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	Engineering and Design COOPERATIVE STREAM GAGING PROGRAM (REPORTS CONTROL SYMBOL, DAEN-CWH-3)	
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DEPARTMENT OF THE ARMY
U.S. Army Corps of Engineers
Washington, D.C. 20314

ER 1110-2-1455

DAEN-CWH-W

Regulation
No. 1110-2-1455

29 June 1984

Engineering and Design
COOPERATIVE STREAM GAGING PROGRAM
(Reports Control Symbol, DAEN-CWH-3)

1. Purpose. This regulation establishes policy, provides background, and discusses management of the Cooperative Stream Gaging Program between the U.S. Army Corps of Engineers (USACE) and the United States Geological Survey (USGS). It also presents the program requirements for Field Operating Activities (FOA).
2. Applicability. This regulation is applicable to all USACE districts and divisions having civil works responsibilities.
3. References.
 - a. ER 1110-2-240
 - b. ER 1110-2-241
 - c. EM 1110-2-8200
4. Policy. The policy of the Corps of Engineers (HQUSACE) is to fully utilize the facilities and services of other Federal agencies, when it is in the interest of the USACE and is more economical and/or will result in a more satisfactory operation than would be achieved by independent USACE action. This policy pertains to obtaining the many types of basic water data and appropriate services required by FOA in connection with their water resources investigations and water control management missions.
5. Background. The Cooperative Stream Gaging Program was established about 1940 by arrangements between the USACE and the USGS, to meet special USACE data needs, both quality and quantity, in connection with water resources responsibilities (e.g. planning studies, monitoring river conditions during construction, and for water control management of completed projects). Arrangements were made for the USGS to operate specific gaging stations for the USACE on an advance of funds basis. The program is operated on a continuing basis, subject to adjustments to conform with current data requirements and the availability of funds. The water data acquired by the USACE from these stations are also available for use by all Federal, state, and private agencies, as well as individuals interested in water data.

This regulation supersedes ER 1110-2-1452, 12 December 1980, and EM 1110-2-8201, 30 January 1973. Cancels RCS: DAEN-CWE-14.

6. Program Management.

a. Objective. FOA will design and maintain stream gaging programs that will meet the USACE needs at a minimum cost. The programs must meet the peak demands for data such as that which may occur during a major flood event.

(1) Appropriate stream gaging data are indispensable for planning, design, and effective management of Corps water resources projects. Appropriate stream data are important to the planning and design of water resource projects, as well as water resource management programs, and include both quantity and quality information. Basic data must be available upstream and downstream of water resource projects on a timely basis for effective regulation. Gaging station networks should be established for projects during the design process. Gage data are necessary for the hydraulic aspects of numerous design memoranda, and for regulating projects as prescribed in Reference 3b.

(2) District data collection programs must be flexible, efficient, and cost effective. Stations should be eliminated when data from the stations are no longer required to meet USACE responsibilities. However, collection of data essential for effective regulation of USACE projects must be assured. For cost effectiveness, the following questions may be helpful when determining the need for each existing or new station.

(a) Is a continuous record necessary for hydrologic planning, reservoir regulation, litigation or legal considerations?

(b) Would seasonal operation of certain gaging stations satisfy data needs?

(c) Would peak flows only, or stages only, satisfy Corps needs?

(d) Is a published record necessary for Corps needs?

(e) Do data needs require the capability to remotely monitor the gage at any time?

(f) Would (or does) real time data improve regulation, or provide other benefits applicable to the Corps mission?

(g) Is the discharge rating stable enough to reduce the frequency of discharge measurements?

b. Program Formulation. District commanders will evaluate each station annually to assure that the appropriate data are, or will be collected to meet the requirements associated with their established water resources objectives. In doing so, stations may be moved, added, modified, or dropped, depending upon continuing or changing Corps needs, or the completion of a study, changes in USACE responsibility, a change in mission, etc. Since the program is established for adequate, efficient coverage, a shortage of funds is an unacceptable reason in itself but must be associated with a functional change.

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(1) The stream gaging program will be formulated in close coordination with the appropriate local USGS district offices. A detailed list of stations for which flow and/or stage data are required will be furnished to the USGS, along with the request for the USGS estimate of the cost of installing and/or operating each station. Close coordination with the USGS is essential to assure continuity and efficiency in management. USGS district offices must be informed of stations that will continue, as well as deletions and/or additional requirements in sufficient time so that they can develop their management plans. While it is appropriate that this coordination be conducted via meetings and telephone conversations, the information must also be documented and transmitted formally. Furthermore, FOA are reminded that the USGS participates on an advance-of-funds basis.

(2) The district commanders will also determine the type of funds to be used in financing the Corps portion of the program. The final program will be forwarded by the district commander through the respective division commander. The division commanders will review and summarize each district's program and determine that proper coordination with the USGS has been completed. Divisions will forward their summaries and final programs to CDR USACE (DAEN-CWH-W), WASH DC 20314. Supplemental instructions pertaining to preparation of these reports will be issued by DAEN-CWH-W, as necessary.

c. Station Classification. The cooperative stream gaging stations have been assigned to five categories. These categories are based on the types of gaging activities and the funding structure of Civil Works activities. During the annual program review, an evaluation will be made to ascertain whether individual stream gages are serving a Corps requirement, as well as whether they have been assigned to the appropriate category. The categories are the same when Mississippi River and Tributaries (MR&T) flood control funds are used.

(1) The five funding categories and the type of activities they support are:

(a) Category a; Army Engineer Replacement (AER) Funds. Some stations are supported by AER funds appropriated to the USGS to support the USACE gaging effort. AER funds are available to the Corps to help support, on a short-term basis, gaging stations which do not have an assured source of funds from other categories.

(b) Category b; General Investigations (GI) Funds. Gages that are necessary in connection with survey studies, as well as any other preauthorization and preconstruction planning, are placed in GI, Category b. GI funds are available for short-term stations.

(c) Category c; Headquarters General Coverage (HGC). Stations that do not have project or specific survey funds available can be funded under Category c. HGC stations are funded by HQUSACE, using the limited General Investigations Collection and Study of Basic Data funds appropriated specifically for stream gaging stations. One type of station that qualifies for HGC funds is one for which there is an

anticipated need for data in connection with future requirements. Other stations may qualify for HGC funds if there is a need for data in connection with an active authorized survey study which is not currently funded, or if there is a time lag between the authorization of funding from one phase to another. HGC funds may not be used on a long-term basis.

(d) Category e; Operation and Maintenance, General (O&M) Funds. After a project is operational, the stream gage is funded under O&M, Category e, and remains there for as long as the gage is needed for project regulation.

(e) Category f; Construction, General (CG) Funds. Gages that are necessary in connection with a project under construction are funded by Construction, General funds; Category f. Before a project is operational, but after construction has been authorized and funded, required gages are funded from Construction, General funds.

(2) In every category, stations must be identified with a specific study, project or activity. For example, this designation can be stated as "Flood Control-Upper Mississippi River," but not "Future Studies." Those not identified properly are subject to deletion from the program. No funds will be expended under the cooperative stream gaging program for gages which are maintained solely for potential emergency situations.

d. Section 7 Projects. Section 7 of the 1944 Flood Control Act involves non-Corps reservoirs which have Federally funded flood control and/or navigation storage. The owner of the non-Corps project should provide financial support for the stream gages which are needed to carry out the Corps prescribed water control plan for the reservoir. In the event the project owner is unable to pay for the necessary stream gages, the Corps may agree to fund the station under O&M, Category e, after consideration of data needs and funding availability.

e. Independent Stations. In addition to the stations included in the cooperative program, a number of districts independently operate and finance a limited number of stream gaging stations, as required for special purposes. Due to the special nature of these stations and the fact that they may be operated for a limited time only, their inclusion in the cooperative program may be impractical. These independent stations will also be evaluated annually, and information supporting the establishment or continuation of these stations and their required funds will also be submitted by the FOA along with their final cooperative program documents.

f. Funding. The funds required to finance the program will be budgeted by the Chief of Engineers, the FOA, and the USGS, as follows:

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(1) Program Budgeting.

(a) HQUSACE. HQUSACE will arrange to finance only those cooperative stations included in General Coverage HGC (Category c) and which, by definition, are not chargeable to an active report or authorized project. In preparing the annual budget estimate for the stream gaging program, the HQUSACE will take into account the funds to be budgeted by the USGS, as discussed below, and will recommend for budgeting, funds sufficient to finance the estimated cost of the HGC portion of the budget year's program. The budget statement, provided annually by the HQUSACE, will request funds for the appropriate portion of the HGC stations, and will indicate the amount of funds to be requested by the USGS for inclusion in the Cooperative Stream Gaging program. The Budget Justification Sheet will also state that the total funds to be transferred to the USGS will include an additional amount from authorized Corps projects and studies budgeted elsewhere.

(b) USACE Districts. The cost of stations chargeable to GI, O&M, and CG appropriations (and the corresponding flood control and MR&T accounts) will be financed from project and report funds available to the district commanders. Request for funds necessary to finance these stations will be included in appropriate budget estimates submitted to HQUSACE annually by district and division commanders. Since proposals for the cooperative program must be formulated several months prior to passage of the current year's appropriation bill, the district commander must anticipate changing data needs, as well as the availability of project and survey funds. However, since the gaging program is designed to meet mission requirements, major changes in the program should not occur, unless missions change.

(c) US Geological Survey. The USGS includes in its budget estimates a request for AER funds to be applied specifically to the Cooperative Stream Gaging Program required by the USACE. Although the funds appropriated for this purpose are retained in the USGS, appropriate allocation of the USGS service is applied by HQUSACE staff to the individual district programs on a prorated basis. As indicated in the above paragraph, AER funds are applied to the non-FOA funded portion of the cooperative program, making the coverage a combined USGS/Corps effort. Thus, the funding reported in annual letters of instruction refers to combined agency funding.

(2) Transfer of Funds to Disbursing Officer, HQUSACE. Upon final approval of the nationwide program by HQUSACE, and acceptance by the Director of the USGS, DAEN-CWH will request that division and district commanders involved initiate payment of their respective amounts. This will be accomplished by a reverse billing procedure on Standard Form 1080 (Voucher for Transfers between Appropriations and/or Funds), prepared by each office concerned. An annual Engineer Circular will provide detailed information on the method of payment. The bills

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should be paid promptly by the field offices so that funds can be transferred to the USGS within a reasonable time. The Civil Works Revolving Fund will not be used by field offices for funding these programs.

g. Program Revision. After it has been submitted to HQUSACE, recommendations regarding revision of the current Cooperative Stream Gaging Program will be processed in accordance with one of the following methods, after coordination of details with local representatives of the USGS. The recommendations will contain a description and justification for the change, an estimate of the cost, the category of station involved, and the type and availability of funds to which the work is to be charged. However, any changes for the current or budget fiscal years must reach DAEN-CWH not later than one month following the beginning of the fiscal year or 30 days after the President submits his budget to Congress, whichever is later.

(1) Headquarters General Coverage (HGC) Stations. Recommendations regarding annual revisions that are proposed to be funded by HGC (Category c) funds will be forwarded through the division office to HQUSACE for determination of availability of funds and for final approval.

(2) Stations Funded by FOAs. Recommendations regarding annual revisions for which district funds are to be used (categories b, e and f) will be submitted to the division commander for review and approval. Any revisions to the programs after submittal of the division report, will be coordinated between the division and HQUSACE. If the HQUSACE program has not been finalized, the revisions can be incorporated into that year's program. In the event that program formulation has been completed by HQUSACE, revisions will be reported in the divisions' next annual report. In any case, modifications will be handled by direct arrangements with the local USGS representative and financed on a reimbursable basis at field level. Copies of pertinent correspondence will be forwarded to DAEN-CWH.

(3) Budgeting Guideline Exceptions. Occasionally, unforeseen anomalies to conventional district programs may arise and require additional funding from the Cooperative Stream Gaging Program. For example, a stream gage destroyed by a severe high water condition may necessitate a costly replacement item which has not been programmed. Similarly, a district office may anticipate a major study effort, requiring an unusual increase in the number of HGC stations. In such instances, the FOA should promptly report the request to DAEN-CWH so that appropriate action can be taken. Written justification of the revision is necessary unless waived by DAEN-CWH.

7. Reporting Requirements.

a. Program documentation is essential for efficient program management. The proposed district programs will be prepared annually by the district commanders and submitted to the appropriate division

commanders for review and approval. Stream gaging program data from the districts will be submitted by input to a computer program called STRMGAGE. The Water Resources Support Center (WRSC) is responsible for maintaining STRMGAGE, and for providing documentation and user instructions. Current instructions on STRMGAGE are available from: WRSC-C, Casey Building, Ft. Belvoir, VA 22060.


b. The division commanders report will include letter of transmittal, a summary describing the proposed program, and a fund Summary Table. These will be submitted to CDR USACE (DAEN-CWH) WASH DC 20314 not later than 15 August of each year. Sample formats for these are provided in Appendixes B and C.

c. Upon final approval of the nationwide program, HQUSACE will prepare a summary for each division showing for each district the total amount of the approved program by station category, the HQUSACE and USGS credits to be applied to the total cost, the amount of funds to be transferred to the USGS, and the net charge to be made to respective districts.

d. The management information requirements are provided in Appendix D, as compliance with AR 335-15.

FOR THE COMMANDER:

- 4 Appendixes
- APP A - Reporting Requirements
- APP B - Sample Division Summary
- APP C - Sample Division Funding Summary
for proposed Program
- APP D - Management Information


PAUL F. KAVANAUGH
Colonel, Corps of Engineers
Chief of Staff

APPENDIX A
REPORTING REQUIREMENTS

1. Annual reports will consist of both automated and manually written parts. Divisions will submit a summary letter report, briefly describing the stream gaging program and summarizing the district evaluations and current annual fiscal requirements. The letter report will also identify deletions or additions since the previous year's report, and describe any unusual features of the program and station rehabilitation. If new stations are to be constructed, or major modifications made to existing stations, the estimated construction cost of each station will be identified in the summary. A sample of this letter report is provided in Appendix B.

2. In the past, most of the information submitted by the districts has been manual and in tabular form. A computer system STRMGAGE, has been developed to improve the compilation reporting and analysis of this information. This system is on the Harris computer at HQUSACE. Instructions for logging on and using the system are available from the Water Resources Support Center, WRSC-C.

3. The divisions will also summarize the proposed cost of district programs in a table developed from the district data. This table will show, by appropriation, the cost of each district program within each USGS district. The information presented will conform to the sample in Appendix C.

4. Copies of the discussions and recommendations provided by the division commander, will be submitted to CDR USACE (DAEN-CWH-W) WASH DC 20314. In addition, one copy of all correspondence and reports furnished by FOA will be furnished to the Water Resources Support Center (WRSC-C,) Casey Building, Ft. Belvoir, VA 22060.

APPENDIX B
Sample Division Summary

SUBJECT: Cooperative Stream Gaging Program for Fiscal Year _____

CDR USACE (DAEN-CWH-W)

1. The proposed Cooperative Stream Gaging Program for Fiscal Year _____ is summarized in this letter report. District data has been submitted to the WRDC computer via the STRMGAGE system on _____ (If the program is submitted via some other method, so state).

2. The FY _____ program as submitted, reflects a net decrease of 2.3 percent from last year's approved program. The deletion of ten stations, the downgrading of _____ stations, and the adding of _____ stations account for a decrease of \$119,560 or 8.1% of the FY (last year) program. Increased operation and maintenance costs for the remaining stations reflect a 5.8% increase over last year.

3. General Coverage funds, Category C, proposed for transfer to the USGS for XYZ Division are \$26,430. This is an increase of \$3,675 from the approved previous FY _____ program.

4. The proposed program was coordinated with the US Geological Survey and confirmed in writing. Changes from last year's program and the reason for the changes are given below. Only minor changes have been made to last year's program.

District A. Six stations have been deleted because they are no longer needed to meet the Corps responsibility.

a. Stream Gaging Stations:

01234567 Gallatin River at Gateway, MT
01234568 Cheyenne River at Plainview, SD

b. Sediment Stations:

01234569 Yellowstone River at Sidney, MT
01234570 Platte River at Louisville, NE

c. Water Quality.

01234571 Missouri River at Landusky, MT
01234572 Turkey Creek Lake at Morrison, CO

The data for the water quality stations that have been deleted from the Cooperative Program is now being collected by District A field personnel, at a considerable reduction in cost to the overall program.

District B.

a. Two sediment stations were added because of the continued need for additional data in these areas.

01234576 Big Bull Creek, Hillsdale Lake, KS
01234577 East Fork 102 River, Bedford, IA

b. The amount of \$10,500 is required to replace two gages on Crow Creek destroyed by storms this past March.

District C.

a. The following independent stations are deleted because the studies have been deauthorized.

01234579 New Cambria (West), KS
01234580 Schell City, MO

b. The following station is changed to a stage only station, only for this FY because the special water quality study has been completed: 01234581 Russel, Missouri.

c. One station has been reinstated because additional data is required for the basin-wide study

01234582 Trinity River Liberty, TX

District D.

a. Sediment will be discontinued on McGee Creek (0123485) near Farris, OK, because this data is no longer needed.

b. Hominy Creek (012345686) near Skiatook, OK will be downgraded to a stage only station. It will be removed from the Cooperative Program and included in the Independently Operated Program.

c. The surface water stations on Pease River at Vernon, TX, (01234587), and Red River at Quana, TX, (01234588) will be converted to partial record stations which will result in a savings of \$9,860.

d. The gage on the Arkansas River at Van Buren, AR will be added to the Independently Operated Program.

e. Two gages are added because of the change in district boundaries. These gages are:

07186000 Spring River - Waco, TX
07187000 Shoal Creek - Joplin, TX

5. I have reviewed the district programs and recommend the program as submitted in Table A (See Appendix C). The Corps of Engineers cooperation for stations in this program is necessary for continued operation and maintenance of these stations. Their operation in FY _____ is vital to the Corps' project planning, design, and operation in the XYZ Basin.

(Signed, C/Enrg. Div.)

Appendix C
SAMPLE FUNDING SUMMARY

MRD
PROPOSED COOPERATIVE STREAM GAGING PROGRAM

FY _____

FUNDING SUMMARY

USGS District	AER (a)	HGC (c)	GI Gen (b)	CG (f)	O&M (e)	Total COE/USGS Program
Kansas District						
Rolla, MO	4,200	2,060	0	17,645	265,635	289,540
Lincoln, NE	0	0	0	0	40,810	40,810
Lawrence, KS	0	0	0		241,370	241,370
Iowa City, IA	1,860	0	3,140	0	43,770	48,770
MRK Total \$	6,060	2,060	3,140	17,645	591,585	620,490
Omaha District						
Helena, MT	1,100	0	0	0	130,370	131,470
Iowa City, IA	0	0	0		210,370	210,370
Lincoln, NE	5,100	5,000	1,690	0	88,680	100,470
Huron, SD	4,000	0	3,500	0	198,900	206,400
Bismarck, ND	0	0	0	0	123,310	123,310
Denver, CO	0	0	0	0	31,680	31,680
Cheyenne, WY	0	10,000	0	0	12,160	22,160
MRD Total \$	10,200	15,000	5,190	0	795,470	825,860
MRD Total \$	16,260	17,060	8,330	17,645	1,387,055	1,446,350

APPENDIX D
MANAGEMENT INFORMATION

This appendix is provided to meet requirements of the revised AR 335-15.

- a. Title and RCS: Cooperative Stream Gaging Program, DAEN-CWH-14.
- b. Purpose, scope and applicability: see page one of this ER.
- c. Preparers: Hydrology and Hydraulics personnel in the districts and divisions.
- d. Negative reports are not required.
- e. Format: Much of the information is provided by District input to an automated system (STRMGAGE). Instructions for this input have been distributed to the FOAs participating in the program and are available from the Water Resources Support Center (WRSC-C, Casey Building, Ft. Belvoir, VA 22060. Narrative information will be submitted in a letter report from the Division; a sample is provided in Appendix B. Three copies of the letter report including a program summary table are to be sent to CDR USACE (DAEN-CWH-W) WASH DC 20314.
- f. Frequency: This information must be compiled and submitted to DAEN-CWH-W by 15 August of each year.
- g. Effective date: This regulation becomes effective as of the publication date.
- h. Security classification: unclassified
- i. Source of data: Hydrology and hydraulics branches in the districts and divisions, or for districts that do not have these branches per se, those individuals responsible for the Cooperative Stream Gaging Program.
- j. Explanation of terms, preparation instructions and management information requirements are provided in the body of this ER and in the Appendixes.
- k. There is no automatic rescission.