

John D. Rockefeller IV
Governor



L. Clark Hansbarger, M.D.
Director

State of West Virginia

DEPARTMENT OF HEALTH
CHARLESTON 25305

May 25, 1983

The Honorable A. James Manchin
Secretary of State for West Virginia
State Capitol Building
Charleston, West Virginia 25305

Dear Sir:

Attached are three (3) copies of our proposed "Water Well Regulations" and "Water Well Design Standards", a notification of public hearings and fiscal notes. Please return one copy, stamped to indicate the date of receipt, to the Drinking Water Division, Department of Health, for their files.

Should you need any additional information to complete our filing, please contact me.

Sincerely,

A handwritten signature in cursive script, appearing to read "L. Clark Hansbarger".

L. Clark Hansbarger, M.D.
Director of Health

LCH/csk

Enclosures

FILED IN THE OFFICE OF
A. JAMES MANCHIN
SECRETARY OF STATE
THIS DATE 5/31/83
Administrative Law Division

West Virginia Department of Health

In accordance with the Code of West Virginia, Chapter 29A and Chapter 59, the West Virginia Department of Health, Office of Environmental Health Services will hold a public hearing on proposed "Water Well Regulations" and "Water Well Design Standards". The hearings have been scheduled as follows:

Tuesday, July 12, 1983 - 1:00 p.m.
Monongalia County Health Department
453 Van Voorhis Road
Morgantown, West Virginia 26505

Wednesday, July 13, 1983 - 1:00 p.m.
Conference Room E, Building #7
State Capitol Complex
Charleston, West Virginia 25305

Interested parties are invited to submit oral or written comments regarding these regulations. Copies of the regulations can be obtained from the West Virginia Department of Health, Office of Environmental Health Services, 1800 Washington Street, East, Charleston, West Virginia, 25305. Written comments may also be submitted to the above address by July 15, 1983.

FISCAL NOTE FOR PROPOSED RULES


Rule No. Chapter 16-1 Series XIX (1983) Subject Water Well Regulations
 Type of Rule: Legislative Interpretive Procedural
 Agency Health Address 1800 Washington Street, East
Charleston, West Virginia 25305


Authorized Representative Robert P. Wheeler Phone 348-2970

1. Effect of Proposed Rule	ANNUAL		FISCAL YEAR		
	Increase	Decrease	Current	Next	Thereafter
Estimated Total Cost	\$ -0-	\$ -0-	\$ -0-	\$ -0-	\$ -0-
Personal Services					
Current Expense					
Repairs and Alterations					
Equipment					
Others					

2. Explanation of above estimates.

3. Date _____ Agency Health

Signature of Agency Head

 L. Clark Hansbarger, M.D.
 Director of Health

Signature of Authorized Representative

 Robert P. Wheeler, Director
 Environmental Health Services

STATEMENT OF ECONOMIC IMPACT OF PROPOSED RULES OR REGULATIONS

Agency Health

Rule No. Chapter 16-1 Series XIX (1983) Subject Water Well Regulations

1. Explanation of Overall Economic Impact of Proposed Rule.

A. Economic Impact on State Government.

NONE

B. Economic Impact on Political Subdivisions; Specific Industries; Specific groups of citizens.

Local Health Departments - approximately \$2000.00/yr Well Drillers
Minimal buisness expenses

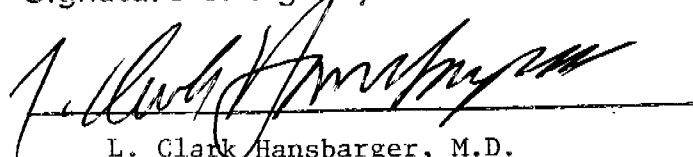
C. Economic Impact on Citizens/Public at Large.

Proposed regulations will increase cost of an individual homeowner's well construction cost by approximately \$100.00

Date _____ Agency Health

Signature of Agency Head

Signature of Authorized Representative



L. Clark Hansbarger, M.D.
Director of Health

Robert P. Wheeler, Director
Environmental Health Services

FISCAL NOTE FOR PROPOSED RULES

Rule No. Chapter 16-1 Series II 1983 Subject Water Well Design Standards

Type of Rule: Legislative Interpretive Procedural

Agency Health Address 1800 Washington Street, East
Charleston, West Virginia 25305

Authorized Representative Robert P. Wheeler Phone 348-2970

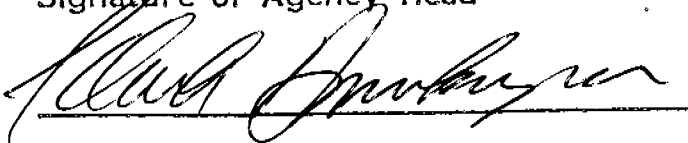
1. Effect of Proposed Rule	ANNUAL		FISCAL YEAR		
	Increase	Decrease	Current	Next	Thereafter
Estimated Total Cost	\$ -0-	\$ -0-	\$ -0-	\$ -0-	\$ -0-
Personal Services					
Current Expense					
Repairs and Alterations					
Equipment					
Others					

2. Explanation of above estimates.

3. Date _____ Agency Health Department

Signature of Agency Head

Signature of Authorized Representative





L. Clark Hansbarger, M.D.
Director of Health

Robert P. Wheeler, Director
Environmental Health Services

STATEMENT OF ECONOMIC IMPACT OF PROPOSED RULES OR REGULATIONS

Agency Health

Rule No. 16-1 Series II (1983)

Subject Water Well Design Standards

1. Explanation of Overall Economic Impact of Proposed Rule.

A. Economic Impact on State Government.

NONE

B. Economic Impact on Political Subdivisions; Specific Industries; Specific groups of citizens.

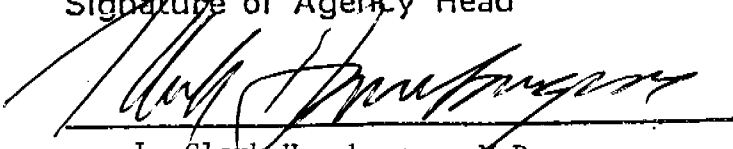
Local Health Departments - approximately \$2000.00/yr.
Water Well Drillery Industries - minimal business expenses.

C. Economic Impact on Citizens/Public at Large.

Proposed standards will increase well cost approximately \$100.00 per well.


Date _____ Agency _____

Signature of Agency Head



L. Clark Hansbarger, M.D.
Director of Health

Signature of Authorized Representative



Robert P. Wheeler, Director
Environmental Health Services

WEST VIRGINIA LEGISLATIVE RULES
BOARD OF HEALTH

Chapter 16-1
Series XIX
(1983)

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WEST VIRGINIA LEGISLATIVE RULES
BOARD OF HEALTH

Chapter 16-1
Series XIX
(1983)

Subject: Water Well Regulations

Section 1. GENERAL

- 1.01. Scope - These legislative rules establish the registration of water well drillers and the permitting of water well drilling.
- 1.02. Authority - These legislative rules are issued under the authority of and related to Chapter 16, Article 1, Section 7(2) of the West Virginia Code of 1931, as amended.
- 1.03. Filing Date - These rules were promulgated on the day of 19 , and were filed on the day of 19 , in the Secretary of State's Office.
- 1.04. Effective Date - These legislative rules became effective on the day of 19 .

Section 2. APPLICATION AND ENFORCEMENT

- 2.01. Application - These legislative rules apply to all water well drillers.
- 2.02. Enforcement - Enforcement of these legislative rules is vested with the Director of the West Virginia Department of Health or his lawful designee.

Section 3. DEFINITIONS

- 3.01. Annular Space - The space between casings or between casing and excavation.
- 3.02. Application - The State Department of Health's standard form(s) for applying for a permit or permit modification, including any additions, revisions or modifications to the form(s).
- 3.03. Aquifer - A geological formation, group of formations, or part of a formation that is capable of yielding a usable amount of water to a well.

- 3.04. Bedrock - Solid rock underlying soil, unconsolidated or weathered material. Bedrock is defined in absolute terms as materials that a six-inch auger, equipped with carbide cutting teeth, penetrates at a rate of less than one inch in three minutes.
- 3.05. Certified Well Driller - A person who has been granted a written certificate by the Director to construct wells who meet the requirements of these regulations.
- 3.06. Confined Aquifer - An aquifer bounded above and below by beds of distinctly lower permeability than that of the aquifer itself and which contains groundwater under pressure greater than that of the atmosphere. This term is synonymous with the term "artesian aquifer".
- 3.07. Confining Bed - A body of relatively impermeable material stratigraphically adjacent to one or more aquifers.
- 3.08. Design Standards - Those specifications, drawings and other details promulgated by the Director to ensure proper location, construction, and completion of water wells.
- 3.09. Director - Director of the State Department of Health or his lawful designee.
- 3.10. Drinking Water - Water free from biological, chemical, physical and radiological contaminants in quantities which cause disease or harmful physiological effects.
- 3.11. Formation - A body of rock characterized by a degree of lithologic homogeneity which is mappable on the earth's surface or traceable in the subsurface.
- 3.12. Groundwater - Water below the land surface in a zone of saturation.

- 3.13. Permeability - The capability of a rock, aquifer or confining bed to transmit water.
- 3.14. Person - Individual, partnership, association, syndicate, company, firm, trust, corporation, government corporation, institution, department, division, bureau, agency, federal agency or any other entity recognized by law.
- 3.15. Pollutant - Any man-induced physical, chemical, biological or radiological substance or matter in groundwater.
- 3.16. Unconfined Aquifer - An aquifer not bounded above by a bed of distinctly lower permeability than that of the aquifer itself and containing groundwater under pressure approximately equal to that of the atmosphere. This term is synonymous with the term "water table aquifer".
- 3.17. Water Well - Any excavation or penetration in the ground, whether drilled, bored, cored, driven, jetted or dug, for a water supply, for the exploration of water, or for removal of water to dewater construction site(s).
- 3.18. Well Completion Report - An accurate report kept at the time of drilling and construction describing geological, hydraulic and construction details.
- 3.19. Well Driller - An individual, firm, partnership, or corporation qualified to engage in well construction or who supervises the construction of water wells.

Section 4. PERMIT TO CONSTRUCT

- 4.01. On and after the effective date of these regulations, no person shall construct a well or award a contract for any construction or alteration of a well without obtaining a permit to do so from the Director. The requirements for application and for permit issuance are set forth in Sections 4.02, 4.03, and 4.04 of these regulations.

- 4.02. No person shall begin construction, alteration or deepening of a water well without first submitting an application for review and approval at least ten (10) days prior to the date on which approval by the Director is desired.
- 4.03. The well shall be constructed or altered in accordance with the West Virginia Department of Health's Design Standards for Water Well Construction or plans which have been approved in writing by the Director.
- 4.04. Application for Permit to Construct shall be made to the Director or his designee on forms prescribed by the Director and shall be jointly signed by well driller and property owner.
- 4.05. In the event the permit application is denied, the Director shall state in writing the reason(s) for denial and furnish same to applicant within ten (10) days from receipt of application.
- 4.06. A Permit to Construct, unless revoked, shall be valid for a period of one (1) year from date of issuance. In the event construction or alteration is not completed within that time, the Director may extend the time limit upon written request by the permittee.
- 4.07. One year after the effective date of these regulations, the Director will issue a well construction permit only to a person licensed by the West Virginia State Health Department as per Section 5 of these regulations.
- 4.08. A Permit to Construct may be revoked or denied by the Director for failure to comply with the provisions of the permit, any applicable provision of the regulations or orders issued pursuant thereto. Such revocation shall be in writing and shall state the reasons for revocation or denial.

- 4.09. Any person whose Application for Permit to Construct a water well has been revoked or denied may, within thirty (30) days from receipt of permit denial or revocation, request a hearing in accordance with Section 10, Administrative Due Process.
- 4.10. Emergency/Mobilization Permits - Permission to begin construction or alteration on any well may be applied for by telephone when emergency conditions or drilling rig mobilization conditions exist which would justify such a request. The Director may grant such emergency/mobilization permits at his discretion. However, a set of unforeseen circumstances must exist to create need for telephone permitting process. Mere carelessness, or lack of planning on the part of applicant, shall not be sufficient grounds to warrant the granting of an emergency/mobilization permit. The applicant for an emergency/mobilization permit shall reduce his application to writing in accordance with the provisions of Sections 4.02, 4.03, and 4.04 above and that writing be received by the Director within ten (10) days after having granted such a request. All other provisions of these regulations shall remain applicable and be complied with.

Section 5. CERTIFICATION OF WATER WELL DRILLERS

- 5.01. Within one (1) year after the date these regulations become effective, all water well drillers and their employees in direct charge of drilling and construction shall be certified for such activity by the Director.
- 5.02. An Application for Certification as a well driller shall be made in writing to the West Virginia Department of Health on a form prescribed by the West Virginia Department of Health. Information required on the form may include but not limited to name, age, address, education, experience, business name and references.

- 5.03. The West Virginia Department of Health shall deny certification if the information on the application form is incomplete, inaccurate, false or misleading, or indicates that the provisions of these regulations can not be met.
- 5.04. Certification shall not be transferrable or assignable and shall automatically become invalid upon suspension or revocation.
- 5.05. Certification shall expire five (5) years after date of issuance and may be renewed before such expiration date.
- 5.06. When certification has been denied, suspended or revoked, the person thereby affected shall immediately discontinue the construction or alteration of wells.
- 5.07. Any person whose application for certification has been denied or whose certification has been suspended or revoked may request a hearing in accordance with Section 10, Administrative Due Process. Applicant must submit written request for hearing within thirty (30) days from receipt of denial, suspension or revocation of certification.
- 5.08. Denial, suspension or revocation of certification shall be in writing from the Director and shall state specific reasons for the denial, suspension or revocation.
- 5.09. Suspension or revocation of certification shall be preceded by "Notice of Intent to Revoke or Suspend" from Director, at least ten (10) days prior to revocation or suspension.
- 5.10. In addition to filing an application for becoming certified to drill wells, the applicant must pass an examination to assure the West Virginia Department of Health that the applicant is thoroughly familiar

with all requirements of the laws of the State of West Virginia and these water well regulations. Examinations shall be administered by personnel of the West Virginia Department of Health. A passing grade of seventy (70%) per cent must be obtained before becoming certified. Any applicant who has failed an examination must wait thirty (30) days before again taking the examination.

- 5.11. When any groundwater system or any modification thereof is being constructed, installed, extended, altered or located, the person in responsible charge of such work shall hold a current certification as a well contractor.

Section 6. IDENTIFICATION NUMBERS OF WATER WELL RIGS AND WELL HEAD

- 6.01. It shall be the duty of all certified water well drillers to see that all water well rigs used by them or their employees in the water well drilling business are marked with legible and plainly visible identification numbers at all times.
- 6.02. The identification number to be used on water well rigs shall be the certification number of the water well driller responsible for the water well drilling operations.
- 6.03. Certification numbers shall be printed upon each side of every water well rig in numerals of not less than two inches high and such numerals shall be in a color sufficiently different from the color of the vehicle or equipment so that the registration number shall be plainly legible.

- 6.04. A driller shall have thirty (30) days from the date a license is issued to him to see that all water well rigs used by him or his employees in the water well drilling business are marked as provided in Section 6.02 and 6.03 above.
- 6.05. Each well drilling contractor shall securely attach a metal tag or embossed well cap to the well head containing the following information: driller's name and address and date of completion.

Section 7. RECORDS OF COMPLETED WELLS

- 7.01. Within fifteen (15) days after the completion of a well, a well drilling contractor shall provide the owner with one copy and the Director with two (2) copies of a record indicating the well owner's name, location of the well; drillers name, well depth, geological materials and thicknesses of material penetrated, amount of casing, static water levels, date of completion, and any other information which may be required by the Director. This information shall be provided on forms prescribed by the Director.

Section 8. ADVISORY BOARD

- 8.01. The Director may appoint a Well Driller's Advisory Board and chairman of said board.
- 8.02. The Advisory Board membership shall consist of, but not necessarily be limited to, the following members:
- Certified well drillers: 2 to 3 members
 - State Health Department: 1 member
 - Local Health Department: 1 member
 - West Virginia Geological Survey: 1 member
 - West Virginia Soil Conservation Commission: 1 member

8.03. Duties of Advisory Board shall consist of the following functions:
Review of applications for certification examinations; review of water well Design Standards; review of water well regulations, and, make recommendations for revisions of regulations and design standards, if deemed necessary.

Section 9. PENALTY - Any individual, partnership, association, syndicate, company, firm, trust, corporation, government corporation, institution, department, division, bureau, agency, federal agency, or any entity recognized by law who shall violate any provision of this section, or any of the regulations or orders issued pursuant thereto, shall be guilty of a misdemeanor, and, upon conviction thereof, shall be fined not less than twenty five dollars (\$25) nor more than two hundred (\$200), and each day's violation shall constitute a separate offense. In addition thereto, the State Director of Health, or his authorized representative, may seek injunctive relief in the circuit court of the county in which the violation occurred. For a willful violation of this section, or of any of the regulations or orders issued thereunder, an individual, partnership, association, syndicate, company, firm, trust, corporation, government corporation, institution, department, division, bureau, agency, federal agency, or other entity recognized by law, upon a finding thereof by the circuit court of the county in which the violation occurs, shall be subject to a civil penalty of not more than five thousand dollars (\$5000), and each day's violation shall be grounds for a separate penalty.

Section 10. ADMINISTRATIVE DUE PROCESS - Those persons adversely affected by the enforcement of these legislative rules desiring a contested case hearing to determine any rights, duties, interests or privileges shall do so in a manner prescribed in the West Virginia Procedural Rules, Board of Health, Chapter 16-1, Series I, 1981, Rules of Procedure for Contested Case Hearings and Declaratory Rulings. The aforementioned procedural rules are incorporated herein by reference.

Section 11. SEVERABILITY - If any provisions of these rules or the application thereof to any person or circumstance shall be held invalid, such invalidity shall not affect the provisions or the application of these rules which can be given effect without the invalid provisions or application and to this end the provisions of these rules are declared to be severable.

WEST VIRGINIA INTERPRETIVE RULES
BOARD OF HEALTH

Chapter 16-1
Series II
(1983)

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WEST VIRGINIA INTERPRETIVE RULES
BOARD OF HEALTH

Chapter 16-1
Series II
(1982)

Subject: Water Well Design Standards

Section 1. General

1.01. Scope - These interpretive rules establish the design standards for the construction of water wells to provide adequate protection of public health and groundwater aquifers from contamination and pollution.

1.02. Authority - These interpretive rules are issued under the authority of and related to Chapter 16, Article 1, Section 9 of the West Virginia Code of 1931, as amended.

1.03. Filing Date - These interpretive rules were promulgated on the day of 19 , and were filed on the day of 19 , in the Secretary of State's office.

1.04. Effective Date - These interpretive rules became effective on the day of , 19 .

Section 2. Application

2.01. Application - These rules apply to all water well drillers.

Section 3. Definitions

3.01. Adequate Protection - means proper construction methods which provide protection of the potable water aquifer from contamination.

Board of Health
Interpretive Rule 16-1
Series II

3.02. Annular Opening - means the water well opening constructed by excavation or penetration.

3.03. Concentric Pipe Installation - refers to the piping system between a jet pump and the well when the suction line must be buried. Concentric piping refers to the suction line being contained or located inside the pressure pipe.

3.04. Static Water Level - is the level at which water stands in a well when no water is being taken from the aquifer either by pumping or free flow. It is expressed as the distance from the ground surface to the water level in the well.

3.05. Drawdown - in a well is the extent of lowering of the water level when pumping is in progress and is the difference, measured in feet, between the static water level and the pumping level.

3.06. Location - means the designation of the well site and other appurtenances of the water supply system.

3.07. NSF - means plastic materials such as pipe, fittings, solvents, etc., approved for use in potable water systems by the National Sanitation Foundation.

3.08. Pitless Well Adapter - is an approved device for attachment to one of more openings through a well casing, and so constructed as to prevent the entry of contamination into the well or potable water, conduct water from the well, protect the water from freezing or extremes of temperature, and provide access of water system components within the well.

3.09. Pitless Well Cap - is an approved watertight, sanitary device that covers and encloses the upper termination of a pitless well unit or the well casing, and provided with water-tight connections for electrical power

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Interpretive Rule 16-1
Series II

3.10. Pitless Well Unit - is an approved pre-assembled device which extends the upper end of a well casing to above grade, provided with an approved pitless well cap, and so constructed as to prevent the entry of contamination into the well or potable water, conduct water from the well, protect the water from freezing or extremes of temperature, and provide access to the well and to the water system components within the well.

3.11. Pumping Level - is the level at which water stands in a well when pumping is in progress.

3.12. Water Well Log - is a log accurately kept, at the time of drilling, showing the depth, thickness, character of the different strata penetrated, location of water bearing strata, depth, size, and type of casing installed, together with any other data or information required by the Water Well Drilling Regulations and on forms prescribed by said regulations.

3.13. Well Liner - means piping installed without driving which may be standard pipe weight or lighter and shall be of such minimum thickness as is required to withstand the structural load imposed by conditions inside and outside the well. Liner refers to piping placed inside or outside the well casing and may be required due to conditions encountered during and after drilling.

Section 4. Location of the Water Well

4.01. The water well shall be located as far as possible from any source or any potential source of pollution and specifically as listed below:

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Series II

4.01.01. The required minimum horizontal distance separation between a water well and source or potential source of contamination is as follows:

Septic Tank	50' (200')*
Sewage Holding Tanks.	100' (200')*
Sewage Absorption Field	100' (200')*
Sewers and Drains (Hydrostatically Tested)	10' **
Sewers and Drains (Non Water Tight)	100' (200')*
Privies (Leaching)	100' (200')*
Privies (Vault)	50' (200')*
Barnyard/Feeding and Watering Areas	100' (200')*
Streams, Impoundments, etc.	25' ***

(*) A water well shall not be located downhill in elevation from any septic tanks, home aeration units, privies, sewage holding tanks, trench fields, serial distribution system, beds, mound systems, and any other soil absorption systems unless the well is two hundred feet (200') minimum from the referenced sources of contamination.

(**) Sewer and drain materials shall be of waterline grade and quality and shall be hydrostatically tested by completely filling the line with water and observing that there is no leakage over a four (4) hour time period.

The sewer or drain line length that is required to be tested and constructed of waterline grade and quality shall be that section of line that is located within one hundred feet (100') of a water well that is higher in ground elevation than the referenced sewer or drain line.

Board of Health
Interpretive Rule 16-I
Series II

The sewer or drain line length that is required to be tested and constructed of waterline grade and quality shall be that section of line that is located within two hundred feet (200') of a water well that is lower in ground elevation than the referenced sewer or drain line.

(***) When possible, the well casing shall extend above the 50 year flood level. When the 50 year level is not known, then the referenced flood level shall be designated at six feet (6') above normal water level of the stream as a minimal standard.

Section 5. Materials

5.01. Well casing may be of iron or steel with minimum wall thickness of 0.142 inches (for undriven casing) and 0.187 inches (for driven casing), minimum casing inside diameter of five and one half inches (5½")

and shall have welded or threaded pipe joints and shall be watertight for protection against contamination.

5.02. Plastic well casing used shall meet National Sanitation Foundation (NSF) standards or otherwise as approved by the Director.

5.03. Plastic well casing shall not be driven.

5.04. Any casing used must be adaptable to stresses to which they will be subjected during installation.

5.05. When metal permanent well casing is driven, a standard drive shoe shall be welded or threaded on the lower end of the string of casing. The shoe shall have a beveled and tempered cutting edge of metal forged, cast or fabricated for this purpose. It shall be the well driller's responsibility to utilize the equipment he deems suitable to insure that the well will maintain

Board of Health
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Series II

5.06. Driven casing shall have minimum weights and thicknesses given in Tables 1 and 2.

5.07. Use of plastic pipe for well liners and temporary casing shall be permitted provided that the following requirements are met:

5.07.01. Plastic pipe shall meet National Sanitation Foundation (NSF) Standards and be approved by the Director.

5.07.02. Electrical grounding to plastic pipe is not approved.

5.08. Pitless Adapters, Pitless Units, Well Caps and Related Accessories shall be Water Systems Council recommended - Recommended Standards (PAS-1) dated February 1980 or latest revision thereto or National Sanitation Foundation (criteria C-3) approved or otherwise as approved by the Director.

5.09. Well Screens

5.09.01. Well screens may be fabricated from either approved plastic or metal materials.

5.09.02. Plastic well screens shall be Schedule 40 (minimum) or equivalent as specified in ASTM D 1785 and ASTM D 1537 or the latest revision thereto and the material shall be NSF approved or otherwise approved by the Director.

5.09.03. Well screen openings shall provide the maximum amount of open area consistent with strength of screen material and sediment grain size of the water bearing formation or any sand or gravel pack placed adjacent to the screen. The screen shall permit maximum water transmission without clogging.

5.09.04. Well screens other than those made commercially are prohibited for use.

5.09.05. Slotted pipe shall not be used in place of well screens.

Board of Health
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Series II

5.09.06. The well screens shall be provided with such fittings as are necessary to close the bottom of the screen.

5.09.07. Well screen and fittings used shall be compatible with the chemical characteristics of the water.

5.10. Distribution Piping

5.10.01. Any plastic piping used shall bear the seal of the National Sanitation Foundation (NSF-pw) or be National Sanitation Foundation approved or otherwise be approved by the Director.

5.10.02. Plastic solvents, joint compounds, fittings, etc., used shall be National Sanitation Foundation approved or otherwise be approved by the Director.

5.10.03. Any other type distribution piping may be used if approved and used per American Water Works Association Standards or otherwise as approved by the Director.

5.11. Grouting Material - Only the following materials shall be acceptable for the grouting of the annular space between the oversize drill hole, excavation, etc., and the well casing.

5.11.01. Neat Portland Cement or quick setting cement utilizing no more than $7\frac{1}{2}$ gallons of water per 94 pounds of cement.

5.11.02. Neat Portland Cement or quick setting cement dry blended with no more than $7\frac{1}{2}$ pounds of sodium base bentonite clay per 94 pounds cement and no more than 10 gallons of water.

5.12.03. Bentonite clay alone shall not be used for grouting.

Section 6. Construction Requirements

6.01. Casing

Board of Health
Interpretive Rule 16-1
Series II

6.01.01. The minimum length of casing placed in any water well shall be twenty feet (20'). This minimum length of casing includes one foot (1') minimum above ground level or well house floor level. Where possible, the well casing shall terminate above the fifty (50) year flood level.

6.01.02. Casing shall enter into unweathered rock a minimum of five (5') feet.

6.01.03. Where bedrock is not encountered in drilling operation the minimum length of well casing placed shall be 20' feet in overall length and grouted in accordance with Section 6.03.

6.01.04. Inside diameter of water well casing shall not be less than five and one half inches (5½"). Lesser diameter casing may be used for those casing lengths in excess of twenty feet (20') where conditions dictate use of additional casing or otherwise as approved by the Director.

6.02. Annular Openings.

6.02.01. The annular opening of the drift hole, well boring, etc., shall be at a minimum three inches greater in diameter than the dimension of the outside diameter of the well casing.

6.02.02. The annular opening shall extend the full depth of the well casing and terminate a minimum of five feet (5') into rock.

6.02.03. The annular opening for water wells constructed in unconsolidated materials shall be maintained by use of twenty foot length (minimum) of outer casing which shall be removed during the grouting operation.

Board of Health
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Series II

6.03. Grouting

6.03.01. All well casing shall be grouted.

6.03.02. Grout shall be placed by means of a grout pump from the bottom of the annular opening upward in one continuous operation.

6.03.03. Gravity placement of grout (poured, rodded, or vibrated) shall not be permitted.

6.03.04. During the grouting operation, the casing shall be maintained in a centered position within the oversize drill hole.

Section 7. Well Head

7.01. The well head shall be constructed as to assure adequate protection of the well and to exclude entry of any contaminant.

7.02. Any well casing must extend a minimum of twelve inches (12") above ground level or finished floor level of a pump house as applicable. Where possible, the well casing shall terminate above the fifty (50) year flood level.

7.03. Installation of pits or well houses below ground level is prohibited for any well water system or pumping system.

7.04. The well casing shall be provided with either a pitless unit or adaptor installation and well cap for outdoor installation or sanitary seal for indoor (well house) installation approved by the Water System Council, National Sanitation Foundation, or otherwise as approved by the Director.

7.05. Well vents shall be provided where required. The well vent shall be constructed with a down-facing elbow or mushroom type head located at least twelve inches (12") above floor or ground level and above 50 year flood elevation

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7.06. Wells shall be properly capped during construction of the water system to exclude the entry of contamination as applicable.

Section 8. Pitless Well Installation

8.01. A pitless well installation shall consist of either a pitless well unit or pitless well adapter including pitless well cap.

8.02. Pitless well units, pitless adapters and pitless well caps shall be constructed in accordance with Criteria C-8 of the National Sanitation Foundation or the Recommended Standards (PAS-1) of the Water Systems Council or latest revision thereto and be recommended for use by the Water Systems Council or equivalent.

8.03. The pitless well unit installation shall terminate not less than twelve inches (12") above the ground surface, and above the 50 year flood elevation as applicable or practical and shall be provided with a pitless well cap and a well vent (where required), which shall be protected with a down-facing elbow or mushroom-type head located above the referenced flood level where applicable or practical and screened against the entry of insects.

8.04. The cement grouting of the annular space of the well shall extend to within six inches (6") of the connection between the well casing and the pitless installation.

8.05. The lateral discharge line shall be provided with a minimum of three feet (3') of earth cover, or a sufficient earth cover to prevent freezing.

8.06. Pitless Well Adapters Connection to Casing

8.06.01. The hole used to install the lateral discharge line to the well casing shall be made in such a manner as to provide a watertight connection.

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8.06.02. The exterior connection between the adapter and the well casing may be welded, or may be of the threaded or clamp-on gasket type. Extreme care shall be exercised when the connection is welded to assure a complete, watertight seal. A clamp-on gasket adapter shall be installed only on a smooth, clean surface.

8.07. Pitless Well Unit Connection to Casing

8.07.01. At the point of attachment to the well casing a pitless well unit may be welded, threaded, or of the slip-on type with O-ring gasket and shall be of watertight construction.

8.07.02. If the connection is to be by means of a field weld, the pitless well unit must be specifically designed for welding. The only field welding permitted shall be that needed to attach the pitless well unit to the well casing.

8.07.03. If the connection is of the slip-on type with O-ring gasket, the surface of the well casing shall be smooth and clean.

8.07.04. The filed connection between the pitless well unit and the lateral discharge line shall be threaded, flanged or a mechanical joint, and shall be so constructed and installed as to be watertight.

Section 9. Well Log - A completed well log shall be submitted to the director. The well log submitted shall be on the form prescribed by the director.

Section 10. Well Abandonment

10.01. Any test well or water well which is not in use shall be sealed by such measures as necessary as to restore the controlling geological conditions which existed prior to well construction.

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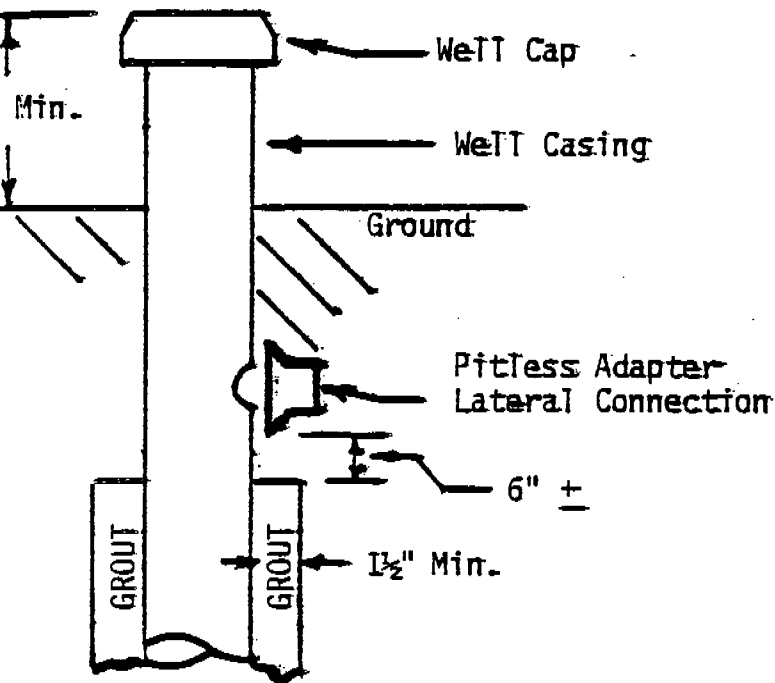
10.02. Wells to be abandoned shall be sealed by fitting the well with concrete to prevent exchange of water from one geological strata to another.

10.03. Notification of well abandonment shall be provided to the director on forms prescribed by the director.

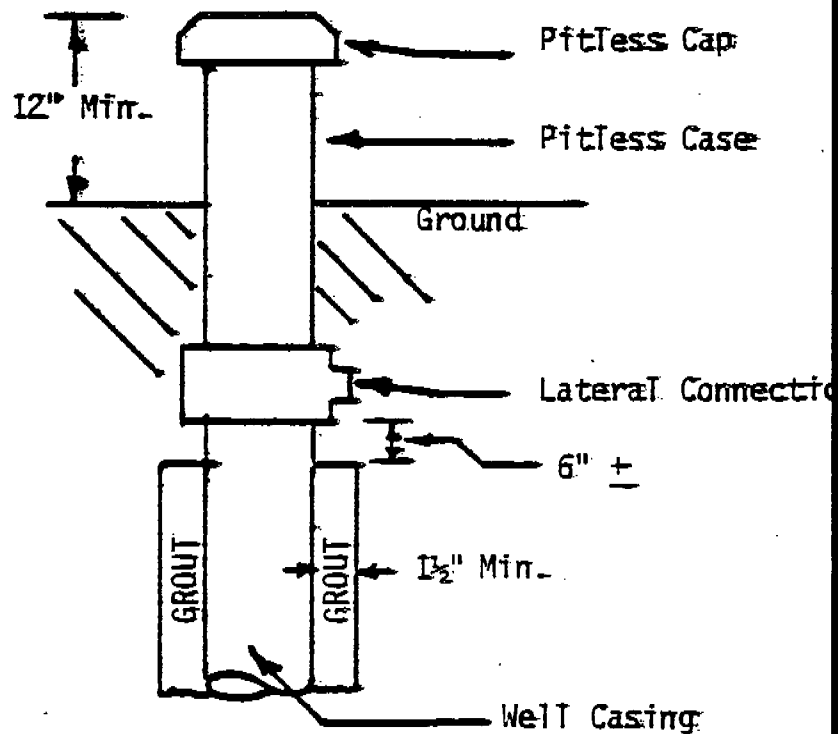
Section 11. Additional Requirements - all installations and operation shall meet or exceed relevant requirements of national, state, local or trades good practices or codes, whichever has jurisdiction.

WELL HEAD CONSTRUCTION

OUTDOOR INSTALLATIONS.



PITLESS ADAPTER
BELOW GROUND



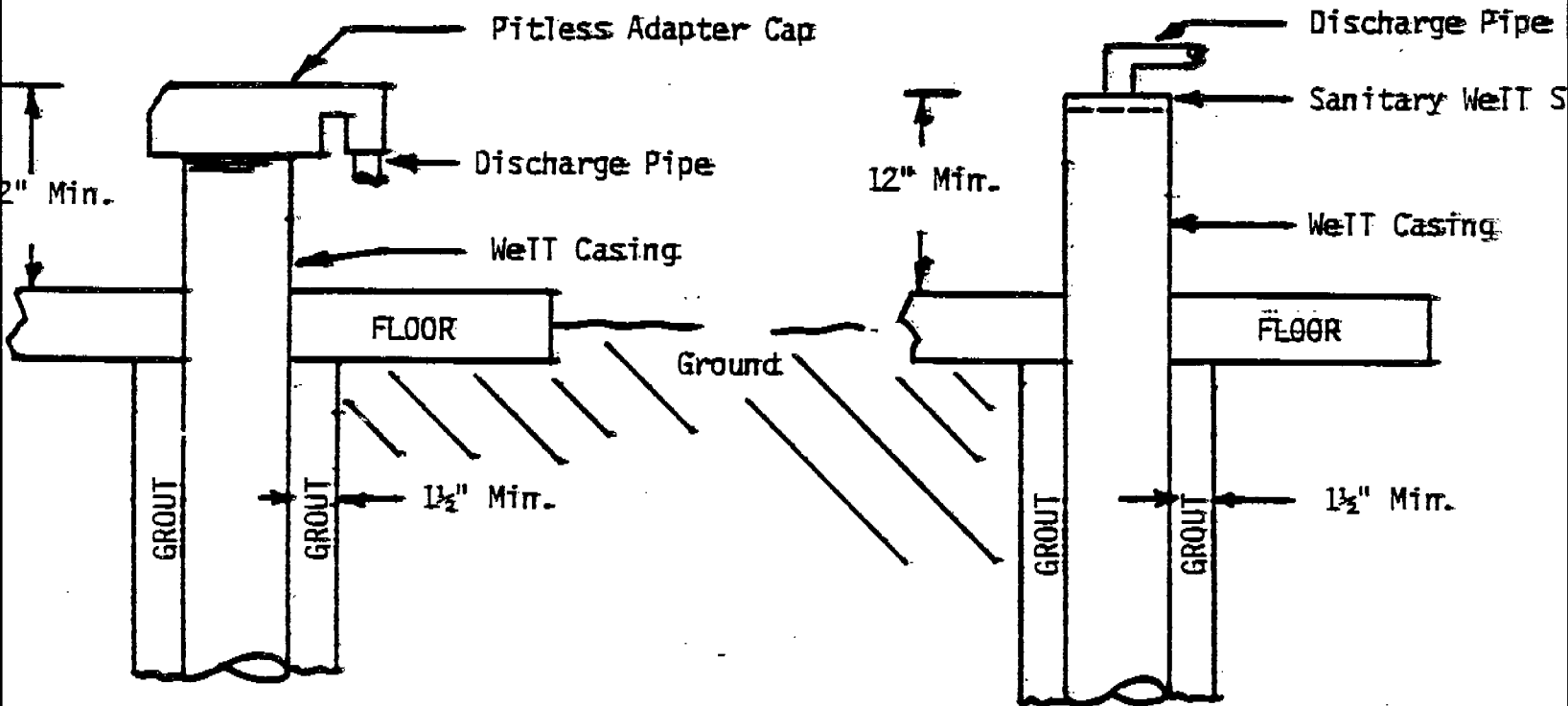
PITLESS UNIT

NOTES

1. Outdoor well heads for drilled water wells shall be constructed in accordance with one of the above standards.
2. Pitless adapters, pitless units, well caps, and related accessories used in water well construction must meet the Recommended Standards (PAS-1) of the Water Systems Council or Criteria C-8 of the National Sanitation Foundation or otherwise as approved by the Director.
3. Grouting of the well casing should not cover the pitless adapter, pitless unit or the lateral connection, etc.
4. The recommended depth of the lateral connection is 3' minimum or below the frost line to avoid freezing.
5. Use of jet pumps with buried suction lines shall require the use of Water Systems Council recommended pitless units with concentric pipe installation. The suction line shall be contained inside the buried pressure line.
6. Properly constructed vents shall be provided as applicable.

WELL HEAD CONSTRUCTION

INDOOR INSTALLATIONS



PITLESS ADAPTER ABOVE
GROUND/FLOOR LEVEL

SANITARY WELL SEAL
ABOVE GROUND/FLOOR LEVEL

NOTES

1. Indoor well heads for drilled water wells shall be constructed in accordance with one of the above standards.
2. Grout shall extend to ground/floor level.
3. Pitless adapters, pitless adapter caps, sanitary well seals and related accessories used in water well construction must meet the Recommended Standards (PAS-1) of the Water Systems Council or Criteria C-8 of the National Sanitation Foundation or otherwise as approved by the Director.
4. Properly constructed vents shall be provided as applicable.

DRILLED
WELL CONSTRUCTION TYPICAL

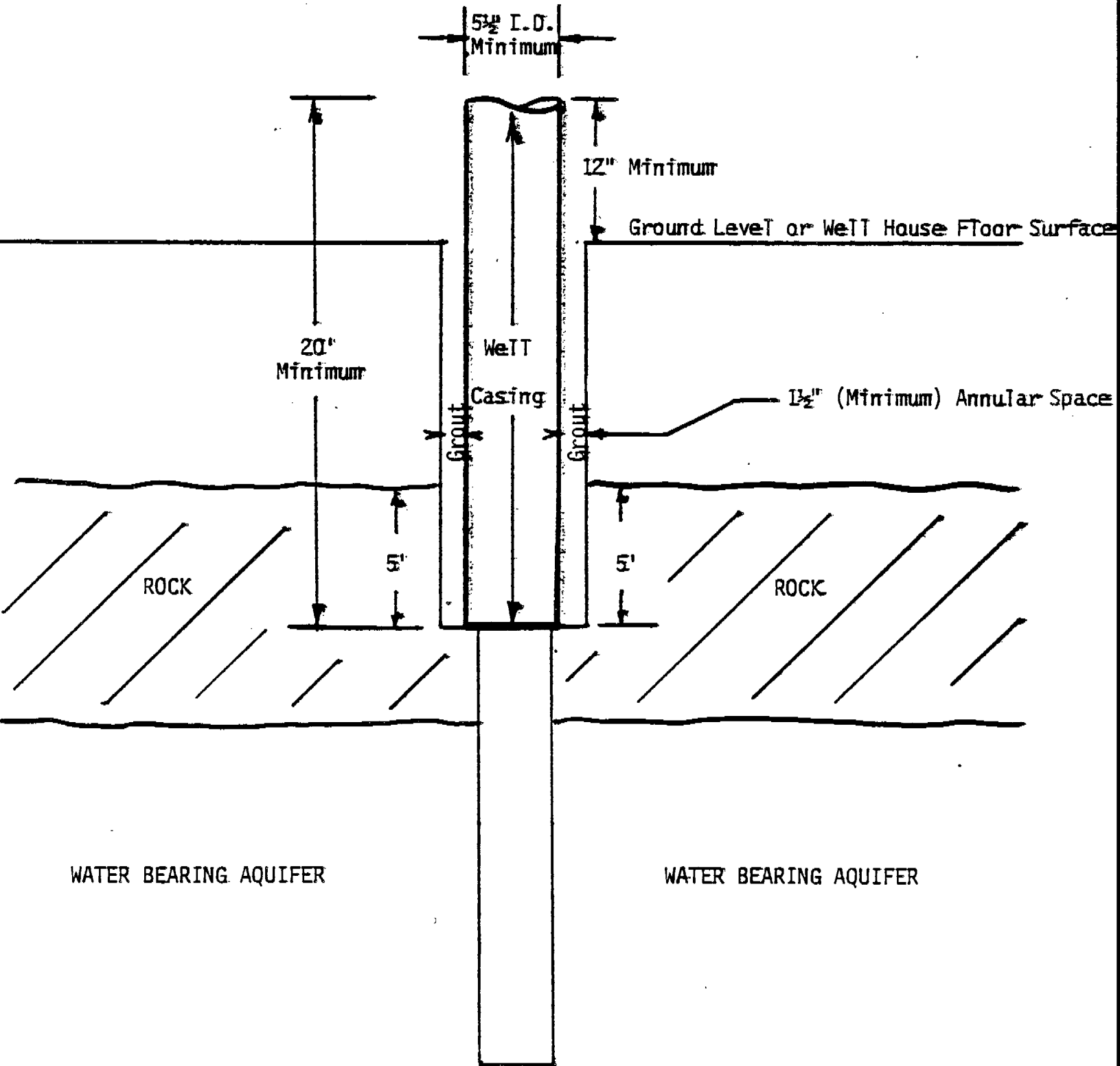


Table I

WROUGHT IRON PIPE*

SIZE (inches)	DIAMETER (inches)		WEIGHT PER FOOT (pounds)		
	EXTERNAL	INTERNAL		PLAIN ENDS (calculated)	WITH THREADS AND COUPLINGS (nominal)
6 id.	6.625	6.053	0.286	18.97	19.45
8	8.625	7.967	0.329	28.55	29.35
10	10.750	10.005	0.372	40.48	41.85
12	12.750	11.985	0.383	49.56	51.15
14	14.000	13.234	0.383	54.56	57.00
16	16.000	15.234	0.383	62.58	65.30
18	18.000	17.165	0.417	76.84	81.20
20	20.000	19.000	0.500	102.10	106.62
22	22.000	21.000	0.500	112.57	
24	24.000	23.000	0.500	123.04	
26	26.000	25.000	0.500	133.51	
28	28.000	27.000	0.500	143.99	
30	30.000	29.000	0.500	154.46	

*Abstracted from AWWA Standard for Deep Wells, AWWA A100-66, p. 34 & 35.

TABLE 2

STEEL PIPE*

SIZE	DIAMETER (inches)		THICKNESS (inches)	WEIGHT PER FOOT (pounds)	
	EXTERNAL	INTERNAL			WITH THREADS AND COUPLINGS (nominal)
6	6.625	6.065	0.280	18.97	19.18
8	8.625	7.981	0.322	28.55	29.35
10	10.750	10.020	0.365	40.48	41.85
12	12.750	12.000	0.375	49.56	51.15
14	14.000	13.250	0.375	54.57	57.00
16	16.000	15.250	0.375	62.58	65.30
18	18.000	17.250	0.375	70.59	73.00
20	20.000	19.250	0.375	78.60	81.00
22	22.000	21.000	0.500	114.81	
24	24.000	23.000	0.500	125.49	
26	26.000	25.000	0.500	136.17	
28	28.000	27.000	0.500	146.85	
30	30.000	29.000	0.500	157.53	
32	32.000	31.000	0.500	168.21	
34	34.000	33.000	0.500	178.89	

TABLE 2 - Driven Casing
STEEL PIPE

SIZE	DIAMETER (inches)		THICKNESS (inches)	WEIGHT PER FOOT (pounds)	
	EXTERNAL	INTERNAL		PLAIN ENDS (calculated)	WITH THREADS AND COUPLINGS (nominal)
6	6.625	6.250	0.187	-	-
6	6.625	6.065	0.280	18.97	19.18
8	8.625	7.981	0.322	28.55	29.35
10	10.750	10.020	0.365	40.48	41.85
12	12.750	12.000	0.375	49.56	51.15
14	14.000	13.250	0.375	54.57	57.00
16	16.000	15.250	0.375	62.58	65.30
18	18.000	17.250	0.375	70.59	73.00
20	20.000	19.250	0.375	78.60	81.00
22	22.000	21.000	0.500	114.81	
24	24.000	23.000	0.500	125.49	
26	26.000	25.000	0.500	136.17	
28	28.000	27.000	0.500	146.85	
30	30.000	29.000	0.500	157.53	
32	32.000	31.000	0.500	168.21	
34	34.000	33.000	0.500	178.89	
36	36.000	35.000	0.500	189.57	

Section 14. Severability - If any provisions of these rules or the application thereof to any person or circumstance shall be held invalid, such invalidity shall not affect the provisions or the application of these rules which can be given effect without the invalid provisions or application, and to this end the provisions of these rules are declared to be severable.

FISCAL NOTE FOR PROPOSED RULES

Rule No. Chapter 16-1 Series XIX (1983) Subject Water Well Regulations
 Type of Rule: Legislative Interpretive Procedural
 Agency Health Address 1800 Washington Street, East
Charleston, West Virginia 25305

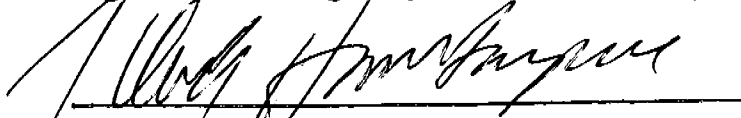
Authorized Representative Robert P. Wheeler Phone 348-2970

1. Effect of Proposed Rule	ANNUAL		FISCAL YEAR		
	Increase	Decrease	Current	Next	Thereafter
Estimated Total Cost	\$ -0-	\$ -0-	\$ -0-	\$ -0-	\$ -0-
Personal Services					
Current Expense					
Repairs and Alterations					
Equipment					
Others					

2. Explanation of above estimates.

3. Date _____ Agency Health

Signature of Agency Head



L. Clark Hansbarger, M.D.
 Director of Health

Signature of Authorized Representative



Robert P. Wheeler, Director
 Environmental Health Services

STATEMENT OF ECONOMIC IMPACT OF PROPOSED RULES OR REGULATIONS

Agency Health

Rule No. Chapter 16-1 Series XIX (1983) Subject Water Well Regulations

1. Explanation of Overall Economic Impact of Proposed Rule.

A. Economic Impact on State Government.

NONE

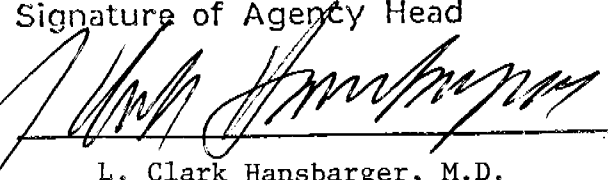
B. Economic Impact on Political Subdivisions; Specific Industries; Specific groups of citizens.

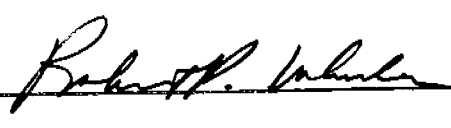
Local Health Departments - approximately \$2000.00/yr Well Drillers
Minimal buisness expenses

C. Economic Impact on Citizens/Public at Large.

Proposed regulations will increase cost of an individual homeowner's well construction cost by approximately \$100.00

Date _____ Agency Health

Signature of Agency Head

L. Clark Hansbarger, M.D.
Director of Health

Signature of Authorized Representative

Robert P. Wheeler, Director
Environmental Health Services

FISCAL NOTE FOR PROPOSED RULES

Rule No. Chapter 16-1 Series II 1983 Subject Water Well Design Standards

Type of Rule: Legislative Interpretive Procedural

Agency Health Address 1800 Washington Street, East
Charleston, West Virginia 25305

Authorized Representative Robert P. Wheeler Phone 348-2970

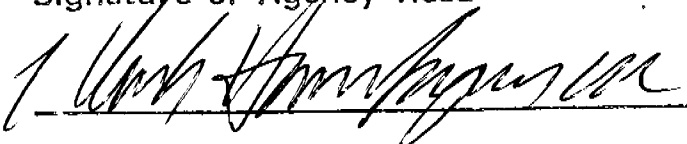
1. Effect of Proposed Rule	ANNUAL		FISCAL YEAR		
	Increase	Decrease	Current	Next	Thereafter
Estimated Total Cost	\$ -0-	\$ -0-	\$ -0-	\$ -0-	\$ -0-
Personal Services					
Current Expense					
Repairs and Alterations					
Equipment					
Others					

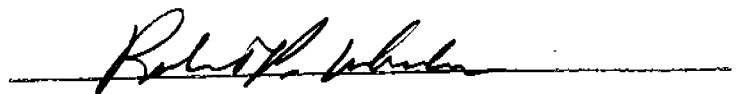
2. Explanation of above estimates.

3. Date _____ Agency Health Department

Signature of Agency Head

Signature of Authorized Representative





L. Clark Hansbarger, M.D.
Director of Health

Robert P. Wheeler, Director
Environmental Health Services

STATEMENT OF ECONOMIC IMPACT OF PROPOSED RULES OR REGULATIONS

Agency Health

Rule No. 16-1 Series II (1983)

Subject Water Well Design Standards

1. Explanation of Overall Economic Impact of Proposed Rule.

A. Economic Impact on State Government.

NONE

B. Economic Impact on Political Subdivisions; Specific Industries; Specific groups of citizens.

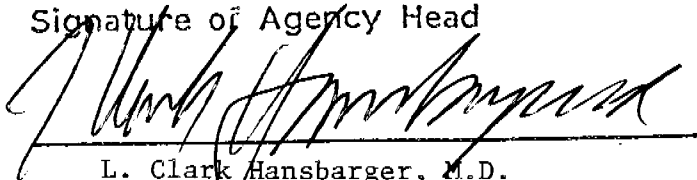
Local Health Departments - approximately \$2000.00/yr.
Water Well Drillery Industries - minimal business expenses.

C. Economic Impact on Citizens/Public at Large.

Proposed standards will increase well cost approximately \$100.00 per well.

Date _____ Agency _____

Signature of Agency Head



L. Clark Hansbarger, M.D.
Director of Health

Signature of Authorized Representative



Robert P. Wheeler, Director
Environmental Health Services

WEST VIRGINIA LEGISLATIVE RULES
BOARD OF HEALTH

Chapter 16-1
Series XIX
(1983)

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WEST VIRGINIA LEGISLATIVE RULES
BOARD OF HEALTH

Chapter 16-1
Series XIX
(1983)

Subject: Water Well Regulations

Section 1. GENERAL

- 1.01. Scope - These legislative rules establish the registration of water well drillers and the permitting of water well drilling.
- 1.02. Authority - These legislative rules are issued under the authority of and related to Chapter 16, Article 1, Section 7(2) of the West Virginia Code of 1931, as amended.
- 1.03. Filing Date - These rules were promulgated on the day of 19 , and were filed on the day of 19 , in the Secretary of State's Office.
- 1.04. Effective Date - These legislative rules became effective on the day of 19 .

Section 2. APPLICATION AND ENFORCEMENT

- 2.01. Application - These legislative rules apply to all water well drillers.
- 2.02. Enforcement - Enforcement of these legislative rules is vested with the Director of the West Virginia Department of Health or his lawful designee.

Section 3. DEFINITIONS

- 3.01. Annular Space - The space between casings or between casing and excavation.
- 3.02. Application - The State Department of Health's standard form(s) for applying for a permit or permit modification, including any additions, revisions or modifications to the form(s).
- 3.03. Aquifer - A geological formation, group of formations, or part of a formation that is capable of yielding a usable amount of water to a well.

- 3.04. Bedrock - Solid rock underlying soil, unconsolidated or weathered material. Bedrock is defined in absolute terms as materials that a six-inch auger, equipped with carbide cutting teeth, penetrates at a rate of less than one inch in three minutes.
- 3.05. Certified Well Driller - A person who has been granted a written certificate by the Director to construct wells who meet the requirements of these regulations.
- 3.06. Confined Aquifer - An aquifer bounded above and below by beds of distinctly lower permeability than that of the aquifer itself and which contains groundwater under pressure greater than that of the atmosphere. This term is synonymous with the term "artesian aquifer".
- 3.07. Confining Bed - A body of relatively impermeable material stratigraphically adjacent to one or more aquifers.
- 3.08. Design Standards - Those specifications, drawings and other details promulgated by the Director to ensure proper location, construction, and completion of water wells.
- 3.09. Director - Director of the State Department of Health or his lawful designee.
- 3.10. Drinking Water - Water free from biological, chemical, physical and radiological contaminants in quantities which cause disease or harmful physiological effects.
- 3.11. Formation - A body of rock characterized by a degree of lithologic homogeneity which is mappable on the earth's surface or traceable in the subsurface.
- 3.12. Groundwater - Water below the land surface in a zone of saturation.

- 3.13. Permeability - The capability of a rock, aquifer or confining bed to transmit water.
- 3.14. Person - Individual, partnership, association, syndicate, company, firm, trust, corporation, government corporation, institution, department, division, bureau, agency, federal agency or any other entity recognized by law.
- 3.15. Pollutant - Any man-induced physical, chemical, biological or radiological substance or matter in groundwater.
- 3.16. Unconfined Aquifer - An aquifer not bounded above by a bed of distinctly lower permeability than that of the aquifer itself and containing groundwater under pressure approximately equal to that of the atmosphere. This term is synonymous with the term "water table aquifer".
- 3.17. Water Well - Any excavation or penetration in the ground, whether drilled, bored, cored, driven, jetted or dug, for a water supply, for the exploration of water, or for removal of water to dewater construction site(s).
- 3.18. Well Completion Report - An accurate report kept at the time of drilling and construction describing geological, hydraulic and construction details.
- 3.19. Well Driller - An individual, firm, partnership, or corporation qualified to engage in well construction or who supervises the construction of water wells.

Section 4. PERMIT TO CONSTRUCT

- 4.01. On and after the effective date of these regulations, no person shall construct a well or award a contract for any construction or alteration of a well without obtaining a permit to do so from the Director. The requirements for application and for permit issuance are set forth in Sections 4.02, 4.03, and 4.04 of these regulations.

- 4.02. No person shall begin construction, alteration or deepening of a water well without first submitting an application for review and approval at least ten (10) days prior to the date on which approval by the Director is desired.
- 4.03. The well shall be constructed or altered in accordance with the West Virginia Department of Health's Design Standards for Water Well Construction or plans which have been approved in writing by the Director.
- 4.04. Application for Permit to Construct shall be made to the Director or his designee on forms prescribed by the Director and shall be jointly signed by well driller and property owner.
- 4.05. In the event the permit application is denied, the Director shall state in writing the reason(s) for denial and furnish same to applicant within ten (10) days from receipt of application.
- 4.06. A Permit to Construct, unless revoked, shall be valid for a period of one (1) year from date of issuance. In the event construction or alteration is not completed within that time, the Director may extend the time limit upon written request by the permittee.
- 4.07. One year after the effective date of these regulations, the Director will issue a well construction permit only to a person licensed by the West Virginia State Health Department as per Section 5 of these regulations.
- 4.08. A Permit to Construct may be revoked or denied by the Director for failure to comply with the provisions of the permit, any applicable provision of the regulations or orders issued pursuant thereto. Such revocation shall be in writing and shall state the reasons for revocation or denial.

- 4.09. Any person whose Application for Permit to Construct a water well has been revoked or denied may, within thirty (30) days from receipt of permit denial or revocation, request a hearing in accordance with Section 10, Administrative Due Process.
- 4.10. Emergency/Mobilization Permits - Permission to begin construction or alteration on any well may be applied for by telephone when emergency conditions or drilling rig mobilization conditions exist which would justify such a request. The Director may grant such emergency/mobilization permits at his discretion. However, a set of unforeseen circumstances must exist to create need for telephone permitting process. Mere carelessness, or lack of planning on the part of applicant, shall not be sufficient grounds to warrant the granting of an emergency/mobilization permit. The applicant for an emergency/mobilization permit shall reduce his application to writing in accordance with the provisions of Sections 4.02, 4.03, and 4.04 above and that writing be received by the Director within ten (10) days after having granted such a request. All other provisions of these regulations shall remain applicable and be complied with.

Section 5. CERTIFICATION OF WATER WELL DRILLERS

- 5.01. Within one (1) year after the date these regulations become effective, all water well drillers and their employees in direct charge of drilling and construction shall be certified for such activity by the Director.
- 5.02. An Application for Certification as a well driller shall be made in writing to the West Virginia Department of Health on a form prescribed by the West Virginia Department of Health. Information required on the form may include but not limited to name, age, address, education, experience, business name and references.

- 5.03. The West Virginia Department of Health shall deny certification if the information on the application form is incomplete, inaccurate, false or misleading, or indicates that the provisions of these regulations can not be met.
- 5.04. Certification shall not be transferrable or assignable and shall automatically become invalid upon suspension or revocation.
- 5.05. Certification shall expire five (5) years after date of issuance and may be renewed before such expiration date.
- 5.06. When certification has been denied, suspended or revoked, the person thereby affected shall immediately discontinue the construction or alteration of wells.
- 5.07. Any person whose application for certification has been denied or whose certification has been suspended or revoked may request a hearing in accordance with Section 10, Administrative Due Process. Applicant must submit written request for hearing within thirty (30) days from receipt of denial, suspension or revocation of certification.
- 5.08. Denial, suspension or revocation of certification shall be in writing from the Director and shall state specific reasons for the denial, suspension or revocation.
- 5.09. Suspension or revocation of certification shall be preceded by "Notice of Intent to Revoke or Suspend" from Director, at least ten (10) days prior to revocation or suspension.
- 5.10. In addition to filing an application for becoming certified to drill wells, the applicant must pass an examination to assure the West Virginia Department of Health that the applicant is thoroughly familiar

with all requirements of the laws of the State of West Virginia and these water well regulations. Examinations shall be administered by personnel of the West Virginia Department of Health. A passing grade of seventy (70%) per cent must be obtained before becoming certified. Any applicant who has failed an examination must wait thirty (30) days before again taking the examination.

- 5.11. When any groundwater system or any modification thereof is being constructed, installed, extended, altered or located, the person in responsible charge of such work shall hold a current certification as a well contractor.

Section 6. IDENTIFICATION NUMBERS OF WATER WELL RIGS AND WELL HEAD

- 6.01. It shall be the duty of all certified water well drillers to see that all water well rigs used by them or their employees in the water well drilling business are marked with legible and plainly visible identification numbers at all times.
- 6.02. The identification number to be used on water well rigs shall be the certification number of the water well driller responsible for the water well drilling operations.
- 6.03. Certification numbers shall be printed upon each side of every water well rig in numerals of not less than two inches high and such numerals shall be in a color sufficiently different from the color of the vehicle or equipment so that the registration number shall be plainly legible.

6.04. A driller shall have thirty (30) days from the date a license is issued to him to see that all water well rigs used by him or his employees in the water well drilling business are marked as provided in Section 6.02 and 6.03 above.

6.05. Each well drilling contractor shall securely attach a metal tag or embossed well cap to the well head containing the following information: driller's name and address and date of completion.

Section 7. RECORDS OF COMPLETED WELLS

7.01. Within fifteen (15) days after the completion of a well, a well drilling contractor shall provide the owner with one copy and the Director with two (2) copies of a record indicating the well owner's name, location of the well, drillers name, well depth, geological materials and thicknesses of material penetrated, amount of casing, static water levels, date of completion, and any other information which may be required by the Director. This information shall be provided on forms prescribed by the Director.

Section 8. ADVISORY BOARD

8.01. The Director may appoint a Well Driller's Advisory Board and chairman of said board.

8.02. The Advisory Board membership shall consist of, but not necessarily be limited to, the following members:

Certified well drillers: 2 to 3 members

State Health Department: 1 member

Local Health Department: 1 member

West Virginia Geological Survey: 1 member

West Virginia Soil Conservation Commission: 1 member

8.03. Duties of Advisory Board shall consist of the following functions:
Review of applications for certification examinations; review of water well Design Standards; review of water well regulations, and, make recommendations for revisions of regulations and design standards, if deemed necessary.

Section 9. PENALTY - Any individual, partnership, association, syndicate, company, firm, trust, corporation, government corporation, institution, department, division, bureau, agency, federal agency, or any entity recognized by law who shall violate any provision of this section, or any of the regulations or orders issued pursuant thereto, shall be guilty of a misdemeanor, and, upon conviction thereof, shall be fined not less than twenty five dollars (\$25) nor more than two hundred (\$200), and each day's violation shall constitute a separate offense. In addition thereto, the State Director of Health, or his authorized representative, may seek injunctive relief in the circuit court of the county in which the violation occurred. For a willful violation of this section, or of any of the regulations or orders issued thereunder, an individual, partnership, association, syndicate, company, firm, trust, corporation, government corporation, institution, department, division, bureau, agency, federal agency, or other entity recognized by law, upon a finding thereof by the circuit court of the county in which the violation occurs, shall be subject to a civil penalty of not more than five thousand dollars (\$5000), and each day's violation shall be grounds for a separate penalty.

Section 10. ADMINISTRATIVE DUE PROCESS - Those persons adversely affected by the enforcement of these legislative rules desiring a contested case hearing to determine any rights, duties, interests or privileges shall do so in a manner prescribed in the West Virginia Procedural Rules, Board of Health, Chapter 16-1, Series I, 1981, Rules of Procedure for Contested Case Hearings and Declaratory Rulings. The aforementioned procedural rules are incorporated herein by reference.

Section 11. SEVERABILITY - If any provisions of these rules or the application thereof to any person or circumstance shall be held invalid, such invalidity shall not affect the provisions or the application of these rules which can be given effect without the invalid provisions or application and to this end the provisions of these rules are declared to be severable.

WEST VIRGINIA INTERPRETIVE RULES
BOARD OF HEALTH

Chapter 16-1
Series II
(1983)

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WEST VIRGINIA INTERPRETIVE RULES
BOARD OF HEALTH

Chapter 16-I
Series II
(1982)

Subject: Water Well Design Standards

Section 1. General

1.01. Scope - These interpretive rules establish the design standards for the construction of water wells to provide adequate protection of public health and groundwater aquifers from contamination and pollution.

1.02. Authority - These interpretive rules are issued under the authority of and related to Chapter 16, Article I, Section 9 of the West Virginia Code of 1931, as amended.

1.03. Filing Date - These interpretive rules were promulgated on the day of 19 , and were filed on the day of 19 , in the Secretary of State's office.

1.04. Effective Date - These interpretive rules became effective on the day of , 19 .

Section 2. Application

2.01. Application - These rules apply to all water well drillers.

Section 3. Definitions

3.01. Adequate Protection - means proper construction methods which provide protection of the potable water aquifer from contamination.

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3.02. Annular Opening - means the water well opening constructed by excavation or penetration.

3.03. Concentric Pipe Installation - refers to the piping system between a jet pump and the well when the suction line must be buried. Concentric piping refers to the suction line being contained or located inside the pressure pipe.

3.04. Static Water Level - is the level at which water stands in a well when no water is being taken from the aquifer either by pumping or free flow. It is expressed as the distance from the ground surface to the water level in the well.

3.05. Drawdown - in a well is the extent of lowering of the water level when pumping is in progress and is the difference, measured in feet, between the static water level and the pumping level.

3.06. Location - means the designation of the well site and other appurtenances of the water supply system.

3.07. NSF - means plastic materials such as pipe, fittings, solvents, etc., approved for use in potable water systems by the National Sanitation Foundation.

3.08. Pitless Well Adapter - is an approved device for attachment to one of more openings through a well casing, and so constructed as to prevent the entry of contamination into the well or potable water, conduct water from the well, protect the water from freezing or extremes of temperature, and provide access of water system components within the well.

3.09. Pitless Well Cap - is an approved watertight, sanitary device that covers and encloses the upper termination of a pitless well unit or the well casing, and provided with water-tight connections for electrical power

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3.10. Pitless Well Unit - is an approved pre-assembled device which extends the upper end of a well casing to above grade, provided with an approved pitless well cap, and so constructed as to prevent the entry of contamination into the well or potable water, conduct water from the well, protect the water from freezing or extremes of temperature, and provide access to the well and to the water system components within the well.

3.11. Pumping Level - is the level at which water stands in a well when pumping is in progress.

3.12. Water Well Log - is a log accurately kept, at the time of drilling, showing the depth, thickness, character of the different strata penetrated, location of water bearing strata, depth, size, and type of casing installed, together with any other data or information required by the Water Well Drilling Regulations and on forms prescribed by said regulations.

3.13. Well Liner - means piping installed without driving which may be standard pipe weight or lighter and shall be of such minimum thickness as is required to withstand the structural load imposed by conditions inside and outside the well. Liner refers to piping placed inside or outside the well casing and may be required due to conditions encountered during and after drilling.

Section 4. Location of the Water Well

4.01. The water well shall be located as far as possible from any source or any potential source of pollution and specifically as listed below:

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4.01.01. The required minimum horizontal distance separation between a water well and source or potential source of contamination is as follows:

Septic Tank	50' (200')*
Sewage Holding Tanks.	100' (200')*
Sewage Absorption Field	100' (200')*
Sewers and Drains (Hydrostatically Tested)	10' **
Sewers and Drains (Non Water Tight)	100' (200')*
Privies (Leaching)	100' (200')*
Privies (Vault)	50' (200')*
Barnyard/Feeding and Watering Areas	100' (200')*
Streams, Impoundments, etc.	25' ***

(*) A water well shall not be located downhill in elevation from any septic tanks, home aeration units, privies, sewage holding tanks, trench fields, serial distribution system, beds, mound systems, and any other soil absorption systems unless the well is two hundred feet (200') minimum from the referenced sources of contamination.

(**) Sewer and drain materials shall be of waterline grade and quality and shall be hydrostatically tested by completely filling the line with water and observing that there is no leakage over a four (4) hour time period.

The sewer or drain line length that is required to be tested and constructed of waterline grade and quality shall be that section of line that is located within one hundred feet (100') of a water well that is higher in ground elevation than the referenced sewer or drain line.

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The sewer or drain line length that is required to be tested and constructed of waterline grade and quality shall be that section of line that is located within two hundred feet (200') of a water well that is lower in ground elevation than the referenced sewer or drain line.

(***) When possible, the well casing shall extend above the 50 year flood level. When the 50 year level is not known, then the referenced flood level shall be designated at six feet (6') above normal water level of the stream as a minimum standard.

Section 5. Materials

5.01. Well casing may be of iron or steel with minimum wall thickness of 0.142 inches (for undriven casing) and 0.187 inches (for driven casing), minimum casing inside diameter of five and one half inches (5½")

and shall have welded or threaded pipe joints and shall be watertight for protection against contamination.

5.02. Plastic well casing used shall meet National Sanitation Foundation (NSF) standards or otherwise as approved by the Director.

5.03. Plastic well casing shall not be driven.

5.04. Any casing used must be adaptable to stresses to which they will be subjected during installation.

5.05. When metal permanent well casing is driven, a standard drive shoe shall be welded or threaded on the lower end of the string of casing. The shoe shall have a beveled and tempered cutting edge of metal forged, cast or fabricated for this purpose. It shall be the well driller's responsibility to utilize the equipment he deems suitable to insure that the well will maintain

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5.06. Driven casing shall have minimum weights and thicknesses given in Tables I and 2.

5.07. Use of plastic pipe for well liners and temporary casing shall be permitted provided that the following requirements are met:

5.07.01. Plastic pipe shall meet National Sanitation Foundation (NSF) Standards and be approved by the Director.

5.07.02. Electrical grounding to plastic pipe is not approved.

5.08. Pitless Adapters, Pitless Units, Well Caps and Related Accessories shall be Water Systems Council recommended - Recommended Standards (PAS-1) dated February 1980 or latest revision thereto or National Sanitation Foundation (criteria C-3) approved or otherwise as approved by the Director.

5.09. Well Screens

5.09.01. Well screens may be fabricated from either approved plastic or metal materials.

5.09.02. Plastic well screens shall be Schedule 40 (minimum) or equivalent as specified in ASTM D 1785 and ASTM D 1537 or the latest revision thereto and the material shall be NSF approved or otherwise approved by the Director.

5.09.03. Well screen openings shall provide the maximum amount of open area consistent with strength of screen material and sediment grain size of the water bearing formation or any sand or gravel pack placed adjacent to the screen. The screen shall permit maximum water transmission without clogging.

5.09.04. Well screens other than those made commercially are prohibited for use.

5.09.05. Slotted pipe shall not be used in place of well screens.

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5.09.06. The well screens shall be provided with such fittings as are necessary to close the bottom of the screen.

5.09.07. Well screen and fittings used shall be compatible with the chemical characteristics of the water.

5.10. Distribution Piping

5.10.01. Any plastic piping used shall bear the seal of the National Sanitation Foundation (NSF-pw) or be National Sanitation Foundation approved or otherwise be approved by the Director.

5.10.02. Plastic solvents, joint compounds, fittings, etc., used shall be National Sanitation Foundation approved or otherwise be approved by the Director.

5.10.03. Any other type distribution piping may be used if approved and used per American Water Works Association Standards or otherwise as approved by the Director.

5.11. Grouting Material - Only the following materials shall be acceptable for the grouting of the annular space between the oversize drill hole, excavation, etc., and the well casing.

5.11.01. Neat Portland Cement or quick setting cement utilizing no more than $7\frac{1}{2}$ gallons of water per 94 pounds of cement.

5.11.02. Neat Portland Cement or quick setting cement dry blended with no more than $7\frac{1}{2}$ pounds of sodium base bentonite clay per 94 pounds cement and no more than 10 gallons of water.

5.12.03. Bentonite clay alone shall not be used for grouting.

Section 6. Construction Requirements

6.01. Casing

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6.01.01. The minimum length of casing placed in any water well shall be twenty feet (20'). This minimum length of casing includes one foot (1') minimum above ground level or well house floor level. Where possible, the well casing shall terminate above the fifty (50) year flood level.

6.01.02. Casing shall enter into unweathered rock a minimum of five (5') feet.

6.01.03. Where bedrock is not encountered in drilling operation the minimum length of well casing placed shall be 20' feet in overall length and grouted in accordance with Section 6.03.

6.01.04. Inside diameter of water well casing shall not be less than five and one half inches (5½"). Lesser diameter casing may be used for those casing lengths in excess of twenty feet (20') where conditions dictate use of additional casing or otherwise as approved by the Director.

6.02. Annular Openings

6.02.01. The annular opening of the drill hole, well boring, etc., shall be at a minimum three inches greater in diameter than the dimension of the outside diameter of the well casing.

6.02.02. The annular opening shall extend the full depth of the well casing and terminate a minimum of five feet (5') into rock.

6.02.03. The annular opening for water wells constructed in unconsolidated materials shall be maintained by use of twenty foot length (minimum) of outer casing which shall be removed during the grouting operation.

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6.03. Grouting

6.03.01. All well casing shall be grouted.

6.03.02. Grout shall be placed by means of a grout pump from the bottom of the annular opening upward in one continuous operation.

6.03.03. Gravity placement of grout (poured, rodded, or vibrated) shall not be permitted.

6.03.04. During the grouting operation, the casing shall be maintained in a centered position within the oversize drill hole.

Section 7. Well Head

7.01. The well head shall be constructed as to assure adequate protection of the well and to exclude entry of any contaminant.

7.02. Any well casing must extend a minimum of twelve inches (12") above ground level or finished floor level of a pump house as applicable. Where possible, the well casing shall terminate above the fifty (50) year flood level.

7.03. Installation of pits or well houses below ground level is prohibited for any well water system or pumping system.

7.04. The well casing shall be provided with either a pitless unit or adaptor installation and well cap for outdoor installation or sanitary seal for indoor (well house) installation approved by the Water System Council, National Sanitation Foundation, or otherwise as approved by the Director.

7.05. Well vents shall be provided where required. The well vent shall be constructed with a down-facing elbow or mushroom type head located at least twelve inches (12") above floor or ground level and above 50 year flood elevation

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7.06. Wells shall be properly capped during construction of the water system to exclude the entry of contamination as applicable.

Section 8. Pitless Well Installation

8.01. A pitless well installation shall consist of either a pitless well unit or pitless well adapter including pitless well cap.

8.02. Pitless well units, pitless adapters and pitless well caps shall be constructed in accordance with Criteria C-8 of the National Sanitation Foundation or the Recommended Standards (PAS-1) of the Water Systems Council or latest revision thereto and be recommended for use by the Water Systems Council or equivalent.

8.03. The pitless well unit installation shall terminate not less than twelve inches (12") above the ground surface, and above the 50 year flood elevation as applicable or practical and shall be provided with a pitless well cap and a well vent (where required), which shall be protected with a down-facing elbow or mushroom-type head located above the referenced flood level where applicable or practical and screened against the entry of insects.

8.04. The cement grouting of the annular space of the well shall extend to within six inches (6") of the connection between the well casing and the pitless installation.

8.05. The lateral discharge line shall be provided with a minimum of three feet (3') of earth cover, or a sufficient earth cover to prevent freezing.

8.06. Pitless Well Adapters Connection to Casing

8.06.01. The hole used to install the lateral discharge line to the well casing shall be made in such a manner as to provide a watertight connection.

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8.06.02. The exterior connection between the adapter and the well casing may be welded, or may be of the threaded or clamp-on gasket type. Extreme care shall be exercised when the connection is welded to assure a complete, watertight seal. A clamp-on gasket adapter shall be installed only on a smooth, clean surface.

8.07. Pitless Well Unit Connection to Casing

8.07.01. At the point of attachment to the well casing a pitless well unit may be welded, threaded, or of the slip-on type with O-ring gasket and shall be of watertight construction.

8.07.02. If the connection is to be by means of a field weld, the pitless well unit must be specifically designed for welding. The only field welding permitted shall be that needed to attach the pitless well unit to the well casing.

8.07.03. If the connection is of the slip-on type with O-ring gasket, the surface of the well casing shall be smooth and clean.

8.07.04. The filed connection between the pitless well unit and the lateral discharge line shall be threaded, flanged or a mechanical joint, and shall be so constructed and installed as to be watertight.

Section 9. Well Log - A completed well log shall be submitted to the director. The well log submitted shall be on the form prescribed by the director.

Section 10. Well Abandonment

10.01. Any test well or water well which is not in use shall be sealed by such measures as necessary as to restore the controlling geological conditions which existed prior to well construction.

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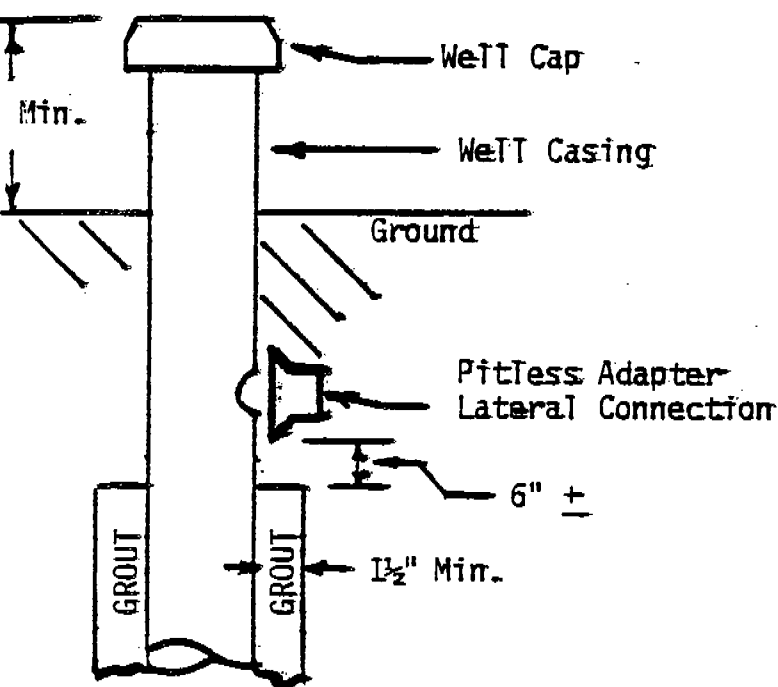
10.02. Wells to be abandoned shall be sealed by filling the well with concrete to prevent exchange of water from one geological strata to another.

10.03. Notification of well abandonment shall be provided to the director on forms prescribed by the director.

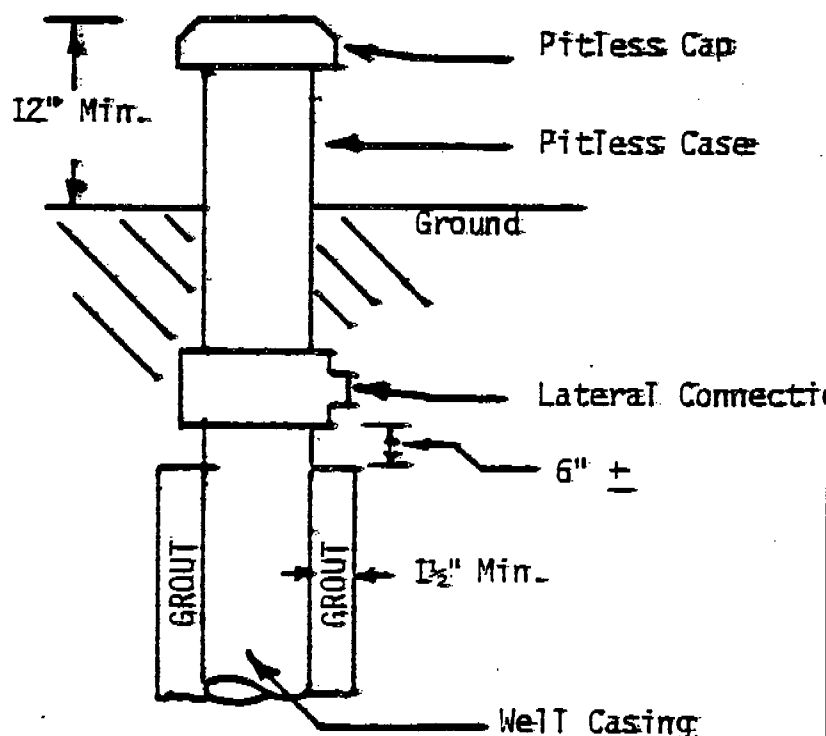
Section 11. Additional Requirements - all installations and operation shall meet or exceed relevant requirements of national, state, local or trades good practices or codes, whichever has jurisdiction.

WELL HEAD CONSTRUCTION

OUTDOOR INSTALLATIONS.



PITLESS ADAPTER
BELOW GROUND



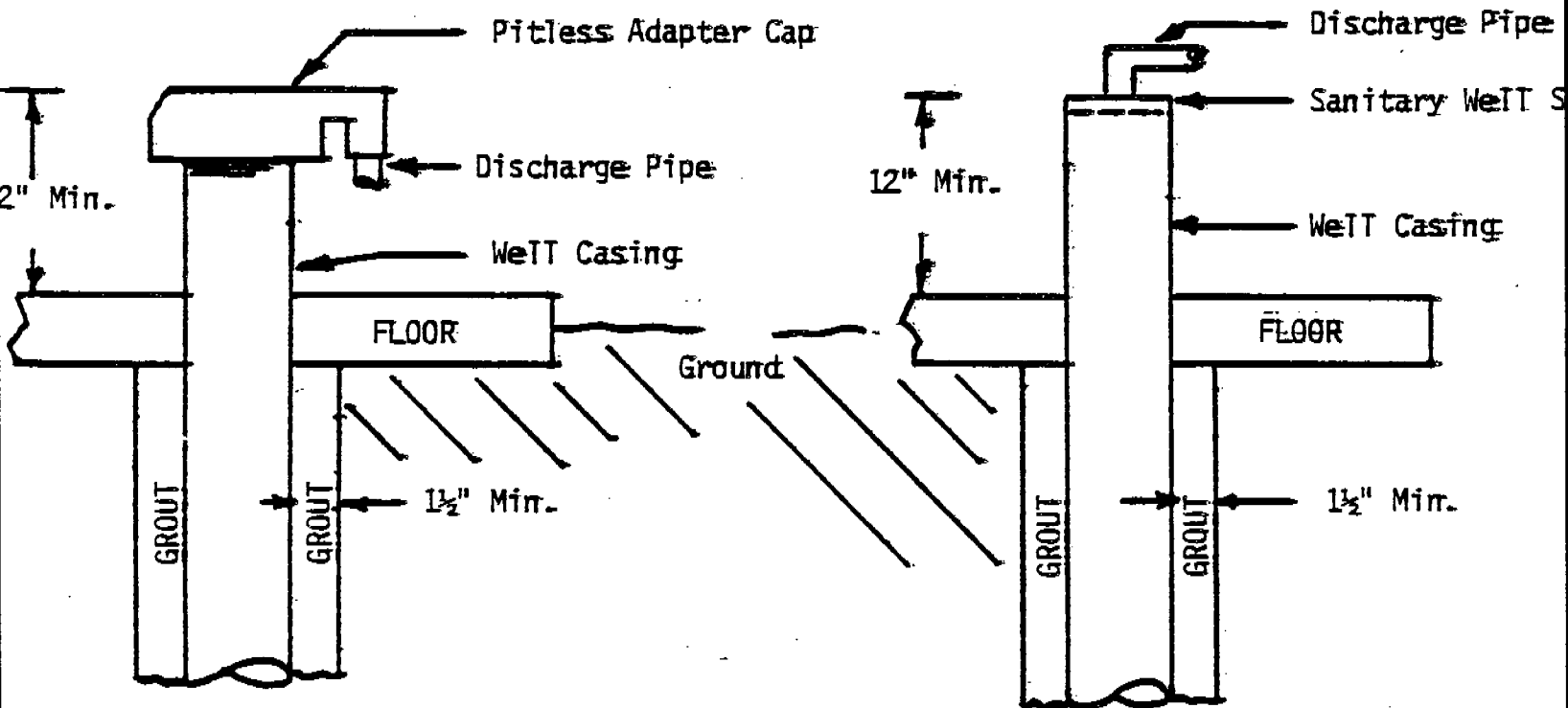
PITLESS UNIT

NOTES

1. Outdoor well heads for drilled water wells shall be constructed in accordance with one of the above standards.
2. Pitless adapters, pitless units, well caps, and related accessories used in water well construction must meet the Recommended Standards (PAS-1) of the Water Systems Council or Criteria C-8 of the National Sanitation Foundation or otherwise as approved by the Director.
3. Grouting of the well casing should not cover the pitless adapter, pitless unit or the lateral connection, etc.
4. The recommended depth of the lateral connection is 3' minimum or below the frost line to avoid freezing.
5. Use of jet pumps with buried suction lines shall require the use of Water Systems Council recommended pitless units with concentric pipe installation. The suction line shall be contained inside the buried pressure line.
6. Properly constructed vents shall be provided as applicable.

WELL HEAD CONSTRUCTION

INDOOR INSTALLATIONS



PITLESS ADAPTER ABOVE
GROUND/FLOOR LEVEL

SANITARY WELL SEAL
ABOVE GROUND/FLOOR LEVEL

NOTES

1. Indoor well heads for drilled water wells shall be constructed in accordance with one of the above standards.
2. Grout shall extend to ground/floor level.
3. Pitless adapters, pitless adapter caps, sanitary well seals and related accessories used in water well construction must meet the Recommended Standards (PAS-1) of the Water Systems Council or Criteria C-8 of the National Sanitation Foundation or otherwise as approved by the Director.
4. Properly constructed vents shall be provided as applicable.

DRILLED
WELL CONSTRUCTION TYPICAL

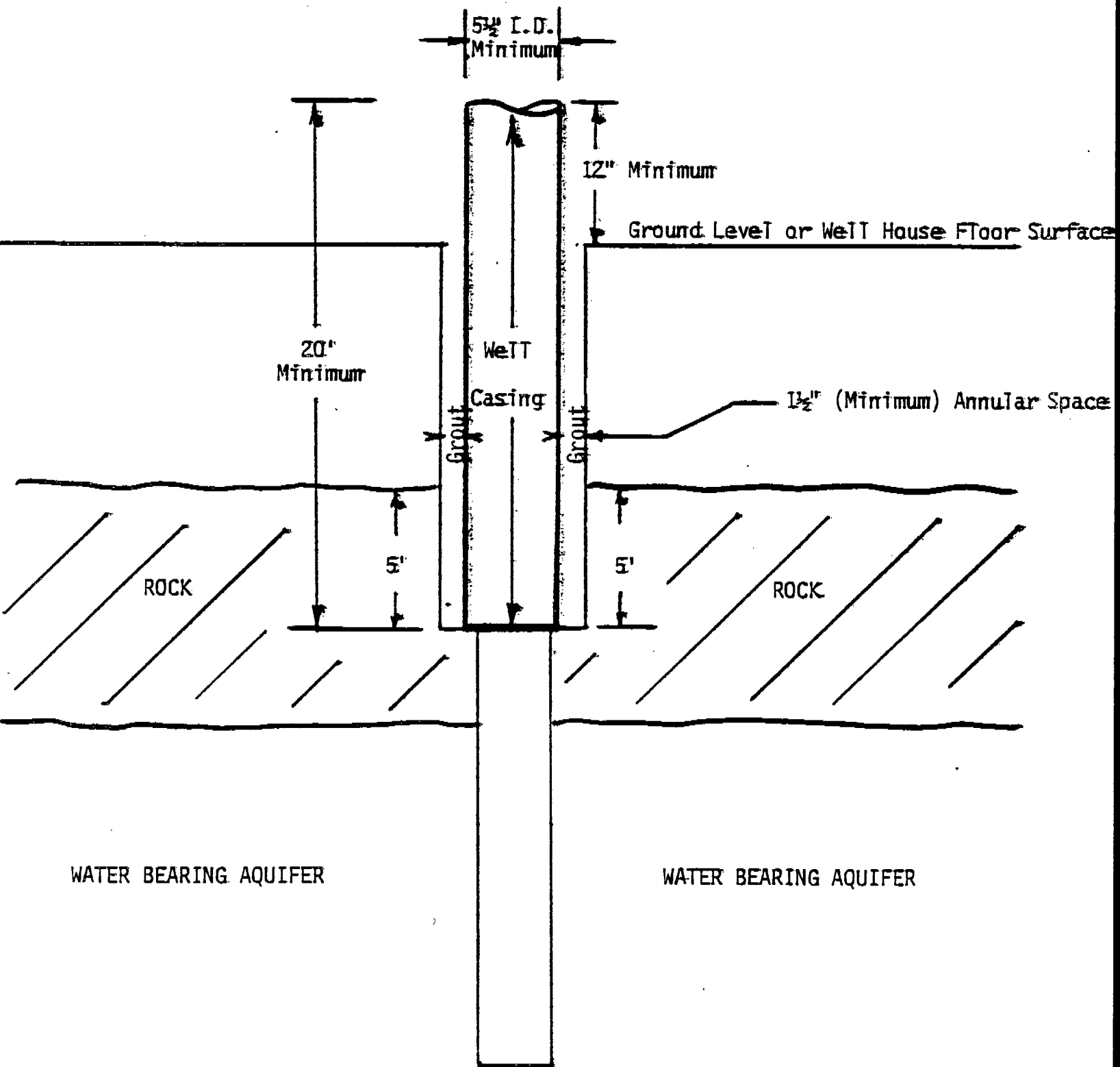


Table 1

WROUGHT IRON PIPE*

SIZE (inches)	DIAMETER (inches)		WEIGHT PER FOOT (pounds)		
	EXTERNAL	INTERNAL		PLAIN ENDS (calculated)	WITH THREADS AND COUPLINGS (nominal)
6 id.	6.625	6.053	0.286	18.97	19.45
8	8.625	7.967	0.329	28.55	29.35
10	10.750	10.005	0.372	40.48	41.85
12	12.750	11.985	0.383	49.56	51.15
14	14.000	13.234	0.383	54.56	57.00
16	16.000	15.234	0.383	62.58	65.30
18	18.000	17.165	0.417	76.84	81.20
20	20.000	19.000	0.500	102.10	106.62
22	22.000	21.000	0.500	112.57	
24	24.000	23.000	0.500	123.04	
26	26.000	25.000	0.500	133.51	
28	28.000	27.000	0.500	143.99	
30	30.000	29.000	0.500	154.46	

*Abstracted from AWWA Standard for Deep Wells, AWWA A100-66, p. 34 & 35.

TABLE 2

STEEL PIPE*

SIZE	DIAMETER (inches)		THICKNESS (inches)	WEIGHT PER FOOT (pounds)	
	EXTERNAL	INTERNAL		PLAIN ENDS (calculated)	WITH THREADS AND COUPLINGS (nominal)
6	6.625	6.065	0.280	18.97	19.18
8	8.625	7.981	0.322	28.55	29.35
10	10.750	10.020	0.365	40.48	41.85
12	12.750	12.000	0.375	49.56	51.15
14	14.000	13.250	0.375	54.57	57.00
16	16.000	15.250	0.375	62.58	65.30
18	18.000	17.250	0.375	70.59	73.00
20	20.000	19.250	0.375	78.60	81.00
22	22.000	21.000	0.500	114.81	
24	24.000	23.000	0.500	125.49	
26	26.000	25.000	0.500	136.17	
28	28.000	27.000	0.500	146.85	
30	30.000	29.000	0.500	157.53	
32	32.000	31.000	0.500	168.21	
34	34.000	33.000	0.500	178.89	

Board of Health
 Administrative Code 15-1
 Article 01

TABLE 2 - Driven Casing
STEEL PIPE

SIZE	DIAMETER (Inches)		THICKNESS (Inches)	WEIGHT PER FOOT (pounds)	
	EXTERNAL	INTERNAL		PLAIN ENDS (calculated)	WITH THREADS AND COUPLINGS (nominal)
6	6.625	6.250	0.187	-	-
6	6.625	6.065	0.280	18.97	19.18
8	8.625	7.981	0.322	28.55	29.35
10	10.750	10.020	0.365	40.48	41.85
12	12.750	12.000	0.375	49.56	51.15
14	14.000	13.250	0.375	54.57	57.00
16	16.000	15.250	0.375	62.58	65.30
18	18.000	17.250	0.375	70.59	73.00
20	20.000	19.250	0.375	78.60	81.00
22	22.000	21.000	0.500	114.81	
24	24.000	23.000	0.500	125.49	
26	26.000	25.000	0.500	136.17	
28	28.000	27.000	0.500	146.85	
30	30.000	29.000	0.500	157.53	
32	32.000	31.000	0.500	168.21	
34	34.000	33.000	0.500	178.89	
36	36.000	35.000	0.500	189.57	

Section 14. Severability - If any provisions of these rules or the application thereof to any person or circumstance shall be held invalid, such invalidity shall not affect the provisions or the application of these rules which can be given effect without the invalid provisions or application, and to this end the provisions of these rules are declared to be severable.

FILED IN THE OFFICE OF
A. JAMES MANCHIN
SECRETARY OF STATE

THIS DATE 5-31-83
Administrative Law Division

West Virginia Department of Health

In accordance with the Code of West Virginia, Chapter 29A and Chapter 59, the West Virginia Department of Health, Office of Environmental Health Services will hold a public hearing on proposed "Water Well Regulations" and "Water Well Design Standards". The hearings have been scheduled as follows:

Tuesday, July 12, 1983 - 1:00 p.m.
Monongalia County Health Department
453 Van Voorhis Road
Morgantown, West Virginia 26505

Wednesday, July 13, 1983 - 1:00 p.m.
Conference Room E, Building #7
State Capitol Complex
Charleston, West Virginia 25305

Interested parties are invited to submit oral or written comments regarding these regulations. Copies of the regulations can be obtained from the West Virginia Department of Health, Office of Environmental Health Services, 1800 Washington Street, East, Charleston, West Virginia, 25305. Written comments may also be submitted to the above address by July 15, 1983.



State Tax Department of West Virginia

Charleston 25305

HERSCHEL H. ROSE III
COMMISSIONER

June 30, 1983

P R E S S R E L E A S E

For Immediate Release

The State Tax Department announced today that the appeal filed by United Hospital Center, Inc. under the West Virginia certificate of need law (CON), W. Va. Code § 16-2D-1 et seq. has been set for hearing at 1:00 p.m., on Monday, July 18, 1983, in the Capitol Complex, Building 7, Conference Center, Room D, 1900 Washington Street, E., Charleston, West Virginia 25305.

United Hospital Center, Inc. seeks review of the decision of the State Health Planning and Development Agency (SHPDA), dated April 21, 1983, in which a certificate of need was denied for the development of a dedicated cardiac catheterization laboratory.

Pursuant to Executive Order 9-78, the governor has designated the State Tax Department to hear appeals of decisions by SHPDA on CON matters.

-30-

FILED IN THE OFFICE OF
A. JAMES MANCHIN
SECRETARY OF STATE
THIS DATE July 5, 1983
Administrative Law Division

For further information, please contact:

Mary R. Bronstein, Hearing Examiner
Office of Hearings and Appeals
West Virginia State Tax Department
1217 Quarrier Street
Charleston, West Virginia 25301
(304) 348-8842

H7/DD

TABLE 2 - Driven Casing
STEEL PIPE

SIZE	DIAMETER (inches)		THICKNESS (inches)	WEIGHT PER FOOT (pounds)	
	EXTERNAL	INTERNAL		PLAIN ENDS (calculated)	WITH THREADS AND COUPLINGS (nominal)
6	6.625	6.250	0.187	-	-
6	6.625	6.065	0.280	18.97	19.18
8	8.625	7.981	0.322	28.55	29.35
10	10.750	10.020	0.365	40.48	41.85
12	12.750	12.000	0.375	49.56	51.15
14	14.000	13.250	0.375	54.57	57.00
16	16.000	15.250	0.375	62.58	65.30
18	18.000	17.250	0.375	70.59	73.00
20	20.000	19.250	0.375	78.60	81.00
22	22.000	21.000	0.500	114.81	
24	24.000	23.000	0.500	125.49	
26	26.000	25.000	0.500	136.17	
28	28.000	27.000	0.500	146.85	
30	30.000	29.000	0.500	157.53	
32	32.000	31.000	0.500	168.21	
34	34.000	33.000	0.500	178.89	
36	36.000	35.000	0.500	189.57	

Section 14. Severability - If any provisions of these rules or the application thereof to any person or circumstance shall be held invalid, such invalidity shall not affect the provisions or the application of these rules which can be given effect without the invalid provisions or application, and to this end the provisions of these rules are declared to be severable.