

ARIZONA DEPARTMENT OF TRANSPORTATION

ADOT CONTRACT NO. T02-48-00044

# **2003 ARIZONA WATERCRAFT SURVEY**

Volume I – Executive Summary

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## TABLE OF CONTENTS

	Page
1.0 INTRODUCTION	1
2.0 SUMMARY OF THE FINDINGS	3
Fuel Consumption Data	3
Use Of Watercraft In Arizona	4
Additional Boating Data	8
3.0 RESEARCH METHODOLOGY	11
3.1 Introduction	11
3.2 Boat Owner Survey – Sample Selection	11
3.3 Boat Owner Survey – Questionnaire Development	17
3.4 Boat Owner Survey – Data Collection	18
3.5 Study Audits/Survey	18
3.6 Launch Ramp Survey	20

## 1.0 INTRODUCTION

The Arizona Department of Transportation (ADOT), the Arizona Game & Fish Department (AGFD), and the Arizona State Parks Board (ASPB) are required, under Arizona Revised Statutes (Sec. 28-1502.01), to conduct a study every three years on watercraft fuel consumption and recreational watercraft usage. The primary purposes of this effort are as follows:

- ! To determine the percentage of total state taxes paid to Arizona for motor vehicle fuel that is used for propelling watercraft; and
- ! To determine the number of days of recreational watercraft use in each of the state's counties by boat use days and person use days.

The fuel consumption data is collected to determine the allocation of motor vehicle fuel tax to the State Lake Improvement Fund (SLIF). The information on recreational watercraft usage patterns on Arizona's lakes and rivers is necessary, in part, to determine the distribution of SLIF funds to applicants.

In addition to collecting the above mandated information, this study also collected selected attitudinal and behavioral data on the following subjects:

- ! Water-based and non-water-based recreational activities participated in;
- ! Boating and water-based recreational facility needs;
- ! SLIF fund utilization priorities;
- ! Adequacy and focus of watercraft law enforcement activities; and
- ! Attitudes about selected watercraft and outdoor recreation issues.

The information contained in this report is based on two key study components:

- ! A statistically valid and projectable telephone survey of 6,462 registered watercraft owners in Arizona, California, and Nevada;
- ! An audit/survey of the fuel sales and consumption patterns of: (1) marinas; (2) public agencies, and (3) concessionaires, commercial boat operators and excursion operators.

In addition to the boat owner surveys and the marina, agency and concessionary audits, this study also included a launch ramp survey. The launch ramp survey was conducted to check the ratio of in-state to out-of-state boaters at ten selected Arizona lakes and rivers.

The methodology utilized on the boat owner segment of this study paralleled the methodology used by BRC in the 1994, 1997, and 2000 Watercraft Studies. The one exception to this is that unlike the 2000 study, this study did not include Utah boaters since the State of Utah would not release their boat owner database for use in this study.

To develop the most accurate data possible, the data collection effort was divided into 24 separate data collection segments spread over the 12-month period from May 16, 2002 to May 8, 2003. Using this format, a total of approximately 534 interviews were conducted each month with one-half being conducted between roughly the 1st and 5th of the month and one-half between roughly the 16th and 20th of the month. During each of the 24 interviewing segments, boaters were asked to recall their boating patterns for only the two weeks prior to the interview.

This study was designed and executed under the direction of a Technical Advisory Committee (TAC) comprised of representatives from each sponsoring agency. The Behavior Research Center (BRC) wishes to thank each of the following TAC members for their indispensable assistance in the successful completion of this most important project:

- ! John Semmens, ADOT
- ! Tanna Thornburg, ASPB
- ! Stephanie Sandrock, ASPB
- ! Ty Gray, AGFD

The information generated from this study is presented in two volumes. **VOLUME I - EXECUTIVE SUMMARY** presents a brief summary review of the key study findings and the methodology employed. **VOLUME II - TECHNICAL REPORT** presents an in-depth analysis of the study findings and a detailed explanation of the study methodology.

The Behavior Research Center has presented all of the data germane to the basic research objectives of the project. However, if the TAC requires additional data retrieval or interpretation, we stand ready to provide such input.

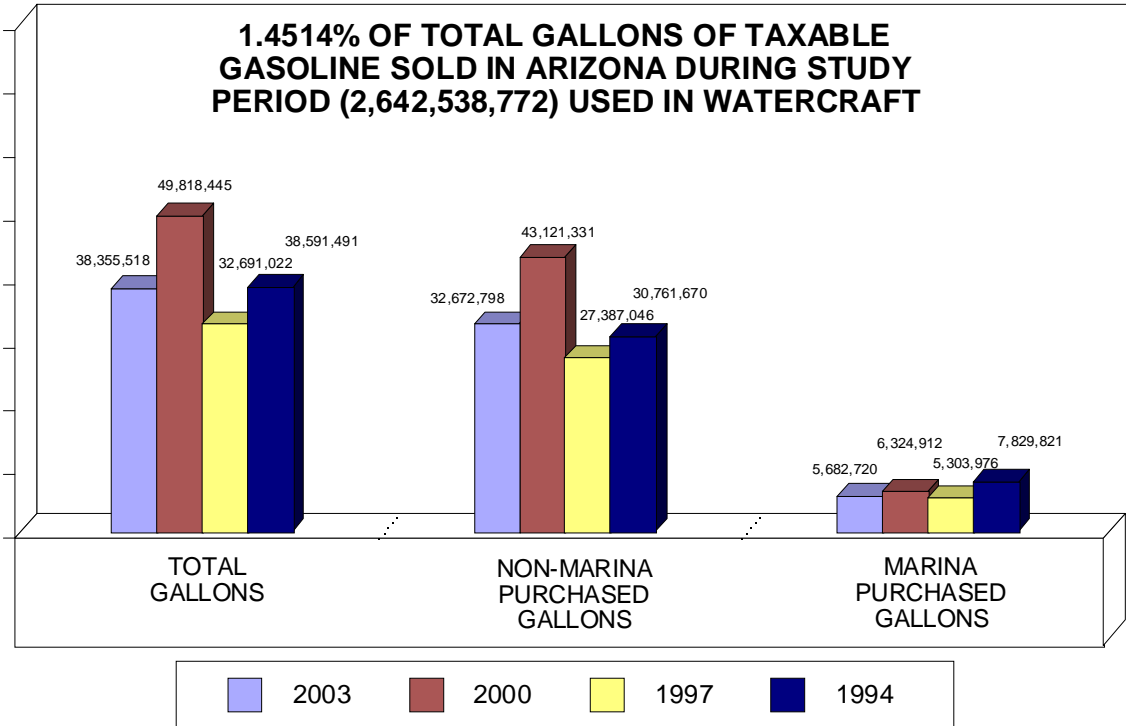
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## 2.0 SUMMARY OF THE FINDINGS

**FUEL CONSUMPTION DATA**

Total gasoline used to propel watercraft in the state of Arizona between May 1, 2002 and June 30, 2003 was 38,355,518 gallons. This total represents 1.4514 percent of the total 2,642,538,772 gallons of taxable gasoline sold in Arizona during the study period. This is the percentage which should be used for the SLIF allocation.

### WATERCRAFT FUEL CONSUMPTION OF ARIZONA GASOLINE



The 2003 SLIF allocation of 1.4514 is down noticeably from the 2000 percentage of 2.0328. The primary reasons for the decrease from 2000 are as follows:

- The percent of boaters who used their watercraft on Arizona lakes and rivers in the prior two weeks decreased from 8.9 percent in 2000 to 8.0 percent in 2003.
- The average number of days boaters used their watercraft on Arizona lakes and river in the prior two weeks decreased from 3.5 days in 2000 to 3.4 days in 2003.
- Consumption of Arizona fuel by California and Nevada boaters decreased between 2000 and 2003 (83.6% of California boaters purchased Arizona fuel in 2000 compared to only 72.8% in 2003; 42.0% of Nevada boaters purchased Arizona fuel in 2000 compared to only 21.6% in 2003).
- The number of gallons of Arizona fuel boaters purchased in the prior two weeks decreased between 2000 and 2003 (Arizona boaters purchased 40.9 gallons in 2000 compared to 36.4 gallons in 2003; California boaters 42.1 gallons in 2000 compared to 36.7 gallons in 2003; Nevada boaters 15.9 gallons in 2000 compared to 15.2 gallons in 2003).

The boating classification which continues to account for the largest amount of non-marina consumption is Class 2 (47.3%) which is made up predominantly of jet skis. This figure is up from 41.5 percent in 2000. Among California boaters this class accounts for 67.7 percent of consumption.

Gasoline is used to propel 98 percent of all boats, with the remainder utilizing diesel and aviation fuel.

95 percent of Arizona boaters purchase Arizona fuel compared to 73 percent of California boaters, and 22 percent of Nevada boaters. These figures represent a slight increase since the 2000 Survey among Arizona boaters (from 89.8% to 95.1%) and major decreases among California boaters (from 83.6% to 72.8%) and Nevada boaters (from 42.0% to 21.6%).

88 percent of Arizona boaters purchase their Arizona fuel at a non-marina location compared to 85 percent of California boaters, and 69 percent of Nevada boaters. Marina purchasing reaches its highest level among Nevada boaters (31%).

#### **USE OF WATERCRAFT IN ARIZONA**

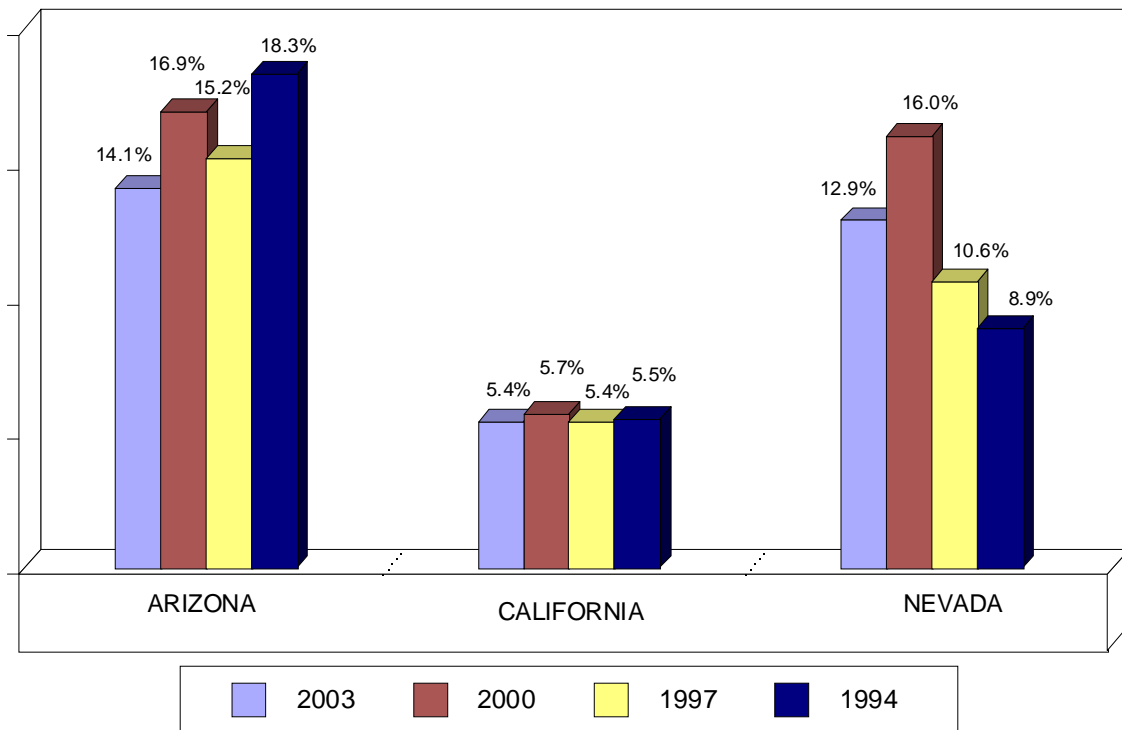
8.0 percent of registered watercraft owners in Arizona, California and Nevada use their boats in Arizona during any given two week period -- down from 8.9 percent in 2000. Among Arizona watercraft owners, usage reaches 14.1 percent – down from 16.9 percent in 2000.

As might be expected, the Arizona usage figure is above those for the other two states studied with 5.4 percent of California owners, 12.9 percent of Nevada owners indicating use in Arizona during any two-week period. The percentage of California owners using their boats is down from 2000 (5.7%), as is the percentage among Nevada owners (16.0%).

As noted in the previous studies, while the California use figure may look minimal compared to Arizona's, this is not the case due to the sheer volume of boats registered in California. For example, the California two-week use figure translates into 20,316 California owners using Arizona lakes and rivers (5.4% of 376,230 total owners). The comparable number for Arizona is nearly identical at 20,354 (14.1% of 144,354).

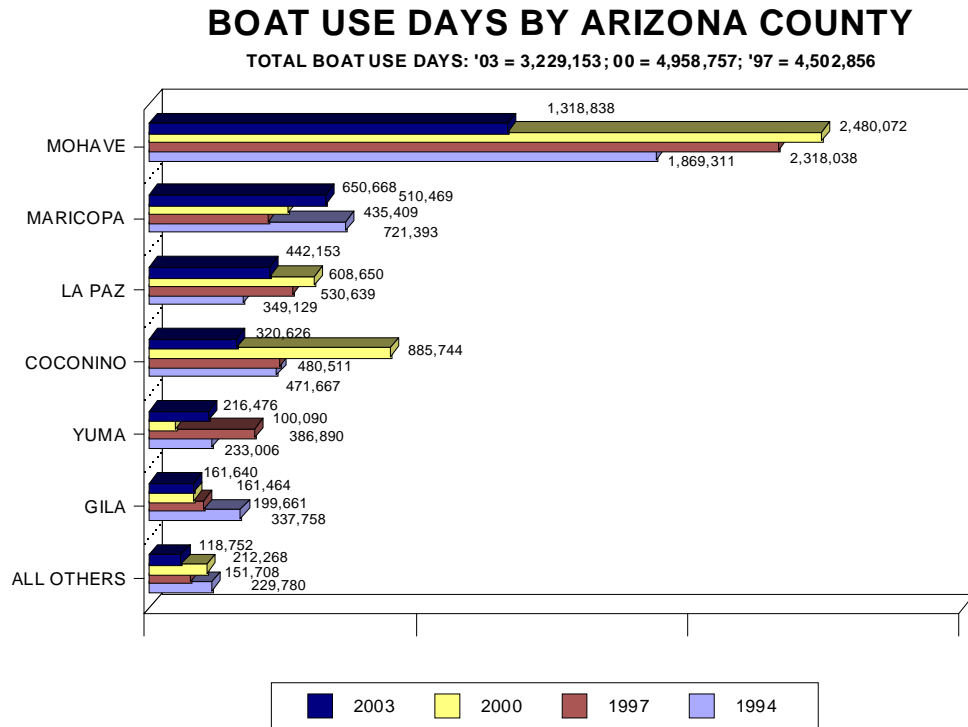
40.6 percent of all watercraft owners in the three state survey universe utilized their boat in Arizona during the prior year -- up from 37.8 percent in 2000. Among Arizona users the figure reaches 61.4 percent compared to 32.3 percent among California owners and 46.4 percent among Nevada owners.

### BOAT USE IN ARIZONA IN ANY GIVEN 2-WEEK PERIOD



Total boat use days in 2003 were 3,229,153, a 35 percent decrease over the 4,958,757 boat use days recorded in 2000. Similar to the prior three studies, Mohave County is the dominant boating location in Arizona with 40.8 percent of total boat use days – down from 50.0 percent in 2000. The study also reveals a 64 percent decrease in boat use days in Coconino County – 320,626 in 2003 vs. 885,744 in 2000 – and a 27 percent decline in boat use days in La Paz County – 442,153 in 2003 vs. 608,650 in 2000. The primary reasons behind the decrease in Coconino County are the exclusion of Utah boaters into this study and decreased use of Lake Powell by boaters from each of the included states. The primary reason for the decline in La Paz County is much lower use of the county’s waterways by California boaters.

The data also reveals a 27 percent increase in boat use days in Maricopa County and a 116 percent increase in boat use days in Yuma County. The Maricopa increase is due to a increased Arizona boater use while the Yuma increase is due to increased California boater use.



Person use days decreased from 22,885,059 in 2000 to 14,781,894 in 2003 – a 35 percent drop. As in the case with boat use days, Mohave County is the dominant boating location in Arizona accounting for 43.5 percent of all person use days.

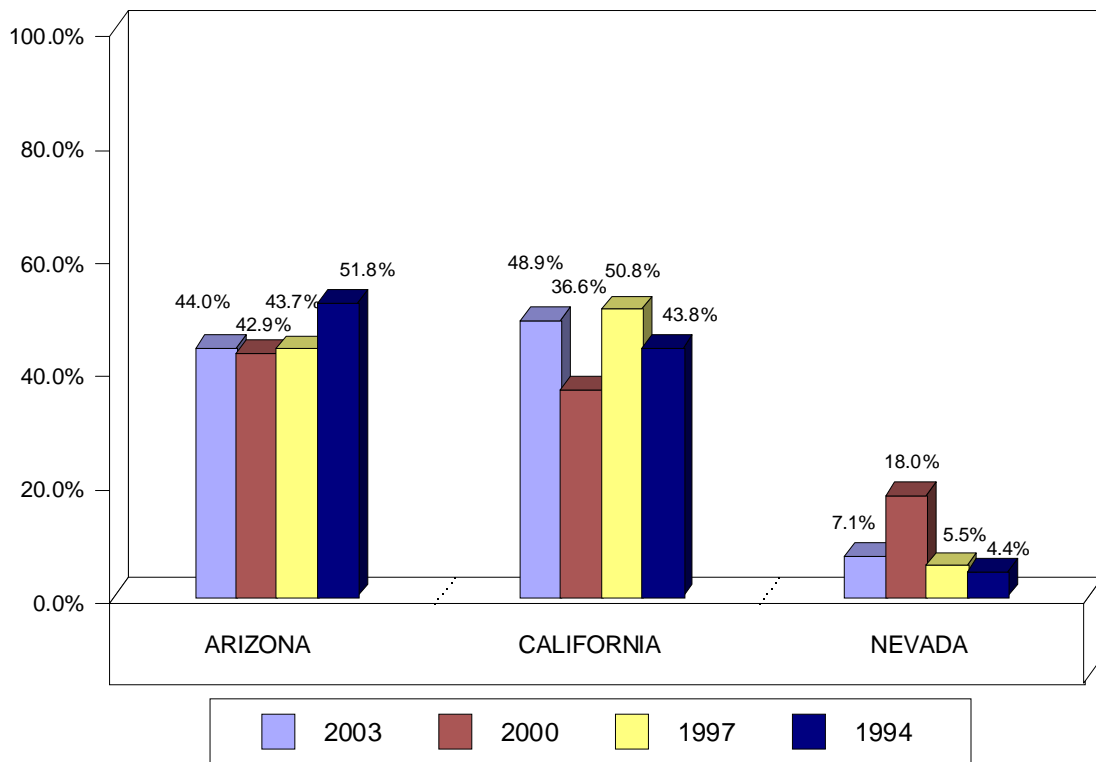


California boaters account for 48.9 percent of boat use days followed by Arizona boaters with 44.0 percent and Nevada boaters with 7.1 percent. These figures represent decreases in boat use days among boaters from each of the three states included in this study.

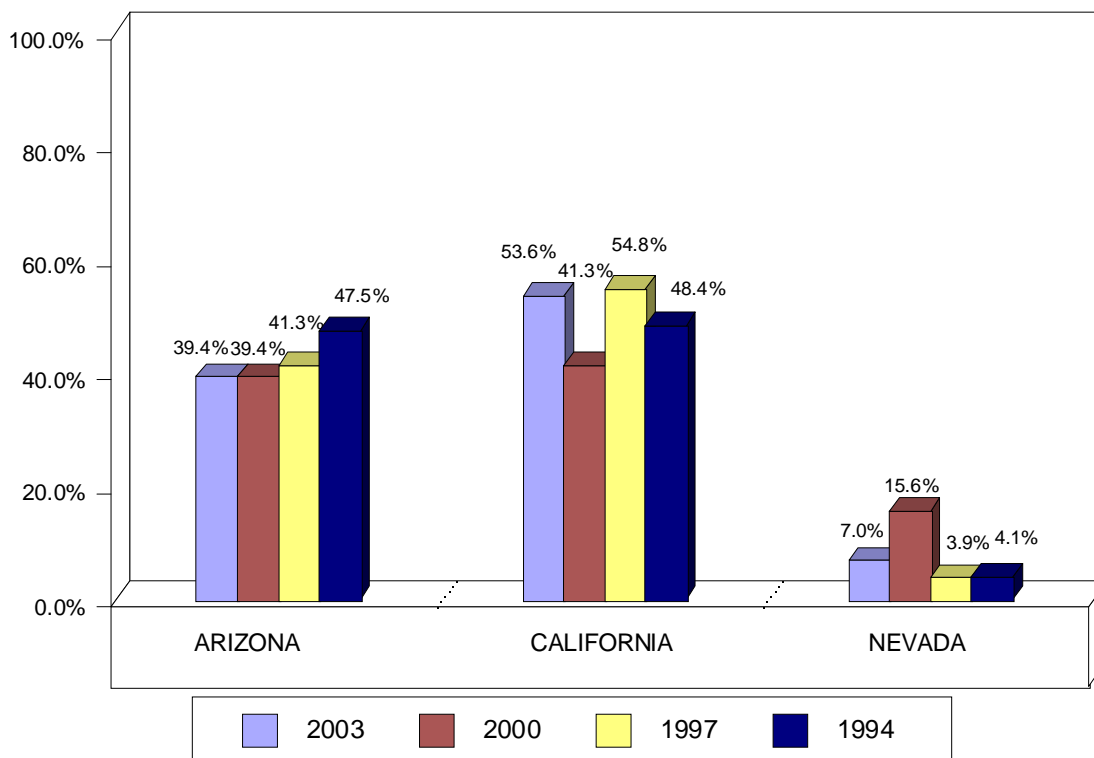
California boaters also account for the largest share of person use days. Thus we find that California boaters account for 53.6 percent of person use days followed by 39.4 percent for Arizona boaters and 7.0 percent for Nevada boaters. The primary reason for California's high percentage is the fact that California boaters tend to have larger boating parties.

Lake Havasu continues to be the state's most utilized lake in terms of both boat use days (679,273) and person use days (3,265,670).

### BOAT USE DAYS BY STATE



## PERSON USE DAYS BY STATE



### ADDITIONAL BOATING DATA

- ! The average daily expenditure for a boating trip in Arizona is \$212. The typical Arizona boater spends \$151 per day compared to \$381 for California boaters and \$75 for Nevada boaters.
- ! Launch ramps (22%) and public restrooms (21%) continue to be the most frequently mentioned needed facilities at boaters' favorite lakes.
- ! When boaters are asked to evaluate each of 22 specific boating and water-based recreational facilities at their favorite lake, the facility registering the highest net positive reading continues to be paved access roads (+40%). Informational signs receives the next highest net positive reading (+30%), followed by launching ramps (+26%) and parking facilities for vehicles (26%). Three items register net negative readings from roughly one-fifth of boaters or more: emergency telephones (-28%), drinking water outlets (-25%) and trash dumpsters accessible by boat (-20%).
- ! Nine percent of boaters are aware of the SLIF program, similar to the ten percent recorded in 2000 and eight percent in 1997. As might be expected, awareness is highest in Arizona with a reading of 12 percent.

- When boaters are asked if they feel the program's funds should be used mostly for renovations or new building, a majority of boaters select renovations over new building -- 53 percent vs. 27 percent. This reading for renovation is virtually unchanged from the 2000 reading.
- When boaters are asked how important they feel each of six SLIF funding functions are, four of the functions are rated very or somewhat important by over eight out of ten boaters: 1) the construction of first-aid stations and other safety facilities (88%); 2) the purchasing of law enforcement and safety equipment such as patrol boats, radios and lights (87%); 3) the construction of recreation support facilities such as restrooms, campgrounds and picnic tables (86%); and 4) the construction of water-based boating facilities such as marinas, launch ramps and piers (85%). These four functions have remained at the top of the importance list over the past three studies.
- A new question was added to the 2000 study to determine boaters' preferences for the uses of a new lake, should one be developed. Seven different boating activities were evaluated and, as was the case in 2000, four received ratings of very or somewhat important by more than 80 percent of the boaters: 1) general pleasure boating (94%); 2) fishing (91%); 3) water skiing (84%); 4) power boating (83%). Jet skiing again received the lowest preference rating with 59 percent of boaters offering a very or somewhat important rating.

Stopping people who are boating while drunk (55%) and stopping people who are boating recklessly (53%) continue to be the two law enforcement activities which boaters would most like to see increased at their favorite lake or river. Also relating to law enforcement and safety issues at Arizona lakes, roughly eight out of ten boaters or more agree with the following attitudes:

- That hands-on training should be required for boat rental customers (87%).
- That penalties for operating a boat under the influence of drug or alcohol should be the same as those for motor vehicles (86%).
- That boating law violators should be required to take a boating safety class (84%).
- That the minimum age for boat operators should be higher than 12 years old (80%).
- That laws and regulations are being adequately enforced (79%).

Eight out of ten boaters (79%) support boating safety educational centers at Arizona lakes – virtually unchanged from 80 percent in 2000.

A majority of boaters (60%) do not believe their favorite lake is too crowded while 37 percent do. This represents a negative shift of three points (“too crowded”) since 2000.

- ! 57 percent of boaters would support designating special areas for use only by jet skis – down three points from 2000.
- ! Nearly six out of ten boaters (57%) would like more information on boating opportunities in Arizona – up one point since 2000.
- ! A majority of boaters (51%) believe their favorite lake needs additional developed campgrounds - down from 55 percent in 2000 - and that it needs additional primitive campgrounds (50%) – also down from 55 percent in 2000.
- ! 46 percent of boaters believe their favorite lake needs additional RV hookup while an equal percent do not. This agree level is virtually unchanged since 2000
- ! Boaters continue to be split on whether the launch ramps at their favorite lake are too crowded (48% agree, 47% disagree) and whether the number of people using a lake should be restricted during high use periods (46% agree, 49% disagree). These readings are virtually unchanged since 2000.
- ! Boaters' single favorite boating activities continue to be waterskiing (27%) and fishing (25%). Fishing reveals particular appeal among Arizona boaters (41%) while waterskiing (31%) reveals particular appeal among California boaters.

## **3.0 RESEARCH METHODOLOGY**

### **3.1 Introduction**

To properly address the Departments' informational needs, it was necessary to collect information from a variety of population universes which either consume or sell Arizona fuel or utilize Arizona's lakes and rivers for recreational purposes. The specific universes studied during the course of this project were as follows:

#### Surveyed Universes:

- ! Arizona registered owners;
- ! Non-Arizona registered boat owners who utilize Arizona's lakes and rivers;

#### Audited/Surveyed Universes:

- ! Concessionaires, commercial boat operators and excursion operators who consume Arizona fuel;
- ! Public agencies which consume Arizona fuel; and
- ! Marinas servicing Arizona lakes and rivers which sell fuel.

The purpose of this section of the report is to address the procedures followed to collect the necessary information from these universes.

### **3.2 Boat Owner Survey — Sample Selection**

In order to get an accurate picture of boaters' use of Arizona's lakes and rivers, this project component utilized a very large random sample of 6,462 Arizona, California and Nevada watercraft owners. A sample of this size is very unusual but was deemed necessary for this project due to its importance.

The sample of 6,462 watercraft owners utilized on this project component represents 1.19 percent of the 544,821 owners in the three-state region studied. As an example of how large this 1.19 percent sample of the total universe is, the typical statewide Arizona sample consists of approximately 800 respondents, or .04 percent of Arizona's estimated 2,059,600 households, while the typical national United States sample consists of 1,500 respondents, or .0014 percent of the United States' estimated 109,440,059 households.

The following several pages of this report offer a detailed description on how the boat owner survey was conducted.

To determine the percentage of all fuel sold in Arizona attributable to propelling watercraft, it was first necessary to determine the total number of gallons sold to watercraft within the state. To arrive at this figure, the consumption patterns of two distinct user groups were studied: (1) Arizona registered boats for which gasoline is purchased in Arizona, and; (2) non-Arizona registered boats for which gasoline is purchased in Arizona.

A total of 6,462 Arizona and non-Arizona registered boat owners stratified by boat class were systematically random-sampled via telephone from current boat registration lists obtained

from each state included in the study (Arizona Game and Fish Department, California Department of Motor Vehicles, Nevada Division of Wildlife) to determine their fuel consumption of and usage patterns during the study period. These figures were then projected to total boat registrations and the findings presented later in this report were calculated. The non-Arizona boaters' sample was drawn from the neighboring California counties of Imperial, Los Angeles, Orange, Riverside, San Diego and San Bernardino and the Nevada county of Clark. Unlike the 2000 study, this study did not include surveys with Utah boaters. The reason for this is that a database of Utah boaters could not be obtained from the State of Utah.

As may be seen on the following table, a total of 544,821 watercraft are registered in the sample universe. Of this total, 69.1 percent are located in California while 26.5 percent are located in Arizona and 4.4 percent in Nevada.

In addition to the sheer volume of watercraft California contributes to the sample universe several other interesting findings are also worth noting in Table 1:

**Arizona Watercraft:**

- ! High proportions of watercraft in classes 1 (under 16' outboard) and 4 (16' to 25' outboards); and
- ! Low proportion of watercraft in class 2 (under 16' in & in/out which is predominately jet skis).

**California Watercraft:**

- ! High proportion of class 2 watercraft (33.2% compared to 19.0% in Arizona and 25.4% in Nevada).

**Nevada Watercraft:**

- ! High proportion of watercraft in class 5 (16' to 25' in/out & in) and class 8 (over 25' in & in/out).

TABLE 1: WATERCRAFT POPULATION IN SAMPLE

BOAT CLASS	STATE OF REGISTRATION						TOTAL	
	ARIZONA		CALIFORNIA		NEVADA		Number	%
	Number	%	Number	%	Number	%		
1	31,597	21.9	65,704	17.5	3,591	14.8	100,892	18.5
2	27,462	19.0	124,818	33.2	6,152	25.4	158,432	29.1
3	5,967	4.1	17,037	4.5	29	.1	23,033	4.2
4	33,409	23.1	46,033	12.2	3,638	15.0	83,080	15.2
5	38,860	26.9	92,703	24.6	9,027	37.2	140,590	25.8
6	1,416	1.0	11,820	3.2	210	.9	13,446	2.5
7	1,704	1.2	1,141	.3	184	.8	3,029	.6
8	3,709	2.6	9,821	2.6	1,322	5.5	14,852	2.7
9	230	.2	7,153	1.9	84	.3	7,467	1.4
TOTAL	144,354	100.0	376,230	100.0	24,237	100.0	544,821	100.0
CUMULATIVE TOTAL		26.5%		69.1%		4.4%		100.0%

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To develop the most accurate data possible, the data collection effort was divided into 24 separate data collection segments spread over the 12-month period from May 16, 2002 to May 8, 2003. Using this format, a total of approximately 534 interviews were conducted each month (236 Arizona, 238 California, 60 Nevada) with one-half being conducted between roughly the 1st and 5th of the month and one-half between roughly the 16th and 20th of the month. During each of the 24 interviewing segments, boaters were asked to recall their boating patterns for only the two weeks prior to the interview.

At the beginning of this process, an analysis was made of the gasoline consumption variances that existed within each of the nine size/propulsion categories from the 2000 Arizona Watercraft Survey to determine the best method to stratify the current sample of boat owners to optimize sampling accuracy and efficiency. This analysis revealed that certain categories are very homogeneous and thus render relatively small standard deviations, while other classes are very heterogeneous and thus render relatively large standard deviations. This situation called for the use of a disproportional stratified sample in this segment of the study.

| <u>CLASS</u> | <u>LENGTH</u> | <u>PROPULSION</u>             |
|--------------|---------------|-------------------------------|
| 1            | Under 16'     | Outboard (prop)               |
| 2            | Under 16'     | Inboard & In/Out (prop & jet) |
| 3            | Under 16'     | Other (sail, oar, electric)   |
| 4            | 16' to 25'    | Outboard (prop)               |
| 5            | 16' to 25'    | Inboard & In/Out (prop & jet) |
| 6            | 16' to 25'    | Other (sail, oar, electric)   |
| 7            | Over 25'      | Outboard (prop)               |
| 8            | Over 25'      | Inboard & In/Out (prop & jet) |
| 9            | Over 25'      | Other (sail, oar, electric)   |

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In disproportional stratified sampling, disproportionate sampling fractions are used to manipulate the number of cases selected from each strata (in this case, the nine size/propulsion classes), with the strata's standard deviations being used as the basis for allocation of cases. Those classes with proportionately larger standard deviations receive a proportionately larger number of cases; while those with proportionately smaller standard deviations receive a proportionately smaller number of cases. In essence, this sampling method allows us to select fewer cases from homogeneous classes and more cases from heterogeneous classes, thereby increasing overall sampling efficiency and accuracy. As a result, the final gasoline consumption estimates are sensitive to variations in consumption within the size/propulsion classes, thereby increasing the accuracy of the final estimate. In addition, this methodology meets the contract required minimum of a margin of error of less than five percent at a 95 percent confidence level.



TABLE 2: TOTAL SAMPLING DISTRIBUTION

			<u>2000 WATERCRAFT SURVEY</u>						
<u>BOAT CLASS</u>	<u>LENGTH</u>	<u>PROPULSION</u>	<u>AVG. (MEAN) DAILY FUEL CONSUMPTION</u>	<u>STANDARD DEVIATION</u>	<u>% OF 2002 REGISTRATIONS</u>	<u>PROPORTIONAL SAMPLE DISTRIBUTION</u>	<u>+/- MARGIN OF ERROR AT 95% CONFIDENCE</u>	<u>DISPROPORTIONAL STRATIFIED SAMPLE</u>	<u>+/- MARGIN OF ERROR AT 95% CONFIDENCE</u>
1	Under 16'	Outboard (prop & jet)	10.9	17.8	18.7%	1,212	2.9	1,080	3.0
2	Under 16'	Inboard & In/Out (prop & jet)	12.9	10.6	28.1	1,821	2.3	1,560	2.5
3	Under 16'	Other (sail, oar, electric)	10.5	12.7	4.1	266	6.1	290	5.9
4	16' to 25'	Outboard (prop & jet)	11.2	12.6	15.3	991	3.2	1,080	3.0
5	16' to 25'	Inboard & In/Out (prop & jet)	16.3	23.9	26.7	1,730	2.4	1,630	2.5
6	16' to 25'	Other (sail, oar, electric)	4.2	3.7	2.5	162	7.9	200	7.1
7	Over 25'	Outboard (prop & jet)	20.8	24.2	0.6	39	16.0	100	10.0
8	Over 25'	Inboard & In/Out (prop & jet)	21.2	18.7	2.7	175	7.6	250	6.3
9	Over 25'	Other (Sail, oar, electric)	3.8	0.0	1.3	84	10.9	150	8.1
	TOTAL		13.4	16.5	100.0%	6,480	1.2	6,340	1.2

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To properly address this study's informational needs, the total interview sampling base was distributed among Arizona, California and Nevada watercraft owners in the following fashion. This distribution is similar to the 2000 study, in that it does not exactly reflect the Boat Use Days distribution derived from the prior Watercraft Survey. This distribution was used because it allows for more sensitive county use data (since few Californians use any Arizona lakes except those adjacent to the Colorado River) without harming the ability to estimate the required fuel consumption data. Further, the initial Nevada sample of 700 represents a sizeable increase from 351 conducted in 2000 and was expanded to allow for a better reading on Nevada boater use of Arizona lakes, which jumped from 246,000 boat use days in 1997 to 890,000 in 2000.

TABLE 3: SAMPLE DISTRIBUTION – BY STATE

| <u>STATE</u> | <u>BOAT USE DAYS 2000</u> | <u>SAMPLE PERCENT</u> | <u>SAMPLE NUMBER</u> |
|--------------|---------------------------|-----------------------|----------------------|
| Arizona      | 44.1%                     | 44.5%                 | 2,820                |
| California   | 37.5                      | 44.5                  | 2,820                |
| Nevada       | <u>18.4</u>               | <u>11.0</u>           | <u>700</u>           |
| TOTAL        | 100.0%                    | 100.0%                | 6,340                |

On the following table is presented a review of the total number of interviews conducted by state and boat class. As Table 4 reveals, a total of 6,462 interviews were conducted during the course of this study – 2,873 Arizona, 2,861 California, 728 Nevada. This volume is higher than the 6,340 initially planned for because additional interviews were conducted during each of the 24 interviewing segments.

TABLE 4: NUMBER OF INTERVIEWS COMPLETED

| <u>Boat Class</u> | <u>STATE OF REGISTRATION</u> |                |                   |               |
|-------------------|------------------------------|----------------|-------------------|---------------|
|                   | <u>Total</u>                 | <u>Arizona</u> | <u>California</u> | <u>Nevada</u> |
| 1                 | 1,073                        | 583            | 393               | 97            |
| 2                 | 1,588                        | 542            | 873               | 173           |
| 3                 | 289                          | 120            | 169               | 0             |
| 4                 | 1,094                        | 658            | 340               | 96            |
| 5                 | 1,649                        | 752            | 654               | 243           |
| 6                 | 217                          | 48             | 144               | 25            |
| 7                 | 94                           | 48             | 24                | 22            |
| 8                 | 268                          | 98             | 120               | 50            |
| 9                 | 190                          | 24             | 144               | 22            |
| TOTAL             | 6,462                        | 2,873          | 2,861             | 728           |

### 3.3 Boat Owner Survey -- Questionnaire Development

The survey questionnaire utilized on this project was developed by BRC in conjunction with the TAC (see Appendix B). The question areas were as follows:

#### **Watercraft Use:**

- ! Number of days watercraft used (prior 2 weeks, annually)
- ! Reasons for non-use
- ! Specific Arizona lakes and rivers visited (prior 2 weeks, prior 12 months)
- ! Number of boating trips made (prior 2 weeks)
- ! Presence of boat engine
- ! Horsepower of boat engine
- ! Types of fuel used
- ! Average daily fuel consumption
- ! Types of vendors from which fuel purchased
- ! Percent of fuel purchased in Arizona

#### **Destination Information:**

- ! Most frequently visited lakes or rivers
- ! Average dollar amount spent on typical boating trip

#### **Recreational Use Data:**

- ! Boating activities engaged in during the recreation day
- ! Number of people per boating party on a typical outing

#### **Boater Opinion:**

- ! Types of boating and water-based recreational facilities needed at lake or river most often visited
- ! Evaluation of water-based recreation facilities at lake or river most often visited
- ! Adequacy of boating law enforcement and the safety and education programs at lake or river most often visited
- ! Awareness of State Lake Improvement Fund (SLIF)
- ! SLIF program funding priorities
- ! General attitudes on selected boating issues

After approval of the preliminary draft questionnaire, it was pre-tested with a randomly selected cross-section of watercraft owners. The pre-test focused on the value and understandability of the questions, adequacy of response categories, questions for which probes were necessary and the like. Several minor changes were made following the pre-test and the final form received TAC approval.

This survey utilized a "split" sample methodology. Using this methodology, selected survey questions were designated core questions and asked of all survey respondents while other survey questions were asked of only one-third of the survey respondents. This methodology is commonly used when the volume of information desired is particularly extensive and the number of interviews to be conducted is of adequate size to justify splitting. Questions 1 through 17a were designated core

questions for the purpose of this survey and asked of all study respondents. The remaining questions were asked of approximately one-third of the study respondents.

### **3.4 Boat Owner Survey -- Data Collection**

All of the interviewing on this project was conducted at BRC's Computer Assisted Telephone Interviewing (CATI) facility in Phoenix where each interviewer worked under the direct supervision of BRC supervisory personnel. All of the interviewers who worked on this project were professional interviewers of the Center. Each had prior experience with BRC and received a thorough briefing on the particulars of this study. During the briefing, the interviewers were trained on (a) the purpose of the study, (b) sampling procedures, (c) administration of the questionnaire, and; (d) other project related factors. In addition, each interviewer completed a set of practice interviews to assure that all procedures were understood and followed.

As noted earlier, telephone interviewing on this study was conducted during 24 two-week time segments starting in May 2002 and ending in May 2003. During each segment, interviewing was restricted to Tuesdays, Wednesdays and Thursdays in order to avoid those days (Friday through Monday) on which the target universe (boat owners) was most likely to be away from home using their watercraft. Further, during the interviewing segment of this study, up to four separate attempts, on different days and during different times of day, were made to contact each selected boat owner. Only after four unsuccessful attempts was a selected boat owner substituted in the sample. Using this methodology, the full sample was completed and partially completed were not accepted nor counted toward fulfillment of the total sample quotas.

One hundred percent of the completed interviews were edited and any containing errors were pulled and the errors corrected. In addition, 15 percent of each interviewer's work was randomly selected for validation to ensure its authenticity and correctness. No problems were encountered during this phase of interviewing quality control.

As the data collection segment of this study was being undertaken, completed and validated interviews were turned over to BRC's in-house coding department. The coding department edited, validated and coded the interviews. Each interview that received final coding department approval was then transferred to the BRC computer department where a series of validity and logic checks were run on the data to insure it was "clean."

The final step prior to running computer analysis of the survey data was to "weight" the data to reflect the actual distribution of watercraft found in the sample universe as revealed earlier in Table 1. This weighted data was only used in analyzing the attitudinal data collected in the survey, not in calculating the fuel consumption and boat use data.

### **3.5 Study Audits/Survey**

The second major data collection component on this project consisted of conducting audits of: (1) concessionaires, commercial boat operators and excursion operators; (2) government agencies, and; (3) marinas.

Each of these groups were audited/surveyed to collect the following information:

- ! **Concessionaires, Commercial Boat Operators and Excursion Operators:** To determine the amount of non-marina, Arizona gasoline they purchased.
- ! **Government Agencies:** To determine the amount of non-marina, Arizona gasoline subject to tax they purchased.
- ! **Marinas:** To determine the amount of gasoline purchased from Arizona distributors they sold.

In order to conduct these audits/surveys, it was first necessary to generate lists of each subject group. This was accomplished: (a) by using the lists compiled in previous Watercraft Surveys; (b) by reviewing telephone and Internet directories from around the state; (c) by reviewing AGFD's watercraft registration data base; (d) through discussions with selected chambers of commerce; (e) by referrals from other operators, agencies and marinas, and; (f) through discussions with AGFD Regional Supervisors.

All those on the identified lists were mailed a self-administered questionnaire along with a postage-paid, return mail envelope. Respondents were given approximately two weeks to respond to the mailing before follow-up telephone contact was undertaken and continued until a response was achieved. The audit/survey forms utilized during this study component are included in Appendix B of this report.

TABLE 5: NUMBER OF AUDITS/SURVEYS COMPLETED

**MARINAS**

|                                         |    |
|-----------------------------------------|----|
| Total forms mailed                      | 67 |
| No fuel sold/No Arizona fuel sold       | 31 |
| Sell Arizona gasoline                   | 22 |
| No longer in business                   | 10 |
| Did not respond after multiple attempts | 4  |

**CONCESSIONAIRES**

|                                         |     |
|-----------------------------------------|-----|
| Total forms mailed                      | 250 |
| No fuel used/No qualified fuel used     | 97  |
| No longer in business                   | 96  |
| Arizona fuel used                       | 46  |
| Did not respond after multiple attempts | 11  |

**GOVERNMENT AGENCIES**

|                                         |     |
|-----------------------------------------|-----|
| Total forms mailed                      | 107 |
| No fuel used/No qualified fuel used     | 51  |
| Qualified Arizona fuel used             | 45  |
| Did not respond after multiple attempts | 11  |

### 3.6 Launch Ramp Survey

The final major data collection component on this project consisted of conducting a launch ramp observation survey to determine the ratio of in-state to out-of-state boaters on selected Arizona lakes and rivers. The ten lakes and rivers selected for inclusion into this study phase were chosen by the TAC and included the inland and border waterways listed below. A total of six observations were conducted at each site during the peak launching hours from 6:00 a.m. and noon. The six observations were distributed so they covered the following time periods: 1) two weekday observations (one in the on-season, one in the off-season); 2) three weekend observations (two in the on-season, one in the off-season), and; 3) one holiday observation (Memorial Day, Fourth of July or Labor Day).

| <u>LAKE/RIVER</u> | <u>LOCATIONS</u>                          |
|-------------------|-------------------------------------------|
| Bartlett          | Public Ramp                               |
| Havasu            | Lake Havasu Marina/<br>Sandy Point Marina |
| Martinez          | Marina Ramp                               |
| Mead              | Temple Bar                                |
| Mohave            | Katherine's Landing/<br>Willow Beach      |
| Parker Strip      | Buckskin Mountain State Park              |
| Pleasant          | Marina/Public Ramps                       |
| Powell            | Wahweap Marina                            |
| Roosevelt         | Marina/Cholla Ramp                        |
| Saguaro           | Public Ramps                              |

Following completion of the boat owner surveys, the study audits/surveys, and the launch ramp surveys the data presented in the remainder of this report was compiled.