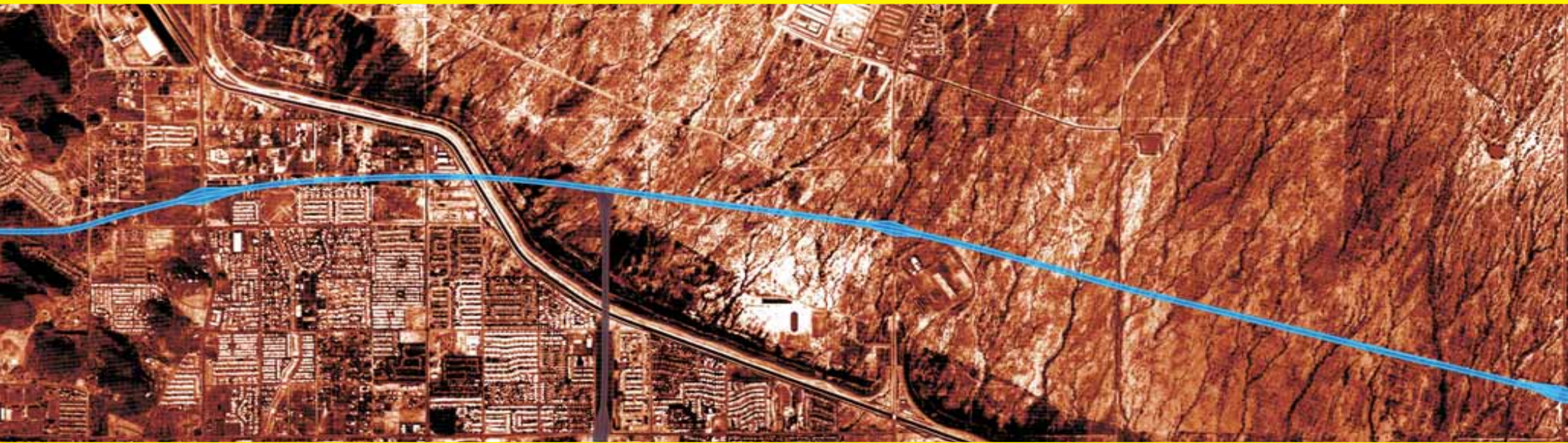


# OUTER LOOP FREEWAY Specific Plan



Agua Fria & Pima Freeways (Loop 101)



**A RESOLUTION ADOPTING THE  
OUTER LOOP FREEWAY SPECIFIC PLAN**

WHEREAS, the Phoenix City Council adopted the General Plan for Phoenix 1985-2000 on October 1, 1985 which called for this freeway as a part of the circulation element of the Plan; and WHEREAS, the Phoenix Planning Commission initiated the Outer Loop Freeway Specific Plan in November, 1990 to address problems encountered by, and to maximize compatibility with, adjacent land uses with specific attention directed to adjacent neighborhoods; and

WHEREAS, considerable citizen participation has occurred, with their involvement at many community meetings, public forums and hearings, as well as personal interviews and telephone conversations, placing emphasis on preserving neighborhood quality; and

WHEREAS, the specific Plan is responsive to community input with a format emphasizing a Plan elements section and a mitigation summary identifying what realistically can be achieved; and

WHEREAS, through action on February 15, 1995, the Phoenix City Council approved the Outer Loop Freeway Specific Plan defining actions to be taken to assure additional freeway compatibility with the adjacent area.

NOW, THEREFORE, BE IT RESOLVED BY THE COUNCIL OF THE CITY OF PHOENIX as follows:

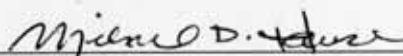
SECTION 1. That the Outer Loop Freeway Specific Plan, annexed hereto and made a part hereof, is hereby adopted.

PASSED by Council of the City of Phoenix this 01 day of May, 1996.

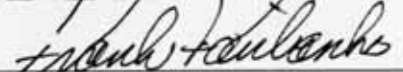
, City Clerk

  
MAYOR

APPROVED AS TO FORM:

, Acting City Attorney

REVIEWED BY:

, City Manager

WFB/RP/FAPP-4937  
5/1/96 #90

Resolution No. 18696

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## Introduction

The freeway mitigation program was created in the City of Phoenix by the 1988 approval of Proposition 17. This proposition authorized general obligation bonds to prepare plans and fund projects which could mitigate the blighting effects on the City's neighborhoods from existing and proposed freeway construction. The Outer Loop (Agua Fria and Pima Freeways, S.R. 101) Freeway Specific Plan, the third under this program, addresses problems encountered or anticipated in neighborhoods adjacent to this freeway corridor. It establishes non-regulatory policies and guidelines to improve the compatibility between the freeway and the residential neighborhoods through which it passes.

The Outer Loop Freeway Specific Plan study area is a corridor approximately one-half mile wide, which follows the existing Beardsley Road alignment. It extends from

51st Avenue on the west to Scottsdale Road on the east (Figure 1). The freeway is generally centered in this corridor for its entire 14-mile length. Construction is complete for the first three miles on the west, however, construction on the east will be 6-8 years away given existing ADOT funding priorities. An interim freeway between I-17 and 56th Street is planned to be built sooner; design finished in 1995 and construction beginning in late 1997 and extending to 1999. This interim project is funded jointly by Arizona Department of Transportation (ADOT), the Maricopa County Flood Control District and the City of Phoenix.

When completed, the Outer Loop Freeway will become a significant asset to this part of the city. The Deer Valley Village core, at the interchange with Interstate 17, is a major feature along this corridor. The freeway will extend over the Central Arizona Project (CAP) Canal at 32nd Street into the Desert View Tri-Villages, and will provide a major

regional transportation connection to the planned village core in the Desert Ridge community. A third village, Paradise Valley, will be linked to the Outer Loop by its future connection to the Squaw Peak Freeway. Along the entire length of the Outer Loop there will be a 46-foot wide median. The intended purpose of this median is to provide for future High Occupancy Vehicle lanes.

The freeway mitigation program offers a unique opportunity to cooperatively plan for the land uses and mitigation features that will enable the community to live in harmony with the very important transportation service that is brought by the City's emerging freeway network.

This program brings together local and state agencies and involves the community in the process of stabilizing the neighborhoods that lie along our freeway corridors. It also provides funding to make many of the improve-

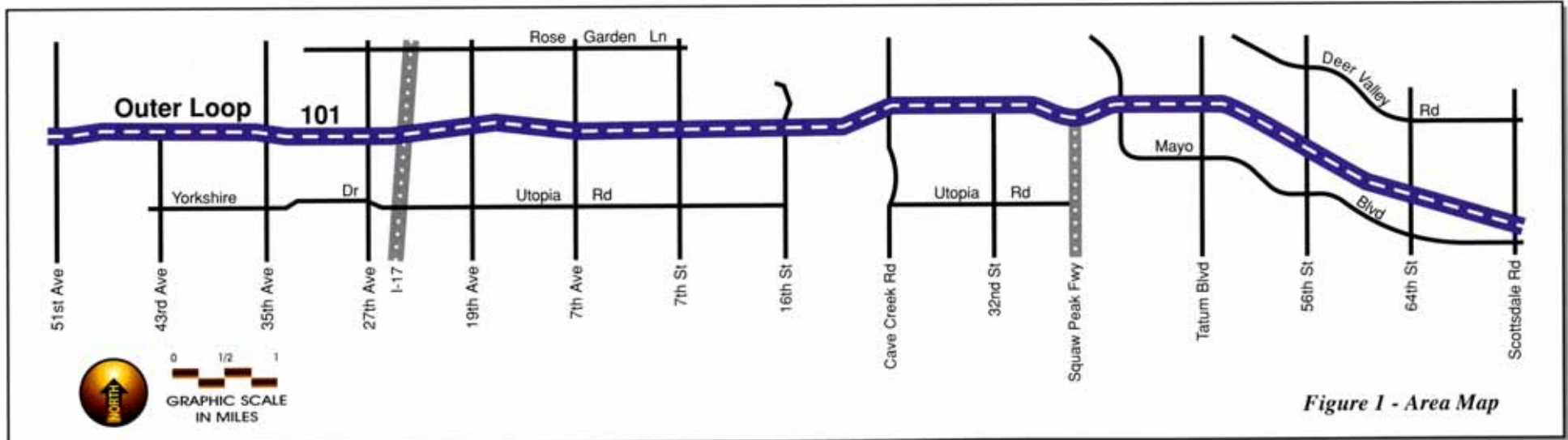


Figure 1 - Area Map



ments that will help bring about that compatibility.

## Background

The Outer Loop (SR 101) has been part of a street and highway plan for the Phoenix urban area since 1960. The initial location for this cross-town connector was generally along the present Greenway Road alignment and east along Indian Bend Wash through Paradise Valley. As the City continued its 25-year northward growth, the freeway location shifted to the north along various other alignments. The final alignment, located approximately along Beardsley Road, was established by the Arizona Department of Transportation (ADOT) in 1983.

The location of the Outer Loop has been included in the council adopted General Plan for Phoenix 1985/2000. Approximately seven lineal miles of freeway corridor are in Deer Valley Village, two are in Paradise Valley Village, and five are in the Desert View Tri-village.

Design and construction work for the freeway, including the vertical profile (the height of the freeway above or below existing ground level), has been essentially completed for the portion west of I-17. East of I-17, conceptual plans are available for the ultimate freeway and final plans are available for the interim. The vertical profile east of the CAP canal has not been finalized. Although initial plans call for a partially elevated profile through this area. Unresolved issues include drainage facilities and

some interchange locations at future major street crossings.

The State of Arizona, with grants from the Federal government, submitted their Preliminary Draft Environmental Impact Statement to the Federal Highway Administration in March 1993. In February 1993 an informational newsletter was mailed to approximately 15,500 residents and businesses located in the vicinity of the freeway alignment and a public meeting was held February 9, 1994. A Public Hearing on the Draft Environmental Impact Statement was conducted by ADOT on May 11, 1995.

The Outer Loop has been designed to provide enough room in the freeway median to construct an additional lane in each direction in the future. This should avoid costly future modifications and allow for additional traffic capacity to be achieved at a later date.

In 1988, initial construction began on the city of Phoenix portions of the Outer Loop. This work involved a widening of the Black Canyon Freeway (I-17), and preliminary construction of a service road system around the Outer Loop/I-17 traffic interchange providing for development in the Deer Valley Village core. This loop is comprised of 27th Avenue, Yorkshire Drive/Utopia Road, 23rd Avenue and Rose Garden Lane. The 23rd and 27th Avenues improvements and the bridges over I-17 at Yorkshire and Rose Garden have been completed.

The Outer Loop is complete from 51st to

35th Avenues. The initial phase included utility relocation, drainage facilities construction, and completion of frontage roads extending eastward to 31st Avenue, replacing Beardsley in this location. The current five-year funding program (FY 92-97) included construction of the freeway mainline from 75th to 31st Avenues and construction of an interim roadway from I-17 to 56th Street. Completion of the fully-directional Outer Loop/I-17 interchange is scheduled for the year 2000. Work on the western half of this traffic interchange is scheduled to be completed in 1998.

## Community Involvement

On October 8, 1985 the citizens of Maricopa County, through the passage of Proposition 300, established a half-cent sales tax increase to fund a regional freeway system for the valley. Considerable enthusiasm and optimism followed with a shift from the City of Phoenix promoting freeways and parkways to ADOT assuming the lead-agency role. A program of planning and construction included public participation.

The success of this funding commitment transformed the Outer Loop in Phoenix from a line on a map to the long-awaited design and construction stage. Following approval of the proposition, ADOT met with citizen and neighborhood groups as well as City officials regarding the specific design and location for the Outer Loop. Formal public hearings were conducted, and meetings were held with individual property owners on the acquisition of right-of-way and construction





timing for this freeway.

While initial ADOT community involvement was occurring, details of the freeway impacts were tentative and some issues unresolved. Also at the time, ADOT and their consultants were finalizing designs and setting construction time frames. In some cases, interim construction phases were discussed. But as often happens with long-range projects, public participation and the degree of understanding vary. Further, by the time this freeway is open to traffic, some of today's participants may no longer reside near the facility.

In order to achieve better community awareness, ongoing informational exchanges are necessary. With the initiation of the mitigation study by the City of Phoenix, further opportunity for citizen comment, understanding, and participation through public forums and meetings has occurred. During this public involvement process, individual dialogue between city staff, nearby residents, and community representatives has resulted in a better understanding and greater acceptance of the freeway facility.



Figure 2 - Public Meetings

Recently the State of Arizona has applied for Federal funds for that portion of the freeway east of I-17. The State submitted their Preliminary Draft Environmental Impact Statement to the Federal Highway Administration in March 1993.

The first required city public meeting initiating this plan occurred on January 8, 1991 to inform the community of the process and procedures to be used.

Because of economic circumstances, City Council placed all 1988 C.I.P. bond funded projects on hold from fall 1992 until fall 1993 and no work took place on this project during that time.

The following city-sponsored public participation activities have been completed: three six-hour public workshops in the neighborhoods; three village planning committee work sessions addressing freeway location, land use and circulation; three constituency group meetings comprising two representatives from each affected village of which members addressed land use and circulation issues; village planning committee review; community meeting to review the draft plan; Planning Commission hearings (General Plan conformance); City Council hearings; and plan approval.

## ADOT Construction

A substantial amount of construction relating to the Outer Loop has occurred in Phoenix, as illustrated by the following list of activities:

- \* *Mainline completed between 51st and 31st Avenues*
- \* *Mainline interchange structures at 51st, 35th, 31st, 27th and 23rd Avenues.*
- \* *Bridge for future mainline at 31st Avenue.*
- \* *Dual frontage roads provided from 51st to 31st Avenues.*
- \* *Drainage facilities from 51st to 21st Avenues, including Skunk Creek and Scatter Wash crossings.*
- \* *Utopia Road bridge over I-17.*
- \* *Rose Garden Lane bridge over I-17.*
- \* *Two new lanes of traffic in each direction on I-17 just south of the Outer Loop from Yorkshire to Rose Garden.*
- \* *Utility relocations.*
- \* *Partial completion of the west half of the Loop 101/I-17 interchange.*

The design of the vertical profile for the Outer Loop is established by ADOT, and will vary between 51st Avenue and Scottsdale road. The typical profile has the freeway passing over north-south major streets and returning to, or near, natural grade between them. In these cases, the freeway rises to approximately 25' above the major-mile streets.

There are two notable exceptions to this general profile. Near the interchange with I-17, the Outer Loop passes beneath 27th Avenue, I-17, and 23rd Avenue. In the other instance the Outer Loop is depressed for the portion from 15th to 7th Avenues. In establishing this profile, topography, cost effectiveness, physical constraints and adjacent land uses were considered by the participating jurisdictions. Initial freeway construction will include three traffic lanes in each direction and frontage roads for the portion west of Cave Creek Road.

Storm water runoff flows in a north-south orientation across the freeway corridor and a drainage system is a major component of the freeway design. It is designed to handle runoff from the freeway as well as overland sheet flows and local street collection. The system includes drainage channels located along the north side of the freeway which work with a number of retention or detention basins controlling storm water and its release into storm water pipes and open drainage washes.

The portion of the Outer Loop within the City of Phoenix includes five construction sections, referenced as follows:

\* *Section 5c: 51st to 31st Avenues.*

\* *Section 6: 31st to 17th Avenues.*

\* *Section 7a: 17th Avenue to 12th Street.*

\* *Section 7b: 12th to 40th Streets.*

\* *Section 8: 40th Street to Scottsdale Road.*

Current construction activity, as identified in this report, is located primarily within Section 5c, or will be done in conjunction with the reconstruction of the I-17 interchange (located in Section 6).

Construction of the mainline freeway between 75th and 31st Avenues is complete.

The interim freeway between I-17 and 56th Street will consist of building the frontage roads between I-17 and Cave Creek Road, and half of the mainline freeway between Cave Creek Road and 56th Street. Subject to funding availability, construction is expected to begin in early 1997 and extending to late 1999.

■ ■ ■ ■ PLAN ELEMENTS



## Land Use

Urban freeways must often be located in existing neighborhoods. In addition to a potential loss of housing, this spatial arrangement often creates a new physical edge to established neighborhoods. The presence of this edge can create a number of problems.

The Outer Loop freeway, for the most part, presents a different scenario from that described above. This freeway alignment follows a major street, Beardsley Road. This is an established transportation corridor with existing right-of-way (ROW) and orientation of the adjacent developed land uses. Obtaining the ROW needed for the Outer Loop has caused only minimal disruption of existing uses. Substantial undeveloped land adjacent to the freeway corridor can develop with awareness of the freeway.

Since its alignment has been public knowledge since November 1983, most development has occurred with a "clean take line" in place. This means that new neighborhoods and commercial development are designed to incorporate the future freeway's edge. This situation eliminates the splitting or separation of neighborhoods into two or more pieces by the construction of the freeway. Neighborhoods adjacent to the Outer Loop, therefore, are better positioned to deal with impacts associated with the facility.

The focus of this element of the mitigation program will be to identify land uses that will be appropriate upon completion of the

freeway and will assist in the stabilization of the corridor. Where possible, neighborhoods are to be buffered from adverse aspects of the freeway.

Land use recommendations have been evaluated using existing zoning, General Plan designation, freeway impact analyses, and Village Plan goals. The following land use policies will improve compatibility and functional relationships with the Outer Loop freeway as it passes through Phoenix.

**Policy 1:** *Respect the overall land use pattern including use, intensity, mix and character.*

**Policy 2:** *Achieve a land use pattern that accommodates the freeway with minimum disruption of the nearby community.*

**Policy 3:** *Where land use modifications are justified as appropriate and reasonable, make the rationale for such changes clear to the community and the individuals affected.*

**Policy 4:** *In order to coordinate with village planning and the City's General Plan, process any land use recommendations that would require an amendment to the General Plan in association with approvals of this mitigation plan.*

**Policy 5:** *Maximize land use compatibility with the freeway by utilizing appropriate urban design techniques and amenities.*

**Policy 6:** *Regarding any areas proximate to the Deer Valley Airport, any requested re-*

*zoning to a residential use should include stipulations which disclose to any purchaser the possibility of overflights due to the proximity of the Deer Valley Airport.*

For this report the land use analysis has been divided into approximate two-mile segments. Each segment will be discussed in the following section.

### **Segment 1** **51st to 35th Avenues** **(Figures 4 & 5)**

#### **General Description**

The character of this segment is dominated by natural features, notably the Hedgpeth Hills, a series of steep desert mountains lying in a northwesterly direction from the freeway, and two major washes, Skunk Creek and Scatter Wash, that merge south of the freeway.

Two forms of urban development exist in this area. West of 43rd Avenue planned residential developments lie south of the freeway and incorporate a desert watercourse area. East of 43rd Avenue, a rural, large lot and equestrian setting remains. New housing is developed north of the freeway, although the Hedgpeth Hills will maintain a desert character.

Zoning varies in density from R-3 (apartments) to RE-43 (acre-lot single family). The General Plan designates areas of medium density housing, 5-15 units per acre to the west of 43rd Avenue and of 2-5 units per acre to the east of 43rd Avenue.



**Proposed Land Use Changes**

The character established by the existing land use pattern is desirable. It is one of the few areas left in Phoenix which retains an open feeling created by combining low density development with significant natural features. The proposed land uses should reinforce this character while being sensitive to the impacts of the freeway. Specifically, the following recommendations have been made:

**1.1**

**Location:** Northeast corner of 51st Avenue and the Outer Loop.

**Issue:** This approximate 16 acre parcel is zoned RE-43, but has a General Plan designation of multi-family (5-15 DU/Ac). This parcel is bounded by an ADOT detention basin on the east, Hedgpeth Hills on the north and east, the Outer Loop on the south, and the future 51st Avenue to the west. Given its location and physical constraints, single-family residential may not be appropriate for this site.

**Recommendation:** Development should not encroach upon Hedgpeth Hills (Figure 3). This natural feature should be preserved in its existing state. In order to accomplish this objective, the site should be allowed to develop as multi-family residential at a density range of 5-15 DU/Ac, but with housing density transferred onto the lower slope portions of the site. Public access can be placed on 51st Avenue to serve the entire project.

**1.2**

**Location:** Southeast corner of 51st Avenue and the Outer Loop.

**Issue:** This approximate 8-acre remnant parcel is currently zoned RE-43. South of this location are two vacant parcels: a 10-acre commercial site adjacent to 51st Avenue; and, a 10-acre multi-family residential site adjacent to the east. However, this multi-family site has recently been approved for single-family at 9 DU/Ac. The proximity of the freeway to the north and the undeveloped, non-residential parcels to the south make low density residential inappropriate here.

**Recommendation:** This site should develop with two land uses: (1) the western portion as commercial; and , (2) the eastern portion as some residential support use since connection with the residential site to the south would be difficult. Access must be from 51st Avenue, not from the local neighborhood stub street.

**1.3**

**Location:** Hedgpeth Hills, north of the Outer Loop, from approximately 51st to 43rd Avenues.

**Issue:** This scenic mountain is a prominent and virtually pristine natural feature. As such, it is valuable as a visual asset to the region, while also serving as an active recreational area for hiking and equestrian activities. However, the majority of the mountain areas are in private ownership.

**Recommendation:** The City should facilitate preservation of this landmark as a regional open-space and recreational facility. Possible tools for preservation could include:

- \* *Use open space easements in conjunction with using development entitlements on lower slope areas.*
- \* *Strict adherence to hillside ordinance.*



**Figure 3 - Hedgpeth Hills**



\* *Acquisition by a Mountain Preserve group.*

### 1.4

**Location:** In the area of the Northwest corner of Yorkshire Drive and 39th Avenue.

**Issue:** This vacant land contains an elliptically-shaped hill that is a local landmark. It is privately owned and zoned RE-43. The hill is located adjacent to a city-owned, future park on the west and Scatter Wash on the north. It provides a natural connection between the equestrian-oriented residential properties to the south and east and the Scatter Wash recreational trail. This area could also provide a principal access point to the north for future recreational trails planned south of Yorkshire Drive.

**Recommendation:** The City should consider acquisition of this area and combine it with the future park site to the west. If this is not possible, development should be in strict accordance with the hillside ordinance.

### 1.5

**Location:** Southwest corner of 35th Avenue and the Outer Loop.

**Issue:** This commercially-zoned parcel is less than 1.5 acres in size and is currently owned by ADOT. The parcel has no access to the eastbound off-ramp or to 35th Avenue.

**Recommendation:** ADOT should transfer this land to the Deer Valley School District, so that it could be incorporated into the Park

Meadows Elementary School property. This action would allow for expansion of the playground area and it could also serve to provide an additional pedestrian entrance to the property. (See Figures 4 & 5)

### Segment 2 31st to 19th Avenues (Figures 6 & 7)

#### General Description

This segment is divided into three distinctive land use areas.

The first area, between 35th and 31st Avenues, is primarily single-family residential of varying densities including some high-density multi-family. The other major land use in this area is the American Express office center located at the SWC of 31st Avenue and the Outer Loop.

The second is the Deer Valley Village Primary Core. The core generally extends from 31st Avenue on the west to 23rd Avenue on the east, and from Rose Garden Lane on the north to approximately Yorkshire Drive/Utopia Road on the south. The adopted Deer Valley Core Plan (a separate document) addresses this same area except that between I-17 and 23rd Avenue the southern boundary extends further south to Union Hills Drive. The Deer Valley core Plan guides growth in the core and includes recommendations, strategies, opportunities and guidelines beyond the scope of this plan.

The core is currently bisected by Interstate

17. Completion of the Outer Loop will further divide it into four quadrants. Presently, approximately 20% of the core is developed while the balance of the land remains vacant.

The third area lies between 23rd and 19th Avenues. This area is comprised of several land use types including: single and multi-family residential, industrial park, and undeveloped commercial. It also contains Deer Valley Park and Community Center, a regional public recreational facility.

#### Proposed Land Use Changes

A major land use change was called for in the Deer Valley Core Plan as explained below in 2.1.

### 2.1

**Location:** Within the northwest quadrant of the Deer Valley Village core, those areas designated on the General Plan for industrial and multi-family residential uses.

**Issue:** Although the existing General Plan calls for industrial uses in this quadrant of the core, the adopted Deer Valley Core Plan recognizes that those uses are not appropriate in this location. Rather, it calls for medium intensity commercial activities to serve the village residents.

**Recommendation:** Employment activities remain appropriate in other portions of the core and in other airport and freeway oriented locations of the village. A General Plan amendment to carry out this change was completed subsequent to adoption of



the Deer Valley Core Specific Plan.

## 2.2

**Location:** South of the Outer Loop, near 33rd Drive and 33rd Avenues.

**Issue:** Four buildable single-family lots in ADOT ROW have been left as vacant parcels. These lots are near the elevated freeway at 35th Avenue and are separated from the eastbound frontage road by a 6 foot masonry wall.

**Recommendation:** These lots are buffered from the freeway and should be rebuilt to their original use, single-family homes. ADOT should sell these lots for construction of owner-occupied single-family homes. In addition, residences constructed should conform to the Freeway Mitigation Site-Development Standards identified in this plan (p. 44).

## 2.3

**Location:** Between the Freeway, Wahalla Lane, 19th Avenue and 21st Avenue.

**Issue:** This ten acres is 80% developed as the American Express Offices. Zoning is a combination of C-2 and Industrial Park. However, the General Plan designation is Parks/Open Space consistent with the park to the south.

**Recommendation:** Change the designation to commercial to reflect the existing use. As this site is in excess of 10 acres, a General Plan amendment was processed and approved with this recommendation. (See

Figures 6 & 7)

## Segment 3 19th Avenue to 7th Street (Figures 8 & 9)

### General Description

Single-family housing comprises approximately 50% of the area in this segment. The remainder is a mix of multi-family residential, an elementary school, public and quasi-public uses, a landfill, and vacant land. The Cave Creek Wash linear park is planned to extend in a north-south direction through this segment between Central Avenue and 3rd Street.

### Proposed Land Use Changes

Since a large portion of this segment is either single-family or multi-family residential, it is important that any land use changes reinforce these uses and character. In order to achieve this objective, the following specific recommendations are made:

### 3.1

**Location:** Southeast corner 19th Avenue and Mohawk Lane.

**Issue:** A less than two acre parcel of land zoned Commercial Office is situated between 19th Avenue, Mohawk Lane, the existing single-family, and a vacant Planned Area Development (PAD) to the south. Even though this parcel is shown for commercial it is separated from the other commercially zoned land further to the south by PAD-14 zoning. Small parcel size, combined with adjacent, non-office uses make

commercial office inappropriate for this location.

**Recommendation:** Incorporate this parcel into the vacant planned area development site adjacent to the south. This incorporation will provide better access and visibility for the residential PAD.

### 3.2

**Location:** Southeast corner 15th Avenue and the Outer Loop.

**Issue:** Approximately two acres are bounded by 15th Avenue on the west, Desert Winds Elementary School on the south, vacant land (zoned for multi-family residential) on the east, and the Outer Loop on the north. The current zoning is for single-family residential. This parcel is too small to adequately develop as a viable single-family project. Circulation constraints, in the form of freeway-related 15th Avenue access limitations and an eastbound-only frontage road, combine to make this an inappropriate land use.

**Recommendation:** This property should be incorporated into the playground area of the Desert Winds Elementary School. If this can not be accomplished, the parcel should develop as a multi-family use. It could function as a "stand-alone" project, or it could become an extension of the undeveloped R-3 property to the east. This extension would also serve to provide access to 15th Avenue for the parcel to the east.



### 3.3

**Location:** The Southwest corner of 13th Avenue and the Outer Loop.

**Issue:** Approximately one acre of commercial office zoning is situated between the Outer Loop on the north and undeveloped multi-family residential on the south. The combination of small parcel size and one-way access from a frontage road limits reasonable development opportunities.

**Recommendation:** This site should be incorporated into the vacant multi-family residential site to the south.

### 3.4

**Location:** Lots fronting the north side of Pontiac Drive between 10th and 13th Avenues.

**Issue:** This is one of the few locations where homes front directly to the freeway.

**Recommendation:** If, after construction of the mainline freeway, there is significant impact on these lots, additional mitigation will be considered.

### 3.5

**Location:** Southwest corner of 7th Avenue and the Outer Loop.

**Issue:** This approximate 17 acres was zoned for industrial park prior to the time of City annexation. However, there are no industrial uses nearby and no other industrial zoning proximate. Development of industrial here would introduce industrial

traffic into this residential area. The General Plan shows this area is appropriate for single-family residential, at a density of 2-5 DU/Ac. Single-family housing lies to the south of these parcels, and a single family subdivision plat has been approved to the west. The freeway is depressed in this section to pass under 7th Avenue.

**Recommendation:** This site is appropriate to develop as single-family residential at a density similar to that of the adjacent neighborhood to the south.

### 3.6

**Location:** Northeast corner of 7th Avenue and the Outer Loop.

**Issue:** Approximately 1.5 acres are zoned for single-family residential. This parcel is bordered on the north and east by higher-density single-family, on the west by 7th Avenue, and on the south by the Outer Loop. Access to this parcel is limited only to that from 7th Avenue. Its small size and very limited access render the single-family use inappropriate on this property. A more appropriate use would be one that can serve the immediate neighborhood.

**Recommendation:** This parcel be allowed to rezone to C-1 for development as a neighborhood service use such as a day-care center.

### 3.7

**Location:** Between Central Avenue and 3rd Street, north and south of the Outer Loop.

**Issue:** This area is designated as part of the 10-mile linear park that extends from Cave Buttes Dam on the north to Dunlap Avenue on the south. The portion south of the Outer Loop is now owned by the City of Phoenix.

Remaining land is partially vacant and partially utilized as a landfill. Future plans designate this area to be improved as part of the Cave Creek Wash Park.

**Recommendation:** Continue plans to develop per the Cave Creek Wash Park Master Plan.

### 3.8

**Location:** Northwest corner of 7th Street and the Outer Loop.

**Issue:** Approximately 73 acres, of which approximately 35 acres are in the freeway planning area, are zoned for industrial park. This property, (zoned industrial at the time of annexation), is owned by the State and is currently operating as an inorganic land fill. The General Plan depicts the southern third of this site as appropriate for commercial and the northern two-thirds as multifamily. As additional development occurs in this area, the landfill will become increasingly incompatible with surrounding uses, especially the proposed park to the west. The development potential of this site is further constrained by its current use. Possible redevelopment problems could include an unstable sub-base for building foundations and possible water table contamination through a leaching process.



**Recommendation:** Future development should be sensitive to the limitations imposed on this site by current and adjacent land uses. Because of differential settling, increased utility and foundation costs, projects such as housing or general commercial development are generally not feasible on landfill sites. More appropriate uses include those with outdoor activities and relatively few structures and with flexibility in site placement. Commerce park or commercial recreation uses, including open land uses, appear to be more suitable in this situation. As this site is in excess of 10 acres, a General Plan Amendment was processed and approved with this recommendation. (See Figures 8 & 9)

#### **Segment 4** **7th Street to Cave Creek Road** **(Figures 10 & 11)**

##### **General Description**

Vacant land comprises approximately 70% of this corridor segment. The remainder is primarily single-family residential of varying densities including equestrian estates and mobile home parks. Additional uses include Eagle Ridge Elementary School and Buffalo Ridge Park. Mountain peaks in this area rise to over 500' above the valley floor. Distinctive geographic features such as Cave Creek Wash, Buffalo Ridge and Union Hills Peak are landmarks within this segment. However, they are under private ownership, and development concerns are raised about hillside scarring and wash vegetation preservation. East of 20th Street the freeway shifts north from the Beardsley

Road alignment to the Mohawk Lane alignment.

##### **Proposed Land Use Changes**

This segment will serve as the beginning of a land use transition from the more heavily-developed areas west of 7th Street, to the currently sparsely-developed areas east of Cave Creek Road. Planned uses for this segment include: neighborhood commercial, commerce park/business park, single and multi-family residential and significant open space areas. Open spaces, located in the center of this segment, further support the transitional aspect of this area. The shifting freeway alignment, combined with the change from a frontage road system to surface streets for local access, will also affect the manner in which future land uses develop.

#### **4.1**

**Location:** Generally bounded by the Rose Garden Lane Alignment on the north, 12th Street (extended) on the east, the Outer Loop on the south and 7th Street on the west (See Figure 11).

**Issue:** This site comprises approximately 100 acres, of which 16 acres is within the freeway planning area and is vacant. It is characterized by varied desert terrain, including some significant washes. Access to this site will be only from the westbound frontage road. The current zoning is for residential estate and industrial park. The General Plan designation is multi-family at a density of 5-15 DU/Ac, and industrial.

**Recommendation:** In order to reflect varying topography and to transition into the mountain preserve adjacent on the east, the area north of the Mohawk Lane alignment should be developed at 2-5 units per acre.

Similarly, the General Plan calls for a small, approximately 15 acre, parcel designated industrial east of an adjacent designated commercial location at the northeast corner of 7th Street and the freeway. This is a poor location for an isolated industrial use, with limited access. The west lip of this industrially designated land should be added to the adjacent commercially designated land to square it off and provide a larger, more usable commercial site. The remaining eastern portion should become residential 5-15 DU/Ac, like the land to the east. As this site is in excess of 10 acres, a General Plan Amendment was processed and approved with this recommendation.

#### **4.2**

**Location:** Bounded by Rose Garden Lane on the north, Cave Creek Road on the east, the Outer Loop on the south and 20th Street on the west.

**Issue:** The General Plan currently shows mostly industrial uses in this area although zoning is dominantly residential. There are currently low and medium density residential uses in the area. It is also well suited for such uses, offering a protected site with views and access to some of the area's mountains.

**Recommendation:** Change the industrial



designation to residential, at 0-2 DU/Ac and 2-5 DU/Ac (see Figure 11). As this site is in excess of 10 acres, a General Plan Amendment was processed and approved with this recommendation. At the same time, the plan's Special Study Area designation was removed between the Outer Loop Freeway and the Central Arizona Project (CAP) canal. (See Figures 10 & 11)

### **Segment 5** **Cave Creek Road to Squaw Peak** **Freeway** **(Figures 12 & 13)**

#### **General Description**

This segment is divided by the CAP canal and the Reach 11 Park area. The area west of the canal is further divided by Mohawk Lane. North of Mohawk Lane it is about 50% developed with equestrian boarding, training operations and some residential dwellings. Some commercial uses are present along Cave Creek Road and 32nd Street. The remaining vacant portion is zoned RE-43 but includes some commercial and commerce park/business park lots.

South of Mohawk Lane and the freeway alignment is a mobile home park located at the northwest corner of 26th Street extended and Beardsley Road, and a single-family subdivision located north of Beardsley Road, between 28th and 30th Streets. The balance of this area has existing zoning that includes: suburban ranch, commercial, planned shopping center, commerce park/business park and high-density multi-

family residential.

East of the CAP canal is an area designated as the Bureau of Reclamation's Reach 11 District Park. Within this area is the proposed interchange between the Outer Loop and the Squaw Peak Freeway. This elevated interchange will provide for free-flowing movement between the two freeways, while allowing the recreational area users to pass underneath.

#### **Proposed Land Use Changes**

This segment has three distinct development characters emerging: the open space of the Reach 11 District Park; the commercial equestrian area located north of the Outer Loop and west of the CAP; and the higher-density single-family residential south of the Outer Loop, west of 32nd Street. At the time that the Outer Loop Plan was approved, the General Plan Special Study Area designation was removed east of Cave Creek Road, between Beardsley Road and the CAP canal. The following recommendations are made in order to assure compatibility of use and to reinforce the existing character.

#### **5.1**

**Location:** The parcels contiguous to the east side of Cave Creek Road between the Outer Loop Freeway and Rose Garden Lane.

**Issue:** This is an area of existing office/commercial development which the General Plan had designated industrial.

**Recommendation:** As this site is in excess of 10 acres, a General Plan Amendment was processed and approved with this recommendation changing the area to a commercial designation.

#### **5.2**

**Location:** Bounded by the freeway, Beardsley Road, Cave Creek Road and 32nd Street.

**Issue:** This area of about 110 acres contains industrially designated land which is occupied by newly built subdivisions, a park, and vacant residentially zoned land. It also contains a mobile home park designated for commercial uses.

The existing land use pattern is logical and will result in an appropriate extension of the land uses south of Beardsley. In particular, the mobile home park, although adjacent to commercially designated lands along Cave Creek Road, is also next to a newly completed park-flood retention facility. As such, it or future multi-family uses on the site, are well located to take advantage of nearby recreation, shopping and public transportation. Except for a neighborhood commercial site on 32nd Street, the balance of this area should fill out in residential uses to complement the recently completed subdivisions.

**Recommendation:** Redesignate the mobile home park and vacant land to the north from commercial to multi-family and the adjacent park as Parks/Open Space. Place a neighborhood commercial designation on 32nd



Street and show the remaining land for Residential, 15+ DU/Ac and 5-15 DU/Ac, as indicated in Figure 13. As this site was in excess of 10 acres, a General Plan amendment was processed and approved with this recommendation.

### 5.3

**Location:** Bounded by Beardsley Road, 32nd Street and the CAP Canal.

**Issue:** With the exception of a small commercial location on 32nd Street at Beardsley, this is part of a large area within the Paradise Valley Village that at one time was designated for industrial uses as an employment resource for the village. However, because of this area's isolation from labor markets and transportation, development of employment-based uses has been slow. Directly to the south of Beardsley Road homes have recently been constructed. North of the Outer Loop alignment is a recently completed school bus maintenance facility.

**Recommendation:** Except for the school bus facility, no industrial uses have been established in this larger area. Rather, rapid residential development has transformed what was recently open desert into residential neighborhoods. At this point, industrial development on remaining open lands would be an intrusion into the character of this area. Except for the school bus site north of the Outer Loop, this area should be designated Residential at 5-15 units per acre. The commercial site on the east side of 32nd Street has been proposed to be relo-

cated to the west side of the street in section 5.2, and this area should also be consistent with the residential designation. The school bus facility north of the Outer Loop should be redesignated Public/Quasi-Public. As this site was in excess of 10 acres, a General Plan amendment was processed and approved with this recommendation. (See Figures 12 & 13)

### Segment 6

#### *Squaw Peak Freeway to 56th Street (Figures 14 & 15)*

##### **General Description**

This segment is characterized by nearly-pristine desert. There are no significant natural features present, however, there is evidence of substantial surface drainage directed from the northeast to the southwest. The land use recommendations for this segment are established by the City Council-approved Desert Ridge Specific Plan (as amended 9-20-95, 3-19-97, and 5-21-97). The plan outlines a mixed-use development.

##### **Proposed Land Use Changes**

Since the existing specific plan provides direction for land use decisions in this area, there are no proposed land use changes for this segment. (See Figures 14 & 15)

### Segment 7 56th Street to Scottsdale Road (Figures 16 & 17)

##### **General Description**

The physical qualities of this segment are similar to that of the previous segment. The Desert Ridge Specific Plan (as amended 9-20-95, 3-19-97, and 5-21-97) includes the area between 56th and 64th Streets. Land use recommendations for the balance of the segment are those set by the General Plan which reflects the Paradise Ridge General Plan Amendment (SA/ DVTV-01-94) approved by City Council.

##### **Proposed Land Use Changes**

With land use direction established by a recently updated General Plan, no changes are proposed. (See Figures 16 & 17)



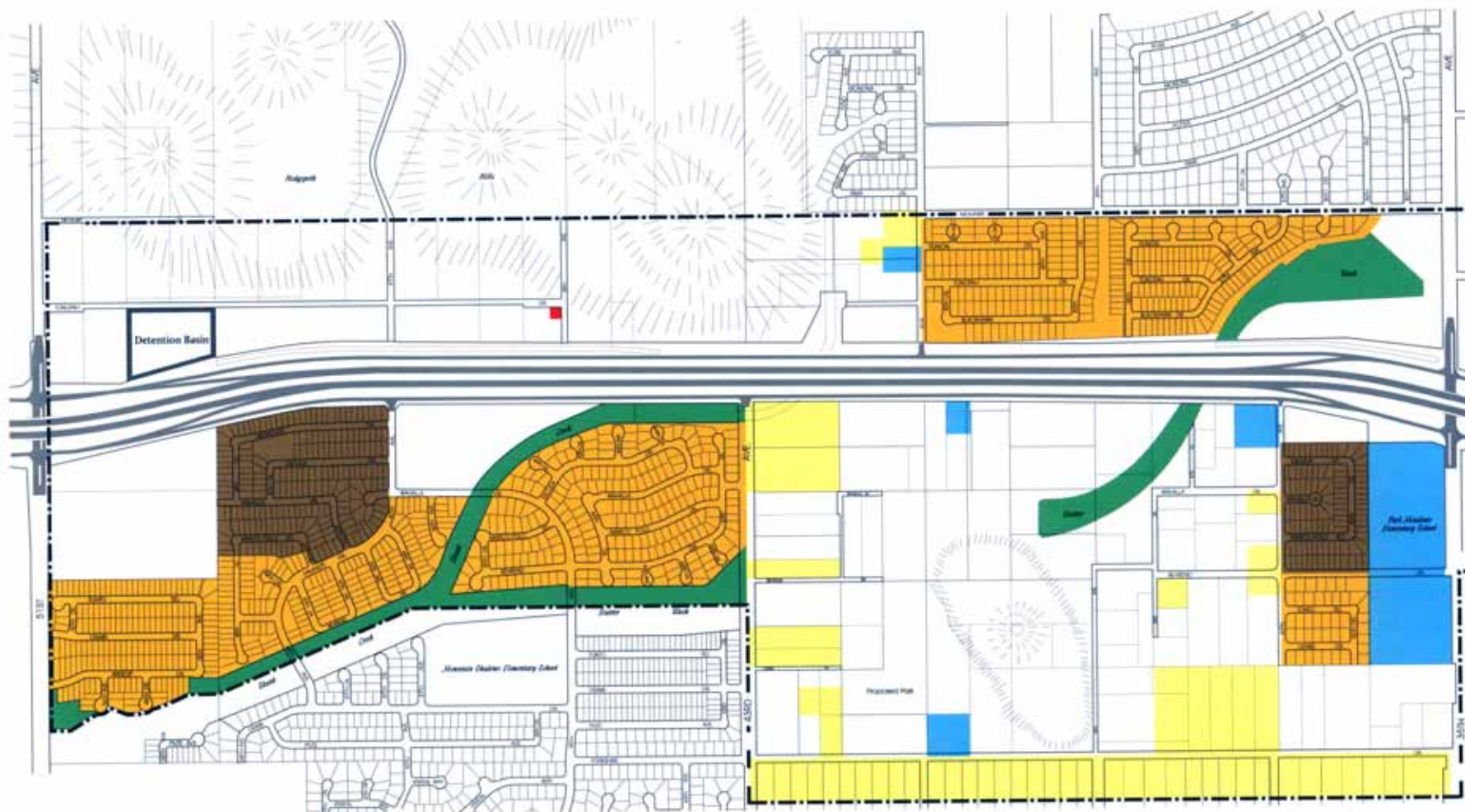


Figure 4  
**EXISTING LAND USE**  
 Outer Loop Freeway - Loop 101  
 Segment 1: 51st Avenue to 35th Avenue

Legend

- 0-2 DU/Ac
- 2-5 DU/Ac
- 5-10 DU/Ac
- 5-15 DU/Ac
- 15+ DU/Ac

- Mixed Use
- Commercial
- Commerce Park
- Industrial
- Public/Quasi Public

- Parks/Open Space
- Flood Plain
- Vacant
- Study Area Boundary
- DU/Ac Dwelling Units per Acre



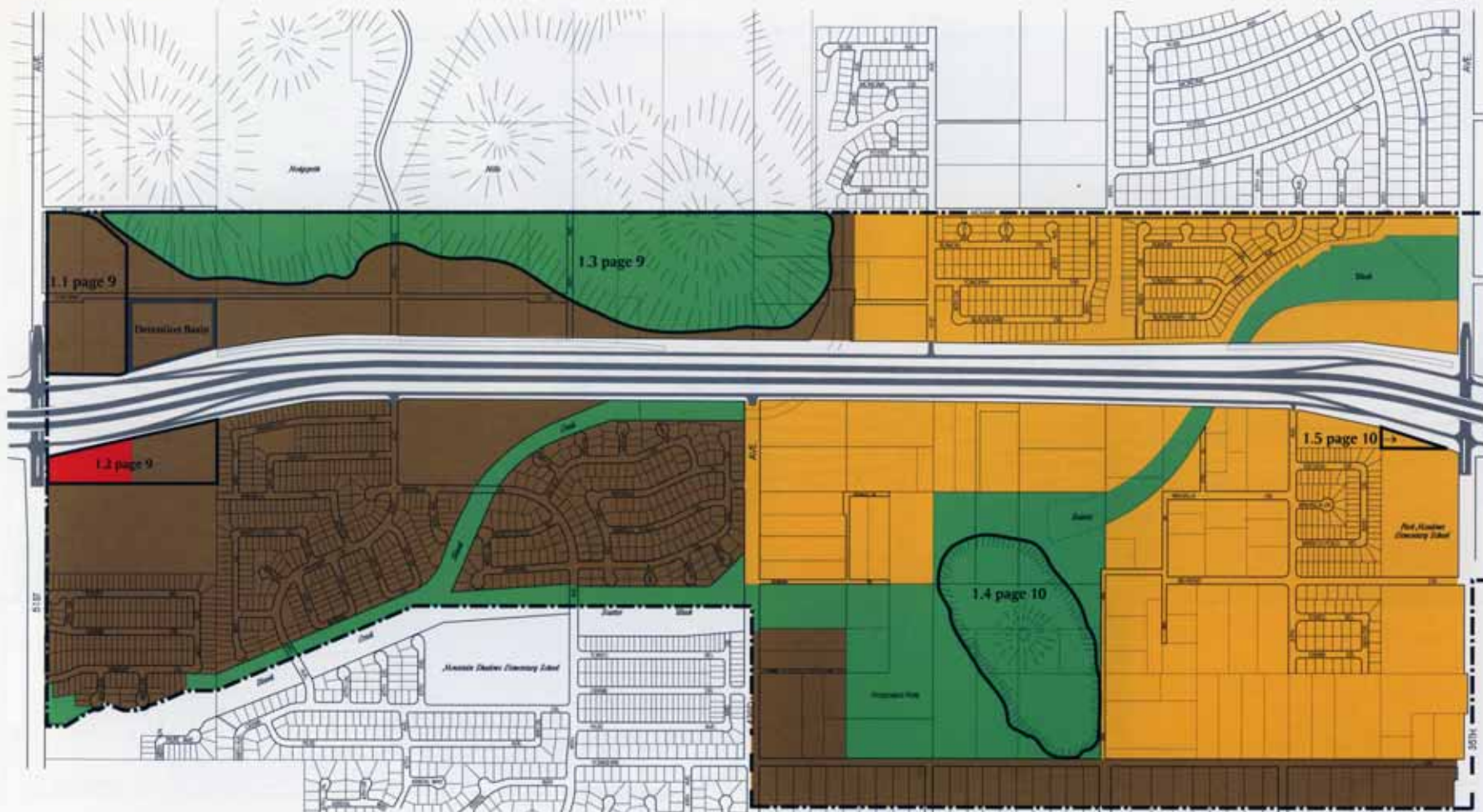


Figure 5  
**GENERAL PLAN LAND USE**  
 Outer Loop Freeway - Loop 101  
 Segment 1: 51st Avenue to 35th Avenue



**Legend**

- 0-2 DU/Ac
- 2-5 DU/Ac
- 5-10 DU/Ac
- 5-15 DU/Ac
- 15+ DU/Ac

- Mixed Use
- Commercial
- Commerce Park
- Industrial
- Public/Quasi Public

- Parks/Open Space
- Flood Plain
- Vacant
- Study Area Boundary
- DU/Ac Dwelling Units per Acre

Note: General Plan Designations are of approximate boundaries. Land use descriptions indicate General Plan Designations.

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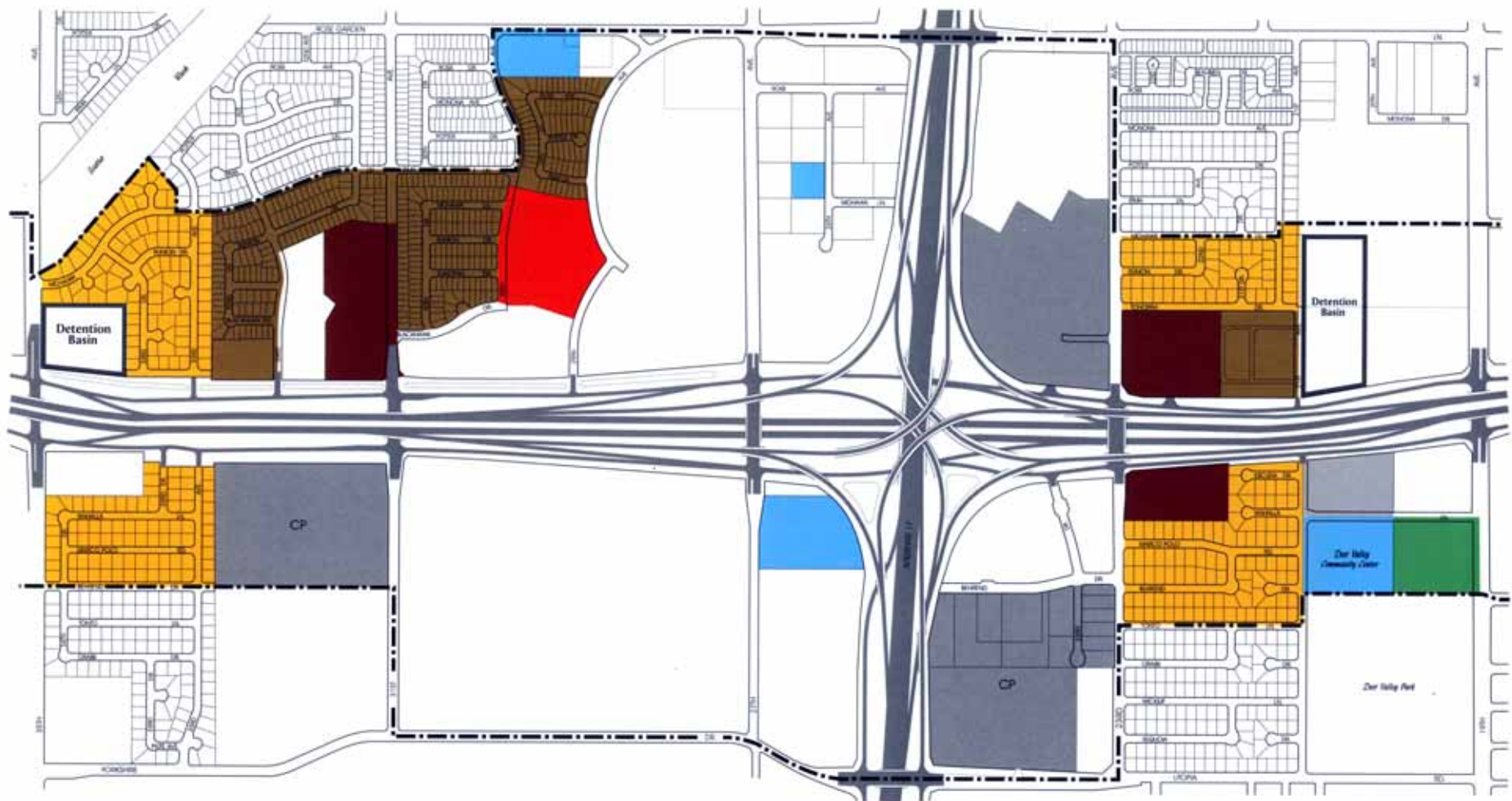


Figure 6  
**EXISTING LAND USE**  
 Outer Loop Freeway - Loop 101  
 Segment 2: 35th Avenue to 19th Avenue

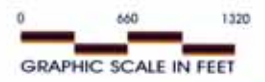


Legend

- 0-2 DU/Ac
- 2-5 DU/Ac
- 5-10 DU/Ac
- 5-15 DU/Ac
- 15+ DU/Ac

- Mixed Use
- Commercial
- CP Commerce Park
- Industrial
- Public/Quasi Public

- Parks/Open Space
- Flood Plain
- Vacant
- Study Area Boundary
- DU/Ac Dwelling Units per Acre



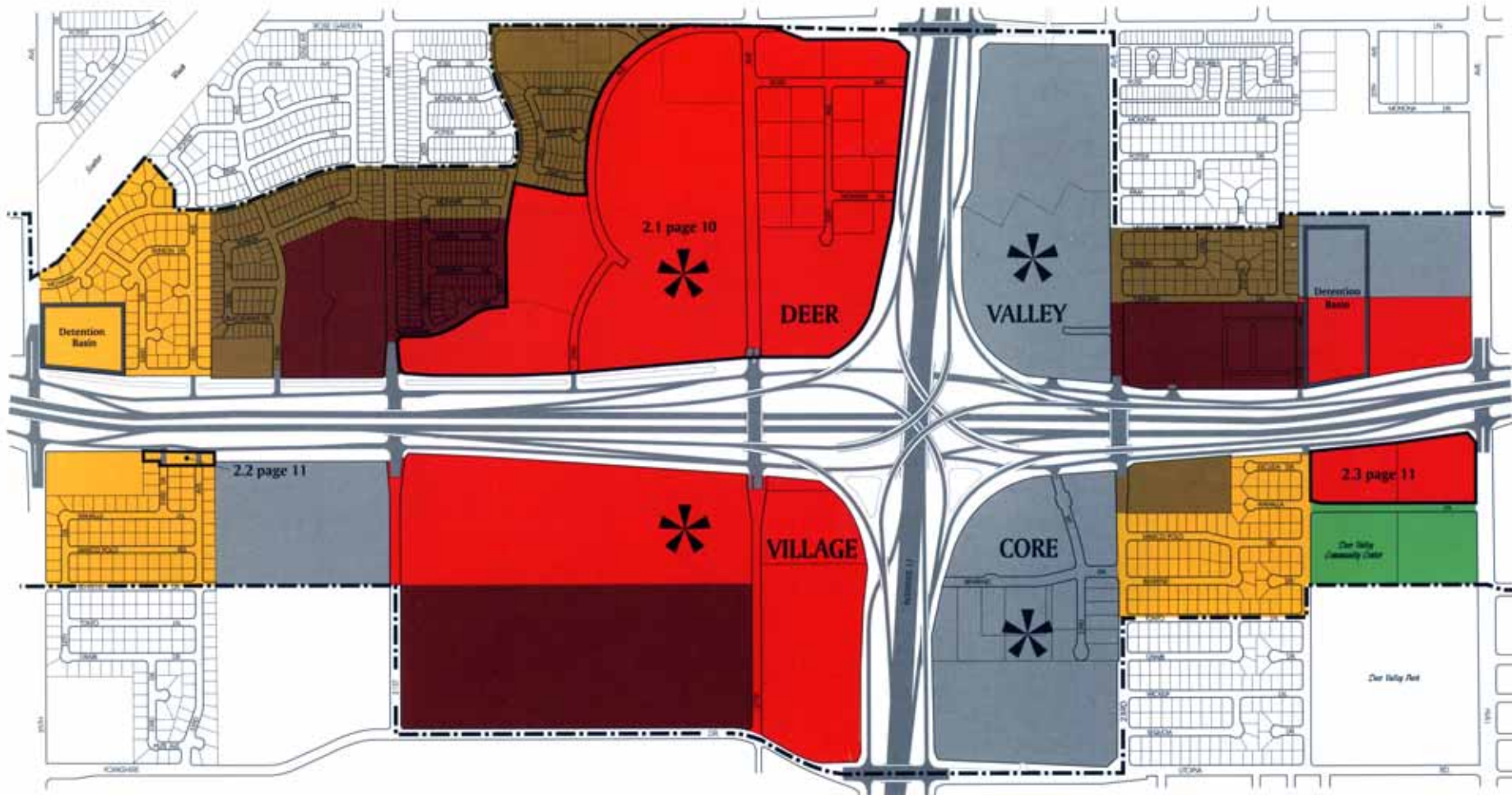


Figure 7  
**GENERAL PLAN LAND USE**  
 Outer Loop Freeway - Loop 101  
 Segment 2: 35th Avenue to 19th Avenue



**Legend**

- 0-2 DU/Ac
- 2-5 DU/Ac
- 5-10 DU/Ac
- 5-15 DU/Ac
- 15+ DU/Ac

- Mixed Use
- Commercial
- CP Commerce Park
- Industrial
- Public/Quasi Public

- Parks/Open Space
- Flood Plain
- Vacant
- Study Area Boundary
- DU/Ac Dwelling Units per Acre

Note: General Plan Designations are of approximate boundaries. Land use descriptions indicate General Plan Designations.





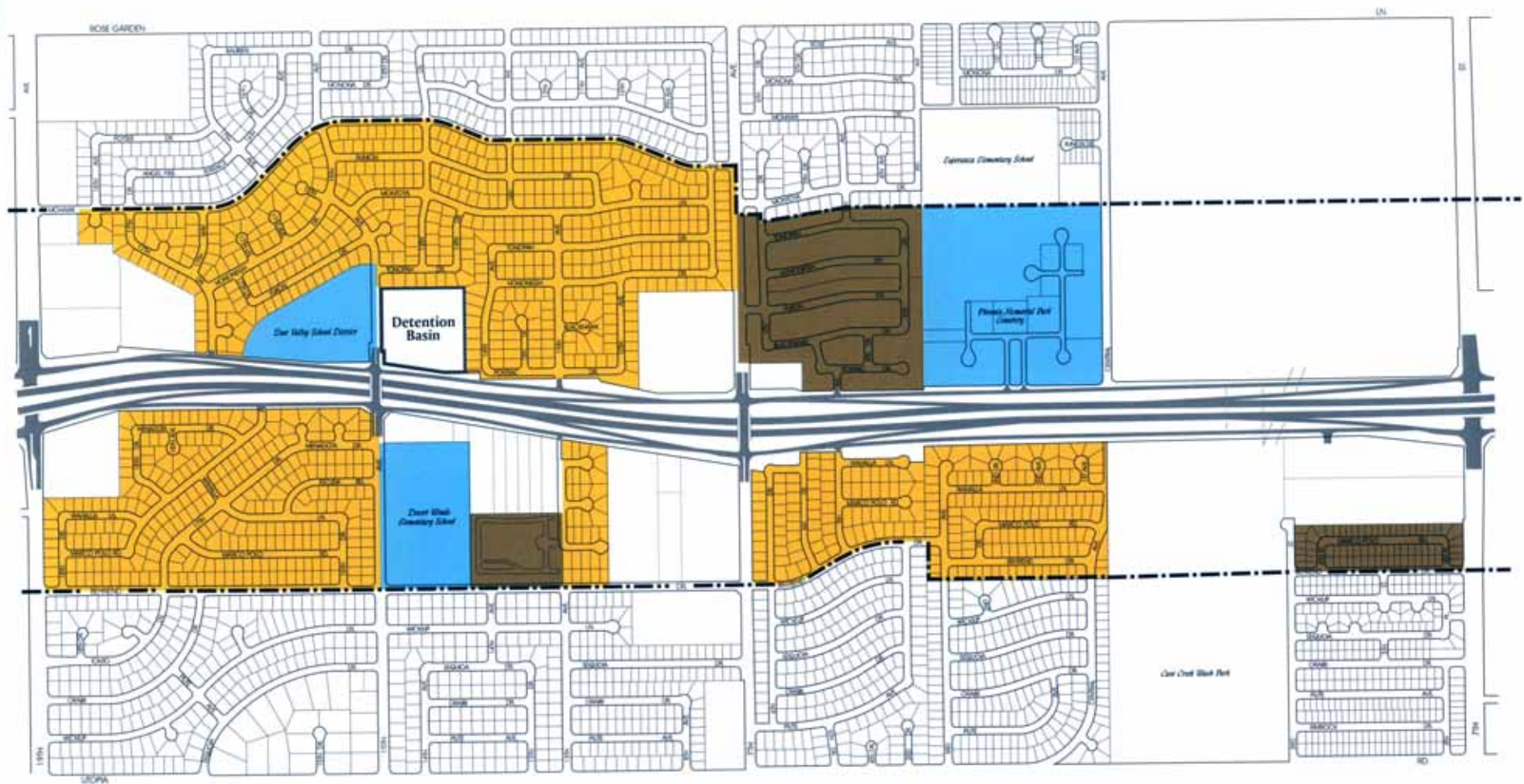


Figure 8  
**EXISTING LAND USE**  
 Outer Loop Freeway - Loop 101  
 Segment 3: 19th Avenue to 7th Street



**Legend**

- 0-2 DU/Ac
- 2-5 DU/Ac
- 5-10 DU/Ac
- 5-15 DU/Ac
- 15+ DU/Ac

- Mixed Use
- Commercial
- CP Commerence Park
- Industrial
- Public/Quasi Public

- Parks/Open Space
- Flood Plain
- Vacant
- Study Area Boundary
- DU/Ac Dwelling Units per Acre





Figure 9  
**GENERAL PLAN LAND USE**  
 Outer Loop Freeway - Loop 101  
 Segment 3: 19th Avenue to 7th Street



**Legend**

- |  |   |   |
|--|---|---|
|  0-2 DU/Ac  |  Mixed Use           |  Parks/Open Space              |
|  2-5 DU/Ac  |  Commercial          |  Flood Plain                   |
|  5-10 DU/Ac |  CP<br>Commerce Park |  Vacant                        |
|  5-15 DU/Ac |  Industrial          |  Study Area Boundary           |
|  15+ DU/Ac  |  Public/Quasi Public |  DU/Ac Dwelling Units per Acre |

Note: General Plan Designations are of approximate boundaries. Land use descriptions indicate General Plan Designations.





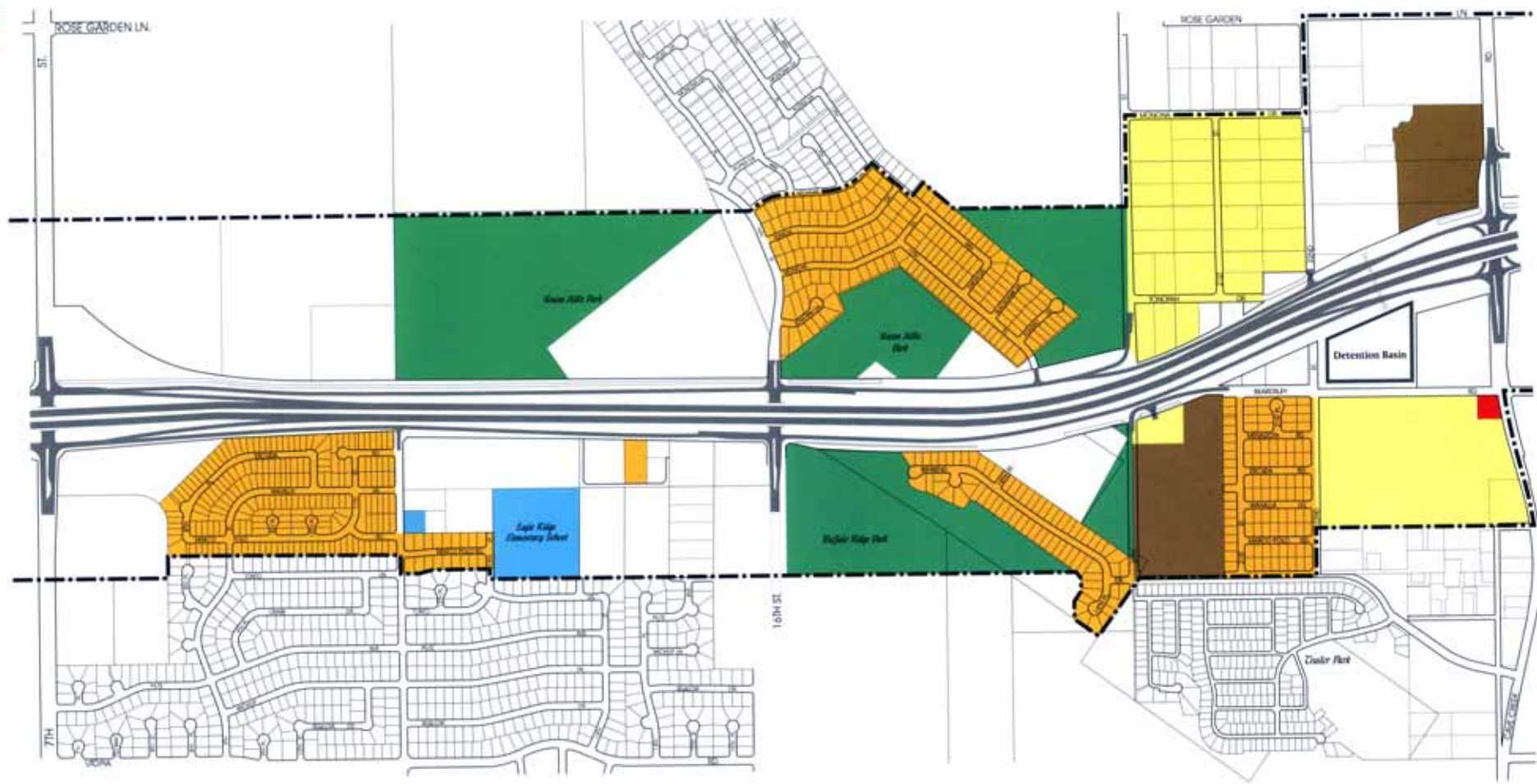


Figure 10  
**EXISTING LAND USE**  
 Outer Loop Freeway - Loop 101  
 Segment 4: 7th Street to Cave Creek Road



**Legend**

- 0-2 DU/Ac
- 2-5 DU/Ac
- 5-10 DU/Ac
- 5-15 DU/Ac
- 15+ DU/Ac

- Mixed Use
- Commercial
- CP Commerce Park
- Industrial
- Public/Quasi Public

- Parks/Open Space
- Flood Plain
- Vacant
- Study Area Boundary
- DU/Ac Dwelling Units per Acre



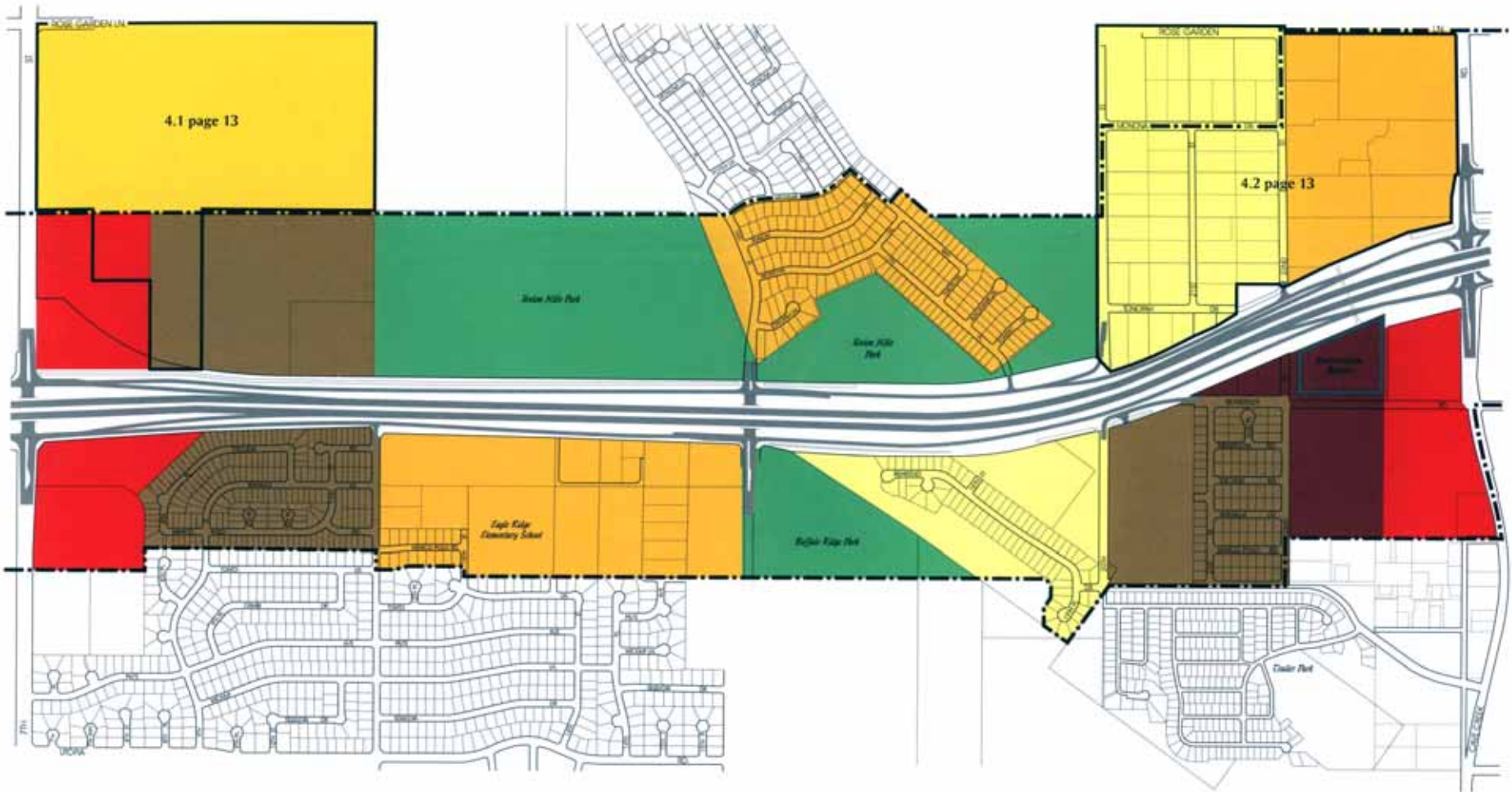
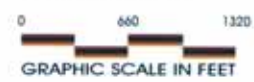


Figure 11  
**GENERAL PLAN LAND USE**  
 Outer Loop Freeway - Loop 101  
 Segment 4: 7th Street to Cave Creek Road



- Legend**
- |  |   |   |
|--|---|---|
|  0-2 DU/Ac  |  Mixed Use           |  Parks/Open Space        |
|  2-5 DU/Ac  |  Commercial          |  Flood Plain             |
|  5-10 DU/Ac |  Commerce Park       |  Vacant                  |
|  5-15 DU/Ac |  Industrial          |  Study Area Boundary     |
|  15+ DU/Ac  |  Public/Quasi Public |  Dwelling Units per Acre |

Note: General Plan Designations are of approximate boundaries. Land use designations indicate General Plan Designations.





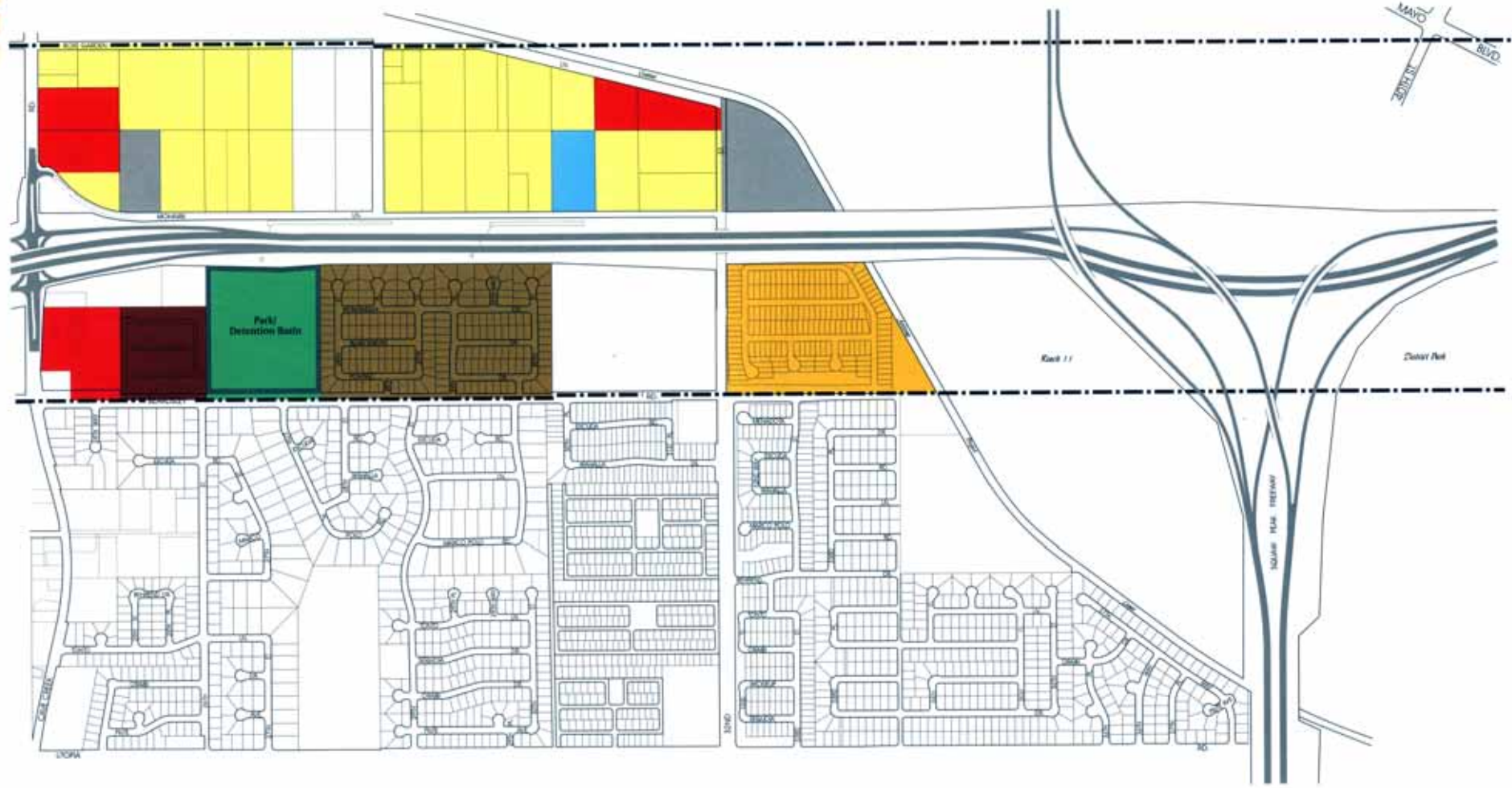


Figure 12  
**EXISTING LAND USE**  
 Outer Loop Freeway - Loop 101  
 Segment 5: Cave Creek Road to Squaw Peak Freeway



**Legend**

- 0-2 DU/Ac
- 2-5 DU/Ac
- 5-10 DU/Ac
- 5-15 DU/Ac
- 15+ DU/Ac

- Mixed Use
- Commercial
- CP Commerce Park
- Industrial
- Public/Quasi Public

- Parks/Open Space
- Flood Plain
- Vacant
- Study Area Boundary
- DU/Ac Dwelling Units per Acre



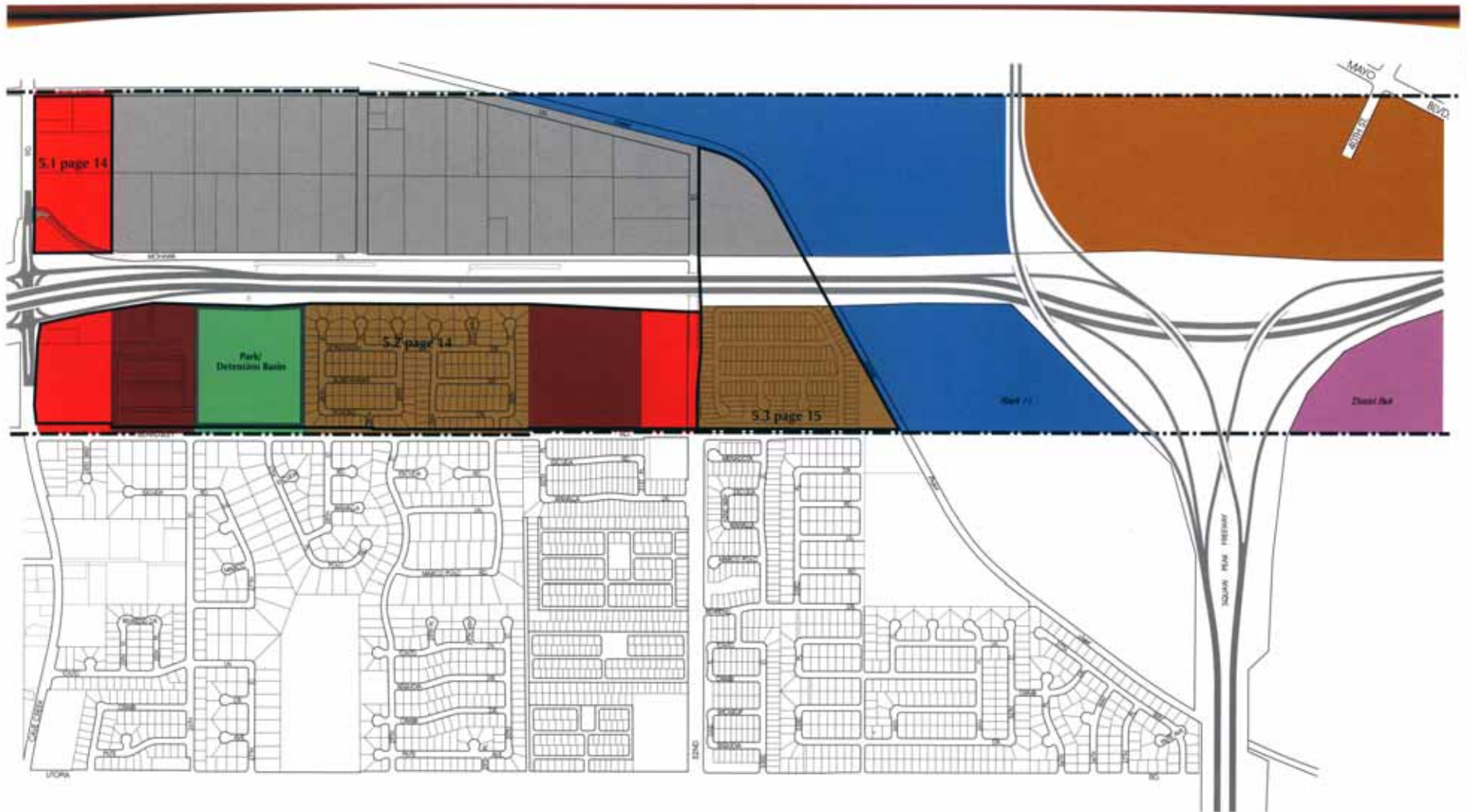


Figure 13  
**GENERAL PLAN LAND USE**  
 Outer Loop Freeway - Loop 101  
 Segment 5: Cave Creek Road to Squaw Peak Freeway



**Legend**

- 0-2 DU/Ac
- 2-5 DU/Ac
- 5-10 DU/Ac
- 5-15 DU/Ac
- 15+ DU/Ac

- Mixed Use
- Commercial
- Commerce Park
- Industrial
- Public/Quasi Public

- Parks/Open Space
- Flood Plain
- Vacant
- Study Area Boundary
- DU/Ac Dwelling Units per Acre

Note: General Plan Designations are of approximate boundaries. Land use designations indicate General Plan Designations.





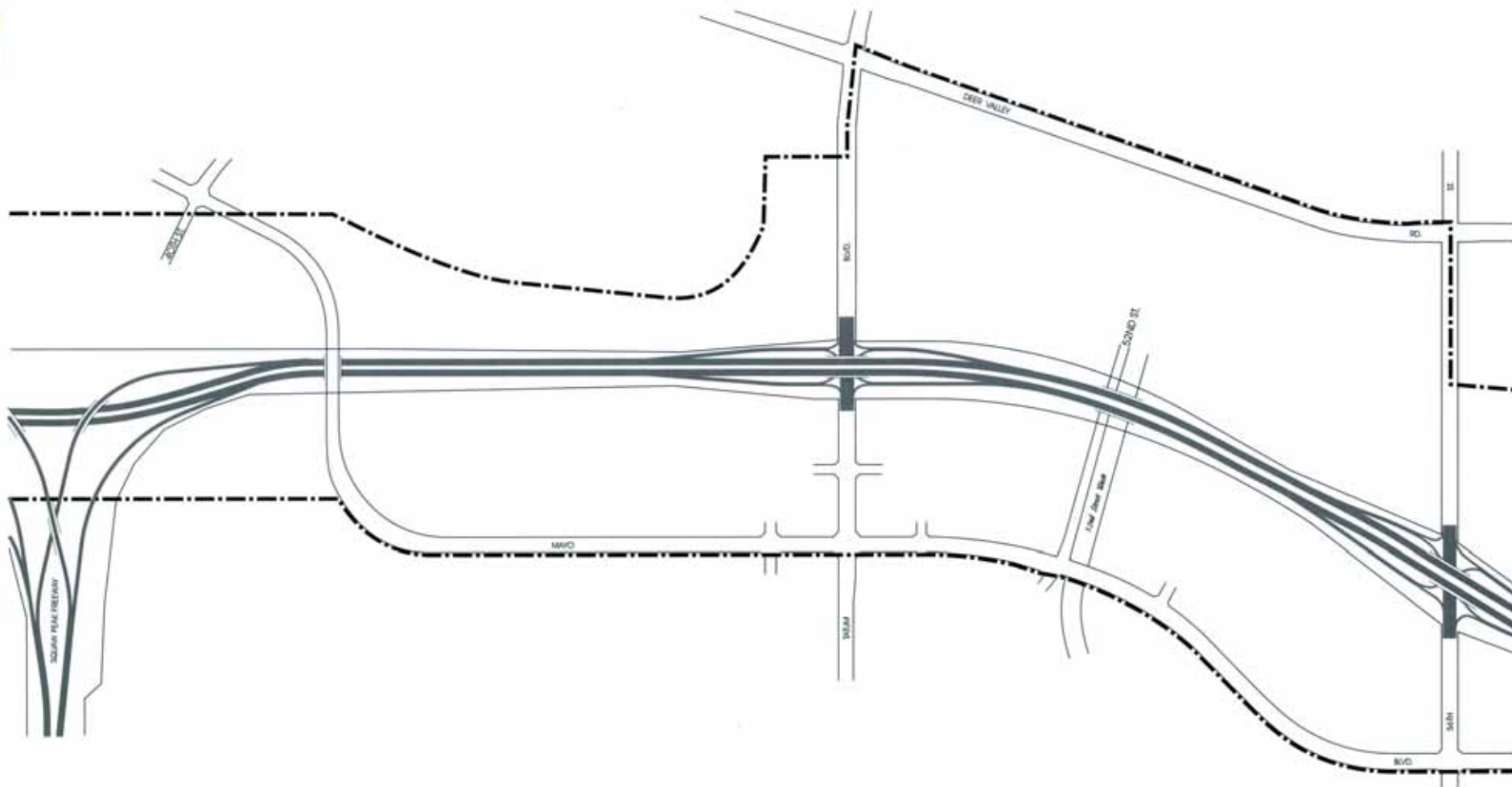


Figure 14  
**EXISTING LAND USE**  
 Outer Loop Freeway - Loop 101  
 Segment 6: Squaw Peak Freeway to 56th Street Alignment



Legend

- 0-2 DU/Ac
- 2-5 DU/Ac
- 5-10 DU/Ac
- 5-15 DU/Ac
- 15+ DU/Ac

- Mixed Use
- Commercial
- CP Commerce Park
- Industrial
- Public/Quasi Public

- Parks/Open Space
- Flood Plain
- Vacant
- Study Area Boundary
- DU/Ac Dwelling Units per Acre



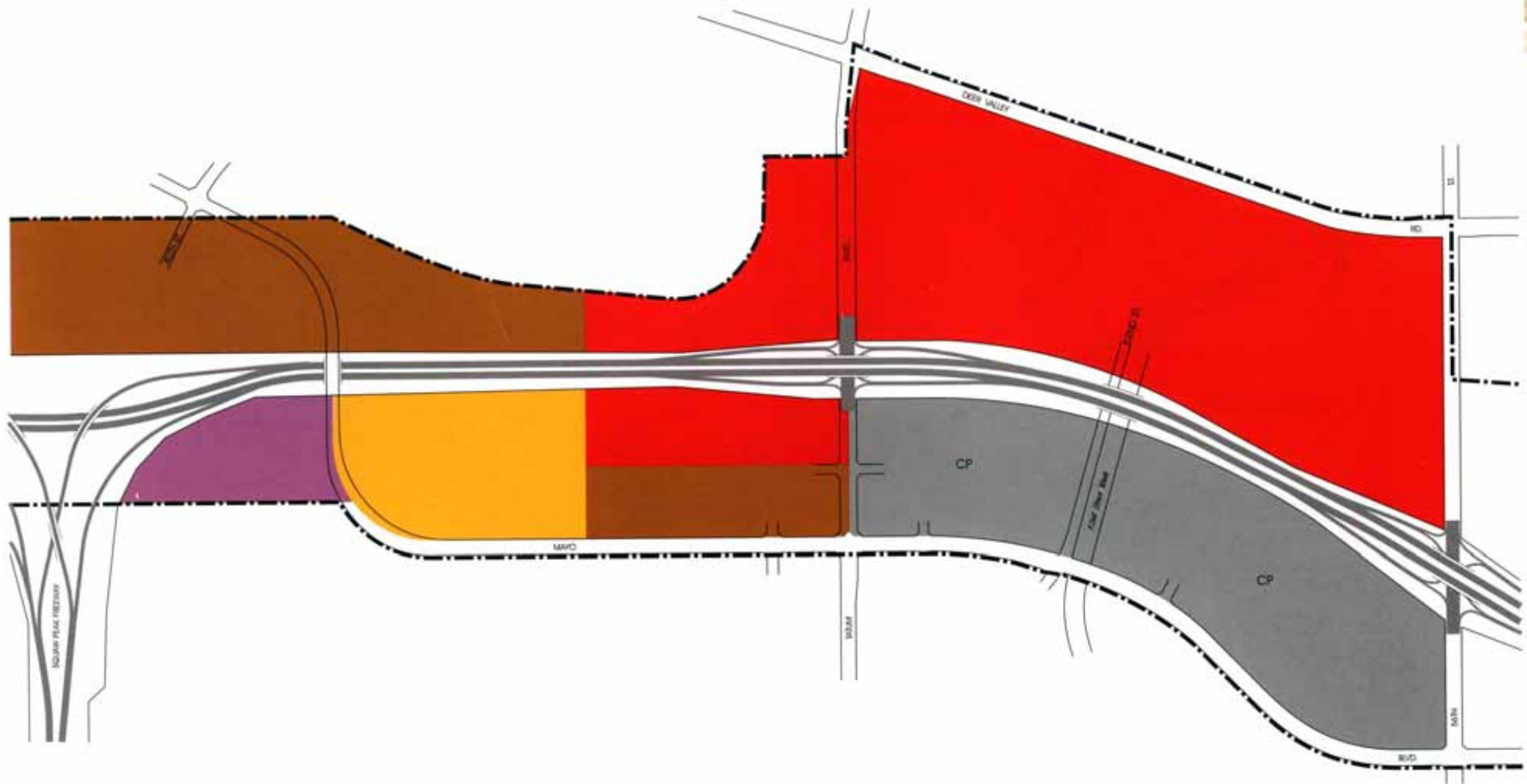


Figure 15  
**GENERAL PLAN LAND USE**  
 Outer Loop Freeway - Loop 101  
 Segment 6: Squaw Peak Freeway to 56th Street



**Legend**

- 0-2 DU/Ac
- 2-5 DU/Ac
- 5-10 DU/Ac
- 5-15 DU/Ac
- 15+ DU/Ac

- Mixed Use
- Commercial
- CP Commerce Park
- Industrial
- Public/Quasi Public

- Parks/Open Space
- Flood Plain
- Vacant
- Study Area Boundary
- DU/Ac Dwelling Units per Acre

Note: General Plan Designations are of approximate boundaries. Land Use designations indicate General Plan Designations.





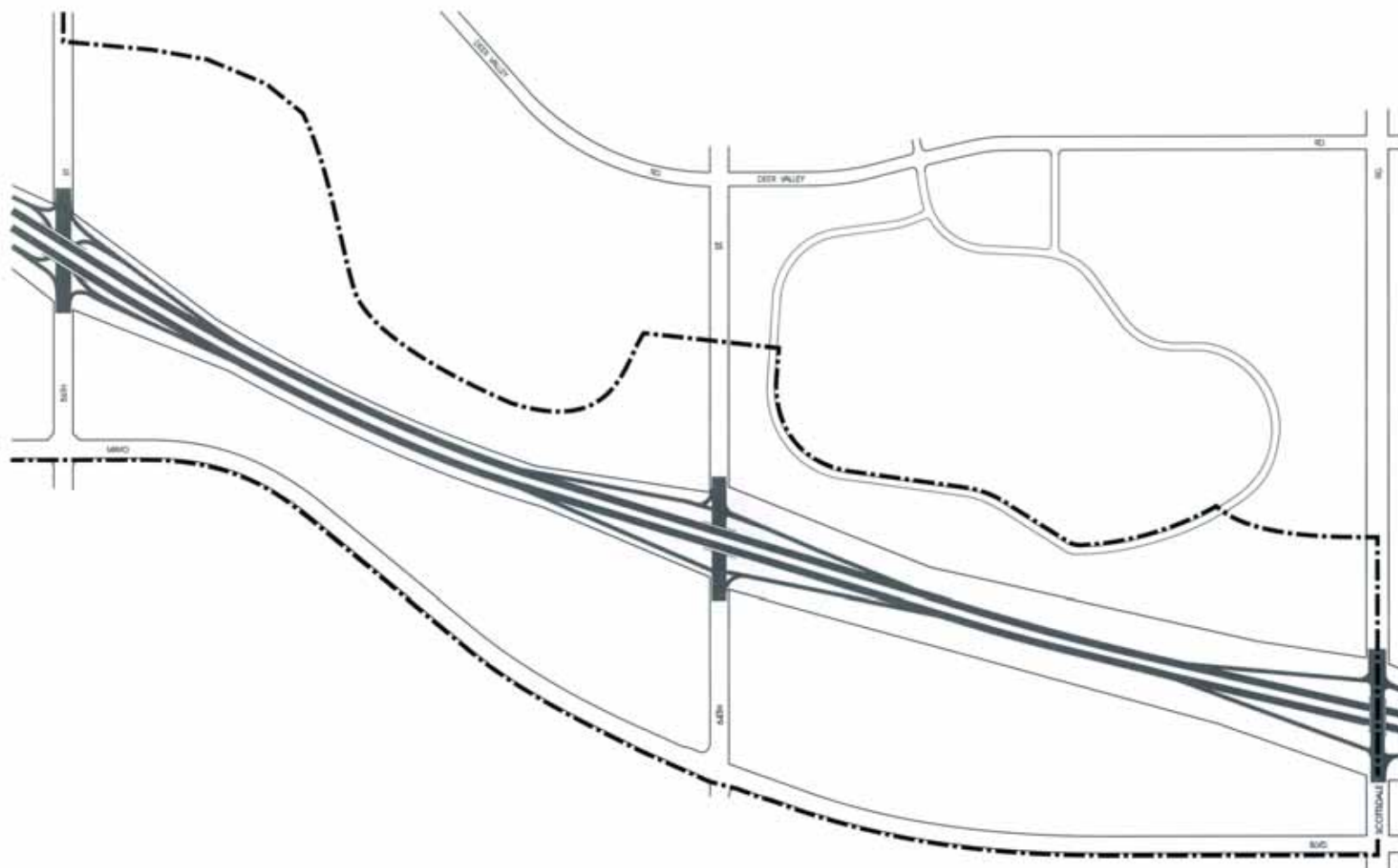


Figure 16  
**EXISTING LAND USE**  
 Outer Loop Freeway - Loop 101  
 Segment 7: 56th Street Alignment to Scottsdale Road

Legend

- 0-2 DU/Ac
- 2-5 DU/Ac
- 5-10 DU/Ac
- 5-15 DU/Ac
- 15+ DU/Ac

- Mixed Use
- Commercial
- Commerce Park
- Industrial
- Public/Quasi Public

- Parks/Open Space
- Flood Plain
- Vacant
- Study Area Boundary
- DU/Ac Dwelling Units per Acre



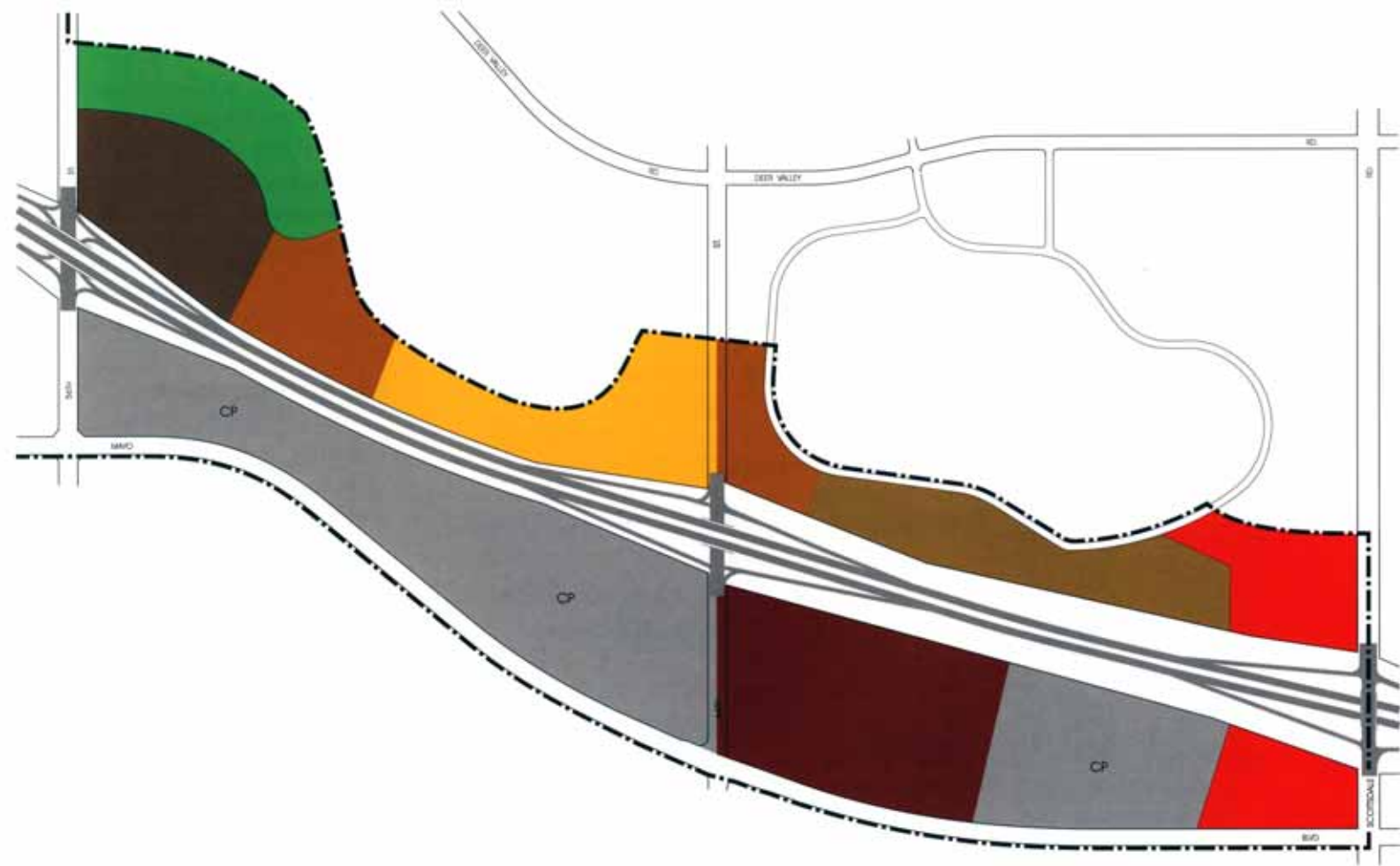


Figure 17  
**GENERAL PLAN LAND USE**  
 Outer Loop Freeway - Loop 101  
 Segment 7: 56th Street Alignment to Scottsdale Road



**Legend**

- 0-2 DU/Ac
- 2-5 DU/Ac
- 5-10 DU/Ac
- 5-15 DU/Ac
- 10+ DU/Ac
- 15+ DU/Ac

- Mixed Use
- Commercial
- CP Commerce Park
- Industrial
- Public/Quasi Public

- Parks/Open Space
- Flood Plain
- Vacant
- Study Area Boundary
- DU/Ac**  
 Dwelling Units per Acre

Note: General Plan Designations are of approximate boundaries. Land Use designators indicate General Plan Designations.

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## Circulation

At the regional level, freeways can serve to link distant parts of a metropolitan area. This linkage increases mobility from predominantly-residential areas to employment centers, while also permitting the expansion of regional market centers. The region as a whole can benefit from these circulation improvements.

Freeways can also alter and sometimes impede local traffic circulation. The extent of inconveniences is determined by a number of factors. The design of the freeway (i.e. does it include a frontage road system) is one example. Another example is whether the freeway passes through versus alongside residential or commercial areas. Of particular interest to this planning effort are changes in residential circulation patterns. If the freeway bisects a neighborhood, it creates one set of circulation impacts. If the residential area was laid out with knowledge of the freeway alignment, circulation impacts can be quite different. These determining factors vary from location-to-location and from freeway-to-freeway.

The Outer Loop passes through a region that possesses a varied and unique character. This freeway corridor encompasses an area of low-density development with an incomplete major street system that experiences frequent topographical interruptions. Most of this low-density development is in the form of residential neighborhoods, some of which are quite "self-contained." This self-containment emphasizes inwardly focused

circulation patterns, while mostly ignoring outside connections. As a result, many areas in the Outer Loop corridor may have adequate internal circulation systems, however, they do not possess the necessary linkages to other land uses.

Park-and-ride lots are proposed in accordance with the adopted MAG HOV (Maricopa Association of Governments High Occupancy Vehicle) System Plan near the following locations:

- \* *I-17 Black Canyon Freeway and Pima Freeway,*
- \* *Pima Freeway and 7th Street, and*
- \* *Pima Freeway and Tatum Road.*

The use of park-and-ride lots can contribute to a reduction in traffic congestion and air pollution.

The purpose of the Circulation Element is to identify circulation issues along the corridor and in localized areas, and to propose solutions to them. The following issues and solutions are organized by two-mile segments, similar to the land use element. The following goals have been developed to guide circulation-related decisions:

**Policy 1:** *Provide appropriate and adequate community access and local circulation to support the land use plan and the economic, cultural, environmental and social needs of the area.*

**Policy 2:** *Avoid creating dead-end or dis-*

*continuous streets in neighborhoods cut by freeways.*

**Policy 3:** *Street changes brought about by the freeway, while providing capacity relief for the nearby street system, are not to result in excessive speeds in the local community or encourage neighborhood cut-through traffic movements.*

### Segment 1 51st to 35th Avenues

#### General Description

North of the freeway, the Hedgpeth Hills interrupt the normal grid pattern of major streets which results in a greater portion of the north-south movement occurring on 35th Avenue. The recently completed 51st Avenue improvements, south of the Outer Loop, will relieve some of the north-south traffic burden now on 43rd and 35th Avenues. Also, the widening and improvements of Union Hills Drive will improve east-west circulation south of the freeway.

In addition to these improvements, the following issues have been identified:

#### 1.1

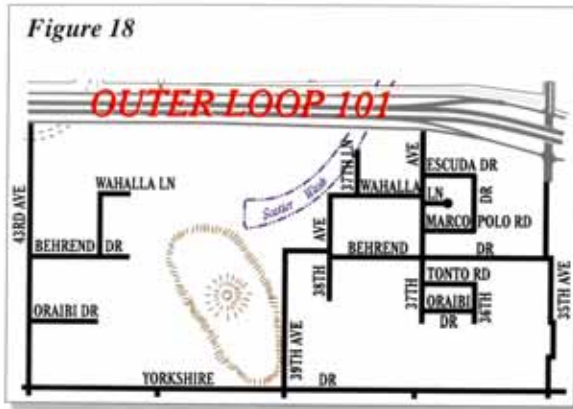
**Location:** Yorkshire Drive, between 43rd and 35th Avenues (Figure 18).

**Issue:** Yorkshire Drive is a long collector street, which passes through diverse areas ranging from low-density, single-family residential to the Deer Valley Village Core. Due to the Yorkshire interchange at I-17, it is anticipated that some additional traffic will



occur along this street.

**Recommendation:** If, and when, the average daily traffic exceeds 8,000 vehicles per day, techniques should be employed to divert some of the thru-traffic movements to Union Hills or the Outer Loop. Such activity would be coordinated through the Neighborhood Traffic Management Team of the City of Phoenix Street Transportation Department.



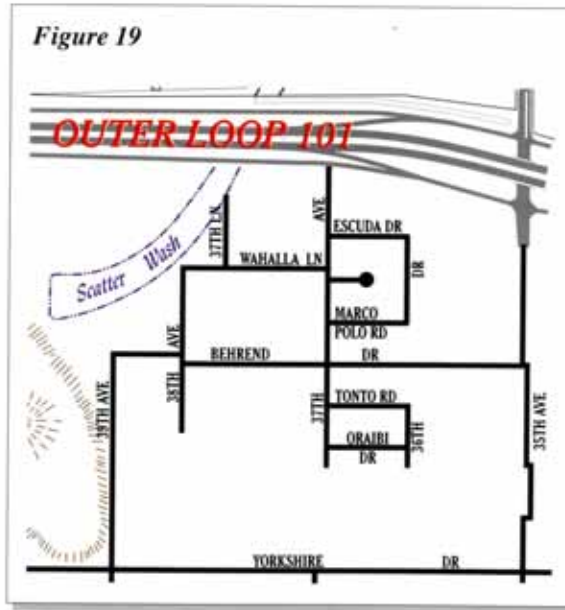
### 1.2

**Location:** From 35th to 39th Avenues between the freeway and Yorkshire Drive (Figure 19).

**Issue:** Additional and properly improved streets within this equestrian-oriented residential area are needed to provide adequate circulation and access to vacant properties.

**Recommendation:** After adoption of this plan, the City of Phoenix Planning Department will convene a task force which will work with the community to develop a circulation master plan for the area, including

providing for ROW dedications and improvements. This plan will be implemented by either improvement districts or through the development process. If the neighborhood approves participation in an improvement district, one will be formed. If one is not approved, right-of-way (ROW) dedications and improvements will occur with subsequent lot divisions or development activity. Without an improvement district implementation of right-of-way, roadway and circulation improvements may be uneven because individual property owners may be reluctant to make necessary improvements.



### 1.3

**Location:** Outer Loop on the north, 48th Lane on the west, Piute Avenue on the south and 45th Avenue on the east (Figure 20).

**Issue:** Adequate neighborhood connections to major streets on the south and west.

Figure 20



Upon completion of the freeway, 47th Avenue will connect only to the eastbound frontage road. Neighborhood collector streets currently carry substantial amounts of traffic and capacity and convenience issues will be magnified when the vacant multi-family-designated parcel is developed north-east of Wahalla and 47th Avenue.

**Recommendation:** Encourage the vacant parcel to develop with primary access from the frontage road to minimize additional traffic through this neighborhood.

### Segment 2 35th to 19th Avenues

#### General Description

This segment includes the village core which with its circulation system is substantially undeveloped. Three streets, 31st, 27th and





tion on this vacant land could add significant traffic volume to Mohawk/Irma Lane if allowed access.

There is currently an approved subdivision plat (593072) for this area that shows no access to 30th Avenue. If development occurs in accordance with this plat there will not be any traffic problem.

**Recommendation:** A plan should not be approved for apartments that permits access to 30th Avenue.

### Segment 3 19th Avenue to 7th Street

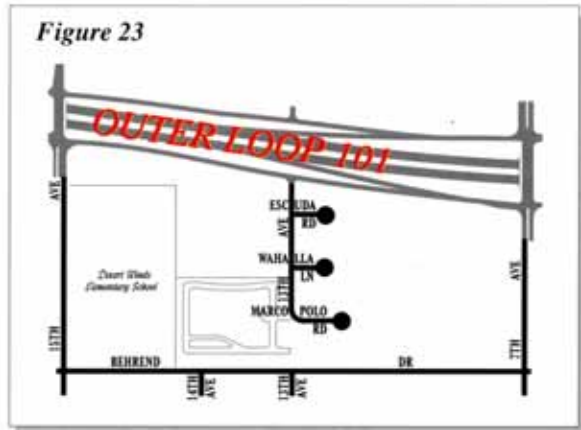
#### General Description

The pattern of streets within this segment generally allow for good circulation. Neighborhood local streets feed into collectors and major streets in the appropriate manner. However, one circulation issue requires attention.

#### 3.1

**Location:** 13th Avenue, south of the Outer Loop (Figure 23).

**Issue:** This roadway provides the sole access for an existing multi-family project and currently connects only to the eastbound frontage road. Based on an approved subdivision plat, current zoning and land use recommendations, this street will need to provide access for a considerable number of additional residential units to the east and west.



**Recommendation:** If the currently-zoned industrial property further to the east develops with residential land use, as is recommended in the land use portion of this report, a public street connection to 7th Avenue will be essential, possibly along an extended Marco Polo Road.

### Segment 4 7th Street to Cave Creek Road

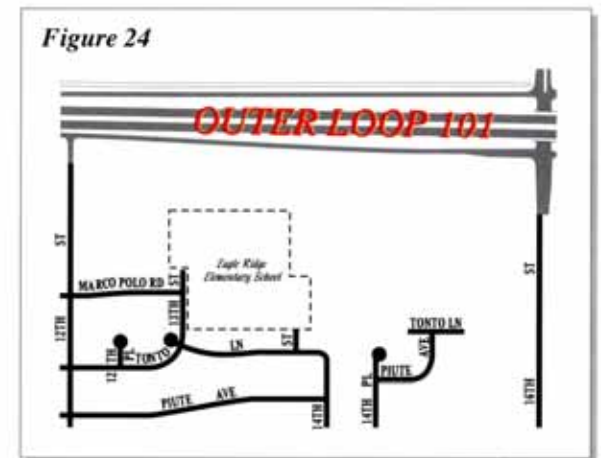
#### General Description

The area between 12th and 20th Streets, north of the Outer Loop, contains a significant federal government land holding. There is, however, private land ownership within the center of this area which is zoned for single-family residential. Access to this site will be from the 16th Street alignment. This roadway will curve to the west and connect to 7th Street on the Rose Garden Lane alignment.

#### 4.1

**Location:** 13th Street and Marco Polo Road (Figure 24).

**Issue:** Eagle Ridge Elementary School is without adequate access. The facility is not adjacent to a collector street, as is the standard in the City. The only access is from a 32-foot wide, local neighborhood street. Sidewalks and circulation in this area are inadequate. Land to the east, north and northwest is vacant allowing the opportunity for improved access.



**Recommendation:** As adjacent development occurs, require adequate and more direct access from the school to 12th or 16th Streets and to the eastbound frontage road of the freeway. This requirement can be enforced through the normal development review process.



## Segment 5 Cave Creek Road to Squaw Peak Freeway

### General Description

Over 90% of the land in this segment is vacant or developed with an interim use. Most parcels are five acres or larger in size. The existing street pattern, both major and local, is limited.

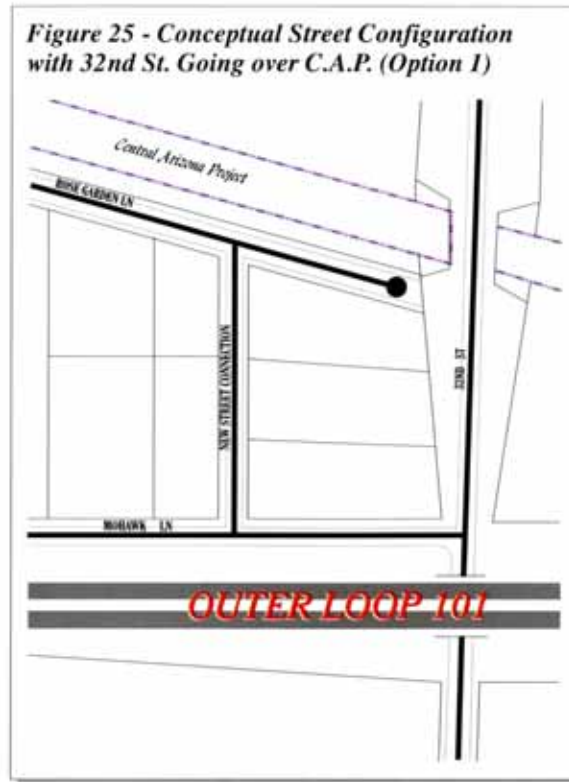
The Central Arizona Project Canal presents a physical barrier to major and local street circulation. Cave Creek Road is the only major street in this two-mile segment to extend over it. The other major street in this segment, 32nd Street, currently terminates at the CAP, although it is planned to extend over the canal. When extended it would not have a connection to Rose Garden Lane.

Rose Garden Lane, Mohawk Lane, and Beardsley Road will remain open as local east-west streets in this area. However, the circulation afforded by these streets is very limited, as they terminate on the east at 32nd Street, and near Cave Creek Road on the west.

### 5.1

**Location:** Rose Garden Lane at 32nd Street (Figure 25).

**Issue:** When Rose Garden Lane no longer connects to 32nd Street, due to a grade separation for 32nd Street to cross over the CAP, it will need a new connection to Mohawk Lane.



**Recommendation:** There are two options for the circulation in this area: (1) connect Mohawk Lane to Rose Garden with a new street west of 32nd Street as part of development in the area. Requests to access 32nd Street between Mohawk Lane and the CAP should not be approved if they would conflict with a future grade separated crossing of the CAP. (2) add a frontage road on the 32nd Street alignment between the two roads as part of the overpass of the CAP on 32nd Street.

## Segment 6 Squaw Peak Freeway to 56th Street

### General Description

This entire segment falls within the City Council approved Desert Ridge Specific Plan. An interchange is planned at Tatum Boulevard (48th Street). Freeway access at 40th Street is not feasible as the elevated Outer Loop/Squaw Peak freeway-to-freeway connection is located just west of the 40th Street alignment. Also, 40th Street will not cross the Central Arizona Project Canal. Eventually, 40th Street (not funded at this time) will cross over the freeway a short distance east of the existing 40th Street alignment while 52nd Street will cross under the freeway.

## Segment 7 56th Street to Scottsdale Road

### General Description

This segment up to 64th Street falls within the Desert Ridge Master Plan. There will be interchanges at 56th Street and Scottsdale Road and they will both pass under the freeway. 64th Street will pass over the freeway and at some time in the future there will be an interchange (unfunded) there.

## NOISE

### Background

#### Impacts

One of the most frequently identified concerns expressed about freeways by nearby



residents is the noise these facilities generate. These concerns can be classified as physical or actual impacts and as psychological or perceived impacts of noise. The physical impacts can usually be successfully mitigated to recognized standards. Techniques to reduce noise levels will be discussed in this section.

Perceived impacts, however, are not as easily dealt with. These impacts can include a change in the ambient neighborhood noise level (what was once a quiet, interior neighborhood street is now one adjacent to the freeway) to realizing that the freeway is “out there” because traffic on the freeway is visible to adjacent residents. The effects of these perceived impacts can be minimized through implementation of various mitigation techniques, in combination with reduction of average noise levels to accepted standards.

### Noise Dynamics

Prior to discussing the process that was used to determine the required extent of noise mitigation, some basic noise principles will be reviewed.

Any noise source generates a given amount of energy which travels along a path to arrive at the receiver (Figure 26).

The dynamics of the perception of noise are based on the relationship between the noise source, the person or place exposed to the noise (the receiver), and the path the noise will travel from the source to the receiver.

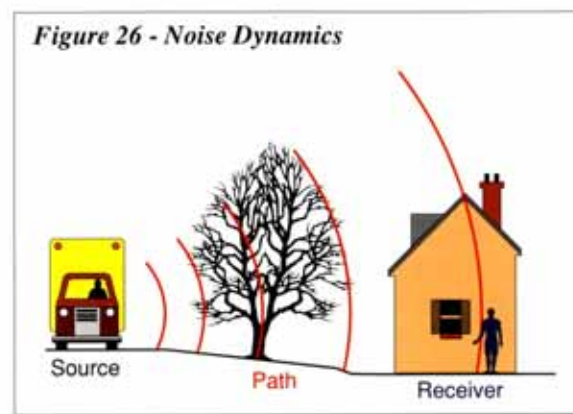
Given the source-receiver-path relationship,

noise can be reduced by three basic methods:

*1 - Reduce the amount or intensity of noise coming from the source.*

*2 - Increase the distance (length of path) between the source and the receiver.*

*3 - Physically block the path of the noise from the source to the receiver.*



Method One can only be accomplished by reducing the noise emitted from the vehicles traveling the facility; by reducing the speed or by reducing the total number of vehicles. In the case of noise from a public roadway these hold limited possibilities. The more feasible options are primarily limited to Methods Two and Three.

Method Two will be feasible mainly for future freeways where ROW lines may be flexible, or in new developments where rear yard setbacks can be increased. Method Three involves the construction of noise berms or walls. The construction of noise

walls is the most common noise mitigation alternative. Berms require more physical space than walls and are considered in settings where adequate land is available, and they can be landscaped to add to the attractiveness of the freeway edge.

### Process

The noise recommendations established by this plan were derived through a two-stage process. The first step determined the responsible agency for providing noise attenuation. The second was a noise analysis of selected sites to establish the degree of mitigation needed. The culmination of this effort is the recommendations presented in the next section.

### Noise Mitigation Policies

The ADOT Noise Abatement Policy for State Funded Projects states that noise abatement, as part of a freeway design will be considered only for those properties adjacent to the freeway that had a developed use at the time the alignment became known to the public. This usually occurs at the public alignment hearing conducted by ADOT. For development occurring after this date, no state funded abatement is considered. In the case of a State project involving potential Federal funding, where an Environmental Impact Statement (EIS) report is prepared, the cutoff date for consideration of mitigation is the date of approval of the EIS report.

City of Phoenix freeway noise mitigation policies state that the City will consider noise mitigation in those circumstances where development occurred after the State cut off if the development is in existence at



the time of approval of a Freeway Mitigation plan, and if mitigation is approved as part of that plan. For development occurring after approval of the mitigation plan, City policy is to require mitigation features to be built into the design of that new development.

#### ***Responsibility Between 51st Avenue and I-17:***

This portion of the Agua Fria freeway is being funded exclusively from Maricopa County Proposition 300 funds. The Alignment Hearing was conducted in November, 1983, thus any development occurring after that date was not considered for noise mitigation. Prior development is recognized in plans and noise walls are being constructed where the standard of 67dbA would be exceeded by the projected roadway noise. As noted earlier, developments occurring after approval of this plan are to be asked to provide noise mitigation as part of their design according to standards in this plan. The following section details planned ADOT walls and the projected noise levels where Freeway Mitigation or private mitigation will be required.

#### ***Responsibility Between I-17 and Scottsdale Road:***

For the Pima Freeway, east of I-17, an EIS is being prepared by ADOT. The policies for responsibility for construction of noise mitigation will remain the same, however the date for assumption of responsibility by ADOT will be September 3, 1992, the date of the public hearing for the EIS. Here too, the City policy will apply for those locations not covered by the ADOT policy.

Figures 27 to 31, following, detail the location of proposed ADOT noise walls for the Agua Fria and Pima sections of the Outer Loop freeway. Locations shown in blue are on ADOT plans for noise mitigation walls, while those shown in green would be assumed by the City through the Freeway Mitigation program. Those shown in red would be for proposed and future developments in which the developer will provide noise mitigation in conjunction with the initial construction. Noise walls are shown in approximate locations and may be located inside or outside of frontage roads. Specific locations will be determined at the time of final roadway design. Specific noise mitigation policies are contained in this section.

In one specific location, Autumn Hills Subdivision, Planning Commission and City Council gave additional direction:

*Replace the existing Dooly wall with an eight-foot high noise wall of 8 inch thick concrete block along the northern boundary of the Autumn Hills subdivision. The northern boundary extends from just west of 28th street to just east of 30th Street. Because this area is east of I-17, funds for this improvement would have to come from a future voter approved bond. The wall would be installed after bond funds became available and when the full freeway at this location is constructed.*

#### ***Noise Analysis***

The goal in mitigating physical impacts of noise is to reduce freeway noise to an acceptable level. There are two generally accepted methods of determining noise standards. The first is the daily average noise

level (Leq). As the name implies, it is an average of the noise levels for a 24-hour period of time. This measurement technique is the method used by the Federal Highway Administration (FHWA), which has adopted 67 dB(A) Leq as its guide for an acceptable level of traffic noise in residential areas. The second noise measurement technique is the day-night level method (Ldn). This technique, also for a 24-hour period of time, is one where night levels (between 10 p.m. and 7 a.m.) receive an extra 10 dB(A) rating. This accounts for the added annoyance of unwanted sound during sleeping hours. The Ldn method has been chosen by the Department of Housing and Urban Development (HUD) as their measurement technique, and they have adopted 65 dB(A) Ldn as the acceptable level of traffic noise in residential areas.

Different public agencies involved in the planning process for the Outer Loop have aligned themselves with the two standards. ADOT has chosen the FHWA standard of 67 dB(A) Leq as its noise threshold. The Phoenix City Council has adopted HUD's 65 dB(A) Ldn as the acceptable level of noise for residential areas adjacent to freeway corridors. This latter standard will be applied throughout this Specific plan in determining the appropriate mitigation measures.

A noise analysis was performed by staff for all residential areas (which were not existing in November 1983) along the freeway between 51st Avenue and the future Squaw Peak interchange. ADOT will provide necessary noise attenuation to protect the properties built prior to or during November

*(continued)*



Figure 27  
**PROPOSED NOISE WALLS**  
 Outer Loop Freeway - Loop 101  
 Segment 1: 51st Avenue to 35th Avenue

- Noise Wall Responsibility
- ADOT
  - Developer
  - City
  - Study Area Boundary





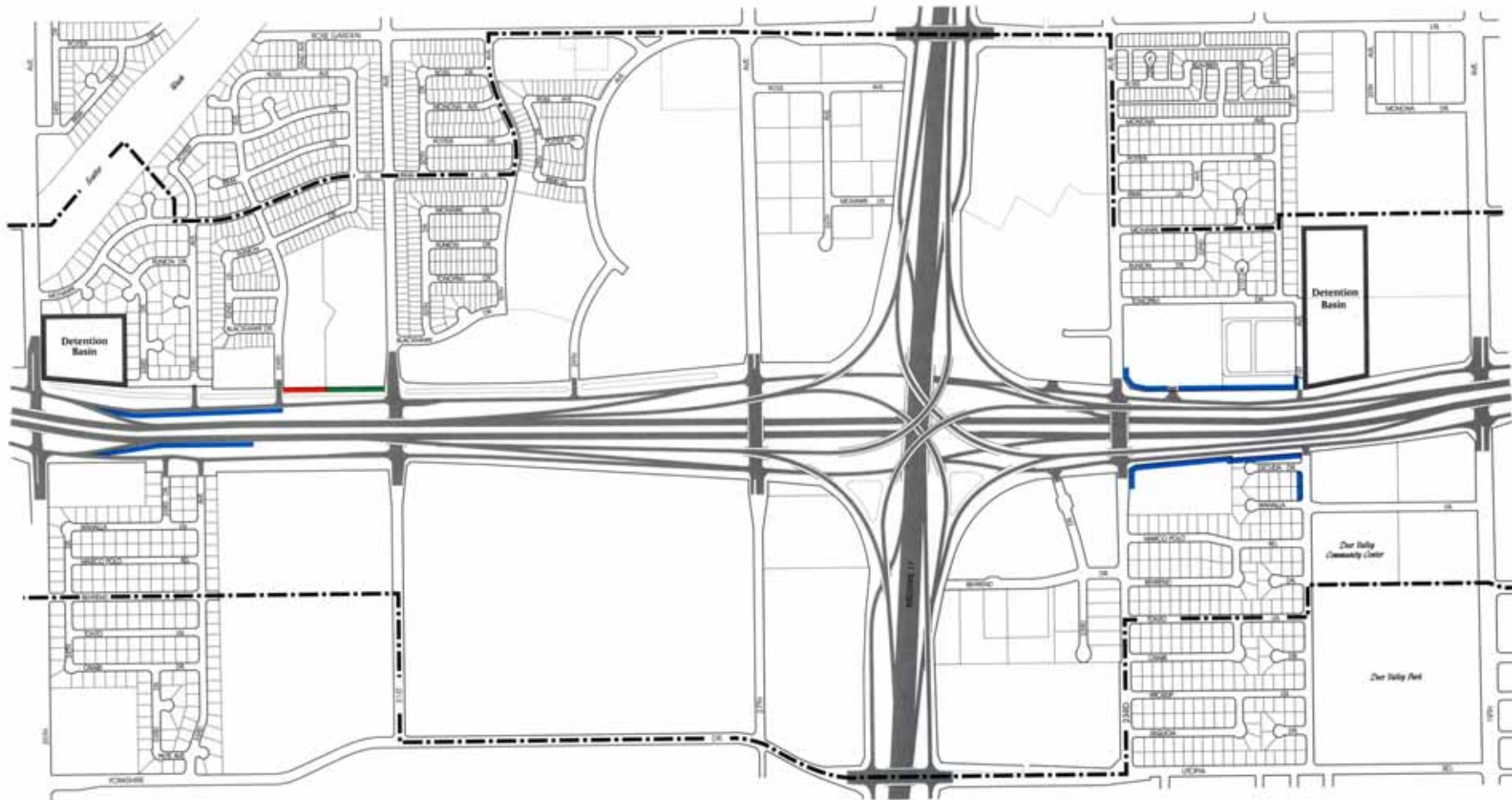


Figure 28  
**PROPOSED NOISE WALLS**  
Outer Loop Freeway - Loop 101  
Segment 2: 35th Avenue to 19th Avenue

- Noise Wall Responsibility
- ADOT
  - Developer
  - City
- Study Area Boundary

0 660 1320  
GRAPHIC SCALE IN FEET



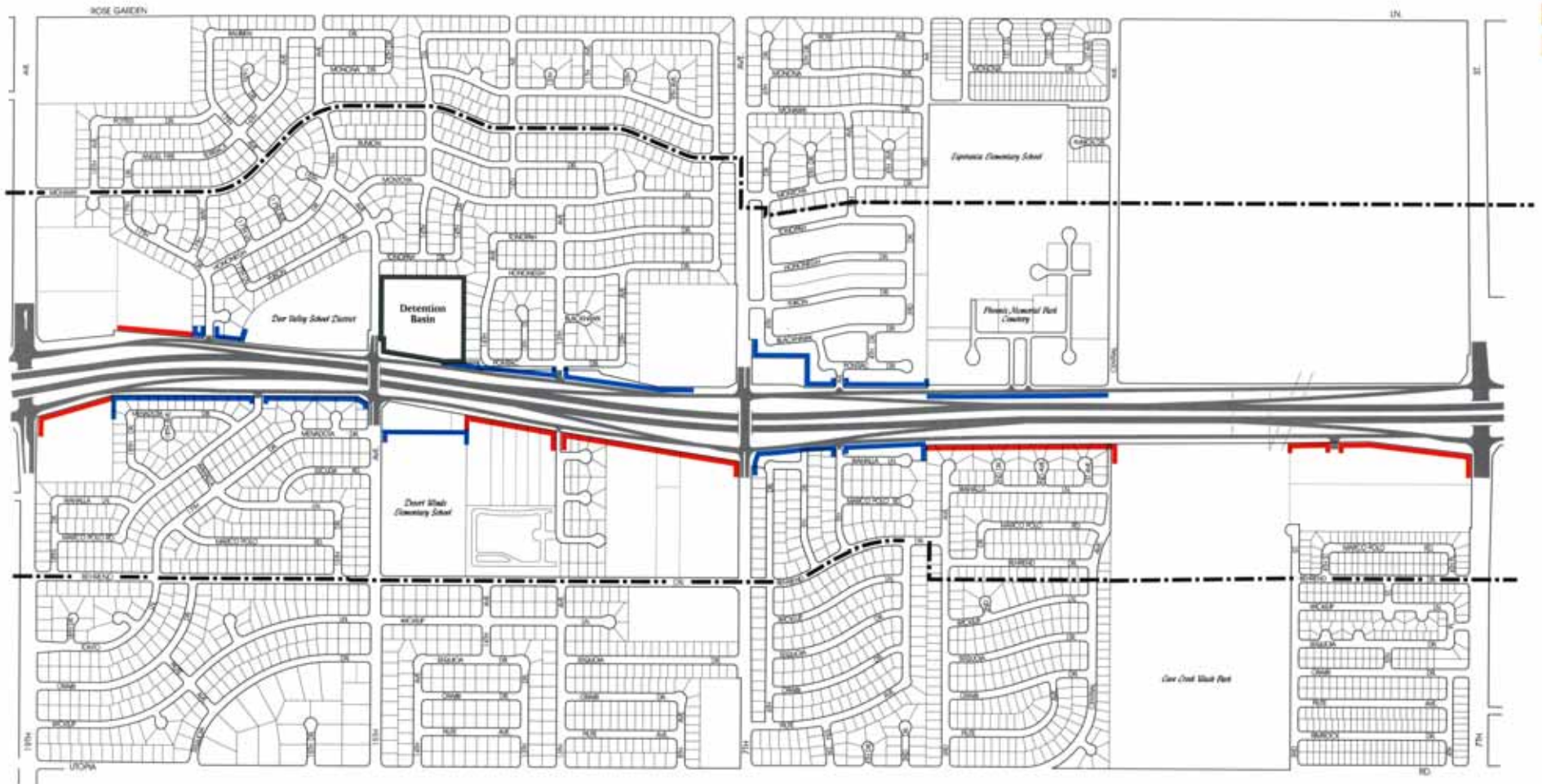


Figure 29  
**PROPOSED NOISE WALLS**  
 Outer Loop Freeway - Loop 101  
 Segment 3: 19th Avenue to 7th Street

Noise Wall Responsibility

- ADOT
- Developer
- - - Study Area Boundary





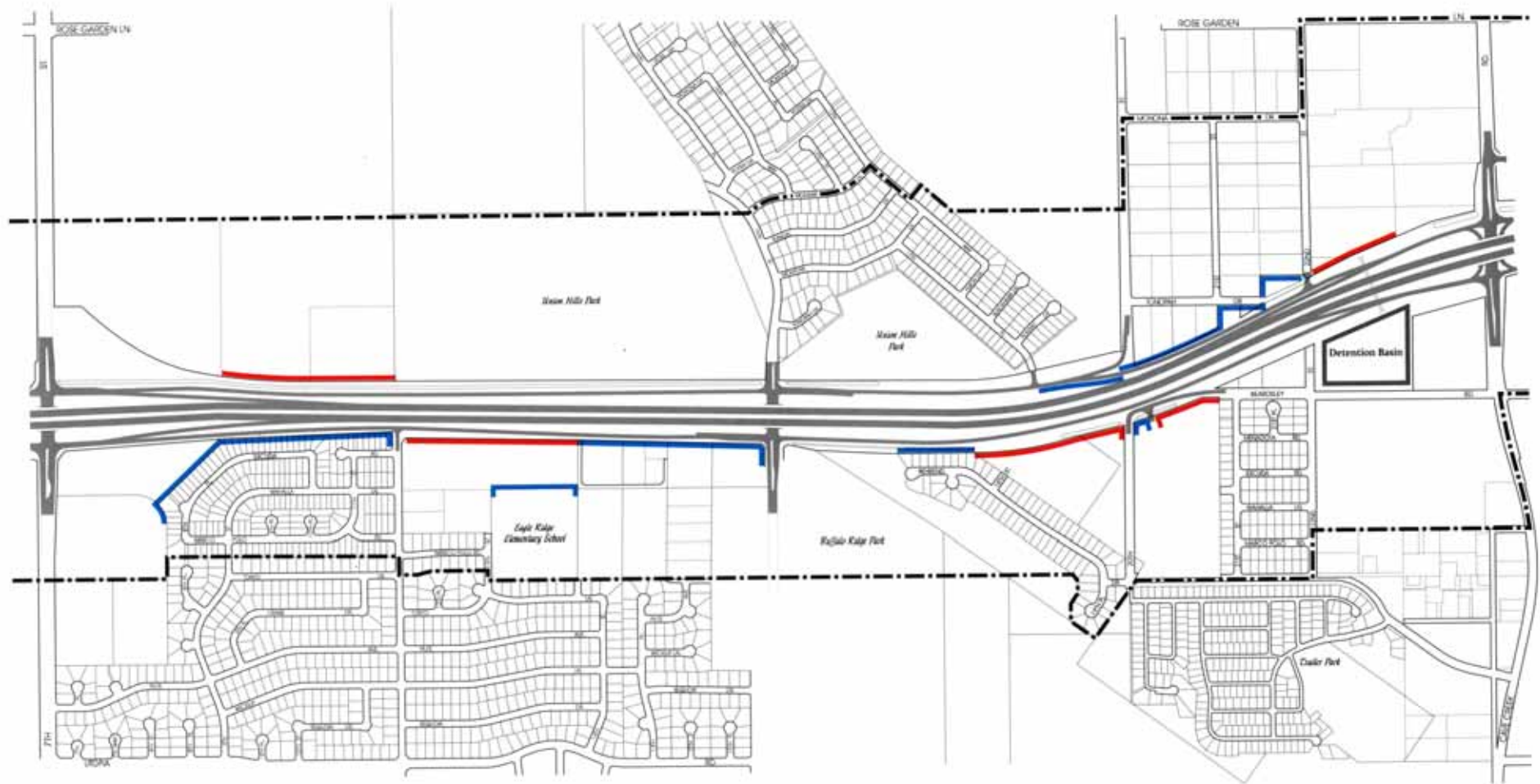


Figure 30  
**PROPOSED NOISE WALLS**  
 Outer Loop Freeway - Loop 101  
 Segment 4: 7th Street to Cave Creek Road

- Noise Wall Responsibility
- ADOT
  - Developer
  - - - Study Area Boundary



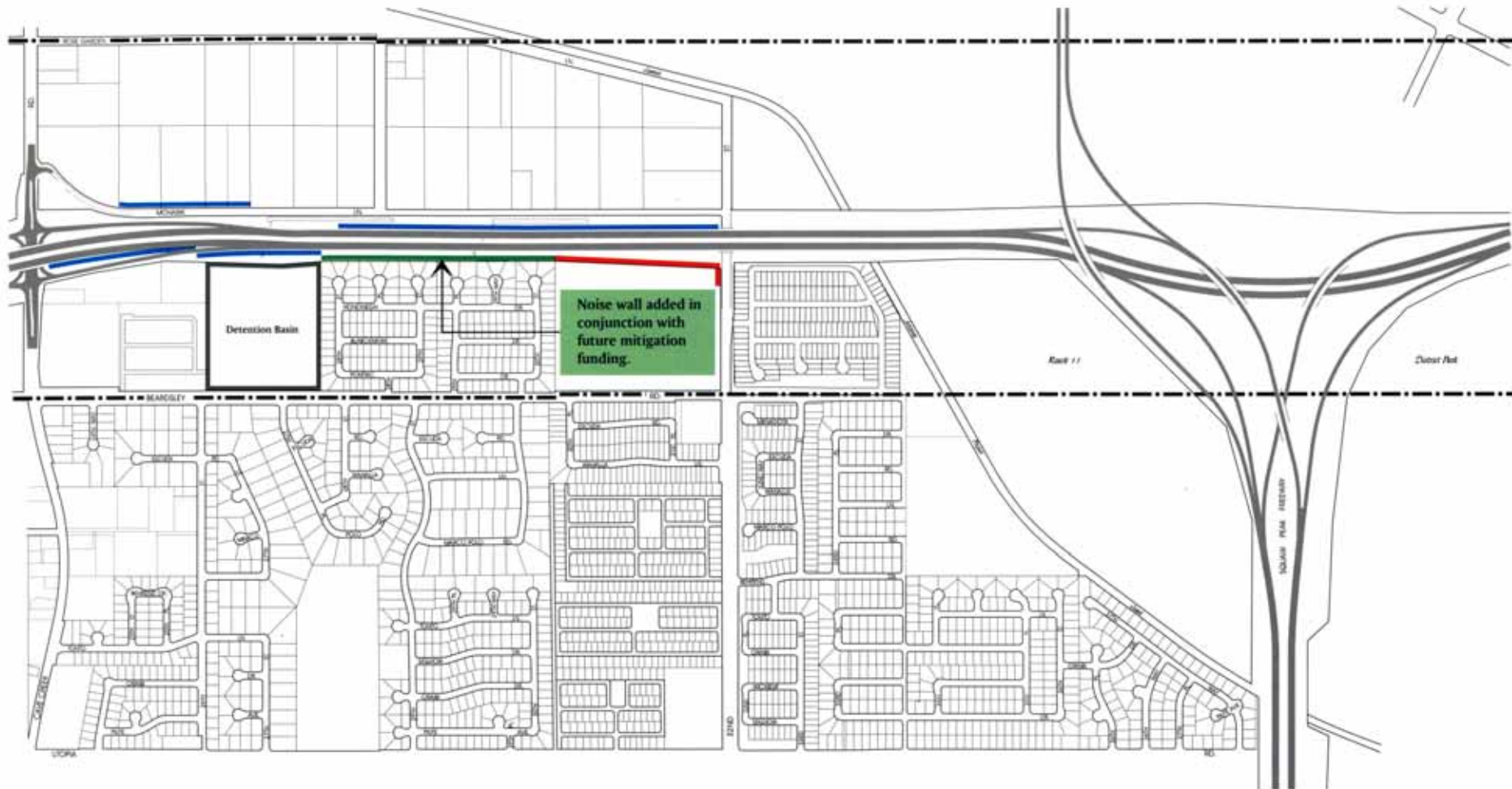
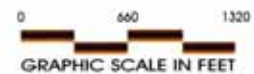


Figure 31  
**PROPOSED NOISE WALLS**  
 Outer Loop Freeway - Loop 101  
 Segment 5: Cave Creek Road to Squaw Peak Freeway

Noise Wall Responsibility

- ADOT
- Developer
- City
- - - Study Area Boundary





1983. Staff used HUD's and FHWA's noise models to determine which residential areas, future or those built since 1983, would exceed the city's standard of 65 dB(A) Ldn adjacent to freeway corridors.

### **Freeway Assumptions**

To arrive at site-specific noise forecasts, certain assumptions were made about freeway conditions. They were as follows:

- 1 - The design of the freeway, including number of lanes.
- 2 - Traffic volumes used were those from the ADOT 2005 Noise Analysis.
- 3 - The vehicular mix on the freeway will be:
  - autos: 92.0%
  - medium trucks: 6.0%
  - heavy trucks: 2.0%
- 4 - The vehicular mix on the frontage roads will be:
  - autos: 92.0%
  - medium trucks: 6.0%
  - heavy trucks: 2.0%
- 5 - Average speed on the freeway: 55 m.p.h.
- 6 - Average speed on the frontage roads: 45 m.p.h.
- 7 - Night time percentage of traffic: 15%.
- 8 - For vacant parcels, final built grade will be equal to that prior to construction.
- 9 - Rear yards are to be 25 feet deep.

Modifications to any of these assumptions would affect the calculated results.

### **Noise Wall Assumptions**

In addition to freeway design assumptions, an integral part of the noise analysis is assumptions made concerning the design and construction of noise walls which can meet the attenuation standards. These assumptions are summarized by the following criteria.

### **Noise Wall Criteria**

- 1 - Walls will be constructed of minimum 8" thick, concrete masonry units (CMU) or of cast-in-place concrete and contain no decorative openings.
- 2 - The wall heights specified in this document shall be measured from finished grade (on the residential side of the wall) to top-of-wall.
- 3 - The use of a decorative cap course with openings will not be permitted unless the cap is at an elevation above the required wall height.
- 4 - Steps in noise walls, to accommodate changes in grade or to meet specified wall heights, will occur in 2'-0" increments.

The noise analysis along the freeway route was conducted in three phases. First, the future noise levels were calculated for each sample site with no noise attenuation present. Second, calculations were performed as if a six-foot high block CMU noise wall were in place. If this wall reduced the traffic noise to 65 dB(A) Ldn or less, the process was complete. If not, the third phase calculated sound levels with walls of increasing height until the guideline was met. In total,

42 sites along the Outer Loop were included in the noise calculations. Of these, 12 required six-foot walls, 22 require eight-foot walls, and 8 require ten-foot walls. For a detailed description of the results of these calculations, see the Appendix.

### **Recommendations**

The result of the noise analysis is a set of recommendations, in the form of policies and standards, which will be the basis of the noise mitigation program. These recommendations are organized by the areas of responsibility identified earlier: ADOT, City of Phoenix, and the private developer.

No noise walls are shown for the undeveloped areas between the Squaw Peak Freeway and Scottsdale Road. There are no residential developments currently adjacent to the freeway corridor, and needed noise walls would be the future developer's responsibility.

### **Arizona Department of Transportation**

The Noise Element maps (Figures 27 to 31) show the extent of ADOT's commitment to building noise walls. Preliminary designs for the Outer Loop include several elevated areas and grade separations where the freeway is elevated over major streets. Where residential areas are near these locations, freeway noise can have wide impacts.

Normal ADOT design practice is to include the option of guard rails or jersey barriers for safety in elevated portions. Both meet a safety standard, but only the solid jersey barrier also contributes to noise reduction (see Figure 32). Although preferred by ADOT,



jersey barriers have not been specified for this roadway, and it is possible that some sections could be bid with the open safety guard rails. Thus, it is recommended that ADOT specify the use of jersey barriers in all locations that have existing or planned nearby residential development. If construction contracts are not approved with jersey barriers, it is recommended that mitigation funds be used to pay the cost differential to allow use of the jersey barriers.

**Policy 1:** Throughout the Outer Loop in Phoenix, in order to reduce noise, ADOT should utilize concrete jersey barriers on elevated portions of the freeway, instead of metal guard rails, in order to provide added noise attenuation.

Also, the Deer Valley Core Plan calls for continuous jersey barriers at the interchange of I-17 with the Outer Loop. These will help to control noise at this massive elevated structure and give a much cleaner appearance where there are so many moving vehicles visible.

The ADOT General Plan for the freeway east of the interchange with the Squaw Peak Freeway to Scottsdale Road indicates a partially elevated roadway between the major street grade crossings. This 5-10 foot elevation is designed to carry storm drain culverts under the freeway. It would be desirable to minimize these elevated portions in residential areas to reduce the amount of noise mitigation needed and to maintain an open character for the freeway.

There are options to minimize the number of storm drainage channels in conjunction with development of the adjacent planned communities of Desert Ridge and Paradise Ridge. With fewer storm drainage channels, the number of culverts required under the freeway may be reduced and more widely spaced. The wider spacing may allow the freeway profile to be lowered between culverts, resulting in more open design and possibly cost savings.

**Policy 2:** During the design of the portion of the Pima Freeway (Outer Loop) east of the

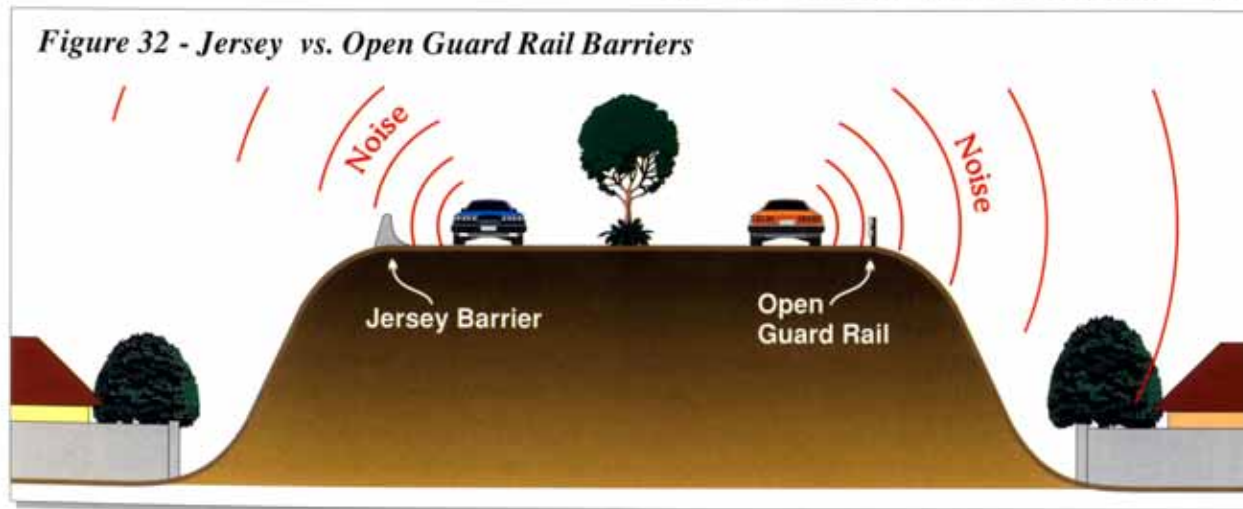
Squaw Peak Freeway, consider a drainage design which could minimize the number of culverts under the freeway, maximize the spacing between culverts, and allow the lowest possible freeway profile in this area.

### *City of Phoenix*

The city's responsibility for providing noise abatement assumes two roles: mitigation and coordination. Providing mitigation occurs at three locations, south of the freeway between 47th Avenue and 48th Lane, north of the freeway between 31st Avenue and 32nd Drive, and south of the freeway approximately between 28th and 30th Streets (using future mitigation funds). In addition, funds are reserved for the upgrading of guard rails to jersey barriers in elevated sections near residential areas where not done by ADOT.

In its coordinator role, the city requires noise walls in new developments. City Council adopted a policy in conjunction with approval of this plan setting standards for new residential development adjacent to any freeway in Phoenix. New neighborhoods will be provided with basic noise mitigation when developed, improving livability of neighborhoods next to freeways and removing the need for future public mitigation efforts.

**Policy:** The Phoenix City Council adopted, for city wide application, the noise policies and standards for new residential development contained in the Outer Loop Freeway Specific Plan.





### Private Development

The most opportune time to mitigate the impacts of freeways is when housing is being built adjacent to either existing or planned routes. There are design features as well as direct mitigation, usually with noise walls, that can substantially lessen the impact of noise on neighbors of a freeway. Thus, it is recommended that all new development adjacent to the Outer Loop be constructed in a fashion to mitigate freeway noise. Following are the specific standards to be used in conjunction with new development:

#### 1 - Noise Wall Standards:

Residential construction shall provide a noise reduction wall for all lots or parcels which abut an existing or adopted freeway right-of-way in accordance with the following policies:

**Policy 1:** Walls for noise mitigation shall be constructed to the standards listed in this section under Noise Wall Criteria.

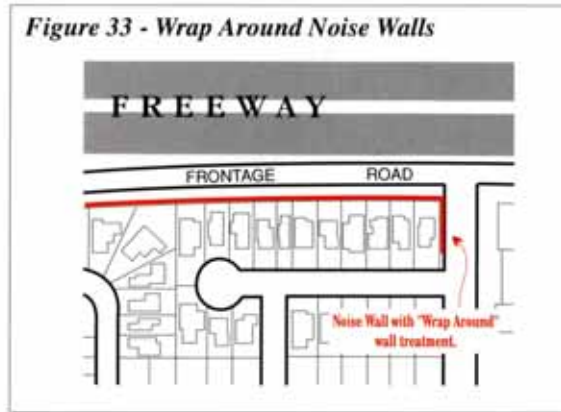
**Policy 2:** Noise wall heights will either conform to those designated in this plan or will be determined by independent engineered calculations as approved by the City.

**Policy 3:** If the required wall height exceeds 8', the developer may opt to maintain the wall at 8', and provide increased building setbacks from the freeway to achieve an equivalent noise level reduction.

**Policy 4:** Noise walls shall be constructed to "wraparound" corner building lots and those areas near intersections, unless exiting

development prohibits this treatment (Figure 33). Wrap around walls shall continue to the streetside front setback of the house.

For walls over six feet high, variances are currently required. City Council approval of an amendment to the Zoning Ordinance is recommended in order to permit higher walls for the proposed freeway noise mitigation without a variance.



#### 2 - Site Development Standards:

This section includes: site planning and construction techniques. The construction techniques provide for a quieter interior environment, while the site planning techniques improve the exterior environment.

##### Site Planning Policies:

**Policy 1:** Minimize the number of lots next to a freeway by using wide or cul-de-sac lots.

**Policy 2:** Build only one-story dwellings adjacent to the freeway.

**Policy 3:** Use cul-de-sac or deep lots to in-

crease rear-yard setbacks.

**Policy 4:** Use mature tree rows to screen views of elevated freeway segments.

##### Construction Policies:

**Policy 1:** Limit the number of building openings (windows and doors) that face the freeway.

**Policy 2:** Increase use of mass in exterior wall materials.

**Policy 3:** Use exterior wall construction which incorporates either air gaps or staggered studs.

**Policy 4:** Use double-pane windows.

**Policy 5:** Use solid or insulated exterior doors.

## Safety

One positive result of the freeway will be to reduce some of the traffic currently traveling on surface streets. Crosstown traffic, seeking a less congested and faster route through the community, will find the freeway a better alternative. Reduced traffic volume, it is anticipated, will result in an overall safer condition on surrounding streets.

Despite this overall increase in traffic safety, the construction of a freeway can raise specific safety issues in some locations along the freeway. Most can be addressed by careful planning of the freeway, while others will have to be dealt with if they become appar-



ent after the freeway is operational.

These concerns fall under three general topics:

*1 - Local traffic congestion and cut through traffic. Concentrations of traffic at interchanges and frontage roads can lead to conflicts with the adjacent land use activities, particularly when they, too, attract substantial traffic. Further, when congestion does occur, it becomes an incentive for drivers to "cut through" neighborhoods to avoid this congestion. Because it often exceeds safe speed limits and adds to normal local traffic, cut through traffic can become a serious safety hazard within a neighborhood.*

*2 - Freeways have created unusable, remnant parcels of land. Left alone, they can become havens for trash and litter as well as other undesirable activities.*

*3 - The location of the freeway can also result in cutting off local circulation, sidewalks and street lighting. Unless identified and restored, these conditions can deteriorate the quality of the neighborhood as well as create a setting for undesirable activities.*

In summary, many lessons have been learned about rules for keeping neighborhoods safe, active and desirable places to live and as desirable places to raise families and recreate. It is important when a freeway is next to a neighborhood that it does not result in those factors that lessen this safe, healthful condition.

Safety issues are identified by topic rather than by geographic segments. This is pri-

marily due to the uniformity of impacts combined with the concern to provide a safe environment along the entire length of the Outer Loop. Generally, safety issues have been categorized as school related, crime prevention, and public service related.

### **Elementary Schools**

Two schools located within or adjacent to the freeway corridor have their access only through local, residential streets. This can lead to severe traffic problems at peak traffic times. The following schools exist with this condition:

*1 - Mountain Shadows Elementary School located at 45th Avenue and Behrend. This school is in a fully developed area and access options are limited.*

*2 - Eagle Ridge Elementary School located at 13th Street and Marco Polo.*

A collector street is more desirable to handle traffic generated as well as impacts created by school buses and related traffic. School districts, the City and neighborhoods should explore means to improve access to Eagle Ridge Elementary School. As future development occurs on vacant land to the north and east of the school, direct street connections should be made to the future 16th Street and the eastbound Pima freeway frontage road. At least one of these connections should be developed to collector street standards.

In addition, Park Meadows Elementary School fronts on 35th Avenue, a major street. The fact that this school is also adjacent to a freeway interchange further highlights safety concerns.

To improve pedestrian and bicycle access, it would be advantageous to improve the access to the schoolyard at the northeast corner of the property. This could include modifications to the walkways under the 35th Avenue/Outer Loop bridge. Further, a new sidewalk could be constructed offset from 35th Avenue. Any space lost by the school in this pursuit could be offset if the school were to acquire the remnant ADOT parcel north of the school.

Issue 1.5 of the Land Use section (p. 10) calls for the remnant parcel north of the school to be incorporated into the playground area of the school. The City will work with the school, if interested, to construct safer access to the property along 35th Avenue.

### **Crime Prevention**

#### **Lighting**

When the edge of an existing neighborhood is purchased for freeway right-of-way, as a result of freeway construction, street lighting is sometimes removed. Lighting from the freeway may, ultimately, be insufficient to provide the illumination needed for a safe area. New lighting may be required as part of the freeway construction to compensate for these deficiencies. Also, when pedestrian paths and bikeways are placed within the corridor, additional safety can be



achieved by increased lighting for them. Placement of walls and landscaping can further the need for additional lighting. Any area with insufficient illumination should be reported to the City for attention. Also, all lighting in underpasses and tunnels should be vandal resistant.

However, lighting should not be excessive, creating a negative effect on adjacent residences or recreational areas. A particularly sensitive location is the Reach 11 recreation area in the vicinity of the interchange with the Squaw Peak Freeway.

### ***Tunnels and Underpasses***

To ensure safety in roadway underpasses and tunnels which have provisions for pedestrian or equestrian access, the following shall be provided:

- 1 - Police call boxes.*
- 2 - Tunnel dimensions to allow access by police vehicles.*
- 3 - Vandal resistant lighting.*
- 4 - Antenna leads for communications within tunnels.*

It is recommended that ADOT review the design of all underpasses and tunnels with the Phoenix Police Department to ensure the adequacy of these features.

### ***Public Service***

Upon completion of freeway construction,

the Police and Fire Departments need to evaluate and possibly adjust their district service boundary locations to compensate for interruptions caused by the new transportation facility. In other areas of the City, these types of adjustments have aided field officers in achieving their neighborhood protection objectives.

## **Neighborhood Enhancement**

Preservation of viable neighborhoods has become one of the highest commitments of the City of Phoenix. As the focus of this mitigation program is on freeway and neighborhood compatibility, any reasonable effort to assure that neighborhoods and residential areas adjacent to the freeway remain stable should be pursued.

In addition to specific land use, noise, safety and circulation impacts, the physical presence of a freeway makes it a part of the environment of adjacent neighborhoods. With the freeway located along Beardsley Road, the degree of community isolation, loss of neighborhood identity, and property value impacts will be less than experienced when freeways are routed through existing neighborhoods. However, where subdivision lots are adjacent to an elevated portion of the freeway, the resulting glare, reduction of privacy and loss of peaceful image can be disturbing.

The following neighborhood enhancement/

preservation policies will help mitigate the physical presence and environmental effects of the freeway on the community:

***Policy 1:*** Residential privacy should be reasonably maintained with emphasis on minimizing direct views between freeway traffic and nearby housing or outdoor living areas.

***Policy 2:*** The design and layout of new residential subdivisions should minimize impacts of the freeway.

***Policy 3:*** Residential land uses should be shielded from freeway glare, sun-reflecting surfaces and vehicle headlights.

***Policy 4:*** Remnant parcels, drainage ways, detention basins and excess right-of-way and easement areas should be utilized for potential open space and pedestrian activity.

Methods for implementing neighborhood enhancement and preservation policies are varied and can be helpful in improving neighborhood quality while also achieving mitigation. They include strategies such as:

- \* *Freeway designs incorporating screen walls, landscaping and berms for privacy.*
- \* *Restoration of local street connections to maintain internal neighborhood pedestrian and vehicular circulation patterns.*
- \* *Adequate maintenance of properties purchased in advance of construction, and prudent removal of structures upon being vacated.*



\* *Creation of a positive edge for the freeway with neighborhoods through use of berms and landscaping which mirrors the local character, creation of focal points, use of decorative materials and reinforcement of local neighborhood themes or identity.*

\* *Design of an identity for the freeway which responds to local aesthetics. Involvement of the community in identification of positive features and design for the freeway.*

\* *Use local focal urban centers, such as village cores, to define the freeway character by the use of graphic designs, materials, patterns and colors. In particular, the Outer Loop freeway should respond to the Deer Valley Core design themes using desert and petroglyphic symbols. As the Desert Ridge core plans evolve, coordination with the freeway design in that area should respond to local design themes.*

The typical freeway cross section for Segments 1-4, between 51st Avenue and Cave Creek Road, includes a frontage road paralleling both sides of the mainline highway. These one-way roads, along with local streets, provide greater separation between the mainline, and private property. However, this highway configuration does allow some of the traffic to be closer to residential lots. Landscape maintenance responsibility will include city participation between the access controlled mainline and the private property.

### Landscape Enhancement

Following are recommendations for additional landscape enhancement for each roadway segment:

#### **Segment 1** **51st to 35th Avenues** **(Figure 35)**

##### **1.1**

East of 51st Avenue, intensify the quantity of proposed landscaping on the elevated north and south facing earth slopes of the mainline where multi-family residential is proposed in the Phoenix General Plan.

##### **1.2**

In the Santa Fe Ridge neighborhood, south of Skunk Creek between 43rd Avenue and Wahalla Lane, screen wall closures are proposed at the cul-de-sac terminations facing the freeway. Additional landscaping is appropriate here. Trees, shrubs, and ground cover complimenting what currently exists on adjacent private property, is to be located between the turnarounds and the wall closures. Where cul-de-sac screen walls are not existing they should be added (Figure 34).

##### **1.3**

West of 35th Avenue on the elevated south facing slope of the mainline structure where residential development is east of 37th Avenue. Add screen trees to the overpass slopes.

#### **Segment 2** **35th to 19th Avenues** **(Figure 37)**

##### **2.1**

In the vicinity of 33rd Avenue, single-family homes are adjacent to both sides of the ele-







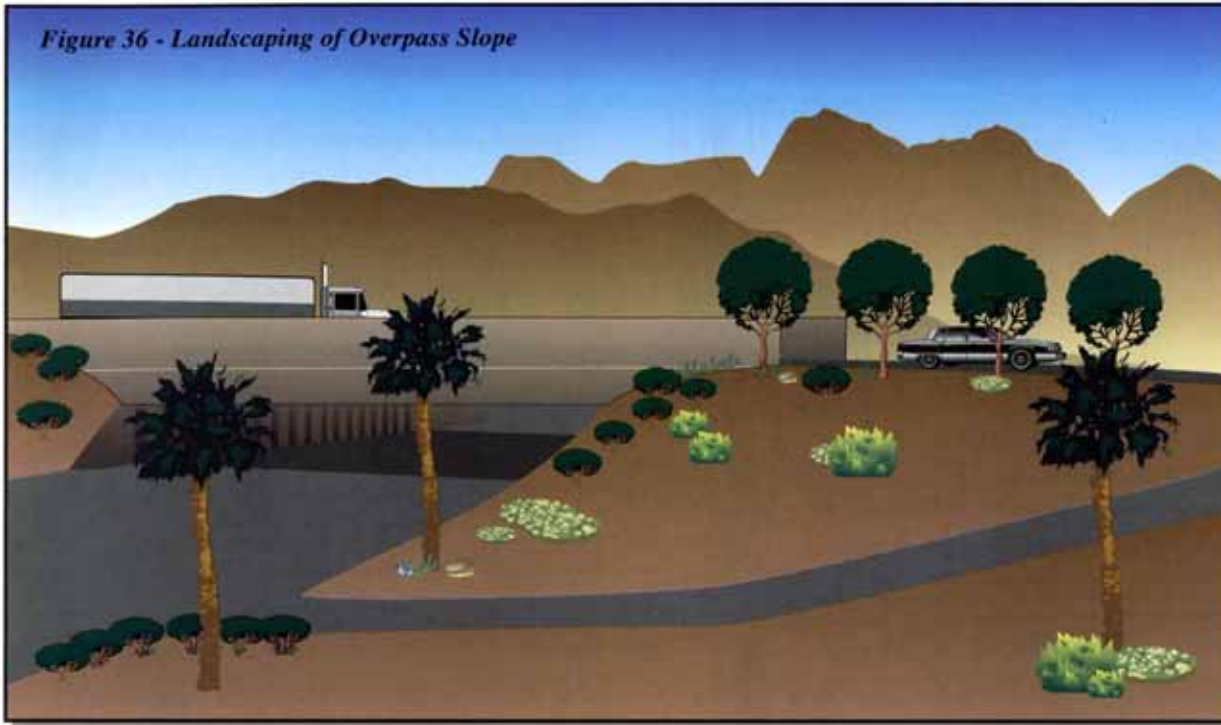
Figure 35  
**LANDSCAPE ENHANCEMENT**  
 Outer Loop Freeway - Loop 101  
 Segment 1: 51st Avenue to 35th Avenue



- Legend
- Landscaping
  - ★ End of Cul-de-Sac Landscaping
  - - - Study Area Boundary



*Figure 36 - Landscaping of Overpass Slope*



vated freeway. Four homes north of the freeway will front-out to the elevated mainline structure. However, the presence of a local street, drainage channel and a frontage road extend the distance between the homes and the closest lanes of traffic to over 350 feet. Lots on the south side are vacant. When homes are constructed, they would be approximately 150 feet from the freeway traffic and would have a side-on configuration. Landscaping is needed on both sides of the freeway to screen and transition these areas from the freeway.

### 2.2

Supplemental landscape enhancement is appropriate on the elevated earth slopes north and south of the mainline freeway east

of 35th Avenue to screen nearby residential development.

### 2.3

Further landscape enhancement is appropriate along the north slope of the elevated mainline freeway between 33rd Avenue and 31st Avenue in recognition of the existing and future multi-family residential uses (Figure 36). In addition, the Deer Valley Core Plan calls for a landscape buffer and planting screens to soften the view of the freeway interchange. ADOT and the core developers should share in achieving this objective.

### 2.4

West of 21st Avenue, north of Escuda Drive,

landscaping is needed due to homes facing the elevated (6' high) mainline structure.

### 2.5

Provide a row of screen landscaping on the west side of the detention basin at the north-east corner of 21st Avenue and the freeway for the adjacent homes.

## *Segment 3 19th Avenue to 7th Street (Figure 38)*

### 3.1

Additional landscape enhancement is appropriate just east of 19th Avenue to screen the elevated structure from existing single-family and multifamily land uses in the area. Trees and shrubs should be placed on the earth slopes, flanking both sides of the freeway mainline.

### 3.2

Landscape enhancement is appropriate to buffer the homes facing or siding on Pontiac Drive between 10th Avenue and 14th Avenue because the on-ramp and access roads are near these homes.

### 3.3

Southeast of 7th Avenue and the freeway, homes were removed to widen the right-of-way needed for the freeway. Homes which were in the middle of a subdivision are now adjacent to the freeway corridor. Additional landscaping, on both sides of the noise wall is appropriate between Wahalla Lane and the frontage road from 7th to 3rd Avenues.



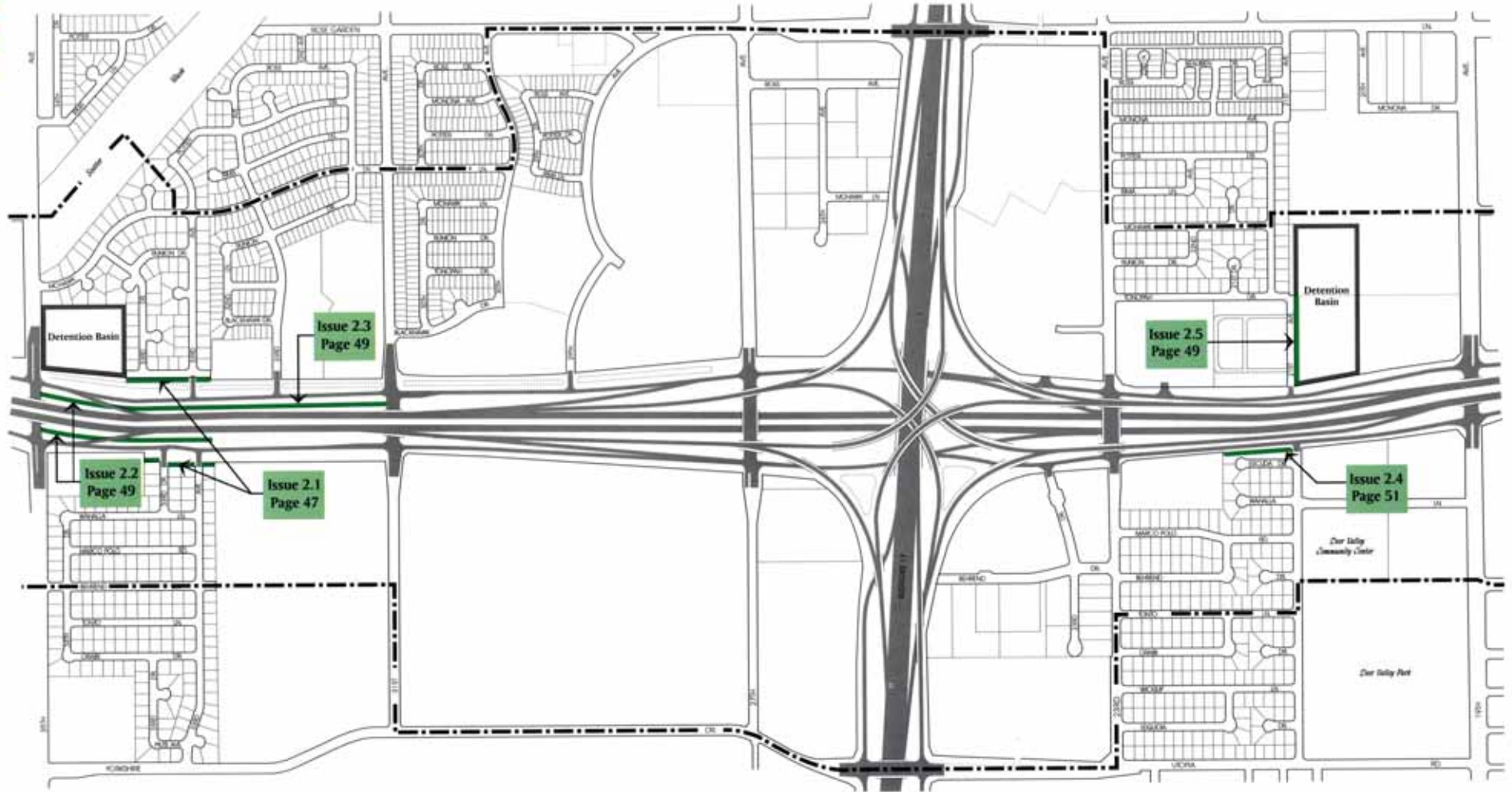


Figure 37  
**LANDSCAPE ENHANCEMENT**  
 Outer Loop Freeway - Loop 101  
 Segment 2: 35th Avenue to 19th Avenue



- Legend
- Landscaping
  - - - Study Area Boundary



### 3.4

When a subdivision develops at the southwest corner of 7th Street and the freeway, an 8 foot high noise wall will be required. While this will reduce the noise, the 23 foot high freeway overpass and traffic will still reduce privacy. Heavy landscaping placed on the southwest slope of the freeway will mitigate this impact.

#### ***Segment 4 7th Street to Cave Creek Road (Figure 39)***

#### 4.1

An existing residential subdivision, located on the south side of the freeway, west of 12th Street, has 25 lots backing up to the freeway corridor. This subdivision, known as Country Hills Amended, was built subsequent to establishing the freeway alignment. The design of the subdivision acknowledged the freeway acquisition line. The mainline freeway ramps begin at grade at the west point of the subdivision rising to about 14 feet above grade at 12th Street.

This subdivision has very narrow lots, small backyards and a number of swimming pools near backyard fences. Most of the homes are two-story units. High profile landscaping in the strip between the frontage road and the subdivision wall is not advised due to difficulty in maintenance. Additional landscape enhancement placed between the mainline structure and the frontage road is recommended.

### 4.2

The Morningside Subdivision is located on the north slope of Buffalo Ridge Mountain, between 16th and 20th Streets. This subdivision was built subsequent to establishing the freeway alignment and the design of the subdivision acknowledged the freeway right-of-way line. Some lots contain large homes with minimal backyards which will be located adjacent to the eastbound freeway frontage road. The subdivision is elevated slightly above the mainline of the freeway at this location. Additional landscape enhancement should be placed between the mainline of the freeway and the frontage road to reduce the visual impact on the 12 homes most directly affected.

### 4.3

Further landscaping enhancement is appropriate between 22nd Street and Tonapah Drive on the north side of the freeway. This will buffer the adjacent existing homes from the elevated freeway.

#### ***Segment 5 Cave Creek Road to Squaw Peak Freeway***

No residential subdivisions were located adjacent to the freeway corridor at the time of alignment hearings. A two-phase subdivision has recently been built from 28th to 30th Streets between the freeway and Beardsley Road. The freeway is at grade in this location and there are no freeway frontage roads. The City requested that the developer install an 8 foot high noise wall con-

tiguous to the freeway. An 8 foot wall was provided, but the wall was not built to noise attenuation standards. A replacement noise wall is proposed in conjunction with the next phase of mitigation funding.

There are cul-de-sac lots along the freeway but many are occupied by two story homes. Additional mitigation is no longer feasible.

#### ***Segment 6 & 7 Squaw Peak Freeway to Scottsdale Road***

Residential development does not currently exist adjacent to the freeway corridor within these two segments. In June 1990, the City Council approved the Desert Ridge Specific Plan and General Plan amendments which covers all of the Outer Loop corridor in these segments except between 64th Street and Scottsdale Road. This master planned community is currently on Arizona State trust land. The Desert Ridge Specific Plan is a regulatory document and includes a land use plan, circulation concept plan and a series of other plans and policy documents. The plan includes a village core, commercial and residential opportunities and a complete planning framework to create a desert community.

The alignment of the Pima Freeway is fixed through Desert Ridge and the right-of-way has been purchased by ADOT. An "interim" freeway is recognized by the plan, extending east from I-17 to Desert Ridge. The interim freeway is to include permanent

*(continued)*





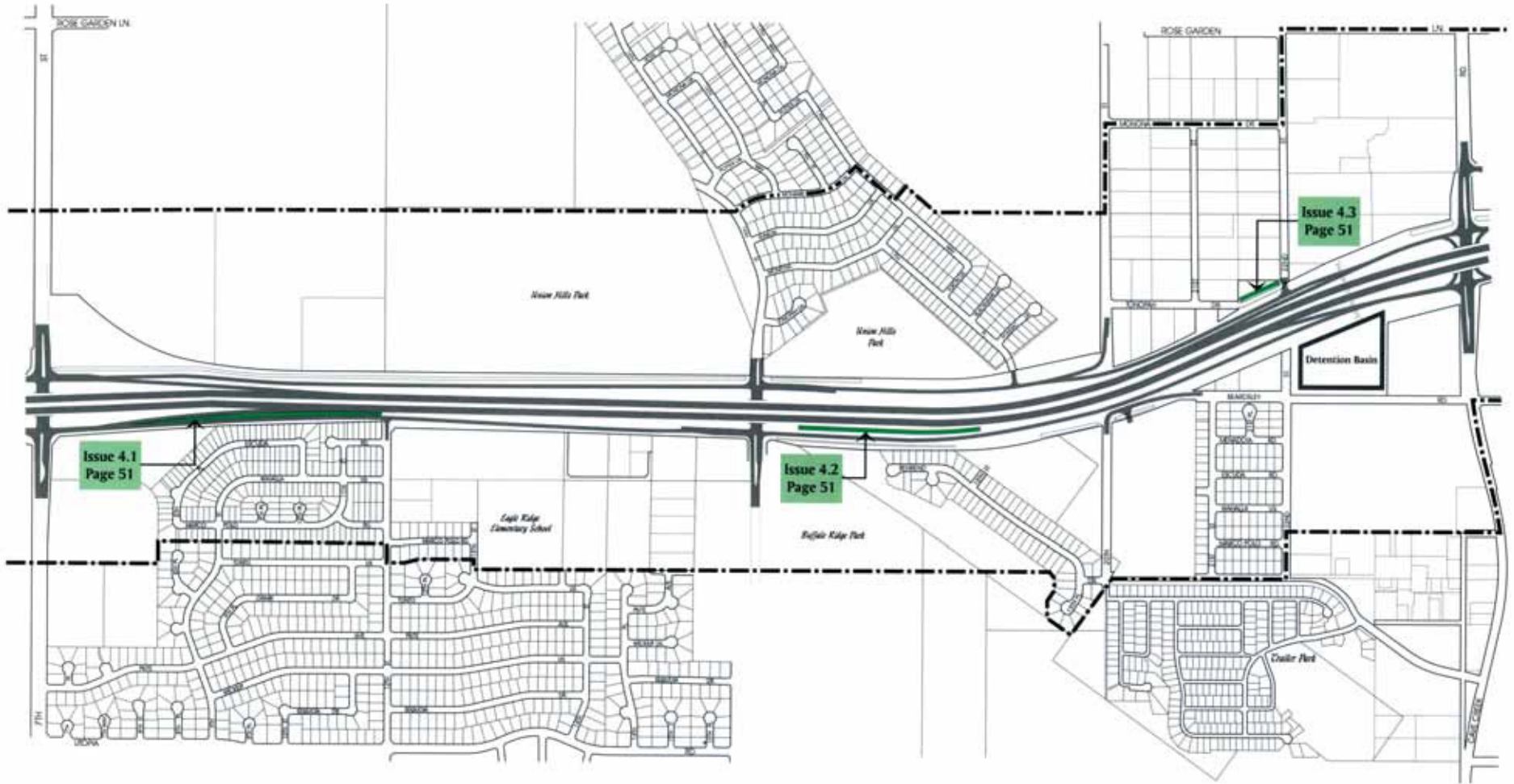


Figure 39  
**LANDSCAPE ENHANCEMENT**  
 Outer Loop Freeway - Loop 101  
 Segment 4: 7th Street to Cave Creek Road

- Legend
- Landscaping
  - - - Study Area Boundary





drainage facilities, four travel lanes and at-grade signalized intersections with major arterials.

### 6.1

Medium density residential and rural residential are proposed adjacent to the freeway just east of 40th Street. Passing underneath the freeway, 40th Street will remain at grade. Implementation of the four neighborhood enhancement/ preservation policies, listed at the beginning of this element, are to be carried out as part of the developer's responsibility as each project is brought in for review.

### 7.1

Residential development is proposed along the north side of the freeway between 56th and 64th Streets. Implementation of the four neighborhood enhancement policies listed at the beginning of this element, should be carried out in conjunction with approval of plans for individual developments. Special attention should be given to noise reduction, visual screening and landscaping to soften the highway berms.

### 7.2

Residential development to be constructed adjacent to the freeway between 64th Street and Scottsdale Road should incorporate implementation of the four general policies of this plan element and are the responsibility of the individual developments.

#### **Screen Walls**

Screen walls can be used in blocking unwanted views of the freeway from adjoining

areas. These walls would provide some additional noise protection, but are justified primarily for aesthetic reasons. They also offer an important psychological benefit of removing constant views of the freeway and vehicles from the neighborhood environment.

Plans for the ultimate freeway and individual developments are not presently completed east of I-17. It is difficult to pre-judge locations where screen walls would be most needed. In most cases this screening would be provided as part of new development projects, however it is recognized that in some circumstances, it will not be possible to create screening in this fashion. The city will, therefore, reserve future mitigation funds for screen walls, but will determine appropriate locations once the freeway is open to traffic and development plans are in hand.

## ***Recreational Trails & Bikeways (Figures 40-46)***

### ***Introduction***

The Trails Element locates bicycle lanes/ways, bicycle paths, and recreational trails along the Outer Loop Freeway (Figures 40 through 46). These trails and paths are consistent with the adopted Phoenix Bikeway System, and plans of the City of Phoenix Parks, Recreation and Library Department. The General Plan for Phoenix contains many policies in support of bicycle paths and recreational trails.

Bicycle paths help to achieve important objectives. When commuters use bicycles to travel to and from work, they also help to reduce traffic congestion and improve air quality. This plan proposes ensuring continuity of bike paths to support a circulation system needed by the commuter bicyclist. Paths also integrate with the city's recreational bike trail system.

Recreational trails are an integral part of the city's overall recreation system. These trails can accommodate horseback riding, hiking, running and mountain biking. This plan proposes a recreational trail system that connects several open space and recreation areas and ensures trail continuity adjacent to the Outer Loop Freeway.

### ***Trail/Bikeway Policies***

The goal is to continue trails through the freeway corridor and integrate them with other trail systems along the length of the corridor. Policies to help achieve this goal are as follows:

***Policy 1:*** ADOT should provide designated bikeways and recreational trails in the portion of the freeway east of I-17. These shall include pathways in the right-of-way, outside of the access control line, necessary lighting and connections to local streets.

***Policy 2:*** In the portion of the freeway east of I-17, ADOT should provide sufficient openings and roadway width in all major street crossings of the freeway to accommodate bike routes and recreation trails. Safe routing of trails at freeway interchanges should be designed.



**Policy 3:** *As conditions of rezoning or site plan/subdivision plat approval, new development should construct adjacent bike paths/ways and recreational trails that were not built by ADOT to ensure continuity through new or redeveloped areas.*

**Policy 4:** *Install adequate lighting in accordance with accepted standards along all trails and paths. Where recreational trails, bike paths or bike lanes are on, or adjacent to City streets, additional lighting may not be required. Underpasses will be lighted 24 hours a day with high pressure sodium lighting. Underpasses over 150' long will also have natural light wells.*

**Policy 5:** *Trails for horses and bicycle paths will be separated wherever possible.*

**Policy 6:** *Use the freeway right-of-way for needed recreational trails and bikeways whenever possible.*

**Policy 7:** *Design and construct recreational trails and bicycle paths in accordance with accepted standards. Provide measures to preclude access, as much as possible, by unauthorized vehicles.*

**Policy 8:** *Make appropriate connections, where needed, between adjacent local streets and bike paths.*

**Policy 9:** *After the City accepts each element of the bicycle path and recreational trail system from ADOT as complete, the City will maintain that system.*

Two critical locations for trail continuity

exist on the Outer Loop at the Deer Valley Core/I-17 interchange and at the Cave Creek Road/CAP crossing areas.

Within the Deer Valley Core and I-17 interchange it is important that the freeway design provide for a bike trail through this area, either as a striped lane on the frontage roads or as a separate trail located on the shoulder. Unfortunately, the recently completed I-17 bridge crossings at Rose Garden Lane and at Yorkshire/Utopia do not include provisions for either a bike lane or a recreational trail crossing. It is recommended that funds to upgrade these structures to provide east-west continuity of these trails across I-17 be included in any future city bond program which includes park and recreation facilities.

Design of the freeway, east of Cave Creek Road does not accommodate adjacent trail routes. This plan shifts the trails to Beardsley until resuming a freeway alignment east of the CAP. To accomplish this, it is recommended that any zoning or development approvals on Beardsley, between 21st Street and the CAP include provisions for bike and recreation trails as shown in this plan. Further, ADOT should ensure that the designated bike and recreation trails are accommodated in the design of the Outer Loop/Squaw Peak interchange as illustrated in Figure 44.

Where roadways cross the CAP, there will be a significant difference in elevation between the trails crossing the canal and those located on either side of that facility. To connect these trails systems, it will be neces-

sary to build a system of connections along 32nd Street and the Squaw Peak Freeway where they cross the CAP. These connections would parallel 32nd Street and the Squaw Peak Freeway, but stay at grade where the roadways elevate to cross the canal to connect with the trails on the north and south sides of the CAP. Designs for both these roadways should incorporate these trail connections.

Reference should also be made to the City Council approved Squaw Peak Freeway Specific Plan (p. 68) regarding bike path and trail connections at the interchange. The Squaw Peak Plan specifies that bikeways and recreational trails must have convenient connections for users through this interchange.

The City recommends that ADOT provide three bridge under-crossings of the freeway of sufficient height and width for: recreational trails, bicycle paths, open space continuity, and native wildlife crossings. The three locations are as follows:

- 1 - Cave Creek Wash at approximately 3rd Street.
- 2 - Just east of 16th Street to connect Union Hills Park and Buffalo Ridge Park, however the bike lane will follow 16th Street.
- 3 - On the east side of the CAP Canal, in Reach 11.



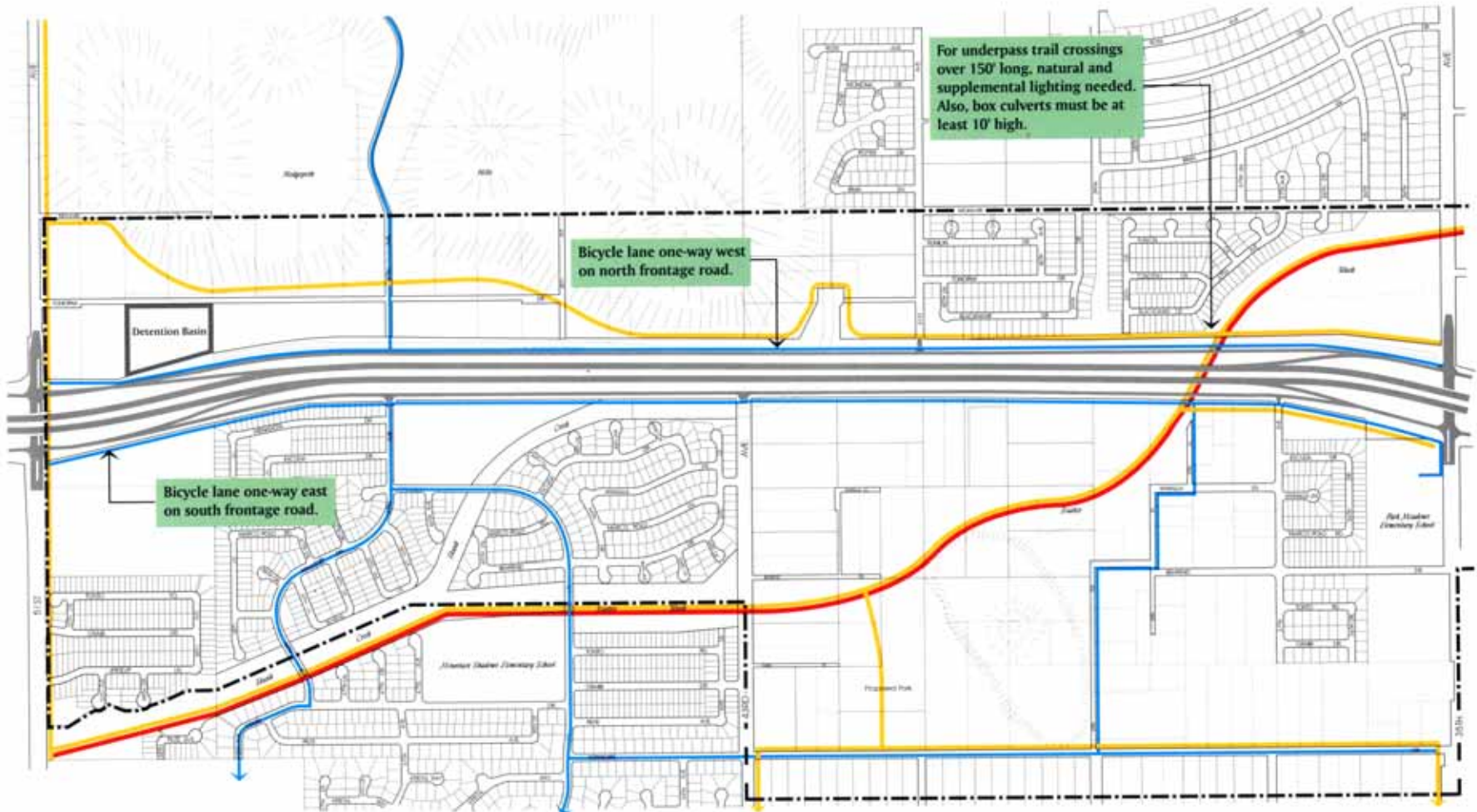


Figure 40  
**RECREATIONAL TRAILS AND BIKEWAYS**  
 Outer Loop Freeway - Loop 101  
 Segment 1: 51st Avenue to 35th Avenue



- Legend**
- Recreational Trail
  - Bicycle Path
  - Bicycle Lane/Route
  - Study Area Boundary



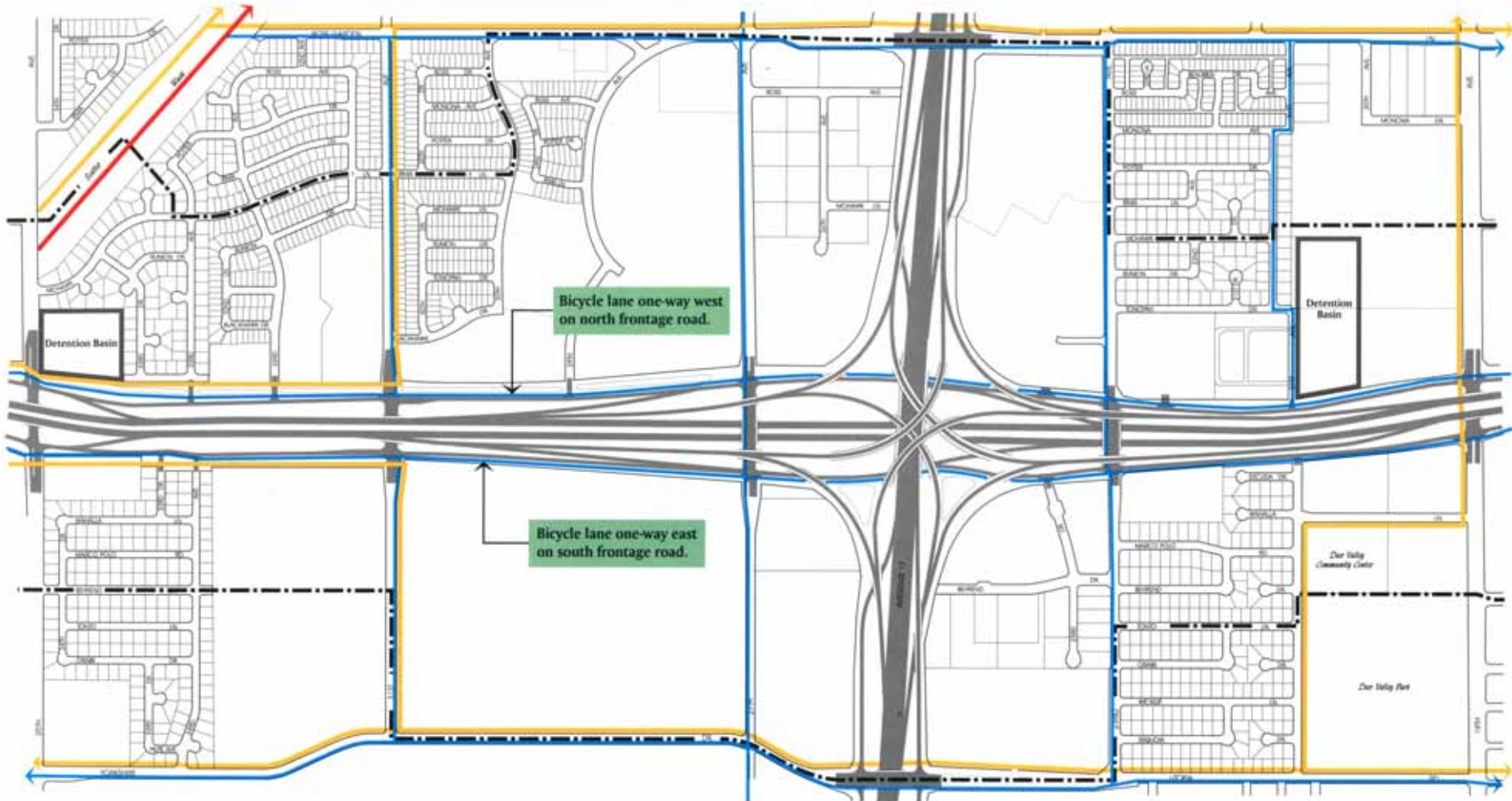


Figure 41  
**RECREATIONAL TRAILS AND BIKEWAYS**  
 Outer Loop Freeway - Loop 101  
 Segment 2: 35th Avenue to 19th Avenue

**Legend**

- Recreational Trail
- Bicycle Path
- Bicycle Lane/Route
- - - Study Area Boundary

Note: Bike lanes on frontage roads between 31st Avenue and 23rd Avenue are only five-foot wide.

0 600 1320

GRAPHIC SCALE IN FEET







Figure 42  
**RECREATIONAL TRAILS AND BIKEWAYS**  
 Outer Loop Freeway - Loop 101  
 Segment 3: 19th Avenue to 7th Street



- Legend
- Recreational Trail
  - Bicycle Path
  - Bicycle Lane/Route
  - - - Study Area Boundary



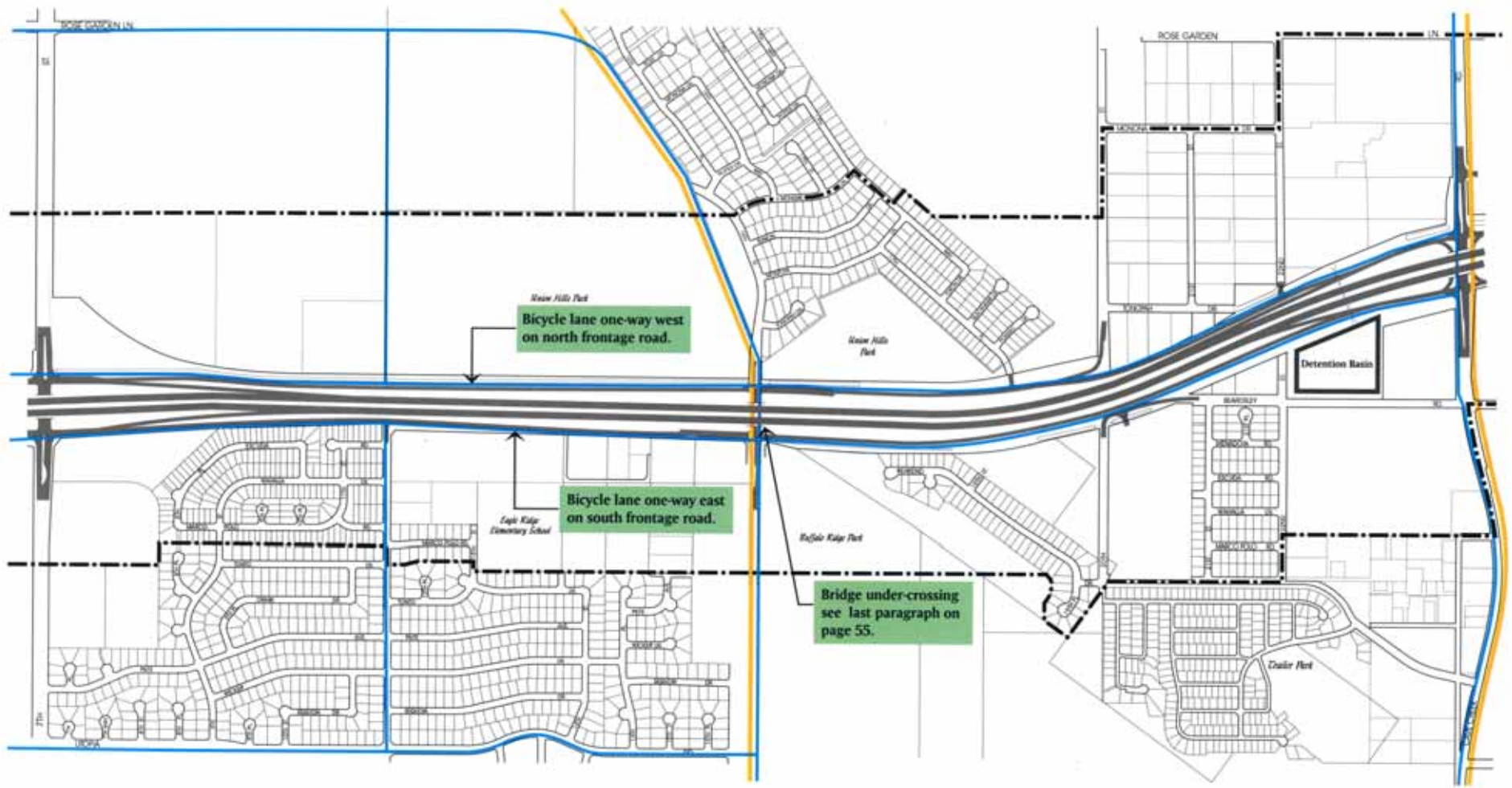
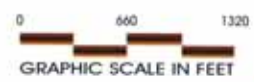


Figure 43  
**RECREATIONAL TRAILS AND BIKEWAYS**  
 Outer Loop Freeway - Loop 101  
 Segment 4: 7th Street to Cave Creek Road



- Legend**
- Recreational Trail
  - Bicycle Path
  - Bicycle Lane/Route
  - - - Study Area Boundary





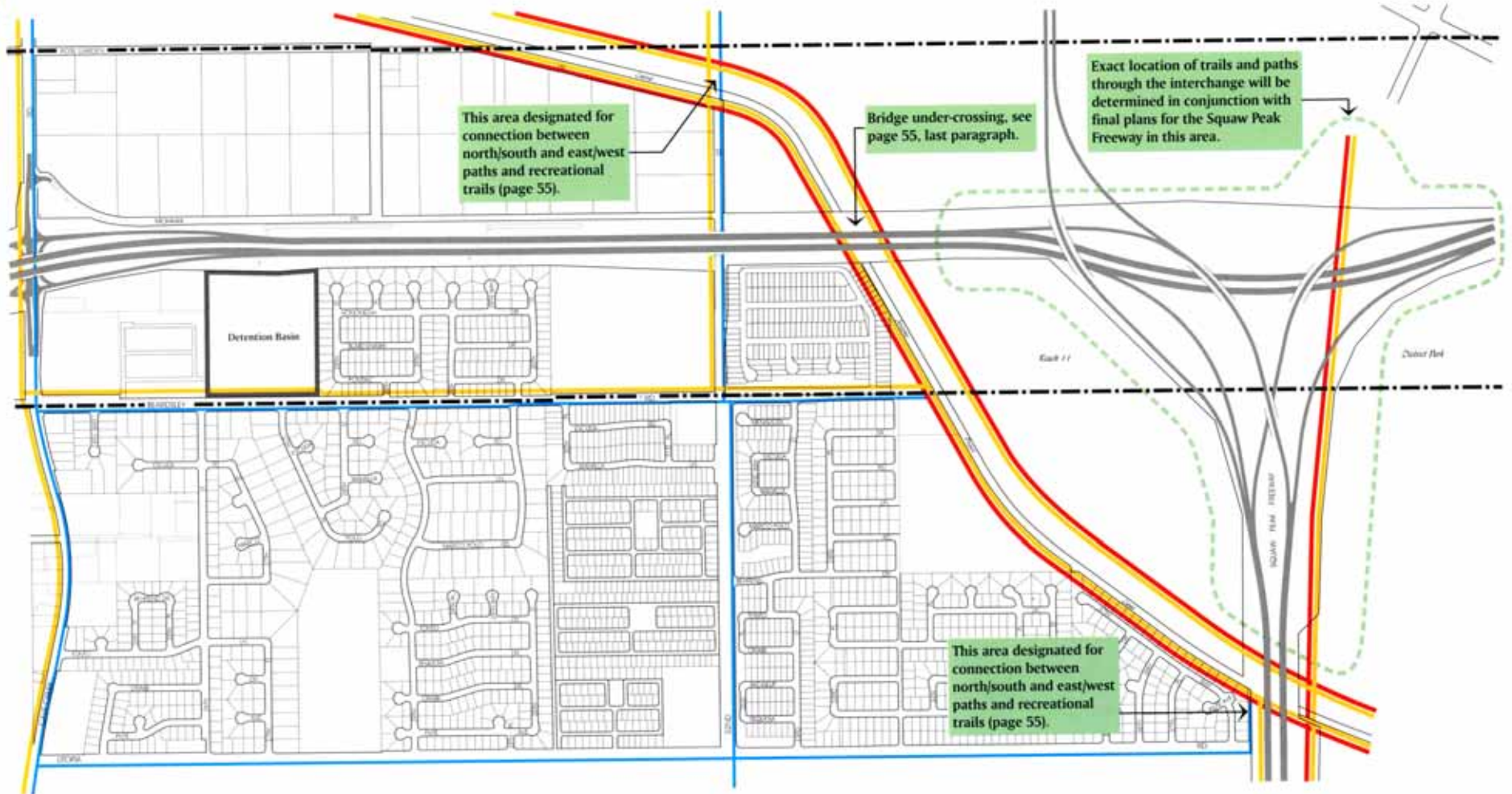
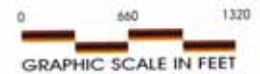


Figure 44  
**RECREATIONAL TRAILS AND BIKEWAYS**  
 Outer Loop Freeway - Loop 101  
 Segment 5: Cave Creek Road to Squaw Peak Freeway



- Legend
- Recreational Trail
  - Bicycle Path
  - Bicycle Lane/Route
  - - - Study Area Boundary



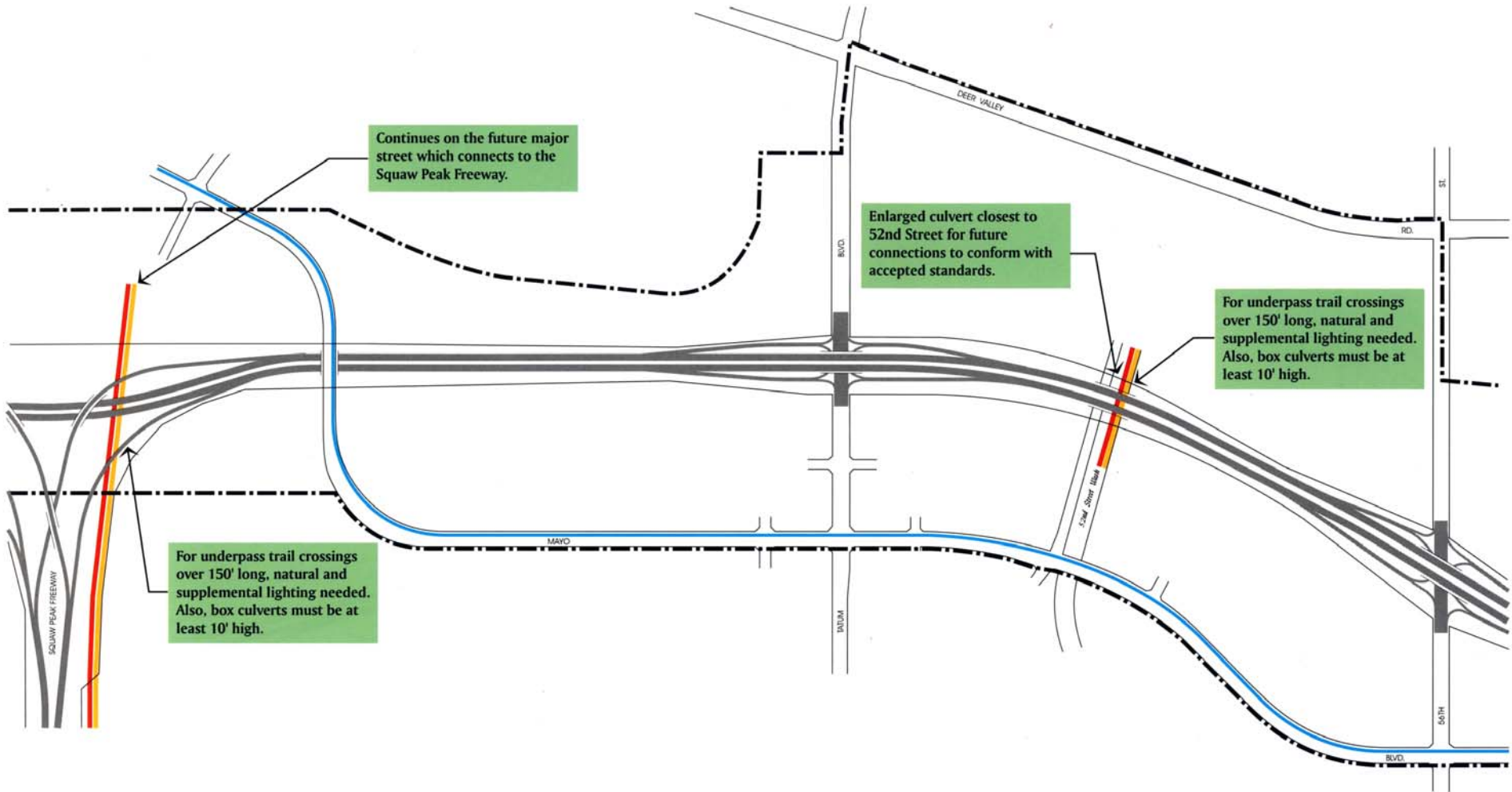
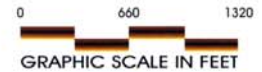


Figure 45  
**RECREATIONAL TRAILS AND BIKEWAYS**  
 Outer Loop Freeway - Loop 101  
 Segment 6: Squaw Peak Freeway to 56th Street Alignment



Legend

- Recreational Trail
- Bicycle Path
- Bicycle Lane/Route
- - - Study Area Boundary





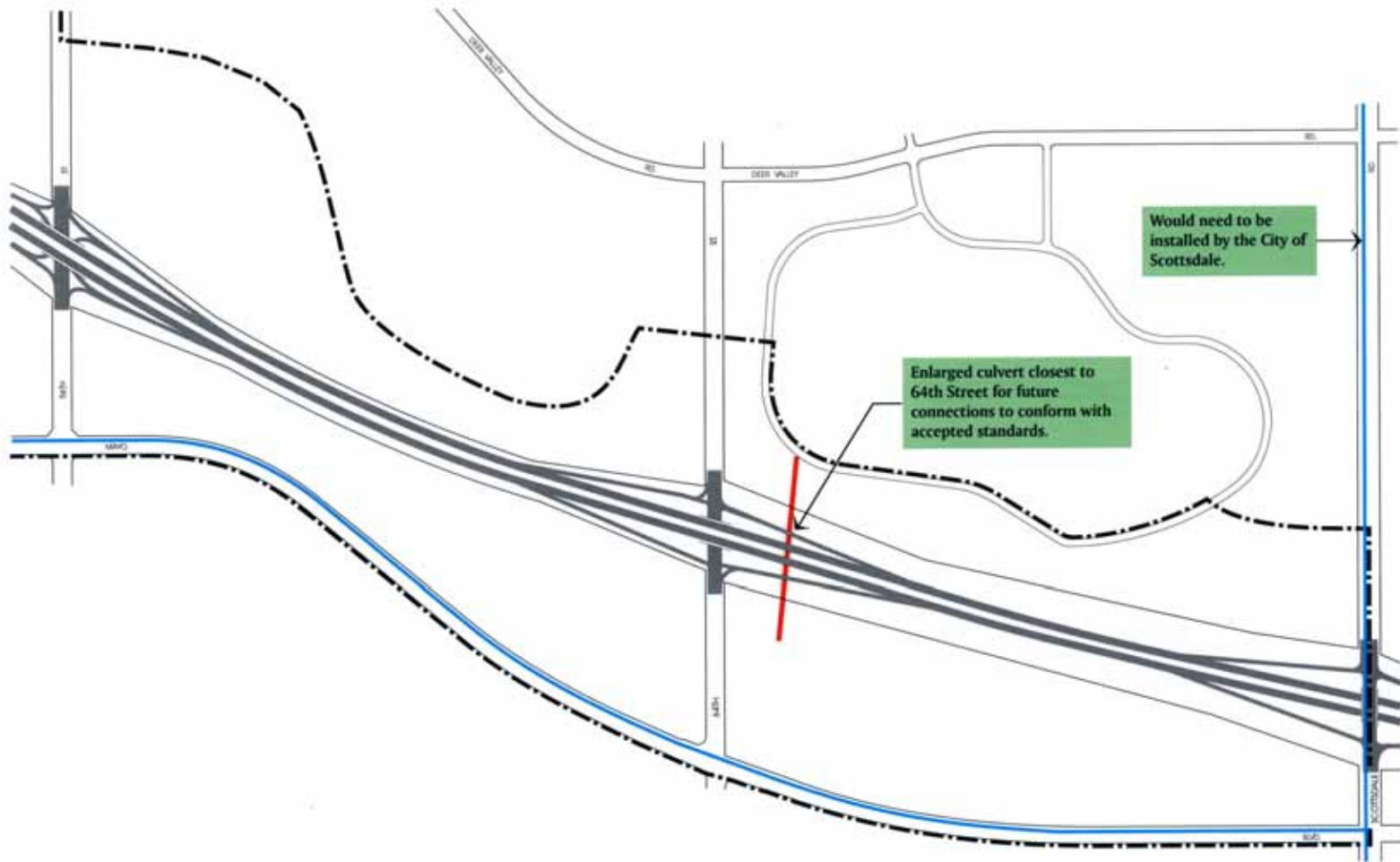


Figure 46  
**RECREATIONAL TRAILS AND BIKEWAYS**  
 Outer Loop Freeway - Loop 101  
 Segment 7: 56th Street Alignment to Scottsdale Road



- Legend
- Recreational Trail
  - Bicycle Path
  - Bicycle Lane/Route
  - - - Study Area Boundary



■ ■ ■ IMPLEMENTATION



## Implementation

In addition to adoption of mitigation policies, a benefit of the Freeway Mitigation program is providing funding for projects to implement adopted plans. Adoption of the plan document, along with the recommended General Plan amendments, will establish direction for city agencies in their activities near the Outer Loop Freeway. By approving this plan, the City Council has also set their policy for mitigation features desired when reviewing future freeway designs proposed by ADOT.

The mitigation measures for the Outer Loop corridor are a combination of policies, guidelines, development standards, land use modifications, and improvement projects. The improvement projects requiring city expenditures will be funded by the "Freeway Mitigation, Neighborhood Stabilization and Slum and Blight Elimination" bond. This bond was approved by Phoenix voters in April 1988.

The Noise Mitigation Standards and Site Development Standards in the Noise Element of this plan should be included in the City Design Standards as an amendment to those standards.

The present Outer Loop schedule has no construction completion scheduled for this facility east of I-17 during the term of the 1988 bonds (1988-2001). Therefore, only bond funded implementation projects falling between 51st Avenue and Interstate 17 will be covered with this plan. Projects located

east of I-17 would be funded by a future, presently unidentified, revenue source. These projects are as important as those west of I-17, and the table on page 91 identifies important uses for future freeway mitigation funds.

The interim freeway is proposed to be constructed between I-17 and 56th Street by 1999. The interim facility would use the freeway frontage roads west of Cave Creek Road. However, most proposed mitigation features in this area are located on the main-line roadway. For this reason, the plan does not propose installing mitigation projects on the interim roadway, although all design and development policies will still apply.

The following pages list the actions recommended and expected costs to the mitigation program. It must be noted that project costs are estimates only. Funds may shift from project to project in order to ensure that all projects are completed satisfactorily. However, the total budget approved for this freeway will not be exceeded.

Aside from these specific projects are the policies, standards and guidelines that were recommended as part of this document. These are important, and to be followed by city staff to ensure successful implementation of this plan.

Finally, actions have been divided into two tables to correspond with the freeway timing discussed earlier. Estimated mitigation costs for the entire plan area are as follows:

51st Ave. To Interstate 17:	\$ 950,000
I-17 to Scottsdale Rd.:	\$1,100,000*
Total:	\$2,050,000

\*Not funded at this time.

## 51ST AVENUE to INTERSTATE 17

<i>ELEMENT</i>	<i>DESCRIPTION/LOCATION</i>	<i>RECOMMENDED ACTION</i>	<i>PROJECT COST</i>
Land Use	Hedgpath Hills	Consult with Parks Department on methods for acquisition of these hills as a public recreation area.	\$ 0
Land Use	Hill located at 39th Avenue and Yorkshire Drive	Consult with Parks Department on methods for acquisition of this scenic feature and incorporation into the adjacent park.	0
Circulation	35th to 39th Avenues, Outer Loop to Yorkshire Drive	Coordinate a task force to develop circulation master plan for this area.	0
Noise	Noise walls as located in Figures 27-31 (City responsibility)	Construct walls as detailed in this plan (2,400 linear feet).	270,000
Noise	Entire Corridor	Implement noise wall policies, guidelines and standards, in conjunction with zoning and development review.	0
Noise	Overpass ramps	Incremental cost to use jersey barriers in place of guard rails.	170,000
Safety	Entire Corridor	Provide assistance to the community to alleviate safety issues as needed.	100,000
Safety	Park Meadows Elementary School	Construct a safer access to the school grounds from 35th Avenue. Consult with school.	100,000
Neighborhood Enhancement	Screening of Freeway Lighting	Where glare from freeway lighting is a problem, work with ADOT to provide light-standard baffles.	10,000
Neighborhood Enhancement	Landscaping, Screen Walls and Community Amenities	Work with ADOT or a private consultant to provide the additional landscaping in prescribed locations for the residential areas along the facility.	300,000

**TOTAL**      \$ \* 950,000

\* Flexibility is authorized within individual expenditure items so long as the total expenditures do not exceed this amount.



# INTERSTATE 17 to SCOTTSDALE ROAD

*Not Currently  
Funded*

<b>ELEMENT</b>	<b>DESCRIPTION/LOCATION</b>	<b>RECOMMENDED ACTION</b>	<b>PROJECT COST</b>
Land Use	North side of Pontiac Drive between 10th and 13th Avenues	If, after construction of the mainline freeway, there is significant impact on these lots, additional mitigation will be considered.	Maximum of \$ 300,000
Land Use	NWC of 7th Street and the Outer Loop	Process a General Plan Amendment from 5-15 Du/Ac and Commercial to Industrial.	0
Land Use	NWC of 12th Street (extended) and the Outer Loop	Process a General Plan Amendment from 5-15 Du/Ac to 2-5 Du/Ac and Industrial to Commercial.	0
Land Use	Cave Creek Road to 32nd Street, Rose Garden Lane to the Outer Loop	Process a General Plan Amendment from Industrial to 0-2 Du/Ac. This amendment may be extended to include additional land to the east and west.	0
Land Use	Cave Creek Road to 32nd Street, Rose Garden Lane to the Outer Loop	Process a General Plan Amendment to remove the Special Study Area designation from this area.	0
Noise	Overpass ramps	Incremental cost to use jersey barriers in place of guard rails.	210,000
Noise	Southern Freeway right-of-way between 28th and 30th Streets, Autum Hills Subdivision	Upgrade existing sound wall to 8 feet high, 8 inch thick masonry block.	140,000
Safety	Corridor wide	Provide assistance to the community to alleviate traffic and pedestrian safety issues as needed.	100,000
Neighborhood Enhancement	Landscaping, screen walls and community amenities	Work with ADOT or a private consultant to increase the amount of landscaping for the residential areas along the facility.	340,000
Neighborhood Enhancement	Screening of freeway lighting	Where glare from freeway lighting is a problem, work with ADOT to provide light-standard baffles.	10,000

**TOTAL**      \$ \*1,100,000

\* Flexibility is authorized within individual expenditure items so long as the total expenditures do not exceed this amount. These funds are to be authorized in a future Freeway Mitigation Bond.



APPENDIX



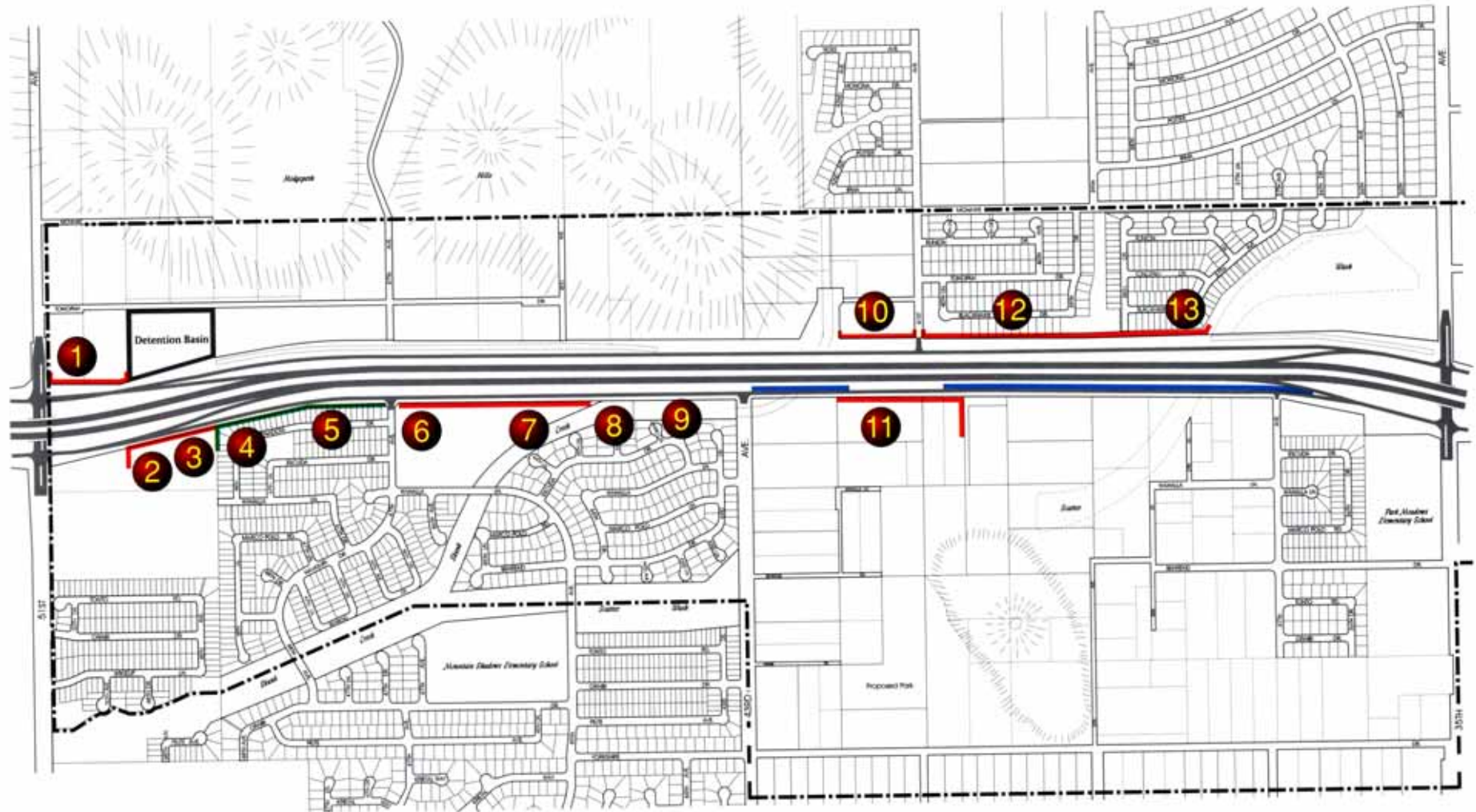
# NOISE ASSESSMENT: OUTER LOOP

No.	Station	Location	Fwy. Elev.	Ground Elev.	No attn. Noise lvl	With 6'x8" block wall	Walls needed to meet 65 dB(A)Ldn
01	1100	N side of fwy @ 51st Ave; future MF	1328	1304	67.7	67.7 dB(A)	8'x8" wall; 64.2
02	1105	S side of fwy, E of 51st Ave; future MF	1320	1306	72.1	71.8 dB(A)	8'x8" wall; 64.5
03	1110	S of fwy, W of Overland Hills; future MF	1312	1310	72.5	70.1 dB(A)	8'x8" wall; 62.6
04	1114	Overland Hills	1310	1312	71.8	64.7 dB(A)	-
05	1120	Overland Hills	1314	1315	71.1	67.8 dB(A)	8'x8" wall; 61.7
06	1128	S side of fwy, E of 47th Ave; future MF	1317	1316	70.8	64.5 dB(A)	-
07	1135	S side of fwy, E of 47th Ave; future MF	1322	1319	71.4	68.6 dB(A)	8'x8" wall; 63.3
08	1142	Sante Fe Ridge	1328	1320	67.8	65.5 dB(A)	8'x8" wall; 59.2
09	1146	Sante Fe Ridge	1331	1320	67.8	65.4 dB(A)	8'x8" wall; 59.1
10	1160	N side of fwy, W of 41st Ave; future SF	1335	1329	70.8	67.9 dB(A)	8'x8" wall; 61.5
11	1160	S side of fwy, W of 41st Ave; future SF	1335	1328	71.9	63.1 dB(A)	-
12	1170	N side of fwy, E of 41st Ave; future SF	1338	1338	70.6	64.9 dB(A)	-
13	1186	N side of fwy, 37th Dr; future SF	1343	1339	69.1	66.2 dB(A)	8'x8" wall; 59.5
14	1226	N side of fwy, E of 32nd Dr; future MF	1387	1362	67.6	67.0 dB(A)	8'x8" wall; 60.6
15	1230	N of fwy, W of 31st Ave; Existing MF	1388	1364	67.0	67.0 dB(A)	10'x8" wall; 63.5
16	1315	SEC of fwy and 19th Ave; future MF	1424	1399	70.0	70.0 dB(A)	10'x8" wall; 61.1
17	1320	N side of fwy, E of 19th Ave; future MF	1419	1405	69.4	69.4 dB(A)	8'x8" wall; 61.5
18	1345	S side of fwy, W of 13th Ave; future MF	1402	1413	72.7	64.6 dB(A)	-
19	1346	N side of fwy, W of 13th Ave; existing SF	1403	1416	70.5	61.9 dB(A)	-
20	1353	S of fwy, 13th Ave - 7th Ave; future SF	1407	1415	71.3	63.2 dB(A)	-
21	1360	S of fwy, 13th Ave - 7th Ave; future SF	1402	1418	71.4	67.0 dB(A)	8'x8" wall; 60.7
22	1368	S side of fwy, E of 5th Dr; existing SF	1405	1423	71.0	62.3 dB(A)	-
23	1374	S side of fwy, E of 5th Ave; existing SF	1422	1424	68.2	65.3 dB(A)	8'x8" wall; 59.6
24	1380	S side of fwy, W of Central; future SF	1430	1427	71.4	68.3 dB(A)	8'x8" wall; 62.0
25	1405	S side of fwy, E of Wash; future SF	1449	1432	72.3	71.5 dB(A)	10'x8" wall; 61.5
26	1410	S side of fwy, W of 7th St; Future SF	1458	1435	71.9	71.4 dB(A)	10'x8" wall; 61.5
27	1430	S side of fwy, W of 10th St; existing SF	1446	1440	72.3	68.7 dB(A)	8'x8" wall; 62.0
28	1430	N of fwy, W of 12th St; future residential	1446	1449	70.0	63.4 dB(A)	-
29	1439	S side of fwy, E of 11th St; existing SF	1456	1446	73.0	72.6 dB(A)	8'x8" wall; 64.7
30	1440	N of fwy, W of 12th St; future residential	1458	1460	70.0	63.5 dB(A)	-
31	1447	S side of fwy, E of 12th St; future SF	1469	1460	70.8	70.5 dB(A)	8'x8" wall; 62.0
32	1460	S side of fwy, W of 16th St; future SF	1505	1485	71.5	70.9 dB(A)	8'x8" wall; 64.8
33	1480	Buffalo Ridge subdivision	1547	1562	69.0	60.3 dB(A)	-
34	1486	S side of fwy (approx. 18th St); future SF	1548	1559	69.2	61.6 dB(A)	-

# NOISE ASSESSMENT: OUTER LOOP

<i>No.</i>	<i>Station</i>	<i>Location</i>	<i>Fwy. Elev.</i>	<i>Ground Elev.</i>	<i>No attn. Noise lvl</i>	<i>With 6'x8" block wall</i>	<i>Walls needed to meet 65 dB(A)Ldn</i>
35	1488	Scarlett Canyon subdivision	1548	1556	67.8	63.2 dB(A)	-
36	1495	S side of fwy, W of 20th St; future SF	1543	1557	69.5	61.1 dB(A)	-
37	1497	S side of fwy, E of 20th St; future MF	1542	1560	68.5	59.9 dB(A)	-
38	1513	N side of fwy, E of 22nd St; future MF	1540	1523	67.8	67.8 dB(A)	8'x8" wall; 59.9
39	1535	S side of fwy, W of 26th St; future MF	1514	1500	70.8	70.8 dB(A)	8'x8" wall; 63.8
40	1550	Dave Brown subdivision @ 29th St	1506	1507	72.2	65.3 dB(A)	8'x8" wall; 61.1
41	1564	S side of fwy, E of 30th St; future MF	1520	1510	72.9	72.9 dB(A)	10'x8" wall; 61.4
42	1575	SWC of fwy and 32nd St; future MF	1541	1517	70.1	70.1 dB(A)	10'x8" wall; 61.2

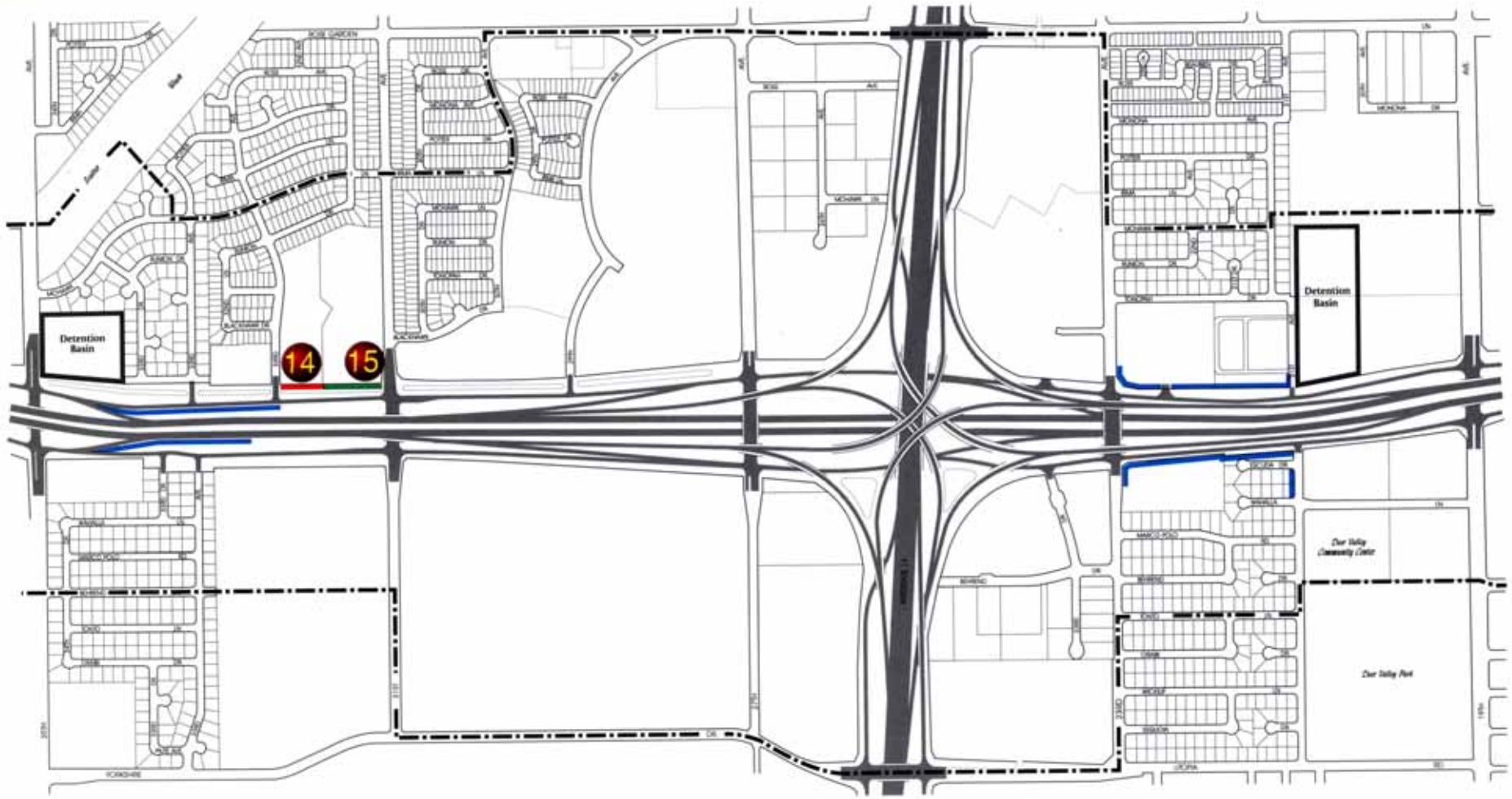




**NOISE STATION LOCATIONS**  
 Outer Loop Freeway - Loop 101  
 Segment 1: 51st Avenue to 35th Avenue

- Noise Wall Responsibility
- ADOT
  - Developer
  - City
  - Study Area Boundary



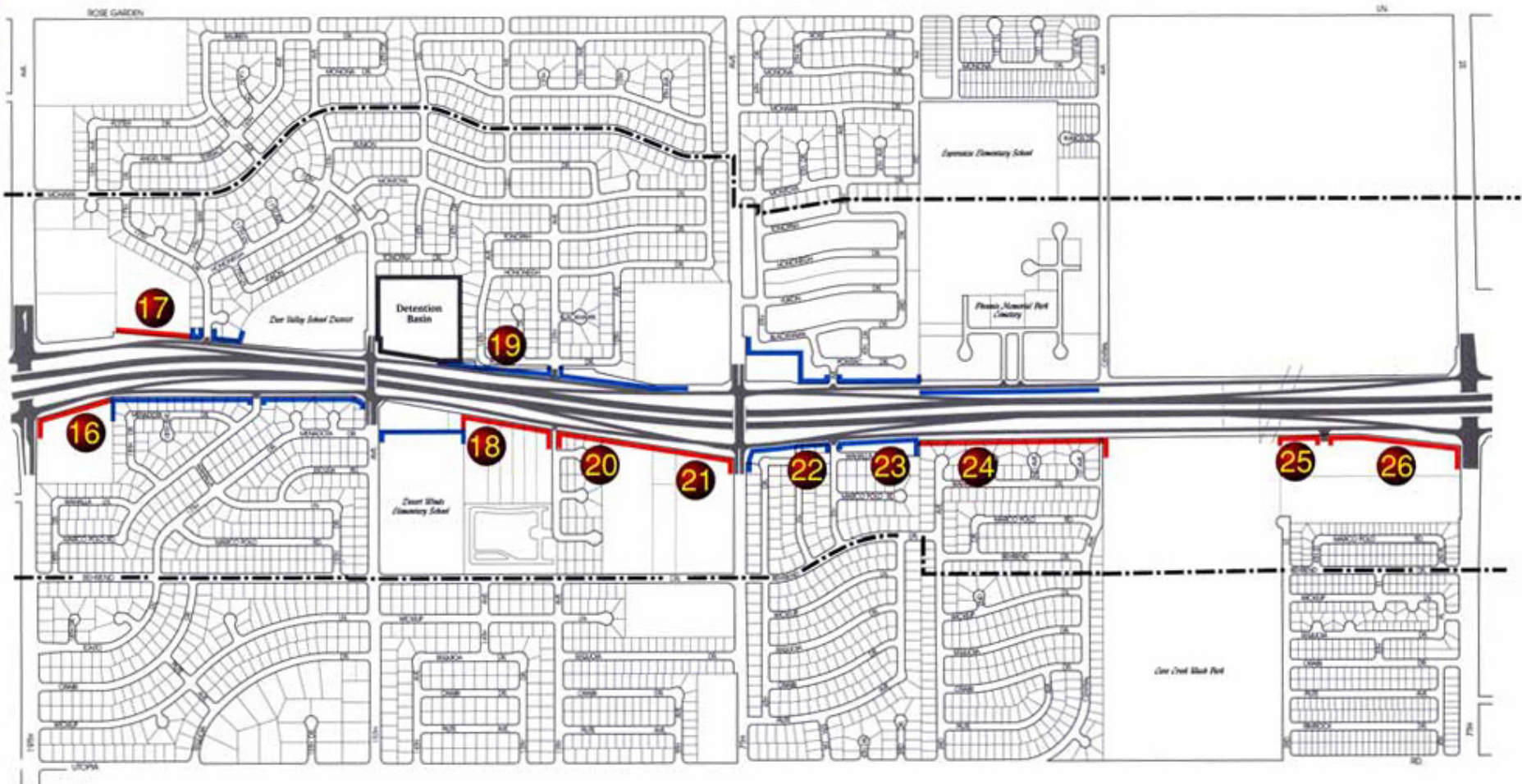


**NOISE STATION LOCATIONS**  
 Outer Loop Freeway - Loop 101  
 Segment 2: 35th Avenue to 19th Avenue

- Noise Wall Responsibility**
- ADOT
  - Developer
  - City
- Study Area Boundary







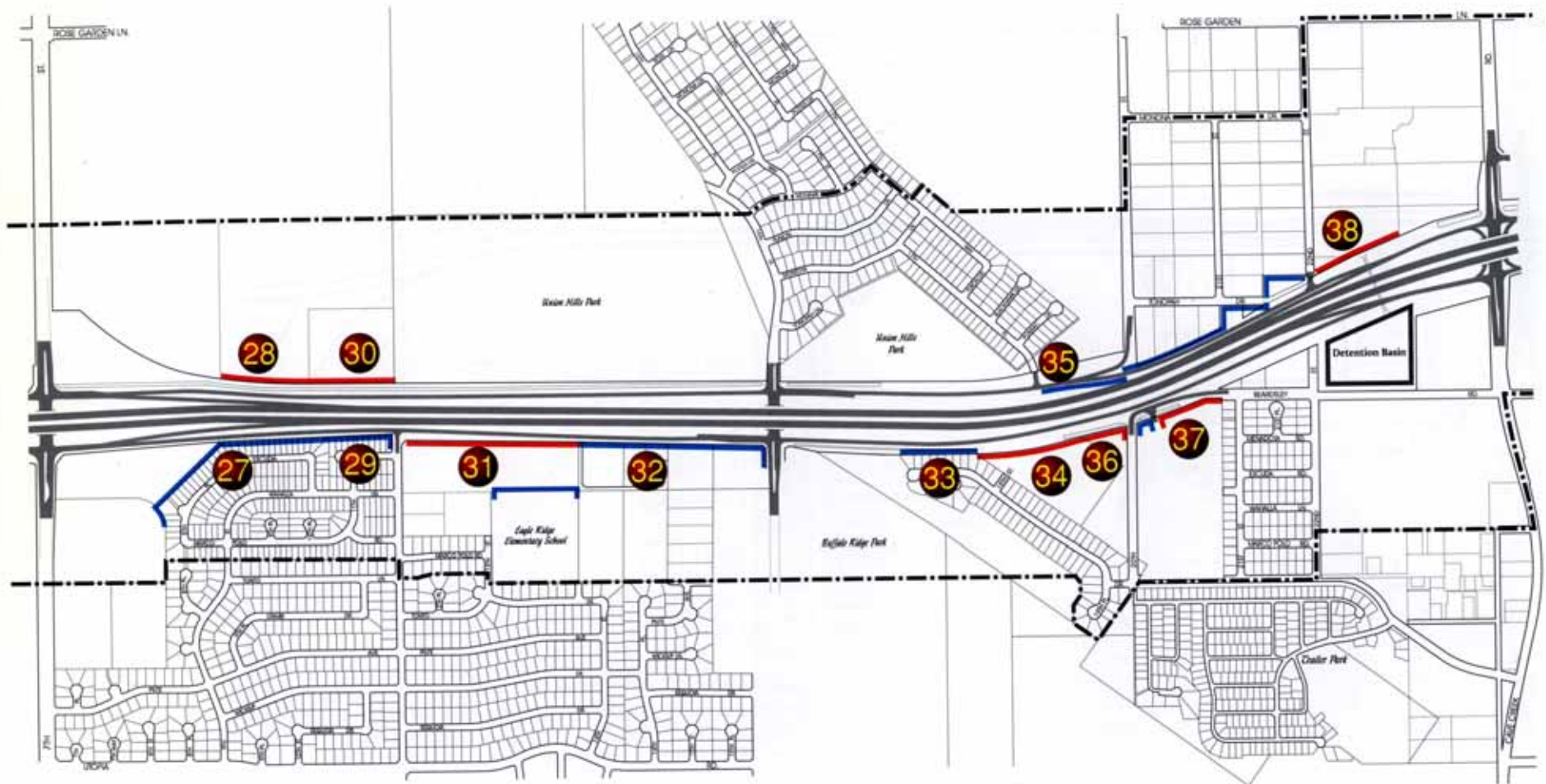
**NOISE STATION LOCATIONS**  
 Outer Loop Freeway - Loop 101  
 Segment 3: 19th Avenue to 7th Street

Noise Wall Responsibility

- ADOT
- Developer

--- Study Area Boundary





**NOISE STATION LOCATIONS**  
 Outer Loop Freeway - Loop 101  
 Segment 4: 7th Street to Cave Creek Road

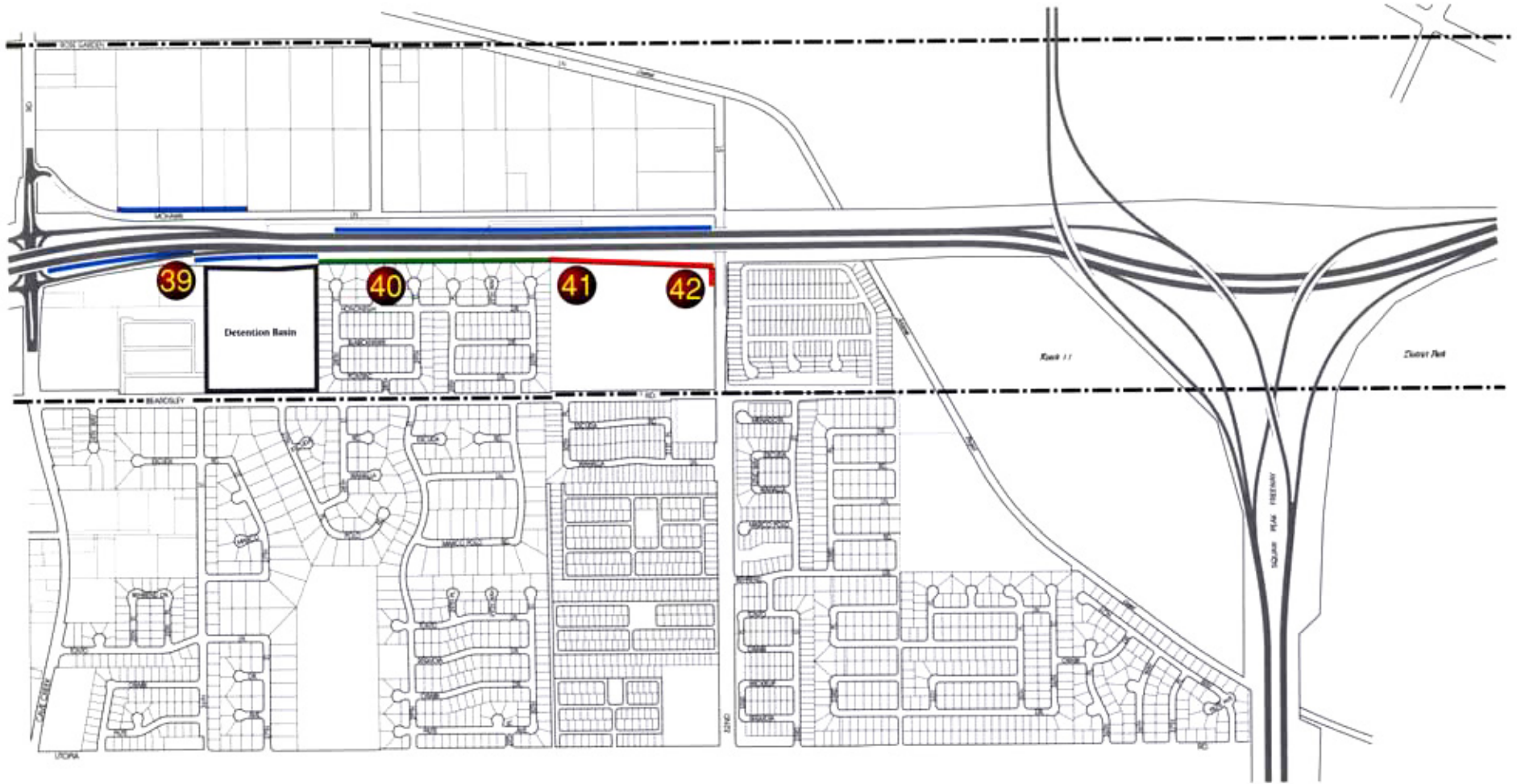
Noise Wall Responsibility

- ADOT
- Developer

--- Study Area Boundary







### NOISE STATION LOCATIONS

Outer Loop Freeway - Loop 101

Segment 5: Cave Creek Road to Squaw Peak Freeway

#### Noise Wall Responsibility

- ADOT
- Developer
- City

--- Study Area Boundary

