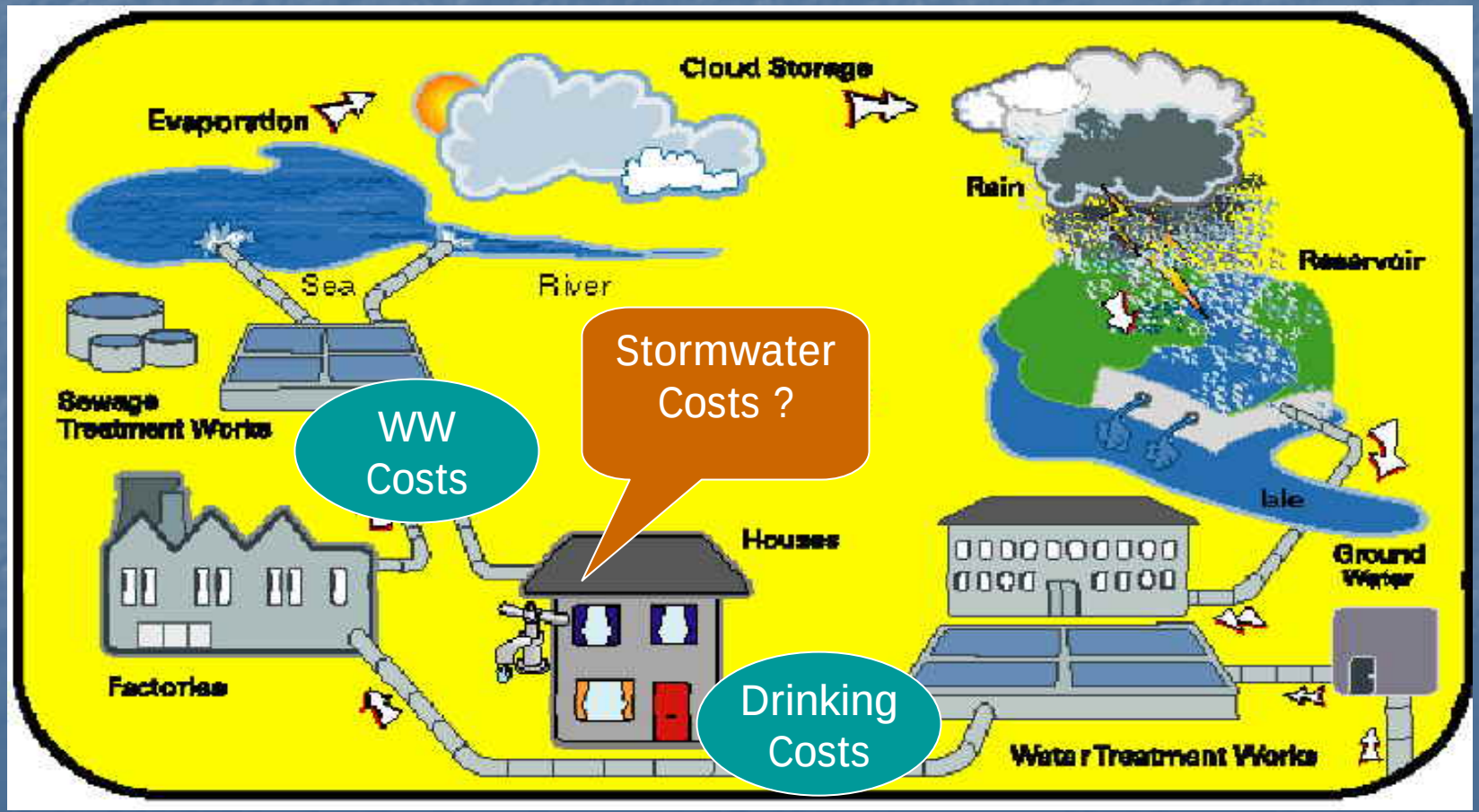
Radnor Township

Municipal Responsibilities, Challenges, and Opportunities

Stormwater Forum
October 23, 2008

Background

The Three Water Services



Stormwater Sources

Public Responsibility for Public A Problem

Municipal Responsibilities

- Maintain Public Safety
- Mitigate Flooding
- Replace Aging Infrastructure
- Insure Public Health
- Maintain and Improve Water Quality
- Restore Stream Functionality and Health
- Comply with Federal and State Regulations

Maintain Public Safety

Mitigate Flooding

FLOOD AUGUST 29, 2006

125 FAIRFAX ROAD, ROSEMONT, PA 19010

Increases in number of flooding events and associated complaints

Mitigate Flooding

Radnor Middle School (Photos From Suburban Newspaper)

- Increase in rainfall events
- Increase in build out

Maintain Infrastructure

- Many of the pipes are made of terra cotta and have outlived their design life
- Many pipes are buried in inaccessible areas
- Most of the older pipes are located in the older, high density area, of the township

Waterborne Diseases of Possible Concern When Flood Waters Recede

Maintain Public Health

Protozoan(Cryptosporidium parvum)
Collects on water filters and membranes that cannot be disinfectedanimal manure, seasonal runoff of water.
Diarrhea, abdominal discomfort

Giardiasis*(oral-fecal) (hand-to-mouth) Protozoan (Giardia lamblia)
Most common intestinal parasite

Untreated water, poor disinfection, pipe breaks, leaks, groundwater contamination, campgrounds where humans and wildlife use same source of water. Beavers and muskrats act as a reservoir for Giardia.

Diarrhea, abdominal discomfort, bloating, gas and gas pains

Viral gastroenteritis (oral-fecal) Viruses (includes Norwalk and rotavirus family)

Sewage, contaminated water, inadequately disinfected drinking water (mostly surface water sources).

Repeated vomiting and diarrhea over 24-hour period, gastrointestinal discomfort, headache, fever.

Insure Stream Functionality

- Erosion
  - Riparian protection
  - Decrease sedimentation
- Free Flowing
  - Culvert blockages
  - BMPs

Comply With Regulations

- Federal Requirements
  - CWA
  - NPDES Phase II
  - MS4 (new permit coming)
- State Requirements
  - MS4
  - TMDL
  - Act 167

Potential Fines Up to $75,000/month

Challenges
SW Management Costs

- Current Costs
  - Engineering - $730,000
  - Operations - $500,000
  - Capital Investments - $720,000
  - Administration - $50,000
- Total – Approx $2 Million

- Future (Order of Magnitude) Estimates
  - Continue current activities
  - Master Planning
  - Capital Investments based on study results/needs
  - Replace existing pipes @ .5 miles/year
  - Conduct sector specific outreach education & training
  - Public education
  - Increased GIS
  - Increase inspection capability
  - Increase maintenance
  - Public/Private partnership for stream restoration
- Total – Approx $4.8 Million (plus pipe replacement cost – TBD)

Challenges
Funding Equity

- Those who actions have the most negative effect are not the same as those suffering the consequences
- Need to link costs to impact

SW Needs

- Master Planning – holistic view
- Infrastructure Replacement - planned
- Capital Improvements – increased and planned
- GIS – improved data and updated flood maps
- Education and Outreach – various stakeholders
- Inspection and Enforcement – increased manpower
- Operations and Maintenance – scheduled inspection and maintenance
- Water Quality – testing and monitoring
- Stream Restoration – public/private approach

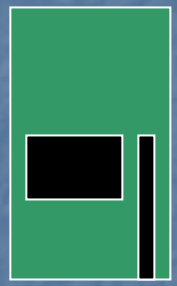
Possible Revenue or Sources of Funds

- Taxes
- Grants
- System Development Fees
- Review Fees
- Stormwater Fees
- Other ?

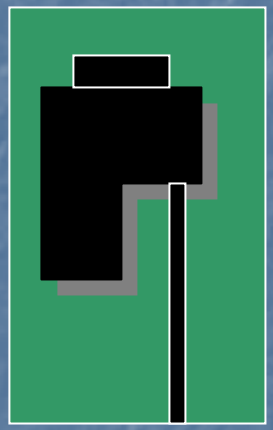
Advantages to SW Fee

- ***Demand – based*** method of paying for services received.
- ***User pays*** based on demand for services.
- Demand is typically related to the amount of ***hard surfaces*** (impervious) on a property.
- ***Program drives the cost*** of service and thus the rate.
- ***Revenues are dedicated*** to an enterprise fund and can only be used for stormwater management.
- Thought to be the ***most equitable*** method of funding because it is based on use/demand on the system.
- Most ***infrastructure services*** are based on “user fees” such as drinking water, sanitary services and roadways (tolls and gas taxes).

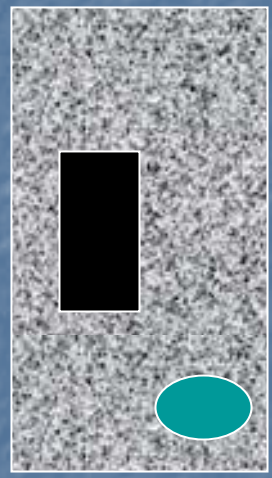
Equivalent Residential Units -ERUs



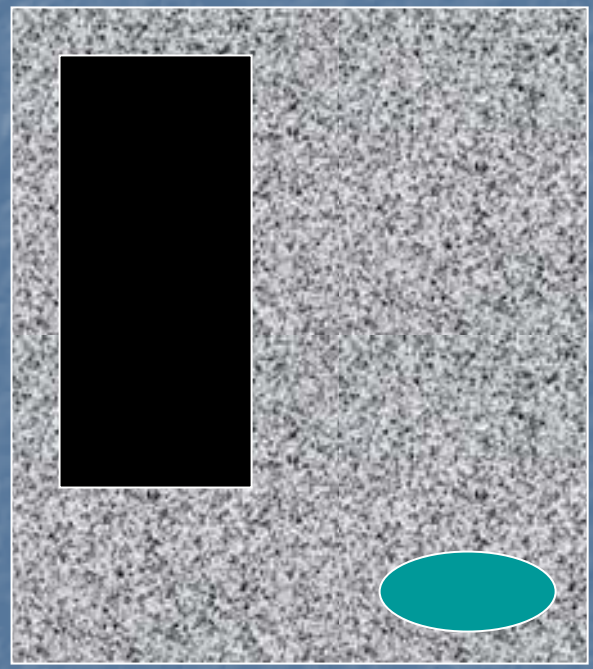
Small Residence



Large Residence



Fast Food



Commercial

Fee Equivalent for ERU Based on Program Needs

Possible Next Steps

- **Program Evaluation**
- **Cost of Service Analysis**
- **Data Analysis**
- **Funding Feasibility Analysis**

With On-Going Stakeholder Involvement

So….What Could a Sustainable Stormwater Program do for Radnor Township?

- Replace aging infrastructure in a planned manner
- Improve ability and capability to address flooding issues
- Decrease levels of stream erosion, sedimentation, and pollution loading
- Provide a sustainable and equitable funding strategy
- Meet State and Federal Clean Water requirements

Questions?

Marlou Church Gregory
AMEC Earth & Environmental, Inc.
One Plymouth Meeting,
Suite 850
Plymouth Meeting, PA 19462
marlou.gregory@amec.com