RECLAMATION

Managing Water in the West

Final Environmental Assessment

Proposed Construction and Operation of the Scorpion Bay Marina & Yacht Club

U.S. Department of the Interior
Bureau of Reclamation
Phoenix Area Office

February 2007

FINAL ENVIRONMENTAL ASSESSMENT

PROPOSED CONSTRUCTION AND OPERATION
of the
SCORPION BAY MARINA and YACHT CLUB
at Lake Pleasant Regional Park
Maricopa County, Arizona

PREPARED BY

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February 2007

Mission Statements

The mission of the Department of the Interior is to protect and provide access to our Nation's natural and cultural heritage and honor our trust responsibilities to Indian tribes and our commitments to island communities.

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The mission of the Bureau of Reclamation is to manage, develop, and protect water and related resources in an environmentally and economically sound manner in the interest of the American public.

PREFACE

An initial draft Environmental Assessment (EA) for the proposed construction and operation of the Scorpion Bay Marina and Yacht Club at Lake Pleasant Regional Park was made available to the public on July 28, 2006, for a 21-day public review and comment period. In preparing responses to comments that we received during that public review and comment period, we discovered that errors had been made in gathering available data on actual daily and monthly watercraft counts. These watercraft counts are the basis for estimating current and future watercraft use on the lake in the EA.

Due to the discrepancy between the estimated current watercraft use identified in the initial draft EA distributed in July 2006, and the estimated current watercraft use based upon corrected data, we determined a revised draft EA should be issued for another public review and comment period. In addition to correcting the watercraft count errors, we revised the initial draft EA where appropriate in response to comments already received. The revised draft EA was distributed on October 24, 2006, for a 24-day public review and comment period. The EA or notice of the EA was sent to the same mailing list used for the initial draft EA, as well as to individuals and organizations that sent in comments during the initial public review and comment period.

All comments received during both comment periods and afterwards, and Reclamation's responses, are included in Appendix H to this final EA.

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1.0 PURPOSE AND NEED

1.1 Introduction

This Environmental Assessment (EA) has been prepared to describe and assess the environmental consequences that are likely to result from construction and operation of the proposed Scorpion Bay Marina and Yacht Club at Lake Pleasant Regional Park (LPRP). Under an existing Recreational Management Agreement between the Bureau of Reclamation (Reclamation) and Maricopa County (County), Reclamation must approve this proposal prior to the County initiating construction of these proposed facilities. The EA has been prepared in compliance with the National Environmental Policy Act of 1969, as amended (NEPA), the Council on Environmental Quality regulations implementing NEPA, and Reclamation's Draft NEPA Handbook (Reclamation 2000). Reclamation is the lead agency responsible for preparation of this document; the County is a cooperating agency due to its expertise in and responsibility for managing LPRP for recreation.

1.2 Background

The original Waddell Dam, which formed Lake Pleasant, was built between 1925 and 1927 by a company that is now the Maricopa County Municipal Water Conservation District #1 (MWD). In 1969, an operating agreement was signed by MWD and the County, under which the County would manage Lake Pleasant and the area around it as a regional park (Cella Barr Associates 1995).

The Colorado River Basin Project Act of 1968 (Public Law 90-537) authorized Reclamation to develop and build the Central Arizona Project (CAP).[1] Section 301(a)(3) of that Act addressed storage and regulated delivery of CAP water, and flood control of the Salt and Gila Rivers through the Phoenix metropolitan area. This aspect of the Act was called the CAP Regulatory Storage Division. During the planning phase for the CAP Regulatory Storage Division, Reclamation was authorized under the 1978 Reclamation Safety of Dams Act (Public Law 95-578) to conduct dam safety related studies at some of the same facilities involved in the CAP study. The two projects were combined into a comprehensive effort called the Central Arizona Water Control Study (CAWCS).

One of the objectives of the CAWCS was to develop a means of increasing operating efficiency of the CAP through conservation of local surface waters and regulation of Colorado River water deliveries from the CAP canal system. To meet that objective, Reclamation proposed constructing a new and higher Waddell Dam about ¼ mile down-stream of the original Waddell Dam, primarily to store Colorado River water for CAP use, and to provide incidental flood control on the Agua Fria River. Because the majority of the recreational facilities at Lake Pleasant existing at that time would be submerged as a result of the increased height of the new dam, the CAWCS recognized the need to replace these facilities. Pursuant to the Federal Water Project Recreation Act of 1965 (Public Law 89-72), Reclamation also was able to consider opportunities to enhance recreational development at Lake Pleasant. As part of the CAWCS, Reclamation coordinated with the County's

[1] The primary purpose of the CAP is to provide water for irrigation, and municipal and industrial uses, in central and southern Arizona and western New Mexico, through importation of Colorado River water and conservation of local surface waters.

Recreation Services (now Maricopa County Parks and Recreation Department [MCPRD]) and others to develop a conceptual recreational development plan for Lake Pleasant.

Reclamation prepared the CAP Regulatory Storage Division Final Environmental Impact Statement (EIS) which included the New Waddell Dam feature as part of an alternative referred to as "Plan 6."[2] Plan 6 was identified as the Agency Proposed Action in the Final EIS. The Final EIS envisioned there would be four reservoir-oriented recreation developments at Lake Pleasant and concluded the effects on reservoir recreation would be beneficial, due primarily to the increased surface area of the lake (Reclamation 1984a). A more detailed description of the conceptual recreation plan for the New Waddell Dam feature was included in a technical appendix to the Final EIS (Appendix C) (Reclamation 1984b). This appendix identified existing LPRP recreational facilities that would need to be replaced, and recreational enhancements that could be developed, at the LPRP.

A Record of Decision was signed by the Secretary of the Interior on April 3, 1984, approving implementation of Plan 6. Among other things, the Record of Decision indicated the plan would consist of constructing New Waddell Dam for regulatory Storage, flood control and recreation (Reclamation 1984c). Reclamation initiated construction of New Waddell Dam, downstream of the original Waddell Dam, in 1985; the major structural features were completed in 1992. The original Waddell Dam was breached. Lake Pleasant reached its new maximum water conservation storage pool elevation of 1,702 feet in spring 1994. As part of the agreement between Reclamation and MWD--under which Reclamation constructed New Waddell Dam, breached MWD's Waddell Dam, and gained ownership of the land surrounding Lake Pleasant--MWD retained ownership of 225 acres located at the eastern abutment of New Waddell Dam, near the southeast corner of Lake Pleasant.

In 1990, Reclamation entered into a Recreational Management Agreement with MCPRD (Contract No. 9-07-30-L0298, executed June 29, 1990) (1990 Contract), to manage public recreation at LPRP. MCPRD later hired Cella Barr Associates to develop a Master Recreation Plan (MRP). The MRP established guidelines for development of the expanded LPRP, based upon the initial conceptual plan developed during the CAWCS and described in Appendix C of the Plan 6 EIS. In 1997, Reclamation completed a final EA that compared the impacts anticipated to result from implementation of the County's LPRP MRP with those described as part of Plan 6. The purpose of that EA (Reclamation 1997a), which was programmatic in nature, was to address the degree to which implementation of the County's MRP would result in environmental impacts that are different from what was originally contemplated and described in the 1984 Final EIS on Plan 6 (Reclamation 1984a). The 1997 EA identified that any proposed concession and subsequent development must be consistent with the overall recreation management plans and goals for Lake Pleasant identified in Appendix C of the 1984 Final EIS, and would be subject to compliance with the procedural requirements of NEPA.

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[2] Plan 6 originally included construction of New Waddell Dam on the Agua Fria River to provide regulatory storage of CAP water, flood control, and recreation; modification of Roosevelt Dam on the Salt River to provide flood control, water conservation, recreation, and dam safety; modification of Stewart Mountain Dam on the Salt River to ensure its safety; and construction of Cliff Dam on the Verde River to provide flood control and water conservation, and for dam safety purposes. Cliff Dam was subsequently eliminated from Plan 6.

The Plan 6 conceptual recreation plan for LPRP included a ranger station complex that included public boat docks, a fuel and boat rental dock, and park concession. This ranger station complex was located in the same general vicinity as the County's MRP proposed marina. Although no specific acreage was identified for the ranger station complex in the Plan 6 document, based upon estimated acreages identified for other features, the ranger station/marina complex was anticipated to be about 12 acres; two 3-lane boat ramps were identified separately. No other details were included. The MRP indicated there would be a 400-acre marina which conceptually, among other things, included the following: 5-lane minimum boat ramp; 500-space minimum parking area; 250-minimum wet storage boat slips; 150-unit minimum dry dock boat storage; wastewater treatment facility; watercraft fueling station; snack bar; watercraft rental; fish cleaning station; watercraft repair facility; and associated access and utilities. The 1997 EA recognized the MRP included greatly expanded marina facilities from what was envisioned in the Plan 6 conceptual recreation plan, among other differences. Because the marina was only addressed in a conceptual manner in the MRP, Reclamation's EA indicated that development of a marina would require separate Reclamation review and approval so that site-specific NEPA compliance could be completed prior to Reclamation's approval of the marina plans.

Reclamation determined a Finding of No Significant Impact was appropriate for approval of the MRP, with inclusion of additional mitigation measures to be implemented by the County and Reclamation, as well as the County's written commitment to fulfill mitigation measures under the authority or responsibility of the County (Reclamation 1997b). This included acknowledgement of the County's requirement, under the 1990 Contract, that any concession and subsequent development would be subject to compliance with procedural requirements of NEPA.

1.3 Purpose and Need

Through the 1990 Contract, MCPRD is the recreational land management agency for LPRP. Among other things, the 1990 Contract allows the County to consider Third-Party Concession Agreements, as long as certain specified requirements are met. In addition, the 1990 Contract requires that any proposed concession and subsequent development will be subject to compliance with the requirements of NEPA.

Watercraft sport and the demand for recreational boating opportunities and facilities have increased both nationally and regionally. Between 1980 and 2005, the total number of boats registered within the nation increased over 50 percent (US Dept. of Homeland Security 2006). Based upon Arizona's most recent watercraft fuel consumption and recreational watercraft usage study, boating in Maricopa County has increased over 15 percent between 2000 and 2006 (Behavior Research Center 2006).

This trend of increased boating activity and demand for additional boating opportunities and facilities is expected to continue into the future. Arizona is the fastest growing State in the country, with a State population increase between July 2005 and July 2006 of 3.6 percent. Planners project that by 2010, the area between Phoenix and Tucson will merge, creating the "Arizona Sun Corridor," which is expected to exceed a population of 10 million by 2040. This growth, most of which has occurred within Maricopa County, increases the demand for the region's finite and limited resources, not the least of which is water (Bowers 2006).

Although it is anticipated the demand for water-based recreation will continue to increase as the population increases, water-based recreational opportunities appear to be limited to those that presently exist. The number of reservoirs available for recreational use in northwestern Maricopa County is likely to remain constant into the foreseeable future. Reclamation's construction of New Waddell Dam maximized storage of flows from the Agua Fria River, which is the only major source of surface water in northwestern Maricopa County. Additionally, the major water operators in the Phoenix metropolitan area, CAWCD and Salt River Project, have been investing their efforts in constructing and operating groundwater recharge projects to store supplemental surface water supplies.[3]

While Maricopa County's population grew 66 percent between 1990 and 2004, several communities in the northern and western portions of Maricopa County have experienced exponential growth. For example, the populations of Peoria, Surprise, and Buckeye grew 164, 798, and 227 percent, respectively, between 1990 and 2004 (AZ Dept. of Commerce 2006). This trend is expected to continue. For example, Vistancia, located in Peoria just south of Lake Pleasant, is a 7,100-acre master-planned community that opened in February 2004. It is currently in its second phase of construction; at completion 17,000 housing units are planned (Sunbelt Holdings). WestWing, another master-planned community in Peoria, is located several miles east of Vistancia. It opened in February 2003, and consists of a 1,312-acre development with 2,100 homes (Padgett 2003). Yet another new master-planned community, to be located in Surprise, will comprise 14,000 homes within a 3,600-acre area once it is completed (Business Journal 2006). In Buckeye alone, over 160,000 single-family lots representing 31 subdivisions have either been or are in the process of being approved by the city of Buckeye (Thompson 2006). The Business Journal, in a May 2006 article, indicated the northern part of Sun Valley Parkway, which extends north of Interstate 10 near Buckeye and then heads east to Surprise, as "one of the hottest markets for new homes (Padgett 2006).

These are but a few examples of the types of development that are causing the current population growth, and are expected to continue into the foreseeable future. Studies indicate boating markets are localized (Peterson 1991; Dangermond Group 2003). As the recreation land management agency, MCPRD has determined there is a need for a marina and its associated amenities as part of the LPRP, and has proposed to construct and operate a marina through a concession Use Management Agreement (UMA) with the Lake Pleasant Marina Partners LLC. This proposal is consistent with the requirements of the 1990 Contract, the MRP, and the overall recreation management plans and goals for New Waddell Reservoir identified in Appendix C of the 1984 Final EIS. The purpose of the project is to provide expanded boating access, additional boat storage capacity, and associated recreational facilities in a manner that will address the increasing demand for these services, provide financial resources for the maintenance of LPRP, and maintain consistency with the MRP. This action is needed because of Lake Pleasant's close proximity to rapidly growing population centers having limited water recreation opportunities and because recreational developments identified in the MRP and Appendix C of the 1984 Final EIS have not yet been implemented.

[3] E.g., Salt River Project's Granite Reef and Agua Fria River underground storage projects, and CAWCD's Agua Fria, Hieroglyphic Mountains, and Tonopah recharge projects.

1.4 Location

LPRP is located in northern Maricopa and southern Yavapai counties in central Arizona, about 30 miles northwest of downtown Phoenix (Figures 1 and 2). The Maricopa County portion of LPRP, including the proposed marina site, is surrounded by the city of Peoria jurisdiction. Elevations within the project area range from 1,580 feet to 1,800 feet.

1.5 Public Involvement

Reclamation sent out a memorandum on March 1, 2006, to about 70 interested agencies, organizations and individuals, requesting input regarding any issues or concerns that should be addressed in the EA (Appendix A). Five scoping comment letters were received during a 23-day public scoping period. The relevant issues and concerns identified during scoping that are addressed in the EA include the following:

Alternative marina site locations. Alternative marina site locations should be considered.

Environmental impacts. Reclamation should not rely on previous studies and should undertake a new site-specific analysis of the potential environmental impacts resulting from the proposed project, including, but not limited to, biological and cultural resources, air quality, and water quality.

Municipal services and Code compliance. Increased visitation will put a strain on local resources, including potential increases in the number of calls for municipal fire and police service and associated response times. Development and construction of the project need to comply with local ordinances.

Water rights and use. Increased use of potable water as a result of the marina will have potentially negative effects to adjacent landowners' water rights.

Boating safety. The increased number of watercraft out on the lake could result in significant impacts.

FIGURE 1. General Project Area

Terracon 4685 SOUTH ASH AVENUE, STE H-4 TEMPE, ARIZONA 85282 (480) 897-8200 FAX (480) 897-1133	SITE LOCATION MAP TERRACON PROJECT NO. 65067887	DRAWN BY: IJR CHECKED BY: DMW SCALE: 1 : 800,000 DATE: 05/23/2006	SCORPION BAY MARINA AND YACHT CLUB LAKE PLEASANT REGIONAL PARK MARICOPA COUNTY, ARIZONA	FIGURE NO. 1

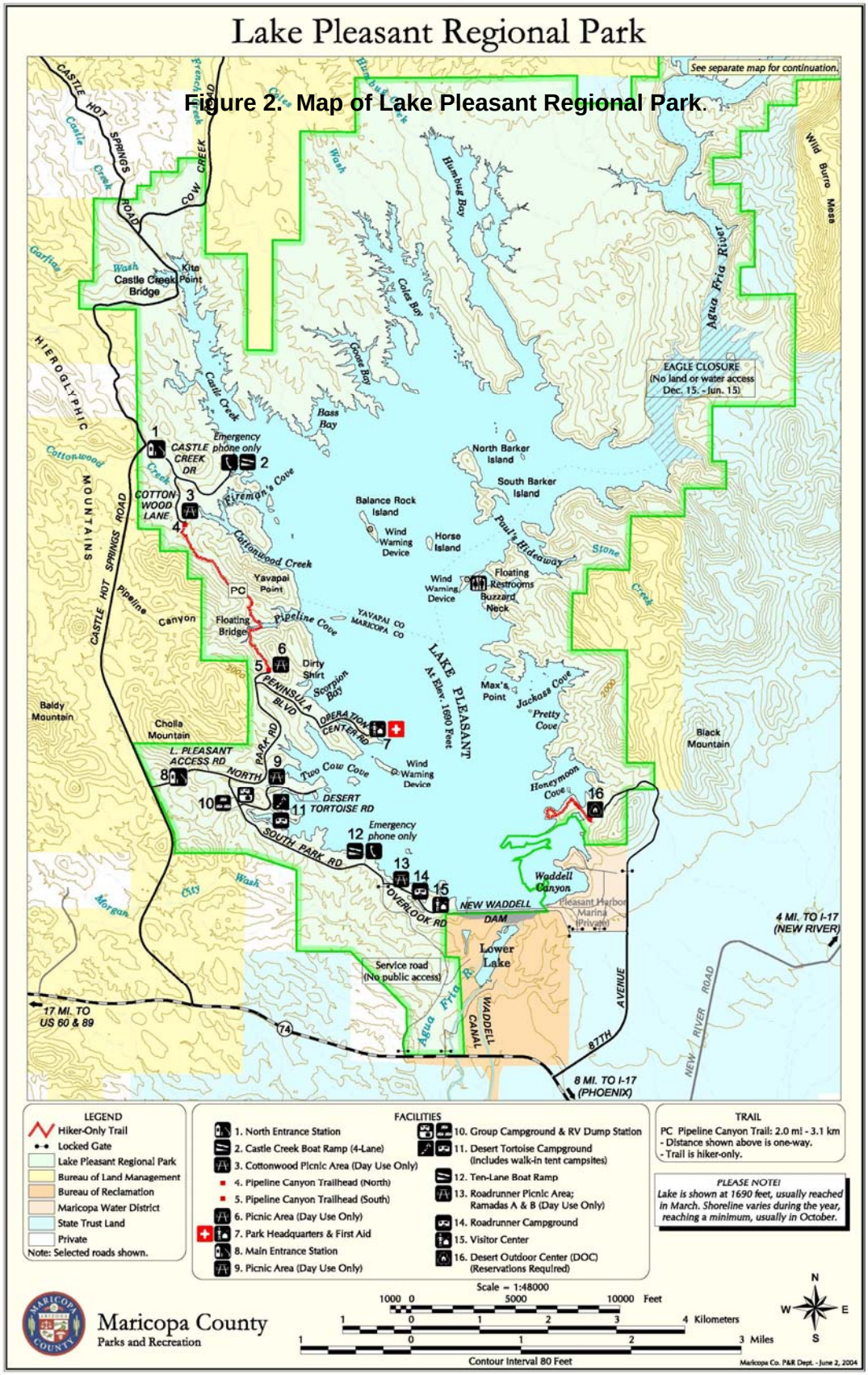

Figure 2. Map of Lake Pleasant Regional Park.

2.0 DESCRIPTION OF THE PROPOSED ACTION AND ALTERNATIVES

This chapter describes the Proposed Action, one action alternative, and a No Action alternative, as well as other alternatives that have been studied but were eliminated from further consideration.

2.1 No Action

The No Action alternative describes the conditions that are assumed to exist into the future in the absence of the Federal action, and provides a basis for comparing the impacts that are anticipated to result from implementing the Proposed Action. Under the No Action alternative, Reclamation would not approve the current Scorpion Bay Marina and Yacht Club proposal received from the County. It is assumed the County would continue to seek other proposals from potential concessionaires to construct and operate marina facilities within LPRP; however, in the foreseeable future no marina facilities would be developed along the western shore of Lake Pleasant. Therefore, for purposes of this assessment it is assumed there would continue to be no marina at LPRP.

Annual visitation to Lake Pleasant has increased at an average of five percent over each of the past three years; from 2005 to 2006 the increase was 10 percent. Watercraft use increased at an average of one percent over this same time frame. In fact, watercraft use at Lake Pleasant actually decreased in FY 2004 and FY 2005; however, it increased 11 percent in FY 2006. On weekends during the peak season (May through July), visitors on the lake already experience boat densities approaching a suburban or urban lake experience (see Table 6 and Appendix C).

Under the No Action alternative, it is expected that visitation to LPRP and use of Lake Pleasant would continue to increase. As the northern portion of Maricopa County continues to become urbanized, the rural nature of the LPRP experience will become more like that of a suburban park. Watercraft enthusiasts at LPRP would experience increasingly longer waiting lines at the entry stations and boat ramps on weekends and holidays. Watercraft enthusiasts desiring a more rural experience would need to drive further distances to less crowded reservoirs, such as Roosevelt Lake.

It is assumed Pleasant Harbor Marina (located on Lake Pleasant just east of New Waddell Dam) would complete its expansion by adding another 160 wet slips and 400 dry stack storage spaces. It is anticipated LPRP visitors would continue to express a desire for marina facilities. At some point, management guidelines to control watercraft activities on the lake would need to be initiated. MCPRD would be responsible for determining what these guidelines should be and when they should be implemented.

2.2 Proposed Action

Under the Proposed Action, a full-service marina would be constructed and operated by a concessionaire on the western shore of Lake Pleasant, in the vicinity of Scorpion Bay and Peninsula Boulevard. MCPRD previously constructed a main entrance for access to the marina from Peninsula Boulevard. This was installed as shown in the LPRP MRP.

The project would encompass about 164 acres total, 93 acres of which would be below elevation 1,702 feet, and 71 acres of which would be located above elevation 1,702 feet (the maximum normal water surface of Lake Pleasant). Of the 71 acres located above elevation 1,702 feet, approximately 37 acres would be permanently affected by the construction of marina facilities. The area within the lake that would be taken up by the marina facilities would be about 33 acres. The project would be developed in four phases. Construction of the first phase would begin immediately upon approval by Reclamation and the County, and acquisition of all necessary permits. It is anticipated this first phase would be completed within approximately 6 months. The remaining three phases would be undertaken as determined by demand for facilities and services. Although there is no set time table for these remaining phases the concessionaire has indicated Phase II could commence within 1 to 2 years, and Phase III could commence within 3 to 5 years, after completion of Phase I. No estimate has been provided for Phase IV.

The proposed marina complex, at total build-out, would consist of the following major facilities: a paved parking area with a capacity of 420 vehicles; a 5-acre area that would be graded, graveled and fenced during Phase I, which would be available for a variety of uses, including but not limited to vehicular and boat trailer parking, storage, and repair and service of watercraft; paved driveways; a public boat ramp with up to three lanes; a 200-boat capacity, 40-foot high dry stack watercraft storage/repair building; a wastewater treatment plant; an 800-slip wet dock; a 1,200-foot long wave attenuator;[4] a watercraft supply store that would sell convenience items and snacks, rent watercraft, and provide executive office space with internet hook-ups; an eight-bay gas dock for watercraft fueling with separate aboveground fuel storage tank; and a wheelchair accessible tram to connect the main vehicle parking area with the wet dock. Potable water and electricity would be supplied by the County. Figure 3 shows the main elements of the Marina Development Plan.

[4] A wave attenuator is an 8' wide by 4' high concrete floating dock section that is used to dampen the effects of waves to protect the marina and the boats from wave damage.

Figure 3. Marina Development Plan

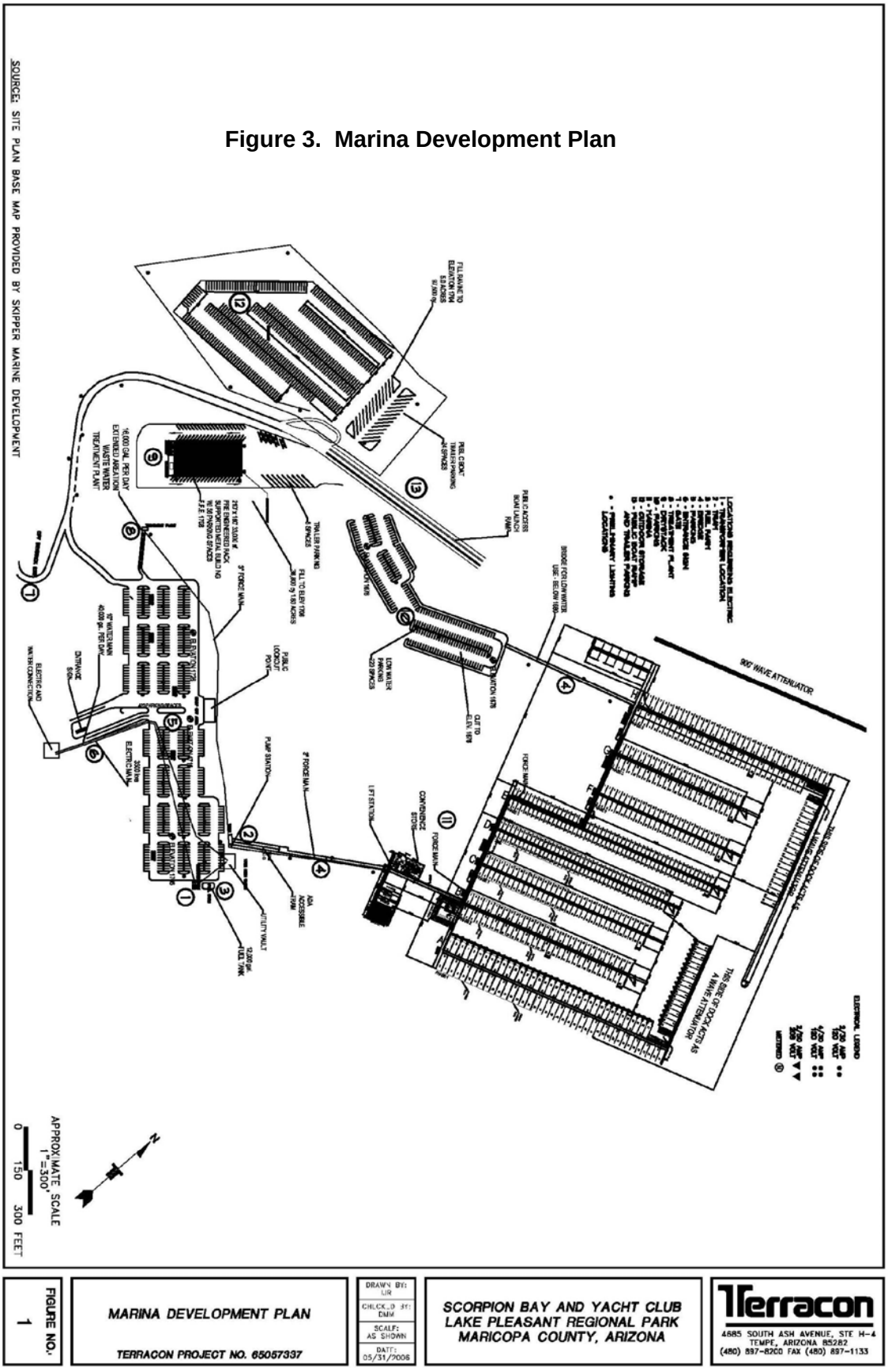

Table 1 provides a summary of the activities that would occur and facilities that are expected to be constructed during each phase. Timing of the actual construction of any of these facilities could shift, depending upon demand. Paragraphs describing the various activities follow the table.

Table 1. Development Phases for the Scorpion Bay Marina and Yacht Club

Activity	Phase I	Phase II	Phase III	Phase IV
Earth work	Grading and fill required for project at build-out (for roads, parking, boat ramps, and facilities)			
Infrastructure	Access roads; fencing; electrical system; potable water delivery system; temporary wastewater vault; wastewater treatment plant; wheelchair accessible tram from main vehicle parking area to wet dock; a public boat ramp with one lane		Two additional lanes at the boat ramp contingent upon funding	
Buildings (floating)	Watercraft supply store/office building; two restroom boats			
Boat wet slips	248 wet slips	64 wet slips	292 wet slips	196 wet slips
Outdoor secured area	Graveled and fenced 5-acre area for vehicular and boat trailer parking, storage, and repair and service of watercraft			Improvements & lighting
Dry stack building			200 boats	
Parking	~280 vehicles & graded area for 24 public watercraft trailers above elevation 1,702 feet		140 vehicles above & 220 below elevation 1,702'; and graded area for 12 public water-craft trailers (low water)	Improvements & lighting for public watercraft trailer parking area
Fueling facility	5-bay gas dock plus aboveground gasoline storage tank (one 12,000-gallon capacity)		3-bay gas dock plus aboveground diesel storage tank (one 500-gallon capacity)	
Wave attenuator	900 linear feet		Move & extend an additional 300 linear feet	

Excavation. Excavation for the main parking area would require blasting of approximately 10 to 15 feet of rock (approximately 200,000 cubic yards [cy]) to acquire enough fill

material to create the outdoor storage and dry stack building areas. The parking area would be approximately 1,000 feet by 300 feet with a parking capacity for 420 vehicles including nine spaces built to Americans with Disabilities Act (ADA) standards. Existing native plants that are determined to be suitable for transplanting by a certified landscape architect would be salvaged and reused for landscaping to the extent practicable.

Creation of the outdoor storage and dry stack building areas would require filling the ravines with up to 20 feet of rock material excavated from the main parking site, to provide an additional seven acres of usable land for these marina facilities. It is anticipated about 11 acres below elevation 1,702 feet would be disturbed as a result. Due to the annual water level fluctuations of Lake Pleasant (averaging 40 to 60 feet yearly, but which can be up to 70 to 80 feet), vegetation is sparse below elevation 1,702 feet. Existing plants in areas above elevation 1,702 feet that would be disturbed by the project, which are deemed suitable for transplanting, would be salvaged and reused for landscaping to the degree practicable.

To develop the low water parking area, this area of the marina site would be excavated down about eight feet, to an elevation of 1,678 feet, unless limited by the water elevation at the time of construction. This area, approximately 700 feet by 150 feet when the water elevation is at or below 1,678 feet, would be entirely within the yearly fluctuation of water levels and would create parking capacity for up to 220 vehicles including five spaces that meet ADA standards.

Utilities would have underground services to the marina. Trenching for each utility would be done after excavation has been completed.

Fugitive dust created during construction would be controlled using CAP water from Lake Pleasant, obtained through a temporary water use permit from the Central Arizona Water Conservation District (CAWCD),[5] to comply with Maricopa County Air Pollution Control Regulations Rule 310 (Fugitive Dust) for construction activities. A Stormwater Pollution Prevention Plan would be developed and implemented and an Arizona Pollutant Discharge Elimination System Stormwater Notice of Intent and Stormwater Notice of Termination would be submitted to the Arizona Department of Environmental Quality (ADEQ). Silt barriers[6] would be placed around the entire work area when activities are conducted under water to reduce water pollution. Blasting and construction activities would be limited to daylight hours for the duration of construction. A U.S. Army Corps of Engineers Clean Water Act section 404 permit would be secured for all construction activities occurring below elevation 1,702 feet.

Dockage and Anchorage. An 800-slip marina would be constructed using a floating dock system along with a floating concrete wave attenuator to protect the marina from waves. The docks would be constructed in four phases. Phase I would include 248 slips and 900 linear feet of wave attenuator. Phase II would add 64 slips. Phase III would include an

[5] CAWCD operates the CAP system, including New Waddell Dam, pursuant to an operating agreement with Reclamation.
[6] A silt barrier consists of a floatation log that holds a filter fabric in place. The filter fabric is composed of a woven polypropylene which allows the passage of water, but retains soil particles.

additional 292 slips; this would require relocating and adding 300 linear feet to the concrete wave attenuator. Phase IV would provide an additional 196 slips. The timing of the phases and actual number of slips added would be based on the demand from the public for additional boat slips.

Up to 300 anchors cabled to the floating docks would be utilized to secure the marina, breakwater and walkway. Rock anchors drilled into the lake's rock bottom would be utilized for a majority of the anchors. The remaining anchors would be 3-foot by 3-foot by 3-foot concrete blocks. Rock anchors are the preferred method due to their increased holding strength and reduced impact under water. The use of rock anchors versus concrete blocks would depend on the water level at the time of construction. Rock anchors can be used in water depths up to 50 feet; deeper water requires use of concrete blocks.

Dockage and anchorage work would result in temporary and localized suspended turbidity[7] at each anchor installation location. Proposed mitigation includes conducting dockage and anchorage work when lake levels are at their lowest (during the summer months when they are down to elevation 1644 feet) to the greatest extent practicable. This would allow more rock anchors to be utilized and installed "in the dry." Observations of the lake during low water elevations indicate the lake in the area of the marina consists of bedrock; therefore, turbidity is anticipated to be nominal regardless of when the work is performed.

Tram System. A 2,000-pound capacity inclined tram system would be used to provide year-round ADA accessibility to the marina from the marina's main parking area, unlike a floating ramp that would rest on the lake bed when the water level is low. The tram structure and anchor system would be designed and constructed to minimize impacts to water quality.

Wastewater System. The marina would have public restrooms; shower facilities would be available to marina patrons. There would be a "boat pump-out system" located at the fuel dock. The boat pump-out system is a vacuum system that removes waste from the boats and transports it to the lift station at the watercraft supply store. There would be a laundry facility, deli and bar within the marina. Phase I is anticipated to produce a maximum of approximately 16,000 gallons per day (gpd) of wastewater.[8]

The wastewater treatment plant would be designed for an initial 16,000 gpd capacity, with the ability to be increased to 34,000 gpd at build out. The concessionaire would need to obtain an Aquifer Protection Permit from ADEQ to comply with Arizona Revised Statutes Title 49, Chapter 2, Article 3, regarding protection of aquifers. The facility would be located away from active public areas and would be screened by landscaping. The facility would be designed for installation of covers and odor control measures should they be determined to be necessary in the future. Wastewater flows at a marina fluctuate greatly depending upon seasonal demands, and between weekend and weekday use. A

[7] Turbidity relates to the degree of clarity or cloudiness of water.

[8] This volume was calculated using design criteria from *Marinas and Small Craft Harbors*, Second Edition, authors Bruce O. Tobiasson, P.E. and Kollmeyer, R.C. (2000). The average daily flow was determined using 32 gallons per boat slip per day.

monitoring system would be installed to collect accurate data to determine system requirements at build-out. Because permitting and construction of this type of treatment plant typically requires two years to complete, and because the minimum volume of wastewater needed for the waste-water treatment plant to operate properly would not be generated during the initial phase of the project, a "vault and haul" system (in which wastewater is pumped into a vault, and then collected and trucked to a sanitary landfill by licensed handlers) would be utilized for the first year of operation to handle the waste.

Within the marina itself, a collection system would deliver the waste to a central location near the watercraft supply store. From there a dual lift station would pump the waste through a 1,600-linear foot buried pipeline to the treatment plant. With the construction of the dry stack building, an additional 200 feet of pipeline would be installed to deliver waste from there to the treatment plant. The design would need to be approved and permitted through the Maricopa County Environmental Services Department. The treated effluent would meet ADEQ Title 18, Chapter 11 requirements for Class B+ reclaimed water quality and would be reused for landscape irrigation through an on-site drip irrigation system that would comply with Arizona Administrative Code Title 18, Chapter 9. As a precautionary measure, a 10,000-gallon effluent holding tank would be included as part of the facility so that if, for any reason, effluent could not be discharged at a particular time (e.g., due to rainy weather), there would be no unscheduled release of effluent.

The boat pump-out system would be constructed in cooperation with the Arizona Game & Fish Department (AGFD) in response to the Clean Vessel Act of 1992. This Act was passed to help reduce pollution from vessel sewage discharges. Use of the B+ treated effluent for irrigation would allow disposal without discharge into surrounding surface waters or injection to subsurface groundwater. The marina landscaping would be designed to utilize the treated effluent to minimize the use of groundwater for irrigation purposes.

Water System. Potable water would be delivered from MCPRD's existing water system. It is anticipated the marina would use a maximum of 40,000 gpd. The major source of potable water for the marina is anticipated to be provided from a County well located near the Operations Center, about ½ mile southeast of the site. There is an existing 12-inch water main located along Peninsula Boulevard. The MRP water system design took into account future recreational development in the area, including the marina, and a stub was constructed across Peninsula Boulevard during LPRP's Phase I utility construction. Approximately 1,000 linear feet of new 10-inch water main would be installed for water delivery from the stub connection to the marina. An additional estimated 900 linear feet of 6- and 2-inch water mains would be installed to the dry stack building when it is constructed. The water distribution mains would need to be designed and permitted per Maricopa County Environmental Services Department requirements and would need to meet Arizona Administrative Code Title 18, Chapter 4 requirements regarding safe drinking water systems.

Use of the existing water system would allow for water to be supplied to the marina without requiring installation of any additional water wells.

Electrical System. An electrical transformer was installed during the Phase 1 utility construction of the LPRP for future planned developments. It is located across Peninsula Boulevard near the main entrance. Approximately 1,000 linear feet of electrical service would be installed to the marina. An additional 1,000 linear feet of electrical service would be installed to the dry stack building when it is constructed. The electrical design has been coordinated with Arizona Public Service, the utility provider. It is anticipated the marina would use a maximum of 3,500 kilo-volt-amperes.

The electrical lines would be buried underground. The lighting has been designed to minimize the creation of unevenly lit areas ("hot spots"), to control light pollution, and minimize the use of lights and poles. The light fixtures chosen are full cut-off fixtures, meaning they do not allow light above the horizontal plane of the light fixture. This cuts down on light pollution into the sky and surrounding areas. The design of the fixtures' locations and direction would also limit light from encroaching on surrounding areas. As an example, a fixture that emits a square light pattern would be used for the interior portions of the parking lot areas and a fixture that gives a wide and narrow light pattern would be used for the driveway areas; this would require fewer lights and would prevent light from spilling onto non-roadway areas.

Taller poles have also been proposed that would allow use of fewer fixtures (requiring less energy usage as the economies of scale take over); this would lead to better uniformity of lighting coverage (translating to fewer hot spots).

Fuel System. The fuel system for the marina would consist of a 12,000-gallon aboveground gasoline storage tank, 1,000 linear feet of buried 2-inch diameter dual wall marine fuel pipe, and two fuel dispensers located on the docks for watercraft use. The system would need to be designed and permitted according to Maricopa County and Arizona State Fire Marshal requirements. In addition, an Air Quality Permit to Construct and Operate a Gasoline Dispensing Operation would be obtained from the Maricopa County Air Quality Department.

Construction of the dry stack building would involve installation of a 500-gallon diesel above-ground storage tank and a waste oil storage area for marina equipment use only. A Spill Prevention, Control & Countermeasures Plan (SPCC) would be prepared and implemented in accordance with the provisions of 40 Code of Federal Register (CFR) § 112.7 with the express purpose of preventing the release of petroleum products onto or into surrounding soil or surface waters. The aboveground tanks would be placed within a secondary containment area capable of holding the contents of the tanks, to prevent spills or leaks from impacting the environment. Double-walled piping would similarly prevent pipeline releases from impacting surrounding soils or waterways.

Landscaping. A Native Plant Inventory Plan and Native Plant Salvage Plan would be prepared before any excavation is initiated. After approval by the County and Reclamation and completion of excavation, existing plants that have been salvaged for transplanting and additional native plants would be planted according to a professionally prepared landscaping plan. The design would include the previously described drip irrigation system

utilizing the B+ treated effluent and design of hardscape and landscapes to hide landside marina facilities (i.e. treatment plant, fuel tank, electrical farm).

Use of the treated effluent for irrigation would allow disposal without discharge into surrounding surface waters and to minimize groundwater use for irrigation. Use of native plants would help the marina blend in with the natural surroundings.

Paving. The main entrance and ADA parking would be paved. The existing Dirty Shirt Road would be rehabilitated and widened to provide access to the boat ramp. A new paved entrance off Peninsula Boulevard onto Dirty Shirt Road would allow watercraft trailers direct access to the new boat ramp. Altogether just over two acres would be paved upon completion of Phase I. The remaining parking areas would have a granular surface in Phase I. The main parking area, with a capacity of 420 vehicles, would be paved in Phase II. The low water parking area, outdoor storage area and dry stack storage building would remain surfaced with granular material. All above water paving would use Asphalt Cement Concrete.

A single lane (10 feet wide by 650 feet long; just under 0.2 acre) Portland Cement Concrete paved boat ramp would be constructed in Phase I for use by the public for launching watercraft. An additional two lanes are planned for the boat ramp in Phase III, in conjunction with construction of the dry stack building. There would be a total of 36 parking spaces available for vehicles with trailers.

A chemical dust suppressant would be used to control the fugitive dust from the granular parking areas. Retention basins would be constructed to collect storm water runoff within the project area.

Dry stack Building. The dry stack building is a 33,600-square foot pre-engineered metal building with racks for boat storage. Large marine forklifts would transport boats from the building to the lake and back using the boat ramp. The facility would have the capacity for 56 parking spaces including a designated number of ADA accessible spaces. The building would be painted in a color to blend with the existing structures at LPRP.

2.3 Action Alternative A – Downsized Marina

Under Action Alternative A, Phase IV as described in the Proposed Action would be eliminated. The marina would be considered built out after completion of Phase III as described in the Proposed Action, resulting in a total of 604 wet slips and a dry stack storage building for 200 boats. The physical space of this alternative, both on land and in the water would essentially be the same as under the Proposed Action. This is because the graveled areas created under Phase I would remain but would not be improved. The wave attenuator would need to be moved to install the wet slips in Phase III, which would also accommodate the wet slips installed in Phase IV, so the area of the marina within Lake Pleasant would remain the same under either the Proposed Action or Action Alternative A. The infrastructure required for the marina complex would be the same as for the Proposed Action; however, build-out capacities of the wastewater treatment plant,

water supply delivery system, and fuel system, and layout for the electrical system would be adjusted, as appropriate.

2.4 Alternatives Eliminated from Further Consideration

Recreational planning associated with the New Waddell Dam feature of the Regulatory Storage Division of CAP has consistently envisioned a marina as one of the developments to be included in the park to be operated and maintained by the local sponsor; this was even before the County became the local operating entity of the park. As the responsible recreation land management agency for LPRP, MCPRD has reconfirmed there is a need for a marina and its associated amenities on the western shore of Lake Pleasant as part of the LPRP, and has proposed to construct and operate a marina through a concession UMA. Alternative marina proposals not associated with the County would not satisfy the purpose and need for the project.

Earlier studies concluded the proposed location is the most suitable site for a marina on the western shore of Lake Pleasant. Reclamation believes these previous evaluations sufficiently considered alternative locations for a marina for the County. Therefore, alternate marina locations were not evaluated in this EA. See Appendix B for a summary of these previous site investigations.

During the Master Recreation Plan planning process, a 200-acre marina was envisioned, with 250 wet slips and 150 dry-boat storage capacity. MCPRD determined these quantities should be considered as minimums that should be provided, as indicated in its subsequent requests for proposals. The County and its concessionaire have determined a marina with capacity less than what is proposed under Action Alternative A would not be economically viable. Therefore, a marina with a smaller capacity would not satisfy the project's purpose and need, nor the applicant's purposes and needs and the comment sense realities of the given situation.

3.0 DESCRIPTION OF THE AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

This section describes the existing affected environment and likely environmental impacts of Reclamation's approval of the either the Proposed Action or Action Alternative A, both of which involve the construction and operation of a marina at LPRP by a concessionaire pursuant to a UMA with the County. A No Action scenario is also evaluated, in which the marina complex is not constructed and operated at this time, to provide a basis for comparing the impacts that are anticipated to result from implementing the proposed project. The analysis is focused on resource areas that may be impacted.

3.1 Geology

3.1.1 Affected Environment

Geologic conditions based on field reconnaissance mapping at the site include Quaternary to Tertiary-aged sedimentary rocks consisting of conglomerate, sandstone, mudstone, limestone, and rock avalanche breccia (sheet-like deposits of crushed rock), and volcanics, deposited and gently tilted during widespread normal faulting and basin development. Nearby geologic units are mapped as Tertiary-aged volcanic rocks consisting of assemblages of interbedded basaltic lava flows, tuffs, and other diverse pyroclastic rocks. These compositionally variable rocks include chiefly andesite, but also basalt, dacite, rhyolite, and lithic to vitric and welded tuff, and regionally extensive ash flows and agglomerate. Given the geologic make-up of the project area, it is unlikely paleontological resources would be present.

Bedrock within the project area is comprised of both sedimentary and igneous volcanic rocks. Bedrock outcrops expose alternating layers of coarse-grained materials that appear to be conglomerate or sandstone as well as finer-grained materials that appear to be ash or tuff that have coarse clasts in their matrix (agglomerate).

3.1.2 Environmental Consequences

3.1.2.1 No Action

Under the No Action alternative, there would be no impact to the geologic resources within the general vicinity of the project area. No areas would be excavated or filled.

3.1.2.2 Proposed Action

It is anticipated both sedimentary and volcanic deposits would be encountered in excavations at the site. In general, the volcanics tend to be sheared and fractured, with fractures often healed (re-cemented) with calcium carbonate; the sedimentary units much less so. The volcanics and sedimentary units, depending on degree of weathering and fracturing, are often excavated in the upper five to 10-feet or so using common methods,

yielding sub-angular to angular, cobble to boulder-sized fragments. These fragments, however, are often unsuitable for use as riprap.

Design of the marina would maintain the natural geology of the site to the extent practicable. Construction of the main parking area on the south part of the site would involve excavating down about 10 to15 feet from the hilltop, removing about 200,000 cy of rock material. This material would be used to fill ravine areas on the west portion of the site, to create the outdoor storage and dry stack building areas. A Clean Water Act section 404 permit would be obtained from the U.S. Army Corps of Engineers prior to placement of this rock fill below the lake's top of water conservation, at elevation 1,702 feet.

3.1.2.3 Action Alternative A

The impacts associated with this alternative would be the same as for the Proposed Action, since the same amount of excavation and grading would occur under both action alternatives.

3.2 Water Resources

3.2.1 Affected Environment

3.2.1.1 Groundwater

LPRP is located at the southern boundary of the Agua Fria basin, adjacent to and just north of the Lake Pleasant sub-basin of the Phoenix Active Management Area (AMA), as designated by the Arizona Department of Water Resources.[9] The Agua Fria basin covers about 1,200 square miles within Yavapai and Maricopa counties, in central Arizona. Its main drainage is the Agua Fria River, which forms Lake Pleasant. There are four major rock units in the Agua Fria basin: Basin-fill and alluvial sands and gravels; sedimentary conglom-erates; and igneous (volcanics) and metamorphic rocks. Water occurs in all four rock units; the main water-bearing units are the basin-fill sands, stream channel alluvium, and the conglomerates. As a result of faulting, the conglomerate/basin-fill units have been separated into several smaller discrete groundwater basins that are separated by impermeable crystalline rocks. There is little direct subsurface hydrologic connection among the sedimentary units in the smaller groundwater basins (ADWR 1994). The hydrogeologic units of the Lake Pleasant sub-basin consist of unconsolidated to semi-consolidated silt, sand, and gravel, and locally may include interbedded basalt.

Groundwater pumping in the Agua Fria basin increased from 3,000 acre-feet per year in 1979 to 10,000 acre-feet per year in 1987, as a result of population growth. Despite this increased pumpage, water levels have generally not declined within the basin except in the Cordes Junction area (ADWR 1994). The total estimated amount of groundwater in the

[9] The Phoenix AMA is a 5,646-square mile area established as a result of the 1980 Arizona Groundwater Management Act. Within the Phoenix AMA, groundwater withdrawal is managed to reach the goal of balancing groundwater withdrawal and recharge by the year 2025, through the increased use of renewable water supplies & decreased withdrawal of groundwater, in conjunction with efficient water use (ADWR 1994)

Agua Fria basin is 3.5 million acre-feet. For the Lake Pleasant sub-basin, ADWR 1994 indicates although groundwater development within the sub-basin has been minimal, increased groundwater development near the town of New River--in areas underlain by volcanics--has caused severe declines and some wells have gone dry. Groundwater is estimated at a depth of approximately 80 feet below ground surface in the vicinity of the project area.

Depending on distance and location from the lake surface, groundwater levels generally fluctuate in direct response--but lag in time--to changes in lake levels. Some of the lake water (the source, since completion of the dam, being a mix of Agua Fria and CAP water), is stored as bank storage, and slowly drains down as lake levels decline. The lake acts as a local recharge boundary condition for these wells, especially Well No. 4, located on the Operation Center peninsula. From past records of several observation wells installed around the reservoir periphery (DH-41-OW through DH-45-OW), and prior to the lake's first-fill but during and after grouting closure on the New Waddell Dam's Right Abutment Ridge, groundwater levels, in general, were previously above the level of the lake. Normally, groundwater flows toward the lake with the hydraulic flow gradient depending upon location and lake fluctuation conditions (Mr. Brad Prudhom [Reclamation], personal communication, June 6, 2006). In 1985, prior to the Right Abutment Ridge grouting, groundwater level elevations in some older reservoir wells (OW-2, -3, -4), were lower than the lake pool elevation of 1,591 feet (O'Neill, 1987, Map 2). In this case the lake was losing water and was a recharge source to groundwater to the south.

At LPRP, the County operates a water supply system that consists of five wells. Two wells are stand alone--one serves the Outdoor Education Center on the east side of the lake, and one serves the North Park entry on the west side of the lake. Three other wells serve the remainder of the Park on the west side, and are connected through a distribution system. A 500,000-gallon storage tank also is part of this system; it is located just north of the marina site, at the junction of Peninsula and North Park roads. One well (Well No. 4) provides the majority of the potable water used within the main Park and has a capacity of 400 gallons per minute (gpm). One well serves the Overlook and CAWCD's facilities and has a capacity of about 100 gpm. A third well (Well No. 1) has a capacity of 50 gpm and is used primarily as a back-up. The total capacity of the three-well distribution system that serves the main Park is about 600 gpm, or 968 acre-feet/year. Initial water quality sampling was conducted at the time these wells were drilled. The results of the sampling indicated the contaminants, for which there are drinking water primary standards, were either below the maximum contaminant level (MCL) or were less than the practical quantification (detection) limit. Primary standards protect public health by limiting the levels of contaminants in drinking water. Secondary standards are non-enforceable guidelines regarding constituents that may affect the taste or color in drinking water. Some inorganic constituents typically derived from volcanic rock aquifers for which there are secondary standards, such as iron, magnesium, chloride, aluminum, or other total dissolved solids (TDS) components, were detected in water samples taken during well development. Table 2 provides the results of water quality testing from Well No. 4, as compared to the Federal primary and secondary drinking water standards (the Federal and Arizona primary standards are identical), for selected parameters tested.

Table 2. Selected Water Quality Testing Results for Well No. 4, Sampled 12/19/91 (units are in milligrams per liter (mg/L) unless otherwise noted) (Arizona Testing Laboratories 1992)

Parameter	Results	Primary Standard*	Secondary Standard*
pH[10]	8.3 pH	N/A	6.5-8.5 pH
Chloride	22	N/A	250
Fluoride	0.43	4.0	2.0
Nitrate-N	<0.2**	10	N/A
Sulfate	44	N/A	250
Total Dissolved Solids	260	N/A	500
Arsenic	<0.010	0.010	N/A
Barium	<0.50	2	N/A
Cadmium	<0.0050	0.005	N/A
Chromium	<0.010	0.1	N/A
Copper	0.11	1.3 TT***	1.0
Lead	<0.0020	0.015 TT	N/A
Manganese	<0.050	N/A	0.05
Mercury	<0.0010	0.002	N/A
Selenium	<0.0050	0.05	N/A
Silver	<0.020	N/A	0.10
Zinc	<0.050	N/A	5

* These represent the numerical standards as of 2006, which are not necessarily the standards that were in effect in 1991.

** The < indicates results are less than the practical quantification limit that existed in 1991.

*** This standard is an action level that is regulated by a Treatment Technique (TT), which requires that a system must control the corrosiveness of its water. If more than 10% of tap water samples exceed the action level, additional steps must be taken.

Currently the County pumps just under 20 acre-feet per year for use within the entire LPRP, the great majority of which is used on the western shore. The County operates the water supply system pursuant to a Certificate of Registration as a Grade 2 Water Treatment Plant Operator, which was issued by ADEQ and is valid until December 31, 2008 (application for renewal of the permit will be made by the County at the appropriate time). The wells are regulated as a community water supply and are tested monthly for microbiologic analysis, and annually for nitrates, to ensure compliance with potable water standards (Mr. Ken Mouw [MCPRD], personal communication, June 8, 2006). The system

[10] The pH unit measures the degree of acidity or basicity of a solution, in units called “pH.” This value ranges from 0 to 14 pH. Values below 7 pH exhibit acidic properties, and values above 7 pH exhibit basic (also known as caustic or alkaline) properties. Since 7 pH is the center of the measurement scale, it is neither acidic nor basic and is, therefore, called "neutral." (Milanco 2006)

was most recently inspected on June 23, 2006, and was found to be in compliance with all ADEQ requirements.

3.2.1.2 Surface Water

New Waddell Dam, which forms Lake Pleasant, was constructed within the watercourse of the Agua Fria River, the principal drainage in the project vicinity. The river is normally dry except during periods of rainfall. Tule Creek (portions of which are perennial) and Boulder Creek drain into the Agua Fria River at or just upstream of the northeastern end of the lake. The shoreline along the eastern side of the lake is very steep and has minor surface runoff into the lake. There are several intermittently flowing creeks, washes and springs located within or adjacent to the northwest and west of LPRP. Pipeline Canyon drains into the lake about ¾ mile north of the proposed marina site. The project area has been in a state of drought in recent years, but typically receives approximately seven to 10 inches of rainfall per year (Maricopa County 2006c)

Prior to construction of New Waddell Dam, Lake Pleasant had a surface area of 3,760 acres, and approximately 157,600 acre-feet of water were stored behind Waddell Dam. The impounded water was delivered by MWD for irrigation purposes within MWD's water service area. With construction of New Waddell Dam, the area of Lake Pleasant increased over five times, to about 9,970 surface acres when the reservoir is at its maximum conservation storage elevation of 1,702 feet. At this elevation, Lake Pleasant stores about 812,100 acre-feet of water. This includes MWD's water rights to Agua Fria River flows for irrigation purposes, and CAP water pumped from the Colorado River that is stored in the reservoir until delivered to CAP customers downstream. MWD's Agua Fria irrigation water is stored in Lake Pleasant, and an equal amount of CAP water is delivered to MWD's Beardsley Canal by CAWCD through a turnout on the CAP canal. During dry years, the reservoir storage is mostly Colorado River water; during wet years with substantial inflows, the reservoir has a blend of Colorado River and Agua Fria River water.

CAWCD pumps CAP water from the Colorado River into Lake Pleasant during periods of low demand (generally the winter months), where it is stored for release into the CAP canal system during high demand periods (generally the summer months). These actions result in an annual average lake elevation fluctuation of about 40 to 60 feet. Releases are also made downstream into the Agua Fria River when large volumes of flood flow into the lake must be passed downstream in order to maintain adequate storage capacity behind the dam. Since the completion of New Waddell Dam, floodwater releases into the Agua Fria River downstream of New Waddell Dam have only occurred once, in 2005 (Mr. David Johnson [Reclamation], personal communication, June 8, 2006).

There are no known Special Flood Hazard Areas on the west side of Lake Pleasant in the area of the proposed undertaking. The project area is within Zone D,[11] described by the Federal Emergency Management Agency as unstudied areas where flood hazards are undetermined but possible. According to Mr. Ken Mouw, MCPRD Engineering Manager,

[11] Federal Emergency Management Agency Flood Insurance Rate Map #s 04013C0345G and 04013C0735H, revised September 30, 2005.

there are no floodplain concerns for the proposed marina site (personal communication, May 18, 2006).

A review of the ADEQ Hazardous Materials Incident Logbook (Spills) and Leaking Underground Storage Tank online databases did not reveal any incidents at Lake Pleasant which would negatively affect water quality. Captain Pat Lopez (Maricopa County Sheriff's Office [MCSO] Lake Patrol Commander) and Mr. Ken Mouw (MCPRD Engineering Manager) both stated they were not aware of any spill incidents at the lake.

LPRP's existing wastewater treatment systems consist of septic tanks. The majority of the effluent goes to lined evapo-transpiration beds filled with sand where the effluent evaporates; however, effluent from two septic systems (Road Runner Campground and the Main-tenance Compound) is directed to leach pits. These leach pits consist mostly of crushed rock and the majority of the effluent also evaporates rather than leaches into the ground (Mr. Ken Mouw [MCPRD], personal communication, June 26, 2006).

Within Arizona, the numeric water quality standards of a given water body are based upon the "designated uses" assigned to it by the ADEQ. ADEQ has identified the designated uses of Lake Pleasant to consist of the following: Aquatic and Wildlife Warmwater Fishery, Full Body Contact; Domestic Water Source; Fish Consumption; Agricultural Irrigation; and Agricultural Livestock Watering. With one or two exceptions, the most stringent numeric standards among these designated uses are those for Domestic Water Source. CAWCD tests the water quality of Lake Pleasant at least three times a year, but usually quarterly, typically for 136 or more constituents. These include 50 or more that are found on ADEQ's list of regulated primary drinking water-related contaminants. Of these 50 or more contaminants, only mercury, although still well below the primary standard MCL (2 micrograms per liter) has, on occasion, exceeded the detection limit (0.2 micrograms per liter) on an infrequent and sporadic basis. Since 2003, cryptosporidium and giardia have been included as parameters for which testing is conducted; sources of contamination include human and animal fecal waste. No detection of either of these parameters has been identified by CAWCD (CAP 2006b).

CAWCD's 2005 Water Quality Report indicates Lake Pleasant water is generally clear with turbidity levels averaging 3.5 NTUs[12] and TDS levels of 480 to 590 milligrams per liter in 2005. Depth profiles of Lake Pleasant revealed summer stratification with warmer oxygen-rich waters in the upper levels of the lake and reduced dissolved oxygen and temperatures in the bottom levels of the lake (CAP 2006a).

[12] NTUs, or Nephelometric Turbidity Units, is a measurement used to indicate the turbidity of water, or how light is scattered by suspended particulate material in the water. The more suspended particulate material there is in a body of water, the more murky it will appear, and the higher its NTU measurement will be.

3.2.2 Environmental Consequences

3.2.2.1 No Action Alternative

In the absence of the proposed project, the current water use and treatment practices would continue. It is anticipated there would be an increase in the amount of groundwater pumped for use at LPRP as visitation continues to increase; however, given the relatively small amount of pumping involved, there would be no detectable impact to the regional aquifer (Mr. Brad Prudhom [Reclamation], personal communication, June 23, 2006).

The proposed marina complex site is located in an area that experiences minor sheet flow during heavy rains; however, there is little erosion and sedimentation into the lake due to the rocky surface of the area. There would be no change to this situation under the No Action alternative.

3.2.2.2 Proposed Action

Excavation at the marina site and placement of rockfill within the lake during Phase I would result in temporary turbid conditions within the lake in the vicinity of the marina complex during and immediately after construction. There also would be temporary increases in and localized suspended turbidity at each location when the rock anchors or concrete blocks for the wet slips are installed. Drill cuttings from holes drilled for installation of anchors (as well as any underwater excavation operations, or excavations that would be inundated), into either volcanic or sedimentary units such as andesite or tuff, or conglomerate, would generate some sand and fine-gravel to predominantly silt and clay-sized particles. These finer sediments would generate some temporary turbid conditions. Temporary construction engineering controls would be implemented to reduce the potential of soil sediments reaching the lake from excavation activities. As noted in Chapter 2, silt barriers would be placed around the excavation work area when activities are conducted “in the wet” within Lake Pleasant, to control temporary turbidity during construction activities.

A U.S. Army Corps of Engineers Clean Water Act section 404 permit would be obtained for the discharge of fill material into the lake. An Arizona Pollutant Discharge Elimination System permit would be obtained for stormwater discharges at the site during construction. In addition, creation of retention ponds to collect stormwater runoff from the paved parking area would comply with city of Peoria requirements. The boat pump-out system would be constructed in accordance with the Clean Vessel Act of 1992, to reduce pollution from vessel sewage discharges.

An SPCC Plan would be prepared and implemented in accordance with the provisions of 40 CFR '112.7 with the express purpose of preventing the release of petroleum products onto or into surrounding soil or surface waters. The proposed aboveground tanks would be placed within a secondary containment area which would contain any spills or leaks and prevent the petroleum products from soaking into the ground. Double-walled product piping would similarly prevent releases from impacting surrounding soils or waterways.

The boat pump-out system to be installed by the concessionaire is considered to be "state-of-the-art," consisting of a vacuum system that removes waste from boats and transports it to the lift station at the boaters' supply store. The system would be constructed in part with grant monies obtained through a Fish and Wildlife Service grant program administered by AGFD pursuant to the Clean Vessel Act of 1992. This Act was passed to help reduce pollution from vessel sewage discharges. The marina operator proposes to work with the State of Arizona to obtain a "Clean Marina" certification for the new marina, if and when Arizona initiates a "Clean Marina" program. This program's primary goal is to promote environmental stewardship by encouraging marinas and boaters to adopt a series of best management practices to keep the waters of the State clean. The proposed program, which would be implemented by AGFD, could become available beginning in July 2007, if funding is made available.

Wastewater would be generated from the restroom/shower facilities, boat pump-out system, laundry facility, and deli/bar within the marina complex. Under Phase I, it is estimated a maximum of approximately 16,000 gpd of wastewater would be generated. Initially, a "vault and haul" wastewater system would be used. This system would be used during the first year of operation, until a permanent on-site wastewater treatment plant is constructed, which is expected to take two years to permit and construct. The permanent treatment plant would utilize "extended aeration" technology, which aerates the wastewater over a long period of time, resulting in little to no sludge that must be hauled away and disposed. The permanent treatment plant would be initially designed to treat 16,000 gpd, with the ability to increase capacity to 34,000 gpd at total build-out. With the permanent system in operation, effluent wastewater would be treated to B+ quality and would be used exclusively to water landscaping at the new marina. Some adjacent areas of undisturbed native vegetation may also be irrigated when supply is available. The plant would include a 10,000-gallon effluent holding tank as a precautionary measure, to store effluent during times when irrigation is not practicable; no treated effluent would be discharged to surrounding surface waters.

As previously stated, potable water for the marina would be provided by MCPRD's existing water supply system, which it operates pursuant to a Certificate of Registration issued by ADEQ. It is anticipated most of the water for the marina would be supplied by the County's Well No. 4, located approximately ½ mile southeast of the site. This well is the primary potable water supply source for the LPRP. Per Mr. Mouw, MCPRD Engineering Manager, there are no permits required or restrictions on the quantity of groundwater that is pumped since LPRP is outside the AMA.

The marina's potable water delivery system would be sized to deliver 40,000 gpd (about 28 gpm), which is the estimated maximum peak demand at total build-out. The water distribution mains that are needed to connect the marina to the existing system would be designed and permitted per Maricopa County Environmental Services Department and State requirements. At total build-out groundwater withdrawals for the marina would be less than 45 acre-feet per year. Currently, about 11 acre-feet per year are pumped from Well #4. An additional 45 acre-feet per year of potable water that could be pumped for use at the marina facilities would not exceed the capacity of Well #4, which can pump about 645 acre-feet per year. Even with an increase in potable water use at LPRP in future

years, the existing water distribution system is anticipated to be able to fully meet these needs. The existing water system was developed for the purpose of serving the marina complex; these additional withdrawals have been anticipated and incorporated into the design of the system. The proposed relatively minor increases in pumping could result in slight increases (tens of milligrams per liter increases, for example) in some of the secondary standard inorganic constituents typically derived from volcanic rock aquifers, some of which were detected in water samples taken during well development. The levels of these constituents were detected at or below the secondary standards, and it is anticipated such slight increases would not substantially degrade the water quality.

The closest developable private land is located approximately one to three miles from LPRP Wells No. 1 and No. 4, and the Overlook Well. It is anticipated there would be no detectable effect on adjacent landowners' wells from the small projected pumping demand of 28 gpm (at build-out) within the LPRP. This includes any wells occurring on private parcels south of Morgan City Wash and west of the LPRP. The Right Abutment Ridge was extensively grouted to reduce seepage losses from the new reservoir pool, and is now considered to be a hydraulic barrier which effectively isolates pumping effects of wells north of that ridge (the MCPRD wells) from private parcel wells south of Morgan City Wash.

Furthermore, the LPRP wells are either completely screened in volcanic bedrock, or mostly within volcanic bedrock. (Well No. 4 may have about half the screened length in conglomerate and half in volcanics, and probably derives most of its transmissivity from the conglomerate). These types of aquifers normally are of relatively low productivity in Arizona, especially when compared to the alluvial aquifers in the central and southern basins of Arizona. The volcanic bedrock at the existing well sites are either underlain or inter-bedded with tuff and/or clayey tuff (Manera 1992). These tuff units act as aquitards (barriers to groundwater flow resulting in poor to non-existent vertical hydraulic connectivity). Also, the great distance of the LPRP wells from other wells such as the Overlook Well (Jeffries 1994) and/or private property wells in the area, and bedrock fracture flow conditions over long distances, further reduces the probability that well interference would occur (interference results in an increase in pumping drawdown to adjacent wells). Finally, the small additional volumes of water being pumped (currently six gpm to about 28 gpm at build-out) would not be detectable in wells several miles away under any time period (Mr. Brad Prudhom, personal communication, July 07, 2006*).*

As there are no known Special Flood Hazard areas in the site vicinity, significant impacts to floodplains are not anticipated from the proposed action.

Construction and operation of the proposed marina would not adversely affect the primary purposes of New Waddell Dam and Lake Pleasant related to the CAP. The rather large fluctuation in reservoir levels resulting from deliveries of CAP water made out of Lake Pleasant, have been taken into account in the design of the proposed marina.

3.2.2.3 Action Alternative A

With this alternative, impacts to ground and surface water quantity and quality would be similar to those resulting from the Proposed Action. There would potentially be slightly less groundwater pumped as a result of reducing the number of wet slips installed at the marina complex; however, this would result in such a small reduction in an already relatively small amount of groundwater withdrawal that there would be no measurable change in the impacts. There also would be a corresponding small reduction in the amount of effluent generated; there could be some slight change in the capacity design of the wastewater treatment plant. There would, perhaps, be somewhat less existing native vegetation that could be irrigated with excess effluent. Construction and operation of this alternative would not adversely affect the primary purposes of New Waddell Dam and Lake Pleasant related to the CAP.

3.2.2.4 Cumulative Impacts

In the long term, increased visitation to LPRP and watercraft use of Lake Pleasant as a result of the proposed project and/or build-out of Pleasant Harbor Marina are not anticipated to adversely affect either the quantity or quality of both the ground and surface water in the general vicinity of the project area.

There have been Lake Pleasant water samples that, although still well below the primary standard MCL[13] for mercury, have exceeded the detection limit on occasion. ADEQ indicated mercury levels in fish tissue is a concern; although there have been no fish advisories with regard to fish caught from Lake Pleasant, it is possible this could happen sometime in the future (Mr. Jason Sutter, personal communication, September 14, 2006). Marina operations and watercraft use do not involve the use of mercury.

3.3 Land Use

3.3.1 Affected Environment

The 23,361 acres of land that make up LPRP were acquired by Reclamation as part of the New Waddell Dam feature of the CAP. CAP-related facilities, such as the dam itself, the spillway, Waddell Canal, the power plant, etc., are operated and maintained by CAWCD. As mentioned in Chapter 1, MWD retains ownership of 225 acres of land at the eastern abutment of New Waddell Dam, along with a permanent easement for access to and from Lake Pleasant and Hank Raymond Lake. MWD operates Camp Dyer Dam, which forms Hank Raymond Lake, and has a maintenance facility within its property.

The lower half of LPRP falls within Maricopa County, while the upper half is located in Yavapai County. The portion of LPRP within Maricopa County is located within the limits

[13] Per Arizona Administrative Code , Title 18, Chapter 4, Appendix A, Part 4, Inorganic Contaminants, the MCL for mercury is 0.002 milligrams per liter (mg/L). The great majority of CAWCD's testing results indicated "none detected" based upon a detection limit of 0.0002 mg/L. Test results from 11/16/05 indicated mercury levels of 0.0029 mg/L; however, resampling on 12/20/05 resulted in mercury levels of 0.000759 mg/L.

of the city of Peoria, Arizona. Pursuant to the 1990 Contract, the County has responsibility for the operation and management of recreational facilities and activities at LPRP, and has law enforcement authority within the Park itself. Specifically, the MCSO provides law enforcement both on land and water within LPRP, which has about 10 officers assigned to Lake Pleasant full time. The County performs recreational land management responsibilities on LPRP lands that are located within Yavapai County through an intergovernmental agreement, for which it makes payment to Yavapai County. The city of Peoria has jurisdiction outside the LPRP boundary within Maricopa County; Yavapai County has jurisdiction outside LPRP within Yavapai County.

For the most part, the Park is surrounded by lands managed by the Bureau of Land Management (BLM), although several parcels of private and State Trust land are also present. There are two parcels of Reclamation land not included in the Park—one small parcel abuts the northeastern boundary of the Park, and one extends south from New Waddell Dam to State Route 74.

The vast majority of the land bordering LPRP consists of vacant desert. In the vicinity of LPRP, BLM manages its lands according to its Phoenix Resource Management Plan. Vehicular travel is limited to existing roads and trails, unless otherwise designated or restricted. A large portion of BLM land surrounding (and including) LPRP is identified as a Burro Herd Management Area, where burros are managed at the minimum level needed to ensure the herd's free-roaming character, health, and self-sustaining ability (BLM 2005). Grazing also currently occurs on BLM lands surrounding LPRP. BLM's Hells Canyon Wilderness Area is located mostly within Yavapai County, just west of the northern portion of LPRP. This 9,900-acre federally designated wilderness area is accessed via the Castle Hot Springs Road turnoff from State Route 74, which also serves as the main access to LPRP. The Hells Canyon Wilderness provides opportunities for hiking, sightseeing, and primitive camping in a wilderness setting that provides a sense of solitude (BLM 2006).

LPRP provides recreational opportunities to the residents of the metropolitan Phoenix area and southern Yavapai County. Land-based recreational activities within LPRP are administered by the MCPRD. Although the AGFD is responsible for administering and providing boating law enforcement statewide, the MCSO Lake Patrol provides the majority of the day-to-day law enforcement on the lake itself (Mr. Kevin Bergersen [AGFD], personal communication, June 16, 2006). Recreation resources are described in more detail in section 3.4.

3.3.2 Environmental Consequences

3.3.2.1 No Action Alternative

In the absence of the proposed project, it is anticipated visitation to LPRP would continue to increase, and the proposed marina complex site would continue to be used for dispersed undeveloped recreation. It is expected private land located south of LPRP, currently zoned by the city of Peoria as a mix of park open space, "planned area development," commercial, and residential, would be developed for residential and/or commercial use (Peoria 2006). Depending upon the rate of growth and demand, State Trust land could also be auctioned off and developed. Use of Federal land managed by BLM is expected to continue as it is currently used; however, it may experience greater visitation as the surrounding desert land becomes developed.

3.3.2.2 Proposed Action

The Proposed Action would result in a change in use within the 164-acre marina site; approximately 71 acres of this area is located above the lake's normal high water level. Use within this area would change from dispersed undeveloped recreation to that associated with a developed marina. Facilities developed on this land would include parking and graveled areas, dry stack storage area, wastewater treatment plant, fuel tank and effluent storage tanks, and other infrastructure related to the marina.

It is anticipated that with the development and operation of the marina, visitation to LPRP would likely increase at a faster rate than under the No Action alternative. The development anticipated to occur on private land adjacent to LPRP under the No Action alternative might also occur at a slightly faster rate with implementation of the proposed project, especially with regard to commercially zoned areas. Similarly, public use of Federal land managed by BLM is also expected to continue to increase as urbanization continues to occur.

3.3.2.3 Action Alternative A

Impacts from this alternative are anticipated to be essentially the same as those described for the Proposed Action. There could be one less module needed for the wastewater treatment plant at full capacity, depending upon actual use during the first year of operation; however this would not result in any meaningful reduction in land disturbance.

3.3.2.4 Cumulative Impacts

With the loss of the Dirty Shirt area for dispersed undeveloped camping and picnicking, MCPRD may consider creating other area(s) for this type of recreational activity, by providing access to the western shoreline elsewhere. This would result in some change in land use at LPRP, but would still be consistent with the overall use of the land for recreation. Should MCPRD decide where such dispersed undeveloped recreational use would be provided, Reclamation would review the proposal to determine what, if any, additional site specific environmental clearances would need to be conducted prior to the

MCPRD implementing land disturbing activities. Should the County pursue incorporation of land into the Park boundaries for development of a convenience store/boat sales facility near the intersection of Lake Pleasant Parkway (87th Avenue) and State Route 74, land ownership and use would change. See discussion in section 3.4.2.4.

3.4 Recreation

3.4.1 Affected Environment

Water-based recreational opportunities are limited in the Phoenix metropolitan area. Within Maricopa County there are four reservoirs besides Lake Pleasant that offer water-oriented recreation with full service marinas. These other reservoirs are all located in the north-eastern corner of Maricopa County on the Tonto National Forest. Bartlett Reservoir is located on the Verde River; Apache, Canyon, and Saguaro reservoirs are located on the Salt River. Lake Pleasant, which represents about 57 percent of the total water surface area of these five reservoirs (when full), experienced the greatest boat use in 2003, comprising about 53 percent of the estimated 2,624,400 hours that boats spent out on the five reservoirs in 2003 (Behavior Research Center 2003). Table 3 provides information about these five reservoirs, including the maximum water surface area of each reservoir, number of miles of shoreline, and approximate number of wet slips and dry storage space at each marina.

Table 3. Major Water-Oriented Recreational Reservoirs with Marinas in Maricopa County, AZ[14]

Reservoir	Water Surface Area When Full (acres)	Shore-line When Full (miles)	TNF Maximum Watercraft Capacity[15]	Public Boat Ramps/ Launch Sites[16]	No. of Marinas	Total Wet Slips	Total Dry Storage Capacity
Lake Pleasant	9,970	125	N/A	4 (22)	1	680	750
Bartlett	2,830	33	769	3	1	200	130
Apache	2,660	41	257	1	1	170	450
Canyon	950	28	320	2 (8)	1	395	97
Saguaro	1,100	22	277	2 (4)	1	~400+	60

LPRP is the only water-oriented park in the County park system. Currently at LPRP, there are two public boat ramps. The four-lane Castle Creek boat ramp is located on the north-western shore just east of the North Park Entrance Station. A 10-lane boat ramp is located

[14] Source of information: Forest Service 1988, 2006; personal communications with Mr. Eric Church, Bartlett Lake Marina; Ms. Barb Recker, Saguaro Lake Marina; and Mr. David Schuster, Apache Lake Marina and Resort; on June 15, 2006, and personal communication with Ms. Cindy Tieman, Canyon Lake Marina, on June 16, 2006.
[15] Tonto National Forest maximum # of boats allowed on lake surface at one time (when full) (Forest Service 1988)
[16] Does not include marina-operated ramps; (#) indicates total number of lanes if known

on the southwestern shore, about a mile north of New Waddell Dam. A personal watercraft (jet ski) rental concession is located in the vicinity of this boat ramp, which operates seasonally (April through October) on a yearly agreement basis with MCPRD.

There are also two four-lane public boat ramps located on the southeast shore of Lake Pleasant. These public boat ramps are maintained by MWD and/or Pleasant Harbor Marina, which is a privately owned and operated marina on MWD property pursuant to a contract with MWD. Pleasant Harbor Marina includes 680 covered and uncovered wet slips, dry storage for 750 boats, a ship store and deli, watercraft rentals, executive and repair services, a houseboat center, paddle wheel cruisers, a fuel dock, and a dockside bar and restaurant. There is an RV resort on the MWD property that includes 290 hook-up sites, a clubhouse, swimming pool, spa, and other convenience and recreational amenities.

The project area encompasses Scorpion Bay and what is referred to as the "Dirty Shirt" area. Within the proposed marina complex site itself, existing amenities are limited to a single primitive stand-alone "Port-O-John" type toilet and a trash dumpster. The project area is generally surrounded by vacant desert land. This is a popular area that is used for dispersed shoreline camping and picnicking. Depending upon the water elevation, access from the shoreline is excellent for jet ski and small watercraft launching. Noise is currently generated from vehicles driving on existing roads, watercraft operating on the water, County park and road construction and maintenance operations, and recreational use by humans (stereos, children playing, etc.).

As described in section 3.2.1.2, the water elevation of Lake Pleasant fluctuates about 40 to 60 feet annually. This corresponds to an estimated total water surface area of between 6,477 and 9,970 surface acres during typical annual operations (at water elevations 1648 feet and 1,702 feet, respectively). The area open to watercraft use is somewhat less, adjusting for unusable boating areas (e.g., shallow areas, small coves, etc.). According to CAWCD, the average water elevation for the period from April through October is about 1,665 feet, which corresponds to a water surface area of about 7,423 acres (Mr. Brian Henning, personal communication, September 12, 2006). Typically, the lowest water levels occur during the months of August and September (CAP 2005).

LPRP offers various forms of public recreation including, but not limited to, boating and operation of personal watercraft, swimming, fishing, hiking, picnicking, sunbathing, camping, and wildlife viewing. Visitation during 2003, 2004, 2005, and 2006, both in terms of vehicles and number of visitors are provided in Table 4. Overall visitation has increased an average of 5 percent annually over the last 3 years. According to the MCSO, it has closed entry to LPRP once, during the 2005 Memorial Day holiday weekend; this was due to the lack of parking (Sgt. Wayne Lupinski, personal communication, June 19, 2006).

Table 4. Lake Pleasant Regional Park Visitation for 2003, 2004, 2005, and 2006*

Year	Vehicles	People	% Change in visitation over previous year
July 2002-June 2003	170,099	549,082	n/a
July 2003-June 2004	171,437	567,246	3
July 2004-June 2005	180,255	586,235	3
July 2005-June 2006	196,190	646,598	10

* Source of Information: MCPRD

For purposes of this evaluation, current boat and jet ski (watercraft) use of Lake Pleasant was estimated for two different points in time:

a. Annual Average[17] Daily Number of Watercraft. This number represents the average number of watercraft entering Lake Pleasant each day from July 2005 through June 2006 (Fiscal Year [FY] 2006). It was calculated by taking the total number of boats actually counted or estimated to have entered Lake Pleasant over the course of that year, and then dividing that total by 365 days.

b. Number of Watercraft on a Peak Season Weekend Day. This number represents the average number of watercraft that might typically use Lake Pleasant on a Saturday or Sunday during peak season (May through July).

These estimates were developed using the actual number of watercraft entering Lake Pleasant from LPRP on a daily basis, the actual number of watercraft entering Lake Pleasant from Pleasant Harbor Marina, which is reported monthly to MCPRD, and an estimate of the percent of total watercraft stored at Pleasant Harbor Marina that might launch on any given day. It should be stressed these are estimates that have been developed for comparison purposes only, to provide a means for comparing the relative impacts of each alternative. The data that were used, rationale for the assumptions and estimates included, and the process by which these estimates were calculated are described in detail in Appendix D to this EA.

The estimate of watercraft currently using Lake Pleasant on an annual average daily basis is 645 watercraft. The estimate of watercraft currently using Lake Pleasant on a Saturday or Sunday during peak season is 1,660 watercraft. It should be noted these numbers represent an estimate of the total number of watercraft that enter Lake Pleasant during the course of one day; the number of boats that are on the water at any given time is expected to be less, as explained below.

[17] As used in the EA, the term “average” refers to the arithmetic mean, which is calculated by adding together a set of variables (e.g., number of watercraft visiting in a year), then dividing by the number of variables in that set (e.g., 365 days in a year).

While visitation has increased each year over the past 3 years, there does not appear to be a direct correlation between these visitation numbers and the watercraft counts for these years (see Table 5).

Reclamation's 2004 Water Recreation Opportunity Spectrum (WROS) Guidebook establishes ranges of the number of water surface acres per boat that represent various types of boating experiences (referred to as "classes" [18]). These ranges are based upon the number of boats on the water at one time (BAOT). BAOT does not account for boats that anchor along the shoreline or are moored at a dock or marina, nor does it include watercraft associated with non-recreational boating (Haas et al. 2004). These ranges, shown in Table 6, are used in the WROS process to classify the type of recreational experience on a given water body.

Table 5. Lake Pleasant Watercraft Counts for Fiscal Years 2003, 2004, 2005, and 2006, Maricopa County, Arizona*

Fiscal Year	LPRP	% change		Pleasant Harbor Marina	% change		Total	% change
July 2002-June 2003	72,670	--		35,268	--		107,938	--
July 2003-June 2004	66,390	< 9>		34,615	< 2>		101,005	< 6>
July 2004-June 2005	65,482	< 1>		33,947	< 2>		99,429	< 2>
July 2005-June 2006	73,925	13		36,808	8		110,733	11
% Annual Average Change FY 2003-FY 2006		0.6%			1.5%			0.8%

* Source of Information: MCPRD

Reclamation did not conduct a study to determine the current Lake Pleasant BAOT for the purposes of this EA. The watercraft counts used in this EA represent the total number of boats estimated to enter the lake on a given day; the BAOT would be less than the total number of boats entering the lake on any given day. This is because many if not most watercraft do not spend the entire day traveling around the lake. Fishing boats may go out

[18] Each WROS class is identified by a particular set of activities, setting attributes, experiences, and benefits, ranging from an environment that has been untouched by human activity, to an environment located adjacent to or in the middle of a city. See the end of Appendix C for a brief description of each of the major WROS classes.

Table 6. Water Recreation Opportunity Spectrum Range of Reasonable Boating Capacity Coefficients[19] (Haas 2004)

WROS CLASS	RANGE OF BOATING COEFFICIENTS
Urban	1 acre to 10 acres per boat
Suburban	10 acres to 20 acres per boat
Rural developed	20 acres to 50 acres per boat
Rural natural	50 acres to 110 acres per boat
Semi-primitive	110 acres to 480 acres per boat

early in the morning and/or towards sunset, returning to shore during midday. Many boaters at Lake Pleasant like to anchor in a certain place off the main body of the lake for extended periods of time. Also, many watercraft docked at the marina might not even leave their slips, or do not go out on the lake proper for the entire day. Nevertheless, by using estimates that represent the annual average daily watercraft count and peak season weekend day watercraft count at Lake Pleasant, some sense of the recreational experiences on Lake Pleasant can be inferred. Given the size of Lake Pleasant and its physical characteristics, it is likely several WROS classes can be found at different locations around Lake Pleasant, and the class of use changes from season to season and between weekday and weekend use, due to the varying amounts of watercraft present in any given location at any given time. For example, based upon the daily LPRP watercraft counts and Pleasant Harbor Marina monthly counts for FY 2006, it is likely a boater would have a rural natural or rural developed experience out on the lake during December or January, depending upon the location and time of day. In contrast, it is likely a boater would have a suburban or urban experience on a Saturday or Sunday during the peak season, depending upon the location of the boat at Lake Pleasant and the time of day.

3.4.2 Environmental Consequences

3.4.2.1 No Action Alternative

In the absence of Reclamation approving the proposed project, it is assumed MCPRD would continue to seek other proposals from potential concessionaires to construct and operate a marina within LPRP; however, in the foreseeable future, no marina facilities would be developed along the western shore of Lake Pleasant. As visitation increases for all recreation activities, and existing facilities reach their capacity limits, available recreation sites and facilities would likely deteriorate over time from overuse and the quality of the recreation experience for most users would decline.

[19] The following terms are defined as follows in the WROS Users' Guidebook: Boating capacity coefficient is the number of water surface acres considered to be adequate for each recreational boat in a particular WROS class. A boating capacity is the number of BAOT that can be accommodated in an area. The coefficient is multiplied by the suitable or available water surface acres for each WROS class to assist in determining boating capacity decisions.

Watercraft use has not increased at the same rate as the overall LPRP visitation over the last several years. Still, given the rapid pace of development in the extreme northern portion of Maricopa County just south and east of LPRP, and in western Maricopa County, both LPRP visitation and watercraft use at Lake Pleasant are expected to increase. Quantifying the increase in the number of watercraft into the future, however, is difficult since there has been no consistent trend based upon data from the past several years. As stated above, LPRP has been closed once in 2005, during Memorial Day weekend, due to the lack of parking. As visitation increases, it is expected closure of LPRP due to parking limitations would become more frequent, especially on holiday and peak season weekends. The number of watercraft on the lake at any given time would continue to be dictated by the amount of trailer parking available at the boat ramps and along or near the shore for visitors hauling watercraft. In addition, pursuant to an existing agreement with the MCSO, the MCSO has the authority to close down access to the public boat ramps in the event it believes the quantity of watercraft on the water creates a safety hazard.

The experience on the lake during peak season is expected to remain suburban or urban in the near term, but would eventually become mostly urban as the surrounding area becomes fully developed and watercraft use at Lake Pleasant increases. Use of the lake during off season and weekdays is also expected to increase over the long term, with the attendant change to more of a rural developed or suburban experience. It is anticipated conflicts among the different types of boaters (i.e., fishing enthusiasts, water skiers, sailors, and speed boaters would continue at the same level as today in the near term, and would increase into the future. Increased law enforcement and management presence would be required. MCPRD would be responsible for determining what management actions should be taken and when they should be implemented. All watercraft on the lake proper would be subject to these management actions.

3.4.2.2 Proposed Action

Short term impacts would occur as a result of construction activities. All excavation and grading needed to complete all four phases would be undertaken under Phase I. Upon completion of all four phases, the marina's major components would consist of 800 wet slips; a paved public boat ramp with at least one and possibly two additional lanes; graded public parking for about 500 vehicles and 24 watercraft trailers above elevation 1,702 feet; an ADA accessible tram from the parking area to the marina; a fenced and lighted 5-acre area that would be available for vehicular and boat trailer parking, storage, and repair and service of watercraft and, depending upon the water elevation at commencement of Phase I, additional public parking for up to 220 vehicles and 12 public watercraft trailers below elevation 1,702 feet, for use when lake levels are low. The main entrance and ADA parking would be paved; the remaining parking areas would be graveled. There also would be a watercraft supply and boat rental store, restroom facilities, and other necessary infrastructure.

Due to safety concerns, the 164-acre marina complex site would be unavailable to recreation users during construction. Phase I is estimated to require 6 months to complete. It is estimated subsequent Phases II, III and IV would be completed within 2, 4, and 4 months of their initiation, respectively. It is anticipated construction of Phases II, III,

and IV would result in less disruption to recreational users than the initial Phase, since all of the excavation and grading would be completed during Phase I. There currently are no improvements at this site, and there are alternative locations for dispersed undeveloped recreation along the western shoreline. MCPRD is considering other suitable areas that, with the provision of access, could be used for similar dispersed recreational activities.

Temporary impacts to watercraft using the lake are expected to be minimal, because much of the area comprising the proposed marina is already buoyed off due to shallow water and hazards in the area at lower water elevations. There would be temporary noise impacts from construction vehicles, equipment, and earthwork (excavation and blasting) during construction activities. Campers within the vicinity of the project area could consider this a nuisance; however, construction would be limited to daylight hours. Delivery of marina-related equipment would result in traffic congestion and potential minor delays in the vicinity of the marina; however; no road closures are anticipated to be required.

As with the No Action alternative, the visitation to the Park is expected to continue to increase and to the degree the existing facilities reach their capacity limits, conditions may deteriorate over time from overuse. The additional parking to be provided at the marina would be available to the non-boating public, which could result in greater numbers of people entering the Park. On peak season holiday weekends, this could result in higher density crowds, which could require additional management. Over time there would be an increase in noise levels resulting from the additional visitors to the marina and watercraft using the lake. This increase could occur more rapidly than under the No Action alternative; however, increased recreational use and activities (which would result in higher noise levels) were an anticipated outcome of implementing the conceptual recreation plan envisioned in Plan 6.

Concession payments to MCPRD would provide an additional revenue stream for use in the operation and maintenance of LPRP. This would assist MCPRD in better maintaining existing facilities and replacing or increasing them as needed. It is anticipated the quality of the recreation experience for most users of Park facilities would be maintained or enhanced.

It is anticipated that construction and operation of the proposed marina could ultimately result in an increase of up to 200 watercraft, if all four phases are constructed. This is based upon the assumption that all 800 wet slips and 200 dry stack storage spaces are rented out, and 20 percent of the total stored watercraft would launch from the new marina every day. There could be an additional 36 watercraft out on the lake as a result of the 36 parking spaces created at the new public boat ramp. A total increase of up to 37 percent over the current annual average daily watercraft count, and a total increase of up to 14 percent over the current peak season weekend day watercraft count could result from this alternative.

As noted above, quantifying the increase in the number of watercraft that would use the lake on a given day under the No Action alternative is difficult, since there has been no consistent trend based upon data from the past several years. Therefore, for purposes of this analysis, projected increases in the number of watercraft that would use the lake under

either of the action alternatives are compared to the existing baseline numbers, to show the relative difference among the alternatives. Because the proposed project would not be constructed all at once, the actual increase in the number of watercraft on the lake would be spread out over a number of years. For example, after construction of Phase I, the potential increase in the number of watercraft would be about the same as the increase that occurred between FY 2005 and FY 2006, using all the same assumptions described above. These assumptions do not account for boaters that currently haul their boats back and forth who might choose to store their boats at the new marina, or boaters that might move from Pleasant Harbor Marina to the new marina; therefore, the actual increase with the Proposed Action could be less.

In the long term, it is expected use of the lake would increase more rapidly with implementation of the proposed project than under the No Action alternative. As watercraft use increases, the number of visitors, both on and off the Lake, experiencing a feeling of overcrowding may increase, especially among historic users of the Lake and Park. Use of the lake during off-season and week-days would change from a rural developed to that of a suburban experience sooner than under the No Action alternative. Visitors desiring an experience of solitude and quiet out on a lake would be adversely impacted as visitation increases on weekdays during the off-season. These users may eventually seek other reservoirs located further away that offer a more rural undeveloped or semi-primitive experience.

It is anticipated the experience on the lake would move more rapidly from a suburban to an urban water body over more weekends, mostly in the months just before and after the peak season (May through July). Providing additional facilities and opportunities could help alleviate the feeling of overcrowding that may occur in the future as the social, physical, environmental, and existing facility capacity levels are reached or exceeded at LPRP. Development of the marina would provide additional boating and parking areas. There could be shorter waiting times at the LPRP entry station if marina clients are provided with passes. There could also be less congestion at the LPRP boating ramps and decreased waiting times to enter the lake. The marina would also provide convenience items, food service, and restroom facilities to the public. Providing new facilities and opportunities would have a beneficial effect on the quality of the visitor experience for those users seeking a suburban or urban type of recreational experience.

It is anticipated conflicts among the different types of boaters (i.e., fishing enthusiasts, water skiers, sailors, and speed boaters would increase. Increased law enforcement and management presence would likely be required. As noted above, the MCSO has the authority to close down access to the public boat ramps in the event it believes the quantity of watercraft on the water creates a safety hazard. This would not change under the proposed action. MCSO has indicated if more boats are on the water, there is the chance more incidents would occur. MCSO is prepared to respond accordingly, and would add additional manpower on a daily basis if required (Lopez 2006). The marina concession would have security staff for the facility 24 hours a day, seven days a week. Additional security staff would be hired for holiday weekends and special events, to handle parking and crowd control issues related to the marina complex. The marina security staff would coordinate with the existing law enforcement agencies that currently work within LPRP.

To address management of activities on the lake into the future and associated public safety concerns, MCPRD has agreed to initiate, within one year of commencement of the marina's operation, a WROS study (Haas 2004). The study would identify the inventory of existing resources and conflicts that exist among the physical aspects, social use, and management practices of the water recreational opportunities at Lake Pleasant. Reclamation would provide recreational staff expertise to assist MCPRD in carrying out this effort. The study would be used to develop management strategies that would then be implemented by MCPRD to enhance the recreation experiences without negatively affecting the natural resources or degrading the recreational experiences at Lake Pleasant. There would be a public education and outreach component to this effort dealing with potential safety and conflict issues and management strategies. It is anticipated all stakeholders would be invited to participate in this effort. All watercraft on the lake proper would be subject to these management strategies. A letter agreement between the County and Reclamation would be executed to ensure this study and subsequent management strategies are developed and implemented in a timely manner, as appropriate.

3.4.2.3 Action Alternative A

Short term Impacts resulting from construction of Alternative A would be identical to those of the Proposed Action, except that Phase IV would not be implemented; therefore, there would not be a four-month period of construction that would temporarily impact activities at and near the marina. There would also not be a temporary disruption to traffic resulting from the delivery of wet slip equipment associated with Phase IV.

With this alternative, the total anticipated increase in watercraft on the lake would be 197. This is based upon the assumption that all 604 wet slips and 200 dry stack storage spaces are rented out, and 20 percent of the total stored watercraft would launch from the new marina every day. There could be an additional 36 watercraft out on the lake as a result of the 36 parking spaces created at the new public boat ramp. A total increase of up to 31 percent over the current annual average daily watercraft count, and a total increase of up to 12 percent over the current peak season weekend day watercraft count could result from this alternative. As noted above, the MCSO has the authority to close down access to the public boat ramps in the event it believes the quantity of watercraft on the water creates a safety hazard. This would not change under this alternative.

The effect on watercraft users would be similar to that resulting from the Proposed Action, except the suburban experience would be maintained over more weekdays and weekends during the off season.

MCPRD would initiate, within one year of commencement of the marina's operation, a WROS study for LPRP, as described above under the Proposed Action, and Reclamation would provide recreational staff expertise to assist MCPRD in carrying out this study. As with the Proposed Action, management strategies that are development through this effort would then be implemented to enhance the recreation experiences without negatively affecting the natural resources or degrading the recreational experiences at Lake Pleasant. All watercraft on the lake proper would be subject to these management strategies.

3.4.2.4 Cumulative Impacts

As stated in the No Action alternative, Pleasant Harbor Marina has indicated it has the ability to add 160 wet slips and 400 dry storage spaces to its facilities. Assuming these spaces are created subsequent to completion of the proposed project, the cumulative impacts of an additional storage capacity of 560 boats at Pleasant Harbor Marina could result in up to 112 watercraft on the lake on a given day, assuming 20 percent of the 560 boats launch from Pleasant Harbor Marina. Under the Proposed Action this would result in a cumulative increase of 54 percent over the current annual average daily watercraft count, and a 21 percent increase over the current peak season weekend day watercraft count. For action Alternative A, the cumulative increase would be 48 percent over the current annual average daily watercraft count, and 18 percent over the current peak season weekend day watercraft count. Table 7 presents the annual average daily and peak season weekend day watercraft counts for the No Action, Proposed Action, Action Alternative A, and cumulative scenarios. These are estimates that have been developed for comparison purposes only. As noted, these numbers do not reflect the BAOT, which would be less for the reasons stated above.

At some point in the future management strategies will need to be implemented to address the increasing number of watercraft using Lake Pleasant. While this may occur somewhat earlier under either of the action alternatives, there would be more resources with which to develop and implement these strategies with the presence of the new marina.

No other recreational developments are being considered in the immediate future. The MRP included two additional concession facilities—a convenience center and lodging facilities. In the MRP these were located in Area 2, which is just south of Area 3 within which the marina complex is located (Figure 4). MCPRD has indicated there are no current plans regarding the lodging facilities. MCPRD has proposed that the convenience center be moved to the intersection of 87th Avenue and State Route 74, approximately 1 mile south of the lake (Mr. Tom Timmons [MCPRD], personal communication, April 27, 2006). A boat sales facility is also being considered to be located with the convenience center. As part of its UMA, the County has given Lake Pleasant Marina Partners, LLC, first right of refusal to bid on the convenience center/boat sales facility, if it is pursued; however, Reclamation is not a signatory to the UMA and is not bound or restricted by it in any way. The property is owned by Reclamation and currently not part of the LPRP. Reclamation would need to agree to this parcel becoming part of LPRP; other options also are available to Reclamation regarding use or disposal of this property. Should Reclamation agree to make this parcel part of LPRP, and specific plans for its use are proposed by MCPRD, additional Federal actions and approvals would be needed, including but not limited to Reclamation's approval of an amendment to the existing 1990 Contract to modify the existing Park boundaries and provide for a long term revenue sharing agreement. Reclamation would also need to approve any uses of Concessionaire Occupancy within LPRP (including but not limited to plan reviews, construction approvals, land use change approvals, and reviews to ensure dam operation and maintenance would

Table 7. Estimated Annual Average Daily and Peak Season Weekend Day Watercraft Counts with the Proposed Project at Lake Pleasant, Maricopa County, AZ

	No Action		Proposed Action (1000-space Marina)		Alternative A (804-space Marina)	
	Annual Average Daily	**Peak Season Weekend Day**	**Annual Average Daily**	**Peak Season Weekend Day**	**Annual Average Daily**	**Peak Season Weekend Day**
Current Watercraft #s	645	1,660	645	1,660	645	1,660
+ 20% New Marina capacity **+ 36 new boat ramp spaces**	0	0	200 36	200 36	161 36	161 36
Total w/ Project	645	1,660	881	1,896	842	1,857
% increase over current	*0*	*0*	*37*	*14*	*31*	*12*
Cumulative						
Pleasant Harbor Marina build-out (160 wet slips & 400 dry)	112	112	112	112	112	112
Cumulative Total	757	1,772	993	2,008	954	1,969
% increase over current	*17*	*7*	*54*	*21*	*48*	*19*

not be impacted). Associated with these Federal actions/approvals is the requirement to comply with NEPA. Site specific environmental analysis would need to be performed after a specific use is proposed and detailed plans are provided.

Increased visitation to LPRP and urbanization of the park and lake experience, as well as the regional trend toward urbanization, could result in an increase in visitation to the nearby Hells Canyon Wilderness, for those seeking a more primitive recreational experience. BLM's Draft Environmental Impact Statement for the Agua Fria National Monument and Bradshaw-Harquahala Draft Resource Management Plan (BLM 2005) indicates that under its preferred alternative, the wilderness characteristics of an additional 6,550 acres would be maintained or enhanced within the Castle Hot Springs Management Unit, within which Lake Pleasant is located. The natural landscape would be retained between the Hells Canyon Wilderness and LPRP. BLM proposes to manage areas beyond ½ mile from a designated route for a semi-primitive non-motorized setting. It also proposes to develop hiking trails that would ultimately link to the Maricopa County Trail System. The route of this County trail system through LPRP is also being planned. These

actions by BLM would assist in maintaining the semi-primitive wilderness experience into the future, even if visitation increases.

3.5 Socioeconomic Resources

3.5.1 Affected Environment

The County collects revenues generated from vehicle and watercraft entry fees, boat launch fees, sales (mostly for firewood) and concessionaire payments. These revenues are used by MCPRD to fund operations and maintenance activities at LPRP. The total numbers of visitors and associated revenues for FY 2003, FY 2004, and FY 2005 is shown in Table 8.

Table 8. Visitation and Entrance Fee Revenue at Lake Pleasant Regional Park, July 2002-June 2005*

Time Period	Visitors	Revenue
July 02-June 03	549,082	$1,257,768
July 03-June 04	567,246	$1,262,855
July 04-June 05	586,235	$1,365,320
* Source of information: LPRP Operations Center		

MWD pays a portion of the entry fees it collects to MCPRD, pursuant to a tri-party agreement among Reclamation, MCPRD and MWD. These funds are used to support MCPRD's operation and management of Lake Pleasant.

Although AGFD is the lead watercraft agency for all of Arizona, the primary law enforcement authority at Lake Pleasant is the MCSO. Law enforcement both on land and water within LPRP is provided by the MCSO, which has about 10 officers assigned to Lake Pleasant full time. During holiday weekends, the Coast Guard also may be present, providing boater safety instruction, but it does not have law enforcement authority (Sgt. Wayne Lupinski [MCSO], personal communication, June 19, 2006). AGFD also assigns about 10 percent of two staff persons' time to Lake Patrol at Lake Pleasant annually (Mr. Kevin Bergersen [AGFD], personal communication, June 16, 2006). Law enforcement outside the boundaries of LPRP is provided by the city of Peoria within Maricopa County, and the Yavapai County Sheriff's Department within Yavapai County. Bureau of Land Management

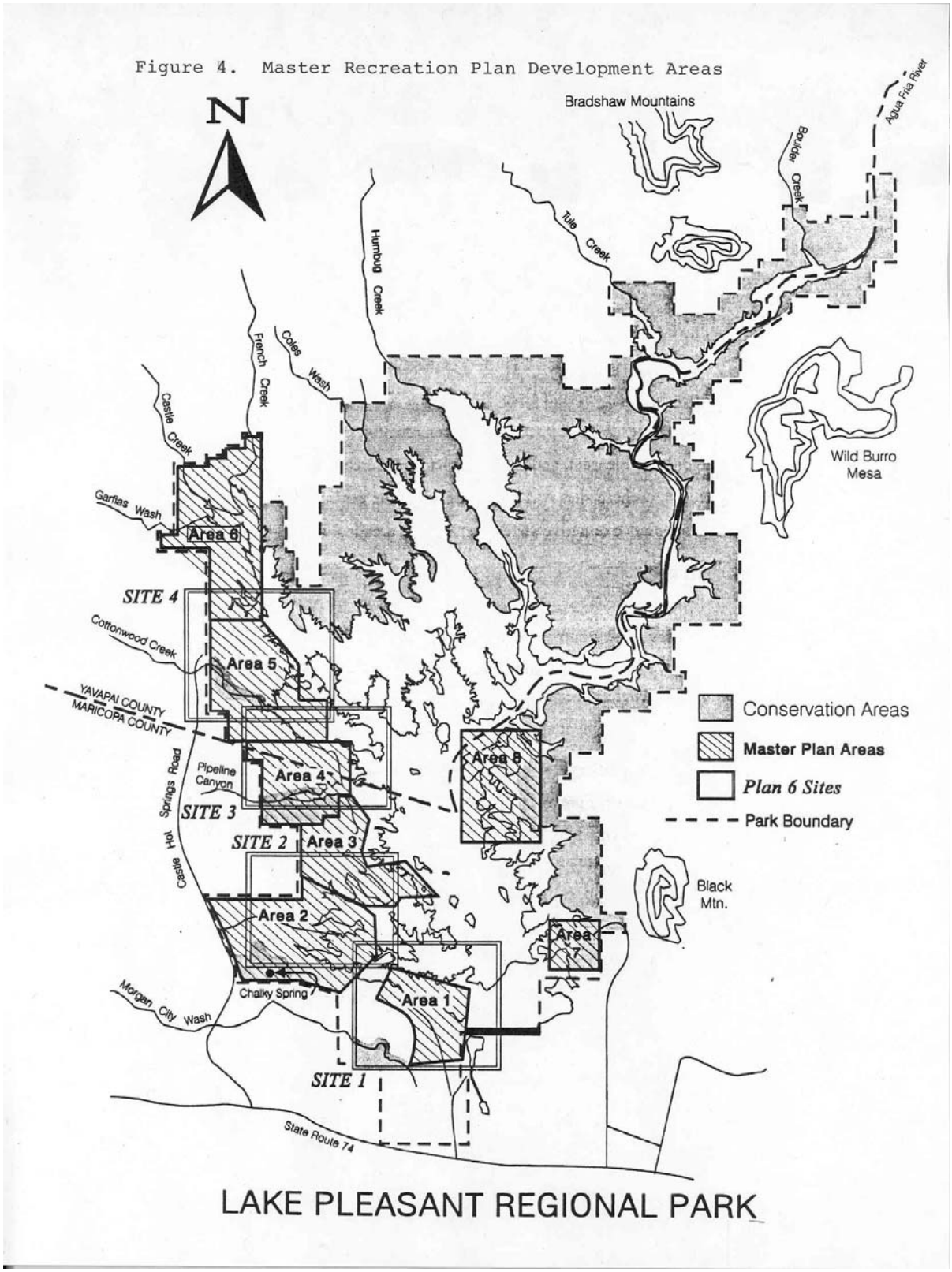
Figure 4. Master Recreation Plan Development Areas
N
Bradshaw Mountains
Agua Fria River
Boulder Creek
Tule Creek
Humbug Creek
French Creek
Coles Wash
Castle Creek
Garfias Wash
Wild Burro Mesa
Area 6
SITE 4
Cottonwood Creek
Area 5
YAVAPAI COUNTY
MARICOPA COUNTY
Pipeline Canyon
Area 4
SITE 3
SITE 2
Area 3
Area 8
Castle Hot Springs Road
Area 2
Black Mtn.
Area 7
Chalky Spring
Morgan City Wash
Area 1
SITE 1
State Route 74
Conservation Areas
Master Plan Areas
Plan 6 Sites
Park Boundary
LAKE PLEASANT REGIONAL PARK

has jurisdiction over its lands adjacent to LPRP. A city of Peoria fire station is located at the Pleasant Harbor Marina. It has a brush truck and fire boat, and provides fire protection to the LPRP. Emergency medical service is provided by the city of Peoria with an estimated response time of 20 minutes. Water rescue operations are the responsibility of MCSO's Lake Patrol.

AGFD is responsible for preparing annual Arizona boating safety reports. Table 9 provides information from these reports regarding the number of accidents, injuries and fatalities that have occurred on the five major lakes with marinas located within Maricopa County, for 2003, 2004, and 2005.

During special events, such as the July 4th fireworks display, traffic control outside LPRP is provided by the city of Peoria, while MCSO is responsible for traffic control inside LPRP.

Table 9. Accidents Occurring in 2003, 2004, and 2005 on Five Reservoirs in Maricopa County, AZ (AGFD 2003, 2004, 2005)

Accidents	Lake Pleasant	Bartlett	Apache	Canyon	Saguaro
2003	32	9	9	12	9
2004	19	8	3	23	14
2005	30	9	6	16	14
Injuries					
2003	21	7	8	8	6
2004	7	5	2	19	11
2005	13	9	6	16	14
Fatalities					
2003	1	0	0	0	0
2004	0	2	0	1	0
2005	0	0	0	0	0

3.5.2 Environmental Consequences

3.5.2.1 No Action Alternative

It is anticipated that visitation to LPRP would continue to increase, and watercraft use would increase as well, given the amount of development occurring in northern and western Maricopa County. Revenues generated from visitation would increase accordingly; however, it is anticipated services at LPRP would remain at about their current levels. It is anticipated available recreation sites and facilities would likely deteriorate over time from overuse and the quality of the recreation experience for most users would decline. Increased law enforcement and management presence would be required. MCSO would continue to be responsible for monitoring all aspects of public safety within LPRP, and protecting the health, safety, and welfare of the public (Lopez 2006).

3.5.2.2 Proposed Action

Construction-related traffic associated with delivery of dockage and anchorage equipment would cause temporary increases of truck traffic along State Route 74 and Castle Hot Springs Road. These trucks would carry legal haul loads and would not require any special shoring up of roads, nor would road closures be required; however, there could be minor delays entering LPRP or along North Park Road and Peninsula Boulevard within LPRP.

It is anticipated construction and operation of the marina would result in an increase in visitors and a proportional increase in entrance fees paid to the County. In accordance with the provisions of the UMA between the County and concessionaire, a fee schedule has also been established for concession payments to the County. These concession funds to be paid to the County, in addition to the County's entrance fees, would be used to support the operations and maintenance activities at LPRP. It is anticipated services at LPRP would increase as a result.

Under the proposed project the existing jet ski rental concession, which operates under a year-to-year agreement with the County, would not be affected, since the proposed marina concession would rent only boats. The existing Pleasant Harbor Marina would no longer be the sole provider of marina services at Lake Pleasant. It is anticipated that having a second marina at Lake Pleasant would benefit the boating public by providing a choice of marina services; however, some boat owners that currently rent space at Pleasant Harbor Marina could switch to the new marina, which would result in a short term loss of revenue to Pleasant Harbor Marina until those customers are replaced.

As indicated in section 3.4.2.2, the marina concessionaire would have security staff for the facility 24 hours a day, seven days a week. Additional security staff would be hired for holiday weekends and special events, to handle parking and crowd control issues related to the marina complex. The marina security staff would coordinate with the existing law enforcement agencies that currently work within LPRP. This would provide additional support to the MCSO, especially in handling peak season and holiday crowds. The marina operator has offered space to the MCSO for its boat and facilities. The marina's location next to the MCPRD's Operations Center, which includes a designated heliport landing area, would improve response time for emergencies requiring helicopter evacuation.

The marina concessionaire intends to work closely with the Peoria Fire Department. On-site training of marina staff would be conducted by an engineering firm internationally recognized in the field of marine fire prevention; this training would also be made available to the Peoria Fire Department staff. The marina would maintain fire-fighting equipment that is specially designed for use in marina fire situations.

No land purchases or encroachments are required by the marina development.

3.5.2.3 Action Alternative A

Impacts from this alternative would be similar to those from the Proposed Action. A reduction of 196 wet slips from the Proposed Action is not expected to substantially change the level of management required, or the level of services provided, although the concession fees to MCPRD would be proportionately less than those of the Proposed Action. The anticipated increase in watercraft counts would be slightly less, as described in section 3.4. Safety and fire protection measures would be implemented as described for the Proposed Action.

3.5.2.4 Cumulative Impacts

It is anticipated the new marina would provide additional resources that would add to the management presence at the lake to help handle the inevitable increase in watercraft use. These resources include added security staff, on-site marina fire protection equipment and trained staff, and availability of information on boating safety and clean boating practices.

The addition of 160 wet slips and 400 dry stack storage spaces at Pleasant Harbor Marina would be expected to contribute a minor amount of watercraft, and it is anticipated the management measures undertaken with either of the action alternatives would adequately address these increases.

Over time, there will be more traffic along State Route 74, Lake Pleasant Road, Castle Hot Springs Road, and New River Road. In the near term, commencement of the city of Phoenix' Lake Pleasant water treatment plant, located just north of State Route 74 on New River Road, will add to local traffic. It is anticipated traffic would increase at a more rapid rate with implementation of either the Proposed Action or Alternative A. Other major contributors to increased traffic would be the regional urbanization trend, improvements being made to roadways (e.g., Lake Pleasant and Happy Valley Parkways) as part of that urbanization, and by-pass traffic from Anthem on New River Road.

Commercial and/or retail development also is likely to occur at a fairly rapid rate, which would add traffic. Should plans for a convenience center/boat sales facility be pursued by MCPRD, this would also add to the traffic congestion at the intersection of Lake Pleasant Parkway and State Route 74. It is expected that any proposed developments would obtain the appropriate approvals from either the Arizona Department of Transportation or city of Peoria regarding safe ingress and egress.

3.6 Air Quality

3.6.1 Affected Environment

Air quality is determined by ambient concentrations of pollutants that are known to have detrimental effects on human health and the environment. The EPA has developed National Ambient Air Quality Standards for six common criteria pollutants: carbon monoxide (CO), nitrogen dioxide (NO_2), particulate matter (PM_{10} and $PM_{2.5}$), ozone, sulfur dioxide, and lead. The Phoenix metropolitan area was re-designated as an attainment

(maintenance) area for CO in January 2005. Currently, portions of Maricopa County are in nonattainment status for ozone (8-hour standard). The portion of LPRP (including Lake Pleasant) south of the northern boundary of Township 6 North falls within the nonattainment area for ozone (8-hour standard). Ozone is created through a photochemical reaction involving NO_2 and volatile organic compounds (VOCs). Portions of Maricopa County are also in nonattainment status for $PM_{10.}$ The entire portion of LPRP (including Lake Pleasant) located within Maricopa County is located within the nonattainment area for $PM_{10.}$ The portion of LPRP (including Lake Pleasant) that falls within the CO maintenance area roughly corresponds to the area east of the middle of Lake Pleasant and south of the northern boundary of Township 6 North (Maricopa County 2006b; Ms. Jo Crumbaker [Maricopa County Air Quality Dept.], personal communication, June 14, 2006).

Under the U.S. Environmental Protection Agency (EPA) General Conformity Rule, established under the Clean Air Act (section 176(c)(4)), Federal actions must conform to the initiatives established in the applicable State Implementation Plan. The General Conformity Rule ensures that the actions taken by Federal agencies in nonattainment and maintenance areas meet national standards for air quality. The General Conformity Rule includes *de minimis* levels that establish a threshold level for each criteria pollutant. If these threshold levels are expected to be exceeded for a targeted pollutant, a conformity determination must be performed to determine whether or not the State Implementation Plan for that particular pollutant will be violated (EPA 2006).

In addition to complying with the General Conformity Rule regarding CO maintenance, another concern regarding CO emissions is the potential for CO poisoning attributed to activities occurring on or in the water near the rear of the boat where the motor is located, in areas where idling boats congregate in large numbers, or during activities such as “teak” surfing (body surfing by hanging onto the ski step on the back of a motorized boat) or dragging behind a slow moving boat. It can also occur in older boats within the cabin or other enclosed areas.

Arizona Department of Health Services conducted a CO exposure survey at LPRP over the 2003 Labor Day weekend. The study concluded no apparent health hazard existed at Lake Pleasant at the time of the study (U.S. Dept. of Health and Human Services 2004). According to a July 29, 2006 article in the *Arizona Republic*, there were two reported CO poisonings in 2003, as well as two on July 23, 2006, when two women were poisoned while swimming near a number of boats in Humbug Cove (Collom & Whiting 2006). This is a popular area where boats congregate and tie-up together in large numbers for extended periods of time. MCSO and the Peoria Fire Department are also addressing this issue of carbon monoxide poisoning. MCPRD, MCSO, and the Peoria Fire Department have been participating in public awareness campaigns regarding the dangers of CO poisoning, distributing educational information to boaters and the general public. According to the *Arizona Republic* article, Peoria Fire Department is also monitoring CO levels at the lake (Collom & Whiting 2006).

3.6.2 Environmental Consequences

3.6.2.1 No Action Alternative

In the absence of the proposed project, there would be no temporary dust pollution resulting from construction activities and related traffic. Visitation to LPRP has increased almost every year since New Waddell Dam was completed; over the past 3 years visitation has increased by an average of about five percent annually. Given the rapid urbanization in the northern portion of Maricopa County, it is anticipated watercraft use of Lake Pleasant would increase at a rate greater than what has been experienced over the past 3 years. There would be an increase in air pollution related to watercraft and vehicular emissions over current conditions as a result of increased visitation to LPRP and watercraft use on Lake Pleasant. It is expected to be somewhat less than what would occur under the Proposed Action (see following discussion). Because there would be no Federal action associated with this increase, there would be no regulation of air emissions resulting from this increase.

3.6.2.2 Proposed Action

Impacts to air quality that are anticipated to result from the proposed project include temporary construction-related pollutant emissions and long-term pollutant emissions associated with operation of watercraft motors. One commenter indicated that on both the draft EA and revised draft EA Reclamation's methodology, used to calculate *de minimis* thresholds for CO, ozone, and PM_{10}, was flawed. To address this issue, Reclamation sought the guidance and expertise of Maricopa County Air Quality Division (MCAQD). MCAQD staff explained the methodology used in the EPA models that are run to produce the County's triennial emissions inventory reports, and how the default values used in those models are applied on the State and County levels. For calculating emissions from nonroad engines, such as watercraft, EPA's guidance recommends that default equipment population and activity levels be changed if local data are available:

> Surveys better capture the actual activity on local lakes, rivers, and other waterways, as well as account for boats registered in one county but used in another. If States, regional air organizations, and local air pollution control districts have such types of data, then EPA is interested in learning about them. Furthermore, EPA encourages state, regional, and local air organizations to use these local data in the NONROAD model for county-level boat populations, subject to the appropriate guidance.

(EPA 2005). A survey was undertaken to determine the number and size of engines located at Pleasant Harbor Marina. The percentages of the motor sizes and numbers were then applied to the total number of wet and dry slips at the proposed marina, to approximate the mix of watercraft engines expected to motor on Lake Pleasant once the marina is completed. This conservatively assumes that every boat motor at the proposed marina is new to the Lake. The number and types of motors were then provided to the MCAQD as inputs to the NONROAD model for pleasure craft. Appendix D provides a complete explanation of the methodology used to calculate the air emissions anticipated to

result from this proposed project, as well as the emission factors and calculations themselves . The results are summarized below.

PM_{10}. Because the project area is located within an area designated as being in serious nonattainment for PM_{10} and the proposed project involves a Federal action, the General Conformity Rule applies. For PM_{10}, the *de minimis* threshold above which a conformity determination must be performed in a serious nonattainment area is 70 tons per year. This means if it is anticipated that collectively the proposed project would result in the generation of 70 tons per year or more of PM_{10}, a conformity determination must be performed. Potential temporary sources of PM_{10} from the proposed project include fugitive dust from earthwork activities and tailpipe emissions from construction vehicles. Long-term PM_{10} emissions would result from vehicular tailpipe and watercraft motor emissions from visitors' cars and boats, and emissions from equipment used to transport boats between the dry stack storage building and boat ramp.

Construction activities for Phases I, II, III, and IV are expected to take 6, 2, 4, and 4 months, respectively. These phases would not occur concurrently nor would any two phases occur within the same year. Construction related to Phase I would generate the greatest amount of emissions over the longest period of time of all four phases, because the vast majority of earthwork involving excavation and placement of rock would occur during Phase I. Fugitive dust during construction would be controlled by watering the construction area regularly, using water from Lake Pleasant. This would meet Maricopa County Air Pollution Control Regulations Rule 310 for construction activities. Construction-related tailpipe emissions would be temporary and limited to times of active construction. Total PM_{10} emissions related to Phase I are estimated to be just under 19 tons, which is well below the 70 tons per year *de minimis* threshold level; emissions from subsequent construction phases, which would occur in separate years, would be minimal.

The existing paved Dirty Shirt Road is in very poor condition, and would be rehabilitated during construction to reduce the amount of dust potentially created by long term use. The main entrance and ADA parking areas would be asphalt-paved, and the boat ramp would be concrete-paved, which would also greatly reduce the potential for fugitive dust. Development of the gravel parking areas would utilize crushed granite which would be coated with a liquid copolymer solution to effectively control fugitive dust. PM_{10} emissions from increased traffic resulting from the proposed project were calculated conservatively assuming the average trip per vehicle into/out from LPRP is about 10 miles, every slip and dry storage area is rented (1,000 boats), and 20 percent of boat owners visit every day. Estimated PM_{10} emissions from onroad mobile sources would be about 2 tons per year.

Gas-powered watercraft motors and marina equipment would contribute PM_{10} emissions within a designated nonattainment area on an ongoing basis as well. To estimate PM_{10} emissions from gas-powered watercraft motors, Reclamation used the results produced by MCAQD, which ran EPA's NONROAD2005 model after replacing the model's nationally derived default values with estimates that reflect the expected population of watercraft motors at the proposed marina. The model's results indicate the maximum nonroad watercraft PM_{10} emissions generated within the PM_{10} nonattainment area, as a result of increased watercraft use associated with the Proposed Action, would be about 0.14 ton per

year. Additional PM_{10} emissions would result from use of a forklift to haul boats between the dry stack storage building and the boat ramp. This would add about 14 tons per year of PM_{10} emissions. Adding these sources' emissions to the PM_{10} generated from increased traffic to and from the new marina would result in a combined total of about 16 tons per year of PM_{10} being generated from the proposed project, thus a conformity determination would not be necessary.

Ozone. Because a portion of the project area falls within an area designated as being in nonattainment for the 8-hour ozone standard, the General Conformity Rule applies. For ozone, there is a 100 tons-per-year threshold of nitrogen oxides (NO_X) and VOCs above which a conformity determination must be performed. Potential temporary sources of NO_X and VOCs from the proposed project include tailpipe emissions from construction vehicles. Vehicular tailpipe and watercraft engine emissions from visitors and boaters, and emissions from equipment used to transport boats between the dry stack storage building and the boat ramp would result in long-term emissions of NO_X and VOCs.

Construction-related tailpipe emissions would be temporary and limited to times of active construction. Construction activities for Phases I, II, III, and IV are expected to take 6, 2, 4, and 4 months, respectively; they would not occur concurrently. The emissions of NO_X and VOCs from these construction-related sources are estimated to be about 0.02 ton per year, which would be well below the 100 tons per year *de minimis* threshold level.

Long-term NO_X and VOC emissions from increased traffic anticipated to result from the proposed project were calculated. Conservatively assuming the average trip per vehicle into/out from LPRP is about 10 miles, every slip and dry storage area was rented (1,000 boats), and 20 percent of boat owners visited every day, approximately three tons per year of NO_X and VOC ozone precursors would be emitted annually.

Gas-powered boat motors and visitors' vehicles would contribute NO_X and VOC emissions on an ongoing basis. To estimate NO_X and VOC emissions from gas-powered watercraft motors, Reclamation used the results produced by MCAQD, which ran EPA's NONROAD2005 model after replacing the model's nationally derived default values with estimates that reflect the expected population of watercraft motors at the proposed marina. The model's results indicate the maximum nonroad watercraft NO_X and VOC emissions generated within the ozone 8-hour nonattainment area, as a result of increased watercraft use associated with the Proposed Action, would be about 34 tons per year. Additional NO_X and VOC emissions would result from use of a forklift to haul boats between the dry stack storage building and the boat ramp. This would add about ½ ton per year of NO_X and VOC emissions. Adding these sources' emissions to the NO_X and VOC emissions generated from increased traffic to and from the new marina would result in a combined total of just under 38 tons per year of ozone precursors being generated from the proposed project, thus a conformity determination would not be necessary.

Based upon the estimated combined potential boat and vehicular NO_X and VOC ozone precursor emission increase from the proposed project, it is expected the 100 tons per year of ozone precursor emissions *de mimimis* threshold would not be exceeded; therefore, Reclamation has concluded a conformity determination is not required.

Carbon Monoxide. A portion of the project area lies within an area designated as "maintenance" for CO, and the General Conformity Rule applies. For CO, the *de minimis* threshold is 100 tons per year. This means if it is anticipated that collectively the proposed project would result in the generation of 100 tons per year or more of CO, a conformity determination must be performed. Potential sources of CO from the proposed project include emissions from watercraft motor emissions from boaters on a long term basis. Vehicular emissions would not be included because the maintenance area within the Maricopa County portion of the lake extends from the middle of the lake eastward, and vehicular traffic related to the new marina would occur on the western portion of the LPRP, outside the maintenance area. For this same reason, emissions from equipment used to haul boats between the dry stack storage building and boat ramp would also not be included, since these facilities would be located west of the CO maintenance area.

Gas-powered boat motors would contribute CO emissions on an ongoing basis. To estimate CO emissions from gas-powered watercraft motors, Reclamation used the results produced by MCAQD, which ran EPA's NONROAD2005 model after replacing the model's nationally derived default values with estimates that reflect the expected population of watercraft motors at the proposed marina. The model's results indicate the maximum nonroad watercraft CO emissions generated within the CO maintenance area, as a result of increased watercraft use associated with the Proposed Action, would be just under 64 tons per year. These emissions are not expected to exceed the 100 tons per year *de minimis* threshold.

As noted above, the assumptions and calculations made to estimate the emissions included in this section are provided in Appendix D to this EA.

Regarding the increased potential for CO poisoning of visitors that stand or swim too near watercraft motors, it is anticipated that in the immediate area of the marina, boaters would likely not keep their motors idling for long periods of time within the wet slip area due to increasing fuel costs and motor wear and tear. The concessionaire would make pamphlets and warnings regarding CO poisoning readily available at the marina facilities.

3.6.2.3 Action Alternative A

Slightly less emissions would be generated with the omission of Phase IV, because there would be 196 fewer boat motors than with the Proposed Action. No calculations were performed to estimate emissions associated with this alternative, since none of the *de minimis* thresholds were approached under the Proposed Action alternative. As with the Proposed Action alternative, the concessionaire would make pamphlets and warnings regarding CO poisoning readily available at the marina facilities.

3.6.2.4 Cumulative Impacts

With the continued urbanization of the northern portion of Maricopa County, it is anticipated construction activities related to development would continue to contribute to the PM_{10} nonattainment status within the general vicinity of the project area. Pleasant Harbor Marina is located within the PM_{10} and ozone nonattainment areas, and the CO

maintenance area. Unless Pleasant Harbor Marina's addition of 160 wet slips and 400 dry stack storage spaces would involve a Federal action, a conformity determination is not required; however, it is highly unlikely the related increases in vehicular and watercraft air pollution would exceed the *de minimis* levels associated with those pollutants.

The U.S. Environmental Protection Agency's 2002 final rule regarding control of emissions from nonroad large spark-ignition engines, and recreational engines (marine and land-based) requires, among other things, a reduction of CO, ozone, and PM_{10} emissions in new marine engines. It required a 75 percent reduction in ozone precursor emissions in new outboard engines and personal watercraft by 2006 (67 *Federal Register*, 68242-68447, November 8, 2002). It is anticipated the use of these new motors with lower emissions will assist in reducing CO emissions from engine-powered watercraft.

3.7 Cultural Resources

3.7.1 Brief History of Reclamation's Cultural Resource Investigations

The following summary is based upon the document, "Lake Pleasant Regional Park Cultural Resource Management Plan, Maricopa and Yavapai Counties, Arizona" (Pinter 2004). All sites are designated (ASM) unless otherwise noted.

CAWCS/Plan 6. Archaeological survey and data recovery work associated with CAWCS-related environmental studies were contracted out to a number of cultural resources firms. A cultural resource survey was conducted by Arizona State University (ASU) for the New Waddell Dam feature of Plan 6. It covered 14,080 acres around Lake Pleasant in the primary construction zones for the new dam and areas that would be inundated when the new dam was in place. Between 1979 and 1980, ASU completed the survey for prehistoric sites (Bostwick 1986; Bostwick & Lerner 1986; Rice & Bostwick 1986). Fieldwork for the historic sites was minimal. Archaeological Research Services, Inc. (ARS) used archival information to anticipate the location of historic sites and then field-checked each possible locus (Stone & Ayres 1984). Combined, these 2 projects recorded 46 sites within the LPRP boundaries of which 37 were prehistoric sites and nine were historic sites.

The prehistoric sites at LPRP were primarily artifact scatters, agricultural fields, field houses, or masonry room blocks with less than 10 rooms. In consultation with the State Historic Preservation Officer and Advisory Council on Historic Places, Reclamation redirected data recovery mitigation efforts for all of Plan 6 on sources in the Tonto Basin (Roosevelt Lake also was surveyed for the Roosevelt Dam feature of Plan 6). The rationale for not including the Lake Pleasant prehistoric sites in the Plan 6 data recovery mitigation effort was that they represented "only a part of a total system, and given our knowledge of the area, it is a component with a high amount of redundancy" (Rice & Bostwick 1986:14). ASU archaeologists performed no further work on the prehistoric sites within the LPRP.

Additional study was, however, undertaken for the historic sites at Lake Pleasant. Dames & Moore excavated 9 of the 15 historic sites that ARS (Stone & Ayres 1984) identified as

part of the data recovery program, which focused on dam construction camps. Of the nine excavated sites, eight that were located within the Park were consolidated into five sites. Through conversation with local residents during data recovery at the Camp Pleasant (AZ T:3:4) and Camp Dyer (AZ T:3:57) construction camp sites (associated with the original Waddell Dam), Dames & Moore learned of nine additional historic sites that had not been previously identified as part of ARS' documentary research. Two of these sites, the Brown Homestead (AZ T:4:55) and Humbug Hydraulic Mining Complex (AZ T:3:59) were added to the data recovery program.

Supplemental Survey, Testing, and Data Recovery. Subsequent to the 1979-1980 CAWCS survey, additional surveys were conducted for preconstruction activities associated with the New Waddell Dam feature by both Reclamation staff (Rogge & Lincoln 1982, 1984), and by Archaeological Consulting Services, Inc. (ACS) under contract with Reclamation. These surveys recorded an additional 14 sites. Also under contract with Reclamation, ACS conducted data recovery within LPRP at AZ T:4:46 (a sherd and worked stone scatter) and AZ T:3:220 (a rock alignment originally identified during the CAWCS survey as AZ T:3:56(ASU)).

Under contract with Reclamation, SWCA Environmental Consultants, Inc. (SWCA) performed eligibility testing at five sites (AZ T:3:60-62 and 64-65) (Euler 1989). Based on these results, SWCA recommended that all five sites were ineligible for the National Register. Like Rice and Bostwick (1986), SWCA argued because these types of sites were highly redundant, the information they provided was not significant.

The only other survey related to the New Waddell Dam feature in or adjacent to the Park located four sherd and worked stone scatters (AZ T:4:67-70) (Rankin & Green 1988). Subsequently, archaeologists with SWCA performed eligibility testing at AZ T:4:67 and 70 (SWCA 1990). SWCA personnel recommended the two tested sites were not eligible.

Miscellaneous Small Projects. Road construction and maintenance generated the next largest body of archaeological work in the Park that has located sites. Relocation of Yavapai County and Castle Hot Springs Roads required Reclamation to conduct surveys, during which two sites were located (Telles 1992a, 1992b). One of these sites (AZ T:3:81) had a trash mound. ACS archaeologists later conducted test excavations at the second site (AZ T:3:79) along Castle Hot Springs Road, and recommended the site as ineligible (Troncone 1993). During a survey of Castle Hot Springs Road, Garcia (1998) rerecorded AZ T:3:79 and recommended that additional areas be tested. Czaplicki (1990) described AZ T:3:76, a multi-component site, discovered during a survey for the MCPRD Maintenance Facility.

Numerous surveys have been conducted for other road projects and utility lines that identified no archaeological sites. Pedrick (1987) reported the discovery and collection of an isolated petroglyph. Condition or damage assessments were also conducted (Gifford 1999; Lincoln 1994).

The Lake Pleasant Survey. The completion of New Waddell Dam in 1993, increasing recreational development, and expansion of the Park boundaries spurred Reclamation to

complete a survey of the entire Park to fulfill its Section 110 requirements under the National Historic Preservation Act. Reclamation performed the Lake Pleasant survey on Reclamation land between May 1993 and July 1995; some of this land was outside the current Park boundary. Upon completion of the fieldwork, Reclamation archaeologists, under the supervision of Carol Telles, identified 79 previously unrecorded sites, 19 isolated petroglyphs, and 306 isolated occurrences. In addition to the survey and literature review, Reclamation undertook a separate rock art study that detailed each petroglyph panel and element identified during the survey.

Once the fieldwork was finished, report preparation began but workload and personnel changes made it difficult to complete the project in-house. Reclamation requested that ACS revise and complete the report under its on-call contract for cultural resource Class III survey and testing. ACS completed the final report in 2001 (Moreno et al. 2001).

Lake Pleasant Regional Park Cultural Resources Management Plan. With the completion of the Lake Pleasant Survey final report in 2001, Reclamation again contracted with ACS to prepare a management plan to guide Reclamation and MCPRD, its contractor for recreational management of the Park, in addressing cultural resource issues within the Park. The management plan was completed in 2004 (Pinter 2004) and copies were provided to Park officials, and American Indian Tribes. Reclamation continues to carry out provisions of the management plan and works with County officials in carrying out Section 106 compliance for new development within the Park such as the proposed Scorpion Bay Marina.

Consultations with Tribes. In June 2002, Reclamation initiated consultation with 10 tribes regarding recreational use of LPRP, providing each tribe with a copy of the report prepared by ACS summarizing the results of the archaeological survey covering the entire Park. The Hopi Tribe requested Reclamation sponsor a site visit to LPRP by members of the Hopi Cultural Resources Advisory Task Team and Cultural Preservation Office. In March 2003, these same tribes were sent a copy of the Draft Cultural Resources Management Plan, for review and consideration. Reclamation received a response from the Yavapai Prescott Indian Tribe, which indicated interest in being kept informed about activities at LPRP and becoming involved in the implementation of the Cultural Resources Management Plan.

3.7.2 Affected Environment

The “Area of Potential Effect” (APE) for the proposed marina is located in Development Area 3 as identified in the LPRP MRP (Figure 4) (Cella Barr Associates 1995: Figure 23; Pinter 2004: 11, 13, Figure 9).

In December 2005, SWCA prepared a Class I Survey report (literature review and records check) for the proposed project (Bellavia & Mitchell 2005; revised May 2006). The Class I survey focused on a 1-mile radius around the marina APE. SWCA determined that no recorded cultural resource sites were present in the APE and no further archaeological work was necessary (Bellavia & Mitchell 2005: 6). The report also noted that 14 sites were present within the 1-mile radius. Of these, seven sites were previously determined to be

not eligible for the National Register of Historic Places (AZ T:3:60-63, 67, 68, 87), four sites were determined eligible (T:3:7, 88, 206, and 222), and the eligibility of three sites could not be determined without limited testing (AZ T:3:86, 89, 90) (the SWCA report incorrectly listed one of these sites as being ineligible) (see Appendix E).

3.7.3 Environmental Consequences

3.7.3.1 No Action Alternative

It is anticipated the No Action alternative would result in no direct impacts to cultural resources, since there are none within the project site. As the Class I survey report notes (Bellavia & Mitchell 2005:1), there are two sites located near the western boundary of the proposed marina complex (AZ T:3:7 and AZ T:3:222) that have been determined to be eligible for listing on the National Register of Historic Places. These could be impacted by visitors that might wander through the area; however, implementation of the Cultural Resources Management Plan would assist in protecting them against adverse impacts.

3.7.3.2 Proposed Action

Because there are no cultural resources in the APE, construction of the marina would have no direct impacts to cultural resources. As noted above, there are two eligible sites located near the western boundary of the marina complex (AZ T:3:7 and AZ T:3:222). Indirect impacts to these sites, while possible, would be unlikely given the nature of activities at the marina. Unlike a dispersed recreation, such as picnicking or camping where visitors may have an inclination to explore the surrounding area, boaters would use the marina as a staging area to access their watercraft to enjoy the lake. The other eligible or potentially eligible sites are further removed from the marina APE and therefore are considerably less likely to be indirectly impacted. These sites are located in Development Areas 2 (Figure 4) (AZ T:3: 86, 88, 89) and 4 (AZ T:3:90, 206) and are discussed in the Management Plan (Pinter 2004).

Based on a description of the marina project and a map of the APE, Reclamation sent a Section 106 consultation letter dated November 22, 2005, to the State Historic Preservation Officer (SHPO) with a finding of 'no historic properties affected' for the marina project. The SHPO concurred with this finding on November 28, 2005.

It should be noted that in Reclamation's final EA for the LPRP MRP, Table 9 (Reclamation 1996:39) listed sites that would be affected by direct or indirect impacts associated with the MRP. Of these sites, four are in the vicinity of the marina APE. Sites AZ T:3:87, 88, and 89 were listed as subject to direct impacts and site AZ T:3:86 was listed as subject to indirect impacts. Site AZ T:3:87 has since been determined not eligible. The other three sites, as noted above, are located in Development Area 2 at a considerable distance from the marina APE, and are included in the Cultural Resources Management Plan.

Although no cultural resources are anticipated to be discovered or disturbed during construction of the proposed project, the concessionaire's contractor would be directed to

cease land-disturbing activities in the immediate vicinity and notify Reclamation immediately if any artifacts are encountered during earthwork.

3.7.3.3 Action Alternative A

The impacts from this alternative on cultural resources would be the same as for the Proposed Action, since the area disturbed by construction of the marina would be the same.

3.7.3.4 Cumulative Impacts

Should MCPRD decide to develop another area for dispersed undeveloped recreational use to replace the loss of the Dirty Shirt area, there could be impacts to cultural resources if sites are within the general area. Use of the LPRP Cultural Resources Management Plan, however, would ensure sites are either avoided and protected, or mitigated.

3.8 Biological Resources

3.8.1 Affected Environment

Vegetation. The marina complex is located within the Arizona Upland subdivision of the Sonoran Desert Scrub biotic community, at elevations ranging from 1,500 to 1,800 feet above mean sea level. The two main types of vegetation communities in the project area, where the marina parking and land-associated facilities would be located, are upland and xeroriparian. Examples of upland vegetation observed at the project area include brittle-bush (*Encelia farinosa*), creosotebush (*Larrea tridentata* var. *tridentata*), and plantain (*Plantago* sp.). Examples of xeroriparian vegetation observed at the project area include foothill paloverde (*Parkinsonia microphylla*), desert ironwood (*Olneya tesota*), and wolfberry (*Lycium* sp.). Examples of lentic-associated (still water) vegetation observed along the edge of the lake include Canada cocklebur (*Xanthium strumarium* var. *canadense*), Bermudagrass (*Cynodon dactylon*), seaside heliotrope (*Heliotropium curassavicum* var. *oculatum*), saltcedar (*Tamarix* sp.), and Russian thistle (*Salsola tragus*). A list of all the vegetative species observed on-site is provided in Appendix F.

Wildlife. LPRP can be expected to support wildlife species typical of the Arizona Upland subdivision of the Sonoran Desert (Brown 1994). Wildlife detected in the project area by SWCA personnel include a speckled rattlesnake (*Crotalus mitchellii*), a woodrat (*Neotoma* sp.), and various birds including the following: American pipit (*Anthus rubescens*), black-tailed gnatcatcher (*Polioptila melanura*), Gambel's quail (*Callipepla gambelii*), gilded flicker (*Colaptes chrysoides*), great blue heron (*Ardea herodias*), house finch (*Carpodacus mexicanus*), rock wren (*Salpinctes obsoletus*), and sandpiper (*Calidris* sp.). No surveys for neotropical migratory birds as defined under the Migratory Bird Treaty Act have been conducted on Lake Pleasant. However, it is expected species such as those typical of the Arizona Upland Sonoran Desert and lentic habitats throughout the State would be present.

Lake Pleasant supports a variety of warm water fish species. Sport fish species stocked by AGFD in the past have included largemouth bass (*Micropterus salmoides*), bluegill

(*Lepomis macrochirus*), channel catfish (*Ictalurus punctatus*), crappie (*Pomoxis annularis* and *P. nigromaculatus*), and white bass (*Morone chrysops*). Threadfin shad (*Dorosma petenense*) also has been stocked in the past. In addition, sunfish (*Centrarchidae*) and carp (*Cyprinus carpio*) are relatively plentiful within the lake (Cella Barr Associates 1996). With the introduction of CAP water into Lake Pleasant, the number of striped bass (*Morone saxatilis*), a fish commonly found in Colorado River water, has increased in the lake (Mr. Jim Warnecke [AGFD], personal communication, July 14, 2006).

Special Status Species. A review of background records and a biological resources survey of the marina site found no evidence of federally endangered, threatened or candidate plant species in the project area, nor is potentially suitable habitat present. There are several plant species at the proposed marina site that are protected by the Arizona Native Plant Law. Those listed as salvage restricted (requiring a State permit for collection or destruction) include the ocotillo (*Fouquieria splendens*) and all cacti present (saguaro [*Carnegiea giganteus*], buckhorn [*Opuntia acanthocarpa*] and teddy bear [*Opuntia bigelovii*] chollas, strawberry hedgehog [*Echinocereus engelmannii*], fishhook cactus [*Mammillaria microcarpa*], prickly pear [*Opuntia phaeacantha*], and barrel cactus [*Ferocactus* sp.]).

The bald eagle is the only federally listed species considered likely to occur within the project area. The marina location is not considered breeding habitat for bald eagles. A breeding pair of bald eagles nests on a cliff face along the Agua Fria River about 4 miles northeast of the site.

The Lake Pleasant bald eagle breeding area was discovered in 1979, when a nest was found in a cottonwood tree along the Agua Fria River. The first breeding activity was recorded in 1984 in a cliff nest on the east side of the Agua Fria arm. Eggs were laid in 1984, 1985, 1990, and 1992 without producing any young. The first successful breeding occurred in 1993. Between 1996 and 2006, this nest site has produced young in all but 3 years, and successfully fledged a total of 11 young.

According to Mr. Kenneth Jacobson of AGFD's Bald Eagle Program, the breeding eagle pair primarily forages in the Agua Fria arm upstream of the lake or in the various coves on the extreme north end of the lake, although the breeding pair also has been spotted on southern portions of the lake occasionally in winter months. In addition to the breeding pair of bald eagles at Lake Pleasant, non-breeding adults and sub-adults have been observed using the Agua Fria River north to Table Mesa Road, and foraging in the Coles and Humbug bays at the north end of the lake since 2002. MCPRD employees reported multiple sightings of adult bald eagles in Pipeline Canyon in 2004, which is located just over ¾ mile north of the proposed marina site (Mr. Kenneth Jacobson [AGFD], personal communication, June 1, 2006).

Due to the high level of recreation at Lake Pleasant, a closure was created in December 1985, to protect the nest area from disturbance. The MCPRD closure prohibits entry within 0.62 mile (1 kilometer) of the nest from December 15th to June 15th every year. Information provided over the last few years by bald eagle nestwatchers, that are stationed near the Lake Pleasant nest each breeding season, indicates that about four percent of watercraft

using the lake that are observed approaching the southern boundary of the closure can be expected to violate the closure by crossing the buoy line into the closure area (Mr. Jaime Driscoll [AGFD], personal communication, July 13, 2006).

Sonoran desert tortoises (*Gopherus agassizi*) are known to occur in LPRP and are listed as a Species of Concern under the Endangered Species Act, although this status does not give this species any statutory protection. No desert tortoises or sign were recorded from the proposed marina site location during surveys conducted in 2003 (Goodlet 2003). However, potential habitat does exist.

3.8.2 Environmental Consequences

3.8.2.1 No Action Alternative

Although not of particularly high quality, there is native desert vegetation in the area of the project including, but not limited to, saguaro and cholla cacti and creosote bush. Some portions of the project area appear to have been previously disturbed by grading or recreational use. Under the No Action alternative, none of the vegetation located within the marina complex site would be lost due to construction activities. Potential disturbance to wildlife from dispersed, undeveloped recreation would continue.

3.8.2.2 Proposed Action

Approximately 37 acres of Arizona upland subdivision vegetation would be permanently disturbed by construction of marina facilities. Much of the area is only sparsely vegetated and some portions have been previously disturbed. There would be localized impacts to small mammals, amphibians, reptiles, and desert nesting birds from the loss of habitat resulting from excavation and construction of the marina complex. Large mammals such as mule deer (*Odocoileus hemionus*) and mid-sized mammals such as javelina (*Dicotyles tajacu*) also would be impacted. Due to the disturbed nature of the project site, availability of similar or higher quality habitat in the general vicinity of the project area, and disturbance from dispersed recreational activity already occurring, the loss of 37 acres of Sonoran desert scrub vegetation from implementation of the proposed project is not expected to result in a substantial impact to wildlife.

A Native Plant Inventory and Salvage Plan would be prepared prior to earthwork. To the extent practicable, existing plants would be avoided during marina construction or would be salvaged and reused for landscaping. The Arizona Department of Agriculture has provided a form for Notice of Intent to Clear Land, which should be completed and submitted to it at least 60 days prior to vegetation removal activities.

Re-vegetation and the addition of plants to the landscaping design would involve only native plant species, which would help the marina blend in with the natural surroundings. Reclamation and MCPRD would review this plan prior to implementation. Marina landscaping would be designed to utilize the B+ treated effluent from the on-site wastewater treatment plant, which would minimize groundwater use for irrigation.

About 11 acres below elevation 1,702 feet would be disturbed, 7.5 acres of which would be filled with rock material excavated above elevation 1,702 feet from within the project area. This is needed to provide adequate space for some of the land-based marina facilities. Placement of the material could result in temporary turbid conditions if this portion of construction occurs when the reservoir is at its maximum elevation. This would result in a loss of up to 7.5 acres of aquatic habitat. This habitat is temporal, as the elevation of the lake rises and falls during the year with operation of New Waddell Dam. The concessionaire has proposed constructing an artificial rock reef in the vicinity of the new marina and hanging fish structures under the floating wave attenuators to enhance the habitat for aquatic life and improve spawning. This would improve the diversity of the aquatic habitat and provide young fish with areas of protection against predators (Mr. Rob Clarkson [Reclamation], personal communication, December 22, 2006).

Because the Lake Pleasant bald eagle breeding area is 4 miles from the marina site, blasting and other activities associated with marina construction are not expected to affect the bald eagles.

Bald eagles from the Lake Pleasant breeding area forage mostly on the Agua Fria arm of the lake. However, these eagles, as well as sub-adult and non-breeding adults, could be expected to forage on any part of the lake. Any significant increase in recreational use on Lake Pleasant could negatively affect foraging opportunities for bald eagles. The potential for eagle mortality associated with discarded monofilament fishing line entanglement could also increase. Increased use of the lake by boaters and jet skiers is also expected to result in a higher number of violations of the eagle closure. The marina operators would implement the following measures to ensure there would be no adverse effect to the bald eagle:

1. The marina concessionaire would post signage at the public boat ramp to be constructed, and at the marina, to educate the public on bald eagle activities, restrictions associated with the bald eagle closure, and the need for proper disposal of unused fishing line to prevent the birds from becoming tangled in improperly discarded line.

2. The marina concessionaire would provide monofilament disposal stations at the new public boat ramp to assist boaters and shore anglers in properly disposing of used fishing line.

3. The marina concessionaire (and any subsequent operator or owner) would contribute funds to the Arizona Bald Eagle Nestwatch Program to defray the costs of supporting the Lake Pleasant nestwatch observation post, as follows: At completion of Phase II, $5,000 per year would be contributed to AGFD; at completion of Phase IV, this amount would be increased to $10,000 per year. Contributions would continue until there is no nestwatch

program at Lake Pleasant, or 20 annual contributions have been made, whichever occurs first.

If a Sonoran desert tortoise is found in the project area during construction, construction within the immediate vicinity of the tortoise shall cease and Reclamation's Environmental Resource Management Division and MCPRD staff must be notified immediately so that removal can be coordinated. If tortoises are found in the area at a future point in time, MCPRD staff and/or AGFD should be notified. Removal of tortoises from the area must be conducted consistent with AGFD's *Guidelines for the Handling of Sonoran Desert Tortoises Encountered on Development Projects*.

Reclamation determined the proposed project may affect, but is not likely to adversely affect, the bald eagle, and submitted a biological assessment to the Fish and Wildlife Service (FWS) for its concurrence. The biological assessment includes implementation of the mitigation measures described above for the bald eagle. No other federally protected species would be affected by this proposed project. FWS provided its concurrence in a memorandum to Reclamation dated August 15, 2006. A copy of this revised draft EA and amended biological assessment were sent to FWS for concurrence on October 25, 2006. In a memorandum dated November 6, 2006, FWS provided concurrence with Reclamation's determination that the proposed project may affect, but is not likely to adversely affect the bald eagle. Copies of Reclamation's submittals to FWS and FWS' concurrence memoranda are provided in the final EA as Appendix G

3.8.2.2 Action Alternative A

Impacts to biological resources resulting from this alternative would generally be the same as those resulting from the Proposed Action; however, because there would be no Phase IV, the contribution to the Nestwatch Program would remain $5,000 for the duration of the payment commitment.

3.8.2.2 Cumulative Impacts

Increased visitation at LPRP, which is expected to occur with or without the proposed project, will continue to put pressure on the existing biological resources. In the MRP, the eastern and northern portions of LPRP and riparian corridors along the creeks flowing into Lake Pleasant have been designated as conservation areas, where developed recreational activities are restricted. Reclamation is fencing off portions of Morgan City Wash below New Waddell Dam to preserve the riparian habitat. With these efforts, it is hoped that higher quality habitat within LPRP will be protected and maintained, while still providing a quality recreational experience for human visitors.

Under the proposed project, the capacity at the marina would be increased in phases, and the associated increase in number of watercraft from the new marina, as well as build-out of the Pleasant Harbor Marina, would be spread out over a number of years. This phased increase may allow the bald eagle an opportunity to adapt to the increasing number of watercraft over time. The concessionaire's financial contribution to the Lake Pleasant Nestwatch Program would ensure the continued presence of nestwatchers to discourage

violations of the bald eagle closure, and collection of data regarding the reaction of the breeding pair to increasing urban pressures.

4.0 SELECTED RELATED ENVIRONMENTAL LAWS/DIRECTIVES

National Environmental Policy Act of 1969, as amended (P.L. 91-190) - This law requires Federal agencies to evaluate the potential environmental consequences of major Federal actions. NEPA also requires full public disclosure about the proposed action, accompanying alternatives, impacts, and mitigation.

This EA was prepared in accordance with the requirements of NEPA. Reclamation's public scoping period began on March 1, 2006, and officially ended on March 24, 2006, although public comments continued to be accepted after this date. Five letters were received; relevant issues identified in those letters have been addressed in this EA.

A draft EA was made available to the public for a 21-day public review and comment period on July 28, 2006. The *Arizona Republic* published an article on July 1, 2006, indicating an EA would shortly be issued by Reclamation on the proposed marina, and provided information regarding how to receive a copy of the document. Another article on the proposed marina and the findings of the draft EA was published in the *Arizona Republic* shortly after the issuance of the draft EA for public review, on July 28, 2006. In preparing responses to comments, it was discovered that errors had been made in gathering available data on actual daily and monthly watercraft counts. These actual watercraft counts are the basis for estimating current and future watercraft use on the lake.

Due to the discrepancy between the estimated current watercraft use identified in the July draft EA, and the estimated current watercraft use based upon corrected data, Reclamation determined a revised draft EA should be issued. In addition to correcting the watercraft count errors, the EA also was revised where appropriate in response to comments already received. The revised draft EA was distributed for another public review and comment period, which occurred between October 24 and November 17, 2006. Nine comment letters were received during the second public review and comment period. Two additional comment letters were received in February 2007. All comments received and Reclamation's responses are provided in Appendix H of this final EA.

Fish and Wildlife Coordination Act (FWCA) (P.L. 85-624) - The FWCA provides a procedural framework for the consideration of fish and wildlife conservation measures in Federal water resource development projects. Coordination with the FWS and State wildlife management agencies is required on all Federal water development projects. Reclamation coordinated with FWS and AGFD during the planning and design of the New Waddell Dam feature of Plan 6; no further coordination pursuant to the FWCA is required. Both FWS and the AGFD will receive a copy of this EA for review and comment.

Endangered Species Act of 1973 (P.L. 93-205) - This Act provides protection for plants and animals that are currently in danger of extinction (endangered) and those that may become so in the foreseeable future (threatened). Section 7 of this law requires Federal agencies to ensure that all federally-associated activities do not have adverse impacts on the continued existence of federally-listed threatened or endangered species or designated areas (critical habitat) that are important in conserving those species.

A Biological Evaluation (BE) report prepared by SWCA Environmental Consultants concluded it is not likely the proposed project will have an effect on any federally listed species or their habitat. The BE report is provided in Appendix F. With the exception of the bald eagle, Reclamation agreed with these findings.

Reclamation determined the proposed project may affect but is not likely to adversely affect, the bald eagle. Reclamation identified measures to be incorporated into the project that, when implemented, will ensure there would be no adverse effect to the federally threatened bald eagle. This finding and the measures that would be incorporated into the project are included in Reclamation's biological assessment, which was submitted to the FWS for concurrence on July 27, 2006. FWS provided its concurrence in a memorandum dated August 15, 2006. A revised biological assessment and the revised draft EA were transmitted to the FWS on October 25, 2006. In a memorandum dated November 6, 2006, FWS provided concurrence with Reclamation's determination that the proposed project may affect, but is not likely to adversely affect the bald eagle. Copies of Reclamation's submittals to FWS and FWS' concurrence memoranda are provided in the final EA as Appendix G.

Wild and Scenic Rivers Act of 1968 (P.L. 90-542) – This Act designated the initial components of the National Wild and Scenic River System, and established procedures for including other rivers or reaches of rivers that possess outstandingly remarkable scenic, recreational, geologic, fish and wildlife, historic, cultural, or other similar values and preserving them in a free-flowing condition.

According to the National Park Service website, Maricopa County does not contain any Wild and Scenic Rivers. The closest Wild and Scenic River to the project area is the Verde River on the Prescott National Forest over 40 miles north of the site. Based on this information, impacts to Wild and Scenic Rivers are not anticipated as a result of the proposed action.

Wilderness Act of 1964 (P.L. 88-577) – This Act enables the Federal government to designate certain Federal lands having special characteristics as "wilderness areas" so as to preserve them and ensure that all wild lands will not disappear. Wilderness areas provide places of solitude and primitive recreational opportunities, encourage the maintenance of diverse plant and animal gene pools, and serve as a unique "living laboratory" for medical and scientific research.

As noted in section 3.3, the Hells Canyon Wilderness Area is located just west of the northern portion of LPRP. Both the Hells Canyon Wilderness Area and LPRP are accessed by Castle Hot Springs Road. It is anticipated there would be more use of the Wilderness Area by those desiring a more primitive recreational experience as LPRP takes on the characteristics of an urban park setting. While there would be no direct effect on Hells Canyon from implementation of the proposed project, this increased use of the Wilderness Area is anticipated to occur at a faster rate with development of the marina, especially given the close proximity of the Wilderness Area to LPRP.

Clean Water Act (P.L. 92-500, as amended) – This Act strives to restore and maintain the chemical, physical, and biological integrity of the Nation's waters by controlling discharge of pollutants. The basic means to achieve the goals of the Clean Water Act is through a system of water quality standards, discharge limitations, and permits. Section 404 of this Act identifies conditions under which a permit is required for actions that result in placement of fill or dredged material into waters of the United States (U.S.). In addition, a 401 water certification and 402 National Pollutant Discharge Elimination System permit are required for activities that discharge pollutants to waters of the U.S.

A Stormwater Pollution Prevention Plan would be designed by Stanley Consultants and an Arizona Pollutant Discharge Elimination System Stormwater Notice of Intent and Storm-water Notice of Termination would be submitted to the State. In-water turbidity booms would be used around the entire work area. A U.S. Army Corps of Engineers 404 permit would be secured for all construction activities within normal high water of Lake Pleasant (elevation 1,702 feet). An SPCC Plan would be prepared and implemented in accordance with the provisions of 40 CFR '112.7 with the express purpose of preventing the release of petroleum products onto or into surface waters.

National Historic Preservation Act (P.L. 89-665) - This Act establishes as Federal policy the protection of historic sites and values in cooperation with States, tribes, and local governments.

The project area and entire LPRP were previously surveyed for cultural resources in the 1990s. No archaeological sites were identified within the proposed project area at that time. Fourteen archaeological sites have been recorded within one mile west of the project area. Of these, seven sites were previously determined to be not eligible for the National Register of Historic Places, four sites were determined eligible, and the eligibility of the remaining three could not be determined without limited testing. No impacts on these resources are anticipated from the proposed action. Reclamation sent a Section 106 Consultation letter to the Arizona SHPO on November 22, 2005 and the SHPO granted a finding of “Concur, No Historic Properties Affected” for the project on November 28, 2005. As a precaution, construction specifications will include a requirement that all work must cease and the Reclamation project archaeologist and MCPRD staff be notified immediately should any artifacts be encountered during land disturbing activities.

A copy of the revised draft EA was sent to the tribes identified in Chapter 5. No traditional cultural properties or concerns were identified by any of the tribes.

Farmland Protection Policy Act (P.L. 97-98) - This Act requires identification of proposed actions that would adversely affect any lands classified as prime and unique farmlands, to minimize the unnecessary and irreversible conversion of farmland to nonagricultural uses. The U.S. Department of Agriculture’s Natural Resources and Conservation Service administers this Act. No prime farmlands have been designated in the project area, or within several miles of the subject property. The proposed action would not impact any lands classified as prime and unique farmlands.

Executive Order 11988 (Floodplain Management) - This Presidential directive encourages Federal agencies to avoid, where practicable alternatives exist, the short- and long-term adverse impacts associated with floodplain development. Federal agencies are required to reduce the risk of flood loss, minimize the impacts of floods on human safety, health and welfare, and restore and preserve the natural and beneficial values served by floodplains in carrying out agency responsibility. Per the Flood Control District of Maricopa County, the proposed action would not occur in a designated floodplain.

Executive Order 12898 (Environmental Justice) - Executive Order 12898 requires Federal agencies to identify and address, as appropriate, disproportionately high and adverse human health or environmental effects of Federal actions on minority populations and low-income populations. Low-income populations include communities or individuals living in close geographic proximity to one another, identified by U.S. Census Bureau statistical thresholds for poverty. Minority populations are identified where the percentage of minorities in the affected area exceeds 50 percent, or where the minority population percentage of the affected area is meaningfully greater than the minority population percentage of a much broader area. Neither of these conditions exists within the local area: No disproportionately high and adverse human health or environmental effects on minority populations and low-income populations would result from the proposed project; and the project area is located within the boundaries of the LPRP, which has no permanent residents. No land acquisition would be required for the proposed project.

Executive Order 11990 (Wetlands) - Executive Order 11990 requires Federal agencies, in carrying out their land management responsibilities, to take action that would minimize the destruction, loss, or degradation of wetlands, and take action to preserve and enhance the natural and beneficial values of wetlands.

The project would require the filling of an approximate total area of about 7.5 acres below elevation 1,702 feet on the northwest part of the site for development of the parking area adjacent to the boat ramp and the dry stack building. No wetlands are located within this area. A Clean Water Act Section 404 Permit would be obtained from the U.S. Army Corps of Engineers for this work.

Department of Interior, Secretarial Order, Indian Trust Assets (ITAs) - ITAs are legal interests in assets held in trust by the U.S. Government for Indian tribes or individual Indians. These assets can be real property or intangible rights, including lands, minerals, water rights, hunting rights, money, and other natural resources. The trust responsibility requires that all Federal agencies take actions reasonably necessary to protect ITAs.

No ITAs are currently known to be present within the project area or that could be affected by implementation of the proposed action. In its scoping comment letter, the Bureau of Indian Affairs indicated it appeared the project was not located near Native American tribal lands; however, the Bureau of Indian Affairs did request a copy of the draft EA, which has been provided.

5.0 AGENCIES AND PERSONS CONSULTED

List of Preparers

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Eleanor Gladding, SWCA Biologist
Michael C. Vaile, P.E., Skipper Marine Development Engineer

List of Agencies and Persons Contacted

Federal Agencies
U.S. Department of the Interior
Bureau of Indian Affairs
Bureau of Land Management
Fish and Wildlife Service
U.S. Department of Agriculture, Forest Service, Tonto National Forest
U.S. Environmental Protection Agency

State of Arizona
Arizona Department of Environmental Quality
Arizona Game & Fish Department
Arizona State Historic Preservation Office

Native American Groups
Ak Chin Indian Community
Gila River Indian Community
Hopi Tribe
Pascua Yaqui Tribe
Yavapai-Apache Nation
Salt River Pima-Maricopa Indian Community
Yavapai-Prescott Indian Tribe

County and Local Governments
Maricopa County Parks & Recreation Dept.
Maricopa County Sheriff's Office, Lake Patrol
Maricopa County Flood Control District
Maricopa County Air Quality Department
City of Peoria

6.0 LIST OF ACRONYMS USED

ACS	Archaeological Consulting Services, Inc.
ADA	Americans with Disabilities Act
ADEQ	Arizona Department of Environmental Quality
ADOT	Arizona Department of Transportation
AGFD	Arizona Game and Fish Department
APE	Area of Potential Effect
ARS	Archaeological Research Services, Inc.
ASU	Arizona State University
BAOT	boats on the water at one time
BLM	Bureau of Land Management (U.S. Department of the Interior)
CAP	Central Arizona Project
CAWCD	Central Arizona Water Conservation District
CAWCS	Central Arizona Water Control Study
CFR	Code of Federal Register
CO	carbon monoxide
COUNTY	Maricopa County (governmental entity)
EA	environmental assessment
EIS	environmental impact statement
FWS	Fish and Wildlife Service (U.S. Department of the Interior)
gpd	gallons per day
gpm	gallons per minute
ITA	Indian Trust Asset
LPRP	Lake Pleasant Regional Park
MCPRD	Maricopa County Parks and Recreation Department
MCSO	Maricopa County Sheriff's Office
MRP	Master Recreation Plan (for LPRP)
MWD	Maricopa County Municipal Water Conservation District #1
NEPA	National Environmental Policy Act
NOx	nitrogen oxides
NTU	NephelometricTurbidity Unit
O_3	ozone
PM_{10}	particulate matter up to 10 micrometers (diameter) in size
RECLAMATION	Bureau of Reclamation (U.S. Department of the Interior)
SPCC	Spill Prevention Control and Countermeasures Plan
SWCA	SWCA Environmental Consultants, Inc.
TDS	total dissolved solids
UMA	Use Management Agreement
VOCs	volatile organic compounds

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