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CHESTER COUNTY HEALTH DEPARTMENT
RULES AND REGULATIONS

CHAPTER 500. WATER, NUISANCES, SEWAGE AND LIQUID WASTE.

501. WATER WELL CONSTRUCTION, AND, INDIVIDUAL AND SEMI-PUBLIC WATER SUPPLIES.

501.1. PURPOSE. The purpose of these Rules and Regulations is to establish minimum standards for location, construction, modification or abandonment of water wells and water well installation; also, to require a permit for the construction of a water supply including production wells, test wells, test borings, and monitoring wells, and/or the installation of pumping equipment, and other appurtenances; also, to license all well contractors and pump installation contractors. After the effective date of adoption of these Rules and Regulations, no well (either individual, semi-public or public) shall be constructed, repaired, or modified or any pump be installed, for new construction contrary to the provisions of these regulations.

501.2. SCOPE. Except where clearly noted in the text, the provisions of this Chapter 500, Section 501 shall apply to all wells serving private, semi-public, and public water supply systems. Nothing in this Chapter 500, Section 501, is construed to exempt a public water system from the requirements of the Pennsylvania Safe Drinking Water Act, (35 P.S. 721.1 et. seq.)

501.3. DEFINITIONS. The following words and terms when used in this Section, shall have the following meanings unless the context clearly indicates otherwise.

501.3.1. "Abandoned" Well: Any well where the drilling process has been completed in excess of 90 days and the well has not been approved for use as a supply by the Department (for new construction the 90 day period begins on the final approval date of the sewage system); or, wells in existence prior to 1983 which have not been used as a supply on a continuous basis for a period of one year; or, wells which are in such a state of disrepair that continued use for the purpose of obtaining ground water is impracticable, such impracticability to be determined by the Department; or, any well which has been replaced by a new well. Test wells are considered to be abandoned wells when their use on a regular basis has been discontinued for a period of six months or more.

501.3.2. Agricultural Water Supply: Any water supply used specifically for watering farm crops and animals with no possibility of human consumption.

501.3.3. "Alteration": Any action which necessitates entering a well with drilling tools; treating a well to increase yield; altering the physical structure or depth of the well; blasting; removal or replacement of well casing; or alterations concerning grouting or curbing.

501.3.4. "Annular Space": The space between two (2) cylindrical objects, one of which surrounds the other, such as the space between a drill hole and a casing pipe and a liner pipe.

501.3.5. "ANSI": American National Standards Institute.

501.3.6. "API": American Petroleum Institute.

501.3.7. "Approval to Use": Written approval to use the supply obtained from the Department in accordance with Section 501.12.9 within 90 days of the completion of the well drilling process or, if new construction, within 90 days of the completion of the well drilling process and final approval of the sewage system.

501.3.8. "Aquifer": A geological formation that contains and transmits water.

501.3.9. "ASTM": American Society for Testing Materials.

501.3.10. "AWWA": American Water Works Association.

501.3.11. "Back Siphonage": The flowing back of used, contaminated, or polluted water from a plumbing fixture or vessel or other sources into a potable water supply pipe due to negative pressure in such pipe.

501.3.12. "Casing": An impervious durable pipe placed in a well to prevent the walls from caving in and to seal off surface drainage or undesirable water, gas or other fluids and prevent them from entering the well.

501.3.13. "Coliform": All of the aerobic and facultative anaerobic, gram negative, non-spore forming, rod-shaped bacteria which are capable of fermenting lactose with gas formation within forty-eight (48) hours at thirty-five (35°C) degrees Celsius.

501.3.14. "Community Water System": A water system which serves at least 15 service connections used by year round residents or regularly serves at least 25 year round residents.

501.3.15. "Construction of Wells": All acts necessary to obtain groundwater, or artificially recharge groundwater. Provided however, such term does not include an excavation made for the purpose of obtaining or for prospecting for oil, natural gas, minerals, or products of mining or quarrying, or for inserting media to repressure oil or natural gas formations or for storing petroleum, natural gas, or other products and services. Construction of wells includes the location and excavation or drilling of the well, but excludes the installation of pumps and pumping equipment.

501.3.16. "Cross Connection": An arrangement allowing either direct or indirect connection through which backflow, including back siphonage, can occur between the drinking water in a public water system and a system containing a potential source of contamination.

501.3.17. "Flowing Well": A well that yields water by artesian pressure at the ground surface.

501.3.18. "Geothermal Well": A well installed for the purpose of heating or cooling a facility.

501.3.19. "Groundwater": Water within the earth below the water table within the zone of saturation. Groundwater includes both water under water table conditions and confined within deep aquifers.

501.3.20. "Grout": A permanent water tight joint or connection made by filling with concrete, neat cement, or other approved impervious material between the casing and the undisturbed formation surrounding the well or between two (2)

strings of casing.

501.3.21. "Individual Water Supply": A system including wells, pumps, and piping equipment, which supplies water to a private structure and does not meet the criteria of "Semi-Public Water Supply" or "Public Water Supply".

501.3.22. "Installation of Pumps and Pumping Equipment": The procedure employed in the placement and preparation for operation of pumps and pumping equipment, including all construction involved in making entrance to the well and establishing seals but not including repairs to existing installations.

501.3.23. "Monitoring Well": A well used to observe water levels and/or obtain samples of groundwater for the purpose of water quality analysis.

501.3.24. "New Construction": Any new building or structure whether residential, commercial or industrial on a property. New construction also includes any change in the use of an existing structure.

501.3.25. "Non-Community Water System": A public water system which is not a community water system.

501.3.26. "N.S.F.": National Sanitation Foundation.

501.3.27. "Pitless Adaptor": A device or assembly of parts which will permit water to pass through the wall of the well casing or extension thereof, and which provides access to the well and to the parts of the water system within the well in a manner to prevent entrance of pollution into the well and the water produced.

501.3.28. "Pump Installation Form": Form CCHD-WCF-02. Which includes the CCHD well permit number, permittee's name and address, township, the site location, depth of pump, pump installer's name, license number, signature and date.

501.3.29. "Pumps and Pumping Equipment": Any equipment or materials utilized or intended for use in withdrawing or obtaining groundwater including, but not limited to, piping, seals and tanks, together with fittings and controls.

501.3.30. "Pump Installation Contractor": Any person engaged in the business of installing or repairing pumps, pumping equipment, drop pipes, pitless adaptors, and the other equipment used for the extraction and conveyance of water from the aquifer to the distribution system of the structure to be served.

501.3.31. "Public Water System": A system which provides water to the public for human consumption which has at least 15 service connections or regularly serves an average of at least 25 individuals daily at least 60 days out of the year. The term is either a community or non-community system and includes collection, treatment, storage and distribution facilities under the control of the operator of the system and used in connection with the system. The term includes collection or pretreatment storage facilities not under such control which are used in connection with the system. The term also includes a system which provides water for bottling or bulk hauling for human consumption.

501.3.32. "Relocation": Any change in location of a proposed well which deviates from the permitted location.

501.3.33. "Second Well": Any well drilled on the same property where a water

supply is already in existence.

501.3.34. "Semi-Public Water Supply": A water system including wells, pumps and piping equipment which supplies water to one or several facilities such as industrial or commercial establishments, parks, camps, hotels, motels, schools, institutions, eating and drinking establishments or a water supply which services two (2) or more dwelling units and is not a public water system as defined by the Pennsylvania Safe Drinking Water Act (35 P.S. 721.1 et. seq.)

501.3.35. "Test Wells": Wells drilled for the sole purpose of measuring ground-water availability.

501.3.36. "Well": Any excavation that is drilled, cored, bored, washed, driven, dug, jetted, or otherwise constructed when the intended use of such excavation is for the location, acquisition or artificial recharge of groundwater. This includes but is not limited to test wells, test borings, geothermal and monitoring wells, in addition to wells to be utilized as individual or semi-public water supplies.

501.3.37. "Well Contractor": Any person in immediate supervision of and/or responsible for the construction, test pumping or equipping or development of any well. Such individual shall have a minimum of three years "hands on" experience in the actual drilling, casing and grouting of water wells and be licensed by the Chester County Health Department.

501.3.38. "Well Driller's Log": Form ER-TGS-15 (also called "Topographic and Geologic Survey"), which includes the month, day and year the well was drilled as well as the CCHD well permit number, permittee's name and the township in which the well was drilled in addition to all other information required on the form.

501.3.39. "Well Completion Form": Form CCHD-WCF-01, which includes the CCHD permit number, the township in which the well was drilled, the owner's name and address, the specific site location, the type of cement used for grouting, the number of bags of cement used for grouting, the date the well was drilled, the depth of the well, the well distance to the house, the name of the well driller, the well driller's CCHD license number and the well driller's signature.

501.3.40. "Well Seal": An approved device or method used to protect a well casing or water system from the entrance of any external pollutant at the point of entrance into the casing of a pipe, electric conduit or water level measuring device.

501.4. LICENSES.

501.4.1. Any person engaging or intending to engage in business as a well contractor or pump installation contractor shall first obtain from the Department a license to conduct such business. The Department shall license, all well contractors, pump installation contractors, or both. Each such applicant must demonstrate professional competence and an understanding of the CCHD well regulations by passing an examination prepared by the Department in order to qualify for such license. This section shall not apply to any persons who perform labor or services at the direction and under the supervision of a licensed well contractor or pump installation contractor.

501.4.2. A well contractor shall place in a conspicuous location on each side of his well drilling machine his Chester County Health Department license number in letters not less than three (3) inches (7.62 cm) high and in contrasting colors preced-

ed by the letters CCHD # (Chester County Health Department License Number).

501.4.3. Licenses issued pursuant to this Section are not transferable and shall be renewed annually. A license will be renewed without examination for an ensuing year by making application not later than thirty (30) days after the expiration date and paying the annual renewal fee, which shall accompany said application.

501.4.4. After thirty (30) days elapse from the date of expiration of the license, a license to engage in the business as a well contractor or pump installation contractor will be issued only upon completion and submission of a license application, satisfactorily passing the appropriate contractor examination and submission of the appropriate fee.

501.4.5. Whenever the Department determines that the holder of any license issued pursuant to this Section has violated any provision of this Regulation, the Department is authorized to take legal action against the license holder and/or suspend or revoke any such license. Any person aggrieved by the action of the Department shall be afforded the opportunity of a hearing as provided in Chapter 100 of these Rules and Regulations.

501.5. LOCAL REGULATION. No city, township, or borough located within Chester County, shall adopt any rule, regulation, standard or procedure not in conformity with the standards, rules and regulations or procedures of the Chester County Health Department, and any regulation, ordinance, standard or procedure presently in existence shall be superseded to the extent that it is inconsistent with the rules, regulations, standard or procedures adopted by the Department.

501.6. DRILLED WATER SUPPLY WELLS.

501.6.1. Location.

501.6.1.1. The source of supply shall be from a water bearing formation drawn not less than twenty-five (25) feet (7.6 m) from the ground surface.

501.6.1.2. Cap wells shall be located at a point free from flooding and at a higher elevation (wherever possible) and at the following minimum distances to existing or potential sources of pollution:

Source of Pollution

Minimum Distance

Minimum isolation distances from the proposed well to the facilities listed below:

WATER RELATED

1. Delineated wetlands or floodplains	25 feet (7.6 m)
2. Lakes, ponds, streams or other surface waters	25 feet (7.6 m)
3. Rainwater pits	25 feet (7.6 m)
4. Storm drains, retention basins, storm water stabilization ponds	25 feet (7.6 m)

SEWAGE RELATED

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| 1. Community spray irrigation site; sewage sludge and septage disposal sites | 300 feet (91.2 m) |
| 2. Farm silos, barnyards, manure pits or tanks or other storage areas of animal manure | 100 feet (30.4 m) |
| 3. Subsurface sewage, absorption areas, elevated sand mounds, cesspools, sewage seepage pits, single family spray irrigation systems, etc. | 100 feet (30.4 m) |
| 4. Septic tanks, aerobic tanks, sewage pump tanks, holding tanks | 50 feet (15.2 m) |
| 5. Gravity sewer lines and drains carrying domestic sewage or industrial waste (except when the sewer line is cast iron pipe with either watertight lead caulked joints or joints filled with neoprene gaskets, or if solvent welded Schedule 40 (or SDR equivalent) or better polyvinylchloride (PVC) pipe) | 50 feet (15.2 m)
(10 feet (3.04 m)) |
| 6. Sewage drains carrying domestic sewage or industrial waste under pressure (except welded steel pipe or concrete encased pipe) | 50 feet (15.2 m)
(10 feet (3.04 m)) |

CHEMICAL RELATED

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| 1. Preparation area or storage area of hazardous spray materials, fertilizers or chemicals; salt piles | 300 feet (91.2 m) |
| 2. Surface or subsurface containers or tanks of 500 gallons or more used for the storage of materials which cannot be properly renovated by passage through the soil. This includes, but is not limited to, gasoline and all other petroleum products. | 300 feet (9.12m) |
| 3. Surface or subsurface containers or tanks less than 500 gallons used for the storage of materials which cannot be properly renovated by passage through the soil. This includes, but is not limited to, | 30 feet (9.12m) |

gasoline and all other petroleum products. For example, the type of tanks frequently found in homes using oil for heating purposes.

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| -if the tank or container is on a leakproof concrete floor inside a permanent structure | 30 feet (9.12 m) |
| -if the tank or container is outside, buried or on a dirt floor inside a permanent structure | 50 feet (15.2m) |

MISCELLANEOUS

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|---|------------------|
| 1. Building foundations (except for buildings enclosing just water wells and/or water well pumps) | 30 feet (9.12 m) |
| 2. Mobile Homes | 30 feet (9.12 m) |
| 3. Wooden structures on concrete or dirt floors | 30 feet (9.12 m) |
| 4. Driveways, parking lots and all paved areas | 15 feet (4.56 m) |
| 5. Dedicated road right-of-way | 15 feet (4.56 m) |
| 6. Property lines, right-of-ways, easements | 10 feet (3.04 m) |
| 7. Metal or masonry storage buildings on a cement slab | 10 feet (3.04 m) |

Any other source of pollution As approved

501.6.1.3. Any proposed deviation or modification to Paragraph 501.6.1.2. above must be approved in writing by the Director, with reasons stated for such deviation or modification.

501.6.2. CONSTRUCTION.

501.6.2.1. Casing.

501.6.2.1.1. All wells supplying individual, semi-public or public water supplies shall be equipped with a watertight and durable wrought iron, steel, plastic (PVC) or other type of approved casing of a minimum thickness of 3/16 inches (0.476 cm) or .175 inches minimum for PVC (0.4445 cm). The sections of casing shall be joined together by threaded couplings or joints, by welding, or by any other watertight approved joint or coupling. The casing shall be carried to a minimum depth of twenty (20) feet (6.1 m) and (then) extended an additional five (5) feet (1.52 m) into firm bedrock or other impervious strata and grouted in place. Well casing material other than wrought iron or steel must be resistant to the corrosiveness of the water and to the stresses to which it will be subjected during installation, and

grouting operation. Casing and grouting materials must be compatible. The criteria established in AWWA Standard A100-84 must be followed.

501.6.2.1.2. Ferrous Casings: Shall: be new pipe meeting ASTM or API specifications for water well construction, have additional thickness and weight if minimum thickness is not considered sufficient to assure reasonable life expectancy of the well, be capable of withstanding forces to which it is subjected, be equipped with a drive shoe, and have full circumference welds or threaded pipe joints.

501.6.2.1.3. Non-ferrous casings shall meet appropriate ANSI/ASTM or NSF Standards for well casing applications as outlined in AWWA Standard A100-84. Non-ferrous casing materials shall not impart any taste, odor, or toxic substances to the well water. Non-ferrous casing, if used, shall not be driven. The casing shall be placed a minimum of 5 (1.52 m) feet into the consolidated formation with a minimum annular opening of 3 inches (7.62 cm) or larger so that the grout may be placed in accordance with the provisions of this section 501.

501.6.2.1.4. Watertight well casing must be placed at a sufficient depth to prevent the entrance of pollution from surface runoff and polluted aquifers.

501.6.2.2. Grout Materials And Location.

501.6.2.2.1. All grout information (type of cement and number of bags of cement used for grouting) must be submitted in writing on CCHD Form CCHD-WCF-01 to the Department by the well driller within thirty (30) days of completion of the well drilling process.

501.6.2.2.2. In all well installations an annular space shall be provided between the well casing and the earth formation. The annular space shall be completely filled with approved grout materials, in one continuous operation, under pressure from the bottom to the natural land surface, within twenty-four (24) hours after completion of the drilling. In the event that grouting is done following the completion of all drilling operations, care must be taken to prevent the entrance of drillers mud into the annulus during the completion of the borehole by the use of a rubber packer or other acceptable method. The annular space shall be completely cleared of all obstructions prior to the placement of the grout material. Exterior grouting methods must be used in this instance. The casing shall be sealed effectively against entrance of water from water bearing zones which are subject to pollution, through which the casing may pass, by grouting a minimum of ten (10) feet (3.04 m) above and ten (10) feet (3.04 m) below the polluted or undesirable water-bearing zone. During the installation of the pitless adaptor, grout material may be removed from the exterior of the casing in order to provide a water tight seal between the casing and the pitless adaptor.

501.6.2.2.3. After the grout has been placed in the annular space, drilling of the borehole may proceed for a maximum of four (4) hours, and if not completed within that time period, a curing time of thirty-six (36) hours must be provided before drilling may resume. A curing time of twelve (12) hours for Type III Portland cement must be provided immediately following the placement of the grout. Drilling is not permitted during the curing period. If casings of smaller diameter are used in the lower portions of the well, effective watertight seals shall be provided between the casings where they telescope for a minimum distance of four (4) feet (1.21 m).

501.6.2.2.4. The annular space of all well installations must be filled with one of

the following listed grout materials. The approximate quantities of cement required to grout a 10 foot (3.04 m) section of annular space is given in the following table 501.A.

501.6.2.2.5. Neat cement grout shall consist of a mixture of API Class G (or Class B similar to ASTM C150 Type II) and water in the ratio of 0.67 cu. ft. (0.019 m³) of water per 94 lb (42.7 kg) sack weighing approximately 228 lbs/cu. ft. A maximum of six percent by weight bentonite and two percent by weight of calcium chloride may be added.

501.6.2.2.6. Pozmix-cement grout shall consist of a mixture of fifty percent by volume of Pozzolan A (74 lbs/cu. ft³) (1185 kg/m³) and fifty percent by volume of API Spec. 10, Class G cement with 0.77 cu. ft. (.02 m³) of water per 84 lbs. (38.2 kg) of mixture. To this mixture may be added a maximum of two percent by weight, bentonite and a maximum of two percent by weight of calcium chloride, at the discretion of the contractor.

501.6.2.2.7. Concrete grout shall contain 5.3 sacks of portland cement (ASTM C150 Type II) per cubic yard of concrete and a maximum of 7 gal. (0.026 m³) of water per 94 lb. (42.7 kg) sack of cement. The maximum slump shall be 4 in. (10.16 cm) The aggregate shall consist of 47 percent sand and 53 percent coarse aggregate, conforming to ASTM Designation C-33. The maximum size aggregate should be 0.75 in. (1.9 cm). Concrete grout shall not be placed in an annulus of less than 3 in. (7.62 cm).

501.6.2.2.8. Sand cement grout shall consist of a mixture of portland cement (ASTM C150 Type II), sand and water in the proportion of not more than two parts by weight of sand to one part of cement with not more than 6 gal. (0.022 m³) of water per 94 lb. (42.7 kg) sack of cement.

501.6.2.2.9. In all well installations if rapid loss of grout material occurs during placement, coarse fill material (e.g. sand, gravel, crushed stone, dry cement) may be used in the zone or zones in which the rapid loss is occurring. The remainder of the annular space, shall be grouted as provided below. In no case shall pouring, dumping or shoveling of grout material into the annular space be deemed an approved method of grout placement.

501.6.2.3. Grout Placement. (Chart follows)

501.6.2.3.1. Grout Pipe Outside Casing.

501.6.2.3.1.1. The annular space shall be a minimum of 1-1/2 inches (3.81 cm) diameter of drilled hole equal to casing O.D. plus 3 inches (7.62 cm). All grout shall be placed by pumping through the grout pipe. The entire interval to be grouted shall be open and without obstructions. Washing or jetting with water is recommended for cleaning the borehole and may serve to remove obstructions caused by caving which otherwise would prevent a proper grout. It is recommended that the grout pipe extend from the surface to the bottom of the interval to be grouted. The grout pipe may remain extended to the bottom of the interval during and after grouting, or it may be raised slowly as the grout is placed provided that the discharge end of the grout pipe remains submerged in the emplaced grout at all times until grouting is completed. In the event of interruption in the grouting operations, the bottom of the grout pipe shall be raised above the grout level and should not be re-submerged until the air and water have been displaced from the grout pipe.

501.6.2.3.1.2. Grouting Depths Greater than 30 feet (9.1 m). The minimum length of grout pipe that shall be inserted into the annular space is 30 feet (9.1 m).

501.6.2.3.1.3. Grouting Depths of 30 feet (9.1 m) and less. Grout may be placed by a tremie pipe inserted only a short distance (approximately 5 feet (1.5 m) into the annular space provided that the entire interval to be grouted is clearly visible from the surface and is dry. An annular space larger than the minimum 1-1/2 (3.8 cm) inches may be required to assure visibility from the surface.

501.6.2.3.2. Grout Pipe Inside Casing. The bottom of the casing is fitted with a packer arrangement, also referred to as a cementing shoe or float shoe, and the casing is placed in the borehole a short distance off the bottom. The float shoe allows grout to be pumped through the grout pipe and upward into the annular space, while preventing grout leakage into the casing during grouting and after removal of the grout pipe. Grouting is continued until cement appears at the surface at which time the grout pipe is disconnected from the float shoe. The float shoe is drilled out after the grout sets and hardens sufficiently.

501.6.2.3.3. Interior Method Two Plug. The first plug separates the grout from the fluid in the casing, and the other separates the grout from water pumped in above it. First, the casing is placed a short distance off the bottom. After pumping water through the casing to circulate fluid in the annular space and clear any obstructions from the hole, the first plug is inserted, and the casing is capped. A measured volume of grout is pumped in, which is sufficient to fill the annular space. The casing then is opened, and the second plug inserted. A measured volume of water is pumped in above the second plug until it is pushed to the bottom of the casing and most of the grout is expelled up and into the annular space. The water in the casing is held under pressure to prevent the backflow of grout until it has set and hardened.

501.6.2.3.4. Interior Method Upper Plug. The casing is placed a short distance off the bottom, and the water is pumped into the casing to circulate fluid through the annular space to clear any obstructions from the hole. A measured quantity of grout slightly greater than that needed to fill the annular space is pumped into the capped casing. Because this grout is in direct contact with the drilling fluid, there will be a narrow zone of weak grout between the drilling fluid and good grout; however, this zone should remain inside the casing and not be forced into the annular space. The casing is opened, and a drillable plug is inserted. A measured volume of water is pumped in above the plug until it is pushed to the bottom of the casing and most of the grout is expelled up and into the annular space. The water in the casing is held under pressure until the grout sets and hardens.

501.6.2.3.5. Interior Method Capped Casing. The casing is placed a short distance off the bottom, and water is pumped into the casing to circulate fluid in the annular space and clear any obstructions from the hole. The grout pipe passes through an air-tight cap at the top of the casing and is positioned 3 to 4 feet above the bottom of the casing. The grout pipe is assembled so that it can be pulled through the cap a distance of about 20 feet after the injection of grout is completed. A bleeder valve is provided to release air from inside the casing as it is filled with water. The first step is to fill the casing and annular space with water. With the upper end of the casing closed, grouting is started by forcing the cement through the grout pipe upward into the annular space. Grouting is continued until the cement overflows around the casing at ground surface. Just enough water is pumped to clear the cement from the grout pipe, and the grout pipe is lifted free of the grout. Both the

casing and grout pipe shall be kept tightly closed under pressure until the cement sets and hardens.

501.6.2.3.6. Grout Displacement Method. The hole is filled with the estimated volume of grout required to fill the annular space, and the casing is lowered into the hole. The bottom of the casing is closed in a tight, drillable plug. Guides often are used to keep the casing centered in the hole. As the casing is lowered, the grout is forced upward around it to fill the annular space. If the pipe does not sink to the bottom under its own weight, it is filled with water.

501.6.2.3.7. Unconsolidated Formations. When drilling through an unconsolidated formation, a steel drive shoe shall be required. Grouting shall be done in accordance with the following:

501.6.2.3.7.1. If caving conditions are experienced on wells deeper than 30 feet, (9.1 m) the annular space shall be grouted from the point where caving occurred or from a depth of 30 feet (9.1 m), whichever is greater, to land surface.

501.6.2.3.7.2. If the annular space cannot be grouted in accordance with these regulations, the well shall be abandoned and sealed in accordance with paragraph 501.9. of this section.

501.6.2.3.8. Other grouting methods and materials may be used subject to prior written approval of the Department.

501.6.2.4. Packers. Packers, when used, shall be of materials that will not impart taste, odor, toxic substances or bacterial contamination to the well water.

501.6.2.5. Well screens. Well screens, when used, shall:

501.6.2.5.1. provide the maximum amount of open area while still maintaining structural strength,

501.6.2.5.2. have the size of openings in the screen based on a sieve analysis of the material contained in the surrounding geological formation or gravel pack,

501.6.2.5.3. be constructed of materials resistant to damage by chemical action of ground water or cleaning operations,

501.6.2.5.4. have sufficient diameter to provide adequate specific capacity and low aperture velocity. Usually, the entrance velocity should not exceed 0.1 feet per second,

501.6.2.5.5. be installed so that the pumping water level remains above the screen under all operating conditions,

501.6.2.5.6. be designed and installed to permit removal or replacement without adversely affecting water-tight construction of the well, and

501.6.2.5.7. be provided with a bottom plate or washdown bottom fitting of the same material as the screen.

501.6.2.6. Gravel packs. Gravel packs when used:

501.6.2.6.1. shall be well rounded particles, 95 percent siliceous material, that are

smooth and uniform, free of foreign material, properly sized, washed and disinfected immediately prior to or during placement,

501.6.2.6.2. shall be placed in one uniform continuous operation.

501.6.2.6.3. Gravel refill pipes, when used, shall be Schedule 40 steel pipe incorporated within the pump foundation and terminated with screwed or welded caps at least 12 inches (30.48cm) above the pump house floor or concrete apron,

501.6.2.6.4. gravel refill pipes located in the grouted annular opening shall be surrounded by a minimum of 1.5 inches (3.81 cm) of grout.

501.6.2.6.5. Protection from leakage of grout into the gravel pack or screen shall be provided.

501.6.2.7. Pit Installations. Pit installations are used where the casing terminates below the ground surface. Where well pits are used, such pits shall be maintained free of water at all times. The floor of the pit shall be a watertight reinforced concrete platform at least four (4) inches (10.16 cm) thick poured around the casing and shall be provided with a watertight seal. The floor of the pit shall extend at least two (2) feet (0.61 m) from the center of the casing in all directions. In all cases, the pit shall be sized to allow adequate working space. The casing shall extend above the floor for at least twelve (12) inches (30.48 cm). The surface of the floor shall be pitched toward a drain which has a minimum diameter of four (4) inches (10.16 cm) and discharged by gravity to the surface of the ground in an area not subject to flooding or to a basement which is effectively protected against flooding. Drain openings shall be effectively screened to prevent the entrance of insects and rodents. The drain shall not be connected to any sewer or other drain. The pit shall have watertight reinforced concrete walls four (4) inches (10.16 cm) thick or equivalent which provide for an effective watertight seal against the floor. The top of the pit shall be a watertight reinforced monolithic concrete slab at least four (4) inches (10.16 cm) thick, which shall be sealed with the wall so as to effectively prevent the entrance of water. The top of the pit shall not be more than six (6) inches (15.24 cm) below the ground surface. A durable watertight manhole shall be installed in the top of the pit centered over the casing and effectively sealed with the top to prevent the entrance of water. This manhole shall be at least twenty-four (24) inches (.61 m) in diameter. It shall extend at least three (3) inches (7.62 cm) above the surrounding ground surface and be covered by an impervious durable cover of concrete, steel, or equivalent material which overlaps the manhole vertically by at least two (2) inches (5.08 cm). The manhole cover shall be effectively secured to the manhole by bolting, locking or equivalent means, and shall be kept so secured. Pit installations shall not be used in areas subject to flooding by ground or surface water or where the ground water level rises to within one (1) foot (.304 m) of the bottom of the proposed pit. Where pipes enter the pit, the annular space between the pipes and the wall shall be effectively sealed by a watertight permanent seal.

501.6.2.8. Pitless Installations. Pitless installations are those installations where the casing terminates above the ground surface.

501.6.2.8.1. Where pitless installations are used, they shall be of a design which provides an effective seal against the entrance of ground or surface water into the well, access casing, and into the piping leading to the pump. All buried suction lines shall be effectively encased, or otherwise protected to prevent external damage or contamination. Pitless installations must be so designed as to be struc-

turally sound and to provide for ready removal of drop piping without excavation. The access casing shall be effectively protected against corrosion and shall extend at least twelve (12) inches (30.48 cm) above the natural ground surface and to a point below the frost line. The ground level at this point shall be elevated above the adjacent ground level and graded to drain away in all directions. The top of the access shall be effectively sealed against the entrance of water, insects, and rodents. The pitless adaptor shall not be submerged in water or used in areas used by automobiles and other vehicles.

501.6.2.8.2. Where surface installations (i.e., hand pumps, pump rooms, etc.) are used a watertight reinforced concrete platform at least four (4) inches (10.16 cm) thick and extending for at least two (2) feet (0.61 m) in all directions from the center of the casing shall be poured around the casing to provide an effective watertight seal with the casing, or shall be made watertight with an effective permanent seal. The surface of the platform shall slope to the edges. The casing shall extend through the slab for at least twelve (12) inches (30.48 cm) and shall be effectively sealed against the entrance of contamination. All pumping equipment shall be protected against freezing. If a pump room is proposed, it shall be so sized to allow adequate working space.

501.6.2.9. Venting. Where venting is required, an overlapping cover or pipe with the opening facing downward shall be required. Such venting shall be effectively protected against the entrance of insects and rodents. In no case shall openings be less than twelve (12) inches (30.48 cm) from the ground, or, in the case of pit installations, the floor.

501.6.2.10. Well Yields. (RESERVED)

501.7. GROUND WATER MONITORING WELLS. Due to the variability in the information to be obtained, ground water monitoring wells shall not be subject to strict compliance with sec. 501.6. of these regulations relating to water well construction. The construction of each monitoring well must first receive written approval of the Director. The design of each monitoring well must be such as to minimize potential contamination of the aquifer and to maximize the information obtained from each monitoring well.

501.8. PUMPS AND OTHER EQUIPMENT.

501.8.1. Head Pump Installations.

501.8.1.1. The pump head shall be designed and constructed to prevent contamination from reaching the water chamber and other interior surfaces of the pump.

501.8.1.2. The pump shall be designed and constructed to provide an effective watertight seal with the well casing or stored water reservoir.

501.8.1.3. The pump cylinder or foot valve shall be installed below the pumping level of the well.

501.8.1.4. The pump shall be designed where necessary for protection against freezing.

501.8.1.5. All pump information must be submitted in writing on Chester County Health Department Form CCHD-WCF-02 within thirty (30) days of the installation of the pump.

501.8.2. Power Pump Installations.

501.8.2.1. The base of a power pump installed directly over a well casing or pipe sleeve shall be designed to provide an effective watertight seal with the casing or pipe sleeve.

501.8.2.2. All power pumps shall be installed on a firm base in an area free from flooding.

501.8.2.3. Where power pumps are installed in pits, the pits shall meet the requirements of Section 501.6.2.7. In addition, the pit shall be ventilated with a pipe of a diameter of at least one and one-half (1-1/2) inches (3.8 cm).

501.8.2.4. Location and installations of the pump and all related equipment shall permit convenient access, removal, maintenance and repair.

501.8.2.5. The pump suction opening shall be placed at least two (2) feet (.62 m) below the maximum drawdown of the water in the well. However, the pump suction opening shall be placed at a sufficient distance from the bottom of the well so as to prevent agitation of accumulated sediment.

501.9. ABANDONED WELLS.

501.9.1. This Department must be notified in writing within 30 days by the well contractor and/or property owner when a well is abandoned under Section 501.3.1. of these regulations. All abandoned wells must be filled and sealed by a Chester County Health Department licensed well contractor. One (1) of the following methods must be used in accordance with the geological formations penetrated, in such a manner as to prevent it from acting as a channel for pollution, or the escape of subterranean gases, and a report of the method of sealing shall be filed with the Department:

501.9.1.1. A well in unconsolidated deposits shall be filled with neat cement grout or concrete grout.

501.9.1.2. The section of a well in a cavernous or creviced rock (such as cavernous limestone or basalt lava rock, creviced granite, etc.) shall be filled with concrete or neat cement grout or alternate layers of concrete or neat cement grout, gravel or stone aggregate. The filling shall be completed at the top by a layer of neat cement grout or concrete grout extending at least 20 feet (6.1 m) above the top of the cavernous rock or to the ground surface.

501.9.1.3. The section of a well in a sandstone strata shall be filled with neat cement grout, concrete grout or sand. The filling shall be completed at the top of the formation by a layer of neat cement grout or concrete grout extending at least 20 feet (6.1 m) above the top of the sandstone or to the ground surface.

501.9.1.4. The flow in a flowing well shall be confined and the well filled in accordance with preceding paragraphs or the well shall be sealed by pressure grouting.

501.9.1.5. Abandonment of wells containing subterranean gases requires special precautions and a casing in such a well shall be sealed with neat cement grout or concrete grout.

501.9.1.6. Debris or obstructions that may interfere with sealing operations shall be removed from the well.

501.10. DISINFECTION.

501.10.1. Following the completion of the construction of an individual, semi-public water or public supply and installation of the pumping equipment, or alterations, repair or maintenance work, the well shall be pumped continuously until the water discharged is clear. The well, pump, piping system, and other fixtures, shall be filled with water containing a concentration of not less than 100 parts per million of free chlorine. A portion of the chlorine solution shall be recirculated directly to the well in order to insure proper agitation. The water shall not be used for a period of twenty-four (24) hours. Other combinations of concentration and time intervals may be used as are demonstrated to be equally effective.

501.10.2. Disposal of the purged water shall be at a point so as to minimize adverse effects to aquatic life and further, the purged water shall not be discharged into any subsurface sewage disposal system. One ounce (28 g/0.8 kg) of dry calcium hypochlorite (70% available chlorine), dissolved in 52.5 gallons (200 l) of water, makes a 100 ppm strength disinfectant solution. Various proportions can be worked out using the approximate quantities shown in the following table:

Diameter of the Well Casing	Water Standing In Well	Amount of dry powder (HTH or equivalent) to make at least 100 ppm chlorine solution
4 inches (10.16 cm)	100 feet (31 m) (65.5 gallons) (247 l)	3 tablespoonful or 1/4 cup (36.7 g)
6 inches (15.24 cm)	100 feet (31 m) (147 gallons) (556 l)	7 tablespoonful or 1/2 cup (82.3 g)
8 inches (18.32 cm)	100 feet (31 m) (261 gallons) (988 l)	12 tablespoonful or 3/4 cup (146.2 g)
10 inches (25.4 cm)	100 feet (31 m) (408 gallons) (1554 l)	1 - 1/4 cups (228.5 g)
12 inches (30.5 cm)	100 feet (31 m) (587 gallons) (2222 l)	1 - 3/4 cups (328.7 g)

501.11. CROSS CONNECTIONS.

501.11.1. Every potable water distributing pipe shall be protected against cross connection with, and backflow from, any plumbing fixture or other piece of equipment or appliance capable of affecting the quality of the potable water by having the outlet end from which the water flows spaced a minimum distance of twice the diameter of the water supply pipe above the flood level rim of the receptacle into which the potable water flows, except:

501.11.2. Where it is not practicable to provide this minimum distance, the connection to the fixture, equipment, or appliance shall be equipped with a cross connection prevention assembly of a type and location approved by the Department.

501.11.3. For semi-public water supplies, the Department shall require a cross

connection prevention device of a type and location approved by the Department be installed at any fixed potable water outlet to which a hose may be connected. This section shall apply to all semi-public water supplies constructed after the effective date of this section. Existing semi-public water supplies shall be subject to this requirement within one (1) year from the effective date of this section.

501.11.4. Public water systems shall comply with the requirements of the Pennsylvania Safe Drinking Water Act (35 P.S. 721.1 et.seq.)

501.12. PERMIT PROCEDURE.

501.12.1. All individual and semi-public water supplies, shall be constructed in strict compliance with the specifications set forth in this Section of these Rules and Regulations.

501.12.2. All individual and semi-public water supplies constructed pursuant to these Rules and Regulations shall be constructed by a duly licensed well contractor or pump installation contractor who is licensed as set forth in this Section of the Rules and Regulations. The licensed well contractor is responsible for taking all reasonable precautions to insure the maintenance of all isolation distances as set forth in these regulations. This includes, but is not limited to, visual site inspections, drilling the well in the location specified on the well permit and confirmation of these distances by the property owner.

501.12.3. The installation, repair, or modification of a well, casing, water supply line for new construction, well pit, or pitless adaptor, constitutes the installation of a water supply or well and requires a permit prior to the beginning of the installation of a water supply system or of any building(s) for which such a system is to be installed. No Permit will be required for the installation of a water supply line that is connected to a public source; the repair or replacement of a well pump; or for treatment processes in a public water system, provided, however, that the disinfection procedures outlined in paragraph 501.10. of this section shall be strictly adhered to.

501.12.4. The application for a permit for the installation of an individual or semi-public water supply must be made by a Chester County licensed well contractor in the name of the real property owner or equitable owner with written documentation to the Department. All well permit applications for new construction must be issued in the same name as the issued sewage permit, except for those instances where the sewage permit has received prior approval from the Department. No well permit can be issued for a property proposing new construction unless there is a valid sewage permit in effect at the time of application.

501.12.4.1. The application shall contain such information as the Department deems necessary including the information found in Chester County Health Department Well Permit Application (Form CCHD-EHS-15) and information as may be required by the Department to insure that the proposed construction complies with this section.

501.12.5. Permits shall be issued or denied within seven (7) working days after receipt of a completed well application. When the Department has found an application to be incomplete, or the Department is unable to verify the information submitted, the applicant shall be notified in writing the Department's time for acting upon a permit shall be extended fifteen (15) days beyond the date of receipt of the supplementary or amendatory information.

501.12.5.1. A permit shall be denied and/or approval to use the water supply shall be withheld in those areas of the County where the Chester County Health Department has been notified by State or Federal agencies or other sources that the area is unsuitable for the installation of on-site water wells due to known groundwater contamination unless the following conditions are met:

501.12.5.1.1. The water well must be tested prior to use and on a yearly basis for all known and suspected contaminants in the area.

501.12.5.1.2. Where the water quality analysis shows that the contaminate level exceeds the maximum contaminate levels allowed by the Safe Drinking Water Act, the water must be treated by the appropriate treatment unit before approval to use can be granted.

501.12.6. When the Department is satisfied that the application is complete and the proposed design meets the requirements found in this section, a permit will be issued.

501.12.6.1. If construction or installation of an individual or semi-public water supply and of any building or structure for which such water supply system is to be installed has not commenced within three years from the date of issuance of the permit said permit shall expire. A new permit shall be obtained prior to the commencement of said construction or installation.

501.12.7. A permit shall be revoked by the Department at any time for any one or more of the following reasons, which shall be incorporated into a written revocation:

501.12.7.1. When any change has occurred in the physical conditions of any lands which will materially affect the operation of an individual or semi-public water supply.

501.12.7.2. When information material to the issuance of the permit has been falsified.

501.12.7.3. When the decision of the Department fails to conform with the provisions of the section, or:

501.12.7.4. When the permittee has violated the provisions of this section.

501.12.7.5. When the sewage permit has been revoked by the Chester County Health Department.

501.12.8. Upon receipt by the applicant of a notice of denial or revocation of a permit, the applicant may request a hearing in accordance with the provisions of Subsection 108, Chapter 100 of the Rules and Regulations of the Chester County Health Department.

501.12.8.1. Use of a well drilled prior to March 21, 1983, may be considered for use as a supply for new construction only if written documentation is submitted to this Department by a Chester County Health Department licensed well driller verifying that the well meets all the standards as stated in these regulations and a water quality analysis is conducted and found to be in conformance with the standards as set forth in Section 501.12. Wells drilled after March 21, 1983, may be consid-

ered for use as a supply for new construction only if prior written "Approval to Use" has been granted by this Department.

501.12.9. No individual or semi-public water supply may be used and no structure served by an individual or semi-public water supply may be occupied unless the individual or semi-public water supply receives an "Approval to Use" from the Department. The "Approval to Use" will only be issued after submission of properly completed: (1.) well driller's Topographic and Geologic Survey (Form ER-TGS-15); (2.) the Chester County Health Department Well Permit (Form CCHD-EHS-15); (3.) a water quality report completed by a Pennsylvania Department of Environmental Resources (DER) approved laboratory which complies with all parameters outlined in Subsection 501.13. (Water Quality); (4.) a satisfactory site inspection; (5.) Pump information Form (CCHD-WCF-02); (6.) Well information Form (CCHD-WCF-01).

501.12.9.1. A public water system may not be used until the owner receives approval from the Pennsylvania Department of Environmental Resources.

501.12.10. If an emergency condition exists, that is, if the lack of water poses an immediate and significant danger to the health and welfare of persons, livestock or domestic fowl or crops, then the Department shall issue a permit within twenty four (24) hours of receipt of the completed permit application. It is the responsibility of the well contractor and/or property owner or tenant to substantiate that an emergency condition exists by submission of a signed statement to the Department. Emergency permits will not be issued over the telephone except in such instances where the Department may be closed for a period of time in excess of 24 hours, and then only to replace an existing water supply where the lack of water poses an immediate and significant threat to human health or when the Department determines that other exceptional circumstances exist. When permits are issued over the telephone the well contractor must submit the required signed statement and the completed well application to the Department by 9:00 a.m. on the next regularly scheduled Department work day.

501.12.10.1. The drilling process for an emergency well must begin within 24 hours of receipt of the permit or verbal approval or said permit/verbal approval is void except where inclement weather conditions or other abnormal circumstances occur.

501.12.10.2. The well contractor must have the well permit and/or verbal approval well permit number in his possession at the specific job site during all aspects of the well drilling process.

501.12.11. Within thirty (30) days of the completion of the well drilling process the well contractor must submit written drilling and grouting information to the Department utilizing form #CCHD-WCF-01 in addition to the well driller's log Form #ER-TGS-15. Approval to use the well will not be granted until all of the requirements outlined in 501.6.2.6 and 501.12.9 have been satisfied.

501.12.11.1. Within thirty (30) days after completion of the pump installation process, the pump installation contractor must submit written information to the Department as described in 501.8.

501.12.11.2. Failure to comply with these regulations will result in legal action being taken against the property owner/equitable owner and/or well contractor and/or pump installation contractor. Neither the well contractor nor the pump

installation contractor shall refuse to submit the information required in 501.12.11 and 501.12.11.1 due to the non-payment for his or her services.

501.13. WATER QUALITY.

501.13.1. Water quality for public water supplies shall be regulated by the Pennsylvania Safe Drinking Water Act, (35 P.S. 721.1 et seq.)

501.13.1.1. All water samples to be tested must be drawn by a trained DER certified laboratory employee or a Chester County licensed well driller.

501.13.1.2 All water test results to be submitted to the Chester County Health Department must contain the following information: (1.) Permittee's name; (2.) Address of origin of sample; (3.) Township of origin of sample; (4.) CCHD Well Permit #; (5.) The name of the person who took the water sample ; (6.) Statement indicating if the sample was treated or untreated.

501.13.2. Water quality for individual and semi-public water supplies shall conform with the following:

501.13.2.1. Microbiological Water Quality Requirements. Procedures for testing for microbiological contaminants shall be approved by and conducted by a laboratory certified by the Commonwealth of Pennsylvania for the technique used. Evidence of such tests shall be given to the Chester County Health Department verifying that the tests have been conducted by a laboratory approved by the Pennsylvania Department of Environmental Resources (DER).

501.13.2.2. Microbiological, Physical and Chemical Water Quality Requirements. Individual and semi-public water supplies must meet the following standards:

Total coliform	<1/100 ml
Turbidity	5 NTU
pH	6.7 to 8.5
Nitrates + nitrites	10 mg/l as N
Iron	0.3 mg/l
Manganese	0.05 mg/l
Chloride	250.0 mg/l
Color	5 units
MBAS	0.5 mg/l
Odor	5 units

501.13.2.2.1. All water quality tests must be conducted for each category listed in 501.13.2.2 by a laboratory approved by the Pennsylvania Department of Environmental Resources.

501.13.2.2.2. If total coliform, turbidity, pH or nitrates + nitrites are not within the specified standards noted in 501.13.2.2 treatment of the water supply is required to achieve compliance with the standards. The lower limit for pH may be waived if the water is conveyed in plastic pipe approved by the National Sanitation Foundation. This waiver must be signed by the property owner.

501.13.2.2.3 If iron, manganese, chloride, color, MBAS or odor are in excess of the above listed standards in 501.13.2.2, treatment is recommended.

501.13.2.2.4 When a treatment unit has been installed to correct a condition

requiring treatment (501.13.2.2.2) this Department must conduct an inspection to verify the installation of the treatment units(s), as well as, receive written information including the make and model number of any installed treatment unit(s).

501.13.2.2.5. When the parameters listed in 501.13.2.2 are not within the specified limits in the initial water testing process, this Department requires two consecutive (minimum 24 hours apart) passing results without treatment (other than disinfection as per Section 501.10 of these regulations) to be submitted; or, one passing result accompanied by a written description of the treatment unit (when a treatment unit has been installed.)

501.13.2.3 For either individual or semi-public water supplies, additional analyses and treatment of the water may be required if the Department has reason to suspect that harmful substances are present in the water in amounts that are significantly adverse to human health, safety, or comfort.

501.14. ACCESSIBILITY TO PUBLIC WATER.

501.14.1. No individual or semi-public water supply shall be constructed or maintained where a public water supply pipe is within 150 feet of the structure to be served by water, and where the structure to be served by water is located within the franchise area of the water supplier except in the following instances and only when there is no possibility of cross-connections with the structure to be served.

501.14.2. New and existing wells may be used for agricultural and geothermal purposes with written permission from the Director.

501.14.3. Wells that have been replaced by public water supplies may not be used where any federal, state or local agency has determined that the use of the well could interfere with cleanup operations of contaminated groundwater.

501.15. AGRICULTURAL WATER SUPPLY.

501.15.1. Agricultural water wells must meet all Chester County Health Department isolation requirements as noted in Sections 501.6.1.2.

501.15.1.1. Wells used solely for watering crops or for other non-consumptive use by livestock or humans must be tested for coliform bacteria and nitrates.

501.15.1.2. Test results must be submitted to the Chester County Health Department prior to the use of the well. It will not be required that the supply be treated if the parameters are outside of the standards listed in 501.13.2.2.

501.15.2. Wells used for watering dairy livestock must be tested for pH, coliform, bacteria, and nitrates and the results must be submitted to the Chester County Health Department prior to usage.

501.15.2.1. If total coliform is not within the specified standards noted in 501.13.2.2., treatment of the water supply is required to achieve compliance with the standards.

501.15.2.2. If the pH of the water is below 6.7 or the nitrates are higher than 30 ppm treatment is recommended.

501.15.2.3. Wells used solely for watering livestock in the field must be tested for

coliform bacteria and nitrates, but treatment will not be required if the parameters are outside the standards listed in 501.13.2.2.

501.16. GEOTHERMAL WELLS.

501.16.1. The geothermal delivery and return wells that depend on groundwater supplies for heating and cooling must meet all Chester County Health Department isolation distance requirements.

501.16.1.1. The geothermal delivery well must be tested for all specified water quality standards listed in 501.13.2.2.

501.16.1.2. If the geothermal delivery well will also be used as a drinking water supply, all Chester County Health Department water quality requirements listed in 501.13.2.2. must be met.

Approved by the Chester County Board of Health: November 24, 1992

Approved by the Chester County Commissioners: December 15, 1992

Effective close of business January 15, 1993

CERTIFICATION

COMMONWEALTH OF PENNSYLVANIA
COUNTY OF CHESTER ss

I, John P. Maher, M.D., M. P. H., Secretary of the Chester County Board of Health, hereby do certify the within to be true and correct. In witness whereof I have hereunto set my hand this day of

John P. Maher, M.D., M.P.H.
Secretary

SEAL