



Salt Water Marshes of Rhode Island

By:

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What is a Salt Marsh Exactly?

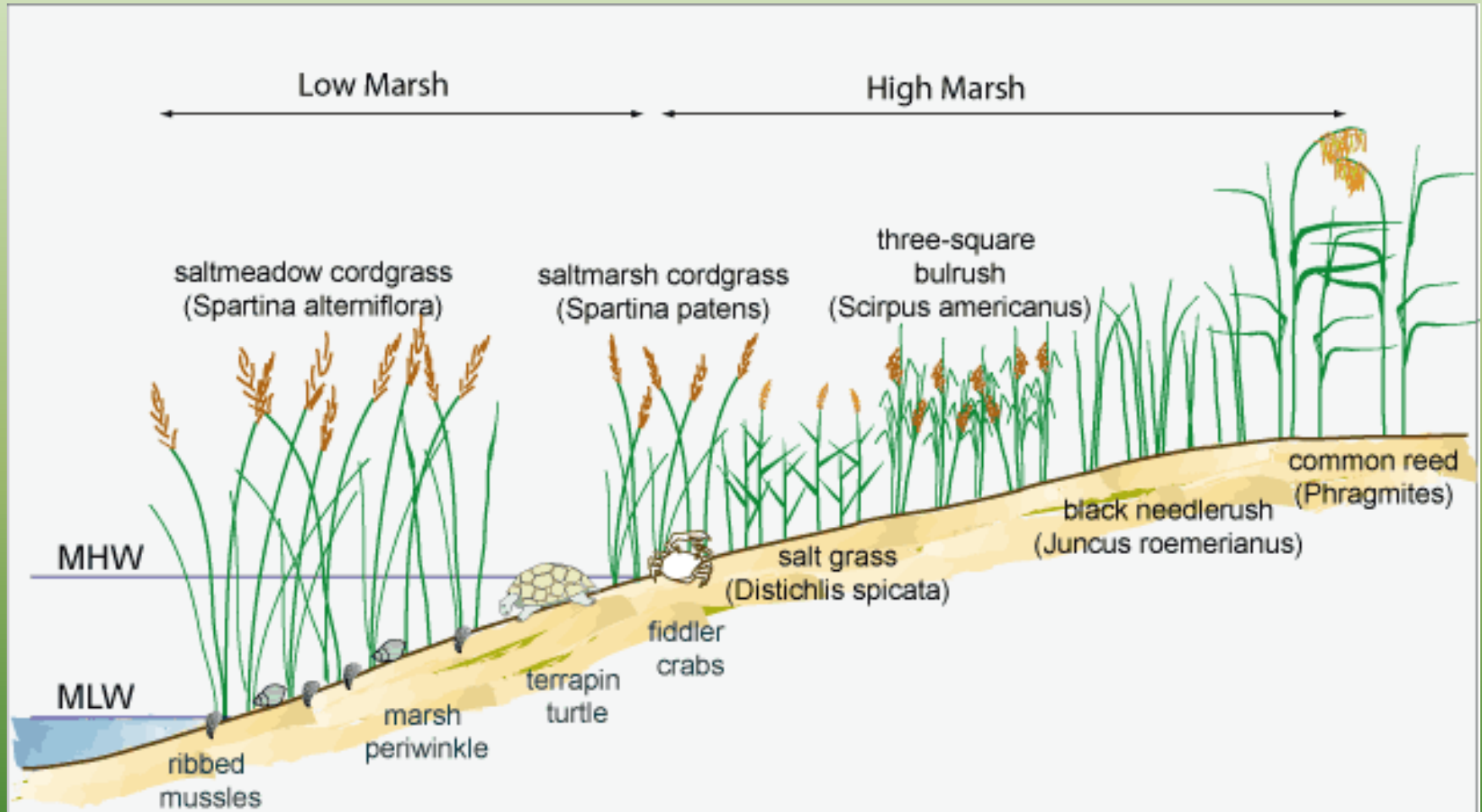
Salt marshes are a type of wetland occurring between the land and the ocean.

They are characterized by plants tolerant of regular tidal influx of salt water.

Salt marshes typically contain several zones of plants, upper, high, and low marsh.



Marsh Zonation



Salt marshes are intertidal environments comprised of specialized plants and animals. The hydrology of the marsh is dependent on how it is flooded by the tide, which in return dictates which species can survive in any particular part of the marsh. This defines the entire marsh ecosystem.

Vegetation



Birds



Invertebrates



Fish

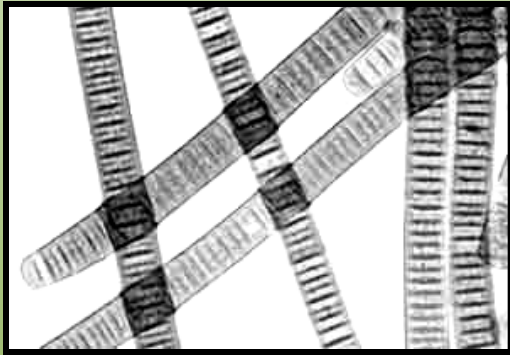


Importance of Salt Marshes

- Provide habitat to many juvenile species such as horseshoe crabs, blue crabs, etc.
- Act as buffers to protect shorelines from storm surge
 - Critical filters of run off from upland



What's that awful smell?



**Thank the bacteria kids...its
a beautiful sulfur redox
reaction!**

- **Redox stands for oxidation-reduction.**
(the chemical exchange of electrons, or energy, between one element and another in the soil)
- **In salt marshes, where the soil is saturated peat, there isn't room for oxygen. Soil bacteria eat the organic matter (formerly salt marsh plants) and convert sulfur from the seawater (MgSO_4), into Hydrogen Sulfide (H_2S) which produces that rotten egg smell of the marsh.**

And our pals the glaciers?

- Two categories: **glaciated** and **unglaciated**
- St. Lawrence River to N. New Jersey is part of the glaciated coast. The marshes that existed here were destroyed by the glacier as it moved south; once the glacier melted, the marshes were re-established but smaller in size.



The unglaciated coast is S. New Jersey to Florida. The marsh here was never covered by ice so pretty intact. Without the pressure from the glaciers, the soils and sands of the marshes were not scraped away, nor was its bedrock exposed. Moreover, the rivers carried great amounts of sediment that helped feed and extend the marshes.

Impacts to Salt Marshes

- **Runoff** (increased over time)
- **Filling** (usually dredged navigation material)
- **Tidal restrictions** (phrag invasion!)
- **Mosquito ditching** (drains the water the fish are in)
- **Sea level rise** (marsh subsidence)



Results of Impacts

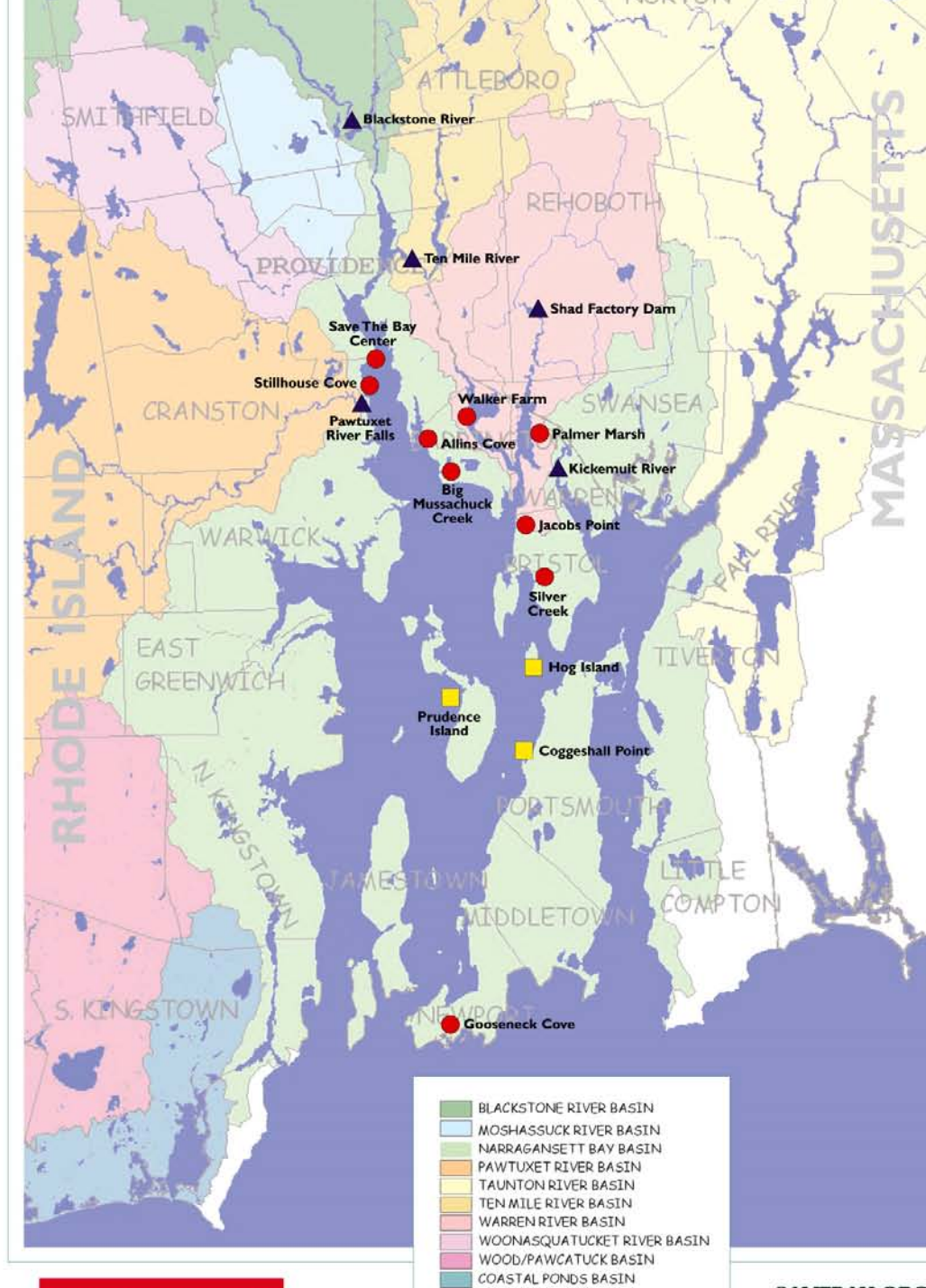


- **Conversion from native to invasive plant species**

- **Subsidence of marsh**

- **Conversion of marsh to upland – loss of all function**





Silver Creek - Bristol



Fill

Bike Path/Rt
114
Restrictions

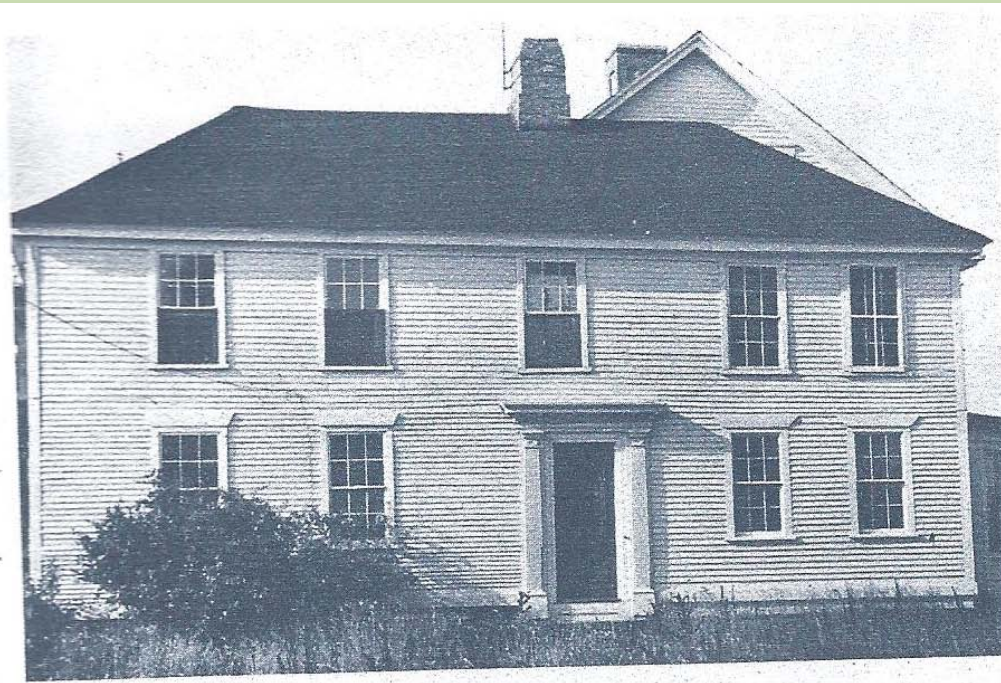
Footbridge restriction

Phragmites

**Construction
completed
2009**

Goal to restore
tidal hydrology in
order to reduce
impounded
waters and to
restore native
plant community

Silver Creek 1680



The Bosworth-Perry House — 1680

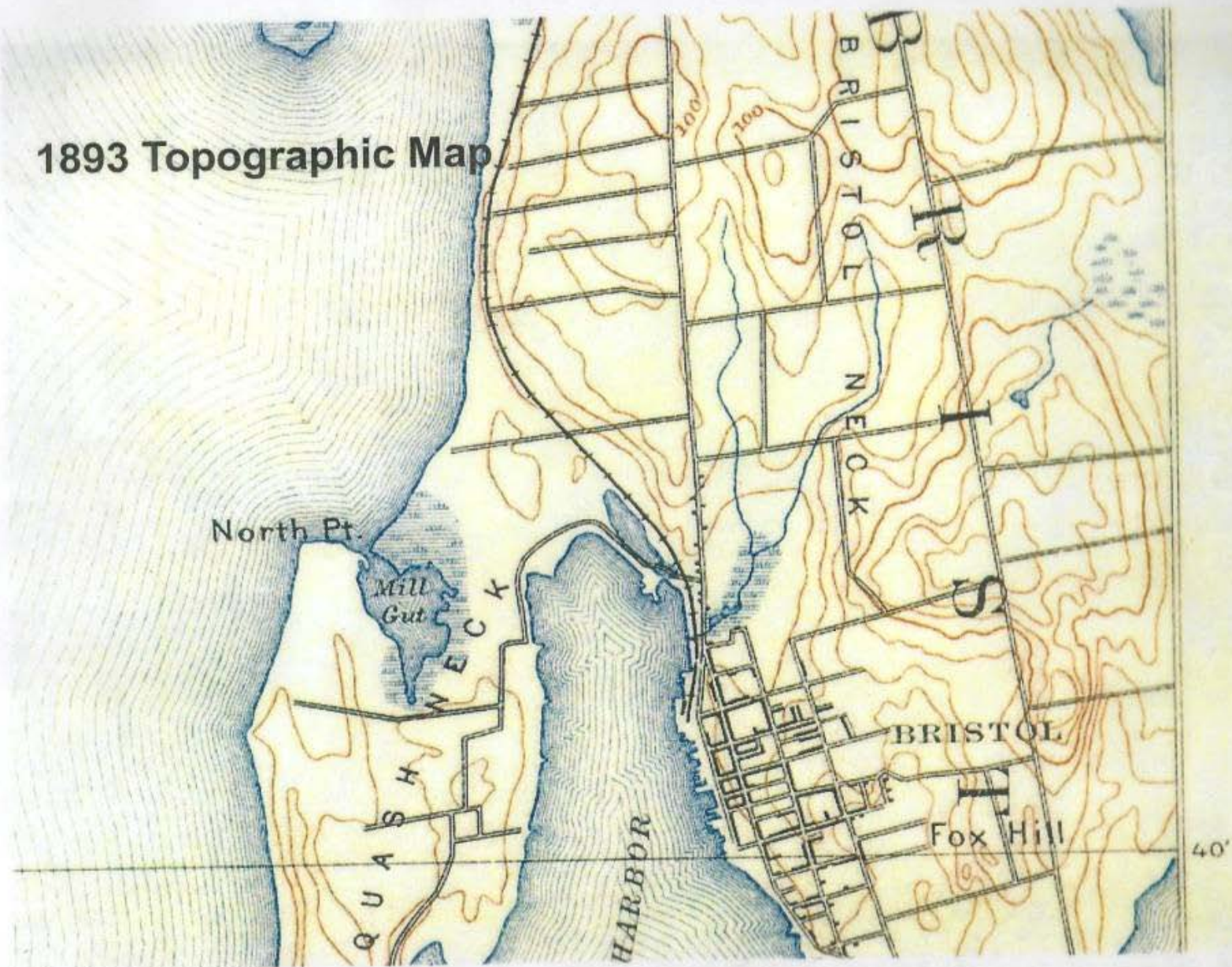
Built by Nathaniel Bosworth in 1680. The oldest house in Bristol. Here the first religious services were held. It has been in the Perry family for a number of years, now owned by James DeWolf Perry Jr.



1877

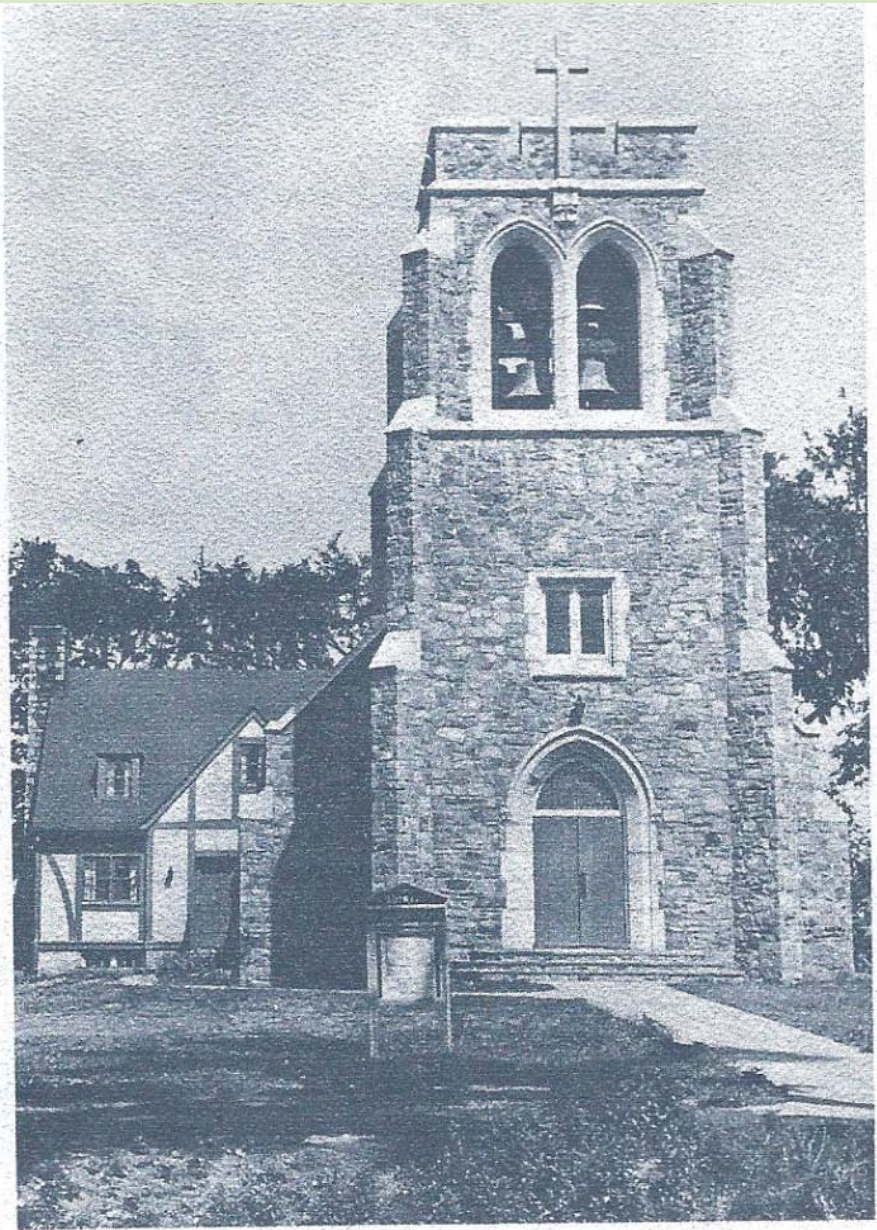


1893 Topographic Map



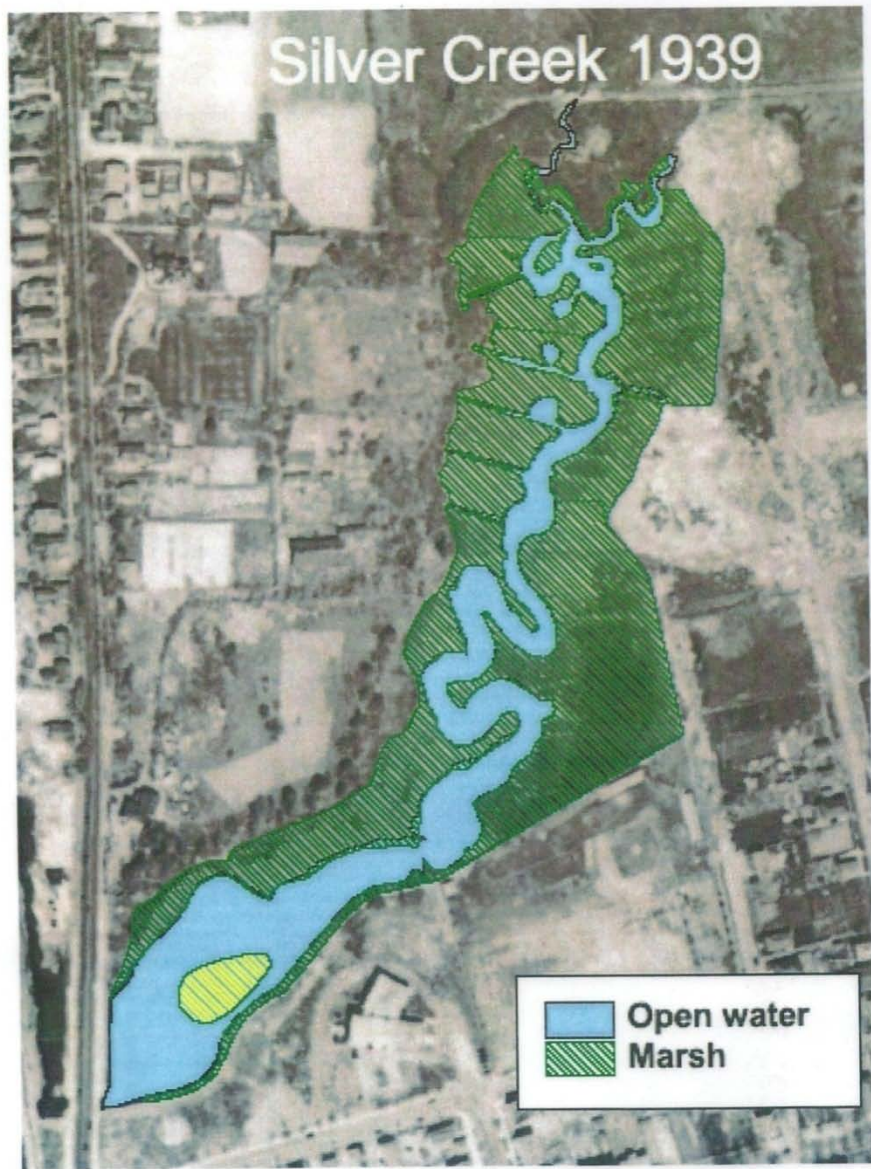
Trinity Church 1875

The Trinity Church in Bristol, built on "Silver Creek" land owes its existence to the beneficence of Mrs. Ruth Bl DeWolf who died in 1874. (Bristol Historical Society, Inc)



Trinity Church

Silver Creek 1939



Silver Creek 2002



- Marshes recharge groundwater supplies and moderate stream flow by providing water to streams. This is an especially important function during periods of drought.
- Helps to reduce damage caused by floods by slowing and storing flood water. As water moves slowly through a marsh, sediment and other pollutants settle to the substrate, or floor of the marsh.
- Marsh vegetation and microorganisms also use excess nutrients for growth that can otherwise pollute surface water such as nitrogen and phosphorus from fertilizer.
- BMP! Replicas of marshes are being built to treat wastewater from farms, parking lots, and small sewage plants.

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