Summary of Comments Received at Public Hearing(s) in re

Title, Type and Number: Sewage Treatment and Collection System Design Standards, Chapter 16-1, Series VII, 1983 - Interpretive

Date(s) and Location(s): April 29, 1983, Capitol Conference Center, Rooms A and B, Charleston, West Virginia

All comments received on the proposed regulation were received through the Board of Health, prior to the actual holding of the hearing. These comments were considered as part of the public hearing comment. A summary of changes and comments is attached. Certain amendments were made to the regulation for purposes of clarification. Some details concerning the application process were deleted to avoid conflict with procedures shared between the Departments of Health and Natural Resources and also to make the application process more flexible. A few provisions were changed due to conflict with other Department regulations establishing drinking water standards. These and other amendments, in the judgement of the Department, do not constitute a change in the purpose or substance of the regulation.

COMMENTS ON PROPOSED W. VA. INTERPRETATIVE RULES
STATE BOARD OF HEALTH

SEWAGE TREATMENT AND COLLECTION SYSTEM DESIGN STANDARDS

Section 4, Part II - Sewage Collection Systems

Section 2.0 Gravity Sewers

Subsection 2.6 Minimum Size - No gravity sewer shall be less than 8" in diameter except that 6" diameter sewers may be used for lateral sewers where no possibility of future extension exists and no more than 30 mobile homes or 15 residences can be served. 4" sewer pipe will not be allowed for the collection system.

Apparently this regulation will eliminate the use of 4" sewers on new collection systems. Common design practice is to use 4" sewers for house service laterals, since most house plumbing is a maximum of 3" or 4" size. Requiring the use of 6" service laterals would only serve to increase the cost of new systems. 4" sewers should be allowed for use as service laterals.

Subsection 2.10 Alignment - Sewers 24" in diameter and less shall be laid with straight alignment between manholes.

This regulation would eliminate the consideration of curved sewers which could serve to reduce system costs in many areas. We suggest that this subsection be amended to include the following statement: Curved sewers may be used in special situations, but approval of the director is required prior to submission of plans.

Subsection 2.17 Stream Crossing - Whenever sewers must cross under a stream or water course, a minimum separation of 3' between stream bed and the top of the sewer pipe shall be provided. However, when sewers cross a stream and less than 3' cover is provided, the sewers shall be encased in concrete for at least 10 feet on either side of the stream. Cast iron pipe or equal shall be utilized.

The restriction of using only cast iron pipe for stream crossing seems unnecessary if in fact the sewer is encased in concrete. We would recommend that this subsection be re-written to allow the use of other pipe materials for stream crossings when utilized in conjunction with concrete encasement.

Section 3.0 Vacuum Sewage Collection Systems

Subsection 3.2.3 Valve boxes shall have a solid bottom, and be counter-weighted to prevent floatation. The cover and valve box material shall be of adequate strength to withstand the expected maximum dynamic and static loading conditions. Valve boxes shall be well vented to reduce condensation and constructed of corrosion resistant material.

This regulation implies that all valve boxes need to be counter-weighted to prevent floatation. We recommend that this section be re-written to indicate that counter-weighting may be required in areas subject to flooding or high ground water.

Subsection 3.2.4 The vent system for the house must have a diameter of 3 inches or greater to prevent evacuation of traps during vacuum valve operation. The vent pipe shall be extended above the eaves of the house.

First, we would like to see this subsection and subsection 3.8.5 either combined or re-written for consistency. We also

recommend that the requirement that the vent pipe be extended above the eaves of the house be eliminated. Standard design practice for a vacuum sewer system is to extend a 4" vent 18 inches above the ground on the gravity lateral adjacent to the house wall. However, this may also be too restrictive and we would suggest that a statement be included that other means of venting may be approved on a case by case basis.

Section 4.0 Pressure Sewer Collection System

Subsection 4.1.1 Simplex units shall serve no more than two residences. Duplex units shall serve no more than four residences. Other multiple source applications shall be approved by the director.

We would recommend that the duplex units be restricted based upon flow rather than the number of residences or equivalent residences served. For example, a regulation restricting duplex units to pumping or serving an equivalent of 3,000 gallons per day would be more workable when considering their use in apartment buildings, trailer parks, etc.

Subsection 4.2.1.3 For purposes of calculation, a C = 100 in the Hazen - Williams formula must be used for all pipe except a C = 120 may be used for plastic pipe.

Manufacturers recommendations and test results seem to substantiate a C = 150 for PVC plastic pipe.

Subsection 4.3.2 Color - All pressure pipe shall be colored solid gray.

While we agree that pressure sewer pipe should be easily field identified and methods should be taken during construction to provide for identification and subsequent location.

requiring the pipe to be colored gray would tend to restrict certain pipe manufacturers from supplying material and may lead to increased costs. This restriction would only be workable if all other utilities were required to follow a similar color standard, i.e., blue for water line, white for gravity sewer line, orange for natural gas, etc. Under many instances, ductile iron pipe may be required which would conflict with the solid gray coloring requirement.

Section 6.0 Manholes

Subsection 6.2 Materials - Manholes shall be precast concrete, poured in place concrete or concrete manhole block.

There is no mention of using fiberglass manholes which are available and can be cost effective in some applications.

Section 7.0 Pumping Stations

Subsection 7.1.4 Pumping rates the Number of Pumping Units - As a minimum dual pumps shall be provided at all lift stations, each capable of providing the maximum design flow. Pumping units shall be sized to provide the minimum cleaning velocity of 2.5 feet per second at the rated capacity, assuming a C = 120 for plastic pipe and C = 100 for all other pipe materials in the Hazen-Williams formula.

Regulations up to this date have required only 2.0 feet per second minimum cleaning velocity in force mains. Requiring 2.5 feet per second would tend to increase friction losses and require larger pumps and increase energy costs. Again, we recommend that C = 150 be adopted for PVC in accordance with the material manufacturers' recommendations.

Section 4, Part III - Sewage Treatment Works

Section 1.0 General

Subsection 1.4.4 New Sewage Systems - Where new sewers are to be constructed, plans for sewage treatment works shall be designed on the basis of 70 gallons per capita per day.

This section should be re-written so that it conforms with the design requirements for sewer systems given in Subsection 1.6 of Section 4, Part II, Sewage Collection Systems. This subsection allows the use of water use records where available and also provides flow allowances for infiltration, future industrial reserve, etc.

Subsection I.7.3.2 Direct Connections - The drinking water supply line to each treatment plant shall be equipped, as a minimum, with an approved reduced-pressure type backflow preventer. These devices must be installed in a location to prevent flooding, corrosion, and allow for adequate, quick service and periodic inspections. Installation and below grade meter type vaults will not be acceptable.

Typical plant design requires that the backflow preventer device be located near the property line or entrance to the treatment plant. Therefore, installation in a below grade vault is most practical.

Subsection 1.9 Laboratory Space - All treatment works shall have facilities, either contractural or on-site, for making the necessary analytical determinations and operating control tests. Whenever an on-site laboratory is utilized, isolation should be such as to render the laboratory reasonably from the adverse effects of noise, heat, vibration, and dust. Minimum laboratory space for

facilities not performing BOD & Suspended solids testing on-site shall be 100 sq. ft. floor space with 35 sq. ft. bench area. Facilities providing on-site BOD, suspended solids, and fecal coliform analysis shall be provided with a minimum of 400 sq. ft. floor space and 150 sq. ft. of bench space.

We concur with your requirements, however, we feel that these may conflict with the current requirements of the Department of Natural Resouces for construction grants projects. Both agencies should get together and adopt a uniform requirement for laboratory space.

Dr. Portz:

Three simple comments:

PART II - Section 3.0 Vacuum Sewage Collection System -

Comment: Vacuum sewage system use is limited in hilly-mountainous terrain.

PART III - Section 1.3.1. Surface Water Discharge -

Comment: There appears to be ambiguity and conflict between this Section and Section 13.2.1. Sand filters will not achieve treatment to meet stream standards of BOD_5 less than 8 mg/l. Therefore, a treatment Mode should not be indicated in the Interpretive Rule 16-1.

PART V - Section 2.11 General Site Requirements -

Comment: The percolation test is based on the assumption that the ability of a soil to absorb sewage effluent over a prolonged period of time may be predicted from its initial ability to absorb clear water. However, the results of the test are highly variable and its use for system sizing relies on an empirical relationship between the measured percolation rate and the actual loading rate. Tests run in the same soil may vary by as much as 50%. The percolation test procedure is unreliable and a more accurate procedure is required.

Part II - Section 2.0: Gravity Sewers:

A 6" diameter gravity sewer is the minimum size "collector" sewer, not house lateral sewer. 4" house laterals certainly are acceptable.

Part II - Section 2.10 Alignment:

As a standard, sewers 24" in diameter and less must be laid with straight alignment between manholes to ensure against plugging problems and to allow standard cleaning equipment to be used. Admitted initial construction cost may be reduced, but future maintenance will in all probability be increased.

Part II - Section 2.17 Stream Crossing:

We do not understand this question. Cast iron pipe "or equal" would indicate that other pipe material can be used. What is the problem?

Part II - Section 3.0 Vacuum Sewage Collection System :

(Section 3.0 changed to Section 5.0)

Subsection 3.2.3:

We will add a statement that valve boxes shall be counter-weighted to prevent floatation when located in an area subject to flooding or high ground water.

Subsection 3.2.4:

We will add a statement that other methods for venting will be approved on a case by case basis.

Part II - Section 4.0 Pressure Sewer Collection System:

(Section 4.0 changed to Section 6.0)

Subsection 4.1.1:

The recommendation to allow a maximum of 4 houses on each duplex pump station in pressure systems came from the pressure sewer collection system manufacturers.

Subsection 4.2.1.3:

We have sewer test data that indicates that the C in the Hazen - Williams formula will be reduced to 100 in time. It may start out as high as 150, but will reduce.

Subsection 4.3.2 - Color:

We checked with pipe manufacturers and were advised that color was an extra cost item. The requirement will be dropped.

Part II - Section 6.0 Manholes:

We have no objections to the use of fiberglass manholes, however, our experience has indicated that they are not cost competitive with other materials and require extreme care in installation.

Part II - Section 7.0 Pumping Stations:

(Section 7.0 changed to Section 4.0)

We have no objections to reducing the cleaning velocity back to 2.0 ft/sec. However, based on the design technical literature we have reviewed, we believe 2.5 ft/sec velocity is considered to be more appropriate to insure proper cleaning and flushing of force mains.

Part III - Sewage Treatment Works:

Section 1.0 General:

Subsection 1.4.4:

The following will be added: "or estimates based upon a minimum one year's fully documented analysis of water use records adjusted for consumption and losses."

Subsection 1.7.3.2:

We do not understand what the problem is. We have no objection to the reduced-pressure type backflow preventer being located near the property line or entrance or in a below grade vault, provided it is protected from flooding, corrosion, and quick service and inspection is possible.

Subsection 1.9 Laboratory Space:

We disagree with the Division of Water Resources, Construction Grants Section on these requirements. Only EPA projects will have to meet the Construction Grants requirements.

Dr. Portz

Part II - Section 3.0 Vacuum Sewage Collection System

Vacuum sewage system use is limited in hilly-mountainous terrain because maximum total dynamic head is only 15 feet. It would become extremely costly to install this system in a hill region.

Part II - Section 1.3.1 Surface Water Discharge

We did not understand the comment.

Part V - Section 2.11 General Site Requirements

The percolation test is the only practical method of determining suitability of soils which is available at the present time.

Changes to Design Standards

Section 4

Part I	All new procedures. Package applications
Part II	
Subsection 2.14.2	Added F789 plastic pipe.
Subsections 2.19.3, 2.19.4.1, 2.19.4.2, 2.19.5.1, 2.19.5.2	Added new requirements for water and sewer systems separations.
Subsection 5.2.3	Added ..."when located in an area subject to flooding or high ground water."
Subsection 5.2.4	Added "Other methods for venting will be considered on a case by case basis."
Subsection 5.8.6 and 6.3.7	Added "Relation of vacuum lines to water lines shall be as for gravity lines. (See Subsection 2.19.4)."
Subsection 4.1.4	Changed 2.5 feet per second to 2.0 feet per second.
Subsection 6.3.2	Deleted.
Part III	
Subsection 1.2	Changed lagoons to stabilization ponds.
Subsection 1.4.3	Added "flow proportional".
Subsection 1.4.4	Added ", or estimates based upon a minimum one (1) years fully documented analysis of water use records adjusted for consumption and losses."
Subsection 1.5.3	Added "Cathodic protection is required for all steel tanks."
Subsection 1.8.7	Changed nonsmoking to nonsparking.
Subsection 2.1.4.2	Changed hazardous to explosive.
Subsection 7.5.2	Changed 3 inches to 2.5 inches.

Subsection 11.2.1.2	Changed 100 feet to 300 feet and changed 200 feet to 600 feet.
Subsection 12.2.2.3	Added "If the discharge is within a five (5) mile distance upstream from a public water supply, the Drinking Water Division of the State Health Department shall be contacted for additional requirements."
Subsection 12.2.2.7	Added "Recommend automatic leak detectors be installed wherever gas chlorination is used."
Subsection 12.2.5	Added "A minimum two (2) air-pass are required."
Subsection 13.3.3	Added "...for plants of 40,001 GPD or more in size."
Subsection 13.3.1.1	Eliminated.
Subsection 13.3.6	Added "Equipment Serving Plants with Design Flows of 40,000 GPD or Less - Where filtration equipment serving plants with design flows of 40,000 GPD or less not conforming to the preceding requirements is proposed, data which supports the capability of the equipment to meet effluent requirements under design conditions shall be provided. Such equipment will be considered on a case-by-case by the director."
Subsection 14.4.1	Added "Under no circumstances shall surface water enter the bed areas."
Subsection 16.4.1	Added "after secondary treatment"
PART V	
Subsection 2.6	200 feet distance to downslope well deleted.
Subsection 7.0	Modified E-T system added.
Subsection 7.2	Mound systems moved to appendix.
Part X	Added new part covering grease traps.

ADDITIONAL CHANGES

Part II

Section 2.19.2

Relation to Water Works Structures changed to Relation to Public Water Systems

Section 2.19.3

Relation to Wells to read, "in general, no sewer line shall be located within 50 feet of a private."

Part V

Section 2.4

Wording changed to: "a septic tank, home aeration unit, vault privy, or other sewage tank shall be located at least 50 feet from a private well or groundwater supply."

Part V

Section 2.5

The section was to have been deleted and was left in error. Section 2.5 becomes; "The minimum horizontal distance betwen a water well serving a public water system and a septic tank, home aeration unit, vault privy or other sewage tank shall be determined by the director on a case by case."

John D. Rockefeller IV
Governor

L. Clark Hansbarger, M.D.
Director

State of West Virginia

DEPARTMENT OF HEALTH

CHARLESTON 25305

Notice of Final Filing

Interpretive Rule: Sewage Treatment and Collection System Design Standards, Chapter 16-1, Series VII (1983)

The attached Board of Health interpretive rule Sewage Treatment and Collection System Design Standards is hereby filed with the Secretary of State in compliance with the provisions of Chapter 29A, Article 2, Section 6 of the West Virginia Code.

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

FILED IN THE OFFICE OF
A. JAMES MANCHIN
SECRETARY OF STATE
THIS DATE Oct. 27, 1983
Administrative Law Division
Entered

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