Groundwater Management and Regional Water Supply Impacts

HRPDC
March 15, 2018
Whitney S. Katchmark
In 2014, Department of Environmental Quality determines Coastal Plain Aquifer is Over Allocated

- Declining water levels
- Land subsidence and loss of storage
- Reversal of groundwater flow leads to salt water intrusion

Proposed solution was to reduce 14 largest permits

- What happened?
- Problem solved?
- Impacts to Hampton Roads
14 largest permits

- RockTenn (paper mill in Westpoint)
- James City Service Authority
- Newport News Waterworks
- Smithfield Packing Company
- Town of Smithfield
- Western Tidewater Water Authority (Isle of Wight County & City of Suffolk)
- City of Franklin
- Hercules Incorporated (Ashland)
- International Paper (paper mill in Franklin)
- City of Norfolk
- City of Portsmouth
- Portsmouth Genco (Cogentrix)
- City of Chesapeake
<table>
<thead>
<tr>
<th>Permit Holder</th>
<th>2017 Permits</th>
<th>2014 or earlier</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Permitted Withdrawal (MGD)</td>
<td>% Cut Below Previous Permit</td>
</tr>
<tr>
<td>City of Franklin</td>
<td>1.4</td>
<td>51%</td>
</tr>
<tr>
<td>City of Chesapeake</td>
<td>3.51</td>
<td>68%</td>
</tr>
<tr>
<td>International Paper - Franklin Mill</td>
<td>16.0 (Y1) to 14.0 (Y10)</td>
<td>56% (Y1) to 62% (Y10)</td>
</tr>
<tr>
<td>WestRock - West Point Mill</td>
<td>20.0 (Y1) to 16.0 (Y10)</td>
<td>13% (Y1) to 31% (Y10)</td>
</tr>
<tr>
<td>City of Portsmouth</td>
<td>5.0</td>
<td>67%</td>
</tr>
<tr>
<td>Solenis - formerly Hercules Inc</td>
<td>3.2</td>
<td>52%</td>
</tr>
<tr>
<td>Western Tidewater Water Authority (Suffolk &amp; Isle of Wight)</td>
<td>4.2</td>
<td>50%</td>
</tr>
<tr>
<td>Virginia Renewable Power - formerly Cogentrix</td>
<td>1.2</td>
<td>53%</td>
</tr>
<tr>
<td>James City Service Authority</td>
<td>6.0</td>
<td>32%</td>
</tr>
<tr>
<td>Newport News Waterworks</td>
<td>2.96</td>
<td>58%</td>
</tr>
<tr>
<td>Colonial Williamsburg</td>
<td>1.12</td>
<td>39%</td>
</tr>
<tr>
<td>Smithfield Farmland Corp</td>
<td>2.60</td>
<td>35%</td>
</tr>
<tr>
<td>Town of Smithfield</td>
<td>1.28</td>
<td>8%</td>
</tr>
<tr>
<td>City of Norfolk</td>
<td>3.74</td>
<td>77%</td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td><strong>72.3 to 66.3</strong></td>
<td><strong>50%</strong></td>
</tr>
</tbody>
</table>
Problem solved?

No: permitted withdrawals still result in violations of regulatory criteria created to protect the aquifer

Additional Challenge: anticipate more unregulated withdrawals from private wells
Why didn’t DEQ solve the problem?

Expensive and contentious to cut permits and find other sources of water

SWIFT proposal to inject water might make the problem disappear
Groundwater management impacts both our public water systems & areas that rely on individual wells.
Public Systems Water Supply & Demand

2011 Projections

**Southside and Western Tidewater**

- Southside/WT Demand: 122.2 to 164.2 MGD
- Southside/WT Supply: 138.2 to 152.4 MGD

2018 Draft Projections

**Southside and Western Tidewater**

- Southside/WT Demand: 122.2 to 164.2 MGD
- Southside/WT Supply: 138.2 to 152.4 MGD

**Peninsula**

- Peninsula Demand: 55.6 to 72.8 MGD
- Peninsula Supply: 60.9 to 66.8 MGD

**Southside and Western Tidewater**

- Peninsula Demand: 55.6 to 72.8 MGD
- Peninsula Supply: 60.9 to 66.8 MGD
Region is using less water

Regional Water Consumption (2002-2016)
How much water is enough?

Industrial Groundwater Users = 41 MGD

Anheuser Busch = 1.8 MGD

Ford Plant = 1.8 MGD

Google data center, SC = 4 MGD
Impacts on rural Hampton Roads

- Future growth limited: DEQ does not expect to issue any significant new groundwater permits.

*Orange = public water service area*

*SWIFT could make Hampton Roads water rich...*
Unresolved Issue: Need aquifer replenishment for groundwater use to be sustainable at current permitted level and to allow rural development.

SWIFT is unique – only replenishment project where entity injecting water doesn’t want to use or sell the water.

Virginia needs regulations that provide the legal framework to incentivize aquifer replenishment.

HB 1036 requires DEQ to convene workgroup to develop banking system by July 1, 2019.
Map 1-2
Peninsula Community Water Systems Service Areas and Water Sources

Public Purveyor Service Areas *
- Gloucester County
- James City County Service Authority
- Newport News Waterworks
- City of Williamsburg
- Future Public Service Areas
- Purchase Water from Public Systems

Public Water Supply Sources
- Surface Water Intakes
- Municipal Wells
- Water Treatment Facilities
- Reservoirs/Rivers

Privately-Owned Community Water Systems
- Private CWS (Groundwater)

* The water distribution system in these areas may be owned by a public or private entity other than the water purveyor.

Prepared by the Hampton Roads Planning District Commission