AGENDA NOTE – HRPDC EXECUTIVE COMMITTEE MEETING

ITEM #6: GROUNDWATER REGULATIONS COMMENTS

SUBJECT:
The Virginia Department of Water Quality (DEQ) has proposed revisions to the Eastern Virginia Groundwater Management Area Regulations (9VAC25-600) and the Groundwater Withdrawal Regulations (9VAC25-610). The revisions would expand the Eastern Virginia Groundwater Management Area to include the remaining portion of Virginia's coastal plain and amend the Groundwater Withdrawal regulations to manage groundwater resources more comprehensively. The proposed regulations are available at the Town Hall website at:

http://www.townhall.virginia.gov/L/viewchapter.cfm?chapterid=1445
http://www.townhall.virginia.gov/L/viewchapter.cfm?chapterid=1451.

The public comment period ends on January 11, 2013. HRPDC staff has prepared a draft comment letter for the Commission's consideration based on input from the HRPDC Directors of Utilities Committee.

BACKGROUND:
These regulations govern groundwater withdrawals in designated Groundwater Management Areas which currently include all Hampton Roads localities except Gloucester County. Most public water systems and industrial users withdraw more than the 300,000 gallons per month threshold and must acquire a permit under these regulations. Individual homeowners with wells are typically not required to get a permit since their use is less than 300,000 gallons per month.

The significant changes in the proposed regulation include:

- Expansion of the Groundwater Management Area to include the entire Coastal Plain,
- Establishment of supplemental drought relief permits and conjunctive use permits for systems with surface and groundwater sources,
- Water conservation and management plans will be an enforceable part of the permit, and
- Agency guidance concerning the 80% drawdown criteria has been incorporated into the regulations.

The groundwater regulations were reviewed by a Regulatory Advisory Panel in 2010. At the conclusion of the panel, the Directors of Utilities Committee submitted comments to Mr. David Paylor, Director of DEQ. The suggested revisions have not been incorporated into the proposed regulations. This presentation will highlight the Committee's concerns:

- If groundwater supplies are limited, public water system demands instead of "human consumption" should be the highest priority. Human consumption is a subset of public water system demands.

- Public water system permits should be grandfathered and should not be required to raise pumps or reduce the amount of permitted withdrawals based on the new hydrologic framework or new 80% drawdown criteria guidance.
- Public water systems should not be required to purchase surface water in lieu of renewing a groundwater withdrawal permit.
- Technical evaluations of proposed withdrawals should be based on predicted water levels at the end of the permit term instead of evaluating the "stabilized effects" of proposed withdrawals.
- Permit term should be extended from 10 years to 30 years to match financing periods for water infrastructure. However, withdrawal amounts should be limited to projected demands for 15 years.
- Virginia Coastal Plain groundwater model should be used to manage the Coastal Plain aquifer system instead of the RASA model currently in use.
- Conjunctive Use Permits should be eliminated; Drought Relief Permits should be evaluated on typical use (2 years of 10 year period) instead of constant use.
- Regulations should encourage Aquifer Storage Recovery wells which inject drinking water into the aquifer system.

The comment letter on the groundwater regulations that was submitted to DEQ in 2010 is included in the agenda. The Directors of Utilities Committee will meet on November 7th to consider revisions to the letter. The Committee will review the final comment letter at its December 5, 2012 meeting.

Ms. Whitney Katchmark, Principal Water Resources Engineer, will brief the Commission.

Attachment 6 - Proposed Groundwater Regulations Comment Letter

Note: Recommended actions are included in Consent Agenda Item #9J.

HAMPTON ROADS
PLANNING DISTRICT COMMISSION

BRUCE C. GOODSON, CHAIRMAN • STAN D. CLARK, VICE CHAIRMAN • JAMES O. McREYNOLDS, TREASURER
DWIGHT L. FARMER, EXECUTIVE DIRECTOR/SECRETARY

October 15, 2010

Mr. David Paylor
Department of Environmental Quality
629 East Main Street
P.O. Box 1105
Richmond, VA 23218

RE: Draft Ground Water Withdrawal Regulations
(WAS: SWCB)

Dear Mr. Paylor:

The Directors of Utilities Committee of the Hampton Roads Planning District Commission (HRPDC) has provided comments on the draft Ground Water Withdrawal Regulations 9 VAC 25-610. The Committee includes the Directors of water utilities from the following localities: Cities of Chesapeake, Franklin, Hampton, Newport News, Norfolk, Poquoson, Portsmouth, Suffolk, Virginia Beach, and Williamsburg, Gloucester County, Isle of Wight County, James City County, Southampton County, Surry County, York County and the Towns of Smithfield and Windsor. The Committee encourages the Department of Environmental Quality to consider the following suggestions during the review of the groundwater withdrawal regulations:

1) **Human consumptive use:** The definition of human consumption needs to be broader. In several sections of the regulations, "public water systems" should replace the term "human consumption" to support all of the customers that rely on public water systems.

   a) In Section 610-10, the proposed definition for "Human Consumption" in the draft regulation is too narrow. It does not include toilet flushing, washing clothes, medical needs, etc. The regulation should continue to use the definition of "Human consumptive use" in the existing regulations:

"Human consumptive use" means the withdrawal of groundwater for private residential domestic use and that portion of ground water withdrawals in a public water supply system that support residential domestic uses and domestic uses at commercial and industrial establishments.

   b) When the available supply of groundwater is not sufficient to meet all requests, meeting the demands of public water systems should be the highest priority. In the existing regulations, human consumptive use is the highest priority which leaves out a portion of the public water systems' customers and creates a burdensome task of

trying to estimate human consumptive use which is not tracked by public water systems. Section 610-110 paragraph E should be revised as follows:

When proposed uses of groundwater are in conflict or available supplies of groundwater are not sufficient to support all those who desire to use them, the board shall prioritize the evaluation of applications in the following manner:

1. Applications for public water systems shall be given the highest priority;
2. Should there be conflicts between applications for public water systems, applications will be evaluated in order based on the date that said applications were considered complete; and
3. Applications for all uses, other than public water systems, will be evaluated following the evaluation of proposed public water systems' uses.

c) Section 610-110, paragraph F.2 should be revised to ensure that public water systems have enough water to serve existing customers and to protect the health and safety of those communities The following language is suggested:

The board shall reissue a permit to any public water supply user for an annual amount no less than the portion of the permitted withdrawal that was used by said system during any consecutive 12 month period occurring in the previous term of the permit.

2) **Grandfathering of public water systems:** Municipal permit holders that operate public water systems have a unique responsibility unlike all other users. They are tasked with supplying safe drinking water to their communities which in turn, supports life itself, the protection of public health, and economic development. These responsibilities do not end when a permit term expires. Municipal permit holders must be able to plan for economic development and land use and know that the water resources to support those plans will continue to be available. If the criterion for evaluating permits is revised, public water systems should be grandfathered under the criterion used to approve the original permit. We are not making this point with respect to new or expanded applications, only those systems and withdrawals existing at the time this regulation is adopted.

a) Existing public water systems should not be required to raise pumps because the Potomac aquifer has been redefined as one aquifer, instead of three aquifers. The new definition for this aquifer system is at least the third attempt by experts to characterize this resource in the last 30 years. As such, the regulated community cannot be expected to modify designs and infrastructure each time a new regional model is developed. Also, the pump setting requirements should be based on the depth and position of the well screen rather than on which aquifers are utilized as a

groundwater source. Section 610-110 paragraph D.3.c should be revised with the following language:

i) The applicant demonstrates that no pumps or water intake devices are placed lower than the top of the uppermost confined aquifer with a well screen in order to prevent dewatering of a confined aquifer, loss of inelastic storage, or damage to the aquifer from compaction.
ii) Public water systems with wells screened in the Potomac Aquifer may continue to operate with pumps set below the top of the Potomac Aquifer if those operational settings were approved in their permits prior to the Potomac Aquifer classification as one aquifer instead of three aquifers (Upper Potomac, Middle Potomac, and Lower Potomac).

b) If a public water system requests a renewal of a permit with the same conditions as its existing permit, the system should be guaranteed that the renewal will not be denied based on new evaluation of water level impacts. Section 610-110 F should be revised with this additional paragraph:

The board shall not conduct or consider technical evaluations of the 80% criteria for reapplications if the applicant is a public water system.

c) Public water systems should be granted renewals of permits with the same conditions as its existing permit regardless of the availability of surface water for purchase. Section 610-102 "Evaluation of need for withdrawal and alternatives" should be revised with this additional paragraph:

F. The board shall not consider requiring public water systems to purchase surface water in lieu of renewing a groundwater withdrawal permit.

3) **Improve technical evaluations:** Technical evaluations of proposed withdrawals should be based on the limitations of the simulation model used in the analysis and based on the impacts of proposed withdrawals during the permit term. The permit term should be extended to match typical financing periods of water infrastructure investments and water supply planning horizons.

a) The technical evaluation of proposed withdrawals should be based on predicted water levels at the end of the proposed permit term instead of evaluating the "stabilized effects" of proposed withdrawals. A transient model simulation should be used instead of a steady state simulation to estimate water level and head changes caused by a proposed withdrawal. A steady state simulation could represent impacts that are expected to occur 50 years or longer after the permit

would expire. Section 610-110 paragraph D.3.h should be revised with the following language:

The board's technical evaluation demonstrates that the effects from the proposed withdrawal in combination with the effects of all existing lawful withdrawals at the end of the permit term will not lower water levels, in any confined aquifer that the withdrawal impacts, below a point that represents 80% of the distance between the historical prepumping water levels in the aquifer and the top of the aquifer.

b) The point of compliance with the 80% drawdown criteria should be based on the generally recognized calibration limit of the model used for the analysis. Permit renewals should not have to meet a more stringent criterion than the permit's initial technical evaluation.

i) Compliance with the 80% drawdown criteria should be based on the calibration limit of a technically sound groundwater model. Section 610-110 paragraph D.3.h should be revised by adding the following paragraphs:

(1) Compliance with the 80% drawdown criterion for new applications will be determined at the model's minimum drawdown contour based on the predicted effects of the proposed withdrawal. The model's minimum drawdown contour is defined as the calibration limit of the specific groundwater model or assessment methodology used for the technical evaluation.

(2) Compliance with the 80% drawdown criterion for permit renewals will be determined at the points that are halfway between the proposed withdrawal site and the model's minimum drawdown contour based on the predicted effects of the proposed withdrawal. The model's minimum drawdown contour is defined as the calibration limit of the groundwater model used for the technical evaluation.

ii) The "area of impact" should be defined according to the calibration of the model used for the analysis. Section 610-10 should include the following definition:

"Area of impact" means the model's minimum drawdown contour based on the predicted effects of the proposed withdrawal. The model's minimum drawdown contour is defined as the calibration limit of the groundwater model used for the technical evaluation.

c) Permit terms should be extended to 30 years to match the financing periods for water infrastructure investments. However, withdrawal amounts should be limited to projected demands for 15 years.

i) Permits should be extended from the current 10 year period to a 30 year period. Many of the permit holders must finance significant investments in the infrastructure required to withdraw, treat and convey water. These investments are often financed over 30 year periods. Section 610-106 paragraph D.13 and 610-40 paragraph A.10 in the draft regulations should be modified with the following language:

Groundwater withdrawal permits shall be effective for a fixed term not to exceed 30 years.

ii) If the permit term is extended beyond 10 years, the permitted withdrawal amounts should be limited to the projected water demands in the next 15 years. Groundwater should not be obligated to a permittee fifteen to thirty years before it is needed. Paragraph A.1 should be created in Section 610-102 Evaluation of need for withdrawal and alternatives. The following language is suggested:

Groundwater withdrawal permits shall be based on projected water demands for no more than 15 years from the date of the permit issuance, even if the permit term exceeds 15 years.

d) The Virginia Coastal Plain groundwater model should be used to manage the Coastal Plain Aquifer System instead of the RASA model currently in use. The Virginia Coastal Plain (VCP) groundwater model, authored by Charles Heywood and Jason Pope from the USGS Virginia Water Science Center, incorporates the findings of the Virginia Coastal Plain Hydrologic Framework report funded by DEQ and HRPDC. The VCP model should be adopted because it produces more accurate predictions of groundwater elevations. The VCP model includes information that was not available when the RASA model was developed such as the groundwater density distribution along the saltwater interface near the Atlantic Ocean, domestic self-supplied withdrawals below the reporting threshold, the Chesapeake Bay Impact Crater, and recognition of a single Potomac aquifer.

4) **Drought relief permits**: Drought relief permits have been better defined in the draft regulations; however, several suggestions are offered to further define how these permits will be issued and evaluated.

a) The HRPDC Directors of Utilities Committee originally supported the creation of Conjunctive Use Permits as a new permit category. However, 610-104 "Surface

water and groundwater conjunctive use systems" in the draft regulations does not accomplish the goal of giving water providers the flexibility to maximize the available water resources with fewer restrictions than Drought Relief Permits. The Committee suggests that the Conjunctive Use Permit category be eliminated. Permits should be issued as either a Production Well Permit or a Drought Relief Permit.

b) Drought Relief Permits for public water systems should not be limited to permitted withdrawals that only support human consumptive use. The definition of "Supplemental drought relief well" in Section 610-10 should be revised with the following language:

"Supplemental drought relief well" means a well permitted to withdraw a specified amount of groundwater to meet human consumptive use needs during declared drought conditions, or other declared water supply emergency, after mandatory water use restrictions have been implemented. Permits for public water systems should be permitted to withdraw groundwater to meet the needs of all consumers after mandatory water use restrictions have been implemented.

c) The impacts of drought relief wells should be evaluated under conditions that more closely match the past operations of drought relief wells in Virginia. The impacts should be evaluated with a transient model assuming the proposed maximum rate and withdrawal amount for two years, followed by eight years at the minimum maintenance withdrawals, and repeated if the permit term is extended beyond 10 years. This approach is based on the historical use of emergency wells in the Virginia Coastal Plain.

i) The draft regulations states that the 80% criterion will be evaluated based on the stabilized effects of the proposed withdrawal. Drought wells are rarely pumped for more than a year and almost never pumped continuously. The aquifer system is sluggish to respond to pumping stresses so using a transient model instead of a steady state model is a more accurate way to simulate the impacts of drought relief withdrawals. Section 610-106 paragraph G.6 should be revised with the following language:

The board's technical evaluation demonstrates that the effects from the proposed withdrawal amounts pumped at the maximum rate for two years followed by the withdrawal of any minimum amounts required for maintenance for eight years in combination with the effects of all existing lawful withdrawals will not lower water levels, in any confined aquifer that the withdrawal impacts, below a point that

represents 80% of the distance between the historical prepumping water levels in the aquifer and the top of the aquifer.

ii) The "area of impact" should be based on the same assumptions used in the technical evaluation of the proposed withdrawal. Section 610-108 paragraph D should be revised as follows:

Mitigation plans for supplemental drought relief permits shall address the area of impact associated with the maximum groundwater withdrawal allowed by such permits assuming the proposed maximum rate and withdrawal amount for two years followed by eight years at the minimum maintenance withdrawals.

5) **Aquifer Storage Recovery wells:** The regulation should address Aquifer Storage Recovery (ASR) wells. The regulations should encourage groundwater users to recharge the aquifer system by establishing guidelines for how DEQ will treat ASR wells in the Groundwater Withdrawal Permitting Program. The following suggestions are recommended:

a) Definition – "Aquifer Storage Recovery well" injects drinking water into the aquifer system and stores more water in the system than it withdraws.
b) ASR wells do not require a Groundwater Withdrawal Permit but must comply with DEQ reporting requirements for withdrawals. The EPA Underground Injection Control Program regulates injection of water at ASR wells.
c) ASR well owners can withdraw a maximum of 70% of the volume of water that has been injected into the aquifer system or up to 95% of the injected water, as long as the utility can effectively demonstrate that the withdrawn water above the 70% point is predominantly injected water (by water quality analysis) and not native water.
d) ASR well owners can withdraw water up to a maximum rate of four times the average daily injection rate based on the previous 12 months.
e) Aquifer Storage Recovery wells should not be required to have a mitigation plan because by definition more water has been injected than withdrawn from the aquifer system. Any and all impacts experienced during a withdrawal cycle are temporary by definition and by operational constraints.

For the past twenty years, the region's local governments have provided financial and technical support to the USGS and DEQ through the on-going Cooperative Groundwater Study Program. The Committee members bring considerable technical and policy experience and perspective to the Groundwater Withdrawal Permitting process. The proposed regulatory changes are important to the operations of the water utilities in the

Hampton Roads region and the Committee would appreciate your careful consideration of its recommendations.

If you need additional information or have any questions, please contact Whitney Katchmark, HRPDC, or me.

Sincerely,

John Carlock
HRPDC Deputy Executive Director
Chair, Directors of Utilities Committee

WSK/fh

Copy: Directors of Utilities Committee