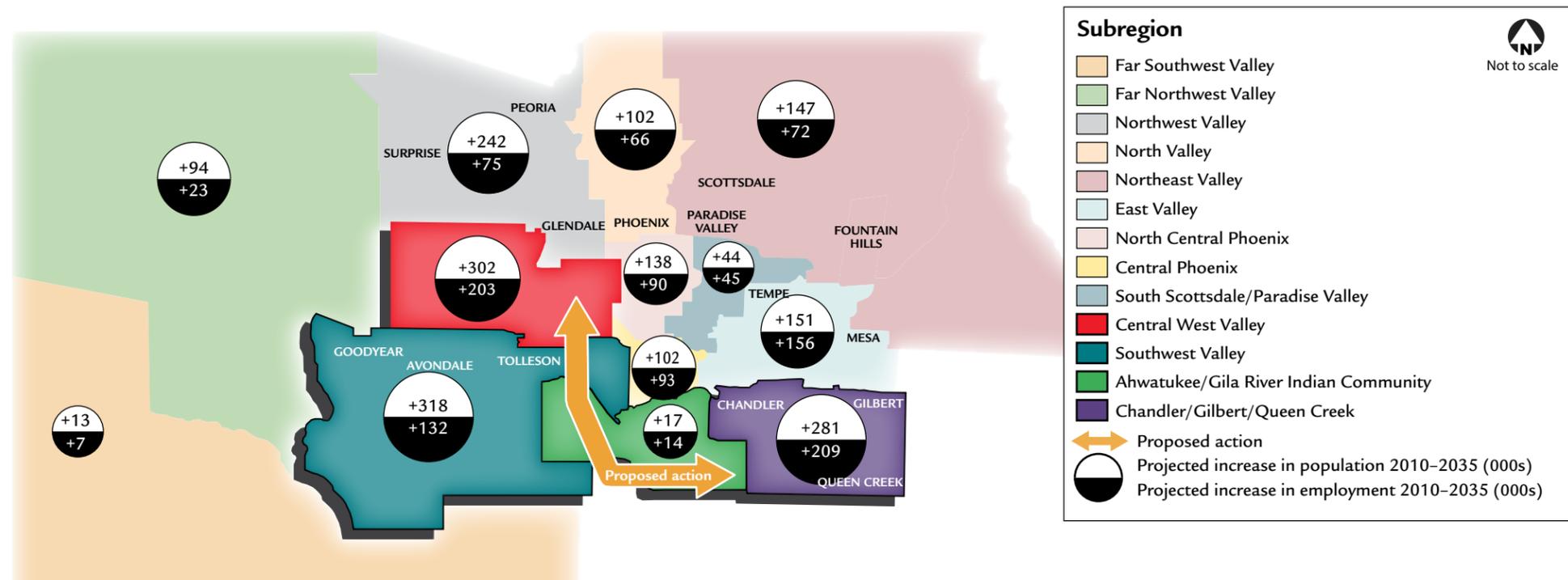


Figure 3 Growth Distribution



Activity Area	Population (000s)			Employment (000s)		
	2010	2035	Projected Increase	2010	2035	Projected Increase
Central West Valley	578	880	302	136	339	203
Southwest Valley	203	521	318	58	190	132
Ahwatukee/Gila River Indian Community	80	97	17	27	41	14
Chandler/Gilbert/Queen Creek	645	926	281	288	497	209
Total for the proposed action activity area	1,506	2,424	918	509	1,067	558
Total Maricopa County	3,824	5,776	1,952	1,707	2,892	1,185
Percentage contribution – proposed action corridor activity area	39%	42%	47%	30%	37%	47%

Source: Maricopa Association of Governments, 2013; extrapolated analysis

When considering the historical need for a major transportation facility, socioeconomic factors, existing and projected transportation capacity and demand, quality of traffic operational performance, and travel time, the South Mountain Freeway is a needed element of the MAG region’s transportation network. Therefore, a need was identified for a major transportation facility. The purpose of such a facility is to fulfill the multiple dimensions of this need.

3. ALTERNATIVES

Alternatives Development and Screening Process Described

Federal regulations stipulate that an environmental impact statement (EIS) shall “rigorously explore and objectively evaluate all reasonable alternatives” (40 Code of Federal Regulations [C.F.R.] § 1502.14). In 1983, the Council on Environmental Quality (CEQ) issued

guidance stating “reasonable alternatives include those that are practical or feasible from a technical and economic standpoint” and “us[e] common sense.” When a large number of alternatives may exist, “only a reasonable number ... covering the full spectrum of alternatives, must be analyzed and compared in the EIS” (*Federal Register* 46:18026 [1981]). The following text summarizes the decision process ADOT and FHWA used to identify, develop, and screen action alternatives, concluding with identification of the range of reasonable action alternatives (and including the No-Action Alternative) that were studied in detail in the Draft Environmental Impact Statement (DEIS) and were again presented in the FEIS.

Figure 4 illustrates the sequential refinement process used to develop and screen alternatives. The process represented a systematic, interdisciplinary approach to ensure the integrated and balanced consideration of a diverse set of factors including ability to meet the need for the project, design and operational parameters, impacts on the natural and human environments, conceptual-level cost comparisons, and public and political acceptability. The team that conducted the screening process also represented a diverse set of interests to promote consistency in the application of screening criteria. The screening process and results are described in more detail in Chapter 3, *Alternatives*, of the FEIS.

The criteria, or values (ability to meet the need for the project, design and operational parameters, impacts on the natural and human environments, conceptual-level cost comparisons, etc.), were important factors in the screening process. The comparative importance of the criteria was adjusted depending on the iterative step in the screening process, but all were accounted for in each step. In making choices during the screening process, FHWA and ADOT balanced their mandates to provide safe and efficient transportation in the context of other federal requirements (including consideration of both negative and beneficial impacts of the proposed action).

As a first step in the process, a “universe” of alternatives was compiled from previous studies, project team input, and input from other agencies and the public. As a starting point, alternatives to be considered in

the screening process were past freeway proposals (dating back to the mid-1980s) as well as transportation system management (TSM)/transportation demand management (TDM), transit (e.g., commuter rail, light rail, expanded bus service), arterial street network improvements, land use controls, new freeway locations, and a No-Action Alternative. Beginning in 2002, this comprehensive set of alternatives was subjected to a logical and tiered screening process guided by the application of specific multidisciplinary criteria (Figure 4). Through each step of the process, some alternatives were eliminated from further study, while others were carried forward to the next step in the screening process until, eventually, the remaining alternatives represented a range of reasonable alternatives to be carried forward into detailed study in the DEIS.

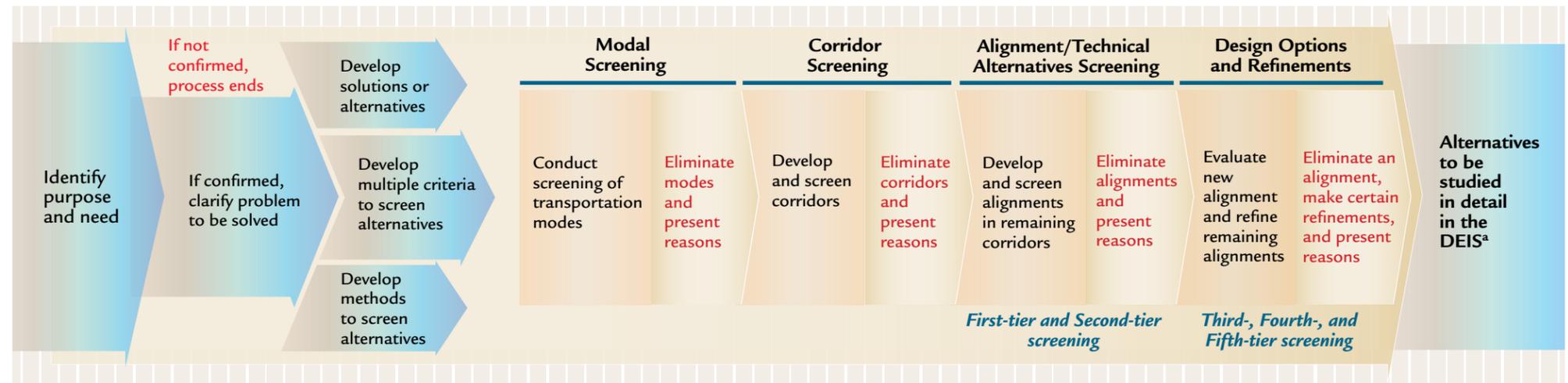
The text immediately below summarizes the screening process undertaken as well as the alternatives and design features that were eliminated from further study. The following section presents those alternatives representing a range of reasonable alternatives selected for detailed study in the DEIS and presented again in the FEIS.

Alternatives and Design Options Eliminated from Further Study during the Screening Process

Nonfreeway and Modal Alternative Screening

As a first step of the screening process, the project need as described in Chapter 1, *Purpose and Need*, of the FEIS was validated. The process of validating past conclusions was a critical action throughout the EIS process because it ensured that later conclusions in the process also remained valid. The process of screening alternatives then began. As an initial screening, analysis was performed to determine whether nonfreeway alternatives and/or single modes of transportation would satisfactorily address the need for the project. TSM/TDM, transit, arterial street improvements, land use controls, and new freeways (individually and in combination) were evaluated. The RTP includes substantial funding for TSM/TDM, transit, and arterial street improvements. The analyses revealed that even when combining the funded improvements in the

Figure 4 Alternatives Development and Screening Process



* Draft Environmental Impact Statement

RTP with better-than-expected performance of the nonfreeway improvements, substantial unmet demand in the region’s transportation network would remain (for example, the average daily ridership for the light rail system connecting downtown Phoenix and the Arizona State University campus was approximately 44,000 in 2014—only approximately 25 percent of the total daily vehicles on an eight-lane freeway in the region) (see Figure 3-3 in the FEIS). Based on the initial screening, the freeway mode was identified as the appropriate facility type to address the purpose and need because it did more than any mode and nonfreeway solution to address the unmet demand. While the project team eliminated other modal choices and nonfreeway alternatives as a stand-alone alternative (reasons are summarized in Table 1), it concluded that nonfreeway elements could be used in combination with the freeway mode and could be implemented in the future.

Corridor Screening

Once the freeway mode was determined to best address the need for the project, locations for a freeway alignment were identified using information from past studies, project team input, and input from other agencies and the public. Freeway locations with common traits were grouped into eight broad corridors. The corridors facilitated a screening process that would answer the question of how a freeway alignment in one

corridor might fare against a freeway location in another corridor in terms of satisfying purpose and need for the project. In this manner, corridors could potentially be screened out and, by default, freeway locations within the screened-out corridors could be eliminated. Using ability to meet purpose and need and potential environmental impacts, two of the eight corridors were eliminated from further study in the EIS process (see Table 1).

Alignment Alternative Screening – First- and Second-tier Alignment Screening (Identification of a Range of Reasonable Alternatives for Detailed Consideration)

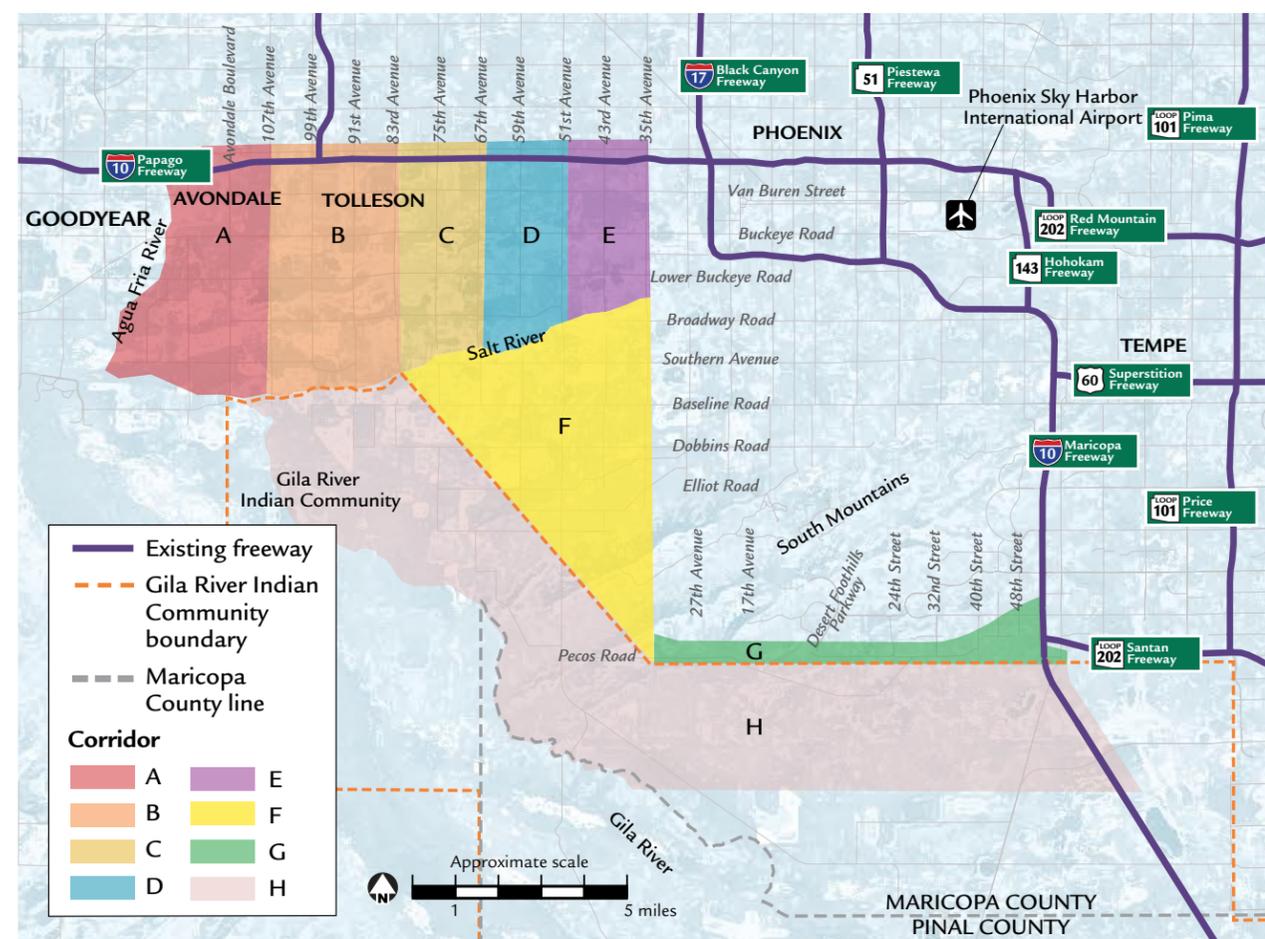
Upon completion of the corridor screening, the freeway location alignments identified as noted above were grouped together based on having similar characteristics. At this point in the screening process, examination of the remaining alignments revealed that a common point was shared among the alignments in the Study Area: east of 59th Avenue and south of Elliot Road. The Study Area was broken into two geographic sections: a Western Section and an Eastern Section. The common point between the Western and Eastern Sections permitted combining alignments in the Western Section with alignments in the Eastern Section to best satisfy the purpose and need of the proposed action and to

Table 1 Alternatives and Design Options Eliminated from Further Study during the Screening Process

Alternative/Option	Stage of Process	FEIS ^a Page Reference	Decision	Basis of Decision	Section 4(f) Considerations
TSM ^b /TDM ^c , transit, arterial street network expansion, existing freeway expansion, land use, new freeway	Modal Screening	3-3	Nonfreeway alternatives were eliminated from further study. A new freeway was determined to be the suitable transportation mode. Nonfreeway elements could be used in combination with the freeway mode and could be implemented in the future.	Nonfreeway alternatives would have limited effectiveness in reducing overall traffic congestion in the Study Area and, therefore, would not meet the purpose and need criteria; specifically, they would not adequately address the MAG ^d region's projected capacity and mobility needs.	For these same reasons, nonfreeway alternatives were determined to not be prudent and feasible avoidance alternatives for avoiding the South Mountains.
Corridors A, B, C, D, E, F, G, and H (see Figure 5)	Corridor Screening	3-6	Corridors A and H were eliminated from further study. Corridor A was eliminated because freeway alignments within Corridor A would have lower traffic volumes near I-10 ^e (Papago Freeway) than any other corridor and thus would provide limited transportation benefit.	Corridor H was eliminated because the Community ^f has not granted permission to study alternatives on Community land in detail.	Not applicable

(continued on next page)

Figure 5 Corridor Locations, Alternatives Development and Screening Process



allow for more specific comparative impact analyses among the alternatives.

The exercise resulted in the identification of nine alignment alternatives in the Western Section and eight alignment alternatives in the Eastern Section of the Study Area. These alignments were comparatively screened against performance criteria associated with purpose and need, environmental impacts, design and operational characteristics, conceptual costs, and political and public concerns. The analyses led to the elimination of six of the nine alignment alternatives in the Western Section and seven of the eight alignment alternatives in the Eastern Section. Table 1 presents reasons for the elimination of the alignment alternatives.

During this screening step, some proposed freeway locations located outside of the identified corridors and even outside of the Study Area were evaluated to ensure that all possibilities were explored. In each instance, these alternatives were eliminated from further study primarily for the inability to meet the purpose and need for the proposed action, as summarized in Table 1.

Upon completion of the First- and Second-tier screening, FHWA and ADOT concluded that three

action alternatives (one with options) in the Western Section (W55 Alternative, W71 Alternative, and W101 Alternative and Options) and the one action alternative in the Eastern Section (E1 Alternative) would be carried forward for detailed study in the DEIS. Further, the agencies concluded that combining any of the three action alternatives in the Western Section with the one action alternative in the Eastern Section would represent a range of reasonable alternatives from project terminus to project terminus. Further, these action alternatives represented a range of reasonable alternatives to allow for meaningful comparative analysis in the EIS process.

Alignment Alternative Screening – Third-, Fourth-, and Fifth-tier Alignment Screening (Design and Alignment Refinements of Alternatives Studied in Detail)

The Third-, Fourth-, and Fifth-tier screening focused on design options and refinements, such as evaluating options for vertical profile, locations and types of traffic interchanges, and options for handling off-site drainage. As environmental technical studies progressed, design adjustments were made to try to avoid substantial

Table 1 Alternatives and Design Options Eliminated from Further Study during the Screening Process (continued)

Alternative/Option	Stage of Process	FEIS ^a Page Reference	Decision	Basis of Decision	Section 4(f) Considerations
Riggs Road Alternative (see Figure 6)	Alignment Alternatives Screening (First Tier)	3-9	The Riggs Road Alternative was eliminated from further study.	The Riggs Road Alternative was eliminated because it would not meet the purpose and need for the project and was located on Community land; the Community has not granted permission to study alternatives on Community land in detail.	For these same reasons, the Riggs Road Alternative was determined to not be a prudent and feasible avoidance alternative for avoiding the South Mountains.
SR 85 ^g /I-8 ^h Alternative (see Figure 7)	Alignment Alternatives Screening (First Tier)	3-9	The SR 85/I-8 Alternative was eliminated from further study.	This route will continue to function as a truck bypass and will be available for interstate and interregional travel, but it does not meet the project’s purpose and need based on regional transportation demand and existing and projected transportation system capacity deficiencies.	For these same reasons, the SR 85/I-8 Alternative was determined to not be a prudent and feasible avoidance alternative for avoiding the South Mountains.

(continued on next page)

impacts as well as to enhance operational characteristics of each action alternative. Examples include:

- ▶ Early in this step, options were evaluated to avoid resources afforded protection under Section 4(f) of the Department of Transportation Act of 1966, such as historic homes and the South Mountains.
- ▶ In response to the economic downturn, the ultimate freeway lane configuration of ten lanes was reexamined, which led to a decision to modify the design to an eight-lane freeway and to reduce the project’s right-of-way (R/W) footprint, with the goal of reducing costs and environmental impacts.
- ▶ The connection to I-10 (Papago Freeway) for the W55 Alternative was shifted from 55th Avenue to 59th Avenue (and thus the name was changed to the W59 Alternative) to enhance operations on I-10 near the interchange and to reduce overall project costs.
- ▶ Throughout the alternatives development and screening process, ADOT and FHWA engaged with the Community in an attempt to allow detailed study of an alternative on Community land. After extensive outreach and coordination with the Community, a Community-coordinated referendum occurred in February 2012, and Community members voted in favor of the no-build option.

Figure 6 Riggs Road Alternative

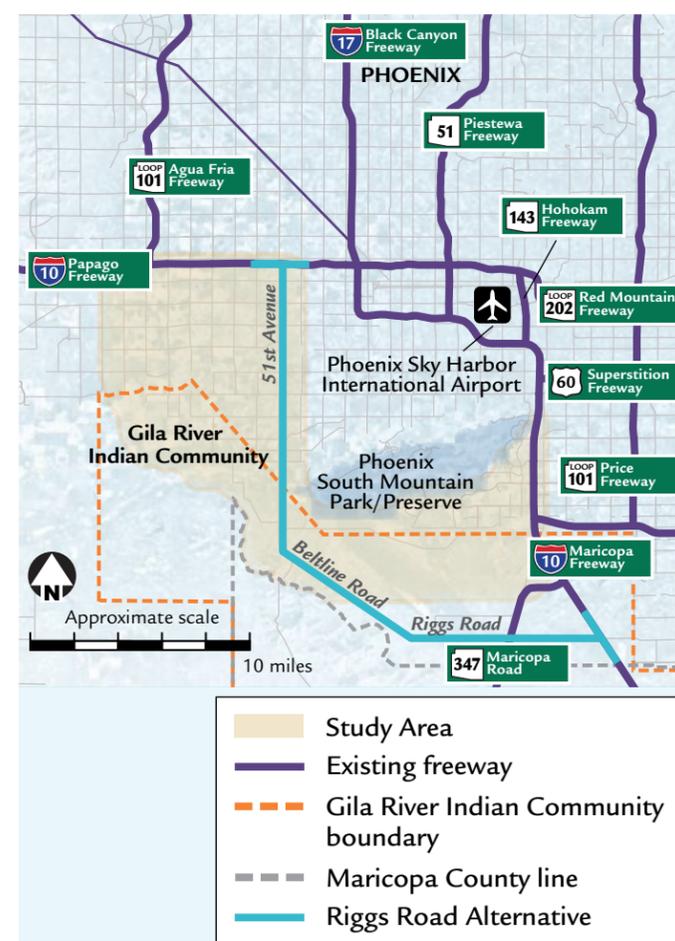


Figure 7 SR 85/I-8 Alternative

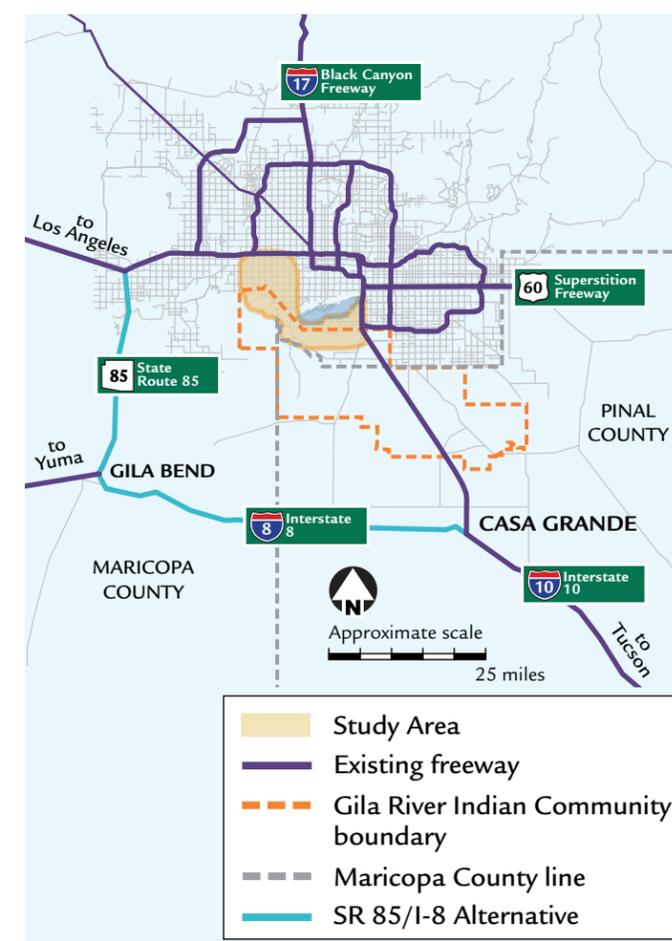
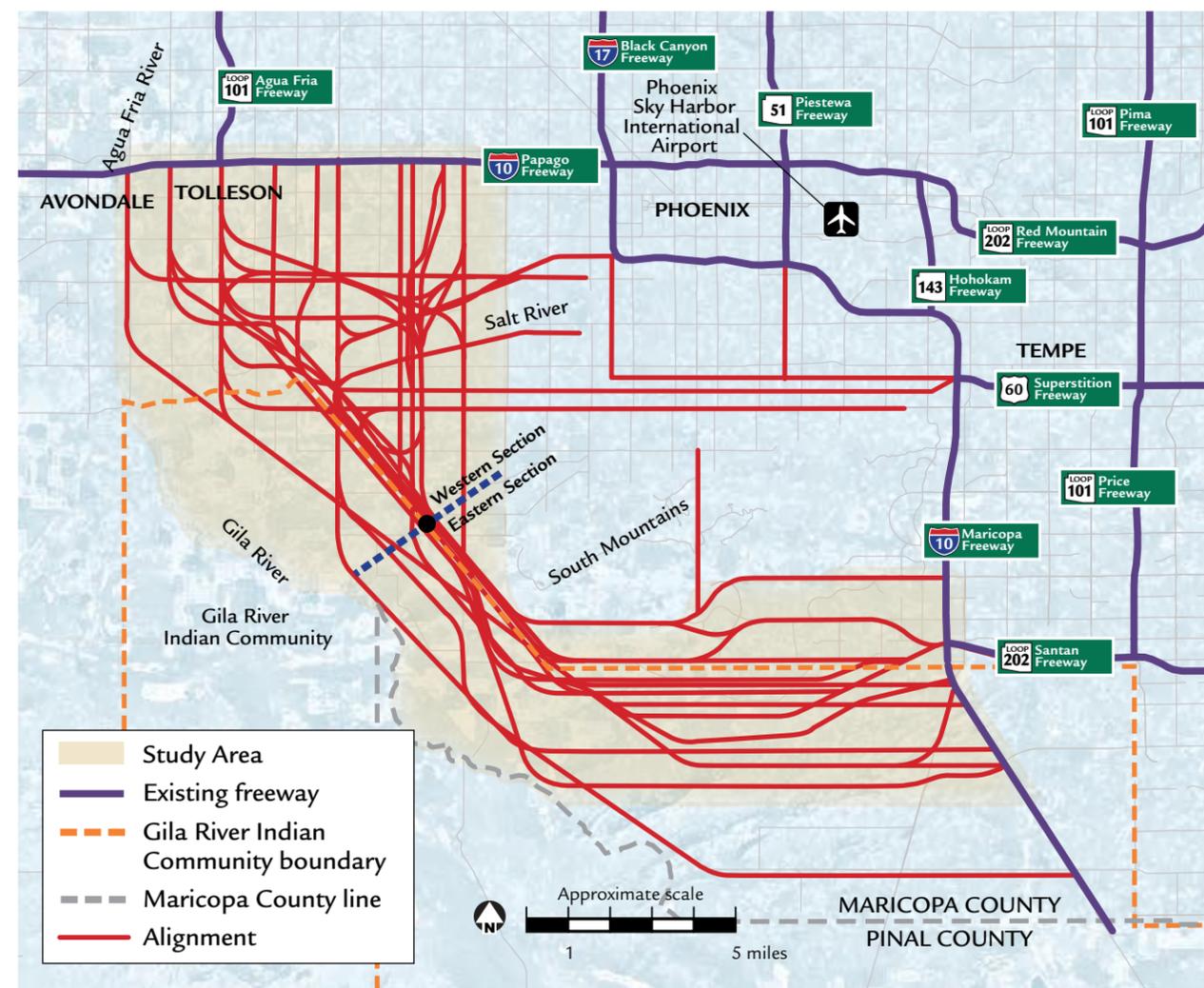


Table 1 Alternatives and Design Options Eliminated from Further Study during the Screening Process (continued)

Alternative/Option	Stage of Process	FEIS ^a Page Reference	Decision	Basis of Decision	Section 4(f) Considerations
Numerous alignments based on public preferences for freeway alignments (see Figure 8)	Alignment Alternatives Screening (First Tier)	3-7	The early alignments were refined into nine Western Section alternatives and eight Eastern Section alternatives (see Figure 9).	The decisions reached in this stage of the process were based primarily on environmental constraints, design criteria, and engineering feasibility.	Not applicable

(continued on page 10)

Figure 8 Early Alignment Siting Efforts, Alternatives Development and Screening Process



Screening Process Results, Conclusions, and Validation Prior to the FEIS

At the conclusion of the alternatives development and screening process in the DEIS, the remaining action alternatives were the W59 Alternative, W71 Alternative, W101 Alternative and Options, and the E1 Alternative. The screening process for the project was initially outlined in the *Alternatives Development and Screening Process* memorandum, dated October 2002. While most of the screening process was completed in the early 2000s, refinements—such as those summarized in the previous section—occurred at many stages over a 13-year period. Over that time, some socioeconomic and environmental elements changed in the Study Area and its surroundings. For example, after the DEIS was released, MAG approved new regional socioeconomic and traffic projections. To document the evaluation of the alternatives development and screening process presented in the FEIS, a technical memorandum, *Validation of the Alternatives Screening Process at FEIS Stage* (dated September 2014), and an FHWA memorandum, *FHWA Validation of Alternatives Screening Process for the South Mountain Freeway* (dated September 2014, see Appendix D), were prepared.

As stated on page 3-1 of the FEIS, “The first step in the alternatives development and screening process was to reconfirm the purpose and need for the proposed

action, as presented in Chapter 1. In June 2013, the Maricopa Association of Governments (MAG) approved new socioeconomic projections for Maricopa County. The purpose and need analysis was updated and reevaluated using these new population, employment, and housing projections and corresponding projections related to regional traffic. The conclusions reached in the DEIS were reconfirmed in the FEIS.” The new MAG socioeconomic and traffic projections for Maricopa County were used to update the analyses in the FEIS. The traffic volumes, traffic conditions, travel distribution, capacity deficiencies, and travel time were reanalyzed to evaluate the alternatives considered in terms of responsiveness to purpose and need criteria. The new socioeconomic and traffic projections were generally lower than what was previously predicted; nevertheless, FHWA and ADOT concluded that the data still supported the overall study conclusions related to evaluation of lane and alignment changes, responsiveness of the proposed freeway to purpose and need, and traffic conditions with the action and No-Action alternatives. Based on the reevaluation, FHWA and ADOT concluded that the three action alternatives in the Western Section of the Study Area and the one action alternative in the Eastern Section (when combined) and the No-Action Alternative represented a range of reasonable alternatives for further study in the FEIS.

Figure 9 Western and Eastern Section Alternatives, Alternatives Development and Screening Process

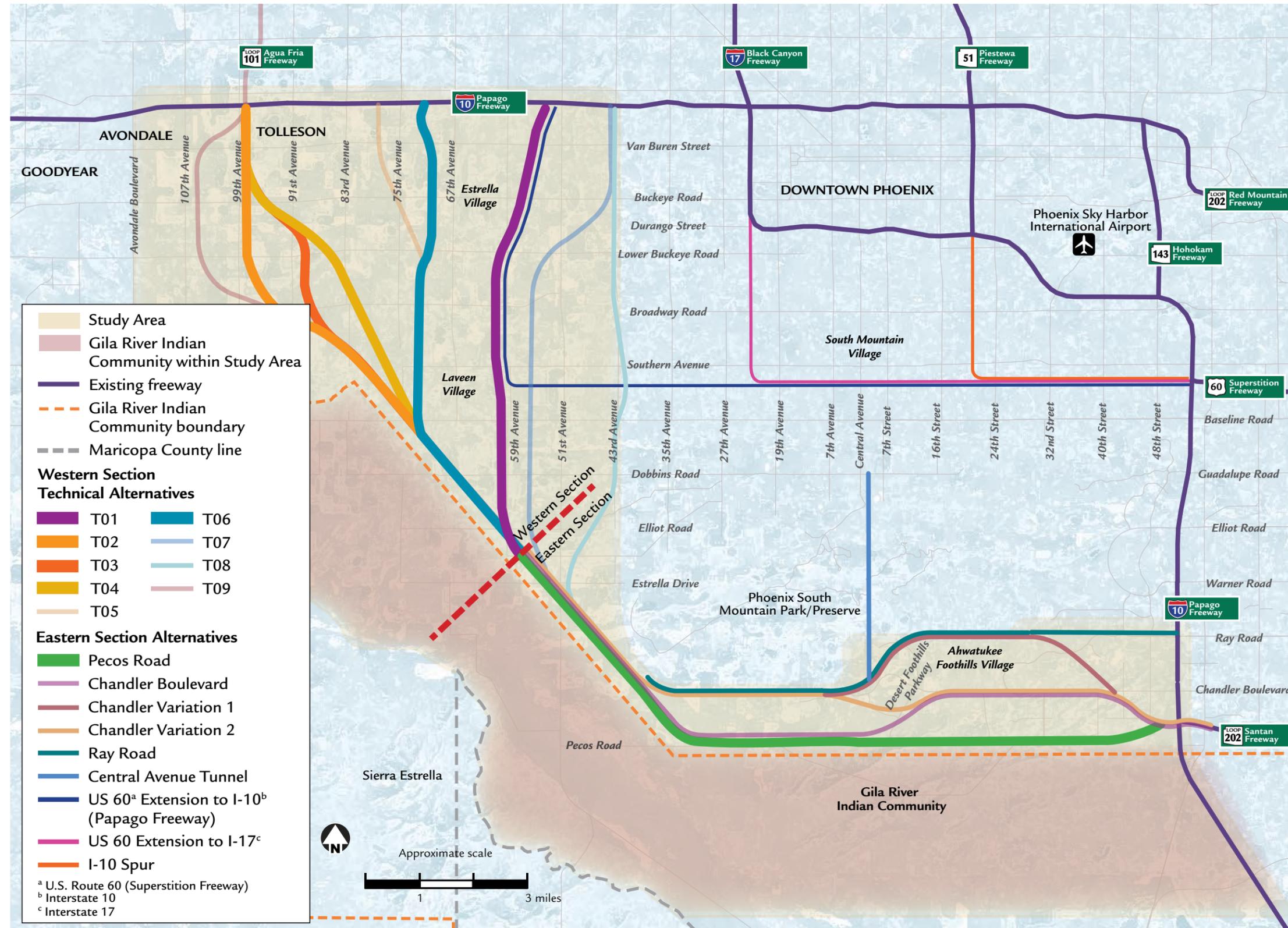


Table 1 Alternatives and Design Options Eliminated from Further Study during the Screening Process (continued)

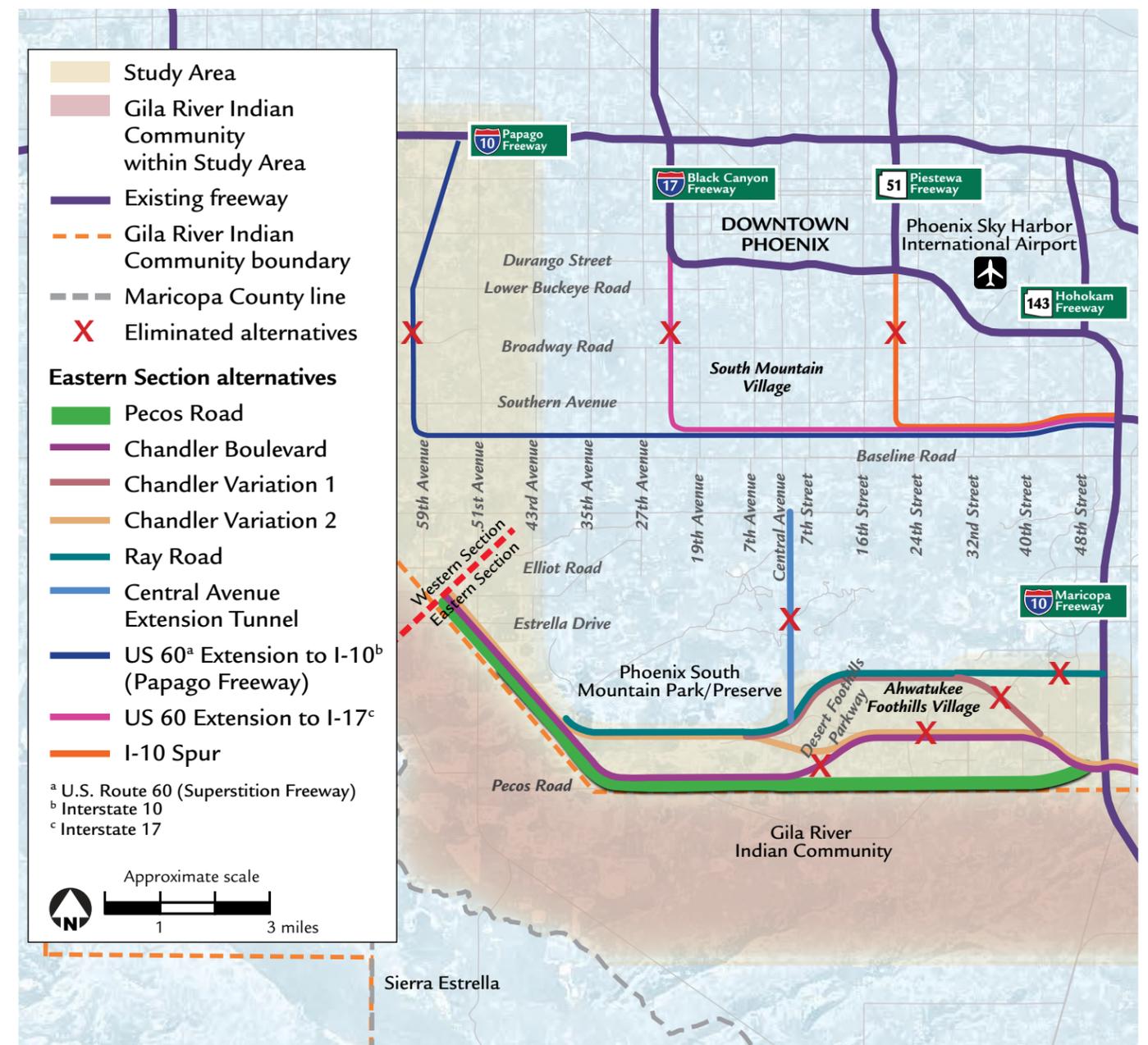
Alternative/Option	Stage of Process	FEIS ^a Page Reference	Decision	Basis of Decision	Section 4(f) Considerations
Western Section: Technical Alternatives T01, T02, T03, T04, T05, T06, T07, T08, and T09 (see Figure 10)	Technical Alternatives Screening (Second Tier)	3-9	The analysis resulted in agreement to carry forward the W55 Alternative (T01), W71 Alternative (T06), and W101 Alternative and Options (T02, T03, and T04). Technical Alternatives T05, T07, T08, and T09 were eliminated.	Technical Alternatives T05, T07, and T08 were eliminated because they would cause traffic operational failure on I-10 (Papago Freeway) between 83rd Avenue and State Route 101L because of two system traffic interchanges located within 3 miles of each other. Technical Alternative T09 was eliminated because it included undesirable geometry near I-10 (Papago Freeway) and substantial impacts on existing and planned residential and commercial developments in Tolleson and Avondale.	Not applicable
Eastern Section: Pecos Road, Chandler Boulevard and variations, Ray Road, Central Avenue Extension Tunnel, US 60 ⁱ Extension to I-17 ^j , I-10 Spur (see Figure 11)	Technical Alternatives Screening (Second Tier)	3-12	The analysis resulted in agreement to carry forward the E1 Alternative (Pecos Road). All other Eastern Section alternatives were eliminated.	The Ray Road and Chandler Boulevard alternatives were eliminated because they would result in a substantially more residential displacements and impacts on community character than the Pecos Road alternative. The Central Avenue Extension Tunnel was eliminated because it would not meet purpose and need criteria and was cost-prohibitive. The US 60 Extension and I-10 Spur alternatives would cause undesirable congestion on I-10 and US 60 and would result in over 1,000 residential displacements and severe community character impacts.	Not applicable
Profile and construction options through the South Mountains (Bridge Alternative, Tunnel Alternative, Open Cut Option)	Design Options and Refinements (Third Tier)	3-13	The assessment of options to construct the freeway through the South Mountains resulted in the agreement to carry forward the Open Cut Option. The Bridge and Tunnel Alternatives were eliminated from further study.	Alternatives to build a bridge over the South Mountains were eliminated from further study because of incident management, constructibility, and maintenance issues; future expansion limitations; substantially higher estimated construction costs; and undesirable intrusion-related impacts. Alternatives to build a tunnel under the South Mountains were eliminated based on safety and constructibility issues, undesirable intrusion-related impacts, maintenance issues, and construction cost.	For these same reasons, the Bridge and Tunnel Alternatives were determined to not be prudent and feasible avoidance alternatives for avoiding the South Mountains.
System traffic interchange options for the connection to I-10 (Papago Freeway)	Design Options and Refinements (Third Tier)	3-14	The traffic operational analysis resulted in the agreement to carry forward a single configuration for the W59 and W71 Alternatives and a full and partial reconstruction option for the W101 Alternative (see Figures 3-29, 3-30, and 3-31 in the FEIS).	The assessment of design options included vertical profiles, horizontal alignments, and existing service traffic interchange ramp configurations. The decision was to select the option that resulted in the best traffic operational performance.	Not applicable
W101 Alternative Options (Western, Central, Eastern, and Western 99th Avenue)	Design Options and Refinements (Third Tier)	3-15	The assessment of alignment options for the W101 Alternative resulted in agreement to eliminate the Western 99th Avenue Option. The other three alignment options, Western, Central, and Eastern, were carried forward.	The Western 99th Avenue Option was eliminated because it would result in substantially more business displacements than the other options. These business impacts would also result in higher R/W ^k costs and greater economic impacts on the City of Tolleson.	Not applicable
E1 Alternative, Depressed Freeway Option	Design Options and Refinements (Third Tier)	3-15	The assessment of profile options for the E1 Alternative in the Pecos Road section resulted in agreement to eliminate the depressed profile option and to carry forward the at-grade/elevated profile option.	The depressed profile option was eliminated because it would require additional land for drainage basins, resulting in substantially more residential displacements; would require pump stations, increasing the risk of flooding for the freeway; and would cost substantially more than the at-grade/elevated profile options.	Not applicable
E1 Alternative, Utility Easement Option	Design Options and Refinements (Third Tier)	3-18	The assessment of using an utility easement for the E1 Alternative in the Pecos Road section resulted in agreement to eliminate the option.	The use of the utility easement was eliminated because the power lines could not be relocated underground, thereby eliminating the intended benefit of reducing impacts on Ahwatukee Foothills Village.	Not applicable

(continued on page 12)

Figure 10 Western Section Alternatives Eliminated from Further Study, Alternatives Development and Screening Process



Figure 11 Eastern Section Alternatives Eliminated from Further Study, Alternatives Development and Screening Process



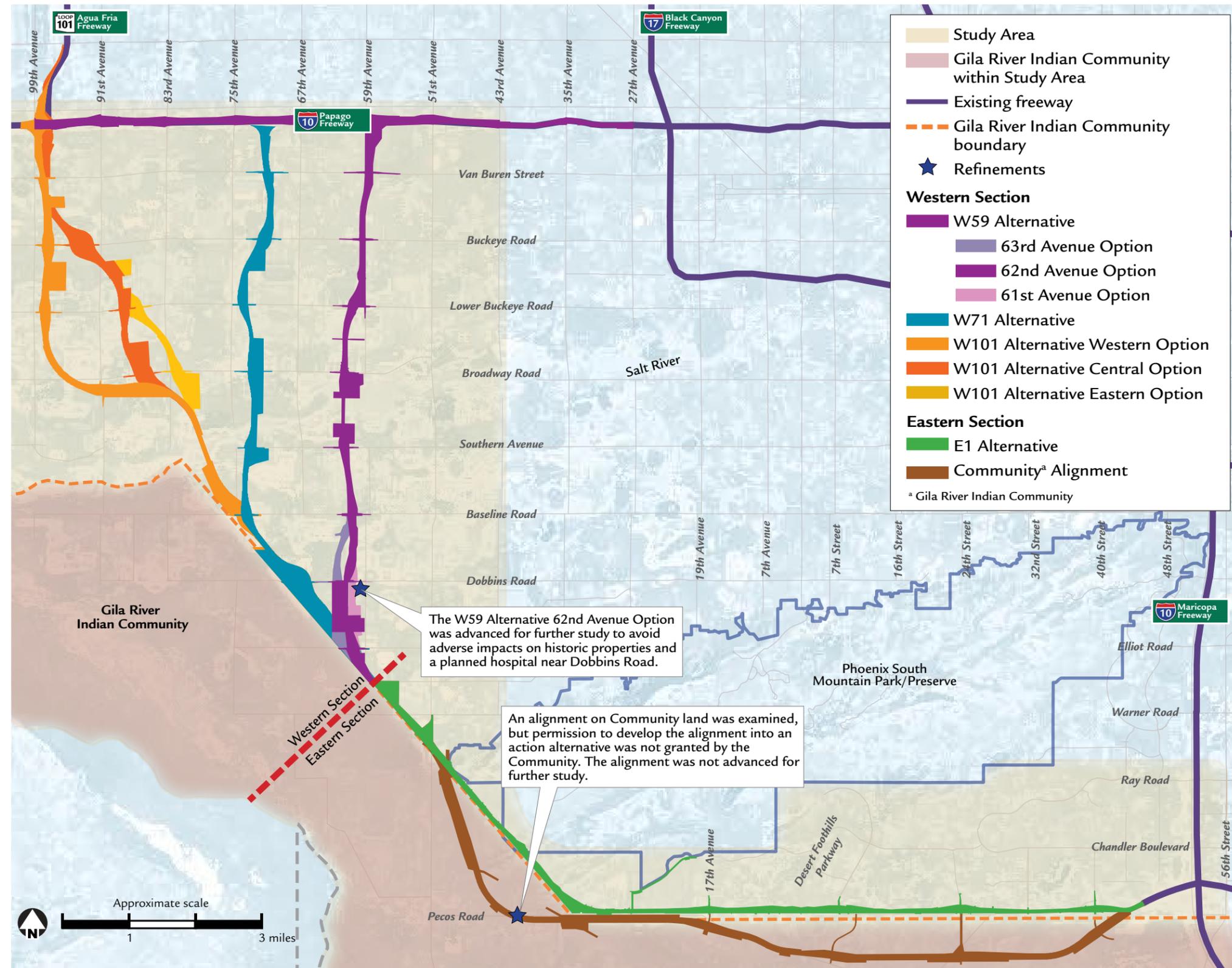
^a U.S. Route 60 (Superstition Freeway)
^b Interstate 10
^c Interstate 17

Table 1 Alternatives and Design Options Eliminated from Further Study during the Screening Process (continued)

Alternative/Option	Stage of Process	FEIS ^a Page Reference	Decision	Basis of Decision	Section 4(f) Considerations
Arizona Parkway Option	Design Adjustments (Fourth Tier)	3-19	The assessment of changing the facility from a freeway to a parkway resulted in agreement to eliminate the parkway option.	In the best-case scenario, the capacity of a parkway would be approximately 105,000 vehicles per day, well below the traffic levels projected on the freeway, which would range from 117,000 to 190,000 vehicles per day. As a result, the Arizona Parkway would lack sufficient capacity to meet projected travel demand. It would not adequately address the projected transportation system capacity deficiency and would not remove a sufficient amount of traffic from the arterial street network; therefore, it would not meet the project's stated purpose and need.	Not applicable
Constrained R/W: eight-lane and ten-lane freeway	Design Adjustments (Fourth Tier)	3-19	The assessment of changing the ultimate number of lanes on the freeway from ten to eight resulted in agreement to carry forward the eight-lane freeway and eliminate the ten-lane freeway.	The evaluation of alternatives, including detailed traffic analysis, determined that the eight-lane freeway would meet the purpose and need criteria for the project. The option would also require less R/W, resulting in substantially fewer residential displacements, and would cost less than the ten-lane freeway.	Not applicable
W55 Alternative alignment adjustment (W59 Alternative)	Design Adjustments (Fourth Tier)	3-23	The assessment of changing the alignment of the W55 Alternative north of Lower Buckeye Road resulted in the agreement to shift the alignment to 59th Avenue (W59 Alternative), thereby eliminating the W55 Alternative.	Because the W59 Alternative would connect to I-10 (Papago Freeway) at an existing service traffic interchange, I-10 traffic would be less affected and would have fewer ramp closures, which would be preferable to the greater I-10 operational impacts under the W55 Alternative. Although the W59 Alternative would cost approximately 3 percent more than the W55 Alternative, the project team determined the operational benefits to I-10 to be worth the additional expense.	Not applicable
Community Alignment (see Figure 12)	Alignment Screening and Further Design Adjustments (Fifth Tier)	3-24	The outcome of the Community-coordinated referendum resulted in the agreement to eliminate the Community Alignment.	A coordinated referendum of Community members to favor or oppose construction of the proposed freeway on Community land or to support a no-build option occurred in February 2012, and Community members voted in favor of the no-build option. As a sovereign nation, the Community must grant permission to the State before any alternatives that would cross Community land can be planned and studied in detail.	For these same reasons, the Community Alignment was determined to not be a prudent and feasible avoidance alternative for avoiding the South Mountains.
W59 Alternative Options through Laveen Village	Alignment Screening and Further Design Adjustments (Fifth Tier)	3-25	The assessment of alignment options resulted in agreement to carry forward the 62nd Avenue Option (located between the 63rd Avenue Option and the 61st Avenue Option) and to eliminate the other options.	The 62nd Avenue Option would avoid historic properties in the area and would not conflict with City of Phoenix-approved zoning in Laveen Village.	Not applicable

^a Final Environmental Impact Statement ^b transportation system management ^c transportation demand management ^d Maricopa Association of Governments ^e Interstate 10 ^f Gila River Indian Community ^g State Route 85 ^h Interstate 8 ⁱ U.S. Route 60
^j Interstate 17 ^k right-of-way

Figure 12 Alignment and Design Adjustments, Alternatives Development and Screening Process



Alternatives Eliminated from Further Study in the FEIS

Comments received on the DEIS included proposals for numerous alternatives. FHWA and ADOT considered each proposed alternative and determined that almost all had previously been considered during the alternatives development and screening process described in the DEIS.

An exception was the alternative presented in a letter from Community Governor Mendoza, who suggested an alignment beginning at the U.S. Route 60 (US 60) and I-10 (Maricopa Freeway) system traffic interchange and extending west between Baseline Road and Southern Avenue until turning north at approximately 59th Avenue, following the W59 Alternative from there to its connection with I-10 (Papago Freeway) (see Figure 11). The US 60 Extension to I-10 Alternative, as the suggested alternative was named, would begin at the same location and would serve similar travel demand (trips) as the US 60 Extension to Interstate 17 (I-17) and the I-10 Spur Alternatives; therefore, the traffic analysis of these alternatives sufficiently represents traffic conditions under the US 60 Extension to I-10 Alternative.

As noted in the *Validation of Alternatives Screening Process at FEIS Stage 09-16-14* memorandum (dated September 2014), rather than reduce congestion (as determined by average daily traffic) on the region's freeway system, the US 60 Extension to I-10 Alternative would place a greater amount of traffic on the system, even on routes not directly connected with the alternative. From the analysis, the following observations were noted relating to the alternative's effectiveness in meeting the project's purpose and need:

- ▶ would cause substantial traffic performance impacts on I-10 (Maricopa Freeway) between SR 202L (Santan Freeway) and US 60 (Superstition Freeway)
- ▶ would increase undesirable congestion on US 60 (Superstition Freeway) and SR 101L (Price Freeway)
- ▶ would not address needs based on regional travel demand and existing and projected transportation

system capacity deficiencies (would not adequately improve regional mobility by shifting traffic from arterial streets to freeways, would not adequately improve travel times)

In addition to the traffic analysis, social and environmental impacts associated with the US 60 Extension to I-10 Alternative include:

- ▶ substantial impacts on existing residences and businesses, including thousands of residential displacements and over 100 business displacements
- ▶ substantial disruption to community character and cohesion, splitting South Mountain Village and constructing a barrier between schools, parks, and residences
- ▶ inconsistent with local and regional planning efforts, which include a freeway alternative that completes the loop system as part of SR 202L

For the reasons presented above, the US 60 Extension to I-10 Alternative was eliminated from further study and was found to not be a prudent and feasible avoidance alternative for avoiding the South Mountains.

Alternatives Studied in Detail in the DEIS and FEIS

The following text briefly describes the alternatives evaluated in detail in the DEIS and FEIS. These alternatives are discussed in detail in the section, *Alternatives Studied in Detail*, in Chapter 3, *Alternatives*, of the FEIS.

No-Action Alternative

The No-Action Alternative is included in accordance with NEPA requirements to compare beneficial and adverse impacts of the action alternatives with those benefits and adverse impacts of not proceeding with one of the action alternatives. The No-Action Alternative would not construct any type of major transportation facility, such as the extension of SR 202L (Santan Freeway) west of I-10 (Maricopa Freeway); it would, however, include all other projects described in the RTP. Traffic on the existing segment of SR 202L (Santan

Freeway), as well as along I-10 (Papago Freeway), would need to use existing Interstate and Regional Freeway and Highway System facilities or the local street network.

FHWA and ADOT, in defining the No-Action Alternative, considered methods by which to frame the alternative, including scenario planning. FHWA and ADOT agree that scenario planning methods have application in some instances; however, in this case, FHWA and ADOT believe that the methods used to describe the No-Action Alternative as presented in the DEIS and FEIS are appropriate. At a basic level, NEPA requires consideration of reasonable alternatives, meaning that the No-Action Alternative should be reasonable as well. It stands then that speculation about what an alternative could be in the future and the conditions surrounding the alternative is not appropriate and that the effects of the No-Action Alternative need to be reasonably foreseeable. Under this premise, the description of the No-Action Alternative is appropriate. As described above, its features include: not extending SR 202L west of I-10 (Maricopa Freeway), assuming all other projects in the RTP are completed, and using population, employment, and housing projections officially approved by MAG.

Further justification of description of the No-Action Alternative includes:

- ▶ At certain points in the Phoenix metropolitan area's history, growth rates prior to planning for the region's freeway system exceeded growth rates after planning for and construction of the regional freeway system began. FEIS Chapter 1, *Purpose and Need*, and the sections, *Land Use* and *Economic Impacts*, in Chapter 4, establish cost of living, livability, mild climate, technological advancement (affordable air conditioning), employment opportunities, a development-oriented regulatory environment, and key location for industry as primary growth drivers in the Phoenix metropolitan area. Therefore, transportation is not the sole driver of growth.
- ▶ As established in the FEIS, "pre-freeway" land use planning mimics "post-freeway" land use planning. In 1979, the *Phoenix Concept Plan 2000* was

adopted by the City of Phoenix. The plan called for 25 Phoenix urban villages. Of those, it established 9 villages with instructions for village planning committees to prepare 25-year concept plans. The Laveen and Estrella Villages were included in the list of 25 suggested villages, although they were not among the 9 villages adopted in the initial plan. However, the intent was that Laveen and Estrella Villages would be developed at a later point in time. The freeway system considered in the plan included only I-10, I-17, and US 60—it did not include the regional freeway system.

The *Phoenix Concept Plan 2000* was replaced by the *Phoenix General Plan, 1985–2000* (see Appendix D for both documents). The resolution adopting the *General Plan* directed the village planning committees to continue in the City of Phoenix’s planning process. The resolution included Laveen and Estrella as villages. Planning for the Laveen and Estrella Villages was completed around the same time as the initial planning for the regional freeway system, including the South Mountain Freeway. Therefore, the land use planning and transportation planning were conducted in parallel, not with one effort depending on the other.

To conclude that land use patterns would look different than they do today is not consistent with past planning patterns. It is more reasonable to argue that the City of Phoenix would have continued to plan for the urban village core concept as has been envisioned since the late 1970s.

FHWA and ADOT determined that scenario planning would be speculative for the following reasons:

- Factors affecting growth vary (see above), and to assume only transportation as a growth driver would be speculative.
- Continuation of “pre-freeway” historical land use planning patterns is reasonable to expect. The section, *Land Use*, in Chapter 4 of the FEIS documents the growth scenario under the No-Action Alternative and notes that the area would develop in

a similar fashion with or without the project. This is supported by:

- The Study Area already has good connecting transportation infrastructure (although congested) to support continued development without the freeway. It is also close to downtown Phoenix. Existing infrastructure plus location would result in growth without the freeway as described in the *Purpose and Need* chapter of the FEIS. The freeway is not opening up the area to development because existing roads (for example, Pecos Road, Baseline Road, and 51st Avenue) provide access.
- To date, approximately 67 percent of the land in the Study Area has already been developed in accordance with the City of Phoenix’s *General Plan* and zoning ordinance. It is assumed that such development would not be torn down and land uses redistributed if the freeway were not built.
- As documented in the section, *Land Use*, in Chapter 4 of the FEIS, agricultural (22 percent) and open space (11 percent) land uses in the Study Area represent only 33 percent of land area (it should be noted the 11 percent of open space is mostly not developable because of topographic challenges and floodplain constraints), while the remainder of the area is in some form of “built” land use. Distribution of zoning further supports the conclusion—12 percent of the Study Area is zoned for agricultural and open space uses while 88 percent is zoned for other more intensive land uses.
- Factors contributing to historical and projected growth are well-documented in the FEIS in Chapter 1, *Purpose and Need*, and in the sections, *Land Use* and *Economic Impacts*, in Chapter 4. The freeway will be built in an area planned for urban growth as established in local jurisdictions’ land use planning activities for at least the last 25 years (see the section, *Induced Growth*, beginning on page 4-182 of the FEIS).
- The sections, *Induced Travel* and *Induced Growth*, beginning on pages 4-179 and 4-182, respectively,

of the FEIS, establish that the freeway would contribute to minimal induced travel demand (which has, to a large degree, been accounted for in the MAG model).

- Section 93.110 of the U.S. Environmental Protection Agency’s (EPA’s) conformity rule requires that population and employment projections (which establish growth rates and distribution) used in a conformity analysis be the most recent estimates that have been officially approved by MAG (as the metropolitan planning organization for the Maricopa County nonattainment and maintenance areas). In accordance with the Governor’s Executive Order 2011-04, county-level population projections used for all State agency planning purposes were updated by the Arizona Department of Administration in December 2012, based on the 2010 U.S. Census. To use projections other than the approved demographic trends would be inconsistent with the projections required for use in the transportation conformity assessment.

Even if one could argue the only reason the development has occurred as it has is because of the planned freeway (which is not the case—see above) for the last 30 years (in other words, if the freeway had not been planned, development would somehow have been different), the argument is irrelevant. Existing development is now there and, therefore, it is reasonable to assume that the land use distribution and related development will be there in the future.

The analysis documented in the FEIS leads to the conclusion that the No-Action Alternative and action alternative land uses would be similar, and thus no “scenario planning” is required. Scenario planning could have application if the area was not developed, but the manner in which the No-Action Alternative was determined and presented in the FEIS is “state-of-the-practice.” Defining the No-Action Alternative as including all projected socioeconomic growth and planned transportation projects in the RTP except the proposed action is common practice. The No-Action

Alternative as defined in the FEIS is appropriate. It satisfies reasonableness, withstands a hard look, and was fully disclosed.

Consequently, the depiction of the severity of impacts caused by the No-Action Alternative is appropriate and correctly represented throughout the DEIS and FEIS. In defining the transportation problem in Chapter 1, *Purpose and Need*, of the DEIS and FEIS, the analysis illustrates the severity of the breakdown in the transportation network if no action were taken in the area. This is further supported by the impact analyses presented throughout Chapter 4, *Affected Environment, Environmental Consequences, and Mitigation*, of the DEIS and FEIS. To summarize, durations and physical lengths of congestion would worsen, travel times would become longer over the same distances, congestion would continue to spill over into the arterial street network, and the monetary costs to the State and its residents would increase. Specifically, the No-Action Alternative would not meet the purpose and need because it would not alleviate congestion on the Interstate and regional freeway systems or on the arterial street network by the design year 2035. It would instead lead to worsening traffic congestion and substantial related impacts, resulting in:

- ▶ increased difficulty in gaining access to adjacent land uses
- ▶ increased difficulty in gaining access to the Interstate and regional freeway systems from the local arterial street network
- ▶ increased levels of congestion-related impacts
- ▶ reduced performance of regional freeway-dependent transit services
- ▶ noticeably longer trip times and higher user costs

Action Alternatives

Western Section Action Alternatives

In the Western Section of the Study Area, alignment descriptions for the action alternatives begin at their western terminus with I-10 (Papago Freeway) and

proceed east to the common point among all action alternatives (see Figure 13).

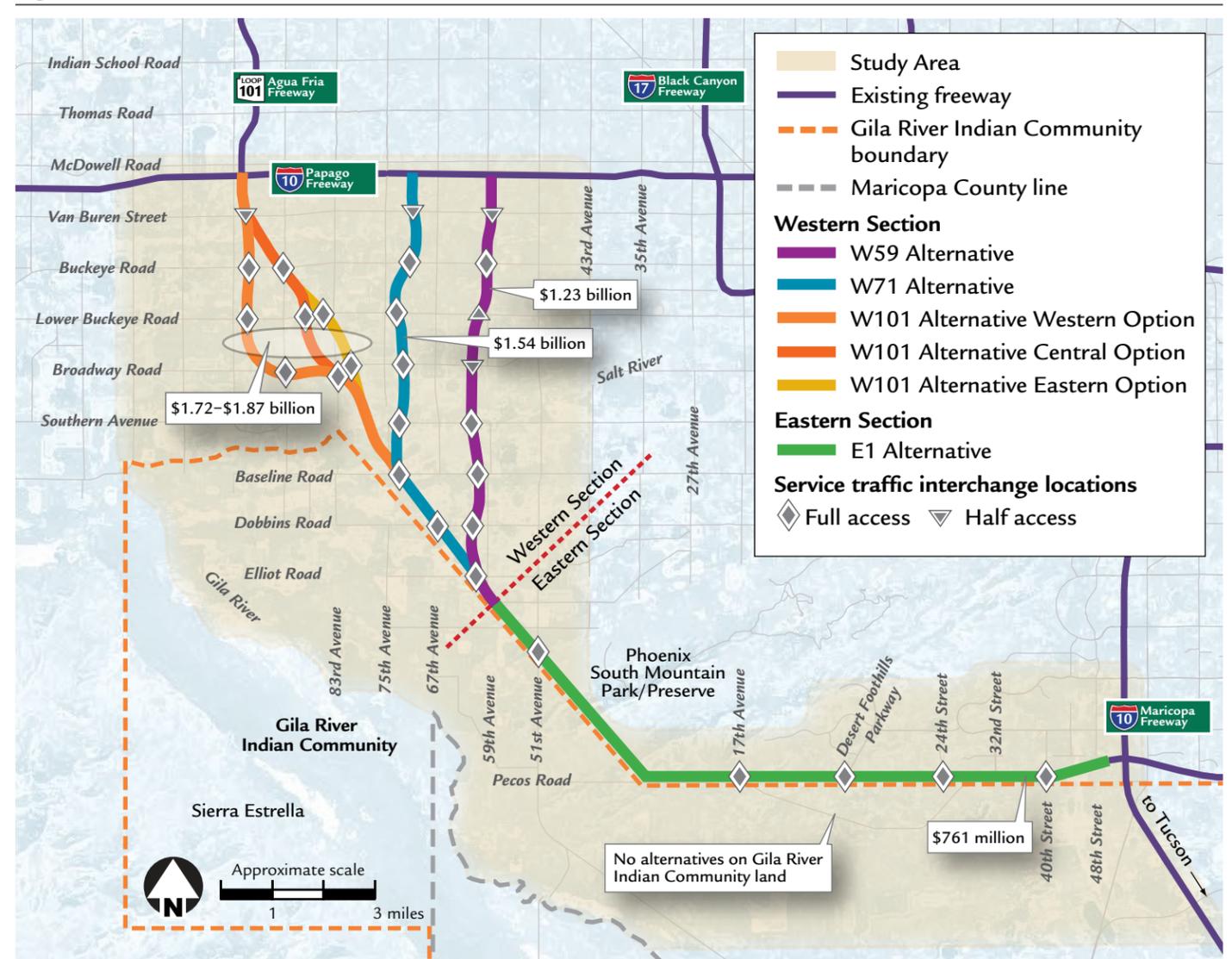
W59 Alternative

The W59 Alternative would connect to I-10 (Papago Freeway) with a system traffic interchange, which would replace the existing service traffic interchange at 59th Avenue and would convert the existing 59th Avenue to two-lane northbound and southbound frontage roads approximately between Van Buren Street and the Roosevelt Irrigation District canal. From I-10 (Papago Freeway), the W59 Alternative would

proceed south along the eastern side of 59th Avenue, crossing Roosevelt and Van Buren streets, then shift to the western side, crossing the Union Pacific Railroad (UPRR) tracks and Buckeye Road before making a slight western shift approximately 1/3 mile north of Lower Buckeye Road.

The W59 Alternative would then travel south, crossing Lower Buckeye Road, Broadway Road, the Salt River, and Southern Avenue before making a slight shift to the east. The alternative would continue south, approximately 1/4 mile west of 59th Avenue, and would

Figure 13 Action Alternatives



cross Baseline and Dobbins roads. It would continue south and then make a curve transition from the southern to the southeastern direction to cross Elliot Road and connect with the E1 Alternative at the point common to all action alternatives on an alignment parallel and adjacent to the Community boundary.

W71 Alternative

The W71 Alternative would proceed from a new system traffic interchange with I-10 (Papago Freeway) at 71st Avenue to the south-southeast, crossing Roosevelt Street, Van Buren Street, and the UPRR tracks before turning to the southwest, crossing Buckeye Road at approximately 71st Avenue. In its southwestern direction, the W71 Alternative would curve around the western side of Santa Maria Middle School, crossing Lower Buckeye Road approximately ¼ mile east of 75th Avenue. South of Lower Buckeye Road, the W71 Alternative would continue to the south, crossing Broadway Road, the Salt River, and Southern Avenue. Just north of Baseline Road, the W71 Alternative would begin the curve transition to the southeastern direction and would cross Baseline Road, the Laveen Area Conveyance Channel, Dobbins Road, and Elliot Road on an alignment parallel and adjacent to the Community boundary. The W71 Alternative would connect with the E1 Alternative at the point common to all action alternatives.

W101 Alternative and its Options

The W101 Alternative would proceed from a new system traffic interchange with I-10 (Papago Freeway) and SR 101L (Agua Fria Freeway) in a southerly direction across Roosevelt Street, Van Buren Street, and the UPRR tracks. At this point, the W101 Alternative has three alignment options heading in a southerly direction across Buckeye, Lower Buckeye, and Broadway roads before returning to a common alignment to the north of Southern Avenue.

After crossing 91st Avenue just south of Broadway Road, the W101 Alternative would head southeasterly to cross the Salt River, Baseline Road, the Laveen Area Conveyance Channel, Dobbins Road, and Elliot

Road on an alignment parallel and adjacent to the Community boundary. The W101 Alternative would connect to the E1 Alternative at the point common to all action alternatives.

Eastern Section Action Alternative

E1 Alternative

At the point common to all action alternatives, the E1 Alternative would travel to the southeast parallel and adjacent to the Community boundary, crossing over Estrella Drive, 51st Avenue, and Ivanhoe Street. In this direction, the action alternative would pass through three ridges of the South Mountains (two of which are in Phoenix South Mountain Park/Preserve [SMPP]) before turning to the east. Traveling to the east, the E1 Alternative would follow and replace the Pecos Road alignment north of and adjacent to the Community boundary and would cross over 17th Avenue, Desert Foothills Parkway, 24th Street, 32nd Street, and 40th Street. The E1 Alternative would then connect to the existing I-10 (Maricopa Freeway)/SR 202L (Santan Freeway)/Pecos Road system traffic interchange.

Ability of Alternatives to Meet the Project Purpose and Need

The comparison of traffic operational characteristics between the action alternatives (the W59, W71, and W101 Alternatives combined with the E1 Alternative) and the No-Action Alternative is presented in the FEIS, beginning on page 3-27. The analysis shows that the action alternatives are responsive to the project's purpose and need and will:

- ▶ reduce overall traffic on the arterial street system (see FEIS Figures 3-12 and 3-13)
- ▶ optimize travel on the region's freeway system (see FEIS Figure 3-12)
- ▶ reduce the capacity deficiency to levels better than experienced today (see FEIS Figures 1-12 and 3-14)
- ▶ reduce the duration of LOS E or F conditions in key areas of the region's freeway system (see FEIS Figure 3-15)

- ▶ improve travel times on trips within the Study Area and across the region (see FEIS Figure 3-17 and Table 3-8)
- ▶ provide improved regional mobility for areas projected to experience growth in the next 25 years (see FEIS Figures 1-7 and 3-18)

When all of this is considered in the realm of travel time savings for motorists in the region, the user benefits total approximately \$200 million per year (see FEIS Table 4-27).

Rationale for Decision

The EIS process, as defined by NEPA, requires an evaluation of a range of reasonable alternatives that would meet a project's purpose and need. A more complete comparison of the impacts of the alternatives is presented in Table 2. The elements identified as differentiators and used in the decision-making process are summarized in the following discussion.

The analyses documented in the FEIS demonstrate that of the range of alternatives considered (the W59, W71, and W101 Alternatives combined with the E1 Alternative), when comparing action alternatives in the Western Section, the W71 Alternative was considered the least desirable of the three action alternatives because:

- ▶ The duration and extent of congested conditions on I-10 would be the least desirable of the alternatives considered.
- ▶ Residential impacts and relocations would be high (up to 839 properties affected).
- ▶ Regional and public support is lacking.
- ▶ The alternative is not consistent with local land use plans dating back to the mid-1980s.

When the W59 and W101 Alternatives were compared, it was determined that both alternatives would have the following advantages and disadvantages in meeting the project's purpose and need.

Table 2 Environmental Factors Accounted for in the Decision

Type of Impact	No-Action Alternative	Action Alternatives			Context and Intensity of Impacts for all Action Alternatives
		W59 Alternative + E1 Alternative (Selected Alternative)	W71 Alternative + E1 Alternative	W101 Alternative and Options + E1 Alternative	
Land Use					
Agricultural converted to Transportation (estimated acreage)	No immediate conversion would occur, other than what could occur from other planned transportation projects. Because of planned development, it is likely that land uses would be converted to transportation-related urban uses.	708	650	836-969 ^a	Of the action alternatives, the W101/E1 Alternative and Options would have the greatest impact. Loss of agricultural land attributable to any action alternative would be negligible relative to the amount of land in the region and to other land development trends that are contributing to the loss of agricultural land.
Residential converted to Transportation (estimated acreage)	No immediate conversion would occur, other than what could occur from other planned transportation projects. Because of planned development, it is likely that land uses would be converted to transportation-related urban uses.	164	395	282-348	The W71/E1 Alternative and Options would result in the greatest conversion of residential to transportation, followed by the W101/E1 Alternative, and then the W59/E1 Alternative. Conversion of residential land caused by any action alternative would have a negligible effect on residential land availability relative to the amount of land in the region designated for residential use.
Commercial/Industrial converted to Transportation (estimated acreage)	No immediate conversion would occur, other than what could occur from other planned transportation projects. Because of planned development, it is likely that land uses would be converted to transportation-related urban uses.	177	220	186-218	The W71/E1 Alternative would result in the greatest acreage conversion of commercial/industrial use. Conversion of commercial/industrial land caused by any action alternative would have a negligible effect on commercial/industrial land use availability relative to the amount of land in the region designated for such use.
Open Space/Undeveloped converted to Transportation (estimated acreage)	Planned development will inevitably cause rural-to-urban land conversion, but no immediate conversions would occur other than from other planned transportation projects.	712	617	630-711	The W59/E1 Alternative would convert the most open space/undeveloped land of all the action alternatives. Loss of open space/undeveloped land attributable to any action alternative would be negligible relative to other land development trends that are contributing to the loss of open space/undeveloped land.
Public/Quasi-public converted to Transportation (estimated acreage)	No immediate conversion would occur, other than what could occur from other planned transportation projects.	13	17	20	Any of the action alternatives would have a negligible effect on the availability of public/quasi-public land in the region.
Total land use conversion (estimated acreage)	No immediate conversion would occur, other than what could occur from other planned transportation projects.	1,813	1,938	2,161-2,191	The W101/E1 Alternative and Options would result in the greatest impact of any of the action alternatives. Land conversion attributable to any action alternative would be negligible relative to the amount of land in the region and to other land development trends that are contributing to land conversion.

(continued on next page)

Table 2 Environmental Factors Accounted for in the Decision (continued)

Type of Impact	No-Action Alternative	Action Alternatives			Context and Intensity of Impacts for all Action Alternatives
		W59 Alternative + E1 Alternative (Selected Alternative)	W71 Alternative + E1 Alternative	W101 Alternative and Options + E1 Alternative	
Social Conditions					
Consistent with local and regional plans (provide a freeway in the Study Area in a planned corridor meeting goals and objectives of the long-range plans)	This alternative would not be consistent with the intent of the local and regional plans to provide a freeway in the Study Area and to promote growth along the corridor.	Yes	Yes, but inconsistent in location.		The W71/E1 and W101/E1 Alternatives would be consistent with local and regional plans, but not in location. The W59/E1 Alternative is most consistent with local and regional plans.
Community character and cohesion	No immediate substantial impacts on community character and cohesion; planned development within communities would have an effect.	Visual and noise intrusions to existing neighborhoods in Laveen and Estrella villages. The freeway would bisect developed properties and disrupt cohesion and existing internal site circulation. Visual and noise intrusions would affect rural, natural areas and recreational areas adjacent to the E1 Alternative.		Visual and noise intrusions to rural and industrial areas in western Estrella Village and in Tolleson. Options would interrupt the cohesion both of dairy operations and farmsteads. Visual and noise intrusions would affect rural, natural areas and recreational areas adjacent to the E1 Alternative.	The action alternatives would introduce an intensive land use adjacent to less-intensive, less-compatible uses in some areas. The impact of any action alternative would intensify as community character would transition from agricultural to residential, as has been ongoing and planned for several years. To reduce community intrusions caused by the action alternatives and to reduce impacts on the character of surrounding communities, the Arizona Department of Transportation will implement mitigation such as reducing the amount of right-of-way required, providing alternative access to the local road network to satisfy emergency services access requirements, and using noise barriers, aesthetic treatments of structures, and landscaping.
Environmental Justice and Title VI^b					
Effects on minority, low-income, female head-of-household, elderly, and disabled populations	As congestion on surface streets increases, all neighborhoods would be affected equally. Travel times for local buses would increase, affecting low-income and minority populations. The No-Action Alternative would result in no property acquisitions and no household relocations. Therefore, environmental justice populations would not be affected by right-of-way acquisitions.	Minority, elderly, female head-of-household, low-income, and disabled populations would be adversely affected by the proposed action; however, no disproportionately high adverse effects on these populations would occur.		Minority, elderly, female head-of-household, and disabled populations would be adversely affected by the proposed action; however, no disproportionately high adverse effects on these populations would occur.	All action alternatives would adversely affect protected populations, but impacts would not be disproportionately high after comparing projected impacts or benefits with those experienced by all populations in the Study Area. Even if one were to reach a contrary conclusion and determine that disproportionately high and adverse effects will occur as a result of the freeway, there is substantial justification for the freeway. It is needed to serve projected growth in population and accompanying transportation demand and to correct existing and projected transportation system deficiencies (see Chapter 1, <i>Purpose and Need</i> , of the Final Environmental Impact Statement). There is no feasible and prudent alternative to the use of the South Mountains, as discussed in Chapter 5, <i>Section 4(f) Evaluation</i> , of the Final Environmental Impact Statement. Mitigation measures presented in Table 3 on page 38 would result in reduction, minimization, and avoidance of impacts as well as overall benefits to all populations in the Study Area (see SOC-6, DIS-1, DIS-2, DIS-3, NOI-1, CUL-1, CUL-4, CUL-5, CUL-6, S4F-13, S4F-15, S4F-16, S4F-17, and S4F-18).

(continued on next page)

Table 2 Environmental Factors Accounted for in the Decision (continued)

Type of Impact	No-Action Alternative	Action Alternatives			Context and Intensity of Impacts for all Action Alternatives
		W59 Alternative + E1 Alternative (Selected Alternative)	W71 Alternative + E1 Alternative	W101 Alternative and Options + E1 Alternative	
Impacts on minority populations protected by Title VI	Not applicable	Minority populations protected by Title VI would be adversely affected by the proposed action; however, no disparate impacts on these populations would occur.	Minority populations protected by Title VI would be adversely affected by the proposed action; however, no disparate impacts on these populations would occur.		All action alternatives would adversely affect minority populations protected by Title VI; however, no disparate impacts on these populations would occur after comparing projected impacts or benefits with those experienced by all populations in the Study Area. Even if one were to reach a contrary conclusion and determine that disparate adverse impacts will occur as a result of the Selected Alternative, there is substantial justification for the freeway. It is needed to serve projected growth in population and accompanying transportation demand and to correct existing and projected transportation system deficiencies (see Chapter 1, <i>Purpose and Need</i> , of the Final Environmental Impact Statement). There is no feasible and prudent alternative to the use of the South Mountains, as discussed in Chapter 5, <i>Section 4(f) Evaluation</i> , of the Final Environmental Impact Statement. Mitigation measures presented in Table 3 on page 38 would result in reduction, minimization, and avoidance of impacts as well as overall benefits to all populations in the Study Area (see SOC-6, DIS-1, DIS-2, DIS-3, NOI-1, CUL-1, CUL-4, CUL-5, CUL-6, S4F-13, S4F-15, S4F-16, S4F-17, and S4F-18).
Displacements and Relocations					
Residential displacements (as of 2013, approximate number)	0	168 houses 680 apartments	960 houses 0 apartments	1,061–1,439 houses 0 apartments	The W59/E1 Alternative would displace fewer residential properties than would the W71/E1 or W101/E1 Alternative, in part because local jurisdictions have planned for the proposed action along an alignment on 55th Avenue (most similar to the W59 Alternative) and among the commercial and industrial development along the W59 Alternative. The displacement projections are consistent with a project of this magnitude located in a growing region. Land acquisition and relocation assistance services for the project shall be available to all individuals in accordance with the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended.
Business displacements (approximate number)	0	42	26	14–30	The W59/E1 Alternative would displace more businesses than would the W71/E1 Alternative or the W101/E1 Alternative and Options. The displacement projections are consistent with a project of this magnitude located in a growing region. Land acquisition and relocation assistance services for the project shall be available to all businesses in accordance with the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended.
Effects on homeland security	No impacts on security-sensitive sites would occur.	The W59/E1 Alternative would be near a fuel tank farm.	No impacts on security-sensitive sites would occur.	No impacts on security-sensitive sites would occur.	While the W59/E1 Alternative would be located near the fuel tank farm, the Arizona Office of Homeland Security and the City of Phoenix have concurred that the W59/E1 Alternative and the fuel tank farm could coexist (an earlier version of the alternative was located closer to the tank farm).
Economic Resources					
Existing taxable land base conversion to nontaxable use (estimated acreage)	0	1,609	1,748	1,934–1,965	The W101/E1 Alternative and Options would convert the most taxable land base of any action alternative, primarily because the alternative and its options are the longest alignments considered. The conversion would be consistent with other projects of this magnitude.

(continued on next page)

Table 2 Environmental Factors Accounted for in the Decision (continued)

Type of Impact	No-Action Alternative	Action Alternatives			Context and Intensity of Impacts for all Action Alternatives
		W59 Alternative + E1 Alternative (Selected Alternative)	W71 Alternative + E1 Alternative	W101 Alternative and Options + E1 Alternative	
Estimated annual loss of tax revenues for existing land uses in Phoenix (property and sales tax/general fund)	No immediate reduction would occur. Continued planned development within the Study Area and future transportation projects would affect property and sales tax/general fund revenues in the area.	\$4,576,900	\$5,594,900	as much as \$2,286,900–\$3,567,100	The Cities of Avondale, Phoenix, and Tolleson would experience reductions in sales and property tax revenues (Avondale and Tolleson would not be directly affected by the W59/E1 or W71/E1 Alternative). For Phoenix and Avondale, reductions would be inconsequential, regardless of which action alternative were implemented. However, under the W101/E1 Alternative and Options, tax revenue losses for Tolleson would be substantial; the City would experience a 20 to 24 percent annual reduction.
Estimated annual loss of tax revenues for existing land uses in Tolleson (property and sales tax/general fund)		No effect on Tolleson property and sales tax/general fund revenues would occur.		as much as \$3,632,500–\$4,114,800	
Estimated annual loss of tax revenues for existing land uses in Avondale (property and sales tax/general fund)		No effect on Avondale property and sales tax/general fund revenues would occur.		as much as \$387,600	
Travel time (impacts in \$/year)	No savings would result under this alternative.	Any of the action alternatives would result in over \$200 million (in 2013 dollars) per year savings after construction of the entire facility.			
Air Quality					
Failure to meet CO ^c 8-hour and 1-hour standards	Congestion on the local arterial street network and regional freeway system would increase, leading to increased travel times and increased CO emissions.	All action alternatives would increase 1-hour and 8-hour CO concentrations near the proposed action; however, these increases would not cause exceedances of the health-based National Ambient Air Quality Standards in 2035. The action alternatives are anticipated to reduce congestion and travel times within the region, resulting in reduced regional CO emissions.			
Failure to meet particulate matter standards (PM ₁₀ and PM _{2.5}) ^d	Increased traffic congestion on the transportation network would lead to increased travel times and increased PM ₁₀ and PM _{2.5} emissions.	All action alternatives would result in short-term increases in PM ₁₀ and PM _{2.5} concentrations during construction. All action alternatives would increase particulate emissions near the proposed action; however, these increases would not cause exceedances of the health-based National Ambient Air Quality Standards in 2035. The action alternatives are anticipated to reduce congestion and travel times within the region, resulting in reduced regional PM ₁₀ and PM _{2.5} emissions.			
MSATs ^e	MSAT levels would decline from existing levels because of compliance with strategies identified by the U.S. Environmental Protection Agency’s national control programs.	For all action alternatives, increased traffic volumes would produce elevated MSATs emissions near the proposed action. The action alternatives would reduce congestion and improve regional traffic conditions, which would reduce regional MSATs emissions. Additionally, overall MSATs levels would decline from existing levels because of compliance with strategies identified by the U.S. Environmental Protection Agency’s national control programs.			
Transportation conformity	Not consistent with the <i>Regional Transportation Plan</i> and Transportation Improvement Program.	The action alternatives would be consistent with the <i>Regional Transportation Plan</i> and Transportation Improvement Program because they would provide a planned transportation facility needed to improve traffic in the Phoenix metropolitan area.			
Noise					
Number of receivers (e.g., groups of residences) eligible for noise mitigation	Activities associated with planned development would affect noise levels but would not be mitigated by the proposed action.	114	109	53–68	Any of the action alternatives would introduce traffic noise where it currently does not exist or produce it at higher levels than now experienced. The W59/E1 and W71/E1 Alternatives would affect the greatest number of noise receivers. With the placement of noise barriers in selected locations along the action alternatives, freeway noise would be reduced to levels that would meet Arizona Department of Transportation policy and Federal Highway Administration regulations for abatement where possible.

(continued on next page)

Table 2 Environmental Factors Accounted for in the Decision (continued)

Type of Impact	No-Action Alternative	Action Alternatives			Context and Intensity of Impacts for all Action Alternatives
		W59 Alternative + E1 Alternative (Selected Alternative)	W71 Alternative + E1 Alternative	W101 Alternative and Options + E1 Alternative	
Water Resources					
Loss of water resources (wells potentially affected)	0	121	57	57-75	The W59/E1 Alternative would affect the most groundwater wells. The number of wells potentially affected is consistent with a project of the magnitude of the proposed action. The well replacement program as outlined by State law is followed by the Arizona Department of Transportation on its projects throughout the region.
Floodplains					
Conversion of floodplains (estimated total acreage)	The No-Action Alternative would have no impact on floodplains. Any future projects to provide access across the Salt River would have potential floodplain impacts.	94	127	48-52	The W71/E1 Alternative would have a substantially greater impact on floodplain acreage than would either the W59/E1 Alternative or W101/E1 Alternative and Options. However, regardless of action alternative, the impact on the overall natural and beneficial values of the floodplain would be effectively mitigated through an elevated crossing (on piers) of the floodplain, using appropriate bridge design.
Waters of the United States					
Loss of jurisdictional waters (estimated acreage)	0	In the Western Section, the W59 (Selected) Alternative is anticipated to affect less than 0.5 acre of jurisdictional waters (the Salt River) and would be permitted under a nationwide permit. In the Eastern Section, the E1 (Selected) Alternative would cross several jurisdictional waters. The E1 Alternative is anticipated to permanently affect between 1 and 2 total acres of jurisdictional waters (ephemeral washes), including potential disturbances of greater than 0.5 acre at individual wash crossings that may require an individual permit; Clean Water Act permitting would be determined during the project design phase.			
Topography, Geology, and Soils					
Change to topography, geology, and soil conditions	No direct effects.	In the Western Section, shallow groundwater conditions might influence both the design and method of construction of bridge foundations. In the Eastern Section, bedrock units would likely be encountered, resulting in difficult excavation conditions in cut sections that would require blasting to facilitate removal. Appropriate design, as commonly applied to projects of the size and features of the proposed action, would mitigate any geotechnical-related construction effects.			
Biological Resources					
Loss of habitat	No direct effects.	All action alternatives would result in the conversion of cover, nesting areas, and food resources for wildlife habitat provided by the natural plant communities found in the Study Area. Much of the land through which the proposed action would pass has already been converted to urban, agricultural, and transportation uses (see Secondary and Cumulative section in this table).			
Loss of wildlife of special concern	No direct effects.	The action alternatives in the Western Section may affect foraging behavior along the Salt River of individuals of the Sonoran Desert population of bald eagles that have nested west of the Study Area, but there would be no take of bald or golden eagles under the Bald and Golden Eagle Protection Act.			
Effects on threatened and endangered species	No direct effects.	In the Eastern Section, the action alternatives may affect the Sonoran desert tortoise.	The yellow-billed cuckoo was listed as threatened and critical habitat has been proposed near the W101 Alternative. In the Eastern Section, the action alternatives may affect the Sonoran desert tortoise.	The project will not affect any currently listed threatened or endangered species. The Sonoran desert tortoise is a candidate species and is currently being reviewed for listing under the Endangered Species Act, but it is not listed at this time. In the Eastern Section, the action alternatives may affect the Sonoran desert tortoise. Direct effects could include mortality from equipment and activities during construction and by vehicle traffic after completion. Individuals may be displaced by construction activities and the removal of food sources and cover habitat. Indirect effects could include the degradation of habitat caused by the introduction of invasive species.	

(continued on next page)

Table 2 Environmental Factors Accounted for in the Decision (continued)

Type of Impact	No-Action Alternative	Action Alternatives			
		W59 Alternative + E1 Alternative (Selected Alternative)	W71 Alternative + E1 Alternative	W101 Alternative and Options + E1 Alternative	Context and Intensity of Impacts for all Action Alternatives
Loss of habitat connectivity	The No-Action Alternative would have no immediate effect. Planned and existing development could eventually cause impacts.	Some wildlife movement in the Western Section might be restricted because of the barrier that would be created. Wildlife movement has already been substantially affected by ongoing development. In the Eastern Section, the action alternatives would create a physical barrier that could, depending on design, decrease movement of wildlife to and from the South Mountains and Sierra Estrella. In response, multifunctional crossing locations have been identified to provide potential movement corridors under the freeway.			
Cultural Resources					
Archaeological sites (NRHP ^f -eligible sites affected)	0	16	12	10-11	All action alternatives would affect large prehistoric village sites. The extent of these impacts would be determined by subsequent testing. Therefore, it appears that all action alternatives have similar potential for affecting archaeological resources. Impacts would be effectively mitigated through use of strategies outlined in the Section 106 Programmatic Agreement and the commitments in Table 3.
Historic sites (NRHP-eligible sites affected)	0	The W59/E1 and W71/E1 Alternatives would cross the Roosevelt Canal and historic Southern Pacific Railroad, but neither would affect the eligibility of the sites. The W101/E1 Alternative would also cross the railroad with similar outcomes. Impacts to the canal and railroad would be mitigated through the use of bridges to span the resources. All of the action alternatives would affect Phoenix South Mountain Park/Preserve.			
TCPs ^g (NRHP-eligible sites affected)	0	All of the action alternatives would affect the South Mountains TCP.			
Prime and Unique Farmlands					
Conversion of prime and unique farmlands (estimated acreage)	No immediate loss would occur, but because of planned development, loss of farmland to urban uses would occur.	723	636	870-923	The W101/E1 Alternative and Options would have the greatest prime and unique farmlands impacts, followed by the W59/E1 Alternative, and then the W71/E1 Alternative. Placed in context, the impacts on prime and unique farmland from implementation of the proposed action, regardless of action alternative, would be negligible. Further, farmland impacts among action alternatives in the Western Section would be inconsequential in differentiating among the action alternatives.
Hazardous Materials					
Disturbance of hazardous materials (number of high-priority sites)	0	5	4	1	The W59/E1 Alternative would potentially interact with the greatest number of hazardous materials sites. Implementation of the W101/E1 Alternative and Options would involve one high-priority site. Appropriate design, as commonly applied to projects of the size and features of the proposed action, would effectively mitigate hazardous materials-related effects.
Visual Resources					
Alteration of visual resources	No immediate impacts would occur; planned development would result in the ultimate appearance of urban use.	Impacts on views from residential and rural uses would include construction impacts, new traffic interchanges, and visibility of the new facility. Impacts would not change the low-to-moderate visual quality of views along the W101/E1 and W59/E1 Alternatives. The W71/E1 Alternative would have a higher level of visual sensitivity because of more planned residential development than the other action alternatives; this would create a slightly greater magnitude of impacts. Visual impacts from severe road cuts through ridgelines of the South Mountains would alter views of the natural setting.			All action alternatives would introduce a substantial human-made feature into the environment. The W71/E1 Alternative would create a slightly greater magnitude of impacts, followed by the W59/E1 and W101/E1 Alternatives. Measures to minimize the effects of altering the views include using slope treatments, rock sculpting, native vegetation landscaping and buffering, and native vegetation transplanting to blend the appearance of the freeway and slope cuts with the surrounding natural environment, as feasible.
Energy					
Regional energy consumption in 2035 (millions of gallons/year)	2,874	2,848	2,853	2,850	Fuel consumption would vary because of differences in vehicle miles traveled, vehicle mix, and fuel economies. The action alternatives would provide benefits compared with the No-Action Alternative.

(continued on next page)

Table 2 Environmental Factors Accounted for in the Decision (continued)

Type of Impact	No-Action Alternative	Action Alternatives			
		W59 Alternative + E1 Alternative (Selected Alternative)	W71 Alternative + E1 Alternative	W101 Alternative and Options + E1 Alternative	Context and Intensity of Impacts for all Action Alternatives
Temporary Construction					
Temporary construction impacts	No impacts would occur.	Temporary negative effects on air quality, noise levels, water resources, residential and business access, pedestrian and vehicular traffic, and utilities would be comparable among action alternatives. Measures to minimize temporary construction impacts will be implemented. For example, to reduce the amount of construction dust generated, particulate control measures related to construction activities will be followed. To reduce noise impacts, equipment will be regularly maintained, construction-related noise generators will be shielded from noise receivers, and hours of operation will be evaluated to minimize disruptions.			
Material Sources and Waste Materials					
Estimated deficit (amount of fill material needed, in millions of cubic yards)	No materials would be required.	10.00	6.45	7.20-10.20	The W71/E1 Alternative would have the smallest deficit, while the W101/E1 Alternative Eastern Option would have the largest deficit. These amounts are not considered excessive for a project of this size.
Secondary and Cumulative					
Secondary impacts	Growth in traffic, population, and related effects would occur with or without the proposed action, resulting in increased congestion. The action alternatives would also result in secondary impacts on biological resources, water resources, air quality, cultural resources, land uses, community character, and economic conditions.				
Cumulative impacts	All alternatives would occur in an already urbanizing area (most noticeably in the Western Section of the Study Area), an area planned for urban growth as established in local jurisdictions' land use planning activities for as many as the last 25 years. The purpose of the proposed action is not to promote economic development but to respond to a growing need for additional transportation capacity as a result of regional growth occurring now and as projected. Therefore, the action alternatives are not expected to contribute to induced growth in the region. For the action alternatives, the minimal contribution to overall traffic use is expected to have both positive and negative consequences. Cumulative impacts may occur on biological resources, water resources, cultural resources, land uses, visual resources, recreational land, noise, and air quality.				
Section 4(f) Resources					
Section 4(f) resources affected	No use of Section 4(f) resources would occur.	All action alternatives would result in the direct use of Section 4(f) resources in the South Mountains. There is no feasible and prudent alternative that avoids			

^a W101/E1 Alternative includes ranges because of design and alignment options. ^b Title VI of the Civil Rights Act of 1964 ^c carbon monoxide ^d PM₁₀ – coarse particulate matter, PM_{2.5} – fine particulate matter ^e mobile source air toxics ^f National Register of Historic Places ^g traditional cultural properties

Overall Transportation Needs

- The W59 Alternative will better link the southern areas of the region with the central metropolitan area and will provide an alternative route to I-10 for regional connectivity.
- The W59 Alternative will be more consistent with local and regional transportation plans, including the RTP.
- Northbound and southbound motorists using the W101 Alternative would have a direct connection to SR 101L (Agua Fria Freeway) and would not have to travel on I-10 (Papago Freeway). This

would complete a true loop around the Phoenix metropolitan area.

- The W101 Alternative would need additional widening improvements to SR 101L (Agua Fria Freeway).
- The W59 Alternative will need additional widening improvements to I-10 (Papago Freeway).

Consistency with Regional and Long-range Planning Goals

- The W59 Alternative will result in less land being converted to freeway use, thereby optimizing opportunities for planned development.

- Since the mid-1980s, City of Phoenix land use planning has progressed in recognition of the planned location of the proposed freeway near the W59 Alternative. Related land use planning for the Phoenix Villages of Estrella and Laveen has been consistent with the City's long-range land use planning.
- The location of the Salt River crossing of the W59 Alternative will be consistent with the Rio Salado Oeste joint use project planned by the City of Phoenix, U.S. Army Corps of Engineers (USACE), and the Flood Control District of Maricopa County (FCDMC).

- ▶ The W59 Alternative will avoid impacts on the planned expansion of the City of Tolleson wastewater treatment facility.

Environmental and Societal Impacts

- ▶ The W59 Alternative will result in fewer residential displacements.
- ▶ The W59 Alternative will have a nominal effect on the local tax base in Phoenix. It will result in less impact on the local tax bases in Tolleson and Avondale.
- ▶ Conversely, the W101 Alternative would have a severe impact on the City of Tolleson's tax base and would lead to a reduction in City-provided services.
- ▶ R/W for the W101 Alternative would eliminate a substantial portion of the remaining developable land in Tolleson. Tolleson is landlocked by Phoenix and Avondale, with no opportunity for future expansion of its city limits.

Operational Differences

- ▶ The W101 Alternative would provide a direct connection to SR 101L (Agua Fria Freeway), thus completing the loop system without any overlap on I-10.
- ▶ The W59 Alternative will provide more direct access to downtown Phoenix.
- ▶ The W101 Alternative would provide better access to destinations west and north of downtown Phoenix.
- ▶ The W59 Alternative will optimize the long-term system of freeways planned in the southwestern portion of metropolitan Phoenix. However, these benefits will not be realized until the planned SR 30 and SR 303L, south of I-10, are completed (see Figure 2).
- ▶ The W59 Alternative will avoid the skewed arterial street interchange configurations that would be needed for the W101 Alternative to connect with the planned SR 30 and several arterial streets.

Estimated Costs

- ▶ The total cost of the W59 Alternative will be \$490 million to \$640 million less than the W101 Alternative.

Regional Support and Public Input

- ▶ Resolutions passed by the City/Town Councils of Avondale, Buckeye, Gila Bend, Goodyear, Litchfield Park, Phoenix, and Tolleson supported an alternative near 55th Avenue (now closely represented by the W59 Alternative) and opposed the W101 Alternative.
- ▶ Public input was split in support of either the W55 (now closely represented by the W59 Alternative) or W101 Alternative. The South Mountain Citizens Advisory Team supported the W101 Alternative, but expressed concern about its impacts on communities surrounding the proposed freeway.

Based on the evaluation of information presented above and in the FEIS, the project's purpose and need, input from the public, and interagency and tribal coordination, FHWA has decided to identify the W59/E1 Alternative as the Selected Alternative. The Selected Alternative will meet the project needs as well as or better than the other alternatives. The Section 4(f) evaluation demonstrated that no feasible and prudent avoidance alternatives to use of the South Mountains' Section 4(f) resources are available. Direct use of the resource is the same regardless of the combination of action alternatives in the Western and Eastern Sections (representing a range of reasonable alternatives). Relative to other action alternatives considered, the Selected Alternative will have similar environmental effects on natural resources, cultural resources, hazardous materials, and noise; will displace fewer residences; will have the lowest impact on total tax revenues of local governments; will have lower construction costs; will cause less construction disruption overall to I-10 (Papago Freeway); will include measures to reduce impacts and minimize harm; represents all possible planning to minimize harm to resources afforded protection under Section 4(f); is favored by the

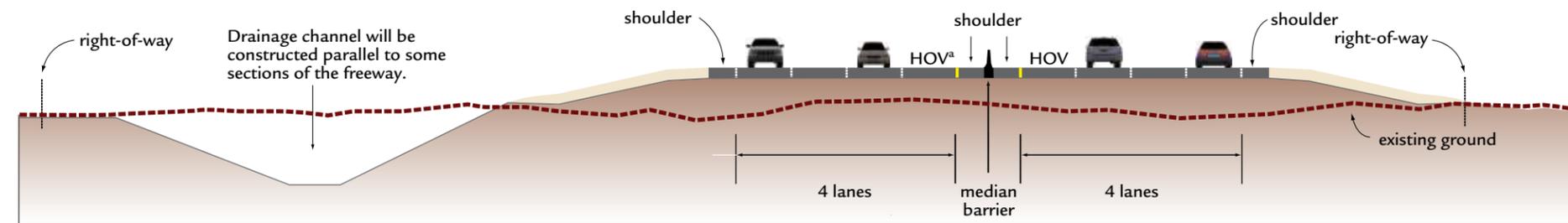
majority of local governments; and will allow regulatory permitting requirements to be met.

Selected Alternative (Preferred Alternative)

The Selected Alternative is the Preferred Alternative evaluated in the FEIS, which is a combination of the W59 and E1 Alternatives. The 22-mile-long freeway will be constructed as an eight-lane divided, access-controlled facility, with four travel lanes in each direction (see Figure 14). Three lanes will be for general purpose use and one lane will be dedicated to HOV, including transit, use. Applicable elements of TSM and TDM will be incorporated into the design and operation of the Selected Alternative.

The Selected Alternative will connect to I-10 (Papago Freeway) with a system traffic interchange that will replace the existing service traffic interchange at 59th Avenue and will convert the existing 59th Avenue to two-lane northbound and southbound frontage roads approximately between Van Buren Street and the Roosevelt Irrigation District canal. From I-10 (Papago Freeway), the Selected Alternative will proceed south along the eastern side of 59th Avenue (see Figure 15), crossing Roosevelt and Van Buren streets, then shift to the western side, crossing the UPRR tracks and Buckeye Road before making a slight western shift approximately 1/3 mile north of Lower Buckeye Road. The Selected Alternative will then travel south, crossing Lower Buckeye Road, Broadway Road, the Salt River, and Southern Avenue before making a slight shift to the east. The Selected Alternative will continue south, approximately 1/4 mile west of 59th Avenue, and will cross Baseline and Dobbins roads. It will continue south (see Figure 16) and then make a curve transition from the southern to the southeastern direction to cross Elliot Road and then travel to the southeast parallel and adjacent to the Community boundary, crossing over Estrella Drive, 51st Avenue, and Ivanhoe Street. In this direction, the Selected Alternative will pass through three ridges of the South Mountains (two of which are in SMPP) before turning to the east. Traveling to the

Figure 14 Typical Eight-lane Freeway Section with Potential Drainage Basin



^a high-occupancy vehicle

Note: The drainage channel will be located north or east of the freeway.

east, the Selected Alternative will follow and replace the Pecos Road alignment north of and adjacent to the Community boundary and will cross over 17th Avenue, Desert Foothills Parkway, 24th Street, 32nd Street, and 40th Street. The Selected Alternative will then connect to the existing I-10 (Maricopa Freeway)/SR 202L (Santan Freeway)/Pecos Road system traffic interchange.

Beginning at a new system traffic interchange with I-10 (Papago Freeway) at 59th Avenue, the Selected Alternative will start as an elevated facility. The alternative's vertical alignment will be a rolling profile, passing over all arterial streets, railroad tracks, canals, and the Salt River. Between these features, the Selected Alternative will descend toward the existing grade. All arterial streets will remain at their existing elevations, with minor variations. South of the Salt River, the profile will pass over Southern Avenue, Baseline Road, the Laveen Area Conveyance Channel, Dobbins Road, and Elliot Road. In the mountainous region, the profile will remain adequately elevated to facilitate wildlife passage through proposed multiuse crossings (see the section, *Biological Resources*, beginning on page 4-125 of the FEIS, for more details) and to avoid interrupting the natural drainage. All arterial streets will remain at their existing elevations, with minor variations. Three cut sections will be required where mountain ridges exist (one ridge is outside SMPP). Between 17th Avenue and 24th Street near Ahwatukee Foothills Village, other cut sections will also be required. The Selected Alternative will end near 46th Street.

The system traffic interchange connecting the Selected Alternative to I-10 (Papago Freeway) will include four freeway-to-freeway ramps and a direct HOV ramp to and from downtown Phoenix. These ramps are described below:

- ▶ For northbound traffic on the Selected Alternative, four general purpose lanes and an HOV lane will be provided approaching the system traffic interchange. The lanes will diverge, with two general purpose lanes forming the northbound-to-eastbound interchange ramp and two general purpose lanes forming the northbound-to-westbound interchange ramp. The HOV lane will travel northbound-to-eastbound and connect to the HOV lane along I-10.
- ▶ For general purpose lane traffic heading south on the Selected Alternative from I-10, an eastbound-to-southbound ramp and a westbound-to-southbound ramp will be provided. For eastbound-to-southbound traffic, two I-10 eastbound lanes will diverge, forming a ramp, and for westbound-to-southbound traffic, two I-10 westbound lanes will diverge to form another ramp. For HOV traffic, the westbound HOV lane will diverge, forming a ramp that connects to the southbound HOV lane on the Selected Alternative.
- ▶ All freeway-to-freeway general purpose lane ramps will have two lanes with shoulders.

- ▶ Access to and from existing service traffic interchanges on I-10 between 67th Avenue and 51st Avenue will be altered.
- ▶ I-10 between 75th Avenue and 43rd Avenue will be widened to accommodate additional traffic from the connection to the proposed freeway.

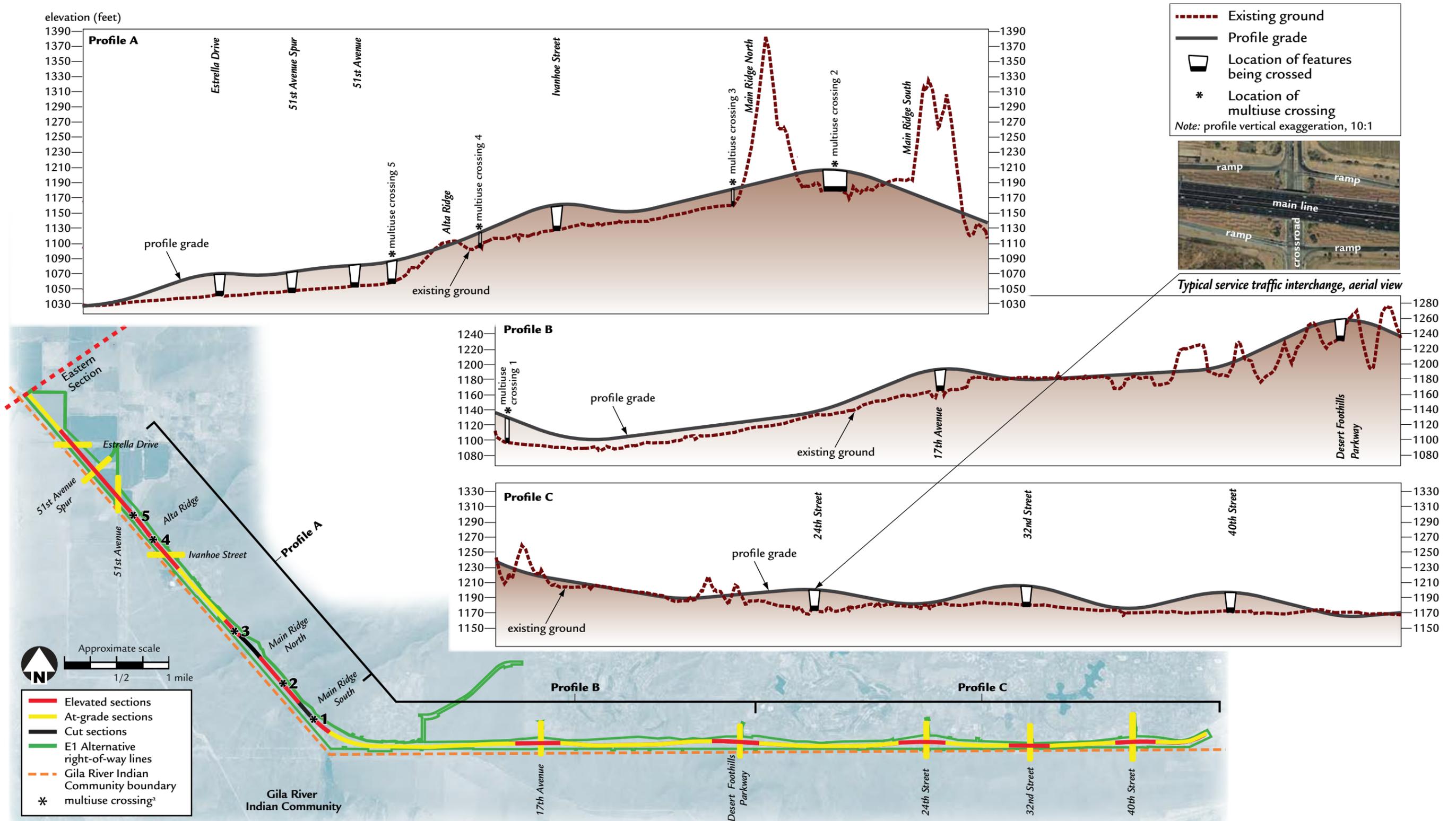
The Selected Alternative will connect to the existing I-10 (Maricopa Freeway)/SR 202L (Santan Freeway)/Pecos Road system traffic interchange by replacing the Pecos Road connection. The system traffic interchange was constructed between 2000 and 2002 to accommodate the western leg of SR 202L (the Selected Alternative). ADOT recently completed construction of a direct HOV connection between I-10 (to and from the north) and SR 202L (Santan Freeway) (to and from the east) along with HOV lanes along the SR 202L (Santan Freeway) corridor. The HOV lanes for the Selected Alternative will be extended to connect to the HOV lanes along SR 202L (Santan Freeway).

As a result of traffic analyses coordinated among the RTP-planned projects associated with the system traffic interchange, the northbound-to-westbound and eastbound-to-southbound ramps will be widened from one to two lanes in each direction to accommodate projected 2035 traffic. The Selected Alternative includes provisions for the proposed ramp widening, which will be constructed as a part of a future project.

The Selected Alternative will include the construction and operation of service traffic interchanges to provide access between the arterial streets and the new freeway. Figure 13 illustrates the locations and access proposed for the service traffic interchanges. Additional information in support of the concepts shown in Figure 13 includes:

- ▶ Service traffic interchanges were generally spaced at 1-mile intervals along the arterial street grid. The spacing is consistent with other freeway facilities in the MAG region. Some locations were not conducive to the 1-mile spacing because of geographic features, operational characteristics, or design limitations

Figure 16 E1 Alternative (Selected Alternative), Horizontal and Vertical Alignments



^a Multiuse crossing 4 is aligned with the Maricopa County Regional Trail/Sun Circle Trail/National Trail (see Figure 5-5 on page 5-8 of the Final Environmental Impact Statement). Multiuse crossings 1, 2, 3, and 5 will provide access by Gila River Indian Community members to the South Mountains and facilitate wildlife movement (see the commitments and mitigation measures for biological resources and Section 4(f) resources in Table 3, beginning on page 38, for more information).

(e.g., the arterial street crossing location did not conform to the 1-mile grid).

- ▶ Members of the public and local jurisdictions influenced the locations, configuration concepts, and access of some of the service traffic interchanges.
- ▶ Environmental, operational, and/or design considerations will determine the level of access to be provided at each service traffic interchange. Most service traffic interchanges will provide full access (ramps in all four directions). Half-diamond (half-access) interchanges will be used near system traffic interchanges to avoid undesirable operational conflicts.
- ▶ The diamond interchange configuration was used to evaluate service traffic interchange needs. The configuration has been commonly used for other freeway facilities in the MAG region. The actual configuration(s) of the service traffic interchanges will be determined during final design of the Selected Alternative. Designers will assess whether other configurations will be more cost-effective, have smaller R/W needs, and/or have less impact while providing adequate or better operational benefits than the diamond configuration. On- and off-ramps at the service traffic interchanges will include one lane with left and right shoulders. Additional lanes as warranted by traffic projections will be provided to accommodate turning movements at the crossroad.
- ▶ Access control will be maintained along the arterial street to ensure desirable traffic performance

The Selected Alternative will introduce a large system traffic interchange to a segment of I-10 (Papago Freeway) that now has a series of service traffic interchanges at 1-mile intervals. The size of the system traffic interchange will affect access to and from I-10 from neighboring service traffic interchanges. As a result, modifications to local access will adversely affect nearby businesses, emergency response times, bus routes, arterial street operational characteristics, and freeway conditions. Conversely, local access by way of service

traffic interchanges located too close to a system traffic interchange will adversely affect the operational and safety characteristics of the freeway main lines. Because of these potential impacts, various concepts using half-diamond interchanges connected to adjacent half- or full-diamond interchanges with access roads were developed to examine the balance between local access and main line operation.

Figure 17 illustrates the local access concepts determined for the Selected Alternative, but the effects of different combinations of ramp configurations (e.g., braided ramps), ramp lengths, access roads (parallel to I-10), and modifications to the service traffic interchange ramps were examined.

The Selected Alternative will affect several segments of the existing local street network. Alteration of the local street network (principally immediately adjacent to the Selected Alternative) will be subject to modification during final design. Examples of how the local street network could be reconfigured are shown in Figures 18 and 19.

Various approaches could be used in the reconfiguration of the local street network. Examples of these approaches are:

- ▶ **Removed street** – As shown in Detail A of Figure 18, Latham Street will be removed. No additional reconfiguration will be needed.
- ▶ **Newly constructed street** – As shown in Detail B of Figure 18, 62nd Avenue will be removed from its existing location and reconstructed farther west. 62nd Avenue will continue to connect Encinas Lane, Wood Street, and Pueblo Avenue.
- ▶ **Existing street remaining below freeway** – As shown in Detail A of Figure 18, Roosevelt Street will remain in its existing location and bridges will be constructed over it.
- ▶ **Newly constructed street** – As shown in Detail C of Figure 19, construction of Chandler Boulevard between approximately 27th and 19th avenues will be completed as a part of this project.

The design criteria used to develop the action alternatives meet standards and guidelines used by ADOT, FHWA, and the American Association of State and Highway Transportation Officials (AASHTO) as set forth in:

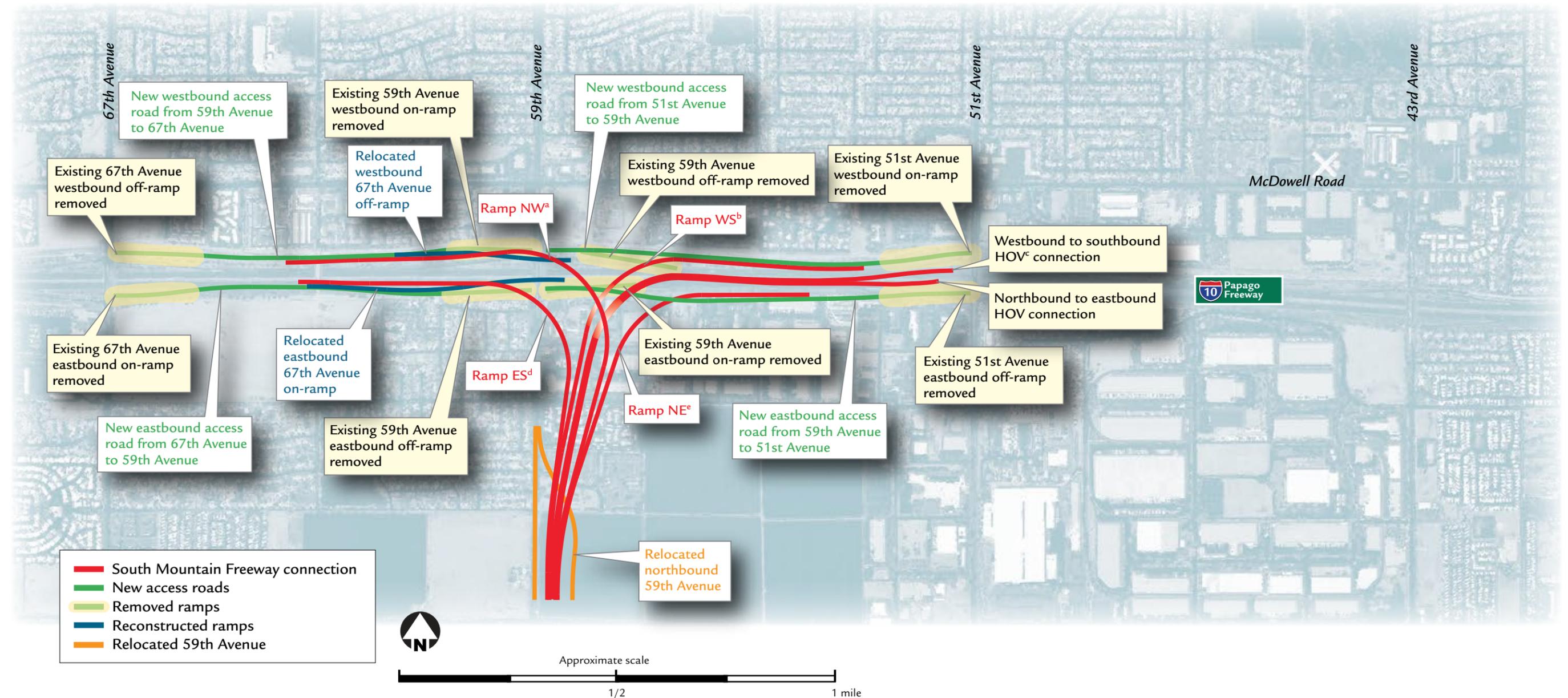
- ▶ *Roadway Design Guidelines* (ADOT 2012a)
- ▶ *Interim Auxiliary Lane Design Guidelines* (ADOT 1996)
- ▶ *A Policy on Geometric Design of Highways and Streets* (AASHTO 2011a)
- ▶ *A Policy on Design Standards – Interstate System* (AASHTO 2005)
- ▶ *Roadside Design Guide* (AASHTO 2011b)

The Selected Alternative will be readily accessible to and usable by individuals with disabilities and will comply with the applicable provisions set forth in the Americans with Disabilities Act. For example, the reconstruction and construction of new curb ramps and sidewalks at proposed service traffic interchanges will satisfy the relevant requirements.

Figure 14 depicts the typical freeway section for the Selected Alternative. The freeway main line will have three 12-foot-wide general purpose lanes and one HOV lane in each direction, separated by a median barrier with left shoulders.

An auxiliary lane is a lane located to the outside of freeway through-lanes. Located between successive on- and off-ramps associated with service traffic interchanges, auxiliary lanes are used by vehicles entering and exiting the freeway main line. Common to Regional Freeway and Highway System segments, auxiliary lanes reduce the degree of conflict between traffic merging onto and exiting a freeway and minimize disruption to on- and off-ramps. By reducing conflict, auxiliary lanes typically improve overall traffic performance. Auxiliary lanes will be 12 feet wide and maintain a full right shoulder, similar to the freeway main line. Auxiliary lanes will be used where warranted in accordance with ADOT's *Interim Auxiliary Lane*

Figure 17 Local Access Modifications, Service Traffic Interchanges, W59 Alternative (Selected Alternative), Western Section



^a northbound to westbound ^b westbound to southbound ^c high-occupancy vehicle ^d eastbound to southbound ^e northbound to eastbound

Design Guidelines (1996). Impacts associated with auxiliary lanes were accounted for in the analysis.

Signs, lighting, traffic signals, and pavement marking will be designed to meet current guidelines and standards referenced under the section, *Design Criteria*, on page 3-54 of the FEIS, as well as in the *Manual on*

Uniform Traffic Control Devices for Streets and Highways (FHWA 2009a). Any freeway lighting installed will be designed to reduce illumination spillover onto sensitive light receptors (such as residential and natural areas). Lighting needs will also include underdeck lighting on bridges where appropriate. The use of municipal or ADOT standard traffic control devices and illumination

at arterial streets will be determined during the design phase.

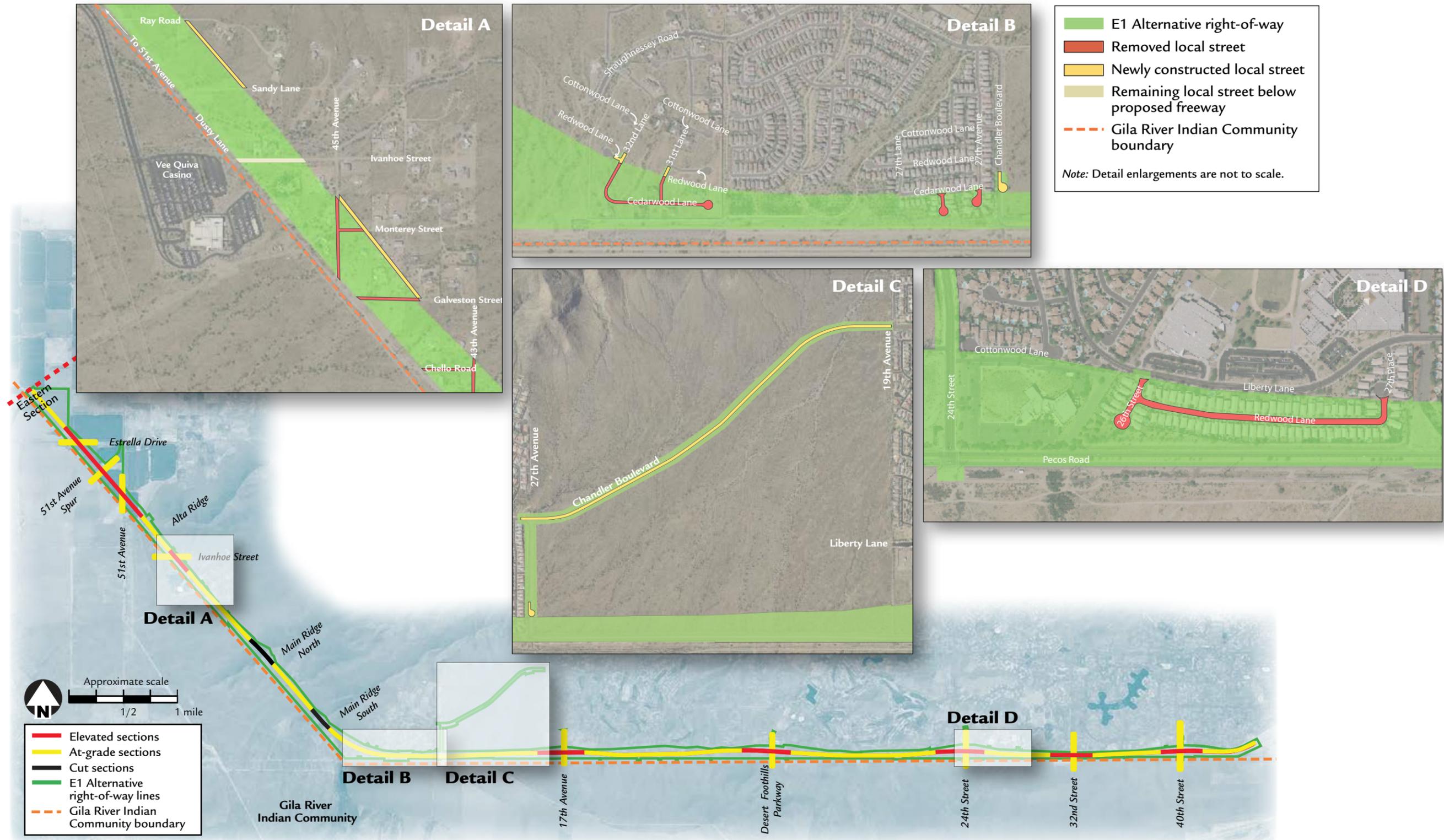
Guidance for the design of drainage structures includes:

- *Roadway Design Guidelines* (ADOT 2012a)
- *Standard Specifications for Road and Bridge Construction* (ADOT 2008)

Figure 18 Local Street Realignments, W59 Alternative (Selected Alternative), Western Section



Figure 19 Local Street Realignments, E1 Alternative (Selected Alternative), Eastern Section



- ▶ *Drainage Design Manual for Maricopa County, Arizona: Hydrology* (FCDMC 2009)
- ▶ *Drainage Design Manual for Maricopa County, Arizona: Hydraulics* (FCDMC 2003)
- ▶ *Guidelines for Culvert Construction to Accommodate Fish & Wildlife Movement and Passage* (Arizona Game and Fish Department [AGFD] 2006)
- ▶ *Guidelines for Bridge Construction or Maintenance to Accommodate Fish & Wildlife Movement and Passage* (AGFD 2008)
- ▶ *Recommended Standard Mitigation Measures for Projects in Sonoran Desert Tortoise Habitat* (Arizona Interagency Desert Tortoise Team 2008)
- ▶ municipal standards as appropriate

Coordination between ADOT and such agencies as applicable—including the City of Phoenix, FCDMC, the Bureau of Reclamation, the Bureau of Land Management (BLM), the Natural Resources Conservation Service, the Community, and local irrigation districts—regarding drainage canal crossings within the Study Area will continue during the design phase and construction. Arterial cross streets will be designed according to the standards of the relevant jurisdictions, in coordination with their staff, during the design phase.

Where appropriate, the defined R/W includes a drainage channel (see Figure 14) and drainage basins. Final configuration of drainage features will be determined during the design phase. The size and location of drainage facilities could change based on additional design efforts, adjacent development plans, changes in rainfall or drainage patterns, and consideration of wildlife connectivity in key locations.

According to ADOT policy, new freeways constructed in the MAG region will be overlaid with rubberized asphalt. See the section, *Noise*, beginning on page 4-88 of the FEIS, for more information regarding the use of rubberized asphalt.

Effects of the Selected Alternative Compared with the Others

The difference in impacts among the action alternatives is based on impacts in the Western Section of the Study Area because the same E1 Alternative is paired with each alternative in the Western Section. For this reason, all action alternatives will result in the direct use of Section 4(f) resources in the South Mountains.

As noted in the FEIS, many impacts from the action alternatives in the Western Section will be similar in type and magnitude. For example, impacts on air quality, waters of the United States, topography, geology, soils, energy, and utilities, along with temporary construction impacts and secondary and cumulative impacts, will be relatively the same among the three action alternatives in the Western Section. For other elements of the social, environmental, and economic analyses, impacts will vary measurably depending on the action alternative. Table 2 reveals the differences among the action alternatives in the following areas: conversion of land uses, social conditions such as consistency with local and regional plans, effects on environmental justice populations, effects on Title VI of the Civil Rights Act of 1964 (Title VI) populations, residential and business displacements, economic resources such as loss of tax revenues, noise impacts and costs of their mitigation, effects on wells and floodplains, effects on biological and cultural resources, conversion of prime and unique farmland, disturbance of hazardous material sites, alteration of visual resources, energy consumption, and estimated amount of fill material needed.

Since completion of the FEIS, the U.S. Fish and Wildlife Service (USFWS) removed the Tucson shovel-nosed snake from the Endangered Species Act (ESA) candidate list; therefore, there is no intent to list the snake as threatened or endangered. As a result, mitigation measures that required preconstruction surveys for the snake are not included in the ROD. It is important to note, however, that FHWA and ADOT continue to commit to coordinate with USFWS, AGFD, and the Community's Department of Environmental

Quality during the design phase regarding wildlife connectivity concerns and whether any additional species-specific mitigation measures will be required.

In addition to the removal of the Tucson shovel-nosed snake from the candidate list, the yellow-billed cuckoo, which at the time of the release of the FEIS was listed as “proposed threatened,” is now listed as threatened with proposed critical habitat. Although proposed critical habitat for the cuckoo occurs within the FEIS Study Area, the proposed critical habitat does not occur within the action alternative corridors. The W101 Alternative, the farthest west of any of the action alternatives, is adjacent to the proposed critical habitat within the Salt River floodplain. The Selected Alternative is over 2 miles from the proposed critical habitat; therefore, the determinations in the FEIS and the Biological Evaluation prepared for the project are still appropriate. FHWA determined that the Preferred Alternative (now the Selected Alternative) will have no effect on the yellow-billed cuckoo or its habitat because there are no documented occurrences of the species within 2.5 miles of the project area, no suitable habitat occurs for the species in or adjacent to the project area, and only marginally suitable habitat occurs adjacent to the project area. USFWS reviewed the Biological Evaluation and provided technical assistance for minimizing impacts to the Tucson shovel-nosed snake and Sonoran desert tortoise. USFWS elected not to comment on the “no effect” findings in the Biological Evaluation.

Based on the evaluation of information presented above and in the FEIS, the project's purpose and need, input from the public, and interagency and tribal coordination, FHWA has decided to identify the W59/E1 Alternative as the Selected Alternative. The Selected Alternative will meet the project needs as well as or better than the other alternatives. The Section 4(f) evaluation demonstrated that no feasible and prudent avoidance alternatives to use of the South Mountains' Section 4(f) resources are available. Direct use of the resource is the same regardless of the combination of action alternatives in the Western and Eastern Sections (representing a

range of reasonable alternatives). Relative to other action alternatives considered, the Selected Alternative will have similar environmental effects on natural resources, cultural resources, hazardous materials, and noise; will displace fewer residences; will have the lowest impact on total tax revenues of local governments; will have lower construction costs; will cause less construction disruption overall to I-10 (Papago Freeway); will include measures to reduce impacts and minimize harm; represents all possible planning to minimize harm to resources afforded protection under Section 4(f); is favored by the majority of local governments; and will allow regulatory permitting requirements to be met.

Feasibility of Obtaining Required Permits

FHWA and ADOT have worked with resource agencies and Tribes to reduce the effects of the Selected Alternative and to define appropriate mitigation and measures to minimize harm. Determinations and approvals are discussed further below in this ROD. FHWA and ADOT can demonstrate that the Selected Alternative would meet the applicable regulatory requirements related to alternative selection, such as the requirement under Section 404(b)(1) of the CWA to select the least environmentally damaging practicable alternative.

4. MEASURES TO MINIMIZE HARM

FHWA and ADOT have included measures to avoid and/or minimize harm in the Selected Alternative. The lead agencies' approach to avoid and minimize effects of the South Mountain Freeway includes the following components:

- ▶ Identifying and advancing reasonable project alternatives for consideration that will result in the least overall environmental effects, as discussed above.
- ▶ Considering all feasible and prudent alternatives to the use of properties protected under Section 4(f).
- ▶ Conducting a comprehensive public involvement program.

- ▶ Developing commitments and mitigation measures designed to avoid, minimize, or mitigate impacts to the extent possible and to reflect discussions with the public and agencies throughout the EIS process.

23 C.F.R. Part 771 established minimum requirements for public input during the EIS process. Since the start of the EIS process for the freeway in 2001, ADOT, with the concurrence of FHWA, has exceeded the minimum public involvement requirements of NEPA. The efforts by ADOT and FHWA to engage the public, agencies, and other stakeholders represented open, frequent, diverse, and comprehensive opportunities for those providing information, those seeking information, or those wishing to otherwise influence the analytical and alternatives screening processes.

ADOT and FHWA developed an extensive agency and public involvement plan, soliciting input into the process throughout all phases. Purposes of seeking public input were to:

- ▶ identify new data pertinent to the freeway to assist in determining the full scope of the study
- ▶ gauge the general public's understanding of the freeway and disseminate information to help further that understanding
- ▶ identify any preferences for alternatives
- ▶ identify and address, to the extent practicable, public questions and concerns regarding the freeway

To accomplish these goals, a variety of communication tools were used at major project milestones, including:

- ▶ A 2-day agency scoping meeting was held with 95 agency representatives at the beginning of the EIS process.
- ▶ Communication with local, regional, State, and federal agencies continued throughout the process with monthly coordination meetings.

The following items highlight the results of public outreach efforts undertaken leading up to publication of the DEIS in April 2013:

- ▶ Over 200 presentations were made to community groups, homeowners' associations, chambers of commerce, village planning committees, trade associations, and other interested parties.
- ▶ Twelve formal public meetings were held. Fifteen days prior to each meeting, display advertising was placed in *The Arizona Republic*, the *Abwatukee Foothills News*, the *Gila River Indian News*, the *East Valley Tribune*, *La Voz*, and the *West Valley View*. Total distribution was approximately 260,000 newspapers per formal meeting.
- ▶ One meeting notice flier and four newsletters were distributed throughout the Study Area in the following quantities (per distribution per meeting): 28,500 door hangers, 5,000 inserts in the *Gila River Indian News*, and 28,000 inserts in the *Abwatukee Foothills News*. In addition, newsletters and fliers were sent to over 4,500 individuals on the project mailing list.
- ▶ The November 2008 project newsletter was mailed to 78,700 businesses and residences in the Study Area and to 3,300 individuals on the project mailing list.
- ▶ The February 2010 project newsletter was mailed to 62,400 businesses and residences in the Study Area and to 3,600 individuals on the project mailing list.
- ▶ The February 2011 informational postcard was mailed to 5,000 businesses and residences on the project mailing list.

A project Web site (azdot.gov/southmountainfreeway) was developed to provide the public with project information and an e-mail address (projects@azdot.gov) was provided to obtain feedback. Approximately half of the comments received prior to publication of the DEIS in April 2013 were submitted electronically through the Web site's online survey or by e-mail. Over 5,000 comments were received by the project team up to publication of the DEIS.

Since 2001 and up to publication of the DEIS, more than 800 news articles were published in the region's newspapers.