

Mission H2O

Groundwater Subcommittee

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Why is Mission H2O writing groundwater whitepapers?

Excerpts from DEQ Director's brief at State Water Commission meeting in July 2013

Management Issues

- Reversal of the hydraulic gradient (groundwater flow) leads to salt water intrusion
- Declining water levels
- Subsidence and loss of storage

Options Resulting From Peer Review

- Regulatory options include:
 - Reduce pumping
 - Spread out pumping
 - Modify management goals
 - Issue permits in regional or aquifer groupings
 - Implementation of greater water conservation
- Program recommendations include:
 - More data collection:
 - water levels
 - water quality
 - land subsidence
 - Implement new generation modeling tool
 - Increase program resources

Other Longer-term Policy Options

- Optimize the new model to spread out withdrawals and evaluate impact
- Add subsidence package to the model
- Evaluate drawdown criteria for subsidence/salt water intrusion
- Continue to increase annual GW quality samples

Other Longer-term Policy Options (cont.)

- Facilitate greater use of alternatives such as wastewater reuse, surface water conjunctive use, and water recycling
- Consider additional regulatory changes
- Evaluate need for an across the board reduction target and implementation schedule

Mission H2O stakeholders developing whitepapers to present additional policy options and influence next steps.

Whitepapers Under Development

1. Evaluation of Policy Options

Authors: Carole Hamner, RockTenn & Andrea Wortzel,
Troutman Sanders

2. Modify Management Criteria

Author: Whitney Katchmark, HRPDC

3. Water Reuse

Authors: Mike Lang, New Kent County & Sean Maconaghy,
Ashland

4. Building New Surface Water Storage

Author: Andrea Wortzel, Troutman Sanders

5. Evolution/application of the groundwater model

Authors: To be determined

Key Points: Evaluation of Policy Options

Identifies 13 policy options: Each one is described in 1-2 paragraphs followed by pros & cons.

Coordinate Permit Cycles	Implement Greater Conservation
Water Use Reduction Targets	Mitigation / fund recharge projects
GW User Management Groups	Market-Based GW Management
Moratorium on New Permits	Total Maximum Withdrawal Capacity
Incentives to Change Water Sources	Surface Water Storage Projects
Modify Management Goals	Groundwater Recharge Strategies
Spread Out Pumping	

Key Points: Modify Management Criteria

Recommends research and adaptive management approach to make technical evaluations more flexible

Declining water levels, saltwater intrusion, and land subsidence are all criteria to reject permit application.

- Refine management objective to balance the significance of these impacts with the cost of reducing groundwater withdrawals.
- Use Water Supply Plans to identify vulnerable groundwater users and sensitive natural resources.
- Install monitoring near those areas and set goals/triggers to avoid significant impacts.
- Use next 2-3 years to quantify impacts and estimate costs of alternatives.

Map 1. Chloride Concentrations and Groundwater Users for the Yorktown-Eastover Aquifer

Legend

Community Water Systems (Drinking Water) Withdrawing from the Yorktown-Eastover Aquifer

-  Municipal Systems (0)
-  Private Systems (5)
-  Municipal Water System Service Areas

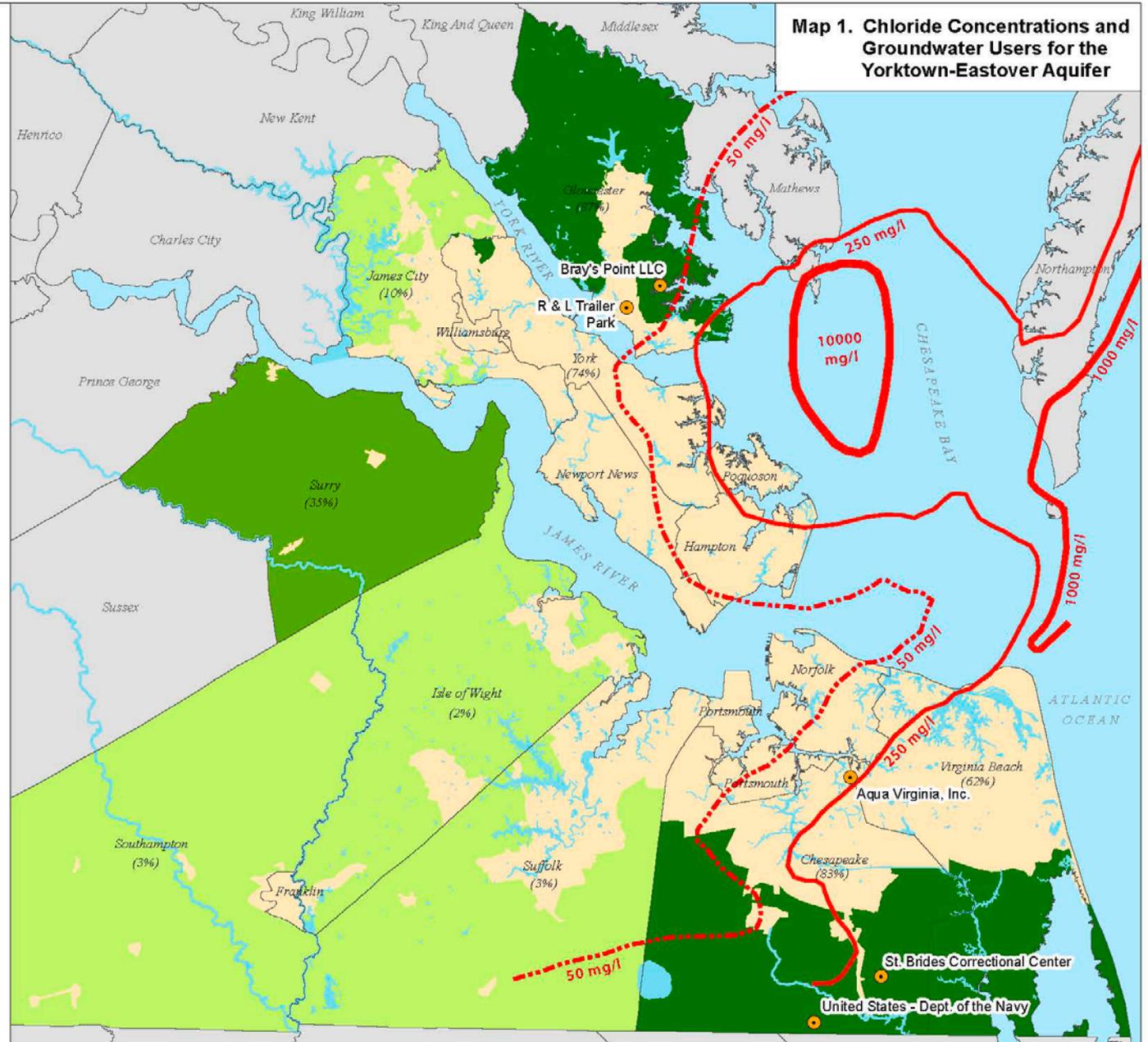
Chloride Concentration (Saltwater Intrusion into Aquifer)

-  50 mg/l
-  250 mg/l
-  1000 mg/l
-  10000 mg/l

Percent (%) of Domestic Wells in Locality Withdrawing from the Yorktown-Eastover Aquifer

-  0%
-  1% - 20%
-  21% - 50%
-  51% - 100%

- Details by Locality:**
- 83% Chesapeake
 - 0% Franklin
 - 87% Gloucester
 - 0% Hampton
 - 2% Isle of Wight
 - 10% James City
 - 0% Newport News
 - 0% Norfolk
 - 0% Poquoson
 - 0% Portsmouth
 - 3% Southampton
 - 3% Suffolk
 - 35% Surry
 - 62% Virginia Beach
 - 0% Williamsburg
 - 74% York



Key Points: Water Reuse & Surface Water Storage

Water Reuse: Describes opportunities for reuse, projects in other states & few Virginia examples, reviews regulatory obstacles and need for incentives and funding.

Surface Water Storage: Describes past projects including Lake Gaston, Ware Creek, King William, & Cobb's Creek.

- New Surface Water Storage seems like an obvious solution.
- Localities unlikely to invest time and resources without stronger state support.
- May describe how state could facilitate multi-locality projects and site selection.

GOALS OF GROUNDWATER MANAGEMENT

1. Maintain long-term sustainable groundwater use in the Eastern Virginia GWMA through the development of management objectives, practices and conjunctive use projects to benefit the social, economic and environmental viability of the eastern area of Virginia.
2. Confirm whether and where degradation of groundwater quality by saline intrusion might be occurring and develop criteria and prevention goals.
3. Increase understanding of Eastern Virginia GWMA dynamics through the development of a sound research program to monitor, evaluate, and predict aquifer conditions.
4. Ensure local involvement in management of the groundwater aquifer through the responsible management of groundwater resources by overlying cities, counties, water districts, agencies, and landowners.
5. Formulate rational and attainable Eastern Virginia GWMA management objectives.
6. Formulate voluntary policies, practices and incentive programs to meet established aquifer management objectives.
7. Formulate appropriate financing strategies for the implementation of the options.