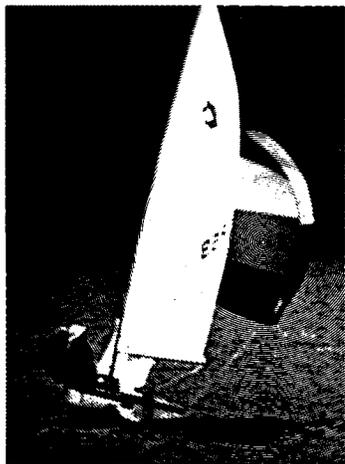




**US Army Corps  
of Engineers**

Waterways Experiment  
Station



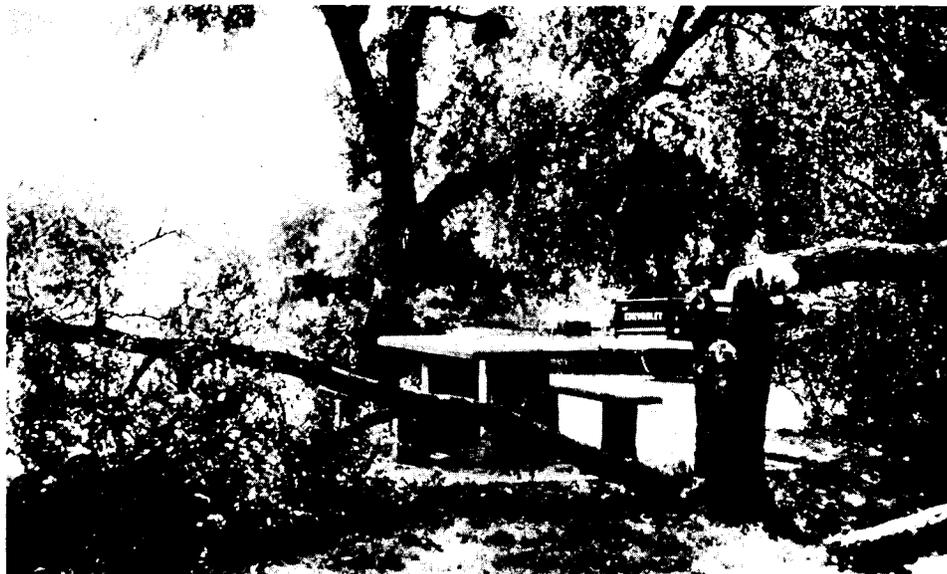
# RECNOTES

RECREATION  
RESEARCH  
PROGRAM

VOL R-83-3

INFORMATION EXCHANGE BULLETIN

SEP 1983



Interpretation programs can be structured to address management problems such as the damage to a picnic area shown above. The following article gives the results of a survey that addressed this and other facets of the interpretation programs at Corps projects and also produced a profile of Corps interpreters.

## SURVEY OF CORPS INTERPRETERS

*Janet Akers Fritschen*

*Environmental Resources Division, EL*

In the June 1980 issue of RECNOTES, a new work unit was announced on interpretation in the Corps. The first product was the instruction report, "A Guide to Cultural and Environmental Interpretation in the U.S. Army Corps of Engineers," published August 1981. Supplements to this report have been written and will be published soon.

To develop these supplements, it was necessary to obtain a profile of Corps personnel with interpretation duties, including their past experience and training, professional affiliations, and training and information needs. It was also necessary to investigate the state of interpretation throughout the Corps, specifically, to identify the types of programs being offered to

visitors and the existence of interpretation master plans, training manuals, and project interpretation goals. The information collected not only provided the background material required for the supplements, but also addressed two recommendations the Chief of Engineers' Environmental Advisory Board made in 1980.

- The scope and function of the Corps' interpretive programs should be reviewed to establish an overall philosophy for interpretive activities.
- The academic and other qualifications of interpretive personnel should be reviewed.

The information on interpretation services and personnel was collected during the summer of 1981 through a

survey of permanent and long-term temporary personnel (at least five months with the Corps) with at least 10 percent interpretation duties. Since there are no master lists of personnel involved in interpretation, the Recreation Research Program (RRP) District contacts were requested to distribute the survey to the appropriate employees in their District office and at the projects within their District. Two hundred thirty-four questionnaires were returned, twenty-seven of which were completed by District personnel and 207 by project personnel. Only the latter group are described in this article.

Although a census of personnel with interpretation duties was desired, it became evident through conversations with Corps interpreters subsequent to the survey that this was not obtained. However, responses were obtained from 125 projects, which represented all 10 CONUS Divisions and 29 of the 35 CONUS Districts, so the results should be at least somewhat representative.

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### SUMMARY

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The results of the survey indicate that interpretation is being used at projects throughout the Corps, but that generally its effectiveness could be improved. A project's interpretation goals are supposed to provide the framework for all interpretation services, but many of the respondents did not know what their project's goals were. An interpretation master plan expands on the interpretation goals to provide specific guidelines for interpretation services. According to the survey results, in most cases, either the project did not have such a plan or the respondent was not aware of it. Interpretation has been shown to be an effective tool for addressing management problems. Still, it was used for this purpose at less than half of the projects represented in the survey.

On the whole, those people responsible for interpretation in the Corps are well educated and received their training in areas relevant to interpretation. Although few had extensive training in interpretation, most have had at least some exposure in terms of past experience, in-service training and short courses, or professional affiliations. This, together with the survey respondents desire for additional training and information, seems to indicate that tremendous potential exists for more effective use of interpretation in the future.

Details of the survey are given in the following paragraphs.

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## INTERPRETATION SERVICES

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To determine the status of interpretation services, data were collected on goals, master plans, training manuals, programs to assist in project management, evaluation procedures, and information and training needs.

### Interpretation Goals

Survey respondents were asked to list the top six interpretation goals at their project. A list of the most frequent responses is in Table 1. One-fifth of the respondents did not answer the question and an additional fifth listed one or more items that were not interpretation goals (e.g., to build an amphitheater).

Table 1. Project Interpretation Goals Listed Most Frequently

<i>Interpretation Goal</i>	<i>Percent of Respondents*</i>
Explain the missions of the Corps	42
Promote safe use of the project	30
Communicate resource information	29
Introduce environmental issues	25
Explain the project mission	24
Orient visitors to available facilities	22
Aid in accomplishing management objectives	22

\* Calculated as a percentage of those respondents who listed one or more goals.

### Interpretation Master Plans and Training Manuals

Only one-sixth of the projects represented in the survey had an interpretive master plan. Approximately twice that number, or one-third, had an interpretive prospectus. (A prospectus is generally a plan for a specific facility, such as an exhibit or visitor center, as opposed to a master plan, which covers all services.) When asked about training manuals specifically for interpreters, the respondents indicated that manuals were available from 15 of the 125 project offices, 16 of the 29 District offices, and 8 of the 10 Division offices.

### Interpretation for Project Management

Employees at 42 percent of the projects represented in the survey reported that interpretation programs were used to help solve management problems. Of the problems listed, safety, resource management, and vandalism were mentioned most often (Table 2). The interpretation techniques used



Approximately two-thirds of Corps interpreters have had in-service training or taken short courses in interpretation, such as this in-house training conducted by the Vicksburg District.

Table 2. Interpretation for Project Management

<i>Management Problem</i>	<i>Percent of Projects</i>
Safety of all types*	25
Resource management	16
Vandalism	15
Littering	9
Knowledge of project rules	9
Other management problems	11

\* Includes boating and water safety (21 percent of projects).

to address management problems were varied. They included the more traditional media such as audiovisual programs, guided walks, talks, displays, publications, and school programs, as well as more unusual forms, including puppetry, bike rodeos, fishing derbies, water carnivals, and nature awareness days.

### Evaluating Interpretation

Three-fourths of those who answered the survey indicated that their interpretation programs were evaluated, while only 44 percent indicated that they were evaluated as interpreters. The program evaluations were conducted mainly by park rangers (30 percent), project managers (28

percent), and District personnel (12 percent). Half of the respondents indicated that they evaluated their own programs as well. Evaluation of the respondent's ability as an interpreter was primarily conducted by project managers (57 percent) and park rangers (37 percent).

In addition to frequency of evaluation and type of evaluator, the respondents were asked about the method of evaluation. The majority of the responses were not specific (e.g., "the manager sits in on my programs"). Still, for program evaluation, one-fourth of the respondents mentioned "visitor response and participation" and one-fifth mentioned an evaluation form or report form. Interpretation programs were evaluated at least once a month for 56 percent of the respondents. Thirty-eight percent of the respondents were evaluated on their performance as interpreters at least once a month.

### Information and Training Needs

Additional training or information needs were listed by 70 percent of the respondents. A wide variety of subjects were given, but those cited most often were: audiovisual equipment and program production, new ideas and innovations, interpretation media and techniques, exhibit and bulletin board designs, and oral and written communication (Table 3).

**Table 3. Additional Training or Information Needs**

<i>Area</i>	<i>Percent of Respondents*</i>
Audiovisual equipment and program production	32
New ideas/innovations	29
Interpretation media and techniques	18
Exhibit and bulletin board design	15
Oral and written communication	14
Trails/self-guided trails	12
Sources of interpretation materials	11
Flora and fauna of the site	11

\* Calculated as a percentage of those respondents who listed training or information needs.

### PERSONNEL PROFILE

Information gathered to prepare a profile of personnel with interpretation duties included: title; grade level, length of service, and current job duties; educational background; additional training; past job experience; and affiliation with professional work-related organizations.

#### Grade Level and Length of Service

Of the persons completing the survey, 43 percent were Park Technicians and 41 percent were Park Rangers. The remaining 16 percent held assorted job titles, including Project and Resource Manager; Park Aid; Co-op Student; and Interpreter. Grade level ranged from GS-02 to GS-11. Three-fourths of the positions were GS-07 or below. The length of employment with the Corps averaged 3.8 years, though actual time in service ranged from less than 1 year to 34 years (Table 4).

**Table 4. Employment With the Corps**

<i>Length of Service*</i>	<i>Percent of Respondents</i>
5 months to 1 year	22
1.1 to 5 years	57
5.1-10 years	16
More than 10 years	5

\* Less than 5 months not included.

#### Current Job Duties

The survey respondents were asked about their current job duties. The percentage of their time spent at interpretation duties ranged from 10 to 100 percent. (Interpretation duties excluded public relations work such as writing noninterpretive

news releases and handling visitor complaints.) However, only 25 percent of the people spent more than half of their time on interpretation and over one-half spent only 20 percent or less of their time. Other job duties noted by the respondents are listed in Table 5.

**Table 5. Duties Other Than Interpretation**

<i>Duty</i>	<i>Percent of Respondents*</i>
Patrol/law enforcement	45
Visitor assistance	35
Resource, wildlife, forest, or park management	31
Administration/supervision	20
Maintenance	14

\* Calculated as a percentage of those respondents who listed one or more other duties.

#### Education

Eighty-four percent of the respondents had at least a bachelor's degree; 8 percent had a master's degree, while 23 percent had taken some additional graduate courses. Major and minor emphasis areas include biological sciences (54 percent), parks and recreation (39 percent), behavioral sciences (14 percent), interpretation (13 percent), and ecology (13 percent). Approximately two-thirds of the interpreters had taken short courses or had in-service training in interpretation or a related area. Of these, 71 percent had training in interpretation and 20 percent in communication. The courses and training were sponsored mainly by the Corps, universities and colleges, and the Association of Interpretive Naturalists.

#### Past Job Experience

Past employers included the Corps (43 percent); state, county, and city parks, forestry, and natural resources departments (27 percent); and other federal agencies (21 percent). Of those who listed previous job duties, 60 percent had had responsibility for interpretation.

#### Professional Affiliations

Approximately half of the respondents were members of some type of work-related organization. One-fifth were members of park societies (including the National Park and Recreation Association); 12 percent were members of the Association of Interpretive Naturalists; and 7 percent were members of the Western Interpreters Association. Regional or national meetings were

(Continued on page 6)

# CITATION AND ENCROACHMENT COMPUTER PROGRAMS

*Jo Tynon and Chris Flanagan  
Operations Division, Walla Walla District*

This summer the Walla Walla District completed computerizing two of its major natural resource management activities: using warnings and citations to enforce Corps regulations and resolving encroachments.

## COERPS

Keeping track of warnings and citations issued by park managers and rangers was becoming a problem for both the Project and the District offices. Paging through handwritten lists to determine second-time parking offenders, to summarize actions into a meaningful quarterly report, and to track court actions on contested citations was very inefficient and time-consuming. Thanks to efforts by Joel David and Jo Tynon of the District's Natural Resources and Regulatory Programs Branch and Gus Kajita, a District computer programmer, a program was designed and written that easily meets all three needs: it can be used to track warnings, citations, and court actions.

Called COERPS for Corps of Engineers Resource Protection System, the program is part of INFO, an electronic filing system. District and Project personnel can access the system, adding, changing, and deleting information as necessary and generating reports to fit each particular need in a fraction of the time previously required. As an example, the quarterly summaries were in the past a four-to-eight-hour project (plus one or two hours for

typing). COERPS prepares and prints the quarterly summary in about a minute.

Second-time offenders may not appreciate the new computerization because now, instead of fussing with copies of handwritten lists of chronologically issued warnings and citations, COERPS provides each ranger a neatly printed list sorted by vehicle tag number. Second-time offenders are a cinch to pinch!

COERPS was designed to be "user friendly" so that both computer whiz and computer skeptic can enjoy using it. A one-day hands-on training session, a brief user manual, and a little practice are all that are needed to master COERPS.

## ENCROACH

Encroachments, unauthorized uses of government land by a variety of public, private, and commercial parties, have been difficult for the District and the Projects to keep track of for a long time. What was needed was a concise easy-to-digest history of past and current land status — something that 25 pounds of file folders just cannot do. But a computer program can and does provide just that.

Using ENCROACH the District is able to keep a file card of just the basics on each encroachment problem. When someone wants to know what is happening in a certain situation, a three-minute trip to the terminal provides all the answers



Employees using computer display in discussion of resource management

normally needed. A further advantage is the computer's ability to check the date of the last action on each encroachment, compare it against the current date, and generate a "reminder" listing. Although this listing isn't as popular as the office bowling league's team standings, it does keep the fire burning under the appropriate action office and is in keeping with the spirit of the policy to encourage timely resolution of encroachment problems. People who are allowed to continue to encroach on Corps land have a tendency to be less willing to stop encroaching and sometimes even forget that they don't own the land in question.

There is nothing fantastic, novel, or terribly complex about COERPS or ENCROACH. They are just handy electronic tools. Walla Walla will be happy to share them with anyone interested in learning about other programs that can make the life of a recreation resource manager easier. For more information call Chris Flanagan, Natural Resources and Regulatory Programs Branch, phone (509) 525-5500, ext. 638 or FTS 442-5632; Walla Walla District, Corps of Engineers, Building 606, City-County Airport, Walla Walla, WA. 99362.

## SURVEY OF CORPS INTERPRETERS

(Continued from pg 4)

attended periodically by about one-third of the people. Many of the respondents read work-related journals and magazines (Table 6).

Table 6. Work-Related Journals and Magazines

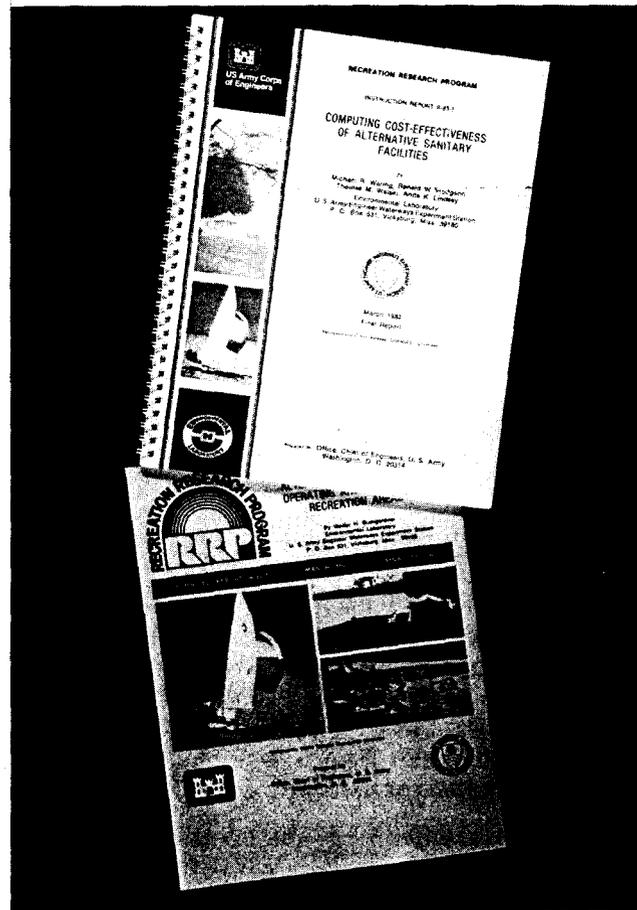
Title/Publisher	Percent of Respondents
Parks and Recreation/National Recreation and Parks Association	65
Journal of Wildlife Management/Wildlife Society	29
Journal of Interpretation/Association of Interpretive Naturalists	28
The Interpreter/Western Interpreters Association	25
Journal of Forestry/Society of American Foresters	25

The results of this interpretation survey have provided the necessary framework for developing the supplements to "A Guide to Cultural and Environmental Interpretation in the U.S. Army Corps of Engineers". These supplements will be available for distribution this winter. - Editor's note.

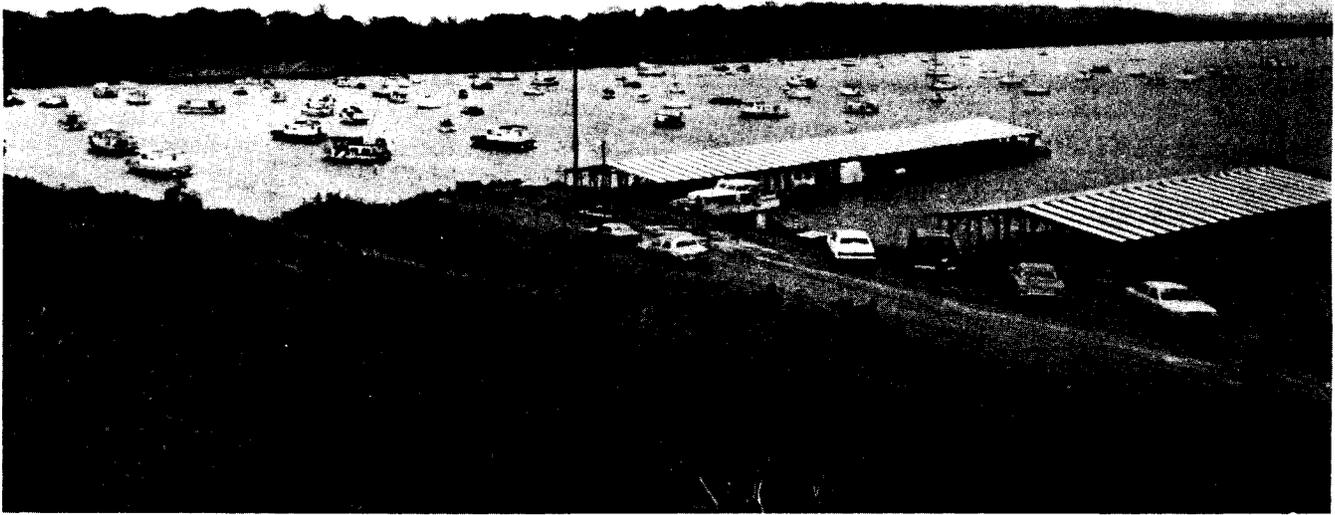
## RECREATION RESEARCH PROGRAM PUBLICATIONS

Inserted in this issue of RECNOTES is an updated list of abstracts of all RRP publications. The basic distribution list and NTIS number for each report are shown. *Publications marked with an asterisk are out of print at WES and can only be obtained from NTIS.*

Since limited numbers of reports are published, Corps employees should first check with District or Division libraries for a loan copy. The few copies remaining after initial distribution are available on first-come first-served basis by writing US Army Engineer Waterways Experiment Station, ATTN: WESEP-R, PO Box 631, Vicksburg, Mississippi 39180. When local supplies are exhausted, copies may be purchased from NTIS (National Technical Information Service, 5285 Port Royal Road, Springfield, Virginia 22151).



As of March 1983, the RRP publication cover has taken on a new look (top) replacing the old cover style (below).



Marina concession operated at a Corps project under a contract lease agreement

## PERCEPTIONS OF THE CORPS' CONCESSION PROGRAM

*Larry Lawrence*  
*Environmental Resources Division, EL*

Like most land-management agencies, the Corps of Engineers uses concession contracts that are first- or second-party leases with private individuals or enterprises to provide recreation facilities and services at its lake projects. A primary objective of a recent study was to determine, through a visitor-perception survey, the level and nature of user satisfaction with facilities and services provided by these concession operators. In addition, through a survey of Corps resource managers and concessionaires, a review was made of various programs and authorities used to evaluate and enforce the compliance of concession operators with their lease agreements. Some of the major conclusions of the study were:

- The overwhelming majority of concession users were highly satisfied with the adequacy (90.8 percent) and quality (94.4 percent) of services and facilities provided at Corps projects.
- Although minor in contrast to the high level of

satisfaction, there were some users dissatisfied with services and facilities. The most commonly expressed dissatisfaction pertained to facility maintenance (17.2 percent), followed by insufficient facilities (13.4 percent), personnel (10.7 percent), prices (9.6 percent), and security (7.4 percent).

- There seemed to be a considerable amount of confusion and concern about the Corps concession compliance program. Lack of guidelines and capability to enforce the program were the main concerns of Corps management personnel. Uncertainty about its intent and validity as presently administered were concessionaires concerns.
- There was at least a perception by concessionaires that they are not allowed the operational and development flexibility by the Corps that is needed to be more responsive to varying market conditions.

The complete results of this study are contained in WES Miscellaneous Paper R-83-1 published by the Recreation Research Program.

# NRMS UPDATE

*Nancy Tessaro*  
*Natural Resources Management Branch, OCE*

The Natural Resources Management System (NRMS) is being converted from a Computer Services Corporation Univac computer to an in-house Honeywell DPS-8 computer on 1 October 1983. Throughout the conversion, attempts are being made to keep changes in the system to a minimum. Some data elements on ENG Form 4378 are being removed and others are being rearranged, but the input form is basically the same. The Districts will have to use slightly different procedures to put data into NRMS, and the query system used to retrieve NRMS data will be totally different. Training on the new system will be given at four demonstration sessions conducted in Washington, D. C., in October and November 1983.



## RECREATION RESEARCH PROGRAM

This bulletin is published in accordance with AR 310-2. It has been prepared and distributed as one of the information dissemination functions of the Environmental Laboratory of the Waterways Experiment Station. It is primarily intended to be a forum whereby information pertaining to and resulting from the Corps of Engineers' nationwide Recreation Research Program can be rapidly and widely disseminated to OCE and Division, District, and project offices as well as to other Federal agencies concerned with outdoor recreation. Local reproduction is authorized to satisfy additional requirements. Contributions of notes, news, reviews, or any other types of information are solicited from all sources and will be considered for publication as long as they are relevant to the theme of the Recreation Research Program, i. e., to improve the effectiveness and efficiency of the Corps in providing recreation opportunity at its water resource development projects. This bulletin will be issued on an irregular basis as dictated by the quantity and importance of information to be disseminated. Communications are welcomed and should be addressed to the Environmental Laboratory, ATTN: A. J. Anderson, U.S. Army Engineer Waterways Experiment Station, P.O. Box 631, Vicksburg, Mississippi 39180, or call AC 601, 634-3657 (FTS 542-3657).

TILFORD C. CREEL  
Colonel, Corps of Engineers  
Commander and Director

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# RECREATION RESEARCH PROGRAM PUBLICATIONS

\*R. E. Coughlin, D. Berry, and P. Cohen. 1978. "Modeling Recreation Use in Water-Related Parks," Technical Report R-78-1, prepared by the Regional Science Research Institute for the Environmental Laboratory, U.S. Army Engineer Waterways Experiment Station, CE, Vicksburg, Miss. NTIS No. AD A071 898). 55 pp.

Distribution: OCE; Division and District Libraries.

Earlier work of the U.S. Army Corps of Engineers on the recreation use of reservoir parks is extended to nonreservoir parks. A thorough review of the literature was followed by a test of several models including those already tested by the U.S. Army Engineer District, Sacramento. For the test, data from New York State Parks were used. The results were somewhat weaker than those obtained by the Sacramento District, which was attributed, in part, to the fact that the data were collected for another purpose and did not contain as many observations as would be desirable for a spatial analysis of this type.

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\*R. M. Mischon and R. C. Wyatt. 1978. "Development of Improved Decision-Oriented Recreation User Information System," Technical Report R-78-2, prepared by the Midwest Research Institute for the Environmental Laboratory, U.S. Army Engineer Waterways Experiment Station, CE, Vicksburg, Miss.; NTIS No. AD A062 795). 113 pp.

Distribution: OCE; Division and District Libraries.

As a result of the growing number of visitors at Corps projects, planners and managers need information concerning the recreation activities, facilities, and preferences of these users. To provide these needs, research was performed to improve visitation input data for the Recreation Resource Management System (RRMS) and to evaluate the needs for an overall recreation information system. There were five major tasks identified as needed to implement the authors' recommendations regarding improving visitation data and development of an overall recreation information system: (1) research and analysis; (2) collection and storage of data; (3) generation of computer software requirements; (4) training and quality control; and (5) reporting.

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\*R. M. Mischon and R. C. Wyatt. 1979. "A Handbook for Conducting Recreation Surveys and Calculating Attendance at Corps of Engineers Projects," Technical Report R-79-1, prepared by the Midwest Research Institute for the Environmental Laboratory, U.S. Army Engineer Waterways Experiment Station, CE, Vicksburg, Miss. (NTIS No. AD A068 677). 76 pp.

Distribution: OCE; Division and District RRP designated representatives; Division and District Operations and Planning Branches; Project Offices.

Survey and analytical techniques are described that will produce standardized estimates of recreation visitation. Earlier research concluded that each Corps District and project essentially had developed its own procedures for collecting visitation data for the Recreation Resource Management System (RRMS). The procedures in the handbook utilized the best of these techniques with several minor changes to improve the quality of the visitation data.

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Urban Research and Development Corporation. 1980. "Recreation Carrying Capacity Design and Management Study," Technical Report R-80-1, prepared for the Environmental Laboratory, U.S. Army Engineer Waterways Experiment Station, CE, Vicksburg, Miss. (NTIS No. AD A090 704). 355 pp.

Distribution: OCE; Division and District RRP designated representatives; Recreation Research and Demonstration Units; Project offices.

The increase in use of Corps recreation facilities and prospects of even greater demand have brought about two major consequences and concerns: resource overuse and user overcrowding. More definitive recreation carrying capacity design and management guidelines are needed to preserve recreation qualities while offering a range of recreation opportunities.

Findings and recommendations of the Recreation Carrying Capacity Design and Management Study are presented. Results of site analyses, management interviews, and user surveys are included for the 11 Corps projects that were studied. Methodologies for determining recreational carrying capacity levels were developed, as well as carrying capacity design and management techniques for use in preventing and correcting problems of overcrowding, overuse, and underuse of recreation resources. Demonstrations are given to show how carrying capacity guidelines can be developed and applied.

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\*Walter H. Bumgardner. 1980. "Development of a Methodology for Preparing Performance Standards for Operation and Maintenance Activities at Corps of Engineers Recreation Areas," Miscellaneous Paper R-80-2, prepared by the University of Southern Mississippi for the Environmental Laboratory, U.S. Army Engineer Waterways Experiment Station, CE, Vicksburg, Miss. (NTIS No. AD A091 560). 64 pp.

Distribution: OCE; Division and District RRP designated representatives; Recreation Research and Demonstration Unit Project Offices.

The quantity and quality of operation and maintenance (O&M) activities at U.S. Army Corps of Engineers Civil Works Projects can be significantly increased through systematic application of work performance standards. Criteria for preparing O&M standards were identified and evaluated. Existing Corps procedures, those used by other agencies, and potentially useful new procedures were evaluated and incorporated into recommended procedures.

Insert to RECNOTES  
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September 1983

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\*Available only through NTIS.

A methodology is described and illustrated for local preparation of O&M standards. Supporting rationale and optional techniques and sources of information are suggested for completing components of individual O&M standards. Example standards, developed from surveillance of maintenance activities at Corps projects, are illustrated.

A quality control plan is recommended for ensuring that O&M activities performed by contractors adhere to Corps-established criteria. Performance inspections, time frames of inspections, and identification of personnel to perform inspections are discussed. Options are examined for recouping costs of unsatisfactorily completed work. Recommendations are given for implementing a standards program and furthering the Corps research on this topic.

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Urban Research and Development Corporation. 1980. "Recreation Carrying Capacity Handbook Methods and Techniques for Planning, Design, and Management," Instruction Report R-80-1, prepared for the Environmental Laboratory, U.S. Army Engineer Waterways Experiment Station, CE, Vicksburg, Miss. (NTIS No. AD AO96 446). 104 pp.

Distribution: OCE; Division and District RRP designated representatives; Recreation Research and Demonstration Unit Project Offices.

The increase in use of Corps recreation facilities and the prospects of even greater demand have brought about two major consequences and concerns: resource overuse and user overcrowding. More definitive recreation carrying capacity design and management guidelines are needed to preserve recreation qualities while offering a range of recreation opportunities. This report presents a methodology for determining recreation carrying capacity levels based on the results of user surveys and site analyses. Carrying capacity planning, design, and management techniques are included for use in preventing and correcting problems of overcrowding, overuse, and underuse of recreation resources. Demonstrations are used to show how carrying capacity guidelines can be developed and applied.

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Robert V. Abbey and Dennis B. Propst. 1981. "A Methodology for the Systematic Collection, Storage, and Retrieval of Trend Data for the Army Engineers Recreation Program," Miscellaneous Paper R-81-1, U.S. Army Engineer Waterways Experiment Station, CE, Vicksburg, Miss. (NTIS No. AD A098 274). 23 pp.

Distribution: OCE; Division and District Libraries; Division and District Planning and Operation Branches; Project Offices.

Past, current, and proposed recreation information systems developed to assist Corps personnel in solving daily management and planning problems are reviewed. The Corps systems designed to collect and store trend data are still in their infancy and are being managed by the Recreation Research Program at the U.S. Army Engineer Waterways Experiment Station (WES). The trend data described in this report were collected as part of a pilot study at three Corps campgrounds during the summer of 1979. The report also describes the

systems of the Research and Demonstration Units (RDU) and of other agencies that collect, store, and utilize recreation user information.

The need to develop additional means of collection trend data is based, in part, on the weaknesses of past Corps of Engineers recreation information systems. These problems, as well as the steps the Corps is taking to gather more reliable visitation and other trend data, are described in the report.

A major product of the proposed recreation user system will be the forecasting of national and regional trends in terms of recreation participation, sales of recreational equipment, and other factors that affect recreation use. Part of this system, the collection of more reliable visitation data, has already been implemented. The mechanics of the proposed recreation user system, potential uses, and relationship to existing systems are herein described.

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William J. Hart. 1981. "Recreation Research and Demonstration System: Its Selection, Operation, and Potential Utility," Technical Report R-81-1, U.S. Army Engineer Waterways Experiment Station, CE, Vicksburg, Miss. (NTIS No. AD A099 751). 112 pp.

Distribution: OCE; Division and District RRP designated representatives.

A Recreation Research and Demonstration System (RRDS) consisting of 24 Recreation Research and Demonstration Units (RRDUs) and 9 Recreation Use Monitoring Stations (RUMS) has been activated. The purpose of the demonstration system is to provide permanently designated outdoor laboratories for the conduct of research in the physiographic, social, economic, and institutional aspects of recreation and related natural resources.

The RRDS represents a stratified 6-percent sample of Corps water resource development projects for which the Corps exercises operational control over the recreation and related natural resources (RRDUs) plus representative examples of important recreation projects for which the Corps is not now credited with responsibility (RUMs). The sample accurately mirrors the size, geographic distribution, attendance, and administrative mode found in the Corps-wide system of recreation projects.

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\*Dennis Propst and Joseph Roggenbuck. 1981. "A Guide to Cultural and Environmental Interpretation in the U.S. Army Corps of Engineers," Instruction Report R-81-1, Environmental Laboratory, U.S. Army Engineer Waterways Experiment Station, CE, Vicksburg, Miss. (NTIS No. AD 104-250). 147 pp.

Distribution: OCE; Division and District Libraries; Division and District Planning and Operation Branches; Project Offices.

The goal of the Corps' Visitor Perception and Interpretives Services Program is to "inform and educate the public with regard to the purposes and concept of operation of the water project and the historical and natural features of the area." This manual is designed to assist Corps personnel in developing and implementing interpretive services at water

resource projects. Subject areas include designing interpretive objectives, selecting appropriate messages to convey, understanding the visitor, choosing the appropriate media, selecting interpretive personnel, and evaluating interpretive services. References are listed for each of the topics.

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Dennis Propst. 1981. "Impact of the Energy Crisis on Corps of Engineers Recreation Program," Miscellaneous Paper R-81-2, Environmental Laboratory, U.S. Army Engineer Waterways Experiment Station, CE, Vicksburg, Miss. (NTIS No. AD 104-779). 45 pp.

Distribution: OCE; Division and District Libraries; Division and District Planning and Operations Branches.

Increases in fuel costs and sporadic shortages in fuel supplies have had an impact on recreation use of Corps Projects. Literature was reviewed with regard to the impact of energy prices and supplies on visitation and recreation use patterns at non-Corps recreation areas. In addition, visitation figures for Corps projects were examined for the years of 1977 through 1979 to determine whether there was any correlation between 1979 fuel shortages and price increases and Corps visitation trends. Due to the quality and detail of Corps recreation data, only the broadest statements on future trends could be made. Energy-related trend forecasts were that recreation use would generally continue to increase steadily at Corps recreation areas due to their proximity to population centers and that visitors would tend to stay longer at one destination.

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James W. Epps, Marion W. Corey, and M. John Cullinane. 1982. "Innovative Roadway Design for Recreation Areas," Miscellaneous Paper R-82-1, Environmental Laboratory, U.S. Army Engineer Waterways Experiment Station, CE, Vicksburg, Miss. (NTIS No. ADA-113-248). 40 pp.

Distribution: OCE; Division and District Libraries; Operation, Planning, and Design Branches.

Access and circulation roads are estimated to contribute approximately 60 percent of the costs associated with recreation area development. The planning and design of recreational area roads may be viewed as a three-phase process involving: (1) routing of the traffic flow based on destination analysis; (2) geometric design of the roadway system; and (3) design of appropriate pavement structures. The accomplishment of each of these phases has depended heavily on traditional highway design practice with a resultant cost penalty. Standard design criteria and construction techniques are being increasingly viewed by present day planners as overly conservative and not widely applicable to implementation of cost-effective low volume road systems.

In recognition of the need for the application of the latest roadway planning and design techniques, a review of available literature on the topic was accomplished. The objective of this effort was to develop information that will assist Corps of Engineers Districts in optimizing the design and operation of recreation area roadway systems.

Efforts have been directed at four categories of roadway planning and design activities where costs savings may be anticipated. These activities include: (1) development of new planning and design techniques; (2) revision of geometric

design criteria; (3) investigation of new pavement materials and design techniques; and (4) development of rapid and effective maintenance methods.

Interim results of the study indicate that techniques are available that have the potential for considerably reducing the cost of recreation area roadway construction. Automated planning techniques are particularly relevant.

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Gregory Curtis, Scott Jackson, William Hansen, and John Rorabacher. 1982. "Development and Evaluation of the Campground Receipt Study," Miscellaneous Paper R-82-2, Environmental Laboratory, U.S. Army Engineer Waterways Experiment Station, CE, Vicksburg, Miss. (NTIS No. ADA-114-128). 59 pp.

Distribution: OCE; Division and District Libraries; Operation and Planning Branches; Project Offices.

Little recreation information that describes visitor use patterns and characteristics has been collected systematically at Corps projects.

A system has been developed to collect information concerning visitor characteristics at Corps of Engineers fee campgrounds. This system has proved to be an effective method of collecting reliable trend data and is cost-efficient. The Campground Receipt Study (CRS) is the development and field testing of this system. This report describes the development and evaluation of the 1980 test of the CRS.

Examples of some possible analyses of data from the CRS data are presented to illustrate the potential usefulness of the information to all levels of management and planning as well as to recreation researchers within the Corps. The analyses are based on data collected during only a portion of the 1980 recreation season and are, therefore, only presented for illustrative purposes. They indicate the type of information that could be readily provided to decisionmakers and researchers through implementation of the CRS procedures. The analyses presented are not intended to be a complete list of uses for the data; other applications can be found within the Corps as well as from other Federal agencies, universities, and private research organizations.

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Scott Jackson. 1982. "Summary Report: Visitor Safety and Security at Corps of Engineer Projects," Technical Report R-82-1, Environmental Laboratory, U.S. Army Engineers Waterways Experiment Station, CE, Vicksburg, Miss. (NTIS No. ADA-112-005). 31 pp.

Distribution: OCE; Division and District Libraries; Operation and Planning Branches; Project Offices.

Limitations on manpower and authority have required the Corps of Engineers to investigate alternative measures for providing a safe and secure environment for Corps project visitors. This report provides a summary of recommended planning, design, and management techniques that will provide increased visitor safety and security at Corps projects. This publication represents a summary of a contract report, "Visitor Safety and Security at Corps of Engineers Projects," which was prepared by Gage-Babcock and Associates, Inc.

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Gregory Curtis and William Hansen. 1982. "Summary of the 1981 Campground Receipt Study," Miscellaneous Paper R-82-3, Environmental Laboratory, U.S. Army Engineer Waterways Experiment Station, CE, Vicksburg, Miss. (NTIS No. ADA-122-095). 56 pp.

Distribution: OCE; Division and District Libraries; Operation and Planning Branches; Project Offices.

This report describes the collection and summarization of the 1981 (calendar year) Campground Receipt Study (CRS) data. These data represent the first complete year of data collection and as such are the best available sample of descriptive characteristics of visitors at Corps fee campgrounds nationwide.

Data collection include visitor characteristics (e.g., length of stay and group size), vehicle type, and camping and other recreation equipment used. These data are summarized for the 15 participating projects as well as for the total sample (119,929 fee permits). Potential uses of the data are also illustrated including analyses of visitor origins, campsite and facility (i.e., electrical hookup) usage, and trends.

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Walter Bumgardner. 1983. "Alternative Approaches to Operating and Maintaining Recreation Areas," Technical Report R-83-1, Environmental Laboratory, U.S. Army Engineer Waterways Experiment Station, CE, Vicksburg, Miss. (NTIS No. ADA-125-745). 44 pp.

Distribution: OCE; Division and District Libraries; Operation and Planning Branches; Project Offices.

This document summarizes the findings and conclusions of the U.S. Army Engineer Waterways Experiment Station (WES) research project, "Cost Efficiency of Methods of Operating and Maintaining Corps Recreation Areas." It consolidates the findings of three separate but closely related substudies comprising the project. The substudies were: (a) an identification of existing approaches used within the Corps for conducting operations and maintenance (O&M) activities; (b) documentation and comparison of costs incurred with O&M activities; and (c) development of a methodology for the preparation of O&M performance standards. The internal working document from which this information was extracted is on file at WES.

The existing approaches substudy revealed that O&M activities were being conducted through the use of: (a) in-house Corps resources; (b) contractual arrangements; and (c) a combination of in-house resources and contractual arrangements. Most of the O&M work was being conducted through contractual arrangements. The highest level of satisfaction was with O&M activities conducted in-house, followed by the combined approach. Managers were more dissatisfied with the contract approach than either the in-house or combined approach.

Although the findings were somewhat inconclusive about O&M costs, they suggest that contracting is more often cost efficient than conducting O&M activities with in-house resources, particularly under conditions of high overall project visitation and high levels of overnight use. It was undetermined whether the contract or in-house approach was more cost efficient under conditions of low overall visitation. The

availability of local labor had no effect on O&M costs.

In suggesting a methodology for local preparation of O&M performance standards, it was concluded that qualitative indicators as well as the amounts of manpower, time, equipment, and supplies and the associated costs should be delineated for specific work tasks.

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Michael Waring, Ronald Hodgson, Thomas Walski and Anita Lindsey. 1983. "Computing Cost-Effectiveness of Alternative Sanitary Facilities," Instruction Report R-83-1, Environmental Laboratory, U.S. Army Engineer Waterways Experiment Station, CE, Vicksburg, Miss. 51 pp.

Distribution: OCE; Division and District Libraries; Operation and Planning Branches; Project Offices.

Sanitary facilities at Corps of Engineers recreation areas contribute significantly to the total cost for both construction and operations and maintenance. In many cases, these costs appear to be unrealistic and the resultant facilities not cost-effective. This is especially true when the facilities are either overdesigned or underdesigned for the level of development or visitation of the area.

This lack of cost-effectiveness can be partially attributed to the lack of any formal methodology that incorporates visitor preferences, by which the planner or designer can quickly evaluate a number of alternative design parameters very early in the development or rehabilitation of a recreation area. The methodology presented in this report addresses this problem through not only the actual costs, but also the visitor preferences and management considerations.

A sample problem is included to illustrate one way in which the methodology may be used.

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Walter Bumgardner. 1983. "Perceptions of the Corps of Engineers' Recreation Concession Program," Miscellaneous Paper R-83-1, U.S. Army Engineer Waterways Experiment Station, CE, Vicksburg, Miss.

Distribution: OCE; Division and District Libraries; Operation and Planning Branches; Project Offices.

This report summarizes user perceptions and concerns expressed by concession managers and Corps personnel for improving the Corps of Engineers' recreation concession program. The findings of a user survey confirm that most users are highly satisfied with the quality and availability of services and facilities provided at Corps concessions. Recommendations on additional facilities that should be provided to meet user needs are identified. A distinction is made between facilities and services traditionally provided by concessions and those provided by the Corps. Basically, users would be pleased with more of the same types of services and facilities being provided.

Potential obstacles inherent in the Corps' concession program that present some limitations to the overall responsiveness to users are discussed. Recommendations are provided for improving the effectiveness of the Corps' concession program.

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