

Introduction to Chapter 4 Banners

The banners in this section present information from **Chapter 4, Affected Environment, Environmental Consequences, and Mitigation** of the Draft EIS. These banners address potential impacts on the existing social, economic, and environmental setting from the action alternatives and the No-Build Alternative.

Chapter 4 of the Draft EIS includes a substantial discussion of those elements of the environment most affected by the proposed freeway.

The Chapter 4 banners also contain information regarding applicable measures to avoid or reduce environmental impacts.

Viewers are urged to review the contents of Chapter 4 to obtain more information about the environmental elements presented in the banners.



What is mitigation?

An action taken to reduce or eliminate an adverse impact from construction, operation, or maintenance of the proposed freeway.



Water Resources
Social Conditions
Title VI and EJ
Displacements
Visual Resources
Farmlands
Cultural Resources
Biological Resources
Noise
Land Use
Environmental Impacts
Economic Impacts
Waters of the US
Floodplains
Air Quality
Topography
Hazardous Materials



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CHAPTER 4

Land Use

Land use issues examined in the Draft EIS considered effects on:

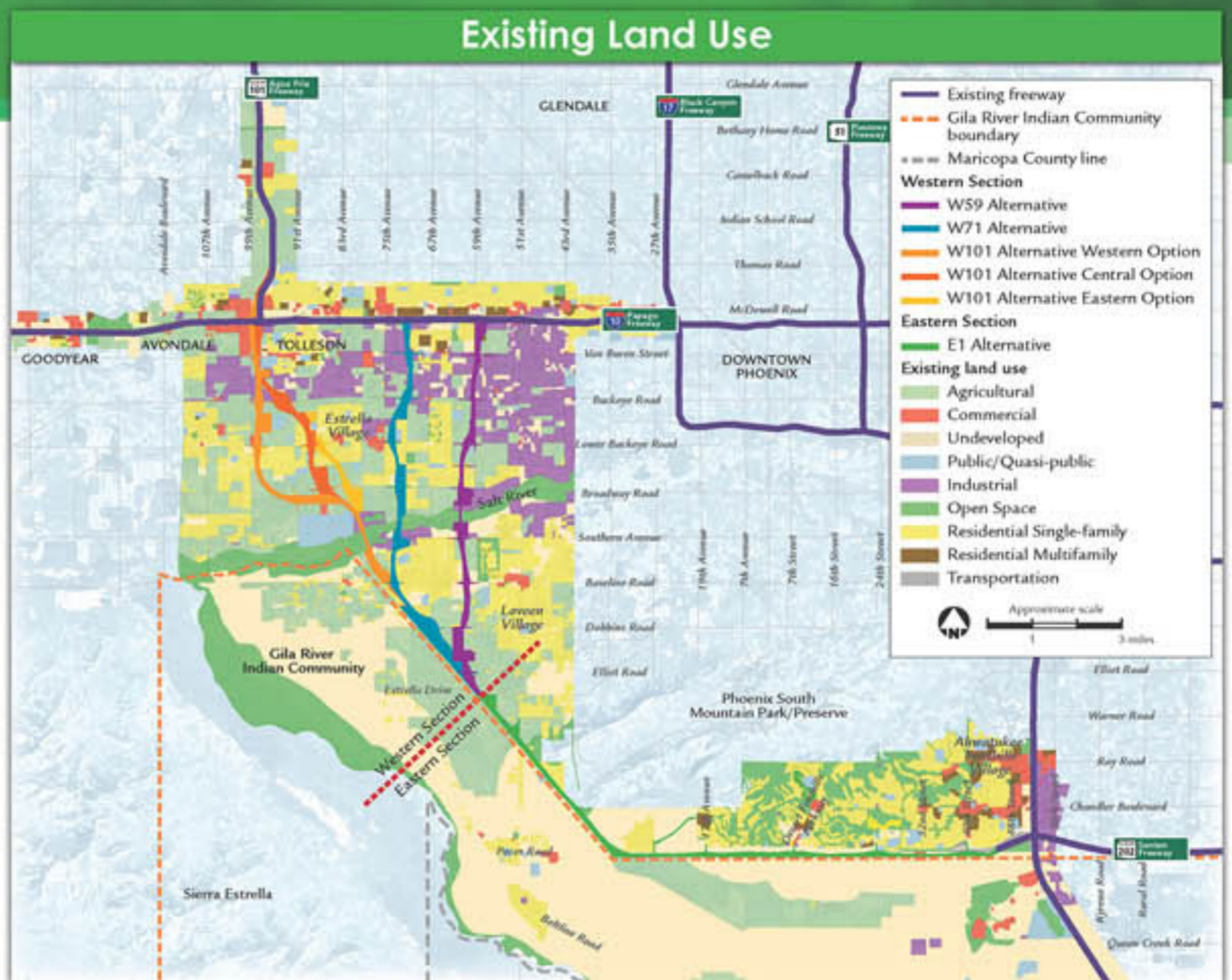
- existing land use.
- zoning.
- development plans.
- future land use plans.
- land ownership in the Study Area.

Representative Impacts

Action Alternatives

Impacts from the action alternatives would include, but would not be limited to:

- conversion of existing and planned land uses to a transportation use.



Land use*	Acreage of land use conversion			
	Western Section			Eastern Section
	W101**	W71	W59	E1
Agricultural	554-699	535	548	163
Residential	291-387	277	62	104
Commercial/Industrial	111-158	182	165	11
Open space/Undeveloped	129-221	65	158	554
Public/Quasi-public	0-1	1	1	12
TOTAL	1,284-1,311	1,061	935	883

* Total acreage in the study area is 55,400.

** **Ranges of values:** For tables throughout the Draft EIS, the W101 Alternative includes ranges because of design options.

No-Build Alternative

- No major project-related influences on land use would occur in the Study Area.
- Existing and planned land development patterns would continue without the proposed freeway, leading to conversion of existing land uses to more urban uses such as commercial, residential, and transportation.
- Increasing congestion on the local street network would be expected, especially in the most rapidly developing areas within the Study Area.

Representative Mitigation

Mitigation would include, but would not be limited to:

- ✓ For the W59 and E1 Alternatives, ADOT and FHWA would coordinate with the Bureau of Land Management and Arizona State Land Department, which manage affected public land, and the various leaseholders to accommodate the proposed freeway.
- ✓ See banners for Social Conditions, Displacements and Relocations, Economic Impacts, Noise, Air Quality, and Visual Resources for additional land use-related impacts.

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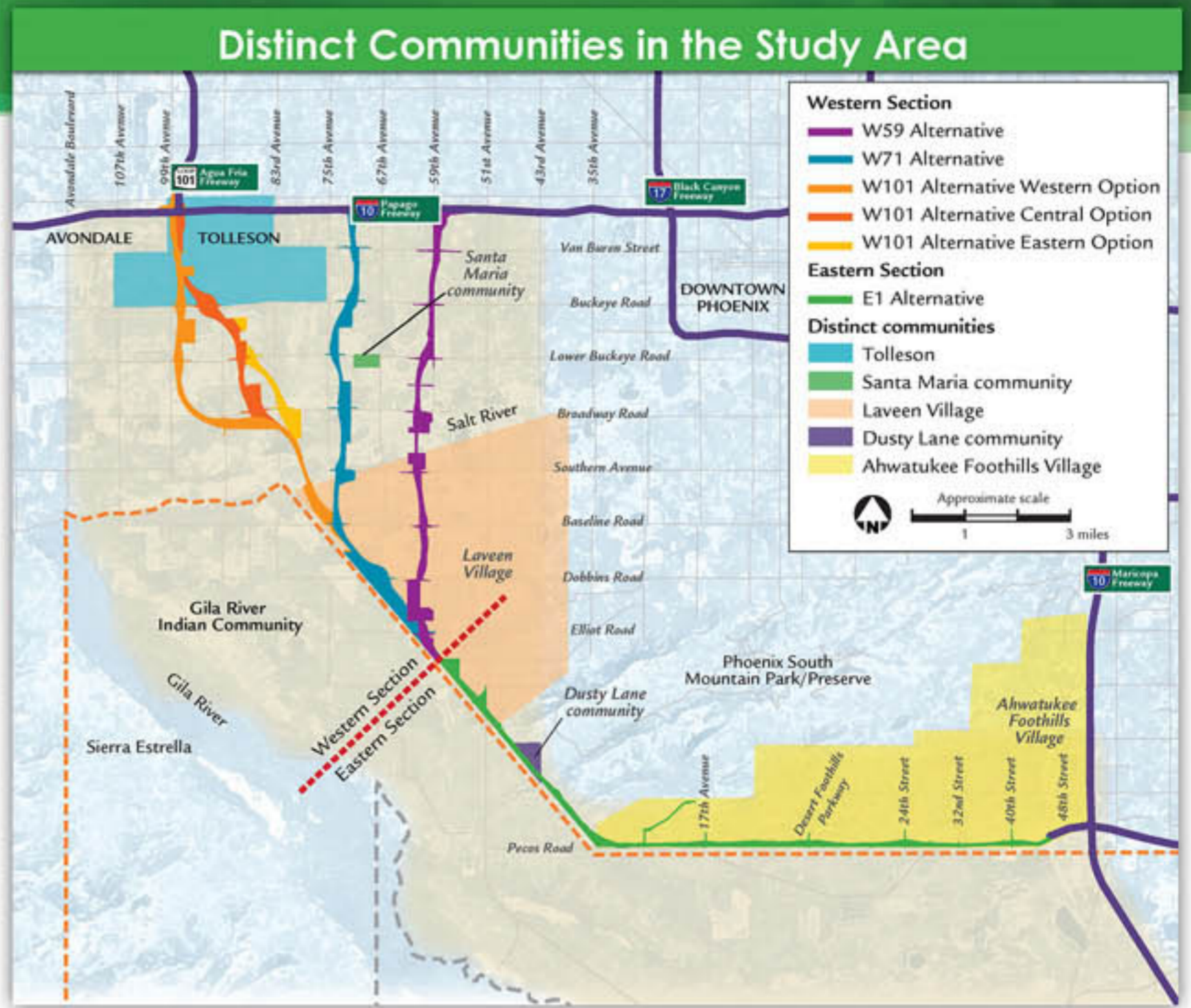


CHAPTER 4

Social Conditions

Social issues considered in the study included:

- population, employment, and housing.
- community character and cohesion.
- public facilities related to societal activities.



Representative Impacts

Action Alternatives

Impacts from the action alternatives would include, but would not be limited to:

Characteristic	W101	W71	W59	E1
Would be consistent with local and regional planning objectives	●	●	●	●
Would be consistent with location depicted in local and regional plans	●	●	●	●
Would introduce visual and noise intrusions into existing neighborhoods	●	●	●	●
Would bisect properties	●	●	●	●
Would disrupt community character and cohesion	●	●	●	●
Would improve emergency vehicle response times	●	●	●	●
Would improve circulation on arterial streets by distributing traffic onto the region's transportation network, adding alternative routes, and local operational improvements	●	●	●	●

No-Build Alternative

- No major project-related influences on social conditions (community character and the cohesiveness of neighborhoods) would occur in the Study Area.
- Existing and planned land development patterns, including new commercial and residential areas and transportation projects, would continue without the proposed freeway, leading to impacts on social conditions.
- Increasing congestion on the local street network would be expected, especially in the most rapidly developing areas within the Study Area.

Representative Mitigation

Mitigation would include, but would not be limited to:

- ✓ Providing alternative access for emergency services.
- ✓ Using noise barriers, aesthetic treatments of structures, and landscaping to reduce neighborhood intrusions.
- ✓ Coordinating with affected jurisdictions to resolve impacts on local street circulation.
- ✓ Designating utility corridors to minimize impacts at planned relocations.

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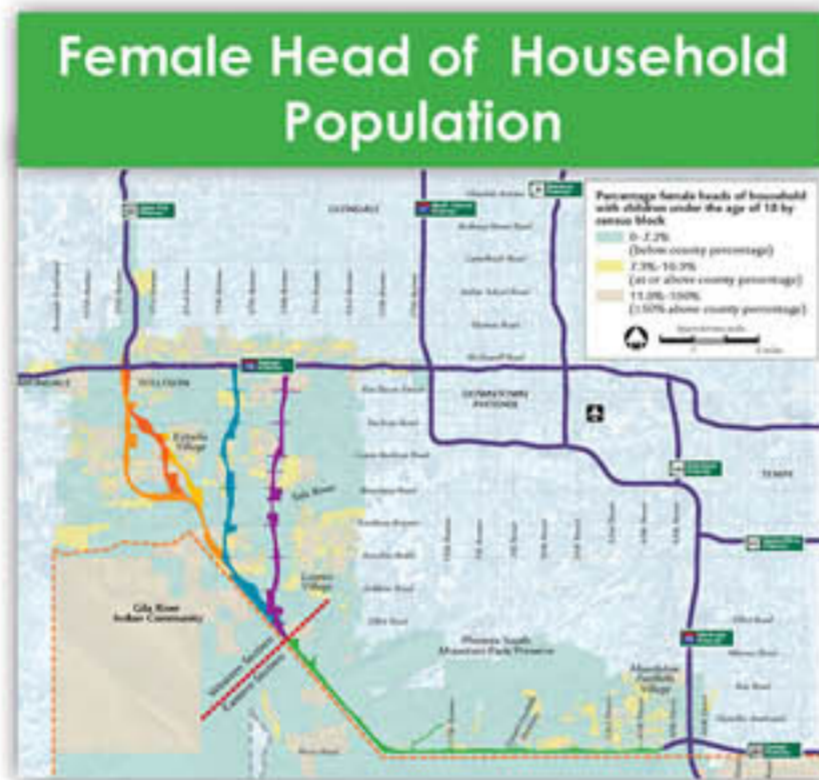
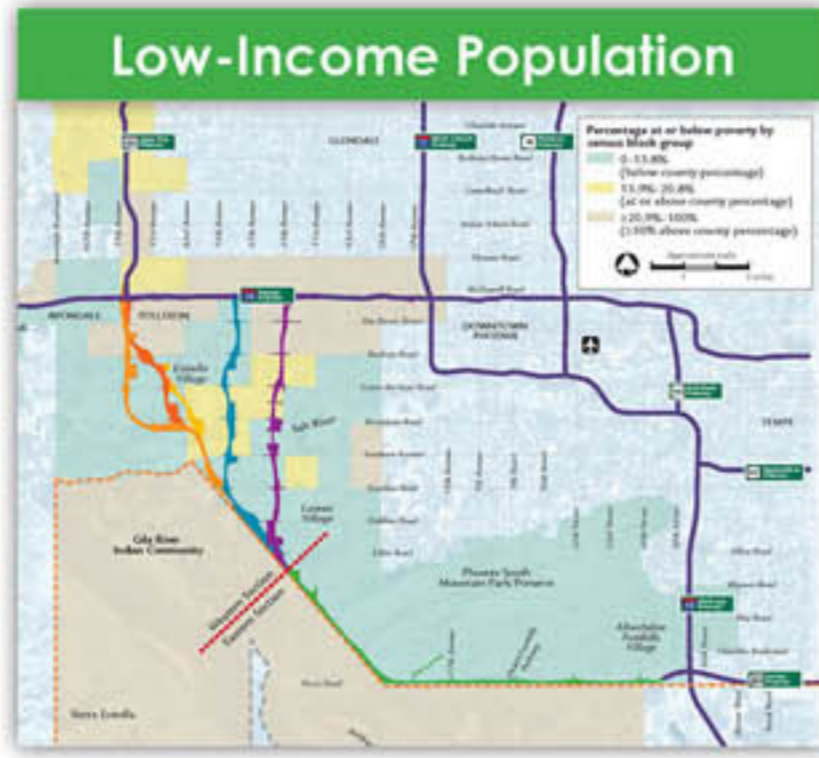
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CHAPTER 4

Environmental Justice

Environmental justice principles address undue hardship and disproportionately high and adverse effects on low-income and minority populations.



Representative Impacts

Action Alternatives

Impacts from the action alternatives would include, but would not be limited to:

- The effects by the proposed freeway on protected populations WOULD NOT constitute undue hardship or disproportionately high and adverse effects.
- Populations with qualifying characteristics based on environmental justice would be afforded full and fair participation in the transportation decision-making process, equal access to the study process, receive the benefits afforded by the proposed freeway, and would not be subject to disproportionately high adverse effects from the action.
- All populations, including protected populations, WOULD benefit from the proposed freeway through improved regional mobility and reduced local street traffic.

No-Build Alternative

- No major project-related influences on environmental justice populations would occur in the Study Area. No displacements or relocations resulting from the proposed freeway would occur as no homes would be subject to project-related acquisitions.
- Existing and planned land development patterns, including new commercial and residential areas and transportation projects, would continue without the proposed freeway, leading to impacts on protected populations.
- Increasing congestion on the local street network would be expected possibly impeding access to employment and housing, although all populations would be equally affected.



FHWA's policy is to identify and prevent discriminatory effects by actively administering its programs, policies, and activities to ensure that social impacts to communities and people are recognized early and continually throughout the transportation decisionmaking process—from early planning through implementation. Should the potential for discrimination be discovered, action to eliminate the potential shall be taken.

Representative Mitigation

✓ None required.

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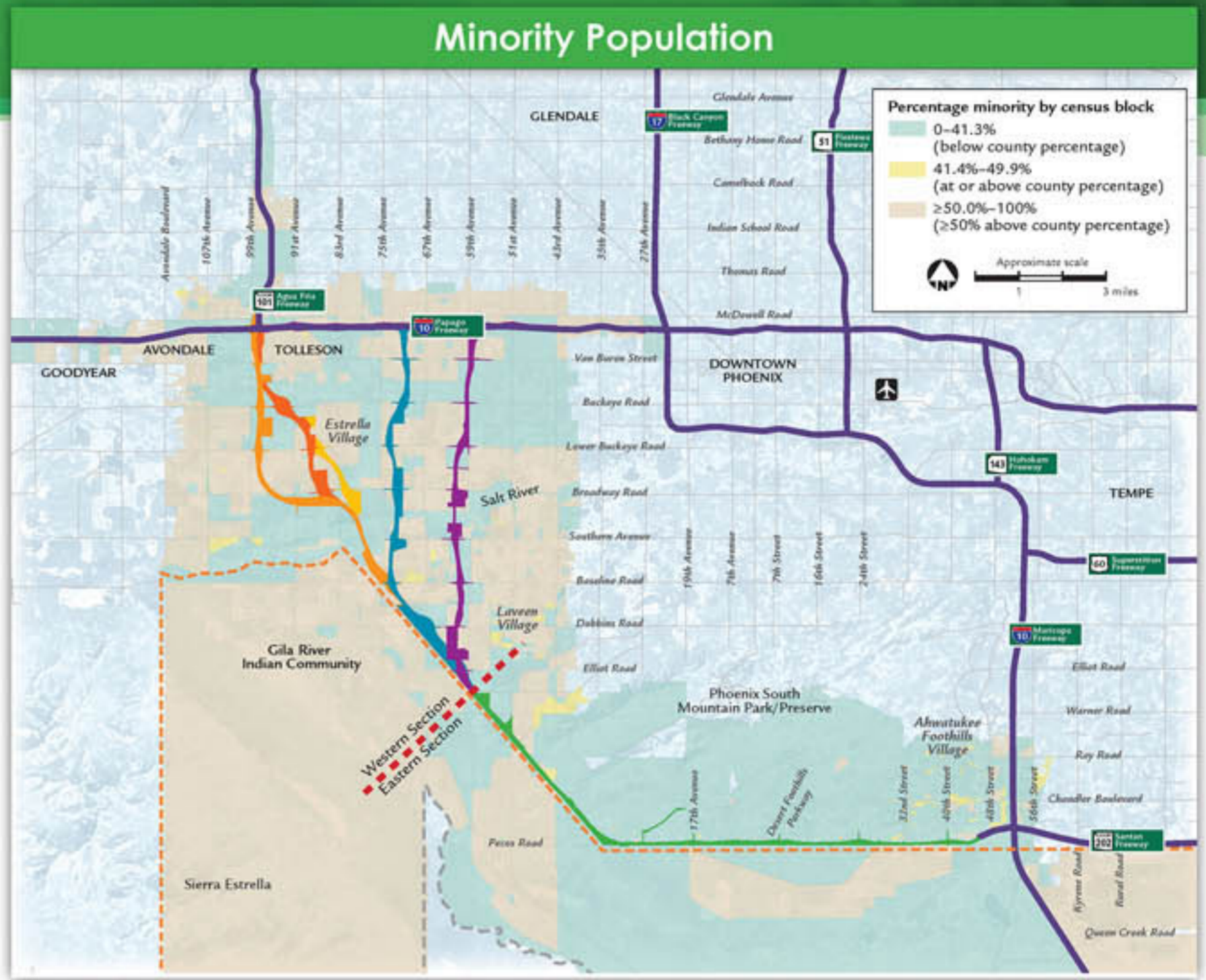
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CHAPTER 4

Title VI

Title VI of the Civil Rights Act of 1964 prohibits discrimination on the basis of race, color, national origin, sex, age, or disability.



Representative Impacts

Action Alternatives

Impacts from the action alternatives would include, but would not be limited to:

- The effects by the proposed freeway on protected populations WOULD NOT constitute undue hardship or disproportionately high and adverse effects.
- All populations, including protected populations, WOULD benefit from the proposed freeway through improved regional mobility and reduced local street traffic.
- All populations, including protected populations, have been involved in the study process since it began in 2001.
- Other potential societal impacts are described in more detail on the Land Use, Social Conditions, Displacements and Relocations, and Economic Impacts banners.

No-Build Alternative

- No major project-related influences on minority populations would occur in the Study Area. No displacements or relocations resulting from the proposed freeway would occur as no homes would be subject to project-related acquisitions.
- Existing and planned land development patterns, including new commercial and residential areas and transportation projects, would continue without the proposed freeway, leading to impacts on protected populations.
- Increasing congestion on the local street network would be expected possibly impeding access to employment and housing, although all populations would be equally affected.

Representative Mitigation

✓ None required.

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CHAPTER 4

Displacements and Relocations

Construction of the new freeway would displace homes, businesses, and public facilities.



Unsure if a property is in the proposed right-of-way?

Visit the roll-plot maps for more information regarding your specific property.

Relocation procedures are summarized in the Property Acquisition and Relocation banner. Further information can be obtained by speaking with an ADOT Right-of-Way representative.

Representative Impacts

Action Alternatives

Impacts from the action alternatives would include, but would not be limited to:

- displacement of residences, community facilities, and businesses.

The table below identifies the potential impacts from the action alternatives.

Property type	Displacements			
	Western Section			Eastern Section
	W101	W71	W59	E1
Homes	926-1,304	825	53	138
Apartment units	0	0	680	0
Businesses	14-30	22	41	0
Community facilities	3	0	0	1

No-Build Alternative

- The No-Build Alternative would not displace any homes, apartments, businesses, or public facilities.
- Existing and planned land development patterns, including new commercial and residential areas and transportation projects, would continue without the proposed freeway.
- Increasing congestion on the local street network may affect access to employment and housing.

Representative Mitigation

Mitigation would include, but would not be limited to:

- ✓ Complying with the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 and Title VI of the Civil Rights Act of 1964.
- ✓ Providing property owners just compensation.
- ✓ Offering rental assistance payments to eligible displacees.
- ✓ Offering relocation services and payments in accordance with eligibility.

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Economic Impacts

Economic analysis considered tax revenue impacts that would result from the action alternatives.

Travel Time Savings



When compared to the No-Build Alternative, the action alternatives would result in **15 million hours of travel time savings annually**. This equates to over **\$200 million per year in user benefits**.

Representative Impacts

Action Alternatives

Impacts from the action alternatives would include, but would not be limited to:

- conversion of existing taxable land to a nontaxable use.
- annual loss of property and sales tax revenue from existing land uses.

	Western Section			Eastern Section
	W101	W71	W59	E1
Acreage of taxable land converted to a nontaxable base	1,220–1,261	1,039	893	740
Phoenix tax revenue reduction*	\$4,430,900–\$5,081,800	\$6,325,900	\$5,104,300	\$4,302,100
Tolleson tax revenue reduction*	\$2,430,100–\$2,633,500	\$0	\$0	\$0
Avondale tax revenue reduction*	\$273,900	\$0	\$0	\$0

* Reduction of annual tax revenues attributable to land use conversion under existing conditions.

The annual reductions in tax base for the cities of Phoenix and Avondale would have a negligible effect on the overall annual tax base available to the two cities. The reduction in tax base for Tolleson (from the W101 Alternative), however, represents a reduction between 14 and 17 percent annually.

No-Build Alternative

- No major project-related influences on economic conditions would occur in the Study Area.
- Existing and planned land development patterns, including new commercial and residential areas and transportation projects, would continue without the proposed freeway, leading to impacts on economic conditions.
- Public projects, including transportation improvements to local streets, would convert land to nontaxable uses.
- No travel time savings would be realized with the No-Build Alternative because increasing congestion on the local street network and on the existing freeway system would continue.

Representative Mitigation

Mitigation would include, but would not be limited to:

- ✓ During construction, ADOT would coordinate with local businesses to ensure reasonable access would be maintained during regular operating hours.
- ✓ Acquisition leading to the conversion of land to nontaxable land base would be done in accordance with federal and state laws addressing compensation and relocation.

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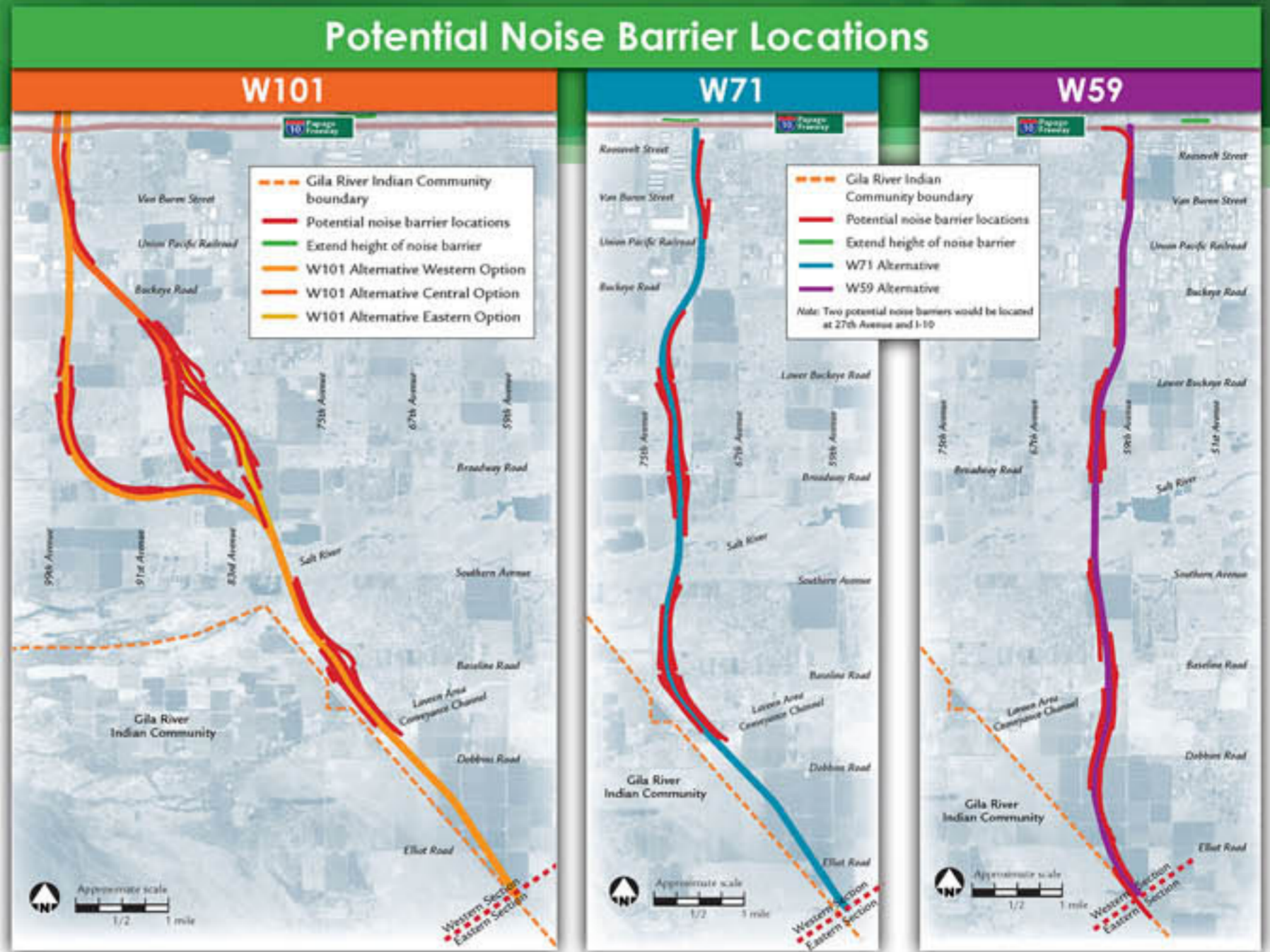
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CHAPTER 4

Noise

The noise impact of the proposed freeway on nearby noise-sensitive land uses (for example, residences) was evaluated to determine if noise reduction options were needed according to ADOT's Noise Abatement Policy.



Exact noise barrier locations and dimensions would be determined during the design phase in accordance with ADOT's Noise Abatement Policy.

Representative Impacts

Action Alternatives

- Would introduce noise where it currently does not exist or at higher levels than now experienced.

No-Build Alternative

- No major project-related influences on noise would occur in the Study Area.
- Existing and planned land development patterns, including new commercial and residential areas and transportation projects, would continue without the proposed freeway, leading to impacts on noise levels.



Noise mitigation typically consists of placing a concrete or masonry wall, called a **NOISE BARRIER**, along a roadway. Noise barriers are usually the most feasible and cost-effective strategy for mitigating highway noise impacts.

Representative Mitigation

Mitigation and considerations would include, but would not be limited to:

- ✓ Locations and height of walls would be reevaluated as design progresses.
- ✓ Where feasible, noise barriers would be constructed as early as possible in the construction phase to shield adjacent properties from construction-related noise impacts.
- ✓ Adding rubberized asphalt over the freeway's concrete pavement surface.

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CHAPTER 4

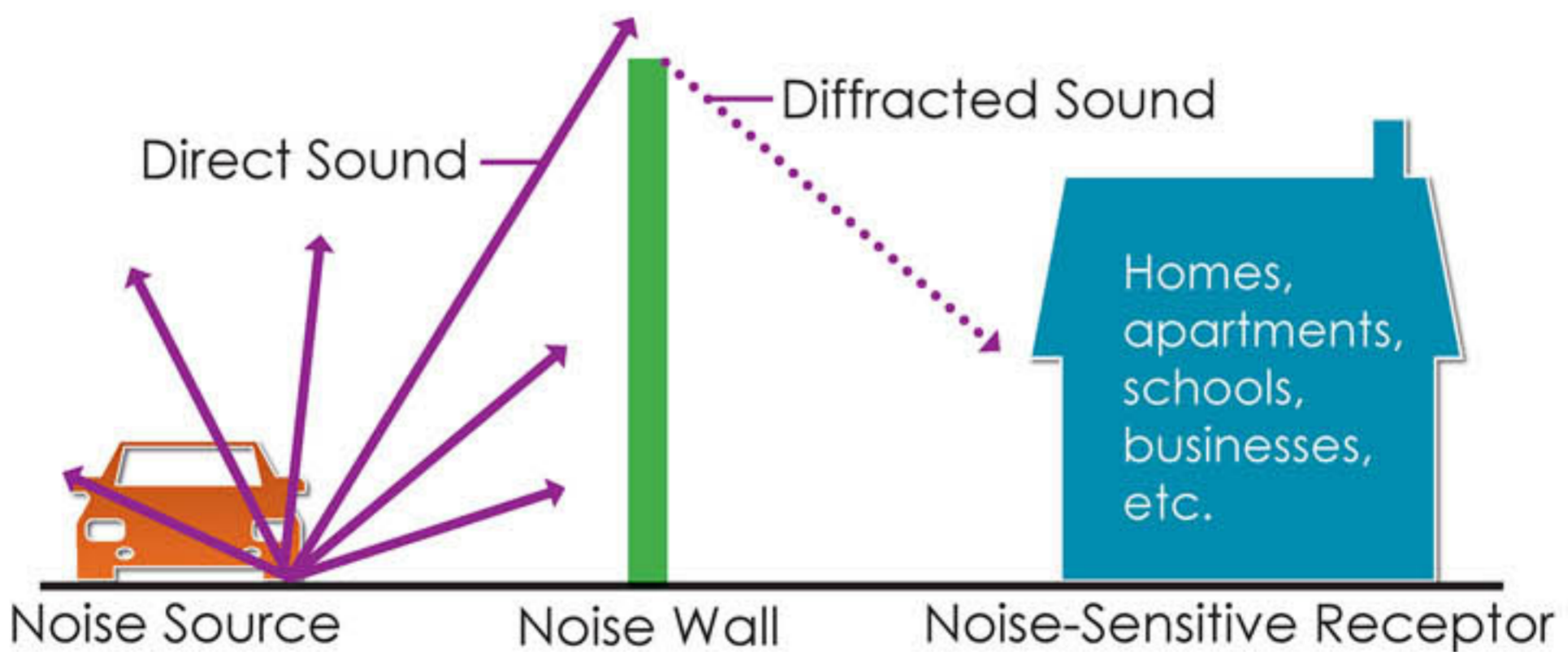
Noise Barrier Location Process



The determination of the location, length, and height of noise barriers requires multiple stages of modeling analysis and offers the public a number of opportunities to gather information and provide comments.

Level of design	Planning	30% Design	100% Design	Construction	Operation
Public Information	Through EIS process	Confirmation of public desire for noise mitigation	Confirm location, length, and height specifics	Ensure mitigation of construction-related noise	Freeway traffic noise concerns expressed
Analysis	Noise monitoring and impact analysis	Refine noise analysis		Complete	Respond to additional concerns
Mitigation (if needed)	Mitigation would not occur until construction			Barriers constructed	Barrier adjustments considered, as needed

How noise walls work



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CHAPTER 4

Air Quality

Mobile Source Air Toxics

Mobile source air toxics (MSATs) are known for or suspected of having serious health or environmental impacts. However, unlike the criteria pollutants, no National Ambient Air Quality Standards have been established for MSATs.

Project-specific predictions of MSATs' health impacts associated with the action alternatives are not available. Forecasting health impacts is also complicated by lifetime (i.e., 70 year) assessments, uncertainties of the toxicity of the various MSATs, and the lack of consensus on an acceptable level of risk. Forecasting health impacts requires emissions modeling; dispersion modeling; exposure modeling; and then final determination of health impacts—each of which has technical shortcomings.



MSATs suspected of having serious health or environmental impacts:

acrolein
benzene
1,3-butadiene
diesel particulate matter
formaldehyde
naphthalene
polycyclic organic matter

Representative Impacts

Action Alternatives

- MSATs emissions would increase near the proposed freeway; however, by reducing regional congestion, regional MSATs emissions would decrease.
- MSATs levels would decrease from existing levels over time because of national control strategies.

No-Build Alternative

- Regional traffic congestion would increase when compared to the action alternatives, which would result in increased regional MSATs emissions.
- MSATs levels would decrease from existing levels over time because of national control strategies.

Greenhouse Gas Emissions (climate change)

Climate change is an important national and global concern. There is general agreement that the earth's climate is changing at an accelerated rate and will continue to do so.

- No alternatives-level greenhouse gases (GHGs) analysis was performed for this project because the potential change in GHGs' emissions is very small in the context of the affected environment (global).
- FHWA is working to develop strategies to reduce transportation's contribution to GHGs—particularly carbon dioxide emissions—and to assess the risks to transportation systems and services from climate change.

Representative Mitigation

Mitigation would include, but would not be limited to:

- ✓ Existing and proposed air pollution regulations are expected to reduce MSAT emissions on the order of 20 to 83 percent by 2035 in the Study Area regardless of whether the proposed freeway is constructed.

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CHAPTER 4

Air Quality

Criteria Pollutants

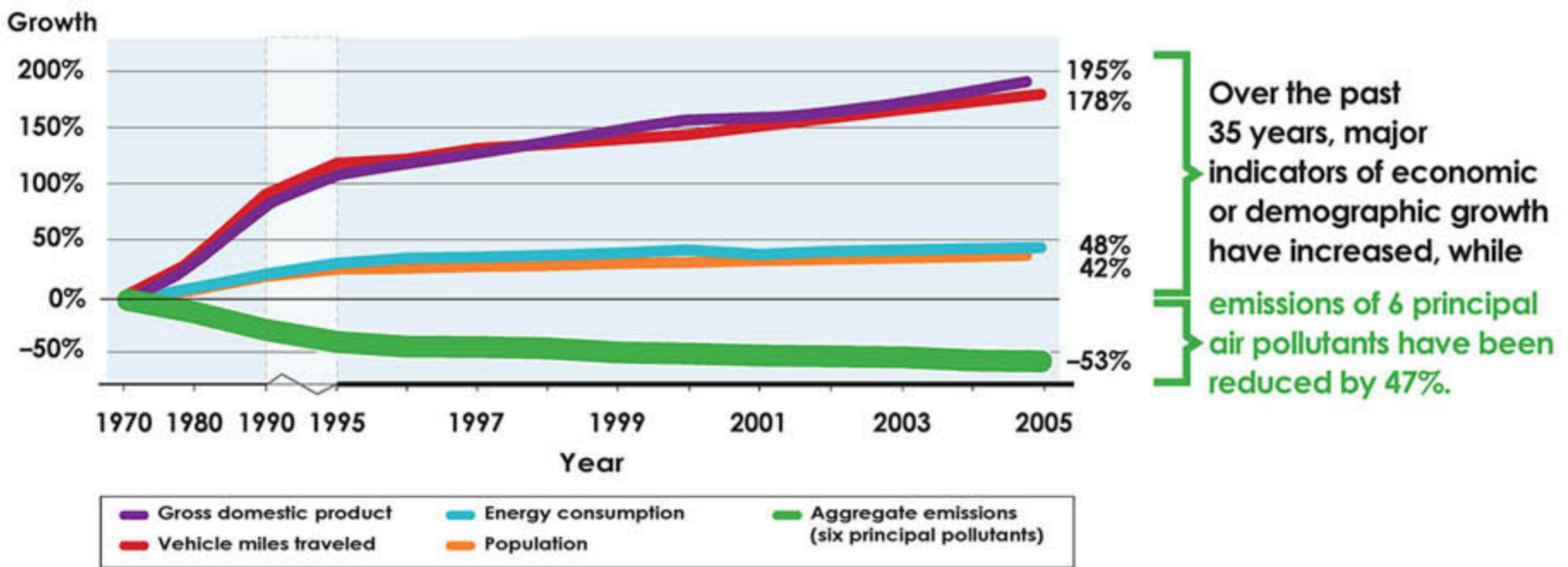
- The Environmental Protection Agency (EPA) regulates many air pollutants. Certain pollutants are known as "criteria" air pollutants because EPA uses health-related criteria for permissible exposure levels.
- The permissible levels are known as the National Ambient Air Quality Standards and were established for 6 criteria air pollutants.
- These air pollutants come from many different sources including stationary sources (such as factories), mobile sources (vehicles), and natural sources (fires and dust).
- These pollutants are monitored by MAG, the Maricopa County Air Quality Department, and the Arizona Department of Environmental Quality.
- **Levels of criteria pollutants have been declining.**



Criteria air pollutants:

carbon monoxide
nitrogen dioxide
ozone
particulate matter
sulfur dioxide
lead

Comparison of National Economic and Demographic Growth Indicators



Representative Impacts

Action Alternatives

- Carbon monoxide concentrations would increase near the proposed freeway; total concentrations would still be well within the federal standards.
- Regional traffic congestion would be reduced when compared to the No-Build Alternative, which would help reduce the excess emissions that are generated by stop-and-go traffic.
- There would be a short-term increase in particulate concentrations during construction.
- The action alternatives are consistent with long-term and short-term transportation planning efforts, and regional air quality targets.

No-Build Alternative

- Regional traffic congestion would increase when compared to the action alternatives, which would help reduce the excess emissions that are generated by stop-and-go traffic.
- The No-Build Alternative is not consistent with long-term and short-term transportation planning efforts.

Representative Mitigation

Mitigation would include, but would not be limited to:

- ✓ Complying with applicable permitting requirements to reduce air emissions during and after construction.
- ✓ Developing and implementing a traffic control plan to help reduce impacts of traffic congestion and associated emissions during construction.

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CHAPTER 4

Water Resources

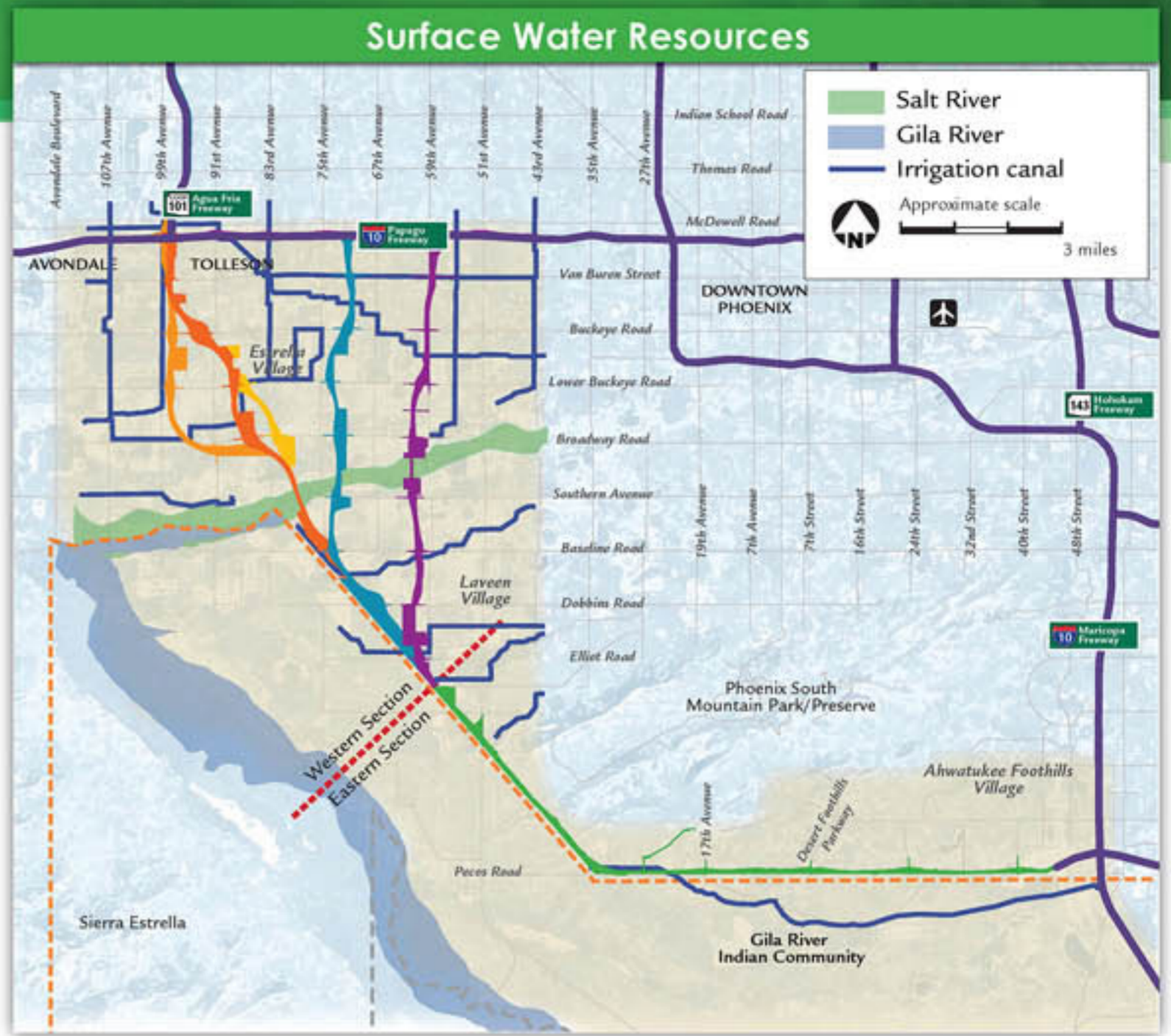
Water resource issues examined in the Draft EIS considered effects on surface water quality, irrigation canals, and access to groundwater supply. Other water resources, like floodplains, are presented in other banners.

Representative Impacts

Action Alternative

Impacts from the action alternatives would include, but would not be limited to:

- The additional amount of freeway pavement would potentially increase the level of pollutants discharged into the Salt and Gila rivers; however, the amount of discharge would be offset by a transference of traffic from local streets to the proposed freeway and region's freeway system.
- The Salt and Gila rivers, washes, and irrigation canals would be subject to the potential for increased pollutant discharges from vehicular traffic.
- Wells used for multiple purposes (e.g., monitoring, testing, irrigation, domestic) would be affected by the action alternatives as shown in the table below and subject to possible removal or abandonment.



	Western Section			Eastern Section
	W101	W71	W59	E1
Potentially affected wells	27-45	28	93	25

No-Build Alternative

- No major project-related influences on water resources would occur in the Study Area.
- Existing and planned land development patterns, including new commercial and residential areas and transportation projects, would continue without the proposed freeway, leading to impacts on water resources.
- Increasing congestion on the local street network would be expected, especially in the most rapidly developing areas within the Study Area.

Representative Mitigation

Mitigation would include, but would not be limited to:

- ✓ Coordination with flood control districts and the Gila River Indian Community when designing drainage features would occur to ensure appropriate drainage design standards are followed.
- ✓ ADOT would obtain an Arizona Pollution Discharge Elimination System (AZPDES) permit from ADEQ. The permit would outline construction limitations of discharge to not exceed water quality standards.
- ✓ Storm Water Pollution Prevention Plans (SWPPP) would be required of contractors as part of the AZPDES. The SWPPP would include Best Management Practices to reduce impacts on water resources during construction.
- ✓ Design features, including sediment-trapping basins, erosion control measures, and settlement basins would be used to reduce pollutant loading on the resources.
- ✓ Wells that would need to be fully replaced would be done so based on the well replacement program outlined by State law.

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CHAPTER 4

Floodplains



Potential impacts to floodplain areas were identified, studied, and assessed to minimize the impacts of flooding and associated loss, and to preserve the beneficial value of the floodplains.



Representative Impacts

Action Alternatives

Impacts from the action alternatives would include, but would not be limited to:

- all Western Section alternatives would result in limited floodplain encroachments and limited flood risk.

Floodplain	Floodplain Acreages Affected			
	Western Section			Eastern Section
	W101	W71	W59	E1
Salt River	19	117	53	0
Union Pacific Railroad	29-33	10	4	0
TOTAL	48-52	127	57	0

No-Build Alternative

- No project-related impacts on floodplains would occur.
- Existing and planned land development patterns, including new commercial and residential areas and transportation projects, would continue without the proposed freeway, leading to further encroachment into federally mapped floodplains.

Representative Mitigation

Mitigation would include, but would not be limited to:

- ✓ Designing drainage features to contain increases in water surface elevations within the existing and proposed right-of-way.
- ✓ Designing bridge structures to prevent a rise in floodwater elevation of more than one foot and coordinating the design with the Maricopa County Floodplain Manager.
- ✓ Using self-cleaning culverts sized based on the design discharge of a 100-year storm.

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CHAPTER 4

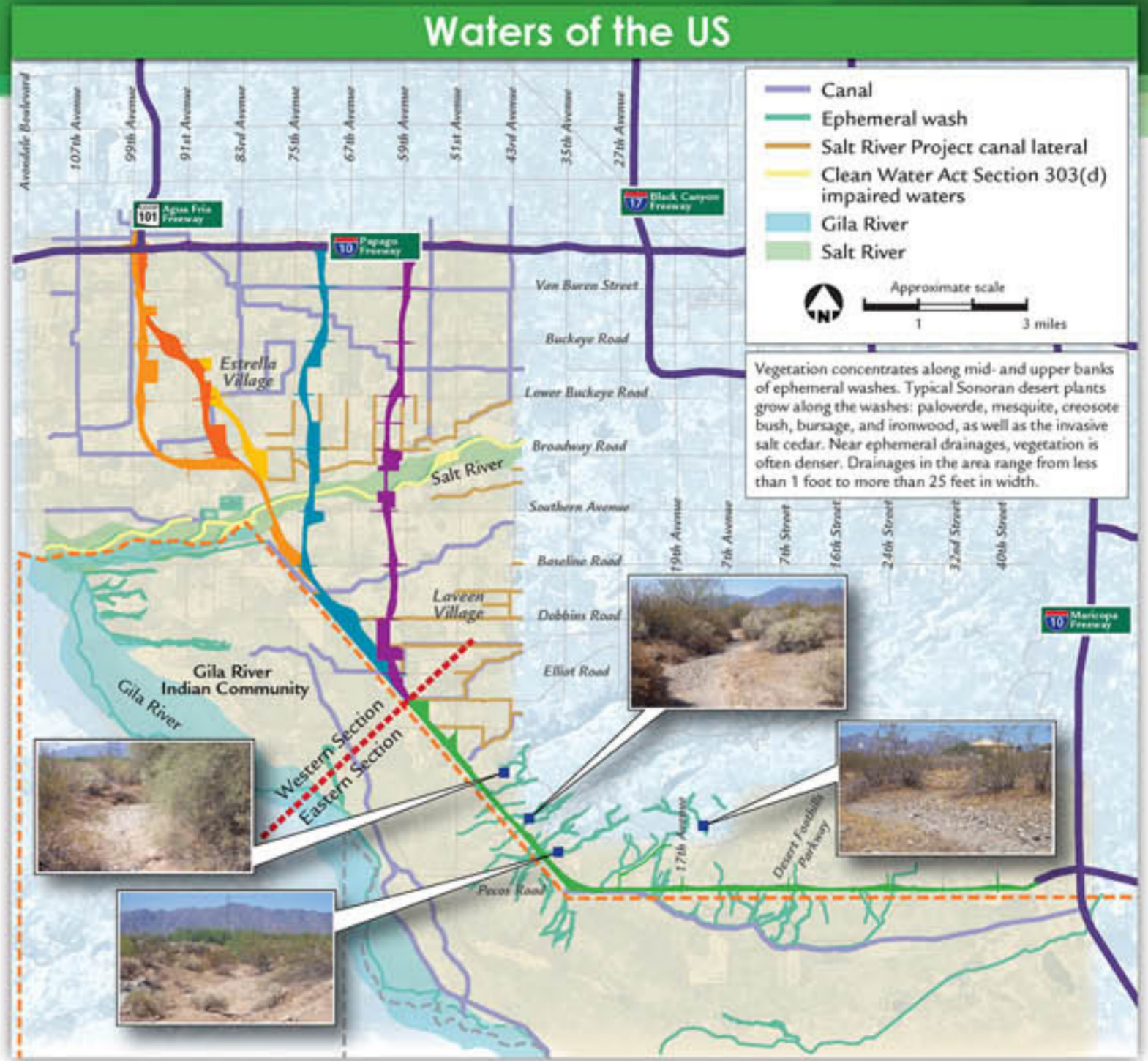
Waters of the United States

Such waters in the Study Area include ephemeral (temporary) washes, canal laterals (ditches), and the Salt and Gila rivers.



What are "waters of the US"?

Interstate waters in the United States are 1) currently, 2) have been used in the past, or 3) may be used in the future for foreign or interstate commerce. Examples include interstate lakes, rivers, streams, mud flats, sand flats, wetlands, playa lakes, or natural ponds, whose use, degradation or destruction could affect foreign commerce activities.



Clean Water Act (CWA)



SECTION 404

regulates

the discharge of dredged or fill material into waters of the US.

administered by



US Army Corps of Engineers



SECTION 401

certifies

water quality associated with activities/construction of the proposed action into waters of the US.

administered by



Representative Impacts

Action Alternatives

Impacts from the action alternatives would include, but would not be limited to:

	Western Section			Eastern Section
	W101	W71	W59	E1
Acreage of impact on waters of the US	17	19	26	4

No-Build Alternative

- No project-related impacts on waters of the US would occur.
- Existing and planned land development patterns, including new commercial and residential areas and transportation projects, would continue without the proposed freeway, leading to impacts on waters of the US.

Representative Mitigation

Mitigation would include, but would not be limited to:

- ✓ Preparing and submitting an application to the U.S. Army Corps of Engineers and ADEQ for a CWA Section 404 permit and for CWA Section 401 water quality certification for the entire project.
- ✓ Complying with all conditions set forth in the Section 401 water quality certification and all terms, general conditions, and special conditions of the Section 404 permit. The Section 404 permit stipulates that the selected alternative must be the least environmentally damaging practicable alternative. Permit review and issuance follows a sequence process that encourages avoidance of impacts, followed by minimizing impacts and, finally, requiring mitigation for unavoidable impacts to the aquatic environment.

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CHAPTER 4

Topography, Geology, and Soils

The study examined the potential adverse effects of the proposed freeway on groundwater resources, fissuring, seismicity, and mineral resources.



Representative Impacts

Action Alternatives

Impacts from the action alternatives would include, but would not be limited to:

Western Section			Eastern Section
W101	W71	W59	E1
<ul style="list-style-type: none"> • Groundwater and soil conditions may influence design and construction, but such conditions are commonly encountered and accounted for in design and construction. • Little direct effect on groundwater levels. Any potential land subsidence due to groundwater-level decline is unlikely to have an adverse effect on the proposed freeway. • Sand and gravel operations—some inactive, some active—would be affected. 			<ul style="list-style-type: none"> • Bedrock of granite and gneiss would be encountered through ridgelines on the west side of the South Mountains, resulting in difficult excavation conditions. • Blasting may be required for removal.

No-Build Alternative

- No major project-related influences on topography, geology, and soils would occur in the Study Area.
- Existing and planned land development patterns, including new commercial and residential areas and transportation projects, would continue without the proposed freeway, leading to modifications to topography, geology, and soils and increased demands on groundwater supply.

Representative Mitigation

Mitigation would include, but would not be limited to:

- ✓ If blasting is necessary for excavation, in-depth pre- and post-construction surveys, including photos and video, for all structures located within one-half mile of any blasting and/or heavy ripping activities would occur. Surveys would be done to ADOT specifications and the contractor would be responsible for any damage from blasting and related activities.
- ✓ Acquisition and relocations of sand and gravel operations would be in accordance with federal and state laws addressing compensation and relocation.
- ✓ Excavated slopes would be protected against erosion and rock fall.

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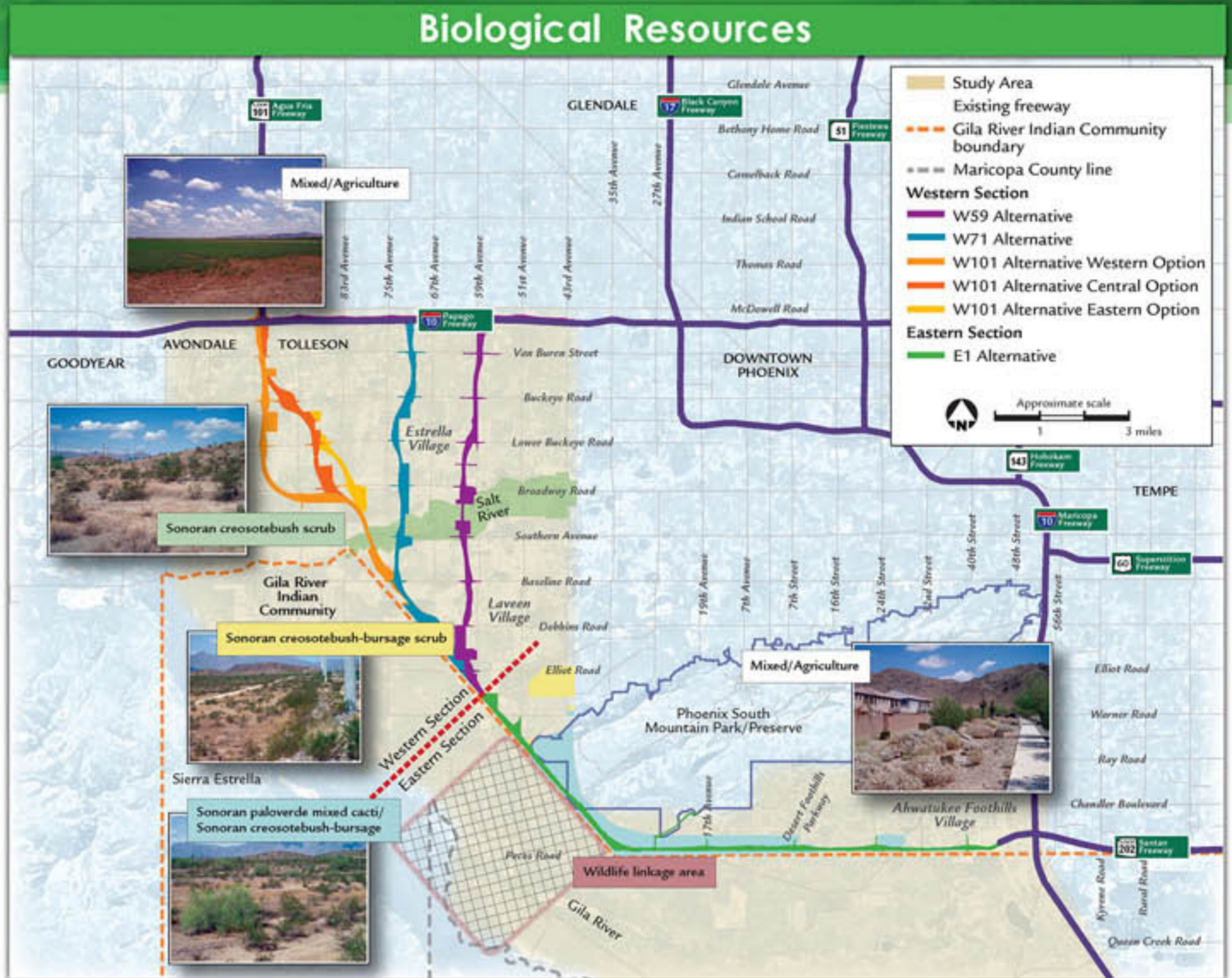
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CHAPTER 4

Biological Resources

Wildlife and plant species in Arizona are regulated and protected through state and federal laws and regulations.



Representative Impacts

Action Alternatives

Impacts from the action alternatives would include, but would not be limited to:

Western Section			Eastern Section
W101	W71	W59	E1
<ul style="list-style-type: none"> • May affect foraging behavior of the Sonoran Desert population of bald eagles along the Salt River. • Would not affect threatened and endangered species or their critical habitat. 			<ul style="list-style-type: none"> • May affect the Sonoran desert tortoise through vehicular conflicts, displacement from construction, loss of food sources and cover habitat, and habitat degradation.
<ul style="list-style-type: none"> • May restrict some wildlife movement because of the physical barrier that would be created by the proposed freeway between the South Mountains and Sierra Estrella. • Would disturb cover areas, nesting areas, and food resources for wildlife habitat provided by the natural plant communities. 			

No-Build Alternative

- No major project-related influences on biological resources would occur in the Study Area.
- Existing and planned land development patterns, including new commercial and residential areas and transportation projects, would continue without the proposed freeway, leading to continued disturbance of cover areas, nesting areas, and food resources provided by natural plant communities.
- Urban development could also restrict wildlife movement because of physical barriers that would be created by urban features such as homes, buildings, walls, and roads.

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CHAPTER 4

Biological Resources

Examples of species in the Study Area



Tortoise



Bald Eagle



Yellow Billed Cuckoo



Yuma Clapper

Representative Mitigation

The Study Area would continue to urbanize due to planned development with or without the proposed freeway. Mitigation would include, but would not be limited to:

- ✓ Coordinating with U. S. Fish and Wildlife Service (USFWS) and Arizona Game and Fish Department to determine whether additional species-specific mitigation measures would be required.
- ✓ Designing drainage structures near the South Mountain Park and Preserve to accommodate multifunctional crossings.
- ✓ Reexamining the USFWS threatened and endangered species list for Maricopa County prior to construction activities.
- ✓ Completing bird surveys and developing species-specific mitigation measures for birds protected under the Migratory Bird Treaty Act.
- ✓ Scheduling and performing construction to avoid breeding seasons of migratory birds.
- ✓ Seeding all disturbed soils that would not be landscaped using species native to the area.
- ✓ Inspecting and cleaning all earthmoving and hauling equipment to prevent the introduction of invasive species seeds.
- ✓ Educating construction personnel of guidelines for handling Sonoran desert tortoises, if encountered.
- ✓ Completing a preconstruction survey for burrowing owls prior to construction in all suitable habitat that would be disturbed.

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CHAPTER 4

Cultural Resources

Cultural resource investigations were performed to establish the proposed freeway's compliance with the National Historic Preservation Act and other laws. Cultural resources generally include archaeological sites, historic buildings and structures, artifacts and objects, and places of traditional, religious, and cultural significance.



Representative Impacts

Action Alternatives

Impacts from the action alternatives would include, but would not be limited to:

National Register of Historic Places-eligible sites		Western Section			Eastern Section
		W101	W71	W59	E1
Archaeological sites		2-3	4	5	7
Roosevelt Canal	Crosses	No	Yes	Yes	No
	Affects eligibility	No	No	No	No
Historic Southern Pacific Railroad	Crosses	Yes	Yes	Yes	No
	Affects eligibility	No	No	No	No
Historic Phoenix South Mountain Park/Preserve		No	No	No	Yes
Traditional Cultural Property-South Mountains		No	No	No	Yes

All action alternatives would affect archaeological and historic resources.

No-Build Alternative

- No project-related impacts on cultural resources would occur.
- Existing and planned land development patterns, including new commercial and residential areas and transportation projects, would continue without the proposed freeway, leading to disturbance of cultural resource properties and sites.

Representative Mitigation

Mitigation would include, but would not be limited to:

- ✓ Developing and implementing a preconstruction testing plan for archaeological sites.
- ✓ Avoiding impacts through the use of bridges to span the historic canal and railroad.
- ✓ Outlining and establishing an agreement between lead agencies and other interested parties for the proper treatment and management of affected cultural resources and associated objects that may be encountered.
- ✓ Contracting with the Gila River Indian Community to perform a full evaluation of traditional cultural properties.
- ✓ Locating multifunctional crossings such that they would facilitate pedestrian access to cultural sites.

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CHAPTER 4

Prime and Unique Farmland

The purpose of the Farmland Protection Policy Act is to “minimize the extent to which federal programs contribute to the unnecessary and irreversible conversion of farmland to nonagricultural uses.”



New residential developments replacing farmland in the Study Area.



What is “prime” and “unique” farmland?

Prime farmland is land that has the best combination of physical and chemical characteristics for producing food, feed, fiber, forage, and other agricultural crops. It does not include land already in or committed to urban development or water storage.

Unique farmland is land other than prime farmland that is used for production of specific high-value food and fiber crops. Examples of such crops include citrus, tree nuts, olives, fruits, and vegetables.

Representative Impacts

Action Alternatives

Impacts from the action alternatives would include, but would not be limited to:

Impact	Western Section			Eastern Section
	W101	W71	W59	E1
Acreage of converted prime and unique farmlands*	827–863	583	588	154

*The acreages of farmland conversion represent a small percentage of farmland in the Study Area.

The Study Area would continue to become more urban because of planned development; therefore, the conversion of farmland by the proposed freeway would be inconsequential, although some remnants of farmland would likely remain indefinitely.

No-Build Alternative

- No project-related impacts on prime and unique farmland would occur.
- Existing and planned land development patterns, including new commercial and residential areas and transportation projects, would continue without the proposed freeway, leading to the conversion of farmland to urban and suburban uses.

Representative Mitigation

Mitigation would include, but would not be limited to:

- ✓ Coordinating with affected property owners to provide access, if possible, for farm equipment between divided agricultural parcels.
- ✓ Purchasing remaining farm parcels considered too small to be farmed either economically or functionally.

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CHAPTER 4

Hazardous Materials

A hazardous materials evaluation for the construction and operation of the proposed freeway was conducted to determine whether:

- contaminated soils would be present near potential hazardous materials sites.
- underground storage tanks would need removal or relocation because of freeway construction.
- wells and dry wells would be present.

Identifying potential sites minimizes the risk of delays during construction and exposure of contaminants to the general public.



Transport of hazardous materials

Types of hazardous materials frequently transported on the region's roads include gasoline and paint products. ADOT is responsible for developing, implementing, and maintaining the list of designated and restricted routes. In Arizona, only three routes are restricted for all hazardous materials. Currently, the proposed freeway would be available for hazardous materials transport.

Representative Impacts

Action Alternatives

Impacts from the action alternatives would include, but would not be limited to:

Impact	Western Section			Eastern Section
	W101	W71	W59	E1
Disturbance of high-priority hazardous materials sites*	1	4	5	0

* High-priority sites are those with high potential for releasing hazardous materials into the soil or groundwater. Examples of high-priority sites include current service stations, bulk fueling terminals, or known sites with a release that has not been remediated (cleaned).

No-Build Alternative

- No major project-related influences on hazardous materials sites would occur.
- Existing and planned land development patterns, including new commercial and residential areas and transportation projects, would continue without the proposed freeway, leading to potential impacts on hazardous materials sites.

Representative Mitigation

Mitigation would include, but would not be limited to:

- ✓ Performing a site-specific assessment prior to acquisition of the high-priority sites.
- ✓ Coordinating with responsible parties to determine the status of any required cleanup actions.
- ✓ Conducting asbestos and lead-paint inspections of structures to be demolished.
- ✓ Controlling construction activities near wells or dry wells to avoid contaminating groundwater resources.
- ✓ Developing emergency response plans with local fire authorities, local hospitals, and certified emergency responders for hazardous materials releases or chemical spills.
- ✓ Removing any existing aboveground storage tanks or underground storage tanks in accordance with Arizona laws and regulations.

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CHAPTER 4

Visual Resources

The Study Area was evaluated in terms of the existing visual conditions and landscape character. The analysis identified distinct features, areas of preservation and disturbance, key landmarks, and major viewpoints.

Representative Impacts

Action Alternatives

Impacts from the action alternatives would include, but would not be limited to:

Western Section			Eastern Section
W101	W71	W59	E1
<ul style="list-style-type: none"> Construction activities, new traffic interchanges, and the proposed freeway would be visible from residences and rural areas. Views from the developed areas of the W101 and W59 Alternatives would not change. The W71 Alternative would have slightly greater impacts to views because of more planned residential development than the other freeway alternatives. 			<p>The proposed freeway in and around the South Mountains would alter the views of the natural settings.</p>

No-Build Alternative

- No major project-related influences on visual resources would occur.
- Existing and planned land development patterns, including new commercial and residential areas and transportation projects, would continue without the proposed freeway, leading to the conversion of the Study Area to an urban appearance.

Representative Mitigation

Mitigation would include, but would not be limited to:

- ✓ Using plants to screen views both of the road and from the road.
- ✓ Clustering or grouping plant material in an informal pattern to break up the linear form of the freeway.
- ✓ Blending retention basins and their landscape treatments into their natural surroundings.
- ✓ Using earth colors for overpasses, retaining walls, screen walls, and noise barriers.
- ✓ Modifying the newly exposed rock faces of road cuts to mimic the adjacent natural rock features to the extent practicable and feasible.

Examples of visual treatments:



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CHAPTER 4

Energy



Primary energy use would be fossil fuel consumption by vehicles traveling within and around the Study Area. Operational energy use was calculated using MAG traffic projections, Maricopa County vehicle registration records, and U.S. Dept. of Energy fuel economy data.

Representative Impacts

Action Alternatives

Impacts would include, but would not be limited to:

Impact	Action Alternatives		
	gallons per year		
	W101/E1	W71/E1	W59/E1
Regional energy consumption	4,181,000,000	4,182,000,000	4,182,000,000

No-Build Alternative

Impact	No-Build Alternative
	gallons per year
Regional energy consumption	4,223,000,000



Among the action alternatives, operational energy use is essentially about the same and all action alternatives are projected to result in less fuel consumption than the No-Build Alternative.

**ACTION ALTERNATIVES =
40M GALLONS
LESS FUEL
PER YEAR**



Representative Mitigation

✓ No mitigation is proposed.

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CHAPTER 4

Temporary Construction Impacts

Construction activities would have a temporary impact on project surroundings in the Study Area.

Representative Impacts

Action Alternatives

Impacts from the action alternatives would include, but would not be limited to:

Western Section			Eastern Section
W101	W71	W59	E1

During construction, motorists and other people living and working in the surrounding area could experience temporary inconveniences associated with traffic delays, detours, and construction dust and noise. Temporary effects on air quality, noise levels, water resources, residential and business access, pedestrian and vehicular traffic, and utilities would be comparable among action alternatives.

No-Build Alternative

- Construction activity associated with existing and planned land development patterns, including new commercial and residential areas and transportation projects, would result in similar temporary construction impacts as the action alternatives.

Representative Mitigation

Mitigation would include, but would not be limited to:

- ✓ Developing and implementing a traffic control plan to reduce impacts of traffic congestion and associated emissions during construction.
- ✓ Coordinating the traffic control plan with public services such as fire and ambulance.
- ✓ Implementing strategies such as watering to minimize dust, stabilizing dirt piles, using windbreaks, and revegetating disturbed areas to minimize dust and erosion.
- ✓ Maintaining and operating all construction equipment to minimize noise and air emissions.
- ✓ Distributing construction alerts to keep the public informed of construction activities.
- ✓ Coordinating short-term and localized disruptions to utility services and providing prior notification of adjacent property owners who would be affected by temporary service cut-offs.

Examples of mitigation strategies



Source: ADOT



Source: ADOT



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CHAPTER 4

ADOT TRACS No.: 202L MA 054 H5764 01L
Federal-aid Project No.: NH-202-D(ADY)

Material Sources

Large-scale projects, such as the proposed freeway, require balancing earthwork needs with available fill material (or dirt). In some cases, project excavation in one area produces excess material that can then be used as fill elsewhere on the project, such as at raised traffic interchanges.

In other cases, projects do not produce enough fill material onsite to meet project needs, so other suitable sources of material must be found offsite and brought to the project.

Onsite excavation can generate required fill.



Local sand and gravel operations can be a source of fill.



Representative Impacts

Action Alternatives

Impacts from the action alternatives would include, but would not be limited to:

Impact	Western Section			Eastern Section
	W101	W71	W59	E1
Amount of fill material needed (million cubic yards)	1.0-4.0	0.25	3.8	6.2

No-Build Alternatives

- Construction activity associated with existing and planned land development patterns, including new commercial and residential areas and transportation projects, would result in the need for material sources.

Representative Mitigation

Mitigation would include, but would not be limited to:

- ✓ The proposed freeway would balance materials to the extent possible, but some additional materials would be needed for all action alternatives. These amounts are not considered excessive for a project of this size.
- ✓ The contractor would use material sources from an ADOT-approved source.
- ✓ Contractor-furnished material sources must obtain environmental clearance for use on ADOT projects.

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CHAPTER 4

Secondary and Cumulative Impacts

Secondary impacts are caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable. Secondary impacts may include growth, changes in land use patterns, population density or growth rate, and related effects on air and water and other natural systems.

Cumulative impacts are environmental impacts that result from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions. Cumulative impacts are considered direct effects that are caused by the action and occur at the same time and place.



Representative Impacts

Action Alternatives

Impacts from the action alternatives would include, but would not be limited to:

	Western Section			Eastern Section
	W101	W71	W59	E1
Secondary	<ul style="list-style-type: none"> Growth in traffic, population, and related effects would occur with or without the proposed freeway, resulting in increased congestion. Impacts on biological resources, water resources, air quality, cultural resources, land uses, community character, and economic conditions would occur. The purpose of the proposed freeway is to respond to a growing need for additional transportation capacity as a result of regional growth occurring now and as projected. 			
Cumulative	<ul style="list-style-type: none"> The proposed freeway would occur in an urbanizing area planned for continued urban growth as established in local jurisdictions' land use planning activities for as many as the last 25 years. The minimal contribution to overall traffic use is expected to have both positive and negative consequences. Cumulative impacts would occur on biological resources, water resources, cultural resources, land uses, visual resources, noise, and air quality. 			

No-Build Alternative

The permanent loss of cultural resources and agricultural land would be expected to continue with increased urbanization even if the proposed freeway were not constructed; however, the incremental effects contributed solely by the proposed freeway would not occur.

Representative Mitigation

Project-specific mitigation measures proposed to address direct impacts would also provide reductions in overall secondary and cumulative impacts.

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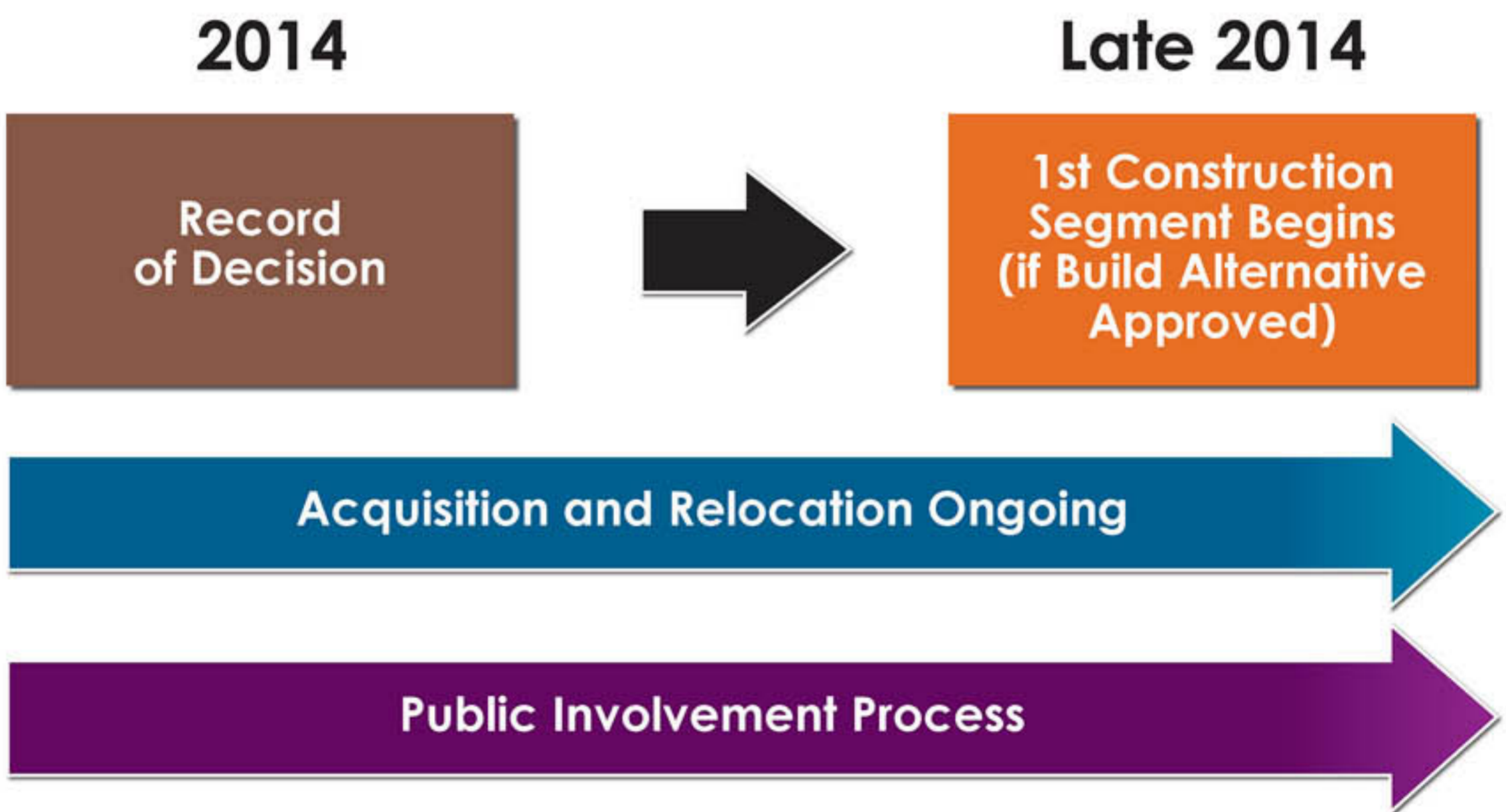
Property Acquisition and Relocation

Is there a process to acquire and relocate residences and businesses? How and when does it work?

- There is a clear, proven property acquisition and relocation process that ADOT is required to follow. ADOT has fulfilled the requirements of this federal process for many years on many projects.
- An acquisition and relocation assistance program would be conducted in accordance with the **Uniform Relocation Assistance and Real Properties Acquisition Policies Act of 1970**.
- This act identifies the process, procedures, and time frame for right-of-way acquisition and relocation of affected residents or businesses.
- All replacement housing would be decent, safe, sanitary, and within a displacee's financial means.
- Relocation resources would be available to all eligible residential and business relocatees without discrimination.
- Assistance will be provided to locate available replacement housing.



Right-of-way process information can be obtained by speaking with an ADOT Right-of-Way representative or calling 602-712-7316.



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