONDITION AS REST OF ABUTMENT					7

Abutment Type: SPILL_THRU
Description of Other Abutment Type:
Abutment Foundation Type: PILES
Abutment Foundation Other Description:
Abutment Piles Type: CONCRETE FILLED STEEL SHELLS
Abutment Piles Size: .305 M DIA
Abutment Spread Footing Size:
Abutment Bearing Material: GRAVEL, SAND, CLAY, SILT, MIX,

Piers

Item	Material	Condition Description	Deformation	Defects	Deterioration	Cracks	Rating
type of pier(s)	S, C	CONCRETE FILLED STEEL SHELLS IN GOOD CONDITION			C		7
pier cap	C	MINOR HAIRLINE CRACKS, GOOD CONDITION				C	7
shaft below pier cap	S, C	MINOR SURFACE RUST			C		7
movement		NONE OBSERVED					8
foundation	C, S	NOT VISIBLE, ASSUME SAME CONDITION AS REST OF PIERS					7

Pier Foundation Type: PILES
Pier Foundation Other Description:
Pier Piles Type: CONCRETE FILLED STEEL SHELLS
Pier Piles Size: .305 M DIA
Pier Spread Footing Size:
Pier Bearing Material: GRAVEL, SAND, CLAY, SILT, MIX,

Retaining Walls - section suppressed because this structure has no retaining walls

CHANNEL (61) and WATERWAY CONDITION (71)

Waterway

Item	Material	Condition Description	Rating
bridge slopes by abutments	D	GOOD	7
slope protection	R, W, S	WIRE ENCLOSED RIPRAP WITH STEEL RAIL ANCHORS, GOOD CONDITION	7
waterway adequacy		SLIGHT CHANCE OF OVERTOPPING	6

Approximate Bridge Slope Ratio 0 to 1.

Channel

Item	Material	Condition Description	Rating
dikes	R, W, S	UPSTREAM EARTH EMBANKMENTS PROTECTED WITH WIRE ENCLOSED RIPRAP ANCHORED WITH STEEL RAILS, GOOD CONDITION	7
chan + bank prot	D	SANDBAR UPSTREAM WITH LARGE TREES	5
channel alignment		CHANNEL ALIGNS WELL WITH THE STRUCTURE	8

Has Scour or Erosion: YES
Scour Location: THROUGHOUT THE CHANNEL
Estimated Maximum Scour Depth: 0.5 m
Estimated Scour Area: 20M X 20M
Angle of Attack: 0 degrees
Attack Location: CENTER

PROFILE ELEVATIONS

These measurements were taken on: 04-JUN-2021
Reference Elevation: TOP OF CURB

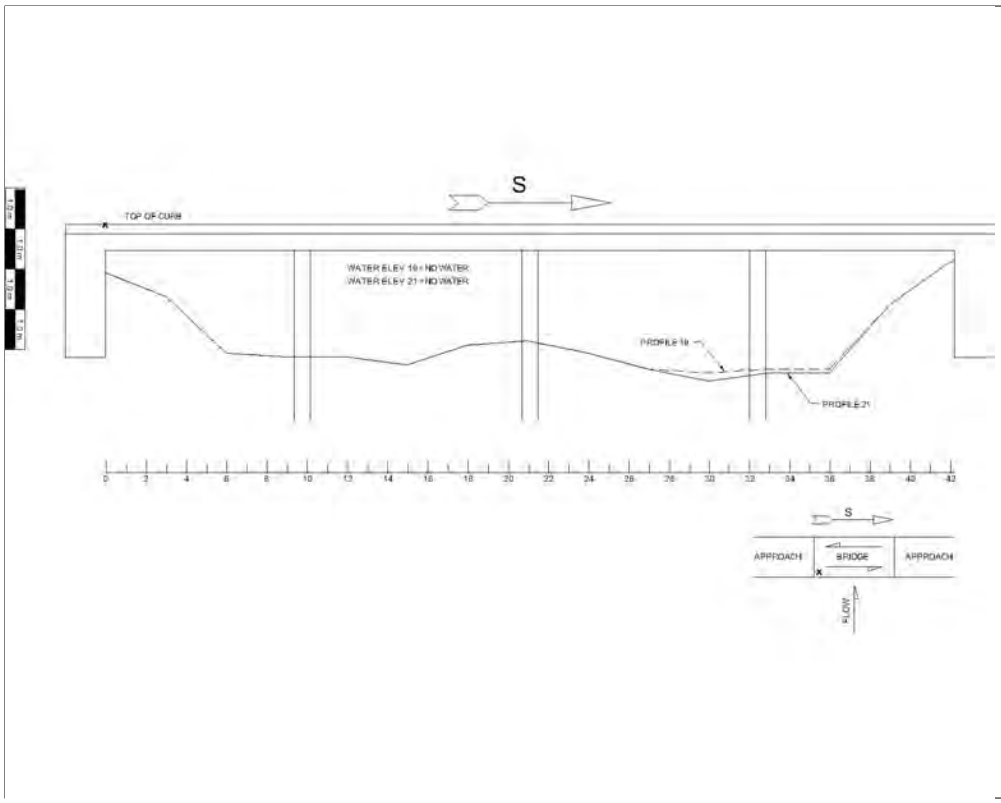
Streambed cross-section measurements start at 0 m from the NW end of the bridge.

	0	1	2	3	4	5	6	7	8	9
Station (m)	0.0	3.0	6.0	9.0	12.0	15.0	18.0	21.0	24.0	27.0
Vertical (m)	1.2	1.8	3.2	3.3	3.3	3.5	3.0	2.9	3.2	3.6

10	11	12	13	14	15
30.0	33.0	36.0	39.0	42.0	42.2
3.9	3.7	3.7	2.0	1.0	0.9

CULVERT CONDITION (62) - section suppressed because this structure is not a culvert

PROFILE OF STREAMBED AT UPSTREAM EDGE, LOOKING DOWNSTREAM


S
TOP OF CURB
WATER ELEV 19 = NO WATER
WATER ELEV 21 = NO WATER
PROFILE 19
PROFILE 21
0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42
S
APPROACH
BRIDGE
APPROACH
FLOW

SIGNATURE PAGE

A revised Load Rating Analysis is required: NO

Comments about bridge load capacity deterioration:

NO SIGNIFICANT CHANGE TO THE STRUCTURE SINCE THE LAST INSPECTION; THEREFORE A REVISED LOAD RATING IS NOT REQUIRED.

I. LOAD LIMITING (CRITICAL) MEMBER(S) BEING RATED:

Beam(s), Girder(s), Deck(s), Other:

DECK SLAB

Location of this Member(s):

THROUGHOUT

Size of this Member and % Reduced (if applicable):

.42 M

Condition of this Member:

HAIRLINE CRACKING WITH SOME EFFLORESCENCE ON THE UNDERSIDE OF THE DECK WITH MAP CRACKING THROUGHOUT

II. BRIDGE HS TRUCK LOAD CAPACITY & HS RATING:

(HS Rating = HS Load x 0.5556)

OPERATING LEVEL

Gross Weight of HS Truck = 53 tons
HS Rating = HS-29.4

INVENTORY LEVEL

Gross Weight of HS Truck = 40 tons
HS Rating = HS-22.2

III. REQUIRED SIGNS - EXACT SIGN WORDING

NONE REQUIRED

IV. REMARKS:

INSTALL TYPE 3 BRIDGE END MARKERS AT THE PROPER LOCATION

Signature Date:
Quality Review Date:

Images

H622_2106_P01 ROADWAY APPROACH LOOKING SOUTH

H622_2106_P02 ROADWAY APPROACH LOOKING NORTH

H622_2106_P03 CHANNEL LOOKING WEST (UPSTREAM)

H622_2106_P04 CHANNEL LOOKING EAST (DOWNSTREAM)

H622_2106_P07 SOUTH ABUTMENT

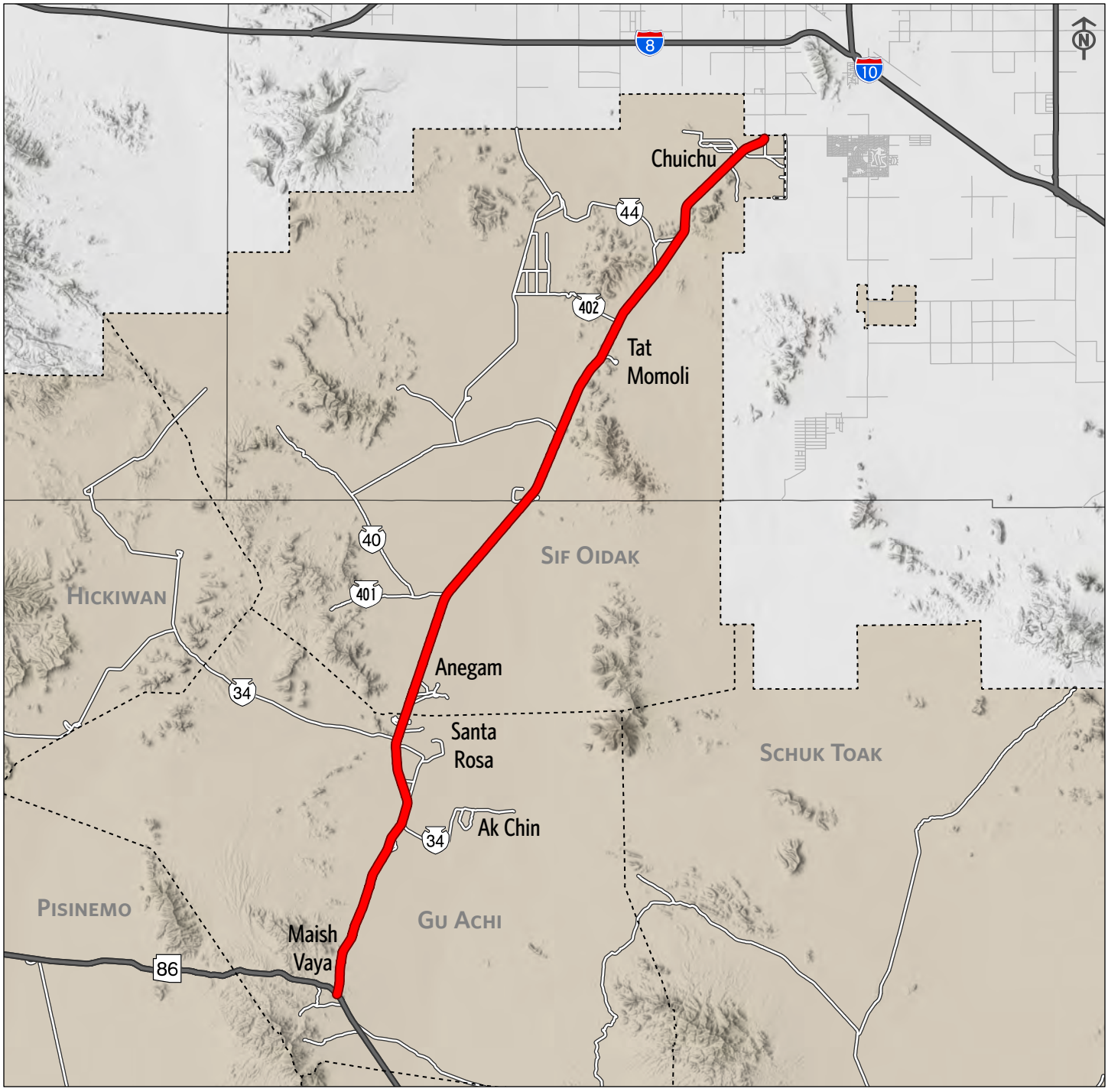
H622_2106_P08 NORTH ABUTMENT

Appendix D

Route 15 Recommended Improvements Atlas

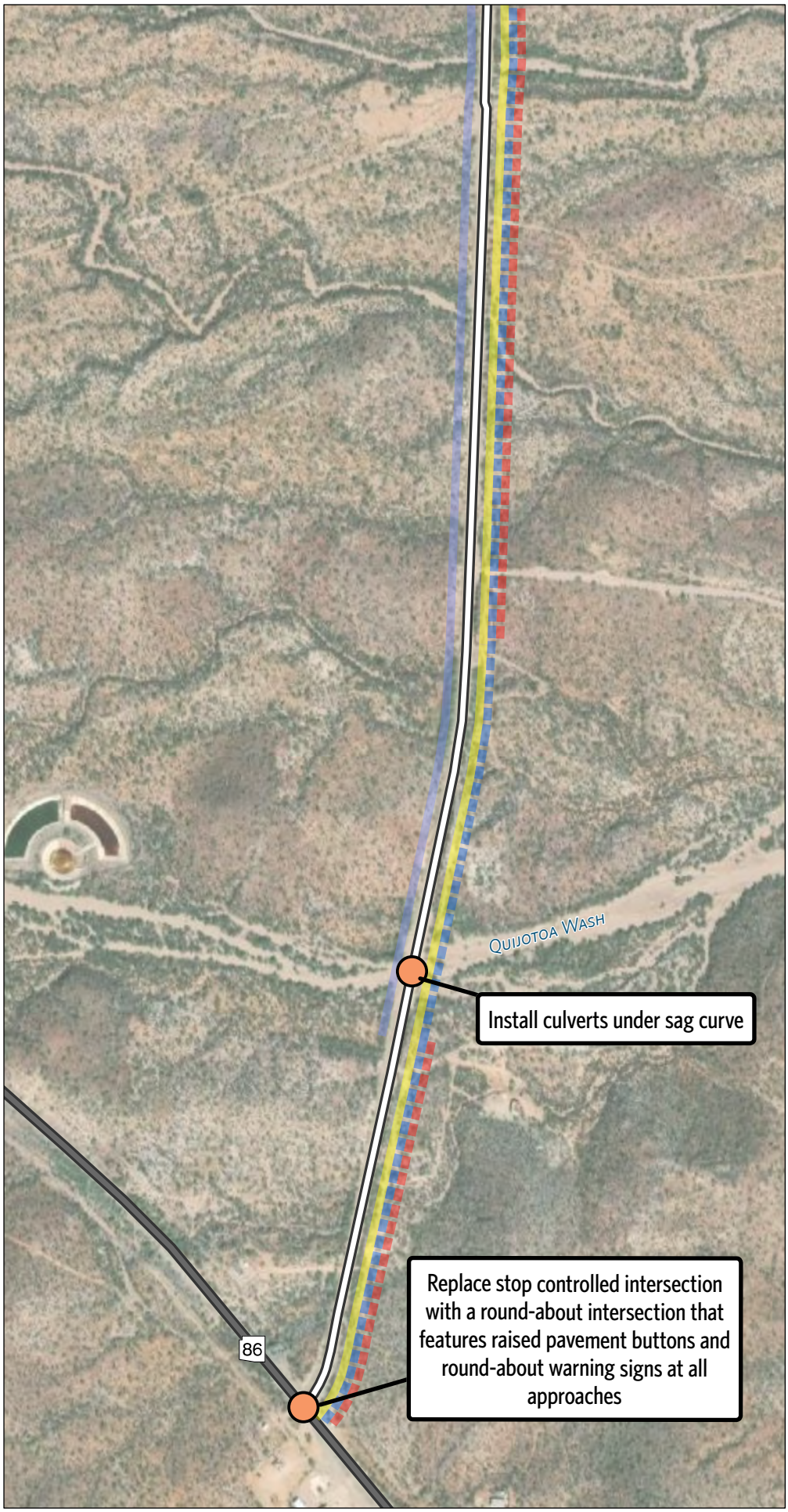
Recommended Improvements - Overview Map

Route 15



Recommended Corridor-wide Improvements

- Complete slurry seal in poor pavement areas
- Install 4 foot shoulders throughout
- Replace all damaged signage and undersized signage per current MUTCD sizing criteria
- Install continuous fencing and conduct a systematic inspection of existing fencing, gates and cattle guards and develop a repair plan
- Conduct maintenance of all culverts
- Install centerline rumble strips
- Remove all overgrown vegetation within the clear zone
- Conduct dike repair and maintenance along the roadway
- Install pedestrian warning signs (W11-2) with a supplemental sign (W16-4P) stating "next XX miles" every 10 miles along entire route



Recommended Improvements

Route 15

Potential Safety Concerns

- High Crash Corridor
- Flooding Issue
- No Sidewalks
- Open Range, No Fencing
- No Shoulders
- Deteriorating Striping
- No Lighting
- Poor Pavement
- Curvy Roadway

Recommended Improvement *

- Spot Improvement

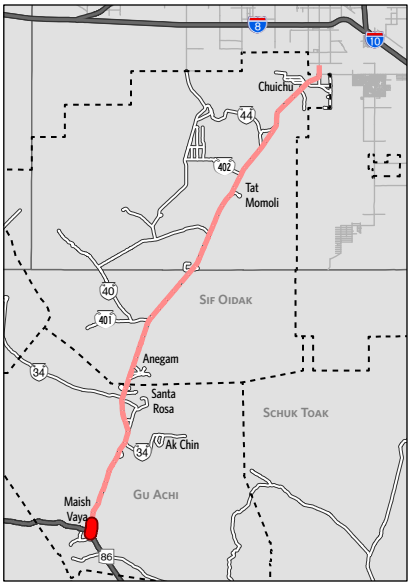
* Also reference overview page for corridor-wide improvement recommendations

Reference

- Tohono O'odham District Boundary

0 300 600 Feet

1 inch equals 600 feet



Recommended Improvements

Route 15

Potential Safety Concerns

- High Crash Corridor
- Flooding Issue
- No Sidewalks
- Open Range, No Fencing
- No Shoulders
- Deteriorating Striping
- No Lighting
- Poor Pavement
- Curvy Roadway

Recommended Improvement *

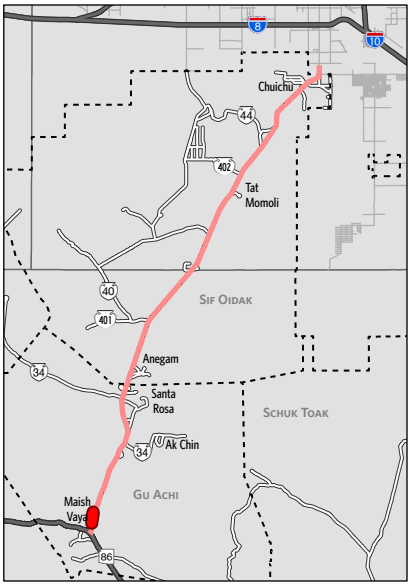
* Also reference overview page for corridor-wide improvement recommendations

Reference

- Tohono O'odham District Boundary

0 300 600 Feet

1 inch equals 600 feet



Recommended Improvements

Route 15

Potential Safety Concerns

- High Crash Corridor
- Flooding Issue
- No Sidewalks
- Open Range, No Fencing
- No Shoulders
- Deteriorating Striping
- No Lighting
- Poor Pavement
- Curvy Roadway

Recommended Improvement *

* Also reference overview page for corridor-wide improvement recommendations

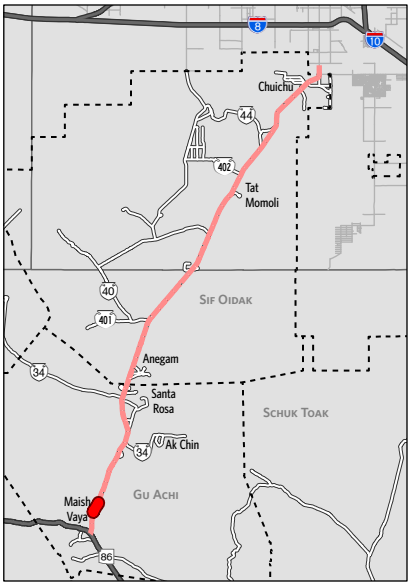
Reference

- Tohono O'odham District Boundary

0 300 600 Feet

1 inch equals 600 feet

N



Recommended Improvements

Route 15

Potential Safety Concerns

- High Crash Corridor
- Flooding Issue
- No Sidewalks
- Open Range, No Fencing
- No Shoulders
- Deteriorating Striping
- No Lighting
- Poor Pavement
- Curvy Roadway

Recommended Improvement *

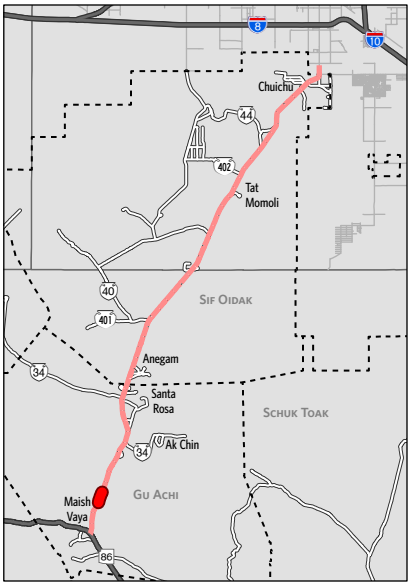
* Also reference overview page for corridor-wide improvement recommendations

Reference

- Tohono O'odham District Boundary

0 300 600 Feet

1 inch equals 600 feet



Recommended Improvements

Route 15

Potential Safety Concerns

- High Crash Corridor
- Flooding Issue
- No Sidewalks
- Open Range, No Fencing
- No Shoulders
- Deteriorating Striping
- No Lighting
- Poor Pavement
- Curvy Roadway

Recommended Improvement *

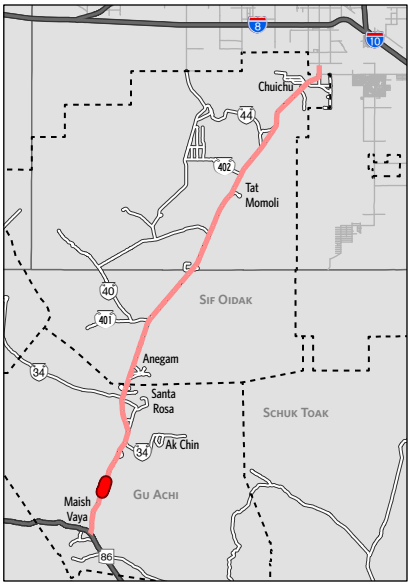
* Also reference overview page for corridor-wide improvement recommendations

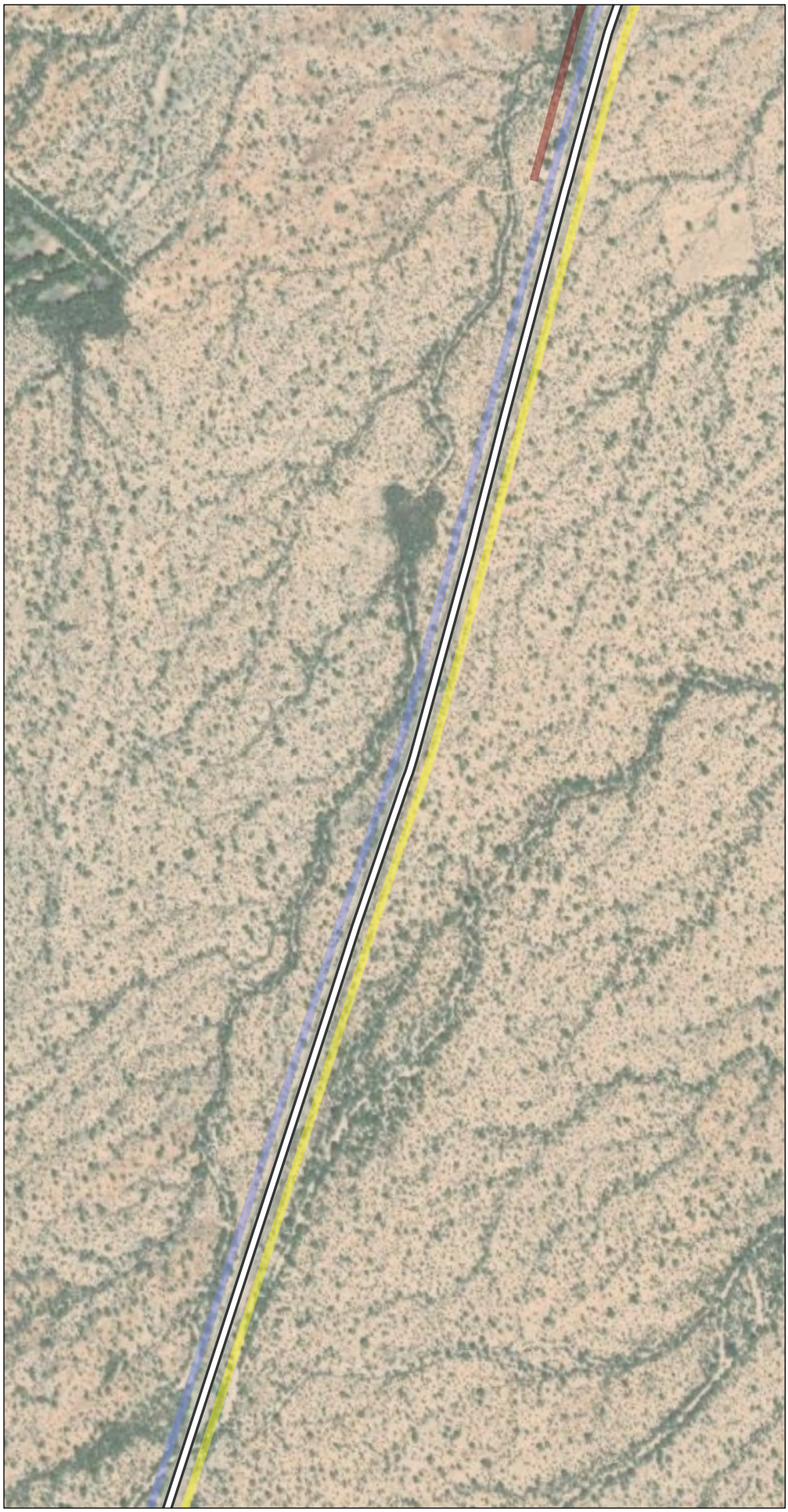
Reference

- Tohono O'odham District Boundary

0 300 600 Feet

1 inch equals 600 feet





Recommended Improvements

Route 15

Potential Safety Concerns

- High Crash Corridor
- Flooding Issue
- No Sidewalks
- Open Range, No Fencing
- No Shoulders
- Deteriorating Striping
- No Lighting
- Poor Pavement
- Curvy Roadway

Recommended Improvement *

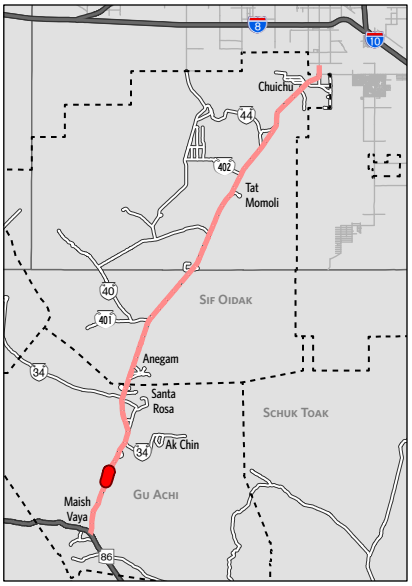
* Also reference overview page for corridor-wide improvement recommendations

Reference

- Tohono O'odham District Boundary

0 300 600 Feet

1 inch equals 600 feet



Recommended Improvements

Route 15

Potential Safety Concerns

- High Crash Corridor
- Flooding Issue
- No Sidewalks
- Open Range, No Fencing
- No Shoulders
- Deteriorating Striping
- No Lighting
- Poor Pavement
- Curvy Roadway

Recommended Improvement *

- Spot Improvement

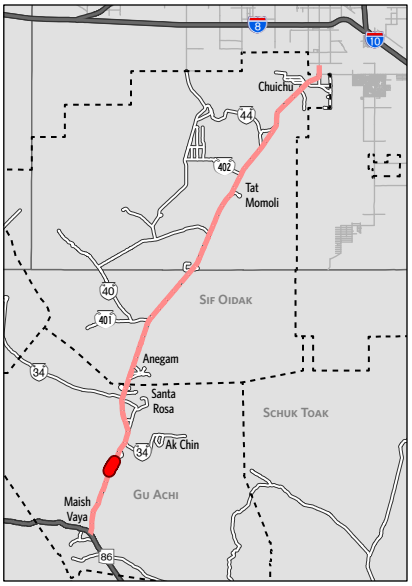
* Also reference overview page for corridor-wide improvement recommendations

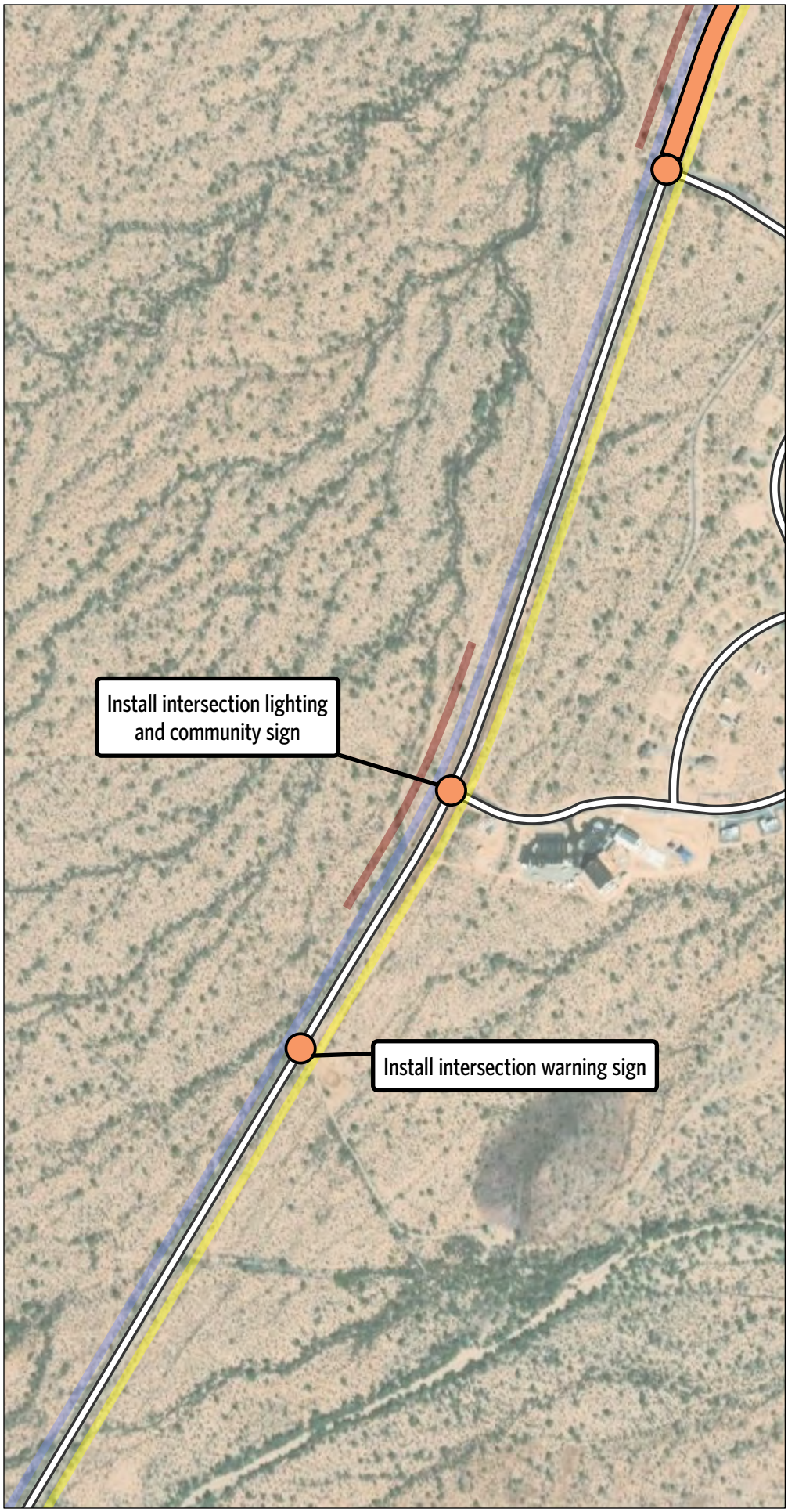
Reference

- Tohono O'odham District Boundary

0 300 600 Feet

1 inch equals 600 feet





Recommended Improvements

Route 15

Potential Safety Concerns

- High Crash Corridor
- Flooding Issue
- No Sidewalks
- Open Range, No Fencing
- No Shoulders
- Deteriorating Striping
- No Lighting
- Poor Pavement
- Curvy Roadway

Recommended Improvement *

- Spot Improvement
- Linear Improvement

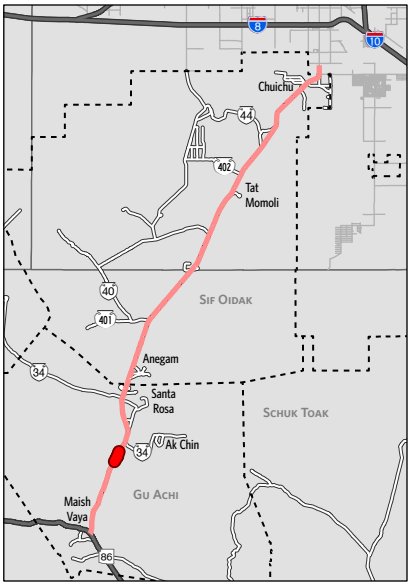
* Also reference overview page for corridor-wide improvement recommendations

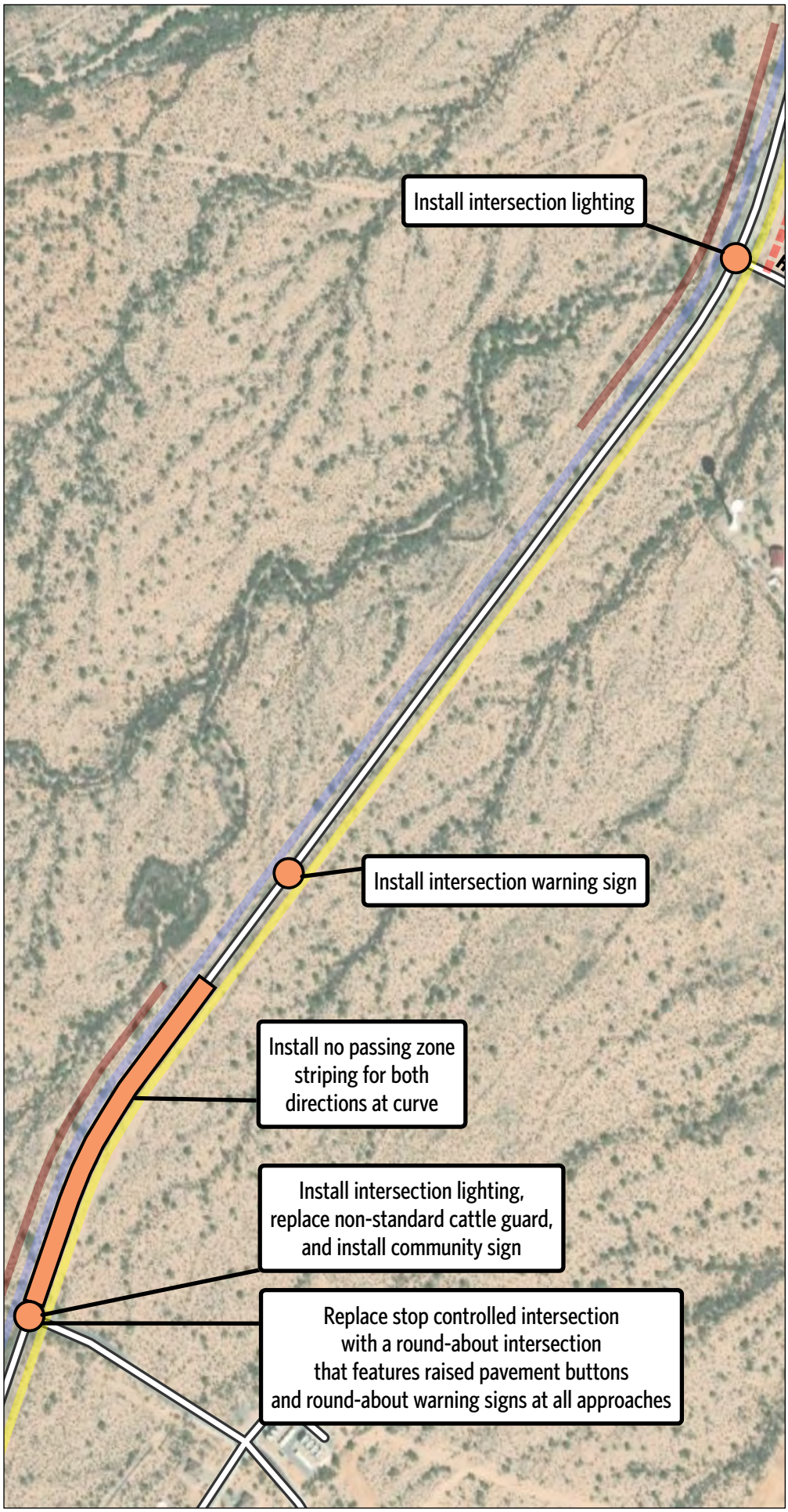
Reference

- Tohono O'odham District Boundary

0 300 600 Feet

1 inch equals 600 feet





Recommended Improvements

Route 15

Potential Safety Concerns

- High Crash Corridor
- Flooding Issue
- No Sidewalks
- Open Range, No Fencing
- No Shoulders
- Deteriorating Striping
- No Lighting
- Poor Pavement
- Curvy Roadway

Recommended Improvement *

- Spot Improvement
- Linear Improvement

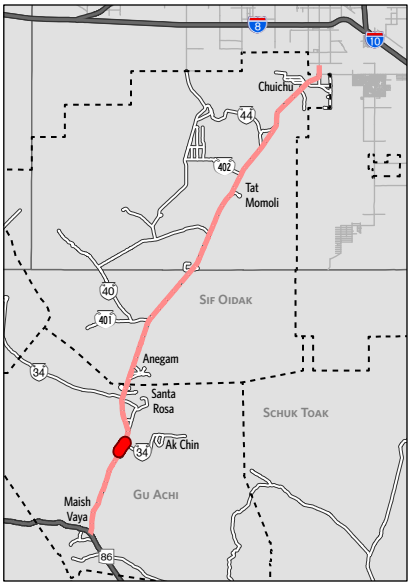
* Also reference overview page for corridor-wide improvement recommendations

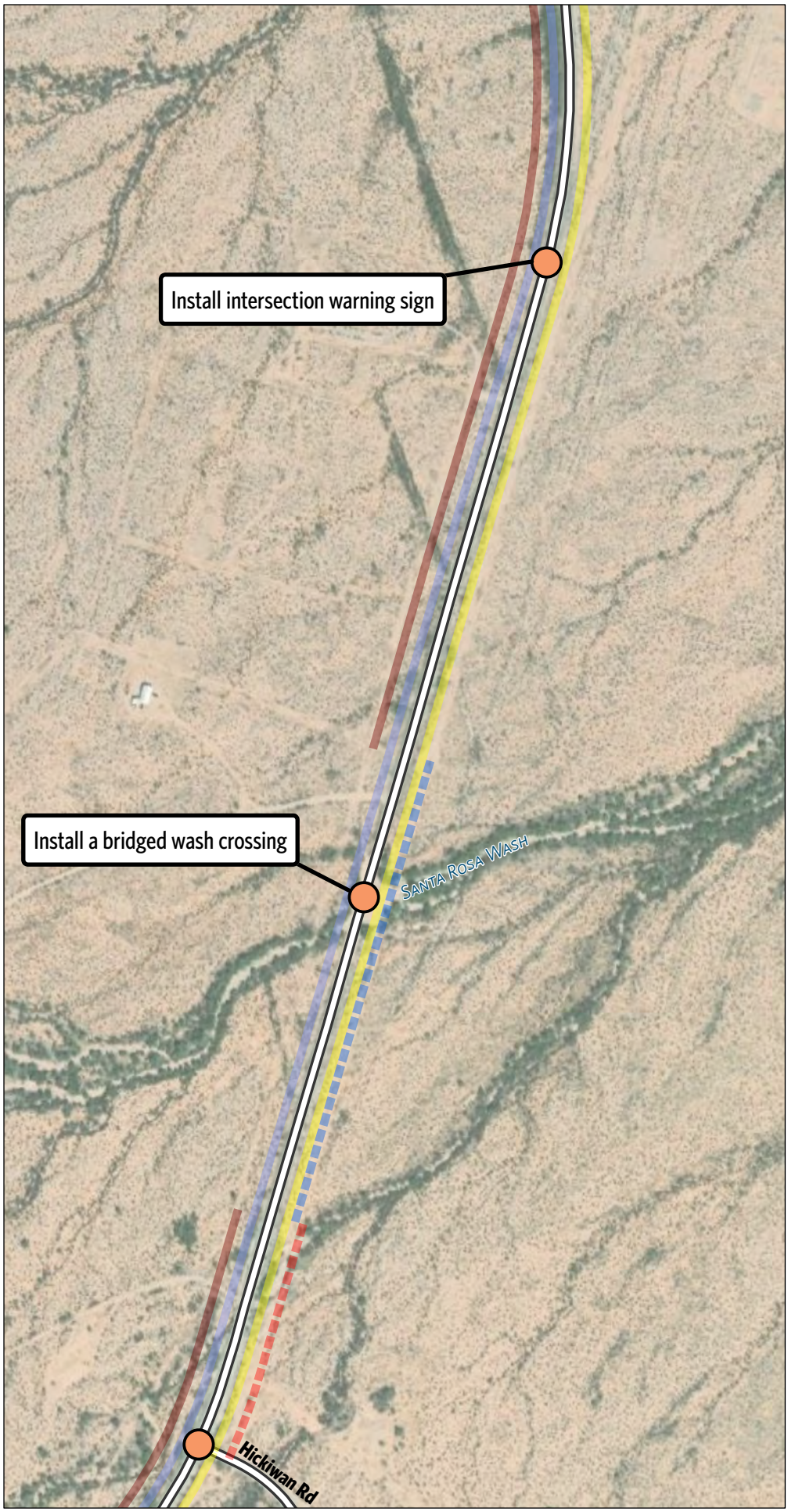
Reference

- Tohono O'odham District Boundary

0 300 600 Feet

1 inch equals 600 feet





Recommended Improvements

Route 15

Potential Safety Concerns

- High Crash Corridor
- Flooding Issue
- No Sidewalks
- Open Range, No Fencing
- No Shoulders
- Deteriorating Striping
- No Lighting
- Poor Pavement
- Curvy Roadway

Recommended Improvement *

- Spot Improvement

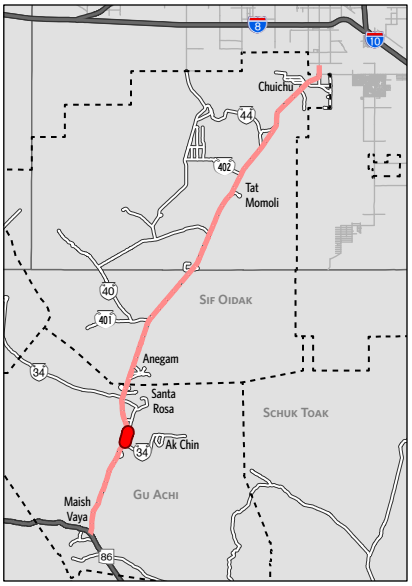
* Also reference overview page for corridor-wide improvement recommendations

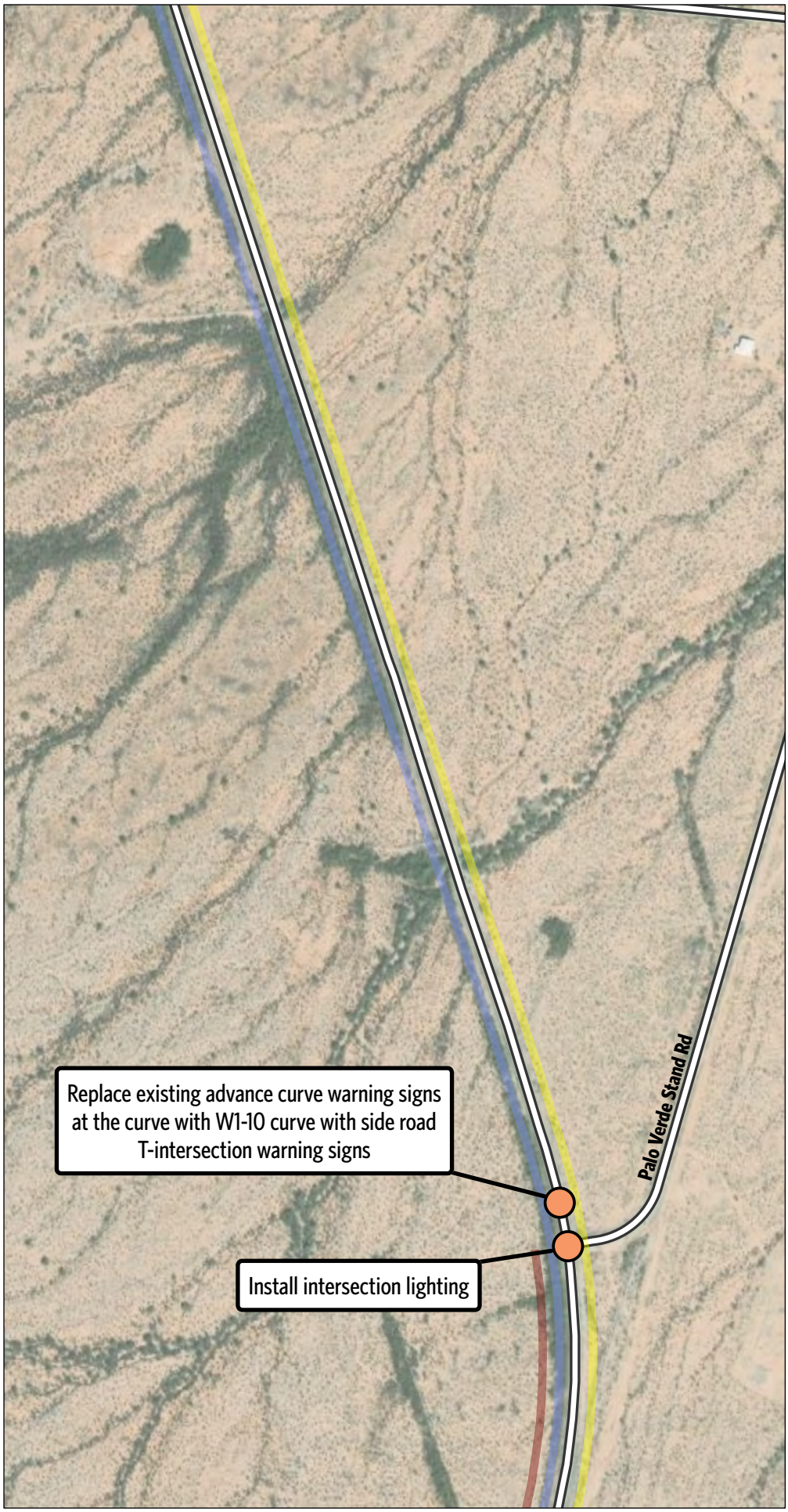
Reference

- Tohono O'odham District Boundary

0 300 600 Feet

1 inch equals 600 feet





Recommended Improvements

Route 15

Potential Safety Concerns

- High Crash Corridor
- Flooding Issue
- No Sidewalks
- Open Range, No Fencing
- No Shoulders
- Deteriorating Striping
- No Lighting
- Poor Pavement
- Curvy Roadway

Recommended Improvement *

- Spot Improvement

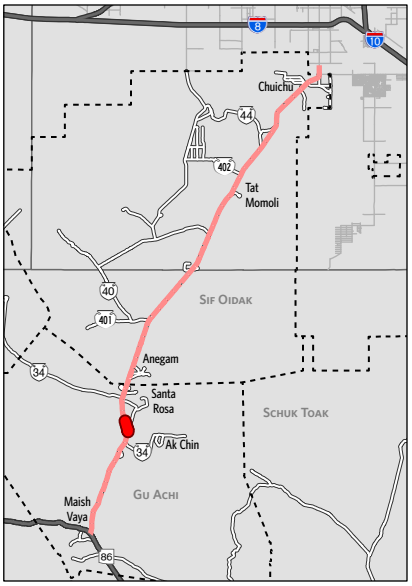
* Also reference overview page for corridor-wide improvement recommendations

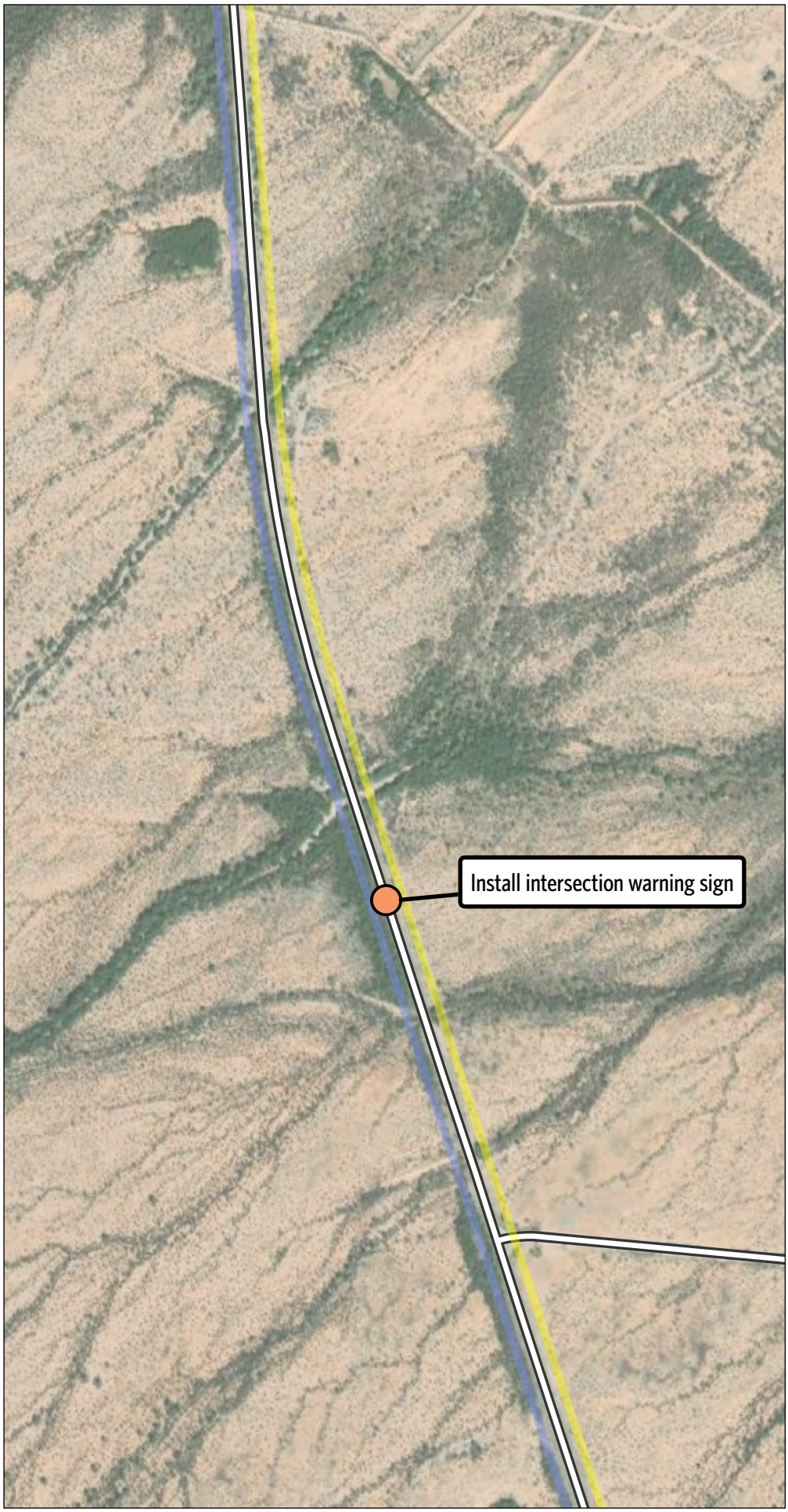
Reference

- Tohono O'odham District Boundary

0 300 600 Feet

1 inch equals 600 feet





Recommended Improvements

Route 15

Potential Safety Concerns

- High Crash Corridor
- Flooding Issue
- No Sidewalks
- Open Range, No Fencing
- No Shoulders
- Deteriorating Striping
- No Lighting
- Poor Pavement
- Curvy Roadway

Recommended Improvement *

- Spot Improvement

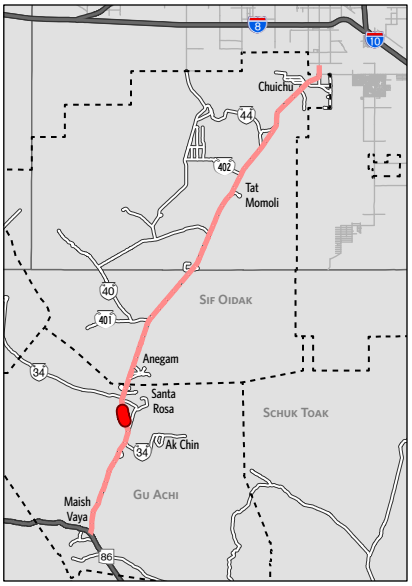
* Also reference overview page for corridor-wide improvement recommendations

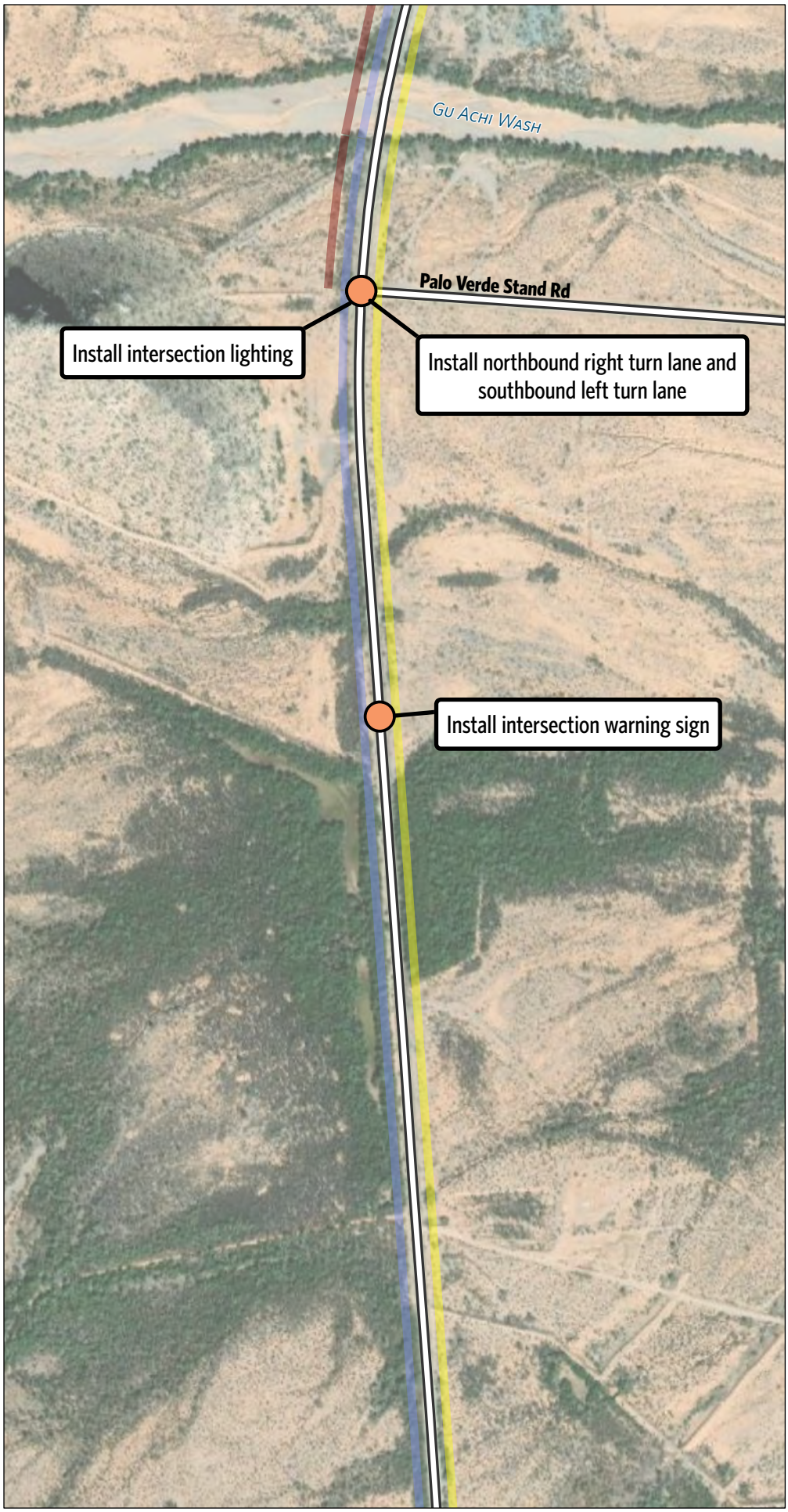
Reference

- Tohono O'odham District Boundary

0 300 600 Feet

1 inch equals 600 feet





Recommended Improvements

Route 15

Potential Safety Concerns

- High Crash Corridor
- Flooding Issue
- No Sidewalks
- Open Range, No Fencing
- No Shoulders
- Deteriorating Striping
- No Lighting
- Poor Pavement
- Curvy Roadway

Recommended Improvement *

- Spot Improvement

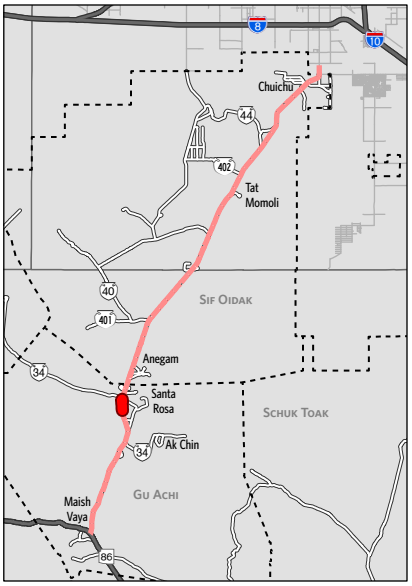
* Also reference overview page for corridor-wide improvement recommendations

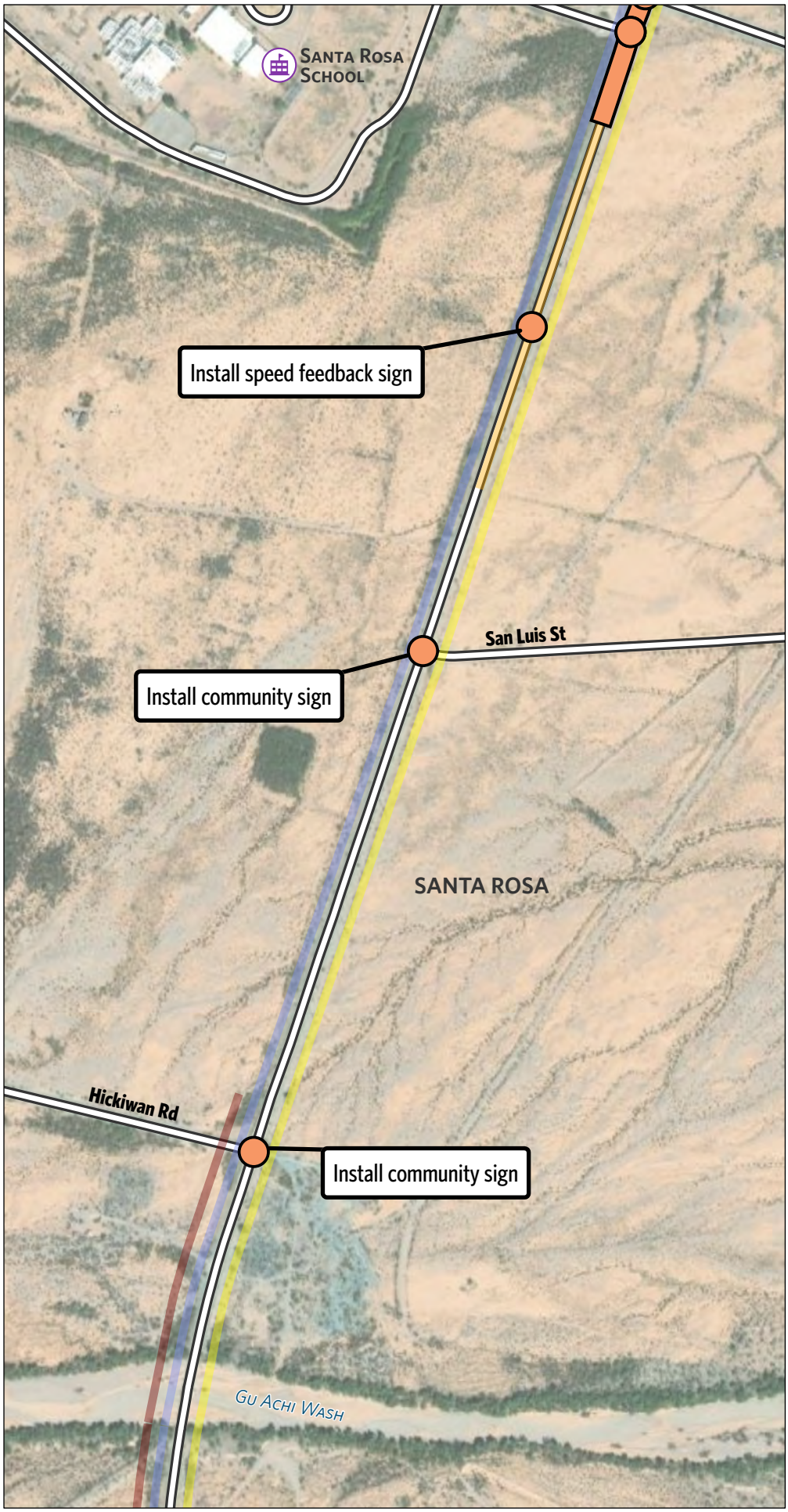
Reference

- Tohono O'odham District Boundary

0 300 600 Feet

1 inch equals 600 feet





Recommended Improvements

Route 15

Potential Safety Concerns

- High Crash Corridor
- Flooding Issue
- No Sidewalks
- Open Range, No Fencing
- No Shoulders
- Deteriorating Striping
- No Lighting
- Poor Pavement
- Curvy Roadway

Recommended Improvement *

- Spot Improvement
- Linear Improvement

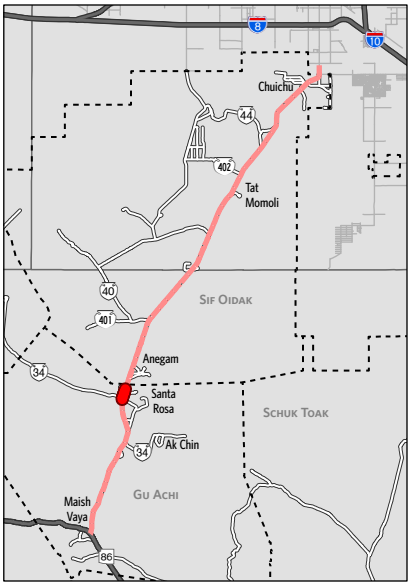
* Also reference overview page for corridor-wide improvement recommendations

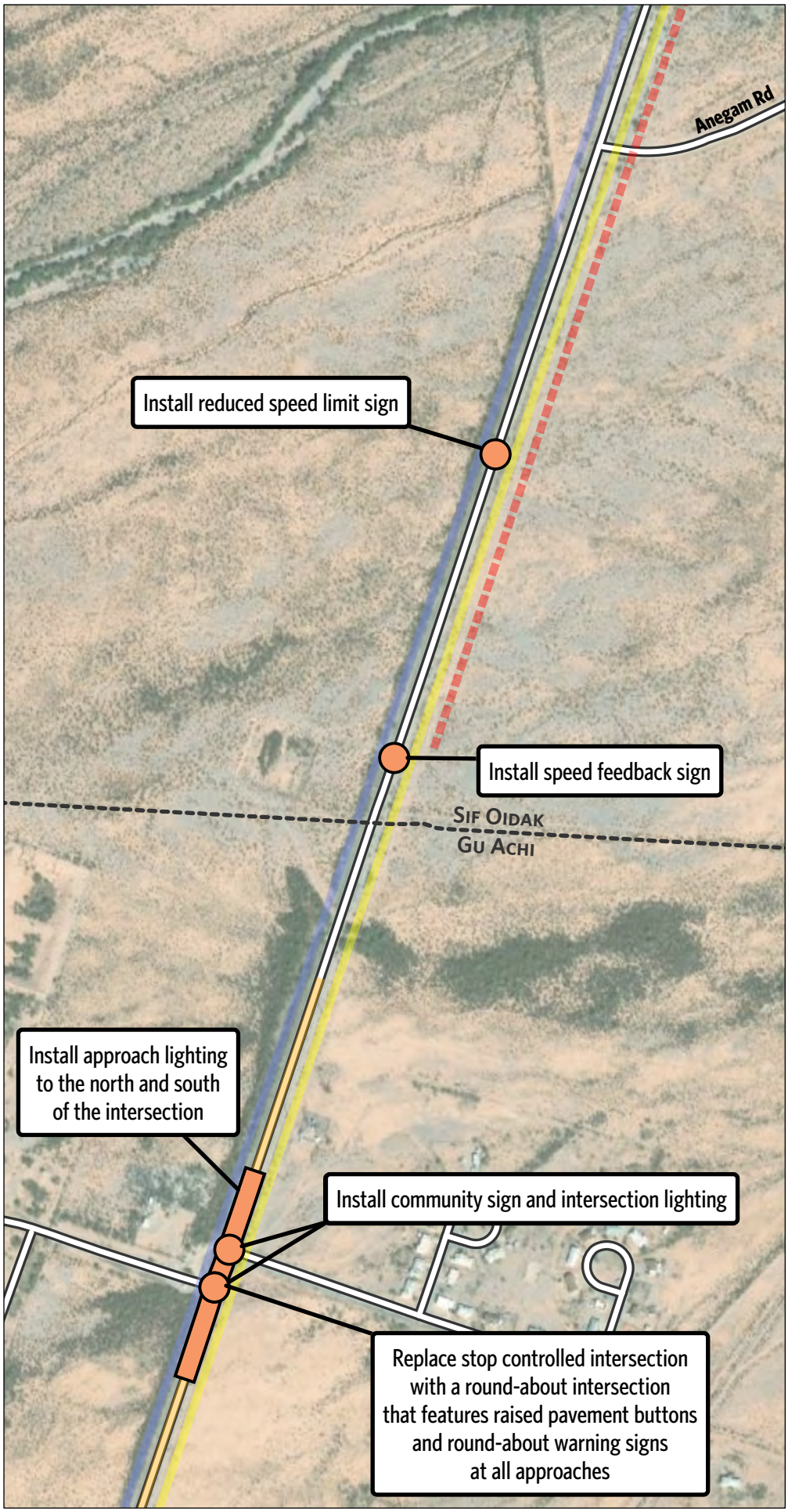
Reference

- School
- Tohono O'odham District Boundary

0 300 600 Feet

1 inch equals 600 feet





Recommended Improvements

Route 15

Potential Safety Concerns

- High Crash Corridor
- Flooding Issue
- No Sidewalks
- Open Range, No Fencing
- No Shoulders
- Deteriorating Striping
- No Lighting
- Poor Pavement
- Curvy Roadway

Recommended Improvement *

- Spot Improvement
- Linear Improvement

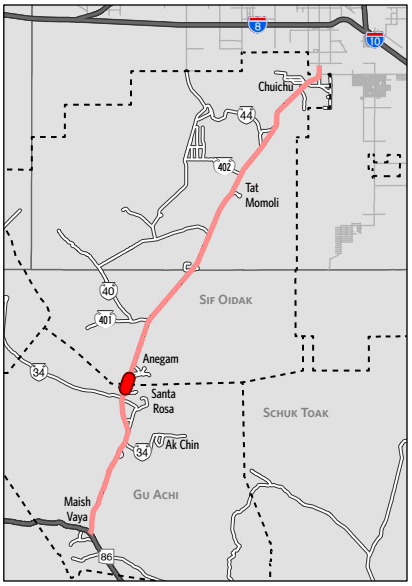
* Also reference overview page for corridor-wide improvement recommendations

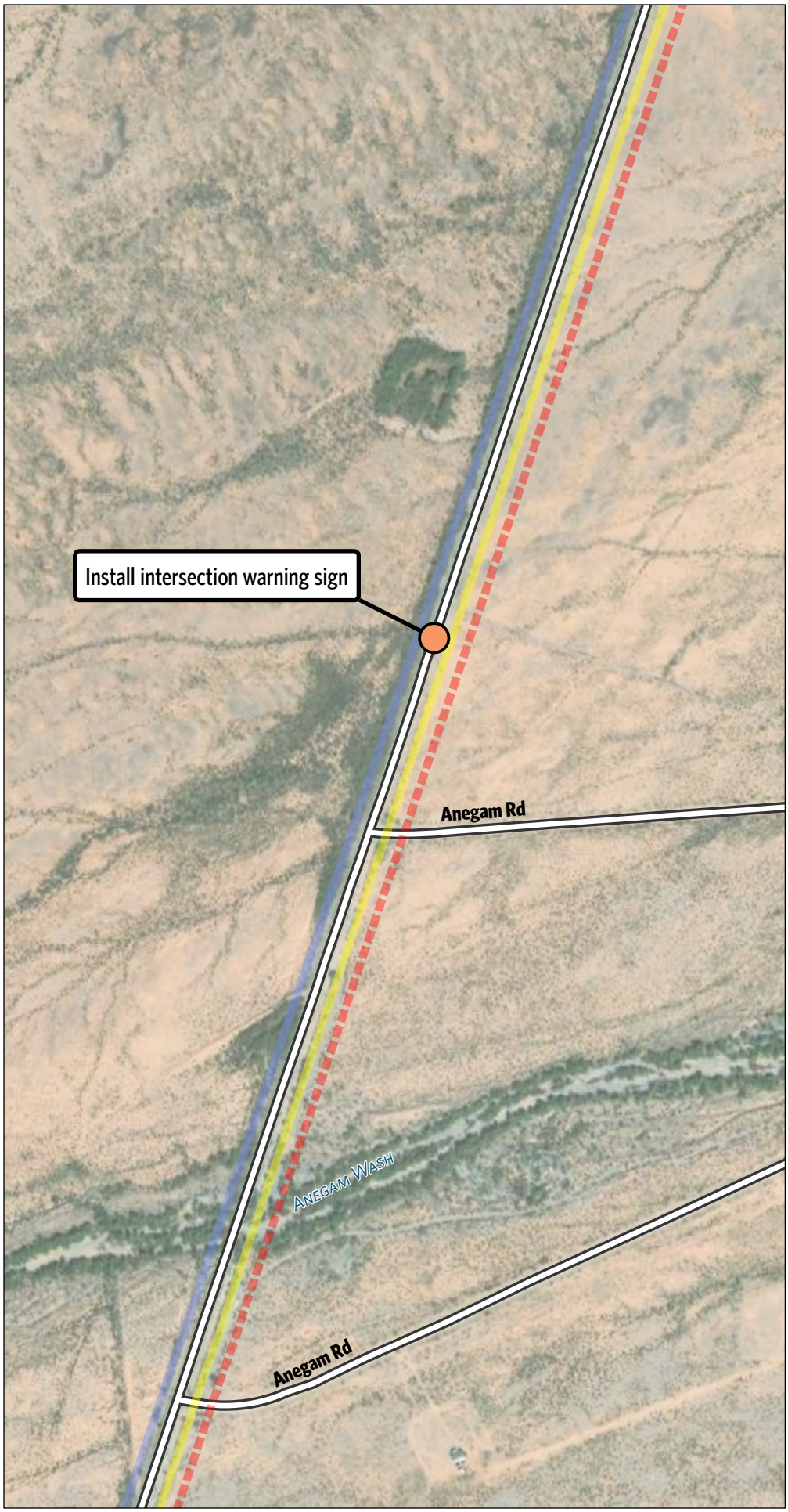
Reference

- Tohono O'odham District Boundary

0 300 600 Feet

1 inch equals 600 feet





Recommended Improvements

Route 15

Potential Safety Concerns

- High Crash Corridor
- Flooding Issue
- No Sidewalks
- Open Range, No Fencing
- No Shoulders
- Deteriorating Striping
- No Lighting
- Poor Pavement
- Curvy Roadway

Recommended Improvement *

- Spot Improvement

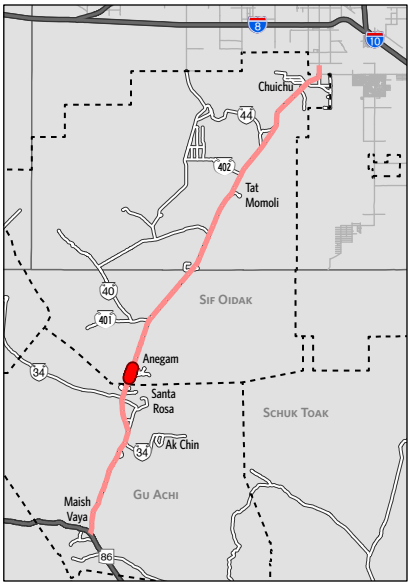
* Also reference overview page for corridor-wide improvement recommendations

Reference

- Tohono O'odham District Boundary

0 300 600 Feet

1 inch equals 600 feet



Recommended Improvements

Route 15

Potential Safety Concerns

- High Crash Corridor
- Flooding Issue
- No Sidewalks
- Open Range, No Fencing
- No Shoulders
- Deteriorating Striping
- No Lighting
- Poor Pavement
- Curvy Roadway

Recommended Improvement *

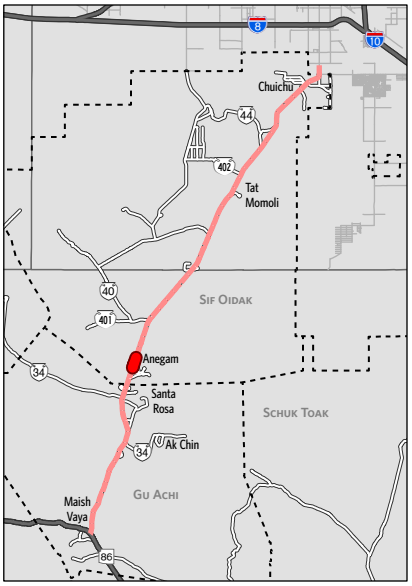
* Also reference overview page for corridor-wide improvement recommendations

Reference

- Tohono O'odham District Boundary

0 300 600 Feet

1 inch equals 600 feet



Recommended Improvements

Route 15

Potential Safety Concerns

- High Crash Corridor
- Flooding Issue
- No Sidewalks
- Open Range, No Fencing
- No Shoulders
- Deteriorating Striping
- No Lighting
- Poor Pavement
- Curvy Roadway

Recommended Improvement *

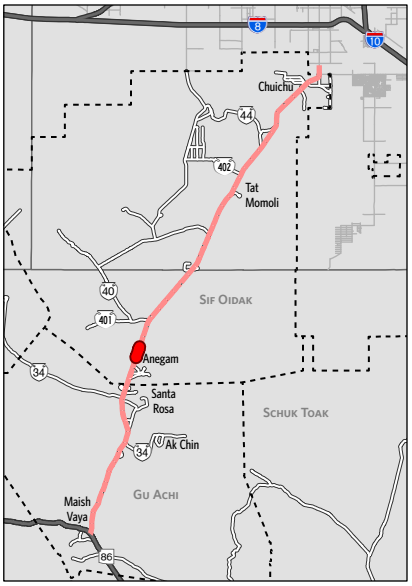
* Also reference overview page for corridor-wide improvement recommendations

Reference

- Tohono O'odham District Boundary

0 300 600 Feet

1 inch equals 600 feet



Recommended Improvements

Route 15

Potential Safety Concerns

- High Crash Corridor
- Flooding Issue
- No Sidewalks
- Open Range, No Fencing
- No Shoulders
- Deteriorating Striping
- No Lighting
- Poor Pavement
- Curvy Roadway

Recommended Improvement *

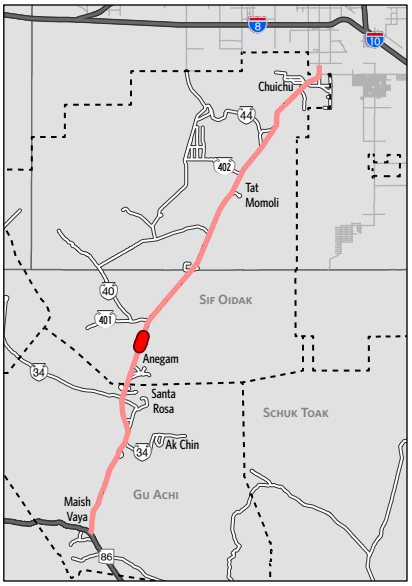
* Also reference overview page for corridor-wide improvement recommendations

Reference

- Tohono O'odham District Boundary

0 300 600 Feet

1 inch equals 600 feet



Recommended Improvements

Route 15

Potential Safety Concerns

- High Crash Corridor
- Flooding Issue
- No Sidewalks
- Open Range, No Fencing
- No Shoulders
- Deteriorating Striping
- No Lighting
- Poor Pavement
- Curvy Roadway

Recommended Improvement *

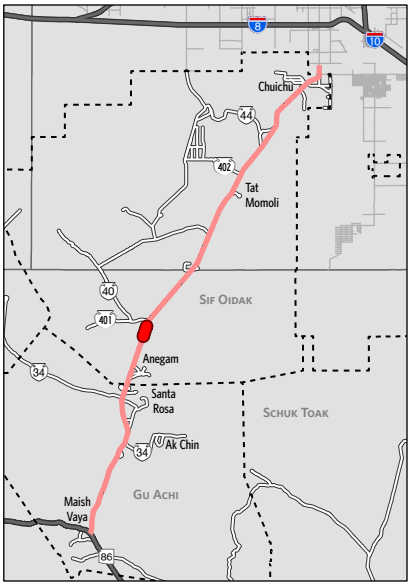
* Also reference overview page for corridor-wide improvement recommendations

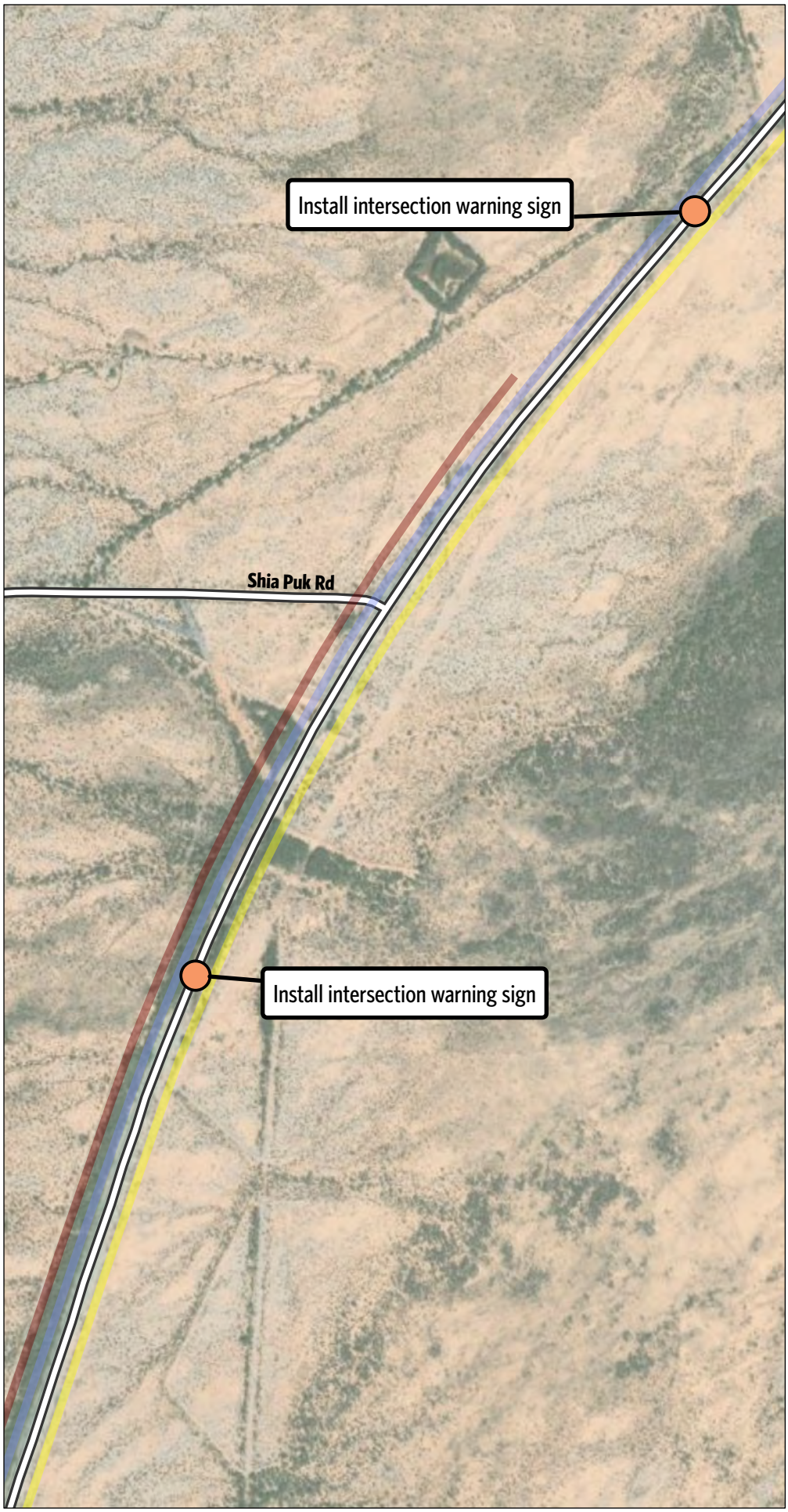
Reference

- Tohono O'odham District Boundary

0 300 600 Feet

1 inch equals 600 feet





Recommended Improvements

Route 15

Potential Safety Concerns

- High Crash Corridor
- Flooding Issue
- No Sidewalks
- Open Range, No Fencing
- No Shoulders
- Deteriorating Striping
- No Lighting
- Poor Pavement
- Curvy Roadway

Recommended Improvement *

- Spot Improvement

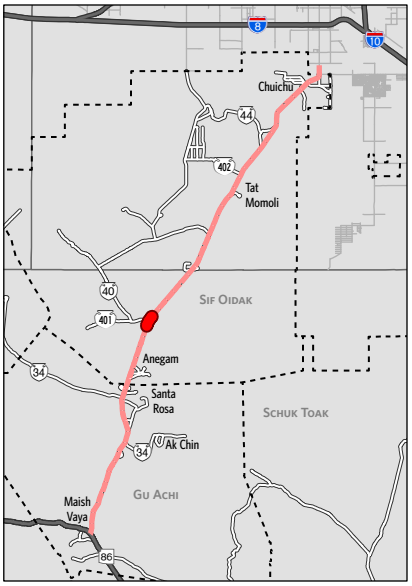
* Also reference overview page for corridor-wide improvement recommendations

Reference

- Tohono O'odham District Boundary

0 300 600 Feet

1 inch equals 600 feet



Recommended Improvements

Route 15

Potential Safety Concerns

- High Crash Corridor
- Flooding Issue
- No Sidewalks
- Open Range, No Fencing
- No Shoulders
- Deteriorating Striping
- No Lighting
- Poor Pavement
- Curvy Roadway

Recommended Improvement *

- Spot Improvement

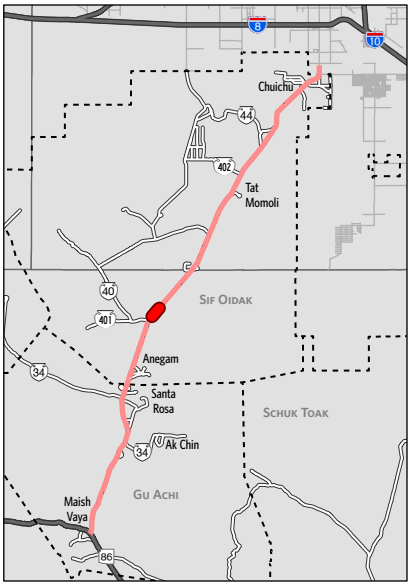
* Also reference overview page for corridor-wide improvement recommendations

Reference

- Tohono O'odham District Boundary

0 300 600 Feet

1 inch equals 600 feet



Recommended Improvements

Route 15

Potential Safety Concerns

- High Crash Corridor
- Flooding Issue
- No Sidewalks
- Open Range, No Fencing
- No Shoulders
- Deteriorating Striping
- No Lighting
- Poor Pavement
- Curvy Roadway

Recommended Improvement *

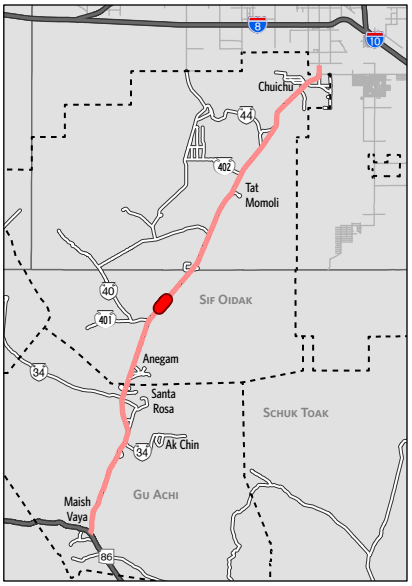
* Also reference overview page for corridor-wide improvement recommendations

Reference

- Tohono O'odham District Boundary

0 300 600 Feet

1 inch equals 600 feet



Recommended Improvements

Route 15

Potential Safety Concerns

- High Crash Corridor
- Flooding Issue
- No Sidewalks
- Open Range, No Fencing
- No Shoulders
- Deteriorating Striping
- No Lighting
- Poor Pavement
- Curvy Roadway

Recommended Improvement *

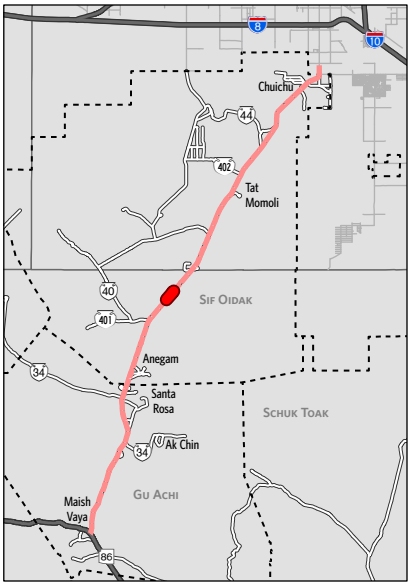
* Also reference overview page for corridor-wide improvement recommendations

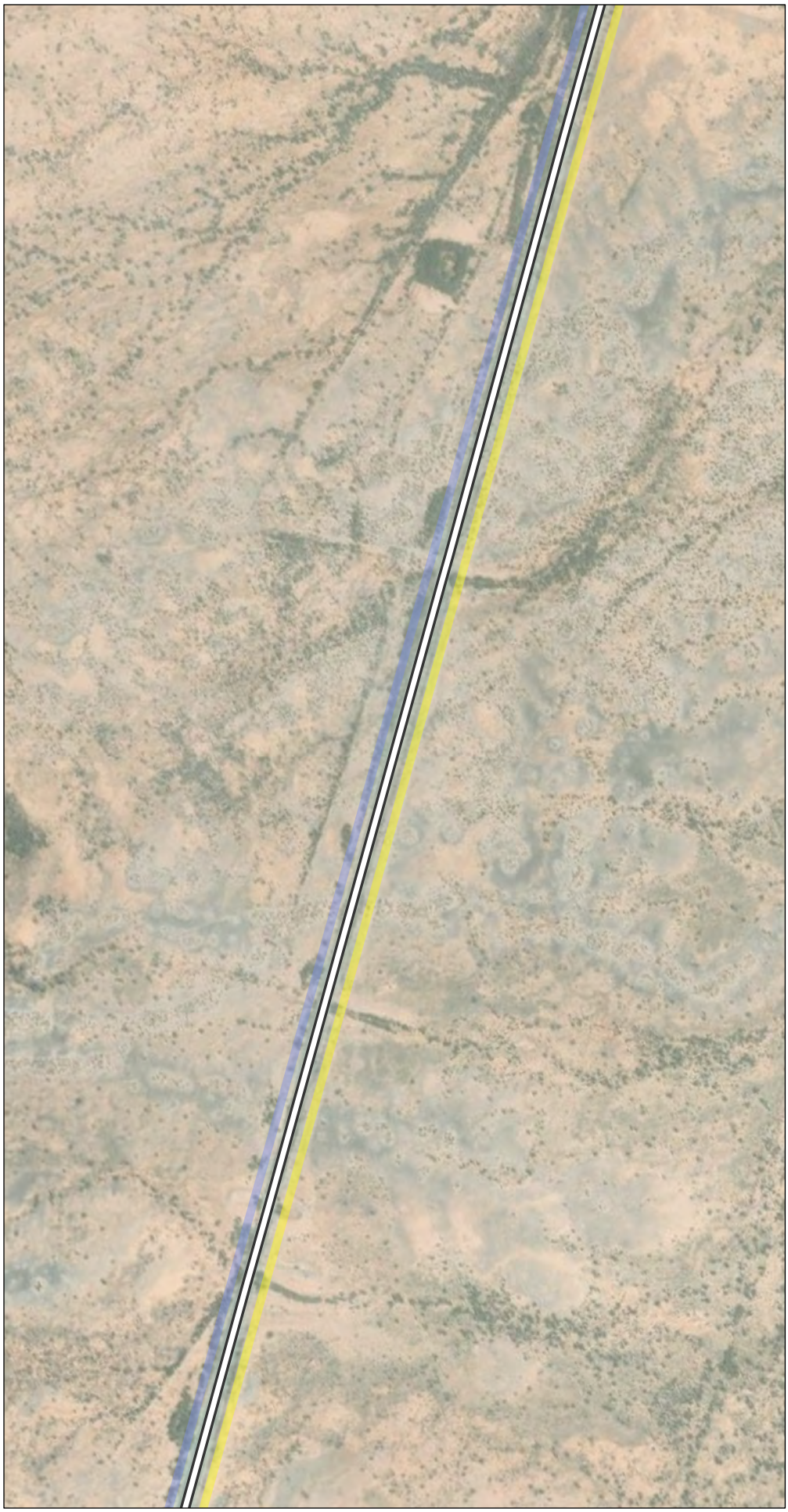
Reference

- Tohono O'odham District Boundary

0 300 600 Feet

1 inch equals 600 feet





Recommended Improvements

Route 15

Potential Safety Concerns

- High Crash Corridor
- Flooding Issue
- No Sidewalks
- Open Range, No Fencing
- No Shoulders
- Deteriorating Striping
- No Lighting
- Poor Pavement
- Curvy Roadway

Recommended Improvement *

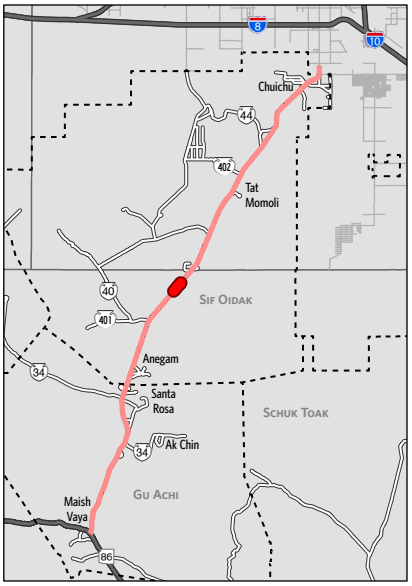
* Also reference overview page for corridor-wide improvement recommendations

Reference

- Tohono O'odham District Boundary

0 300 600 Feet

1 inch equals 600 feet



Recommended Improvements

Route 15

Potential Safety Concerns

- High Crash Corridor
- Flooding Issue
- No Sidewalks
- Open Range, No Fencing
- No Shoulders
- Deteriorating Striping
- No Lighting
- Poor Pavement
- Curvy Roadway

Recommended Improvement *

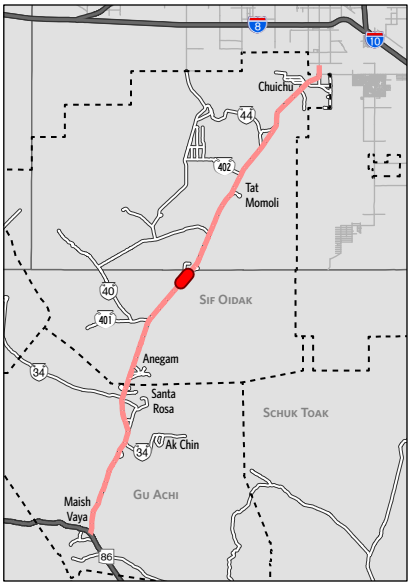
* Also reference overview page for corridor-wide improvement recommendations

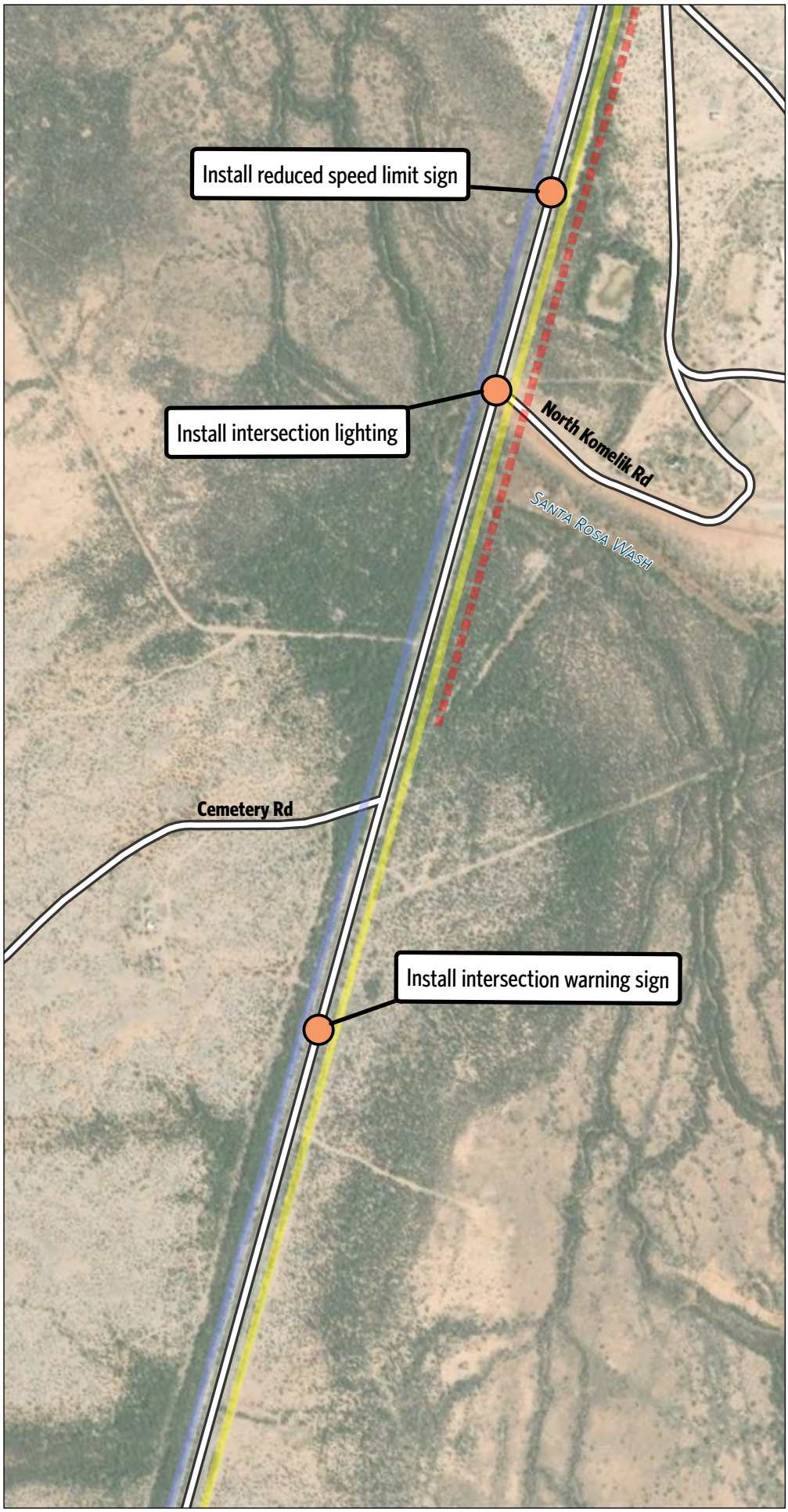
Reference

- Tohono O'odham District Boundary

0 300 600 Feet

1 inch equals 600 feet





Recommended Improvements

Route 15

Potential Safety Concerns

- High Crash Corridor
- Flooding Issue
- No Sidewalks
- Open Range, No Fencing
- No Shoulders
- Deteriorating Striping
- No Lighting
- Poor Pavement
- Curvy Roadway

Recommended Improvement *

- Spot Improvement

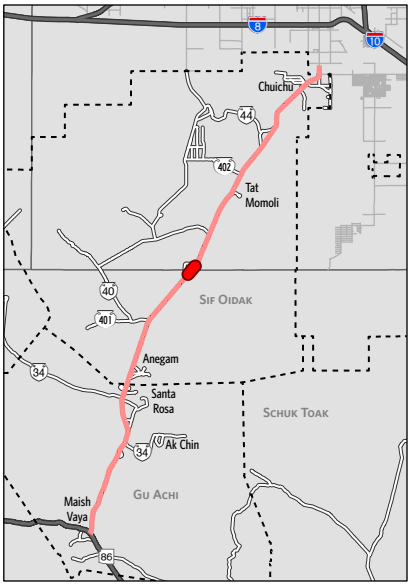
* Also reference overview page for corridor-wide improvement recommendations

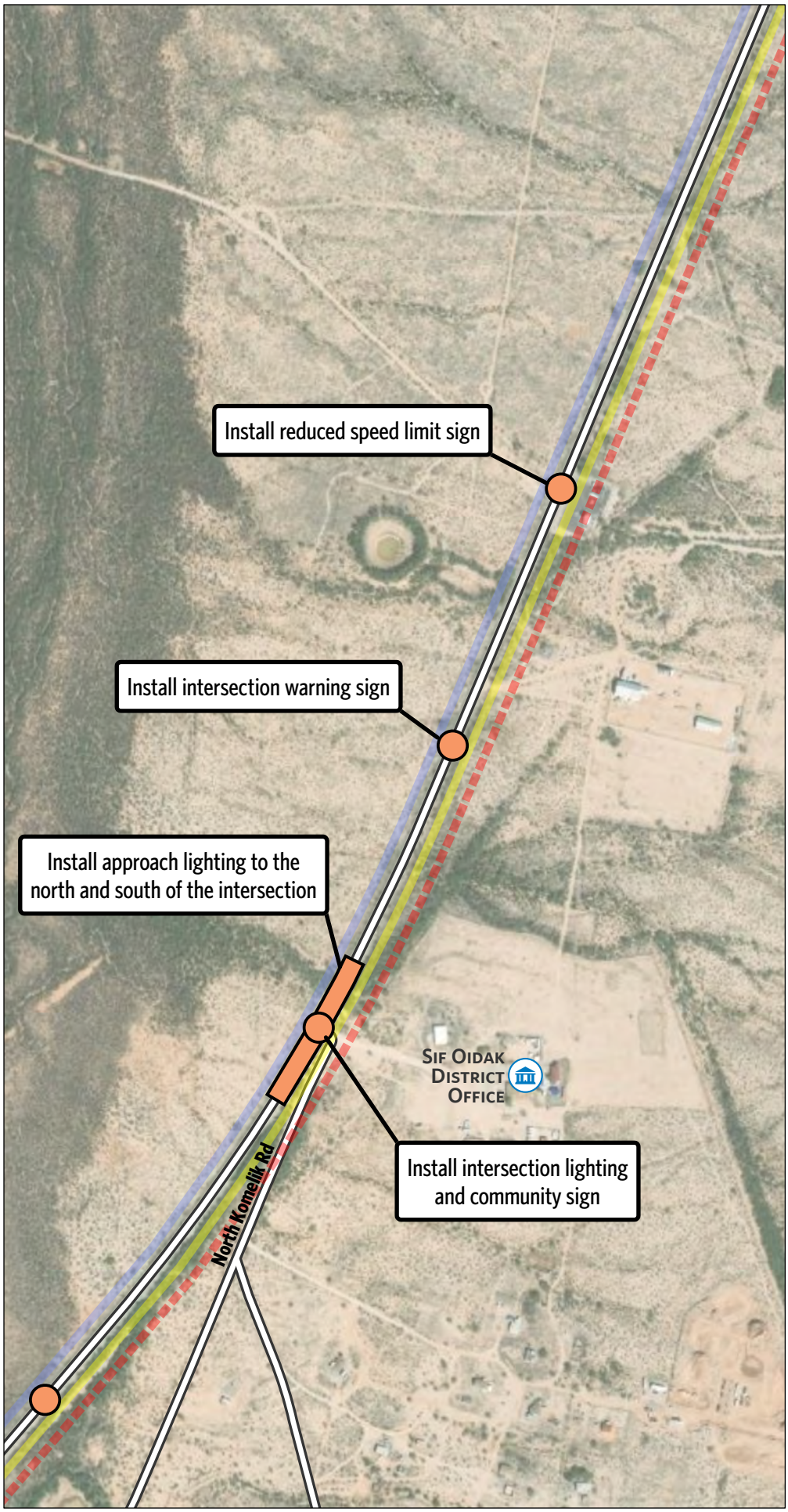
Reference

- Tohono O'odham District Boundary

0 300 600 Feet

1 inch equals 600 feet





Recommended Improvements

Route 15

Potential Safety Concerns

- High Crash Corridor
- Flooding Issue
- No Sidewalks
- Open Range, No Fencing
- No Shoulders
- Deteriorating Striping
- No Lighting
- Poor Pavement
- Curvy Roadway

Recommended Improvement *

- Spot Improvement
- Linear Improvement

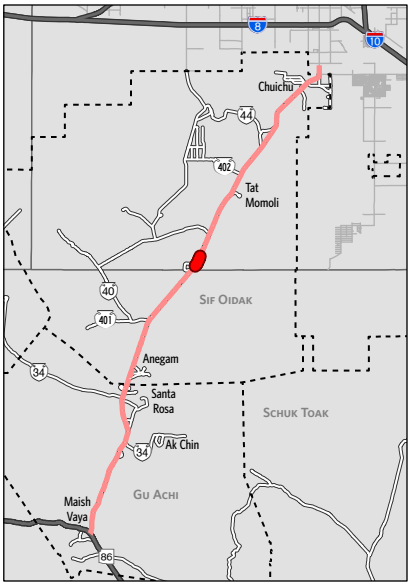
* Also reference overview page for corridor-wide improvement recommendations

Reference

- Government Office
- Tohono O'odham District Boundary

0 300 600 Feet

1 inch equals 600 feet



Recommended Improvements

Route 15

Potential Safety Concerns

- High Crash Corridor
- Flooding Issue
- No Sidewalks
- Open Range, No Fencing
- No Shoulders
- Deteriorating Striping
- No Lighting
- Poor Pavement
- Curvy Roadway

Recommended Improvement *

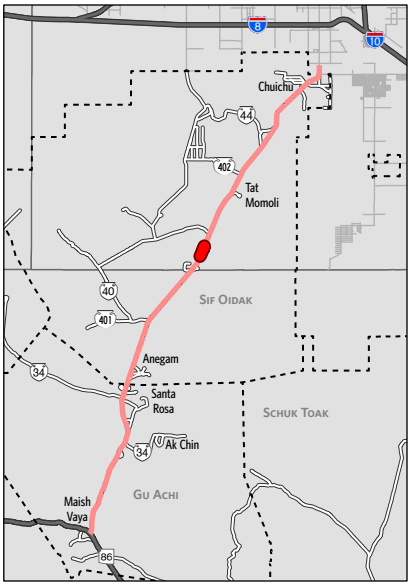
* Also reference overview page for corridor-wide improvement recommendations

Reference

- Tohono O'odham District Boundary

0 300 600 Feet

1 inch equals 600 feet



Recommended Improvements

Route 15

Potential Safety Concerns

- High Crash Corridor
- Flooding Issue
- No Sidewalks
- Open Range, No Fencing
- No Shoulders
- Deteriorating Striping
- No Lighting
- Poor Pavement
- Curvy Roadway

Recommended Improvement *

- Spot Improvement

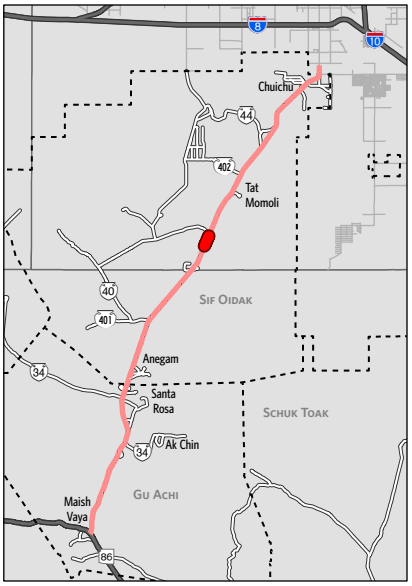
* Also reference overview page for corridor-wide improvement recommendations

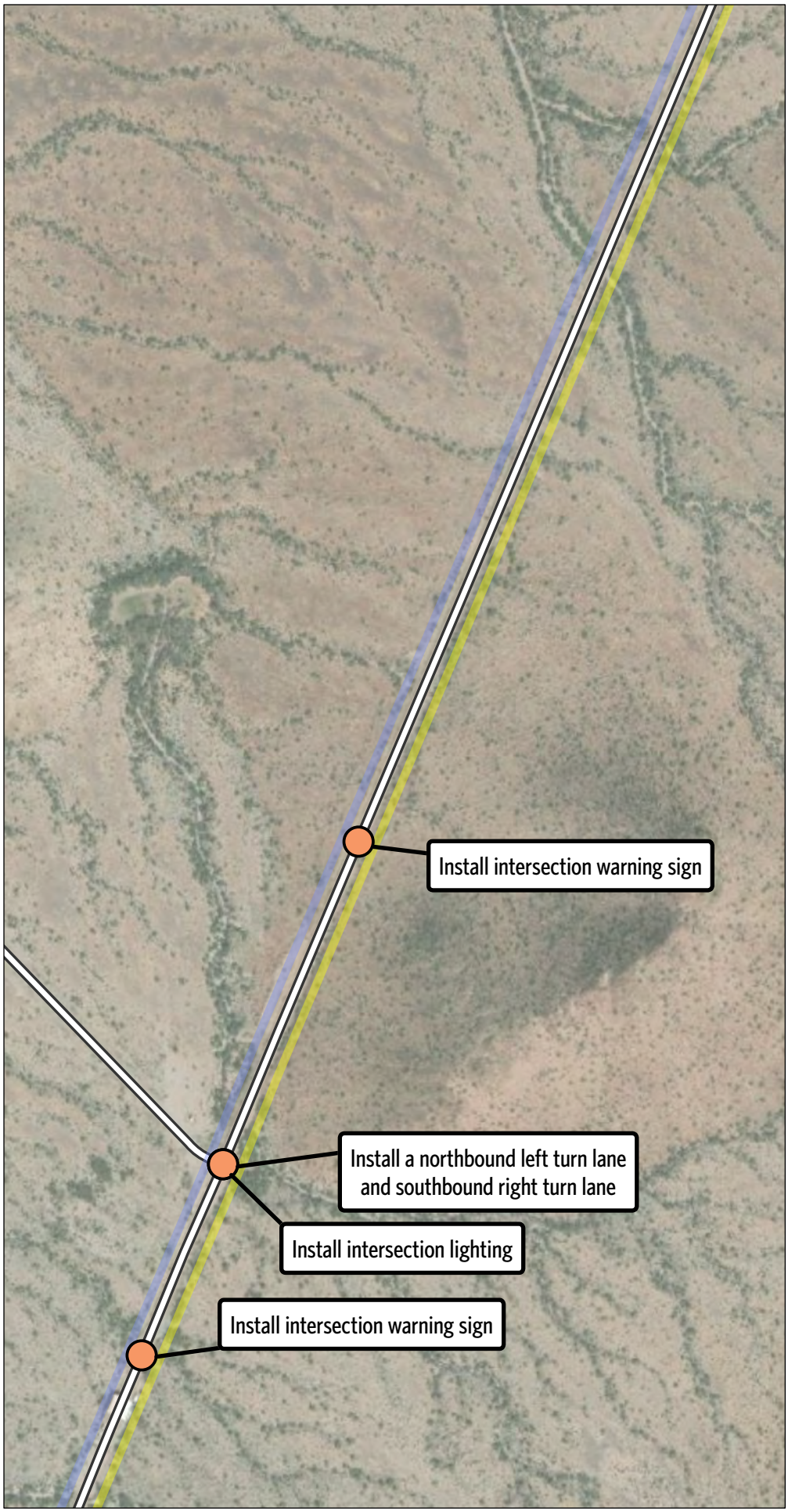
Reference

- Tohono O'odham District Boundary

0 300 600 Feet

1 inch equals 600 feet





Recommended Improvements

Route 15

Potential Safety Concerns

- High Crash Corridor
- Flooding Issue
- No Sidewalks
- Open Range, No Fencing
- No Shoulders
- Deteriorating Striping
- No Lighting
- Poor Pavement
- Curvy Roadway

Recommended Improvement *

- Spot Improvement

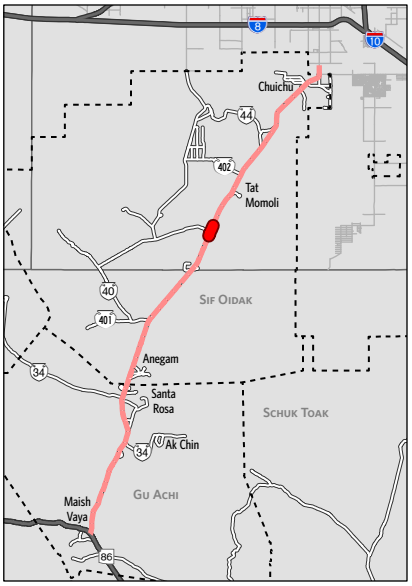
* Also reference overview page for corridor-wide improvement recommendations

Reference

- Tohono O'odham District Boundary

0 300 600 Feet

1 inch equals 600 feet



Recommended Improvements

Route 15

Potential Safety Concerns

- High Crash Corridor
- Flooding Issue
- No Sidewalks
- Open Range, No Fencing
- No Shoulders
- Deteriorating Striping
- No Lighting
- Poor Pavement
- Curvy Roadway

Recommended Improvement *

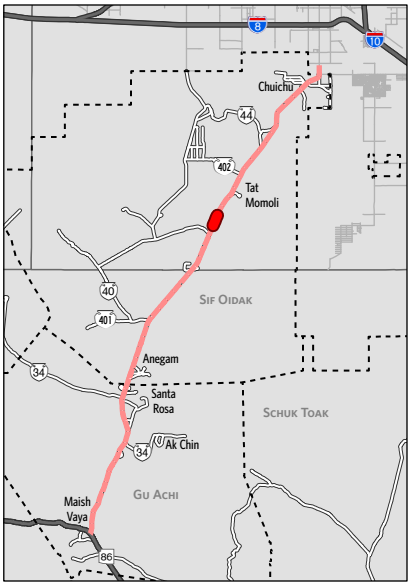
* Also reference overview page for corridor-wide improvement recommendations

Reference

- Tohono O'odham District Boundary

0 300 600 Feet

1 inch equals 600 feet



Recommended Improvements

Route 15

Potential Safety Concerns

- High Crash Corridor
- Flooding Issue
- No Sidewalks
- Open Range, No Fencing
- No Shoulders
- Deteriorating Striping
- No Lighting
- Poor Pavement
- Curvy Roadway

Recommended Improvement *

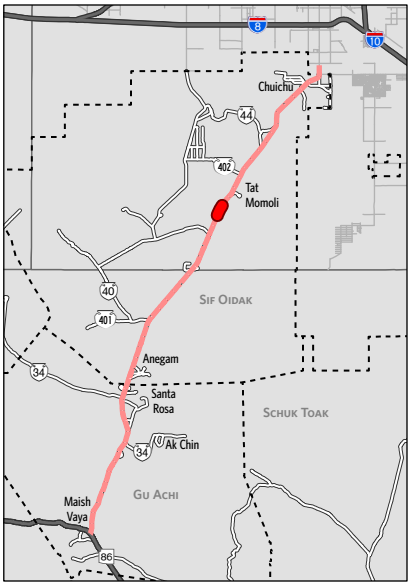
* Also reference overview page for corridor-wide improvement recommendations

Reference

- Tohono O'odham District Boundary

0 300 600 Feet

1 inch equals 600 feet



Recommended Improvements

Route 15

Potential Safety Concerns

- High Crash Corridor
- Flooding Issue
- No Sidewalks
- Open Range, No Fencing
- No Shoulders
- Deteriorating Striping
- No Lighting
- Poor Pavement
- Curvy Roadway

Recommended Improvement *

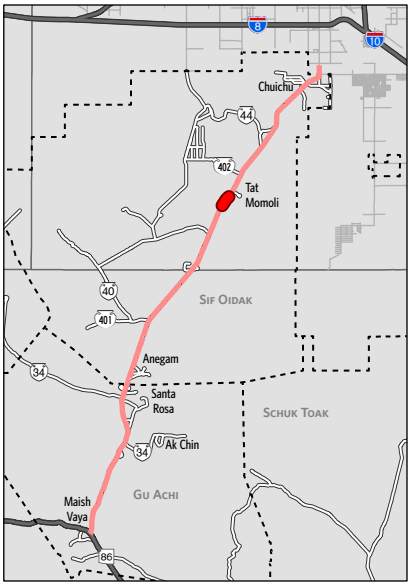
* Also reference overview page for corridor-wide improvement recommendations

Reference

- Tohono O'odham District Boundary

0 300 600 Feet

1 inch equals 600 feet



Recommended Improvements

Route 15

Potential Safety Concerns

- High Crash Corridor
- Flooding Issue
- No Sidewalks
- Open Range, No Fencing
- No Shoulders
- Deteriorating Striping
- No Lighting
- Poor Pavement
- Curvy Roadway

Recommended Improvement *

- Spot Improvement

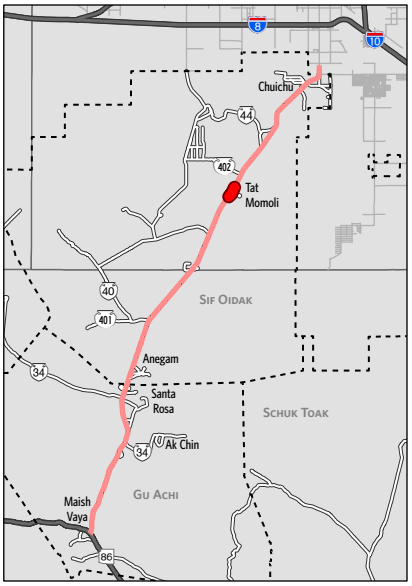
* Also reference overview page for corridor-wide improvement recommendations

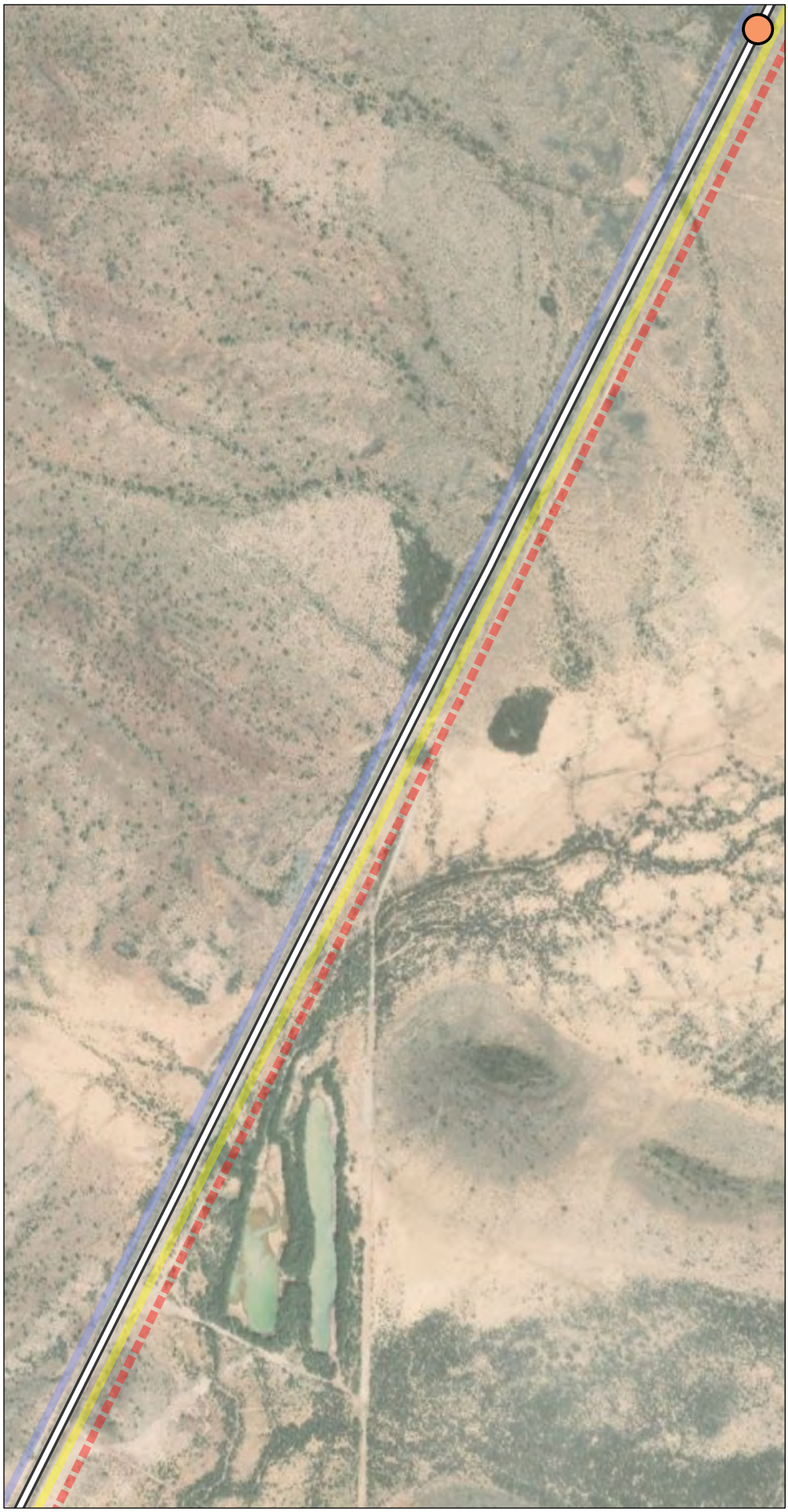
Reference

- Tohono O'odham District Boundary

0 300 600 Feet

1 inch equals 600 feet





Recommended Improvements

Route 15

Potential Safety Concerns

- High Crash Corridor
- Flooding Issue
- No Sidewalks
- Open Range, No Fencing
- No Shoulders
- Deteriorating Striping
- No Lighting
- Poor Pavement
- Curvy Roadway

Recommended Improvement *

- Spot Improvement

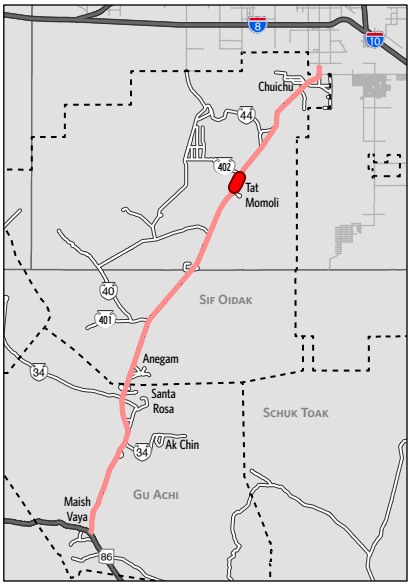
* Also reference overview page for corridor-wide improvement recommendations

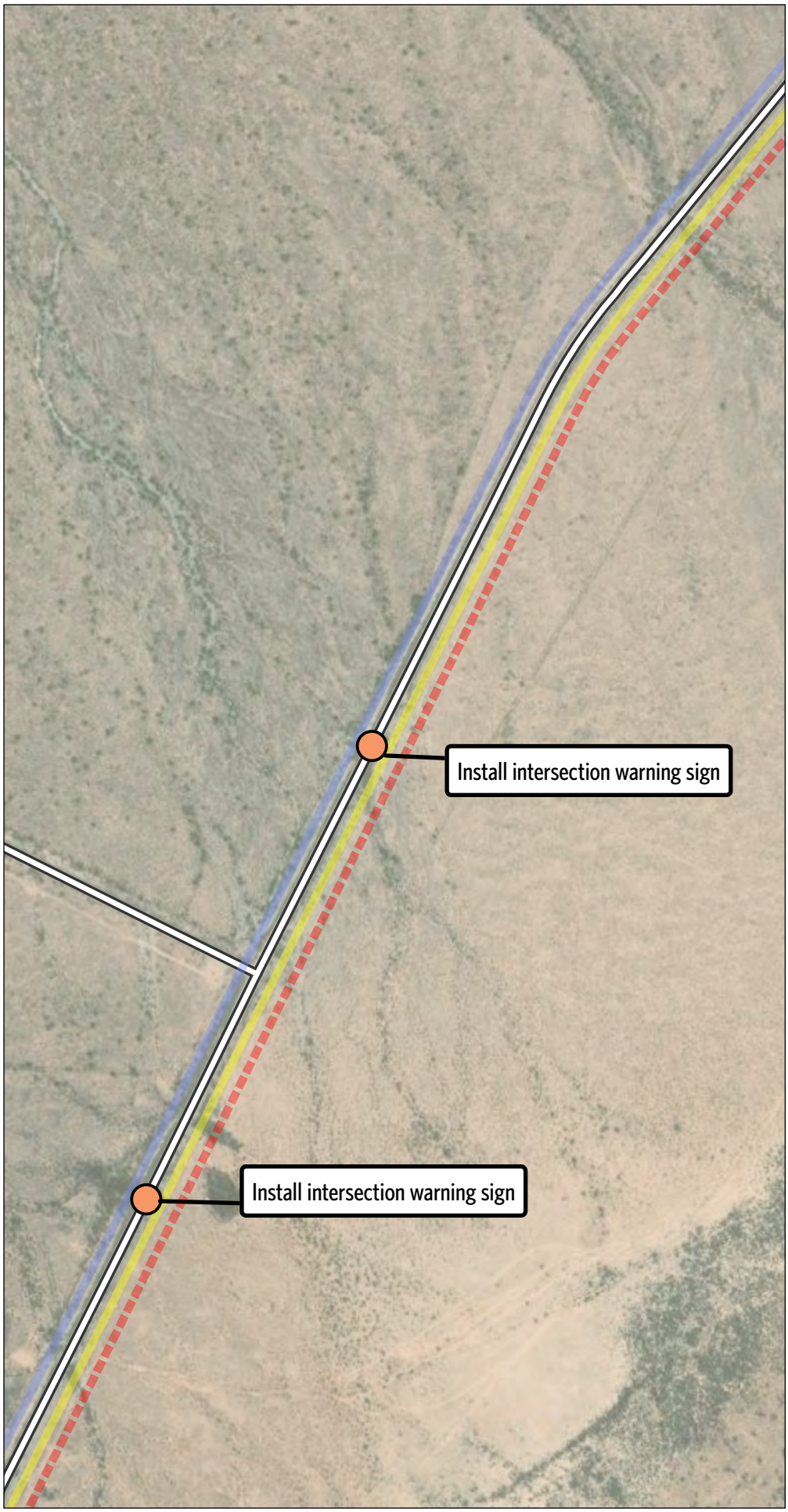
Reference

- Tohono O'odham District Boundary

0 300 600 Feet

1 inch equals 600 feet





Recommended Improvements

Route 15

Potential Safety Concerns

- High Crash Corridor
- Flooding Issue
- No Sidewalks
- Open Range, No Fencing
- No Shoulders
- Deteriorating Striping
- No Lighting
- Poor Pavement
- Curvy Roadway

Recommended Improvement *

- Spot Improvement

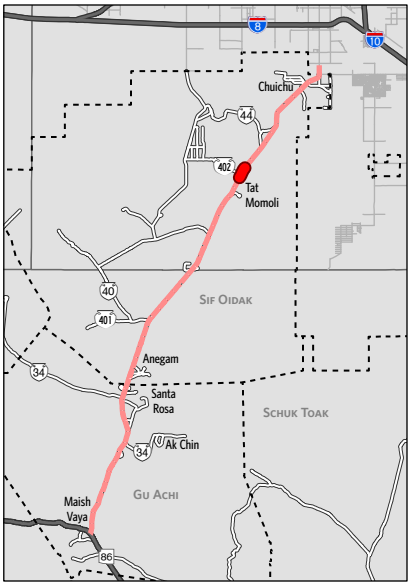
* Also reference overview page for corridor-wide improvement recommendations

Reference

- Tohono O'odham District Boundary

0 300 600 Feet

1 inch equals 600 feet



Recommended Improvements

Route 15

Potential Safety Concerns

- High Crash Corridor
- Flooding Issue
- No Sidewalks
- Open Range, No Fencing
- No Shoulders
- Deteriorating Striping
- No Lighting
- Poor Pavement
- Curvy Roadway

Recommended Improvement *

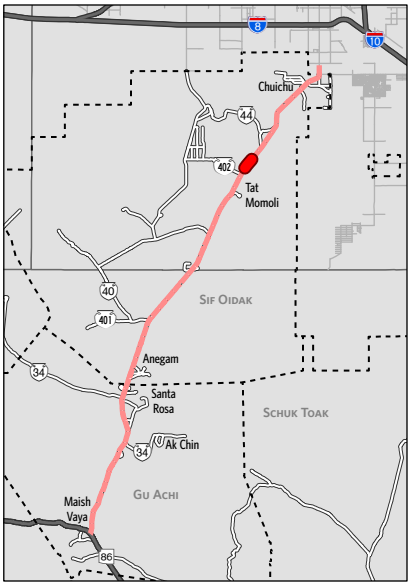
* Also reference overview page for corridor-wide improvement recommendations

Reference

- Tohono O'odham District Boundary

0 300 600 Feet

1 inch equals 600 feet



Recommended Improvements

Route 15

Potential Safety Concerns

- High Crash Corridor
- Flooding Issue
- No Sidewalks
- Open Range, No Fencing
- No Shoulders
- Deteriorating Striping
- No Lighting
- Poor Pavement
- Curvy Roadway

Recommended Improvement *

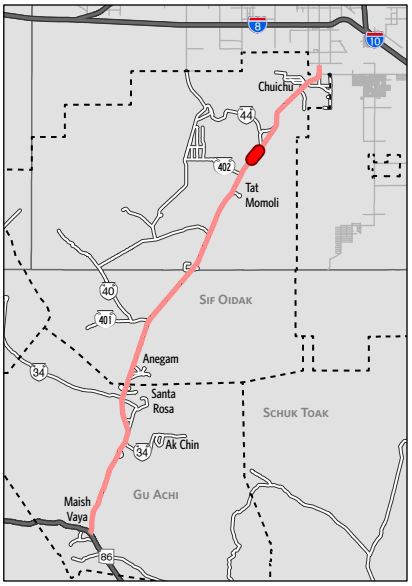
* Also reference overview page for corridor-wide improvement recommendations

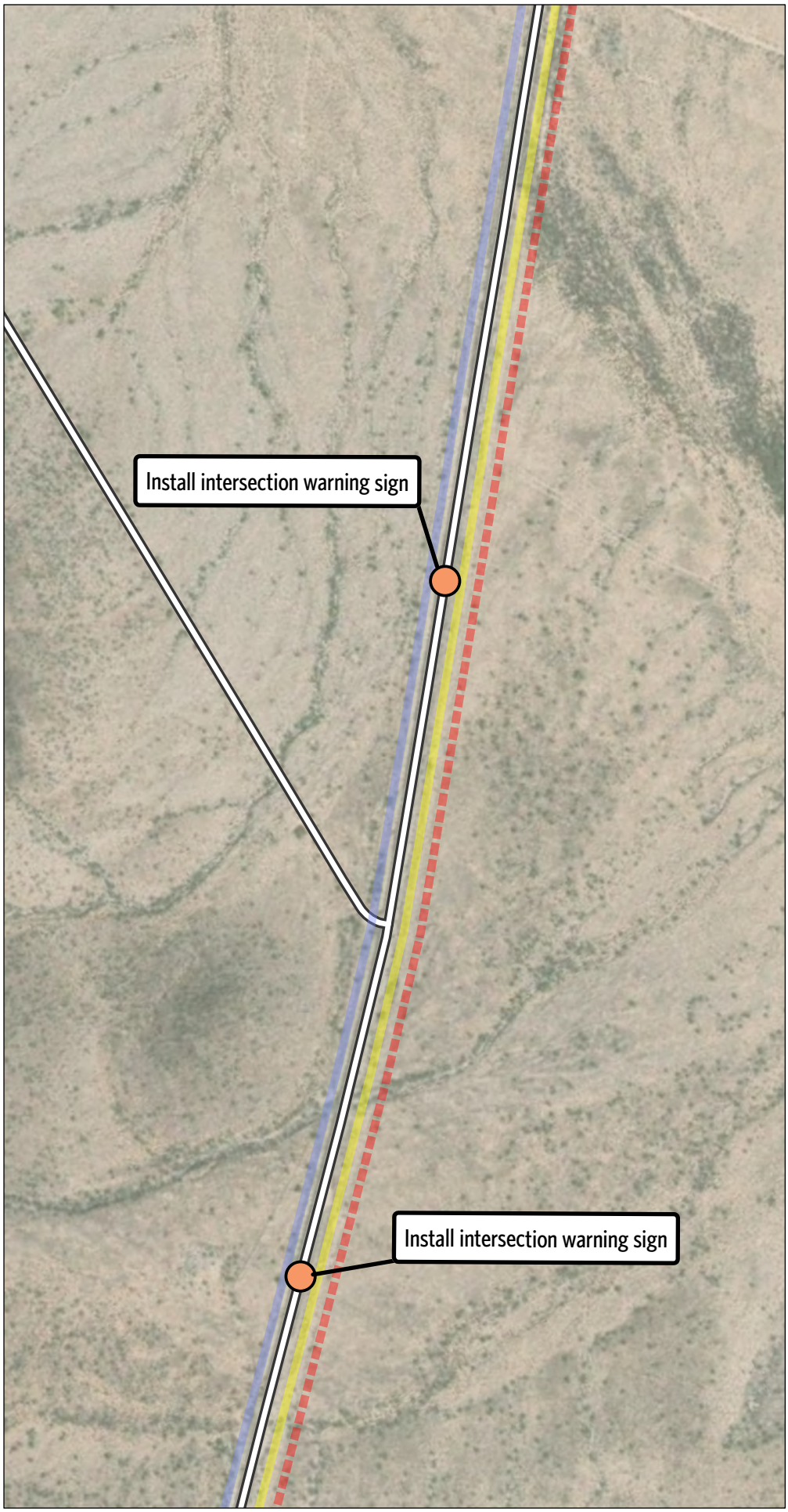
Reference

- Tohono O'odham District Boundary

0 300 600 Feet

1 inch equals 600 feet





Recommended Improvements

Route 15

Potential Safety Concerns

- High Crash Corridor
- Flooding Issue
- No Sidewalks
- Open Range, No Fencing
- No Shoulders
- Deteriorating Striping
- No Lighting
- Poor Pavement
- Curvy Roadway

Recommended Improvement *

- Spot Improvement

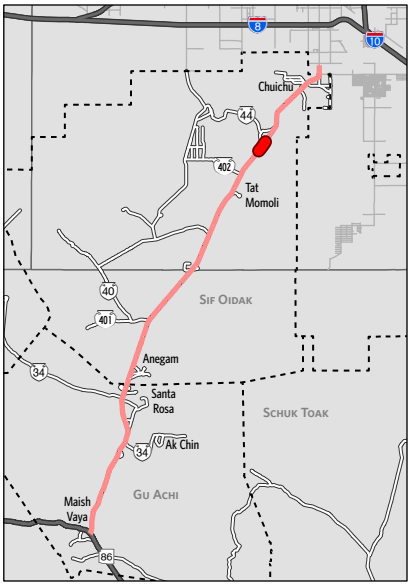
* Also reference overview page for corridor-wide improvement recommendations

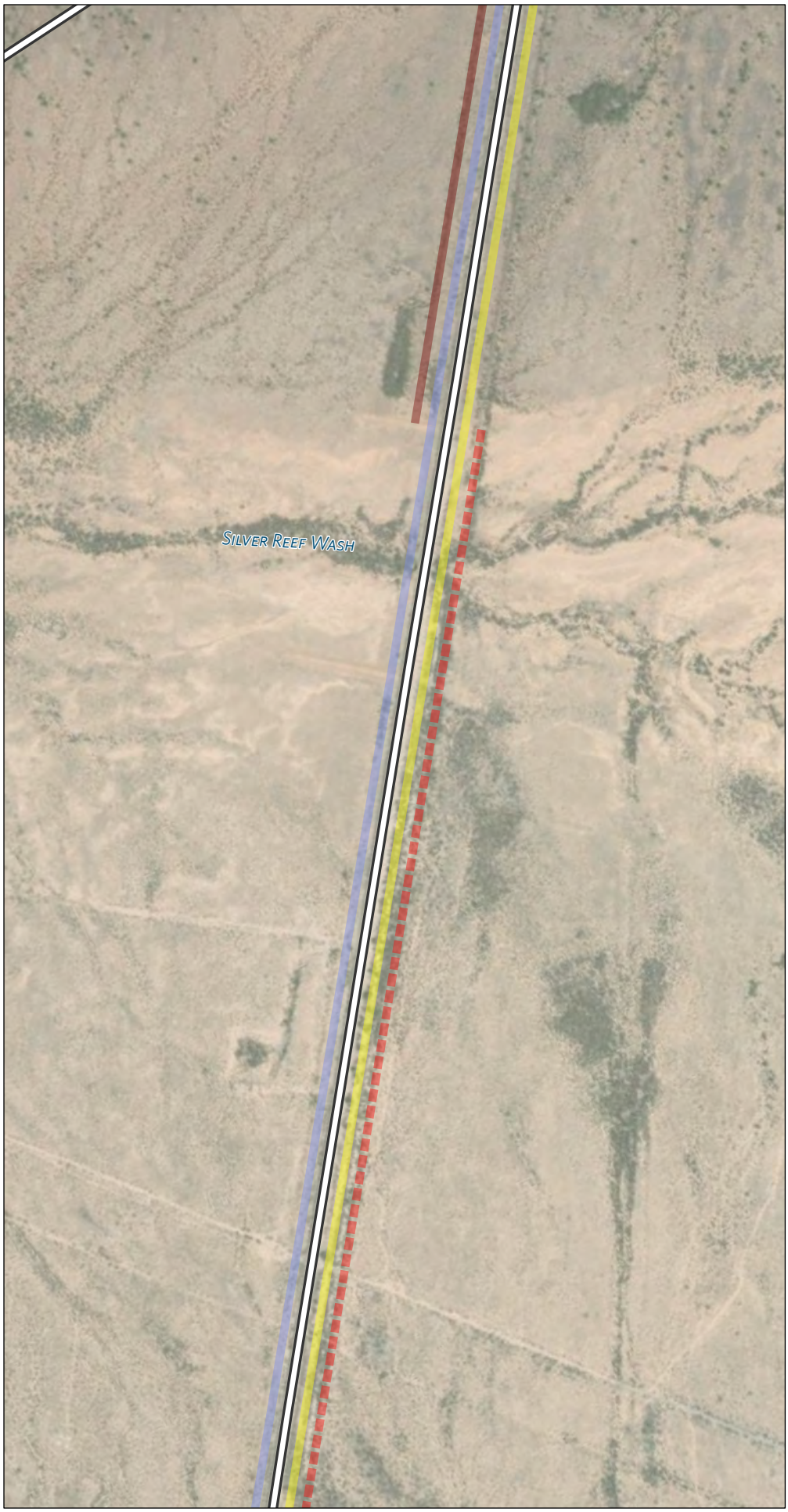
Reference

- Tohono O'odham District Boundary

0 300 600 Feet

1 inch equals 600 feet





Recommended Improvements

Route 15

Potential Safety Concerns

- High Crash Corridor
- Flooding Issue
- No Sidewalks
- Open Range, No Fencing
- No Shoulders
- Deteriorating Striping
- No Lighting
- Poor Pavement
- Curvy Roadway

Recommended Improvement *

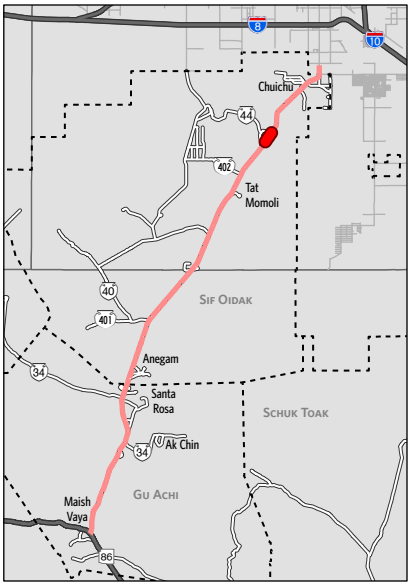
* Also reference overview page for corridor-wide improvement recommendations

Reference

- Tohono O'odham District Boundary

0 300 600 Feet

1 inch equals 600 feet



Recommended Improvements

Route 15

Potential Safety Concerns

- High Crash Corridor
- Flooding Issue
- No Sidewalks
- Open Range, No Fencing
- No Shoulders
- Deteriorating Striping
- No Lighting
- Poor Pavement
- Curvy Roadway

Recommended Improvement *

- Spot Improvement

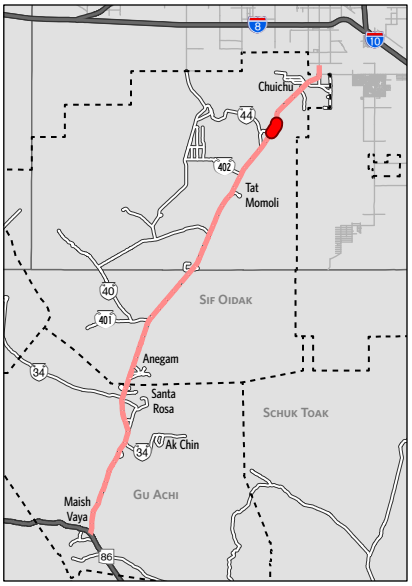
* Also reference overview page for corridor-wide improvement recommendations

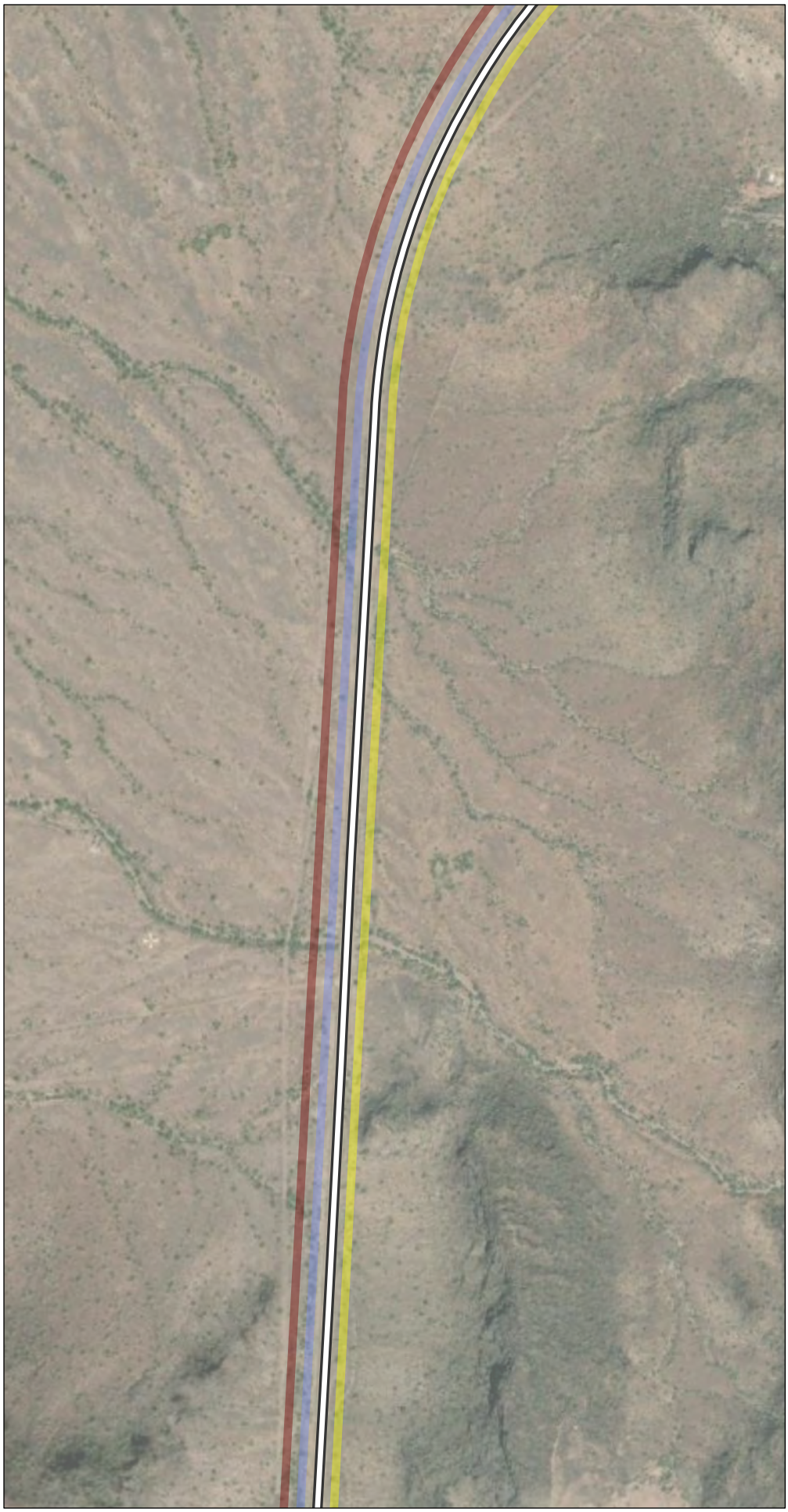
Reference

- Tohono O'odham District Boundary

0 300 600 Feet

1 inch equals 600 feet





Recommended Improvements

Route 15

Potential Safety Concerns

- High Crash Corridor
- Flooding Issue
- No Sidewalks
- Open Range, No Fencing
- No Shoulders
- Deteriorating Striping
- No Lighting
- Poor Pavement
- Curvy Roadway

Recommended Improvement *

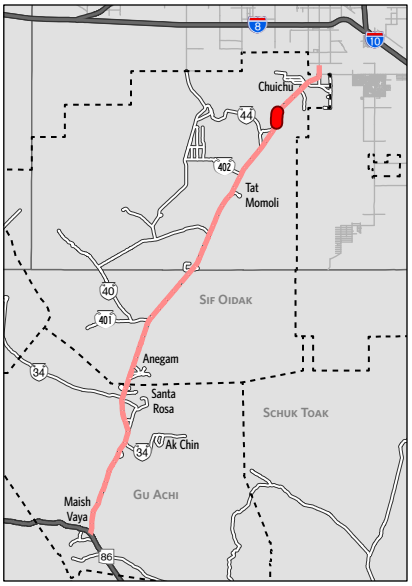
* Also reference overview page for corridor-wide improvement recommendations

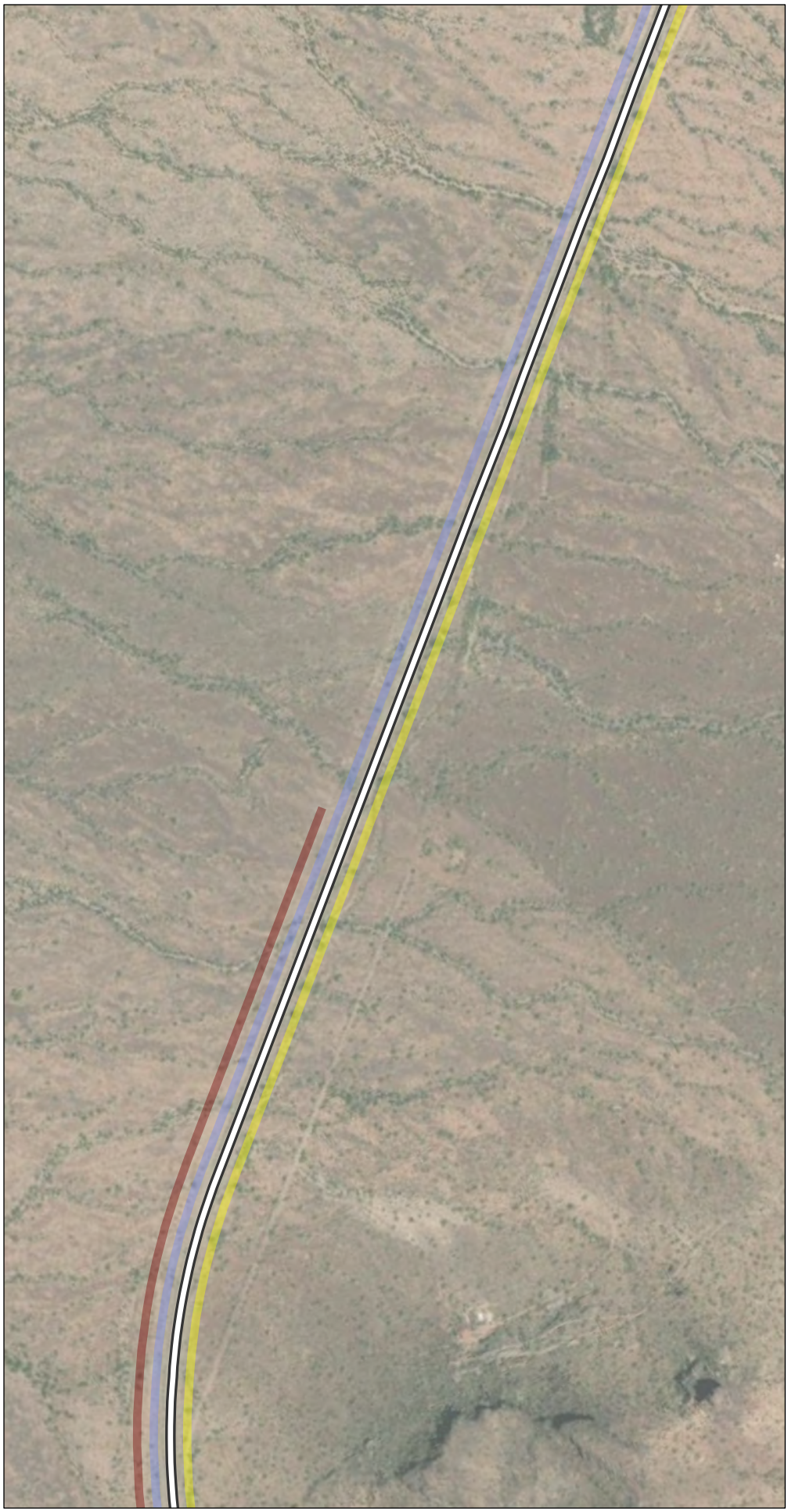
Reference

- Tohono O'odham District Boundary

0 300 600 Feet

1 inch equals 600 feet





Recommended Improvements

Route 15

Potential Safety Concerns

- High Crash Corridor
- Flooding Issue
- No Sidewalks
- Open Range, No Fencing
- No Shoulders
- Deteriorating Striping
- No Lighting
- Poor Pavement
- Curvy Roadway

Recommended Improvement *

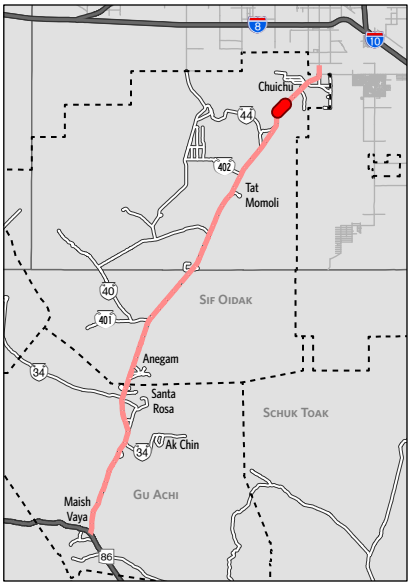
* Also reference overview page for corridor-wide improvement recommendations

Reference

- Tohono O'odham District Boundary

0 300 600 Feet

1 inch equals 600 feet



Recommended Improvements

Route 15

Potential Safety Concerns

- High Crash Corridor
- Flooding Issue
- No Sidewalks
- Open Range, No Fencing
- No Shoulders
- Deteriorating Striping
- No Lighting
- Poor Pavement
- Curvy Roadway

Recommended Improvement *

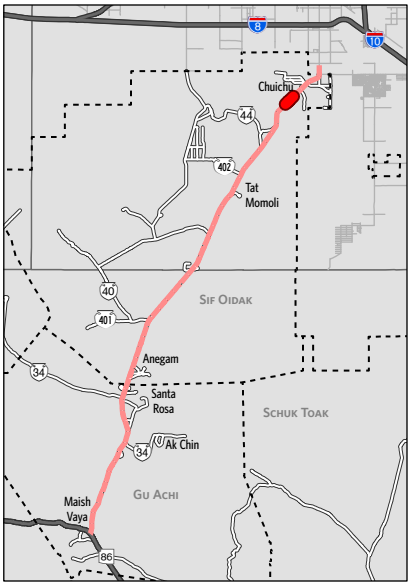
* Also reference overview page for corridor-wide improvement recommendations

Reference

- Tohono O'odham District Boundary

0 300 600 Feet

1 inch equals 600 feet



Recommended Improvements

Route 15

Potential Safety Concerns

- High Crash Corridor
- Flooding Issue
- No Sidewalks
- Open Range, No Fencing
- No Shoulders
- Deteriorating Striping
- No Lighting
- Poor Pavement
- Curvy Roadway

Recommended Improvement *

- Spot Improvement

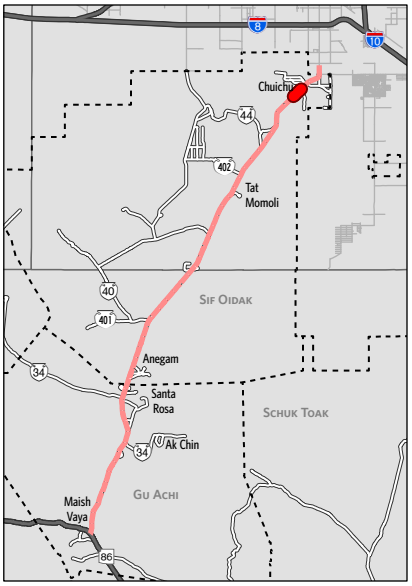
* Also reference overview page for corridor-wide improvement recommendations

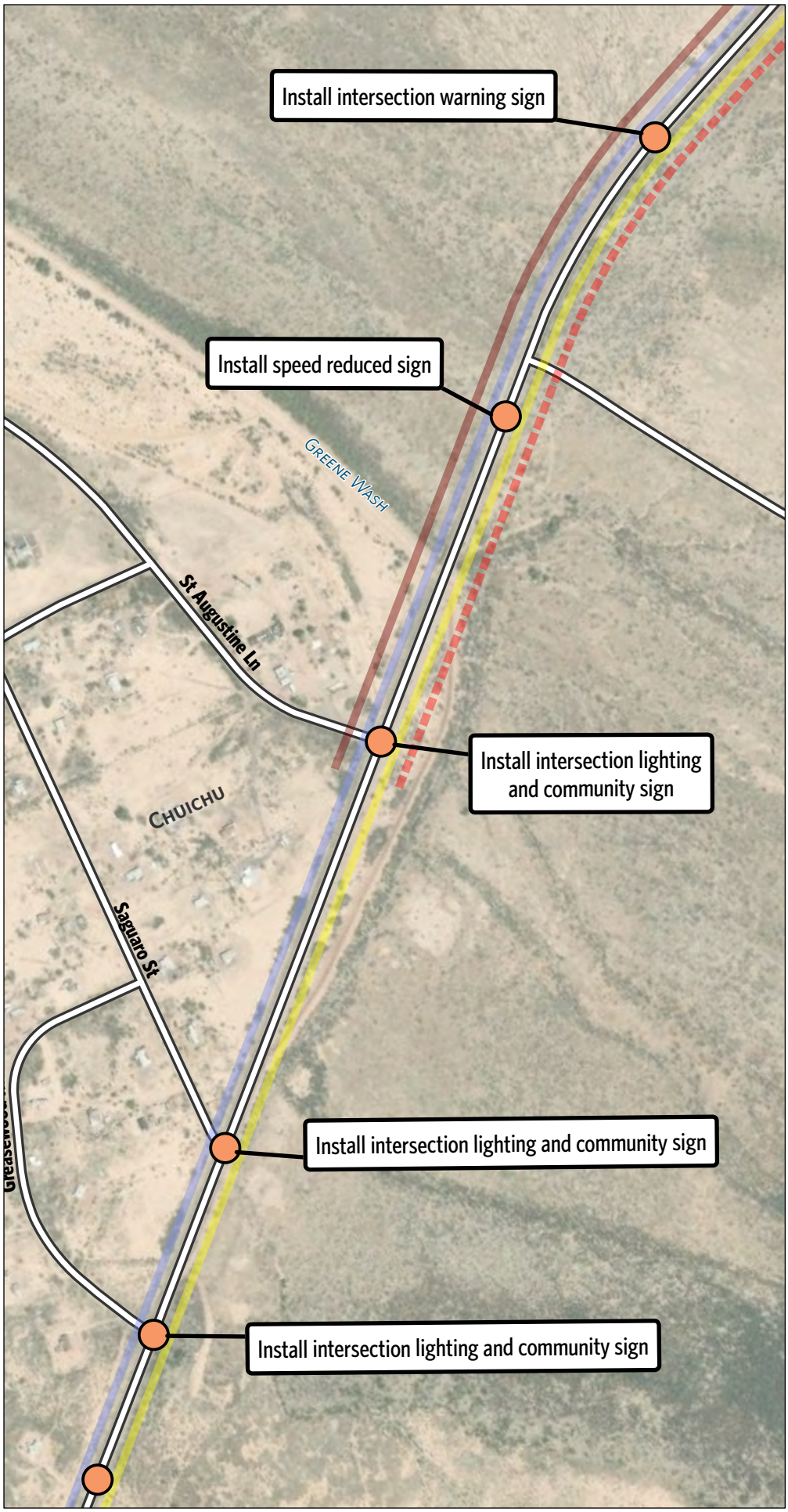
Reference

- Tohono O'odham District Boundary

0 300 600 Feet

1 inch equals 600 feet





Recommended Improvements

Route 15

Potential Safety Concerns

- High Crash Corridor
- Flooding Issue
- No Sidewalks
- Open Range, No Fencing
- No Shoulders
- Deteriorating Striping
- No Lighting
- Poor Pavement
- Curvy Roadway

Recommended Improvement *

- Spot Improvement

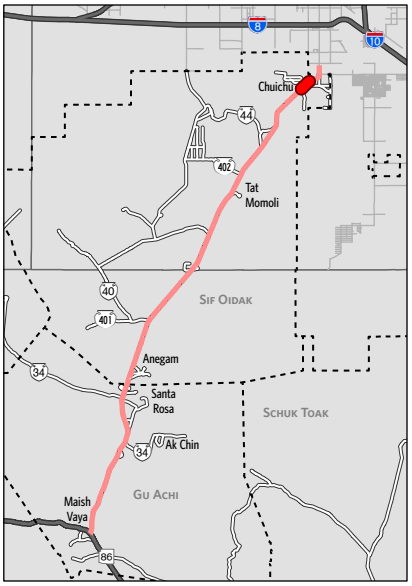
* Also reference overview page for corridor-wide improvement recommendations

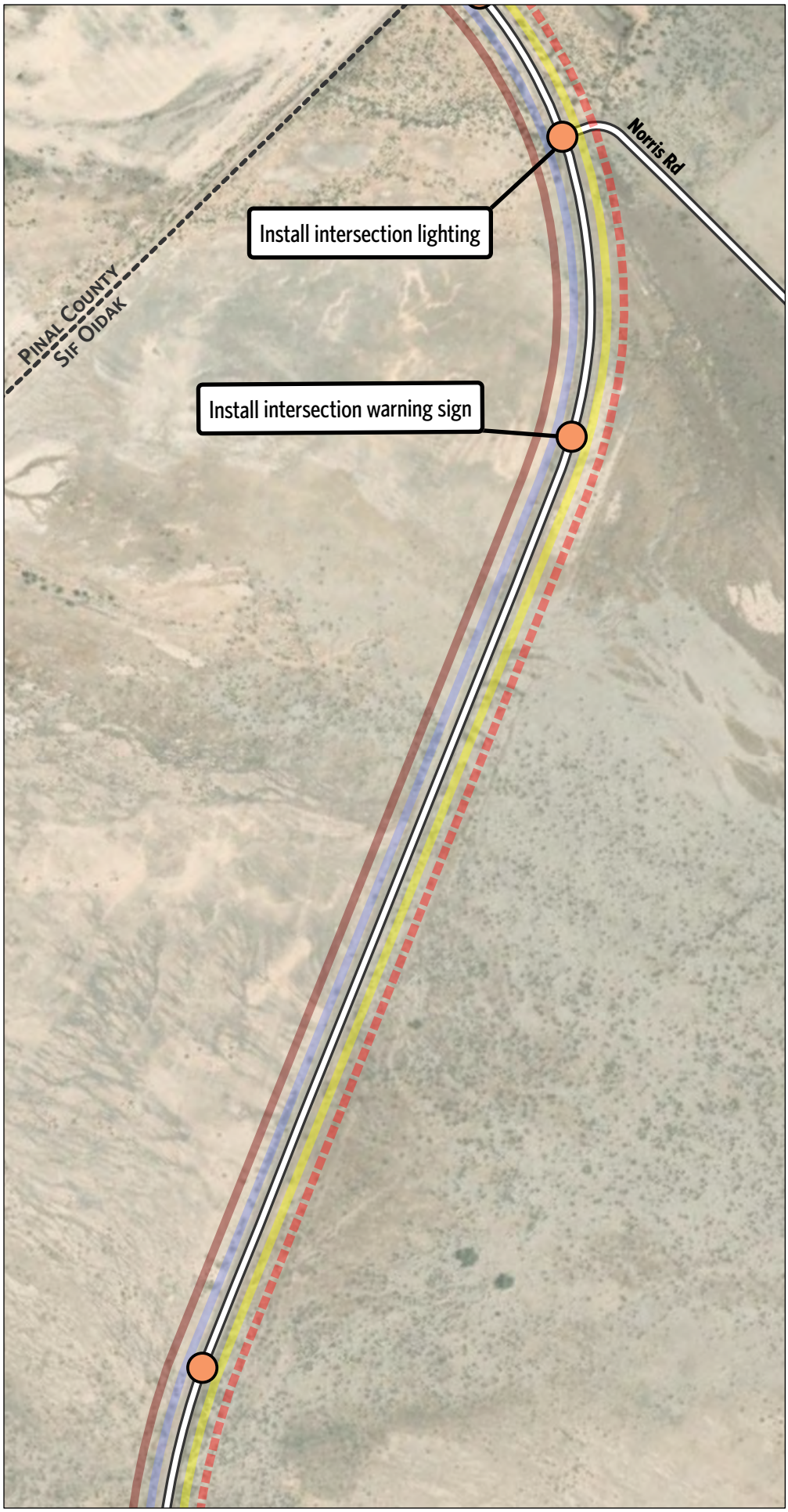
Reference

- Tohono O'odham District Boundary

0 300 600 Feet

1 inch equals 600 feet





Recommended Improvements

Route 15

Potential Safety Concerns

- High Crash Corridor
- Flooding Issue
- No Sidewalks
- Open Range, No Fencing
- No Shoulders
- Deteriorating Striping
- No Lighting
- Poor Pavement
- Curvy Roadway

Recommended Improvement *

- Spot Improvement

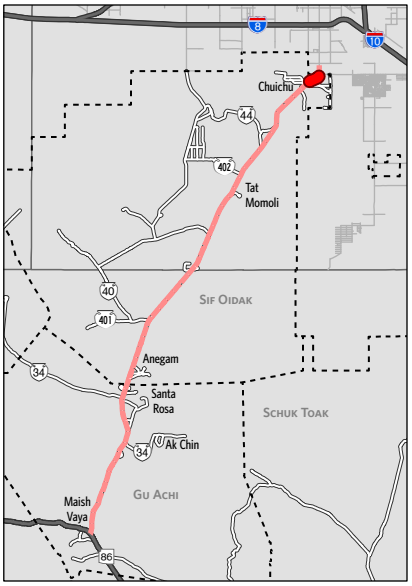
* Also reference overview page for corridor-wide improvement recommendations

Reference

- Tohono O'odham District Boundary

0 300 600 Feet

1 inch equals 600 feet



Recommended Improvements

Route 15

Potential Safety Concerns

- High Crash Corridor
- Flooding Issue
- No Sidewalks
- Open Range, No Fencing
- No Shoulders
- Deteriorating Striping
- No Lighting
- Poor Pavement
- Curvy Roadway

Recommended Improvement *

- Spot Improvement

* Also reference overview page for corridor-wide improvement recommendations

Reference

- Tohono O'odham District Boundary

0 300 600 Feet

1 inch equals 600 feet