

General Specifications of GIS data

The following five (5) types of data files will be required for each EAP.

1. Point File

The point file will be used both for locating project structures, such as dams and powerhouses, as well as for reference points for georeferencing raster format inundation maps. Points can be acquired by, survey, GPS, or by identification of electronic coordinates of features (such as road intersections) from a USGS DRG or DOQQ. Three points are required for each map panel on the inundation map sheets. Most inundation map sheets will have a single map panel, but if inset maps are used to illustrate different resolutions, these insets must have three reference points as well.

2. Rasters

A raster map is simply a digital copy of the paper inundation map used in the EAP. The digital copy can either be a scanned copy of an existing paper map, or a digitally created map from a program such as GIS or CAD. This copy will be georeferenced by FERC staff using the required point file, and used to verify the accuracy of the GIS failure inundation polygon files.

The raster (and paper) maps must have a minimum of three reference points for each map panel. If a sheet has insets or a split drawing with match lines, then each inset or split must have its own 3 reference points.

The inundation area delineated on the map must overlay the failure inundation polygon (see 3 below) EXACTLY when georeferenced using the reference points provided by the licensee. The map must overlay the USGS QUADs or the DOQQs with a positional error no greater than 40 ft.

3. Failure Inundation Polygon

The failure inundation zone should be a single shapefile feature for each flood scenario (i.e. fair weather, PMF, etc), and should be a closed polygon. This polygon can be used by emergency response personnel to delineate the affected area, which can then be cross-referenced with other GIS layers such as water and sewer lines, electrical lines, roads and bridges, jurisdictional areas, and geocoded addresses, which can be used to automatically generate a call list.

4. Cross Section File

The cross section file is used for determining the timing and depth of flooding at a given location. This information can be used by emergency responders to identify houses or subdivisions that are high priority due to early flooding or excessive flooding depths. Submit only information from the cross sections shown on the inundation maps.

5. Metadata Text File

A metadata file is literally “data about data.” Metadata is a text file that describes the details of the data set such as the source, the year the data was produced, the coordinate system used to create the data (Albers Equal Area – see Technical specs below), the datum (NAD 83 should be used – NAD 27 should not be used unless there is no other alternative), and the units of measurement (meters should be used). One metadata file should be included with each of the above four files.

Technical Specifications

All data submitted should meet the following requirements.

1. **Spatial Projection**

All data files shall be filed in Albers’ Equal Area Conic Projection, a readily available national scale spatial projection, which has the following specifications:

Parameters:

False Easting: 0.000000
False Northing: 0.000000
Central Meridian: -96.000000
Standard Parallel 1: 29.500000
Standard Parallel 2: 45.500000
Latitude of Origin: 37.500000

Units: meters

Datum: North American Datum 1983

2. Accuracy

All georeferenced electronic data files must be positionally accurate to ±40 feet in order to comply with National Map Accuracy Standards for maps at a 1:24,000 scale.

We recognize available base data is not as accurate in Alaska. These projects should attempt to meet our standards to the best extent possible. If the accuracy standards above cannot be met, include a written description of the base data used to georeference the inundation area.

The following data requirements are unique to each data type:

Point File

Three reference points will be required for map panel. The points should be triangular in orientation to facilitate georeferencing of the raster files. Typically, each inundation map will have one map panel per sheet. If a sheet has more than one map panel, such as an inset at a different scale or a split drawing with match lines, each of the map panels should have three reference points. Include points at the main section of the dam and other major project features, such as the powerhouse or saddle dike. The location of the coordinate for the dams should be the spillway or the approximate center of the impounding structure, if possible. The location of the powerhouse should be the approximate center of the building.

The following data fields should be included in any point file submittal:

Field Name	Field Type	Units	Description
ID	ObjectID	None	Field reserved by GIS data – the ID of the point
Shape	Geometry	Point	Field reserved by GIS data – where the point geometry is stored
Project	Integer	None	FERC Project Number
Dam_Name	Text	None	Name of Dam
Sheet	Integer	None	Sheet number that reference points refer to
DESC	Text	None	A description of the point, i.e. center of dam crest, road intersection

Raster

Each sheet of the inundation maps must be contained in a separate electronic raster file, which meets the following format specification:

- IMAGERY - black & white raster file
- FILE TYPE – Tagged Image File Format, (TIFF) CCITT Group 4

RESOLUTION –300 dpi desired, (200 dpi min)
 FILE SIZE – less than 1 MB desired

This format minimizes file storage space on computer servers, and is universally read by most computer software. Each sheet must contain a minimum of three known reference points. The positional coordinates of each reference point must be shown.

Failure Inundation Polygon

The dam failure inundation polygon should match the inundation area on the EAP paper maps. Each inundation area must be a closed polygon. A collection of line segments, such as from a converted CAD file, will not be accepted.

The following data fields should be included in the failure inundation area attribute table:

Field Name	Field Type	Units	Description
ID	ObjectID	None	Field reserved by GIS data – the ID of the polygon
Shape	Geometry	Polygon	Field reserved by GIS data – where the polygon geometry is stored
Project	Integer	None	FERC Project Number
Dam_Name	Text	None	Name of dam
Scenario	Text	None	Fair weather or IDF

Cross Section

The cross section file should include a single polyline feature for each of the cross section locations shown on the inundation maps. The following data fields should be included in the cross section attribute table:

Field Name	Field Type	Units	Description
ID	ObjectID	None	Field reserved by GIS data – the ID of the cross section line
Shape	Geometry	Lines	Field reserved by GIS data – where the line geometry is stored
Project	Integer	None	FERC Project Number
Dam_Name	Text	None	Name of dam
DIST	Float	Miles	The distance of the cross section downstream of the dam
IDF_TOA	Float	Hours	Time of arrival of leading edge of IDF failure hydrograph
IDF_TTP	Float	Hours	Time to peak of IDF failure hydrograph
IDF_WSEL	Float	Feet	Peak water surface elevation of IDF failure hydrograph
IDF_RISE	Float	Feet	Incremental rise due to IDF dam failure
IDF_FLOW	Float	CFS	Peak flow of IDF failure hydrograph
FW_TOA	Float	Hours	Time of arrival of leading edge of fair weather failure hydrograph
FW_TTP	Float	Hours	Time to peak of fair weather failure hydrograph

FW_WSEL	Float	Feet	Peak water surface elevation of fair weather failure hydrograph
FW_RISE	Float	Feet	Incremental rise due to fair weather dam failure
FW_FLOW	Float	CFS	Peak flow of fair weather failure hydrograph

Metadata

One metadata file should be included with each of the other four file types. The metadata should be a simple text file and should contain background information about each of the data sources. Metadata should be submitted in Federal Geographic Data Committee format (<http://www.fgdc.gov/metadata>). Items that are required in the metadata are: the model used to calculate the inundation, the date of the dam break model run, the source and date of the elevation data for the model, and the PMF, IDF, and fair weather flows used in the model.