Historical Trends of Energy Use, Energy Sources and Hydrocarbon Pollution along the Passaic River and Newark Bay, 1660-present,
Or,
My God! What Happened To That Poor River?
Leading U.S. Pollution/Environmental Historians

Joel A. Tarr, Carnegie Mellon University:

- The Horse in the City: Living Machines in the Nineteenth Century (2007).

Martin V. Melosi, University of Texas at Houston:

- Pollution and Reform in American Cities, 1879-1930. (1980).
DL&W Coal Terminals at Hoboken

Fig. 7.—RETURN SWITCH, RIVER END OF THE PIER.

Empty coal jimmies start their journey back to the mines. The lever along the side of each car was the brake. A brakeman is shown riding on the running board with his hands on the lever of one car.
Detail of 1844 U.S. Coastal Survey Nautical Chart of Newark Bay and Upper New York Bay
Map of route of Morris Canal across Northern New Jersey, from Delaware River on left to Newark, Jersey City, and Hudson River on right.

Detail of Map showing route of Morris Canal through Newark and extension to Jersey City.
Figure 4.1. The anthracite coalfields (dark shading), their surrounding ridges (light shading), and the canal and railway routes used to deliver coal to distant consumers. In 1857, canals and railways shared the coal traffic. (From Henry D. Rogers, The Geology of Pennsylvania [Philadelphia: Lippincott, 1858], vol. 2, map follows p. 1018)
Detail of 1844 Nautical Chart of Passaic River at Newark, with Commercial Dock at center, bordered by initial Morris Canal Basin at left, and new larger basin along canal extension.
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Coal Gas Manufacturing Plant on Passaic River
Electricity Generating Plant on Passaic River
Big Inch and Little Inch Pipelines
Initially Crude Oil, later Natural Gas
Traditional Energy Consumption Equations

Wood = Heat/Mechanical Energy/Light

Coal = Larger Amounts of Heat/Energy/Light

Oil = Even Larger Amounts of Heat/Energy/Light
Energy Equation for Wood Consumption

Wood + O2 = Heat/Energy/Light + CO2 + Wood Ash

Energy Equation for Coal Consumption

Coal + O2 = Heat/Energy/Light + CO2 + Coal Ash

Coal Ash = SiO2 + CaO + Other minerals

(arsenic, beryllium, boron, cadmium, chromium, chromium VI, cobalt, lead, manganese, mercury, molybdenum, selenium, strontium, thallium, and vanadium) + Dioxins + PAHs
Energy Equation for Fossil Fuels

Fossil Fuel + O2 = Heat/Energy/Light + CO2 + Byproducts

Heat/Energy/Light: Temporary

Byproducts: Permanent and/or Toxic
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