

Mapping Water in Connecticut: An Introduction

How Connecticut State Agencies use Water/Hydro Data

September 25th, 2025









About Us



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Agenda

CT Hydrography efforts

Watershed Management

Stream Flow Classifications

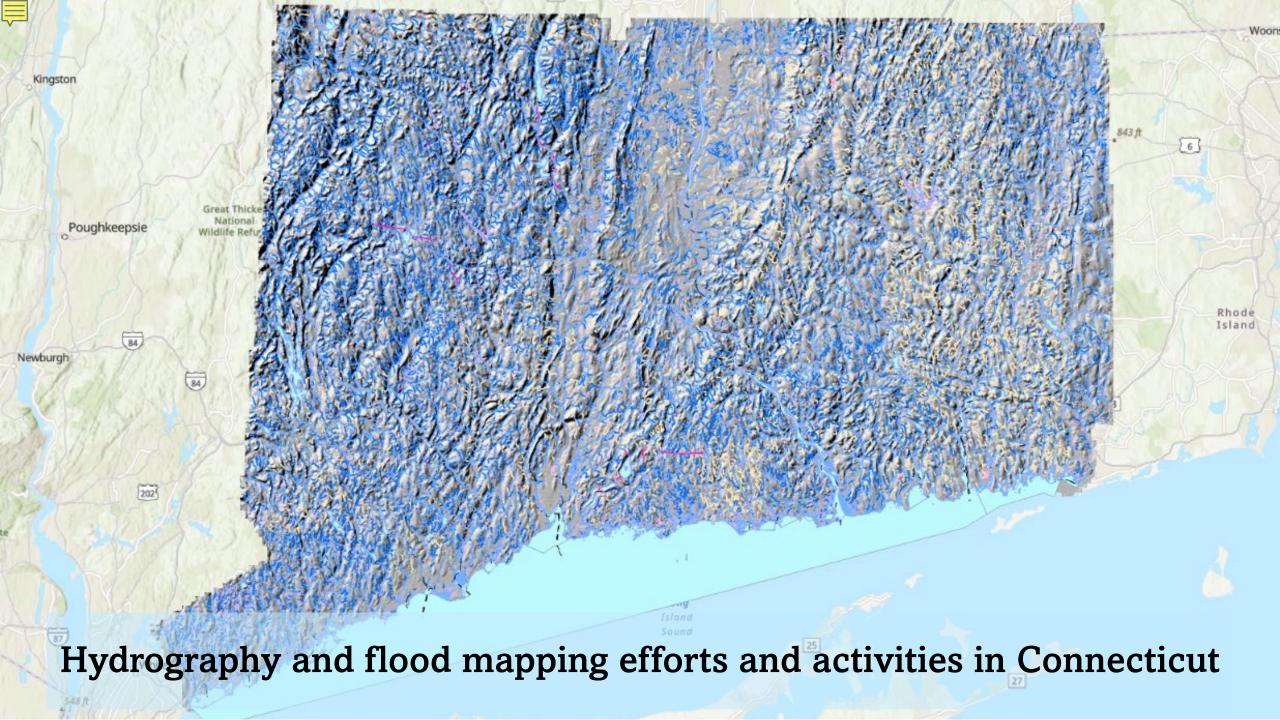
Flood Mapping

DESPP/DEMHS

Available Datasets

Final Thoughts and other available resources.

What's Next



Rivers and Streams

Connecticut is fortunate to be a 'water rich' state, with more than 5,800 miles of rivers and streams. (This distance is roughly the equivalent of the U.S.-Canada and U.S.-Mexico borders combined!) These waters include large rivers (e.g. the lower Connecticut River) to much smaller, babbling brooks. Connecticut is also home to four federally designated Wild and Scenic River Systems - the Eightmile River, the lower Farmington River and Salmon Brook, the West Branch Farmington River, and the Wood and Pawcatuck River systems.



Water Quality Information

- River and Stream Water Quality Monitoring
- Phosphorus Reduction Strategy for Inland Non-Tidal Waters
- Water Quality Standards and Classifications
- Integrated Water Quality Report
- Nonpoint Source Pollution (NPS) Management
- Integrated Water Resource Management
- Watershed Management Program

Water Quantity Information

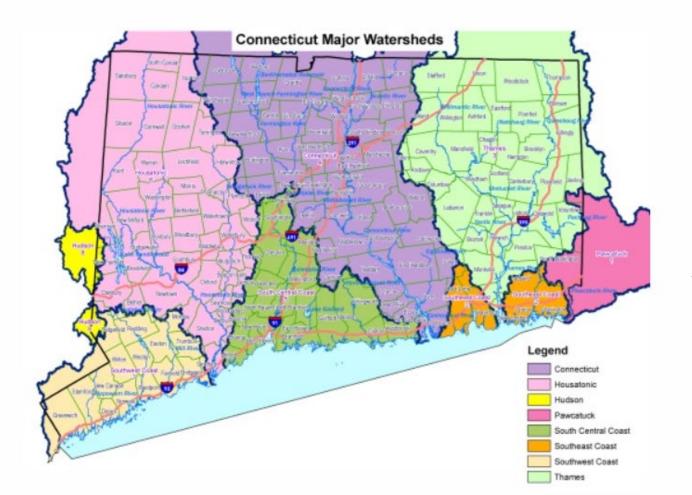
- Flood Management & Natural Hazard Mitigation
- State Water Plan
- Stream Flow Standards and Regulations
- Water Diversion Program

Related DEEP Pages

- State Dams and Dam Safety Program
- DEEP Municipal Wastewater Section

Watershed Management

Watershed management is a term used to describe the process of implementing land use practices and water management practices to protect and improve the quality of the water and other natural resources within a watershed by managing the use of those land and water resources in a comprehensive manner.



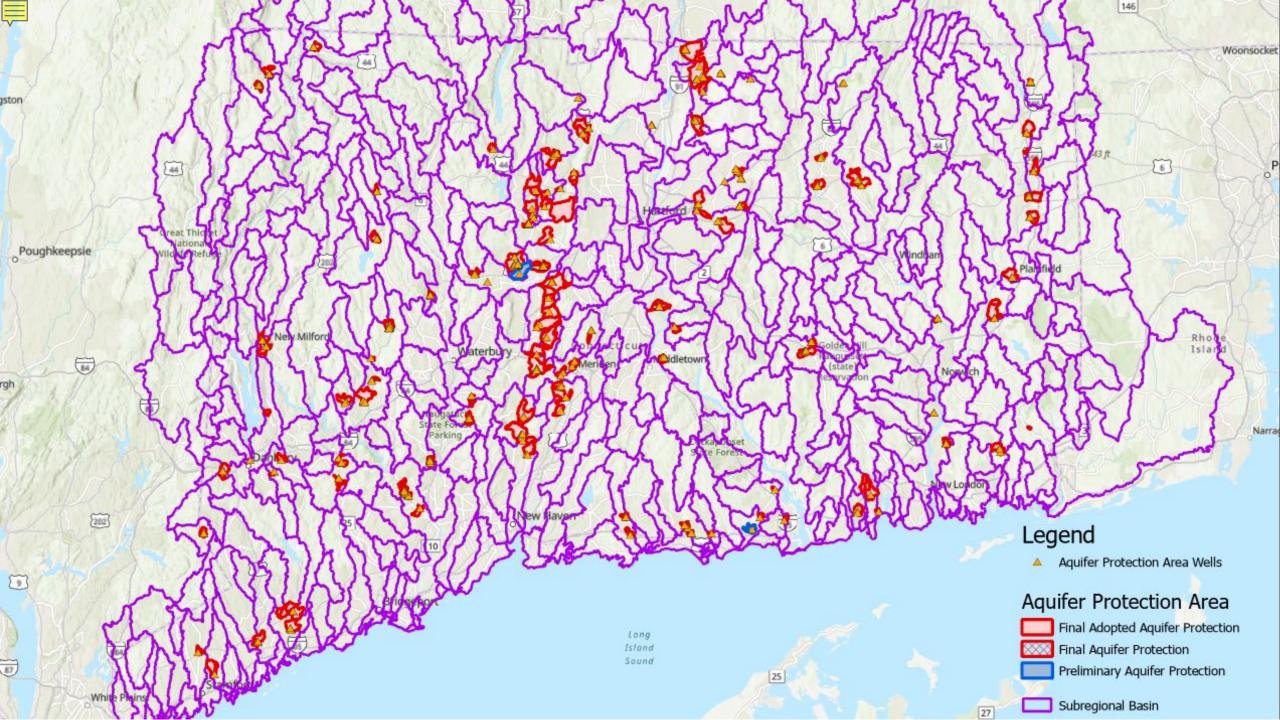
Overview of Watershed Management Principles

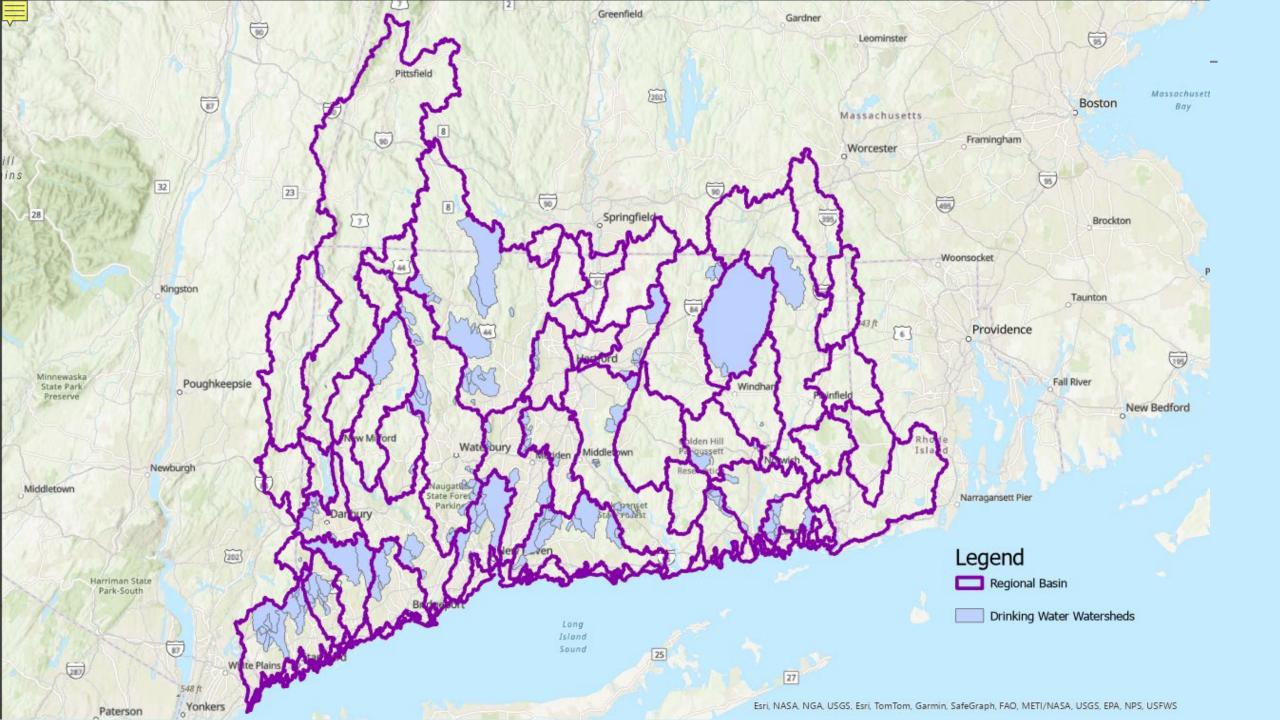
Watershed Management Plans and Documents

Guidance for Developing Watershed Based Plans

Municipal Outreach and Low Impact Development

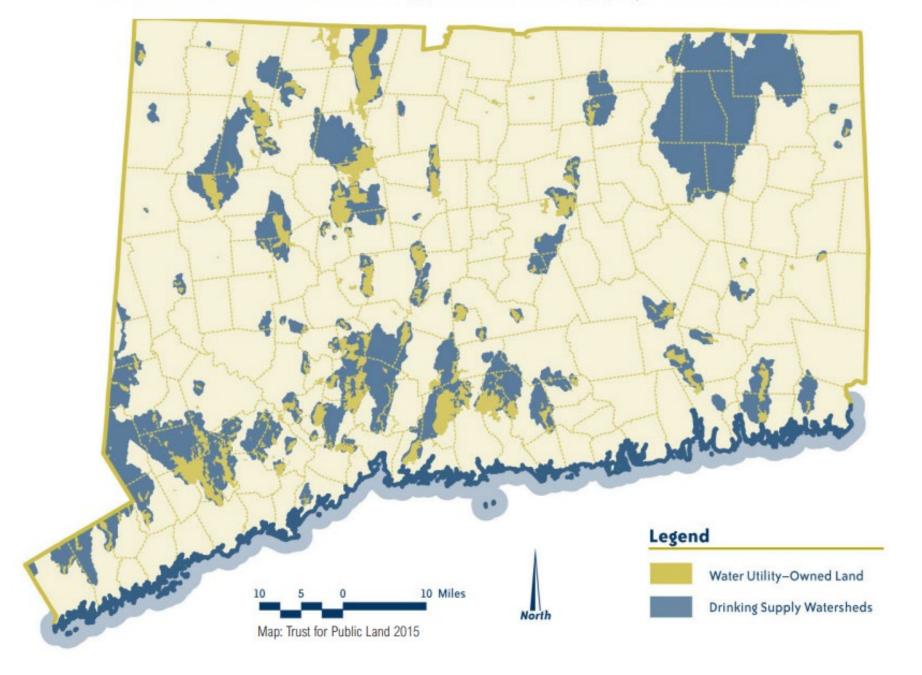
for Watersheds



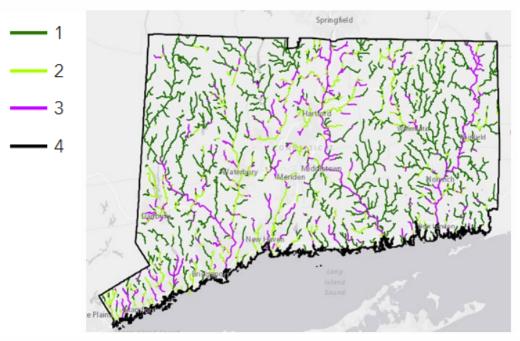


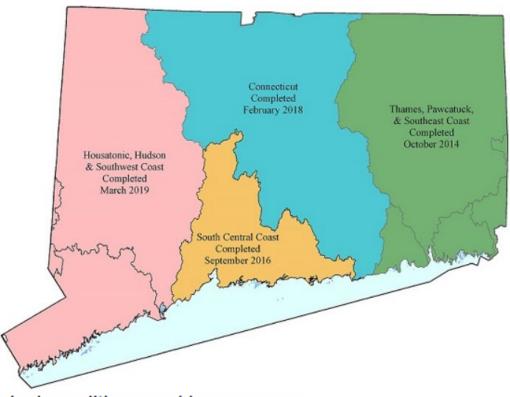


Connecticut Drinking Water Supply Watersheds



Connecticut Stream Flow Classifications





The stream flow classification of a stream or river segment is based on ecological conditions and human use characteristics, and determines flow management goals and applicable flow standards for that segment. Stream flow classifications were developed using known information on factors indicative of the degree of human alteration of natural stream flow, environmental flow needs, and existing and future needs for public water supply. The factors needed to be considered for classifying the streams and rivers of the State of Connecticut are provided for in Section 26-141b-5 of the Regulations of Connecticut State Agencies (RCSA). The classification process followed the Detailed Stream Flow Classification Methodology CRCSA). For a breakdown of the classification process and outcome, view the Stream Flow Classification Fact Sheet Leach basin follows a different legislative time frame for when reporting activities, such as stream flow releases, will come into effect. Those time frames are provided in the graphic above.



METHODOLOGY FOR DEFINING PRELIMINARY STREAM FLOW CLASSIFICATIONS PURSUANT TO SECTIONS 26-141B-1 TO 26-141B-8 OF THE REGULATIONS OF CONNECTICUT STATE AGENCIES

Revised: 2 May 2016

INTRODUCTION

The State of Connecticut Stream Flow Standards and Regulations (Sections 26-141b-1 to 26-141b-8 of the Regulations of Connecticut State Agencies) require that the Department of Energy and Environmental Protection (CT DEEP) in consultation with the Department of Public Health (DPH) prepare a State-wide map of proposed classifications indicative of the degree of human alteration of natural stream flow. The regulations define four stream flow class standards (See Table 1). The regulations include consideration of 18 factors when adopting river or stream system classifications (Sections 26-141b-5 Adoption of river or stream system classifications).

The process described below represents the data and methodology used to evaluate those 18 factors to assign stream segments a proposed stream flow class for public comment. The numbers in parentheses below reflect the stream flow classification factor listed under Sec. 26-141b-5(a). Sec. 26-141b-2 defines a stream segment as a discrete, contiguous reach of river or stream channel for which a uniform classification has been adopted. For the purposes of proposing classifications, stream segments were derived from the National Hydrography Dataset (NHD) developed at a 1:24,000 scale (1 inch = 2000ft) by USGS for the State of Connecticut using Wrap Hydro tools (http://www.crwr.utexas.edu/gis/gishydro03/WRAPhydro/WRAPhydro.htm), an extension for ArcGIS. There are approximately 36,000 stream segments in the State. The average length of the stream segments is approximately 0.3 miles long.



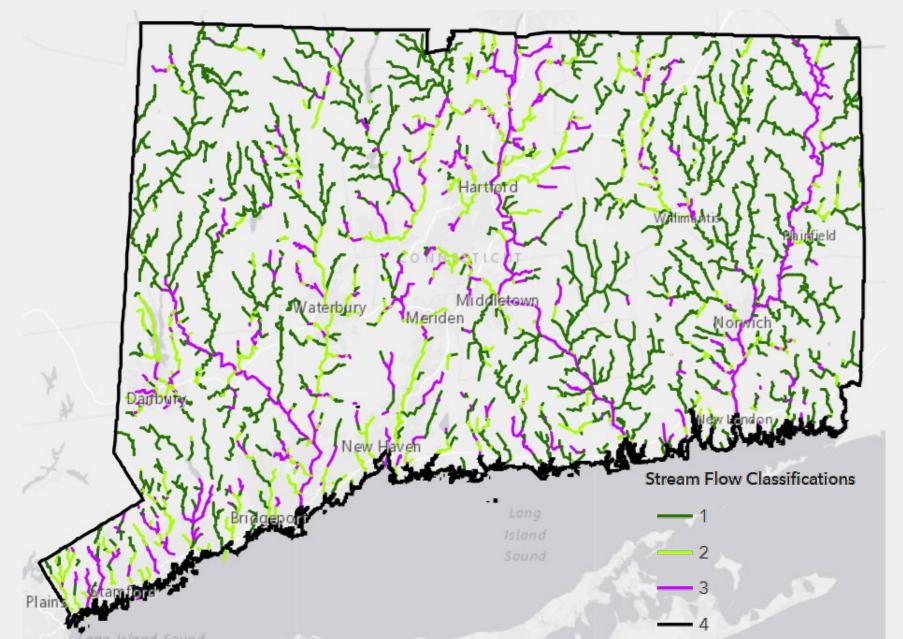


Stream flow Class	Stream Condition	Narrative Standard
1	Free Flowing Stream	Maintain stream flow and water levels to support and maintain habitat conditions supportive of an aquatic, biological community characteristic typically of free-flowing stream systems
2	Minimally Altered	Maintain stream flow and water levels to support and maintain habitat conditions supportive of an aquatic, biological community characteristic minimally altered from that of typically of free-flowing stream systems
3	Moderately Altered	Maintain stream flow and water levels to support and maintain habitat conditions supportive of an aquatic, biological community characteristic moderately altered from that of typically of free-flowing stream systems
4	Altered	Exhibit substantially altered stream flow conditions caused by human activities to provide for societal needs

Table 1: Narrative Standard for Each Stream flow Class



Map of Final Adopted Stream Flow Classifications



Flood Management



National Flood Insurance Program (NFIP) - Established by Congress with the passage of the National Flood Insurance Act of 1968, the NFIP is administered by the Federal Emergency Management Agency (FEMA). Learn more about Flood Maps, Flood Regulations, and Flood Insurance.

Rising Waters: Planning for Flooding in Connecticut - An educational video that highlights flooding scenarios within our state along with the social and economic impacts of flooding, and opportunities for mitigation. The video aims to increase the knowledge base of municipal officials to make informed decisions and effective choices supporting resilience. (Video

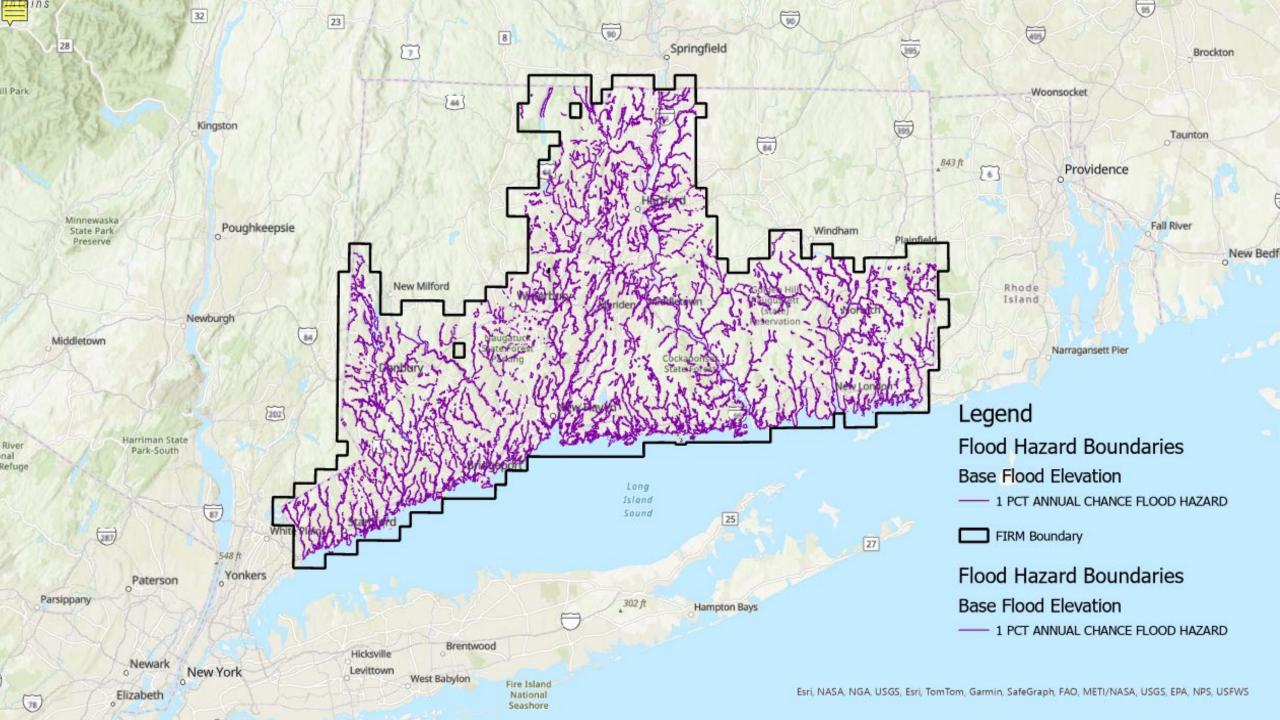
length - 15 minutes)

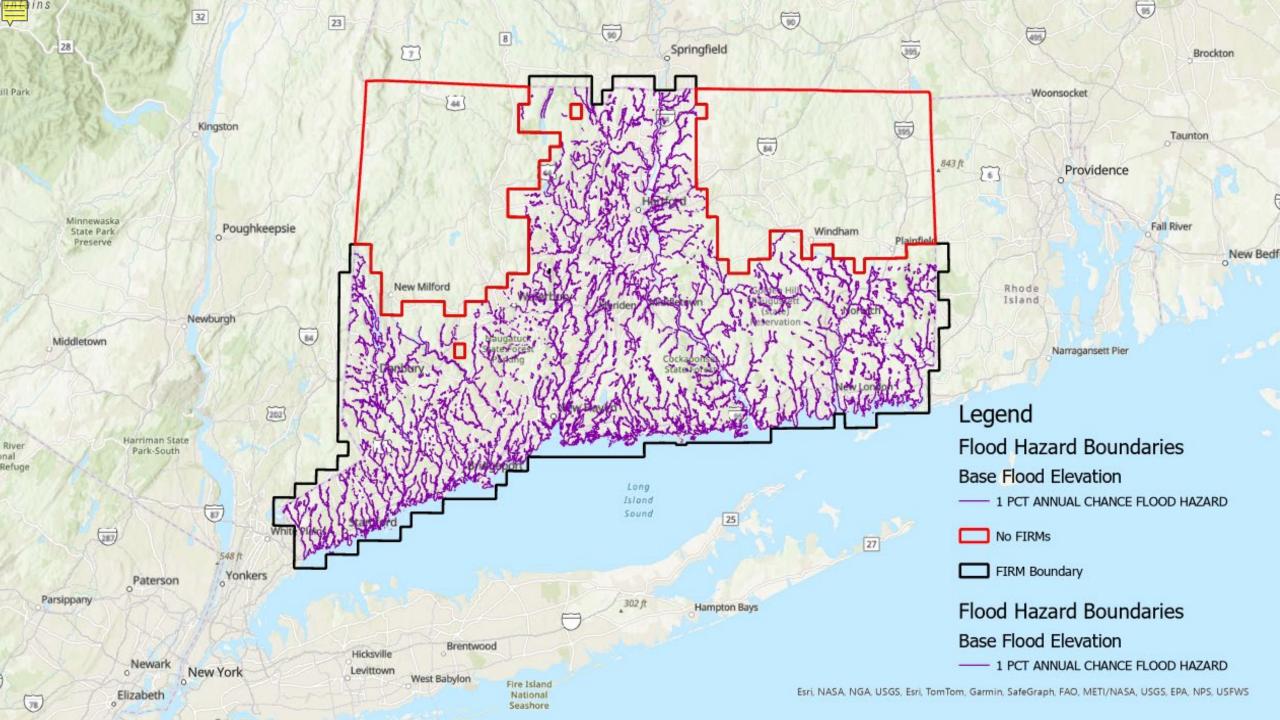


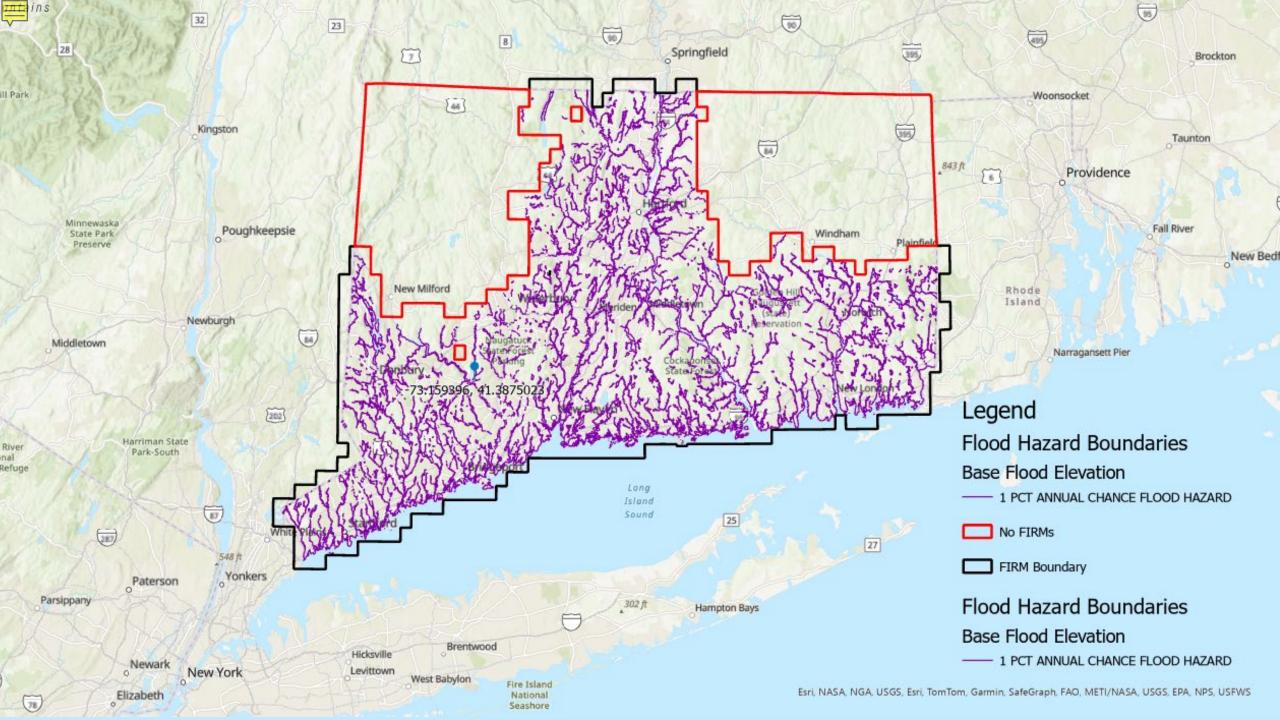
Connecticut DEEP Flood Management Certification Program

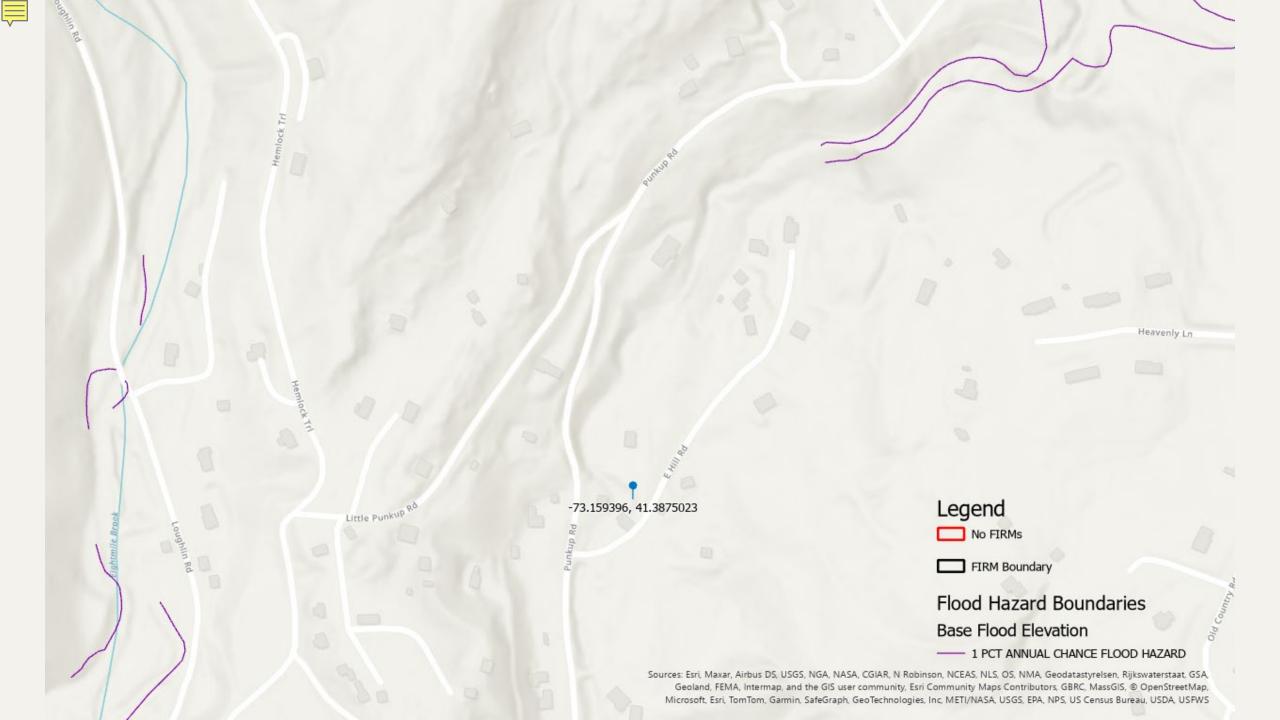
Connecticut General Statutes Sections 25-68b through 25-68h require any state agency proposing an activity within or affecting a floodplain or that impacts natural or man-made storm drainage facilities to submit a flood management certification to DEEP.

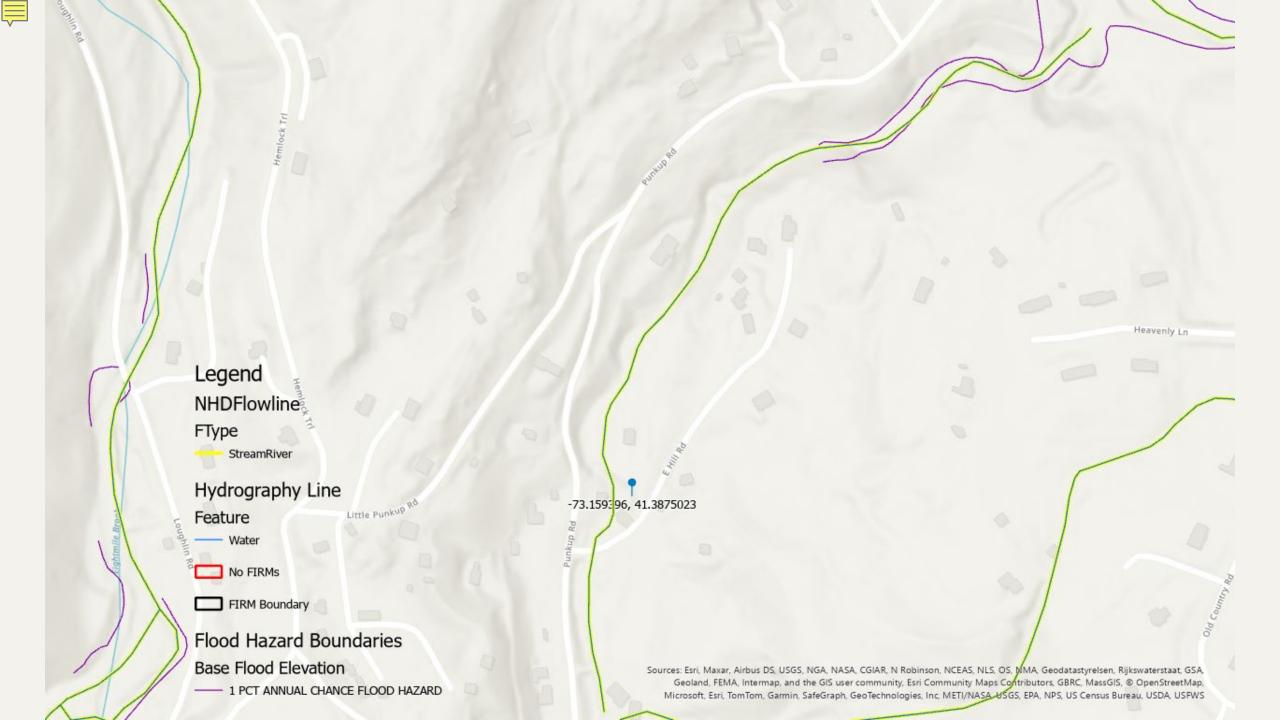
- DEEP's Flood Management Certification Fact Sheet
- Method for calculating the 500 year Flood Elevation in a FEMA Designated Coastal Flood Hazard Area for the purpose of obtaining a Flood Management Certificate from DEEP

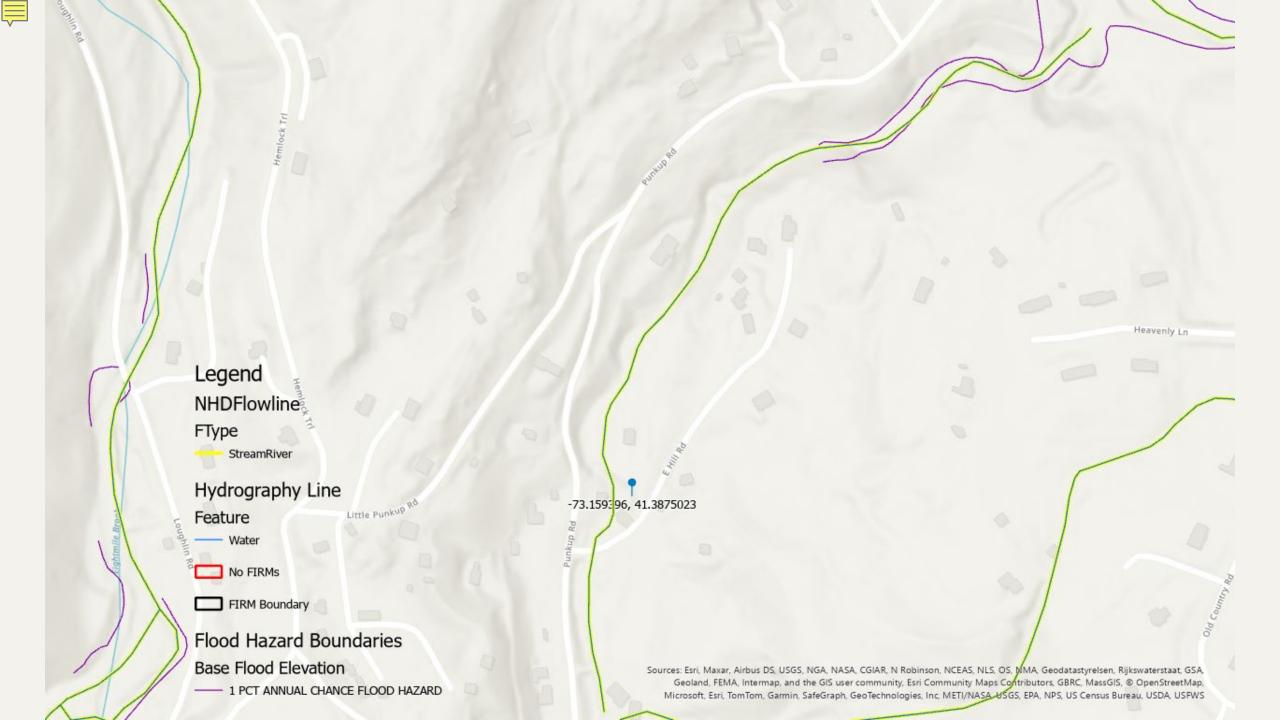






















Department of Emergency Services & Public Protection



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Emergency Management and Homeland Security



Helping Connecticut Before, During, and After an Emergency

The Division of Emergency Management and Homeland Security (DEMHS) provides a coordinated, integrated program for statewide emergency management and homeland security, including coordination of the state response to emergencies, strategic and operational all-hazards planning; community preparedness; exercise and training; and grants planning and program management.

Explore this page to find programs, services, and helpful links for DEMHS.

Browse DEMHS topics A to Z >

Prepare yourself for emergencies in CT



Department of Emergency Services & Public Protection



Severe And Flash Flooding

Connecticut and its cities, towns and tribal nations, are susceptible to flooding throughout the year in both the summer and winter months. Numerous rivers run through Connecticut and the state contains the estuaries for several major rivers.

Flooding of these rivers can occur due to heavy rainfall or snowmelt in Connecticut or other parts of New England during the Spring months and at other times of the year. Additionally the Connecticut shoreline can be susceptible to coastal inundation; thus it is important to "Know Your Zone!" if you live in a coastal community. It is important to remain prepared for such events and to Stay Informed during severe weather and flooding situations.

- Coastal Inundation and Flood (SLOSH) Maps
- Know Your Zone! Shoreline Evacuation Maps

Flash Flooding And River Flooding

Historically flooding has caused a significant number of federally declared disasters in Connecticut. Larger Rivers in Connecticut Include: The Housatonic, The Connecticut, The Farmington, The Thames, and The Naugatuck Rivers. In addition to these larger rivers, Connecticut has many smaller streams, brooks, and rivers that are also susceptible to flooding throughout the year. It is always important to stay informed about ongoing weather situations which may result in flooding.

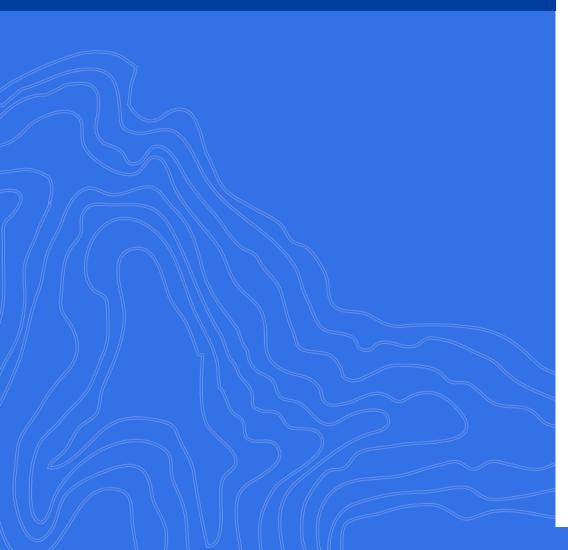
In addition to river flooding, flash flooding may occur in urban environments which have increased impervious surfaces and the lack of sufficient drainage. If you live in one of these areas susceptible to flooding, It is important to remain informed during severe and rapidly changing weather situations.

Flooding Preparedness Tips

- If you live on the Connecticut coastline; "Know Your Zone!" in case of the need for evacuation do to coastal flooding.
- Those who experience flooding should work closely with their local police, fire, emergency management, and other emergency support organizations to monitor the situation.
- · Use common sense and evaluate your situation:
 - Motorists should use caution driving and not venture into areas where water has collected. People
 often underestimate the force of flood waters and think they can drive through the areas.
 - o Do not drive, wade or enter into any flood zones.
 - Evacuate if told to do so.
 - o Move to higher ground or a higher floor.







Coastal Inundation And SLOSH Maps

The Connecticut coastline is susceptible to flooding from both river floods and coastal storm effects, with over many permanent residents and additional seasonal residents.

• Severe and Flash Flooding Preparedness Tips

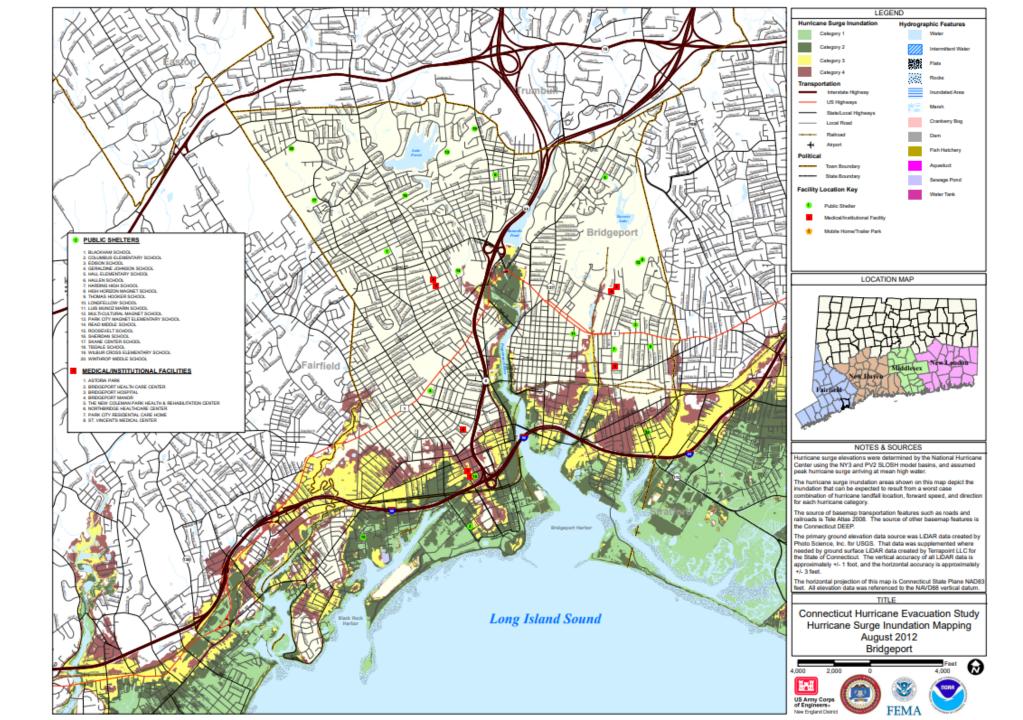
The US Army Corps of Engineers has created Sea, Lake, and Overland Surge from Hurricanes (SLOSH) maps for each Connecticut coastal community, and those have been included as attachments below for planing purposes.

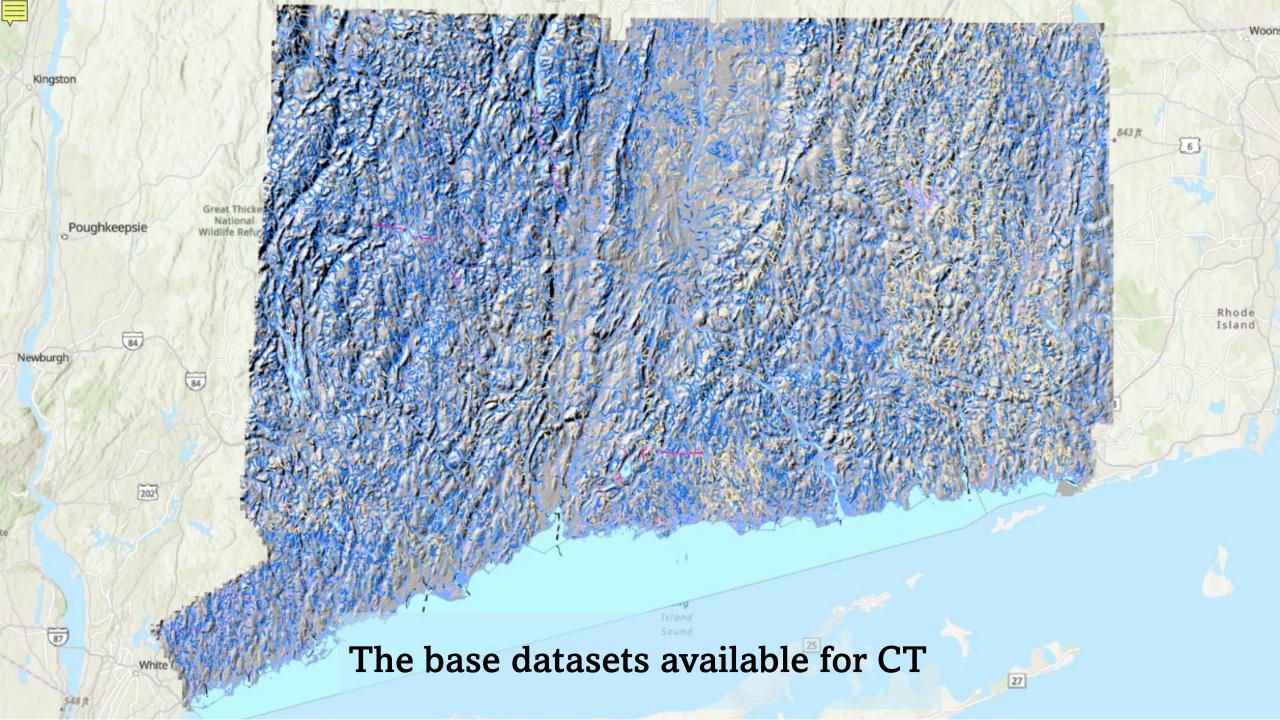
SLOSH MAPS

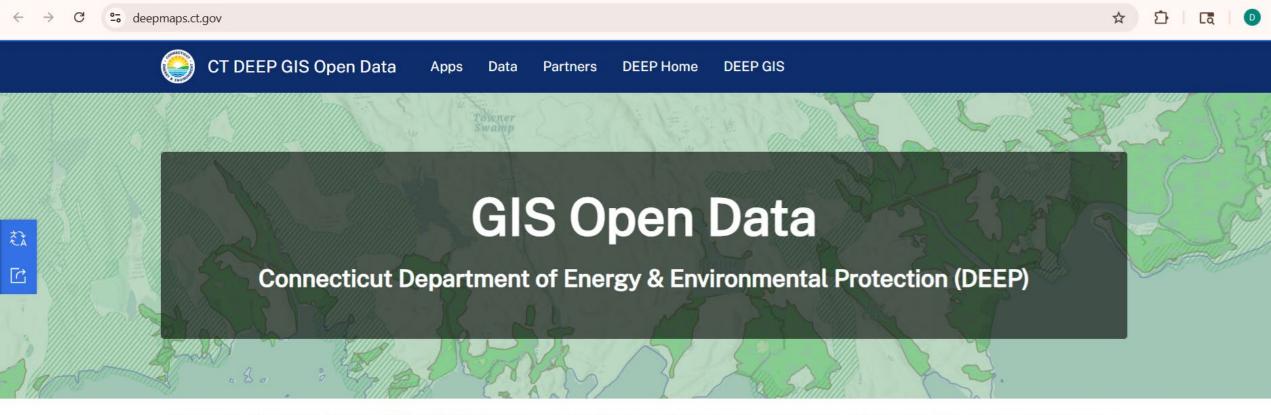
The following Sea, Lake, and Overland Surge from Hurricane (SLOSH) maps represent the most up-to-date hurricane surge data available. These maps are intended for planning purposes only.

Please follow the instructions of local officials during an emergency.

DEMHS Region 1	DEMHS Region 2	DEMHS Region 4
<u>Bridgeport</u>	<u>Branford</u>	<u>East Lyme</u>
<u>Darien</u>	Clinton	<u>Groton</u>
<u>Fairfield</u>	East Haven	New London
<u>Greenwich</u>	Guilford	Old Lyme
<u>Norwalk</u>	<u>Madison</u>	Stonington
Stamford	Milford	<u>Waterford</u>
Stratford	<u>NewHaven</u>	
Westport	Old Saybrook	
	West Haven	
	Westbrook	







GIS Open Data

Geographic Information Systems (GIS) at DEEP play an important role in our agency's mission of protecting and preserving the environment for present and future generations. DEEP develops and maintains a statewide automated geographic storage and retrieval system that can rapidly integrate and analyze large amounts of spatial map and file data over any selected geographic area.

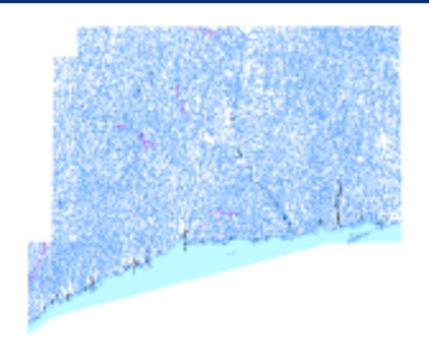
DEEP develops and shares authoritative geospatial information with federal, state, and municipal government agencies such as the U.S. Geological Survey, Environmental Protection Agency, Federal Emergency Management Agency, Connecticut Department of Public Health, Connecticut Department of Transportation, and the Connecticut Office of Policy and Management.

Explore Data

i.e. Data Layers, Maps, or Applications

Data





DEEP GIS Open Data

Connecticut Hydrography Set



ctdeepgis maps

Department of Energy & Environmental Protection

Summary

Connecticut Hydrography Set includes: Hydrography Line, Hydrography Poly

Connecticut Hydrography Set: Connecticut Hydrography Line includes the line features of a layer named Hydrography. Hydrography is a 1:24,000-scale, polygon and line feature-based layer that includes all hydrography features depicted on the U.S. Geological Survey (USGS) 7.5 minute topographic quadrangle maps for the State of Connecticut. This layer only includes features located in Connecticut. These hydrography features include waterbodies, inundation areas. marshes, dams, aqueducts, canals, ditches, shorelines, tidal flats, shoals, rocks, channels, and islands. Hydrography is comprised of polygon and line features. Polygon features represent areas

Details



Map

Feature Service



July 3, 2023 at 2:48:13 PM EDT Date Updated



October 28, 2019 at 10:08:22 AM EDT **Published Date**



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Drainage Basin Set



ctdeepgis maps

Department of Energy & Environmental Protection

Summary

Drainage Basin Set includes: Basin Boundary Lines, Basin Polygon

See full Data Guide here.

Drainage Basin Set: Connecticut Drainage Basins is 1:24,000-scale, polygon and line feature data that define natural drainage areas in Connecticut. These are small basin areas that average approximately 1 square mile in size and make up, in order of increasing size, the larger local, subregional, regional, and major drainage basin areas. Connecticut Drainage Basins includes drainage areas for all Connecticut rivers, streams, brooks, lakes, reservoirs and ponds published on 1:24,000-scale 7.5 minute topographic quadrangle maps prepared by the USGS between 1969 and 1984. Data is compiled at 1:24,000 scale (1 inch = 2,000 feet). This information is not updated. Polygon and line features represent drainage basin areas and boundaries, respectively. Each basin area (notygon) feature is outlined by one or more major regional, subregional, local, impoundment

Details



Map

Feature Service



July 3, 2023 at 1:44:10 PM EDT **Date Updated**



October 28, 2019 at 11:10:02 AM EDT **Published Date**



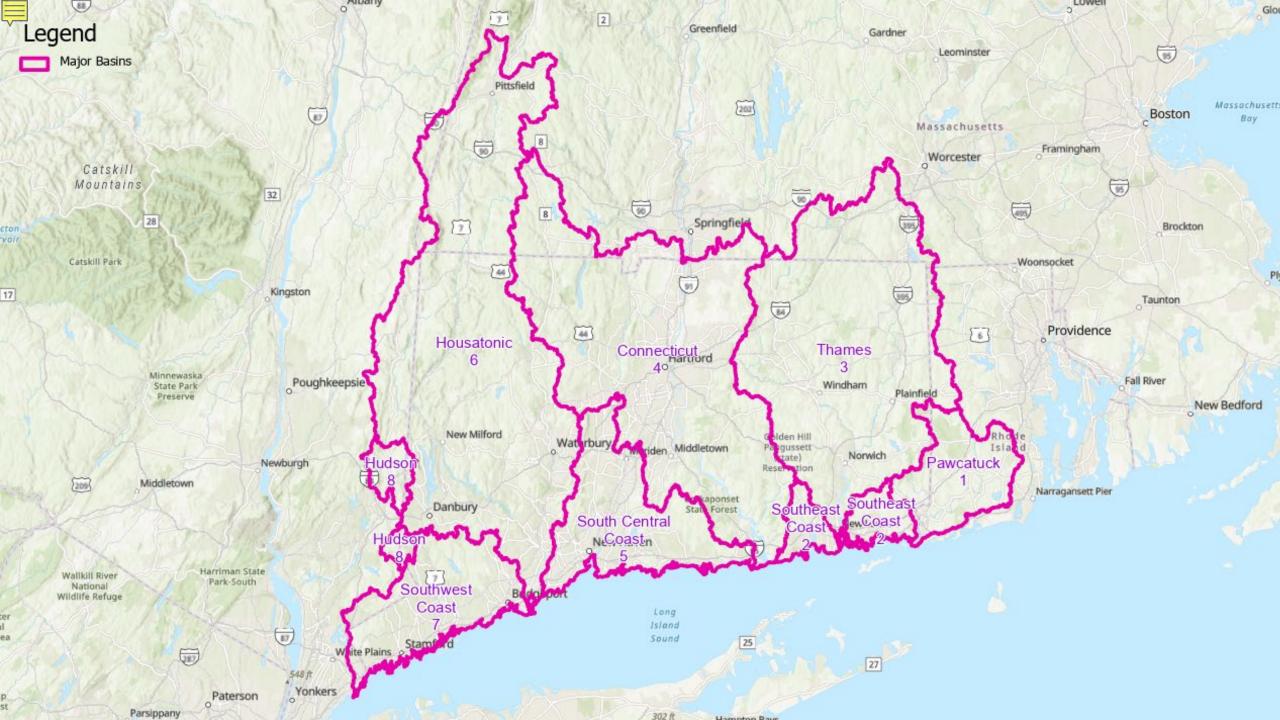
Public

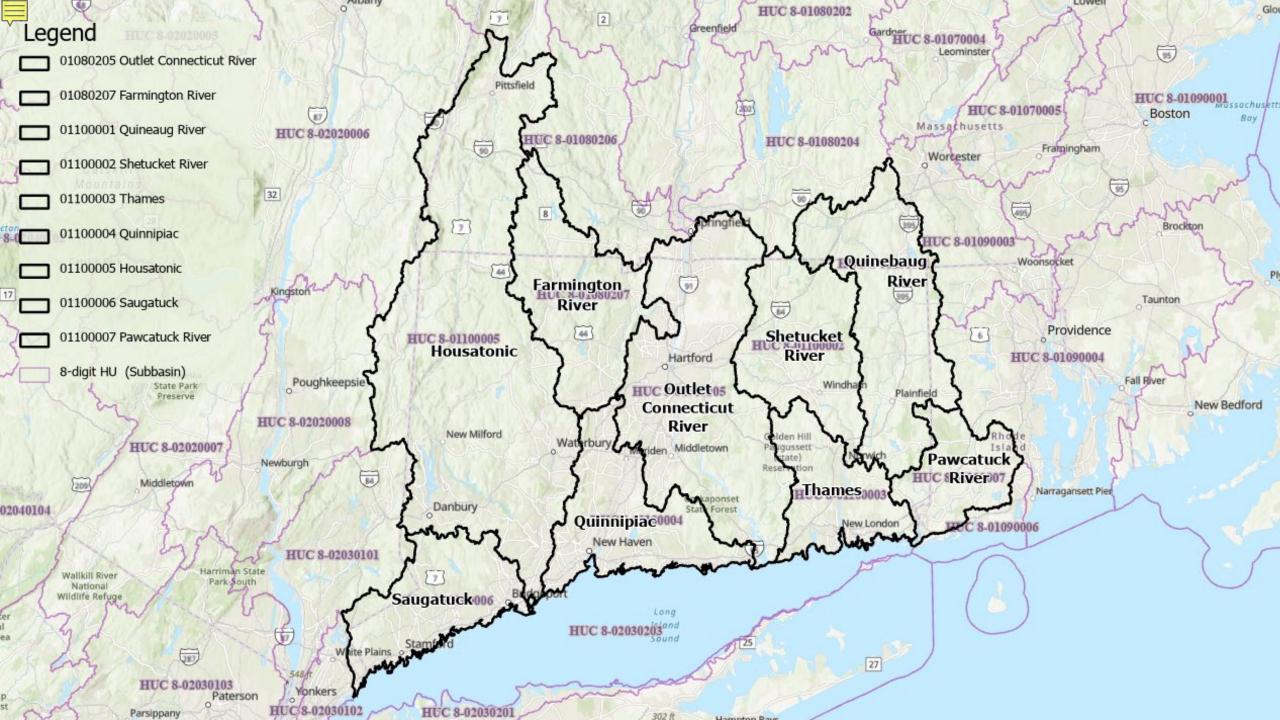
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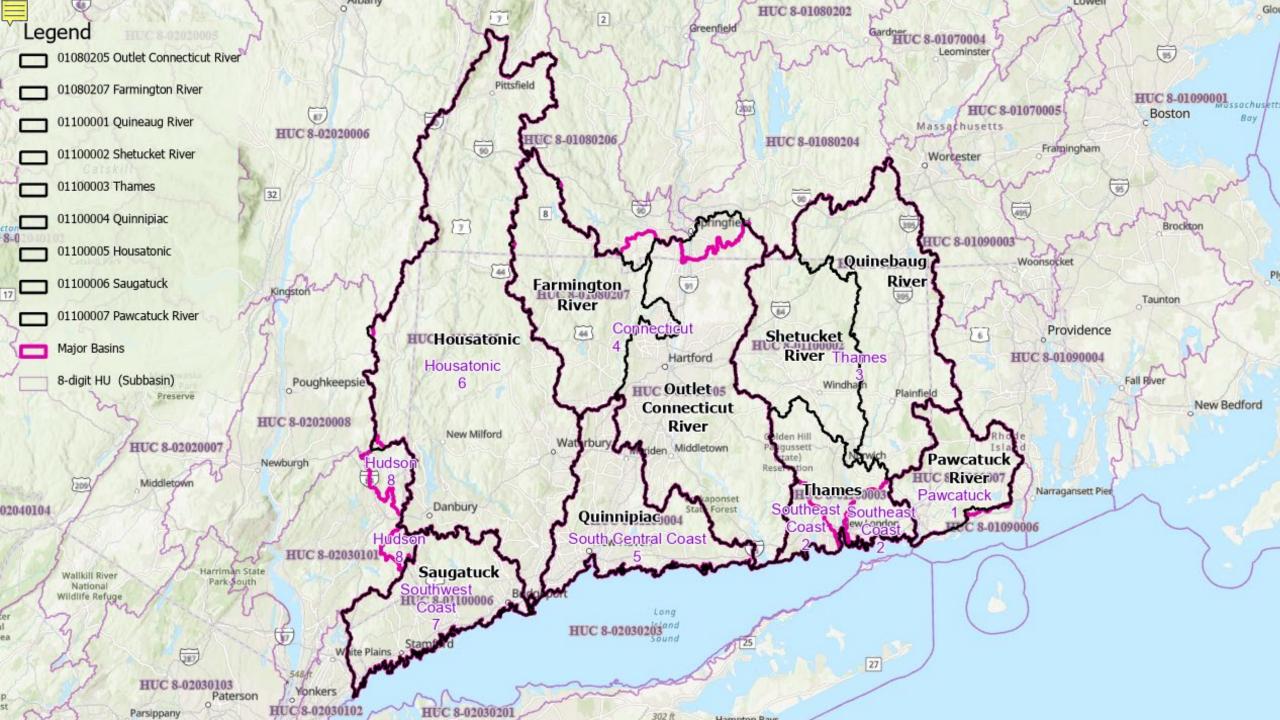


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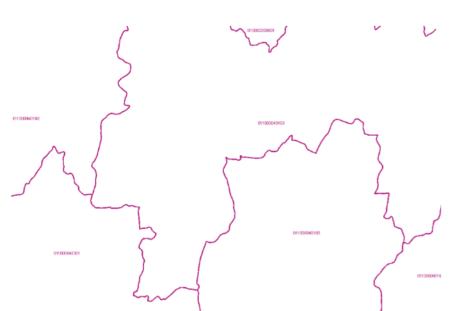
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Watershed Boundary Dataset



ctdeepgis maps

Department of Energy & Environmental Protection

Summary

The Watershed and Subwatershed hydrologic unit boundaries provide a uniquely identified and uniform method of subdividing large drainage areas. These smaller sized hydrologic units (up to 250,000 acres) are useful in many programs supported by the Natural Resources Conservation Service and others.

This data set is a digital hydrologic unit boundary layer that is at the Subwatershed (12-digit) level. The original data set was developed by delineating the boundary lines on base USGS 1:24000 scale topographic quadrangle, and digitizing the delineated lines. Digital Raster Graphics (DRG) images were used for edits to the data layer. This data set consists of geo-referenced digital map data and attribute data. The spatial data are in a statewide coverage format and include complete coverage of the entire state of Connecticut, and small parts of surrounding states. The hydrologic unit ID code attached to each delineated polygon is linked to the attribute data.

Details



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June 23, 2025 at 2:50:33 PM EDT Date Updated



June 13, 2025 at 12:03:40 PM EDT **Published Date**



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By National Hydrography

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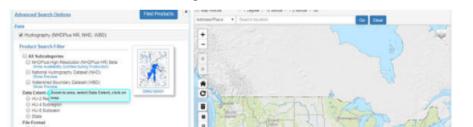
MULTIMEDIA

The NHDPlus High Resolution (NHDPlus HR), National Hydrography Dataset (NHD), and Watershed Boundary Dataset (WBD) are available for download and as web-based map services.

Note – As of October 1, 2023, the NHD was retired. NHD data will continue to be available, but no longer maintained. The most current data will be available through the 3D Hydrography Program (3DHP).

Access 3DHP Products

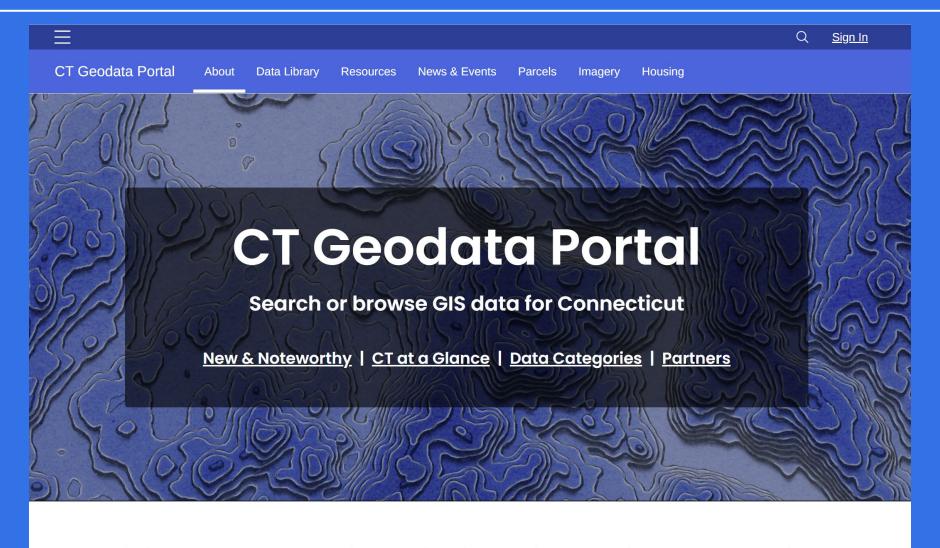
The National Map Downloader



The National Map Web-based Map Services List







The mission of the Geodata Portal is to provide high-quality geospatial data for Connecticut data practitioners across all sectors and industries. By hosting, aggregating, and sharing on a trusted and reliable GIS open data platform, our users can expect to easily find and access valuable and trusted data resources.



Geodata Portal Highlights

https://geodata.ct.gov



The site has been live for nearly three years! Updates occur periodically.

The Geodata Portal shares partner data and items to make it all available in one place.

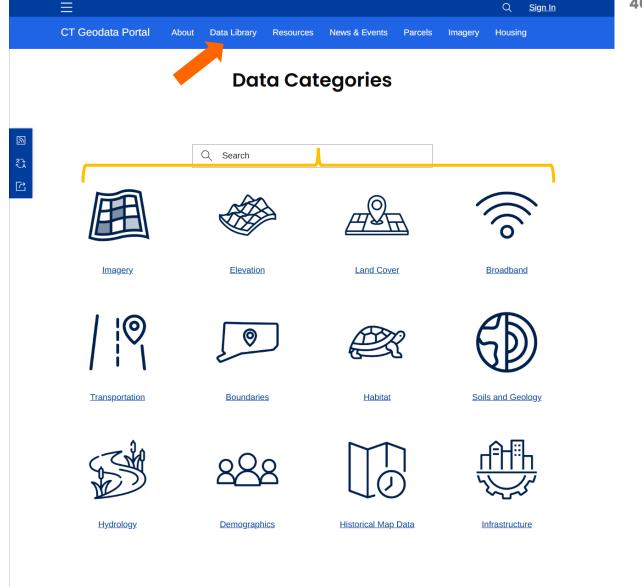
Data Collection Portal created Spring of 2025.

Initiative pages for important topics and datasets.

- Parcels
- Housing
- Imagery
- More Coming Soon...



Data Library



Go to Developer Help & Additional Resources >

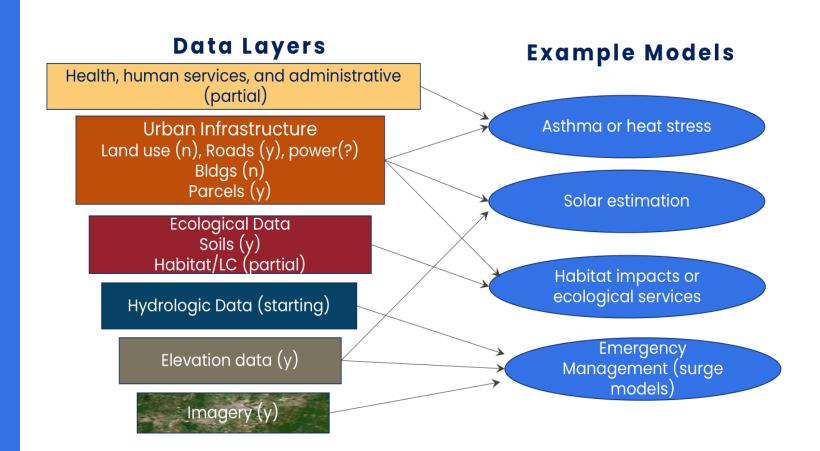


Make Once, Use Many Times

This visual shows that even partial or incomplete datasets can still inform effective planning tools. The key is to start connecting them early, structure them well, and ensure the models evolve as the data improves.

Better foundational data has a greater positive effect on these models than any other single improvement.

Downstream Effects of Good Foundational Data



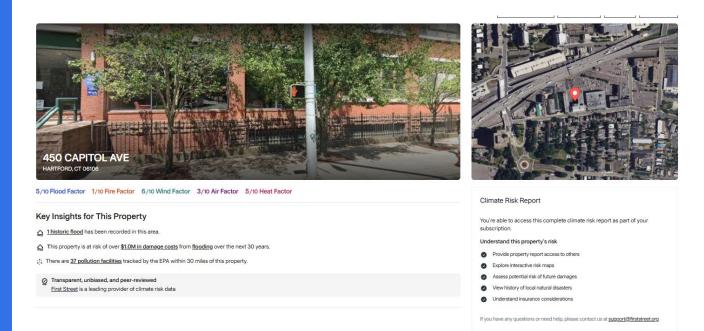


Other State Activities

Free Climate Risk Mapping Tool for Connecticut Residents

The Connecticut Insurance Department, in collaboration with First Street, the leading provider of physical climate risk analytics, is providing this free risk mapping tool to help Connecticut residents make informed decisions about their insurance needs.

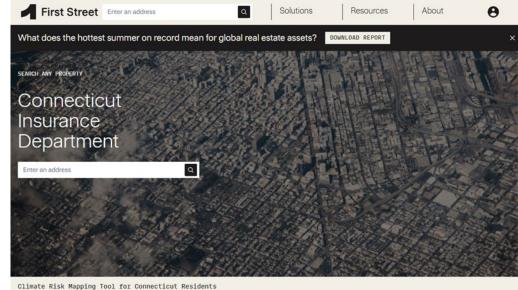
Users can enter any Connecticut address to view maps for flood, fire, wind, air quality, and extreme heat, to receive detailed, property-specific climate-risk assessments.













What's Next?



https://clear.uconn.edu/webinars/



The 3D Hydrography Program: Modernizing the Nation's Water Data Infrastructure

In the second installment of this three-part webinar series, we'll explore the U.S. Geological Survey's (USGS) effort to remap the Nation's hydrography through the 3D Hydrography Program (3DHP) and why now is the time for this significant change.

Regional Stormwater Mapping Support: From MS4 to SB9 (PA 25-33)

In this final installment of this three-part webinar series, we will talk about WestCOG's experience providing mapping support to towns working to meet their obligations under the MS4 permit requirement. Which includes the logistics of mapping stormwater infrastructure, data structure, outputs, lessons learned, and how these efforts will carry forward into the mapping requirements of Public Act 25-33 (which includes the collection of bridges and culverts).



Questions?

