

# Guidance for Flood Risk Analysis and Mapping

## Coastal Barrier Resources System Mapping on Flood Insurance Rate Maps

May 2014



**FEMA**

This guidance document supports effective and efficient implementation of flood risk analysis and mapping standards codified in the Federal Insurance and Mitigation Administration Policy FP 204-07801.

For more information, please visit the Federal Emergency Management Agency (FEMA) Guidelines and Standards for Flood Risk Analysis and Mapping webpage (<http://www.fema.gov/guidelines-and-standards-flood-risk-analysis-and-mapping>), which explains the policy, related guidance, technical references, and other information about the guidelines and standards process.

Nothing in this guidance document is mandatory other than standards codified separately in the aforementioned Policy. Alternate approaches that comply with FEMA standards that effectively and efficiently support program objectives are also acceptable.

## Document History

Affected Section or Subsection	Date	Description
First Publication	May 2014	Initial version of new transformed guidance. The content was derived from the <i>Guidelines and Specifications for Flood Hazard Mapping Partners</i> , Procedure Memoranda, and/or Operating Guidance documents. It has been reorganized and is being published separately from the standards.

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## **1.0 Background**

With the passage of the Coastal Barrier Resources Act (CBRA) in 1982, Congress established the Coastal Barrier Resources System (CBRS) and designated areas known as “System units” along the Atlantic and Gulf of Mexico coasts, where Federal expenditures and financial assistance, including flood insurance, are prohibited. In 1990, Congress passed the Coastal Barrier Improvement Act, which increased the extent of the CBRS to include areas along the Great Lakes, Puerto Rico, and the U.S. Virgin Islands coasts and created a new type of unit called “Otherwise Protected Areas” (OPAs). System units and OPA units are collectively referred to as the CBRS, or CBRS areas.

### **1.1 Relevance to the National Flood Insurance Program**

The CBRA and its amendments prohibit the sale of federally backed flood insurance by FEMA’s National Flood Insurance Program for structures built or substantially improved or damaged on or after the flood insurance prohibition date for the area (i.e. the date that the area was added to the CBRS or the date that flood insurance prohibitions went into effect). Because of the flood insurance prohibition, the CBRS boundaries are shown on the Flood Insurance Rate Maps (FIRMs), along with the insurance prohibition dates and other pertinent information. The FEMA FIRMs are often the first place that CBRS boundaries are seen; therefore it is important that they closely match the boundaries on the official CBRS maps and are appropriately “fit” to the FIRM base map. It is also important that the FIRMs are updated appropriately when the CBRS boundaries change as a result of legislative revisions by Congress or administrative revisions by the U.S. Fish and Wildlife Service (FWS) (as authorized by 16 U.S.C. 3503(c)-(e)).

### **1.2 Official Congressionally-Enacted CBRS Maps**

Most of the official maps that currently depict the CBRS, which are produced and maintained by FWS, are outdated technologically and difficult to use. Since 2006, FEMA and FWS have collaborated through Interagency Agreements (IAAs) to improve the accuracy of the CBRS boundaries depicted on the FIRMs. In 2011, FEMA and FWS expanded this interagency partnership to facilitate a “digital conversion” of the outdated and paper-based official CBRS maps. This effort will help improve the accuracy and usability of the CBRS maps and ensure that the CBRS boundaries depicted on the FIRMs are the same as the boundaries depicted on the official CBRS maps maintained by the FWS, which in turn will help enhance awareness of and compliance with CBRA. Through the digital conversion effort, the existing CBRS boundaries are transferred and fitted to updated base maps to ensure the boundaries correspond with the natural or development features they are clearly intended to follow on the official maps. The boundaries are modified to: (1) reflect any natural changes (e.g., erosion and accretion) that have occurred since the maps were last updated, (2) incorporate any voluntary additions to the CBRS specifically requested by landowners, and (3) add excess Federal property to the CBRS following consultation with the General Services Administration. These three types of administrative modifications to the CBRS boundaries are authorized under CBRA (16 U.S.C. § 3503(c)-(e)). These modifications to the CBRS boundaries are made by FWS before they are provided to FEMA for the FIRMs. The digital conversion project is planned for completion by 2016. Figure 1 shows a sample of an existing hand-drawn Congressionally-

enacted CBRS map. The area shown outlined in red is shown below in Figure 2 on a FEMA FIRM. It is important to note that the FEMA FIRM is not the official CBRS map.

It is important to note that the updated CBRS boundary data for use on FEMA FIRMs is produced by the FWS. However, while the Mapping Partners are not responsible for the production of the CBRS data or the creation of the S\_CBRS feature class, they still have important responsibilities with respect to the incorporation of CBRS areas and their associated elements on the FIRM and in the Flood Insurance Study (FIS) report.

### 1.3 FEMA FIRM

As noted in Section 1.2, the official CBRS map that is enacted by Congress is not the same as the FEMA FIRM. The boundaries on the Congressionally-enacted map, however, form the basis for the CBRS boundaries shown on the FEMA FIRM. Figure 2 shows the end result of transferring the CBRS boundary from the official CBRS map to the FEMA FIRM.

Note: Figure 2 represents a FIRM panel using 2003 graphic specifications. Newly revised FIRM panels will use the newer graphic specifications detailed in the *FIRM Panel Technical Reference*.

## 2.0 FIRM-Based CBRS Mapping Process

In order to achieve consistency and accuracy in CBRS mapping on FEMA FIRM panels, the following process is recommended. Additional details follow this abbreviated process summary:

- Step 1:** CBRS Unit Identification by Mapping Partner
- Step 2:** Establish Point of Contact (POC) with FWS
- Step 3:** Transmit FIRM base map to FWS POC
- Step 4:** Receive S\_CBRS Feature Class from FWS
- Step 5:** Incorporate S\_CBRS Feature Class into FIRM Database

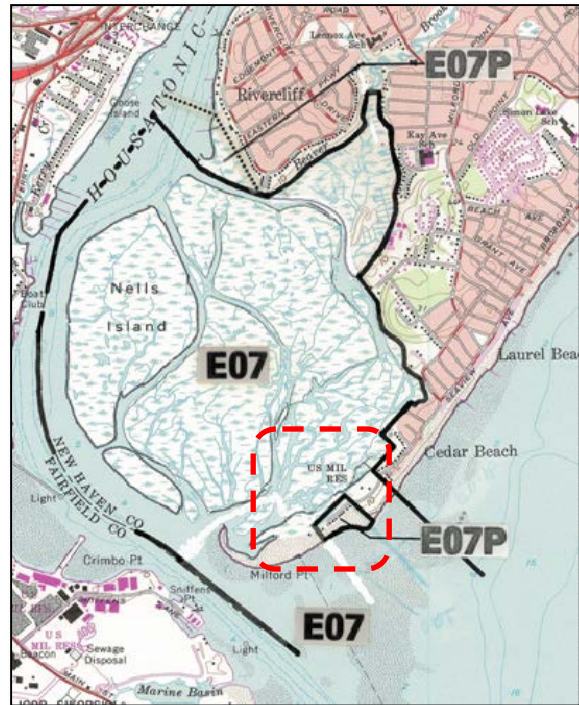


Figure 1: Section of Congressionally-enacted CBRS Map

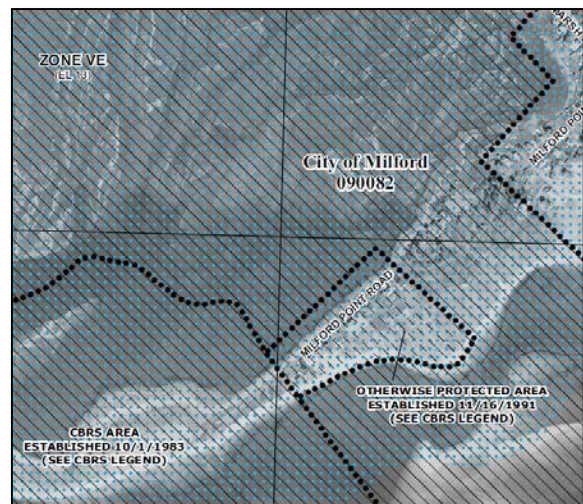


Figure 2: FIRM Panel with CBRS Areas

**Step 6:** Depict CBRS units on FIRM panels per the *FIRM Panel Technical Reference*

**Step 7:** Add CBRS Information Table and legend elements to FIS report

**Step 8:** Transmit FIRM Database and panels with CBRS boundaries to FWS POC before preliminary issuance

**Step 9:** Address FWS review comments and update FIRM database and panels

## 2.1 CBRS Unit Identification

As early as is practical, typically during Discovery, Mapping Partners should determine if the study area contains CBRS areas. To determine whether or not a study area contains CBRS areas, Mapping Partners should view the study area in the CBRS Mapper hosted on the FWS website (shown in Figure 3) at <http://www.fws.gov/CBRA/Maps/Mapper.html>.



**Figure 3: CBRS Mapper - the gold areas depict the approximate extent of the CBRS**

If the effective FIRM panels include CBRS areas or the FIRM database contains data within the S\_CBRS layer, it is likely that the study area currently contains CBRS areas. However, CBRS areas can be revised, expanded, deleted, or otherwise modified at any time, thus Mapping Partners with study areas along the coast should verify the presence or absence of CBRS areas. As of March 2014, CBRS areas exist only in FEMA Regions 1 through 6, along the Atlantic Ocean, Gulf of Mexico, Great Lakes, U.S. Virgin Islands, and Puerto Rico coasts, as well as several large estuaries such as the Chesapeake and Delaware Bays. There are no CBRS areas along the Pacific Coast. The FEMA Regions and States within the CBRS are itemized in Table 1 below. If there is any uncertainty over whether a study area contains CBRS areas, Mapping Partners should contact the FWS via email at [CBRA@fws.gov](mailto:CBRA@fws.gov).

**Table 1: Location of CBRS Units**

<b>FEMA Region</b>	<b>State / US Territory</b>
<b>1</b>	CT, MA, ME, RI
<b>2</b>	NJ, NY, PR, VI
<b>3</b>	DE, MD, VA
<b>4</b>	AL, FL, GA, MS, NC, SC
<b>5</b>	MI, MN, OH, WI
<b>6</b>	LA, TX

## **2.2 Establish Point of Contact with the FWS**

Note: Unless otherwise indicated, “FWS” refers to FWS Headquarters or their designee.

According to FEMA Standard 170, CBRS areas shown on all new and revised FIRMs must be provided by the FWS. In many cases the FWS will already be aware of the FIRM revisions affecting CBRS areas. However, the Mapping Partner is responsible for communicating the FIRM revision schedule to the FWS in order to ensure that the FWS workflow is synchronized with the FEMA workflow. Just as it takes a long time to revise a FIRM, it also takes FWS several months to digitally convert the official CBRS maps, conduct stakeholder review of the revised boundaries, and prepare and deliver the revised CBRS data to the Mapping Partner. Therefore, Mapping Partners should establish a POC with the FWS soon after the study is scoped. During this initial coordination with the FWS POC, the Mapping Partner should discuss the FEMA preliminary schedule and the transmittal of the FEMA base map to the FWS. Additional helpful information related to the CBRS is available on the FWS website at <http://www.fws.gov/CBRA> as shown in Figure 4.



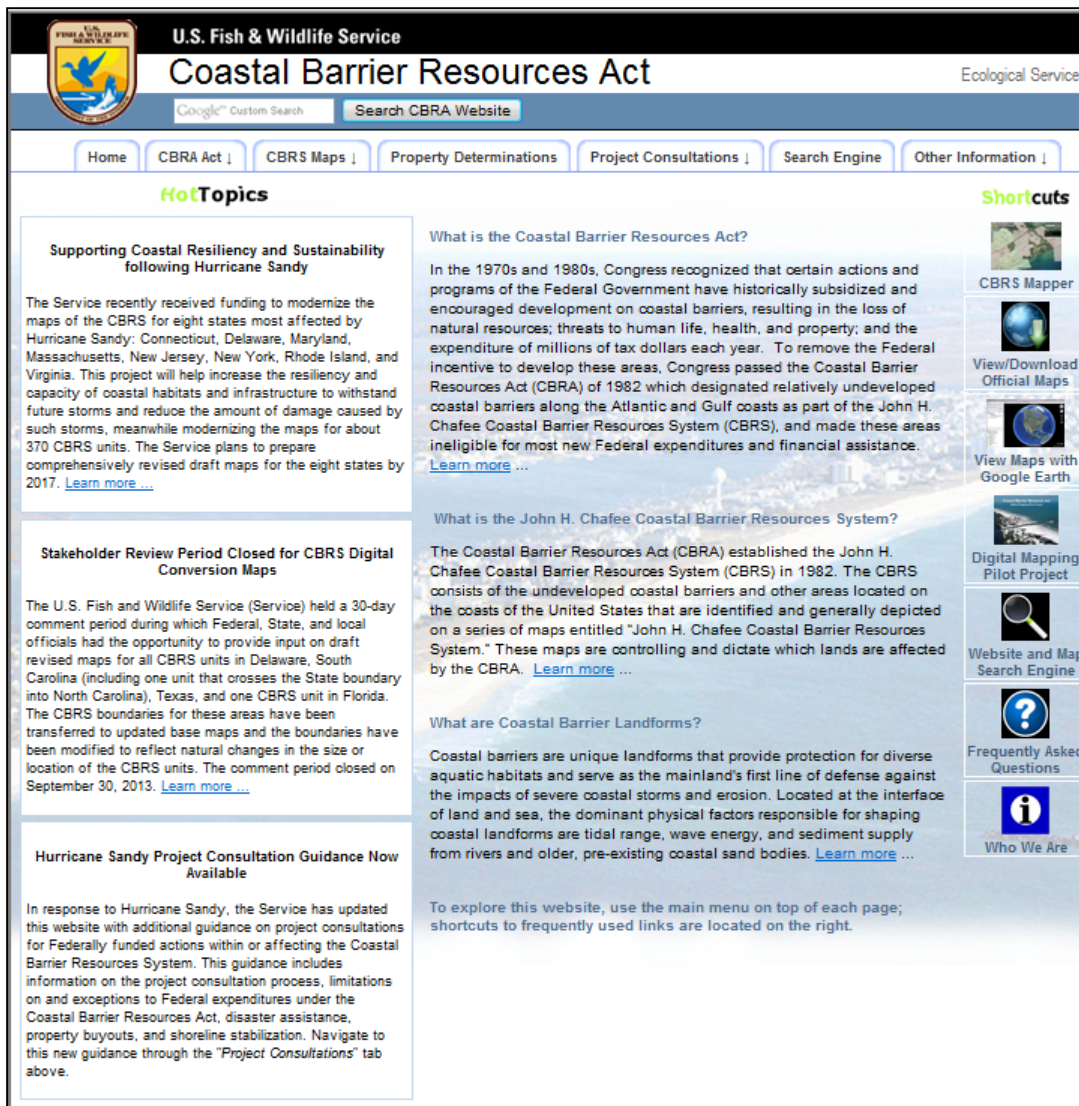


Figure 4: U.S. Fish & Wildlife Service CBRS Website

To determine the FWS POC, Mapping Partners should contact the FWS via email at [CBRA@fws.gov](mailto:CBRA@fws.gov).

### 2.3 Base Map Transmittal to FWS POC

The CBRS boundaries are customized or “fit” to the FIRM base map. Generally this customization is necessary because all base maps have slight differences with respect to spatial accuracy, but also because the FWS is currently in the process of updating its set of official paper-based maps and revising CBRS areas to align with the dynamic geomorphic features that they are intended to include. This process is known as the “5-year review.” Although the FWS has a published set of approximate Geographic Information System CBRS data available on their website, they cannot be used on the FIRMs because they have not been customized to the FIRM base map. In many cases these data have not been through the 5-year

review process, and do not have the same attribution as the FIRM database feature class, S\_CBRS.

When the base map is selected, the Mapping Partner should transmit the FIRM base map to the FWS POC. This can be accomplished by FTP, external hard drive, or by uploading to the Mapping Information Platform K: drive. However, in many cases the FIRM base map consists of large imagery files that are already publicly available for download. The Mapping Partner and the FWS POC should work together to determine the most practical method of base map transmittal.

If the FIRM base map changes during the production process, the Mapping Partner should inform the FWS POC immediately.

In limited cases, due to the time constraints of the IAAs, the FWS will produce updated CBRS data prior to the selection of a base map for the FIRMs. In these cases, the Mapping Partner should contact the FWS POC as soon as the FIRM base map has been selected to ensure that the updated CBRS boundaries properly fit the base map.

## **2.4 Receipt of the FWS Endorsed S\_CBRS Feature Class**

The S\_CBRS feature class is the FIRM database layer that stores the boundaries of CBRS areas, CBRS unit types, and flood insurance prohibition dates, and is the primary deliverable that the Mapping Partner will receive from the FWS. During initial coordination, the Mapping Partner and FWS POC will establish a schedule for delivery of the S\_CBRS feature class. Ideally, this delivery should occur at least 30 days prior to Quality Review 3, to give Mapping Partners enough time to incorporate the data into the FIRM database and to create the necessary graphics on the FIRM panels. Thus, the Mapping Partner should always keep the FWS POC informed of changes to the schedule that might affect the FWS workflow.

The FWS POC will typically transmit the S\_CBRS feature class via FTP. Upon receipt of the data, the Mapping Partner should inform the FWS POC that the transmittal was successful.

In some limited cases, revisions will be necessary to the S\_CBRS feature class due to comments from stakeholders after it has been incorporated into the preliminary FIRMs. For more information on this possibility, see Section 3.0 of this document.

## **2.5 Incorporation of the S\_CBRS Feature Class**

The S\_CBRS feature class delivered to the Mapping Partner will follow the specifications established in the *FIRM Database Technical Reference*, and will contain values in the CBRS\_TYP and CBRS\_DATE attributes. The Mapping Partner is responsible for inputting values for the remaining attributes. Table 2 lists the attributes of the S\_CBRS feature class.

**Table 2: S\_CBRS Feature Class Attributes**

Attribute	Description	Responsibility
DFIRM_ID	Study Identifier	Mapping Partner
Version_ID	Version Identifier	Mapping Partner
CBRS_ID	Primary Key	Mapping Partner
CBRS_TYP	CBRS or OPA	FWS
CBRS_DATE	Flood Insurance Prohibition Date	FWS
WTR_NM <sup>1</sup>	Primary Flooding Source	Mapping Partner
Source_CIT	Source Citation	Mapping Partner

<sup>1</sup> As it relates to the WTR\_NM attribute, in some cases a CBRS polygon will intersect multiple Primary Flooding Sources. Mapping Partners should choose the largest coastal flooding source (e.g., Atlantic Ocean, Gulf of Mexico, Chesapeake Bay). The Mapping Partner should not subdivide CBRS polygons to account for multiple flooding sources. For help in determining the appropriate value for the WTR\_NM attribute coordinate with the FWS POC.

In some cases, the S\_CBRS feature class will cover an area larger than the FIRM study area. The Mapping Partner may clip the S\_CBRS to the extent of the study area. This is the only acceptable spatial modification that a Mapping Partner may make to the S\_CBRS feature class.

For more information on the elements of the S\_CBRS feature class see the [FIRM Database Technical Reference](#).

## 2.6 Depiction of CBRS Units on FIRM Panels

According to FEMA Standard ID 356, all FIRM panel notes, labels, and symbolization associated with CBRS areas shall conform to the specifications outlined in the [FIRM Panel Technical Reference](#).

## 2.7 Update FIS Report with CBRS Elements

There are several elements required in the FIS Report regarding the CBRS areas that are described in the [FIS Report Technical Reference](#).

## 2.8 Transmit FIRM Database and FIRM Panels to the FWS POC before Preliminary Issuance

Mapping Partners must provide the FWS a copy of the FIRM database and all CBRS FIRM panels for review. Although the FWS review is not a standard part of the existing FEMA review framework conducted before a FIRM is provided for preliminary community review, executing this FWS review of the FIRM and FIRM database before it is distributed in preliminary form is considered optimal.

The FWS will usually be able to review the FIRM database and FIRM panels within a week, but it is important for the Mapping Partner to coordinate this review in advance, so that it does not negatively impact the FIRM workflow.

## **2.9 Address FWS Review Comments**

The FWS will verify that the FWS endorsed S\_CBRS feature class was incorporated into the FIRM database correctly and that all panels comply with FEMA Standard ID 356. The FWS will send the Mapping Partner a list of items that are not in compliance with the standard. The Mapping Partner must revise the FIRM database and/or FIRM panels accordingly.

## **3.0 Ongoing Revisions to CBRS Areas**

It is critical that Mapping Partners understand that the CBRS areas are in a continual state of revision by the FWS as a part of their responsibility to maintain the official Congressionally-enacted CBRS maps. In this regard, it is possible that a CBRS area being added to a FIRM may also be in the process of being revised by the FWS to account for geomorphic changes, voluntary additions, and additions of excess Federal property and other reasons. When CBRS areas are updated by the FWS, the FWS must publish a notice in the Federal Register to announce a 30-day “stakeholder review” period for Federal, State, and local officials to review the updated CBRS maps and comment on the proposed modifications to the CBRS boundaries. Ideally, the stakeholder review would be conducted prior to the release of the preliminary FIRMs, but in some cases may be conducted concurrently with or after the appeals and protest period for the FIRMs. Following the stakeholder review period on the updated CBRS maps, if any changes to the CBRS boundaries are necessary, the FWS will provide the Mapping Partner with a revised S\_CBRS feature class as early as is practicable.

Community officials and property owners may notice changes to the CBRS boundaries on the preliminary FIRMs if the FWS stakeholder review period is not conducted prior to the release of the preliminary FIRMs. Any comments received from the public regarding the CBRS areas should be provided to the FWS and questions should be directed to [CBRA@fws.gov](mailto:CBRA@fws.gov).

## **4.0 More Information**

For more information on the CBRS visit the following websites:

- <http://www.fws.gov/CBRA>
- <http://www.fema.gov/national-flood-insurance-program-2/coastal-barrier-resources-system>