

DEPARTMENT OF THE ARMY
Corps of Engineers, Northwestern Division
P.O. Box 2870
Portland, Oregon 97208-2870

CENWD-MT-E
Regulation
No. 1110-1-3

31 March 2003

Engineering and Design
MODIFICATIONS AT EXISTING CORPS-OWNED CIVIL WORKS PROJECTS

History. This issue is a new regulation for the Northwestern Division (NWD).

Summary. Northwestern Division is responsible for the safety, structural integrity, and operational adequacy for eighty-one dams, thirty powerhouses, and nine navigation locks along and within the North Pacific Coastal, Columbia River and Missouri River basins.

1. PURPOSE. This regulation establishes the Northwestern Division policy to ensure that modifications to Corps-owned dams and appurtenant structures do not adversely impact the safety or operational adequacy of the project. This regulation applies to all NWD operating projects identified as Corps-owned Federal dams in the FEMA National Inventory of Dams (NID) database. Districts shall evaluate proposals to modify Corps-owned Civil Works Projects, to assure that the authorized project purposes are not compromised and that the public is not endangered.

a. The NWD dams, powerhouses, navigation locks, and other appurtenant structures are critical public resources. The public expects the Corps to manage them efficiently, economically, and safely. Dam failures carry the potential for loss of life, and severe economic and environmental damages. Customers and stakeholders are interested in water supply, hydropower, recreational and other development opportunities at our projects, but may not be fully cognizant that modifications to project features can reduce the reliability and level of protection provided by our projects, particularly under flood conditions.

b. As owners and operators, USACE must ensure that proposed modifications do not adversely impact safe performance under all operating conditions. Early and continual coordination between Project Managers, customers, designers, operators and dam safety technical experts is required.

2. APPLICABILITY. This regulation is applicable to all districts in the Northwestern Division Regional Business Center (RBC) for Corps-owned projects modified by either USACE or external customers.

3. REFERENCES.

a. Required Reference. ER 1110-2-1454, Corps Responsibilities for Non-Federal Hydroelectric Power Development Under the Federal Power Act, dated 15 Junly 1983. Cited in paragraph 7.

b. Related Referencs.

(1) Federal Guidelines for Dam Safety, dated June 25, 1979.

(2) Water Resource Development Act of 1986, PL 99-662.

(3) The National Dam Safety and Security Act of 2002, Public Law 107-310.

(4) ER 5-1-11, U.S. Army Corps of Engineers Business Process, dated 17 August 2001.

(5) ER 1110-2-100, Periodic Inspection and Continuing Evaluation of Completed Civil Works Structures, dated 15 February 1995.

(6) ER 1110-2-1150, Engineering and Design for Civil Works Projects, dated 31 August 1999.

(7) ER 1110-2-1156, Dam Safety – Organization, Responsibilities, and Activities, dated 31 July 1992.

(8) ER 1110-2-8157, Responsibility for Hydraulic Steel Structures, dated 31 January 1997.

4. POLICY. It is the policy of the Northwestern Division that no modification to an existing Corps-owned Civil Works Project will jeopardize the safety or operational adequacy of the operating project. Maintaining authorized project purposes, and preserving safety and operational adequacy must be considered in the planning and implementation of any modification to a Corps-owned dam. Modifications are changes from original design or operational criteria. Routine maintenance and improvements to meet original criteria are not modifications. Examples of modifications, include, but are not limited to, the following:

a. Structural alterations to intake towers, regulating gates, discharge conduits, and stilling basins.

b. Modifications to Hydraulic Steel Structures.

- c. Changes to spillway entrance geometry, spillway gates, and discharge channels within Corps-owned lands.
- d. Alterations to concrete structure drainage systems, such as foundation drains.
- e. Alteration to embankment crest elevations, cross section geometry, and seepage control systems, such as seepage cut-offs, internal chimney drains, relief wells, and toe drains.
- f. Installation of structures, including buildings and pipelines, on or adjacent to embankments, abutments, downstream toe areas, spillways and outlet works channels.
- g. Alterations to powerhouse discharge tunnels and tailraces.
- h. License applications for non-Federal hydroelectric power development either at or affecting Corps water resource projects.
- i. Operational changes that increase the frequency or volume of reservoir releases.

5. ROLES AND RESPONSIBILITIES.

- a. The District's Dam Safety Officer is responsible for assuring that no modification to an existing Civil Works project will jeopardize the dam safety, structural stability, operational adequacy or any other authorized aspect of an operating project, before, during, or after construction.
- b. The District Dam Safety Committee must approve concept level designs that are forwarded to the Committee, before the project proceeds to a detailed design phase. Approval of the final design, plans and specifications, methods of construction, Memorandums of Agreement (MOAs), etc. is also the responsibility of the District Dam Safety Committee, following consultation with the District Dam Safety and Operations experts and the individual Project Manager. Written minutes from the District Dam Safety Committee meeting, signed by the District Dam Safety Officer, is adequate documentation of approval. MOAs must be coordinated with District Counsel.
- c. Proposed modifications to Corps Civil Works projects will be addressed in accordance with the Project Management Business Process, including the assignment of a Project Manager and Project Delivery Team (PDT) members with experience in design, construction, and operations. Individual Project Managers assigned to modification projects meeting the criteria in paragraph 4 are responsible to include appropriate dam safety technical team members, Operations Managers, and Operations experts as active participants on the PDT.

d. The dam safety technical experts and Operations experts will be assigned to the PDT early in the development process, such as the Reconnaissance Study and/or concept design phase, and participate throughout the duration of the project. Dam Safety technical experts and Operations experts will be included on modification projects performed by in-house staffs and Architect–Engineering (A-E) contractors. PDT participants shall be identified in the Project Management Plan (PMP) and funded from project resources.

(1) Individual District Project Managers assigned to modification projects will ensure that appropriate design and operating criteria are used during design and construction. Quality Control/Quality Assurance (QA/QC) will be conducted according to existing District processes. Use of Corps of Engineers dam safety technical experts for QA/QC activities is encouraged. The experts may reside within the District or obtained from another Corps District.

(2) The individual District Project Manager will ensure that site inspections are conducted, secure funding for as-built drawings and operating manuals, by Contractor or additional personnel, and deliver as-built drawings and operating manuals in a timely manner. As-built drawings will be furnished at the completion of the construction contract. Appropriate features from these drawings will be incorporated into the project’s dam surveillance and contingency plan.

(3) The PDT is responsible for consultation and review of proposed modifications. The dam safety technical experts will review proposed modifications and evaluate potential impacts against original design and operating criteria. A review of current design criteria will also be performed. Potential reductions in factors of safety or release capability due to the proposed modification will be carefully evaluated. Engineering judgment by the District dam safety technical experts on the PDT will be relied upon to determine whether the proposed modifications reduce safety and operability. This is a significant responsibility that must not be taken lightly by the team members. Findings will be thoroughly documented and presented to the Project Manager. Conclusions indicating reduced factors of safety or release capability will be forwarded to the District Dam Safety Committee for resolution, if required.

(4) The dam safety technical experts participating on the PDT may be structural, mechanical, geotechnical and/or hydraulic engineers, depending on the nature of the modification. All dam safety technical experts will be Registered Professional Engineers, with a minimum of 10 years of experience in the monitoring, inspection, design, construction, and operation of dams. Individuals performing QA/QC reviews for proposed modifications projects must also meet these qualifications.

e. The Operations Manager shall advise the PDT and Project Manager of impacts the proposed modifications may pose to the operating project, including local public perception and relationships with other agencies.

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f. **External Peer Review Board.** In cases involving complex, high risk projects, the District will use a formal External Peer Review Board. An External Peer Review Board will be established at the direction of the District Dam Safety Officer. Members will be nationally recognized technical experts with extensive dam safety experience. The Board will review existing site conditions, historical data and concept designs to determine whether proposed modifications impact dam safety. The Board will perform its assessment independent of the PDT, and provide findings and recommendations to the District Project Manager.

6. **MODIFICATIONS PERFORMED BY OTHER AGENCIES.** When agencies, entities or individuals other than the Corps are involved, a proposed MOA or outgrant, if appropriate, must be developed that identifies ownership, responsibilities, and liabilities for operation, testing, maintenance and repair. MOAs and outgrants must be coordinated with District Counsel. For the purpose of dam safety and project operation and maintenance safety, the MOA or outgrant shall state that the Corps shall have access for inspection and emergency response activities.

7. **NON-FEDERAL HYDROPOWER DEVELOPMENT.** In addition to the requirements of this regulation, proposed modifications for non-Federal hydroelectric power development must be performed in accordance with ER 1110-2-1454, "Corps Responsibilities for Non-Federal Hydroelectric Power Development Under the Federal Power Act". Per ER 1110-2-1454, "The Division commander is responsible for adequacy of design, plans, and construction specifications of licensed non-Federal hydropower facilities that will be an integral part of or that could affect the structural integrity or operation of a Corps Project." Corps field commanders are to coordinate with the Federal Energy Regulatory Commission (FERC) regional engineers in planning, design, and construction activities. The Division Commander will review and approve the proposed overall general plans (license application) for compliance with pertinent Corps policies and general requirements. The Commander's review and recommendations to the FERC will cover impacts of the proposed non-Federal hydropower construction on the authorized function, safety, and operation of Corps projects.

FOR THE COMMANDER:



CLIFTON P. JACKSON, JR.
Executive Assistant

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