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	Engineering and Design POLICIES, GUIDANCE, AND REQUIREMENTS FOR GEOSPATIAL DATA AND SYSTEMS	
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**DEPARTMENT OF THE ARMY
U. S. Army Corps of Engineers
Washington, D.C. 20314-1000**

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CECW-EP

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1 August 1996

Engineering and Design
POLICIES, GUIDANCE, AND REQUIREMENTS
FOR GEOSPATIAL DATA AND SYSTEMS

1. Purpose

This regulation prescribes the policy for the acquisition, processing, storage, distribution, and utilization of non-tactical geospatial data throughout the U.S. Army Corps of Engineers (USACE) and prescribes policy to comply with Executive Order (EO) 12906, Coordinating Geographic Data Acquisition and Access: The National Spatial Data Infrastructure (NSDI). This regulation also provides guidance and requirements and identities standards for Geospatial Data and Systems (GD&S). By complying with this regulation, USACE will maximize its use of GD&S technologies; will promote interoperability among GD&S technologies; will reduce duplication of non-tactical geospatial data collection and software development; will support the digital geospatial data life cycle; and will strengthen the USACE role in the NDI.

2. Applicability

This regulation is applicable to all USACE Commands having civil works, military construction, and environmental restoration responsibilities. This regulation specifically applies to functional areas having responsibility for regulation investigations and studies, planning studies, real estate, emergency operations, and other functions involving automated GD&S for surveying, mapping, or geospatial database development, such as modeling, and to GD&S that are used to produce a variety of products including: river and harbor maps, charts, and drawings; real estate tract or parcel maps; small- and medium-scale engineering drawings; survey reports; environmental studies; hazardous, toxic, and radioactive waste (HTRW) studies; and channel condition reports. This regulation applies to in-house and contracted efforts. USACE customers for reimbursable work who are required to comply with the EO 12906, such as the Department of Defense (DoD) installations, Environmental Protection Agency, and the Federal Emergency Management Agency, will determine their level of compliance. These customers may opt to incorporate compliance with the EO into contracts with USACE or may accomplish compliance unassisted by USACE.

3. References

Referenced publications and related regulations and standards are listed in Appendix A.

4. Definitions

a. Geospatial Data - non-tactical data referenced, either directly or indirectly, to a location on the earth.

b. Geospatial Data Systems (GDS) - any automated system that employs geospatial data including Geographic Information Systems (GIS), Land Information Systems (LIS), Remote Sensing or Image Processing Systems, Computer-Aided Design and Drafting (CADD) systems, Automated Mapping/Facilities Management (AM/FM) systems, and other computer systems that employ or reference data using either absolute, relative, or assumed coordinates such as hydrographic surveying systems.

c. Geospatial Data and Systems (GD&S) - Geospatial data and the GDS that create and process the data.

d. USACE Commands - all subordinate entities of the U.S. Army Corps of Engineers including districts, divisions, research laboratories, and field offices.

e. Metadata - descriptive information about the data. Metadata describes the content, quality, fitness for use, access instructions, and other characteristics about the geospatial data.

f. National Geospatial Data Clearinghouse (Clearinghouse) - a distributed, electronic network of geospatial data producers, managers, and users operating on the Internet. The Clearinghouse is a key element of EO 12906 and will allow its users to determine what geospatial data exist, find the data they need, evaluate the usefulness of the data for their applications, and obtain or order the data as economically as possible.

g. USACE Clearinghouse Node - HQUSACE established and maintains a computer network server on the National Geospatial Data Clearinghouse. This node functions as the primary point of public entry to the USACE geospatial data discovery path in the Clearinghouse. A separate electronic data page for each USACE Command has been established on the server. The Internet Universal Resource Locator (URL) address for the USACE Clearinghouse node is http://corps_geol.usace.army.mil

5. Exclusions

a. Spatial data and computer systems that do not use coordinates that are directly or indirectly referenced to a position on the Earth are not required to adhere to this regulation. This exempts architectural, mechanical, electrical, structural, and sanitary engineering data and drawings of objects typically inside buildings, as well as the CADD systems used to develop such data and drawings.

b. Site plans showing building structure footprints or any data sets about features on the exterior of a building or structure are geospatial data, are compatible with the NSDI concept, and are not excluded from this regulation. This data may use relative, assumed, or geographic coordinates and may be stored in a CADD or GIS environment.

c. This regulation also excludes business systems, such as those that focus on textual and statistical information that is created, stored, manipulated, queried, displayed, and transferred differently than geospatial data.

d. This regulation also excludes tactical spatial data and associated computer systems such as those used for fire control, targeting, and mission planning.

6. Policy

a. It is the policy of USACE that GD&S acquisition, processing, storage, distribution, and utilization shall promote interoperability and be performed efficiently and in accordance with EO 12906 and appropriate standards, including the Spatial Data Transfer standard (SDTS)/Federal Information Processing Standard (FIPN) 173, Federal Geographic Data Committee (FGDC) standards, and any applicable standards adopted by the DoD such as the Tri-Service GIS Spatial Data Standards.

b. Any coremand that believes these standards are inappropriate for its use must apply to CECW-EP-S for a waiver. The waiver must explain why the standards and policy are inappropriate, i.e., data standards are incomplete, data sets are sensitive and can not be shared with the public. The waiver must also identify what will be used as a substitute.

7. Roles, Actions, and Responsibilities

In order to implement the policy described in paragraph 7, the following roles, actions and responsibilities are established. These actions are summarized in Table 1. Refer to EM 1110-1-2909, Geospatial Data and Systems, for technical guidance and procedures to comply with this Section.

a. USACE GD&S Manager. The Chief, Engineering Division, Directorate of Civil Works, HQUSACE (CECW-E) will serve as the USACE GD&S Manager and will represent Civil Works on the Tri-Service CADD/GIS Technology Center Executive Steering Group and will represent DoD facilities, civil works, and environmental interests on the FGDC.

b. HQUSACE GD&S Coordination Committee. This committee, created in FY96 and chaired by CECW-EP-S, will meet at least twice per year to address GD&S issues from a USACE corporate oversight perspective. The various HQUSACE Directorates including Civil Works, Military Programs, Real Estate, Research and Development, and Information Management, will nominate a member to this committee. The chair will support the USACE GD&S Manager, will grant waivers of compliance for this ER, will review information copies of coremand GD&S implementation plans, and will consider funding GD&S Field Advisory Group recommendations and other corporate GD&S activities.

c. USACE GD&S Field Advisory Group. The USACE GD&S Field Advisory Group will advise CECW-EP-S on GD&S issues from the field and users perspective. This group is composed of approximately one representative from a district within each division and one from each UACE R&D Laboratory. The members are selected by CECW-EP-S based on their expertise in GD&S technologies and applications. They usually meet twice per year and the chair is elected by the group.

d. USACE Commanders. Commanders will appoint a GD&S Point of Contact (POC) to act as a liaison between the command and HQUSACE, CECW-EP-S (described in 7. f). Beginning with the FY97 Civil Works budget cycle, USACE Commanders will certify that their Command has accessed the Clearinghouse, contributed metadata to the Clearinghouse, determined via the Clearinghouse that needed geospatial data are not available from an existing source, and that possible data collection partnerships have been explored. This certification, included as Appendix B, will be submitted to USACE annually as part of the Civil Works Budget submittal.

e. Command GD&S Committees. USACE Commands will establish and maintain GD&S Technical and Oversight Committees to promote interoperability among their geospatial community and to insure adherence to this regulation. Commands may assign these responsibilities to existing committees.

The Technical Committee will meet quarterly and will be composed of persons responsible for geospatial data management, as well as other interested persons in the command. This committee will address the technical aspects of compliance with this regulation as well as coordinate other technical issues. The Technical Committee will also be responsible for developing the Command GD&S Implementation Plan, for reviewing it annually to ensure that the plan is being adhered to, and for updating it whenever significant modifications are made (at an interval not to exceed three years). The Technical Committee will submit the original Implementation Plan, a report of findings based on the annual review, and any subsequent versions of the plan to the Oversight Committee for review and approval. The Technical Committee will also evaluate the execution of the GD&S Implementation Plan annually to determine if the execution is on schedule and moving in the direction set by the GD&S Implementation Plan. They will forward this evaluation to the GD&S Oversight Committee.

The Oversight Committee will meet twice each year and will be composed of chiefs of any division or office within a Command that has an interest in geospatial data. They will address local funding and policy issues related to compliance with this regulation. The Oversight Committee will approve the GD&S Implementation Plans prepared by the Technical Committee and will forward an information copy of the Plan to HQUSACE (CECW-EP-S). The Committee will also review the GD&S Performance Evaluation submitted annually by the GD&S Technical Committee and forward an information copy of the Evaluation to HQUSACE (CECW-EP-S).

f. Command GD&S POC. USACE Commanders will appoint a GD&S POC to serve as the liaison between their command and HQUSACE (CECW-EP-S) on GD&S issues and to be responsible for disseminating information related to GD&S throughout their Command's geospatial data community, including field offices. The POC will be a member of the GD&S Technical Committee and an advisor to the GD&S Oversight Committee. Commands may opt to internally maintain separate coordinators for GIS, CADD, and Surveying and Mapping but the GD&S POC will be cognizant of on-going and planned efforts in these areas and will be the focal point for information exchange between the command and HQUSACE. As new data pages are developed on the USACE Clearinghouse node by HQUSACE for the Commands, GD&S POCS will review

the pages and provide corrections to the Webmaster. Annually, the GD&S POC will review the Command's geospatial data pages on the USACE Clearinghouse node and forward any updates to the Webmaster.

g. Command GD&S Committees and POC. Commands have five responsibilities related to participation in the Clearinghouse. The Command GD&S committees and POC will ensure that these responsibilities are met and may choose the approach that best suits their environment, i.e., perform the work themselves, delegate the work to in-house technical personnel, or contract the work. Metadata and Clearinghouse support tools are provided in EM 1110-1-2909, "Geospatial Data and Systems," and electronically via the USACE Clearinghouse Node.

(1) Document new geospatial data using the FGDC Content Standard for Digital Geospatial Metadata. Data are considered new if produced or collected since January 1995. Geospatial data produced after Jan 95 will be documented at the time of production and metadata will be submitted to the Clearinghouse as the data become available for public use. The GD&S Committees and POCS will ensure that new data is documented and it is recommended that the metadata be generated as part of the data development process and by the person(s) developing the data.

(2) Document existing geospatial data to the extent practicable? Data are considered existing if collected or produced prior to January 1995. To promote consistency and practicality in documenting the large amount of existing data, many existing USACE geospatial datasets will be described and presented on the USACE Clearinghouse node as coremand-wide and sometimes Corps-wide "collections." The GD&S Committees and POCS will ensure their commands meet this requirement .

A geospatial data "collection" is defined as a logically consistent grouping of geospatial data that can be documented in a uniform manner. Collections may be established based on commonality of theme or based on commonality of geospatial domain. Each collection will be documented by a single collection metadata file containing only the required metadata elements. Examples of USACE data collections based on theme are hydrographic survey data, survey control markers, stage and discharge measurements, geophysical logs, and aerial photographs. An example based on spatial domain is a project data set containing multiple themes covering the same geographic extent.

Commands are encouraged to utilize the collection metadata format as an efficient and acceptable approach to documenting large volumes of existing data. Collection

metadata templates and completed example for common USACE geospatial data themes are available on each Command's data pages on the USACE Clearinghouse node. The GD&S POC is responsible for the correctness of these collection metadata files. When an additional collection is needed by a Command, the Command should coordinate the collection definition and content with the HQUSACE proponent named in paragraph 9 of this regulation and provide a collection metadata template to be included on the node for use by other Commands as appropriate. Commands may wish to develop an inventory of the individual items in collections as resources permit.

Existing geospatial data that are not included in a defined collection will be documented as resources become available or in the process of responding to a data request from the public or other agencies. These metaata will be submitted to the Clearinghouse as they are developed.

When responding to requests for geospatial data, regardless of age of the data, full FGDC compliant metadata must be generated and provided to the requestor at the time of data delivery. Full FGDC compliant metadata include all applicable metadata elements (FGDC 1994). It is recommended that the metadata be generated by the person(s) who developed the data or who have significant familiarity with the data.

(3) Submit metadata to the Clearinghouse. The GD&S Committees and POCs will ensure that their Commands utilize the USACE Clearinghouse node to serve metadata for the purpose of advertising their geospatial data holdings to the public. Commands will prepare and submit to the USACE Node, all metadata as discussed in 7.g(1) and 7.g(2) of this regulation. The GD&S Committees and POC may opt to establish internal guidance regarding metadata submittal. Some options are: the GD&S POC will submit all metadata on behalf of the Command; each division or fictional area within a Coremand will designate someone to submit metadata; each data developer will submit metadta.

Commands may establish supplemental Clearinghouse nodes in accordance with CEIM guidance on requirements for computer network security. Commands must assure a link is maintained from the USACE node to any supplemental nodes established by the Command. Use of a supplemental node does not remove the requirement to provide and maintain all metadata on the USACE node.

(4) Utilize the Clearinghouse. Prior to the collection or production of new geospatial data, Commands will access the Clearinghouse to determine whether the data or a usable substitute has already been collected by others, or if cooperative efforts to obtain the data are possible. Beginning with the FY97 Civil Works budget cycle, USACE

Commanders will certify that their Command has accessed the Clearinghouse, contributed metadata to the Clearinghouse, determined via the Clearinghouse that needed geospatial data are not available from an existing source, and that possible data collection partnerships have been explored. This certification, provided in Appendix B, will be included in the annual Civil Works Budget submittal. The GD&S Committees and POC may opt to establish internal guidance regarding utilizing the Clearinghouse such as requiring project managers to include results of Clearinghouse queries in project files. This might be useful as Commanders prepare their budget submittal.

(5) Provide public access to geospatial data. The GD&S Committees and POCs will ensure that their c ommands establish internal procedures to provide geospatial data collected or produced and held by USACE to the public upon request. Commands will respond to these requests to the extent permitted by law, current policies, and relevant Office of Management and Budget (OMB) circulars, including OMB Circular No. A-130 and any implementing bulletins. This regulation does not void existing policies or laws regarding release of sensitive or classified data. Frequently requested geospatial data, such as hydrographic surveys and inland waterway charts, shall be placed on the node for unrestricted direct public access.

8. Funding

No additional funds will be provided by OMB to implement EO 12906. Agencies are expected to execute the EO within their own budgets. Some sections of the EO and some , portions of this regulation are already being met, need little funding, can be fulfilled using existing resources or architectures, or require simple modifications in the way USACE operates. These incidental costs, such as those associated with generating metadata files for new geospatial data, generating metadata for well defined data collections, accessing the Clearinghouse, and submitting metadata and geospatial data to the USACE Clearinghouse node should be charged to the current mapping or database portions of individual projects or technical indirect accounts. Beginning in FY97, project engineers should incorporate any substantial costs associated with complying with the EO into the mapping or database portions of civil works project budgets.

Project engineers performing military construction and reimbursable work for others should query their project sponsors for guidance in this regard (paragraph 2 of this regulation).

CECW-EP-S will continue to fund development and testing of corporate approaches for compliance with this ER and EO 12906. This includes providing training on GD&S, developing metadata generation tools, supporting Commands in the creation of metadata, and other corporate efforts.

**Table 1
Actions Summary**

ACTIONS	PARAGRAPH
Commanders to appoint a GD&S POC and submit Clearinghouse Certificate of Compliance with Civil Works Budget	7.d
Commands Technical and Oversight Committees to meet annually and forward copy of approved GD&S Implementation Plan (IP) and performance evaluation of IP to HQUSACE	7.e
Commands GD&S POC to liaison with HQUSACE and update data pages on USACE Clearinghouse Node annually	7.f
Commands Technical and Oversight Committees and GD&S POC to document new geospatial data IAW FGDC Metadata Standard	7.g(l)
Commands Technical and Oversight Committees and GD&S POC to submit metadata to USACE Clearinghouse Node	7.g(3)
Commands Technical and Oversight Committees and GD&S POC to check Clearinghouse prior to beginning geospatial data collection efforts	7.g(4)
Commands Technical and Oversight Committees and GD&S POC to serve frequently requested data on USACE Clearinghouse Node, develop internal procedures for providing public access to geospatial data , and furnish geospatial data to the public/other agencies upon request.	7.g(5)

9. Proponency

All comments regarding improvements and/or clarifications should be submitted to the proponent at HQUSACE, ATTN: CECW-EP-S, 20 Massachusetts Ave., N. W., Washington, DC 20314-1000.

2 Appendices

APP A - References

APP B - Certificate of Clearinghouse Use

FOR THE COMMANDER:



**ROBERT H. GRIFFIN
Colonel, Corps of Engineers
Chief of Staff**

APPENDIX A REFERENCES

Executive Order 12906. *Coordinating Geographic Data Acquisition and Access: The National Spatial Data Infrastructure*, Washington, DC, Executive Office of the President, 11 April 1994. (Published in the 13 April 1994 Federal Register Volume 59, Number 71, Pages 17671-17674).

FIPS 173. *Spatial Data Transfer Standard*, Washington, DC, National Institute of Standards and Technology, 1992.

Office of Management and Budget. OMB Circular A-16, *Coordination of Surveying, Mapping and Related Spatial Data Activities*, Washington, DC, Executive Office of the President, Office of Management and Budget, 19 October 1990.

Federal Geographic Data Committee. *Guidelines for Implementing the National Geospatial Data Clearinghouse*, Reston, VA, Federal Geographic Data Committee, 8 June 1994.

Federal Geographic Data Committee. *Content Standards for Digital Geospatial Metadata*, Reston, VA, Federal Geographic Data Committee, 1992.

Federal Geographic Data Committee. *Content Standards for Digital Geospatial Metadata Workbook*, Reston, VA, Federal Geographic Data Committee, 1995.

Tri-Service CADD/GIS Technology Center. *Tri-Service GIS Spatial Data Standards*. U.S. Army Corps of Engineers, Vicksburg, MS, 1995.

Department of the Army, Director of Information Systems for Command, Control, Communications, and Computers. *Army Technical Architecture*, Washington, DC, U.S. Department of the Army, Director of Information Systems for Command, Control, Communications, and Computers, 30 January 1996.

EP-25-I-97. *Internet Implementing Procedures*. Washington, DC. U.S. Army Corps of Engineers

EM-111 O-1-2909. *Geospatial Data and Systems*. Washington, DC, U.S. Army Corps of Engineers

APPENDIX B CERTIFICATE OF CLEARINGHOUSE USE

Per paragraphs 7.d and 7.g(4) of this regulation, beginning with the FY97 Civil Works budget cycle, commanders will sign a certificate that their Command has served metadata via the Clearinghouse and has accessed the Clearinghouse and ascertained that the needed data is not available before Federal funds are expended to collect or produce new geospatial data. An example is provided on the following page.

Each USACE Command may establish internal procedures to ensure that the search has been conducted properly. For example, the Command may choose to attach hardcopies of the Clearinghouse queries and the responses to the certificate when it is submitted to the local commander for signature and incorporate all paperwork into the project files. A Command may also choose to have the GD&S POC or Technical Committee chairperson certify successful completion of the Clearinghouse queries prior to submission to the local commander.

Clearinghouse querying for projects with established accounts should be billed to these accounts. If the querying needs to be done as part of a study before a proposal is made and there is no project to charge to, then charge it to Technical Indirect Overhead.

DATE: _____

CERTIFICATE OF COMPLIANCE WITH
SECTION 3(D) OF EXECUTIVE ORDER 12906
AND PARAGRAPHS 7.d and 7.g(4) of ER 1110-1-8156

This is to certify that the FY XXXX budget for the _____ (district, division, or laboratory name) Civil Works Program does not include an implicit or explicit request for funds to collect, produce, or acquire geospatial data that is available through the National Geospatial Data Clearinghouse and that all possible data collection partnerships identified through the Clearinghouse have been investigated. The _____ (district, division, or laboratory name) has also contributed metadata to the National Geospatial Data Clearinghouse in accordance with ER 1110-1-8156.

Colonel, Corps of Engineers

Commanding

FOR ILLUSTRATIVE PURPOSES ONLY
(TO BE TYPED AS NECESSARY and submitted with the Annual Civil Works Budget submittal)