

## **Guidance for Geocoding Mitigation Data**

### ***Terms:***

**Address Geocoding (or Address Matching):** A form of geocoding where a site's address is compared with a digital street map or cadastral map to determine the coordinates of that address.

**Cadastral:** A map that shows or records property boundaries, subdivision lines, buildings, and related details.

**Geocoding:** Assigning a geographic coordinate, such as a latitude/longitude pair, to a data record (also called geolocating).

**GPS or Global Positioning System:** A system of satellites and receiving devices used to compute positions on the Earth. GPS is used in navigation, and its precision supports cadastral (property boundary) surveying.

**Mitigation Site:** Specific location of mitigation activity, typically a structure such as a residence.

### ***Requirements:***

- 1) **All mitigation projects approved on or after the date of this memorandum that are entered into databases must be geocoded using standard datum. For projects approved before the date of this memorandum, existing project data may be geocoded using the street address (see #4 below for more information).** The standard datum for GPS lat/long collection is NAD-83 or WGS-84. Coordinates must be in decimal degrees longitude and latitude with at least **6 decimal places** for property locations and include a minus (-) to show west longitude or south latitude. Example: Latitude 36.999221, Longitude -109.044883 is Four Corners. Plug it in to <http://www.hazardmaps.gov> to see!
- 2) **As part of this effort, we ask that States provide the FEMA Regions with any property information they may have on file.** This would include any updated addresses and all updated final property lists for mitigation projects that show the actual properties that were mitigated, with latitude and longitude wherever possible. Any data received from the States must be entered into our data collection databases to update the existing records, which would include open and approved projects as well as closed projects. These updates must be completed within 90 days after receiving the updated information.
- 3) **To ensure consistency in future data collection, GPS readings for latitudes and longitudes should be taken from one of the following places, listed in order of preference:**
  - a. The front door of the structure; or
  - b. The center of the beginning of the driveway, road, or access way that is used to access the property; or
  - c. From the westernmost or easternmost point of the property closest to the road or access way (either SW, SE, NW, or NE corner of the property). This specifically applies to tribal lands, pacific regions, and other areas where actual addresses and easily recognizable property divisions may not exist.

**4) Existing data may be geocoded by using the street address.**

- a. The FEMA mapping center staff geocoded all properties previously entered into NEMIS that had sufficient street address or zip code data. FEMA HQ will provide the Regions with the latitude and longitude coordinates for these properties. FEMA HQ recommends the Regional Mitigation staffs use the data provided to meet the data entry requirement for closed HMGP and FMA projects, unless the Regional staff has better latitude and longitude data.
- b. For previously entered properties that do not have a sufficient street address or zip code, Regional and State staff will be required to obtain more specific property location information (e.g. tax parcel data, county data, and more specific street address and zip code data).
- c. For these properties without sufficient street address or zip code data, tax parcel data should be used to geocode if it is available (this may be available from the State or local government).
- d. As a last resort, Regional Mitigation staffs may do “address geocoding” for the properties without initial street address or zip code once they obtain the updated information, using programs such as MapInfo, ArcView, CENTRUS, etc. Regions should have their own capabilities for “address geocoding”. If not, Headquarters can help. Note that this is a very inaccurate method for geocoding, as typically 20-40% of addresses are unable to match to streets.

**5) Data for projects approved on or after the date of this memorandum must be geocoded and accurate to within +/-20 meters for all records.**

- a. For HMGP projects only, Regional Mitigation staffs may use HMTAP funds and DAE support to obtain location coordinate information. Examples of acceptable HMTAP and DAE use include DAE or contractor obtainment of lat/long coordinates to demonstrate previous or proposed mitigation activities and to support project development. State and Tribal government agencies may use State Management Cost funds to hire personnel to obtain lat/long coordinates to support project development.
- b. Coordinates can be attained with GPS units as inexpensive as \$100 (typical accuracy would be to within 50 feet 95% of the time).
- c. Regions should have their own GPS units. However, Headquarters is trying to obtain a number of units for the regions. These units may have to be shared with other areas within the FEMA Regions.
- d. The accuracy to within +/-20 meters can also be achieved by geocoding to tax parcel data that is often available from the local municipality. Regional GIS staff may have such data. Note that due to data errors, some records may not match to parcels, and will have to be geocoded through other means.
- e. The latitudes and longitudes found in BureauNet can be used for geocoding properties already found in NEMIS and e-Grants.
- f. For projects that involve information deemed by the submitter as sensitive, such as those in disasters 1391-NY and 1392-VA, geocoding requirements will not apply. Please work with FEMA HQ in making a determination regarding project exemptions from this policy.

**6) System Updates and Additional Data required to ensure geocoding data are captured in NEMIS and e-Grants.**

- a. Completing the latitude and longitude fields in NEMIS and in e-Grants is now required in order to closeout a project.
- b. Method of obtaining these points should be entered in the available *Comments* fields.
  - i. For Address Geocoding, this would be the name of the geocoder and the geocode result code and/or level of detail used. The geocode result code is a code given by the geocoding program that tells you what layer and level of accuracy the address was matched to. Examples include GPS, Parcel, Street address range, Street, Zip+4, Zip Code, City, County, and Census tract.
  - ii. Other methods besides address matching would be GPS, Parcel, Orthophoto (1 meter, 10 meter, etc.), or any other you might use.
- c. Datum (typically WGS-84, per requirement #1)
- d. Projection, if relevant
- e. Error, if known

**7) FEMA Regional and State responsibilities to ensure geocoding data are captured.**

- a. **The requirement for completing this data rests with both the States and FEMA Regional offices.** State staffs must assist the Regions as much as possible in completing the data entry requirements for project closeout in NEMIS and e-Grants. This State assistance entails that State staffs will provide the Regions with any missing project information needed to meet the geocoding requirements of NEMIS and e-Grants, such as property addresses, project locations, etc.