MISCELLANEOUS PAPER R-80-1

RECREATION CARRYING CAPACITY FACTS AND CONSIDERATIONS

| Title | Date |
|---|---|
| Report 1: Barkley Lock and Dam, Lake Barkley Project Area | Jul 1980 |
| Report 2: Benbrook Lake Project Area | Jul 1980 |
| Report 3: Hartwell Lake Project Area | Jul 1980 |
| Report 4: Lake Ouachita Project Area | Jul 1980 |
| Report 5: Lake Shelbyville Project Area | Jul 1980 |
| Report 6: McNary Lock and Dam, Lake Wallula Project Area | Jul 1980 |
| Report 7: Milford Lake Project Area | Jul 1980 |
| Report 8: New Hogan Lake Project Area | Jul 1980 |
| Report 9: Shenango River Lake Project Area | Jul 1980 |
| Report 10: Somerville Lake Project Area | Jul 1980 |
| Report 11: Surry Mountain Lake Project Area | Jul 1980 |


## Acknowledgements

We gratefully acknowledge the enthusiasm and excellent cooperation of the resource managers, rangers, and other Corps personnel at Milford Lake and the representatives from the Kansas City District Office. Their contributions of practical experience and knowledge, along with their assistance in arranging schedules, have made this carrying capacity research effort possible.


Destroy this report when no longer needed. Do not return it to the originator.

Unclassified

SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

| REPORT DOCUMENTATION PAGE | | READ INSTRUCTIONS BEFORE COMPLETING FORM |
|---|---|---|
| 1. REPORT NUMBER<br>Miscellaneous Paper R-80-1 | 2. GOVT ACCESSION NO. | 3. RECIPIENT'S CATALOG NUMBER |
| 4. TITLE (and Subtitle) RECREATION CARRYING CAPACITY FACTS AND CONSIDERATIONS; Report 7, MILFORD LAKE PROJECT AREA | | 5. TYPE OF REPORT & PERIOD COVERED<br>Report 7 of a series |
| | | 6. PERFORMING ORG. REPORT NUMBER |
| 7. AUTHOR(s) | | 8. CONTRACT OR GRANT NUMBER(s)<br>Contract No.<br>DACW39-78-C-0096 |
| 9. PERFORMING ORGANIZATION NAME AND ADDRESS<br>Urban Research and Development Corporation<br>528 North New Street<br>Bethlehem, Pa. 18018 | | 10. PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS<br>Recreation Research Program |
| 11. CONTROLLING OFFICE NAME AND ADDRESS<br>Office, Chief of Engineers, U. S. Army<br>Washington, D. C. 20314 | | 12. REPORT DATE<br>July 1980 |
| | | 13. NUMBER OF PAGES<br>91 |
| 14. MONITORING AGENCY NAME & ADDRESS(if different from Controlling Office)<br>U. S. Army Engineer Waterways Experiment Station<br>Environmental Laboratory<br>P. O. Box 631, Vicksburg, Miss. 39180 | | 15. SECURITY CLASS. (of this report)<br>Unclassified |
| | | 15a. DECLASSIFICATION/DOWNGRADING SCHEDULE |

16. DISTRIBUTION STATEMENT (of this Report)

Approved for public release; distribution unlimited.

17. DISTRIBUTION STATEMENT (of the abstract entered in Block 20, if different from Report)

18. SUPPLEMENTARY NOTES

A project map of Milford Lake is enclosed in an envelope attached inside the back cover of this report.

19. KEY WORDS (Continue on reverse side if necessary and identify by block number)

| | | |
|---|---|---|
| Carrying capacity | Recreation | Utilization |
| Milford Lake Project | Recreation resource planning | |
| Monitoring | Recreational areas | |
| Overcrowding | Recreational facilities | |

20. ABSTRACT (Continue on reverse side if necessary and identify by block number)

This report provides selected recreation carrying capacity-related information for the Milford Lake Project. The information is based upon: 1) user and management surveys conducted at Milford Lake, and 2) Urban Research and Development Corporation's observations and perceptions of the situations at the project's activity areas. The report provides information regarding activity situations, user characteristics, carrying capacity findings, and other findings; it then focuses on selected problem situations and their possible solutions.

DD FORM 1 JAN 73 1473 EDITION OF 1 NOV 65 IS OBSOLETE

Unclassified

SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

# PREFACE

This report presents the findings and recommendations of the Urban Research and Development Corporation (URDC) relative to recreational carrying capacity at the Milford Lake Project Area. Results of site analyses and user surveys are presented as they relate to existing carrying capacity conditions on the project. The study was conducted under Contract with the U. S. Army Engineer Waterways Experiment Station (WES), Vicksburg, Mississippi, (Contract No. DACW39-78-C-0096).

Mr. Donald R. Detwiler, President of URDC, was Principal-In-Charge of this study, assisted by Mr. Martin C. Gilchrist, Executive Vice-President and Mr. David H. Humphrey, Vice-President. Mr. B. Thomas Palmer, Project Director, had the major responsibility for technical project direction; Messrs. Phillip D. Hunsberger and Paul L. Sabrosky were involved in the site analysis, conducting surveys, and the success analysis; and Mr. Timothy A. Fluck was involved in conducting surveys, survey analysis, and development of methodologies.

Mr. R. Scott Jackson, WES was the Project Monitor. Dr. Adolph Anderson, WES, was Program Manager of the Environmental Laboratory (EL) Recreation Research Program. The study was supervised by Dr. Conrad J. Kirby, Chief, Environmental Resources Division, EL, under the general supervision of Dr. John Harrison, Chief, EL.

COL John L. Cannon, CE, and COL Nelson P. Conover, CE, were Commanders and Directors of WES during this study. Technical Director was Mr. F. R. Brown.

# CONTENTS

CONVERSION FACTORS, U. S. CUSTOMARY TO METRIC (SI)
UNITS OF MEASUREMENT

U. S. customary units of measurement used in this report can be converted to metric (SI) units as follows:

| Multiply | By | To Obtain |
|---|---|---|
| acres | 4046.856 | square metres |
| Fahrenheit degrees | 5/9 | Celsuis degrees or Kelvins |
| feet | 0.3048 | metres |
| horsepower (550 foot and pounds per second) | 745.6999 | watts |
| inches | 2.54 | centimetres |
| miles per hour (U. S. statute) | 1.609344 | kilometres per hour |
| miles (U. S. statute) | 1.609344 | kilometres |
| square feet | 0.09290304 | square metres |
| yards | 0.9144 | metres |

* To obtain Celsius (C) temperature readings from Fahrenheit (F) readings, use the following formula: $C = (5/9)(F - 32)$. To obtain Kelvin (K) readings, use $K = (5/9)(F - 32) + 273.15$.

# PART 1: INTRODUCTION

# RECREATION CARRYING CAPACITY FACTS AND CONSIDERATIONS

## MILFORD LAKE PROJECT AREA

## PART 1: INTRODUCTION

### This Report

#### Purpose

This report, prepared as the seventh in a series of the U. S. Army Engineer Waterways Experiment Station's (WES) Recreational Carrying Capacity Design and Management Study reports, provides selected carrying capacity-related information for the Milford Lake Project Area which are not contained in the Technical Report. The information is based upon: 1) the user and management surveys conducted at Milford, and 2) Urban Research and Development Corporation's (URDC) observations and perceptions of the situations at the project's study acticity areas. Some observations and suggestions dealing with project area planning, design, and/or management are included, even though they are not specifically carrying capacity related. The report also suggests specific solutions and treatments of specific recreation activity areas.

The report first provides information regarding activity situations, user characteristics, carrying capacity findings, and other findings; it then focuses on selected problem situations and their possible solutions. Although suggestions regarding possible solutions to problems are included, this report is not intended to be a substitute for master planning or to provide answers to all project area capacity problems. Instead, this report should be viewed as a constructive, informative document which points out directions and techniques for consideration by project managers and designers in the near or distant future.

Relationship to Technical Report and Handbook

In addition to this Project Area Report and similar reports on the other ten study project areas,* the overall capacity study effort produced a Technical Report and a Capacity Handbook:

a. The Technical Report describes the overall study process, reports detailed study findings, and suggests and demonstrates methods and techniques for capacity management.

b. The Capacity Handbook is a more graphic, "how-to-do-it" type of report, designed to serve as a useful field tool for determining carrying capacity and applying techniques for capacity design and management.

This project area report is different from the Technical Report and Handbook in several ways: it includes information not found in the Technical Report and Capacity Handbook; it reports and examines user survey information by activity area and project area, rather than from the total survey population; it addresses specific problems and examines possible solutions; and it does not include the methodologies for determining and monitoring social and resource capacity. For these reasons, this report is intended to compliment the Technical Report and the Handbook, and is not intended to substitute for them.

Qualifications

The information in this report is based on the Management/Site Survey conducted on October 23-25, 1978 and the User Survey conducted on July 6-8, 1979 by Urban Research & Development Corporation (URDC). (See Appendix B). The user survey information was collected over a one-weekend period, which may or may not have been representative of a typical or heavy use weekend at Milford. Interviews were limited at some activity areas because of such factors as lack of users and weather conditions. For these reasons and because carrying capacity analysis is dynamic rather than static, this report is not intended to provide the final answers. Rather, it is a foundation for future analysis and carrying capacity progress.

---

* See definition of "Study Project Area" in Appendix A for a listing of these project areas.

## Summary Project Area Description*

Milford Lake,** authorized for the purposes of flood control and water supply, is located on Republican River four miles§ northwest of Junction City, Kansas. Much of the area surrounding the lake is rural and is devoted to agriculture. Milford Lake has a normal recreation pool of 16,190 acres and 163 shoreline miles. The lake proper extends 20 miles upstream and averages about one mile in width. Average water depth is 15 feet. The total size of the project area is 48,939 acres. The area's topography lends itself well to recreation use and management. Lands in developed recreation areas are gently rolling to level, sloping mildly to the shore. Most of the shoreline is usable. The project area is subject to a broad range of temperatures, high winds, and intense rainfall. Summer temperatures average in the upper 80's (degrees F). Precipitation amounts to 32 inches of rain and 22 inches of snow annually.

Much of the project area is sparsely wooded, with extensive plantings accomplished in the public use areas. The climax cover is comprised of a mixture of the tall and mid-grasses characteristic of the true prairie. Federal highways border the lake on three sides and within a 100-mile radius of the lake are the major metropolitan areas of Topeka and Wichita, Kansas. In addition to serving nearby Kansas residents, Milford Lake provides water-oriented recreation opportunities to the personnel stationed at Fort Riley, a nearby large military reservation. Visitation in 1978 was approximately 1.5 million recreation days.

---

* Appendix C contains a more detailed project area description for your future use.

** See map inside back cover.

§ A table of factors for converting U. S. customary units of measurement to metric (SI) units is found on page iv.

# PART 2: SURVEY FINDINGS BY ACTIVITY

## BOATING AND WATERSKIING

### Orientation

Boating and waterskiing are popular activities at Milford. The lake is underused to well balanced. Management indicates no overcrowding on the lake; and overcrowding was not observed during the User Survey. Most summer weekends produce well balanced lake use. Like most study project areas, there are some conflicts between power boaters and fishermen on the lake surface.

The findings in the remainder of this section are based on the User Survey. This survey obtained 8 responses from boaters and waterskiers at Milford Lake.

User characteristics

Table 1 indicates the characteristics of the boaters and waterskiers surveyed at Milford. The most significant differences in the characteristics of the boaters and waterskiers at Milford from those of other study project areas are: 1) the large size of the boating/waterskiing groups and 2) the large number of boaters and waterskiers coming from nearby areas.

Table 1

Boater/Waterskier Characteristics

| Age | Percent of Boaters/Waterskiers | Group Size | Percent of Boaters/Waterskiers |
|---|---|---|---|
| <18 | 0 | 1 | 0 |
| 18 - 25 | 50 | 2 | 0 |
| 26 - 40 | 13 | 3 - 4 | 0 |
| 41 - 55 | 38 | 5 - 8 | 75 |
| 56 - 65 | 0 | 9 - 12 | 25* |
| >65 | 0 | >12 | 0 |

| Travel Time to Project Area | Percent of Boaters/Waterskiers | Visit Duration | Percent of Boaters/Waterskiers |
|---|---|---|---|
| <15 minutes | 50* | 1 - 4 hours | 0 |
| 15 - 30 minutes | 0 | 5 - 8 hours | 38 |
| 30 - 60 minutes | 25 | 1 day | 0 |
| 1 - 2 hours | 13** | 2 days | 25 |
| 2 - 3 hours | 13** | 3 days | 38 |
| 3 - 5 hours | 0 | 4 days | 0 |
| >5 hours | 0 | 5 - 7 days | 0 |
| | | >7 days | 0 |

| No. of Other Activities | Percent of Boaters/Waterskiers | Equipment | Percent of Boaters/Waterskiers |
|---|---|---|---|
| 0 | 13 | Sailboat | 14 |
| 1 | 0 | Canoe | 0 |
| 2 | 25 | Rowboat | 0 |
| 3 | 0 | Power Boat | |
| 4 | 50 | (<25 h.p.) | 14 |
| 5 | 0 | Power Boat | |
| 6 | 0 | (>25 h.p.) | 71 |
| >6 | 13 | | |

*Significantly higher than total survey sample.
**Significantly lower than total survey sample.

User opinions

Spacing preferences - Tables 2 and 3 indicate the spacing that the boaters and waterskiers surveyed at Milford and elsewhere prefer.

Table 2

Preferred Distance Responses*

| Sample | Sample Size | Range | Mean | Median | Mode |
|---|---|---|---|---|---|
| All Boaters Surveyed | 135 | 30- a | 531 | 300 | 300 |
| Milford Lake | 5 | 100-1500 | 440 | 150 | 150 |
| All Waterskiers Surveyed | 95 | 30- a | 520 | 300 | 300 |
| Milford Lake | 3 | 300-2700 | 300 | 300 | 300 |

*In feet; see Appendix A for definitions of terms.
a - response of "alone" or "out of sight."

Table 3

Preferred Distance Responses in Planning Range and Preference Groupings*

| Sample | % in Planning Range[1] (100'-1500') | % in A[2] (100'-199') | % in B[2] (200'-450') | % in C[2] (451'-1500') |
|---|---|---|---|---|
| All Boaters Surveyed | 79% | 29% | 37% | 34% |
| Milford Lake | 100 | 60 | 20 | 20 |
| **Sample** | **% in Planning Range[1] (100'-1500')** | **% in A[2] (100'-199')** | **% in B[2] (200'-400')** | **% in C[2] (401'-1500')** |
| All Waterskiers Surveyed | 91% | 22% | 50% | 28% |
| Milford Lake | 33 | 0 | 100 | 0 |

*See Appendix A for definitions of terms; see Technical Report for a full development of spacing preference information.

[1]Percentage of all preferred distance responses.

[2]Percentage of all preferred distance responses in the Planning Range.

The responses of the boaters and waterskiers at Milford differed considerably from those of the total survey sample, most likely due to the low number of surveys at Milford.

Reasons for pleasant/unpleasant experience - Table 4 indicates the impact that different factors had on making the boating or waterskiing experience pleasant or unpleasant for users at Milford Lake. Boaters and waterskiers surveyed at Milford found their experience to be generally pleasant. The amount of facilities, and the maintenance of the facilities were the factors which most often made the experience at Milford unpleasant. No factor was so unpleasant as to cause a user to indicate that he would not return.

Table 5 indicates the changes in the physical condition of the lake as reported by boaters and waterskiers from their previous visit. No changes in people's use of the lake were reported.

Table 5

Positive and Negative Changes Noticed in the Physical Conditions of the Area - Items Mentioned by Boaters and Waterskiers

| Area | Positive Changes | Negative Changes |
|---|---|---|
| Lake and Adjacent Areas | "Fewer boats than last years" (2)<br>"Better kept" (1) | "Beach not as well kept" (1) |

NOTE: The number in parenthesis (#) indicates the number of times the change was mentioned.

Table 4

Reasons Making Recreation Experience Pleasant or Unpleasant--Boating/Waterskiing
Milford Lake

| Reasons | Percentage* of Users Responding: | | |
|---|---|---|---|
| | Pleasant | Unpleasant | Not Important |
| General Reasons | | | |
| Characteristics and behavior of other people | 100 | - | - |
| Distance from other people | 88 | 12 | - |
| Number of people in other visitor groups | 38 | - | 62 |
| Number and type of other activities occurring here | 75 | - | 25 |
| Scenic views | 88 | - | 12 |
| Noise | 75 | - | 25 |
| Accidents or near accidents | 100 | - | - |
| Enforcement of rules/regulations | 100 | - | - |
| Car parking facilities | 88 | - | 12 |
| Theft | 88 | - | 12 |
| Vandalism | 88 | - | - |
| Land-Based Reasons | | | |
| Amount of facilities (restrooms, water, etc.) | 71 | 29 | - |
| Convenience to facilities (restrooms, water, etc.) | 100 | - | - |
| Maintenance of facilities | 86 | 14 | - |
| Condition of trees and landscape | 100 | - | - |
| Condition of grass or soil | 100 | - | - |
| Water-Based Reasons | | | |
| Water quality | 100 | - | - |
| Formal designation of places for your activity | 43 | - | 14 |
| Waiting time to launch boat | 88 | - | - |
| People in areas they shouldn't be | 100 | - | - |

*Percentages may not total 100% because of those responding "Does Not Apply."

Acceptability of techniques - Table 5 indicates the acceptability of different techniques for solving problems to the boaters and water-skiers surveyed at Milford Lake.

The acceptability of most techniques is very clear: at least 60 percent of the respondents agreed on one of the 3 levels of acceptability for 12 of the 17 techniques. But even for those techniques which most respondents found to be acceptable, up to 38 percent found them to be unacceptable. Thus, project management should expect some opposition to any technique used.

In general, the more apparent and widespread that a problem of overcrowding or overuse is, the more likely users may accept a technique which addresses it. Thus, remedial techniques (which solve existing problems) are generally more acceptable than preventative techniques (which correct a problem before it becomes readily apparent).

The more users can understand the rationale and operation of a technique, the more likely they will accept the use of the technique. Education, therefore, would seem to be an important method of improving user acceptance of different techniques.

It also seems as though the more directly a technique impacts only the problem, and the less it operates to diminish recreational opportunities generally, the more likely users will accept the use of the technique. Thus, techniques which can be applied in the short-term or selectively to problem areas are favored (particularly if done in a crisis setting).

Techniques which call for reductions in existing opportunities to use recreational resources and facilities are strongly disfavored. User expectations of the opportunities available are critical in this determination. Consideration should be given initially to avoiding overdeveloping an area with the idea that selective cutbacks in services and facilities can be accomplished later. Users expectations will be based on the initial level, and subsequent reductions will be disfavored.

Table 6

User Acceptability of Techniques--Boating/Waterskiing
Milford Lake

| Techniques | Levels of Acceptability | | |
|---|---|---|---|
| | Percentage* of Users Responding: | | |
| | Very Acceptable | Mildly Acceptable | Unacceptable |
| General Planning Techniques | | | |
| Keep major recreation areas more separated | 63 | - | 37 |
| Make vehicle access to areas less convenient | - | - | 100 |
| Make area's existence less obvious | - | 25 | 75 |
| Site Planning Techniques | | | |
| Design for greater distance between people | 13 | - | 13 |
| Reduce number of parking spaces | 50 | 25 | 25 |
| Management Techniques | | | |
| Procedures: | | | |
| Require prior reservations | - | - | 100 |
| Require permits | 63 | 25 | 12 |
| Charge/increase fees | - | 12 | 87 |
| Rules and Regulations: | | | |
| Impose more rules | 50 | 12 | 38 |
| Provide stricter enforcement of rules | 38 | - | 62 |
| Close areas when natural resource destruction reaches critical point | 75 | 25 | - |
| Close areas when they become "too full" | 62 | - | 38 |
| Reduce number of activities in same area | 50 | 12 | 38 |
| Keep unnecessary vehicles out | 75 | - | 25 |
| Services: | | | |
| Provide more and better information | 88 | - | 12 |
| Increase maintenance and restoration | 100 | - | - |
| Reduce facilities and services | 25 | 25 | 50 |

*Percentages may not total 100% because of those responding "Does Not Apply."

## BOAT LAUNCHING

### Orientation

The boat launching ramps at Milford are well designed. The ramps have multiple divided lanes; the parking areas are asphalt. Overcrowding is not a problem. Few boat launchers were interviewed during the User Survey.

The findings in the remainder of this section are based on the User Survey. This survey obtained 6 responses from boat launchers at Milford (3 at Farnum Creek, 2 at Milford State Park, and 1 at North Timber Creek).

User characteristics

Table 7 indicates the characteristics of the boat launchers surveyed at Milford.

Table 7

Boat Launcher Characteristics

| Age | Percent of Boat Launchers |
|---|---|
| <18 | 0 |
| 18 - 25 | 0 |
| 26 - 40 | 33 |
| 41 - 55 | 17 |
| 56 - 65 | 33 |
| >65 | 17 |

| Group Size | Percent of Boat Launchers |
|---|---|
| 1 | 17 |
| 2 | 17 |
| 3 - 4 | 17 |
| 5 - 8 | 50 |
| 9 - 12 | 0 |
| >12 | 0 |

| Travel Time to Project Area | Percent of Boat Launchers |
|---|---|
| <15 minutes | 33 |
| 15 - 30 minutes | 0 |
| 30 - 60 minutes | 17 |
| 1 - 2 hours | 33 |
| 2 - 3 hours | 17 |
| 3 - 5 hours | 0 |
| >5 hours | 0 |

| Visit Duration | Percent of Boat Launchers |
|---|---|
| 1 - 4 hours | 17 |
| 5 - 8 hours | 50 |
| 1 day | 0 |
| 2 days | 0 |
| 3 days | 0 |
| 4 days | 0 |
| 5 - 7 days | 17 |
| >7 days | 17 |

| No. of Other Activities | Percent of Boat Launchers |
|---|---|
| 0 | 0 |
| 1 | 0 |
| 2 | 33 |
| 3 | 33 |
| 4 | 33 |
| 5 | 0 |
| 6 | 0 |
| >6 | 0 |

| Equipment | Percent of Boat Launchers |
|---|---|
| Power Boat (>25 h.p.) | 100 |

User opinions

Launch time preferences - The preferred launch times of the users surveyed at Milford ranged from 0-25 minutes and averaged 8 minutes.

Reasons for pleasant/unpleasant experience - Tables 8, 9, and 10 indicate the impact that different factors had on making the boat launching experience pleasant or unpleasant for users at the three areas surveyed. The responses of the boaters surveyed did not vary greatly from one another. Boat launchers at Farnum Creek and Milford State Park found their experience to be generally pleasant. Boat launchers at both North Timber Creek and Milford State Park cited the amount of facilities as an unpleasant factor. Boat launchers at North Timber Creek also indicated that convenience to facilities, maintenance of facilities, and formal designation of places for activities made their experience unpleasant. No factor was so unpleasant as to cause a boat launcher to indicate that he would not return.

Tables 11 and 12 indicate the changes in the physical condition and people's use of the launch areas reportedly by launchers from their previous visit.

Table 8

Reasons Making Recreation Experience Pleasant or Unpleasant--Boat Launching
Farnum Creek

| Reasons | Percentage* of Users Responding: | | |
|---|---|---|---|
| | Pleasant | Unpleasant | Not Important |
| General Reasons | | | |
| Characteristics and behavior of other people | 100 | - | - |
| Distance from other people | 100 | - | - |
| Number of people in other visitor groups | 100 | - | - |
| Number and type of other activities occurring here | 100 | - | - |
| Scenic views | 100 | - | - |
| Noise | 100 | - | - |
| Accidents or near accidents | 100 | - | - |
| Enforcement of rules/regulations | 100 | - | - |
| Car parking facilities | 100 | - | - |
| Theft | 100 | - | - |
| Vandalism | 100 | - | - |
| Land-Based Reasons | | | |
| Amount of facilities (restrooms, water, etc.) | 67 | 33 | - |
| Convenience to facilities (restrooms, water, etc.) | 100 | - | - |
| Steepness of slopes | 100 | - | - |
| Maintenance of facilities | 100 | - | - |
| Condition of trees and landscape | 100 | - | - |
| Condition of grass or soil | 100 | - | - |
| Water-Based Reasons | | | |
| Water quality | 100 | - | - |
| Formal designation of places for your activity | 100 | - | - |
| Waiting time to launch boat | 100 | - | - |
| People in areas they shouldn't be | 100 | - | - |

*Percentages may not total 100% because of those responding "Does Not Apply."

Table 9

Reasons Making Recreation Experience Pleasant or Unpleasant--Boat Launching
Milford State Park

| Reasons | Percentage* of Users Responding: | | |
|---|---|---|---|
| | Pleasant | Unpleasant | Not Important |
| General Reasons | | | |
| Characteristics and behavior of other people | 100 | - | - |
| Distance from other people | 100 | - | - |
| Number of people in other visitor groups | 50 | - | 50 |
| Number and type of other activities occurring here | 100 | - | - |
| Scenic views | 100 | - | - |
| Noise | 100 | - | - |
| Accidents or near accidents | 100 | - | - |
| Enforcement of rules/regulations | 100 | - | - |
| Car parking facilities | 100 | - | - |
| Theft | 100 | - | - |
| Vandalism | 100 | - | - |
| Land-Based Reasons | | | |
| Amount of facilities (restrooms, water, etc.) | 100 | - | - |
| Convenience to facilities (restrooms, water, etc.) | 100 | - | - |
| Steepness of slopes | 100 | - | - |
| Maintenance of facilities | 100 | - | - |
| Condition of trees and landscape | - | - | 50 |
| Condition of grass or soil | - | - | 50 |
| Water-Based Reasons | | | |
| Water quality | 100 | - | - |
| Formal designation of places for your activity | 100 | - | - |
| Waiting time to launch boat | 100 | - | - |
| People in areas they shouldn't be | 100 | - | - |

*Percentages may not total 100% because of those responding "Does Not Apply."

Table 10

Reasons Making Recreation Experience Pleasant or Unpleasant--Boat Launching
North Timber Creek

| Reasons | Percentage* of Users Responding: | | |
|---|---|---|---|
| | Pleasant | Unpleasant | Not Important |
| General Reasons | | | |
| Characteristics and behavior of other people | 100 | - | - |
| Distance from other people | 100 | - | - |
| Number of people in other visitor groups | - | - | 100 |
| Number and type of other activities occurring here | 100 | - | - |
| Scenic views | 100 | - | - |
| Noise | 100 | - | - |
| Accidents or near accidents | 100 | - | - |
| Enforcement of rules/regulations | 100 | - | - |
| Car parking facilities | 100 | - | - |
| Theft | 100 | - | - |
| Vandalism | 100 | - | - |
| Land-Based Reasons | | | |
| Amount of facilities (restrooms, water, etc.) | - | 100 | - |
| Convenience to facilities (restrooms, water, etc.) | - | 100 | - |
| Steepness of slopes | 100 | - | - |
| Maintenance of facilities | - | 100 | - |
| Condition of trees and landscape | 100 | - | - |
| Condition of grass or soil | 100 | - | - |
| Water-Based Reasons | | | |
| Water quality | 100 | - | - |
| Formal designation of places for your activity | - | 100 | - |
| Waiting time to launch boat | 100 | - | - |
| People in areas they shouldn't be | 100 | - | - |

*Percentages may not total 100% because of those responding "Does Not Apply."

Table 11

Positive and Negative Changes Noticed in the Physical Conditions of the Area - Items Mentioned by Boat Launchers

| Area | Positive Changes | Negative Changes |
|---|---|---|
| Farnum Creek | "Parking spaces" (1)<br>"Picnic area" (1) | (None mentioned) |
| Milford State Park | (None mentioned) | (None mentioned) |
| North Timber Creek | (None mentioned) | (None mentioned) |

NOTE: The number in parenthesis (#) indicates the number of times the change was mentioned.

Table 12

Positive and Negative Changes Noticed in the People's Use of the Area - Items Mentioned by Boat Launchers

| Area | Positive Changes | Negative Changes |
|---|---|---|
| Farnum Creek | "More careful" (1) | (None mentioned) |
| Milford State Park | (None mentioned) | (None mentioned) |
| North Timber Creek | (None mentioned) | (None mentioned) |

NOTE: The number in parenthesis (#) indicates the number of times the change was mentioned.

Acceptability of techniques - Table 13 indicates the acceptability of different techniques for solving problems to the boat launchers surveyed at Milford.

The acceptability of many techniques is very clear: at least 60 percent of the respondents agreed on one of the 3 levels of acceptability for 8 of the 21 techniques. But even for those techniques which most respondents found to be acceptable, up to 33 percent found them to be unacceptable. Thus, project management should expect some opposition to any technique used.

Table 13

User Acceptability of Techniques--Boat Launching
Milford Lake

| Techniques | Levels of Acceptability<br>Percentage* of Users Responding: | | |
|---|---|---|---|
| | Very Acceptable | Mildly Acceptable | Unacceptable |
| General Planning Techniques | | | |
| Keep major recreation areas more separated | 33 | 33 | 33 |
| Make vehicle access to areas less convenient | - | 33 | 67 |
| Make area's existence less obvious | - | - | 100 |
| Site Planning Techniques | | | |
| Redesign area to accommodate fewer users | 17 | 67 | 17 |
| Design for greater distance between people | 17 | 50 | 17 |
| Reduce number of parking spaces | | | 100 |
| Management Techniques | | | |
| Procedures: | | | |
| Require prior reservations | - | - | 100 |
| Require permits | 50 | - | 50 |
| Charge/increase fees | 17 | 33 | 50 |
| Rules and Regulations: | | | |
| Impose more rules | - | 33 | 67 |
| Provide stricter enforcement of rules | 17 | 50 | 33 |
| Close areas when natural resource destruction reaches critical point | 50 | 17 | 33 |
| Close areas when they become "too full" | 17 | 50 | 33 |
| Reduce number of activities in same area | 33 | 33 | 33 |
| Limit number of people in visitor groups | - | 17 | 83 |
| Keep unnecessary vehicles out | 50 | 50 | - |
| Services: | | | |
| Provide more and better information | 50 | 50 | - |
| Increase maintenance and restoration | 50 | 33 | 17 |
| Reduce facilities and services | - | - | 100 |

*Percentages may not total 100% because of those responding "Does Not Apply."

## CAMPING

### Orientation

Milford provides opportunities for a variety of different types of camping experiences: individual tent and trailer sites, "multi-family" campsites, and group camping areas. Overflow areas are used during heavy use periods. Many trees have been planted to provide shade, serve as landscape buffers, and to make the area more attractive. Overuse and overcrowding are not significant problems at Milford.

The findings presented in the remainder of this section are based on the User Survey. This survey obtained 43 responses from campers at Milford (4 responses at Curtis Creek, 10 at Farnum Creek, 11 at North Timber Creek, 8 at South Timber Creek, and 10 at School Creek).

User characteristics

Table 14 indicates the characteristics of the campers surveyed at Milford. The most significant difference in the characteristics of the campers at Milford from those of other study project areas is the relatively large size of the camping groups.

Table 14

Camper Characteristics

| Age | Percent of Campers |
|---|---|
| <18 | 0 |
| 18 - 25 | 19 |
| 26 - 40 | 30 |
| 41 - 55 | 37 |
| 56 - 65 | 9 |
| >65 | 5 |

| Group Size | Percent of Campers |
|---|---|
| 1 | 0 |
| 2 | 30 |
| 3 - 4 | 16 |
| 5 - 8 | 35 |
| 9 - 12 | 14* |
| >12 | 8* |

| Travel Time to Project Area | Percent of Campers |
|---|---|
| <15 minutes | 5 |
| 15 - 30 minutes | 14 |
| 30 - 60 minutes | 16 |
| 1 - 2 hours | 33 |
| 2 - 3 hours | 21 |
| 3 - 5 hours | 7 |
| >5 hours | 5 |

| Visit Duration | Percent of Campers |
|---|---|
| 1 - 4 hours | 0 |
| 5 - 8 hours | 2 |
| 1 day | 9 |
| 2 days | 44 |
| 3 days | 21 |
| 4 days | 7 |
| 5 - 7 days | 2 |
| >7 days | 14 |

| No. of Other Activities | Percent of Campers |
|---|---|
| 0 | 5 |
| 1 | 5 |
| 2 | 19 |
| 3 | 12 |
| 4 | 14 |
| 5 | 19 |
| 6 | 12 |
| >6 | 16 |

| Equipment | Percent of Campers |
|---|---|
| Tent | 21 |
| Tent Camper | 5 |
| Truck-mounted Camper | 24 |
| Travel Trailer | 38 |
| Van | 5 |
| Motor Home | 7 |

*Significantly higher than total survey sample.

User opinions

Spacing preferences - Tables 15 and 16 indicate the spacing (as measured on center of each site) that campers surveyed at Milford and elsewhere prefer (as measured on center of each site).

Table 15

Preferred Distance Responses* - Camping

| Sample | Sample Size | Range | Mean | Median | Mode |
|---|---|---|---|---|---|
| All Campers Surveyed (11 projects) | 511 | 10 - a | 79 | 60 | 75 |
| Milford | 43 | 30 - a | 141 | 75 | 75 |
| Curtis Creek | 4 | 60 - 100 | 78 | 75 | 75 |
| Farnum Creek | 10 | 30 - 180 | 64 | 40 | - |
| School Creek | 10 | 150- 600 | - | - | - |
| Timber Creek, North | 11 | 30 - a | 63 | 60 | - |
| Timber Creek, South | 8 | 40 - 100 | 72 | 75 | - |

*in feet; See Appendix A for definitions of terms.
a - response of "alone" or "out of sight."

Table 16

Preferred Distance Responses in Planning Range and Preference Groupings*

| Sample | % in Planning Range[1] (20'-120') | % in A[2] (20'-39') | % in B[2] (40'-59') | % in C[2] (60'-79') | % in D[2] (80'-120') |
|---|---|---|---|---|---|
| All Campers Surveyed | 90% | 20% | 28% | 31% | 21% |
| Milford | 72 | 17 | 17 | 28 | 39 |
| Curtis Creek | 100 | 0 | 0 | 75 | 25 |
| Farnum Creek | 80 | 25 | 25 | 0 | 50 |
| School Creek | 0 | - | - | - | - |
| Timber Creek, North | 60 | 33 | 0 | 33 | 33 |
| Timber Creek, South | 100 | 0 | 33 | 33 | 33 |

*See Appendix A for definitions of terms; See Technical Report for full development of spacing preference information.
[1]Percentage of all preferred distance responses.
[2]Percentage of all preferred distance responses within the Planning Range.

While the preferences of campers at the five areas differ from each other, the preferences of campers at School Creek differed most significantly from those at the other areas. Spacing in the range of group D (80'-120' feet) is greatly favored at all five camping areas.

Reasons for pleasant/unpleasant experience - Tables 17, 18, 19, 20, and 21 indicate the impact that different factors had on making the camping experience pleasant or unpleasant for users at the five areas surveyed. Most campers at Milford rated their experience as pleasant. Yet in all five camping areas, the amount of facilities (water, restrooms, etc.) and/or convenience to facilities were cited as unpleasant factors, especially at North Timber Creek. At Curtis Creek, Farnum Creek, and School Creek car parking facilities were also considered to be unpleasant in a significant number of cases. Distance from other people and visual privacy were unpleasant factors in a significant number of cases at both Curtis Creek and Farnum Creek. None of these factors was so unpleasant as to cause the campers surveyed to indicate that they would not return.

Tables 22 and 23 indicate the changes in the physical condition and people's use of the camping areas reported by campers from their previous visit.

Table 17

Reasons Making Recreation Experience Pleasant or Unpleasant--Camping
Curtis Creek

| Reasons | Percentage* of Users Responding: | | |
|---|---|---|---|
| | Pleasant | Unpleasant | Not Important |
| General Reasons | | | |
| Characteristics and behavior of other people | 75 | 25 | - |
| Distance from other people | 50 | 50 | - |
| Number of people in other visitor groups | 50 | - | 50 |
| Number and type of other activities occurring here | 75 | - | - |
| Fees charged | 100 | - | - |
| Scenic views | 100 | - | - |
| Noise | 75 | - | 25 |
| Accidents or near accidents | 100 | - | - |
| Enforcement of rules/regulations | 100 | - | - |
| Car parking facilities | 50 | 50 | - |
| Theft | 100 | - | - |
| Vandalism | 100 | - | - |
| Land-Based Reasons | | | |
| Visual privacy from other people | 75 | - | 25 |
| Amount of facilities (restrooms, water, etc.) | 75 | 25 | - |
| Convenience to facilities (restrooms, water, etc.) | 75 | 25 | - |
| Nearness to the water body | 100 | - | - |
| Steepness of slopes | 100 | - | - |
| Maintenance of facilities | 100 | - | - |
| Condition of trees and landscape | 100 | - | - |
| Condition of grass or soil | 100 | - | - |
| Water-Based Reasons | | | |
| Water quality | 100 | - | - |

*Percentages may not total 100% because of those responding "Does Not Apply."

Table 18

Reasons Making Recreation Experience Pleasant or Unpleasant--Camping
Farnum Creek

| Reasons | Percentage* of Users Responding: | | |
|---|---|---|---|
| | Pleasant | Unpleasant | Not Important |
| General Reasons | | | |
| Characteristics and behavior of other people | 60 | 20 | 20 |
| Distance from other people | 78 | 22 | - |
| Number of people in other visitor groups | 78 | - | 22 |
| Number and type of other activities occurring here | 78 | - | 22 |
| Fees charged | 67 | - | 33 |
| Scenic views | 100 | - | - |
| Noise | 100 | - | - |
| Accidents or near accidents | 100 | - | - |
| Enforcement of rules/regulations | 100 | - | - |
| Car parking facilities | 80 | 20 | - |
| Theft | 100 | - | - |
| Vandalism | 100 | - | - |
| Land-Based Reasons | | | |
| Visual privacy from other people | 70 | 20 | 10 |
| Amount of facilities (restrooms, water, etc.) | 30 | 70 | - |
| Convenience to facilities (restrooms, water, etc.) | 100 | - | - |
| Nearness to the water body | 100 | - | - |
| Steepness of slopes | 80 | - | 20 |
| Maintenance of facilities | 90 | 10 | - |
| Condition of trees and landscape | 100 | - | - |
| Condition of grass or soil | 100 | - | - |
| Water-Based Reasons | | | |
| Water quality | 80 | - | 20 |

*Percentages may not total 100% because of those responding "Does Not Apply."

Table 19

Reasons Making Recreation Experience Pleasant or Unpleasant--Camping
School Creek

| Reasons | Percentage* of Users Responding: | | |
|---|---|---|---|
| | Pleasant | Unpleasant | Not Important |
| General Reasons | | | |
| Characteristics and behavior of other people | 100 | - | - |
| Distance from other people | 90 | - | 10 |
| Number of people in other visitor groups | 70 | - | 30 |
| Number and type of other activities occurring here | 70 | - | 30 |
| Fees charged | - | - | - |
| Scenic views | 100 | - | - |
| Noise | 90 | - | 10 |
| Accidents or near accidents | 80 | - | - |
| Enforcement of rules/regulations | 80 | 10 | - |
| Car parking facilities | 70 | 20 | 10 |
| Theft | 90 | - | - |
| Vandalism | 90 | - | - |
| Land-Based Reasons | | | |
| Visual privacy from other people | 80 | - | 20 |
| Amount of facilities (restrooms, water, etc.) | 70 | 20 | 10 |
| Convenience to facilities (restrooms, water, etc.) | 70 | 20 | 10 |
| Nearness to the water body | 70 | 30 | - |
| Steepness of slopes | 90 | 10 | - |
| Maintenance of facilities | 100 | - | - |
| Condition of trees and landscape | 100 | - | - |
| Condition of grass or soil | 100 | - | - |
| Water-Based Reasons | | | |
| Water quality | 100 | - | - |

*Percentages may not total 100% because of those responding "Does Not Apply."

Table 20

Reasons Making Recreation Experience Pleasant or Unpleasant--Camping
North Timber Creek

| Reasons | Percentage* of Users Responding: | | |
|---|---|---|---|
| | Pleasant | Unpleasant | Not Important |
| General Reasons | | | |
| Characteristics and behavior of other people | 100 | - | - |
| Distance from other people | 100 | - | - |
| Number of people in other visitor groups | 40 | - | 40 |
| Number and type of other activities occurring here | 80 | - | 10 |
| Fees charged | 70 | - | 30 |
| Scenic views | 100 | - | - |
| Noise | 91 | 9 | - |
| Accidents or near accidents | 82 | - | - |
| Enforcement of rules/regulations | 90 | - | - |
| Car parking facilities | 82 | 9 | 9 |
| Theft | 73 | - | 9 |
| Vandalism | 73 | - | - |
| Land-Based Reasons | | | |
| Visual privacy from other people | 55 | 9 | 18 |
| Amount of facilities (restrooms, water, etc.) | - | 91 | 9 |
| Convenience to facilities (restrooms, water, etc.) | 36 | 55 | 9 |
| Nearness to the water body | 100 | - | - |
| Steepness of slopes | 91 | - | 9 |
| Maintenance of facilities | 82 | 18 | - |
| Condition of trees and landscape | 100 | - | - |
| Condition of grass or soil | 100 | - | - |
| Water-Based Reasons | | | |
| Water quality | 90 | 10 | - |

*Percentages may not total 100% because of those responding "Does Not Apply."

Table 21

Reasons Making Recreation Experience Pleasant or Unpleasant--Camping
South Timber Creek

| Reasons | Percentage* of Users Responding: | | |
|---|---|---|---|
| | Pleasant | Unpleasant | Not Important |
| General Reasons | | | |
| Characteristics and behavior of other people | 100 | - | - |
| Distance from other people | 88 | - | 12 |
| Number of people in other visitor groups | 50 | - | 50 |
| Number and type of other activities occurring here | 75 | - | 25 |
| Fees charged | 88 | - | 12 |
| Scenic views | 100 | - | - |
| Noise | 88 | - | 12 |
| Accidents or near accidents | 100 | - | - |
| Enforcement of rules/regulations | 88 | 12 | - |
| Car parking facilities | 88 | - | 12 |
| Theft | 100 | - | - |
| Vandalism | 100 | - | - |
| Land-Based Reasons | | | |
| Visual privacy from other people | 100 | - | - |
| Amount of facilities (restrooms, water, etc.) | 50 | 50 | - |
| Convenience to facilities (restrooms, water, etc.) | 50 | 50 | - |
| Nearness to the water body | 100 | - | - |
| Steepness of slopes | 88 | 12 | - |
| Maintenance of facilities | 88 | 12 | - |
| Condition of trees and landscape | 100 | - | - |
| Condition of grass or soil | 100 | - | - |
| Water-Based Reasons | | | |
| Water quality | 100 | - | - |

*Percentages may not total 100% because of those responding "Does Not Apply."

Table 22

Positive and Negative Changes Noticed in the Physical Conditions of the Area - Items Mentioned by Campers

| Area | Positive Changes | Negative Changes |
|---|---|---|
| Curtis Creek | "Built up beach" (1) | "Stricter" (1) |
| Farnum Creek | "Cleaner" (1) | (None mentioned) |
| | "Better pads" (2) | |
| | "Fireplaces" (2) | |
| | "Roads" (1) | |
| | "Tables" (1) | |
| | "Added toilet" (1) | |
| School Creek | "Lake water level high" (1) | "Not enough dump stations" (1) |
| | "More pads" (1) | "Not enough shower facilities" (1) |
| | "More trees" (1) | "Roads" (1) |
| | | "Pads designated" (1) |
| Timber Creek, North | "Beach installed" (2) | "Dead limbs on trees" (1) |
| | "Runs (driveways)" (1) | "Extra toilets" (1) |
| | "Fireplaces" (1) | "No more bikes" (1) |
| | "Roads" (1) | |
| | "Pads" (1) | |
| | "Brush trimmed" (1) | |
| Timber Creek, South | "Designated campsites" (1) | (None mentioned) |
| | "A few more trees" (1) | |

NOTE: The number in parenthesis (#) indicates the number of times the change was mentioned.

Table 23

Positive and Negative Changes Noticed in the People's Use of the Area - Items Mentioned by Campers

| Area | Positive Changes | Negative Changes |
|---|---|---|
| Curtis Creek | "Same people at the area" (1) | (None mentioned) |
| Farnum Creek | "More careful" (1) | (None mentioned) |
| School Creek | "Much less trash" (1) | (None mentioned) |
| Timber Creek, North | "Good use of area" (1)<br>"Quieter" (1)<br>"Ranger comes by more" (1)<br>"Maintenance" (1) | "Skiers come too close to shore" (1) |
| Timber Creek, South | (None mentioned) | (None mentioned) |

NOTE: The number in parenthesis (#) indicates the number of times the change was mentioned.

Acceptability of techniques - Table 24 indicates the acceptability of different techniques for solving problems to the campers surveyed at Milford.

The acceptability of many techniques is very clear: at least 60 percent of the respondents agreed on one of the 3 levels of acceptability for 11 of the 22 techniques. But even for those techniques which most respondents found to be acceptable, up to 46 percent found them to be unacceptable. Thus, project management should expect some opposition to any technique used.

Table 24

User Acceptability of Techniques--Camping
Milford Lake

| Techniques | Levels of Acceptability<br>Percentage* of Users Responding: | | |
|---|---|---|---|
| | Very Acceptable | Mildly Acceptable | Unacceptable |
| General Planning Techniques | | | |
| Keep major recreation areas more separated | 49 | 21 | 19 |
| Make vehicle access to areas less convenient | 5 | 16 | 79 |
| Make area's existence less obvious | 5 | 23 | 72 |
| Site Planning Techniques | | | |
| Redesign area to accommodate fewer users | 58 | 23 | 19 |
| Design for greater distance between people | 60 | 14 | 26 |
| Reduce number of parking spaces | 25 | 21 | 51 |
| Change natural surface by hardening | 33 | 23 | 37 |
| Change natural surface by paving | 50 | 25 | 25 |
| Provide landscaped buffers | 60 | 28 | 12 |
| Management Techniques | | | |
| Procedures: | | | |
| Require prior reservations | 5 | 14 | 81 |
| Require permits | 26 | 28 | 46 |
| Charge/increase fees | 12 | 30 | 56 |
| Rules and Regulations: | | | |
| Impose more rules | 9 | 14 | 77 |
| Provide stricter enforcement of rules | 42 | 19 | 33 |
| Close areas when natural resource destruction reaches critical point | 86 | 12 | 2 |
| Close areas when they become "too full" | 63 | 16 | 21 |
| Reduce number of activities in same area | 40 | 35 | 23 |
| Limit number of people in visitor groups | 26 | 14 | 60 |
| Keep unnecessary vehicles out | 58 | 14 | 28 |
| Services: | | | |
| Provide more and better information | 49 | 28 | 16 |
| Increase maintenance and restoration | 74 | 21 | 5 |
| Reduce facilities and services | 14 | 9 | 77 |

*Percentages may not total 100% because of those responding "Does Not Apply."

## HIKING

### Orientation

The South Timber Creek trail is used mostly by campers and organized groups. The pathway is heavily worn. Overcrowding is not a problem (only one person was observed using the trail during the User Survey).

### User information

Because there was only one respondent in the User Survey, only limited information will be presented.

The respondent was between the ages of 26-40, was a member of a 3-4 person group, lived 2-3 hours travel time from the project, was visiting for 2 days, and participated in four other activities. He preferred there to be 1320 feet between his group and other groups of hikers.

He found his visit to be generally pleasant, with only the amount of facilities being unpleasant. This would not prevent him from returning, however, He noticed no changes in the physical condition or in people's use of the area since his previous visit.

He found most of the techniques for dealing with problems of overcrowding and overuse to be very acceptable. He considered that "making vehicle access less convenient," "paving natural surfaces," "providing landscaped buffers," "requiring permits," and "limiting the number of people in visitor groups" to be only mildly acceptable; and "hardening natural surfaces," "requiring prior reservations," "charging fees," "reducing the number of activities in the same area," and "reducing facilities and services" to be unacceptable.

## OFF-ROAD VEHICLE (ORV) RIDING

### Orientation

A designated area is provided for off-road vehicle (ORV) riding. The area, once an old rock quarry, is well suited for ORV riding. The open areas and trails are used by motorcycles, but also by three-wheelers, jeeps, and all-terrain vehicles. Vault toilets and trash containers are provided.

The findings presented in the remainder of this section are based on the User Survey. This survey obtained 7 responses from off-road vehicle riders at School Creek.

User characteristics

Table 25 indicates the characteristics of the riders surveyed at School Creek.

Table 25

ORV Rider Characteristics

| Age | Percent of ORV Riders |
|---|---|
| <18 | 14 |
| 18 - 25 | 57 |
| 26 - 40 | 29 |
| 41 - 55 | 0 |
| 56 - 65 | 0 |
| >65 | 0 |

| Group Size | Percent of ORV Riders |
|---|---|
| 1 | 0 |
| 2 | 29 |
| 3 - 4 | 29 |
| 5 - 8 | 14 |
| 9 - 12 | 29 |
| >12 | 0 |

| Travel Time to Project Area | Percent of ORV Riders |
|---|---|
| <15 minutes | 0 |
| 15 - 30 minutes | 0 |
| 30 - 60 minutes | 29 |
| 1 - 2 hours | 57 |
| 2 - 3 hours | 14 |
| 3 - 5 hours | 0 |
| >5 hours | 0 |

| Visit Duration | Percent of ORV Riders |
|---|---|
| 1 - 4 hours | 0 |
| 5 - 8 hours | 0 |
| 1 day | 14 |
| 2 days | 43 |
| 3 days | 43 |
| 4 days | 0 |
| 5 - 7 days | 0 |
| >7 days | 0 |

| No. of Other Activities | Percent of ORV Riders |
|---|---|
| 0 | 0 |
| 1 | 57 |
| 2 | 0 |
| 3 | 0 |
| 4 | 0 |
| 5 | 0 |
| 6 | 43 |
| >6 | 0 |

| Equipment | Percent of ORV Riders |
|---|---|
| Motorcycle | 57 |
| Dune Buggy | 29 |
| 4-Wheel Drive | 14 |

*Significantly higher than total survey sample.
**Significantly lower than total survey sample.

User opinions

Spacing preferences - The mean spacing preference by riders was 212 feet, somewhat less than the mean preferred spacing for all ORV riders of 276 feet.

Reasons for pleasant/unpleasant experience - Table 26 indicates the impact that different factors had on making the ORV experience pleasant or unpleasant for users at School Creek. ORV riders at School Creek found their experience to be generally pleasant. The maintenance of facilities and the occurrence of accidents or near accidents were the factors which most often made the experience at School Creek unpleasant. None of these factors were so unpleasant as to cause any of the ORV riders to indicate that they would not return.

Table 27 indicates the changes in the physical condition of the area as reported by ORV riders from their previous visit. No changes in people's use of the area were reported.

Table 26

Reasons Making Recreation Experience Pleasant or Unpleasant--ORV Riding
Milford Lake

| | Percentage* of Users Responding: | | |
|---|---|---|---|
| | Pleasant | Unpleasant | Not Important |
| General Reasons | | | |
| Characteristics and behavior of other people | 86 | 14 | - |
| Distance from other people | 100 | - | - |
| Number of people in other visitor groups | 71 | - | 29 |
| Number and type of other activities occurring here | 86 | 14 | - |
| Scenic views | 100 | - | - |
| Noise | 14 | 14 | 71 |
| Accidents or near accidents | 57 | 43 | - |
| Enforcement of rules/regulations | 86 | - | 14 |
| Car parking facilities | 100 | - | - |
| Theft | 100 | - | - |
| Vandalism | 100 | - | - |
| Land-Based Reasons | | | |
| Amount of facilities (restrooms, water, etc.) | 57 | 14 | 29 |
| Convenience to facilities (restrooms, water, etc.) | 86 | 14 | - |
| Nearness to the water body | 100 | - | - |
| Steepness of slopes | 100 | - | - |
| Maintenance of facilities | 43 | 43 | 15 |
| Condition of trees and landscape | 100 | - | - |
| Condition of grass or soil | 86 | - | 14 |
| Water-Based Reasons | | | |
| Water quality | 100 | - | - |

*Percentages may not total 100% because of those responding "Does Not Apply."

Table 27

Positive and Negative Changes Noticed in the Physical Condition of the Area - Items Mentioned by ORV Riders

| Area | Positive Changes | Negative Changes |
|---|---|---|
| School Creek | "New trails" (1) | "Washed out trails" (2) |
| | "Toilets" (2) | "Needs better access road" (1) |
| | "Signs" (1) | |
| | "More bikes" (1) | |

NOTE: The number in parenthesis (#) indicates the number of times the change was mentioned.

Acceptability of techniques - Table 28 indicates the acceptability of different techniques for solving problems to the ORV riders surveyed at Milford.

The acceptability of many techniques is very clear: at least 60 percent of the respondents agreed on one of the 3 levels of acceptability for 8 of the 21 techniques. But even for those techniques which most respondents found to be acceptable, up to 43 percent found them to be unacceptable. Thus, project management should expect some opposition to any technique used.

Table 28

User Acceptability of Techniques--ORV Riding
Milford Lake

| Techniques | Levels of Acceptability<br>Percentage* of Users Responding: | | |
|---|---|---|---|
| | Very Acceptable | Mildly Acceptable | Unacceptable |
| General Planning Techniques | | | |
| Keep major recreation areas more separated | - | 29 | 57 |
| Make vehicle access to areas less convenient | - | - | 86 |
| Make area's existence less obvious | 43 | 14 | 43 |
| Site Planning Techniques | | | |
| Redesign area to accommodate fewer users | - | 14 | 57 |
| Design for greater distance between people | 14 | 14 | 14 |
| Reduce number of parking spaces | 14 | - | 86 |
| Change natural surface by hardening | - | - | 57 |
| Provide landscaped buffers | - | - | 14 |
| Management Techniques | | | |
| Procedures: | | | |
| Require prior reservations | - | - | 100 |
| Require permits | 14 | 43 | 43 |
| Charge/increase fees | - | 43 | 57 |
| Rules and Regulations: | | | |
| Impose more rules | - | 14 | 86 |
| Provide stricter enforcement of rules | 14 | 43 | 43 |
| Close areas when natural resource destruction reaches critical point | 43 | - | 43 |
| Close areas when they become "too full" | 43 | - | 57 |
| Reduce number of activities in seam area | 14 | - | 86 |
| Limit number of people in visitor groups | 29 | 29 | 29 |
| Keep unnecessary vehicles out | 86 | - | 14 |
| Services: | | | |
| Provide more and better information | 71 | - | 29 |
| Increase maintenance and restoration | 43 | 27 | 27 |
| Reduce facilities and services | 29 | - | 71 |

*Percentages may not total 100% because of those responding "Does Not Apply."

## SHORELINE FISHING

### Orientation

Shoreline fishing is very popular at Milford, especially at the outlet channel.

The findings presented in the remainder of this section are based on the User Survey. This survey obtained 26 responses from shoreline fishermen at the Outlet channel.

User characteristics

Table 29 indicates the characteristics of the shoreline fishermen surveyed. Many more of the fishermen surveyed at the Outlet came from nearby areas than the shoreline fishermen surveyed at other project areas.

Table 29

Shoreline Fisherman Characteristics

| Age | Percent of Shoreline Fishermen |
|---|---|
| <18 | 8 |
| 18 - 25 | 31 |
| 26 - 40 | 27 |
| 41 - 55 | 23 |
| 56 - 65 | 0 |
| >65 | 11 |

| Group Size | Percent of Shoreline Fishermen |
|---|---|
| 1 | 50 |
| 2 | 31 |
| 3 - 4 | 19 |
| 5 - 8 | 0 |
| 9 - 12 | 0 |
| >12 | 0 |

| Travel Time to Project Area | Percent of Shoreline Fishermen |
|---|---|
| <15 minutes | 42* |
| 15 - 30 minutes | 35* |
| 30 - 60 minutes | 19 |
| 1 - 2 hours | 4** |
| 2 - 3 hours | 0 |
| 3 - 5 hours | 0 |
| >5 hours | 0 |

| Visit Duration | Percent of Shoreline Fishermen |
|---|---|
| 1 - 4 hours | 36 |
| 5 - 8 hours | 52 |
| 1 day | 0 |
| 2 days | 8 |
| 3 days | 4 |
| 4 days | 0 |
| 5 - 7 days | 0 |
| >7 days | 0 |

| No. of Other Activities | Percent of Shoreline Fishermen |
|---|---|
| 0 | 100 |
| 1 | 0 |
| 2 | 0 |
| 3 | 0 |
| 4 | 0 |
| 5 | 0 |
| 6 | 0 |
| >6 | 0 |

*Significantly higher than total survey sample.
**Significantly lower than total survey sample.

User opinions

Spacing preferences - Tables 30 and 31 indicate the spacing that shoreline fishermen surveyed at the Outlet and elsewhere prefer.

Table 30

Preferred Distance Responses*

| Sample | Sample Size | Range | Mean | Median | Mode |
|---|---|---|---|---|---|
| All shoreline fishermen surveyed | 106 | 6 - a | 76 | 35 | 50 |
| Outlet | 26 | 6 - 300 | 36 | 30 | 15, 50 |

*In feet; See Appendix A for definitions of terms.
a - response of "alone" or "out of sight."

Table 31

Preferred Distance Responses in Planning Range and Preference Groupings*

| Sample | % in Planning Range[1] (10'-100') | % in A[2] (10'-19') | % in B[2] (20'-39') | % in C[2] (40'-59') | % in D[2] (60'-100') |
|---|---|---|---|---|---|
| All Shoreline Fishermen surveyed | 83% | 20% | 38% | 24% | 18% |
| Outlet | 77 | 29 | 29 | 29 | 12 |

*See Appendix A for definitions of terms; See Technical Report for a full development of spacing preference information.

[1]Percentage of all preferred distance responses.
[2]Percentage of all preferred distance responses in Planning Range.

The shoreline fishermen surveyed at the Outlet have a similar pattern of preferences to the total survey sample.

Reasons for pleasant/unpleasant experience - Table 32 indicates the impact that different factors had on making the shoreline fishing experience pleasant or unpleasant for users at the Outlet. The shoreline fishermen found most aspects of their experience at Outlet to be pleasant. The amount of facilities and convenience to facilities were the factors most often considered unpleasant. Table 33 presents the reasons given by those shoreline fishermen who indicated that they would not return.

Table 34 indicates the changes in the physical condition of the Outlet reported by shoreline fishermen on their previous visit. No changes in people's use of the Outlet were reported.

Table 33

Number and Percent of Users That Indicated They Would Not Return to the Activity Area and Their Reasons

| Area | Number and percent of users surveyed who indicated they would not return # | % | Reasons for not wanting to return |
|---|---|---|---|
| Outlet | 2 | 8% | "Others tangle lines, snag fish" |
| | 1 | 4% | "Behavior of others" |

Table 34

Positive and Negative Changes Noticed in the Physical Conditions of the Area - Items Mentioned by Shoreline Fishermen

| Area | Positive Changes | | Negative Changes | |
|---|---|---|---|---|
| Outlet | "Better fishing" | (1) | "Fewer fish" | (2) |
| | "Lights for night fishing" | (1) | "More litter" | (3) |
| | "More people" | (2) | "More crowded" | (2) |
| | "More scenery, better than before" | (1) | "Water too fast" | (2) |
| | "Water cleaner" | (1) | | |

NOTE: The number in parenthesis (#) indicates the number of times the change was mentioned.

Table 32

Reasons Making Recreation Experience Pleasant or Unpleasant--Shoreline Fishing Outlet

| Reasons | Percentage* of Users Responding: | | |
|---|---|---|---|
| | Pleasant | Unpleasant | Not Important |
| General Reasons | | | |
| Characteristics and behavior of other people | 69 | 19 | 11 |
| Distance from other people | 89 | 11 | - |
| Number of people in other visitor groups | 54 | - | 35 |
| Number and type of other activities occurring here | 35 | 7 | 11 |
| Scenic views | 81 | 8 | 11 |
| Noise | 77 | 8 | 8 |
| Accidents or near accidents | 89 | 8 | - |
| Enforcement of rules/regulations | 81 | 15 | 4 |
| Car parking facilities | 96 | 4 | - |
| Theft | 80 | 16 | - |
| Vandalism | - | - | - |
| Land-Based Reasons | | | |
| Visual privacy from other people | 5 | 5 | 85 |
| Amount of facilities (restrooms, water, etc.) | 62 | 29 | 10 |
| Convenience to facilities (restrooms, water, etc.) | 62 | 24 | 14 |
| Nearness to the water body | 40 | - | - |
| Steepness of slopes | 70 | 20 | 10 |
| Maintenance of facilities | 84 | 11 | 5 |
| Condition of trees and landscape | 63 | 11 | 16 |
| Condition of grass or soil | 68 | 5 | 16 |
| Water-Based Reasons | | | |
| Water quality | 92 | 4 | 4 |
| Catching fish | 73 | 23 | - |
| Formal designation of places for your activity | 16 | - | 8 |

*Percentages may not total 100% because of those responding "Does Not Apply."

Acceptability of techniques - Table 35 indicates the acceptability of different techniques for solving problems to the shoreline fishermen surveyed at the Outlet.

The acceptability of most techniques is very clear: at least 60 percent of the respondents agreed on one of the 3 levels of acceptability for 11 of the 21 techniques. But even for those techniques which most respondents found to be acceptable, up to 42 percent found them to be unacceptable. Thus, project management should expect some opposition to any technique used.

Table 35

User Acceptability of Techniques--Shoreline Fishermen
Milford Lake

| Techniques | Levels of Acceptability<br>Percentage* of Users Responding: | | |
|---|---|---|---|
| | Very Acceptable | Mildly Acceptable | Unacceptable |
| General Planning Techniques | | | |
| Keep major recreation areas more separated | 54 | 8 | 15 |
| Make vehicle access to areas less convenient | 15 | 23 | 62 |
| Make area's existence less obvious | 8 | 12 | 72 |
| Site Planning Techniques | | | |
| Redesign area to accommodate fewer users | 23 | 23 | 39 |
| Design for greater distance between people | 39 | 39 | 19 |
| Reduce number of parking spaces | 46 | 4 | 50 |
| Change natural surface by paving | 39 | 15 | 23 |
| Provide landscaped buffers | 8 | - | 31 |
| Management Techniques | | | |
| Procedures: | | | |
| Require prior reservations | 8 | 8 | 85 |
| Require permits | 8 | 4 | 81 |
| Charge/increase fees | 4 | 12 | 85 |
| Rules and Regulations: | | | |
| Impose more rules | 20 | 16 | 64 |
| Provide stricter enforcement of rules | 62 | 12 | 27 |
| Close areas when natural resource destruction reaches critical point | 76 | 12 | 4 |
| Close areas when they become "too full" | 27 | 31 | 42 |
| Reduce number of activities in seam area | 50 | 12 | 12 |
| Limit number of people in visitor groups | 8 | 15 | 69 |
| Keep unnecessary vehicles out | 42 | 23 | 19 |
| Services: | | | |
| Provide more and better information | 58 | 23 | 19 |
| Increase maintenance and restoration | 69 | 23 | - |
| Reduce facilities and services | 8 | 12 | 73 |

*Percentages may not total 100% because of those responding "Does Not Apply."

## SUNBATHING/SWIMMING

### Orientation

Several improved swimming areas are provided at Milford. These areas are marked with float lines. Drinking fountains, bath houses, parking areas, and other support facilities are provided. The areas are heavily used.

The findings presented in the remainder of this section are based on the User Survey. This survey obtained 50 responses from sunbathers and swimmers at Milford (26 at the Outlet, 11 at Rolling Hills, and 13 at East Rolling Hills).

User characteristics

Table 36 indicates the characteristics of sunbathers and swimmers surveyed at Milford. These characteristics are very similar to those of the total survey sample.

Table 36

Sunbather/Swimmer Characteristics

| Age | Percent of Sunbathers/Swimmers |
|---|---|
| <18 | 4 |
| 18 - 25 | 50 |
| 26 - 40 | 40 |
| 41 - 55 | 4 |
| 56 - 65 | 0 |
| >65 | 2 |

| Group Size | Percent of Sunbathers/Swimmers |
|---|---|
| 1 | 12 |
| 2 | 30 |
| 3 - 4 | 36 |
| 5 - 8 | 22 |
| 9 - 12 | 0 |
| >12 | 0 |

| Travel Time to Project Area | Percent of Sunbathers/Swimmers |
|---|---|
| <15 minutes | 58 |
| 15 - 30 minutes | 30 |
| 30 - 60 minutes | 0 |
| 1 - 2 hours | 10 |
| 2 - 3 hours | 2 |
| 3 - 5 hours | 0 |
| >5 hours | 0 |

| Visit Duration | Percent of Sunbathers/Swimmers |
|---|---|
| 1 - 4 hours | 64 |
| 5 - 8 hours | 36 |
| 1 day | 0 |
| 2 days | 0 |
| 3 days | 0 |
| 4 days | 0 |
| 5 - 7 days | 0 |
| >7 days | 0 |

| No. of Other Activities | Percent of Sunbathers/Swimmers |
|---|---|
| 0 | 4 |
| 1 | 54 |
| 2 | 32 |
| 3 | 6 |
| 4 | 4 |
| 5 | 0 |
| 6 | 0 |
| >6 | 0 |

User opinions

Spacing preferences - Tables 37 and 38 indicate the spacing that sunbathers and swimmers surveyed at Milford and elsewhere prefer.

Table 37

Preferred Distance Responses*

| Sample | Sample Size | Range | Mean | Median | Mode |
|---|---|---|---|---|---|
| All Sunbathers surveyed | 161 | 3- a | 30 | 20 | 15, 20 |
| Milford | 13 | 5- a | 17 | 25 | 25, 30 |
| Outlet | 7 | 5-100 | 17 | 18 | 25 |
| East Rolling Hills | 6 | 5- a | 16 | 14 | - |
| All Swimmers surveyed | 120 | 2-200 | 25 | 20 | 20 |
| Milford | 31 | 2-100 | 27 | 20 | 20 |
| Outlet | 19 | 2-100 | 28 | 25 | 5, 30 |
| East Rolling Hills | 4 | 5- 10 | 25 | 20 | 20 |
| Rolling Hills | 8 | 20- 80 | 41 | 24 | 20 |

*In feet; See Appendix A for definitions of terms.
a - response of "alone" or "out of sight."

Table 38

Preferred Distance Responses in Planning Range and Preference Groupings*

| Sample | % in Planning Range[1] (5'-50') | % in A[2] (5'-14') | % in B[2] (15'-20') | % in C[2] (21'-30') | % in D[2] (31'-50') |
|---|---|---|---|---|---|
| All Sunbathers surveyed | 88% | 27% | 39% | 20% | 14% |
| Milford | 88 | 50 | 10 | 40 | 0 |
| Outlet | 86 | 50 | 0 | 50 | 0 |
| East Rolling Hills | 100 | 50 | 25 | 25 | 0 |
| **Sample** | **% in Planning Range[1] (5'-50')** | **% in A[2] (5'-14')** | **% in B[2] (15'-24')** | **% in C[2] (25'-34')** | **% in D[2] (35'-50')** |
| All Swimmers surveyed | 90% | 25% | 41% | 19% | 15% |
| Milford | 90 | 37 | 19 | 26 | 19 |
| Outlet | 89 | 35 | 12 | 29 | 24 |
| East Rolling Hills | 100 | 100 | 0 | 0 | 0 |
| Rolling Hills | 86 | 0 | 50 | 33 | 17 |

*See Appendix A for definitions of terms; See Technical Report for a full development of spacing preference information.
[1]Percentage of all preferred distance responses.
[2]Percentage of all preferred distance responses in Planning Range.

The sunbathers surveyed at Milford tended to prefer closer spacing than the total survey sample. Swimmers surveyed at Milford tended to prefer the group A spacing (5-14 feet) more than the total survey sample.

Reasons for pleasant/unpleasant experience - Tables 39, 40, and 41 indicate the impact that different factors had on making the sunbathing or swimming experience pleasant or unpleasant for users at the three areas surveyed. The responses of the sunbathers and swimmers surveyed vary from one activity area to another. Sunbathers and swimmers at Rolling Hills found their experience to be generally the most pleasant, followed by those at East Rolling Hills, then those at the Outlet. In all three areas the amount of facilities, their convenience or their maintenance were factors making the experience unpleasant in a significant number of cases. At Outlet the condition of grass or soil was also considered unpleasant by some of the sunbathers and swimmers. At East Rolling Hills and Rolling Hills the presence of people in areas where they should not be was an unpleasant factor. None of these factors were so unpleasant that users reported that they would not return to the area.

Table 42 indicates the changes in the physical conditions of these areas as reported by sunbathers and swimmers from their previous visit. No changes in people's use of these areas were reported.

Table 39

Reasons Making Recreation Experience Pleasant or Unpleasant--Sunbathing/Swimming Outlet

| Reasons | Percentage* of Users Responding: | | |
|---|---|---|---|
| | Pleasant | Unpleasant | Not Important |
| General Reasons<br>Characteristics and behavior of other people | 85 | 15 | - |
| Distance from other people | 88 | 12 | - |
| Number of people in other visitor groups | 85 | 4 | 12 |
| Number and type of other activities occurring here | 77 | 12 | - |
| Scenic views | 100 | - | - |
| Noise | 100 | - | - |
| Accidents or near accidents | 85 | - | 8 |
| Enforcement of rules/regulations | 88 | 12 | - |
| Car parking facilities | 92 | 8 | - |
| Theft | 100 | - | - |
| Vandalism | 100 | - | - |
| Land-Based Reasons<br>Amount of facilities (restrooms, water, etc.) | 73 | 27 | - |
| Convenience to facilities (restrooms, water, etc.) | 100 | - | - |
| Maintenance of facilities | 96 | 4 | - |
| Condition of trees and landscape | 96 | 4 | - |
| Condition of grass or soil | 73 | 27 | - |
| Water-Based Reasons<br>Water quality | 92 | 8 | - |
| Formal designation of places for your activity | 88 | - | 12 |
| People in areas they shouldn't be | 92 | - | 8 |

*Percentages may not total 100% because of those responding "Does Not Apply."

Table 40

Reasons Making Recreation Experience Pleasant or Unpleasant--Sunbathing/Swimming
East Rolling Hills

| Reasons | Percentage* of Users Responding: | | |
|---|---|---|---|
| | Pleasant | Unpleasant | Not Important |
| General Reasons<br>Characteristics and behavior of other people | 100 | - | - |
| Distance from other people | 92 | 8 | - |
| Number of people in other visitor groups | 85 | - | 15 |
| Number and type of other activities occurring here | 85 | - | 15 |
| Scenic views | 85 | - | 15 |
| Noise | 100 | - | - |
| Accidents or near accidents | 85 | - | 15 |
| Enforcement of rules/regulations | 92 | 8 | - |
| Car parking facilities | 85 | 15 | - |
| Theft | 100 | - | - |
| Vandalism | 100 | - | - |
| Land-Based Reasons<br>Amount of facilities (restrooms, water, etc.) | 85 | 15 | - |
| Convenience to facilities (restrooms, water, etc.) | 77 | 23 | - |
| Maintenance of facilities | 92 | 8 | - |
| Condition of trees and landscape | 100 | - | - |
| Condition of grass or soil | 100 | - | - |
| Water-Based Reasons<br>Water quality | 92 | 8 | - |
| Formal designation of places for your activity | 92 | 8 | - |
| People in areas they shouldn't be | 77 | 15 | 8 |

*Percentages may not total 100% because of those responding "Does Not Apply."

Table 41

Reasons Making Recreation Experience Pleasant or Unpleasant--Sunbathing/Swimming
Rolling Hills

| Reasons | Percentage* of Users Responding: | | |
|---|---|---|---|
| | Pleasant | Unpleasant | Not Important |
| General Reasons<br>Characteristics and behavior of other people | 100 | - | - |
| Distance from other people | 100 | - | - |
| Number of people in other visitor groups | 92 | 8 | - |
| Number and type of other activities occurring here | 92 | 8 | - |
| Scenic views | 100 | - | - |
| Noise | 92 | 8 | - |
| Accidents or near accidents | 100 | - | - |
| Enforcement of rules/regulations | 85 | 15 | - |
| Car parking facilities | 100 | - | - |
| Theft | 100 | - | - |
| Vandalism | 100 | - | - |
| Land-Based Reasons<br>Amount of facilities (restrooms, water, etc.) | 85 | 15 | - |
| Convenience to facilities (restrooms, water, etc.) | 92 | 8 | - |
| Maintenance of facilities | 76 | 24 | - |
| Condition of trees and landscape | 100 | - | - |
| Condition of grass or soil | 92 | 8 | - |
| Water-Based Reasons<br>Water quality | 100 | - | - |
| Formal designation of places for your activity | 100 | - | - |
| People in areas they shouldn't be | 85 | 15 | - |

*Percentages may not total 100% because of those responding "Does Not Apply."

Table 42

Positive and Negative Changes Noticed in the Physical Conditions of the Area - Items Mentioned by Sunbathers and Swimmers

| Area | Positive Changes | Negative Changes |
|---|---|---|
| Outlet | "Cleaner beach" (3)<br>"Water is better" (1)<br>"Fixed beach, had been muddy" (1) | "Corps digging up beach to clean and not smoothing it out" (2)<br>"Muddier" (1)<br>"Needs new sand" (2)<br>"Some days too crowded" (1) |
| East Rolling Hills | "Water clean" (2)<br>"Beach is now sand" (2) | "Snakes seen" (1)<br>"Bugs biting" (1) |
| Rolling Hills | (None mentioned) | "Less maintained" (1)<br>"Part of beach is muddier" (1)<br>"Wants diving board" (1)<br>"Sand spurs on beach" (2)<br>"Bathrooms smell" (1)<br>"Parking lot" (1) |

NOTE: The number in parenthesis (#) indicates the number of times the change was mentioned.

Acceptability of techniques - Table 43 indicates the acceptability of different techniques for solving problems to the sunbathers and swimmers surveyed at Milford.

The acceptability of most techniques is very clear: at least 60 percent of the respondents agreed on one of the 3 levels of acceptability for 13 of the 18 techniques. But even for those techniques which most respondents found to be acceptable, up to 48 percent found them to be unacceptable. Thus, project management should expect some opposition to any technique used.

Table 43

User Acceptability of Techniques--Sunbathing/Swimming
Milford Lake

| Techniques | Levels of Acceptability | | |
|---|---|---|---|
| | Percentage* of Users Responding: | | |
| | Very Acceptable | Mildly Acceptable | Unacceptable |
| General Planning Techniques | | | |
| Keep major recreation areas more separated | 46 | 16 | 38 |
| Make vehicle access to areas less convenient | 10 | 10 | 80 |
| Make area's existence less obvious | 8 | 18 | 74 |
| Site Planning Techniques | | | |
| Redesign area to accommodate fewer users | 4 | 6 | 71 |
| Design for greater distance between people | 30 | 12 | 30 |
| Reduce number of parking spaces | 20 | 8 | 72 |
| Management Techniques | | | |
| Procedures: | | | |
| Require permits | 16 | 22 | 62 |
| Charge/increase fees | 22 | 12 | 66 |
| Rules and Regulations: | | | |
| Impose more rules | 16 | 10 | 72 |
| Provide stricter enforcement of rules | 38 | 24 | 38 |
| Close areas when natural resource destruction reaches critical point | 88 | 4 | 8 |
| Close areas when they become "too full" | 38 | 14 | 48 |
| Reduce number of activities in same area | 40 | 18 | 38 |
| Limit number of people in visitor groups | 8 | 10 | 74 |
| Keep unnecessary vehicles out | 60 | 14 | 26 |
| Services: | | | |
| Provide more and better information | 78 | 14 | 6 |
| Increase maintenance and restoration | 84 | 6 | 8 |
| Reduce facilities and services | 6 | 6 | 88 |

*Percentages may not total 100% because of those responding "Does Not Apply."

# PART 3: ANALYSIS OF SELECTED PROBLEMS/SITUATIONS

## PART 3: ANALYSIS OF SELECTED PROBLEMS/SITUATIONS

This final section identifies and examines selected problems and situations at Milford. The section is not intended to provide solutions to all project area problems. Nor is it a substitute for project area master planning. The solutions/techniques are intended to be only suggestions for further consideration by project area personnel, for they are most familiar with the intricacies associated with these problems.

In many cases, the project area staff is already aware of these problems or situations and is in the process of dealing with them. And in some cases, the solutions/techniques listed in Table 44 may not be practical or possible because of management, budget, or other constraints.

Table 44

Analysis of Selected Problems/Situations

| Area/Subject | Problem/Situation | Possible Solutions/Techniques |
|---|---|---|
| Lake surface | Water use conflicts--Like at most lakes, there are sometimes conflicts between power boaters and fishermen. | • educate and inform users as to their roles in assuring an enjoyable recreation experience.<br>• consider marking off some cove areas for "limited speeds only" so boat fishermen have a place to go during heavy use periods. |
| South Timber Creek Trail | The surface of the South Timber Creek Trail is worn. | • harden trail surface using wood chips, gravel, or other materials. |
| ORV Area | In the past, there has been some abuse of the area. | • continue to tell users that it is their area; and that they can use it unless they start abusing it.<br>• urge users to help maintain the area.<br>• encourage organized groups who use the area to help plan trails and further development of the area.<br>• monitor use levels periodically. |
| Shoreline Fishing at the Outlet Channel | Perhaps better and safer shore access could be provided at the Outlet Channel for fishermen. (During the User Survey, several elderly and young people were fishing at the Outlet Channel. | • identify possible ways of improving shoreline access (steps, piers, etc.).<br>• talk with users about what improvements should be made. |

| Area/Subject | Problem/Situation | Possible Solutions/Techniques |
|---|---|---|
| | Some users complained about the illegal method of catching fish (snagging) that was being used by some people. | • urge game wardens to strictly enforce regulations.<br>• post signs. |
| Picnicking | In general, it appears there may be too many picnic sites for the present picnicking demand. (Most of the picnic areas were underused during the User Survey.) | • identify underused areas, and relocate tables to more suitable locations.<br>• consider the idea of providing more group picnic areas and fewer single family picnic settings.<br>• continue to issue permits for group picnicking/partying--this seems to work very well at Milford. |
| Camping | Underuse reported and observed at South Timber Creek. | • make more people aware of the opportunities of camping at the area.<br>• provide some electric hookups, and other improvements (proposed in Master Plan) to attract more users to the area. |
| Outlet Public Use Area--boating | One respondent during the User Survey pointed out that there should be an informal launching area provided for small boats. | • consider the possibility of providing a small boat access area with parking; this could be very informal. |

# APPENDICES

## APPENDIX A: KEY TERMS

1. Activity area - The specific area where an individual primary activity occurs (e.g., a campground, the lake, a hiking trail, a picnic area, etc.).

2. Capacity, recreational carrying - The capability of a recreational resource to provide opportunity for certain types of satisfactory recreation experiences over time without significant degradation of the resource. Inherent in this view of carrying capacity are resource (biophysical) and social (psycho-social) capacities.

3. Capacity, resource - The level of recreational use of a resource beyond which irreversible biological deterioration takes place or degradation of the physical environment makes the resource no longer suitable or attractive for that recreational use.

4. Capacity, social - The level of recreational use of a resource or area beyond which the user's expectation of the experience is not realized and he/she does not achieve a reasonable level of satisfaction.

5. Carrying capacity guidelines - The levels of use and the methods used to obtain and achieve them which are recommended in this report.

6. Factors - The characteristics and phenomena which influence carrying capacity.

7. Indicators - The phenomena which can be used to identify or measure the degree of overcrowding or overuse, and which can be used in conjunction with a monitoring system to help predict when problems of overuse and overcrowding will occur if preventive measures are not taken.

8. Management/site survey - The initial survey conducted at the study project areas where resource managers, rangers, and maintenance personnel were interviewed and a reconnaissance was made of "overused," "overcrowded," "underused," and "well-balanced" recreation areas. (See Appendix B)

9. Mean - The measure of central value defined as the sum of all observations divided by the number of observations.

10. Median - The measure of central value defined as the point on the scale of observations which is the middle observation (if there is an odd number of cases) or which is the mean of the two central observations (if there is an even number of cases).

11. Mode - The measure of central value defined as the observation with the largest frequency.

12. Monitoring - The periodic assessment of the impact that use levels have on the social capacity or resource capacity of an area.

13. Overcrowding - A condition where the user does not achieve a satisfactory recreational experience because of too many people, inadequate distances between sites, etc.

14. Overuse - A condition where (during the course of a season/year) degradation of the physical environment makes the resource no longer suitable or attractive for recreational use.

15. Planning range - The range of spacing distances for an activity which satisfies the spacing preferences of the majority of recreators participating in that activity, which at the same time accounts for other considerations (e.g., cost, safety, equity, etc.).

16. Preference distribution - The set of preference groupings for an activity which can be modified to develop the social carrying capacity of an area.

17. Preference groupings - The range of spacing distances for an activity which satisfies the similar spacing preferences of a group of recreators participating in that activity.

18. Primary activity - The major recreation activity which brought the visitor to the recreation area.

19. Project area - The land and water area of the total Corps of Engineers Project.

20. Project management - The project area staff, district personnel, and other people involved with project area management.

21. Recreation area - Corps-managed areas specifically identified for recreational use within the total Project Boundary; usually named.

22. Recreation day - A standard unit of use consisting of a visit by one individual to a recreation development or area for recreation purposes during any reasonable portion or all of a 24-hour period.

23. Recreation environment - An activity area together with its various recreation settings.

24. Recreation resource - The land and/or water areas, with associated facilities, which provide a base for outdoor recreation activities.

25. Recreation setting - The physical, development/control, activity/use relationship components of an activity area; taken as a whole, the various settings comprise a particular "recreation environment" for each activity area.

26. Recreation unit - A campsite, picnic table, boat, off-road vehicle, user group, or other unit which when spaced together with other units represents a use level or density.

27. Representative recreation setting - The most typical recreation setting for a particular activity.

28. Secondary activities - Incidental activities; activities which are supplemental to the primary activity.

29. Study activity area - An activity area at which the management/site survey and the user survey was conducted.

30. Study project area - One of the 11 project areas at which the management/site survey and the user survey were conducted. These project areas are: Barkley Lock and Dam, Benbrook Lake, Hartwell Lake, McNary Lock and Dam, Milford Lake, New Hogan Lake, Lake Ouachita, Lake Shelbyville, Shenango River Lake, Somerville Lake, and Surry Mountain Lake.

31. Title 36 - Part 327, Chapter III, of Title 36 of the Code of Federal Regulations which provides rules and regulations governing the public use of water resource development projects administered by the Army Corps of Engineers.

32. Underuse - A condition where use levels are significantly less than their potential service level.

33. User survey - The survey that provided user preference information used in developing social capacity guidelines; information was obtained from users at the study project areas by means of a questionnaire (see Appendix B).

34. Well-balanced use - A condition which exhibits just the right amount of use to satisfy users and protect the resource.

# APPENDIX B: EXAMPLE SURVEY FORMS

This Appendix includes on the following pages examples of the survey forms that were used during the Management/Site Survey and the User Survey.

# MANAGEMENT/SITE SURVEY

## PICNICKING QUESTIONNAIRE

(Resource Manager, Head Ranger, Maintenance Foreman)

Project Area Name _____

Respondent Name _____ Title _____

Interviewer _____ Date _____

1. PICNICKING USE AREA INFORMATION (selected areas)

| Recreation Area/Use Area Names | Support Facilities | Fee Charged | Acres: Total Use Area | Acres: Activity Area Only | Total Picnic Sites | List Primary Activities Adjacent to Area | When Started |
|---|---|---|---|---|---|---|---|
| OVERCROWDED | | | | | | | |
| OVERUSED | | | | | | | |
| UNDERUSED | | | | | | | |
| WELL-BALANCED | | | | | | | |

2. VISITOR CHARACTERISTICS RELATED TO OVERCROWDING/OVERUSE

| Recreation Area/Use Area Names (same as in #1) | # of picnicking groups on typical recreation season weekend day | Typical Length of Stay | Typical Ages | Typical Group Size | Origin of visitors[1] % U | % S | % R | Approximate # of miles most visitors travel High | Approximate # of miles most visitors travel to use area Average | Average Frequency of visits per year |
|---|---|---|---|---|---|---|---|---|---|---|
| OVERCROWDED | | | | | | | | | | |
| OVERUSED | | | | | | | | | | |
| UNDERUSED | | | | | | | | | | |
| WELL-BALANCED | | | | | | | | | | |

NOTES: [1]U = Urban location (city), S = Suburban location, R = Rural

3. CAUSES & EFFECTS OF OVERCROWDING/OVERUSE

| Use Area Names (same as in #1 & #2) | Actual Complaints (list in order of frequency) | Causes | | Effects | |
|---|---|---|---|---|---|
| | | Observed | Surmised | Observed | Surmised |
| OVERCROWDED | | | | | |
| OVERUSED | | | | | |
| UNDERUSED | | | | | |
| WELL-BALANCED | | | | | |

4. OCCURRENCE OF OVERUSE/DEGRADATION

Picnicking

| Use areas which experience overuse (from #1) | Off-season restoration potential | | | Approximate Dates of Recreation season (_____ to _____) | When signs of degradation first occur | | When highest degradation is reached | |
|---|---|---|---|---|---|---|---|---|
| | Recovers naturally | Requires treatment | Beyond off-season restoration | | Approx. date | Approx. visitor groups to date | Approx. date | Approx. visitor groups to date |

5. INDICATORS (SIGNS) OF OVERCROWDING

| Indicators | Assign relative importance using a numerical rating on a scale of 1 (least) to 10 (most) | Comments |
|---|---|---|
| o Increase in the # of complaints | | |
| o Arguments/conflicts between picnickers | | |
| o Shorter stays | | |
| o Fewer returnees | | |
| o Increase in crime | | |
| o Increase in noise | | |
| o Picnicking, in non-picnic areas | | |
| o Crowded support facilities | | |
| o Increase in litter | | |
| o Increase in resource and facility destruction | | |
| o Occurrence of displacement/succession (changes in visitor characteristics) | | |
| o Increase in number of accidents involving vehicles | | |
| o Increase in use levels | | |

(Please list others below)

o

o

o

6. INDICATORS OF OVERUSE/DEGRADATION

| Indicators | Assign relative importance using a numerical rating on a scale of 1(least) to 10 (most) | Comments |
|---|---|---|
| o Ground cover wearing away | | |
| o Damaged trees and/or undergrowth | | |
| o Absence/change in wildlife | | |
| o Increased erosion/sedimentation | | |
| o Little deadfall | | |
| o Compacted soils | | |
| o Increased litter/trash | | |
| o Trees cut down | | |
| o Increased runoff | | |
| o Need for replacement of support facilities before normal life period | | |
| o Rodent infestation | | |

(Please list others below)

o

o

o

o

7. FACTORS AFFECTING RESOURCE CARRYING CAPACITY

Picnicking

| Factors | Assign relative importance using a numerical rating on a scale of 1 (least) to 10 (most) | Comments |
|---|---|---|
| o Resiliency of vegetation type | | |
| o Resiliency of soils | | |
| o Resiliency of wildlife | | |
| o Degree of normal maintenance applied | | |
| o Degree of off-season restoration applied | | |
| o Site drainage | | |
| o Slope/topography | | |
| o Climate/micro-climate | | |
| o Group size | | |
| o Slope orientation | | |
| o Tree cover | | |
| o Level of development (e.g. paved roads/paths vs. unpaved roads/paths) | | |

(Please list others below)

o

o

o

8. FACTORS AFFECTING SOCIAL CARRYING CAPACITY

| Factors | Assign relative importance using a numerical rating on a scale of 1 (least) to 10 (most) | Comments |
|---|---|---|
| o Similarity of visitor groups | | |
| o Slope orientation | | |
| o Distance from highway access | | |
| o Proximity to the water | | |
| o Scenic views or vistas | | |
| o Quality/variety of natural amenities | | |
| o Number, type, and degree of man-made intrusions or disturbances (power lines, buildings, etc.) | | |
| o Visual screening between picnickers | | |
| o Density/type of vegetation | | |
| o Distance between picnic sites | | |
| o Degree of designation | | |
| o Level of support facilities | | |
| o Proximity to support facilities | | |
| o Size of picnicking area | | |
| o Charging of fees | | |
| o Compatibility of nearby primary activities | | |
| o Single purpose or multi-purpose recreation area | | |
| o Distance traveled | | |
| o Frequency of visits | | |
| o Origin of user (urban, suburban, rural) | | |
| o Configuration of area | | |
| o Degree of maintenance | | |

(Please list other factors)

o

o

9. PRESENT/PAST CAPACITY MANAGEMENT

Picnicking

| Use areas where capacity management techniques were, or are now, applied (Name) | Past (√) | Present (√) | List capacity management techniques(s) used | Describe level of effectiveness (pros/cons regarding visitor satisfaction and resource protection) | Assessment of management feasibility (pros/cons why the technique could or could not be implemented) |
|---|---|---|---|---|---|

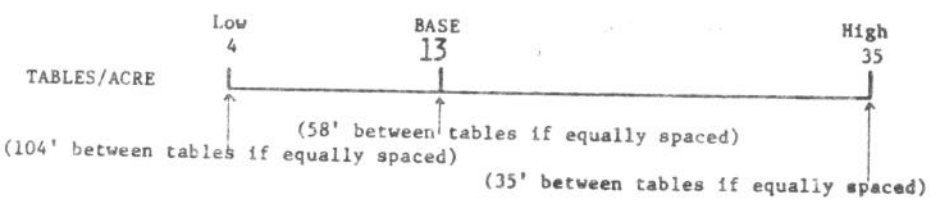
10. POSSIBLE CARRYING CAPACITIES

| Use Area Names | Present capacity actual or estimated | Best guess as to what the capacity should be | Principal factors |
|---|---|---|---|
| THE MOST OVERCROWDED AREA: | | | |
| THE MOST OVERUSED AREA: | | | |
| THE MOST UNDERUSED AREA: | | | |
| THE MOST WELL-BALANCED AREA: | | | |



EXAMPLES FROM BUREAU OF OUTDOOR RECREATION CAPACITY RESEARCH:

(Use as a general guide when estimating what the capacity should be)



# MANAGEMENT/SITE SURVEY

## CAMPING

USE AREA ANALYSIS SHEET

(for URDC staff use)

Project Area Name _____ Field Analyst(s) _____

Recreation Area and/or Use Area _____ _____

_____ Weather _____

Code # _____ Date _____

| | | | ANSWER COLUMN | COMMENT CODE | COMMENTS: |
|---|---|---|---|---|---|
| SITE AWARE-NESS | Signage (camping or name) | Between main highway and use area entrance | | | |
| | | At use area entrance | | | |
| | Exposure of Site | Between main highway and use area entrance | | | |
| | | At use area entrance | | | |
| SITE ACCESS | Relation-ship to Main Highway | Distance to area from main highway | | | |
| | Road Conditions | Road to site from main highway | | | |
| | | Paved(P) or Unpaved(U) | | | |
| | | Condition (E, G, P) | | | |
| | | Estimated Width | | | |
| | | Road within use area | | | |
| | | Paved(P) or Unpaved(U) | | | |
| | | Condition (E, G, P) | | | |
| | | Estimated Width | | | |
| | | Presenqe of informal roads | | | |
| SLOPES & GETATION | Slopes | % of area 0 - 5% | | | |
| | | % of area 6 - 9% | | | |
| | | % of area 10%+ | | | |
| | | Existence of unique land form | | | |
| | Vegetation | Density of trees | | | |
| | | % dense | | | |
| | | % moderate | | | |
| | | % sparse | | | |
| | | % little or none | | | |
| | | Density of understory | | | |
| | | % dense | | | |
| | | % moderate | | | |
| | | % sparse | | | |
| | | % little or none | | | |
| | On the Use Area | Geologic, cultural, archeo-logic features | | | |
| | | Abundance of wildlife | | | |
| | | Water feature | | | |

| | | | | | |
|---|---|---|---|---|---|
| NATURAL AMENITIES | From the Use Area | Visibility to water features | | | |
| | | (insert) O - outstanding | Severely obstructed | | |
| | | | Moderately obstructed | | |
| | | G - good | Mildly obstructed | | |
| | | U - undesirable | Unobstructed | | |
| | | Visibility to other natural areas | | | |
| | | (insert) O - outstanding | Severely obstructed | | |
| | | | Moderately obstructed | | |
| | | C - good | Mildly obstructed | | |
| | | U - undesirable | Unobstructed | | |
| CONDITION OF NATURAL FEATURES | Vegetation & Soils | Distance to lake | | | |
| | | Dead or trampled vegetation | | | |
| | | Evidence of taking | | | |
| | | Compacted soils | | | |
| | Drainage | Wet soils/standing water | | | |
| | | Erosion | | | |
| FACILITIES & SERVICES | Facility/ Service Distribution (S - Site D-Distributed C - Centralized) | Electric hook-ups | | | |
| | | Water hook-up | | | |
| | | Improved pad | | | |
| | | Picnic tables | | | |
| | | Cooking grill | | | |
| | | Firewood | | | |
| | | Drinking water (cold) | | | |
| | | Hot water | | | |
| | | Showers | | | |
| | | Flush toilets | | | |
| | | Vault toilets | | | |
| | | Pit toilets | | | |
| | | Dumping station | | | |
| | | Shelter | | | |
| | | First aid station | | | |
| | | Telephone | | | |
| | | Lighting (R - road, P - Parking W - Walkway, C - Comfort area | | | |
| | | Recreation area or equipment | | | |
| | | Convenience store | | | |
| | Condition | Excellent | | | |
| | | Good | | | |
| | | Need attention | | | |
| PLANNING DESIGN ASPECTS | Distance between campsites | Minimum | | | |
| | | Maximum | | | |
| | | Average | | | |
| | Distance between campsites and the facilities | Minimum | | | |
| | | Maximum | | | |
| | | Average | | | |
| | Space for camper unit maneuverability | Ample | | | |
| | | Acceptable | | | |
| | | Restrictive | | | |
| | Access Control | Controlled (gate, attendant) | | | |
| | | Uncontrolled | | | |

| | | | |
|---|---|---|---|
| Car Parking | Parking space on each camp-site | | |
| | Road parking | | |
| Buffer between Campsites | Man-made | | |
| | Natural vegetation | | |
| | Planted landscape | | |
| | None | | |

RELATIONSHIP OF CAMPING USE AREA TO OTHER USE AREAS

| Use rea ame | Activity | Estimated direct distance from camping use area | Pedestrian accessibility to other use area | | | Visibility to other use area | | | Reasons for accessibility and/or visibility situation |
|---|---|---|---|---|---|---|---|---|---|
| | | | Easy | Mod-erate | Diffi-cult | Ob-structed | Semi-ob-structed | Unob-structed | |

ANALYST'S PERCEPTION OF ACTIVITY AREA'S CARRYING CAPACITY

List the resource/physical factors you feel most affect carrying capacity on this site

_____

_____

_____

_____

_____

Should resource/physical carrying capacity of this site be: _____ higher _____ lower _____ same

List possible techniques which might be used to increase and/or to limit capacity on this site.

_____

_____

_____

# CORPS OF ENGINEERS USER CAPACITY SURVEY

Notations ☐

Date _____ Day _____ OMB Clearance # 49-R0419

Time (hour) _____ Expires October 1983

Weather _____ Project Area Name _____

Interviewer _____ Recreation Area Name _____

Activity _____ Code _____ Activity Area _____ Code _____

We are conducting a survey for the Army Corps of Engineers at selected Corps recreation areas throughout the Country. Through these surveys, we will discover how visitors feel about overcrowding and overuse of these recreation areas. The Corps will use this information to help make decisions about the use and protection of its recreation areas. Would you be willing to take fifteen minutes of your time to answer some questions about your visit here?

## BASIC VISITOR CHARACTERISTICS

1. In which category is your age?

| | |
|---|---|
| 17 & under | ☐ |
| 18 - 25 | ☐ |
| 26 - 40 | ☐ |
| 41 - 55 | ☐ |
| 56 - 65 | ☐ |
| 66 & over | ☐ |

2. How large is your group?

| | |
|---|---|
| 1 | ☐ |
| 2 | ☐ |
| 3- 4 | ☐ |
| 5- 8 | ☐ |
| 9-12 | ☐ |
| 13+ | ☐ |

3. Is this your main destination or a stopover on a trip?

| | |
|---|---|
| Main destination | ☐ |
| Stopover on trip | ☐ |

4. How long did it take you to travel here from your home ___(✓) or last destination ___(✓)?

| | |
|---|---|
| Under 15 minutes | ☐ |
| 15-30 minutes | ☐ |
| 30 min. - 1 hour | ☐ |
| 1 - 2 hours | ☐ |
| 2 - 3 hours | ☐ |
| 3 - 5 hours | ☐ |
| 5+ hours | ☐ |

## VISITOR PARTICIPATION

5. How many times did you participate in this activity anywhere last year? (if "0", go to Question 7)

| | |
|---|---|
| 0 | ☐ |
| 1 - 5 | ☐ |
| 6 - 10 | ☐ |
| 11 - 20 | ☐ |
| 21 - 30 | ☐ |
| 31+ | ☐ |

6. How many times have you participated in this activity at this Lake?

| a) Last year? | | b) So far this year? | |
|---|---|---|---|
| 0 | ☐ | 0 | ☐ |
| 1- 2 | ☐ | 1- 2 | ☐ |
| 3- 4 | ☐ | 3- 4 | ☐ |
| 5- 7 | ☐ | 5- 7 | ☐ |
| 8-10 | ☐ | 8-10 | ☐ |
| 11-19 | ☐ | 11-19 | ☐ |
| 20+ | ☐ | 20+ | ☐ |

7. How long are you staying on this visit?

| | |
|---|---|
| 1 - 4 hours | ☐ |
| 5 - 8 hours | ☐ |
| 1 day(overnight) | ☐ |
| 2 days | ☐ |
| 3 days | ☐ |
| 4 days | ☐ |
| 5 - 7 days | ☐ |
| 8 or more days | ☐ |

8. Have you participated in this activity at this specific location anytime before this visit?

No ☐ (go to #9) Yes ☐ Please list any changes you have noticed in the physical condition of this location or in people's use of the area.

| Physical condition: | People's use of the area: |
|---|---|
| ☐ Positive | ☐ Positive |
| | |
| | |
| ☐ Negative | ☐ Negative |
| | |
| | |
| | |

9. Would you say the number of people who are now participating in this activity are:

too many ☐ too few ☐ just the right number ☐

10. a) Would you say that the distance between you and other people is:

too far ☐ (to 10c) just right ☐ (to 10c) too close ☐

(Actual or estimated distance to be recorded by interviewer _____)

b) If other people are too close, how far away would you like them to be? ☐ Not Applicable

just a little farther ☐ twice as far ☐ three times farther ☐ more than 3 times ☐

c) What is the closest distance you would accept? _____

d) What distance would you like them to be? _____

11. a) Which of the following reasons are making your present activity at this location pleasant or unpleasant?

| | Pleasant | Un-pleasant | Not Important | Does Not Apply |
|---|---|---|---|---|
| **GENERAL REASONS** | | | | |
| 1. Characteristics and behavior of other people | ☐ | ☐ | ☐ | ☐ |
| 2. Distance from other people | ☐ | ☐ | ☐ | ☐ |
| 3. Number of people in other visitor groups | ☐ | ☐ | ☐ | ☐ |
| 4. Number and type of other activities occurring here | ☐ | ☐ | ☐ | ☐ |
| 5. Fees charged | ☐ | ☐ | ☐ | ☐ |
| 6. Scenic views | ☐ | ☐ | ☐ | ☐ |
| 7. Noise | ☐ | ☐ | ☐ | ☐ |
| 8. Accidents or near accidents | ☐ | ☐ | ☐ | ☐ |
| 9. Enforcement of rules/regulations | ☐ | ☐ | ☐ | ☐ |
| 10. Car parking facilities | ☐ | ☐ | ☐ | ☐ |
| 11. Theft | ☐ | ☐ | ☐ | ☐ |
| 12. Vandalism | ☐ | ☐ | ☐ | ☐ |
| Others _____ | ☐ | ☐ | ☐ | ☐ |
| _____ | | | | |
| **LAND-BASED REASONS** | | | | |
| 13. Trees/natural landscape | ☐ | ☐ | ☐ | ☐ |
| 14. Visual privacy from other people | ☐ | ☐ | ☐ | ☐ |
| 15. Amount of facilities (restrooms, water, etc.) | ☐ | ☐ | ☐ | ☐ |
| 16. Convenience to facilities (restrooms, water, etc.) | ☐ | ☐ | ☐ | ☐ |
| 17. Nearness to the water body | ☐ | ☐ | ☐ | ☐ |
| 18. Steepness of slopes | ☐ | ☐ | ☐ | ☐ |
| 19. Maintenance of facilities | ☐ | ☐ | ☐ | ☐ |
| 20. Condition of trees and landscape | ☐ | ☐ | ☐ | ☐ |
| 21. Condition of grass or soil | ☐ | ☐ | ☐ | ☐ |
| Others _____ | ☐ | ☐ | ☐ | ☐ |
| _____ | ☐ | ☐ | ☐ | ☐ |
| _____ | ☐ | ☐ | ☐ | ☐ |
| **WATER-BASED REASONS** | | | | |
| 22. Water quality | ☐ | ☐ | ☐ | ☐ |
| 23. Catching fish | ☐ | ☐ | ☐ | ☐ |
| 24. Formal designation of places for your activity | ☐ | ☐ | ☐ | ☐ |
| 25. Waiting time to launch boat | ☐ | ☐ | ☐ | ☐ |
| 26. Waiting time to retrieve boat | ☐ | ☐ | ☐ | ☐ |
| 27. People in areas they shouldn't be | ☐ | ☐ | ☐ | ☐ |
| Others _____ | ☐ | ☐ | ☐ | ☐ |
| _____ | ☐ | ☐ | ☐ | ☐ |
| _____ | ☐ | ☐ | ☐ | ☐ |

b) Will any of the above reasons prevent you from coming here again?

No ☐ Yes ☐

If yes, which reasons (selected from reasons checked "unpleasant" above)?

_____ _____ _____

_____ _____ _____

12. If recreation areas have too many people for each to enjoy the activity or if areas become damaged by too much use, there are some solutions for reducing that overcrowding or overuse. Please indicate which of the following possible solutions you would find very acceptable, mildly acceptable, or unacceptable for reducing crowding and/or natural resource destruction in this location. (If this location is not overcrowded or overused, assume that it is for this question.)

| POSSIBLE SOLUTIONS FOR OVERCROWDING OR OVERUSE | Very Acceptable | Mildly Acceptable | Unacceptable | Does Not Apply |
|---|---|---|---|---|
| **PUBLIC AWARENESS/EASE OF ACCESS SOLUTIONS** | | | | |
| 1. Make vehicle access to areas less convenient. | ☐ | ☐ | ☐ | ☐ |
| 2. Make the area's existence less obvious to the general public (fewer signs and directions) | ☐ | ☐ | ☐ | ☐ |
| 3. Provide more and better information on how to use the area | ☐ | ☐ | ☐ | ☐ |
| **ACTIVITY RELATIONSHIPS & USE DENSITY** | | | | |
| 4. Keep major recreation activities more separated from one another. | ☐ | ☐ | ☐ | ☐ |
| 5. Reduce the number of different activities occurring in the same area | ☐ | ☐ | ☐ | ☐ |
| 6. Design for greater distance between people | ☐ | ☐ | ☐ | ☐ |
| 7. Limit the number of people in each group | ☐ | ☐ | ☐ | ☐ |
| 8. Change natural surfaces by hardening them to withstand more use. | ☐ | ☐ | ☐ | ☐ |
| 9. Increase maintenance and restoration to allow more use | ☐ | ☐ | ☐ | ☐ |
| **PLANNING & DESIGN SOLUTIONS** | | | | |
| 10. Reduce the type and number of facilities and services provided | ☐ | ☐ | ☐ | ☐ |
| 11. Keep unnecessary vehicles out of areas | ☐ | ☐ | ☐ | ☐ |
| 12. Reduce number of parking spaces to limit number of users | ☐ | ☐ | ☐ | ☐ |
| 13. Provide landscaped buffers between visitor groups to increase privacy | ☐ | ☐ | ☐ | ☐ |
| 14. Redesign area to accommodate fewer users | ☐ | ☐ | ☐ | ☐ |
| **RULES & REGULATIONS SOLUTIONS** | | | | |
| 15. Have stricter enforcement of regulations | ☐ | ☐ | ☐ | ☐ |
| 16. Impose more rules and regulations | ☐ | ☐ | ☐ | ☐ |
| 17. Require prior reservations to use areas. | ☐ | ☐ | ☐ | ☐ |
| 18. Require permits to use areas | ☐ | ☐ | ☐ | ☐ |
| 19. Close down areas when natural resource destruction reaches critical point | ☐ | ☐ | ☐ | ☐ |
| 20. Charge fees or increase fees now charged | ☐ | ☐ | ☐ | ☐ |
| 21. Close gates when areas get "too full". | ☐ | ☐ | ☐ | ☐ |
| **OTHERS** | | | | |
| _____ | ☐ | ☐ | ☐ | ☐ |
| _____ | ☐ | ☐ | ☐ | ☐ |
| _____ | ☐ | ☐ | ☐ | ☐ |
| _____ | ☐ | ☐ | ☐ | ☐ |

13. Please answer the following questions about your other recreation activities on this visit.

| | a) What are your other recreation activities on this visit? | b) Are they within walking distance or driving distance from this location? (use launching location for boat activities) (1) Walking distance | (2) Driving distance | c) What is your main recreation activity on this visit? |
|---|---|---|---|---|
| 1. | Camping | ☐ | ☐ | ☐ |
| 2. | Boating | ☐ | ☐ | ☐ |
| 3. | Waterskiing | ☐ | ☐ | ☐ |
| 4. | Swimming | ☐ | ☐ | ☐ |
| 5. | Sunbathing | ☐ | ☐ | ☐ |
| 6. | Picnicking | ☐ | ☐ | ☐ |
| 7. | Shoreline fishing | ☐ | ☐ | ☐ |
| 8. | Boat fishing | ☐ | ☐ | ☐ |
| 9. | Hiking | ☐ | ☐ | ☐ |
| 10. | Horseback riding | ☐ | ☐ | ☐ |
| 11. | Off-road vehicle riding | ☐ | ☐ | ☐ |
| 12. | _____ | ☐ | ☐ | ☐ |
| 13. | _____ | ☐ | ☐ | ☐ |
| 14. | _____ | ☐ | ☐ | ☐ |
| 15. | _____ | ☐ | ☐ | ☐ |
| 16. | None | ☐ | ☐ | ☐ |

---

RECREATION EQUIPMENT RECORD

**Camping**

- Tent ☐
- Tent camper ☐
- Truck-mounted camper ☐
- Travel trailer ☐
- Van ☐
- Motor home ☐
- _____ ☐
- _____ ☐

**Boat Activities**

- Day sailer ☐
- Sailer (cabin) ☐
- Canoe ☐
- Row boat ☐
- Power boat (less than 25 hp) ☐
- Power boat (25+ hp) ☐
- Houseboat or cruiser ☐
- _____ ☐
- _____ ☐

**Off-Road Vehicle Riding**

- Trail bike ☐
- Motorcycle ☐
- ATV ☐
- Dune buggy ☐
- 4-wheel drive ☐
- _____ ☐
- _____ ☐

COMMENTS:

REPLACEMENT QUESTIONS TO ASK DURING BOAT LAUNCHING INTERVIEWS

(Write answers and comments directly on the User Survey Interview Sheet)

10. a) Would you say that the time it takes you to launch your boat at this ramp is:

too long ☐ long, but tolerable ☐ just right ☐

(Approximately how long does it take to launch your boat at this ramp? Actual or estimated time to be recorded by interviewer _____)

b) How long would you prefer it to take:

just a little faster ☐ twice as fast ☐ three times faster ☐ more than three times faster ☐

c) What could be done to expedite boat launching at this ramp:

_____

_____

_____

APPENDIX C: PROJECT AREA DESCRIPTION

## Milford

### Location

Milford Lake (Kansas City District) is located on the Republican River, four miles northwest of Junction City, Kansas and about 65 miles west of Topeka. Wichita is approximately 110 miles to the south, and Kansas City, Missouri is 130 miles to the east.

### Authorization and purpose

The Milford Lake Project was authorized by the Flood Control Act of 1944 for purposes of flood control. Water supply was added as a purpose under terms of the Water Supply Act of 1958.

### Project area size and features

Milford Lake's watershed area is 3796 square miles. The dam impounds a normal recreational lake of 16,190 acres at an elevation of 1144 feet msl. The lake extends 20 miles upstream and averages about one mile in width. Average water depth is 15 feet with the deepest portion being 70 feet.

The project area contains 28,049 acres of land above the recreational pool elevation. Of this area, 6440 acres are managed by the Corps, 21,636 acres by other federal, state, and local government agencies, and 652 acres by other interests. Total project land and water area is 48,939 acres.

Most of the 163-mile shoreline is usable, as there are few high or steep banks. Lake access may be gained by fishermen, boaters, swimmers, and campers at many places around the lake. However, best access is found at the Corps ramps and beaches.

The Corps of Engineers staff consists of the Project Manager, two park rangers, a clerk-radio operator, a general maintenance mechanic, an equipment operator, and a maintenance foreman. Temporary seasonal employees are hired as required. Routine maintenance of sanitary facilities is carried out by project personnel, or occasionally by private contractors.

Topography

The local terrain is characterized by the river's flood plain, low terraces and steep limestone bluffs, and uplands of a rolling character. The valleys of the streams which flow into the lake are narrow with steep side slopes.

Climate

The project area is subject to a broad range of temperatures, high winds, tornadoes, and intense rainfall. The average annual temperature is about 55 degrees F. The average winter temperatures are in the mid-20 degrees F. (with extremes to below 0 degrees F.), while summer temperatures average in the upper 80 degrees F. (with extremes to over 110 degrees F.). Annual precipitation amounts to 32 inches of rain and about 22 inches of snow. Prevailing winds during the summer recreation season come from the south at about 10 mph, and from the north at 11 mph in the winter months. Sunny days occur annually about 55 percent of the time, and about 72 percent of the time in summer.

Soils and vegetation

Soils most commonly found are granular silt loams and silty clay loams over dark, heavy clay and semi-clay subsoils. These soils are slowly permeable, but have a high water storage capacity. Surface runoff is rapid on the steeper hills, and serious sheet and gully erosion has occurred locally.

Vegetative ground cover is comprised of a mixture of the tall and mid-grasses, characteristic of the true prairie. The principle invaders (depending upon the available moisture) are woody plants, ironweed, Kentucky bluegrass, vervain, and annuals. Much of the area is sparsely wooded; dominant species in the area are cottonwood, willow, bur oak, American and red elm, hackberry, green ash, eastern red cedar, and chinkapin oak.

Fish and wildlife

Fish species include black and white bass, channel and flathead catfish, walleye, and crappie. Striped bass and northern pike have been introduced.

The lake area contains a variety of wildlife. Native animals include shrews, bats, skunks, coyote, squirrels, gophers, moles, and

racoons, with the game species of white-tailed deer, rabbit, and fox squirrel also present. Fur-bearing animals such as beaver, muskrat, mink, and opossum live in the wooded bottomlands and drainage areas. Many species of water fowl, mourning dove, bobwhite quail, greater prairie chicken, and ring-necked pheasant are present in the area. A number of threatened species of birds have their wintering range within the Milford Lake area.

Population areas
served and accessibility

Much of the area surrounding Milford Lake is rural and agricultural. However, within a 100-mile radius of the lake are the major metropolitan areas of Topeka and Wichita, Kansas. Total population in 1970 in this 100-mile area of influence was 302,890. In addition to serving nearby Kansas residents, Milford Lake provides water-oriented recreational opportunities to the personnel stationed at nearby Fort Riley.

Federal highways border the lake on three sides. Interstate Highway 70 provides east-west access to the southern shoreline. U. S. Highway 24 provides east-west access to the northern shoreline. U. S. Highway 77 lies east of the lake and provides excellent access to the northern shoreline.

Recreation areas

The Corps presently manages six recreational areas on approximately 4200 acres. Other recreational opportunities on the lake include Pleasant View State Park and a 16,763-acre wildlife area (both managed by the State of Kansas), municipal and county parks and access areas, Thunderbird Marina (a concessionaire), and various other public and private concerns.

These recreation areas offer many activities, including boating, fishing, camping, waterskiing, swimming, picnicking, hunting, hiking, and motorcycle riding. Corps support facilities include boat ramps, courtesy docks, restroom buildings, showers, a dumping station, electric and water hook-ups, picnic shelters, and a sewage treatment plant.

Visitation

In 1978, 1,459,600 recreation days were recorded at Milford Lake. July was the month of greatest visitation, with 310,700 recreation days.

In accordance with letter from DAEN-RDC, DAEN-ASI dated 22 July 1977, Subject: Facsimile Catalog Cards for Laboratory Technical Publications, a facsimile catalog card in Library of Congress MARC format is reproduced below.

Urban Research & Development Corporation.
Recreation carrying capacity facts and considerations; Report 7: Milford Lake Project Area / by Urban Research and Development Corporation, Bethlehem, Pa. Vicksburg, Miss. : U. S. Waterways Experiment Station ; Springfield, Va. : available from National Technical Information Service, 1980.
iv, 73, [25] p. : ill. ; 27 cm. (Miscellaneous paper - U. S. Army Engineer Waterways Experiment Station ; R-80-1, Report 7)
Prepared for Office, Chief of Engineers, U. S. Army, Washington, D. C., under Contract No. DACW39-78-C-0096.
Project map of Milford Lake in pocket at end of report.

1. Carrying capacity. 2. Milford Lake Project. 3. Monitoring. 4. Overcrowding. 5. Recreation. 6. Recreation resource planning. 7. Recreational areas. 8. Recreational facilities. 9. Utilization. I. United States. Army. Corps of Engineers. II. Series: United States. Waterways Experiment Station, Vicksburg, Miss. Miscellaneous paper ; R-80-1, Report 7.
TA7.W34m no.R-80-1 Report 7