



Prepared by/for:
**Modeling, Mapping,
and Consequences**

Appendix 4.3.1

File Schema Guide

FY2023 Standard Operating Procedure for Dams and Levees

March 2022

| Date | Principal Author | Comments |
|------------|------------------|----------------------|
| 4/1/2013 | MMC | Technical Edit |
| 02/11/2017 | MMC | Transfer to template |
| 10/23/2018 | MMC | Annual Update |
| 10/28/2019 | MMC | Annual Update |
| 6/30/2021 | MMC | Annual Update |
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CONTENTS

| | |
|--|----------|
| Section 1—Introduction | 1 |
| Section 2—Requirements | 2 |
| Section 3—Folder Structure | 3 |
| Section 4—Folder Structure Description | 6 |
| 4.1 [Study_Dam_Name] (subfolder of <i>Root</i>) | 6 |
| 4.2 [Year–Draft or Final] (subfolder of [<i>Study_Dam_Name</i>]) | 6 |
| 4.2.1 GIS_Modeling (subfolder of [<i>Year–Draft or Final</i>]) | 6 |
| 4.2.2 Google (subfolder of [<i>Year–Draft or Final</i>]) | 7 |
| 4.2.3 RAS (subfolder of [<i>Year–Draft or Final</i>])..... | 7 |
| 4.2.4 LifeSim (subfolder of [<i>Year–Draft or Final</i>])..... | 7 |
| 4.2.5 Mapping (subfolder of [<i>Year–Draft or Final</i>]) | 7 |
| 4.2.6 Reference_Material (subfolder of [<i>Year–Draft or Final</i>]) | 8 |

LIST OF FIGURES

| | |
|---|---|
| Figure 3-1. Modeling, Mapping, and Consequences Data Structure for Dams | 4 |
| Figure 3-2. Modeling, Mapping, and Consequences Data Structure for Levees | 5 |

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SECTION 1

Introduction

Hydraulic modeling via the Hydrologic Engineering Centers River Analysis System (HEC-RAS), economic consequence analysis and mapping using ESRI software all produce many data layers to support specific processes and the maps and reports that constitute the output of these processes. All these files require a comprehensive file storage structure to ensure the completeness and consistency of the digital outputs of all MMC processes.

Modeling, Mapping and Consequences (MMC) Production Center model results shall be organized in the standard folder structure described below. This practice serves two purposes:

- Provides standard organization for MMC digital products.
- Simplifies model reviews, reduces the effort needed to index the files, and makes it easier for future modelers to work with the files.

SECTION 2

Requirements

This document applies to all files that will be transferred between members of the MMC at specific milestones throughout the MMC process. It also defines the final file structure that each MMC study will be held to for archive storage.

The file structure described below should be used beginning with the initial pre-model data delivery to the H&H modeler. A zip file called MMC_File_Structure.zip can be unzipped to provide the base for the required folder structure. Some sub folders will be added as needed throughout the process.

The deliverable package schema portion of the MMC Pre-Modeling Data Production Specification (Appendix 4.1.1) describes the structure of the pre-modeling data as it is developed and stored locally at NWK. This document should be used as the official guide for structuring the data for transfer to the modeling team.

When beginning to prepare a model deliverable, modelers will add the data derived through modeling to the folder structure provided by GIS, using the primary folders and adding sub-folders where necessary.

MMC team members responsible for data management and mapping will review the data after modeling is complete for adherence to this data structure standard.

At each point where data is transferred between functional units of the MMC, a data manifest will be created or appended to. The original pre-model data delivery will create the manifest describing the contents of the delivery and any subsequent additions or deletions to the data will be reflected. The format for this manifest can be found in Appendix 4.1.1.

SECTION 3

Folder Structure

MMC modeling team members will receive a folder structure containing the pre-model data as shown in Figure 3-1. Following is a description of the folder structure, the files that are expected to be contained in the folders, and any required files. Folder names in brackets i.e., [Study_Dam_Name] or [Study_Levee_Name] refer to instances when a folder should be named according to the individual dam or levee being modeled or the individual scenario being modeled. It should be noted that spaces or special characters should not be used in file or folder names.

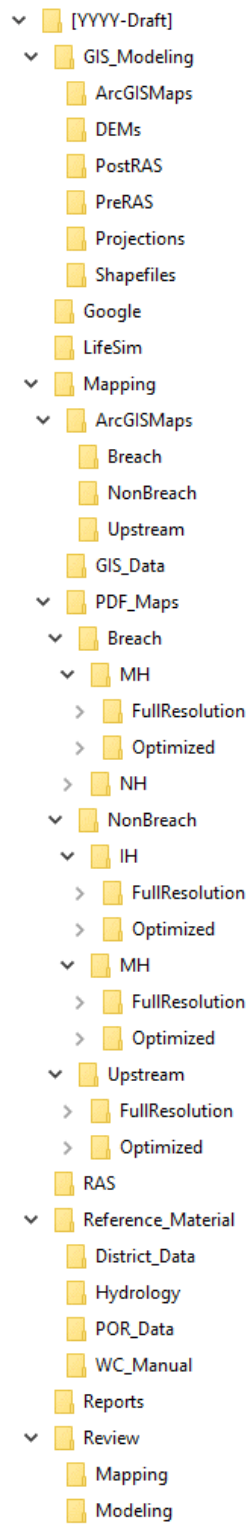


Figure 3-1. Modeling, Mapping, and Consequences Data Structure for Dams

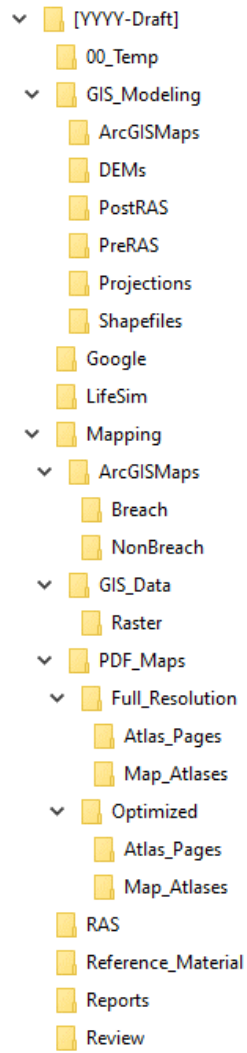


Figure 3-2. Modeling, Mapping, and Consequences Data Structure for Levees

SECTION 4

Folder Structure Description

The root folder can either be the root of a portable storage device or any folder designated to hold MMC data. The root also contains the file “Manifest.doc” that describes the contents of the folder structure.

4.1 [STUDY_DAM_NAME] OR [STUDY_LEVEE_NAME] (SUBFOLDER OF *ROOT*)

Each study area delivered should be given a unique folder name at the root of the drive. The folder should be named using the study dam name and the associated NIDID or study levee name and the associated NLDID, i.e., Barker_TX00019, or Skagway_River_Levee_5505000016. Folders and files for each study area folder will be organized as listed below. An empty folder structure and document templates are contained in the zip file “MMC_File_Structure.zip” and can be unzipped to set up the primary and secondary folder structure for each study area. Folders may not be added at the primary level, but secondary and tertiary folders may be added on an as-needed basis.

4.2 [YEAR–DRAFT OR FINAL] (SUBFOLDER OF [STUDY_DAM_NAME] OR [STUDY_LEVEE_NAME])

Each study area should be given the year of production and if the data is in a draft or final state as a subfolder of the Study Dam Name folder.

4.2.1 GIS_Modeling (subfolder of [Year–Draft or Final])

This folder’s subfolders will contain all the GIS data provided as inputs to and resulting from HEC-RAS processes. All pre-model datasets will be stored in this folder’s sub-folders.

4.2.1.1 ArcGISMaps (subfolder of *GIS_Modeling*)

This folder stores any ESRI .mxd files created prior to and during the modeling efforts.

4.2.1.2 DEMs (subfolder of *GIS_Modeling*)

This folder stores the digital elevation model (DEM) files used in the modeling. The DEMs developed during the pre-modeling data preparation steps will be stored in this folder for delivery to the modeling team. Tiled DEMs should be named according to the tile number if the data is tiled (i.e., “[DEM]_1”).

4.2.1.3 PostRAS (subfolder of *GIS_Modeling*)

This folder stores geometry outputs from HEC-RAS that feed into RAS model runs.

4.2.1.4 PreRAS (subfolder of *GIS_Modeling*)

This folder will store the RAS geometry geodatabase used in modeling all the scenarios. This is also the location where the modeler will save the .mxd document used to set up the pre-model geometry.

4.2.1.5 Projections (subfolder of *GIS_Modeling*)

This folder contains an ESRI .prj projection description file that is set to the MMC projection.

4.2.1.6 Shapefiles (subfolder of *GIS_Modeling*)

This folder contains all of the shapefiles developed by the GIS team and included in the pre-model data delivery.

4.2.2 Google (subfolder of [Year–Draft or Final])

This folder will contain all Google .kmz or .kml files created for display in Google Earth.

4.2.3 RAS (subfolder of [Year–Draft or Final])

This folder should contain the final RAS plans, geometry data, terrain and unsteady flow data for each load case.

4.2.3.1 LandCover (optional subfolder of *RAS*)

This folder will store the source files for the land cover dataset that is used to define Manning's "n" for 2D areas. A common source for this data is the National Land Cover database (NLCD).

4.2.4 LifeSim (subfolder of [Year–Draft or Final])

This folder's subfolders will hold all of the corresponding data used in LifeSim analysis and the LifeSim model itself.

4.2.4.1 Hydraulic_Data (subfolder of *LifeSim*)

This folder will contain the GIS files used by the consequences modeler to create the LifeSim model. This would include items such as the structure inventory shapefile, emergency planning zone shapefiles, study area shapefile, downstream reach polygon shapefile, and city boundaries. Other GIS data can be included if it was used to develop the model or analyze results, however, the HEC-RAS model data should not be included because it will be uploaded by the hydraulic modeler.

4.2.5 Mapping (subfolder of [Year–Draft or Final])

This folder and sub-folders will contain all of the files associated with map production.

4.2.5.1 ArcGISMaps (subfolder of *Mapping*)

This folder contains the .aprx files created for map production including, but not limited to the Map Index, Aerial Sheets, Street Map Sheets, and Detail Sheets (dams only).

4.2.5.2 GIS_Data (subfolder of *Mapping*)

This folder holds the working geodatabase and any working shapefiles that are created during the mapping process.

4.2.5.2.1 Raster (levees only subfolder of *GIS_Data*)

This folder holds the HEC-RAS depth grids and arrival grids that have been clipped levee protected area for use in mapping.

4.2.5.3 PDF_Maps (subfolder of *Mapping*)

This folder will contain all the .pdf formatted output maps. Flat .pdf and GeoPDF versions of the maps are stored here.

4.2.6 Reference_Material (subfolder of *[Year–Draft or Final]*)

This folder and sub-folders should contain any reference material used in setting up the model including all breach equations, etc.

4.2.6.1 Breach_Spreadsheet (subfolder of *Reference_Material*)

This folder should contain a copy of the MMC Breach Spreadsheet that is used to calculate breach parameters for earthen embankments using regression equations.

4.2.6.2 District Data (dams only subfolder of *Reference_Material*)

This folder should contain any data obtained from the home district of the study dam. This can be miscellaneous data used in setting up H&H modeling, mapping or as background for consequence analysis.

4.2.6.3 Hydrology (dams only subfolder of *Reference_Material*)

This folder should contain any reference material used in developing a runoff model for the study project or areas downstream for development of residual inflow. This includes basin parameters, rainfall and routing data.

4.2.6.4 POR_Data (dams only subfolder of *Reference_Material*)

This folder should contain period of record data files including pool elevation and inflows and any reference material used for analysis of the data.

4.2.6.5 WC_Manual (dams only subfolder of *Reference_Material*)

This folder should contain the Water Control Manual and any reference material used in developing the Water Control Manual including rating curves and operational rules and guides.