Sewers in the Time of Cholera

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Sewers

The earliest sewers were intended to keep stormwater from flowing through the streets, but human waste was also deposited in them. They were typically privately constructed and paid for by landowners. Unfortunately, the strategy of depositing waste in rivers to be diluted became less effective as the population grew.

What was the trigger that prompted New Jersey cities to construct sewers? Was it a direct response to the threat of cholera and other epidemics, or were other factors decisive? We map sewer construction data, cholera pandemics, and legislative milestones to better understand New Jersey's response to public health issues in the nineteenth century.

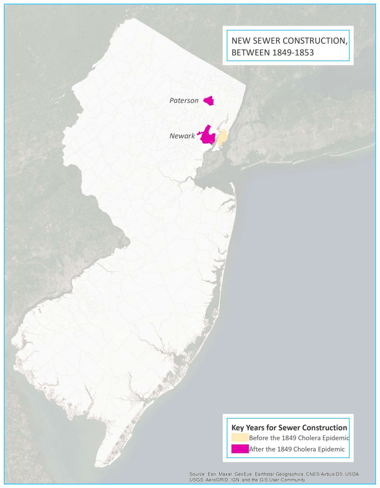
Cholera

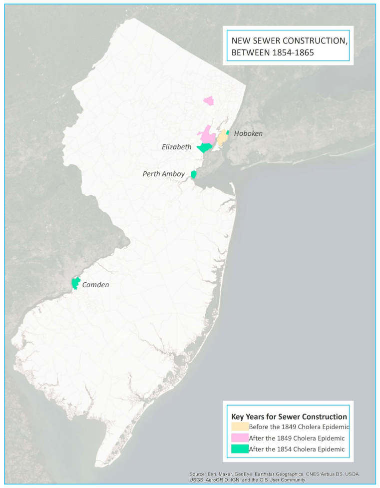
Cholera is caused by a bacteria that spreads through food and water contaminated with human feces, but most people in the nineteenth century thought it spread by miasma, or noxious gases in the air. When the 1832 cholera epidemic hit New Jersey, the death toll was 500 people, or 0.16% of the state's population of 320,823. This death rate is almost identical to the toll that COVID-19 has taken on the people of America in 2020-2021. Cholera would return to New Jersey in 1849 and 1854. *How did New Jersey respond to the cholera threat?*

Cholera Tramples the Victor and the Vanquished Both.
Source: https://upload.wikimedia.org/wikipedia/commons/b/b7/Cholera-tramples-the-victors-and-the-vanquished-both-robert-seymour-1831_u-l-pii0om0.jpg

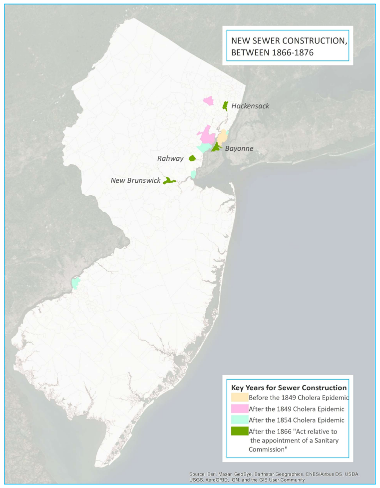
The Appearance After Death of a Victim to the Indian Cholera, Who Died at Sunderland
Source:https://commons.wikimedia.org/wiki/File:A_dead_victim_of_cholera_at_Sunderland_in_1832._Coloured_lit_Wellcome_L0008118.jpg#/media/File:A_dead_victim_of_cholera_at_Sunderland_in_1832._Coloured_lit_Wellcome_V0010484.jpg

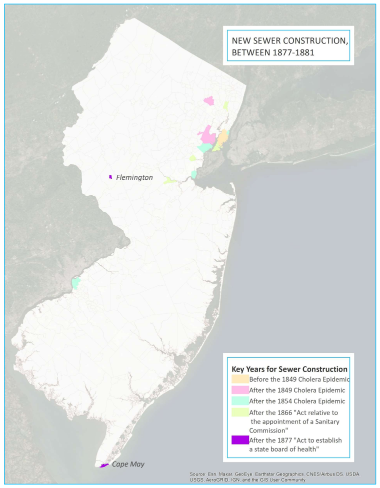
Sewer Construction following Cholera Epidemics

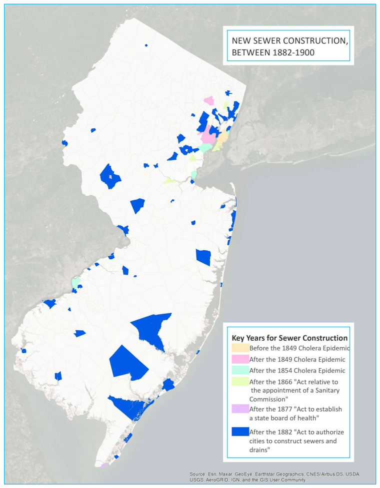




Sewer Construction following Sanitation Legislation



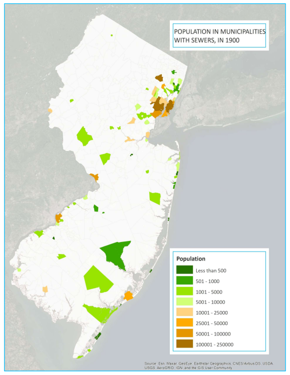


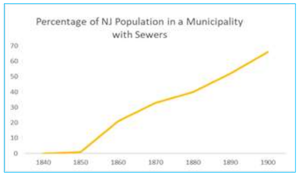


Major Sanitation Legislation in the Nineteenth Century

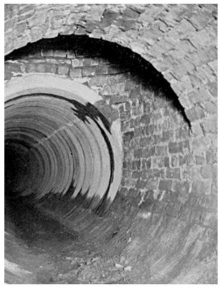
1. 1866 "Act relative to the appointment of a Sanitary Commission"
2. 1877 "Act to establish a state board of health"
3. 1882 "Act to authorize cities to construct sewers and drains, and to provide for the payment of the cost thereof"
4. 1882 "Act relating to the improvement of streets and the construction of sewers in the cities of this state"

Population density and access to sewers





Cholera was more of a threat in urban areas. By 1900, the population of the State of New Jersey was concentrated within municipalities that were industrial centers, including northeastern New Jersey, Camden, and Trenton. Smaller pockets of population are spread throughout the state, particularly in coastal resort towns, which have smaller residential populations supplemented in the summer with a larger tourist population.



View showing the junction of brick sewer with Parmley Reinforced Concrete Segmental (Newark, NJ)
Source: https://www.sewerhistory.org/images/pi/pip/1927_pip37.gif

Conclusion

While the construction of municipal sewer systems in New Jersey started as a response to cholera, it was a decades-long process that was only catapulted by the 1882 "Act to authorize cities to construct sewers and drains, and to provide for the payment of the cost thereof." Prior to any state-wide legislation, cities that adopted sewers were able to do so because their acts of incorporation included provisions to construct them, at the expense of private individuals. Unfortunately, sewer access within municipalities was not distributed equally. Population size was also an indicator of pre-1882 sewer construction, with well-populated industrial cities, like Jersey City, being early adopters of sewers.

Three major epidemics of cholera in the US in 1832, 1849, and 1854 prompted officials in New Jersey to pass the 1866 "Act relative to the appointment of a Sanitary Commission" with the goal of "prevention and treatment of Asiatic cholera." While they were incorrect that cholera was transmitted through miasmas, doctors and government officials were well aware that sanitary measures like sewers could prevent disease. New Jersey's Sanitary Commission of 1866 determined that the history of cholera "has shown beyond the possibility of doubt, the power which sanitary law possesses to stay its advance." Though New Jersey was faced with over 200 fatalities in 1866, the actions of the Sanitary Commission and related sanitary measures prevented cholera from becoming a pandemic, even though relatively few cities had built sewer systems. By 1877, the State of New Jersey turned its attention to studying "the causes of disease, and especially of epidemics," eventually leading to the 1882 Act which empowered cities to construct cohesive, city-wide, sewer systems. Shortly thereafter, the 1882 "Act relating to the improvement of streets and the construction of sewers in the cities of this state" was passed and designated construction cost limits in correlation with population size. In 1900, nearly 70% of the state's citizens lived in municipalities with sewers. Providing a governmental source of funding for sewer construction clearly was the impetus behind the widespread adoption of this sanitary practice. The success of governmental intervention in public health can be seen in the fact that New Jersey was never affected by another cholera pandemic.

References

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- *Report of the State Sewerage Commission to the Legislature, Session of 1900*
- *Twenty-Sixth Annual Report of the Board of Health to the State of New Jersey of 1902*
- David Petriello, *"A people so well fed and so clean": The 1832 Cholera Pandemic in New Jersey (2020)*