

M E M O R A N D U M

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Subject: DRBC Staff Recommendation and Response to Comments
Docket No. D-2002-034 CP-4 Artesian Water Company, Inc. – Broad Run PA Well
New Castle County, Delaware and New Garden Township, Chester County,
Pennsylvania

I. Summary and Recommendation

- A. Summary:** In accordance with the Delaware River Basin Compact and regulations, staff of the Delaware River Basin Commission (“DRBC” or “Commission”) prepared a draft docket in response to an application dated September 5, 2014 by Artesian Water Company, Inc. (AWC) for approval and inclusion of the existing Broad Run PA Well into the AWC public water supply distribution system (“the Project”).

The Commission published a Notice of Application Receipt (NAR) concerning the application for the renewal of the existing allocation and the use of existing Broad Run PA Well on the DRBC website on December 19, 2014. On the same date via U.S. Mail or email, the DRBC notified all parties on the Interested Parties List (“IPL”) for the project of the receipt of the application. The draft docket was announced for public comment and scheduled for a public hearing on three separate occasions. A notice of public hearing on the draft docket appeared in the Pennsylvania Bulletin on February 21, 2015 for the March 10, 2015 Commission Hearing, on May 23, 2015 for the June 9, 2015 Commission Hearing and again on August 22, 2015 for the September 15, 2015 Commission Hearing. The hearing notice and draft docket were posted on the Commission’s website on February 27, 2015 for the March 10, 2015 Commission Hearing, on May 26, 2015 for the June 9, 2015 Commission Hearing and August 31, 2015 for the September 15, 2015 Commission Hearing. The Commission staff also sent copies of the hearing notice to the IPL.

At the March 10, 2015 public hearing, Commission staff presented a revised draft docket (D-2002-034 CP-3) that renewed the approval of the existing groundwater withdrawal system allocation of 612.83 million gallons per month (mgm) from forty-two (42) wells in the DRB and required the docket holder to submit to Commission by June 11, 2015 a long-term groundwater/surface water monitoring program to monitor the water resources in the vicinity of the Broad Run PA well. Additionally, the Findings section of the docket indicated that at a future Commission hearing and meeting as described in docket condition C.II.1., the Commission would consider the approval of the Broad Run PA well and the groundwater/surface water monitoring program. The docket was approved by the Commission on March 11, 2015.

From May 23, 2015 through June 9, 2015 comments were received on a revised docket D-2002-034 CP-4. The revised docket included the Commission staff recommendation for the approval of the Broad Run PA well and the requested groundwater/surface water monitoring program plan. During the public comment period the draft docket was withdrawn from comment in response to the public's requests for additional time to review and comment on the project. Between August 31, 2015 and September 15, 2015 the revised draft docket D-2002-034 CP-4 was re-noticed for public comment. On September 8, 2015, Commission staff attended a public information meeting regarding the Broad Run PA Well project at the Avondale Fire Company in Avondale, Pennsylvania, which was attended by more than 200 citizens and elected officials. A significant number of written and oral comments were received on the draft docket during the comment period and at the September 15, 2015 public hearing. At the September 16, 2015 Commission Business Meeting the Commissioners voted to defer action on the draft docket and extended the public comment period to the close of business September 30, 2015.

A summary of the commenters who provided written comments to the Commission on the project during the review of the docket application and on the draft docket during the public notice periods is provided in Attachment 1 of this document. A summary of the commenters who provided oral comments to the Commission at the September 15, 2015 public hearing on the project is provided in Attachment 2 of this document.

Based on the review of all comments received, Commission staff produced a revised draft docket for the project (revisions are summarized below). On October 26, 2015, staff released the revised draft for public comment and hearing at the November 10, 2015 public hearing. The public comment period for the revised draft closed on November 12, 2015. A summary of the commenters who provided written and oral comments on the project to the Commission at the November 10, 2015 public hearing and/or by the end of the comment period on November 12, 2015 is provided in Attachment 3 of this document. Commission staff have prepared the following comment and response document and recommendation to the Commissioners.

- B. Recommendation:** Commission staff have reviewed the hearing transcript from both the September 15, 2015 and November 10, 2015 public hearings and all of the written comments submitted on the project and have prepared this Response to Comments (*see* Section III below) and the attached revised draft docket D-2002-034 CP-4. Commission staff recommend that you approve Docket No. D-2002-034 CP-4

II. **Project Description and Revised Draft Docket D-2002-034 CP-4**

The revised draft Docket D-2002-034 CP-4 includes continuation of the approval of the:

- existing import project of up to 3.0 million gallons per day (mgd) from the Chesapeake Bay Basin (CBB) from the Old County Road, Chesapeake City Road/Brennan Estates and Eastern States well fields, and up to 3.0 mgd from the Susquehanna River Basin

(SRB) from an interconnection with Chester Water Authority (CWA) to augment water supply to the docket holder's public water supply system in the Delaware River Basin (DRB); and,

- existing water allocation of up to 612.83 million gallons per month (mgm) to the docket holder's public water supply distribution system from forty-two (42) wells in the DRB.

Neither the import nor in-basin allocations are increased from that included in the previous Docket D-2002-034 CP-3.

The revised draft Docket (D-2002-034 CP-4) also includes:

- Condition C.II.1.: the approval of a long term ground and surface water monitoring which includes:
 - a 9 month period of ground and surface water monitoring prior to initiation of water withdrawal from the Broad Run PA Well; and
 - the continuation of a ground and surface water monitoring that will be conducted during a phased increase in water withdrawal from the Broad Run PA Well; and
 - a ground and surface water monitoring program that will continue for at least 5 years; and
 - the public availability of the data and results of the ground and surface water monitoring. The monitoring reports will also be required to be sent to New Garden Township and the Chester County Water Resources Authority (CCWRA) at the same time they are submitted to the DRBC, PADEP, and DNREC. The monitoring reports will also be published on the Commission website.
 - Executive Director approved phased adjustments in water withdrawal amounts from the Broad Run PA Well up to the well allocation provided in the draft docket. The approval of each phase will be based on the results of the monitoring program and demonstration that the withdrawal at each phase had no adverse impacts to the stream or existing groundwater wells.
- A more robust interference condition that will be carried forward in all applicable withdrawal approvals issued by the Commission (Condition C.II.s.).
- The inclusion of the expanded service area in Pennsylvania (200 additional service connections) as described in the Area Served of the docket is contingent upon Artesian receiving Pennsylvania Public Utilities Commission approval for the expansion (Condition C.II.p.)

- Condition C.II.o. of the docket that states “Nothing herein shall be construed to exempt the docket holder from obtaining all necessary permits and/or approvals from other State, Federal or local government agencies having jurisdiction over this project” has been made more explicit by the addition of the following: “including, but not limited to, the Pennsylvania Public Utilities Commission, Pennsylvania Department of Environmental Protection, Delaware Department of Natural Resources and Environmental Control, Chester County, and New Garden Township.”

III. Comment and Response

A. A summary of the commenters who provided written comments to the Commission on the project during the review of the docket application and on the draft docket during the public notice periods is provided in Attachment 1 of this document. A summary of the commenters who provided oral comments to the Commission at the September 16, 2015 public hearing on the project is provided in Attachment 2 of this document. A summary of the commenters who provided written and oral comments on the project to the Commission at the November 10, 2015 public hearing and/or by the end of the comment period on November 12, 2015 is provided in Attachment 3 of this document.

B. Response to Comments on the Draft Docket heard at the September 16, 2015 Commission Hearing:

- 1) A substantial number of commenters objected to the Commission’s approval of an increase to the service area that includes 14 large land parcels totaling approximately 172 acres within New Garden Township, Chester County. AWC projected an additional 200 homes may be constructed in this area in the future subject to the economy, developer construction schedules, etc. Objectors argued that the Commission should not include this service area:
 - in advance of the PA Public Utility Commission action on the AWC application,
 - in the absence of required local approvals of sub-divisions and or plans for these areas. In the absence of such approvals there is no justification to support the estimated number of customers and or water supply needs.
 - prior to the resolution of the many issue with New Garden Township zoning requirements
 - in the absence of an analysis of an alternative involving an inter-connection between AWC and the nearby Chester Water Authority (CWA) water line as it would utilize an existing active water source and avoid the need to bring a new source (i.e. the Broad Run PA Well) into active production at this time.

Commenters-Jan Bowers, P.G. CCWRA, Save Our Water, Stephen E. Allaband, Chairman of the Board from New Garden Township and many local residents.

Response: DRBC’s approval does not supersede any local, state or Federal permits or approvals that the project sponsor is required to obtain. Docket holders are required to obtain and comply with all conditions of such approvals unless they are less stringent than those imposed by the Commission. This requirement is included in the wording of several docket conditions in Docket No. D-2002-034 CP-4.

Docket Condition C.II.a. States:

“Docket approval is subject to all conditions, requirements, and limitations imposed by DNREC and PADEP and the PA PUC, where applicable, and such conditions, requirements, and limitations are incorporated herein, unless they are less stringent than the Commission’s. The wells and operational records shall be available at all times for inspection by the DRBC.”

DRBC also included in the prior draft of the AWC docket the following standard condition C.II.o.:

“Nothing herein shall be construed to exempt the docket holder from obtaining all necessary permits and/or approvals from other State, Federal or local government agencies having jurisdiction over this project.”

Thus, the docket holder must still obtain approvals from the PA PUC, local planning and zoning approvals, as well as any PADEP approvals before the Broad Run PA Well can be utilized. In addition, it must obtain any permits from PADEP required for water transmission line construction. To further clarify and emphasize that the docket holder is not exempt from obtaining all other government approvals, DRBC’s amended the above condition in the revised docket as follows (Condition C.II.o.):

“Nothing herein shall be construed to exempt the docket holder from obtaining all necessary permits and/or approvals from other State, Federal or local government agencies having jurisdiction over this project including, but not limited to, the Pennsylvania Public Utilities Commission, Pennsylvania Department of Environmental Protection, Delaware Department of Natural Resources and Environmental Control, Chester County, and New Garden Township.”

Regarding an analysis of an alternative involving AWC increasing reliance on the inter-connection between AWC and the nearby CWA water line as it would utilize an existing active water source and avoid the need to bring a new source (i.e. the Broad Run PA Well) into active production at this time, the following response is provided:

As a policy, the DRBC promotes efforts of public and private water purveyors to increase the reliability of their water systems to distribute water to their customers through the addition of new groundwater and surface water sources and interconnections with existing systems. The DRBC prefers that established, regional water collection and distribution systems be utilized by new water users whenever appropriate. In the case where there are multiple regional systems available for new users to connect, the DRBC does not determine which system shall supply water to the new user and thereby does not require an analysis of which purveyor would be better suited or positioned to provide service. Additionally, the DRBC does not determine the allowable service area that a water purveyor may serve, it only acknowledges the service area that has been approved by the authority that grants the approval for any particular service area (i.e. PAPUC, BPU) or in the case of municipal systems is within their legal authorities or by agreement with other municipal entities. As described above, and in accordance with Condition C.II.p. of the draft Docket, the inclusion of the expanded service area in Pennsylvania (200 additional service connections) described in the Area Served of the docket is contingent upon AWC receiving Pennsylvania Public Utilities Commission approval for the expansion. If that expansion is rejected by the PA PUC, the docket does not grant approval to AWC to serve water to those properties. It does not limit them however from serving those areas described in their existing approved service area.

- 2) Commenters stated that AWC is requesting an allocation in the Broad Run PA Well greater than what is needed to serve the existing 38 homes located in AWC's existing service area in New Garden Township. They also believe that an adequate explanation to document the need or rationale for requesting this rate of withdrawal has not been presented by AWC. The objectors argue that these homes are currently being served by AWC from the existing wells and allocation approved in the DRBC approval (Docket No. D-2002-034 CP-3 and its predecessor dockets) and therefore the requested use of the Broad Run PA Well to supply this area in unnecessary.

Response: AWC justification for the addition of the Broad Well Run well to its existing system is not limited to serving the additional service area in New Garden Township. In their application to the Commission and in additional information submitted in response to comments on the project, AWC has indicated that the addition of the Broad Run PA Well will add reliability to their system, and provide a water source close to the 38 homes in their existing service area in New Garden Township and 558 existing customers in Delaware once the well is in production. This is in addition to any additional customers that may be served as a result of their application to the PA PUC for a service area expansion.

- 3) Commenters argued that while the information reported by AWC presents conclusions that there will be no impact to nearby wells or Broad Run; however,

significant technical questions have been raised by Brickhouse Environmental and others regarding those conclusions and their technical basis.

Commenters-Jan Bowers, P.G. CWA, Save Our Water and many local residents

Response: AWC's consultant, Ground Water Associates, LLC (GWA) provided a rebuttal in response to the issues raised by Brickhouse Environmental regarding the Hydrogeologic Report for the Broad Run PA Well. The issues raised by Brickhouse Environmental with the Broad Run PA Hydrogeologic Report and GWA rebuttals contained in its Hydrogeologic Report Addendum are summarized below:

- i) Brickhouse Environmental believes the Cockeyville Marble aquifer is unconfined while GWA disagrees with Brickhouse and believes that the aquifer is confined. Brickhouse supports the unconfined argument by stating that the water levels in the piezometers respond to rainfall precipitation immediately and with the same magnitude as that apparent in Broad Run, an indication of an unconfined aquifer being recharged by increasing stream flow due to precipitation. The pumping well water levels also respond to precipitation, but to a lesser degree. Additionally, Brickhouse indicates that the water level data in piezometers PZ-1 and PZ-2 and the monitoring wells completed in the Cockeyville Marble do not clearly indicate a response to changes to barometric pressure, which is more indicative of an unconfined aquifer. GWA states in the hydrogeologic report addendum for the Broad Run PA Well the following arguments that support the assertion that the aquifer is confined:
 - Time versus drawdown graphs follow the Theis non-equilibrium curve, which is the textbook response of a confined aquifer.
 - Brickhouse properly identifies that the water levels in the fractures rise above the bedrock indicative of confined conditions within the aquifer.
 - Carbonate wells do show responses to barometric pressure which indicates confined conditions, just on a smaller scale. Figures 11A and 13A in the Addendum show the responses of carbonate wells to barometric pressure.
 - The piezometers responded immediately to the pumping of the Broad Run PA Well which indicates a confined aquifer.
 - The piezometers drop one foot below the level of the Broad Run and remain below the level of the stream for the entire duration of the pumping test. This indicates that the aquifer is confined as there is no indication of any drainage from Broad Run or from pore space drainage impacting the water levels in the piezometers.
 - A Storativity value of 7.9×10^{-4} was calculated from the distance-drawdown data observed at monitoring wells 976 Broad Run Road, PZ-1 and PZ-2 monitored during the pumping test. The storage coefficient is indicative of confined conditions.

- ii) Brickhouse Environmental believes there is connection between the Broad Run PA Well and Broad Run so pumping at the well could possibly affect the stream during normal operation.
- The evidence is not clearly apparent to support the argument. The piezometers drop one foot below the level of the Broad Run and remain below the level of the stream for the entire duration of the pumping test. The water levels in the piezometers continue to decline throughout the pumping period and do not appear to be influenced by a recharge boundary (i.e. Broad Run) or pore space gravity drainage (unconfined aquifer). In either case, the effect would be evident as a dramatic decrease in the slope of the drawdown curve after the initial early-time data, as the piezometers are recharged by the stream or pore space drainage due to gravity which is not apparent in the observed data.
 - Additionally, GWA and the PADEP collected Microscopic Particulate Analysis samples at the conclusion of the pumping test. These samples did not indicate a direct connection between the well and the stream. Positive Microscopic Particulate analyses indicate a wells direct connection to surface water bodies as particles of animals and plants are present in the sample. While a negative result does not preclude there being a potential connection to a surface water body, it does provide an additional piece of evidence that supports the position that there is not a direct connection of the Broad Run PA Well to Broad Run.
- iii) Brickhouse Environmental recommends that the PADEP consider increasing the Zone 1 Wellhead Protection area radius based on unconfined conditions.

GWA contends that the Cockeysville marble aquifer in the vicinity of the Broad Run is a confined aquifer and the Zone 1 Wellhead Protection area radius should be based on confined conditions. The Pennsylvania Department of Environmental Protection (PADEP) regulates Wellhead Protection Areas of a production well to protect potable water quality. The Commission's Administrative Manual-Rules of Practice and Procedure Section 2.3.7.A. states that the Commission will rely on the appropriate agency in each state to review and regulate the potability of all public water supplies. Applications before the Commission should address the impacts of the withdrawal, use and disposal of water on the basis of quantity. Questions regarding the designation of a Wellhead Protection Area or size of the Wellhead Protection Area need to be addressed with the PADEP.

Commission staff have reviewed the Hydrogeologic Report for the Broad Run PA Well, the Brickhouse Environmental analysis and interpretation of the Hydrogeologic Report, and the GWA rebuttal. There are clearly differing interpretations of the data from the 72-hour Broad Run PA Well pumping test, each supported by convincing arguments. The question of whether the Cockeysville Marble Aquifer is confined or unconfined is almost immaterial as the Commission does not discriminate against confined or unconfined aquifers in its approvals of groundwater withdrawal projects, it does however attempt to prevent adverse impacts to the local hydrologic system through attaching operating conditions to the approval that are protective of the resource. Commission staff understand that under dry conditions, if the Cockeysville Marble Aquifer at the project site is unconfined or semi-confined, pumping at the Broad Run PA Well may induce recharge from the stream to the underlying aquifer, thereby reducing base-flow to the stream at a time when it is most needed by the stream. However, the pumping test drawdown data do not strongly support the presence of the unconfined condition as the water levels in the piezometers continue to decline throughout the pumping period and do not appear to be influenced by a recharge boundary (i.e. Broad Run) or pore space gravity drainage. In either case, this effect would be evident as a decrease in the slope of the drawdown curve which is not apparent in the observed data. Commission staff still expect that no adverse impacts to Broad Run or neighboring wells will result from pumping the Broad Run PA Well. The data collected as a result of the proposed monitoring plan included in the draft docket will be utilized to confirm that pumping from the Broad Run PA Well will not adversely affect the local hydrologic system. If adverse impacts are detected during the course of the long-term pumping and associated monitoring, the allowable pumping rate will be reduced to a rate that prevents such impacts. Furthermore, if a direct connection of the Broad Run PA Well to Broad Run becomes evident in the data collected during the monitoring plan period a passing flow may then be applied to the withdrawal, requiring AWC to cease withdrawals from the well during low-flow (e.g. 7Q10) conditions.

- 4) Commenters contend that a withdrawal of 200 gallons per minute (gpm) could have potential adverse impacts on the water quality and aquatic habitat in Broad Run, including decreasing the amount of water in the local aquifer available to mushroom farms, local residential wells, Broad Run and downstream surface water users. *Commenters-New Garden Township, Jan Bowers, P.G., Shane Morgan, Julia Bell, J. Denis Newbold, Ph.D., Suez Environmental – United Water Delaware, nine (9) local mushroom farms and many local residents*

Response: Based upon the information included in the hydrogeological report of the Broad Run PA Well, the Commission does not believe there will be any adverse impact to the local hydrologic system or neighboring wells as a result of pumping the Broad Run PA Well. The results of the pumping test did not indicate that the pumping at the Broad Run PA Well will adversely impact Broad Run. There is also no indication that there will be an impact on the aquatic habitat or ecosystem.

Condition C.II.1 requires AWC to monitor Broad Run Creek and surrounding area to insure that the pumping will not adversely affect flows in Broad Run and thereby downstream users. Additionally, given the small amount of drawdown apparent in local wells monitored during the Broad Run PA Well pumping test, it is unlikely that there will be adverse impacts to the quantity of water available in the local aquifer for use by neighboring well owners including the local mushroom farms.

- 5) Commenters questioned whether or not the Cockeysville Marble in the vicinity of Broad Run PA Well is a confined or unconfined aquifer. *Commenters-Shane Morgan, Julia Bell, Save Our Water (including the Brickhouse Environmental report submitted by Save Our Water) and a few local residents*

Response: The hydrogeological report for the Broad Run PA Well demonstrates that the Cockeysville Marble aquifer in the area of the Broad Run PA Well exhibits response to pumping as that of a confined aquifer. The Time versus Drawdown graphs follow a Theis non-equilibrium curve, which is the expected response of a confined aquifer to pumping when equation assumptions are being met. A Storativity of 7.9×10^{-4} was calculated from the distance-drawdown data observed at monitoring wells 976 Broad Run Road, PZ-1 and PZ-2 monitored during the pumping test. The storage coefficient is indicative of confined conditions as typical storage coefficients in confined aquifers range from 1×10^{-5} to 1×10^{-3} (Driscoll, 1986). **Also see Response III.B.3.iii.**

- 6) Commenters questioned if a Zone 1 Wellhead Protection Area of 100 feet would be adequate to protect the groundwater recharge in the vicinity of Broad Run PA Well.
Commenters-Shane Morgan, Save Our Water and a few local residents

Response: The Pennsylvania Department of Environmental Protection (PADEP) regulates Wellhead Protection Areas of a production well to protect potable water quality from potential or existing pollution sources, not recharge to the aquifer. The Commission's Administrative Manual-Rules of Practice and Procedure Section 2.3.7.A. states that the Commission will rely on the appropriate agency in each state to review and regulate the potability of all public water supplies. Applications before the Commission should address the impacts of the withdrawal, use and disposal of water on the basis of quantity. Questions regarding the designation of a Wellhead Protection Area or size of the Wellhead Protection Area need to be addressed with the PADEP.

- 7) Commenters indicated their concerns that the pumping test was conducted during the early spring, which was a period of very high soil saturation and high aquifer

recharge rates. They are concerned that the timing and conditions may have masked effects on existing area wells. They requested that additional pumping tests should be conducted during a period of normal soil saturation and dry conditions.
Commenters- Save Our Water and local residents

Response: DRBC pumping test guidance requires the submission of records of precipitation, measurements or observations of nearby stream flows, and weather conditions throughout the pumping test for any given groundwater withdrawal project. This is required in addition to the pumping and drawdown data to help determine if the pumping test and associated data was adversely impacted by precipitation recharge. Expected seasonal increases or decreases in recharge and even precipitation events during the pumping test do not necessarily preclude the accurate assessment of pumping test data for pumping tests run during the given period if there is no evidence that the pumping test was adversely affected by it. In the case of the Broad Run PA Well, the test was run in the early spring when increased recharge to the aquifer can be expected; however, there is little evidence that suggests the test data were adversely impacted by this recharge in so far as to prevent an accurate interpretation of the pumping test data.

The revised monitoring plan includes 9 months of background monitoring which will occur over the period when precipitation is expected to be at its lowest, and when water use and evapo-transpiration is greatest. This will help to establish low flow in Broad Run prior to any withdrawals being made from Broad Run. The continued monitoring of Broad Run and local residential wells during the pumping phases included in the monitoring plan will be analyzed to verify that pumping from the Broad Run PA Well is not adversely impacting Broad Run and the surrounding area.

- 8) Save Our Water commented that due to very high stream flows during the test, changes in Broad Run due to pumping would have been impossible to detect on stream gages. On the other hand, the piezometers installed near the stream did show correlations with both stream flows and pumping, indicating interaction of the stream with the underlying aquifer, contrary to AWC's claim.

Response: Water levels in the Broad Run PA Well and piezometers did show a response to rainfall during pre-test monitoring. The water level rise in the piezometers was very similar to the water level rise in Broad Run during this period. The Broad Run Well water level rise was somewhat less so. This is described as either a result of the increased weight of water from precipitation accumulating in Broad Run on the described confining layer below Broad Run causing water levels

to rise in the piezometers or as the water table surface of the aquifer rising relative to the increase in stream level and recharging the water table aquifer and fractures in the bedrock below the aquifer. Either scenario is plausible. It is true that effects on the stream from pumping at the Broad Run PA Well may not be easily apparent during high flow conditions, particularly so if the Broad Run PA Well is isolated from the stream by a confining unit. As previously stated, the water levels in the piezometers during the pumping test drop below the water level in Broad Run and continue to drop during the course of the pumping test. There is little evidence of any drainage from the Broad Run impacting the water levels in the piezometers. This indicates little interaction between the piezometers and Broad Run. AWC will conduct a long-term monitoring program both before and after the Broad Run PA Well is in operation, the data will be analyzed to verify that the Broad Run PA Well is not adversely affecting Broad Run or surrounding wells.

- 9) Save Our Water commented that AWC wrongly assumes that the Cockeyville Marble aquifer is recharged by the entire watershed. The assessment of recharge for the Cockeyville Marble Formation in the watershed should consider the low transmission rates from the surrounding formations as it does in the Hockessin Cockeyville study referenced in the Brickhouse report. This will limit the water available for recharge and will increase the impact on the Broad Run Creek.

Response: The Hockessin study in the Brickhouse Report referenced by the Commenter is Williams, 1981. Ground-Water Availability, Hockessin, Delaware. Vol.19, No. 1-GROUND WATER- January-February 1981. Williams states in the Abstract and Conclusions of the study that the entire basin, which includes both Cockeyville Marble and Wissahickon Schist bedrock formations overlain by saprolite, serves as a recharge area for the Marble sector, but that the manageable storage area is limited to the marble area. It appears from the report that this is because the saprolite is somewhat homogenous and the saprolite receives recharge from precipitation and induced streamflow infiltration and promotes recharge to the underlying bedrock formations. The saprolite provides storage for most of the groundwater in the basin and baseflow to streams. Thereby it is reasonable to assume that all of the saprolite in the watershed can be accounted for when determining recharge to the Cockeyville Marble.

- 10) Save Our Water commented that the hydrogeological report appears to have been written to position AWC for future increases in water withdrawal rate from the Broad Run PA well.

Response: Commission staff reviewed the AWC application based on the current requested withdrawal. If in the future AWC seeks to increase the withdrawal from the Broad Run PA Well, it would be required to apply for a docket modification, conduct another pumping test at the increased rate and complete an additional hydrogeologic study. The docket modifications would be subject to a public comment period and public hearing.

- 11) Save Our Water and many local residents commented that New Garden Township’s ordinances include a water exportation ordinance requiring a permit to export groundwater outside of Township boundaries. This in combination with the Township’s Comprehensive Plan, expresses the intent of the municipality to preserve local groundwater for current use and future developments in the Township. The 288,000 gal/day of water requested in the AWC application for 38 current Pennsylvania customers and an unspecified number of Delaware customers is clearly aimed at obtaining a majority of the water for use in Delaware and should not be allowed. AWC appears to be counting on the PADEP and/ or the Commission to over-ride that ordinance if the water use permit is granted.

Response: As indicated in response to Comment No. 1 above, the draft docket (Condition No. C.II.o.) does not exempt the docket holder from obtaining all necessary permits and /or approvals from other State, Federal or local government agencies having jurisdiction over this project. DRBC’s approval neither supersedes the local requirements nor does the Commission include in its approvals local requirements where such requirements have not been submitted to and approved by the Commission.

However, the Commission was created as a regional body to oversee a unified approach to managing a river system without regard to political boundaries. Commission regulations were established to protect and approve the use of the waters of the basin. The Commission has approved projects where the use of water by a project sponsor is from shared water sources or where the use impacts more than one state. Commission determinations are made in accordance with its regulations. In addition the Commissioners have approved projects in advance of local and state approvals.

While the Commission has regulations regulating the import or export of water to or from the Delaware Basin (Section 2.30 in the Commission’s Water Code), these regulations do not apply to the transfers of water between states within the Basin.

Furthermore, the New Garden Township well water exportation permit described in Chapter 196. WELLS, sub-section 196-3 of the New Garden Township Code requires that a DRBC approval of the well be submitted with the well water exportation permit application along with an environmental impact analysis, prepared by a certified hydrogeologist or registered engineer having similar experience, which sets forth in appropriate detail the anticipated and expected environmental impact on the Township and its groundwater supply of the proposed exportation. It seems quite appropriate and even required that DRBC act on an application approval in advance of New Garden Township's approval.

- 12) Many local residents commented on what would happen if the groundwater withdrawals from the Broad Run PA Well would adversely affect domestic wells and how quickly the impacted well issues will be dealt with. In addition, adverse impacts on the domestic wells could lower the values of the respective houses. The additional costs of connecting to the public water distribution system and monthly water fees will put a financial burden on the residents.

Response: Based on the Commission's staff review of the application materials and the terms and conditions in the revised draft docket, Commission staff does not believe that there will be interferences with local wells. However, if such an occurrence were to arise, AWC will be required to resolve any issues where their operations of the Broad Run PA Well may be adversely affecting domestic wells or streams in accordance with Docket Condition C.II.s. The Executive Director has the authority to direct AWC to take immediate actions to take interim/permanent remedial actions to restore reduce the well operations, restore a water supply other mitigation. Condition C.II.s. reads as follows:

- s. If the monitoring required herein or any other relevant data or information demonstrates that the operation of this project is interfering with or otherwise impairing groundwater or surface water or existing uses of groundwater or surface water, or if the docket holder receives a complaint from an existing groundwater or surface water user alleging such interference or impairment, the docket holder shall immediately notify the Executive Director, and unless excused by the Executive Director, shall investigate the demonstrated or alleged impacts. For purposes of this condition, notification shall mean either (a) transmittal of written notice to the Executive Director via certified mail with a copy of such notice sent via email (using addresses posted on the DRBC website); or (b) written notice to the Executive Director via certified mail and a telephone call to the Project Review Section at 609-883-9500, ext. 216. (Oral notification must always be accompanied by immediate written notification directed to the Executive Director.) In addition, the docket holder shall provide written notice to all potentially affected water users of the docket holder's responsibilities under this condition. **Any well or surface water supply that is impaired as a result of the docket holder's project withdrawal shall be repaired, replaced or mitigated at the docket holder's**

expense. The scope of the options to consider for repair, replacement and/or mitigation shall not be limited solely to those that are owned, operated, or controlled by the project sponsor. An investigation report and/or mitigation plan prepared and certified by a licensed professional engineer and/or a licensed professional geologist qualified in water resource engineering or hydrogeology shall be submitted to the Executive Director as soon as practicable following notice of the demonstrated or alleged impairment consistent with this paragraph. The Executive Director shall make the final determination regarding the scope and sufficiency of the investigation and the extent of any mitigation measures that may be required. Where groundwater and surface waters are rendered unavailable, unusable, or unsuitable for the pre-existing use, the Executive Director may direct the docket holder to take interim actions to mitigate such impacts, pending completion of the investigative report and any long-term repair, replacement or mitigation.

In addition to the Commission action the affected individuals are also free to take whatever separate legal action it elects to resolve the matter to its satisfaction.

- 13) Many local residents commented that approval of the Broad Run PA Well could lead to additional commercial buildings in the area, and the rural and residential character of the area will be compromised.

Response: The Commission does not regulate local zoning or subdivision and land development. AWC or any other entity engaged in activities that require approval by the local government for zoning or subdivision and land development related issues will need to resolve that with the local municipality.

- 14) Many local residents commented that seven (7) domestic wells monitored during the long term pumping test of the Broad Run PA Well was too few and that the testing done was inadequate.

Response: The Commission pumping test guidance requires representative well monitoring before, during, and after the pumping test, but does not require a specific number of wells to be monitored during the well pumping test. Based on our experience, AWC had satisfactory coverage of monitoring points around the well in a half mile radius. Commission staff believe that the hydrogeologic study conducted on the Broad Run PA Well was satisfactory and followed industry standard protocol for aquifer testing. However, in response to concerns raised by the public and elected officials the revised draft docket includes additional pre and post operation monitoring and reporting, a long term monitoring and reporting program, and a phase-in of allowable water withdrawals from the Broad Run PA Well. The monitoring information will be available to the public from the Commission website and will also be sent directly to state and local governments.

- 15) Many local residents commented that AWC should just buy more water from Chester Water Authority since there is available capacity in their interconnection.

Response: The Commission makes its determinations based on the merits and information provided by the project sponsor and through the public comment and hearing process. Currently, AWC obtains water from the Chester Water Authority (CWA), which also imports water to the Basin from the Octoraro Reservoir in the Susquehanna River Basin. AWC may elect to seek additional water from the CWA, and the DRBC promotes the interconnection of water suppliers to promote water supply reliability, but it does not mandate that water suppliers purchase water from one another in lieu of seeking additional sources. In addition, CWA has approval from both DRBC and SRBC for its water imported from the SRBC. Any increases to the amounts approved would require approval from both basin Commissions.

- 16) A few local residents commented that AWC selected the geologist to conduct the testing of the Broad Run PA Well, and a third party non-biased geologist should be used.

Response: It is common practice for project sponsor's to retain geologists of their choosing to conduct the monitoring and testing required to prepare a hydrogeologic report for a given withdrawal project. This practice is followed in support of water withdrawal applications submitted to State programs as well as to the DRBC. In Pennsylvania geologists practicing geology professionally must be licensed by the state. DRBC and the state use professional geologists to review the reports and to make recommendations regarding the withdrawal project largely based on the data and conclusions presented in those reports.

- 17) A local resident commented that AWC's application was incomplete and the draft docket should be postponed until AWC submits a complete application.

Response: The application submitted by AWC was generally complete. The DRBC reviewer requested additional information from the applicant during the course of the review where additional information was deemed necessary and it was provided to the Commission when requested. This is a standard practice in the review of applications submitted to the Commission. The Commission does not outwardly reject applications that are missing some details as concerns or issues may arise during the review of the project that were not adequately addressed in the application or were unforeseen by the applicant.

- 18) A local resident commented that the Broad Run PA Well is not in compliance with the Southeastern Pennsylvania Ground Water Protected Area (SEPA GWPA) regulations.

Response: The Broad Run PA Well is not located within the boundaries designated Southeastern Pennsylvania Ground Water Protected Area and therefore is not subject to the SEPA GWPA regulations.

- 19) Representative Chris Ross, House of Representative for the Commonwealth of Pennsylvania, commented that additional testing should be conducted in a time of

year with less plentiful water supply. Representative Ross, also commented that the withdrawal rate of the Broad Run PA Well should be reduced until more water is needed.

Response: See Responses 3.B.2) and 7)

- 20) Senator David P. Sokola, Senator for the State of Delaware, commented that the Broad Run well offers extra reliability for the residents of Chester County, Pennsylvania and New Castle County, Delaware.

Response: The Commission supports public water suppliers that incorporate reliability into their public water distribution systems by way of interconnections and additional sources.

- 21) Senator David P. Sokola, Senator for the State of Delaware, commented that the long term pumping test of the Broad Run PA Well showed insignificant impact to wells within a half mile radius from the site and Save Our water’s consultant (Brickhouse Environmental) confirmed there was insignificant impact.

Response: The Commission has reviewed the hydrogeological report for the Broad Run PA Well pumping test. Commission staff agree that it is unlikely that significant adverse impacts will occur to the local wells as a result of pumping from the Broad Run PA Well. Brickhouse Environmental agreed that during the Broad Run PA Well pumping test, only the domestic well located at 976 Broad Run Road (325 feet west-southwest of the pumping well) exhibited drawdown (0.3 feet) as a result of pumping at the Broad Run PA Well.

- 22) A few local residents commented that a citizen’s well was excluded from the hydrogeologic study of Broad Run PA Well because the hydrograph indicated the well was affected by the pumping at the Broad Run PA Well.

Response: The comments appear to be anecdotal and inaccurate. The well was clearly not excluded from the hydrogeologic study. The domestic well in question is located at 108 Eden Road. According to the Broad Run PA Well hydrogeologic report and comments submitted by the owner of the well, the well was indeed monitored during the long-term pumping test of the Broad Run PA Well and the data was presented in the hydrogeologic report. This monitoring well data was included as part of the analysis of the pumping test results. The pumping test discusses that this well is located in a different aquifer than the pumping well (Baltimore Gneiss aquifer). The well appears to have a low yield, due to normal use in the water dropping the water level over 20 feet. Low yields are indicative of the Baltimore Gneiss aquifer. The water level in the well during the pumping test

dropped approximately 5 feet and then recovered multiple times, but had a rising trend through the pumping test.

Brickhouse stated in their report that the well does not show any evidence of drawdown as a result of pumping from the Broad Run PA Well.

- 23) Several of the residents commented that AWC stated they would not be liable for any domestic well running dry during the test or in the future.

Response: In seeking residential wells to be included in the well monitoring network for the Broad Run PA Well pumping test, AWC sent out letters to residents within a half mile radius of the Broad Run PA Well to gain permission from the well owners to access their wells for monitoring purposes. The letters explicitly indicated that AWC is not responsible for any pre-existing conditions in owners' well. The relevant language from the letter is included below:

“...Before a level transducer is installed in the well, a bacteria test will be conducted on the well water by Artesian. Artesian will report the result of the bacteria test to Owners. In the event that the bacteria test is positive, Artesian is not responsible for disinfection of the well and will not install a level transducer in the Owners' well. If the bacteria test has negative results, Artesian will install a disinfected level transducer in Owners' well. The level transducer will remain in the well for the duration of the aquifer test, and will be removed once the test has been completed. Upon removal, Artesian will perform another bacteria test to ensure that the well was exposed to no bacterial contamination. Upon completion of the pump test and related report, Artesian will provide a copy of the test results to Owners. Owners acknowledge that in connection with the grant to Artesian of temporary access to the site, Artesian shall have the right to install, maintain, inspect, operate, repair and/or replace necessary components to monitor water levels at any and all reasonable times during the testing period. Artesian is not responsible for any preexisting conditions in Owners' well.”

The comments that AWC stated they would not be liable for any domestic well running dry during the test or in the future in their letter to residents appears to be a misinterpretation of the AWC letter.

- 24) Two residents commented that they do not agree with AWC's consultant that the cause of a significant drop in water level in their well during the long term pumping test of the Broad Run PA Well was due to a water leak in the house. They believe the drop in water level was due to the pumping of the Broad Run PA Well.

Response: Brickhouse Environmental, who was hired by Save Our Water, agreed that the pumping of the Broad Run PA Well did not affect the specific well. Brickhouse indicated that the water level in this well routinely falls below the depth of the transducer (approximately 25 feet). This well appears to respond weakly to barometric pressure and slowly to precipitation events. This was also stated by AWC's consultant in the hydrogeological report of the Broad Run PA Well. **See also Response III.B.22)**

- 25) A local resident commented that they are concerned that there could be an increase in the concentration of iron in the groundwater in the vicinity of the Broad Run PA Well after the well is in operation. They state that the iron content in their well, which they apparently monitor frequently, has increased significantly since the Broad Run PA Well pumping test.

Response: The laboratory analysis of groundwater sampled from the Broad Run PA Well during the Broad Run PA Well pumping test did not detect any iron. Furthermore, the commenters well is not completed in the same geologic formation as the pumping well, likely contains a differing geochemistry, and is up the hydraulic gradient. The commenter argues that as iron in the formation is exposed to air as a result of drawdown in the aquifer, iron becomes mobilized and may increase iron concentrations in groundwater. A neighboring well to the commenter monitored during the pumping test did not exhibit any water level drawdown as a result of pumping from the Broad Run PA Well. As no drawdown occurred locally, the aquifer was not exposed to air and should not be providing any additional iron to groundwater in the vicinity of the commenters well.

- 26) Kathy Thaeber of AWC commented that the number of customers that will be served by the Broad Run PA Well, 39 customers in Pennsylvania and 558 customers in Delaware. These customers are currently serviced by AWC. The Broad Run PA Well will provide a closer source of water and increase the overall systems reliability. A service area map was included.

Response: No Response required.

- 27) A local resident commented that the Commission Hearing should have been held in New Garden Township not Wilmington and not at 1:00 pm when people are working.

Response: The Commission public hearings are scheduled four times a year and are generally held at Washington Crossing state park in Pennsylvania as this is a central location in terms of the DRBC’s jurisdiction. Commission public hearings may include resolutions on the budget, its regulations and multiple draft dockets from all over the Basin. For example at this hearing a total of thirty-three (33) projects were heard covering all four (4) States. Commission hearings and meetings are generally during the day during business hours. Commission staff did attend a public information meeting on September 8, 2015 in Avondale, Chester County PA. That meeting was attended by over 200 individuals. The Commission did hold the September 15, 2015, public hearing in Wilmington, Delaware which was closer to the project site and on occasion has held separate public meetings on specific projects.

- 28) A local resident commented that the Public Hearing, followed by a vote the following day is wrong, the Commissioners should have more time to evaluate the facts presented.

Response: At the Business meeting on September 16, 2015, the Commission announced a new format for their Public Hearing and Business Meeting portions of the Commission Hearings. On a trial basis over the next year, starting with the November 10, 2015 Commission Hearing, the Public Hearing and Business Meeting will be held approximately one month apart instead of back to back days. While the vast majority of the draft dockets considered at Commission meetings receive minor or no comments, the Commissioners believe that the trial new format will afford the Commissioners and staff more time to thoroughly review and respond to the comments and concerns of interested parties.

- 29) Two residents commented that the water quality of the Broad Run PA Well could be affected by the water treatment plant located a mile away or that the pollution from industrial waste dumping at the former HP Star Road Site could potentially migrate into the aquifer as a result of pumping the Broad Run PA Well.

Response: Commission staff assume that the commenter is referring to the wastewater treatment plant spray field irrigation that occurs up-stream of the Broad Run PA Well. The laboratory analysis of groundwater sampled during the Broad Run PA Well pumping test did not indicate any water quality issues as a result of the spray field irrigation that has been historically discharging to the area or from the former HP Star Road Contamination Site. The HP Star Road Site groundwater remediation program is ongoing and includes pump and treat remediation and extensive groundwater sampling to monitor the contaminant plume and to prevent

contamination migration. The site is located over 1.8 miles from the Broad Run PA Well in the Glenarm Wissahickon Schist formation. The Broad Run PA Well is located in the Cockeysville Marble formation. The HP site and the Broad Run PA Well are separated by a pegmatite dike, a northeast-southwest trending thrust fault and mafic gneiss.

- 30) A local resident commented that there may be a delayed effect on the Broad Run from the pumping of the Broad Run PA Well, which could not be seen in the three (3) days of the pumping test.

Response: It is generally accepted practice to conduct a pump test over a three (3) day period. The results of the pumping test did not indicate that pumping at the Broad Run PA Well will impact Broad Run. See earlier comments and responses discussing additional monitoring and reporting requirements included in the draft docket.

- 31) Stephen E. Allaband, Chairman of the Board for New Garden Township, commented that the PADEP Public Water Supply Permit No. 1591509 for the Broad Run PA Well has a withdrawal limit of 75 gpm or 108,000 gpd.

Response: AWC will need to resolve any issues with the PADEP prior to putting the Broad Run PA Well into operation.

C. Response to Comments on the Monitoring Plan:

The revised draft docket includes a revised monitoring plan that requires additional testing and monitoring over a 9 month period prior to the initiation of water withdrawals from the Broad Run PA Well. The initial monitoring will provide baseline information over the typically drier season of the year where precipitation is lowest and evapo-transpiration is highest. The draft docket also includes phased increase in water withdrawal rates from the Broad Run PA Well with an associated monitoring program that will be continued over the various phased increases. This information will be analyzed to confirm the operation of the Broad Run PA Well will not adversely impact Broad Run or neighboring domestic supply wells and to approve additional incremental increases up to the draft docket allocation or require reductions in withdrawal rates. All of the information from the monitoring program will be available on the Commission's website and will be mailed to federal, state, and local governments.

- 1) Jan Bowers, P.G., Shane Morgan, Save Our Water, J. Denis Newbold, Ph.D., Representative Chris Ross, Suez Environmental – United Water Delaware and local residents commented that a downstream monitoring location should be added at Broad Run Road or in that vicinity.

Response: The Commission staff has reviewed the hydrogeological report submitted by AWC for the Broad Run PA Well pumping test and believe that monitoring at either the upstream or downstream location is satisfactory. However, given the expressed concerns AWC proposed to monitor a downstream location on Broad Run and Commission staff have included the downstream monitoring point in the monitoring plan.

- 2) Jan Bowers, P.G., J. Denis Newbold Ph.D., Save Our Water and many local residents commented that the duration for background and monitoring during the well operation should be conducted for a longer time period (1 month background and 1 year operational) and should be conducted during all seasonal conditions, including times of low flow in the Broad Run.

Response: Commission staff have revised the monitoring plan to require background monitoring to be conducted for a duration of nine months prior to pumping commencing from the Broad Run PA Well. The Executive Director of the DRBC must grant approval to begin pumping after the background monitoring is complete. Monitoring will continue during the phased increases in the withdrawal rate and all phased increases in the withdrawal rate also require the Executive Directors approval.

- 3) Shane Morgan, Save Our Water and J. Denis Newbold, Ph.D. commented on safeguards to prevent depletion of the stream water level of the Broad Run to the 7Q10 or below.

Response: The pumping test of the Broad Run PA well did not clearly indicate any impact on Broad Run. Pass-by flows or passing flows are conditions applied to water withdrawal approvals where an impact from a withdrawal on a stream or other waterbody is clearly evident. However, given the expressed concerns the Commission staff have include the following pumping phase in Condition C.II.1.iii.:

iii. Following the completion of the 9 month baseline monitoring program required in Condition C.II.1.i. above, the docket holder may apply for an increase in the withdrawal rate from the well in 50 gpm increments from 100 gpm to 150 gpm, and from 150 gpm to and 200 gpm on an annual basis. The requests shall be

in writing and shall include the demonstration required in the Plan. The Executive Director may approve phased water withdrawal increases up to the Broad Run PA Well allocation provided in this docket. Phased increases in water withdrawal amounts will occur only upon demonstration that the monitoring program does not indicate significant impacts to the stream or existing groundwater wells. The Executive Director may also deny requested increases or reduce the allowable withdrawal rate based on the results of the monitoring program or any other information that demonstrates that reductions are required to protect neighboring wells from adverse impacts or surface water flow in Broad Run.

- 4) J. Denis Newbold, Ph.D. commented that a discharge rating curve is needed for each monitoring site.

Response: The monitoring program requires AWC to prepare discharge rating curves at both stream monitoring points on Broad Run.

- 5) Save Our Water, Suez Environmental – United Water Delaware and a few local residents comments that the monitoring plan should contain trigger points where the pumping at the Broad Run PA Well would be reduced or even halted when the stream levels are lowered.

Response: See Response III.C.3) In addition, Commission staff have determined that while the long-term pumping test of Broad Run PA well did not indicate that adverse impacts will occur to the local hydrologic system as a result of pumping, increasing the withdrawal rates of the well over time will confirm there will not be adverse impacts to the Broad Run hydrologic system over increasing pumping rates. Phase 1 will last approximately 6 months at a pumping rate of 100 gpm. Phase 2 will last approximately from months 6 to 12 at a pumping rate of 150 gpm. The final phase will increase the pumping rate to 200 gpm, which was the pumping rate originally requested by AWC. Each Phase shall continue until approval to increase the pumping rate from the Executive Director is finalized.

The Executive Director may halt withdrawals at a certain rate or roll back to a previous withdrawal rate at any time if review of the hydrologic data and/or any other information indicates such action is necessary or appropriate.

- 6) Commenters indicated that that the annual monitoring reports and data should be available to New Garden Township.

Response: The monitoring reports will be posted on the Commission website. In addition, Docket Condition C.II.I.iv requires the monitoring reports to be mailed directly to the New Garden Township.

D. Comments during the November 10, 2015 Public Hearing

- 1) Don Vymazal representing Senator Dinniman commented that Senator Dinniman wants all the comments from Save Our Water, Stroud Water Research Center and the CCWRA to be taken into consideration for the Docket; specifically the water withdrawal amounts and a starting point for the phased in monitoring plan in terms of a more robust monitoring plan. Also the monitoring data should be evaluated by a third party organization.

Response: The comments from Save Our Water that suggest starting pumping at a lower rate than 100 gpm are somewhat in conflict with other concerned parties such as Denis Newbold, Shane Morgan, Gerry Kauffman, and Jan Bowers that have commented on the project and are agreeable to starting pumping at 100 gpm. They have also supported AWC's request to omit the 150 gpm pumping phase in favor of running the 200 gpm phase for a period of 24 months as it would be easier to detect any changes in stream flow. Commission staff have reviewed all comments submitted on the project and have taken them into careful consideration with respect to drafting the docket. Commission staff believe that the docket as presented and the associated monitoring program is responsive to the comments and provides for adequate protection of the water resources in the area of the Broad Run PA Well. Docket Condition C.II.I.iv requires that the quarterly data reports and demonstration reports be mailed directly to the PADEP, DNREC, New Garden Township and the CCWRA. Additionally, the reports will be made available on the Commission's website so third party organizations such as Save Our Water will have access and can review the monitoring data. **See also Response III.D.5)**

- 2) Don Vymazal representing Senator Dinniman commented that Senator Dinniman wants the Commission to take time to address all the comments from the residents.

Response: The Commission has reviewed all comments received and has taken them into consideration with respect to the docket. This comment and response document memorializes that all comments submitted on the project have been considered.

- 3) Marion Waggoner from Save Our Water commented that he wants AWC to be responsible for impacts on any wells in the vicinity of the Broad Run PA Well after the well owner first verifies with a licensed contractor or plumber or water supply specialist that the home water system is working properly and that the reason for the problem of the well is as a result of lowering the water level in the well. He also requests that DRBC define the zone of influence from the Broad

Run PA Well so that claims of interference aren't being made by owners of wells who are not located within a reasonable distance from the pumping well.

Response: See Response III.B.12). Additionally, during the Broad Run PA pumping test, influence on neighboring wells was only apparent in one well; 976 Broad Run Road. This well is located approximately 325 feet away from the Broad Run PA Well. There was no influence from pumping detected in the water level data collected at neither 108 Eden Road located 910 feet away from the pumping well nor 1025 Broad Run Road located approximately 1,315 feet from the pumping well. It is likely that the zone of influence lies somewhere between 325 feet and 910 feet from the pumping well. The zone of influence distance is not specified in the interference condition in the docket (Condition C.II.s) as it is difficult to presume from only a representative number of wells monitored during the pumping test, the exact distance from the pumping well at which any interference may take place. The Commission prefers to handle interference issues and determinations of whether or not a well is impacted or could have possibly been impacted on a case by case basis to account for any unforeseen or unexpected interference situation.

- 4) Marion Waggoner from Save Our Water commented that he wants a 24 hour Hotline for impacted wells and that AWC should have 24 hours to supply water to any residences that are impacted.

Response: Commission staff have reviewed the Hydrogeological Report for the Broad Run PA Well, the Brickhouse Environmental analysis and interpretation of the Hydrogeological Report, and the GWA rebuttal. While there are differing, well supported arguments and interpretations of the data from the 72-hour Broad Run PA Well pumping test, AWC, Brickhouse, and Commission staff agree that drawdown as a result of pumping in the Broad Run PA Well was only detected in one well (976 Broad Run Road). The drawdown was minimal (approximately 0.3 feet). No drawdown was detected in any of the other neighboring wells that were monitored. Pumping well, piezometer and potentially neighboring well water levels will be monitored throughout the monitoring program. Commission staff will be aware of excessive increases in drawdown occurring in the vicinity of the pumping well. Commission staff still contend that there should not be any adverse impacts to neighboring wells as a result of pumping from the Broad Run PA Well. As such, staff do not believe that a 24-hour hotline is necessary.

- 5) David Yake of Save Our Water recommends that the Commission put a 40,000 gpd (28 gpm) limit on the withdrawals of the Broad Run PA Well and increase the limit by 50,000 gpd (35 gpm) each year until 288,000 gpd (200 gpm) is reached. The commenter also requested that a limit of 80,000 gpd should be imposed until the

PAPUC approves AWC's request for an increase in their service area in New Garden Township.

Response: The rate of 28 gpm is very low and in fact it is below the Commission's water withdrawal review threshold of 100,000 gpd on average over any consecutive 30-day period (approximately 70 gpm). A withdrawal of groundwater at this rate would no longer require Commission review and approval. Considering the minimal amount of drawdown apparent during the pumping test (approximately 7 feet) and the high hydraulic conductivity and presumably, the large amount of storage available in the saprolite, it would be unlikely that any impact to Broad Run would be observed at this low of a pumping rate. Commission staff believe that beginning at a higher rate is better to detect any impact early in the monitoring period and then the pumping rate could be reduced from that point. Furthermore, other concerned parties such as Denis Newbold, Shane Morgan, Gerry Kauffman, and Jan Bowers that have commented on the project are agreeable to starting pumping at 100 gpm and they have also supported AWC's request to omit the 150 gpm pumping phase in favor of running the 200 gpm phase for a period of 24 months as it would be easier to detect any changes in stream flow. **See also Response III.B.1) and 2)**

- 6) David Yake of Save Our Water recommends that the Commission define a significant impact to the Broad Run in the docket to be equal to the 7Q10 or worse.

Response: See Response III.C.3) and 5) Additionally, AWC intends to compare stream flow measured at Broad Run with comparable data collected from USGS gaging sites in similar watersheds to determine if adverse impacts are occurring to Broad Run and to demonstrate that the pumping phase can be increased if there are no adverse impacts detected. The DRBC attempts to maintain 7Q10 flow in streams to maintain the streams assimilative capacity as well to ensure there is water available to the local biological community. DRBC does consider withdrawals that reduce stream flows to 7Q10 or less as being adverse and pumping rates will be reduced to prevent this from occurring. This occurrence of course must be demonstrated with the appropriate data that indicates such an impact.

- 7) David Yake of Save Our Water recommends that additional monitoring points upstream are added to the monitoring network.

Response: The Commission believes the monitoring locations detailed in the monitoring plan associated with docket are sufficient to provide the data necessary

to confirm the Broad Run PA Well will not have any impacts on Broad Run or wells in the vicinity of the pumping well.

- 8) David Yake of Save Our Water recommends that a third party collaborates with AWC to analyze the monitoring plan data objectively.

Response: Docket Condition C.II.I.iv requires the monitoring reports to be mailed directly to the PADEP, DNREC, New Garden Township and the CCWRA. The data will also be made available on the Commission’s website so third party organizations such as Save Our Water will have access and can review the monitoring data.

- 9) John Thaeber of AWC commented that the monitoring plan is very rigorous and a little overkill.

Response: The additional monitoring included in the revised monitoring plan will be analyzed to confirm that the withdrawals from the Broad Run PA Well will not affect Broad Run or domestic wells in the vicinity of the pumping well.

- 10) John Thaeber of AWC stated that there has been no evidence of any impacts on the stream or domestic wells in all the tests conducted, including the microscopic particulate analysis.

Response: In general, Commission staff agree with this assertion, but have required on going groundwater and surface water monitoring and phased increases in the allowable withdrawal rate of the well along with analysis of that data to confirm this.

E. Written Comments Received during the Comment Period from October 26, 2015 to November 12, 2015.

- 1) Save Our Water submitted written comments which were largely summarized in their testimony given by David Yake at the November 10, 2015 Commission Hearing. Those comments were addressed in **Responses III.D. 5), 6), 7), and 8)**, above. Additional comments contained in his written submission included; prescribing the type of instrument to be used and how it is to be used for flow monitoring, suggesting that flow measurements not be conducted immediately after rainfall/precipitation events, and providing flow monitoring location recommendations for the best flow monitoring results that reduce to the greatest extent any error in measurement. The commenter also provided the results of Save Our Water’s independent flow monitoring data and analysis of Broad Run collected at Newark Road and Broad Run Road.

Response: Commission staff commend Save Our Water on the independent analysis that they have undertaken and provided in their comments on the project. Regarding their comments, Commission staff believe that a Marsh McBirney FloMate or similar electronic instrument are acceptable instruments to use for flow monitoring purposes and agree that with these instruments, multiple measurements should be made and averaged to maximize the accuracy of the flow measurement at each flow measurement location along the transect. Measurement of flow should be made at 60 percent of the total depth of the stream below the water surface as this is a standard practice. The float measurement option will be removed from the monitoring program as an option for flow measurement due to its inaccuracy. As base flows in Broad Run are the most important flows to measure in ascertaining the effect of pumping the Broad Run PA Well have on Broad Run, measurements of flow in Broad Run shall not be taken within 72 hours after precipitation events.

- 2) A local resident commented that the actual duration of the initial monitoring period should be contingent upon the acquisition of historical normal precipitation and should be extended in the event of abnormal rainfall amounts.

Response: The requirement for background monitoring as stated in Condition C.II.1.i. of Docket No. D-2002-034 CP-4, is as follows:

- i. Prior to the initiation of water withdrawal from the Broad Run PA Well the docket holder will shall conduct a 9- months of background monitoring program in accordance with the attached Program. Water withdrawal from the Broad Well Run PA Well will only be initiated after the 9 months of baseline data collection and receiving the written approval of the Executive Director.*

As the condition requires the Executive Director’s approval to commence pumping after the background monitoring period, Commission staff will have the opportunity to review the background data to determine if an inordinate amount of precipitation occurred during the monitoring period and may require that the background monitoring period be extended. The background monitoring will continue pending the approval or denial of the Executive Director to move on to the next phase in the monitoring plan.

- 3) Senator Andrew Dinniman, Pennsylvania State Senator, recommends a third party organizations (such as CWWRA or Save Our Water) are used to review and evaluate the monitoring plan data. Also, a local resident commented that an independent third party should be responsible for collecting and documenting the monitoring data.

Response: See **Response III.B.16**); however, as explained in **Response III.C.6**), the monitoring reports will be posted on the Commission website. In addition, Docket Condition C.II.1.iv requires the monitoring reports to be mailed directly to the PADEP, DNREC, New Garden Township and the CCWRA. The data will also

be posted on the Commission’s website so third party organizations such as Save Our Water will have access and can review the monitoring data.

- 4) Jan Bowers, P.G. of the CCWRA submitted comments regarding modifying language in three specific locations in the docket.
 - i. C. Decision II.I.iii first sentence (Page 19) – remove *9 month baseline* and replace with *Phase I* to be consistent with table on page 25.
 - ii. Section 5 2nd Paragraph, 5th Sentence (Page 24) – Add the following phrase: that there are no significant
 - iii. Monitoring Program Table (Page 25) Change Language in Line 1, column 2 of the table to read: 9 months beginning after docket approval date.

Response: The Commission does not see the need to make the change requested in **i)** as the background monitoring period is referred to as “Pre-Pumping” not as “Phase 1”. *Pre-Pumping* will be used instead. Comment **ii)** has been incorporated into the docket. Comment **iii)** has been incorporated into the docket.

- 5) Senator Andrew Dinniman, Pennsylvania State Senator and a local resident commented that the groundwater withdrawn from the Broad Run PA well should serve the residents of Pennsylvania, especially New Garden Township, Chester County and should not be shipped to Delaware or Maryland.

Response: See Response III.B.11)

- 6) A local resident commented that since AWC states they need the additional water from the Broad Run PA Well for reliability and not for supply, AWC should just purchase additional water from the Chester Water Authority. Also AWC still has not applied to New Garden Township for a required zoning change of the property the Broad Run PA Well is located.

Response: See Response III.B.1) and 2)

- 7) Senator Andrew Dinniman, Pennsylvania State Senator, commented that AWC needs to clarify/expand the number of methods used, devices utilized to collect data and collection points.

Response: See Response III.E.1)

- 8) Senator Andrew Dinniman, Pennsylvania State Senator, commented that AWC has to change their practice of limited liability during monitoring to increase the total number of monitoring locations.

Response: See Response III.B.23)

- 9) John Thaefer of AWC submitted comments requesting changes to the docket. The requested changes are as follows:
- i. The Executive Director also has the authority to reduce monitoring requirements if no impact is observed after the Broad Run PA Well has been operating at 200 gpm for a year. (Page 19)
 - ii. Modify Condition II.s. to say a licensed engineer qualified in water resource engineering or geo-hydrology. (Page 21)
 - iii. AWC is in agreement with White Clay Creek Committee to modify the Stream Gauging section of the monitoring plan to have low flow measurements to be collected with an electronic meter rather than an averaged flow velocity-type measurements. (Page 23)
 - iv. AWC is in agreement with White Clay Creek Committee to modify the Pre-Pumping period to be June 1 to October 15 instead of April to September. (Page 25)
 - v. AWC is in agreement with White Clay Creek Committee to modify the Phase Two pumping regime from 150 gpm to 200 gpm. (Page 25)

Response: i) The monitoring in the monitoring program is required for a minimum period of 5 years; ii) This change has been incorporated in the docket; iii) This change has been incorporated in the monitoring plan; iv) This change is incorporated in the draft docket and monitoring plan; v) This change has not been incorporated into the docket.

- 10) Shane Morgan of White Clay Creek National Wild & Scenic River requested that the following criteria be incorporated into the draft docket:
- i. Define the methodology used to determine what is considered to be a “significant impact” from pumping on stream flow, and how it will be applied to protect low flows.
 - ii. Clarify the action that would be taken should a significant impact from pumping be detected.

- iii. Change the low flow period (i.e., the period that must be included in the pre-pumping phase) from “April to September” to “June 1 to October 15”.
- iv. Require use of a velocity meter (such as an electromagnetic meter) rated for use in water less than three inches in depth.
- v. Require pre-pumping monitoring and flow relationships to be developed in a manner that appropriately quantifies the “natural” low flow regime for comparison to low flows during pumping.
- vi. Change phased in pumping regime Phase Two from 150 gpm to 200 gpm so that it will be easier to detect if there is an impact to stream flow, and extend the duration of Phase Two monitoring to a minimum of 24 months..
- vii. Revise manual flow measurement times to include weekly measurements between July 1 and October 15 (to capture minimum flow) in the first year of monitoring (pre-pumping); biweekly measurements during June 1 – October 15 of year 2 (phase 1 of pumping). Years 3-5 of monitoring can remain unchanged.
- viii. Briefly explain the rationale for the 200 gpm pumping rate.

Response: **i) See Responses III.C.3) and 5) and III.D.6);** additionally, the Commission does not want to be overly prescriptive in this matter to allow the professional preparing the assessment to utilize any available tool at their disposal; **ii) Condition C.II.1. of the docket clarifies the action to be taken as the interference condition also applies to surface water and groundwater interferences even in the absence of a use or user; iii) This change has been incorporated into the docket and monitoring plan; iv) This change has been incorporated in the monitoring plan as “... a more appropriate instrument may be required for water depths of less than 3 inches such as a SonTec FlowTracker Handheld ADV or equivalent instrument”;** **v) See Response III.D.6)** Additionally, this request has not been incorporated in the docket, but the professional preparing the quarterly data and demonstration reports has been made aware that this will be expected as part of the review of those reports and determinations of whether to increase the allowable rate of pumping from the Broad Run PA Well; **vi) This change has not been incorporated into the docket or monitoring plan; vii) weekly manual velocity measurements between July 1 and October 15 (to capture minimum flow) in the first year of monitoring (pre-pumping) has been included in the monitoring plan viii) See Response III.B.2)** Additionally, the applicant is seeking to include a source within

their system that provides additional reliability to their system. They have chosen a pumping rate that the pumping well can reliably supply will being protective of the groundwater resource.

Attachment 1

WRITTEN COMMENTS AS OF SEPTEMBER 30, 2015			
	Commenter	Organization	Correspondence and Date Received
1.	Barry Crozier, David Doyen, David Yake, Jane Waggoner and Marion Waggoner	Save Our Water	Brickhouse Summary Report December 22, 2014
2.	J. Denis Newbold, Ph.D.	Resident formerly affiliated with Stroud Water Research Center	Letter Review of Application February 18, 2015
3.	Jan Bowers, P.G.	Chester County Water Resources Authority	Letter January 23, 2015
4.	Julia Bell	National Park Service	Email January 5, 2015
5.	Shane Morgan	White Clay Creek Wild and Scenic River Program	Letter January 20, 2015
6.	J. Denis Newbold, Ph.D.	Local Resident formerly affiliated with Stroud Water Research Center	Letter August 24, 2015
7.	Shane Morgan	White Clay Creek Wild and Scenic River Program	Email September 3, 2015
8.	Barry A. Crozier	Save Our Water	Letter to Governor Markell September 4, 2015
9.	Barry Crozier, David Doyen, David Yake, Jane Waggoner and Marion Waggoner	Save Our Water	Letter May 27, 2015
10.	Jan Bowers, P.G.	Chester County Water Resources Authority	Email August 24, 2015
11.	Virginia Noblit	Local Resident	Email September 10, 2015
12.	Pamella S. Hennigan	Local Resident	Email September 10, 2015
13.	Ed and Cathy Cotter	Local Resident	Email September 10, 2015
14.	Diane Murray	Local Resident	Email September 10, 2015
15.	Connie Eash	Local Resident	Email September 9, 2015
16.	Sara Korol	Local Resident	Email September 9, 2015

WRITTEN COMMENTS AS OF SEPTEMBER 30, 2015			
	Commenter	Organization	Correspondence and Date Received
17.	Dr. Joseph P. Sitarik	Local Resident	Email September 9, 2015
18.	Rodney Yoder	Local Resident	Email September 8, 2015
19.	Ellen and Donald Scavia	Local Residents	Email and Letter September 2, 2015
20.	Stacie Beck	Local Resident	Email September 10, 2015
21.	David J. Bartlett Sr.	Local Resident	Hand Delivered Letter September 8, 2015
22.	Richard Fischer	Local Resident	Email September 10, 2015
23.	Barbara Palladino	Local Resident	Email September 10, 2015
24.	Neil Oberter	Local Resident	Email September 10, 2015
25.	James R. Thompson	Local Resident	Letter August 24, 2015
26.	David Yake and Marrion Waggoner	Save Our Water	Email – Upgraded Monitoring Proposal September 12, 2015
27.	Mark and Barbara Schroeder	Local Residents	Email September 11, 2015
28.	Hendrik-Jan Francke	Local Resident	Email September 14, 2015
29.	Nicholas C. Lutwyche	Local Resident	Email September 14, 2015
30.	Mary Miller	Local Resident	Email September 14, 2015
31.	Daniel Grochulski	Local Resident	Email September 14, 2015
32.	David L. Hill Sr.	Local Resident	Email September 14, 2015
33.	Sandi Manfredi	Local Resident	Email September 14, 2015
34.	Diane Gray	Local Resident	Email September 14, 2015

WRITTEN COMMENTS AS OF SEPTEMBER 30, 2015			
	Commenter	Organization	Correspondence and Date Received
35.	Gwendolyn M. Lacy Esq.	Local Resident, Executive Director, The Land Conservancy of Southern Chester County; Member of London Britain Twp. Zoning Board	Email September 14, 2015
36.	Thomas K. and Monica Quann	Local Residents	Email September 14, 2015
37.	Sue and Jim Byham	Local Residents	Email September 14, 2015
38.	Herbert T. Conner	Local Resident	Email September 13, 2015
39.	Melanie Ryan	Local Resident	Email September 12, 2015
40.	Barry A. Crozier, CPA, CGMA	Local Resident	Email September 12, 2015
41.	John M. Coe	Local Resident	Email September 14, 2015
42.	Mark and Nancy Rowan	Local Residents	Email September 14, 2015
43.	John Henderson	Local Resident	Email September 14, 2015
44.	William H. and Lydia Akerman	Local Residents	Email September 12, 2015
45.	Anthony Vietri	Local Resident	Email September 14, 2015
46.	Hugh J. Lofting	Local Resident	Email September 14, 2015
47.	Marion Waggoner	Save our Water	Email September 14, 2015
48.	Amy Haskins	Local Resident	Email September 14, 2015
49.	Robert and Linda Cook	Local Residents	Email September 14, 2015
50.	Douglas and Mary Beth French	Local Residents	Email September 14, 2015
51.	Linda M. Rector	Local Resident	Email September 14, 2015
52.	Eileen Oberter	Local Resident	Email September 14, 2015

WRITTEN COMMENTS AS OF SEPTEMBER 30, 2015			
	Commenter	Organization	Correspondence and Date Received
53.	Donald Y. Needham	Mushroom Farmers of Pennsylvania	Email September 14, 2015
54.	Gerald Auman, VMD	Local Resident	Email September 12, 2015
55.	William H. Wells	Local Resident	Email September 12, 2015
56.	April M. Schmitt	Local Resident	Email September 11, 2015
57.	Joanna Grochulska	Local Resident	Email September 11, 2015
58.	John R. and M. Carol Starzmann	Local Residents	Email September 11, 2015
59.	Chris Ross	House of Representatives Commonwealth of Pennsylvania	Email September 11, 2015
60.	Claire Mickletz	Local Resident	Email September 11, 2015
61.	Robert and Loretta Gravatt	Local Residents	Email September 11, 2015
62.	Charles and Lou Ann Carroll	Local Resident	Email September 11, 2015
63.	Rosamond L. du Pont	Local Resident	Email September 10, 2015
64.	Lloyd Tarkington	Local Resident	Email September 14, 2015
65.	Alma Forsyth	Chester County League of Women Voters	Email September 14, 2015
66.	Blair Fleischmann	Local Resident	Email September 14, 2015
67.	Glenn G. Cote	Laurel Valley Farms	Email September 14, 2015
68.	Carol and Scott Mc Kently	Local Residents	Email September 14, 2015
69.	Doris Howell	Mayor of Avondale Borough	Email September 14, 2015
70.	Pete Demicco	Groundwater Associates, LLC	Email September 14, 2015
71.	Kathy Thaeber	Artesian Water Company	Hydrogeological Report Addendum February 10, 2015

WRITTEN COMMENTS AS OF SEPTEMBER 30, 2015			
	Commenter	Organization	Correspondence and Date Received
72.	Bonnie Keen	Local Resident	Email September 14, 2015
73.	The Frazer Family (Lindsey and Rob)	Local Residents	Email September 14, 2015
74.	Marquerite Stabosz	Local Resident	Email September 14, 2015
75.	Dave Hilyard	Local Resident	Email September 14, 2015
76.	Lynn Zbranak	Local Resident	Email September 15, 2015
77.	Senator David P. Sokola	Delaware State Senate	Letter September 14, 2015
78.	Billy and Peggy Channell	Local Resident	Email September 21, 2015
79.	Mr. and Mrs. Richard Fuller	Local Residents	Email September 15, 2015
80.	John Kuhn	Local Resident	Email September 15, 2015
81.	Leanne and Randall Renneisen	Local Residents	Email September 15, 2015
82.	Eric G. Dunlap	Kaolin Mushroom Farms	Email September 22, 2015
83.	Clint Blackwell	CJ Mushroom Company, LLC	Email September 23, 2015
84.	Richard D. Forte, Jr.	New Garden Fresh, Inc.	Email Letter September 28, 2015
85.	Henry J. Ciarrocchi, Jr.	CNB Mushroom, LLC	Email Letter September 22, 2015
86.	Robert Cantarera	John C. Leo & Son, LLC	Email Letter September 27, 2015
87.	Ken Davis Mushroom Farms	Ken Davis Mushroom Farms	Email Letter September 25, 2015
88.	Stephen E. Allaband	Chairman Board of Supervisors, New Garden Township	Email Letter September 29, 2015
89.	William Steller, CFO	Phillips Mushroom Farms	Email September 29, 2015
90.	Edward A. Leo, CEO	Country Fresh Mushroom Company	Email Letter September 29, 2015
91.	Kathy Thaeber	Artesian Water Company	Email Letter September 29, 2015

WRITTEN COMMENTS AS OF SEPTEMBER 30, 2015			
	Commenter	Organization	Correspondence and Date Received
92.	Larry Finnicum	Suez Environmental – United Water Delaware	Email Letter September 30, 2015
93.	Peter Demicco, P.G.	Ground Water Associates, LLC (Artesian’s Consultant)	Email Letter September 30, 2015
94.	Eric J. Baker	Local Resident	Email September 30, 2015
95.	Stephen Niemoeller	Local Resident	Email September 30, 2015
96.	Larry C. Cooper	Local Resident	Email September 30, 2015
97.	Gary and Roberta Bell	Local Residents	Email September 30, 2015
98.	Patricia Whetham	Local Resident	Email September 30, 2015
99.	Beth Shapiro	Local Resident	Email September 30, 2015
100.	Karly A. Laughlin	Local Resident	Email September 29, 2015
101.	Allison Thomas	Local Resident	Email September 30, 2015
102.	Donald Holton	Local Resident	Email September 23, 2015
103.	Tara and Joe DiGiacomo	Local Residents	Email September 23, 2015
104.	Chris Alonzo	Pietro Industries, Inc.	Email Letter September 23, 2015
105.	Allison and Brian Tester	Local Residents	Email September 23, 2015
106.	Paul Pusecker	Local Resident	Email September 22, 2015
107.	Kathleen Pusecker	Local Resident	Email September 22, 2015
108.	Jeffrey B. Hutchinson	Save Our Water Committee Member	Email September 18, 2015
109.	Raymond Chorba	Local Resident	Email September 21, 2015
110.	Joan Waysrun	Local Resident	Email September 29, 2015
111.	Dawn Romanczak	Local Resident	Email September 21, 2015

WRITTEN COMMENTS AS OF SEPTEMBER 30, 2015			
	Commenter	Organization	Correspondence and Date Received
112.	Randall Lieberman	Landenberg Church	Email Letter September 28, 2015
113.	Henry J. Ciarrocchi, Jr.	Sharp Road Peat Moss, Inc.	Email Letter September 25, 2015
114.	William F. Ward	Local Resident	Email September 25, 2015
115.	Michael J. Basciani	Basciani Foods, Inc.	Email September 30, 2015
116.	Bill and Beth Skalish	Granite Tech, Inc.	Email September 21, 2015
117.	Bill Holck	Local Resident	Email September 16, 2015
118.	John and Darelle Riabov	Local Residents	Email September 13, 2015
119.	Kathleen B. Thaeder	Artesian Water Company	Monitoring Letter to Mr. and Mrs. Riabov September 19, 2015
120.	John R. Starzmann	Local Resident	Email of Statement at Commission Hearing September 15, 2015
121.	W. Boulton Alexander	Local Resident	Email September 15, 2015
122.	Michael Zbranak	Local Resident	Email September 15, 2015
123.	Stephen Allaband	Chairman of Board of Supervisors New Garden Township	Email September 15, 2015
124.	Carol Buckwalter	Local Resident	Email September 15, 2015
125.	Diane Kedash	Local Resident	Email September 15, 2015
126.	David Kedash	Local Resident	Email September 15, 2015
127.	Gail Bobish	Local Resident	Email September 21, 2015
128.	Joe Loyd	Local Resident	Email September 18, 2015
129.	John Jobes	Local Resident	Email September 19, 2015

WRITTEN COMMENTS AS OF SEPTEMBER 30, 2015			
	Commenter	Organization	Correspondence and Date Received
130.	Alan and Rose Levin	Local Residents	Email September 18, 2015
131.	Kathleen Wheatley	Local Resident University of Delaware	Email September 18, 2015
132.	Michael Wright	Local Resident	Email September 18, 2015
133.	Elizabeth Bridges	Local Resident	Email September 18, 2015
134.	Deborah J. Rigler	Local Resident	Email September 13, 2015
135.	Teri Dignazio	Local Resident	Email September 14, 2015
136.	Patricia Allen	Local Resident	Email September 14, 2015
137.	Robert C. Fromuth and Michelle M. Wolfe	Local Residents	Email September 14, 2015
138.	William and Susan Emmons	Local Residents	Email September 21, 2015
139.	Daniel Hofer	Local Resident	Email September 20, 2015
140.	Judy Doyen	Local Resident	Email September 11, 2015
141.	David Doyen	Local Resident	Email September 11, 2015
142.	Sylvia Gosztonyi	Local Resident	Email September 11, 2015
143.	Kent A. Laughlin	Local Resident	Email September 10, 2015
144.	Sharon E. McCann	Local Resident	Email September 11, 2015
145.	John L. Thomas	Local Resident	Email Handwritten Letter September 12, 2015
146.	Thomas S. MacAulay	Local Resident	Email September 13, 2015
147.	Freda Gates	Local Resident	Email September 10, 2015
148.	Scott Murray	Local Resident	Email September 10, 2015

WRITTEN COMMENTS AS OF SEPTEMBER 30, 2015			
	Commenter	Organization	Correspondence and Date Received
149.	Robert Calehuff	Local Resident	Email September 10, 2015
150.	Joseph S. Kowalski Jr.	Local Resident	Email September 10, 2015
151.	Cheryl Kirk	Local Resident	Email September 10, 2015
152.	Ken and Melisse Tonge	Local Resident	Email September 9, 2015
153.	Tracy Merges	Local Resident	Email September 9, 2015
154.	Russell Hertler	Local Resident	Email September 9, 2015
155.	Jim Russell	Local Resident	Email September 9, 2015
156.	Seung Ah Byun	Brandywine Conservancy	Letter to PUC December 22, 2014

Attachment 2

ORAL COMMENTS FROM SEPTEMBER 15, 2015 COMMISSION HEARING		
	Commenter	Organization
1.	Senator Andrew Dinniman	Pennsylvania Senator for Chester County
2.	Steven Allaband	New Garden Township
3.	Marion Waggoner	Save Our Water
4.	Jane Waggoner	Save Our Water
5.	David Yake	Save Our Water
6.	John and Darelle Riabov	Local Residents
7.	Connie Eash	Local Resident
8.	Richard Geer	Local Resident
9.	Patricia Whetham	Local Resident
10.	J. Denis Newbold, Ph.D.	Local Resident formerly affiliated with Stroud Water Research Center
11.	Carol Buckwalter	Local Resident
12.	John and Carol Starzmann	Local Resident
13.	Alma Forsyth	Chester County League of Women Voters
14.	Jan Bowers, P.G.	Chester County Water Resources Authority
15.	Aileen Parrish	Board of Supervisors for New London Township
16.	David Bartlett	Resident
17.	Herbert Connor	Resident
18.	Jack Schreppler	Artesian Water Company
19.	Kathy Thaeber	Artesian Water Company
20.	Peter Demicco, P.G.	Ground Water Associates, LLC (Artesian's Consultant)
21.	John Thaeber	Artesian Water Company

Attachment 3

WRITTEN COMMENTS RECEIVED BETWEEN SEPTEMBER 30, 2015 AND NOVEMBER 12, 2015			
	Commenter	Organization	Correspondence and Date Received
1.	Senator Andrew Dinniman	Pennsylvania Senator for Chester County	Letter November 5, 2015
2.	David Yake	Save Our Water	Email November 11, 2015
3.	John R. Starzmann	Local Resident	Email November 12, 2015
4.	Jan Bowers, P.G.	Chester County Water Resources Authority	Email Letter November 10, 2015
5.	Mark and Barbara Schroeder	Residents	Email November 8, 2015
6.	John Thaeber	Artesian Water Company	Email Letter November 12, 2015

ORAL COMMENTS RECEIVED AT NOVEMBER 10, 2015 PUBLIC HEARING			
	Commenter	Organization	Correspondence and Date Received
1.	Senator Andrew Dinniman	Pennsylvania Senator for Chester County	Letter November 5, 2015
2.	David Yake	Save Our Water	Email November 11, 2015
4.	Marion Waggonner	Residents	Email November 8, 2015
5.	John Thaeber	Artesian Water Company	Email Letter November 12, 2015