

CONSTRUCTION PROJECTS

AND NATURAL RESOURCES

Figure 1. Built amid the Giant Forest in Sequoia National Park, cabins and park housing promote soil compaction, a threat to the behemoths, and must be removed. A new process to award NPS construction funds recognized this project as the highest priority in the national park system. Costing more than \$100 million dollars, work of this magnitude will not be entertained in the future unless specifically directed by Congress. However, the evaluation process now considers the benefits of all construction projects to natural resources and targets more affordable proposals as detailed in the following pages.

Natural resources may benefit from new construction evaluation process

By ABBY MILLER

A NEW LOOK FOR THE NPS line-item construction program suggests that natural resource managers should pay more attention to construction projects as resource management solutions. The NPS line-item construction program (see sidebar on page 21) was reengineered in 1995 and 1996, in part in response to congressional expressions of concern, including cost overruns and a finding that "the priority system is undecipherable." The NPS National Leadership Council (NLC) approved the *Service-wide Development Strategy: The Next Decade* to establish direction for the program, including objectives that every dollar spent on a construction project adds value to the park and the national park system and that every project contributes to resource protection, high quality visitor experience, or improved park operations, including operating in a sustainable and environmentally responsible manner.

In July, the results of reengineering the priority-setting process were implemented for the first time. In the past, the National Park Service relied on the collective wisdom of its senior managers in

an informal process to set construction priorities. The new system uses a formal process and a project assessment team to rate and rank projects for review by the development advisory board, a new NLC committee, which in turn develops a priority list for full NLC approval. The assessment team has representatives from each field area, including park, system support office, and field office-level personnel, and representatives of the associate directors for cultural resource stewardship and partnerships, natural resource stewardship and science (the author), administration, and operations. The process was coordinated by Roger Brown, special assistant to the associate director for professional services.

Service employee. The objective of the process is to focus on the importance of individual contributions, or specific advantages, of each project, rather than the importance of broad, abstract categories—for example, visitor services are "more important" than resource protection. Paraphrasing an example used in training, CBA focuses on whether a specific difference in weight is more or less important than a specific difference in stability in choosing between two canoes as opposed to whether weight or stability in the abstract is the most important decision factor. To use differences among actual projects requires rating scales to be developed based

The definition of what constitutes a "construction" project is broader than many believe; it could be a natural resource rehabilitation project.

Based on the recommendations of a departmental task force, Associate Director for Professional Services Denis Galvin selected a decision-making system called "choosing by advantages" or CBA, which was developed by a former U.S. Forest

on the projects at hand (i.e., for each priority-setting effort), rather than generically.

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RATING FACTORS DETERMINED

The assessment team met in February 1996 to develop factors to reflect the direction of the development strategy. We first chose four broad objectives—resource protection, visitor services, operations, and “other.” The “other” category allowed parks to articulate the advantages of projects that were not captured elsewhere. Each objective has one or more factors—threat elimination, treatment, and support under resource protection; visitor experience and visitor safety under visitor services, etc. The project call, issued last year in April, required information related to these factors, in addition to the 10-238 forms traditionally used for construction projects. Examples of information related to the factors include resource significance as denoted by designations (such as biosphere reserve, world heritage site, and listed threatened or endangered species) and site visitation.

PROJECTS REVIEWED

In July, the assessment team met for 6 days to review the projects. After evaluating the greatest benefit (most important advantage, in CBA parlance) provided by any project under each factor, the team judged “eliminating threats” (one of the factors) to the Giant Forest at Sequoia-Kings Canyon National Park by removing facilities from the grove (figure 1, page 19) as the single most important advantage of any project within any of the factors. As a result, this advantage or benefit became the benchmark to create a scoring scale to apply to the advantages of all projects within all of the factors. The Sequoia project received 1,000 points for its advantages in threats elimination and all other advantages were compared to that one and scored.

Although the Sequoia undertaking demonstrates that natural resource projects can be judged highly beneficial

under the new system, project submissions with natural resource protection objectives or spin-off benefits were limited in number. This was not true for cultural resource projects since so many cultural resources are facilities themselves and construction projects are integral to their protection.

WATER RESOURCES CONNECTION

Most of the projects with benefits to natural resources were projects to reduce or eliminate water pollution. Sewage treatment projects were the most common, although less so than in the last priority-setting process. Upgrades of such plants at Yellowstone and Glacier Bay that eliminated discharges to sensitive waters, and had good information about the discharges and the threats they pose, scored relatively high in the “eliminate threats” factor. Projects to remove septic systems that were leaking near wetlands or sig-



Figure 2. Open to the elements and subject to vandalism, this fossilized sequoia tree stump at Florissant Fossil Beds National Monument, Colorado, will be protected in the future through construction of a shelter structure.



Figure 3. Trails within Great Smoky Mountains National Park are degrading. Not only is visitor safety a concern, but soil is eroding into streams, threatening aquatic life, and vegetation is being trampled. The new construction evaluation process considered these multiple impacts and funded the project, which will repair, rebuild, realign, or relocate 400 miles of trail.

Good, objective data are necessary for a natural resource rehabilitation project to score well.

nificant or sensitive water resources at Cape Cod and Acadia also scored well. Two highly scored projects at Mammoth Cave and Wind Cave dealt with preventing polluted waters from entering cave systems.

Other project advantages that received points for resource treatment or threat elimination included new or redesigned visitor facilities described as necessary to control impacts to natural resources (figures 2 and 3). Although some natural resource benefits were ascribed to many visitor facilities, those that were judged

to have the most significant resource-related advantages were those described as designed specifically to address a threat to natural resources, particularly camping, waste discharge, and erosion next to water resources. An example is a campground and parking facility designed to prevent indiscriminate and unlimited vehicular camping on beaches at Glen Canyon. Other visitor-related projects receiving high points for spin-off benefits to resources were the replacement of inadequate comfort facilities and the establishment of trails at two Hawaiian parks where "searching for relief" and social trails result in trampling of habitat for endangered plants and bird nesting sites.

Of interest in the "other" category is the advantage of evaluating a project with no direct resource protection value of its own, but that has a bearing on subsequent projects with high resource protection values. In Grand Canyon, a visitor center needed to be relocated first before a new transportation system—that would itself reduce air emissions—could become operational. The desired final outcome necessitated the first project and was judged important in sending a signal to our partners in air clean-up efforts that we are willing to do our part.

OVERALL BENEFITS IMPORTANT

The CBA process requires that projects be ranked not only in order of their individual benefits or advantages, but also in order of their advantages per dollar, i.e., advantage/cost ratio (Note: This is similar to a "cost/benefit" ratio with the important difference that benefits, or advantages, are *not* expressed in dollars). The objective is to get the most value for the national park system from the dollars available to the line-item construction program. For example, the top project could have an "advantage" of 2,000 points worth of benefits (as determined in the scale-making and assigning process previously described) for 2 million dollars, but the same 2 million dollars could buy 4,000 points of benefits by funding several smaller projects. Then decision-makers (the development advisory board and the National Leadership Council) must decide whether several smaller projects further down the benefits list are collectively a better investment for the park system than the single, top-ranked project.



The NLC decided to begin the transition to use of the advantage/cost ratio by using it within three categories of construction projects based on their cost—under \$3 million, \$3 to \$8 million, and \$8 to \$20 million—to identify priority projects for the fiscal year 1999 program. One-third of the funds allocated to the line-item construction program for that year will be used for projects in each category. This approach will allow a few large-cost projects to be initiated or continued while

funding many more medium- and small-cost projects. A new call will be issued late this calendar year to develop priorities for fiscal year 2000 using the CBA-based process with the expectation that the advantage/cost ratio will be more closely followed than it was for fiscal year 1999. Given this increased attention to advantages produced per dollar

in the line-item construction program (and the continued decline in available funding), large projects will become increasingly difficult to justify. In the future, extremely large projects such as that to improve water delivery to the Everglades (in Florida) and the Elwha Dam removal in Washington (restoring a river drainage for salmon and steelhead spawning) may be better considered outside the line-item construction program. It is difficult to develop a meaningful scale to cover projects where the magnitudes of costs and benefits are so different.

IN SUMMARY

This was the first time we used the new process and we learned a lot. We know that good judgment about relative differences among projects can be exercised only if the information about the projects is good; this time, that was not always the case. Many project writeups still “gilded the lily,” but we learned what information and in what form is needed to facilitate objective judgments. Nevertheless, The assessment team felt that the system was fair. All participants worked hard and conscientiously, including trying to deal consciously with their personal biases.

Park resource managers may learn some lessons here. First, if construction solutions can help deal with resource problems, resource personnel should work closely with their facility manager as they design projects. Second, the definition of what constitutes a “construction” project is broader than many believe. If a project costs more than \$500,000 and less than \$20 million, it may be eligible for construction funding and it does not have to be a building; it could be a rehabilitation project. Third, projects that have resource benefits of any kind will receive more credit for those advantages if good, objective data are included in the package. Finally, the system is explicitly open to resource protection projects—resource-related projects will get a fair evaluation.



Abby Miller is the Deputy Associate Director for Natural Resource Stewardship and Science. Her phone number is (202) 208-4650.