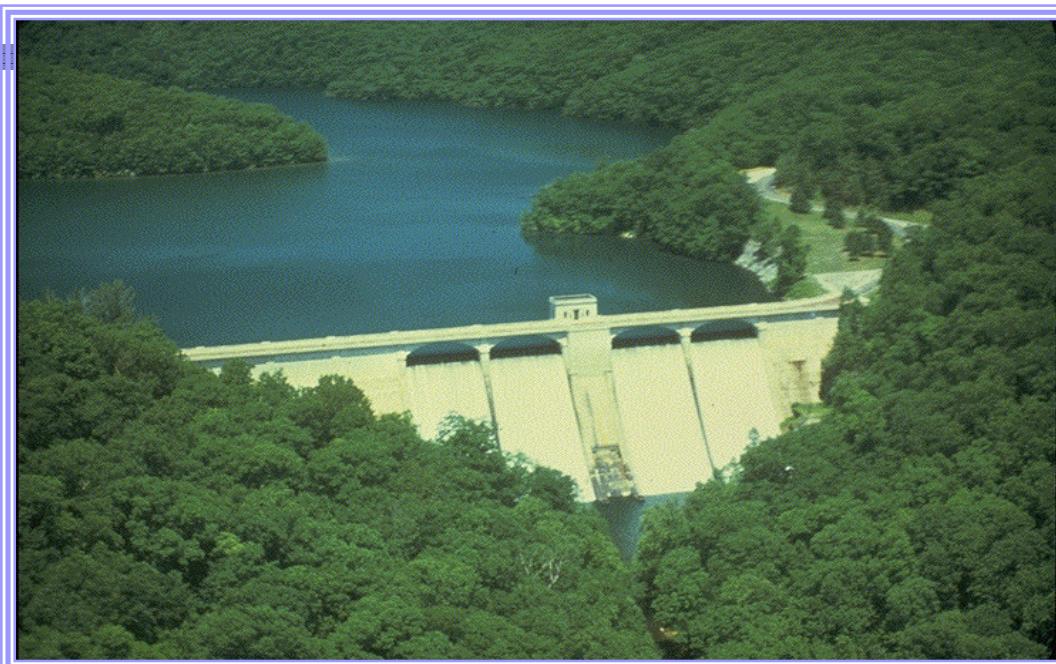


# Road Salt Contamination of the Baltimore Metropolitan Reservoirs



Prettyboy Dam

CITY OF BALTIMORE

DEPARTMENT OF PUBLIC WORKS

BUREAU OF WATER AND WASTEWATER

WATER QUALITY MANAGEMENT SECTION

George L. Winfield, Director

Jay Sakai, Bureau Head

William Stack, Chief



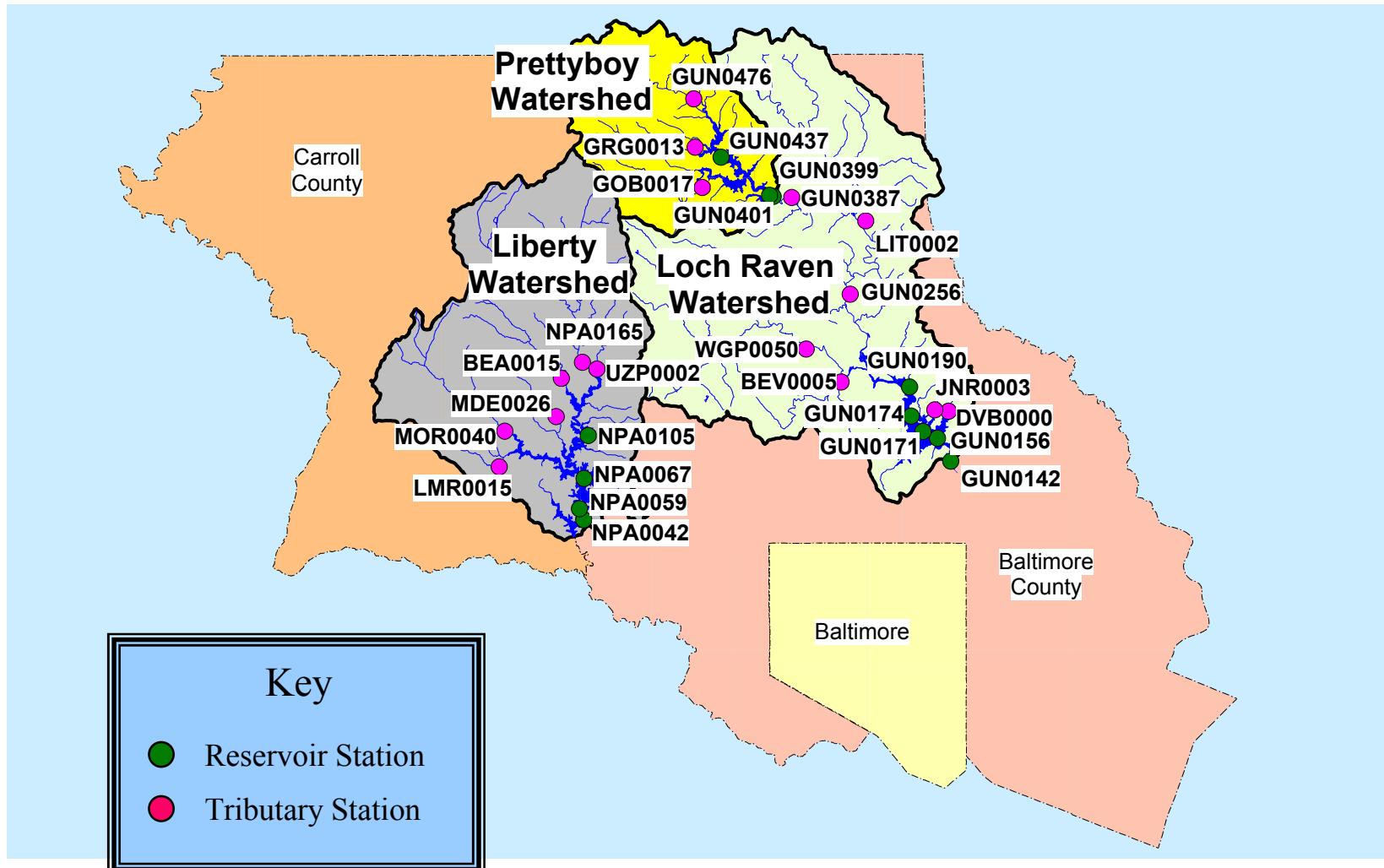
# Historical Water Quality Problems

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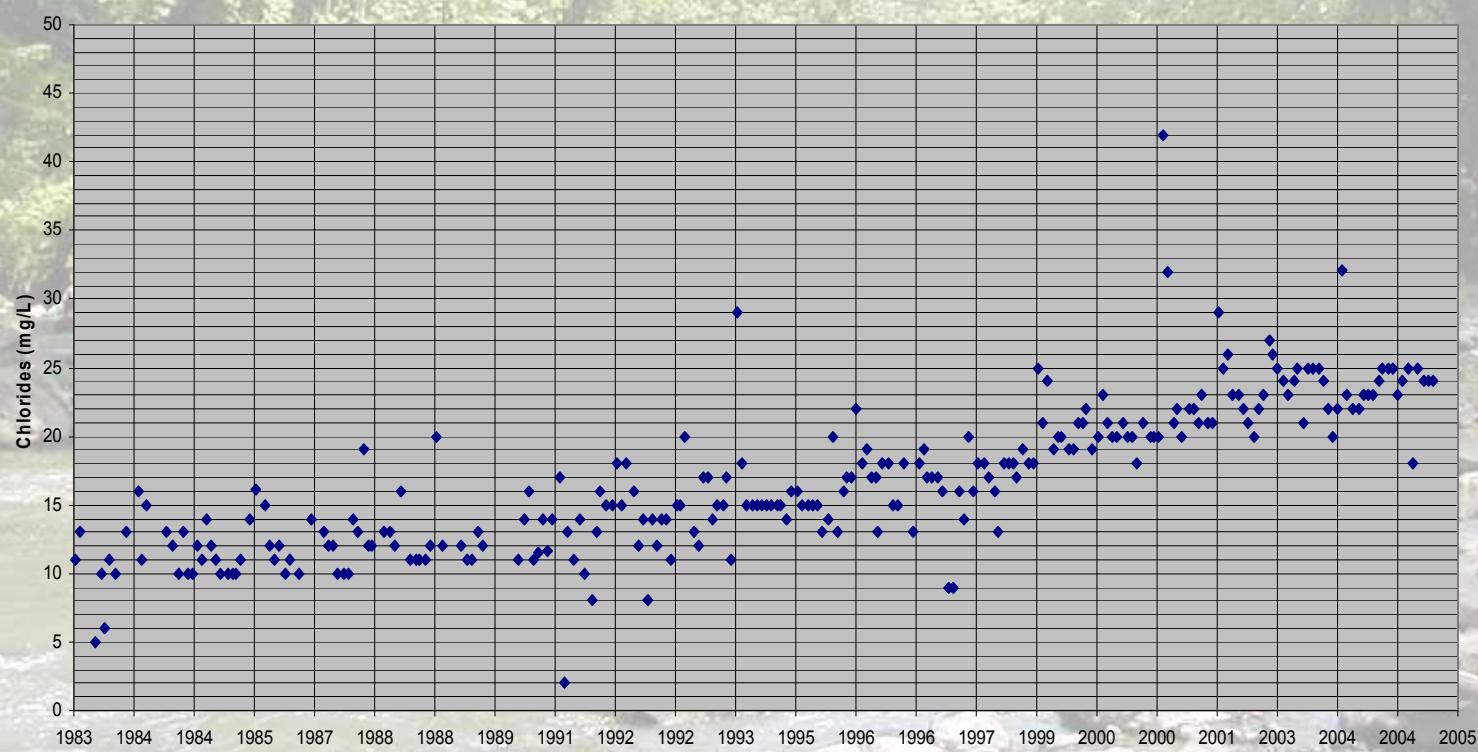
First water quality problems were documented in early 1900's when City took several farm operations to court. 494 cases of pollution were documented 213 were barnyards or hog pens.

- Loch Raven: chlorides increase over 300% from 1950's to 1970's. Nitrate increased 2.5 fold over this same period.
- Significant treatment problems began occurring in Loch Raven in 1970's.
- In 1981, one of the worst algal blooms in the City's history occurred in Loch Raven accounting for close to 2000 complaints related to the taste and odor of the finished drinking water.

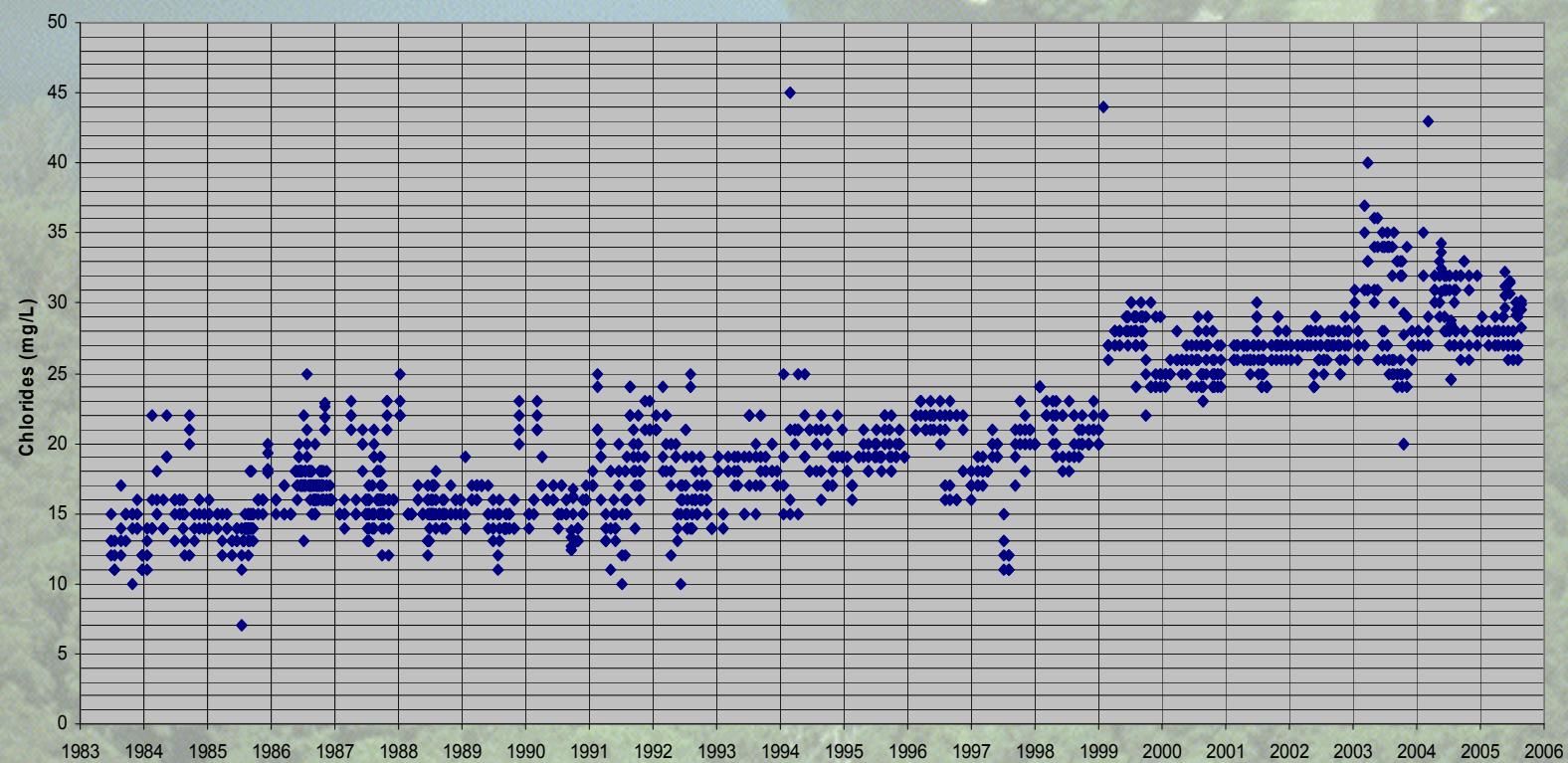
# Reservoir & Tributary Water Quality Sampling Stations

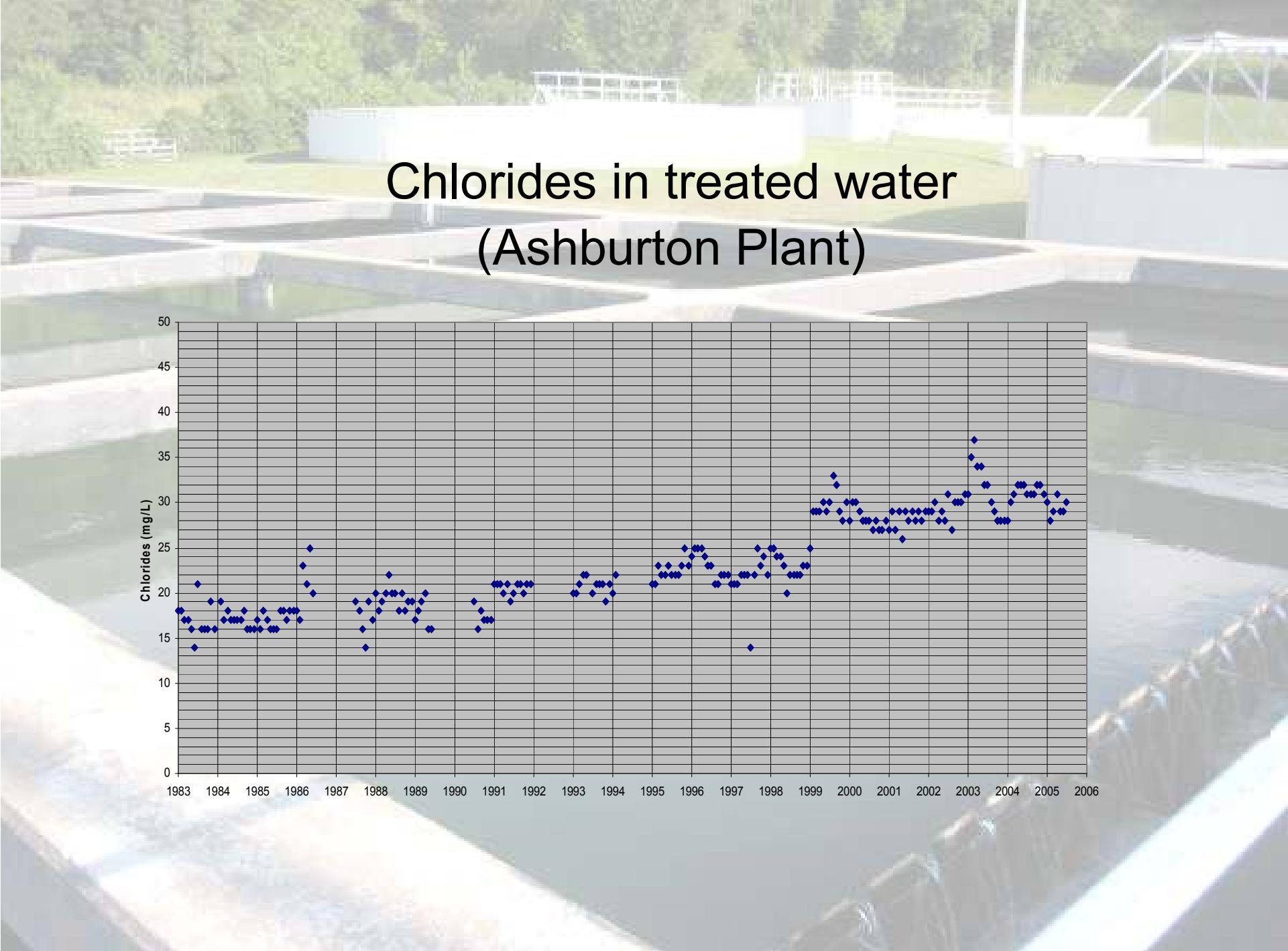


# Chlorides in streams (Morgan Run)



# Chlorides in reservoirs (Liberty)

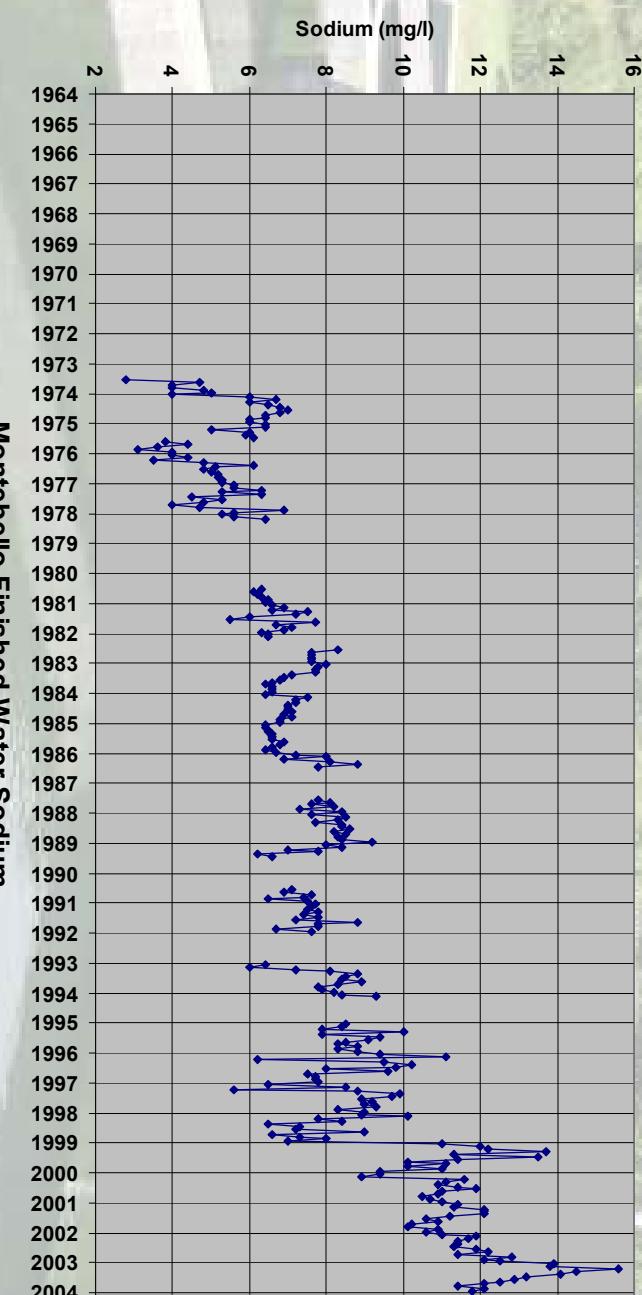




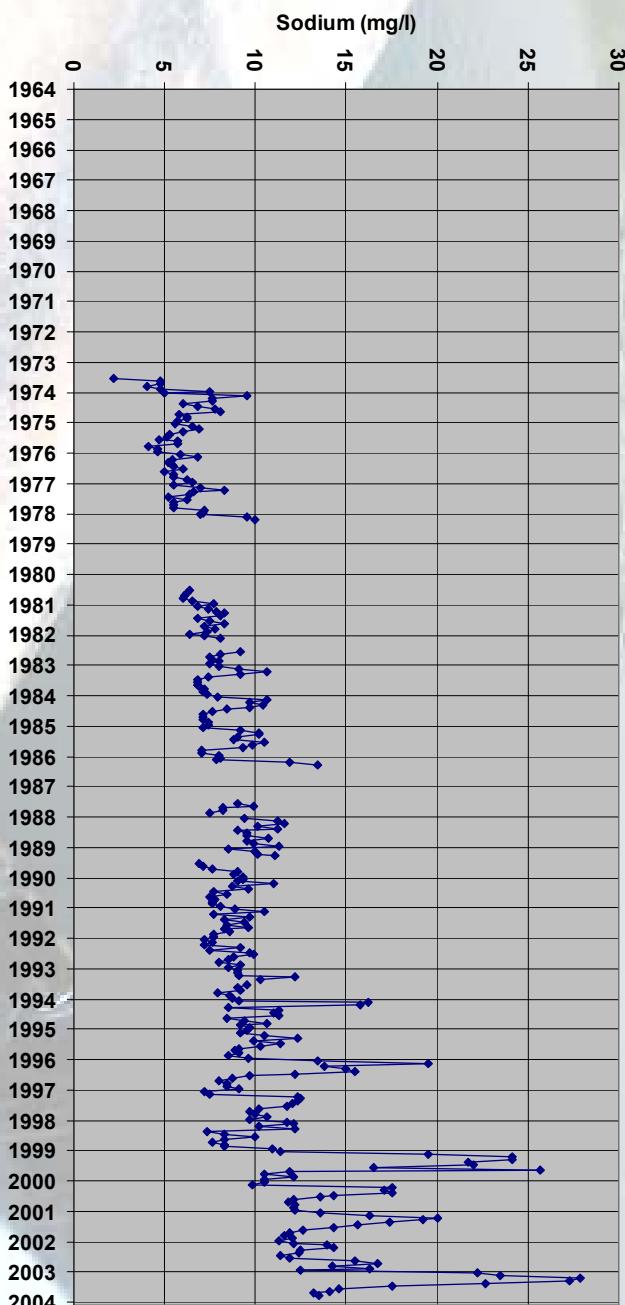
## Chlorides in treated water (Ashburton Plant)



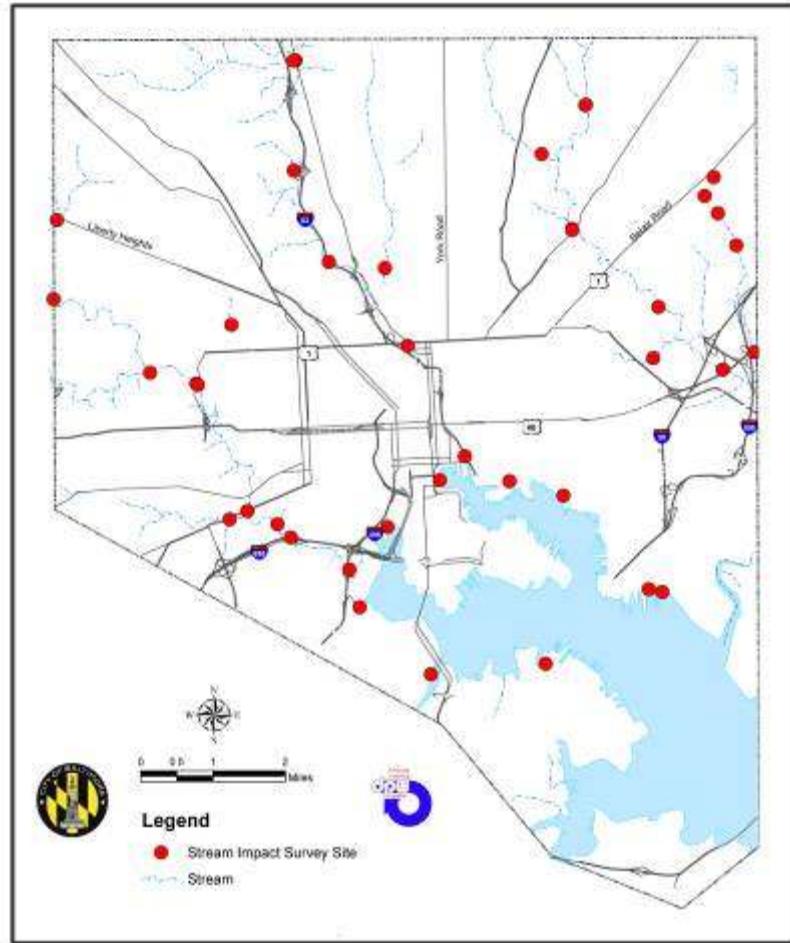
### Ashburton Finished Water Sodium



### Montebello Finished Water Sodium

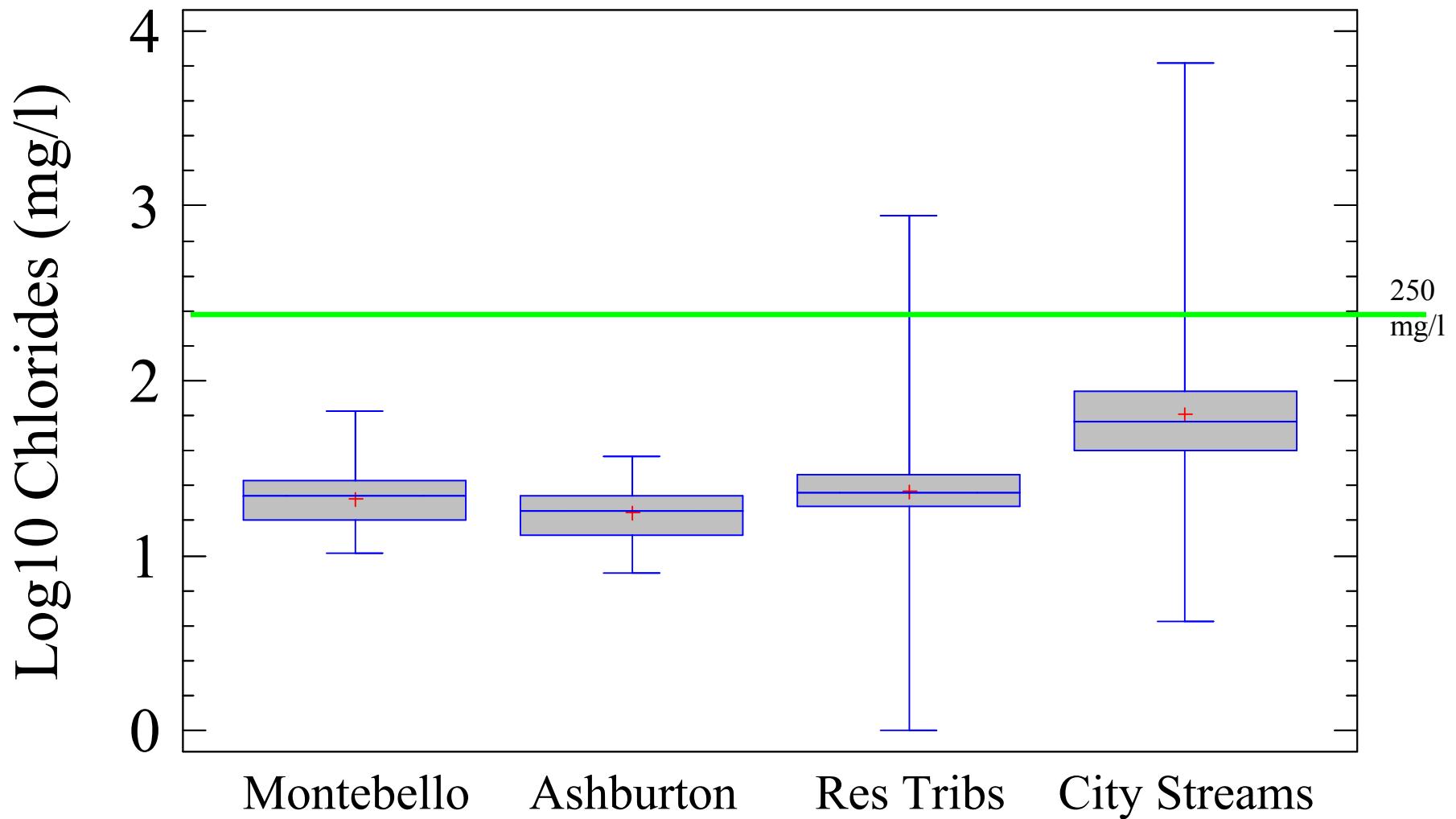


# How bad can things get?

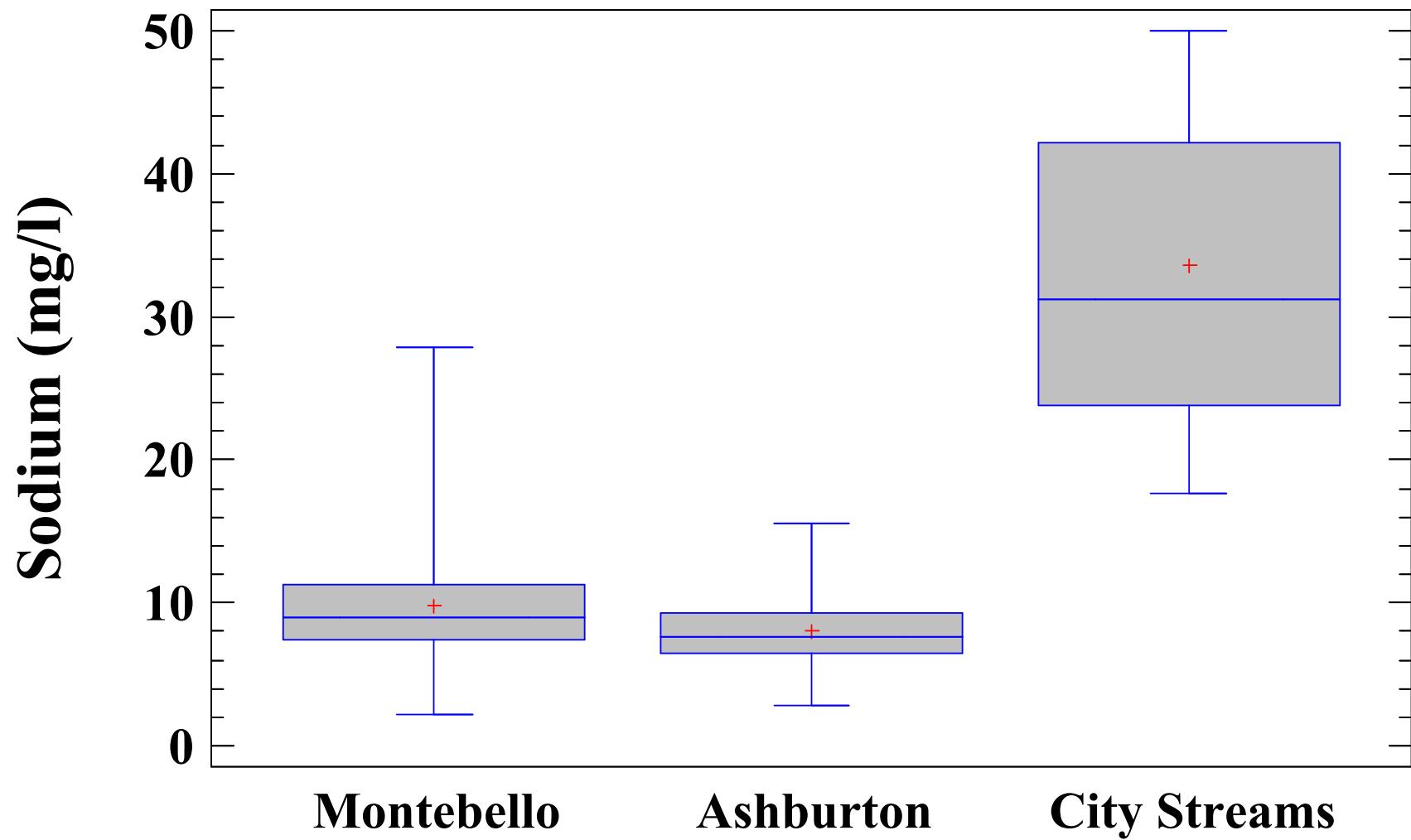


Baltimore City Sampling Stations

**Compare Montebello & Ashburton Finished Water (1964-2003)  
to Reservoir Tributaries (1982-2004) & City Streams (1997- 2004)**

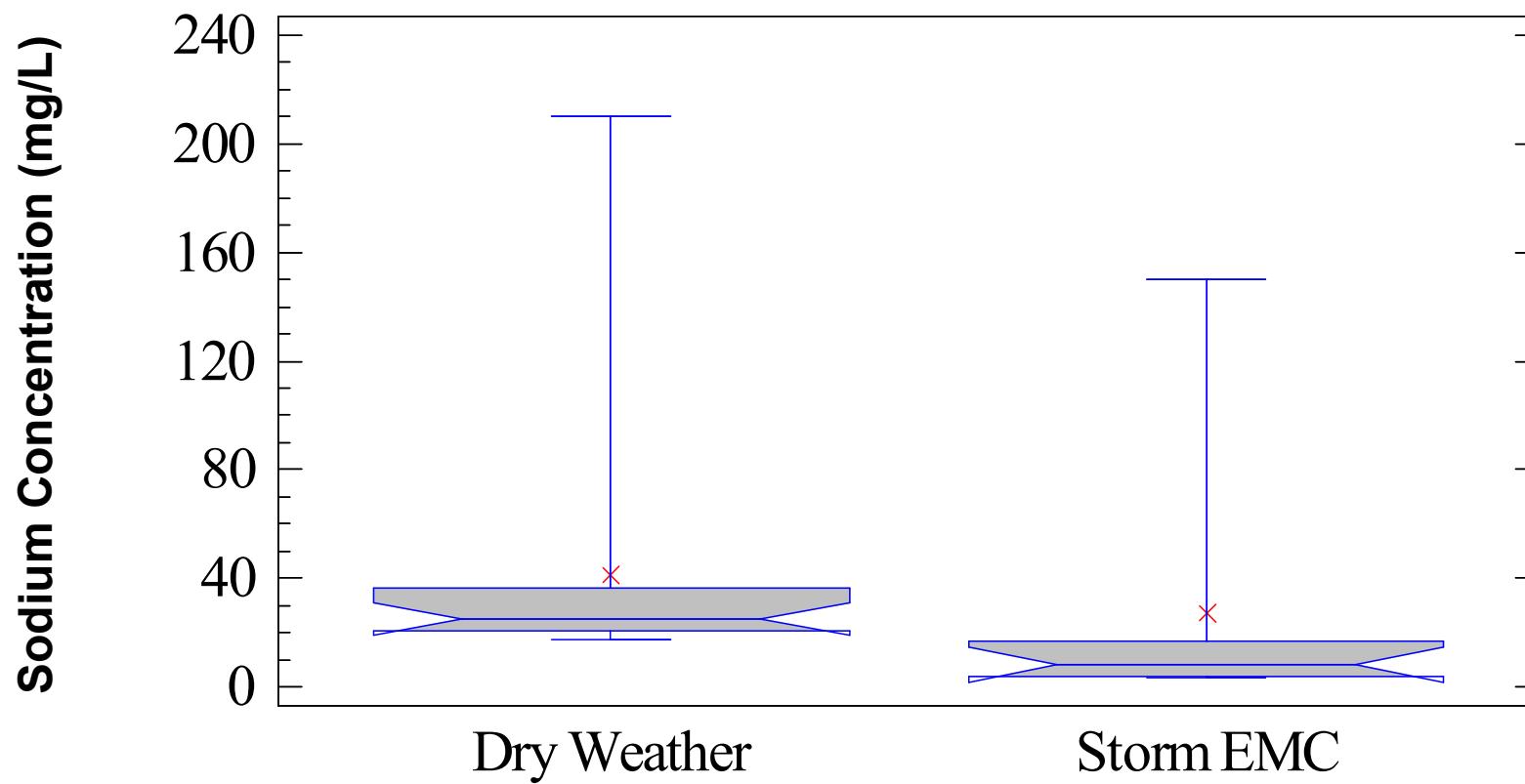


**Compare Montebello & Ashburton Finished Water (1973-2003)  
to City Streams (May-Jul 2004)**

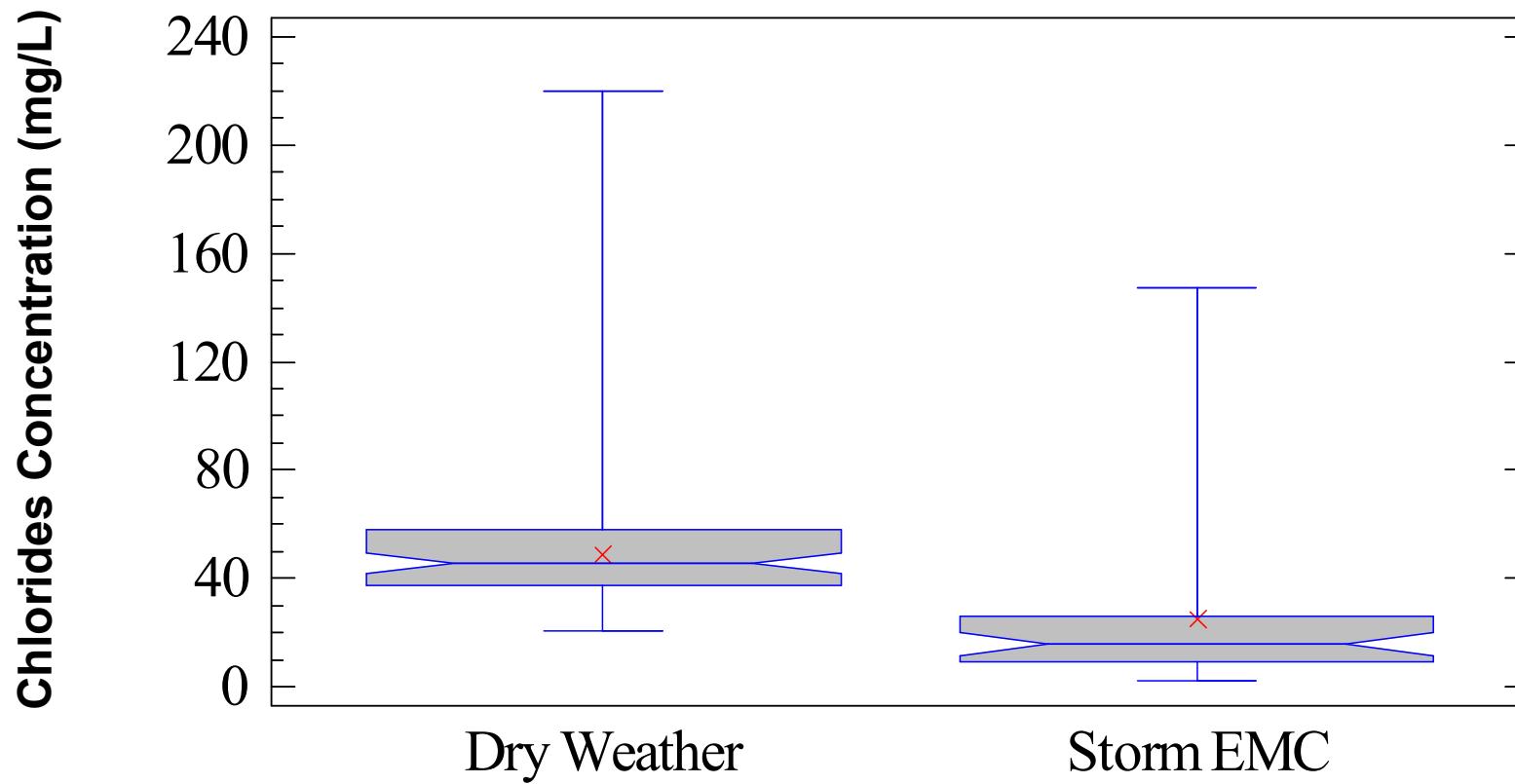


## Sodium Concentration Moores Run at Radecke Ave.

May 2004 through December 2005

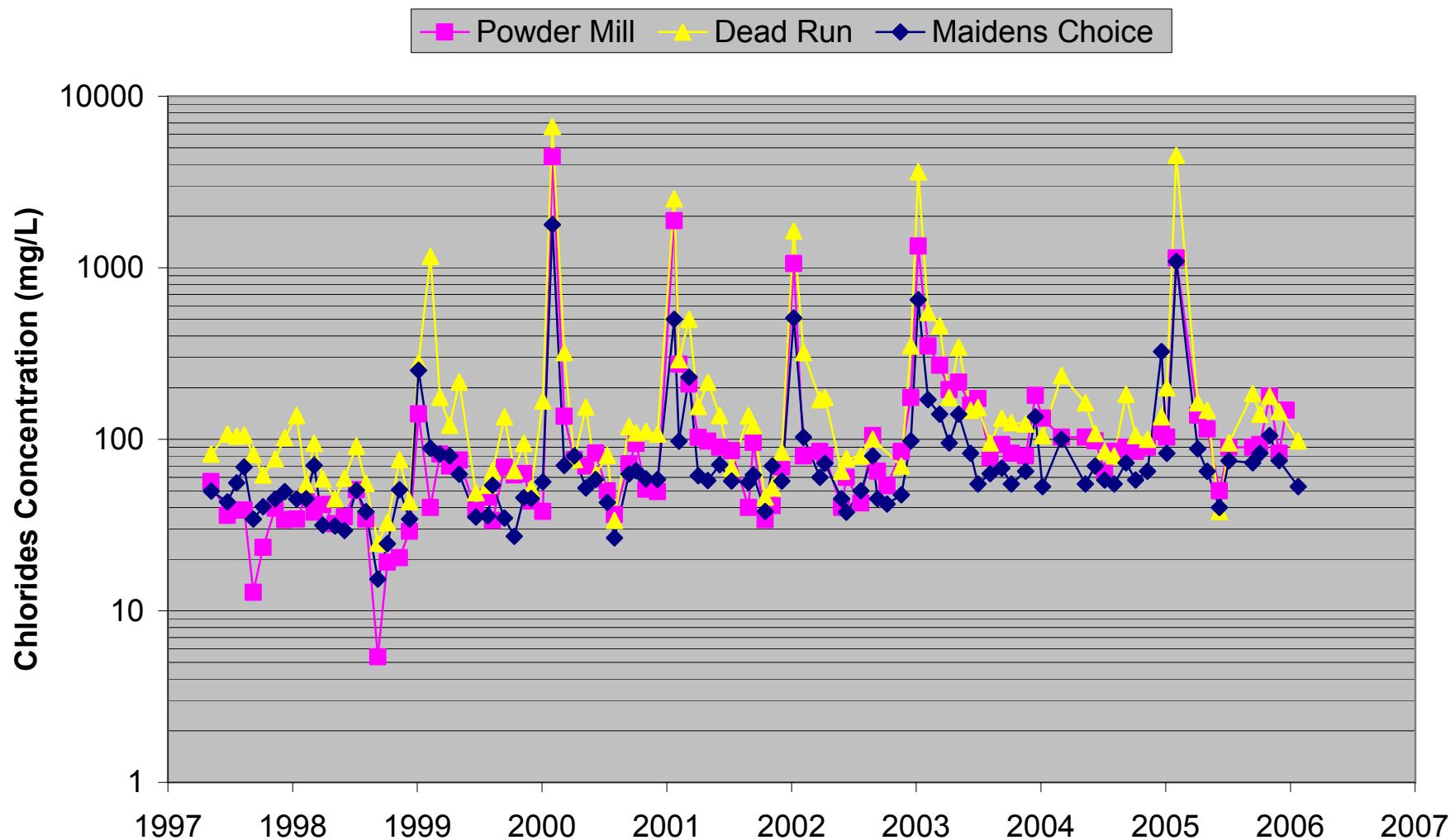


**Chlorides Concentration Moores Run at Radecke Ave.**  
**March 1996 through March 2000**

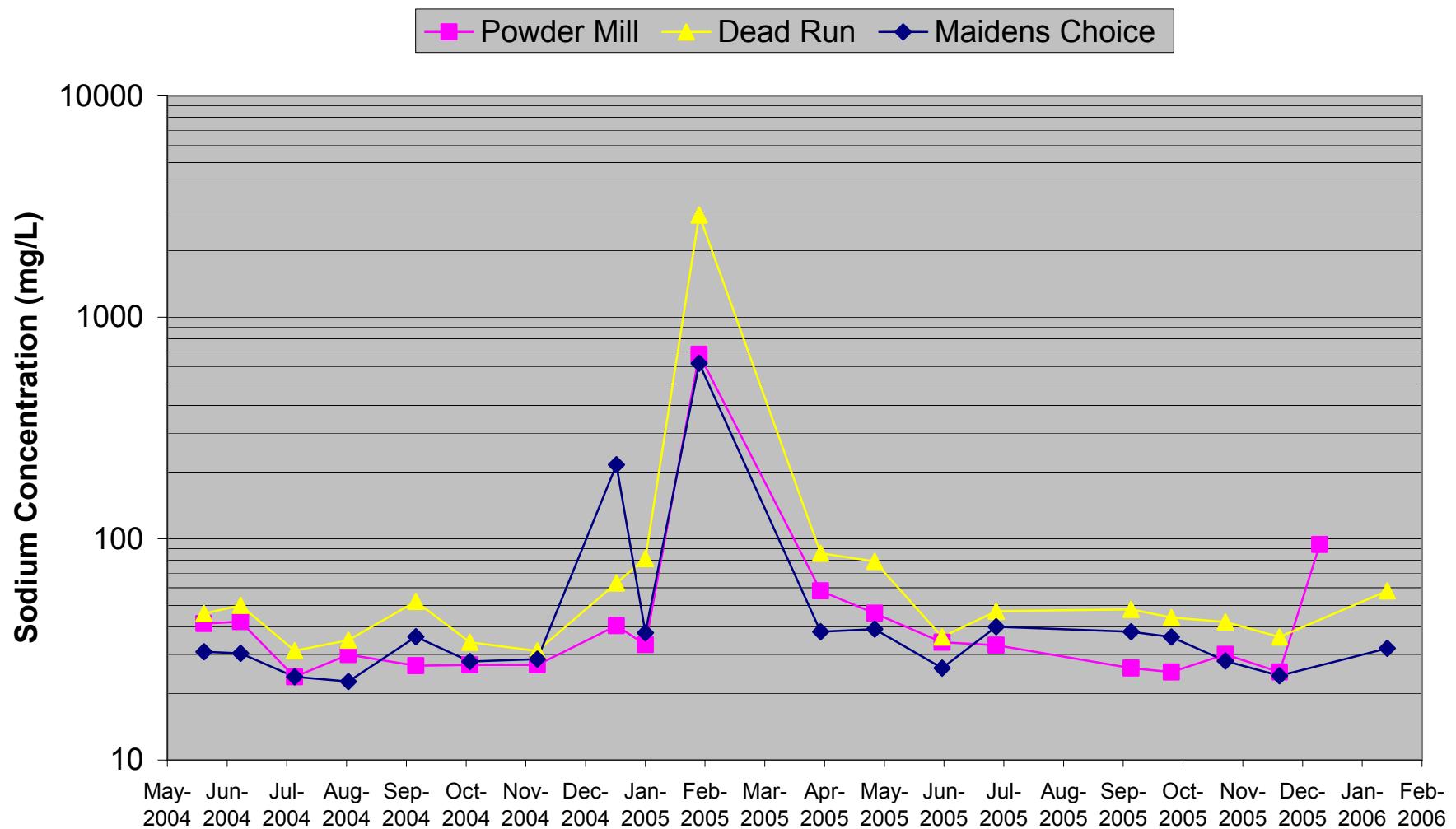


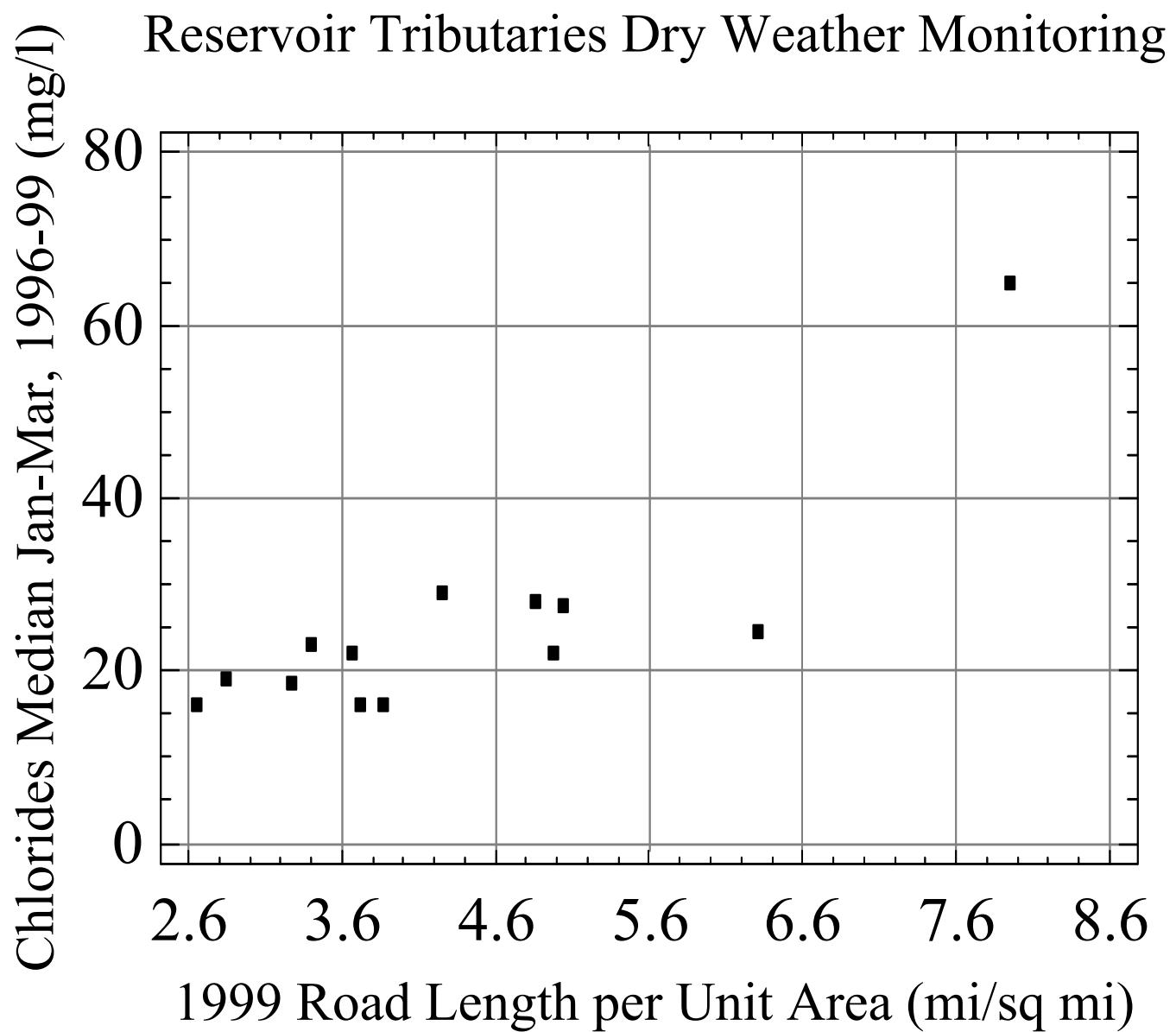
## **Chlorides Concentration Gwynns Falls Tributaries Dry Weather**

### **May 1997 through January 2006**



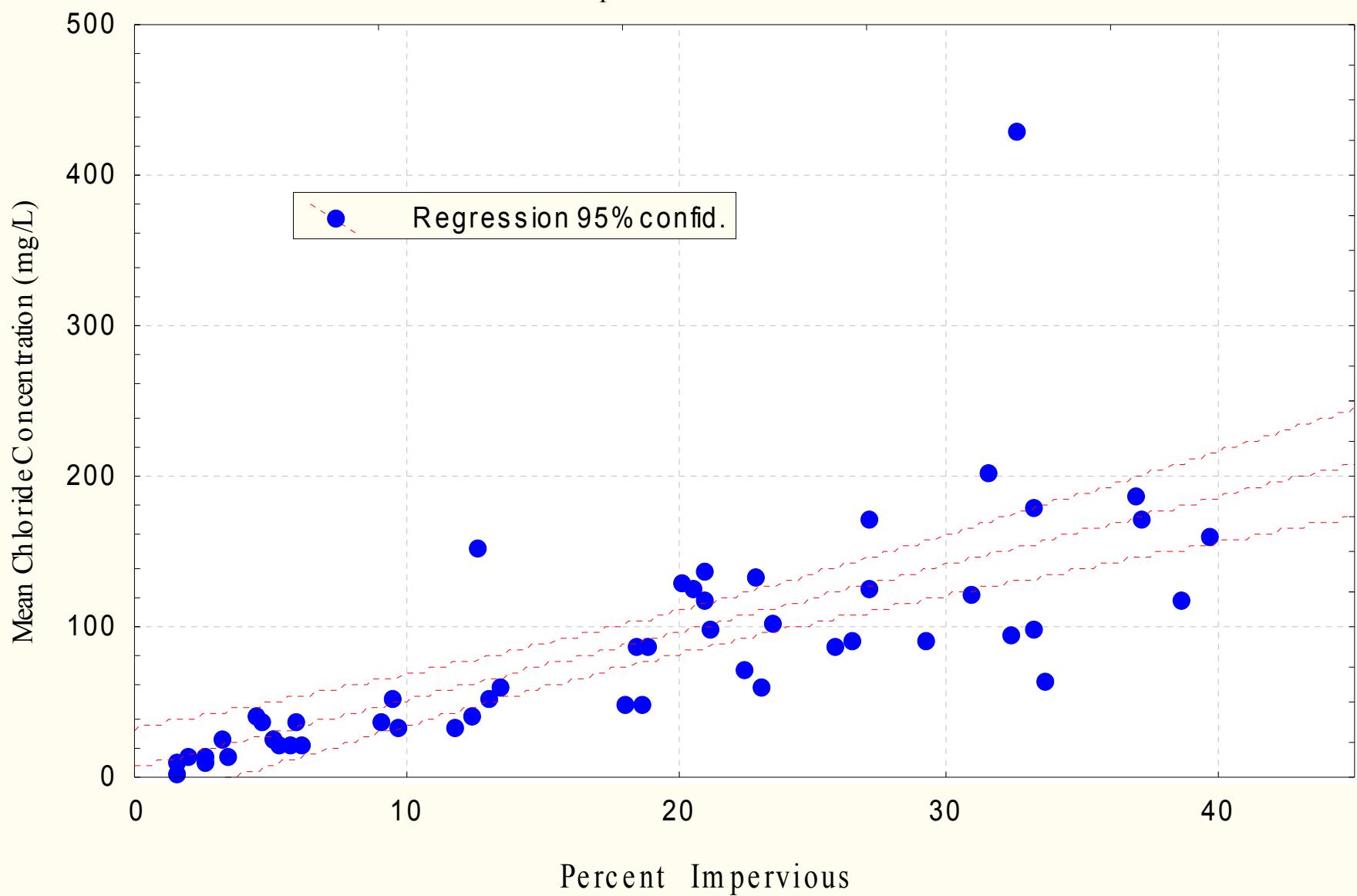
## Sodium Concentration Gwynns Falls Tributaries Dry Weather May 2004 through January 2006

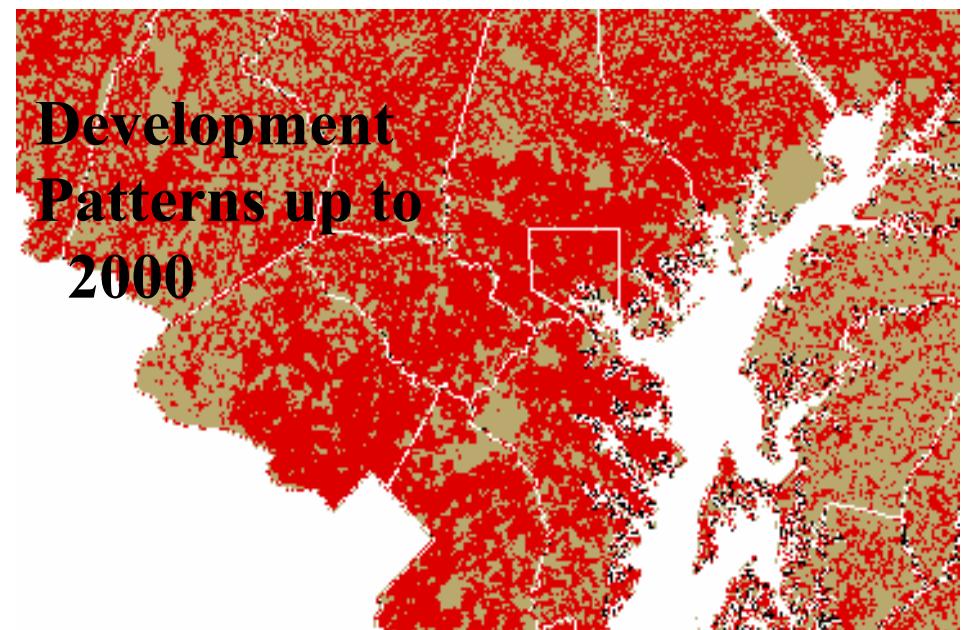
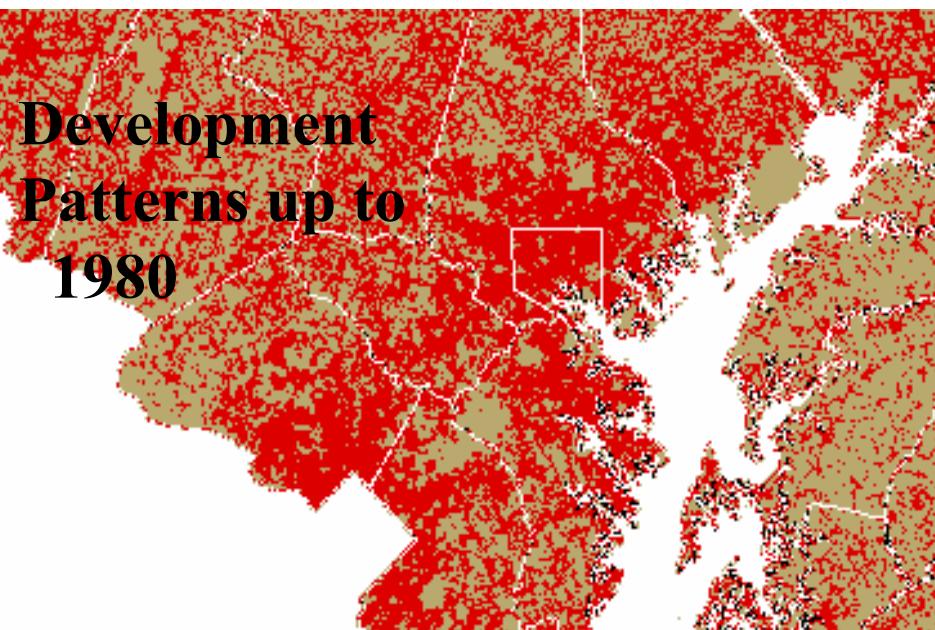
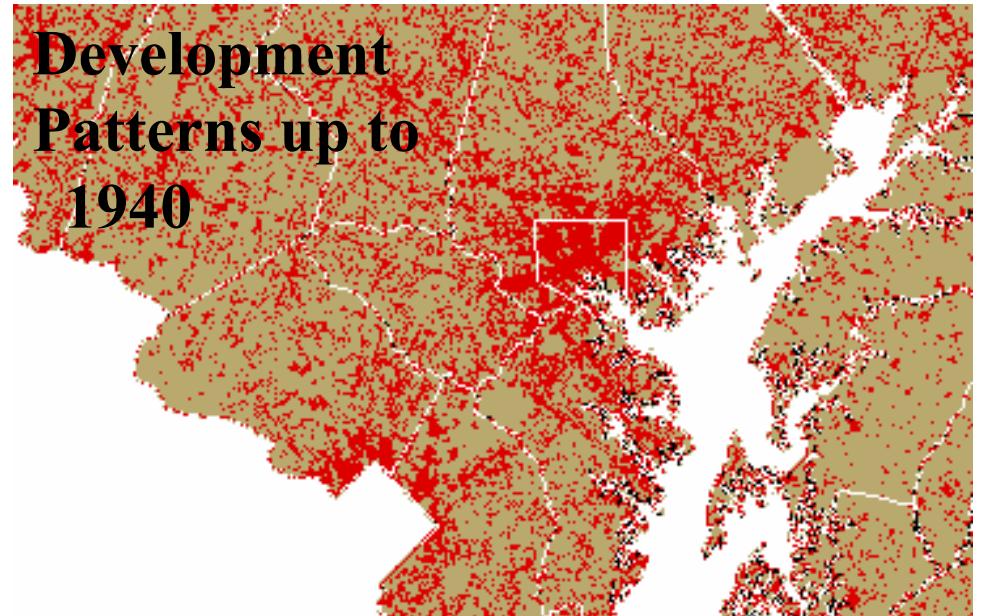
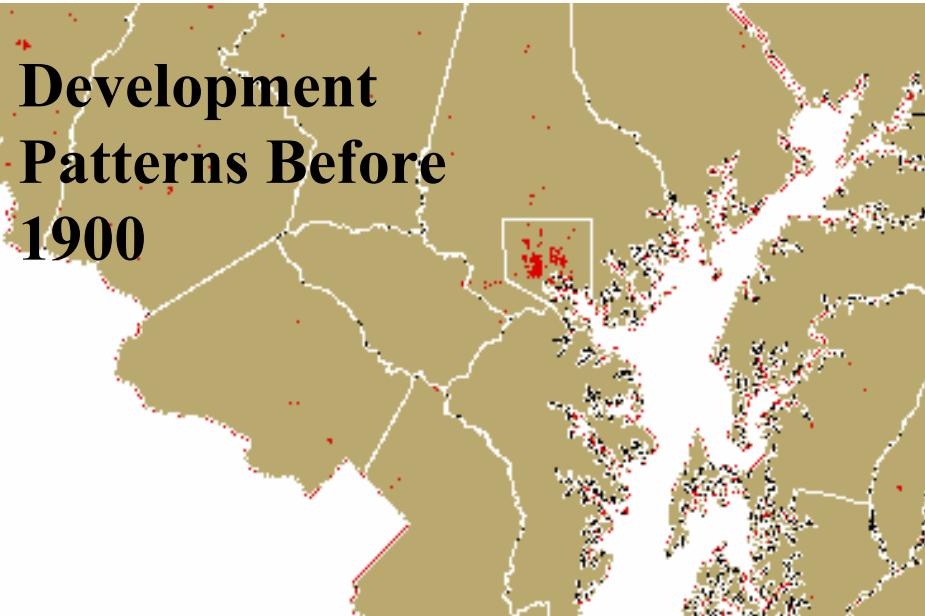




$$\text{Chloride Concentration} = 6.3210 + 4.5003 * \% \text{ Impervious}$$

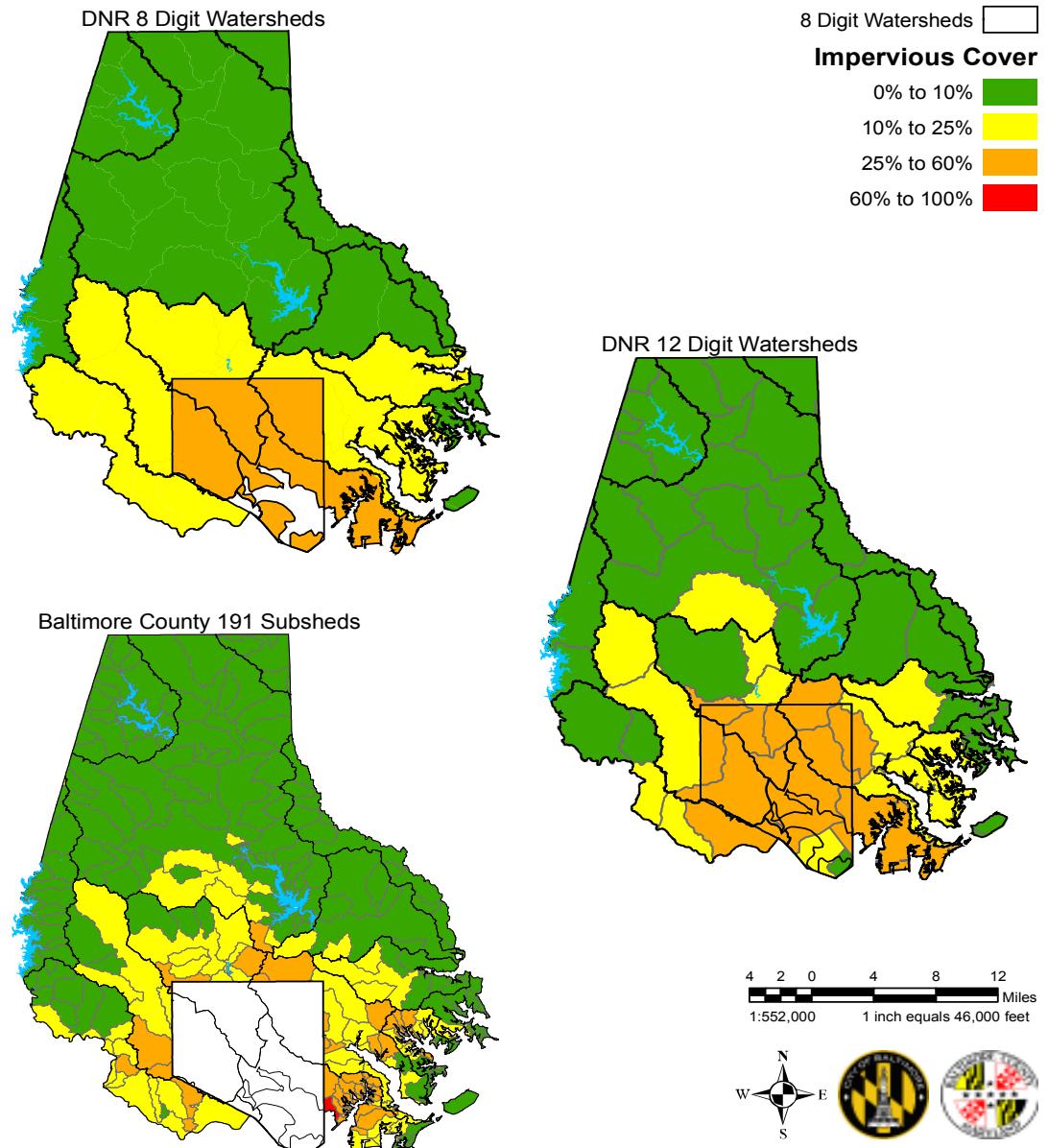
Correlation: r = .72  
Patapsco Back River Basin





Source: Maryland Office of Planning

# Impervious Cover by Watershed



Prepared by Geographic Information Services, Baltimore County  
Department of Environmental Protection and Resource Management  
Z/SHARED/DESHARED/2004gisBACKUP/  
WATERSHEDS/ImperviousnessByWatershed3ways.mxd