



NOAA Open Space Tool

Calculating and Documenting
Credits Under Activity 420

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How to Map Open Space Preservation for the FEMA Community Rating System

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CRS Activity 420:

Open Space Preservation

- Communities earn credits for permanently preserved open space
- First five elements provide credit for parcels that qualify for:

OSP Credit

- Open Space Preservation (OSP) – 1450 points

OSP Extra
Credit

- Deed Restrictions (DR)
- Natural functions open space (NFOS)
- Special flood-related hazard open space (SHOS)
- Coastal erosion open space (CEOS)

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How To Map Open Space Preservation (OSP) for Community Rating System Credits

1. Step-by-step instructional “How To” guide (for planners)
2. GIS workflow (for GIS analysts)
 - Supplementary documents
 - Before you get started
 - **GIS dataset checklist**
 - Job aid for calculating credits



Digital Coast Partnership CRS Strategy

Community Rating System (CRS) Strategy

Purpose:

The purpose of this Community Rating System (CRS) strategy is to coordinate, promote and encourage community participation in the National Flood Insurance Program's (NFIP) Community Rating System (CRS) through decision support tool development and stakeholder engagement.

Objective:

The Nature Conservancy's (TNC) objective is to provide stakeholder-driven decision support to support comprehensive floodplain management through the Community Rating System while encouraging engagement between planners and communities about the benefits of nature-based solutions for flood risk reduction and hazard mitigation.

Background:

CRS is a voluntary program, established in 1990, administered by the Federal Emergency Management Agency (FEMA). It provides incentives for communities that exceed the minimum NFIP requirements for flood insurance. Communities can earn points for activities that reduce flood risk. Activities include, but are not limited to, activities about flood risk, floodplain mapping, and conserving open space. The program encourages community floodplain management activities that exceed the NFIP's minimum standards through a point system. As communities get more points, they can receive larger reductions on flood insurance.

While the program incentives are clear, many communities still face a variety of barriers to participation. Many coastal community planners do not have the technical capacity that supports the credit application process. The volume of information, data, and maps required to calculate potential program points and submit an application to FEMA can be overwhelming for communities with no capacity to dedicate to CRS. Organizations including NOAA's Office of Coastal Management, the Nature Conservancy (TNC), Climate Central, The Associated States of Floodplain Management, and the Coastal States Organization (CSO) are therefore investing in the development of tools and

ASFPM and CSO
Green Guide

TNC CRS Explorer

NOAA How To Guide
& GIS Workflow

Climate Central's Surging
Seas CRS Guide

Workflow Steps

1. Calculate the community's impact adjusted SFHA
2. Identify lands that may qualify as open space
3. Exclude areas that do not qualify
4. Calculate the number of possible OSP credits
$$rOSP = aOSP / aSFHA \text{ (x 1,450 points)}$$
5. Determine if parcels qualify for “extra credit”



Step 1: Map the impact adjusted special flood hazard area

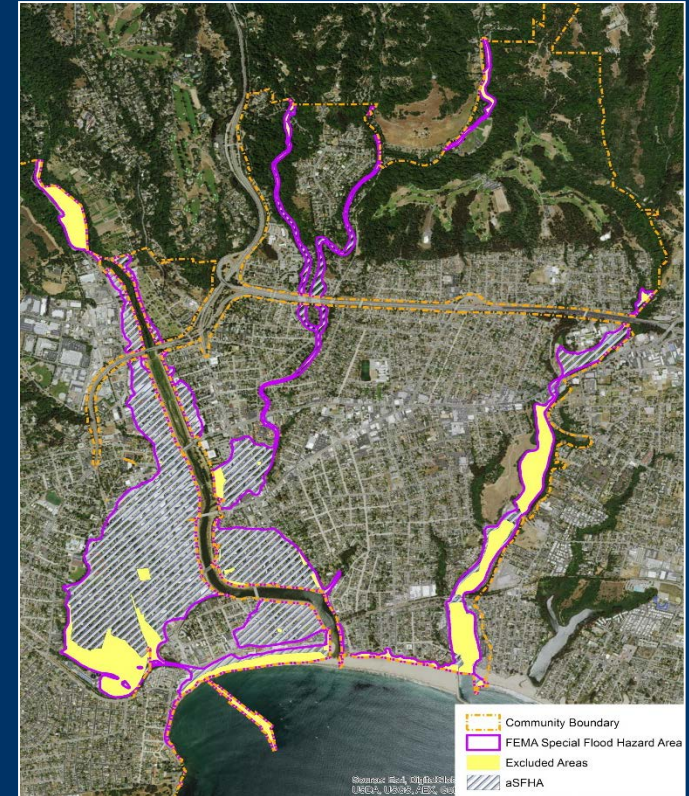
Required GIS Data

- Special Floodplain Hazard Area (SFHA)
- Community boundary
- Federal lands
- Open water

GIS Analysis

- Calculate the acreage of the SFHA
- Adjust the total area of the SFHA
- aSFHA is the basis for open space calculations (denominator)

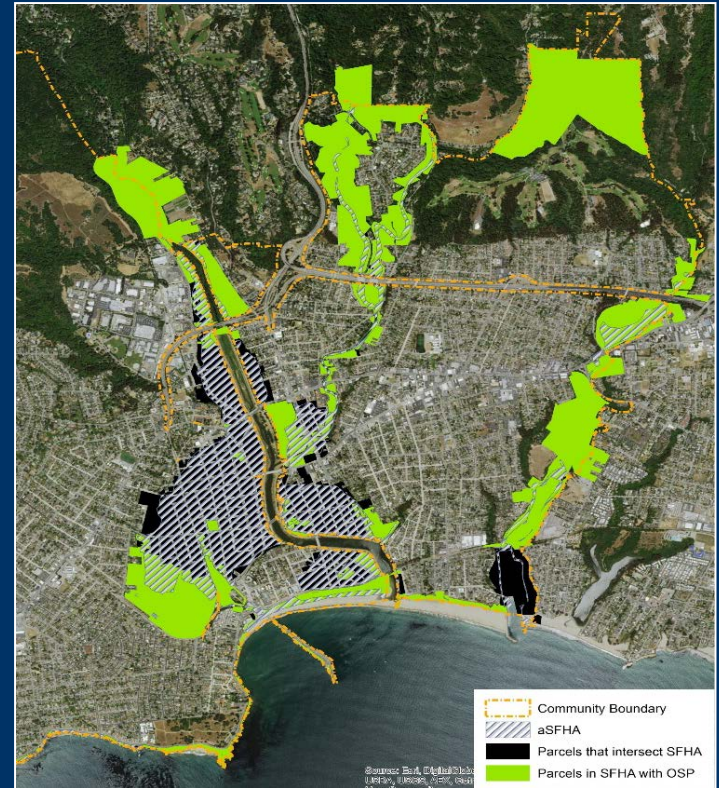
$$rOSP = aOSP/aSFHA \text{ (x 1,450 points)}$$



Step 2: Identify lands that may qualify for OSP credits

Required GIS Data

- aSFHA
- Parcel database
- Protected areas
- Coastal or riverine setbacks
- Land use and zoning
- Land cover



GIS Analysis

- Identify parcels that intersect the aSFHA and regulatory floodplain
- Query aSFHA parcel intersection using land use attribute
- Overlay land types that may qualify as “preserved” open space

Step 3: Exclude areas that do not qualify for OSP credits

Required GIS Data

- Regional or high-resolution land cover
- High-resolution imagery

GIS Analysis

- Identify the portion of parcels covered by impervious surfaces



Option 1: Reclass high resolution land cover dataset

Option 2: Calculate percent impervious using regional land cover

Option 3: Perform image classification using ortho-imagery

Step 4: Calculate the number of possible OSP credits

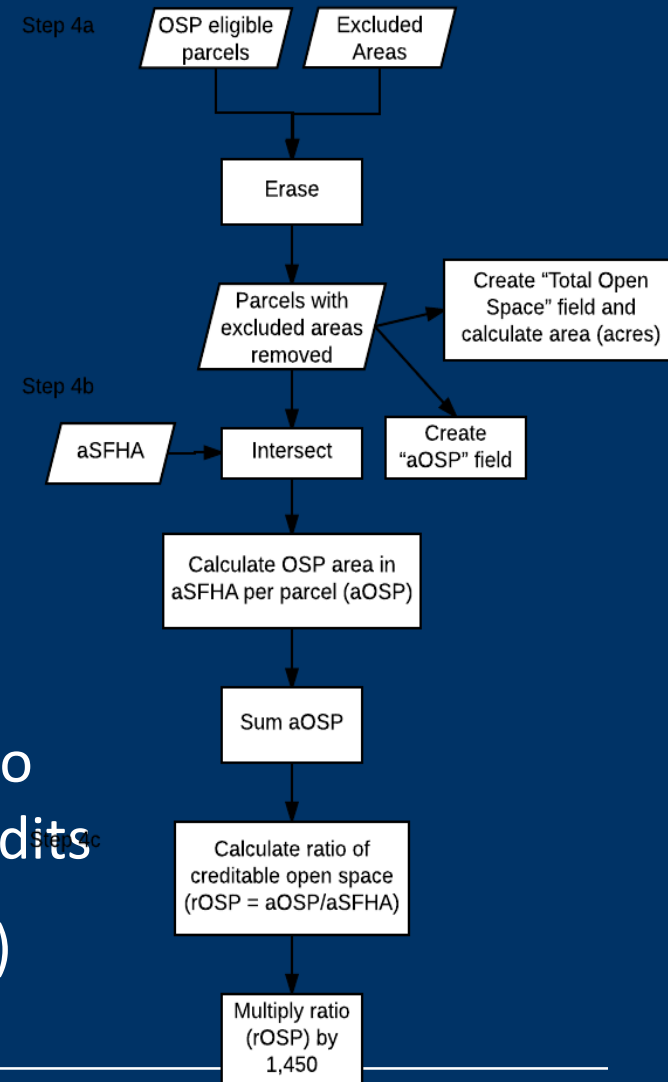
Required GIS Data:

- aSFHA (Step 1)
- OSP eligible parcels (Step 2)
- Excluded Areas (Step 3)

GIS Analysis

- Subtract (“erase”) disqualifying areas
- Sum total area that qualifies, or aOSP
- Calculate the impact adjustment ratio to determine the total number of OSP credits

$$rOSP = aOSP/aSFHA \text{ (x 1,450 points)}$$



Step 5: Determine if OSP parcels qualify for “extra credit”

Required Data

- OSP eligible parcels
- Protected areas



GIS Analysis

- Select parcels that qualify for Deed Restrictions (DR) and Natural Function Open Space (NFOS)
 - NFOS 1 – Preserved areas in natural state
 - NFOS 3 – Critical fish/wildlife habitat
- Calculate qualifying area and calculate ratio
- Add extra points

GIS Dataset Checklist and Sources

- **Community layers**
 - Special floodplain hazard area (SFHA) from FEMA's NFHL
 - Parcels and land use, zoning
- **Excluded areas**
 - Federal Lands
 - Open water
 - Impervious surfaces
- **Open spaces areas**
 - Protected areas (e.g. conservation easements, land trusts)
 - Land cover
 - Critical habitat and water/biological resources


Job Aid: Worksheet for Calculating Open Space Credits under Activity 420

Instructions: In column B, add a unique parcel name for each property being documented. (Note: this name should be consistent with the impact adjustment map.) In column B, insert the total acreage of the parcel. In column C, insert the area of each parcel that falls within the SFHA and qualifies as protected open space (after excluding ineligible areas), using the results from a GIS or other parcel analysis. In column E, list the FEMA flood zone, or zones, in which the parcel falls. In column F, add the name of the parcel's owner. In column G, add the parcel's land use designation from property tax assessor records.


SUMMARY TABLE - Parcel documentation and Summary of Potential Credits (Parcels 1-10)


Location (Parcel Name or Number)	Total Acreage for Parcel	Area of parcel within SFHA (or regulatory floodplain) that qualifies as protected open space (aOSP)	Flood zone of parcel (particularly for any parcel outside SFHA but within regulatory floodplain)	Name of Parcel Owner	Parcel's Land Use Designation	Element 422 a. Preserved Open Space Credits (cOSP)	Element 422 b. Credits for Deed Restrictions (cDR)	Element 422 c. Credits for Natural Functions Open Space (cNFOS)	Element 422 d. Credits for Special Flood Hazards Open Space (cSHOS)	Element 422 e. Credits for Coastal Erosion Open Space (cCEOS)	Element 423 Subtotal - Credits for Preserved Open Space:
e.g. City Parks	236	143.2	AE	City	Public parks	411.66	2.41	85.17	6.54	16.69	522.47
City Parks	236	143.2	AE	City	Public parks	411.66	2.41	85.17	6.54	16.69	522.47
Country Club	73	55.3		South Scottsdale Country Club	Golf course	158.97	5.48	0.00	0.00	0.00	164.45
Indian Bend Wash Floodway	29.1	29.1		Private	Residential / Commercial	83.65	0.00	0.00	4.76	6.45	94.86
McCormick Creek Floodway	15.3	15.3		Private	Residential	43.98	0.00	0.00	0.00	0.00	43.98
						0.00	0.00	0.00	0.00	0.00	0.00
						0.00	0.00	0.00	0.00	0.00	0.00
						0.00	0.00	0.00	0.00	0.00	0.00
						0.00	0.00	0.00	0.00	0.00	0.00
						0.00	0.00	0.00	0.00	0.00	0.00
						0.00	0.00	0.00	0.00	0.00	0.00
Totals:	353.40	242.90				698.27	7.89	85.17	11.30	23.15	825.77

Where You'll find it



Office for Coastal Management
DIGITALCOAST

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Questions & Feedback?



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