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# KARTCHNER CAVERNS CORRIDOR DEVELOPMENT PLAN

Submitted to:

Cochise County Planning Department and  
the City of Benson  
Arizona

Adopted by the Cochise County Board of Supervisors  
May 24, 1993

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# KARTCHNER CAVERNS CORRIDOR DEVELOPMENT STUDY

**Future Land Use Report:**  
Land Use Concept Plans  
Development Policies  
Design Guidelines

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# DOCUMENT FRAMEWORK

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The purpose of this report is to provide land use information, and design guidance for development in the Kartchner Caverns Corridor. It was developed to be used by those who wish to build projects in the plan area, City and County staff who review project proposals and decision makers who are called upon to act on these projects.

## **Contents and sequence of Future Land Use Plans:**

1. The Introduction presents the project area to the document user by identifying its location and presenting purpose and goal statements. This section also explains the rationale for the Land Use Concept Plans and Development Policies. It also, explains the process used by staff to review new development proposals and the required submittals.
2. The Land Use Concepts sets forth the plan concepts for land use, circulation, and infrastructure. This section establishes the basic permissible land uses and roadway system considered appropriate to protect and enhance the State Park, travel on Highway 90, the existing natural environment and historic land uses, as well as provide services to visitors attracted by Kartchner Caverns.
3. The Development Policies state the development goals and policies that will guide all projects in the area.
4. The Design Guidelines provide suggested methods which can be used to design proposals that comply with the Development Policies.

# Corridor Study Area

City of Benson Corporate Limits

SR 90

Kartchner  
Caverns  
State Park

## LEGEND

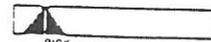
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Maps - McGrew Springs and Benson

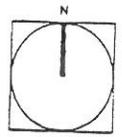
Study Boundary

## Kartchner Caverns Corridor Development Study

City of Benson & Cochise County, Arizona

 THE  
PLANNING  
CENTER  
GEOGRAPHIC INFORMATION SYSTEMS  
830 N. FRANKLIN CENTER DRIVE, SUITE 210  
TUCSON, AZ 85710 (520) 625-6148

 RICK  
ENGINEERING  
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3000 EAST GRIFFIN ROAD  
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(520) 798-1888  
ENGINEERING - PLANNING - SURVEYING



# INTRODUCTION

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## Setting

The Kartchner Caverns Highway 90 Corridor, in southeastern Arizona, starts at the junction of Interstate 10 and extends eight miles south to Kartchner Caverns State Park and then an additional three miles south beyond the Park. The Corridor travels along the eastern base of the Whetstone Mountains, with views to the east of the San Pedro River Valley. The rolling topography, at an elevation of between 4000 and 5000 feet, is ribboned with drainageways and vegetated with dense clusters of native trees, shrubs, ocotillos and grasses. Drainageways provide corridors for wildlife and allow views to the River Valley and Whetstone Mountains for travellers along Highway 90. The land adjacent to the Highway is rural in character and has been primarily used by large ranches for cattle grazing.

The Highway 90 Corridor will serve as an extension of the Kartchner Caverns State Park. It also serves as a gateway to other attractions in Cochise County. As such it presents an opportunity to project a positive image of the entire County to State Park visitors. The challenge is to foster quality development in the Corridor to serve the demand of visitors to the State Park while at the same respecting the existing natural beauty.

This Future Land Use Report focuses on the eleven mile increment of the Corridor south of Interstate 10, past Kartchner Caverns State Park. The study area is shown in Exhibit II-A.

## Purpose & Intent

The purpose of this plan is to identify land use opportunities and provide guidance for responsible development along the Kartchner Caverns Corridor. This report recommends policies consistent with Cochise County's Comprehensive Plan and the long range plans of the City of Benson.

## Background

In the summer of 1990, the Kartchner Caverns State Park Master Plan process was begun by McGann and Associates. As the Master Plan is being completed and actual development begins, interest and pressure to develop associated and support facilities in the vicinity of the Park will occur. Various agencies, staff at the City of Benson, Cochise County, Arizona Dept. of Transportation, and Arizona Dept. of Commerce, recognized the potential impact of development along the Corridor. These agencies have had the foresight to begin studies and planning for the Corridor now in conjunction with the master planning of Kartchner Caverns. The

Corridor Development Study is comprised of three separate documents: 1) *Site Inventory and Analysis*, 2) *Future Land Use Report with Design Guidelines*, and 3) *Economic Assessment*. The results of this study will create a basis from which to identify economic opportunities for the entire area.

An inventory and analysis of the Corridor was completed and serves as the data base for the Land Use Concepts and Development Policies contained in this document. The report summarizes existing physical elements within the project boundary. Physical data included topography, hydrology, vegetation, wildlife, geology, archaeology, viewsheds, infrastructure, existing land use, and current zoning. Physical elements were based on information primarily provided by Cochise County, mapped when appropriate, and analyzed as to how they may affect or impact future development.

This document focuses on a land use concept and design elements along the Corridor. Elements included are a Land Use Concept Plan, Circulation Concept Plan, Infrastructure Concept Plan and Development Policies. Also included are suggested Design Guidelines.

## **Opportunities & Constraints**

With the inventory and analysis of existing physical conditions along the Corridor as a framework, the opportunities and constraints of the planning area were mapped. They are summarized in Exhibits II-B, II-C, II-D, and II-E.

### **Development Capability:**

Development capability (Exhibit II-B) represents the physical capability of the land to support development. Data collected and analyzed for development capability included: slope classes, ownership (USDA Forest Service Land, Kartchner State Park, Arizona State Lands, and private lands), and hydrology.

The analysis was performed in a geographic information system (GIS) aimed at determining areas that can support development based on the factors listed above. The majority of the study area is capable of development. The largest portion limiting development is within the Coronado National Forest and Kartchner Caverns State Park. There are small areas in the northeastern and southwestern portions of the study area not capable of supporting development due to slope constraints. The FEMA (Federal Emergency Management Act) Class A area, in the southeastern portion of the study area, is also indicated as not capable of development. The El Paso Gas line, dissecting the mid-portion of the area, has also been identified as a constraint.

**Primary Development Demand:**

The development demand factors considered were proximity to SR 90 and I-10, proximity to Kartchner Caverns State Park, proximity to the intersection of SR 90 and Post Road, and availability of electric service (see Exhibit II-C). Utilities and infrastructures are currently very limited in the study area. Any major development in the area will need to consider infrastructure and utility improvements.

**Environmental and Aesthetic Sensitivity:**

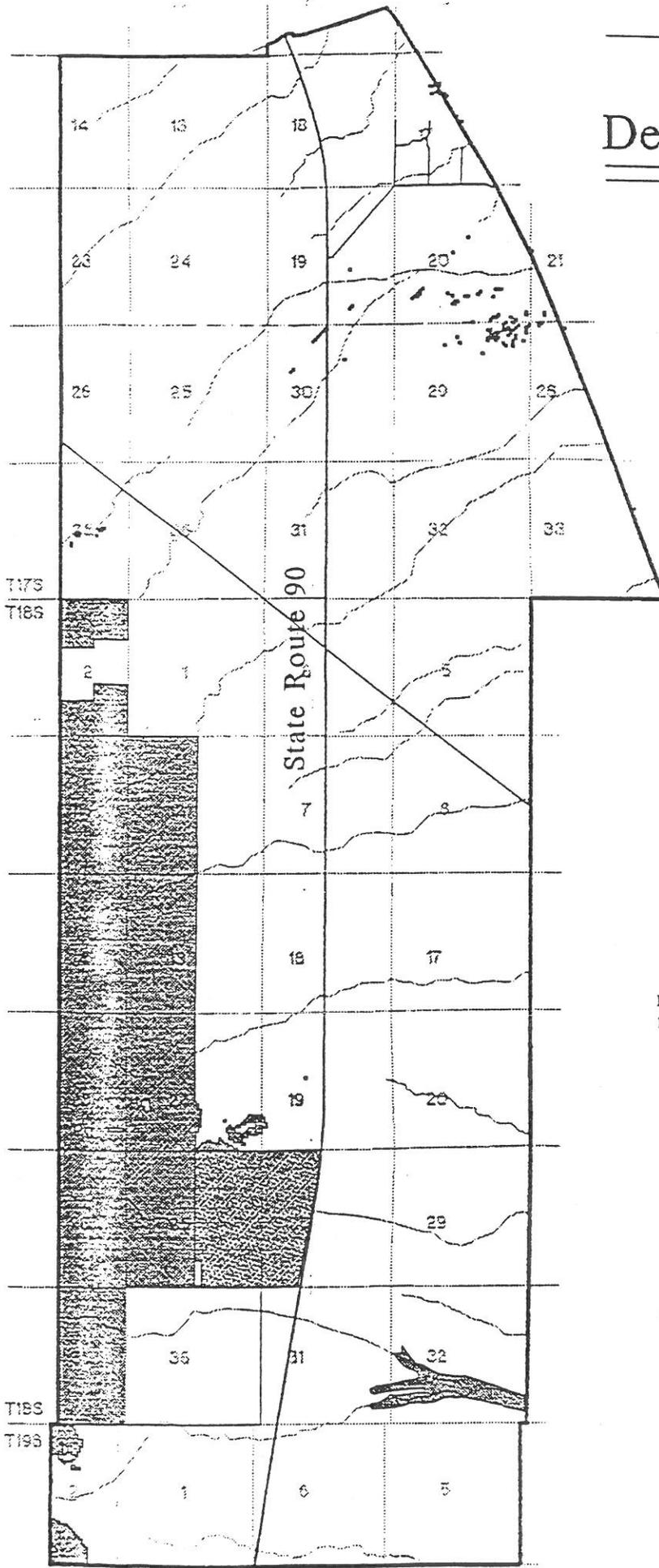
The map (Exhibit II-D) representing environmental and aesthetic sensitivity is a combination of visual sensitivity and environmental issues. The main elements considered were visual sensitivity along SR 90, buffers along the washes as identified from the Tiger files and FEMA mapping, and visibility from Kartchner Caverns State Park as indicated in the Kartchner Caverns State Park Master Plan.

The aesthetic and ecological issues addressed are important in maintaining and enhancing the positive image/theme along the Corridor. As the potential for tourism and associated commerce increases, visitors and residents of Cochise County will be affected by developmental impacts along this Corridor. Preserving and maintaining the quality and history of the surrounding environment along with supporting appropriate development is an important objective of this study.

### **Composite Development Suitability:**

The Composite Development Suitability (Exhibit II-E) is a composite of the three maps listed above. The mapped information was processed in the geographic information system (GIS) driven by a Development Suitability model. The composite suitability represents areas of development with little physical, aesthetic and environmental, and development issues as indicated in the primary demand development areas. The areas shown as medium and/or low suitability are due to aesthetic and environmental constraints and/or development issue constraints.

# Development Capability



## LEGEND

- Capable of Supporting Development 
- Not Capable of Supporting Development 
- Kartchner Caverns State Park 

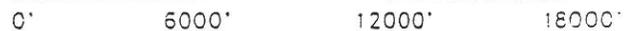
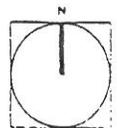
NOTE: Development Capability is a function of land ownership, flood prone land, and slope class.

## Kartchner Caverns Corridor Development Study

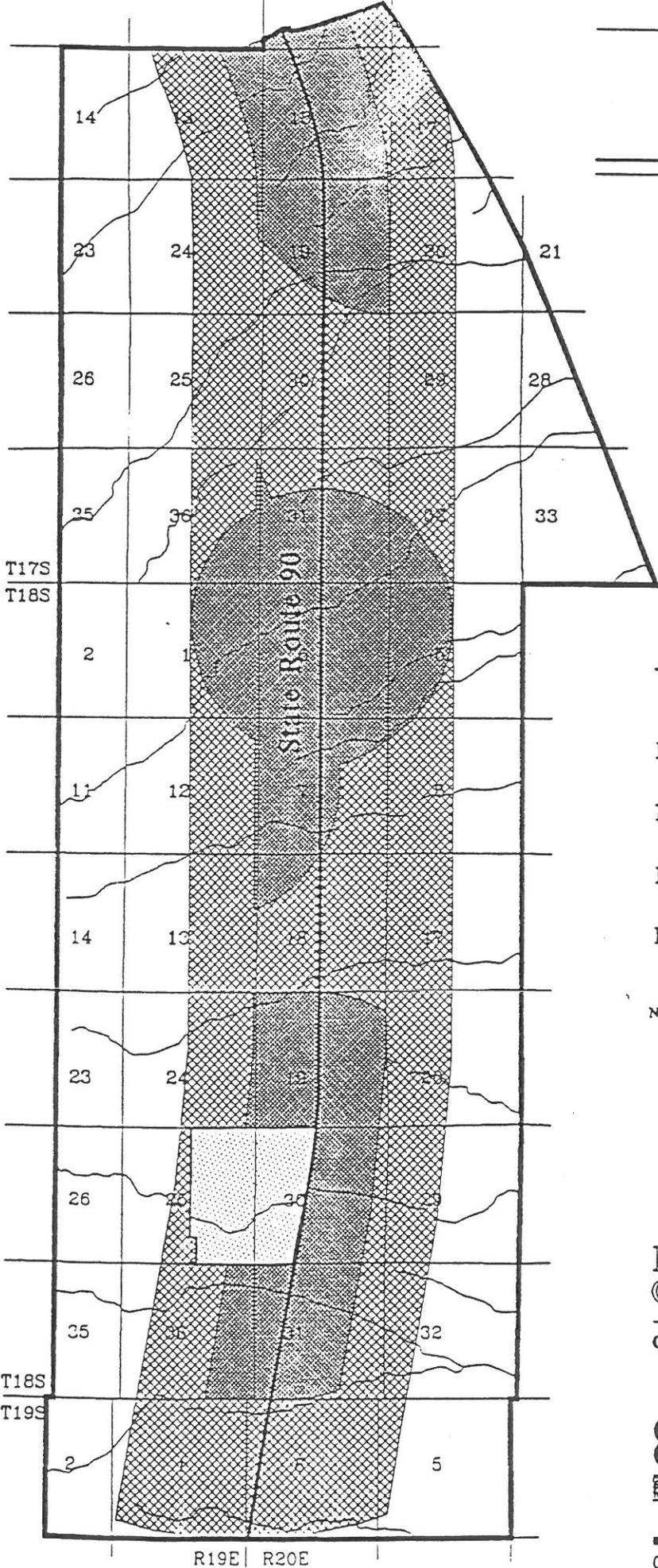
City of Benson & Cochise County, Arizona

 THE PLANNING CENTER  
 GEOGRAPHIC INFORMATION SYSTEMS  
 530 W. FINANCE CENTER DR. SUITE 210  
 TUCSON, AZ 85710 (602) 623-6114

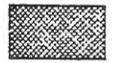
 RICE ENGINEERING COMPANY  
 1001 EAST SHAW ROAD  
 TUCSON, AZ 85710  
 (602) 623-1111  
 ENGINEERING PLANNING PERMITTING



# Primary Development Demand



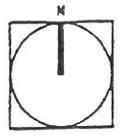
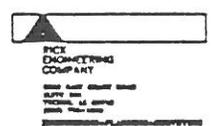
## LEGEND

- High Demand 
- Moderate Demand 
- Low Demand 
- Kartchner Caverns State Park 

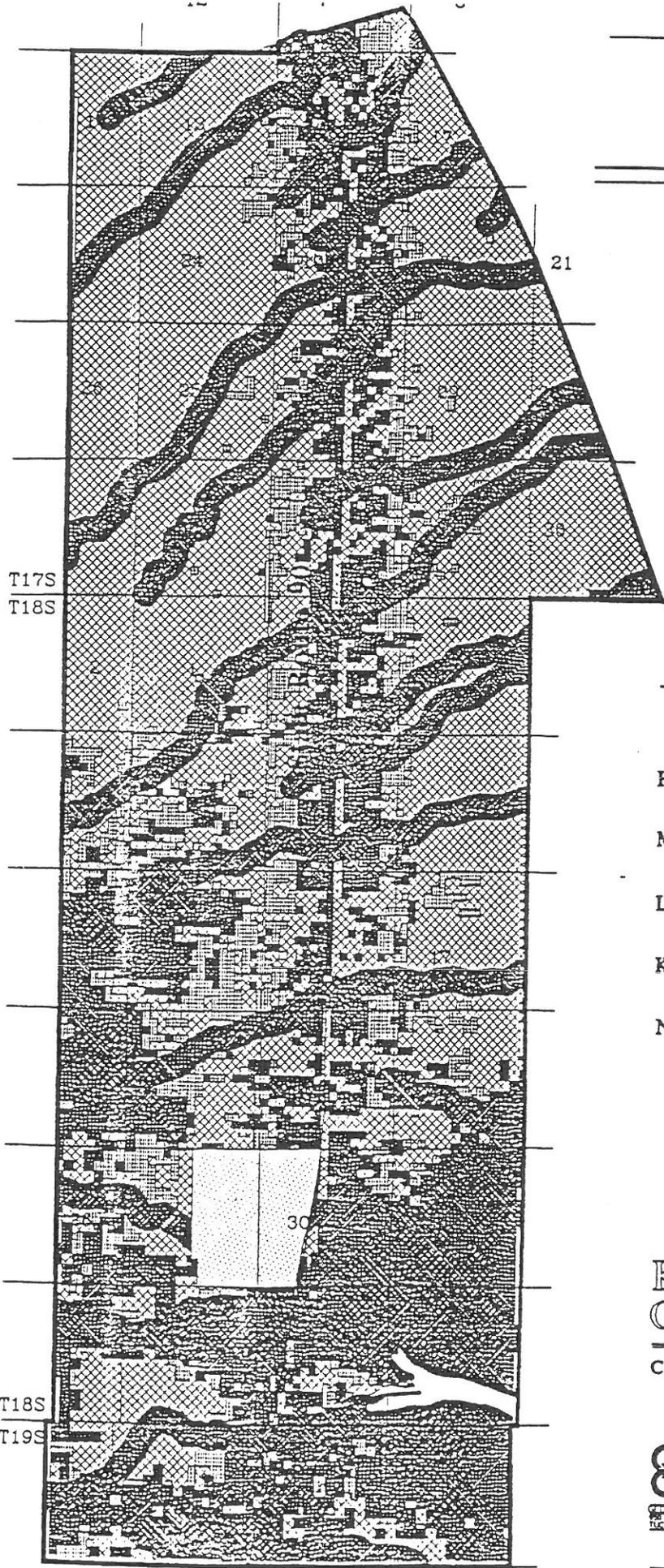
NOTE: Primary Development Demand is a function of proximity to roadways, utilities, and park site.

## Kartchner Caverns Corridor Development Study

City of Benson & Cochise County, Arizona



# Environmental & Aesthetic Sensitivity



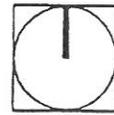
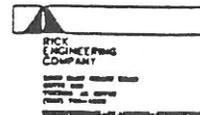
## LEGEND

- High Sensitivity 
- Moderate Sensitivity 
- Low Sensitivity 
- Kartchner Caverns State Park 
- Not Suitable for Development 

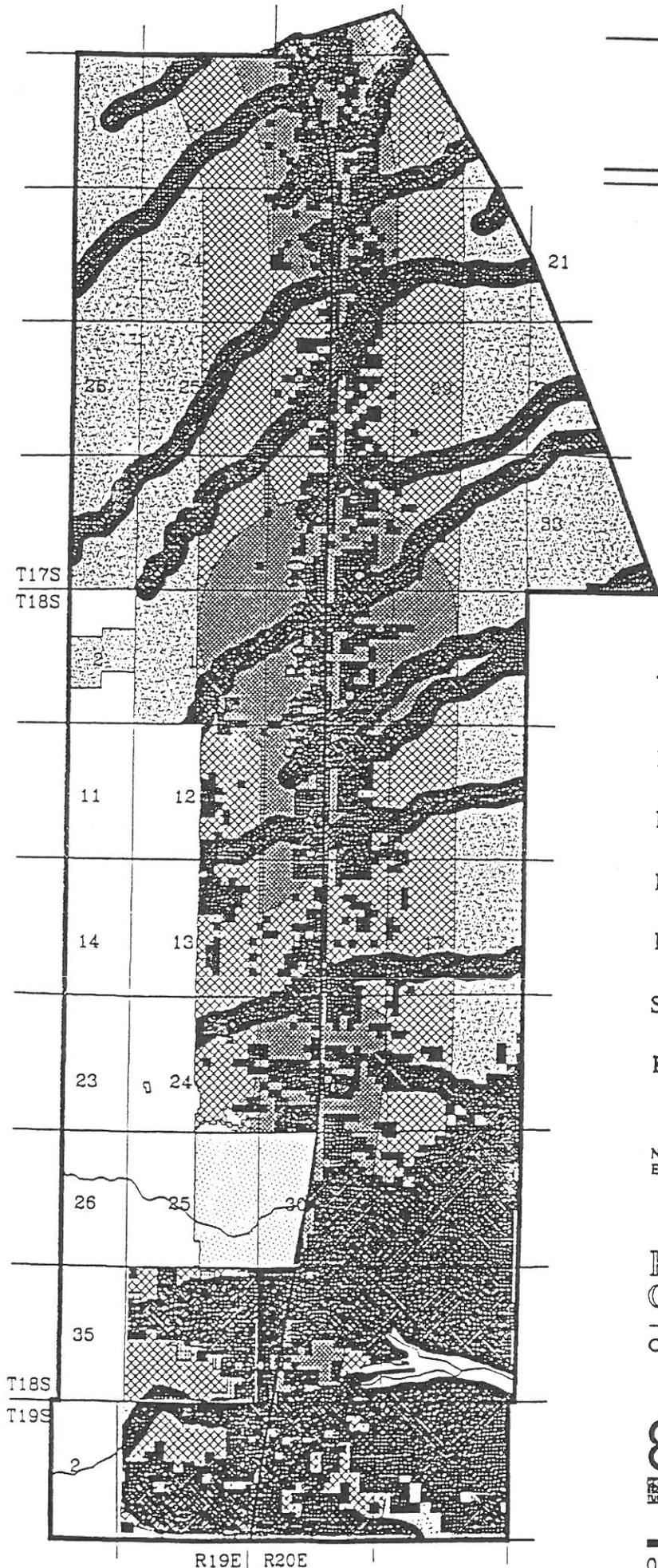
NOTE: Environmental and Aesthetic Sensitivity is a function of buffered washes, regional visibility and visual sensitivity.

## Kartchner Caverns Corridor Study

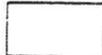
City of Benson & Cochise County, Arizona



# Development Suitability



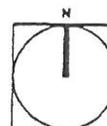
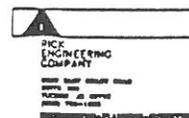
## LEGEND

- Not Suitable for Development 
- Low Suitability 
- Moderate Suitability 
- High Suitability 
- Sensitive Development Areas 
- Kartchner Caverns State Park 

NOTE: Development Suitability is a composite of Development Capability, Environmental and Aesthetic Sensitivity and Primary Development Demand.

## Kartchner Caverns Corridor Development Study

City of Benson & Cochise County, Arizona



## Planning Goals

The Kartchner Caverns Corridor Development Land Plan was developed to address the following goals:

1. Provide for flexibility in the development of the Kartchner Caverns Corridor area as new land uses are proposed in the future;
2. Identify the proposed land uses and their general location within the Corridor area;
3. Establish a process to ensure conformance with the development policies and standards of the Corridor Study Plan and to achieve the quality and expectations established by the City of Benson and Cochise County;
4. Ensure protection of the environmentally-sensitive areas of the Corridor Study area as identified in the Inventory and Analysis Report as the area is built out;
5. Create a secondary transportation circulation system to limit access to State Route 90 and accommodate new development within the Corridor study area;
6. Establish a sense of place, as well as continuity and consistency of development standards within the Corridor;
7. Maintain a sensitivity to Kartchner Caverns State Park by encouraging compatible land uses and integrating new development through design guidelines;
8. Recognize and, when feasible, integrate the historic land use of ranching;
9. Protect the visual quality of the corridor.

## Implementation

Currently in the Kartchner Corridor Study plan area, the existing zoning primarily permits rural uses such as one dwelling unit per four acre parcels. Both the County and City, however, have processes which allow staff and elected officials to review requests to develop more intense uses such as residential subdivisions or apartments or businesses like hotels or restaurants.

These processes include, but are not limited to, rezonings, special

use permits, master development plans and the subdivision approval process. The guidelines and recommendations contained in the Kartchner Corridor Development Plan will largely be applied during these processes. Generally, they do not apply to land uses which are already permitted uses under existing zoning at the time of Plan approval.

## **Review Process & Submittal**

There are several steps involved in reviewing a new development proposal in the Kartchner Corridor. The review and approval process is carried out by the Cochise County if the development is in the County. If the proposed development is in the City of Benson the process is completed by City staff and officials. The purpose of review is to determine compliance with the concept plans and Development Policies.

### **Step 1 - Conformance with the Land Use Concept Plan**

The first step is to determine if the proposed development is in substantial compliance with the Land Use Concept Plans including the Circulation Plan. Should a proposal not conform to the Land Use Map, the applicant has the option to request approval of a plan change from the Cochise County Board of Supervisors if the parcel is in the County or the Benson City Council if the parcel is within City limits.

### **Step 2 - Check Submittals for Completeness**

Staff will need thorough, clear and accurate submittals to review for compliance with the plans and policies of Kartchner study. The following are Required Submittals:

1. **Site Plan** to include:
  - a. Location map;
  - b. Legal description;
  - c. Property Lines;
  - d. Existing easements and utilities;
  - e. Existing topography;
  - f. Contour lines at 10 foot intervals with significant views of the San Pedro Valley and Whetstone Mountains identified;
  - g. Drainage features such as washes;

- h. Existing buildings;
    - i. Scale; and
    - j. Minimum size, 24 by 36 inches.
  2. **Development Plan** showing all changes to the site (NOTE: This can be done on the site plan or with an overlay if all features are clearly identified):
    - a. All proposed structures with all dimensions including height;
    - b. Parking and loading zones including type of surface;
    - c. Proposed landscaping including areas where natural vegetation will be retained;
    - d. Internal vehicular circulation and access points to site from adjacent roadways and neighboring parcels, sidewalks and bike paths. Type of surfaces should be described;
    - e. Signs including height, dimensions, location, and copy;
    - f. Outdoor lighting locations;
    - g. Location of walls or fences;
    - h. Scale (same as site plan); and
    - i. Size (same as site plan).
  3. Building, wall and sign elevations. Drawings/descriptions of outdoor lighting.
  4. Drawings or descriptions of proposed drainageway treatments if not left in the natural state.
  5. Preliminary grading, grubbing and cut and fill plan(s).
  6. Preliminary cross sections of proposed roads and driveways.

#### Possible Additional Submittals

In some instances, additional submittals may be required. These submittals will be required when: a large development with significant offsite impacts is proposed; when a site has unique environmental, topographical or drainage features worthy of special treatment such as in the Special Development District; or the applicant proposed major alterations to the terrain of the site.

1. Hydrology report.
2. Offsite traffic impact study.
3. Environmental impact study.
4. Archaeology study.

### **Step 3 - Conformance with the Development Policies and Zoning Regulations**

If a proposal conforms to the Land Use Concept Plan and submittals are judged complete, staff review will commence to determine if the proposal substantially follows the requirements and spirit of the Circulation and Infrastructure concept plans and the Development Policies. The remaining section of this document includes design guidelines which if followed will help ensure compliance these plans and Policies.

### **Step 4 - Staff Recommendation and Approval**

Upon completion of this review, a staff recommendation will be made to the appropriate body (Planning and Zoning Commission, Board of Supervisors if project is in the County or Benson City Council, if in the City). If the proposal does not meet the requirements and spirit of the plan, this recommendation will most likely be unfavorable or approval will be recommended subject to compliance with the plan. The approval process, in most instances, will include public hearings and a decision by the Cochise County Board of Supervisors if the subject parcel is in the County or Benson City Council if the subject parcel is within the Benson City limits.

# FUTURE LAND USE CONCEPTS

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The Kartchner Caverns Corridor Future Land Use Report is designed to facilitate appropriate new development along the State Route 90 area, starting at the intersection of Interstate 10 and proceeding eleven miles south toward Huachuca City and Sierra Vista.

This portion of the Plan establishes the theme for development along with development policies. It emphasizes development of a consistent character throughout the Corridor and preservation of regional character. By explaining the various components of the Land Use Concept, Land Use Intensity Zones, Land Use Matrix, Circulation, and Infrastructure the rationale for the Development Policy section will be more understandable.

## Land Use Intensity Zone Concept

The Conceptual Land Use Intensity Zone Plan consists of an arrangement of potential uses within defined "Zones." The boundaries of the individual zones and their associated land use and design concepts are derived from physical, developmental, and aesthetic constraints as determined by the Inventory and Analysis phase of this study summarized in the Introduction.

The Conceptual Land Use Intensity Zone Plan is shown in Exhibit II-F. The overall concept of the Corridor is to complement and reflect the rural character and existing uses, such as ranching, to preserve the openness and broad vistas of the San Pedro Valley, and to enhance visitors' experiences in and around Kartchner Caverns.

The Conceptual Land Use Plan proposes the general circulation within the study area and the arrangement of five land use intensity zones. The five intensity zones are:

1. High Intensity
2. Transitional Intensity
3. Low Intensity
4. Sensitive Development District
5. Future Planning Area

The *Intensity Zones* are generally multi-use areas with graduated intensity of uses. The *Sensitive Development District* areas identify environmentally sensitive areas and major drainageways

mapped by U.S. Census Bureau's Tiger Files. Drainageways are a potential opportunity to create contiguous open space networks.

The Future Planning Area designates the outer east/west edges of the corridor study area. Generally, these peripheral areas need detailed analysis beyond the scope of this study to evaluate any proposed future development. Land uses within these areas, therefore, have not been identified. These areas are none-the-less guided by all other recommendations in this plan. Further more, within the Future Planning Area, special plans, such as Master Plans, Planned Unit Developments and Specific Plans, are highly recommended for proposed developments over 40 acres.

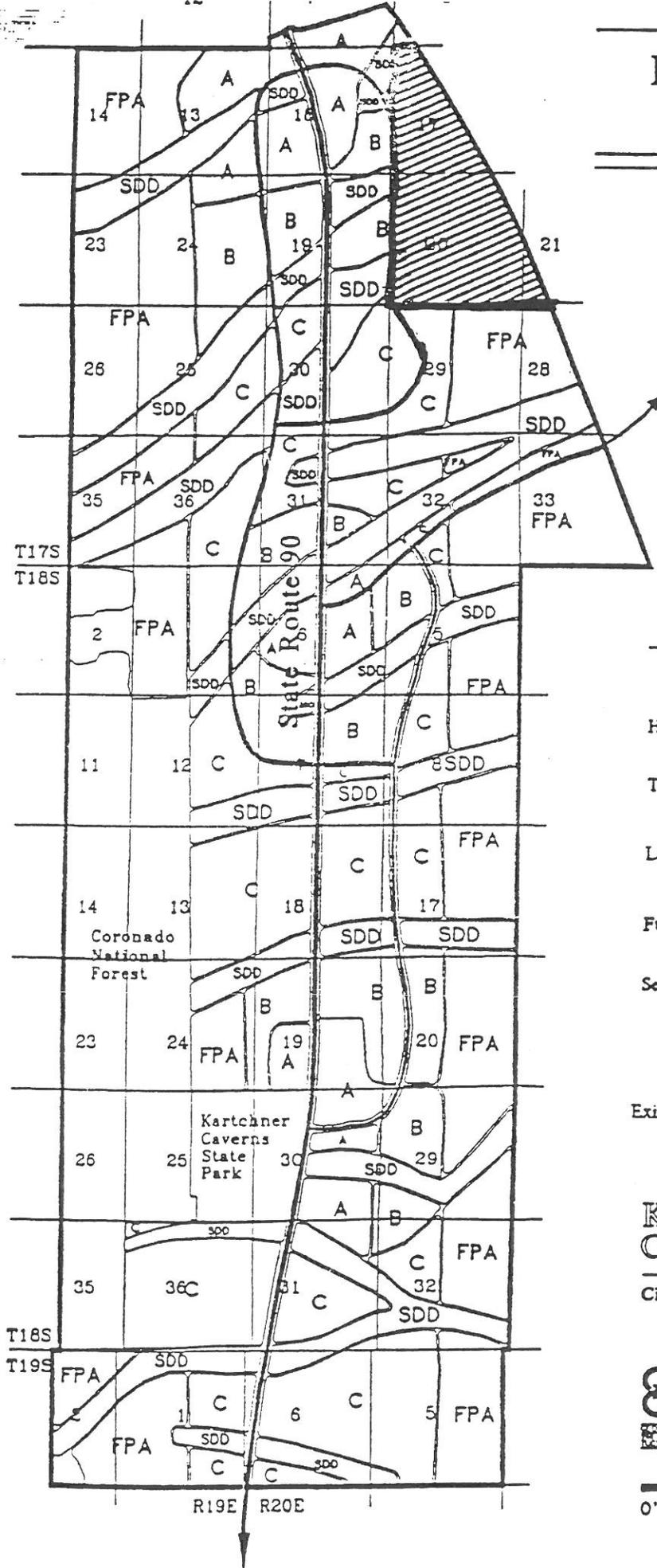
The delineation of the Intensity Zones is based on (1) the site's opportunities and constraints as determined by the Site Inventory and Analysis; (2) the desire to create a transportation corridor complementing Kartchner Caverns State Park and (3) provision of development opportunities for the City of Benson and Cochise County.

### **Land Use Matrix**

The Conceptual Land Use Intensity Zone Map (Exhibit II-F) is to be used in conjunction with the Land Use Matrix (Exhibit II-G). The Land Use Matrix further defines broad categories of permitted, conditional or prohibited uses within the intensity zones. Conditional uses shall adhere to tighter restrictions and/or require additional public hearings. Conditional uses shall be subject to additional reviews and/or design standards. The map and matrix encourage land uses which attract and serve tourists and visitors. The Land Use Matrix identifies broad categories of land uses:

- Residential
- Business
- Industrial
- Recreational/Open Space

# Land Use Intensity Zone Concept Plan

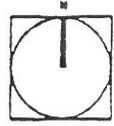
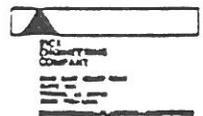


## LEGEND

- High Intensity Use A
- Transitional Use B
- Low Intensity Use C
- Future Planning Area FPA
- Sensitive Development District SDD
- Existing Neighborhood

## Kartchner Caverns Corridor Development Study

City of Benson & Cochise County, Arizona



0' 6000' 12000' 18000'

# Permitted Use Matrix

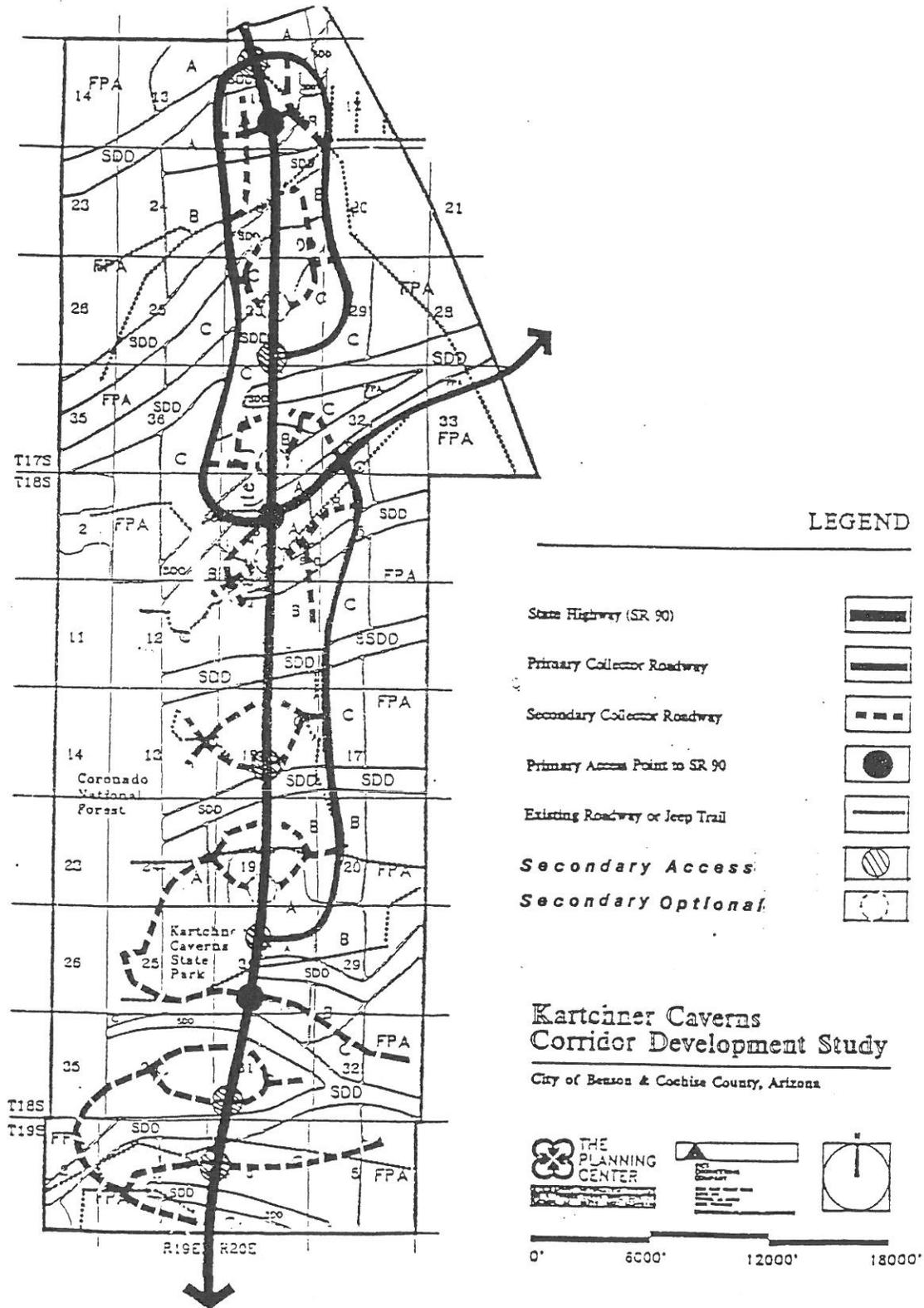
## LEGEND

-  Permitted Use
-  Conditional Permitted Use
- X** Prohibited

### INTENSITY ZONE

LAND USE		INTENSITY ZONE				
		HIGH INTENSITY	TRANSITIONAL	LOW INTENSITY	FUTURE PLANNING AREA	SENSITIVE DEVELOPMENT DISTRICT
INDUSTRY	Light Industrial	○	○	X	○	X
	Heavy Industrial	X	X	X	○	X
BUSINESS	Commercial	●	○	X	○	X
	Recreation & Resort	○	○	○	○	X
RESIDENTIAL	High Density > 6.5 DU/ac	X	○	X	○	X
	Medium Density 2.5 - 6.5 DU/ac	○	●	X	○	X
	Low Density ≤ 2.5 DU/ac	○	○	●	○	X

Exhibit II-H: Circulation Concept Plan



It shall be the responsibility of the planning staff to determine which category a specific proposed use falls into and if the use is consistent with the intent of the area and is also compatible with surrounding existing uses.

## **Circulation Concept Plan**

The Circulation Plan for the Kartchner Cavern Corridor is based upon four guiding factors:

- The development of a proper roadway classification system which meets the traffic flow, safety, and future development needs of the corridor.
- The acknowledgement of access as the primary controlling criteria necessary to insure a successful and functional roadway system.
- The careful control of access in order to insure safety and the continued efficiency of all roadways and major streets.
- The establishment of a hierarchy of accessibility directly related to the roadway classification system. A geometric relationship is recommended, whereby the higher the classification of the roadway, the more control which exists over direct access to it.

The most effective method of implementing these guiding factors is the establishment of a formal roadway classification system throughout the corridor area. In conjunction with the Circulation Concept Plan graphic, the roadway classification system will provide regulatory jurisdictions with the general engineering criteria and conceptual roadway alignments necessary to coordinate proposed development with overall transportation objectives.

For example, the Circulation Concept Plan delineates conceptual roadway alignments for each class of roadway within the roadway system. The engineering criteria, as contained within this report, identifies right-of-way widths, access considerations, and signalization concerns. This array of information will provide the necessary direction to undertake both public and/or private engineering studies necessary to construct final roadway improvements in conjunction with new development activities.

Roadway Classification System:

The proposed classification system is comprised of three roadway types:

- 1) State Highway,
- 2) Primary Collectors, and
- 3) Secondary Collectors.

Each of these roadway types are described below in terms of the following:

- Functional Description
- Existing/Proposed Cross-section
- Access Considerations
- Signalization

State Highway

Functional Description: Arizona State Route 90 is the primary roadway serving the corridor. Upon ultimate build out, SR 90 will continue its role as the major transportation artery of the corridor.

Existing/Proposed Cross-section: The existing right-of-way width is 200 feet. There will be the need to expand this right-of-way to accommodate the future improvements of SR 90. The existing roadway cross-section is two-lane, non-divided from Interstate 10 southward through the length of the corridor study area. ADOT's long term goal is to provide a four-lane, divided facility from Interstate 10 southward, through the corridor study area, to Sierra Vista. ADOT is currently in the process of administering additional studies which will yield a specific cross-section design for the roadway.

At the present time, it is ADOT's intention to utilize the existing roadway as one of the future two-lane pairs. This will require the construction of an additional pair of lanes on either the east or west side of the existing roadway, necessitating the procurement of the additional right-of-way mentioned above.

Access Considerations: In order to insure the future efficiency and safety of SR 90, four primary access points to the highway are planned. A minimum spacing of 1/2 mile between secondary access points must be maintained. Exhibit H: Circulation Concept Plan shows the proposed direct access points to SR 90, as

well as a potential scheme of primary and secondary collectors necessary to adequately provide access to adjacent properties.

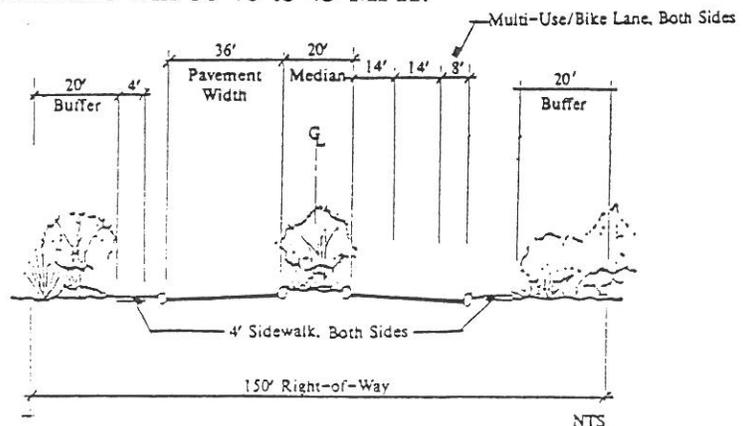
Optimally, all connections to SR 90 would be accomplished through the use of grade-separated intersections and on/off ramps, however, due to the substantial costs involved, this is not likely. Therefore, the majority of connections to State Route 90 will be "at-grade."

Signalization: Due to the extreme negative impacts which signalization has upon traffic flow, carrying capacity, etc, of the State Highway, the Arizona Department of Transportation's official position is to discourage signalization on all State Highways. In the future, signals may be required to best meet developed conditions in the corridor. The provision of such signals would require close coordination with ADOT as well as the fulfillment of all applicable ADOT signalization criteria.

Primary Collector Roadways

Functional Description: These roadways will function as the primary arterial streets within the corridor, providing direct access to large development blocks and ultimate connections to other primary collectors and the State Highway.

Existing/Proposed Cross-section: The proposed right-of-way for primary collectors will be 150 feet. The proposed cross-section will consist of a total of four travel lanes, comprised of two lanes in each direction. The roadway will also incorporate a 15 to 20 foot landscaped median and pedestrian circulation on both sides of the street. Bicycle lanes represent an additional cross-section element which may be incorporated in the event that demand warrants them. It is anticipated that the posted speed of the primary collectors will be 40 to 45 MPH.



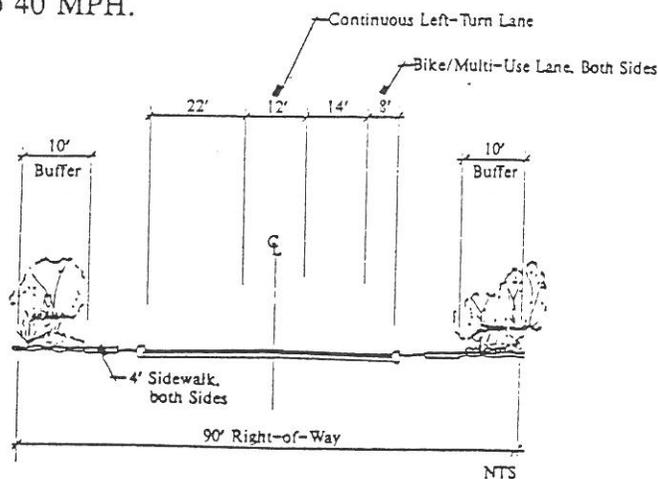
Access Considerations: Direct access to the Primary Collectors will be less controlled in comparison to the State Highway, however, clear restrictions to maintain proper safety and efficiency are recommended . The recommended spacing between direct access points will be 1/8 to 1/4 of a mile.

Signalization: As development increases and traffic volumes increase, signalization on the primary collectors should be limited to one traffic signal per 1/2 mile. Closer spacing of signalization will result in a deleterious effect upon traffic flow and efficiency.

## Secondary Collectors

Functional Description: Secondary Collectors will link development blocks in a coordinated manner so as to provide direct and unified access to the State Highway. By minimizing the number of direct connections, secondary collectors will play a key role in maintaining the efficiency and safety of State Route 90.

Existing/Proposed Cross-section: Secondary Collectors will have a 90' wide right-of-way containing a 3-lane roadway cross-section comprised of two lanes plus a continuous left turn lane. In addition, Secondary Collector roadways may incorporate bicycle lanes and pedestrian circulation on both sides of the street. It is anticipated that the posted speed limit of the secondary collectors will be 35 to 40 MPH.



Access Considerations: Secondary Collectors will provide the least restrictive direct access of the three types of roadways. Direct access points should be at a minimum spacing of 150 feet, with an optimal separation of 250 to 300 feet between any given access point and an adjacent intersection.

As shown in the Circulation Concept Plan, the secondary collectors cross the Sensitive Development Districts (SDD's) at select locations. Given the desire to maximize preservation of the SDD areas, along with the need to, nonetheless, provide reasonable access to specific development blocks, we recommend that the Circulation Concept Plan be used to control SDD access by identifying the specific locations at which crossings will be allowed. Doing so will afford the Circulation Concept Plan regulatory authority to prevent random access to SDD areas while, at the same time, meeting the access demands of certain select development blocks adjacent to them. As presently proposed, the Circulation Concept Plan limits impact by secondary collectors to three Sensitive Development Districts.

Signalization: Signals should optimally be placed no closer than every 1/2 mile, with a minimum allowable spacing of 1/4 mile. We anticipate that signalization will be required only at intersections with primary collectors, the State Highway, and other secondary collectors.

## Implementation

Implementation of the proposed Circulation Concept Plan will largely occur in response to future development activity. The graphic Circulation Concept Plan is intended primarily as *a guide* to conceptual roadway alignments. With the onset of specific development requests, the applicable regulatory jurisdictions will require detailed engineering and roadway alignment studies necessary to finalize specific primary/secondary collector alignments affecting a given development site.

All such studies will be subject to the review and approval of the reviewing jurisdiction (i.e. the County Director of Public Works or the City of Benson Engineer). This review will insure that proper agency standards are met and that the roadway's final alignment and cross-sectional characteristics are consistent with the expressed goals of the Circulation Concept Plan. All required right-of-way dedications would be determined by these final engineering studies. It is expected that such dedications would be required prior to the issuance of the proposed project's construction permits.

### Funding

To the extent possible, the funding of new transportation improvements throughout the corridor should be distributed equitably and borne by the new businesses and residential developments actually creating additional traffic. Funding for the circulation system can be accomplished in a variety of ways including but not limited to impact fees, development agreements, Community Facility Districts, improvement districts or actual construction of the roadways. In any event, developers will be required to obtain approval, from the City or County, of a Traffic Impact Study which identifies appropriate means of providing for current and future estimated traffic.

### Summary

A hierarchical roadway classification system is essential to the proper development of the Kartchner Caverns Corridor area. It provides a fundamental basis for:

- 1) meeting the traffic safety and movement needs of the corridor, and
- 2) providing Cochise County and the City of Benson with a basis for requiring appropriate developer contributions through the identification of specific right-of-way requirements and roadway improvements.

As previously stressed, access remains a primary consideration in the design of this roadway classification system, especially with respect to State Route 90. The access guidelines and recommendations, as put forth above, represent a key element in achieving a successful transportation system for the corridor.

Beyond the three roadway classes identified within this Circulation Concept Plan, it is anticipated that individual developments will be served by a network of local-level streets. Given their reduced level of importance, it is recommended that such local streets be designed on a site by site basis, in coordination with Cochise County or the City of Benson depending on the location of the parcel, at the time of development review and permitting.

## **Infrastructure Concept Plan**

Based on the existing conditions inventory for the region, the Kartchner Caverns Corridor does not have utility installations capable of supporting the planned growth and developments as depicted in the Proposed Land Use Plan. While minor facilities do exist (i.e. electric lines), these are to support a small number of individual users. Extending them to serve the projected land uses is not a viable option. To provide adequate infrastructure and utility service to the corridor will require construction of entirely new trunk line facilities for all required utilities.

Given the largely undeveloped character of the area, those utility companies currently servicing the corridor do not have well defined short or long term improvements planned. Significant discussions have occurred between Arizona State Parks, the City of Benson, and the Sulphur Springs Valley Electric Cooperative to extend electric, gas, and potable water utilities from the Interstate 10/SR 90 junction to the Kartchner Caverns State Park site, however, no definite arrangements have been formalized regarding this matter. In the event that utility extensions are undertaken in the manner presently being discussed (i.e. 3-phase electric power, 8" water line, 6" gas main), it must be recognized that they will have a limited ability to meet the ultimate corridor demands as indicated by the Proposed Land Use Plan.

With all of this in mind, the trunk line utility recommendations, for the overall corridor, as shown on Exhibit I: Infrastructure Concept Plan, can only be considered preliminary in nature. Finalization of the alignments and sizing of all installations requires an additional degree of study beyond the scope of work of this endeavor. It is envisioned that the trunk line utility alignments, as shown on Exhibit I, could most usefully be viewed as a starting point for discussion and for the future planning activities of the various utility companies which will eventually serve the Kartchner Caverns Corridor.

Consistent with the Design Guidelines being developed for the Corridor, all new utility lines should be located underground, and all upgraded utility lines shall be re-installed underground, if possible. Exterior transformers, utility pads, cable TV, and telephone boxes shall be located out of view, in public rights-of-way or screened with walls, fences, and/or vegetation. Utility lines within the Special Development Districts shall be designed to minimize impact on the natural environment.

**Proposed Trunk  
Line Facilities**

The majority of trunk line facilities shall be located within the rights-of-way of SR 90 and the Primary and Secondary Collectors, if possible, as shown in the Circulation Concept Plan. This will not only afford the dual use of public rights-of-way for both transportation and utility services, but will also provide the opportunity for simultaneous construction coordination of roadway improvements and needed utilities infrastructure.

State Route 90 represents a natural spine-way for major utility trunk lines within the Corridor. Close coordination and negotiation will be required with ADOT's Utility and Railroad Engineering Services Division in order to allow the placement of any utilities within the SR 90 right-of-way. ADOT's present intention is to ultimately expand the existing SR 90 right-of-way to accommodate future roadway improvements. Therefore, any proposed utility location within the existing or future rights-of-way must be coordinated with ADOT as to insure there is no conflict with the ultimate roadway facilities.

With respect to each individual utility, the following conceptual service recommendations are put forth:

**Waste Water**

The major trunk line sewer facilities will be contained within the major streets/highway rights-of-way if possible (see Exhibit I: Infrastructure Concept Plan). Exceptions to this general rule are due to the prevailing topography of the corridor and the inherent sewer service basins which result. Due to the general west-to-east downward sloping of the region and the relatively flat south-to-north slope which characterizes the southern half of the corridor, it is anticipated that a regional pump station will be required to transport wastewater flow from the southern half of the corridor to a location where gravity flow will transport it to a future Waste Water Treatment Facility (WWTF).

**Potable/Domestic Water**

As no registered water company presently has any public water facilities within the corridor, it is difficult to predict the specific franchisee which will ultimately provide service to the area. Due to the proximity of the City of Benson, it would seem most reasonable to assume that the corridor will ultimately be served through an extension of their existing public water facilities.

Exhibit I indicates a conceptual spine water line and major loop system off of which adjacent development blocks will construct site-specific service loops. As is the case with public sewer, these lines will likely be located within the rights-of-way of SR 90 and the proposed Primary Collector roadways. For advanced planning purposes, it is assumed this water system will connect to future City of Benson extensions. Therefore, such connections to the northeast are conceptually shown.

### **Natural Gas**

Given the presence of the El Paso Natural Gas Line within the corridor, the possibility exists to construct a regional regulator substation for distribution of natural gas throughout the area. One potential site for a distribution facility is shown on Exhibit II-I; final location, potential franchise agreements, water structures, etc, would all be subject to extensive negotiations with El Paso Natural Gas Company. Future distribution lines to serve projected development would almost exclusively be located within the rights-of-way of primary roadways.

### **Telephone/Electricity**

The State Route 90 right-of-way will again represent the likely location of major trunk line facilities for both electric feeder and main telephone cable installations. Site-specific service lines, serving individual development blocks, will be located within Primary and Secondary Collector rights-of-way. It is anticipated that US West Communications will be the telephone service provider for the corridor. Sulphur Springs Valley Electric Cooperative, due to its present electric installations within the corridor, is assumed to be the future electric service franchise.

### **Summary**

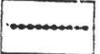
As indicated at the beginning of this section, the utility and infrastructure recommendations, as put forth in this Infrastructure Concept Plan, are most appropriately considered as a basis for initiating planning, discussions, and negotiations with individual service providers and franchisees. Once these entities institute long term capital improvement programs with respect to the corridor region, accurate and detailed comprehensive infrastructural programming can more realistically be undertaken.

# Infrastructure Concept Plan

Potential Utility Ties to Kartchner Cavern State Park by City of Benson/SSVEC:

- 3 Phase Electric Line
- 8" Water Line
- 6" Gas Main

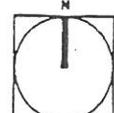
## LEGEND

- Sewer Pump Station & Pressure Flow Line 
- Gravity Flow Sewer Main 
- Water Main 
- Existing El Paso Gas Natural Gas Regional Main 
- Future Gas Regulator Station by City of Benson 

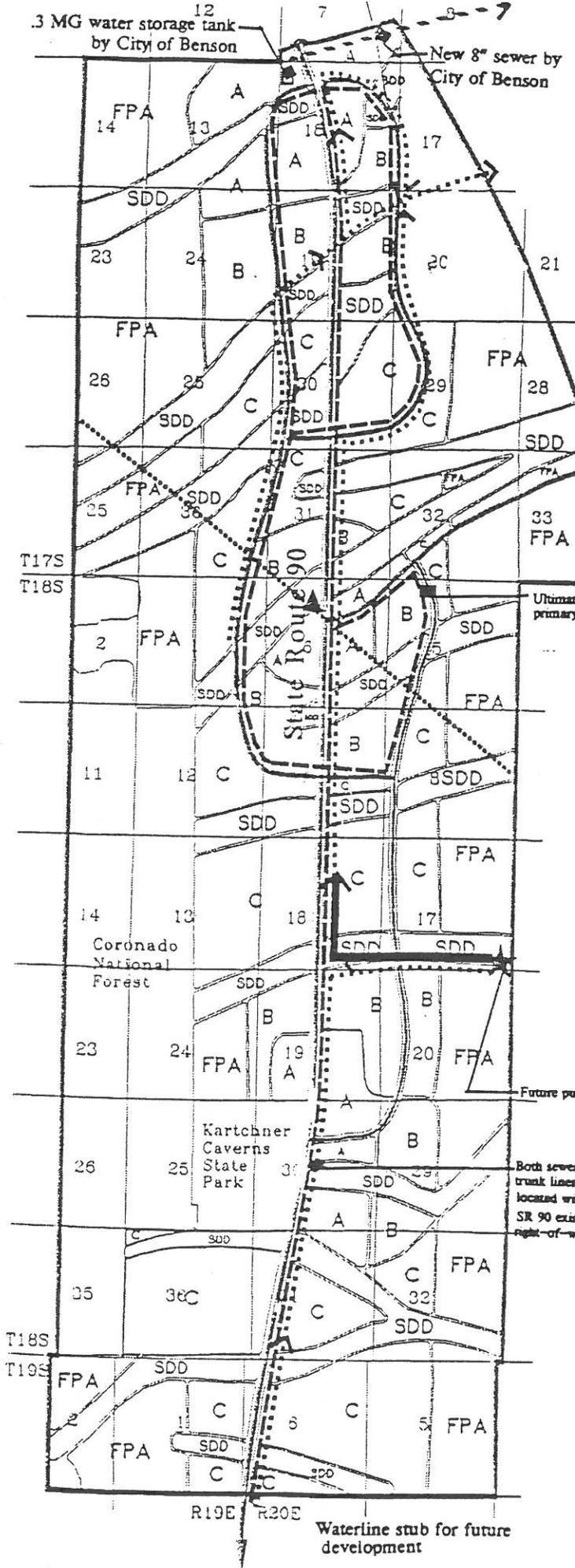
NOTE: Electric and telephone service lines will be located within the rights-of-way of SR90 and the primary collector roadways

## Kartchner Caverns Corridor Development Study

City of Benson & Cochise County, Arizona



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# DEVELOPMENT POLICIES

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## Introduction

This section presents the basic policies which will be used to review future growth and development proposals within the Kartchner Caverns Corridor. It provides the overall framework of guidelines and policies for orderly development in the study area. The report incorporates diverse views, offering guidelines to development, sensitive to the management and preservation of the surrounding environment. The policies are intended to protect and enhance the scenic and recreational qualities of the corridor while at the same time fostering appropriate development. The Kartchner Corridor is currently almost undeveloped, and will most likely develop with land uses that respond to the service demands of visitors to Kartchner Caverns such as tourist oriented commercial and recreational uses. Such uses are considered to be the most appropriate uses in the area. There is less likely to be demand for other types of land uses such as offices, industries and medium and high density housing. Further, these uses are considered less appropriate, since they do not serve the needs of visitors and can more efficiently be provided in existing communities throughout the County.

These policies can be used in conjunction with the more specific Design Guidelines contained in the final section of this Corridor Study. The policies also provide guidance for the preparation of more detailed environmental, land use, transportation proposals, and strategies for refinement of community facility and service plans.

## Goals, Objectives, & Policies

To understand the following framework of the development policies, there needs to be an understanding of the hierarchy of goals, objectives, and policies. *Goals* provide general overall direction and are usually not limited by time. They describe community values, attitudes, and expectations that relate directly to the present and future needs of the Plan area. These goals are further clarified through the statement of *objectives*. Specific *objectives* explain the meaning of goals and form the foundation for policies. *Objectives* are generally measurable. *Policies* are written to define specific objectives. They are the direct application of administrative, analytical, and technical skills to develop, implement, and monitor actions related to objectives.

**GOAL 1:** Complement the rural/recreational/ranching character of the region through appropriate land uses and protection of the existing scenic qualities.

**OBJECTIVE 1.1:** Create a mixture of uses responding to the existing environment and the rural character of the area.

**POLICY 1.1A:** The policies, objectives, and designated land use intensity classifications shall establish the primary development guidelines for the area.

**POLICY 1.1B:** Land uses should reflect balanced regional community needs by providing employment, business, social and recreational opportunities for visitors and the residents of Cochise County.

**OBJECTIVE 1.2:** Maintain and enhance the character and quality of existing open space and views.

**POLICY 1.2A:** Significant vistas of the San Pedro Valley and the Whetstones should be preserved. Incorporate design features such as building forms, setbacks, heights, colors and landscaping to maintain a sense of open space and aesthetic vistas overlooking the San Pedro Valley and maintaining the visibility of the Whetstone Mountains.

**POLICY 1.2B:** Development visible from SR 90 will be sited and designed to blend visually with the surrounding natural areas.

**POLICY 1.2C:** Development activities in highly visible areas along SR 90 should utilize appropriate mitigation techniques, such as desert varnish, reduced grading methods, boulder and rock replacement and revegetation using native vegetation comprised of nursery stock and salvaged plants.

**POLICY 1.2D:** A minimum setback of 20 feet should be maintained between more intense and less intense uses and from interior streets to be vegetated with native vegetation.

**POLICY 1.2E:** All buildings and parking areas should have setbacks from Highway 90, ranging from 50 to 100

feet depending on the type of screening and landscaping proposed (see Design Guidelines).

**POLICY 1.2F:** Landscape and maintenance in the street right-of-ways should be the responsibility of the owners of adjoining properties.

**OBJECTIVE 1.3:** Cluster development uses, maintaining large portions of consolidated open space areas.

**POLICY 1.3A:** Developments should include appropriate buffer elements to insure protection of open space, views, environmental and natural resources.

**POLICY 1.3B:** Permit development in areas identified as capable for development in the site inventory and analysis.

**GOAL 2:** Protect the natural environment.

**OBJECTIVE 2.1:** Preserve unique natural resources in the area as identified in site specific inventory and analysis of specific proposed development.

**POLICY 2.1A:** Significant slopes shall remain undisturbed unless a grading mitigation plan is submitted and approved by the appropriate jurisdiction. The Plan should demonstrate the need for grading in these areas and identify measures that are being taken to assure the restoration and stabilization of the area after grading is complete. Excessive cutting and filling should not be permitted. Specifically, development should primarily occur in areas of less than 15% slope. Disturbance in areas with slopes of 15% to 25% should be justified in a grading mitigation plan approved by staff as in conformance with this plan. Slopes of greater than 25% shall remain undisturbed.

**POLICY 2.1B:** Site disturbance should be kept to a minimum during construction. Within six months of construction, these areas should be revegetated with vegetation listed in Appendix A.

**POLICY 2.1C:** If development grading has occurred but there is no construction activity, the graded area should be hydroseeded with the seed mix recommended in Appendix A. Hydroseeding should occur between 90 days and six months after grading depending on climatic conditions. Hydroseeded areas should be established and maintained per local Zoning Regulations.

**POLICY 2.1D:** During construction, outdoor trash and debris should not be accumulated in an unsightly condition and should be removed as needed.

**OBJECTIVE 2.2:** Maintain an open space network to preserve native vegetation and provide contiguous wildlife corridors.

**POLICY 2.2A:** Drainageways, should be maintained in their natural state leaving the maximum amount of vegetation possible preserved when feasible, except for transportation crossings, unless a mitigation plan is submitted and approved by the local jurisdiction.

**POLICY 2.2B:** Plant preservation and salvaging should be completed for any development areas greater than one acre in size per the State Native Plant law.

**OBJECTIVE 2.3:** Light pollution should be minimized through conformance to existing the existing County and City Light Pollution Codes.

**GOAL 3:** Encourage quality development that integrates any new built environment with the natural environment and provides a consistent image throughout the corridor.

**OBJECTIVE 3.1:** Promote and reinforce quality landscaping that is integrated with the natural environment.

**POLICY 3.1A:** Streetscape and landscaping should be composed of native vegetation, including nursery stock and salvaged plants from onsite. Minimize the use of turf.

**POLICY 3.1B:** The barren unshaded appearance of parking lots over 10 spaces will be minimized through provision of minimum 5 gallon trees which provide shade

covering of at least 30 percent of the lot within 2 years of commencement of operation.

**Policy 3.1C:** Parking lots over 10 spaces will be sited to the rear of the building or otherwise located or landscaped in such a manner to minimize visibility from Highway 90.

**OBJECTIVE 3.2:** Promote design which serves visitors to the Corridor and County and is architecturally consistent throughout the corridor.

**POLICY 3.2A:** New developments should be harmonious with surrounding uses and the natural environment.

**POLICY 3.2B:** Business that serve RV traffic should have five RV parking spaces per 20 required spaces.

**POLICY 3.2C:** Within 1/4 mile of Highway 90, signs should be limited to 8 feet in height above highway pavement, except extending south of I-10 for 250 feet, signs shall conform with the Benson sign code in regards to height.

**POLICY 3.2D:** Architectural design, styles and materials that complement and harmonize with the natural environment will be used for all primary and accessory structures, signs, walls and light fixtures. Southwestern architectural styles reflective of historic settlements in the area such as ranching and invisible architecture based on the colors, materials, and shapes of their surroundings, such that they blend in, are recommended.

**GOAL 4:** To improve opportunities for a variety of passive and active outdoor recreational experiences.

**OBJECTIVE 4.1:** Encourage a recreational system integrating natural open space, washes, and unique topographic features within the Plan area.

**POLICY 4.1A:** Functional open space should include cohesive, unified areas designed for active and passive recreation compatible with the protection of natural resources.

**POLICY 4.1B:** Functional open space may include nature trails, exercise trails, playing fields, and active recreation areas. The open space areas should provide environmental amenities, visual relief, shade, screening, and buffering. Wherever possible, the design should be integrated to allow wildlife movement and provide mitigation and wildlife habitat enhancement.

**GOAL 5:** Provide efficient, safe, timely and environmentally sensitive facilities and services.

**OBJECTIVE 5.1:** To protect the health, safety and welfare of all residents in providing water and waste services.

**POLICY 5.1A:** Encourage compatible, multiple use of water and waste management facilities, including public recreational utilization, where consistent with their original purpose and the maintenance of water quality.

**POLICY 5.1B:** Design water and waste management systems which enhance the appearance of the development in which they are located and minimize negative environmental impacts.

**OBJECTIVE 5.2:** Encourage a water conservation program.

**POLICY 5.2A:** Encourage the use of water-conserving systems for all new development, including water harvesting techniques, grey water recycling systems, and low water use plumbing fixtures. Install toilets using a maximum of 1.6 gallons per flush, and faucets and showerheads using a maximum of 2.5 gallon per minute.

**POLICY 5.2B:** Water runoff detention and retention facilities should be provided in order to enhance groundwater recharge. Whenever feasible, natural drainageways should be maintained as water recharge areas.

**POLICY 5.2C:** Whenever feasible, landscaping and recreation areas throughout the Plan area should utilize drip irrigation and effluent reuse.

**POLICY 5.2D:** Minimize use of turfed areas where feasible and use the best irrigation management practices.

**OBJECTIVE 5.3:** Discourage depletion of the corridor water supply by careful assessment of the impact of high volume users on the existing water supply. High volume uses include but are not limited to industrial uses, high density residential uses and commercial uses, and recreational uses (such as some golf courses) that are high water uses.

**POLICY 5.3A:** Developers should provide estimates of average water usage.

**POLICY 5.3C:** Land uses that are high volume water users should be discouraged unless satisfactory mitigation measures and implementation techniques are employed to minimize the adverse impacts on the basins water supply.

**GOAL 6:** Develop an internal transportation system that incorporates principles designed to help ensure a safe, energy efficient and cost effective system.

**OBJECTIVE 6.1:** Develop an internal circulation system that is responsive to topographic conditions and minimizes access points to offsite public roadways.

**POLICY 6.1A:** The public internal vehicular roadways shall be in compliance with ADOT, City of Benson, and/or Cochise County roadway standards and developed to highest applicable standard. Internal roads shall be designed to rural/scenic standards if such standards are adopted by the City of Benson of Cochise County.

**POLICY 6.1B:** All vehicular roadways should be designed to provide sufficient capacity for the ultimate development of the Plan area.

**POLICY 6.1C:** All public vehicular roadways shall be built as per an engineering/alignment study prepared by the developer at the time of site development. Said studies will be subject to the review and approval of the City of Benson or Cochise County as applicable to insure conformance

with the adopted Kartchner Caverns Circulation Concept Plan as well as adherence to applicable roadway standards.

**OBJECTIVE 6.2:** Encourage alternate modes of transportation to reduce vehicle miles traveled and maintain acceptable air quality standards.

**POLICY 6.2A:** Where feasible, integrate pedestrian, bike, and equestrian trails throughout the project.

**POLICY 6.2B:** Encourage the development of bicycle-related facilities, including parking and lockers.

**POLICY 6.2C:** When feasible, develop a shuttle/transit system throughout the Plan area as well as to major destinations within the region such as major airports, transit centers, and Kartchner Caverns State Park.

**OBJECTIVE 6.3:** Restrict access to SR 90.

**POLICY 6.3A:** Allow major roadway connections at: Kartchner Caverns, Post Road, approximately ½ mile south of Interstate 10 intersection and one other location as appropriate. The intent is to restrict direct access to Highway 90 to these four entrances or in accordance with ADOT guidance to try to sustain the 55 mile per hour speed limit consistent with public safety.

**POLICY 6.3B:** Phase development on the SR 90 Corridor so that preceding policies are met and an appropriate internal network is developed.

**POLICY 6.3C:** Require developers to finance the construction of offsite roadways

**GOAL 7:** To preserve and/or protect cultural sites for educational and scientific purposes.

**OBJECTIVE 7.1:** Preserve and/or protect archaeological/historic and cultural resources according the Arizona State Historical Preservation Office (SHIPO).

**POLICY 7.1A:** Developers should provide documentation that SHIPO standards have been followed.

**GOAL 8:** Identify major forces, both positive and negative, impacting the Corridor development.

**OBJECTIVE 8.1:** Develop and promote the corridor as a tourism gateway to Cochise County and guide development in such a manner as to attract visitors to Kartchner Caverns and other scenic and historical areas of Cochise County.

**POLICY 8.1A:** Promote liaisons between Cochise County, all County communities, Arizona Dept. of Commerce, community leaders and neighborhood organizations on the orderly expansion of commerce in the region.

**POLICY 8.1C:** Affected economic development agencies should seek to attract businesses which have an acceptable impact on the area's scenic and recreational attractions, air quality, groundwater quality and supply, and waste disposal systems.

**GOAL 9:** Equitably distribute the financial burden of developing the Corridor.

**OBJECTIVE 9.1:** Develop funding mechanisms which optimize the extent to which development pays its fair share with respect to the provision of necessary transportation and utility infrastructure.

**POLICY 9.1A:** Require developers to provide the offsite transportation and infrastructure improvements necessary to serve their development.

## **Summary**

The Development Policies contained within this Plan are intended to be used as guidelines for the recommended land uses within the study area. Implementation of these concepts and policies may require modification of existing Zoning and Sign Ordinances and other adopted plans. Any modifications will need to be accomplished by the appropriate jurisdiction, either the City of Benson or Cochise County.

As development occurs and the nature of the Corridor begins to change, the Corridor Land Use Concept will need to be re-evaluated. It is important that open dialogue and communication remain between the residents, developers, the City of Benson and Cochise County in order to successfully maintain and create a positive image for the Kartchner Caverns Corridor Study area.

# DESIGN GUIDELINES

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## Purpose

The Design Guidelines address areas of site planning, landscape, open space/drainageways, and architecture within the Kartchner Caverns Corridor Area Plan. The purpose of these guidelines is to provide design suggestions on how to implement the Development policies. They provide design criteria for developers, architects, engineers, landscape architects, builders and other professionals.

These guidelines are designed to be used in various combinations. The applicant is free to propose additional techniques so long as they achieve the intent of the Development Policies. An advantage to using these guidelines is that if followed, the applicant will be in substantial conformance with the Development Policies.

Please note that retention of the natural vegetation and terrain is always presented as an option. Use of the natural terrain and vegetation to screen parking, maintain drainageways and minimize the impact of new construction on the view of Highway 90 are favored approaches and may also result in cost savings to the developer.

The following Corridor-wide goals of these Design Guidelines apply to the entire Kartchner Corridor Area Plan:

- Assist the developer/builder in the design development/review process to retain and enhance the existing character of the Corridor and implement the Corridor Development Policies;
- Allow for a mixed use of development that has a balance of land uses interlaced by open space;
- Encourage site development in a manner sensitive to the terrain (i.e. slope, natural drainage and runoff patterns, native vegetation, soil stability, and views);
- Protect existing uses and ensure non-encroachment of conflicting uses;
- Encourage and utilize a high quality and variety of indigenous architectural styles to be constructed within the Corridor;
- Provide vehicular circulation concepts that are efficient, safe, visually attractive and meet the future needs of development within the Corridor;
- Provide safe, attractive and efficient parking for automobiles and other vehicles;
- Maintain open space corridors, preserving native vegetation

- when feasible, for wildlife movement;
- Provide opportunities for passive and active recreation within or next to open space corridor areas, especially in high use areas;
- Unify and reinforce the existing landscape through establishment of plant palettes for new developments, open space areas, and circulation elements of the Corridor; and
- Establish signage characteristics that complement the existing rural/ranching ambiance of the Corridor.

## Site Planning

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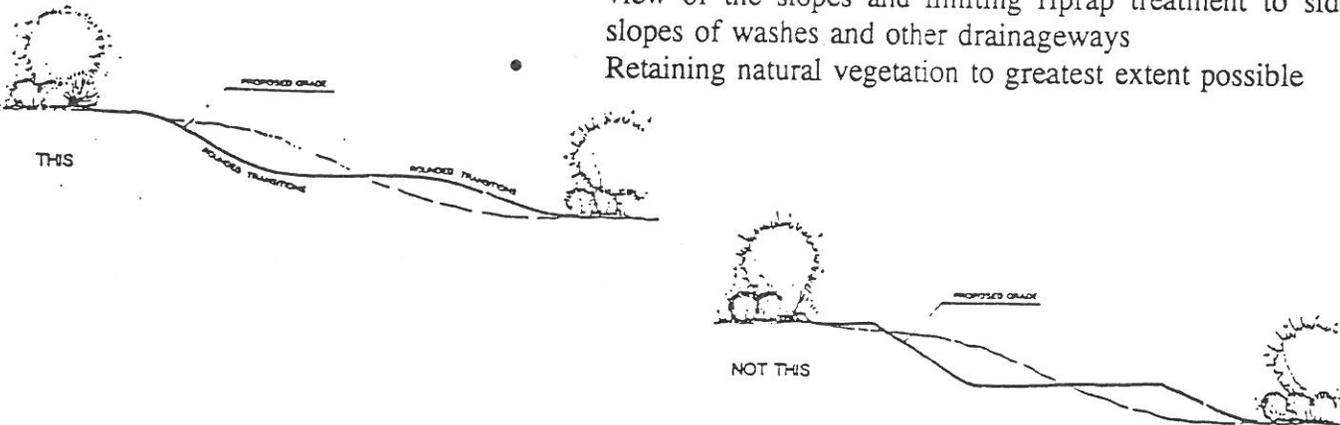
Site planning addresses the placement of buildings, roads, and utilities. This requires an understanding of existing site opportunities and constraints. It involves issues of building form, grading, orientation, coverage, setbacks, parking, utilities, loading docks, storage areas, and access.

### Grading/Slopes

The intent of grading guidelines are to minimize the impact and extent of disturbed areas to preserve the integrity of the natural landscape. Grading of the site should reflect the natural topography and result in a harmonious transition between the manmade graded areas with the natural terrain. Site grading can complement and reinforce architectural and landscape character by screening parking, loading, and service areas; reducing the perception of height and mass on larger buildings; providing transitions between on-site and off-site uses; and providing elevation changes facilitating movements.

#### Recommended Guidelines:

- Rounding tops and toes of all slopes
- Limiting maximum cut slope to 3:1 and maximum fill slope to 4:1
- Cutting slopes not to exceed 5' in height and filling slopes not to exceed 3' in height
- Avoiding large, level graded building pads ("padding") on sloping sites
- Designing structures to conform to hillsides by terracing with the topography
- Replanting all graded slopes with trees, shrubs, and groundcovers to control erosion and minimize denuded view of the slopes and limiting riprap treatment to side slopes of washes and other drainageways
- Retaining natural vegetation to greatest extent possible

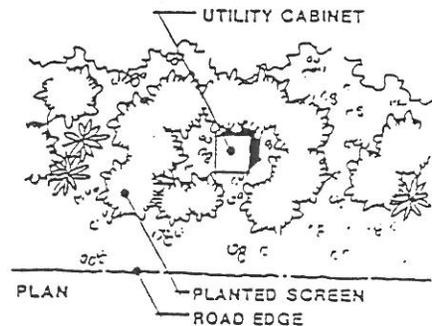


## Utilities

As with other structures, the Development Policies require that the impact by new utility structures on views and the natural environment be minimized by the following techniques.

### Recommended Guidelines:

- Placing utilities underground when relocated, if feasible.
- Screening transformers, utility pads, cable TV and telephone boxes with walls, fences or vegetation.
- Using existing terrain to locate utilities out of sensitive viewsheds along SR 90 and Kartchner Caverns State Park.
- Revegetating areas disturbed by utility structures construction.



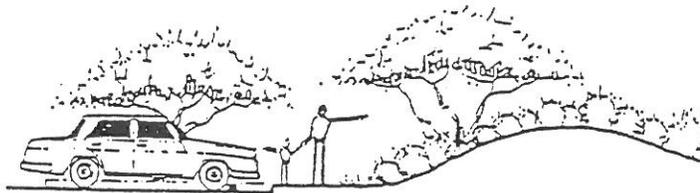
## Non-residential Parking/Loading Zones/Refuge Areas

Large unlandscaped parking areas provide a sharp contrast from the existing surrounding natural environment. In order to mitigate and soften the impact of the large parking areas, a combination of the following techniques can be used.

### Recommended Guidelines:

- Parking lots to be screened from adjoining streets and residential lots. This should include a low wall (3' high) and landscaping (3' high in two years time), or earth berm (minimum 3' high) and landscaping (4' high in two years time).
- Parking next to street rights-of-way to be buffered with a landscaped area at least 10' wide (not including the public right-of-way).
- Groundcover plantings are encouraged within the parking area to provide some relief from the paving.
- Parking to the rear of establishments is encouraged.
- Loading dock areas are encouraged to be set back, recessed, or screened so as not to be visible from adjacent

- lots or sites, neighboring properties or streets.
- Materials, supplies, or equipment, including trucks or other motor vehicles, should be stored on-site either inside a closed building or behind a visual barrier screen so as not to be visible from neighboring properties and streets.
- Storage areas and service yards could be screened and located in the rear of the developments.
- Outdoor refuse containers could be located to the rear of buildings and visually screened with a 6' or higher wall so as not to be visible from adjacent lots, neighboring properties or streets.
- The refuse enclosures could be designed of durable materials with finishes and colors which are unified and harmonious with the building architecture.



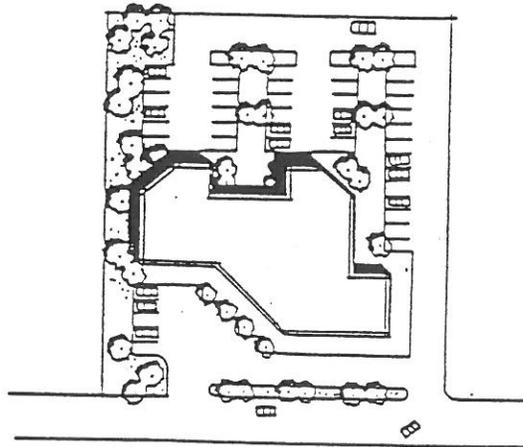
PARKING AREAS SCREENED BY EARTH MOUNDING AND VEGETATION

### Commercial/Office/ Manufactured Building Setbacks

Provisions of a substantial landscaped buffer and sensitive structure design along Highway 90 are required by the Development Policies to help retain the existing scenic quality of the Kartchner Caverns Corridor.

#### Recommended Guidelines:

- Front setbacks should vary, with no more than two adjacent units having the same setback. Minimum setback variation between units is 3 feet.
- Like uses can be clustered to preserve areas of open space along roadways.
- Required setbacks in the zoning regulations can be combined, modified or transferred.
- The design guidelines encourage developments to be unique, creating interesting streetscape appearances. Development plans should foster varied setbacks and a variety of elevations and avoid unbroken building facades.
- Projects are encouraged to complement the feeling of rural open space within the development.



### Street Standards

Development along the Kartchner Corridor shall have limited access from SR 90 (see **Circulation Concept Plan and Development Policies** for mandatory policies) As with other types of construction, street design is expected to minimize the impact on the existing natural environment and provide for safe and efficient flow of traffic. This can be done using a combination of the following techniques and streetscape suggestions in the Landscape Section.

#### Recommended Guidelines:

- Slopes of 3:1 or more along the roadways can be stabilized with rock, decomposed granite, or vegetative groundcovers.
- Access drives for commercial and public use areas should be coordinated so as not to impede the efficient flow of traffic.
- Connections are strongly encouraged between parking lots of contiguous parcels to efficiently move traffic from one business to the next.

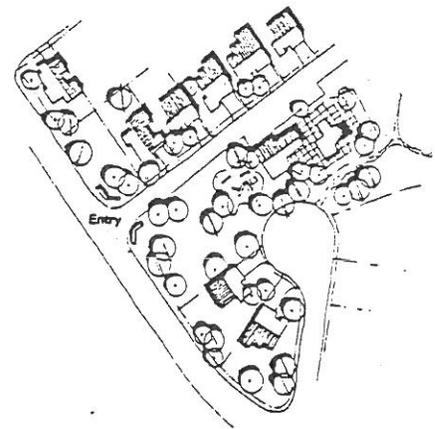
### Signage

Signage has an important and obvious impact on the character and quality of the built environment. As a prominent part of the scenery, signs can attract or repel the viewing public and affect the safety of vehicular and pedestrian traffic. Their suitability and appropriateness help to complement the rural tone of the corridor. The purpose of these signage guidelines is to establish quality and consistency of signage throughout this development. Use of a combination of the following techniques will help ensure quality

signage in the Kartchner Caverns Corridor.

**Recommended Guidelines:**

- Signage graphics should exhibit clarity and directness of message.
- Signing should be restrained in character and no larger than necessary for adequate identification.
- The size, color, shape, and placement of the sign is encouraged to be compatible with and bear a harmonious relationship to the building or facility it identifies.
- A sign should be compatible with the building's architecture.
- A unity within the various types and locations of signs is strongly recommended.
- To guide travelers and residents to the individual businesses and residential developments, a smaller secondary entry monumentation, along secondary access roadways and business entrances, can include directory signs identifying and directing patrons to all the businesses and facilities on the secondary access roadway.



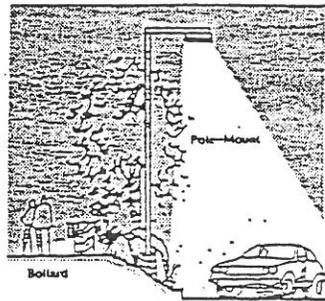
**Lighting**

Lighting is part of the architectural vocabulary, but can also create and dramatize the nighttime image of a structure. Lighting is necessary for the functional requirements of safety, security, and identification. Excessive lighting, however, is not compatible with the existing character of the Kartchner Caverns Corridor.

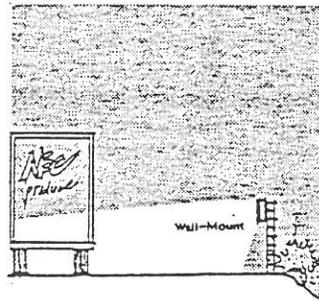
**Recommended Guidelines:**

- Lighting should be designed to complement the corridor theme.

- Light sources should be directed downward and shielded to prevent light pollution into neighboring areas and the nighttime sky in general.
- Unnecessary use of light is discouraged.
- Parking lots, businesses, and local streets can be lit to provide for safety, security, and identification.
- Light standards can be designed to provide "pools of light" on the pavement rather than create a continuous, saturated condition.



Parking Area Lighting



Rear Loading Area Lighting

## Landscape

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The corridor study area is characterized by a Mixed Desert Grassland plant community. Predominant plants include Acacia, Creosotebush, small native Mesquite, Yucca, Prickly Pear, Ocotillos, and various grasses. Much of the native vegetation is healthy, attractive, and suitable for buffering, screening, and other landscape uses. The landscape theme for the project will be enhanced natural desert vegetation. This will maintain the continuity of the San Pedro Valley environmental setting for Kartchner Caverns State Park.

### Screening, Buffers & Open Space

These design guidelines provide suggestions to preserve the existing natural environment of Kartchner Caverns Corridor, while at the same time permitting responsible development. Screening, buffering and clustering developments to create large areas of open space begin to achieve this overall concept of preservation.

#### Recommended Guidelines:

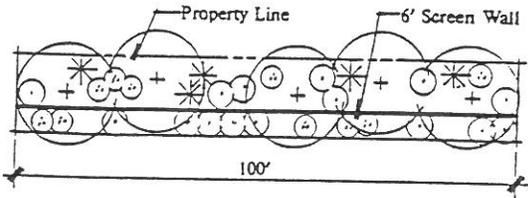
A combination of the following techniques are encouraged to complement the existing scenic quality of the corridor:

- Landscaping can primarily consist of vegetation naturally occurring in the corridor or selections from Appendix A or other drought tolerant vegetation compatible with the corridor.
- Minimum recommended sizes for landscape plantings are as follows:

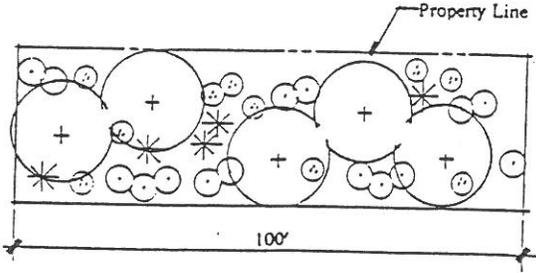
Tree	15 gallon
Shrub	5 gallon
Accent Plant	5 gallon or standard size bare root
Groundcover	1 gallon
- Amount of screening along Highway 90 varies according to bufferyard width as follows (amounts are per 100 linear feet of bufferyard):

	<u>50 foot width</u>	<u>75 foot width</u>	<u>100 foot or greater width</u>
<b>Disturbed Buffers</b>	6 trees 18 shrubs 6 accents 12 groundcovers Native seeding 6' screen wall	6 trees 18 shrubs 6 accents 10 groundcovers Native seeding No wall required	same as 75 foot width
<b>Undisturbed Buffers</b>	To existing vegetation: Add 3 trees Add 7 shrubs Add 3 accents	To existing vegetation: Add 1 tree Add 7 shrubs Add 3 accent	Existing vegetation is sufficient

- Salvage and utilizing existing vegetation will help maintain the character of the area.
- Clustering of buildings to maintain maximum amount of open space is encouraged.
- Use of the xeriscape concept (Appendix A) complements the existing desert environment.
- Commercial, office and large residential projects are encouraged to provide usable open space for employees and visitors (i.e. courtyards, outdoor eating terraces, etc.).
- New plantings are encouraged to be of a type that blends with existing vegetation.



50' Landscape Buffer (Disturbed)



75' Landscape Buffer (Disturbed)

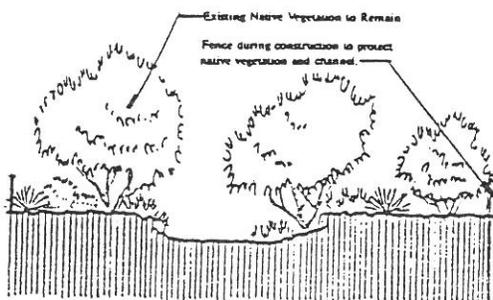
**Sensitive  
Development  
Districts/  
Drainageways**

Drainageways form the major open spaces within the Corridor. The Development Policies require that drainageways remain as contiguous and natural as possible so that they can function effectively as natural drainageways, wildlife corridors, pedestrian/hiking corridors to public land and view corridors from Highway 90.

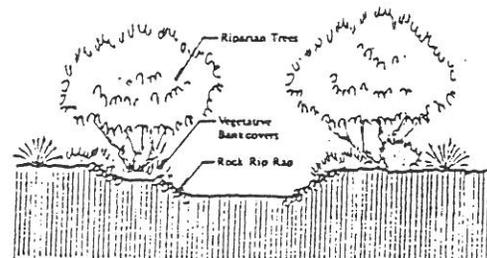
**Recommended Guidelines:**

The following techniques are encouraged as drainageway treatments:

- Natural drainageway treatments are encouraged be used wherever possible.
- Minimal disturbance to all drainageways, dependent on site-specific hydrology information, should be strongly encouraged.
- Stabilization of washes can be used if justified by a hydrology report.
- Native San Pedro Valley river rock are encouraged along the wash slopes to further stabilize the banks.
- Existing dense vegetation can be preserved and/or incorporated into site specific designs as an amenity feature.
- On-site detention basins of storm runoff is encouraged to be designed to facilitate water harvesting to supplement irrigation of plant materials.
- Natural washes are encouraged to be preserved for multi-purpose uses, such as areas for drainage, open space, buffers between different land uses, and for passive recreation.
- Contiguous wash systems can provide linkages between larger open space/recreational areas, commercial, office, and housing uses.

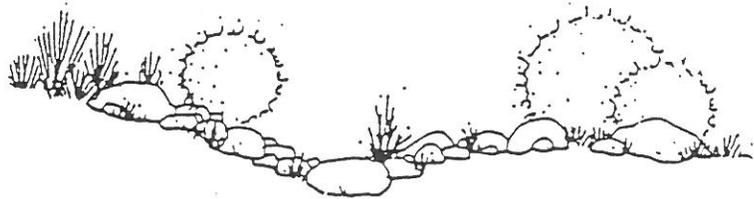


NATURAL WASH



BANK PROTECTED WASH

- The use of soil cement is discouraged.
- The use of rock on over 50% of steep slopes is discouraged and integration with vegetation is recommended.



## Architecture

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The following general architectural guidelines are intended to provide a logical and pleasing environment composed of buildings, landscapes, and natural forms. These guidelines are primarily concerned with the physical appearance of the community environment as perceived from SR 90 or secondary roadways. These architectural guidelines have been compiled for the purpose of establishing a corridor unity and to assure quality buildings, walls, and fences within the Corridor. These design guidelines begin to establish the Corridor's character as a community gateway to the Kartchner Caverns State Park and Cochise County.

### **Building Design (Height, Style, Materials and Colors)**

- Buildings design must consider the view.
- Traditional southwestern architecture is encouraged.
- Masonry and stucco are the primary recommended building materials for developments within the Kartchner Corridor study area.
- Other recommended materials include:
  - Cement stucco over concrete block
  - Cement stucco over wood frame
  - Split face concrete block
  - Slump block
  - Brick and mortar washed brick
  - Fired adobe brick/adobe/rammed earth
  - Mud stucco over stabilized adobe block
  - Natural stone
- Use of large amounts of metal materials is discouraged, except for ranch type metal roofs.
- Warm earthtones in pinks, grayed violets, grayed pale blues and greens, pale rusts and brown tones, and various tans, buffs, and grays are encouraged for exterior facades.
  - Whites, off-whites, or bright colors are discouraged. Small amounts of accent colors may be used, however, those should be from the same range of colors. Roof overhangs are encouraged to produce interest and as a response to climatic conditions, especially when used in combination with porches, balconies, and recesses.
- Parapet roofs are encouraged to be continuous around the roof perimeter.
- Roof mounted heating or cooling units should be screened from the view from the street and adjacent parcels.

- Solar panel designs are to be integrated into the overall design and screened.
- All architectural building projections; including chimney flues, vents, gutters, downspouts, utility boxes, porches, railings, and stairways should match the main color of the structure.

## **Walls and Fences**

The intention of these guidelines is to encourage walls and fences that are designed to be integrated with the natural environment and the corridor architecture.

### **Recommended Guidelines**

- Recommended wall materials are similar to the recommended building materials, but also can include ornamental iron (tubular steel) in combination with masonry.
- Long stretches of wall can be softened with planting recesses, landscaping, decorative designs and varying heights..
- Wall heights and locations should be as required in the landscaping/screening section.
- Walls and fences are encouraged to be less than six feet in height.
- Chain link fences are discouraged unless obscured by vegetation and terrain.
- The use of wider landscape buffers is preferred over the use of walls and fences.

# APPENDIX A: Landscape Architecture

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## Xeriscape Concept

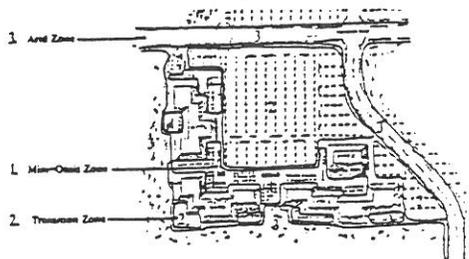
Projects within the Kartchner Corridor should be landscaped with a xeriscape concept, with emphasis on indigenous plant materials, blending development into the existing desert grassland and promoting water conservation. A developed area can be divided into three zones of water use. All zones shall be irrigated by a permanent, underground automatic irrigation system. Drip irrigation should be used for plant materials other than turfed and seeded areas which will receive spray irrigation. The three landscape zones are Arid, Transition, and Mini-oasis.

The Arid landscape zone should use predominantly native plant materials (see recommended plant list for each zone) with minimal irrigation. A seed mix has been developed for revegetation in this area. This zone is the peripheral area of each development site. When peripheral dense screening is required, additional native vegetation shall be added to the arid zone plant materials to "beef up" the density. The arid zone also includes disturbed areas adjacent to natural open space or drainageways.

The Transition landscape zone should use a combination of native plant materials and other colorful, drought tolerant, desert adapted plant material. The streetscape, parking screens, and landscaping around the buildings are within the transitional zone. The transitional landscape shall blend with native plant materials, but is characteristically denser, greener, and more colorful. Decomposed granite, matching native rock and soil on the site is an acceptable groundcover.

The Mini-oasis landscape zone includes the use of more exotic, desert adapted plant materials in combination with transition plant materials. This creates a "mini-oasis" within a high use area adjacent to a building. This is the highest water use zone and should occupy relatively small areas of the site. Mini-oasis zone includes swimming pool/recreation areas, some small areas at building entrances, courtyards or patios, or outdoor eating areas at restaurants.

Xeriscape Concept



**RECOMMENDED  
PLANT PALETTES**

The following are recommended plant materials.

**Arid Landscape  
Zone:**

<u>Botanical Name</u>	<u>Common Name</u>
Acacia spp.	Acacia
Cercidium spp.	Palo Verde
Chilopsis linearis	Desert Willow
Prosopis glandulosa 'glandulosa'	Honey Mesquite
Prosopis spp.	Hybrid Mesquite Species (i.e. Chilean/ Argentina)
Agave spp.	Century Plant
Atriplex canescens	Four Wing Saltbush
Caesalpinia spp.	Mexican Bird of Paradise
Calliandra eriophylla	Fairy Duster
Dalea pulchra	Bush Dalea
Dasyliirion wheeleri	Desert Spoon
Fouquieria splendens	Ocotillo
Larrea divaricata	Creosote
Opuntia spp.	Prickly Pear
Vauquelinia californica	Arizona Rosewood
Yucca spp.	Native Yuccas
Abronia villosa	Sand verbena
Dalea greggii	Trailing Indigo Bush
Penstemon parryi	Parry's Penstemon

**Transitional  
Landscape Zone:**

All plant materials in the Arid Landscape Zone plus the following:

<u>Botanical Name</u>	<u>Common Name</u>
Brahea armata	Mexican Blue Palm
Celtis reticulata	Western Hackberry
Cupressus arizonica	Arizona Cypress
Eleagnus angustifolia	Russian Olive
Fraxinus velutina	Arizona Ash
Gleditsia triacanthos 'inermis'	Thornless Honey Locust
Pistachia chinensis	Chinese Pistache

<u>Botanical Name</u>	<u>Common Name</u>
Sophora secundiflora	Texas Mountain Laurel
Vitex agnus-castus	Chaste Tree
Eleagnus ebbingii	Ebbing Silverberry
Leucophyllum frutescens	Texas Ranger
Myrtus communis	Classic Myrtle
Rosa banksiae	Lady Banks Rose
Tagetes lemmonii	Mountain Marigold
Calylophus tamui	Calylophus
Lantana montevidensis	Trailing Lantana
Oenothera berlandieri	Mexican Evening Primrose

**Mini-oasis Landscape**

All plant materials in the Arid and Transition Landscape Zones plus the following:

<u>Botanical Name</u>	<u>Common Name</u>
Carya illinoensis	Pecan
Cercis canadensis	Eastern Redbud
Cupressus sempervirens	Italian Cypress
Fraxinus velutina 'Rio Grande'	Fan Tex Ash
Platanus wrightii	Arizona Sycamore
Trachycarpus fortunei	Windmill Palm
Campsis radicans	Trumpet Creeper
Chamaerops humilis	Mediterranean Fan Palm
Gelsemium sempervirens	Carolina Jasmine
Jasminum humile	Italian Jasmine
Jasminum mesnyi	Primrose Jasmine
Lagerstroemia indica	Crape Myrtle
Lonicera japonica 'Halliana'	Hall's Honeysuckle
Raphiolepis indica	Indian Hawthorn
Punica granatum	Pomegranate
Wisteria floribunda	Japanese Wisteria
Xylosma congestum	Xylosma
Rosmarinus officinalis	Rosemary

Revegetation Mix:	Seed	Vinca major	Periwinkle
		<u>Botanical Name</u>	<u>Common Name</u>
		Acacia constricta	Whitethorn Acacia
		Acacia greggii	Catclaw Acacia
		Aristida purpurea	Purple Threeawn
		Atriplex canescens	Four Wing Saltbush
		Baileya multiradiata	Desert Marigold
		Bouteloua curtipendula	Sideoats Grama
		Bouteloua gracilis	Blue Grama
		Calliandra eriophylla	Fairy Duster
		Cercidium floridum	Blue Palo Verde
		Chilopsis linearis	Desert Willow
		Eschscholzia californica	California Poppy
		Gaillardia pulchella	Firewheels
		Larrea tridentata	Creosote
		Oryzopsis hymenoides	Indian Ricegrass
		Penstemon parryi	Parry's Penstemon
		Sphaeralcea ambigua	Desert Globe Mallow

RESOLUTION NO. 93-53

A RESOLUTION ADOPTING THE KARTCHNER CAVERNS CORRIDOR DEVELOPMENT PLAN

WHEREAS the Cochise County Board of Supervisors adopted the Cochise County Comprehensive Plan in 1984;

WHEREAS the Comprehensive Plan is designed to guide orderly development in Cochise County;

WHEREAS the Cochise County Board of Supervisors amended the Zoning Regulations and Comprehensive Plan in 1992 to allow establishment of community, area, neighborhood and specific plans as planning tools for unincorporated areas;

WHEREAS the Kartchner Caverns Corridor Development Plan is an area plan;

WHEREAS the Board of Supervisors desires to encourage safe, responsible, attractive development to serve visitors to the new Kartchner Caverns State Park;

WHEREAS the Board of Supervisors desires to encourage development that respects the existing natural beauty along the Highway 90 corridor in proximity to the Kartchner Caverns State Park and that creates a favorable impression of Cochise County along this gateway route into the County;

NOW BE IT THEREFORE RESOLVED BY THE COCHISE COUNTY BOARD OF SUPERVISORS AS FOLLOWS:

The Kartchner Caverns Corridor Development Plan is hereby adopted as an area plan that provides goals, polices, objectives and maps guiding land use, circulation, construction design and safety, provision of open space, landscaping and other elements as contained in the Plan, in a corridor along Highway 90, south of Interstate 10 as described below:

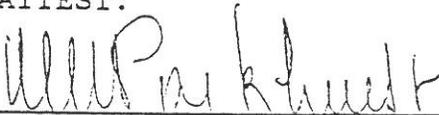
SECTION (SEC.) 13, E 1/2 SEC. 14, E 1/2, SEC. 23, SEC. 24, SEC. 25, E 1/2, SEC. 26, E 1/2, SEC. 35, SEC. 36, TOWNSHIP 17 SOUTH, RANGE 19 EAST, G&SRB&M; AND SEC. 1, E 1/2, SEC. 2, E 1/2, SEC. 11, SEC. 12, SEC. 13, E 1/2, SEC. 14, E 1/2, SEC.23, SEC. 24, SEC. 25, E 1/2, SEC. 26, E 1/2, SEC. 35, SEC. 36, TOWNSHIP 18 SOUTH, RANGE 19 EAST, G&SRB&M; AND SEC. 1, TOWNSHIP 19 SOUTH, RANGE 19 EAST, G&SRB&M; AND BEGINNING AT THE NORTHWEST CORNER OF SECTION 1, TOWNSHIP 19 SOUTH, RANGE 19 EAST, G&SRB&M; THENCE DUE SOUTH ONE (1) MILE TO THE SOUTHWESTERN CORNER OF SEC. 1; THENCE DUE WEST ONE HALF

(1/2) MILE; THENCE DUE NORTH ONE (1) MILE TO THE SOUTHERN BOUNDARY OF SEC. 35, TOWNSHIP 18 SOUTH, RANGE 19 EAST; THENCE DUE EAST 1/2 MILE TO THE POINT OF BEGINNING; AND SEC. 5, SEC. 6 OF TOWNSHIP 19 SOUTH, RANGE 20 EAST, G&SRB&M; AND SEC. 5, SEC. 6, SEC. 7, SEC. 8, SEC. 17, SEC. 18, SEC. 19, SEC. 20, SEC. 29, SEC. 30, SEC. 31, SEC. 32, OF TOWNSHIP 18 SOUTH, RANGE 20 EAST, G&SRB&M; AND S 1/2, SEC. 18, SEC. 19, SEC. 29, SEC. 30, SEC. 31, SEC. 32 OF TOWNSHIP 17 SOUTH, RANGE 20 EAST, G&SRB&M; AND BEGINNING AT THE NORTHWEST CORNER OF SEC. 28, TOWNSHIP 17 SOUTH, RANGE 20 EAST, G&SRB&M; THENCE APPROXIMATELY DUE EAST 1140 FEET; ALONG THE NORTHERN BOUNDARY OF SEC. 28; THENCE SOUTHEAST TO THE SOUTHEAST CORNER OF SEC. 33, TOWNSHIP 17 SOUTH, RANGE 20 EAST, THENCE ONE (1) MILE DUE WEST ALONG THE SOUTHERN BOUNDARY OF SEC. 33; THENCE NORTH TWO (2) MILES TO THE POINT OF BEGINNING.

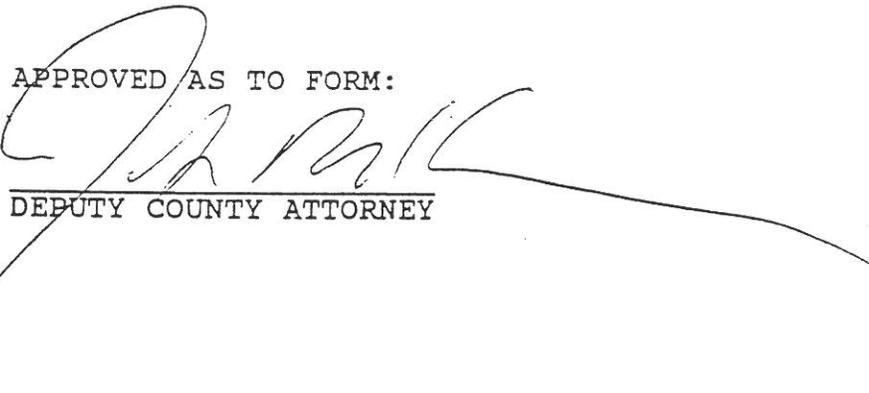
PASSED AND ADOPTED THIS 24<sup>TH</sup> DAY OF May, 1993.

  
\_\_\_\_\_  
MIKE PALMER, CHAIRMAN, COCHISE COUNTY BOARD OF SUPERVISORS

ATTEST:

  
\_\_\_\_\_  
NADINE M. PARKHURST, CLERK

APPROVED AS TO FORM:

  
\_\_\_\_\_  
DEPUTY COUNTY ATTORNEY

**EXHIBIT A**  
**DOCKET MDP 92-02 (KARTCHNER CAVERNS CORRIDOR PLAN)**

SECTION (SEC.) 13, E 1/2 SEC. 14, E 1/2, SEC. 23, SEC. 24, SEC. 25, E 1/2, SEC. 26, E 1/2, SEC. 35, SEC. 36, TOWNSHIP 17 SOUTH, RANGE 19 EAST, G&SRB&M; AND SEC. 1, E 1/2, SEC. 2, E 1/2, SEC. 11, SEC. 12, SEC. 13, E 1/2, SEC. 14, E 1/2, SEC. 23, SEC. 24, SEC. 25, E 1/2, SEC. 26, E 1/2, SEC. 35, SEC. 36, TOWNSHIP 18 SOUTH, RANGE 19 EAST, G&SRB&M; AND SEC. 1, TOWNSHIP 19 SOUTH, RANGE 19 EAST, G&SRB&M; AND BEGINNING AT THE NORTHWEST CORNER OF SECTION 1, TOWNSHIP 19 SOUTH, RANGE 19 EAST, G&SRB&M; THENCE DUE SOUTH ONE (1) MILE TO THE SOUTHWESTERN CORNER OF SEC. 1; THENCE DUE WEST ONE HALF (1/2) MILE; THENCE DUE NORTH ONE (1) MILE TO THE SOUTHERN BOUNDARY OF SEC. 35, TOWNSHIP 18 SOUTH, RANGE 19 EAST; THENCE DUE EAST 1/2 MILE TO THE POINT OF BEGINNING; AND SEC. 5, SEC. 6 OF TOWNSHIP 19 SOUTH, RANGE 20 EAST, G&SRB&M; AND SEC. 5, SEC. 6, SEC. 7, SEC. 8, SEC. 17, SEC. 18, SEC. 19, SEC. 20, SEC. 29, SEC. 30, SEC. 31, SEC. 32, OF TOWNSHIP 18 SOUTH, RANGE 20 EAST, G&SRB&M; AND S 1/2, SEC. 18, SEC. 19, SEC. 29, SEC. 30, SEC. 31, SEC. 32 OF TOWNSHIP 17 SOUTH, RANGE 20 EAST, G&SRB&M; AND BEGINNING AT THE NORTHWEST CORNER OF SEC. 28, TOWNSHIP 17 SOUTH, RANGE 20 EAST, G&SRB&M; THENCE APPROXIMATELY DUE EAST 1140 FEET; ALONG THE NORTHERN BOUNDARY OF SEC. 28; THENCE SOUTHEAST TO THE SOUTHEAST CORNER OF SEC. 33, TOWNSHIP 17 SOUTH, RANGE 20 EAST, THENCE ONE (1) MILE DUE WEST ALONG THE SOUTHERN BOUNDARY OF SEC. 33; THENCE NORTH TWO (2) MILES TO THE POINT OF BEGINNING.