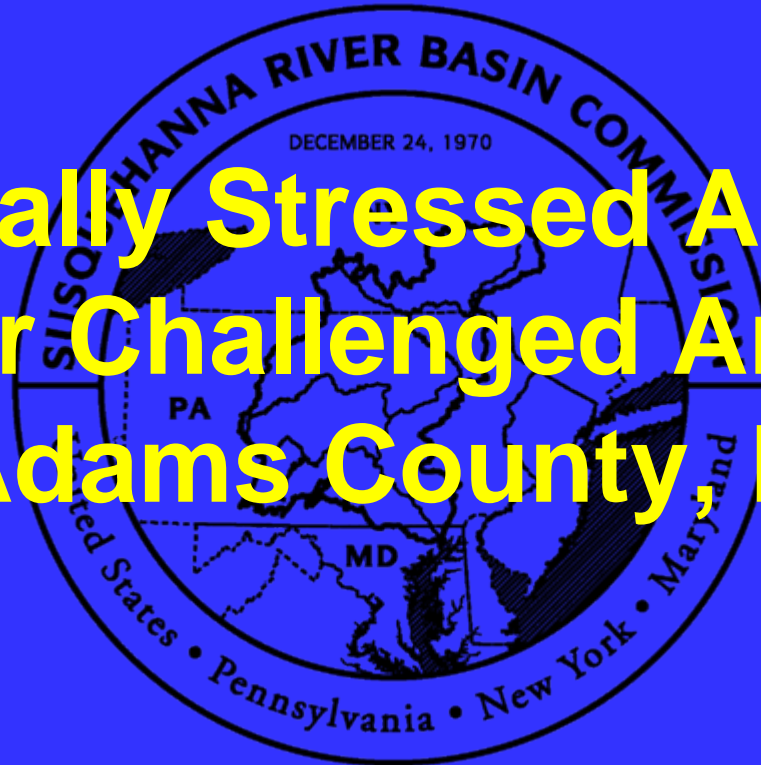


Susquehanna River Basin Commission

Potentially Stressed Areas and Water Challenged Areas in Adams County, PA



A Presentation for the
Adams County
2010 State of the Waters Conference

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STATEMENT OF MISSION

To enhance public welfare through comprehensive planning, water supply allocation, and management of the water resources of the Susquehanna River Basin.

WATERSHED BASED PLANNING

Sovereign rights and responsibilities of the signatory parties are exercised jointly through the Commission in the common interest of the people of the basin.

Water Withdrawal and Use Regulation

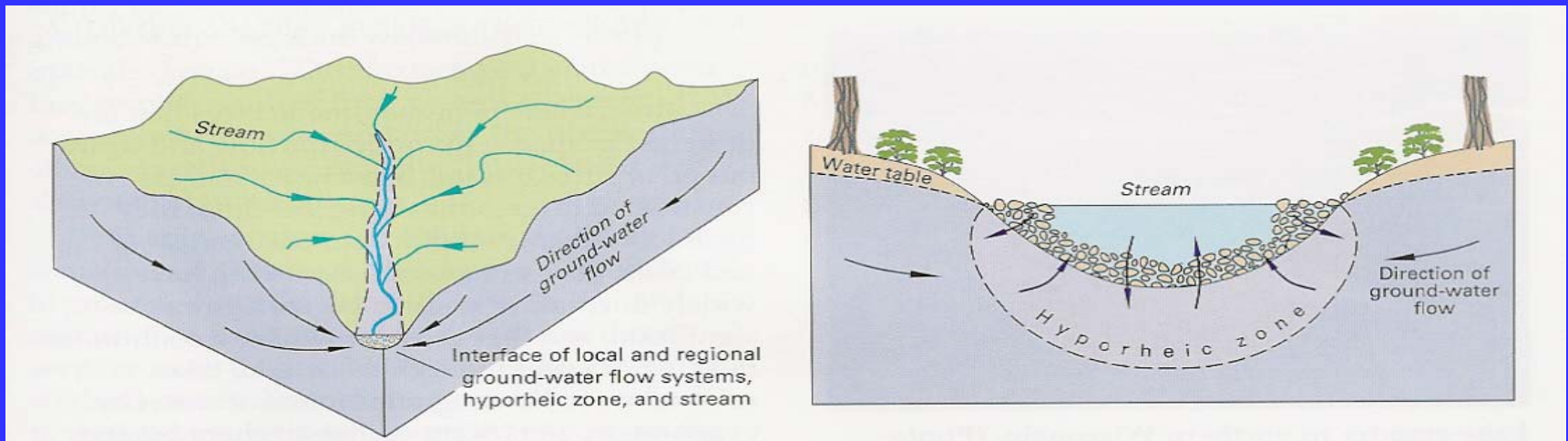
SRBC regulates surface and groundwater withdrawals and consumptive uses to help:

- avoid water conflicts
- protect public health, safety and welfare
- regulate flows and control stream quality
- consider economic development factors
- protect fisheries and aquatic habitat
- protect the Chesapeake Bay



Keys to Water Resource Management

- Manage water resources for sustainability.
- Understand the connection between groundwater and surface water (they are part of the same flow system).



Manage groundwater resources to prevent overutilization (1 in 10 year drought recharge)



Loss of spring flow during drought conditions

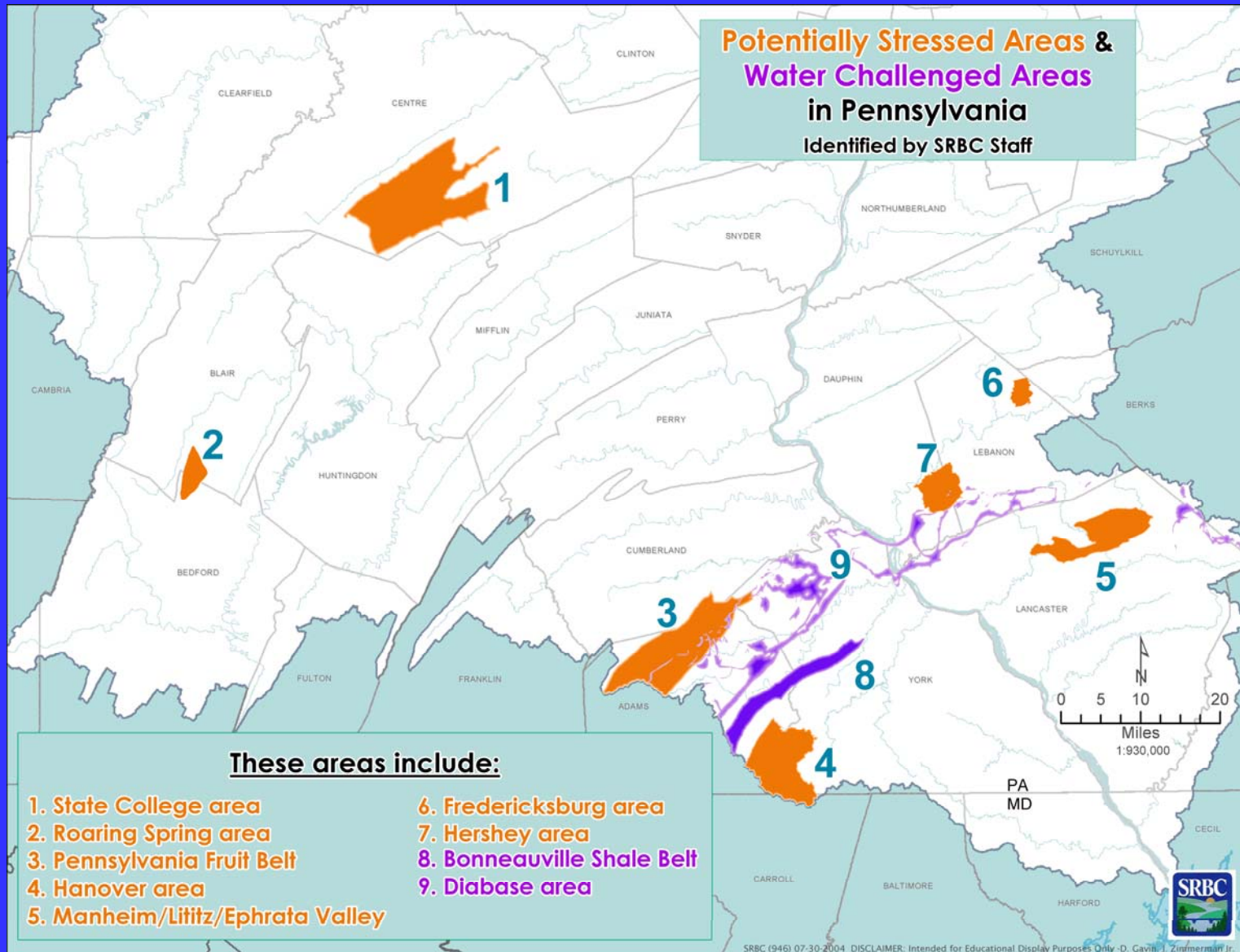
Water Challenged Areas

Lands that underlain by low yielding aquifers or headwater streams are often naturally water challenged areas. These areas typically lack sufficient water resources necessary for centralized public water supplies, commercial development, and industrial growth.

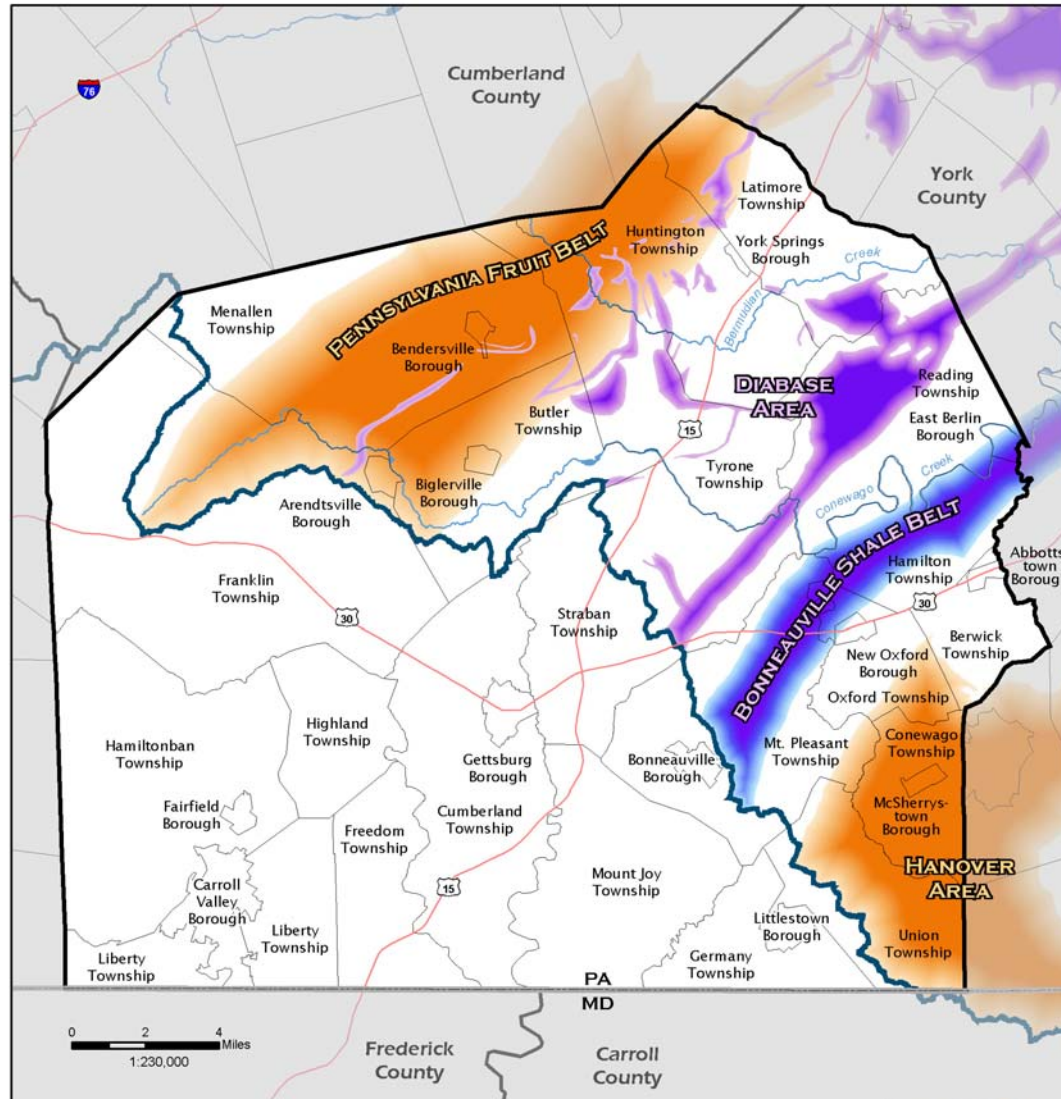
Potentially Stressed Areas












Are typically Water Challenged Areas that include over-development, over-allocation of water, historic land use (e.g., mining, agriculture), disproportionate consumptive use, increased impervious cover, waste water disposal issues.

SRBC Potentially Stressed Areas and Water Challenged Areas



POTENTIALLY STRESSED & WATER CHALLENGED AREAS in Adams County, Pennsylvania

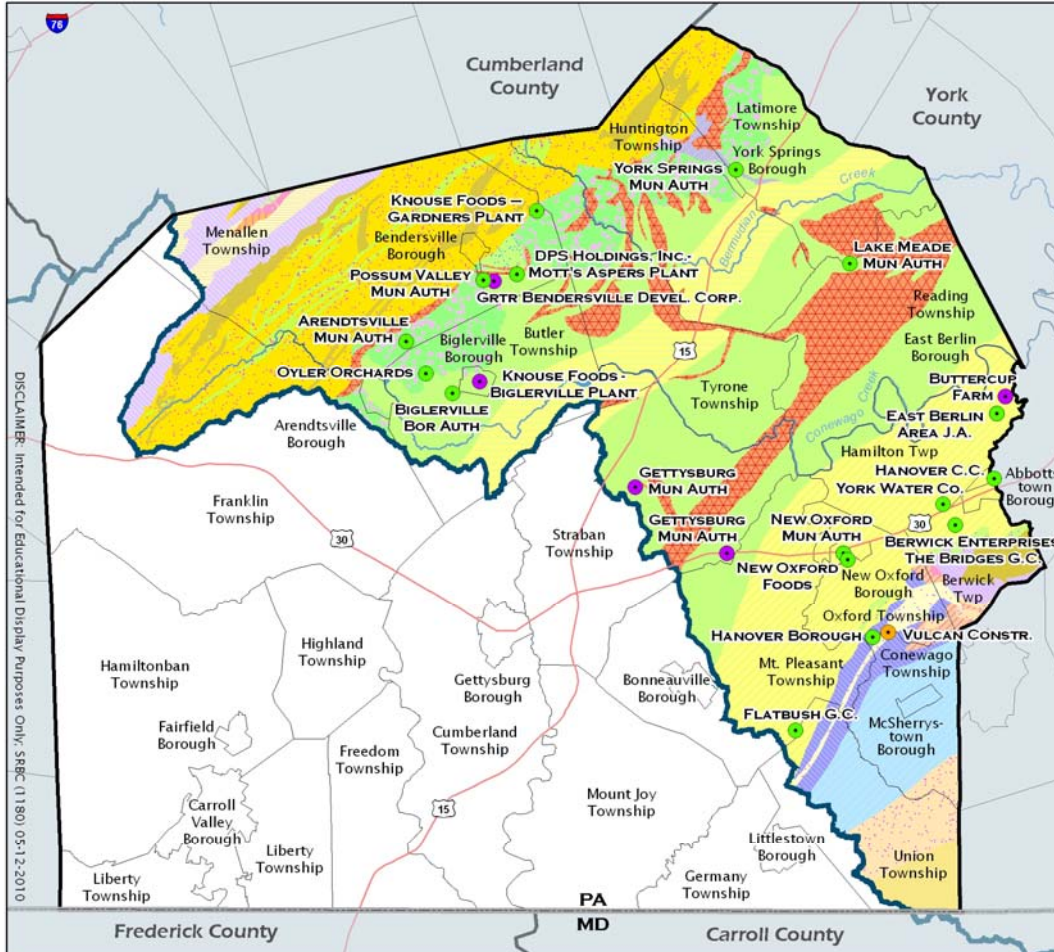


	 Potentially Stressed Area	 Municipal Boundary	 Major Road
	 Water Challenged Areas	 County Boundary	 River/Stream
	 Shale Geology	 State Boundary	 Susquehanna River Basin
	 Diabase Geology		

DISCLAIMER: Intended for Educational Display Purposes Only; SRBC (1180) 11-04-2005; Jeff Zimmerman, Jr.



SRBC APPROVED PROJECTS & GEOLOGY in Adams County, Pennsylvania



<ul style="list-style-type: none"> Diabase Gettysburg Fm Heidlersburg Member New Oxford Fm Quartz Fanglomerate Marburg Schist Beekmantown Group Conestoga Fm Antietam & Harpers Fms 	<ul style="list-style-type: none"> Chickies Fm Kinzers Fm Ledger Fm Montalto Member Vintage Fm Weverton & Loudon Fms Greenstone Schist Metabasalt Metarhyolite 	<ul style="list-style-type: none"> Approved Project Pending Project Exempt Project Major Road Municipal Boundary County Boundary State Boundary Susquehanna River Basin
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Water Challenged Areas

Areas underlain by **Diabase Bedrock**

- Composed of intergrown mineral crystals
 - No Primary porosity
- Secondary porosity consists of sparse, widely spaced horizontal and vertical joints
 - Most of the permeability is in the top 50 feet
 - Diminishing permeability with depth

Water Challenged Areas

- **Areas of Diabase Bedrock**
 - Numerous wetlands, seepages, streams and springs suggests an abundance of available water resources.
 - However, this abundance is deceptive.
 - The low amount of subsurface space available for groundwater is easily filled and often overfilled, resulting in overland runoff, wetlands, etc. but little groundwater recharge.

Water Challenged Areas

- **Bonneauville 'Shale'**
 - An informal hydrostratigraphic unit
 - A group of strata within the Triassic age sedimentary rocks
 - Contains rocks mapped as New Oxford Formation and Gettysburg Formation
 - Composed of mudstones and silty, argillaceous (clay-rich) fine-grained sandstones

Water Challenged Areas

The Bonneauville Shale is Characterized by

- Gentle slopes and extremely low relief
- Flashy streams with very low baseflow
- Deep wells with low yields, and frequent 'dry' wells
- Ductile (clay-rich) lithologies (bend instead of break and thus lack fractures to transmit water)
- Very low interconnected space for water storage (primary porosity)
- Sparse, tight, poorly integrated fractures inhibit the removal (pumping) of stored water

Potentially Stressed Areas in Adams County

Water Supply Area to Hanover Borough

- Limited area of ‘municipal-grade’ aquifers
- Principal municipal-grade aquifer is overdrawn
- Principal stream is perched and ‘losing’
- Extensive sinkhole development
- Inadequate dilution flow for wastewater treatment plant

Potentially Stressed Areas in Adams County

The Pennsylvania Fruit Belt

- Low yielding aquifers
- Intensive irrigation and consumptive use
- Headwater setting and high quality streams
(waste water dilution flow issues)

Management of Potentially Stressed Areas

SRBC's Role

- Identify new Potentially Stressed Areas
- Greater Scrutiny of Project Applications for sustainability and potential impacts
- SRBC 'Planning' Studies
 - Northern Lancaster Co. Study
 - Deer Creek Watershed Study
 - Morrison Cove Study
- Education
 - Presentations to stakeholders
- Designation of Special Protected Areas

Management of Potentially Stressed Areas By Stakeholders

- 1) Evaluate available 'onsite' water resources (there is no substitute for good science – hire a non-biased scientist to evaluate the resources and help develop county wide planning).

Determine the maximum amount of potable water available locally (1 in 10 year groundwater availability standard). Water use greater than this will require water to be imported from areas with a surplus of water

Management of Potentially Stressed Areas By Stakeholders

2) Evaluate current and future water needs

- Consider the type of growth
 - Residential
 - Commercial
 - Agricultural
 - Industrial
- Consider the impact of this growth on the available water resources and utilize best management practices (impervious cover, stormwater runoff, allow for groundwater recharge, etc.)

Management of Potentially Stressed Areas By Stakeholders

- 3) Consider the water savings possible with water conservation measures.
- 4) Consider the need for adequate dilution flow for wastewater treatment plants.

Management of Potentially Stressed Areas By Stakeholders

- 5) Educate local populations
 - during the study phase,
 - during the planning phase,
 - and after enactment.

- 6) Municipalities, Counties and Industries need to plan, work in unison, and enact the plans.

“When the well's dry, we know
the worth of water ”

--Benjamin Franklin

