

# TECHNICAL NOTES

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U.S. Department of Agriculture

Natural Resources Conservation Service

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## USLE R-factor Digital Geodata Layer for HEL Determinations

### **Purpose:**

Establish official use of a digital R-factor (Rainfall and Runoff factor in the Universal Soil Loss Equation) geodata layer when making Highly Erodible Land (HEL) determinations. Establish spatial information for soil erosion using USLE factors and a Geographic Information System (GIS).

### **Background:**

A California statewide Geodata layer for R-factor for highly erodible land determinations was developed to provide a more automated and precise method to obtain R-factor values for HEL determinations. The layer was derived from the statewide 2 Year-6 Hour Storm Event geodata raster (NOAA Atlas 2 - Precipitation-Frequency Atlas for the Western United States All-season series) and specific R-factor Value equations developed for each Statewide R-factor Zone depicted from California Major Land Resource Areas (MLRA) layer.

R-factor values are computed as a continuous number across the landscape for any geographic location within the state of California.

The data layer is found at the following location at each Field Office Server:

*F:\Geodata\Climate\USLE\_Data\ R\_Factor\_for\_HEL.tif*

There is also an associated “layer file”, *R\_Factor\_for\_HEL.tif.lyr*, which can be added to automatically depict a symbology set with 7 pre-set R-factor value class ranges.

### **ArcGIS procedure to identify R-factor values:**

Within ArcMap > Add the *R\_Factor\_for\_HEL.tif.lyr* to any ArcMap document.

Navigate to the specific land unit for which an HEL determination is needed

Click on the Identify Tool and then click within the land unit

In the Identify Window, choose the *R\_Factor\_for\_HEL.tif* layer in the “Identify from:” dropdown list

Click again within the land unit to display R-factor values in the “Identify” window

Identify Results shows a “Pixel Value”; this is the R-factor value

**Geodata Specifications for *R Factor for HEL.tif* :**

Format: ArcGIS raster (TIF image) Rows 2023, Columns 2242

File size: 17.30 MB

Pixel spatial resolution = 463.3 x 463.3 meters.

Pixel Type: Floating Point

Pixel Values = R value to 6th decimal place. Min. 4.773, Max. 546.806

Projected Coordinate System: UTM Zone 10, Datum NAD1983

**Technical Contacts:**

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**References:**

Guides for Erosion and Sediment Control in California, Appendix A, Issued September 1997;  
Revised February, 1985; with additions January, 1991.

eFOTG > Section 1 > Erosion Prediction > Erosion Prediction Models > Water Erosion >  
Erosion Guides for California