APPENDIX D

RECORD OF DECISION SUPPORTING DOCUMENTS

The documents provided in Appendix D, Record of Decision Supporting Documents, are referenced in the responses to public comments on the Final Environmental Impact Statement. They include:

- Internal Federal Highway Administration memorandum, FHWA Validation of Alternative Screening Process for the South Mountain Freeway (D1)
- E-mail from the U.S. Environmental Protection Agency, Region 9, regarding the project-level conformity determination (page D5)
- Two historic planning documents from the City of Phoenix: Phoenix Concept Plan 2000 (page D6) and Phoenix Urban Village Model, General Plan 1985-2000 (page D28)
- Letter from the U.S. Army Corps of Engineers related to the strategy for Clean Water Act permitting for the project (page D45)
- E-mail from the Gila River Indian Community Department of Transportation with comments on the project’s Initial Location/Design Concept Report (page D46) and meeting notes from a comment resolution meeting (page D47)

APPENDIX D

Memorandum

Subject: FHWA Validation of Alternatives
Screening process for the South Mountain Freeway.

Date: September 25, 2014

From: Alan R. Hansen
Team Leader
Planning, Environment and Realty
Phoenix, Arizona

In Reply Refer To: 202-D(ADV)

Ham-Az

To: Karla S. Petty
Division Administrator
Phoenix, Arizona

In order to confirm the information contained in the Technical Memorandum prepared by the Arizona Department of Transportation (ADOT) by the consultant HDR regarding Validation of Alternative Screening Process at the Final Environmental Impact Statement (FEIS) stage of the South Mountain Transportation Corridor study, the FHWA Arizona Division carried out an independent review of the alternatives that were eliminated through the screening process. In addition to the subject Technical Memorandum, the Division also used the various documents referenced in the Technical Memorandum and particularly, the 2012 and 2014 versions of the Traffic Overview. The Traffic Overview documents are important because the 2012 version is based on an extrapolation of modeled traffic data that was used in the early screening process, and the 2014 version is the modeled traffic data that was updated with the Maricopa Association of Governments (MAG) revised traffic and socioeconomic information based on the 2010 census data. Both of the Traffic Overview documents were reviewed by James Cokay and Ed Foh, who are traffic experts in the FHWA Resource Center, and they found the modeling used to be consistent with established FHWA recommended practices.

Elimination of Transportation System Management (TSM), Transportation Demand Management (TDM), Transit, Arterial Streets and Land Use – This analysis looks at whether other modes of transportation could be used as opposed to a freeway alternative to meet the purpose and need of the project. The supporting documentation for this discussion is in the
DEIS. There is not a lot of quantification in the DEIS with regard to these alternatives, however a few key points are that the projected traffic for the freeway is 175,000 vehicles per day (vpd), and the modal alternative that would be able to handle the greatest amount of that demand is a light rail transit system. The existing Phoenix metro light rail transit system, which is built around areas that have great demand centers, currently handles around one quarter of the projected demand. Based on this, I agree that the modal alternatives alone would not be able to meet the purpose and need of the project. Since the projected traffic for the project that I used is from the 2014 Traffic Overview and the Phoenix metro usage is based on the City’s numbers, I believe this analysis to still be accurate.

Elimination of Corridor A – this alternative was eliminated very early in the process because the ADT maps showed that this alternative would serve the least amount of traffic. The alternative would serve approximately 30% less traffic than any of the other alternatives. An alternative that serves such a significantly lower volume of traffic is less responsive to the regional transportation demand component of the purpose and need and was therefore eliminated.

This screening was done in 2003, so the question is whether the Corridor A alternative would still lack viability given the updated traffic projections. However, since Corridor A was eliminated early in the process, it was not carried forward in the modeling using the updated MAG Traffic and Socioeconomic projection and it is not possible to do a direct comparison of ADT maps. However, it is possible to review the base factors that would have influenced the modeling done in 2002 and determine whether there were any changes to those factors and thereby change the outcome of the model if it were recreated today.

The first factor is the population within the service area of the freeway. Referring back to the Traffic Overview documents, Corridor A is located in the southwest regional population center. It is expected that users of the transportation facility are generally from the regional population center that is served by the facility. In comparing the 2012 Traffic Overview, which is extrapolated from the 2000 census, to the 2014 Traffic overview which is based on the 2010 census, table 4 of the Traffic Overview’s show that the population for 2035 in the southwest region dropped from 808,800 with the model based on the 2000 census to 521,000 with the model based on the 2010 census. This demonstrates that the growth for the region directly served by Corridor A has seen a 36% reduction in projected population, and has been significantly affected by the economic downturn that started in 2007. This factor is a good indicator that Corridor A would be even less viable of an alternative based on the updated traffic and socioeconomic information.

The second factor is the modeled ADT volumes, which are included in table 8 of the Traffic Overview, on the roadway network in the area of the proposed freeway. The modeled roadway most relevant to Corridor A is I-10 (11th Avenue to 19th Avenue). This segment of I-10 shows an increase in traffic of around 7% between the two models. Since the gap in the traffic served was originally around 30%, a change of 7% would not be enough to change the screening process results.

The final factor worth considering is out of direction travel. Roadway users who wish to continue North on SR-101 would be subjected to approximately 5 additional miles of out of direction travel over any of the other alternatives. This factor has not changed from the original analysis.

Based on the above factors, I conclude that validation offered in the alternatives screening Technical Memorandum is accurate and that Corridor A would still be less responsive to the regional demand component of the purpose and need and should be eliminated. The project team also uses the local government general plans to show that the local governments planning efforts do not contain an alternative for Corridor A. The local planning efforts are primarily a factor from the standpoint that the local governments in the Corridor A and B regions are opposing having the freeway within their jurisdictions due to the impacts that it would have in their communities. Further, had Corridor A moved forward, it would have been eliminated due to other factors such as traffic operational problems associated with having two system interchanges less than three miles apart, costs associated with right-of-way (ROW) that would be needed to construct a longer project, and the above mentioned local government planning efforts.

Identification of Technical Alternatives – this was a process of taking the large number of alternatives that were originally proposed and combining them into a reasonable number of alternatives to carry forward. The basis for the validations offered in the Technical Memorandum was that, while there had been changes to population and housing growth, the physical environmental constraints, design criteria and engineering feasibility had not changed. I agree with that position. I think it is further of note, that the project team added more alternatives for screening that came up during the development process. To my knowledge, there are no proposed alternatives that were not considered as part of the screening process.

Elimination of Corridor H – Corridor H consists of alternatives on the Gila River Indian Community (Community). The project team’s validation is that there has been no change in the Community’s opposition to constructing the freeway on their land. We have now been working with the Community for a number of years on this and my observation is that the Community continues to be divided on the issue. There are a fair number of Community members who see the freeway as having a negative impact on their culture, through things like increased traffic, noise and visual impacts. There is also a strong contingent of Community members who see the freeway as bringing economic development opportunities. The overall Community perspective on the freeway was and is constantly changing, however I believe the decision we must abide by is the referendum by the Community members in 202-12, which is also a tribal resolution, stating that they do not support the freeway being located on Community land. So based on this I agree with the elimination of
Appendix D

this alternative.

Elimination of the Riggs Road Alternative - I agree with the validation offered in the Technical Memorandum. As noted in the elimination of Corridor H, the Community is opposed to alternatives on their lands. Riggs Road also has substantial cut of direction travel and would not meet the projects purpose and need. I would further note that the Community is already unhappy with the amount of non-Community traffic (primarily trucks) currently on 51st Avenue. I believe that their opposition to a freeway on the Riggs Road Alternative would be even greater than their opposition to the Corridor H alternatives.

Elimination of the SR-85/S-8 Alternative – I agree with the validation offered in the Technical Memorandum. This alternative is so far out of direction that it would not meet the regional transportation demand portion of the purpose and need for the project. Not mentioned in the screening process is that this alternative lies outside of the MAG region, which means that the project could not be funded using Proposition 400 funding (a major source of funding identified for the project) and in order to fund it there would have to be changes to the funding distribution set out in the Tess Grande Accords with regard to Federal funds. This is important from the standpoint that the project would not meet fiscal constraint.

Elimination of T05, T07, T08 and T09 – I agree with the validation for elimination of alternatives T05, T07 and T08, which were all screened out based on location of system to system interchanges within 3 miles of each other. The Traffic Overviews also show that the freeway traffic volumes, even with the updated MAG Traffic numbers, would still be great enough that having system to system interchanges so close together would cause traffic operational failure of the freeway mainline. This is primarily caused by weaving sections that are created when major freeway ramps are located in close proximity. I concur with the analysis that the system to system interchanges should be located more than three miles apart in order to avoid the reduced traffic operational characteristics, such as delay, congestion and increased crashes, associated with heavy weaving areas on the mainline. However, using this reason for validation of T09 is not appropriate. T09 actually ties back into I-10 at SR-101 and would not be within three miles of another freeway system to system interchange. So I do not concur with using system interchange spacing as the validation for T09.

However, in considering the other factors that are discussed in the Technical Memorandum associated with the T09 alternative, it does appear that it should still be screened out. Of particular note is that poor roadway geometrics in the form of sharp curves that would be required to bring the freeway from its location one mile to the west, back to where it would need to tie into I-10 at SR-101, the greater impact on Tolleson, which was opposed to the freeway in their town; and the greater cost of construction and ROW associated with this alternative.

In summary, I concur with the validation offered for the T05, T07 and T08 alternatives screening which eliminated those alternatives from further study due to system interchange spacing. I do not agree with the system interchange spacing validation being applicable to the T09 alternative, however I do believe that the original screening criteria used is still accurate and it is appropriate to screen the T09 alternative from further development.

Elimination of the Ray Road and Chandler Boulevard alternatives - The validation of the elimination of these two alternatives is due to the system to system interchange spacing and to the impacts to the Ahwatukee community, specifically the increased number of residential displacements needed for this alternative over the E1 alternative and splitting of the community. As noted above, I concur with the system interchange spacing reasoning due to negative impacts to the traffic operations, I further agree that since the residential areas near or within these alternatives were built out prior to the 2001 screening, the land use in the Ahwatukee community has not significantly changed so that impact would still be present. Based on this, I concur that the validation for the screening of these alternatives is accurate.

Elimination of US 60 Extension alternatives – The validation for the screening of these alternatives is that they do not support the regional transportation demand part of the purpose and need. They would also not address the projected capacity deficiencies associated with the existing facilities. FHWA is well acquainted with the regional transportation demand issues in the I-10 corridor between SR-202L Santan and SR-141, including around US-60. These segments are the most congested in Arizona and relieving the congestion is one of the components of supporting the regional transportation demand portion of the purpose and need. As is evident in the Table 26 of the Traffic Overview, the South Mountain Freeway would relieve over 36,000 vehicles per day from these segments of I-10. Further in the review of the table 3 in the Traffic Sensitivity Memorandum that analyzed the US-60 alternatives, it shows that these alternatives would increase the traffic on all existing segments of the regional freeway system. Based on this, I concur with the validation that the US-60 extension alternatives would not meet the purpose and need of the project. Also noted in the analysis and the validation is the much greater impacts to residences, businesses and community character that would occur. In general, I concur with that greater impacts to the residences, businesses and community; however it is not well quantified in the analysis. Because of this, the focus of the FHWA evaluation of these alternatives is on the lack of support for the purpose and need based on not addressing the regional transportation demand issue.

Elimination of the Central Avenue Extension Tunnel - This alternative would extend Central Avenue south out of the downtown Phoenix metropolitan area and under the South Mountains. This validation for screening this alternative is that it does not meet the purpose and need of the project since it does not meet the Regional Transportation Demand needs identified. This alternative would not address the capacity deficiencies on I-10 around the Broadway curve because it would only serve localized traffic from the
Auwatulee community to the downtown area. Regional traffic trying to make the east-west movements would still have to use routes such as I-10 to get across the urban area. Based on this I concur that this alternative would not meet the purpose and need for the project and should be eliminated.

Design Options – The next section of the memo describes the validation of the screening of design options. They represent more design refinement and tweaking of the alignment to address localized impacts, however they do not represent screening of entire alternatives. The one exception is the Elimination of the Community Alignment, which was actually screened out in 2003 as part of the C-corridor discussion above; however it was revisited at the request of the Community in 2010 during the Tier 5 screening so that effort is captured in the design options section.

Elimination of the Bridge and Tunnel Options – The bridge and tunnel design options were both generated to look at alternatives that would not impact the South Mountains which is a Section 4(f) eligible resource. The validations includes two discussion points, the first is that both of these options would directly impact the South Mountains and therefore are not avoidance alternatives, and the second point is that both alternatives would be much more expensive so they would not be prudent and feasible. Based on a review of the memo associated with these options, there are multiple options for tunneling. I believe the most viable of those is the low profile option, since that would keep the freeway profile closest to level, and would balance the lowest tunneling and bridge needs. With that option, tunneling using the SIEN/NATM method (the cheapest form of tunneling) would add around $215 million to the project cost, which is roughly 5 times more expensive than an open cut. So based on these factors, I concur that the tunnels not only do not avoid the Section 4(f) resources but also are not prudent due to the upfront construction cost and long term maintenance costs. The only option which has only bridge elements to cross the South Mountain Ridges is the high profile option. The bridge cost associated with this option is $307 million, but would eliminate the need for the open cut estimated at $40 million, so overall the bridge option would increase the cost of the project around $270 million. In addition, the memo discusses eliminating consideration of the bridges based on incident management, constructability and maintenance issues. I agree that cost, incident management, constructability and maintenance are all valid arguments, but I continue to see the overriding discussion point to be that the tunnel and bridge options do not avoid impacts to the South Mountain Section 4(f) eligible resource and they would not be prudent due to the other issues.

System Interchange Options Carried Forward or Eliminated – This phase of screening included alternatives considered for a direct connection to SR-101 at I-10 as well as later consideration of design concepts around the W55 and W71 alternatives. This effort was primarily a refinement of design options. This also includes the screening of the W99 alternatives as part of the W101 alternative. I concur with the validation offered in the Technical Memorandum for eliminating these design options.

Elimination of Depressed Profile Option to the E1 Alternative – This alternative was essentially an evaluation of the costs and feasibility of depress the freeway below grade. The validation is that the design criteria and legal requirements have not changed and therefore the screening of this design alternative is still valid. Specifically this design option would result in higher construction costs of $470 million and would result in the need to acquire at least an additional 150 residences due to the larger footprint needed for a below grade facility. An additional major concern would be the need for pump stations to facilitate the movement of stormwater drainage, which would have both a higher initial cost as well as long term maintenance costs.

Elimination of the Utility Easement Options for the E1 Alternative – This design option considered moving the utilities that are currently located right at the southern limit of the City of Phoenix, to the North so they would be located directly next to the Auwatulee Community and then have the freeway run next to the southern limits of the City. This option would essentially use the power line utility easement as a buffer between the freeway and the residential area. There is also concern about relocating 500 kilowatt power lines next to a residential community. The validation for elimination of this design option is the ROW costs and cost of relocation, in addition the increased cost of relocating the power lines underground also continue to be cost prohibitive. I concur with this validation.

Elimination of the Arizona Parkway Concept – The Arizona Parkway Concept is essentially an urban parkway that does not allow direct left turns. Instead the driver must go past their intersection and make a u-turn, followed by a right turn in place of the left turn. The validation for eliminating this concept is that it would not be able to handle the high volumes of traffic projected for the corridor. An Arizona Parkway would have a maximum capacity of 105,000 vph, which is well below the projected 175,000 vph in the MAG models. I concur with the analysis and finding that an Arizona Parkway would not be able to handle the projected traffic for this corridor.

Elimination of the Ten Lane facility – ADOT and MAG were looking for alternatives to bring down the cost of the project. The original project concept was to build a six lane freeway, with an additional four lanes constructed when needed, this would be a 4+1 lane facility. MAG instead wanted to reduce costs by constructing an eight lane facility, 3+1 lanes, from the start. Typically each lane is estimated to carry 40,000 vpd. So a 3+1 lane facility should be able to carry around 160,000 vpd. Although the estimated traffic volumes on the freeway, using the updated traffic projections show 175,000 vpd in the design year, MAG and ADOT agreed to build the eight lane facility, rather than the ten lane facility. While FHWA continues to believe that it would be more appropriate to construct a ten lane facility, we do recognize that this is a design option on a non-Interstate route we therefore believe this is a local decision to be made by ADOT in conjunction with MAG.

Shift to the W99 from the W55 alternative – this was essentially a shift of the freeway to connect with I-10 around 59th avenue, rather than the originally
Hi Rebecca-

I spoke with Alan Hansen this morning regarding the additional air quality comments EPA had sent on both 8/19 and 8/6, and he confirmed that all of the comments are being addressed by FHWA, and the Air Quality Technical Report revised accordingly. With that information, this concludes the PM10 conformity consultation between FHWA and EPA for the South Mountain Freeway project.

We’d like to thank FHWA for working so closely with EPA to address our concerns, and we look forward to reviewing and providing comments on the Final EIS when it is circulated for review.

Please see the attached spreadsheet for a summary of the consultation (comments and responses) that has taken place between EPA and FHWA since we received the Air Quality Technical Report on 6/2/2014. If you have any questions or notice any revisions that should be made to the summary, please let me know.

Thanks,
Clifton

Clifton Meek, Life Scientist
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Environmental Review Section - Transportation Team
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RESOLUTION

NO. 15227

A RESOLUTION ADOPTING THE PHOENIX CONCEPT PLAN 2000.

WHEREAS, the Phoenix City Council directed the Planning Commission to undertake a study of alternative urban forms and their ramifications for application in Phoenix, and
WHEREAS, the Planning Commission proceeded with a seminar for community leaders and the appointment of over 200 citizens to the Urban Form Directions Committee, and
WHEREAS, the Urban Form Direction Committee has worked diligently studying the social, economic and environmental aspects of alternative urban forms, and
WHEREAS, the Urban Form Directions Committee has involved all segments of the community in its planning efforts and has gained broad support for its recommendations, and
WHEREAS, the central focus of the Phoenix Concept Plan 2000 — the urban village — represents a dramatic yet achievable advancement in guiding growth in Phoenix, and
WHEREAS, the plan is intended as a conceptual guide to development rather than a rigid map of the future, and
WHEREAS, the goals of the plan are statements of desired results toward which efforts are directed but are not commitments for full achievement, and
WHEREAS, the City of Phoenix will support appropriate agencies working toward achievement of those goals which are not within the city jurisdiction, legal authority, or policy limits, and
WHEREAS, the Phoenix Concept Plan 2000 is only the beginning of the development of a general plan for Phoenix and plans for each of the villages and areas identified in the plan, and
WHEREAS, the plans should be reviewed and updated every five years to adjust to the changing needs of the citizens of Phoenix,

NOW, THEREFORE, BE IT RESOLVED that the Phoenix City Council hereby adopts the Phoenix Concept Plan 2000 as contained in the attached text and map and identified by the signature of the Mayor, which text and map are by this reference incorporated herein and made a part hereof,

PASSED by the Council of the City of Phoenix this 31st day of July, 1979.

Margaret T. Hauser
Mayor

ATTEST

Deirdre Gilbert
City Clerk

APPROVED AS TO FORM:

Thomas J. Farley
City Attorney

REVIEWED BY:

Marvin A. Anderson
City Manager

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SUMMARY

The Phoenix Concept Plan 2000 defines only the conceptual intent for future land use in Phoenix and is not intended as an inflexible statement of allowable zoning districts in any area.

The unifying element of the 2000 Plan is the concept of urban villages containing a mix of housing types, a variety of jobs and shopping, recreation and education facilities. These villages would help satisfy the psychological need to belong to an identifiable community with a sense of control over its environment. Each urban village will have a clearly identifiable core and boundary. Its core will contain the most intense land uses and will be the aesthetic and functional focal point of the village.

The 2000 Plan consists of four major parts:

Goals
Goals are the ultimate accomplishments toward which the city's actions should be directed. They deal with many aspects of city life including land use, transportation, housing, air and water quality, energy, life-styles, economic stability and government responsiveness.

Urban Village Map-2000
The map is a graphic representation of the urban village concept in Phoenix and is intended primarily to identify the areas to be planned by urban village planning committees.

Policies
Policies are intended to provide guidance for making decisions about the way the city should grow through the year 2000. They will provide direction in both initiating programs and controlling proposals.

The first policy directs that growth be structured into a system of urban villages with the timing and location of new growth to be directed in accord with the village concept and the infilling of central city areas. Other policies for example, support the Rio Salado project, discourage development north of the Central Arizona Project until after the year 2000, encourage significant residential infilling in the central villages and direct the development of a planning and implementation program to bring about the goals of this plan. The planning and implementation program would include preparation of the nine general plan elements required by the State and the preparation of a plan for each village by 1985.

Charge to Urban Village Planning Committee
This part requires that village plans be prepared which work toward implementation of the 2000 Plan and include necessary land use and circulation elements.
INTRODUCTION

This document includes the four components of the Phoenix Concept Plan 2000: A Program for Planning, and appendices outlining the basis for selection of the plan. The plan is intended to help public and private decision makers shape Phoenix into the city we want it to become by making the most efficient and equitable use of resources.

Even full adherence to the plan’s maps and policies will fail to fully achieve all of the goals of the plan. What is important is progress toward the goals which can be measured. After extensive analysis of alternatives, the Urban Village Map 2000 and the policies of the plan were selected because they provide the best compromise toward meeting all of the goals without overemphasizing some at the expense of others. The 2000 Plan which defines the conceptual intent for future land use in Phoenix is not the total comprehensive plan tool is the first step toward the development of one. It is not intended as an inflexible statement of allowable zoning districts in any area.

The 2000 Plan also fits into the metropolitan context as its components are in accord with and support the Guide for Regional Development, adopted by the Maricopa Association of Governments on January 4, 1978.

Urban Village Concept

The Urban Village Concept is the unifying element of the plan and the best means for achieving its goals.

Within Phoenix, an urban village is an area that provides for a variety of the physical land use needs of its residents. It contains a mix of housing types; a variety of jobs; and shopping, recreation and education facilities. It helps satisfy the psychological need to belong to an identifiable community with a sense of control over its own environment. Urban villages will not all be the same. Some might be rural or suburban in character while others might be highly urban. Types and amounts of housing, jobs, office spaces, and stores will vary. While urban villages will provide for most of the needs of their residents, they will also be a part of metropolitan Phoenix and will not duplicate unique metropolitan serving activities such as the Civic Plaza or Arizona State University.

The urban village will have a clearly identifiable center (core) and boundary (periphery). Its core will contain the most intense land uses and will be the aesthetic and functional focal point of the village. Land use intensity will decline from the core to the periphery. The concept of urban villages is not contrary to existing land use patterns as elements of urban villages already exist in several areas of Phoenix, such as, the concentration of activity at Midtowncenter. In newly developing areas growth would be structured to create new villages and in older areas development of skipped over parcels and redevelopment of underutilized land uses should be directed to create villages.

Phoenix Planning Area

This plan covers an area greater than the present area within Phoenix including 438 square miles. This includes all areas which the City Council has determined to be appropriate for annexation through the year 2000.

The Planning Program

The subtitle, “A Program for Planning” is intended to emphasize both the cooperative role of the 2000 Plan and the shift from thinking of the plan as a blueprint to thinking of it as evolving and dynamic. The 2000 Plan is intended as a guide to making better decisions by the City Council, the Planning Commission and the public.

The 2000 Plan will serve as the guide for planning in Phoenix. It suggests that the city government should concern itself with decisions of city-wide importance and delegate responsibility for making decisions of less than city-wide importance. It does this by requiring the development of two sets of plans — (1) a General Plan including the following nine elements: Land Use, Circulation, Conservation, Housing, Recreation, Public Buildings, Neighborhood Rehabilitation and Redevelopment, Public Services and Facilities, and Safety, and (2) a Specific Plan for each urban village or planning area. These plans would be developed, progress toward them monitored and, appropriate amendments made on a continuing basis. The General Plan will be prepared in accord with Arizona Statutes and the specific plans for urban villages in accord with the Charge to Urban Planning Committees.

GOALS

The following are the long range goals of the City of Phoenix. They have been developed after an arduous effort by the many citizens of Phoenix, the Planning Commission and the City Council. The word “goal” has been used in accord with the following definition:

A goal is a statement of the end result or ultimate accomplishment toward which an effort is directed. It is used more as a call to action than a statement of expected full achievement.

Many of those goals cannot be fully achieved and working toward achievement of some may make it more difficult to achieve others. At the same time all goals are not of equal importance. These factors have been taken into account in the selection of the urban village map and the policies which follow. This map and policies represent the best compromise in achieving the goals. The goals as well as the plan and policies should form the basis for development of General Plan Elements and Urban Village Plans.

MAN-MADE ENVIRONMENT

A. Land Use

Develop a land use pattern which provides for the physical, social and economic needs of the citizens of Phoenix.

1. Develop and provide for the continued viability of all areas of the city.

2. Ensure that land use transitions occur with minimum adverse impact.

B. Transportation

Provide for system wide accessibility and mobility and ensure that transportation and land use plans are complementary.

1. Develop a land use pattern that reduces the need to travel by shortening required travel distances.

2. Provides mobility by improving transportation facilities.

3. Develop an equitable transportation system providing accessibility to nonautomobile users.

4. Provides for safe, efficient and convenient movement and transfer of people and goods.

5. Minimize the adverse impacts of transportation system construction and operation on housing and businesses, parks, schools, historical and archaeological sites and on the aesthetics of adjacent areas.

C. Housing

Provide a sufficient choice of adequate housing in all parts of the city to meet the needs of all individuals.

1. Make available in a range of prices, for purchase or rent, a choice of housing — single-family detached, community ownership, patio home, garden apartment and mobile homes — in all urban villages and, where appropriate, high-rise apartment.

2. Provide low and moderate income housing in all urban villages.

3. Reduce the minimum cost of new housing or decrease the rate of the increase to benefit the home owner or renter.

D. Aesthetics and Urban Design

1. Encourage a contemporary reflection of the heritage, culture and environment of the Southwest in all areas and particularly in public facilities.

2. Provides for the visual identity of various areas of the city.
E. Public Buildings, Services and Facilities
Provide for an optimum balance among service and accessibility to all residents, efficiency, safety and environmental quality in the location and operation of public buildings, services and facilities.
1. Maximize the level of service provided by public buildings, services and facilities to all residents.
2. Maximize accessibility for all residents to public buildings, services and facilities.
3. Maximize efficiency in public buildings, services and facilities.
4. Maximize safety in public buildings, services and facilities.
5. Maximize environmental quality in and around all existing and future public buildings, services and facilities.

F. History and Archaeology
1. Encourage the identification, preservation and restoration of historically and culturally important neighborhoods, sites and structures.

II. NATURAL ENVIRONMENT
Maximize the preservation and the enhancement of the natural environment and encourage the efficient management of scarce natural resources.

A. Air
1. Provide and maintain air quality compatible with health and well-being and with the reduction of damage to property, vegetation, and aesthetic values.

B. Water
Manage the quality and quantity of all water resources in a manner that enhances the quality of life.
1. Provide a safe and adequate domestic water supply to all citizens of Phoenix.
2. Manage the quality and quantity of groundwater resources.
3. Equitably manage urban and agricultural water needs.
4. Provide for multiple use of surface water with due consideration to groundwater quality.
5. Minimize the hazard and damage to life and property resulting from storm water runoff.

6. Provide for the multiple use of canals, floodplains and other waterways in the city.

C. Land
1. Preserve environmentally sensitive areas such as floodplains, wildlife habitats and steep slopes.
2. Preserve agricultural land uses.
3. Develop a land use pattern which responds to the geology and soil characteristics of Phoenix.

D. Energy
1. Minimize the use of nonrenewable energy resources through conservation and increased use of renewable resources.

E. Noise
1. Establish, foster, and maintain high standards for the control of noise pollution, ensuring a noise level that does not cause stress or health damage.

F. Wildlife and Vegetation
1. Enrich and perpetuate the lifestyle of the present and future citizens of Phoenix by enhancing and maintaining wildlife resources and habitats and by the protection of native and exotic vegetation in the community.

G. Climate
1. Minimize the urban dome effect which tends to reduce normal daily temperature variations.

III. SOCIAL FABRIC
Maximize the stability and income generation in Phoenix through diversification of employment opportunities.

A. Community/Neighborhood
1. Maximize the sense of community felt by urban village and neighborhood residents.
2. Develop physical and social focal points in urban villages and neighborhoods.
3. Create new and preserve existing neighborhood supports that encourage the educational, physical and economic needs of their residents providing for security, leisure time activity, physical and mental health, and social interaction as well as privacy.

B. Life-Style
1. Maximize the opportunity for diversity and flexibility of activity and a choice of life-style.

C. Social Stability
1. Enhance the opportunity for an integration of socio-economic backgrounds.

2. Create an atmosphere in which different types of people interact naturally.
3. Foster community spirit, friendliness, physical and psychological well-being, and high community morale throughout the Phoenix metropolitan area.

D. Physical Security
1. Reinforce public and private capacity to ensure physical security.
2. Make street crime less likely by developing urban village cores where employment, recreational, commercial and residential activities occur at a sufficient level of intensity to warrant an increase in pedestrian activity throughout the day.

E. Recreation
1. Provide a wide range of opportunities for the enrichment of the life of each citizen and the stimulation of his unique talents.
2. Provide a park and recreation system adequate to meet the changing leisure time needs for mental and physical refreshment of residents and visitors alike.
3. Design open space areas to provide relief from continuous urban development areas for varied recreational needs, and preservation of some of the original character of the area.
4. Design local recreational facilities and open spaces, as an integral part of residential areas near the center of neighborhoods with pedestrian access.

IV. ECONOMY
A. Stability
Maximize the stability of employment and income generation in Phoenix through diversification of employment opportunities.
1. Facilitate the continued growth of tourism through protecting the natural and man-made attractions which draw people to the valley.
2. Facilitate development of manufacturing enterprises by providing a wide choice of sites, with good access to labor markets, suppliers and buyers.

B. Taxation
1. Minimize the local tax burden by providing public services and facilities in the most efficient manner possible.
2. Revise the local property tax system to encourage rather than penalize maintenance and rehabilitation of older units.

C. Employment
1. Provide opportunities for diversification of basic employment.
2. Create conditions conducive to attracting and retaining a labor force.
3. Revitalize businesses and industrial enterprises which provide meaningful employment opportunities to low income people and increase the tax base in low income areas.

D. Development Costs/Incentives
1. Encourage a partnership of the public and private sectors in providing for both development and redevelopment.
2. Emphasize the use of incentives over the use of restrictions to achieve appropriate development.

V. GOVERNMENT
A. Informed Constituency/Electoral and Non-Electoral Participation
1. Involve the public in all phases of the planning process and make them aware of the social, economic and environmental effects of different land use policies.
2. Establish community centers to help in informing the public of governmental activities.

B. Government Responsiveness
1. Create a city in which an individual's participation can have influence on the decisions that affect his or her life.
2. Ensure that property owners will be fairly compensated in the event that property or property rights are acquired in the public interest.

C. Booms of Adulthood and Involvement
1. Insecure public sector investment in large scale urban development activities in furtherance of urban economic activities beyond the capacity of the private sector due to the lack of funds and the absence of private sector financing or interjurisdictional coordination.

2. Encourage and facilitate private sector involvement in urban development activities in furtherance of urban form goals in relatively autonomous, profit motivated projects.

3. Participate in area-wide water management and transportation planning.

4. Minimize the level of government intervention necessary to achieve urban form goals.
Appendix D • D11

Urban Village Map — 2000 is a graphic representation of the urban village concept in Phoenix. Villages are shown by the most intense dot pattern in the center area of the village and village peripheries by the unshaded area between cores. Villages may have secondary cores providing services to less than than the whole village. Some of these secondary cores are shown on the map.

The map is primarily to identify the area to be planned by urban village planning committees and refers to the Village Production and Employment Control Zones of Policy 2. The map does not show the extent of the village peripheries. Exact locations of cores, gradients and peripheries will be identified by urban village planning committees.

The following policies will provide guidance for making decisions about the way the city should grow through the year 2000. They will provide direction in both initiating programs and controlling properties.

1. Structure future growth into a system of urban villages characterized by:
   a. High intensity pedestrian oriented cores with a full mix of activities. The downtown core should be the largest and most intense core and provide unique city and metropolitan services. Primary cores in other urban villages should be of similar importance although their character and intensity may differ. Villages may also have secondary cores to facilitate the provision of services to portions of villages.
   b. Identify low intensity peripheries incorporating functional open space.

2. Structure the timing and location of future growth to achieve approximately the following distribution of population, employment and housing:

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1. Basic industries include agriculture, mining, construction, manufacturing, transportation, communication, utilities, and State and Federal government.
11. Service industries include local government, public schools, retail and wholesale trade, finance, insurance, real estate and services.

POLICIES
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3. As a priority high-rise buildings should be concentrated in downtown and midtown before consideration of highrise in other areas.
4. Promote the development of Rio Salado for multiple uses.
5. Emphasize suitable use of canals, Cave Creek Wash north of the Arizona Canal and the Indian Band Wash.
6. a. Encourage significant increases in new residential development in the central valleys. b. Encourage moderate increases in new residential development in villages other than the central valley.
7. Reserve the southwestern portion of the city north of the Rio Salado for agricultural uses and for industries with low employment densities and of less area requirements.
8. Development north of the CAP aqueduct should generally be discouraged before the year 2000, but all development plans for that area should be reviewed on a case by case basis.
9. Encourage most new employment to locate in village cores.
10. Discourage any contiguous development adjacent to agricultural areas to prevent the loss of agricultural land.
11. Develop a planning and implementation program with a strong citizen participation component to bring about the goals of this plan. This program should include the following accomplishments by 1985.
   a. Preparation of the General Plan Elements required by the State. Preparation of the Land Use and Circulation Elements should begin immediately. The circulation element should include a long-range transit plan.
   b. Appointment of a village planning committee and preparation of a plan and implementation program for each village.
12. Reevaluate and update the goals, policies and recommendations of adopted plans every five years to meet the changing needs of Phoenix.

* Basic industries include agriculture, mining, construction, manufacturing, transportation, communication, utilities, and State and Federal government.
** Service industries include local government, public schools, retail and wholesale trade, finance, insurance, real estate and services.
Appendix D • D13

To work toward implementation of the Phoenix Concept Plan 2000 in all areas of the city, village and area planning committees shall be appointed and shall refine the city plan in accordance with the goals of their village or area and the following guidelines:

1. Village and area plans shall define actions working toward the goals and policies of the Phoenix Concept Plan 2000.

2. The components of village and area plans shall be as follows:
   a. A 25-year concept plan including:
      (1) Goals and policies.
      (2) A map indicating village cores where appropriate and the general distribution of land use intensity throughout the village or area.
      (3) Components of the city-wide concept plan relating to the village or area.
   b. A detailed plan with five-year staging including:
      (1) Land use maps showing existing development and for the first five-year plan future land uses and intensities in sufficient detail to serve as a basis for making zoning decisions. Subsequent five-year plans would show future land uses in increasingly less detail.
      (2) Employment and population distribution to traffic analysis zones. Total population will be broken into age groups and employment into appropriate categories.
      (3) Land use policies and standards.
      (4) Quantifiable objectives and an implementation program for the first five-year period.
      (5) Transportation policies and standards.

3. Each village plan shall work toward the development of an ideal urban village containing three elements — core, gradient and periphery.

Core: The core should be the clearly identifiable central focus for the village and contain a mix of the village’s most intense land uses. Employment, commercial, cultural and high-density residential uses should be concentrated here. A pedestrian environment should be emphasized.

Periphery: The periphery is the outer boundary of the village and contains the village’s least intense land uses — low-density residential neighborhoods, agricultural lands and open space. Even where more intense uses exist or are appropriate in a periphery, the average intensity of the periphery should be the area of least intensity between village cores.

Gradient: The gradient is the area of progressively decreasing land use intensity between the core and the periphery. The gradient contains some concentrations of land use intensity in subzones providing services to portions of a village.

Within the framework of the core, gradient and periphery, each village should offer unique features building upon existing identities. As each village evolves it should acquire a more distinct and recognizable identity and character based on the activities, life-styles and attitudes of its residents, creating a pride and enthusiasm of each resident in his or her community.
A. HISTORY OF URBAN FORM DIRECTIONS

In January, 1974, Mayor Timothy A. Barrow and the City Council appointed a Phoenix Planning Commission with the responsibility of preparing them with alternative urban form plans and their implications. The Commission's first step was to hold a seminar in Carefree to discuss urban form.

Next, the Commission appointed over 200 citizens to eight Urban Form Directions committees. During Phase I of the progress each committee studied a single topic: Land Use, Transportation, Conservation, Recreation, Public Buildings, Services and Facilities, Housing, Health, and Safety, and Neighborhood Rehabilitation and Redevelopment—similar to each one of the elements of a general plan required by Arizona law.

Beginning with a general meeting on April 2, 1975, the committees prepared reports, met weekly until they finished on October 1. While many detailed proposals were developed, the work of the committees focused on one subject—the urban village concept.

After consideration of the reports of the eight committees, the Planning Commission recommended that the City Council adopt the urban village concept described in the introduction to the plan and many of the other Phase I recommendations. The Council found the urban village concept to have merit but wanted more study of its implications. They authorized Phase II of the study reforming the Urban Form Directions Committee and the allocation of Planning Department staff to assist them. To direct Phase II the Planning Commission appointed a Steering Committee comprised of the chairman of the eight Phase I committees, the vice chairman of the Planning Commission and Joe Loomis, member of the Land Use Planning Department in the development of the urban village concept. Phase II began in early June of 1975.

The Steering Committee held meetings weekly. Over the first few months, the committee concentrated on refining the goals developed by the eight committees during Phase I. These goals were accepted by the Phoenix Planning Commission and City Council.

In September of 1977 the Planning Commission appointed representatives from four of the area planning committees to the Steering Committee to ensure coordination and cooperation of the activities of these groups.

The Steering Committee then concentrated its efforts on developing alternative urban village sketch plans. A trend was apparent that the Phoenix grid might look like assuming no change in current land use controls or was already.

After the sketch plans were developed, the Steering Committee met with the Phoenix Planning Commission and the Urban Form Directions Committee to determine the realism of proposals in each of the alternatives. These subcommittees worked over a year before completing their final reports which provided the basis for the Steering Committee to re-examine the alternatives. This recommendation was refined during a series of workshops held in Carefree in February and March 1978 and forwarded to the Phoenix Planning Commission. The Planning Commission held two public hearings on the plan in April and the City Council held one. The Phoenix Concept Plan of 1978 was then adopted by City Council resolution on July 31, 1978.

B. DEVELOPMENT OF GOALS

The goals included in the 2000 Plan are as defined in the Plan statement, "is to act; but they also formed the basis for evaluating plans and thus for selection of the 2000 Plan map and policies.

The Steering Committee concentrated its efforts on developing the goals of the eight committees of Urban Form Directions Phase I, the Steering Committee and Planning Department staff compiled three lists in a common format: (1) Urban Form Directions goals from Phoenix Planning Commission Reports, (2) adopted city goals from the Comprehensive Plan of 1975, and (3) Phoenix plan area, plans, and other adopted plans, and (4) Phoenix land use problems from Phase I Urban Form Directions Committee Reports and the work of the Phase II subcommittee convened for the purpose. These lists were used by the Steering Committee to identify overlaps and inconsistencies in the Phase I goals and to determine if significant problems or adopted goals were not considered in the Phase I goals.

The Steering Committee approved a preliminary list of goals for use in Phase II in December 1976. These were discussed with the Planning Commission in January 1977 and the City Council in February. The Commission and Council accepted them as appropriate for further work in Urban Form Directions.

In early 1977 the Urban Form Directions Committee and the Steering Committee conducted a questionnaire to the Steering Committee in determining the relative importance of the community attitudes was made in late 1977 and 1978. The results of the questionnaire helped the goals of Urban Form Directions and the Steering Committee's ranking of their relative importance.

C. DEVELOPMENT OF SKETCH PLANS

Work on sketch plans began with the identification of positions in the community on significant land use issues such as the strength of downtown Phoenix, types of dwelling units and sizes of residential areas, preservation of agricultural land, and development of the central Arizona Project. Eventually 50 different positions on land use issues were identified. Definitions of these are included in Appendix E.

A set of alternative positions on the issues were selected using the Sketch Plan Matrix included in Appendix E to central Phoenix and in neighborhoods of 20 different land use alternatives or sketch plans which would be possible and specifically constructed. Each of these plans were prepared and initially the following three were selected for additional study:

1. Sketch Plan 7 showing an urban village plan with much lower residential densities than Sketch Plan 1.
2. Sketch Plan 15 showing the other end of the spectrum of urban villages. Sketch Plan 7 with significantly higher residential densities than trends.
3. First Plan 18 showing development of central Phoenix very substantial redevelopment areas and major new residential development. Sketch Plan 18 was dropped in favor of Sketch Plan 16 after initial work had been done on the latter plan. These last plans were developed using the following steps:

1. Designation of land to be withheld from development including steep slopes, floodways and large public parks and airports. Sketch plans with characteristics of "retention of agricultural land" or "no development north of the Central Arizona Project" would also designate these areas as withheld.
2. Location of urban village cores and boundaries based on natural and man-made features, areas of existing high intensity uses and policy considerations.
3. Determination of residential densities and mix of housing types in the city as a whole and in each village.
4. Determination of employment distribution and the proportion of basic and service employment in each village.
5. Determination of land area requirements for land which will be devoted to recreation, and residential and employment activities.
6. Preparation of sketch plan map.

After preliminary analysis of Plans 1, 7, and 15, the Steering Committee and Planning Department staff prepared a fourth alternative, Sketch Plan 18 using the committee's concern for a larger selection of the community characteristics, core locations, village boundaries and an attempt at achieving the highest possible residential density in Phoenix assuming little redevelopment.

After substantial analysis and refinement of plans 7, 15, and 18 it was determined that the implementation measures required by Sketch Plan 18 in the committee's concern for a larger selection of the community characteristics, core locations, village boundaries and an attempt at achieving the highest possible residential density in Phoenix assuming little redevelopment.

After substantial analysis and refinement of plans 7, 15, and 18 it was determined that the implementation measures required by Sketch Plan 18 in the committee's concern for a larger selection of the community characteristics, core locations, village boundaries and an attempt at achieving the highest possible residential density in Phoenix assuming little redevelopment.

Sketch Plan 18 was designed as number 16. All four plans were developed for each five-year period between 1985 and 2000. The following is a brief description of the four plans:

1. Sketch Plan 1. This alternative represents a protection of land currently zoned for urban villages and indicates the total amount of land in the city that would show no change in land use controls between now and the year 2000. This represents the largest amount of residential land that would increase moderately from 5.9 to 3.4 dwelling units per acre. Employment would increase significantly in Central Phoenix, but population would remain relatively unchanged there. Residential development would extend north of the Central Arizona Project and much of the southwestern portion of the planning area would be within agricultural uses.
2. Sketch Plan 7. This plan assumes government management of the location of urban villages and development to create a city composed of 22 equally sized urban villages by the year 2000. Residential density would increase very moderately between 1980 and 2000 from 3.8 to 3.3 dwelling units per acre and most present agricultural and vacant lands in the planning area would be developed. Substantially more development is proposed in southwestern Phoenix than is projected by trends. Central Phoenix would have only slight population and employment growth.
3. Sketch Plan 15. This plan assumes government management of the location of urban villages and development to create a city composed of eight urban villages and indicate that substantial residential density would increase somewhat faster than trends to 5.0 dwelling units per decade and in new areas would be more balanced between the northern and southern portions of the city. Substantial new residential growth would occur in the center of the city to bring population and employment into a closer balance. More agricultural and vacant land would be retained.

The southwestern portion of the city north of the Salt River would be reserved for agricultural and low density industrial uses with little new residential development.

4. Sketch Plan 18. This plan assumes government management of the location of urban villages and development to create a city composed of eight urban villages and indicates that substantial residential density would increase much faster than trends to 6.0 dwelling units per acre with the construction of a large number of high-rise apartment buildings in central Phoenix and greater apartment construction in other areas.

The following table shows the significant differences among the sketch plans for residential land areas in the year 2000 but the relatively insignificant differences in other categories. Summary of 2000 year data by village or planning area is included in Appendix E.
Year 2000 Land Use Areas By Sketch Plan (Acres in Phoenix Planning Area)

<table>
<thead>
<tr>
<th>Land Use Category</th>
<th>2000</th>
<th>Sketch Plan 16</th>
<th>Sketch Plan 18</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agriculture</td>
<td>29,103</td>
<td>23,900</td>
<td>30,100</td>
</tr>
<tr>
<td>Vacant, Industrial</td>
<td>52,505</td>
<td>57,700</td>
<td>68,300</td>
</tr>
<tr>
<td>Residential</td>
<td>104,400</td>
<td>130,400</td>
<td>91,900</td>
</tr>
<tr>
<td>Basic Employment</td>
<td>67,200</td>
<td>70,200</td>
<td>14,300</td>
</tr>
<tr>
<td>Service Employment</td>
<td>24,100</td>
<td>25,800</td>
<td>24,300</td>
</tr>
<tr>
<td>Total</td>
<td>275,400</td>
<td>275,400</td>
<td>275,400</td>
</tr>
</tbody>
</table>

D. EVALUATION OF SKETCH PLANS

The evaluation of alternative plans formed the basis for the urban form directions. The Steering Committee’s recommendation of the 2000 Plan map and policies. The process selected for this evaluation was a Goals – Achievement Matrix to organize the comparison of the disparate factors indicating whether one plan is better than another. After selection of goals, use of the matrix begins with the identification of objectives to permit either a qualitative or quantitive measurement of an alternative’s achievement of a goal. The results of the measurements are then transferred into a common unit of normalization so the results of several measures can be summed.

In September 1977 the Urban Form Directions Steering Committee appointed the following four subcommittees to begin evaluation of the sketch plans:

1. Cost/Revenue
2. Man-Made Environment and Social Fabric
3. Transportation
4. Natural Environment

The charge to each subcommittee included those goals on which the Steering Committee found appropriate for study. The subcommittees were also asked to review other goals to determine if those goals had implications in their subject area.

After initial work on refining the goals assigned to them, the subcommittees identified measurable objectives for as many of the goals as possible. At the conclusion of their work only 24 of the goals were found to be measurable with the information available for this sketch plans. The measurement techniques used by each subcommittee differed substantially to be discussed below. A report by each subcommittee explaining these techniques is also available.

Cost/Revenue Subcommittees

This subcommittee’s work centered on the fiscal impact of each of the four sketch plans. On City of Phoenix and the Phoenix metropolitan region (comprising the consulting firm of Tischler, Marcus and Associates (TMA) was hired for the fiscal analysis city-wide projections of population, housing units, and basic and service employment under each sketch plan were broken down by sector or “tile” within the Phoenix Planning Area. This enables TMA to discriminate costs by area of the city where costs might differ substantially. For example, land costs downtown greatly exceed those south of the Salt River, affecting the cost of all land-usage public facilities located in one area or the other. These tile areas are defined as follows:

a. Tier I – central Phoenix
b. Tier II – most of the remaining development
c. Tier III A – predominantly undeveloped areas in the northern part of the city,
d. Tier III B – predominantly undeveloped areas in the southern and western parts of the city.

Cumulative Fiscal Impacts

The evaluation of four alternative sketch plans for the Phoenix Planning Area shows that the two fiscal impacts of the highest density plan, Sketch Plan 18, is better over the 1980 to 2000 time frame than the other alternatives. (See the following table).

For the City of Phoenix, the net fiscal surplus generated totaled $399 million, or $12.4 million and $46.5 million respectively, Sketch Plan 1, the “trends” alternative, generates a fiscal deficit of $98.5 million over the 20-year planning period.

The cumulative fiscal impacts noted above also indicate that no plan appears likely to generate major revenue surpluses, relative to the total Phoenix budget, or to forestall needs of the current population. Reversal growth, accounting for all the predictable sources, is barely enough to meet cost increases projected in this analysis.

Results for the Phoenix area school districts, aggregated into seven hypotetical districts, are more mixed, and are not easily summarized. Primary factors affecting the surpluses and deficits projected include current tax rates and State aid levels, and new property values projected, relative to the number of new pupils.

Summary of Cumulative Fiscal Results (1980-2000)

<table>
<thead>
<tr>
<th>Budget Category</th>
<th>Sketch Plan 1</th>
<th>Sketch Plan 7</th>
<th>Sketch Plan 16</th>
<th>Sketch Plan 18</th>
</tr>
</thead>
<tbody>
<tr>
<td>General Government</td>
<td>$100,745</td>
<td>$105,811</td>
<td>$100,763</td>
<td>$105,650</td>
</tr>
<tr>
<td>Criminal Justice</td>
<td>249,624</td>
<td>249,754</td>
<td>248,792</td>
<td>248,384</td>
</tr>
<tr>
<td>Public Safety</td>
<td>107,810</td>
<td>115,845</td>
<td>97,210</td>
<td>106,786</td>
</tr>
<tr>
<td>Transportation/Transit</td>
<td>91,762</td>
<td>85,702</td>
<td>65,670</td>
<td>94,606</td>
</tr>
<tr>
<td>Transportation/Storm Sewers</td>
<td>87,487</td>
<td>84,445</td>
<td>87,110</td>
<td>50,302</td>
</tr>
<tr>
<td>Transportation/Buses</td>
<td>62,453</td>
<td>76,883</td>
<td>62,483</td>
<td>52,483</td>
</tr>
<tr>
<td>Transportation/Other</td>
<td>98,028</td>
<td>98,028</td>
<td>98,028</td>
<td>98,028</td>
</tr>
<tr>
<td>Sanitation/Refuse</td>
<td>102,603</td>
<td>103,553</td>
<td>105,399</td>
<td>75,171</td>
</tr>
<tr>
<td>Sanitation/Recycle</td>
<td>52,092</td>
<td>50,847</td>
<td>44,130</td>
<td>40,064</td>
</tr>
<tr>
<td>Community Enrichment</td>
<td>159,339</td>
<td>159,502</td>
<td>152,186</td>
<td>152,918</td>
</tr>
<tr>
<td>Water System</td>
<td>239,581</td>
<td>239,581</td>
<td>239,581</td>
<td>239,581</td>
</tr>
<tr>
<td>Housing and Urban Redevelopment</td>
<td>0.677</td>
<td>0.677</td>
<td>0.677</td>
<td>0.677</td>
</tr>
<tr>
<td>Human Resources</td>
<td>16,820</td>
<td>16,820</td>
<td>16,820</td>
<td>16,820</td>
</tr>
<tr>
<td>Subtotal</td>
<td>$1,335,021</td>
<td>$1,286,709</td>
<td>$1,282,483</td>
<td>$1,213,461</td>
</tr>
</tbody>
</table>

General Revenues

| City General Revenues | $683,353 | $688,210 | $709,961 | $601,832 |
| City Property Taxes | 392,586 | 410,038 | 387,130 | 397,875 |
| Water System Revenue | 239,581 | 239,581 | 239,581 | 239,581 |
| Subtotal | $1,314,510 | $1,323,829 | $1,306,672 | $1,318,699 |

Surplus or Deficit

| Surplus or Deficit | $20,511 | $46,100 | $54,269 | $105,517 |

Note: Totals may not add, due to rounding.

*Revenues assumed to equal costs, shown here as an average of the four sketch plans. The rationale for these assumptions is discussed in the text.


No single sketch plan is best for schools in all areas of the city. If results are measured by the level of surplus or deficit generated, Sketch Plan 18 produces the highest surpluses in Tier I and II, due to high property value added and low pupil growth. Sketch Plan 7 is best in Tier II A, due to its high property value added per pupil added, which in turn reflects relatively high employment growth projected for this tier. Sketch Plan 7 also generates the highest surplus for Tier III elementary schools for similar reasons, although Sketch Plan 18 produces slightly better results for high schools. The latter effect is due to the combined impacts of pupil population levels, property values projected and current tax rates. These fiscal results, however, merely reflect the fact that Sketch Plans 7 and 18 are extremes of the spectrum. It is likely that, overall, Sketch Plan 16 might prove more beneficial to more school districts than any of the alternative plans. Sketch Plan 16, which generates the most even distribution of new pupils and new property values, would probably help to reverse declines in the inner city districts and moderate the strain of new growth in the developing areas.
Bonded Debt — Year 2000

Another measure of cumulative fiscal results, the level of outstanding debt in the Year 2000, shows that Sketch Plan 7 and 18 were the only City and school projects least burdened by bonded debt. Sketch Plan 7 has the lowest outstanding City debt in the Year 2000, primarily due to the absence of any guidedway transit costs. However, this plan also has the highest school debt as a result of high pupil generation, concentrated in undeveloped areas of Phoenix. Sketch Plan 18 is second best for both the City and public schools due to efficient use of existing facilities, but the cost of guideway transit makes other savings.

Relative Rankings

The following table exhibits the relative rankings among sketch plan alternatives for the City of Phoenix cumulative fiscal results and the Year 2000 bonded debt.

<table>
<thead>
<tr>
<th>SKETCH PLAN</th>
<th>CITY OF PHOENIX</th>
<th>1989-1990 &amp; YEAR 2000 BONDED DEBT</th>
<th>SUMMARY RELATIVE RANKINGS</th>
</tr>
</thead>
<tbody>
<tr>
<td>SKETCH PLAN 7 &amp; 18</td>
<td>.99</td>
<td>.94</td>
<td>CUMULATIVE FISCAL RESULTS</td>
</tr>
<tr>
<td>SKETCH PLAN 16 &amp; 17</td>
<td>.95</td>
<td>1.00</td>
<td></td>
</tr>
<tr>
<td>Year 2000 Bonded Debt</td>
<td>.99</td>
<td>.94</td>
<td>.95</td>
</tr>
</tbody>
</table>

With regard to these combined City rankings, higher densities, urban-village-centered concepts appear to be most beneficial. However, all alternatives, including Sketch Plan 18, are ranked in the realm of feasibility. This latter conclusion should be stressed. No alternative is so outstandingly positive or negative as to merit selection or disqualification on fiscal grounds alone.

Impact on Schools

Impacts on schools are even more favorable toward Sketch Plan 18 than the City rankings. This result is due to the assumption that with a high-density housing pattern being promoted by the City, families with children would likely locate in nearby communities rather than Phoenix. There is, thus, an implied central bias in the age-profile of the population if Sketch Plan 18 is implemented, resulting in modest number of new pupils and relatively few schools. These relatively favorable property values — highly favorable conditions for the schools.

Among the other sketch plans, the overall results of Sketch Plan 16 appear best in Tiers I, II, and III. (Tier I is included here, because numbers assigned to families are based on full-time enrollment, as is the case with Sketch Plan 1 for Tier I, and are not considered a "favorable" outcome for the standpoints of school districts' quality and viability.) Within Tier II, Sketch Plan 16 emphasizes low-density housing, which implies higher number of pupils, relative to the tax base added. Still, this sketch plan should produce fairly limited difficulty. If so, for the school districts in the tier.

Key Cost/Revenue Factors

Examination of the detailed outputs of calculated costs and revenues indicate that several elements are critical to the results for the City of Phoenix, as discussed above. Public Safety costs, Transportation, Sanitation, and the Capital Facilities. Although an additional, water system costs could have major impacts on Tier I City’s fiscal position, although the type and magnitude of such possible impacts is still under study.

With Public Safety programs, principally the Fire Department, capital facility requirements are critical, with compact development and low levels of public service being promoted by the City. Similarly, school facilities would likely exist in nearby communities rather than Phoenix.

Several factors influence total Transportation program costs, including costs for major streets and storm sewer construction, costs for guideway construction, and costs for street maintenance, lighting, and traffic control. For street and storm sewer work, sketch Plan 18 fares best, while Sketch Plan 7 has the lowest overall capital cost for transportation. However, operating costs for transportation programs result in Sketch Plan 7 having higher total costs than Sketch Plan 16. This is due to the high density of urban village concept embedded in Sketch Plan 7, relative to plans 16 or 18.

Sanitation costs differ widely between Sketch Plan 16 and the other alternatives, because the City is assumed to prefer conservative practices at all high-density buildings. Given the predominance of this housing type in Sketch Plan 16, the City cost (not considering private cost) is understandable.

A second reason for differences among Sanitation program costs is the level of sanitary sewer capital costs required by each plan. These costs range from $163 million under Sketch Plan 16 to $246 million under Sketch Plan 1. These costs, determined by the Water and Sewer Department, result in substantially different levels of debt service among the alternatives.

Differences among the alternatives for Community Enrichment costs reflect assumptions about land availability for parks under each plan. Due to the limited availability of suitable park sites in central Phoenix, new park facilities in Tier I were assumed to be severely limited. In Sketch Plan 16 and particularly Sketch Plan 18, increased population in Tier I simply results in a higher level of urban demand for park and recreation facilities. The City’s budget surplus on the City’s budget surplus is obtained by reducing the proportion of the population receiving some types of public services.

As noted above, Water System costs were estimated as a potentially significant area of difference between sketch plans. However, because water demand, and the means for making up any temporary shortfall of supply, cannot be determined at present, water system costs were estimated and averaged for the four plans in order to avoid unduly biasing the results. Instead, the Water and Sewers Department, as a result of discussions regarding this fiscal analysis, has undertaken a study of long-range water demand, and the resulting costs and feasibility of water supply. With this information, the department can plan to assure a safe and adequate water supply for Phoenix' future, at the most reasonable overall cost.

Cost/Revenue Subcommittee Conclusions

The City of Phoenix Fiscal Impact Analysis proved to be beneficial in assessing the relative public costs and revenues associated with each sketch plan alternative. While Sketch Plan 7 achieved the highest scores for the cost/revenue post, followed by Sketch Plan 16, 18, and 1 respectively. It is essential to note that the actual fiscal differences between the two extremes were when taken in an annual basis is relatively insignificant.

The Subcommittee therefore did not wish to recommend any one sketch plan alternative. The Subcommittee, however, noted that the Fiscal Impact Analysis study results indicate that some form of managed growth in line with the urban village concept appears to be fiscally beneficial although not overwhelmingly so.

The difficulty in assigning a cost to public benefit acquisition is that there are a range of feasible policies and measures which could be utilized. Monetary techniques might include out-of-pocket contributions, such as the Phoenix Mountain Park Lands, or land banking activities. Nonmonetary implementation techniques include variations in the zoning process, such as downzoning. Since many of the possible implementation tools have not been previously tested in Phoenix, accurate measurement and the relative effectiveness of these techniques is difficult to assess.

In assessing redevelopment activity, the degree of public and private involvement must be determined. Due to the currently limited existing of public redevelopment in Phoenix, which is primarily federally funded, the maximum level of activity is currently in the hands of the City. Tax incentives to private redevelopment activity through tax incentive techniques, the extent of private participation cannot be accurately measured.

In light of these implementation concerns, the Subcommittee concurs with the substantive evaluation of these issues made by the Man-Made Environment/Social Fabric Subcommittee. Their evaluation resulted in Sketch Plan 1 being the least difficult plan to implement followed by Sketch Plan 7, 16, and 18, respectively. The Cost/Revenue Subcommittee sees that substantially greater implementation costs would be incurred in Sketch Plan 18 than would be in Sketch Plan 7 or 16.

Man-Made Environment and Social Fabric Subcommittee

This committee dealt with the most qualitative aspects of economic and process and presented an integrated view of the fourteen goals it originally considered measurable. The goals it established encompassed many of those central to the urban village concept.

Sensory of Community

The most important of the subcommittee's goals, "Maximize the sensory of community felt by urban village and neighborhood residents," was evaluated with these measures:

1. The proportion of miles of natural and man-made features as village or planning area boundaries. Using this measure the following scores resulted in Sketch Plan 1 — 39%, Plan 7 — 86%, Plan 16 — 91%, Plan 18 — 91%. The area plans boundaries in Sketch Plan 1 had more flexibility in following natural boundaries as the goal of urban village. The subjective nature of keeping desired parcels of land out of production and redevelopment activities in the older areas of Phoenix would help to reinforce sense of community.
2. The deviation of village areas from the metropolitan employment participation rate. This measure is based on the assumption that people living and working in the same villages will have a greater sense of community. The high residential densities in Sketch Plan 16 permitted a dramatically better match of employment and residential opportunities with only 3600 people in the year 2000 not having the opportunity to live and work in the same village as compared to 7900 in Sketch Plan 16, 14,000 in 7 and 67,800 in Sketch Plan 1.

3. The deviation of each village area from an ideal mix of housing types. The Subcommittee subjectively selected the following mix of residential density ranges and the best opportunity for choice of appropriate housing in the year 2000:

<table>
<thead>
<tr>
<th>Dwelling Units Per Residential Acre in Category</th>
<th>Typical Dwelling Units Types in Category</th>
<th>Proportion of Dwelling Units in Category</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 - 1.7 large lot single family</td>
<td>5%</td>
<td></td>
</tr>
<tr>
<td>1-5 small lot single family</td>
<td>5%</td>
<td></td>
</tr>
<tr>
<td>5 - 15 patio homes and townhouses</td>
<td>5%</td>
<td></td>
</tr>
<tr>
<td>15 and over garden and high-rise apartments</td>
<td>5%</td>
<td></td>
</tr>
</tbody>
</table>

The net difference between each village percentage and the subcommittee percentage for each density range was determined. Sketch Plan 16 had the lowest average variation from the ideal mix and achieved the best score. The normalized scores for this measure were Sketch Plan 1 — 68, Sketch Plan 7 — 92, Plan 16 — 1.00 and Plan 18 — 0.85.

Vitality of All Areas

Another important goal measured by the Man-Made Environment and Social Fabric Subcommittee was, “Develop and provide for the continued vitality of all areas of the city.” Eight measures were used to determine a score for this goal including the composite score of the “sense of community” goal. This was identified as an essential ingredient for achievement of the vitality goal. Residents who share a sense of community would be more likely to support efforts to develop and maintain their community as a self-sustaining one. The normalized scores of community sense are as follows: Sketch Plan 1 — 85, Plan 7 — 73, Plan 16 — 82 and Plan 18 — 1.00.

Transportation measures were intended allowing that access to opportunities within the city was being carried out as efficiently as possible. It was noted that because of its small villages and low levels of congestion, lack of congestion also caused Plan 7 to score best for access to opportunities outside the city.

Another measure used was an index of accessibility to employment opportunities. Sketch Plan 16 received the best score for this index because it combined a good match of employment opportunities to population with relatively low levels of traffic congestion. The normalized scores for this measure are: Sketch Plan 1 — 97, Plan 7 — 97, Plan 16 — 1.00 and Plan 18 — 0.96.

Other measures used for this goal compared the mix of land uses in villages to the average for the city and the diversity of age of housing units. Sketch Plan 1 received the best score for mix of land uses and Plan 16 the best for diversity of age of housing units. Scores for this latter measure were: Plan 1 — 85, Plan 7 — 70, Plan 16 — 1.00 and Plan 18 — 0.94.

Implementation Problems

Another significant goal studied by the Subcommittee was, “Minimize the need for governmental intervention necessary to achieve urban form goals.” To measure the impact a subjective rating was assigned to each plan. The weighting done the degree of difficulty municipal government would have in implementing the plan. Prior to assigning the rating the Subcommittee discussed at length the role of the city government in plan implementation. The resulting scores were: Sketch Plan 1 — 1.00 indicating that it would be easiest to implement and therefore require the least intervention, Sketch Plan 7 — 80, Plan 16 — 80 and Plan 18 — 85 indicating that it would be somewhat more difficult to implement.

While Sketch Plan 16 and 18 scored low on the “minimizing governmental intervention” goal the Subcommittee feels that the negative political and economic consequences of “government intervention” could be overcome only if the City Council and the Planning Commission are committed to the urban village concept as being the most viable alternative to continued urban sprawl.

Main-Made Environment and Social Fabric Subcommittee Conclusions

The Subcommittee feels that certain characteristics of Sketch Plans 16 and 18 are necessary for achieving Man-Made Environment and Social Fabric goals and strongly recommend that they be retained in the sketch plan ultimately selected for formal adoption by City Council. Characteristics to be included in the recommended plan are:

1. A strong downtown core to help establish the City identity for its place. A strong downtown core is also necessary for Phoenix’ development and economic growth.
2. Strong village definitions that promote a sense of community, provides a choice of life-styles, and encourages continued vitality.
3. Retention of agricultural land for gardens within peripheries and buffer between villages and different land uses.
### Transportation Subcommittee

The Transportation Subcommittee considered the interrelationships of the four land use alternatives (Sketch Plans 1, 7, 16, and 18) and several transportation alternatives including the following components:

1. **Streets.** All transportation alternatives included, in the urbanized areas of each sketch plan, completion of major, collector and local streets as listed in the Phoenix Right-of-Way Standards Map for areas now within the Phoenix City Limits and 1980 FMSCA street standards for the remainder of the planning area.

The Transportation Subcommittee Report concentrated on the impact of different land use configurations with regard to the service needs of any single transportation system. Additional study and refinement of the transportation system will be undertaken during the development of a Circulation Element upon adoption of the Plan.

### Normalized Score for Transportation Goals

<table>
<thead>
<tr>
<th>Goal</th>
<th>1</th>
<th>7</th>
<th>16</th>
<th>18</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>E-C</td>
<td>Plan</td>
<td>E-C</td>
<td>Plan</td>
</tr>
<tr>
<td>Develop a land use pattern that reduces the need to travel by shortening required travel distances.</td>
<td>0.67</td>
<td>0.62</td>
<td>0.61</td>
<td>0.62</td>
</tr>
<tr>
<td>Provide mobility by improving transportation facilities for nonmotorized users.</td>
<td>0.89</td>
<td>0.93</td>
<td>1.01</td>
<td>0.92</td>
</tr>
<tr>
<td>Develop an equitable transportation system providing accessibility for nonmotorized users.</td>
<td>0.83</td>
<td>0.82</td>
<td>0.82</td>
<td>0.82</td>
</tr>
<tr>
<td>Provide for sale, efficient, and convenient movement and transfer of people and goods.</td>
<td>0.77</td>
<td>0.78</td>
<td>0.82</td>
<td>0.8</td>
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</table>

### Movement within and between villages is dependent upon mobility. Mobility is a reflection of competition and density. The availability of accessible employment depends upon both density and mobility. Thus, residential and employment densities increase, employment opportunities increase, but only as long as the densities do not reach a point where mobility decreases.

### Transit movement between and within villages was determined by the design of the sketch plan as well as system improvements. Transit use increased as the transit system improved, or as the travel distance was reduced. In no alternative tested did total regional transit ridership exceed 5% of total trips. Substantially higher proportions of transit ridership were projected for home-to-work trips in the central Phoenix area however.

The overall results suggest that lower densities improve mobility but do not improve accessibility to employment opportunities. Higher densities produced more congestion but required shorter trips and greater access to employment and shopping. Ideally, the optimum alternative will maximize employment opportunity to residents while minimizing traffic congestion.

### Natural Environment Subcommittee

The Natural Environment Subcommittee determined the achievement of ten goals by the four sketch plans. These goals dealt with air and water quality, agricultural land, energy and open spaces. Measurement of some of the more significant findings was performed as follows:

### Domestic Water Supply

The goal, "Provide a safe and adequate domestic water supply to all citizens of Phoenix," was measured by determining the amount of water required by population and water use outside the Salt River Project service area. The water may not be withdrawn from the Salt River Project service area unless replaced with water produced outside the service area. Assuming current rates of water use, the well production off-project and the contracted amount of water from the Central Arizona Project will not be adequate to meet peak day demand for water for any alternative throughout the 1960-2000 period when water credits are not available. Several alternatives are possible for bringing off-project water into the region. The plan suggests a combination of preproject development that has a high probability of success and the development of an off-project water supply that will complement the Central Arizona Project. The plan suggests that the off-project water supply be given a high score.

### Agricultural Land

The two measures used to assess a sketch plan's ability to preserve agricultural land: 1) the total number of acres preserved, and 2) the intensity of development adjacent to the agricultural land (measuring the compatibility of adjacent uses). The scores for the goals, "Preserve agricultural land," are: Sketch Plan 1 81, Plan 7 85, Plan 16 88, and Plan 18 100.
Groundwater

The goal, "Manage the quality and quantity of groundwater resources, and protect its uses by estimating the amount of groundwater overdraft resulting from retention of agricultural land uses in the Phoenix Planning Area. The scores for this goal are: Sketch Plan 1 = .93, Sketch Plan 7 = 1.00, Plan 16 = .82 and Plan 18 = .81."

Air Pollution

Air pollution differences among the plans were measured by the amount of vehicle emissions, and the scores of vacant and agricultural land causing particulate emissions. Sketch Plan 7 and Plan 18 received a score of 1.00, Plan 1 had a score of .96 and Plan 18 of .97.

Natural Environment Subcommittee Recommendations

The Natural Environment Subcommittee did not wish to recommend any of the four sketch plans as best achieving the intent of the Natural Environment Goals. Although Sketch Plan 18 came out with the highest score for most of the goals, the fact that it was the lowest in water conservation posed a problem. Also, although Sketch Plan 15 retained the greatest amount of open space, a good portion of it was located on the perimeter of the planning area and was not easily accessible to all villages.

The Subcommittee felt that certain characteristics of the sketch plans were important in achieving the natural environment goals and recommended that the following characteristics be included in the development of that plan.

1. Development of the Rio Salado and emphasis of waterways.
2. Retention of mountain open space and other environmentally sensitive areas.
3. Strong village definition to better utilize open space.
4. An overall density high enough to retain adequate open space and reduce energy consumption.
5. Multiple cores in numbers sufficient enough to create villages and not utilises.
6. A strong inflating policy that would reduce energy consumption, help preserve agricultural land, and minimize off-project water needs.
7. Retention of agricultural land when it may be incorporated into the open space periphery of a village while minimizing groundwater depletion.
8. Consideration should be given to all characteristics which tend to improve such goals as air quality and noise pollution even though little variation between sketch plans is now evident.

Summary of Evaluation Results

The following table presents the normalized scores for each of the Urban Form Directions goals found to be measurable by the four evaluation subcommittees. The goals are listed in the order of the Steering Committee ranking of their importance with the most important measurable goal listed first:

<table>
<thead>
<tr>
<th>Rank</th>
<th>Goal</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Provide a safe and adequate domestic water supply to all citizens of Phoenix.</td>
</tr>
<tr>
<td>2.</td>
<td>Conserve the quality and quantity of groundwater resources.</td>
</tr>
<tr>
<td>3.</td>
<td>Develop a land use pattern that reduces the need to travel by shortening required travel distances.</td>
</tr>
<tr>
<td>5.</td>
<td>Provide and maintain air quality compatible with health and well-being and with the prevention of damage to property, vegetation, and aesthetic values.</td>
</tr>
<tr>
<td>6.</td>
<td>Provide a sufficient choice of adequate housing in all parts of the city to meet the needs of all individuals.</td>
</tr>
<tr>
<td>7.</td>
<td>Maximize the opportunity for diversity and flexibility of activities and a choice of life-style.</td>
</tr>
<tr>
<td>8.</td>
<td>Provide mobility by improving transportation facilities.</td>
</tr>
<tr>
<td>9.</td>
<td>Provide for the multiple use of canals, floodplains and other waterways in the city.</td>
</tr>
<tr>
<td>10.</td>
<td>Preserve environmentally sensitive areas such as floodplains, wildlife habitats and steep slopes.</td>
</tr>
<tr>
<td>11.</td>
<td>To minimize the urban dome effect which tends to reduce normal daily temperature variations.</td>
</tr>
</tbody>
</table>

Normalized Scores from
### Sketch Plan Evaluation

<table>
<thead>
<tr>
<th>Rank</th>
<th>Goal</th>
<th>1</th>
<th>7</th>
<th>16</th>
<th>18</th>
</tr>
</thead>
<tbody>
<tr>
<td>13.</td>
<td>Develop and provide for the continued vitality of all areas of the city.</td>
<td>.88</td>
<td>.99</td>
<td>.99</td>
<td>1.00</td>
</tr>
<tr>
<td>14.</td>
<td>Develop an equitable transportation system providing accessibility to nonautomobile users.</td>
<td>.91</td>
<td>1.00</td>
<td>.90</td>
<td>.82</td>
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<tr>
<td>15.</td>
<td>Preserve agricultural land uses.</td>
<td>.81</td>
<td>.85</td>
<td>.98</td>
<td>1.00</td>
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<tr>
<td>16.</td>
<td>Minimize individual and municipal costs, given current levels of service, by providing public services and facilities in the most efficient manner possible.</td>
<td>.80</td>
<td>1.00</td>
<td>.99</td>
<td>.88</td>
</tr>
<tr>
<td>17.</td>
<td>Facilitate the continued growth of tourism through protecting the natural and man-made attractions which draw people to the valley.</td>
<td>.95</td>
<td>1.00</td>
<td>1.00</td>
<td>.97</td>
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<td>18.</td>
<td>Maximize the sense of community felt by urban village and neighborhood residents.</td>
<td>.65</td>
<td>.73</td>
<td>.82</td>
<td>1.00</td>
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<td>19.</td>
<td>Provide for multiple use of surface water without allowing groundwater quality to deteriorate.</td>
<td>.82</td>
<td>.91</td>
<td>1.00</td>
<td>1.00</td>
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<tr>
<td>20.</td>
<td>Equitably manage urban and agricultural water needs.</td>
<td>.99</td>
<td>.98</td>
<td>1.00</td>
<td>1.00</td>
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<tr>
<td>21.</td>
<td>Minimize the adverse impacts of transportation system construction and operation on housing and businesses, parks, schools, historical and archeological sites and on the aesthetics of adjacent areas.</td>
<td>1.00</td>
<td>1.00</td>
<td>1.00</td>
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<td>22.</td>
<td>Provide for safe, efficient and convenient movement and transfer of people and goods.</td>
<td>.82</td>
<td>1.00</td>
<td>.88</td>
<td>.71</td>
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<tr>
<td>23.</td>
<td>Establish, foster, and maintain high standards for the control of noise pollution, ensuring a noise level that does not cause stress or health damage.</td>
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<td>.99</td>
<td>.99</td>
<td>.97</td>
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<td>24.</td>
<td>Minimize the level of government intervention necessary to achieve urban form goals.</td>
<td>1.00</td>
<td>.90</td>
<td>.80</td>
<td>.65</td>
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Appendix D • D21

Characteristics of Sketch Plan

The following are definitions of the characteristics used to define sketch plans for study in Urban Form Directions Phase III. These are the characteristics that would be shown in the Sketch Plan Matrix. Each number indicates a group of alternative characteristics, while letters in the matrix indicate variations within the group.

Land Use

1. Strong Downtown Core — Weak Downtown Core

Sketch plans with a strong downtown core would include a downtown core with a significantly greater land use intensity and proportion of employment, cultural and recreational land uses, and employment opportunities in the center of the city. In this type of plan, the central area would have high density development, significant employment opportunities, transportation facilities, and other unique characteristics. In contrast, the downtown core in a weak downtown core would have low density development, limited employment opportunities, and less transportation facilities.

2. Monocore

This characteristic is applicable to cities with a single dominant core, such as a downtown area or a business district. In this type of plan, the core would be significantly more developed than the surrounding areas, with higher density development, more jobs, and more facilities.

3. Hierarchy of Cores — Equal Cores

In sketch plans with a hierarchy of cores, one, possibly Central Phoenix, would be significantly larger than the others and contain land uses serving all of the city. A second level of cores would serve as important employment centers and shopping centers. A third level, often called the community centers, would be designed to serve the needs of the individual community. These centers would include shopping centers, schools and include shopping centers such as the medium-sized area including large discount stores. The smallest service level is normally the neighborhood or area such as elementary schools and supermarkets.

In contrast to a hierarchy, a monocore plan with an equal or community centers or a downtown core would be the same size and contain land uses serving all of the city. A second level of centers would include significant employment centers and shopping centers.

4. Strong Village Core — Weak Village Core

The strength of a village core depends on the mix and intensity of land use activity. Weak village cores such as shopping centers without entertainment or employment opportunities would be classified as weak cores. Strong cores would be readily identifiable with 24-hour-a-day activity.

5. Village Specialization and Integration — Non-Metro Uses

Non-metro uses are those urban land uses normally serving less than the central area, such as educational and employment opportunities. In this type of plan, the central area would have a high density development with significant employment opportunities. Transportation facilities would be provided for the central area, but not for the surrounding areas. In this type of plan, the central area would also be an example of integration of non-metro uses. In this type of plan, the central area would have a high density development with significant employment opportunities. Transportation facilities would be provided for the central area, but not for the surrounding areas.

6. Village Specialization and Integration — Metro Uses

Metro uses are those serving the entire metropolitan area. There are normally only one or very few metro uses of each type. Examples of metro uses in Phoenix include ABQ, the Civic Plaza, and major bank headquarters. In this type of plan, the central area would have a high density development with significant employment opportunities. Transportation facilities would be provided for the central area, but not for the surrounding areas.

7. Retention — Development of Agricultural Land

Self explanatory.

8. Rio Salado — No Rio Salado

Sketch plans with Rio Salado would include full development of Rio Salado properties as proposed in the study by Daniel, Marn, Johnson, and Manders with additional associated development that might be expected. No Rio Salado would assume no significant development other than industrial and extractive uses.

9. Emphasis — Deemphasis Waterways

Sketch plans emphasizing waterways would make substantial use of the waterway for transportation and outdoor recreation facilities. Plans de-emphasizing waterways might include covering canals and channelizing washes.

10. Rotation of Mountain Open Spans — Development of Mountains

Sketch plans retaining mountain open space would continue or expand the present pattern of development within the mountain areas while sketch plans showing development of the mountain areas would include significant peripheral high density development on the mountains.


Sketch plans with maximum transit opportunity would provide convenient transit access to all of metropolitan Phoenix. Transportation facilities would be provided for all areas, and employment opportunities. Transportation facility construction and land use configuration would emphasize transit opportunity. Although travel opportunities would be significantly higher than it is now, it would still account for much less than a large portion of the trip. Maximum auto opportunities would emphasize construction of facilities to improve automobile movement.

12. Freeways — Parkways

a. No New Freeways Except I-10 Connections

Although selection of an I-10 connection has not occurred, for the purposes of this study only the inner loop and the Durango Belt-alternatives will be considered.

b. Freeway Network

This category would include sketch plans with a freeway system using new and existing freeways providing interconnection of significant metropolitan subareas with a high proportion of total trips using a freeway during some portion of the trip.

c. Parkway Network

Sketch plans in this category provide interconnection of significant metropolitan subareas by parkways as a supplement to the major street system. A parkway is a six or more lane heavily landscaped major street with limited frontage access.

13. Bus and/or Dual Mode Systems

This category includes sketch plans with a bus or additional roadways transit service to most of the city. A dual mode system would have the capacity of providing door-to-door vehicle service and automated fixed guideway movement for a significant portion of the trip.

14. Fixed guideway Systems

This category included sketch plans with a significant portion of the portions served by a mass transit system employing a fixed guideway. Examples of this type of transit system include streetcars, subways, railroads, monorails, and separate bus lanes. Existence of this system would depend upon a high volume of passenger traffic, and the demand in the corridor including the fixed guideway. The demand would normally be evidenced by high density land use along the corridor or by a concentration of trips ending at points connected by the corridor. The concentration of trip ends could be accomplished through a combination of a fixed guideway system and a bus or other flexible transit system feeding points on the fixed guideway.

15. Uniform Accessibility — High Accessibility to Cores

a. Uniform Accessibility

This would provide relatively equal access to most employment, shopping, and recreational opportunities from most areas of the city. As an example, a grid major street system would meet the definition of providing relatively uniform accessibility on a metropolitan scale even though there would be differences on a local scale between the areas. Designations of various zones are midway between major streets.

b. High Accessibility to Cores

This would provide significant differences in accessibility on a metropolitan scale. Areas of intense land use (cores) would have much higher levels of accessibility than areas of less intense land use. For example, some type of radial transportation system would converge on cores and/or cores would be near major freight interchanges or high capacity transit terminals.

16. Strong — Weak Connection of Cores

With strong connection of cores it would be relatively easy to get from one core to another, interaction and interdependence among cores would be facilitated. Conversely, weak connection of cores could lead to more autonomous integrated subarea units.

Housing

17. Density

a. Low Density — 0 to 5 DU per Residential Acre

This category includes sketch plans where the average residential density of Phoenix would be less than five units per acre. The residential character of the city would be similar to that of today, with most small houses in medium-low density (1.7-9 DU/A) subdivisions. A small proportion of dwellings would be found on a significant farm area, would be in low density area (under 1.7 DU/A) and a small number of dwelling units on a small area would be in densest over 15 dwelling units per acre.

b. Medium Density — 5 to 10 DU per Residential Acre

This category includes sketch plans with an average residential density for Phoenix of five to ten dwelling units per acre. While there would still be a substantial proportion of dwelling units in medium-low density (1.7-9 DU/A) developments, almost all new residential development in the city would be at densities over 15 dwelling units per acre.
c. High Density — Over 10 DU/A (residential acre)

This category includes sketch plans with an average residential density for Phoenix in excess of two dwelling units per acre. Almost all new construction would be at densities well in excess of 15 DU/A and large areas of existing housing would be redeveloped to higher densities.

18. Mix-Uniformity of Housing Types in Villages

a. Mix of Housing Types in Villages

In this category, sketch plans would include a mix of housing types in each village approximately equal to the City average in the year 2000.

b. Uniformity of Housing Types in Villages

In this category, sketch plans would include a mix of housing types in each village approximately equal to the City average in the year 2000.

19. Orientation

a. Orientation Related to Core Areas

This category represents sketch plans with a random distribution of employment opportunities. That is, employment opportunities would generally be unrelated to residential locations or to locations of shopping, recreational, and other opportunities.

b. Orientation in Village Core

This category represents the situation of extreme centralization. Most employment opportunities would be located in the central core.

c. Orientation in Village Core

This category represents sketch plans with employment opportunities dispersed throughout the City, but concentrated in village cores.

20. Strong — Weak Village Definition

a. Strong Village Definition

This category includes sketch plans where there is a considerable difference in visual characteristics among villages as well as in the well-defined boundary between villages.

b. Weak Village Definition

This category includes sketch plans where there is little visual difference among villages and no attempt to create well-defined village boundaries.

21. Growth Management — No Location Management

Other than the normally small area impact of zoning restriction, Phoenix exercises little direct control over the location of new development. Thus, any change from current trends in the location of new development will require additional location management activities. The more the sketch plan differs from trends the more control will be required for location of new development.

22. Development — No Development North of the Cap

Self-explanatory.

23. Rate Management — No Rate Management

Sketch plans with this characteristic would attempt to increase or decrease the rate of population growth or to make no change in the growth rate.

24. No Growth

In this characteristic a population size similar to the present one would be retained.

D. SKETCH PLAN MAPS AND DATA SHEETS

- Sketch Plan 1 (Trends) p. 36
- Sketch Plan 7 p. 38
- Sketch Plan 16 p. 40
- Sketch Plan 18 p. 42
### SUMMARY SHEET SKETCH PLAN # 1 (TRENDS)

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<td>0</td>
<td>8.7</td>
<td>9.7</td>
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</tbody>
</table>

**Total Agriculture Acres:** 29,120
**Total Vacant Developed Unzoned Acres:** 0
**Total Vacant Developed Zoned Acres:** 59,418
**Total Land Withdrawn From Development (including towns, parks, selected roadways, and airports):** 33,774

---

**KEY**

- Village Gradients
- Village Cores
- Planning Area

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**SKETCH PLAN 7**

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**South Mountain Park:** 15,341
**Total Residential Acres:** 104,430
**Total Basic Industry Acres:** 15,158
**Total Service Industry Acres:** 24,141
**Total Acres in Planning Area:** 275,986
### SUMMARY SHEET SKETCH PLAN #7

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<th>Village</th>
<th>Average Residential Density</th>
<th>Percent D.U. over 15</th>
<th>Total Employment</th>
<th>Total DU</th>
<th>Total Employee Density (Emp/Acre)</th>
<th>Service Area (acres)</th>
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</tr>
</tbody>
</table>

**TOTAL:** 32,800

*Partial villages (remainder outside PPA)
*Excludes South Mountain Park

---

**SKETCH PLAN 16**

- **Agriculture Acres:** 23,804
- **Total Vacant Residential Acres:** 0
- **Total Vacant Unserviced Acres:** 0
- **Total Vacant Serviced Acres:** 23,534
- **Land Withdrawn from Development:** 30,774

---

**KEY**

- **Village Gradients**
- **Industrial and Agricultural Area**
- **Downtown Core**
- **Primary Core**
- **Secondary Core**
- **Planning Area**
#### SUMMARY SHEET SKETCH PLAN #16

<table>
<thead>
<tr>
<th>Village</th>
<th>Average Residential Density</th>
<th>Percent D.U. in D.U.A.</th>
<th>Total Population</th>
<th>Employment Population</th>
<th>Part. Rate</th>
<th>Total D.U.</th>
<th>Employees Density (Emp./Acre)</th>
<th>Basic Service</th>
<th>Area (acres)</th>
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<td>481,110</td>
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<td>12.6</td>
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</table>

*Partial village (remainder outside PPA)
*Excludes South Mountain Park and areas north of Central Area Project

<table>
<thead>
<tr>
<th>Total Agriculture Acres</th>
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<tr>
<td>Total Vacant Developable Unserviced Acres</td>
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<tr>
<td>Total Vacant Developable Serviced Acres</td>
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<tr>
<td>Total Land Withheld From Development (deep slopes, large parks, selected roadways, and airports)</td>
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</tr>
<tr>
<td>South Mountain Park</td>
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<tr>
<td>Total Residential Acres</td>
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<td>Total Basic Industry Acres</td>
<td>14,290</td>
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<td>Total Service Industry Acres</td>
<td>24,510</td>
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<td>Total Acres In Planning Area</td>
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SUMMARY SHEET SKETCH PLAN #18

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<tr>
<th>VILLAGE</th>
<th>Averages</th>
<th>Residential Density</th>
<th>Percent D.U. over 15 D.U./A.</th>
<th>Total Population</th>
<th>Emp. Employment</th>
<th>Port Rate</th>
<th>Total D.U.</th>
<th>Total Service Acres</th>
<th>Employee Density</th>
<th>(Emp./Acre) Service Area (acres)</th>
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<td>1,042,153</td>
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</table>

*Partial sites (remainder outside PPA)
**Excludes South Mountain Park and area north of Centine Area Project

H. POPULATION, EMPLOYMENT, LAND USE AND DEVELOPMENT AND DWELLING UNIT ASSUMPTIONS

Population Projections

All sketch plans provided for a projected population of 1,042,077 for the Phoenix Planning Area in the year 2000. The source for this projection is the Maricopa Association of Governments’ Guide for Regional Development, Transportation and Housing, January 4, 1978, and the projection for the Phoenix area, prepared by the Department of Economic Security projection for Maricopa County. The projection assumes a decline in the Phoenix proportion of county population from 57.7% in 1960 to 45.5% in 2000.

The total population allocated to the Phoenix Planning Area and the other planning areas in Maricopa County is based on an initial distribution by each jurisdiction in the county and Maricopa Association of Governments staff. The final distribution is regulated by the city managers to reach a distribution which does not exceed the control total. Once the control total is given, persons per household factors are applied to compute the number of households. Vacancy rates are then applied by dwelling unit type to produce the number of dwelling units.

Between 1970 and 1978 the number of persons per household in the City of Phoenix declined from 3.13 to 2.85 or 28. The national household size declined 22 during the same period. The Census Bureau predicts that households will continue to decline in size until 1990 although the rate of decline will gradually decrease. Using Census Bureau information we were able to determine the range in projected decline for each five year period and used the midpoint of that range for our projections. This resulted in the following persons per household:

- 1975: 2.85
- 1980: 2.70
- 1985: 2.50
- 1990: 2.30
- 2000: 2.00

We have no reason to believe that Phoenix will not follow the national trend.

The number of persons per dwelling unit was established based on data from the 1970 census on total dwelling units and overall vacancy rates. 1970 census data and comparison with household size by type in other cities. The number of persons per dwelling unit by type for 1990 were projected to be as shown in the following table.

The overall vacancy rate includes both on and off market units and counts as vacant all units occupied by persons who reside here less than six months of the year. If the vacancy rates were cut in half to four percent (the 1970 vacancy rate was 4.5 percent and the 1975 rate 6 percent) and the number of dwelling units were kept constant, the population would increase to 173,000 or 30,000. Conversely if the population and persons per household were held constant, the number of dwelling units would decrease about 12,000 with the reduced vacancy rate.

The number of persons per dwelling unit per gross acre in each of the four residential density categories used in the alternative plans was developed based on the current and projected population projections and assumptions about new construction and demolition in the future. The number of persons per dwelling unit were then applied to the percentage of each type. For example, in one density category:

<table>
<thead>
<tr>
<th>0 — 1.7 dwelling units/acre</th>
</tr>
</thead>
<tbody>
<tr>
<td>Single-family</td>
</tr>
<tr>
<td>9% x 2.77 = 263.15</td>
</tr>
<tr>
<td>Multi-family</td>
</tr>
<tr>
<td>1% x 1.81 = 1.81</td>
</tr>
<tr>
<td>Mobile homes</td>
</tr>
<tr>
<td>4% x 1.68 = 27.76</td>
</tr>
</tbody>
</table>

Employment Projections

All sketch plans provided for total projected employment of 543,300 for the Phoenix Planning Area in the year 2000. The source for this projection is the Maricopa Association of Governments’ Guide for Regional Development, Transportation and Housing, January 4, 1978. The projection assumes an increase from the 1980 employment participation rate of 45% for Phoenix to 52% by 2000 as a result of a greater participation of women in the labor force and of Phoenix becoming more of an employment center for the metropolitan area. Employment was broken into basic and service groups for distribution within the planning area. The components of these groups are as follows:

Basic — Agriculture/Mining; Construction; Manufacturing; Transportation; Communication and Utilities, and State and Federal Government

Service — Local Government; Public Schools; Retail and Wholesaler Trade; Finance, Insurance and Real Estate, and Services

1980 Trends

<table>
<thead>
<tr>
<th>D.U. Type</th>
<th>No. of D.U.</th>
<th>Percent Vacant</th>
<th>No. of Households</th>
<th>Persons Per D.U.</th>
<th>Persons Per Household</th>
<th>Total Pop.</th>
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</thead>
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<td>Single family</td>
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<td>195,800</td>
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<td>2.95</td>
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<td>9,100</td>
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<td>2.39</td>
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<tr>
<td>Multi-family</td>
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<td>13.0</td>
<td>55,300</td>
<td>1.81</td>
<td>1.90</td>
<td>121,300</td>
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<tr>
<td>Mobile Home</td>
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<td>10.0</td>
<td>11,700</td>
<td>1.69</td>
<td>1.68</td>
<td>23,000</td>
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<tr>
<td>Total</td>
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A summary of the employment projections for the Planning Area are as shown in the following table.

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<tbody>
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<td>Basic ex. Government</td>
<td>110,380</td>
<td>121,060</td>
<td>129,700</td>
<td>153,300</td>
<td>176,600</td>
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<td>Federal &amp; State Gov.</td>
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<td>35,000</td>
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<tr>
<td>Basic: Subtotal</td>
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<td>Service ex. Government</td>
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<td>Local Gov. &amp; Pub. Sch.</td>
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<td>Service Subtotal</td>
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<td>414,500</td>
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<td>.46</td>
<td>.47</td>
<td>.49</td>
<td>.52</td>
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Land Use and Development

1. For all plans no development was permitted in the following areas:
   a. Selected roadways for the Salt River, Cave Creek Wash, the Indian Bend Wash, New River and the Arizona Canal between Cave Creek Wash and New River.
   b. The Phoenix Mountain Preserve, South Mountain Park and all existing district parks.
   c. All land with a cross slope in excess of 10% (although this assumption does not consider some probable variances indefinitely, it simplifies plan preparation and computer testing).
   d. Land within the future planned boundaries of Sky Harbor Airport including land to be acquired for safety and noise protection west of the airport.
   e. Deer Valley Airport.
   f. The Arizona National Guard and United States Army Reserve Centers adjacent to Papago Park.
   g. Traffic congestion will be sufficient to restrict development in any area of the city.
   h. There will be adequate water available for urban and industrial needs.
   i. Sewage treatment plant capacity will be expanded as necessary to meet the demands of projected population.
   j. There will be no extended gasoline shortages sufficient to restrict use of private automobiles.
   k. Federal air and water quality standards will not be so restrictive as to limit growth.

Dwelling Units

The Sketch Plans were developed using the following four residential density categories: 0 to 1.7, 1.7 to 5.5, 5.5 to 15 and 15 and over dwelling units per gross residential acre. Based on the 1970 Land Use Information System and building permit activity since then, the proportion of dwelling types within each density category was estimated for 1980, 1990, 1995, 1990 and 2000 to the land plan. Seven types were used for the fiscal impact analysis — large lot single-family, small lot single-family, patio home, townhouse, garden apartment, high-rise, and mobile home. These proportions were adjusted for each of the other sketch plans based on the extent of differences in distribution to density categories from the land plan. A summary of the results of this procedure is shown in the following table.

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<td>Single Family - Small Lot</td>
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<td>42</td>
<td>60,611</td>
<td>41</td>
<td>39,535</td>
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<td>Patio Home</td>
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<td>Townhouse</td>
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<td>Garden Apartment</td>
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<td>High-rise</td>
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<td>Mobile Home</td>
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Thank you.

Document Prepared by the City of Phoenix Planning Department

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In 1989 and 1990, the City sponsored the Futures Forum, a series of meetings which provided an opportunity for the community to discuss and articulate a vision for Phoenix’s future. Some of these discussions focused on Phoenix’s existing urban form and the strengths and weaknesses of the Urban Village Concept. In 1991, as part of an update of the General Plan, the City used the results of these discussions as a basis to refine the existing Urban Village Concept into a new urban form model for Phoenix. From 1991 through 1994, the City worked with the Village Planning Committees and other citizens to refine and finalize these concepts into a new Urban Village Model. This document contains the results of these efforts.

This document provides a new model for the desired urban form of Phoenix. Based on new community perceptions of place and neighborhood, this new model refines the original Phoenix Urban Village Concept. This new model provides a description of existing development patterns and a prescription for what Phoenix’s urban form should be in the future. In existing areas the model provides insight into how redevelopment might modify existing development patterns to enhance the efficiency of urban services and economy while promoting a stronger sense of community. For newly developing areas the model provides a blueprint for building a new urban form that better meets the community’s desires for function and sense of place.

**PURPOSE**

The purpose of the model is to provide a physical place for Phoenix residents that promotes a strong sense of community, promotes a healthy and viable economy, promotes the efficient provision of high quality urban services, and protects the quality of life in established neighborhoods.

**INTENT**

This model provides the basis for updating the Phoenix General Plan. The model contains the general concepts that will be used to update the goals, policies, and strategies of the Land Use and other appropriate elements of the General Plan. The model will implement through the policies of the General Plan and the mechanisms for implementing those policies. The model represents a desired end state. However, because of the dynamics of urban development, the desired end state will likely never be achieved for the City as a whole. It may be achieved within small portions of the City, particularly newly developed areas. For the more urbanized parts of the City, this end state provides a model for which portions may be implemented incrementally as redevelopment and enhancement occur.

**HISTORY**

The Urban Village Model is a refinement of the Phoenix Urban Village Concept. This concept was originally identified as the urban form for Phoenix by a citizen committee that worked from 1974 to 1979. This work resulted in the adoption by the City Council of the Phoenix Concept Plan 2000. This Plan defined the Urban Village Concept and was used as the basis for developing the General Plan adopted by City Council in 1985. The Plan initially established nine villages and the urban form for Phoenix. The Plan also established Urban Village Planning Committees, charged with providing advice to the City Council on planning related issues in each village.
The Urban Village Model is based on five principles.

**Principle 1.** Balancing housing and jobs
The idea of living, working, and playing in the same village is a basic principle of the Model. This principle focuses on creating a sense of community by providing living, employment, and recreational opportunities in close proximity to village residents. Residents of Phoenix, and the entire metropolitan region, have many choices as to where they will live, work, and play. Factors such as the transportation system, disparities in educational system quality, ongoing changes in provision of retailing services, a range of job opportunities available, and a variety of lifestyles, are examples of what impacts where people live, work, and play.

Although it may be difficult to achieve a standard citywide ratio for each village, consideration should be given to identifying a ratio for each village. This should be based on the long term economic development goals of the community, the unique characteristics of each village, and the opportunities for future employment and population growth for each. Thus the appropriate ratio of jobs to population will be determined for each village. This will result in a range of ratios based on the historic development patterns of each individual village.

**Principle 2.** Concentrating intensity in village cores
The core is considered the central focus for each village from both a physical and social standpoint. To become that focus, the core should include a variety of land uses that will create a reason for village residents to come to and congregate in the core.

Because the core is the central focus for each village, it shall contain the highest development intensity - concentration of people and activities. Core intensity in a village will be based primarily on the intensity of development in the village. However, the absolute intensity of village cores will be different from one village to another.

**Principle 3.** Promoting the uniqueness of each village
Each of the urban villages has a unique natural, urban and social character. That character should be enhanced by the types and intensities of land uses that are developed in the village. The Model establishes land use categories which provide each village flexibility as to how those land use categories are used to enhance the character of the village.

**Principle 4.** Preserving and enhancing the quality of life in each village
There are a variety of factors that contribute to the quality of life in Phoenix and each of its villages - i.e., climate, environment (air, water, open spaces), recreation opportunities, employment opportunities, educational opportunities, and a variety of housing opportunities. In some instances desirable factors exist that are unique to specific villages - freeway access, natural features, housing stock, and historic resources. Those factors should be identified, and where possible preserved, and enhanced for each village.

Historic structures, both residential and commercial, add character and create identity. Preservation of historic sites and structures should be encouraged. Development in or adjacent to historic structures should be sensitive to the area. Whenever possible, the structure should be preserved in its entirety. If the site is redeveloped, every attempt should be made to incorporate the historic facade.

**Principle 5.** Providing for a majority of resident needs within the village
In addition to providing employment opportunities for village residents, other types of private and public services should must be equitably provided to satisfy resident needs. Private and public services should include, but not necessarily be limited to, programs and facilities that address critical social issues such as homelessness, substance abuse, domestic violence; dependent child and adult care, criminal justice services; and residential treatment of AIDS, Alzheimers, chronic mental illness and other health problems. Consideration, where reasonable, should be given in each village to insure that these services needs are provided in a balanced manner within a reasonable distance of each resident. A balanced City-wide distribution will help alleviate the problems that may be created when these services are concentrated in a particular village or area of the City. In addition, efforts should be made to insure that both private and public services are distributed equitably among all the cities in the metropolitan region and not concentrated in Phoenix.

**Principle 6.** Directing urban planning through the Village Planning Committees
The central planning unit for each urban village shall be the village planning committee which shall have the opportunity to formulate its recommendations regarding the following factors in consonance with the affected neighborhood groups registered with the City of Phoenix and any other affected property owners:

- Location of the five components of the Urban Village Model, including identification of the need for new service areas.
- An appropriate mix of land uses based on the residential component.
- Character, uses and intensities within cores.
- Appropriate ratio of jobs to population.
The recommendations of the village planning committees shall be forwarded to the Planning Commission and City Council for review, comment, and action.

**Principle 7.** Balancing economic impacts and land use decisions

Land use decisions should be evaluated in the context of the potential impacts on the economic viability of the village as a whole. In addition, the impacts on the short and long term revenues of the City should be determined. Consideration of the economic viability in each village is essential to the overall viability of the entire City.

The Urban Village Model is comprised of five components which identify the basic land use relationships within each urban village. These are: CORE, NEIGHBORHOODS, OPEN SPACE, COMMUNITY SERVICE AREAS, and REGIONAL SERVICE AREAS. Each identifies a broad range of similar land use types that exist in each village.

**ARRANGEMENT OF COMPONENTS**

The diagram on Page 8 shows how the five components might be arranged, particularly within newly developed areas. Within more urbanized parts of the City, the arrangement of these components might look quite different and reflect transition areas between commercial and residential uses. Where single family stock exists within the transition area, or within any of the five components, its retention is encouraged.

**CHARACTERISTICS**

Each Component has characteristics which determine the land use relationships within each component and between the various components. For each component these characteristics are defined in the following terms:

- **Function** describes the purpose, or role, of each component. Function remains consistent throughout all villages. For example, the function of neighborhoods - to provide housing and support services - is the same throughout all villages.
- **Relative intensity** describes the level of concentration of activities and people. The intensity of development will be a related to the development character and unique circumstances that exist in each village. The relative intensity of the core will not be the same in every village. In addition, relative intensity will be further defined by the "development character" both in the context of each village and in the context of the City.

**Developments character** identifies three levels of relative intensity that can be generally applied to land use patterns in Phoenix. Development character addresses the basic site development elements of building type, configuration and placement, lot coverage, pedestrian amenities, automobile orientation, and access to transportation systems. Specifically these characteristics are further described by the following:

- **Urban character** refers to a development pattern which maximizes buildable area. Character includes features such as narrow streets, minimal building setbacks, maximum lot coverage, minimum surface parking, and pedestrian accessibility to adjacent buildings. These features provide enhanced opportunities for multimodal transportation services.
- **Suburban character** refers to a development pattern which is oriented towards automobile accessibility. Features include wide streets, large building setbacks, low percentage of lot coverage, and extensive surface parking frequently between the building and the street. These features limit opportunities for pedestrian access from the street and transit stops.
- **Rural character** refers to a development pattern which minimizes buildable area and maximizes the use of open land for natural, recreational, or agricultural uses. Features include narrow streets or unpaved streets with minimal or no curbing, minimal or no sidewalks, variable building setbacks, low lot coverage frequently with low profile buildings, and parking associated with an equivalent or greater area of natural vegetation. Low density development severely limits transit and pedestrian opportunities though recreational pedestrian, bicycle, and equestrian opportunities may be provided.

Generally relative intensity will decrease from the core to the village boundary. There will be nodes of more intense land use activity located at prescribed areas throughout the village based on resident needs for employment opportunities and services.

Relative intensity can be described based on Floor Area Ratio (FAR), trip generation, land use characteristics, density, and other unique site factors. Also, high intensity does not necessarily mean high rise buildings.

- **Land use** describes the types and the mix of land uses desirable in each component. The mix of land uses will vary by village, but land use types will be generally consistent among all villages. For example, the types of residential development (single family detached, single family attached, and multi-family) will be the same in most villages but the mix among these residential types will vary.
transportation describes the factors of the component which impact the transportation system and define the types of transportation services that may be required.
Appendix D • D35

Because a village boundary is generally considered to be a line on a map and does not occupy space, it is not considered to be a component of the Model. The boundary for each village does serve an important function.

1. The boundary is a line on a map that identifies the planning area for each village planning committee.

2. Where a physical feature serves as a boundary, it has the potential to be a clearly identifiable symbol for the village. As such, it contributes to the unique character of that village and becomes a symbol for identification of and association with a village. Where there is a physical feature, the appropriate village planning committee(s) should be actively involved in the planning process with respect to such feature.

Within each village, the Model can be used to identify boundaries in the context of physical barriers and edges that serve as distinct separations between neighborhoods and communities. This requires an examination of internal neighborhood and community relationships to ensure that the boundaries do not conflict with these relationships. Once the boundary relationships between neighborhoods and communities are identified, the Village boundaries should not divide neighborhoods and or communities.

Examples of boundary types:
- Natural feature:
  - mountains
  - drainageways
- Manmade features:
  - freeways
  - arterial streets
  - canals

Arterial streets and canals, which can serve as boundaries, also have the potential to serve as linkages within the open space network. Used as linkages, streets and canals serve the residents of adjacent neighborhoods, communities, and villages.

Critical issues to be addressed for boundary identification;
- the potential impacts of land use decisions that occur near the boundary of two villages
- the use of physical features, mountains and canals, which help to identify the unique character of the village

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Critical issues to be addressed for boundary identification;
- the potential impacts of land use decisions that occur near the boundary of two villages
- the use of physical features, mountains and canals, which help to identify the unique character of the village
Land Uses:
- retail, office, public, hotels
- may include some regional services
- multi-family
- entertainment/cultural centers
- pedestrian plazas

*Where single family stock exists within or adjacent to the Core Component, its retention is encouraged.

Transportation:
- important destination for the village
- high trip generation rate
- multi-modal - vehicle, transit, pedestrian
- accessed by two or more arterials - internal circulation on local and collector streets

GOALS AND POLICIES
The goals and policies to be included in the revised Land Use Element of the General Plan will focus on the following:
- Provision of a central focus that creates a physical identity for the residents of each village.
- Provision of a mix of employment and housing opportunities in an area with the village's most intense development.
- Provision of an area that serves as a central focus for social interaction in each village.
- Provision of a transition and/or buffer between intense core development and other less intense development including residential neighborhoods. Transition can be provided through reduction of building height, siting of buildings, and/or changes in land use. Buffer can be provided through the use of open space landscaped areas and major streets. The transition and/or buffer should occur within the core.

SECONDARY CORES
The General Plan identifies secondary cores in the Camelback East Village, Maryvale Village, and North Mountain Village. This designation recognizes existing secondary cores, but additional secondary cores should not be designated. The secondary cores may provide areas of major office employment and support services or may serve as a central focus for a community. Secondary cores are differentiated from the Core in that a secondary core generally would not have the mix of uses or the intensity of development that should occur in the core.
NEIGHBORHOOD SERVICES
These are land uses that provide basic services and goods to neighborhoods within a 1 or 2 mile trade area. This includes a range in size from the smallest commercial development site to a commercial development no larger than a site anchored by a small grocery store. In many of the more urbanized villages, neighborhood services are sometimes provided in a development type recognized as linear or strip commercial areas along arterial and heavily travelled collector streets. This type of development is not desirable, and strip commercial should not be permitted in future commercial construction because of the negative impact it has on neighborhoods.

PURPOSE
The Neighborhoods Component recognizes neighborhoods as an essential component of urban form.
- emphasizes the relationship between neighborhoods, communities, and urban villages.
- identifies the predominant, but not exclusive, residential nature of each village.
- reaffirms the composition of neighborhoods by including non-residential land uses which are important to viable residential neighborhoods and the mixture of housing types which are essential to their long term stability.

CHARACTERISTICS
Function:
- provides a stable residential base for the villages and the City
Relative Intensity:
- varies based on proximity to core (generally higher intensity closer to the core)
- varies by village with different overall village intensities
- areas of greater intensity may be located in conjunction with community services or in areas with enhanced regional accessibility
Land Uses:
- residential
- residential support services
 Depending on the character of the community, there may be an identifiable "central focus" for the residents of the community. This could be a school, community center, adult center, a park, or a commercial area (community service area).

An identifiable community may not exist in every area of a village. Designation of these areas should be done by the village planning committee in conjunction with local residents.

A Community is a cluster of neighborhoods that possess some or all of these characteristics:

- Has a physical and/or social central focus.
- Functions as a service area for schools, parks, commercial, and similar uses which may be located within or adjacent to the community.
- Has an internal circulation system that encourages pedestrian and bicycle traffic within the neighborhoods and between the neighborhoods and the uses located in the service areas.
- Has an external circulation system that creates few major separations between different neighborhoods in the community.
- Has neighborhoods and communities in which local destinations can be reached on foot or by bicycle.
- Has local schools, parks and other community facilities which serve as neighborhood and community focal points.
- Has facilities for public services and assembly and celebration in neighborhood and community service centers.
- Has an area of concentration of commercial development surrounding neighborhood.

Transportation:
- location of trip origins
- low trip generation rate
- auto is predominant mode for access to outside areas
- pedestrian/bicycle travel occur within neighborhoods
- accessed by minor collectors and local streets
- outflow in the morning and inflow in the evening

GOALS AND POLICIES

The goals and policies to be included in the revised Land Use Element of the General Plan will focus on the following:

- Preservation and enhancement of existing neighborhoods.
- Provision of compatible land use relationships for new neighborhoods.
- Inclusion of a mix of housing types and densities that support a broad range of lifestyles.
- Location of high density residential uses in the core. High density residential uses may locate near the core, but not at the expense of existing low intensity development.
- Location of clusters of medium density residential land uses throughout the village in proximity to higher intensity development not located in the core.
- Provision of schools and parks to serve the neighborhoods in each village.
- Mitigation of potential impacts that may exist or be created between neighborhoods and more intense land uses.
- Provision of appropriate physical linkages (i.e., pedestrian walkways) between neighborhoods to create a sense of community.
- Provision of physical linkages between neighborhoods and nonresidential land uses that serve the neighborhoods.

Within each village there are groups or clusters of neighborhoods that have a common recognizable sense of identity for the residents of the area. This identity may be linked to a natural or manmade physical characteristic or a social/cultural characteristic that contributes to a "sense of place". These areas are identified as "communities".

A sense of identity may be difficult to accomplish on a village level because of the geographic size and diversity of the villages. The community provides a sense of identity on a geographical scale smaller than a village but larger than a neighborhood.
Appendix D

The Open Space Component recognizes the important contribution that open areas make to the quality of life. Open space is important for several reasons. It provides physical form and contributes to the visual context of the community. Open space provides recreational and educational opportunities for residents and enhances the quality of life for those who live in proximity to open space areas.

Open Space areas are either man made or natural. These areas comprise the “ecological infrastructure system” which provides shape and form for the community. This system includes a variety of open space areas and the linkages that connect those areas. The system recognizes the relationship open space has with other land uses and the contribution that open space makes to the quality of life in each of the villages.

Open space can be either public or private. Public open space includes mountain preserves, washes, trails, canals, parks, golf courses, streets, detention basins, and similar open space areas. Private open space includes uses such as golf courses, areas within planned area developments and areas within commercial developments.

**PURPOSE**

The Open Space Component recognizes that natural open space provides the opportunity to preserve the natural high quality desert environment for visual, recreational, and educational benefits. It recognizes open space areas as important because of the aesthetic, social, psychological, economic, cultural, and recreational benefits that are derived from these areas. It recognizes that open space helps shape urban form and provides identity for the community.

**CHARACTERISTICS**

**Function:**
- preserves significant natural environment that contribute to urban form and protect open space areas
- provides recreational, educational, and cultural opportunities

**Relative Intensity:**
- zero to very low

**Land Use:**
- passive and active recreational facilities

**GOALS AND POLICIES**

The goals and policies to be included in the revised Land Use Element of the General Plan will focus on the following:
- Support regional open space planning efforts through creation of an open space system that identifies open space areas and provides physical linkages of those areas within each village, within the City, between cities within the region, and between the region and the state.
- Development of open space areas that provide recreational opportunities for walking, jogging, bicycling, equestrian, and individual participant activities.
- Preservation and protection of natural open space areas in either public or private ownership.
- Provision of open space areas in major developments and areas of activity concentration.
- Use of open space, where possible, as a transition/buffer between different types of land uses (residential - commercial) and between similar land uses of different intensity (single family residential - multiple family residential).
- Support working with the Parks Department on desert preserve concept. This can be accomplished through the provision of the opportunity for protection of flatland desert areas that have been identified by the community for preservation.
serve a market area of several neighborhoods or communities within a 2 to 5 mile trade area. This will typically include commercial development with more than one anchor, e.g., a grocery store and a junior department store.

LINEAR COMMERCIAL DEVELOPMENT
As in the case of Neighborhood Services, Community Services are sometimes provided in a linear configuration. Linear Commercial is not a land use designation but rather a development type that recognizes the existence of “strip commercial” areas along arterial streets. However, this type of development is not desirable, and strip commercial should not be permitted in the future because of negative impacts associated with this land use category. Inherent conflicts with traffic and parking are detrimental to surrounding businesses and residential development. Frequent curb cuts contribute to the reduction in carrying capacity of the adjacent street and an increase in accidents. Linear Commercial tends to be unattractive because of parking adjacent to the street and lack of pedestrian amenities. The linear nature of this type of development creates the largest possible impact with adjacent residential, frequently resulting in service, loading and trash areas being located next to adjacent houses.

There are linear commercial areas, i.e., McDowell Road east of Central Avenue, that have been rehabilitated and remain viable commercial areas. Where economically feasible, it may be appropriate to rehabilitate areas that have the potential to provide basic retail services to adjacent neighborhoods. This may include improved pedestrian access from adjacent neighborhoods, relocating parking, maximizing opportunities for shared parking, and design treatments which maintain high street visibility and easy access by automobile yet minimize the visual and functional impacts of signage, parking, and traffic interaction with pedestrians.

Some linear commercial areas that are not economically viable, may be redeveloped. Such redevelopment should focus on uses viable within the existing available land area. Uses which serve adjacent neighborhoods or communities are preferred. Redevelopment feasibility should not be based on the assemblage of adjacent residential lots or housing to facilitate redevelopment.

NON COMMERCIAL COMMUNITY SERVICES
There are non commercial uses that serve a community or subarea of a Village. These uses may create a high concentration of activity which has the potential to impact adjacent neighborhoods. Examples includes junior high schools, high schools, churches, community
Land Uses:
- retail
- office
- public/quasi public

Transportation:
- destination area for sub-village area
- high trip generation - pm peak and weekend activity
- auto dominant mode with some transit
- usually accessed from arterial streets

GOALS AND POLICIES

The goals and policies to be included in the revised Land Use Element of the General Plan will focus on the following:

- Prohibition of additional linear commercial and development of methods to encourage rehabilitation, redevelopment or the phasing out, where appropriate, of existing linear uses. Redevelopment of linear commercial areas should focus on providing neighborhood services that don't have a detrimental effect on adjacent neighborhoods and encourage pedestrian and bicycle transportation modes.

- Preparation of locational standards* for the various types of community services ensuring compatibility of these uses with adjacent neighborhoods.

- Preparation of performance standards* that will mitigate or eliminate the potential land use conflicts that may be created through the redevelopment of an existing community service area or the development of a new community service area and provide a transition to residential uses.

- Provision of a mechanism for the identification and/or creation of community service areas as the central focus for communities within each village. Village planning committees working in concert with Planning Department staff, will prepare locational and performance standards that are compatible with the unique character of each village, and which provide the basis for identifying community service areas.

- Provision of transportation standards addressing access to and from the site, and on the site.

* The use of standards whether locational and/or performance shall not in any way interfere or limit the ability of residents to have a full and complete hearing cycle before the Village Planning Committee, Planning Commission, and the City Council prior to any possible approval of the reclassification of any residential property to a commercial designation or prior to the reclassification of any commercial property to a use with a
Regional Service Areas identify land use areas which are one of a kind, unique, and/or special purpose. This category recognizes the existence and the importance of the identification of areas available for basic employment or the provision of unique services. Regional Service Areas are generally land use areas that are oriented to the metropolitan area. These areas do not compete with village cores because they are single purpose or located at areas of unique natural or transportation features. Uses in these areas focus on specific purposes or site characteristics while cores are a concentration of mixed uses focused on providing general services to the Village or region.

**PURPOSE**

The Regional Service Areas Component:
- Identifies land use areas that relate to a regional context rather than to the context of the individual village. In certain situations, where a regional service area is under public jurisdiction, the village planning committee may have no review authority over the land use modifications that may occur within an existing regional service area site. However, village planning committees should be kept informed on a timely basis of any such land use modifications. The village planning committees should have review authority over the location of new regional service areas.
- Identifies special purpose areas that serve a much broader area than the urban village in which they are located.
- Recognizes areas with high concentrations of activities and people.
- Recognizes the importance of basic employment to the long-term economic health of the city and provides areas for the location of those types of employment opportunities.

Because of their single purpose nature, and limited support services, a Regional Service Area will not compete with the village cores. There may be situations where a Regional Service Area may complement a core, e.g., Governmental Mall complements Downtown, St. Joseph’s Hospital complements the Encanto Core.

On the following page are several common types of regional service areas. Each has its unique function and design issues related to the special purpose or site characteristics. Regional Service Areas are not limited to these types, though most will fall under one of these types.

**Regional Services**

Commercial uses that provide goods and services which serve a regional market but which are not located in a village core. Examples include “power centers” and “automalls.”

**Highway Services**

Highway Commercial is a specialized area and/or node of activity where goods and services related to intercity vehicle travel are provided. Uses located in these areas typically have special development needs, i.e., larger site requirements, increased parking requirements, and higher and larger sign needs than in other commercial areas. Highway commercial generally occurs adjacent to freeway interchanges such as the Papago Freeway. A freeway truck stop and freeway oriented motels are examples.

**Medical Services**

Frequently businesses that provide medical services congregate around a large medical institution such as a hospital. These areas cater to regional markets as well as providing services within the immediate business area.

**Entertainment Services**

There are several uses in the valley that provide regional entertainment services. Examples in Phoenix are the dog and horse racing facilities, Papago Park, and the Desert Sky Pavilion. These facilities typically require large land areas and attract large numbers of regional trips at off peak hours.

**Transportation Services**

Airports are unique regional service areas. Though the function of the airport itself is special purpose, areas around airports often develop with multiple uses. Many of these uses have operations focused on easy access to airport services while others simply provide services to the local businesses. Phoenix currently has two such areas, Sky Harbor Airport and the Deer Valley Airport. Phoenix also borders on similar areas - the Scottsdale Airport and the Glendale Airport.

**Industrial/Warehousing**

These are areas that include activities such as heavy industrial, manufacturing and warehousing facilities. These can occur in fairly small to very large districts, be freestanding, or oriented to major roadways and
Some locations may have high trip generation rates while others may have very low rates.

**CHARACTERISTICS**

- Function: provide a unique facility, service, and associated uses which primarily serve the metropolitan area and/or beyond (e.g., Sky Harbor, Deer Valley Airport, Southwest Industrial Area, ASU West)
- Relative Intensity: varies based on land uses
- Land Uses: could be a single purpose use with associated/support land uses
- Transportation: some areas may be important destination areas for the region

**GOALS AND POLICIES**

The goals and policies to be included in the revised Land Use Element of the General Plan will focus on the following:

- Provide locations for uses needed for the economic and cultural viability of the region which would have adverse impacts on neighborhoods if integrated as a component of a village.
- Recognize areas which have urban or natural features that create unique opportunities for regional services.
- Recognize places which have unique cultural significance to the region but are not part of the character of a community or a village.
- Provision of regional service areas that indicate a community commitment to encouraging the creation of new jobs.

**COMMUNITY** - A community is an area of undefined boundaries containing several neighborhoods, yet maintaining a size smaller than an urban village. Social communities can be classified according to their predominant activities, common traditions, loyalties, attributes, and life-ways. Physical and social communities are neither mutually inclusive nor exclusive.

**DENSITY** - The number of dwelling units divided by the gross land area, generally expressed in units per acre. The gross land area should include one half of all abutting streets and alleys which are dedicated to the public.

**FLOOR AREA RATIO (FAR)** - The ratio of the gross floor area of a building, excluding those parts of the building specifically excluded in the Zoning Ordinance, to the gross land area of the site. The gross land area should include one half of all abutting streets and alleys which are dedicated to the public.

**GOAL** - A stated aim of the City which represents a broad purpose towards which policies, programs, and implementation actions are directed. A goal may not be achievable but rather represents an end state that can not be measured.

**HIGH-DENSITY HOUSING** - More than fifteen (15) dwelling units per gross acre.
Focus on living in an open space or agricultural environment. Design interaction by emphasizing site design characteristics which primarily focus on accommodating the private automobile over transit and pedestrian use. Design characteristics include low to medium density residential development, relatively large street setbacks, little attention given to mass transit or pedestrian facilities, and, for commercial and industrial uses, highly visible surface parking lots separating the building from the street in centers of varying sizes.

Suburban - An area which generates low levels of human activity and interaction by emphasizing site design characteristics which primarily focus on accommodating the private automobile over transit and pedestrian use. Design characteristics include low to medium density residential development, relatively large street setbacks, little attention given to mass transit or pedestrian facilities, and, for commercial and industrial uses, highly visible surface parking lots separating the building from the street in centers of varying sizes.

Urban - An area that generates high levels of human activity and interaction by emphasizing site design characteristics which primarily focus on promoting mass transit and the pedestrian experience. Design characteristics include small or no building setbacks, medium to high density residential development, maximized lot coverage, mixed land uses, structured or street parking predominating over surface lots, and a generally high amount of mass transit and pedestrian facilities.

Urban Village - A land use form adopted as the unifying element of the General Plan. Urban villages have been designated in the General Plan, each having its own planning committee. The urban village model encourages major village-serving uses to be concentrated in one place, the core, thereby fostering interaction and reducing travel times and trips. Each urban village is unique, while following the same village form and allowing urban, suburban, and even rural lifestyles to coexist within one village.

Village Planning Committee - Each urban village has its own village planning committee. The committee’s activities include identifying provisions of the General Plan that need refinement and updating, identifying opportunities related to implementation of the General Plan, defining in greater detail the intended future function, density, and character of subareas of the village, and commenting on proposals for new zoning districts or land use districts. Village Planning Committees operate in accordance with the Council adopted Village Planning Handbook.
January 28, 2015

Karla S. Petty
Division Administrator
4000 N. Central Ave, Ste 1500
Phoenix, AZ 85012

Attention: Rebecca Yedlin

SUBJECT: SPL-2002-00655-KAT South Mountain Freeway EIS

Dear Ms. Petty:

I am responding to your request (File No. SPL-2002-00655-KAT) dated January 26, 2014 for a letter describing the Corps of Engineers Arizona Regulatory Branch (Branch) approach on the permitting for the South Mountain Freeway (33.339040°N, -112.16501°W, NAD 83) located in the City of Phoenix, Maricopa County, Arizona. Below is the permitting approach we would follow unless conditions change. These conditions could include changes to our regulations and/or guidance, changes in design that avoid and minimize impacts to waters of the US (allowing additional use of Nationwide Permits), or changes to the Nationwide Permit program.

The Branch has been involved in the South Mountain Freeway EIS since early 2000. For Transportation projects, it has been the approach of the Branch that permitting occur during the final design/construction development process. Typically a jurisdictional delineation (JD) doesn’t occur when the EIS process starts due to the fact that it could take many years to build this size of freeway and the JD would have to be revisited and potentially revised due to changes in geomorphology of the wash or changes in the Corps regulations.

It wasn’t until the final EIS that there was the potential that two of the drainages at the eastern end would possibly require an individual permit. Since then ADOT and the Branch have met and discussed the various options of permitting. It was decided that the project would be permitted in two segments, the eastern end which starts at Pecos Road and the I-10 freeway interchange and end at what would be the intersection of Pecos Road and 51st Avenue. The western segment would start there and at end with connection with I-10 freeway. This break would allow each permit to be completely within individual watersheds. The eastern end would encompass the South Mountain and Firebird Lake 12-digit HUC of the Middle Gila (15059100) and the western segment would encompass the Co-op Village-Gila River, City of Laveen - Gila River, Town of Santa Maria - Salt River 12-digit HUC of the Salt Lower Salt (15060106).

The eastern segment would be permitted as an individual permit if those wash impacts exceed 0.5 acre and the western segment would be permitted using nationwide permits. Breaking...
GRIC Comments on Initial Location/Design Concept Report
State Route 202L (South Mountain Freeway)
Tracs No. 202L MA 054 H5764 01L
July 22, 2013

1) DWG No. C-03.04 & C.03.05: Existing and proposed watershed map needed to
determine if historical peak discharges remain the same as proposed. Mainly referring to
new channel culvert installs at Sta. 2160 & Sta. 2205.

2) DWG No. C-03.03: Existing 10'X 4' CBC with extension may convey flow to existing
Pecos Storage Facility on Reservation (near Sta. 2135).

3) DWG No. C-03.08: For culvert at Sta. 2383, new 3-10'X4' CBC conveying flows into
existing 1-84" CMP. New culverts are oversized.

4) DWG No. C-03.09: At Sta. No. 2447, existing culvert is 2-36" RCPs, new culvert is 3-
10'X4' CBCs. There is potential for increased discharge onto Reservation.

5) DWG No. C-03.10: From Sta. No. 2464 to Sta. 2494, New culverts concentrate flows to
Reservation. No calculations provided that equates Historical Hydraulics to proposed
Hydraulics/Hydrology.

6) DWG No. C-03.12: How does new culverts compare with Historical
Hydraulics/Hydrology?

7) DWG No. C-03.14: At Sta. No. 2595, it appears to be concentrated flow.

8) DWG No. C-03.18: Where does First flush basins?

Good Morning Ben,

Per our discussion at Progress meeting on July 17th Please find attached GRC's comments on DCR
for SR 202L (South Mountain Freeway) Project, Tracs No. 202L MA 054 H5764 01L, federal Project
No. NH-202-(D)2).

Please let me know if you have any questions.

Thank You

Devi

Sreedevi (Devi) Samudrala, P.E.
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of e-mail transmission. If verification is required please request a hard-copy version.
The group discussed the possibility of moving the discharge locations and possibility of reducing the peak flows. Notable discussion related to this included:

- There is an existing storage lot just south of Pecos Road at 32nd Street. An existing wash outfalls directly into the storage lot.
- There are no cemeteries surrounding other development south of Pecos Road.
- The main concern is that moving the outfalls or reducing the peak flows could affect other property owners (allottees) in the area.
- These types of adjustments may need the approval of the Community Council with input from other groups such as the Bureau of Indian Affairs (representing allottees), GRIC DEQ, and possibly others.
- GRIC staff recommended that as possible, concentrated flows should be mitigated with spreader basins to provide sheet flow downstream of the freeway.

Ray led the group through a review of the specific comments submitted by GRIC staff on the Initial L/DCR. Most of the responses were addressed in the earlier discussion. Notable discussion included:

- The flows identified in the L/DCR in the area of the new casino are much higher than those used to design the drainage channels around the casino. GRIC staff will review the casino design.
- First flush basins are not located within the mountain areas. In these areas, it is assumed that on-site flows will be collected through catch basins and conveyed in pipes to a basin at the southwest corner of the freeway.

Open discussion included the following items:

- GRIC staff recommended that the team coordinate with El Paso Natural Gas who has a gas line parallel to Pecos Road on community land. The main issue would be access.
- The group discussed the upcoming Flood Control District of Maricopa County Area Drainage Master Study and Plan for the South Mountain area. The proposed freeway is within the ADMS/ADMP area. The ADMS/ADMP could provide refined and more detailed flows at the proposed freeway.
- GRIC staff questioned how the Community’s vote for the no-build option affects future coordination with ADOT. GRIC DOT agreed to take the lead in confirming with Community leadership their ability to continue coordination.
- GRIC staff recommended that future meetings include staff from BIA, GRIC DEQ, and GRIC Irrigation and Drainage District in addition to GRIC DOT and LUPZ (Steve provided contact information for these groups to ADOT). Issues of concern would be water quality and drainage.
- GRIC staff will continue to be involved in design reviews through the final design stage. The next deliverable for this study will be the Final L/DCR. The Final EIS is anticipated for public review next spring. The Record of Decision is anticipated in late summer 2014.

NEXT MEETING

No future meeting was identified. The following contact information was provided for additional meeting attendees.

- Ondrea Barber, Director, BIA Pima Agency (520) 562-3326, cecilia.martinez@bia.gov
- Parker, Gary, Director, Gila River Indian Irrigation and Drainage District (520) 562-2234, Gary.Parker@gridd.com
- Cecilia Martinez, Superintendent, BIA Pima Agency (520) 562-3326

These minutes reflect the understanding of HDR Engineering, Inc or its representative. Corrections or additions are needed. Contact Ben Spargo.