Testimony
Before the Subcommittee on Energy and Resources, Committee on Government Reform, House of Representatives

CORPS OF ENGINEERS

Observations on Planning and Project Management Processes for the Civil Works Program

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CORPS OF ENGINEERS

Observations on Planning and Project Management Processes for the Civil Works Program

What GAO Found

GAO’s recent reviews of four Corps civil works projects and actions found that the planning studies conducted by the Corps to support these activities were fraught with errors, mistakes, and miscalculations, and used invalid assumptions and outdated data. Generally, GAO found that the Corps’ studies understated costs and overstated benefits, and therefore did not provide a reasonable basis for decision-making. For example:

- For the Delaware Deepening Project, GAO found credible support for only about $13.3 million a year in project benefits compared with the $40.1 million a year claimed in the Corps’ analysis.
- For the Oregon Inlet Jetty Project, GAO’s analysis determined that if the Corps had incorporated more current data into its analysis, benefits would have been reduced by about 90 percent.
- Similarly, for the Sacramento Flood Control Project, GAO determined that the Corps overstated the number of properties protected by about 20 percent and used an inappropriate methodology to calculate the value of these protected properties.

In addition, the Corps’ three-tiered internal review process did not detect the problems GAO uncovered during its reviews of these analyses, raising concerns about the adequacy of the Corps’ internal reviews. The agency agreed with GAO’s findings in each of the four reviews. For three projects the Corps has completed a reanalysis to correct errors or is in the process of doing so; it decided not to proceed with the fourth project.

GAO’s review of how the Corps manages its appropriations for the civil works program found that instead of an effective and fiscally prudent financial planning, management, and priority-setting system, the Corps relies on reprogramming funds as needed. While this just-in-time reprogramming approach can provide funds rapidly to projects that have unexpected needs, it has also resulted in many unnecessary and uncoordinated movements of funds, sometimes for reasons that were inconsistent with the Corps’ own guidance. Because reprogramming has become the normal way of doing business at the Corps, it has increased the Corps’ administrative burden for processing and tracking such a large number of fund movements. For example, in fiscal years 2003 through 2004 the Corps moved over $2.1 billion through over 7,000 reprogramming actions. In response to GAO’s findings, the Congress directed the Corps to revise its procedures for managing its civil works appropriations, starting in fiscal year 2006, to reduce the number of reprogramming actions and institute more rational financial discipline for the program.

To view the full product, including the scope and methodology, click on the link above.

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Mr. Chairman and Members of the Subcommittee:

We are pleased to be here today to discuss the U.S. Army Corps of Engineers' (Corps) civil works planning and project management processes. My testimony is based on five reports issued by GAO over the last 4 years; it focuses on the economic, or cost benefit, analyses used to support decisions on specific civil works projects and actions and the Corps lack of effective planning and project management processes for its civil works appropriations. As you know, the Corps is the federal agency responsible for designing, constructing, operating, and maintaining thousands of civil works projects across the United States. These projects historically involved navigation and flood control activities but have more recently been expanded to include ecosystem restoration efforts. The Corps follows a two-phase study process to help inform congressional decision makers about civil works projects and determine if they warrant federal investment. As part of the process of deciding to proceed with a project, the Corps analyzes and documents that the costs of constructing a project are outweighed by the benefits provided by the project. Although there has been an overall decline in federal funding for water resource development projects during the last three decades, over $5 billion was appropriated for the Corps' civil works program in both fiscal years 2005 and 2006.

In summary we found that

- the cost and benefit analyses performed by the Corps to support decisions on Civil Works projects or actions were generally inadequate to provide a reasonable basis for deciding whether to proceed with the project or action, and

- the Corps’ practice of conducting thousands of reprogrammings resulted in movements of project funds that were not necessary and that reflected

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poor planning and an absence of Corps-wide priorities for its Civil Works portfolio.

Background

The Corps’ Civil Works program is responsible for investigating, developing, and maintaining the nation’s water and related environmental resources. In addition, the Civil Works program provides disaster response as well as engineering and technical services. The Corps’ headquarters is located in Washington, D.C., with eight regional divisions and 38 districts that carry out its domestic civil works responsibilities.

Each year, the Corps’ Civil Works program receives funding through the Energy and Water Development Appropriations Act. The act normally specifies a total sum for several different appropriation accounts, including investigations, construction, and operation and maintenance, to fund projects related to the nation's water resources. The funds appropriated to the Corps are “no year” funds, which means that they remain available to the Corps until spent. The conference report accompanying the Energy and Water Development Appropriations Act specifically lists individual investigations, construction, and operation and maintenance projects and the amount of funds designated for each project. In effect, the conference report provides the Corps with its priorities for accomplishing its water resource projects.

Corps’ Process for Developing Water Resource Projects

In general, the Corps becomes involved in water resource projects when a local community perceives a need and contacts the Corps for assistance. If the Corps does not have the statutory authority required for the project, the Congress must provide authorization. After receiving authorization, generally through a committee resolution or legislation and an appropriation, a Corps district office conducts a preliminary study on how the problem could be addressed and whether further study is warranted.

When further study is warranted, the Corps typically seeks agreement from the local sponsor to share costs for a feasibility study. The Congress may appropriate funds for the feasibility study, which includes an economic analysis that examines the costs and benefits of the project or action. The local Corps district office conducts the feasibility study that is subject to review by the Corps’ division and headquarters offices. The feasibility study makes recommendations on whether the project is worth pursuing and how the problem should be addressed. The Corps also conducts needed environmental studies and obtains public comment on them. After those are considered, the Chief of Engineers transmits the
final feasibility and environmental studies to the Congress through the Assistant Secretary of the Army for Civil Works and the Office of Management and Budget. The Congress may authorize the project’s construction in a Water Resources Development Act or other legislation. Once the project has been authorized and after the Congress appropriates funds, construction can begin. Figure 1 shows the major steps in developing a civil works project.
Reprogramming is the shifting of funds from one project or program to another within an appropriation or fund account for purposes other than

**Reprogramming Authority**

Figure 1: Major Steps in Developing a Civil Works Project

**Step 1:** Local perception of water resources problem

**Step 2:** Locals contact Corps District Office for help

**Step 3:** **Reconnaissance Phase** (12-18 months):
- Defines problems, identifies potential solutions

**Step 4:** **Feasibility Phase** (2-3 years):
- Federal and local sponsors agree on study cost-sharing
- Further evaluation of alternative solutions
- Federal and local officials review Feasibility Report and Environmental Impact Study
  - Congress authorizes project and appropriates funds

**Step 5:** **Project Implementation**
- Preconstruction Engineering and Design Phase (2 years)
- Corps and non-Federal sponsors agree on project implementation & cost-sharing
- Construction Phase (varies by project)
  - Construction is generally managed by the Corps, but done by private contractors

**Step 6:** **Operation & Maintenance Phase** (as long as project remains authorized)
- Typically done by non-Federal sponsors

Source: GAO presentation of Corps data.
those contemplated at the time of appropriation. A reprogramming transaction changes the amount of funds provided to at least two projects—the donor project and the recipient project. However, more than two projects are often involved in a single reprogramming action. For example, in an effort to make effective use of available funding, the Corps may move funds from a construction project that has slipped due to inclement weather and reprogram the funds to one or more construction projects that are ahead of schedule or experiencing cost overruns.

The authority to reprogram funds is implicit in an agency’s responsibility to manage its funds; no specific additional statutory authority is necessary. While there are no government-wide reprogramming guidelines, the Congress exercises control over an agency’s spending flexibility by providing guidelines, or non-statutory instructions, on reprogramming in a variety of ways. For example, some reprogramming and reporting guidelines have evolved from informal agreements between various agencies and their congressional oversight committees.

The Corps’ Cost and Benefit Analyses Were Inadequate to Support Decision-Making

Our review of four Civil Works projects or actions found that the cost and benefit analyses the Corps used to support these actions were fraught with errors, mistakes, and miscalculations, and used invalid assumptions and outdated data. The Corps’ analyses often understated costs and overstated benefits. As such, we concluded that they did not provide a reasonable basis for decision-making. In two instances, we also found that the Corps’ three-tiered review process, consisting of district, division, and headquarter reviews, did not detect the problems we uncovered. These instances raised concerns about the adequacy of the Corps’ internal reviews.

Delaware River Deepening Project

Our review of the Corps’ cost and benefit analysis of the Delaware River channel-deepening project found that it contained a number of material errors. For example, the Corps misapplied commodity rate projections, miscalculated trade route distances, and included benefits for some import and export traffic that had seriously declined over the last decade. As a result, the Corps’ estimate of project benefits was substantially overstated. We found that project benefits for which there was credible support were about $13.3 million a year compared with the $40.1 million a year claimed by the Corps’ 1998 report. Specifically, we found that the Corps significantly overestimated the growth in oil import traffic for 1992 through 2005 because it used an incorrect commodity growth rate for part of the period. Use of this rate resulted in the Corps overestimating benefits.
by about $4.4 million. Additionally, the Corps’ estimate contained a computer error that overestimated this same benefit by another $4.7 million. Finally, the Corps’ project benefits attributed to the import and export of commodities such as scrap metal, iron ore, and coal were overstated by about $2.7 million.

Conversely, the Corps’ cost estimate for the project contained a number of positive and negative errors that in aggregate would have reduced project costs slightly but not enough to make up for the significant decrease in project benefits.

We found that the Corps’ three-tiered quality control process of the Corps, consisting of district, division, and headquarters offices, was ineffective in detecting or correcting the significant miscalculations, invalid assumptions, and outdated information in the cost and benefit analysis that our review revealed.

In response to our report, the Corps conducted a reanalysis of the project with updated, more complete information. This reanalysis asserted that the project could be built for $56 million less than the Corps had previously estimated. As we recommended, the Corps also had its reanalysis reviewed by an external party.

Our review of the Oregon Inlet Jetty project found that the Corps’ most recent cost benefit analysis of the project, issued in 2001, had several limitations, and as a result did not provide a reliable basis for deciding whether to proceed with the project. The Corps’ analysis did not consider all alternatives to the project, used outdated data to estimate benefits to fishing trawlers, did not account for the effects on smaller fishing vessels, and used some incorrect and outdated data to estimate damage and losses to fishing vessels. For example, the Corps did not evaluate alternatives to the jetty project and 20-foot deep channel that it proposed, although many vessels that currently use the inlet could have benefited from a shallower and less costly channel-deepening project. Further, the Corps used outdated data to estimate benefits of the project to larger (75-foot long) fishing trawlers that resulted in a significant overestimate of benefits.

We determined that if the Corps had incorporated more current data on the actual number of trawlers that used the inlet in its analysis, benefits would have been reduced by about 90 percent, from over $2 million annually to less than $300,000. Conversely, the Corps did not estimate the benefit to the smaller fishing vessels that use the inlet. However, since
these vessels could have a shallower draft than the large vessels they might not have benefited from the deeper channel and jetty that was proposed to benefit larger vessels. Additionally, the Corps miscalculated benefits due to a reduction in the damages that would occur to trawlers because of accidents that occur due to the conditions in the inlet. The Corps overestimated these benefits because it assumed, based on anecdotal evidence, that all of the 56 commercial fishing vessels regularly using the inlet would be damaged during the year and would incur about $7,000 each in damages. Our review of Coast Guard data showed that only about 10 commercial fishing vessels actually reported damages during the time frame the Corps considered, these damages averaged about $1,700 per year. Because of the concerns raised by our report, the Corps, the Council on Environmental Quality, and the Departments of Interior and Commerce mutually agreed not to proceed with this project.

Sacramento Flood Protection Project

Our review of the Corps’ Common Features project, which is intended to provide flood protection to the Sacramento area, found that the Corps did not fully analyze likely cost increases or report them to the Congress in a timely manner. The Corps also incorrectly calculated project benefits because it overstated the number of properties protected by about 20 percent and used an inappropriate methodology to calculate the value of protected properties.

After a 1997 storm demonstrated vulnerabilities in the project, the Corps substantially changed the design of the project but did not analyze likely cost increases. Some of the design changes led to substantial cost increases. For example, in some areas the Corps tripled the depth from almost 20 to almost 60 feet of cutoff walls designed to prevent seepage beneath the levees. The Corps also decided to close gaps in the cutoff walls in areas where bridges or other factors caused gaps. These changes added $24 million and $52 million, respectively, to a project that was originally, in 1996, estimated to cost $44 million. By the time the Corps reported these cost increases to the Congress in 2002, it had already spent or planned to spend more than double its original estimated cost of the project.

The Corps also made mistakes in estimating the benefits from this project because in 1996 it incorrectly counted the number of properties protected by the project by almost 20 percent and incorrectly valued these protected properties. Although the Corps updated its benefit estimate in 2002 to reflect new levee improvements authorized in 1999, we found that even this reanalysis contained mistakes in estimating the number of properties.
that would be protected and therefore continued to estimate higher benefits from the project than would be warranted.

As with the Delaware River Deepening study, we found that all three organizational review levels within the Corps reviewed and approved the benefit analyses for this project, but these reviews did not identify the mistakes that we found.

The Corps concurred with our report’s recommendations and is working on a General Reevaluation Report for the uncompleted portions of the project that is due in the spring of 2007.

### Restrictions on the Corps’ Hopper Dredges

In a 2000 report to the Congress, the Corps recommended that one of its dredges remain in a reserve status and that another be added to that status. However, we found that the Corps could not provide support for these conclusions and that its cost and benefit analyses supporting these conclusions had analytical shortcomings.

We also found that the Corps did not perform a comprehensive analysis of the ready reserve program and in fact could not provide any documentation of what analysis, if any, it had done. In addition, the Corps’ recommendation that the reserve program be continued because it was beneficial was contradicted by evidence in the report showing that the price the government paid for dredging was higher after a Corps dredge was placed in reserve than before. We also questioned whether it was prudent to add another dredge to the reserve fleet without a comprehensive analysis in light of the fact that the dredge needed significant repairs to remain in service, even in reserve.

We also determined that the Corps had used outdated data and used an expired policy that could raise the government’s cost estimate for hopper dredging work. This cost estimate is pivotal in determining the reasonableness of private contractor bids. If all bids exceed the government estimate by more than 25 percent, the Corps may elect to perform the work itself. Moreover, in making its estimate, the Corps had not obtained comprehensive industry data since 1988 although it had obtained some updated data for some cost items. In addition, the Corps used a policy on estimating transit costs that had expired in 1994. Use of this policy could significantly raise the estimate of transit costs for dredging contracts. For example, in one case, using the Corps’ policy resulted in a transit cost estimate of about $480,000 as opposed to about $100,000 if the expired policy was not used.
As a result of our review, a conference committee report directed the Corps to report to the Appropriations Committees a detailed plan of how it intended to rectify the issues raised in our report. On June 3, 2005, the Corps issued a revised report to the Congress on its plans for the hopper dredge fleet.

The Corps’ reprogramming guidance states that only funds surplus to current year requirements should be a source for reprogramming and that temporary borrowing or loaning is inconsistent with sound project management practices and increases the Corps’ administrative burden. However, we recently reported that, over a two year period (fiscal years 2003 through 2004), the Corps moved over $2.1 billion through over 7,000 reprogramming actions. This movement of funds occurred because during these two years the Corps managed its civil works project funds using a “just-in-time” reprogramming strategy. The purpose of this strategy was to allow for the movement of funds from projects that did not have urgent funding needs to projects that need funds immediately. While the just-in-time approach may have moved funds rapidly, its implementation sometimes resulted in uncoordinated and unnecessary movements of funds from project to project.

In our review of projects from fiscal years 2003 and 2004, we found that funds were moved into projects, only to be subsequently revoked because they were excess to the project’s funding needs. For example, in fiscal year 2004, 7 percent of the funds (totaling almost $154.6 million) from every non-earmarked construction project were revoked in order to provide funding to projects designated as “national requirements” by the Corps. The national requirements projects were a group of projects for which Corps headquarters management had promised to restore funding that had been revoked in previous years. However, after the Corps moved funds into the national requirements projects, the Corps revoked over a quarter of the funds, $38.8 million, from these projects because they actually did not need the funds. For example, one national requirements construction project, New York and New Jersey Harbor, received $24.9 million. All of these funds, plus an additional $10.3 million, were excess to the needs of the project at the time and were subsequently reprogrammed to other projects. Corps officials in the New York District told us that, prior to receiving the national requirements funds they had informed Corps headquarters that they could not use these funds.

We also found that the use of the just-in-time strategy resulted in funds being removed from projects without considering their near-term funding...
requirements, such as projects with impending studies. For example, on August 1, 2003, the Corps revoked $85,000 from the Saw Mill River and Tributaries investigation project in New York because the funds were excess to the project’s needs in the current year. Six weeks later, however, on September 15, 2003, $60,000 of funding was reprogrammed into the project because they were needed to initiate a feasibility study. Corps documents explaining the revocation of funds from the Saw Mill River and Tributaries project indicate that the Corps was aware of the project’s impending needs, and knew that the project would need funds again in September 2003 to execute a feasibility study.

Further, under the just-in-time reprogramming strategy, funds were moved into and out of the same project on the same day as well as numerous times within a fiscal year. Overall, 3 percent of investigations and construction projects in fiscal year 2003 and 2 percent of investigations and construction projects in fiscal year 2004 moved funds into and out of the same project on the same day. For example, in fiscal year 2003, the Corps used 18 separate actions to reprogram approximately $25 million into, and about $10.5 million out of, the Central and Southern Florida construction project, including three separate occasions when funds were both moved into and out of the project on the same day.

The just-in-time reprogramming strategy also moved money into and out of projects without regard to the relative priorities of the projects. During the period of our study, the Corps lacked a set of formal, Corps-wide priorities for use when deciding to reprogram funds from one project to another. Instead, according to the Chief of the Civil Works Programs’ Integration Division, during fiscal years 2003 and 2004, reprogramming decisions were left up to the intuition of program and project managers at the district level. While this decentralized system might have allowed for prioritized decision-making at the district level, when reprogramming actions occurred across districts or across divisions, the Corps lacked any formal system of evaluation as to whether funds were moving into or out of high-priority projects. The lack of a Corps-wide priority system limits the Corps ability to effectively manage its appropriations, especially in an era of scarce funding resources when choices have to be made between competing needs of donor and recipient projects.

Finally, the Corps’ practice of allocating all funds to projects as soon as the funds are allotted to the Corps, coupled with the reprogramming flexibility provided to the districts, may result in an elevated number of reprogramming actions. Typically, once the Corps receives appropriated funds from the Congress, the Corps disperses all of these funds directly
Allocating funding in this manner could result in some projects receiving more money than they are able to spend. In some cases that we reviewed, the Corps dispersed an entire fiscal year’s worth of funding to a project even though they knew that the project manager could not spend all of the funding. The flexibility provided to district managers once they receive their funding may also increase the number of reprogramming transactions. According to some Corps program managers, the relative ease of conducting reprogramming actions at the district level, without the need to obtain division or headquarters approval, creates incentives for project managers to transfer funds among projects within the district even if it creates a greater number of reprogramming actions. For example, when project managers have an immediate need for funds, they may be more likely to reprogram funds between projects within their own district, even if the donor project has a need for funds in a few weeks or months, because Corps guidance allows them to do so.

The Corps’ reprogramming practices place a large demand on the administrative resources of the agency. In fiscal year 2003, after receiving their appropriated funds from the Congress, the Corps conducted at least one reprogramming action every business day of the fiscal year except for 4 days; after receiving its funds in fiscal year 2004, the Corps conducted at least one reprogramming action on every business day of the fiscal year except for 14 days. Each reprogramming action conducted requires the Corps to expend time and personnel resources to locate donor projects, file necessary paperwork, and in some cases obtain the approval of appropriate Corps staff and, possibly, the Congress. In particular, locating sources of donor funding is often a time-consuming process, as the project manager seeking funding must wait for other project managers to acknowledge excess funds and offer them for use on other projects.

In response to the findings in our report, the Congress directed the Corps to revise its procedures for reprogramming of funds starting in fiscal year 2006 to reduce the amount of reprogramming actions that occur and would institute a more rationale financial discipline for the Corps Civil Works appropriations accounts.
Works decision-making documents, including cost and benefit analyses to allow for outside review in certain cases. Specifically, according to the Corps’ revised policy, external peer review of such documents will take place where the “risk and magnitude of the proposed project are such that a critical examination by a qualified person or team outside of the Corps and not involved in the day-to-day production of a technical product is necessary.” In addition, the Corps has reported that it has undertaken a number of other improvements, including (1) updating and clarifying its project study planning guidance, (2) establishing communities of practice to foster technical competence and share knowledge among individuals who have a common functional skill, and (3) reorganizing to foster integrated teamwork and streamline the project review and approval process.

In closing, Mr. Chairman, we have found that the Corps’ track record for providing reliable information that can be used by decision makers to assess the merits of specific Civil Works projects and for managing its appropriations for approved projects is spotty, at best. The recurring themes throughout the five studies that are highlighted in our testimony clearly indicate that the Corps’ planning and project management processes cannot ensure that national priorities are appropriately established across the hundreds of civil works projects that are competing for scarce federal resources. While we are encouraged that the Corps and/or the Congress have addressed or are in the process of addressing many of the issues we have identified relating to these individual projects, we remain concerned about the extent to which these problems are systemic in nature and therefore prevalent throughout the Corps’ Civil Works portfolio. Effectively addressing these issues may therefore require a more global and comprehensive revamping of the Corps’ planning and project management processes rather than a piecemeal approach.

This concludes my prepared statement, Mr. Chairman. I would be happy to respond to any question that you or Members of the Subcommittee may have.

For further information on this testimony, please contact Anu Mittal at (202) 512-3841 or mittala@gao.gov. Individuals making contributions to this testimony included Ed Zadjura, Assistant Director.
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