The "Big E" challenge — large-scale graffiti removal

by Christopher M. White

There seems to be a need in many of us to leave a reminder of our passing. Human beings have been obsessed with marking our passage in time and space for eons. Early hunter-gatherers in North America drew pictures of animals and marked this rock art with outlines of their hands (perhaps an early illiterate signature). Spanish explorers marked their names and insignia on El Morro rock in New Mexico. This became so popular an activity that by the twentieth century, the early markings were totally overwritten in some places. Along the Oregon Trail, travelers wrote their names in the soft rock of Scotts Bluff and Inscription Rock, among others. Today, soldiers at one Army post make a point of painting elaborate insignia on a prominent rock outcropping.

While interesting and sometimes historically important, much of today's "rock art" is more commonly known as "graffiti" and "vandalism." Some people define "historical resource" as meaning that the writing has endured 50 years or more, but the current rock art is just "vanilla" graffiti. It appears that people are painting and inscribing their names (and other artwork) on natural rock outcroppings, boulders, and cliff
faces in increasing numbers and in many areas. When this rock art occurs at Corps projects, it has an impact on the visitors’ enjoyment of the area.

Determining how to remove the graffiti and deter this type of behavior is more complicated and challenging at times than at first thought. One example of an extremely challenging and difficult graffiti problem was addressed by the Natural Resources Technical Support Program for Norfork Lake (Little Rock Corps District). What was learned there may prove useful to other Corps managers faced with a similar problem at their projects.

The “Big E”

Limestone and dolomite cliff faces along a popular Norfork Lake swimming and diving area (commonly referred to as the Big E) are being spray-painted with names, faces, and other markings. Access to the area is only by boat. The Big E is a section of a long series of cliffs that jut out into the lake and is popular with cliff divers who jump from the top of the rock, 10 to 25 feet (depending on lake level) into the lake.

Over the past five years, a steadily increasing amount of graffiti has appeared around the Big E cliffs. Presently, the graffiti covers the cliffs for about a half mile horizontally and 10 to 20 feet vertically. Names of individuals, families, and even the “Blytheville [Arkansas] Firefighters” mar this natural area. The surrounding area is not developed in any way, and the presence of the graffiti detracts from the aesthetic value of the area. Indications are that the presence of so much graffiti is leading to an expansion of this depreciative behavior to other areas of the lake.

The main area where graffiti is occurring is a popular gathering spot for boaters from several nearby marinas. Boat registrations indicate that many of the visitors to this area are from the Jonesboro, Arkansas, region. Most (99 percent) of the markings do not appear to be done in anger or in haste. Half-full cans of spray paint and Rustoleum® have been found near the cliffs. Many of the recent markings are multicolored and indicate that considerable time went into their preparation and placement. Also, much of the current graffiti is being done in bright, fluorescent colors much more visible from a distance.

Attempts to control rock art

Attempts by project staff to curtail such graffiti have included increased patrols, citations with mandatory appearance, making the offenders scrub off the paint when they are caught, and using staff members to try to wash off the paint with high-pressure hoses. However, current staffing levels make it difficult to provide patrol coverage during times of high recreation use, because of other, more pressing demands. The previous Federal magistrate was reluctant to impose fines or other punishment under Title 36 for those that were caught, because of the abundance of existing graffiti. When people have been ordered to remove their markings, they have found it difficult to do so because of the rock structure and type of paint used.

The rocks at Norfork Lake are mainly a heavily weathered dolomitic limestone with an inter-spersed, fragmented chert layer. Attempts to scrub, spray, or otherwise remove the graffiti are hampered by this rough, weathered surface. Weathering of the rock face by wave action and immersion has not noticeably dimmed even 5-year-old graffiti.

One homeowner on another section of the lake has had problems with a small amount of graffiti on a Corps-owned section of cliff directly below his house. He sprays gray paint (without permission) over the graffiti as it occurs. The color of the paint does not exactly match that of the surrounding rock. However, farther than about 10 feet from the cliff, the paint hardly shows, and it effectively conceals the graffiti.

High-pressure washing was tried on one section of graffiti
Previous studies on graffiti indicate that prompt hiding or removal of graffiti tends to keep others from marking the same area. However, without a comprehensive ongoing program, simply removing the graffiti does not change behaviors related to this problem. The immediate concern is how to remove or mask existing graffiti. The long-term problem is preventing the recurrence of what appears to be a popular pastime. Both concerns need to be addressed with regard for the constraints of time, money, and labor contracts.

Graffiti removal

Several methods are available for the physical removal of graffiti. These approaches are summarized below.

- **Wire brushing.** This technique was tried by the staff and several offenders (sentenced by the magistrate) and was found ineffective. In addition, the large surface area to be cleaned means that any such effort is very time-consuming. Adding chemical solvents (such as paint stripper) has not increased the effectiveness of removal to a large measure. Also, the brushes tend to leave scratches across the rock face. An advantage is that when using just wire brushes, there is no concern about pollution. (It should also be noted that adding paint stripper to make the brushing easier is not environmentally sound, as the drippings would fall into the water below the cliff. Also, the cost of enough paint stripper to remove this large area of graffiti makes it cost-prohibitive.)

- **High-pressure water.** Tried by the staff, this method was found to be somewhat effective in small areas. However, it is very time-consuming, and there is a safety hazard with small chips of stone blasted off the rock by the water spray. It is relatively effective in that the paint is 95 percent removed with no pollution problem. However, the area cleaned is unnaturally brighter than the surrounding rock. This could lead to others seeing this area as a "clean slate" on which to write.

- **Muriatic acid.** This has not been tested, but was suggested by project staff. Disadvantages include the potential for chemical reaction with limestone, and localized water pollution. This product must be used with caution. Also, this approach is expensive and time-consuming for cleaning an area this large.

- **Sand blasting.** This method was used by U.S. Forest Service staff to remove a large amount of graffiti in a lava cave in Arizona. However, when used on limestone, there is a potential for rock chips being knocked loose from the cherty rock layers. While effective in the lava cave, the cost was kept low by donated materials and a donation of a large portion of the labor cost. At Norfork Lake, it would be difficult to transport the needed supplies, materials, and equipment across the lake to the cliff area. Road access is possible, but would require good weather and perhaps a four-wheel drive vehicle. Sand blasting would be effective in removing the graffiti, but could leave bright scars on rock where graffiti was removed. Little or no potential for pollution exists. However, any type of rock when sandblasted will be brighter than the surrounding surface and possibly would present another "clean slate."

- **Masking.** This could be an effective method, especially for small areas. For such a large area at Norfork, access problems exist, which require barging over a scaffold, spray gun, and paint. It could be cost-effective in covering the graffiti area and aesthetically effective if care is taken to match the
paint to the rock color. The potential pollution problem (from spray mist settling in the lake) could be mitigated by placing a tarpaulin below the area being painted. Also, there is a possible public relations problem with environmental groups over painting the natural rock face. The National Park Service suffered a public relations “black eye” in the 1970s over painting a cliff face to provide film makers the proper background. While this involves an entirely different agency, location, and reason, the symbolism of painting such a large area should be reason enough to require meeting with the public and special interest groups before undertaking such a task.

- **Commercial graffiti removal products.** Numerous products are made to remove graffiti or to harden the surface and make removal easier. However, these products are characterized by two elements: high cost and high toxicity. Anything powerful enough to remove these different types of paint is also powerful enough to require the user to don protective eyewear, breathing mask, and clothing. While helpful in limited situations, this approach is most useful when treating structures or areas where runoff can be controlled. A major limiting factor is cost. One group of consultants estimated the cost for Norfork to be between $250,000 and $500,000.

For Norfork Lake, the most cost-effective solution would be to mask the area with a matching paint. The concern has been that any additional delays would result in more graffiti in new areas. Based on several concerns, the staff is still considering this option while trying several others. This past summer, the staff used a small sand blaster in one area as an added removal method. It was discovered that some of the names were being repainted over the previous year, with five layers of paint colors being found under one set of names.

Another option, sand blasting, would have to be done with caution at Norfork Lake, because of the highly weathered rock surfaces. High-pressure air jets cause some spalling and chipping of the rock face, especially in the chert layers. A softer abrasive, such as walnut shells, is being considered. Also, the cleaning methods are being tested in areas that are not noticeable to the public.

**Conclusion**

Graffiti is an ongoing problem that usually has no easy answer. The first priority in any case is to remove or mask the existing graffiti. Without that step, it will be difficult to discourage additional “rock art” and reinforce the illegality of it. The presence of existing graffiti will also make it more difficult to get convictions when people are caught in the act. However, there is no easy or simple way to remove such graffiti. Each approach to removal has pros and cons that need to be carefully considered and weighed based on factors such as material affected, location and extent of the graffiti, and budget and manpower, among others.

Finally, it should be noted that the removal of existing graffiti does not guarantee that others will not come later and mark the cliffs. Deterrence of this activity may require closure of the area, increased enforcement, and a continuing education program coupled with personal contacts. This will be the subject of a future article.

**Note:** The author would appreciate hearing from any of the readers of this article concerning successful or unsuccessful methods and techniques they have used to remove graffiti. Also, for additional information on products or techniques mentioned in this article, please contact the author at telephone 1-800-LAB-6-WES, ext. 2866.

Christopher White is an Outdoor Recreation Planner in the Resource Analysis Branch, Environmental Laboratory, U.S. Army Engineer Waterways Experiment Station. He has been interested in the reasons for and the prevention of vandalism and graffiti for many years, having dealt with such behaviors while working as a Park Ranger. Chris holds a Bachelor of Science degree in Natural Resources Management and a Master’s degree in Forestry from the University of Missouri. He is presently working toward a PhD in Recreation Resource Development from Texas A&M University.
An update on the Automated Use Permit System

by
Judy Rice, Headquarters, USACE

The Automated Use Permit System (AUPS) is a computer program for issuing and managing recreation use permits at Corps projects. Since its beginning in the mid-1980s, AUPS has evolved from a system that issued camping permits at six Corps projects designated as Research and Demonstration Units, to a system that issues a variety of recreation use permits and produces a number of management reports at Corps projects nationwide.

The 1993 recreation season brings an increase in the use of the AUPS around the Corps. Over 120 projects are authorized to use the software this year at 225 campgrounds. Although authorization to use the program was limited initially, approval to use the system is now easily obtained with a written request from the District to the Waterways Experiment Station (WES).

Modifications have been made to the software throughout the system's development and deployment phases. Many of these modifications were made at the suggestion of AUPS users; some were made to correct software errors or inefficiencies. This process of system evolution and improvement will continue in order to ensure that AUPS remains an effective management tool that properly serves the user.

A number of problems which users have reported could be avoided by following a few simple operating rules. First, you must use computer equipment that meets the minimum requirements, as outlined in the AUPS User Manual. Failure to follow this rule has caused many users to have very long permit processing times. Operating the AUPS without the recommended battery backup system has also caused problems resulting from power failures.
Second, you must follow the instructions in the user manual. This manual is your basic source for information and assistance, and provides specific instructions for proper system operation. The system, for instance, is very date- and time-sensitive. It is possible to "lose" permits and reservations if you try to modify data from previous dates. The 1993 AUPS User Manual contains explanations of common problems to help users avoid mistakes.

Third, and perhaps most importantly, you must understand the basics of running a computer system and be able to do limited troubleshooting yourself. A familiarity with basic DOS commands and a thorough knowledge of AUPS is necessary for all users and system administrators.

If you have any problems with the 1993 version of AUPS, first contact your District AUPS coordinator. Your coordinator may know the solution to your problem or may be able to find the answer with assistance from the District's information management office. If local sources cannot solve the problem, WES will provide technical support. Be sure to document carefully the circumstances of the problem and forward this information, along with copies of incorrect permits and/or operating files, to WES. Your contact at WES will be Mr. Sammy Franco, who can be reached at (601) 634-4205. WES will also operate an AUPS bulletin board in 1993 to expedite information to the user, and to assist users with common problems.

After you have had a chance to use AUPS 1993, the Natural Resources Management (NRM) Branch at Headquarters, U.S. Army Corps of Engineers, will ask for your recommendations. The AUPS Advisory Committee will review your recommendations for improvements, and the NRM Branch will pass approved changes on to WES for programming. You, the user, play the most important role in this process by identifying those improvements that will make the system more responsive to your needs.

You, the potential user, play an important role, as well, in the future of AUPS. As you become more interested in using the system, you will discover all it has to offer as a campground management and operations tool. Once you begin using the system, you will quickly become more proficient and innovative in taking advantage of its capabilities. AUPS has great potential to improve our service to the public, to increase our efficiency in campground operations, and to enhance your effectiveness as a recreation professional.

AUPS provides the project manager with some very valuable data for recreation area management, while performing the necessary tasks of issuing permits and collecting fees. With a rapidly growing number of AUPS projects, an ongoing program of system improvement, and a committed user network, the Corps — and you — can begin to take full advantage of AUPS' potential.

NRRP research addresses field problems

Do you have an operational/management problem that requires a new look, or perhaps short-term or long-term research to find a solution? If so, let us know so that the resources of the NRRP can be targeted toward real problems — your problems.

Explain the situation or problem in writing (no more than two pages) and send your idea, along with your name, address, and telephone number, to your District or Division NRRP point of contact (POC). POCs are listed in the August 1992 RecNotes. Feel free to call your POC if you have questions about the program.

When should you submit research ideas? Any time. But do it now while the idea is fresh in your mind.

Your ideas are needed to make the NRRP your program. Get involved!
## NRRP program review scheduled

The Natural Resources Research Program Review will be held at the Red Lion Hotel-Columbia River, on April 29-30 in Portland, Oregon. For further information or to attend, contact Carolyn Schneider at (601) 634-3657 or Billie Skinner at (601) 634-3701. The program review is open to all Corps of Engineers employees.

## RecNotes articles requested

RecNotes welcomes the submission of articles from our readers on topics affecting the Natural Resources Research Program. Original articles may be submitted with photographs or slides. Please include your name, affiliation, and your telephone number. Articles may be edited. Photographs and slides should be accompanied by captions. For articles longer than two typewritten double-spaced pages, we would like to receive a brief biography and a head-and-shoulders photo of yourself (but this is not mandatory).

Articles published elsewhere should be identified and approval obtained from the publisher (in writing, if the source is copyrighted). We would also like to receive information from all sources, including upcoming events, special awards, and events that affect our natural resources and recreation.

Submit articles and other items to: U.S. Army Engineer Waterways Experiment Station, ATTN: CEWES-EP-L/Carolyn Schneider, 3909 Halls Ferry Road, Vicksburg, MS 39180-6199. You may fax articles to (601) 634-3528. Be sure to identify your submission as for RecNotes.

## Natural Resources Technical Support (NRTS) Program

The NRTS Program was initiated in FY 87 to provide rapid technical assistance for field problems associated with recreation and natural resources management in the U.S. Army Corps of Engineers. The program is funded under Operations and Maintenance (O&M). Assistance is limited to Corps activities associated with operating O&M projects, problems existing during the planning or engineering phases of renovations, or alterations to operating O&M projects.

To request assistance, a letter to the Manager of the NRTS Program at the following address is required:

Commander and Director  
U.S. Army Engineer Waterways Experiment Station  
ATTN: CEWES-EP-L/Mr. Decell

3909 Halls Ferry Road  
Vicksburg, MS 39180-6199

In the request you should name the project, and state the nature of the problem and the type of assistance required. If you have been in contact with a technical person at the U.S. Army Engineer Waterways Experiment Station (WES) who has knowledge of your problem, you may request that individual by name. The request should identify a point of contact in your organization and a telephone number. Upon receipt of your letter, the request will be directed to the proper technical staff member at WES for response.

Assistance under NRTS is provided at no cost to the user and is limited to 7 man-days, including travel. The results of the assistance provided will be formally transmitted to your organization by the Manager, NRTS. In cases where assistance is needed very rapidly, telephone requests are honored, but must be followed up by a letter. When the results are needed rapidly, advance copies are forwarded by FAX and followed up with a formal response.

In addition to this direct assistance to the FOAs, NRTS activities include technology transfer, such as workshops, and publication and distribution of RecNotes, the Natural Resources Research Program's information exchange bulletin. Technology maintenance is also a NRTS function, as it ensures that the direct assistance provided is state of the art.
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This bulletin is published in accordance with AR 25-30. 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 Natural Resources Research Program can be rapidly and widely disseminated to Headquarters, 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 so long as they are relevant to the theme of the Natural Resources Research Program, i.e., to improve the effectiveness and efficiency of the Corps in managing the natural resources while providing recreation opportunities at its water resources development projects. This bulletin will be issued on an irregular basis as dictated by the quantity and importance of information to be disseminated. The contents of this bulletin are not to be used for advertising, publication, or promotional purposes. Citation of trade names does not constitute an official endorsement or approval of the use of such commercial products. Communications are welcomed and should be addressed to the Environmental Laboratory, ATTN: J. L. Decell, U.S. Army Engineer Waterways Experiment Station (CEWES-EP-L), 3909 Halls Ferry Road, Vicksburg, MS 39180-6199, or call AC (601) 634-3494.

ROBERT W. WHALIN, PhD, PE
Director
HQUSACE Natural Resources Management Perspective

Secretary Dorn's Recreation Policy Review

The Assistant Secretary of the Army (Civil Works) has completed her review of Corps recreation policies. I'd like to share the process with you to provide some insight on the intensity of the review.

The review group was a committee consisting of Messrs. Steve Dola and Robert Kaighn from the Office of the ASA(CW), Mr. John P. Elmore, Chief, Operations, Construction and Readiness Division, and Mr. Barry Frankel, Director of Real Estate. As I mentioned in an earlier column, to support the efforts of this committee, we asked a number of Natural Resources Management (NRM) people to participate in the effort. Since the focus of the ASA(CW) was on the review of "existing policies, regulations and outgrant instruments pertaining to our partnership relationships," we also invited a number of HQUSACE and field people from the Real Estate Directorate. As a Task Force was already looking at ways to streamline the Corps Shoreline Management program, it was incorporated into this review process as well.

Two work sessions were held in Washington, DC, last fall. The group was broken into several subunits to address the following areas: Public Partnerships, Private Sector Partnerships, Shoreline Management, and Role/Business Practices. Recommendations on each of these issues were presented to the committee, and the decisions on recommendations to be forwarded to the ASA(CW) were made by the committee.

The committee’s recommendations were presented to Ms. Nancy Dorn, ASA(CW), in a series of four detailed briefings. An additional briefing was provided on the status of implementation of the Corps’ National Recreation Study, completed in 1990. The briefings consisted of a presentation of identified policy issues and the recommended action to address the issue. In response to these briefings, Ms. Dorn made numerous (almost 50) modifications in existing Corps policies.

While the purpose of this column is not to lay out these new policy directions in detail, I would like to provide an overview of the Secretary’s philosophy in dealing with Corps recreation policy.

Ms. Dorn was concerned that Corps oversight of our outgrants to both public and private partners was excessive. Her policy changes reduce Corps oversight of leases to state and local government and the private sector. The greatest relaxation of Corps oversight was in our relationships with the states. Our new policies will particularly recognize state park systems as competent governmental entities with both the ability and the accountability to provide responsible stewardship of the lands they manage. Numerous changes are being made in the standard lease forms for both public and private sector recreation leases.

Ms. Dorn was concerned with the consistent application of administration policy throughout the Corps. She also wanted to ensure an efficient program through the application of business practices.

The ASA(CW) approved a number of suggestions for streamlining the Shoreline Management program. These changes are primarily procedure oriented rather than modifications to basic policy.

As you may recall from a previous column, one of the tasks of the review was to develop a statement of the Corps’ role in recreation. This is one area where our efforts failed to produce a final product. Numerous draft statements were developed, but work will continue on that item.

Ms. Dorn approved a recommendation to adopt a more business-oriented approach to managing the Corps recreation program. The thrust of this concept is to incorporate sound business practices into the management process. These practices will be applied in our budget guidance, Operational Management Plans, field budget requests, and accomplishment monitoring procedures. Two new concepts to watch for: “Best Management Practices” and “Measurable Objectives.” Both of these ideas were generated by a small group of Corps project managers we brought in to help us with the task of bringing the concept of business practices to the reality of project activities.

Now the job of implementing these decisions begins. We will be issuing a number of policy letters titled "Recreation Policy Letter 93-XX" in the very near future with revisions to the relevant ERs to follow.
As these policy decisions are promulgated, I hope you will agree with me that the results of this review have strengthened our program by increasing our flexibility in dealing with our partners. I believe we have taken a major stride forward in improving our ability to serve the public with quality public outdoor recreation opportunities.

As I'm writing this column, the Clinton administration has yet to announce a nominee for the ASA(CW). By the time you read this, I expect that selection will have been made. As this new administration takes charge, I'll do my best to keep you posted on their policies as they affect the Natural Resources Management program.

DARRELL E. LEWIS
Chief, Natural Resources Management Branch, HQUSACE