



February 21, 2014

Mission H<sub>2</sub>O

Groundwater Management Options for Eastern Virginia Groundwater Management Area

INTRODUCTION

At the September 2013 meeting of the State Water Commission, the Virginia Department of Environmental Quality (“DEQ”) proposed several long and short term options for managing ground water supplies in the Eastern Virginia Groundwater Management Area. The Mission H<sub>2</sub>O Groundwater Subgroup was formed so that municipal, industrial and agricultural water users, along with water supply consultants, could collaborate on groundwater management strategies within the Eastern Virginia Groundwater Management Area. A consensus based approach to water resources planning and conjunctive water management increases the chance for successfully implementing groundwater management actions that are equitable, affordable, and provide far reaching benefits locally, regionally, and Statewide. Mission H<sub>2</sub>O is committed to working with DEQ to find collaborative solutions to groundwater management.

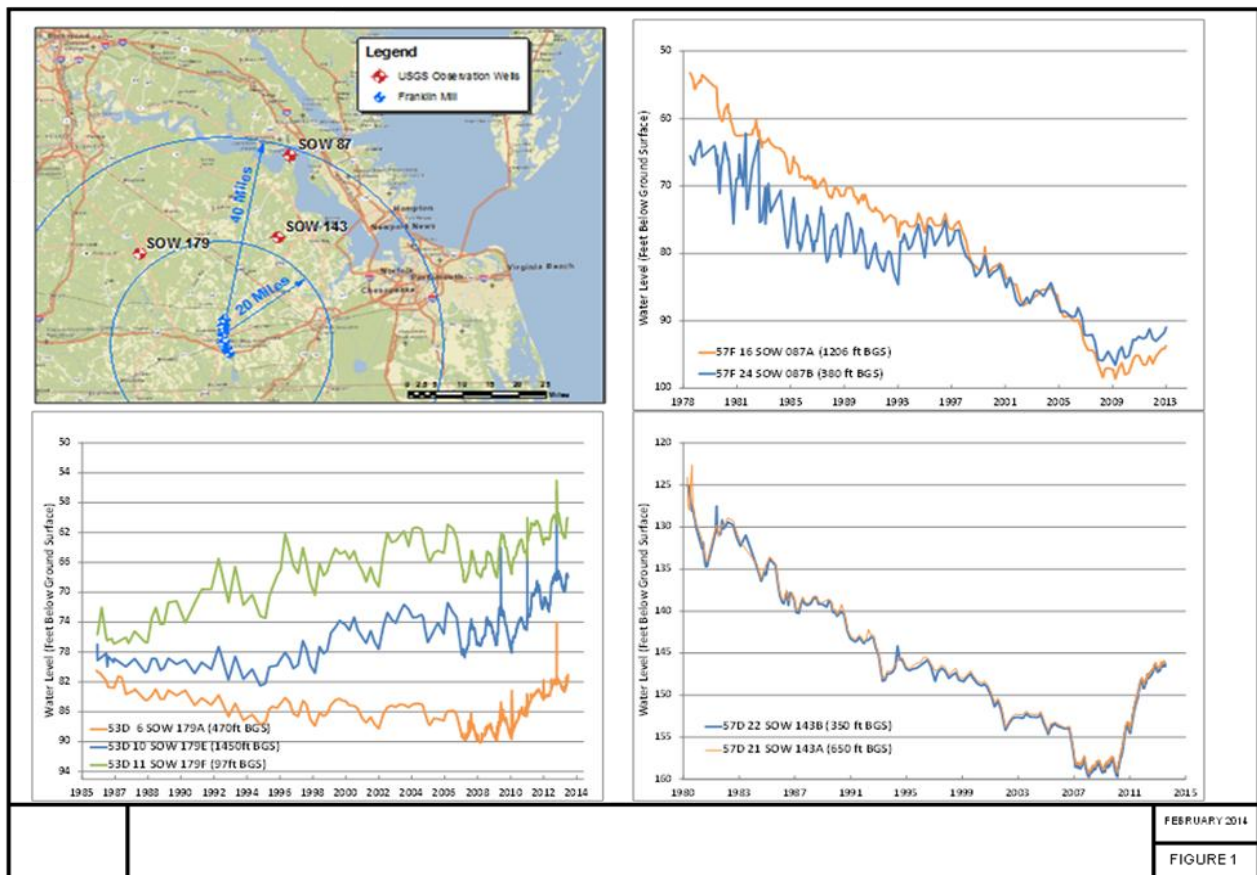
**To that end, MH<sub>2</sub>O’s immediate recommendation is that DEQ form an Eastern Virginia Groundwater Advisory Committee to evaluate the current management objectives and criteria, and the policy options that could be used to achieve these objectives and criteria. A proposed two-year work plan for such a group is attached.**

The criteria and options discussed in this paper relate solely to the Eastern Virginia Groundwater Management Area. While some of these options may be useful in other groundwater management areas, each groundwater management area is unique, with different geological and hydrological features, as well as different base of users, management goals, alternative water sources and needs.

## ESTABLISHING OBJECTIVES FOR GROUNDWATER MANAGEMENT

When assessing groundwater management options, it is important to have a clear understanding of the goals those options should be meeting. Currently, DEQ makes groundwater withdrawal permitting decisions based on one primary criterion: avoiding the 80% drawdown. During recent presentations on the health of the Potomac Aquifer, DEQ has pointed to additional goals/criteria: avoiding saltwater intrusion, avoiding land subsidence, and preventing the decline in water levels. There may be other criteria that are relevant. In addition to evaluating the appropriate criteria, analysis of how, where and when groundwater withdrawals impact those criteria is needed. Triggers could be established for certain management options based on that evaluation. In other words, if water levels go below X (or if water withdrawals go above Y), then certain management options become applicable.

Data from DEQ's observation wells shows that, at current actual withdrawal rates, water levels over much of the Coastal Plain are rising, even several years after a temporarily shuttered significant withdrawer resumed operations (*see* Figure 1, below). A better understanding is needed about the long-term sustainability of this trend. If current water withdrawals are determined to be sustainable, the question becomes how to manage growth, or how to deal with future water needs. The options appropriate to address this question are different than the options appropriate in a situation where current withdrawals are exceeding the identified management criteria.



Another question to consider is whether the same criteria should apply throughout the Eastern Virginia Groundwater Management Area. There is a strong case to be made that withdrawals along the Fall Line should be subject to different management criteria than withdrawals elsewhere in the Coastal Plain. The aquifer is much thinner in this area, which means that the withdrawals are less likely to cause land subsidence or to create significant cones of depression. Additionally, withdrawals in the fall line area are likely not the cause of saltwater intrusion. Ultimately, the impact to the groundwater resource of water level declines along the fall line is not the same as impacts from water level declines further to the east. Under many criteria, the impacts to the resource from declining water levels along the fall line are less.

Additional analysis is needed to determine why there is a significant gap between actual withdrawals and permitted withdrawals. Answering this question will influence decisions about the appropriate management options.

## PROPOSED WORK PLAN FOR ADVISORY COMMITTEE

- I. Monitoring and Data Needs on Health of Aquifer
  - A. Establish Data Needs
  - B. Identify Options for Obtaining Needed Data
  - C. Evaluate Groundwater Level Trends Based on Current Water Withdrawal
  - D. Evaluate Current Conditions in Aquifer
  - E. Analyze Current Management Criteria and Evaluate Other Potential Criteria
    - i. 80% Drawdown
    - ii. Saltwater Intrusion
    - iii. Land Subsidence
    - iv. Water Levels
    - v. Other
    - vi. Carve Out for Fall Line
- II. Analyze the Connection Between Critical Areas and Actual versus Permitted Withdrawals to Narrow Down the Solutions and Conduct Cost Benefit Analysis
  - A. Evaluate Actual Withdrawals versus Permitted Withdrawals
    - i. Identify Capacity Permitted for Drought
    - ii. Identify Capacity Permitted for Growth
    - iii. Evaluate Whether Capacity Created by Declining Use
  - B. Evaluate Unpermitted Withdrawals/Future Water Needs
  - C. Evaluate Water Supply Planning Information
  - D. Develop Options Such as Alternate Sources or Regional Recharge for Critical Areas and Permittees
  - E. Conduct Cost-Benefit Analysis of Solutions

- III. Evaluation of Regulatory Framework/Impediments to Management Solutions
  - A. Regulatory Impediments to Artificial Groundwater Recharge
  - B. Technical Impediments to Water Reclamation and Reuse
  - C. Financial Impediments to Use of Alternative Sources
  - D. Evaluate Ability to Require Use of Public Water System
- IV. Consideration of Policy Options (see attached table)