



**HILL ENVIRONMENTAL GROUP, INC.**  
*Environmental & Engineering Services*

Pennington Borough  
Planning & Zoning Board  
30 N. Main St.  
Pennington, NJ 08534

October 20, 2005

Attention: Mr. Winn Thompson, Chairman

Re: Bristol-Myers Squibb Future Water Use  
Potential for Impacts to Borough Water Supply

Dear Mr. Thompson:

As described in our October 7, 2005 proposal to the Borough, Hill Environmental Group, Inc. (HILL) has reviewed various documents and had discussions with Ms. Amy Lanterman of Bristol-Myers Squibb (BMS). This work is in regard to the potential for future BMS water use to impact the Borough of Pennington's water supply (which is 100% derived from groundwater).

The following documents were supplied by you, and reviewed:

- Letter report to the Hopewell Township Planning Board (dated September 27, 2005), prepared by Matthew Mulhall, P.G. of M<sup>2</sup> Associates, Inc.
- A December 1, 2000 letter from Killam Associates to the Borough (prepared by Robert Starcher, PhD, P.G.) regarding possible water impacts on the Borough resulting from BMS expansion.
- Section 5 of the BMS "Site Master Plan 2005 – 2025" which is entitled "Meeting Water Needs."

The M<sup>2</sup> letter report includes a review of water levels in BMS pumping and observation wells and a review of "Water Diversion and Monitoring Results Forms." The most significant conclusions from the letter report (paraphrased) are:

- Water levels in observation wells are relatively consistent, and do not indicate declining groundwater levels or adverse impacts to the aquifer system.
- The median volume of water pumped was 3.18 million gallons per month (mgm), less than the 5.0 mgm allocated by the NJDEP. BMS appears to have additional capacity in its groundwater pumping operations.

The Killam letter report included a review of documents that were relevant to the issue of potential impacts of BMS water use on the Borough water supply. The most significant conclusions from the letter report (paraphrased) are:

- Any BMS impacts to the Pennington wells will not be critical as long as there is water flowing in Stony Brook.
- An earlier report (prepared by Malcolm Pirnie for Mobil Corporation) overestimates the impact of BMS (then Mobil) on Pennington Well #5 (the well closest to the BMS facility). This opinion coincides with a conclusion from an 2000 M<sup>2</sup> report reviewed by Killam.

Section 5 of the BMS Site Master Plan does not contain any details concerning future water usage; rather it is a strategy document that presents potential approaches to meeting unspecified future water needs. Although obtaining a tie-in to a public supply (not Pennington's) is mentioned, the document focuses on the following approaches:

- Continued pumping from the facilities' three wells,
- Use of on-site surface (pond) water
- Reclaiming (i.e., recycling) water
- Water conservation

The document states that the use of "on-campus" water resources (combined with water reclaiming and water conservation) will be able to meet future BMS water needs.

In addition, I spoke with Ms. Amy Lanterman, the environmental, health and safety watershed manager for the BMS Hopewell facility. She informed me of the following:

- The current water use allocation for the facility is 72 million gallons per year (mgpy). This allocation includes 60 mgpy for groundwater and 12 mgpy for surface water (the on-site pond).
- An increased water allocation (to 90 mgpy) has been proposed to the NJDEP. The groundwater allocation will remain the same (60 mgpy); the additional 18 mgpy is proposed surface water withdrawals.
- An additional 60 mgpy of future demand can probably be met by water reclaiming. The total water usage of 150 mgpy will meet the maximum projected BMS water needs through the year 2025.
- The BMS semi-annual monitoring reports (which include water levels in observation wells) are sent to the Borough Clerk).

From the Borough's perspective, the following facts/conclusions are most important:

- BMS will not increase it's groundwater allocation from current levels.
- Groundwater levels measured in BMS observation wells have remained relatively constant over the prior 2+ years.



- It has been concluded by qualified independent consultants (i.e., Matthew Mulhall of M<sup>2</sup> and Robert Starcher of Killam) that, based on detailed hydrogeologic analyses, BMS water usage is unlikely to impact the Borough water supply (even during drought conditions).

Based upon my review, both the data and professional opinions indicate that future BMS water usage will not significantly impact the Borough's water supply.

Because of inherent uncertainties associated with complex groundwater systems in fractured rock (such as the groundwater system underlying both the Borough and BMS), it cannot be stated with certainty that BMS water usage will never cause significant impact to the Borough water supply. However, I believe that such an impact is unlikely in any foreseeable circumstance.

Note: Even if a hypothetical future impact were to occur, it would likely involve a long-term drought coupled with increased water usage from other users. In such a hypothetical case, long-term (on the order of years) warning signs would be available, such as decreasing water levels in BMS observation and pumping wells, and corresponding water level decreases in Borough pumping wells.

As mentioned above, BMS semi-annual monitoring reports (that include water level measurements in observation wells) are forwarded to the Borough. I recommend that the Borough monitor these data, to be aware of any trends.

Please do not hesitate to call me if you have any questions or comments.

Sincerely,

HILL ENVIRONMENTAL GROUP, INC.



J. Gregory Hill, P.E., P.G.  
Technical Director





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