



Visual Resources Report

In support of the
Environmental Impact Statement

South Mountain Transportation Corridor in Maricopa County, Arizona

Arizona Department of Transportation
Federal Highway Administration
in cooperation with
U.S. Army Corps of Engineers
U.S. Bureau of Indian Affairs
Western Area Power Administration



November 2012

Federal-aid Project Number: NH-202-D(ADY)
ADOT Project Number: 202L MA 054 H5764 01L



Visual Resources Report

In support of the
Environmental Impact Statement

South Mountain Transportation Corridor in Maricopa County, Arizona

Arizona Department of Transportation
Federal Highway Administration
in cooperation with
U.S. Army Corps of Engineers
U.S. Bureau of Indian Affairs
Western Area Power Administration



November 2012

Federal-aid Project Number: NH-202-D(ADY)
ADOT Project Number: 202L MA 054 H5764 01L

Abstract: This document assesses and describes the effects on visual resources that would occur as a result of the construction and operation of the proposed South Mountain Freeway as adopted in the 2003 *Regional Transportation Plan*. Contents of this document will be presented in Chapter 4 of the South Mountain Transportation Corridor Environmental Impact Statement.

Table of Contents

List of Acronyms and Abbreviations	iv
Glossary	v
1. Project Description and Purpose and Need	1-1
Project Description	1-1
Purpose and Need	1-3
2. Affected Environment.....	2-1
Introduction	2-1
Affected Environment.....	2-1
3. Environmental Consequences.....	3-1
Impacts Associated with the No-Action Alternative	3-1
Impacts Associated with Construction of Action Alternatives and Options	3-1
Impacts Associated with Operation of Action Alternatives and Options.....	3-2
Secondary and Cumulative Impacts	3-16
4. Mitigation.....	4-1
ADOT Design Responsibilities	4-1
5. Bibliography/References.....	5-1

List of Appendices

Appendix A	A-1
Visual Assessment Unit Sheets	A-1
Appendix B	B-1
Process of Determining Visual Impacts by VAU and Alternative Determination of Visual Quality Scores	B-1
Appendix C	C-1
Methodology and Assumptions	C-1

List of Tables

Table 1. Action Alternatives and Options	1-3
Table 2. Visual Impacts of the Western Section Action Alternatives and Options	3-4
Table 3. Visual Impacts of the Eastern Section Action Alternatives	3-5

List of Figures

Figure 1. Study Area and Action Alternatives	1-2
Figure 2. Visual Assessment Units – Western Section	2-2
Figure 3. Visual Assessment Units – Eastern Section	2-3
Figure 4. View to West into Community Land	2-5
Figure 5. View from the Northwestern Portion of the Study Area	2-5
Figure 6. View of Study Area Showing Rapid Change in Land Use	2-6
Figure 7. View to South from 99th Avenue and Lower Buckeye Road	2-6
Figure 8. View to South toward Community Land from SMPP	2-7
Figure 9. View from SMPP toward Community Land	2-8
Figure 10. View from National Trail in SMPP toward Community Land	2-8
Figure 11. View from National Trail in SMPP toward Gila River	2-9
Figure 12. View to West from National Trail in SMPP	2-9
Figure 13. View from Ahwatukee Foothills Village to Community Land	2-11
Figure 14. View from Ahwatukee Foothills Village toward Community Land	2-11
Figure 15. Visual Impacts Summary by Visual Assessment Unit and by Alternative – Western Section	3-3
Figure 16. Perspective Representation of Service TI for the Eastern and Western Section Alternatives	3-6
Figure 17. Visual Impacts Summary by Visual Assessment Unit and by Alternative – Eastern Section	3-7
Figure 18. Perspective of Proposed Road Cuts	3-9
Figure 19. Simulated Views of Proposed Cuts through the Major Ridges of the South Mountains	3-10
Figure 20. View from Western End of Pecos Road Alignment	3-11
Figure 21. View near Vee Quiva Casino	3-11
Figure 22. View along the Boundary of Community Land to Southeast	3-12
Figure 23. Perspective Representation of Proposed Freeway from the National Trail, near Western End of Phoenix South Mountain Park/Park, Looking West	3-13
Figure 24. Perspective Representation of Proposed Freeway from Ahwatukee Foothills Village, Looking South	3-15

List of Acronyms and Abbreviations

ADOT	Arizona Department of Transportation
C	Central
Community	Gila River Indian Community
E	Eastern
E1	E1 Alternative
EIS	environmental impact statement
FHWA	Federal Highway Administration
FR	Full Reconstruction
I-10	Interstate 10
MAG	Maricopa Association of Governments
PR	Partial Reconstruction
SMPP	Phoenix South Mountain Park/Preserve
SMTC	South Mountain Transportation Corridor
SR	State Route
TI	traffic interchange
VAU	Visual Assessment Unit
W	Western
W101CFR	W101 Alternative, Central Option, Full Reconstruction
W101CPR	W101 Alternative, Central Option, Partial Reconstruction
W101EFR	W101 Alternative, Eastern Option, Full Reconstruction
W101EPR	W101 Alternative, Eastern Option, Partial Reconstruction
W101WFR	W101 Alternative, Western Option, Full Reconstruction
W101WPR	W101 Alternative, Western Option, Partial Reconstruction
W59	W59 Alternative
W71	W71 Alternative

Glossary

affected environment	Those elements of the Study Area that may be changed by the proposed alternatives. These changes might be positive or negative in nature.
assessment viewpoint	General location within a Visual Assessment Unit from which the unit was photographed and evaluated.
background	The landscape distance zone that extends beyond 3 miles from the observer; surfaces and landforms will lose detail distinction. Silhouettes and ridges are conspicuous with skyline the strongest line.
capacity	The maximum number of vehicles that a given section of roadway or traffic lane can accommodate.
color	An object's relative reflectiveness (for example, light, dark) and its hue (for example, red, green).
continuity	The uninterrupted flow of pattern elements in a landscape and the maintenance of visual relationships among immediately connected or related landscape components.
cumulative impact	The impact on the environment that results from the incremental impact of the action when added to the other past, present, and reasonably foreseeable future actions regardless of what agency (federal or nonfederal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time. (40 Code of Federal Regulations § 1508.7)
direct impact	A change that is caused by the action and occurs at the same time and same place as the action.
distance zones	Terms, generally <i>foreground</i> , <i>middleground</i> , and <i>background</i> , used to describe the distance relationship of the landscape to the viewer.
distinctiveness/ vividness	A criterion for measuring visual quality. <i>Distinctiveness</i> is defined by the memorability of the visual impression received from the contrasting landscape elements as they combine to form a striking and distinctive visual pattern. <i>Vividness</i> is assessed according to spatial definition, landmarks, water forms/riparian features, presence of human-made features, topographic relief, skyline character, vegetation, and adjacent landforms and features.
diversity	The number, variety, and intermixing of visual pattern elements.
dominance	The relationship among landscape components such as position, extent, or contrast of basic elements that create a landscape's spatial presence.
Eastern Section	The portion of the Study Area located east of 59th Avenue.
environmental impact statement (EIS)	The project documentation prepared in accordance with the National Environmental Policy Act when the project is anticipated to have a significant impact on the environment.

Federal Highway Administration (FHWA)	A branch of the U.S. Department of Transportation responsible for administering the Federal-aid Program. The program provides financial resources and technical assistance for constructing, preserving, and improving the National Highway System along with other urban and rural roads.
foreground	The landscape distance zone that extends up to 0.25 mile from the observer; details can be perceived.
form	The visual mass, bulk, or shape of an object.
intactness	A criterion for measuring visual quality. The integrity of visual order in the natural and human-made environment and the extent to which the landscape is free from visual encroachment of human-made elements.
line	The edge of an object or a part of an object—the linear transitional demarcation between objects and between colors and textures.
major viewpoint	A location from which the landscape is viewed where the distant view of distinct landforms/landmarks attracts attention away from the foreground area.
middleground	The landscape distance zone that extends for 0.25 to 3 miles from the observer; at these distances, textures are related more to the general land masses than to individual objects; visual distinctions are more than just one of color and major linear demarcations are still discernible.
mitigation	An action taken to reduce or eliminate an adverse impact stemming from construction, operation, or maintenance of a proposed action alternative. Mitigation could reduce the magnitude and extent of an impact from a level of significance to a level of insignificance. Mitigation includes: <i>Avoiding</i> the impact altogether by not taking a certain action or parts of an action. <i>Minimizing</i> impacts by limiting the degree of magnitude of the action and its implementation. <i>Rectifying</i> the impact by repairing, rehabilitating, or restoring the affected environment. <i>Reducing or eliminating</i> the impact over time by preservation and maintenance operations during the life of the action. <i>Compensating</i> for the impact by replacing or providing substitute resources or environments. (40 Code of Federal Regulations § 1508.20)
National Trail	The backbone of the Phoenix South Mountain Park/Preserve trail system, stretching from the Pima Canyon Trailhead in the east to the San Juan Lookout in the west. Nearly every other trail in the park joins the National Trail at some point.
pattern character	The secondary visual attributes of a landscape: dominance, scale, diversity, and continuity.
pattern elements	The primary visual attributes of objects in a landscape: form, line, color, and texture.
scale	The apparent size relationship between a landscape component and its surroundings.
secondary impact	A change caused by the action that is later in time or farther removed in distance, but still reasonably foreseeable. Secondary impacts may include growth-inducing effects and other effects related to induced changes in the pattern of land use, population density or growth rate, and related effects on air, water, and other natural systems, including ecosystems.

Study Area	The geographic area within which action alternative solutions to the problem are developed.
texture	An object's apparent surface coarseness or roughness.
unity	A criterion for measuring visual quality. The degree to which visual resources join together to form a single, coherent, harmonious visual pattern. It refers to compositional harmony—intercompatibility between the landscape elements, or an organized balance. Unity can be measured by two factors: the degree of contrast between human-made elements and their setting in the landscape and the unity of the overall landscape. The rating for the degree of contrast between human-made elements and their setting in the landscape is based on a rating of the visual compatibility, scale contrast, and spatial dominance of the elements.
Visual Assessment Units (VAUs)	Subdivisions of the landscape defined in terms of landform, vegetation, land use, length, and special features in the foreground, middleground, and background. In particular, such units are defined by observable changes in the primary biotic community as marked by vegetation, changes in land use and visual character, and changes in viewpoint (on- or off-corridor), as well as the presence of special features in the landscape.
visual character	The order and composition of the elements of form, line, color, and texture that form the visual landscape.
visual impact	The degree of change in visual resources and viewer response to those changes.
visual quality	The measure of the visual elements of distinctiveness, intactness, and unity as it relates to the formation of a distinct landscape.
visual sensitivity	The relative measure of viewer response to changes in the visual landscape.
Western Section	The portion of the Study Area located west of 59th Avenue.

1. Project Description and Purpose and Need

Project Description

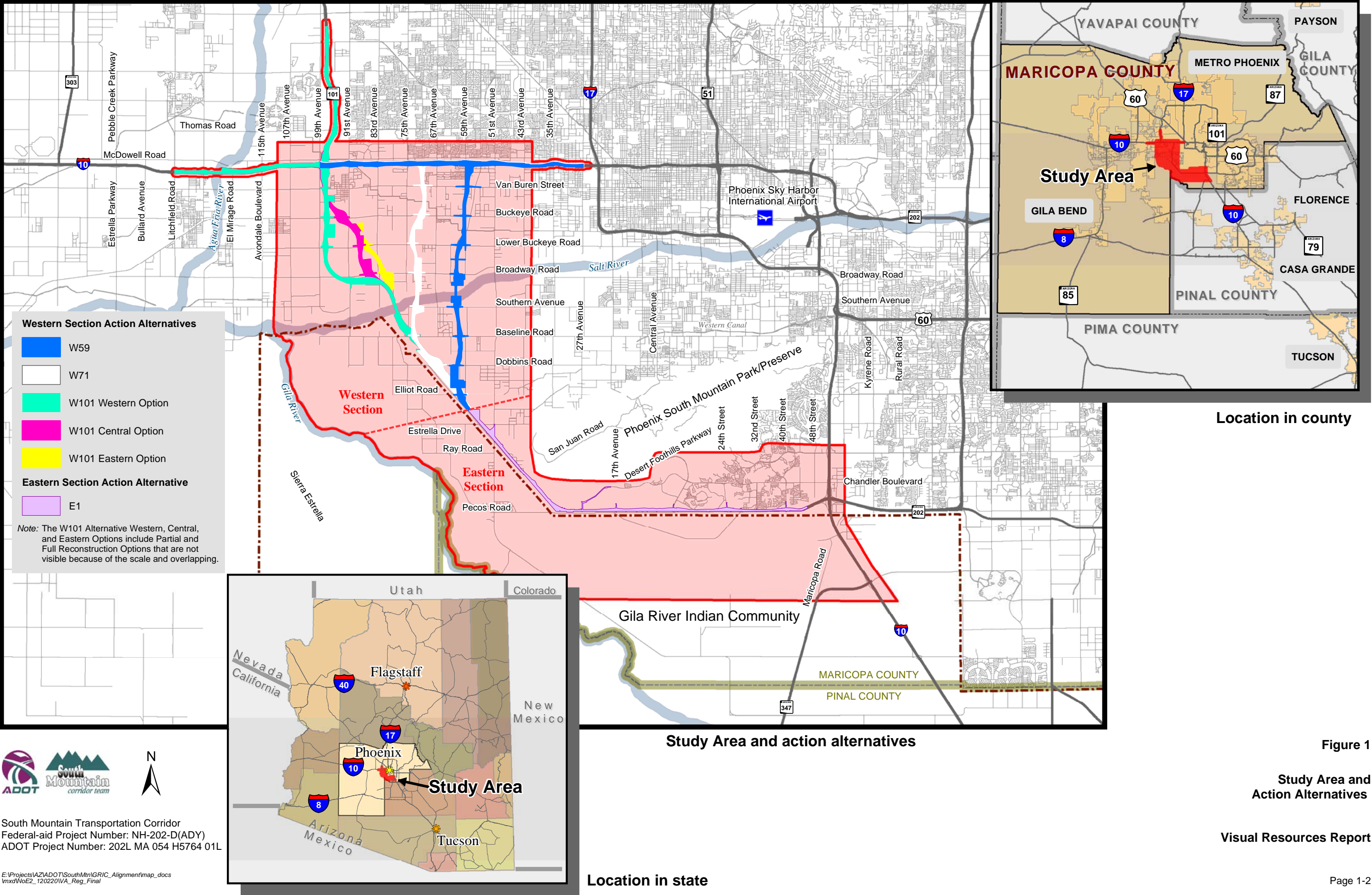
The Arizona Department of Transportation (ADOT) is studying the South Mountain Transportation Corridor (SMTC) in southern Phoenix, Maricopa County, Arizona. The South Mountain Freeway corridor was adopted into the Maricopa Association of Governments (MAG) regional freeway system in 1985 as part of the *MAG Freeway/Expressway Plan* (MAG 1985), at which time it was placed on the state highway system by the State Transportation Board. In 1988, ADOT prepared a design concept report and a state-level environmental assessment for the project, identified at that time as the South Mountain Parkway (ADOT 1988a, 1988b). As presented then, the project would connect Interstate 10 (I-10) (Maricopa Freeway) south of Phoenix with I-10 (Papago Freeway) west of the city, following an east-to-west alignment along Pecos Road through the western tip of the Phoenix South Mountain Park/Preserve (SMPP), then north to I-10 between 59th and 99th avenues. Because of the time elapsed since those documents were approved and to secure eligibility for federal funding for a proposed project within this corridor, ADOT and the Federal Highway Administration (FHWA) are now preparing an environmental impact statement (EIS) in accordance with the National Environmental Policy Act. In November 2004, the MAG *Regional Transportation Plan* (2003) was placed before Maricopa County voters, who approved the sales tax funding the plan. The South Mountain Freeway was included in this plan.

Alternatives considered for the SMTC included past freeway proposals as well as transportation system management, transportation demand management, transit improvements, arterial street network improvements, and land use controls. A freeway facility was determined to best address the project purpose and need. Therefore, this report discusses the potential impacts of a proposed freeway in the SMTC.

The Study Area for the EIS encompasses more than 156 square miles and is divided into a Western Section and an Eastern Section at a location common to all action alternatives (Figure 1). The division between sections occurs just east of 59th Avenue and south of Elliot Road.

Within the Western Section, three action alternatives are being considered for detailed study. These are the W59, W71, and W101 Alternatives. The W59 Alternative would connect to I-10 at 59th Avenue, while the W71 Alternative would connect at 71st Avenue. The W101 Alternative would connect to I-10 at the existing State Route (SR) 101L (Agua Fria Freeway)/I-10 system traffic interchange (TI) and has six associated options. The W101 Alternative options vary geographically among the Western (W), Central (C), and Eastern (E) Options and would vary geometrically based on a Partial Reconstruction (PR) or a Full Reconstruction (FR) of the system TI.

Improvements to I-10 (Papago Freeway) would occur for each Western Section action alternative (W59, W71, and W101). Improvements to SR 101L would occur for each option associated with the W101 Alternative.



Project Description and Purpose and Need

Within the Eastern Section of the Study Area, one action alternative is being considered. The E1 Alternative would begin near Elliot Road and 59th Avenue and proceed to the southeast to Pecos Road, which it would follow to the east until connecting to I-10 (Maricopa Freeway) at the Pecos Road/I-10/SR 202L (Santan Freeway) system TI.

The action alternatives and options are summarized in Table 1.

Table 1. Action Alternatives and Options

Section	Interstate 10 Connection	Action Alternative	Option – Broadway Road to Buckeye Road	Option – State Route 101L/ Interstate 10 Connection Reconstruction	Option Name
Western	59th Avenue	W59	— ^a	—	—
	71st Avenue	W71	—	—	—
	State Route 101L	W101	Western	Partial Reconstruction	W101WPR
				Full Reconstruction	W101WFR
			Central	Partial Reconstruction	W101CPR
				Full Reconstruction	W101CFR
			Eastern	Partial Reconstruction	W101EPR
				Full Reconstruction	W101EFR
Eastern	Pecos Road	E1	—	—	—

^a not applicable

The No-Action Alternative is being considered for the entire Study Area.

Purpose and Need

An analysis of population trends, land use plans, and travel demand shows that a considerable traffic problem in the Phoenix metropolitan area is projected for the future, resulting in the need for a new freeway in the SMTA. This traffic problem is likely to worsen if plans are not made to accommodate the regional travel anticipated. The purpose of a freeway within the SMTA is to support a solution to traffic congestion. Between the early 1950s and the mid-1990s, the metropolitan area grew by over 500 percent, compared with approximately 70 percent for the United States as a whole (MAG 2001). From 1980 to 2005, the Maricopa County population more than doubled, from 1.5 million to 3.7 million. The MAG region has been one of the fastest-growing metropolitan areas in the United States; Phoenix is now the fifth-largest city in the country, and the region ranks as the 12th-largest metropolitan area in the country.

Travel demand and vehicle miles driven in the metropolitan area are expected to increase at a faster rate than the population. MAG projections (conducted in collaboration with the Arizona Department of Economic Security) indicate Maricopa County's population will increase from 3.7 million in 2005 to 6.5 million in 2035 (MAG 2009). It is projected that in the next 25 years, daily vehicle miles traveled will increase from 101 million to 185 million.

Project Description and Purpose and Need

Even with anticipated improvements in light rail service, bus service, trip reduction programs, and existing roads and freeways, vehicle traffic volumes are expected to exceed the capacity of Phoenix metropolitan area streets and highways by as much as 11 percent in 2035. A freeway within the SMTTC would accommodate approximately 6 percentage points of the 11 percent of the unmet travel demand and would be part of an overall traffic solution.

2. Affected Environment

Introduction

The potential impacts of developing a proposed freeway within the SMTC were assessed against the current visual setting. This section describes existing visual conditions (the affected area). The following section, *Environmental Consequences*, describes the effects on scenic quality and cohesiveness that each of the proposed action alternatives would have in the area. Identified mitigation measures would apply to all action alternatives and options and would be used to reduce adverse impacts and enhance the visual quality of the completed project.

Affected Environment

In describing the affected environment, the action alternatives were subdivided into Visual Assessment Units (VAUs) based on landform, land use, length, and special features in the foreground, middleground, and background. In particular, these units were defined by observable changes in the primary biotic community as marked by vegetation, by land use and visual character, and by viewpoint (onto or from the alignment), as well as by the presence of special features in the landscape.

For the proposed action alternatives and options in the Western Section of the Study Area, 32 VAUs were developed along the proposed alignments, generating a specific set of units that could be assessed for each proposed action alternative and option (Figure 2). Twelve additional VAUs were identified along the existing I-10 and SR 101L freeways in the northern portion of the Western Section. The Eastern Section action alternative, or E1 Alternative, was divided into 6 VAUs (Figure 3).

Each VAU number is recorded on Figures 2 and 3. More information about the VAUs is included in Appendices A and B. Appendix C contains a discussion of the visual assessment methodology and assumptions. The proposed action alternatives and options are not anticipated to affect the visual resources of the 12 additional VAUs along I-10 and SR 101L because the existing freeway corridors are well established. Potential impacts at interchange locations are included in the VAUs for each action alternative. Because the change in visual quality for the 12 additional VAUs would be low, inclusion of these units in the assessment calculation would artificially lower the values of the impact assessment and would not provide a meaningful evaluation of the effects of the new corridor for use in comparing alternatives.

Project Setting

Regional

The Study Area lies within the Basin and Range physiographic province, characterized by rocky mountain ranges that alternate with desert basins as the primary landform organization. Landforms such as the South Mountains, the Sierra Estrella, and the Gila River's lowlands are characteristics of the Basin and Range province.

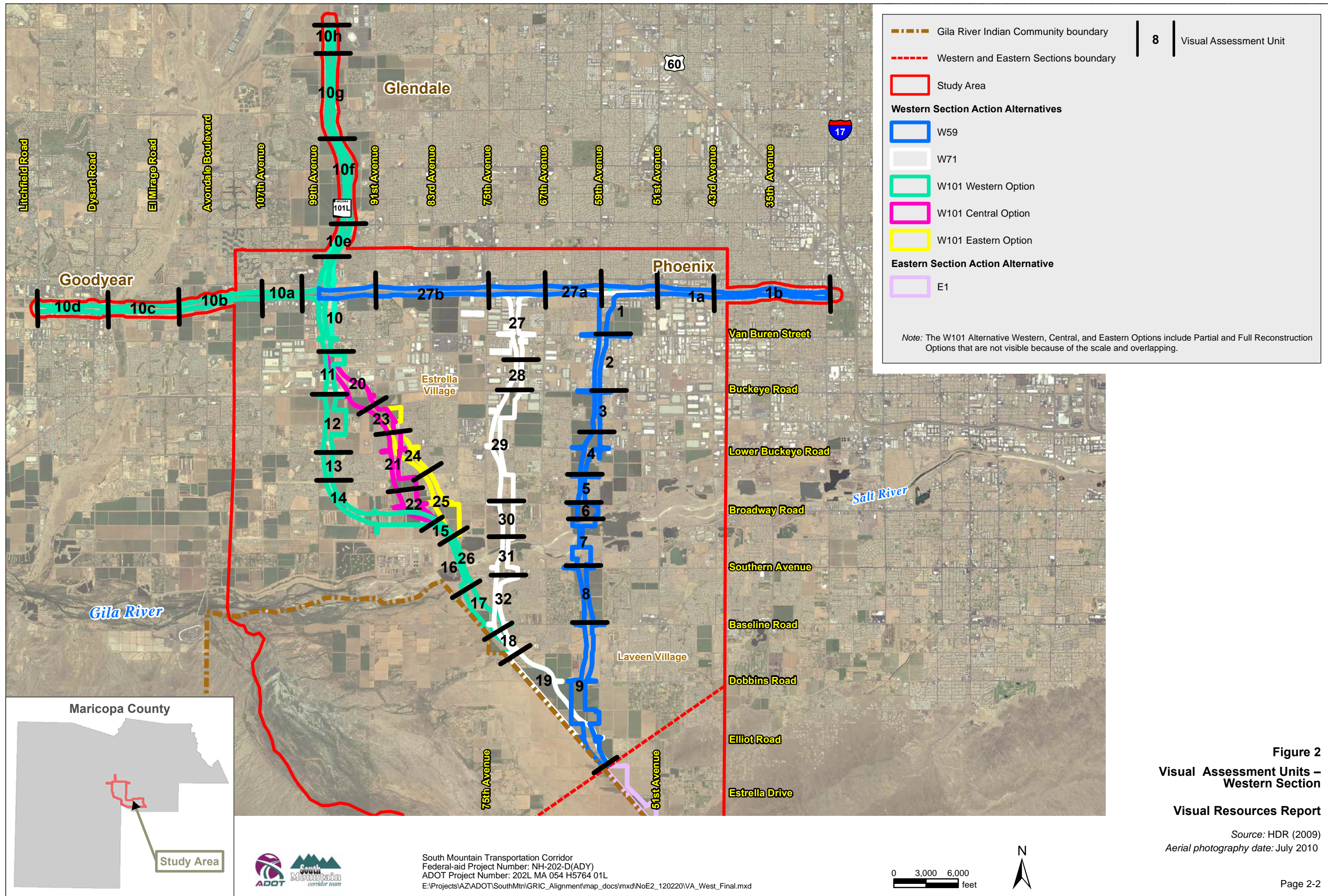


Figure 2
Visual Assessment Units –
Western Section

Visual Resources Report

Source: HDR (2009)
 Aerial photography date: July 2010

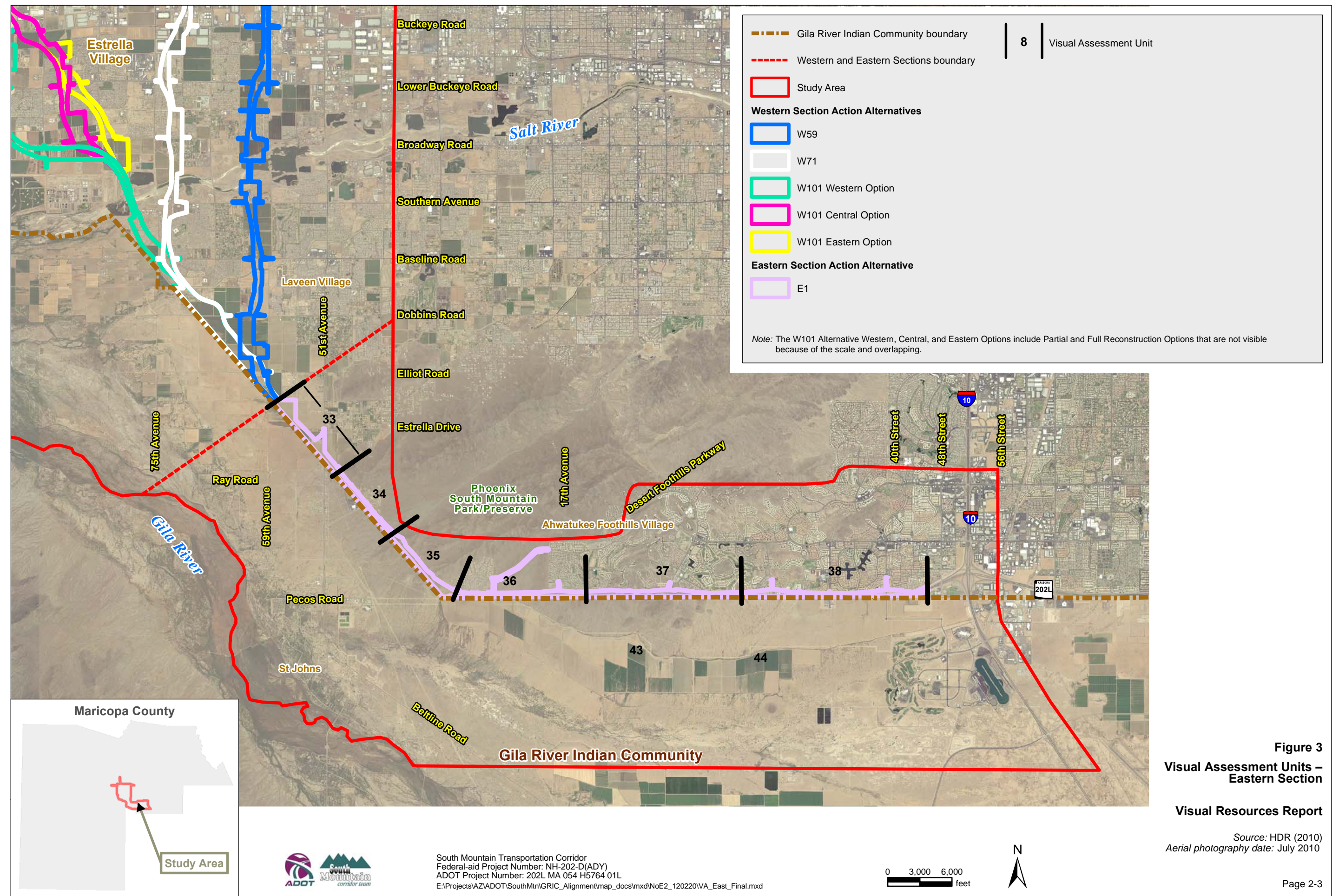


Figure 3
Visual Assessment Units – Eastern Section
Visual Resources Report

Source: HDR (2010)
 Aerial photography date: July 2010

Local

The Study Area is located in the southwestern portion of the Phoenix metropolitan area in Maricopa County, within the city limits of Phoenix (Phoenix villages of Estrella, Ahwatukee Foothills, and Laveen), Avondale, and Tolleson. Land abutting to the south of the Study Area is under Gila River Indian Community (Community) jurisdiction. The majority of land within the Study Area is privately owned. Bordering the Study Area to the north and east, however, is SMPP, a large public park. Land use varies along the length of the proposed action alternatives from fully developed tracts (commercial, residential, agricultural, and industrial) to undeveloped natural areas (recreational). The majority of urbanization occurs in the most northern and eastern portions of the Study Area.

Elevations within the Study Area range from approximately 1,160 feet above mean sea level at Pecos Road (eastern end) to about 1,015 feet above mean sea level at 99th Avenue where it intersects I-10 (western end). Within the middle portion of the Study Area, an elevation difference occurs at the western end of SMPP along three ridges that provide panoramic views of distant vistas, adjacent landforms, agriculture, and urban development.

The Study Area is located within the Sonoran Desertscrub vegetative community. Sonoran Desertscrub is characterized by saguaro (*Carnegiea gigantea*), bursage (*Ambrosia deltoidea*), creosote bush (*Larrea tridentata*), ocotillo (*Fouquieria splendens*), prickly pear/cholla (*Opuntia* spp.), paloverde (*Parkinsonia* sp.), and ironwood (*Olneya tesota*). Native plant communities have been substantially replaced by crops and ornamental plants in the agricultural and urban development areas.

Local Features

Outstanding natural features in the viewshed include prominent off-site landforms and vistas across the lowlands of Community land, to the south (Figure 4). Lone Butte is an identifiable landmark just south of the Study Area. The Sierra Estrella defines the background of the majority of the westward views. The South Mountains are the focus of most of the views to the north from the Eastern Section action alternative. These mountain ranges also provide distinct rugged landforms and skyline character. Views of the Study Area are numerous, including many from SMPP and from the Sierra Estrella.

The northwestern portion of the Study Area is level agricultural land that is rapidly transitioning to warehouse and distribution facilities, light industrial uses, and medium-density housing. The South Mountains and the Sierra Estrella provide mountainous backdrops to many southerly and easterly views in these areas (Figures 5 to 7).



Figure 4. View to West into Community Land

From south of Pecos Road near the Desert Foothills Parkway in Ahwatukee Foothills Village.



Figure 5. View from the Northwestern Portion of the Study Area

To southeast with South Mountains in background.



Figure 6. View of Study Area Showing Rapid Change in Land Use

View to south from northwestern portion of Study Area, with the Sierra Estrella in background.



Figure 7. View to South from 99th Avenue and Lower Buckeye Road

View from roundabout with adjacent new housing and the Sierra Estrella in background.

Throughout the Study Area, views of SMPP are available because of the steep rise in elevation of the South Mountains. This fault-block desert mountain range provides a distinctive backdrop in the Eastern Section of the Study Area and is visible from most anywhere in the Study Area. Conversely, hikers and other users of SMPP have distant, elevated, open views of the Study Area and its surroundings. Figures 8 and 9 show views from prominent locations in SMPP looking over residential areas in Ahwatukee Foothills Village toward Pecos Road and onto Community land.

The closest views of the proposed project would be from the western end of the National Trail, the longest and one of the more popular trails in SMPP. Figures 10 to 12 provide different views from the National Trail of the portion of the Study Area immediately adjacent to the western end of the park.



Figure 8. View to South toward Community Land from SMPP

Lone Butte is in the undeveloped, central portion of the image. Homes in Ahwatukee Foothills Village are in the foreground, with Pecos Road separating the residential area from Community land.



Figure 9. View from SMPP toward Community Land

Homes in Ahwatukee Foothills Village are in the foreground, with Pecos Road separating the residential area from Community land. The Sierra Estrella is in the background.



Figure 10. View from National Trail in SMPP toward Community Land

View to the north/northwest with the Sierra Estrella in the background.



Figure 11. View from National Trail in SMPP toward Gila River

View to west toward Community land with the Sierra Estrella in the background.



Figure 12. View to West from National Trail in SMPP

View of Community land with Vee Quiva Casino as a large structure in the valley in the middleground. The Sierra Estrella is in the background.

Existing Visual Conditions

Visual resources of the Study Area were evaluated in terms of the existing visual conditions and landscape character. The visual conditions analysis included an identification of distinct features, areas of preservation and disturbance, key landmarks, and location of major viewpoints. Distinct features are those features comprising landscape elements and patterns that make a memorable visual impression.

Viewpoints, as well as the other components of the existing visual conditions, are described based on publicly accessible locations within the Study Area. A major viewpoint is one where the distant view of distinct landforms/landmarks attracts attention away from the foreground area. The foreground is defined as the area within 0.25 mile of the viewer's position.

In addition to the various views into the Study Area from recreational trails in SMPP and the Sierra Estrella, the Study Area is easily visible from recreational and residential areas in Ahwatukee Foothills Village (Figures 13 and 14). Resort, casino, and recreational facilities on Community land also have views of the Study Area. Lone Butte, in the southeastern portion of the Study Area, south of Pecos Road, is an area of cultural importance to the Community, as are the South Mountains.

Visual Quality

For each VAU, the relative distinctiveness/vividness, intactness, and unity of the landscape were determined. Visual quality or attractiveness is a combination of attributes based on landforms, water characteristics, vegetation patterns, and architectural/cultural elements. Visual quality was rated as *very low*, *low*, *moderately low*, *moderate*, *moderately high*, *high*, and *very high*, depending on the distinctiveness, unity, and intactness of the patterns and attributes of the area. Unity is the visual coherence and harmony of the landscape when considered as a whole. Visual intactness relates to the integrity of visual order in the natural and built landscape and the extent to which the landscape elements and patterns that they create are cohesive. The level of visual intactness was expressed as *low*, *moderate*, or *high* (see Appendix B for examples of each descriptor).

As shown in the evaluation sheets in Appendix A, the existing visual quality of the Study Area is generally in the moderate to moderately low range for most VAUs. Several units, primarily associated with industrial and warehouse uses, scored in the low range. Two units—numbers 34 and 35, located near or just south of SMPP—are relatively undisturbed or have lower levels of disturbance that could lower visual quality. They scored as moderately high.



Figure 13. View from Ahwatukee Foothills Village to Community Land
View from Muirwood Drive and 2nd Street to the south-southeast.



Figure 14. View from Ahwatukee Foothills Village toward Community Land
View to south-southwest from Muirwood Drive, with the Sierra Estrella in background.

Visual Character

Landscape character is the physical appearance of the landscape, including the natural, physical, and architectural/cultural features that give it an identity and “sense of place.” Existing landscape character is based on defining areas of similar land use, vegetation, spatial enclosure, landform, or architectural/cultural patterns. To facilitate the visual resources analysis, the specific site areas have been subdivided into broad-based VAUs. These units, as previously stated, are based on the presence of vegetation, changes in land use, degree of spatial enclosure, and the presence of notable landforms or architectural/cultural patterns in the landscape. The resulting VAUs are areas of similar visual character. Each unit has been named and described in terms of its vegetative cover, landform, land use, and special features visible in the foreground. A general description of each specific site and the area within the foreground distance zone of the site is provided in Appendix A, identifying distinct features, vegetation characteristics, terrain, and local and regional landmarks.

Few Study Area features are highly distinctive, except for SMPP and the Salt River channel. Land use is a patchwork distribution of residential, industrial, and agricultural and creates a heterogeneous setting of forms, colors, and textures. Most individual land uses lack diversity and have few dominant elements. The visual character derived from this setting generally has a horizontal line character without distinctive elements, but with the adjacent mountain ranges supplying distinctive backdrops.

Visual Sensitivity

The primary viewer types within the Study Area include local residents (the majority of viewers), businesspersons, SMPP visitors, casino visitors, and daily commuters to destinations within the Study Area and in the Phoenix metropolitan area. Study Area residences would provide numerous viewing points of the various proposed project corridors. Residents would likely respond to changes in the scenic quality of the landscape as viewed from their homes. Scenic viewing would also occur from local streets and parks. Additionally, viewing would occur from SMPP, which would include vantage points from dispersed recreational activities such as hiking and mountain biking.

Vertical relief is provided by the South Mountains and the Sierra Estrella. In the Western Section of the Study Area the patchwork of land uses results in an irregular distribution of areas, especially residential, that could have high sensitivity to changes in the visual landscape. Most areas such as industrial or warehouse uses that have lower sensitivity are located close to I-10 or the Salt River channel.

SMPP visitors are sensitive to visual change because many of them are trail users. While the existing trail system is not very close to any of the proposed action alternatives, in most areas the high elevation above the valley exposes trail users to long vistas to the south, west, and northwest that include the proposed action alternative corridors. The Eastern Section has viewers with a high level of sensitivity along the entire proposed E1 Alternative because of the residential development on the northern side, toward the South Mountains. The terrain where the development is located also increases in elevation toward the mountains and exposes more residents to views to the south toward this proposed action alternative and Community land.

3. Environmental Consequences

Impacts Associated with the No-Action Alternative

The No-Action Alternative would result in no direct change in visual character or quality because it would not involve freeway construction. Over time, the visual character and quality of the Study Area would change because of the reasonably foreseeable continued urbanization within Phoenix. Urban expansion could encroach on portions of the Study Area that are currently rural or undeveloped, leading to a more urbanized character for the Study Area. Such alteration would have both beneficial and adverse impacts on the visual quality of the area. The loss of rural or natural areas would potentially reduce the visual quality of the Study Area. If low-visual-quality development were to occur within the Study Area, an additional reduction of overall visual character and quality could occur. However, if future development were harmonious with the existing visual elements and patterns found within the Study Area in terms of scale, color, line, and form, beneficial visual effects may be realized.

Impacts Associated with Construction of Action Alternatives and Options

Overall visual impacts of construction involve activities such as creation of equipment and materials storage areas, excavation areas, and soil stockpiles; the temporary presence of crane towers and falsework; and other miscellaneous items. These impacts were not evaluated on a VAU basis because construction procedures and techniques are not yet known. However, a general understanding of typical road construction practices can provide insight to the types of impacts that would occur from construction of any of the action alternatives. Regardless of the action alternative selected, certain views during the construction period would be altered by the presence of construction equipment, vehicles, cranes, personnel, and emerging freeway facilities. The temporary impact could be expected to be adverse to the majority of viewers and would be an unavoidable consequence of the proposed project. Construction impacts would be particularly negative for VAU number 10, the system TI at I-10 and SR 101L. The system TI's height, complexity, and high visibility for travelers on I-10 and SR 101L would make for a high magnitude of impact for an extended construction period.

Impacts from construction of the major road cuts (with the E1 Alternative) in VAU numbers 34 and 35 would also be highly visible, complex, and extended in time. Many travelers would not see these construction impacts because these VAUs' low traffic volumes would continue until completion of construction (when the proposed freeway would be connected with the eastern and western ends of the corridor). The visual impacts on those who do frequent these areas (a quite small number compared with the total number of SMPP visitors or even with the number of SMPP trail users) would, however, be substantial because the areas are relatively undeveloped. People accustomed to seeing the foothills of the South Mountains in their pristine state would likely see substantial (approximately 200-foot-high) road cuts. Visitors to the Vee Quiva Casino, on Community land, would readily be able to see all three road cuts as they are constructed (with the E1 Alternative). With implementation of the E1 Alternative, hikers on the National Trail in SMPP would be able to see construction vehicle clutter, but from distances of at

least 1.5 mile. Construction activities occurring on the boundary of the park would result in view degradation for most trail users.

Impacts Associated with Operation of Action Alternatives and Options

The Study Area landscapes are in the state's major metropolitan area. Most VAUs have low to moderately low visual quality and offer only relatively modest visual quality when considered on a statewide basis. As part of a major urban area, however, the Study Area contains views of the region's mountains of high to moderately high visual quality. For the most part, none of the proposed project's action alternatives would affect these views. What is important is the degree of change between the pre- and post-project conditions.

Western Section Action Alternatives and Options

Table 2 records the results of the assessment of the potential visual impacts associated with each of the Western Section action alternatives. Using the state's landscapes as the basis of comparison, impacts on visual resources from implementation of the various action alternatives were evaluated on a scale of 1 to 3, with 3 representing the most severe visual impact. In general, the VAUs' low to moderately low initial visual quality tended to mean they would undergo only moderate or low visual impact with construction and operation of a freeway. This conclusion is generally applicable across all VAUs, except for those having the highest initial visual quality (e.g., near SMPP) or in areas having the most sensitive viewers (e.g., close to recreation areas or residential communities).

The W71 Alternative would create the most visual impact, but it would not be substantially different than the other action alternatives. It ranked highest (most impact) in terms of visual sensitivity and visual character, and this is the visual element that caused it to have the highest impact overall. The change in visual quality of the W71 Alternative is similar in magnitude to the other action alternatives.

Because the lengths of the VAUs range by an order of magnitude (from 1,269 feet to 12,297 feet), impacts were also evaluated on a length-weighted basis. The W71 Alternative has four of the ten longest VAUs (numbers 19, 27, 29, and 32) in the Western Section. Figure 15 shows the distinction between the action alternatives in graphic form of the scoring from Table B-2 in Appendix B. The *high*, *moderate*, and *low* designations for each VAU in Figure 15 derive from a summing of the scores from the *Magnitude of Impact to Visual Quality*, *Change in Visual Character*, and *Visual Sensitivity* columns in Table B-2 and standardizing for VAU length. The W59 and W71 Alternatives cross or are near numerous residential areas. The other action alternatives have, at most, only one or two units with a high level of impact. Of the 8 VAUs in the Western Section having the highest visual impacts (standardized for length—see the red shading in Figure 15), the W71 and W101E Alternatives have 3 each; the W101C Alternative has only 1.

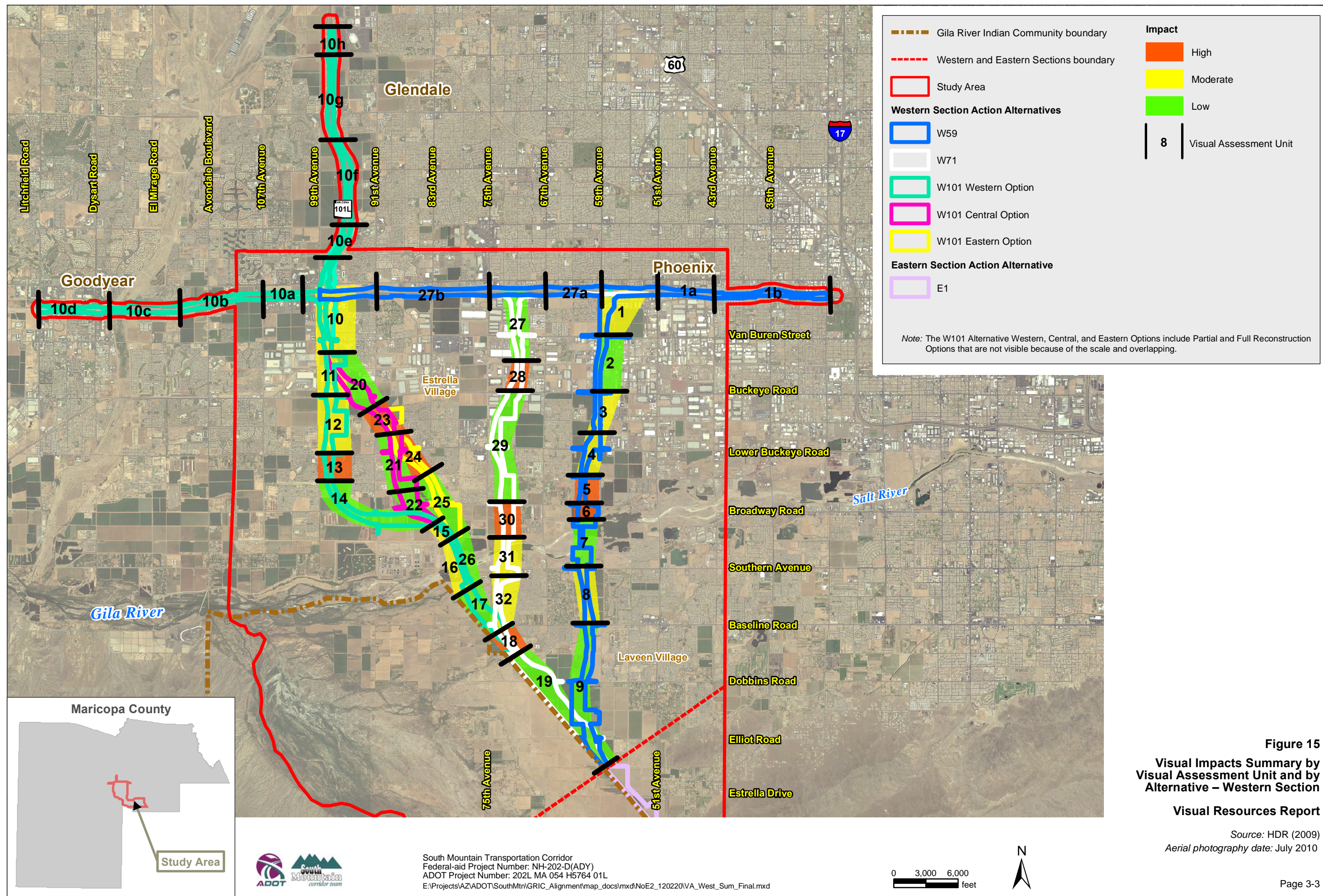


Figure 15
Visual Impacts Summary by
Visual Assessment Unit and by
Alternative – Western Section
Visual Resources Report

Source: HDR (2009)
 Aerial photography date: July 2010

Table 2. Visual Impacts of the Western Section Action Alternatives and Options

Western Section Action Alternative	Magnitude of Change to Visual Quality^a	Magnitude of Change to Visual Character^a	Magnitude of Change to Visual Sensitivity^a	Overall Impact on Visual Resources
W59	1.79	1.65	1.68	1.70
W71	1.75	2.29	2.33	2.12
W101W	1.97	2.03	1.29	1.76
W101C	1.90	1.90	1.63	1.81
W101E	1.71	1.98	1.52	1.74

^a from Appendix B, Table B-2

All Western Section action alternatives would generally have similar visual impacts. The individual VAUs for the Western Section alternatives follow a generally checkerboard pattern of alternating land uses that characterize the Western Section of the Study Area. Generally, because of higher sensitivity, residential areas, expanses of agricultural fields, and natural areas such as the Salt River channel drive higher visual impact scores. Warehouses and light and heavy industry generate the least visual impact changes because of their low sensitivity to visual change. The degree to which the specific alignments of the Western Section action alternatives would avoid directly conflicting with the most visually sensitive land uses would largely determine their overall visual impact. In this relatively flat landscape, distances of even a half-mile would provide substantial buffering from much of the adverse visual impacts of the proposed project.

Sensitive Views

In VAU number 9, the modified W59 Alternative would cross Dobbins Road near 62nd Avenue, thereby avoiding direct and adverse impacts on historic properties near Dobbins Road. Blending colors, lines, textures, and forms of the freeway with the surrounding environment would reduce its visual impact on the historic resources. Because the freeway would be elevated over Dobbins Road, aesthetic treatment of the overpasses would help diminish any visual impacts and could, over time, help unify what may become a visually complex landscape. Following ideas identified beginning on page 4-1 would help protect the visual integrity of the historic properties and the visual unity of the proposed freeway in its increasingly urbanizing context. Of particular importance would be those mitigation measures regarding use of materials, textures, and detailing on concrete barriers, highly visible head- and endwalls, concrete box culverts, and piers to blend into the existing landscape.

In addition to the assessment of visual impacts of the Western Section action alternative corridors, special attention was given to sensitive views in the area of the system TI connecting the proposed project with the existing I-10 freeway because of the prominence of the structures. With each of the SR 101L options, the system TI with I-10 would be the dominant vertical element. At 18 lanes wide on I-10 (at build-out) and nearly 80 feet high (with four levels of ramps), the sheer size of the proposed system TI would make it the prominent object on the horizon almost everywhere within a 0.5-mile radius. Because the

I-10/SR 101L system TI already exists, this would not be a new visual impact for many viewers, but would be a change in the existing condition.

Figure 16 illustrates a typical service TI at an arterial street. These service TIs, located throughout the corridors of each proposed action alternative, would create new impacts on the existing visual landscape; however, they would be much smaller in scale and the impact would be reduced compared with the system TIs.

Eastern Section Action Alternative

Evaluation of visual impacts for the Eastern Section VAUs and the E1 Alternative followed the same analytical steps used for the Western Section assessment. The detailed assessments are in Tables B-1 and B-3 in Appendix B; the summarized results are displayed in Table 3 and employ the same rating approach shown in Table 2. Again, the lower the number, the less impact on visual resources.

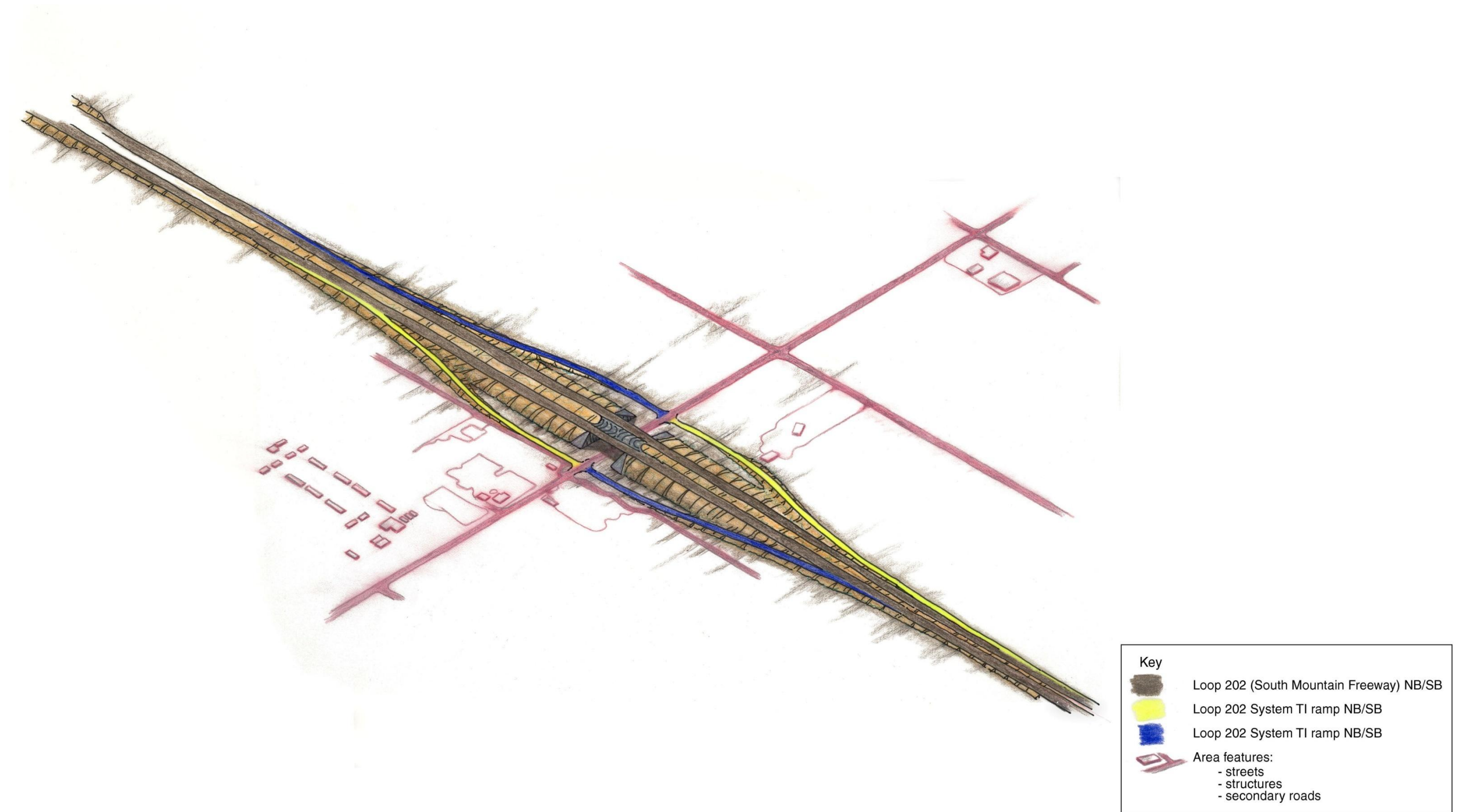
The overall visual impacts for the E1 Alternative would be substantially higher than those for any of the Western Section alternatives. This is chiefly attributable to the proximity of numerous existing residences for almost the whole extent of Pecos Road and to the substantial visual impacts that would accompany the road cuts at the western end of the South Mountains.

Table 3. Visual Impacts of the Eastern Section Action Alternative

Eastern Section Action Alternative	Magnitude of Change to Visual Quality^a	Magnitude of Change to Visual Character^a	Magnitude of Change to Visual Sensitivity^a	Overall Impact on Visual Resources
E1	1.99	2.86	2.72	2.52

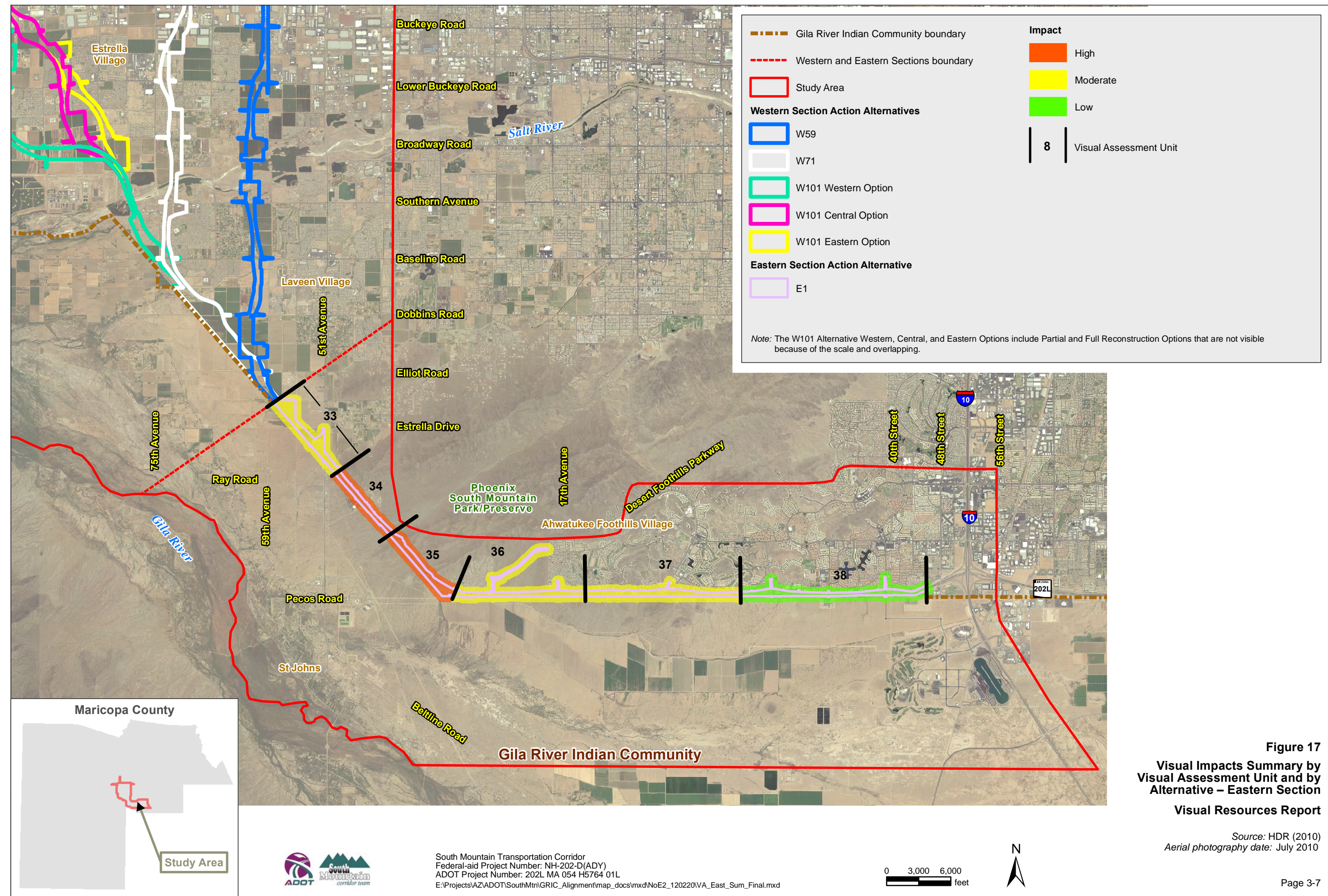
^a from Appendix B, Table B-3

Figure 17 shows the distinction between VAUs in a graphic form of the Table B-3 scoring in Appendix B. The *high*, *moderate*, and *low* designations for each VAU in Figure 17 derive from a summing of scores from the *Magnitude of Impact to Visual Quality*, *Change in Visual Character*, and *Visual Sensitivity* columns in Table B-1 and standardizing for the length of each VAU.



Perspective Representation of Service TI for the Eastern and Western Section Alternatives

Figure 16



Sensitive Views

In addition to assessment of the visual impact on Eastern Section VAUs from construction and implementation of the E1 Alternative, special attention was given to sensitive views. These were views from SMPP, views from residential areas in Ahwatukee Foothills Village, and views of major road cuts at the western end of SMPP. An artist's views of the proposed roadway from these vantage points accompany the following discussions.

The proposed service TIs in the E1 Alternative would be new impacts on the existing visual landscape; however, they would be much smaller in scale, and the impact would be reduced compared with the existing system TI at Pecos Road and I-10. An artist's representation of a typical view is shown in Figure 16.

Phoenix South Mountain Park/Preserve and Area Road Cuts

Figure 18 shows an aerial perspective of the western end of the South Mountains, noting additional figures with ground-level photographs of the area. The proposed roadway under the E1 Alternative is "draped" over the existing terrain. What would be the three major road cuts through the tapering ridges are readily observable. Figure 19 depicts views of the cuts through the major ridges. Following the aerial simulations, Figures 20 to 22 depict ground-level photographs of the landscapes that would be excavated to provide passage for the proposed freeway (white arrows in the photographs). The illustrations assisted in the assessment of the degree of visibility of the road cuts from surrounding roads, SMPP trails (images in Figures 10 and 23 are from the National Trail), the Vee Quiva Casino, and residential areas and in the evaluation of the magnitude of the visual impacts on these sensitive areas. The actual appearance of these cuts and their exact dimensions would be determined during the final design phase. The visual analysts assumed that measures described in the *Mitigation* section of this document would be employed to reduce visual impacts during construction and operation of the proposed freeway.

Following these road cut simulations is a view from the National Trail in SMPP looking toward the valley between the southernmost cut and the middle cut (Figure 23). It is similar in perspective to that in Figure 11. The proposed freeway would be close to the existing grades in this valley. The road cuts would be visible as depicted.

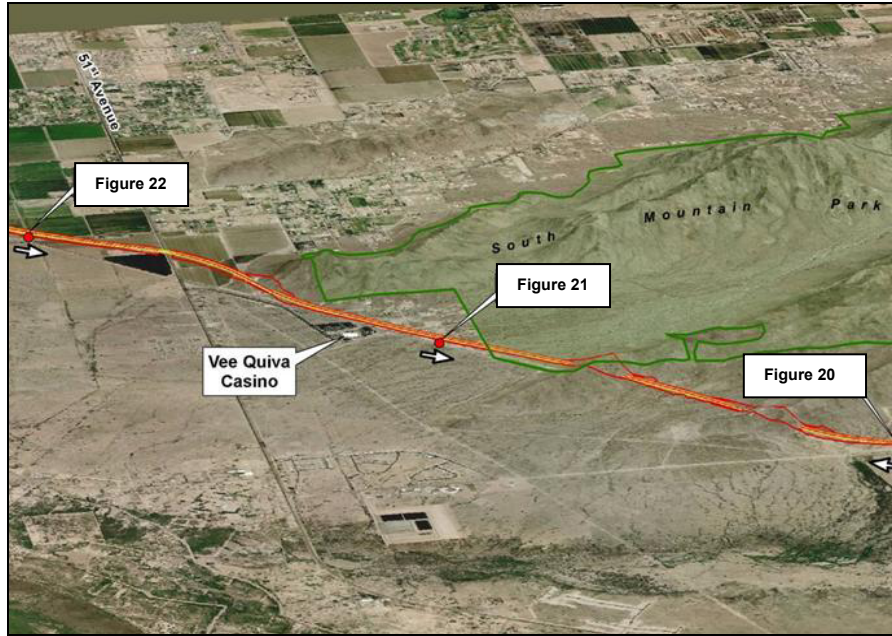


Figure 18. Perspective of Proposed Road Cuts

This figure shows the approximate alignment of the proposed E1 Alternative on the western end of SMPP.

The photographic simulations in Figure 19 show that the proposed road cuts through the South Mountains would be severe, but visible in only a western, remote, seldom-visited section of SMPP. They would not be prominent to motorists on 51st Avenue, but would be visible. They would be most visible to anyone traveling on the proposed freeway, to anyone visiting Vee Quiva Casino, to residents of and visitors to the Dusty Lane community, and to residents of and visitors to a small portion of Community land. Residents of several homes along 51st Avenue and on Community land would have views of the road cuts. The cultural resources reports for this study describe what the South Mountains mean to the Community and what a perception of their desecration by the actual road cuts and by their continuing visibility over time might mean.

Measures described in the *Mitigation* section of this document would reduce visual impacts during construction and operation of the E1 alternative.

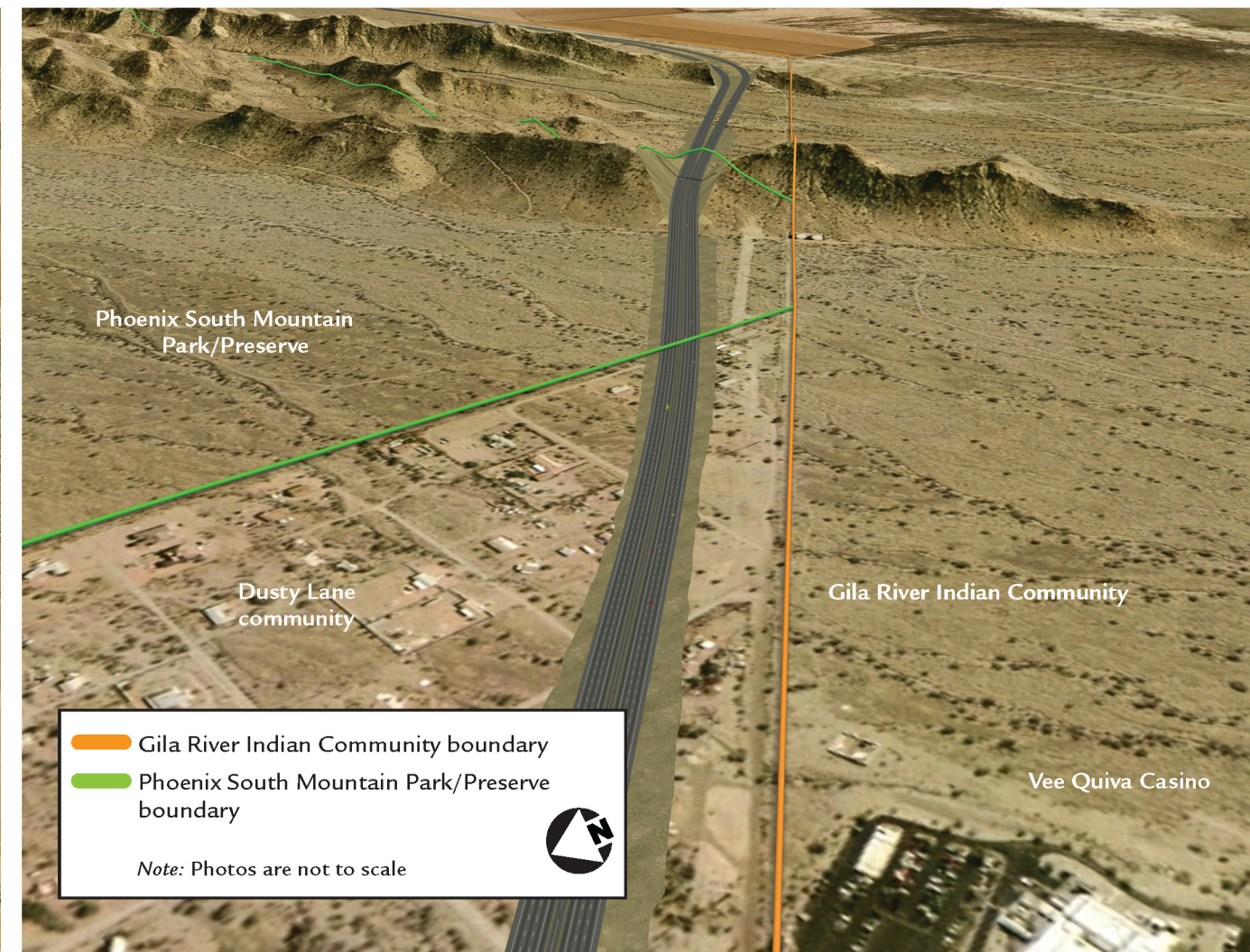
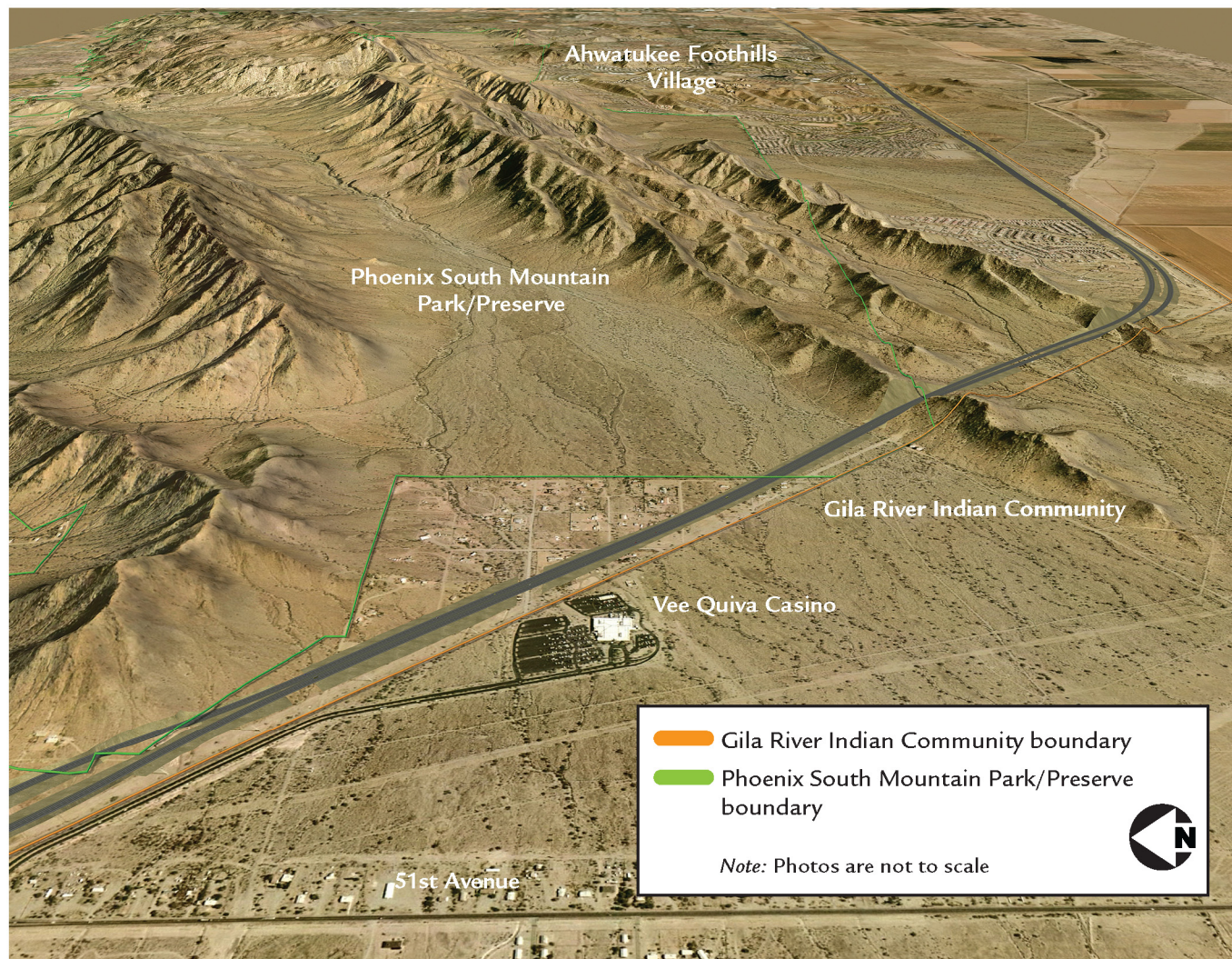


Figure 19. Simulated Views of Proposed Cuts through the Major Ridges of the South Mountains

The simulation on the left shows the westernmost ridges of the South Mountains, with the boundaries of SMPP and the Community highlighted. The simulation on the right shows how the E1 Alternative would cut through several of these ridges. (Note that these cuts include no slope treatments or other mitigation measures that would likely be identified in the final design stage.) The perspective is from a point above Community land, looking to the east toward the South Mountains.



Figure 20. View from Western End of Pecos Road Alignment

Looking northwest along proposed alignment adjacent to transmission lines. This, the largest and southernmost of the proposed three large road cuts, would be through this tapering ridge, which is not part of SMPP. Arrow denotes approximate location of proposed road cut.



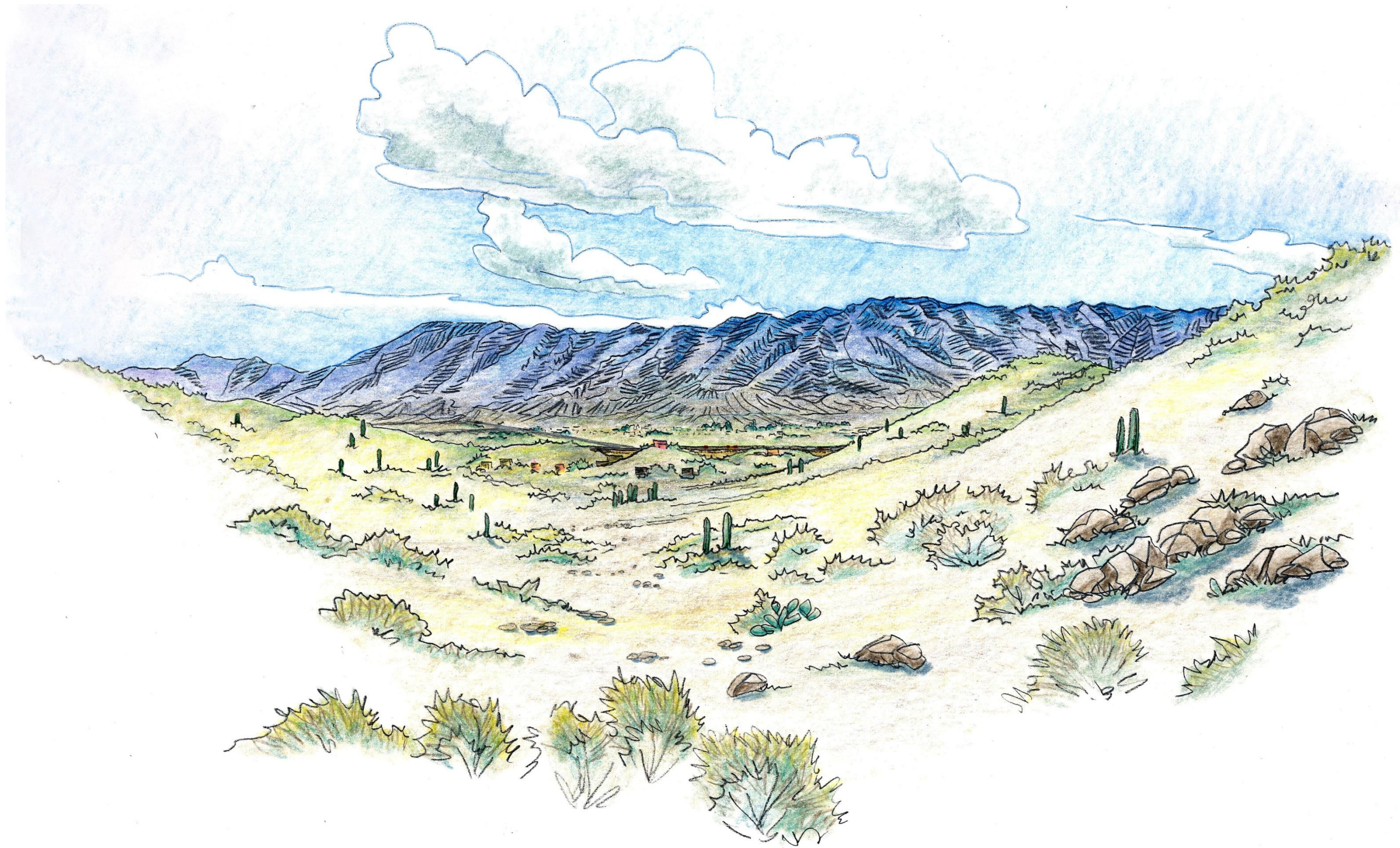
Figure 21. View near Vee Quiva Casino

Looking to the southeast from road adjacent to transmission lines along the boundary of Community land near Vee Quiva Casino. The ridge in the middleground would be the middle of the proposed three major road cuts and is in SMPP. Arrow denotes approximate location of proposed road cut.



Figure 22. View along the Boundary of Community Land to Southeast

Looking to the southeast from the road adjacent to transmission lines along the boundary of Community land. The western flank of the tapering ridge in the middleground is in SMPP and would be the northernmost of the proposed three major road cuts. Arrow denotes approximate location of proposed road cut.



Perspective Representation of Proposed Freeway from the National Trail,
near Western End of Phoenix South Mountain Park/Preserve, Looking West

Pecos Road Visual Impacts

Residents of neighborhoods north of Pecos Road have expressed concerns about the proximity of the proposed freeway and its appearance. Figures 13, 14, and 24 give a sense of the visibility and visual impact of the proposed freeway from the Chandler Boulevard area. Pecos Road, which would be the alignment of the proposed E1 Alternative in this area, is easily discernible in these images as the visual divider between the desert and agricultural areas of Community land to its south and the residential developments of Ahwatukee Foothills Village to its north.

The proposed freeway would be readily visible from houses directly fronting Pecos Road, already a four-lane, divided road. Final design would determine the sizes and locations of any noise barriers or other walls that might be part of the project. Farther north, the proposed freeway would be less visible because of intervening houses and, in many cases, topography. It is only with an increase in elevation, along the side slopes of the South Mountains, that the freeway would become visible; at these distances (1 to 1.5 miles or more) from the proposed freeway, its visibility would be minimal. Where the E1 Alternative would be close to or on the existing alignment of Pecos Road, the nighttime view of the road would be of a brighter road, but not a truly different type of viewer experience.

The *Mitigation* section addresses issues of controlling freeway lights and signs. Service TIs would be only moderately elevated, as depicted in Figure 16, and would result in only moderate visual impacts beyond those existing with the divided, four-lane Pecos Road.

Beneficial Effects Associated with the Action Alternatives and Options

Construction and operation of the proposed freeway would facilitate access to views of the Gila River Valley between the Sierra Estrella and the South Mountains. More people would be exposed to views of these fault-block mountains located so close to central Phoenix. For some people, this route might provide a superior driving experience, visually, as compared with driving through downtown Phoenix using I-10.



Perspective Representation of Proposed Freeway from Ahwatukee Foothills Village, Looking South

Secondary and Cumulative Impacts

Secondary Effects

Secondary effects are broadly defined by Council on Environmental Quality as those effects that are “caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable” (40 Code of Federal Regulations § 1508.8). Potential impacts to visual resources are discussed qualitatively in the following text and are based on reasonably foreseeable future actions in the Study Area that would be attributable to construction of the proposed freeway. The major secondary visual impacts of the proposed freeway would be the potential for acceleration of the already rapid land use transitions taking place in the western end of the Study Area.

Chiefly in the Western Section of the Study Area, more and more agricultural and abandoned agricultural land would likely be converted to housing, light industry, and warehouses. Visually, the impacts would be commensurate with the current land conversion trend, that is, the perception of a loss of open space and other low-density land uses. The secondary effects of the construction and operation of the freeway would cause minor loss of views to the Sierra Estrella and South Mountains, the major background vistas. Those residential and commercial properties near the proposed freeway could experience a decline in property values because of the freeway’s visual impacts. On the other hand, some property values might increase because of the enhanced convenience of access to and egress from nearby TIs and the rapid travel that the freeway would afford. This would likely be more probable outside of the immediate visual impact area (approximately 0.25 to 0.5 mile). The accelerated land use conversion would cause moderate adverse changes in middleground views and substantial adverse changes in foreground views. Again, these changes would likely be inevitable; the freeway would accelerate the trend.

Construction and operation of a freeway along the perimeter of SMPP could establish precedents that could cause moderate adverse secondary visual impacts through land conversion near designated TIs. Over time, this loss of buffering open space could adversely affect the park’s natural appearance within its perceived setting.

Cumulative Effects

Cumulative effects, as defined in 40 Code of Federal Regulations § 1508.7, are “the impact on the environment that results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions, regardless of which agency (federal or nonfederal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.” Only past, present, and reasonably foreseeable future actions that incrementally add to the cumulative visual impacts of the proposed freeway were considered. For this analysis, projects within the past 10 to 15 years were considered as past actions. Future actions are those that are already known and being planned for by local, regional, state, and federal planning agencies. Projects within 5 miles of the Study Area were included.

Past Actions/Completed Projects

The key past actions that directly and indirectly resulted in current conditions are listed below. The continued implementation and use of the following actions since their completion are implied.

- ▶ A rapid transition in land use from low-density, open uses to residential, commercial, and light industrial uses has occurred.
- ▶ Large subdivisions have been developed in open agricultural land.
- ▶ Vee Quiva Casino has been expanded and modernized, and access and parking have been improved.
- ▶ Pecos Road has been widened and extended as a four-lane divided thoroughfare.
- ▶ Residential development has encroached onto the southern side of the South Mountains.

Ongoing/Present Actions

The following current actions are within the geographic limits of the cumulative effects analysis:

- ▶ Continued residential development is occurring on the northern side of the western end of the existing Pecos Road.
- ▶ Continued development is occurring along SR 101L as a major metropolitan freeway that facilitates access to new sports, entertainment, and retail opportunities in Glendale.

Reasonably Foreseeable Future Actions

The following future actions are reasonably foreseeable within the geographic limits of the cumulative effects analysis:

- ▶ Chandler Boulevard will be extended to the west.
- ▶ SR 30, a proposed new freeway, will be developed in the Western Section to provide east–west freeway capacity to supplement I-10’s capacity.
- ▶ A light rail system to the Southwest Valley will potentially be developed, involving the I-10 right-of-way.
- ▶ The City of Phoenix is widening and otherwise improving a major arterial street in south-central Phoenix through the Avenida Rio Salado/Broadway Road project. A service TI with the South Mountain Freeway is proposed on the western end of this project.
- ▶ The idea of the Laveen Village Core in the City of Phoenix’s *General Plan* (2001) calls for both increased residential and commercial development as well as protection of aspects of Laveen Village’s historical agricultural character. The relevant Study Area land is centered along 51st Avenue in Laveen Village.
- ▶ Development of land in the northernmost parts of the Community could begin at some time; the rate of any development is not known.

These actions would all generally contribute to the continuing alteration of the visual landscape by development of the southwestern Phoenix metropolitan area from an agricultural-oriented past to a suburban-urban-appearing present and future. This is particularly applicable to land in the Western Section. The cumulative impact of the proposed freeway would involve acceleration of this trend through continuation of these simultaneous actions. The perception of open spaces with distant mountain backdrops would change to one of expanding suburban and urban development. The backdrop would remain, but the foreground and middleground would change so substantially that the visual perception, over time, would change dramatically. This is a trend that is underway and will likely continue with or without the proposed freeway. This has not been the overall trend, however, in the Eastern Section.

4. Mitigation

The following list describes potential mitigation measures for ADOT to consider as future commitments to be implemented as part of the project to avoid, reduce, or otherwise mitigate environmental impacts associated with the proposed project. Presentation in this report does not obligate ADOT to these measures. Upon review of the measures presented, ADOT, along with FHWA, may choose to modify or delete measures or may choose to add new measures to mitigate impacts. Results will be made available in the Draft EIS.

ADOT Design Responsibilities

During final design, ADOT would evaluate the following measures:

- ▶ using vegetative buffers to screen views both of the roadway and from the roadway
- ▶ leaving in place rock outcrops if they are stable and do not create a hazard to the traveling public, interfere with construction, or look out of place in the natural landscape
- ▶ using measures to blend retention basins and their landscape treatments into the surroundings
- ▶ transplanting larger saguaros, mature trees, and large shrubs to visually sensitive or critical roadway areas
- ▶ placing landscape treatments on the periphery of right-of-way areas at overpass locations, as well as on areas adjacent to residential development
- ▶ clustering or grouping plant material in an informal pattern to break up the linear form of the freeway
- ▶ using treatments and patterning on sound barriers and screen walls, piers, concrete barriers, retaining walls, and highly visible headwalls
- ▶ using earth colors for lighting standards, overpasses, abutments, retaining and screen walls, and sound barriers
- ▶ using riprap that blends with the surrounding rocks and exposed soil color
- ▶ using materials and textures on concrete barriers, highly visible headwalls and endwalls, concrete box culverts, and piers that blend into the existing landscape
- ▶ using special detailing on specific locations on concrete barriers, highly visible headwalls and endwalls, concrete box culverts, and piers that blend into the existing landscape
- ▶ using natural-tone metals with a noncontrasting, nonglare finish for guardrails, handrails, and lighting standards
- ▶ using strategic gaps in plantings to frame positive views
- ▶ incorporating into the newly exposed rock faces characteristics of the adjacent natural rock features, including scale, shape, slope, and fracturing to the extent that could be practical and feasible as identified through geotechnical testing and constructibility reviews

- ▶ requiring the contractor to round and blend new slopes to mimic the existing contours to highlight natural formations
- ▶ adjusting and warping slopes at intersections of cuts and natural grades to flow into each other or transition with the natural ground surfaces without noticeable breaks
- ▶ using shotcrete that matches the adjacent rocks
- ▶ keeping concrete bridges and overpass structural systems simple to provide greater unification to a visually complex landscape
- ▶ using minimum structural size and/or recessing the face of the structural members from the edge of the roadway to reduce real or apparent breadth of structures

5. Bibliography/References

- Arizona Department of Transportation (ADOT). 1988a. *Southwest Loop Highway (SR 218) Design Concept Report*. September. Phoenix.
- . 1988b. *Southwest Loop Highway (SR 218) Final Environmental Assessment*. January. Phoenix.
- City of Phoenix. 2001. *Phoenix General Plan*.
- Council on Environmental Quality, Executive Office of the President. 1997. *Considering Cumulative Effects under the National Environmental Policy Act*. Washington, D.C. <ceq.hss.doe.gov/nepa/ccenepa/toc.pdf>.
- Maricopa Association of Governments (MAG). 1985. *MAG Freeway/Expressway Plan*. Phoenix.
- . 2001. *Valley Vision 2025*. August. Phoenix.
- . 2003. *Regional Transportation Plan*. November. Phoenix.
- . 2009. *Extension of MAG 2007 Socioeconomic Projections to 2035 for Population, Housing and Employment by Municipal Planning Area and Regional Analysis Zone*. January. Phoenix.
- U.S. Department of Transportation, Federal Highway Administration (FHWA). 1981. *Visual Impact Assessment for Highway Projects*. Office of Environmental Policy. Publication No. FHWA-HI-88-054. Contract No. DOT-FH-11-9694; reprinted 1990. Washington, D.C.
- . 2002. *Secondary and Cumulative Impact Assessment in the Highway Project Development Process*. Washington, D.C. <nepa.fhwa.dot.gov/ReNEPA/ReNepa.nsf/home?OpenForm&Group=Cumulative%20and%20Indirect%20Impacts&tab=REFERENCE>.
- . 2003. *Interim Guidance: Questions and Answers Regarding Indirect and Cumulative Impact Considerations in the NEPA Process*. Washington, D.C. <www.environment.fhwa.dot.gov/projdev/qaimpact.asp>.

Appendix A

Visual Assessment Unit Sheets

The following sheets provide a brief synopsis of all 38 Visual Assessment Units (VAUs). There is one sheet for each unit, with a pre-project evaluation and a post-project evaluation of the change in visual character and visual quality as well as a photograph of a representative landscape for that VAU. The visual sensitivity of each VAU is recorded as a number. Visual sensitivity is largely a measure of the existing land use, and the numeric characterization is described in the main text, Section 3. The scores from these pre- and post-project analyses (along with numeric characterizations of visual character and visual sensitivity) are carried forward into the tables in Appendix B and into the main text in Tables 2 and 3. Included are notes specific to the changes in visual character and visual quality for each VAU.

The “additional” VAUs (the 12 VAUs east, west, and north of the proposed system TIs along I-10 and SR 101L, as shown in Figure 2) were not evaluated as the 38 other VAUs were. The proposed action alternatives are not anticipated to affect the 12 additional VAUs’ visual resources because the existing freeway corridors are well established and the potential impacts at interchange locations are included in the VAUs for each action alternative. Because the change in visual quality would be low, the inclusion of the units would artificially lower the values of the impact assessment and would not provide a meaningful evaluation of the effects of the new corridor for use in comparing alternatives.

Assessment Unit number: 1

Assessment Unit name: Light Industry/Agriculture

Visual Quality Ratings		
	Pre-project	Post-project
Vividness/Distinctiveness		
Spatial definition	1	3
Topographic relief	1	1
Landmarks	2	4
Skyline character	1	3
Water form	1	1
Vegetation	3	2
Built features	5	6
Adjacent landforms	2	2
Vividness/Distinctiveness Score	2.0	2.75
Intactness		
Level of naturalness	1	1
Degree of deviation	2	1
Intactness Score	1.5	1
Unity		
Degree of visual contrast	4	1
Degree of scale contrast	4	3
Degree of spatial dominance	3	4
Overall landscape	4	2
Unity Score	3.83	2.33
Visual Quality Score	7.3	6.08
Level of Visual Quality	Moderately Low	Low

**Magnitude of Visual Quality Impact = Low (2)**

The VAU has no single memorable visual feature. Structures associated with the light industrial activities are arranged in an orderly way, but are not particularly unified. In places, agricultural fields and residential areas that abut the industries appear incongruous. The VAU's landscapes' low level of harmonious arrangement and contrasting visual elements result in the overall landscape's low memorability. Into this context, the proposed freeway, its system TI at the northern end, and the TI at the southern end would provide a more memorable human-made structural presence that would be ordered and vividly different in scale from its surroundings.

Visual Sensitivity = 2

The flat VAU has diminishing acreage in cultivation; light industrial structures and extensive residential areas make up the rest of the VAU.

Change in Visual Character = Notable (1)

Agricultural fields do not visually dominate this VAU because they are not expansive and are being encroached on by residential, commercial, and light industrial structures. These are the largest elements, with simple lines and forms, but do not visually dominate. The low edge diversity (light industrial abutting residential and agricultural areas) contributes little to the perception of a diverse landscape. Because of encroaching land uses in the middleground, the landscape is neither expansive nor visually continuous. The proposed freeway and TIs would change this transitioning landscape and would not substantially interrupt its low visual continuity. The freeway would introduce different forms, lines, and colors.

Assessment Unit number: 2

Assessment Unit name: Light Industry

Visual Quality Ratings		
	Pre-project	Post-project
Vividness/Distinctiveness		
Spatial definition	3	3
Topographic relief	1	1
Landmarks	1	2
Skyline character	1	2
Water form	1	1
Vegetation	1	1
Built features	4	5
Adjacent landforms	1	1
Vividness/Distinctiveness Score	1.63	2.0
Intactness		
Level of naturalness	1	1
Degree of deviation	1	1
Intactness Score	1	1
Unity		
Degree of visual contrast	2	1
Degree of scale contrast	2	2
Degree of spatial dominance	2	1
Overall landscape	2	1
Unity Score	2	1.15
Visual Quality Score	4.6	4.2
Level of Visual Quality	Low	Low


Magnitude of Visual Quality Impact = *Very low (1)*

The VAU has no single memorable visual features. Structures associated with the light industrial activities are arranged in an orderly way, but are not particularly unified. The VAU's landscapes' low level of harmonious arrangement and contrasting visual elements result in the overall landscape's low memorability. Into this context, the proposed freeway and its TIs at the northern and southern ends would provide a more memorable human-made structural presence that would be ordered and vividly different in scale from its surroundings. Railroad tracks, at-grade, run east-west through the VAU, but provide little visual distinction.

Visual Sensitivity = 2

Light industrial structures and activities make up the flat VAU.

Change in Visual Character = *Notable (1)*

Light industrial structures, the largest elements, are of simple lines and forms, but do not visually dominate. Edge diversity (light industrial structures and parking lots of varying sizes abutting each other) is low and contributes little to the perception of a diverse landscape. The proposed freeway (and its TIs) would notably change this light industrial landscape, but would not substantially interrupt its low visual continuity. The freeway would introduce forms distinctly different from those that currently exist.

Assessment Unit number: 3

Assessment Unit name: Light Industry/Agriculture

Visual Quality Ratings		
	Pre-project	Post-project
Vividness/Distinctiveness		
Spatial definition	1	3
Topographic relief	1	1
Landmarks	2	4
Skyline character	1	1
Water form	1	1
Vegetation	4	3
Built features	3	6
Adjacent landforms	2	2
Vividness/Distinctiveness Score	1.875	2.66
Intactness		
Level of naturalness	2	1
Degree of deviation	3	2
Intactness Score	2.5	1.5
Unity		
Degree of visual contrast	3	1
Degree of scale contrast	4	3
Degree of spatial dominance	3	2
Overall landscape	4	2
Unity Score	3.67	2.0
Visual Quality Score	8.0	6.2
Level of Visual Quality	Moderately Low	Moderately Low

**Magnitude of Visual Quality Impact = *Very low (1)***

There is no single memorable visual feature in this VAU. Structures associated with the light industrial activities are arranged in an orderly way, but are not particularly unified. In places, the agricultural fields that abut the industries appear incongruous. The VAU's landscapes' low level of harmonious arrangement and contrasting visual elements result in the overall landscape's low memorability. Into this context, the proposed freeway would provide a more memorable human-made structural presence that would be ordered and vividly different in scale from its surroundings.

Visual Sensitivity = 2

The VAU is flat, with a large portion in cultivation; light industrial structures and activities make up the rest of the VAU.

Change in Visual Character = *Notable (1)*

Agricultural fields visually dominate this VAU because of their expansiveness. One does sense the encroachment of light industrial structures. These are of simple lines and forms, but do not visually dominate. The VAU's low edge diversity (light industrial structures abutting agricultural fields) contributes little to the perception of a diverse landscape. Because of encroaching land uses in the middleground, from the north and east, the landscape does not appear as visually continuous. The proposed freeway (and the TI at the northern end of the VAU) would be only a notable change to this transitioning landscape and would not substantially interrupt its low visual continuity. The freeway would introduce forms, lines, and colors distinctly different from those that currently exist.

Assessment Unit number: 4

Assessment Unit name: Agriculture

Visual Quality Ratings		
	Pre-project	Post-project
Vividness/Distinctiveness		
Spatial definition	1	2
Topographic relief	1	1
Landmarks	1	2
Skyline character	2	3
Water form	1	1
Vegetation	4	4
Built features	2	5
Adjacent landforms	2	2
Vividness/Distinctiveness Score	1.75	2.5
Intactness		
Level of naturalness	5	3
Degree of deviation	5	3
Intactness Score	5	3
Unity		
Degree of visual contrast	5	3
Degree of scale contrast	4	3
Degree of spatial dominance	3	1
Overall landscape	3	2
Unity Score	3.5	2.17
Visual Quality Score	10.3	7.7
Level of Visual Quality	Moderate	Moderately Low


**Magnitude of
Visual Quality Impact = *Low (2)***

The VAU generally lacks striking visual patterns or landforms, and built features are mostly limited to canals, roads, and small structures. Larger structures exist just beyond the eastern edge of the corridor at the northern end but do not substantially affect the visual setting of the unit. Vegetative cover from crops is seasonal and little other vegetation is present. The visual pattern of agricultural fields is mostly intact and free from visual encroachments. Elements of similar scale create an overall harmonious, unified landscape. The addition of the freeway, including the interchange, would decrease the cohesive feel of the landscape and would provide a higher level of contrasting forms.

Visual Sensitivity = *1*

Agricultural fields with minimal number of farm buildings or homes in or near the VAU.

**Change in
Visual Character = *Substantial (2)***

There are no dominant or high-contrast elements. The strong horizontal lines and consistent forms, colors, and textures create a moderately continuous landscape. The proposed freeway and interchange would introduce forms, lines, colors, and textures distinctly different than those currently existing.

Assessment Unit number: 5

Assessment Unit name: Medium-density Housing

Visual Quality Ratings		
	Pre-project	Post-project
Vividness/Distinctiveness		
Spatial definition	2	2
Topographic relief	1	1
Landmarks	1	2
Skyline character	2	3
Water form	1	1
Vegetation	1	1
Built features	3	5
Adjacent landforms	3	3
Vividness/Distinctiveness Score	1.75	2.25
Intactness		
Level of naturalness	4	2
Degree of deviation	4	2
Intactness Score	4	2
Unity		
Degree of visual contrast	3	1
Degree of scale contrast	3	1
Degree of spatial dominance	3	2
Overall landscape	3	2
Unity Score	3.0	1.67
Visual Quality Score	8.8	5.9
Level of Visual Quality	Moderately Low	Low

**Magnitude of Visual Quality Impact = Low (2)**

The most vivid feature of this VAU is the central core of open space bisecting the medium-density, single-family housing. Neither housing nor open space areas, individually, are particularly visually memorable. Both are intact landscapes, with no visually encroaching features. The presence of the central core causes a stark visual contrast to the housing, a contrast that would be heightened by the construction and operation of the proposed freeway and TI in this open space. The freeway (with TI) would be incongruous in the setting of the overall VAU's housing.

Visual Sensitivity = 3

Medium-density residential areas bisected by open space in core of VAU, where proposed freeway would be constructed.

Change in Visual Character = Severe (3)

Existing homogeneous, flat landscape of medium-density, single-family housing has a narrow corridor of open abandoned agricultural land running north-south through its center. No natural or human-made elements dominate spatially. Forms, lines, colors, and textures are those of suburban homes and of small, sparse, opportunistic desert shrubs; grasses; and small trees. The housing and the open space lack visual diversity. The proposed freeway would be a spatially dominant structure whose right-of-way would eliminate the unit's central open space and whose TI, at the southern end of the unit, would be visible from throughout the VAU. The proposed freeway would introduce forms, lines, colors, and textures distinctly different from those that currently exist.

Assessment Unit number: 6

Assessment Unit name: Agriculture

Visual Quality Ratings		
	Pre-project	Post-project
Vividness/Distinctiveness		
Spatial definition	2	3
Topographic relief	1	1
Landmarks	1	3
Skyline character	2	3
Water form	2	2
Vegetation	4	4
Built features	2	5
Adjacent landforms	4	4
Vividness/Distinctiveness Score	2.25	3.13
Intactness		
Level of naturalness	5	2
Degree of deviation	5	2
Intactness Score	5	2
Unity		
Degree of visual contrast	5	3
Degree of scale contrast	4	3
Degree of spatial dominance	3	1
Overall landscape	4	2
Unity Score	4.0	2.17
Visual Quality Score	11.3	7.3
Level of Visual Quality	Moderate	Moderately Low


Magnitude of Visual Quality Impact = *Low (2)*

The VAU generally lacks striking visual patterns or landforms, and built features are mostly limited to canals, roads, and small structures. The unit is small and adjacent to the Salt River; the landform of the river, however, provides topographic relief and a sense of spatial definition. Vegetation cover from crops is seasonal and little other vegetation is present. The visual pattern of agricultural fields is mostly intact and free from visual encroachments. Elements of similar scale create an overall harmonious, unified landscape within the unit, but the addition of the freeway—including the interchange and bridge approaches—would decrease the cohesive feel of the landscape and provide a higher level of contrasting forms.

Visual Sensitivity = *1*

Agricultural fields with minimal number of farm buildings or homes in or near the VAU.

Change in Visual Character = *Substantial (2)*

There are no dominant or high-contrast elements. The strong horizontal lines and consistent forms, colors, and textures create a moderately continuous landscape. There is, however, a strong contrast between the landform of this VAU and that of the Salt River channel. The proposed freeway would introduce forms, lines, colors, and textures distinctly different than those currently existing. Because of the short length of this VAU, the freeway, its interchange at the northern end, and the bridge supports would create a strong contrast in scale with the surrounding flat agricultural fields.

Assessment Unit number: 7

Assessment Unit name: Riverbed/Heavy Industry

Visual Quality Ratings		
	Pre-project	Post-project
Vividness/Distinctiveness		
Spatial definition	1	3
Topographic relief	3	3
Landmarks	1	2
Skyline character	1	1
Water form	3	3
Vegetation	2	2
Built features	1	4
Adjacent landforms	3	3
Vividness/Distinctiveness Score	1.88	2.63
Intactness		
Level of naturalness	3	1
Degree of deviation	3	1
Intactness Score	3	1
Unity		
Degree of visual contrast	2	1
Degree of scale contrast	3	2
Degree of spatial dominance	2	3
Overall landscape	3	2
Unity Score	2.67	2.0
Visual Quality Score	7.6	5.6
Level of Visual Quality	Moderately Low	Low


**Magnitude of
Visual Quality Impact = *Low* (2)**

The most distinctive feature of the VAU is the dry riverbed of the Salt River. The riverbed provides some topographic relief to the unit compared with the surrounding flat agricultural and residential areas. The form also gives a sense of water and has a natural visual character, although it has flows only during certain periods of increased rainfall. The structures and equipment associated with sand and gravel operations are generally small in relation to the river form and are occasionally moved, which changes the visual setting of some areas. There is minimal vegetation except in areas that are undisturbed for long periods. The riverbed dominates the unit spatially, but since the scale of visual intrusions such as buildings is small, it retains a somewhat harmonious, unified landscape.

Visual Sensitivity = *1*

Industrial sand and gravel operations are the major land use; there are no residences or recreational facilities in or near the VAU.

**Change in
Visual Character = *Notable* (1)**

There are no dominant or high-contrast elements. While the proposed freeway would be a notable change in the landscape, the forms, lines, colors, and textures would be somewhat compatible with those that currently exist.

Assessment Unit number: 8

Assessment Unit name: Low-density Housing/Agriculture

Visual Quality Ratings		
	Pre-project	Post-project
Vividness/Distinctiveness		
Spatial definition	2	2
Topographic relief	2	2
Landmarks	3	4
Skyline character	2	3
Water form	2	2
Vegetation	3	2
Built features	3	5
Adjacent landforms	4	4
Vividness/Distinctiveness Score	2.63	3.0
Intactness		
Level of naturalness	4	2
Degree of deviation	4	4
Intactness Score	4	2
Unity		
Degree of visual contrast	4	2
Degree of scale contrast	4	2
Degree of spatial dominance	4	2
Overall landscape	4	2
Unity Score	4.0	2.0
Visual Quality Score	10.6	7.0
Level of Visual Quality	Moderate	Moderately Low


Magnitude of Visual Quality Impact = *Low (2)*

The VAU generally lacks striking visual patterns or landforms, and built features in the agricultural areas are mostly limited to canals, roads, and small structures. The Salt River, adjacent to the VAU, provides topographic relief and a sense of spatial definition. Vegetative cover from crops is seasonal and there is ornamental vegetation associated with the residential landscapes. The visual pattern of agricultural fields is mostly intact and free from visual encroachments. Although it is spatially divided, with the residences limited to the western side of the unit, the residences are of similar scale, and, generally, the unit has an overall harmonious, unified landscape. The addition of the freeway, including the interchange and bridge approaches, would decrease the cohesive feel of the landscape, provide a higher level of contrasting forms, and spatially separate the residential area from the eastern side of the freeway.

Visual Sensitivity = 3

Agricultural fields with minimal number of farm buildings or homes in or near the VAU.

Change in Visual Character = *Substantial (2)*

There are no dominant or high-contrast elements. Strong horizontal lines and consistent forms, colors, and textures of agricultural areas create a moderately continuous landscape with some contrast at the edge between agricultural and residential areas. There is a strong contrast between the unit and the Salt River. The proposed freeway would introduce forms, lines, colors, and textures distinctly different from those that currently exist and would become a dominant element adjacent to the residential area.

Assessment Unit number: 9

Assessment Unit name: Agriculture

Visual Quality Ratings		
	Pre-project	Post-project
Vividness/Distinctiveness		
Spatial definition	1	2
Topographic relief	1	1
Landmarks	1	2
Skyline character	2	3
Water form	1	1
Vegetation	4	4
Built features	2	5
Adjacent landforms	2	2
Vividness/Distinctiveness Score	1.75	2.5
Intactness		
Level of naturalness	5	3
Degree of deviation	5	3
Intactness Score	5	3
Unity		
Degree of visual contrast	5	3
Degree of scale contrast	4	3
Degree of spatial dominance	3	1
Overall landscape	3	2
Unity Score	3.5	2.17
Visual Quality Score	10.6	7.7
Level of Visual Quality	Moderate	Moderately Low


Magnitude of Visual Quality Impact = *Low* (2)

The VAU generally lacks striking visual patterns or landforms, and built features are mostly limited to canals, roads, and small structures. Vegetative cover from crops is seasonal and little other vegetation is present. The visual pattern of agricultural fields is mostly intact and free from visual encroachments. The central part of the VAU on the western side of the proposed alignment is less intact because of additional buildings, although most are relatively small scale. Elements of similar scale in most of the VAU create a somewhat harmonious, unified landscape. The proximity of the South Mountains provides a sense of spatial definition, which would increase on the eastern side of the VAU because of the space-defining character of the proposed freeway.

Visual Sensitivity = *1*

Agricultural fields with minimal number of farm buildings or homes in or near the VAU.

Change in Visual Character = *Substantial* (2)

There are no dominant or high-contrast elements. The strong horizontal lines and consistent forms, colors, and textures create a moderately continuous landscape. The buildings in the central part of the VAU are contrasting elements, but their scale is generally comparable to that of other structures in the area. The proposed freeway would introduce forms, lines, colors, and textures distinctly different from those that currently exist.

Assessment Unit number: 10

Assessment Unit name: Warehouse/Agriculture

Visual Quality Ratings		
	Pre-project	Post-project
Vividness/Distinctiveness		
Spatial definition	2	4
Topographic relief	1	1
Landmarks	2	5
Skyline character	2	5
Water form	1	1
Vegetation	3	2
Built features	3	6
Adjacent landforms	1	1
Vividness/Distinctiveness Score	1.88	3.13
Intactness		
Level of naturalness	3	1
Degree of deviation	2	1
Intactness Score	2.5	1
Unity		
Degree of visual contrast	3	2
Degree of scale contrast	2	1
Degree of spatial dominance	2	5
Overall landscape	2	1
Unity Score	2.17	1.83
Visual Quality Score	6.6	6.0
Level of Visual Quality	Moderately Low	Low

**Magnitude of Visual Quality Impact = Low (2)**

Although this VAU has multiple land uses, there are no memorable visual features. Warehouses and warehouse activities, agricultural fields, and some retail concerns (e.g., a truck stop) tend to abut each other. Structures in the various land uses are arranged in an orderly way, but are not particularly unified. Agricultural uses in places appear incongruous when adjacent to the warehouses. The VAU's landscapes' low level of harmonious arrangement and contrasting visual elements create low memorability. Into this context, the proposed freeway, with its TI at Van Buren Street and its large system TI with I-10 (18 lanes on I-10, 70-foot-tall ramps) would provide a memorable human-made structural presence contrasting starkly in scale with its surroundings.

Visual Sensitivity = 1

The VAU is flat, with a small portion in cultivation and a larger, transitioning portion in warehouses, a truck stop, and truck service.

Change in Visual Character = Severe (3)

No single VAU component visually dominates through its extent, scale, or contrast with other components. Warehouses, the largest elements, are of simple lines and forms. The VAU is highly discontinuous in terms of its visual flow among component uses and structures. The proposed freeway—and its two TIs—would substantially exacerbate this visual discontinuity. The freeway would introduce forms and lines distinctly different from those that currently exist. The sheer size of the system TI would cause a severe change in the VAU's visual character.

Assessment Unit number: 11

Assessment Unit name: Light Industry/Warehouse

Visual Quality Ratings		
	Pre-project	Post-project
Vividness/Distinctiveness		
Spatial definition	2	3
Topographic relief	1	1
Landmarks	3	4
Skyline character	2	3
Water form	1	1
Vegetation	3	3
Built features	5	6
Adjacent landforms	1	1
Vividness/Distinctiveness Score	2.25	2.75
Intactness		
Level of naturalness	2	1
Degree of deviation	3	2
Intactness Score	2.5	1.5
Unity		
Degree of visual contrast	3	4
Degree of scale contrast	4	2
Degree of spatial dominance	3	2
Overall landscape	3	2
Unity Score	3.17	2.33
Visual Quality Score	7.9	6.6
Level of Visual Quality	Moderately Low	Low


Magnitude of Visual Quality Impact = *Low (2)*

The most vivid visual feature on the landscape is a group of grain elevators visible from throughout the VAU. Light industrial structures associated with these elevators and other applications are nondescript, not particularly memorable. They are arranged across the VAU in a functional, but nonunified manner. Architectural styles, colors, and layouts are variable and uncoordinated. The VAU has a low level of visual intactness, not only because of the elevators, but also because of railroad spurs, loading docks, and encroaching light industrial development. There is little relationship between the existing landscape and its prior appearance as natural desert or agricultural fields. The proposed freeway would slightly degrade the VAU's unity by adding another human-made, encroaching feature. It would not enhance the visual relationship to existing landforms or land cover patterns.

Visual Sensitivity = 2

The VAU is flat, with most of the area developed as low-density light industries. Adjacent areas are transitioning from agriculture to light industries/warehouses.

Change in Visual Character = *Notable (1)*

While the proposed freeway would not change the grain elevators' spatial dominance of the unit, the proposed freeway would create a visual tension between two dissimilar, high-mass, highly visible facilities. The freeway would introduce forms and lines distinctly different from those that currently exist. It would cause little change in the already degraded visual continuity of the VAU or in its highly fragmented, visually diverse, multisized, light industrial structures.

Assessment Unit number: 12

Assessment Unit name: Agriculture

Visual Quality Ratings		
	Pre-project	Post-project
Vividness/Distinctiveness		
Spatial definition	1	2
Topographic relief	1	1
Landmarks	1	2
Skyline character	2	3
Water form	1	1
Vegetation	4	4
Built features	2	5
Adjacent landforms	2	2
Vividness/Distinctiveness Score	1.75	2.5
Intactness		
Level of naturalness	5	3
Degree of deviation	5	3
Intactness Score	5	3
Unity		
Degree of visual contrast	5	3
Degree of scale contrast	4	3
Degree of spatial dominance	3	1
Overall landscape	3	2
Unity Score	3.5	2.17
Visual Quality Score	10.3	7.7
Level of Visual Quality	Moderate	Moderately Low


Magnitude of Visual Quality Impact = *Low (2)*

The VAU generally lacks striking visual patterns or landforms, and built features are mostly limited to canals, roads, and small structures. Larger structures exist just beyond the eastern edge of the corridor in the central area, but do not substantially affect the visual setting of the unit. Vegetative cover from crops is seasonal and little other vegetation is present. The visual pattern of agricultural fields is mostly intact and free from visual encroachments. Elements of similar scale create an overall harmonious, unified landscape. The addition of the freeway, including the interchanges at the northern and southern ends, would decrease the cohesive feel of the landscape and would provide a higher level of contrasting forms.

Visual Sensitivity = *1*

Agricultural fields with minimal number of farm buildings or homes in or near the VAU.

Change in Visual Character = *Substantial (2)*

There are no dominant or high-contrast elements. The strong horizontal lines and consistent forms, colors, and textures create a moderately continuous landscape. The proposed freeway would introduce forms, lines, colors, and textures distinctly different from those that currently exist.

Assessment Unit number: 13

Assessment Unit name: Medium-density Housing/Commercial

Visual Quality Ratings		
	Pre-project	Post-project
Vividness/Distinctiveness		
Spatial definition	2	2
Topographic relief	1	1
Landmarks	2	2
Skyline character	2	3
Water form	1	1
Vegetation	1	1
Built features	4	5
Adjacent landforms	1	1
Vividness/Distinctiveness Score	1.75	2.0
Intactness		
Level of naturalness	3	2
Degree of deviation	4	2
Intactness Score	3.5	2
Unity		
Degree of visual contrast	3	1
Degree of scale contrast	3	1
Degree of spatial dominance	3	2
Overall landscape	4	2
Unity Score	3.5	1.67
Visual Quality Score	8.8	5.7
Level of Visual Quality	Moderately Low	Low


Magnitude of Visual Quality Impact = *Low* (2)

The VAU generally lacks striking visual patterns or landforms, and built features are limited to single-family residences and associated walls and landscaping. The VAU has a moderate sense of contrast in the commercial area adjacent to the roundabout, and the housing is of a uniform scale. Construction and operation of the proposed freeway and TI would remove some of the residences, increasing the scale and visual contrast and spatially separating neighborhoods. The freeway (with TI) would be incongruous in the setting of the overall VAU's housing.

Visual Sensitivity = 3

Medium-density residential areas existing or planned throughout the VAU, with a commercial focus near the roundabout.

Change in Visual Character = *Severe* (3)

The unit is a homogeneous, flat landscape of existing or planned medium-density, single-family housing. Commercial elements are spatially recognizable, but are not dominant at the roundabout. Forms, lines, colors, and textures are those of suburban homes and the associated landscaping for the open space and individual homes. The housing generally lacks visual diversity. The commercial development is visually consistent with the residential area's colors and textures. The proposed freeway would be a spatially dominant structure whose TI, in the northern part of the unit, would be visible from throughout the VAU. The proposed freeway would introduce forms, lines, colors, and textures distinctly different from those that currently exist.

Assessment Unit number: 14

Assessment Unit name: Dairy/Agriculture

Visual Quality Ratings		
	Pre-project	Post-project
Vividness/Distinctiveness		
Spatial definition	1	2
Topographic relief	1	1
Landmarks	1	2
Skyline character	2	3
Water form	1	1
Vegetation	4	4
Built features	3	5
Adjacent landforms	2	2
Vividness/Distinctiveness Score	1.88	2.5
Intactness		
Level of naturalness	5	3
Degree of deviation	4	3
Intactness Score	4.5	3
Unity		
Degree of visual contrast	4	2
Degree of scale contrast	3	2
Degree of spatial dominance	3	1
Overall landscape	3	2
Unity Score	3.2	1.83
Visual Quality Score	9.6	7.3
Level of Visual Quality	Moderate	Moderately Low


Magnitude of Visual Quality Impact = *Low (2)*

The VAU generally lacks striking visual patterns or landforms, and built features are mostly limited to canals, roads, and small structures. The buildings and canopies of the dairy operations are in the central part of the unit on both sides of the alignment, but do not substantially affect the visual continuity. Vegetative cover from crops in the agriculture fields is seasonal, and little other vegetation is present because the dairy operations include mostly livestock enclosures. The visual pattern of agricultural fields and dairy farms is mostly intact and free from visual encroachments. However, there is a contrast between the open agricultural fields and the canopies and structures of the dairies. Elements of land uses of a similar scale create a somewhat harmonious, unified landscape. The freeway (with TI) would be incongruous in the setting of the overall VAU and would create visual and scale contrast as viewed from the dairy areas.

Visual Sensitivity = *1*

Agricultural fields with minimal number of farm buildings or homes characterize the land in or near the VAU. Dairy operations have barns and other structures, including some residences, and have employees on-site during working hours.

Change in Visual Character = *Substantial (2)*

There are no dominant or high-contrast elements. The fields and canopies of the dairy operations have strong horizontal lines, and consistent forms, colors, and textures create a moderately continuous landscape. The proposed freeway would be a substantial change in the landscape, and the forms, lines, colors, and textures would be distinctly different elements.

Assessment Unit number: 15

Assessment Unit name: Heavy Industry/Water Treatment

Visual Quality Ratings		
	Pre-project	Post-project
Vividness/Distinctiveness		
Spatial definition	1	2
Topographic relief	1	1
Landmarks	1	3
Skyline character	1	1
Water form	1	1
Vegetation	2	2
Built features	1	6
Adjacent landforms	3	2
Vividness/Distinctiveness Score	1.38	2.38
Intactness		
Level of naturalness	2	1
Degree of deviation	3	1
Intactness Score	2.5	1
Unity		
Degree of visual contrast	3	2
Degree of scale contrast	3	2
Degree of spatial dominance	2	3
Overall landscape	3	2
Unity Score	2.83	2.17
Visual Quality Score	6.7	5.6
Level of Visual Quality	Moderately Low	Low

**Magnitude of Visual Quality Impact = *Low (2)***

The most distinctive feature of this VAU is the water treatment facilities southwest of the freeway alignment. The dry riverbed of the Salt River is immediately adjacent to the unit to the south. The riverbed provides some topographic relief to the unit compared with the surrounding flat agriculture areas. Industrial uses associated with sand and gravel operations are located on the eastern side of the freeway alignment. There is an area of moderate vegetative cover immediately to the south of the unit and also to the southwest, associated with the water treatment facilities. The wide range of facilities reduces the visual cohesiveness of the landscape.

Visual Sensitivity = *1*

Industrial sand and gravel operations and water treatment facilities are the major land uses; there are no residences or recreation facilities in the VAU.

Change in Visual Character = *Notable (1)*

The water treatment and quarry activities provide some contrast in the form, line color, and texture of the existing landscape. While the proposed freeway would be a notable change in the landscape, the forms, lines, colors, and textures would be somewhat compatible with those of the industrial uses that currently exist.

Assessment Unit number: 16

Assessment Unit name: Riverbed/Heavy Industry

Visual Quality Ratings		
	Pre-project	Post-project
Vividness/Distinctiveness		
Spatial definition	1	3
Topographic relief	3	3
Landmarks	3	3
Skyline character	1	1
Water form	3	3
Vegetation	3	2
Built features	2	5
Adjacent landforms	3	3
Vividness/Distinctiveness Score	2.38	3.0
Intactness		
Level of naturalness	3	1
Degree of deviation	3	1
Intactness Score	3	1
Unity		
Degree of visual contrast	2	1
Degree of scale contrast	3	2
Degree of spatial dominance	2	3
Overall landscape	3	2
Unity Score	2.67	2
Visual Quality Score	8.1	6.0
Level of Visual Quality	Moderately Low	Low

**Magnitude of Visual Quality Impact = *Low (2)***

The most distinctive feature of the VAU is the dry riverbed of the Salt River. The riverbed provides some topographic relief to the unit compared with the surrounding flat agriculture areas. The form also gives a sense of water and has a natural visual character, although it has flows only during certain periods of increased rainfall. The structures and equipment associated with sand and gravel operations are generally small in relation to the river form and are occasionally moved, which changes the visual setting of the unit. The industrial uses also expand outside the riverbed onto the northern side, creating a more permanent visual setting with facilities and ground disturbance. There is an area of moderate vegetative cover on the northern side of the river. The riverbed dominates the unit spatially, but since the scale of visual intrusions such as buildings is small, it retains a somewhat harmonious, unified landscape.

Visual Sensitivity = *1*

Industrial sand and gravel operations are the major land use; there are no residences or recreation facilities in the VAU.

Change in Visual Character = *Substantial (2)*

There are no dominant or high-contrast elements. While the proposed freeway would be a notable change in the landscape, the forms, lines, colors, and textures would be somewhat compatible with those of the industrial uses that currently exist.

Assessment Unit number: 17

Assessment Unit name: Agriculture

Visual Quality Ratings		
	Pre-project	Post-project
Vividness/Distinctiveness		
Spatial definition	1	2
Topographic relief	1	1
Landmarks	1	2
Skyline character	2	3
Water form	1	1
Vegetation	4	4
Built features	2	5
Adjacent landforms	2	3
Vividness/Distinctiveness Score	1.75	2.5
Intactness		
Level of naturalness	5	3
Degree of deviation	5	3
Intactness Score	5	3
Unity		
Degree of visual contrast	5	3
Degree of scale contrast	4	3
Degree of spatial dominance	3	1
Overall landscape	3	2
Unity Score	3.5	2.17
Visual Quality Score	10.3	7.7
Level of Visual Quality	Moderate	Moderately Low


**Magnitude of
Visual Quality Impact = *Low (2)***

The VAU generally lacks striking visual patterns or landforms, and built features are mostly limited to canals, roads, and small structures. Vegetative cover from crops is seasonal and little other vegetation is present. The visual pattern of agricultural fields is mostly intact and free from visual encroachments. Elements of similar scale create an overall harmonious, unified landscape. The addition of the freeway, including the interchange, would decrease the cohesive feel of the landscape and would provide a higher level of contrasting forms.

Visual Sensitivity = *1*

Agricultural fields with a small number of farm buildings and homes in or near the VAU. The southeastern portion of the VAU is beginning to develop with single-family housing.

**Change in
Visual Character = *Substantial (2)***

There are no dominant or high-contrast elements. The strong horizontal lines and consistent forms, colors, and textures create a moderately continuous landscape. The two areas of the unit along the Community boundary do not contrast because the fields on both sides of the boundary are in active production. The proposed freeway would introduce forms, lines, colors, and textures distinctly different from those that currently exist.

Assessment Unit number: 18

Assessment Unit name: Medium-density Housing/Agriculture

Visual Quality Ratings		
	Pre-project	Post-project
Vividness/Distinctiveness		
Spatial definition	3	3
Topographic relief	1	1
Landmarks	2	3
Skyline character	3	2
Water form	2	2
Vegetation	2	4
Built features	5	5
Adjacent landforms	2	2
Vividness/Distinctiveness Score	2.5	2.88
Intactness		
Level of naturalness	3	3
Degree of deviation	3	2
Intactness Score	3.0	2.5
Unity		
Degree of visual contrast	4	1
Degree of scale contrast	4	2
Degree of spatial dominance	3	3
Overall landscape	3	2
Unity Score	3.3	2.0
Visual Quality Score	8.8	7.4
Level of Visual Quality	Moderately Low	Moderately Low


Magnitude of Visual Quality Impact = *Very low (1)*

This VAU's most distinctive feature is its natural vegetative cover in the lowlands near the Gila River. Patches of mesquite trees cover the area. Dominant encroachments are the numerous makeshift dirt roads that crisscross the southeastern end of the VAU. These roads have facilitated the illegal dumping of household rubbish, miscellaneous farm equipment, cars, and other debris in that area. Most of the VAU is now in residential use, predominantly single-family housing. The proposed freeway would negatively affect the VAU's natural appearance. The scale difference between the relative encroachment of the existing clutter and debris and residences and the proposed freeway would create a substantial negative effect on the VAU's perceived intactness.

Visual Sensitivity = 3

VAU has natural vegetative cover and some debris, but most of the VAU is medium-density residential.

Change in Visual Character = *Substantial (2)*

With about 80 percent of the VAU in housing, the remnant vegetative matrix no longer visually dominates the VAU. Dirt roads and debris deposits are still interspersed among homogeneous patches of mesquite trees. The proposed freeway through this VAU (no TIs) would strikingly interrupt the residential housing as well as this simple vegetative matrix. The freeway would also be of a scale substantially different from the landform and the vegetation in the VAU. The proposed freeway would introduce forms, lines, colors, and textures distinctly different from those that currently exist.

Assessment Unit number: 19

Assessment Unit name: Abandoned Agriculture/Agriculture

Visual Quality Ratings		
	Pre-project	Post-project
Vividness/Distinctiveness		
Spatial definition	1	2
Topographic relief	1	1
Landmarks	1	2
Skyline character	2	3
Water form	1	1
Vegetation	4	4
Built features	2	5
Adjacent landforms	2	2
Vividness/Distinctiveness Score	1.75	2.5
Intactness		
Level of naturalness	5	3
Degree of deviation	5	3
Intactness Score	5	3
Unity		
Degree of visual contrast	5	3
Degree of scale contrast	4	3
Degree of spatial dominance	3	1
Overall landscape	3	2
Unity Score	3.5	2.17
Visual Quality Score	10.3	7.7
Level of Visual Quality	Moderate	Moderately Low

**Magnitude of Visual Quality Impact = *Low (2)***

The VAU generally lacks striking visual patterns or landforms, and built features are mostly limited to canals, roads, and small structures. Seasonal vegetation covers crops in the fields on the eastern side of the VAU. Green colors contrast vividly with the light browns of the fallow or abandoned agricultural fields on the western side of the VAU. The visual pattern of agricultural fields on the east is mostly intact and free from visual encroachments. Elements of similar scale in most of the VAU create an overall harmonious, unified landscape. The addition of the freeway, including two interchanges, would decrease the cohesive feel of the landscape and would provide a higher level of contrasting forms.

Visual Sensitivity = *1*

Agricultural fields with minimal number of farm buildings or homes in or near the VAU.

Change in Visual Character = *Substantial (2)*

There are no dominant or high-contrast elements. The strong horizontal lines and consistent forms, colors, and textures create a moderately continuous landscape. There is a strong contrast, however, between the two areas of the unit along the Community boundary. The green color of crops east of the boundary provides a distinct seasonal contrast to the fallow or abandoned agricultural fields on Community land. The proposed freeway would introduce forms, lines, colors, and textures distinctly different from those that currently exist.

Assessment Unit number: 20

Assessment Unit name: Light Industry/Warehouse/Agriculture

Visual Quality Ratings		
	Pre-project	Post-project
Vividness/Distinctiveness		
Spatial definition	2	3
Topographic relief	1	1
Landmarks	1	2
Skyline character	1	2
Water form	1	1
Vegetation	2	2
Built features	3	5
Adjacent landforms	1	1
Vividness/Distinctiveness Score	1.5	2.13
Intactness		
Level of naturalness	2	1
Degree of deviation	2	1
Intactness Score	1.5	1
Unity		
Degree of visual contrast	2	1
Degree of scale contrast	3	2
Degree of spatial dominance	3	4
Overall landscape	3	2
Unity Score	2.83	2.2
Visual Quality Score	6.3	5.3
Level of Visual Quality	Low	Low


Magnitude of Visual Quality Impact = *Very low (1)*

Light industrial structures are nondescript, not particularly memorable. They are arranged across the VAU in a functional but nonunified manner. Architectural styles, colors, and layouts are variable and uncoordinated. The VAU has a low level of visual intactness because of railroad spurs, loading docks, and related, encroaching aspects of light industrial development. The proposed freeway would slightly degrade the VAU's perceived unity by adding another human-made, encroaching feature. It would not enhance the visual relationship to existing landforms or land cover patterns. The freeway would become the most visible structure in the immediate foreground.

Visual Sensitivity = 2

The VAU is flat, with most of the area developed as low-density light industries. Adjacent areas are transitioning from agriculture to light industries/warehouses.

Change in Visual Character = *Notable (1)*

The proposed freeway would introduce forms and lines distinctly different from those that currently exist. It would cause little change in the already degraded visual continuity of the VAU or in its highly fragmented, visually diverse, multisized, light industrial structures. The transition from agricultural and abandoned agricultural lands is well underway throughout the VAU. The grain elevators in VAU number 11 are still quite prominent from much of this VAU.

Assessment Unit number: 21

Assessment Unit name: Agriculture/Medium-density Housing

Visual Quality Ratings		
	Pre-project	Post-project
Vividness/Distinctiveness		
Spatial definition	2	3
Topographic relief	1	1
Landmarks	2	4
Skyline character	3	3
Water form	1	1
Vegetation	3	4
Built features	4	5
Adjacent landforms	2	2
Vividness/Distinctiveness Score	2.25	2.75
Intactness		
Level of naturalness	4	3
Degree of deviation	4	2
Intactness Score	4	2.5
Unity		
Degree of visual contrast	3	1
Degree of scale contrast	4	2
Degree of spatial dominance	4	2
Overall landscape	4	2
Unity Score	3.83	1.83
Visual Quality Score	10.1	7.1
Level of Visual Quality	Moderate	Low

**Magnitude of Visual Quality Impact = *Moderately low (3)***

The VAU generally lacks striking visual patterns or landforms. Built features in the agricultural area are mostly limited to canals, roads, and small structures. The VAU's agricultural areas are rapidly being converted to residential uses. The new subdivisions are consistent in general scale, much like other area developments. Crop vegetation (about one-third of the VAU, in the south) is seasonal, and there will be ornamental vegetation associated with landscaping of the residential development. The agricultural and residential areas would be considered intact landscapes with no visually encroaching features; however, there is a distinct contrast between the two uses. The freeway (with TI) would be incongruous in the setting of the overall VAU, creating significant visual and scale contrast as viewed from residential areas.

Visual Sensitivity = 3

New residential development creates a substantial number of homes in and near the VAU. Agricultural fields have no structures.

Change in Visual Character = *Substantial (2)*

Existing homogeneous, flat landscape of agriculture and medium-density, single-family homes. No natural or human-made elements dominate spatially. Forms, lines, colors, and textures are those of suburban homes and adjacent fields, which generally lack visual diversity. The proposed freeway would be a spatially dominant structure and the TI, in the central portion of the unit, would be visible from throughout the VAU. The proposed freeway would introduce new and different forms, lines, colors, and textures.

Assessment Unit number: 22

Assessment Unit name: Dairy/Agriculture

Visual Quality Ratings		
	Pre-project	Post-project
Vividness/Distinctiveness		
Spatial definition	1	1
Topographic relief	1	1
Landmarks	1	2
Skyline character	2	3
Water form	1	1
Vegetation	4	4
Built features	3	5
Adjacent landforms	2	2
Vividness/Distinctiveness Score	1.88	2.38
Intactness		
Level of naturalness	5	3
Degree of deviation	4	3
Intactness Score	4.5	3
Unity		
Degree of visual contrast	4	3
Degree of scale contrast	3	3
Degree of spatial dominance	3	1
Overall landscape	3	2
Unity Score	3.17	2.17
Visual Quality Score	9.6	7.5
Level of Visual Quality	Moderately Low	Moderately Low

**Magnitude of Visual Quality Impact = *Very low (1)***

The VAU generally lacks striking visual patterns or landforms, and built features are mostly limited to canals, roads, and small structures. The buildings and canopies of the dairy operations are in the northern part of the unit on both sides of the alignment but do not substantially affect the visual continuity. Vegetative cover from crops in the agriculture fields is seasonal, and little other vegetation is present because the dairy operations include mostly livestock enclosures. The visual pattern of agricultural fields and dairy farms is mostly intact and free from visual encroachments. However, there is a distinct contrast between the open agricultural fields and the canopies and structures of the dairies. Elements of land uses of a similar scale create a somewhat harmonious, unified landscape.

Visual Sensitivity = 2

Agricultural fields with minimal number of farm buildings or homes characterize the land in or near the VAU. The dairy operations include barns and other structures, including some residences, and have employees on-site during working hours.

Change in Visual Character = *Substantial (2)*

There are no dominant or high-contrast elements. The fields and canopies of the dairy operations have strong horizontal lines, and consistent forms, colors, and textures create a moderately continuous landscape. The proposed freeway would be a substantial change in the landscape, and the forms, lines, colors, and textures would be distinctly different from those that currently exist.

Assessment Unit number: 23

Assessment Unit name: Agriculture/Medium-density Housing

Visual Quality Ratings		
	Pre-project	Post-project
Vividness/Distinctiveness		
Spatial definition	2	3
Topographic relief	1	1
Landmarks	2	3
Skyline character	3	3
Water form	1	1
Vegetation	4	3
Built features	2	4
Adjacent landforms	2	2
Vividness/Distinctiveness Score	2.13	2.5
Intactness		
Level of naturalness	4	3
Degree of deviation	4	3
Intactness Score	4	3
Unity		
Degree of visual contrast	4	2
Degree of scale contrast	3	2
Degree of spatial dominance	4	3
Overall landscape	4	2
Unity Score	3.83	2.17
Visual Quality Score	10.0	7.7
Level of Visual Quality	Moderate	Moderately Low

**Magnitude of Visual Quality Impact = *L* (2)**

The VAU generally lacks striking visual patterns or landforms. Built features in the agricultural areas are mostly limited to canals, roads, and small structures. The residential area encompasses the southern part of the VAU. This new subdivision is consistent in general scale, much like other development occurring in the area. The crop vegetation is seasonal, and there is ornamental vegetation associated with the landscaping of the residential development. Both the agricultural areas and residential areas are intact landscapes, with no visually encroaching features; however, there is a distinct contrast between the two uses. The freeway would be incongruous in the setting of the overall VAU and would create significant visual and scale contrast as viewed from the residential areas.

Visual Sensitivity = 3

New residential development increases the numbers of homes in or near the VAU. Agricultural fields have a minimal number of farm buildings or homes in or near the VAU.

Change in Visual Character = *Severe* (3)

Existing homogeneous, flat landscape of agriculture and medium-density, single-family homes. No natural or constructed elements dominate spatially. Forms, lines, colors, and textures are those of suburban homes and adjacent agricultural fields. The housing and the fields generally lack visual diversity. The proposed freeway would be a spatially dominant structure. The proposed freeway would introduce forms, lines, colors, and textures distinctly different from those that currently exist.

Assessment Unit number: 24

Assessment Unit name: Medium-density Housing

Visual Quality Ratings		
	Pre-project	Post-project
Vividness/Distinctiveness		
Spatial definition	2	2
Topographic relief	1	1
Landmarks	1	2
Skyline character	2	3
Water form	1	1
Vegetation	1	1
Built features	3	5
Adjacent landforms	1	1
Vividness/Distinctiveness Score	1.5	2.0
Intactness		
Level of naturalness	2	2
Degree of deviation	2	2
Intactness Score	2	2
Unity		
Degree of visual contrast	3	1
Degree of scale contrast	3	1
Degree of spatial dominance	3	2
Overall landscape	3	1
Unity Score	3	1.17
Visual Quality Score	8.5	5.2
Level of Visual Quality	Moderately Low	Low


Magnitude of Visual Quality Impact = *Low (2)*

The VAU generally lacks striking visual patterns or landforms, and built features are limited to single-family residences and associated walls and landscaping. The VAU lacks a strong sense of contrast in the developed area, and the housing has a uniform scale. Construction and operation of the proposed freeway and TI would remove some of the residences, increasing the scale and visual contrast and spatially separating the eastern side from the western side of the neighborhoods. The freeway (with TI) would be incongruous in the setting of the overall VAU's housing.

Visual Sensitivity = 3

Medium-density residential areas exist throughout the VAU.

Change in Visual Character = *Severe (3)*

The unit is a homogeneous, flat landscape of existing medium-density, single-family housing. No natural or human-made elements dominate spatially. Forms, lines, colors, and textures are those of suburban homes and the associated landscaping for the open space and individual homes. The housing generally lacks visual diversity. The proposed freeway would be a spatially dominant structure whose TI, in the central part of the unit, would be visible from throughout the VAU. The proposed freeway would introduce forms, lines, colors, and textures distinctly different from those that currently exist.

Assessment Unit number: 25

Assessment Unit name: Agriculture

Visual Quality Ratings		
	Pre-project	Post-project
Vividness/Distinctiveness		
Spatial definition	1	2
Topographic relief	1	1
Landmarks	1	2
Skyline character	2	3
Water form	1	1
Vegetation	4	4
Built features	2	5
Adjacent landforms	2	2
Vividness/Distinctiveness Score	1.75	2.5
Intactness		
Level of naturalness	5	2
Degree of deviation	5	3
Intactness Score	5	2.5
Unity		
Degree of visual contrast	5	3
Degree of scale contrast	4	3
Degree of spatial dominance	3	1
Overall landscape	3	2
Unity Score	3.5	2.17
Visual Quality Score	1.03	7.2
Level of Visual Quality	Moderate	Moderately Low


Magnitude of Visual Quality Impact = *Low (2)*

The VAU generally lacks striking visual patterns or landforms, and built features are mostly limited to canals, roads, and small structures. The buildings and canopies of a dairy operation are in the central part of the unit on the western side of the alignment but do not substantially affect the visual continuity. Vegetative cover from crops is seasonal and little other vegetation is present. The visual pattern of agricultural fields is mostly intact and free from visual encroachments. Elements of similar scale create an overall harmonious, unified landscape. The addition of the freeway, including the interchange, would decrease the cohesive feel of the landscape and would provide a higher level of contrasting forms.

Visual Sensitivity = *1*

Agricultural fields with minimal number of farm buildings or homes in or near the VAU. The northeastern portion of the VAU is converting to single-family residential.

Change in Visual Character = *Substantial (2)*

There are no dominant or high-contrast elements. The strong horizontal lines and consistent forms, colors, and textures create a moderately continuous landscape. The proposed freeway would introduce forms, lines, colors, and textures distinctly different from those that currently exist. Planned residential development in the northeastern portion will appear like other nearby subdivisions.

Assessment Unit number: 26

Assessment Unit name: Riverbed/Heavy Industry

Visual Quality Ratings		
	Pre-project	Post-project
Vividness/Distinctiveness		
Spatial definition	1	3
Topographic relief	3	3
Landmarks	3	4
Skyline character	1	1
Water form	3	3
Vegetation	2	2
Built features	2	5
Adjacent landforms	3	3
Vividness/Distinctiveness Score	2.25	2.88
Intactness		
Level of naturalness	3	1
Degree of deviation	3	1
Intactness Score	3	1
Unity		
Degree of visual contrast	3	1
Degree of scale contrast	3	2
Degree of spatial dominance	2	3
Overall landscape	3	2
Unity Score	2.83	2
Visual Quality Score	8.1	5.9
Level of Visual Quality	Moderately Low	Low


**Magnitude of
Visual Quality Impact = *Low (2)***

The most distinctive feature of the VAU is the dry riverbed of the Salt River. The riverbed provides some topographic relief to the unit compared with the surrounding flat agriculture areas. The form also gives a sense of water and has a natural visual character, although it has flows only during certain periods of increased rainfall. The structures and equipment associated with sand and gravel operations are generally small in relation to the river form and are occasionally moved, which changes the visual setting of the unit. There is minimal vegetation except in areas that are undisturbed for long periods. The riverbed dominates the unit spatially, but since the scale of visual intrusions such as buildings is small, it retains a somewhat harmonious, unified landscape.

Visual Sensitivity = *1*

Industrial sand and gravel operations are the major land use; there are no residences or recreation facilities in the VAU.

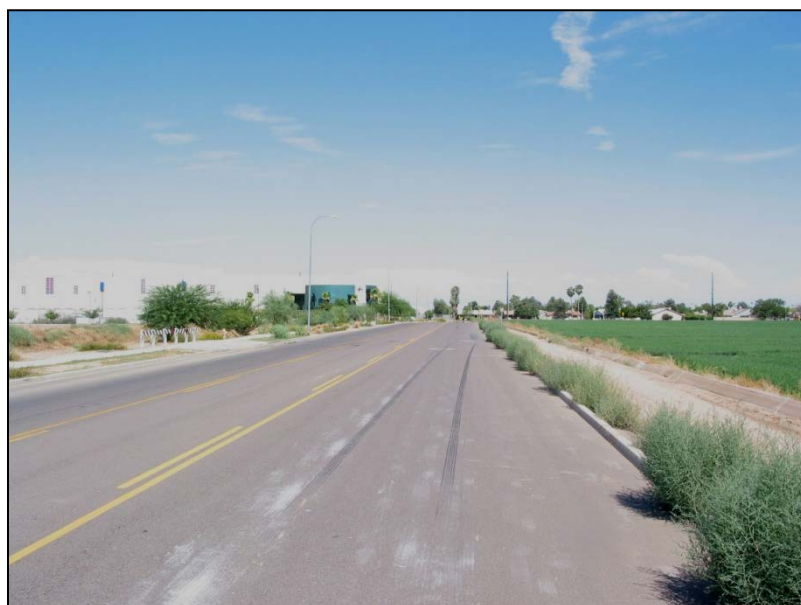
**Change in
Visual Character = *Notable (1)***

There are no dominant or high-contrast elements. While the proposed freeway would be a notable change in the landscape, the forms, lines, colors, and textures would be somewhat compatible with those of the industrial uses that currently exist.

Assessment Unit number: 27

Assessment Unit name: Medium-density Housing/Warehouse/Agriculture

Visual Quality Ratings		
	Pre-project	Post-project
Vividness/Distinctiveness		
Spatial definition	2	3
Topographic relief	1	1
Landmarks	2	3
Skyline character	3	4
Water form	1	1
Vegetation	2	2
Built features	4	6
Adjacent landforms	1	1
Vividness/Distinctiveness Score	2.03	2.66
Intactness		
Level of naturalness	2	1
Degree of deviation	2	1
Intactness Score	2	1
Unity		
Degree of visual contrast	2	2
Degree of scale contrast	2	3
Degree of spatial dominance	2	3
Overall landscape	3	3
Unity Score	2	2.83
Visual Quality Score	6.0	6.4
Level of Visual Quality	Low	Low


Magnitude of Visual Quality Impact = *Very low (1)*

Although this VAU has multiple land uses, there are no memorable visual features. Warehouses and warehouse activities, one agricultural field, and medium-density housing tend to run into each other in separate quadrants of the VAU. Structures in the various land uses are arranged in an orderly way, but are not particularly unified. The residential and agricultural uses appear incongruous when adjacent to the warehouses. The VAU's landscapes' low level of harmonious arrangement and contrasting visual elements result in the overall landscape's low memorability. Into this context, the proposed freeway and large system TI with I-10 would provide a memorable human-made structural presence that would be ordered and vividly different in scale from its surroundings.

Visual Sensitivity = 3

The VAU is flat, with a small portion in what appears to be abandoned agricultural fields in the southern portion and in medium-density housing; the rest is warehouse structures and activities.

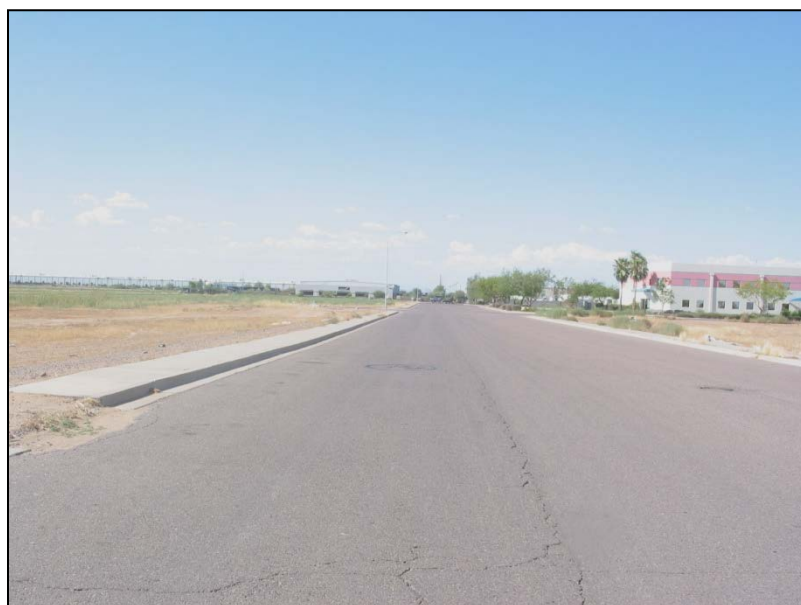
Change in Visual Character = *Substantial (2)*

No single VAU component visually dominates through its extent or contrast with other components. Warehouses, the largest elements, are of simple lines and forms. Housing has the most diversity in terms of lines, colors, and textures. The VAU is highly discontinuous in terms of its visual flow among component uses and structures. The proposed freeway—and its two TIs within this VAU—would substantially exacerbate this visual discontinuity. The freeway would introduce forms and lines distinctly different from those that currently exist.

Assessment Unit number: 28

Assessment Unit name: Warehouse/Agriculture

Visual Quality Ratings		
	Pre-project	Post-project
Vividness/Distinctiveness		
Spatial definition	1	2
Topographic relief	1	1
Landmarks	1	2
Skyline character	2	3
Water form	1	1
Vegetation	2	1
Built features	3	5
Adjacent landforms	1	1
Vividness/Distinctiveness Score	1.5	2.0
Intactness		
Level of naturalness	4	3
Degree of deviation	4	2
Intactness Score	4	2.5
Unity		
Degree of visual contrast	3	2
Degree of scale contrast	3	1
Degree of spatial dominance	2	3
Overall landscape	3	2
Unity Score	2.83	2.0
Visual Quality Score	8.3	6.7
Level of Visual Quality	Moderately Low	Moderately Low


Magnitude of Visual Quality Impact = *Very low (1)*

There are no memorable visual features in this VAU. Structures associated with the warehouse activities are arranged in an orderly way, but are not particularly unified. In places, the agricultural uses appear incongruous when adjacent to the warehouses. The VAU's landscapes' low level of harmonious arrangement and contrasting visual elements result in the overall landscape's low memorability. Into this context, the proposed freeway would provide a memorable human-made structural presence that would be ordered and vividly different in scale from its surroundings.

Visual Sensitivity = 2

VAU is flat, with a large portion in cultivation, and the rest is warehouse structures and activities.

Change in Visual Character = *Substantial (2)*

The agricultural fields visually dominate because of their expanse. Warehouses, although the largest elements, are of simple lines and forms, and in this open landscape do not visually dominate. The VAU's low edge diversity (warehouses adjacent to agricultural fields) contributes little to the perception of a diverse landscape. Because of the expanse and relative low density of structural additions, the landscape is fairly continuous. The proposed freeway (and the TI at the southern end of the VAU) would be a substantial change to this expansive landscape and would interrupt the visual continuity. The freeway would introduce forms, lines, and colors distinctly different from those that currently exist.

Assessment Unit number: 29

Assessment Unit name: Medium-density Housing/Agriculture

Visual Quality Ratings		
	Pre-project	Post-project
Vividness/Distinctiveness		
Spatial definition	2	3
Topographic relief	1	1
Landmarks	2	4
Skyline character	2	2
Water form	1	1
Vegetation	2	3
Built features	5	5
Adjacent landforms	2	2
Vividness/Distinctiveness Score	2.125	2.63
Intactness		
Level of naturalness	3	3
Degree of deviation	2	2
Intactness Score	2.5	2.5
Unity		
Degree of visual contrast	2	1
Degree of scale contrast	2	2
Degree of spatial dominance	2	2
Overall landscape	2	2
Unity Score	2.0	2.25
Visual Quality Score	6.6	7.1
Level of Visual Quality	Low	Moderately Low

**Magnitude of Visual Quality Impact = Low (2)**

This VAU has medium-density, single-family housing mixed with warehousing areas and agricultural fields in the northern section. Neither housing nor open space areas, individually, are particularly visually memorable. The freeway (with TI) would be incongruous in the setting of the overall VAU's housing and increase the visual contrasts within the unit.

Visual Sensitivity = 3

The residential areas contain a substantial number of homes in or near the VAU, and continued conversion of the agricultural areas to residential will increase the number of residences in the unit. Agricultural fields have a minimal number of farm buildings or homes in or near the VAU.

Change in Visual Character = Severe (3)

Existing homogeneous, flat landscape consists primarily of medium-density, single-family housing; several agricultural fields; and several new, large warehouses. Forms, lines, colors, and textures are those of suburban homes, an orderly layout of crops, and the large warehouses. The housing (mostly all in the southern half of the VAU) and fields (only a small number, located in the northern portion of the VAU) lack visual diversity. The proposed freeway would be a spatially dominant structure and would have three TIs that would be visible from throughout the VAU. The proposed freeway would introduce forms, lines, colors, and textures distinctly different from those that currently exist.

Assessment Unit number: 30

Assessment Unit name: Low-density Housing/Agriculture

Visual Quality Ratings		
	Pre-project	Post-project
Vividness/Distinctiveness		
Spatial definition	2	2
Topographic relief	2	2
Landmarks	3	4
Skyline character	2	3
Water form	2	2
Vegetation	3	2
Built features	3	5
Adjacent landforms	3	3
Vividness/Distinctiveness Score	2.62	3.0
Intactness		
Level of naturalness	4	2
Degree of deviation	4	3
Intactness Score	4	2.5
Unity		
Degree of visual contrast	4	2
Degree of scale contrast	4	3
Degree of spatial dominance	4	2
Overall landscape	4	2
Unity Score	4.0	2.16
Visual Quality Score	10.6	7.7
Level of Visual Quality	Moderate	Moderately Low


**Magnitude of
Visual Quality Impact = *Low (2)***

The VAU generally lacks striking visual patterns or landforms, and built features in the agricultural areas are mostly limited to canals, roads, and small structures. The unit is adjacent to the Salt River, and the river channel landform provides topographic relief and a sense of spatial definition. Vegetative cover from crops is seasonal and there is ornamental vegetation associated with the residential landscapes. The visual pattern of agricultural fields is mostly intact and free from visual encroachments. The residences are of similar scale, and, generally, the unit has an overall harmonious, unified landscape. The addition of the freeway, including the interchange and bridge approaches, would decrease the cohesive feel of the landscape and would provide a higher level of contrasting forms.

Visual Sensitivity = 3

Agricultural fields with minimal number of farm buildings or homes in or near the VAU.

**Change in
Visual Character = *Substantial (2)***

There are no dominant or high contrast elements. The strong horizontal lines and consistent forms, colors, and textures of the agricultural areas create a moderately continuous landscape with some contrast at the agricultural-residential edge. There is also strong contrast between the unit and the Salt River channel. The proposed freeway would introduce forms, lines, colors, and textures distinctly different from those that currently exist and would become a dominant element adjacent to the residential area.

Assessment Unit number: 31

Assessment Unit name: Riverbed/Heavy Industry

Visual Quality Ratings		
	Pre-project	Post-project
Vividness/Distinctiveness		
Spatial definition	2	1
Topographic relief	3	3
Landmarks	3	3
Skyline character	1	1
Water form	3	3
Vegetation	2	2
Built features	2	5
Adjacent landforms	3	3
Vividness/Distinctiveness Score	2.38	2.63
Intactness		
Level of naturalness	3	1
Degree of deviation	3	1
Intactness Score	3	1
Unity		
Degree of visual contrast	2	1
Degree of scale contrast	4	2
Degree of spatial dominance	2	3
Overall landscape	3	2
Unity Score	2.67	2
Visual Quality Score	8.1	5.6
Level of Visual Quality	Moderately Low	Low


Magnitude of Visual Quality Impact = *Low (2)*

The most distinctive feature of the VAU is the dry riverbed of the Salt River. The riverbed provides some topographic relief to the unit compared with the surrounding flat agriculture and residential areas. The form also gives a sense of water and has a natural visual character, although it has flows only during certain periods of increased rainfall. The structures and equipment associated with sand and gravel operations are generally small in relation to the river form and are occasionally moved, which changes the visual setting of the unit. There is minimal vegetation except in areas that are undisturbed for long periods. The riverbed dominates the unit spatially, but since the scale of visual intrusions such as buildings is small, it retains a somewhat harmonious, unified landscape.

Visual Sensitivity = *1*

Industrial sand and gravel operations are the major land use; there are no residences or recreational facilities in the VAU. There are residences located to the south of the VAU.

Change in Visual Character = *Notable (1)*

There are no dominant or high-contrast elements. While the proposed freeway would be a notable change in the landscape, the forms, lines, colors, and textures would be somewhat compatible with those that currently exist.

Assessment Unit number: 32

Assessment Unit name: Medium-density Housing

Visual Quality Ratings		
	Pre-project	Post-project
Vividness/Distinctiveness		
Spatial definition	2	3
Topographic relief	1	1
Landmarks	3	5
Skyline character	2	3
Water form	2	2
Vegetation	2	3
Built features	4	5
Adjacent landforms	3	3
Vividness/Distinctiveness Score	2.38	3.13
Intactness		
Level of naturalness	4	2
Degree of deviation	4	2
Intactness Score	4	2
Unity		
Degree of visual contrast	4	2
Degree of scale contrast	5	3
Degree of spatial dominance	3	4
Overall landscape	4	2
Unity Score	4.0	2.5
Visual Quality Score	10.4	7.6
Level of Visual Quality	Moderate	Moderately Low

**Magnitude of Visual Quality Impact = Low (2)**

This VAU generally lacks striking visual patterns or landforms. Built features in the agricultural areas are mostly limited to canals, roads, and small structures. The residential areas are currently being developed and are anticipated to be consistent in general scale, much like other housing development occurring in the area. The crop vegetation is seasonal and there will be ornamental vegetation associated with the residential landscapes. Both the agricultural areas and future residential areas are intact landscapes, with no visually encroaching features. The freeway (with TI) would be incongruous in the setting of the overall VAU and create significant visual and scale contrast as viewed from the residential areas.

Visual Sensitivity = 3

New residential development creates a substantial number of homes in or near the VAU.

Change in Visual Character = Severe (3)

Existing homogeneous, flat landscape is primarily medium-density, single-family housing. No natural or constructed elements dominate spatially. Forms, lines, colors, and textures are those of suburban homes. The housing generally lacks visual diversity. The proposed freeway would be a spatially dominant structure and the TI, in the central portion of the unit, would be visible from throughout the VAU. The proposed freeway would introduce forms, lines, colors, and textures distinctly different from those that currently exist.

Assessment Unit number: 33

Assessment Unit name: Abandoned Agriculture/Agriculture

Visual Quality Ratings		
	Pre-project	Post-project
Vividness/Distinctiveness		
Spatial definition	3	4
Topographic relief	1	1
Landmarks	1	2
Skyline character	4	5
Water form	1	1
Vegetation	4	4
Built features	3	5
Adjacent landforms	5	5
Vividness/Distinctiveness Score	2.75	3.38
Intactness		
Level of naturalness	5	3
Degree of deviation	5	3
Intactness Score	5	3
Unity		
Degree of visual contrast	5	3
Degree of scale contrast	4	3
Degree of spatial dominance	3	1
Overall landscape	4	2
Unity Score	4	2.75
Visual Quality Score	11.8	9.1
Level of Visual Quality	Moderate	Moderately Low


Magnitude of Visual Quality Impact = *Low* (2)

The VAU generally lacks striking visual patterns or landforms, and built features are mostly limited to canals, roads, and small structures. There is seasonal vegetative cover from crops in the agricultural fields on the eastern side of the VAU. These greens contrast vividly with the light brown color of the fallow or abandoned agricultural fields on the western side of the VAU. The visual pattern of agricultural fields is mostly intact and free from visual encroachments. Elements of similar scale create an overall harmonious, unified landscape. The proximity of the South Mountains provides a sense of spatial definition, which would increase on the eastern side of the VAU because of the space-defining character of the proposed freeway.

Visual Sensitivity = *1*

Agricultural fields with minimal number of farm buildings or homes in or near the VAU.

Change in Visual Character = *Substantial* (2)

There are no dominant or high-contrast elements. The strong horizontal lines and consistent forms, colors, and textures create a moderately continuous landscape. There is a strong contrast, however, between the two areas of the unit along the Community boundary. The green color of crops east of the boundary provides a distinct seasonal contrast to the currently fallow or abandoned fields on Community land. The proposed freeway would introduce forms, lines, colors, and textures distinctly different than those currently existing.

Assessment Unit number: 34

Assessment Unit name: Low-density Housing/Casino

Visual Quality Ratings		
	Pre-project	Post-project
Vividness/Distinctiveness		
Spatial definition	4	6
Topographic relief	5	4
Landmarks	3	5
Skyline character	4	6
Water form	1	1
Vegetation	4	3
Built features	3	6
Adjacent landforms	5	4
Vividness/Distinctiveness Score	3.63	4.38
Intactness		
Level of naturalness	5	2
Degree of deviation	4	2
Intactness Score	4.5	2
Unity		
Degree of visual contrast	5	2
Degree of scale contrast	4	2
Degree of spatial dominance	5	2
Overall landscape	4	2
Unity Score	4.33	2
Visual Quality Score	12.5	8.3
Level of Visual Quality	Moderately High	Moderately Low

**Magnitude of Visual Quality Impact = *Moderately low* (3)**

The VAU is adjacent to the striking landforms of the South Mountains and includes a portion of a small ridge at the northern end. Built features include the casino and single-family residences. The power lines and mountain landforms provide a sense of spatial definition, and the landscape is visually cohesive. The casino contrasts in scale with the nearby residences, but does not present a strong contrast in the overall context of the nearby mountains. The freeway, especially the extensive road cuts in this VAU and VAU number 35, would increase the scale and visual contrast and would spatially separate the park and mountain area on the east from Community land on the west. The freeway and the accompanying road cuts would be incongruous in the setting of the overall low-density and open desert landscape.

Visual Sensitivity = 3

The recreational area of SMPP and low-density residential areas are in or adjacent to the VAU. The casino attracts many visitors.

Change in Visual Character = *Severe* (3)

The unit is a heterogeneous landscape of low-density housing, a large commercial building, and significant open desert and mountain landforms. Natural elements dominate the VAU spatially. Forms, lines, colors, and textures are those of suburban homes, large structures, and undisturbed desert vegetation. The housing generally lacks visual diversity; however, the casino has contrasting forms, lines, and colors. The proposed freeway and road cuts would be visible from most of the VAU. It would also be the dominant feature and would introduce new and different forms, lines, colors, and textures.

Assessment Unit number: 35

Assessment Unit name: Open Desert

Visual Quality Ratings		
	Pre-project	Post-project
Vividness/Distinctiveness		
Spatial definition	4	6
Topographic relief	6	5
Landmarks	5	6
Skyline character	5	6
Water form	1	1
Vegetation	4	3
Built features	2	5
Adjacent landforms	6	5
Vividness/Distinctiveness Score	4.13	4.63
Intactness		
Level of naturalness	6	3
Degree of deviation	5	2
Intactness Score	5.5	2.5
Unity		
Degree of visual contrast	5	2
Degree of scale contrast	4	2
Degree of spatial dominance	5	2
Overall landscape	5	2
Unity Score	4.83	2
Visual Quality Score	14.5	9.2
Level of Visual Quality	Moderately High	Moderately Low


Magnitude of Visual Quality Impact = *Moderately low (3)*

A portion of this VAU is within SMPP, and the unit contains two ridge landforms of the South Mountains. Built features are limited to the power lines, which provide some sense of spatial definition. The mountain ridges provide a strong sense of spatial definition, and the landscape is visually cohesive. Construction and operation of the proposed freeway would increase the scale and visual contrast and spatially separate the park and mountain area on the east from Community land on the west. The freeway, particularly with its extensive road cuts, would be incongruous in the setting of the open desert landscape VAUs.

Visual Sensitivity = 3

The SMPP recreational areas are adjacent to the VAU.

Change in Visual Character = *Severe (3)*

The unit is a homogenous landscape of significant open desert and mountain landforms. The natural elements dominate the VAU and the forms, lines, colors, and textures are those of undisturbed desert vegetation. The proposed freeway would be the dominant feature and introduce forms, lines, colors, and textures distinctly different from those that currently exist. The proposed, extensive road cuts would be highly visible from most everywhere within the VAU and from some areas in the adjacent VAUs, including the westernmost housing developments along Pecos Road.

Assessment Unit number: 36

Assessment Unit name: Medium-density Housing/Open Desert/Agriculture

Visual Quality Ratings		
	Pre-project	Post-project
Vividness/Distinctiveness		
Spatial definition	3	2
Topographic relief	3	3
Landmarks	4	5
Skyline character	4	5
Water form	1	1
Vegetation	4	3
Built features	3	5
Adjacent landforms	5	4
Vividness/Distinctiveness Score	3.38	3.75
Intactness		
Level of naturalness	4	3
Degree of deviation	4	2
Intactness Score	4	2.5
Unity		
Degree of visual contrast	4	2
Degree of scale contrast	3	2
Degree of spatial dominance	3	2
Overall landscape	3	2
Unity Score	3.17	2
Visual Quality Score	10.6	8.3
Level of Visual Quality	Moderate	Moderately Low

**Magnitude of Visual Quality Impact = Low (2)**

The VAU is adjacent to striking landforms of the South Mountains. Built features include single-family homes and associated walls and landscaping that contrast strongly with the mountains. Housing is of a uniform scale with little diversity. Construction and operation of the proposed freeway and TIs would increase differences in scale and visual contrast and would separate the northern residential area from the open desert and agriculture to the south. The freeway (with TIs) would be incongruous with respect to the VAU's housing and the mountains. The freeway road cuts associated with VAU number 35 would be visible from some of the housing developments.

Visual Sensitivity = 3

Medium-density residential areas exist, are under construction, or are planned on the northern side of Pecos Road. Agriculture and open desert areas would remain to the south within the VAU.

Change in Visual Character = Severe (3)

The unit is a somewhat heterogeneous landscape of medium-density housing, agriculture, open desert, and mountain landforms. Natural elements dominate the VAU to the north, and there are expansive open views to the south. The overhead 230 kilovolt transmission line paralleling Pecos Road is a dominant vertical element. Forms, lines, colors, and textures are those of suburban homes, agriculture fields, and undisturbed desert vegetation. The housing generally lacks visual diversity. The proposed freeway would be visible from most of the VAU, with the VAU number 35 road cuts also visible. The freeway and TIs would be the dominant feature and would introduce new and different forms, lines, and colors.

Assessment Unit number: 37

Assessment Unit name: Medium-density Housing/Open Desert

Visual Quality Ratings		
	Pre-project	Post-project
Vividness/Distinctiveness		
Spatial definition	3	4
Topographic relief	4	3
Landmarks	3	4
Skyline character	3	4
Water form	1	1
Vegetation	4	3
Built features	4	5
Adjacent landforms	3	3
Vividness/Distinctiveness Score	3.13	3.38
Intactness		
Level of naturalness	4	3
Degree of deviation	3	2
Intactness Score	3.5	2.5
Unity		
Degree of visual contrast	4	1
Degree of scale contrast	3	2
Degree of spatial dominance	3	2
Overall landscape	3	2
Unity Score	3.12	1.83
Visual Quality Score	9.8	7.7
Level of Visual Quality	Moderate	Moderately Low


Magnitude of Visual Quality Impact = Low (2)

The VAU is adjacent to the striking landforms of the South Mountains, but they lie farther north and do not dominate the unit. Smaller foothill landforms are within the unit along the proposed freeway alignment and open desert lies to the south. Built features include single-family homes and associated walls and landscaping. The residential development contrasts strongly with the mountains, foothills, and open desert. The housing is of a uniform scale. Construction and operation of the proposed freeway and TI would increase the scale and visual contrast and separate the northern residential area from the open desert to the south. The freeway (with TI) would be incongruous in the setting of the overall VAU's housing and open space.

Visual Sensitivity = 3

Medium-density residential areas exist or are planned on the northern side of Pecos Road. Open desert areas would remain to the south within the VAU.

Change in Visual Character = Severe =3

The unit is a somewhat heterogeneous landscape of medium-density housing, open desert, and foothills landforms, with residential area dominating the VAU to the north and expansive open views to the south. Forms, lines, colors, and textures are those of suburban homes and undisturbed desert vegetation. The housing generally lacks visual diversity. The proposed freeway would be visible from most of the VAU, although the vertical scale of freeway components would not contrast strongly with the scale of the homes and commercial buildings. It would also be the dominant feature and would introduce new and different forms, lines, and colors.

Assessment Unit number: 38

Assessment Unit name: Medium-density Housing/Abandoned Agriculture

Visual Quality Ratings		
	Pre-project	Post-project
Vividness/Distinctiveness		
Spatial definition	2	3
Topographic relief	2	2
Landmarks	3	4
Skyline character	3	4
Water form	1	1
Vegetation	3	2
Built features	4	5
Adjacent landforms	2	2
Vividness/Distinctiveness Score	2.5	3.0
Intactness		
Level of naturalness	2	2
Degree of deviation	3	2
Intactness Score	2.5	2.0
Unity		
Degree of visual contrast	3	2
Degree of scale contrast	3	2
Degree of spatial dominance	2	2
Overall landscape	3	2
Unity Score	2.83	2
Visual Quality Score	7.8	7.0
Level of Visual Quality	Moderately Low	Moderately Low

**Magnitude of Visual Quality Impact = Very low (1)**

In this unit the landforms of the South Mountains lie much farther north and are not a strong visual feature because of the development in the foreground. Built features include single-family residences and associated walls and landscaping. The I-10/SR 202L TI is visible just east of the unit. There is still a sense of contrast between the abandoned agriculture to the south, the residential development, and the mountain foothills within the development areas. The developed area is of a generally uniform scale, but does include larger-scaled school and commercial buildings. The proposed freeway and three TIs would increase the scale and visual contrast and separate the residential area from the open space to the south. The freeway and TIs would be incongruous in the setting of the overall VAU's housing and open space.

Visual Sensitivity = 3

Medium-density residential areas exist on the northern side of Pecos Road.

Change in Visual Character = Severe (3)

The VAU is a somewhat heterogeneous landscape of medium-density housing and abandoned agriculture areas. Residential elements spatially dominate in the north, and there are expansive open views to the south. Forms, lines, colors, and textures are those of suburban homes and abandoned agricultural fields. The housing generally lacks visual diversity. The proposed freeway would be visible from most of the VAU, although the vertical scale of freeway components would not strikingly contrast with the scale of the residences and commercial buildings. The freeway and TIs would be the dominant features and would introduce new and different forms, lines, and colors.

Appendix B

Process of Determining Visual Impacts by VAU and Alternative; Determination of Visual Quality Scores

Appendix B

Process of Determining Visual Impacts by VAU and by Alternative; Determination of Visual Quality Scores

Visual quality ratings for the each VAU were determined by first generating a “visual quality score” for each unit. Appendix A contains the rating sheets for the pre- and post-project visual quality of each of the project’s 38 VAUs.

Vividness, or *distinctiveness*, is defined as the memorability of the visual impression received from the contrasting landscape elements as they combine to form a striking and distinctive visual pattern. *Vividness* was measured using eight factors (see below). *Intactness* is defined as the integrity of the visual order in the natural and built environment and the extent to which the landscape is free from visual encroachment. To determine the intactness of a unit, two factors were considered: level of naturalness and the degree of deviation from the surroundings. *Unity* is a measure of the degree to which the visual resources join to form a single, coherent, harmonious visual pattern. It refers to the compositional harmony or intercompatibility among the landscape elements—an organized balance. Unity was measured by two factors: the degree of contrast between built elements and their setting in the landscape, and the unity of the overall landscape. The ratings for the degree of contrast between built elements and their setting in the landscape were based on ratings of the visual compatibility, scale contrast, and spatial dominance.

Visual quality components were rated on a seven-digit scale from “very high” to “very low.” Thus, each of the eight elements of the component *vividness* were summed and divided by eight to give an average score for this component. Similarly, the two *intactness* elements’ ratings were summed and divided by two to yield an average score for this component. The first three elements of the *unity* component were summed and divided by three to yield an average and then the rating for the element *overall landscape* was added to this subtotal, with the resulting subtotal divided by two to produce a final average for the component.

Adding the averages for each of the components together meant that the highest overall visual quality rating, or visual quality score, possible was 21. Equation (1) displays in mathematical form how this score is derived:

$$\frac{\sum_{V_8}^{V_1}}{8} + \frac{\sum_{I_2}^{I_1}}{2} + \left(\frac{\sum_{U_3}^{U_1}}{3} + OL \right) \frac{1}{2} = \text{visual quality score} \quad (1)$$

where each variable is evaluated on a scale of 1 to 7,

Vividness/Distinctiveness

- V₁ = spatial definition
- V₂ = topographic relief
- V₃ = landmarks
- V₄ = skyline character
- V₅ = water form/riparian features
- V₆ = vegetation
- V₇ = adjacent landforms
- V₈ = built features

Intactness

- I₁ = level of naturalness
- I₂ = degree of deviation

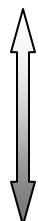
Unity

- U₁ = visual contrast
- U₂ = scale contrast
- U₃ = spatial dominance
- OL = unity of the overall landscape


The above variables are more fully defined in the following 1-to-7 ranges:

Vividness/Distinctiveness	
<p>Spatial Definition</p> <p>1. few vertical features; undefined sense of space; agricultural fields</p> <p>7. strong sense of defined space</p>	<p>Landmarks</p> <p>1. no distinctive or memorable built or natural features</p> <p>5. Proposed South Mountain Freeway, especially interchanges and overpasses</p> <p>7. distinctive built or natural features in or near the VAU</p>
<p>Topographic Relief</p> <p>1. generally flat; minimal topographic features</p> <p>7. mountainous terrain</p>	<p>Skyline Character</p> <p>1. generally featureless or monotonous horizon</p> <p>7. distinctive profile of built or natural elements</p>

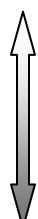
Water Form/Riparian Features

- 
1. no water or significant drainage features apparent in landscape
 7. reservoirs, rivers are notable features in/near corridor


Adjacent Landforms

- 
1. no natural features
 7. notable mountains, rivers, or other natural features

Vegetation

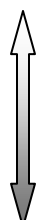
- 
1. industrial/disturbed areas with minimal vegetation
 7. undisturbed desert or riparian areas

Built Features


- 
1. few, if any built elements
 2. agricultural fields; canals; few permanent structures
 7. fully developed; very little open space

Intactness

Level of Naturalness


- 
1. industrial-appearing landscapes
 2. warehouse areas, presence of light industry
 3. commercial areas
 4. residential areas
 5. dairy cow fields/equipment
 6. pasture/open fields
 7. open, undisturbed desert or river channel

Degree of Deviation


- 
1. presence of encroaching or incongruous elements in the visual setting that create a fragmented landscape
 7. integrated, cohesive landscape (for example, parks, cemetery, campus)

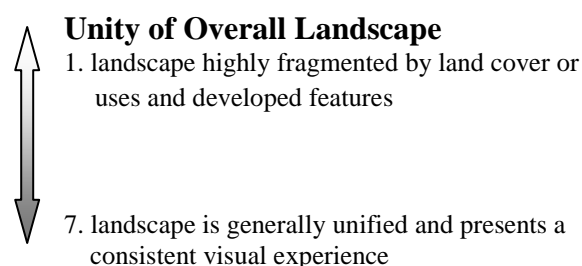
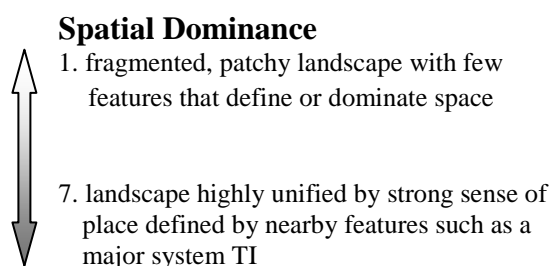
Unity

Visual Contrast

- 
1. presence of disparate, high-contrast features in form, line, color, or texture that disrupt the unity of the landscape
 7. landscape elements compatible with each other and give sense of unified landscape

Scale Contrast

- 
1. high contrast in the size of landscape features or that disrupts sense of unified landscape
 7. similar or appropriate scale among landscape features landscapes



The numerical visual quality score for each VAU was translated into letter designations according to this scheme:

19–21 = VH (very high)

16–18 = H (high)

13–15 = MH (moderately high)

10–12 = M (moderate)

7–9 = ML (moderately low)

4–6 = L (low)

1–3 = VL (very low)

Tables B-1 through B-4 refer to the process explained in Appendix C.

Table B-1. Magnitude of Change, by Visual Assessment Unit

Visual Assessment Unit		Change in Visual Character ^a	Visual Quality						Visual Sensitivity ^e
			Pre-project Score ^b		Post-project Score ^b		Visual Quality Impact ^c	Magnitude of Impact ^d	
1	Light Industry/Agriculture	Notable (1)	7.3	ML	6.1	L	1.2	L (2)	2
2	Light Industry	Notable (1)	4.6	L	4.2	L	0.4	VL (1)	2
3	Light Industry/Agriculture	Notable (1)	8.0	ML	6.2	ML	1.8	VL (1)	2
4	Agriculture	Substantial (2)	10.3	M	7.7	ML	2.6	L (2)	1
5	Medium-density Housing	Severe (3)	8.8	ML	5.9	L	2.9	L (2)	3
6	Agriculture	Substantial (2)	11.3	M	7.3	ML	4.0	L (2)	1
7	Riverbed/Heavy Industry	Notable (1)	7.6	ML	5.6	L	2.0	L (2)	1
8	Low-density Housing/ Agriculture	Substantial (2)	10.6	M	7.0	ML	3.6	L (2)	3
9	Agriculture	Substantial (2)	10.6	M	7.7	ML	2.9	L (2)	1
10	Warehouse/Agriculture	Severe (3)	6.6	ML	6.0	L	0.6	L (2)	1
11	Light Industry/Warehouse	Notable (1)	7.9	ML	6.6	L	1.3	L (2)	2
12	Agriculture	Substantial (2)	10.3	M	7.7	ML	2.6	L (2)	1
13	Medium-density Housing/ Commercial	Severe (3)	8.8	ML	5.7	L	3.4	L (2)	3
14	Dairy/Agriculture	Substantial (2)	9.6	M	7.3	ML	2.3	L (2)	1
15	Heavy Industry/ Water Treatment	Notable (1)	6.7	ML	5.6	L	1.1	L (2)	1
16	Riverbed/Heavy Industry	Substantial (2)	8.1	ML	6.0	L	2.1	L (2)	1
17	Agriculture	Substantial (2)	10.3	M	7.7	ML	2.6	L (2)	1

(continued on next page)

Table B-1 (continued). Magnitude of Change, by Visual Assessment Unit

Visual Assessment Unit		Change in Visual Character ^a	Visual Quality						Visual Sensitivity ^e
			Pre-project Score ^b		Post-project Score ^b		Visual Quality Impact ^c	Magnitude of Impact ^d	
18	Medium-density Housing/Agriculture	Substantial (2)	8.8	ML	7.4	ML	1.4	VL (1)	3
19	Abandoned Agriculture/Agriculture	Substantial (2)	10.3	M	7.7	ML	2.6	L (2)	1
20	Light Industry/Warehouse/Agriculture	Notable (1)	6.3	L	5.3	L	1.0	VL (1)	2
21	Agriculture/Medium-density Housing	Substantial (2)	10.1	M	7.1	L	3.0	ML (3)	3
22	Dairy/Agriculture	Substantial (2)	9.6	ML	7.5	ML	2.1	VL (1)	2
23	Agriculture/Medium-density Housing	Severe (3)	10.0	M	7.7	ML	2.3	L (2)	3
24	Medium-density Housing	Severe (3)	8.5	ML	5.2	L	3.3	L (2)	3
25	Agriculture	Substantial (2)	10.3	M	7.2	ML	3.1	L (2)	1
26	Riverbed/Heavy Industry	Notable (1)	8.1	ML	5.9	L	2.2	L (2)	1
27	Medium-density Housing/Warehouse/Agriculture	Substantial (2)	6.0	L	6.4	L	−0.4	VL (1)	3
28	Warehouse/Agriculture	Substantial (2)	8.3	ML	6.7	ML	1.5	VL (1)	2
29	Medium-density Housing/Agriculture	Severe (3)	6.6	L	7.1	ML	−0.5	L (2)	3
30	Low-density Housing/Agriculture	Substantial (2)	10.6	M	7.7	ML	2.9	L (2)	3
31	Riverbed/Heavy Industry	Notable (1)	8.1	ML	5.6	L	2.5	L (2)	1
32	Medium-density Housing	Severe (3)	10.4	M	7.6	ML	2.0	L (2)	3
33	Abandoned Agriculture/Agriculture	Substantial (2)	11.8	M	9.1	ML	2.7	L (2)	1
34	Low-density Housing/Casino	Severe (3)	12.5	MH	8.3	ML	4.2	ML (3)	3
35	Open Desert	Severe (3)	14.5	MH	9.2	ML	5.3	ML (3)	3
36	Medium-density Housing/Open Desert/Agriculture	Severe (3)	10.6	M	8.3	ML	2.3	L (2)	3

(continued on next page)

Table B-1 (continued). Magnitude of Change, by Visual Assessment Unit

Visual Assessment Unit		Change in Visual Character ^a	Visual Quality						Visual Sensitivity ^e
			Pre-project Score ^b		Post-project Score ^b		Visual Quality Impact ^c	Magnitude of Impact ^d	
37	Medium-density Housing/Open Desert	Severe (3)	9.8	M	7.7	ML	2.1	L (2)	3
38	Medium-density Housing/Abandoned Agriculture	Severe (3)	7.8	ML	7.0	ML	0.8	VL (1)	3

^a evaluated on a scale from “subtle” to “notable” (a “1”) to “substantial” (a “2”) to “severe” (a “3”) for the change in the visual character

^b see the rating scheme in Appendix A

^c difference in pre- and post-project scores

^d see Table C-1 (ML = 3; L = 2; VL = 1)

^e based on land use: 1 = low sensitivity, for example, heavy industrial uses or areas of disturbance; 2 = moderate: for example, commercial, office, and light industrial uses; 3 = high: for example, residential and recreational uses

Table B-2. Total Visual Impact, by Segment – Western Section

Visual Assessment Unit		Magnitude of Impact to Visual Quality ^a	Change in Visual Character ^a	Visual Sensitivity ^b	Segment Length (feet)	Action Alternative														
						W59			W101W			W101C			W101E			W71		
						VQ ^c	VC ^c	VS ^c	VQ	VC	VS	VQ	VC	VS	VQ	VC	VS	VQ	VC	VS
1	Light Industry/Agriculture	2	1	2	4,133	8,206	4,287	8,266												
2	Light Industry	1	1	2	5,328	5,328	5,328	10,656												
3	Light Industry/Agriculture	1	1	2	3,931	3,931	3,931	7,862												
4	Agriculture	2	2	1	4,231	8,462	8,462	4,231												
5	Medium-density Housing	2	3	3	2,576	5,152	7,728	7,728												
6	Agriculture	2	2	1	1,269	2,538	2,538	1,269												
7	Riverbed/Heavy Industry	2	1	1	4,599	9,198	4,599	4,599												
8	Low-density Housing/ Agriculture	2	2	3	5,367	10,734	10,734	16,101												
9	Agriculture	2	2	1	12,297	24,594	24,594	12,297												
10	Warehouse/Agriculture	2	3	1	5,048				10,096	15,144	5,048	10,096	15,144	5,048	10,096	15,144	5,048			
11	Light Industry/Warehouse	2	1	2	4,116				8,232	4,116	8,232									
12	Agriculture	2	2	1	3,954				7,908	7,908	3,954									
13	Medium-density Housing/ Commercial	2	3	3	4,031				8,062	12,093	12,093									
14	Dairy/Agriculture	2	2	1	10,475				20,950	20,950	10,475									
15	Heavy Industry/Water Treatment	2	1	1	3,310				6,620	3,310	3,310	6,620	3,310	3,310						
16	Riverbed/Heavy Industry	2	2	1	4,315				8,630	8,630	4,315	8,630	8,630	4,315						
17	Agriculture	2	2	1	6,073				12,146	12,146	6,073	12,146	12,146	6,073	6,073	12,146	6,073			
18	Medium-density Housing/ Agriculture	1	2	3	1,757				1,757	3,514	5,271	1,757	3,514	5,271	1,757	3,514	5,271	1,757	3,514	5,271
19	Abandoned Agriculture/ Agriculture	2	2	1	10,470				20,940	20,940	10,470	20,940	20,940	10,470	20,940	20,940	10,470	20,940	20,940	10,470
20	Light Industry/ Warehouse/Agriculture	1	1	2	6,750							6,750	6,750	13,500	6,750	6,750	13,500			
21	Agriculture/Medium-density Housing	3	2	3	8,593							25,779	17,186	25,779						
22	Dairy/Agriculture	1	2	2	5,015							5,015	10,030	10,030						
23	Agriculture/Medium-density Housing	2	3	3	3,500										7,000	10,500	10,500			
24	Medium-density Housing/	2	3	3	4,758										9,516	14,274	14,274			
25	Agriculture	2	2	1	6,022										12,044	12,044	6,022			
26	Riverbed/Heavy Industry	2	1	1	6,695										13,390	6,695	6,695			
27	Medium-density Housing/ Warehouse/Agriculture	1	2	3	6,605													6,605	13,210	19,815
28	Warehouse/Agriculture	1	2	2	3,091													3,091	6,182	6,182

(continued on next page)

Table B-2 (continued). Total Visual Impact, by Segment – Western Section

Visual Assessment Unit		Magnitude of Impact to Visual Quality ^a	Change in Visual Character ^a	Visual Sensitivity ^b	Segment Length (feet)	Action Alternative														
						W59			W101W			W101C			W101E			W71		
						VQ ^c	VC ^c	VS ^c	VQ	VC	VS	VQ	VC	VS	VQ	VC	VS	VQ	VC	VS
29	Medium-density Housing/ Agriculture	2	3	3	10,133													20,266	30,399	30,399
30	Low-density Housing/ Agriculture	2	2	3	3,662													7,324	7,324	10,986
31	Riverbed/Heavy Industry	2	1	1	3,441													6,882	3,441	3,441
32	Medium-density Housing	2	3	3	7,170													14,340	212,510	21,510
Length-weighted Segment Score ^d						78,203	72,047	73,009	105,341	108,751	69,241	97,733	97,650	83,796	87,566	101,007	77,853	81,205	106,520	108,074
Segment Length						43,731			53,549			51,331			51,073			46,329		
Average Magnitude of VQ, VC, and VS of each Segment ^e						1.79	1.65	1.675	1.97	2.03	1.29	1.90	1.90	1.63	1.71	1.98	1.52	1.75	2.29	2.33
Segment Average Magnitudes of the above VQ, VC, and VS ^f						1.70			1.76			1.81			1.74			2.12		

Note: Shaded areas represent Visual Assessment Units comprising a given segment.

^a from Table B–1

^b based on land use: 1 = low sensitivity, for example, heavy industrial uses or areas of disturbance; 2 = moderate: for example, commercial, office, and light industrial uses; 3 = high: for example, residential and recreational uses

^c VQ = visual quality; VC = visual character; VS = visual sensitivity. In each case the variable in question is multiplied by the unit’s length.

^d sum of length-weighted scores of all Visual Assessment Units in the segment

^e total length-weighted magnitude of visual quality impact for a given segment divided by that segment’s length (Unit lengths are approximated from mapped information.)

^f (VQ plus VC plus VS) divided by three, that is, each segment’s overall average visual quality impact; segment with lowest average has the least impact on visual resources, standardized for its length

Table B-3. Total Visual Impact, by Segment – Eastern Section

Visual Assessment Unit		Magnitude of Impact to Visual Quality ^a	Change in Visual Character ^a	Visual Sensitivity ^b	Segment Length (feet)	Action Alternative		
						E1		
						VQ ^c	VC ^c	VS ^c
33	Abandoned Agriculture/ Agriculture	2	2	1	9,911	19,822	19,822	9,911
34	Low-Density Housing/ Casino	3	3	3	8,473	25,419	25,419	25,419
35	Open Desert	3	3	3	7,500	22,500	22,500	22,500
36	Medium-Density Housing/Open Desert/Agriculture	2	3	3	11,258	22,516	33,774	33,774
37	Medium-Density Housing/Open Desert	2	3	3	17,130	34,260	51,390	51,390
38	Medium-Density Housing/Abandoned Agriculture	1	3	3	16,500	16,500	49,500	49,500
Length-Weighted Segment Score^d						141,017	202,405	192,494
Segment Length						70,772		
Average Magnitude of VQ, VC, and VS of each Segment^e						1.99	2.86	2.72
Segment Average Magnitudes of the above VQ, VC, and VS^f						2.52		

^a from Table B-1^b based on land use: 1 = low sensitivity, for example, heavy industrial uses or areas of disturbance; 2 = moderate: for example, commercial, office, and light industrial uses; 3 = high: for example, residential and recreational uses^c VQ = visual quality; VC = visual character; VS = visual sensitivity. In each case the variable in question is multiplied by the unit's length. (Unit lengths are approximated from mapped information.)^d sum of length-weighted scores of all Visual Assessment Units in the segment^e total length-weighted magnitude of visual quality impact for a given segment divided by that segment's length^f (VQ plus VC plus VS) divided by three, that is, each segment's overall average visual quality impact; segment with lowest average has the least impact on visual resources, standardized for its length

Table B-4. Description of Existing Conditions of VAUs

VAU Name	VAU Numbers	Typical Features within VAU and Viewed from VAU	Terrain	Views within VAU	Vegetation
Agriculture	4, 6, 9, 10b, 10f, 12, 17, 25	Croplands are of various types and rotational phases. Alfalfa is the predominant crop and is generally farmed within quadrangular parcels that are identified by bordering irrigation canals and access roads. Large, high-voltage transmission lines and large trees that line irrigation canals create additional linear elements across the flat landscape. Lone farm structures, equipment, and homesteads dot the green and brown fields. Open views of the distant South Mountains and Sierra Estrella are distinct.	Flat	Expansive views to the south and west.	Irrigated croplands and large trees that line canals and surround farm structures.
Abandoned Agriculture	19, 33	Abandoned agricultural fields in various successional stages typify Community land in the southwest. Views of Community land are of sparse grassland dotted with large shrubs and desert trees. Productive/fallow agricultural fields lie northeast of this abandoned cropland and are separated by a utility corridor that includes large, high-voltage transmission lines; a canal; and an access road. Prominent off-site views are of the South Mountains and the Sierra Estrella to the southeast and west.	Flat	Open, providing views of Community land and southeast and west off-site views of the South Mountains and Sierra Estrella.	Irrigated croplands and scattered natural grasses, weeds, shrubs, and trees.
Dairy/Agriculture	14, 22	Cattle, equipment, feedlots, food storage, and farm structures are located on parcels of dairy farmland. This dairy farmland is intermixed with parcels of croplands (alfalfa). Large trees line portions of irrigation canals and access roads, which create linear elements across the flat landscape. Solitary farm structures, equipment, and homesteads are dotted among the green and brown fields. Open views of the distant South Mountains and the Sierra Estrella are visible to the south.	Flat	Open views of the South Mountains and Sierra Estrella.	Irrigated croplands and large trees that line canals and surround farm structures.
Low-density Housing/Agriculture	8, 30	Agricultural fields surround communities of Ranch-style houses on larger lots. Clusters of large shade trees dot the landscape near the residences and line portions of irrigation canals and access roads. Agricultural fields incorporate farm structures, equipment, and isolated homesteads. High-voltage transmission lines and distant mountain ranges are visible.	Flat	Unrestricted views are of the South Mountains and Sierra Estrella to the south.	Irrigated croplands and large trees that line canals and surround farm structures.
Medium-density Housing/Agriculture	10a, 10e, 10g, 18, 21, 23, 29	Newly built subdivisions of medium-density housing are interspersed among the agricultural fields in a checkerboard pattern. Large trees line portions of irrigation canals and access roads, which create linear elements across the flat landscape. Farm structures, equipment, and homesteads are intermixed within the agricultural fields.	Flat	Unrestricted views are of the South Mountains and Sierra Estrella to the south.	Irrigated croplands and large trees that line canals and surround farm structures.
Medium-density Housing	5, 13, 24, 32	Residential communities are of single-family homes. Small commercial districts consist of retail, fast-food restaurants, and grocery stores located at arterial cross streets. Roadways and yards are landscaped with native and nonnative vegetation. The South Mountains and Sierra Estrella dominate distant southern views.	Flat	Partially restricted views are of the South Mountains and Sierra Estrella to the south.	Landscaped native and nonnative vegetation.
Medium-density Housing/Warehouse/Agriculture	27, 27a	Residential subdivisions are located adjacent to industrial warehouse buildings and agricultural fields. Warehouses restrict distant views of the South Mountains and Sierra Estrella to the south.	Flat	Views of the South Mountains and Sierra Estrella to the south are, in places, restricted.	Irrigated croplands and large trees that line canals and surround farm structures.
Warehouse/Agriculture	10, 28	Agricultural fields surround parcels of warehouse buildings. Large shade trees dot the landscape near warehouse or agricultural structures and line portions of irrigation canals and access roads. Agricultural fields incorporate farm structures, equipment, and isolated homesteads. High-voltage transmission lines and distant mountain ranges are visible to the southwest.	Flat	Unrestricted views are of the distant South Mountains and Sierra Estrella to the south.	Irrigated croplands and large trees that line canals and surround farm structures.
Light Industry	1a, 2	Medium-sized and large buildings and structures limit off-site views. Surroundings include a variety of equipment, construction material, bus and truck storage, metal and chemical stockpiles, and storage drums. In some VAUs, at-grade railroad tracks are present.	Flat	Partially restricted views are of the distant South Mountains and Sierra Estrella to the south.	Sparse tree planting.

(continued on next page)

Table B-4 (continued). Description of Existing Conditions of Visual Assessment Units

Unit Name	Visual Assessment Unit Numbers	Typical Features within VAU and Viewed from VAU	Terrain	Views within VAU	Vegetation
Light Industry/Warehouse/Agriculture	1, 3, 20, 27b	Agricultural fields surround parcels of industrial buildings. Large shade trees dot the landscape near industrial buildings or agricultural structures and line portions of irrigation canals and access roads. Agricultural fields incorporate farm structures, equipment, and isolated homesteads. High-voltage transmission lines and distant mountain ranges are visible to the southwest. Residential areas encroach and incongruously abut.	Flat	Unrestricted views are of the distant South Mountains and Sierra Estrella to the south.	Irrigated croplands and large trees that line canals and surround farm structures.
Light Industry/Warehouse	10d, 11	Encompassing the area are large warehouses, equipment, construction material, bus and truck storage, metal and chemical stockpiles, and storage drums. Medium-sized and large industrial buildings and warehouses limit off-site views.	Flat	Views of the distant South Mountains and Sierra Estrella to the south are, in places, restricted.	Sparse shrubs and trees.
Riverbed/Heavy Industry	7, 16, 26, 31	Large sand and gravel mining operations are located on the northern and southern edges of the Salt River’s rocky floodplain. Several large industrial properties contain mining equipment; trucks, stockpiles, and cement-mixing structures are visible. Additionally, several manufacturing sites are located adjacent to the Salt River.	Flat with a depressed floodplain	Unrestricted views are of the distant South Mountains and Sierra Estrella to the south.	Sparse shrubs and trees.
Heavy Industry/Water Treatment	15	A water treatment plant and a sand and gravel mining operation are located north of the Salt River. These properties contain large water treatment structures, evaporation ponds, mining equipment, trucks, and stockpiles.	Flat	Unrestricted views are of the distant South Mountains and Sierra Estrella to the south.	Sparse shrubs and trees.
Riverbed/Heavy Industry/Water Treatment	16	A water treatment plant and a sand and gravel mining operation are located on the southern edge of the Salt River, along Sunland Avenue. These properties contain large water treatment structures, evaporation ponds, mining equipment, trucks, and stockpiles.	Flat with a depressed floodplain	Unrestricted views are of the distant South Mountains and Sierra Estrella to the south.	Sparse shrubs and trees.
Low-density Housing/Casino	34	Low-density housing is located on the western edge of SMPP, which contains undisturbed desert vegetation, on the western foothills. High-voltage transmission lines and access roads cut across the terrain, which is adjacent to small rural communities. Additional features include two large water tanks located southwest of the residential development and a casino located on Community land, west of the development. Open views to the west are of the Sierra Estrella that rises from the Gila River floodplain.	Flat	Open views of the Sierra Estrella and of the adjacent South Mountains foothills.	Desert vegetation and nonnative plantings on residential properties.
Open Desert	35	Undisturbed desert vegetation and rock outcroppings cover the western foothills and ridges of the South Mountains. High-voltage transmission lines and access roads cut across the terrain and skyline. Open views to the south and west are of the Sierra Estrella and distant mountain ranges that rise from the Gila River floodplain. A lone residence is hidden between the desert foothills of the South Mountains to the east.	Varies with ridges, vales, and flats	Open views of the Sierra Estrella and Community lowland from the ridges and inward views from the flats and vales.	Creosote, saguaro, paloverde, and other native plants.
Medium-density Housing/ Open Desert/Agriculture	36	Set against the southern side of the South Mountains, the four-lane Pecos Road is characterized by large high-voltage transmission lines that parallel the roadway. Several ephemeral drainages cross the roadway and are identified by culverts lined with guardrails and reflective signs. Abandoned agricultural land and productive croplands are visible to the south and southwest. Creosote flats lie to the north and rise to the desert vegetation of the South Mountains set above residential communities to the north. The Sierra Estrella dominates distant westward views.	Flat	Open, providing views to the south into Community lowland, with the Sierra Estrella in the background.	Native vegetation along roadway and along the foothills; crops in the agriculture fields; ornamental plantings associated with housing.
Medium-density housing/ Open Desert	37	Undulating desert hills encompass the Pecos Road corridor, which accommodates dual high-voltage transmission lines along the southern side of the Pecos Road. These hills feature rock outcroppings, saguaro cactus, and other native vegetation. This landscape frames and conceals off-site northern views of the South Mountains and southern views of abandoned agriculture land and desert lowland of the Community. Radio towers atop the South Mountains are prominent landmarks that rise above the residential communities situated among the desert foothills below.	Undulating hills	Internally focused views with framed outward views of the South Mountains and Community lowland to the north and south.	Native vegetation along roadway and along the foothills. Nonnative plantings in residential properties.

(continued on next page)

Table B-4 (continued). Description of Existing Conditions of Visual Assessment Units

Unit Name	Visual Assessment Unit Numbers	Typical Features within VAU and Viewed from VAU	Terrain	Views within VAU	Vegetation
Medium-density Housing/ Abandoned Agriculture	38	Pecos Road is bordered by housing to the north and abandoned farmland of the Community to the south. Dual large transmission lines parallel Pecos Road and are set against the landscaped desert vegetation along the road and within its median. Vacant parcels separate the road from the residential community and foothills of the South Mountains to the north. An additional feature to the south is Lone Butte within Community land.	Flat	Views of the South Mountains and into the Community lowland are limited by vegetation and housing.	Native and desert vegetation in roadway median and along roadway. Nonnative plantings in residential properties.

Appendix C

Methodology and Assumptions

Appendix C

Methodology and Assumptions

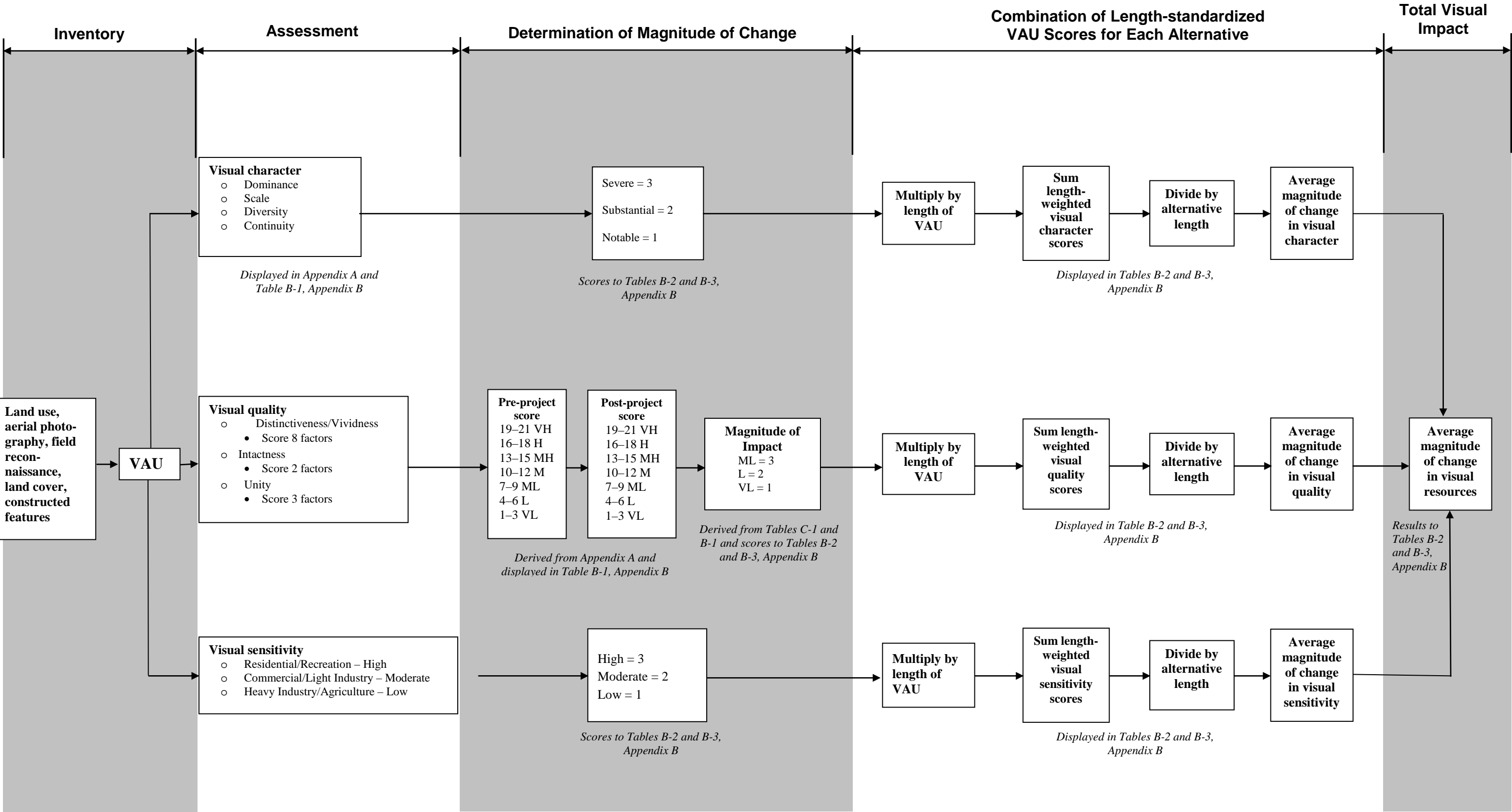
The visual resources impact assessment has been prepared to determine potential impacts of the proposed transportation corridor on existing visual resources. The visual assessment used to prepare this report generally follows the guidelines of FHWA's *Visual Impact Assessment for Highway Projects* (1981). Determination of the visual impacts of the proposed project were qualitatively made based on an evaluation of the changes in visual quality, on an assessment of the overall change in visual character, and on the projected sensitivity of the most frequent Study Area viewers to changes in the visual landscape. However, the project setting is mostly in an urbanizing area of Phoenix, and land use is rapidly changing in the Study Area. The setting, especially in the Western Section of the Study Area, is somewhat similar for each proposed action alternative. Therefore, a quantitative method that takes into account the small changes within each corridor was developed to determine the magnitude of change along the proposed action alternatives. The approach considered the distribution of landscape features and land use in each proposed action alternative to distinguish the visual impacts of the alternatives from one another and compare each of the alternatives with the others. Mitigation measures for minimizing the visual impacts of the proposed improvements have been identified.

Visual Resources

The landscape components of landforms, water features, vegetation types, and cultural modifications were used as the basis for the definition of visual resources. The character and quality of the visual resources vary in relation to the various Study Area landscape components and their patterns. To describe the visual resources of the alternative alignments, the Study Area was divided into 38 VAUs. VAUs were based on the presence of primary vegetation communities, land use, visual character, and special features in the landscape. The resulting units are areas of similar visual character.

An assessment viewpoint within each unit was selected, generally near its geographic center, to be the point from which the existing conditions and the projected changes in the landscape attributable to the proposed project were evaluated. Each unit was numbered, named, and described in terms of its length, vegetative cover, landform, land use, and special features in each of three distance zones. The distance zones were determined from the proposed roadway alignment as follows: 1) foreground—up to 0.25 mile, 2) middleground—0.25 mile to 3 miles, and 3) background—3 miles and beyond. Representative photographs of each assessment unit are included in Appendix A. Figure C-1 outlines the major steps in the visual assessment process followed for this project.

Figure C- 1. Visual Impact Assessment Methodology



Visual Quality

Visual quality is associated with the relative excellence of a resident or visitor's visual experience in addition to the area's visual character. While visual character derives from attributes of the landscape itself, visual quality has both viewer and visual resource dimensions. Although enjoyment and interpretation of the landscape experiences that are most preferred are variable, there is clear public agreement on commonalities. Certain landscapes can have high visual quality, and the characteristics that contribute to that quality can often be protected from project impacts by application of appropriate mitigation measures. Low visual quality does not necessarily mean that there is no concern regarding the visual effects of a project. Broad application of general visual impact mitigation measures can noticeably enhance the driving and landscape appreciation experience of the high number of people who use a freeway. Highway projects can affect the visual quality of an area through the displacement of attractive visual resources as well as through the addition or enhancement of them.

Visual Character

Landscape character is the physical appearance of the landscape, including the natural, physical, and architectural/cultural features that give it an identity and "sense of place." The existing landscape character is based on defining areas of similar land use, vegetation, spatial enclosure, landform, or architectural/cultural patterns. According to FHWA's visual impact assessment guidelines, visual character is descriptive and not evaluative. That is, it is based on attributes that are, themselves, neither good nor poor. The components that make up the visual character of a particular landscape have been distinguished on two levels: individual elements and overall patterns. Individual visual elements are the primary attributes of objects in the landscape, such as form, line, color, and visible texture. Overall patterns result from the visual relationships among these elements—from the presence/absence and arrangement of the individual elements within a landscape. The pre- and post-project visual character of each VAU is described and rated in Appendix A.

Visual Sensitivity

Visual sensitivity is the measure of people's concern for the visual environment based on viewers' activities and awareness, as well as their values, opinions, past experiences, and preconceptions. Neither the general public nor jurisdictional agencies were sent questionnaires to determine their relative sensitivity to changes in the landscape. The evaluation of visual sensitivity was, therefore, based on viewer activities related to existing developed land use rather than on any visual preference evaluations.

Change in Visual Resources

Visual impacts are defined as the change in visual resources resulting from the introduction of modifications into the landscape. Types of impacts that could affect visual resources include, but are not restricted to:

- ▶ vertical alignment and roadway structures (for example, overpasses, sound barriers, retaining walls) that would intrude on viewsheds of sensitive viewing groups or on views from sensitive viewing locations (for example, parks, residences, churches, schools)
- ▶ alignments that would block, truncate, or detract from existing views
- ▶ alignments that would conflict with local scenic corridor objectives
- ▶ project scale, lighting, traffic volumes, signs, pavement type and width, and/or TIs that would adversely affect views from sensitive viewing locations
- ▶ removal of desert scrub vegetation that would change the perceived character of a given VAU
- ▶ alignments that would parallel nearby transmission lines rather than directly traverse them
- ▶ alignments that would exacerbate visual discontinuities and/or visual diversity
- ▶ alignments that would provide new viewing opportunities of distant features
- ▶ alignments that would remove existing features that currently create visual disorder and detract from landscape coherence

No-Action Alternative Impacts

The visual character and quality of the Study Area were assessed under the No-Action Alternative. This evaluation is described in general, qualitative terms regarding the overall Study Area and is not discussed on a VAU basis because the No-Action Alternative is already visually adversely affected by I-10, and that is its single dominant visual element.

Construction Impacts

The overall effect of construction on visual character and quality is described, addressing such activities as excavation areas, stockpiling areas, the use of crane towers, equipment and materials storage, and falsework. This evaluation is described in general, qualitative terms, not on a VAU basis because the locations of the activities that could have impacts on visual resources are not known and they would be removed upon completion of construction.

Operational Impacts

Figure C-1 depicts a breakdown of the steps of the assessment process and Appendix B describes the steps in more detail. The impact assessment assumes that appropriate mitigation measures would be undertaken during construction and, when appropriate, during operation. The evaluation assumes that standard ADOT construction and maintenance practices would be implemented. Simulations of the proposed action alternatives were prepared from critical viewpoints determined by the analytical findings.

Inventory

The initial step in the visual assessment process included preparation of base maps for use in the field to inventory the existing conditions. The maps were based on current aerial photography and showed the proposed corridors. The maps were used to identify the underlying land use in each VAU of the proposed alternatives. The next step was to perform extensive field reconnaissance to photograph the VAUs from selected viewpoints and to verify land cover and land within each proposed action alternative. The field

data were then cataloged and the information added to the geographic information system database for the project. The VAUs are shown in Figures 2 and 3. Refer to Table B-4, Appendix B, for descriptions and details of the visual setting of the VAUs.

Assessment

During field reconnaissance and in subsequent study of the aerial photography, the visual character quality and sensitivity of each VAU were assessed. Each VAU was evaluated in terms of the magnitude of the projected changes to its visual character, quality, and sensitivity.

Determination of Magnitude of Change in Visual Character

The changes in visual character from existing conditions to post-project conditions were categorized on a scale ranging from “notable” to “severe” (see the following definitions). These results are displayed in Appendix B, Table B-1.

Notable – project would be a readily visible addition to the landscape, but would be only somewhat compatible with the visual setting. Project can be highly visible, but would generally be recognized as a normal component in the landscape.

Substantial – project would be a fundamental change in the visual setting, and its forms, lines, colors, and textures would generally be incompatible with the surrounding area.

Severe – project would become the dominant element in the landscape and its forms, lines, colors, and textures would be highly incompatible with the visual setting. The project would strikingly contrast with adjacent landforms and uses in terms of scale and continuity.

The FHWA visual character assessment methodology usually includes a category on the scale of change to visual character of “subtle” where project elements of form, line, color, and texture are generally compatible with the visual setting, scale and continuity of the landscape. It was determined, based on the visual setting, that the proposed project would not lead to “subtle” changes of visual character of any of the VAUs shown in Figures 2 and 3 (that is, action alternatives located in the Western and Eastern Sections of the Study Area). Therefore, the subtle category was not used in the visual character assessment for this project. The construction of new lanes and ramps in the “additional” VAUs would develop along the existing I-10 corridor, however, and would result in only subtle changes.

Visual quality derives, chiefly, from the integration of the visual relationships among all components of a landscape, rather than from the presence of a single distinctive feature, whether high in quality or low. To assess the changes in a VAU’s visual quality, its visual quality “score” was derived from an overall “Viewpoint Score.” From a viewpoint that represented a given overall VAU, the landscape was evaluated pre-project for the primary factors that comprise visual quality—distinctiveness/vividness, intactness, and unity—and then reevaluated for the post-project conditions resulting from construction and operation of the proposed roadway.

Distinctiveness/vividness was evaluated on the subcomponents of spatial definition, topographic relief, landmarks, skyline character, water form, vegetation, built features, and adjacent landforms. The two subcomponents of intactness evaluated were level of naturalness and degree of deviation from the natural landscape conditions. Evaluation of unity included the three subcomponents of visual contrast, scale contrast, and spatial dominance. The unity evaluation also included assigning an overall landscape unity score after considering the three primary subcomponents.

Surrounding land use from the inventory phase was the most important consideration and input in the assessment of visual sensitivity. Visual sensitivity was rated as “high” for residential and recreation use and undisturbed natural land; “moderate” for commercial, office, and light industrial uses; and “low” for heavy industrial land uses and areas of disturbance.

Determination of Magnitude of Visual Change in Visual Quality

In this step of the evaluation process a numeric value was assigned to the results of the assessment process. This approach allows a quantitative method to be employed for comparison of the alternatives. The numeric values for visual character and sensitivity were assigned to correspond to the results of the character scoring so that higher numbers reflected higher levels of impacts, or sensitivity, to change in the landscape. The results of the post-project magnitude of visual quality impact ratings are shown in Table B-1 in Appendix B. The magnitude of change in visual quality in the Study Area from pre-project (existing) conditions to post-project conditions was determined using Table C-1 where a value change of six steps represents a “very high” impact. The relationships displayed in the table are weighted to indicate greater impacts when the existing visual quality was “high” or “very high.”

Table C-1. Magnitude of Visual Impact Matrix

Pre-project Value	Post-project Value ^a						
	VH	H	MH	M	ML	L	VL
VH	VL	L	M	MH	H	VH	VH
H	L	VL	ML	M	MH	VH	VH
MH	M	ML	VL	L	ML	M	MH
M	M	M	L	VL	L	ML	M
ML	MH	MH	ML	L	VL	L	ML
L	VH	VH	M	ML	L	VL	L
VL	VH	VH	MH	M	ML	L	VL

^a VH = very high; H = high; MH = moderately high; M = moderate; ML = moderately low; L = low; VL = very low

The letter designations in Table B-1, Appendix B, for the column “Magnitude of Impact” reflect a range of original inputs of Moderate to Low. When juxtaposed against each other as in Table C-1, the original inputs translate into a range of *moderately low* to *very low*. It is these designations that were given a numerical valuation of from 1 to 3 (with 3 representing the most visual quality impact) and incorporated into the valuation in Tables B-2 and B-3, Appendix B.

As an example, the pre-project score for visual quality of VAU 8 was 10.6 (see evaluation sheet in Appendix A), which translated into *moderate* visual quality. The post-project score (also from Appendix A) was 7.0, or *moderately low*. In using Table C-1, following the M (*moderate*) pre-project value across the row to align with the post-project value of ML (*moderately low*), results in a magnitude of change value of L (the shaded cell). The L value does not indicate the visual quality of the VAU but rather the magnitude of change in visual quality for the unit. The values from Table C-1 were then assigned a numeric value of 1, 2, or 3, for use in Table B-2 (to determine the overall change for a complete alternative), because only three magnitude of change values were identified in the evaluation.

Determination of Visual Sensitivity

Sensitivity to changes in the visual landscape is based on the land use in the existing area. Land uses with a greater sensitivity to change are residential and open space/park uses that have higher numbers of people that view the landscape and have expectations that the landscape setting will be a positive element of their use of the area. For this project, the creation of the VAUs based primarily on land use makes it easy to identify the areas that would have the most sensitivity to visual change. For the assessment, each VAU was evaluated for primary land use within the VAU and within the VAUs immediately adjacent to it. The areas along the existing I-10 and Salt River that are mostly industrial or warehouse uses were not considered as sensitive because the landscape setting is not as important to the land use. New and existing residential areas of varying densities are scattered throughout the Study Area and the high sensitivity of those uses occurs in all proposed alternatives.

Combination of VAU Scores

In this step each VAU was given a “score” or qualitative evaluation. These scores or evaluations translate into numerical values of 1, 2, or 3 (rising visual impact), which were carried forward in the analysis, as depicted in Tables B-2 and B-3, Appendix B. In these tables a process of standardizing VAU scores to control for VAU length was conducted. This prevents short and adversely visually affected VAUs from unduly dominating the analysis. Longer, moderately affected VAUs might cause comparable visual impact, and this standardization technique takes this into account. The numerical “1- 2- or 3” scores for visual character, quality, and sensitivity impact for each VAU were multiplied by the VAU length. When these three “length-times-visual impact scores” for a given VAU were summed and then divided by the total length of the VAUs making up the associated proposed action alternative, the result was an average visual character, quality, and sensitivity impact for each proposed alternative.

Total Visual Impact

After combining the VAU scores that take into account the differences in length of the various VAUs, it is possible to compare the impacts of the proposed action alternatives and assess the impacts to visual resources in a quantitative way. The length of each VAU was multiplied by each of the three inputs for that unit. The resulting “scores” were then summed for each action alternative so that comparisons of the visual impacts among the various alternatives could be made. Dividing this total for a given action alternative by the length of that alternative permitted comparisons of the visual impacts of the various

alternatives on a standardized basis. The total impacts—by action alternative—and a summary of the results of this summary step are displayed in Tables B-2 and B-3, Appendix B.

Secondary and Cumulative Impacts

An assessment of the secondary and cumulative effects of a proposed project is required by Council on Environmental Quality regulations (40 Code of Federal Regulations § 1500–1508) to satisfy the requirements of the National Environmental Policy Act. The assessment of secondary and cumulative effects was made based on guidance provided in the April 1992 FHWA position paper *Secondary and Cumulative Impact Assessment in the Highway Project Development Process*, the January 1997 Council on Environmental Quality handbook *Considering Cumulative Effects Under the National Environmental Policy Act*, and FHWA’s January 2003 *Interim Guidance: Questions and Answers Regarding Indirect and Cumulative Impact Considerations in the NEPA Process*.

The terms “impacts” and “effects” are used interchangeably in the Council on Environmental Quality regulations (40 Code of Federal Regulations § 1508.8) as well as within this assessment. In accordance with FHWA guidelines, the terms “secondary” and “indirect” are also used synonymously. All impacts discussed are considered long-term. Short-term effects, such as construction-related impacts, are assumed not to contribute to secondary effects.

In general, the effects on visual resources are identified as *secondary* or *cumulative* in nature and as either being *positive*, *adverse*, or *neutral*. The magnitude or degree of impact is classified as *minor*, *moderate*, or *substantial*. For example, a beneficial, moderate secondary effect means that the change in the environmental resource as a result of the secondary effects of the proposed freeway would be positive and the magnitude of the change in the resource would be considered to be moderate.

Mitigation Measures

The introduction of the proposed corridor would create various degrees of alteration in the existing visual landscape. The alterations would be the result of contrasts with the forms, lines, colors, and textures of the existing landscape. Potential mitigation measures have been identified that could be incorporated into project design. The intent of these mitigation measures is to provide methods for integrating the proposed transportation corridor into the existing landscape while minimizing anticipated visual impacts. Visually successful projects have typically achieved a balance among distinctiveness, intactness, and unity. Emphasis during the freeway design stages and in implementation of impact mitigation measures would need to focus on all three criteria, taken together, to avoid negatively affecting the freeway’s overall visual quality. Mitigation measures that would be employed are assumed to encompass the enhancement of positive project effects as well as the reduction or elimination of adverse effects.