



## **APPENDIX 4**

### **TECHNICAL MEMORANDUM NO. 4 – DEVELOPMENT AND EVALUATION OF CANDIDATE ALTERNATIVE ALIGNMENTS**



# Hidden Waters Parkway Corridor Feasibility Study – Watermelon Road to Interstate 10

Contract No.: 2008-046  
Work Order No.: TT005

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## FINAL

# Technical Memorandum No. 4 Development and Evaluation of Candidate Alternative Alignments

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## 1. INTRODUCTION

Technical Memorandum No. 4 (TM 4), entitled *Candidate Alternative Alignments and Evaluation*, provides a summary of the alternatives development and evaluation process used for this project. Specifically, TM 4 describes study background and study area; the process used to develop conceptual and candidate alternative alignments, constraints that were considered in the development of alternatives; and evaluation criteria that were applied to candidate alternative alignments to identify preferred alternative alignments for further analysis. Additional detailed information is included in the following companion documents: *Existing and Future Corridor Features* (TM 1), *Environmental Overview* (TM 2), *Conceptual Drainage Report* (TM 3), and *Detailed Preferred Alignment* (TM 5).

### 1.1 Study Background

In July 2008, the Maricopa Association of Governments (MAG) completed the *Interstate 10/Hassayampa Valley Transportation Framework Study* (known as the *Hassayampa Framework Study*), which recommended a comprehensive roadway network to meet the future traffic demands that result when the area west of the White Tank Mountains is completely developed (hereafter referred to as buildout travel demand). This long-range regional transportation network included the “Arizona Parkway” as a new facility type to supplement more traditional roadway classifications in meeting projected travel demand within the study area.

The Arizona Parkway utilizes a distinct intersection treatment that prohibits left turns at major cross-street intersections and controls intersection traffic movements with two-phased signal control. Left-turn movements are made indirectly using directional left-turn crossovers immediately downstream of the cross-street intersection.

A north-south Arizona Parkway known as the Hidden Waters Parkway was demonstrated to be needed in the *Hassayampa Framework Study* that generally is offset about two miles to the west of the Hassayampa River. The northern portion of the Hidden Waters Parkway is proposed to cross Interstate 10 at 339<sup>th</sup> Avenue (where a traffic interchange already exists) and extend southward to Old U.S. Highway 80 (Old US 80).

Similar to the *Hassayampa Framework Study*, the *Interstate 8 and Interstate 10 Hidden Valley Transportation Framework Study* (known as the *Hidden Valley Framework Study*), completed by MAG in October 2009, indicates the need for a network of Arizona Parkways to meet the future buildout travel demand for the area southwest of Interstate 10 (I-10) and north of Interstate 8 (I-8). In the *Hidden Valley Framework Study*, the need was demonstrated for the Hidden Waters Parkway identified previously in the *Hassayampa Framework Study* to extend further south, generally following the Old US 80 alignment, to Watermelon Road in Gila Bend.

In May 2009, the Maricopa County Department of Transportation (MCDOT) retained Kimley-Horn and Associates, Inc. (KHA) to conduct a corridor feasibility study for the southern portion of the Hidden Waters Parkway between Watermelon Road and I-10.

### 1.2 Project Study Area

The project study area for the proposed Hidden Waters Parkway is approximately 39 miles in length between Watermelon Road and I-10 and is roughly two miles wide, centered on the north-south segment of Old US 80. North of the Cactus Rose Road/Old US 80 intersection, where Old US 80 diverges to the east, the study area broadens to a four-mile wide corridor, centered on the



347<sup>th</sup> Avenue section-line alignment, extending north to the Salome Highway. North of the Salome Highway, the study area width narrows back to two miles, following the 339<sup>th</sup> Avenue alignment north to I-10. The study area covers approximately 93.9 square miles. The project study area is shown in **Figure 1**.

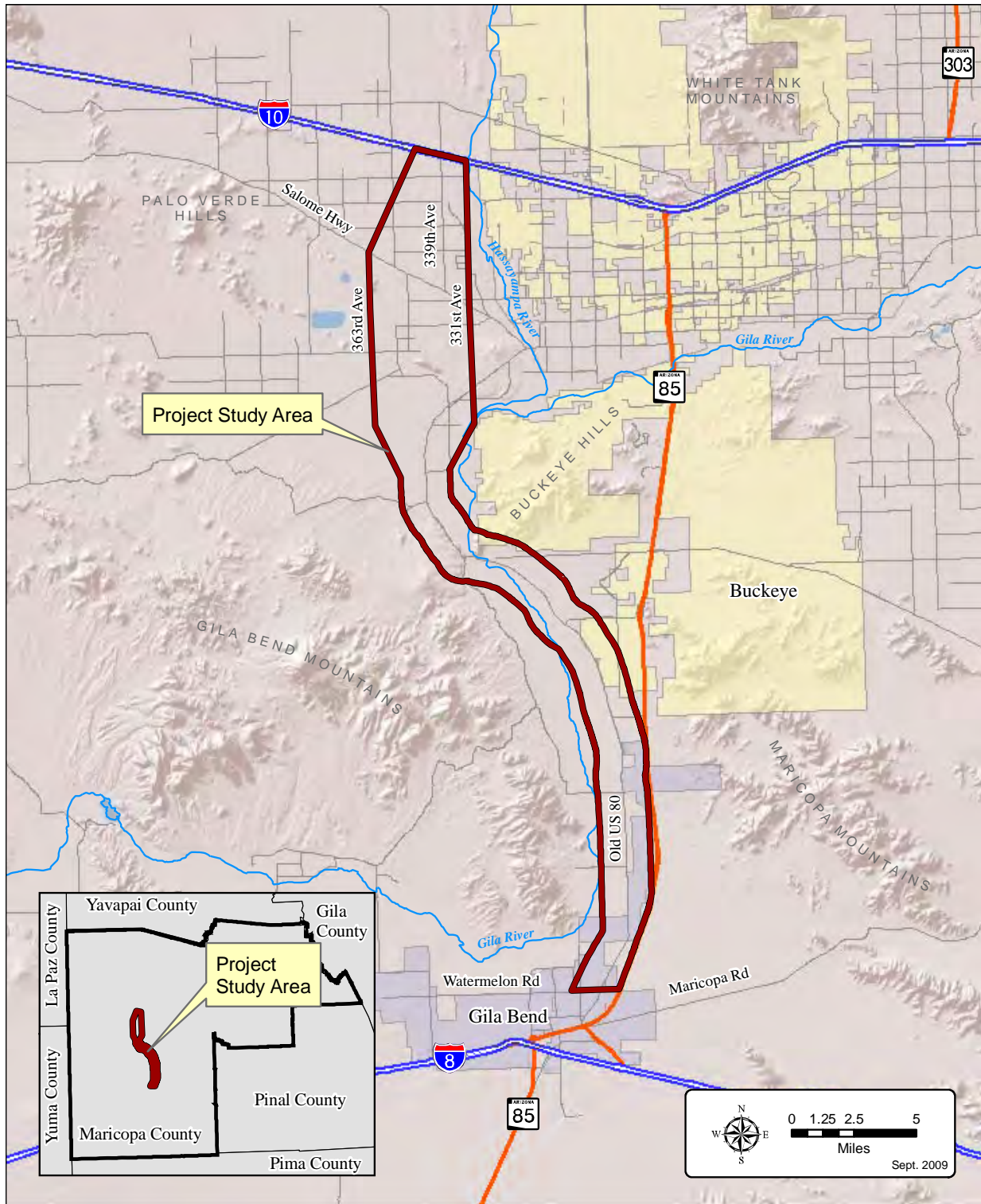


Figure 1 – Project Study Area

## 2. DEVELOPMENT OF ALTERNATIVES

### 2.1 Alternatives Development Process

The alternatives development process involved two steps. The first step was to identify a series of conceptual alternatives that would be subjected to a “fatal flaw” analysis. The conceptual alternatives were developed only to the extent necessary to conduct a meaningful comparative analysis that would produce up to three candidate alternatives that could be defined and evaluated in greater detail. The second step was to perform a more in-depth evaluation of the candidate alternatives and identify preferred alternatives. The conceptual alternatives, candidate alternatives, and evaluation criteria were all developed in consultation with the Technical Advisory Committee (TAC) and stakeholders and were presented for general public input at public open house meetings.

For alternatives development and evaluation purposes, the study area was divided into two separate segments: one south of the Old US 80 Bridge over the Gila River and one north of the Old US 80 Bridge over the Gila River.

For the southern segment, endpoints common to all of the alternatives were designated as the Old US 80/Watermelon Road intersection for the southern terminus and as the eastern edge of the proposed new Gila River Bridge location recommended in the *MCDOT Old U.S. Highway 80 Bridge (Gillespie Dam Bridge) Final Design Concept Report* for the northern terminus.

For the northern segment, the common endpoints were designated as the eastern edge of the proposed new Gila River Bridge location for the southern terminus and as the existing I-10/339<sup>th</sup> Avenue interchange for the northern terminus.

### 2.2 Potential Corridor Constraints

Based on the findings reported in TM 1, TM 2, and TM 3, potential corridor constraints were mapped for both the southern and northern segments, as respectively shown in **Figure 2a** and **Figure 2b**. Potential corridor constraints consist of features that may have some bearing on the location and configuration of conceptual alternatives. Many of the potential constraints are not truly “fatal flaws” but rather may result in higher project costs if they cannot be avoided and mitigation measures are required.

The potential constraints that are considered to be more significant and should be avoided if possible include schools, landfills, cultural and historic resources, wildlife areas, floodplains, steep slope areas, approved planned developments, and large utility facilities.

Potential constraints that were considered in developing the conceptual alternatives are summarized as follows:

- *Land ownership:*
  - Bureau of Land Management (BLM) land near Gillespie Dam;
  - Arizona State Trust land; and
  - Wildlife areas.



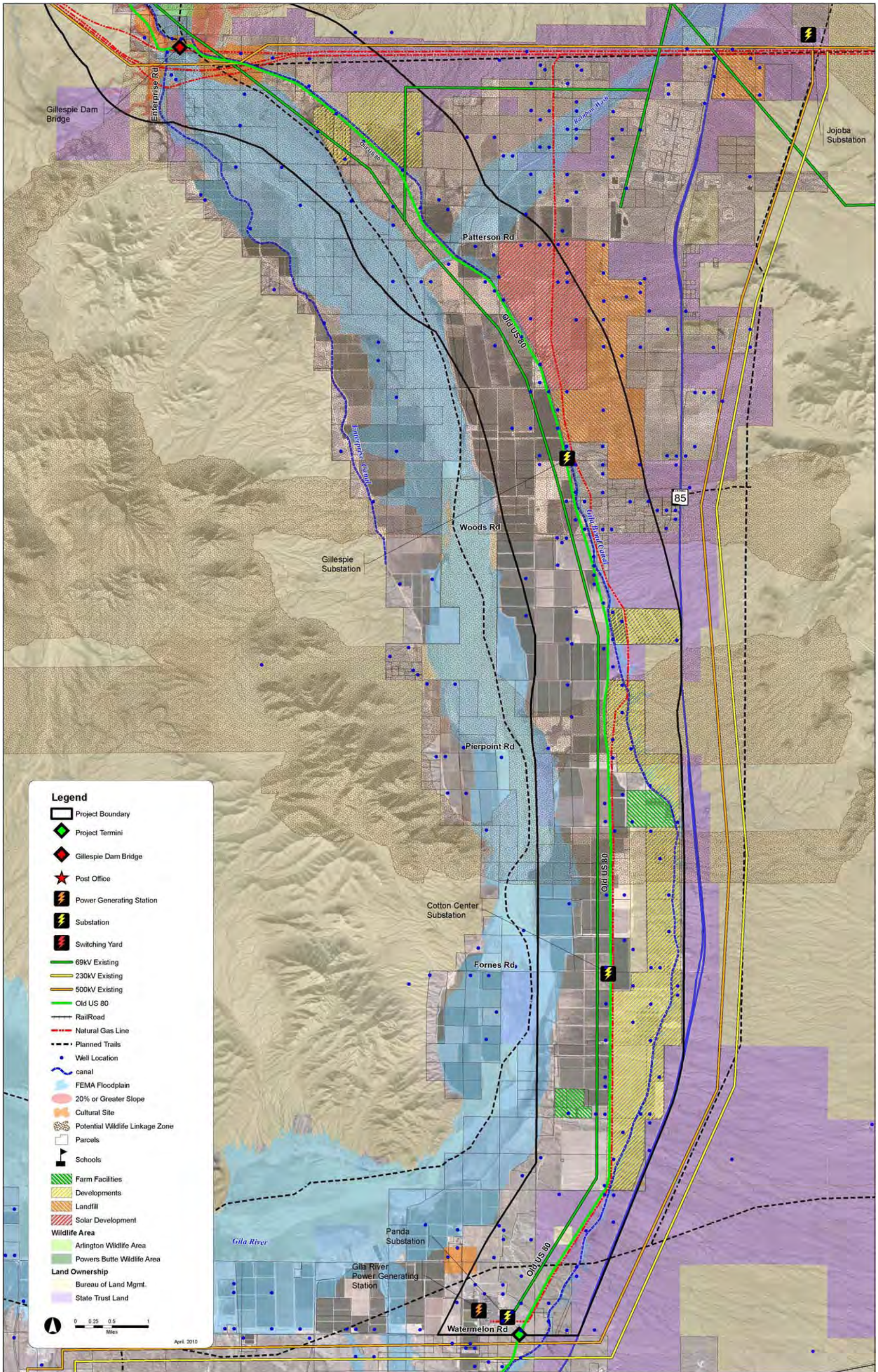


Figure 2a – Potential Corridor Constraints (South)

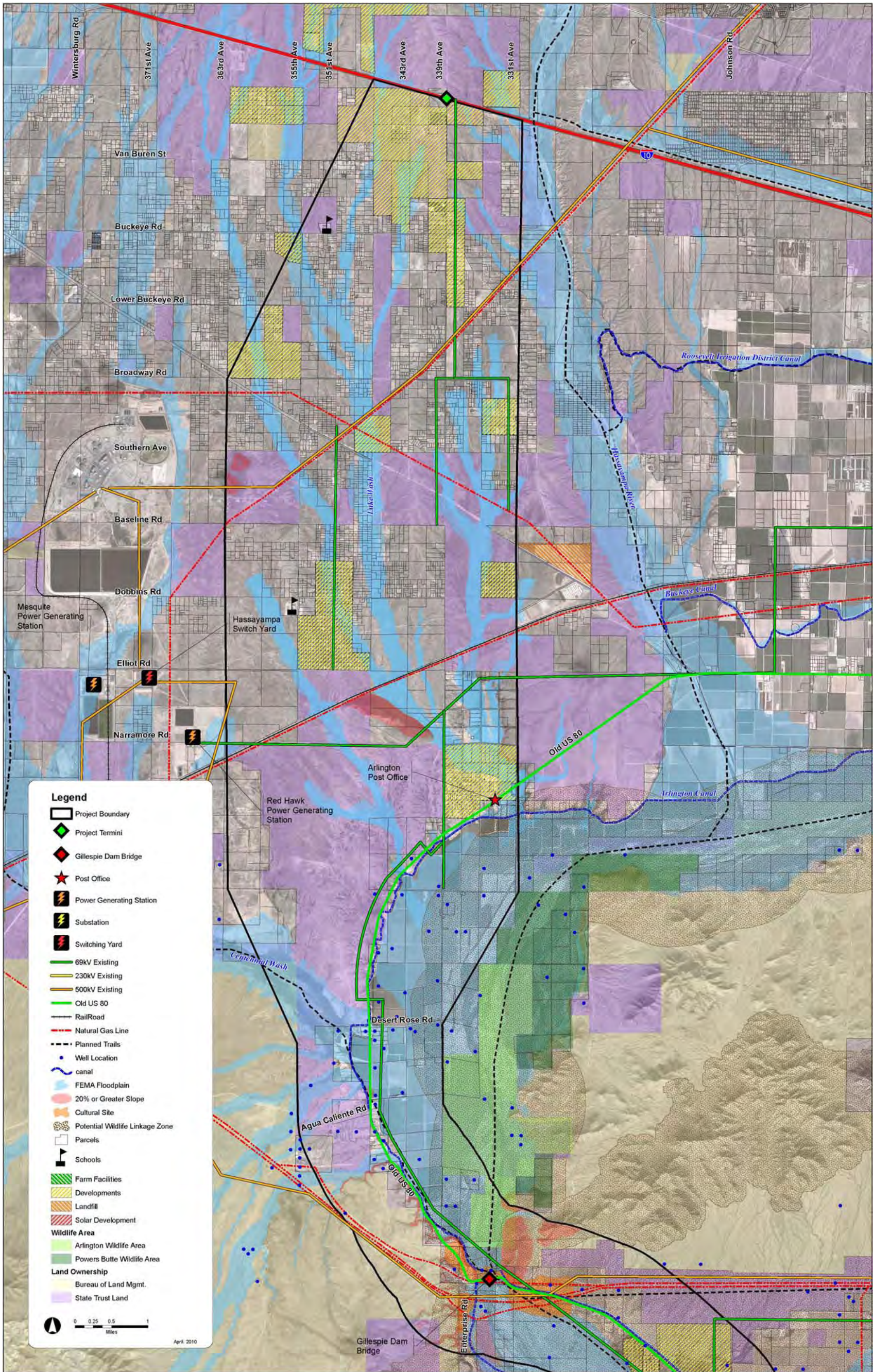


Figure 2b – Potential Corridor Constraints (North)



- *Land use:*
  - Arlington and Winters' Well Elementary Schools;
  - Arlington and Powers Butte Wildlife Areas;
  - Wildlife linkage zones; and
  - Existing and planned developments.
- *Transportation:*
  - Old US 80/Watermelon Road intersection;
  - Old US 80 Bridge location; and
  - I-10/339<sup>th</sup> Avenue interchange.
- *Utilities/Facilities:*
  - Power stations – Gila River, Panda, and Cotton Center;
  - Irrigation canals – Gila Bend, Enterprise, and Arlington;
  - Gas pipelines and electrical power lines near the Old US 80 Bridge; and
  - SR 85 landfill/solar plant.
- *Topography:*
  - Narrow pass at Gillespie Dam;
  - Large hill near 347<sup>th</sup> Avenue/Dobbins Road; and
  - Small hill near 363<sup>rd</sup> Avenue/Salome Highway.
- *Others:*
  - Known cultural resource areas near the Old US 80 Bridge; and
  - Floodplains.

### **2.3 Phase I Conceptual Alternatives**

As a starting point in the development of conceptual alternatives, a brainstorming session was conducted with project task leaders to generate a wide range of options that span the full width and length of the study area. The conceptual alignment alternatives for the southern and northern corridor segments are respectively shown in **Figure 3a** and **Figure 3b**. As these figures show, there are opportunities to assemble multiple combinations of alternatives at common intersecting points to produce numerous options for consideration.

In developing conceptual alternatives, constraints considered to be potential “fatal flaws” were avoided to the extent possible to produce a set of realistic alternatives. The conceptual alternatives were presented to the TAC and stakeholders for review and input.

### **2.4 Phase II Candidate Alternatives**

To narrow the range of alternatives to be evaluated in greater detail, a subjective, qualitative assessment was performed on all conceptual alternatives, resulting in three recommended candidate alternatives for the southern segment and three recommended candidate alternatives for the northern segment. The candidate alternatives were selected from the conceptual alignments that avoided or had minimal impacts on the more significant constraints identified previously.

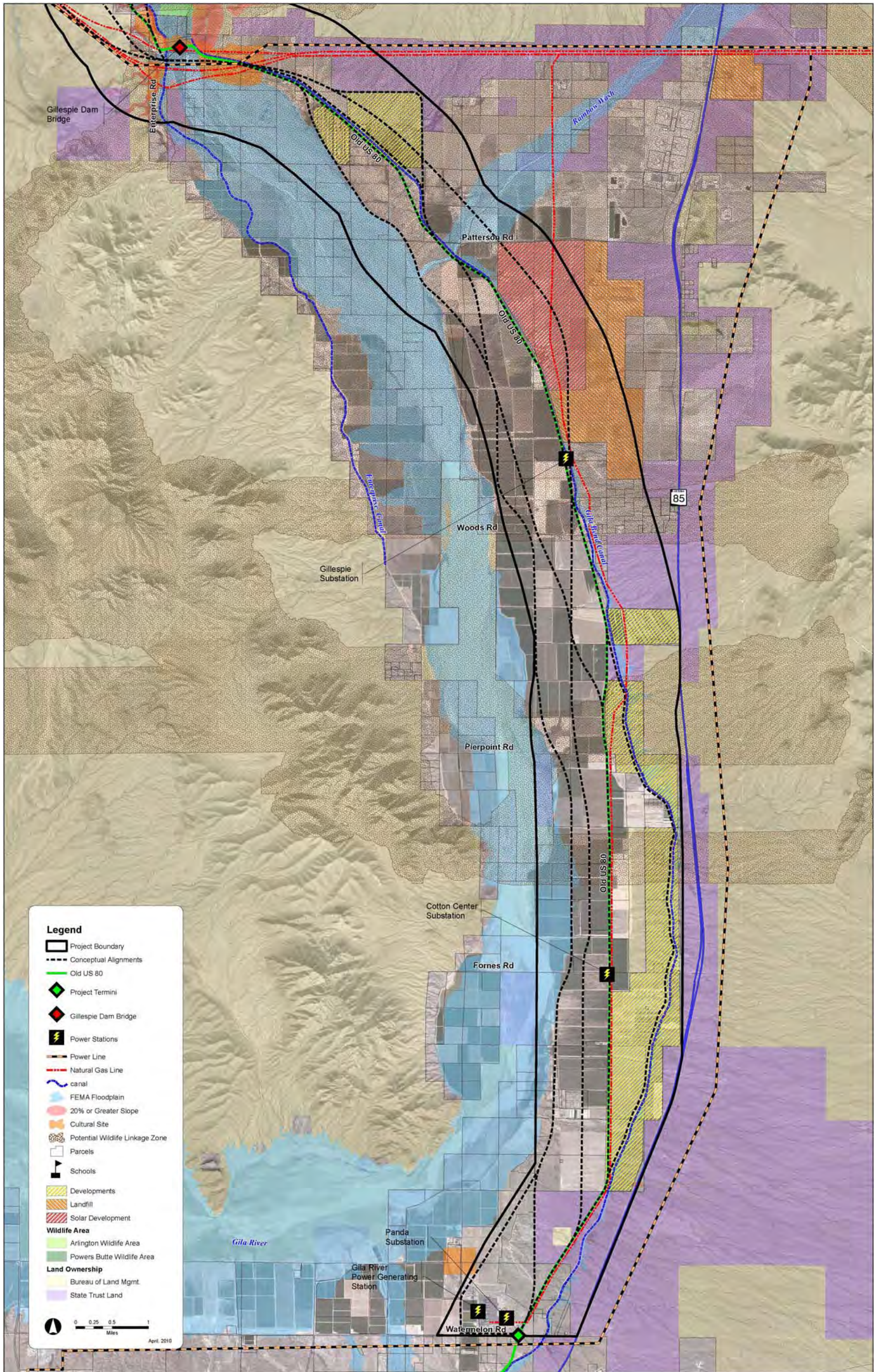


Figure 3a – Conceptual Alternatives (South)

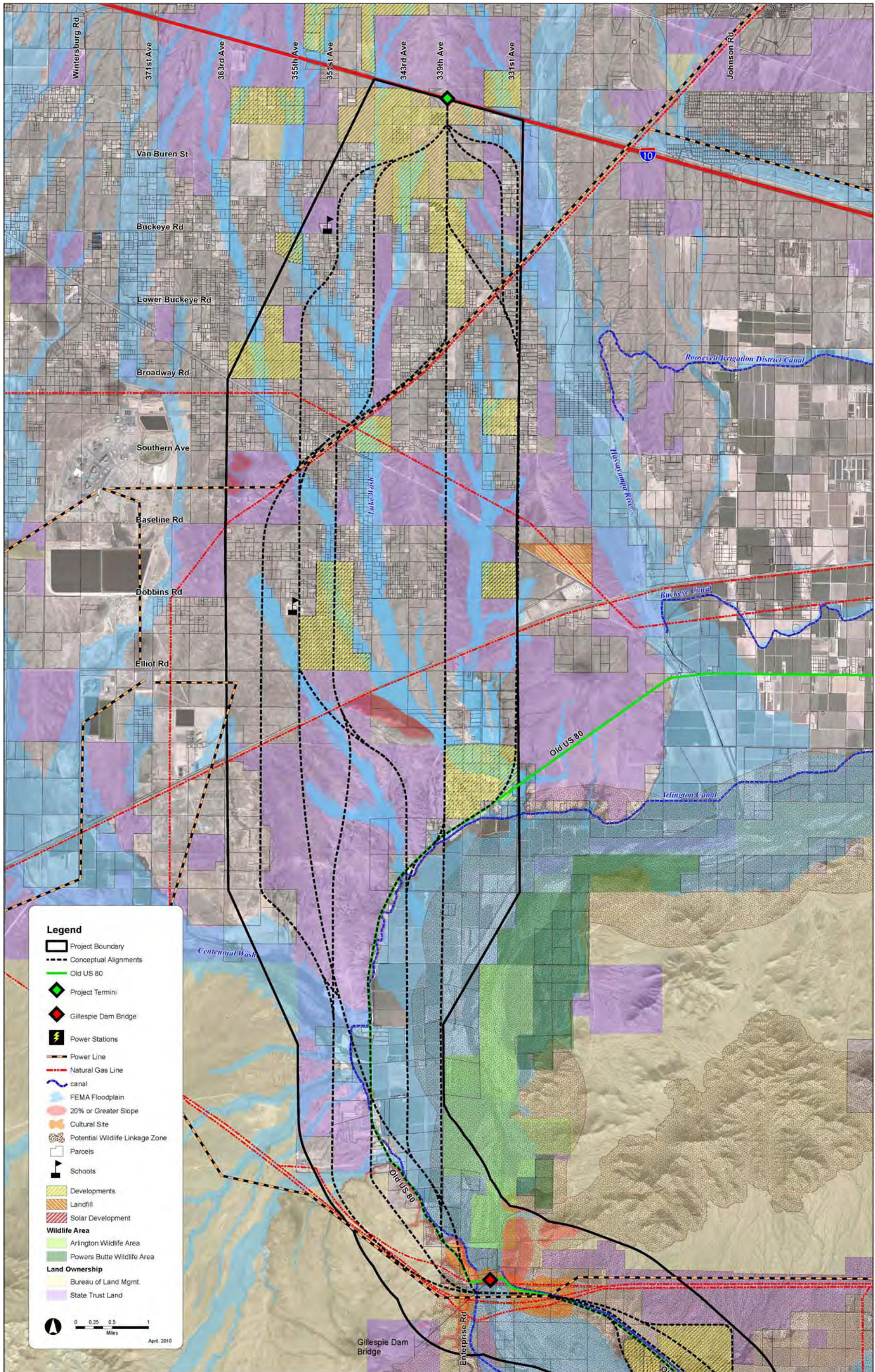


Figure 3b – Conceptual Alternatives (North)



A field review of the study area was conducted to obtain visual, on-the-ground confirmation that the recommended candidate alternative alignments appear to be feasible locations for a future parkway facility.

The candidate alternatives were presented to the TAC and stakeholders for review and input. Through a break-out group process, aerial photographs showing the study area, conceptual alternatives, and recommended candidate alternatives were discussed and comments from the TAC and stakeholders were placed directly on the aerial photographs.

As a result of this process, it was determined that it would be desirable to develop a fourth alternative for the northern segment that combined some of the more favorable aspects of the three initially recommended alternatives, making optimum use of existing roadways but avoiding cultural resource and topography constraints near the Old US 80 Bridge. After additional field review was conducted to verify the feasibility/desirability of the fourth alternative, it was determined that the fourth alternative for the northern segment should be included in the candidate alternatives evaluation.

Drawings showing all of the candidate alternatives for the southern and northern corridor segments are respectively shown in **Figure 4a** and **Figure 4b**. Drawings showing each candidate alternative separately are shown in **Figure 5**, **Figure 6**, and **Figure 7** for the southern segment and in **Figure 8**, **Figure 9**, **Figure 10**, and **Figure 11** for the northern segment. Schematic drawings showing the candidate alternatives at a scale of 1 inch = 1,000 feet are included in **Appendix TM4-1**.

#### 2.4.1 *Southern Segment Candidate Alternatives*

The southern segment candidate alternatives are briefly described as follows:

- *Alternative A* – Generally follows the eastern edge of the Gila River floodplain west of the Old US 80 alignment. This is the most westerly southern alternative and is almost entirely new alignment through agricultural properties;
- *Alternative B* – Generally bisects the land in between Old US 80 and the Gila River floodplain. This alternative is slightly east of Alternative A and the Gila River floodplain. It is predominately on new alignment through agricultural properties but does make use of portions of Old US 80; and
- *Alternative C* – Generally follows the existing Old US 80 alignment for its entirety.

#### 2.4.2 *Northern Segment Candidate Alternatives*

The northern segment candidate alternatives are briefly described as follows:

- *Alternative A* – Generally follows the 351<sup>st</sup> Avenue alignment. This is the most westerly northern alternative and passes through a combination of low density residential developments, State Trust lands, and open desert;
- *Alternative B* – Generally follows the 339<sup>th</sup> Avenue alignment, providing the most direct connection from I-10 to the Old US 80 Bridge. It passes through a combination of low density residential development, State Trust lands, agricultural lands, and the Gila River floodplain;



- *Alternative C* – Generally follows the Old US 80 and 331<sup>st</sup> Avenue alignments. It passes through a combination of low density residential development, State Trust lands, and open desert; and
- *Alternative D* – A combination of Alternatives A and B that follows the 351<sup>st</sup> Avenue alignment on the south and transitions to the 339<sup>th</sup> Avenue alignment on the north. It passes through a combination of low density residential development, State Trust lands, and open desert.

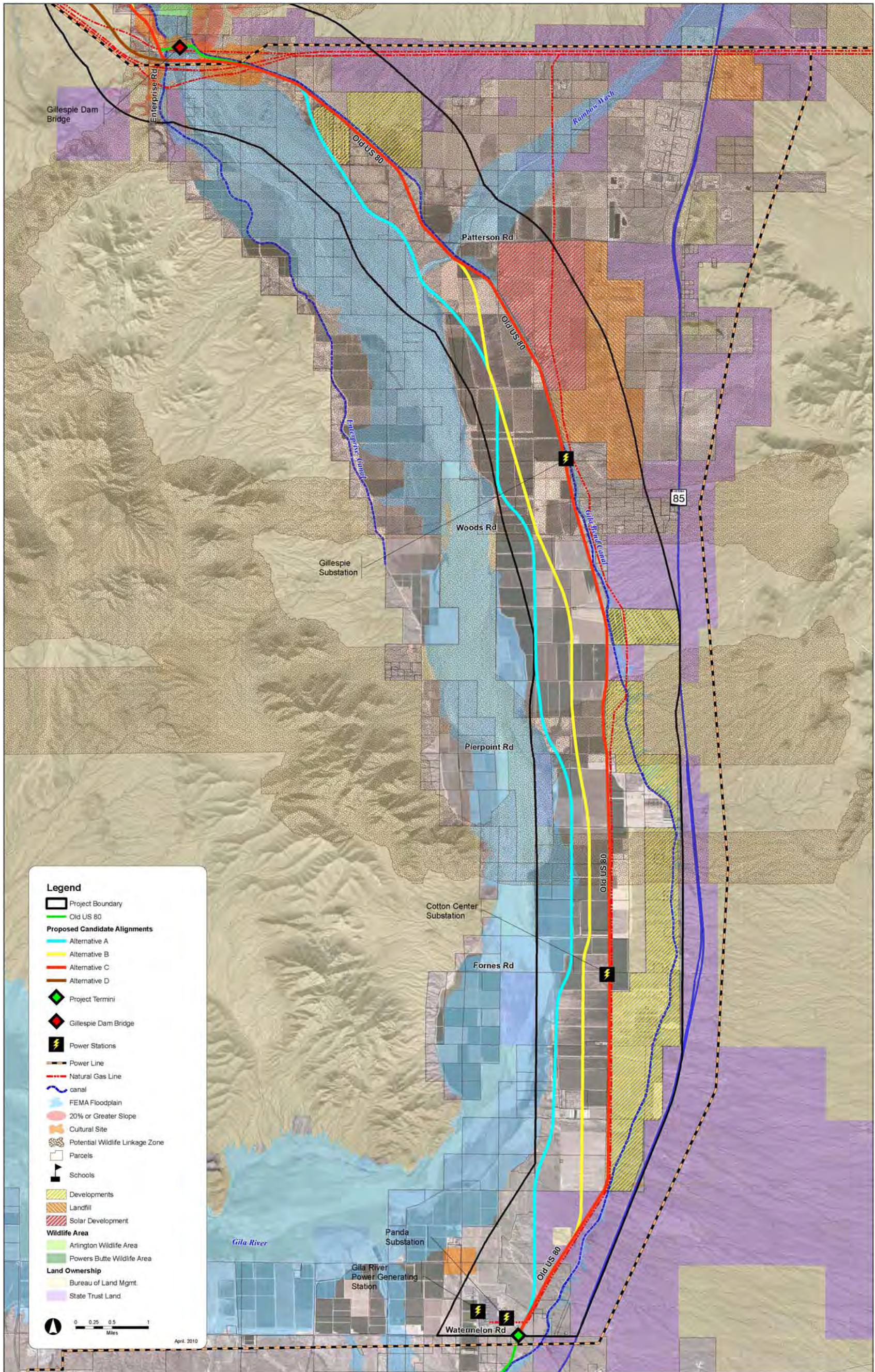


Figure 4a – Candidate Alternatives (South)



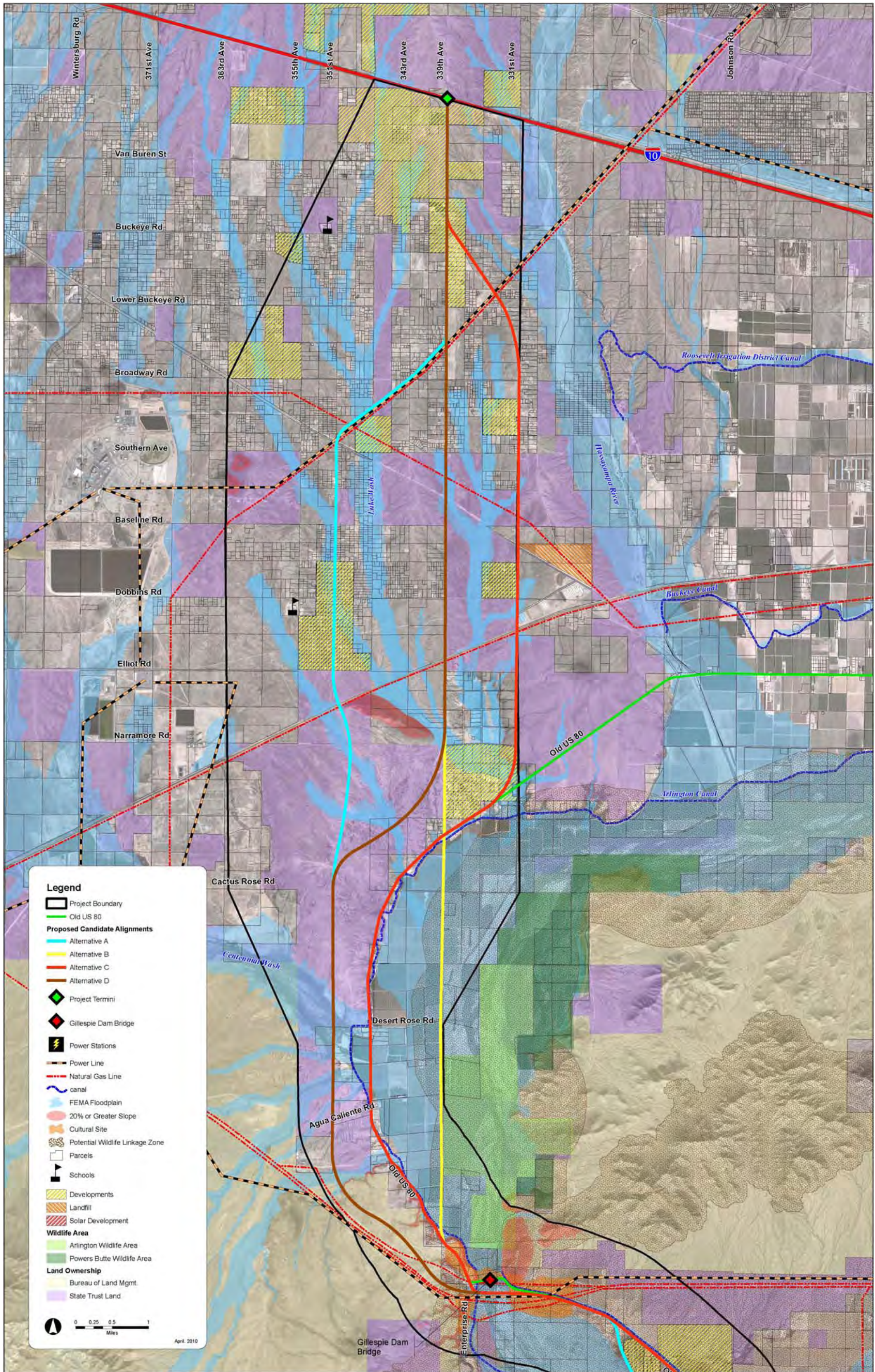


Figure 4b – Candidate Alternatives (North)

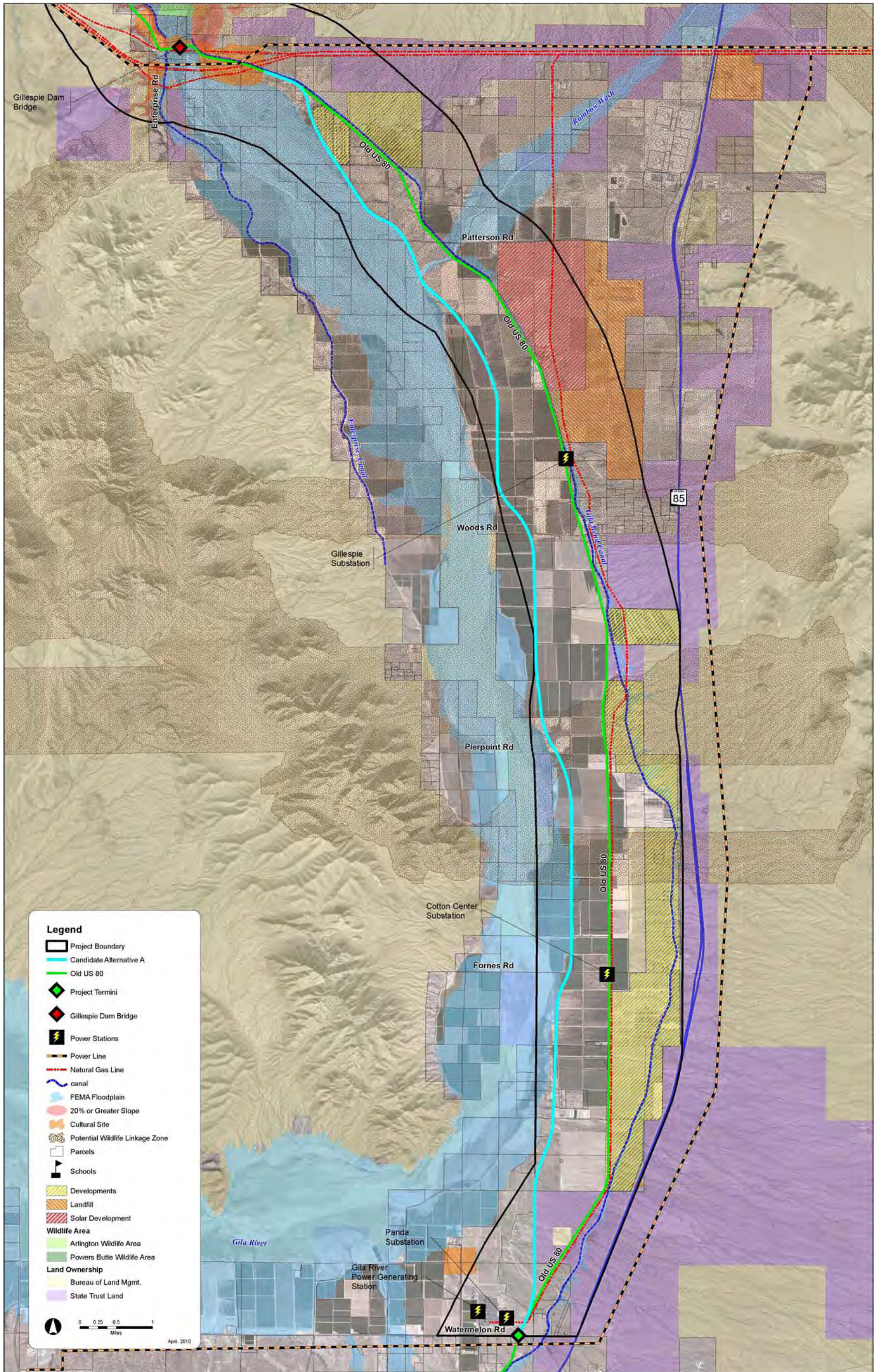


Figure 5 – Candidate Alternative A (South)

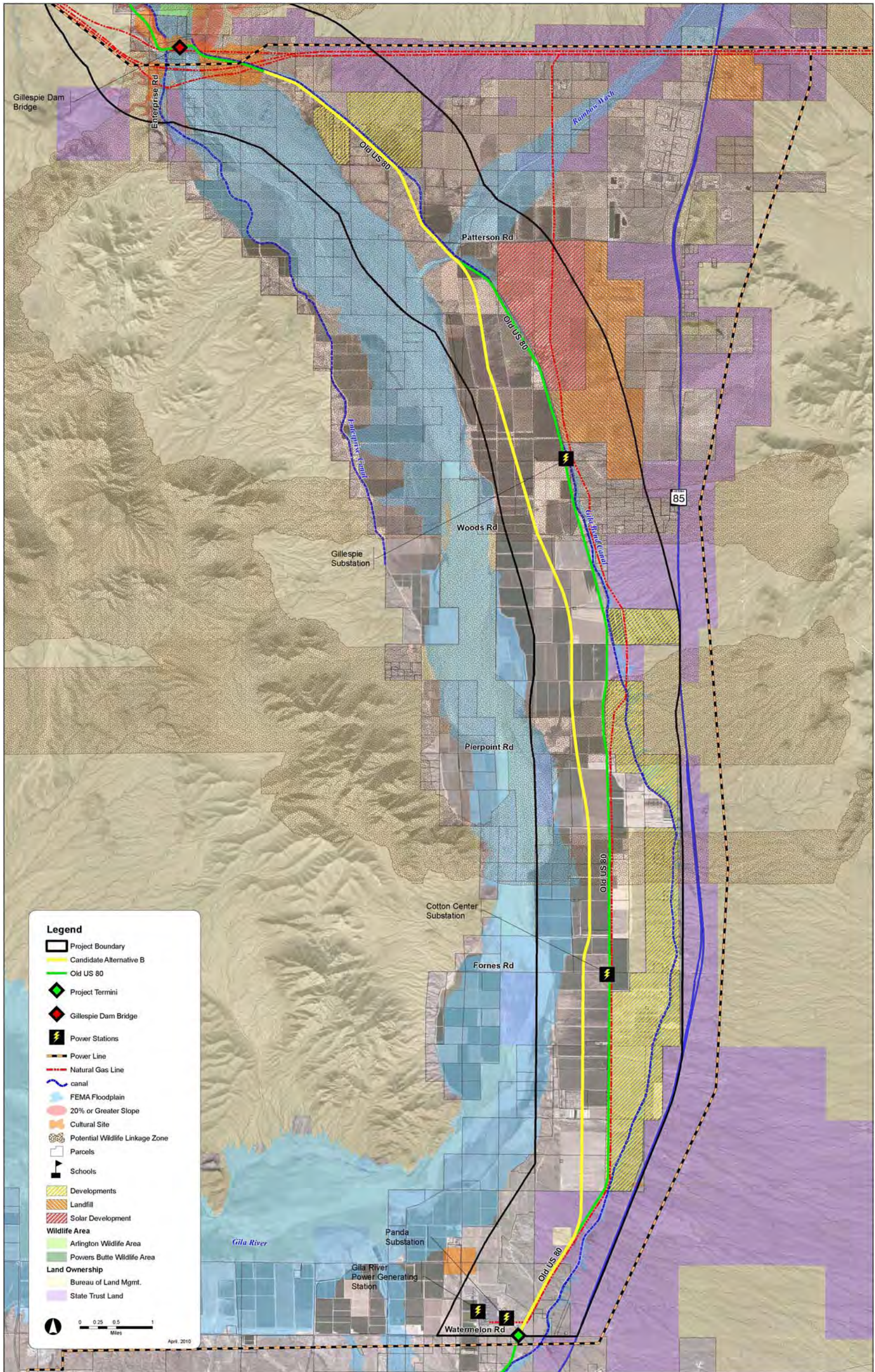


Figure 6 – Candidate Alternative B (South)

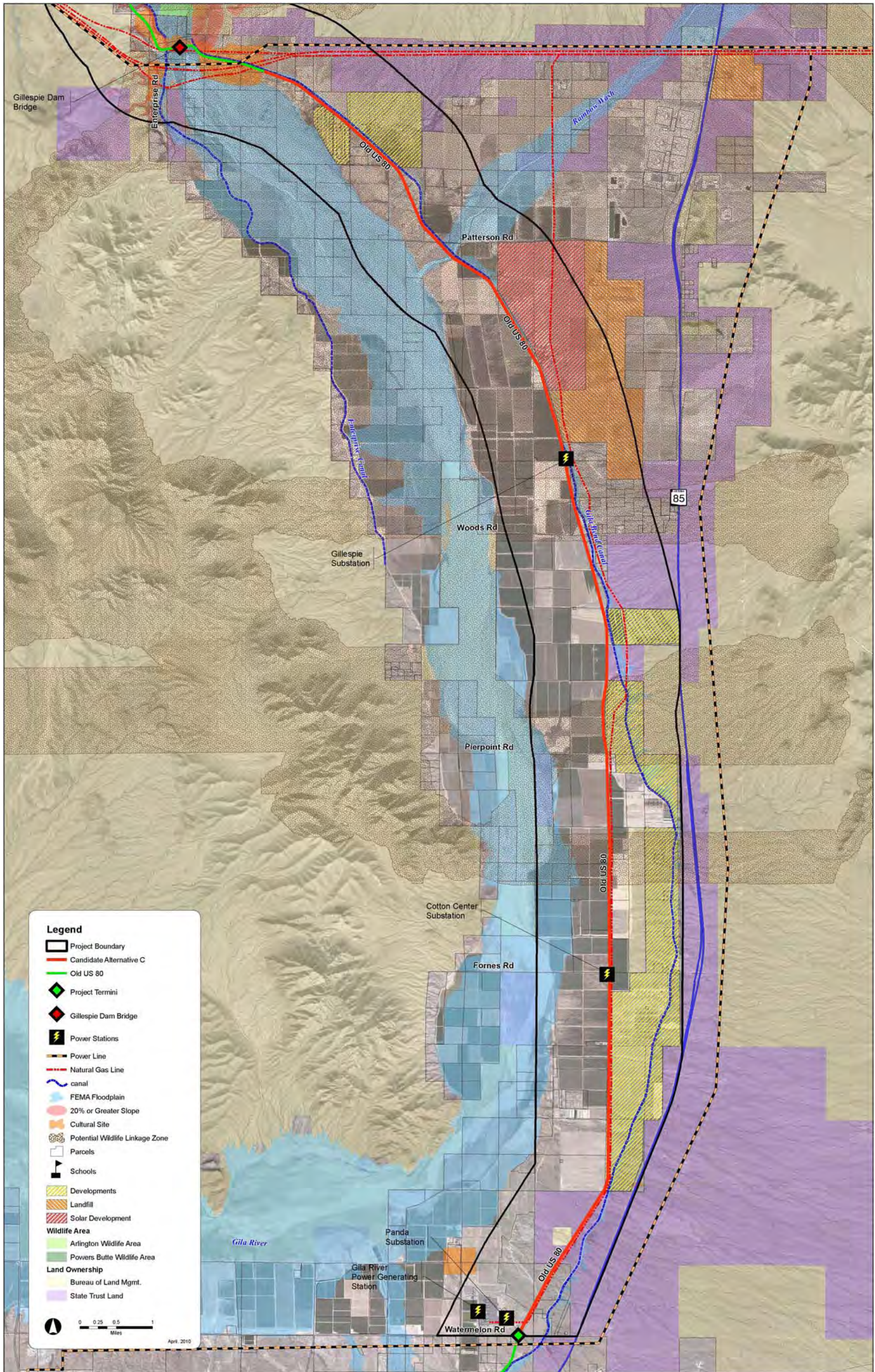


Figure 7 – Candidate Alternative C (South)

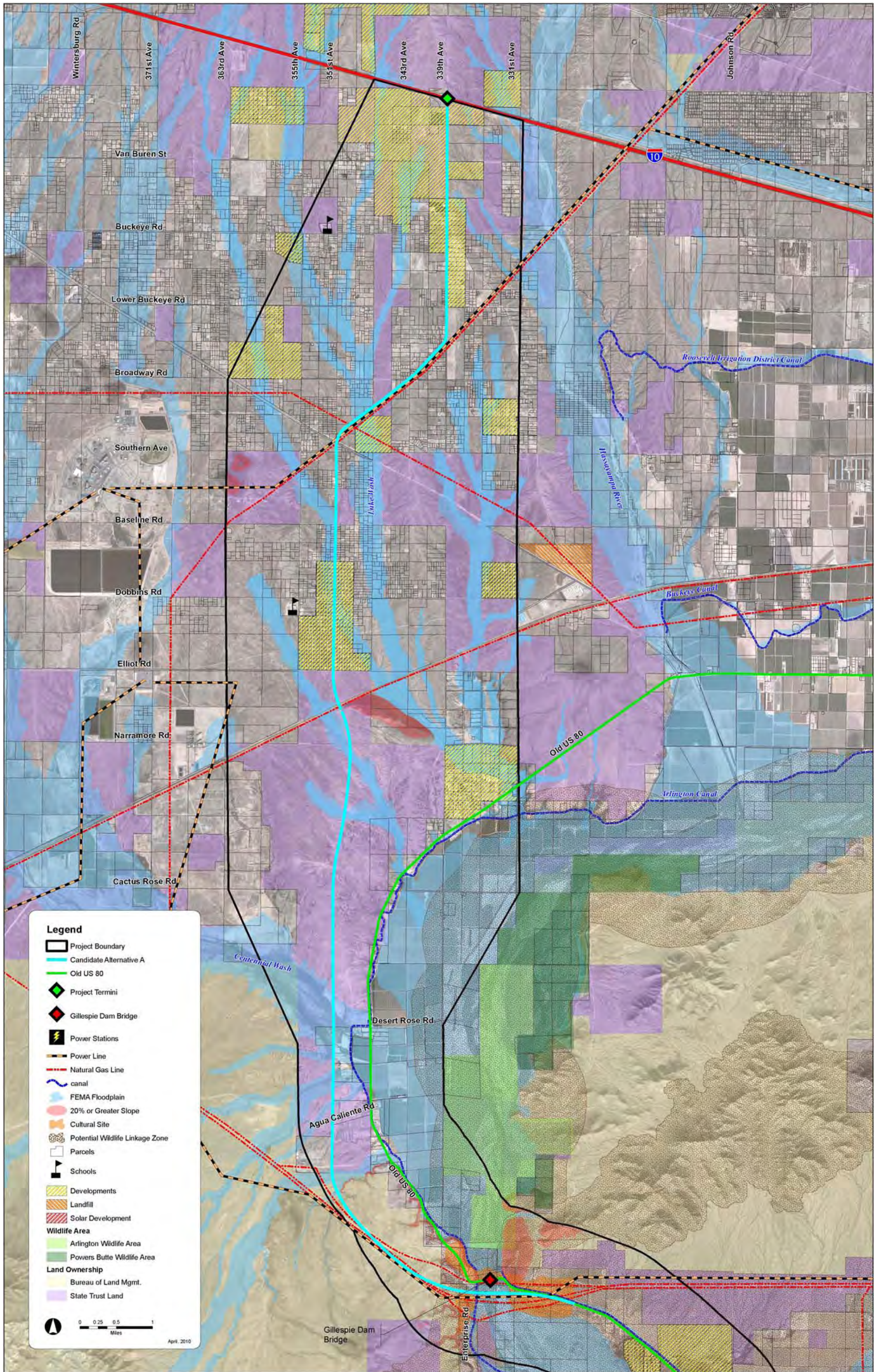


Figure 8 – Candidate Alternative A (North)

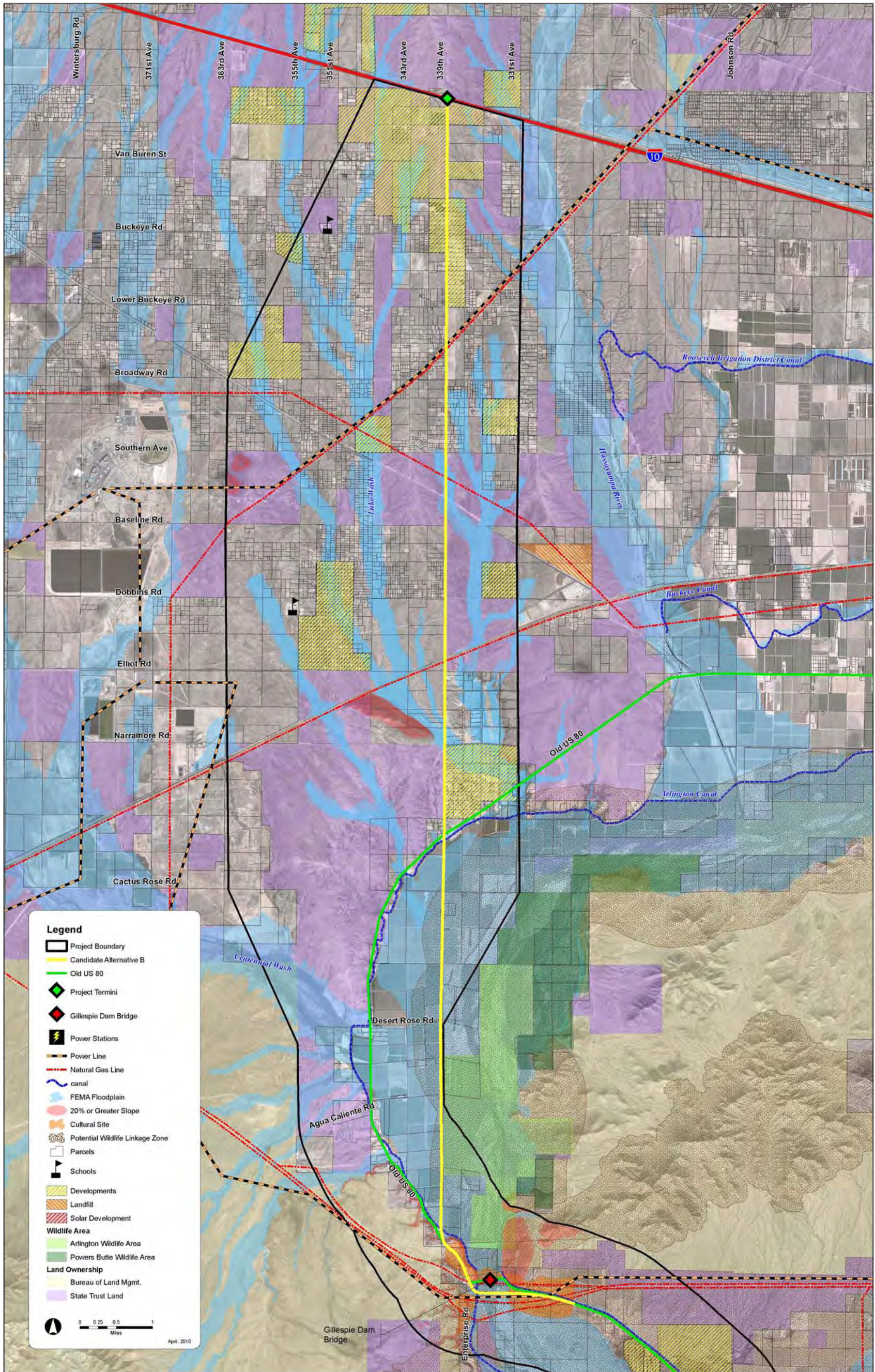


Figure 9 – Candidate Alternative B (North)

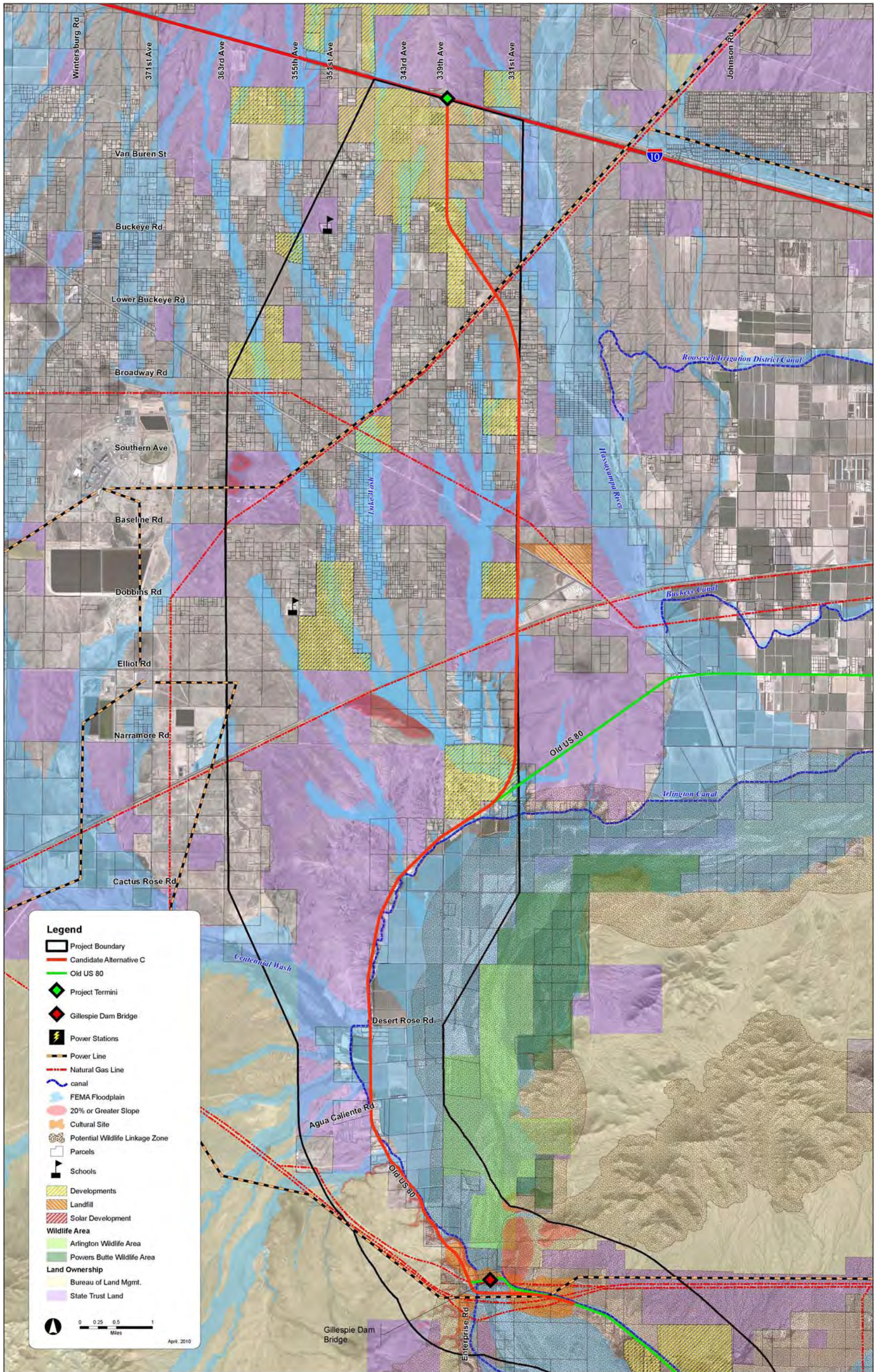


Figure 10 – Candidate Alternative C (North)

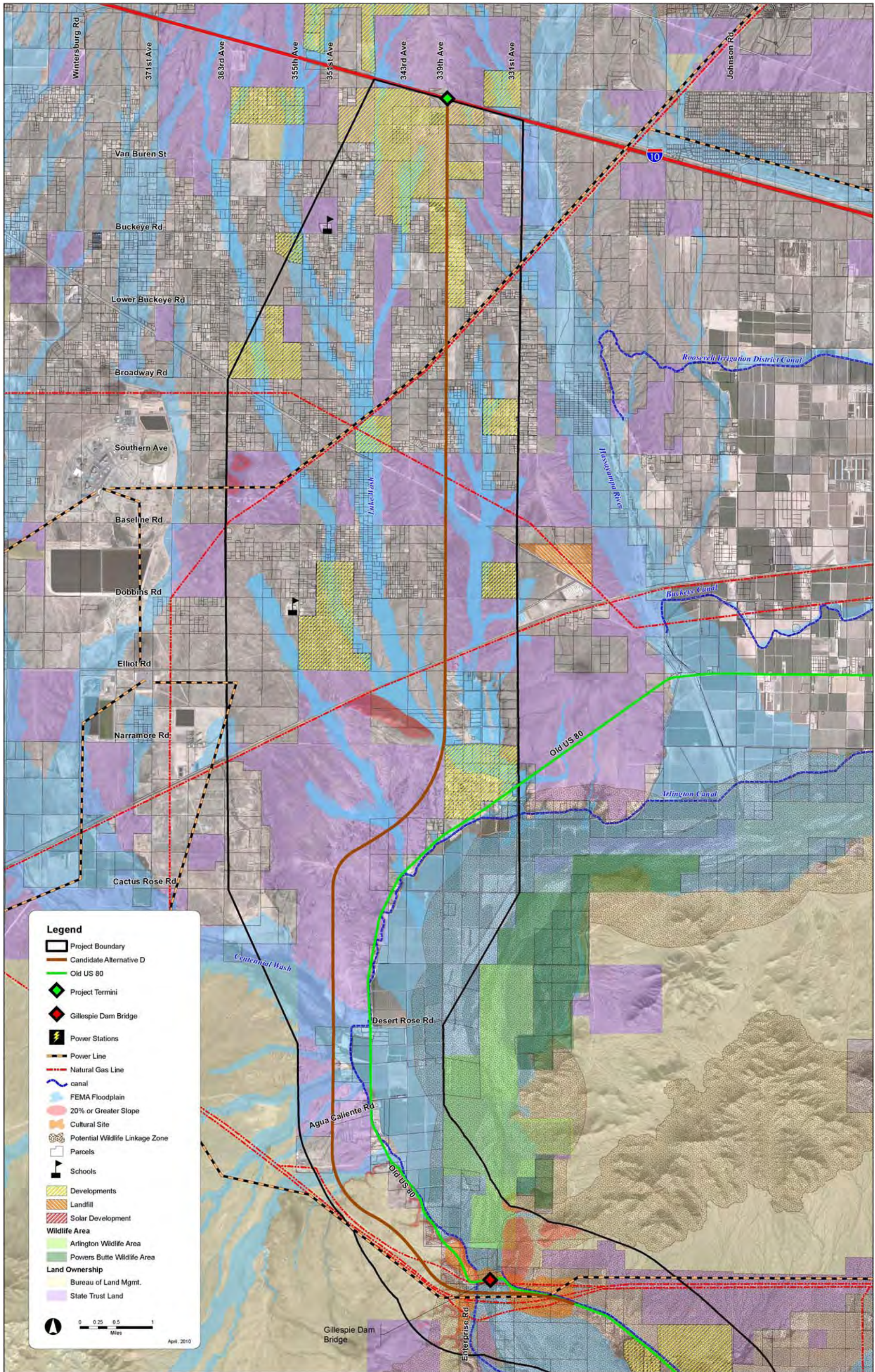


Figure 11 – Candidate Alternative D (North)



### 3. EVALUATION OF CANDIDATE ALTERNATIVES

#### 3.1 Evaluation Criteria

After performing the fatal flaw assessment of the conceptual alternatives and then narrowing the conceptual alternatives to three candidate alternative alignments for the southern segment and four candidate alternatives for the northern segment, the candidate alternatives, along with a “no-build” alternative, were evaluated against a number of criteria. The evaluation criteria included the following:

- *Future Development Compatibility* – This criterion addresses the impacts that each alternative has with respect to planned future development and whether or not the alternative is compatible with the planned development. For example, some planned developments in the corridor already show a 200’-wide footprint for the Hidden Waters Parkway along portions of 339<sup>th</sup> Avenue while other planned developments are based on a no-build scenario. This criterion does not address the potential benefits of the parkway to future development, only whether or not the future development plan can accommodate the Hidden Waters Parkway;
- *System Continuity and Capacity* – This criterion is a measure of how each alternative contributes to providing a continuous transportation link throughout the length of the corridor with sufficient capacity to serve projected build-out traffic volumes. It also includes consideration of the ability to connect with other existing and planned freeways, parkways, and arterial streets;
- *Irrigation Impacts* – With the large amount of irrigated farm land in the corridor, most alternatives will have some impact on irrigation facilities. In some cases, existing irrigation systems will need to be replaced with new (and more modern) facilities and would derive a benefit from the parkway project. In other cases, irrigation patterns may be negatively impacted, making it more difficult to continue irrigation service;
- *Drainage Impacts* – The Gila River and numerous washes are located in the study area. In most cases, implementing a parkway facility will require new drainage structures, which will typically improve existing drainage patterns;
- *Building/Property Impacts* – There are numerous low density residential properties and agricultural properties that may be adversely impacted by the parkway project. Some buildings may have to be vacated and demolished, and some agricultural properties may be divided into smaller parcels that are less efficient for farming operations;
- *Wildlife Impacts* – There are wildlife habitats and linkage zones within the study area that will experience differing impacts depending on the alternative alignment. Some existing barriers to wildlife movement may be mitigated while other new barriers would be created by a new or widened roadway facility;
- *Cultural/Archaeological Impacts* – Throughout the corridor, there are known cultural and archaeological sites. Some alternatives would have more adverse impacts than others on these resources. This criterion is limited to known cultural and archaeological sites. Further alignment-specific cultural and archaeological analyses will be needed to identify and mitigate unknown resources;
- *Utility Impacts* – Most existing utilities are located adjacent to existing transportation facilities and may need to be relocated in those cases where the parkway will require additional right-of-way;

- *Public Acceptability* – Residents and landowners in the corridor have differing opinions regarding the need and desirability of constructing a new major north-south roadway through the study area. Public input received through the TAC, stakeholder, and open house meetings provides an indication of the general level of support for each alternative; and
- *Cost* – Some alternatives will clearly have greater right-of-way, utility, and drainage costs than others and can be evaluated on a comparative planning-level cost assessment.

### 3.2 Candidate Alternatives Evaluation Results

Most of the evaluation criteria listed in the previous section do not lend themselves to numerical quantification, so the evaluation was performed on a “qualitative” basis using the following descriptors to describe the relative impacts of each alternative:

- Strong advantage;
- Advantage;
- Neutral;
- Disadvantage; and
- Strong disadvantage.

**Table 1** provides a narrative description of the issues that pertain to each of the evaluation criteria for each of the southern candidate alternatives and evaluation ratings according to the above descriptors. **Table 2** provides a similar narrative description for each of the northern candidate alternatives. **Table 3** graphically summarizes the overall evaluation of the candidate alternatives.

A visual inspection of **Table 3** without applying any weighting factors to the criteria indicates that for the southern segment, the No-Build Alternative and Alternative C have the most positive ratings (i.e., more Strong advantage and Advantage ratings and/or fewer Strong disadvantage and Disadvantage ratings). For the northern segment, the No-Build Alternative and Alternative D have the most positive ratings.

### 3.3 Preferred Alternatives

The evaluation results were discussed with the TAC members and stakeholders and were presented for public input at the third open house. There was general consensus that the evaluation results are reasonable and valid.

For both the southern and northern segments, it was determined that the No-Build Alternative does not address the demonstrated long-term need for a high-capacity parkway facility in the study area (see Strong disadvantage indication for System Continuity and Capacity in the tables). As a result, Alternative C for the southern segment and Alternative D for the northern segment were recommended as the preferred alternatives. The ratings for the two preferred alternative segments are highlighted in **Table 3**.

**Table 1 – Southern Segment Candidate Alternatives Evaluation Matrix**

Evaluation Criteria	Alternatives Evaluated			
	No-Build Alternative	Alternative A	Alternative B	Alternative C
<b>Future Development Compatibility</b>	<p>Old US 80 has existed for many years and several developments have been planned for compatibility with Old US 80 as it exists today. Active developments include Sonoran Trails, Lakeside Ski Village, Dos Lagos, Spring Mountain Ski Ranch, Insignia, and the City of Phoenix landfill/solar development site. The No-Build Alternative was assumed during the planning process for these developments.</p> <p><i>Net Effect: Advantage</i></p>	<p>Alternative A is almost entirely on new alignment near the Gila River flood plain and is in close proximity to only one existing development, the Spring Mountain Ski Ranch. This alternative provides an opportunity to more clearly delineate the flood plain and be incorporated into future land development plans as agricultural lands are converted to more intensive uses. Due to the close proximity of Alternative A to the Gila River flood plain, development opportunities adjacent to the parkway would likely be restricted to the east side of the roadway.</p> <p><i>Net Effect: Neutral</i></p>	<p>Alternative B is on new alignment south of Rainbow Wash and follows the existing Old US 80 alignment north of Rainbow Wash. No developments are currently being planned south of Rainbow Wash and west of Old US 80, so Alternative B could be incorporated into future land development plans in this area. Two developments north of Rainbow Wash, Spring Mountain Ski Ranch and Insignia, do not reflect a parkway facility adjacent to their boundaries and may require additional land dedications or acquisitions.</p> <p><i>Net Effect: Neutral</i></p>	<p>Alternative C follows the Old US 80 alignment and will require acquisition or dedication of additional right-of-way to accommodate the parkway footprint. It may be possible to shift the centerline to avoid impacts on the Sonoran Trails, Lakeside Ski Village, Dos Lagos, and City of Phoenix landfill/solar developments, but it will likely require additional right-of-way acquisition or dedication from the Spring Mountain Ski Ranch and Insignia developments.</p> <p><i>Net Effect: Disadvantage</i></p>
<b>System Continuity and Capacity</b>	<p>Build-out traffic projections developed by the Maricopa Association of Governments show traffic volumes ranging from 28,000 to 46,000 vehicles per day near the Gillespie Dam Bridge and 44,000 to 84,000 vehicles per day near Gila Bend. These traffic projections exceed the current capacity of Old US 80 and the projections near Gila Bend exceed the capacity of a six-lane major arterial street. In addition, Watermelon Road is envisioned to be an east-west parkway facility carrying build-out traffic volumes in the range of 125,000 to 143,000 vehicles per day, necessitating a parkway-to-parkway interchange in the vicinity of Old US 80. The No-Build Alternative will not adequately serve long-term traffic needs.</p> <p><i>Net Effect: Strong disadvantage</i></p>	<p>Alternative A is the most westerly alternative and offers the advantage of a new parkway facility to serve longer distance travel while maintaining Old US 80 for localized traffic service. The separation from Old US 80 will facilitate good intersection spacing along east/west connecting collector and arterial streets. Alternative A provides continuity with the Watermelon Parkway via a parkway-to-parkway interchange.</p> <p><i>Net Effect: Strong advantage</i></p>	<p>Alternative B offers many of the same advantages as alternative A with the exception of separation from Old US 80. Alternative B is generally ¼ mile to ½ mile closer to Old US 80 south of Rainbow Wash and is coincident with Old US 80 north of Rainbow Wash. Alternative B provides continuity with the Watermelon Parkway via a parkway-to-parkway interchange.</p> <p><i>Net Effect: Advantage</i></p>	<p>Alternative C follows the Old US 80 alignment. Upgrading Old US 80 to a Parkway will accommodate the build-out traffic projections and provide continuity with the Watermelon parkway via a parkway-to-parkway interchange.</p> <p><i>Net Effect: Advantage</i></p>
<b>Irrigation Impacts</b>	<p>The No-Build Alternative will not cause any improvement or degradation to existing irrigation systems or operations.</p> <p><i>Net Effect: Neutral</i></p>	<p>Alternative A is almost entirely on new alignment, passing through irrigated farm land for most of its length. Numerous parcels will be bisected, some of them diagonally, resulting in the need to rebuild and reconfigure irrigation systems and re-grade some farm fields. It may be possible to shift the centerline to the west, parallel to the floodplain, to reduce irrigation impacts.</p> <p><i>Net Effect: Disadvantage</i></p>	<p>South of Rainbow Wash, Alternative B is entirely on new alignment, passing through irrigated farm land for most of its length. Numerous parcels will be bisected, some of them diagonally, resulting in the need to rebuild and reconfigure irrigation systems and re-grade some farm fields. North of Rainbow Wash, Alternative B follows the Old US 80 alignment, but there are limited irrigation facilities in this area.</p> <p><i>Net Effect: Strong disadvantage</i></p>	<p>Alternative C follows the Old US 80 alignment. The wider parkway footprint along Old US 80 will require relocating, rebuilding and upgrading some of the irrigation pumping systems near the roadway, but it should not significantly alter irrigation patterns. With upgraded irrigation and drainage facilities, Alternative C will result in positive long-term irrigation impacts.</p> <p><i>Net Effect: Advantage</i></p>
<b>Drainage Impacts</b>	<p>The No-Build Alternative will not cause any improvement or degradation to existing drainage patterns or facilities.</p> <p><i>Net Effect: Neutral</i></p>	<p>Alternative A follows much of the Gila River flood plain and as such offers significant opportunities to more clearly delineate the floodplain boundaries and improve overall drainage capabilities in the area. This alternative would likely require a significant drainage structure where it crosses the Rainbow Wash, offering improved all-weather access at this crossing.</p> <p><i>Net Effect: Strong advantage</i></p>	<p>Alternative B is located further away from the Gila River floodplain and would have limited benefit in terms of better delineation of the floodplain. This alternative would likely require a significant drainage structure where it crosses the Rainbow Wash, offering improved all-weather access at this crossing.</p> <p><i>Net Effect: Advantage</i></p>	<p>The Old US 80 alignment has numerous dip crossings and substandard culverts that are subject to flooding, erosion, and sedimentation. Alternative C would provide upgraded drainage structures to meet current drainage design requirements, improving both all-weather vehicular access and land development potential.</p> <p><i>Net Effect: Strong advantage</i></p>

**Table 1 – Southern Segment Candidate Alternatives Evaluation Matrix (continued)**

Evaluation Criteria	Alternatives Evaluated			
	No-Build Alternative	Alternative A	Alternative B	Alternative C
<b>Building/Property Impacts</b>	<p>The No-Build Alternative will not have any positive or negative impacts on buildings or properties.</p> <p><i>Net Effect: Neutral</i></p>	<p>Alternative A is almost entirely on new alignment. It will be possible to avoid most buildings along this alignment, but numerous parcels will be bisected, some of them diagonally, creating some odd-shaped parcels that may be difficult to farm or develop. There may be some impacts to existing residential properties in the Spring Mountain Ski Ranch development.</p> <p><i>Net Effect: Disadvantage</i></p>	<p>South of Rainbow Wash, Alternative B is on new alignment, and it will be possible to avoid most existing buildings. As with Alternative A, numerous parcels will be bisected, some of them diagonally, creating some odd-shaped parcels that may be difficult to farm or develop. North of Rainbow Wash, there may be some impacts to existing buildings or property improvements, particularly in the vicinity of the Spring Mountain Ski Ranch.</p> <p><i>Net Effect: Disadvantage</i></p>	<p>There are some existing farm houses and agricultural buildings along Old US 80 and some improvements in the Spring Mountain Ski Ranch that may be impacted by Alternative C, depending on the final roadway centerline. The Old US 80 right-of-way already establishes property boundaries for parcels that are generally fairly large, and the wider parkway footprint will not significantly impact the shape or function of these properties.</p> <p><i>Net Effect: Disadvantage</i></p>
<b>Wildlife Impacts</b>	<p>Much of Old US 80 lies within the PLZ 73 and Gila Bend-Sierra Estrella wildlife linkage zones. Wildlife-vehicle conflicts are currently common occurrences. Old US 80 does not currently provide wildlife crossing treatments.</p> <p><i>Net Effect: Disadvantage</i></p>	<p>Much of Alternative A lies within the PLZ 73 and Gila Bend-Sierra Estrella wildlife linkage zones. Alternative A would create an additional barrier besides Old US 80 to wildlife crossings, but this could be mitigated to some degree by incorporating wildlife crossing structures into the new roadway design at locations such as Rainbow Wash.</p> <p><i>Net Effect: Disadvantage</i></p>	<p>Much of Alternative B lies within the PLZ 73 and Gila Bend-Sierra Estrella wildlife linkage zones. Alternative B would create an additional barrier besides Old US 80 to wildlife crossings, but this could be mitigated to some degree by incorporating wildlife crossing structures into the new roadway design. At Rainbow Wash, the existing Old US 80 culvert would be replaced with a major new drainage structure that would better accommodate wildlife movement.</p> <p><i>Net Effect: Disadvantage</i></p>	<p>Alternative C will result in a wider parkway footprint along the existing Old US 80 alignment but would not create an additional barrier. The crossing distance for wildlife would get larger, but this could be mitigated to some degree by incorporating wildlife crossing structures into the new roadway design. At Rainbow Wash, the existing Old US 80 culvert would be replaced with a major new drainage structure that would better accommodate wildlife movement.</p> <p><i>Net Effect: Neutral</i></p>
<b>Cultural/Archaeological Impacts</b>	<p>The No-Build Alternative will not have any positive or negative impacts on cultural or archaeological resources.</p> <p><i>Net Effect: Neutral</i></p>	<p>The only anticipated area of cultural or archaeological impacts is just south and east of the Old US 80 Bridge, where Alternative A follows the Old US 80 alignment to a planned new Gila River crossing south of the Old US 80 Bridge. It is likely that any roadway improvements outside the existing Old US 80 right-of-way limits would have a negative impact on these cultural and archaeological resources.</p> <p><i>Net Effect: Disadvantage</i></p>	<p>The only anticipated area of cultural or archaeological impacts is just south and east of the Old US 80 Bridge, where Alternative B follows the Old US 80 alignment to a planned new Gila River crossing south of the Old US 80 Bridge. It is likely that any roadway improvements outside the existing Old US 80 right-of-way limits would have a negative impact on these cultural and archaeological resources.</p> <p><i>Net Effect: Disadvantage</i></p>	<p>The only anticipated area of cultural or archaeological impacts is just south and east of the Old US 80 Bridge, where Alternative C follows the Old US 80 alignment to a planned new Gila River crossing south of the Old US 80 Bridge. It is likely that any roadway improvements outside the existing Old US 80 right-of-way limits would have a negative impact on these cultural and archaeological resources.</p> <p><i>Net Effect: Disadvantage</i></p>
<b>Utility Impacts</b>	<p>The No-Build Alternative will have no impact on existing or planned utilities.</p> <p><i>Net Effect: Neutral</i></p>	<p>Alternative A is on an entirely new alignment and will require some relocation of existing electrical facilities and wells.</p> <p><i>Net Effect: Disadvantage</i></p>	<p>Alternative B is a combination of new alignment and replacement of Old US 80 with a parkway facility. South of Rainbow Wash, Alternative B will have impacts on existing electrical facilities and wells that are similar to Alternative A. North of Rainbow Wash, there are 69 kV power lines and wells adjacent to Old US 80 that may require relocation, depending on the final centerline location.</p> <p><i>Net Effect: Disadvantage</i></p>	<p>Alternative C follows the existing Old US 80 alignment for its entire length, except for the area immediately south of Gillespie Dam Bridge. There are 69kV power lines, agricultural wells, and the Gila Bend Canal in close proximity to Old US 80 that may require relocation, depending on the final centerline location.</p> <p><i>Net Effect: Strong disadvantage</i></p>

**Table 1 – Southern Segment Candidate Alternatives Evaluation Matrix (continued)**

Evaluation Criteria	Alternatives Evaluated			
	<i>No-Build Alternative</i>	<i>Alternative A</i>	<i>Alternative B</i>	<i>Alternative C</i>
<b>Public Acceptability</b>	<p>Based on the input received from three TAC/stakeholder meetings and three public open houses, there is significant support for the No-Build Alternative. Many of the agricultural stakeholders do not want to have their farming practices disrupted with modified parcel shapes and sizes, revised irrigation systems, and access restrictions that would interfere with moving farm equipment throughout the corridor. There is, however, recognition of the need to start the process now to identify centerlines and footprints for future roadways and plan future land developments in accordance with the long-range roadway needs.</p> <p><i>Net Effect: Advantage</i></p>	<p>Some agricultural stakeholders support Alternative A due to its close proximity to the Gila River flood plain and the prospect of a clearer delineation of the flood plain limits. Most other stakeholders, however, did not support Alternative A. This alternative will require the most acquisition of new right-of-way.</p> <p><i>Net Effect: Disadvantage</i></p>	<p>Very little support has been provided by stakeholders for Alternative B. Alternative B would bisect a significant number of agricultural parcels without the Alternative A benefits associated with more clearly delineating the Gila River flood plain.</p> <p><i>Net Effect: Strong disadvantage</i></p>	<p>Next to the No-Build Alternative, Alternative C has received the most stakeholder and public support because this alternative is an upgrade to an existing roadway. Alternative C will not have a significant impact on existing parcel shapes and sizes or on current farming operations, and will provide a long-term north-south alternative to SR 85.</p> <p><i>Net Effect: Neutral</i></p>
<b>Cost</b>	<p>The No-Build Alternative will only require continued on-going maintenance costs.</p> <p><i>Net Effect: Neutral</i></p>	<p>Alternative A will require the most acquisition of new right-of-way and the highest construction cost for flood protection due to its close proximity to the Gila River.</p> <p><i>Net Effect: Strong disadvantage</i></p>	<p>Alternative B will require nearly as much new right-of-way acquisition as Alternative A. Construction costs for flood protection will be somewhat lower than Alternative A due to its distance from the Gila River.</p> <p><i>Net Effect: Disadvantage</i></p>	<p>Alternative C will have the lowest right-of way acquisition cost because nearly half of the required right-of-way is already owned by Maricopa County. Alternative C will likely have the highest utility relocation cost due to the extent of power lines, irrigation facilities, and wells that are in close proximity to Old US 80.</p> <p><i>Net Effect: Disadvantage</i></p>

**Table 2 – Northern Segment Candidate Alternatives Evaluation Matrix**

Evaluation Criteria	Alternatives Evaluated				
	<i>No-Build Alternative</i>	<i>Alternative A</i>	<i>Alternative B</i>	<i>Alternative C</i>	<i>Alternative D</i>
<b>Future Development Compatibility</b>	<p>There are numerous low-density residential properties along 339<sup>th</sup> Avenue between I-10 and Dobbins Road and in the Arlington area with limited new development potential. The most recent planned development along 339<sup>th</sup> Avenue south of I-10, Hidden Waters Ranch, has designated 339<sup>th</sup> Avenue as a parkway showing a planned dedication of 200' of right-of-way. Other planned developments have not incorporated the parkway concept.</p> <p><i>Net Effect: Neutral</i></p>	<p>Alternative A would bisect the Phoenix Valley West 1 development and would be in close proximity to the western corner of the Verma Estates Development. It would also bisect a large State Lands parcel, but this could benefit long-term development potential for this parcel.</p> <p><i>Net Effect: Neutral</i></p>	<p>Alternative B follows the 339<sup>th</sup> Avenue alignment from I-10 to just north of Gillespie Dam. 339<sup>th</sup> Avenue is a one-mile section line rural minor arterial road that has an existing interchange with I-10. The rural minor arterial designation indicates that 339<sup>th</sup> Avenue could ultimately be widened to rural minor arterial standards. There are numerous low-density residential properties along 339<sup>th</sup> Avenue between I-10 and Dobbins Road and in the Arlington area with limited new development potential. The Hidden Waters Ranch master plan designates 339<sup>th</sup> Avenue as a parkway. The Arlington Farms development does not include the parkway concept.</p> <p><i>Net Effect: Neutral</i></p>	<p>Alternative C shifts to the east to follow the 331<sup>st</sup> Avenue. It would diagonally bisect the Butterfield Stage Coach development and would have some impact on Dixie Park, Hickman's Egg Ranch, Phoenix Valley West 2, and the Arlington Farms development. 331<sup>st</sup> Avenue is a one-mile section line rural minor arterial road that has no existing or planned interchange with I-10. The rural minor arterial designation indicates that 331<sup>st</sup> Avenue could ultimately be widened to rural minor arterial standards. South of Old US 80, Alternative C passes through the Gila River flood plain where there are currently no planned developments.</p> <p><i>Net Effect: Disadvantage</i></p>	<p>Similar to Alternative B, Alternative D follows the 339<sup>th</sup> Avenue alignment between I-10 and Arlington and would have the same impacts as Alternative B north of Arlington. At Arlington, this alternative shifts to the west, passing through a large State Lands parcel. The westerly shift reduces impacts on Arlington and may improve long-term development potential for the State Lands parcel.</p> <p><i>Net Effect: Advantage</i></p>
<b>System Continuity and Capacity</b>	<p>There is currently no continuous north-south connection in the study area between I-10 and the Old US 80 Bridge. Build-out traffic projections developed by the Maricopa Association of Governments show traffic volumes ranging from 29,000 to 57,000 vehicles per day between the Gillespie Dam Bridge and Elliot Road and from 57,000 to 85,000 vehicles per day between Elliot Road and I-10. These traffic projections exceed the capacity of a six-lane major arterial street. Also, there are a number of planned freeways and parkways that would connect with the Hidden Waters Parkway, including the Hassayampa Freeway, Yuma Parkway, Southern Avenue Parkway, and the SR 801 Parkway. As a result, the No-Build Alternative will not adequately serve long-term traffic needs.</p> <p><i>Net Effect: Strong disadvantage</i></p>	<p>Alternative A is predominately on new alignment, providing the highest level of additional roadway capacity and flexibility for connecting with the planned future freeway and parkway facilities. Alternative A also provides the best roadway geometry for connecting with a new Gila River crossing south of the Old US 80 Bridge.</p> <p><i>Net Effect: Strong advantage</i></p>	<p>By following the 339<sup>th</sup> Avenue Alignment, Alternative B provides the most direct north-south connection from I-10 to the Gillespie Dam. However, the roadway geometry for connecting to the new Gila River crossing south of the Old US 80 Bridge will likely require a reduced design speed and a reduced cross-section through the plateau/ridge line area north of the dam due to the close proximity of the slopes and ridges on the eastern edge of the plateau area.</p> <p><i>Net Effect: Advantage</i></p>	<p>Alternative C shifts to the east to follow the 331<sup>st</sup> Avenue Alignment between I-10 and Old US 80, and then follows Old US 80 to the Old US 80 Bridge. This alternative is less direct than Alternative B and will have the same roadway geometry challenges in connecting to the new Gila River crossing south of the Old US 80 Bridge along with the challenges associated with close proximity to the Arlington Canal.</p> <p><i>Net Effect: Neutral</i></p>	<p>Alternative D provides the most direct north-south continuity between I-10 and the Arlington area. At Arlington, Alternative D transitions to the west to provide a new roadway that generally parallels Old US 80. As with Alternative A, this Alternative provides the best roadway geometry for connecting with a new Gila River crossing south of the Old US 80 Bridge.</p> <p><i>Net Effect: Strong advantage</i></p>
<b>Irrigation Impacts</b>	<p>The No-Build Alternative will not cause any improvement or degradation to existing irrigation systems or operations.</p> <p><i>Net Effect: Neutral</i></p>	<p>Alternative A does not impact any irrigated agricultural lands.</p> <p><i>Net Effect: Neutral</i></p>	<p>Alternative B would bisect a number of irrigated agricultural properties in the Gila River flood plain, resulting in the need to rebuild and reconfigure irrigation systems and re-grade some farm fields.</p> <p><i>Net Effect: Strong disadvantage</i></p>	<p>South of Arlington, Alternative C follows the Old US 80 alignment. The wider parkway footprint on the Old US 80 alignment will require relocating, rebuilding and upgrading some of the irrigation systems near the roadway, but it should not significantly alter irrigation patterns.</p> <p><i>Net Effect: Neutral</i></p>	<p>Alternative D does not impact any irrigated agricultural lands.</p> <p><i>Net Effect: Neutral</i></p>

**Table 2 – Northern Segment Candidate Alternatives Evaluation Matrix (continued)**

Evaluation Criteria	Alternatives Evaluated				
	No-Build Alternative	Alternative A	Alternative B	Alternative C	Alternative D
<b>Drainage Impacts</b>	<p>The No-Build Alternative will not cause any improvement or degradation to existing drainage patterns or facilities.</p> <p><i>Net Effect: Neutral</i></p>	<p>Alternative A would provide a number of new all-weather drainage structures to cross Luke Wash, Centennial Wash, and several other drainage ways. These new structures will provide an alternative to existing roadways that now occasionally experience flooding, erosion, and sedimentation. Significant channelization may be required for the Centennial Wash crossing(s).</p> <p><i>Net Effect: Advantage</i></p>	<p>339<sup>th</sup> Avenue has several dip crossings that are subject to flooding, erosion, and sedimentation. Alternative B would provide a number of upgraded and new all-weather drainage structures to cross Luke Wash, Centennial Wash, and several other drainage ways along 339<sup>th</sup> Avenue. Significant channelization may be required for the Centennial Wash crossing(s). South of Old US 80, Alternative B is located in the Gila River flood plain, requiring significant flood protection measures, channelization, and bridge structures.</p> <p><i>Net Effect: Strong disadvantage</i></p>	<p>331<sup>st</sup> Avenue and Old US 80 now occasionally experience flooding, erosion, and sedimentation. Alternative C would provide a number of upgraded and new all-weather drainage structures to cross Luke Wash, Centennial Wash, and several other drainage ways along 331<sup>st</sup> Avenue and Old US 80. Significant channelization may be required for the Centennial Wash crossing(s). Alternative C also benefits from the flood protection provided by the Arlington Canal on the east side of Old US 80.</p> <p><i>Net Effect: Advantage</i></p>	<p>Alternative D would provide a number of upgraded and new all-weather drainage structures to cross Luke Wash, Centennial Wash, and several other drainage ways along 339<sup>th</sup> Avenue south of I-10 to Arlington. These new structures will provide an alternative to existing roadways that now experience flooding, erosion, and sedimentation. Significant channelization may be required for the Centennial Wash crossing(s).</p> <p><i>Net Effect: Advantage</i></p>
<b>Building/Property Impacts</b>	<p>The No-Build Alternative will not have any positive or negative impacts on buildings or properties.</p> <p><i>Net Effect: Neutral</i></p>	<p>Alternative A would impact a fairly large number of low density residential properties between I-10 and Elliot Road. South of Elliot Road, Alternative A bisects a large State Lands parcel.</p> <p><i>Net Effect: Strong disadvantage</i></p>	<p>Alternative B would impact some low density residential properties between I-10 and Old US 80 and would bisect some agricultural properties south of Old US 80.</p> <p><i>Net Effect: Disadvantage</i></p>	<p>Alternative C would impact some low density residential properties between I-10 and Old US 80 at Arlington. South of Arlington, the Old US 80 right-of way already establishes property boundaries for parcels that are generally fairly large. The wider parkway foot print will not significantly impact the shape or function of these properties, but it will impact some existing structures.</p> <p><i>Net Effect: Disadvantage</i></p>	<p>Alternative D would impact some low density residential properties along 339<sup>th</sup> Avenue between I-10 and Arlington and would bisect a large State Lands parcel.</p> <p><i>Net Effect: Disadvantage</i></p>
<b>Wildlife Impacts</b>	<p>A portion of Old US 80 near the Old US 80 Bridge passes through wildlife linkage zone PLZ 73. Wildlife-vehicle conflicts are currently common occurrences. Old US 80 does not currently provide wildlife crossing treatments. As part of the Old US 80 Bridge rehabilitation project, a new low-flow crossing is planned to be built south of the existing bridge. This new low-flow crossing will create an additional barrier to wildlife crossings, making it more difficult for wildlife to safely cross Old US 80.</p> <p><i>Net Effect: Disadvantage</i></p>	<p>A small portion of Alternative A near the Old US 80 Bridge passes through wildlife linkage zone PLZ 73. The new segments of Alternative A within the wildlife linkage zone would create an additional barrier to wildlife crossings, but this could be mitigated by incorporating wildlife crossing structures into the new roadway design. Alternative A would replace the currently planned new low-flow crossing with a new bridge structure that would better accommodate wildlife movement.</p> <p><i>Net Effect: Neutral</i></p>	<p>Alternative B passes through portions of wildlife linkage zones PLZ 73 and PLZ 151. In addition, Alternative B is in close proximity to the Arlington and Powers Butte Wildlife Areas. The new segments of Alternative B within the wildlife linkage zones would create an additional barrier to wildlife crossings – particularly between the Wildlife Areas and the adjacent agricultural fields where wildlife often forages – but this could be partially mitigated by incorporating wildlife crossing structures into the new roadway design. Alternative B would replace the currently planned new low-flow crossing with a new bridge structure that would better accommodate wildlife movement.</p> <p><i>Net Effect: Strong disadvantage</i></p>	<p>A small portion of Alternative C near the Old US 80 Bridge passes through wildlife linkage zone PLZ 73. The widened cross-section of Old US 80 within the wildlife linkage zone would create a larger barrier to wildlife crossings, but this could be mitigated by incorporating wildlife crossing structures into the new roadway design. Alternative C would replace the currently planned new low-flow crossing with a new bridge structure that would better accommodate wildlife movement.</p> <p><i>Net Effect: Advantage</i></p>	<p>A small portion of Alternative D near the Old US 80 Bridge passes through wildlife linkage zone PLZ 73. The new segments of Alternative D within the wildlife linkage zone would create an additional barrier to wildlife crossings, but this could be mitigated by incorporating wildlife crossing structures into the new roadway design. Alternative D would replace the currently planned new low-flow crossing with a new bridge structure that would better accommodate wildlife movement.</p> <p><i>Net Effect: Neutral</i></p>

**Table 2 – Northern Segment Candidate Alternatives Evaluation Matrix (continued)**

Evaluation Criteria	Alternatives Evaluated				
	No-Build Alternative	Alternative A	Alternative B	Alternative C	Alternative D
<b>Cultural/Archaeological Impacts</b>	<p>The No-Build Alternative will not have any positive or negative impacts on cultural or archaeological resources.</p> <p><i>Net Effect: Neutral</i></p>	<p>Alternative A would have fewer impacts on known cultural and archaeological resources near the Old US 80 Bridge than Alternative B or Alternative C because it follows a previously disturbed utility corridor west of Old US 80.</p> <p><i>Net Effect: Disadvantage</i></p>	<p>Alternative B follows the Old US 80 alignment through known cultural and archaeological sites near the Old US 80 Bridge. The wider parkway footprint for Old US 80 is expected to have a significant impact on known cultural and archaeological resources in this area.</p> <p><i>Net Effect: Strong disadvantage</i></p>	<p>Alternative C follows the Old US 80 alignment through known cultural and archaeological sites near the Old US 80 Bridge. The wider parkway footprint for Old US 80 is expected to have a significant impact on known cultural and archaeological resources in this area.</p> <p><i>Net Effect: Strong disadvantage</i></p>	<p>Alternative D would have fewer impacts on known cultural and archaeological resources near the Old US 80 Bridge than Alternative B or Alternative C because it follows a previously disturbed utility corridor west of Old US 80.</p> <p><i>Net Effect: Disadvantage</i></p>
<b>Utility Impacts</b>	<p>The No-Build Alternative will have no impact on existing or planned utilities.</p> <p><i>Net Effect: Neutral</i></p>	<p>Alternative A is intended to be compatible with existing power and gas utility corridors on the north and south ends of the northern segment. It is anticipated that some minor utility and well relocations will be required through the existing low density residential areas between I-10 and Elliot Road.</p> <p><i>Net Effect: Disadvantage</i></p>	<p>Alternative B will likely require significant relocation of existing power lines along 339<sup>th</sup> Avenue and well relocations in the Gila River flood plain.</p> <p><i>Net Effect: Strong disadvantage</i></p>	<p>It is anticipated that Alternative C will require significant relocation of existing power lines along 339<sup>th</sup> Avenue, 331<sup>st</sup> Avenue, and Old US 80.</p> <p><i>Net Effect: Strong disadvantage</i></p>	<p>It is anticipated that Alternative D will require significant relocation of power lines along 339<sup>th</sup> Avenue, but there should not be any significant utility impacts south of Arlington.</p> <p><i>Net Effect: Disadvantage</i></p>
<b>Public Acceptability</b>	<p>Based on the input received from three TAC/stakeholder meetings and three public open houses, there is significant support for the No-Build Alternative. Many of the low-density residential and agricultural stakeholders do not want any changes to their current environment. There is, however, recognition of the need to start the process now to identify centerlines and footprints for future roadways and plan future land developments in accordance with the long-range roadway needs.</p> <p><i>Net Effect: Advantage</i></p>	<p>Due to the number of low-density residential properties between I-10 and Elliot Road that would be impacted by the parkway, some residents and landowners have opposed Alternative A. Wildlife, cultural and archaeological stakeholders have supported the southern portion of Alternative A because it minimizes adverse impacts on wildlife, cultural, and archaeological resources near the Old US 80 Bridge.</p> <p><i>Net Effect: Disadvantage</i></p>	<p>Due to the number of low-density residential properties along 339<sup>th</sup> Avenue between I-10 and Arlington along with the large number of irrigated farm lands in the Gila River floodplain that would be bisected by the parkway, some residents and landowners have opposed Alternative B. Wildlife, cultural, and archaeological stakeholders have opposed Alternative B because of its adverse impacts on wildlife, cultural, and archaeological resources near the Old US 80 Bridge.</p> <p><i>Net Effect: Strong disadvantage</i></p>	<p>Due to the number of low-density residential properties along 339<sup>th</sup> Avenue and 331<sup>st</sup> Avenue between I-10 and Arlington that would be impacted by the parkway, some residents and landowners have opposed Alternative C. Wildlife, cultural, and archaeological stakeholders have opposed Alternative C because of its adverse impacts on wildlife, cultural, and archaeological resources near the Old US 80 Bridge.</p> <p><i>Net Effect: Strong disadvantage</i></p>	<p>Due to the number of low-density residential properties along 339<sup>th</sup> Avenue between I-10 and Arlington that would be impacted by the parkway, some residents and landowners have opposed Alternative D. This opposition is offset to some degree by the fact that wildlife, cultural and archaeological stakeholders have supported Alternative D because it minimizes adverse impacts on wildlife, cultural, and archaeological resources near the Old US 80 Bridge.</p> <p><i>Net Effect: Neutral</i></p>
<b>Cost</b>	<p>The No-Build Alternative will only require continued on-going maintenance costs.</p> <p><i>Net Effect: Neutral</i></p>	<p>Alternative A will have a substantial right-of-way cost since it is predominately a new alignment and it passes through numerous developed residential areas. This alternative also has multiple new wash crossings that will be expensive to construct.</p> <p><i>Net Effect: Strong disadvantage</i></p>	<p>Alternative B has the advantage of using substantial existing right-of-way along the 339<sup>th</sup> Avenue alignment. It is expected that the cost of constructing a new parkway through the Gila River flood plain and the potential need for archaeological recovery near the Old US 80 Bridge would add significantly to the project construction cost. This alternative also has multiple new wash crossings that will be expensive to construct.</p> <p><i>Net Effect: Strong disadvantage</i></p>	<p>Alternative C passes through fairly large areas of undeveloped State Lands and would make substantial use of the existing Old US 80 right-of-way south of Arlington. This alternative would likely require the lowest cost for drainage improvements, but it could require archaeological recovery near the Old US 80 Bridge. This alternative also has multiple upgrades to existing wash crossings that will be expensive to construct.</p> <p><i>Net Effect: Disadvantage</i></p>	<p>Alternative D passes through fairly large areas of undeveloped State Lands and would make substantial use of existing right-of-way along the 339<sup>th</sup> Avenue alignment. This alternative also has multiple new wash crossings that will be expensive to construct.</p> <p><i>Net Effect: Disadvantage</i></p>



**Table 3 – Candidate Alternatives Evaluation Matrix Summary**

Evaluation Criteria	Southern Segment Candidate Alternatives				Northern Segment Candidate Alternatives				
	No-Build	Alt. A	Alt. B	Alt. C	No-Build	Alt. A	Alt. B	Alt. C	Alt. D
Future Development Compatibility	○	○	○	●	○	○	○	●	●
System Continuity and Capacity	●	●	○	●	●	●	○	○	●
Irrigation Impacts	○	●	●	●	○	○	●	○	○
Drainage Impacts	○	●	○	●	○	○	●	○	○
Building/Property Impacts	○	●	●	●	○	●	●	●	●
Wildlife Impacts	●	●	●	○	●	○	●	○	○
Cultural/Archaeological Impacts	○	●	●	●	○	●	●	●	●
Utility Impacts	○	●	●	●	○	●	●	●	●
Public Acceptability	○	●	●	○	○	●	●	●	○
Cost	○	●	●	●	○	●	●	●	●

LEGEND:      Strong advantage ●      Advantage ○      Neutral ○      Disadvantage ●      Strong disadvantage ●

Factors that support the selection of the recommended preferred alternatives include the following:

### **Southern Segment**

- The No-Build Alternative will not adequately serve projected traffic volumes associated with anticipated build-out land uses. Even though it may be many years before land uses and traffic volumes justify construction of a parkway facility, the transition from agricultural land uses and open desert to higher-intensity land uses is already occurring. Steps need to be taken now to preserve the long-term viability of constructing a parkway in the future by delineating the footprint and preferred location for the Hidden Waters Parkway;
- Alternative C makes maximum use of existing roadway right-of-way along the Old US 80 alignment and will require the least acquisition of new roadway right-of-way;
- Because Old US 80 already provides a continuous link from Watermelon Road to the Gila River, Alternative C provides the opportunity to upgrade Old US 80 in phases as needed to serve traffic demands. Alternatives A and B are predominately on new alignment, and it could be many years before a continuous, useable roadway could be constructed in these locations;
- Alternative C will have the least impact on existing irrigation patterns and farming operations. Irrigation facilities in close proximity to Old US 80 would likely require some relocation and reconstruction that would improve irrigation and farming operations due to the upgrades to facilities that would occur as part of the relocation and reconstruction processes;
- Alternative C will result in upgrades to virtually all of the existing drainage structures and dip crossings along Old US 80, improving both all-weather vehicular access and land development potential;
- Alternative C will have the least negative impacts on wildlife linkages. It may be possible to construct a drainage structure at Rainbow Wash that can safely accommodate wildlife movement across the parkway; and
- Next to the No-Build Alternative, Alternative C has received the most stakeholder and public support because: it is an upgrade to Old US 80; it will not result in an additional major north-south roadway through the study area; it will not significantly impact existing parcel shapes and sizes or farming operations; and it will provide a long-term high-capacity transportation alternative to SR 85.

### **Northern Segment**

- The No-Build Alternative will not adequately serve projected traffic volumes associated with anticipated build-out land uses. Even though it may be many years before land uses and traffic volumes justify construction of a parkway facility, the transition from agricultural land uses and open desert to higher-intensity land uses is already occurring. Steps need to be taken now to preserve the long-term viability of constructing a parkway in the future by delineating the footprint and preferred location for the Hidden Waters Parkway;
- Alternative D follows the 339<sup>th</sup> Avenue alignment from I-10 to Arlington, making maximum use of existing roadway right-of-way and providing the most direct north-south connection between I-10 and the Arlington area. The planned Hidden Waters Ranch development south of I-10 already anticipates dedicating a 200'-wide right-of-way footprint along the 339<sup>th</sup> Avenue alignment for the future Hidden Waters Parkway;



- The westerly shift of Alternative D near the Arlington Area reduces impacts on Arlington, improves long-term development potential for Arizona State Land properties, and provides the best roadway geometry for connecting to the planned new Gila River crossing south of the existing Old US 80 Bridge;
- Alternative D will not impact any irrigated agricultural lands;
- Alternative D will provide a number of upgraded and new all-weather drainage structures to cross Luke Wash, Centennial Wash, and several other drainage ways along 339<sup>th</sup> Avenue between I-10 and Arlington. These new structures will reduce flooding, erosion, and sedimentation in this area, improving all-weather vehicular access and land development potential;
- Alternative D will offer the most opportunities to better accommodate wildlife linkage zones through facilities such as the drainage structures required to cross the numerous washes between Arlington and the Gila River;
- Alternative D will have fewer impacts on known cultural and archaeological resources near the existing Old US 80 Bridge because it follows a previously disturbed utility corridor west of Old US 80.
- Next to the No-Build Alternative, Alternative D has received the most stakeholder and public support because: it makes efficient use of existing segments of 339<sup>th</sup> Avenue; it results in reduced potential for adverse impacts on archaeological and cultural resources near the existing Old US 80 Bridge; it will not significantly impact existing parcel shapes and sizes; and it will provide a long-term high-capacity transportation alternative to SR 85.

For the reasons enumerated above, Alternative C for the southern segment and Alternative D for the northern segment will be advanced as the preferred alignments for the Hidden Waters Parkway. The preferred alternatives for the southern and northern segments of the Hidden Waters Parkway are respectively shown in **Figure 12a** and **Figure 12b**.

The preferred alternatives will be depicted at a scale of 1 inch = 200 feet on preferred alignment drawings. These detailed drawings will be used for long-term right-of-way preservation as land within the corridor is developed and/or redeveloped.

### **3.4 Compliance with Title VI of the Civil Rights Act of 1964**

As reported in TM 2 – *Environmental Overview*, the Hidden Waters Parkway study area does include minority and low income population groups that exceed the thresholds for disproportionate adverse impacts as covered in Title VI of the Civil Rights Act of 1964. As the parkway moves towards final design and impacts to specific properties become more defined, further consideration for Title VI populations will likely be warranted as part of future environmental clearance documents.

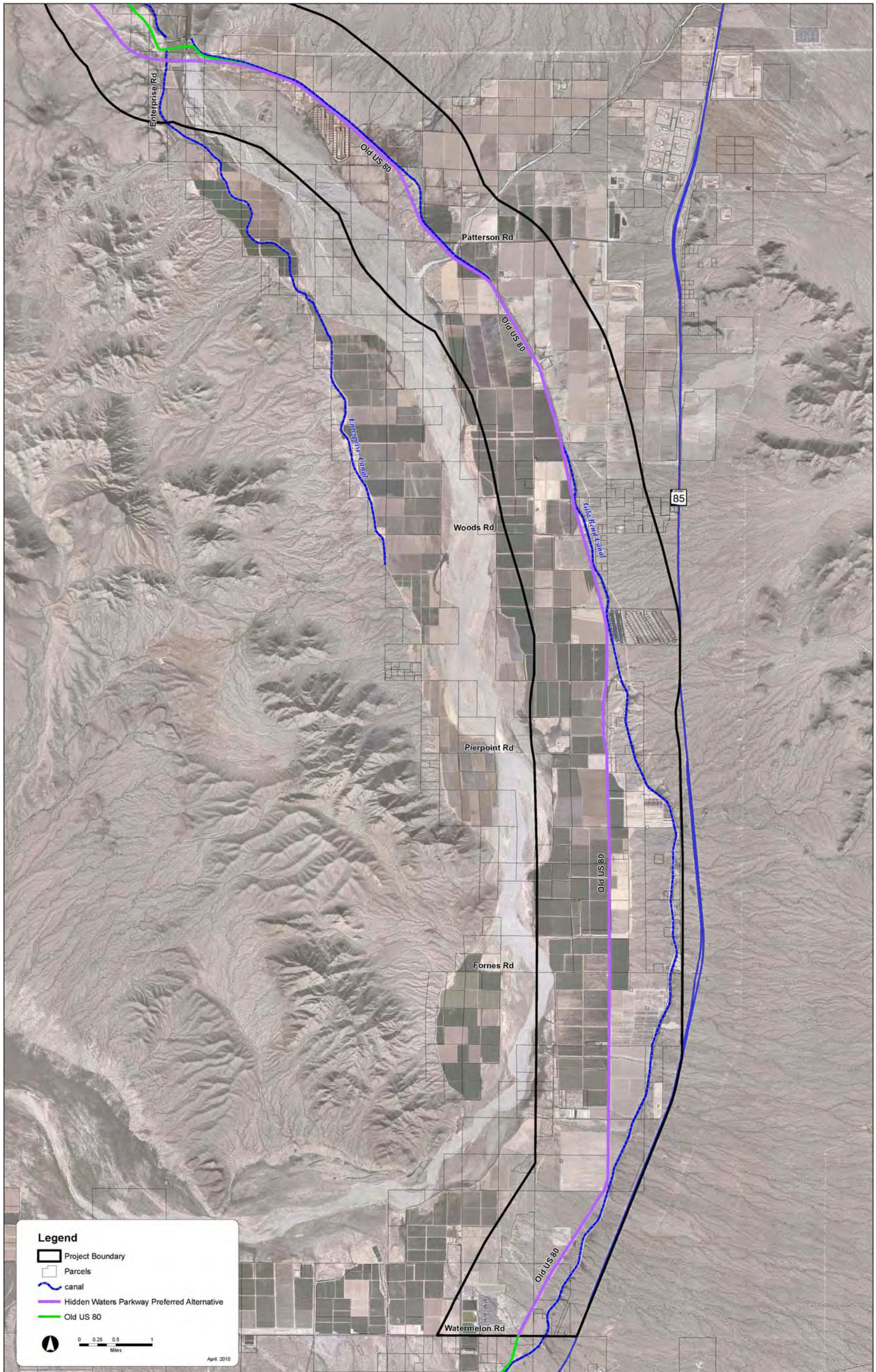


Figure 12a – Preferred Alternative (South)

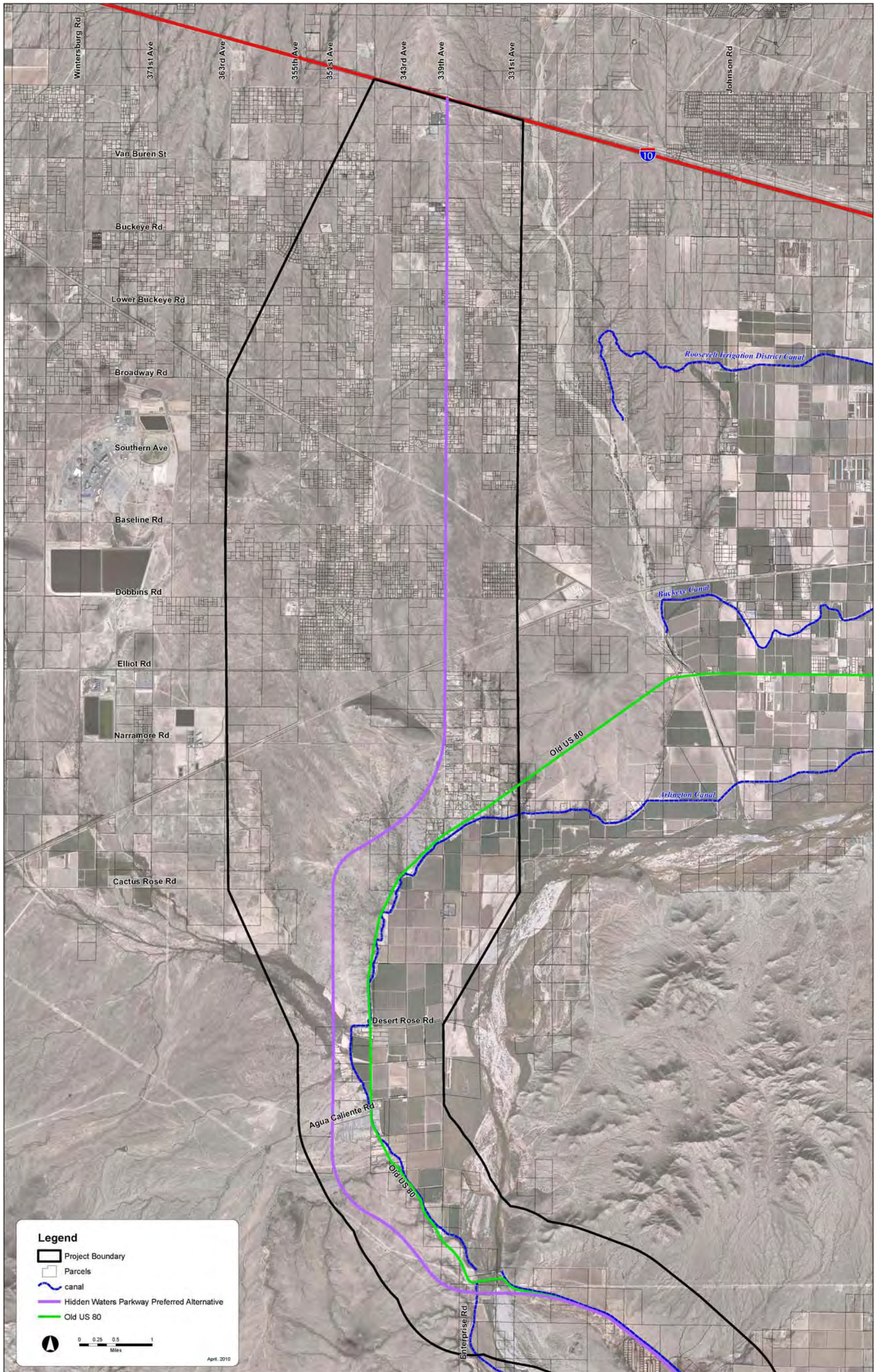
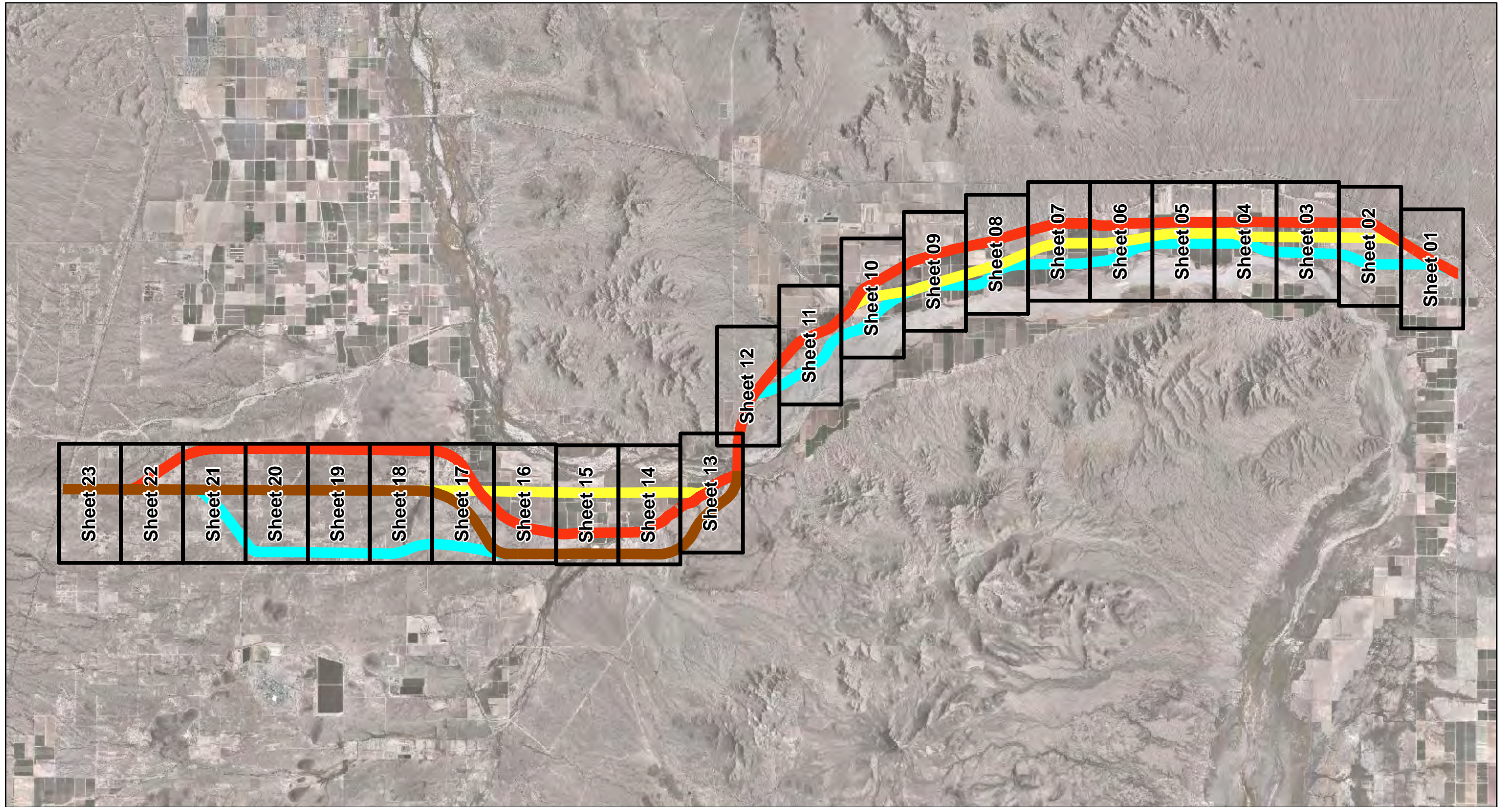









Figure 12b – Preferred Alternative (North)



## **APPENDIX TM4-1**

### **SCHEMATIC DRAWINGS OF CANDIDATE ALTERNATIVES**

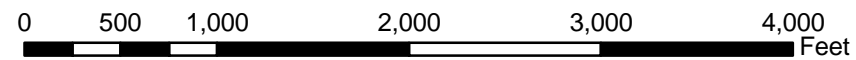


 <b>Kimley-Horn and Associates, Inc.</b>	<b>Hidden Waters Parkway Maricopa County, Arizona</b>	  1 in = 2 miles	 Alternative A  Alternative B  Alternative C  Alternative D
	<b>Proposed Candidate Alignments</b>		May 2010



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**Hidden Waters Parkway  
Maricopa County, Arizona**



1 inch = 1,000 feet

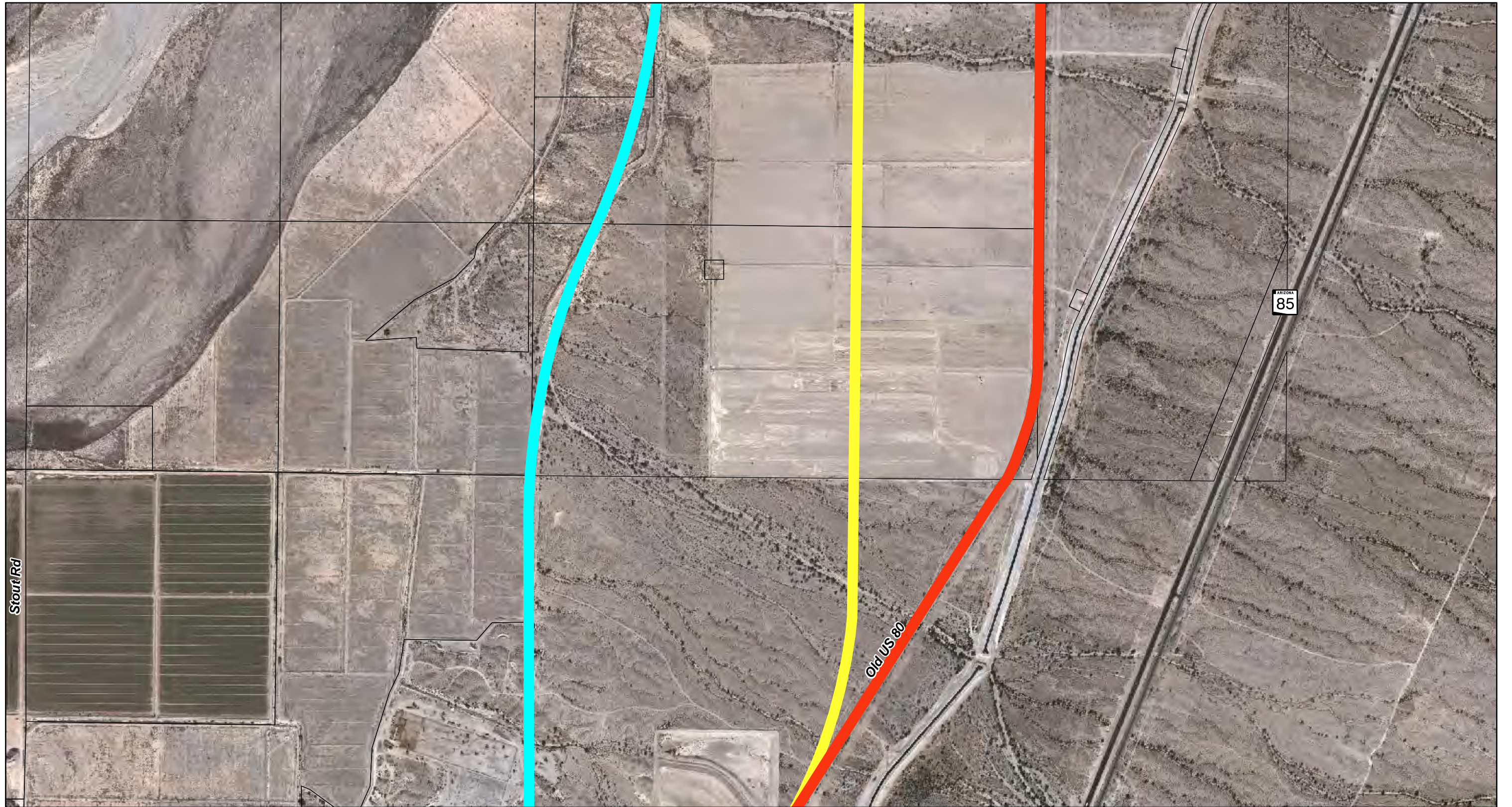
- █ Alternative A
- █ Alternative B
- █ Alternative C
- █ Alternative D



## Proposed Candidate Alignments

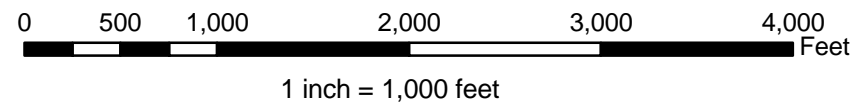
May 2010





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**Hidden Waters Parkway  
Maricopa County, Arizona**

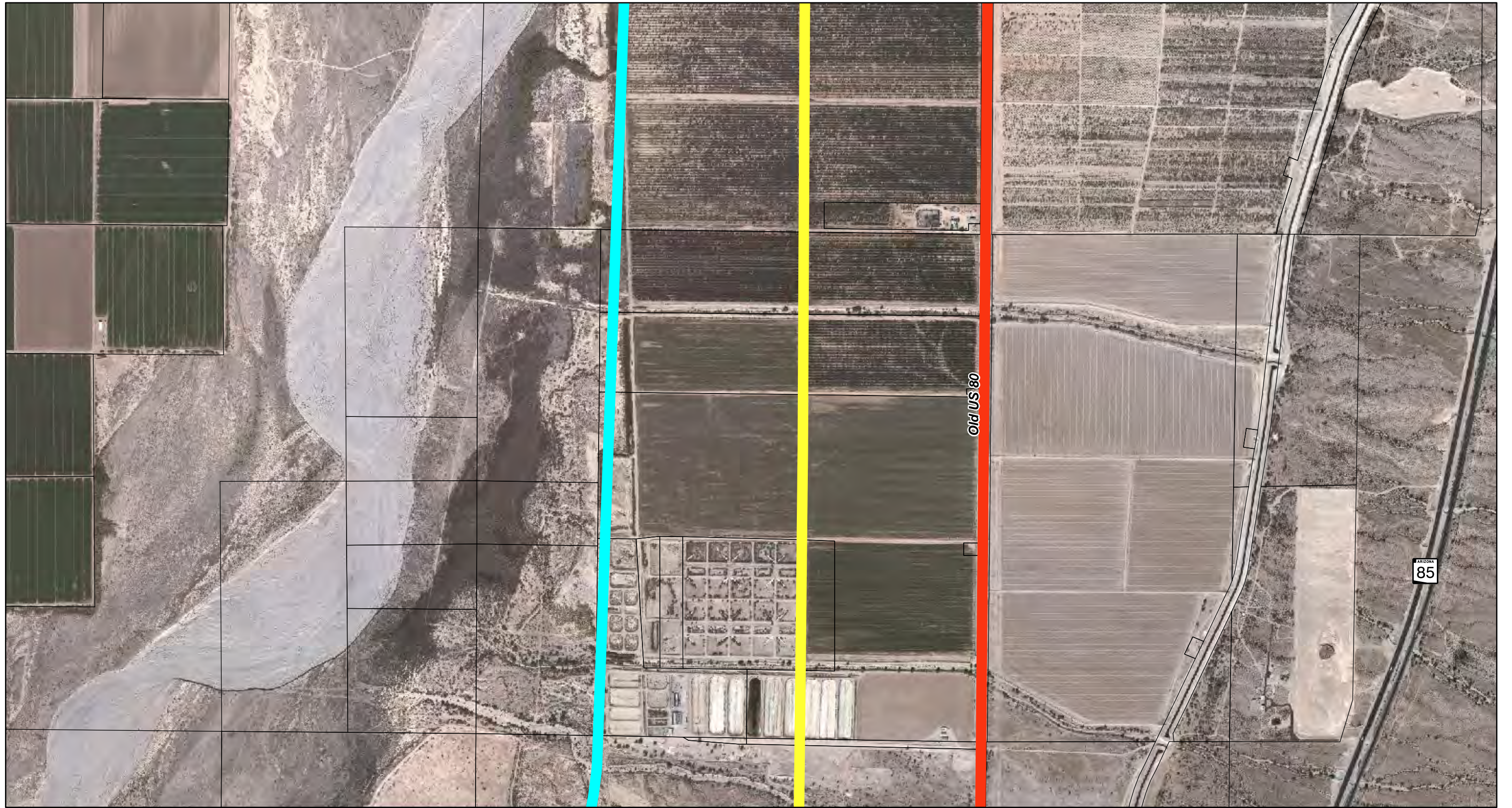


- █ Alternative A
- █ Alternative B
- █ Alternative C
- █ Alternative D



## Proposed Candidate Alignments

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**Hidden Waters Parkway  
Maricopa County, Arizona**



0 500 1,000 2,000 3,000 4,000  
Feet

1 inch = 1,000 feet

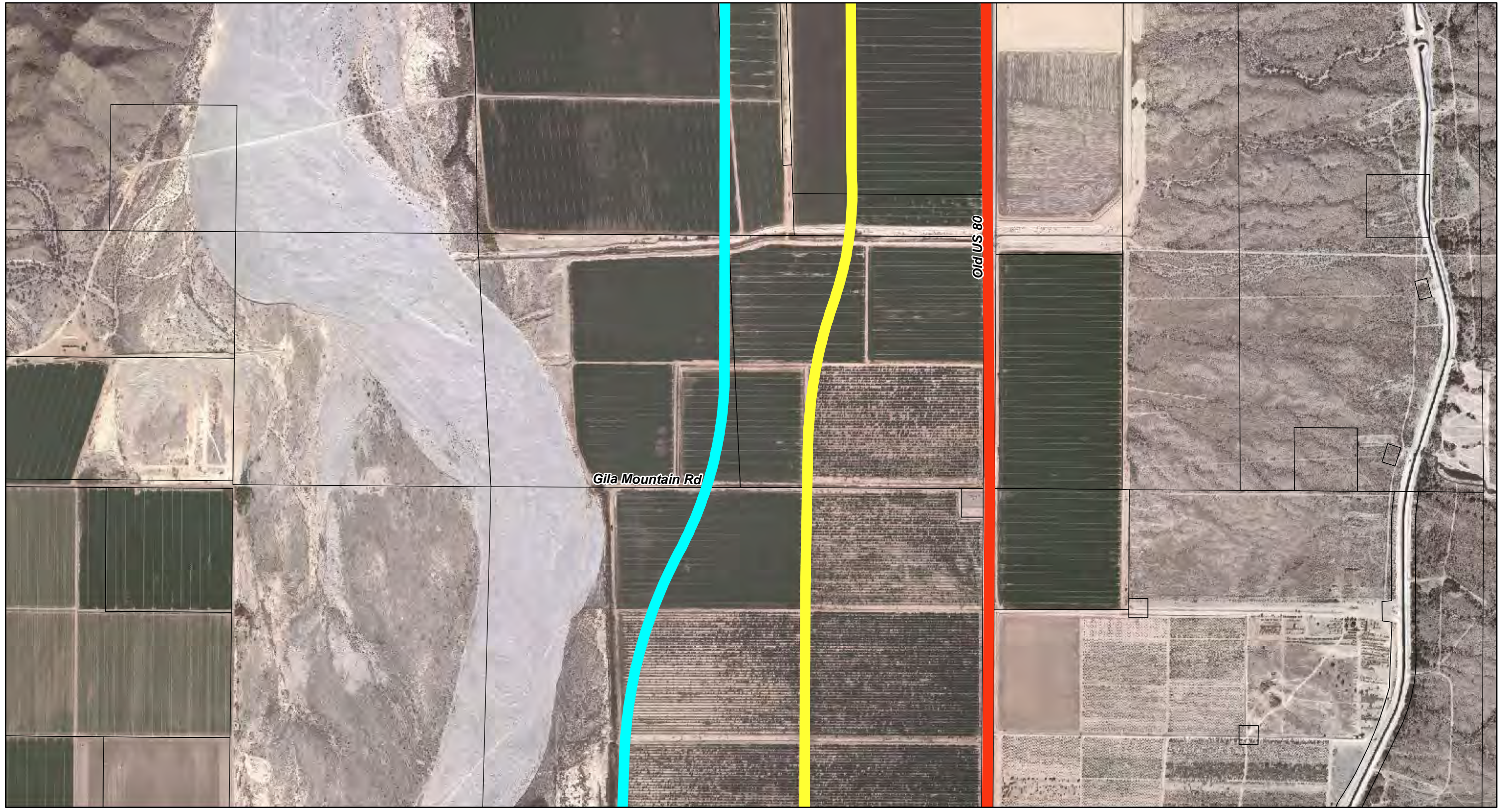
- █ Alternative A
- █ Alternative B
- █ Alternative C
- █ Alternative D



**Kimley-Horn  
and Associates, Inc.**

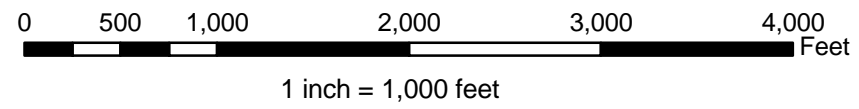
## Proposed Candidate Alignments

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**Hidden Waters Parkway  
Maricopa County, Arizona**



- █ Alternative A
- █ Alternative B
- █ Alternative C
- █ Alternative D

**Proposed Candidate Alignments**

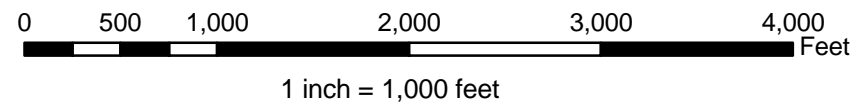


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**Hidden Waters Parkway  
Maricopa County, Arizona**

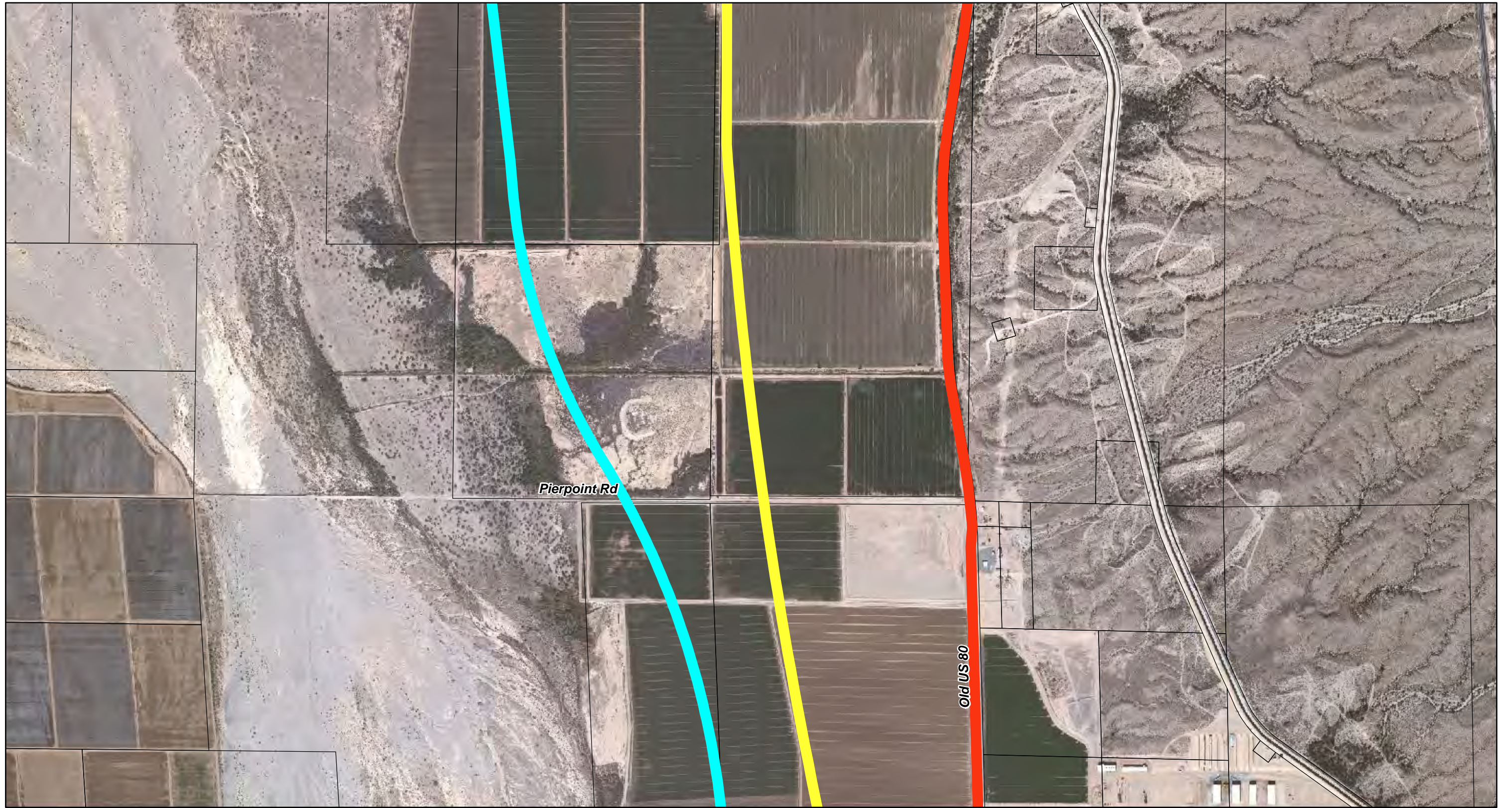


- █ Alternative A
- █ Alternative B
- █ Alternative C
- █ Alternative D



## Proposed Candidate Alignments

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**Hidden Waters Parkway  
Maricopa County, Arizona**



0 500 1,000 2,000 3,000 4,000  
Feet

1 inch = 1,000 feet

- █ Alternative A
- █ Alternative B
- █ Alternative C
- █ Alternative D



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**Hidden Waters Parkway  
Maricopa County, Arizona**



0 500 1,000 2,000 3,000 4,000  
Feet

1 inch = 1,000 feet

- █ Alternative A
- █ Alternative B
- █ Alternative C
- █ Alternative D



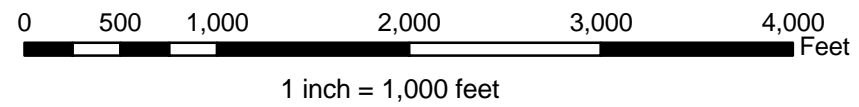
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**Hidden Waters Parkway  
Maricopa County, Arizona**



- █ Alternative A
- █ Alternative B
- █ Alternative C
- █ Alternative D



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**Hidden Waters Parkway  
Maricopa County, Arizona**



0 500 1,000 2,000 3,000 4,000 Feet

1 inch = 1,000 feet

- █ Alternative A
- █ Alternative B
- █ Alternative C
- █ Alternative D



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**Hidden Waters Parkway  
Maricopa County, Arizona**



0 500 1,000 2,000 3,000 4,000 Feet

1 inch = 1,000 feet

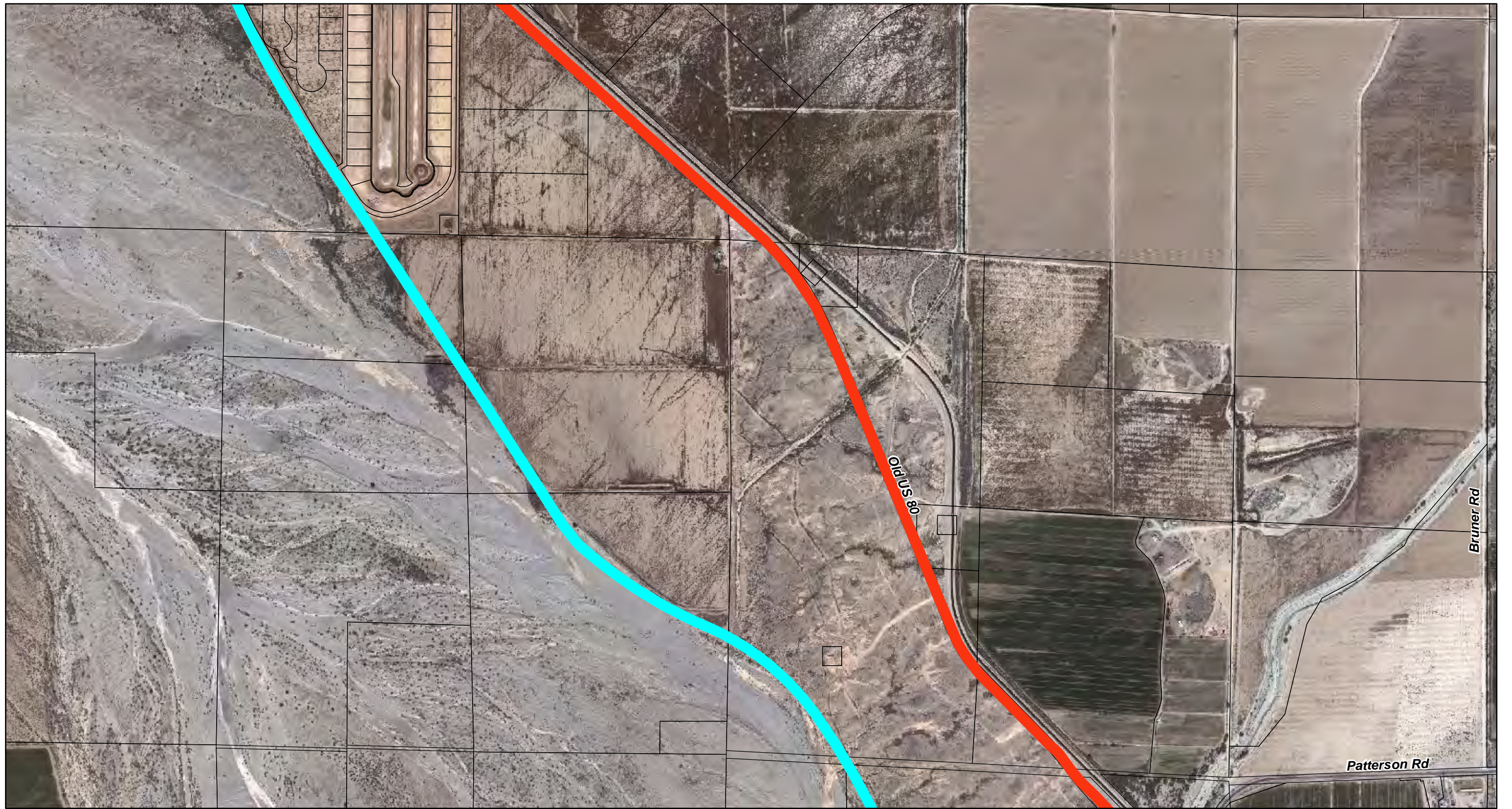
- █ Alternative A
- █ Alternative B
- █ Alternative C
- █ Alternative D



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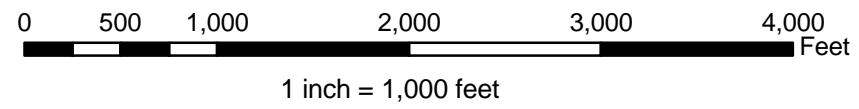
## Proposed Candidate Alignments

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**Hidden Waters Parkway  
Maricopa County, Arizona**



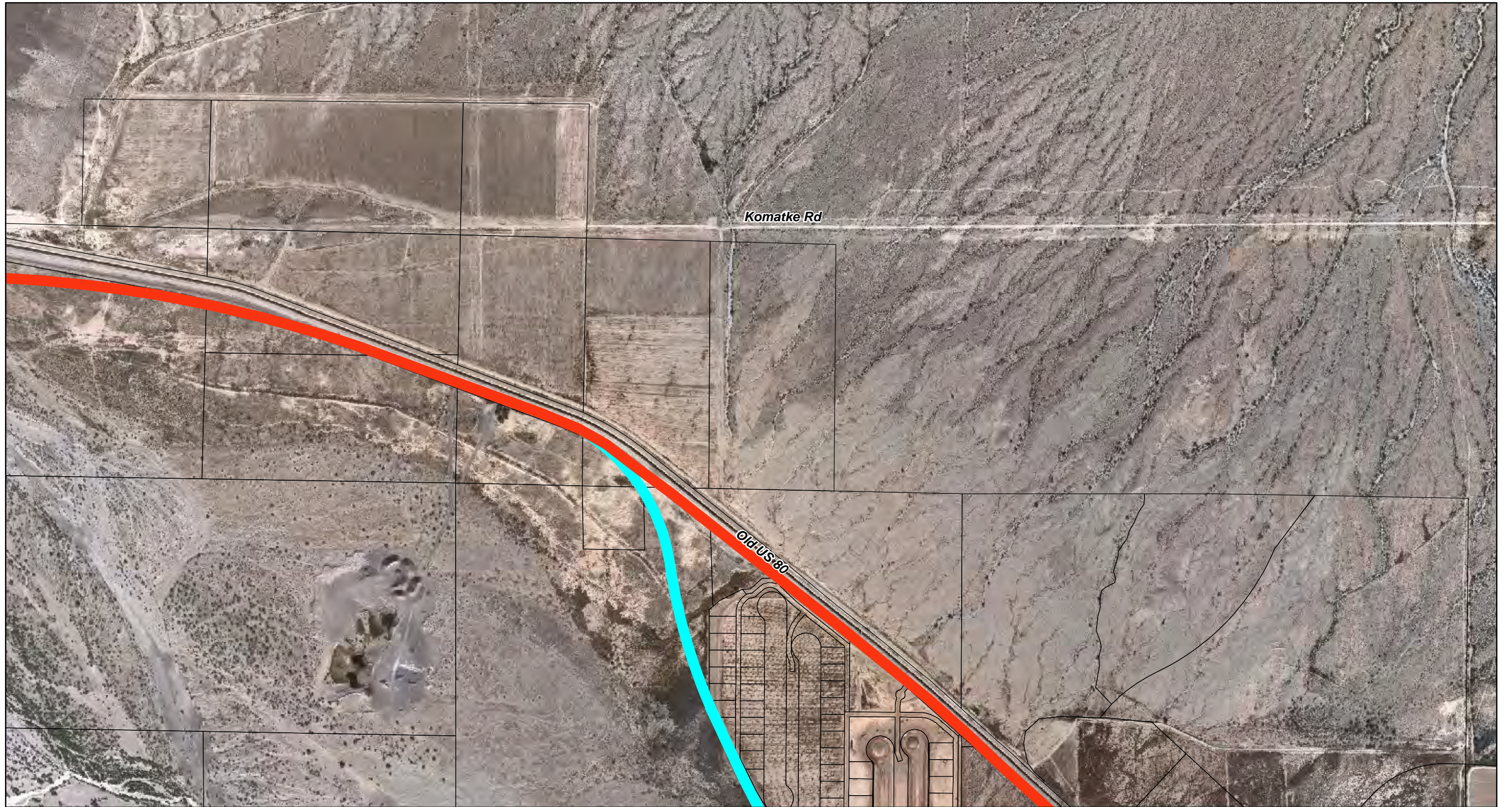
- █ Alternative A
- █ Alternative B
- █ Alternative C
- █ Alternative D



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## Proposed Candidate Alignments

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**Hidden Waters Parkway  
Maricopa County, Arizona**



0 500 1,000 2,000 3,000 4,000 Feet

1 inch = 1,000 feet

- Alternative A
- Alternative B
- Alternative C
- Alternative D



**Kimley-Horn  
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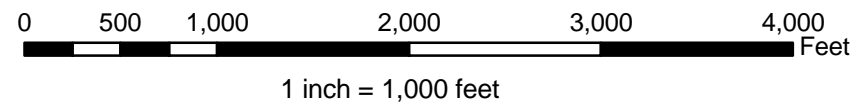
## Proposed Candidate Alignments

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**Hidden Waters Parkway  
Maricopa County, Arizona**



- █ Alternative A
- █ Alternative B
- █ Alternative C
- █ Alternative D



**Proposed Candidate Alignments**

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**Hidden Waters Parkway  
Maricopa County, Arizona**



0 500 1,000 2,000 3,000 4,000  
Feet

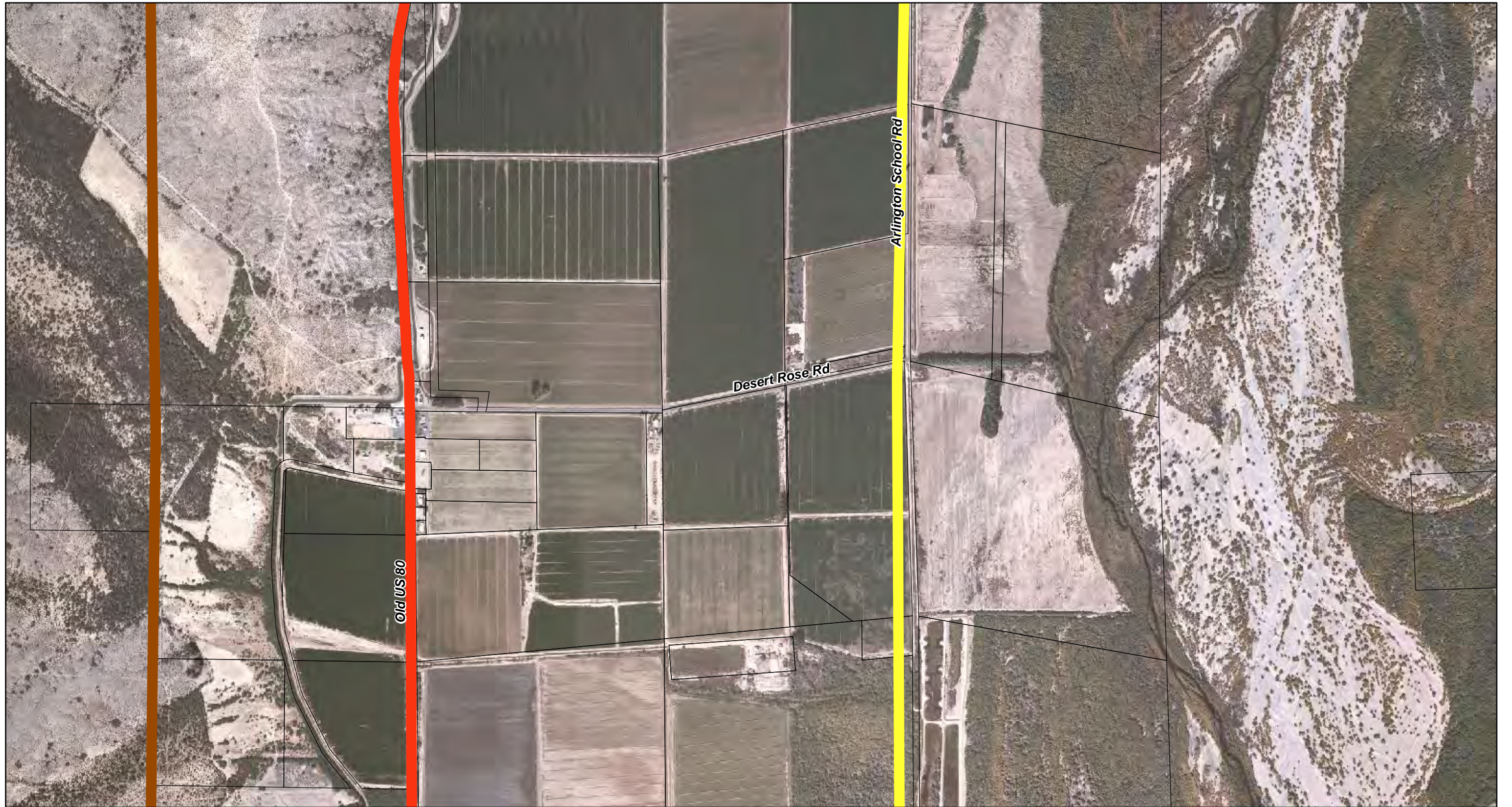
1 inch = 1,000 feet

- █ Alternative A
- █ Alternative B
- █ Alternative C
- █ Alternative D



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**Hidden Waters Parkway  
Maricopa County, Arizona**



0 500 1,000 2,000 3,000 4,000  
Feet

1 inch = 1,000 feet

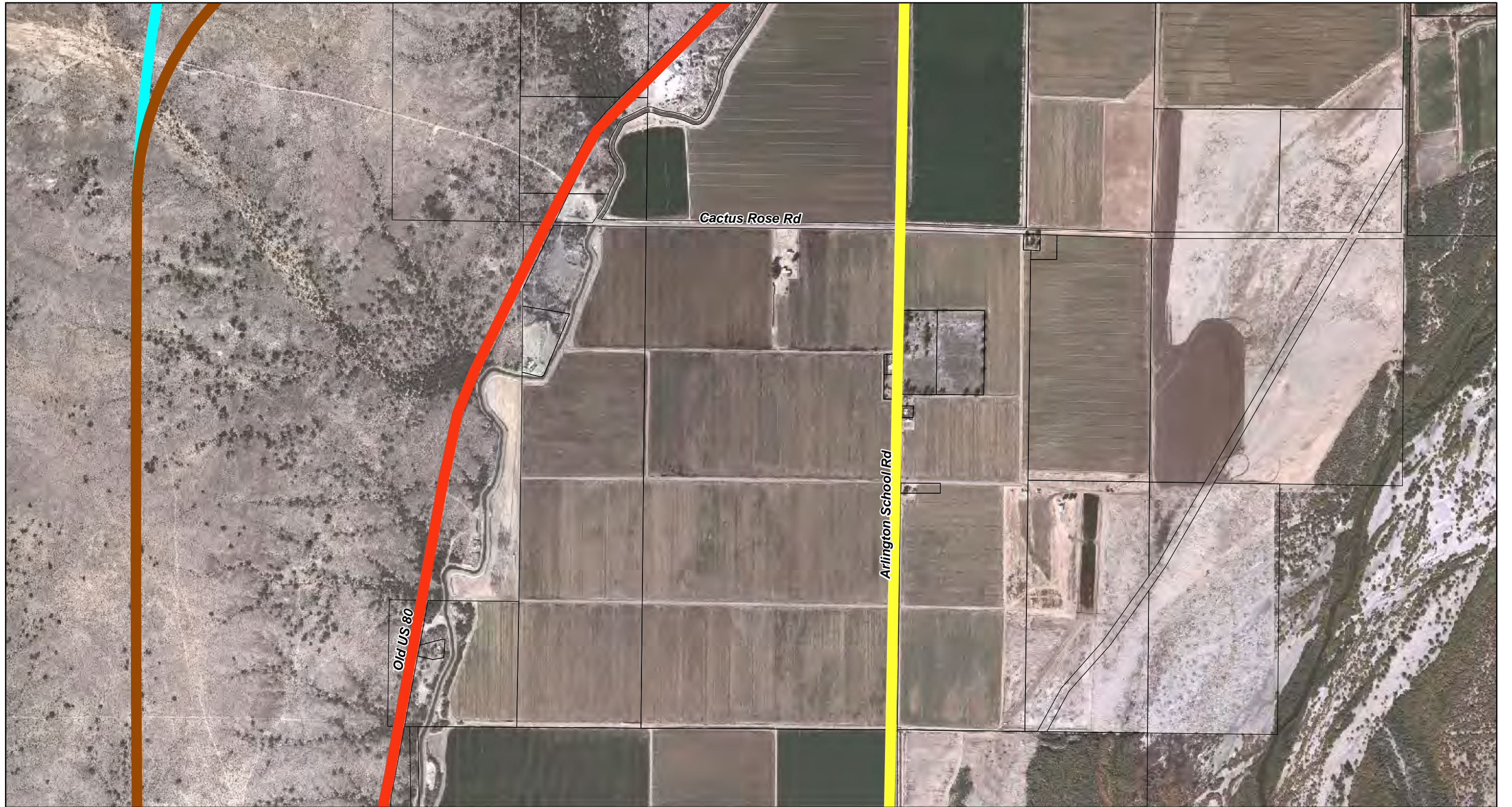
- Alternative A
- Alternative B
- Alternative C
- Alternative D



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**Hidden Waters Parkway  
Maricopa County, Arizona**



0 500 1,000 2,000 3,000 4,000  
Feet

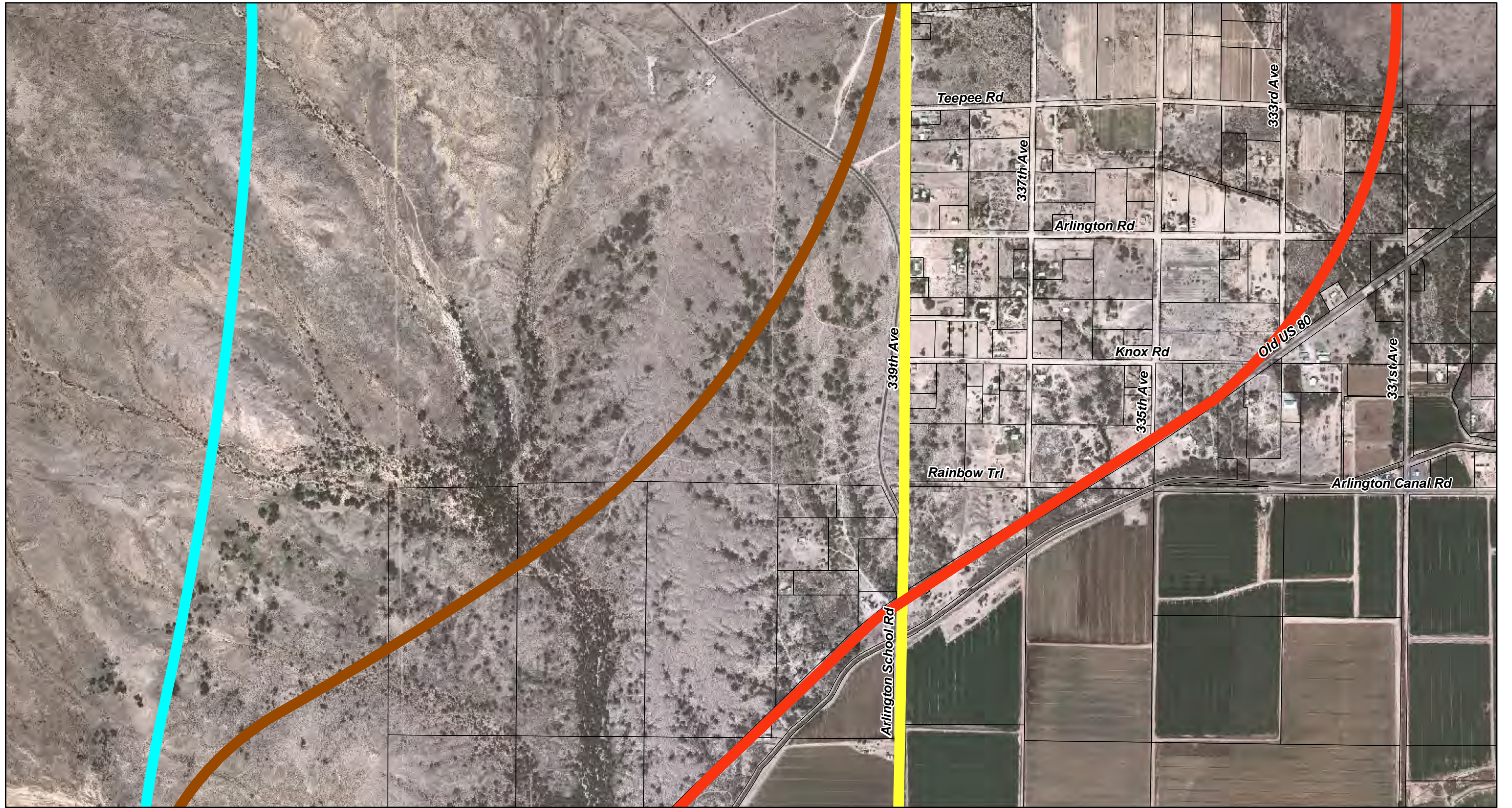
1 inch = 1,000 feet

- █ Alternative A
- █ Alternative B
- █ Alternative C
- █ Alternative D



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**Hidden Waters Parkway  
Maricopa County, Arizona**



0 500 1,000 2,000 3,000 4,000 Feet

1 inch = 1,000 feet

- █ Alternative A
- █ Alternative B
- █ Alternative C
- █ Alternative D



**Kimley-Horn  
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## Proposed Candidate Alignments

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**Hidden Waters Parkway  
Maricopa County, Arizona**



0 500 1,000 2,000 3,000 4,000 Feet

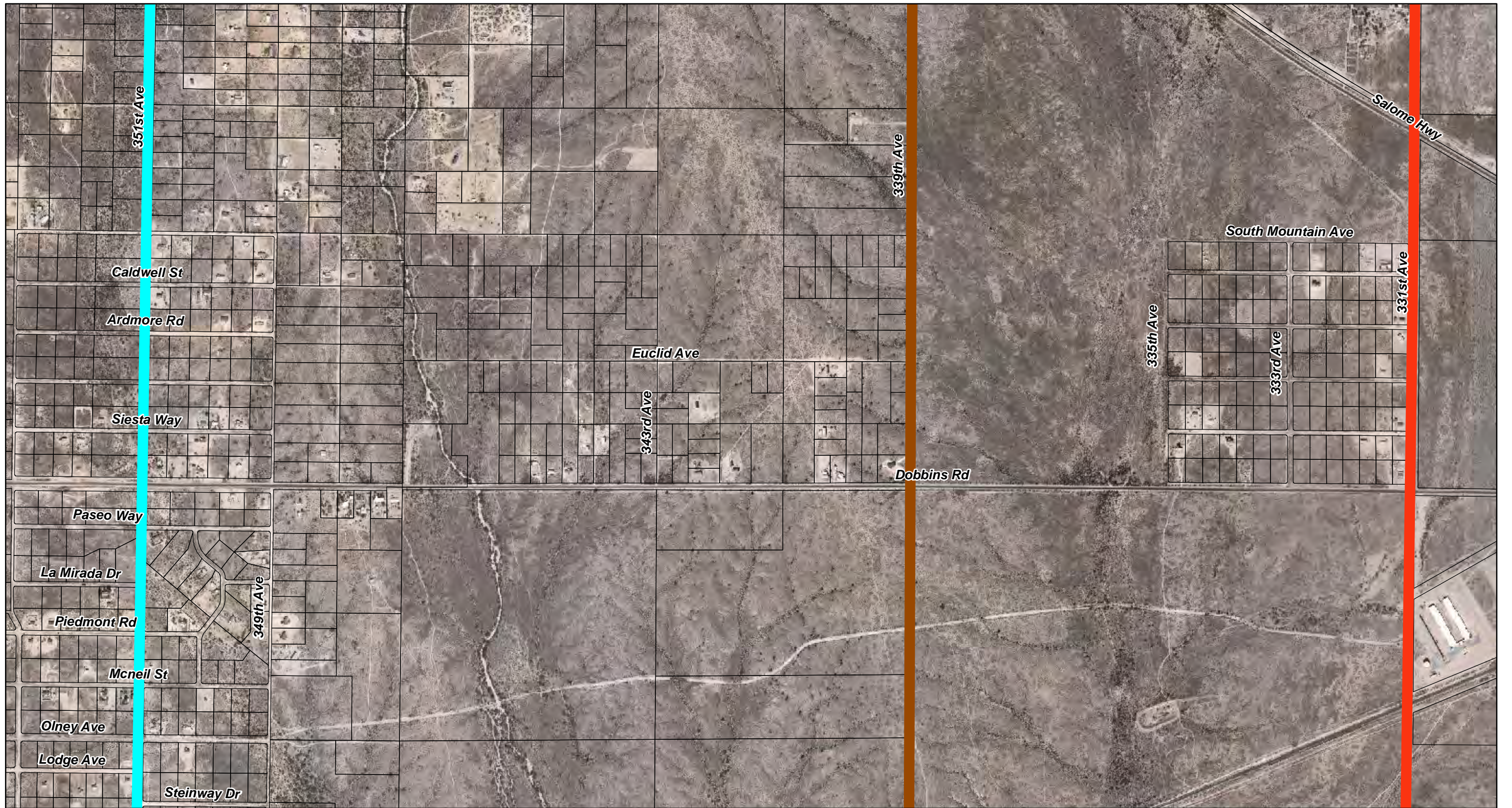
1 inch = 1,000 feet

- █ Alternative A
- █ Alternative B
- █ Alternative C
- █ Alternative D



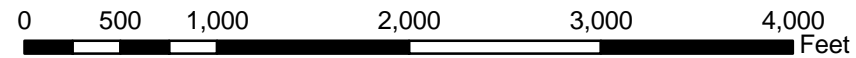
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**Hidden Waters Parkway  
Maricopa County, Arizona**



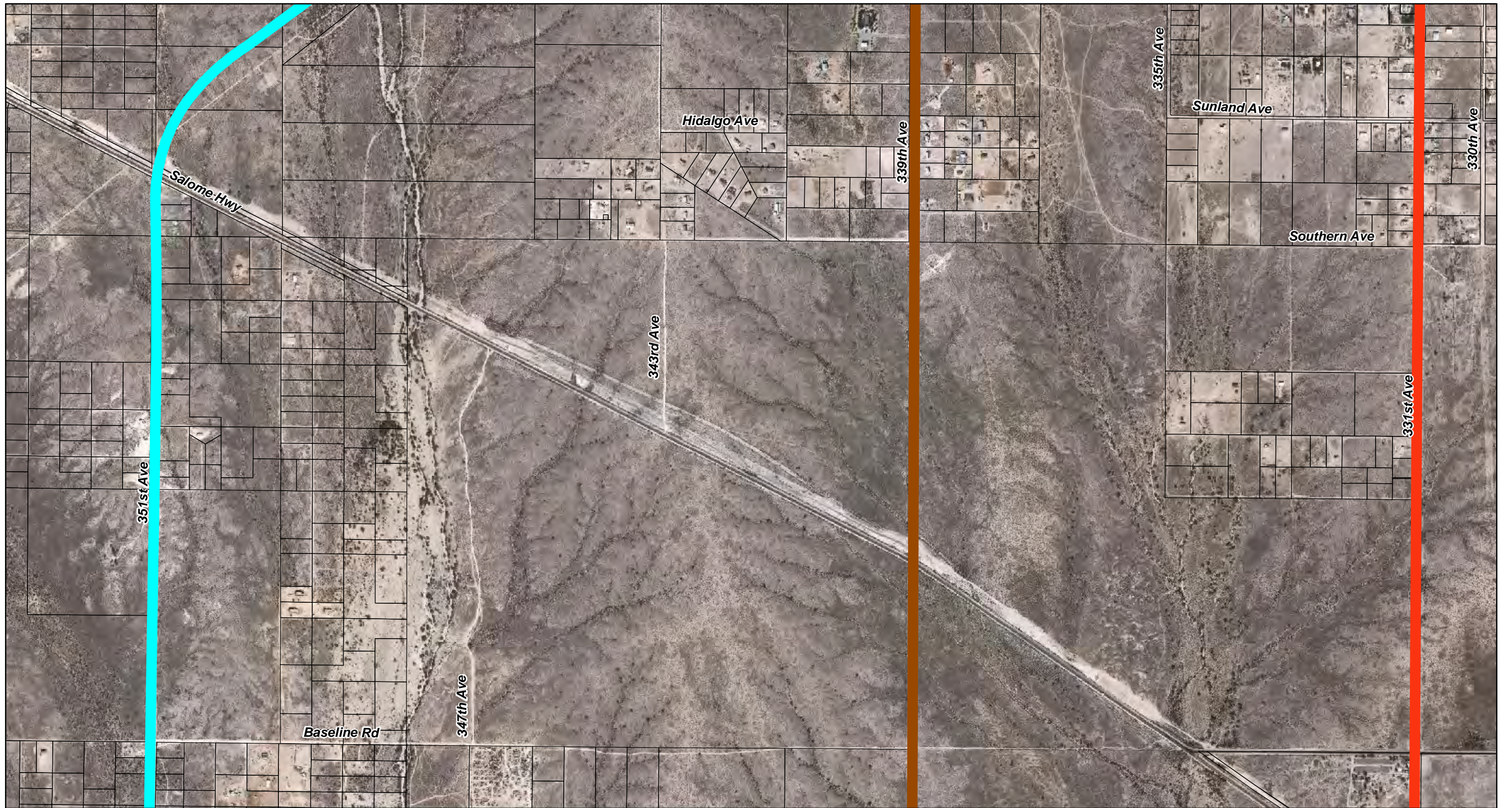
1 inch = 1,000 feet

- █ Alternative A
- █ Alternative B
- █ Alternative C
- █ Alternative D



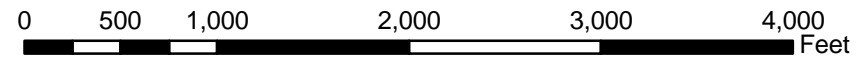
## Proposed Candidate Alignments

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**Hidden Waters Parkway  
Maricopa County, Arizona**



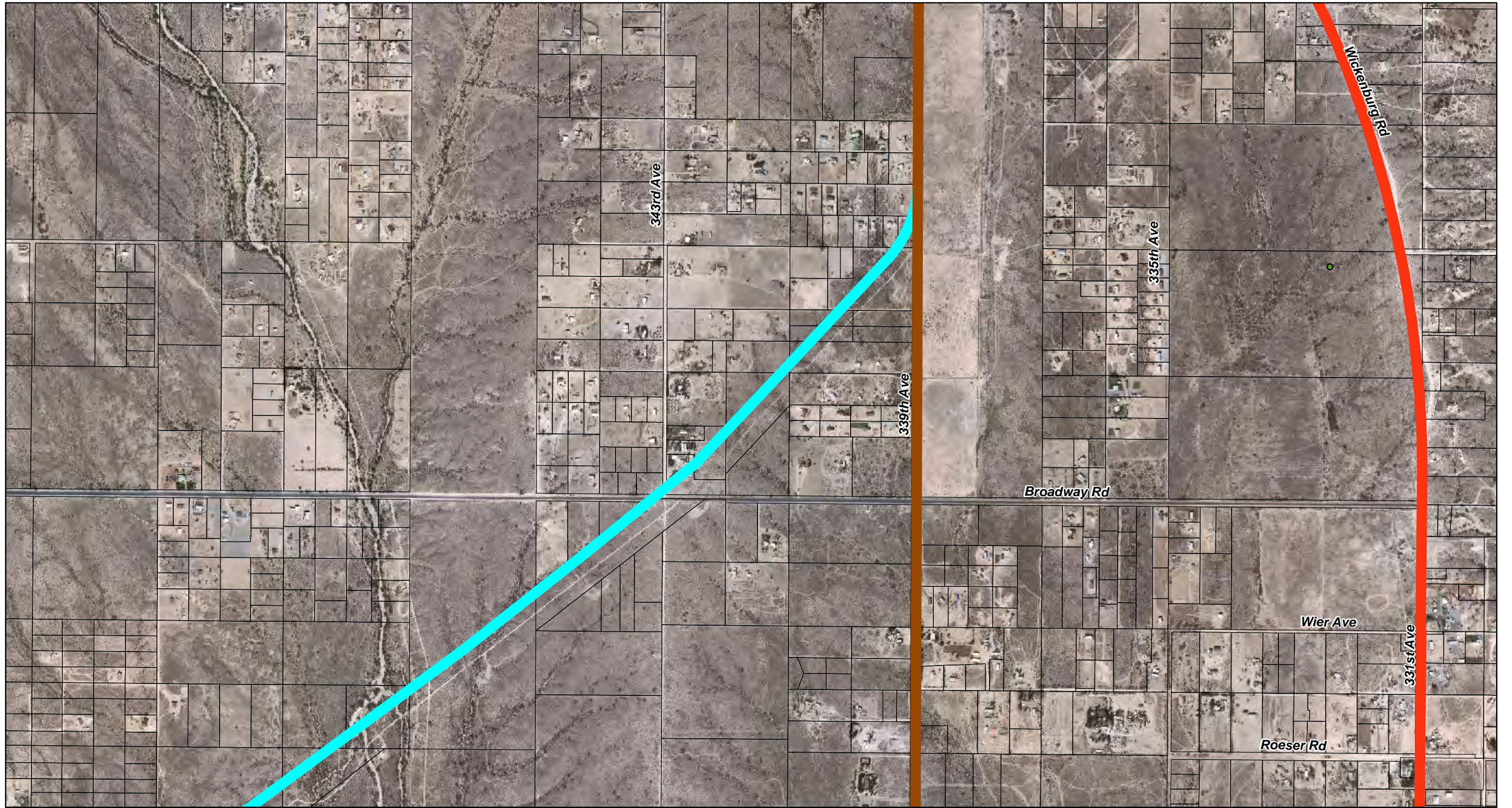
1 inch = 1,000 feet

- █ Alternative A
- █ Alternative B
- █ Alternative C
- █ Alternative D



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**Hidden Waters Parkway  
Maricopa County, Arizona**



0 500 1,000 2,000 3,000 4,000 Feet

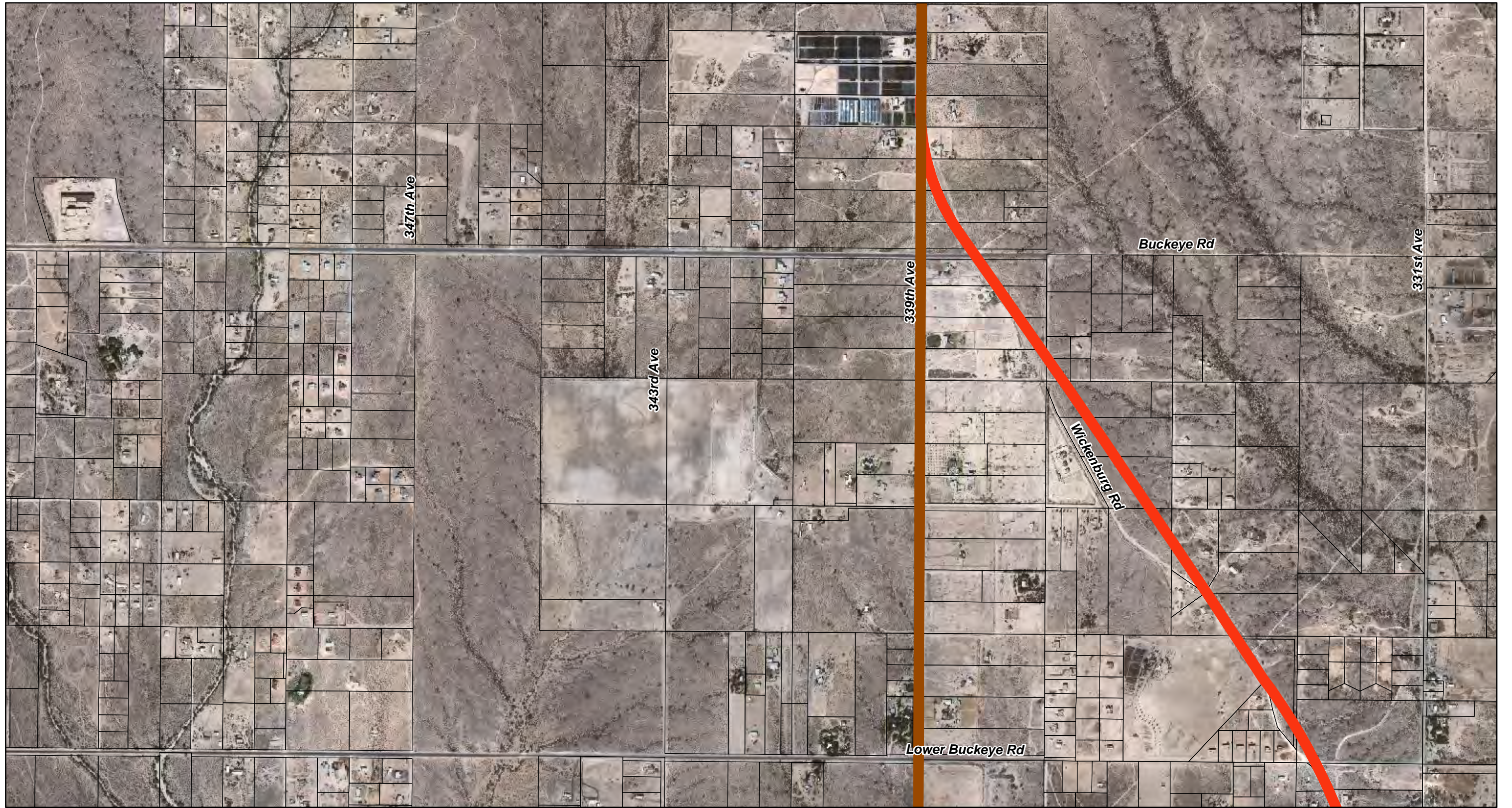
1 inch = 1,000 feet

- █ Alternative A
- █ Alternative B
- █ Alternative C
- █ Alternative D



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**Hidden Waters Parkway  
Maricopa County, Arizona**



0 500 1,000 2,000 3,000 4,000 Feet

1 inch = 1,000 feet

- █ Alternative A
- █ Alternative B
- █ Alternative C
- █ Alternative D



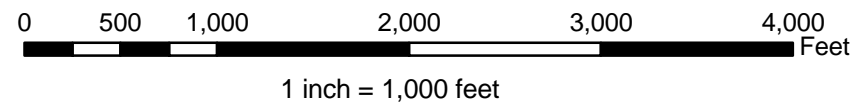
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**Hidden Waters Parkway  
Maricopa County, Arizona**



- █ Alternative A
- █ Alternative B
- █ Alternative C
- █ Alternative D



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