



DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS
441 G STREET NW
WASHINGTON, D.C. 20314-1000

CECW-HS (1110)

NOV 16 2007

MEMORANDUM FOR MAJOR SUBORDINATE COMMANDS AND DISTRICTS

SUBJECT: Levee Safety Program Implementation

1. References.

a. Memorandum, Headquarters, United States Army Corps of Engineers (HQUSACE) (CECW-HS), MG Don T. Riley, Subject: Interim Vegetation Guidance for Control of Vegetation on Levees, 12 June 2007.

b. Engineer Circular (EC) 11-2-187, "Corps of Engineers Civil Works Direct Program, Program Development Guidance Fiscal Year 2009," 11 May 2007.

c. Memorandum, Headquarters, United States Army Corps of Engineers (HQUSACE) (CECW-HS), MG Don T. Riley, Subject: Policy Guidance for the Prioritization of FY07 Inspection of Completed Works (ICW), Operations & Maintenance, General (O&M Gen), Mississippi River and Tributaries (MR&T) and Flood Control & Coastal Emergencies Inspection Accounts, 26 September 2006.

d. Levee Owner's Manual for Non-Federal Flood Control Works, March 2006.

e. Engineering Regulation (ER) 500-1-1, "Emergency Employment of Army and Other Resources Civil Emergency Management Program," 30 September 2001.

f. Engineering Regulations (ER) 1130-2-530, "Project Operations – Flood Control Operations and Maintenance Policies," 30 October 1996.

2. In Fiscal Year (FY) 2006, HQUSACE developed the Flood Risk Management Program (FRMP) which is a comprehensive approach for sustainable national flood risk management to improve public safety and reduce flood damages to the Nation. The intent of the FRMP is to coordinate and synchronize flood risk management activities and initiatives internally and with our Federal, state and local partners, and other stakeholders. Enclosure 1 depicts the HQUSACE flood risk management team organization for this purpose. We will publish guidance for establishing supporting plans and teams in our Major Subordinate Commands (MSCs) and Districts in FY08. As a critical part of our USACE Levee Safety Program, we will also establish technical policies and procedures for managing, inspecting, assessing, and certifying, completed storm and flood damage reduction projects, as well as, establishing and maintaining levee databases.

3. The purpose of this memorandum is to provide initial guidance for establishing our USACE Levee Safety Program, including responsibilities within MSCs and Districts. The USACE Levee Safety Program applies to all completed storm and flood damage reduction systems, including levees, channels, floodwalls, and hurricane and shore protection systems that 1) USACE operates and maintains, 2) are federally authorized projects (to include the Mississippi River &

Tributaries projects) in the Inspection of Completed Works (ICW) Program, and 3) are non-Federal projects in the Rehabilitation and Inspection Program (RIP). We will publish additional implementing instructions in guidance memoranda, Engineer Regulations (ER), Engineer Circulars (EC), and Engineer Technical Letters (ETL) as appropriate.

4. At HQUSACE, the following positions have been established:
 - a. Levee Safety Officer: Mr. Steve Stockton, HQUSACE, Civil Works.
 - b. Special Assistant for Levee Safety: Mr. Eric Halpin (Interim), HQUSACE, Engineering and Construction Community of Practice (E&C CoP).
 - c. Levee Safety Program Manager: Mr. Tracy Hendren (Interim), HQUSACE, E&C CoP.

We have also established a Levee Safety Policy and Procedures Team to develop and implement technical regulations, policies, and procedures to ensure an effective Levee Safety Program. This team is led by Mr. Michael Bart, Chief of Engineering and Construction at our St. Paul District with members from varied disciplines and multiple Districts, MSCs, HQUSACE, USACE laboratories, and other Federal agencies.

5. MSCs will develop plans for their Levee Safety Programs and submit them for review via email to Mr. Tracy Hendren **NLT 14 December 2007**. Plans must include the following:
 - a. *Levee Safety Officer and Levee Safety Program Manager*. As described in Enclosure 2, MSCs and districts shall designate a Levee Safety Officer (LSO) and designate or establish a position for a Levee Safety Program Manager (LSPM). Following our USACE Dam Safety Program model, the LSO should function as the engineer technical lead for the Program. The LSPM should function in the organization (where most appropriate) to manage Program execution. Levee safety responsibilities may be combined with existing dam safety roles based on mission, workload, and organizational structure.
 - b. *Organizational Structure*. Plans must include 1) contact information for LSOs and LSPMs, 2) a diagram of the Levee Safety Program organization showing lines of authority, and 3) a description of the organization to be used for routine and periodic inspections.
6. The new tiered inspection and assessment program includes 1) *routine inspections* (Continuing and Initial Eligibility Inspections, CEI & IEI), 2) *periodic inspections*, 3) *periodic assessments* (a screening level assessment conducted using the results of the periodic inspection), and 4) detailed *risk assessments* (to be initially conducted on Federal projects only). Definitions, Inspection Team Member Qualifications, and Report Approval Levels are at Enclosure 3.
7. Beginning in 2008, we will use an automated inspection tool, developed as part of the National Levee Database (NLD), for all routine inspections. This automated tool is Global Positioning System (GPS) based, incorporates the revised inspection checklist, and is designed to be linked with the NLD. We will publish training guidance and course opportunities for this new automated inspection tool by the end of first quarter FY08.
8. Inspection and assessment intervals are described in Enclosure 4. Districts should use these intervals to schedule routine inspections beginning in FY08.

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9. MSCs and Districts should continue to use the revised inspection checklist issued in the interim guidance at reference 1.a. above for routine inspections and to determine eligibility for rehabilitation assistance under Public Law (PL) 84-99. We are updating the Levee Owner's Manual for Non-Federal Flood Control Works, dated March 2006, and will re-publish it in FY08 as the "Levee Owner's Guide." This new publication will apply to projects that are 1) federally operated and maintained, 2) federally authorized and locally maintained, and 3) non-Federal projects in the USACE program.
10. In FY08, we will centrally fund periodic inspections and periodic assessments for HQUSACE selected systems as part of our risk methodology testing. After consulting with MSC and District LSPMs, the HQ LSPM will set the priorities and schedule for our FY09 periodic inspections, periodic assessments, and risk assessments. FY09 budgeting guidance can be found in Engineering Circular (EC) 11-2-187.
11. HQUSACE is developing standards for vegetation management and encroachments. MSCs and Districts should refer to the interim guidance in reference 1.a. above until we publish final policy guidance and standards.
12. I want to strongly emphasize that the Levee Safety Program is being developed as a national Program similar to the Dam Safety Program. We want to review your plans to ensure USACE-wide consistency for this critical national effort. Please address any questions regarding this guidance to Mr. Eric Halpin at 202-761-7775.

FOR THE COMMANDER:



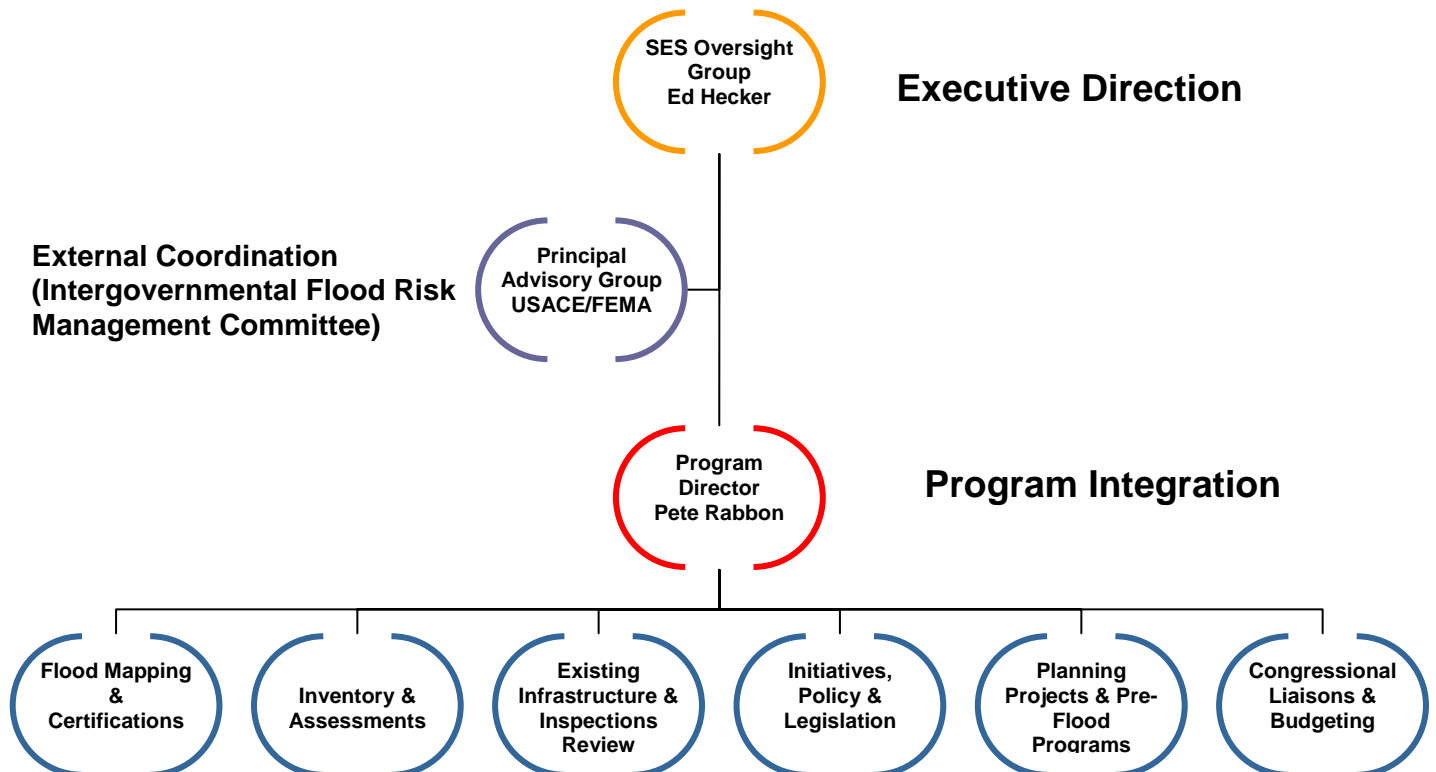
DON T. RILEY
Major General, U.S. Army
Director of Civil Works

4 Encls

1. HQUSACE FRMP Structure
2. Levee Safety Program - Organization, Qualifications, and Responsibilities
3. Definitions, Inspection Team Qualifications, and Report Approval Levels
4. Inspection and Assessment Intervals for Storm and Flood Damage Reduction Systems

Enclosure 1: HQUSACE FRMP Structure

- FRMP Senior Executive Staff (SES) Champion: Mr. Ed Hecker, Chief Homeland Security
- FRMP Program Director: Pete Rabbon, Institute for Water Resources (IWR)
- Focus Area Team Leads:
 - Flood Mapping and Certifications: Jerry Webb, HQUSACE and Michael Deering, Hydrologic Engineering Center (HEC)
 - Inventory and Assessments: Eric Halpin, HQUSACE and Tracy Hendren (Interim), HQUSACE
 - Existing Infrastructure and Inspections Review: Jeff Jensen, HQUSACE
 - Initiatives, Policy, and Legislation: Harry Kitch, HQUSACE
 - Planning Projects and Pre-flood Programs: Harry Kitch, HQUSACE
 - Congressional Liaisons and Budgeting: Jennifer Greer, HQUSACE
- Communications: Pete Pierce, Public Affairs, HQUSACE



Enclosure 2: Levee Safety Program - Organizational Structure, Qualifications, and Responsibilities**

	Proposed Positions	Qualifications
HQ	Levee Safety Officer	SES*, P.E. with civil engineering background, management abilities, and competency in the areas related to levee system engineering, design, construction, or operations.
	Special Assistant for Levee Safety	P.E. with civil engineering background, management abilities, and competency in the areas related to the design, construction, operation, inspection, or evaluation of levee systems.
	Levee Safety Program Manager	P.E. or P.G. with management abilities and knowledge and experience in the design, construction, operation, inspection, or evaluation of levee systems.
	Levee Safety Committee	Purpose and qualifications to be determined by the Levee Safety Policy & Procedures Team. Committee membership could include appropriate representatives from Engineering, Construction, Operations, Planning, Emergency Management, and others.
	Levee Safety Program Management Team	Purpose and qualifications to be determined by the Levee Safety Policy & Procedures Team
MSC	Levee Safety Officer	SES*, P.E. with civil engineering background, management abilities, and competency in the areas related to levee system engineering, design, construction, or operations.
	Levee Safety Program Manager	P.E. or P.G. with management abilities and knowledge and experience in the design, construction, operation, inspection, or evaluation of levee systems.
	Levee Safety Committee	Purpose and qualifications to be determined by the Levee Safety Policy & Procedures Team. Committee membership could include appropriate representatives from Engineering, Construction, Operations, Planning, Emergency Management, and others.
District	Levee Safety Officer	P.E. with civil engineering background, management abilities, and competency in the areas related to levee system engineering, design, construction, or operations.
	Levee Safety Program Manager	P.E. or P.G. with management abilities and knowledge and experience in the design, construction, operation, inspection, or evaluation of levee systems.
	Levee Safety Committee	Purpose and qualifications to be determined by the Levee Safety Policy & Procedures Team. Committee membership could include appropriate representatives from Engineering, Construction, Operations, Planning, Emergency Management, and others.

*If the current SES meets the qualifications.

** The Levee Safety Program addresses Storm and Flood Damage Reduction Systems.

Responsibilities:

MSC Responsibilities

The MSC Levee Safety Officer (LSO) is responsible for quality assurance and serving as the technical lead for levee safety under the MSC Levee Safety Program. The MSC Levee Safety Program Manager (LSPM) is responsible for coordination and implementation of the MSC Levee Safety Program in accordance with the MSC Levee Safety Program Management Plan, in addition to, activities in support of the MSC LSO responsibilities. Both the LSO and LSPM have the overall responsibility of program execution and will establish procedures to ensure that the MSC LSO is fully advised on all levee safety issues. The following is the initial list of responsibilities of the MSC LSO and LSPM:

Responsibilities of the MSC LSO include, but may not be limited to,

1. Working with districts to establish levee safety related work priorities and ensuring that these priorities are addressed during budget development.
2. Ensuring that an independent technical review is conducted for inspections, evaluations, and design of all features of levee system projects.
3. Ensuring, in technically complex cases, that the project development team includes members from the MSC and HQUSACE starting early in the process to ensure that the analytical methods and processes used by the district comply with policy and criteria.
4. Ensuring that adequate performance monitoring and evaluations of levee systems are conducted and documented.
5. Overseeing quality assurance activities for all features of civil works levee system projects, including review of district levee safety related plans.
6. Reviewing and approving periodic assessment and risk assessment reports.
7. Reviewing and approving regional variances on vegetation standards.

Responsibilities of the MSC LSPM include, but may not be limited to,

1. Developing, coordinating, and managing the MSC Levee Safety Program Management Plan.
2. Ensuring that the program is staffed with qualified personnel for program implementation and to meet program requirements.
3. Leveraging regional and national resources, as necessary, to staff inspection teams with correct personnel.
4. Ensuring that accurate data are submitted for the National Levee Database.

5. Ensuring that levee safety priorities are addressed during budget development.
6. Monitoring and supporting levee safety public awareness programs established at the district level.
7. Ensuring integration and the involvement of planning, engineering, operations, emergency management, and the other Communities of Practice as necessary.
8. Participating in various periodic inspections and field visits to ensure that the district programs are conducted in accordance with the district quality control plans and requirements of this guidance.
9. Ensuring the regional program is in alignment with the national program and policies.
10. Participating on the national steering committee, to be determined at a later time.

District Responsibilities

The District Levee Safety Officer (LSO) is responsible for quality assurance and serving as the technical lead for levee safety under the District Levee Safety Program. The District Levee Safety Program Manager (LSPM) is responsible for coordination and implementation of the District Levee Safety Program in accordance with the District Levee Safety Program Management Plan, in addition to, activities in support of the District LSO responsibilities. Both the LSO and LSPM have the overall responsibility of program execution and will establish procedures to ensure that the District LSO is fully advised on all levee safety issues. The following is the initial list of responsibilities of the District LSO and LSPM:

Responsibilities of the District LSO include, but may not be limited to,

1. Holding life safety paramount.
2. Ensuring the routine inspections, periodic inspections, periodic assessments and risk assessments are performed by qualified technical and field personnel in accordance with Enclosure 3. Monitoring and evaluating the operation and maintenance performance under the inspection program using routine inspections based on the frequency required in Enclosure 4. Reporting results of those inspections in accordance with this policy.
3. Reviewing and approving periodic inspections reports and recommended specific project measures in accordance with this policy.
4. Establishing priorities for levee safety related work in coordination with the MSC.
5. Ensuring independent technical reviews for periodic inspection, periodic assessment, and risk assessment are conducted in accordance with Enclosure 3.

6. Reviewing and approving of project encroachments, modifications, and improvements (Section 208.10) for levee safety.
7. Providing levee safety input for projects under design.
8. When requested, developing, reviewing and verifying all vegetation variance agreements and alternations (Section 408) after full coordination with MSC LSO and HQUSACE.
9. Reviewing and signing levee certification reports and determination letters in accordance to current policies.

Responsibilities of the District LSPM include, but may not be limited to,

1. Developing, coordinating, and implementing the District Levee Safety Program Management Plan.
2. Reviewing and approving all district routine inspection reports, if so delegated.
3. Ensuring that inspection personnel are trained in the use of the automated inspection tool in FY 2008.
4. Ensuring adequate Quality Control/Quality Assurance documentation is completed.
5. Ensuring that levee safety products are developed in accordance with documented district Project Management Business Processes.
6. Ensuring integration and the involvement of planning, engineering, operations, emergency management, and the other Communities of Practice as necessary.
7. Identifying policy, technical, or procedural issues and coordinating resolution with the MSC and/or HQUSACE.
8. Establishing and supporting levee safety public awareness programs in coordination with local interests and other federal, state, and local agencies.
9. Coordinating with water management on any levee safety impacts to reservoir operations.
10. Establishing processes to ensure that current and relevant information is submitted for the National Levee Database.

Enclosure 3: Inspection Team Qualifications and Report Approval Level

1. Routine Inspections

Team - The routine inspection (IEI and CEI) will be conducted by an engineer or engineering technician, local sponsor, and other personnel as required with training and experience in storm and flood damage reduction (FDR) system inspections and evaluations and knowledge of the system being inspected.

Approval Level - All routine inspection reports will be approved by the District Levee Safety Officer (LSO) or the District Levee Safety Program Manager if designated by the District LSO.

2. Periodic Inspection (PI)

Team - To be lead by a licensed professional engineer with experience in the design, construction, and operation of the type of storm or flood damage reduction system being inspected. Depending on system features, the team might include the following personnel and/or disciplines: civil, geotechnical, structural, hydraulic, mechanical, electrical, environmental specialist/landscape architect, emergency management, and the local sponsor.

Independent Technical Review - There will be an independent technical review of the inspection report – thus there will be at least one if not more professional engineers reviewing and signing the PI report.

Approval Level – The District Levee Safety Officer will approve the PI report.

3. Periodic Assessments (PA)

Team - To be lead by a licensed professional engineer trained as a facilitator in potential failure mode and risk analysis and with experience in the design, construction, and operation of the type of storm or flood damage reduction system being assessed. This type of assessment will include the combination of a periodic inspection and a potential failure mode and consequences analysis (PFMCA). The periodic assessment specialist/cadre will conduct a field inspection as part of the periodic inspection and will conduct the PFMCA to complete the PA. Depending on system features, the team might include the following personnel and/or disciplines: civil, geotechnical, structural, hydraulic, mechanical, electrical, environmental specialist/landscape architect, emergency management, and the local sponsor. Typically the PA will be done in conjunction with the PI.

Independent Technical Review - There will be an independent technical review of the periodic assessment and associated periodic inspection. Representatives from the USACE Engineering Risk and Reliability Directory of Expertise and/or Regional Risk Cadres will be included on the independent technical team. The ITR team may include Regional Risk Cadre members from other regions.

Approval Level - The MSC Levee Safety Officer will approve the periodic assessment reports with concurrent review by HQUSACE to assure consistency of the periodic assessments across the nation.

4. Risk Assessments (RA)

Team - Depending on system features, the team might include the following disciplines: civil, geotechnical, structural, hydraulic, mechanical, electrical, economist, environmental specialist/landscape architect and the local sponsor. Working in conjunction with the local district the national risk assessment specialist/cadre will conduct/facilitate the risk assessment. The risk assessment specialist/cadre and the risk assessment team will conduct a field inspection of the storm or flood damage reduction system and conduct a risk analysis and assessment of the design, construction, and performance of the system. The risk assessment will use existing information available from planning, design, construction, operational, and inspection documents in the district.

Independent Technical Review - There will be an independent technical review of the risk assessment. Representatives from the USACE Engineering Risk and Reliability Directory of Expertise will be included on the independent technical team.

Approval Level – The MSC Levee Safety Officer will approve the risk assessment reports with concurrent review by HQUSACE to assure consistency of the risk assessments across the nation.

Enclosure 4: Inspection and Assessment Intervals

INSPECTION AND ASSESSMENT INTERVALS FOR STORM AND FLOOD DAMAGE REDUCTION SYSTEMS			
Current Land Use in the Protected Area*	Project Design Event	Interval of Inspection/ Assessment**	Type of Inspection/Assessment
Urban/Rural/ Agricultural ¹	100 year event or greater	Annual	Routine
		5 yr	Periodic Inspection ²
		TBD ³	Periodic Assessments/Risk Assessment ⁴
Urban/Rural	50 to 99 year event	Annual	Routine
		5 yr	Periodic Inspection ²
		TBD ³	Periodic Assessments/Risk Assessment ⁴
Urban/Rural ⁵	0 to 49 year event	2 year	Routine
Agricultural ⁵	0 to 99 year event	2 year	Routine
<p>* For combined urban, rural, and agricultural levee systems the higher standard governs.</p> <p>** Consider more frequent interval for levees with water on it all of the time.</p> <p>1. This applies to high consequence agricultural regions.</p> <p>2. Federal projects only (excludes non-federal levees in RIP).</p> <p>3. Determination of intervals for Periodic & Risk Assessments will be done in consultation with HQUSACE Levee Safety Program Manager.</p> <p>4. Periodic Assessments and Risk Assessment for non-federal projects only</p>			

if directed and funded by Congress. Initial Periodic Assessments and Risk Assessments for the Federal projects will be budgeted by HQUSACE, but the districts will have to program for the associated Periodic Inspection starting in FY09.

5. If system has high consequences upon overtopping or failure, consider conducting a Periodic Assessment or Risk Assessment.

Definitions:

Routine Inspection verifies proper maintenance, owner preparedness, and component operation.

ER 1130-2-530 states, "This program (Inspection of Completed Works) should assure sponsor compliance with existing agreements that the structures and facilities constructed by the United States for flood protection will be continuously maintained in such a manner and operated at such times and for such periods as may be necessary to obtain the maximum benefits." ER 500-1-1 states inspections are conducted to determine eligibility for rehabilitation assistance under authority of PL 84-99 for federal and non-federal projects.

Periodic Inspection (PI) verifies proper maintenance and component operation and evaluates operational adequacy, structural stability, and safety of the system. The PI also evaluates project original design criteria versus current design criteria to determine potential performance impacts, compares the design loads and design analysis used against current design standards, and evaluates the current project conditions against the current design standards. This is to be done to identify components and features that need to be monitored more closely over time or corrected as needed.

Periodic Assessment (PA) is a combination of a periodic inspection and potential failure modes and consequences analysis (PFMCA) and will be used for screening and prioritization of risk assessments.

Risk Assessment (RA) determines residual risk of the levee system, based on information collected during the Routine Inspections, Periodic Inspections, and Periodic Assessments.

Agricultural – Protected population would be in the range of zero to 5 households per square mile protected. PI and RA should be considered for agricultural levee systems with significant environmental or economic impact upon failure.

Rural – 6 to 20 households per square mile

Urban – Greater than 20 households per square mile and major industrial areas with significant infrastructure investment. Some protected urban areas have no permanent population, such as industrial areas with high value infrastructure with no overnight population.

Project – A flood damage reduction project is made up of one or more flood damage reduction systems which are under the same authorization.

System – A flood damage reduction system is made up of one or more flood damage reduction segments which collectively provide flood damage reduction to a defined area. Failure of one segment within a system constitutes failure of the entire system. Failure of one system does not affect another system.

Segment – A flood damage reduction segment is defined as a discrete portion of a flood damage reduction system that is operated and maintained by a single entity. A flood damage reduction segment can be made up of one or more features (levee, floodwall, pump stations, etc).