# 7: Integrated Urban Water Management

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- *Project 7.1: Non-structural flood control measure to balance risk-cost-benefit in flood control management in urban areas*
  - "Guidelines on Non-Structural Measures in Urban Flood Management"
  - "Public Participation in the Design of Local Strategies for Flood Mitigation and Control"
- *Project 7.2: Surface and Ground Water Management in Urban Environment*
  - "Water, The City and Urban Planning, Symposium" (Paris, 10-11 April 97)
- *Project 7.3: Integrated Urban Drainage Modelling in Different Climates; tropical, arid and semi-arid*
  - "Vol. I: Urban Drainage in Humid Tropics"
  - "Vol. II: Urban Drainage in Cold Climates"
  - "Vol. III: Urban Drainage in Arid and Semi-Arid Climates"
- "International Symposium Frontiers in Urban Water Management": Deadlock or Hope?" (Marseille, 18-20 June 01)
- "Frontiers in Urban Water Management: Deadlock or Hope"

Project 7.3: Urban Drainage in Specific Climates

# Vol. I: Urban Drainage in Humid Tropics

- Very good scientific review of traditional methods and techniques used in urban drainage design
- An issue particular to **developing countries**
  - Lack of information, guidelines, regulations, law enforcements.
  - Lack of funds, poor management.
  - Using practices from developed countries.
  - **Lack of awareness and education** as to the benefits of alternative drainage systems.
  - **Lack of hydrologic data.**
  - Rapid changes in this region of the world occur thus data requires constant updating.
  - **Lack of public participation**.

Project 7.3: Urban Drainage in Specific Climates

# Vol. II: Urban Drainage in Cold Climates

- Very good scientific review of traditional and innovative methods and techniques used in urban drainage design
  - Little to review because little research has been done in this area.
  - Misuse of methods intended for warm climatic conditions.
  - “There is a need for appropriate urban **hydrological data** and a careful calibration of these models catering to winter conditions”.

Project 7.3: Urban Drainage in Specific Climates

# Vol. III: Urban Drainage in Arid and Semi-Arid Climates

- Again, very good scientific review
  - Big issue is soil erosion
    - Reduced vegetation, soil type, characteristics of rainfall
- Misapplication of methods from non-arid region.
- "**Requires sophisticated sampling** because of the random nature of stormwater runoff, and short duration and rapid rise of hydro/hyeto graphs";
- "**Monitoring of stormwater quality is essential**".

# Other Monographs….

- Title: “Guidelines on non-structural measures in urban flood management”
  - Thorough
- Title: “Public Participation in the Design of Local Strategies for Flood Mitigation and Control”
  - Very good – value in the fact that it exists!
  - Authors note that a major challenge facing today’s water professionals is the need to **communicate effectively with the public** – many engineers have failed to appreciate this latter challenge.

# From Dr. Maksimovic's Presentation

- "The urban water community of water professionals, decision makers and end users, could only benefit both by being provided with **up to date knowledge** and [the] art of "integrated urban water management" .....

# “Frontiers in Urban Water Management: Deadlock or Hope?”,

Ed. by C. Maksimovic and A. Tejada-Guibert.

- It’s a Wonderful Book!
- The **Realistic** look at integrated water management.
- Excellent coverage of technical issues.
- Covers scientific impacts to hydrological cycle.
- Considers developing countries.
- Helps point to some future directions.
- Staple for all current practicing engineers and primer for graduate students in field.

# From Chapter 3

- "The entities involved in planning, development and running modern urban water systems ….are **increasingly relying on strong informatic** support in order to be reliable, efficient and financially viable…"
- "Surprisingly, almost all water supply systems **lack enough reliable information** to solve even the basic water balance equation."
- "That the systems of the future, should **include methods for securing high quality data**".

# More Defining Statements

- Chapter 4: mentions how there should be "a **close liason between different departments in cities**, including exchanges with those responsible in areas outside cities should be encouraged".
- Chapter 5: **Need to improve the availability of information**....
- Chapter 8: "Challenges will only be effectively tackled is if there is **serious and active involvement of the stakeholders**".

# Chapter 9

- "Adapative management, that is, proceeding with solutions along the envisaged optimal path, **while collecting additional data and monitoring the system performance** and making further adjustments as required, has a better chance of success. This requires **much better coordination and open communication channels between the relevant players**."

# From Dr. Maksimovic's Presentation

- "The first step to integrated management is to **identify barriers** and to search for means of improving co-ordination".

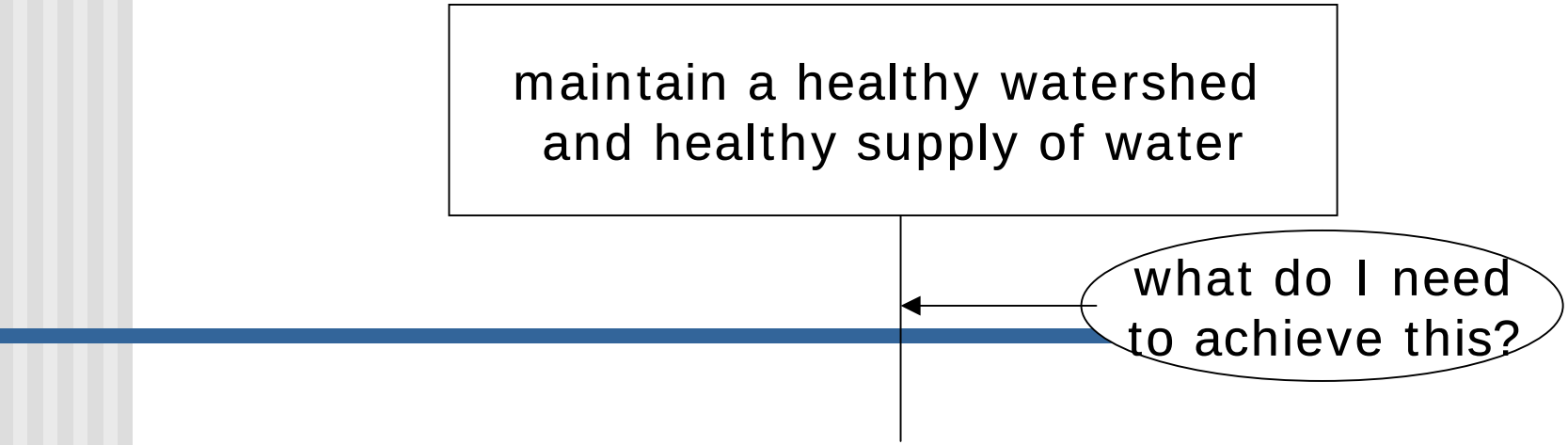
# Steps to Successful Integrated Urban Watershed Management

- "Successful implementation of an integrated watershed management plan involves developing a plan of action that begins with the definition of the problem, objectives and goals, and eventually leading to solutions and management measures." (Chapter2: "Urban water as a part of integrated catchment management" by J. Marsalek, Q. Rochfort and D. Savic.)

# Local Problem

- Integrated Water Resources Management for Elbow River Watershed in Southern Alberta (main source of water for the City of Calgary and receiver of urban storm/waste water).
- Developed country with semi-arid and cold-climate urban drainage problems.
- Conducted “Barrier Analysis”.

maintain a healthy watershed
and healthy supply of water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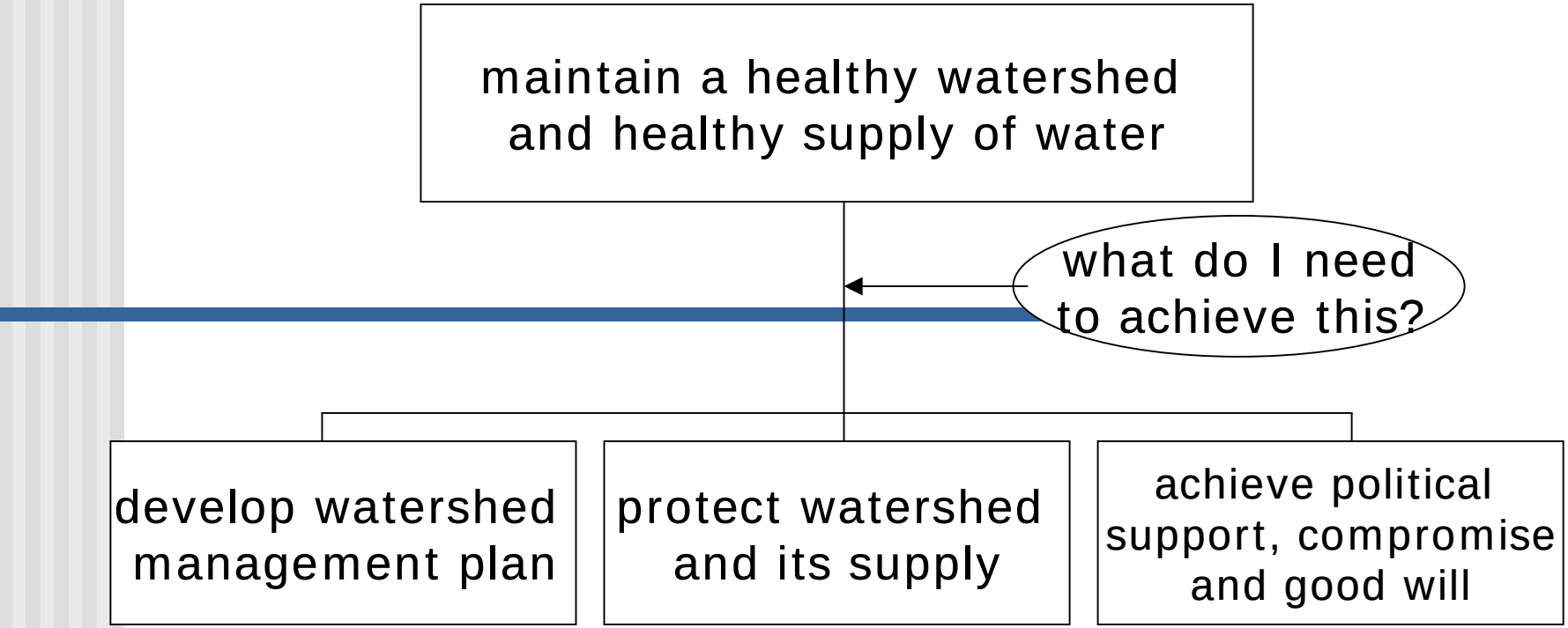
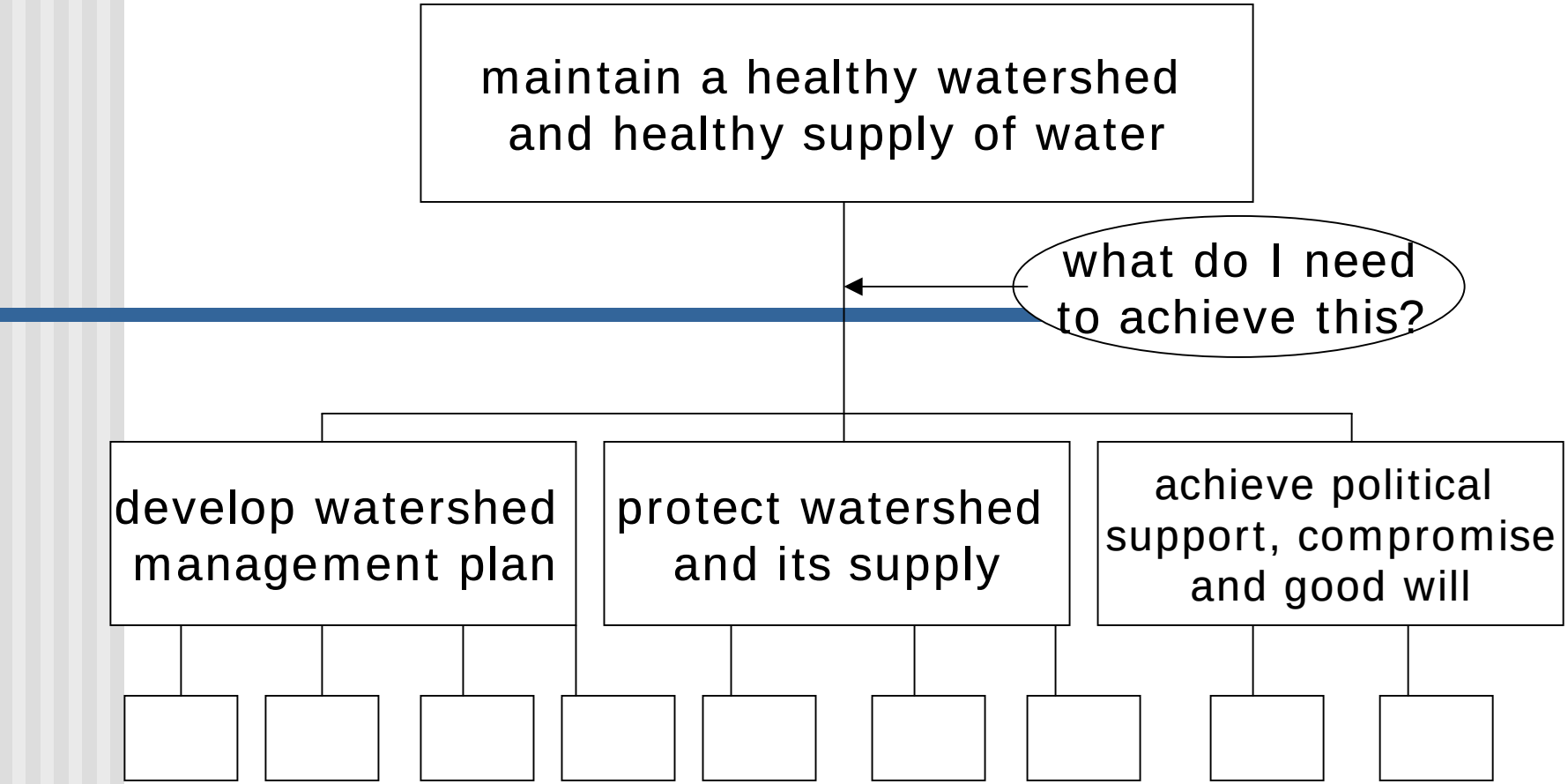
and healthy supply of water
what do I need
to achieve this?


maintain a healthy watershed and healthy supply of water
what do I need to achieve this?
develop watershed management plan
protect watershed and its supply
achieve political support, compromise and good will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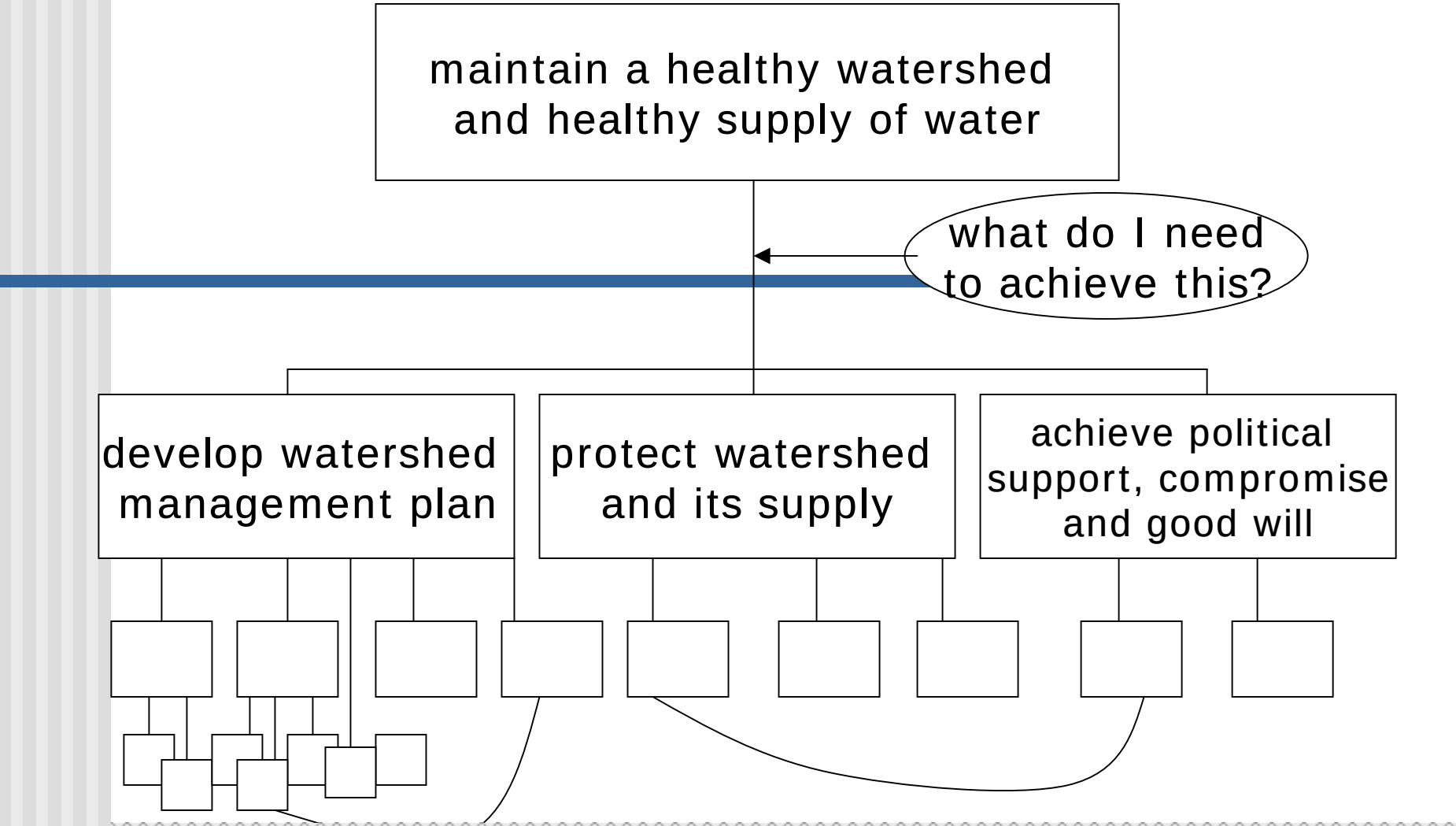
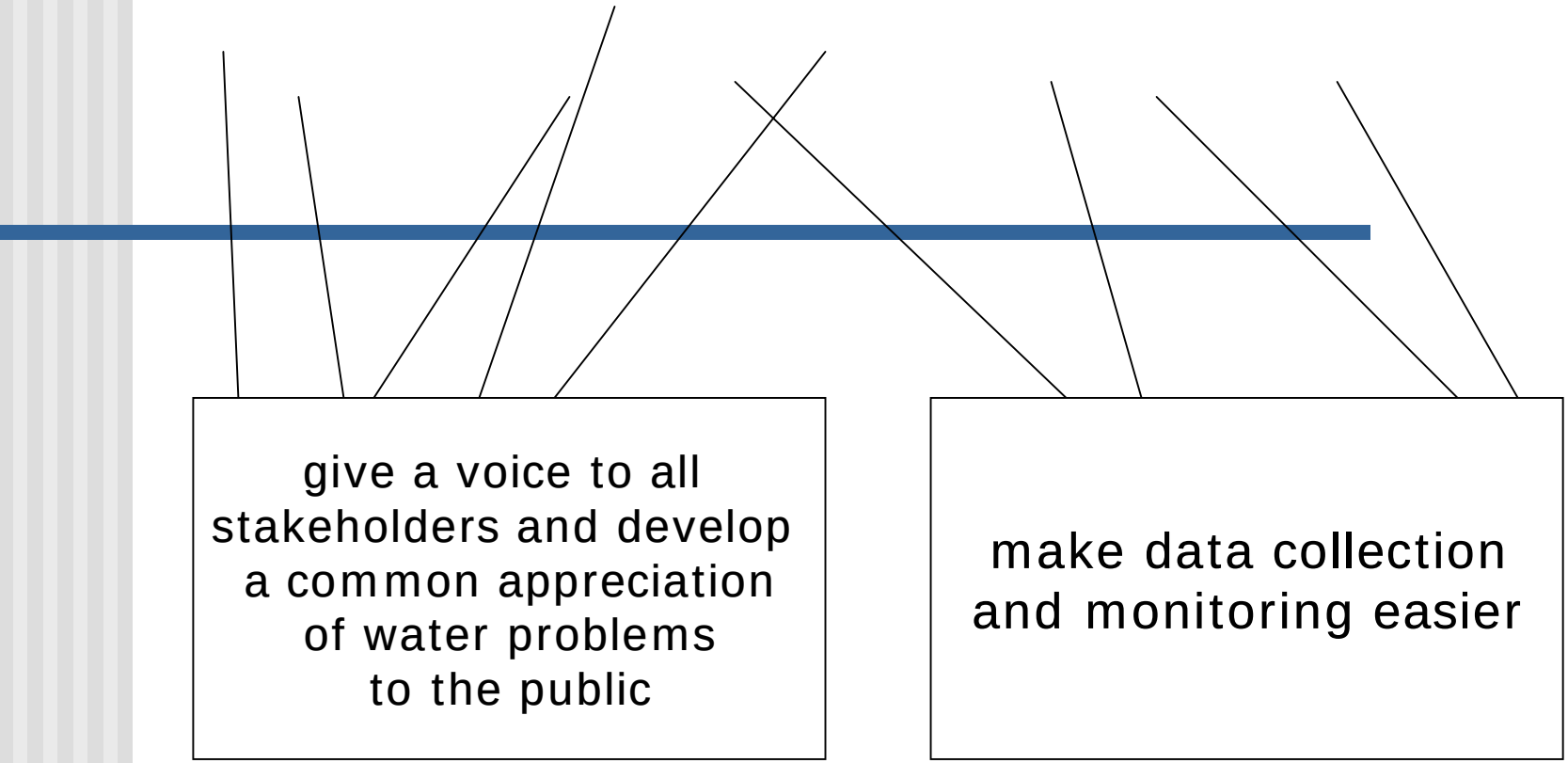



The Monster –
no less than 50 sub-elements


give a voice to all stakeholders and develop a common appreciation of water problems to the public
make data collection and monitoring easier

# What Theme 7 Did Not Achieve

- Project 7.2: Surface and ground water management in urban environments:
  - Original objectives not well outlined
  - Little attention.
- Better and more concise directions to overcoming problems to progress field.
- How to get more and better quality data.
- Greater recognition/investigation into the role of technological tools (GIS) for urban modelling.
- Comprehensive review of computer urban stormwater models.
- Disemminate! MUST get 7.3 monographs and “Frontiers” text out to the world.