



### Background

- This indicator characterizes the geographic extent of the 500-year flood.<sup>1</sup>
- The 500-year floodplain is an area with a 0.2% annual chance of being flooded by water from a bayou, stream, or creek.<sup>2</sup>
- Locations within the 500-year floodplain may be more vulnerable to climate change due to anticipated increases in the magnitude, extent, and depth of flooding in such areas.<sup>3</sup>
- Higher values suggest higher vulnerability relative to other watersheds.

**THIS INDICATOR MEASURES THE AREA IN THE 500-YEAR FLOODPLAIN.**

### Data Sources

Data Source	Description	Spatial Resolution	Temporal Resolution
FEMA - Census Block Group Flood Zones and Population, Housing Units and Policies in 0.2% Floodplain Areas	Area of block group within 500-year floodplain	Block group	N/A
U.S. Census Bureau – <a href="#">Block Group</a>	Shapefiles of Census 2000 block groups	Block group	Every 10 years; minor revisions yearly

### This Indicator Was Used to Assess the Vulnerability of One of USACE’s Eight Business Lines

Business Line	Importance Weight (Varies from 1 to 2 for USACE)
Navigation	1

### Calculation

- Identify which block groups are within which 4-digit hydrologic unit code (HUC-4) watershed (i.e., spatially link block groups to the coincident HUC-4 watersheds within a GIS).
- Sum the block group area values within each HUC-4 watershed.

<sup>1</sup> Balica, S.F., Douben, N., and N.G. Wright. 2009. Flood Vulnerability Indices at Varying Spatial Scales. *Water Science & Technology*. 60(10): 2571-2580.

<sup>2</sup> Hurd, B., Leary, N., Jones, R., and J. Smith. 1999. Relative Regional Vulnerability of Water Resources to Climate Change. *Journal of the American Water Resources Association*. 35(6): 1399-1409.

<sup>3</sup> Karamouz, M., Noori, N., Moridi, A., and A. Ahmadi. 2011. Evaluation of Floodplain Variability Considering Impacts of Climate Change. *Hydrological Processes*. 25: 90-103.



**LOW**

**LOW INDICATOR VALUE**  
 Little to no land is located in 500-year floodplain, i.e., land area is at relatively lower risk of flooding.

**HIGH INDICATOR VALUE**  
 Large portions of land area are located in 500-year floodplain, i.e., land area is at relatively higher risk of flooding.



**HIGH**

Desert National Wildlife Refuge, NV - Courtesy of USFWS

Grand Forks County, ND - Courtesy of USDA