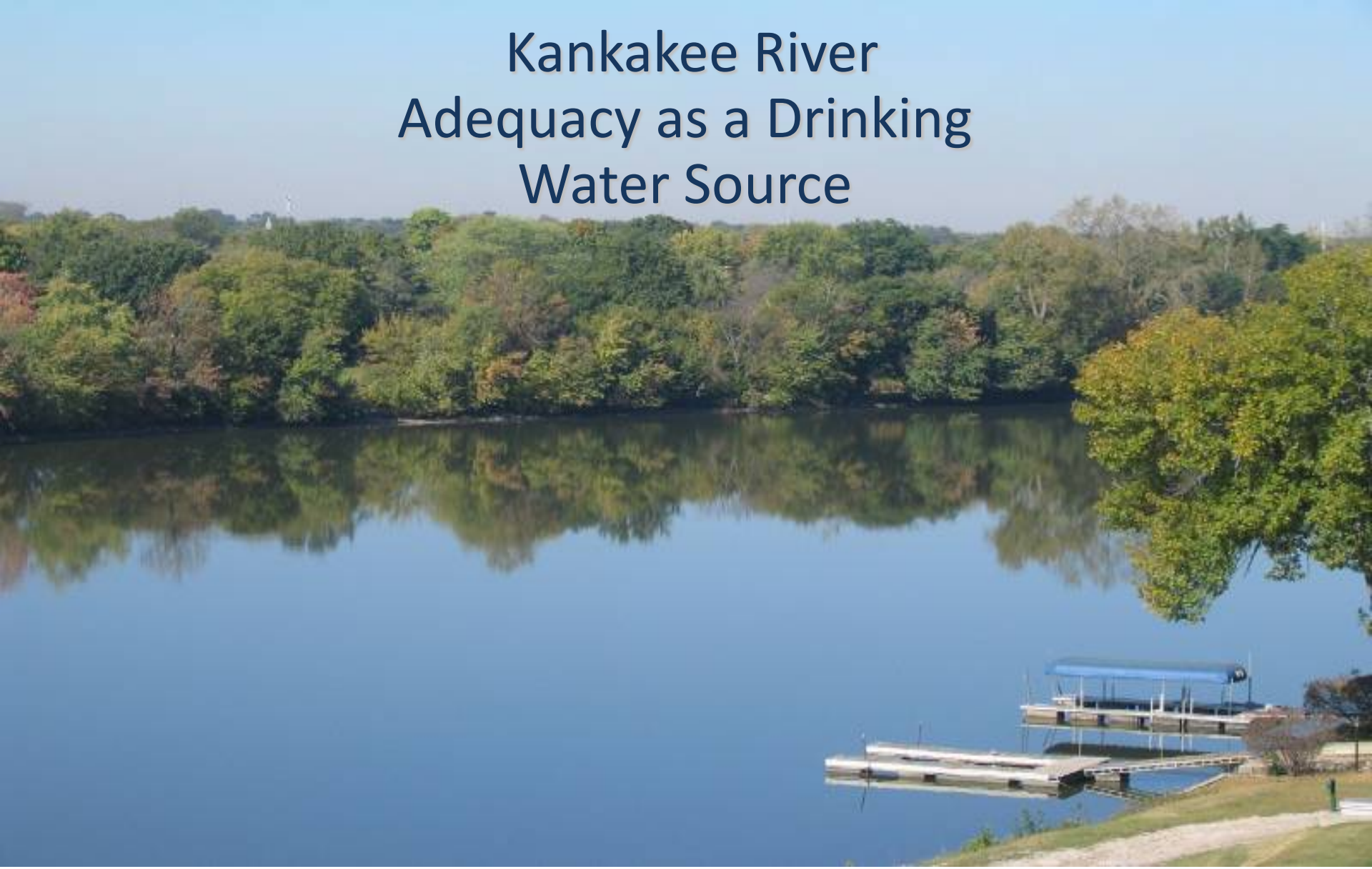
Kankakee River Adequacy as a Drinking Water Source



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Overview

- History
- Plant Intake Structures
- Plans for Future
- Goals of Aqua Illinois
- Adequacy of the River
- Q7/10 Low Flow Events
- Conclusion
- Questions and Answers

History

- Continuous Investor-Owned Operation Since 1886
- First filtered water filtration plant in Illinois (1932)
- 2012 Average Daily Usage - 11.5 MGD
- Rate Capacity of the treatment plant is 22 MGD
- Net Use is Zero - All water returned to river through KRMA and Grant Park Wastewater Treatment Plant
- The Kankakee River meets the water needs of over 85,000 people in the Kankakee Metropolitan Area served

Plant Intakes

- Six-Mile Pool with 750 million gallons of capacity
- Shore Intake & Deep Intake
  - Capable of 80 MGD capacity from two intakes
  - 80 MGD represents less than 2% of average flow

Plans for Future

- Meet the needs of the Kankakee Metropolitan Area through proactive investment
- Plant Expansion this year for redundancy
- Growth along I-57 Corridor
- Support increased population and demand for water in commercial/industrial

Goals of Aqua Illinois

- Ensure reliable service and a quality water supply to customers in Kankakee County
- Support community growth and economic development
- Improve fire protection in our communities
- Maintain and protect water quality of the Kankakee River for a multitude of users
- Public education of water resources
- Outreach to the farming community to reduce nutrient loss

Adequacy of the Kankakee River

- Aqua's current withdrawal is net Zero
  - (all water is returned to the river)
- 4.2 billion gallons total annual Aqua withdrawal
- Aqua currently draws less than 3/10ths of 1% of total river flow volume
- Large watershed area (5,300 square miles)

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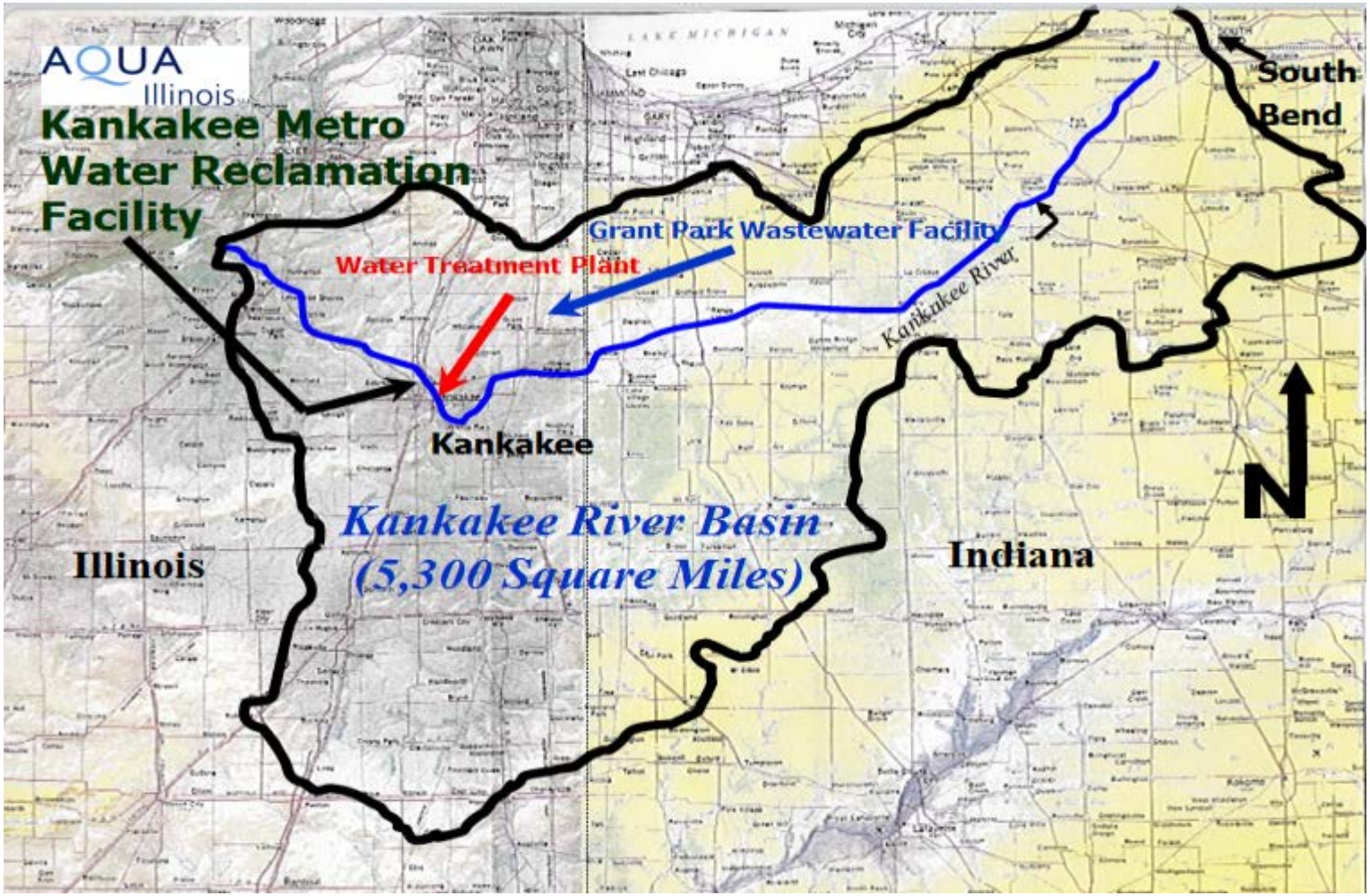
Kankakee River Basin



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Adequacy of the Kankakee River

- Kankakee River Water Quality
  - Nitrates – under the limit and trending downward
  - Very low to no detectable pesticides or herbicides
  - No Volatile Organic Compound (VOC)
    - Organic material results in Trihalomethanes formation
    - Controlled with chloramines
  - Raw turbidity and color varies greatly
  - Varying algae concentration can causes taste and odor problems
  - Hardness level is 350 million gallons per liter (mg/l) reduced to 170 mg/l via softening process

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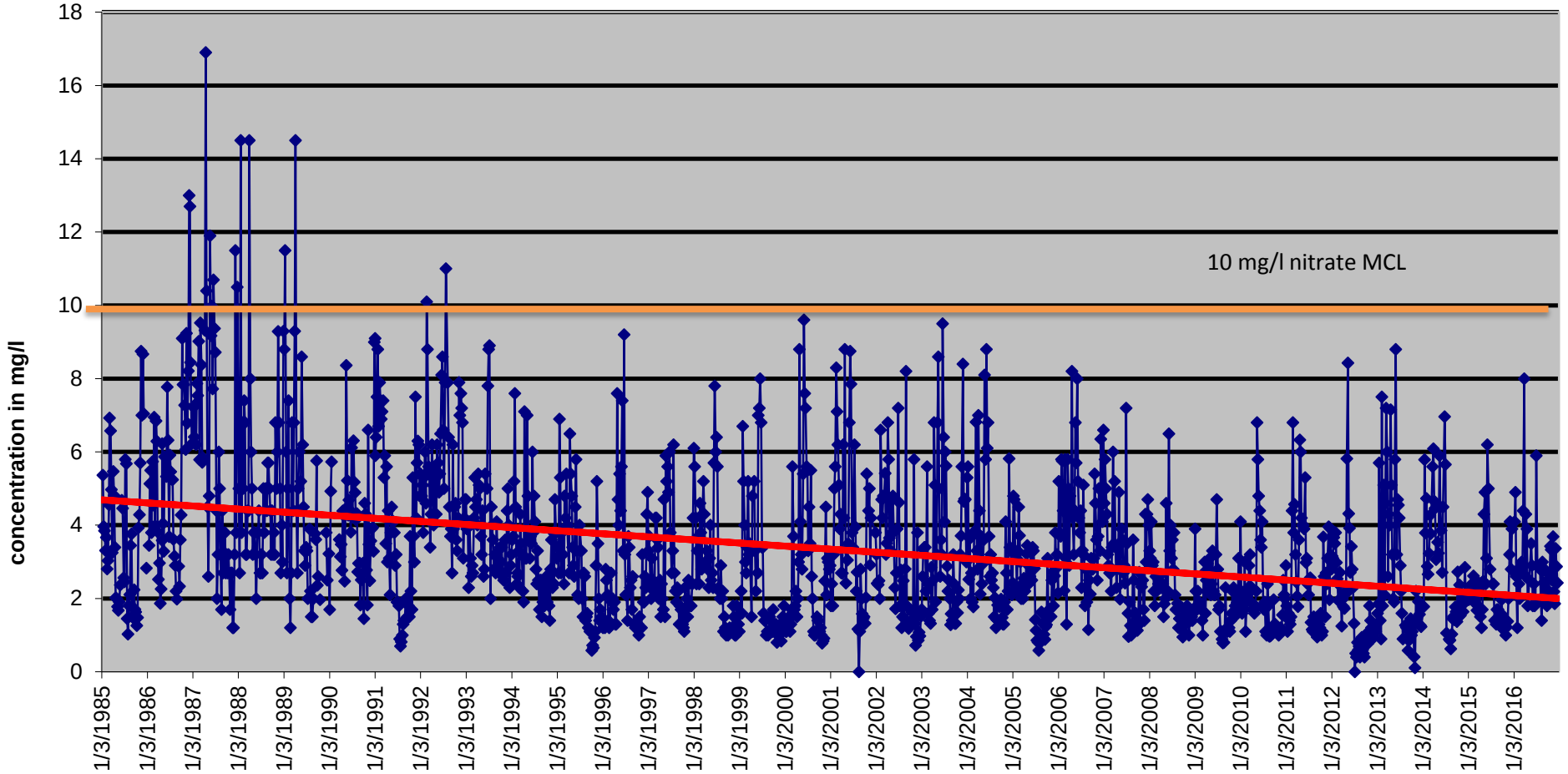
Nitrate level in PPM
In the Kankakee River



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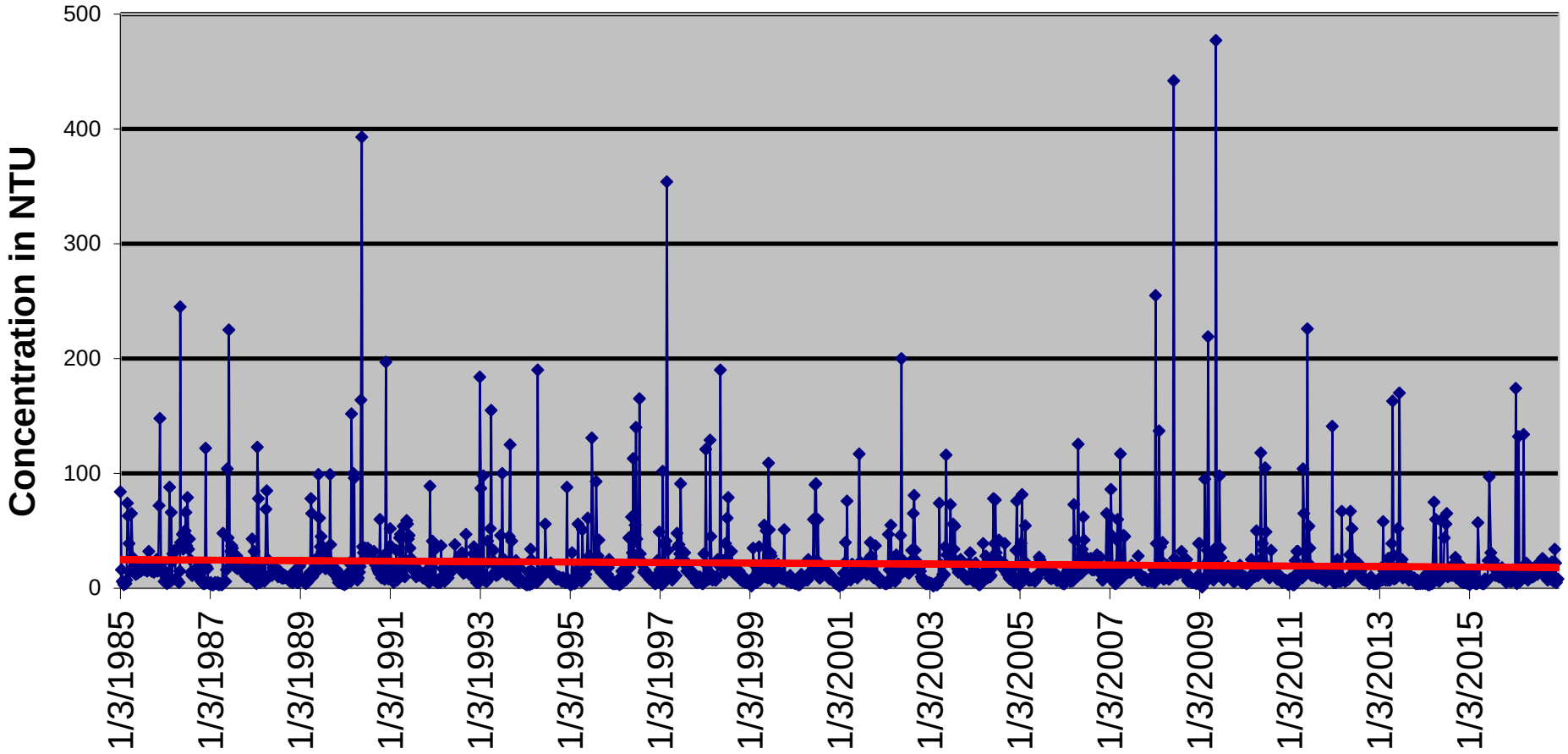
Kankakee River Raw Water Turbidity (NTU)



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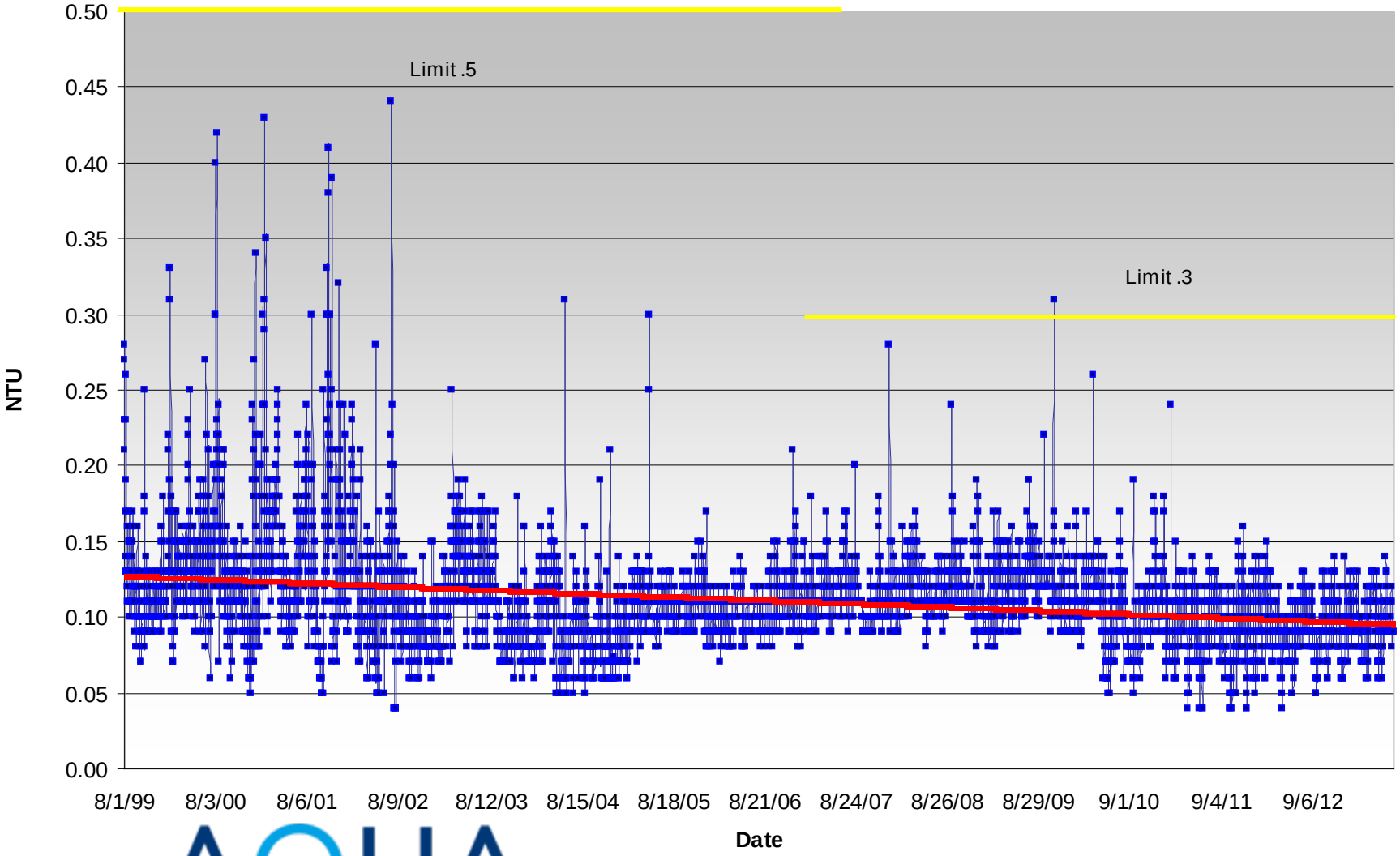
Kankakee Plant - 0915030
Daily Average Combined
Turbidity



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Kankakee Facts

“The Kankakee River houses one of the state’s most diverse aquatic communities and should be regarded as a resource of National importance”

- 84 species of fish (5 threatened or endangered
- 37 species of mussels (9 threatened or endangered
- 14 Species of Large crustaceans (crayfish)
- A macro-invertebrate population more diverse than in most Illinois watersheds
- 74.7 miles of Biologically Significant Streams (BSS)
- 64 species of threatened or endangered plants and animals

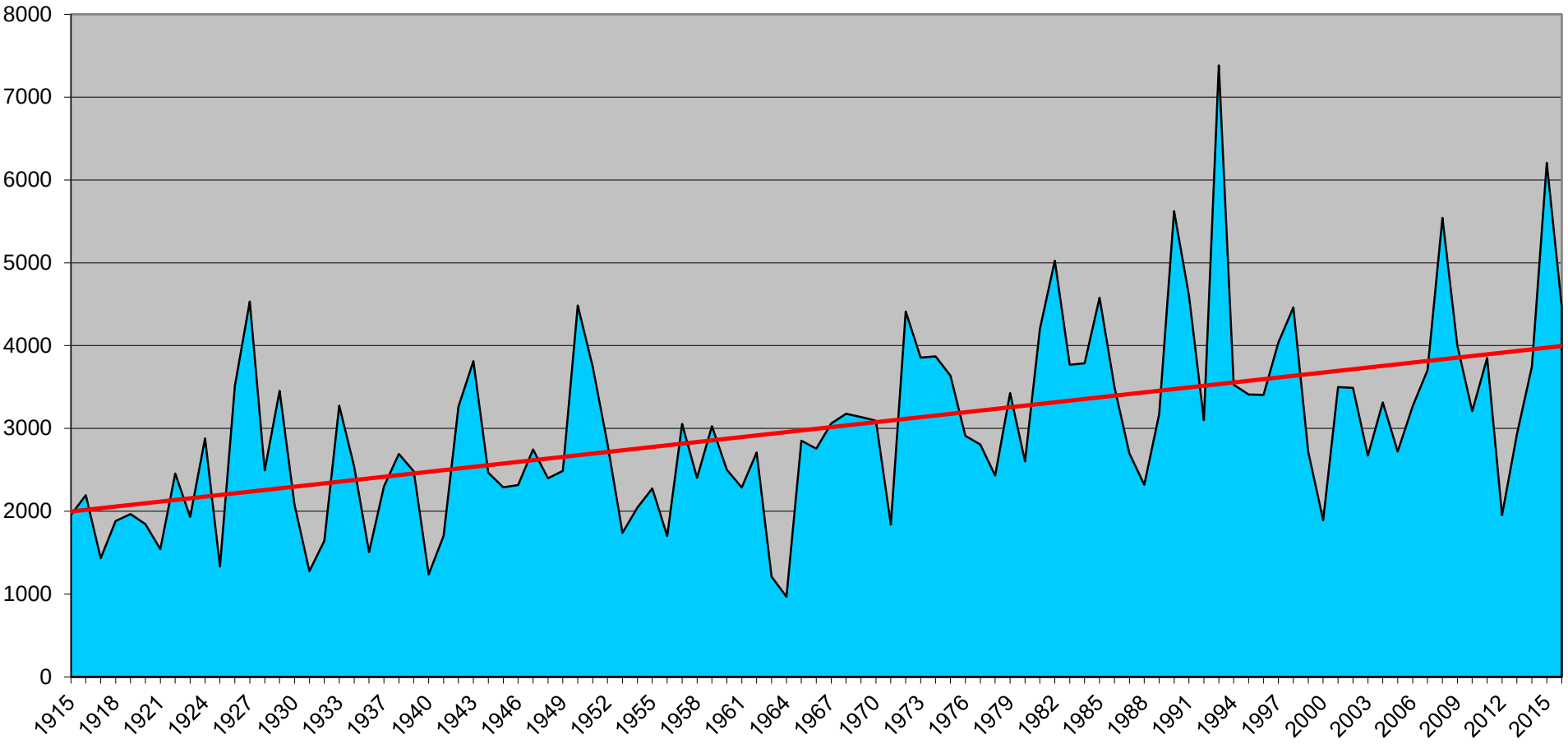
Flows in the Kankakee River

- Flows:
  - River flows are increasing (nearly doubled since 1915)
  - Average river flow trend is increasing
    - 3.9 billion gpd today versus 2.2 billion gpd in 1915
- Reason:
  - Decreased evaporation
  - Increased drainage of land
  - Fewer wetlands

History of River Flows

KANKAKEE RIVER

YEARLY AVERAGED FLOWS
in millions of gallons per day(MGD)



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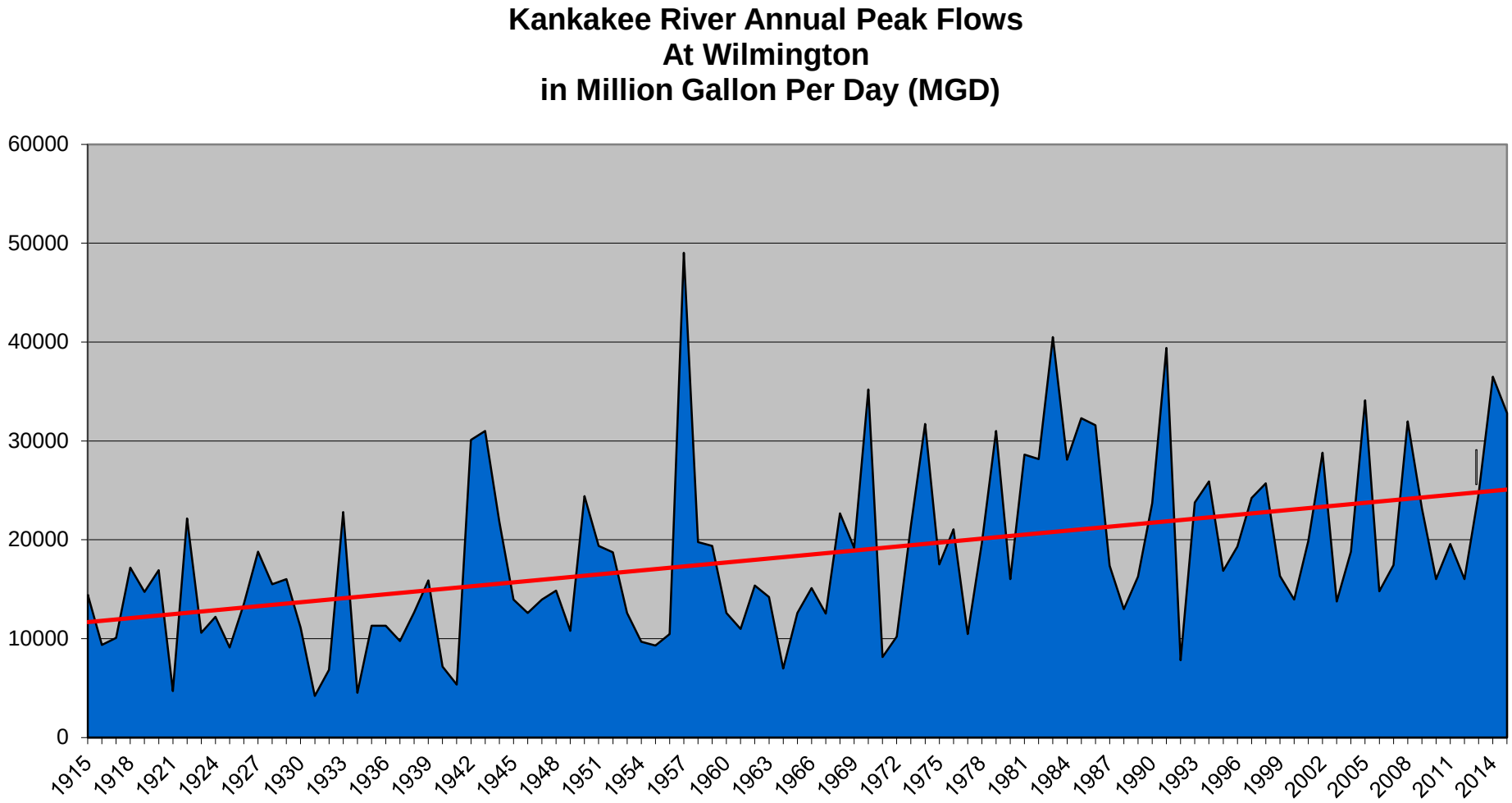

Annual Peak Discharges for the Wilmington Gaging Station in the Kankakee River Basin

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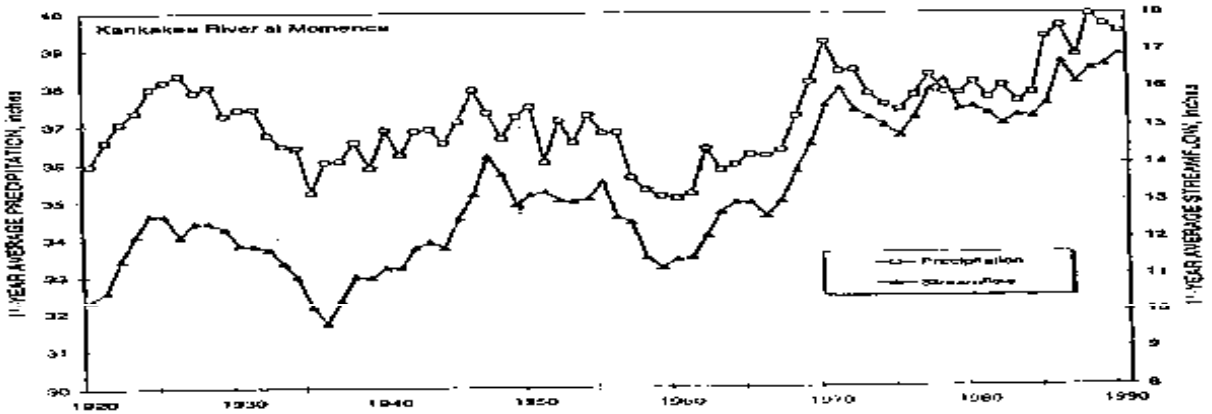
"The Kankakee River, more than any other river in the state, shows definite increasing trends of high, medium and low streamflows.....All trends appear to be related to a coincident increase in average precipitation"



Eleven-Year Moving Averages for Streamflow and Precipitation, 1920-1991

Kankakee River 11-Year Moving Average Streamflow and Precipitation, 1920-1991

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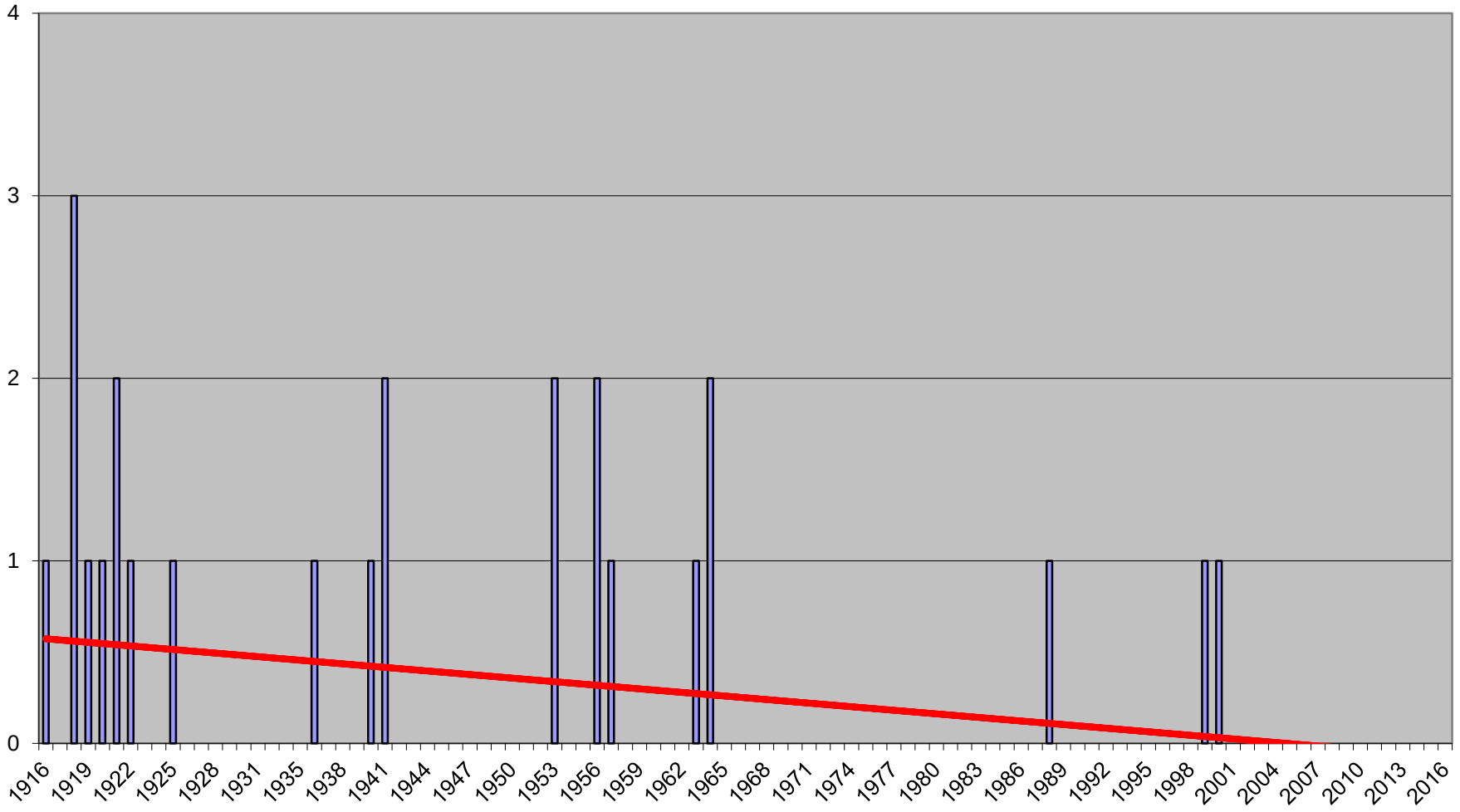
Q7/10 Low Flow Occurrences

- Since 1915
  - Low flow occurrence events have decreased
  - 116 days of under 453 cfs (293 mgd) Q7/10 flow
  - Accounts for less than 0.5% of the time in 87 years
  - 14 events made-up the 116 days
  - Longest period was 30 continuous days in July/August 1936
  - Lowest recorded flow was 174 mgd on 1-1-40
  - Seven-day low flow volume is increasing

Occurrence of Low Flow Events of Less Than 500cfs for the Kankakee River at Wilmington



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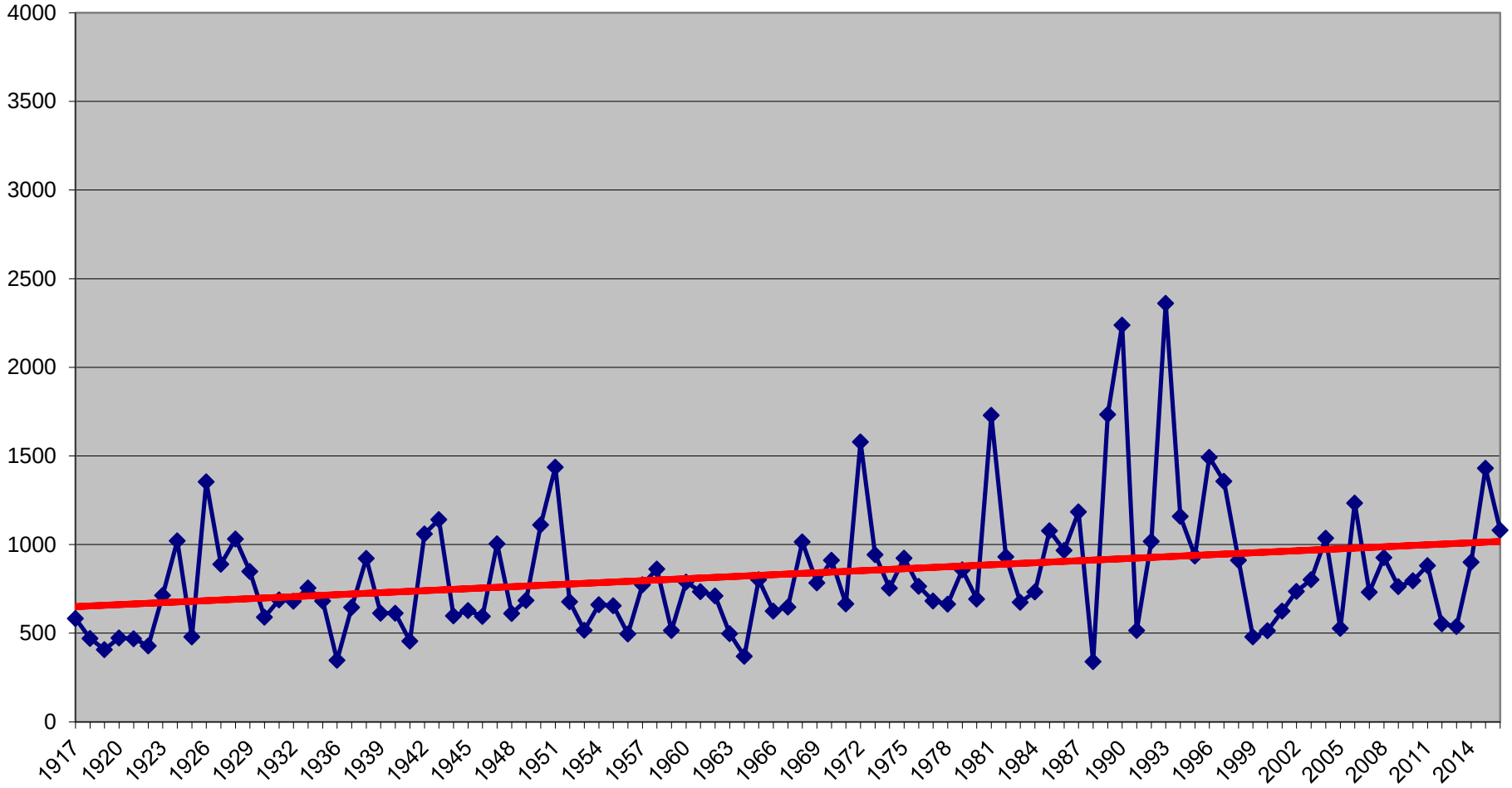
Low Flow Events of Less Than 293MGD (453 CFS) For the Kankakee River at Wilmington 14 Events - 116 Days

Month	Year	Total # Days	Total # Continuous Days
Sept.	1916	1	1
Oct.	1918	1	1
Sept.	1919	11	8
Sept.-Oct.	1920	4	2
July -Aug.	1921	2	1
Sept.-Oct.	1922	9	6
Aug.	1925	1	1
July-Aug.	1936	33	30
Jan.	1940	4	4
Aug.	1941	3	2
Sept.	1941	3	3
Sept.	1956	2	2
Sept.	1964	15	13
July-Aug.	1988	27	16
Total		116	N/A

Kankakee River Annual 7 Day Low Flow
at Wilmington
in Cubic Feet Per Second (cfs)



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“ The Kankakee River, more than any other river in the state, shows definite increasing trends of high, medium, and low stream flows… All trends appear to be related to a coincident increase in average annual precipitation.”[1]

[1] **Illinois Department of Natural Resources, 1998.** *Kankakee River Area Assessment Volume 2: Water Resources.*

Conclusion

- Current and future net water uses are minimal
- Average & maximum river flows are increasing
- Low flow events are decreasing
- Kankakee River has excellent water quality
- Aqua Illinois' plans for meeting water needs can be met by the Kankakee River

Questions