

**HB 1036 – Water Trading Work Group  
DRAFT Minutes of  
September 16, 2019, Meeting  
Troutman Sanders Building, Richmond Virginia**

**Work Group members present:**

HRSD, Jamie Mitchell  
King George County, Eric Gregory, Hefty, Wiley & Gore  
Western Tidewater Water Authority, Justin Curtis, AquaLaw  
Eastern Shore Groundwater Committee, Britt McMillan, Arcadis  
Mission H2O/Troutman Sanders, Shannon Varner  
DEQ, Scott Kudlas  
VDH, Office of Drinking Water, Anthony Creech  
WestRock, Jim Taylor  
VDH, Scott Vogel  
Virginia Economic Development Partnership, Sandi McNinch

**Work Group members absent:**

Aqua Virginia  
Newport News Waterworks  
Middle Peninsula PDC  
Virginia Well Drillers Association

**Interested parties attending:**

David Jurgens, City of Chesapeake  
Katie Kruger, HRPDC  
Brandon Bull, DEQ  
Jason Early, Cardno  
John Mayhut, RK&K

- The meeting began at approximately 2:00 with Workgroup members and others in attendance introducing themselves.
- Members then discussed DEQ’s request during the July 2019 meeting that additional language regarding the agency’s technical concerns be added to the May 7, 2019, meeting minutes. DEQ provided an email (text attached to these minutes) and outlined during the meeting its technical concerns, many of which are rooted in the Department’s comments on the Eastern Virginia Groundwater Management Area Advisory Committee report. DEQ’s technical concerns on the extended recovery zone include a lack of empirical evidence on the impact injections will have on the aquifer over time, location

and volume. DEQ also noted (i) a lack of recommendations on how to establish monitoring wells to measure the propagation of water through the system to confirm model simulations, (ii) the need for monitoring wells to better understand the impacts on the groundwater system so that informed decisions can be made on a potential structure for a trading framework or regulation for an extended recovery zone, and (iii) the need for funding for monitoring wells and staff. DEQ elaborated that much of what has been discussed over the course of the Workgroup's meetings has been based on a hypothetical impact of injection. DEQ has concerns that moving forward on extended recovery zones without supporting data could result in negative impacts to the groundwater resource. DEQ currently doesn't have adequate information to determine the length of time it may take for an injection to produce a benefit over a large geographic area. While modeling can be used, the model has not been calibrated to sufficiently accommodate, to the degree DEQ finds technically sufficient, the identification of an extended recovery zone. DEQ also expressed concern that there would be an expectation placed on DEQ to move forward without sufficient data, staff and financial resources.

These issues had been discussed generally but solutions were not identified other than revising the strawman to require DEQ to development procedures for identification of annual water loss rates and extended recovery zones prior to trading within an extended recovery zone being authorized. It was also recognized that DEQ's concerns should be clearly reflected in the minutes. Since the issues raised by DEQ went beyond those discussed during the May 7 meeting, it was agreed that these concerns would be expressed in the September 16, 2019, meeting minutes, in lieu of the May meeting minutes.

The discussion then centered on whether the extended recovery aspects should be removed from the strawman or should be retained with an understanding that it may not be implemented until additional information comes available, possibly a decade or more from now. A benefit of removing the provision is to avoid expectations that DEQ cannot meet given current levels of information and funding. A benefit of retaining the provision is that the potential for extended recovery zones does not get lost as the commonwealth continues to look for alternative means to manage groundwater resources.

- Members next reviewed the July meeting minutes. DEQ requested that concerns regarding lack of agency resources to carry out subsection H and I of § 62.1-003 be added. DEQ also requested clarification of the statement attributed to DEQ on top of page 8. The language was clarified by replacing it with "The question was also raised but not answered as to what impact this subsection would have on expectations surrounding SWIFT."
- Shannon Varner provided an overview of the agenda topics including review of the revised draft statutory language based on previous Workgroup discussions including incorporation of changes suggested at the July 2019 meeting and a discussion on other ways to generate credits.

- DEQ noted that the agency is taking no position on any legislative proposal and cannot do so until the Governor takes a position. DEQ’s role in this Workgroup process is advisory only.
- The Workgroup proceeded to discuss each section of the revised draft. Each section is reproduced below with changes based on the July 2019 meeting discussions appearing as underlined (new language) or stricken (deleted language), followed by summaries of the discussion on each section, if any. No additional changes were suggested except for those generated by § 62.1-003 J. This subsection generated additional discussion on DEQ technical concerns with extended recovery zones and whether extended recovery zones should be included in the proposal or not. Two alternatives were discussed to address extended recovery zones: (i) remove it from the proposal, or (ii) retain the concept but add language that the extended recovery portions of the proposal would not become effective until funding and a mechanism is established that would address DEQ’s technical concerns.

## **Discussion of Draft Statute:**

### **Article 2 Aquifer Storage Recovery and Trading**

#### **§ 62.1-001. Findings and purpose.**

The General Assembly hereby determines and finds that actions adding groundwater to the aquifers in Eastern Virginia and Eastern Shore Groundwater Management Areas designated by the Board should be encouraged and that governmental and private entities need regulatory certainty and benefits in order to expend financial resources for these actions. Providing regulatory certainty and benefits will assist in improving the availability of groundwater for all beneficial uses and create opportunities for the regulated community to more cost effectively meet groundwater withdrawal needs.

#### **§ 62.1-002. Definitions.**

As used in this article, unless the context requires otherwise:

*“Annual water loss rate”* means the rate at which injected water is not available as a groundwater storage credit due to water loss through the aquifer boundary related to the injection. An annual water loss rate is based on procedures developed by the department.

*“Extended recovery zone”* means a recovery zone located outside of the short term recovery zone and defined through a technical analysis conducted by the department.

*“Groundwater storage credit”* means the quantity of injected water that is authorized to be recovered from an aquifer.

*“Injected water”* means water that is injected into an aquifer in the Eastern Virginia or Eastern Shore Groundwater Management Areas.

*“Long term storage”* means injected water that may be withdrawn more than 36 months after injection.

*“Recovery factor”* means the annual fraction of the remaining injected water that is available for recovery by a permittee. The recovery factor is calculated as one minus the annual water loss rate.

*“Recovered water”* means water represented by groundwater storage credits and withdrawn from the aquifer into which the water creating the credits was originally injected.

*“Recovery zone”* means the area within a spatial boundary from which injected water is authorized to be recovered. *“Short term recovery zone”* means a recovery zone no less than a one (1) mile radius from the point of injection.

*“Short term storage”* means injected water that may be recovered within 36 months of the date of injection.

**§ 62.1-003. Groundwater credits, availability of injected water for withdrawal.**

A. Within the Eastern Virginia and Eastern Shore Groundwater Management Areas, DEQ shall annually certify a groundwater storage credit to any person lawfully injecting water into an aquifer and requesting groundwater storage credit.

B. Groundwater storage credits shall be available to groundwater permit holders and permit applicants under the terms and conditions of this Article and incorporated into permits issued under the Ground Water Management Act (Va Code § 62.1-254 et seq). A groundwater withdrawal permit or modification to an existing groundwater withdrawal permit shall be required prior to the withdrawal of injected water or groundwater represented by groundwater storage credits.

C. Permitted recovery of the groundwater storage credits may occur within the short term recovery zone or the extended recovery zone.

D. Any person requesting certification of groundwater storage credits shall report to the department, on a schedule defined by the department, the location and amount of water injected and such other information as the department may require.

E. Any person utilizing groundwater storage credits shall report to the department, on a schedule defined by the department, the amount and location of the withdrawal and such other information as the department may require.

F. Groundwater permit holders and groundwater permit applicants proposing to utilize groundwater storage credits held by another person shall provide the department with documentation, satisfactory to the department, that the person has sufficient contractual rights to utilize the groundwater storage credits. A contractual right to utilize injected water or

groundwater storage credits does not negate the need for a groundwater withdrawal permit pursuant to the Ground Water Management Act (Va Code § 62.1-254 et seq.).

G. The groundwater storage credit shall be increased annually based on the amount of water injected and reduced by the amount of recovered water and by the applicable recovery factor, if any, depending on whether the recovered water is from short- or long-term storage as described in § 62.1-004 and § 62.1-005.

H. A groundwater storage credit shall be considered an addition to the permittee's withdrawal limits under a groundwater withdrawal permit and groundwater storage credits shall not be used to reduce the permittee's otherwise allowable withdrawal.

I. The Department shall maintain a publicly available tracking system based on information it may require from those who request or generate groundwater storage credits and those who are authorized through a groundwater withdrawal permit to utilize groundwater storage credits. The tracking system shall at a minimum document, by permitted withdrawal and permitted injection, the amount of water injected, the number of groundwater storage credits generated, the number of groundwater credits used, the number of short term and long term groundwater storage credits available, and the volume of injected groundwater no longer qualifying as a groundwater storage credit.

J. ~~Unless authorized by the person injecting water, the~~ The Department shall not consider the impact of the injected water on the aquifer within a short term or extended recovery zone in making groundwater withdrawal permitting decisions for other permittees or permit applicants, unless authorized by the person injecting water or the holder of groundwater storage credits.

Discussion:

*These changes are based on the desire expressed at the July meeting to provide geographic boundaries to the subsection's limitation. The Workgroup discussed this subsection's purpose to protect investments in injection and recovery systems and effectively protect the injected water from being utilized by those who did not contribute financially to that effort. Issues were not identified regarding the application of this subsection to the short-term recovery zone. Concerns were expressed regarding the application of this subsection to an extended recovery zone creating the potential for those who inject water to prevent access to water over a broad area that could otherwise be put to a beneficial use. A counter argument was presented that investment will not occur if there are no protections for the injected water. This triggered a broader discussion on concerns with extended recovery zones including (i) the lack of existing examples or data to act as a "proof of concept," (ii) the lack of a mechanism and funding to develop that data, (iii) concerns about administrative costs including those to maintain "two sets of books" and (iv) the impact of significant unregulated withdrawals (i.e. those uncontrolled withdrawals that do not require a permit but which could influence the groundwater system and withdrawal injected water). Data is needed in order to understand how injected water benefits may propagate through the system and to avoid unintended consequences. It was noted that it may take 10 or more years to develop data, including using data that may developed through SWIFT. SWIFT data alone may not be*

*enough, since monitoring locations may not be relevant to the location of a proposed extended recovery zone injection and withdrawal. The scope of the data and monitoring that would be needed, against which professional judgment on the potential size of extended recovery zones could be applied, also needs to be defined.*

*The view was expressed that it may not be appropriate to include the extended recovery zone (and foster related expectations) until there is a more realistic likelihood that an extended recovery zone program could be technically and financially supported. On the other hand, workgroup members noted that the current draft structure provides an opportunity for DEQ to develop the “procedures,” providing flexibility for implementation to when information is developed. Continuing to include the concept also helps highlight it as a potential option and to support requests for necessary funding. Timing for implementation is indeterminate since it is unknown when DEQ will have the necessary funding or manpower. Implementation will also not likely be uniform across geographic areas since there may be differences based on the volume, duration, and consistency and locations of injections and withdrawals. From a technical perspective, DEQ believes that more than modeling will be needed, and that appropriate monitoring would be required. With a lack of DEQ resources and insufficient existing monitoring network, that burden may fall on a permittee and be expensive. DEQ noted that it will continue to have technical concerns with the extended recovery zone concept until the Eastern Virginia Groundwater Management Area Advisory Committee report comments have been addressed or a plan is in place to collect and evaluate the needed information. One approach would be for the legislation to focus on the short-term recovery aspects, with which DEQ does not have technical concerns, and develop recommendations for funding and on how to obtain the needed level of understanding to support an extended recovery zone program. The recommendations could be for the entirety of the Eastern Shore and Eastern Virginia Groundwater Management Areas or, as a first step, limited to a specific geographic area.*

*Based on the Workgroup discussions, two alternatives will be developed for consideration at the next meeting. The first will remove the extended zone concept from the proposal. The second would be to retain the extended zone concept but add language that it is not effective until the technical and financial needs are met, and procedures are developed. In either case, a discussion on how to meet the data and funding needs for an extended recovery program to be implementable would be useful.*

K. To the extent not covered by the groundwater withdrawal permit fee in § 62.1-44.15:6, the Department is authorized to charge a fee not to exceed the lesser of \$7,500 or the department’s actual out of pocket expense for outside consulting assistance to perform the technical evaluation needed to determine the extended recovery zone, the water loss rate and/or the recovery factor. No fee, other than that authorized by § 62.1-44.15:6 shall be charged when a groundwater permittee or permit applicant will use groundwater storage credits from short term storage and the withdrawal is located in the short term recovery zone unless the department identifies a specific concern regarding potential unmitigated impacts requiring additional technical analysis.

#### **§ 62.1-004. Short term storage recovery factor.**

The recovery factor for short term storage shall be 1.

**§ 62.1-005. Long term storage recovery factor.**

A. The recovery factor for long term storage shall be based on an estimated annual water loss rate through a technical evaluation conducted by the department. The department shall develop a procedure for estimating aquifer losses for purposes of determining recovery factors. The long-term storage recovery factor shall be 0.8 until superseded by procedures developed by the Department.

B. A long-term storage recovery factor schedule shall be established by the Department for a permittee desiring to withdraw water injected more than 36 months prior to the withdrawal. The schedule shall be incorporated into the permittee's groundwater withdrawal permit, shall run for the length of the permit term including as it may be extended and shall be subject to other permit conditions. Prior to permit expiration, the schedule shall be re-evaluated, and the recovery factor may be revised for the permittee's next long-term storage recovery factor schedule based on then current Department procedures. A long-term storage recovery factor schedule shall remain effective unless modified by the Department.

C. Annual recovery factors contained in a long-term storage recovery factor schedule may vary across time if annual loss rates are not constant over time.

**§ 62.1-006. Extended recovery zone.**

The Department shall develop procedures for defining an extended recovery zone to the maximum practical extent and subject to reasonable expectations that no adverse impacts will be imposed on the groundwater resource. Recovery can occur off-site of the injection location with an extended recovery zone delineated during the permitting process. The recovery zone shall be re-evaluated when a long-term storage recovery factor is reevaluated pursuant to § 62.1-005 B.

**§ 62.1-007. Credit transfer between permittees.**

All or a portion of a groundwater storage credit may be transferred to another person.

**2. That the State Water Control Board (the Board) may adopt regulations to implement the requirements of this act. The adoption of such regulations shall be exempt from the requirements of Article 2 (§ 2.2-4006 et seq.) of the Administrative Process Act (§ 2.2-4000 et seq.) of the Code of Virginia. However, the Department shall (i) provide a Notice of Intended Regulatory Action, (ii) form a stakeholders advisory group, (iii) provide for a 60-day public comment period prior to the Board's adoption of the regulations, and (iv) provide the Board with a written summary of comments received and responses to comments prior to the Board's adoption of the regulations.**

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**Continuation of discussion on other means to generate groundwater credits:**

Workgroup members reviewed the discussion on this topic from the July meeting. Additional ideas were not generated; however, it was agreed that the topic should be revisited at a future meeting.

### **Next Steps:**

Alternative versions of the draft statute will be developed and circulated for before the next meeting. One alternative will retain the extended recovery zone and the other will not.

### **Future Meetings:**

The next meeting was not scheduled.

### **Public Comment:**

No one spoke during the meeting's public comment period.



## **Attachment: Scott Kudlas' 9/16/19 email expressing DEQ Technical Concerns**

Shannon,

No, I had not gotten a chance to look until just now. We remain concerned that the long term credits remain so prospective and uncertain as to be premature. We are concerned that the ramp up of these injection projects, including SWIFT, is so far out that no tangible water level benefit will exist until the end of the next decade. It may not be good public policy to agree to a trading framework in which no one in the room has empirical evidence of how water level improvements will or won't propagate through the system over time. There is reason to believe that not every injection is beneficial based on volume and location. It is not empirically clear that all injections are beneficial, particularly when it is not measurable. There are also no recommendations from the group on how to establish monitoring wells to observe the propagation of these injection projects to confirm modeled simulations. These wells should be completed and water level improvements understood prior to agreement on a long term trading framework or regulation. DEQ stated clearly in our comments on the GWAC Report that we needed to see tangible results in water level improvements. These issues stated above will require significant resources. We see limited acknowledgment in these minutes that these are legitimate concerns other than to suggest that this concern can be handled by agency procedures that have been authorized to be developed. I think it is important to reiterate the concerns DEQ identified regarding the recommendations in the GWAC report. For reference:

"DEQ has the following comments on the recommendations of the EVGMAC related to alternative management structures, banking and trading.

- Groundwater banking and trading systems are recommended by the EVGMAC (recommendations #9 and #10). While there may be worthy benefits from trading and banking in reducing the costs of developing alternative sources of supply to comply with permit reductions, these recommendations should be evaluated with reasonable caution. Our understanding of the aquifer system at this time suggests that there are temporal and spatial limits to the benefits of credits generated. This means that the potential "credits" generated in increased groundwater levels appear to quickly become part of the background condition, limiting the duration of time that they can be used without resulting in impacts to the aquifer or other existing groundwater users. Therefore, for each one million gallons injected it may not mean that one million gallons of additional groundwater is available for use. It also appears that the geographic scope of a potential credit area may be limited for similar reasons. At this time, it appears that transferring the "benefit" of higher groundwater levels from one location to a location with low groundwater levels simply results in further lowering of water levels in the location with already low levels.
- If such a banking or trading program were to be developed, it may be too limited to be economically attractive to most potential participants. In addition, the need to increase monitoring of potential impacts to individual existing users would be expected and the current monitoring network is likely to be insufficient to provide reasonable protection.

- The resolution of current predictive regional modeling tools also may be insufficient for the anticipated increase in complexity resulting from the generation of credits and trades. Local scale water level impacts will be of greater importance to predict and at a higher resolution than the current model. Given this complexity in modeling and the limitations of the current monitoring network, there also are potential fiscal implications that may need to be considered if this recommendation is explored. DEQ is unaware of any program in other states that has established a trading program in a confined coastal aquifer system like the one in Virginia so there is some significant uncertainty regarding what the costs of developing and implementing a program of this kind will be.

RE: SWIFT:

- The Hampton Roads Sanitation District's (HRSD) Sustainable Water Initiative For Tomorrow (SWIFT) Project appears to offer great potential for long-term regional aquifer benefits that improve prospects for overall aquifer sustainability. The project should not be considered the sole solution because of its long time horizon and because it is not without technical challenges that need to be systematically assessed and addressed as it matures. Some uncertainty remains about the long-term ability to inject the design volumes. While the modeling completed for this project is very positive, modeling results must be validated through empirical data from monitoring in the field. This uncertainty is being addressed through the project's demonstration program, which includes some onsite monitoring and will likely be an ongoing issue that is evaluated throughout the life of the project. HRSD, DEQ, and the Virginia Department of Health (VDH) are involved in ongoing discussions regarding the long-term oversight of project water quality and how those safeguards will be institutionalized. These discussions are continuing and have been very productive in addressing concerns about what to monitor, at what levels, at what frequency, and by whom.”

Scott Kudlas