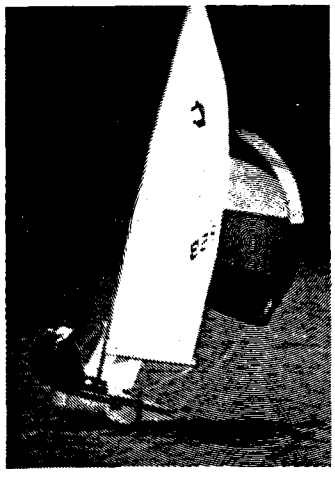
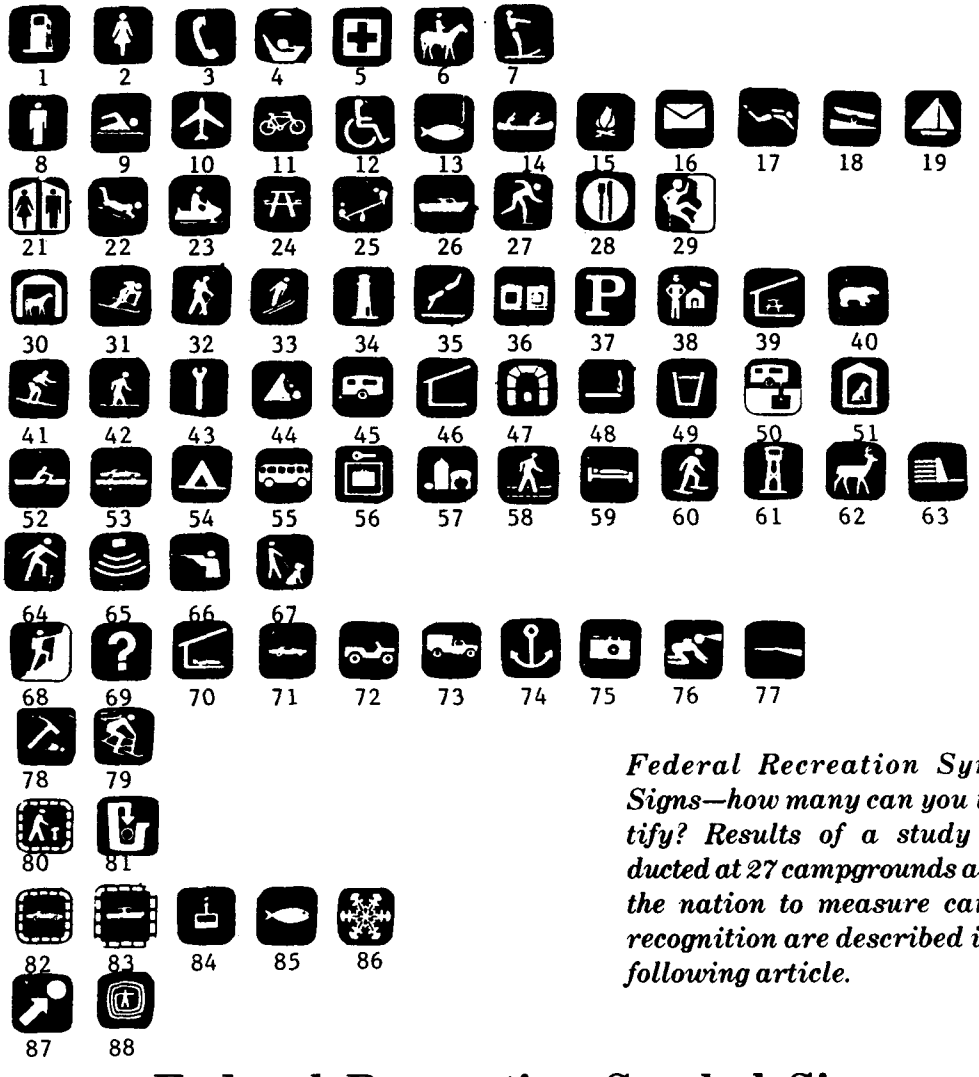
US Army Corps of Engineers
Waterways Experiment Station



ENVIRONMENTAL LABORATORY

RECNOTES
NATURAL RESOURCES RESEARCH PROGRAM

Vol R-86-4 INFORMATION EXCHANGE BULLETIN DEC 1986



Federal Recreation Symbol Signs—how many can you identify? Results of a study conducted at 27 campgrounds across the nation to measure camper recognition are described in the following article.

Federal Recreation Symbol Signs

Nancy Tessaro, Assistant Chief
Natural Resources Management Section
Ohio River Division

Resource Managers may have one thing in common—the belief that the public does not understand the Federal Recreation Symbol Signs. The signs have been in use since the early 1970s and the Corps' policy has always endorsed their use, yet the doubt persists. Do the visitors to Corps projects really know what the signs mean? This question does not represent unfounded paranoia. The fact is even recreation professionals can't decipher ALL of the 88 Federal Recreation Symbol signs now in use. (Can you?) Oh woe is the poor weekend camper who finds himself in a pictorial jungle of stick-men, anchors, and question marks that are supposed to tell him where to go and what not to do.

To gain some insight into the problem, a study was conducted at 27 Corps of Engineers fee campgrounds across the nation to determine if the visitors could correctly identify the Federal Recreation Symbol Signs. Visitors surveyed included males and females from age 8 to 74, from grade 4 to post-doctorate level, from unemployed to professionals, from swimmers to cross-country skiers, and from 19 states in the U.S. to Switzerland. On the average visitors recognized almost 60% of the 88 Federal symbols.

Of more value, perhaps, was how each individual sign fared in the test. Certain signs, such as "gas station," were correctly identified by almost all campers. Others, such as "environmental study area," were not correctly identified by anyone, regardless of their age, recreation experience, education, sex, or locality. Such results indicate a definite problem with the sign itself.

For analysis, the signs were grouped according to their composition. Signs depicting a person or persons (such as "waterskiing") were recognized most often. The next most recognized group of signs contained familiar objects, but without people (such as "picnicking"). The least recognized group of signs were those with abstract representations, such as the "point of interest" (sign number 87).

To determine the relative effectiveness of the 88 signs, the signs were ranked according to the number of campers correctly identifying each sign. Signs from left to right on the same line in the figure on the cover are equally effective (received similar camper recognition scores), while lines of signs from top to bottom represent decreasing recognition scores. Thus "gas station" through "water skiing" are the most effective signs, while "point of interest" and "environmental study area" are least effective in conveying their meanings to the visitor.

Of particular interest are the incorrect responses given on the symbol-recognition test. Such answers allow us to view the signs from the visitor's perspective. In most cases, the answers were taken to be legitimate responses because it was easy to see how the visitor came to the erroneous conclusion about the sign. For example, incorrect answers for "litter" (sign number 81) included: "drainage ditch," "bathtub," "well," "sewage dump," "restroom," "maze area," "flush toilets" and "bomb shelter." Other examples are: for "interpretive trail" (sign number 80), responses included: "grill," "church service," "poison mushrooms," "trash can," "no hiking," "point of interest," "tourist information," "sightseeing," "a park for walking." An important and common sign, "information" (sign number 69) elicited these responses: "expect the unexpected," "unknown danger," "think," "watch," "are you lost?" and "me too!"

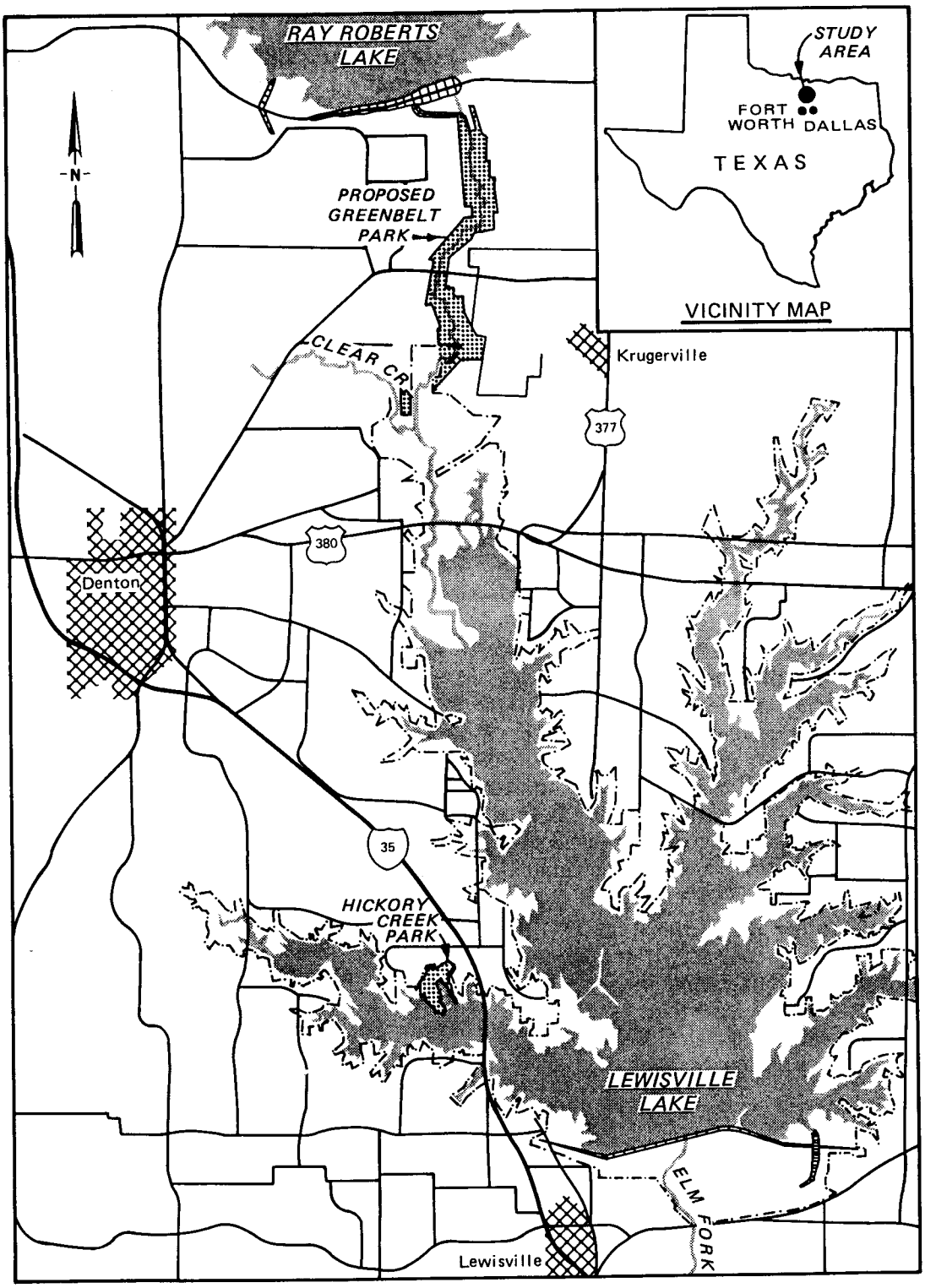
One fact stood out in the study—there was a definite correlation between sign-recognition scores and prior exposure to the signs. The signs seen before by campers scored consistently higher than those signs campers had not seen prior to the test.

The overall conclusion is while certain signs fail in their purpose of conveying a message to the visitor, the Federal Recreation Symbol signs are generally effective and understood by visitors to Corps of Engineers fee campgrounds. For those signs that are not understood, perhaps the best way to educate the public is to use the signs more often.

Responding to Changing Recreation Needs Within the Constraints of an Authorized Project

Rebecca S. Doby, Environmental Resource Planner
Fort Worth District

Lewisville Lake was constructed on the Elm Fork of the Trinity River, Texas, between 1948 and 1954 by the Fort Worth District, US Army Corps of Engineers. Subsequent Corps studies led to a recommendation for an additional reservoir on the Elm Fork, immediately upstream of Lewisville Lake, for water supply, recreation, and fish and wildlife purposes. This project, Ray Roberts Lake, was authorized in 1965 in House Document 276 of the 89th Congress. The authorizing document provided for a raise in the elevation of the conservation pool at Lewisville Lake as a feature of the Ray Roberts project and for the acquisition and/or easement conversion of up to 1900 acres for public (recreational) use at Lewisville Lake in association



Location of Ray Roberts project area and proposed greenbelt park

with the Ray Roberts project.

The concept of connecting the two Federal lakes with a linear greenbelt park was included in the September 1974 Supplemental Information Report, which addressed the Ray Roberts pool raise to 632.5 ft msl. The idea was endorsed by both the US Fish and Wildlife Service and the Texas Parks and Wildlife Department (TPWD). However, planning activities for the Ray Roberts project slowed down considerably in the 1970s pending resolution of a water-rights conflict between the local sponsors of the project.

During the 1970s, a number of things were happening, both regionally and on the national level, that had major impacts on the planning process. Most significant of these was the national population shift to the sunbelt states, which include Texas. In 1970, the population of the Dallas-Fort Worth Standard Metropolitan Statistical Area (SMSA), which is located just to the south of both the Lewisville and Ray Roberts projects, was 2,318,219. By 1980, the population for the same area had grown to 2,974,805, an increase of 28 percent in 10 years. Estimates for 1985 indicated an additional 28-percent increase in population over the 1980 figures.

During the same period of time, a number of trends in recreation patterns were developing. Changing public attitudes and an increased awareness of the importance of health and physical activity contributed to a shift from traditional passive to more active types of recreation. Low density and/or nonmotorized forms of recreation (such as canoeing, hiking, and backpacking) enjoyed phenomenal increases in participation.

The 1985 Texas Outdoor Recreation Plan (TORP) projected the top three outdoor activities for 1990 to be walking/hiking, bicycling, and jogging, all of which are trail oriented. Further, the TORP identified stream corridors as a high priority recreation resource and stated:

> ***"In the greater Dallas-Fort Worth metropolitan area, securing large tracts of land for present and future needs is a tremendous problem. The need for large regional parks, open space, and natural areas in, or close to, the metropolitan area is a high priority."***

Shortly after initiation of construction of the project in September 1980, the Fort Worth District began to develop a master plan for Ray Roberts Lake. Factors such as the trends in population and recreation patterns, as well as the possible need to have a downstream flood easement to maximize the Corps flexibility of releases, led to a revival of the greenbelt concept. The cities of Dallas and Denton were contractually obligated to participate in development and assume management of new park facilities at Lewisville Lake.

On January 28, 1983, the Dallas city officials formally requested the Corps to investigate the stretch of land between Ray Roberts and Lewisville lakes for its potential as a park. Specifically, they requested that an investigation be conducted of the feasibility of substituting a greenbelt park along the Elm Fork for the recreational development proposed at Lewisville Lake.

Factors that required consideration in the feasibility included the enormous population growth predicted for the area, particularly the Denton area immediately adjacent to Lewisville Lake; the project-related increase in river flow between the reservoirs; and the potential conflicts between recreationists and riparian landowners that are common to all fishable/floatable rivers in Texas. A final consideration was the unique opportunity to connect two large blocks of land already in public ownership and so exploit recreational opportunities far in excess of those directly attributable to the riparian corridor.

Because recreation benefits were attributed to the Ray Roberts Lake/Lewisville pool raise project during authorization, it was necessary to ensure that substitution of the greenbelt for the plan discussed in the 1973 General Design Memorandum would not decrease the overall project benefit/cost ratio (BCR). The district, therefore, conducted an evaluation of the comparative benefits of the two proposals, using the Travel Cost Method. Benefits for the greenbelt proposal were estimated at $1.4 million annually, while the facilities-only plan (new development at Lewisville Lake) was estimated to yield $1.3 million annually. In developing the cost estimates, the following features were considered:

- The greenbelt plan would require fee acquisition of about 660 acres, acquisition of conservation easement on about 500 acres, and conversion from existing flowage easement to fee of about 440 acres. Canoe launching and take-out points would be provided just below the Ray Roberts dam and at the two major highway crossings upstream of Lewisville Lake (Routes 380 and 428). An equestrian/hiking trail with 10 primitive camp sites would be designed to take advantage of the diverse stream-oriented resources of the corridor.
- The facilities-only plan for Hickory Creek at Lewisville Lake, as formulated by the Fort Worth District, consists of 120 camp sites, 35

picnic sites, 4 group pavilions, and 1 boat ramp with 4 boat-launching lanes.

The greenbelt plan has a total first cost of approximately $3,036,000 (Jan 85). Early in the study process, the TPWD indicated a willingness to assume all operation and maintenance responsibilities for the greenbelt corridor, in addition to 25% of the first cost of its development. Thus, the first cost would be shared 37.5% Corps, 25% TPWD, and 37.5% to be divided between Dallas and Denton.

In comparison, the facilities-only plan has an estimated first cost of $4,034,000 which would be shared 50% by the Corps and 50% by the two cities. Operation and maintenance costs of approximately $245,000 annually would be borne by Dallas and Denton, as TPWD has no interest in operating a second state park at Lewisville Lake.

Both plans were considered to be incrementally justified; however, the greenbelt plan, with its better BCR, greater than 50% non-Federal financing, and lower total costs, was determined to be in greater compliance with current administration policies.

Extensive public involvement was also a major portion of the study effort. A total of seven public notices were mailed, and three public meetings were held. Local landowners strenuously objected to the taking of private land for public purposes and questioned the Corps authority for the proposal in the overall context of the Ray Roberts project. Environmentalists and recreation groups strongly supported the greenbelt project, citing needs for open space and stream access, particularly in proximity to urban centers. Public sentiment preferring the facilities-only option over the greenbelt option was virtually nonexistent.

Based on the BCR and the public involvement process, the Fort Worth District recommended the greenbelt proposal to the Southwestern Division (SWD) in the Ray Roberts Master Plan in 1983. The SWD questioned the substitution of one type of facility for another and Corps authority for the proposal and did not approve it, but did allow for further evaluation to resolve issues.

The Lewisville Master Plan Update, submitted to SWD in the summer of 1985, contained the results of the reevaluation and again recommended approval of the greenbelt. In August 1985, the SWD made the determination that the project was not within the Division Engineer's discretional authority and forwarded the proposal with a recommendation for approval to the Office of the Chief of Engineers for a determination.

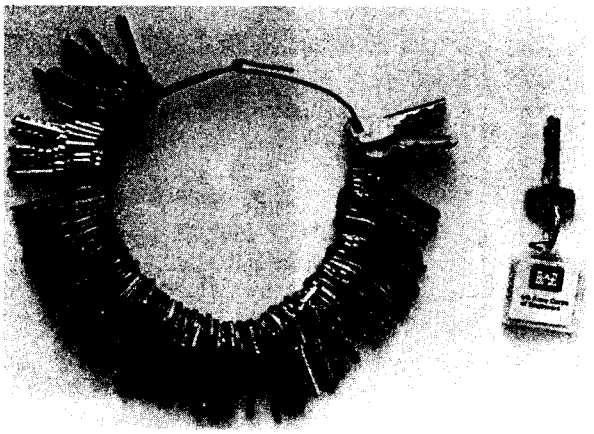
The Chief of Engineers has three options: he can make a determination that it is within his discretionary authority and then he can either approve it or disapprove it, or he can make the decision that it requires congressional authorization and forward it to Congress for a decision. At this time, the District has no indication which of these options he is likely to pursue, and the implementation of the proposed greenbelt remains uncertain.

Single-Key Master System

Avis Kennedy, Outdoor Recreation Planner
Nashville District

For many years, Natural Resources Management personnel have had to carry a bulky, heavy key ring with them as they patrolled a project. Often it took a key for each set of padlocks, a different set of keys for each campground, and finally a set of keys for the office.

Resource managers at several lakes in the Nashville District have installed single-key master systems and found the systems to be highly satisfactory and economical. The master system provides a resource manager or park ranger with one key that will open any lock on the project. A maintenance employee has a key to the shop areas and all of the recreation areas. Each park attendant has a key



THIS or THIS

that works only in an assigned recreation area. This method abolishes all of the aggravation of remembering the function of each key and yet maintains security.

Many other advantages are realized with the master key system. If a key is lost or stolen, the lock core can be removed and replaced with a new lock core by using a special control key. Since this can be accomplished in a matter of moments, security is not jeopardized.

Hardware and labor costs are greatly reduced because the actual knob does not have to be replaced after the initial installation. Only the lock core is removed, and it can be adjusted and reused. Over 15,000 combinations are possible with this system, giving it wide flexibility in application.

There are presently several manufacturers of this type of security system. The companies have cost options to satisfy each project's needs and security considerations.

For further information contact the author at FTS number 852-5115 or commercial number (615) 736-5115.

Orange Pipe for Beach Barrier

Jerry D. Brite, Reservoir Manager
Grapevine Lake, Texas

To protect swimming areas at Grapevine Lake, Ft. Worth District, we selected polyethylene pipe used by gas utility companies for underground gas transmission. The pipe is impregnated with a chemical that protects it from ultraviolet light and also colors the pipe orange, which increases visibility of the pipe in the water. We used three 500-ft spools of 3-in. diameter pipe to construct a 1,500-ft-long barrier. No couplings were required since the ends of the pipe are heat-fused together. Installation of the pipe required about six hours and three contract workers. The polyethylene pipe requires less maintenance than cable and should last longer before it needs replacement. It is also cheaper to install, since barrier floats are not needed.

The pipe presents a more attractive appearance than cable and floats. We think the pipe is a better barrier to boats than cable because the pipe actually floats on top of the water so that boats cannot cross over without damaging their propellers. For extra floatation, the barrier pipe can be plugged with cylinders of polystyrene foam prior to assembly.

Meadowmere Park, Grapevine Lake, swimming beach buoy line is 3-in. polyethylene pipe (behind walker)

Using the Natural Resources Technical Support (NRTS) Program

Do you have a problem related to natural resources/recreation management that the staff at the Waterways Experiment Station (WES) could assist in solving? Could the solution be provided in a few days? If the answers are yes, have we got a deal for you!

The Natural Resources Research Program Task Force's recommended NRTS Program is designed to provide rapid response to requests for help in solving field problems related to natural resources/recreation management. To request assistance, simply send a letter to the Manager of the Natural Resources Research Program at WES stating the exact nature of the problem and describe the services requested. Please include the name and phone number of a point of contact in your letter.

Upon receipt of your letter, the proper technical staff will be alerted to respond to your request. We will inform you whether your problem qualifies for assistance under the NRTS Program; if it does, we will work with you toward a solution.

Address your request to:

Commander and Director
US Army Engineer
Waterways Experiment Station
ATTN: Dr. A. J. Anderson (WESEP-R)
PO Box 631
Vicksburg, MS 39180-0631

For additional information, call Area Code 601,634-3657 (FTS 542-3657).

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NATURAL
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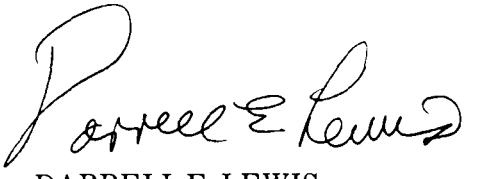
OCE NATURAL RESOURCES MANAGEMENT TOPICS

A new program is beginning this FY as a result of the assignment given to the Natural Resources Research Program Task Force to "...identify ways in which the Natural Resources Management Program can be furthered by research." The task force consisted of personnel from six projects, three districts, and one division.

The NATURAL RESOURCES TECHNICAL SUPPORT PROGRAM was recommended to provide rapid response to requests for help in solving field problems associated with recreation and natural resources management. This program is limited to activities associated with completed projects operated and maintained by the Corps. The program purpose is to transmit readily available technology to address the specific problem at hand in a timely manner. The O&M funded program is initiated for one year, during which it will be evaluated to determine if it should continue.

Procedures for implementing this new program are described in an article on page 7. We are pleased with the concept of this new program and expect it to be beneficial to the FOA's natural resources employees.



DARRELL E. LEWIS
Chief, Natural Resources Management
Branch, (DAEN-CWO-R)