Overview of Water Resource Management Program Implementation and Emerging Needs

State Water Commission, 09 July 2009

Water Resources Vision

Achieve the full economic and environmental potential of Virginia's water resources through sustainable water supply planning to meet current and future beneficial uses of water.

Objectives for Localities

Ensure that localities have the means to:

- adequately meet local water needs;
- make decisions based on the best available information;
- produce alternatives that include the least environmentally damaging, practicable alternative; and
- are supported by the public to the greatest extent possible.

Objectives for the State

Ensure that DEQ has a water management process that:

- recognizes that water is a finite resource;
- is based on the best available information;
- creates water planning partnerships that advocate for beneficial use needs and can navigate resource conflicts;
- represents a sustainable way to meet the multiple societal benefits demanded of our water resources; and
- is supported by the public to the greatest extent possible.

Management Tools

- State Drought Assessment and Response Plan
- State Water Resources Plan
- Local or Regional Water Plan
- Virginia Water Protection Permit
- Groundwater Withdrawal Permit

State Drought Plan

- Completed March 2003
- For use by the Drought Monitoring Task Force
- Establishes criteria for determining drought stages-watch, warning and emergency in each Drought Region
- Provides stakeholder consensus on activities that should be restricted in each stage
- Used to make recommendation to the Governor on what activities to restrict through his executive order authority

State Water Resources Plan

- Otherwise known as the “State Plan”
- 1st plan expected to be issued in 2012
- Intended to be comprehensive in scope
- Will evaluate all local/regional water plans, their alternatives, and water available
- Will model the impacts of these and identify conflicts and optimal regional solutions
- Will provide information for legislature and executive branch to make informed water resource policy

State Water Resources Plan

- Will not resolve the conflicts among users
- Will not determine who receives a permit for the water
- Will not include all alternatives for which a withdrawal permit may be sought

Local or Regional Water Plan

- Also known as Local Water Supply Plans
- Plan developed in compliance with Water Supply Planning Law
- Paradigm change to more state involvement in water supply planning and more local involvement in drought response
- Tries to maintain local planning autonomy with state providing data support on water availability, cumulative impacts, and conflicts

VA Water Protection Permit

- Used to authorize surface water withdrawals
- 72 existing permits statewide
- Since 2002, all permits have included drought response conditions based on the State Drought Plan or local equivalent plan
- Allows use of local plan's demand projections, local drought response plan, and alternatives analysis
- Proposed alternative doesn't have to be in Local Water Plan

Groundwater Withdrawal Permits

- Used to authorize groundwater withdrawals in declared management areas
- Requires applicant to provide a water conservation plan
- Allows for use of local plan's demand projections, drought response plan, and alternatives analysis
- Proposed alternative doesn't have to be in the Local Water Plan

Water Supply Planning Implementation

Schedule: why so much time?

- Big Change—from local water independence to an emphasis on regional interdependence
- Time needed to overcome initial resistance
- Limited local staff
- Goal is to make decisions based on best available data—plans are very data intensive
- Program was enacted during a time of budget uncertainty
- Limited funding for data and state staff

Funding Provided

FY06	$300,000	12 grants
FY07	$500,000	14 grants
FY08	$300,000	13 grants
FY09	$200,000	18 grants
FY10	$100,000	18 grants*
	$1,400,000	75

* may be reduced or eliminated due to budget reductions.

Important Dates

- Population-based deadlines
  - Greater than 35,000 = Nov. 2, 2008
  - 15,000 to 35,000 = Nov. 2, 2009
  - Less than 15,000 = Nov. 2, 2010
  - Regional with LOI = Nov. 2, 2011
- Letter of Intent (LOI) to regionalize due by Nov. 2, 2008

Program Submissions

- LOI Submissions: 98%
- 2008 Deadline: Norfolk, Richmond, Stafford
- Must establish State Water Control Board Procedures in accordance with 9VAC25-780-140.A

Water Supply Planning: **Review Queue**

Anticipated annual submissions:

YEAR	**#**
2009 *(July – Dec)*	8
2010	22
2011	29

Plan Strengths

- Move toward greater regionalism
- Most plans are very thorough in their approach to data gathering
- Local drought planning is greatly improved
- Improved projection of demand
- Greater understanding of local and regional resource constraints
- Process has forced folks to think

Plan Weaknesses

- Slow to move beyond facility planning to comprehensive water resource planning
- Lack of data collection and data presentation
- Discomfort with local role in drought response planning
- Equating water conservation to lost revenue is still prevalent
- Limited emphasis on asset management
- Relationships among local governments, water authorities, and state staff are new and evolving

Data Limitations for State and Local Water Planning

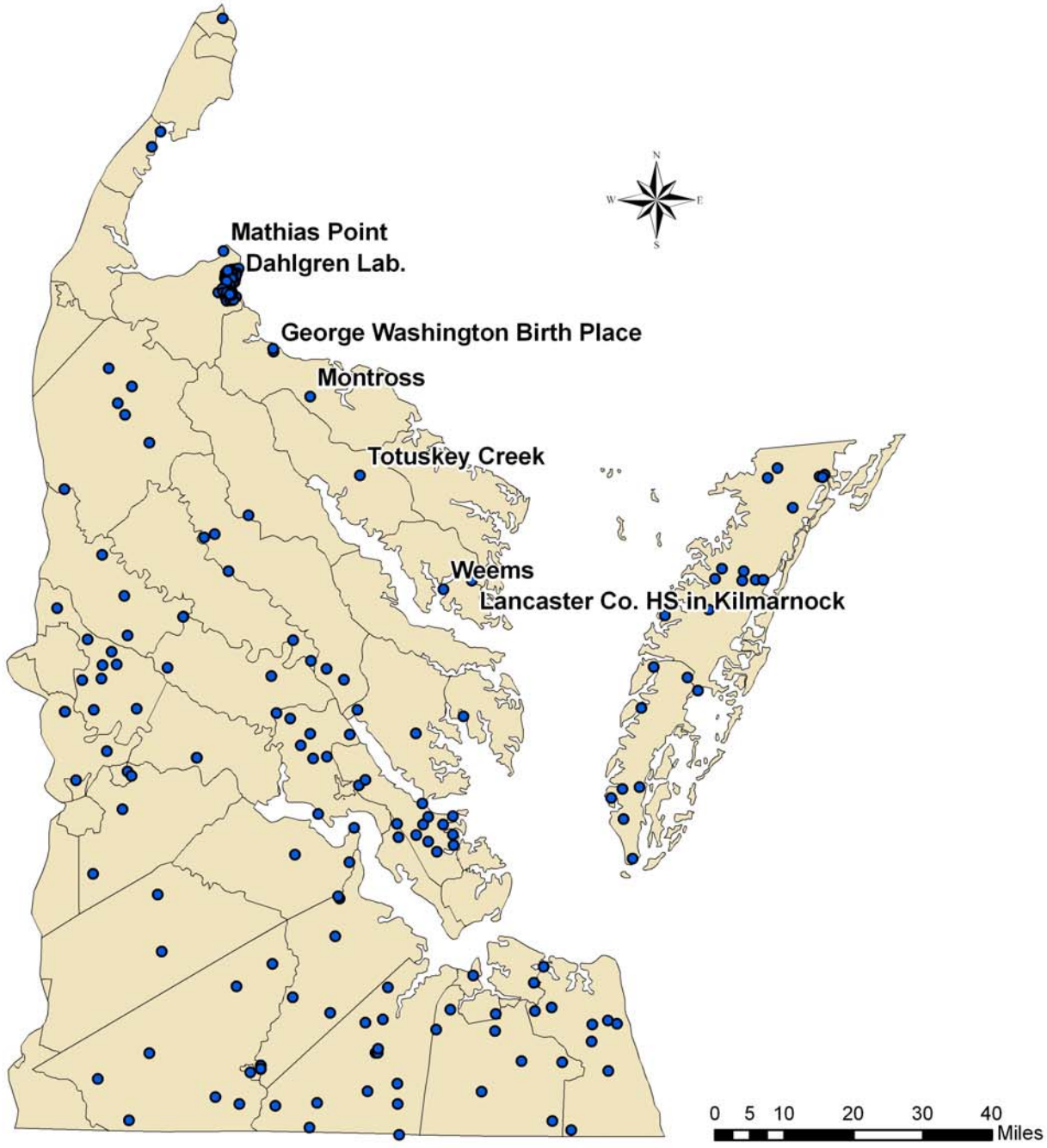
Policy Limitations

- Unlike other neighboring states, Virginia has not had a stated policy to promote and facilitate the development of basic data to characterize water resources to determine surface and groundwater resource availability statewide.
- Water supply is a state and local responsibility--there are no federal mandates for this effort and funding is solely state general fund money.
- State budget cuts have greater impact on water resource programs more than those with federal funding or mandates.
- Multiple agencies regulating the resource limits data development and sharing without clear legislative policy.

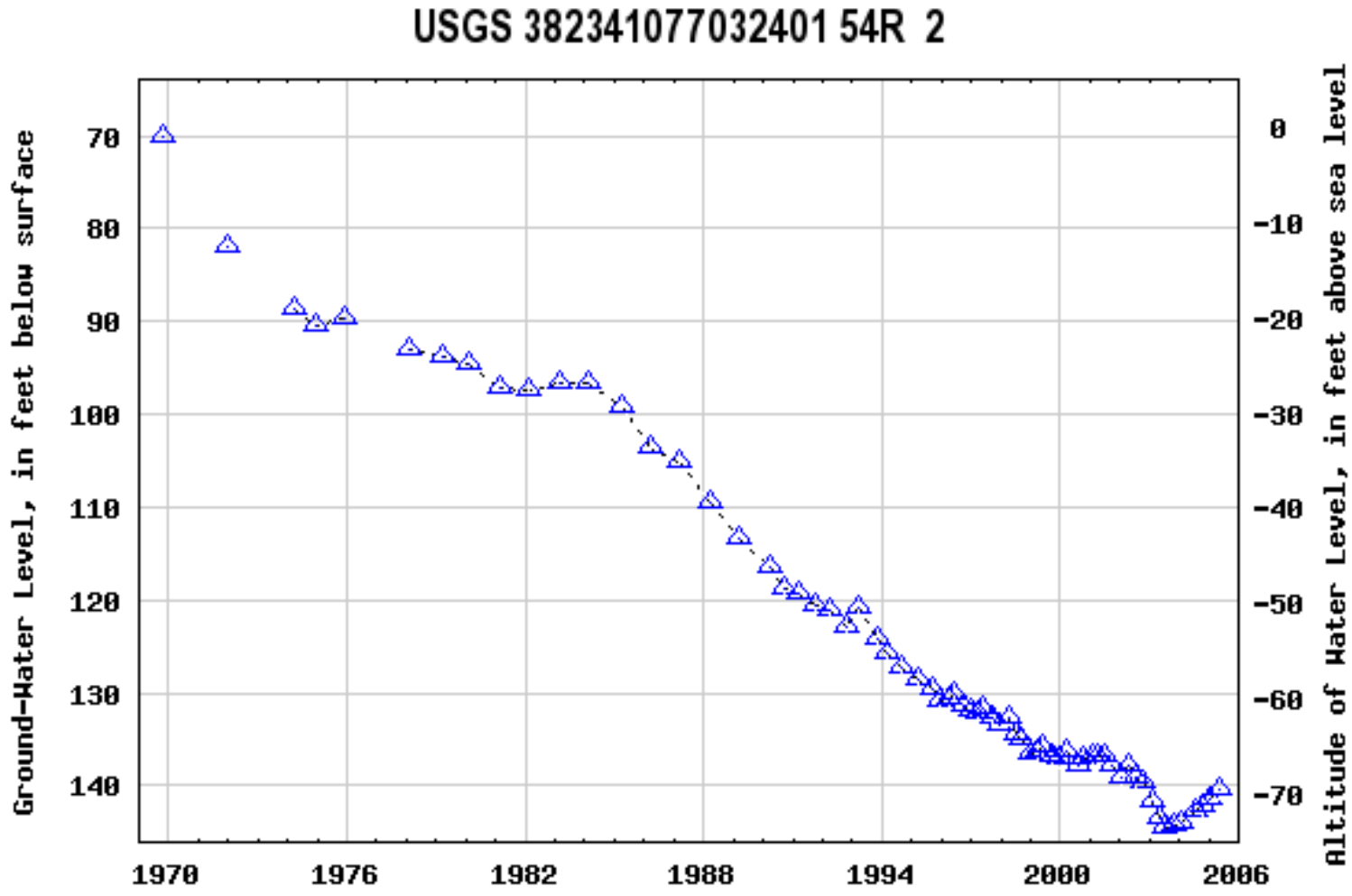
How much groundwater do we have?

- Important question for many localities to plan in an informed manner
- Can't be answered anywhere in Virginia
- Our groundwater monitoring capability peaked in the 1980s and adequate investment has not returned or kept pace with growing data needs.
- Modeling tools have not been updated since the early 1990s

VA Coastal Plain Ground Water Level Network Wells

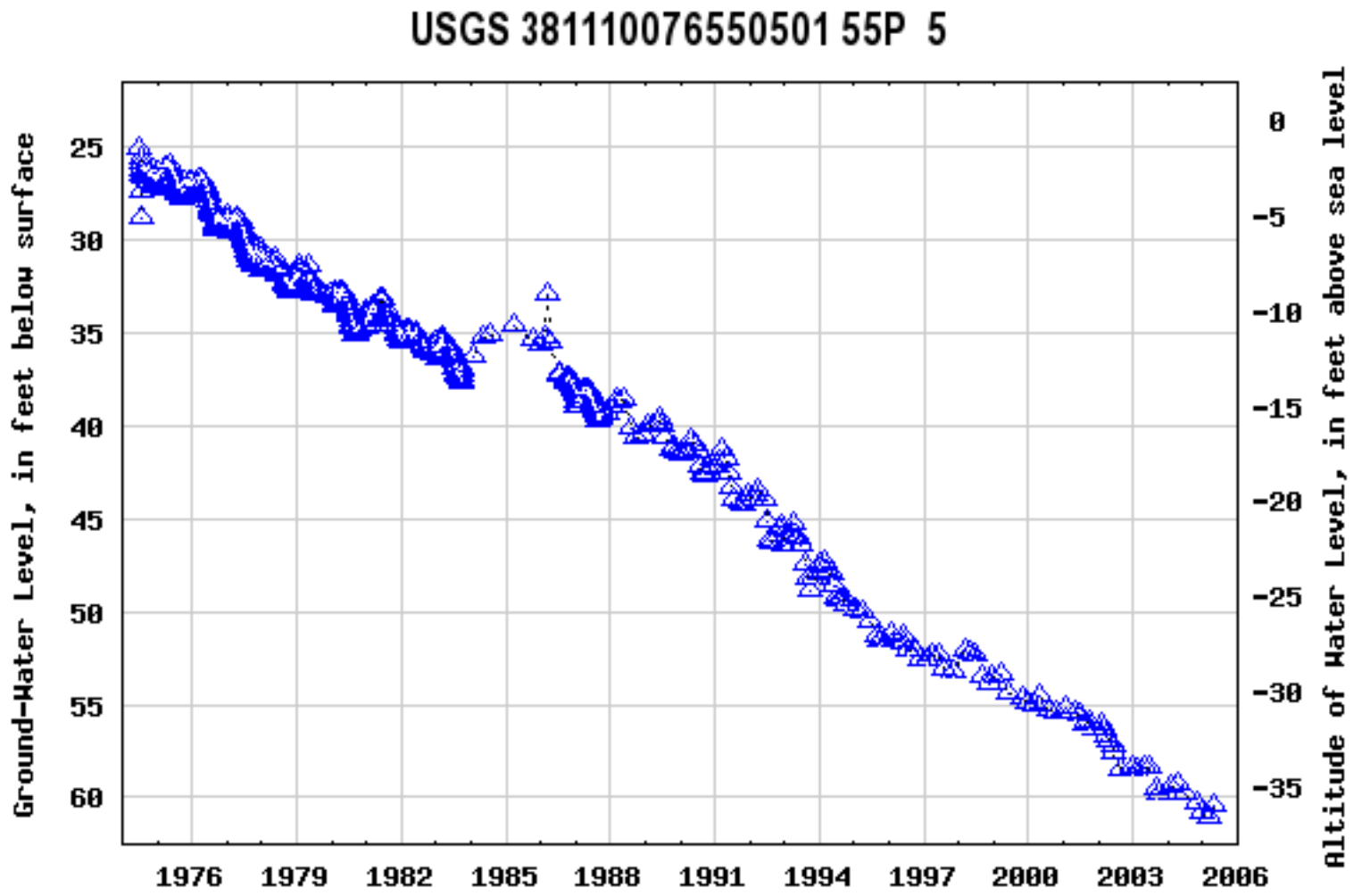


USGS Mathias Point Observation Well Middle Potomac Aquifer



Provisional Data Subject to Revision

USGS George Washington Birthplace Middle Potomac Aquifer



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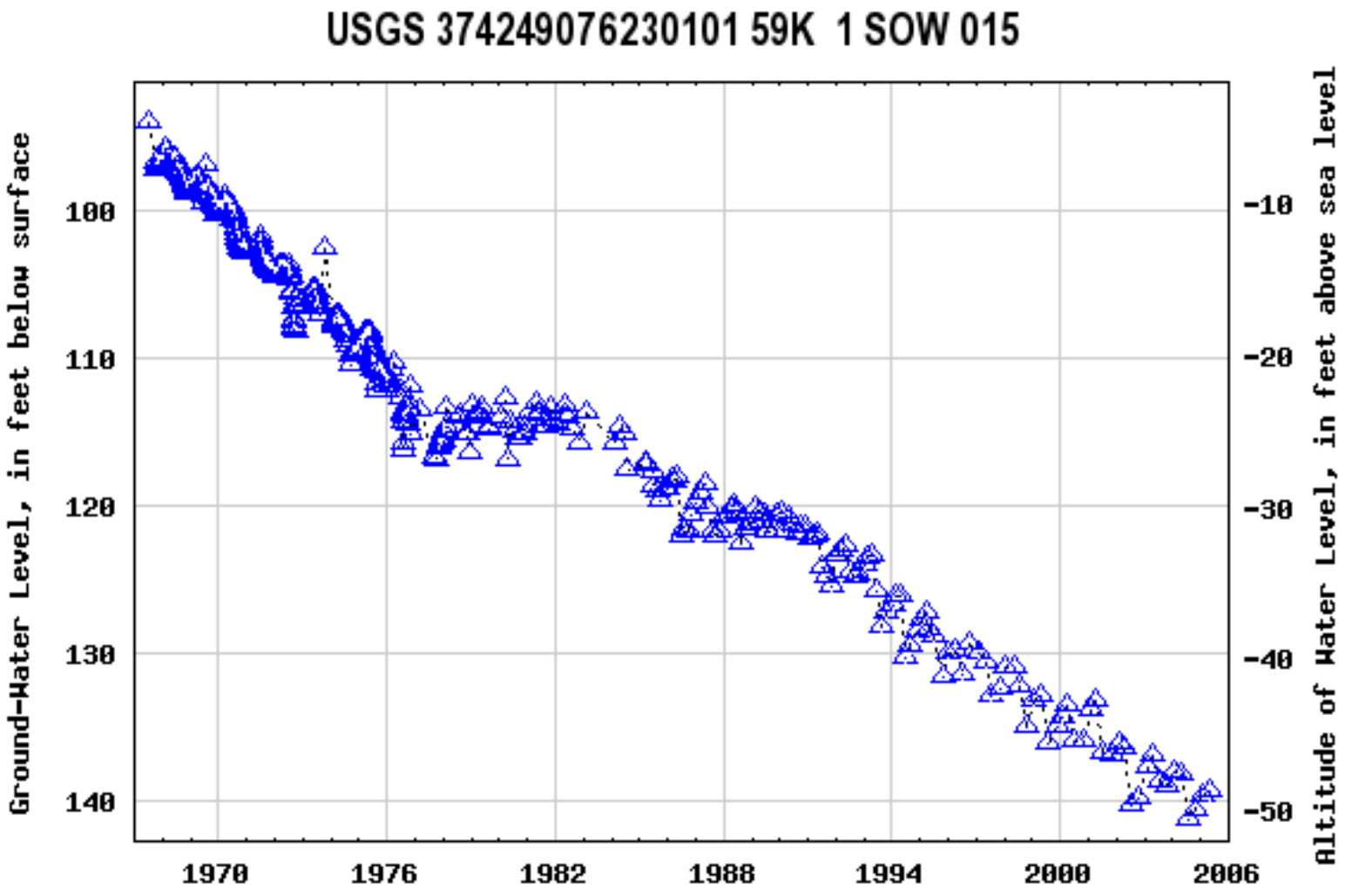
USGS

Lancaster HS Observation Well Upper Potomac Aquifer



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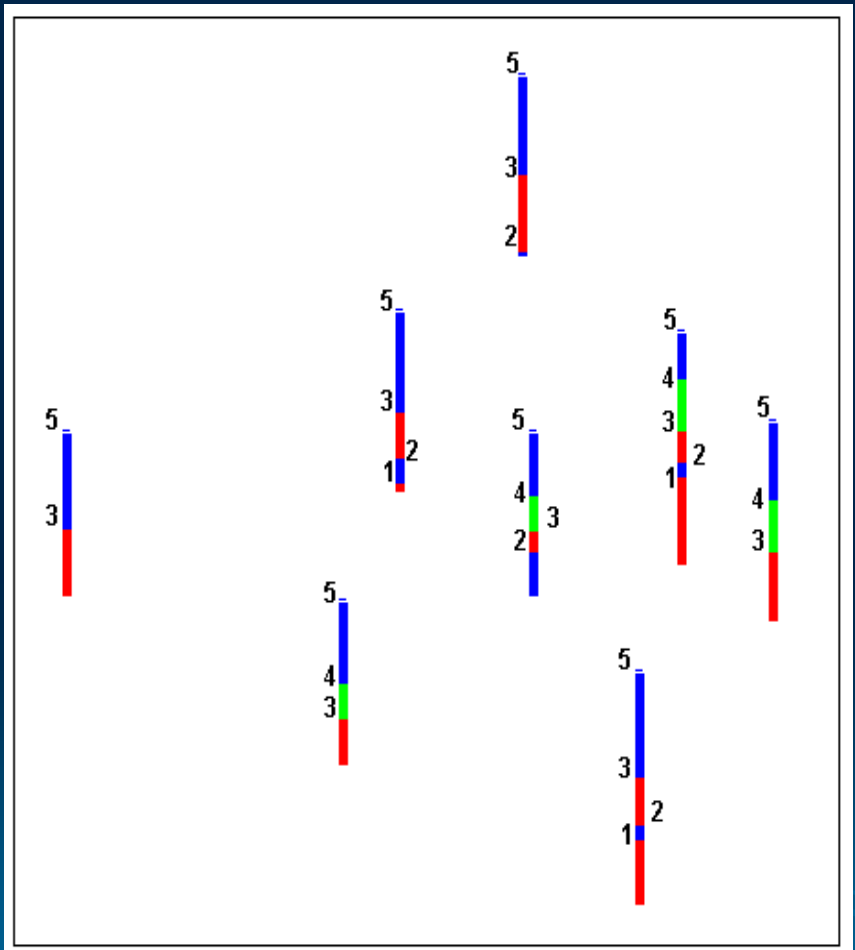
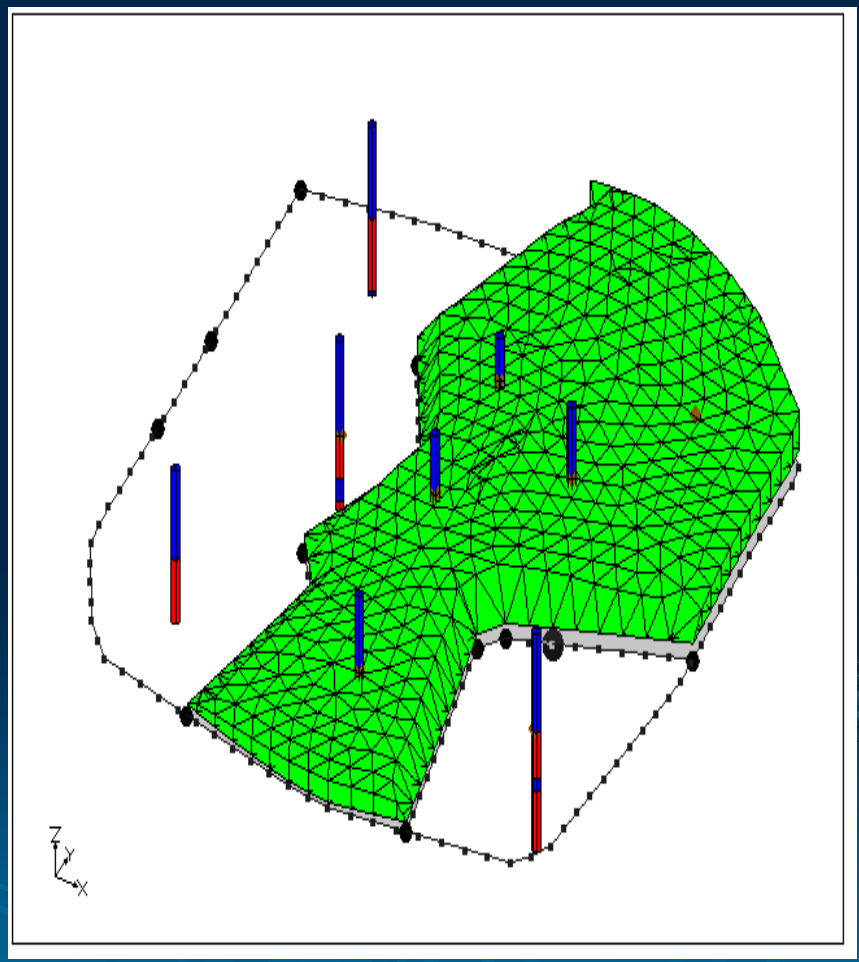
Well Data

- Law changed in 1991 to send well construction reports to VDH, rather than DEQ
- VDH has not had the resources to compile or automate this data
- DEQ staff have to spend time trying to get copies from other sources
- Why is this data important?

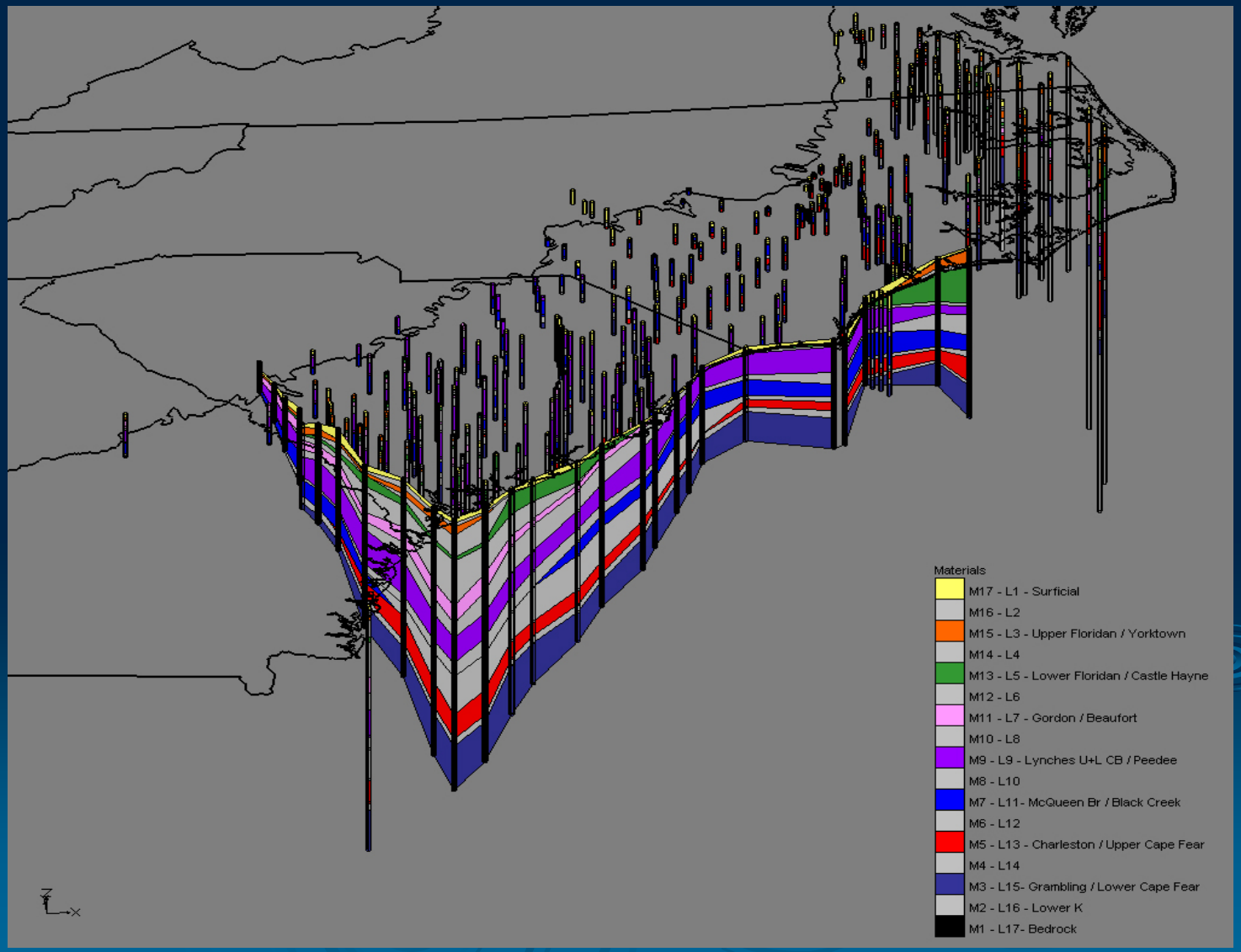
Uses of Well Data



Horizons assigned to contacts on boreholes



Coastal Cross Section



How much surface water do we have?

- Important question for many localities and industries to plan in an informed manner
- Can be answered better than groundwater
- Our surface water monitoring capability peaked in the 1980s and adequate investment has not returned or kept pace with growing data needs.

Gaps in surface water data

- Limited understanding of agricultural use
- Lack of certainty on the amount of water grandfathered withdrawals can take
- Lack of pre-determined in-stream flow criteria for beneficial uses
- No river basin water budgets
- Limited resources to investigate impacts of changing weather patterns

Agricultural Use

- Use amounts and patterns are not well understood
- Appears to be under-reported and reported data can be problematic
- Use typically occurs during times of water scarcity
- Currently there are no agricultural water withdrawals under permit

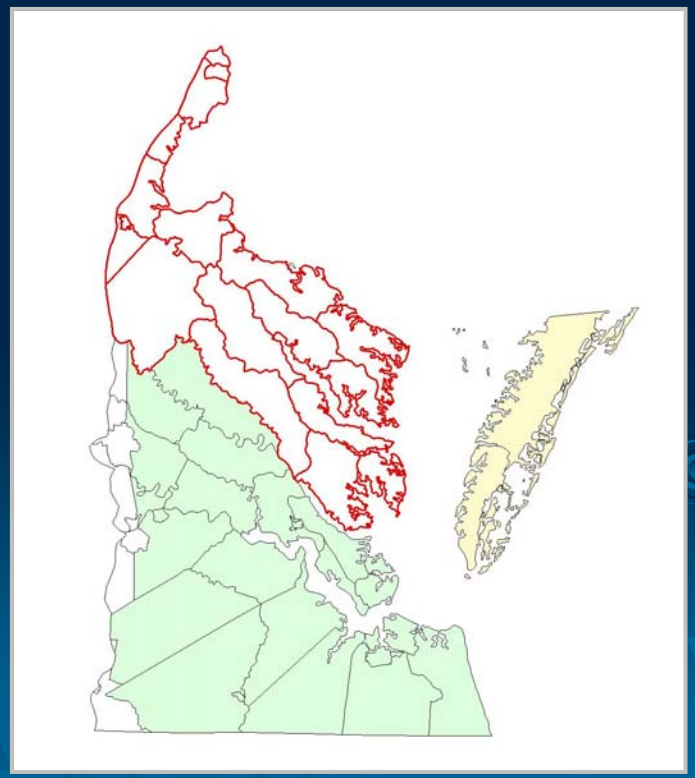
VWP Excluded Max Capacity

- **Required by 9VAC25-210-30**
- **Sent out: 1274**
- **Responded: 369**
- **Follow-up is in process**
- **Goal is to provide an analysis of the impact of this grandfathering in the first State Water Plan**

Areas of Concern: Developing a Path Forward

GW Implementation Issues

- Unregulated withdrawals
  - domestic use – single home wells in subdivisions
  - coastal plain counties not in GWMA's



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- Interstate resource
  - MD
  - NC

Figure 1. Location of the Atlantic Coastal Plain Province.

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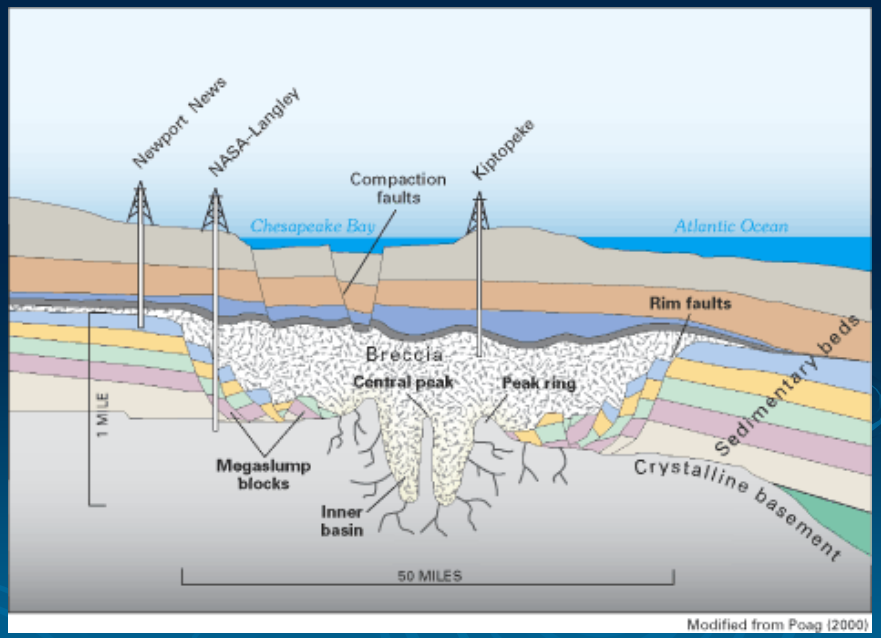
  - coastal plain counties not in GWMA's
- Interstate resource
  - MD
  - NC
- Need for more "dynamic" regional flow models
  - **CBIC**
  - brackish withdrawals
  - development of add-on modules (like optimization)



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- Need for more "dynamic" regional flow models
  - CBIC
  - brackish withdrawals
  - development of add-on modules like optimization
- Difficulties of generalization
  - intricacies of formations
  - pumping periods

Coastal Plain Groundwater Management

- Resolution of state monitoring wells is inadequate
- Uncertainty causes us to make conservative assumptions in reviewing withdrawal proposals
- Existing models cannot be refined or new models built without additional data
- Salt water intrusion is a threat to supplies that cannot be evaluated without additional monitoring
- Current model is 20 years old

Managing Cumulative Impacts to Surface Water

- The permit program needs to be more comprehensive in the future
- Agricultural use must be better addressed
- Determining water availability is uncertain because the needs of recreation, navigation, and fish and wildlife habitat are not adequately defined
- Requirements for water withdrawal reporting can be improved by including return flows sales, and transfers and real measurements

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http://www.deq.virginia.gov/watersupplyplanning/homepage.html