

May 2023



Florida Statewide Resilience Dataset

Statewide Critical Assets:
Final Report on Dataset

Statewide Resilience Dataset Project: Database of Critical Assets

Introduction

This report describes the final database of critical assets in Florida (as defined by F.S. 380.093). The spatial data for critical assets were sourced from state, federal, and regional datasets to provide a comprehensive statewide, consistent coverage within each asset type. As supplementary assets, the dataset also includes locally-provided asset data (with attributes adjusted for consistency across locations) for areas in which it was available from data providers that had assembled asset data for a prior or current vulnerability assessment. This final deliverable of Florida Critical Assets data presents the database with separate data classes for each of the four critical Asset Groups (1) Critical Community Emergency Facilities, (2) Critical Infrastructure, (3) Natural, Cultural and Historical Resources, and (4) Transportation and Evacuation Routes), and a separate data class for the locally-provided assets. Regionally significant assets were identified by asset type based on the definitions of F.S. 380.093. This report was prepared for the Department of Environmental Protection by the Balmoral Group.

Critical Asset Combined Database

For the statewide, complete coverage data types: all asset types were organized into one of the four asset groups as feature datasets in the geodatabase, and the locally-provided assets are a separate feature dataset in the geodatabase. The statewide coverages are comprehensive for each of the 39 asset types in each of the Asset Groups: Critical Community and Emergency Facilities, Critical Infrastructure, Natural and Culture and Historical Resource, and Transportation and Evacuation Route. The critical assets database includes about 2.5 million critical assets across Florida. The locally-provided data are not comprehensive spatially and are likely to be used for supplementary information in locations in which the locally-provided data are available. The locally-provided data (about 824,000 assets) are included as separate standardized feature datasets in the geodatabase; this was determined in collaboration with the Department as the best approach in order to improve data utility and efficiency of dataset updates. Feature dataset names are as follows:

FL_Critical_Assets_Final.gdb

- Critical_community_emergency_facilities (23,398 assets)
- Critical_infrastructure (353,907 assets)
- Natural_cultural_historical_resource (1,301,958 assets)
- Transportation_and_evacuation_route (835,725 assets)
- Local_assets (824,115 assets)

The geodatabase is available for retrieval (named “FL_Critical_Assets_Final.gdb”) at this [SharePoint Folder](#). Metadata provided at that location lists all data layers with primary source information and provides a tabular list of all attributes across all data layers. An example screenshot of the critical assets database coverage is shown in **Figure 1**. Spatial data sources for the statewide coverages are listed in **Table 1**.

Table 1. Source entities for statewide critical assets database

| Source Entity |
|--|
| Bureau of Archaeological Research (BAR) |
| Department of Homeland Security (DHS) |
| Environmental Protection Agency (EPA) |
| Florida Division of Emergency Management (FDEM) |
| Florida Housing Data Clearinghouse (FHDC) |
| FDEP (Florida Department of Environmental Protection) |
| FDOT (Florida Department of Transportation) |
| Florida Fish and Wildlife Conservation Commission (FWC) |
| Florida Natural Areas Inventory (FNAI) |
| Northwest Florida Water Management District (NFWFMD) |
| South Florida Water Management District (SFWMD) |
| St. Johns River Water Management District (SJRWMD) |
| Southwest Florida Water Management District (SWFWMD) |
| US Army Corps of Engineers (USACE) |
| US Department of Transportation, Bureau of Transportation Statistics (USDOT-BTS) |
| US Geological Survey (USGS) National Structures Dataset (NSD) |
| USGS National Transportation Dataset (NTD) |
| USGS National Hydrography Dataset (NHD) |

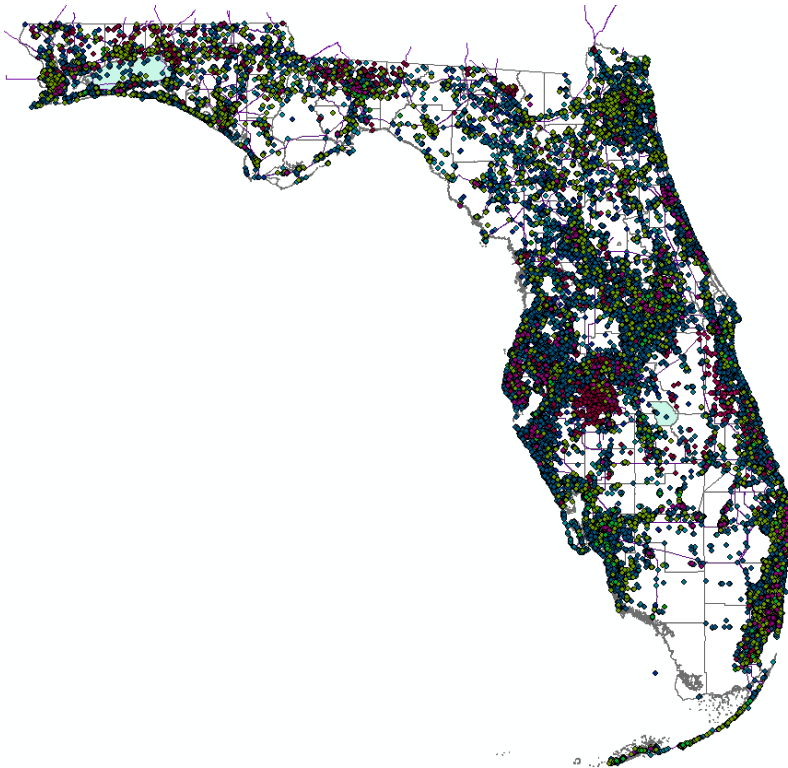


Figure 1. Source entities for statewide critical assets database Statewide view of critical assets database coverage

Statewide Dataset Assembly

This section explains the process of identifying, retrieving, and processing critical asset data into the statewide database. The two key factors in evaluating data source choices and processing of asset data were:

- Use authoritative, existing spatial data that align with statutorily defined critical assets
- Minimize alterations to source data to allow for efficient updates to the database.

Statewide Assets Coverage

An initial list of candidate data sources for all critical assets was provided by the Department at the outset of the project. This was iteratively refined through dataset inspections of spatial coverage and data attributes to improve data source options and cull or merge datasets in instances in which there were multiple sources for the same asset type. The initial list of 155 datasets from 15 unique sources was refined to the final dataset of 63 data layers from 20 unique sources. As this dataset will be regularly updated, it was a goal to minimize data manipulations from source data unless the data alterations provided major improvements to data usability.

The number of total data layers exceeds the number of critical asset types (39 critical asset types) because for some assets it is beneficial to have multiple different spatial coverages for the same asset type. For example, the “historical and cultural assets” are represented by separate data layers from the Bureau of Archaeological Research spatial coverage of Historic Bridges, Historic Cemeteries, Historical Structure Locations, and Resource Groups. Similarly, the “electric production and supply facilities” asset type includes separate data layers for Transmission Lines, Substations, and Power Stations (see **Figure 2** for example view). Maintaining these as separate data layers simplifies dataset updates and reduces loss of attributes that would accompany merging datasets with different attributes.

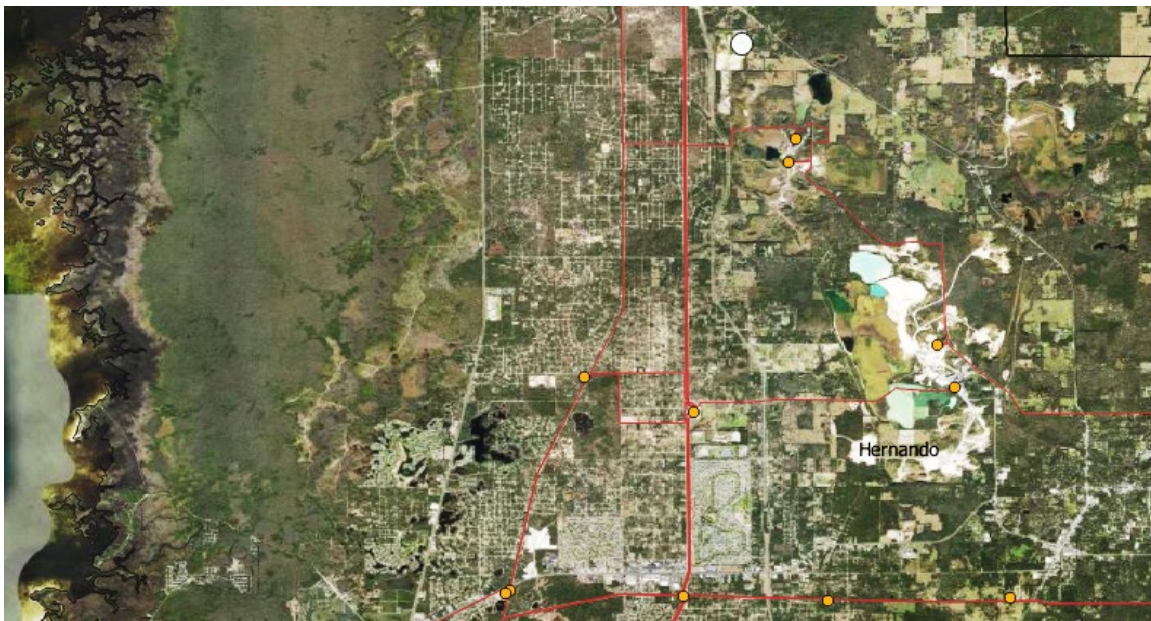


Figure 2. Example of asset GIS data for “electric production and supply facilities”: Transmission Lines, Substations (yellow points), and Power Stations (white point).

For asset types with multiple competing data sources, datasets were merged/combined in many instances if the merging did not require significant loss of attributes. The objective for merging data from multiple sources was to balance the tradeoffs between geoprocessing and attribute complexity: to ensure the data is easy to use/interpret and is also easy to update as needed. For example, the schools datasets from Florida Division of Emergency Management (FDEM) were provided as separate coverages of public and private schools but these data had otherwise identical attribute types; so these could be efficiently merged with only the inclusion of an additional attribute to designate each school as public or private.

Asset data was provided from the Florida Division of Emergency Management (FDEM) for their Critical Facilities Inventory (CFI) data. The CFI data were selected as the most authoritative source for numerous asset types in the Critical Community and Emergency Facilities asset group, but the CFI data were not commonly used for the other three asset groups. The primary data providers feeding into the CFI were the preferred source for many other asset types. For example, wastewater treatment facilities in the CFI data are sourced from FDEP; therefore, the FDEP data coverage of wastewater facilities was used directly for that asset type. Additionally, the CFI data is represented by points for all asset types, which is not the preferred geometry type for some assets. The appendix provides a detailed account of data sources and processing to combine datasets where it was needed.

Locally-Provided Critical Assets

Under a previous outreach effort with the Department to catalogue the status of completed or in-progress vulnerability assessments (completed in June 2022), information requests were delivered by email to more than 600 contacts across 493 unique organizations. For the 206 cities or counties with Peril of Flood requirements, targeted individual emails and/or phone calls were made to request information about their vulnerability assessment or similar flood risk study. For organizations identified as having completed or in progress with a type of vulnerability assessment, requests were made to retrieve the spatial data on critical assets that was used to support their vulnerability assessment.

Building on that outreach for this project, Cities and Counties or regional organizations with more recent or current (in-progress) vulnerability assessments were contacted by phone and email to request available critical asset data. The previous version of the locally-provided critical assets included GIS asset data from 31 entities. With more recent, targeted outreach and data retrievals, the current version of the locally-provided critical asset data now includes asset data from 52 entities. The total number of critical assets in the locally-provided critical asset data is now about 824,000 assets (increased from about 308,000 in the June 2022 version).

Asset data were identified from GIS data provided by organizations based on their names or descriptions and their geometry (points, lines, or polygon features). To develop the compiled local asset dataset, more than 1,500 individual spatial data layers were reviewed in order to determine if they included assets in line with the statutory asset types. See **Figure 3** as an example of local asset data in Franklin County. As expected, there is significant variability in critical asset types and attributes across the numerous data providers; therefore, compiling into a single dataset required streamlining the attributes for consistency. Standardizing the asset data involved detailed review of all GIS files delivered.

Crosswalk tables and customized attribute calculation expressions were developed to efficiently relate assets to asset types and groups. The attributes were standardized as follows, based on recommended attributes from the Department (**Table 2**):

Table 2. GIS data attributes for local assets geodatabase

| Abbreviation | Description |
|--------------|---|
| EntityName | Name of Entity (County or City that provided the asset data) |
| Asset_Elev | Elevation of asset, feet (if provided) |
| Own_Maintn | The owner or maintainer of the asset (if provided) |
| Name | Details about asset (pipe size, street type, etc – if provided) |
| Asset | Asset label or description (i.e. hydrant, stormwater pipe, cell tower, etc.) |
| Asset_Type | Statutory Asset type (i.e. airports, bridges, roadways, marinas, etc.) |
| Asset_Group | Statutory Asset Group (i.e. transportation and evacuation route, critical infrastructure, etc.) |

Separate geodatabase features for points, lines, and polygons were prepared to align with standard geodatabase requirements. Organizing the geodatabase by geometry type also allows for standardization of attributes across the numerous data provider entities and asset types, and this structure allows for more efficient queries or processing with the database. Crosswalk tables and attribute calculator code was developed and will be included with a Data Maintenance Manual.



Figure 3. Screenshot of example asset GIS data (locally-provided assets), Franklin County (streets and points of various asset types shown)

Summary

The final geodatabase is submitted with this report. These data provide spatial coverage of all critical assets in Florida in alignment with asset types of F.S. 380.093. From the statewide critical asset data,

there are over 2,500,000 critical asset features across the 39 asset types (see **Table 3** for asset numbers by asset type):

- 23,398 Critical community and emergency facilities
- 353,907 Critical Infrastructure assets
- 1,301,958 Natural, cultural, and historical resource assets
- 835,725 Transportation and evacuation route assets.

Additionally, in the locally-provided asset data there about 824,000 critical assets across the 52 entities from which data was available.

It is expected that the statewide critical assets database will be regularly updated and refined to align with changes in data and additional or reduced asset types. To ensure the long-term updates/maintenance of the critical assets data, all processing actions have been documented. A data maintenance manual has been prepared for the Department to ensure all processing and data collection and refinement activities can be efficiently repeated as needed. **Table 3** summarizes the number of assets for each asset type. The critical assets database provides locations and attributes of statewide assets in Florida that can be used to support risk assessment in the state.

Table 3. Asset counts for each asset type from statewide coverage

| Asset Type | Asset Group | Count |
|--|---|--------------|
| Affordable Public Housing | Critical community and emergency facilities | 2,945 |
| Colleges and Universities | Critical community and emergency facilities | 349 |
| Community Centers | Critical community and emergency facilities | 903 |
| Correctional Facilities | Critical community and emergency facilities | 389 |
| Disaster Recovery Centers | Critical community and emergency facilities | 346 |
| Emergency Medical Service Facilities | Critical community and emergency facilities | 588 |
| Emergency Operation Centers | Critical community and emergency facilities | 71 |
| Fire Stations | Critical community and emergency facilities | 1,876 |
| Health Care Facilities | Critical community and emergency facilities | 5,801 |
| Hospitals | Critical community and emergency facilities | 351 |
| Law Enforcement Facilities | Critical community and emergency facilities | 981 |
| Local Government Facilities | Critical community and emergency facilities | 786 |
| Logistical Staging Areas | Critical community and emergency facilities | 101 |
| Risk Shelter Inventory | Critical community and emergency facilities | 1,978 |
| Schools | Critical community and emergency facilities | 5,381 |
| State Government Facilities | Critical community and emergency facilities | 552 |
| Communications Facilities | Critical Infrastructure | 6,697 |
| Disaster Debris Management Sites | Critical infrastructure | 915 |
| Drinking Water Facilities | Critical Infrastructure | 15,267 |
| Electric Production and Supply Facilities | Critical Infrastructure | 5,590 |
| Military Installations | Critical Infrastructure | 40 |
| Solid and Hazardous Waste Facilities | Critical infrastructure | 138,729 |
| Stormwater Treatment Facilities and Pump Stations | Critical Infrastructure | 177,252 |
| Wastewater Treatment Facilities and Lift Stations | Critical Infrastructure | 2,842 |
| Water Utility Conveyance Systems | Critical Infrastructure | 6,575 |
| Conservation Lands | Natural, cultural, and historical resource | 3,215 |
| Historical and Cultural Assets | Natural, cultural, and historical resource | 200,379 |

| Asset Type | Asset Group | Count |
|--|--|------------------|
| Parks | Natural, cultural, and historical resource | 2,398 |
| Shorelines | Natural, cultural, and historical resource | 59,204 |
| Surface Waters | Natural, cultural, and historical resource | 434,660 |
| Wetlands | Natural, cultural, and historical resource | 602,102 |
| Airports | Transportation and evacuation route | 780 |
| Bridges | Transportation and evacuation route | 9,848 |
| Bus Terminals | Transportation and evacuation route | 50 |
| Major Roadways | Transportation and evacuation route | 817,660 |
| Marinas | Transportation and evacuation route | 1,798 |
| Ports | Transportation and evacuation route | 69 |
| Rail Facilities | Transportation and evacuation route | 5,509 |
| Railroad Bridges | Transportation and evacuation route | 11 |
| Total statewide Critical Assets | | 2,514,988 |

Deliverables

The deliverables for the Final Critical Assets database are included at this folder: [SharePoint Folder](#) and are listed as follows:

- Final Report
- The metadata for the geodatabase (with primary source information) and a tabular list of all attributes with descriptions across all data layers)
- The final geodatabase of all statewide and locally-provided critical assets data

The appendix provides additional detail on data sources and processing for the statewide critical assets dataset.

Appendix

Statewide Dataset Sources by Asset Type

This section explains the choices of data sources for statewide assets coverages and any necessary processing to combine data from multiple sources to produce a simplified representation of the data for a particular asset type. For many of the 39 asset types, a single data source was identified as the most authoritative and complete spatial representation. For asset types with multiple competing data sources, the goal in combining multiple sources was to balance the tradeoffs between geoprocessing and attribute complexity (goal: to reduce effort in future dataset updates) and data simplicity (goal: to avoid multiple data layers for the same asset type). In some cases, the asset type is general or broad (example: rail facilities); therefore, it is beneficial for those instances to have multiple, distinct data layers to represent different particular assets that all would be identified as the same statutory asset type (example: rail facilities datasets include three data layers for terminals, rail lines, and rail crossings). The data sources and rationale for any data combination decisions is explained in the following sections. See **Table 4** for a list of all data sources and data layers.

Critical Community and Emergency Facilities

Affordable Public Housing

Data for affordable public housing assets is from The Assisted Housing Inventory (AHI) as recommended by the Department. AHI consists of subsidized developments that provide affordable rental housing in Florida. The AHI data are prepared by The Florida Housing Data Clearinghouse, which provides access to data about Florida housing, including subsidized rental housing, and demographics.

Colleges and Universities

Asset data for colleges and universities was sourced from the Florida Division of Emergency Management (FDEM) Critical Facilities Inventory (CFI); compiled by FDEM using source data from the Counties. The CFI data were used for numerous asset types for consistency with that data. CFI data were most commonly used for Critical Community and Emergency Facilities, but were not commonly used for the other three asset groups.

Community Centers

Asset data for community centers was sourced from FDEM's CFI; compiled by FDEM using source data from the Counties. Three data layers from FDEM's CFI database were merged into a single coverage for community centers as critical assets. These included community centers, libraries, and food banks.

Correctional Facilities

Asset data for correctional facilities was sourced from FDEM's CFI; compiled by FDEM using source data from the Counties.

Disaster Recovery Centers

Asset data for disaster recovery centers was sourced from FDEM's CFI; compiled by FDEM using source data from the Counties and the State Emergency Response Team (SERT).

Emergency Medical Service Facilities

Asset data for emergency medical service facilities was sourced from FDEM's CFI; compiled by FDEM using source data from the Counties.

Emergency Operation Centers

Asset data for emergency operations centers was sourced from FDEM's CFI; compiled by FDEM using source data from the Counties.

Fire Stations

Asset data for emergency operations centers was sourced from FDEM's CFI; compiled by FDEM using source data from the Counties.

Health Care Facilities

Asset data for emergency operations centers was sourced from FDEM's CFI; compiled by FDEM using source data from the Counties and from Florida Department of Health (FDOH).

Hospitals

Asset data for emergency operations centers was sourced from FDEM's CFI; compiled by FDEM using source data from the Counties and from the Florida Agency for Health Care Administration (AHCA).

Law Enforcement Facilities

Asset data for law enforcement facilities was sourced from FDEM's CFI; compiled by FDEM using source data from the Counties.

Local Government Facilities

Asset data for local government facilities was sourced from FDEM's CFI; compiled by FDEM using source data from the Counties.

Logistical Staging Areas

Asset data for logistical staging areas was sourced from FDEM's CFI; compiled by FDEM using source data from the Counties and SERT.

Risk Shelter Inventory

Asset data for risk shelters was sourced from FDEM's CFI; compiled by FDEM using source data from the Counties. Risk shelters are represented as two data layers: risk shelters and special needs risk shelters. Pet friendly risk shelters are a separate data layer in FDEM's CFI database, but these are represented by an attribute in the general shelters data coverage so an additional data layer is not needed.

Schools

Asset data for schools was sourced from FDEM's CFI; compiled by FDEM using source data from the Counties. Public and private schools are separate layers in FDEM's CFI database; these were merged into a single coverage for schools as critical assets.

State Government Facilities

Asset data for schools was sourced from FDEM's CFI; compiled by FDEM using source data from the Florida State Owned Lands and Records Information System (FL-SOLARIS).

Critical Infrastructure

Communications Facilities

Asset data for communications facilities was sourced from FDEM's CFI; compiled by FDEM using source data from the Counties. Numerous communications data layers from the Department of Homeland

Security (DHS) Homeland Infrastructure Foundation-Level Data (HIFLD) database were analyzed, and the FDEM data were used because they represented a more complete coverage in terms of locations and communications types.

Disaster Debris Management Sites

Asset data for disaster debris management sites was sourced from FDEM's CFI; compiled by FDEM using source data from the Counties and SERT.

Drinking Water Facilities

Asset data for drinking water facilities was sourced from FDEP's Public Water Supply (PWS) Plants coverage as the most comprehensive coverage.

Electric Production and Supply Facilities

Three data layers comprise electric production and supply facilities asset types. Substations and transmission lines are sourced from DHS-HIFLD. Power plants, including renewables, are sourced from Environmental Protection Agency's (EPA's) eGRID 2021 data (Plant File; 2021 is newest available). Transmission lines entirely outside of Florida were excluded from the data, but those that crossed the Florida boundary were included.

Military Installations

Data for military installations was sourced from USDOT Bureau of Transportation Statistics.

Solid and Hazardous Waste Facilities

Solid and hazardous waste facilities are comprised of four data layers. Solid waste facilities are sourced from FDEP's coverage of the same name. Superfund and brownfield sites are from EPA's coverage of those locations. Data for County Small Quantity Generators (SQG) and Hazardous Waste Treaters Storers and Disposers (TSDs) are both from FDEP.

Stormwater Treatment Facilities and Pump Stations

Drainage systems are a significant means of reducing flood risk. Extensive spatial data reviews were completed on the stormwater treatment facilities asset layers in the dataset. Stormwater assets for each of the five Water Management Districts were requested, and stormwater assets from NFWWMD, SJRWMD, SFWMD, and SWFWMD are included in the statewide critical assets database. These represent water control structure locations or other significant drainage assets for those four districts (SRWMD did not have any stormwater-related critical assets that are District-managed). In SJRWMD, levees and flood control monitoring sites were included in addition to their stormwater structures (weirs, gated spillways, pumping stations, and culverts). In SFWMD, asset for stormwater also include data layers for stormwater treatment areas (STAs), flow equalization basins (FEBs), storage areas, culverts, canals, levees, operations buildings, and stormwater communications assets. Stormwater assets from NFWWMD, SJRWMD, SFWMD, and SWFWMD; these were merged into like-geometry datasets. The current database has combined point features with stormwater assets for those four districts (culverts, control structures, flood monitoring points, and stormwater communications assets). The line type and polygon asset types were also merged from previously separate data layers from SJRWMD and SFWMD. The lines data coverage includes canals and levees and the polygon layer includes stormwater treatment areas (STAs), flow equalization basins (FEBs). This combination/merging of the District-provided data significantly reduced the number of data layers for the stormwater treatment facilities asset type and will simplify geoprocessing and risk assessments related to these asset types.

Dams from U.S. Army Corps of Engineers (USACE) are also included as stormwater assets if they were not already represented by stormwater assets from one of the Water Management Districts. The USACE dams layer was processed to remove dams/control structures already represented in District-provided stormwater asset data.

Ponds are the principal means of stormwater treatment in Florida; therefore, it was determined that a ponds data coverage should be identified that could represent most of the stormwater ponds in Florida. For this deliverable, a stormwater ponds data layer was assembled from the National Hydrography Dataset (NHD) water bodies layer, subsetting those data to only selected reservoir types identified to best align with stormwater ponds. Reservoirs in the NHD are defined as constructed basins for some type of water storage with types including: Aquaculture, Decorative Pool, Disposal, Evaporator, Swim Pool, Treatment, Unspecified or Water Storage. Only those that were classified as water storage or unspecified types (if less than about 250 acres in area) were included as likely stormwater ponds. This was based on numerous location-specific reviews by stormwater engineers. Features with a Geographic Names Information System (GNIS) name were also generally not included as likely stormwater ponds, but these were reviewed and some were retained based on their known functions as stormwater ponds (Examples: Huguenot Lagoon, Jacksonville; Cranes Roost, Altamonte Springs; and several others). The resulting ponds dataset contains about 173,000 pond features that are likely to have a stormwater treatment function. Reservoirs that overlapped with SFWMD's storage features were removed from the NHD-derived stormwater ponds layer.

The following figures illustrate some examples of the stormwater ponds data layer.



Figure 4. Stormwater treatment facilities: ponds coverage in Apopka, FL (roadway stormwater; 28.633354, - 81.459367)



Figure 5. Stormwater treatment facilities: ponds coverage in Tallahassee, FL (left; roadway stormwater; 30.501960, -84.252182) and Venice, FL (right; subdivision stormwater; 27.041809, -82.342873)

Wastewater Treatment Facilities and Lift Stations

Asset data for wastewater treatment facilities were sourced from FDEP's coverage for Wastewater Facility Regulation (WAFR) - Wastewater Facilities.

Water Utility Conveyance Systems

Asset data for water utility conveyance were sourced from FDEP's coverage for Public Water Supply (PWS) Tanks. These are storage facilities for holding drinking water prior to distribution.

Natural, Cultural, and Historical Resource

Conservation Lands

Data for conservation lands was sourced from the Florida Natural Areas Inventory and consists of the Florida Managed Areas (FLMA) and the Florida Forever lands. The layers were merged with processing steps to produce a single conservation lands coverage that includes FLMA and all FF lands with no overlapping geometry.

Historical and Cultural Assets

Asset data for historical and cultural assets was sourced from the Bureau of Archaeological Research and consists of layers for cemeteries, historic bridges, historic structures, and resource groups (historical districts, archaeological districts or building complexes). These data are ultimately sourced from the

Florida Master Site File (FMSF), the State of Florida's official inventory of historical and cultural resources.

Parks

Data for parks includes state park areas and structures as separate spatial coverages, both sourced from FDEP. Parks data also includes national parks from U.S. Department of Transportation (USDOT) Bureau of Transportation Statistics (BTS).

Shorelines

Shoreline locations and classification of shoreline type were sourced from Florida Fish and Wildlife Conservation Commission (FWC) Florida Shoreline dataset.

Surface Waters

Data for surface waters was sourced from the United States Geological Survey (USGS) National Hydrography Dataset (NHD). NHD Areas (flowing water bodies) and NHD water bodies (largely lakes/ponds and reservoirs) were merged into a combined polygon coverage of statewide surface waters. Reservoirs were excluded from this data coverage (with some exceptions) and were used to represent stormwater treatment facilities as described above in the Critical Infrastructure asset group. NHD water bodies classified as reservoirs were retained in the surface waters layer if the name included lake or pond. The resulting dataset for surface waters represents mostly natural-shoreline water features (with few constructed water bodies). The surface water polygons in the NHD included marsh/wetland areas, but those features were removed to avoid overlaps with the wetlands layer and for consistency with this asset type name as surface waters. The resulting surface waters areas coverage includes about 65,000 surface water features statewide. Surface water linear features (streams, ditches, canals) are included in the surface waters flowlines data later (about 370,000 linear features). Additionally, DEP's Watershed Monitoring Section (WMS) lakes data that were not represented by NHD water bodies were included as a separate surface waters data layer (only about 300 of the 3,000 WMS lakes features were not already represented by NHD lakes). Line or polygon features in the NHD that intersected with the boundary of Florida or were entirely inside Florida were included, features outside the state were excluded from the critical assets database, although they are included in the NHD Florida data as they are within watershed boundaries that are connected to Florida.



Figure 6. Surface waters (polygon features) example data: Dead Lakes and numerous small lakes near Apalachicola River

Wetlands

Data for surface waters was sourced from FDEP’s statewide landcover, including only those features designated as wetland types according to the landcover codes.

Transportation and Evacuation Route

Airports

Asset data for airports was combined from FDEM’s public, private, and heliport airports. Strategic Intermodal System (SIS) attributes were joined to FDEM’s coverage to designate those airports that are part of the SIS.

Bridges

Asset data for bridges was sourced from Florida Department of Transportation (FDOT) from their Roadway Characteristics Inventory data.

Bus Terminals

Asset data from bus terminals was sourced from FDEM's CFI, compiled using source data from FDOT.

Major Roadways

Asset data for roadways was sourced from FDOT, USGS National Transportation Dataset (NTD) and FDEM's CFI. The base geometry for FDOT roads was their Basemap Routes with Measures coverage. Local names were added to that layer from FDOT's local names roads coverage, and evacuation route status was assigned from FDEM's CFI coverage using spatial overlays. Additionally, SIS attributes were added to the FDOT roads layer. The resulting statewide roads coverage of FDOT roadways is a complete spatial coverage including information on evacuation routes and SIS designation.

The USGS NTD includes all roads, including local roads. Only the roads not already represented with the FDOT roads coverage were retained in the NTD, and the separate NTD layer provides a coverage of roads that are not represented by the FDOT coverage. The resulting roadways data layers represents all roadways in Florida, recognizing these are not all major roadways, but the vulnerability of smaller roads does affect public access to major roadways, which has implications for flood vulnerability and emergency management. See **Figure 7** of example roadways coverages.



Figure 7. Roadways statewide coverage example in Bay County; FDOT roads shown as thicker lines, local roads shown as thinner lines source from USGS NTD.

Marinas

Asset data for marinas was sourced from FDEM's CFI; compiled by FDEM using source data from FDEP. These data include coverages for boat ramps and marinas merged to a single coverage from FDEM data and assigned an attribute to distinguish between the two types.

Ports

Asset data for ports was sourced from FDEM's CFI, with SIS attributes joined where appropriate from FDOT's coverage of SIS ports. Line features of waterways are also included as ports as a transportation asset type; only SIS waterways are included as ports (linear features).

Rail Facilities

Rail facilities are represented by a combined data layer version of four SIS coverages for rail terminals (freight, passenger, urban fixed guideway (UFG), and intermodal). Rail lines from FDOT's SIS are included as the rail line features. Rail crossings locations were sourced from National Transportation Atlas Database (NTAD).

Railroad Bridges

Asset data for railroad bridges was sourced from FDEM's CFI layer of railroad bridges, using data compiled from FDOT.

A summary of data sources and feature counts for each data layer is provide in **Table 4**.

Table 4. Statewide asset data layers and sources; regionally significant asset types designated by Reg_Sig attribute

| Statewide Dataset Name | Asset Type | Asset Group | Geometry | Count | Reg_Sig | Source Entity |
|---|--------------------------------------|---|----------|-------|---------|---------------|
| Assisted Housing Inventory | affordable public housing | Critical community and emergency facilities | polygon | 2,945 | | FHDC |
| Colleges - FDEM | colleges and universities | Critical community and emergency facilities | point | 349 | | FDEM |
| Community Centers - all FDEM layers | community centers | Critical community and emergency facilities | point | 903 | | FDEM |
| Correctional Facilities - FDEM | correctional facilities | Critical community and emergency facilities | point | 389 | | FDEM |
| Disaster Recovery Centers - FDEM | disaster recovery centers | Critical community and emergency facilities | point | 346 | | FDEM |
| Emergency Medical Services - FDEM | emergency medical service facilities | Critical community and emergency facilities | point | 588 | Y | FDEM |
| Emergency Operations Center - FDEM | emergency operation centers | Critical community and emergency facilities | point | 71 | Y | FDEM |
| Fire Stations - FDEM | fire stations | Critical community and emergency facilities | point | 1,876 | | FDEM |
| Healthcare Facilities - FDEM | health care facilities | Critical community and emergency facilities | point | 5,801 | | FDEM |
| Hospitals - FDEM | hospitals | Critical community and emergency facilities | point | 351 | | FDEM |
| Law Enforcement - FDEM | law enforcement facilities | Critical community and emergency facilities | point | 981 | | FDEM |
| Local Government Facilities - FDEM | local government facilities | Critical community and emergency facilities | point | 786 | | FDEM |
| Logistical Staging Areas - FDEM | logistical staging areas | Critical community and emergency facilities | point | 101 | | FDEM |
| Risk Shelter Inventory - General - FDEM | risk shelter inventory | Critical community and emergency facilities | point | 1,898 | Y | FDEM |
| Risk Shelter Inventory - Special Needs - FDEM | risk shelter inventory | Critical community and emergency facilities | point | 80 | Y | FDEM |
| Schools (public/private) - FDEM | schools | Critical community and emergency facilities | point | 5,381 | | FDEM |
| State Government Facilities - FDEM | state government facilities | Critical community and emergency facilities | point | 552 | | FDEM |
| Post Offices - NSD | communications facilities | Critical Infrastructure | point | 779 | | USGS NSD |
| Communications - FDEM | communications facilities | Critical infrastructure | point | 5,918 | | FDEM |
| Disaster Debris Management Sites - FDEM | disaster debris management sites | Critical infrastructure | point | 915 | | FDEM |
| Public Water Supply (PWS) Plants (Non-Federal) | drinking water facilities | Critical Infrastructure | point | 5,790 | Y | FDEP |

| Statewide Dataset Name | Asset Type | Asset Group | Geometry | Count | Reg_Sig | Source Entity |
|---|---|--|----------|---------|---------|-------------------------------|
| Public_Water_System_PWS_Wells | drinking water facilities | Critical Infrastructure | point | 9,477 | Y | FDEP |
| FloridaPowerPlantsFrom_eGRID_EPA_XY | electric production and supply facilities | Critical Infrastructure | point | 221 | Y | EPA |
| DHS HIFLD - Substations | electric production and supply facilities | Critical Infrastructure | point | 1,990 | | DHS-HIFLD |
| DHS HIFLD - Electric_Power_Transmission_Lines | electric production and supply facilities | Critical Infrastructure | line | 3,379 | Y | DHS-HIFLD |
| Military_Bases | military installations | Critical Infrastructure | polygon | 40 | | USDOT-BTS |
| Solid Waste Facilities | solid and hazardous waste facilities | Critical infrastructure | point | 12,339 | | FDEP |
| EPA superfund and brownfield sites | solid and hazardous waste facilities | Critical Infrastructure | point | 1,738 | | EPA |
| CountySQGs | solid and hazardous waste facilities | Critical Infrastructure | point | 124,543 | | FDEP |
| HazWasteTSDs | solid and hazardous waste facilities | Critical Infrastructure | point | 109 | | FDEP |
| Dams USACE | stormwater treatment facilities and pump stations | Critical Infrastructure | point | 870 | Y | USACE |
| Drainage Assets - NFWWMD, SFWMD, SJRWMD, SWFWMD | stormwater treatment facilities and pump stations | Critical Infrastructure | point | 1,811 | Y | NFWWMD, SFWMD, SJRWMD, SWFWMD |
| Stormwater Ponds - NHD | stormwater treatment facilities and pump stations | Critical Infrastructure | point | 172,744 | Y | USGS NHD |
| Drainage Assets | stormwater treatment facilities and pump stations | Critical Infrastructure | line | 1,778 | Y | SFWMD and SJRWMD |
| Drainage Assets - SFWMD | stormwater treatment facilities and pump stations | Critical Infrastructure | point | 49 | Y | SFWMD |
| Wastewater facility data | wastewater treatment facilities and lift stations | Critical Infrastructure | point | 2,842 | Y | FDEP |
| PWS_Tanks | water utility conveyance systems | Critical Infrastructure | point | 6,575 | Y | FDEP |
| FLMA and FF combined | conservation lands | Natural, cultural, and historical resource | polygon | 3,215 | | FNAI |
| Historic Bridges in Florida | historical and cultural assets | Natural, cultural, and historical resource | line | 1,633 | | BAR |

| Statewide Dataset Name | Asset Type | Asset Group | Geometry | Count | Reg_Sig | Source Entity |
|--|--------------------------------|--|----------|---------|---------|-------------------|
| Historic Cemeteries in Florida | historical and cultural assets | Natural, cultural, and historical resource | polygon | 1,700 | | BAR |
| Resource Groups in Florida | historical and cultural assets | Natural, cultural, and historical resource | polygon | 3,229 | | BAR |
| Historical Structure Locations in Florida | historical and cultural assets | Natural, cultural, and historical resource | point | 193,817 | | BAR |
| FL_NationalParks_NTAD | parks | Natural, cultural, and historical resource | polygon | 11 | | USDOT-NTAD |
| Florida State Parks - Parks and Recreational Areas | parks | Natural, cultural, and historical resource | polygon | 178 | | FDEP |
| Florida_State_Park_Structures | parks | Natural, cultural, and historical resource | polygon | 2,209 | | FDEP |
| ESI Shoreline Classification Lines | shorelines | Natural, cultural, and historical resource | line | 59,204 | | FWC |
| NHD-Flowline | surface waters | Natural, cultural, and historical resource | line | 369,451 | | USGS NHD |
| NHD-Waterbody and NHD-Area merge | surface waters | Natural, cultural, and historical resource | polygon | 64,935 | | USGS NHD |
| WMS Lakes Resource | surface waters | Natural, cultural, and historical resource | polygon | 274 | | FDEP |
| wetlands LU codes - DEP land cover - wetlands | wetlands | Natural, cultural, and historical resource | polygon | 602,102 | | FDEP |
| Airports FDEM and FDOT merge | airports | Transportation and evacuation route | point | 780 | | FDEM and FDOT |
| Bridges_TDA | bridges | Transportation and evacuation route | line | 9,848 | | FDOT |
| Bus Terminals - FDEM | bus terminals | Transportation and evacuation route | point | 50 | Y | FDEM |
| Basemap Routes with Measures and Local Names and Evac | major roadways | Transportation and evacuation route | line | 17,153 | Y | FDOT |
| Road Segments NTD | major roadways | Transportation and evacuation route | line | 800,507 | | USGS-NTD |
| Marinas and Boat Ramps - FDEM | marinas | Transportation and evacuation route | point | 1,798 | | FDEM |
| Commercial and SIS ports | ports | Transportation and evacuation route | point | 34 | Y | FDEM and FDOT-SIS |
| SIS - spaceports | ports | Transportation and evacuation route | point | 2 | Y | FDOT-SIS |

| Statewide Dataset Name | Asset Type | Asset Group | Geometry | Count | Reg_Sig | Source Entity |
|------------------------|------------------|-------------------------------------|----------|-------|---------|---------------|
| SIS - waterways | ports | Transportation and evacuation route | line | 33 | Y | FDOT-SIS |
| Railroad_Crossings | rail facilities | Transportation and evacuation route | point | 5,258 | Y | USDOT-NTAD |
| SIS - railroads | rail facilities | Transportation and evacuation route | line | 193 | Y | FDOT-SIS |
| SIS - rail terminals | rail facilities | Transportation and evacuation route | point | 58 | Y | FDOT-SIS |
| Rail Bridges - FDEM | railroad bridges | Transportation and evacuation route | point | 11 | Y | FDEM |

Locally-provided Asset Data

The local asset data is not a complete coverage and is only available for locations in which a city or county or planning organization was able to deliver their critical asset spatial data that was used for some type of flood risk assessment. The likely application of the locally-provided asset data is for the purposes of location-specific supporting information for cases in which the local data might provide some additional asset information.

As expected, there is significant variability in the attributes and types of asset data assembled by local data providers. Separate geodatabase features for points, lines, and polygons were prepared to align with standard geodatabase requirements. Organizing the geodatabase by geometry type also allows for standardization of attributes across the numerous data provider entities and asset types, and this structure allows for more efficient queries or processing with the database. For consistency, attributes were reduced to only commonly identifiable attributes from the original data. The total number of critical assets in the locally-provided critical asset data is about 800,000; see **Table 5** for asset counts by entity and asset type.

Table 5. Locally-provided critical asset data counts

| Entity Name | Critical community and emergency facilities | Critical infrastructure | Natural, cultural, and historical resource | Transportation and evacuation route | Total asset count |
|-----------------------|---|-------------------------|--|-------------------------------------|-------------------|
| Bal Harbour | - | 255 | 17 | 63 | 335 |
| Bay County | 472 | - | 423 | 15,972 | 16,867 |
| Broward County | 380 | 4,876 | 185 | 385 | 5,826 |
| Calhoun County | 159 | 281 | 143 | 306 | 889 |
| Cape Canaveral | 114 | 109 | 101 | 3,406 | 3,730 |
| Charlotte County | 8,163 | 20 | 4,463 | 3,408 | 16,054 |
| City of Doral | 8 | 29 | 25 | 483 | 545 |
| City of Port Richey | 171 | 82 | 229 | 366 | 848 |
| City of St. Augustine | 138 | 7,448 | 42 | 19,315 | 26,943 |
| Clay County | - | 54,109 | 4,386 | - | 58,495 |
| Clearwater | 727 | 814 | 141 | 11,786 | 13,468 |
| Collier County | 171 | - | 51 | - | 222 |
| Everglades City | 103 | 993 | 35 | - | 1,131 |
| Flagler County | 50 | - | 3 | - | 53 |
| Franklin County | 197 | 332 | 1,084 | 449 | 2,062 |
| Gadsden County | 240 | 831 | 3,703 | 759 | 5,533 |
| Gulf County | 174 | 806 | 205 | 398 | 1,583 |
| Hallandale Beach | - | 7,355 | - | - | 7,355 |
| Hillsborough County | 411 | 208 | 10,320 | 8,773 | 19,712 |
| Hollywood | 128 | 101 | 122 | 1,223 | 1,574 |

| Entity Name | Critical community and emergency facilities | Critical infrastructure | Natural, cultural, and historical resource | Transportation and evacuation route | Total asset count |
|---------------------|---|-------------------------|--|-------------------------------------|-------------------|
| Indian River County | 64 | 29 | 56 | - | 149 |
| Jackson County | 494 | 1,492 | 2,189 | 1,017 | 5,192 |
| Jacksonville | 1 | 5 | - | 53 | 59 |
| Jefferson County | 85 | 326 | 1,056 | 450 | 1,917 |
| Leon County | 1,733 | 2,790 | 8,295 | 1,221 | 14,039 |
| Liberty County | 103 | 259 | 113 | 283 | 758 |
| Longboat Key | 7 | 1,140 | - | - | 1,147 |
| Madeira Beach | 6 | 1 | 8 | 206 | 221 |
| Martin County | 1,410 | 9,146 | 6 | 36 | 10,598 |
| Melbourne Beach | 6 | 23 | - | - | 29 |
| Miami Dade County | 1,340 | 177 | 1,577 | 134 | 3,228 |
| Monroe County | 314 | 70,608 | 52,784 | 3,395 | 127,101 |
| Naples | 31 | 18,683 | 109 | 18,479 | 37,302 |
| Nassau County | 2,156 | 10,460 | 1,290 | 634 | 14,540 |
| Neptune Beach | 7 | - | - | 9 | 16 |
| New Smyrna | 119 | 8,855 | - | 4,479 | 13,453 |
| Oak Hill | - | - | - | 211 | 211 |
| Okaloosa County | 142 | - | 24 | - | 166 |
| Palm Beach | - | - | - | 203,932 | 203,932 |
| Pensacola | 2,513 | 5,138 | 1 | 321 | 7,973 |
| Pinellas County | - | 94,843 | - | 91,640 | 186,483 |
| Ponce Inlet | 6 | 10 | 14 | - | 30 |
| Sanibel | 144 | 34 | 171 | 8 | 357 |
| Santa Rosa | 101 | 435 | - | 6 | 542 |
| Sarasota County | 53 | 243 | 86 | - | 382 |
| Satellite Beach | 10 | 4 | 2 | - | 16 |
| St. Johns County | - | 769 | 9 | 333 | 1,111 |
| St. Lucie County | 515 | 2,070 | 79 | 1,107 | 3,771 |
| Titusville | - | - | - | 129 | 129 |
| Venice | 29 | 200 | 28 | 27 | 284 |
| Village of Estero | 78 | 18 | 882 | 3,322 | 4,300 |
| Wakulla County | 138 | 393 | 603 | 320 | 1,454 |
| Total | 23,411 | 306,800 | 95,060 | 398,844 | 824,115 |