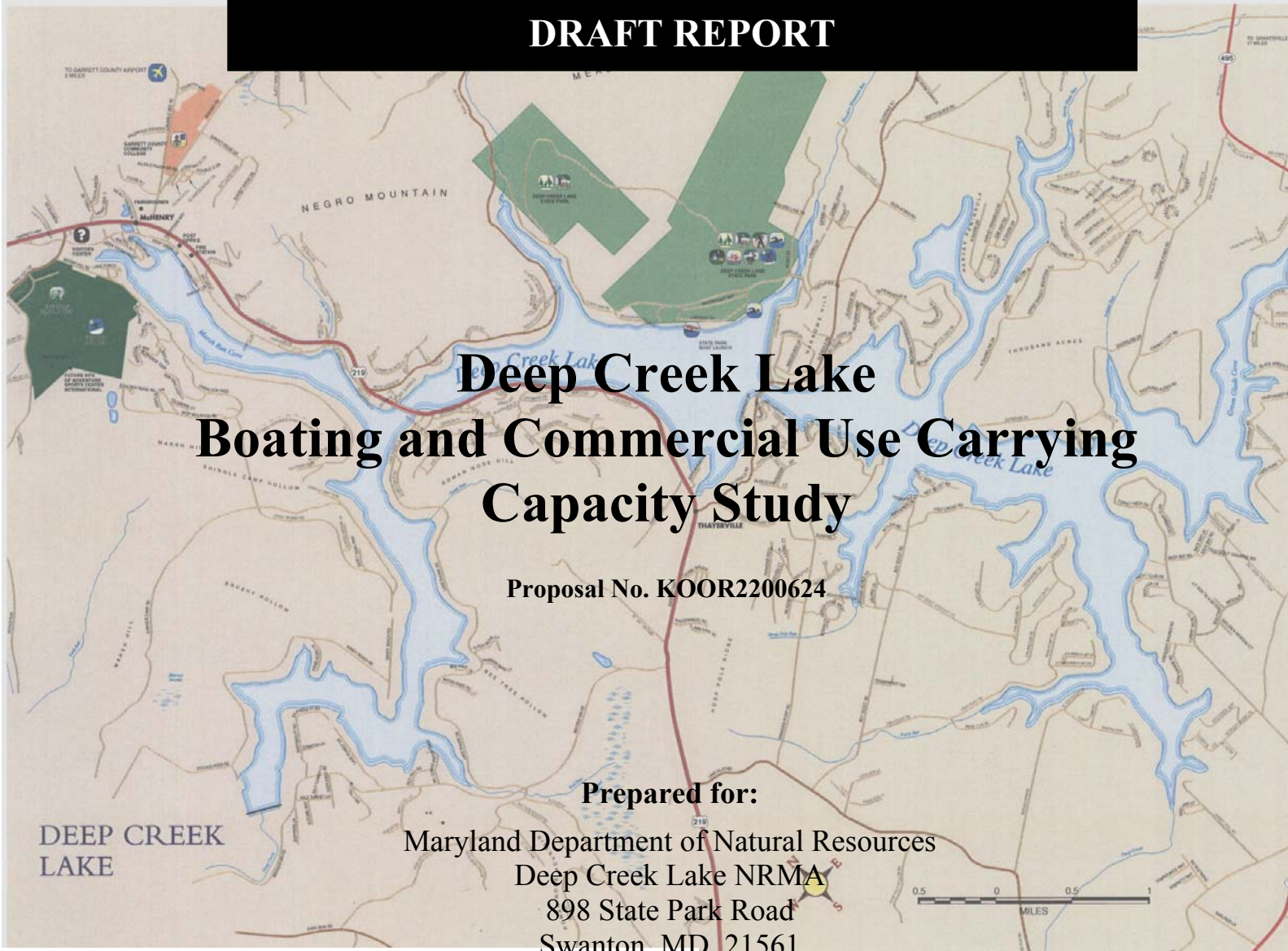


DRAFT REPORT



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1.0 INTRODUCTION

Deep Creek Lake is located in central Garrett County, the westernmost county in Maryland. The lake has a surface area of 3,628 acres with a storage volume of approximately 106,000 acre-feet, and drains an approximately 64.7 square mile-watershed between Marsh Mountain, Meadow Mountain, Snaggy Mountain, and Roman Nose Hill. It was created in 1925 when the Pennsylvania Electric Company (Penelec) dammed Deep Creek, a tributary to the Youghiogheny River, to form the Deep Creek hydroelectric project. In 1968, the Federal Energy Regulatory Commission (FERC) issued a license to operate the hydroelectric project to Penelec. Penelec managed Deep Creek Lake for recreational use according to its own corporate policies until 1980, when the Maryland Department of Natural Resources (MDNR) assumed responsibility for managing recreation and access at Deep Creek Lake according to a FERC-approved contract between the MDNR and Penelec.

The MDNR's regulations concerning recreation at Deep Creek Lake were established through a public process in 1981 and have been updated four times since then, most recently in 2000. In 2000, General Public Utility, Penelec's holding company, sold the lake bottom and a buffer zone surrounding the lake to the State of Maryland. Also in 2000, the Maryland General Assembly recognized the unique recreational value of Deep Creek Lake and enacted legislation to guide the management of Deep Creek Lake into the future. This legislation established the Deep Creek Lake Policy and Review Board (PRB), which is responsible for advising the MDNR on issues related to lake fees, budget, and management. Since the creation of the PRB in 2000, recreation at Deep Creek Lake has been managed by the MDNR with input from the PRB. One of the primary management goals for Deep Creek Lake (as stated in Code of Maryland Regulations, Title 08, Department of Natural Resources, Subtitle 08 Deep Creek) is *"to work toward a reasonable balance preserving an acceptable quality of recreational experience on Deep Creek Lake, while at the same time providing for the greatest use of the lake consistent with a quality experience and safety of all users of the lake."*

In response to growing concern that increasing recreational boat traffic may have reached unsafe levels and was changing the character of the lake, the MDNR contracted with Urban Research and Development Corporation (URDC) to perform a recreational carrying capacity study in 1988. The URDC study suggested several management objectives for the future, and proposed several specific management actions meant to improve safety, maintain the quality of the recreational experience, and prevent management crises from developing at the lake. In response to the recommendations of the URDC study, the MDNR and the Deep Creek Lake Advisory and Review Committee (the precursor to the PRB) implemented several new regulations to address boating issues, including:

- speed limits and use restrictions in certain areas;
- a 3-knot minimum wake speed limit within 100 feet of shore;
- restrictions on personal watercraft use;
- management of new slips and buffer-strip use permits;

- an environmental monitoring program; and
- an expanded information and education effort.

Since 1988, Garrett County's population and economy have experienced significant growth. The Deep Creek Lake Land Use and Recreation Plan (LURP), which was prepared by the MDNR and PRB in July 2001, indicates that "fairly extensive development has occurred at several places around the perimeter of the Lake." It also states "more than 40 percent of the subdivisions in Garrett County between 1986 and 1996 were for homes in the Deep Creek Lake area" (LURP, 2001). Recognizing the increasing demand for lake-oriented recreation, the MDNR and PRB recommended that an independent recreation carrying capacity study be conducted to update the URDC study and to assist the MDNR and PRB in developing proactive management strategies for dealing with the increase in recreational demand at Deep Creek Lake.

The general purpose of this study is to provide the independent carrying capacity assessment as recommended by the MDNR and PRB. This study was specifically conducted to determine: current/existing recreational boating lake uses; potential/projected future recreational boating uses; optimal recreational boating use carrying capacities, the ability of the lake to accommodate existing and future demands; and management options for controlling growth if boating commercial uses at the lake meet or exceed carrying capacity. In addition to simply quantifying existing and future recreational use, this study also provides information to help address some of the recreational use issues and conflicts that currently exist at Deep Creek Lake. These include: balancing protection of Deep Creek Lake and the desire for economic development in Garrett County; the appropriate amount and type of commercial use along the Deep Creek Lake buffer; and need for additional public boat access so people without dock permits can easily access this valuable recreational resource.

2.0 METHODOLOGY

2.1 Data Collection

Several types of data related to recreational and commercial use of Deep Creek Lake were collected during the 2003 summer recreational period (approximately Memorial Day through Labor Day). These data included a recreational facility inventory, recreational and commercial use patterns, boating use, and information on growth and development in Garrett County, particularly in the immediate vicinity of the lake.

Recreational Facility Inventory

Available recreational use information was collected and a field survey was conducted to characterize existing public, private, and commercial recreational facilities. This information was collected from several sources, including the 1988 Deep Creek Lake Carrying Capacity Report, MDNR's buffer strip use permit files, and the Deep Creek Lake Recreation and Land Use Plan. The field survey involved ground-truthing the recreational inventory, and collecting information on the type and location of recreational facilities (e.g., boat ramps, parking) at Deep Creek Lake State Park and commercial recreational facilities at Deep Creek Lake, including boat rental facilities.

Recreational Use

Recreational users, lakeshore residents, and commercial operations were surveyed via contact surveys, mail-back surveys, and phone surveys to estimate recreational use at Deep Creek Lake. These surveys provided information from a representative sample of the different user groups (i.e., waterfront residents, non-waterfront residents, commercial operators, and day users) recreating on the lake throughout the summer. The user contact surveys were conducted at the Deep Creek Lake State Park boat ramp, on a boat on the lake, and at commercial businesses on weekdays, weekends, and holidays in order to collect demographic and user preference information. Spot counts were conducted concurrently with the user contact surveys to determine patterns of use during peak and non-peak use periods.

Spot counts were conducted at the Deep Creek Lake boat ramp, on the lake by boat, and from aerial photographs taken by plane. These spot counts included information on the number and type of watercraft on the lake.

Deep Creek Lake was surveyed from late May through Labor Day (study period), which corresponds to the primary recreation season at the lake. All calendar days in the study period were stratified by holiday weekend days (i.e., Memorial Day, 4th of July, Labor Day weekends), other weekend days, and weekdays for each month to ensure adequate sampling for the entire summer recreational season. Table 2-1 provides a summary of the surveys administered during the 2003 recreational season.

Table 2-1. Recreational Surveys Conducted During the 2003 Study Period

	Holiday weekends	Other Weekends	Weekdays
Boat Spot Counts/Contact Surveys	3	5	2
Ramp Spot Counts/Contact Surveys	4	4	4
Aerial Spot Counts	1	2	0

Spot Counts

For the spot counts at the Deep Creek Lake State Park boat launch, all boats launched over a 10-hour period (approximately 8:00 am to 6:00 pm) were counted and the time boats were launched and returned was noted (boats launched before 8:00 am were counted as they returned). The number of vehicles, boat trailers, jet ski trailers, and rooftop carriers (for canoes) at the parking lot were recorded and the number and type of boats launched were tallied. In addition, the length of time people waited to launch their boat was recorded.

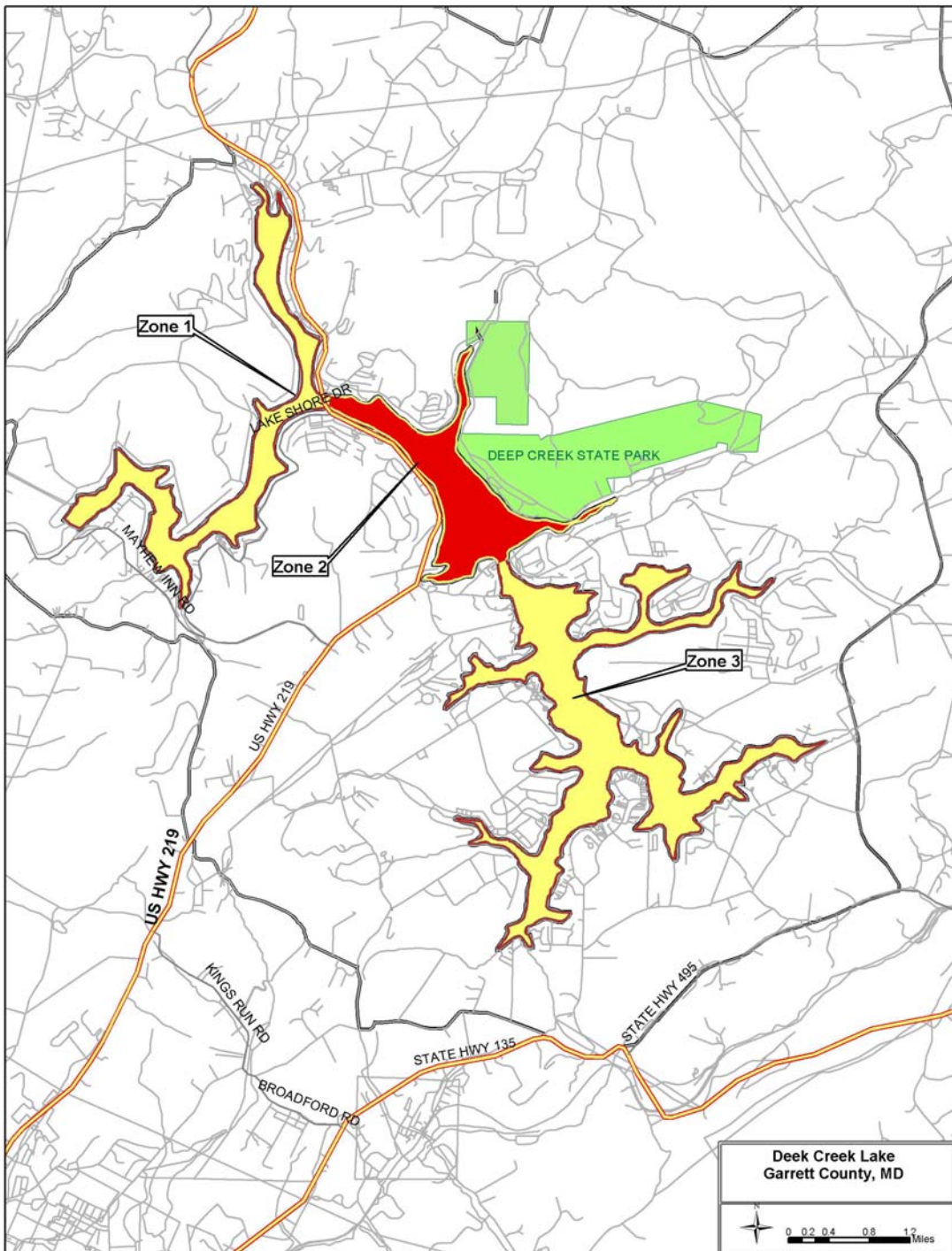
For the spot counts conducted by boat, the lake was toured beginning approximately at 8:30 am and all boats in use were counted, noting the number and type of boats. For the purposes of the lake spot count the lake was subdivided into three sectors (northern, central, southern) (Figure 2-1). Two or three spot counts were conducted in each of the lake's three sectors over the course of each survey day.

For the aerial photographs, a series of almost vertical (approximately 85 degrees) photographs were taken sequentially over the lake. The photographs were taken at a sufficiently low altitude that the number and type of boats could be readily identified. This allowed an accurate estimate of the boats-at-one-time (BAOT) on the lake during these periods. This methodology was essentially identical to that used by MDNR over the past decade to count boats. The only difference was that this study took aerial photographs and counted boats from the aerial photographs while the MDNR counts were taken directly from the plane.

Recreational Use Contact Survey

In conjunction with the spot counts at the Deep Creek Lake State Park boat launch and on the lake, a recreational use survey was administered which provided information on user characteristics, activities, concerns, and overall recreational experience. The recreational contact survey was also given to customers at every commercial boat rental concessionaire. A total number of 263 surveys were collected and evaluated as part of the recreational use analyses.

Figure 2-1. Lake Sectors used in the DNR and ERM Aerial Boat Count Surveys



Prior to implementing the survey, the recreational contact survey form, as well as the spot count form, was presented to MDNR and PRB. Input was solicited from the PRB and MDNR on the draft forms and the forms were modified as appropriate to incorporate the PRB's and MDNR's comments. Appendix A provides the visitor use (contact) survey.

Waterfront Resident Mail Back Survey

A mail-back survey was mailed to all approximately 1,900 buffer strip use permit holders who have direct private access to Deep Creek Lake, and approximately 10% of the common dock slipholders. This survey provided information on user characteristics, activities, concerns, and overall recreational experience of waterfront residents, and residents who live near the lake and have access to it through community piers or homeowner associations. The approximately 1,900 buffer strip use permit holders were divided into three equal sets and one third of the permit holders were surveyed in June, July, and August. This approach controlled for weather-related effects on recreational use and other temporary factors that have the potential to skew the results of the study. An addressed, stamped return envelope was provided with each mail-back survey to encourage a high return rate. A total number of 910 surveys were received and evaluated as part of the recreational use analyses.

The resident mail-back survey was similar to the recreational use contact survey in terms of obtaining basic user demographics, use levels, recreational activities, and opinions on the adequacy of recreational facilities and services as well as crowding. In addition, however, this survey collected information on whether the waterfront user is a year-round resident, whether the residence is used as a rental, (and if so how many weeks during the summer it is rented), and other similar information to help assess overall recreational use.

Like the recreational contact survey form, the resident survey form was presented to MDNR and PRB for input and approval prior to distributing it to the public. Appendix B provides the resident survey.

Commercial Business Survey

A commercial business survey was administered to all the boat rental concessionaires with permits for use of the Deep Creek Lake buffer strip (a total of 8 concessionaires). The surveys were used to collect information on existing services offered at Deep Creek Lake and trends in commercial activity at the lake. A total number of 7 concessionaires provided input that was factored into the analyses.

2.2 Data Compilation and Analysis

The following section summarizes the data compilation and assessment phases of the carrying capacity assessment.

Summary of Previous Recreational Use Studies and Data Collection Efforts

A review and summary of previous recreational studies associated with Deep Creek Lake and previous data collection efforts was conducted. Studies reviewed and summarized included a 1988 recreational carrying capacity study for Deep Creek Lake (URDC, 1988a); a study to assess the feasibility of requiring mandatory lake use stickers for boaters on Deep Creek Lake (MDNR, 1994); a visitor use and attitude survey to provide information regarding visitors to Deep Creek Lake State Park (MDNR, 1998); and boat count data collected by MDNR on various weekend and holiday afternoons during July through early September from 1991 through 2003 (MDNR, 2004). This information provided a context for the assessment of recreational use trends and changes at Deep Creek Lake.

Recreation User Surveys and Spot Counts

Responses to the resident, commercial, and contact survey and information collected concurrently with the spot counts were analyzed to assess recreational use characteristics and boating use characteristics. Recreational use characteristics included basic demographics (e.g., age, sex, place of residence), length of stay, party or household size, frequency of recreational use at Deep Creek Lake, type of recreational activities, degree of crowding, and conflicts with other recreational users. A boating characteristics assessment, which included analyses of boating use by type of day and month, by type of boat, by lake sector, and boating crowdedness and density was also completed. The 2003 spot count data and the MDNR boat count data were analyzed to determine the peak boating use measured in boats at one time (BAOT) on the lake.

Projected Future Recreational Use

An assessment of regional demographics and development trends within the region surrounding Deep Creek Lake was conducted to determine the anticipated development potential within the Deep Creek Lake area. In addition, regional recreational use trends and projections were analyzed and summarized. Finally, the development trend information, the recreational use trends information, and past recreational use trends at Deep Creek Lake were assessed to provide input on anticipated future recreational use trends at Deep Creek Lake.

Carrying Capacity Assessment

The overall boat carrying capacity for Deep Creek Lake was assessed based on a modification of standards and procedures identified in “Guidelines for Understanding and Determining Optimum Recreation Carrying Capacity” (BOR, 1977) and “Management of Aquatic Recreational Resources” (Warren and Rea, 1989). Several data items were identified including:

- peak boating use estimate, including BAOT for weekends and holidays;

- total usable boating surface area;
- optimum boating acres per boat for each boat activity type; and
- distribution of the type of boating per category, i.e., what percent of the total boating use is motor boating, sailing, jet skiing, etc.

ERM supplemented the MDNR boat count data from 2003 with boat count data from aerial over flights on July 4th, August 17th, and August 23rd. ERM's aerial surveys were conducted generally in accordance with the same methodology used for the MDNR counts (see section 4.1), therefore the data from ERM's over flights are comparable to the MDNR's aerial boat count data.

The type and distribution of the boating use was obtained from the aerial surveys conducted during the 2003 period. The usable boating surface area was determined by subtracting all areas within 100 feet (allowable length of piers) of the shoreline from the total surface area at full pond and. These restrictions were applied to establish a conservative estimate of the usable boating surface area available at Deep Creek Lake.

The carrying capacity of the lake was calculated using the existing distribution of watercraft in each of the three zones of the lake and applying a use factor (i.e., acres of water surface needed for safe operations per each type of watercraft) based on prior research (Warren and Rea, 1989).

Type of Watercraft	Use Factor	% Boat Use by Zone		
		North	Central	South
Motorboats -	9.0 acres per boat	51.8%	53.7%	47.0%
Boat fishing -	1.3 acres per boat	27.9%	28.9%	25.3%
Sailboats -	4.3 acres per boat	0.3%	1.9%	14.4%
Personal watercraft -	4.3 acres per boat	13.4%	9.8%	6.5%
Canoes/kayaks -	1.3 acres per boat	0.0%	0.7%	0.3%
Waterskiing boats -	12.0 acres per boat	6.6%	4.9%	6.5%

The overall carrying capacity for each lake zone was determined by an equation that maintained the percent boat use and applied the use factor to the net area of each lake zone (732 acres in the North, 672 acres in the Central, and 1,535 in the South).

3.0 RECREATION FACILITY INVENTORY

Recreational facilities associated with boating at Deep Creek Lake include the formal and informal public boat launch facilities at Deep Creek Lake State Park, private residential docks, commercial boat rental docks, private yacht clubs, and common docks (docks that are jointly owned by several residents or community associations). Table 3-1 provides an inventory of each type of facility at Deep Creek Lake.

Table 3-1. Boating-Related Recreational Facilities at Deep Creek Lake

Facility type	Number	Description
Public boat ramp	1	Deep Creek Lake State Park. Two boat ramps with parking for vehicles and trailers.
Car top boat launch (informal)	1	Deep Creek Lake State Park. Unimproved. On shoreline adjacent to Deep Creek Lake State Park Visitor's Center. No parking.
Private residential docks	1,626	Floating docks only. Total number of docks on lake subject to change as residents remove docks annually during winter and replace them at varying times each spring. Number of private docks in use peaks in mid-summer
Commercial boat rental businesses	8	Eight boat rental concessionaires operated on Deep Creek Lake in 2003. The total commercially available rental fleet consisted of approximately 310 boats (250 powerboats; 30 non-powered craft; and 30 PWCs) in 2003.
Private yacht clubs	2	Turkey Neck Yacht Club and Deep Creek Yacht Club are both located in the southern zone of Deep Creek Lake.
Common docks	97	The total estimated number of slips that are held by permit holders is currently about 1,560 slips

The MDNR maintains a launch facility at Deep Creek Lake State Park. The facility consists of two double-wide boat ramps and two piers with eight transient slips available for public use. The parking lot at the State Park boat ramp has the capacity to accommodate 80-100 tow vehicles and trailers, although the capacity of the parking lot is somewhat affected by the orientation and size of parked vehicles. During scheduled special events, such as fishing tournaments, the DNR may utilize additional parking facilities to accommodate event participants' vehicles in order to maintain capacity for transient vehicles in the main lot. The MDNR also maintains another public dock for transient use at the Deep Creek Lake State Park Visitor's Center. This facility does not have individual slips, but is of sufficient size to accommodate several small to medium-sized boats.

There is one cartop boat launch area on the shoreline at Deep Creek Lake State Park adjacent to the Deep Creek Lake State Park Visitors Center. This is an informal launch area; i.e. no facilities or improvements exist at this location. No parking is

provided, and no fees are charged at this location. Watercraft launched at this location are generally limited to kayaks, canoes, inflatable watercraft, and other small watercraft that may be transported without a trailer.

Private residential docks account for the largest number of on-water boat storage facilities on the lake. The MDNR regulates docks on the lake through the buffer strip use permit program. According to the MDNR's regulations all private docks must be removed from the lake by December 1 and are not permitted to be replaced on the lake until April 1. The requirement to remove docks by December 1 is strictly enforced; however the MDNR may allow property owners to replace their docks prior to April 1 if the lake is free of ice on a discretionary basis. Private dock owners may keep multiple boats at their docks. Private docks are not allowed to exceed 100 feet in total length, or 1/3 of the distance between the shores of lake, whichever is less. Private docks are also not allowed to extend past the side boundaries of a lot. For common residential permit holders, the total estimated number of slips that are held by permit holders is currently about 1,560 slips.

There are eight commercial boat rental concessionaires currently operating on Deep Creek Lake (Figure 3-1). Most of the concessionaires rent powerboats exclusively, however one rental operation specializes in PWCs and another rents non-motorized vessels including canoes and kayaks. Boat rental docks are subject to the same regulations as private residential docks, however docks on commercial property require a commercial buffer strip use permit rather than a private buffer strip use permit.

Turkey Neck Yacht Club and Deep Creek Yacht Club are the only two private yacht clubs on Deep Creek Lake, both of which are located on the southern end of the Lake (Figure 3-1). The total number of boats docked or moored at each club varies. The majority of boating traffic emanating from the yacht clubs consists of sailboats. Sailing regattas, which contribute large numbers of sailboats to the lake at one time, are held on weekends throughout the summer. The effects of these regattas on boating traffic can be very significant in the vicinity of Turkey Point (Figure 3-2). However, these effects are localized because the regattas are generally confined to a triangular course in the vicinity of Turkey Point.

Figure 3.1 Boat Rental Concessionaires and Yacht Clubs at Deep Creek Lake

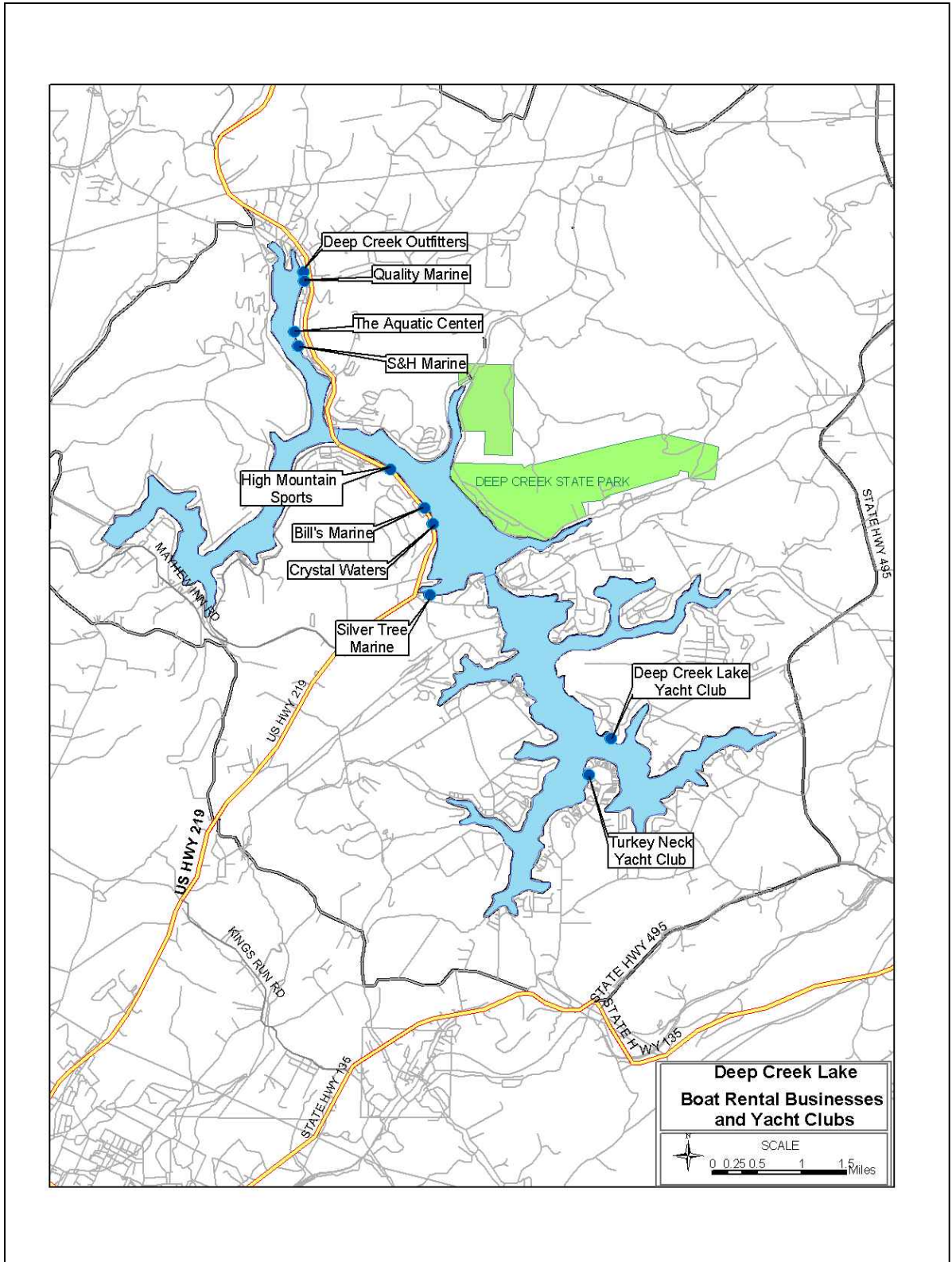


Figure 3.2. A sailing regatta near Turkey Point. Note the high concentration of sailboats in the central portion of the lake. Under Maryland law, power boats must yield right of way to vessels under sail. These events restrict the area of the lake available to other types of vessels navigating in this area.



4.0 RECREATIONAL USE ASSESSMENT

4.1 Summary of Previous Recreational Use Studies and Data Collection Efforts

This section summarizes some of the key findings of several previous recreational use studies and data collection efforts conducted at Deep Creek Lake. This information can be used to provide a context for recreational use trends and changes at Deep Creek Lake.

1988 Recreational Carrying Capacity Study

In 1988, MDNR conducted a recreational carrying capacity study for Deep Creek Lake NRMA (URDC, 1988a) to assess recreational use carrying capacity levels and to propose potential management guidelines for recreational use at Deep Creek Lake. The study included four surveys: an on-site user survey, a residential property owner survey, a business survey, and a boat use survey.

The results of the residential survey indicated that about 8 percent of the respondents were from the Deep Creek Lake area, 14 percent from the Baltimore area, 17 percent from the Pittsburgh area, 12 percent from the Washington, D.C. metropolitan area, 22 percent from other parts of Maryland, and the remaining from other areas. The primary recreational activities reported included motor boating, waterskiing, boat fishing, swimming, sunbathing, and picnicking.

The results of the residential survey indicated that 23 percent of the respondents were year-round residents of the Deep Creek Lake area, 20 percent were from the Pittsburgh area, 20 percent from the Washington D.C. metropolitan area, 9 percent from the Baltimore area, and the remaining from other areas. Swimming, sunbathing, motor boating, waterskiing, and boat and shoreline fishing were the most popular summer recreational activities.

The results of the business survey indicated that about 21 percent of the businesses were involved in the motel, hotel and cottage business, followed by contractor and other businesses, both at 13 percent, and marinas at about 9 percent. About 85 percent indicated that their business had been in existence for ten years or more, and about 67 percent had owned or managed their business for ten years or more. The clientele during 1986-87 were reported to be about 25 percent overnight/weekend visitors, 20 percent seasonal residents, 20 percent week-long to month-long residents, 17 percent non-lake county residents, 6 percent non-lake non-county residents, and 9 percent year-round residents

The results of the boat use survey and assessment found that on peak summer weekend days there were a maximum of 275 to 280 BAOT based on aerial flights taken at during this period. The study also found that an average of 3,477 boats were counted in slips around the lake on summer weekend survey days, and that an average of 102

boats were launched at boat ramps (public boat ramp at Deep Creek Lake State Park and at the private boat ramp run by Quality Marine in McHenry) during this same period. At the time of the study there was estimated to be about 6,700 boat slips under permit at Deep Creek Lake. The boating mix for the northern lake area was estimated to be about 10% boat fishing, 5% non-power boating, 45% power boating, 15% sail boating, and 25% waterskiing. The boating mix for the southern lake area was estimated to be about 10% boat fishing, 5% non-power boating, 35% power boating, 25% sail boating, and 25% waterskiing.

For the boating carrying capacity assessment, the lake was divided into four different lake areas: ends of coves, cove areas, northern lake area, and southern lake area. Table 4-1 summarizes the gross and net acres (subtracting a 100-foot no-wake zone area around the perimeter of the lake) and the estimated carrying capacity per lake zone.

Table 4-1. Summary of Boating Carrying Capacity Estimates per Lake Area

Lake Area	Gross Acres	Net Acres	Carrying Capacity
End of Coves	164	94	82 boats
Cove Areas	812	563	111 boats
Northern Lake Area	1,310	1,095	242 boats
Southern Lake Area	1,387	1,216	267 boats
Total	3,673	2,968	702 boats

Source: URDC, 1988a

The study concluded that the consideration of additional social capacity factors justified reducing the overall capacity estimate by half to about 350 boats. The factors considered included survey responses indicating that there were too many boaters on the lake during peak summer weekends (75 percent of the property owners surveys and 93 percent of the on-site users surveyed indicated that there were too many power boaters), the narrowness and irregular shape of the lake, and the mixture of boating uses, (various boating speeds and mixed boating skill levels).

1994 Feasibility Study for Boat Sticker System

In 1994 MDNR conducted a study to assess the feasibility of requiring mandatory lake use stickers for boaters on Deep Creek Lake (MDNR, 1994). As part of this study MDNR assessed the number and makeup of boat launches at Deep Creek Lake State Park. During May through September 1994 there were an estimated 5,028 total launches at the State Park boat launch. Surveys of the boat launchers were conducted in 1990 and 1994 and found the following composition of user groups:

User Group	1990	1994
Property Owners	16%	43%
Rental Property Owners	50%	18.5%
Day Use	34%	21%

As part of the study a survey of lake boaters was conducted at various random places around the lake. About 79% of those surveyed felt that over the previous five years that the levels of boating use had increased, about 74% felt that the level of enforcement of boating regulations and amount of patrols were appropriate, and about 77% felt that the boating use restrictions were appropriate.

1997 Visitor Use and Attitude Survey

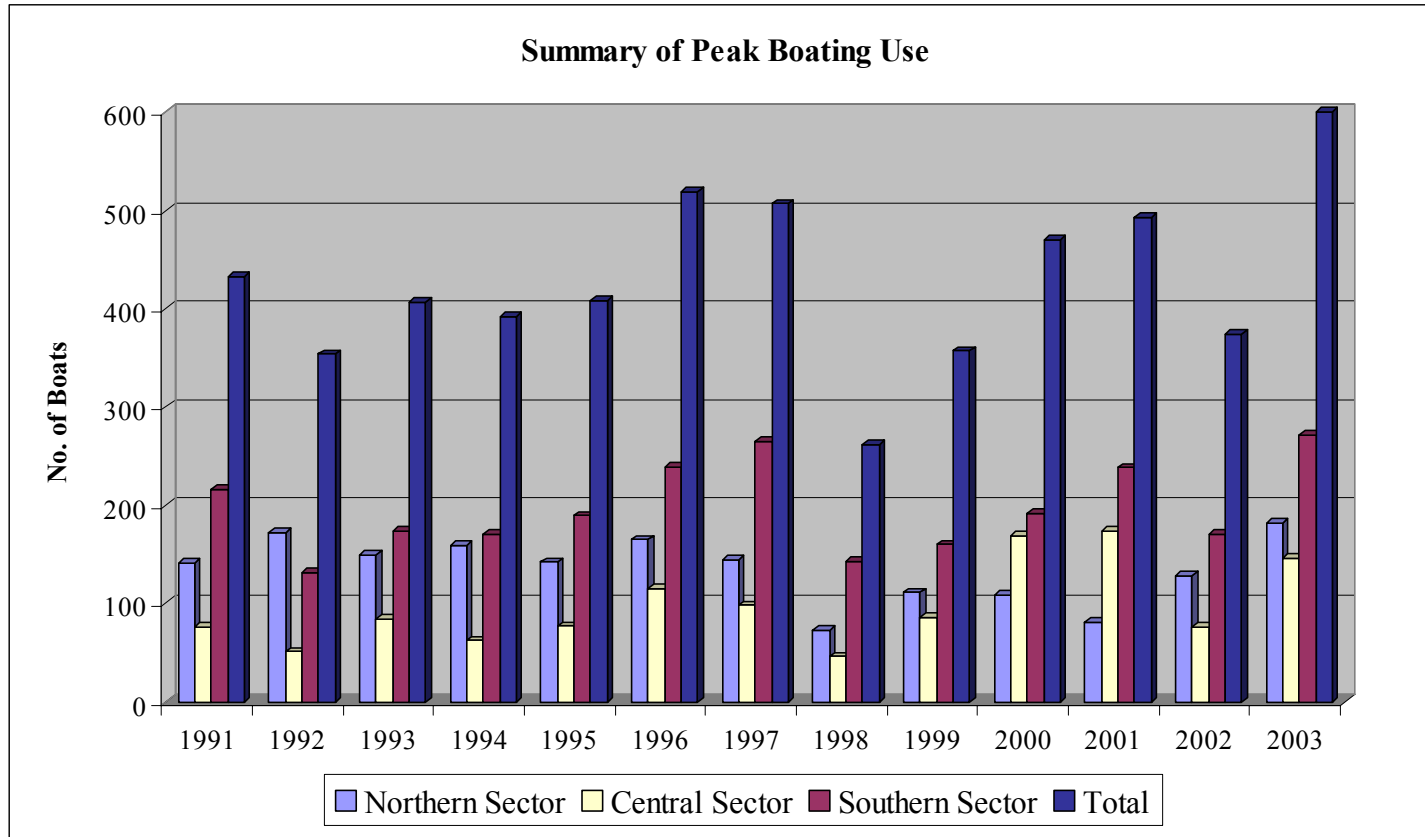
In 1997, MDNR conducted a visitor use and attitude survey to provide information regarding visitors to Deep Creek Lake State Park and perceptions about the facilities, programs and service delivery at the park (MDNR, 1998). The primary recreational activities of those surveyed were: swimming (63%), picnicking (51%), boating (49%), camping (45%), walking (44%), hiking (42%), and fishing (41%). About 75 % of those surveyed reported that the park was their primary trip destination. About 54% of the respondents were Maryland residents, about 21% from Pennsylvania, about 8% from West Virginia, and about 5% from Virginia. Only about 6% reported conflicts with other people, and about 15% reported conflicts within animals in the park.

Boat Count Data

MDNR collected boat count data on various weekend and holiday afternoons during July, August, and early September from 1991 through 2003. The lake was separated into three sectors: north, central, and south. Boat counts were conducted in each of the three lake sectors. The portion of the lake north and west of the U.S. 219 Bridge constituted the northern sector; the area between the U.S. 219 Bridge and the Glendale Bridge constituted the central sector; and the southern sector was comprised of the area south of Glendale Bridge (see Figure 2-1). Boats that were actively being used at the time of the over flight were counted within each sector. Boat trailers at the state park boat launch area were counted during the same period that the boat counts were conducted. The over flights were conducted at 2:00 pm during clear weather when the temperature was 70°F or warmer. The aerial surveyors followed a standardized route for each of the surveys, starting in the central sector, then proceeding to the southern sector, and terminating in the northern sector.

Table 4-2 summarizes the median, average, minimum, and maximum number of BOAT counted during each year, including both weekend and holiday counts. The maximum number of BOAT ranged from 262 to 600 based on the MDNR and ERM 2003 boat counts. Figure 4-1 shows the peak day boat counts for each year broken out by lake zone and the total count for that day. Figure 4-2 shows the percent distribution of boats per lake zone for the peak day for each year. The southern portion of the lake typically received the highest level of boating use, followed by the northern section and then the central section. The number of boats on the southern portion of the lake typically ranged from 40 percent to over 50 percent of the total BOAT on the lake.

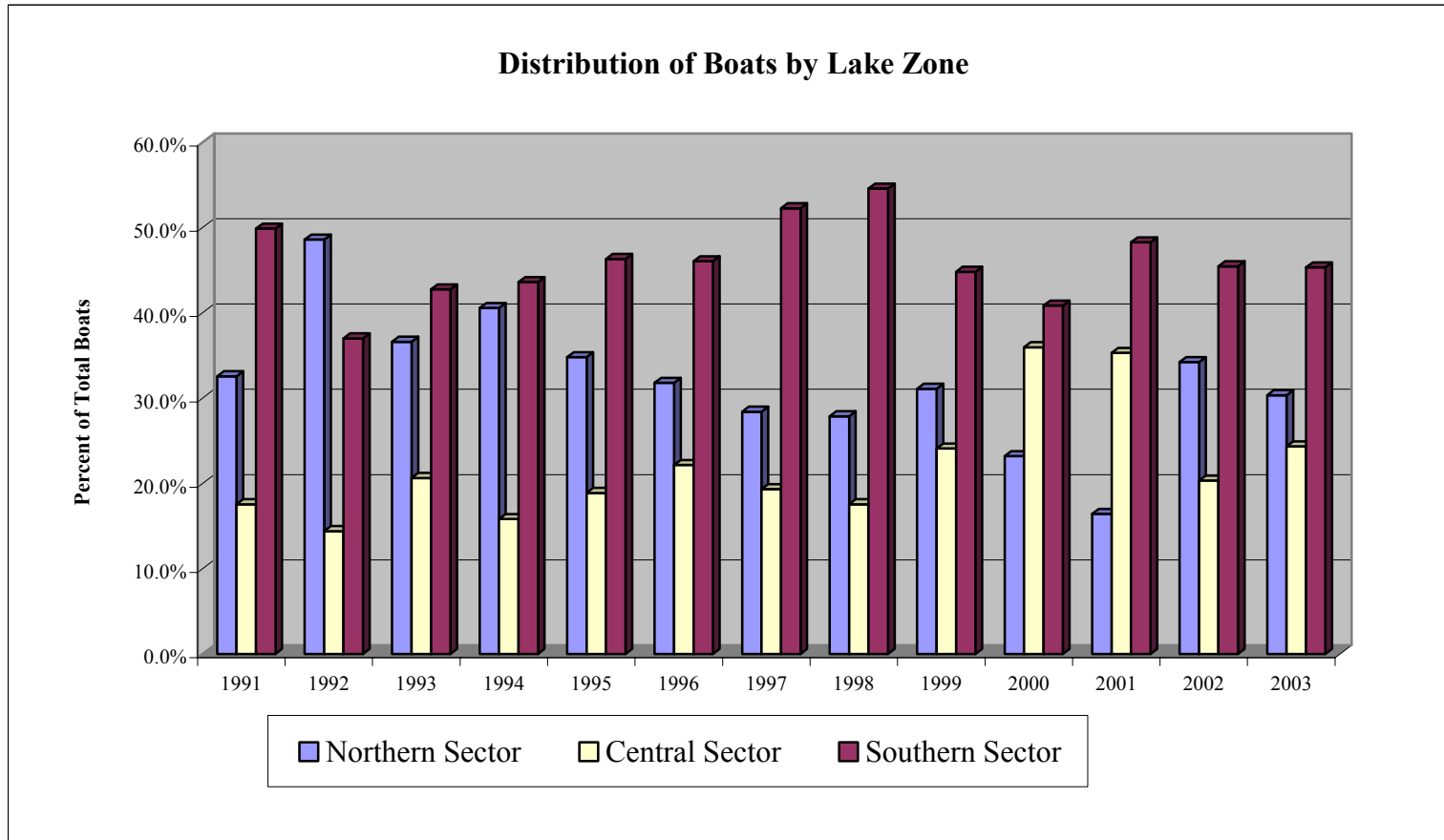
Figure 4-1. Summary of Peak Boat Use Day for Each Year During the 1991-2003 Period



Source: Data from MDNR, 2004

Note: Chart represents count of total boats on Deep Creek Lake at one time during peak day recorded for each year.

Figure 4-2. Distribution of Boats by Lake Zone Area



Source: Data from MDNR, 2004

Note: Chart represents percent of total boats on Deep Creek Lake at one time during peak day recorded for each year.

Table 4-2. Summary of BAOT Count Data at Deep Creek Lake from 1991-2003

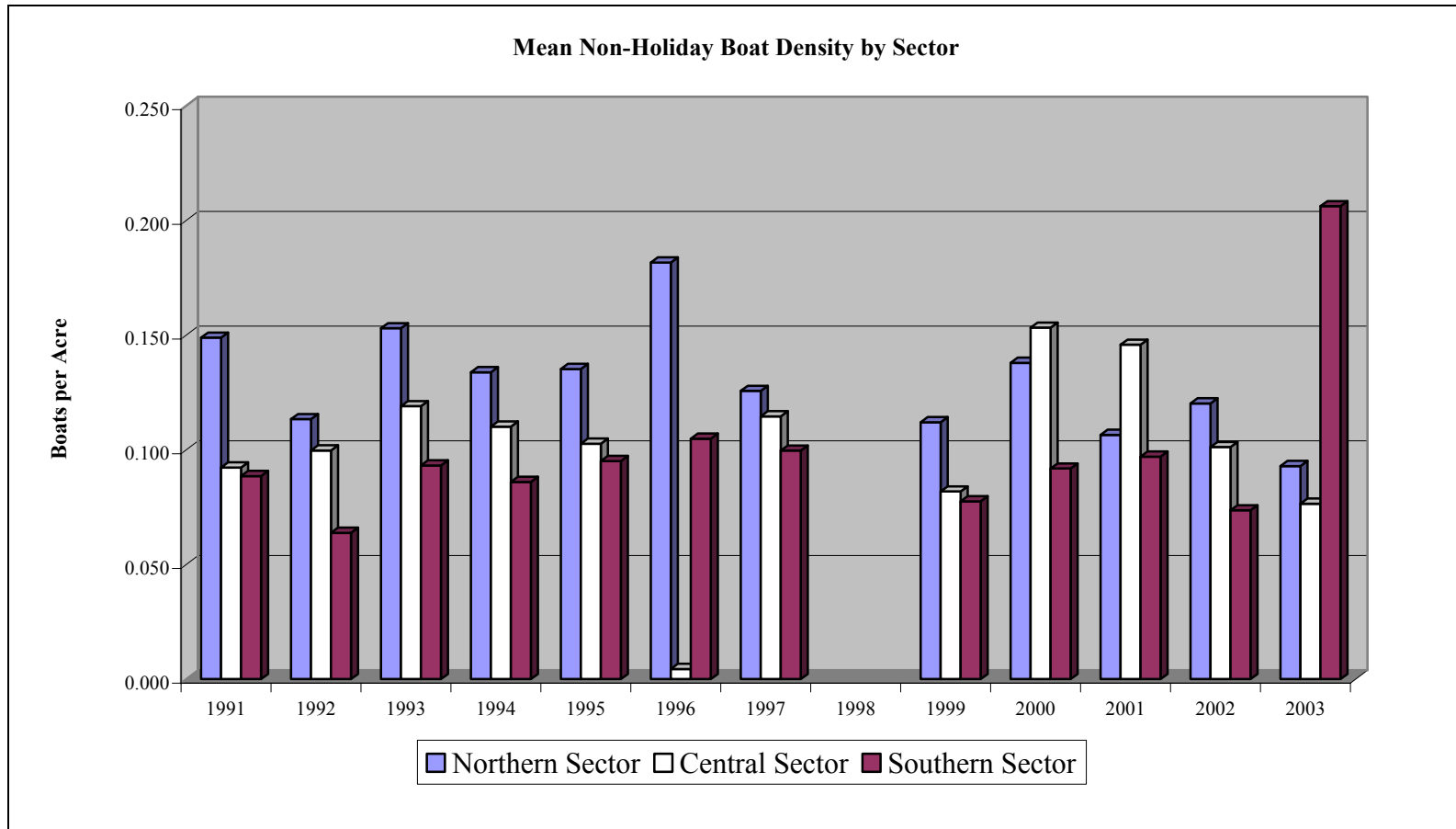
Year	No. of Counts	Median	Mean	Minimum	Maximum
1991	12	292	295	213	433
1992	10	249	256	113	354
1993	12	325	335	258	407
1994	8	295	299	214	392
1995	12	294	294	135	408
1996	10	362	387	288	519
1997	8	296	322	225	507
1998	1	262	262	262	262
1999	7	264	256	139	357
2000	5	347	345	215	470
2001	7	301	326	233	493
2002	8	257	269	188	374
2003	7	352	334	152	600

Source: Data from MDNR, 2004

Figures 4-3, 4-4, and 4-5 denote boat density by lake zone. Figure 4-3 denotes the average boat density by sector on non-holiday weekends. The highest density area was in the southern sector in 2003 with a density of 0.21 boats per acre (number of boats divided by the net lake area). Figure 4-4 denotes the average boat density by sector on holiday weekends. The highest density area was in the southern sector in 2003 with a density of 0.29 boats per acre. Figure 4-5 denotes the boat density by sector and for the total lake on the peak day for each year during the 1991-2003 period, based on the MDNR and ERM boat count data. The highest density was in the central sector in 2001 with a density of 0.26 boats per acre.

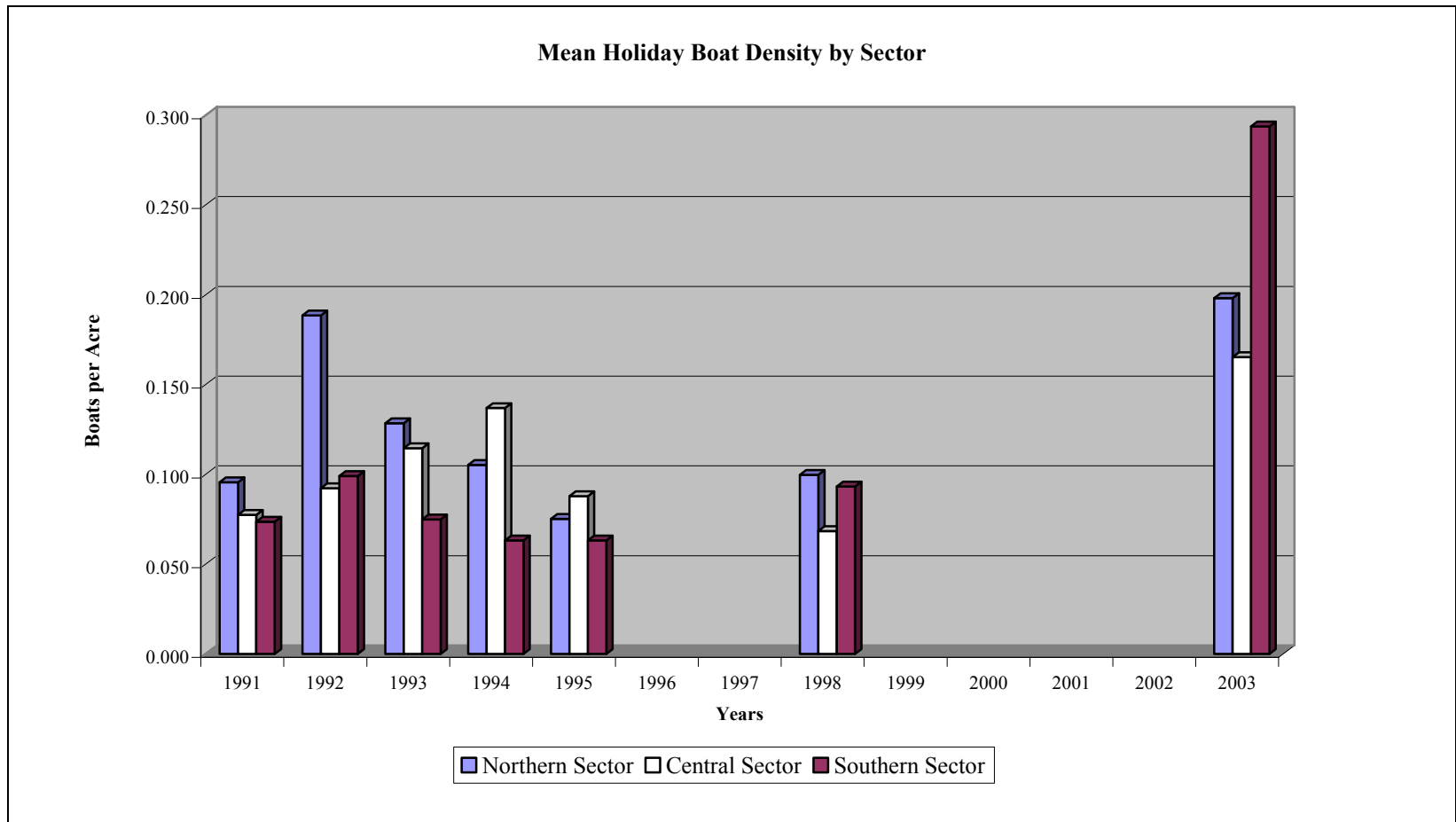
Table 4-3 summarizes the count of the boat trailers at the state parks during the days that data were collected by MDNR. During the 1991 to 2003 period, the average ratio of boat trailers in the state park boat launch area as compared to the total BAOT count for that day was about 22 percent, ranging from 16 to 29 percent on the peak days. The state park boat launch area has a capacity of about 80 to 100 cars with trailers. The boat ramp and parking lot was last expanded in 1991. During the 1991 through 2003 period there were 8 occasions when the number of boat trailers counted at the state park were over 80 and at no time did the number of trailers exceed 100.

Figure 4-3. Mean Non-Holiday Boat Density by Sector



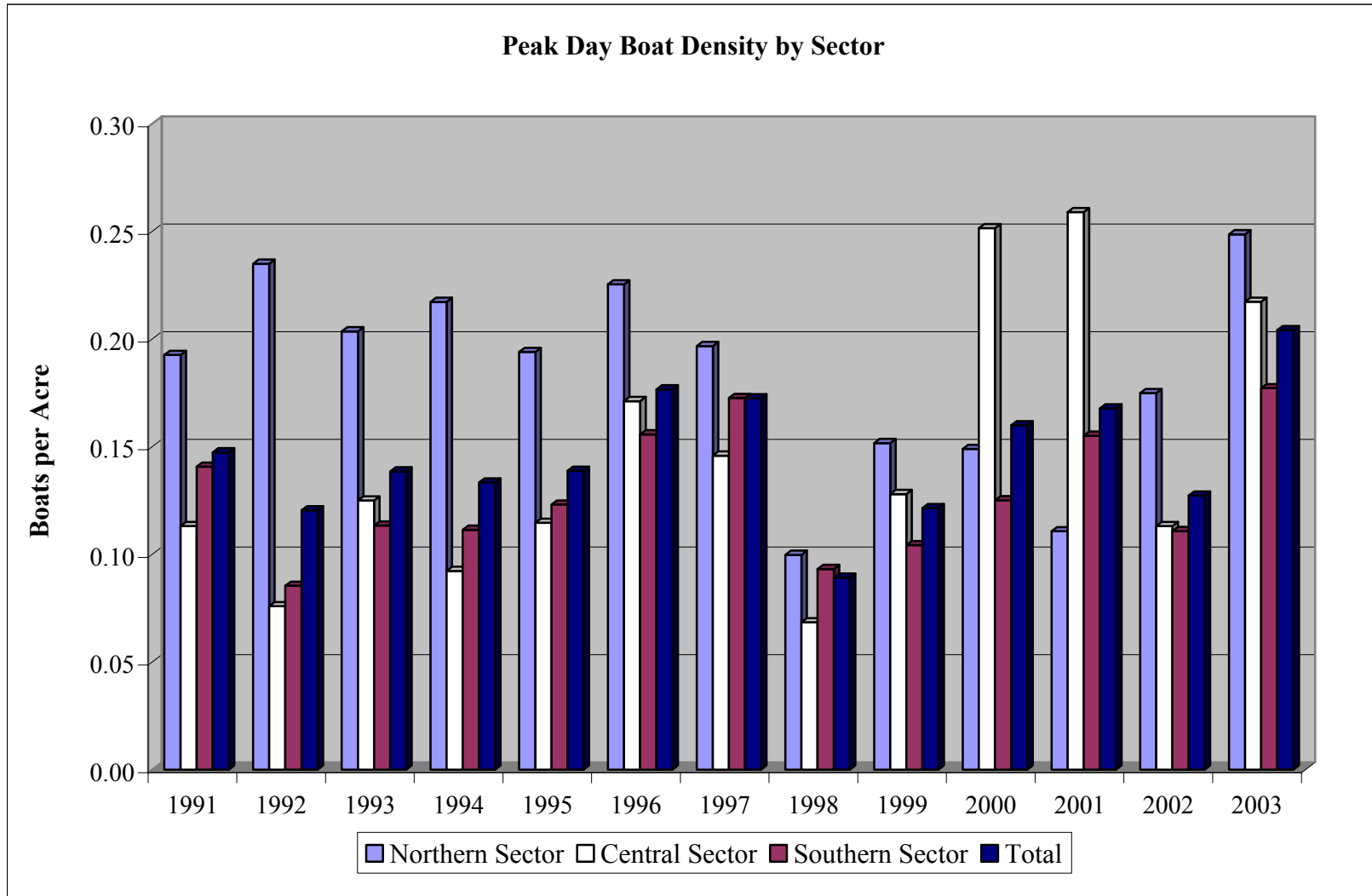
Source: Data from MDNR, 2004

Figure 4-4. Mean Holiday Boat Density by Sector



Source: Data from MDNR, 2004

Figure 4-5. Peak Day Boat Density By Sector



Source: Data from MDNR, 2004

Note: Chart represents density of boats on Deep Creek Lake at one time during peak day recorded for each year.

Table 4-3. Summary of Boat Trailer Counts at State Park

Year	No. of Counts	Mean	Minimum	Maximum	No. Times Count over 80
1991	12	54.5	34	68	0
1992	8	57.1	37	74	0
1993	1	70.0	70	70	0
1994	6	62.8	46	81	1
1995	12	46.5	15	83	1
1996	9	59.6	48	81	1
1997	6	58.8	36	70	0
1998	1	63.0	63	63	1
1999	6	59.0	32	87	1
2000	2	54.0	47	61	0
2001	6	73.2	57	91	1
2002	8	67.9	45	93	1
2003	6	70.3	52	95	1

Source: Data from MDNR, 2004

In addition to counting boats on the lake, MDNR also counted boats at docks and along the shoreline of the lake during the peak recreation season (July, August and early September) for certain days of each year for the 1996 to 2003 period. The total number of boats counted along the shoreline and docks combined ranged from 4,288 to 5,350 during this period. Of the two areas (docks and shoreline), the majority of the boats were located at docks, ranging from about 70 to 80 percent of the total as compared to those along the shoreline, ranging from about 19 to 30 percent of the total boats counted along the dock and shoreline areas.

Typically, the largest category of boats located at docks along the lake was motor boats, ranging from 55 to 68 percent of the total boats counted along the shoreline. The largest category of boats along the shoreline was jet skis, ranging from 47 to 72 percent of the total boats along the shoreline. Several of the counts were conducted during days where boats on the lake were also counted. During these periods, the boats counted on the lake represented about 3.6 to 7.4 percent of the total boats counted along the shoreline, at docks, and on the lake.

MDNR also collected information about the number of boats launched and rented from commercial marinas surrounding the lake. Table 4-4 provides a summary of the average boat rentals and boat launch counts for the weekends and holidays at the commercial facilities.

Table 4-4. Summary of Average Number of Boat Launch and Rentals at Commercial Areas

Year		July		August	September	
		Holiday	Weekend	Weekend	Holiday	Weekend
1991	Day Rentals	39	46	69	55	ND
	Boat Launch	14	25	25	31	ND
1992	Day Rentals	53	10	14	ND	35
	Boat Launch	214	109	96	ND	110
1993	Day Rentals	0	13	11	0	0
	Boat Launch	57	104	110	78	101
1994	Day Rentals	19	10	1	ND	0
	Boat Launch	159	92	119	ND	75
1995	Day Rentals	18	10	21	7	ND
	Boat Launch	69	49	96	65	ND
1996	Day Rentals	ND	25	8	ND	22
	Boat Launch	ND	105	92	ND	115
1997	Day Rentals	ND	9	11	ND	ND
	Boat Launch	ND	84	94	ND	ND
1998	Day Rentals	25	ND	ND	ND	ND
	Boat Launch	163	ND	ND	ND	ND
1999	Day Rentals	ND	22	11	29	ND
	Boat Launch	ND	111	85	114	ND
2000	Day Rentals	ND	15	ND	ND	ND
	Boat Launch	ND	105	ND	ND	ND
2001	Day Rentals	ND	13	16	ND	ND
	Boat Launch	ND	120	121	ND	ND
2002	Day Rentals	ND	22	18	ND	ND
	Boat Launch	ND	120	120	ND	ND
2003	Day Rentals	102	57	76	ND	ND
	Boat Launch	11	7	16	ND	ND

Source: Data from MDNR, 2004

Note: ND= no data available

4.2 Recreational Use During the 2003 Study Period

The following section provides a summary of the key findings of the surveys and spot count information gathered during the 2003 study period. Appendix C includes a summary of the primary responses to the resident and contact surveys.

Recreational User Profile and Activity

Respondents to the contact survey indicated that their primary residence was outside of Maryland (51%), within Maryland, but not within Garrett County (24%), within Garrett County (3%), and a lakefront property at Deep Creek Lake (22%). In response to where they were staying, respondents to the contact survey indicated that they stayed at a vacation home (28%), were staying at a hotel or motel (12%), at their permanent residence (10%), were renting lakefront (10%), were renting a house near the lake (10%), were tent camping (8%), were trailer or RV camping (7%), and indicated other (4%). About 15% of the resident survey respondents indicated they stayed 0-5 days at their lakefront home during June 2003, about 24% indicated 6-10 days, about 29% indicated 11-20 days, and about 32% indicated 21-30 days. The resident survey respondents indicated that they typically rented out their dwelling an average of 1.23 weeks between Memorial Day and Labor Day.

For the contact survey, 61% of the respondents were male and 39% were female. The age distribution was 49% in the age group 46-65, 31% in the age group 31-45, 11% in the age group 18-30, 7% over 65, and 2% under 18. For the resident survey, 72% of the respondents were male and 28% were female. The age distribution was 57% in the age group 46-65, 29% over 65, and 14% in the age group 22-45.

Respondents to the resident survey indicated that the distribution of watercraft at their lakefront home included: 44% power boats, 30% canoe/ kayak/rowboat, 14% personal watercraft/jet ski, and 12% sailboat/boards. Respondents to the contact survey indicated that the distribution of watercraft at their lakefront home included: 63% power boats, 20% personal watercraft/jet ski, 10% canoe/kayak/rowboat, and 6% sailboat/boards. Respondents to the resident survey indicated that they keep a watercraft owned by someone other than a member of their household in the water or at their dock at their lakefront home an average of 5.1 days during the period June 1st through September 30th. About 60% of the respondents to the contact survey indicated that they would keep a boat with them either on a trailer or in the water overnight during their stay, and of those respondents, 86% stated they would keep the boat at a private dock, 8% at a community dock, and 6% at a commercial dock.

Figure 4-6 summarizes the distribution of recreational activity based on the contact survey. The primary activities included motor boating, boat fishing, swimming and waterskiing. Primary activities listed in the "other" category included tubing, bicycling and sightseeing. For the contact survey, the average group size was 3.8 for ages 18 and older and 1.22 for ages less than 18 years. About 65% of the respondents were on an overnight trip and about 35% indicated they were on a day trip. The average length of stay for day trips was 5.4 hours and for overnight trips was 5.1 nights. Figure 4-7 summarizes the average number of days that the resident survey respondents indicated they recreated in various recreational activities. Primary activities listed in the "other" category included, wake boarding, tubing, fishing from dock, paddle boating, picnicking and sunbathing.

Figure 4-6. Distribution of Recreational Activities of Contact Survey Respondents

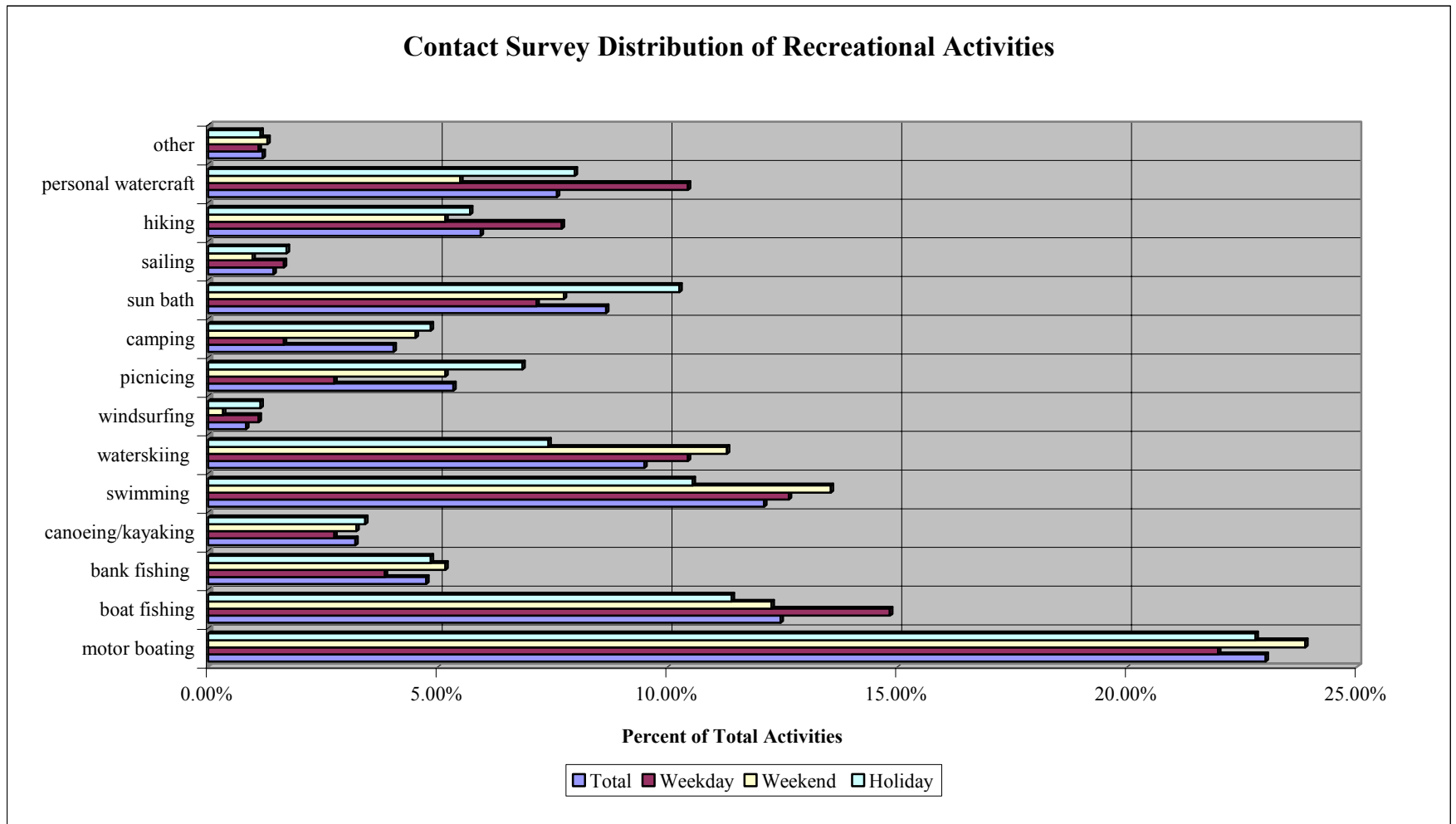
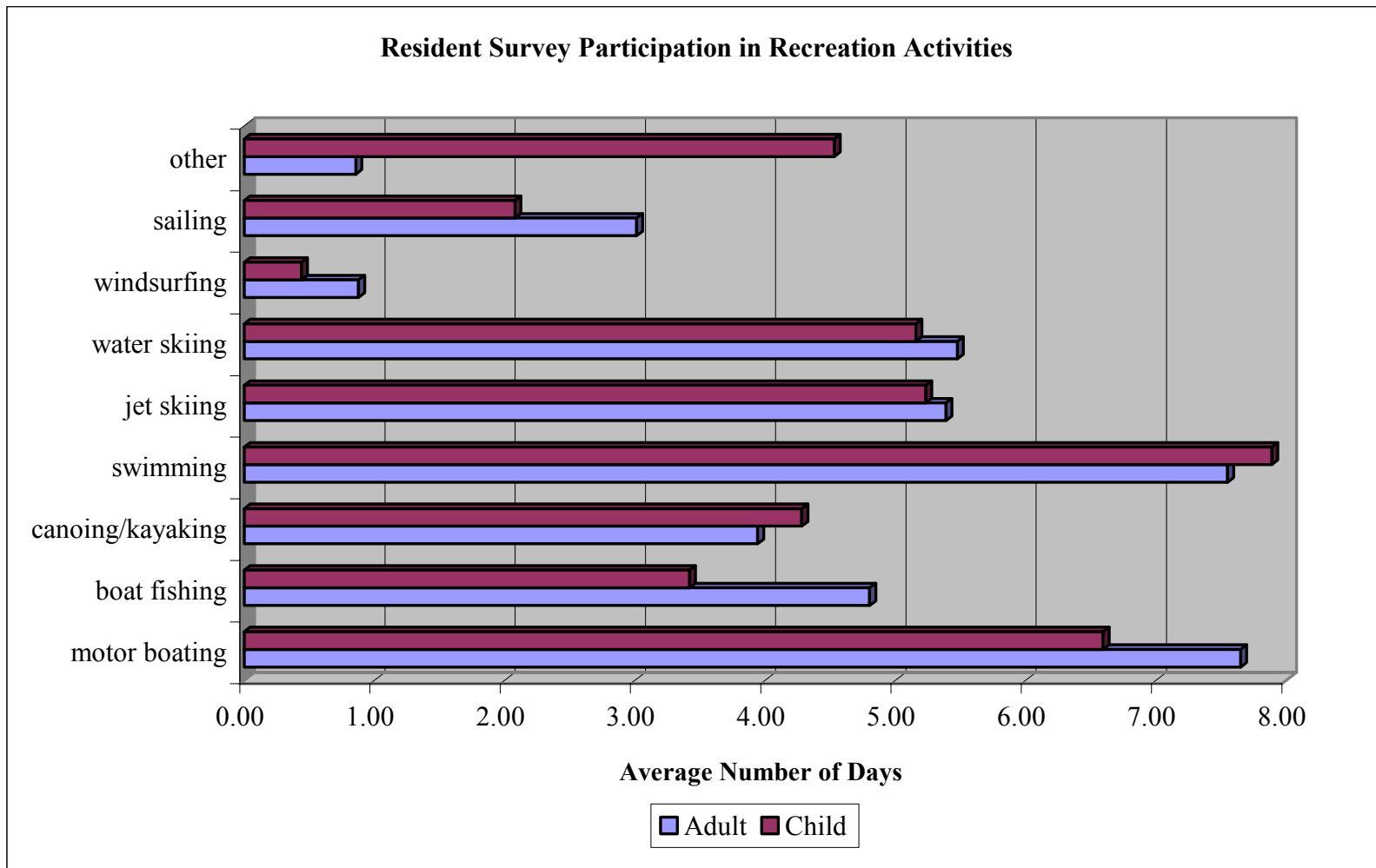


Figure 4-7. Resident Survey Respondents Participation in Recreational Activities

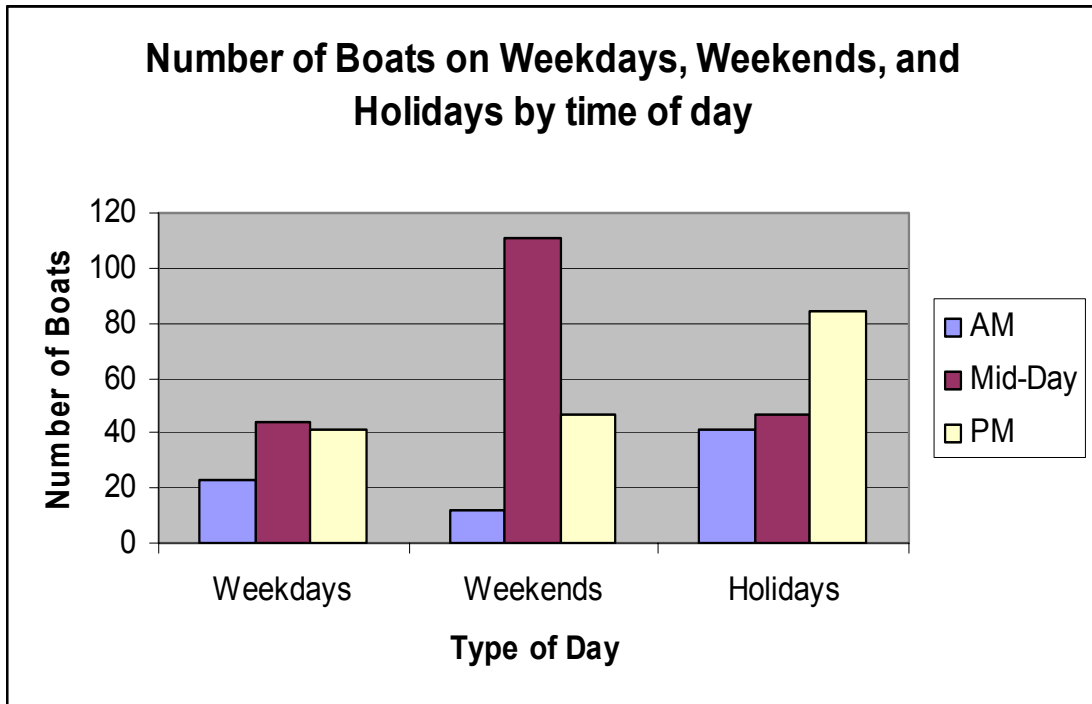


Boating Use and Characteristics

Boating Use by Time of Day

Boating use was counted in terms of time of day. Overall, boating use was the least in the mornings (8 to 11 am), although this was a popular time for anglers. Boating use was the highest during mid-day (11 am to 2 pm) and afternoons (2 to 5 pm) for weekends and holidays, respectively (Figure 4-8).

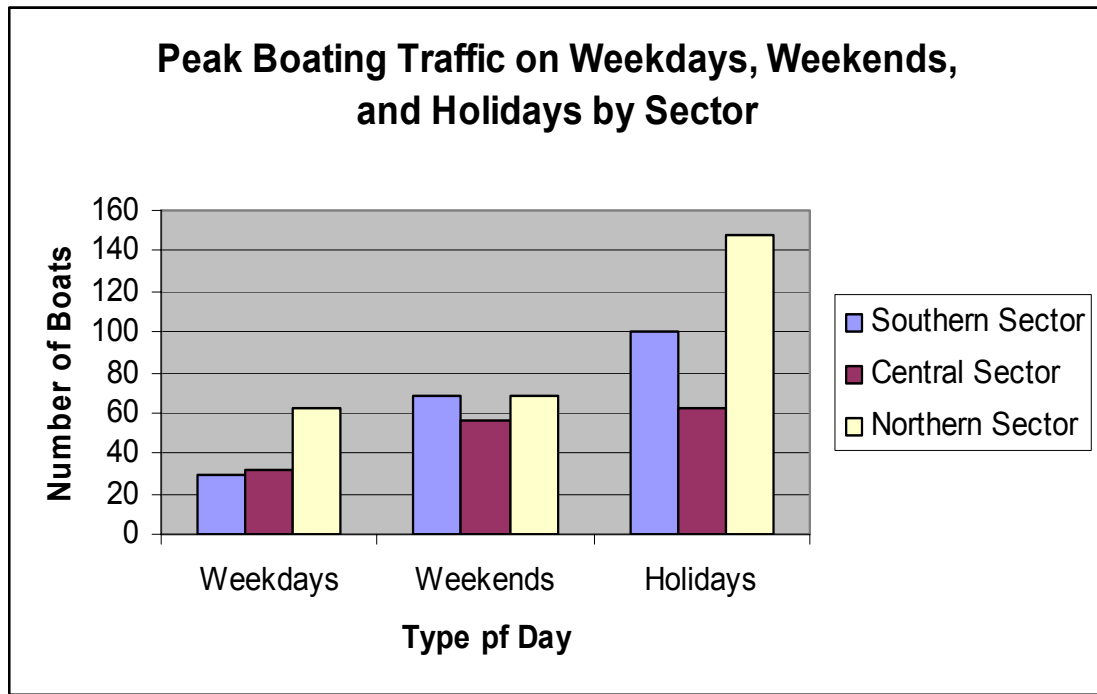
Figure 4-8. Number of Boats on Weekdays, Weekends, and Holidays by Time of Day



Boating Use by Type of Day

Boating use was also tracked by type of day (i.e., weekday, weekend day, holiday weekend day). Boating use was the highest during holiday weekends, although boating use remained high for most weekend days in July and August when the weather was good (Figure 4-9).

Figure 4-9. Peak Boating Traffic on Weekdays, Weekends, and Holidays by Sector



Boating Use by Month

The recreational boating season at Deep Creek Lake is generally considered to extend from approximately Memorial Day weekend to Labor Day weekend. Based on our observations, recreation use increases significantly around 4th of July weekend and remains fairly high until Labor Day weekend, assuming the weather remains fairly good. Less recreational boating definitely occurs in June.

Boating Use by Sector

Boat counts were conducted by MDNR (see section 4.1) and by ERM from the aerial photographs taken in 2003 during peak time periods. The number and type of boats were then counted per each lake sector. Table 4-5 summarizes the boat count data per sector for the 2003 study period. A total of 7 count days were conducted, including three days of aerial photograph counts. The maximum number of BAOT on the total lake recorded was 600 during the Fourth of July holiday, a warm, sunny day that followed a very wet June. The minimum count day recorded was 152 for the total lake on a cloudy weekend day in July. Based on the 7 count days, the average boat count for the lake was 334 boats. Based on the average of the 2003 counts for each sector, the northern sector received about 27%, the central sector about 22%, and the southern sector about 51% of the total average use.

Table 4-5. Summary of the 2003 Boat Counts per Sector

Lake Sector	Median	Mean	Minimum	Maximum
Northern Sector	79	90	51	182
Central Sector	62	74	38	146
Southern Sector	157	169	56	272
Total Lake	352	334	152	600

Boating Use by Type of Watercraft

Table 4-6 summarizes the count and distribution of the type of boat per each sector and for the total lake. Motor boating was the category with the highest use in each sector, accounting for over 70% of the total lake use within each sector.

Table 4-6. Distribution of Boat Type per Sector

Activity	Northern Sector		Central Sector		Southern Sector		Total Lake	
	Count	% of Sector	Count	% of Sector	Count	% of Sector	Count	% of Lake
Motor Boating	267	79.7%	218	82.6%	563	72.3%	1,048	76.1%
Sailing	1	0.3%	5	1.9%	112	14.4%	118	8.6%
Canoe/Kayak	0	0.0%	2	0.8%	2	0.3%	4	0.3%
PWC	45	13.4%	26	9.8%	51	6.5%	122	8.9%
Water Skiing	22	6.6%	13	4.9%	51	6.5%	86	6.2%
Total	335	100.0%	264	100.0%	779	100.0%	1,378	100.0%

Boat Launch

Table 4-7 summarizes the characteristics of the type and timing of boat launches and type of activities observed at the state park boat launch area. The average number of boats launched ranged from 15.7 on weekdays to 50.3 on holidays. The maximum wait time at the state park boat ramp for launching a boat was 4 minutes on weekdays, 5.7 minutes on the weekends and 12.2 minutes on holidays. The average wait time ranged from 2.3 minutes on weekdays to 8.4 minutes on holidays. The largest category of boats launched was motorboats, followed by personal watercraft and fishing boats. The primary recreational activities observed at the boat launch area was bank angling, picnicking, and sunbathing.

Table 4-7. State Park Boat Launch Summary

	Weekday	Weekend	Holiday
Avg. No. Boats Launched	15.7	49.3	50.3
Max. Boats Launched	27.0	90.0	59.0
Min. Boats Launched	5.0	4.0	33.0
Avg. Wait Time (minutes)	2.3	3.0	8.4
Max. Wait Time (minutes)	4.0	5.7	12.2
Avg. No. Fishing Boats Launched	5.0	8.2	0.0
Avg. No. Pontoon Boats Launched	1.3	1.5	0.0
Avg. No. Motor Boats Launched	7.7	33.3	29.0
Avg. No. Water-skiing Boats Launched	0.3	1.0	0.0
Avg. No. Sail Boats Launched	0.0	0.0	0.0
Avg. No. PWCs Launched	1.3	5.0	4.0
Avg. No. Windsurfers	0.0	0.3	0.0
Avg. No. Canoeists/Kayakers	0.0	1.2	1.0
Avg. No. Bank Anglers	2.7	6.2	1.7
Avg. No. Sunbathers	0.0	0.3	0.7
Avg. No. Picnickers	0.0	2.7	5.3

Source: Data from Spot Counts

Note: Weekday data based on 3 observation days, weekend data based on 6 observation days, and holiday data based on 3 observation days.

Recreational Issues

Respondents to the contact and resident survey were asked whether they had encountered certain conditions at Deep Creek Lake that interfered with their recreation experience. They were asked to check whether the listed conditions were not a problem (1), a slight problem (2), a moderate problem (3), or a big problem (4). Table 4-8 summarizes the average ratings of both the resident and contact survey respondents. For the resident survey, respondents indicated that the conditions that caused the most problems included boat wakes, too many watercraft on the lake, and eroding shoreline. For the contact survey the conditions that caused the most problems included availability of public sanitary facilities or port-a johns, and loud, rude or inconsiderate behavior by other recreation users. It should be noted that none of the conditions were considered even a moderate problem (i.e., rating of 3.0 or higher) by either the resident or contact survey.

Table 4-8. Rating of Conditions Encountered that Interfered with Recreation Experience

Condition	Resident Survey	Contact Survey
Boat wakes	2.94	1.88
Too many people along the shoreline	1.33	2.27
Too many watercraft on the lake	2.89	2.33
Improper disposal of litter, trash, etc.	1.79	2.37
Conflicts with other recreation users	1.77	2.37
Loud, rude or inconsiderate behavior by recreation users	2.00	2.41
Boating hazards (i.e., stumps, shallow areas)	1.54	2.25
Tree cutting along the shoreline	1.34	1.32
Bulkheads/riprap along the shoreline	1.32	1.26
Muddy water	2.08	1.38
Eroding shoreline	2.53	1.53
Availability of public sanitary facility	1.42	2.49

These results do highlight the differences between waterfront residents and visitors (most respondents to the contact survey were not waterfront residents). As would be expected, waterfront residents are more concerned than visitors regarding boat wakes, shoreline erosion, and muddy water along the shoreline, since it is there shoreline that is affected. Conversely, visitors are more concerned about the lack of public bathrooms since they are dependent on these facilities, unlike the waterfront residence. Perhaps more significantly, however, waterfront residents are more concerned about the number of watercraft on the lake. We attribute this heightened sensitivity regarding crowding to several factors:

- Many waterfront residents are year-round residents and are more accustomed to a rural setting than many of the visitors who come from the Baltimore-Washington and Pittsburgh metropolitan areas and are more accustomed to crowding.
- Many waterfront residents have lived at Deep Creek Lake for several years and may be concerned by their perception of increased crowding.
- Many waterfront residents may have heightened concern about crowding because they have invested in the area through their purchase of property and houses.

Noise

Respondents to the contact and resident survey were also asked whether they had encountered certain noise-related conditions at Deep Creek Lake. They were asked to check whether the listed conditions were not a problem (1), a slight problem (2), a moderate problem (3), or a big problem (4). Table 4-9 summarizes the average ratings of both the resident and contact survey respondents. For the resident survey respondents, noise from powerboats and personal watercraft were rated as a slight to moderate

problem. The contact survey respondent indicated that noise related issues were primarily not a problem.

Table 4-9. Rating of Noise-Related Conditions Encountered

Condition	Resident Survey	Contact Survey
Noise from powerboats	2.47	1.55
Noise from personal watercraft	2.61	1.50
Noise from airboats	1.80	1.18
Noise from on-shore activities during the day	1.29	1.26
Noise from on-shore activities during the night	1.76	1.27
Noise from others recreational users on the lake	1.56	1.26

In response to whether they had any other comments regarding noise at Deep Creek Lake, respondents to the resident survey stated various concerns and problems, including: loud boats, such as those with modified exhaust systems or boat exhaust systems above the water; loud jet skis; loud airboats; the need to enforce noise regulations; loud music from on-shore and boats; loud boats at nighttime and early morning (i.e., “bass fishing boats noise”); the need for a better method of evaluating boat motor noise (i.e., “at idle at the dock doesn't do it”; “measure boats (noise) at full throttle, 50 yards from shore”; “cut outs on power boats should be banned”); and loud noise from renters. Respondents to the contact survey generally did not have any additional negative comments, a few indicated personal watercraft as a noise problem, and several stated that noise was not a problem.

General Comments

In the general comment response, the resident survey respondents frequently commented on the excessive noise, too many boats and related safety concerns, and concerns about shoreline erosion as a result of fluctuating water elevations. Comments from the contact survey respondents generally indicated a favorable recreational experience at the lake. There were also a few comments regarding the need for noise and boat crowding controls.

Quality of Recreation Experience

The contact survey asked recreational users whether they will return to Deep Creek Lake. At a fundamental level, the responses to this question may be the best indicator of overall recreational experience. If people enjoyed their visit, they will return again. If not, they will not return. They were asked to indicate whether they will certainly return again, probably will return again, probably will not return again, and certainly won't return again. Table 4-10 summarizes the responses by type of day.

Table 4-10 Responses to Survey Question – Will you return to Deep Creek Lake?

Response	Weekday	Weekend	Holiday	Total
Certainly will return	82%	91%	80%	85%
Probably will return	13%	7%	20%	13%
Probably will not return	2%	2%	0%	1%
Certainly will not return	2%	0%	0%	1%

These data indicate suggest that the overall recreation experience at Deep Creek Lake is very good.

Commercial Operators Survey Responses

A total of 8 commercial operations on Deep Creek Lake were surveyed. Of these, they stated they had been in business ranging from 10-45 years, with the majority of them being locally owned. At the commercial operations there are a total of 246 powerboat rentals available, ranging from 0 to 71 at an individual business, and a total of 30 non-power boats (canoes, kayaks, etc.). On a non-holiday summer weekend day, the respondents indicated that they rented between 2 to 50 boats. By extrapolation, ERM concluded that on a non-holiday summer weekend day, the commercial boat rental concessionaires rent an average of 137 boats, in aggregate. When asked about the average party size per boat rental the respondents indicated that the average party size was 8 to 12 people for pontoon boat rentals and 2 to 4 people for other boat types. Only one business indicated that they allowed privately owned boats to be launched at their facility. Four of the businesses indicated that they rent boat slips on a seasonal basis, ranging from 2 to 74 slips per business, with a combined total of 164 slips. The respondents indicated that they conducted about 20% of their business in June, about 32% of their business in July, and about 29% of their business in August. All but one of the businesses indicated they were open year-round.

5.0 PROJECTED FUTURE RECREATIONAL USE

This section includes an assessment of regional demographics and development trends within the region surrounding Deep Creek Lake. In addition, an assessment of regional recreational use trends and projections and a summary of projected future recreational use trends at Deep Creek Lake are provided.

5.1 Regional Demographics and Development Trends

The market area for development around Deep Creek Lake is an approximately 70 square mile (44,326 acre) area surrounding the lake (Figure 5-1). This area is recognized as the primary market area for second home development in the Deep Creek Lake area by both planning staff and by local real estate professionals. This area also corresponds approximately to the Deep Creek Watershed, an area Garrett County has for many years used as a planning area. The development market area surrounding Deep Creek Lake comprises approximately 10 percent of the area of Garrett County.

As of 2000, according to the US Census, the population of the market area was 3,845, approximately 12.9% of the total population of Garrett County (Table 5-1). Between 1990 and 2000 the market area population increased by 21 percent compared to six percent for Garrett County as a whole.

Table 5-1. Population and Housing

<i>Census Tract 0005.00</i>				
	1990	2000	Change 1990-2000	
			Number	Percent
Population	3,174	3,845	671	21.1
Housing Units	3,970	5,009	1,039	26.2
Occupied	1,252	1,618	366	29.2
Owner	1,093	1,343	250	22.9
Renter	159	275	116	72.9
Vacant	2,718	3,391	673	24.8
Seasonal/recreational/occasional Use	2,394	3,007	613	25.6
Garrett County				
	1990	2000	Change 1990-2000	
			Number	Percent
Population	28,138	29,846	1,708	6.1
Housing Units	14,119	16,761	2,642	18.6
Occupied	10,110	11,476	1,366	13.5
Owner	7,998	8,945	947	11.8
Renter	2,112	2,531	419	19.8
Vacant	4,009	5,285	1,276	31.8
Seasonal/recreational/occasional use	3,022	3,996	974	32.2

Source: US Bureau of the Census 1990 and 2000

Note: Census data is not collected for the exact area of the Deep Creek Watershed. The data in the table are for Census tract 0005, which nearly approximates the Deep Creek Watershed. A small area between Foxtown Road and Accident Bittinger Road is outside tract 0005 but is inside the watershed.

As of 2000, there were a total of 5,009 housing units in the market area, an increase of 1,039 units or 26 percent over the 1990 total of 3,970 (Table 5-1). Approximately 68 percent (3,391 units) of the total 5,009 units were vacant on census day (April 1, 2000), and the Bureau of the Census identified 88 percent of these (3,007 units) as vacant because they were “seasonal, recreation, occasional use” units. As a result, the census likely provides an accurate estimate of the full-time or year round population of the market area, but does not reflect the summer population when the number of visitors and vacationers is highest.

Existing Property Development

As of 2001, according to the Maryland Department of Assessment and Taxation’s (DAT) database, the market area contained approximately 7,563 properties (parcels of land with a property identification number). Of these, 5,006 were improved and 2,557 were unimproved (that is, they had a zero dollar market value for improvements). An unknown number of undeveloped properties that were created by deed prior to 1975 when zoning was first adopted in the Deep Creek area exist in the market area. They come to the County’s attention when a development is proposed, at which time the legality of the property is established. Garrett County planning staff estimates the number of such properties that come to their attention annually to be small (10 to 20). There are approximately 2,000 waterfront properties at Deep Creek Lake of which 1,784 have buffer use permits issued by MDNR¹.

Figure 5-2 gives an indication of the approximate distribution of properties in the market area. On the figure, each small circle represents a single property. The circles are color-coded based on their land use for assessment purposes: residential, commercial, agricultural, or exempt. Figure 5-2 shows the concentration of properties near and along nearly the entire extent of the lakefront.

The DAT has created a special assessment district called District 18 comprising “lake influenced” property. Figure 5-2 shows a geographic representation of the District 18 properties by drawing a line (the red line on the figure) around the District 18 properties. As shown on Figure 5-2, District 18 hugs the lake, and comprises only a portion of the area of the entire market area. Approximately 71 percent (5,412) of the properties in the market area are within District 18. Of the 5,412 properties, 3,861 (71 percent) are improved and 1,551 are unimproved. Approximately 90 percent of the improved properties (3,477 properties) are owned by non-resident property owners.

¹ The exact number of properties is not known. DNR has issued 1,784 buffer use permits, and estimates that 95 to 98 percent of lakefront property owners are under permit. The Department of General Services is conducting a Lake Front Buy Down project and has prepared 1,847 drawings of surplus property to be offered for sale to adjoining owners. We use an estimate of 2,000 properties because this number of drawings does not include properties where there is no adjoining surplus property or properties where the DNR wishes to retain the property (Kathy Meteer, Maryland Department of General Services).

Development Activity

The rate of development activity in the Deep Creek area has increased in recent years. This is shown both in subdivision activity (the creation of new building lots) and in the number of building permits issued for new dwellings. Between 1997 and September 2003, a total of 757 new building lots were created by subdivision in the Deep Creek Lake Watershed, for an average of approximately 108 per year (Table 5-2). Of the total, 522 lots were created between 2001 and 2003 compared to 235 between 1997 and 2000².

Table 5-2. Lots Created by Subdivision in the Deep Creek Lake Watershed

	Major Subdivision	Minor Subdivision	Planned Residential Development	Total
1997	0	2	0	2
1998	18	17	55	90
1999	24	35	0	59
2000	53	31	0	84
2001	92	44	22	158
2002	242	21	40	303
2003	58	3	0	61
Lots Created 1997-2000	95	85	55	235
Lots Created 2001-2003	392	68	62	522
Lots Created 1997-2003	487	153	117	757
Total Number of Subdivisions	30	70	3	103

Source: Garrett County Department of Planning and Zoning

As with subdivision activity, building permit activity has increased since 2000 compared to the period 1990 to 2000. Between 1981 and September 2003, a total of 2,979 permits were issued (an average of 131 per year). Between 1981 and 1990, an average of 134 permits per year were issued. Between 1991 and 2000, the average per year fell to 107 per year. For the years 2000 through September 2003, the average has increased to 207 per year. In 2002, 237 permits were issued, the highest number since 1988.

There is a trend in the Deep Creek Lake area towards larger dwellings, especially for vacation homes. Between 1990 and 2000, the median number of rooms in housing units in the market area increased from five to six. The number of housing units in the market area with seven, eight, and nine or more rooms increased by 112, 131, and 85

² These numbers appear low compared to the period 1987 to 1993. During this 6.5 year period, 1,309 dwelling units were approved in the Deep Creek Lake Sewer Service Area for an average of 201 per year (A Second Close Look at Garrett County, URDC, December 1993, page IX-11). Further investigation is needed to determine whether the 1997 to 2003 data and the 1987 to 1993 data are truly comparable.

percent respectively compared to 1990. Although the trend towards larger dwellings is a national trend, the increases in the Deep Creek Lake market area are far greater than the percent changes for Garrett County or for the State of Maryland. Some of these larger homes are replacing, older, smaller homes built in the 1950s through the 1970s. Through this “redevelopment”, the number of people living at or visiting Deep Creek can increase even though there is no increase in the number of lots or in dwelling unit density, i.e., the number of dwelling units.

Concerns over the potential effects of very large dwellings on nearby properties lead the County to adopt zoning amendments to regulate large homes that are used for vacation rentals. The regulations, adopted in August 2003, created a new use category called “transient vacation rental unit” and set a limit of eight bedrooms per this type of unit where there had previously been no limit. Further, transient vacation rental units with six to eight bedrooms now require special exception approval in the LR-Lake Residential zoning district, the most extensive district in the watershed.

Visitation

There are no universally accepted, overall visitation numbers for Garrett County or for the market area. The Garrett County Chamber of Commerce estimates that more than one million visitors come to Garrett County each year, though the Chamber does not offer a specific visitation number for the Deep Creek area. Another commonly cited statistic is that the population of the County doubles in the summer, which would mean the County’s population reaches approximately 60,000 people in summer. A 1993 report cited a total of 11,718 persons in the lake area during peak summer vacation periods, based on the 1990 population of 3,174 plus up to 8,544 seasonal residents³.

Most visitors to the Deep Creek Lake area stay in rental vacation homes. As of 2001, there were 3,477 second homes (improved properties with non-resident property owners) in District 18. There are three primary vacation property management companies, Coldwell Banker Deep Creek Realty-Rentals, Long & Foster Resort Rentals, and Railey Mountain Lake Vacations. As of 2000, these companies rented 570 properties⁴. Currently, there are 11 hotels (411 rooms) and nine bed and breakfast inns (59 rooms) in the market area offering a total of approximately 470 rooms to visitors and tourists year round⁵. No new hotels are currently planned.

³ A Second Close Look at Garrett County, URDC December 1993, page X-5.

⁴ The Economic Significance of Garrett County’s Second Home Market, Nancy Railey and George Volsky (2000).

⁵ Alpine Village Inn (21 rooms); Comfort Inn Deep Creek Lake (75 rooms); Innlet Motor Lodge (20 rooms); Lake Breez Motel (10 rooms); Lake Side Motor Court (10 rooms); Panorama Motel (20 rooms); The Garrett Inn (10 rooms); The Inn at Point View (18 rooms); Will O’ Wisp Prestige Condominiums (48 rooms); Wisp Mountain Resort Hotel and Conference Center (169 rooms); and Lake Point Inn (10 rooms).

Development Potential

Deep Creek Lake attracts visitors from a large geographic area including the Baltimore, Washington, and Pittsburgh metropolitan areas. With such a large, populous area to draw from, the number of potential vacation, second home, and vacation homeowners and visitors is very large. Away from the immediate vicinity of Deep Creek Lake, the market area has a large amount of undeveloped and underdeveloped land. A land capacity study conducted in 1987 concluded that the Deep Creek Lake area had the capacity to accommodate between 26,000 and 39,000 people⁶. Overall, therefore, the amount of additional development potential is large.

The general consensus among planners and real estate professionals is that the Deep Creek lakefront is largely developed. We identified a total of four lake front properties, including Thousand Acres property, Ann Blakeslee Smith Property, Holy Cross property, and Carnegie Institute property (Figure 5-3), with significant (i.e., the potential to create more than two to three new development lots through subdivision) additional development potential⁷. Combined, the four properties total more than 1,200 acres with an estimated potential for several hundred lots. Of the four properties, only one, Thousand Acres, is in active development.

As property in close proximity to the lake has become more developed and costly, buyers are increasingly considering property further away from the Lake, where there may be views of the lake or other scenic areas, or where an otherwise desirable environment can be obtained. Several subdivisions have been created on the hillsides overlooking the Deep Creek Lake.

Future Growth Potential

The period from 2001 to 2003 has been one of rapid growth in the Deep Creek Lake market area with over 460 new building lots created and an average of over 200 building permits issued per year. This amount of growth is a significant increase over the rate of growth experienced since 1980, but it is difficult to say whether this is the beginning of a new sustained, higher level of growth or a brief spurt brought on by factors such as the aging baby boomer demographics and poorly performing stock market that has renewed investor interest in real estate.

⁶ Recreational Carrying Capacity Study and Management Guidelines for Deep Creek Lake Natural Resources Management Area, Final Report, October 31, 1988.

⁷ The properties were identified by analyzing tax maps of the area and verifying information through conversations with Garrett County Planning and Zoning staff, local real estate professionals, and property owners.

Whatever the causes, it is reasonable to assume that the long-term trend of steady growth in the Deep Creek market area will continue through 2013 with at least between 100 and 150 new homes added per year. The new homes will serve second homeowners, retirees, and vacation home investors. A portion of the homes will be on new building lots and some will replace existing, older homes. Of the 100 to 150 new homes per year, we estimate that approximately five to ten will be waterfront homes on Deep Creek Lake. People living in and visiting these new homes will add to the pool of potential users of Deep Creek Lake.

Projections for 2008 and 2013

Table 5-3 presents peak day population projections for the market area for 2008 and 2013. Peak day numbers are provided as input for the peak-day lake use analysis. Peak day is assumed to be a summer weekend/holiday. As shown in Table 5-3, we estimate that in 2000, the peak day population was approximately 25,000, and that this population will increase to 30,500 in 2008, and to 33,400 by 2013.

Table 5-3. Peak Day Projections for the Deep Creek Lake Watershed

Peak day population and dwelling unit projections for the Deep Creek Lake Watershed					
Population			2000	2008	2013
Year round population			3,845	4,915	5,441
Day users			1,474	1,497	1,536
Visitors	1	Campers (state park)	392	392	392
	2	Population in marketed rental homes	3,910	4,754	5,179
	3	Population in hotels	846	936	1,026
	4	Population in other seasonal homes	14,500	18,011	19,796
Total			24,968	30,505	33,370
Units & Lodging					
Year round occupied units			1,618	2,048	2,267
Visitors	1	Camp sites	112	112	112
	2	marketed rental homes	570	693	755
	3	hotel rooms	470	520	570
	4	Other seasonal homes	2,437	3,027	3,327
Total peak occupied units			4,625	5,880	6,461
Vacant not seasonal			384	470	514
Total Units			5,009	6,350	6,975

5.2 Regional Recreational Use Trends and Projections

This section discusses regional recreational use trends and projections, both nationally and within the western Maryland region. These regional trends help to characterize potential changes in recreational use in the future and can help to provide further guidance regarding expected future recreational user trends within the Deep Creek Lake area.

National and Southern Region

National and regional recreation participation trends and projections were assessed as part of the 2000 National Survey on Recreation and the Environment (NSRE), coordinated by the USDA Forest Service. The NSRE included a phone survey of about 50,000 households nationwide, addressing areas such as outdoor recreation participation, demographics, constraints to participation, and other related factors. The NSRE survey results were applied to recreation demand models to project future outdoor recreation participation and consumption nationally (Bowker, English and Cordell, 1999). Projections were conducted for various activities, including projections of changes in recreation participation and number of recreation days. Table 5-4 provides a summary of the projections for the southern region (Maryland is within the southern region for the purposes of this survey) for outdoor recreation participation for some of the activities that occur within the Deep Creek Lake area. The projected indices of change were estimated on a 1995 base recreation participation rate. For example, the base participation rate for canoeing is translated to 4.2 million people canoeing a total of 17.6 million days in 1995 in the Southeast region, or a little over an average of 4 days per participant. The number of people canoeing is expected to increase by 11 percent, and the number of days canoeing is expected to increase by 13 percent by the year 2020.

In the 1995 base year, the most popular outdoor recreational activities were wildlife viewing and visiting a beach/waterside. Wildlife viewing and visiting a beach/waterside, sightseeing and picnicking were the activities with the greatest number of participants. Camping (68% increase), wildlife viewing (59% increase), and hiking (48% increase) are the activities projected to have the greatest increase in recreation days by the year 2020. Cross-country skiing was projected to decrease (-51%) in recreation days by the year 2020. Other activities projected to have minimal growth by 2020 included rafting/floating (3%) and motor boating (2%), although the participation rate for motor boating was projected to increase by 24%.

Kelly and Warnick (1999) conducted an assessment of national recreation trends and markets, including projected future trends for participation in recreational activities. The trend assessment was based on data from national surveys, such as the Simmons National Survey and the National Sporting Goods Survey. Table 5-5 summarizes the projected trends for various recreational activities that occur within the project area. This information provides further context regarding what recreational activities are anticipated to exhibit future growth nationally. The key differences between these two sources of projected national and regional recreational trends are in the projected large growth

increase in wildlife viewing and camping by Bowker, English and Cordell (1999), and the projected minimal growth in these areas by Kelly and Warnick (1999).

Table 5-4. Projected Indexes of Change in Recreation Days and Participation for the Southern Region of the United States

Activity	Unit	1995 ¹	2000 ²	2010 ²	2020 ²
Canoeing	Days	17.6	4%	9%	13%
	Participants	4.2	3%	7%	11%
Motor boating	Days	294.0	-1%	0%	2%
	Participants	15.5	4%	13%	24%
Nonpool Swimming	Days	410.9	-4%	2%	8%
	Participants	23.3	5%	15%	27%
Visiting Beach or Waterside	Days	1,037.5	5%	16%	28%
	Participants	37.7	7%	20%	30%
Rafting/Floating	Days	24.2	0%	1%	3%
	Participants	4.9	1%	1%	2%
Fishing	Days	491.5	2%	11%	19%
	Participants	20.2	4%	11%	19%
Cross-Country Skiing	Days	1.4	-11%	-34%	-51%
	Participants	0.7	8%	-34%	-45%
Wildlife Viewing	Days	2,322.1	9%	32%	59%
	Participants	34.2	7%	22%	38%
Hiking	Days	194.7	7%	27%	48%
	Participants	11.3	5%	17%	32%
Camping	Days	115.5	10%	37%	68%
	Participants	10.7	6%	22%	34%
Picnicking	Days	311.2	7%	19%	32%
	Participants	27.4	6%	21%	38%
Sightseeing	Days	605.4	7%	23%	40%
	Participants	33.9	8%	25%	43%

Source: Bowker, English and Cordell, 1999

¹ Estimated 1995 base recreation participation rate for millions of days and millions of participants

² Estimated projected percent increase in change from the 1995 base participation rate.

Table 5-5. Projected Trends in Future Recreational Activities

Activity	Projected Trends
Canoeing	fluctuating, recent decline
Motor boating	fluctuating, some short-term minimal growth, likely to plateau
Sailing	steady decline
Jet skiing	some minimal growth and then steady
Waterskiing	gradual decline
Nonpool Swimming	stable, possible slight increase
Visiting Beach or Waterside	fluctuating
Rafting/Floating	maintain similar levels
Fishing	maintain similar levels
Wildlife Viewing	gradual minimal growth
Hiking	steady increase
Camping	gradual small increase
Cross-Country Skiing	steady or slow gradual decline

Source: Kelly and Warnick, 1999

Western Maryland Region

The Maryland Institute for Policy Analysis and Research (MIPAR) and the Center for Urban Environmental Research and Education (CUERE) of the University of Maryland conducted two recreation-related surveys for the MDNR and the Maryland Department of Planning (MDP) in 2003. One study included an assessment of public opinion regarding Maryland state parks and natural resource areas (Norris and Hansen, 2003). The survey was conducted of 800 randomly selected Maryland households during the winter of 2003, and the results of the survey were summarized and broken out by regions. Deep Creek Lake is located within the western region. For the western region, the top recreational activities that the respondents indicated they participated in included: family outing (89.7%), walking (87.7%), family picnicking (61.6%), nature appreciation (67.1%), hiking (46.6%), fishing from shore or pier (45.2%), bicycling (38.4%), picnicking/outing with organized group (33.7%), and camping at a campsite (30.8%). In terms of rating of experiences in parks and natural resource areas and facilities and amenities, the respondents indicated primarily a good or excellent rating, which is consistent with responses in other regions within Maryland.

The survey also included questions regarding governmental actions concerning open space protection. For the western region, about 48.5 percent felt that enough was being done by the government to protect open space and about 36.5 percent felt that not enough was being done. In terms of governmental actions to protect open space, about 54 percent felt that it was very important and about 28.5 percent felt it was somewhat important to acquire parkland for active recreation. About 83.5 percent felt it was very important and about 13.5 percent felt it was somewhat important to protect lands for

protection of wildlife and environment. About 41 percent felt it was very important, and about 45.5 percent felt it was somewhat important to provide public access to the bay or rivers.

For the second study, about 2,800 households were surveyed in January 2003 to obtain information about participation in local park and recreation activities (Norris, Hanson, and Coleman, 2003). The survey results were summarized by regions (400 households per region), with Deep Creek Lake being in the western region (The eastern region includes Garrett, Allegany, Washington, and Frederick counties.) The most popular recreational activities of those surveyed included: walking (70%), attending fairs or festivals (66.3%), swimming at beach/river/lake (53.3%), swimming at pool (49%), picnicking (45%), visiting playgrounds (39.3%), hiking (36.3%), attending outdoor concerts (33.5%), fishing from shore/bank (30.5%), and hunting (26.3%).

The survey also obtained information from the respondents regarding the percent of households participating in various recreation activities, the average number of participants per household, the individual participation rate, and the frequency of participation per person. The individual participation rate and frequency of participation per person can be used, combined with population projections for the area, to provide information about future recreational demand within the region. Table 5-6 provides a summary of the projected annual user occasions from the baseline year of 2000 out to 2030.

As part of the development of the 1998 Garrett County Land Preservation and Recreation Plan (LPRP) (URDC, 1998b), a countywide survey was conducted of recreation needs in 1992. Both residents and visitors were included in the survey. The most popular recreational activities among the respondents included walking and jogging (35%), downhill skiing (34%), swimming in a pool (33%), nature walks (28%), sailing and boating (27%), hiking (26%), fishing (25%), picnicking (25%) and bicycling (21%). In terms of facilities that they would like to see developed, the most common responses included: swimming pools, ice skating, outdoor volleyball, tennis, bicycling, nature walks, off-road vehicle area, skeet shooting areas, horseback riding areas, hiking areas, basketball courts, mountain biking areas, and baseball/softball fields. In terms of proposed recreational facility and program development, the LPRP did not propose any specific facility and program improvements to the Deep Creek Lake area. However, the LPRP stated that many residents and visitors indicated an interest in the MDNR expanding its environmental education programs.

Table 5-6. Annual User Occasions to Accommodate Those Participating in Each Activity

Activity	2000	2005	2010	2015	2020
Swimming at Beach/River/Lake	105,774	108,977	111,607	113,790	115,758
Power Boating	28,772	29,643	30,359	30,952	31,488
Canoeing	5,517	5,684	5,822	5,935	6,038
Waterskiing	4,910	5,059	5,181	5,283	5,374
Sailing	3,481	3,587	3,673	3,745	3,810
Kayaking	22,074	22,742	23,291	23,747	24,157
Fishing from Shore/Bank	49,170	50,659	51,882	52,896	53,811
Fishing from Boat	34,384	35,426	36,281	36,990	37,630
Fishing from Pier	15,722	16,198	16,589	16,914	17,206
Cross-Country Skiing	2,525	2,602	2,665	2,717	2,764
Hiking	59,914	61,728	63,218	64,454	65,569
Nature Walks	8,092	8,337	8,538	8,705	8,856
Tent Camping	18,032	18,578	19,026	19,398	19,734
Cabin Camping	4,159	4,285	4,388	4,474	4,552
Picnicking	55,327	57,002	58,378	59,520	60,549

Trends and Future Recreational Use Demand

Based on a review of the previous and current recreational use at Deep Creek Lake, various key trends or influencing factors on recreational use can be identified. Overall the types of recreational activities that occur at Deep Creek Lake have remained fairly constant. These include motor boating, swimming, fishing, camping, hiking, and picnicking as some of the key recreational activities. Increased use has influenced the type of recreational experience at the Lake on peak weekends and holidays to reflect more of a busy, high use recreational area.

In terms of boating use, the peak day boating use has fluctuated over the past 12 year period, with the past year (2003) receiving the day with the highest use during that period (600 BAOT). The 1988 survey estimated that the peak BAOT on summer weekend days was at about 280, while based on the MDNR data, the peak BAOT ranged from 262 to 600 throughout the 1991 to 2003 period. The distribution of boating activity use (boating mix) has changed somewhat from 1988 to the present, with an apparent increase in personal watercraft use, slight decrease in waterskiing and sail boating, and increase in power boating use. During the 1988 study (URDC, 1988) the boating mix for the northern lake area was estimated to be about 10% boat fishing, 5% non-power boating, 35-45% power boating, 15-25% sailing, and 25% waterskiing. The boating mix during the 2003 study period for the entire lake area was estimated to be about 76%

motor boating (including both motor boating and boat fishing), about 9% sailing, less than 1% canoe/kayak, about 9% PWC, and about 6% water skiing.

The recreational use at Deep Creek Lake is anticipated to increase in relation to the residential and commercial development in the vicinity of Deep Creek Lake. Based on the peak day projections for the Deep Creek Lake watershed area (see Table 5-3), there is a projected increase in the peak day population of about 33% from the year 2000 to the year 2013. This would correspond to a steady increase in recreational use in the areas currently supporting recreational activities, such as motor boating, swimming, fishing and picnicking. Most likely the amount of canoe and kayak use would remain similar to existing conditions, with the use occurring primarily during periods of low powerboat usage, such as early morning or late evening.

5.3 Future Recreational Use

Based on the demographics and development trends in the Deep Creek Lake area, and recreational use trends, and assuming the existing recreation participation rate remains the same, future water-based recreational use at Deep Creek Lake would be projected to increase by approximately 13% by 2008 and 23% by 2013 in comparison to 2003 use levels.

6.0 RESERVOIR RECREATIONAL BOATING CARRYING CAPACITY

The following sections provide an assessment of the boating carrying capacity assessment based on both physical and social carrying capacity analysis. The first section (6.1) is primarily based on physical characteristics of Deep Creek Lake and peak day BAOT use at Deep Creek Lake. The second section (6.2) discusses social carrying capacity factors as determined from the results of the survey data collected, such as crowdedness ratings, acceptable boating levels, and issues and concerns. In Section 6.3 we compare future recreational use to the physical and social carrying capacity. Finally, in Section 6.4, we discuss key issues identified related to carrying capacity based on this analysis and the survey results.

6.1 Physical Boating Carrying Capacity Assessment

The methodology for the physical carrying capacity assessment is discussed in Section 2.2. For the purposes of this assessment the lake was broken down into the three lake zone areas (or sectors) used by MDNR in past data collection efforts (Figure 4-1). Table 6-1 summarizes the lake zone water surface acreages, both gross and net, used in this analysis. The gross acreages equal the total surface acreage of each segment of the lake. The net acreage equals the total surface acreage of each segment of the lake minus a 100-foot buffer around the shoreline of the lake, and is considered the usable acreage for purposes of carrying capacity calculations. The 100-foot buffer reflects shallow areas along the lake margin that are used for piers or swimming, and is included in MDNR's no wake zone. This area is subtracted from the gross lake area because it is less suitable for most boating activities than the open portions of the lake further from shore.

Table 6-1. Deep Creek Lake Surface Acreages

Lake Area	Gross Surface Acreage	Net Surface Acreage
Northern Sector	927	732
Central Sector	794	672
Southern Sector	1,907	1,535
Total	3,628	2,939

Northern Lake Sector

Table 6-2 summarizes the assessment of the physical boat capacity based on the usable water surface acreage and the boating activity mix identified from the aerial photographs taken during 2003.

Table 6-2. Northern Lake Sector Boat Carrying Capacity Assessment

Boat Activity	Usable Acreage	Use Factor	Max. No. Boats	% Usage	Est. Capacity by Boat Mix
Motor Boating	732	9.0	81	51.8%	59
Boat Fishing	732	1.3	563	27.9%	32
Sailing	732	4.3	170	0.3%	0
Canoe/Kayak	732	1.3	563	0.0%	0
PWC	732	4.3	170	13.4%	15
Water Skiing	732	12.0	61	6.6%	8
Total				100%	114

Central Lake Sector

Table 6-3 summarizes the assessment of the physical boat capacity based on the usable water surface acreage and the boating activity mix identified from the aerial photographs taken during 2003.

Table 6-3. Central Lake Sector Boat Carrying Capacity Assessment

Boat Activity	Usable Acreage	Use Factor	Max. No. Boats	% Usage	Est. Capacity by Boat Mix
Motor Boating	672	9.0	75	53.7%	57
Boat Fishing	672	1.3	517	28.9%	31
Sailing	672	4.3	156	1.9%	2
Canoe/Kayak	672	1.3	517	0.8%	1
PWC	672	4.3	156	9.8%	10
Water Skiing	672	12.0	56	4.9%	5
Total				100%	106

Southern Lake Sector

Table 6-4 summarizes the assessment of the physical boat capacity based on the usable water surface acreage and the boating activity mix identified from the aerial photographs taken during 2003.

Table 6-4. Southern Lake Sector Boat Carrying Capacity Assessment

Boat Activity	Usable Acreage	Use Factor	Max. No. Boats	% Usage	Est. Capacity by Boat Mix
Motor Boating	1,535	9.0	171	47.0%	115
Boat Fishing	1,535	1.3	1181	25.3%	62
Sailing	1,535	4.3	357	14.4%	35
Canoe/Kayak	1,535	1.3	1181	0.3%	1
PWC	1,535	4.3	357	6.5%	16
Water Skiing	1,535	12.0	128	6.5%	16
Total				100%	245

Total Lake Boating Carrying Capacity

Table 6-5 shows the allowable overall boat carrying capacity based on the usable water surface acreage and the boating activity mix identified from the surveys, and the total estimated maximum boat use capacity for Deep Creek Lake. Table 6-10 provides the assessment of the percent capacity of the boating use for Deep Creek Lake by the peak day for the weekend and holiday periods for the 2003 study period. During the weekend the existing (2003) boating carrying capacity was estimated at 91% capacity and during the peak holiday period at 129% capacity for overall boating use.

Table 6-5. Deep Creek Lake Overall Boat Carrying Capacity

Boat Activity	North Lake Zone	Central Lake Zone	South Lake Zone	Total
Motor Boating	59	57	115	231
Boat Fishing	32	31	62	125
Sailing	0	2	35	37
Canoe/Kayak	0	1	1	2
PWC	15	10	16	41
Water Skiing	8	5	16	29
Total	114	106	245	465

For the purposes of assessing the peak day carrying capacity the peak weekend and the peak holiday boat counts during 2003 were applied. Table 6-6 summarizes the peak boat counts applied for each sector of the lake. The boating mix was derived from an assessment of the distribution of boating types from the aerial photos during 2003. In order to determine the distribution of motor boating and boat fishing (as the type of motor boating activity occurring was not discernable from the aerial photographs) the total number of powerboats counted was split by 65% motor boating and 35% boat fishing. This percentage split was derived from the survey responses.

Table 6-6. 2003 Peak Day Boat Count Summary

Lake Area	Weekend	Holiday
	8/23/03	7/4/03
Northern Sector	93	182
Central Sector	62	146
Southern Sector	271	272
Total	426	600

Table 6-7 compares the calculated net carrying capacity with actual peak 2003 weekend and holiday boat counts. During the peak weekend in 2003, boating use was approximately 91% of carrying capacity, while during the peak holiday period boating use approximately 129% of capacity.

Table 6-7. Comparison of 2003 Peak Boating Use to Net Carrying Capacity

Lake Zone	Net Carrying Capacity	Peak Weekend	Percent Capacity	Peak Holiday	Percent Capacity
North Lake Zone	114	93	81.5%	182	159.5%
Central Lake Zone	106	62	58.2%	146	137.1%
South Lake Zone	245	271	110.4%	272	110.8%
Total Lake		426	91.4%	600	128.7%

For comparison purposes, the lake carrying capacity was also assessed using gross lake area. Table 6-8 summarizes the overall boat carrying capacity and Table 6-9 summarizes the estimated carrying capacity based on the gross lake acreages. Although these calculations resulted in a higher lake carrying capacity, peak holiday use levels still exceeded lake carrying capacity.

Table 6-8. Overall Boat Carrying Capacity Based on Gross Acreages

Boat Activity	North Lake Zone	Central Lake Zone	South Lake Zone	Total
Motor Boating	75	68	143	286
Boat Fishing	40	36	77	154
Sailing	0	2	44	47
Canoe/Kayak	0	1	1	2
PWC	19	12	20	52
Water Skiing	10	6	20	36
Total	145	126	305	576

Table 6-9. Comparison of 2003 Peak Boating Use to Gross Carrying Capacity

Peak Use	Weekend	% Capacity	Holiday	% Capacity
North Lake Zone	93	64.3%	182	125.8%
Central Lake Zone	62	49.3%	146	116.1%
South Lake Zone	271	88.9%	272	89.2%
Total Lake	426	74.0%	600	104.3%

Although peak use levels in 2003 exceeded the calculated net (and the gross) physical carrying capacity of Deep Creek Lake, it should be noted that the boat count for the 4th of July weekend of 600 boats was the highest count recorded since MDNR started systematic boat counts in 1991. In fact, there has only been 5 times (out of 107 counts) since MDNR started the boat counts that use levels exceeded the calculated net physical carrying capacity of 465 boats.

6.2 Social Carrying Capacity Assessment

Social carrying capacity reflects users' perceptions of crowding and the effect of crowding on their recreational experience. Social carrying capacity was assessed in several ways as part of this study:

- Responses to a question regarding how crowded the lake was on the contact survey.
- Responses to a question regarding the number of people at the lake on the contact survey.
- Responses to questions regarding crowding on typical summer weekends and weekdays on the waterfront resident survey.
- Responses to photographs showing various levels of crowding on both the contact and waterfront resident survey.

These responses are discussed below.

Responses to Crowding Questions on the Contact Survey

The contact survey was administered at both the Deep Creek State Park boat ramp, which is primarily used by visitors (non-waterfront residents), and on the lake, which would capture both waterfront residents and visitors. The advantage of contact surveys is that the responses reflect users actual experience on the day they were surveyed.

Respondents to the contact survey indicated an overall average rating of 2.52 on a scale of 1 (not crowded) to 5 (very crowded). The responses were disaggregated by type of day with an average rating of 1.88 for weekdays, 2.31 for weekends, and 3.02 for holidays. Since a rating of 3.0 would be midway between not crowded and crowded,

most recreation users did not consider the lake very crowded. Even on the busiest days (holiday weekends) the average crowding rating just barely exceeded the mid-point on the scale.

Respondents to the contact survey were asked to describe the number of people at Deep Creek Lake during the day they completed the survey. Following is the summary of responses. Respondents typically felt that the number of people recreating at the lake was just the right number.

	Weekday	Weekend	Holiday
Too Many	9.1%	17.6%	25.5%
Just Right	75.0%	78.9%	72.3%
Too Few	15.9%	3.5%	2.1%

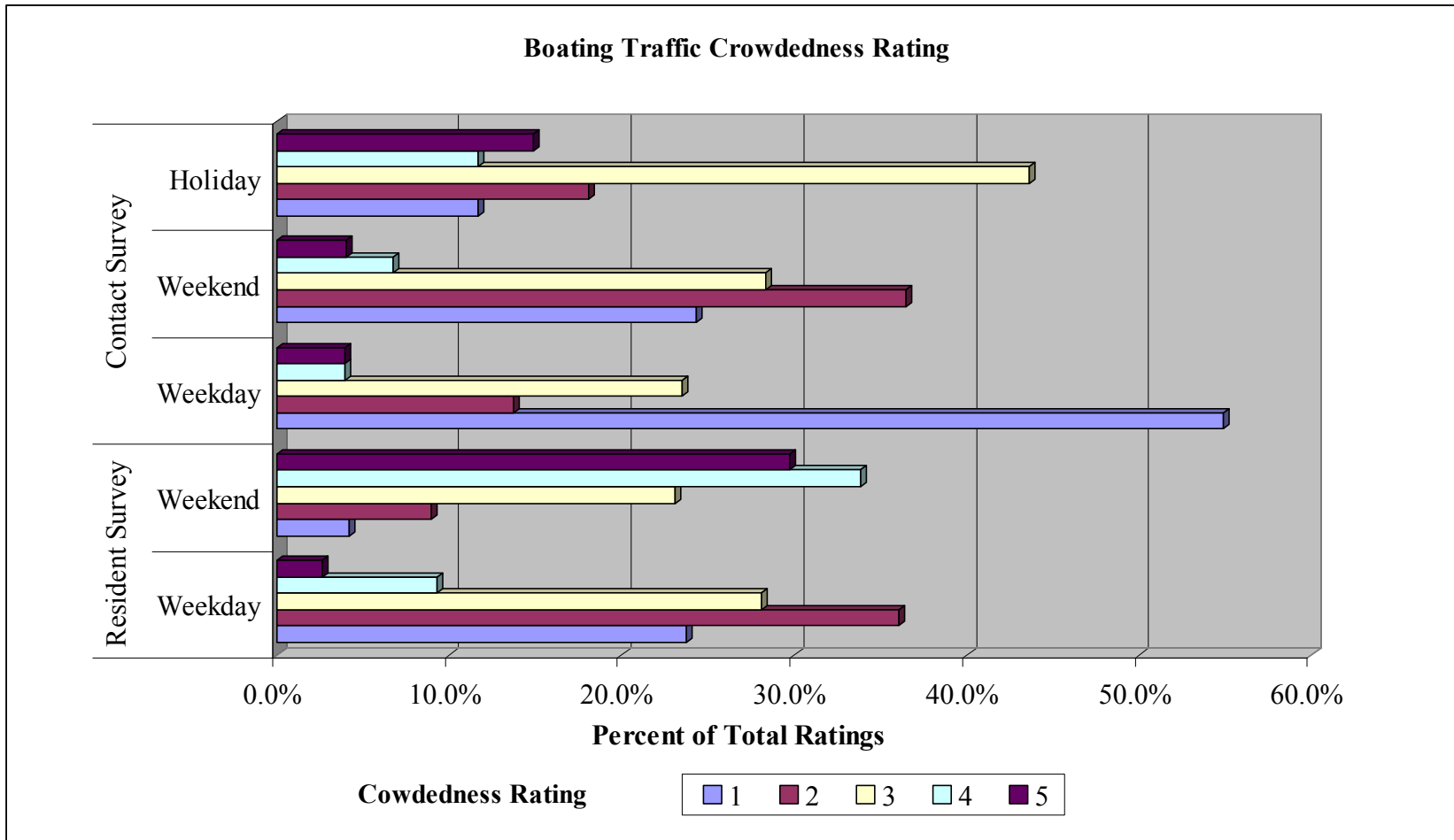
Responses to Crowding Questions on the Waterfront Resident Survey

The responses to the waterfront resident survey obviously reflect the opinions of waterfront residents. Since this was a mail-back survey, the responses do not reflect users' experience on a given day, but rather their overall impression of crowding issues. They were asked to differentiate between typical weekend days and weekdays.

Respondents indicated an average rating of 2.32 on a typical weekday and 3.75 on a typical weekend, again on the same scale of 1 (not crowded) to 5 (very crowded). The responses were also disaggregated by month with significantly higher ratings in July and August than in June.

Figure 6-1 denotes the distribution of the crowding rating (percent) by category (i.e., 1 to 5) for both the resident and contact survey respondents.

Figure 6-1. Summary of Boating Traffic Crowdedness Rating



Responses to Photographs Showing Different Levels of Crowding

Respondents were asked to select from a series of photos depicting boating use levels (see Figure 6-2; Photo A shows the least boats and Photo E shows the most boats) which photo would best represent various comfort levels of boating use on Deep Creek Lake. The first question asked which of the photographs reflected their preferred boating use level. Following is the summary of responses.

	Photo A	Photo B	Photo C	Photo D	Photo E	None
Resident	38.7%	43.0%	14.9%	1.96%	1.0%	0.00%
Contact	42.5%	34.3%	17.9%	3.7%	1.5%	0.00%

The second question asked respondents to select the photo at which the boating level was so high that they would not boat on Deep Creek Lake. Following is the summary of responses.

	Photo A	Photo B	Photo C	Photo D	Photo E	None
Resident	0.0%	0.6%	9.3%	32.8%	37.5%	19.7%
Contact	1.6%	1.6%	10.8%	27.7%	40.2%	18.1%

The third question asked which photo indicated the boating level at which some type of management action should be taken. Following is the summary of responses.

	Photo A	Photo B	Photo C	Photo D	Photo E	None
Resident	19.7%	0.7%	9.0%	32.6%	43.1%	14.6%
Contact	0.0%	0.0%	5.3%	20.5%	41.7%	32.6%

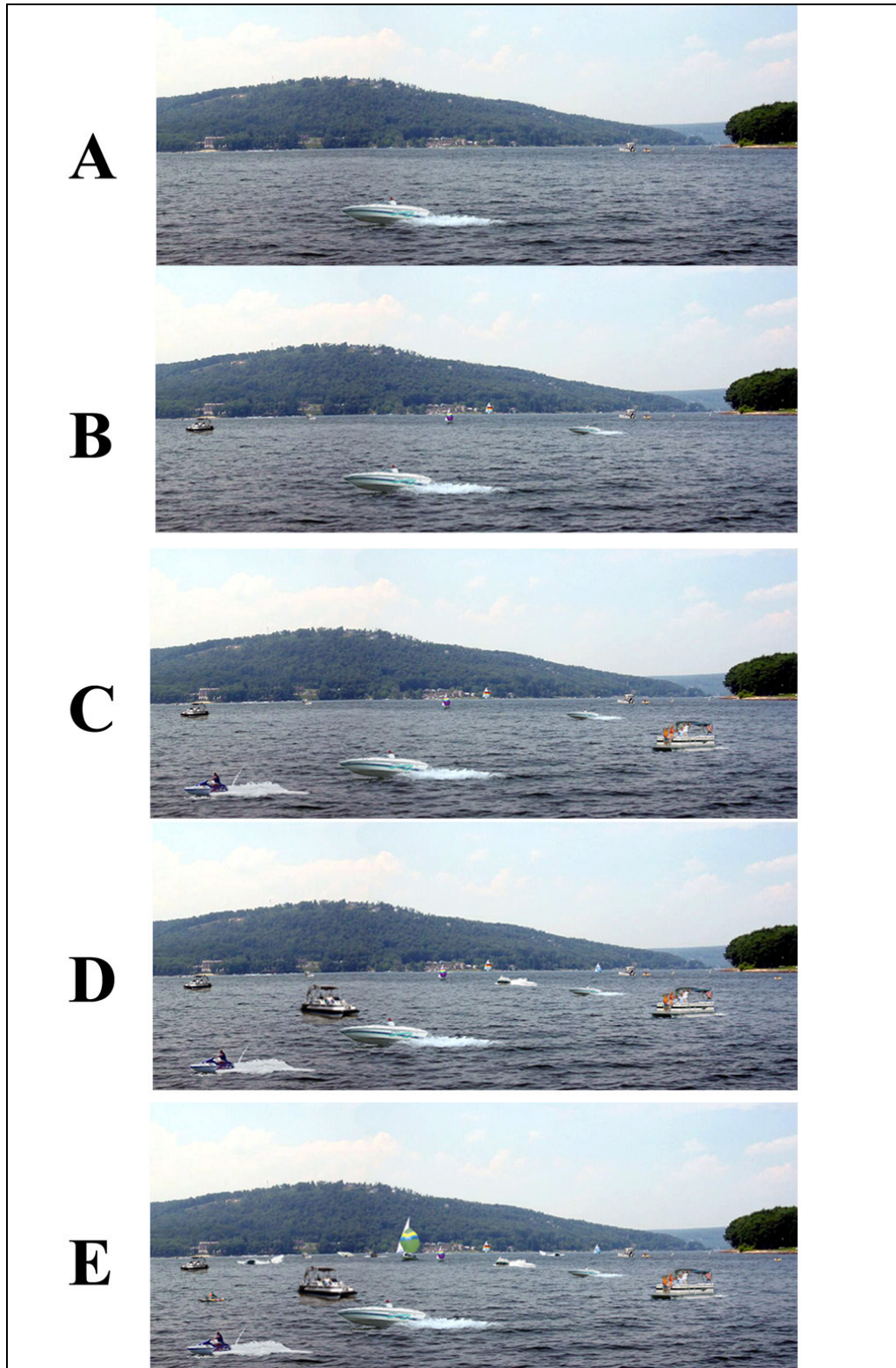
As would be expected, Photos A and B reflect the preferred boating use level. However, boating use would have to reach approximately the levels shown in Photos D and E before most respondents would decide not to boat. Boating use would need to approach the levels shown in Photo E before most respondents supported taking some type of management action to restrict use. Generally waterfront residents (resident survey respondents) were more concerned over crowding than day users or visitors (contact survey respondents). Typically, crowding was of the most concern on holiday weekends (i.e., 4th of July and Labor Day) and other weekends in July and August with good weather.

Based on an estimated lake surface area shown in the photos of approximately 80 acres, boating densities were calculated for each photo, applied to the entire net acreage of the lake, and overall boat levels were estimated for the net acreage of Deep Creek Lake and compared to the computed net carrying capacity (465 boats).

Photo	Boat Density	DCL Boats	Percent of Carrying Capacity
Photo A	0.038 boats/acre	112 boats	24% of carrying capacity
Photo B	0.100 boats/acre	294 boats	63% of carrying capacity
Photo C	0.125 boats/acre	367 boats	79% of carrying capacity
Photo D	0.163 boats/acre	479 boats	103% of carrying capacity
Photo E	0.238 boats/acre	699 boats	150% of carrying capacity

As the table above indicates, the calculated net carrying capacity of Deep Creek Lake would be slightly less than the boating levels shown in Photo D. In general, this is approaching the level in which many respondents indicated concerns about crowding.

Figure 6-2. Photos of Boating Use Levels Used for the Surveys



6.3 Comparison of Physical and Social Carrying Capacity

The physical carrying capacity assessment identified 465 boats as the overall Deep Creek Lake boating net carrying capacity. One factor that influences the carrying capacity is the boating mix (e.g., the percent of motorboats versus non-power boats, the percent of water skiers). The boating mix appears, based on a general review of the past boating use studies, to have been comprised of more non-power boats (i.e., canoe, kayak, sailing) than under current conditions, in which there are a greater number of powerboats, including motorboats and personal watercraft. Increases in the number of motorboats, which typically need greater surface acreage for safe operation conditions, can reduce the overall carrying capacity of the lake.

The social carrying capacity indicates that most boaters could tolerate levels at least as high as 465 boats. The highest boating use day ever recorded at Deep Creek Lake was July 4, 2003. Review of aerial photographs identified 600 boats on the lake that day, approximately 130% of carrying capacity. Despite even these high boating levels, the average rating for crowding that day was only a 3.4 on a 1 (not crowded) to 5 (very crowded) scale. This indicates that most boaters would find the calculated carrying capacity of the Deep Creek Lake (465 boats – less than the 600 boats counted on 4th of July) acceptable from a recreational experience perspective. This conclusion is further supported by the fact that 100% of respondents to the contact survey on holiday weekends (peak use periods) indicated that they would certainly or probably return to Deep Creek Lake. This suggests that existing boating use levels are not so high as to adversely affect the overall recreational experience.

The social carrying capacity results suggest that the overall carrying capacity of Deep Creek Lake could be higher than the 465 boats calculated based on the physical carrying capacity. Over 80% of respondents indicated, however, that the boating use levels in Photo E (a boat density equivalent to a net carrying capacity of 699) would be sufficient to discourage them from boating. Even at the use levels in Photo D (a boat density equivalent to a net carrying capacity of 479 boats, which is very close to the proposed physical carrying capacity), about 43% of respondents indicated that they would not boat at this level. Yet, the lake appears to have accommodated 600 boats while maintaining a quality recreational experience on July 4, 2003. This may be due, however, to extenuating circumstances. There was a sailboat regatta occurring during this peak use period, in which many boats were concentrated, thereby leaving the rest of the lake at slightly less dense boating levels. Also, a number of boats were anchored for fishing, picnicking, or swimming, several of which were located in the 100-foot buffer. These factors may have contributed to most boaters not finding the lake unacceptably crowded that day.

As indicated above, the physical carrying capacity is based on the current mix of watercraft and recreational activities. To the extent that during peak boating periods more power boaters are anchored for fishing, picnicking, or swimming; or are using the 100-foot buffer for these activities; then the lake can safely accommodate more than 465

boats. It is difficult to estimate the upper bound of Deep Creek Lake's social carrying capacity, but it is clearly less than 699 boats (the level shown in Photo E), and is probably not much higher than the 600 boats observed on July 4th. Also, lake managers should not rely on boaters using the 100-foot buffer, and should not encourage use of this buffer for safety and environmental reasons.

We recommend using 465 boats as a reasonable and prudent carrying capacity estimate for achieving MDNR's management goal of "providing for the greatest use of the lake consistent with a quality experience and safety of all users of the lake." It should be recognized that higher use levels, although probably not much higher than 600 boats, can be accommodated occasionally for short durations (e.g., the afternoon of a sunny holiday weekend) without significantly adversely affecting the overall recreational experience for most boaters. To the extent that use levels start to more regularly exceed the 465 boat carrying capacity, MDNR should consider further action. This is discussed in more detail in Section 7.

As noted above, use is not currently evenly distributed across the lake. There are a few areas of the lake today that are routinely crowded and may pose safety concerns. These areas include the channels near the two bridges across Deep Creek Lake, which function as bottlenecks, and the Turkey Neck area during sail regattas.

7.0 MANAGEMENT OPTIONS

This section discusses the responses from the resident survey, the contact survey, and the commercial operators survey regarding potential management options, summarizes the overall study's findings and recommendations, and suggests metrics for use in a Limits of Acceptable Change monitoring program.

7.1 Survey Responses Regarding Management Options

Respondents to the resident, contact, and commercial surveys were asked to indicate whether they would support or oppose certain commercial uses (e.g., allowing boat races) as well as certain government management actions (e.g., instituting lower speed limits) at Deep Creek Lake. They were asked to describe their reaction to these potential measures as follows: strongly oppose (-2), oppose (-1), neutral (0), support (+1) or strongly support (+2). Figures 7-1 and 7-2 summarize the average ratings provided by the resident, contact and commercial survey respondents to the potential management actions. Appendix C provides a summary of the percent distribution of responses (strongly opposed to strongly support) by both the resident, contact and commercial surveys for each listed management option on the surveys.

Government Management Options

In terms of government-related management options, the only options that received any relatively strong support (scores over 1.0) were by respondents to the resident survey who were in favor of limiting residential development (average rating of 1.22) and limiting commercial development around Deep Creek Lake (average rating of 1.02). Respondents to the contact survey were not strongly in support or opposition of any of the management options, but were most opposed to increasing fees to use the lake or public facilities adjacent to the lake (average rating of -0.77) or requiring prior reservations or permits to use the lake or public facilities adjacent to the lake (average rating of -0.62). The respondents to the commercial business survey were generally not in favor of any of the potential government actions, and were strongly opposed to limiting commercial development (average rating of -1.29) and requiring reservations or permits (average rating of -1.29). Overall, waterfront residents were most in favor of government management options, commercial operators were most opposed to government management options, and visitors (respondents to the contact survey) tended to support residents in limiting residential and commercial development and support commercial operators in opposing increased fees or requiring permits to use the lake.

The responses to the government management options are relatively typical of a lake that is growing in popularity. Waterfront residents are usually more sensitive to increasing recreation use as they generally prefer the lower use levels of the past and are concerned about the potential effects of increased crowding, or perceptions of crowding, on property values. Commercial operators generally support increasing recreational use as increased visitorship is generally good for business. Visitors, however, are often the best indicator of the need for government action because they are responding primarily to

their recreational experience without being influenced by personal investment or business factors. The relatively high scores (greater than 0.50) for limiting residential and commercial development on the visitor survey may reflect more concern about the loss of rural character and shoreline aesthetics than concerns about increasing recreational use, because respondents to the contact survey were generally comfortable with existing use levels. Based on the responses shown in Figure 7-1, there is little support for MDNR taking any immediate management actions. Based on the relatively high scores for stricter boat noise restrictions and the need for greater law enforcement, noise-related impacts and the adequacy of enforcement patrols should be closely monitored.

Commercial Uses

In terms of commercial management options, respondents to the contact surveys indicated they would support (average rating of 0.61) and resident survey respondents stated they would somewhat support (average rating of 0.11) allowing musical performances on the lake or along the lake shoreline. Respondents to the contact survey indicated they would somewhat support allowing water taxis (average rating of 0.19) and SCUBA diving services (average rating of 0.13). Respondents to both the resident and contact surveys were not in support of most of the other potential commercial management options. Respondents to the resident survey indicated that they would oppose allowing larger boat tours (average rating of -1.17), allowing parasailing (average rating of -0.97), allowing additional boat tours (average rating of -0.95), and allowing boat-based food vending (average rating of -0.93). The commercial options received strong support from commercial operators, as would be expected, but the only commercial management options that received any support from recreational users were allowing SCUBA diving and water taxis, and in both cases only the visitors supported these options (i.e., contact survey responses).

The responses to the potential commercial options provide insight into the type of recreational experience preferred by most users of the lake. The results suggest that most lake users prefer a less commercialized experience. Few complaints were received about current commercial operations along the lake (e.g., boat rentals, gasoline sales, restaurants, fishing supplies) that support the primary recreational activities (e.g., boating and fishing). More commercialized activities (e.g., additional or larger tour boats, parasailing, and boat races) were opposed, even by visitors for whom these events would be targeted. Even relatively unintrusive commercial uses such as SCUBA diving and water taxis received only mild support from visitors.

Figure 7-1. Summary of Average Ratings for Government Related Management Options

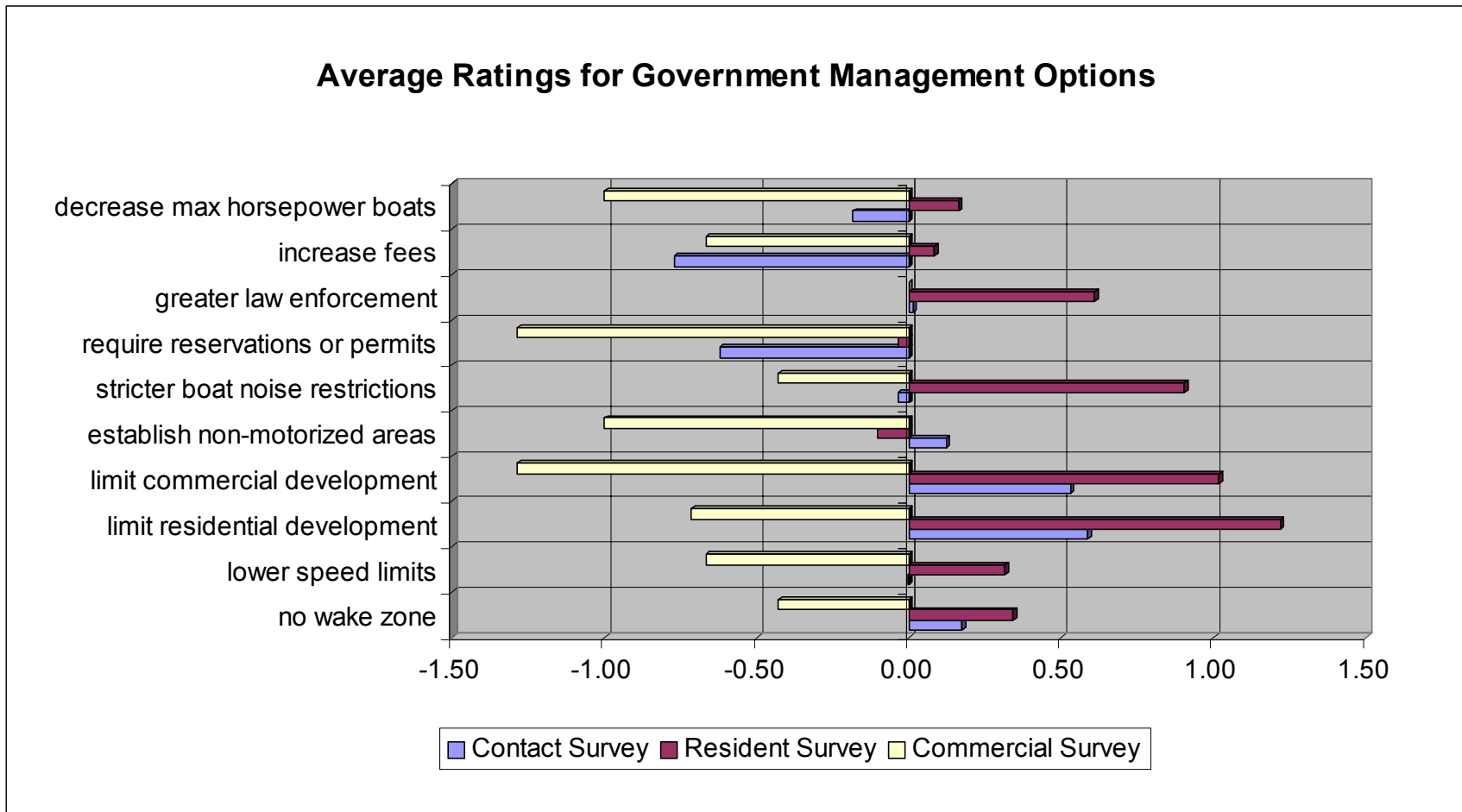
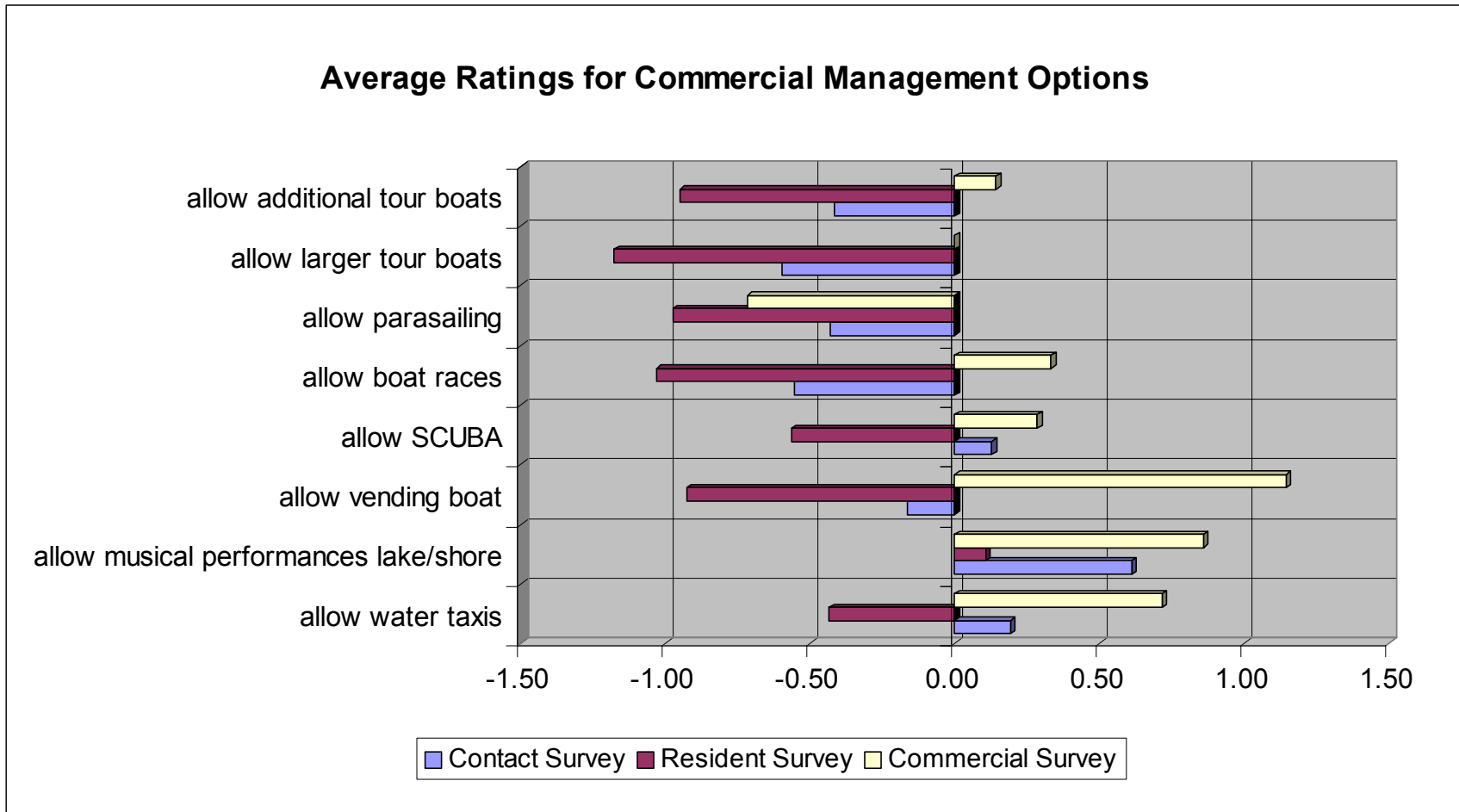


Figure 7-2. Summary of Average Ratings for Commercial Related Management Options



7.2 Summary of Findings and Recommendations

This section briefly summarizes the findings and recommendations of this study.

Recreational Boat Carrying Capacity

Based on the carrying capacity analysis, we recommend 465 boats as a prudent and safe recreational boating carrying capacity for Deep Creek Lake. This is a boating level that has only been exceeded 5 times over the past 13 years and usually on holiday weekends, although other weekends in July and August can approach or exceed this level if weather conditions are good. Generally, recreational use is well below this level.

The highest boat count at Deep Creek Lake recorded since records have been kept was recorded this summer (600 boats), and while concerns regarding crowding were identified, use levels on that day did not appear to significantly adversely affect boaters' recreational experiences. Of course, many boaters may have chosen not to boat that day because of the degree of crowding. Overall, however, it appears that recreational users are willing to tolerate occasional short-term high use periods. MDNR should consider the following management options for at least holiday weekends (4th of July and Labor Day) to insure a safe and enjoyable boating experience on days when lake carrying capacity may be exceeded:

- Increased law enforcement presence to control and enforce limits on boat speeds and other reckless activities during peak use hours, especially in coves under the bridges, and other bottlenecks or no-wake areas.
- Prohibit special events (e.g., sailing regattas, fishing tournaments) during peak use hours on holiday weekends.

Based on the survey responses, we believe that use levels over approximately 600 boats will result in a less desirable recreational experience. MDNR should continue to monitor recreational use and if use levels begin to exceed the recommended carrying capacity (465 boats) on a more regular basis, additional management actions should be considered. The surveys indicate that at current use levels, there is relatively little support for additional management (e.g., user fees, boat horsepower restrictions, lower speed limits).

Trends in Recreational Use

The recreational use at Deep Creek Lake is anticipated to increase in relation to the residential and commercial development in the vicinity of Deep Creek Lake and tourism. Based on trends in 2nd home development, resident population, and visitors, there is a projected increase in the peak day population of about 23% from the year 2003 to the year 2013. This would relate to a steady increase in recreational use in the areas currently receiving recreational activity, such as motor boating, swimming, fishing and picnicking.

Factors that can affect future boating use and associated crowdedness include: changes in the boating mix, i.e., more power boats and fewer non-power boats; the effects of future growth, i.e., more boat docks and more residential-related boating access and users; and increased influx of users from outside of the Deep Creek Lake region, if additional recreational access is provided to meet this increased demand.

Boating Safety

Overall, Deep Creek Lake provides a safe and attractive boating environment. As indicated above, there are times when the lake's recreational carrying capacity is exceeded and additional law enforcement may be required. It should be noted, however, that boating use is not evenly distributed across the lake. There are a few areas of the lake that are routinely crowded and may pose safety concerns. These areas include the channels near the two bridges across Deep Creek Lake, which function as bottlenecks, and the Turkey Neck area during sail regattas. Stricter speed limits and greater law enforcement may be required in these areas.

Quality of the Recreational Experience

Generally, the visitors to Deep Creek Lake (contact survey respondents) had a favorable recreational experience and indicated that they would return to Deep Creek Lake in the future. The visitors were generally more tolerable of higher boating use levels than were the shoreline residents (resident survey respondents). The residents were concerned with boating use levels and associated crowdedness; boating noise; safety issues, such as reckless boating use; and shoreline erosion conditions. Overall the primary types of recreational activities that occur at Deep Creek Lake have remained fairly constant, including motor boating, swimming, fishing, and picnicking. Increased use has influenced the type of recreational experience on peak weekends and holidays to reflect more of a busy, high use recreational area.

Type of Recreational Experience

The responses to the potential commercial options provide insight into the type of recreational experience preferred by most users of the lake. The results suggest that most lake users prefer a less commercialized experience. Few complaints were received about current commercial operations along the lake (e.g., boat rentals, gasoline sales, restaurants, fishing supplies) that support the primary recreational activities (e.g., boating and fishing). More commercialized activities (e.g., additional or larger tour boats, parasailing, and boat races) were opposed, even by visitors for whom these events would be targeted. Even relatively un-intrusive commercial uses such as SCUBA diving and water taxis received little support from visitors.

Differences Between Waterfront Residents and Visitors

There are clear differences in opinions between waterfront residents and visitors regarding recreational use of Deep Creek Lake. Waterfront residents tend to be more

concerned about noise, boat wakes, and shoreline erosion than visitors. These are legitimate concerns as waterfront residents experience these problems for most of the summer while visitors may only be at Deep Creek Lake for the weekend. It was beyond the scope of this study to identify and evaluate the severity of shoreline erosion. If erosion is occurring in some areas, speed limits, expanded or more strictly enforced no wake zones, and/or shoreline protection measures should be considered.

Visitors tend to be more concerned about public access and public restrooms. These too are legitimate concerns. There is currently only one public, non-commercial, access point to Deep Creek Lake at Deep Creek Lake State Park. Given the popularity of Deep Creek Lake, MDNR or Garrett County may wish to consider providing a second public access area somewhere along the lake so that non-waterfront residents have good access to this valuable recreational resource. The existing boat trailer parking lot at Deep Creek Lake State Park is only occasionally full, so it is not currently limiting access. A smaller cartop boat put-in for canoes or kayaks on one of the coves would provide improved access for non-motorized watercraft; while minimizing potentially hazardous interactions between larger motorized craft and smaller, non-motorized craft in the vicinity of Deep Creek Lake State Park. Provision of a public cartop launch site is consistent with the DNR's stated goal of providing maximum public of the lake, and with the current management of the 100 ft no-wake zone around the shoreline.

7.3 Limits of Acceptable Change

In the development of management goals and measures, components of the Limits of Acceptable Change (LAC) planning system can be applied (Stankey, et al., 1985). The LAC process utilizes a primary emphasis on the conditions desired in an area rather than on how much use an area can physically tolerate. The LAC system provides a framework for establishing acceptable and appropriate resource and social conditions in recreational settings. The LAC process can be applied to identify desired resource management conditions and identify resource indicators and standards to meet these desired conditions. The overall goal for the management of Deep Creek Lake is "to work toward a reasonable balance preserving an acceptable quality of recreational experience on Deep Creek Lake, while at the same time providing for the greatest use of the lake consistent with a quality experience and safety of all users of the lake."

Based on this overall management goal for Deep Creek Lake, we identified various resource indicators that can provide the means to assess whether additional management related actions should be pursued to maintain the desired conditions. These potential resource indicators include the following:

Quality of Recreational Experience

- Establish and monitor the minimum acceptable percentage of visitors to the lake that indicate that they will probably and certainly return for another visit.

Boating Use Levels

- Establish criteria and monitor the acceptable length of wait to launch a boat at the Deep Creek Lake boat ramp.
- Establish and monitor the acceptable levels of capacity of boat launch area, i.e., number of boats/trailers in parking area, number of boats launched per day during peak periods.
- Establish and monitor the acceptable level of crowding on the lake based on social capacity perceptions, i.e., periodic surveying of crowdedness ratings.
- Establish and monitor the acceptable level of crowding on the lake (by sector) based on physical capacity, i.e., number/type of days when capacity is exceeded.

Boating Safety

- Monitor boating safety perceptions, i.e., periodic surveying of user perceptions of safety related concerns/issues.
- Monitor reported boating accidents.
- Monitor boating speeds and use levels in key bottleneck areas.

Boating Noise

- Establish and monitor boating noise levels, i.e., set maximum allowed noise level, establish revised conditions for monitoring conditions related to boating noise monitoring
- Monitor boating and recreation user noise perceptions, i.e., periodic survey of user perceptions of noise related issues.

Shoreline Erosion

- Conduct evaluation and monitor shoreline erosion conditions at key locations

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Appendix A: User Contact Survey

Date: _____
 Time: _____

DEEP CREEK LAKE RECREATIONAL CARRYING CAPACITY RECREATION USE CONTACT SURVEY

The Maryland Department of Natural Resources has hired ERM to conduct a recreation use survey at Deep Creek Lake. ERM is an environmental consulting firm located in Annapolis, MD. Our firm has extensive experience in Maryland including Garrett County. We specialize in evaluating the impacts of recreational use on environmental, economic, and cultural resources. Information collected by this survey will be used to help improve recreation opportunities at Deep Creek Lake. Please take a few minutes to answer these questions. Your experience and opinions are important to us.

1. Please indicate below where you are staying:

I'm only here for the day _____	Local hotel/motel _____
Staying at my permanent residence _____	Tent camping _____
Staying at my vacation home _____	Trailer or RV camping _____
Staying at a friend's house _____	Other _____
Renting a house near the lake _____	
Renting a lakefront house/condo _____	

2. Please indicate your place of residence by placing an X in the space provided next to the appropriate description below:
 - ___ My primary residence is a lakefront property at Deep Creek Lake
 - ___ I own lakefront property on Deep Creek Lake, but my primary residence is not a lakefront property at Deep Creek Lake
 - ___ I am a resident of Garrett County, but I do not own lakefront property on Deep Creek Lake
 - ___ I am a resident of Maryland, but I do not reside in Garrett County
 - ___ I am not a resident of Maryland
 If you do not live in Garrett County, what is the zip code of your primary residence? _____

3. What is your age? less than 18 18-30 31-45 46-65 over 65
 Are you male _____ or female _____?

4. Please check all of the activities that you have participated in, or will participate in, during your trip to Deep Creek Lake **today**.

motor boating <input type="checkbox"/>	swimming <input type="checkbox"/>	camping <input type="checkbox"/>	using personal watercraft <input type="checkbox"/>
boat fishing <input type="checkbox"/>	water skiing <input type="checkbox"/>	sun bathing <input type="checkbox"/>	other _____ <input type="checkbox"/>
bank fishing <input type="checkbox"/>	windsurfing <input type="checkbox"/>	sailing <input type="checkbox"/>	
canoeing/kayaking <input type="checkbox"/>	picnicking <input type="checkbox"/>	hiking <input type="checkbox"/>	

5. From the list above, which one was your primary activity (the main reason for your trip to Deep Creek Lake) **today**?

6. How many people came in your group to the lake **today**, including yourself?
 Number of adults (18 years or older) _____
 Number of children (less than 18 years) _____

7. How long will you be staying at the lake **today**?
 ___ Day Trip – How many hours do you plan to spend at the lake today? _____ hours
 ___ Overnight – How many nights do you plan to stay at the lake on this trip? _____ nights

8. Please circle below the type and number of watercraft that you keep at your lakefront home. If you keep more than three watercraft at your lakefront home, please write in the number in the space provided.

Powerboats	0 1 2 3	_____	Canoe/kayaks/rowboats	0 1 2 3	_____
Personal Watercrafts/jet skis	0 1 2 3	_____	Sailboats/boards	0 1 2 3	_____

9. How crowded was the lake **today** in terms of boat traffic? (circle number)

Not Crowded 1 2 3 4 5 Very Crowded

10. Which of the following responses best describes the number of people at Deep Creek Lake **today**?
 ___ Too Many People ___ Just the right number ___ Too Few People

11. Will you return to Deep Creek Lake again to engage in the recreational activity you are doing right now?
 ___ Certainly ___ Probably ___ Probably Not ___ Certainly Not

12. We would like to know whether you have encountered certain conditions at Deep Creek Lake that interfered with your recreation experience **today**. Please check whether each of the following was a big, moderate, slight, or not a problem on your trip **today**.

	<u>Not a Problem</u>	<u>Slight Problem</u>	<u>Moderate Problem</u>	<u>Big Problem</u>
Boat wakes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Too many people along the shoreline	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Too many watercraft on this lake	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Improper disposal of litter, trash, or toilet paper	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Conflicts with other recreation users	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Loud, rude or inconsiderate behavior by other users	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Boating hazards (e.g., stumps, shallow areas)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Tree cutting along the shoreline	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Bulkheads/rip-rapped shoreline	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Muddy water	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Eroding shoreline	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Availability of public sanitary facilities or port-a-johns	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

13. We would like to know whether you have encountered certain noise-related effects while using Deep Creek Lake. Please indicate if these conditions have been a big problem, moderate problem, slight problem, or not a problem.

	<u>Not a Problem</u>	<u>Slight Problem</u>	<u>Moderate Problem</u>	<u>Big Problem</u>
Noise from powerboats	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Noise from personal watercraft	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Noise from airboats	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Noise from on-shore activities during the day	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Noise from on-shore activities during the night	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Noise from other recreational users on the lake	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Do you have any other comments regarding noise at Deep Creek Lake?

THE FOLLOWING QUESTIONS RELATE TO YOUR GENERAL EXPERIENCE AT DEEP CREEK LAKE, BUT ARE NOT LIMITED TO TODAY.

14. Do you plan to keep a boat with you, either in the water or on a trailer, overnight at any point during your stay?

Yes No

15. If you answered yes, will you dock at a private, commercial, or community dock?

Private dock Commercial dock Community dock

16. If you answered yes to either of the above questions, how many nights (total) will you keep a boat with you during your visit at Deep Creek Lake? _____ total nights at a private dock _____ total nights at a commercial dock

_____ total nights at a community dock _____ total nights on a trailer off the lake

17. Are there any other activities or services that are currently not available, but that would improve your recreational experience?

18. How long are you willing to wait to launch your boat at the Deep Creek Lake State Park boat ramp?

0-5 minutes 6-10 minutes 11-15 minutes 16-20 minutes more than 20 minutes

19. Please look at the pictures provided to you by the survey technician to answer the three questions below.

Which of the photographs reflect your preferred boating use level?

Photo A Photo B Photo C Photo D Photo E None

Is there any use level shown that is so high that you would not boat on Deep Creek Lake?

Photo A Photo B Photo C Photo D Photo E None

Is there any use level shown that is so high that some type of management action should be taken? (*understanding that these measures or activities could potentially affect or restrict your personal use of the lake at certain times of the year, should they be implemented*)

Photo A Photo B Photo C Photo D Photo E None

20. Please indicate how strongly you would support or oppose implementation of each of the following potential management actions or uses at Deep Creek Lake by circling your answers in the appropriate column below (*understanding that these measures or activities could potentially affect or restrict your personal use of the lake at certain times of the year, should they be implemented*). For those actions you would support, please indicate the location(s) where you would like to see these measures implemented.

	Strongly Oppose	Oppose	Neutral	Support	Strongly Support	Comments
Institute expanded/new no wake zones	-2	-1	0	+1	+2	Where?
Institute lower speed limits or new speed zones	-2	-1	0	+1	+2	Where?
Limit the amount of residential development around Deep Creek Lake	-2	-1	0	+1	+2	
Limit the amount of commercial development around Deep Creek Lake	-2	-1	0	+1	+2	
Special areas for non-motorized vessels	-2	-1	0	+1	+2	Where?
Stricter boat noise restrictions	-2	-1	0	+1	+2	What type of restriction?
Require prior reservations or permits to use the lake or public facilities adjacent to the lake	-2	-1	0	+1	+2	
Provide a greater law enforcement presence on the lake	-2	-1	0	+1	+2	
Charge or increase fees to use the lake or public facilities adjacent to the lake	-2	-1	0	+1	+2	
Decrease the maximum allowable horsepower for boat motors	-2	-1	0	+1	+2	What should be the maximum allowable horsepower?
Allow water taxis	-2	-1	0	+1	+2	
Allow musical performances on the lake or along the shoreline	-2	-1	0	+1	+2	
Allow food vending by boat	-2	-1	0	+1	+2	
Allow commercial SCUBA diving services	-2	-1	0	+1	+2	
Allow boat races	-2	-1	0	+1	+2	
Allow parasailing	-2	-1	0	+1	+2	
Permit larger tour boats	-2	-1	0	+1	+2	
Permit additional tour boats	-2	-1	0	+1	+2	
Other _____ _____						

21. Do you have any other comments regarding your recreation experiences at Deep Creek Lake?

Appendix B: Resident Mail-back Survey

**DEEP CREEK LAKE RECREATIONAL CARRYING CAPACITY
LAKEFRONT PROPERTY OWNER USE SURVEY**

The Maryland Department of Natural Resources has hired ERM to conduct a recreation use survey at Deep Creek Lake. ERM is an environmental consulting firm located in Annapolis, MD. Our firm has extensive experience in Maryland including Garrett County. We specialize in evaluating the impacts of recreational use on environmental, economic, and cultural resources. Information collected by this survey will be used to help improve recreation opportunities at Deep Creek Lake. Please take a few minutes to answer these questions. Your experience and opinions are important to us.

- Approximately how many days during July 2003 did you spend at your lakefront home?
 0 - 5 days 11 - 20 days
 6 - 10 days 21 - 31 days
- Including yourself and your family, please write in the number of adults (18 years and older) and children (less than 18 years of age) that stayed overnight in your dwelling on Deep Creek Lake each night during July of 2003. If there were nights that no one stayed at your dwelling at Deep Creek Lake, please leave those boxes blank.

1st Adults:____ Children:____	2nd Adults:____ Children:____	3rd Adults:____ Children:____	4th Adults:____ Children:____	5th Adults:____ Children:____	6th Adults:____ Children:____
7th Adults:____ Children:____	8th Adults:____ Children:____	9th Adults:____ Children:____	10th Adults:____ Children:____	11th Adults:____ Children:____	12th Adults:____ Children:____
13th Adults:____ Children:____	14th Adults:____ Children:____	15th Adults:____ Children:____	16th Adults:____ Children:____	17th Adults:____ Children:____	18th Adults:____ Children:____
19th Adults:____ Children:____	20th Adults:____ Children:____	21st Adults:____ Children:____	22nd Adults:____ Children:____	23rd Adults:____ Children:____	24th Adults:____ Children:____
25th Adults:____ Children:____	26th Adults:____ Children:____	27th Adults:____ Children:____	28th Adults:____ Children:____	29th Adults:____ Children:____	30th Adults:____ Children:____

- Please have the adult and child (if applicable) in your household whose birthdays are closest to July 1st answer this survey question.** About how many days during July 2003 did this adult and this child (together with other household members, or individually) participate in the following activities as their *principal recreational activity* on Deep Creek Lake? For example, let's say both the adult and child answering this question went motor boating on the lake about 9 times during July. If fishing was their principal recreational activity (e.g., the reason they went out on their boat) 6 of these times, and the other 3 times they simply went boating, then you would write in "6" next to boat fishing and a "3" next to motor boating in both the adult and child columns below. ***Please estimate the number of days of participation in each recreational activity. Please always estimate a number – do not write in "a lot".***

Recreational Activity	Number of days the adult with the birthday closest to July 1 st participated in the following recreational activities on Deep Creek Lake	Number of days the child with the birthday closest to July 1 st participated in the following recreational activities on Deep Creek Lake
motor boating	_____	_____
boat fishing	_____	_____
canoeing/kayaking	_____	_____
swimming	_____	_____
personal watercraft	_____	_____
water skiing	_____	_____
windsurfing	_____	_____
sailing	_____	_____
Other (please list)	_____	_____

- How many weeks do you usually rent your dwelling at Deep Creek Lake to others between Memorial Day and Labor Day? _____
- How crowded (in terms of boat traffic) was Deep Creek Lake on a typical Saturday or Sunday during July 2003? (not the 4th of July) (Please circle the appropriate number below).

Not Crowded ← 1 2 3 4 5 → Very Crowded
- How crowded (in terms of boat traffic) was Deep Creek Lake on a typical weekday during July 2003? (Please circle the appropriate number below).

Not Crowded ← 1 2 3 4 5 → Very Crowded

7. We would like to know whether you have encountered certain conditions at Deep Creek Lake that interfered with your recreation experience. Please check whether each of the following is a big, moderate, slight, or not a problem.

	<u>Not a Problem</u>	<u>Slight Problem</u>	<u>Moderate Problem</u>	<u>Big Problem</u>
Boat wakes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Too many people along the shoreline	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Too many watercraft on this lake	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Improper disposal of litter, trash, or toilet paper	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Conflicts with other recreation users	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Loud, rude or inconsiderate behavior by other users	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Boating hazards (e.g., stumps, shallow areas)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Tree cutting along the shoreline	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Bulkheads/rip-rapped shoreline	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Muddy water	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Eroding shoreline	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Availability of public sanitary facilities or port-a-johns	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

8. We would like to know whether you have encountered certain noise-related effects while using Deep Creek Lake. Please indicate if these conditions have been a big problem, moderate problem, slight problem, or not a problem.

	<u>Not a Problem</u>	<u>Slight Problem</u>	<u>Moderate Problem</u>	<u>Big Problem</u>
Noise from powerboats	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Noise from personal watercraft	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Noise from airboats	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Noise from on-shore activities during the day	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Noise from on-shore activities during the night	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Noise from other recreational users on the lake	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Do you have any other comments regarding noise at Deep Creek Lake? _____

9. Please circle below the type and number of watercraft that you keep at your lakefront home. If you keep more than three watercraft at your lakefront home, please write in the number in the space provided.

Powerboats 0 1 2 3 ____ Canoe/kayaks/rowboats 0 1 2 3 ____
 Personal Watercrafts/jet skis 0 1 2 3 ____ Sailboats/boards 0 1 2 3 ____

10. Approximately how many days from June 1st through September 30th do you keep transient watercraft (watercraft owned by someone other than a member of your household) in the water or at your dock at your lakefront home? _____ days

11. What is your age? less than 18 18-21 22-45 46-65 over 65
 Are you male _____ or female _____?

12. Please look at the pictures provided to you by the survey technician to answer the three questions below.

Which of the photographs reflect your preferred boating use level?
 Photograph A ____ Photograph B ____ Photograph C ____ Photograph D ____ Photograph E ____ None ____

Is there any use level shown that is so high that you would not come to Deep Creek Lake?
 Photograph A ____ Photograph B ____ Photograph C ____ Photograph D ____ Photograph E ____ None ____

Is there any use level shown that is so high that some type of management action should be taken? (*understanding that these measures or activities could potentially affect or restrict your personal use of the lake at certain times of the year, should they be implemented*)
 Photograph A ____ Photograph B ____ Photograph C ____ Photograph D ____ Photograph E ____ None ____

13. Please indicate how strongly you would support or oppose implementation of each of the following potential management actions or uses at Deep Creek Lake by circling your answers in the appropriate column below (*understanding that these measures or activities could potentially affect or restrict your personal use of the lake at certain times of the year, should they be implemented*). For those actions you would support, please indicate the location(s) where you would like to see these measures implemented.

	Strongly Oppose	Oppose	Neutral	Support	Strongly Support	Comments
Institute expanded/new no wake zones	-2	-1	0	+1	+2	Where?
Institute lower speed limits or new speed zones	-2	-1	0	+1	+2	Where?
Limit the amount of residential development around Deep Creek Lake	-2	-1	0	+1	+2	
Limit the amount of commercial development around Deep Creek Lake	-2	-1	0	+1	+2	
Special areas for non-motorized vessels	-2	-1	0	+1	+2	Where?
Stricter boat noise restrictions	-2	-1	0	+1	+2	What type of restriction?
Require prior reservations or permits to use the lake or public facilities adjacent to the lake	-2	-1	0	+1	+2	
Provide a greater law enforcement presence on the lake	-2	-1	0	+1	+2	
Charge or increase fees to use the lake or public facilities adjacent to the lake	-2	-1	0	+1	+2	
Decrease the maximum allowable horsepower for boat motors	-2	-1	0	+1	+2	What should be the maximum allowable horsepower?
Allow water taxis	-2	-1	0	+1	+2	
Allow musical performances on the lake or along the shoreline	-2	-1	0	+1	+2	
Allow food vending by boat	-2	-1	0	+1	+2	
Allow commercial SCUBA diving services	-2	-1	0	+1	+2	
Allow boat races	-2	-1	0	+1	+2	
Allow parasailing	-2	-1	0	+1	+2	
Permit larger tour boats	-2	-1	0	+1	+2	
Permit additional tour boats	-2	-1	0	+1	+2	
Other _____						

14. Do you have any other comments regarding your recreation experiences at Deep Creek Lake?

Appendix C: Summary of Primary Responses to Contact and Resident Surveys

Ramp Survey Only

Ramp Survey	n=150	n=28	n=57	n=65
	Total	Weekday	Weekend	Holiday
Question 1 - Where are you staying?				
	Percentage of Total			
day only	2.38%	8.00%	0.00%	1.75%
perm. residence	11.11%	24.00%	9.09%	7.02%
vacation home	25.40%	40.00%	31.82%	14.04%
friends house	7.94%	0.00%	2.27%	15.79%
house near lake	13.49%	12.00%	15.91%	12.28%
renting lakefront	5.56%	4.00%	13.64%	0.00%
hotel/motel	19.05%	4.00%	9.09%	33.33%
tent	6.35%	4.00%	6.82%	7.02%
trailer/RV	7.14%	0.00%	9.09%	8.77%
other	1.59%	4.00%	2.27%	0.00%
Question 2 - Place of residence				
	Percentage of Total			
lakefront	34.69%	47.62%	29.41%	18.18%
Garrett Co	4.08%	9.52%	0.00%	0.00%
Maryland	18.37%	19.05%	23.53%	9.09%
outside MD	42.86%	23.81%	47.06%	72.73%
Zip/Place of residence	N/A	N/A	N/A	N/A
Question 3 - What is your age and sex?				
	Percentage of Total			
under 18	4.71%	0.00%	3.45%	10.00%
18-30	7.06%	15.38%	3.45%	3.33%
31-45	20.00%	23.08%	17.24%	20.00%
46-65	57.65%	53.85%	68.97%	50.00%
over 65	10.59%	7.69%	6.90%	16.67%
male	49.65%	69.57%	50.00%	42.19%
female	50.35%	30.43%	50.00%	57.81%
Question 4 - Participated activities				
	Percentage of Total			
motor boating	21.62%	17.32%	22.10%	24.28%
boat fishing	10.81%	8.66%	13.26%	9.83%
bank fishing	5.20%	3.15%	6.63%	5.20%
canoeing/kayaking	2.91%	3.15%	2.21%	3.47%
swimming	12.06%	12.60%	12.71%	10.98%
waterskiing	9.56%	11.81%	10.50%	6.94%
windsurfing	0.83%	1.57%	0.55%	0.58%
picnicing	6.65%	3.94%	6.08%	9.25%
camping	3.95%	2.36%	4.97%	4.05%
sun bath	8.94%	10.24%	7.73%	9.25%
sailing	1.25%	2.36%	0.00%	1.73%
hiking	5.61%	8.66%	4.42%	4.62%
personal watercraft	10.19%	14.17%	7.73%	9.83%
other	0.42%	0.00%	1.10%	0.00%
Question 5 (Fill in the blank survey responses)				
Boat Fishing	8.47%			
Boating	20.34%			
Camping	1.69%			
Canoeing	1.69%			
Fishing	10.17%			
Jet skiing/ personal watercraft	11.86%			
Motor Boating	25.42%			
Picnic	1.69%			
Water skiing/ wakeboarding	4.24%			
Question 6 - How many in your group?				
	Percentage of Total			
18 up	3.30	3.19	3.32	3.34

Ramp Survey Only

	under 18	1.20	0.89	1.64	0.95
Question 7 - Length of stay		Average Stay (days)			
	day/hours	4.72	4.40	6.10	3.83
	overnight/nights	6.08	9.50	7.52	3.15
	percent of day users	43.48%	38.46%	42.00%	46.77%
	percent of overnight users	56.52%	61.54%	58.00%	53.23%
Question 8 - Type of watercraft		Percentage of Total			
	Powerboats	60.61%	48.94%	65.38%	65.15%
	personal/jet ski	24.85%	31.91%	25.00%	19.70%
	canoe/kayaks/row	9.09%	12.77%	7.69%	7.58%
	sailboats/boards	5.45%	6.38%	1.92%	7.58%
Question 9 - How crowded was the lake		Average ranking			
	Average ranking	2.71	2.00	2.35	3.22
Question 10 - Describe number of people at lake		Percentage of Total			
	too many	10.64%	10.00%	12.50%	9.09%
	just right	80.85%	70.00%	87.50%	90.91%
	too few	8.51%	20.00%	0.00%	0.00%
Question 11 - Will you return?		Percentage of Total			
	certainly	88.89%	89.47%	86.67%	90.91%
	probably	11.11%	10.53%	13.33%	9.09%
	probably not	0.00%	0.00%	0.00%	0.00%
	certainly not	0.00%	0.00%	0.00%	0.00%
Question 12 - Interfering conditions		Average Ranking (1-4)			
	boat wakes	1.57	1.89	1.36	1.27
	too many on shoreline	2.84	1.77	2.89	3.26
	too many watercraft	2.65	2.04	2.72	2.84
	too much trash/litter...	2.92	2.00	2.95	3.27
	conflicts with others	2.95	1.85	3.00	3.38
	loud/rude/others	2.95	1.92	2.98	3.35
	boat hazards	2.86	1.55	2.95	3.24
	tree cutting on shoreline	1.11	1.05	1.29	1.00
	bulkheads	1.09	1.06	1.14	1.09
	muddy water	1.25	1.26	1.36	1.09
	eroding	1.30	1.63	1.08	1.00
	port-a-john	2.95	2.15	2.91	3.32
Question 13 - Noise impacts		Average Ranking (1-4)			
	powerboats	1.33	1.42	1.27	1.27
	watercraft	1.11	1.11	1.07	1.18
	airboats	1.09	1.21	1.00	1.00
	on-shore activities-day	1.04	1.00	1.13	1.00
	on-shore activities-night	1.11	1.11	1.20	1.00
	recreation on lake	1.05	1.06	1.07	1.00
	comments	N/A			
Question 14 - Keep boat overnight?		Percentage of Total			
	yes	55.12%	77.27%	69.05%	38.10%
	no	44.88%	22.73%	30.95%	61.90%
Question 15 - What type of dock?		Percentage of Total			
	private	92.54%	94.12%	100.00%	82.61%
	commercial	2.99%	0.00%	0.00%	8.70%
	community	4.48%	5.88%	0.00%	8.70%
Question 16 - How many nights keep a boat		Average ranking			
	private dock	20.07	48.07	14.62	5.35
	community dock	1.00	0.00	0.00	0.00
	commercial dock	0.00	0.00	0.00	0.00

Ramp Survey Only

	on trailer	1.75	1.00	3.00	1.50
Question 17 N/A					
Question 18 - willing to wait for launch?					
		Percentage of Total			
	0-5	3.03%	0.00%	9.09%	0.00%
	6-10	39.39%	61.54%	18.18%	33.33%
	11-15	36.36%	23.08%	36.36%	55.56%
	16-20	18.18%	7.69%	36.36%	11.11%
	20-more	3.03%	7.69%	0.00%	0.00%
Question 19 - Which reflects preferred boat use level?					
		Percentage of Total			
	Photo A	32.56%	21.05%	30.77%	54.55%
	Photo B	18.60%	15.79%	23.08%	18.18%
	Photo C	37.21%	52.63%	23.08%	27.27%
	Photo D	11.63%	10.53%	23.08%	0.00%
	Photo E	0.00%	0.00%	0.00%	0.00%
	None	0.00%	0.00%	0.00%	0.00%
Question 19 - Which reflects too high of level					
		Percentage of Total			
	Photo A	2.17%	3.70%	0.00%	3.13%
	Photo B	1.45%	0.00%	2.13%	1.56%
	Photo C	9.42%	7.41%	10.64%	9.38%
	Photo D	26.09%	11.11%	46.81%	17.19%
	Photo E	37.68%	40.74%	29.79%	42.19%
	None	23.19%	37.04%	10.64%	26.56%
Question 19 - Which reflects need for management?					
		Percentage of Total			
	Photo A	0.00%	0.00%	0.00%	0.00%
	Photo B	0.00%	0.00%	0.00%	0.00%
	Photo C	4.76%	5.26%	8.33%	0.00%
	Photo D	7.14%	0.00%	8.33%	18.18%
	Photo E	38.10%	21.05%	50.00%	54.55%
	None	50.00%	73.68%	33.33%	27.27%
Question 20					
		Percentage of Total			
no wake zone					
	Oppose -2	11.38%	30.77%	12.20%	1.79%
	-1	4.07%	3.85%	7.32%	1.79%
	0	61.79%	38.46%	58.54%	75.00%
	1	12.20%	15.38%	7.32%	14.29%
	Support 2	10.57%	11.54%	14.63%	7.14%
	Where?				
lower speed limits					
	Oppose -2	11.38%	36.00%	9.76%	1.75%
	-1	8.94%	12.00%	17.07%	1.75%
	0	60.16%	40.00%	51.22%	75.44%
	1	13.82%	4.00%	9.76%	21.05%
	Support 2	5.69%	8.00%	12.20%	0.00%
	Where?				
limit residential development					
	Oppose -2	15.91%	26.32%	7.14%	9.09%
	-1	11.36%	15.79%	14.29%	0.00%
	0	31.82%	31.58%	28.57%	36.36%
	1	20.45%	0.00%	35.71%	36.36%
	Support 2	20.45%	26.32%	14.29%	18.18%
	Comment				
limit commercial development					
	Oppose -2	16.28%	26.32%	7.69%	9.09%
	-1	16.28%	21.05%	23.08%	0.00%

Ramp Survey Only

	0	23.26%	21.05%	15.38%	36.36%
	1	32.56%	26.32%	38.46%	36.36%
	Support 2	11.63%	5.26%	15.38%	18.18%
Comments					
establish non-motorized areas					
	Oppose -2	14.75%	40.00%	12.50%	5.26%
	-1	7.38%	16.00%	10.00%	1.75%
	0	51.64%	24.00%	47.50%	66.67%
	1	12.30%	16.00%	12.50%	10.53%
	Support 2	13.93%	4.00%	17.50%	15.79%
Where?					
stricter boat noise restrictions					
	Oppose -2	13.68%	32.00%	9.76%	3.45%
	-1	9.47%	8.00%	9.76%	10.34%
	0	58.95%	36.00%	60.98%	75.86%
	1	12.63%	16.00%	14.63%	6.90%
	Support 2	5.26%	8.00%	4.88%	3.45%
Type?					
require reservations or permits					
	Oppose -2	35.21%	57.89%	64.29%	13.16%
	-1	16.90%	21.05%	21.43%	13.16%
	0	39.44%	15.79%	14.29%	60.53%
	1	5.63%	0.00%	0.00%	10.53%
	Support 2	2.82%	5.26%	0.00%	2.63%
Comments					
greater law enforcement					
	Oppose -2	31.82%	47.37%	7.14%	36.36%
	-1	9.09%	10.53%	14.29%	0.00%
	0	38.64%	26.32%	42.86%	54.55%
	1	9.09%	10.53%	7.14%	9.09%
	Support 2	11.36%	5.26%	28.57%	0.00%
Comments					
increase fees					
	Oppose -2	56.82%	68.42%	57.14%	36.36%
	-1	9.09%	0.00%	21.43%	9.09%
	0	22.73%	26.32%	7.14%	36.36%
	1	4.55%	0.00%	7.14%	9.09%
	Support 2	6.82%	5.26%	7.14%	9.09%
Comments					
decrease max horsepower boats					
	Oppose -2	27.66%	48.00%	27.50%	10.34%
	-1	5.32%	8.00%	7.50%	0.00%
	0	53.19%	36.00%	47.50%	75.86%
	1	7.45%	4.00%	7.50%	10.34%
	Support 2	6.38%	4.00%	10.00%	3.45%
allow water taxis					
	Oppose -2	9.86%	26.32%	7.14%	2.63%
	-1	4.23%	0.00%	14.29%	2.63%
	0	53.52%	36.84%	28.57%	71.05%
	1	18.31%	26.32%	14.29%	15.79%
	Support 2	14.08%	10.53%	35.71%	7.89%
Comments					
allow musical performances lake/shore					
	Oppose -2	11.36%	15.79%	14.29%	0.00%

Ramp Survey Only

-1	4.55%	5.26%	7.14%	0.00%
0	22.73%	21.05%	28.57%	18.18%
1	27.27%	31.58%	14.29%	36.36%
Support 2	34.09%	26.32%	35.71%	45.45%
allow vending boat				
Oppose -2	27.27%	31.58%	28.57%	18.18%
-1	11.36%	5.26%	14.29%	18.18%
0	18.18%	21.05%	21.43%	9.09%
1	18.18%	15.79%	21.43%	18.18%
Support 2	25.00%	26.32%	14.29%	36.36%
allow SCUBA				
Oppose -2	15.91%	26.32%	14.29%	0.00%
-1	11.36%	10.53%	7.14%	18.18%
0	27.27%	26.32%	28.57%	27.27%
1	25.00%	21.05%	28.57%	27.27%
Support 2	20.45%	15.79%	21.43%	27.27%
allow boat races				
Oppose -2	36.36%	36.84%	42.86%	27.27%
-1	4.55%	0.00%	7.14%	9.09%
0	29.55%	21.05%	28.57%	45.45%
1	22.73%	31.58%	21.43%	9.09%
Support 2	6.82%	10.53%	0.00%	9.09%
Comment				
allow parasailing				
Oppose -2	18.60%	21.05%	23.08%	9.09%
-1	18.60%	10.53%	23.08%	27.27%
0	32.56%	31.58%	23.08%	45.45%
1	18.60%	26.32%	15.38%	9.09%
Support 2	11.63%	10.53%	15.38%	9.09%
allow larger tour boats				
Oppose -2	32.56%	36.84%	38.46%	18.18%
-1	20.93%	26.32%	23.08%	9.09%
0	25.58%	15.79%	30.77%	36.36%
1	11.63%	10.53%	0.00%	27.27%
Support 2	9.30%	10.53%	7.69%	9.09%
Comments				
allow additional tour boats				
Oppose -2	23.26%	31.58%	30.77%	0.00%
-1	11.63%	15.79%	7.69%	9.09%
0	34.88%	26.32%	38.46%	45.45%
1	18.60%	15.79%	7.69%	36.36%
Support 2	11.63%	10.53%	15.38%	9.09%
Comments				
other				

Boat Survey only

	n=113	n=24	n=41	n=48
	Total	Weekday	Weekend	Holiday
Question 1 - Where are you staying?				
	Percentage of Total			
day only	6.80%	4.00%	9.76%	5.41%
perm. residence	9.71%	8.00%	14.63%	5.41%
vacation home	30.10%	16.00%	31.71%	37.84%
friends house	4.85%	4.00%	7.32%	2.70%
house near lake	4.85%	12.00%	2.44%	2.70%
renting lakefront	16.50%	24.00%	9.76%	18.92%
hotel/motel	3.88%	8.00%	2.44%	2.70%
tent	10.68%	4.00%	4.88%	21.62%
trailer/RV	5.83%	8.00%	9.76%	0.00%
other	6.80%	12.00%	7.32%	2.70%
Question 2 - Place of residence				
	Percentage of Total			
lakefront	16.04%	16.67%	22.50%	9.52%
Garrett Co	2.83%	0.00%	7.50%	0.00%
Maryland	26.42%	29.17%	27.50%	23.81%
outside MD	54.72%	54.17%	42.50%	66.67%
Zip/Place of residence	N/A	N/A	N/A	N/A
Question 3 - What is your age and sex?				
	Percentage of Total			
under 18	0.00%	0.00%	0.00%	0.00%
18-30	15.22%	13.33%	14.63%	16.67%
31-45	41.30%	40.00%	39.02%	44.44%
46-65	40.22%	40.00%	41.46%	38.89%
over 65	3.26%	6.67%	4.88%	0.00%
male	76.77%	84.21%	79.41%	71.74%
female	23.23%	15.79%	20.59%	28.26%
Question 4 - Participated activities				
	Percentage of Total			
motor boating	24.86%	32.14%	26.36%	21.23%
boat fishing	14.64%	28.57%	10.85%	12.85%
bank fishing	4.14%	5.36%	3.10%	4.47%
canoeing/kayaking	3.59%	1.79%	4.65%	3.35%
swimming	12.15%	12.50%	14.73%	10.06%
waterskiing	9.39%	7.14%	12.40%	7.82%
windsurfing	0.83%	1.79%	0.00%	1.68%
picnicing	3.59%	0.00%	3.88%	5.03%
camping	4.14%	0.00%	3.88%	5.59%
sun bath	8.29%	0.00%	7.75%	11.17%
sailing	1.66%	0.00%	2.33%	1.68%
hiking	6.35%	5.36%	6.20%	6.70%
personal watercraft	4.14%	1.79%	2.33%	6.15%
other	2.21%	3.57%	1.55%	2.23%
Question 5 Primary reason for visiting (fill in the blank by people surveyed)				
Motor boating	35.85%			
fishing	13.21%			
boating	12.26%			
boat fishing	8.49%			
Camping	3.77%			
Swimming	3.77%			
Sunning	1.89%			
Kayaking	2.83%			
Misc (only one response per grouping)	17.92%			
Question 6 - How many in your group?				
	Average group size			
18 up	4.45	2.52	3.58	6.26
under 18	1.26	0.92	1.38	1.35
Question 7 - Length of stay				
	Average Stay (days)			
day/hours	6.87	4.83	7.81	6.86
overnight/nights	4.12	5.33	3.83	3.64
percent day users	24.53%	25.00%	35.14%	15.56%

Boat Survey only

	percent overnight users	75.47%	75.00%	64.86%	84.44%
Question 8 - Type of watercraft		Percentage of Total			
	Powerboats	67.96%	87.50%	72.97%	58.00%
	personal/jet ski	12.62%	0.00%	8.11%	20.00%
	canoe/kayaks/row	11.65%	6.25%	8.11%	16.00%
	sailboats/boards	7.77%	6.25%	10.81%	6.00%
Question 9 - How crowded was the lake		Average ranking			
		2.29	1.75	2.27	2.67
Question 10 - Describe number of people at lake		Percentage of Total			
	too many	20.79%	8.33%	19.51%	30.56%
	just right	73.27%	79.17%	75.61%	66.67%
	too few	5.94%	12.50%	4.88%	2.78%
Question 11 - Will you return?		Percentage of Total			
	certainly	84.00%	80.00%	92.50%	77.14%
	probably	14.00%	16.00%	5.00%	22.86%
	probably not	2.00%	4.00%	2.50%	0.00%
	certainly not	1.00%	4.00%	0.00%	0.00%
Question 12 - Interfering conditions		Average Ranking (1-4)			
	boat wakes	2.01	2.09	1.83	2.13
	too many on shoreline	1.58	1.91	1.08	1.85
	too many watercraft	1.93	2.23	1.50	2.18
	too much trash/litter...	1.68	2.00	1.25	1.91
	conflicts with others	1.67	2.22	1.15	1.86
	loud/rude/others	1.74	2.22	1.23	1.95
	boat hazards	1.70	2.04	1.25	1.93
	tree cutting on shoreline	1.41	2.11	1.23	1.13
	bulkheads	1.34	2.09	1.05	1.16
	muddy water	1.44	2.17	1.18	1.24
	eroding	1.64	2.04	1.55	1.45
	port-a-john	1.92	2.43	1.53	2.03
Question 13 - Noise impacts		Average Ranking (1-4)			
	powerboats	1.65	2.08333333	1.59	1.42
	watercraft	1.67	2.20833333	1.61	1.36
	airboats	1.23	1.0625	1.30	1.22
	on-shore activities-day	1.36	2.125	1.10	1.12
	on-shore activities-night	1.35	2.125	1.10	1.09
	recreation on lake	1.35	2	1.13	1.13
	comments	N/A	N/A	N/A	N/A
Question 14 - Keep boat overnight?		Percentage of Total			
	yes	66.99%	82.61%	65.79%	58.14%
	no	33.01%	17.39%	34.21%	41.86%
Question 15 - What type of dock?		Percentage of Total			
	private	78.69%	82.35%	65.22%	87.50%
	commercial	9.84%	11.76%	17.39%	4.17%
	community	11.48%	5.88%	17.39%	8.33%
Question 16 - How many nights keep a boat		Average Ranking			
	private dock	39.53	12.91	51.73	50.44
	community dock	55.78	48.00	62.20	47.50
	commercial dock	81.33	47.00	150.00	0.00
	on trailer	2.67	0.00	2.50	3.00
Question 17 N/A					
Question 18 - willing to wait for launch?		Percentage of Total			
	0-5	13.79%	0.00%	17.39%	17.39%
	6-10	20.69%	16.67%	21.74%	21.74%
	11-15	22.41%	8.33%	26.09%	26.09%
	16-20	10.34%	16.67%	4.35%	13.04%
	20-more	32.76%	58.33%	30.43%	21.74%
Question 19 - Which reflects preferred boat use level?		Percentage of Total			
	Photo A	47.25%	41.18%	56.10%	38.24%

Boat Survey only

	Photo B	41.76%	41.18%	36.59%	47.06%
	Photo C	8.79%	17.65%	4.88%	8.82%
	Photo D	0.00%	0.00%	0.00%	2.94%
	Photo E	2.20%	0.00%	2.44%	2.94%
	None	0.00%	0.00%	0.00%	0.00%
Question 19 - Which reflects too high of level		Percentage of Total			
	Photo A	0.90%	0.00%	0.00%	2.22%
	Photo B	1.80%	0.00%	4.76%	0.00%
	Photo C	12.61%	40.00%	4.76%	4.44%
	Photo D	29.73%	25.00%	28.57%	35.56%
	Photo E	43.24%	30.00%	47.62%	44.44%
	None	11.71%	5.00%	14.29%	13.33%
Question 19 - Which reflects need for management?		Percentage of Total			
	Photo A	0.00%	0.00%	0.00%	0.00%
	Photo B	0.00%	0.00%	0.00%	0.00%
	Photo C	5.56%	0.00%	7.69%	5.88%
	Photo D	26.67%	35.29%	25.64%	23.53%
	Photo E	43.33%	41.18%	43.59%	44.12%
	None	24.44%	23.53%	23.08%	26.47%
Question 20		Percentage of Total			
no wake zone					
	Oppose -2	10.48%	4.35%	12.50%	11.90%
	-1	9.52%	8.70%	17.50%	2.38%
	0	35.24%	39.13%	30.00%	38.10%
	1	28.57%	30.43%	25.00%	30.95%
	Support 2	16.19%	17.39%	15.00%	16.67%
	Where?				
lower speed limits					
	Oppose -2	9.43%	4.35%	12.50%	9.30%
	-1	17.92%	13.04%	17.50%	20.93%
	0	35.85%	30.43%	42.50%	32.56%
	1	30.19%	47.83%	22.50%	27.91%
	Support 2	6.60%	4.35%	5.00%	9.30%
	Where?				
limit residential development					
	Oppose -2	4.72%	0.00%	5.00%	6.98%
	-1	9.43%	0.00%	15.00%	9.30%
	0	18.87%	21.74%	20.00%	16.28%
	1	39.62%	43.48%	32.50%	44.19%
	Support 2	27.36%	34.78%	27.50%	23.26%
	Comment				
limit commercial development					
	Oppose -2	4.72%	0.00%	5.00%	6.98%
	-1	9.43%	13.04%	10.00%	6.98%
	0	24.53%	21.74%	35.00%	16.28%
	1	32.08%	30.43%	20.00%	44.19%
	Support 2	29.25%	34.78%	30.00%	25.58%
	Comments				
establish non-motorized areas					
	Oppose -2	10.31%	4.35%	12.20%	12.12%
	-1	13.40%	4.35%	14.63%	18.18%
	0	28.87%	34.78%	29.27%	24.24%
	1	37.11%	39.13%	41.46%	30.30%
	Support 2	10.31%	17.39%	2.44%	15.15%
	Where?				
stricter boat noise restrictions					
	Oppose -2	9.38%	0.00%	12.50%	12.12%
	-1	14.58%	17.39%	17.50%	9.09%
	0	48.96%	47.83%	50.00%	48.48%

Boat Survey only

1	16.67%	26.09%	7.50%	21.21%
Support 2	10.42%	8.70%	12.50%	9.09%
Type?				
require reservations or permits				
Oppose -2	16.84%	13.04%	23.08%	12.12%
-1	34.74%	34.78%	38.46%	30.30%
0	33.68%	30.43%	30.77%	39.39%
1	12.63%	17.39%	7.69%	15.15%
Support 2	2.11%	4.35%	0.00%	3.03%
Comments				
greater law enforcement				
Oppose -2	7.29%	8.70%	7.50%	6.06%
-1	17.71%	21.74%	15.00%	18.18%
0	35.42%	30.43%	45.00%	27.27%
1	26.04%	26.09%	17.50%	36.36%
Support 2	13.54%	13.04%	15.00%	12.12%
Comments				
increase fees				
Oppose -2	23.16%	36.36%	22.50%	15.15%
-1	38.95%	31.82%	50.00%	30.30%
0	18.95%	13.64%	20.00%	21.21%
1	16.84%	18.18%	5.00%	30.30%
Support 2	2.11%	0.00%	2.50%	3.03%
Comments				
decrease max horsepower boats				
Oppose -2	11.65%	4.76%	7.32%	19.51%
-1	20.39%	19.05%	21.95%	19.51%
0	32.04%	47.62%	34.15%	21.95%
1	26.21%	28.57%	26.83%	24.39%
Support 2	9.71%	0.00%	9.76%	14.63%
allow water taxis				
Oppose -2	4.21%	0.00%	2.50%	9.09%
-1	18.95%	13.64%	17.50%	24.24%
0	36.84%	40.91%	40.00%	30.30%
1	35.79%	40.91%	37.50%	30.30%
Support 2	4.21%	4.55%	2.50%	6.06%
Comments				
allow musical performances lake/shore				
Oppose -2	4.12%	0.00%	4.88%	6.06%
-1	12.37%	21.74%	9.76%	9.09%
0	17.53%	21.74%	14.63%	18.18%
1	53.61%	56.52%	56.10%	48.48%
Support 2	12.37%	0.00%	14.63%	18.18%
allow vending boat				
Oppose -2	18.75%	21.74%	17.50%	18.18%
-1	28.13%	26.09%	22.50%	36.36%
0	21.88%	21.74%	25.00%	18.18%
1	21.88%	30.43%	20.00%	18.18%
Support 2	9.38%	0.00%	15.00%	9.09%
allow SCUBA				
Oppose -2	8.99%	0.00%	5.00%	18.18%
-1	19.10%	12.50%	22.50%	18.18%
0	33.71%	31.25%	32.50%	36.36%
1	31.46%	56.25%	32.50%	18.18%
Support 2	6.74%	0.00%	7.50%	9.09%
allow boat races				
Oppose -2	25.56%	12.50%	26.83%	30.30%
-1	36.67%	43.75%	36.59%	33.33%
0	14.44%	6.25%	14.63%	18.18%

Boat Survey only

	1	21.11%	37.50%	19.51%	15.15%
	Support 2	2.22%	0.00%	2.44%	3.03%
	Comment				
allow parasailing					
	Oppose -2	20.00%	18.75%	17.07%	24.24%
	-1	37.78%	37.50%	39.02%	36.36%
	0	24.44%	12.50%	26.83%	27.27%
	1	14.44%	31.25%	14.63%	6.06%
	Support 2	3.33%	0.00%	2.44%	6.06%

Boat Survey only

allow larger tour boats				
Oppose -2	19.10%	0.00%	17.07%	30.30%
-1	38.20%	60.00%	39.02%	27.27%
0	30.34%	26.67%	26.83%	36.36%
1	10.11%	13.33%	12.20%	6.06%
Support 2	2.25%	0.00%	4.88%	0.00%
Comments				
allow additional tour boats				
Oppose -2	16.67%	9.09%	9.76%	30.30%
-1	35.42%	31.82%	43.90%	27.27%
0	34.38%	40.91%	26.83%	39.39%
1	11.46%	18.18%	14.63%	3.03%
Support 2	2.08%	0.00%	4.88%	0.00%
Comments				
other				

Resident Survey Results Summary

Month

june	41.71%
july	19.65%
aug	38.64%

days

0-5	15.10%
6-10	23.63%
11-20	28.77%
21-30	32.49%

Overnight Stay

1	adult	2.88
	child	2.33
2	adult	2.96
	child	2.48
3	adult	3.09
	child	2.53
4	adult	3.16
	child	2.54
5	adult	3.12
	child	2.54
6	adult	3.03
	child	2.56
7	adult	2.81
	child	2.45
8	adult	2.84
	child	2.74
9	adult	2.91
	child	2.79
10	adult	2.80
	child	2.68
11	adult	2.77
	child	2.77
12	adult	2.84
	child	2.59
13	adult	2.83
	child	2.45
14	adult	2.81
	child	2.38
15	adult	2.81
	child	2.34
16	adult	3.01
	child	2.36
17	adult	2.84
	child	2.42
18	adult	2.78
	child	2.31
19	adult	2.81
	child	2.37
20	adult	2.76
	child	2.35
21	adult	2.79

	child	2.33
22	adult	2.80
	child	2.43
23	adult	2.90
	child	2.51
24	adult	2.82
	child	2.49
25	adult	2.79
	child	2.30
26	adult	2.77
	child	2.31
27	adult	2.86
	child	2.41
28	adult	2.78
	child	2.32
29	adult	2.87
	child	2.36
30	adult	2.99
	child	2.42
31	adult	3.05
	child	2.88

motor boat	adult	7.65
	child	6.59
boat fishing	adult	4.80
	child	3.42
canoe/kayak	adult	3.94
	child	7.55
swim	adult	7.89
	child	5.39
personal watercraft	adult	5.23
	child	5.48
water ski	adult	5.16
	child	0.88
windsurf	adult	0.44
	child	3.01
sail	adult	2.08
	child	0.86
other	adult	4.53
	child	1.45

Rankings 1-4

Weeks rented out	3.79
Sat/Sun crowding	2.32
Weekday crowding	2.94

Rec interference (Rankings 1-4)

boat wakes	2.94
too many people	1.33
too many watercraft	2.89
litter etc.	1.79
conflicts w/others	1.77
loud/rude	2.00
boating hazards	1.54

tree cutting on shore	1.34
bulkheads/riprap	1.32
muddy water	2.08
eroding shoreline	2.53
public sanitary fac.	1.42

Noise

powerboats	2.47
personal watercraft	2.61
airboats	1.80
on-shore activities/day	1.29
on-shore activities/night	1.76
others on lake	1.56

Comments re: noise N/A

Watercraft at lakefront home

powerboats	44.14%
personal watercraft/jet ski	13.67%
canoe/kayak/rowboat	30.42%
sailboat/board	11.76%

Transient watercraft 5.10

Age/Sex

under 18	0.22%
18-21	0.00%
22-45	14.53%
46-65	56.62%
over 65	28.63%
male	72.27%
female	27.73%

Preferred Use

Photo A	38.71%
Photo B	42.98%
Photo C	14.91%
Photo D	1.86%
Photo E	0.99%
None	

Too Busy (high) to come

Photo A	0.00%
Photo B	0.58%
Photo C	9.34%
Photo D	32.82%
Photo E	37.54%
None	

Too Busy, Management Action needed

Photo A	19.73%
Photo B	0.70%
Photo C	8.98%
Photo D	32.63%
Photo E	43.11%
None	

no wake zone

Oppose -2	11.43%
-1	11.19%
0	32.25%

	1	21.90%
	Support 2	23.23%
	Where?	
lower speed limits		
	Oppose -2	11.86%
	-1	13.08%
	0	29.42%
	1	23.00%
	Support 2	22.64%
	Where?	
limit residential development		
	Oppose -2	5.71%
	-1	4.90%
	0	9.56%
	1	21.91%
	Support 2	57.58%
	Comment	
limit commercial development		
	Oppose -2	6.43%
	-1	6.19%
	0	14.95%
	1	24.07%
	Support 2	48.36%
	Comments	
establish non-motorized areas		
	Oppose -2	17.61%
	-1	12.68%
	0	43.43%
	1	15.14%
	Support 2	11.15%
	Where?	
stricter boat noise restrictions		
	Oppose -2	6.74%
	-1	5.00%
	0	21.05%
	1	25.47%
	Support 2	41.74%
	Type?	
require reservations or permits		
	Oppose -2	18.10%
	-1	13.98%
	0	34.90%
	1	19.98%
	Support 2	12.93%
	Comments	
greater law enforcement		
	Oppose -2	6.95%
	-1	9.04%
	0	27.46%
	1	29.20%
	Support 2	27.35%
	Comments	

increase fees		
Oppose -2		16.55%
-1		13.83%
0		32.62%
1		19.50%
Support 2		17.38%
Comments		
decrease max horsepower boats		
Oppose -2		17.56%
-1		11.27%
0		29.77%
1		20.28%
Support 2		21.00%
allow water taxis		
Oppose -2		32.79%
-1		11.32%
0		29.99%
1		18.20%
Support 2		7.70%
Comments		
allow musical performances lake/shore		
Oppose -2		19.32%
-1		12.46%
0		24.10%
1		26.43%
Support 2		17.69%
allow vending boat		
Oppose -2		50.57%
-1		17.82%
0		13.68%
1		9.43%
Support 2		8.51%
allow SCUBA		
Oppose -2		32.36%
-1		16.30%
0		32.71%
1		12.78%
Support 2		5.86%
allow boat races		
Oppose -2		56.06%
-1		13.87%
0		14.22%
1		8.62%
Support 2		7.23%
Comment		
allow parasailing		
Oppose -2		50.53%
-1		16.45%
0		18.45%
1		8.81%
Support 2		5.76%
allow larger tour boats		

	Oppose -2	58.84%
	-1	15.61%
	0	14.80%
	1	6.47%
	Support 2	4.16%
	Comments	
allow additional four boats		
	Oppose -2	49.29%
	-1	14.34%
	0	22.63%
	1	9.36%
	Support 2	4.38%