



Connecticut Institute for Resilience
and Climate Adaptation

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Beavers, the Law, and Climate Resilience

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What did our
streams and rivers
look like 400 years
ago?

(probably not like this)





Since roughly 1600, 80% of inland wetlands have disappeared.

Why?

Removal of Beavers

(Plus changes in land use, development, etc. with human population increases)

Estimates of 60-400 million beaver in North America prior to start of fur trade.

Now, likely less than 6 million.



Beaver biology and ecology

- Large semi aquatic rodents, live in communal family groups
- Use sharp teeth to gnaw and cut down waterside trees
- Build dam structures to create impoundments so lodge entrances are underwater
- Provide habitat for many associated species



Beaver and climate change



- Beaver wetlands as water storage, groundwater recharge, buffers to drought
- Slow flow leading to greater local infiltration which can reduce flooding
- In places with high fire potential, beaver wetlands serve as refugia, fire breaks
- Carbon sequestration
- Improvements in water quality
- Habitat reservoirs for increased biodiversity

Beaver management

Nuisance or climate resilience partner?

What does the law say?

Who has jurisdiction?

When do we do what?

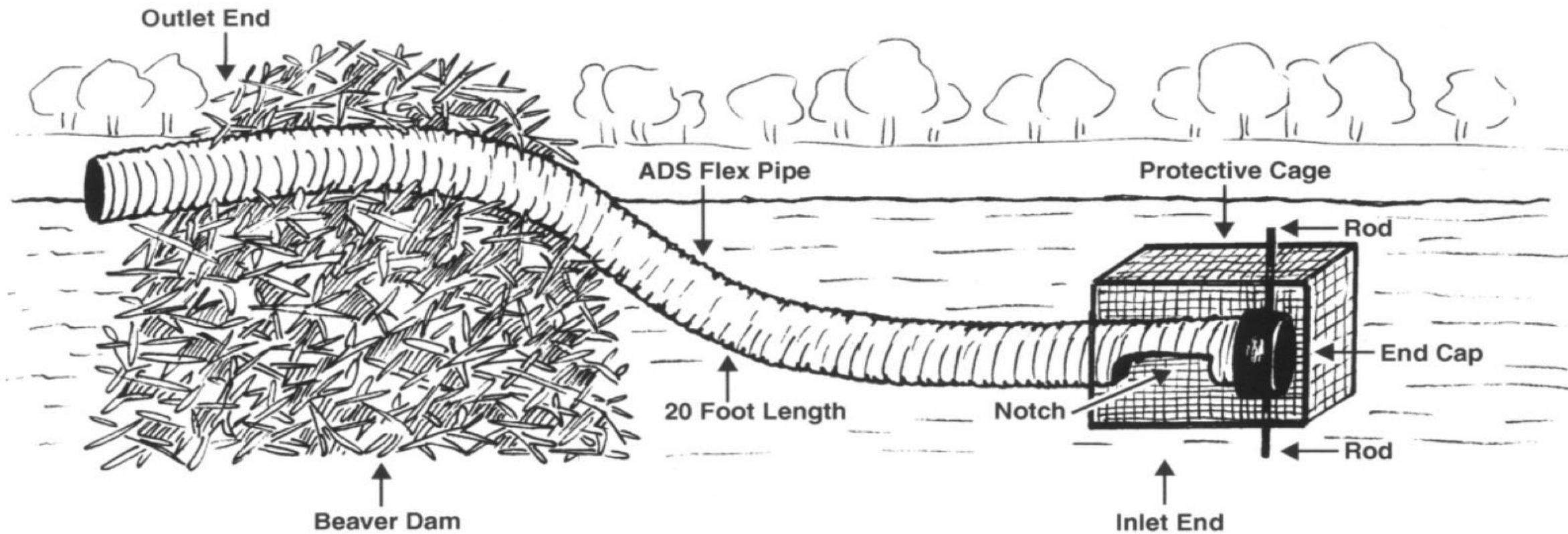


Jurisdiction

CT DEEP has jurisdiction over wildlife, including beavers

Local Inland Wetland Agency has regulatory authority over activity in wetlands and watercourses and the upland review area.





Can we
coexist with
beaver in the
northeast?





Thank you!

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Culverts and Climate Resilience

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Photo credit: CTDOT
East Flat Hill Road over Transylvania Brook, Southbury, shown before and after work to replace the culvert.

What is a Culvert?

- Culverts are tubes, tunnels, large pipes or structures designed to channel water under roadways, railways and other pathways, allowing roads and transportation to be unaffected by waterflow passing beneath.

CT Culvert Facts

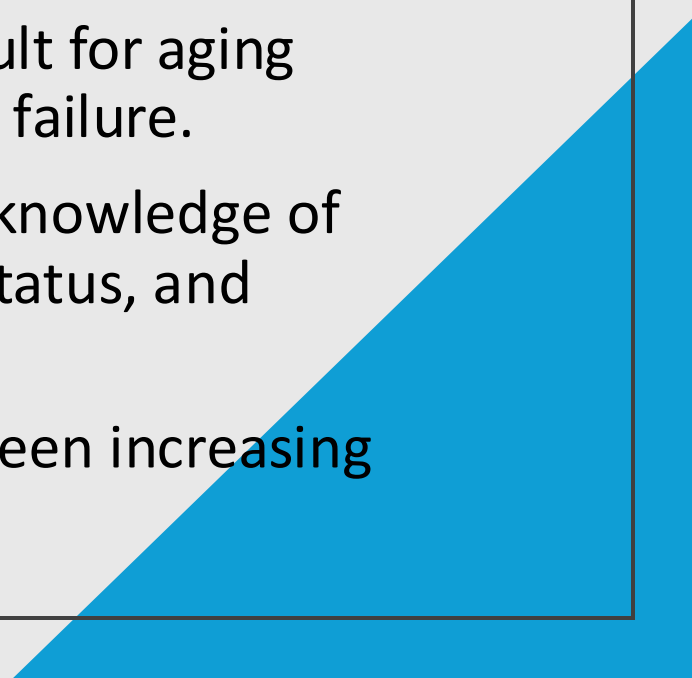
- Estimated 11,500 culverts in CT
- Approx. 4,200 bridges/culverts maintained on local level with some state support
- Average CT culvert age: 68 years old

Bridges vs. Culverts

Culverts with a diameter of 6' and larger are considered bridge structures. Culverts smaller than 6' in diameter (<72" horizontal dimension for box culverts) are considered drainage culverts (CTDOT).



Culverts & Climate Resilience

- Heavy rainfall events have increased over the last century, particularly in the Northeast.
 - Development pressure/more impervious surface area increases runoff into waterways, creating rapid and larger volumes of water flow that quickly fill inadequate drainage systems, making it difficult for aging culverts to pass the additional water without damage or failure.
 - Predicting which culverts are at risk for failure requires knowledge of culvert age, built engineering tolerances, maintenance status, and changing watershed characteristics.
 - Across Connecticut, in just the past few years, we have seen increasing culvert failures leading to catastrophic events.
- 

CT Towns in Action

Woodbury, Connecticut

- In the summer of 2024, the Woodbury region experienced the largest flood in the town's history.
- Roads collapse, infrastructure is submerged in flood water, severe damage to crops and farmland occurs, and property is washed away.
- 20/100 culverts were classified as **severe barriers**, aquatic life cannot get through, meaning limited to no water getting through the structure (North Atlantic Aquatic Connectivity Collaborative-NAACC).
- **MS4**-climate resiliency focused



CREDIT: TYLER RUSSELL / CONNECTICUT PUBLIC

CT Towns in Action Continued

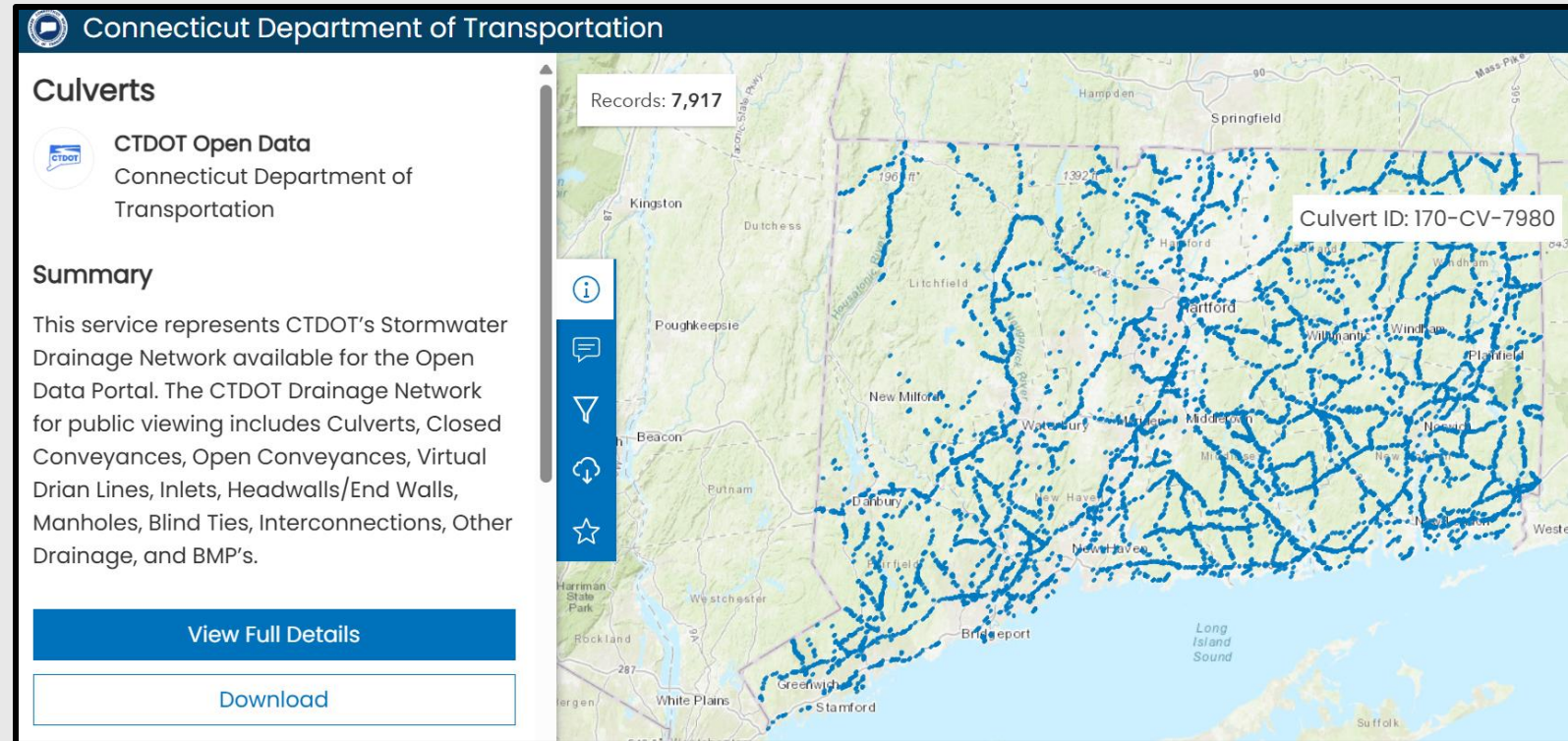
Southbury, Connecticut

- Again, summer 2024 catastrophic storm
- "Build back better" attitude!
- 1,000-year storm had no effect on upgraded culverts
- Estimated \$91 million municipal damages; declared major disaster; federal funding used to recover
- Estimated 20% higher damage cost had the town not recently upgraded many culverts



CREDIT: JAN ELLEN SPIEGEL

CT Culvert Database



- In March of 2025, the CT DOT published an interactive map with open data to represent the State owned and maintained Stormwater Drainage Network across Connecticut.
- Public access to information such as location, water source, material makeup, conveyance type, diameter, length, date of last inspection, and maintenance activity.



Culvert Funding

- **State** Local Bridge Program (state bonding/federal funds)
- **Federal** Local Bridge Program
- **Federal**-The National Culvert Removal, Replacement, and Restorative Grant Program
- **Federal**-Hazard Mitigation Assistance (HMA) Programs
 - Building Resilient Infrastructure & Communities (BRIC)
 - Flood Mitigation Assistance (FMA)



Culvert Funding

Federal Local Bridge Program Pomfret, Connecticut

CT DOT Under the Federal Local Bridge Program to Replace 3 Pomfret Bridges

POSTED ON: MAY 22, 2023 - 5:51PM

The Federal Local Bridge Program has approved the Town submitted applications for replacement of three Pomfret bridges that are evaluated as critical. The Federal program will pay 80% of the cost of replacement and the State of Connecticut DOT will pay the remaining 20%. Taft Pond Road bridge has been approved with preliminary design work already underway. Actual construction is slated to begin in 2026. The Bosworth Road bridge has recently been approved. Preliminary design work will begin soon and construction is slated for 2027. Single lane closure is expected during construction of the Bosworth bridge as the road is a dead-end. Day Road bridge is in the pipeline under this same program.



Mitigation Saves!

Affordable & cost-effective strategies:

- Adopting/strengthening building codes
- Stringent land use standards
- Upgrading existing buildings
- Improving utilities/transportation systems



- Dated culverts-no longer equipped to handle higher than historical water volume
- More prone to failure leading to:
 - Erosion
 - Poor water quality
 - Transportation disruptions
 - Localized flooding
 - Damaged ecosystems

What about the future?

P.A 25-33 Section 8 (Effective July 1, 2025)

****On or before May 1, 2028, and annually thereafter****

- Each municipality shall submit a geospatial data file of each culvert and bridge
- Data file shall include:
 - geospatial data pertaining to each
 - locational coordinates of each
 - age and dimensions of each
 - any additional information deemed necessary by the Office of Policy and Management



Substitute Senate Bill No. 9

Public Act No. 25-33

AN ACT CONCERNING THE ENVIRONMENT, CLIMATE AND SUSTAINABLE MUNICIPAL AND STATE PLANNING, AND THE USE OF NEONICOTINOIDS AND SECOND-GENERATION ANTICOAGULANT RODENTICIDES.



Thank you!

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