LAKE PLEASANT REGIONAL PARK
MASTER PLAN

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II. Executive Summary

Executive Summary

This Master Plan has been prepared to establish guidelines for development of the newly expanded Lake Pleasant Regional Park. The Master Plan will provide for the development of numerous recreational facilities and site amenities while protecting the natural resources of the area.

It should be noted that this Master Plan is a dynamic document and that adjustment to the plan is not only possible, but necessary to fully respond to the changing needs of the public, park management, and the environment.

Lake Pleasant Regional Park has provided residents of the Metropolitan Phoenix area with recreational opportunities for over 20 years. As the only water based park in the County Park system, it is the most visited, attracting over 1,000,000 visitors on a yearly basis. Activities have traditionally included boating, camping, fishing, waterskiing and picnicking which have made Lake Pleasant one of the most popular parks in the metropolitan area.

The recent construction of the New Waddell Dam which provided increased storage capacity for Central Arizona Project (CAP) water has had a significant impact on the Park. The water level rose approximately 100 feet and the surface area of the lake increased from 3,000 acres to over 9,000 acres. These changes alone have increased recreational opportunities dramatically. However, water management requirements which may result in annual water level fluctuations of 60 to 150 feet will also create problems in the planning of facilities. In order to properly maintain not only the increased facilities, amenities, natural resources and water management, the need for a comprehensive master plan is essential.

The Master Planning Process performed by Cella Barr Associates is the culmination of not only new efforts, but the past contributions of many agencies. The initial study, titled the Central Arizona Water Control Study (CAWCS) (prepared by the Bureau of Reclamation), has been built upon and refined with the continued efforts of the Maricopa County Recreation Services, Bureau of Reclamation, Bureau of Land Management, Arizona Game and Fish Department and Central Arizona Water Conservation District.

In preparing this Master Plan, the evaluation of the affected environment and natural resources provided critical information for assessing development within the Park. The following items were studied during the evaluation process:

Water Resources
Vegetation
Wildlife
Fisheries
Cultural Resources
Land Forms
Geology
Soils
Climate

Air Quality
Acoustics
Visual Resources
Mineral and Water Rights
Zoning
Property Ownership
Opportunities and Constraints

The most significant factors affecting development are existing landforms, access and fluctuating water levels. Of the over 24,000 acres of land within the park boundaries only approximately 1,000 acres are on buildable slopes (less than 15%). Limited access further restricts development to primarily the west and south portions of the lake. Water level fluctuations of 60-150 feet also create further challenges in the design and siting of new facilities.

As well as the aforementioned factors, public input played an important role in the development of the master plan. Public input was solicited through several methods to determine user needs and requirements for development at Lake Pleasant Regional Park. The CAWCS utilized the Arizona Statewide Comprehensive Outdoor Recreation Plan and contacts with concerned user groups to establish user needs. Over the past 5 years, several public opinion surveys have been distributed to interested persons and groups through mass mailings and public meetings. Additionally, numerous presentations have been conducted to present information to the public and solicit comments back from them. Most recently, open house presentations were conducted throughout the Valley to provide the public with an opportunity to review and comment on plans developed.

Through an evaluation of user needs, site constraints and recreation requirements, land uses and preferred facilities were developed and incorporated into the Park development. The following uses and facilities were determined to be appropriate for the Park:

Camping
Picnicking
Interpretation/Education
Boating
Fishing
Hiking
Equestrian Activities
Visitors Center
Conservation Areas
Concession Areas

Areas designated for possible development were further divided into eight separate zones during the Master Planning Process to facilitate evaluation. These areas were then analyzed and land use options were developed for each. These options were evaluated by the consultant and county personnel and preferred alternatives were selected. The final mix of major facilities resulted in the following general land uses and associated area allocations:

Camping	466 Acres
Picnicking	61 Acres
Marina	400 Acres

This conceptual Master Plan represents current user needs and requirements for development and facilities within the park. Future changes due to management issues, user needs or environmental concerns are encouraged to further achieve the goals and objectives for development of this unique recreational facility.

VI. Project and Site Analysis

A. Overview

Features

A. Overview
B. Water Resources
C. Vegetation
D. Wildlife
E. Fisheries
F. Cultural Resources
G. Land Form
H. Geology
I. Soils
J. Climate
K. Air Quality
L. Acoustics
M. Visual Resources
N. Existing Mineral Rights and Mining Claims
O. Existing Zoning
P. Existing Property Ownership
Q. Existing Man Made Conditions
R. Opportunities and Constraints

An understanding of the resources in the park is essential for creating a development plan that effectively utilizes, enhances and conserves those resources. Each description includes a brief inventory of the resource and conservation recommendations to minimize disturbance of the resource and to properly integrate development and management of the park with it.

B. Water Resources

The most outstanding feature of the park is Lake Pleasant formed by the construction of the New Waddell Dam across the Agua Fria River and the storage of water from the Central Arizona Project. The river drains an area of approximately 1,460 square miles. Depending on the demand for CAP water, the surface elevation of Lake Pleasant could fluctuate as much as 150 vertical feet each year. The minimum surface elevation behind New Waddell Dam is projected to be 1552 as required by special conditions in the 1986 Environmental Impact Statement for Plan 6. Water will be pumped into the lake via the Pumping and Generating Plant during the fall and winter months (October through March). From April through September, water will be released from the reservoir to satisfy CAP water demands. The release would normally occur through the CAP generators whenever the reservoir elevation is above 1645.0 feet. Whenever the reservoir is below elevation 1645.0, releases would occur through the CAP bypass. Because the lake will be used for regulatory storage, the actual surface area will typically vary from 3,528 acres to 9,966 acres depending on the time of the year. The reservoir will be operated between elevations 1552.0 (minimum water surface elevation) and 1702.0 (maximum conservation storage level).

Critical Elevations

- Elevation 1706.5 - This is the elevation of the crest of the spillway and represents the 100 year flood elevation based on the lake level being at 1694, or less, when the storm starts. With these conditions, the water will be contained.

- Elevation 1711 - This is the elevation of the pilot channel of the fuse plug and represents the 200 year flood elevation based on the lake level being at 1694, or less, when the storm starts.

There are also several intermittently flowing creeks, washes and springs located within or immediately adjacent to the park boundary. Cottonwood Creek, Castle Creek, Humbug Creek, French Creek, and Coles Wash drain directly into the lake. Tule Creek (portions of which are perennial) and Boulder Creek drain into the Agua Fria River upstream of the lake. There are also numerous springs located west and north of the lake. The eastern shore is very steep and has minor surface runoff into the lake.

Lake Pleasant is the primary public attraction to the Park providing opportunities for water- oriented recreation such as sailing, boating, water skiing, fishing and swimming. Land based activities such as hiking, camping, and picnicking are enhanced by the park's water resources. In addition, wildlife are attracted to the water, increasing the public's opportunities to view them. Water resources are shown in Figure 2.

Conservation Recommendations

- The extreme fluctuation in water surface elevation (150 vertical feet) caused by the reservoir operations will make development of the park facilities very difficult. Locate all permanent development sites above the maximum conservation storage level (1,702).

- Maintain active major washes as open space to facilitate flows, provide natural view corridors and buffer activity areas.

- Prohibit construction of buildings within the flood plains of major washes.

- Where appropriate and possible, leave undisturbed vegetative buffer areas 50-100 feet wide between the lake and structures such as roads and buildings.

- Construct wash crossings to blend into the natural terrain and minimize environmental impacts.

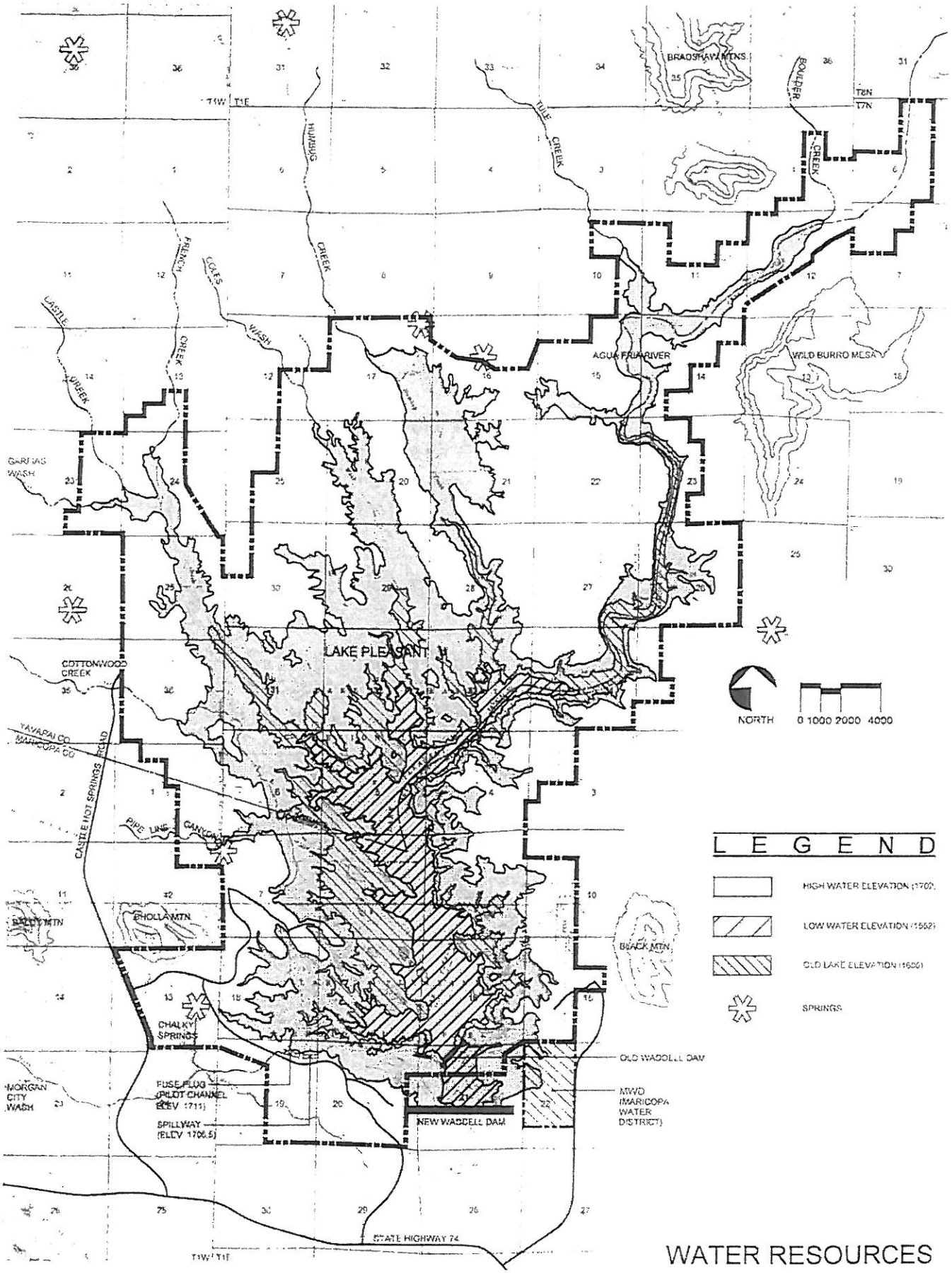
- Minimize construction impacts on the lake by careful disposal of construction debris.

- Minimize impacts of trails, picnic and camping development on the creeks, washes, springs, and lake through public education by promoting trash disposal and providing trash containers in camping, picnic areas and parking lots.

- Minimize erosion during construction by complying with erosion and pollution control measures as required by National Pollutant Discharge Elimination System (NPDES) and further defined in the Drainage Design Manual Volume III published by the Flood Control District of Maricopa County.

- Minimize erosion into washes by terracing, on-site impoundment, or diverting run-off away from washes.

Fig. 2



WATER RESOURCES

LAKE PLEASANT REGIONAL PARK

C. Vegetation

Vegetation throughout much of the Park is typical of the Arizona Upland Subdivision of the Sonoran Desertscrub Biome (Turner et. al. 1982). Trees and shrubs within this subdivision are generally small-leaved and attain an average maximum height of thirty feet. Most of the woody plants are spiny or possess aromatic oils that discourage use by plant eating animals. Dominant trees and shrubs include blue palo verde, foothill palo verde, ironwood, crucifixion thorn, bursage, and brittlebush. Cacti are also dominant in this subdivision & include saguaro, compass barrel cactus, ocotillo, prickly pear, buckhorn cholla, teddy bear cholla, and chain fruit cholla. See Figure 3 for vegetation map.

Along the valley bottoms, tablelands, and gently-sloping mesas adjacent to the Lake, the vegetation is more typical of the Lower Colorado River Valley Subdivision. The dominant perennial species include blue palo verde, creosote bush, snakeweed, Engelmann prickly pear, and cat-claw.

Desert wash communities are scattered throughout the Lower Colorado River Valley Subdivision and contain distinct assemblages of plants which have higher moisture requirements than those in the surrounding desert. These include blue palo verde, ironwood, cat-claw acacia, mesquite, white thorn acacia, desert hackberry, and chuparosa. Desert washes provide important habitat for breeding and migratory bird species.

Stands of riparian vegetation occur adjacent to perennial stretches of the Agua Fria River, washes, and areas along active springs. Vegetation includes salt cedar, mesquite, willow, cottonwood, cattails, reeds, and sedges. A list of species found at the park is included in Table 4.

The expansion of the lake itself will have the biggest impact on the vegetation by inundating approximately 6,000 acres of shoreline. However, this will have a beneficial effect by providing extensive new fish habitat.

Further development of park facilities including boat ramps, campgrounds, roads will also eliminate some area of native vegetation, although efforts will be made to avoid developing in heavily vegetated areas such as washes and riparian areas. Facility site layout will also be developed to preserve as much native vegetation as possible.

Additionally the impact to existing vegetation will be further lessened by designating camping areas below the 1,702 elevation where vegetation is already in a decline due to the inundation from the lake.

Special Status Species

The Hohokam agave, found in the park, was placed on the Candidate Category 2 list in January 1990. This classification means those categories of plants for which U.S. Fish and Wildlife Service has insufficient information to support a proposed rule to add the species to the threatened or endangered species list. Further biological research and field study will usually be needed to change the status of species in Category 2. No impacts are expected to this species as a result of development. In a June 25, 1990 survey, five clones of the Hohokam agave were discovered. An additional two clones were discovered later that year, bringing the total to seven. Two of the clones were located below the proposed conservation pool level and were relocated to the overlook facility. The remaining clones are located in remote locations and are not expected to be impacted by park facilities with the exception of a clone located within the stage III development area. Development in this area will be designed around preservation of the clone.

Conservation Recommendations

- Provide signage to inform the public of the site's status as a regional park and to advise them that vehicular traffic is restricted to park roads.

- Inform the public of the Arizona Native Plant Law which states that all native plants and dead wood are protected from mutilation, destruction, and theft.

- Utilize the existing roads and trails as much as possible, and where appropriate, expand early in the park development to minimize the establishment of random tracks and trails that destroy vegetation and wildlife habitat. Close and revegetate existing roads and trails not selected for use.

- Remove existing litter by soliciting help from community organizations in order to discourage further littering and environmental degradation. Post signs prohibiting littering.

- Encourage preservation and reuse of existing plant material (especially trees) either by architectural integration or by transplanting.

- Only native plants shall be used in landscaping and revegetation work.

- Designate Morgan City Wash, Chalky Springs, Pipeline Springs Canyon, Cottonwood Creek, Castle Creek, and the north and east sides of the Park as conservation areas with limited access and development which will preserve riparian areas.

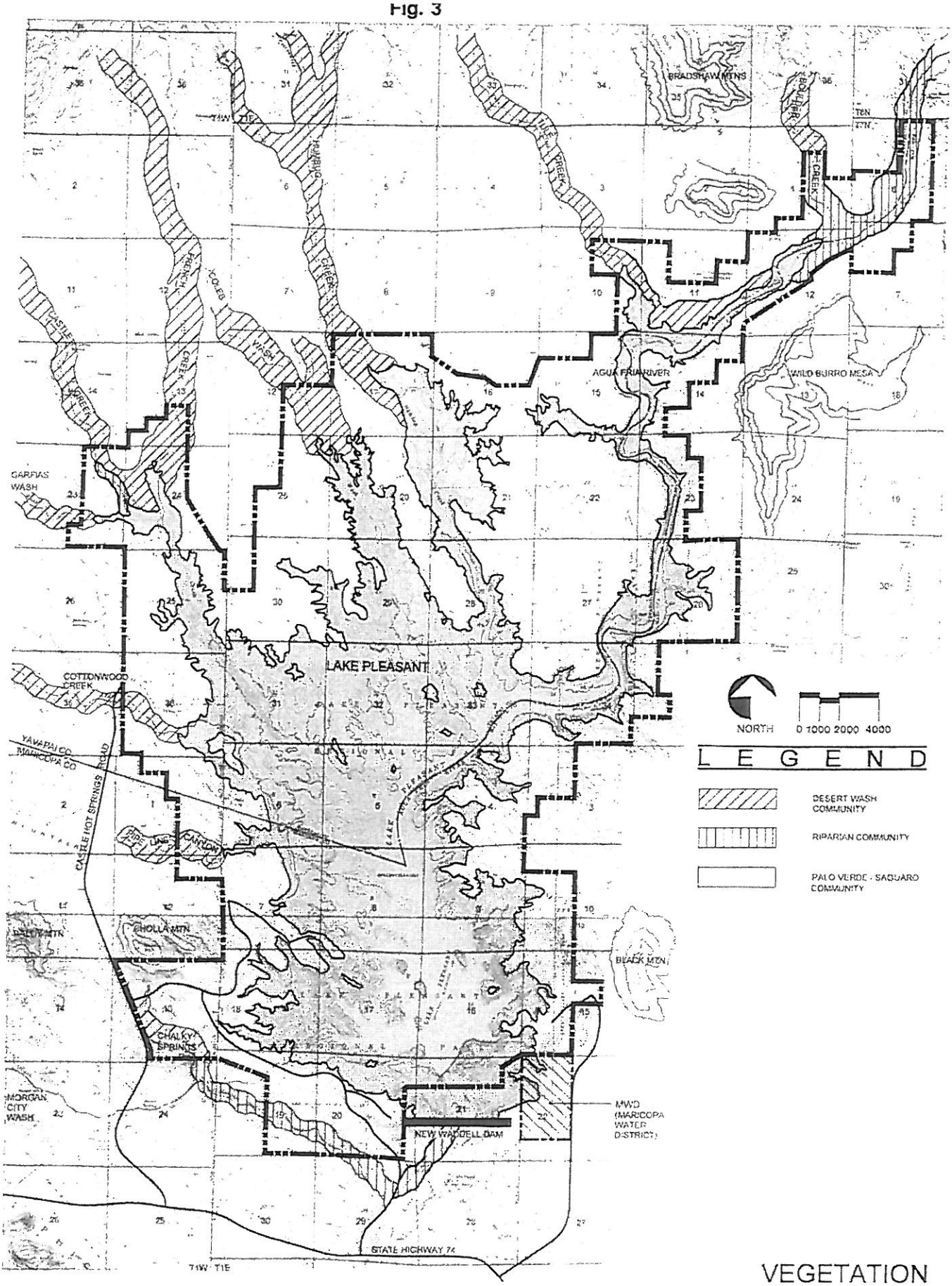
- Future development will incorporate protective measures for the Hohokam agave.

Table 4

COMMON PLANT SPECIES FOUND AT LAKE PLEASANT REGIONAL PARK

Blue Palo Verde	*Cercidium floridum*
Foothill Palo Verde	*Cercidium microphyllum*
Ironwood	*Olneya tesota*
Crucifixion Thorn	*Canotia holacantha*
Bursage	*Ambrosia deltoidea*
Brittlebush	*Encelia farinosa*
Saguaro	*Carnegiea giganteus*
Compass Barrel Cactus	*Ferocactus acanthodes*
Ocotillo	*Fouquieria splendens*
Prickly Pear	*Opuntia phaeacantha*
Buckhorn Cholla	*Opuntia acanthocarpa*
Teddy Bear Cholla	*Opuntia bigelovii*
Chain Fruit Cholla	*Opuntia fulgida*
Creosote Bush	*Larrea tridentata*
Snakeweed	*Gutierrezia sarothrae*
Engelmann Prickly Pear	*Opuntia engelmannii*
Cat-Claw	*Acacia greggii*
Salt Cedar	*Tamarix pentandra*
Velvet Mesquite	*Prosopis velutina*
Gooding Willow	*Salix goodingii*
Fremont Cottonwood	*Populus fremontii*
Cattails	*Typha sp.*
Hohokam Agave	*Agave murpheyi*
Night Blooming Cereus	*Cereus greggii*

Fig. 3



VEGETATION

LAKE PLEASANT REGIONAL PARK

D. Wildlife

Birds

Lake Pleasant is a large, permanent source of water that attracts a diversity of wildlife to the Park. The most diverse group of wildlife in regards to species composition is birds. Year round residents in the Park include golden eagle, bald eagle, peregrine falcon, turkey vulture, red-tailed hawk, American kestrel, mourning dove, Gambel's quail, greater roadrunner, Gila woodpecker, ladder-backed woodpecker, northern flicker, cactus wren, verdin, common raven, northern cardinal and Cooper's hawk.

The best time to go bird watching in the Park is during the winter and spring when the number of species is the greatest. A variety of waterfowl use the Park in winter months including Canadian goose, mallard, common pintail, American wigeon, northern shoveler, redhead, canvasback, ruddy duck, bufflehead, ring-necked duck, green-winged teal, American coot, eared grebe, pied-billed grebe, western grebe, white-faced ibis, and common gallinule. Great blue herons also use the lake and a heron rookery is located just upstream of the reservoir on the Agua Fria River. Other commonly observed seasonal visitors to the Park include white-winged dove, common snipe, black-chinned hummingbird, Costa's hummingbird, and osprey. A list of birds that may be found at the Park is included in Appendix I.

Bald eagles are known to forage along a 7.5 mile stretch of the Agua Fria River and Lake Pleasant including the lower lake. Early in the year, the eagles forage on the lake. Coles Wash and the mouth of Humbug Creek are particularly attractive forage areas because of their large, shallow coves and emergent vegetation. Forage activities shift to the river during the white bass and carp spawns. White bass have been known to begin spawning as early as February 24, ending in early March. Carp have been observed to spawn in the area of the cliff nest from March 5 to March 26. The eagles also have been known to prey on catfish, crappie, black-tailed jackrabbit, and on waterfowl such as American coot and green-winged teal. Foraging locations will likely shift with increases in water level and any subsequent elevation changes throughout the year.

Mammals

Mammals that may be seen in the park include Harris antelope squirrel, black-tailed jack rabbit, desert cottontail, coyote, javelina, and mule deer. Mule deer seasonally move between the Hieroglyphic Mountains and Lake Pleasant in response to environmental conditions. During the dry months, deer restrict their movements to areas near permanent water such as Lake Pleasant. In the cooler months and after thunderstorms, deer tend to scatter throughout their range. Major drainages function as movement corridors for mule deer, providing thermal cover, hiding cover, and forage areas.

The Park lies within a federal burro Herd Management Area of approximately 85,000 acres. According to the Bureau of Land Management (BLM), who is responsible for the welfare and protection of the burros, between 225 and 250 burros graze on the east, west

and north sides of the Lake. Wild burros are protected by the Wild and Free-Roaming Horse and Burro Act. The BLM is developing a Herd Management Plan for these burros. Wildlife at the Park will be impacted by the loss of habitat caused by construction of new facilities, by increased disturbance due to higher recreational usage, and by construction activity.

A list of mammals that may be found at the Park is included in Appendix I.

Reptiles and Amphibians

A variety of reptiles and amphibians live within the Park area including Sonoran desert tortoise, western whiptail, Gila monster, horned lizard, Couch's spadefoot toad, Woodhouse's toad, lowland leopard frog, Sonora gopher snake and California king snake. Several species of poisonous snakes also exist, such as black-tailed rattlesnake, western diamondback and Mohave rattlesnake. A list of reptiles and amphibians found at Lake Pleasant is in Appendix I.

Special Status Species

There are several animals that use the Park that are protected by the Endangered Species Act of 1973 (ESA). The Bald Eagle is listed as endangered under the ESA. The Sonoran desert tortoise, cave myotis, lowland leopard frog, white faced ibis and loggerhead shrike are listed as a Candidate Category 2 species. This status indicates that insufficient information on the biological vulnerability of these species is available to conclusively support listing of the species. Although these species have no official protection under the ESA, special management recommendations are usually considered during planning and development.

In 1979 a bald eagle nest was discovered in a live cottonwood tree along the Agua Fria River upstream of Waddell Dam. This nest, which has remained unoccupied since its discovery, will be inundated by the new reservoir. Another nest was located in the same area in 1984, this time on a cliff on top of an old raven or red-tailed hawk nest. A full-adult female and a near-adult male laid eggs in 1984 and 1985, and, in both instances, the eggs failed to hatch. Eagles were observed in the area during the breeding seasons of 1986, 1987, 1988, and 1989; however, the nest was not used during this time. In 1991, a new pair, consisting of a banded female and a near-adult male, occupied the cliff nest but did not lay eggs. In 1992 a new unbanded female and a blue banded male occupied the territory and laid eggs, but the nest failed due to unknown causes. The 1993 breeding season turned out to be the first successful nesting at Lake Pleasant. In February a male chick was hatched. Although eagles mate for life, the Lake Pleasant territory has experienced considerable turnover. The exact cause for the increased mortality within the pair is unknown at this time. The 1994 pair (the same blue banded male and unbanded female) fledged two eaglets successfully. The nesting territory was also occupied during the 1995 season and two young were hatched. However, this document was finalized prior to completion of the nesting season and the success of the nest is unknown.

Any potential impacts to Federally listed threatened or endangered species would result in a re-initiation of Section 7 consultation. Although no consultations are required for species like the desert tortoise (category 2), mitigation measures are typically implemented. Some impacts to the desert tortoise may be caused by the construction of North Park Road.

Additionally, there are several species identified by Arizona Game and Fish Department as endangered or threatened within the park which are identified in Appendix I.

Conservation Recommendations

- Conduct public education programs at the park to inform the public about the general habits of the desert tortoise and to direct them not to harass or collect wild tortoises (which is classified as a class 2 misdemeanor under state law) or to release captive tortoises.

- Conduct surveys to identify tortoise habitat areas and avoid known tortoise population centers during site selections.

- Avoid bisecting tortoise habitat with improved roads, wherever possible. Where unavoidable construct tortoise fence barrier.

- Design roads to allow safe crossings for javelina, deer, and desert tortoise. Control vehicle speeds and post signs at crossings.

- Restrict all activities within 1/4 mile of nesting birds of prey.

- Designate Morgan City Wash, Chalky Springs, Pipeline Springs Canyon, Cottonwood Creek, Castle Creek and the north and east sides of the Park as conservation areas with limited access and development which will preserve wildlife habitat.

- Close the nesting areas of the bald eagle during the breeding season from December through June when birds are in residence. Inform public through signs and handouts of area closures and note penalties for harassment of nesting birds.

- Ensure that interpretation for park visitors, monitoring by nest watchers, and enforcement of closure areas are provided.

- Limit the drawdown rate to a maximum of 28" over any two week period from February through April 15, and longer whenever possible, to maintain a satisfactory prey base to support the eagles.

- Promote neotropical migrant conservation and passive nature activities such as bird watching and photography.

E. Fisheries

Lake Pleasant supports a self-sustaining warm water fishery, including the only white bass fishery in Arizona. The Lake Pleasant fishery is the result of past stocking by the Arizona Game and Fish Department (AGFD). Species of sport fish that were stocked include largemouth bass, bluegill, eastern channel catfish, crappie, and white bass. Threadfin shad was also stocked as a food source. It is expected that for a number of years after the initial filling of the Lake that fish numbers will dramatically increase due to the increased capacity and nutrient levels. In order to assess the impacts of the increased lake levels on the fisheries a "pre-Lake study" was completed in May 1990 and the "post-Lake study" will be completed after the Lake equilibrates (probably around the year 2000). Depending upon the results of the latter study, additional fishery mitigation may be necessary.

As part of the "pre-Lake study" the AGFD interviewed anglers to assess the status of the Lake Pleasant fishery (AGFD 1990). A total of 18,969 anglers were interviewed regarding the species sought, the degree of angling success, the number of fish caught, and angler satisfaction.

Twenty nine percent of those interviewed indicated no species preference. When a preference was indicated, largemouth bass was the most sought after species. Approximately 53% of the anglers indicated that they were fishing for largemouth bass either exclusively or in combination with other species. Almost 7% indicated their preference for white bass only, while 2% fished for white bass in combination with other species. Next in order of preference were channel catfish, crappie, and sunfish.

Anglers that fished exclusively for largemouth bass or exclusively for channel catfish generally had the lowest catch rates among angler groups. Sunfish anglers had the highest catch rate followed by white bass anglers and crappie anglers. Approximately 61% of the anglers rated their fishing experience as poor, with an average of 0.22 fish per hour of effort. Anglers that rated their experience as fair (23.7%) averaged 0.66 fish per hour. Less than 17% of the anglers interviewed felt their fishing experience was good or excellent. These anglers averaged about 0.8 fish per hour of effort. The average catch per hour of effort for all those interviewed was 0.39 fish.

In the same AGFD study, fish populations within the Lake were sampled using gill nets, trap nets, and electrofishing. Rotenone was also used to sample three coves. The desert sucker is the only native species that was found in the Lake. The remaining species were introduced to the waters of Arizona. Table 5 lists each species sampled and the percentage of each species within the total sample.

Although striped bass have been documented from Lake Pleasant, the actual effect of striped bass on the Lake Pleasant fishery is currently unknown. It is anticipated that water quality and temperature differences between the Lake and the CAP canal will seriously limit the number of individuals in the reservoir. These individuals would attain maximum size and have little effect on the remainder of the Lake's fishery. If striped bass populations within the reservoir were to become viable, the result could be catastrophic to the white bass and largemouth bass fisheries. Other populations could be decimated by the aggressive and efficient predator. Under this scenario anglers could experience excellent striped bass fishing for the first few years. The voracious striper would eventually cause the prey species to become scarce, leaving only below-average sized striped bass available to the angler. This is theoretical and AGFD has indicated it feels the striped bass will not be able to form a viable population in Lake Pleasant.

Special Status Species

The Gila topminnow is an Arizona native that is listed as endangered under the Endangered Species Act. This livebearing fish was once widespread throughout the southern part of the Gila River Basin. Introduction of predators and competitors and the elimination of much of its native habitat have driven the species to near extinction. It is currently known to exist in only a few scattered areas of the State. Although the species is not present in Lake Pleasant, it is known to occur upstream of the Lake within a tributary of the Agua Fria River. This population was introduced by the AGFD in 1970. Longfin dace and desert sucker are both Category 2 species found in main tributaries to Lake Pleasant within the park. A fish barrier was constructed to prevent non-native fish species from entering into the top minnow habitat.

Due to the variable nature of the lake, it is important that the water levels be monitored and regulated carefully due to its effect on fish spawning. Past literature regarding the spawning success of centrarchid fishes (largemouth bass, bluegill, black crappie, sunfish) indicate that water levels dropping more than 3 inches per day have significant impacts on fish spawning success. The spring months of March, April, and May constitute the reproductive and spawning periods of the highly sought after fish species.

Impacts of Lake Pleasant development include the destruction of habitat and the lowering of water quality by increased water activities and construction activity.

Conservation Recommendations

- Minimize Lake level fluctuations during spawning periods.
- Build artificial reefs and spawning cover, as needed.
- Dispose of construction debris in a manner that prohibits its being blown into the Lake.

- Prohibit stormwater runoff from construction sites from entering the Lake.
- Complete a "post-Lake study" to assess the impacts of the increased Lake levels.
- Conduct public education programs on the value of native fish species.

Table 5

FISH SPECIES SAMPLED AT LAKE PLEASANT

Species	% of Sample
Threadfin Shad (Dorosma petenense)	36.7
Sunfish	33.8
White Bass (Morone chrysops)	11.6
Largemouth Bass (Micropterus salmoides)	10.3
Carp (Cyprinus carpio)	5.1
Crappie (Pomoxis annularis and P. nigromaculatus)	1.0
Channel Catfish (Ictalurus punctatus)	0.8
Goldfish (Cyprinus auratus)	<0.8
Golden Shiner (Notemigonus crysoleucus)	<0.8
Red Shiner (Notropis lutrensis)	<0.8
Gila sucker (Catostomus insignis)	<0.8
Yellow Bullhead (Ictalurus natalis)	<0.8
Mosquitofish (Gambusia a. affinis)	<0.8
Blue Tilapia (Tilapia aurea)	<0.8

F. Cultural Resources

Cultural resources include prehistoric and historic districts, sites, buildings, structures, and objects that are significant in American history, architecture, archaeology, engineering, and culture. The majority of the cultural resources contained within the Lake Pleasant Regional Park are represented by prehistoric and historic archaeological sites. The cultural resources in the park represent nonrenewable resources whose preservation must be managed and balanced with the development and operation of the park.

In 1993, Reclamation archaeologists initiated a Class III (intensive) survey of park land (see Figure 6). The purpose of the survey is to supplement the earlier Plan 6 surveys due to the increased size of the park. The current plan is to produce a preliminary report during the summer of 1996 that summarizes the background, purpose, and plan for completion of the Lake Pleasant survey. It is anticipated that the intensive survey of the remaining park area will be completed in July, 1995. The inventory results will serve as the basis for developing a treatment plan to be integrated with the Master Plan for the park. Once the inventory has been completed, a final survey report will be prepared and submitted to the Arizona State Historic Preservation Office (SHPO) for mandated consultation regarding site eligibility and any subsequent treatment required to mitigate anticipated impacts from development of park facilities. Initial consultation with the SHPO has resulted in agreement regarding this approach.

The following information on cultural resources is primarily based on the surveys conducted in the early 1980's which are now being supplemented as noted above.

Prehistoric Resources

In the northern and eastern areas of the park, sites are scattered along the Agua Fria River, Tule Creek, and Boulder Creek from the northern park boundary to the proposed Outdoor Education Center site. Fifty-three of the 101 sites in the park lie along this 13-mile corridor of the Agua Fria River and its tributaries. The sites include several large villages complete with masonry structures, rock alignments, rock piles, artifact scatters, roasting pits, and petroglyphs. Sites appear to be extremely diverse, ranging from agricultural to habitation to resource manufacturing.

Humbug Creek flows through the central northern part of the park. Prior to the recent surveys, not much data was available for this area. Nearing completion, recent surveys indicate Humbug Creek to have been a highly utilized area. Eleven sites cover an area of 1.5 square miles from the park boundary to Lake Pleasant. The sites include several villages. Although lacking in visible structures, their subsurface potential is evident. Sites contain artifact scatters, rock alignments, rock piles, and roasting pits. These sites were absent of petroglyphs. Based on artifactual material, this area appears to have been primarily used for agriculture, plant exploitation, and habitation.

The western portion of the park, where recreational facilities will be built, includes Castle Creek, Cottonwood Creek, Pipeline Canyon, and Morgan City Wash. During recent surveys, Castle Creek has proven to be an interesting area. Ten sites cover a 1.5 square mile area from the park boundary to Lake Pleasant. One large village and one large agricultural site are among the sites identified in this area. Like at Humbug Creek, structures were not clearly evident, but their subsurface potential is high. Sites contain artifact scatters, rock alignments, rock piles, roasting pits, and some have petroglyphs. Sites are scattered along the other drainages, but in lower frequency. The western portion, from Castle Creek to the Overlook Visitor Center, contains 32 of the park's sites. Primary site types include resource exploitation, habitation, and agricultural.

Only a few sites lie within the southern boundary of the park. Four sites were identified below New Waddell Dam and all represent habitation. These sites should not be impacted by any construction activities.

Protohistoric Resources

The Protohistoric period for the Yavapai culture is between A.D. 1450 and 1700. During earlier surveys in the park, no Yavapai sites had been identified. However, recent surveys have identified two distinct Yavapai sites and two sites which contain a high density Hohokam component. Three of the sites are located along the Agua Fria River and the other along Tule Creek. The sites consist mostly of ceramic scatters, few lithic artifacts, and minimally used groundstone artifacts. These sites have proven to be an important part of the survey, representing the southernmost occupation of the protohistoric Yavapai in the Agua Fria River valley.

Historic Resources

Prospecting and mining are the earliest evidence of historical activity in the Lake Pleasant area, with farming and ranching much smaller in comparison. The discovery of mineral wealth in the early 1860's lured prospectors and miners to the area. Mining activity brought the railroad into the region. The Santa Fe, Prescott, and Phoenix railway began construction in 1892. Roads, such as the Phoenix-Prescott Road, were constructed to connect the railway stations to the Lake Pleasant area. Some traces of the wagon roads still exist just north of the park.

The demands of the miners and the military caused ranching and farming to become profitable. Ranches and farmsteads were established minimally throughout the park, much of which is now under water. Because farming and ranching were dependent on mining, when the mineral resources of the area became depleted in the 1880's, much of the farming and ranching died out. The desired resource then became the Agua Fria River because of its irrigation potential. The need to provide irrigation water to farmers led to the construction of the original Waddell Dam, its diversion dam and canal in the 1920's.

Of the historic sites at the park, the most significant is Waddell Dam. New Waddell Dam has replaced and caused inundation of the original dam. The other historic sites include roads, ranches, homesteads, a hydraulic mining operation, and features related to the construction of Waddell Dam. Recent surveys have identified a sheepherder's camp, possible General Land Office surveyor's campsites, blacksmith's work area, and several artifact scatters which contain large amounts of shell casings.

Conservation Recommendations

The resources in this area represent a largely unstudied data base and have information potential for interpretive sites. Based on the current status of the 1993 inventory, a total of 101 prehistoric, protohistoric, and historic sites have been identified so far within the boundaries of Lake Pleasant Regional Park. Twenty-four sites are completely inundated and twenty-four sites are located in the reservoir operation zone between 1660 and 1702 elevations. Once the inventory is completed, the following measures must be taken pursuant to Section 106 of the National Historic Preservation Act:

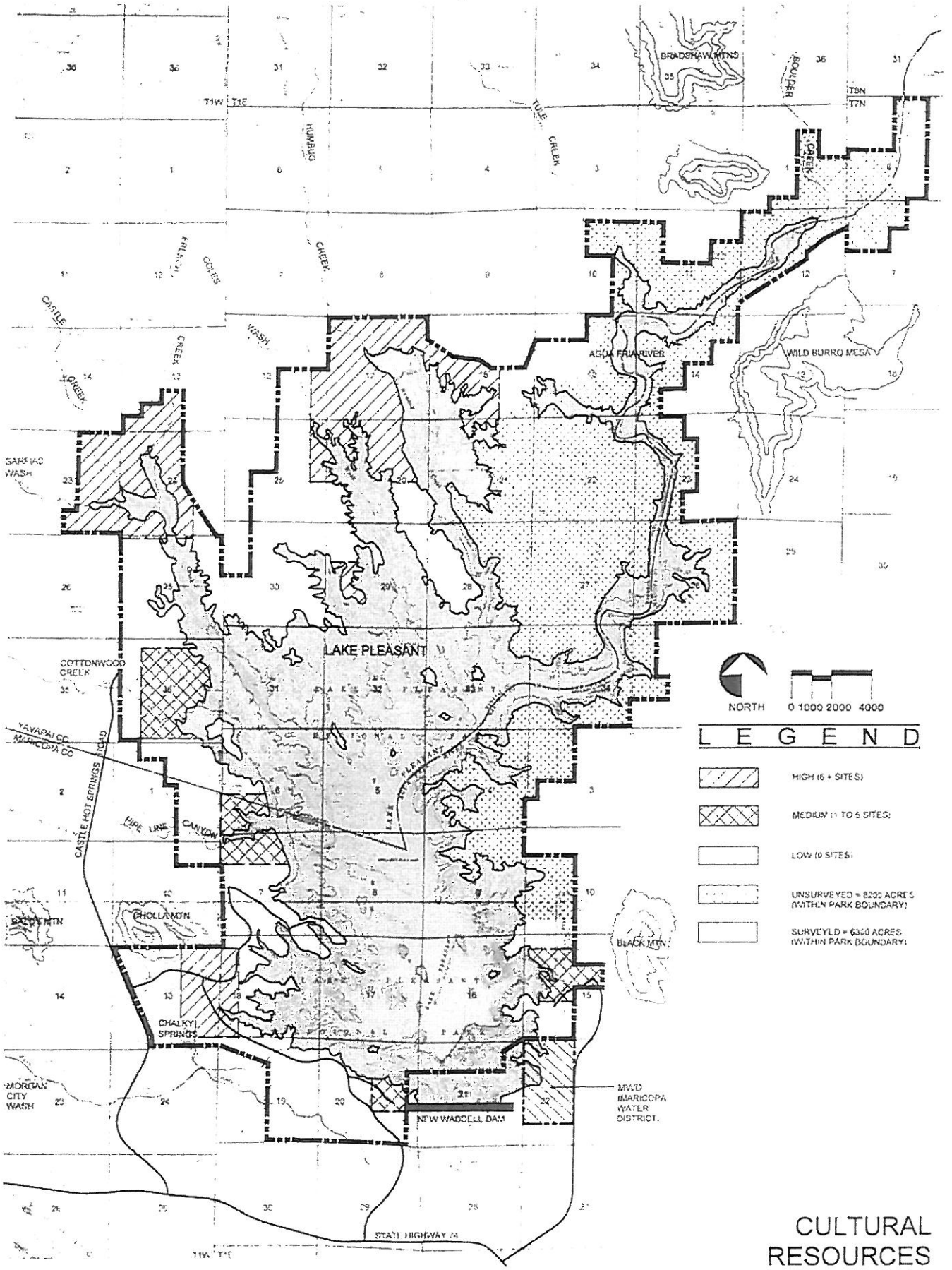
- All sites must be evaluated for their eligibility for the National Register of Historic Places, in consultation with the SHPO.

- Potential impacts from proposed developments to eligible sites must be considered and avoided or mitigated through the development of a treatment plan in consultation with the SHPO. The current inventory survey for cultural resources will not be completed until approximately December 1994, but the majority of areas slated for development on the west side of the lake have been inventoried. Of particular concern will be Areas 2, 5, and 6 which contain the highest density of cultural resources. Consideration of impacts includes not only facilities development but potential impacts from increased access allowed by hiking and equestrian trails which may require site avoidance, signs, surface collections prior to trail development or other treatment strategies to ensure site protection and preservation. This consultation should be coordinated by the Cultural Resources Branch of Reclamation as lead agency in cooperation with the County.

- Identified sites should also be evaluated for their interpretive potential for the public. Any interpretive development of cultural resources should be considered within the context of long term park management and must take into consideration the preservation and protection of the site. There is considerable potential to include cultural resources as part of the experience provided at the Visitor Center through displays and exhibits, as well as informational materials that educate park visitors in a positive way regarding the State and Federal laws and regulations that protect cultural resources.

- A long term program for monitoring and management of the cultural resources within the park must be integrated with the long term management of the park. The program shall include development and implementation of procedures to ensure protection of these resources, including avoidance of sites, and incorporation of them into the recreational experience through the use of interpretive displays.

Fig. 6



CULTURAL RESOURCES

LAKE PLEASANT REGIONAL PARK

G. Land Form

The 24,500 acre Lake Pleasant Regional Park site is located on the Agua Fria River about 35 miles upstream from its confluence with the Gila River. It lies in a transition zone from the Mountain Region to the Desert Region of the Basin and Range Province, where the Agua Fria River emerges from isolated mountain ranges onto a generally level basin floor.

Topography of the area has an important effect upon the views or areas of visual interest. Across the major portion of the area, the topography consists of rolling terrain incised by numerous small arroyos and channels. Some of the larger tributaries include French Creek, Castle Creek, Humbug Creek, Pipeline Canyon, Tule Creek and Cottonwood Wash. A series of rugged, steep-sided ridges and mesas rise east of the lake, the Bradshaw Mountains lie directly north of the park. Prominent topographic features in the area include (Cholla Mountain (2,396 feet), Baldy Mountain (2,757 feet), Wild Burro Mesa (2, 957 feet) and Black Mountain (2,490 feet). The terrain south and southeast of the park is relatively flat. Figure 7 indicates landforms and slope of the Park.

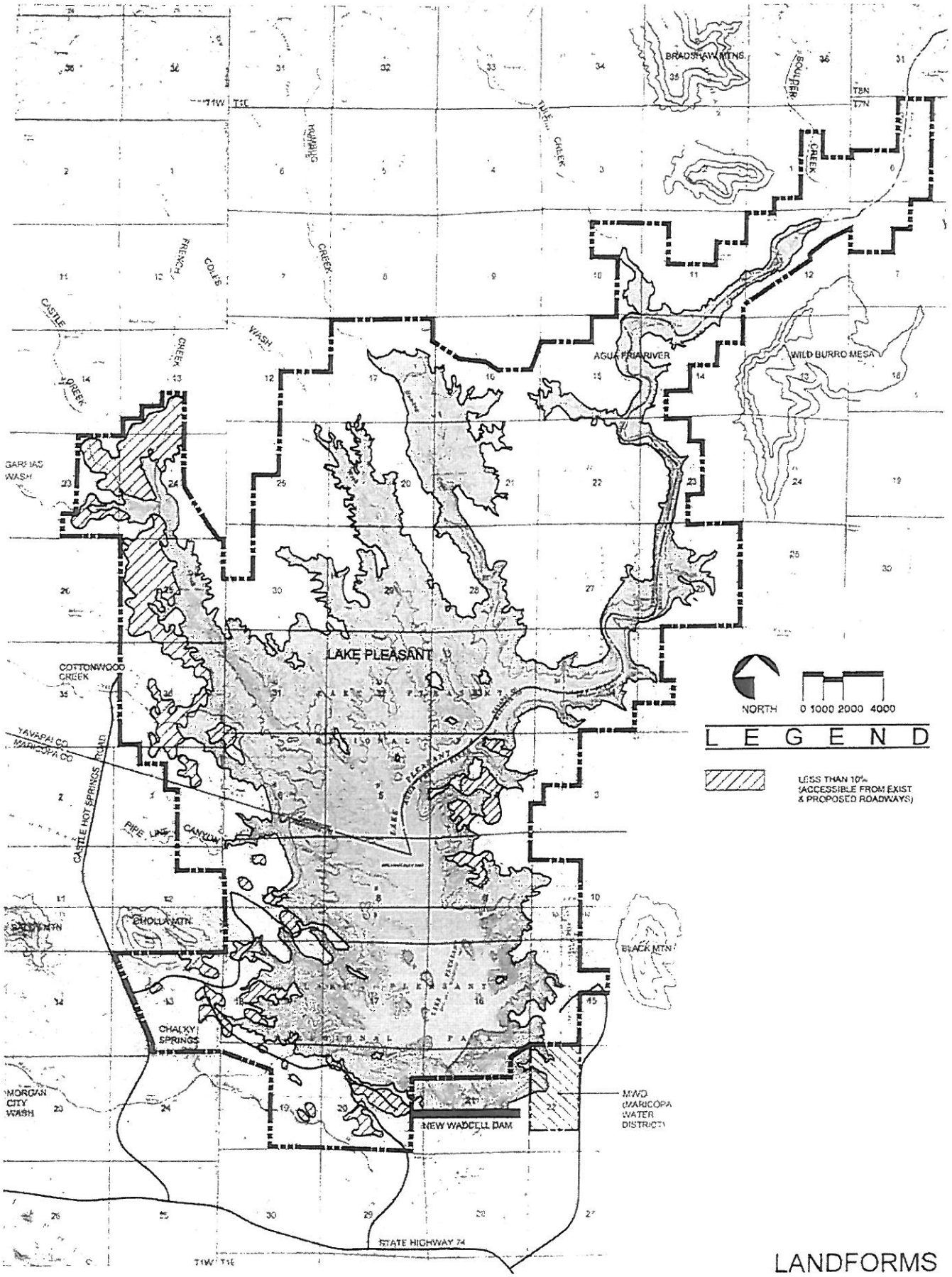
Conservation Recommendations

- Because construction must occur at elevations equal to or above 1706, much of the development will occur in areas having slopes up to 5 percent. Locate intensive land use development such as parking lots or building sites in areas with the least severe slopes to minimize the visual and environmental impact.

- Focus facility design on adapting the building to the site as opposed to grading the site to fit the building. The use of retaining walls, terraces, split level and platform structures can minimize the disturbances of the natural terrain. Hold site grading to an absolute minimum.

- Locate recreation sites in areas with slopes of 10 percent or less.

Fig. 7



LANDFORMS

LAKE PLEASANT REGIONAL PARK