

Ingredients for Protection: How Guangzhou, China Can Learn from Boston and New York City's Experiences with Surface Drinking Water Source Protection

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Outline

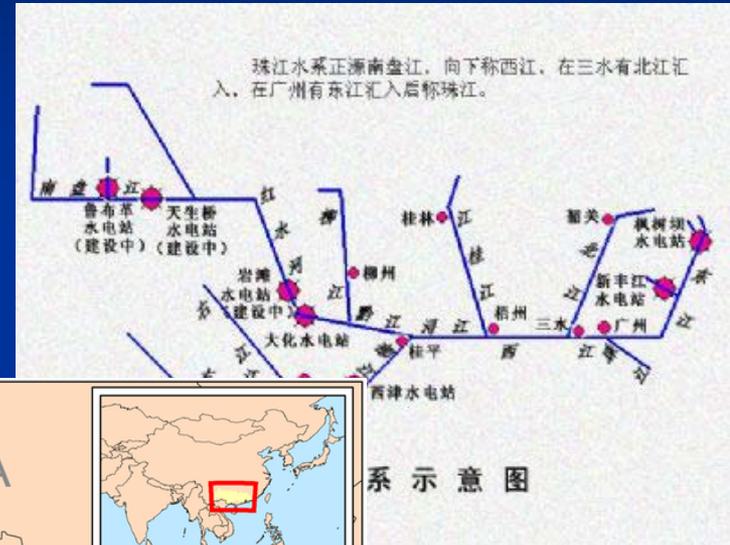
- Origin of the project
- Description of drinking water in Guangzhou
- Laws relevant to source water protection in Guangzhou
- Reasons to strengthen source water protection in Guangzhou
- U.S. laws relevant to source water protection
- Case studies of Boston, Massachusetts and New York City
- Themes for source water protection
- Application of the themes to source water protection in Guangzhou

Origin of the Project



- Vermont Law School's US-China Partnership for Environmental Law:
 - Academic and Faculty Exchanges, Conferences and Workshops, Collaborative Research Projects
- Request from Sun Yat-Sen University for one team of the collaborative fellows to research drinking water source protection
- Design of my research: providing suggestions based on U.S. law and case studies

Where does Guangzhou get its drinking water from?



Drinking water in Guangzhou

- From January to May 2008, only 72.5% of Guangzhou's drinking water meets the national drinking water standards
- More than 80% of the drinking water in Guangzhou comes from surface water sources
 - primarily major rivers and their streams
- Industrial pollution is a main source of pollution in Guangzhou
- There also is urban water pollution, agriculture pollution (mainly from pesticides and chemical fertilizers), and domestic sewage



Applicable Laws and Regulations

- PRC Water Law and Law on the Prevention and Control of Water Pollution
 - Both include provisions for regulating pollution to water bodies and protecting drinking water sources
- Guangzhou's Regulation on the Prevention and Control of Drinking Water Source Pollution
 - Outlines EPB's duties, designates Grade I, II, and quasi protected zones, and establishes a monitoring and enforcement scheme

Reasons to Strengthen Guangzhou's Source Water Protection

- There is a need to address transboundary pollution that is affecting Guangzhou's drinking water
- There is a lack of public and stakeholder participation in establishing the protected drinking water areas
- There is a need to establish a more comprehensive strategy for protecting drinking water sources, considering the many factors and sources of contamination



The U.S. Laws Applicable to Source Water Protection

- The Clean Water Act
 - Requires a NPDES (National Pollutant Discharge Elimination System) permit before point sources can discharge into U.S. waters
 - Requires states to designate the use of a water body and establish corresponding water quality standards
 - Requires states to implement TMDL's (total maximum daily loads) when pollutant levels exceed the water quality standards



U.S. Laws Continued

- The Safe Drinking Water Act
 - Requires the EPA to promulgate National Primary Drinking Water Regulations, which establish permissible maximum contaminant levels (MCLs) for particular contaminants found in the drinking water supply
 - Authorizes the Surface Water Treatment Rule (SWTR), which requires filtration unless certain factors (watershed management) are met
 - Provides funding to support drinking water programs and water system infrastructure improvements
 - Requires annual Consumer Confidence Reports and Source Water Assessment Programs

Case Study of Boston, Massachusetts



- The Massachusetts Legislature passed the Watershed Protection Act (WPA) in order to protect the three sources of Boston's water supply
- The Act designates the Department of Conservation and Recreation's Office of Watershed Management as the agency responsible for the administration of the WPA
- The Act creates primary protection zones which encompass land within 400 feet of a reservoir's shoreline and 200 feet of a tributary or other surface water
- The primary zone prohibits any physical alteration of the land, which includes construction, paving, excavating, filling, grading, and any changing of run-off characteristics.

Boston Cont.

- The secondary protection zone encompasses land between 200 and 400 feet from tributaries, surface water, flood plains, some aquifers, and within bordering vegetated wetlands.
- In this zone, some alterations to the land are permitted, but those specific activities “which pose a high risk of degrading water quality” are prohibited.
- The Act allows exemptions and variances from the prohibited activities
- Massachusetts also utilizes land acquisitions, access restrictions, and public education/outreach to improve its source water protection

Case Study of New York City

- In response to the SWTR, NYC avoided the estimated \$8 billion cost of a filtration system by pursuing watershed management
- NYC, NY State, the U.S. EPA, the watershed communities, and certain environmental organizations reached a watershed agreement to protect NYC's upstate drinking water sources
- The agreement provided for:
 - A land acquisition program
 - Funds to rehabilitate and replace substandard septic systems

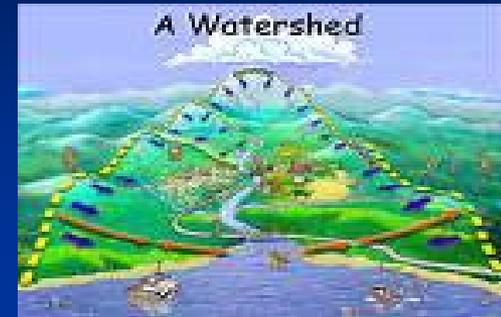


New York City Cont.

- A Watershed Protection and Partnership Council (composed of representatives of NYC, NY state, watershed towns, the EPA, and certain environmental groups)
- Funds to design and implement storm water best management practices
- Funds to support stream corridor and forestry management projects and programs
- Funds to support public education of the nature and importance of NYC's water supply system
- The NYC DEP maintains a comprehensive and detailed website, which provides information about watershed management strategies and source water protection

Themes for Source Water Protection

- Importance of watershed management
- Need for public participation, stakeholder involvement, and public outreach/education
- Value of intergovernmental cooperation (both between agencies and between the different levels of government)
- Need for the preservation of land
- Importance of funding and capacity building
- Use of incentives to affect change



Application of the Themes to Source Water Protection in Guangzhou

- Guangzhou can establish and implement a watershed management plan
- The Guangzhou EPB can involve stakeholders (business, agriculture, environmental interests) and the public when making management and source water protection plans
- The Guangzhou EPB can provide advertisements, websites, brochures, materials, and other programs to educate the public of the importance of source water protection and watershed management
- The Guangzhou EPB can collaborate with other agencies, other city governments, and the provincial/national government when making management and source water protection plans

Application of the Themes Cont.

- Guangzhou can create city parks and protection areas that preserve land in its natural state (trees, limited development, limited access)
- Guangzhou can provide funds to support source water protection in neighboring jurisdictions, public education and awareness, and technical capacity building
- Guangzhou can provide incentives that encourage preservation, minimize pollution, and improve source water protection



Conclusion

- Source water protection is a useful tool for ensuring safe drinking water
 - It improves the quality of water
 - It minimizes the costs spent on treatment
- The U.S. case studies demonstrate effective tools for implementing source water protection
- Guangzhou can apply these tools in order to strengthen its source water protection and improve its drinking water quality

