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*Natural Resources Research Program*

## **Pilot Study Effects of Implementing Day Use Fees at Corps of Engineers Projects**

by *Roy Rylander, Christopher M. White*  
*Environmental Laboratory*

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by Roy Rylander, Christopher M. White  
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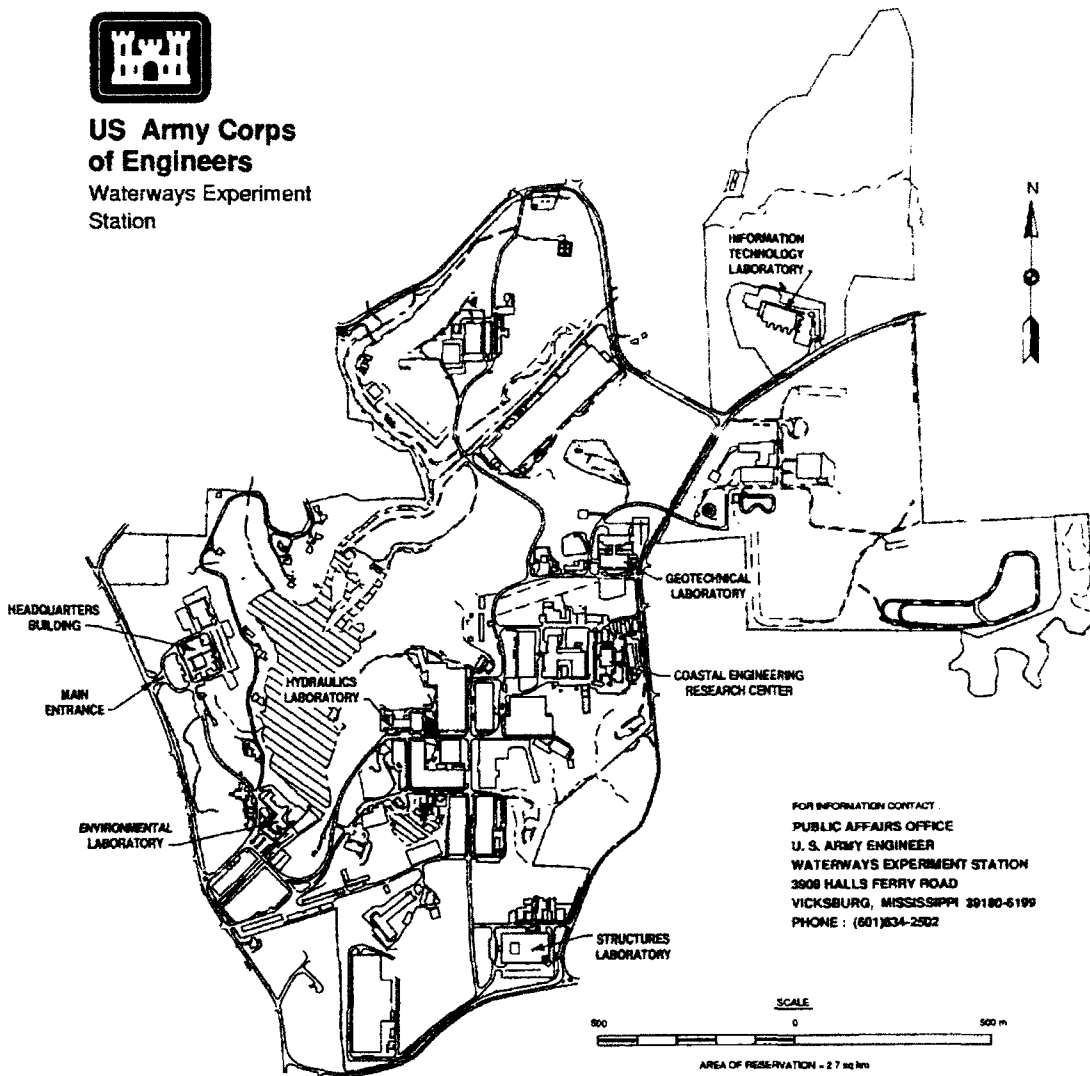
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# Preface

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The work reported herein was conducted as part of the Natural Resources Research Program (NRRP) as part of the work unit entitled "Measuring the Effects of Recreation Fee Programs." The NRRP is sponsored by the Headquarters, U.S. Army Corps of Engineers (HQUSACE), and is assigned to the U.S. Army Engineer Waterways Experiment Station (WES) under the purview of the Environmental Laboratory (EL). The NRRP is managed under the Environmental Resources Research and Assistance Programs (ERRAP), Mr. J. L. Decell, Manager. Dr. A. J. Anderson was Assistant Manager, ERRAP, for the NRRP. Technical monitors during this pilot study were Mr. Robert Daniel and Ms. Judy Rice, HQUSACE.

This report presents a pilot study of the effects of implementing day use fees at Corps of Engineers projects. It was completed as one of the tasks for Work Unit 32745, "Measuring the Effects of Recreation Fee Programs."

The report was prepared by Mr. Roy Rylander, Michigan State University, and Mr. Christopher M. White, Resource Analysis Branch (RAB), EL. Review and comments were provided by Dr. Steve Reiling, Department of Agricultural and Resource Economics, University of Maine; Mr. Jim Henderson, RAB; and Mr. Scott Jackson, RAB.

This report was prepared under the general supervision of Mr. H. Roger Hamilton, Chief, RAB, EL; Mr. J. Lewis Decell, Chief, Natural Resources Division, EL; and Dr. John Harrison, Director, EL.

Dr. Robert W. Whalin was Director of WES at the time of publication of this report. COL Bruce K. Howard, EN, was Commander.

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# 1 Introduction

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## Background

Current legislative and administrative actions indicate a renewed interest in recreation fees (Brown 1992, White 1992a). A recent study by the Corps of Engineers identified fee program alternatives that have the potential to reduce the Federal costs in providing recreation opportunities at Corps projects. These alternatives ranged from adjustments to existing fees to the introduction of fees for facilities and services previously provided without charge (Headquarters, U.S. Army Corps of Engineers 1990). For a complete discussion of the legislative history of fees and research related to fees, the reader should refer to Brown (1992), White (1992 a,b,c), and Hansen (1990).

Previous research indicates that participants prefer that public outdoor recreation services be subsidized at least partially through taxes (Driver 1985, Howard and Selin 1987, Leuschner et al. 1987, Manning and Baker 1981, White 1992b). Most participants do not oppose "reasonable" fees (Economic Research Associates 1976, Harris and Driver 1987, Howard 1984, Howard and Selin 1987, Manning et al. 1984) and are willing to pay a substantially higher fee if the fee is used for maintenance and construction at a site (Driver 1985, Leuschner et al. 1987, McCarville and Crompton 1987). Several studies suggest there are limits to acceptance of fees and that these limits vary depending on the recreational activity in question (Economic Research Associates 1976, Howard 1984, Driver 1984, Howard and Selin 1987). Several studies indicate that in some circumstances instituting fees would not reduce use (Economic Research Associates 1976, Manning and Baker 1981, Howard 1984, Becker et al. 1985). Converting from uncontrolled access (no fee) to controlled access with an entrance fee at one Corps project tended to reduce the incidence and perception of crime and depreciative behavior (Fletcher 1984). At another site, a fee controlled access changed the type of activities occurring (loitering decreased, picnicking increased), increased the percentage of older citizens, and reduced the number of cars entering the area (Manning and Baker 1981). Entrance or use fees in an outdoor recreation setting do not tend to discriminate against or prevent participation by low income individuals (Howard 1984, Manning and Baker 1981, Reiling, Cheng, and Trott 1992).

## Purpose

This pilot test was conducted as part of the Natural Resources Research Program work unit entitled "Measuring the Effects of Recreation Fee Programs." The objective of the work unit was to evaluate visitors' and managers' attitudes, motivations, and perceptions of fees and how these attitudes, motivations, and perceptions affected recreation use patterns and revenues. This pilot study was intended to gather data concerning the effects of implementing day use fees at Corps of Engineers projects. Findings will be used in two surveys: a nationwide attitudes, motivations, and fee perceptions survey; and a demand and marketing survey.

## Objectives

The pilot study was designed to gather information from visitors to Corps projects concerning:

- a. Fee perceptions.
- b. Recreation area quality perceptions.
- c. Prior visits to other day use areas.
- d. Knowledge of availability of substitute recreation areas.
- e. Demographic characteristics.

## Procedures

Three Corps of Engineers projects in Texas (Lake Georgetown, Lake Whitney, and Lake Lavon) were selected for data collection for the pilot study. The reasons for their selection was primarily that the Texas State Parks and Wildlife has a comprehensive set of entrance fees at all their parks and that the Corps of Engineers is a major recreation supplier in the region. Also, the three projects were selected for the pilot study based on having at least one potential day use fee site, size, location, potential visitation high enough to ensure an adequate sample, and recommendations from the Fort Worth District staff.

The three projects are located in the Fort Worth District in central Texas. Lavon Lake is located 20 miles<sup>1</sup> northeast of Dallas. Lake Whitney is located outside Hillsboro, Texas, approximately 30 miles north of Waco and 65 miles south of Dallas/Fort Worth. Lake Georgetown is located 18 miles north of

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<sup>1</sup> To convert miles to kilometers, multiply by 1.609347.

Austin. Both Lake Whitney and Lake Georgetown are near Interstate 35, the main highway between Dallas/Fort Worth and Austin (see maps attached to back cover).

The survey instrument and procedures were pretested on a small sample, a total of about 25 interviews, and then revised. After the pretest results were received and the questionnaire revised, a total of 350 surveys were completed at the three projects (70 at Lake Georgetown, 120 at Lake Whitney, and 160 at Lake Lavon). The survey was conducted from 29 July 1991 through 14 September 1991 with an average interview lasting about 16 min. All the interviews were conducted onsite at the respective Corps recreation area. No data were collected at recreation areas at those three projects which did not have the potential for day use fees. Corps fee campgrounds were not part of the survey.

The survey instrument (Appendix A) was developed in accordance with pilot study objectives. Respondents were asked questions concerning perception of fees, perception of area quality, and willingness to pay under different fee scenarios. The importance and performance of facilities, services, and features were also subjects that respondents were asked to comment on during the survey. Data were also collected concerning demographics.

Mean, mode, median, and frequency were calculated for most of the variables. Data analysis was then done using chi-square and Mann Whitney U statistics. Chi-square tests the assumption that there is no relationship between two variables in the total sample population. Given the observed distribution of values on the two separate variables, the conjoint distribution that would be expected if there was no relationship between the two variables is computed. The expected distribution is compared with the distribution of cases actually found in the sample data, and then the probability that the discovered discrepancy could have resulted from sampling error alone (Babbie 1986) is determined. Significance in chi-square was the reason to reject the null hypothesis, meaning that there is a potential relationship between those variables, and to investigate the interaction with Mann Whitney U. For instance, the relationship of the "willing to pay for fees" variable was found to be significant when linked to the amount of income respondents reported.

Mann Whitney U test is a nonparametric, i.e., uneven distribution of the sample population test, for the difference between two independent means. It can be applied when there are two independent random samples (independent within each sample as well as between samples) in which the random variable is continuous. This test is often applied in situations in which the two samples are drawn from the same population, but different "treatments" are used on each set (Johnson 1988). For instance, the statement, "There should be fees," was tested under Mann Whitney U against the respondents willingness to pay for an annual restricted pass and was found to be significant, indicating a possible linkage.

## Pilot Study Limitations

This pilot study was designed to gather indicators concerning different aspects of fees and to provide guidance in developing survey instruments for two subsequent nationwide studies. The interviewer gathered data from users of potential fee areas with emphasis on the respondent's ability to take the time and have the information necessary for a complete interview. He attempted in all cases to contact the individual in any group most likely to be the authority figure and, therefore, most likely to decide where to recreate and whether to pay. This non-random selection of respondents may have introduced bias in the survey. Also, the analysis does not account for the sampling bias associated with number of visits. Those who make more visits have a larger chance of being in the sample.

The interviewer noted conflicts between visitor groups, but was unable to account for these possible effects in the analysis. Some of the respondents indicated that they held differing views concerning willingness to pay depending on their primary activity, i.e., fishing, waterskiing, picnicking, swimming, and camping. For instance, some fishermen mentioned that they were paying for a fishing license while other recreation users did not have to buy a license.

The survey did not account for the impact of price on the quality evaluations. A visitor might expect more of a fee area, which suggests that the quality, importance, and performance, of the Corps recreation areas may be somewhat overvalued. A larger sample would allow more confidence in the validity of findings, the ability to talk of the larger group (the whole population), and would enable valid tests, or comparisons, of possible segment and interaction effects related to different variables such as sex, age, education, marital status, income, and site quality.

This study solicited open-ended multiple responses under different fee scenarios. Responses given to one proposed fee scenario may influence or affect the responses to succeeding fee scenario questions. Most contingent valuation studies use the dichotomous choice, closed end format, a study design that ensures all observations are independent of each other.

## 2 Regional Context

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The Fort Worth District is located in central and east Texas. In 1990 there were 67 million visits and 120 million visitor hours. Other recreation providers in this region include Texas State Parks and Wildlife, Brazos River Authority, Colorado River Authority, Sabine River Authority, Trinity River Authority, Dallas Parks and Recreation, Fort Worth Parks and Recreation, Austin Parks and Recreation, Waco City Parks, Georgetown City Parks, Travis County, and other county, city, and privately managed lakes.

### Site Locations

Lavon Lake, 20 miles northeast of Dallas, with 121 miles of shoreline and 21,400 acres<sup>1</sup> of conservation pool had 3.17<sup>0</sup> million visitor hours in 1991. Lake Whitney, approximately 30 miles from Waco and 65 miles from Dallas/Fort Worth, has 225 miles of shoreline and 23,550 surface acres of water, and it had 6.60 million visitor hours in 1991. Lake Georgetown, 18 miles from Austin, has a 1,310-acre surface area and 25 miles of shoreline, and in 1991 it had 3.55 million visitor hours. Both Lake Whitney and Lake Georgetown are near Interstate 35, the main highway between Dallas and Austin. Facilities and visitation at each day use area sampled are detailed in Appendix D, Tables D1 and D2. Maps showing the regional location and specific project facilities are attached to the back cover.

### Study Demographics

The average group size was 3.36 persons with a standard deviation of 1.87 and ranged from 1 to 12. The mode was 2 persons (101 cases or 28.9 percent); the median was 3 persons. Forty-one percent of the respondents were in 1 or 2 person groups, and 23 percent were in groups of 5 or more (Table 1). Senior citizens comprised 7.7 percent, 27 cases, of the sample (Table 2). Ethnicity of the respondents was predominantly white (90.3 percent or 316 respondents), with

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<sup>1</sup> To convert acres to square meters, multiply by 4,046.873.

<b>Table 1 Group Size</b>				
<b>Value Label</b>	<b>Value<sup>1</sup></b>	<b>Frequency</b>	<b>Percent</b>	<b>Cum Percent</b>
1 - 2 persons	1	145	41.4	41.4
3 - 4 persons	2	126	6.0	77.4
5+ persons	3	79	22.6	100.0

<sup>1</sup> "Value" refers to the number of categories used in response to that question.

<b>Table 2 Senior Citizen</b>				
<b>Value Label</b>	<b>Value</b>	<b>Frequency</b>	<b>Percent</b>	<b>Cum Percent</b>
Yes	1	27	7.7	7.7
No	2	323	92.3	100.0

<b>Table 3 Ethnicity</b>				
<b>Value Label</b>	<b>Value</b>	<b>Frequency</b>	<b>Percent</b>	<b>Cum Percent</b>
Black	1	8	2.3	2.3
Hispanic	2	22	6.3	8.6
Other	3	4	1.1	9.7
Caucasian	4	316	90.3	100.0

blacks composing 2.3 percent and hispanics 6.3 percent (Table 3). The average number of visits was 20 with a standard deviation of 45 visits. The minimum was 1 and the maximum was 350 with the most common response 1 visit (62 cases or 17.7 percent); the median was 5. Those making 1 visit comprised the lowest quintile, and those making 25 or more were in the upper quintile (Table 4). The average one-way distance traveled was 27 miles with a 28-mile standard deviation. One-way distances ranged from 1 to 200 miles; the mode was 15 miles (38 cases or 10.9 percent), and the median was 20 miles. Those respondents traveling 7 or fewer miles were in the lower quintile, and those traveling 40 or more miles were in the upper quintile (Table 5).

The average number of hours spent at the recreation areas in the survey was 5 with a 3.05-hr standard deviation. Responses ranged from 1 to 16 hr with the mode and the median 4 (62 cases or 17.7 percent). One-third of the sample spent between 1 and 3 hr in the recreation area and 33 percent spent at least 6 hr (Table 6). Average income was \$33,200, and both the median and the mode were within the category \$30,000 to \$39,999 (68 cases). Seventeen percent of

<b>Table 4 Visits In Last 12 Months to This Area</b>				
<b>Value Label</b>	<b>Value</b>	<b>Frequency</b>	<b>Percent</b>	<b>Cum Percent</b>
1 visit	1	62	17.7	17.7
2 - 3 visits	2	68	19.4	37.1
4 - 8 visits	3	83	23.7	60.9
9 - 24 visits	4	67	19.1	80.0
25+ visits	5	70	20.0	100.0

<b>Table 5 Miles (one way) to This Area</b>				
<b>Value Label</b>	<b>Value</b>	<b>Frequency</b>	<b>Percent</b>	<b>Cum Percent</b>
0 - 7 miles	1	68	19.4	19.4
8 - 14 miles	2	46	13.1	32.6
15 - 24 miles	3	92	26.3	58.9
25 - 39 miles	4	66	18.9	77.7
40+ miles	5	78	22.3	100.0

<b>Table 6 Hours Spent in Area</b>				
<b>Value Label</b>	<b>Value</b>	<b>Frequency</b>	<b>Percent</b>	<b>Cum Percent</b>
1 - 3 hr	1	116	33.1	33.1
4 - 5 hr	2	118	33.7	66.9
6+ hr	3	116	33.1	100.0

the sample reported income of less than \$20,000 for 1990, and 21 percent reported income of more than \$60,000 for 1990 (Table 7).

## **Regional Day Use Fees**

In the region around the study sites, there are three major recreation providers: Texas State Parks and Wildlife Department (TSP&W), the Lower Colorado River Authority (LCRA), and Travis County and the Trinity River Authority (TRA). At the time of the survey, 1991, TSP&W charged an entrance fee of \$2 per vehicle, walk-ins \$0.50 per adult, and \$0.25 per child under 12.

<b>Value Label</b>	<b>Value</b>	<b>Frequency</b>	<b>Percent</b>	<b>Cum Percent</b>
< \$20,000	1	59	16.9	17.4
\$20,001-\$30,000	2	57	16.3	34.1
\$30,001-\$40,000	3	67	19.4	54.1
\$40,001-\$60,000	4	83	23.7	78.5
> \$60,000	5	73	20.9	100.0
Missing		10	2.9	

Buses were charged a minimum of \$2 plus 50 cents for each person if the bus contained 1 to 11 persons or \$6 if the bus contained 12 to 47 persons. An Annual (state-wide) Park Entrance Permit was \$25, and a Restricted Annual Entrance Permit (access to one area) was \$13. A State Parkland Passport allowed seniors and disabled veterans entry without a fee. Group entrance permits were \$25 for youth groups (18 years and under) and valid for up to 50 persons. There were facility use fees within the park and a somewhat different schedule for historic sites.

Travis County Texas and the LCRA have nearly similar day use fee recreation areas on the Highland Lakes: Lake Buchanan, Lake Lydon B. Johnson, Lake Travis, Lake Inks, and Lake Austin. At the recreation areas that charge a fee (not all do) the entrance fee varies from \$2 to \$5.25 per vehicle up to 4 persons plus \$1 for each additional passenger. Walk-ins are \$1. In some areas, there is an additional fee for a boat launch. The annual permit in LCRA parks varies from \$30 to \$75, and in the Travis County parks, it is \$30 each year per vehicle. Senior persons, 65 and over, are eligible for a Lone Star Pass which allows free entry.

TRA charges fees on day use areas on Joe Pool Lake. The entrance fee is \$2 per vehicle per day, \$2 per person per day, and \$2 per trailer per day. Seniors over 65 are \$1 per person per day. Children under 5 are free. An annual pass, prorated in October to \$75, is \$150 per year.

Collin Park on Lavon Lake is now operated by a concessionaire. The entrance fee is \$2 per vehicle per day, \$1 per person per day, and \$2 per trailer per day. Seniors over 65 and children under 7 are free. In 1991, the concessionaire offered an introductory annual permit for \$50, prorated about every 2 months. For 1992, the annual permit is \$100, also prorated, and is good for 1 to 4 persons and trailer access for 1 year.

## 3 Analysis

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### Willingness to Pay

Respondents were asked open-ended questions concerning different willingness to pay scenarios:

- For every \$100.00 in cost to operate this area, how many dollars do you feel should come from use fees? The average response was 29 percent and the standard deviation was 25.40 percent. Responses ranged from \$1 to \$100 with the mode \$50 and the median \$25. Twenty percent of the sample stated \$4 or less and 37 percent responded \$50 or more (Table 8).

Value Label	N <sup>1</sup>	Percent	Cum Percent
0 - 4%	71	20.3	20.3
5 - 15%	66	18.9	39.4
16 - 49%	83	23.7	63.2
50%+	28	36.6	100.0
Missing	2	0.6	

<sup>1</sup> "N" is the number of respondents to that question in a category.

- What is the maximum price you would be willing to pay on a per car basis to use this recreation area on a weekday? The average was \$2.91 per car with a standard deviation of \$2.31. Responses ranged from zero dollars to \$15 with the mode and the median both \$2 (107 cases or 30.6 percent). Twenty-four percent of the sample stated that they would pay \$1.99 or less and 24 percent stated they would be willing to pay \$5 or more (Table 9).

- What is the maximum price you would be willing to pay on a per car basis to use this recreation area on a weekend day or holiday? Average response was \$4.20 per car, per weekend day, and the standard deviation was

\$3.04. Responses ranged from \$0 to \$25; the mode was \$5 (89 cases or 25.4 percent of the sample); the median was \$4. Twenty-nine percent of respondents reported \$2 or less, and 44 percent reported \$5 or more (Table 10).

<b>Table 9</b>				
<b>Willingness to Pay: Maximum Price for a Weekday</b>				
Value Label	Value	Frequency	Percent	Cum Percent
\$0.00 - \$1.99	1	83	23.7	23.7
\$2.00	107	30.6	54.3	
\$2.01 - \$4.99	3	75	21.4	75.7
\$5.00 - high	4	85	24.3	100.0

<b>Table 10</b>				
<b>Willingness to Pay: Maximum Price for a Weekend or Holiday</b>				
Value Label	Value	Frequency	Percent	Cum Percent
\$0.00 - \$2.00	1	102	29.1	29.1
\$2.01 - \$4.99	2	95	27.1	56.3
\$5.00	3	89	25.4	81.7
\$5.01 - high	4	64	18.3	100.00

• What is the maximum price you would be willing to pay on a per car basis for an annual pass to Corps-managed day use areas only on this lake? Average response was \$27.76 with a standard deviation of \$27.84. The responses ranged from \$0 to \$300 with the median and the mode, \$25 (88 cases or 25.4 percent of the sample). Twenty-two percent of the respondents stated \$10 or less, and 17 percent stated \$40 or more (Table 11).

<b>Table 11</b>				
<b>Willingness to Pay: Maximum Price for Annual Pass to Corps Day Use Area</b>				
Value Label	Value	Frequency	Percent	Cum Percent
\$0.00 - \$10.00	1	76	21.7	21.9
\$10.01 - \$24.99	2	81	23.1	45.2
\$25.00	3	88	25.1	70.6
\$25.01 - \$40.00	4	41	11.7	82.4
\$40.01 - high	5	61	17.4	100.0
Missing		3	0.9	

- What is the maximum price you would be willing to pay on a per car basis for an annual day use pass that includes all Corps-managed lakes in this state? The average response was \$45.05, and the standard deviation was \$43.54. Responses ranged from \$0 to \$350 with the mode \$50 (66 cases or 18.9 percent) and the median \$30. Approximately 19 percent reported \$18 or less, and 21 percent reported \$50.01 or more (Table 12).

Pass Cost	Value	Frequency	Percent	Cum Percent
\$0.00 - \$18.00	1	66	18.9	19.0
\$18.00 - \$25.00	2	83	23.7	42.9
\$25.01 - \$49.99	3	59	16.9	59.9
\$50.00	4	66	18.9	79.0
Above \$50.00	5	73	20.9	100.0
Missing		3	0.9	

## Attitudes Toward Fees

In the following questions, respondents were asked to refer to a five-point scale where 1 means "agree strongly" and 5 means "disagree strongly":

- There should be fees for day use recreation. The average response was neither agree nor disagree (3.17) with a standard deviation of 1.54. The mode was 5 (114 cases or 32.6 percent at strongly disagree), and the median was 3. Forty-six percent of the sample agreed that there should be fees for day use recreation, and 47 percent disagreed (Table 13).

Value Label	Value	Frequency	Percent	Cum Percent
Strongly Agree	1	57	16.3	16.3
Mildly Agree	2	104	29.7	46.0
Neither Agree Nor Disagree	3	25	7.1	53.1
Mildly Disagree	4	50	14.3	67.4
Strongly Disagree	5	114	32.6	100.0

• **I would be more willing to pay a fee if I knew that the money was used to maintain this area.** The average response was 2.0 (mildly agree) with a standard deviation of 1.20 and 1 as the mode and median (170 cases or 48.6 percent at strongly agree). Eighty-two percent of the respondents stated they would be more willing (Table 14).

<b>Table 14</b>				
<b>Willing To Pay: If Revenues Stay In Recreation Area</b>				
<b>Value Label</b>	<b>Value</b>	<b>Frequency</b>	<b>Percent</b>	<b>Cum Percent</b>
Strongly Agree	1	170	48.6	52.1
Mildly Agree	2	99	28.3	82.5
Neither Agree Nor Disagree	3	16	4.6	87.4
Mildly Disagree	4	16	4.6	92.3
Strongly Disagree	5	25	7.1	100.0

• **Fees should be lower on weekdays than weekends and holidays.** The average response was 2.23 (mildly agree) with a standard deviation of 1.44. The mode was 1 (151 cases or 43.1 percent at agree strongly), and the median was 2. Seventy percent of the sample agreed that fees should be lower on weekdays than on weekends, and 23 percent disagreed (Table 15).

<b>Table 15</b>				
<b>Differential Fee Structure: Fees on Weekdays Lower Than Weekends</b>				
<b>Value Label</b>	<b>Value</b>	<b>Frequency</b>	<b>Percent</b>	<b>Cum Percent</b>
Strongly Agree	1	151	43.1	43.1
Mildly Agree	2	94	26.9	70.0
Neither Agree Nor Disagree	3	26	7.4	77.4
Mildly Disagree	4	30	8.6	86.0
Strongly Disagree	5	49	14.0	100.0

• **Better quality facilities should have a higher fee.** The average response was 2.20 (mildly agree), and the standard deviation was 1.28. The median and the mode were 2 (130 cases or 37.1 percent at mildly agree). Seventy-three percent

of the sample agreed that better quality facilities should have a higher fee, and 19 percent disagreed (Table 16).

Value Label	Value	Frequency	Percent	Cum Percent
Strongly Agree	1	125	35.7	35.7
Mildly Agree	2	130	37.1	72.9
Neither Agree Nor Disagree	3	27	7.7	80.6
Mildly Disagree	4	36	10.3	90.9
Strongly Disagree	5	32	9.1	100.0

A test of statistical independence to indicate whether two variables are independent or dependent on the survey question, "should there be fees," indicates that those who tended to agree that there should be fees for day use recreation tended to hold more favorable attitudes toward fees and different fee scenarios and were more willing to pay for day use facilities (Table D3). These visitors tended to be more willing to pay a day use fee if it was used to maintain the recreation area and tended to prefer using a larger percentage of the use fee for the area. Those respondents agreeing that there should be fees for day use recreation tended to travel more miles to and from the lake, make fewer visits, and had recent previous paying experience. Respondents who tended to agree with a fee structure based on the quality of a recreation area tended to agree with fee scenarios based on different weekday/weekend pricing (Tables D4 and D5). They also tended to hold favorable attitudes toward fees (except government/user fee percentage) and were more willing to pay fees. Respondents tending to agree with different weekday/weekend pricing tended to be more willing to pay if revenue was to maintain the area or for weekend day use. They tended to agree with fee scenarios based on quality of recreation area and the lake.

Those respondents willing to pay for a restricted pass (Table D6) had a higher maximum willingness to pay, tended to be more willing to pay, held more favorable attitudes toward fees, and tended to hold more favorable attitudes toward different fee scenarios with the exception of weekday/weekend pricing. The respondents of this group were less often a senior citizen.

There is a contradiction in findings between maximum per weekday and maximum restricted pass. The pattern in maximum weekday, which includes income, visits, and miles as variables, would tend to indicate that income, visits, and miles are key impacting variables. This effect, however, did not hold through willingness to pay for a restricted pass. Logically, a restricted pass

offers a discount (cost/visit) to those making many visits and living nearer to a lake, and, perhaps, offers the lower income group a more reasonable deal.

Analysis of willingness to pay based on the quality of a recreation area and willingness to pay for weekend use based on stated income indicated that there was not a correlation between these variables. In other words, the quality of a site and a person's salary are not indicated as factors that would predict how much a person was willing to pay for entrance to a recreation area. However, willingness to pay for weekday use and for a lake-specific pass were correlated to stated income. The higher a person's income, the more they are willing to pay in day use fees for a weekday pass or a lake-specific pass.

## **Importance/Performance Evaluations**

The survey included a section where respondents were asked to evaluate a series of 19 items related to visiting a day use recreation area. The list included specific creature comforts such as "flush toilets instead of vault," "short distance to comfort station," and "clean restrooms." The list also included more abstract evaluations including "scenic beauty." First, the respondent was given the list of 19 items and asked, "How important is each of the following items for you when visiting a day use recreation area?" They were asked to rate each item on a five-point scale with 1 "extremely important," and 5 "not important." After completing the evaluation, each respondent was asked, "How do you rate this recreation area with respect to the Corps provision for those items," on the same scale of 1 to 5. The intention was to develop an idea of what items the respondents felt were important to their visit to that area and how good a job the Corps was doing in providing that item. Table 17 lists in rank order the results of importance (a ranking of what the visitor felt was important to have at that area) and performance (a ranking of how well the respondents felt the Corps was providing that item). The means of each item were used for the ranking, and the 19 items are listed in descending order in Table 17 (see Appendix C for detailed analysis):

The 19 items were rated and ranked by means, both by individual lake and grouped together. A scattergram was prepared to indicate relative importance compared with performance (Appendix B). There was little variation in the scattergrams by lake; therefore, this discussion uses combined ratings for all three lakes. One item that stands out as the most important both at individual lake rankings and in the summary rankings is "clean restrooms." Referring to the scattergram, the item "clean restrooms" is ranked between extremely and very important (1.42) and is the most important item for respondents. However, performance is ranked ninth (2.31 - between very good and good), which may indicate that respondents felt that this item could use some improvement. The next important item for respondents was "shaded picnic sites" (1.75), which ranked fourth in performance (2.20). The third most important item was "clear water," which ranked 11th in performance.

Table 17 Ranking of Importance and Performance Evaluations	
Importance	Performance
Clean restrooms	Paved access roads
Shaded picnic sites	Adequate parking
Clear water	Boat dock
Adequate parking	Shaded picnic sites
Picnic table near beach	Scenic beauty
Uncrowded waters	Picnic table near beach
Frequent security patrols	Close to home
Flush toilets	Uncrowded beach
Paved access roads	Clean restrooms
Boat dock	Short distance to comfort station
Scenic beauty	Clear water
Short distance to comfort station	Uncrowded waters
Good fishing	Concessions
Uncrowded beach	Playground
Store nearby	Flush toilets
Close to home	Good fishing
Playground	Store nearby
Concessions	Frequent security patrols
Vending machines	Vending machines

Several other items of interest in the evaluation were "adequate parking," "picnic table near beach," and "uncrowded waters." These items were high in importance and relatively high in performance, meaning that respondents perceived that the Corps was probably meeting their needs in those categories. "Frequent security patrols" ranked seventh in importance, but eighteenth in performance, possibly indicating that this is one important item that could be emphasized if a fee program for day use was instituted. Another item ranking eighth in importance and fifteenth in performance was "flush toilets."

Several other items on the list were not that important, but which ranked relatively high in performance. These included "scenic beauty," "short distance to comfort station," "uncrowded beach," "close to home," and "concessions." These items would not be of particular interest to people coming to a recreation area, and improvement of these areas as part of a fee program would not be justified. Finally, last in both importance and performance is "vending machines," perhaps indicating that many day users are self-contained and do not expect to purchase much once at a recreation area.

## Differences by Lake on Attitudes

Data were collected from visitors to the three lakes from different settings. Testing the key fee variables as independent of lake indicates that there were no significant differences (chi-square, 0.05 criterion). Respondents at Corps lakes in urban (Lake Lavon), semi-urban (Georgetown), and rural (Lake Whitney) settings did not differ significantly in their attitudes toward fees, alternative fee scenarios, and willingness to pay.

There is a strong linear relationship between fee and percent of visits (0.983 correlation). This model explains 96.1 percent of the variability in visits by percent, a very good fit to the data ( $F = 174.98$ , signif 0.0000). For each \$1 increase in fee, visits tend to decrease by 9.9 percent. The model does not reliably estimate impacts below \$1.50. In the \$1.50 scenario there is a 31.4 percent decrease in visits. Revenues increased from a \$1.50 scenario, to a \$3.00 scenario and appear to level off at the \$5.00 scenario. The \$3 model generated the most revenue. Since the relationship between fee and revenue was not linear, a regression was not applied.

## **Restricted Pass and Day Use Fee**

Those interviewed were asked, "Assuming the price for day use was \$1.50, \$3, or \$5, would you buy an annual pass to the lake at \$12, \$15, \$20, or \$25?" Approximately 84 percent of the visitors might buy a \$12 restricted pass assuming the entrance fee was \$1.50, and approximately 67 percent might buy a \$25 restricted pass assuming a \$5 entrance fee. As a test of the validity of these observations, the assumption of an economical visitor was applied on a cost per visit rule. This test revealed that in many cases a stated willingness to buy a restricted pass when the respondents stated number of annual visits to that lake could not justify a purchase. In those cases, it could be more economical to pay a \$2 entrance fee six times than to buy a \$15 pass. There were large differences. For instance, without a cost per visit rule, the analysis could assume 84 percent of the sample could buy a \$12 pass assuming a \$1.50 daily fee. Using the rule, analysis assumes 65 percent could buy the \$12 pass. It was hoped that by making the assumption of an economically rational visitor and applying these rules, there could be a more accurate and conservative estimate of the impacts.

## 4 Effects of Varying Fee Levels

Respondents were asked, "In this section of the survey, we are concerned about the impact of day use fees on your recreation use of Corps of Engineers Lakes. If the price for a day use pass at this recreation area was \$1.50, \$3, \$5, per car, would you continue to come? If so, how many visits per year?" The scenarios were evaluated by revenue and visit impacts. For instance, a \$1.50 per car day use fee without a restricted lake pass might result in a 31.4 percent decrease in visits and a \$3 fee could cause a 53.4 percent decrease. Estimates are based on a sample of 319 cases reporting a total of 7,410 visits in the period 1990-1991 (Table 18).

\$1.50	2.00	2.50	3.00	3.50	4.00	5.00	7.00
68.6%	58.3	51.2	46.6	39.3	35.2	27.1	12.9

\* Note: 319 cases made 7,410 visits 1990 - 1991.

### Visit Impacts

Where the restricted pass is \$12 and the day use fee is \$1.50, there could be an estimated 13.6 percent decrease in total visits. A \$5/\$25 scenario could cause an approximately 33 percent decrease in total visits. Recreation visits are sensitive to a change in the price of the day use fee when holding the price of restricted pass constant. Each model suggests approximately a 5 percent decrease as daily entrance fees increase from \$1.50 to \$3, and an approximate 1 percent decrease in visits as price increases from \$3 to \$5. In each model, demand seems to level off above \$3.

The \$15 scenario is not entirely consistent with these patterns. The visit impact percentage increases by 2.4 percent as the price moves from \$3 to \$5. In the \$25 model, there is a sharp decrease above the \$5 fee. This appears to be a

point where other models remain stable, which indicates a threshold (Tables 19 and 20).

Aside from the immediate impact and holding the price of entrance constant, there is a decrease in visits of approximately 1 percent. This rule should hold within the \$1.50 to \$5 range and for the \$12 to \$25 range. While this appears to be a linear relationship, there may be a threshold price beyond which respondents will not pay. Therefore, these figures cannot be extrapolated above and below these ranges. There may be a threshold price above which there is great resistance and a sharp drop in visitation. This can only be found by additional questioning specifically about those price scenarios.

Analysis indicated a \$1.50/\$12 fee scenario could cause approximately a 13.6 percent (1,008 of 7,410) decrease in visits (Table 20). Ninety-four percent of the sample, 300 visitors, indicated no change in visits. A large part of the reported visitation impact can be attributed to 2.2 percent of the sample, 7 cases, who reported a total of 960 visits or 95.2 percent of the visitation impact. These 7 cases represent 10 percent of those making at least 25 visits. Twelve other visitors (3.8 percent of sample) accounted for the remaining 48 impacted visits. This bias is not unusual.

<b>Table 19 Percent Visit Impact</b>			
<b>Price of Lake Pass</b>	<b>Entrance Fee/Day Use</b>		
	<b>\$1.50</b>	<b>3.00</b>	<b>5.00</b>
\$12.00	86.4	81.8	81.7
\$15.00	83.4	76.7	79.1
\$20.00	77.4	73.0	72.3
\$25.00	75.3	68.7	66.8

<b>Table 20 Visit Impact for \$1.50/\$12 Scenario</b>				
<b>Visit Impact</b>	<b>Value</b>	<b>Frequency</b>	<b>Percent</b>	<b>Cum Percent</b>
00 percent	1	11	3.4	3.4
01-33 percent	2	2	0.6	4.1
34-67 percent	3	4	1.2	5.3
68-99 percent	4	2	0.6	6.0
100 percent	5	300	94.0	100.0

The \$1.50/\$15 scenario could result in a 16.6 percent decrease in visits. This analysis indicated that 91.2 percent, 291 cases, of the visitors are unaffected in this scenario (Table 21). Further analysis by number of visits indicates that 90.4 percent, or 1,092 visits, of the initial impact of 16.6 percent could be accounted for by 10 visitors (3.13 percent of the sample). Eighteen other cases accounted for the remaining 118 impacted visits.

Visit Impact	Value	Frequency	Percent	Cum Percent
00 percent	1	12	3.8	3.8
01-33 percent	2	5	1.5	5.3
34-67 percent	3	8	2.4	7.8
68-99 percent	4	3	0.9	8.8
100 percent	5	291	91.2	100.0

The \$1.50/\$20 scenario could result in a 22.6 percent immediate decrease in visits. This analysis revealed that 89.3 percent of the visitors, 285 cases, indicated no decrease in visits (Table 22). Further analysis indicated that 93 percent of this impact (1,557 of 1,675 visits) could be traced to 14 cases (4.39 percent of the sample). There were 20 other cases (an additional 6.3 percent of sample) that account for the other 118 impacted visits.

Visit Impact	Value	Frequency	Percent	Cum Percent
00 percent	1	15	4.7	4.7
01-33 percent	2	7	2.2	6.9
34-67 percent	3	9	2.8	9.7
68-99 percent	4	3	1.0	0.7
100 percent	5	285	89.3	100.0

The \$1.50/\$25 scenario shows an immediate impact of 24.7 percent. Eighty-six percent (85.6 percent or 273 cases) of the sample indicated no change in visits in this potential scenario (Table 23). Further analysis revealed that 87.7 percent of this immediate decrease (1,605 of 1,830 visits) could be accounted for by 15 cases (4.7 percent of sample). Thirty-one other cases (9.7 percent of the sample) accounted for the other 225 impacted visits.

Visit Impact	Value	Frequency	Percent	Cum Percent
00 percent	1	16	5.0	5.0
01-33 percent	2	9	2.8	7.8
34-67 percent	3	16	5.1	12.9
68-99 percent	4	5	1.5	14.4
100 percent	5	273	85.6	100.0

Analysis of this impacted visitor group indicated no systematic differences due to group size, income, commitment to recreation, activity, age, or ethnicity. However, this group tended toward the extreme negative attitudes toward fees, fee scenarios, and willingness to pay. Considering that the visitor who makes many visits has a larger chance of being in the sample, which is a sampling bias, it is probable that these estimated immediate decreases are overestimates. This group makes up a smaller percentage of the visitors in the population and is probably overrepresented in the sample.

### **Revenue Impacts**

There was a general pattern within the data of increasing revenue within and between restricted pass models. Revenue increased as the day use fee increased, and revenues increased as the price of a restricted pass increased. Revenue was optimized in the \$5 daily pass/\$25 annual pass scenario. Revenues on baseline visits were computed for ease of estimation, and regression models were used to predict the revenue impact of other alternatives. Other analysis included revenue on expected visits and revenue from restricted passes. An estimate of the revenue effects of different fees levels was developed based on the potential visitation impacts (Table 24). Visitors were asked in the survey to state the number of times they had visited the recreation areas. Based on the limited, nonrandom sample collected for this survey, the estimated revenue from day use fees at these three projects would be maximized when the entrance fee is \$3.

### **Other Segmentation: Nonfee Versus Fee**

Analysis of the data collected was made to examine whether visitors to day use fee areas differ from visitors who have not visited a fee area. The sample was divided for analysis into two groups: those having made at least one visit in the last 12 months to a fee area, and those who had made none. It was possible that those who do not or prefer not to visit fee areas could have very different

**Table 24**  
**Estimated Revenue Entrance Fee Without Restricted Pass**

Day Use Fee	Visits Decrease, %	Estimated Visits <sup>1</sup>	Potential Revenue, \$
1.50	31.4	5,083	7,624
3.00	53.4	3,453	10,359
5.00	72.9	2,008	10,040

<sup>1</sup> The 319 respondents to this survey reported that in the past year they had visited the recreation areas a total of 7,410 visits.

reactions toward fee systems than those who do visit fee areas. In this comparison, the nonfee group functions like the control group in an experiment, and the fee group serves as the treatment group. The treatment is exposure to the fee system. Presumably, similarities and differences through fee questions could provide clues to the effects or workings of the nonfee and/or fee social variables.

If the respondent had been to a day use fee area in the last 12 months, they were asked about the area most often visited, including number of visits in last 12 months, number of miles from residence, name of the recreation area and lake, fee paid, kind of pass used for admittance, and an evaluation of the area. There were 113 (32 percent of sample) fee area visitors and 238 nonfee visitors.

Tests of independence indicated that the fee area visitor tended to be more favorable toward fees, report a higher maximum willingness to pay for weekday use, have traveled more miles to the area from their residence, have been pleasure boating and sunbathing, and to have made a larger percentage of their total visits to non-Corps areas (significant Mann Whitney U, 0.05 criterion).

The above might lead to the conclusion that the nonfee area visitors were less favorable to day use recreation fees and less willing to pay than the fee area users. Although the fee area visitors tended to be more agreeable toward fees, their responses to other fee attitude variables such as "percent user pays" and "more willing to pay fees" were not different. While the fee area visitor reported a higher maximum weekday price, responses to other willingness to pay variables, "max per weekend," "max per lake pass," and "max per region pass," were not different. Therefore, it is not possible based on these findings to conclude that the nonfee area visitor was less favorable toward fees or less willing to pay.

If the visitor had been to a non-Corps nonfee day use area in the last 12 months, the survey gathered information about the area most often visited. This information included the number of visits in the last year, the number of miles from residence, and the name of the area and lake.

There were a total of 138 responses or 39.4 percent of the sample population. On average, this group made 10.6 visits a year to that area and traveled 26 miles from their residence. The alternative recreation areas are listed in Appendix B. This is not an exhaustive list, but it does provide a picture of the nonfee

alternative (competition) recreation areas of the region. Most of the nonfee area demand is probably distributed among these areas and Corps areas. This list excludes Corps of Engineers recreation areas in the region.

If the respondent had been to a day use fee area in the last 12 months, they were asked about the number of visits in the last year, number of miles one way from their residence, name of the area and lake, fee paid, and kind of pass. There were 113 responses or 32 percent of sample. On average, this group made 6.3 visits per year to that area and traveled approximately 52 miles one way from their residence.

## **Correlation Analysis**

The data were analyzed to determine if there was a correlation between attitudes toward fees, different fee scenarios, and willingness to pay (Appendix D, Tables D7-D11). Focusing on the fee questions, several consistencies emerged: a pattern of high intercorrelation between variables within each of the above-mentioned sections and a pattern of high intercorrelation between variables of different sections. Several areas of note:

- Visitors who tended to agree that there should be fees for day use recreation tended to be more willing to pay a day use fee if it was used to maintain the recreation area. They also tended to report support for spending a larger percentage of fees collected for operating the area. As visitor agreement toward fees increased, so did percentage of cost to operate the area from user and the willingness to pay assuming the revenue was used to maintain the area (correlations significant at 0.001).
- Respondents who tended to agree with a fee structure based on the quality of a recreation area also tended to agree with fee scenarios based on lake qualities and different weekend/weekday pricing (intercorrelations significant at 0.001).
- Respondents who reported higher maximum prices for weekday use also tended to report higher maximums for weekend day use, an annual lake pass, and an annual region pass (correlations significant at 0.001).
- Respondents who held favorable attitudes toward fees in general tended to hold favorable attitudes toward the different fee scenarios they were offered in the interview.

## **Demographics and Willingness to Pay**

To investigate possible relationships between demographics and visitor attitudes toward fees, analysis focused on two variables: "should there be fees," which may represent a general attitude toward fees, and "maximum willingness to pay per weekday," which may reflect demand and price sensitivity.

Analysis of independence (chi-square) on demographic variables indicated significant interaction between "should there be fees" and miles traveled, number of visits, and whether the visitor had been to a fee area this past year. Follow-up tests (Mann Whitney U) were significant indicating that those who tended to agree that there should be fees for recreation had traveled more miles, made fewer visits, and visited a fee area at least once in the last 12 months.

To investigate possible connections between sensitivity to price and demographic characteristics, analysis of independence was applied through demographic variables. Results indicated patterns of interaction (chi-square and Mann Whitney U criterion, 0.05) between "max per weekday" and "visits," "hours in area," "miles," "fee area," "income," "senior" (senior citizen respondent or not), and "Corps area," if the respondent knew the area as a Corps of Engineers area or not. Compared with those in the higher quantile (\$5 or higher) of "max per weekday," those in the lower quantile (\$0.00 - \$1.99) tended to make significantly more visits, travel fewer miles, stay fewer hours in area, have a lower income, have not been to a fee area in the last year, know that the recreation area was Corps of Engineers, and include significantly more senior citizens.

## **Comparison of Pilot Study Policy Alternatives**

Of the different alternatives tested in the analysis, the entrance fee without restricted pass has the largest percentage impact on visitation, and the \$12 model has the smallest percentage impact on visitation. Revenue could be optimized in an entrance fee without restricted pass scenario. The \$12 model might not generate as much revenue as the \$15 model. A \$3 entrance fee without restricted pass could result in a 52 percent decrease in visits and \$1.40 per baseline visit. A \$3 entrance fee with a \$12 restricted pass results in a 18 percent decrease in visits and approximately 45 cents on a baseline visit. The \$12 model has the advantage of a smaller visit impact percentage, but it has the smaller revenue potential on baseline visits. The no restricted pass alternative has the disadvantage of the largest visit impact percentage and the advantage of the largest revenue on baseline.

## 5 Findings and Discussion

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The following paragraphs summarize the findings as they relate to each of the stated objectives.

### Fee Perceptions

The most sensitive question was whether or not there should be fees. This continues to be a controversial issue at public recreation areas. Visitors to these Corps sites were evenly divided in their support and opposition to fees. This is one issue where only 7 percent of the respondents were neutral and is similar to findings in other studies that addressed the sensitive issue of fees for use of public areas. If this question had been asked at a campground or other area where fees are already charged, there is a strong likelihood, based on previous studies, that the respondents would have been less opposed to fees. Related to the above question is the issue of where any fees that are collected should be used.

Previous studies have indicated that the greatest support for fees comes if the fee is used to maintain the area where the fee is collected. Respondents to this survey indicated the greatest support for fees if they stay in the area where the fee is collected. Over two-thirds of the respondents indicated a mild or strong support for this option. Related to this is the issue of differential fees. Since there was no record of the day the data were collected, it is not possible to relate support for differential fees to the day of the week. However, it appears that two-thirds of the respondents were supportive of differential fees. This is rather high compared with several other studies. The national study will attempt to uncover attitudes about fees in more depth to attempt to find if there is some relationship to these perceptions, especially concerning age. The Golden Age Passport shields older users from higher fees and may affect answers to these questions.

### Recreation Area Quality Perceptions

There was strong support for fees that were higher for better quality areas (73 percent either strongly or mildly agreeing). However, these same

respondents were not as strongly in favor of fees in the first place. Perhaps, if there is a fee, most visitors want to get the maximum return from their dollar. In most transactions, price is a relatively good indicator of quality, so the finding that visitors will pay for better quality is understandable. However, additional testing is needed to determine if this price/quality relationship holds for public goods such as day use areas that have traditionally been free and whether there is any variation when such factors as age and income are taken into account.

Another area of interest was the type of facilities and amenities that visitors were looking for when coming to Corps recreation areas. This was measured as part of the "importance-performance" analysis. Since most day users are from the local area, they have probably brought their own food and drinks and would help explain why "concessions," "store nearby," and "vending machines" were ranked so low by visitors. What is interesting is that "close to home," "playgrounds," and "uncrowded beach," were also ranked low in importance. This may indicate that the respondents felt that these were not important because these needs were already being met. However, when performance of these items was ranked, all items were in the middle or low end of the list.

There are some other interactions possibly going on that will be examined in the national studies. Perhaps users are going further away in order to have a better quality experience and that is why "close to home" is not that important. Concerning "playgrounds," this is an item that is almost a given since every day use area has a playground. Yet, these users are not interested in them. Playgrounds are costly to install and maintain, and they are a major liability problem. If users do not want them, there could be a substantial savings for the Corps.

One final issue of concern is that of "security" and "clean restrooms." Both of these were important to visitors, yet "security" and "clean restrooms" were ranked relatively low as to current provisions by the Corps. Respondents stated that they support higher fees for better quality. If day use fees were implemented, support for fees could be increased by providing additional cleaning of the restroom, the presence of a gate attendant, and making it clear to the visitors that these items were provided only because of the new fees.

All the above issues will be re-examined on a national basis to determine if this is only a regional variation or reflects interest in other types of development at day use areas.

## **Prior Visits to Other Day Use Areas**

Visitors coming to Corps-operated day use areas may be more attuned to and supportive of fees if they have been to other fee areas. However, they may be coming to the Corps areas because they are free, and, therefore, they are opposed to fees. There may be some other interactions at work, and this is reflected in the intensity of both support and opposition to fees by respondents when asked. The survey analysis indicates that visitors to other fee or nonfee areas may not differ in attitudes about fees. It is possible that this is the only area that offers

that particular recreational activity or is perceived by the visitor as the "best" place to pursue that recreational activity. For instance, certain lakes are perceived as the best fishing for certain species, and that is the reason that the person goes to that area, not whether there is a fee or, within limits, the amount of fee.

These findings indicate the need to examine the reasons behind that visitor's decision to use one area against another. There are other than economic reasons that people are using day use areas, and these need to be examined in the national studies.

## **Knowledge of Availability of Substitute Recreation Areas**

The intention was to collect data concerning what visitors knew about the "competition" and how it affected their decision to use (and possibly pay for) Corps day use areas. However, there was no question that probed the reason for visits to the Corps area against non-Corps areas. In addition, many visitors appear to be unable to differentiate between outgranted areas and Corps-operated areas. The questionnaire did not probe for this, and the results are, therefore, open to inquiry. The questionnaires for the national studies will take this into account and focus on the role of information in making choices and decisions. This will also include a more rigorous method of informing and testing the visitor's knowledge of which agency operates which area.

## **Demographic Characteristics**

It was intended to gather demographic information about respondents in order to relate these to some of the survey questions concerning fees and fee attitudes. Amount of income was important in explaining visitor responses to some of the willingness-to-pay questions. However, previous studies had indicated that higher income meant less support for fees while this study indicated that the higher income meant a greater support for fees. This will be noted and addressed on the national studies to try to determine if this is a regional finding or possibly a new trend. Another area of interest is the small percentage of Hispanics surveyed, 6 percent. The projects for this study are located in an area where Hispanics comprise a large percentage of the population. Yet, for some reason, there are few Hispanics in the day use areas. Perhaps the facilities provided do not meet the needs of this ethnic group.

Other variables that are usually collected in a fee survey are "age," "education," and "group composition." Age is an important factor to consider in any fee survey as the Golden Age passport users account for a large percentage of users in Texas campgrounds. If revenue projections are to be accurate, they need to take into account the amount of revenue based on percentage of visitation by

age, as an indicator of those who would or would not use a Golden Age Passport for a discount. Level of education is important in determining whether the information provided about fees and fee sites is meeting the needs of the users. Finally, group composition is needed to determine fee revenue as families will usually be in one car and pay one fee while a group of friends may come in several cars and each pay a fee.

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# **Appendix A Pilot Study Survey**

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U.S. ARMY CORPS OF ENGINEERS  
DAY USE FEE SURVEY  
1991

LAKE (PROJECT) .....

RECREATION AREA .....

HELLO MY NAME IS ROY RYLANDER. AND I AM WORKING FOR THE  
CORPS OF ENGINEERS (UNDER GOVERNMENT CONTRACT). WE ARE INTERVIEW-  
ING VISITORS TO LEARN ABOUT A NUMBER OF ITEMS WHICH MAY AFFECT  
FUTURE MANAGEMENT OF LAKE .....

MAY I TALK WITH YOU ABOUT YOUR USE OF CORPS OF ENGINEERS REC-  
REATION AREAS? THE QUESTIONS THAT I HAVE TO ASK WILL TAKE ABOUT  
10 TO 15 MINUTES OF YOUR TIME. ALL OF YOUR ANSWERS WILL BE KEPT  
IN CONFIDENCE, AND YOU WILL NOT BE IDENTIFIED IN THE RESULTS.

DATE: .....

ID # .....

REFUSALS .....

IF YES, TIME .....

SECTION ONE:

HOW MANY HOURS WILL YOU SPEND AT THIS RECREATION AREA TODAY? .....

AND HOW MANY PEOPLE ARE IN YOUR PARTY TODAY? .....

HOW MANY MILES (ONE WAY) DO YOU TRAVEL FROM YOUR RESIDENCE TO THIS RECREATION AREA? .....

COUNTING THIS VISIT, HOW MANY DAY USE RECREATION VISITS HAVE YOU MADE IN LAST 12 MONTHS TO THIS RECREATION AREA ? .....

WHAT IS YOUR ZIP CODE ? .....

CAN YOU TELL ME WHO OPERATES THIS PARK ? .....

Q - PLEASE REFER TO THE LIST OF ACTIVITIES ON THE CARD THAT I GAVE YOU, AND FOR EACH ACTIVITY, TELL ME THE NUMBER OF PEOPLE IN THE PARTY, WHO HAVE PARTICIPATED OR WILL PARTICIPATE IN THAT ACTIVITY AT THIS RECREATION AREA TODAY ?

	NUMBER OF PEOPLE
PLEASURE BOATING	.....
WATERSKIING OR JETSKIING	.....
FISHING FROM BOAT	.....
FISHING FROM SHORE	.....
PICNICKING	.....
SWIMMING	.....
SUNBATHING	.....
HIKING, WALKING, BICYCLING	.....
SIGHTSEEING	.....
CAMPING	.....

A) WOULD YOU TELL ME HOW MANY DAY USE RECREATION VISITS YOU HAVE MADE IN LAST 12 MONTHS,

B) PLEASE TELL ME THE NUMBER OF AREAS YOU USED DURING YOUR VISITS:

	VISITS	AREAS
A) TO OTHER CORPS MANAGED AREAS AT THIS LAKE	.....	.....
B) TO THE OTHER CORPS MANAGED RECREATION AREAS OF OTHER LAKES IN THIS STATE	.....	.....
C) TO STATE MANAGED AREAS	.....	.....
D) TO COUNTY MANAGED AREAS	.....	.....
E) TO CITY MANAGED AREAS	.....	.....
F) TO RIVER AUTHORITY AREAS	.....	.....
DOES THAT ABOUT COVER IT ?	YES	NO
OTHER AREAS .....		

SECTION TWO:

IN THIS SECTION WE ARE INTERESTED IN YOUR EVALUATION OF THE QUALITY OF THE RECREATION AREAS YOU USE FOR DAY TRIPS.

REFERING TO THE SCALE:

- (1) SUPERIOR
- (2) ABOVE AVERAGE
- (3) AVERAGE
- (4) BELOW AVERAGE
- (5) PASSABLE
- (9) DOES NOT APPLY

HOW WOULD YOU EVALUATE THE OVERALL QUALITY OF THIS RECREATION AREA,

- A) IN COMPARISON TO OTHER DAY USE AREAS ON THIS LAKE

.....

- B) IN COMPARISON TO THE DAY USE AREAS IN THIS REGION (WITHIN 60 - 80 MILES OF YOUR RESIDENCE)

.....

AND EVALUATE THE QUALITY OF THIS LAKE

- C) IN COMPARISON TO OTHER LAKES IN THIS REGION

.....

REFERING TO THE SCALE ON THE CARD:

- 1 = EXTREMELY IMPORTANT
- 2 = VERY IMPORTANT
- 3 = IMPORTANT
- 4 = SOMEWHAT IMPORTANT
- 5 = NOT IMPORTANT
- 6 = DOES NOT APPLY

HOW IMPORTANT IS EACH OF THE FOLLOWING ITEMS FOR YOU WHEN VISITING A DAY USE RECREATION AREA ?

A STORE NEARBY (FOOD AND FISHING SUPPLIES)  
CONCESSIONS (RESTAURANT, BOAT RENTAL ETC.)  
VENDING MACHINES

A PLAYGROUND FOR CHILDREN  
PICNIC TABLES NEAR BEACH  
SHADED PICNIC SITES  
UNCROWDED BEACH

CLEAN RESTROOMS  
FLUSH TOILETS INSTEAD OF VAULT  
SHORT DISTANCE TO COMFORT STATION

FREQUENT SECURITY PATROLS  
PAVED ACCESS ROADS TO RECREATION AREA  
CLOSE TO HOME

ADEQUATE PARKING SPACE FOR VEHICLES  
BOAT DOCK FOR LOADING AND UNLOADING  
GOOD FISHING

CLEAR WATER  
SCENIC BEAUTY  
UNCROWDED LAKE

Q - REFERING TO THE CARD MARKED 'PERFORMANCE THIS AREA' :

- (1) EXCELLENT
- (2) VERY GOOD
- (3) GOOD
- (4) FAIR
- (5) POOR
- (6) DOES NOT APPLY

A) PLEASE INDICATE HOW YOU RATE THIS RECREATION AREA WITH RESPECT TO THE CORPS PROVISION FOR THOSE ITEMS.

B) IN THE PAST 12 MONTHS, HAVE YOU VISITED A DAY USE AREA NOT MANAGED BY THE CORPS THAT DOES NOT CHARGE A FEE ?

YES NO

IF NO THEN SKIP TO QUESTION 20

IF YES, I WOULD LIKE YOU TO EVALUATE THE RECREATION AREA YOU VISIT MOST OFTEN THAT IS NOT MANAGED BY THE CORPS AND DOES NOT CHARGE A FEE.

WHAT IS THE

NAME OF THE RECREATION AREA

.....

THE NAME OF THE LAKE (PROJECT, RIVER, ETC.)

.....

AND HOW MANY VISITS DID YOU MAKE TO THAT AREA IN THE LAST 12 MONTHS ? .....

AND HOW MANY MILES (ONE WAY) DO YOU TRAVEL FROM YOUR RESIDENCE TO THAT AREA ? .....

REFERING TO THE CARD MARKED 'PERFORMANCE - NOT CORPS MANAGED AND NOT FEE' PLEASE INDICATE HOW YOU RATE THIS AREA WITH RESPECT TO PROVISION OF THOSE ITEMS.

Q - 20

IN THE PAST 12 MONTHS HAVE YOU VISITED A DAY USE RECREATION AREA NOT MANAGED BY THE CORPS THAT DOES CHARGE A FEE ?

YES NO

IF NO MOVE TO QUESTION 25

IF YES, I WOULD LIKE YOU TO EVALUATE THE DAY USE RECREATION AREA THAT YOU VISIT MOST OFTEN THAT IS NOT MANAGED BY THE CORPS AND CHARGES A FEE.

WHAT IS THE NAME OF THE

RECREATION AREA

.....

AND THE NAME OF THE LAKE (PROJECT, RIVER, ETC. )

.....

AND HOW MANY VISITS DID YOU MAKE TO THAT AREA IN THE LAST 12 MONTHS .....

AND HOW MANY MILES (ONE WAY) DO YOU TRAVEL FROM YOUR RESIDENCE TO THAT AREA ? .....

AND HOW MUCH WAS YOUR ENTRANCE FEE ? .....

AND DO YOU HAVE A

1= DAILY PASS  
2= RESTRICTED PASS .....

OR AN 3= ANNUAL PASS

REFERRING TO THE CARD MARKED 'NOT CORPS MANAGED AND FEE CHARGING' PLEASE RATE THIS SITE WITH RESPECT TO PROVISION OF THOSE ITEMS.

SECTION THREE:

RECREATION AREAS MANAGED BY THE CORPS OF ENGINEERS ARE PRESENTLY OPERATED WITH TAX REVENUES FROM THE FEDERAL GOVERNMENT. IN THIS SECTION WE ARE INTERESTED IN YOUR REACTIONS TO OTHER POTENTIAL METHODS OF FUNDING CORPS OF ENGINEERS RECREATION AREAS IN THE FUTURE.

Q 25 - FOR EVERY \$100 IN COST TO OPERATE THIS AREA, HOW MANY DOLLARS DO YOU FEEL SHOULD COME FROM USE FEES ?

....

Q - REFERING TO THE FIVE POINT SCALE WHERE

- 1 = STRONGLY AGREE
- 2 = MILDLY AGREE
- 3 = NEITHER AGREE OR DISAGREE
- 4 = MILDLY DISAGREE
- AND 5 = STRONGLY DISAGREE

INDICATE THE EXTENT YOU AGREE/DISAGREE WITH THE FOLLOWING STATEMENTS:

(1) THERE SHOULD BE FEES FOR DAY USE RECREATION ....

(2) I WOULD BE MORE WILLING TO PAY A FEE IF I KNEW THAT THE MONEY WAS USED TO MAINTAIN THIS AREA. ....

AND ASSUMING THE CORPS OF ENGINEERS INITIATES DAY USE FEES TO HELP PAY FOR THE MAINTENANCE OF RECREATION AREAS,

(3) FEES SHOULD BE LOWER ON WEEKDAYS THAN ON WEEKENDS AND HOLIDAYS ....

(4) BETTER QUALITY FACILITIES SHOULD HAVE A HIGHER FEE. ....

(5) RECREATION AREAS AT BETTER QUALITY LAKES SHOULD HAVE A HIGHER FEE. ....

Q - AND WHAT IS THE MAXIMUM PRICE YOU WOULD BE WILLING TO PAY ON A PER CAR BASIS:

- (1) TO USE THIS RECREATION AREA ON A WEEKDAY .....
- (2) TO USE THIS RECREATION AREA ON A WEEK END DAY OR HOLIDAY .....
- (3) FOR AN ANNUAL PASS TO CORPS MANAGED DAY USE AREAS ONLY ON THIS LAKE .....
- (4) FOR AN ANNUAL DAY USE PASS THAT INCLUDES ALL CORPS MANAGED LAKES IN THIS STATE .....

SECTION FOUR:

IN THIS SECTION WE ARE CONCERNED ABOUT THE IMPACT OF DAY USE FEES ON YOUR RECREATIONAL USE OF CORPS OF ENGINEERS LAKES.

Q - IF THE PRICE FOR THE DAY USE PASS AT THIS RECREATION AREA WAS \$ 1.50, PER CAR, WOULD YOU CONTINUE TO COME AT ALL ? AND HOW MANY VISITS PER YEAR ?

	WOULD YOU CONTINUE TO COME ?	HOW MANY VISITS
1.50	.....	.....
2.00	.....	.....
2.50	.....	.....
3.00	.....	.....
3.50	.....	.....
4.00	.....	.....
5.00	.....	.....
7.00	.....	.....

Q - NOTE: THE MATRIX WOULD READ - IF THE DAILY FEE WAS \$ 1.50  
WOULD YOU PURCHASE AN ANNUAL PASS TO THIS LAKE AT \$ 12.00

X = YES  
O = NO

	1.50	3.00	5.00
12.00	.....	.....	.....
15.00	.....	.....	.....
20.00	.....	.....	.....
25.00	.....	.....	.....

Q - IF THE DAILY FEE WAS \$ 1.50, WOULD YOU PURCHASE AN ANNUAL PASS  
TO ALL CORPS MANAGED DAY USE AREAS OF THIS STATE AT \$ 20.00 ETC.

X = YES  
O = NO

	1.50	3.00	5.00
20.00	.....	.....	.....
30.00	.....	.....	.....
40.00	.....	.....	.....
50.00	.....	.....	.....
75.00	.....	.....	.....

SECTION 5:

Q - LOOKING AT THE LIST OF EQUIPMENT ON THE CARD

(BOAT(S), MOTOR(S), TRAILER(S), FISHING EQUIPMENT, SKIING EQUIPMENT, MOTOR HOME, TRAVEL TRAILER ) ?

AND REFERING TO THE SCALE ON THE CARD:

- (1) LESS THAN 1,000
- (2) 1,001 THRU 2,500
- (3) 2,501 THRU 5,000
- (4) 5,001 THRU 10,000
- (5) 10,001 THRU 15,000
- (6) 15,001 THRU 25,000
- (7) 25,001 THRU 35,000
- (8) 35,001 THRU 45,000
- (9) 45,001 OR MORE

WHICH CATAGORY BEST DESCRIBES YOUR TOTAL INVESTMENT IN THIS KIND OF EQUIPMENT ?

.....

Q - REFERRING TO THE INCOME CATAGORIES ON THE CARD, WHICH ONE BEST DESCRIBES YOUR TOTAL ANNUAL FAMILY INCOME BEFORE TAXES LAST YEAR ?

- (1) LESS THAN 5,000
- (2) 5,000 TO 9,999
- (3) 10,000 TO 14,999
- (4) 15,000 TO 19,999
- (5) 20,000 TO 29,999
- (6) 30,000 TO 39,999
- (7) 40,000 TO 49,999
- (8) 50,000 TO 59,999
- (9) 60,000 OR MORE

.....

AND HOW MANY IN YOUR PARTY ARE 17 YEARS OLD OR YOUNGER ?

.....

AND HOW MANY ARE 62 YEARS OR OVER ?

.....

SECTION SIX:

IN THIS SECTION WE ARE INTERESTED IN YOUR THOUGHTS ABOUT HOW WE MIGHT IMPROVE THIS AREA.

IN WHAT WAY CAN WE IMPROVE THIS AREA ?

.....  
.....

WOULD YOU BE WILLING TO PAY AN ADDITIONAL FEE IF THIS AREA WAS IMPROVED IN THAT WAY ?

YES NO

DO YOU HAVE ANY ADDITIONAL COMMENTS ?

INTERVIEWER NOTES ETHNICITY

- 1 = BLACK
- 2 = CHICANO (MEXICAN AMERICAN)
- 3 = NATIVE AMERICAN (AMERICAN INDIAN)
- 4 = WHITE (CAUCASIAN)
- 5 = ORIENTAL
- 6 = OTHER

.....

SENIOR ????????????????????

THANK YOU FOR PARTICIPATING

END TIME .....

# **Appendix B Pilot Study Adjacent Recreation Areas**

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**RECREATION AREAS OF REGION: NONFEE ALTERNATIVES**

**LAKE GEORGETOWN REGION**

City Park, Lake Austin  
 Highway 360 Boat Ramp, Lake Austin  
 Walsh Boat Landing, Lake Austin  
 Emma Long, Lake Austin  
 Black Rock, Lake Buchanan  
 Weberville Boat Ramp, Colorado River  
 City of Pflugerville, Pflugerville  
 San Gabriel Park, San Gabriel River

Anderson Mill Marina, Lake Travis  
 Arkansas Bend, Lake Travis  
 McGregor Park, Lake Travis  
 Sandy Creek, Lake Travis  
 Windy Point, Lake Travis  
 Thom Ball Park, Thom Ball Lake  
 Zilker Park, Lake Towne

**LAKE WHITNEY REGION**

Quinland Park, Lake Austin  
 Cameron East Park, Brazos River  
 Riverfront Park, Brazos River  
 Cleburne City Park, Pat Cleburne  
 DeCordova Dam, Lake Granbury  
 Rough Creek (McCleveys), Granbury  
 Twin Coves, Grapevine Lake

Fort Sill, Lake Possum Kingdom  
 Scenic Point, Lake Possum Kingdom  
 Airport Park, Lake Waco  
 Lake Speegleville II, Lake Waco  
 Weatherford Marina, Lake Weatherford  
 Ham Creek, Lake Whitney  
 Highway 199, Lake Worth

**LAKE LAVON REGION**

Cedar Creek, Cedar Creek  
 Farmersville City, Farmersville Lk  
 Highway 515 Boat Ramp, Lake Fork  
 Highway 154/155 Boat Ramp,  
 Lake Fork  
 Lake Fork Marina, Lake Fork  
 Rainswood Marina, Lake Fork  
 East Hill, Lewisville Lake  
 Titus County Park, Lake Montecello

City of Irving, North Lake  
 Dal Rock, Lake Ray Hubbard  
 Jon Paul Jones, Lake Ray Hubbard  
 Harbor Bay Marina, Lake Ray Hubbard  
 Highway 66 Rockwall, Lake Ray  
 Hubbard  
 Murfry Point, Lake Ray Hubbard  
 Robertson Park, Lake Ray Hubbard  
 Tanners Landing, Lake Ray Hubbard  
 Bathhouse, White Rock Lake

<b>RECREATION AREAS OF REGION: FEE ALTERNATIVES</b>	
<b>LAKE GEORGETOWN REGION</b>	
Bastrop State Park, Lake Bastrop Calahans Marina, Choke Canyon Choke Canyon State Park, Choke Canyon Colorado Bend State Park, Colorado River Inks State Park, Inks Lake Lockhart State Park, Lockhart Lake	McKinney Falls State Park, McKinney Falls Cypress Creek, Lake Travis Pace Bend Park, Lake Tavis Pedernales Falls Park, Lake Travis Sandy Creek, Lake Travis Windy Point, Lake Travis
<b>LAKE WHITNEY REGION</b>	
Dinosaur Valley State Park, Brazos Cleburne State Park, Cleburne Lake Curtis Creek Park, Curtis Creek Lk Twin Points, Eagle Mountain Lake Fairfield Park, Lake Fairfield Silver Lake, Lake Grapevine Cedar Hill State Park, Joe Pool Lake	Lynn Creek, Joe Pool Lake Loyd Park, Joe Pool Lake Mineral Wells State Park, Mineral Wells Possum Kingdom State Park, Possum Kingdom Lk Whitney State Park, Lake Whitney Goat Island, Lake Worth
<b>LAKE LAVON REGION</b>	
Blackwell Park, Lake Blackwell Bob Sandlin Park, Bob Sandlin Bonham State Park, Bonham Lake Cedar Springs, Cedar Springs Minnow Bucket, Lake Fork Lynn Creek, Joe Pool Lake Collin Park, Lake Lavon Lewisville State Park, Lake Lewisville Cedar Hill State Park, Joe Pool Lake	Pallo Dura Park, Pallo Dura Lake Purts Creek Park, Purts Creek Chandlers Landing, Lake Ray Hubbard Lake Harbor Bay, Lake Ray Hubbard Robertson Park, Lake Ray Hubbard Goat Island, Lake Worth Holiday Marina, Lake Tawakani Eisenhower State Park, Lake Texoma Waxahachie Park, Lake Waxahachie

# **Appendix C**

## **Importance/Performance Data**

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Summary Stats for Lake Georgetown, 70 observations						
Value	Importance			Performance		
	Mean	Median	Mode	Mean	Median	Mode
a) Store nearby	2.71	3	1	3.00	3	3
b) Concessions	3.43	4	5	3.73	4	5
c) Vending machines	4.01	4	5	4.00	5	5
d) Playground	2.67	2.5	1	3.28	3	5
e) Picnic tables near beach	1.64	1	1	2.00	2	1
f) Shaded picnic sites	1.41	1	1	1.85	2	1
g) Uncrowded beach	2.24	2	1	2.47	3	3
h) Clean restrooms	1.24	1	1	1.93	2	1
i) Flush toilets	1.64	1	1	1.80	2	1
j) Short distance to comfort station	2.06	2	1	1.90	2	1
k) Frequent security patrols	2.01	2	1	2.48	2	2
l) Paved access roads	1.87	2	1	1.46	1	1
m) Close to home	2.29	2	2	2.00	2	1
n) Adequate parking	1.76	2	2	1.76	2	1
o) Boat dock	2.24	2	1	1.75	2	1
p) Good fishing	2.37	2	1	3.07	3	3
q) Clear water	1.50	1	1	2.03	2	2
r) Scenic beauty	1.84	2	1	1.91	2	1
s) Uncrowded waters	1.85	2	1	2.39	2	3

1 = Extremely Important  
 2 = Very Important  
 3 = Important  
 4 = Somewhat Important  
 5 = Not Important

Summary Stats for Whitney Lake, 120 observations						
Value	Importance			Performance		
	Mean	Median	Mode	Mean	Median	Mode
a) Store nearby	2.25	2	1	2.18	2	1
b) Concessions	3.50	4	5	3.07	3	3
c) Vending machines	4.22	5	5	3.90	4	5
d) Playground	3.09	3	3	3.41	3	5
e) Picnic tables near beach	2.08	2	1	2.26	2	1
f) Shaded picnic sites	1.82	1	1	2.23	2	1
g) Uncrowded beach	2.35	2	1	2.31	2	2
h) Clean restrooms	1.41	1	1	2.25	2	1
i) Flush toilets	2.29	2	1	2.79	3	3
j) Short distance to comfort station	2.29	2	1	2.48	2	3
k) Frequent security patrols	2.01	2	1	2.83	3	3
l) Paved access roads	2.22	2	1	2.06	2	1
m) Close to home	2.81	3	3	2.55	3	3
n) Adequate parking	2.13	2	1	1.95	2	1
o) Boat dock	2.13	2	1	2.31	2	1
p) Good fishing	2.21	2	1	2.36	2	1
q) Clear water	2.03	2	1	2.22	2	1
r) Scenic beauty	2.04	2	1	1.94	2	1
s) Uncrowded waters	1.97	2	1	2.30	2	3

1 = Extremely Important  
 2 = Very Important  
 3 = Important  
 4 = Somewhat Important  
 5 = Not Important

### Summary Stats for Lake Lavon, 160 observations

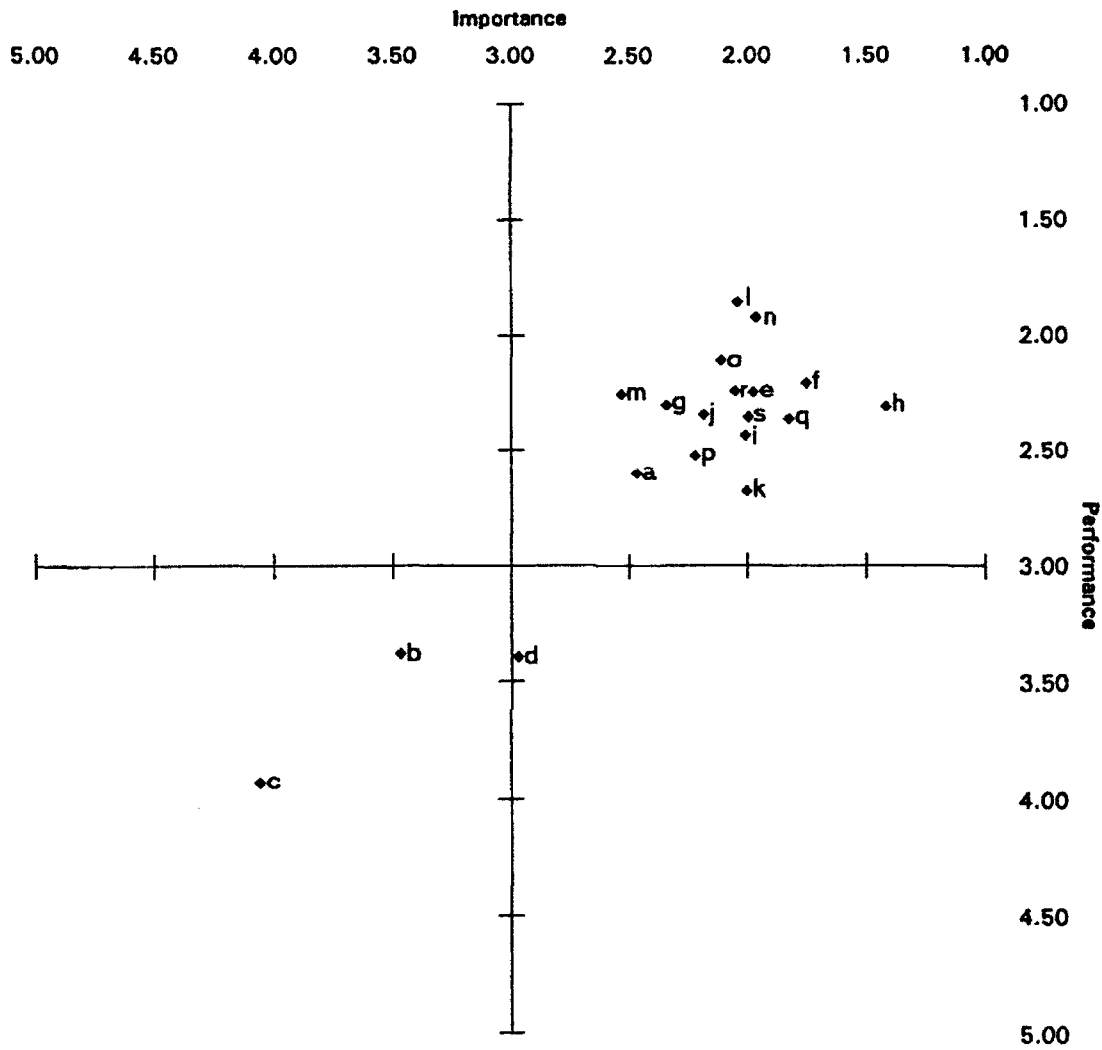
Value	Importance			Performance		
	Mean	Median	Mode	Mean	Median	Mode
a) Store nearby	2.53	2	1	2.77	3	3
b) Concessions	3.47	3	5	3.50	4	5
c) Vending machines	3.96	4	5	3.93	4	5
d) Playground	3.01	3	5	3.41	3	3
e) Picnic tables near beach	2.04	2	1	2.33	2	1
f) Shaded picnic sites	1.85	1	1	2.35	2	3
g) Uncrowded beach	2.38	2	1	2.23	2	2
h) Clean restrooms	1.50	1	1	2.53	3	3
i) Flush toilets	1.96	1	1	2.50	2	3
j) Short distance to comfort station	2.16	2	1	2.46	2	3
k) Frequent security patrols	1.99	2	1	2.65	3	3
l) Paved access roads	1.98	2	1	1.88	2	2
m) Close to home	2.43	2	2	2.16	2	1
n) Adequate parking	1.93	2	1	1.97	2	1
o) Boat dock	2.03	1	1	2.09	2	1
p) Good fishing	2.17	2	1	2.42	2	3
q) Clear water	1.82	1	1	2.62	3	3
r) Scenic beauty	2.15	2	2	2.62	3	3
s) Uncrowded waters	2.08	2	1	2.38	2	3

1 = Extremely Important  
 2 = Very Important  
 3 = Important  
 4 = Somewhat Important  
 5 = Not Important

Summary Stats for All Lakes, 350 observations						
Value	Importance			Performance		
	Mean	Median	Mode	Mean	Median	Mode
a) Store nearby	2.47	2	1	2.60	3	3
b) Concessions	3.47	4	5	3.38	3	6
c) Vending machines	4.06	5	5	3.93	4	6
d) Playground	2.97	3	1	3.39	3	6
e) Picnic tables near beach	1.97	2	1	2.25	2	1
f) Shaded picnic sites	1.75	1	1	2.20	2	1
g) Uncrowded beach	2.34	2	1	2.30	2	3
h) Clean restrooms	1.42	1	1	2.31	2	1
i) Flush toilets	2.01	1	1	2.43	2	1
j) Short distance to comfort station	2.18	2	1	2.34	2	2
k) Frequent security patrols	2.00	2	1	2.68	3	3
l) Paved access roads	2.04	2	1	1.86	2	1
m) Close to home	2.53	2	2	2.26	2	1
n) Adequate parking	1.96	2	1	1.92	2	1
o) Boat dock	2.11	2	1	2.11	2	1
p) Good fishing	2.22	2	1	2.52	3	3
q) Clear water	1.83	1	1	2.36	2	3
r) Scenic beauty	2.05	2	1	2.24	2	3
s) Uncrowded waters	1.99	2	1	2.36	2	3

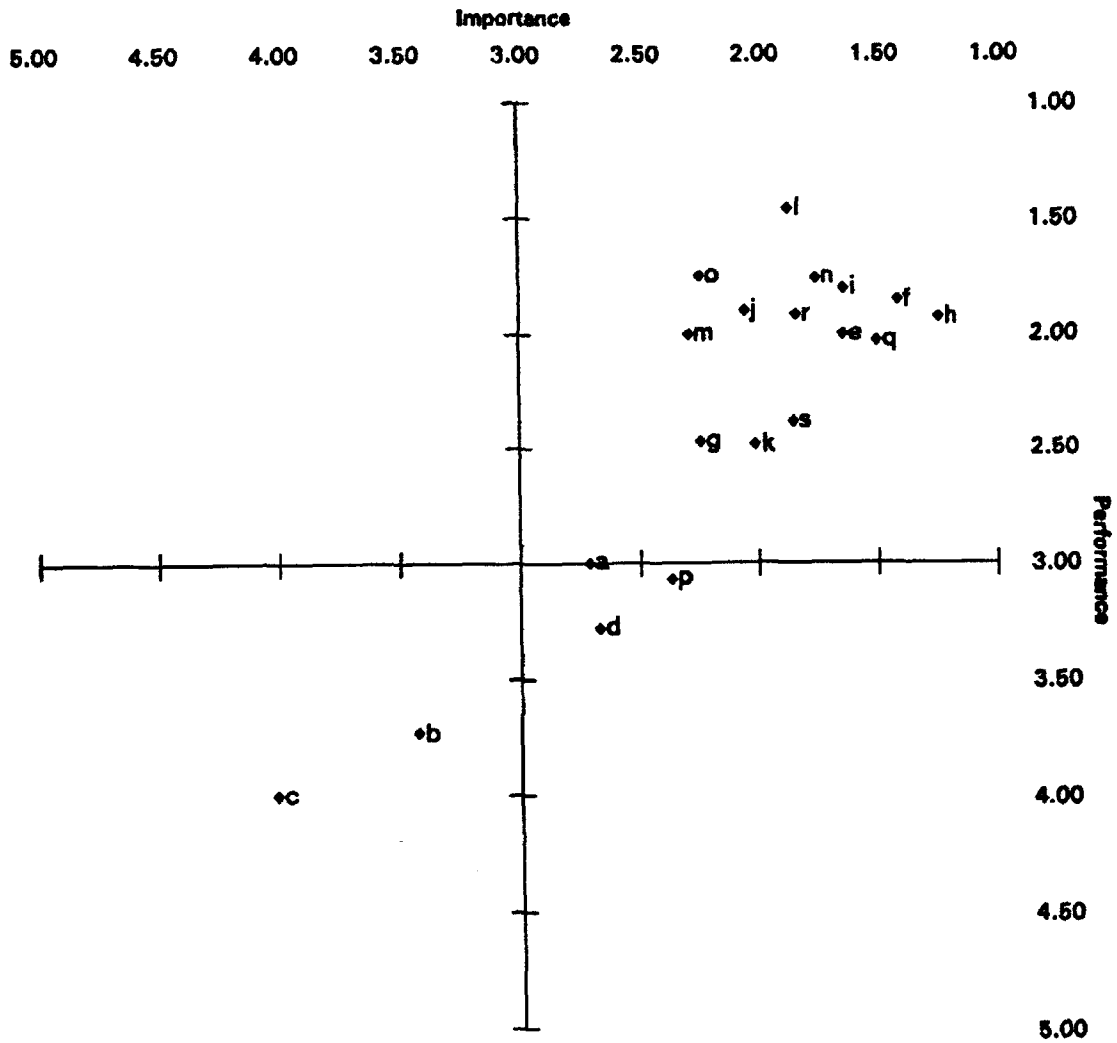
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 3 = Important  
 4 = Somewhat Important  
 5 = Not Important

## Means of Importance vs Performance for All Lakes



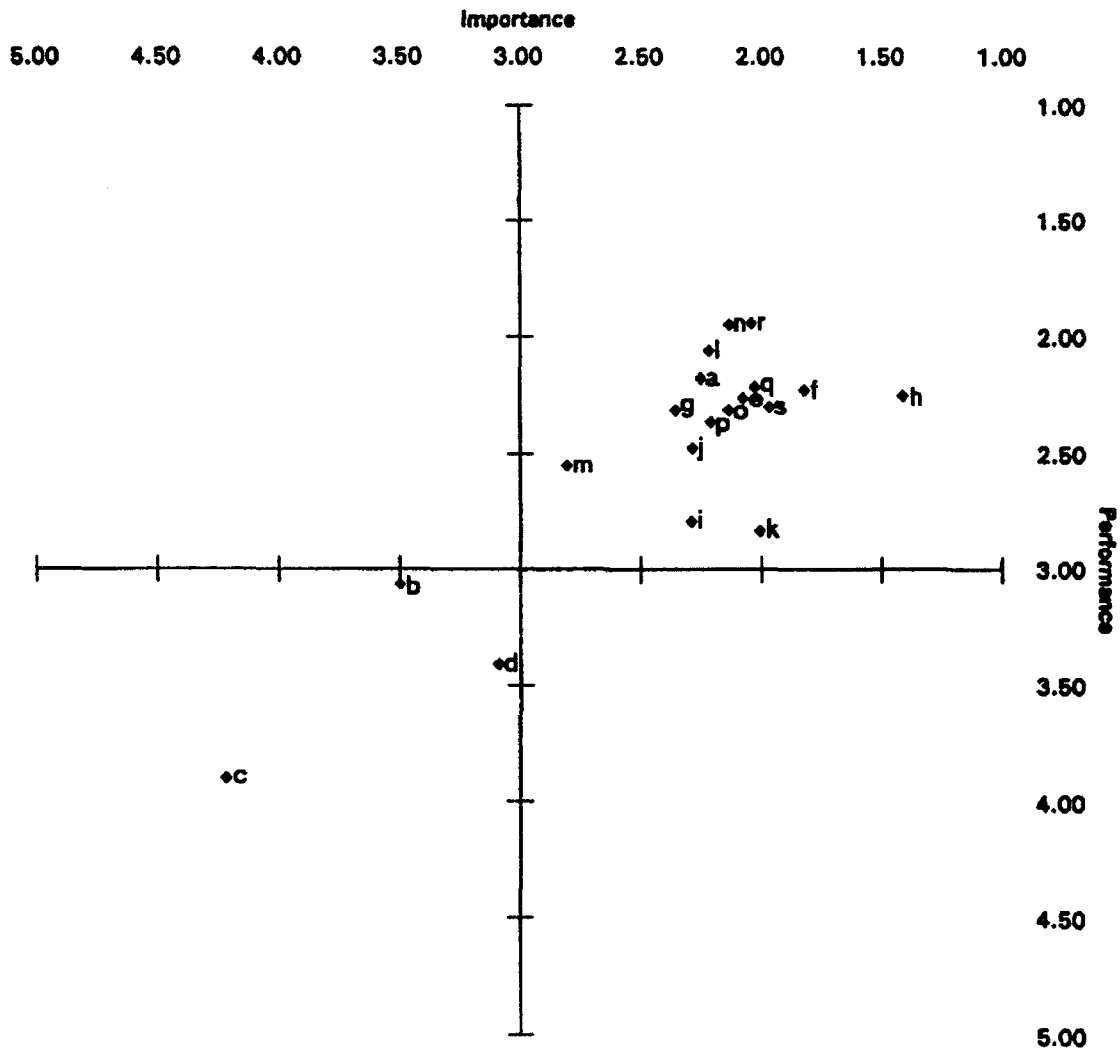
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## Means of Importance vs Performance for Lake Georgetown



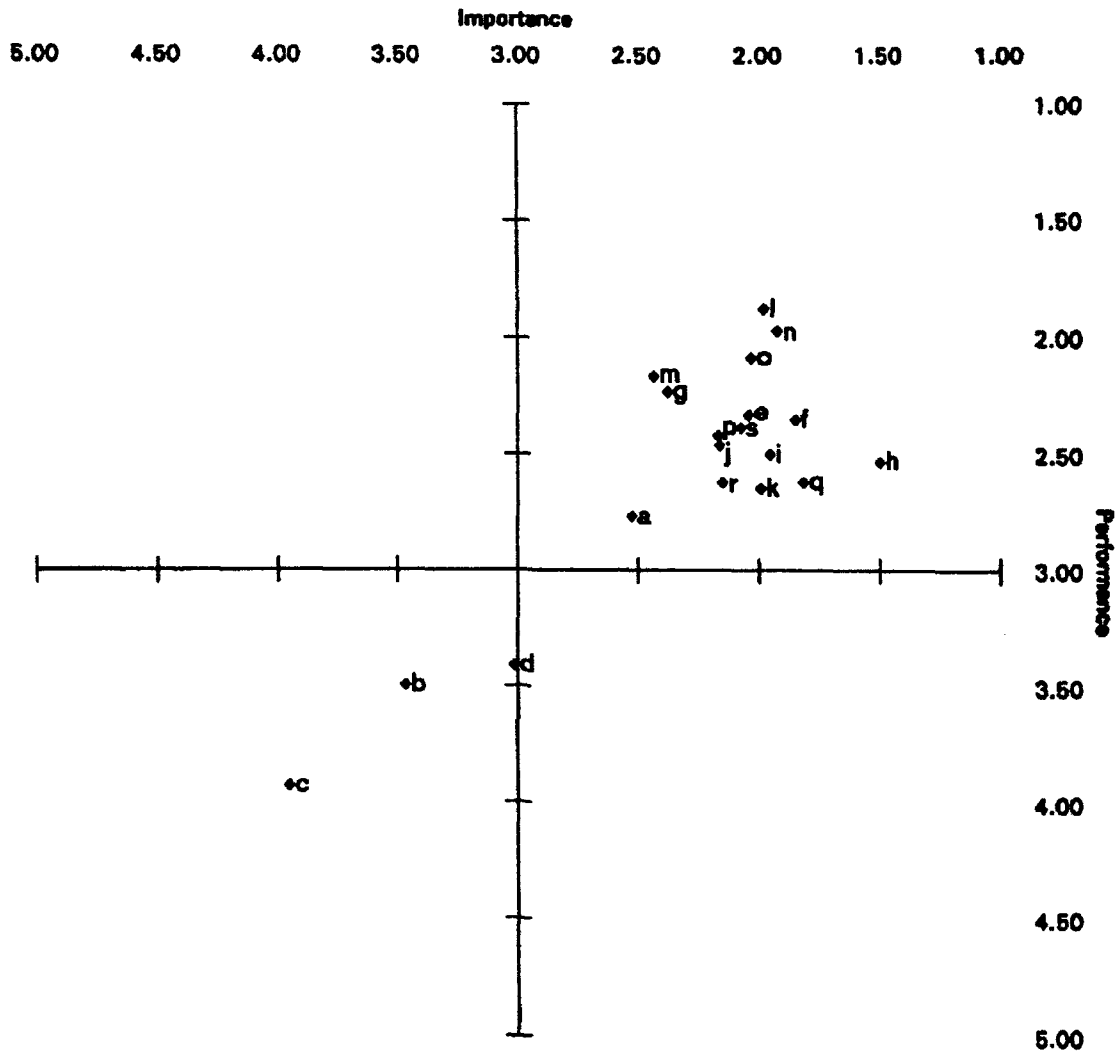
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## Means of Importance vs Performance for Lake Whitney

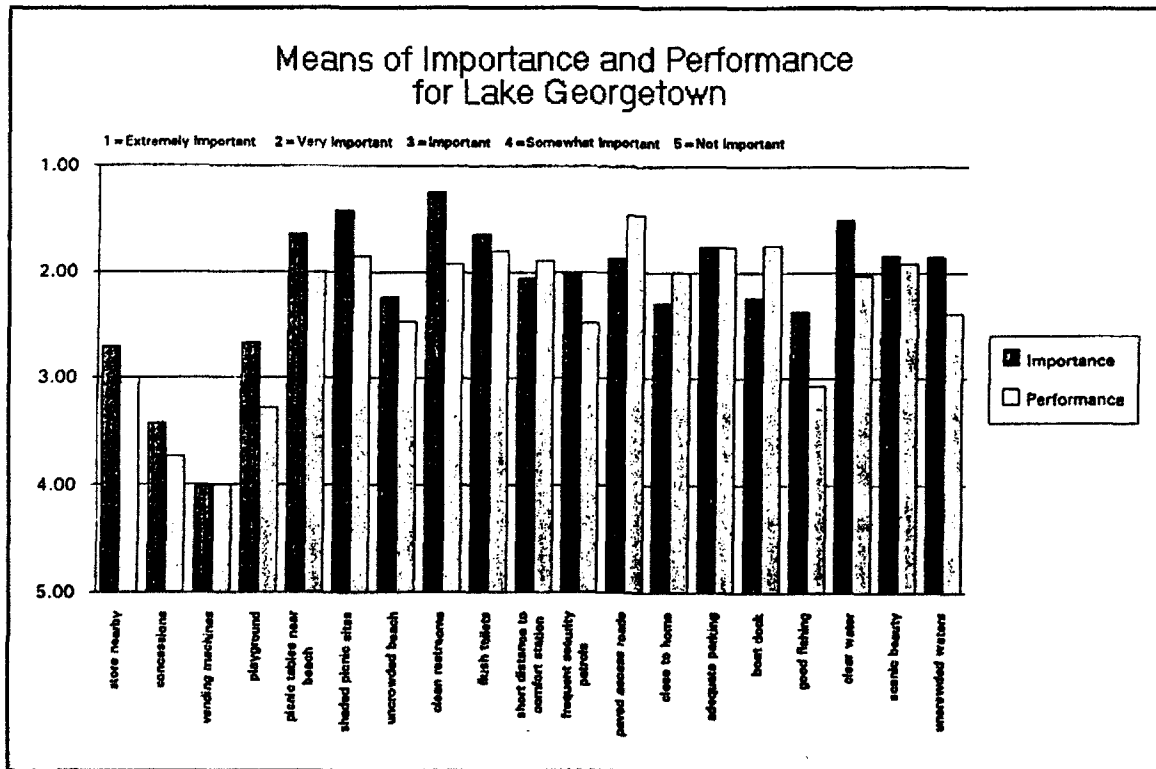
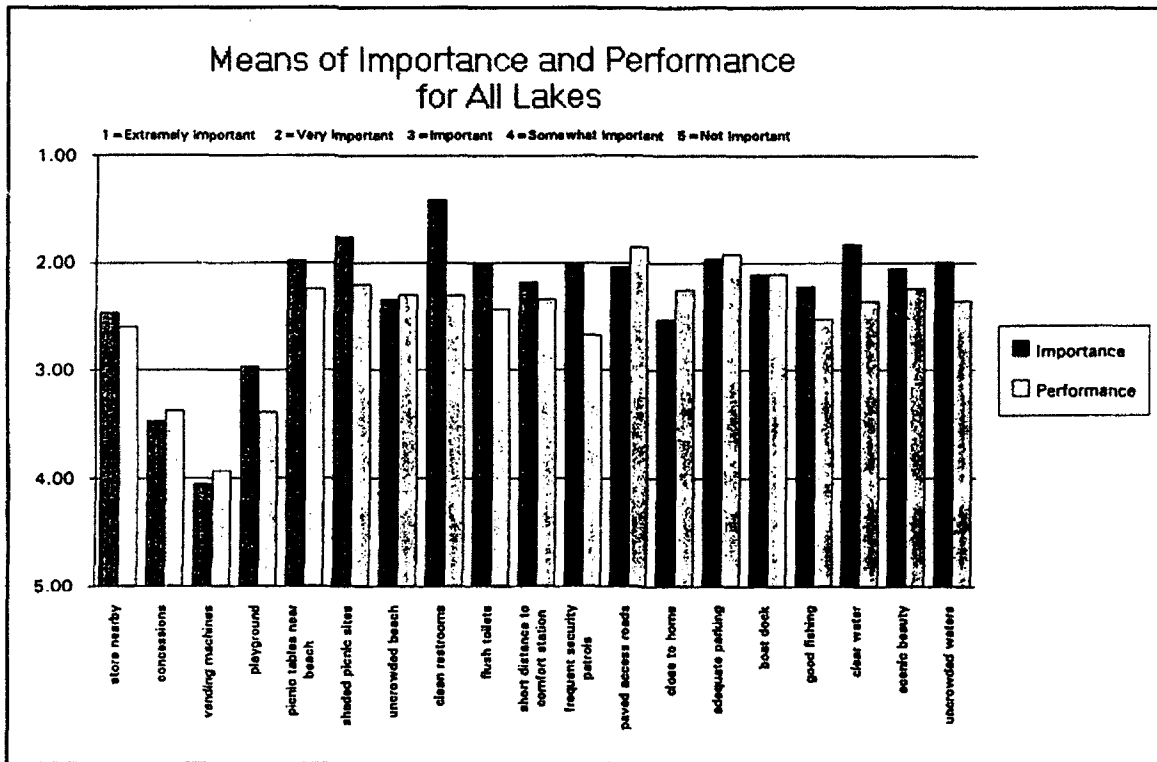


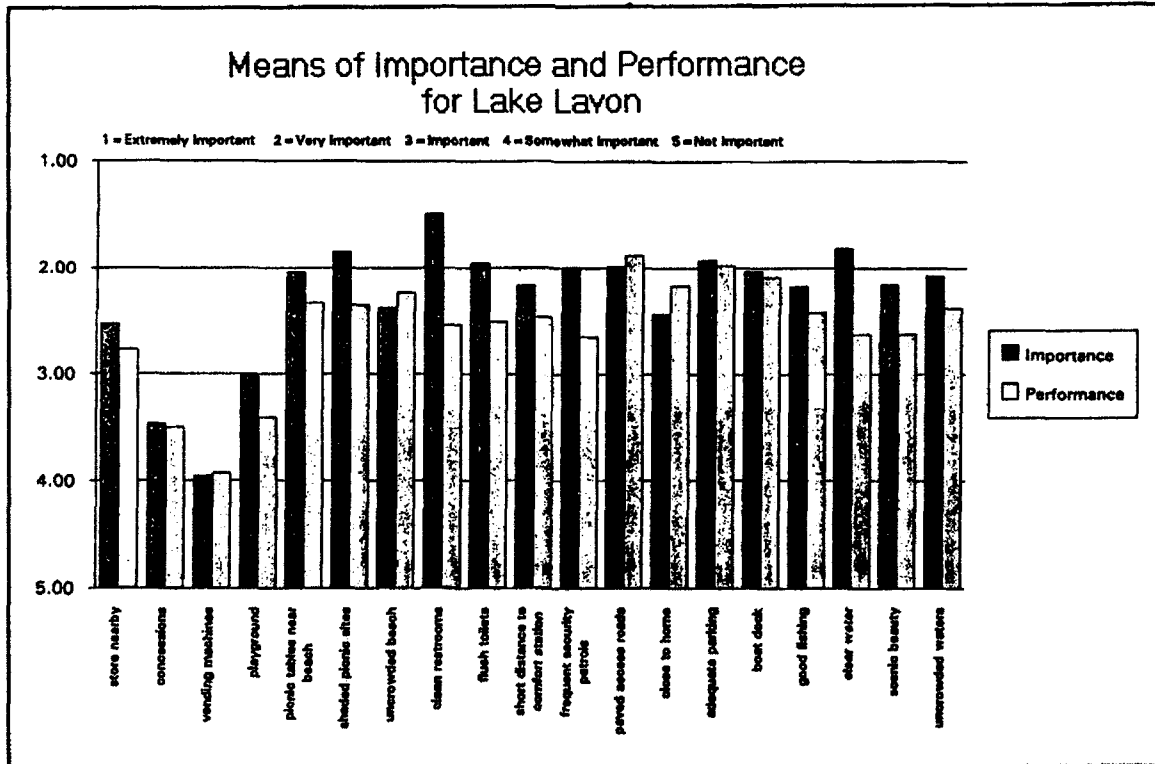
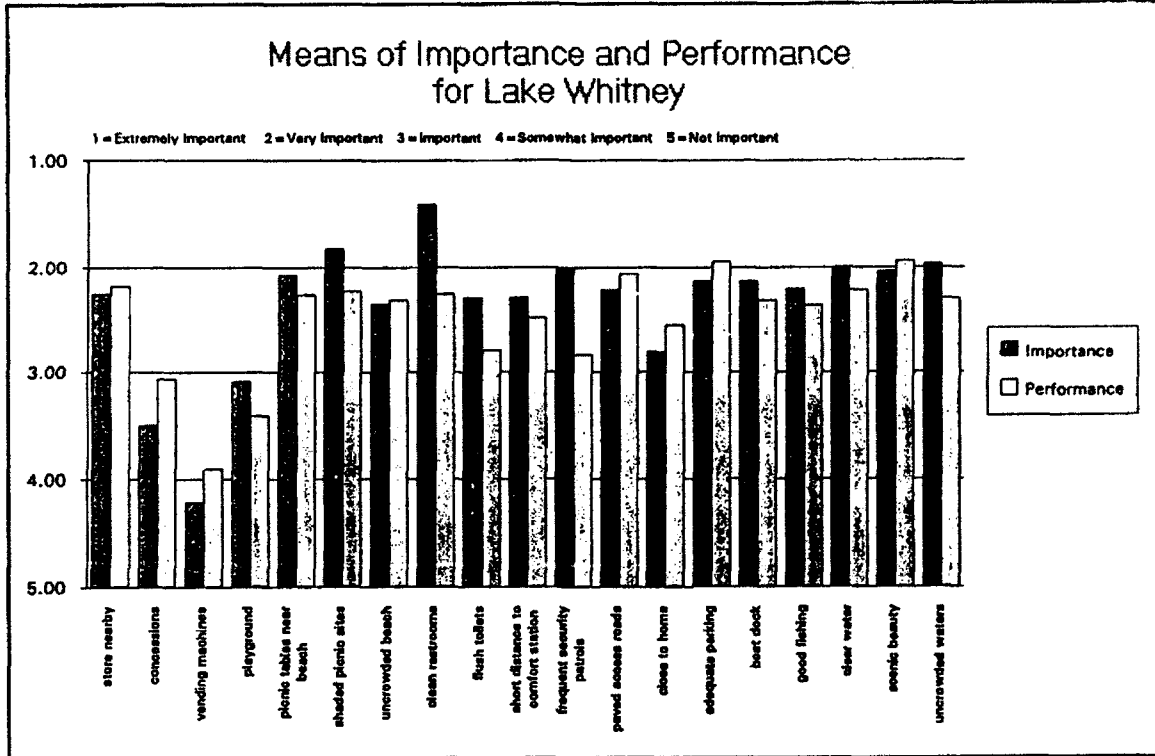
1 = Extremely Important    2 = Very Important    3 = Important    4 = Somewhat Important    5 = Not Important

## Means of Importance vs Performance for Lake Layon



1 = Extremely Important    2 = Very Important    3 = Important    4 = Somewhat Important    5 = Not Important





# **Appendix D**

## **Supporting Tables and Data**

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**Table D1  
Study Sites, Recreation Areas,  
1991 Visitor Hours**

Recreation Area	Visitor Hours
<b>Lake Georgetown</b>	
Cedar Breaks Park	1,169,900
Good Water M.U. (Tejas)	63,600
Jim Hogg Park	1,917,700
Russell Park	374,100
<b>Lake Whitney</b>	
Cedar Creek Park	182,900
Cedron Creek Park	548,300
Kimbell Bend Park	635,300
Lofers Bend Park	1,477,400
McCown Valley Park	539,200
Plowman Creek Park	238,100
Soldiers Bluff Park	208,700
Steeles Creek Park	452,000
Walling Bend Park	184,300
<b>Lavon Lake</b>	
Avalon Park	101,900
East Fork Park	714,000
Elm Creek Park	62,400
Lakeland Park	80,900
Lavonia Park	806,500
Little Ridge Park	76,800
Mallard Park	136,200
Pebble Beach Park	131,400
Tickey Creek Park	110,300
Source: Natural Resource Management System	

**Table D2  
Recreation Area Facilities**

Recreation Area	Picnic Facilities	Flush Toilets	Vault Toilets	Swimming Beach
<b>Lake Georgetown</b>				
Cedar Breaks Park	■	■		
Jim Hogg Park		■		
Russel Park	■		■	■
Tejas Park	■		■	
<b>Whitney Lake</b>				
Cedron Creek Park	■	■		■
Kimball Bend Park	■		■	
Lofers Bend Park	■		■	■
McCown Valley Park	■	■	■	■
Plowman Creek Park	■	■	■	
Soldiers Bluff Park	■	■		
Steelers Creek Park	■		■	
Walling Bend Park	■		■	
<b>Lavon Lake</b>				
Avalon Park	■	■		
East Fork Park	■	■		
East Fork Park (B/R)		■		
Elm Creek Park (B/R)			■	
Lakeland Park	■	■		
Lavonia Park	■	■		
Lavonia Park (B/R)				
Little Ridge Park	■	■		
Mallard Park		■		■
Pebble Beach Park	■	■		■
Ticky Creek Park			■	
<i>(Continued)</i>				

Table D2 (Concluded)					
Recreation Area	Boat Ramp	Multi Use	Group Shelter	Hiking Trails	Gate House
<b>Lake Georgetown</b>					
Cedar Breaks Park	■		■	■	■
Jim Hogg Park	■		■	■	■
Russel Park	■		■	■	■
Tejas Park		■			
<b>Whitney Lake</b>					
Cedron Creek Park	■		■		■
Kimball Bend Park	■	■	■	■	
Lofers Bend Park	■		■		
McCown Valley Park	■	■	■		
Plowman Creek Park	■	■	■	■	
Soldiers Bluff Park			■	■	
Steelers Creek Park	■	■	■	■	
Walling Bend Park	■	■	■	■	
<b>Lavon Lake</b>					
Avalon Park	■		■		■
East Fork Park	■		■		■
East Fork Park (B/R)	■				
Elm Creek Park (B/R)	■				
Lakeland Park	■	■			
Lavonia Park	■		■		■
Lavonia Park (B/R)	■				
Little Ridge Park	■	■	■		
Mallard Park	■				
Pebble Beach Park	■	■			
Ticky Creek Park	■	■			

**Table D3  
Should There be Fees, Analysis of Independence**

Variable	Chi Sqr	Signif	Follow-Up Tests			
			1,5	2,5	1,4	2,4
<b>Attitudes Toward Fees</b>						
User/Government Balance percent	113.09	0.0000	**	**	*	*
More Willing If Fee Revenues Go To Area	136.58	0.0000	**	**	**	**
<b>Differential Structure</b>						
Different Fee On Weekends/Weekdays	22.80	0.1186				
Fees Based On Quality Of Recreation Area	40.32	0.0007	**	**	**	
<b>Willingness To Pay</b>						
Per Weekday	67.16	0.0000	**	**	**	
Per Weekend Day	62.55	0.0000	**	**	**	
Per Restricted Pass	83.59	0.0000	**	**	**	
Per Region Pass	83.95	0.0000	**	**	**	*
<b>Demographics</b>						
Hours Spent In Area	6.49	0.590				
Group Size	3.19	0.922				
Miles From Residence	36.06	0.0028	**	**		
Visits Last 12 Months	26.24	0.0507	**	*		
Corps Area	5.49	0.24				
Previous Pay	22.60	0.0002	**	**		
Income Last Year	20.69	0.1907				
** = 0.01 Significant Mann Whitney U * = 0.05 Significant Mann Whitney U						

<b>Table D4 Fee Structure: Fees Based on the Quality of Recreation Area, Analysis of Independence</b>					
Variable	Chi Sqr	Signlf	Follow-Up Tests		
			1,4	1,3	2,4
<b>Attitudes Toward Fees</b>					
There Should Be Fees	34.42	0.0006	**	*	**
User/Government Balance Percent	16.58	0.0556	**		
More Willing If Fee Revenues Go To Area	38.35	0.0000	**	*	
<b>Differential Structure</b>					
Different Fee On Weekends/Weekdays	32.84	0.0001	**	**	**
Fees Based on Lake Qualities	314.06	0.0000	**	**	**
<b>Willingness To Pay</b>					
Per Week Day	26.41	0.0017	**		
Per Weekend Day	40.35	0.0000	**		**
Per Annual Restricted Pass	51.24	0.0000	**	*	**
Per Annual Region Pass	42.43	0.0000	**		**
** = 0.01 Significant Mann Whitney U * = 0.05 Significant Mann Whitney U					

**Table D5  
Fee Structure: Fees Based on Weekend/Weekday, Analysis of Independence**

Variable	Chi Sqr	Signif	Follow-Up Tests		
			1,4	1,3	2,4
<b>Attitudes Toward Fees</b>					
There Should Be Fees	21.85	0.0424			
User/Government Balance Percent	15.28	0.0834			
More Willing If Fee Revenues Go To Area	23.88	0.0045	*	*	
<b>Differential Structure</b>					
Fees Based On Quality Of Recreation Area	32.84	0.0001	**		
Fees Based on Lake Qualities	41.46	0.000	**	**	
<b>Willingness To Pay</b>					
Per Week Day	12.86	0.1690			
Per Weekend Day	25.16	0.0028	**	**	
Per Annual Restricted Pass	12.86	0.3980			
Per Annual Region Pass	16.05	0.1887			
** = 0.01 Significant Mann Whitney U * = 0.05 Significant Mann Whitney U					

**Table D6**  
**Willingness to Pay: Maximum Price Willing to Pay for an Annual Restricted Pass, Analysis of Independence**

Variable	Chi Sqr	Signif	Follow-Up Tests		
			1,4	1,3	2,4
<b>Attitudes Toward Fees</b>					
There Should Be Fees	83.59	0.0000	**	**	
User/Government Balance Percent	59.79	0.0000	**	**	*
More Willing If Fee Revenues Go To Area	106.77	0.0000	**	**	
<b>Differential Structure</b>					
Different Fee On Weekends/Weekdays	17.73	0.3396			
Fees Based on Lake Quality Of Recreation Area	54.92	0.0000	*	**	*
Fees Based On Lake Qualities	39.20	0.0010	**	*	
<b>Willingness To Pay</b>					
Per Week Day	114.16	0.0000	**	**	*
Per Weekend Day	97.78	0.0000	**	**	*
Per Annual Region Pass	425.46	0.0000	**	**	**
<b>Demographics</b>					
Senior	24.43	0.0001	**	**	
** = 0.01 Significant Mann Whitney U * = 0.05 Significant Mann Whitney U					

**Table D7  
Attitude Toward Fees, Correlation Analysis**

Variable	Attitude Toward Fees			Attitude Toward Fee Scenarios		
	Should be Fee	Gov't/ User	More Willing	Wkday/ Wkend	Quality Based	Lake Based
Should Be Fee	1.0000	-0.4166**	0.5509**	0.1114	0.2573**	0.2074**
Government/User	-0.4166**	1.0000	-0.4030**	-0.0985	-0.1142	-0.1138
More Willing	0.5509**	-0.4030**	1.0000	0.2049**	0.3026**	0.2522**
Wkday/Wkend	0.1114	-0.0985	0.2049**	1.0000	0.2363**	0.2549**
Quality Based	0.2573**	-0.1142	0.3026**	0.2363**	1.0000	0.7280**
Lake Based	0.2074**	-0.1138	0.2522**	0.2549**	0.7280**	1.0000
Max Wkday	-0.3627**	0.1868**	-0.4452**	0.0388	-0.2082**	-0.1999**
Max Wkend	-0.3459**	0.2229**	-0.4362**	-0.1742*	-0.2760**	-0.2787**
Restricted Pass	-0.3760**	0.2130**	-0.4155**	-0.0787**	-0.3356**	-0.2175**
Region Pass	-0.3974**	0.2652**	-0.4343**	-0.1399*	-0.2882**	-0.2051**
Hour Area	-0.0715	0.0481	-0.0691	0.0921	0.1388*	0.1142
Group Size	-0.0204	0.1393*	-0.1361*	-0.0358	-0.0991	-0.0586
Miles	-0.2109**	0.0212	-0.1975**	-0.0461	0.0245	-0.0396
Visits	0.1635*	-0.1712*	0.1703*	0.1007	0.0940	0.1153
Income	-0.1907**	0.0276	-0.1052	0.0417	-0.0084	0.0039
Previous Pay	0.1986**	-0.0577	0.1237	-0.0313	0.0043	0.0196
Corps Area	-0.0493	0.0589	-0.0920	-0.0063	-0.0095	-0.0551
Senior	-0.1624*	0.1623*	-0.2056**	-0.0217	-0.0402	-0.0652

\*\* 0.001 = 1-tailed Significant  
\* 0.01 = 1-tailed Significant

**Table D8**  
**Willingness to Pay, Demographics, Correlation Analysis**

Variable	Willingness to Pay			Demographics		
	Max Wkday	Max Wkend	Restrctd Pass	Pass Region	Hour Area	Group Size
Should Be Fee	-0.3627**	-0.3459**	-0.3760**	-0.3974**	-0.0715	-0.0204
Government/User	0.1868**	0.2229**	0.2130**	0.2652**	0.0481	0.1393*
More Willing	-0.4452**	-0.4362**	-0.4155**	-0.4343**	-0.0691	-0.1361*
Wkday/Wkend	0.0388	-0.1742*	-0.0787	-0.1399*	0.0921	-0.0358
Quality Based	-0.2082**	-0.2760**	-0.3356**	-0.2882**	0.1388*	-0.0991
Lake Based	-0.1999**	-0.2787**	-0.2175**	-0.2051**	0.1142	-0.0586
Max Wkday	1.0000	0.8171**	0.5029**	0.4663**	0.1957**	0.1004
Max Wkend	0.8171**	1.0000	0.4507**	0.4320**	0.1744*	0.0863
Restricted Pass	0.5029**	0.4507**	1.0000	0.8194**	0.0895	0.0750
Region Pass	0.4663**	0.4320**	0.8194**	1.0000	0.0896	0.0492
Hours Area	0.1957**	0.1744**	0.0895	0.0896	1.0000	0.0750
Group Size	0.1004	0.0863	0.0750	0.0492	0.0750	1.0000
Miles	0.2557**	0.2032**	0.1235	0.1353*	0.3291**	0.0336
Visits	-0.2343**	-0.2539**	-0.0353	-0.0705	-0.1098	-0.0974
Income	0.1701*	0.1050	0.1822**	0.1758**	0.0836	-0.0239
Previous Pay	-0.0969	-0.0693	0.0270	0.0044	-0.1076	0.0003
Corp Area	0.1552*	0.0855	0.0712	0.0869	0.0570	0.0395
Senior	0.1803**	0.1454*	0.1970**	0.2248**	0.1064	0.1257

\*\* 0.001 = 1-tailed Significant  
\* 0.01 = 1-tailed Significant

**Table D9  
Demographics, Correlation Analysis**

Variable	Demographics					
	Miles	Visits	Income	Prev. Pay	Corp Area	Senior
Should Be Fee	-0.2109**	0.1635*	-0.1907**	0.1986**	-0.0493	-0.1624*
Government/User	0.0212	-0.1712*	0.0276	-0.0577	0.0589	0.1623*
More Willing	-0.1975**	0.1703*	-0.1052	0.1237	-0.0920	-0.2056**
Wkday/Wkend	-0.0461	0.1007	0.0417	-0.0313	-0.0063	-0.0217
Quality Based	0.0245	0.0940	-0.0084	0.0043	-0.0095	-0.0402
Lake Based	-0.0396	0.1153	0.0039	0.0196	-0.0551	-0.0652
Max Wkday	0.2557**	-0.2343**	0.1701*	-0.0969	0.1552*	0.1803**
Max Wkend	0.2032**	-0.2539**	0.1050	-0.0693	0.0855	0.1454*
Restricted Pass	0.1235	-0.0353	0.1822**	0.0270	0.0712	0.1970**
Region Pass	0.1353*	-0.0705	0.1758**	0.0044	0.0869	0.2248**
Hours Area	0.3291**	-0.1098	0.0836	-0.1076	0.0570	0.1064
Group Size	0.0336	-0.0974	-0.0239	0.0003	0.0395	0.1257
Miles	1.0000	-0.3980**	0.0894	-0.1815**	0.2082**	0.0045
Visits	-0.3980**	1.0000	-0.0825	0.0748	-0.1888**	-0.0196
Income	0.0894	-0.825	1.0000	-0.1510*	-0.0014	0.2365**
Previous Pay	-0.1815**	0.0748	-0.1510*	1.0000	-0.1060	-0.1023
Corp Area	0.2082**	-0.1888**	-0.0014	-0.1060	1.0000	0.1267
Senior	0.0045	-0.0196	0.2365**	-0.1023	0.1267	1.0000

\*\* 0.001 = 1-tailed Significant  
\* 0.01 = 1-tailed Significant

**Table D10  
Maximum Price for a Week Day, Analysis of Independence**

Variable	Chi Sqr	Signif	1,4	1,3	2,4
<b>Attitudes Toward Fees</b>					
There Should Be Fees	67.16	0.0000	**	**	**
User/Government Balance Percent	33.08	0.0000	**	**	
More Willing If Fee Revenues Go To Area	83.08	0.0000	**	**	**
<b>Differential Structure</b>					
Different Fee On Weekends/Weekdays	19.78	0.0712			
Fees Based On Quality Of Recreation Area	27.70	0.0061	**	**	
<b>Willingness To Pay</b>					
Per Weekend Day	360.82	0.0000	**	**	**
Per Annual Restricted Pass	114.16	0.0000	**	**	**
Per Annual Region Pass	114.69	0.0000	**	**	**
<b>Demographics</b>					
Hours Spent In Area	13.55	0.0351	**		**
Group Size	3.18	0.315			
Miles From Residence	32.74	0.0011	**	**	
Visits Last 12 Months	40.93	0.0001	**	**	
Corps Areas	17.23	0.0006	**	**	
Previous Pay	12.45	0.0060	**	**	
Income Last Year	26.04	0.0106	*	**	
Senior	19.49	0.0002	*	**	
** = 0.01 Significant Mann Whitney U * = 0.05 Significant Mann Whitney U					

**Table D11  
Attitude Toward Fees: Government User Balance, Analysis of Independence**

Variable	Chi Sqr	Signif	Follow-Up Tests		
			1,4	1,3	2,4
<b>Attitudes Toward Fees</b>					
There Should Be Fees	113.09	0.0000	**	**	
More Willing If Fee Revenues Go To Area	94.24	0.0000	**	**	*
<b>Differential Structure</b>					
Different Fee On Weekends/Weekdays	15.28	0.0834	**	*	
Fees Based On Quality Of Recreation Area	16.58	0.0556	**	*	
<b>Willingness To Pay</b>					
Per Week Day	33.08	0.0001	**	**	
Per Weekend Day	51.65	0.0000	**	**	
Per Annual Restricted Pass	59.80	0.0000	**	**	
Per Annual Region Pass	62.66	0.0000	**	**	
<b>Demographics</b>					
Senior	12.14	0.0069	**	**	
Hours On Site	18.65	0.0048			
Picnicking	26.23	0.0019	*		
Percent Visits This Area	31.19	0.0018	**	**	
** = 0.01 Significant Mann Whitney U * = 0.05 Significant Mann Whitney U					

# REPORT DOCUMENTATION PAGE

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<b>6. AUTHOR(S)</b> Roy Rylander, Christopher M. White		<b>7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES)</b> U.S. Army Engineer Waterways Experiment Station Environmental Laboratory 3909 Halls Ferry Road, Vicksburg, MS 39180-6199	
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<b>12a. DISTRIBUTION/AVAILABILITY STATEMENT</b> Approved for public release; distribution is unlimited.		<b>12b. DISTRIBUTION CODE</b>	
<b>13. ABSTRACT (Maximum 200 words)</b>  This pilot test was conducted as part of the Natural Resources Research Program Work Unit entitled "Measuring the Effects of Recreation Fee Programs." Three Corps of Engineers projects in Texas (Lake Georgetown, Lake Whitney, and Lake Lavon) were selected for the pilot study. Respondents at day use recreation areas with beaches, picnic tables, and boat launches that had the potential to be fee areas were queried concerning perceptions of fees, perception of area quality; willingness-to-pay under different fee scenarios; and the importance and performance of 19 common facilities, services, and amenities.  Overall, visitors to these Corps sites were evenly divided in their support and opposition to fees. Respondents indicated the greatest support for fees if the fees stay in the area where collected. There was also strong support for fees that were higher for better quality areas (73% either strongly or mildly agreeing). Of the different fee alternatives tested in the analysis, an entrance fee without restricted pass has the largest percentage impact on visitation and an annual pass for \$12.00 has the smallest percentage impact on visitation. Revenue could be optimized in an entrance-fee-without-restricted-pass scenario.			
(Continued)			
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<b>16. PRICE CODE</b>		<b>17. SECURITY CLASSIFICATION OF REPORT</b> UNCLASSIFIED	
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<b>20. LIMITATION OF ABSTRACT</b>			

**13. (Concluded).**

Concerning site qualities, clean restrooms, shaded picnic sites, clear water, and adequate parking were most important to visitors. At the same time, clean restrooms and clear water were ranked relatively low in actual performance. This may indicate that managers intending to impose day use fees should consider upgrading these amenities and then emphasizing this upgrading to increase public acceptance of day use fees.





