SUSQUEHANNA RIVER BASIN COMMISSION
4423 North Front Street • Harrisburg, Pennsylvania 17110-1788
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Web http://www.srbc.net

Groundwater Withdrawal Application Summary

Source Name: Block Plant Well #2 **SRBC Pending No.:** 2016-050

This summary is only a portion of the application materials and is meant to provide general information about the proposed project.

1.1 Project Sponsor

Company Name:	Pennsy Supply, Inc.
Mailing Address Line 1:	PO Box 3331
Mailing Address Line 2:	
City:	Harrisburg
State:	PA
ZIP Code:	17104

Contact Person:

First Name:	John
Last Name:	Rice
Title:	Director of Environmental Compliance
Telephone:	717-236-7023
Fax:	
Mobile:	
E-mail:	jrice@oldcastlematerials.com

1.3 Existing and Projected Facility Water Use

The usage should be entered in million gallons per day (mgd) and rounded off to the nearest one thousand gallons (three decimal places).

Projected Design Year:
2016

Total Project Water Usage	**Existing Usage (mgd)**	**Projected Usage For Design Year (mgd):**
Maximum 30-day Average Water Demand :	0.0189	0.0189
Maximum Daily Water Demand :	0.0189	0.0189
System Capacity :	0.0432	0.0432

1.4 Requested Withdrawal Amount:

Estimated Daily Hours of Operation per Day (Ex. = 5):	16
Maximum Instantaneous Withdrawal Rate (gpm):	30
Maximum 24-Hour Day (mgd):	0.0189
Maximum 30-Day Average (mgd):	0.0189

2.2 Facility Location

Please enter the address of the parcel where the Project Facility is located.

Street Address:	2742 Lancaster Road
State:	PA
County:	Lancaster
Municipality:	East Hempfield Township
Zip Code:	17552
Subbasin:	Lower Susquehanna

Executive Summary

Akens Engineering Associates, Inc. (Akens) is preparing the following Aquifer Test Plan, on behalf of Pennsy Supply, Inc. (Pennsy) for their East Petersburg, Pennsylvania, quarry. Pennsy is located at 1001 Paxton Street, Harrisburg, Pennsylvania, 17105. Pennsy acquired this property at the end of 2007. In March 2008, Akens, on behalf of Pennsy submitted an application to the Susquehanna River Basin Commission (SRBC) for a groundwater withdrawal of 4.32 million gallons per day (mgd) and a consumptive use of 341,212 gallons per day (gpd). The quarry is currently grandfathered for a consumptive use of 0.203 mgd. In recent months, SRBC has requested that sources be "proved" for approval. Quarries are somewhat unique in that they do not seek the majority of the water that they handle, they simply have to deal with the water entering the pit in order to continue operations. This particular quarry has been operating for approximately 80 years, so there an established record of data. The project is located in the Lower Susquehanna Sub-basin, HUC 02050306, Little Conestoga Creek Watershed, East Hempfield Township, Lancaster County, Pennsylvania.

The quarry does require some water to use consumptively for a variety of reasons. Pennsy excavates limestone and dolomite from the active open pit for the production of aggregate and the manufacture of blocks. Currently, the pit sump pumps water from the active mining level to a series of settling ponds. From there, a majority of the water is discharged through a concrete-lined channel to Little Conestoga Creek. A total of 167,820 gpd of this discharge is directed to the stone washing plant to aid in production, while 64,000 gpd is used to fill water trucks and then used for dust suppression. In the past submission, Pennsy listed Well 3 as a source of water consumption. Well 3 is located within in the quarry footprint (~50' from the sump system) and pumps less than 1 gpm and less than 1,000 gpd. We are requesting that this water be considered part of the sump system as this 1 gpm is statistically insignificant compared to the 4.32 mgd discharged by the quarry system. The only reason for this well is to aid in dust suppression for the crusher and logistically it is not plausible to pull 1 gpm off of the sump discharge line.

The other source of consumptive use at the quarry is used at the Block Plant and comes from Well 2. Well 1 serves as an emergency backup well when Well 2 is being serviced. Both of these wells pump at a maximum rate of 30 gpm. Well 2 is the primary well and was drilled because Well 1 began to dewater due to mining activities, proving conclusively that these wells are connected to the larger sump discharge system. These wells provide a maximum of 8,400 gpd/shift, with 2 shifts operating, for a total of 18,800 gpd.

The last source of consumptive use is pond evaporation. There are currently a series of settling ponds constructed to settle solids. These ponds total 11.53 acres of surface area. This equates to a peak of 58,573 gpd for the month of July. This was explained in greater detail in the Consumptive Use Application.

Based upon years of site data, it is confirmed that the block plant well(s) are under the influence of the quarry pit sump dewatering system. For this reason, this document will be submitted for each of the sources within the application(s). Akens has specialized in determining the Zone of Influence (ZOI) of several quarry systems in both Pennsylvania and Maryland over the past 15 years. This experience has led to the development of a large-scale Sump Drawdown Test, coupled with three-dimensional groundwater monitoring, to determine both current and future impacts of mining as well as predict future quarry inflows. The minimal water being extracted from the Block Plant Wells is miniscule compared to the quarry system. Also, because the Block Plant Well will not operate more than 2 shifts, it will be more scientifically accurate to include it as part of the larger testing.

We are proposing to perform a large-scale sump drawdown test. This has proven to be very successful for past quarry operations. This type of testing deviates somewhat from the typical SRBC testing procedures but is necessary in this type of setting, especially when there are other large water withdrawals that will create overlapping cones of depression. In addition, recent dye trace testing has proven a connection between Little Conestoga Creek and the quarry. Three-dimensional groundwater modeling will account for all of these components and give an accurate portrayal of the ZOI and future water handling needs. This submission, for the aforementioned water quantities, is subject to change based upon the results of the testing/modeling and fixing of the sinkholes within Little Conestoga Creek.

As the quarry is an open-face, surface mine operation of many acres, there is not a well construction log available. The geology within the quarry is visible, as Commission staff has observed at the site. The Block Plant Well(s), currently do not have logs, however we know that Well 1 was installed under the supervision of a registered professional geologist, Charles Grenot, P.G., during a 1988 groundwater study. This well is reported to be 116' deep and had a yield of 40 gpm. Prior to testing, the depth of this well will be confirmed and Well 2 will be camera-logged to verify depth, casing length, etc.

Quarry operations are different from other types of water uses in that, for the most part, the quarry does not want to use water. Rather, they have to pump water from the footprint of the active pit in order to keep a dry and workable quarry. Therefore, pumping is done on an “as-needed” basis and occurs more often during wetter periods and significantly decreases in times of minimal recharge (during drought conditions, no pumping may be required for extended periods of time). This submission and proposed testing are based upon the maximum pumping periods, which will always occur during high water table and high recharge conditions.

The East Petersburg Quarry dewatering system is somewhat complex in that it is a two-phase pumping network. The first pumping station is the pit sump, which is at elevation 160 (feet above mean sea level). From here, two 250 HP pumps move the water to the 225' elevation. At this elevation, a large pond exists and was designed to allow solids to drop out before being pumped to the concrete-lined portion of Conestoga Creek (some of this water is used consumptively for the plant and dust suppression). The lower sump controls the groundwater table within the Zone of Influence (ZOI) and therefore will be the focus of the testing which will lead to the development of a three-dimensional groundwater model.

In August 2015, a series of six pressure transducers, equipped with data loggers, were installed around the quarry. This data will be used, along with pumping data over that time period, to help calibrate the groundwater model. In addition, that data was used to help generate the some of the conclusions found herein.

The aforementioned ponds have a great deal of water storage for plant use during low flow or drought conditions. The upper pond system, at elevation 225, holds approximately 10 million gallons of water. When the sump is at its maximum capacity, it can store in excess of 25 million gallons. This 35+ million gallons of water storage could supply the quarry’s water needs for several months without any recharge to the groundwater system.

Some major items have been mentioned in this Executive Summary. Each item will be discussed in greater detail in the appropriate section of this submission. This testing has been proposed based upon a plethora of past quarry groundwater experience and will give the best and most accurate results to aid

the Commission in approving this site for the water use requested. This document was prepared by Charles Brown, under the supervision of Michael Nawrocki, P.G., P.E., and will ultimately use the expertise of Mr. James Rumbaugh, P.G., for groundwater modeling.