

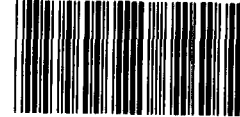
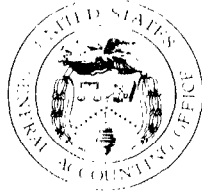
GAO

Briefing Report to the Chairman,  
Committee on Small Business, U.S.  
Senate

August 1992

WATER RESOURCES

The Corps of Engineers'  
Dredging Program for  
Small Business Firms



147370

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United States  
General Accounting Office  
Washington, D.C. 20548

Resources, Community, and  
Economic Development Division

B-249405

August 3, 1992

The Honorable Dale Bumpers  
Chairman, Committee on Small  
Business  
United States Senate

Dear Mr. Chairman:

This briefing report responds to your request that we evaluate whether the U.S. Army Corps of Engineers' (Corps) program to set aside, or restrict, a portion of its dredging contracts for firms classified as small businesses results in significantly increased federal costs because competition is less for restricted-bid contracts. As agreed with your office, we evaluated existing studies pertaining to program costs and competition (measured by the number of bids per contract) conducted on behalf of large and small dredging firms. We also performed a separate analysis of dredging contracts the Corps awarded during a recent 31-month period. This briefing report serves to formalize the findings and observations presented to your staff on June 16, 1992.

Section 722 of the Small Business Competitiveness Demonstration Program Act of 1988 (P.L. 100-656) directed the Secretary of the Army to establish a 4-year demonstration program to expand contract opportunities for small dredging firms during fiscal years 1989-92. The program's legislated goal for fiscal year 1992 is to award 30 percent of the total dollar value of Corps dredging contracts to small businesses, including 10 percent awarded to emerging small businesses.<sup>1</sup> In an effort to achieve the program's goals, the Corps restricts some of its dredging contract offers to bids from small or emerging small

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<sup>1</sup>The federal government's size standard for the dredging industry, which is based on a firm's average annual income for the preceding 3 years, defines a business that earns less than \$6.75 million as an emerging small business and a business that earns between \$6.75 million and \$13.5 million as a nonemerging small business.

businesses. The program's authority expires on September 30, 1992.

In summary, we found the following:

- Two studies conducted in 1990 and 1991 by a consulting firm, A.T. Kearney, for the large dredging firms concluded that decreased competition for restricted-bid contracts resulted in increased costs to the Corps of between \$70 million and \$115 million between 1985 and 1990. The studies' conclusions were based on unit-cost comparisons (cost per cubic-yard of dredged material) of restricted and unrestricted contracts.

Corps officials and small business dredgers say that the unit-cost analysis is flawed because it ignores cost differences based on the size and requirements of the job. They assert that economies of scale and other reasons can make the unit cost of smaller jobs higher. We agree that there can be significant unit-cost differences between large and small dredging jobs. We believe that contract data would have to be subjected to a more rigorous analysis than that allowed by unit-cost comparisons to determine the relationship between restricted bids and contract costs. (See sec. 1.)

- A third study performed by the consultant for the large dredgers in November 1991 identified and compared the costs of 23 individual projects. The criteria for including projects in the study were that the project's contracts were offered (1) under unrestricted bid in some years and restricted bid in other years and (2) for identical work. We judgmentally selected and reviewed 5 of the 23 projects and found that, on the basis of our analysis of the Corps' data, the study's criterion regarding unrestricted-bid and restricted-bid contracts was not met in 4 of the 5 projects, and contracts for 1 of these 4 projects appeared not to be for identical work. (See sec. 1, table 1.1.)
- Studies prepared by the American Association of Small Dredging and Marine Construction Companies compared the lowest bid for each contract offer with the Corps' pre-bid estimate of the "fair and reasonable" cost for that contract. Because it is based on this pre-bid cost estimate, bid comparison has the benefit of using a standardized measure applied by the local officials at the Corps' district offices that takes into consideration

contract-specific tasks and conditions. These studies, using fiscal year 1987-91 data, showed that the lowest bids for the restricted-bid contracts were lower than the Corps' estimates by a greater percentage than were the lowest bids for the unrestricted-bid contracts.

Limitations of this methodology are that (1) contract offers do not all result in contract awards, (2) the lowest bidder is not always awarded the contract, (3) the Corps has expressed little confidence in the reliability of its dredging contract data before fiscal year 1990, and (4) the methodology assumes that the Corps' estimates can be computed with equal precision for large and small jobs and that the estimates are not biased for or against restricted bids. (See sec. 1.)

- To analyze the costs of unrestricted-bid and restricted-bid contracts, we obtained data from the Corps on awarded contracts as well as the Corps' estimate of fair and reasonable costs for the latest period for which Corps officials expressed confidence in their data--October 1989 to April 1992. We found that, for both unrestricted-bid and restricted-bid contracts, the winning bids were less than the Corps' estimate of the contract cost and that the restricted bids were lower by a greater percentage than were the unrestricted bids. (See sec. 2, fig. 2.1, and table 2.4.) A limitation of this methodology is that we did not audit the design or implementation of the Corps' bid estimation process and have no basis for judging whether there are differences in how large and small jobs are estimated. We segmented the data base by business size and found mixed results when unrestricted-bid and restricted-bid contracts awarded to small businesses are compared. (See sec. 2, table 2.5.)
- In addition to costs, the issue of competition was raised in the consultant's studies for the large dredging firms. These studies used the average (mean) number of bids per contract as the measure of comparison and concluded that unrestricted-bid contracts were more "competitive" than restricted-bid contracts since they elicited a higher average number of bids per contract. We applied this measure to the Corps' contract data for October 1989 through April 1992 and found the opposite: Restricted-bid contracts had a higher average number of bids per contract than unrestricted-bid contracts. (See sec. 2, table 2.9.) However, we believe that the number of bids

per contract may not be a clear measure of competition.  
(See sec. 2 and app. I.)

Section 1 of this briefing report provides information on studies conducted on behalf of large and small dredging firms; section 2 provides the results of our analysis of the Corps' data on contract costs and the number of bids.

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As requested, we did not obtain written agency comments on a draft of this report. However, we discussed our findings and observations with the Chief of the Corps' Dredging Branch and with representatives of the large and small dredging firms. The Corps official and the representative of the small dredging firms agreed with our analysis. Representatives of the large dredging firms said they consider a unit-cost analysis superior to an analysis based on the Corps' pre-bid cost estimates because the former measure is based on actual dollar amounts while the latter measure is based on subjective estimates. We believe unit cost is not an effective measure for comparing unrestricted-bid and restricted-bid contracts unless the effects of other factors--such as job size, conditions, and requirements--can be identified and measured.

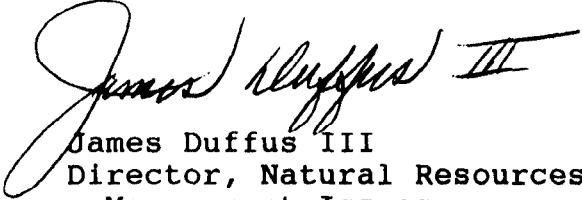
Our review was performed between April and June 1992. Because of time constraints, we did not verify the reliability of the Corps' data system or review the process for developing contract estimates at the Corps' district offices.

As agreed with your office, unless you publicly announce its contents earlier, we plan no further distribution of this briefing report until 15 days from the date of this letter. At that time, we will send copies of this briefing report to the appropriate congressional committees; the Secretaries of Defense and the Army; the Chief, U.S. Army Corps of Engineers; and representatives of the large and small dredgers who participated in our review. We will make copies available to others on request.

B-249405

Please contact me on (202) 275-7756 if you or your staff have any questions. Other major contributors to this briefing report are listed in appendix II.

Sincerely yours,



James Duffus III  
Director, Natural Resources  
Management Issues

## CONTENTS

<b>LETTER</b>		<u>Page</u>
<b>SECTION</b>		
1	ANALYSIS OF STUDIES ON THE CORPS' SMALL BUSINESS SET-ASIDE PROGRAM FOR DREDGING	9
	March 1990 and April 1991 Studies on Behalf of the Large Dredging Firms	9
	November 1991 Study on Behalf of the Large Dredging Firms	10
	1990 and 1991 Studies on Behalf of the Small Dredging Firms	12
2	GAO'S ANALYSIS OF THE CORPS' DREDGING CONTRACT DATA	14
	Dredging Program Background	15
	Cost Comparison of Unrestricted-Bid Contracts and Restricted-Bid Contracts With the Corps' Pre-Bid Cost Estimate	19
	Comparison of Number and Percentages of Bids for Unrestricted-Bid and Restricted-Bid Contracts	25
 <b>APPENDIX</b>		
I	SCOPE AND METHODOLOGY	36
II	MAJOR CONTRIBUTORS TO THIS BRIEFING REPORT	37
 <b>TABLE</b>		
1.1	Comparison of Corps' and Consultant's Description of Contract Bid Type for Selected Projects	12
2.1	Percentage of Corps' Dredging Contract Dollars Awarded to Small Businesses Compared With Legislated Program Goals	16
2.2	Distribution of Corps' Dredging Contract Dollars by Bid Type and Business Category	17
2.3	Distribution of Corps' Dredging Contracts by Bid Type and Business Category	18



2.4	Percentage by Which Winning Bid Contract Costs Were Below Corps' Estimate	20
2.5	Percentage by Which Winning Bid Contract Costs Were Below Corps' Estimate, Segmented by Business Category	22
2.6	Winning Bid Costs Compared With Corps' Estimates for Dredging Contracts Awarded During Fiscal Year 1990	23
2.7	Winning Bid Costs Compared With Corps' Estimates for Dredging Contracts Awarded During Fiscal Year 1991	23
2.8	Winning Bid Costs Compared With Corps' Estimates for Dredging Contracts Awarded During Fiscal Year 1992	24
2.9	Average (Mean) Number of Bids for Unrestricted-Bid and Restricted-Bid Contracts	26
2.10	Average (Mean) Number of Bids for Unrestricted-Bid and Restricted-Bid Contracts, Segmented by Business Category	27
2.11	Percentage of Contracts Awarded on the Basis of Unrestricted and Restricted Bidding at Four Bidding Levels	28
2.12	Percentage of Contracts Awarded on the Basis of Unrestricted and Restricted Bidding at Four Bidding Levels, Segmented by Business Category	29
2.13	Distribution of Unrestricted Contracts Awarded in Fiscal Year 1990, Segmented by Number of Bids and Business Category	30
2.14	Distribution of Restricted Contracts Awarded in Fiscal Year 1990, Segmented by Number of Bids and Business Category	31
2.15	Distribution of Unrestricted Contracts Awarded in Fiscal Year 1991, Segmented by Number of Bids and Business Category	32
2.16	Distribution of Restricted Contracts Awarded in Fiscal Year 1991, Segmented by Number of Bids and Business Category	33

2.17	Distribution of Unrestricted Contracts Awarded in Fiscal Year 1992, Segmented by Number of Bids and Business Category	34
2.18	Distribution of Restricted Contracts Awarded in Fiscal Year 1992, Segmented by Number of Bids and Business Category	35
FIGURE		
2.1	Unrestricted Bids and Restricted Bids as a Percentage of the Corps' Pre-Bid Cost Estimate	20

## SECTION 1

### ANALYSIS OF STUDIES ON THE CORPS' SMALL BUSINESS SET-ASIDE PROGRAM FOR DREDGING

We reviewed three studies conducted for the large dredgers by a consulting firm and two studies conducted for the small dredgers by their trade association. The studies' primary findings, together with our analysis, are discussed in this section.

#### MARCH 1990 AND APRIL 1991 STUDIES ON BEHALF OF THE LARGE DREDGING FIRMS

The consulting firm of A.T. Kearney conducted two studies on the Corps' set-aside program for dredging contracts: (1) Analysis of the Small Business Set-Aside Provisions in Dredging, March 1990, and, a followup study, (2) The Small Business Set-Aside Program for Dredging--An Analysis of the Economic Impact of the Program, April 1, 1991.

- The primary conclusion of these studies was that restricted-bid jobs cost more than unrestricted-bid jobs. The second study concluded that the Corps paid "an additional \$70 million to \$115 million between 1985 and 1990 as a result of the set-aside program" and could pay an additional \$130 million to \$230 million between 1991 and 1995. The measure used to make the comparison in both studies was unit cost (cost-per-cubic-yard of dredged material).
- The two studies also concluded that, based on the average number of bids per contract, there is less competition for restricted-bid contracts than for unrestricted-bid contracts.

#### GAO's Observations

- Unit cost is not an effective measure for comparing the costs of unrestricted-bid and restricted-bid dredging jobs. A principal limitation of unit-cost comparison, as used in the consultant's studies, is that displacing a cubic yard of material is only one of several significant cost factors for a dredging job. A wide disparity in conditions and requirements between smaller and larger jobs--such as site conditions, equipment set-up time, and requirements for the disposal of dredged material--can significantly affect unit costs. These other job conditions and requirements, apart from the actual dredging, can represent a larger percentage of total costs for smaller dredging jobs (for both restricted-bid and unrestricted-bid contracts). Conversely, larger dredging jobs can enjoy economies-of-scale production advantages that have nothing to do with whether the contract offer was unrestricted or restricted.

- Smaller jobs, whether their contracts are restricted or unrestricted, have a smaller base (quantity of dredged material) over which indirect costs, such as costs for mobilization and dredged-material disposal, can be distributed or allocated.
- Unit cost should not be used to compare unrestricted-bid and restricted-bid contracts unless the contracts' work requirements and conditions are very similar.
- Proponents of the large dredging firms have asserted that the legislated goal for small businesses (30 percent in fiscal year 1992) should not be based on total contract dollars because small dredgers do not own hopper dredges and cannot perform work that requires such equipment.<sup>2</sup> Hopper-dredge contracts were excluded from A.T. Kearney's analyses. We did not evaluate the statutory program goals and have no basis for questioning the appropriateness of the inclusion of hopper contracts in program-goal calculations. However, for an analysis that has as its objective measuring the differences between unrestricted-bid and restricted-bid contracts, we believe that all contracts that are offered for bid should be included--at least initially--in the analysis. Hopper--or other--contracts could be segregated later and analyzed separately to show their effect on analysis results.

NOVEMBER 1991 STUDY ON BEHALF  
OF THE LARGE DREDGING FIRMS

A.T. Kearney issued a third study on November 1, 1991: The Small Business Set-Aside Program for Dredging--An Analysis of the Economic Impact of the Program. This study's objective was to analyze "[r]epeated projects which were bid unrestricted in some years and restricted in others [to] enable a direct comparison of set-aside and unrestricted prices for identical work."

- The consulting firm identified 23 projects, for which 82 contracts were completed during 1985-90, that met study criteria for contracts that (1) were bid unrestricted in some years and restricted in other years and (2) were for identical work.
- The study's conclusions were similar to those of the first two studies--the Corps paid an additional \$68 million to \$94 million between 1985 and 1990 as a result of the set-aside program, and unrestricted-bid contracts attracted more bidders than did restricted-bid contracts.

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<sup>2</sup>Hopper dredges, generally used for major harbor, river, and open-water dredging, accounted for about 17 percent of the dredging market during 1985-89, the period examined for A.T. Kearney's 1990 study.

## GAO's Observations

On the basis of study data supplied by representatives of the large dredgers who commissioned the Kearney study, we judgmentally selected five projects for detailed review. These projects represented 15 contracts over the 6-year period 1985-90. Three projects spanned several years and required dredging the same, or nearly the same, volume of material from year to year; one project involved a relatively small amount of dredged material; and one project did not appear to fit the study criterion of identical work. We requested the Corps and the consultant to provide detailed descriptions of the work performed so we could independently determine that the contracts were identical, or at least very similar. We also asked for information on the contracts' mobilization, dredging, and demobilization costs, but the consulting firm said the information was not in their data base.

- As shown in table 1.1, we found that, based on our analysis of the Corps' data, the study's criterion regarding unrestricted-bid and restricted-bid contracts was not met in 4 of the 5 projects. In addition, Corps data for one of these four--the McClellan-Kerr project--show the contracts do not appear to meet the criterion for identical work.
- Proponents of the study said documentation was not available to explain the study's project/contract selection process or to reconcile differences between the study's and the Corps' descriptions of the projects.

Table 1.1: Comparison of Corps' and Consultant's Description of Contract Bid Type for Selected Projects

Project name <sup>a</sup>	Year of contract	Corps' bid description	A.T. Kearney's bid description
Big Sandy Harbor	1987	<b>Unrestricted</b>	<b>Restricted</b>
	1988	Unrestricted	Unrestricted
	1989	Unrestricted	Unrestricted
	1990	Unrestricted	Unrestricted
McClellan-Kerr <sup>b</sup>	1987	<b>Restricted</b>	<b>Unrestricted</b>
	1987	Restricted	Restricted
Lorain Harbor	1985	Unrestricted	Unrestricted
	1986	Unrestricted	Unrestricted
	1987	Unrestricted	Unrestricted
	1990	<b>Unrestricted</b>	<b>Restricted</b>
Quillaute River	1985	Unrestricted	Unrestricted
	1987	Restricted	Restricted
	1989	Unrestricted	Unrestricted
Monkey Chute	1987	<b>No contract</b>	<b>Unrestricted</b>
	1988	Unrestricted	Restricted

Note: Boldface highlights bids for which the consultant's description did not agree with the Corps' description.

<sup>a</sup>As identified in the November 1991 A.T. Kearney study.

<sup>b</sup>In addition, on the basis of the Corps' data, this project does not appear to fit the study's criterion of identical work. More than 1.8 million cubic yards of material was dredged under the contract identified as restricted; the contract described as unrestricted was for less than half that amount (0.85 million cubic yards).

1990 AND 1991 STUDIES ON BEHALF OF THE SMALL DREDGING FIRMS

Studies prepared by the trade association for the small dredgers,<sup>3</sup> based on Corps data for fiscal years 1987-91, compared the lowest bid offer for each contract with the Corps' pre-bid estimate of the fair and reasonable cost for that contract. The studies concluded that the lowest bids for restricted-bid contracts were lower than

<sup>3</sup>The American Association of Small Dredging and Marine Construction Companies.

were the bids for unrestricted-bid contracts. One study also concluded that restricted-bid contracts had a higher average number of bids per contract than did unrestricted-bid contracts. However, the methodology, as applied in these studies, has certain limitations: (1) contract offers do not all result in contract awards, (2) the lowest bidder is not always awarded the contract, (3) the Corps has expressed little confidence in the reliability of its dredging contract data before fiscal year 1990, and (4) the methodology assumes that the Corps' estimates can be computed with equal precision for large and small jobs and that the estimates are not biased for or against restricted bids.

## SECTION 2

### GAO'S ANALYSIS OF THE CORPS' DREDGING CONTRACT DATA

The analysis of contract costs in this section is based on comparing the winning bid price on unrestricted-bid and restricted-bid contracts with the Corps' pre-bid cost estimate. The Corps' estimate is based on a standard process used by many people in many Corps district offices around the country and takes into consideration the specific job requirements and conditions for each contract.

- Because of time constraints, we did not review the Corps' estimating process nor test the estimates made by the Corps' district officials. However, a draft report by the Corps' Engineering Strategic Studies Center indicates that Corps district officials were generally applying the contract cost estimation criteria correctly and that there was no bias in the estimation process for or against restricted bids.
- The tables in this section include data from the Corps' centralized computer files covering the 31-month period October 1989 through April 1992 (fiscal years 1990 and 1991 and the first 7 months of fiscal year 1992).
- Our analysis covered all contracts in the Corps' data base, including hopper-dredge contracts. The Corps' data base does not, however, include sole-source or negotiated contracts (with the exception of the \$112 million Kill Van Kull project).<sup>4</sup>
- We did not perform reliability/validation tests on the Corps' dredging contract data.
- We segmented the unrestricted-bid and restricted-bid contracts by business size to permit comparison among similar size firms (small) that have similar size equipment (no hopper dredges).
- Our analysis of bidding patterns is based on (1) the average (mean) number of bids per contract (the approach used in the studies for the large dredgers) and (2) the percentage of unrestricted-bid and restricted-bid contracts at four bidding levels--contracts that received more than one bid, more than two bids, more than three bids, and more than four bids. However, the average number of bids for contracts may not be a clear measure of competition, since the average may also be affected by

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<sup>4</sup>Kill Van Kull is a multiyear project in New York that was negotiated in fiscal year 1991 between the Corps and two large dredging firms cooperating under a joint venture. The effect of including or excluding this project is noted in this section where appropriate.



other factors--such as the size or location of the job, or the number of large firms versus the number of small firms. We obtained information on the number of bids received for contracts, but we did not review the contract bidding process to test the validity of individual bids.

### GAO's Observations

- The winning bids for both the unrestricted-bid and restricted-bid dredging contracts were below the Corps' estimate of the fair and reasonable price for the contract, but the restricted-bid contracts were below the Corps' estimate by a greater percentage than were the unrestricted-bid contracts. (See fig. 2.1 and table 2.4.) The results are mixed when the contracts are segmented by business size and only unrestricted-bid and restricted-bid contracts awarded to small businesses are compared. (See table 2.5.)
- The average number of bids was higher for restricted-bid contracts than for unrestricted-bid contracts (see table 2.9), but the results are mixed when the contracts are segmented by business size and only unrestricted-bid and restricted-bid contracts awarded to small businesses are compared. (See table 2.10.)
- The distribution of awarded contracts based on the number of bids (more than one bid, more than two bids, more than three bids, and more than four bids) shows a higher percentage of restricted-bid contracts than unrestricted-bid contracts at each of the four bidding levels. (See table 2.11.) The results are mixed when the contracts are segmented by business size and only unrestricted-bid and restricted-bid contracts awarded to small businesses are compared. (See table 2.12.)

### DREDGING PROGRAM BACKGROUND

The first three tables in this section provide program background data:

- Table 2.1 compares the distribution of dredging contract dollars to small businesses with the legislatively established program goals.
- Table 2.2 shows the distribution of contract dollars among the three business size categories, segmented by unrestricted-bid and restricted-bid contracts.
- Table 2.3 shows the distribution of the number of contracts awarded among the three business size categories, segmented by unrestricted-bid and restricted-bid contracts.

Table 2.1: Percentage of Corps' Dredging Contract Dollars Awarded to Small Businesses Compared With Legislated Program Goals

Business category	Fiscal year 1990		Fiscal year 1991		Fiscal year 1992 <sup>a</sup>	
	Actual	Goal	Actual	Goal	Actual	Goal
Nonemerging small	15%	17.5%	10%	20%	23%	20%
Emerging small	5	7.5	6	10	11	10
Total	21% <sup>b</sup>	25%	16%	30%	34%	30%

<sup>a</sup>Figures cover the first 7 months of fiscal year 1992.

<sup>b</sup>Does not add because of rounding.

Observations, Table 2.1

- Legislatively established percentage goals for awarding dredging contract dollars to nonemerging small and emerging small businesses were not achieved during fiscal years 1990 and 1991; the goals were exceeded for the first 7 months of fiscal year 1992.
- For fiscal year 1991, the 10 percent and 6 percent figures would increase to 14 percent and 9 percent, respectively, if the \$112 million Kill Van Kull project were excluded.

**Table 2.2: Distribution of Corps' Dredging Contract Dollars by Bid Type and Business Category**

Dollars in millions

Bid type and business category	Fiscal year 1990		Fiscal year 1991		Fiscal year 1992 <sup>a</sup>	
	Amount	Percent	Amount	Percent	Amount	Percent
<b>Unrestricted bid</b>						
Large	\$226	79	\$336	84	\$55	66
Nonemerging small	9	3	11	3	11	13
Emerging small	3	1	2	0	3	3
Subtotal	\$238	84 <sup>b</sup>	\$349	87	\$68 <sup>b</sup>	82
<b>Restricted bid</b>						
Nonemerging small	35	12	29	7	9	10
Emerging small	12	4	23	6	7	8
Subtotal	46 <sup>b</sup>	16	51 <sup>b</sup>	13	15 <sup>b</sup>	18
<b>Total</b>	<b>\$285</b>	<b>100</b>	<b>\$401<sup>b</sup></b>	<b>100</b>	<b>\$83</b>	<b>100</b>

<sup>a</sup>Figures cover the first 7 months of fiscal year 1992.

<sup>b</sup>Does not add because of rounding.

Observations, Table 2.2

- Nonemerging small and emerging small businesses were awarded about 6 percent of the unrestricted dredging contract dollars for the 31-month period (\$39 million out of \$655 million).
- For fiscal year 1991, the \$401 million includes all contracts in the Corps' data base offered for bid plus the \$112 million Kill Van Kull project.

Table 2.3: Distribution of Corps' Dredging Contracts by Bid Type and Business Category

Bid type and business category	Fiscal year 1990		Fiscal year 1991		Fiscal year 1992 <sup>a</sup>	
	Number	Percent	Number	Percent	Number	Percent
<b>Unrestricted bid</b>						
Large	113	57	120	51	33	44
Nonemerging small	10	5	10	4	6	8
Emerging small	6	3	5	2	3	4
<u>Subtotal</u>	<u>129</u>	<u>65</u>	<u>135</u>	<u>57</u>	<u>42</u>	<u>56</u>
<b>Restricted bid</b>						
Nonemerging small	46	23	35	15	9	12
Emerging small	24	12	65	28	24	32
<u>Subtotal</u>	<u>70</u>	<u>35</u>	<u>100</u>	<u>43</u>	<u>33</u>	<u>44</u>
<u>Total</u>	<u>199</u>	<u>100</u>	<u>235</u>	<u>100</u>	<u>75</u>	<u>100</u>

<sup>a</sup>Figures cover the first 7 months of fiscal year 1992.

Observation, Table 2.3

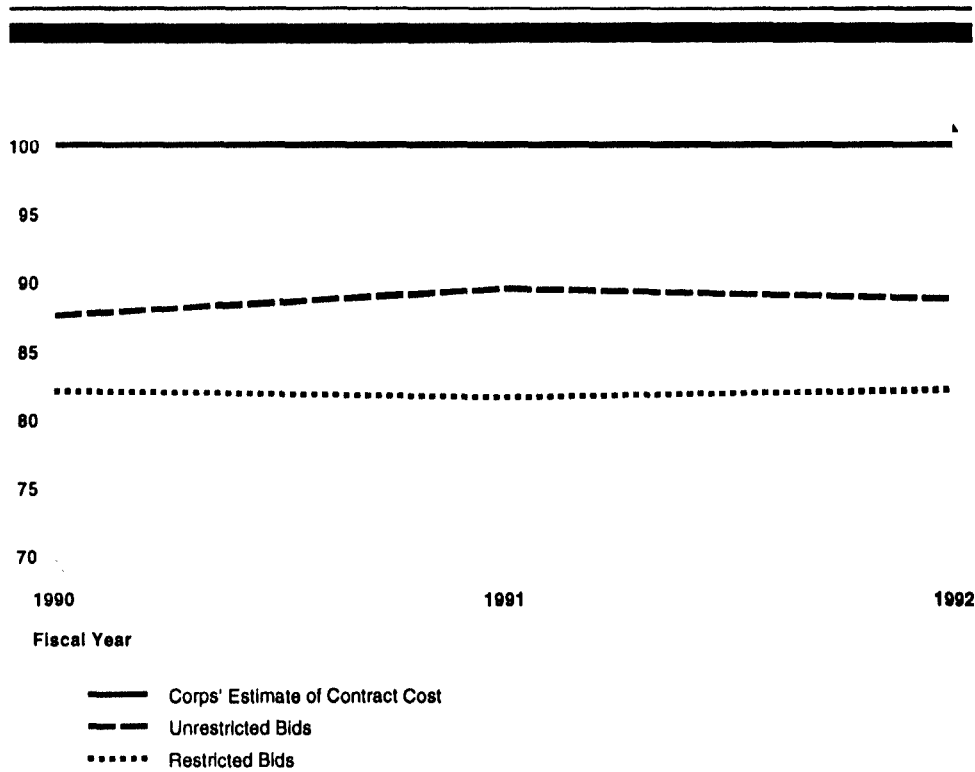
- Nonemerging small and emerging small businesses were awarded about 13 percent (40 out of 306) of the unrestricted-bid contracts for the 31-month period.

COST COMPARISON OF UNRESTRICTED-BID  
CONTRACTS AND RESTRICTED-BID CONTRACTS  
WITH THE CORPS' PRE-BID COST ESTIMATE

Figure 2.1 and the next five tables present information on the relative costs of unrestricted-bid and restricted-bid contracts:

- Figure 2.1 and tables 2.4 and 2.5 compare the winning bid contract prices with the Corps' estimates of the fair and reasonable price.
- Tables 2.6, 2.7, and 2.8 show the contract dollars awarded described in tables 2.4 and 2.5 as a percentage of the Corps' pre-bid estimate for each fiscal year.

Figure 2.1: Unrestricted Bids and Restricted Bids as a Percentage of the Corps' Pre-Bid Cost Estimate



Fiscal year 1992 covers the period October 1991 to April 1992.

Table 2.4: Percentage by Which Winning Bid Contract Costs Were Below Corps' Estimate<sup>a</sup>

Fiscal year	Unrestricted bid		Restricted bid	
	Percent below estimate	Number of contracts	Percent below estimate	Number of contracts
1990	12.4	129	17.9	70
1991	10.5	135	18.3	100
1992 <sup>b</sup>	11.1	42	18.3	33

<sup>a</sup>Table percentage figures are weighted by dollar volume.

<sup>b</sup>Covers first 7 months of fiscal year 1992.

Observation, Figure 2.1 and Table 2.4

- For all 3 fiscal years, the winning bids for the restricted-bid contracts were below the Corps' estimate by a greater percentage than were those for the unrestricted-bid contracts. In fiscal year 1990, for example, the winning bids on all the restricted-bid contracts were lower than the Corps' pre-bid estimate by 17.9 percent, while the winning bids on all the unrestricted-bid contracts were lower than the Corps' estimate by 12.4 percent.

Table 2.5: Percentage by Which Winning Bid Contract Costs Were Below Corps' Estimate, Segmented by Business Category<sup>a</sup>

Bid type and business category	Fiscal year 1990		Fiscal year 1991		Fiscal year 1992 <sup>b</sup>	
	Percent below estimate	Number of contracts	Percent below estimate	Number of contracts	Percent below estimate	Number of contracts
<b>Unrestricted bid</b>						
Large	12.4	113	9.7	120	10.8	33
Nonemerging small	16.4	10	20.3	10	14.3	6
Emerging small	(3.2)	6	47.4	5	7.4	3
<b>Restricted bid</b>						
Nonemerging small	17.6	46	18.5	35	18.9	9
Emerging small	18.6	24	18.3	65	16.5	24

<sup>a</sup>Table percentage figures are weighted by dollar volume.

<sup>b</sup>Figures cover first 7 months of fiscal year 1992.

Observations, Table 2.5

- This table expands information presented in table 2.4 by segmenting the awarded contracts by business categories.
- When only unrestricted-bid and restricted-bid contracts awarded to small businesses are compared, the results are mixed. In 1 of the 3 fiscal years, 1991, unrestricted-bids from small businesses were lower than the Corps' estimate by a greater margin than restricted bids.



Table 2.6: Winning Bid Costs Compared With Corps' Estimates for Dredging Contracts Awarded During Fiscal Year 1990

Dollars in millions

	Unrestricted bid resulting in contracts to:			Restricted bid resulting in contracts to:	
	Large firms	Nonemerging small firms	Emerging small firms	Nonemerging small firms	Emerging small firms
Corps' estimate	\$257.7	\$11.0	\$3.1	\$42.0	\$14.5
Bid	\$225.8	\$9.2	\$3.2	\$34.6	\$11.8
Bid as a percentage of Corps' estimates	87.6%	83.6%	103.2%	82.4%	81.4%

Table 2.7: Winning Bid Costs Compared With Corps' Estimates for Dredging Contracts Awarded During Fiscal Year 1991

Dollars in millions

	Unrestricted bid resulting in contracts to:			Restricted bid resulting in contracts to:	
	Large firms	Nonemerging small firms	Emerging small firms	Nonemerging small firms	Emerging small firms
Corps' estimate	\$372.5	\$13.8	\$3.8	\$35.1	\$27.9
Bid	\$336.2	\$11.0	\$2.0	\$28.6	\$22.8
Bid as a percentage of Corps' estimates	90.3%	79.7%	52.6%	81.5%	81.7%

**Table 2.8: Winning Bid Costs Compared With Corps' Estimates for Dredging Contracts Awarded During Fiscal Year 1992<sup>a</sup>**

Dollars in millions

	Unrestricted bid resulting in contracts to:			Restricted bid resulting in contracts to:	
	Large firms	Nonemerging small firms	Emerging small firms	Nonemerging small firms	Emerging small firms
Corps' estimates	\$61.2	\$12.6	\$2.7	\$10.6	\$7.9
Bids	\$54.6	\$10.8	\$2.5	\$8.6	\$6.6
Bids as a percentage of Corps' estimates	89.2%	85.7%	92.6%	81.1%	83.5%

<sup>a</sup>Covers first 7 months of fiscal year 1992.

COMPARISON OF NUMBER AND PERCENTAGES OF BIDS  
FOR UNRESTRICTED-BID AND RESTRICTED-BID CONTRACTS

- Tables 2.9 and 2.10 show the average number of bids for unrestricted-bid and restricted-bid contracts.
- Tables 2.11 and 2.12 show the percentage of unrestricted-bid and restricted-bid contracts at each of four bidding levels; that is, when contracts were bid by more than one, more than two, more than three, and more than four bidders.
- Tables 2.13 through 2.18 show the distribution for the number of bids for all awarded contracts included in the Corps' data base for the 31-month period.

Table 2.9: Average (Mean) Number of Bids for Unrestricted-Bid and Restricted-Bid Contracts

Fiscal year	Average number of bids for unrestricted-bid contracts	Average number of bids for restricted-bid contracts
1990	3.07	3.39
1991	2.99	3.81
1992 <sup>a</sup>	3.36	3.64

<sup>a</sup>Covers first 7 months of fiscal year 1992.

Observation, Table 2.9

- The average number of bids for restricted-bid contracts was higher than that for unrestricted-bid contracts for each fiscal year reviewed.

Table 2.10: Average (Mean) Number of Bids for Unrestricted-Bid and Restricted-Bid Contracts, Segmented by Business Category

Bid type and business category	Fiscal year 1990	Fiscal year 1991	Fiscal year 1992 <sup>a</sup>
<b>Unrestricted bid</b>			
Large	3.12	2.89	3.15
Nonemerging small	2.70	3.50	4.83
Emerging small	2.67	4.40	2.67
<b>Restricted bids</b>			
Nonemerging small	3.59	3.57	3.33
Emerging small	3.00	3.94	3.75

<sup>a</sup>Figures cover the first 7 months of fiscal year 1992.

Observations, Table 2.10

- This table expands information presented in table 2.9 by segmenting the awarded contracts by business categories.
- An advantage of segmenting the contracts by business category is that it allows a comparison of bidding patterns for similar size firms (small) that have similar equipment (no hopper dredges).
- The results displayed in this table do not support the large dredging firms' contention that restricted-bid contracts receive a lower average number of bids; restricted contracts awarded to small businesses have a higher average number of bids than unrestricted-bid contracts awarded to small businesses in 8 of 12 comparisons.

Table 2.11: Percentage of Contracts Awarded on the Basis of Unrestricted and Restricted Bidding at Four Bidding Levels

Fiscal year	Bid type	Percent of awarded contracts			
		More than 1 bid	More than 2 bids	More than 3 bids	More than 4 bids
1990	Unrestricted	89%	71%	33%	12%
	Restricted	91	74	43	17
1991	Unrestricted	87	61	33	11
	Restricted	93	78	53	31
1992 <sup>a</sup>	Unrestricted	90	71	43	21
	Restricted	91	79	45	24

<sup>a</sup>Covers first 7 months of fiscal year 1992.

Observation, Table 2.11

- For all 3 fiscal years, there was a higher percentage of restricted-bid contracts at each of the four bidding levels analyzed. In fiscal year 1990, for example, 91 percent of all restricted-bid contracts attracted more than one bid, compared with 89 percent of all unrestricted-bid contracts. The differences range from one percentage point (for 1992, more than one bid) to 20 percentage points (for 1991, more than three bids and more than 4 bids).

Table 2.12: Percentage of Contracts Awarded on the Basis of Unrestricted and Restricted Bidding at Four Bidding Levels, Segmented by Business Category

Fiscal year and number of bids	Percent of unrestricted-bid contracts awarded to:			Percent of restricted-bid contracts awarded to:	
	Large firms	Nonemerging small firms	Emerging small firms	Nonemerging small firms	Emerging small firms
1990					
More than 1	90%	80%	83%	91%	92%
More than 2	75	40	50	80	63
More than 3	33	30	33	47	34
More than 4	13	20	0	19	13
1991					
More than 1	86	90	100	91	94
More than 2	57	90	100	74	80
More than 3	31	40	80	43	58
More than 4	9	30	40	20	36
1992 <sup>a</sup>					
More than 1	91	100	67	100	87
More than 2	70	100	33	78	79
More than 3	37	83	33	34	50
More than 4	16	50	33	12	29

<sup>a</sup>Covers first 7 months of fiscal year 1992.

Observations, Table 2.12

- This table expands information presented in table 2.11 by segmenting the awarded contracts by business categories.
- The results shown in this table do not support the large dredging firms' contention that restricted-bid contracts receive a lower average number of bids. The percentage of restricted-bid contracts awarded to small firms at each of the four bidding levels was slightly higher than the percentage of unrestricted-bid contracts awarded to small firms (25 of 48, with 1 tie). In fiscal year 1990, for example, 91 percent of the restricted-bid contracts awarded to nonemerging small firms received more than one bid, compared with 80 percent and 83 percent of the unrestricted-bid contracts awarded to nonemerging small firms and emerging small firms, respectively.

**Table 2.13: Distribution of Unrestricted Contracts Awarded in Fiscal Year 1990, Segmented by Number of Bids and Business Category**

Number of bids	Number and percent of contracts awarded to:					
	Large firms		Nonemerging small firms		Emerging small firms	
	Number	Percent	Number	Percent	Number	Percent
1	11	10	2	20	1	17
2	17	15	4	40	2	33
3	48	42	1	10	1	17
4	23	20	1	10	2	33
5	12	11	2	20	0	0
6	2	2	0	0	0	0
<b>Total</b>	<b>113</b>	<b>100</b>	<b>10</b>	<b>100</b>	<b>6</b>	<b>100</b>



**Table 2.14: Distribution of Restricted Contracts Awarded in Fiscal Year 1990, Segmented by Number of Bids and Business Category**

Number of bids	Number and percent of contracts awarded to:			
	Nonemerging small firms		Emerging small firms	
	Number	Percent	Number	Percent
1	4	9	2	8
2	5	11	7	29
3	15	33	7	29
4	13	28	5	21
5	4	9	3	13
6	1	2	0	0
7	4	9	0	0
Total	46	100*	24	100

\*Does not add to 100 percent because of rounding.

**Table 2.15: Distribution of Unrestricted Contracts Awarded in Fiscal Year 1991, Segmented by Number of Bids and Business Category**

Number of bids	Number and percent of contracts awarded to:					
	Large firms		Nonemerging small firms		Emerging small firms	
	Number	Percent	Number	Percent	Number	Percent
1	16	13	1	10	0	0
2	35	29	0	0	0	0
3	32	27	5	50	1	20
4	26	22	1	10	2	40
5	5	4	3	30	1	20
6	1	1	0	0	1	20
7	4	3	0	0	0	0
<b>Total</b>	<b>119</b>	<b>100<sup>a</sup></b>	<b>10</b>	<b>100</b>	<b>5</b>	<b>100</b>

<sup>a</sup>Does not add to 100 percent because of rounding.

**Table 2.16: Distribution of Restricted Contracts Awarded in Fiscal Year 1991, Segmented by Number of Bids and Business Category**

Number of bids	Number and percent of contracts awarded to:			
	Nonemerging small firms		Emerging small firms	
	Number	Percent	Number	Percent
1	3	9	4	6
2	6	17	9	14
3	11	31	14	22
4	8	23	14	22
5	4	11	12	18
6	1	3	10	15
7	1	3	0	0
8	0	0	2	3
12	1	3	0	0
<b>Total</b>	<b>35</b>	<b>100</b>	<b>65</b>	<b>100</b>

**Table 2.17: Distribution of Unrestricted Contracts Awarded in Fiscal Year 1992, Segmented by Number of Bids and Business Category<sup>a</sup>**

Number of bids	Number and percent of contracts awarded to:					
	Large firms		Nonemerging small firms		Emerging small firms	
	Number	Percent	Number	Percent	Number	Percent
1	3	9	0	0	1	33
2	7	21	0	0	1	33
3	11	33	1	17	0	0
4	7	21	2	33	0	0
5	4	12	2	33	1	33
6	1	3	0	0	0	0
8	0	0	1	17	0	0
Total	33	100 <sup>b</sup>	6	100	3	100 <sup>b</sup>

<sup>a</sup>Covers the first 7 months of the fiscal year.

<sup>b</sup>Does not add to 100 percent because of rounding.

**Table 2.18: Distribution of Restricted Contracts Awarded in Fiscal Year 1992, Segmented by Number of Bids and Business Category<sup>a</sup>**

Number of bids	Number and percent of contracts awarded to:			
	Nonemerging small firms		Emerging small firms	
	Number	Percent	Number	Percent
1	0	0	3	13
2	2	22	2	8
3	4	44	7	29
4	2	22	5	21
5	0	0	2	8
6	1	11	4	17
8	0	0	1	4
<b>Total</b>	<b>9</b>	<b>100<sup>b</sup></b>	<b>24</b>	<b>100</b>

<sup>a</sup>Covers first 7 months of fiscal year 1992.

<sup>b</sup>Does not add to 100 percent because of rounding.

SCOPE AND METHODOLOGY

We obtained dredging contract information for the period October 1989 to April 1992 from the Corps' computerized records system. Our analysis period began in October 1989 because the Corps expressed little confidence in the reliability of its data before that date.

We analyzed contract cost information by comparing the price of the winning bid with the Corps' pre-bid estimate of the fair and reasonable price of the contract. Because of time constraints, we did not compare contract information at the Corps' district offices with the centralized records system or perform other reliability or verification tests on the system. Also, we did not audit the Corps' implementation of its procedures for awarding dredging contracts at district offices and have no basis for judging the fairness or accuracy of that implementation. However, a draft report by the Corps' Engineering Strategic Studies Center indicates that Corps district officials were generally applying the contract cost estimation criteria correctly and that there was no bias in the estimation process for or against restricted bids.

To address the issue of competitiveness for unrestricted-bid and restricted-bid contracts discussed in the A.T. Kearney studies, we applied the studies' criterion (number of bids received per contract offering) with the Corps' records on dredging contracts. However, the average number of bids on contracts may not be a clear measure of competition, since the average may also measure the effects of other factors--such as the size or location of the job, or the number of large firms versus the number of small firms. We obtained information on the number of bids received for contracts, but we did not review the contract bidding process to test the validity of individual bids.

MAJOR CONTRIBUTORS TO THIS BRIEFING REPORT

RESOURCES, COMMUNITY, AND ECONOMIC DEVELOPMENT DIVISION,  
WASHINGTON, D.C.

Leo E. Ganster, Assistant Director  
Ronald M. Owens, Evaluator-in-Charge





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