Briefing Notes
Gettysburg Stream Well # 2

Prepared by Gannett Fleming, Inc. for discussion with the Act 220 Potomac Basin Regional Committee

- Stream Well #2 penetrates the Gettysburg Formation and was drilled at the intersection of two fracture traces identified in Wood (1980) *Groundwater Resources of the Gettysburg and Hammer Creek Formations in Southeastern Pennsylvania (WRR 49)*. Two small tributaries to Marsh Creek, one from the east and the other from the west are developed along the larger east-west trending fracture trace.

- Well was drilled in 1998 to a depth of 210 ft. and was reamed to 150 ft as 12-inch. The well is cased to 57 ft.

- A 48-hour constant rate pump test was conducted in Dec. 1998 at 900 GPM. Total drawdown was 51 ft. in the pumping well.

- Drawdown monitored at two nearby residential wells was approximately 7.2 feet and 11.3 feet from 180 and 200 foot deep wells situated 250 and 500 feet from the pumping well.

- Stream levels were collected from Marsh Creek at two locations. One upstream and one along bedrock strike adjacent to the site. No changes were observed in stream level during the test. However, geologic structural and distance drawdown relationships indicate the potential for influence.

- Distance drawdown relationships were used to determine a 2000 ft radius of influence. Based on local hydrogeology and geologic structure (N dipping tabular aquifer), a zone of influence elongated along bedrock strike is likely with the greatest permeability and movement of groundwater in the strike direction.

- Calculated aquifer parameters hydraulic conductivity, transmissivity and storage coefficient values for the Stream Well #2 are 226 gpd/ft^2; 40,900 gpd/ft and 0.006 respectively and with the storage coefficient in the range of typical confined to semi-confined conditions.

- The estimated elliptical zone of influence encompasses approximately 288 acres of the larger contributing basin which includes approximately 1850 acres.

- The Stream Well #2 sub-basin equals approximately 6 percent of the Marsh Creek drainage basin upstream of Black Horse Tavern which encompasses 31,775 acres or 49.7 square miles.

- Assuming baseflow rates between 17 and 27 percent of 41 inches of annual precipitation equates to average annual baseflow from the contributing basin between 351 and 555 million gallons per year. A 20 percent annual baseflow rate equates to 411 million gallons per year.

- Assuming equivalent baseflow rates for the Marsh Creek basin above Black Horse Tavern, annual baseflow for the upper portion of the basin ranges between 6.0 and 9.5 billion gallons.

- Under the terms of an NPDES permit under which water quality and temperature differentials are also controlled, GMA is permitted to discharge up to 117 million gallons per year to Marsh Creek from Stream Well #2 using an instantaneous pumping rate not to exceed 900 GPM.

- Approved withdrawal equals 320,550 GPD if well is operated continuously. Well is infrequently operated.

- Based on a 20 percent annual baseflow rate this withdrawal equates approximately 28% of average annual baseflow to the contributing drainage basin and a much smaller percentage of baseflow to the Marsh Creek basin above Black Horse Tavern.

- Using standards in place today in SRBC, availability would be judged on 60% of average annual baseflow to account for drought conditions. Stream Well #2 passes this criterion.