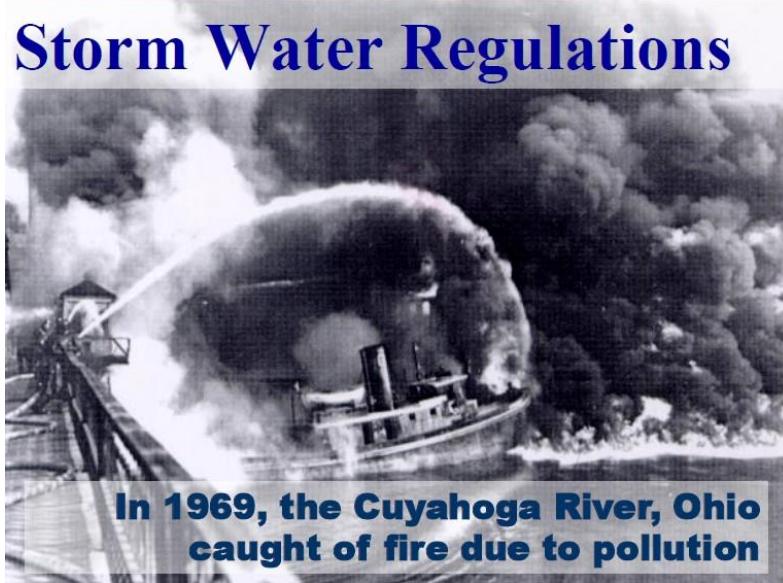


**"Not everything that counts can be counted and not everything that can be counted counts."**  
**Albert Einstein**

## COUNTING THE COST OF STORM WATER POLLUTION

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### STORM WATER HISTORY

June 23, 1969, the Cuyahoga River, Cleveland, OH caught on fire. The Cuyahoga River was once one of the most polluted rivers in the United States as represented by the multitude of times it has caught fire, a recorded number of thirteen starting in 1868. The most destructive fire occurred in 1952 causing over \$1.3 million in damages; however, the most fatal fire happened in 1912 resulting in five deaths.

Inspired by the 1969 river fire, Congress was determined to resolve the issue of pollution, not just in Cleveland, but throughout the United States. The legislature passed the National Environment Protection Act (NEPA) which was signed into law on January 1, 1970. This act established that the U. S. Environmental Protection Agency (EPA) would be given the responsibilities of managing the environmental risks and to regulate numerous sanitary-specific policies to address point-sources of pollution into the nation's water bodies. One of the first regulations the EPA put-forth was the Clean Water Act (1972), which mandated that all rivers throughout the United States be clean enough to safely allow community recreation, swimming and fish by 1983. Additionally, in the mid 1970's, Love Canal in Niagara Falls, New York motivated the establishment of further environmental protection legislation.

In the 1980's, a Nationwide Urban Runoff Program (NURP) study was conducted by the U.S. EPA to determine to what extent urban runoff is contributing to water quality problems and to evaluate various managing practices for controlling urban runoff. The report submits that urban runoff is contributing pollutants causing water quality problems across the United States. The NURP study recommends that urban storm water runoff be added to the list of environmental issues which require controls to protect water quality.

Damages caused by elevated flows from urbanized area, erosion and aquatic habitat destruction as well as flooding were relatively easy to mitigate and control. However, documentation concentrations of urban pollutants and potentially toxic pollutants required intensive collection of water quality samples during runoff events. The NURP study added more evidence about the high levels of some pollutants found in urban runoff. The study also identified "point sources" as the leading cause of storm water pollution. The U.S. EPA defines point source pollution as "any single identifiable source of pollution from which pollutants are discharged, such as a pipe, ditch, ship or factory smokestack". Factories and sewage treatment plants are two common types of point sources. Industrial manufactures such as oil refineries, pulp and paper mills, chemical formulation facilities, electronics and automobile manufacturers, typically discharge one or more pollutants from their facilities into waterbodies. Point sources were identified as the leading cause of contamination to our nation's water bodies.

Large farms that raise livestock, such as cows, pigs and chickens, are other sources of point source pollution. These types of farms are known as concentrated animal feeding operations (CAFOs). If they do not treat their animals' waste materials, these substances can then enter nearby waterbodies as raw sewage, radically adding to the level and rate of pollution.

Unregulated discharges from point sources can result in water pollution and unsafe drinking water, and can restrict activities like fishing and swimming. Some of the chemicals discharged by point sources are harmless, but others are toxic to people and wildlife. Whether a discharged chemical is harmful to the aquatic environment depends on a number of factors, including the type of chemical, its concentration, the timing of its release, weather conditions, and the organisms living in the area.

To control point source discharges, the Clean Water Act establishing the National Pollutant Discharge Elimination System (NPDES, 1987). Under the NPDES program, factories, sewage treatment plants, and other point sources must acquire a permit from the state and EPA before they can discharge their waste or effluents into any body of water. Prior to discharge, the point source must use the latest technologies available to treat its effluents and reduce the level of pollutants. If necessary, a second, more stringent set of controls can be placed on a point source to protect a specific waterbody.

One of the NURP study area was the Fresno Metropolitan Flood Control District's municipal storm water basins. The District provides flood control and urban storm water services as well as groundwater recharge in a 400-square mile watershed located between the Kings and San Joaquin Rivers. The District is home to roughly 650,000 people and includes urban, industrial

and agricultural land uses. The Fresno/Clovis urban area is served by a system of approximately 640 miles of pipeline and 154 storm water retention basins.



## TIMELINE

- 1956** Fresno Metropolitan Flood Control District (FMFCD) created by Special District Act
- 1987** National Pollution Discharge Elimination Systems (NPDES) i.e. Storm Water Regulations created through the amendment of the Clean Water Act of 1972
- 1990** California State Water Resources Control Board (SWRCB) implementation of NPDES Program
- 1994** Regional Water Quality Control Board (RWQCB) and FMFCD begin implementation of state storm water program
- 1996** Municipal Separate Storm Sewer System (MS4) Permit populations of 100,000 or more
- 2010** NEW Construction General Permit (CGP) all development > one acre must secure CGP
- 2013** Phase II MS4 Permit all municipal jurisdictions of 50,000 or more must secure MS4 permit
- 2014** NEW Industrial General Permit (IGP) adapted by the SWRCB

NEXT ARTICLE: Storm Water Regulations and Municipal Storm Water Management