# Characteristics of the Mississippi Sound Estuary and Watershed

Mississippi Sound Estuary Program

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# Preface

This is a Quarto book.

To learn more about Quarto books visit https://quarto.org/docs/books.

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# Part I

# Geographic Setting

Some info here about different ways of describing where we are and what comprises the watershed: USGS HUCs, DEQ's division into different basins, and EPA EcoRegions.

Possibly also the definitions from the CCMP of MS Sound, MS Sound Estuary, and MS Sound Watershed.

# 1 HUCs

Nice explanation of HUCs this USGS page.

The HUCs that make up the Mississippi Sound Watershed are 0317 (Pascagoula) and 0318 (Pearl).

Show some mappy breakdowns.

# 2 MDEQ Basins

There are several waterways that don't actually end up in either the Pearl or Pascagoula Rivers. So the Mississippi Department of Environmental Quality uses a slightly different division.

NEED TO CONFIRM, but I think: HUC12s are the same between MDEQ's classification and the USGS HUCs. They're just grouped differently, and the streams that empty into bays or straight into the Sound are the 'Coastal Streams Basin'. There is also a 'Coastal Offshore' grouping, that is comprised of the Sound itself, the islands, and the 3-mile zone beyond the islands.

# 3 EPA Ecoregions

For some geological classification that isn't based on watershed boundaries, we turn to the EPA's Ecoregions.

Intent here is to list which ecoregions are in our watershed, and which are in each basin (using MDEQ's divisions). And maybe how much are of each basin belongs to each ecoregion. Plus show a map.

# Part II

# Climatology

Pieces of this part will be things like precipitation, temperature, etc.

# 4 Precipitation

Make the precip maps here.

# 5 Temperature

Some descriptions and maps of temperature normals

# Part III

# Hydrology

Freshwater inflows from the different sources, salinity characteristics, etc.

# 6 Streams and Waterbodies

## 6.1 Amount of water

e.g. how many miles of streams, how many acres of lakes/ponds/etc. in the watershed

**TO-DO: Calculate this by basin (MDEQ definitions, not HUCs)**

### 6.1.1 Stream Lengths

```
Reading layer `EPA_NHDplus_flowline_MSEP' from data source
  `C:\Users\kc2741\Documents\CMEP Repos\msep_geospatialCharacterization\data\processed\EPA_NH
  using driver `GPKG'
Simple feature collection with 33808 features and 14 fields
Geometry type: MULTILINESTRING
Dimension:     XY
Bounding box:  xmin: -90.60984 ymin: 30.03385 xmax: -88.02912 ymax: 33.38485
Geodetic CRS:  NAD83
```

Table 6.1: Length (mi) of stream types in the MSEP watershed

| Type | total_miles |
|---|---|
| Artificial Path | 1,496.8 |
| Canal/Ditch | 145.3 |
| Coastline | 308.7 |
| Connector | 26.6 |
| Stream/River | 5.2 |
| Stream/River: Hydrographic Category = Intermittent | 20,350.3 |
| Stream/River: Hydrographic Category = Perennial | 11,730.7 |

### 6.1.2 Waterbody Areas

```
Reading layer `EPA_NHDplus_waterbody_MSEP' from data source
  `C:\Users\kc2741\Documents\CMEP Repos\msep_geospatialCharacterization\data\processed\EPA_NH
  using driver `GPKG'
Simple feature collection with 5282 features and 12 fields
Geometry type: MULTIPOLYGON
Dimension:     XY
Bounding box:  xmin: -90.61443 ymin: 30.03375 xmax: -88.07912 ymax: 33.35289
Geodetic CRS:  NAD83
```

Table 6.2: Total area (acres) of water body types in the MSEP watershed

| Type | total_acres |
|---|---|
| Lake/Pond: Hydrographic Category = Intermittent | 70.6 |
| Lake/Pond: Hydrographic Category = Perennial | 67,602.0 |
| Lake/Pond: Hydrographic Category = Perennial; Stage = Average Water Elevation | 27,726.5 |
| Lake/Pond: Hydrographic Category = Perennial; Stage = Normal Pool | 9.5 |
| Reservoir | 48.2 |
| Reservoir: Reservoir Type = Aquaculture | 471.6 |
| Reservoir; Reservoir Type = Treatment | 954.8 |
| Swamp/Marsh | 251,495.2 |

## 6.2 Designated Uses

from DEQ, what's designated for shellfishing vs. drinking water vs. fish and wildlife (etc.)

## 6.3 Impairments

TMDLs! How many, where are they, what are the TMDLs for.

## 6.4 Data Sources

**The `.qmd` file** that generated this section was: **streams_waterbodies.qmd**.

Stream Lengths and Waterbody Areas were calculated from the EPA's NHDPlus dataset.

# 7 Freshwater Inflows

Pearl River, Pascagoula River, bays. Do some summarizing based on USGS gage data?

# 8 Salinity

Summarize the info from the Gulf Data Atlas (e.g. the maps that went into the CCMP). Would be great to summarize the USGS salinity data and DMR's sampling data as well - some seasonal and annual details would be great.

# Part IV

# People and Land Use

Here's where population calculations and land use/land cover summaries can be generated.

# 9 Population

Code here that generated population info from Census data

# 10 Land Use / Land Cover

Summarize LULC info by MDEQ basin here

# 11 Summary

In summary, this book has no content whatsoever.

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