

**Cover Sheet:** This cover sheet provides background information on the purpose and intended use of the following template, including descriptions of what it is, the intended audience, and how to use it. The cover sheet serves as a guide for using the following template.

**Title of Template:** FEMA Suggested Tabbed Submission for 44 CFR 65.10 Material

**Audience:** Communities levee system owners submitting 44 CFR 65.10 data and documentation to FEMA for a levee system.

**Description:** FEMA recommends a tabbed format when submitting 44 CFR 65.10 materials for levees systems. The Suggested Tabbed Submission for 44 CFR 65.10 Material includes individual cover sheets for the following section and subsections under:

- 44 CFR 65.10(b)(1) – (b)(7) Design Criteria,
- 44 CFR 65.10(c) Operation Plans and Criteria,
- 44 CFR 65.10(d) Maintenance Plans and Criteria, and
- 44 CFR 65.10(e) Certification Requirements.

Accreditation materials submitted in this format help to organize data and facilitate review.

This suggested format is not intended to supersede or substitute the submittal of 44 CFR 65.10 materials through the MT-2 process. However, this Suggested Tabbed Submission format may be used to supplement a map revision request made through the MT-2 process. In those cases, submittals should follow FEMA’s MT-2 Application Forms and Instructions.

**Terms and Conditions:** The technical accuracy of 44 CFR 65.10(b) certification materials submitted under this suggested format is the responsibility of the registered Professional Engineer(s) (P.E./P.E.s). It is also each P.E.’s responsibility to assure the certification materials submitted meet the design requirements listed under 44 CFR 65.10(b).

**User(s):**

- P.E. (or P.E.s) responsible for compiling 44 CFR 65.10(b) materials and/or the P.E. (or P.E.s) responsible for 44 CFR 65.10(b) data certifications.
- Chief Executive Officer (CEO) or highest elected official of the community or the appropriate head of the agency or entity that is accepting the ultimate responsibility for all the tasks and actions listed in operation, maintenance, and emergency preparedness plans.

**How to Use This Template:**

1. Complete the Table of Contents and General Information pages.
2. There are a total of eleven tabs under 44 CFR 65.10(b) where the signature of a P.E. (or P.E.s) is required. The signature is required either to certify the levee system data within that section or to acknowledge that the information requested under the section does not apply to the levee system. A signature line titled “Not Applicable” is provided for those sections of 44 CFR 65.10(b) that are not required to certify the levee system data.

3. The P.E. responsible for compiling 44 CFR 65.10(b) levee system data must sign the first tab (44 CFR 65.10(b) Tab).
4. The P.E. responsible for 44 CFR 65.10(b) levee system data under 44 CFR 65.10(b) (1), (2), (3), (4), (5), (6), and (7) sections must certify the data under the appropriate tab.
5. Certified As-Built plans must be submitted per 44 CFR 65.10(e).

By signing each tab acknowledging the submittal of 44 CFR 65.10(b) levee system certification data, the P.E. (or P.E.s) accepts the Terms and Conditions listed above and certifies the corresponding levee system data within each tab according to the definitions provided in 44 CFR 65.2 (a) and (b).

In addition to the design materials submitted to certify data for a levee system according to 44 CFR 65.10(b), the levee system owner, operator, sponsor, and/or community is responsible for submitting operation, emergency preparedness, and maintenance plans according to 44 CFR 65.10(c) and (d) and As-built plans according to 44 CFR 65.10(e).

**Submittal of Levee System Certification Data:**

The preferred format for the submittal materials is an electronic PDF with each volume clearly labeled with state, county, community, levee names and document chapter. The backup data in its native electronic format is recommended. However, FEMA may request data in PDF format in cases when data are generated using proprietary software that is not commonly used.

The materials should be provided to the FEMA Regional Project Officer for levee systems that are Provisionally Accredited Levees (PALs) or to demonstrate compliance or continued compliance with 44 CFR 65.10 during the course of a FEMA Risk MAP project.

**Guidelines Before Use:**

- Please reference FEMA Guidance Document No. 95, [Guidance for Flood Risk Analysis and Mapping, Levees](#) document for more information.

## Table of Contents

Tab Description	Applicable	Not Applicable	If applicable, cite where submitted document(s) address 44 CFR 65.10 Subpart criteria. Please include page number(s).
General Information			
65.10(b)			
65.10(b)(1) Freeboard			
(b)(1)(ii) Freeboard Exception (Riverine)			
(b)(1)(iii) Coastal Freeboard			
(b)(1)(iv) Freeboard Exception (Coastal)			
65.10(b)(2) Closures			
65.10(b)(3) Embankment Protection			
65.10(b)(4) Embankment and Foundation Stability			
65.10(b)(5) Settlement			
65.10(b)(6) Interior Drainage			
65.10(b)(7) Other Design Criteria [ <i>Emergency Preparedness Plan</i> ]			
65.10(c) Operation Plans and Criteria			
(c)(1) Closures			
(c)(2) Interior Drainage Systems			
(c)(3) Other Operation Plans and Criteria			
65.10(d) Maintenance Plans and Criteria			
65.10(e) Certification Requirements			

<b>General Information</b>
----------------------------

Date of submittal: \_\_\_\_\_

Levee System owner point of contact: \_\_\_\_\_

Name of levee system owner/agency: \_\_\_\_\_

Levee system owner point of contact:

Address: \_\_\_\_\_

\_\_\_\_\_

Phone number: \_\_\_\_\_

E-mail address: \_\_\_\_\_

Levee system name: \_\_\_\_\_

National Levee Database (NLD) System ID: \_\_\_\_\_

County: \_\_\_\_\_

City: \_\_\_\_\_

State: \_\_\_\_\_

Most recent Letter of Map Revision (LOMR) case number, if applicable: \_\_\_\_\_

Name of submitting engineer(s) for 65.10(b) certifications: \_\_\_\_\_

End of 24-month PAL documentation period (certification submittal deadline): \_\_\_\_\_

Have risk and uncertainty modeling approaches been used for the freeboard analysis? \_\_\_\_\_

DFIRM panel number(s) (preliminary or final): \_\_\_\_\_

44 CFR 65.10(b) Tab

For levee system \_\_\_\_\_ to be recognized by FEMA, evidence that adequate design and operation and maintenance systems are in place to provide reasonable assurance that protection from the base flood exists is provided in this submission.

*Note: According to 44 CFR 65.2, “(b) For the purpose of this part, a certification by a registered professional engineer or other party does not constitute a warranty or guarantee of performance, expressed or implied. Certification of data is a statement that the data is accurate to the best of the certifier’s knowledge. Certification of analyses is a statement that the analyses have been performed correctly and in accordance with sound engineering practices. Certification of structural works is a statement that the works are designed in accordance with sound engineering practices to provide protection from the base flood. Certification of “as built” conditions is a statement that the structure(s) has been built according to the plans being certified, is in place, and is fully functioning.”*

P.E. Signature: \_\_\_\_\_

P.E. Name: \_\_\_\_\_

P.E. License Number and State: \_\_\_\_\_

44 CFR 65.10(b)(1)(i) Tab

(1) *Freeboard.* (i) Riverine levees must provide a minimum freeboard of three feet above the water-surface level of the base flood. An additional one foot above the minimum is required within 100 feet in either side of structures (such as bridges) riverward of the levee or wherever the flow is constricted. An additional one-half foot above the minimum at the upstream end of the levee, tapering to not less than the minimum at the downstream end of the levee, is also required.

P.E. Signature: \_\_\_\_\_

Not Applicable: \_\_\_\_\_

P.E. Name: \_\_\_\_\_

P.E. License Number and State: \_\_\_\_\_

44 CFR 65.10(b)(1)(ii) Tab

(ii) Occasionally, exceptions to the minimum riverine freeboard requirement described in paragraph (b)(1)(i) of this section, may be approved. Appropriate engineering analyses demonstrating adequate protection with a lesser freeboard must be submitted to support a request for such an exception. The material presented must evaluate the uncertainty in the estimated base flood elevation profile and include, but not necessarily be limited to an assessment of statistical confidence limits of the 100-year discharge; changes in stage-discharge relationships; and the sources, potential, and magnitude of debris, sediment, and ice accumulation. It must be also shown that the levee will remain structurally stable during the base flood when such additional loading considerations are imposed. Under no circumstances will freeboard of less than two feet be accepted.

P.E. Signature: \_\_\_\_\_

Not Applicable: \_\_\_\_\_

P.E. Name: \_\_\_\_\_

P.E. License Number and State: \_\_\_\_\_

44 CFR 65.10(b)(1)(iii) Tab

(iii) For coastal levees, the freeboard must be established at one foot above the height of the one percent wave or the maximum wave runup (whichever is greater) associated with the 100-year stillwater surge elevation at the site.

P.E. Signature: \_\_\_\_\_

Not Applicable: \_\_\_\_\_

P.E. Name: \_\_\_\_\_

P.E. License Number and State: \_\_\_\_\_



44 CFR 65.10(b)(1)(iv)

(iv) Occasionally, exceptions to the minimum coastal levee freeboard requirement described in paragraph (b)(1)(iii) of this section, may be approved. Appropriate engineering analyses demonstrating adequate protection with a lesser freeboard must be submitted to support a request for such an exception. The material presented must evaluate the uncertainty in the estimated base flood loading conditions. Particular emphasis must be placed on the effects of wave attack and overtopping on the stability of the levee. Under no circumstances, however, will a freeboard of less than two feet above the 100-year stillwater surge elevation be accepted.

P.E. Signature: \_\_\_\_\_

Not Applicable: \_\_\_\_\_

P.E. Name: \_\_\_\_\_

P.E. License Number and State: \_\_\_\_\_

44 CFR 65.10(b)(2) Tab

(2) *Closures*. All openings must be provided with closure devices that are structural parts of the system during operation and design according to sound engineering practice.

P.E. Signature: \_\_\_\_\_

Not Applicable: \_\_\_\_\_

P.E. Name: \_\_\_\_\_

P.E. License Number and State: \_\_\_\_\_

44 CFR 65.10(b)(3) Tab

(3) *Embankment protection.* Engineering analyses must be submitted that demonstrate that no appreciable erosion of the levee embankment can be expected during the base flood, as a result of either currents or waves, and that anticipated erosion will not result in failure of the levee embankment or foundation directly or indirectly through reduction of the seepage path and subsequent instability. The factors to be addressed in such analyses include, but are not limited to: Expected flow velocities (especially in constricted areas); expected wind and wave action; ice loading; impact of debris; slope protection techniques; duration of flooding at various stages and velocities; embankment and foundation materials; levee alignment, bends, and transitions; and levee side slopes.

P.E. Signature: \_\_\_\_\_

Not Applicable: \_\_\_\_\_

P.E. Name: \_\_\_\_\_

P.E. License Number and State: \_\_\_\_\_

44 CFR 65.10(b)(4) Tab

*(4) Embankment and foundation stability.*

Engineering analyses that evaluate levee embankment stability must be submitted. The analyses provided shall evaluate expected seepage during loading conditions associated with the base flood and shall demonstrate that seepage into or through the levee foundation and embankment will not jeopardize embankment or foundation stability. An alternative analysis demonstrating that the levee is designed and constructed for stability against loading conditions for Case IV as defined in the U.S. Army Corps of Engineers (COE) manual, "Design and Construction of Levees" (EM 1110-2-1913, Chapter 6, Section II), may be used. The factors that shall be addressed in the analyses include: Depth of flooding, duration of flooding, embankment geometry and length of seepage path at critical locations, embankment and foundation materials, embankment compaction, penetrations, other design factors affecting seepage (such as drainage layers), and other design factors affecting embankment and foundation stability (such as berms).

P.E. Signature: \_\_\_\_\_

Not Applicable: \_\_\_\_\_

P.E. Name: \_\_\_\_\_

P.E. License Number and State: \_\_\_\_\_

44 CFR 65.10(b)(5) Tab

(5) *Settlement*. Engineering analyses must be submitted that assess the potential and magnitude of future losses of freeboard as a result of levee settlement and demonstrate that freeboard will be maintained within the minimum standards set forth in paragraph (b)(1) of this section. This analysis must address embankment loads, compressibility of embankment soils, compressibility of foundation soils, age of the levee system, and construction compaction methods. In addition, detailed settlement analysis using procedures such as those described in the COE manual, "Soil Mechanics Design—Settlement Analysis" (EM 1100-2-1904) must be submitted.

P.E. Signature: \_\_\_\_\_

Not Applicable: \_\_\_\_\_

P.E. Name: \_\_\_\_\_

P.E. License Number and State: \_\_\_\_\_

44 CFR 65.10(b)(6) Tab

(6) *Interior drainage*. An analysis must be submitted that identifies the source(s) of such flooding, the extent of the flooded area, and, if the average depth is greater than one foot, the water-surface elevation(s) of the base flood. This analysis must be based on the joint probability of interior and exterior flooding and the capacity of facilities (such as drainage lines and pumps) for evacuating interior floodwaters.

P.E. Signature: \_\_\_\_\_

Not Applicable: \_\_\_\_\_

P.E. Name: \_\_\_\_\_

P.E. License Number and State: \_\_\_\_\_

44 CFR 65.10(b)(7) Tab

(7) *Other design criteria.* In unique situations, such as those where the levee system has relatively high vulnerability, FEMA may require that other design criteria and analyses be submitted to show that the levees provide adequate protection. In such situations, sound engineering practice will be the standard on which FEMA will base its determinations. FEMA will also provide the rationale for requiring this additional information.

P.E. Signature: \_\_\_\_\_

Not Applicable: \_\_\_\_\_

P.E. Name: \_\_\_\_\_

P.E. License Number and State: \_\_\_\_\_

44 CFR 65.10(c) Tab

(c) *Operation plans and criteria.* For a levee system to be recognized, the operational criteria must be as described below. All closure devices or mechanical systems for internal drainage, whether manual or automatic, must be operated in accordance with an officially adopted operation manual, a copy of which must be provided to FEMA by the operator when levee or drainage system recognition is being sought or when the manual for a previously recognized system is revised in any manner. All operations must be under the jurisdiction of a Federal or State agency, an agency created by Federal or State law, or an agency of a community participating in the NFIP.

Date of Operations Plan: \_\_\_\_\_

Title of Operations Plan: \_\_\_\_\_

Proof of Formal Adoption Provided:

(c)(3) *Other operation plans and criteria.* Other operating plans and criteria may be required by FEMA to ensure that adequate protection is provided in specific situations. In such cases, sound emergency management practice will be the standard upon which FEMA determinations will be based.

*[FEMA Standard ID #444 became effective 11/30/2016 for new applications submitted to FEMA for levee accreditation.]*

*FEMA Standard ID #444:* Levee systems can only be accredited when compliance with Code of Federal Regulations Title 44 C.F.R. § 65.10 is demonstrated. Compliance includes demonstrating that an emergency preparedness plan has been adopted by the community that at a minimum, includes the area impacted by the levee system, and includes procedures for emergency operation and public evacuation, meeting the standards of 44 C.F.R. § 65.10(c)(3).

Date of Emergency Preparedness Plan: \_\_\_\_\_

Title of Emergency Preparedness Plan: \_\_\_\_\_

Proof of Formal Adoption Provided:

*[Please complete the FEMA Suggested Submission for 44 CFR 65.10(c)]*



FEMA Suggested Submission for 44 CFR 65.10(c)

44 CFR 65.10 (c)		Is this 44 CFR 65.10 Subpart Applicable to Levee System? (Yes/No)	If applicable, please cite where submitted document(s) address this 44 CFR 65.10 Subpart criteria. Please include page number.	
<p><b>Operation Plans and Criteria [44 CFR, 65.10(c)].</b> For a levee system to be recognized, the operational criteria must be as described below. All closure devices or mechanical systems for internal drainage, whether manual or automatic, must be operated in accordance with an officially adopted operation manual, a copy of which must be provided to FEMA by the operator when levee or drainage system recognition is being sought or when the manual for a previously recognized system is revised in any manner. All operations must be under the jurisdiction of a Federal or State agency, an agency created by Federal or State law, or an agency of a community participating in the NFIP.</p>	<p><b>(1) Closures.</b> Operation plans for closures must include the following:</p>	<p><b>(i)</b> Documentation of the flood warning system, under the jurisdiction of Federal, State, or community officials, that will be used to trigger emergency operation activities and demonstration that sufficient flood warning time exists for the completed operation of all closure structures, including necessary sealing, before floodwaters reach the base of the closure.</p>		
		<p><b>(ii)</b> A formal plan of operation including specific actions and assignments of responsibility by individual name or title.</p>		
		<p><b>(iii)</b> Provisions for periodic operation, at not less than one-year intervals, of the closure structure for testing and training purposes.</p>		
	<p><b>(2) Interior drainage systems.</b> Interior drainage systems associated with levee systems usually include storage areas, gravity outlets, pumping stations, or a combination thereof. These drainage systems will be recognized by FEMA on NFIP maps for flood protection purposes only if the following minimum criteria are included in the operation plan:</p>	<p><b>(i)</b> Documentation of the flood warning system, under the jurisdiction of Federal, State, or community officials, that will be used to trigger emergency operation activities and demonstration that sufficient flood warning time exists to permit activation of mechanized portions of the drainage system.</p>		
		<p><b>(ii)</b> A formal plan of operation including specific actions and assignments of responsibility by individual name or title.</p>		
		<p><b>(iii)</b> Provision for manual backup for the activation of automatic systems.</p>		
		<p><b>(iv)</b> Provisions for periodic inspection of interior drainage systems and periodic operation of any mechanized portions for testing and training purposes. No more than one year shall elapse between either the inspections or the operations.</p>		
	<p><b>(3) Other operation plans and criteria.</b> Other operating plans and criteria may be required by FEMA to ensure that adequate protection is provided in specific situations. In such cases, sound emergency management practice will be the standard upon which FEMA determinations will be based. (<i>Emergency Preparedness Plan per FEMA Standard ID 444</i>)</p>	YES		

44 CFR 65.10(d) Tab

(d) *Maintenance plans and criteria.* For levee systems to be recognized as providing protection from the base flood, the maintenance criteria must be as described herein. Levee systems must be maintained in accordance with an officially adopted maintenance plan, and a copy of this plan must be provided to FEMA by the owner of the levee system when recognition is being sought or when the plan for a previously recognized system is revised in any manner. All maintenance activities must be under the jurisdiction of a Federal or State agency, an agency created by Federal or State law, or an agency of a community participating in the NFIP that must assume ultimate responsibility for maintenance. This plan must document the formal procedure that ensures that the stability, height, and overall integrity of the levee and its associated structures and systems are maintained. At a minimum, maintenance plans shall specify the maintenance activities to be performed, the frequency of their performance, and the person by name or title responsible for their performance.

Date of Maintenance Plan (if separate document): \_\_\_\_\_

Title of Maintenance Plan (if separate document): \_\_\_\_\_

Proof of Formal Adoption Provided:

44 CFR 65.10 (e) Tab

(e) *Certification Requirements.* Data submitted to support that a given levee system complies with the structural requirements set forth in b(1) through b(7), must be certified by a Registered Professional Engineer. Also, certified as-built plans must of the levee must be submitted. Certification requirements are subject to further definition given in Section 65.2 of the NFIP regulations. In lieu of these structural requirements, a Federal agency with responsibility for levee design may certify that the levee has been adequately designed and constructed to provide protection against the base flood.

Date(s) of As-Built Plans: \_\_\_\_\_

As-Built Plans Certified by a Registered Professional Engineer:

Location of As-Built Plans in submittal if not in this tab: \_\_\_\_\_