BRIDGETON TOWNSHIP WELL APPLICATION

Public_____ Permit No._____
Semi-Public_____
Private_____ Fee_____

Application for Permit to Drill Well

Application must be completed and permit received before drilling operations start.

TO: Bridgeton Township, Bucks County, Pennsylvania
In accordance with the provisions of Bridgeton Township Subdivision and Land Development Ordinance, Section 519.3.A-D, a permit to drill a water well is hereby requested.

Tax Parcel Number:_____

1. Owner's Name and Address_____
   _____
2. Address of proposed well drilling site_____
3. Well Driller's name and address_____
   _____
4. Water to be used for _____
5. Describe any existing wells on the property_____
   _____
6. Provide a sketch with this application showing the location of the proposed well with relation to all adjacent wells and/or sewage or waste disposal systems within 100 feet.

Note: The issuance of a permit to drill a well or a Certificate of Compliance shall not be construed as a guarantee that the systems will function satisfactorily nor shall it in any way restrict the powers of responsibilities of the State, County, or Municipality in the enforcement of any law or Ordinance relating to Public Health.

Date:_____

Owner's Signature:_____

Owner's Telephone Number:_____

All such rules and regulations adopted by the Township shall be in conformity with the provisions herein, and all other Ordinances of the Township, and all applicable laws, and regulations of the Commonwealth of Pennsylvania. Nothing herein, however, will prevent the Township from considering and evaluating the potential use of alternative water conservation or supply systems approved by PA DEP.

ARTICLE VII. – Regulations.

A. Well certification.

1. Well yield shall be determined by a pumping test of not less than four hours duration completed by a well driller and/or hydrogeologist. Pumping test shall be accomplished in accordance with procedures outlined within the Bridgeton Township Well Yield Test Worksheet. A certification completed by the well driller/hydrogeologist shall be submitted to the Township in the form of a completed Bridgeton Township Well Yield Test Worksheet, which includes detailed pump test information to verify that the well will provide sufficient yield to meet peak demand requirements for the proposed use.

2. In the event that the well does not yield a minimum of 6 gallons per minute (gpm) for a residential use, the proposed water system shall be designed to provide sufficient storage via oversized tanks and/or storage in the well bore for the length of time it would take for the expected peak demand to empty a standard pressure tank being supplied by a well pumping 6 gpm.

3. All well drillers shall, upon completion of the well, provide the Township with a copy of the report submitted to the Commonwealth of Pennsylvania; written verification from the Bucks County Department of Health, in the form of a "Certification to Operate"; and certification in the form of a completed Bridgton Township Well Yield Test Worksheet, with sufficient data and documentation to verify compliance with provisions of this Ordinance.

4. A minimum of one (1) water sample shall be collected for those items listed below (except for coliform as noted). Samples must be collected at the end of the pump test. All test results must meet established maximum contaminate levels (MCL's) for the Commonwealth of Pennsylvania. Water samples must be tested by a PA DEP certified water laboratory. Additional testing may be required as determined on a case by case basis by the Township, considering the sites history and location.

   a. Coliform – a minimum of three water samples shall be collected during the pump test for analysis of coliform bacteria. The first sample shall be collected 15 minutes prior to the end of the test with the remaining two samples collected at 15 minute intervals thereafter.

   b. Nitrates

   c. Nitrites

   d. PH

   e. Iron

   f. Total dissolved solids.

g. TCE, PCE, and 1-1-1 Trichlorethan

h. Detergents

i. Benzene, Toluene, Xylene

j. Total petroleum hydrocarbons.

k. Arsenic

l. Any other substance deemed necessary by the Township that may be hazardous (as defined by state or federal regulations), which may reduce water quality.

B. Well construction.

Installation/modification of wells shall be in accordance with "Bucks County Department of Health Individual Water Supply Well Construction Specifications", dated November 3, 2004, as amended. Written verification from the Bucks County Department of Health, in the form of a "Certification to Operate", shall be submitted to the Township prior to issuance of a building/zoning permit.

C. Permit required.

Prior to commencement of well drilling operation, owner shall be required to make application to, and receive approval from, Bridgeton Township and Bucks County Department of Health. Issuance of a permit to drill wells shall not be made until written verification of approval for well installation is received from the Bucks County Department of Health, and until payment of a permit fee in the amount established by resolution of the Board of Supervisors. An original and two copies of the application for a well drilling permit shall be filed with the Township Code Enforcement Officer. The Code Enforcement Officer shall retain two copies of the application, with one stamped copy being returned to the applicant. Original applications shall remain on file at the Township.

D. Well location and plot plan requirements.

Proposed wells shall be shown on a plan submitted with the application for well permits, which verifies where wells are located, to insure compliance with minimum isolation distances specified in "Bucks County Health Department Individual Water Supply Well Construction Specifications", dated November 3, 2004, as amended. Documentation relative to the "as-built" location of wells drilled must be submitted to the Township, prior to issuance of a building/zoning permit.

E. Abandonment.

Existing wells to be closed/abandoned shall be closed/abandoned in accordance with "Bucks County Department of Health Rules and Regulations Governing Individual Water Supply Systems" and "Bucks County Department of Health Individual Water Supply Well Construction Specifications", dated November 3, 2004, as amended.

F. Wellhead Protection.

BRIDGETON TOWNSHIP WELL YIELD TEST WORKSHEET

Date: _____

Project Name: _____

Site Address: _____

Bucks County Tax Parcel #: _____

Name of Applicant: _____

Mailing Address of Applicant: _____

_____

Name of Property Owner: _____
(If different from applicant)

Mailing address of Property Owner: _____

_____

Name of Well Driller/Hydrogeologist: _____

Mailing Address of Well Driller/Hydrogeologist: _____

_____

Location of Well: _____
(Attach a plot plan showing all setbacks to property lines and features)

Proposed Well Use: _____Residential

_____ Commercial/Industrial

_____ Agricultural

_____ Other (Specify): _____

BRIDGETON TOWNSHIP WELL YIELD TEST WORKSHEET

Test Design

Preliminary Well Summary

1. Depth of well ..... _____ feet
2. Static water level (depth to water from top of casings) ..... _____ feet
3. Number of hours between well completion and measurement of static water level ..... _____ hours

For Residential Uses:

Dwelling Summary

4. Number of bedrooms ..... _____
5. Number of bathrooms ..... _____

Peak Demand Test Requirements

6. Peak time (required minimum duration of test from Table 1)... _____ minutes
7. Peak demand rate (required minimum discharge rate from pump during test from Table 2). _____ gpm
8. Peak load (from Table 4)..... _____ gallons

For Nonresidential Uses:

9. Peak demand rate ..... _____ gpm
10. Peak load ..... _____ gallons

Test Measurements

Peak Demand Test

11. Depth to water at beginning of test (static water level)..... _____ feet
12. Depth to pump at end of test..... _____ feet
13. Discharge rate measured during test (use minimum observed) ..... _____ gpm
14. Duration of test ..... _____ minutes
15. Depth to water at end of test ..... _____ feet
16. Drawdown at end of peak demand test .....line 15 – line 11 =..... _____ feet

Constant Head Test

17. Constant head pumping rate ..... _____ gpm
18. Duration of pumping at constant head rate ..... _____ minutes
19. Depth to water at end of test..... _____ feet
20. Drawdown at end of constant head test ..... line 19 – line 11 =..... _____ gpm
21. Estimated well yield..... _____ gpm

Evaluation of Results

22. Peak demand test duration. If line 14 is less than line 6 then well fails peak demand test..... ____ pass or fail
23. Peak demand pump test rate. If line 13 is less than line 7 (or 9) then well fails peak demand test..... ____ pass or fail
24. Calculate aquifer contribution (multiply line 17 by 1440 or use Table 3)..... ____ gpd
25. Daily home water demand (from Table 4) ..... ____ gpd
26. Aquifer contribution rate. If line 24 is less than line 25 then well fails constant head pump test ..... ____ pass or fail

DOMESTIC WELL WORKSHEET FOR TWO-PART PUMP TEST

Actions Based on Test Results

Peak demand test	Constant head test	Action
27. pass	pass	Go to *Pump Placement and Minimum Well Depth (lines 38-40)*
28. fail	pass	The well must be developed to increase yield, deepened to increase storage or surface storage installed. If the well is deepened or developed, it must be retested. Go to lines 31-37 (*Additional Drawdown for a 6-inch Well With Sufficient Storage)*
29. pass	fail	The well must be developed, deepened or redrilled at a new location to increase yield. It must then be retested.
30. fail	fail	

ADDITIONAL DRAWDOWN FOR A 6-INCH DIAMETER WELL WITH INSUFFICIENT STORAGE

31. Assured volume
....line 20 X 1.4 gallons/foot = _____ gallons

32. Assured time...line 31/line 7 (or 9) = _____ gallons

33. Shortfall volume
.....line 8 (or 10) - line 31 = _____ gallons

34. Shortfall time..line 6 - line 32 = _____ minute

35. Aquifer contribution volume
.....line 17 X line 34 = _____ gallons

36. Required additional storage
.....line 33 – line 35 = _____ gallons

37. Additional drawdown needed in well
.....line 36/1.4 gal/ft. = _____ feet

TOTAL WELL DEPTH AND PUMP PLACEMENT

38. Minimum total drawdown needed
.....line 16 + 10 feet = _____ feet

39. Depth below top of casing to place pump .....line 11 + line 38 = _____ feet

40. Minimum total depth of well
.....line 39 + 10 feet = _____ feet

TABLES

Table 1: Duration of peak time in minutes as a function of the numbers of bedrooms and bathrooms in a dwelling.

Number of Bedrooms	Number of Bathrooms				
	1	1 ½	2	2 ½	3
1	33.3	22.2	16.7	13.3	11.1
2	66.7	44.4	33.3	26.7	22.2
3	100.0	66.7	50.0	40.0	33.3
4	133.3	88.8	66.7	53.3	44.4
5	166.7	111.1	83.3	66.7	55.5

Table 2: Peak demand rate as a function of the number of bathrooms in a dwelling.

Number of Bathrooms	Peak Demand Rate (gpm)
1	3
1 ½	4.5
2	6
2 ½	7.5
3	9

Table 3: Flow volumes in gallons per minute corresponding to flow volumes in gallons per day.

Flow Volume (gpm)	Flow Volume (gpd)
0.01	14.4
0.02	28.8
0.05	72.0
0.1	144.0
0.2	288.0
0.3	432.0
0.4	576.0
0.5	720.0
0.6	864.0
0.7	1,008.0
0.8	1,152.0
0.9	1,296.0
1.0	1,440.0
2.0	2,880.0
5.0	7,200.0
10.0	14,400.0

Table 4: Daily demand volume and peak load as a function of the number of bedrooms in a dwelling.

Number of Bedrooms	Daily Demand Volume (gallons)	Peak Load (gallons)
1	200	100
2	400	200
3	600	300
4	800	400
5	1,000	500

DEFINITIONS

Aquifer contribution: the proportion of the well flow at any given time which comes directly from the aquifer.

Aquifer contribution rates: the maximum rate at which water can flow from an aquifer to a well. Here assumed to equal the pumping rate measured in the constant head test.

Aquifer contribution volume: the total volume of water which flows from the aquifer to the well during the shortfall time.

Assured time: the time it will take to pump the assured volume from the well at the peak demand rate.

Assured volume: the volume of water in a well below the static level and above the constant head level.

Constant head: a stable water level attained under a constant pumping rate. For this application a rate of change of less than 0.5 feet (6 inches) per hour is taken as stable.

Constant head drawdown: the drawdown in a well when a constant head condition has been attained, measured from the static water level at the end of the constant head test.

Constant head level: the water level in a well at the end of the constant head test. Measured from the top of the casing.

Constant head pumping rate: a constant pumping rate at which a stable water level is attained. The pumping rate during the constant head test.

Constant head test: a pumping test in which pumping rate and drawdown are kept constant with time. For this application a rate of change of less than 0.5 feet (6 inches) per hour is taken as constant.

Drawdown: the decline in the water level in a well during pumping. Measured from the static water level prior to pumping.

Hydropneumatic tank: a tank which uses compressed air to maintain pressure in a water supply system. It is only secondarily a water storage tank.

Peak demand rate: the average rate of water use during peak demand periods.

Peak demand test: a pumping test conducted to evaluate the capability of a well to supply peak demand needs of a use. The test is conducted at a rate equal to or greater than the peak demand rate for the peak time.

Peak load: the volume of water required by a use during each peak demand period. In this application the peak load is assumed to be half the estimated total daily use water consumption.

Peak time: the length in minutes of each of two daily peak demand periods.

Shortfall time: the time needed to pump the shortfall volume from a well at the peak demand pumping rate.

Shortfall volume: the volume of water needed in addition to the assured volume to make up the peak load.

Static level: the water level in a well before a pumping test when all effects of drilling and previous pumping on the aquifer have dissipated and the well is in equilibrium with atmospheric pressure.

Storage contribution: the proportion of the well flow at any given time which comes from storage in the well.

Well flow: the flow rate of water from a well at a given time. It is the sum of the aquifer contribution and the well storage contribution.

Well storage: the volume of water stored within a well which is available for pumping.

CERTIFICATION:

I hereby certify that the above information is true and correct to the best of my knowledge and belief, and that the well has been installed in accordance with prevailing standards of Bridgeton Township and/or Bucks County.

(Print name)	(Signature)
(Bucks County Well Drillers Registration Number)	(Date)