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Pinal County, Arizona
Open Space and Trails Department

Master Plan for the
Pinal County Segment of
the Central Arizona Project
CAP National Recreation Trail
November 2015



Prepared by
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CAP Trail Master Plan Pinal County Segment



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Section 1 Introduction

Introduction:

The Central Arizona Project aqueduct extends through Pinal County delivering water from the Colorado River to users within Pinal County and to users in Pima County to the south. The construction of this aqueduct created an uninterrupted corridor of land that is publicly owned, generally flat, and most suitable for the development of a multi-use, non-motorized, trail.

The idea of having a recreational trail along the 336 mile Central Arizona Project corridor dates to the initial planning and design of the project. The original plans for the canal, as developed by the United States Department of the Interior Bureau of Reclamation, recognized the benefits of a parallel trail and specifically identified low impact recreational trails as an auxiliary use of the corridor. While the original plans did not identify a specific alignment for the trail, the concept was then, and continues to be, a key element of the overall project.

While only small portions of the overall Central Arizona Project (CAP) Trail have been constructed, its potential to serve as a recreational resource, and as a principal element of the trail systems of communities it passes through, has been recognized. In 2003, the trail was designated as a National Recreation Trail. It has also been made an integral part of planned trail systems being developed by several Arizona counties and local jurisdictions.



Figure 1-A: Project Location

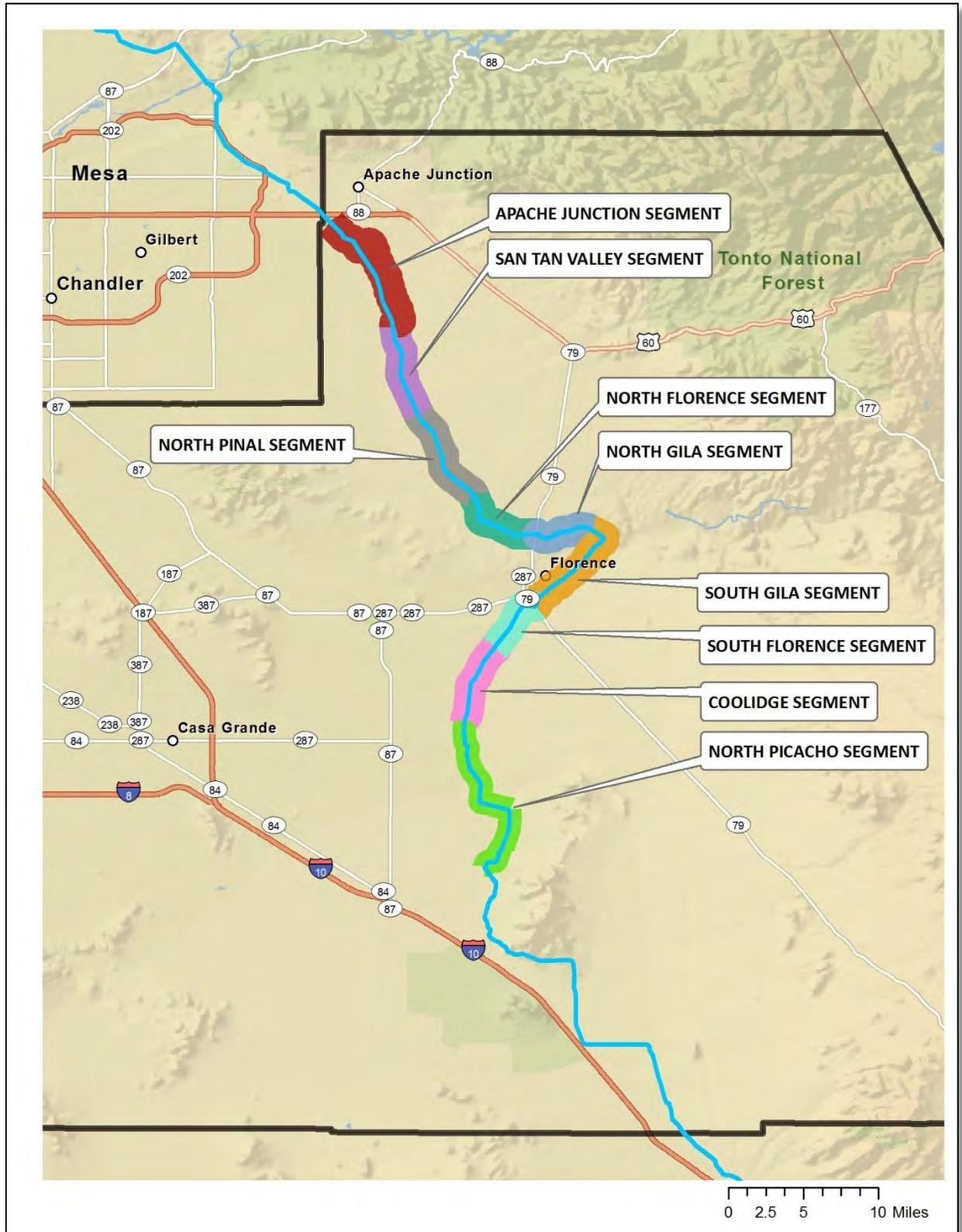


Figure 1-B: Trail Corridor Map (Trail Corridor Segments in Pinal County)

The National Recreation Trail System:

The National Trail System Act of 1968 (Public Law 90-543) authorized the creation of a national trail system consisting of National Recreation Trails, National Scenic Trails, and National Historic Trails. While National Scenic Trails and National Historic Trails can only be designated by an act of Congress, National Recreation Trails may be designated by the Secretary of the Interior or the Secretary of Agriculture to recognize exemplary trails of local and regional significance.

The CAP Trail was designated as a National Recreation Trail by the Secretary of the Interior, Gale Norton, on June 5, 2003. The designation was made to recognize the many public benefits that will be realized when the construction of the CAP Trail is completed.

CAP Trail Planning by Others:

Pinal County's neighbors to the north and south, Maricopa County and Pima County, have each prepared plans for the CAP Trail within their boundaries. During the preparation of the Pima County master plan, Pima and Pinal County partnered to develop a plan that includes that portion of the corridor from the Picacho Mountains to the county line. Small segments of the CAP Trail have been constructed in Pima and Maricopa County. The trail construction will continue on a phased basis over a period of many years.

The CAP Trail as a Component of the Pinal County Trail System:

Recognizing the potential benefits of the CAP Trail to the citizens of Pinal County, the 2007 "Pinal County Open Space and Trails Master Plan," made the CAP Trail a centerpiece and the central spine of a diverse regional trail system.

This project was authorized and implemented as a follow-up to the overall Pinal County open space and trail system plan. This project advances the development of the CAP Trail in Pinal County by:

- Defining a specific trail alignment
- Identifying appropriate points of access
- Establishing basic standards for trail construction
- Identifying partners to assist Pinal County with trail construction and maintenance

The CAP Trail as a Component of the Sun Corridor Trail:

The Sun Corridor Trail is a planned facility that will extend from the United States / Mexico border near Douglas, Arizona to Las Vegas, Nevada. It will cover a distance of more than 1,000 miles. The trail will consist of numerous regional trails that are linked together to form the Sun Corridor Trail. One of the regional trails is the CAP Trail through Pinal County.

As a key link near the center of the proposed trail, the CAP Trail will enable the Sun Corridor Trail to connect the communities of Douglas, Sierra Vista, Tucson, and Marana to the south with the communities of Phoenix, Prescott, Sedona, Flagstaff, Williams, Kingman, and Las Vegas to the north.

Purpose and Need:

As with any large-scale public works project there was a need to refine the broad concept for the CAP Trail and develop a specific but flexible master plan that can be:

- Approved by the Pinal County Board of Supervisors making it eligible for future funding as will be needed for final engineering and construction.
- Reviewed and approved by the United States Bureau of Reclamation, the owner of the underlying property.
- Reviewed and approved by the Central Arizona Water Conservation District, the operator of the CAP aqueduct.
- Incorporated into the general plans and trail plans of communities along the corridor making these communities partners in the development of the trail.
- Used by agencies and departments, such as the Arizona Department of Transportation, to make design and engineering decisions related to improvements and modifications to roadways that cross the trail corridor.

This master plan addresses these needs and provides a common set of standards for trail development along the entire 62 mile long unplanned reach of the CAP Trail in Pinal County.

The Planning Process:

Through a competitive, qualifications-based process, McGann & Associates Landscape Architects was selected to work with Pinal County on the development of this master plan. The firm was charged with conducting and / or implementing: field reconnaissance, data collection, inter-agency coordination, solicitation of public input, trail planning, and master plan development.

Other parties were directly involved and made significant contributions to this master plan. One of these parties was the Pinal County Open-Space and Trails Commission. Periodic presentations were made to the Commission and the commissioners provided valuable information and insight related to local conditions along the corridor and the needs and aspirations of Pinal County residents as they relate to trail development.

A multi-agency working group was also created to assist with project planning. This group included representatives of the; United States Bureau of Reclamation, Central Arizona Water Conservation District, Arizona State Land Department, Arizona Game and Fish Department, Pinal County Planning Department, Pinal County Public Works Department, Pima County, as well as representatives from the communities of Apache Junction, Queen Creek, Florence, Coolidge, and Marana.

This working group provided information related to potential partnerships, concurrent projects along the corridor, natural and cultural resource protection, applicable development guidelines, and other project related issues.

This master plan also reflects the input of Pinal County citizens including land owners, trail users, businesses, and interested residents. Information related to all project meetings and presentations was posted on the Pinal County website for review. Also posted was information related to how to provide feedback. An advertised public meeting was also conducted on August 26, 2015 at the Pinal County offices. At this meeting a draft master plan was presented and written comments were solicited. The comments provided were used to amend and update the draft plan and create the Master Plan presented herein.

Trail Segments:

During the planning process, nine separate segments of the CAP Trail through Pinal County were identified. These segments reflect the cities and towns present along the corridor and they respond to the varied conditions present in different locations. Each segment will likely have a different set of partners who will work with Pinal County over the long-term to construct the CAP Trail.

The designated segments also reflect a likely sequence of construction. Those located close to developed or developing urban areas are likely to be constructed first. These areas have a significant and growing user population. They are also areas where there are local governments with departments and staff directly involved in trail planning and construction.

The designated segments also reflect varying complexity in trail construction. In some locations, the trail is largely in-place, requiring only fence and gate improvements to make the CAP Trail suitable for public use. Within other segments, trail construction will be more difficult and time consuming due to the canals, roads, and other existing features along the corridor.

Organization of Master Plan Report:

This Master Plan is organized with chapters related to each of the nine trail segments. Maps, cross-sections, descriptions, and data summaries are provided for each segment. Also provided are chapters related to development standards and to plan implementation.

Also included is an Appendix that describes the highways and roads the CAP Trail will cross. Although few in number, each of these trail / roadway crossings must be made safe for both motorists and trail users. This appendix includes specific recommendations for the signage and other improvements needed to create safe and functional conditions at each crossing location.

CAP Trail Master Plan
Pinal County Segment



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Section 2
Apache Junction Segment

2. Apache Junction Segment

Overview:

The Apache Junction Segment of the CAP Trail extends from Baseline Road to the alignment of Germann Road which is the southern boundary of the City of Apache Junction's planning area. Within this segment there are three unique opportunities. One of these is to allow the trail to be routed outside the CAP right-of-way and through preserved natural open space. This condition occurs at the northern end of the Apache Junction segment.

The preserved natural open space consists of lands upstream of two flood retarding structures and along associated drainage channels. Within these lands, urban development will be precluded due to periodic flooding. By routing the trail through this area, there is an opportunity to introduce variety to the trail by moving it away from the often tight confines of the CAP right-of-way.



Figure 2-A: Photo - Trail Corridor at South Ironwood Drive (Trail to cross below bridge to right of photo).

A second opportunity is the ability of this segment to be an integral part of an urban trail system. The City of Apache Junction plans to incorporate this portion of the trail into its municipal trail system and connect it to other trails to create a 4.5 mile loop. This loop will feature a staging area for access to the CAP trail and will also make a connection to a planned city park.

The third opportunity is the potential for a grade separated crossing of the CAP Trail and a major street or highway. This occurs at South Ironwood Drive where a new roadway bridge has been constructed with a span and clear height that allows the trail to pass under the bridge and eliminate conflicts

between trail users and motor vehicles. This bridge should be used as a prototype for future roadway bridges that cross the CAP.

Trail Description:

The Apache Junction Segment of the CAP Trail will begin at Baseline Road (CAP milepost 202.3). It will extend along the west side of the aqueduct a distance of approximately 0.9 miles to the alignment of South Ironwood Drive. This portion of the trail will be on the west side of the right-of-way to facilitate a connection to that portion of the CAP trail north of Baseline Road in Maricopa County.

At South Ironwood Drive, the trail will cross over the old roadway bridge above the CAP to reach the east side of the aqueduct where it will extend south through Pinal County.



Figure 2-B: Photo - View of Superstition Mountains from Proposed Trail Corridor

2. Apache Junction Segment

This old roadway bridge was replaced with a new flyover and is currently closed to motor vehicle traffic. The new Ironwood Drive bridge structure has a sufficiently long span that the CAP Trail can be routed under the bridge structure to provide grade separation between the new roadway and the trail.

The trail will then extend east and will exit the CAP right-of-way near the north end of the existing Powerline Road Flood Retarding Structure (FRS). This existing FRS consists of an earthen levee but the structure is being decommissioned in conjunction with flood control improvements being designed and constructed by the Flood Control District of Maricopa County. It is anticipated that at least portions of the levee will be retained to harvest stormwater runoff as needed to support the biologically rich green-up area upstream of the levee.

The trail will follow the top of the decommissioned levee in this area. By constructing the trail on top of the levee, trail users will be provided with panoramic views of the Superstition Mountain range to the north and east and of the metro Phoenix basin to the west.



Figure 2-C: Photo - View of Green-Up Area and Preserved Natural Open Space (Trail to be routed east of Green-Up Area)

At the south end of the Powerline FRS, the trail will swing west, cross the Siphon Wash drainage channel, and then proceed south paralleling the CAP aqueduct, but approximately one-half mile to the east. The trail corridor will be within a preserved natural area, upstream of the Vineyard Road FRS. The area upstream of the FRS will be retained as natural open space as it is within an area potentially subject to flooding. The trail alignment will be at or near the upper edge of the flood pool to minimize the frequency of inundation.

The trail will continue south paralleling the Vineyard Road FRS and the CAP aqueduct for approximately five miles to a location between the Vineyard Road FRS and the Rittenhouse FRS. At this point it will extend west back towards the CAP right-of-way near the alignment of Germann Road.

Connections and Trailheads:

The trail will connect to the planned Apache Junction Loop Trail at the northern end of this segment. The loop will start where the CAP trail crosses below Ironwood Drive. It will extend north and then east following the alignment of Baseline Road to a planned trailhead. From the trailhead, it will extend south following a stormwater intercept channel to the Siphon Wash drainage channel. At this point, it extends west and reconnects with the CAP Trail.

The Pinal County "Open Space and Trails Master Plan" and the City of Apache Junction trails plan both call for the development of a trail along Siphon Wash. The CAP Trail, via the Apache Junction Loop Trail, will make a connection to this planned recreational facility.

Development Issues:

The routing of portions of the trail through lands outside of the CAP right-of-way will necessitate coordination with the Arizona State Land Department, the owner of the subject property. Established procedures for acquiring the trail corridor will need to be implemented.

Coordination will also be required with the Flood Control District of Maricopa County, the agency charged with managing the flood control improvements in this location. In-as-much as trail use is compatible with floodplain management, it may be appropriate to co-locate the trail with an operations and maintenance road. The responsibilities of the various collaborating parties will need to be established.

As with all segments of the CAP Trail, it will be necessary to work collaboratively with the United States Bureau of Reclamation to ensure that the trail's construction and use will not adversely impact protected cultural or biological resources. If potential conflicts with cultural resources are identified, appropriate mitigation measures will be implemented. If wildlife habitat is impacted, full replacement or enhancement of existing habitat will be required.

Potential Development Partners:

This trail segment is within the planning boundary of the City of Apache Junction and the concept of the CAP Trail is already embodied in various plans that have been adopted by the City. Unlike other segments of the trail, there is an existing resident population that will use this recreational amenity as soon as it is opened to the public. As such, the City of Apache Junction will be the primary entity responsible for the development of this segment.

Trail user organizations and advocacy groups may also be willing to partner with Pinal County and the City of Apache Junction on the development, operation, and maintenance of this segment of the CAP Trail.

Trail Data Summary:

Provided on the following page is a summary that identifies the specific features of this trail segment.

2. Apache Junction Segment

Trail Data Summary - Apache Junction Segment			
Feature:	Location / Limits:	Notes:	References
Begin:	Mile Post (MP): 0.0	Baseline Road	CAP MP 202.3
End:	MP: 9.62	Germann Road Alignment	CAP MP 210.3
Segment Length:	9.62 Miles		
Jurisdiction:	MP 0.0 to MP 4.0	City of Apache Junction	CAP MP 202.3 to 204.9
	MP 4.0 to MP 9.62	Pinal County	CAP MP 204.9 to 210.3
Land Ownership:	MP 0.0 to MP 1.17	CAP/BOR	CAP MP 202.3 to 203.2
	MP 1.17 to MP 9.4	Arizona State Trust Land	CAP MP 203.2 to 210.0
	MP 9.4 to MP 9.62	CAP/BOR	CAP MP 210.0 to 210.3
Proposed Alignment	MP 0.0 to MP 0.9	Canal Right - On Embankment	Section AJ-1
	MP 0.9 to MP 1.0	Existing CAP Bridge to Canal Left	N/A
	MP 1.0 to MP 1.2	Canal Left - On Embankment	N/A
	MP 1.2 to MP 1.3	Ramp up to Existing FRS	N/A
	MP 1.3 to MP 2.8	On Existing FRS	Section AJ-2
	MP 2.8 to MP 9.4	On proposed MCFCD maintenance road	Section AJ-3
	MP 9.4 to MP 9.6	Canal Left - On Embankment	Section AJ-4
Roadway Crossings (Existing Roads)	MP: 0.0	Baseline Road	See Appendix A
	MP: 1.0	Ironwood Drive	See Appendix A
Fencing:	MP 0.0 to MP 0.9	Canal Right - New or Relocated Fence	
	MP 0.9 to MP 1.0	Existing Fence	
	MP 1.0 to MP 1.2	Canal Left - New or Relocated Fence	
	MP 1.2 to 9.4	Existing Fence	
	MP 9.4 to 9.6	Canal Left - New or Relocated Fence	
Trail Connections:	MP 3.1	Siphon Draw Trail	Apache Jnct. Gen. Plan
	MP 1.2 & MP 3.3	CAP Trailhead Loop Trail	
Trailheads:	MP: 1.2	Baseline Road Trailhead (Proposed)	via CAP Trailhead Loop
Special Features:	MP: 1.0	CAP crossing via old Ironwood bridge	CAP MP 203.16
	MP: 1.2	Ramp up to top of FRS	N/A
	MP: 2.8	Ramp down to maintenance Rd. trail	

2. Apache Junction Segment

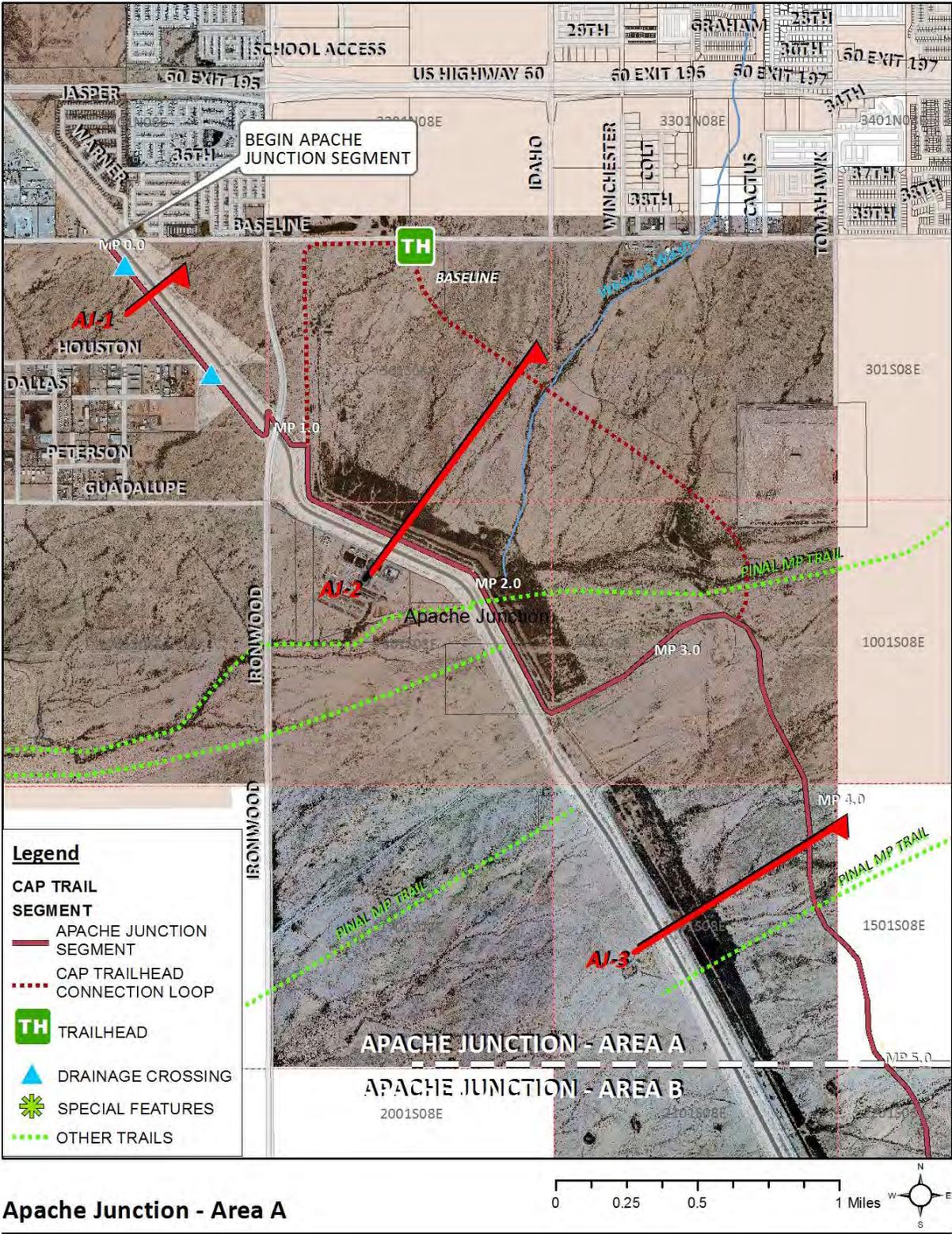


Figure 2-D – Trail Map – Apache Junction Segment – Area A

2. Apache Junction Segment

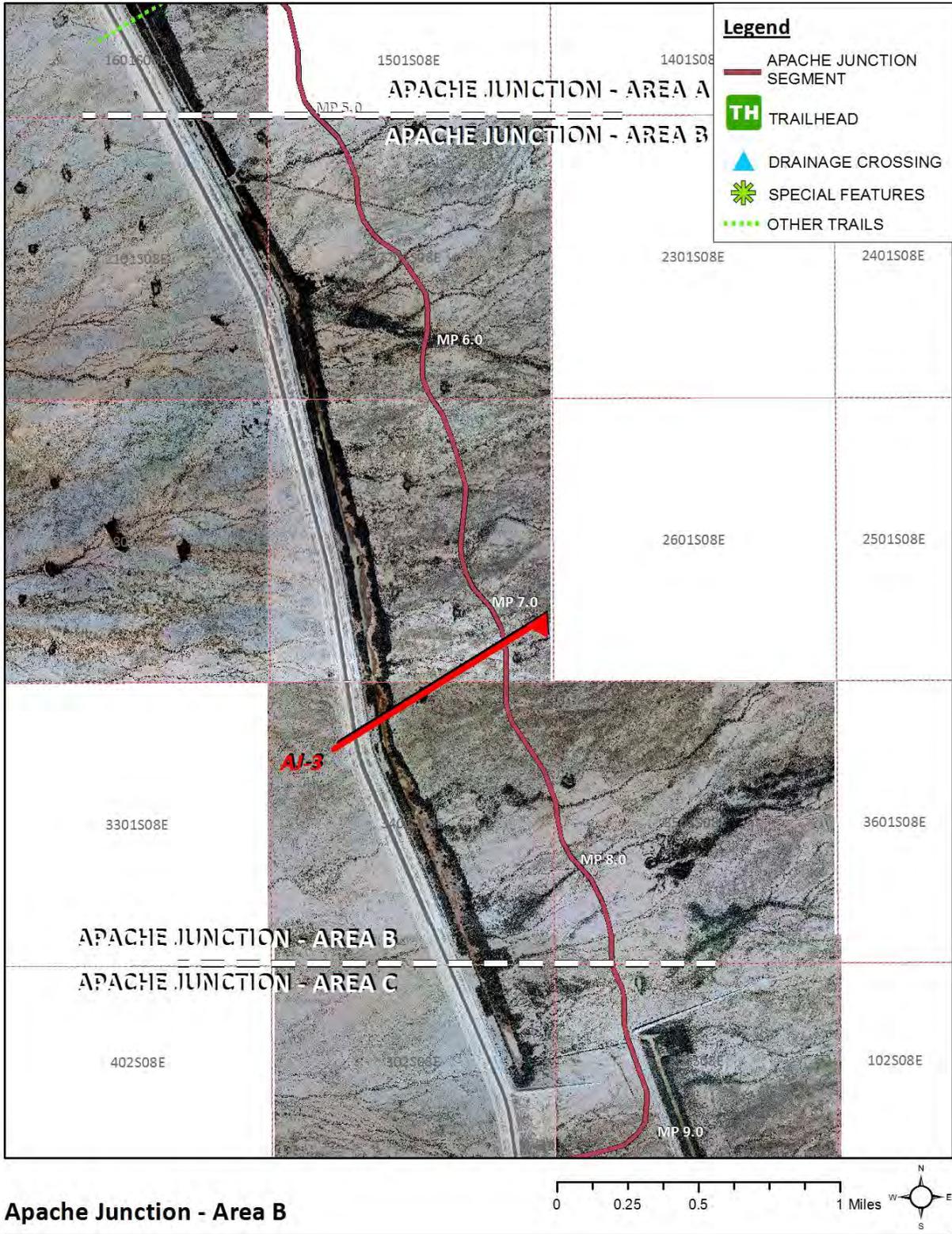


Figure 2-E – Trail Map – Apache Junction Segment – Area B

2. Apache Junction Segment

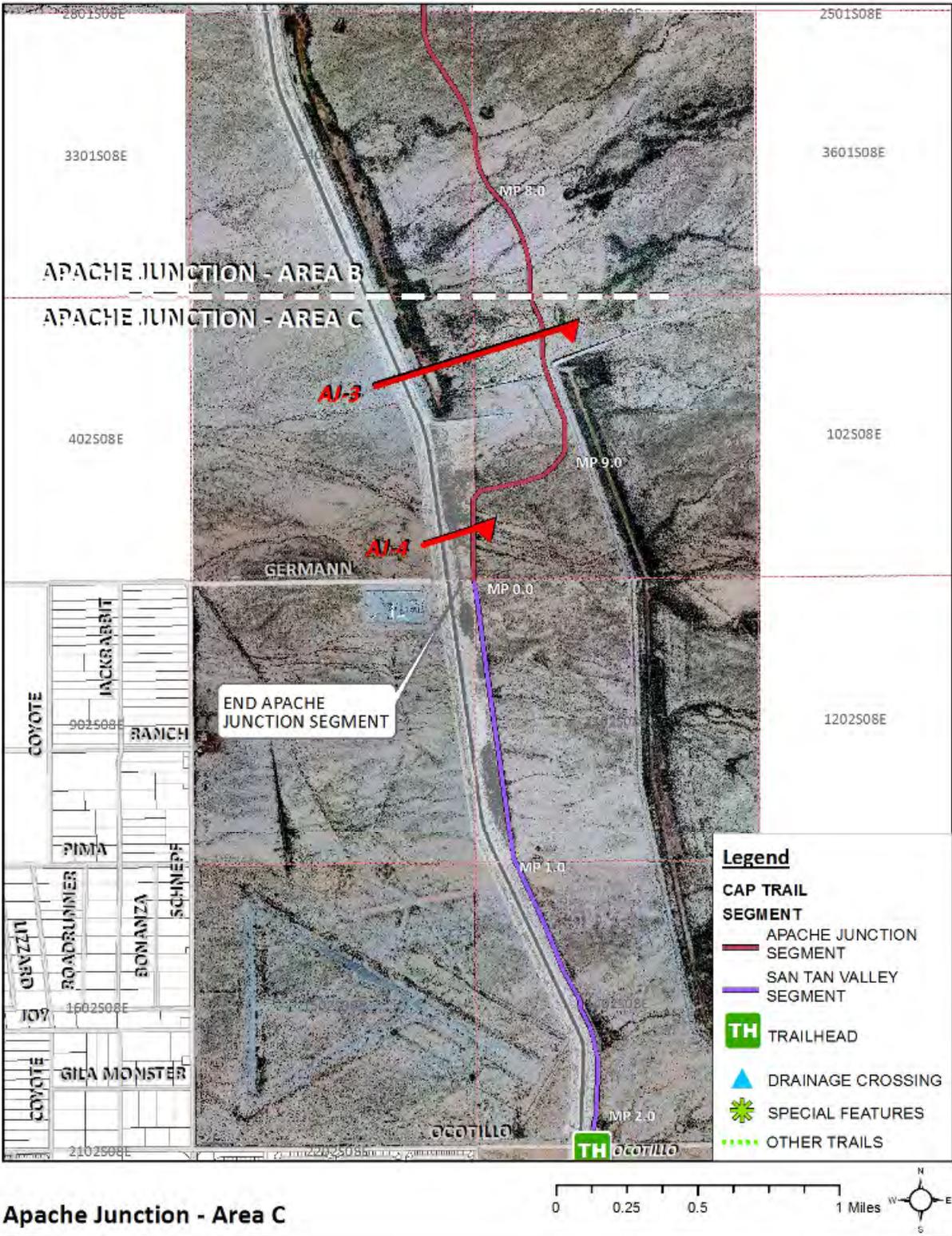


Figure 2-F – Trail Map – Apache Junction Segment – Area C

Typical Cross Sections – Apache Junction Segment:

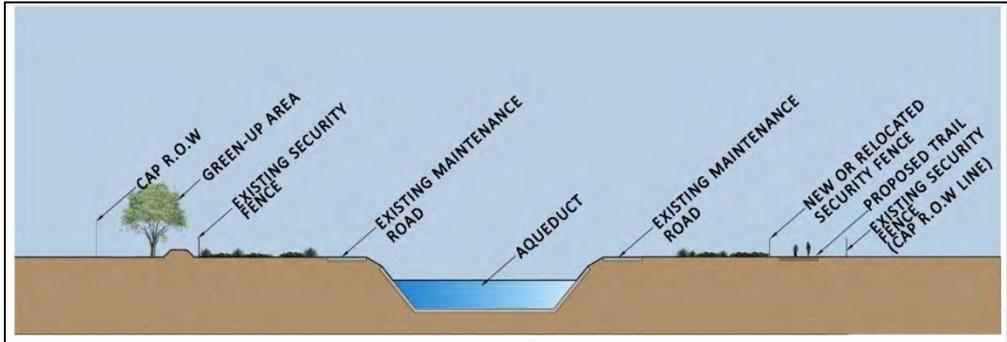


Figure 2-G: Cross Section AJ-1 – Typical of Mile Post 0.0 to Mile Post 0.9

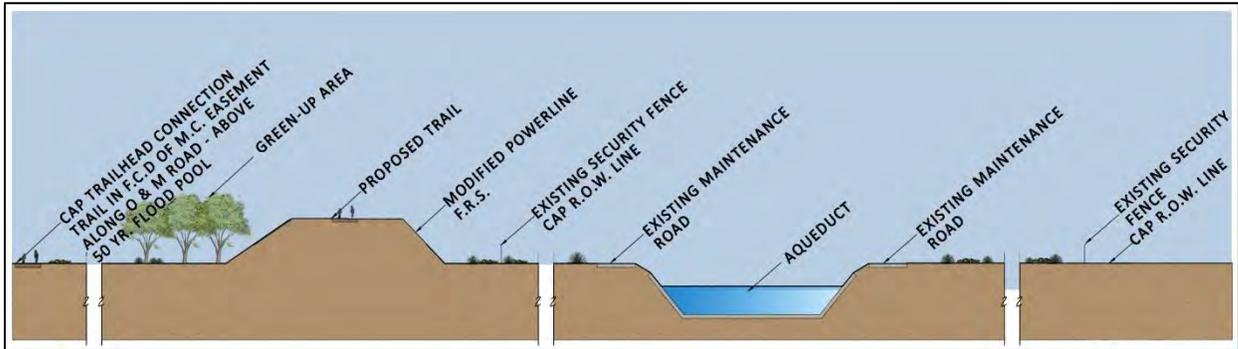


Figure 2-H: Cross Section AJ-2 – Typical of Mile Post 1.3 to Mile Post 2.8

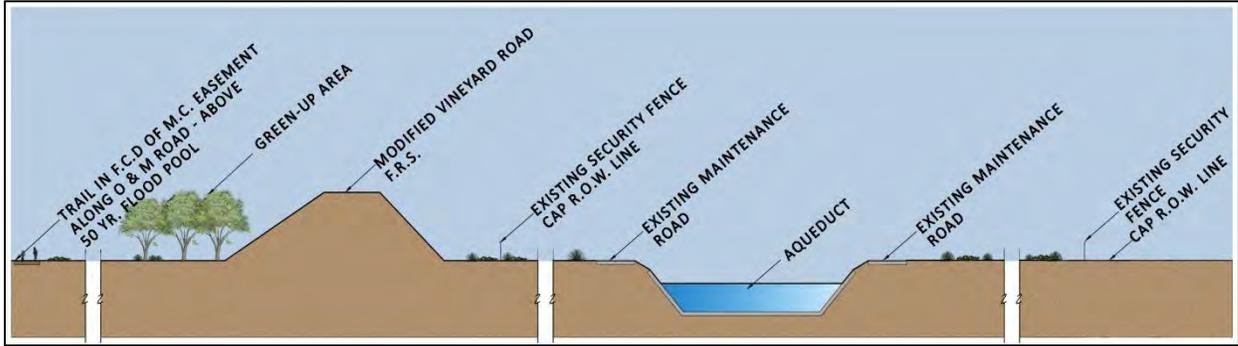


Figure 2-I: Cross Section AJ-3 – Typical of Mile Post 2.8 to Mile Post 9.4

2. Apache Junction Segment

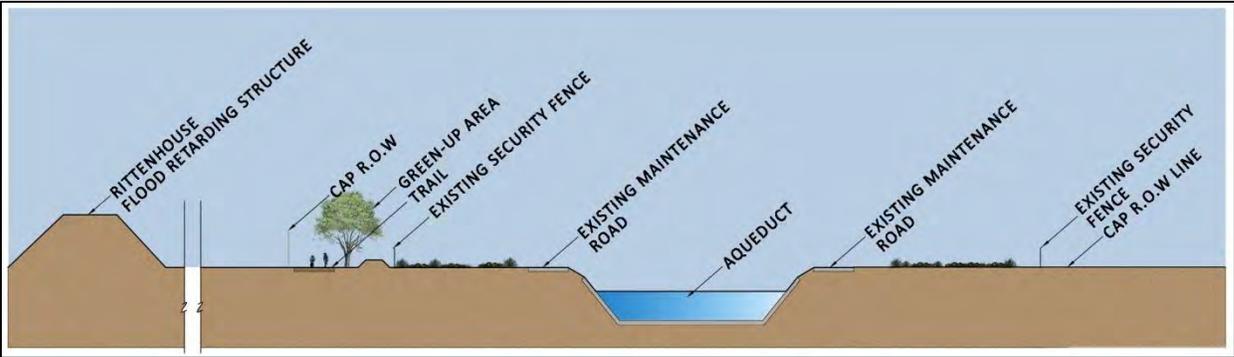


Figure 2-J: Cross Section AJ-4 – Typical of Mile Post 9.4 to Mile Post 9.6

CAP Trail Master Plan
Pinal County Segment



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Section 3
San Tan Valley Segment

3. San Tan Valley Segment

Overview:

The San Tan Valley Segment of the CAP Trail will extend from the Germann Road alignment to East Skyline Drive, a distance of approximately 6.4 miles. It will pass by the community of Queen Creek and provide for a connection to the proposed Queen Creek Trail.

The segment will also follow portions of the Sonoqui Dike. From the top of the dike, trail users will be afforded broad vistas of the preserved natural open space east and upstream of this structure as well as views of the canal and the desert landscape to the west.

Trail Description:



Figure 3-A: Photo - View towards community of Queen Creek from the Ocotillo Road Bridge above the CAP Aqueduct

This trail segment will begin at CAP milepost 210.3, which aligns with an extension of Germann Road, and proceed south along the embankment east of the aqueduct (canal left), a distance of approximately 2.1 miles. At this location it will intersect with Ocotillo Road. Ocotillo Road is currently closed to private motor vehicle traffic but does include a bridge across the canal. This bridge will allow individuals living west of the CAP to access the trail on the east side of the aqueduct.

The trail will then continue south 1.3 miles on the existing embankment (canal left) to a point where the trail will connect with the Sonoqui Dike. The trail will be on top of the Sonoqui Dike for approximately 3 miles where it will intersect with East Skyline Drive at C.A.P. mile post 216.6.

Trail Connections and Trailheads:

The San Tan Valley segment of the CAP Trail will include a connection to the Queen Creek Trail, a regional trail identified in the Pinal County Open Space and Trails Master Plan. Connections to future local trails, as may be constructed by the Town of Queen Creek or others, could be developed in the future. A CAP Trail trailhead is proposed for the vicinity of Ocotillo Road. This could potentially be built on existing CAP right-of-way, but other locations adjacent to or near the CAP should also be investigated as alternatives.

Development Issues:

Ocotillo Road is currently gated approximately 0.4 miles west of the CAP canal and at the bridge over the aqueduct. It will be necessary to collaborate with appropriate parties to construct pedestrian / equestrian gates at these locations and to ensure that trail users have the legal right to use Ocotillo Road as an access corridor.

3. San Tan Valley Segment

United States Bureau of Reclamation records indicate that there are known cultural resource sites in the vicinity of this trail segment. It will be necessary to work closely with the Bureau to ensure that the development and use of the trail does not have adverse direct or indirect impacts on these resources.

Similarly it will be necessary to collaborate with the Bureau to ensure the protection of biological resources in this location.

Potential Development Partners:

This trail segment is within the planning boundary of the Town of Queen Creek. A stated goal of the Town's "Parks, Trails, and Open Space Master Plan" is to create a comprehensive trail system within the Queen Creek planning area. The CAP Trail can be a key component of this system and the Town of Queen Creek should be encouraged to take the lead in the final design and construction of this trail segment.

Trail user organizations and advocacy groups may also be willing to partner with Pinal County on the development, operation, and maintenance of the San Tan Valley Segment of the CAP Trail.

Trail Data Summary:

Provided on the following page is a summary that identifies the specific features of this trail segment.

3. San Tan Valley Segment

Trail Data Summary - San Tan Valley Segment			
Feature:	Location / Limits:	Notes:	References
Begin:	Mile Post (MP): 0.0	Germann Road Alignment	CAP MP 210.3
End:	MP: 6.4	East Skyline Drive	CAP MP 216.6
Segment Length:	6.4 Miles		
Jurisdiction:	MP 0.0 to MP 6.4	Pinal County	CAP MP 210.3 to 216.6
Land Ownership:	MP 0.0 to MP 6.4	CAP/BOR	CAP MP 210.3 to 216.6
Proposed Alignment	MP 0.0 to MP 2.1	Canal Left - On Embankment	STV-1
	MP 2.1 to MP 3.3	Canal Left - On Embankment	STV-2
	MP 3.3 to MP 6.4	Canal Left - On Sinoqui Dike	STV-3
Roadway Crossings (Existing Roads)	MP 2.1	Ocotillo Road (Restricted Access)	CAP MP 212.4
Drainage Crossings	MP 3.3	Dip Crossing	CAP MP 213.5
Fencing:	MP 0.0 to MP 6.4	Canal Left - Existing Fence	
Trail Connections:	MP 3.3	Queen Creek Trail	Pinal County Trails Plan
Trailheads:	MP 2.1	Ocotillo Road Trailhead	CAP MP 212.4
Special Features:	MP 3.6	Sinoqui Recharge Basins	

3. San Tan Valley Segment

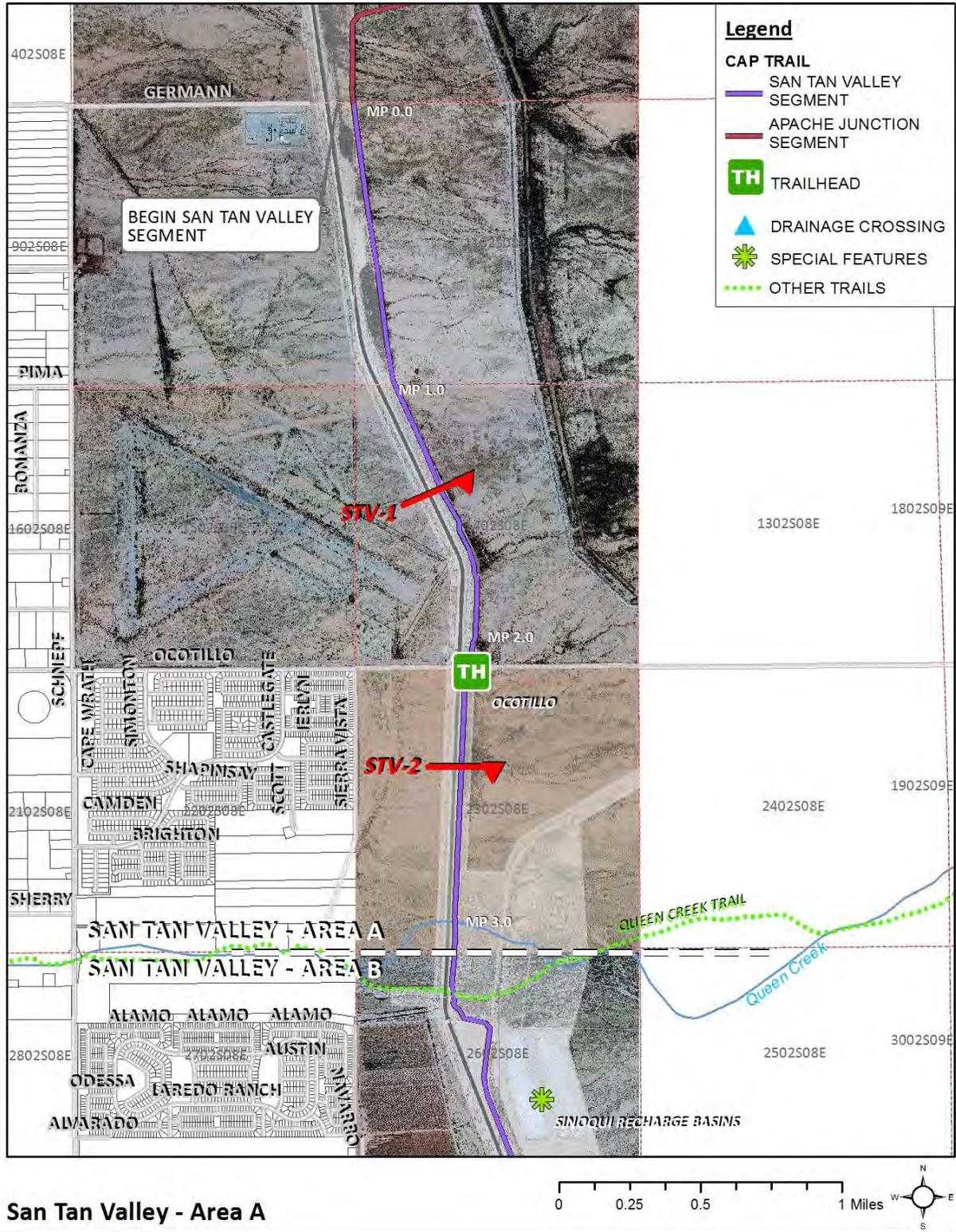


Figure 3-B: Trail Map – Area A

Typical Cross-Sections – San Tan Valley Segment:

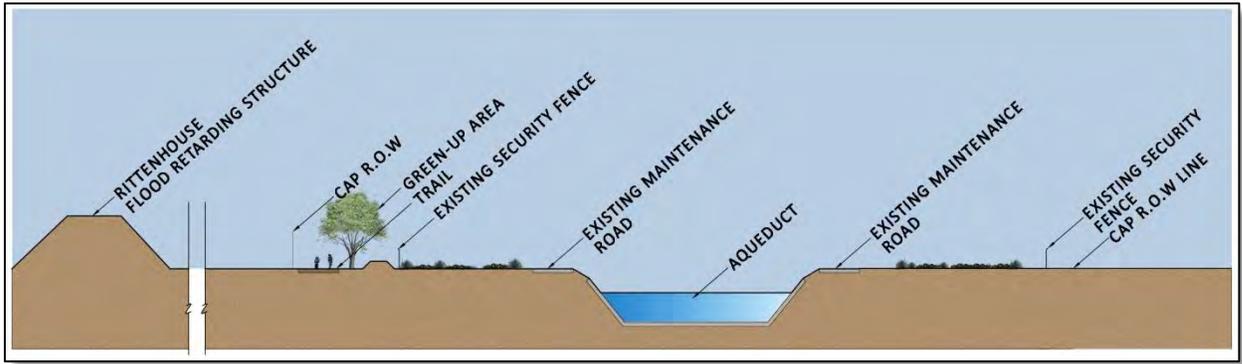


Figure 3-D: Cross-Section STV-1 - Typical of Mile Post 0.0 to Mile Post 2.1

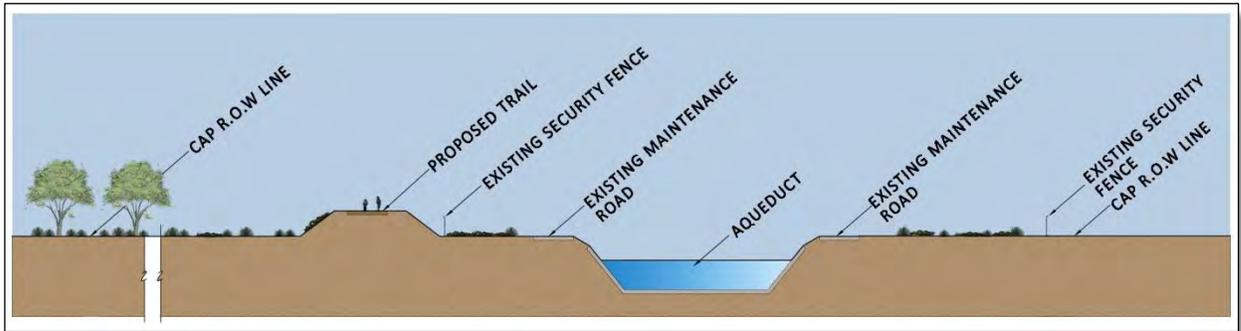


Figure 3-E: Cross Section STV-2 - Typical of Mile Post 2.1 to Mile Post 3.3

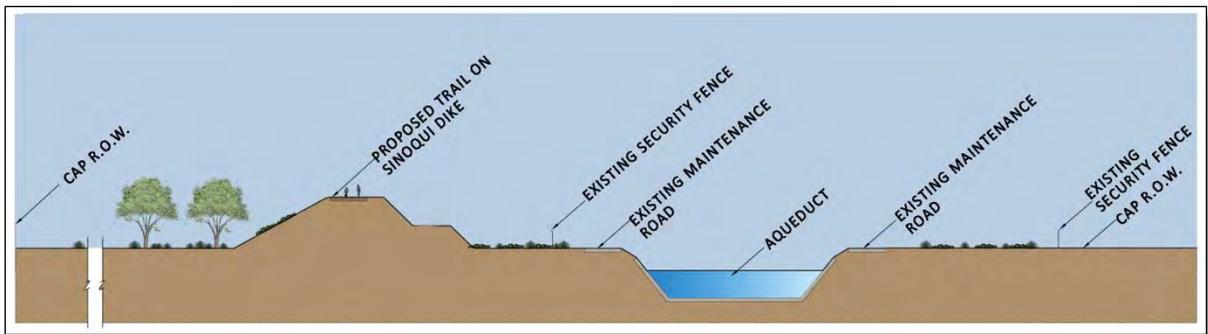


Figure 3-F: Cross Section STV-3 - Typical of Mile Post 3.3 to Mile Post 6.4

CAP Trail Master Plan
Pinal County Segment



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Section 4
Pinal North Segment

Overview:

The North Pinal Segment of the CAP Canal will extend from Skyline Road to Arizona Farms Road, a distance of approximately 6.2 miles. The trail will be constructed along the east side of the aqueduct (canal left) throughout this segment. Much of the trail will be on top of an existing embankment elevated above the canal. The remaining portions will be on the east side but at an elevation that is only slightly above the canal maintenance road.

Trail Description:

This trail segment will begin at CAP milepost 216.6 with an at-grade crossing of Skyline Drive, a two-lane Pinal County principal arterial. Both the 2014 Maricopa Association of Governments (MAG) “2035 Regional Transportation Plan” and the 2015 Central Arizona Association of Governments (CAG) “Regional Transportation Plan” call for this roadway to be improved to 4 lanes in the future. When widened, a new bridge across the CAP aqueduct will be required. This new construction will present an opportunity to create a grade-separated crossing of the roadway and the trail.



Figure 4-A: Photo: Sonoqui Dike (Portions of CAP Trail to be located on top of Dike).

South of Skyline Drive, the trail will be constructed on top of the Sonoqui Dike. This elevated location will provide for broad vistas of the upstream green-up areas to the east and of the canal and the desert landscape to the west. It will continue along the dike for approximately 2.8 miles to the southern terminus of the dike.

South of the Sonoqui Dike, the trail will cross the Magma Railroad. This rail line currently receives very little train traffic. While it will never be a busy rail corridor, traffic could increase if mining activity expands in the mines east of the CAP that are served by this rail line. A conceptual detail for the rail crossing is included in Section 11 of this report.

Continuing south, the trail will cross Judd Road, also a Pinal County highway. Initially the crossing will be at grade. Recommendations for improvements at this crossing are included in Appendix A. As with Skyline Drive, the MAG “2035 Regional Transportation Plan” calls for Judd Road to be improved to 4 lanes in the future requiring a new bridge and creating an opportunity for a grade-separated crossing. A trailhead or access node is proposed for this location.



Figure 4-B: Photo: Magma RR at proposed CAP Trail Crossing (Existing Condition).

From the rail line, the trail will continue south on an embankment of varying heights east of the aqueduct. As the trail approaches Arizona Farms Road, it will pass by a residential development with potential trail users. A trailhead in the vicinity of Arizona Farms Road is proposed to serve this population. The Pinal North Segment of the trail terminates at Arizona Farms Road (CAP mile post 222.6).

Trail Connections and Trailheads:

Trailheads are proposed in the locations where Skyline Road and Judd Road cross the CAP aqueduct. Initially, these will be small access nodes with room for the safe parking of a few vehicles. When the subject roads are widened and the bridges replaced, fully developed trailheads with space for the maneuvering and parking of trucks with equestrian trailers should be constructed.

The Magma Railroad Trail crosses this trail segment. The Magma Trail is currently unbuilt but is identified in the “Pinal County Open Space and Trails Master Plan.”

Development Issues:

There are very few issues associated with the development of the CAP Trail within this segment. No additional right-of-way will be required and the trail will be constructed on an existing, graded, level surface. New gates will be required. The requirement for new and/or relocated fence will be limited in scope. In instances where new or relocated fence is required, opportunities for fence relocation by the Central Arizona Water Conservation District (CAWCD) should be explored. If the CAWCD is not able to perform this work, the cost of this work will be the responsibility of Pinal County.

The trail crossing of the Magma Railroad will require the installation of a surfacing that is compatible with equestrian use. The current condition, as illustrated in Figure 4-B, is not suitable for horses. A flat, stable surface will be required at this location.

As with all segments of the CAP Trail, it will be necessary to work collaboratively with the United States Bureau of Reclamation to ensure that the trail’s construction and use will not adversely impact protected cultural or biological resources. If potential conflicts with cultural resources are identified, appropriate mitigation measures will be implemented. If wildlife habitat is impacted, full replacement or enhancement of existing habitat will be required.

Potential Development Partners:

This segment is outside of the Town of Queen Creek’s planning boundary, but within its sphere of interest. In the future, this segment of the CAP Trail might become an element of the community’s trail system. A partnership between Queen Creek and Pinal County should be pursued as it relates to the final design and construction of this trail.

Trail user organizations and advocacy groups may also be willing to partner with Pinal County on the development, operation, and maintenance of the Pinal North Segment of the CAP Trail.

Trail Data Summary:

Provided on the following page is a summary that identifies the specific features of this trail segment.

4. Pinal North Segment

Trail Data Summary - Pinal North Segment			
Feature:	Location / Limits:	Notes:	References
Begin:	Mile Post (MP): 0.0	East Skyline Drive	CAP MP 216.6
End:	MP: 6.2	Arizona Farms Road	CAP MP 222.6
Segment Length:	6.2 Miles		
Jurisdiction:	MP 0.0 to MP 2.3	Pinal County	CAP MP 216.6 to 218.9
	MP 2.3 to MP 4.6	Town of Florence	CAP MP 218.9 to 221.2
	MP 4.6 to MP 6.0	Pinal County	CAP MP 221.2 to 222.6
Land Ownership:	MP 0.0 to MP 5.3	CAP/BOR	CAP MP 216.6 to 222.6
Proposed Alignment	MP 0.0 to MP 3.0	Canal Left - On Sinoqui Dike	Section PN-1
	MP 3.0 to MP 4.4	Canal Left - On Embankment	Section PN-2
	MP 4.4 to MP 4.65	Canal Left - On Embankment	Section PN-3
	MP 4.65 to MP 6.2	Canal Left - On Embankment	Section PN-4
Roadway Crossings (Existing Roads)	East Skyline Drive	See Description - Appendix A	CAP MP 216.6
	Judd Road	See Description - Appendix A	CAP MP 220.0
Drainage Crossings	MP 3.3	Existing Culvert I	CAP MP 219.9
Fencing:	MP 0.0 to MP 3.0	Canal Left - Existing Fence	
	MP 3.0 to MP 4.4	Canal Left - New or Relocated Fence	
	MP 4.4 to MP 4.65	Canal Left - Existing Fence	
	MP 4.65 to MP 6.2	Canal Left - New or Relocated Fence	
Trail Connections:	MP 2.9	Magma Railroad Trail	Pinal Co. Trails Plan
Trailheads:	MP 0.0	East Skyline Drive	CAP MP 216.6
	MP 3.4	Judd Road	CAP MP 220.0
Special Features:	MP 2.9	Trail Ramp to Levee Alignment	CAP MP 219.4
	MP 3.0	Magma Railroad Crossing	CAP MP 219.5

4. Pinal North Segment

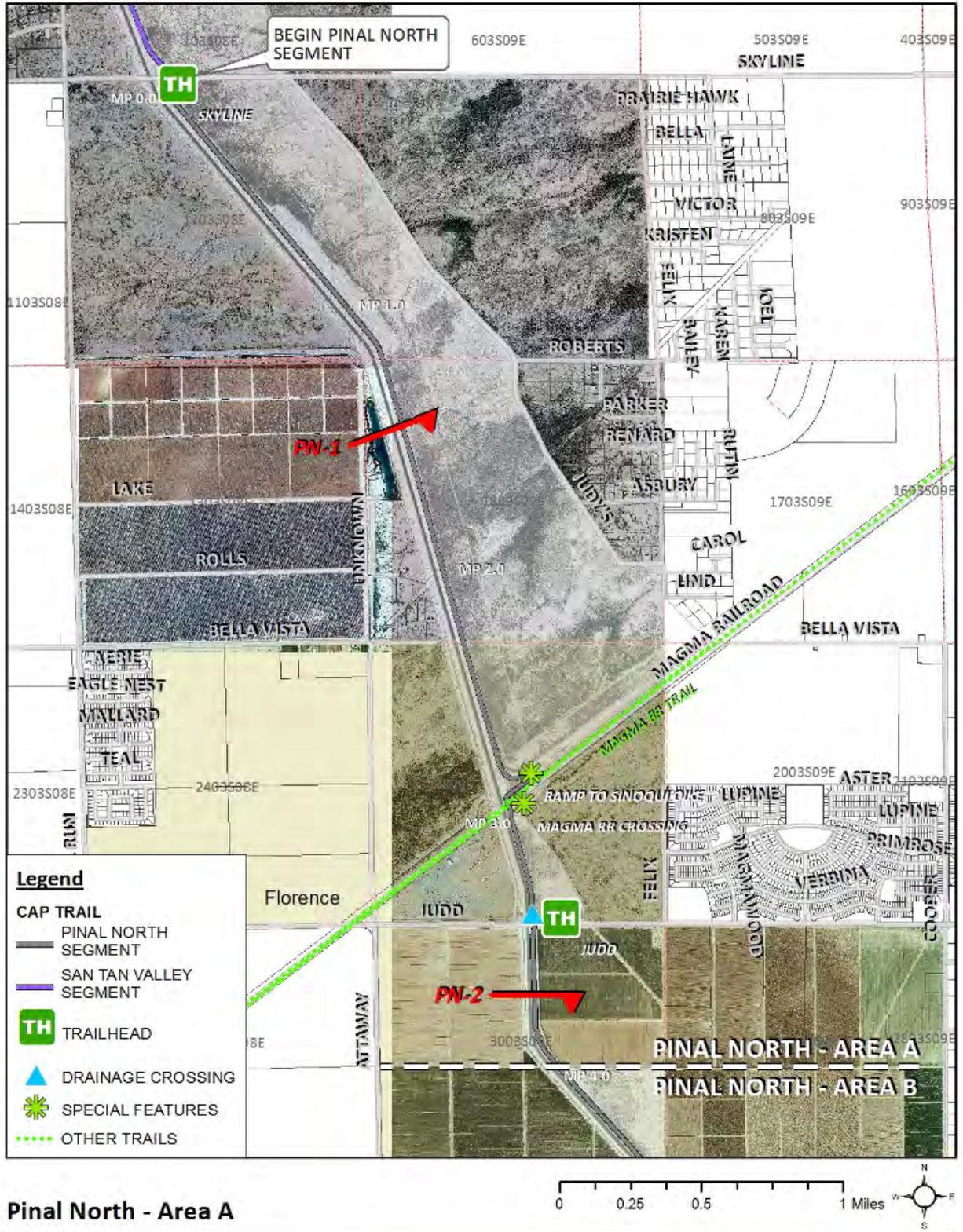


Figure 4-C: Trail Map – Area A

4. Pinal North Segment

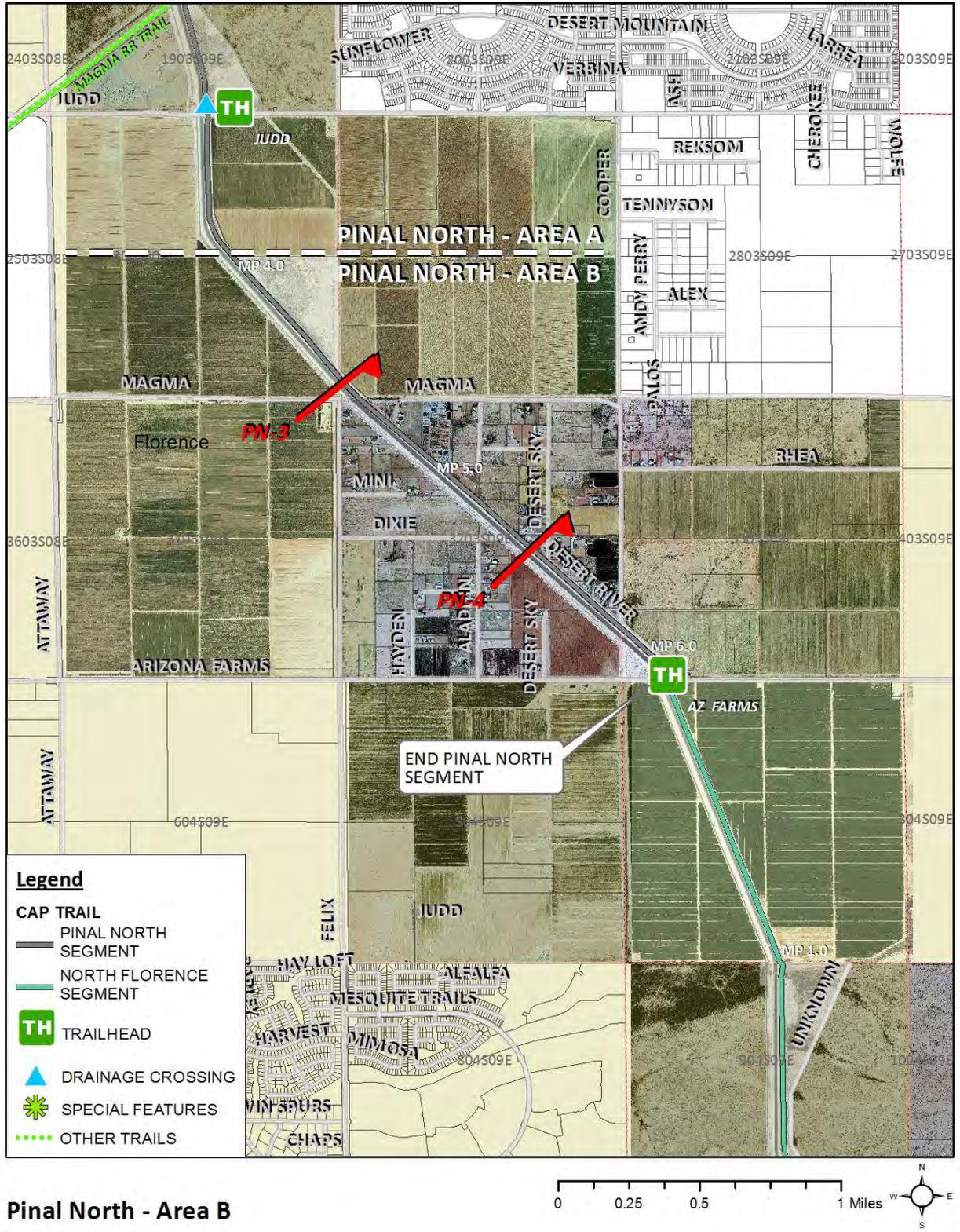


Figure 4-D: Trail Map – Area B

Typical Cross Sections – Pinal North Segment:

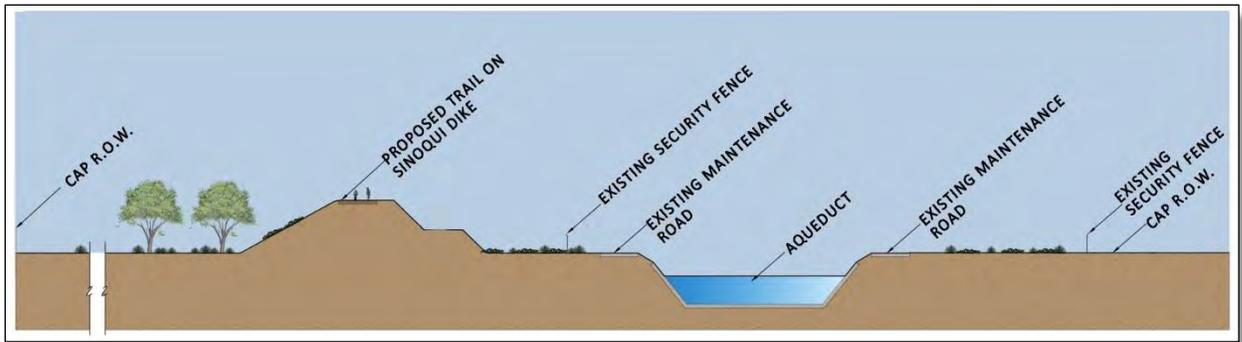


Figure 4-E: Cross-Section PN-1 - Typical of Mile Post 0.0 to Mile Post 3.0

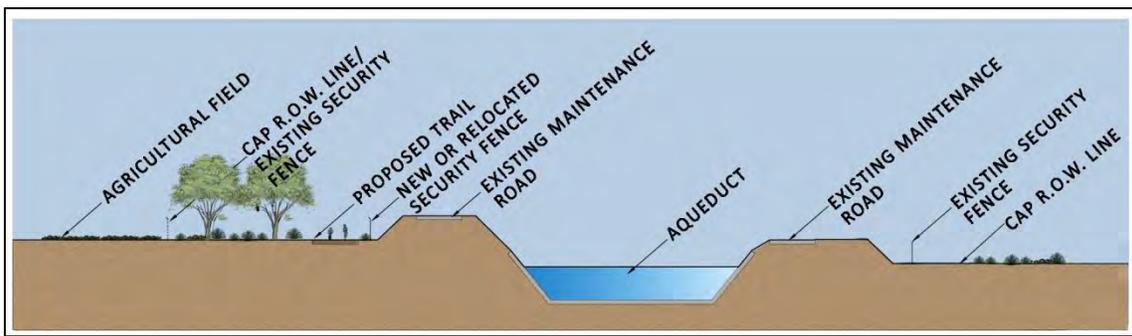


Figure 4-F: Cross-Section PN-2 - Typical of Mile Post 3.0 to Mile Post 4.4

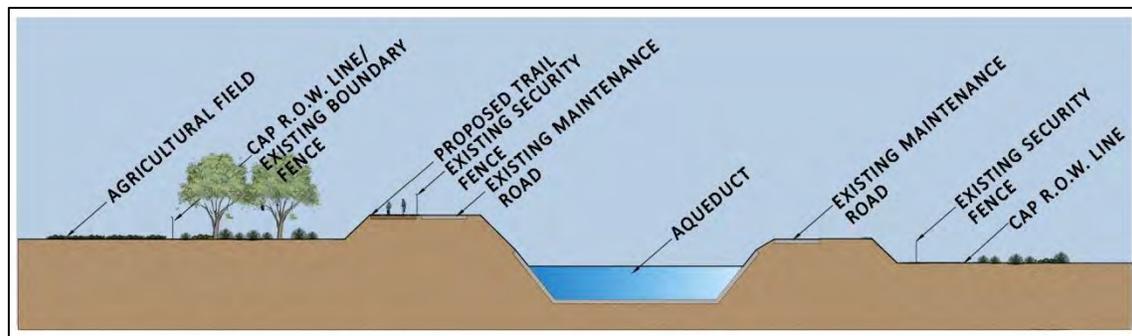


Figure 4-G: Cross-Section PN-3 - Typical of Mile Post 4.4 to Mile Post 4.65

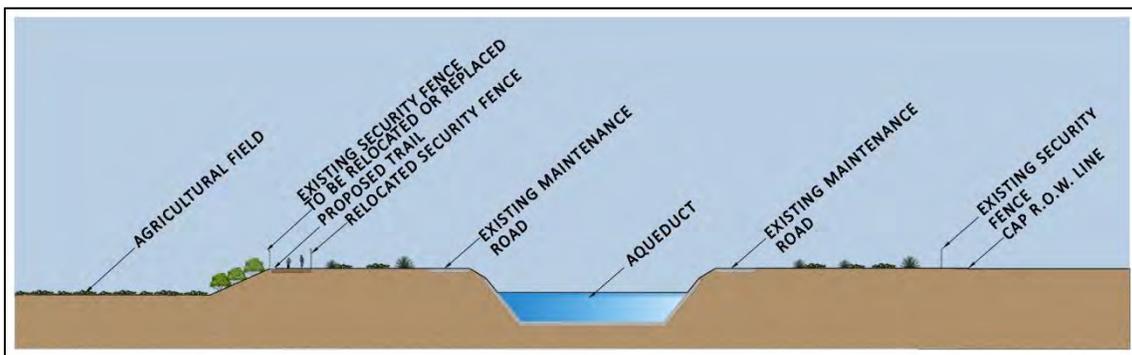


Figure 4-H: Cross-Section PN-4 - Typical of Mile Post 4.65 to Mile Post 6.2

CAP Trail Master Plan
Pinal County Segment



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Section 5
North Florence Segment

Overview:

The North Florence Segment will extend from Arizona Farms Road to State Route 79, a distance of approximately 5.3 miles. The northern portion of this segment currently passes through irrigated agricultural lands. This condition will likely change as plans for new residential communities have been approved by Pinal County and urban development along the CAP corridor is expected. The Paloroso Planned Area Development (PAD) and the Merrill Ranch PAD are adjacent to or near the proposed CAP Trail. When constructed, these developments will result in a significant increase in the number of users of the CAP Trail.

The southern portion of this segment passes through hilly country where it was necessary to make deep excavations for the construction of the aqueduct. In this area, the CAP trail will be above and some distance away from the canal following existing maintenance roads. This alignment will create unique conditions that will enhance the trail user's experience. The North Florence segment of the CAP Trail will terminate at State Route 79, north of Florence.

Trail Description:



Figure 5-A: Photo: Looking east towards SR-79. (Trail will be constructed on upper elevations to left, above CAP Aqueduct).

This trail segment will begin at CAP milepost 222.6 with an at-grade crossing of Arizona Farms Road. The first 2.7 miles of trail will be constructed on the levee east of the canal (canal left). The construction of this portion of the trail will require minor improvements associated with fences, gates, and drainage crossings.

At trail segment mile post 2.7 (+/-) there is an existing pipeline bridge across the aqueduct. While this may not be significant in the short-term, it creates an opportunity to connect the CAP Trail with the urban trail system planned for the Town of Florence.

From the pipeline bridge to the end of this segment, the trail will remain on canal left but will be separated from the canal by some distance. The trail will be within the existing CAP right-of-way but will be above the earthwork cut made to construct the canal.

Connections and Trailheads:

Arizona Farms Road has been designated in the 2014 Maricopa Association of Governments' (MAG) "2035 Regional Transportation Plan" as a future 4-lane highway. This will necessitate the construction of a new highway bridge over the CAP Canal, and create opportunities for a grade-separated crossing of the roadway, below the new bridge. It will also create an opportunity for the construction of a trailhead that will enhance public access to the CAP Trail.

The existing pipeline bridge will also facilitate future access to the trail if and when new residential development occurs along the canal, north of Florence.

Connections to future local trails, as may be developed by the Town of Florence, will also be possible along this trail segment.

Development Issues:

An important issue will be coordination with residential developments that are planned for lands adjacent to this corridor. These plans are currently very general, but when refined could result in linear parks being developed along the CAP canal and new bridges and roadways across the canal. Coordination with the Town of Florence and the real estate development companies should be an on-going process so that the new developments receive the maximum benefit from having a regional trail nearby and so that the construction of the trail by development companies can be made a condition of plan or plat approval, when appropriate.

An additional coordination issue may be the proposed North-South Freeway that is planned for this portion of Pinal County. As of the date of this master plan report, various alignments were being considered and dates for freeway construction had not been identified. To the greatest extent possible, right-of-way acquired, bridges constructed, and open space corridors established along the proposed freeway should be coordinated with the CAP Trail.

An additional development issue will be the design of improvements at the southern terminus of this trail segment, improvements that allow for the safe crossing of State Route 79. This issue is discussed more fully in Section 6 (Gila River North Segment).

As with all segments of the CAP Trail, it will be necessary to work collaboratively with the United States Bureau of Reclamation to ensure that the trail's construction and use will not adversely impact protected cultural or biological resources. If potential conflicts with cultural resources are identified, appropriate mitigation measures will be implemented. If wildlife habitat is impacted, full replacement or enhancement of existing habitat will be required.

Potential Development Partners:

The City of Florence is a potential partner in the development of the North Florence Segment of the CAP Trail. Their involvement may be direct through the design, construction, and operation of portions of the trail. It may also be indirect by making the construction of portions of the trail a condition of adjacent development approval.

Trail user organizations and advocacy groups may also be willing to partner with Pinal County on the development, operation, and maintenance of the North Florence Segment of the CAP Trail.

Trail Data Summary:

Provided on the following page is a summary that identifies the specific features of this trail segment.

5. North Florence Segment

Trail Data Summary - North Florence Segment			
Feature:	Location / Limits:	Notes:	References
Begin:	Mile Post (MP): 0.0	Arizona Farms Road	CAP MP 222.6
End:	MP: 5.3	State Route 79 (North)	CAP MP 227.9
Segment Length:	5.3 Miles		
Jurisdiction:	MP 0.0 to MP 2.4	Town of Florence	CAP MP 222.6 to 225.0
	Mile Post 2.4 to Mile Post 5	Pinal County	CAP MP 225.0 to 227.9
Land Ownership:	MP 0.0 to MP 5.3	CAP/BOR	CAP MP 222.6 to 227.9
Proposed Alignment:	MP 0.0 to MP 1.1	Canal Left - On Embankment	Section NF-1
	MP 1.1 to MP 2.4	Canal Left - On Embankment	Section NF-2
	MP 2.4 to MP 5.3	Canal Left - On Embankment	Section NF-3
Roadway Crossings:	Arizona Farms Road	See Description - Appendix A	CAP MP 222.6
	Gas Line Road	See Description - Appendix A	CAP MP 225.4
Drainage Crossings:	MP 1.1	Dip Crossing	CAP MP 223.7
Fencing:	MP 0.0 to MP 1.1	Canal Left - New or Relocated Fence	
	MP 1.1 to MP 2.8	Canal Left - Existing Fence	
	MP 2.8 to MP 5.2	Canal Left - New or Relocated Fence	
	MP 5.2 to MP 5.3	Canal Left - Existing Fence	
Trail Connections:	Mile Post 5.3	SR 79 Proposed Trail Route	
Trailheads:	MP: 0.0	Arizona Farms Road	CAP MP 222.6
Special Features:	MP 2.4 to MP 4.6	Wide Trail Corridor	CAP MP 225.0 to 227.2

5. North Florence Segment

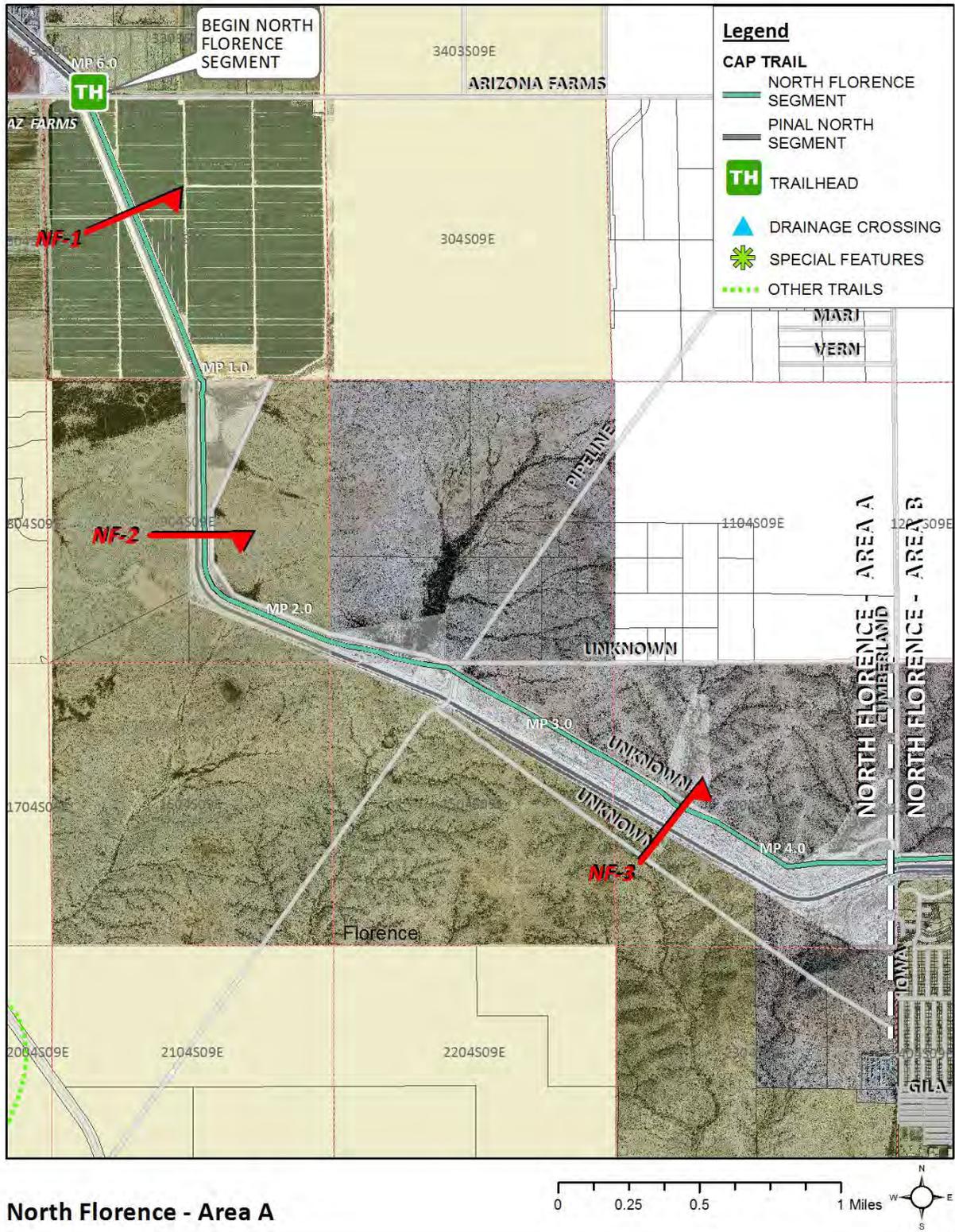


Figure 5-B: Trail Map - North Florence Segment – Area A

5. North Florence Segment

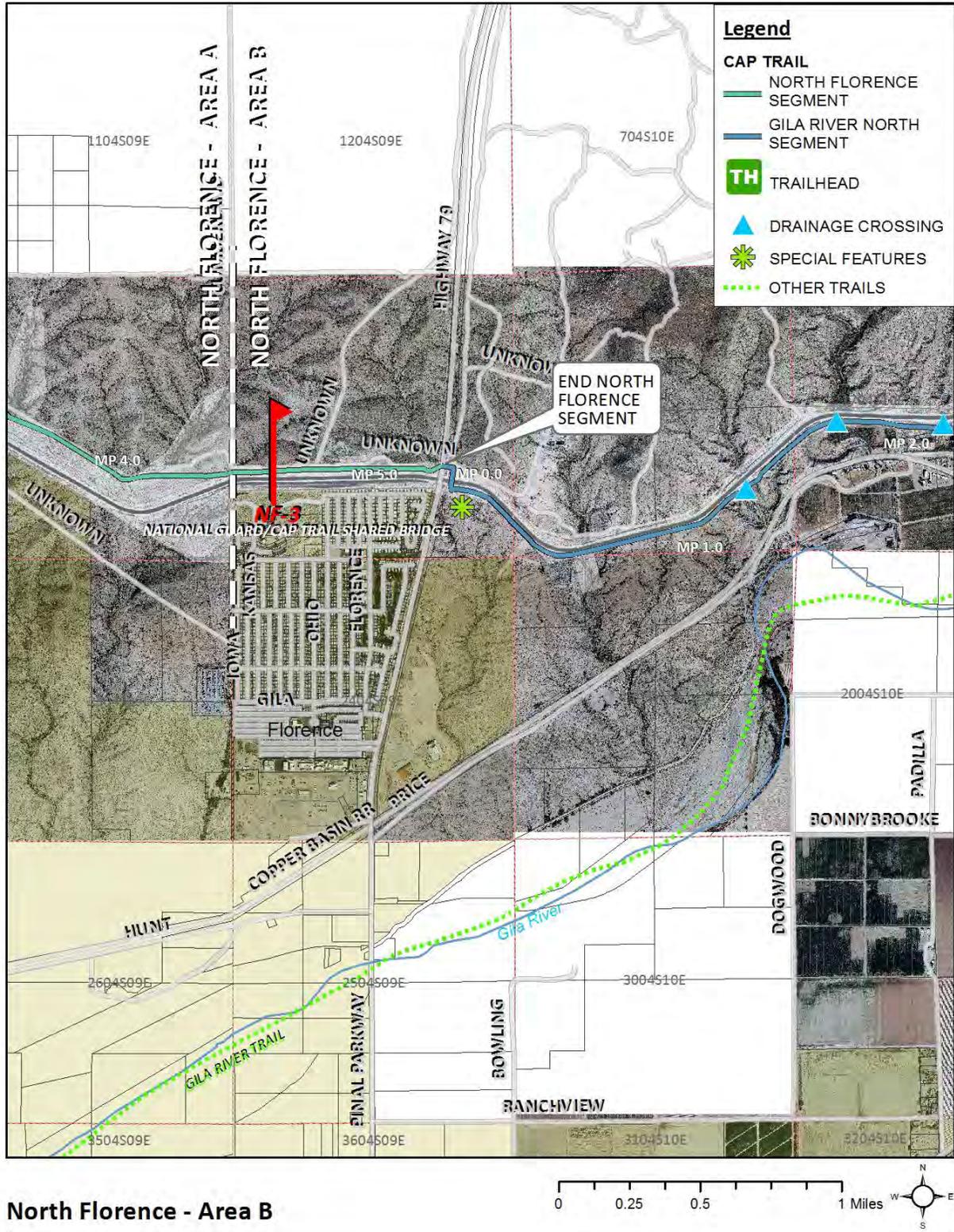


Figure 5-C: Trail Map - North Florence Segment – Area B

Typical Cross-Sections – North Florence Segment:

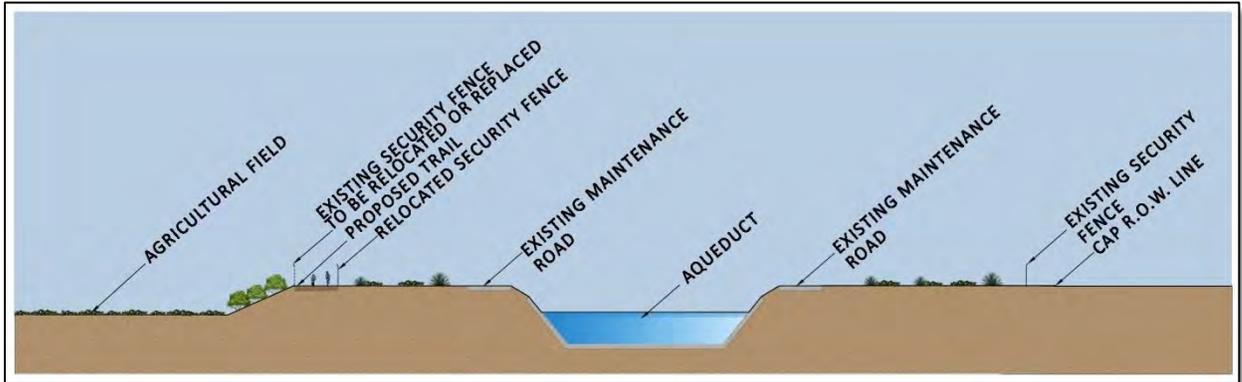


Figure 5-D: Cross-Section NF-1 - Typical of Mile Post 0.0 to Mile Post 1.1

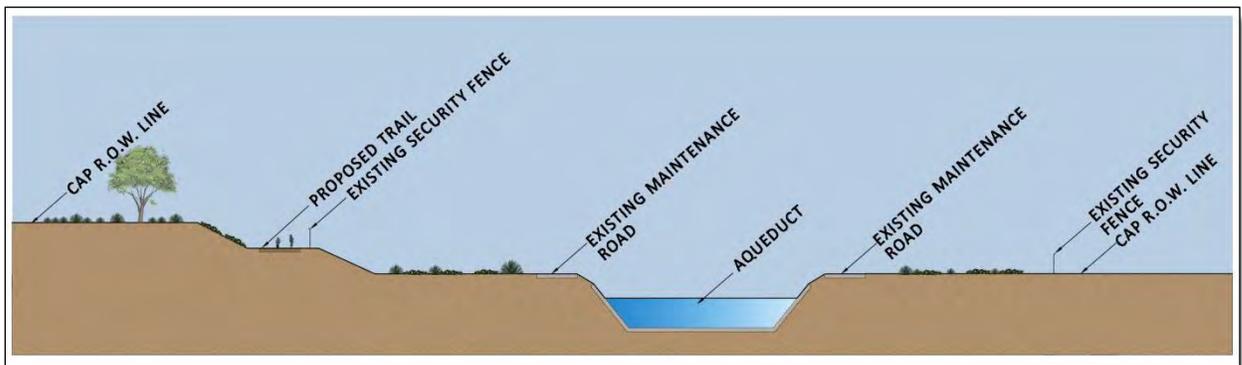


Figure 5-E: Cross-Section NF-2 - Typical of Mile Post 1.1 to Mile Post 2.8

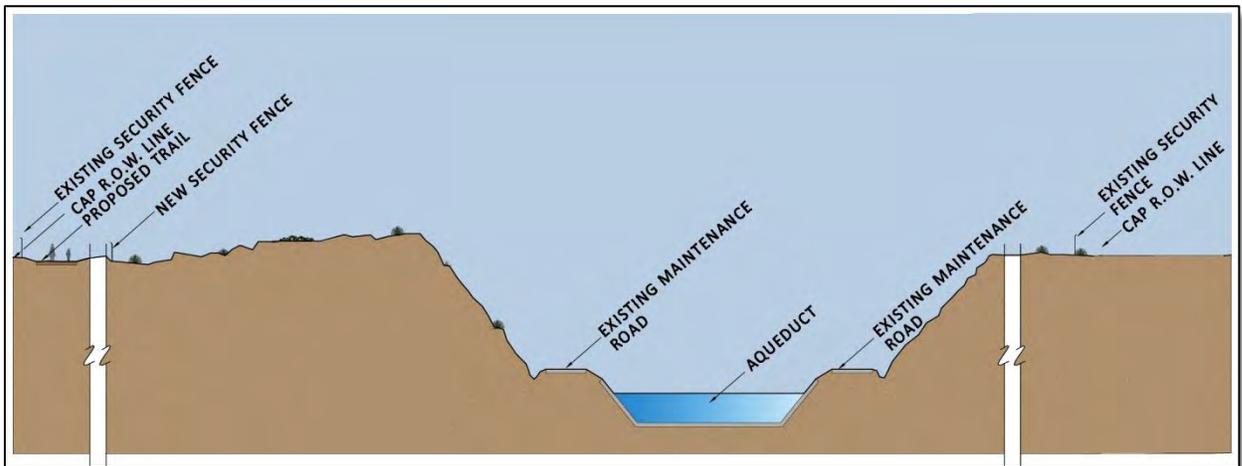


Figure 5-F: Cross-Section NF-3 - Typical of Mile Post 2.8 to Mile Post 5.3

CAP Trail Master Plan
Pinal County Segment



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Section 6
Gila River North Segment

Overview:

The Gila River North Segment will extend across State Route 79 north of Florence and extend east to Price Road, near the CAP siphon below the Gila River. The length of this segment is approximately 3.8 miles.

Throughout this segment the trail will be on the south side of the CAP aqueduct (canal right). This is to provide maximum separation and a physical barrier (the canal) between the trail and the U.S. Army National Guard Training Facility located to the north. This facility includes a live-fire practice range.

The CAP canal through this segment is on a hillside above the Gila River valley floor. Storm water runoff from the hillside and from the National Guard Training Facility to the north crosses below the aqueduct in a series of pipes and culverts. Steep slopes are prevalent at many of these drainage crossings that will make trail development challenging.

The elevation difference between the Gila River Valley and the proposed CAP Trail provides for broad vistas of the valley from the trail.

Trail Description:

This segment begins at CAP Mile Post 227.9 west of SR 79 and will cross the highway at-grade. The potential for grade separation at the highway crossing was investigated but options are limited. The existing highway bridge above the CAP canal does not provide sufficient space for a trail. (See Figure 6-A). The costs for a new structure to be constructed above or below the road were considered prohibitive, based on the number of trail users anticipated in the foreseeable future.



Figure 6-A: Photo - ADOT SR-79 Bridge over CAP Canal north of Florence (Without space for trail below the bridge).

A traffic signal to stop motor vehicles when trail users are crossing the highway was also investigated. However, the likely number of trail users was determined to be less than that required by the Arizona Department of Transportation to warrant a traffic signal on a state highway. Alternatively, advance warning signs and other improvements are planned to alert motorists of the possibility of trail users crossing the highway at the designated crossing location. See Appendix A.

Proceeding east of SR 79, the trail will cross the aqueduct from north to south using a bridge that connects portions of the National Guard Training Facility on the opposite side of the canal.

On the south side of the aqueduct, the trail will extend east, within the CAP right-of-way, to the vicinity of the siphon inlet structure, where it will make its way down a slope to Price Road. The trail between SR-79 and the siphon inlet structure crosses drainage channels and culverts at several locations.

6. Gila River North Segment

In these locations, the trail will need to switch-back down to the invert of the channel and back-up the other side. These grade changes will make for a challenging trail use experience, differentiating this segment from other portions of the trail which will be quite level.

Connections and Trailheads:

A trailhead is proposed in the vicinity of the CAP Trail crossing of Price Road. This location is convenient to the residents of Florence, but is away from SR 79 with its large volume of high-speed traffic.

The planned Gila River Trail, a regional trail identified in the “Pinal County Open Space and Trails Master Plan,” extends east along the Gila from the CAP – Gila River siphon. The Price Road Trailhead will provide access to this trail when it is developed.

The Town of Florence has also proposed several trails in the vicinity of the Gila River Valley and in the vicinity of SR 79. As these trails are given more definition, potential connections to the CAP Trail should be explored.

Development Issues:

Coordination with the Arizona Department of Transportation related to the crossing of SR 79 will be a key issue in the development of this trail segment. So, too, will be coordination with the U.S. Army National Guard. While the Guard has expressed support for the trail and for the use of the existing bridge across the canal, coordination will be required on the reconfiguration of fences and gates that will allow for unobstructed trail use while maintaining security at the training facility.



Figure 6-B: Photo: Proposed Trail Corridor East of SR 79. (Trail to be constructed to the right of Canal Maintenance Road)

Grade changes, at crossing drainages and between the siphon inlet structure and Price Road will also be a design challenge. Sustainable trail building techniques will be important in these locations.

As with all segments of the CAP Trail, it will be necessary to work collaboratively with the United States Bureau of Reclamation to ensure that the trail’s construction and use will not adversely impact protected cultural or biological resources. If potential conflicts with cultural resources are identified, appropriate mitigation measures will be implemented. If wildlife habitat is impacted, full replacement or enhancement of existing habitat will be required.

Potential Development Partners:

The U.S. Army National Guard indicated an interest in using the trail in conjunction with their physical training program. They have also indicated that it may be possible to use their forces to construct portions of the trail as an engineering exercise. All options for collaboration with the National Guard should be explored.

6. Gila River North Segment

Trail user organizations and advocacy groups may also be willing to partner with Pinal County on the development, operation, and maintenance of the Gila River North Segment of the CAP Trail.

Trail Data Summary:

Provided on the following page is a summary that identifies the specific features of this trail segment.

6. Gila River North Segment

Trail Data Summary - Gila River North Segment			
Feature:	Location / Limits:	Notes:	References
Begin:	Mile Post (MP): 0.0	State Route 79 (North)	CAP MP 227.9
End:	MP: 3.8	Gila River Siphon (near Price Rd)	CAP MP 231.6
Segment Length:	3.8 Miles		
Jurisdiction:	MP 0.0 to MP 3.8	Pinal County	CAP MP 227.9 to 231.6
Land Ownership:	MP 0.0 to MP 3.67	CAP/BOR	CAP MP 227.9 to 231.5
	MP 3.67 to MP 3.79	PRIVATE (Public ROW / RR Crossing)	CAP MP 231.5
	MP 3.79 to MP 3.8	CAP/BOR	CAP MP 231.6
Proposed Alignment:	MP 0.0 to MP 0.9	Canal Left - At Grade Xing to Bridge	N/A
	MP 0.9	Existing CAP Bridge to Canal Right	N/A
	MP 0.9 to MP 3.7	Canal Right - On Embankment / Existing Terrain	Section GRN-1
	MP 3.7 to MP 3.8	Canal Right - Descend Embankment to Trailhead	N/A
Roadway Crossings:	MP 0.0	State Route 79 (North)	See Appendix A
	MP 3.7	Price Road	See Appendix A
Drainage Crossings:	MP 1.3	Dip Crossing	CAP MP 229.1
	MP 1.7	Existing Culvert II	CAP MP 229.5
	MP 2.0 to 2.1	Dip Crossing	CAP MP 229.9
Fencing:	MP 0.0 to MP 0.9	Canal Left - New or Relocated Fence	
	MP 0.9 to MP 3.7	Canal Right - New or Relocated Fence	
	MP 3.7 to 3.8	Canal Right - New Fence/Wall/Ramp	
Trail Connections:	MP 3.8	Gila River Trail	Pinal Co. Trails Plan
Trailheads:	MP 3.8	Gila River Siphon Trailhead	CAP MP 231.6
Special Features:	MP 0.9	Military / CAP Bridge East of SR 79	CAP MP 227.99

6. Gila River North Segment

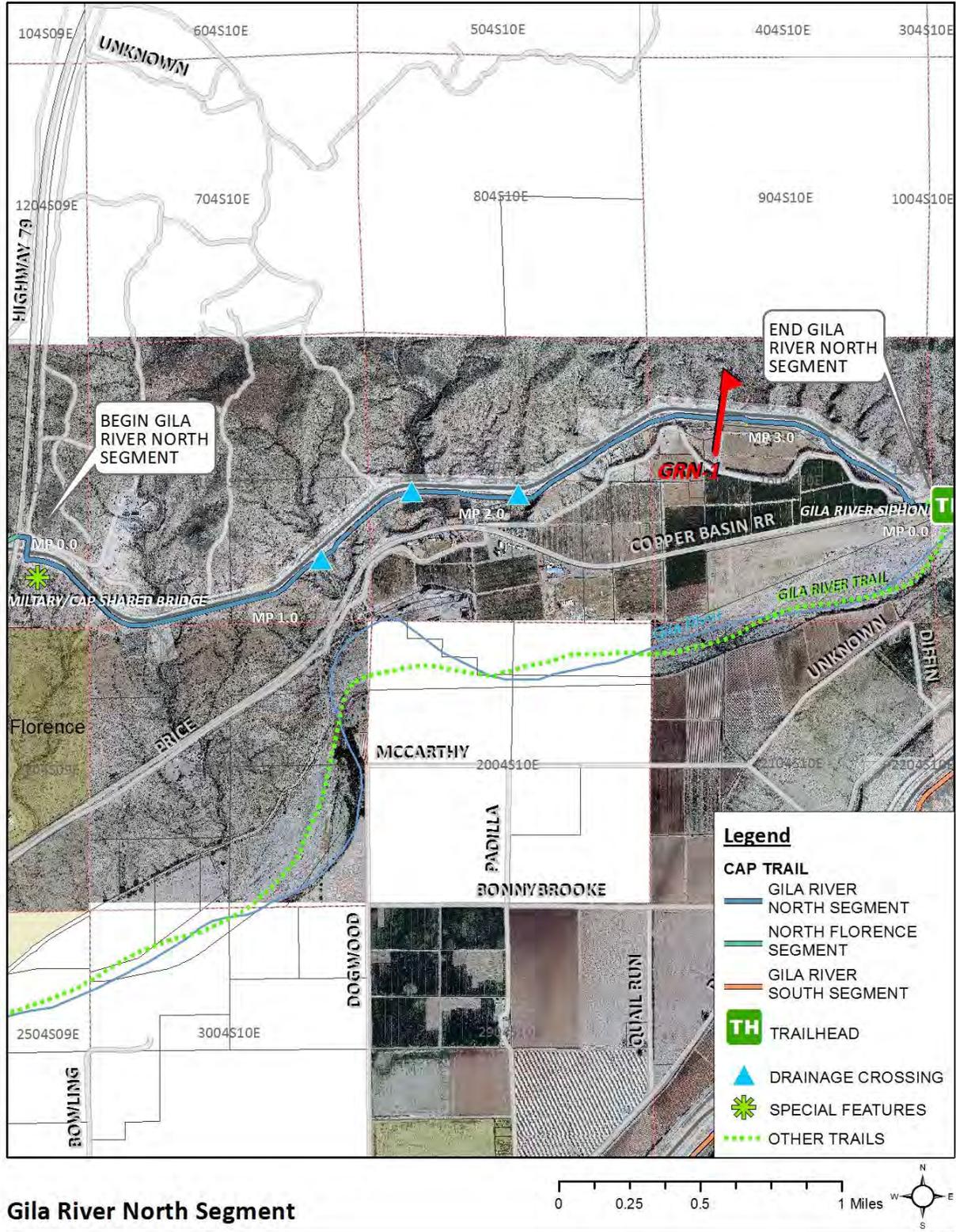


Figure 6-C: Trail Map – Gila River North Segment

Typical Cross-Sections – Gila River North Segment:

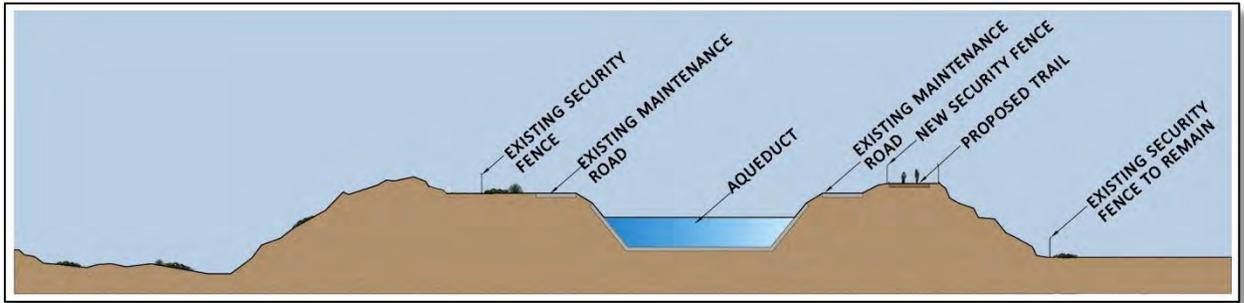


Figure 6-D: Cross Section GRN-1 - Typical of Mile Post 0.9 to Mile Post 3.7

CAP Trail Master Plan
Pinal County Segment



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Section 7
Gila River South Segment

Overview:

The Gila River South Segment of the CAP Trail will extend from the Price Road (near the Gila River siphon inlet), south across the Gila River, and then west paralleling the south bank of the CAP aqueduct to State Route 79. The length of this segment is approximately 7.2 miles.

South of the Gila River, the preferred route will place portions of the trail on the Flood Retarding Structure (FRS) that is operated by the Florence Area Flood Control District. While portions of this FRS fall outside of the CAP right-of-way, it provides an elevated trail with views of the Gila River valley. It also moves the trail further away from the Arizona Department of Corrections Florence Prison, minimizing potential concerns about a public trail in close proximity to the secure prison grounds.

Alternative routes, however, may need to be considered. This is due to potential changes to the FRS. As of the date of this report, the Florence Area Flood Control District and the United States Department of Agriculture, Natural Resources Conservation Service (NRCS) were beginning a collaborative project to assess the adequacy of the FRS and, if needed, prepare plans for required improvements. It is possible that the changes to the FRS will make the preferred trail alignment not feasible.

If the preferred route is not feasible, two alternative alignments are possible. One of these alternatives is to align the trail north of and below the FRS, adjacent to the existing CAP security fence. While this alternative will be less desirable from a trail user perspective, it would allow for a connection between the Gila River siphon and SR 79.

The second alternative is to route the trail upstream of the FRS, through or above the flood pool associated with the structure. With this alternative, the trail will be located on State Trust Land.

Following the preferred or the alternative alignments, the Gila River South Segment of the CAP trail will terminate State Route 79 south of Florence where it will pass under the highway in a grade-separated configuration. (See Section 8 for additional information related to the proposed grade-separated crossing).

Trail Description:



Figure 7-A: Photo: Existing Track across Gila River (along approximate alignment of CAP Trail)

This trail segment will begin at CAP Milepost 231.6. The first two miles of trail will follow the Gila River siphon on land owned by the Bureau of Reclamation. After crossing the Gila, the trail will pass over an irrigation canal operated by the San Carlos Irrigation and Drainage District (SCIDD). A new pedestrian, equestrian, and bicycle bridge will be required for this crossing.

The trail will then rejoin the open CAP canal corridor and parallel it for approximately 1.5 miles. At this location, it will swing away from the canal corridor to the east end of the FRS, and then follow the FRS for approximately 2.8 miles to Butte Avenue.

7. Gila River South Segment

After crossing Butte Avenue at grade, it will continue along the FRS structure for another 2.1 miles until it reaches the western end of the FRS near State Route 79. An at-grade portion of the trail will then continue on to the proposed SR 79 underpass.

Development Issues:

This segment offers several challenges to trail development and ultimately to trail use. The first challenge is the crossing of the Gila River. Of necessity, this crossing will be subject to periodic closures when water is running in the river channel. There are no bridges existing or planned in the vicinity of the CAP aqueduct's crossing of the river and the cost to construct such a bridge for the trail would be prohibitive. As a result, the crossing will be closed from time to time, not unlike many back-country trails that cross streams and arroyos with seasonal flows.



Figure 7-B: Photo: San Carlos Irrigation and Drainage District (SCIDD) Canal to be bridged, south of the Gila River

A second challenge will be the crossing of a San Carlos Irrigation and Drainage District (SCIDD) canal near the outlet of the Gila River siphon. A pedestrian / equestrian / bicycle bridge will need to be constructed to extend the path across the canal. Although the span is relatively short, approximately 40 feet, the bridge will serve only the trail and its cost will need to be borne by the agencies collaborating on the development of this trail segment.

The crossing of Price Road and Butte Avenue will be minor design issues. These roads receive very little motor vehicle traffic. With warning signs and similar devices, a safe trail / roadway crossing can be developed.

United States Bureau of Reclamation records indicate that there are known cultural resource sites in the vicinity of this trail segment. It will be necessary to work closely with the Bureau to ensure that the development and use of the trail does not have adverse direct or indirect impacts on these resources. It will also be necessary to acquire right-of-way from the Arizona State Land Department for that portion of the trail segment that is on State Trust Land.

Connections and Trailheads:

Trailheads are proposed in the vicinity of the CAP Trail crossing of Price Road and Butte Avenue. These will provide access to the trail for individuals residing in the Florence area.

The Town of Florence has also proposed several trails in the vicinity of the Gila River Valley and in the vicinity of SR 79. As these trails are given more definition, potential connections to the CAP Trail should be explored.

7. Gila River South Segment

Potential Development Partners:

This segment of the CAP Trail is within the Town of Florence planning boundary and, as such, the Town will have an interest in making the Gila River South Segment of the CAP Trail a part of the community's trail system. Potential collaborations between Pinal County and the Town of Florence should be pursued.

Trail user organizations and advocacy groups may also be willing to partner with Pinal County on the development, operation, and maintenance of the Gila River South Segment of the CAP Trail.

Trail Data Summary:

Provided on the following page is a summary that identifies the specific features of this trail segment.



Figure 7-C: Photo: Proposed Alignment of Trail on Florence Area Flood Control District FRS

7. Gila River South Segment

Trail Data Summary - Gila River South Segment			
Feature:	Location / Limits:	Notes:	References
Begin:	Mile Post (MP): 0.0	Gila River Siphon (near Price Rd)	CAP MP 231.6
End:	MP: 7.2	State Route 79 (South)	CAP MP 238.3
Segment Length:	7.2 Miles		
Jurisdiction:	MP 0.0 to MP 3.6	Pinal County	CAP MP 231.6 to 234.8
	MP 3.6 to MP 6.5	Town of Florence	CAP MP 234.8 to 237.4
	MP 6.5 to MP 7.2	Pinal County	CAP MP 237.4 to 238.3
Land Ownership:	MP 0.0 to MP 2.0	CAP/BOR	CAP MP 231.6 to 233.5
	MP 2.0 to MP 3.1	AZSLD	CAP MP 233.5 to 234.2
	MP 3.1 to MP 3.42	PRIVATE (Florence FCD)	CAP MP 234.2 to 234.5
	MP 3.42 to MP 5.02	AZSLD	CAP MP 234.5 to 236.1
	MP 5.02 to MP 5.7	BLM	CAP MP 236.1 to 237.0
	MP 5.7 to MP 6.3	PRIVATE (Florence FCD)	CAP MP 237.0 to 237.6
	MP 6.3 to MP 6.46	CAP/BOR	CAP MP 237.6 to 237.8
	MP 6.46 to MP 6.94	PRIVATE (Florence FCD)	CAP MP 237.8 to 238.0
	MP 6.94 to MP 7.2	CAP/BOR	CAP MP 238.0 to 238.3
Proposed Alignment	MP 0.0 to MP 0.5	Canal Left - On Siphon	Section GRS-1
	MP 0.5 to MP 1.9	Canal Left - On Embankment	Section GRS-2
	MP 1.9 to MP 2.1	Canal Left - Single Track to FRS	Section GRS-3
	MP 2.1 to MP 7.1	Canal Left - On FRS	Section GRS-4
	MP 7.1 to MP 7.2	Canal Left - Grade Separated Xing	Section GRS-5
Roadway Crossings	MP 4.9	East Butte Avenue	CAP MP 236.1
	MP 7.2	State Route 79 (South, Grade Separated)	CAP MP 238.3
Fencing:	MP 0.0 to MP 0.5	No Fencing, On Siphon	N/A
	MP 0.5 to MP 2.1	Canal Left - New or Relocated Fence	
	MP 2.1 to MP 7.1	Canal Left - Existing Fence	
	MP 7.1 to MP 7.2	Canal Left - New Fence/Wall/Ramp	
Trail Connections:	MP 0.0	Gila River Trail	
Trailheads:	MP 4.9	East Butte Avenue Trailhead	CAP MP 236.1
Special Features:	MP 0.0 to MP 0.5	At grade crossing of Gila River	
	MP 0.5	Bridge across SCIDD Canal	

7. Gila River South Segment

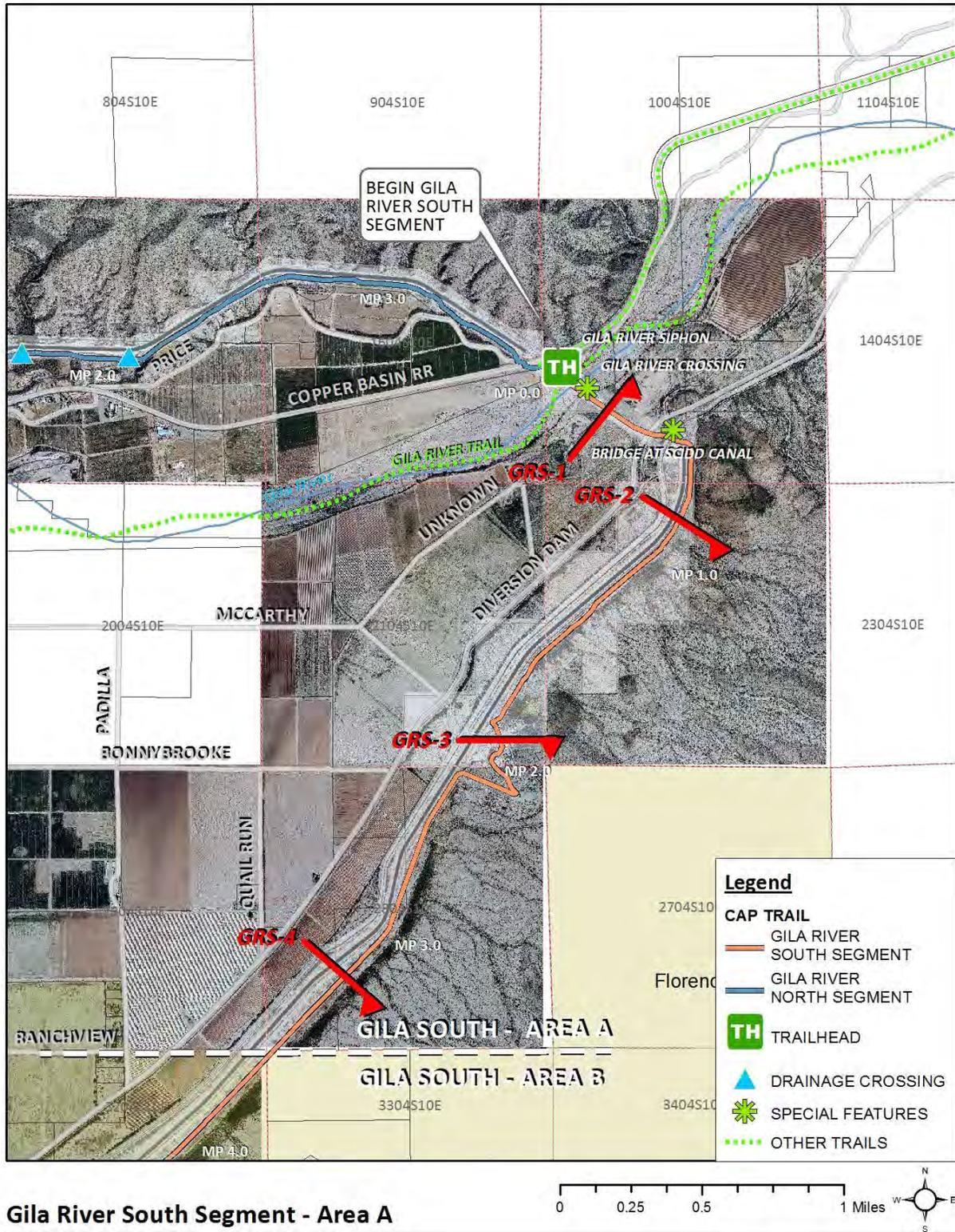


Figure 7-D: Trail Map – Gila River South Segment – Area A

7. Gila River South Segment

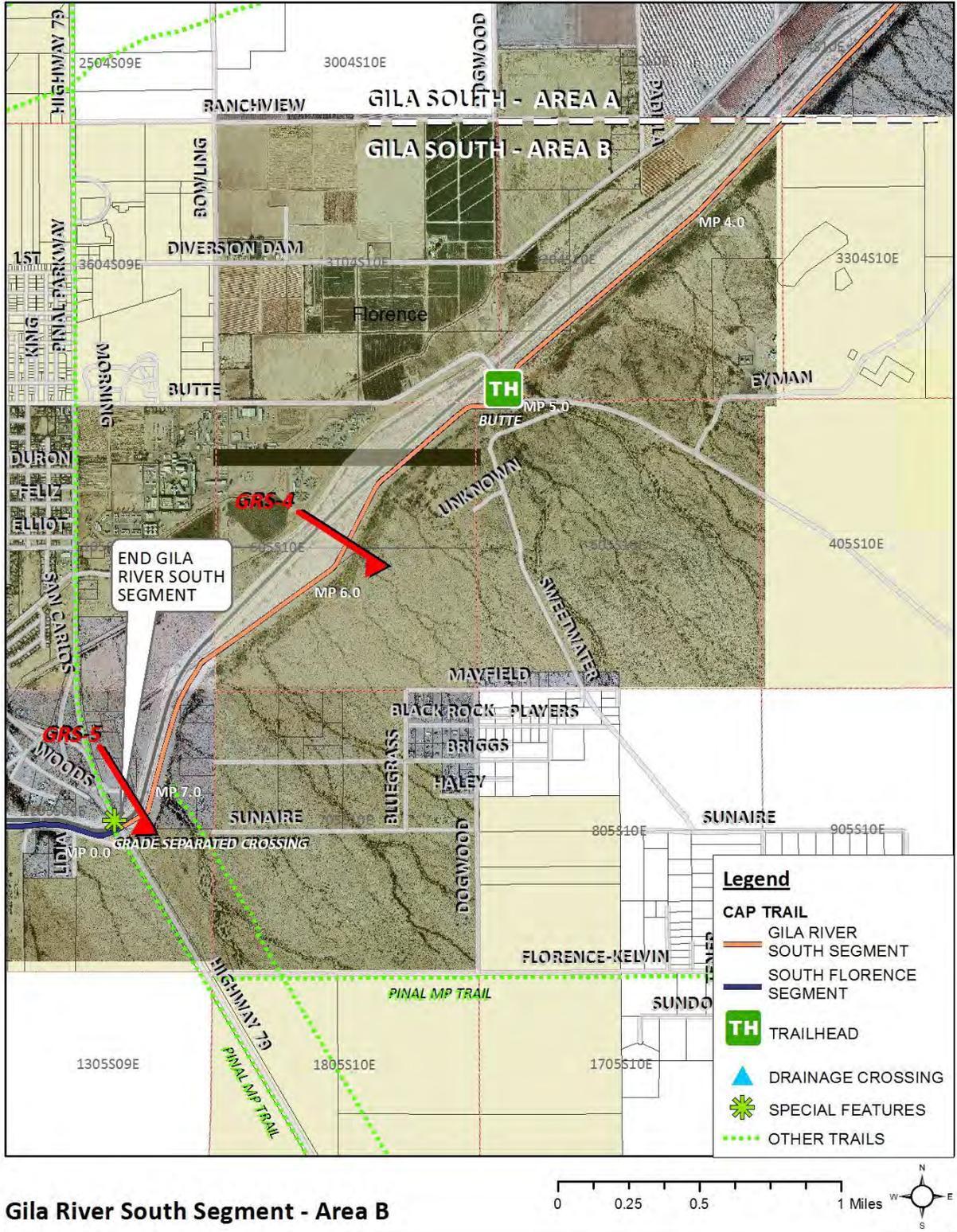


Figure 7-E: Trail Map – Gila River South Segment – Area B

Typical Cross-Sections – Gila River South Segment:

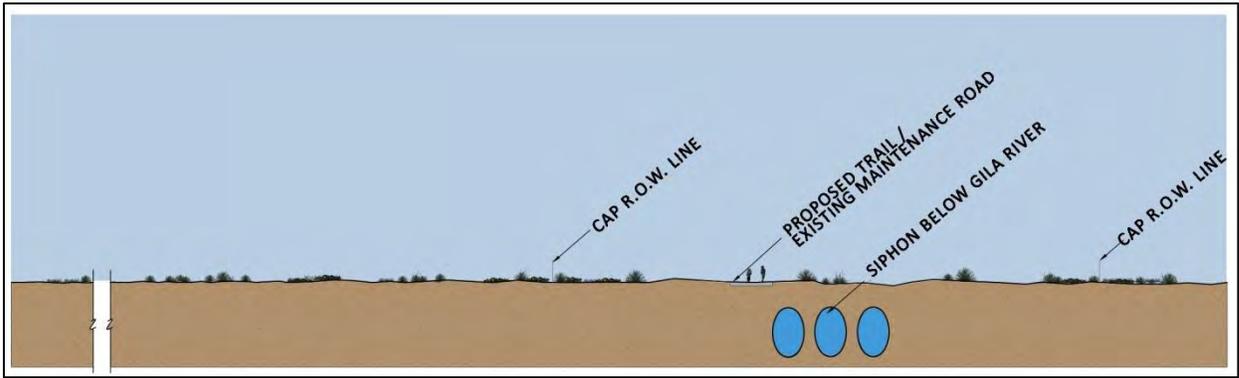


Figure 7-F: Cross Section GRS-1 - Typical of Mile Post 0.0 to Mile Post 0.5

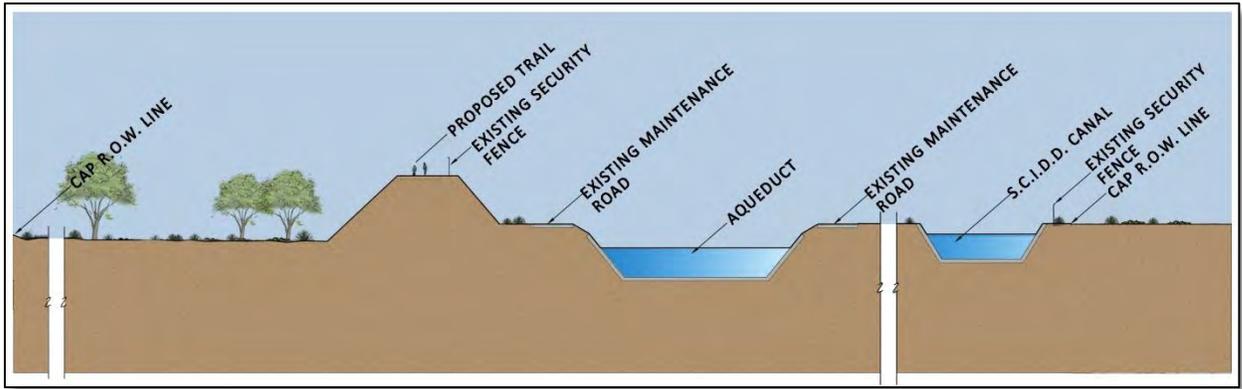


Figure 7-G: Cross-Section GRS-2 - Typical of Mile Post 0.5 to Mile Post 1.9

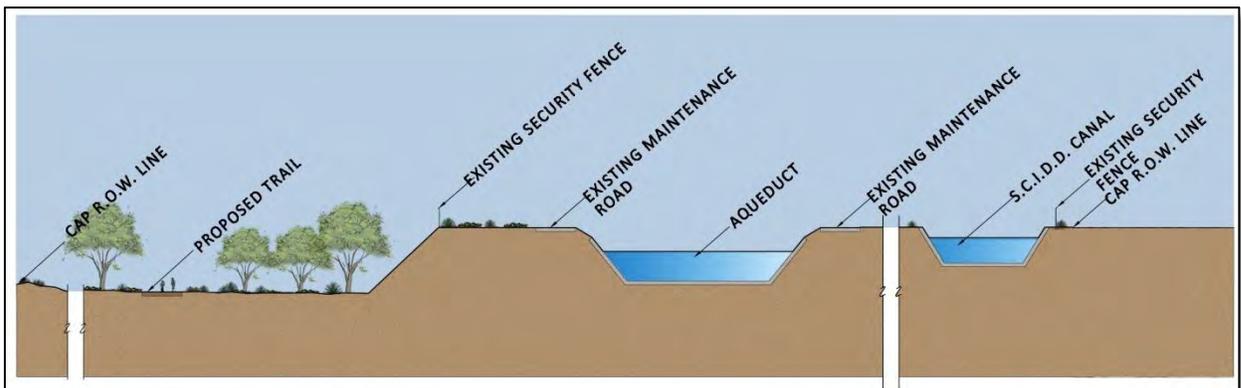


Figure 7-H: Cross Section GRS-3 - Typical of Mile Post 1.9 to Mile Post 2.1

Typical Cross-Sections – Gila River South Segment:

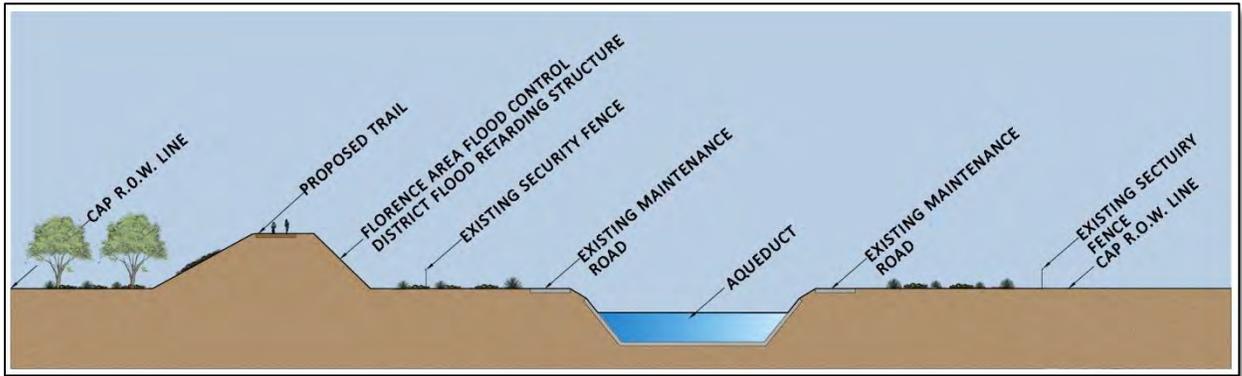


Figure 7-I: Cross Section GRS-4 - Typical of Mile Post 2.1 to Mile Post 7.1

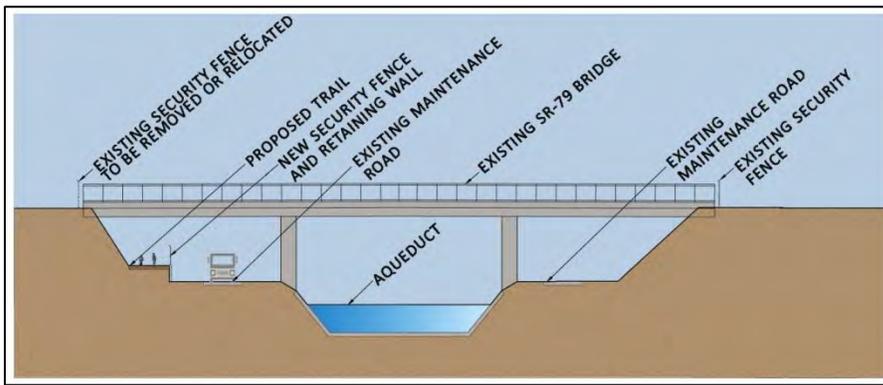


Figure 7-J: Cross Section GRS-5 - Typical of Mile Post 7.1 to Mile Post 7.2

CAP Trail Master Plan
Pinal County Segment



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Section 8
South Florence Segment

Overview:

The South Florence Segment of the CAP Trail will extend from State Route 79 to Cactus Forest Road, a distance of approximately 3.9 miles. It will include a bicycle / pedestrian / equestrian underpass below State Route 79 to provide for the safe crossing of this highway. The path will extend south along the east side of the aqueduct to Cactus Forest Road, a county highway that connects the City of Coolidge with SR 79.

Trail Description:

This trail segment will begin at CAP Milepost 238.3 on the east side of State Route 79. It will ramp down and pass under the existing highway bridge that spans the aqueduct, and then ramp back-up to the elevation of Salazar Street (also known as Cemetery Street). Below the bridge, the trail will be adjacent to the existing canal maintenance road as seen in Figure 8-A. It may be necessary to construct a retaining wall and build the trail slightly above, and adjacent to, the canal maintenance road so that maintenance road width remains sufficient for large vehicles and equipment. A new security fence will be required to separate the trail and the maintenance road.



Figure 8-A: Photo: Existing Maintenance Road below State Route 79, Looking West. (The CAP Trail will ramp down to cross below SR-79 and ramp back-up to Salazar / Cemetery Street).

In other locations within this segment, the previously cleared area is narrower. The trail will be constructed on the existing levee. From this elevated vantage point, there are views of adjacent green-up area and broad vistas across the desert landscape.

After crossing below the highway, the trail will follow Salazar Street to its western terminus near the entry to the cemetery. Beyond the cemetery entrance, the trail will continue west, a distance of approximately 0.2 miles, and then turn south along the east side of the aqueduct. It will follow the east side of the aqueduct (canal left) to the Cactus Forest Road right-of-way.

Within portions of this segment, the construction of the aqueduct resulted in a broad corridor being cleared of native vegetation. One such cleared area, located west of the Coolidge Cemetery, is the proposed site for the proposed Cemetery Trailhead.



Figure 8-B: Photo: Proposed Trail Corridor South of Coolidge Cemetery

Connections and Trailheads:

The Town of Florence has proposed several trails in the vicinity of SR 79. As these trails are given more definition, potential connections to the CAP Trail should be explored.

A trailhead is proposed in the vicinity of the CAP Trail's crossing of Cactus Forest Road. This will provide for access to the trail from residents of both Florence and Coolidge.

Development Issues:

A principal development issue associated with the construction of this trail segment will be coordination with the Arizona Department of Transportation and the Central Arizona Water Conservation District (CAWCD) related to the proposed underpass at State Route 79.

It will be essential to the CAWCD that they be able to maintain the aqueduct from the existing service road adjacent to the canal. The Arizona Department of Transportation (ADOT) will want to make certain that the trail improvements allow for on-going maintenance of the bridge structure. ADOT will also want to make certain that trail users are directed to the underpass and not encouraged to cross the state highway at-grade.

As with all segments of the CAP Trail, it will be necessary to work collaboratively with the United States Bureau of Reclamation to ensure that the trail's construction and use will not adversely impact protected cultural or biological resources. If potential conflicts with cultural resources are identified, appropriate mitigation measures will be implemented. If wildlife habitat is impacted, full replacement or enhancement of existing habitat will be required.

Potential Development Partners:

The Town of Florence will likely be the lead agency as it relates to the development of this trail segment. The Town's 2008 "Parks, Trails, and Open Space Master Plan" calls for all or portions of the CAP corridor within its planning boundary to become an urban linear park with paved pathways and other amenities. A likely first phase of development will be an unpaved trail. Additional improvements may be considered as part of subsequent phases of construction.

Trail user organizations and advocacy groups, may also be willing to partner with Pinal County on the development, operation, and maintenance of the South Florence Segment of the CAP Trail.

Trail Data Summary:

Provided on the following page is a summary that identifies the specific features of this trail segment.

8. South Florence Segment

Trail Data Summary - South Florence Segment			
Feature:	Location / Limits:	Notes:	References
Begin:	Mile Post (MP): 0.0	State Route 79 (South)	CAP MP 238.3
End:	MP: 3.9	Cactus Forest Road	CAP MP 242.1
Segment Length:	3.9 Miles		
Jurisdiction:	MP 0.0 to MP 2.7	Pinal County	CAP MP 238.3 to 241.0
	MP 2.7 to MP 3.5	City of Coolidge	CAP MP 241.0 to 241.8
	MP 3.5 to MP 3.9	Pinal County	CAP MP 241.8 to 242.1
Land Ownership:	MP 0.0 to MP 3.9	CAP/BOR	CAP MP 238.3 to 242.1
Proposed Alignment	MP 0.0 to MP 0.25	Canal Left - Grade Separated Crossing	Section SF-1
	MP 0.25 to MP 0.5	Canal Left - Adjacent to Salazar Rd	Section SF-2
	MP 0.5 to MP 3.9	Canal Left - On Embankment	Section SF-3
Roadway Crossings	MP: 0.0	State Route 79 (Grade Separated)	CAP MP 238.3
	MP: 3.9	Cactus Forest Road	CAP MP 242.1
Drainage Crossings	MP 2.3	Existing Culvert I	CAP MP 240.6
	MP 3.3	Existing Culvert I	CAP MP 241.6
Fencing:	MP 0.0 to MP 0.25	Canal Left - New Fence/Wall/Ramp	
	MP 0.25 to MP 0.5	Canal Left - Existing Fence	
	MP 0.5 to MP 3.9	Canal Left - New or Relocated Fence	
Trail Connections:	MP 0.0		
Trailheads:	MP: 0.5	Coolidge Cemetery Trailhead	
Special Features:	MP: 0.0	Grade Separated Crossing at SR79	

8. South Florence Segment

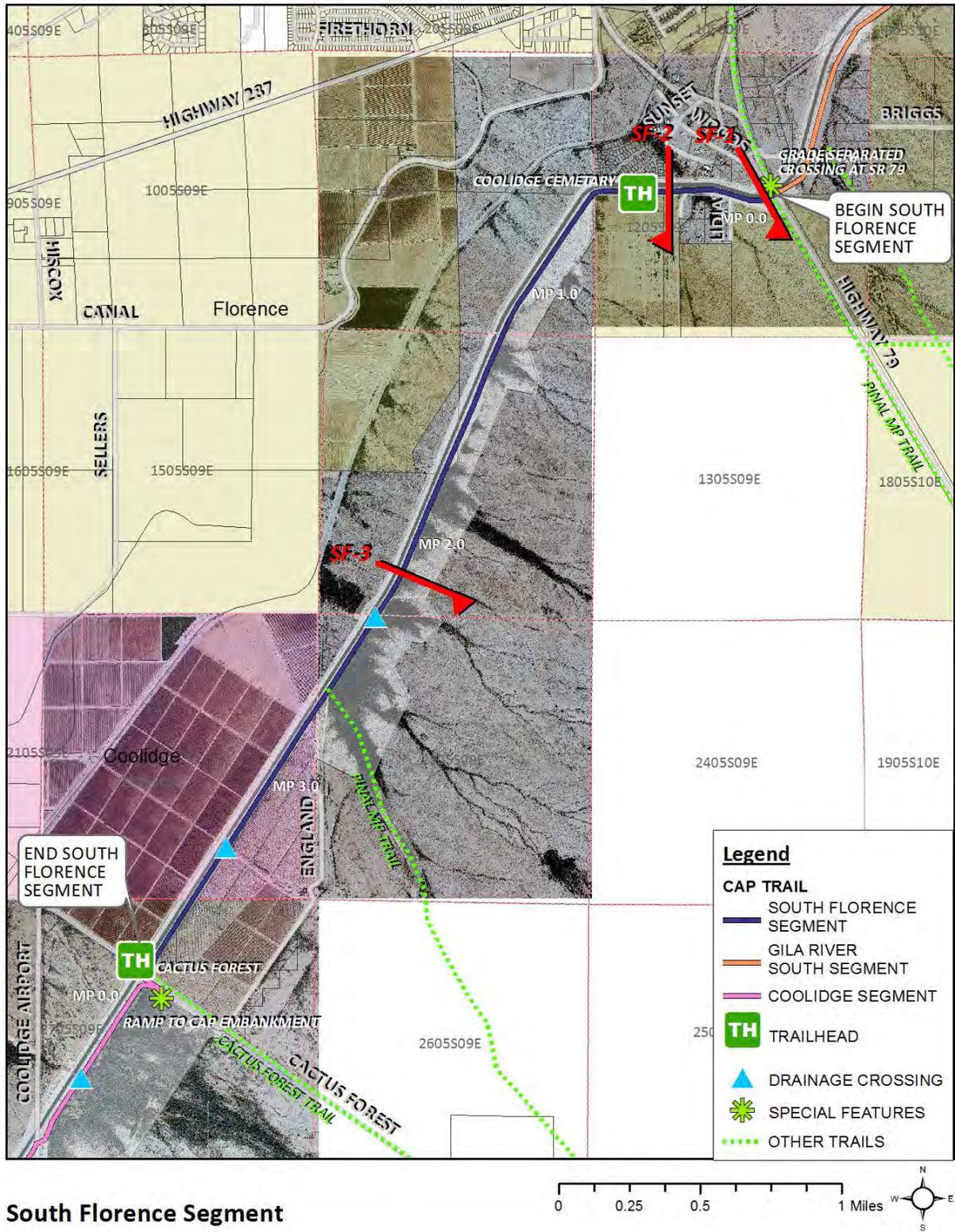


Figure 8-C: Trail Map – South Florence Segment

Typical Cross-Sections – South Florence Segment:

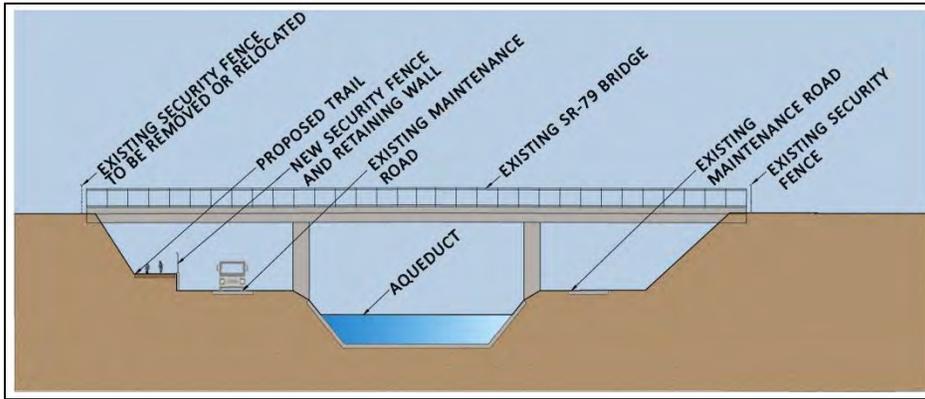


Figure 8-D: Cross-Section SF-1 - Typical of Mile Post 0.0 to Mile Post 0.25

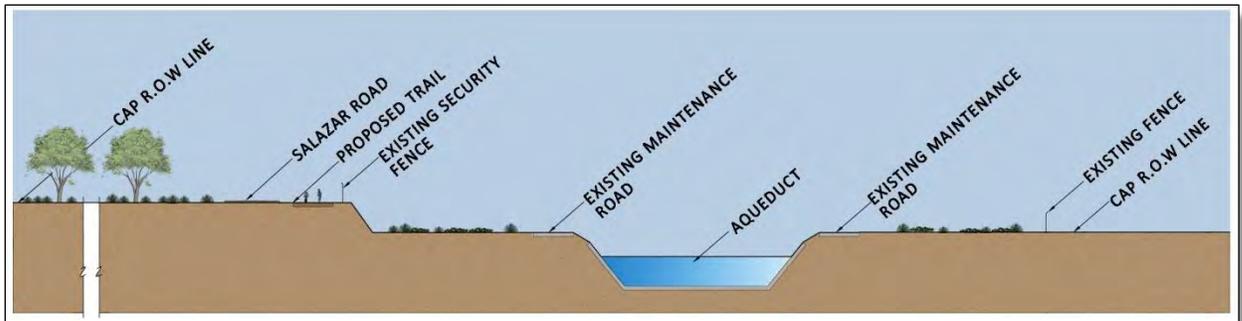


Figure 8-E: Cross-Section SF-2 - Typical of Mile Post 0.25 to Mile Post 0.5

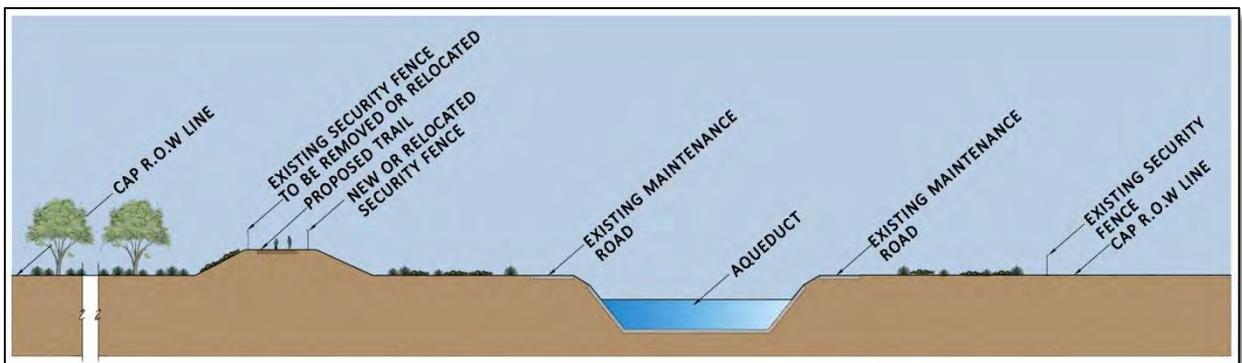


Figure 8-F: Cross-Section SF-3 - Typical of Mile Post 0.5 to Mile Post 3.9

CAP Trail Master Plan
Pinal County Segment



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Section 9
Coolidge Segment

Overview:

The Coolidge Segment of the CAP Trail is approximately 5.3 miles long and extends from Cactus Forest Road on the north to the Gas Line Road on the south. The segment is within the City of Coolidge's planning boundary. The segment will have excellent public access from Cactus Forest Road and the Coolidge Airport Road.

Cactus Forest Road is designated in the City of Coolidge General Plan as a minor arterial which will extend from downtown Coolidge to State Route 79, crossing the CAP Canal. It will provide for access to the CAP Trail for the residents of Coolidge and individuals residing east of the canal.

Trail Description:

This trail segment will begin at CAP Milepost 242.1. Through the entire length of this segment, the CAP Trail will be located on the existing embankment east of the aqueduct (canal left). The top of the embankment is slightly elevated above the surrounding landscape providing for broad desert vistas.

Throughout most of the segment the trail will be located outside of the existing security fence. As such, the requirements for new and/or relocated fencing will be minor. The trail will, however, cross several drainages. This will require the construction of graded ramps that extend down from the top of the embankment to an at-grade crossing of the drainageway and then back-up to the top of the embankment.



Figure 9-A: Photo: Proposed Trail Corridor Outside of Existing Security Fence



Figure 9-B: Photo: Livestock / Wildlife Crossing Near MP 3.4

The Coolidge Segment will terminate at the Gas Line Road. This is an improved, gravel utility line access road but it includes a bridge across the aqueduct. This road is closed to the public, but it could be used for emergency access to the CAP Trail if needed. The Gas Line Road bridge could also be used to connect the CAP Trail to future trails west of the aqueduct that may be developed by the City of Coolidge or others.

Connections and Trailheads:

There are two lateral canals that extend to the east of the CAP aqueduct within this reach. The corridors associated with these lateral canals could be developed with new trails.

Access to these corridors would need to be along the west side of the CAP right-of-way, extending south from the Airport Road and/or north from the Gas Line Road.

Development Issues:

The Coolidge Municipal Airport, a general aviation airfield, is adjacent to the CAP right-of-way within this segment. An existing barbed-wire fence near the perimeter of the airport keeps livestock from roaming on to the property. Signs noting the airport as a restricted access zone and more secure fencing may be required when the CAP Trail through this area is opened to the public. Improved fencing around the airport may also be necessitated by other development as the City's General Plan calls for business, commercial, industrial, and manufacturing land uses in the vicinity of the airport.

As with all segments of the CAP Trail, it will be necessary to work collaboratively with the United States Bureau of Reclamation to ensure that the trail's construction and use will not adversely impact protected cultural or biological resources. If potential conflicts with cultural resources are identified, appropriate mitigation measures will be implemented. If wildlife habitat is impacted, full replacement or enhancement of existing habitat will be required.

Potential Development Partners:

The City of Coolidge, with a resident population of 12,000 potential trail users, will be a key partner in the development of the Coolidge Segment of the CAP Trail. Trail user organizations and advocacy groups may also be willing to partner with Pinal County on the development, operation, and maintenance of the Coolidge Segment of the CAP Trail.

Trail Data Summary:

Provided on the following page is a summary that identifies the specific features of this trail segment.

9. Coolidge Segment

Trail Data Summary - Coolidge Segment			
Feature:	Location / Limits:	Notes:	References
Begin:	Mile Post (MP): 0.00	Cactus Forest Road	CAP MP 242.1
End:	MP: 5.3	Gas Line Road	CAP MP 247.4
Segment Length:	5.3 Miles		
Jurisdiction:	MP 0.0 to MP 5.3	Pinal County	
Land Ownership:	MP 0.0 to MP 5.3	CAP/BOR	CAP MP 242.1 to 247.4
Proposed Alignment	MP 0.0 to MP 2.2	Canal Left - On Embankment	Section CO-1
	MP 2.2 to MP 3.3	Canal Left - On Embankment	Section CO-2
	MP 3.3 to MP 5.3	Canal Left - On Embankment	Section CO-1
Roadway Crossings	MP: 0.0	Cactus Forest Road	CAP MP 242.1
	MP: 0.7	Coolidge Airport Road	CAP MP 242.8
Drainage Crossings	MP 0.4	Existing Culvert II, Exhibit B	CAP MP 242.5
	MP 2.9	Dip Crossing, Exhibit D	CAP MP 245.0
	MP 4.0	Existing Culvert II, Exhibit B	CAP MP 246.1
	MP 4.6	Existing Culvert II, Exhibit B	CAP MP 246.7
Fencing:	MP 0.0 to MP 5.3	Canal Left -Existing Fence	
Trail Connections:	MP: 0.9	Lateral Canal Trail	CAP MP 243.0
Trailheads:	MP: 0.0	Cactus Forest Road Trailhead	CAP MP 242.1
Special Features:	MP: 0.0	Ramp to Trail on Embankment	CAP MP 242.1
	MP 1.3 to MP 3.4	Adjacent to Coolidge Airport	CAP MP 243.2 to 245.5
	MP: 3.4	CAP Wildlife Bridge	CAP MP 245.5

9. Coolidge Segment

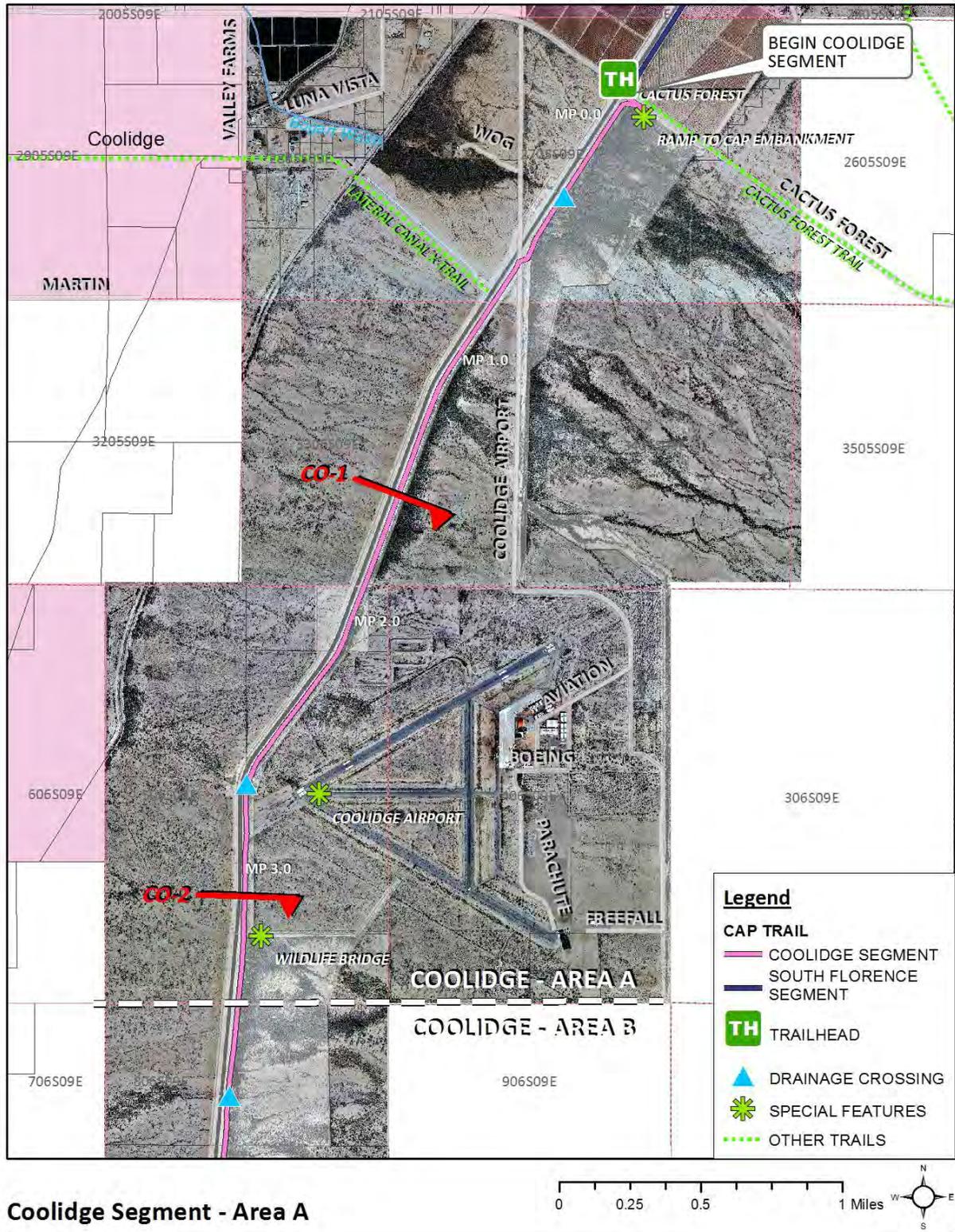


Figure 9-C: Trail Map – Coolidge Segment – Area A

9. Coolidge Segment

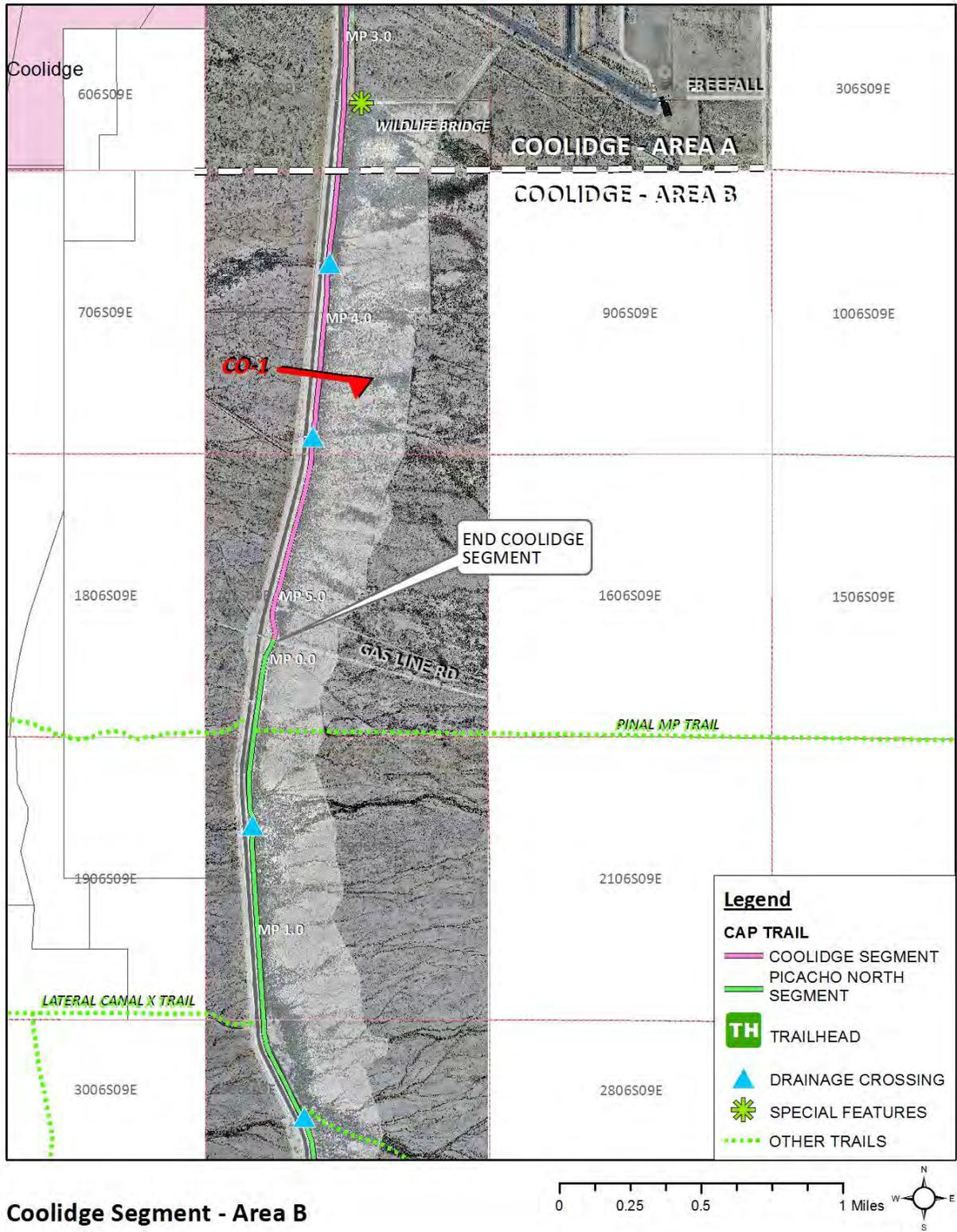


Figure 9-D: Trail Map – Coolidge Segment – Area B

Typical Cross-Sections – Coolidge Segment:

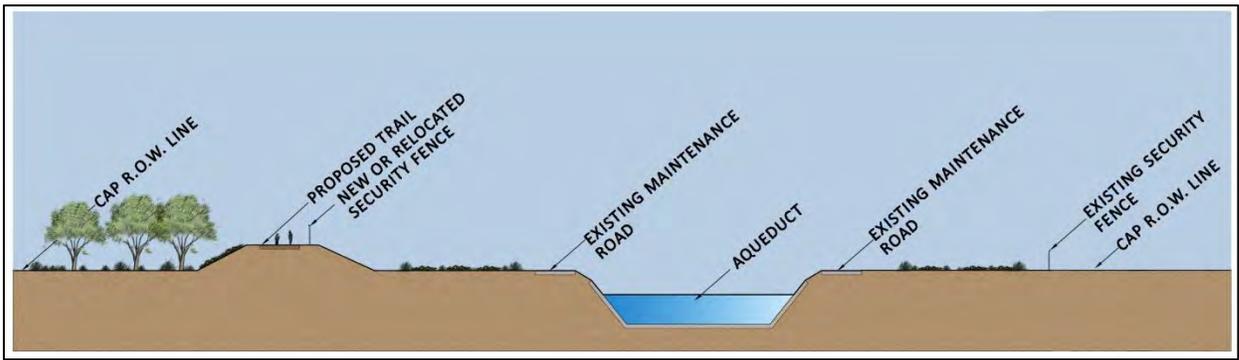


Figure 9-E: Cross-Section CO-1 - Typical of Mile Post 0.0 to Mile Post 2.2 & Mile Post 3.3 to Mile Post 5.3

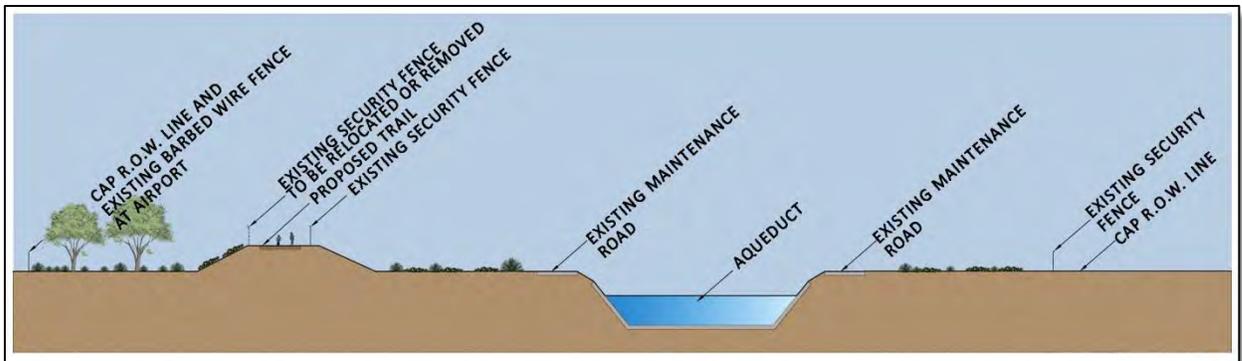


Figure 9-F: Cross-Section CO-2 - Typical of Mile Post 2.2 to Mile Post 3.3

CAP Trail Master Plan
Pinal County Segment



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Section 10
Picacho North Segment

Overview:

The Picacho North Segment is approximately 12 miles long and extends from the Gas Line Road south to the Brady Pump Station Road. This segment is rural in character and will cater to the hikers, equestrians, and cyclists interested in long-distance, non-urban trail experience.

Unlike many of the other segments which cross broad, relatively flat desert basins, the Picacho Mountains form the visual backdrop for this portion of the trail. Prominent landscape features include rugged mountain peaks, scenic foothill slopes, and densely vegetated arroyos.

Although the Picacho Mountains are not, at this time, readily accessible for recreation, the Pinal County Open Space and Trails Master Plan does call for the mountain range and surrounding areas to be managed as a regional natural resource / mountain park. The Picacho North Segment of the CAP Trail has the potential to provide access to numerous trails that might be developed within the proposed mountain park.



Figure 10-A: Photo: Picacho Mountains as seen from the CAP Trail.

Trail Description:



Figure 10-B: Photo: Riparian Vegetation in Green-Up Area along Proposed Trail Alignment

This trail segment will begin at CAP Milepost 247.4. The northernmost 6.5 miles portion of the segment will be on the existing embankment on the east side of the aqueduct (canal left). Existing and new / relocated fence will be utilized to maintain separation between the trail and the operational corridor associated with the canal.

Near the mid-point of this segment, the trail will pass by the Brady Pump Station and a portion of the aqueduct that is underground. In this location, the trail will follow existing unpaved service roads or old construction roads, minimizing disturbance to the surrounding landscape. Some additional fencing may be required to delineate the trail corridor.

10. Picacho North Segment

South of the Brady Pump Station the trail will continue on the embankment along the east side of the aqueduct (canal left) to segment mile post 10.0 where it will cross the canal on an existing livestock and game bridge. Crossing to the west side will eliminate potential conflicts with the Picacho Pump Station located near the southern terminus of this trail segment.

Pinal County and the Bureau of Reclamation will monitor the use of the existing livestock / game bridge by hikers, equestrians, and cyclists. If it is determined that recreational use of the bridge is having an adverse impact on livestock or game, it may be necessary to construct a second bridge in this approximate location.

After crossing the canal, the trail will follow an existing unpaved road just outside of the CAP right-of-way. This road is on Arizona State Trust Land. The Picacho North Segment terminates near a turn-out / lateral canal which is also the northern end of the trail previously master planned by Pima County. (See Pima County "CAP Trail Master Plan," December 2008).

Connections and Trailheads:

There are several unnamed future trails in this area that are proposed by the "Pinal County Open Space and Trails Master Plan." As these trails are developed by others, there is potential to make connections to the CAP Trail.

There are no trailheads proposed within the trail segment, but a trailhead just south of the segment has been proposed by the Pima County "CAP Trail Master Plan."

Development Issues:

United States Bureau of Reclamation records indicate that there are known cultural resource sites in the vicinity of this trail segment. It will be necessary to work closely with the Bureau to ensure that the development and use of the trail does not have adverse direct or indirect impacts on these resources.

It will also be necessary to acquire right-of-way from the Arizona State Land Department for that portion of the trail segment that is on State Trust Land.

Potential Development Partners:

In as much as there are no incorporated cities or towns adjacent to this trail segment, Pinal County will likely be the lead agency coordinating the final design and construction of this trail.

Trail user organizations and advocacy groups may also be willing to partner with Pinal County on the development, operation, and maintenance of the Picacho North Segment of the CAP Trail.

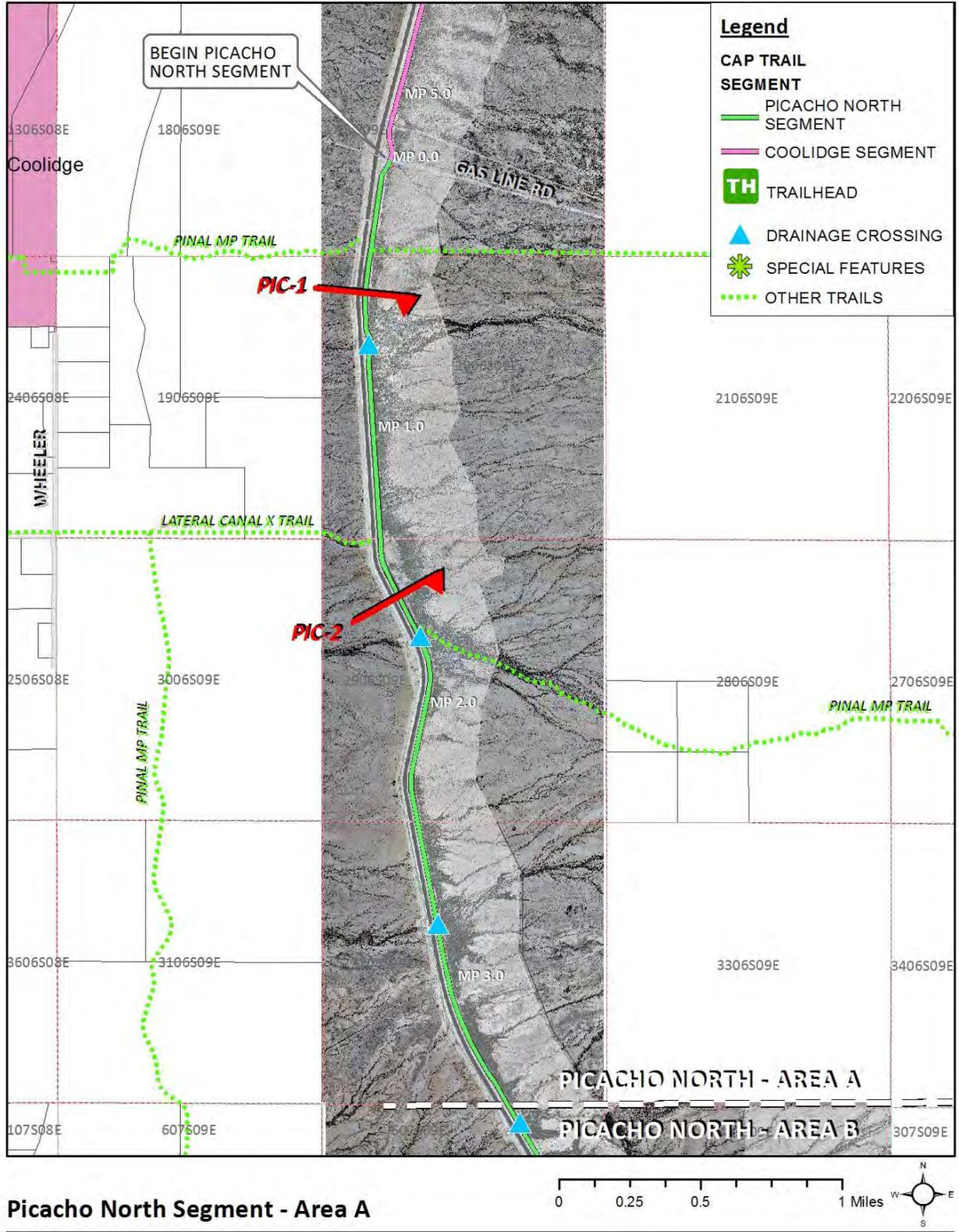
Trail Data Summary:

Provided on the following page is a summary that identifies the specific features of this trail segment.

10. Picacho North Segment

Trail Data Summary - Picacho North Segment			
Feature:	Location / Limits:	Notes:	References
Begin:	Mile Post (MP): 0.00	Gas Line Road	CAP MP 247.4
End:	MP: 12.00	Brady Pump Road	CAP MP 259.2
Segment Length:	12.0 Miles		
Jurisdiction:	MP 0.0 to MP 12.0	Pinal County	
Land Ownership:	MP 0.0 to MP 10.1	CAP/BOR	CAP MP 247.4 to 257.3
	MP 10.1 to MP 11.7	Arizona State Trust Land	CAP MP 257.3 to 258.9
	MP 11.7 to MP 12.0	CAP/BOR	CAP MP 258.9 to 259.2
Proposed Alignment:	MP 0.0 to MP 1.4	Canal Left - On Embankment	PIC-1
	MP 1.4 to MP 4.6	Canal Left - On Embankment	PIC-2
	MP 4.6 to MP 6.5	Canal Left - On Embankment	PIC-1
	MP 6.5 to MP 7.4	Canal Left - On Siphon	PIC-3
	MP 7.4 to MP 10.0	Canal Left - On Embankment	PIC-1
	MP 10.0	Game and Cattle Crossing	N/A
	MP 10.1 to MP 12.0	Canal Right - ASLD / CAP BOR	PIC-4
Roadway Crossings:	MP 0.0	Gas Line Road	CAP MP 247.4
	MP 4.6	County Road	CAP MP 252.0
	MP 12.0	Brady Pump Road	CAP MP 259.2
Drainage Crossings:	MP 0.7	Dip Crossing, Exhibit D	CAP MP 248.1
	MP 1.7	Existing Culvert I, Exhibit A	CAP MP 249.1
	MP 2.8	Existing Culvert I, Exhibit A	CAP MP 250.2
	MP 3.6	Existing Culvert I, Exhibit A	CAP MP 251.0
	MP 4.1	Existing Culvert I, Exhibit A	CAP MP 251.5
	MP 5.4	Dip Crossing, Exhibit D	CAP MP 252.8
Fencing:	MP 0.0 to MP 1.4	Canal Left - Existing Fence	
	MP 1.4 to MP 4.6	Canal Left - New or Relocated Fence	
	MP 4.6 to MP 10.0	Canal Left - Existing Fence	
	MP 10.1 to MP 12.0	Canal Right - Existing Fence	
Trail Connections:	MP 1.4	Lateral Canal Trail	CAP MP 248.8
	MP 5.5	Lateral Canal Trail	CAP MP 252.9
	MP 12.0	Lateral Canal Trail	CAP MP 259.2
Trailheads:	MP 12.0	Picacho Trailhead	Pima County Master Plan
Special Features:	MP 10.0	Canal Crossing on Livestock Bridge	CAP MP 257.3

10. Picacho North Segment



Picacho North Segment - Area A

Figure 10 C: Trail Map – North Picacho Segment – Area A

10. Picacho North Segment

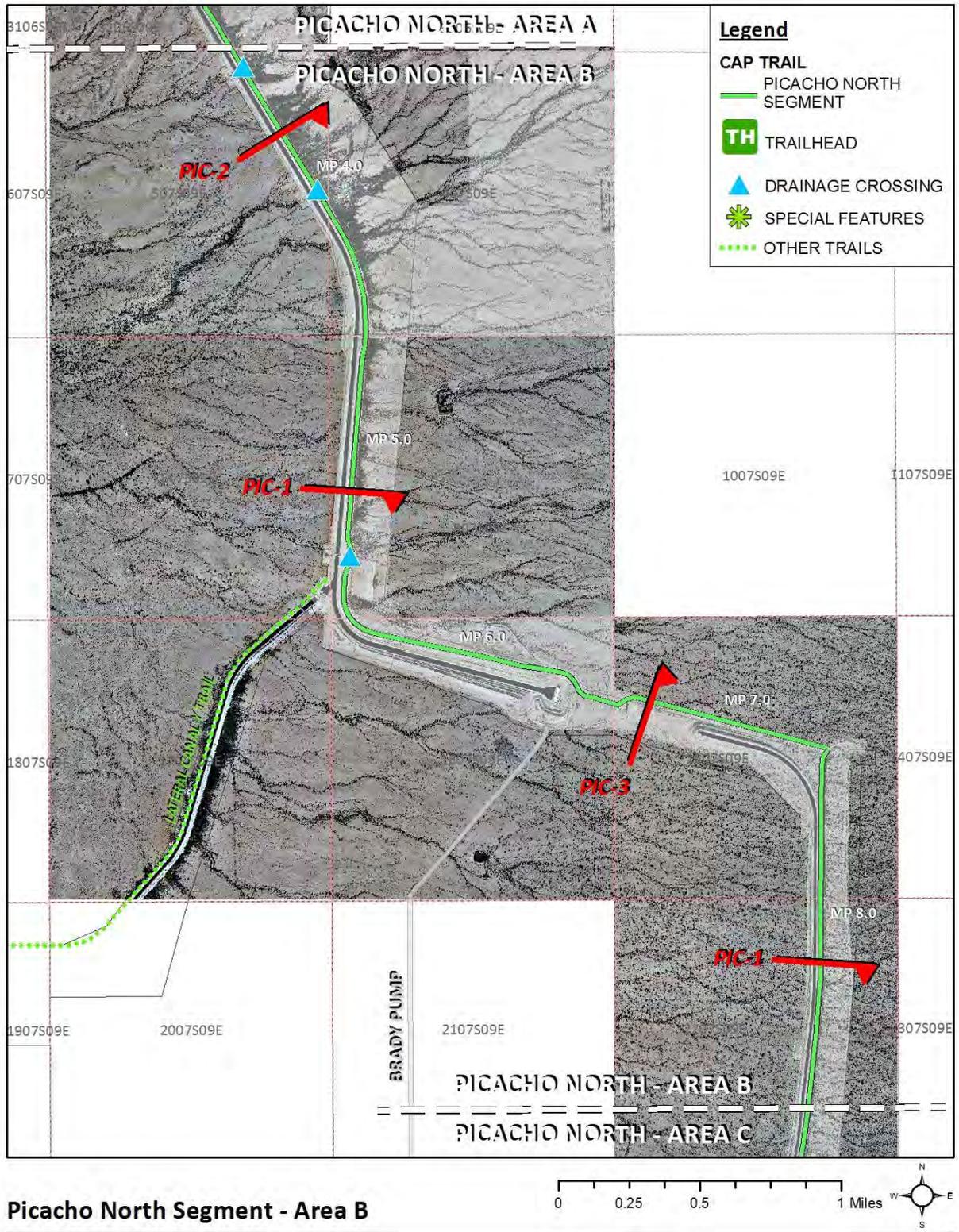


Figure 10 D: Trail Map – North Picacho Segment – Area B

10. Picacho North Segment

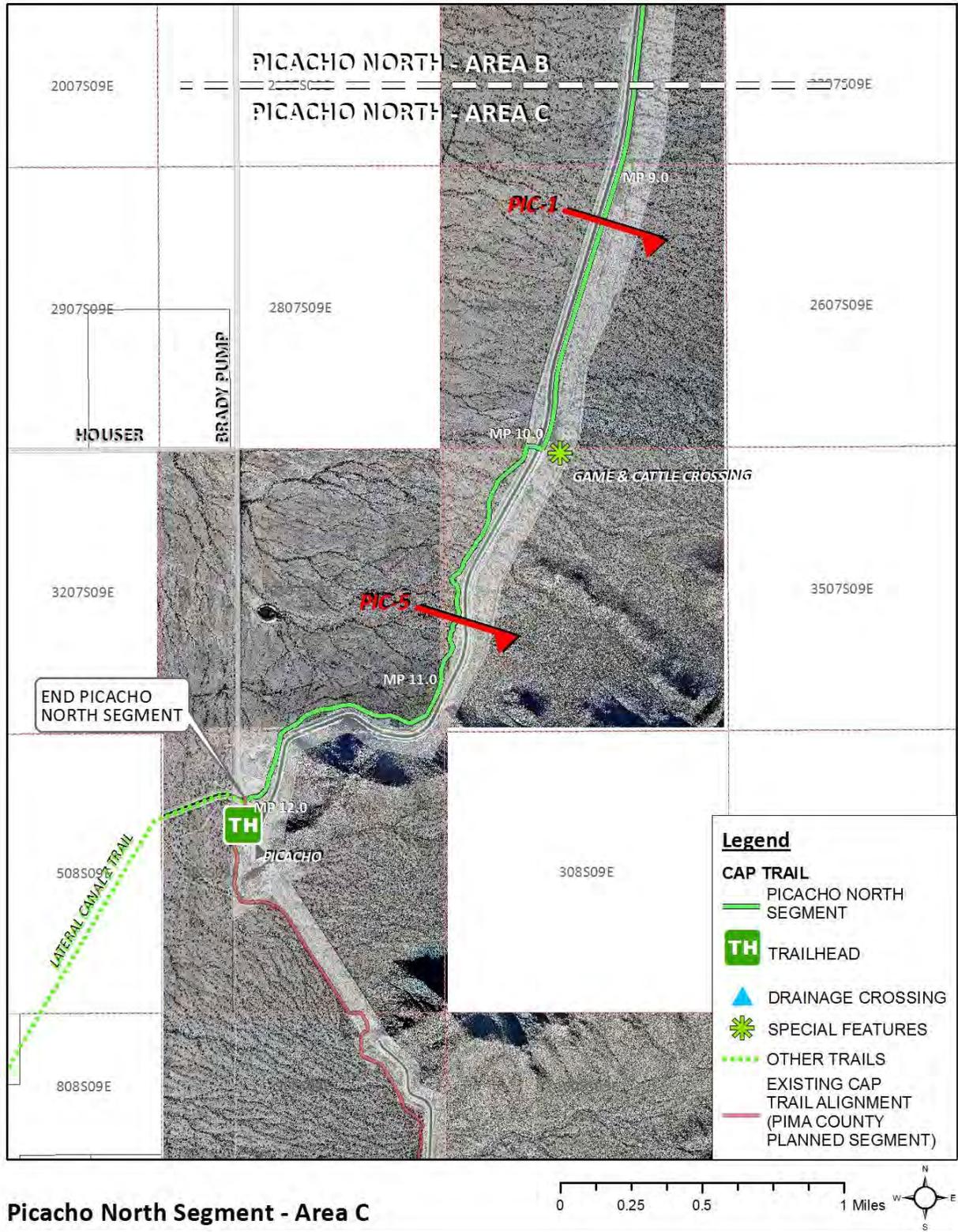


Figure 10 E: Trail Map – North Picacho Segment – Area C

Typical Cross-Sections – Picacho North Segment:

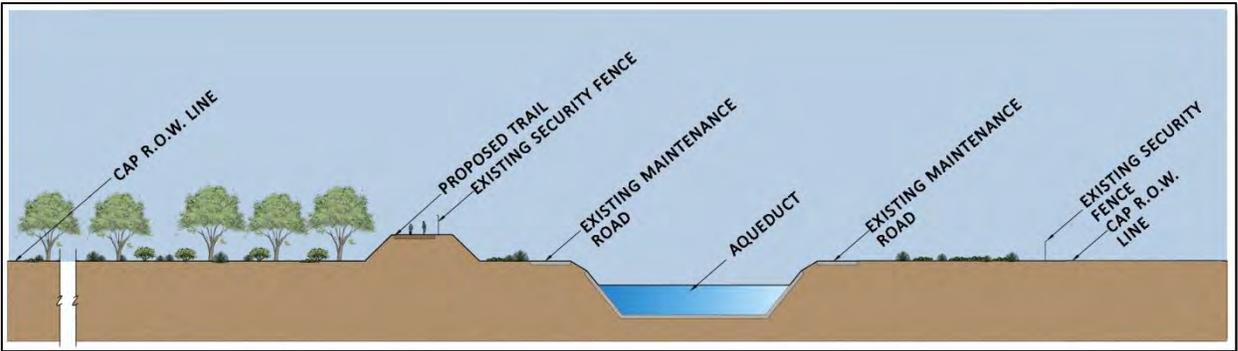


Figure 10-F: Cross Section PIC-1 – Typical of Mile Post 0.0 to 1.4, 4.6 to 6.5, and 7.4 to 10.0

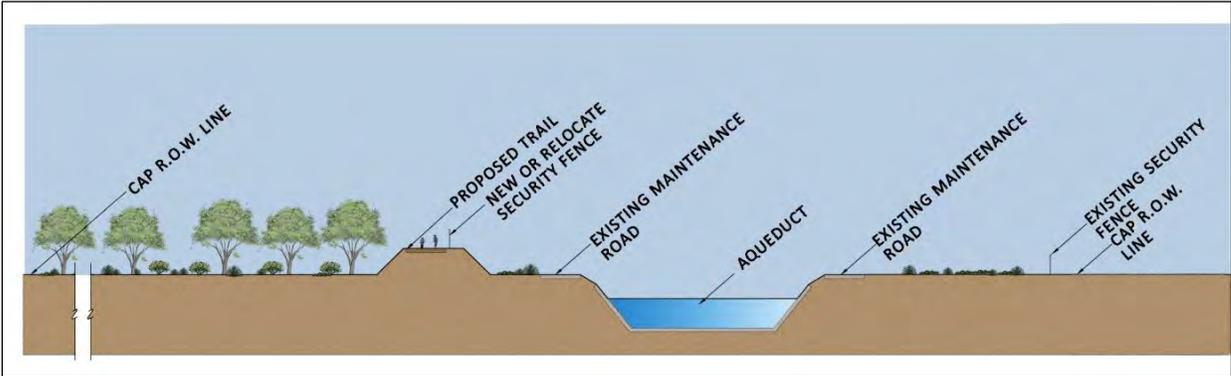


Figure 10 – G: Cross-Section PIC-2 – Typical of Mile Post 1.4 to 4.6

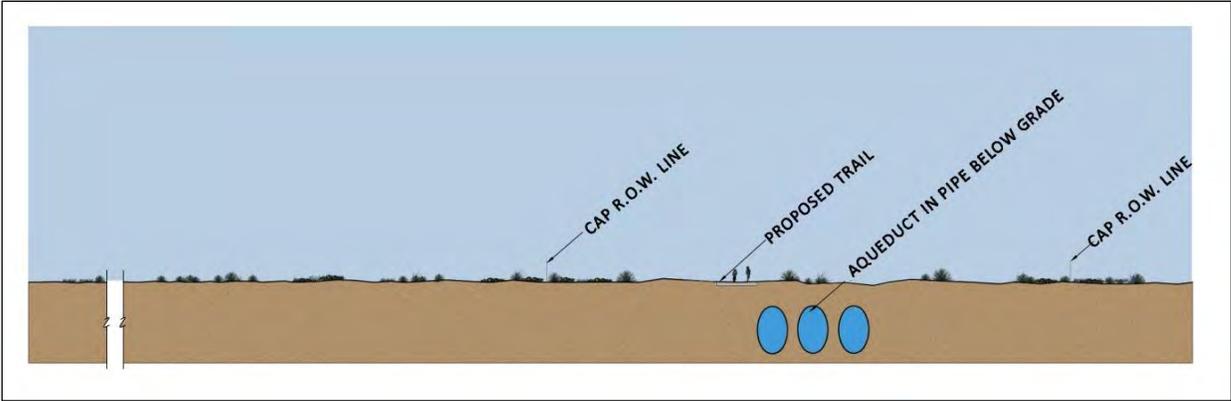


Figure 10 – H: Cross-Section PIC-3 – Typical of Mile Post 6.5 to 7.4

Typical Cross-Sections – Picacho North Segment:

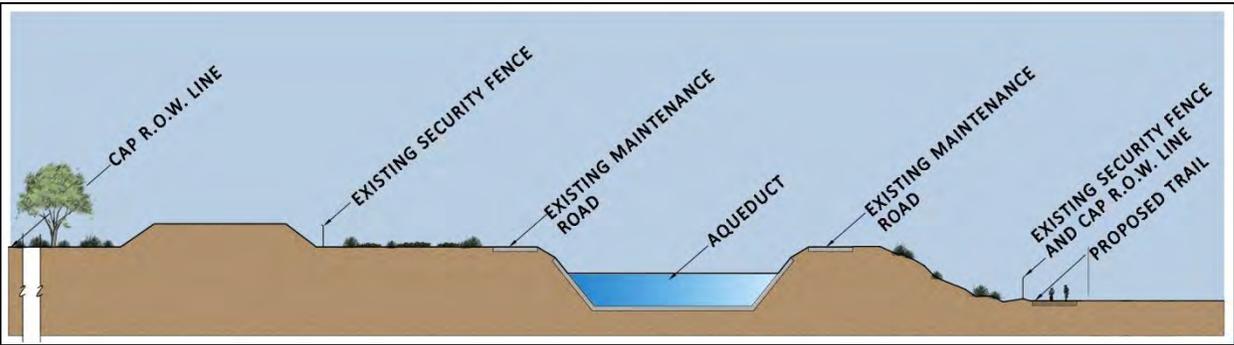


Figure 10 – I: Cross-Section PIC-4 – Typical of Mile Post 10.1 to 12.0

CAP Trail Master Plan
Pinal County Segment



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Section 11
Development Standards
and Guidelines

11. Development Standards and Guidelines

Introduction:

As a multiple-use, non-motorized facility, the CAP Trail should be designed and constructed to accommodate the needs of anticipated users, to provide for user safety, and to minimize the requirements for on-going maintenance. The development standards and guidelines provided herein should be applied to all sections of the CAP Trail to accomplish these objectives.

The Trail:

- **General Requirements:** The trail is intended for use by pedestrians (hikers, joggers, etc.), bicyclists, and equestrians. In all instances, the alignment, surfacing, and features of the trail should accommodate these users.
- **Trail Surface:** In most instances, the trail should have a natural soil surface that is graded and compacted to provide a stable surface condition. A natural soil surface will be used in all rural areas. In urban areas, where the CAP Trail is made a part of an urban trail system, a stabilized aggregate and/or paved surface may be appropriate. Paving materials may include portland cement concrete, asphaltic concrete, or stabilized decomposed granite.

In locations where paving is used, a parallel and adjacent unpaved path should be retained for equestrians and other users who prefer a non-paved surface.

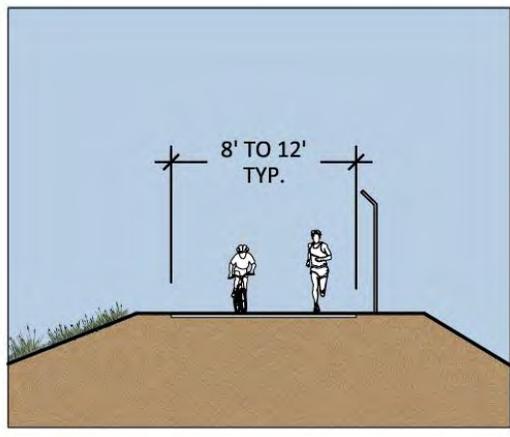


Figure 11-A: Trail on Top of Existing Levee

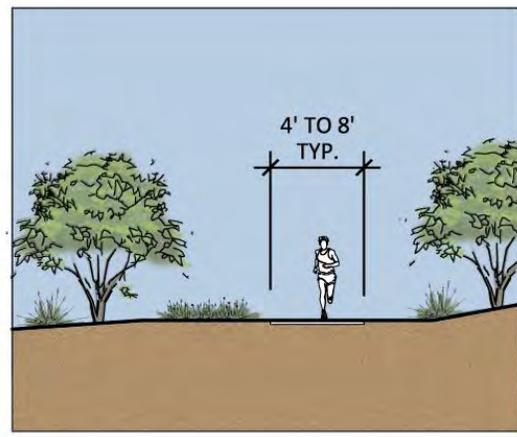


Figure 11-B: Trail in Single-Track Configuration

- **Trail Width:** The width of the trail will vary. In locations where the trail is on top of an existing levee or similar structure, the trail will vary from approximately 8' to 12' or greater. In these locations the trail width will be a function of the existing conditions.

In locations where the trail extends through the adjacent desert landscape, the configuration of the trail may change to a single-track type trail with an effective width of approximately 4'. Where narrower trail widths are used, it will be important to provide passing zones at regular intervals so that equestrians, bicyclists, and pedestrians can safely pass when traveling in opposite directions.

11. Development Standards and Guidelines

- **Gradient:** In most instances the gradient of the trail will follow the gradient of the aqueduct which is quite flat. In isolated areas, such as at drainage crossings, gradients will be steeper. While no maximum gradient is proposed, grades should safely accommodate the full range of anticipated users (not just the most skilled) and should create conditions that do not promote erosion.
- **Sight Distances:** A practical approach to sight-distances should be employed to avoid conditions where trail users traveling in opposite directions will unexpectedly encounter one another. An example of this would be a bicycle traveling at a relatively high speed suddenly encountering an equestrian. Trail alignment, topography, and vegetation should be considered in areas where sight distances could be an issue.
- **Drainage and Erosion Protection:** Storm water runoff must be considered during detailed design and trail construction. Features such as crib walls, molar, armoring, and knicks should be used to protect the trail and adjacent areas from erosion. These features will likely be needed only in steeper areas away from the flat top of the existing levee.

Fencing:

- **CAP Canal Security Fencing:** In all instances a security fence will be required to separate the trail from the CAP aqueduct and its adjacent maintenance road. The height, materials, and configuration of the fence shall be in accordance with the Central Arizona Water Conservation District's standard details and specifications.

In many instances, this security fence is existing and in a location that will allow for trail development and use. In certain locations, the existing fence will need to be relocated or a new fence installed. Decisions regarding relocation vs. new fence will need to be made on a case-by-case basis.

- **Boundary Delineation Fence:** A boundary delineation fence has been installed in many areas to define the limits of the existing CAP right-of-way. In some instances, it will be necessary to install this fence. An example of where this might be needed is an area where there is no existing right-of-way fence and the trail corridor is adjacent to private land.

In these locations a standard three-strand barbed wire fence or a modified three-wire game fence (per the Arizona Game and Fish Department guidelines) should typically be used.

- **Protected Resource Area Exclusion Fence:** In some locations along the trail corridor, it may be necessary to restrict access to protected natural resource areas or cultural resource sites. Typically these areas will be inconspicuously fenced using fence types and materials similar to those used for boundary delineation. More secure fencing may be used if required as part of a resource protection and mitigation plan.
- **Other Fence Types:** During the detailed design of individual trail segments, special conditions may be identified that warrant special fencing. The type, configuration, and materials used to construct these fences will be determined on a case-by-case basis.

Gates:

- **General Requirements:** All gates installed along the CAP Trail must comply with the standard details and specifications as published by the Central Arizona Water Conservation District.
- **Gates that Restrict Access by Off-Highway Vehicles:** The agreement between Pinal County and the United States Bureau of Reclamation that allows for the construction and use of the CAP Trail stipulates that the trail will be available for non-motorized uses only. As such, all gates must be design and maintained to restrict access to the trail by motorcycles, quads, and other types of off-highway recreational vehicles.
- **Gates that Control Livestock Movement:** Exclusive of gates in urban areas where livestock grazing on adjacent lands is prohibited, all gates must be designed to control the movement of livestock through the gate opening.

Trailheads:

- **General Requirements:** Trailheads and access points should be provided at regular intervals along the corridor to accommodate public access to the trail and to discourage trespass across private lands. In urban areas, trailheads should be provided at regular intervals as close as every few miles. In rural areas the spacing between trailheads can be greater.

Additionally, the size and scope of trailheads can and should vary. These can range from trailheads with paved parking and space for truck-equestrian trailer parking and maneuvering to small access nodes that may have no parking but rather allow users to access the trail on foot, on a bicycle, or on horseback.

- **Trailhead Sites:** This master plan suggests certain general locations where trailheads are appropriate, but the plan does not identify specific parcels of land for their development. This provides flexibility and will allow the County or the local jurisdiction to explore options and to work with various landowners and developers to select the best and most cost-effective sites for trailhead construction.

It should also be noted that improvements to roadways that cross the CAP canal are planned for multiple locations throughout the County. As these improvements are made, there will be a need to acquire additional right-of-way and an opportunity to create accessible trailheads at prominent locations.

11. Development Standards and Guidelines

Concept Plan for Major Trailhead:

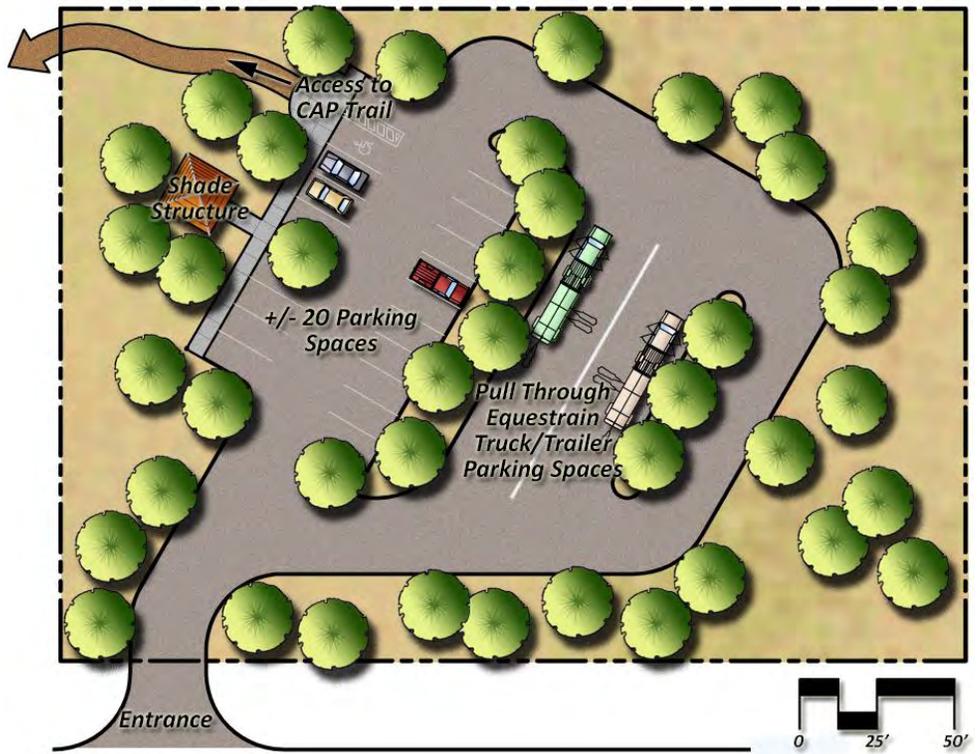


Figure 11-C: Concept Plan for Major Trailhead

Concept Plan for Minor Trailhead:

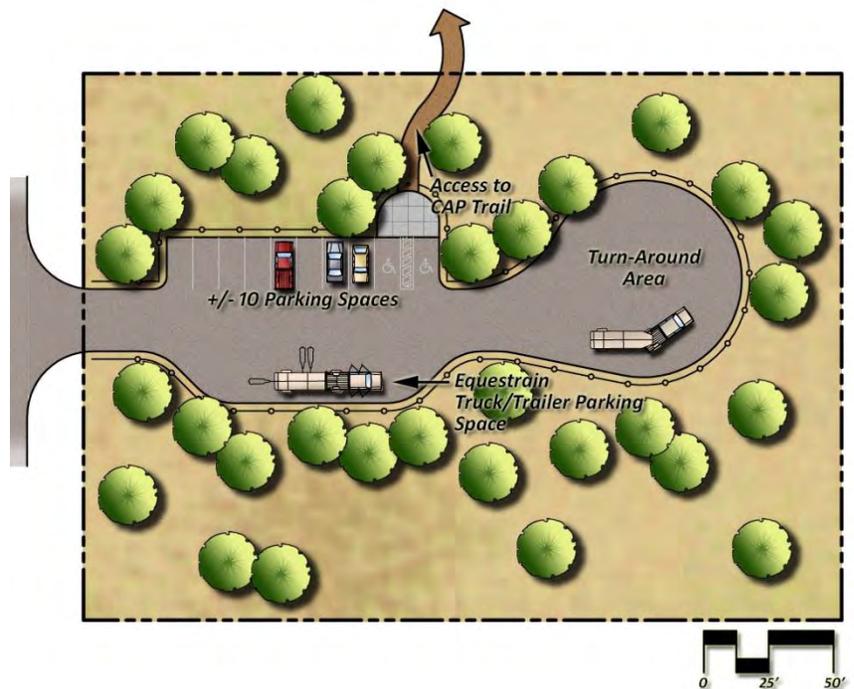


Figure 11-D: Concept Plan for Minor Trailhead

Concept Plan for Local Access Node:

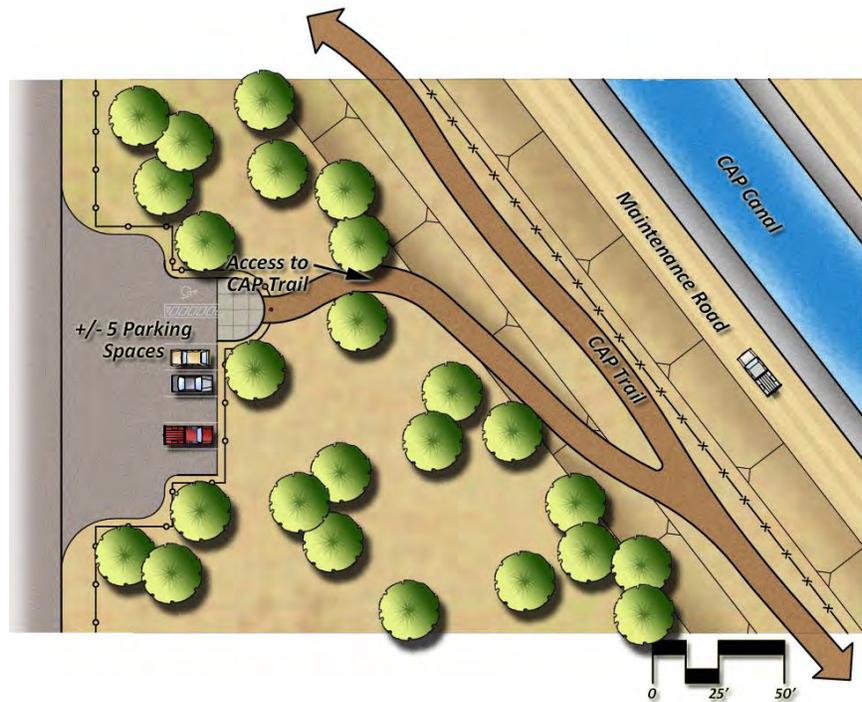


Figure 11-E: Concept Plan for Local Access Node

Graphics and Signage:

A logo for the CAP Trail has been developed and should be incorporated into all signs, printed material, and web-based material associated with the Pinal County segment of the CAP Trail. This logo can be used by itself or in combination with the logo and graphic standards of collaborating jurisdictions.

- **CAP Trail Identification Signs:** CAP Trail Identification signs should be installed at all trailheads and access points. These should be fabricated of durable material, should incorporate the trail logo, and should acknowledge the Pinal County Open Space and Trails Department and other collaborating agencies and jurisdictions including, but not limited to: The United State Bureau of Reclamation and the Central Arizona Water Conservation District.
- **Trail Use Rules and Etiquette Signs:** Trail use rules and etiquette signs should be installed at all trailheads, access nodes, and at other prominent locations along the trail corridor. These signs should clearly identify permitted uses, hours of operation (if applicable), prohibited uses and activities, and general guidelines for safe trail use. Statutes and ordinances that apply should be cited.

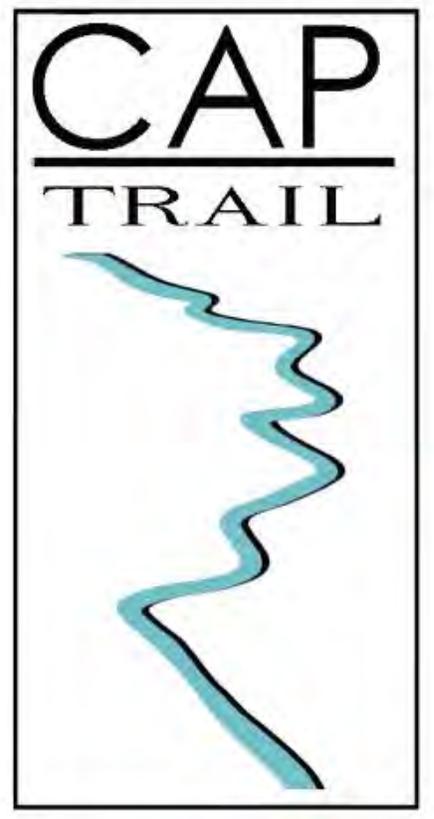


Figure 11-F: CAP Trail Logo

11. Development Standards and Guidelines

Where portions of the trail are a part of a local jurisdictions' trail system, additional standards and regulations pertaining to trail use may be included. Information regarding how to report violations of the trail use rules and / or vandalism to trail features should be provided.

- **Trail Maps:** A trail map that shows the CAP Trail through Pinal County, the current location of the sign viewer, connections to other trails, and points of interest in the vicinity should be installed at all trailheads, access nodes, and other appropriate locations.
- **Interpretive Signs:** The trail use experience can be enhanced if interpretive signs are provided to describe the history of the area or the biological, cultural, or visual resources present. These signs should be concise and should include graphic illustrations as well as text. A resource that can be used to help in the planning and design of interpretive signs is the United States Department of the Interior – National Park Service (2009) Publication Wayside Exhibits – A Guide to Developing Outdoor Interpretive Exhibits.
- **Trail Markers:** Low-cost, flexible trail markers (Carsonite or similar) identifying the CAP Trail should be installed at regular intervals along the trail corridor. Typically these markers should be installed at intervals not exceeding one mile, but greater spacing may be utilized in rural areas where the volume of trail users is low. Trail markers should indicate mileage from designated point of origin or to a designated destination.

Reference Standards and Specifications:

Standard details and specifications for trails and related facilities, as published by the following agencies, should be utilized in the development of the CAP Trail through Pinal County. Priority should be given to the standards of these agencies in the order listed below.

- United State Bureau of Reclamation
- Central Arizona Water Conservation District
- Pinal County Open Space and Trails Department
- Pinal County Public Works Department
- Municipal Parks and Public Works Departments

CAP Trail Master Plan
Pinal County Segment



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Section 12
Implementation Plan

Introduction:

With the completion of this Master Plan, the County has set the stage for the incremental development of the Pinal County Segment of the CAP Trail, from Baseline Road on the north to the Picacho Mountains on the south. The plan adds significant detail to the concept of a multiple-use, non-motorized, long-distance regional trail as originally presented in the 2007 “Open Space and Trails Master Plan” and it provides guidance for the detailed design and engineering of each subsection of the trail.

The master plan also provides local jurisdictions with a concrete scheme that can be incorporated into their linear parks, trails, and transportation plans. By incorporating the CAP Trail into these documents, it will enable local officials to allocate funding and other resources as needed for trail construction.

Additionally, the Master Plan communicates to other agencies and departments Pinal County’s vision for the CAP Trail. Agencies such as the Arizona Department of Transportation will now have a specific Pinal County approved document that they can and must consider as they plan for the roads and highways that will cross or otherwise engage the CAP corridor.

Master Recreational Use Agreement:

As a follow-up to the CAP Trail Master Plan, Pinal County will negotiate and enter into a Master Recreational Use Agreement with the United States Bureau of Reclamation (BOR). As the owner of the underlying property, BOR requires that all development and use of the subject lands be reviewed and approved by that agency. The Master Agreement will identify the scope and character of the improvements that can be made along the corridor and the uses that will be allowed. It will also identify the responsibilities of various parties for operation and maintenance of the trail. The execution of this agreement will be a prerequisite to trail development.

Phasing:

The CAP Trail through Pinal County will be constructed incrementally over a period of many years. Those portions closest to existing resident populations and those that can be developed at minimal cost will be constructed and opened for public use first. As these segments are completed, there will be increased interest in those sections that connect them, even though they will be more difficult and expensive to construct.

Partnerships with Local Jurisdictions:

To the greatest extent possible, Pinal County will partner with local jurisdictions on the final design, construction, and operation of individual trail segments. This will allow additional resources to be allocated to the effort and will enable local jurisdictions to make the CAP Trail an integral component of their trail systems. In areas where the trail does not extend through the corporate boundary of a city or town, Pinal County will continue to be the lead agency.

The Trail Development Process for Individual Trail Sections:

The sequence of tasks that must be completed to move from Master Plan to operating trail are described below.

- **Task 1: Adoption of CAP Trail Master Plan**

Typically a local jurisdiction will adopt the CAP Trail Master Plan or that portion of it that pertains to the trail within their planning boundary. This may be done formally by a resolution of the town's council or informally by simply incorporating the CAP Trail into the community's trail system or parks plan.

- **Task 2: Identification of Trail to be Constructed**

The portion of the trail to be constructed as part of an individual project may be an entire trail segment as identified herein, but more likely will be a portion thereof. As an initial step in the process, the exact limits of the planned construction will need to be identified.

- **Task 3: Allocation of Funding for Trail Design and Construction**

There will be costs associated with the final design and construction of each portion of the CAP Trail. Funds will need to be allocated for:

1. Final Design and Engineering
2. Environmental Assessments and Clearances
3. Construction

Even in circumstances where a community intends to use its own forces to implement the final design and construction work, the allocation of some funds will likely be required to complete the environmental review and approval processes. Pinal County can assist local governments with the establishment of a budget for this work.

- **Task 4: Environmental Assessment**

The completion and the approval of an Environmental Assessment (EA) will be a condition of the Bureau of Reclamation's approval for each project. When determining the scope of each EA, local governments are encouraged to work with Pinal County to make certain that the results of previous investigations are available as background information and to help ensure that the EA is appropriately limited to areas of direct and indirect impact.

A component of each EA will be an investigation of cultural resources. Many of these resources were previously inventoried and mapped, but due to the date of the initial assessment, BOR now intends to review and update the information associated with many of these recorded sites. A collaboration with BOR, one that builds on and utilizes their on-going cultural resource survey work, can potentially reduce the costs to be borne by the local government agency.

When preparing the Environmental Assessment, it will be necessary to conduct field reconnaissance work at the time the work is being implemented to verify existing conditions and evaluate potential impacts on cultural and/or biological resources.

- **Task 5: Coordination with the Central Arizona Water Conservation District**

The Central Arizona Water Conservation District (CAWCD), as operator of the CAP, is responsible for the security of the aqueduct, the operation of the canal and its pump stations, and the maintenance of the right-of-way. As such, the development of each segment of trail will require close coordination with the CAWCD. The early identification of all improvements that will be required by the CAWCD will be an important step in the development process.

- **Task 6: Coordination with Other Agencies and Landowners**

While the majority of the CAP Trail through Pinal County will be built within the existing CAP right-of-way, there will be portions that are routed through lands not owned by the Bureau of Reclamation. These may include Arizona State Trust Lands or lands controlled by other state or federal agencies. Pinal County will assist local jurisdictions by providing information related to the process for acquiring the right to build the trail on State Trust Land. The County will also share with local jurisdictions information related to its experience working with other landowners.

The crossing of roadways with the trail will require coordination with the Arizona Department of Transportation (as in the case of the SR 79 crossings) or the Pinal County Public Works Department. Preliminary guidelines for these crossings are provided herein. A more detailed assessment of traffic volumes and roadway conditions at the time of final design for each crossing will be required.

- **Task 7: Operations and Maintenance Plan**

Before the trail segment is opened to the public, an operations and maintenance plan will need to be in place. This will be a requirement of the Recreational Use Sub-Agreement and essential to making the trail a successful public amenity over the long-term.

- **Task 8: Execution of a Recreational Use Sub-Agreement with Pinal County**

To ensure consistency and compliance with the Master Agreement between Pinal County and the Bureau of Reclamation, each local jurisdiction will be required to enter into a sub-agreement with Pinal County as portions of the trail are constructed within their boundaries. This agreement will address issues such as limiting the trail to non-motorized uses, periodic monitoring of the trail, and the implementation of trail maintenance activities.

- **Task 9: Design and Engineering of Trail Segment**

The final design and engineering required will vary from segment to segment. For portions of the trail that are to be built on the existing (canal left) levee with few other improvements, the plans and specifications prepared as part of the final design will be minimal. However, a complete and accurate set of documents should be prepared for use by construction crews and for use in demonstrating compliance with BOR and/or other requirements.

In other locations, the plans and specifications may include the design and engineering of items such pedestrian / equestrian bridges or other structures. In these instances, the documents will be more elaborate and they may be subject to local building department reviews and permitting.

For features such as fences and gates, the plans and specifications must reflect the standard details and material specifications as adopted and published by the Central Arizona Water Conservation District.

- **Task 10: Bidding**

The manner in which the services of a construction contractor are procured will be based on the codes, policies, and procedures of each local jurisdiction. Prior to awarding a construction contract, consultation with the Central Arizona Water Conservation District should occur to make certain that the contractor can meet the requirements of the CAWCD and be authorized to work within the CAP right-of-way.

- **Task 11: Construction**

Construction, by municipal crews or by a private construction contractor, is the final step in the development process. It will be important to provide appropriate oversight during construction and, where applicable, to provide for a materials testing and quality control program. Standard procedures for public works projects should be utilized with special provisions added as may be required by the Central Arizona Water Conservation District or the Bureau of Reclamation.

In instances where it is appropriate to use volunteers to construct the trail, that option should be pursued as a cost saving measure. The use of volunteers not only helps to reduce cost but it also enables the volunteers to have a sense of ownership in the completed project.

Potential Resources

In addition to the support that will be provided by the Pinal County Open Space and Trails Department, resources available to local jurisdictions as part of their CAP Trail development efforts may include:

- **The Central Arizona Water Conservation District**

While the District's ability to assist may be limited, the CAWCD is committed to making the CAP Trail a success. With sufficient lead time, the District will consider requests to install gates or make other improvements as may be needed for the trail and to do this work at no cost to the local jurisdiction. Opportunities for collaboration with the CAWCD should be pursued.

- **Pima County, Maricopa County, and other Municipal Governments**

Pima County, Maricopa County, and communities such as the Town of Marana are all working towards the common goal of developing a continuous 336 mile long National Recreational Trail along the CAP corridor. All are at various stages of the planning, design, and development process. Shared information and lessons-learned can be of great value to communities beginning the process of developing the CAP Trail through their jurisdiction.

- **The National Park Service (NPS) Rivers, Trails, and Conservation Assistance Program**

This program is designed to help communities by providing expertise and experience from around the nation. With a completed master plan for the CAP Trail in-place, this program may be able work with local governments to conduct public meetings and information campaigns that will inform the public and increase support for trail development.

(See http://www.nps.gov/ncrc/programs/rtca/whoweare/wwa_who_we_are.htm)

- **Arizona State Parks**

The Arizona State Parks Board administers a trail development grant program for both motorized and non-motorized trails in the State of Arizona. The CAP Trail, trailheads along the corridor, and/or trails connecting to the CAP Trail may be eligible for grant funding under this program.

(See <http://azstateparks.com/grants/index.html>).

- **Adjacent Public and Private Landowners**

Adjacent landowners, public and private, may have an interest on partnering with local jurisdictions on the development of the CAP Trail. An example of a public entity that might be interested in collaborating is the U.S. Army – Arizona National Guard. The National Guard operates a training facility adjacent to the CAP Trail near the Town of Florence and could potentially use the trail as part of its physical training program. Discussions that could result in a partnership with the National Guard should be pursued.

Similarly, the CAP Trail will be a valued amenity for the residents of new communities being constructed along the corridor. The developers of these communities should be engaged and encouraged to make the CAP Trail, and connections to it, integral components of their planned communities.

- **Trail User and Advocacy Groups**

Trail user and advocacy groups can play a key role in the development of the CAP Trail. At the early stages of a project, they can help to inform the public of the benefits of the trail and generate support for its construction. They can also assist with the monitoring and maintenance of the trail after it is completed.

Useful References:

- Equestrian Design Guidebook for Trails, Trailheads, and Campgrounds
United States Department of Agriculture, Forest Service in cooperation with
United States Department of Transportation, Federal Highway Administration (2007)
- Desert Trails, Designing and Building Trails in a Harsh and Demanding Environment
Flint, Mark (2007)

CAP Trail Master Plan
Pinal County Segment



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Appendix A
Traffic Data and
Recommendations for
Roadway Crossings

Appendix A: Roadway Crossings

Road / Highway:	Baseline Road
Road Classification:	Collector
Jurisdiction:	Apache Junction
Responsible Agency:	Pinal County
Existing Traffic Volume:	6,357 vpd (MAG: 2011 Annual Average Weekday Traffic Volume)
Projected Traffic Volume:	8,747 vpd (MAG: 2035 Traffic Projections)
Speed Limit:	45 mph
Description of Existing Conditions:	Baseline Road is a two-lane roadway that is parallel to Highway 60. The roadway is approximately 24 feet wide, with 1 foot paved shoulders. The road primarily serves approximately 15 residential developments to the east of Phoenix. There is a signalized intersection approximately 0.5 miles to the east of the crossing with the canal.
Planned Roadway Improvements:	The Maricopa Association of Governments (MAG) 2035 Regional Transportation Plan (RTP) that was completed in January 2014 has identified Baseline Road as being four lanes in 2035.
Recommendations for Current Trail - Roadway Crossing:	Advance warning signs. Refer to Figure 1 of this Appendix.
Recommendations for Ultimate Trail - Roadway Crossing	Refer to Figures 13 through 16 for possible future crossing concepts. The appropriate crossing treatment will depend on the trail usage, roadway volumes, and the geometry of the roadway. If the trail use and roadway volumes increase before the roadway is widened, the concepts in Figures 13, 14, and 15 should be considered. Additional traffic calming measures on the roadway may need to be implemented in addition to the concepts shown. If the roadway is widened in the future, the bridge over the canal should be designed to allow the crossing to be grade separated, with the trail passing under the roadway (Figure 16).

Appendix A: Roadway Crossings

Road / Highway:	Ironwood Drive
Road Classification:	Major Arterial
Jurisdiction:	Apache Junction
Responsible Agency:	Pinal County
Existing Traffic Volume:	27,230 vpd (MAG: 2011 Annual Average Weekday Traffic Volume) 27,591 vpd (Pinal County Traffic Counts: 2013)
Projected Traffic Volume:	28,593 vpd (MAG: 2035 Traffic Projections)
Speed Limit:	45 mph
Description of Existing Conditions:	Ironwood Drive is a four-lane divided highway that connects Apache Junction with Queen Creek to the south. The road transitions to a four-lane divided road to the south of the signalized intersection with Baseline Road. The travel lanes are 12 feet wide, and the shoulders are 4 feet wide; there is guardrail on both sides of the road on both approaches.
Planned Roadway Improvements:	The Maricopa Association of Governments (MAG) 2035 Regional Transportation Plan (RTP) that was completed in January 2014 has identified Ironwood Drive as remaining four lanes in 2035.
Recommendations for Current Trail - Roadway Crossing:	Grade separated. Refer to Figure 2 of this Appendix.
Recommendations for Ultimate Trail - Roadway Crossing	Grade separated. Refer to Figure 2 of this Appendix.

Appendix A: Roadway Crossings

Road / Highway:	Ocotillo Road
Road Classification:	Collector
Jurisdiction:	Pinal County
Responsible Agency:	Pinal County
Existing Traffic Volume:	0 vpd (Segment of road is not open to public use)
Projected Traffic Volume:	0 vpd. MAG projections do not show Ocotillo Road extending to CAP (MAG 2035 Traffic Projections)
Speed Limit:	45 mph
Description of Existing Conditions:	Ocotillo Road is a gravel roadway that provides access to a quarry/concrete plant at the crossing with the canal. Ocotillo Road is paved, two-lane road until approximately 2,000 to the west of the crossing of the canal. West of the canal Ocotillo Road provides access to a residential development. There is a sign at the transition point from paved to gravel that states “NO MOTOR VEHICLES,” and the road is gated off. The road is 28 feet wide at the crossing, and there are no lane markings.
Planned Roadway Improvements:	The Maricopa Association of Governments (MAG) 2035 Regional Transportation Plan (RTP) that was completed in January 2014 does not indicate Ocotillo Road extending or expanding to additional lanes at the crossing.
Recommendations for Current Trail - Roadway Crossing:	Trail warning signs. Refer to Figure 3 of this appendix.
Recommendations for Ultimate Trail - Roadway Crossing	Refer to Figures 13 through 16 for possible future crossing concepts. The appropriate crossing treatment will depend on the trail usage, roadway volumes, and the geometry of the roadway. If the trail use and roadway volumes increase before the roadway is widened, the concepts in Figures 13, 14, and 16 should be considered. Additional traffic calming measures on the roadway may need to be implemented in addition to the concepts shown. If the roadway is widened in the future, the new bridge over the canal should be designed to allow the crossing to be grade separated, with the trail passing under the roadway (Figure 16).

Appendix A: Roadway Crossings

Road / Highway:	Skyline Road
Road Classification:	Collector
Jurisdiction:	Pinal County
Responsible Agency:	Pinal County
Existing Traffic Volume:	2,047 vpd (ITE Trip Generation Manual: Single-Family Detached Housing-210) 3,273 vpd (Pinal County Traffic Counts: 2013, East of Sierra Vista Drive)
Projected Traffic Volume:	3,639 vpd (MAG 2035 Traffic Projections)
Speed Limit:	50 mph
Description of Existing Conditions:	Skyline Road is a two-lane roadway that provides access to approximately 215 residences east of the CAP Canal. Currently this is the only access for these residences. Another development has land prepared, but there are no houses constructed. The road ends just to the west of the railroad tracks, and there is no outlet at this location. The roadway is approximately 24 feet wide, with 2 foot paved shoulders. There is guardrail on both sides of the road on the east approach.
Planned Roadway Improvements:	The Maricopa Association of Governments (MAG) 2035 Regional Transportation Plan (RTP) that was completed in January 2014 has identified Skyline Road as being four lanes in 2035.
Recommendations for Current Trail - Roadway Crossing:	Advance warning signs. Refer to Figure 4 of this Appendix.
Recommendations for Ultimate Trail - Roadway Crossing	Refer to Figures 13 through 16 for possible future crossing concepts. The appropriate crossing treatment will depend on the trail usage, roadway volumes, and the geometry of the roadway. If the trail use and roadway volumes increase before the roadway is widened, the concepts in Figures 13, 14, and 15 should be considered. Additional traffic calming measures on the roadway may need to be implemented in addition to the concepts shown. If the roadway is widened in the future, the bridge over the canal should be designed to allow the crossing to be grade separated, with the trail passing under the roadway (Figure 16).

Appendix A: Roadway Crossings

Road / Highway:	Judd Road
Road Classification:	Collector
Jurisdiction:	Pinal County
Responsible Agency:	Pinal County
Existing Traffic Volume:	4,760 vpd (ITE Trip Generation Manual: Single-Family Detached Housing-210)
Projected Traffic Volume:	5,102 vpd (MAG 2035 Traffic Projections)
Speed Limit:	45 mph
Description of Existing Conditions:	Judd Road is a two-lane roadway that provides access to approximately 500 residences to the east of the CAP Canal. Currently this is the primary access route to these residences. There is a school located within the developed residential subdivision east of the CAP. Another development has land prepared, but only a small area has been constructed. Judd Road ends approximately 2.5 miles east of the Canal. The roadway is approximately 24 feet wide, with 2 foot paved shoulders; there is guardrail on both sides of the road on both approaches.
Planned Roadway Improvements:	The Maricopa Association of Governments (MAG) 2035 Regional Transportation Plan (RTP) that was completed in January 2014 has identified Judd Road as four lanes in 2035.
Recommendations for Current Trail - Roadway Crossing:	Advance warning signs. Refer to Figure 5 of this Appendix.
Recommendations for Ultimate Trail - Roadway Crossing	Refer to Figures 13 through 16 for possible future crossing concepts. The appropriate crossing treatment will depend on the trail usage, roadway volumes, and the geometry of the roadway. If the trail use and roadway volumes increase before the roadway is widened, the concepts in Figures 13, 14, and 15 should be considered. Additional traffic calming measures on the roadway may need to be implemented in addition to the concepts shown. If the roadway is widened in the future, the bridge over the canal should be designed to allow the crossing to be grade separated, with the trail passing under the roadway (Figure 16).

Appendix A: Roadway Crossings

Road / Highway:	Arizona Farms Road
Road Classification:	Collector
Jurisdiction:	Florence
Responsible Agency:	Pinal County
Existing Traffic Volume:	2,148 vpd (MAG:2011 Annual Average Weekday Traffic Volume) 2,499 vpd (Pinal County Traffic Counts: 2013, East of Herseith Road)
Projected Traffic Volume:	4,280 vpd (MAG 2035 Traffic Projections)
Speed Limit:	50 mph
Description of Existing Conditions:	Arizona Farms Road is a two-lane roadway that provides connection for approximately 125 residences east of the CAP Canal. Arizona Farms Road provides connectivity between Hunt Highway and State Route 79, which both run north-south. The roadway is approximately 24 feet wide, with 2 foot paved shoulders.
Planned Roadway Improvements:	The Maricopa Association of Governments (MAG) 2035 Regional Transportation Plan (RTP) that was completed in January 2014 has identified Arizona Farms Road as being four lanes in 2035.
Recommendations for Current Trail - Roadway Crossing:	Advance warning signs. Refer to Figure 6 of this Appendix.
Recommendations for Ultimate Trail - Roadway Crossing	Refer to Figures 13 through 16 for possible future crossing concepts. The appropriate crossing treatment will depend on the trail usage, roadway volumes, and the geometry of the roadway. If the trail use and roadway volumes increase before the roadway is widened, the concepts in Figures 13, 14, and 15 should be considered. Additional traffic calming measures on the roadway may need to be implemented in addition to the concepts shown. If the roadway is widened in the future, the bridge over the canal should be designed to allow the crossing to be grade separated, with the trail passing under the roadway (Figure 16).

Appendix A: Roadway Crossings

Road / Highway:	State Route 79 (North of Florence)
Road Classification:	Minor Arterial/State highway
Jurisdiction:	Florence
Responsible Agency:	Arizona Department of Transportation (ADOT)
Existing Traffic Volume:	6,647 vpd (ADOT AADT & KDT Report for 2013)
Projected Traffic Volume:	9,100 vpd (ADOT 2030 Traffic Projections) 8,787 vpd (MAG 2035 Traffic Projections)
Speed Limit:	65 mph
Description of Existing Conditions:	State Route 79 is a two-lane roadway that provides an alternative route for I-10 between Tucson and Phoenix. It connects State Route 77 in Tucson with State Route 60, which extends into Phoenix to the west and to Globe to the east. This crossing is to the north of the Town of Florence. The roadway is approximately 24 feet wide, with 8 foot paved shoulders. There is guardrail on both sides of the road on both approaches.
Planned Roadway Improvements:	The Maricopa Association of Governments (MAG) 2035 Regional Transportation Plan (RTP) that was completed in January 2014 has identified State Route 79 as remaining two lanes in 2035. There are still many unknowns with the traffic projections for this route due to the unknown alignment for the proposed North-South Freeway. Additional lanes will most likely be constructed on State Route 79 if the Sun Corridor experiences the growth that is projected.
Recommendations for Current Trail - Roadway Crossing:	Advance warning signs. Refer to Figure 7 of this Appendix.
Recommendations for Ultimate Trail - Roadway Crossing	Refer to Figures 13 through 16 for possible future crossing concepts. The appropriate crossing treatment will depend on the trail usage, roadway volumes, and the geometry of the roadway. If the trail use and roadway volumes increase before the roadway is widened, the concepts in Figures 13, 14, and 15 should be considered. Additional traffic calming measures on the roadway may need to be implemented in addition to the concepts shown. If the roadway is widened in the future, the bridge over the canal should be designed to allow the crossing to be grade separated, with the trail passing under the roadway (Figure 16).

Appendix A: Roadway Crossings

Road / Highway:	Price Road
Road Classification:	Local Road
Jurisdiction:	Florence
Responsible Agency:	Pinal County
Existing Traffic Volume:	<50 vpd
Projected Traffic Volume:	Not Available
Speed Limit:	25 mph
Description of Existing Conditions:	Price Road is a graded dirt roadway that provides access to farm land adjacent to the north side of the Gila River.
Planned Roadway Improvements:	The Maricopa Association of Governments (MAG) 2035 Regional Transportation Plan (RTP) that was completed in January of 2014 does not indicate Price Road extending or expanding to include additional lanes at the proposed trail crossing.
Recommendations for Current Trail - Roadway Crossing:	Advance warning signs, Refer to Figure 8 of this Appendix.
Recommendations for Ultimate Trail - Roadway Crossing	Refer to Figures 13 through 16 for possible future crossing concepts. The appropriate crossing treatment will depend on the trail usage, roadway volumes, and the geometry of the roadway. If the trail use and roadway volumes increase before the roadway is widened, the concepts in Figures 13, 14, and 15 should be considered. Additional traffic calming measures on the roadway may need to be implemented in addition to the concepts shown. If the roadway is widened in the future, the bridge over the canal should be designed to allow the crossing to be grade separated, with the trail passing under the roadway (Figure 16).

Appendix A: Roadway Crossings

Road / Highway:	Butte Road/Florence Kelvin Highway
Road Classification:	Arterial
Jurisdiction:	Florence
Responsible Agency:	Pinal County
Existing Traffic Volume:	<500 vpd
Projected Traffic Volume:	40,000 vpd (Pinal Co Small Area Transportation Study)
Speed Limit:	35 mph
Description of Existing Conditions:	Cactus Forest Road is a two-lane roadway that provides a connection Butte Road is a two-lane roadway that provides a connection between SR 79 to the west and the Old Florence – Kelvin Highway, along the south side of the Gila River. The roadway is approximately 26 feet wide with 2 foot paved shoulders.
Planned Roadway Improvements:	This roadway is outside of the Maricopa Association of Governments (MAG) 2035 Regional Transportation Plan (RTP) area that was completed in January of 2014. The 2008 Pinal County Small Area Transportation Study identifies this road as being a six-lane principal arterial in 2025.
Recommendations for Current Trail - Roadway Crossing:	Advance warning signs. Refer to Figure 9 of this Appendix.
Recommendations for Ultimate Trail - Roadway Crossing	Refer to Figures 13 through 16 for possible future crossing concepts. The appropriate crossing treatment will depend on the trail usage, roadway volumes, and the geometry of the roadway. If the trail use and roadway volumes increase before the roadway is widened, the concepts in Figures 13, 14, and 15 should be considered. Additional traffic calming measures on the roadway may need to be implemented in addition to the concepts shown. If the roadway is widened in the future, the bridge over the canal should be designed to allow the crossing to be grade separated, with the trail passing under the roadway (Figure 16).

Appendix A: Roadway Crossings

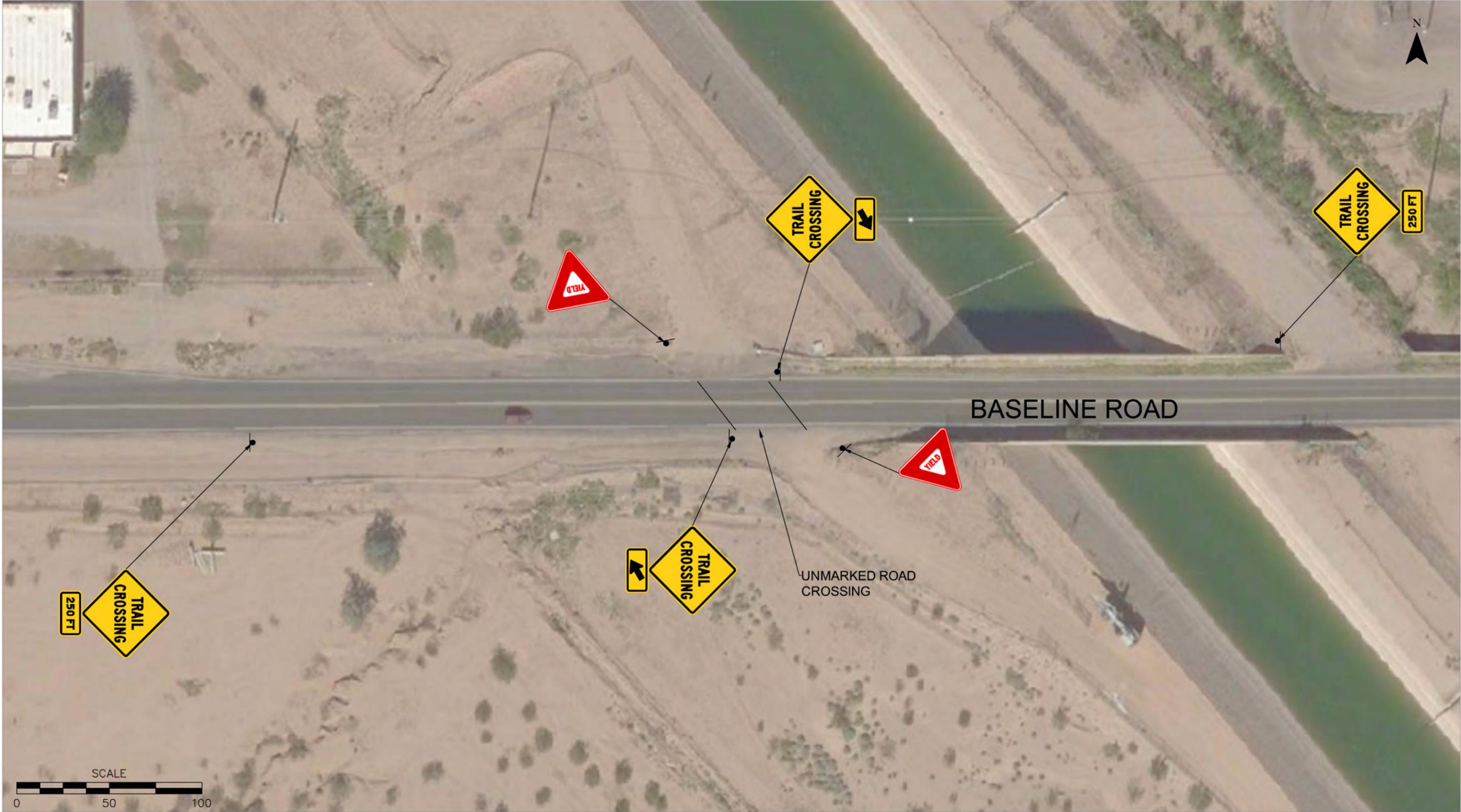
Road / Highway:	State Route 79 (South of Florence)
Road Classification:	Minor Arterial/State Highway
Jurisdiction:	Florence
Responsible Agency:	Arizona Department of Transportation (ADOT)
Existing Traffic Volume:	2,960 vpd (ADOT AADT & KDT Report for 2013)
Projected Traffic Volume:	3,900 vpd (ADOT 2030 Traffic Projections)
Speed Limit:	45 mph
Description of Existing Conditions:	State Route 79 is a two-lane roadway that provides an alternative route for I-10 between Tucson and Phoenix. It connects State Route 77 in Tucson with State Route 60, which extends into Phoenix to the west and to Globe to the east. This crossing is to the south of the Town of Florence. This crossing is located directly south of where State Route 79 and State Route 79B merge together, with the merge occurring on the bridge. There is a right turn lane in the southbound direction that forms on the bridge for vehicles turning onto Salazar Street, which is approximately 400 feet south of the canal. There is also a two-way left-turn lane (TWLTL) that turns into a left turn lane in the northbound direction for vehicles turning onto Salazar Street. The roadway is approximately 36 feet wide, with 2 foot paved shoulders. There is guardrail on both sides of the road on both approaches.
Planned Roadway Improvements:	The Maricopa Association of Governments (MAG) 2035 Regional Transportation Plan (RTP) that was completed in January 2014 has identified State Route 79 as remaining two lanes in 2035. There are still many unknowns with the traffic projections for this route because of the unknown alignment for the proposed North-South Freeway. Additional lanes will most likely be constructed on State Route 79 if the Sun Corridor experiences the growth that is projected.
Recommendations for Current Trail - Roadway Crossing:	Grade separated. Refer to Figure 10 of this Appendix.
Recommendations for Ultimate Trail - Roadway Crossing	Grade separated. Refer to Figure 10 of this Appendix.

Appendix A: Roadway Crossings

Road / Highway:	Cactus Forest Road
Road Classification:	Major Collector
Jurisdiction:	Florence
Responsible Agency:	Pinal County
Existing Traffic Volume:	938 vpd (ADOT Multimodal Planning: 2014)
Projected Traffic Volume:	1,386 vpd (MAG 2035 Traffic Projections)
Speed Limit:	50 mph
Description of Existing Conditions:	Cactus Forest Road is a two-lane roadway that provides a connection between Coolidge and Cactus Forest to the east, along with State Route 79. The roadway is approximately 22 feet wide, with 1 foot paved shoulders.
Planned Roadway Improvements:	The Maricopa Association of Governments (MAG) 2035 Regional Transportation Plan (RTP) that was completed in January 2014 has identified Cactus Forest Road as being six lanes in 2035.
Recommendations for Current Trail - Roadway Crossing:	Advance warning signs. Refer to Figure 11 of this Appendix.
Recommendations for Ultimate Trail - Roadway Crossing	Refer to Figures 13 through 16 for possible future crossing concepts. The appropriate crossing treatment will depend on the trail usage, roadway volumes, and the geometry of the roadway. If the trail use and roadway volumes increase before the roadway is widened, the concepts in Figures 13, 14, and 16 should be considered. Additional traffic calming measures on the roadway may need to be implemented in addition to the concepts shown. If the roadway is widened in the future, the bridge over the canal should be designed to allow the crossing to be grade separated, with the trail passing under the roadway (Figure 116).

Appendix A: Roadway Crossings

Road / Highway:	Coolidge Airport Road
Road Classification:	Local Street
Jurisdiction:	Coolidge
Responsible Agency:	Pinal County
Existing Traffic Volume:	Less than 50 vpd (Only leads to the airport)
Projected Traffic Volume:	1,296 vpd (MAG 2035 Traffic Projections)
Speed Limit:	40 mph
Description of Existing Conditions:	Coolidge Airport Road is a two-lane roadway that provides access to the Coolidge Municipal Airport from Cactus Forest Road. This is the only use of this road at this time. The roadway is approximately 20 feet wide, with 3 foot paved shoulders.
Planned Roadway Improvements:	The Maricopa Association of Governments (MAG) 2035 Regional Transportation Plan (RTP) that was completed in January 2014 does not identify Coolidge Airport Road as having any additional lanes in 2035 beyond the two current lanes. The Coolidge Municipal Airport Master Plan indicates that total operations are expected to increase from 20,700 in 2009 to 37,800 in 2030. In 2009 there were 38 aircraft located at the airport, with most of them being small, private planes. This is expected to increase to 90 planes in 2030. The type of aircraft is expected to remain the same. The support facilities at the airport are expected to expand, which could require the Coolidge Airport Road to be realigned, but the location where it would cross the CAP Canal is unknown at this time. The plan does not indicate the number of lanes that will be required.
Recommendations for Current Trail - Roadway Crossing:	Advance warning signs. Refer to Figure 12 of this Appendix.
Recommendations for Ultimate Trail - Roadway Crossing	Refer to Figures 13 through 16 for possible future crossing concepts. The appropriate crossing treatment will depend on the trail usage, roadway volumes, and the geometry of the roadway. If the trail use and roadway volumes increase before the roadway is widened, the concepts in Figures 13, 14, and 15 should be considered. Additional traffic calming measures on the roadway may need to be implemented in addition to the concepts shown. If the roadway is widened in the future, the bridge over the canal should be designed to allow the crossing to be grade separated, with the trail passing under the roadway (Figure 16).



**BASELINE ROAD TRAIL CROSSING CONCEPT
PINAL COUNTY, AZ**

Figure
1

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OLD IRONWOOD DRIVE

IRONWOOD DRIVE

GRADE SEPARATED: TRAIL PASSES UNDER IRONWOOD DRIVE

CONSTRUCT TRAIL RAMP DOWN TO TOP OF CANAL BANK



**IRONWOOD DRIVE TRAIL CROSSING CONCEPT
PINAL COUNTY, AZ**

Figure
2



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SCALE
0 50 100

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TRANSPORTATION ENGINEERING/PLANNING

**OCOTILLO ROAD TRAIL CROSSING CONCEPT
PINAL COUNTY, AZ**

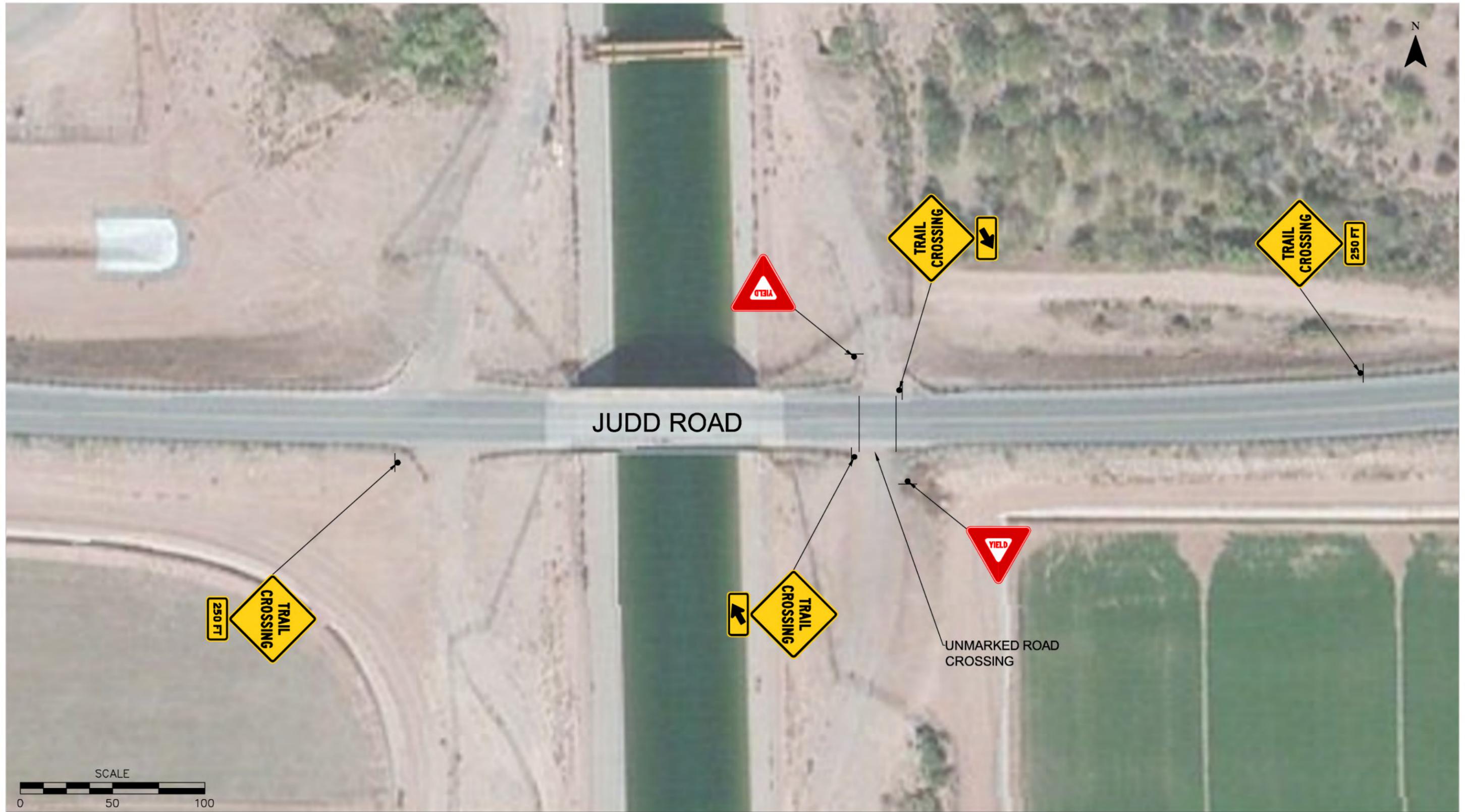
Figure
3



**SKYLINE ROAD TRAIL CROSSING CONCEPT
PINAL COUNTY, AZ**

Figure
4

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**JUDD ROAD TRAIL CROSSING CONCEPT
PINAL COUNTY, AZ**

Figure
5

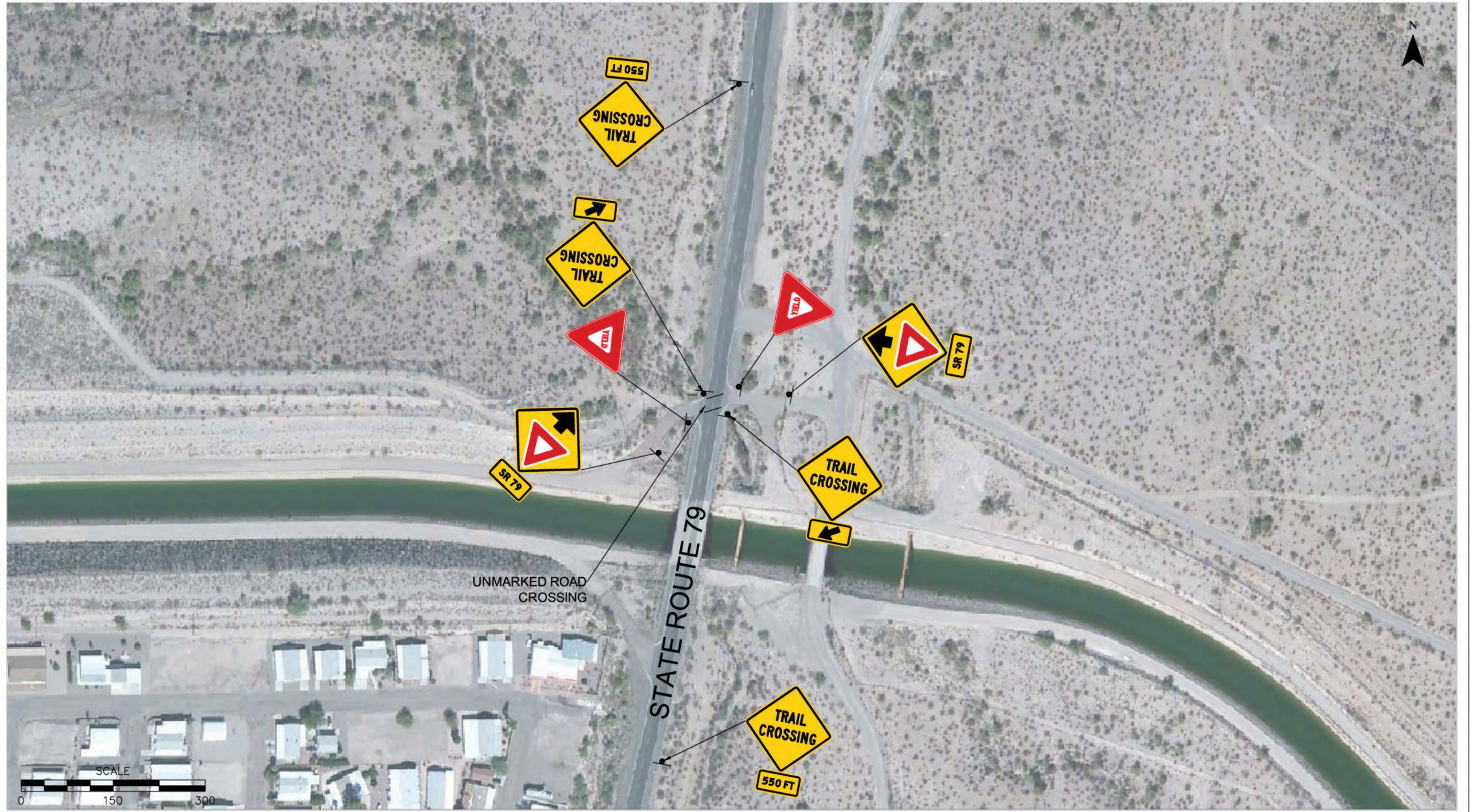
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ARIZONA FARM ROAD TRAIL CROSSING CONCEPT
PINAL COUNTY, AZ

Figure
6

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STATE ROUTE 79 (NORTH) TRAIL CROSSING CONCEPT
PINAL COUNTY, AZ

Figure
7



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**PRICE ROAD TRAIL CROSSING CONCEPT
PINAL COUNTY, AZ**

Figure
8

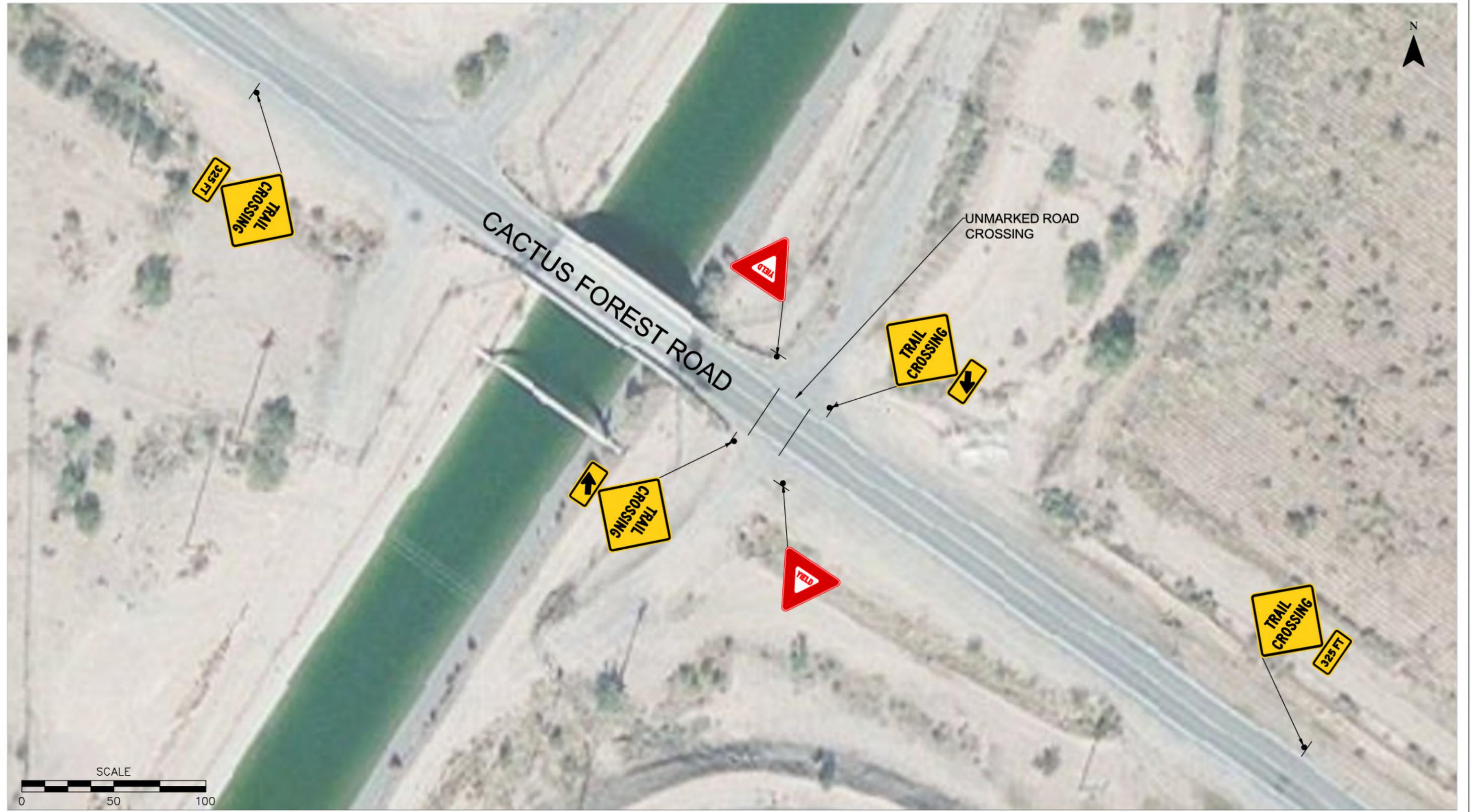
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**STATE ROUTE 79 (SOUTH) TRAIL CROSSING CONCEPT
PINAL COUNTY, AZ**

Figure
10

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**CACTUS FOREST ROAD TRAIL CROSSING CONCEPT
PINAL COUNTY, AZ**

Figure
11



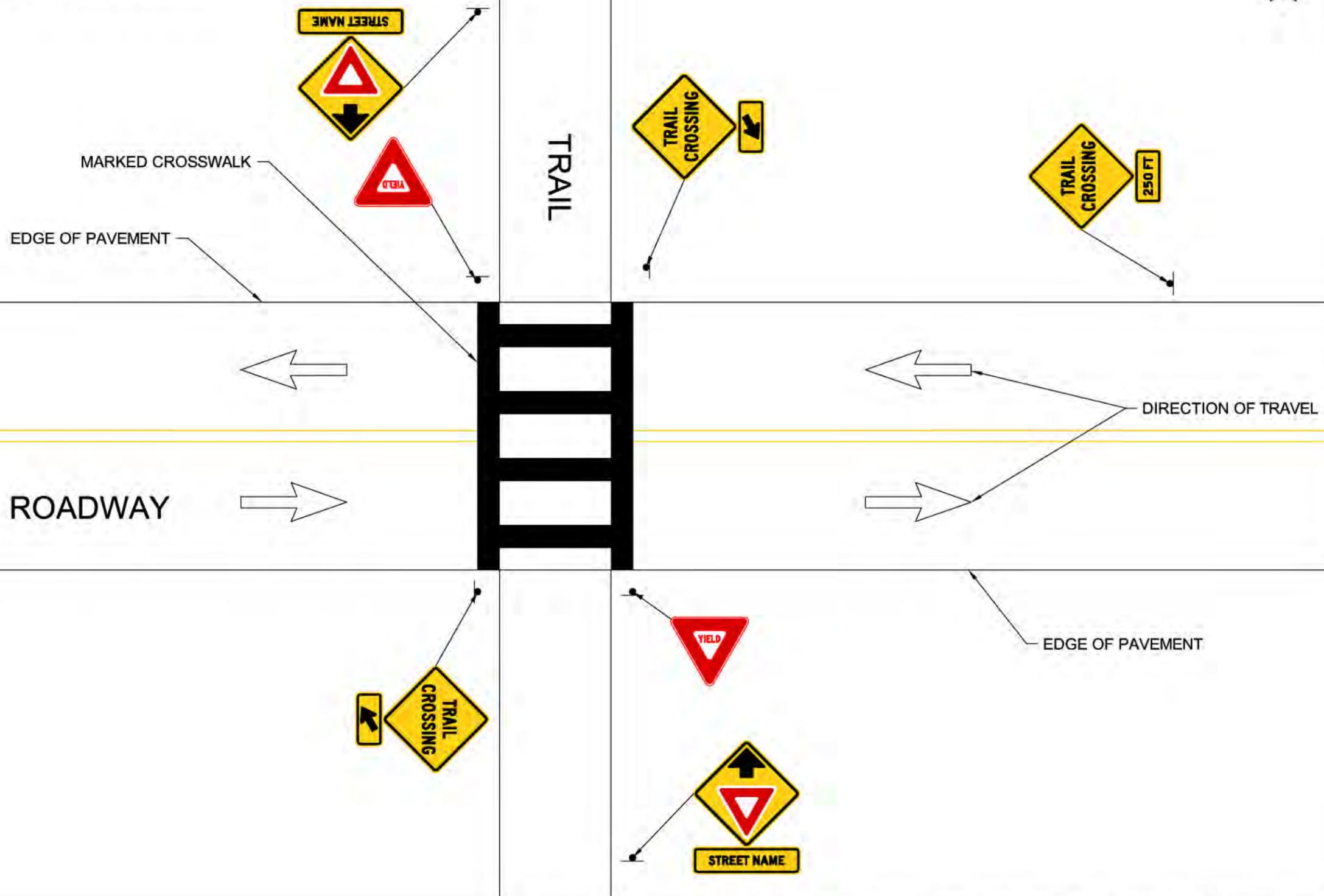
**COOLIDGE AIRPORT ROAD TRAIL CROSSING CONCEPT
PINAL COUNTY, AZ**

Figure
12

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PLACEMENT OF ADVANCE TRAIL CROSSING	
POSTED OR 85TH-PERCENTILE SPEED (MPH)	DISTANCE BEFORE CROSSING (FT)
20	100
25	100
30	100
35	100
40	125
45	175
50	250
55	325
60	400
65	475
70	550
75	650

ADVANCED "TRAIL CROSSING SIGN" LOCATED UPSTREAM OF CROSSING. DISTANCE DEPENDS ON SPEED LIMIT OF ROADWAY.



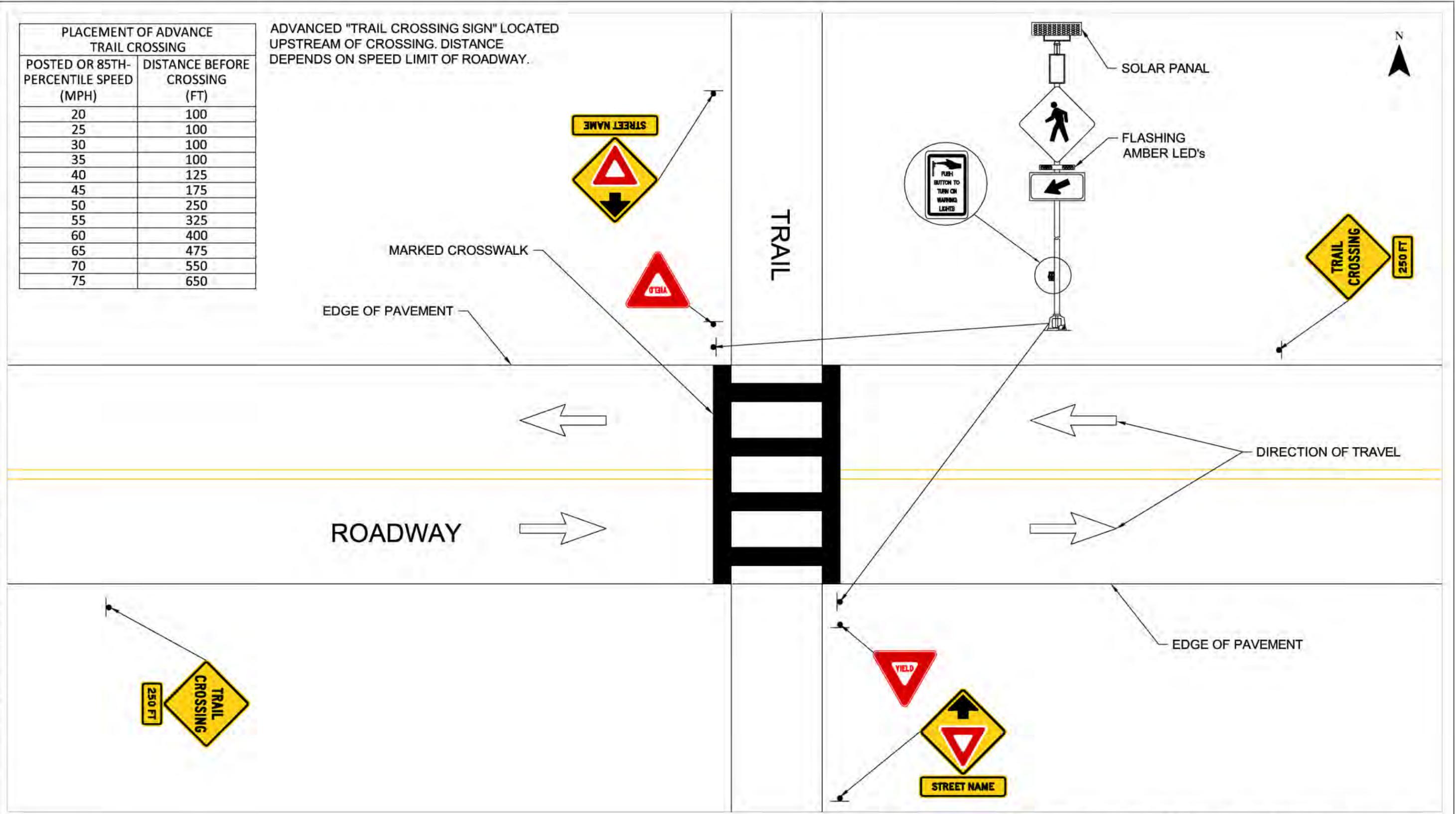
**FUTURE MARKED CROSSWALK CROSSING CONCEPT
2 LANE
PINAL COUNTY, AZ**

Figure
13

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PLACEMENT OF ADVANCE TRAIL CROSSING	
POSTED OR 85TH-PERCENTILE SPEED (MPH)	DISTANCE BEFORE CROSSING (FT)
20	100
25	100
30	100
35	100
40	125
45	175
50	250
55	325
60	400
65	475
70	550
75	650

ADVANCED "TRAIL CROSSING SIGN" LOCATED UPSTREAM OF CROSSING. DISTANCE DEPENDS ON SPEED LIMIT OF ROADWAY.



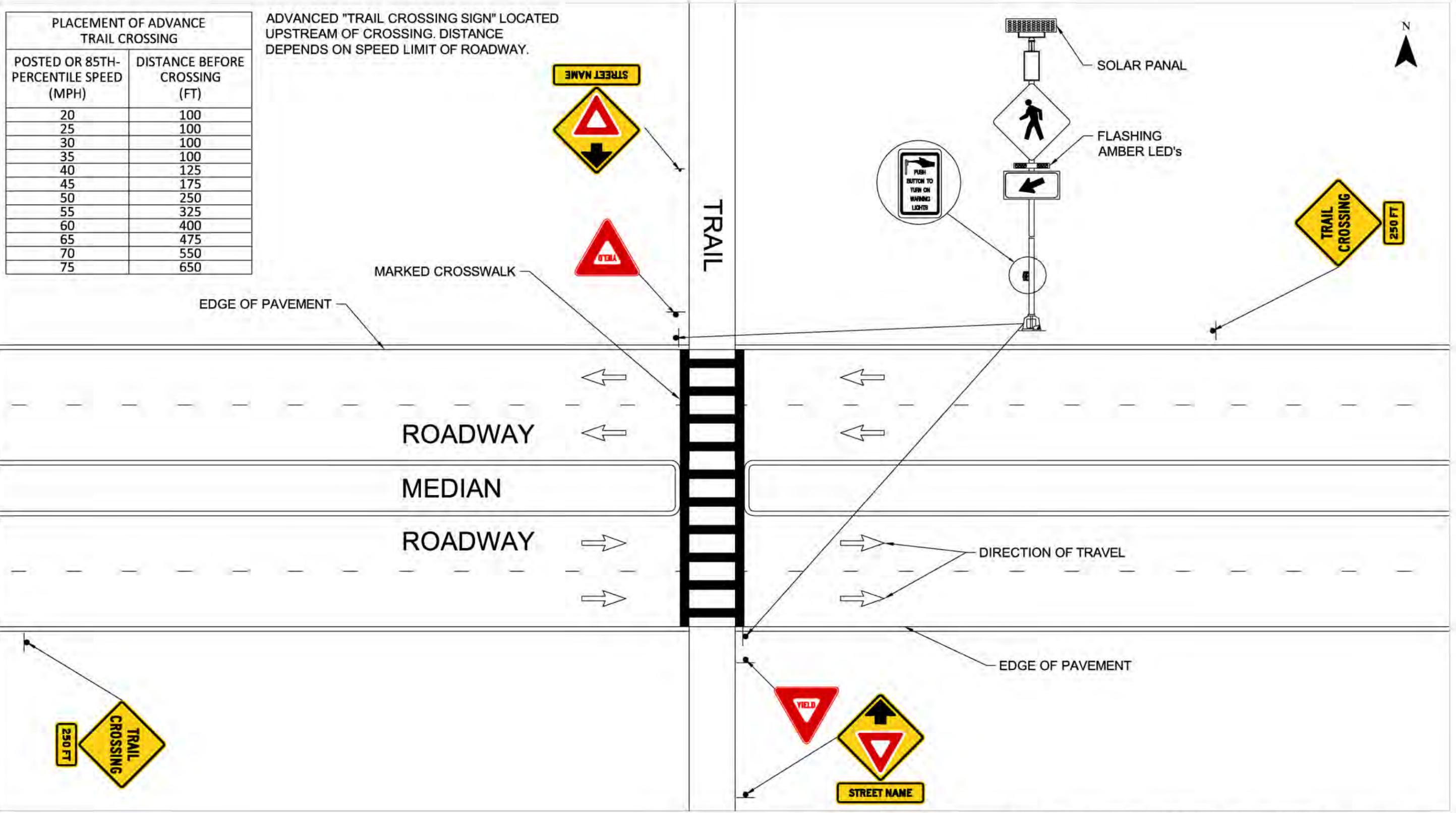
**FUTURE FLASHING BEACON WITH MARKED CROSSING CONCEPT
2 LANE
PINAL COUNTY, AZ**

Figure
14

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PLACEMENT OF ADVANCE TRAIL CROSSING	
POSTED OR 85TH-PERCENTILE SPEED (MPH)	DISTANCE BEFORE CROSSING (FT)
20	100
25	100
30	100
35	100
40	125
45	175
50	250
55	325
60	400
65	475
70	550
75	650

ADVANCED "TRAIL CROSSING SIGN" LOCATED UPSTREAM OF CROSSING. DISTANCE DEPENDS ON SPEED LIMIT OF ROADWAY.



**FUTURE FLASHING BEACON WITH MARKED CROSSING CONCEPT
4 LANE
PINAL COUNTY, AZ**

Figure
15

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**FUTURE TYPICAL GRADE SEPARATED CROSSING CONCEPT
PINAL COUNTY, AZ**

Figure
16